APPENDIX V

SDSU 2007 MASTER PLAN UPDATE

TRANSPORTATION IMPACT ANALYSIS

LINSCOTT LAW & GREENSPAN (LLG), JANUARY 2018

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TRANSPORTATION IMPACT ANALYSIS

SDSU MASTER PLAN UPDATE

San Diego, California
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EXECUTIVE SUMMARY

Linscott, Law & Greenspan, Engineers (LLG) has been retained to provide additional traffic engineering consulting services associated with the San Diego State University (SDSU) 2007 Campus Master Plan (the Project). Following litigation brought in 2007 to challenge the environmental impact report (EIR) prepared for the Master Plan, the court found that the transportation related analysis conducted in connection with the 2007 Plan was inadequate in certain limited respects. This traffic study has been prepared in response to the court's ruling and revises those portions of the 2007 analysis found inadequate by the court. Specifically, all applicable mitigation measures have been revised to remove the prior condition making their implementation and/or funding contingent upon legislative appropriation, and the analysis of transit-related impacts (i.e., impacts to trolley and bus service) and a mitigation measure requiring preparation of a Transportation Demand Management (TDM) program have both been revised consistent with the court's ruling. While not required by the court, the study presented here is based on an update to the 2007 study, with updated traffic information based on 2016 traffic counts, an updated list of cumulative projects, and updated transit data. Consistent with the court's ruling, the study analyzes the same project trip generation as analyzed in the 2007 study.

The SDSU campus is located just south of the Interstate 8 freeway, between the Waring Road and Lake Murray Boulevard interchanges. The campus is bisected on its north-south axis by College Avenue, and generally bound by Interstate 8 and Del Cerro Boulevard/Adobe Falls Drive to the north, and Montezuma Road to the south.

As noted above, this transportation impact analysis analyzes the same project as that proposed in 2007, which included an increase in Full-Time Equivalent (FTE) students from 25,000 FTE to 35,000 FTE, and a corresponding increase in "headcount" from 33,441 students to 44,826. [1] As with the 2007 analysis, this increase in headcount is analyzed under two different scenarios, a Near-Term scenario and a Horizon Year scenario. The Near-Term scenario (approximately 2022) corresponds to an increase in headcount of 2,094 students (approximately 1,840 FTE). The Horizon Year timeframe (approximately 2035) corresponds to Project buildout and a headcount increase of 11,385 students (i.e. 10,000 FTE). Year 2035 was chosen as it is consistent with the 2007 analysis and the forecast year used by SANDAG. In addition to the increase in FTE/headcount, the proposed project also includes physical improvements to the SDSU campus, including classroom/research facilities, student and faculty/staff housing, and a hotel. These project components are further described in *Section 2.2*.

The Project's impacts were analyzed at all study area intersections, street segments, freeway ramp meters, and mainline segments consistent with the 2007 analysis. Additionally, an analysis of the

[1] One FTE student is defined as one student taking 15 course units (which is considered to be a "full course load"). Two part-time students, each taking 7.5 course units, also would be considered one FTE student, although the associated headcount would be two. The 2007 Campus Master Plan EIR projected that when FTE enrollment reaches 35,000, 44,826 total students (i.e. headcount) will be enrolled at the university, which equated to an enrollment increase of 11,385 students.

Project's impacts relative to transit (trolley and buses) was conducted. The following summarizes the Project's significant impacts under both the Near-Term and Horizon Year analyses:

Near-Term (Year 2022) Significant Impacts

The Project would result in significant impacts under the Near-Term scenario at the following intersections:

- College Avenue / I-8 EB Ramps (LOS E during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS E during the PM peak hour)
- College Avenue / Zura Way (LOS F during the PM peak hour)
- College Avenue / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the PM peak hour)

The Project would result in significant impacts under the Near-Term scenario at the following street segments:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)

Mitigation measures for these impacts are discussed in detail in *Section 12.1*. The Near-term mitigation measures for intersections and street segments are shown below. No significant Near-Term impacts to the freeway ramp meters or mainline segments were identified.

Intersections

A–1. College Avenue / I-8 Eastbound Ramps

The improvement necessary to mitigate the Project's significant impact at the College Avenue / I-8 Eastbound Ramp is to widen the northbound College Avenue approach to the on-ramp to provide an additional lane on College Avenue between Canyon Crest Drive and the I-8 EB on-ramp.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,211[2] or its equivalent[3], SDSU shall widen the northbound College Avenue approach to the College Avenue / I-8 Eastbound Ramp to provide an additional (third) northbound lane between Canyon Crest Drive

[2] For 2017/2018, the FTE for capacity and master planning purposes is 24,555. (See Appendix T.) The total FTE trigger is then calculated as follows: baseline FTE (i.e. 24,555) + FTE trigger shown in *Table 13–1*. *For e.g.: Impact A-1*: 24,555 baseline FTE + 656 FTE increase = 25,211 total FTE. Similar methodology was followed for other impacted locations.

[3] The phrase "or its equivalent" as used in this and other mitigation measures refers to the fact that the near-term construction of the Alvarado Hotel, in combination with construction of a portion of the Adobe Falls Faculty/Staff Housing, could trigger the identified significant impact prior to FTE enrollment actually reaching the designated trigger, in this case 25,211. Accordingly, Table 13-1, Mitigation Trigger Analysis, identifies the number of FTE equivalent hotel rooms and faculty/staff housing that would trigger the identified impact requiring mitigation.

and the I-8 EB on-ramp. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego and Caltrans for review and approval. Following City and Caltrans approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to Caltrans and the City Engineer prior to constructing the subject improvements consistent with the approved City and Caltrans plans. In the event the proposed improvements are not approved and constructed in a timely manner, the impact would remain temporarily significant and unavoidable.

A-2 College Avenue / Canyon Crest Drive

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Canyon Crest Drive intersection is to widen the northbound College Avenue approach to the intersection to provide an additional lane.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,251 or its equivalent, SDSU shall widen the northbound College Avenue approach to the College Avenue / Canyon Crest Drive intersection to provide an additional (third) northbound through lane, to the reasonable satisfaction of the City Engineer. The improvements shall be completed prior to the impact occurring.

A–3. College Avenue / Zura Way

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Zura Way intersection is to install a traffic signal at the intersection. A signal warrant analysis is included in *Appendix P*, which concludes that a signal is warranted at the College Avenue / Zura Way intersection.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,608 or its equivalent, SDSU shall install a traffic signal at the College Avenue / Zura Way intersection, to the reasonable satisfaction of the City of San Diego Engineer. The improvements shall be completed prior to the impact occurring.

A–4. College Avenue / Montezuma Road

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Montezuma Road intersection is to re-stripe the eastbound Montezuma Road approach to the intersection to provide an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue, and also to install an overlap phase for the eastbound right-turn to southbound College Avenue at the intersection traffic signal.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,912 or its equivalent, SDSU shall re-stripe the eastbound Montezuma Road approach to the College Avenue / Montezuma Road intersection to provide an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue and also shall install an overlap phase for the

eastbound right-turn to southbound College Avenue at the intersection traffic signal to the reasonable satisfactory to the City Engineer. The improvements shall be completed prior to the impact occurring.

A–5. I-8 Westbound Ramp / Parkway Drive

The improvement necessary to mitigate the Project's significant impacts at the I-8 Westbound Ramp / Parkway Drive intersection is to install either a traffic signal or a roundabout at the intersection, dependent upon the results of an Intersection Control Evaluation (ICE) analysis. The improvement ultimately decided upon shall be determined based on input provided by Caltrans and the City of La Mesa (the local jurisdiction), and also shall account for any queuing that could affect adjacent intersections, including the 70th Street/Parkway Drive intersection.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,795 or its equivalent, SDSU shall install a traffic signal at the I-8 Westbound Ramp / Parkway Drive intersection. To implement the improvements, SDSU shall prepare design plans and submit such plans to Caltrans and City of La Mesa for review and approval. Following Caltrans and City of La Mesa approval, SDSU shall install the traffic signal or a roundabout consistent with the approved plans. In the event the proposed improvements are not approved and constructed in a timely manner, the impact would remain temporarily significant and unavoidable.

Street Segments

B–1. Alvarado Road: E. Campus Drive to Reservoir Drive

The improvement necessary to mitigate the Project's significant impact on the segment of Alvarado Road from East Campus Drive to Reservoir Drive is to re-stripe Alvarado Road to add a two-way center left-turn lane or left turn pockets at the Alvarado Rd intersections at Alvarado Court and the Villa Alvarado Apartments driveway.

This improvement would require the removal of on-street parking on a portion of the segment, which is noted in the College Area Community Plan. The removal of on-street parking may not be feasible, however, since alternative parking spaces may not be available, although SDSU would be able to retain the on-street parking on a portion of Alvarado Road by widening the segment that fronts SDSU property between Alvarado Court and approximately 250 feet west of the Alvarado Medical Center driveway. Assuming the removal of on-street parking where necessary is feasible, prior to Full-Time Equivalent (FTE) enrollment reaching 24,910 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego Engineer, re-stripe and widen, where feasible, Alvarado Road between E. Campus Drive and Reservoir Drive to add a two-way center left-turn lane or add left turn pockets at the Alvarado Road intersections at Alvarado Court and the Villa Alvarado Apartments driveway. However, if the removal of on-street parking where necessary is not feasible, the improvements cannot be fully

implemented due to right-of-way limitations and the impact would remain significant and unavoidable. .

B–2. Alvarado Road: Reservoir Drive to 70th Street

The improvement necessary to mitigate the Project's significant impact on the segment of Alvarado Road from Reservoir Drive to 70th Street is to restripe this segment of Alvarado Road to add a two-way left-turn lane or left turn pockets at the major apartment and retail driveways along Alvarado Rd.

This improvement would require the removal of on-street parking, which is noted in the College Area Community Plan, although the removal may not be feasible since alternative parking spaces may not be available. Assuming the removal of on-street parking where necessary is feasible, prior to Full-Time Equivalent (FTE) enrollment reaching 25,465 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego Engineer, re-stripe where feasible Alvarado Road between Reservoir Drive and 70th Street to add a two-way center left-turn lane or add left turn pockets at the major apartment and retail driveways along Alvarado Road. However, if the removal of on-street parking where necessary is not feasible, the improvements cannot be fully implemented due to right-of-way limitations and the impact would remain significant and unavoidable.

B–3. College Avenue: I-8 Eastbound Ramp to Zura Way

The improvement necessary to mitigate the Project's significant impact on the segment of College Avenue from Zura Way to the I-8 Eastbound Ramp is to widen this segment of College Avenue to provide an additional (third) northbound travel lane.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,862 or its equivalent, SDSU shall widen northbound College Avenue from Zura Way to the I-8 Eastbound Ramp to provide an additional (third) northbound travel lane. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego and Caltrans for review and approval. Following City and Caltrans approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to Caltrans and the City Engineer prior to constructing the subject improvements consistent with the approved City and Caltrans plans. In the event the proposed improvements are not approved and constructed in a timely manner, the impact would remain temporarily significant and unavoidable.

B–4. College Avenue: Montezuma Road to Cresita Drive

The improvement necessary to mitigate the Project's significant impact on the segment of College Avenue from Montezuma Road to Cresita Drive is to widen College Avenue and construct a raised median. However, this mitigation is infeasible in the near term because: (i) the installation of a raised median would require road widening, which in turn would require the acquisition of additional right-of-way on College Avenue between Montezuma Road and

Cresita Drive that is owned by multiple individual third parties; and (ii) installation of a raised median would restrict access to the residential uses fronting College Avenue. Therefore, the road widening and installation of a raised median is infeasible and, as a result, this impact is considered significant and unavoidable.

As an alternate strategy, SDSU could widen the sidewalks on the segment of College Avenue between Montezuma Road and Cresita Drive to facilitate increased pedestrian travel, and/or restripe the road to provide for bicycle lanes, although this latter improvement would require removal of the limited existing curbside parking. Neither bicycle lanes nor widened sidewalks would reduce the identified vehicular level of service impact to less than significant.

Horizon Year (Year 2035) Significant Impacts

The Project would result in significant impacts under the Horizon Year scenario at the following intersections:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the PM peak hour)
- 55th Street / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- Campanile Drive / Montezuma Road (LOS F during the AM peak hour)
- College Avenue / I-8 EB Ramps (LOS E during the AM peak hour, LOS F during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS F during the AM and PM peak hours)
- College Avenue / Zura Way (LOS F during the AM and PM peak hours)
- College Avenue / Montezuma Road (LOS F during the AM and PM peak hours)
- Alvarado Court / Alvarado Road (LOS F during the PM peak hour)
- 70th Street / Alvarado Road (LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the AM and PM peak hours)
- Montezuma Road / Collwood Boulevard (LOS E during the PM peak hour)

The Project would result in significant impacts under the Horizon Year scenario at the following street segments:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS F)
- College Avenue: Del Cerro Boulevard to I-8 WB off-ramp (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Zura Way to Montezuma Road (LOS E)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: Collwood Boulevard to 55th Street (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)

The Project would result in significant impacts under the Horizon Year scenario at the following freeway ramp meters:

- NB College Avenue to WB I-8 (AM peak hour)
- SB College Avenue to WB I-8 (AM peak hour)

The Project would result in significant impacts under the Horizon Year scenario at the following freeway mainline segments:

- I-8 between Fairmount Avenue and Waring Road, *LOS F(1)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(1)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(3)–AM (WB) and LOS F(0)–PM (EB)*

Mitigation measures for each of the identified significant impacts are shown below.

Intersections

C–1. Fairmount Avenue / I-8 Westbound Off Ramp / Camino Del Rio N.

The improvement necessary to mitigate the Project's significant cumulative impact at the Fairmount Avenue / I-8 Westbound Off Ramp / Camino Del Rio North intersection is to widen the eastbound approach to provide an additional (second) eastbound exclusive right-turn lane on Camino Del Rio N. to southbound Fairmount Avenue at this intersection.

However, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (0.9%), nor is there a plan or program in place to construct the necessary improvements at this intersection. Therefore, the identified improvements are infeasible as they are not capable of being accomplished in a successful manner within a reasonable period of time and, as a result, this impact is considered significant and unavoidable.

C–2. 55th Street / Montezuma Road

The improvements necessary to mitigate the Project's significant cumulative impact at the 55th Street / Montezuma Road intersection are to modify the traffic signal and restripe the 55th Street southbound approach to include: one (1) dedicated southbound right-turn lane; one (1) shared southbound right/thru/left-turn lane; and one (1) dedicated southbound left-turn lane.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (10.9%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has agreed to fully fund and implement the necessary improvements and, to that end, shall prepare design plans and submit such plans to the City of San Diego for review and approval prior to SDSU Full-Time Equivalent (FTE)

enrollment reaching 28,762 or its equivalent. Following City approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer prior to restriping the 55th Street southbound approach to include: one (1) dedicated southbound right-turn lane; one (1) shared southbound right/thru/left-turn lane; and one (1) dedicated southbound left-turn lane, and coordinating with the City regarding the signal modification.

C–3. Campanile Drive / Montezuma Road

The improvement necessary to mitigate the Project's significant cumulative impact at the Campanile Drive / Montezuma Road intersection is to restripe the Montezuma Road westbound approach at the intersection to provide an exclusive westbound right-turn lane on Montezuma Road to northbound Campanile Drive.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (12.1%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has agreed to fully fund and implement the necessary improvements. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,670 or its equivalent, SDSU shall re-stripe the Montezuma Road westbound approach to the Campanile Drive / Montezuma Road intersection to provide an exclusive westbound right-turn lane on Montezuma Road to northbound Campanile Drive. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.

C–4. College Avenue / I-8 Eastbound Ramp

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / I-8 Eastbound Ramp intersection (provide a third northbound lane on College Avenue between Canyon Crest Drive and I-8 [A-1]) would also mitigate the Project's significant cumulative impact and no further mitigation is necessary.

C–5. College Avenue / Canyon Crest Drive

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Canyon Crest Drive intersection (widen the intersection to provide an additional (third) northbound lane [A-2]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –6. College Avenue / Zura Way

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Zura Way intersection (install a traffic signal [A-3]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –7. College Avenue / Montezuma Road

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Montezuma Road intersection (restripe the eastbound approach to include an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue and install a right-turn overlap phase [A-4]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –8. Alvarado Court / Alvarado Road

The improvement necessary to mitigate the Project's significant cumulative impact at the Alvarado Court / Alvarado Road intersection is to install a traffic signal at the intersection. A signal warrant analysis is included in *Appendix P*, which concludes that a signal is warranted at the Alvarado Court / Alvarado Road intersection.

However, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (59.8%), nor is there a plan or program in place to construct the necessary improvements at this intersection. Therefore, the identified improvement is infeasible and, as a result, this impact is considered significant and unavoidable.

C –9. 70th Street / Alvarado Road

The improvement necessary to mitigate the Project's significant cumulative impact at the 70th Street / Alvarado Road intersection is to install an overlap phase on the northbound right-turn to eastbound Alvarado Road at the intersection traffic signal.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (10.2%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has agreed to fully fund and implement the necessary improvements and, to that end, shall prepare design plans and submit such plans to the City of San Diego for review and approval prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 29,359 or its equivalent. Following City approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer prior to coordinating with the City to install an overlap phase on the northbound right-turn to eastbound Alvarado Road at the 70th Street/Alvarado Road intersection traffic signal.

C –10. Interstate 8 Westbound Ramps / Parkway Drive

The improvements to be implemented as mitigation for the Project's direct impact at the I-8 Westbound Ramps / Parkway Drive intersection (install a traffic signal or a roundabout) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –11. Montezuma Road / Collwood Boulevard

The improvement necessary to mitigate the Project's significant cumulative impact at the Montezuma Road / Collwood Boulevard intersection is to provide a right-turn overlap phase on the northbound approach.

Since, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (9.7%), nor is there a plan or program in place to construct the necessary improvements at this intersection. SDSU has agreed to fully fund and implement the necessary improvements. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 30,386, or its equivalent, SDSU shall modify the traffic signal at the Montezuma Road / Collwood Boulevard intersection to provide a right-turn overlap phase on the northbound approach. To implement the improvement, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.

Street Segments

D–1. Alvarado Road: E. Campus Drive to Reservoir Drive

The improvements identified to mitigate the Project's direct impact to the segment of Alvarado Road from E. Campus Drive to Reservoir Drive (widen and restripe Alvarado Road to construct a two-way center left-turn lane or add left-turn pockets) would, if implemented, also mitigate the Project's significant cumulative impact at this location.

However, as previously explained in B-1, the improvements identified to mitigate the direct impacts at this location may be infeasible. If that is the case, cumulative impacts at this location would be considered significant and unavoidable.

D –2. Alvarado Road: Reservoir Drive to 70th Street

The improvements identified to mitigate the Project's direct impact to the segment of Alvarado Road from Reservoir Drive to 70th Street (restripe Alvarado Road to construct a two-way center left-turn lane or add left-turn pockets) would, if implemented, also mitigate the Project's significant cumulative impact at this location.

However, as previously explained in B-2, the improvements identified to mitigate the direct impacts at this location may be infeasible. If that is the case, cumulative impacts at this location would be considered significant and unavoidable.

D –3. College Avenue: Del Cerro Boulevard to I-8 WB off-Ramp

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of College Avenue from Del Cerro Boulevard to Interstate-8 WB off-ramp is to restripe northbound College Avenue to provide an additional lane.

However, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (32.1%), nor is there a plan or program in place to construct the necessary improvements at this segment. Furthermore, the addition of a lane to this segment of College Avenue would conflict with the Navajo Community Plan designation. Therefore, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

D –4. College Avenue: I-8 Eastbound Ramps to Zura Way

The improvements to be implemented as mitigation for the Project's direct impact to the segment of College Avenue from the I-8 Eastbound Ramps to Zura Way (widen College Avenue to provide an additional (third) northbound lane [B-3]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

D –5. College Avenue: Zura Way to Montezuma Road

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of College Avenue from Zura Way to Montezuma Road is to widen the four-lane portion of College Avenue to provide an additional travel lane.

However, implementation of the necessary improvement is infeasible because the right-of-way necessary to add a fifth lane is not available due to the proximity of buildings fronting College Avenue at this location. While the Community Plan shows College Avenue as 6-lanes between Zura Way and Montezuma Road, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (34.5%), nor is there a plan or program in place to construct the necessary improvements at this segment. Therefore, the addition of a fifth lane is infeasible and, as a result, this impact is considered significant and unavoidable.

D –6. College Avenue: Montezuma Road to Cresita Drive

The improvements identified to mitigate the Project's direct impact to the segment of College Avenue from Montezuma Road to Cresita Drive (widen College Avenue to construct a raised median) would, if implemented, also mitigate the Project's significant cumulative impact at this location. However, as previously explained in B-4, the improvements identified to mitigate

the direct impacts at this location are infeasible and, therefore, the cumulative impact mitigation also is infeasible and, as a result, cumulative impacts at this location are considered significant and unavoidable.

D –7. Montezuma Road: Fairmount Avenue to Collwood Boulevard

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from Fairmount Avenue to Collwood Boulevard is to widen this segment of Montezuma Road to provide an additional eastbound travel lane.

However, implementation of the necessary improvement is infeasible because: (i) the right-of-way necessary to add a lane is not available due to the existing topography; and (ii) there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (8.2%), nor is there a plan or program in place to construct the necessary improvements at this location. Therefore, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

D –8. Montezuma Road: Collwood Boulevard to 55th Street

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from Collwood Boulevard to 55th Street is to widen this segment of Montezuma Road to provide an additional travel lane.

However, implementation of the necessary improvements is infeasible because: (i) the right-of-way necessary to add a lane is not available due to the existing topography; and (ii) there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (9.1%), nor is there a plan or program in place to construct the necessary improvements at this location. Therefore, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

D –9. Montezuma Road: 55th Street to College Avenue

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from 55th Street to College Avenue is to install a raised median along this segment of Montezuma Road.

However, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (21.9%), nor is there a plan or program in place to construct the necessary improvements at this location. Therefore, the identified improvement is infeasible and, as a result, this impact is considered significant and unavoidable.

Ramp Meter

E–1. Northbound College Avenue to I-8 Westbound

The improvement necessary to mitigate the Project's identified significant cumulative impact at the Northbound College Avenue to I-8 Westbound ramp meter is to provide additional capacity on the I-8 westbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the Interstate-8 / College Avenue interchange including the Northbound College Avenue to I-8 Westbound on-ramp. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent on the outcome of the study, California State University/SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this on-ramp, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

E–2. Southbound College Avenue to I-8 Westbound

The improvement necessary to mitigate the Project's identified significant cumulative impact at the Southbound College Avenue to I-8 Westbound ramp meter is to provide additional capacity on the I-8 westbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the Interstate-8 / College Avenue interchange including the Southbound College Avenue to I-8 Westbound on-ramp. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent on the outcome of the study, California State University/SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this on-ramp, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

Freeway Mainline

F–1. Interstate 8: Fairmount Avenue to Waring Road (eastbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact (5.4%) to the eastbound segment of Interstate-8 between Fairmount Avenue and Waring Road is to provide additional capacity on the I-8 eastbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-

Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at either the I-8 / Fairmount Avenue or I-8 / Waring Road interchange and, relatedly, on the segment of I-8 between Fairmount Avenue and Waring Road. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–2. Interstate 8: Waring Road to College Avenue (eastbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact (6.2%) to the eastbound segment of Interstate-8 between Waring Road and College Avenue is to provide additional capacity on I-8. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / College Avenue Interchange and, relatedly, on the segment of I-8 between Waring Road and College Avenue. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–3/F-4. Interstate 8: College Avenue to Lake Murray Boulevard (eastbound and westbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact to the eastbound (4.1%) and westbound (3.7%) segments of Interstate-8 between College Avenue and Lake Murray Boulevard is to provide additional capacity on I-8. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / College Avenue Interchange and, relatedly, on the segment of I-8 between College Avenue and Lake Murray Boulevard. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study.

However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–5/F-6. Interstate 8: Lake Murray Boulevard to Fletcher Parkway (eastbound and westbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact (to the eastbound (10.4%) and westbound (9.4%) segments of Interstate-8 between Lake Murray Boulevard and Fletcher Parkway is to provide additional capacity on the I-8 eastbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / Fletcher Parkway or I-8 / Lake Murray Boulevard interchange and, relatedly, on the segment of I-8 between Lake Murray Boulevard and Fletcher Parkway. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

As to transit, a detailed transit analysis was conducted to determine if adequate capacity would exist in the transit system (i.e. trolley and bus) to absorb the additional riders that would be generated as a result of the Project. Based on the design passenger capacity of the trolley and buses serving the SDSU Transit Center, the analysis determined that sufficient capacity would be available to accommodate the forecasted increase in transit riders. Therefore, the proposed project would not result in significant impacts related to transit.

An assessment relative to pedestrian and bicycle facilities also was conducted and is presented in *Section 15.0.*

In addition, the analysis presented in this report includes a mitigation measure requiring that SDSU implement certain identified Transportation Demand Management (TDM) strategies to reduce single occupant vehicle trips to and from campus. These strategies include designation of a TDM Coordinator, providing increased rideshare opportunities, bicycle and pedestrian related improvements, and strategies designed to increase transit ridership. The TDM mitigation measure is presented in *Section 16.0*.

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TRANSPORTATION IMPACT ANALYSIS

SDSU MASTER PLAN UPDATE

San Diego, California
January 9, 2018

1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has been retained to provide additional traffic engineering consulting services associated with the San Diego State University (SDSU) 2007 Campus Master Plan (the Project). Following litigation brought in 2007 to challenge the environmental impact report (EIR) prepared for the Master Plan, the court found that the transportation related analysis conducted in connection with the 2007 Campus Master Plan was inadequate in certain limited respects. This traffic study is prepared in response to the court's ruling and revises those portions of the 2007 analysis found inadequate by the court. Specifically, all applicable mitigation measures have been revised to remove the prior condition making their implementation and/or funding contingent upon legislative appropriation, and the analysis of transit-related impacts (i.e., impacts to trolley and bus service) and a mitigation measure requiring preparation of a Transportation Demand Management (TDM) program have both been revised consistent with the court's ruling. While not required by the court, the study presented here is based on an "update" to the 2007 study, with updated traffic information based on 2016 traffic counts, an updated list of cumulative projects, and updated transit data. Consistent with the court's ruling, the study analyzes the same project, including trip generation, as analyzed in the 2007 study.

The project vicinity map is shown in ***Figure 1–1***. A more detailed project area map is shown in ***Figure 1–2***.

The analysis presented in this report addresses the following subject areas:

- Project Description
- Existing Conditions
- Analysis Approach and Methodology
- Significance Criteria
- Cumulative Projects
- Existing Conditions Analysis
- Project Trip Generation/ Distribution/ Assignment
- Existing + Total Project Analysis
- Near-Term (Year 2022) Analysis
- Horizon Year (Year 2035) Analysis
- Transit Analysis
- Significance of Impacts and Mitigation Measures
- Mitigation Trigger Analysis

- Additional Intersection Analysis
- Pedestrian and Bicycle Facilities Assessment
- Transportation Demand Management (TDM) Mitigation Measure
- California State University (CSU) Significance Criteria

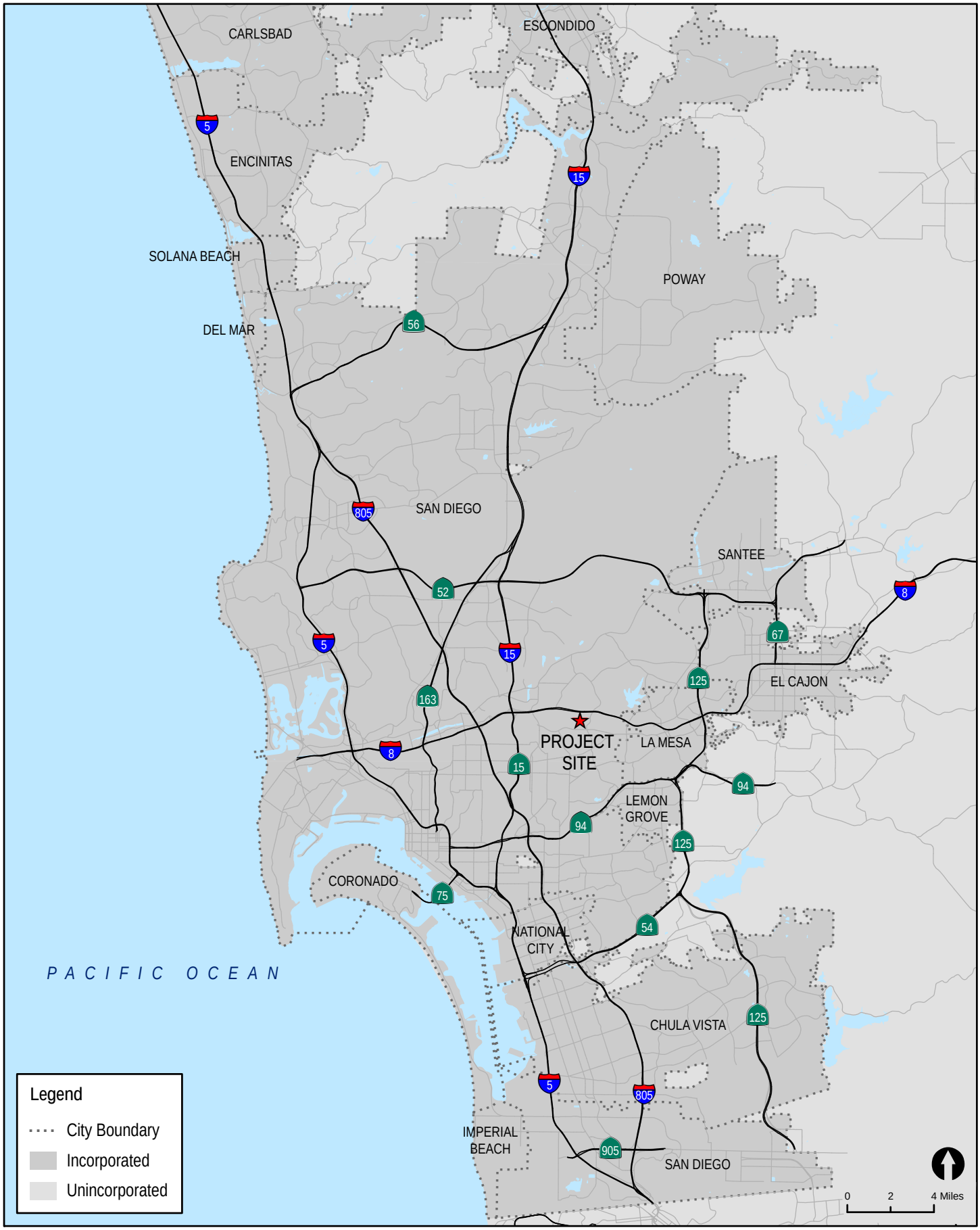

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Figure 1-1

Vicinity Map

SDSU Master Plan Update

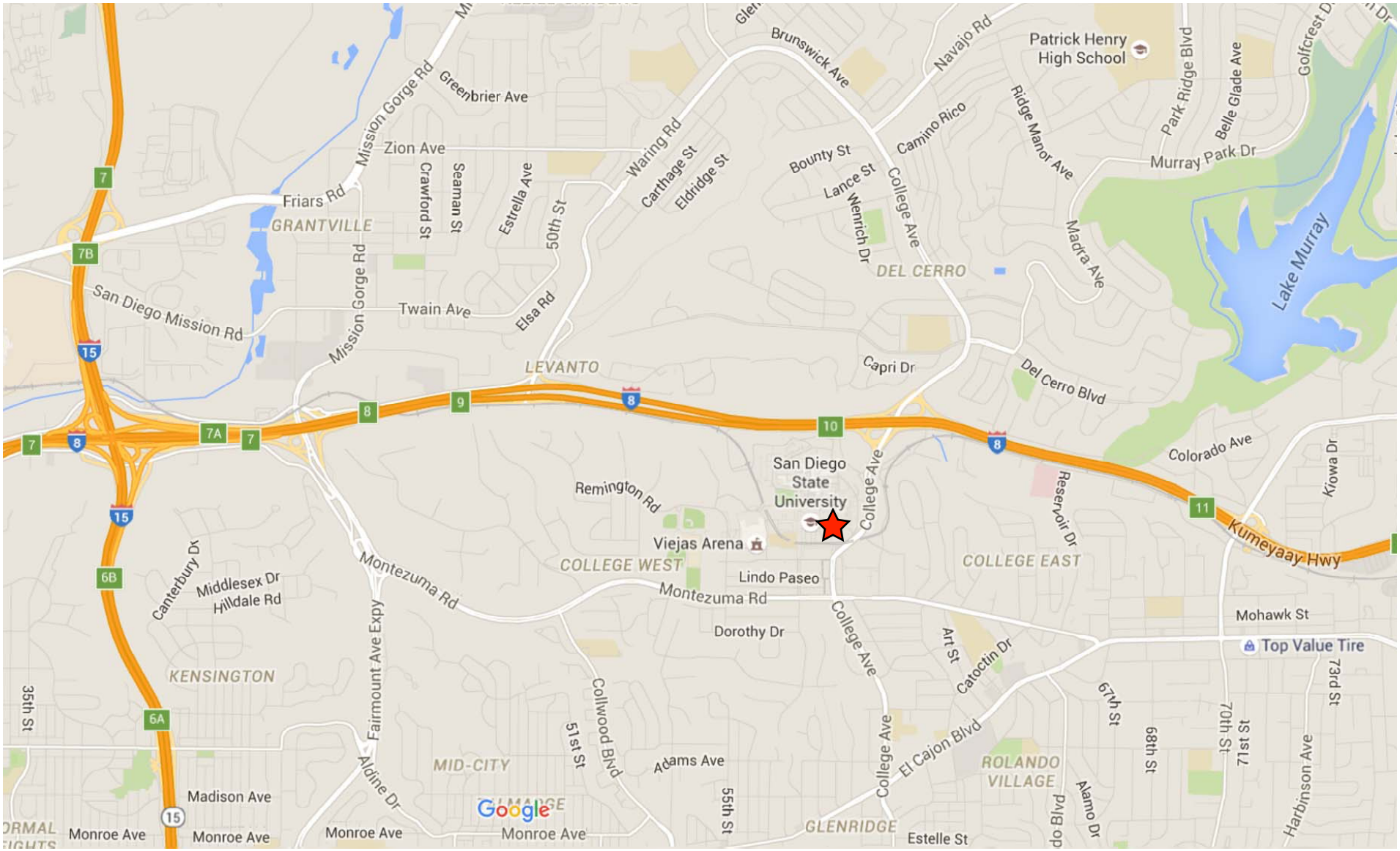

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Figure 1-2

Project Area Map

SDSU MASTER PLAN UPDATE

2.0 PROJECT DESCRIPTION

2.1 Project Location

The San Diego State University Campus is located just south of the Interstate 8 freeway, between the Waring Road and Lake Murray Boulevard interchanges. The Campus is bisected on its north-south axis by College Avenue, and generally bound by Interstate 8 and Del Cerro Boulevard/Adobe Falls Drive to the north, and Montezuma Road to the south.

2.2 Project Description

The SDSU 2007 Campus Master Plan traffic study was prepared in 2007. The present study was prepared in response to court rulings following litigation relating to the EIR prepared for the 2007 Master Plan. This study analyzes the same project as that proposed in 2007, which included an increase in Full-Time Equivalent (FTE) students from 25,000 FTE to 35,000 FTE,[4] and a corresponding increase in "headcount" from 33,441 students to 44,826.[5] Similar to the 2007 analysis, this increase in headcount is analyzed under two different scenarios, a Near-Term scenario that extends out approximately five years (approximately 2022) and a Horizon Year scenario (approximately 2035). The Near-Term scenario corresponds to an increase in headcount of 2,094 students (approximately 1,840 FTE), while the Horizon Year scenario, which is consistent with the SANDAG forecast year, analyzes the impacts attributable to Project buildout, a headcount increase of 11,385 students (i.e. 10,000 FTE).

In addition to the increase in FTE/headcount, the proposed project also includes physical improvements to the SDSU Campus, which will occur at six distinct Campus locations. These physical improvements are: the Adobe Falls Faculty/Staff Housing; Alvarado Campus classroom and research facilities (to be constructed on Lot 17C [formerly Lot D] and the Alvarado Medical Center site); a renovated Student Union (already constructed); a Campus Conference Center to provide meeting/conference space, office space, food and retail services; Student Housing (to be constructed on Lots 2A, 9, & 17 [formerly Lots G, U & C, respectively); and the sites of the existing Maya and Olmeca halls respectively); and the Alvarado Hotel (to be constructed on Lot 17 [formerly Lot C]). In addition to the increase in FTE enrollment, three of these six sites are expected to generate measurable traffic volumes and affect circulation around the Campus and, therefore, these facilities are addressed in this study. A brief description of these three sites follows.

---

[4] As explained in the 2007 Campus Master Plan Environmental Impact Report (EIR), one FTE student is defined as one student taking 15 course units (which is considered to be a "full course load"). Two part-time students, each taking 7.5 course units, also would be considered one FTE student, although the associated headcount would be two. The 2007 Campus Master Plan EIR projected that when FTE enrollment reaches 35,000, 44,826 total students (i.e. headcount) will be enrolled at the university. See, 2007 Campus Master Plan EIR, Section 1.0, Project Description, Table 1.0-3, SDSU Enrollment Planning Projections. During the 2006-07 academic year, 25,163 FTE attended SDSU, which equated to a student enrollment of 33,441 students. Therefore, the proposed project would result in an enrollment increase of 11,385 students.

[5] For comparative purposes, the 2016 SDSU headcount was 33,788, which is comparable to the base headcount (33,441) used for the present analysis. (Source: SDSU Analytic Studies and Institutional Research, https://asir.sdsu.edu/enrollment-summary-data-table/.)

The proposed **Alvarado Campus** site is located in the northeast corner of the SDSU Campus **(former Lot D, now Lot 17C)** and incorporates adjacent land and buildings to the east owned by the SDSU Research Foundation. It is assumed that the student headcount increase from 33,441 to 44,826, which, for purposes of this analysis, is assumed to be completed in the 2034 / 2035 academic year, would be partially accommodated in classroom facilities to be constructed on this site. The balance of the student increase would utilize classrooms on the existing campus. This project component consists of constructing approximately 612,000 gross square feet of new instruction and administrative buildings along with a 2,000 space parking structure. Much of the new construction would replace the existing research medical center and adjacent surface parking lots. Access to the Alvarado Campus site from the west would be via College Avenue to Alvarado Road or from the east via 70th Street to Alvarado Road.

The **Adobe Falls Faculty/Staff Housing** project component is located north of I-8 on undeveloped SDSU land. The site is bounded by Adobe Falls Drive to the north and the I-8 to the south. The Adobe Falls project is divided into an "Upper Village" and a "Lower Village." The Upper Village would include 48 housing units. For the Lower Village, three (3) different access scenarios are contemplated with 124 units deemed the most likely of the three development scenarios. Therefore, for the purposes of this traffic analysis, a total of 172 units (48 units in the Upper Village + 124 units in the Lower Village) have been studied.

The **Alvarado Hotel** project component is located south and east of Alvarado Road on an existing parking lot (Lot C) east of the SDSU Main Campus. The proposed hotel would consist of approximately 120 rooms and studio suites, and facilities suitable for accommodating small conferences and business meetings.

3.0 EXISTING CONDITIONS

Effective evaluation of the traffic impacts associated with the proposed SDSU Master Plan Project requires an understanding of the existing transportation system within the project area. ***Figure 3–1*** illustrates existing road conditions, including signalized intersections and lane configurations.

The study area for this project was determined using the *City of San Diego Traffic Impact Study Manual* standards, which require at a minimum the analysis of facilities that would carry "50-directional peak hour trips" from the project and any others that would be expected to be significantly impacted by the project. The sections below provide a brief description of the existing conditions and volumes in the project study area.

3.1 Existing Street Network

The following is a description of the existing street network in the study area.

Interstate 8 (I-8) is an interstate freeway operated by CALTRANS. I-8 is an east-west facility that extends from the San Diego area eastward to the California-Arizona border and beyond. It provides five (5) lanes eastbound and five (5) lanes westbound within the study area. This facility provides access to the Fairmount Avenue, Waring Road, College Avenue and Lake Murray / 70th Street interchanges within the project vicinity. The posted speed limit is 65 mph.

Alvarado Road is an east-west roadway and is classified in the College Area Community plan as a 3-lane Collector between E. Campus Drive and 70th Street. Alvarado Road is currently constructed as a two-lane undivided roadway between College Avenue and 70th Street, running parallel with Interstate 8. Bike lanes are provided on both sides of the roadway between College Avenue and Reservoir Drive. On-street parking is generally prohibited between College Avenue and Reservoir Drive. Currently no bus facilities exist on Alvarado Road. The Green Line Trolley has an existing station at the Reservoir Drive intersection. The posted speed limit is 35 mph.

Alvarado Court is an unclassified roadway in the College Area Community Plan, and is currently constructed as a two-lane undivided roadway south of Alvarado Road. On-street parking is allowed on both sides of the roadway. Currently, no bicycle or transit facilities exist on Alvarado Court. There is currently no posted speed limit.

Campanile Drive is an unclassified roadway in the College Area Community Plan. Campanile Drive is currently constructed as a 2-4 lane roadway north of Montezuma. Bike lanes are not provided along Campanile Drive. On-street parking is generally allowed south of Montezuma Road by permit only. There is a bus stop at Montezuma Road, and additional bus stops and a Green Line Trolley stop at the SDSU Transit Center. The posted speed limit is 25 mph.

Canyon Crest Drive / East Campus Drive is an unclassified roadway in the College Area Community Plan. Canyon Crest Drive / East Campus Drive is currently constructed as a two-lane undivided roadway west of College Avenue, as a two-lane one-way roadway between College Avenue and Zura Way, and as a two-lane undivided roadway south of Zura Way. On-street parking

is generally prohibited. Currently, no bicycle or transit facilities exist on Canyon Crest Drive / East Campus Drive. The posted speed limit is 25 mph.

College Avenue is a north-south roadway and is classified as a 4-lane Major Street between Del Cerro Boulevard and I-8 in the Navajo Community Plan; as a 6-lane Major Street between Canyon Crest Drive and Montezuma Road; and as a 4-lane Major Street south of Montezuma Road in the College Area Community Plan, and. College Avenue is currently constructed as a four-lane, intermittently divided roadway between Del Cerro Boulevard and Montezuma Road. College Avenue is constructed as a 4-lane Collector between Montezuma Road and Cresita Drive. Bike lanes have been recently installed and provided along College Avenue between Zura Way and Montezuma Road. On-street parking is prohibited north of Montezuma Road but provided south between Montezuma Road and El Cajon Boulevard. Bus stops are provided at Del Cerro Boulevard, Canyon Crest Drive / East Campus Drive, Lindo Paseo and near College Avenue and El Cajon Boulevard. The posted speed limit is 40 mph between Del Cerro Boulevard and Zura Way, and 35 mph south of Zura Way.

Del Cerro Boulevard is an east-west roadway and is classified as a 2-lane Collector Street in the Navajo Community Plan. Del Cerro Boulevard is currently constructed as a two-lane divided roadway west of College Avenue in the Adobe Falls community, and as a four-lane roadway between College Avenue and Madra Avenue. Bike lanes are not provided along Del Cerro Boulevard. On-street parking is generally allowed. A bus stop is provided at College Avenue. The posted speed limit is 25 mph west of College Avenue, and 30 mph east of College Avenue.

Fairmount Avenue is a north-south roadway and is classified as a 6-lane Primary Arterial between Montezuma Road and I-8 in the College Area Community Plan. Fairmount Avenue is currently constructed as a six-lane divided expressway between Interstate 8 and Montezuma Road. Bike lanes are provided on both sides of the roadway. On-street parking is prohibited. Currently, no transit facilities exist along Fairmount Avenue. The posted speed limit is 35 mph between the I-8 ramps, and 50 mph south of the I-8 ramps.

Montezuma Road is an east-west roadway and is classified as a 4-lane Major Street between Fairmount Avenue and Reservoir Drive in the College Area Community Plan. Montezuma Road is currently constructed as a four-lane divided roadway between Fairmount Avenue and 55th Street; a four-lane undivided roadway between 55th Street and College Avenue, and as a four-lane undivided roadway with intermittent turn lanes east of College Avenue. Bike lanes are provided on Montezuma Road between Fairmount Avenue and 54th Street; and between Campanile Drive and College Avenue (westbound only). On-street parking is allowed on both sides of the roadway between 55th Street and Campanile Drive, and on the south side of the roadway intermittently east of College Avenue. Bus stops are provided along Montezuma Road at Collwood Boulevard, 54th Street, 55th Street, Campanile Drive, College Avenue, 63rd Street and E. Campus Drive. The posted speed limit is 50 mph from Fairmount Avenue to Collwood Boulevard, 40 mph eastbound and 45 mph westbound between Collwood Boulevard and 54th Street, 40 mph eastbound and 35 mph westbound between 54th Street and 55th Street, and 35 mph elsewhere.

Remington Road is an east-west roadway and is classified as a 2-lane Collector in the College Area Community Plan. Remington Road is currently constructed as a two-lane undivided roadway west of 55th Street. Bike lanes are provided on both sides of the roadway. On-street parking is generally prohibited. Currently no transit facilities exist on Remington Road. The posted speed limit is 25 mph.

Reservoir Drive is a north-south roadway and is classified as a 2-lane Collector in the College Area Community Plan. Reservoir Drive is currently constructed as a two-lane undivided roadway between Alvarado Road and Montezuma Road. Bike lanes are not provided along Reservoir Drive. On-street parking is generally allowed. There is a bus stop at Montezuma Road and a Green Line Trolley stop at Alvarado Road. The posted speed limit is 30 mph.

Zura Way is an unclassified roadway in the College Area Community Plan, and is currently constructed as a two-lane undivided roadway east of College Avenue and north of Montezuma Road. Zura Way connects College Avenue and Montezuma Road with East Campus Drive, parking structures 3 and 4, as well as surface lots 2B, 2, and 2A (formerly Lots E, F, and G). Bike lanes are not provided and on-street parking is prohibited. Currently no transit facilities exist on Zura Way. The posted speed limit is 15 mph.

55th Street is a north-south roadway and is classified as a 2-lane Collector north of Hardy Avenue and a 4-lane Collector between Hardy Avenue and Montezuma Road in the College Area Community Plan. 55th Street is currently constructed as a four-lane undivided roadway north of Montezuma Road, and as a two-lane undivided roadway north of Canyon Crest Drive. Bike lanes are provided south of Remington Road. On-street parking is prohibited except north of Canyon Crest Drive. There is a bus stop at Montezuma Road. The posted speed limit is 25 mph.

Section 14.0 includes existing condition descriptions of Collwood Boulevard and Yerba Santa Drive.

3.2 Existing Transit Conditions

Transit service is provided to the area via the SDSU Transit Center, which serves seven (7) bus routes and the Green Line Trolley operated by MTS. Bus Routes 11, 14, 115, 215, 856, 936, and 955 are all serviced by the SDSU Transit Center and various other stops within the project area. A short description of the trolley and bus service is provided below.

3.2.1 *MTS Trolley Green Line*

The MTS Trolley Green Line connects Downtown San Diego to Santee. A total of 27 stops currently exist along the Green Line with a dedicated SDSU Transit Center stop serving the campus. The general trolley hours of operation are from 3:53 AM until 12:30 AM. The trolley headways are typically 15 minutes on weekdays between 6:15 AM and 8:15 PM with headways increasing to 30 minutes during the off-peak times. A more detailed description of trolley conditions and operations is provided in section ***11.1.***

3.2.2 *MTS Bus Service*

Route 11 connects SDSU with Paradise Hills via Downtown; Route 14 connects SDSU with Lake Murray Village to the east and Grantville Trolley Station to the west; Route 115 connects SDSU with the El Cajon Transit Center; Route 215 is a Rapid connection serving SDSU and Downtown; Route 856 connects SDSU with Rancho San Diego and Cuyamaca College on weekdays; Route 936 connects SDSU with Lemon Grove Depot; Route 955 connects SDSU with the 8th Street Transit Center in National City. A more detailed description of bus conditions and operations is discussed in ***Section 11.1.***

3.3 Existing Traffic Volumes

Existing AM and PM peak hour traffic volumes, as well as average daily traffic counts (ADTs),) were conducted in April 2016 while SDSU and all local schools were in session.

Table 3–1 summarizes the ADTs based on the traffic counts. ***Appendix A*** contains the manual existing traffic volume count sheets. A traffic count validation was also conducted to compare the TIA counts with Year 2017 counts. The traffic count validation is included in *Appendix A*.

TABLE 3–1
EXISTING TRAFFIC VOLUMES

Street Segment	ADT[a]
Alvarado Road	
E. Campus Drive to Reservoir Drive	8,800
Reservoir Drive to 70th Street	7,040
College Avenue	
Del Cerro Boulevard to I-8 WB off-ramp	31,330
I-8 EB Ramps to Zura Way	35,850
Zura Way to Montezuma Road	29,790
Montezuma Road to Cresita Drive	27,490
Montezuma Road	
Fairmount Avenue to Collwood Boulevard	52,330
Collwood Boulevard to 55th Street	28,950
55th Street to College Avenue	32,570
College Avenue to E. Campus Drive	21,500
E. Campus Drive to Reservoir Drive	18,960
Fairmount Avenue	
Montezuma Road to I-8	91,350

Footnotes:

a. Average Daily Traffic Volumes, April 19, 2016 (Tuesday).

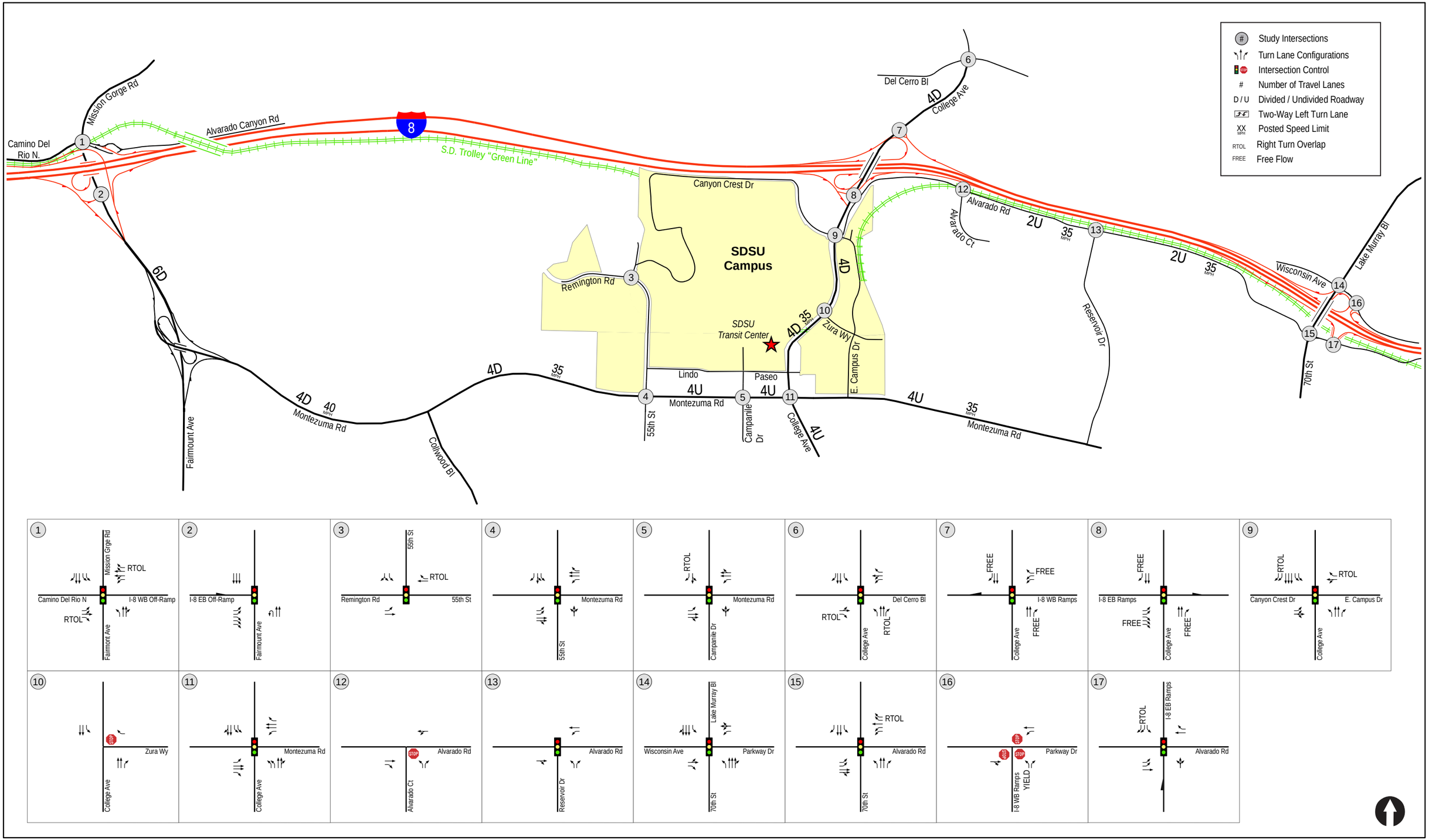

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Figure 3-1

Existing Conditions Diagram

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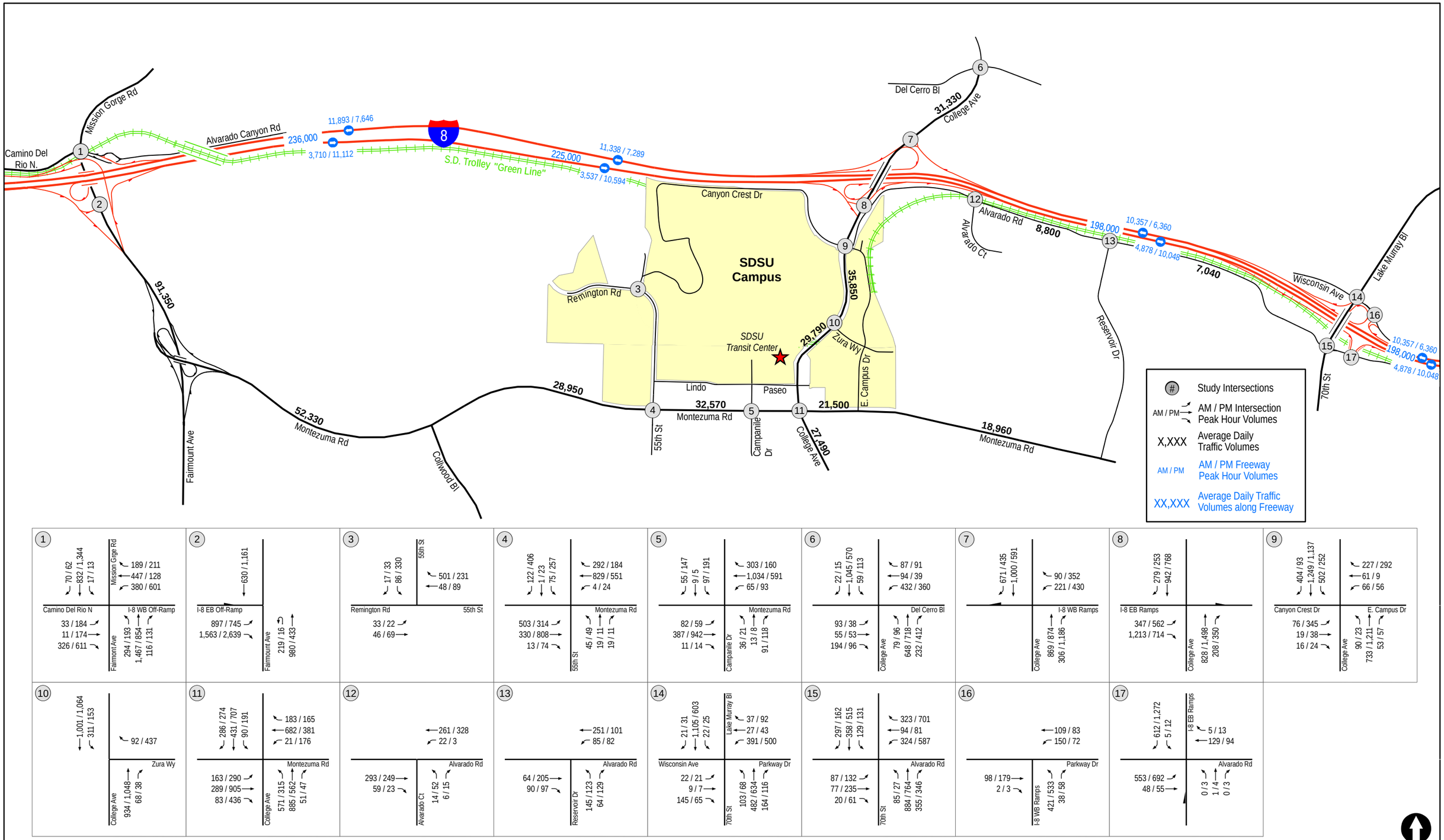

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Figure 3-2

Existing Traffic Volumes

SDSU Master Plan Update

4.0 ANALYSIS APPROACH AND METHODOLOGY

Level of service (LOS) is the term used to denote the different operating conditions that occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis, taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

4.1 Intersections

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 16 of the *Highway Capacity Manual (HCM)*, with the assistance of the *Synchro* 9 computer software. Synchro provides the option to report methodologies for both 2010 and 2000 editions of the HCM. The 2010 version of the HCM is similar to the 2000 HCM methodologies but is focused more on specific controller set ups. Due to the changes in the 2010 HCM, there are several limitations within Synchro that do not allow results to be produced for an intersection. Some of these limitations include:

- Exclusive pedestrian phases
- Exclusive U-turn phases
- Right turn overlaps with through movements
- Permissive left turns yielding to pedestrians at a T-intersection
- Split phasing

Two (2) of the intersections within the study area would not be able to produce results using the HCM 2010 methodology:

- Fairmount Avenue / I-8 EB Off Ramp (Exclusive U-turn phase)
- College Avenue / I-8 EB Ramps (Right turn overlaps with through movement)

Therefore, HCM 2000 methodology was used in the analysis of the above intersections. HCM 2010 methodology was used in the analysis of the remaining fifteen (15) intersections.

The delay values (represented in seconds) were qualified with a corresponding intersection LOS. Signalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in ***Appendix B.***

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS were determined based upon the procedures found in Chapter 17 of the *2000 Highway Capacity Manual (HCM)*, with the assistance of the *Synchro* 9 computer software. Unsignalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in *Appendix B.*

4.2 Street Segments

Street segment analysis is based upon the comparison of average daily traffic volumes (ADTs) to the City of San Diego's *Roadway Classification, Level of Service, and ADT Table*. The ADT table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. The College Area Circulation Element, City of San Diego's *Roadway Classification, Level of Service, and ADT Table* are attached in ***Appendix C***.

4.3 Freeway Mainline

Freeway segments were analyzed during the AM and PM peak hours based on the methodologies developed by CALTRANS District 11. Freeway segment LOS is based on the volume to capacity ratio on the freeway.

The analysis of freeway segment LOS is based on the procedure developed by Caltrans District 11 based on methods described in the *Highway Capacity Manual*. The procedure involves comparing the peak hour volume of the mainline segment to the theoretical capacity of the roadway (V/C). The procedure for calculating freeway LOS involves the estimation of volume to capacity (V/C) ratio using the following equation:

$$V/C = \frac{((AADT \times Peak\ Hour\ Percent \times Directional\ Factor)/(Truck\ Terrain\ Factor))}{Lane\ Capacity}$$

AADT = Average Annual Daily Traffic
Peak Hour Percent = Percentage of ADT occurring during the peak hour.
Directional Factor = Percentage of peak hour traffic occurring in peak direction.
Truck Factor = Truck/terrain factor to represent influence of heavy vehicles & grades.
Capacity = 2,000 vehicles/lane/hour/lane for mainline, and 1,200 for auxiliary lanes.

The resulting V/C is then compared to accepted ranges of V/C values corresponding to the various LOS for each facility classification, as shown in ***Table 4–1***. The corresponding LOS represents an approximation of existing or anticipated future freeway operating conditions in the peak direction of travel during the peak hour.

Appendix D contains the relevant "K" and "D" factors listed in the Caltrans *Peak Hour Volume Data* and the truck factors from the *2015 Annual Average Daily Truck Traffic on the California State Highway System* utilized in the analysis.

The "D" factor is the percentage of traffic in the peak direction during the peak hour. Values are derived by dividing the measured peak hour volume (PHV) by the sum of both directions of travel during the peak hour.

The "K" factor is the percentage of the Annual Average Daily Traffic (AADT) in both directions during the peak hour. Values are derived by dividing the measured 2-way PHV in the peak direction by the AADT.

TABLE 4–1
FREEWAY SEGMENT LEVEL OF SERVICE DEFINITIONS

LOS[a]	V/C[b]	Congestion/Delay	Traffic Description
USED FOR FREEWAYS, EXPRESSWAYS AND CONVENTIONAL HIGHWAYS			
A	<0.41	None	Free flow
B	0.42-0.62	None	Free to stable flow, light to moderate volumes.
C	0.63-0.80	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted
D	0.81-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
E	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
USED FOR FREEWAYS AND EXPRESSWAYS			
F(0)	1.01-1.25	Considerable 0-1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
F(l)	1.26-1.35	Severe 1-2 hour delay	Very heavy congestion, very long queues.
F(2)	1.36-1.45	Very Severe 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
F(3)	>1.46	Extremely Severe 3+ hours of delay	Gridlock

Footnotes:
a. LOS = Level of Service
b. V/C = Volume/Capacity

4.4 Ramp Meters

The project ramp meters were analyzed using the Fixed Rate method. The fixed rate approach is based solely on the specific time intervals at which the ramp meter is programmed to release traffic.

The ramp meter results are theoretical and based on Caltrans' most restrictive meter rates, which were obtained from Caltrans. The ramp meter rates fluctuate during the peak hour; however, to be conservative, the most restrictive rate was used.

The fixed rate approach generally tends to produce unrealistic queue lengths and delays since this approach does not take into account driver behavior such as "ramp shopping" or trip diversion. As a result, field observations were conducted to observe maximum delays and queues at the ramp meters. At ramp meters where the theoretical ramp meter analysis did not match field observations, the Existing and Near-Term analyses were calibrated by decreasing the most restrictive discharge rates to match field conditions. No adjustments were made to the Horizon Year analysis as it is difficult to predict future operations based on existing performance. *Appendix D* contains a summary of the observed ramp meter operations.

The following on-ramps are within the study area:

- I-8 Eastbound On-Ramp / Southbound Fairmount Avenue - Metered during the PM peak hour
- I-8 Westbound On-Ramp / Northbound College Avenue – Metered during the AM peak hour
- I-8 Westbound On-Ramp / Southbound College Avenue – Metered during the AM peak hour
- I-8 Eastbound On-Ramp / Northbound College Avenue – Metered during the PM peak hour
- I-8 Eastbound On-Ramp / Southbound College Avenue – Metered during the PM peak hour
- I-8 Eastbound On-Ramp / Eastbound Alvarado Road – Not metered
- I-8 Westbound On-Ramp / Northbound Lake Murray Boulevard/70th Street – Metered during the AM peak hour

The following on-ramps were analyzed since the project would add more than 20 peak hour trips:

- I-8 Eastbound On-Ramp / Southbound Fairmount Avenue - PM peak hour
- I-8 Westbound On-Ramp / Northbound College Avenue – AM peak hour
- I-8 Westbound On-Ramp / Southbound College Avenue – AM peak hour
- I-8 Eastbound On-Ramp / Northbound College Avenue – PM peak hour

Other on-ramps in the area were not analyzed since the on-ramp is not metered or the project would add either no trips or less than 20 peak hour trips.

Appendix D contains a copy of the existing ramp meter rates obtained from Caltrans.

5.0 SIGNIFICANCE CRITERIA

According to the City of San Diego's *Significance Determination Thresholds* dated January 2011, a project is considered to have a significant impact if project traffic would decrease the operations of surrounding roadways by a defined threshold. For projects deemed complete on or after January 1, 2011, the City defined thresholds are shown in ***Table 5–1***.

The impact is designated either a "direct" or "cumulative" impact. According to the City's *Significance Determination Thresholds*,

> "*Direct* traffic impacts are those projected to occur at the time a proposed development becomes operational, including other developments not presently operational but which are anticipated to be operational at that time (near term)."
>
> "*Cumulative* traffic impacts are those projected to occur at some point after a proposed development becomes operational, such as during subsequent phases of a project and when additional proposed developments in the area become operational (short-term cumulative) or when affected community plan area reaches full planned buildout (long-term cumulative)."
>
> It is possible that a project's near term (direct) impacts may be reduced in the long term, as future projects develop and provide additional roadway improvements (for instance, through implementation of traffic phasing plans). In such a case, the project may have direct impacts but not contribute considerably to a cumulative impact."
>
> For intersections and roadway segments affected by a project, level of service (LOS) D or better is considered acceptable under both direct and cumulative conditions."

If the project exceeds the thresholds in *Table 5–1*, then the project is considered to have a significant "direct" or "cumulative" project impact. A significant impact can also occur if a project causes the LOS to degrade from D to E, even if the allowable increases in *Table 5–1* are not exceeded. A feasible mitigation measure will need to be identified to return the impact within the City thresholds, or the impact will be considered significant and unmitigated.

TABLE 5–1
CITY OF SAN DIEGO
TRAFFIC IMPACT SIGNIFICANT THRESHOLDS

Level of Service with Project[b]	Allowable Increase Due to Project Impacts[a]			
	Freeways	Roadway Segments	Intersections	Ramp Metering[c]
	V/C	V/C	Delay (sec.)	Delay (min.)
E	0.010	0.02	2.0	2.0
F	0.005	0.01	1.0	1.0

Footnotes:

a. If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are determined to be significant. The project applicant shall then identify feasible improvements (within the Traffic Impact Study) that will restore/and maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note b), or if the project adds a significant amount of peak-hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating the project's direct significant and/or cumulatively considerable traffic impacts.

b. All LOS measurements are based upon Highway Capacity Manual procedures for peak-hour conditions. However, V/C ratios for roadway segments are estimated on an ADT/24-hour traffic volume basis (using Table 2 of the City's Traffic Impact Study Manual). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped locations). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

c. The allowable increase in delay at a ramp meter with more than 15 minutes delay and upstream freeway LOS E is 2 minutes. The allowable increase in delay at a ramp meter with more than 15 minutes delay and upstream freeway LOS F is 1 minute.

General Notes:

1. Delay = Average control delay per vehicle measured in seconds for intersections or minutes for ramp meters
2. LOS = Level of Service
3. V/C = Volume to Capacity ratio

6.0 CUMULATIVE PROJECTS

There are other planned projects in the areas adjacent to the project site that will add traffic to the roadways surrounding the project location. Based on correspondence with the City of San Diego and SDSU staff, a total of twenty-five (25) cumulative projects were identified. The traffic that would be generated by each of these cumulative projects is accounted for in the analysis presented here in the Near-Term (Year 2022) and/or Horizon Year (Year 2035) analysis, as applicable.

Table 6–1 contains the list of cumulative projects. ***Figure 6–1*** shows the cumulative projects traffic volumes.

TABLE 6–1
CUMULATIVE PROJECTS SUMMARY

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
City of San Diego Redevelopment Agency					
Crossroads Redevelopment Area					
1a–1c	Crossroads Redevelopment Project	Three non-contiguous subareas within the following boundaries: (a) El Cajon Boulevard and University Avenue from 54th Street to the City of La Mesa, (b) the east side of 54th Street and north of College Grove Drive, and (c) Redwood and Thorn Streets, Martin Luther King Freeway, and 54th Street	Redevelopment project consisting of a variety of programmatic, residential, commercial, and public facilities with approximately 2,421 dwelling units ("DUs") proposed to be built over a 1,032-acre redevelopment area.	Approved	2032 (10% assumed in the Near-Term)
2	Chollas Triangle Redevelopment Project	South side of 5400 University Avenue	Pedestrian-oriented mixed-use project (possibly 500–600 DUs) on 36-acre site.	In planning process	Unknown (10% assumed in the Near-Term)
College Community Redevelopment Area					
3	Villa Paseo Apartments	5541 Linda Paseo	Construct a four-story, eight unit apartment building with street level parking.	Under Construction	2017
4	Delta Upsilon - CUP/PDP	5545 Hardy Ave	Demolish an existing residence for the construction of a 3-story, 15,343 sq ft, 16 bedrooms fraternity building with a deviation to lot coverage regulations.	Under construction	2017*
5	Montezuma PDP / CUP / SDP	6213 Montezuma Road	Construct new Student Housing/Dormitory structure with 128 rooms over 3 levels of underground parking garage, totaling 7,220 square feet.	Under Review	Unknown*

TABLE 6–1
CUMULATIVE PROJECTS SUMMARY

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
6	6195 Montezuma Road	6195 Montezuma Road	Demolish two existing single-family DUs and construct a four-story structure with two levels of underground parking. Construct 40 DUs (22 four-bedroom DUs, 2 three-bedroom DUs, and 16 two-bedroom DUs), 84 on-site parking spaces, and associated improvements.	Vacant Lot in 2017	Through 2025
7	Capstone	5030 College Avenue	Construct 94 residential apartment units (374 beds)	Under Construction	2017*
City of San Diego					
8	Centrepoint–Grantville (East & West)	Block bounded by Vandever Avenue, Fairmount Avenue, Twain Avenue, Mission Gorge Road	12-acre site for mixed-use development of 588 multi-family DUs and 135,228 SF of office, retail, and restaurant space.	Successor Impacts approved ministerially	Unknown* (10% assumed in the Near-Term)
9	Grantville Trolley Station Transit Oriented Development ("TOD")	4510 Alvarado Canyon Road	Approximately 900 beds	Application in with the City	Unknown
10	Marburn Corp TM	5551 College Avenue	Subdivision of one existing vacant parcel into 24 single family residential lots and four HOA lots within environmentally sensitive lands located at the northeast corner of Interstate 8 and College Ave.	Approved	Unknown*
11	Grantville Veterans	4380 Alvarado Canyon Rd	Conversion of an existing motel to an 85 unit multi-family apartment building for permanent Veteran's Housing and Administrative Office.	Application in with the City	Unknown*

TABLE 6–1
CUMULATIVE PROJECTS SUMMARY

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
12	Alvarado Lot 27/28 - SDP	5665 Toyon Road and 5660 Toyon Road	Create two single family residence on Lot 27 totaling 5,553 square feet and Lot 28 totaling 5,553 square feet.	Application in with the City	Unknown*
13	Aztec Budget Inn Redevelopment	6050 El Cajon Blvd	Construct up to 65 for-sale residential units, including 7 affordable, and 3,000 square-feet of retail space	Proposed	Unknown*
San Diego State University					
14	College of Business Administration Building	Southeastern portion of SDSU, between College Avenue and East Campus Drive (existing Lot F)	170,000 SF College of Business building in Lot F.	Proposed	Unknown
15	Performing Arts Building	Adjacent to the existing Music Building in the central portion of campus	New five-story, 50,000 SF building to house a 400-seat black box performing arts theatre, dance studios, drama rehearsal space, and support space.	Proposed	Unknown
16	Softball Stadium Pressbox Addition	South of Remington Road, adjacent to Tony Gwynn Stadium	Construct press box at softball stadium.	On hold (possible future project)	Unknown
17	Children's Center Landscape Upgrade	East side of campus, east of College Avenue, north of Zura Way (north of South E Lot)	Landscape improvements.	In design	Unknown*
18	Engineering and Interdisciplinary Sciences Building	South of Engineering Building	85,000 GSF of teaching and research lab, centers, offices, collaboration and meeting space.	Under construction	2018*
19	Open Air Theater Concourse Improvements	South of Love Library	Replace temporary restrooms and concession stands with permanent code-compliant structures. No seating increase.	Completed	2017*

TABLE 6–1
CUMULATIVE PROJECTS SUMMARY

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
20	SDSU Student Housing	Next to the existing Chapultepec Residence Hall on the northwest corner of the Remington Road/55th Street intersection, on the west side of the San Diego State University (SDSU) campus.	The proposed Project consists of single-, double-, and triple-occupancy student housing that can accommodate up to a total of 850 beds.	Under Construction	2019*
City of La Mesa					
21	Jessie Avenue	4888 Jessie Avenue	47 townhomes and two commercial units.	Approved	Unknown*
22	Parks Avenue Townhomes	Parks Avenue and El Cajon Boulevard	10 townhomes and one live/work unit.	Approved	Unknown*
23	Comanche Apartments	Comanche Drive and El Cajon Boulevard	19 townhomes with a small commercial component	Under Review	Unknown*
24	Montebello North	5017 Thorne Drive	General Plan Amendment and rezone for multiple unit residential structure (mixed-use urban density at 24 to 40 units per acre)	Under Review	Unknown
25	Lowell Street	North end of Lowell Street	Five-unit planned residential development.	Under Review	Unknown*

End of List

General Notes:
* indicates Near-Term (Year 2022) cumulative projects.

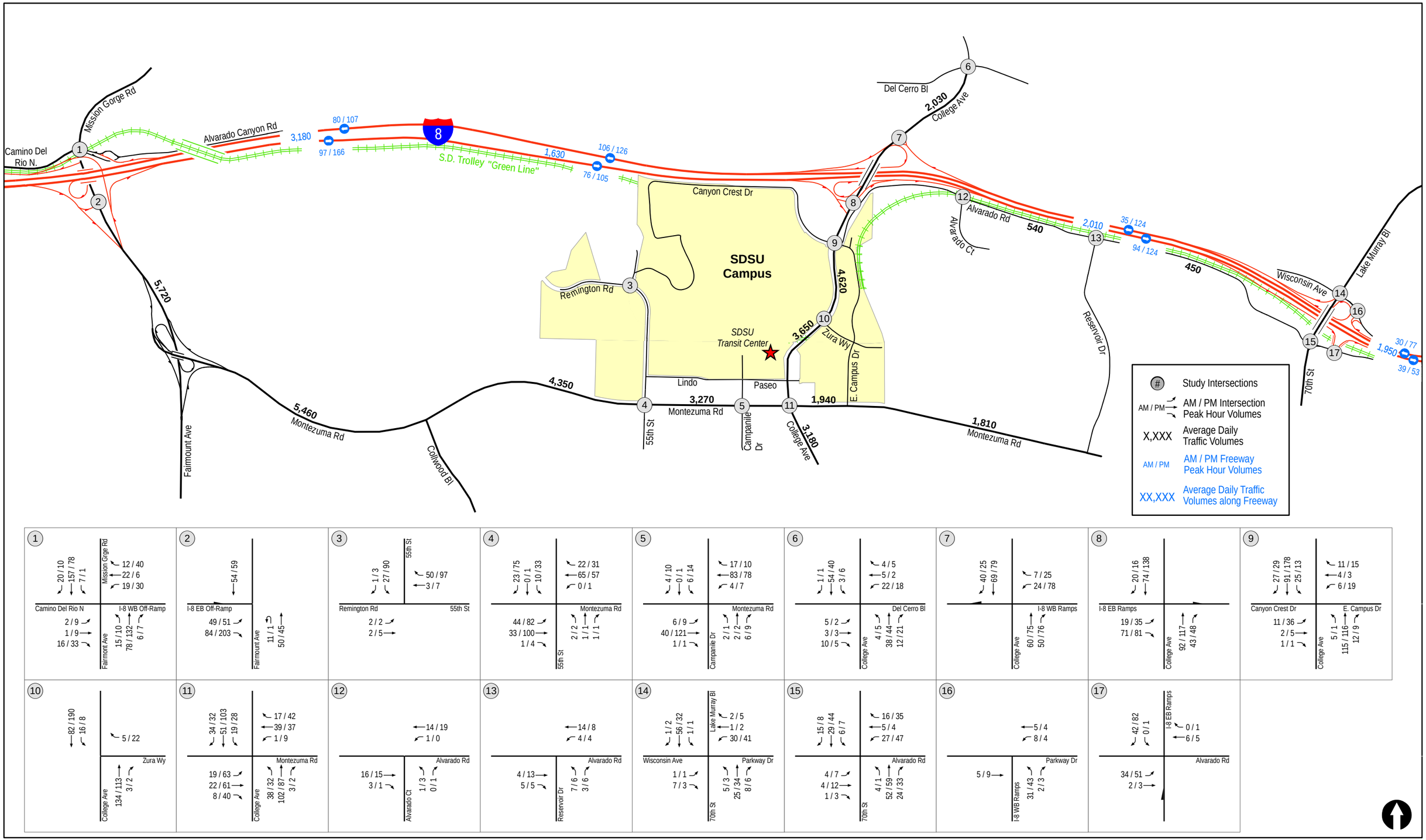

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Figure 6-1

Cumulative Projects Traffic Volumes

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7.0 ANALYSIS OF EXISTING CONDITIONS

The analysis of existing conditions includes the assessment of the study area intersections, street segments, and freeways using the methodologies described in Section 4.0.

7.1 Existing Intersection Operations

Intersection capacity analyses were conducted for the study intersections under Existing conditions. ***Table 7–1*** reports the intersection operations during the peak hour conditions. As shown on the table, the following intersections currently operate at LOS E or F:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the AM and PM peak hours)
- Fairmount Avenue / I-8 EB Off Ramp (LOS F during the PM peak hour)
- College Avenue / Zura Way (LOS F during the PM peak hour)
- College Avenue / Montezuma Road (LOS E during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS E during the PM peak hour)

Appendix E contains the intersection analysis worksheets for the Existing scenario.

TABLE 7–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay[a]	LOS[b]
1. Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N.	Signal	AM PM	**82.2** **122.5**	**F** **F**
2. Fairmount Avenue / I-8 EB Off Ramp	Signal	AM PM	37.6 **106.1**	D **F**
3. 55th Street / Remington Road	Signal	AM PM	8.4 10.2	A B
4. 55th Street / Montezuma Road	Signal	AM PM	33.5 50.2	C D
5. Campanile Drive / Montezuma Road	Signal	AM PM	30.2 29.5	C C
6. College Avenue / Del Cerro Boulevard	Signal	AM PM	31.1 23.2	C C

TABLE 7–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay[a]	LOS[b]
7. College Avenue / I-8 WB Ramps	Signal	AM PM	7.0 11.2	A B
8. College Avenue / I-8 EB Ramps	Signal	AM PM	19.6 50.0	B D
9. College Avenue / Canyon Crest Drive	Signal	AM PM	38.4 49.1	D D
10. College Avenue / Zura Way	MSSC[c]	AM PM	16.2 **112.3**	C **F**
11. College Avenue / Montezuma Road	Signal	AM PM	52.6 **67.7**	D **E**
12. Alvarado Court / Alvarado Road	MSSC[d]	AM PM	12.7 13.3	B B
13. Reservoir Drive / Alvarado Road	Signal	AM PM	9.1 10.1	A B
14. Lake Murray Boulevard / Parkway Drive	Signal	AM PM	31.8 31.2	C C
15. 70th Street / Alvarado Road	Signal	AM PM	36.8 46.8	D D
16. I-8 WB Ramps / Parkway Drive	AWSC[d]	AM PM	20.4 **41.8**	C **E**
17. I-8 EB Ramps / Alvarado Road	Signal	AM PM	24.2 22.7	C C

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. MSSC – Minor Street Stop Controlled intersection. The highest (worst) of the minor street right-turn delay (westbound right-turn) or major street (northbound left-turn) is reported. Left-turns from Zura Way to College Avenue are not allowed.
d. MSSC – Minor Street Stop Controlled intersection. Minor street left turn delay is reported.
e. AWSC – All-Way Stop Controlled intersection.

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or F.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

7.2 Existing Street Segment Operations

Existing street segment analyses were conducted for roadways in the study area. ***Tables 7–2*** reports the existing street segment daily operations. As shown on the table, the following segments currently operate at LOS E or F:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS E)
- College Avenue: Montezuma Road to Cresita Drive (LOS E)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)
- Fairmount Avenue: Montezuma Road to I-8 (LOS F)

TABLE 7–2
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Classification	Capacity (LOS E) [a]	ADT [b]	LOS [c]	V/C [d]
Alvarado Road					
E. Campus Drive to Reservoir Drive	2-lane Collector *(fronting property)*	8,000	**8,800**	**F**	**1.100**
Reservoir Drive to 70th Street	2-lane Collector *(fronting property)*	8,000	**7,040**	**E**	**0.880**
College Avenue					
Del Cerro Boulevard to I-8 WB off-ramp	4-lane Major Arterial	40,000	31,330	D	0.783
I-8 EB Ramps to Zura Way	4-lane Major Arterial	40,000	**35,850**	**E**	**0.896**
Zura Way to Montezuma Road	4-lane Major Arterial	40,000	29,790	C	0.745
Montezuma Road to Cresita Drive	4-lane Collector	30,000	**27,490**	**E**	**0.916**
Montezuma Road					
Fairmount Avenue to Collwood Boulevard	4-lane Major Arterial	40,000	**52,330**	**F**	**1.308**
Collwood boulevard to 55th Street	4-lane Major Arterial	40,000	28,950	C	0.724
55th Street to College Avenue	4-lane Collector	30,000	**32,570**	**F**	**1.086**
College Avenue to E. Campus Drive	4-lane Collector	30,000	21,500	D	0.717
E. Campus Drive to Reservoir Drive	4-lane Collector	30,000	18,960	C	0.632
Fairmount Avenue					
Montezuma Road to I-8	6-lane Prime Arterial	60,000	**91,350**	**F**	**1.523**

Footnotes:
a. Capacities based on City of San Diego Roadway Classification Table.
b. Average Daily Traffic Volumes.
c. Level of Service.
d. Volume to Capacity.

General Notes:
1. **Bold** typeface indicates segments operating at LOS E or F.

7.3 Existing Freeway Ramp Meter Operations

Freeway entrance ramps that currently have ramp meters installed and in operation were analyzed under existing conditions. As shown in ***Table 7–3***, the following freeway ramp meter presently incurs a delay exceeding 15 minutes

- SB Fairmount Avenue to EB I-8 (PM peak hour)

TABLE 7–3
EXISTING RAMP METER OPERATIONS

Location/Scenario	Peak Hour	Peak Hour Demand	Ramp Meter Rate (Flow)[a]	Excess Demand	Delay per Lane [b]	Queue per Lane [c]
SB Fairmount Ave to EB I-8	PM	390	246	144	**35**	3,600
NB College Avenue to WB I-8	AM	306	*Restrictive*: 318	0	0	0
			Observed: 296	10	2	250
SB College Avenue to WB I-8	AM	336	*Restrictive*: 336	0	0	0
			Observed: 300	36	7	888
NB College Avenue to EB I-8	PM	350	*Restrictive*: 570	0	0	0
			Observed: 330	20	4	500

Footnotes:
a. While meter rates were obtained from Caltrans (see *Appendix D*), the rates were reduced to reflect existing ramp meter observations.
b. Delay expressed in minutes per lane.
c. Queue expressed in feet per lane.

General Notes:
1. **Bold** indicates meter delays exceeding 15 minutes.

7.4 Residential Street Segment Operations

The 2007 Master Plan traffic study analyzed several residential neighborhood street segments in the vicinity of the proposed Adobe Falls faculty/staff housing. The 2007 analysis found that the residential streets could accommodate the additional project traffic. To determine whether this conclusion remained valid, a traffic count was conducted in April 2016 on Del Cerro Boulevard between Capri Drive and College Avenue, the entrance to the community where the Adobe Falls faculty/staff housing would be built.

Based on a count comparison between the 2007 and 2016 traffic counts, the 2016 volume on Del Cerro Boulevard was lower by 30% than the 2007 counts. *Appendix F* shows this calculation. Therefore, since the background traffic volumes have decreased since 2007, the available capacity actually has increased since that time. Therefore, the conclusion that the Adobe Falls area residential streets can accommodate the Project traffic without resulting in significant impacts still applies.

7.5 Existing Freeway Segment Operations

The study area freeway segments were analyzed under existing conditions. ***Appendix G*** contains the detailed calculations sheets for the existing scenario. As shown in ***Table 7–4***, the following segments currently operate at LOS E or F:

I-8

- I-8 between Fairmount Avenue and Waring Road, *LOS E–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray Boulevard, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(1)–AM (WB) and LOS F(0)–PM (EB)*

TABLE 7–4
EXISTING FREEWAY SEGMENT OPERATIONS

Freeway and Segment	ADT[a]	AM Peak Hour					PM Peak Hour				
		Direction & Number of Lanes		Capacity[b]	V/C[c]	LOS[d]	Direction & Number of Lanes		Capacity[b]	V/C[c]	LOS[d]
I-8											
Fairmount Avenue to Waring Road	236,000	EB Mainlines	5M	10,000	0.371	B	EB Mainlines	5M	10,000	**1.111**	**F(0)**
		WB Mainlines	6M	12,000	**0.991**	**E**	WB Mainlines	6M	12,000	0.637	C
Waring Road to College Avenue	225,000	EB Mainlines	5M	10,000	0.354	B	EB Mainlines	5M	10,000	**1.059**	**F(0)**
		WB Mainlines	5M	10,000	**1.134**	**F(0)**	WB Mainlines	5M	10,000	0.729	C
College Avenue to Lake Murray Boulevard	198,000	EB Mainlines	4M+ 1A	9,200	0.530	B	EB Mainlines	4M+ 1A	9,200	**1.092**	**F(0)**
		WB Mainlines	5M	10,000	**1.036**	**F(0)**	WB Mainlines	5M	10,000	0.636	C
Lake Murray Boulevard to Fletcher Parkway	198,000	EB Mainlines	4M+ 1A	9,200	0.530	B	EB Mainlines	4M+ 1A	9,200	**1.092**	**F(0)**
		WB Mainlines	4M	8,000	**1.295**	**F(1)**	WB Mainlines	4M	8,000	0.795	C

Footnotes:

a. Existing ADT volumes from *Caltrans' 2015 Traffic Volumes on California State Highways.*
b. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).
c. Volume to Capacity.
d. Level of Service.

LOS	V/C	LOS	V/C
A	<0.41	F(0)	1.25
B	0.62	F(1)	1.35
C	0.80	F(2)	1.45
D	0.92	F(3)	>1.46
E	1.00		

General Notes:

1. See *Appendix G* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.

8.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

The following is a summary of the project trip generation and the project traffic distribution and assignment to the local and regional network.

8.1 Trip Generation, Distribution and Assignment

As previously discussed, the project description is unchanged from the 2007 study. The travel patterns to/from the campus have not changed much over the years with College Avenue and Montezuma Road still providing the principal access to the campus. Therefore, the trip generation, trip distribution, and project traffic assignment for the 2007 study were not changed. Relevant excerpts from the 2007 traffic study are included in ***Appendix G1*** to this report.

Tables 8–1A, B & C show the Near-Term (Year 2022) trip generation calculations. ***Tables 8–2A, B & C*** show the Horizon Year (Year 2035) trip generation calculations.

Figures 8–1 through ***8–3*** shows the project trip distribution figures. ***Figures 8–4*** and ***8–5*** show the Near-Term (Year 2022) and Horizon Year (Year 2035) total project traffic volumes.

TABLE 8–1A
NEAR-TERM PROJECT TRIP GENERATION (YEAR 2022)

Trip Generation Project Components	Size		Daily Trip Ends (ADT[a])		AM Peak Hour				PM Peak Hour			
			Rate	Volume	% of ADT	In:Out Split	Volume In	Volume Out	% of ADT	In:Out Split	Volume In	Volume Out
SDSU Student Headcount Increase												
Non-Resident Student Headcount Increase [b]	1,466	Students	2.47 /Student [c]	3,621	5%	90:10	163	18	7%	30:70	76	177
Resident Student Headcount Increase	628	Students	0.64 /Student [d]	402	5%	90:10	18	2	7%	30:70	8	20
Subtotal	*2,094*	*Students*	–	*4,023*			*181*	*20*			*84*	*197*
Adobe Falls Faculty/Staff Housing												
Upper Village Town homes	48	DU	8 /DU [e]	384	8%	20:80	6	25	10%	70:30	27	11
Alvarado Hotel	120	Room	10 /Room [e]	1,200	6%	60:40	43	29	8%	60:40	58	38
Total			—	**5,607**	—	—	**230**	**74**	—	—	**169**	**246**

Footnotes:

a. Average Daily Traffic

b. Near-Term (Year 2022) student headcount increase calculated as 2,094 students (35,535 minus 33,441 equals 2,094 students). It should be noted that 70% of the student headcount increase are assumed to consist of non-resident students, and 30% of the student headcount increase will consist of resident students.

c. SDSU rates are based on actual counts taken in November 2006. This rate includes SDSU faculty, staff, vendors, visitors, and students.

d. The resident student rate is based on the Community College Redevelopment EIR that assumed 4.4 trips per student dwelling unit (with a reduction of 2.8 trips per DU based on students with new commute but would instead relocate and occupy the on-campus housing).

e. Rates were taken from the City of San Diego Trip Generation Manual, May 2003.

General Notes:

1. DU = Dwelling Units

TABLE 8–1B
SHIFT FROM DRIVING TO TROLLEY (NEAR-TERM)

SDSU boardings Increase (Near-Term)	2,460 students [a]
79% boardings are not transfers	1,943 students [b]
Vehicle Occupancy Rate	1,620 students [c]
95 % of shift to trolley is from private vehicle	1,538 students [d]
Total ADT diverted from private vehicle to trolley	3,076 (5 % during AM peak = 154 trips and 7 % during PM peak = 215 trips)

Footnotes:

a. Source: SANDAG Trolley Boarding Data

b. Source: SANDAG

c. Accounts for fact that not all drivers that shift from trolley were driving alone, some carpool (5% assumed).

d. Accounts for fact that some future users of trolley would shift from other transit opportunities, and not from personal vehicles

TABLE 8–1C
NET INCREASE IN TRAFFIC (NEAR-TERM)

1. Proposed project trips (without any increased trolley usage) = 5,607 ADT
2. Future Shift from driving to trolley = 3,076 ADT
3. Net increase in traffic = 2,531 ADT (150 AM peak hour trips and 200 PM peak hour trips)

TABLE 8–2A
HORIZON YEAR PROJECT TRIP GENERATION (YEAR 2035)

Trip Generation Project Components	Size		Daily Trip Ends (ADT[a])		AM Peak Hour				PM Peak Hour			
			Rate	Volume	% of ADT	In:Out Split	Volume In	Volume Out	% of ADT	In:Out Split	Volume In	Volume Out
SDSU Student Headcount Increase												
Non-Resident Student Headcount Increase [b]	7,401	Students	2.47 /Student [c]	18,280	5%	90:10	823	91	7%	30:70	384	896
Resident Student Headcount Increase	3,984	Students	0.64 /Student [d]	2,550	5%	90:10	115	13	7%	30:70	54	125
Subtotal	*11,385*	*Students*	–	*20,830*			*938*	*104*			*438*	*1,021*
Adobe Falls Faculty/Staff Housing												
Upper Village Town homes	48	DU	8 /DU [e]	384	8%	20:80	6	25	10%	70:30	27	11
Lower Village Townhomes	124	DU	8 /DU [e]	992	8%	20:80	16	63	10%	70:30	66	28
Alvarado Hotel	120	Rooms	10 /Room [e]	1,200	6%	60:40	43	29	8%	60:40	58	38
Total			—	**23,406**	—	—	**1,003**	**221**	—	—	**589**	**1,098**

Footnotes:

a. Average Daily Traffic

b. Horizon Year (Year 2035) student headcount increase calculated as 11,385 students (44,826 minus 33,441 equals 11,385 students). It should be noted that 65% of the student headcount increase are assumed to consist of non-resident students, and 35% of the student headcount increase will consist of resident students.

c. SDSU rates are based on actual counts taken in November 2006. This rate includes SDSU faculty, staff, vendors, visitors, and students.

d. The resident student rate is based on the Community College Redevelopment EIR that assumed 4.4 trips per student dwelling unit (with a reduction of 2.8 trips per DU based on students with new commute but would instead relocate and occupy the on-campus housing).

e. Rates were taken from the City of San Diego Trip Generation Manual, May 2003.

General Notes:

1. DU = Dwelling Units

TABLE 8–2B
SHIFT FROM DRIVING TO TROLLEY (HORIZON YEAR)

SDSU boardings Increase (Horizon Year)	8,732 students [a]
79% boardings are not transfers	6,898 students [b]
Vehicle Occupancy Rate	5,748 students [c]
95 % of shift to trolley is from private vehicle	5,460 students [d]
Total ADT diverted from private vehicle to trolley	10,920 (5 % during AM peak = 546 trips and 7 % during PM peak = 764 trips)

Footnotes:

a. Source: SANDAG Trolley Boarding Data

b. Source: SANDAG

c. Accounts for fact that not all drivers that shift from trolley were driving alone, some carpool (5% assumed).

d. Accounts for fact that some future users of trolley would shift from other transit opportunities, and not from personal vehicles

TABLE 8–2C
NET INCREASE IN TRAFFIC (HORIZON YEAR)

1. Proposed project trips (without any increased trolley usage) = 23,404 ADT
2. Future Shift from driving to trolley = 10,920 ADT
3. Net increase in traffic = 12,484 ADT (678 AM peak hour trips and 923 PM peak hour trips)

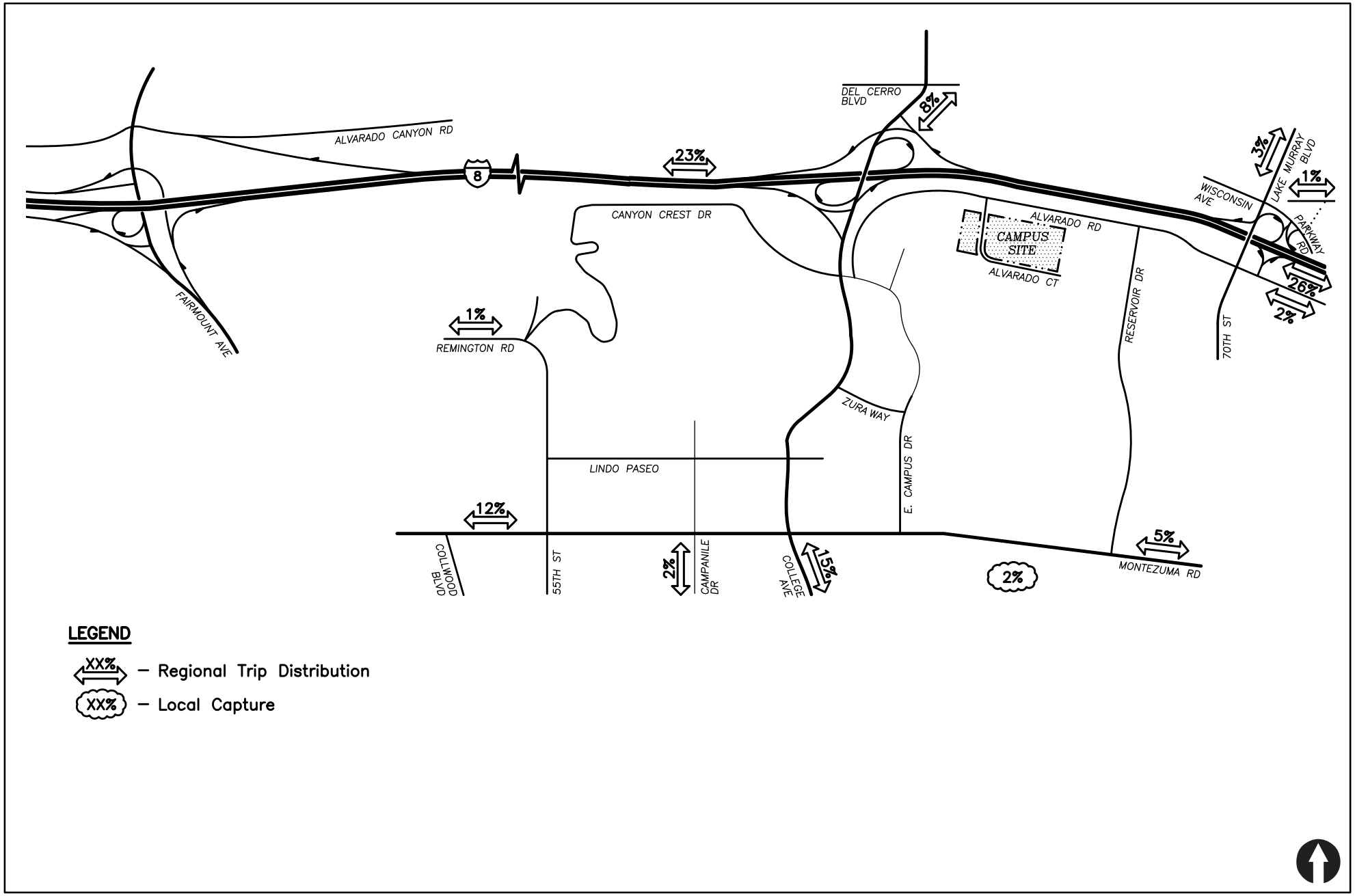

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Figure 8-1

Alvarado Campus Project Traffic Distribution

(Near-Term & Horizon Year)

SDSU MASTER PLAN UPDATE

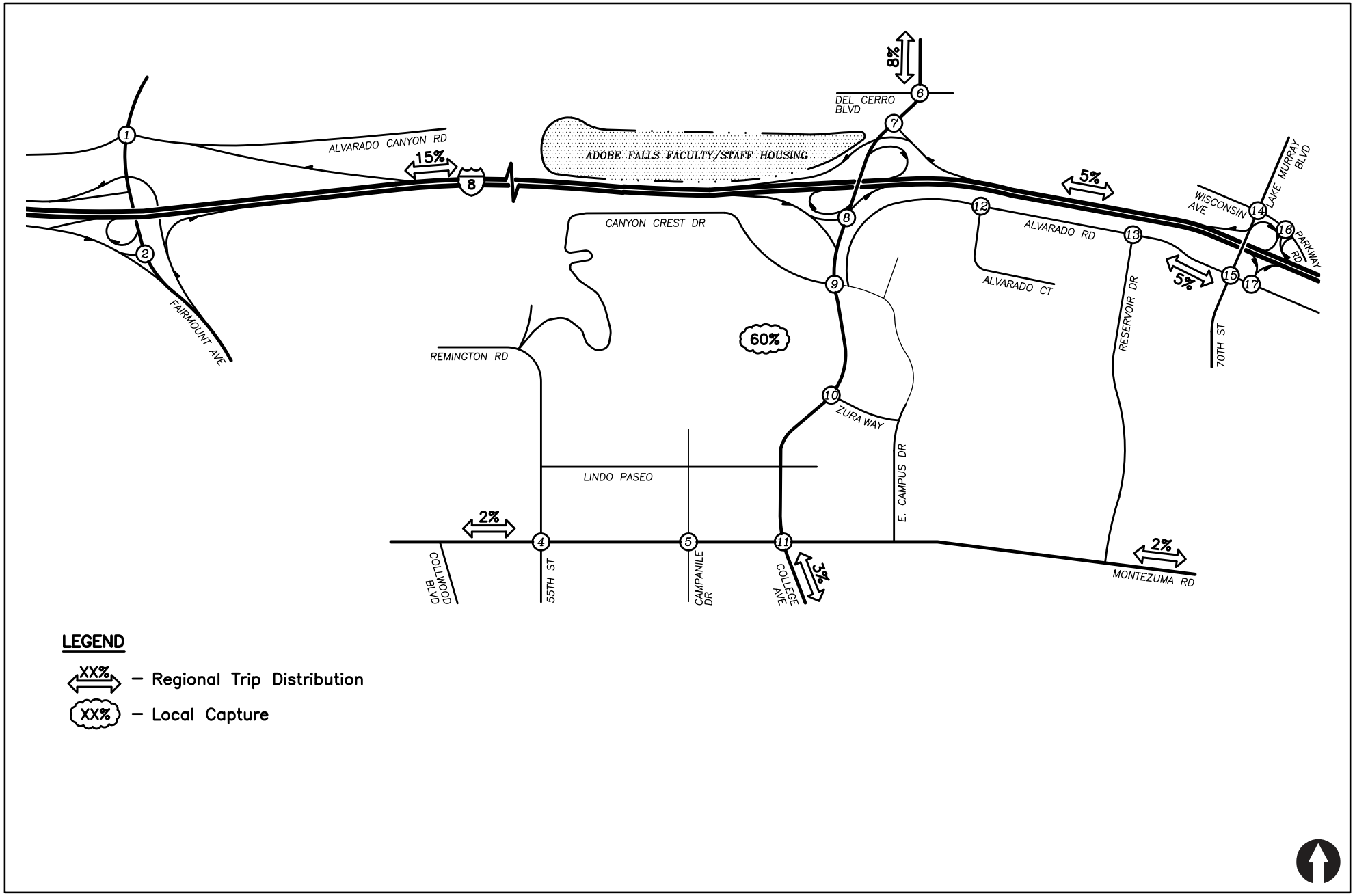

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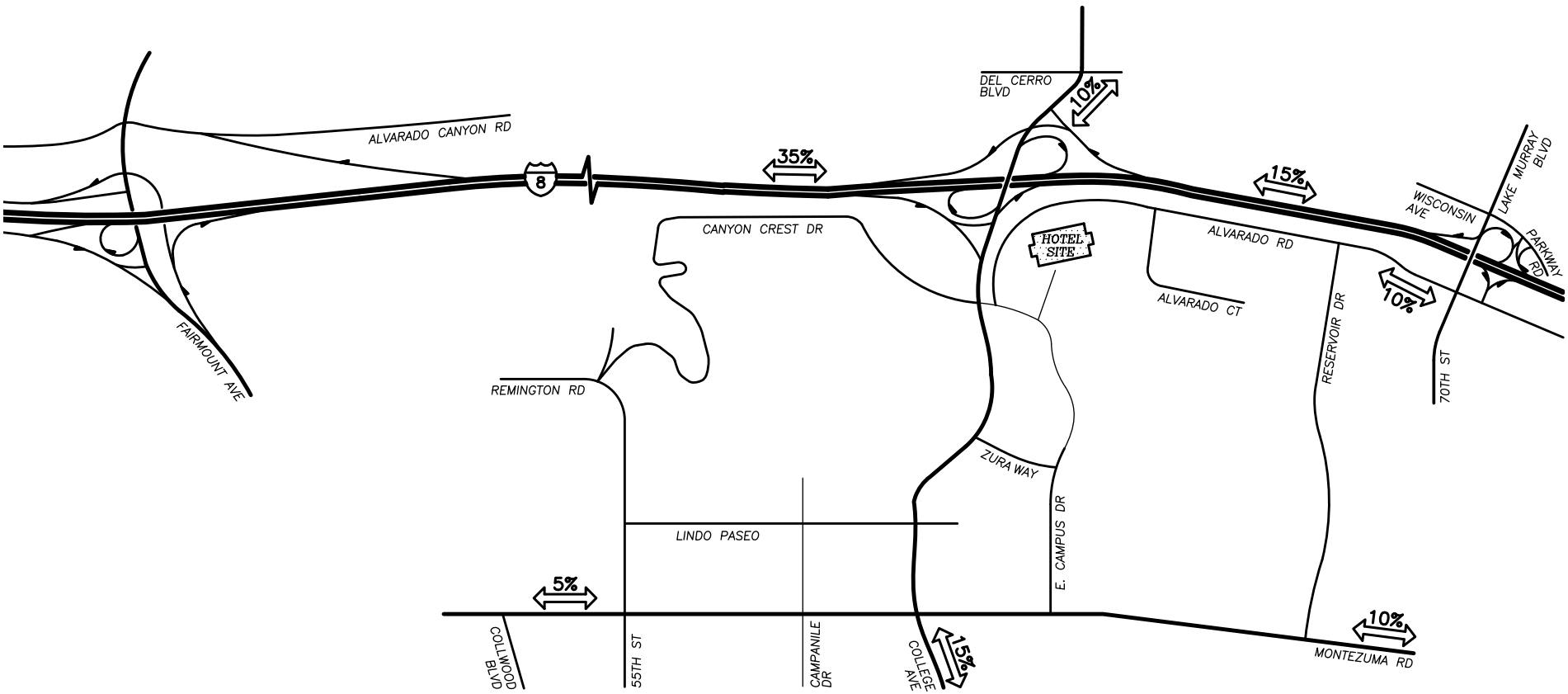
Figure 8-2

Adobe Falls Faculty/Staff Housing Traffic Distribution

(Near-Term & Horizon Year)



LEGEND

XX% — Regional Trip Distribution

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Figure 8-3

Alvarado Hotel Project Traffic Distribution

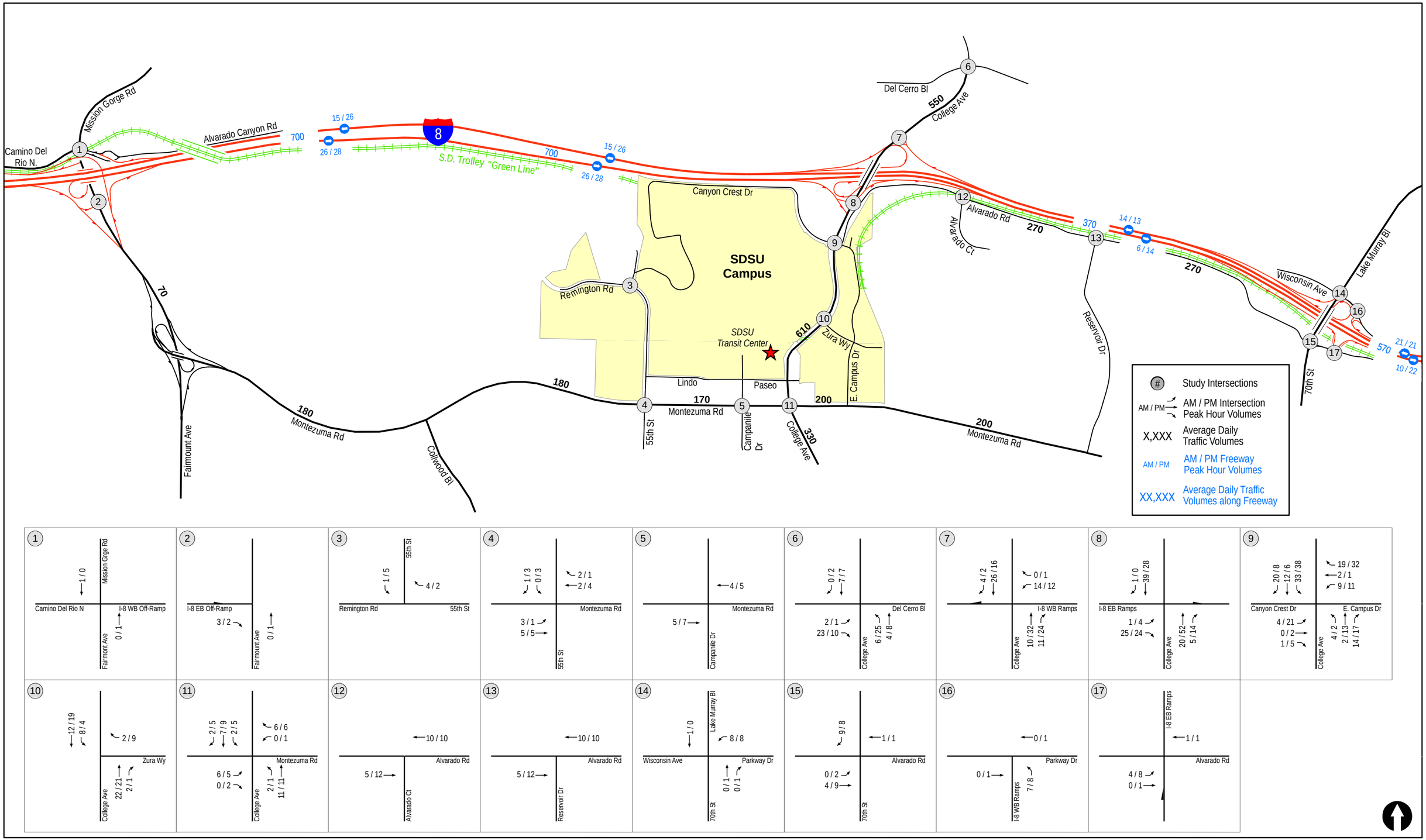

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Figure 8-4

Near-Term (Year 2022) Total Project Traffic Volumes

SDSU MASTER PLAN UPDATE

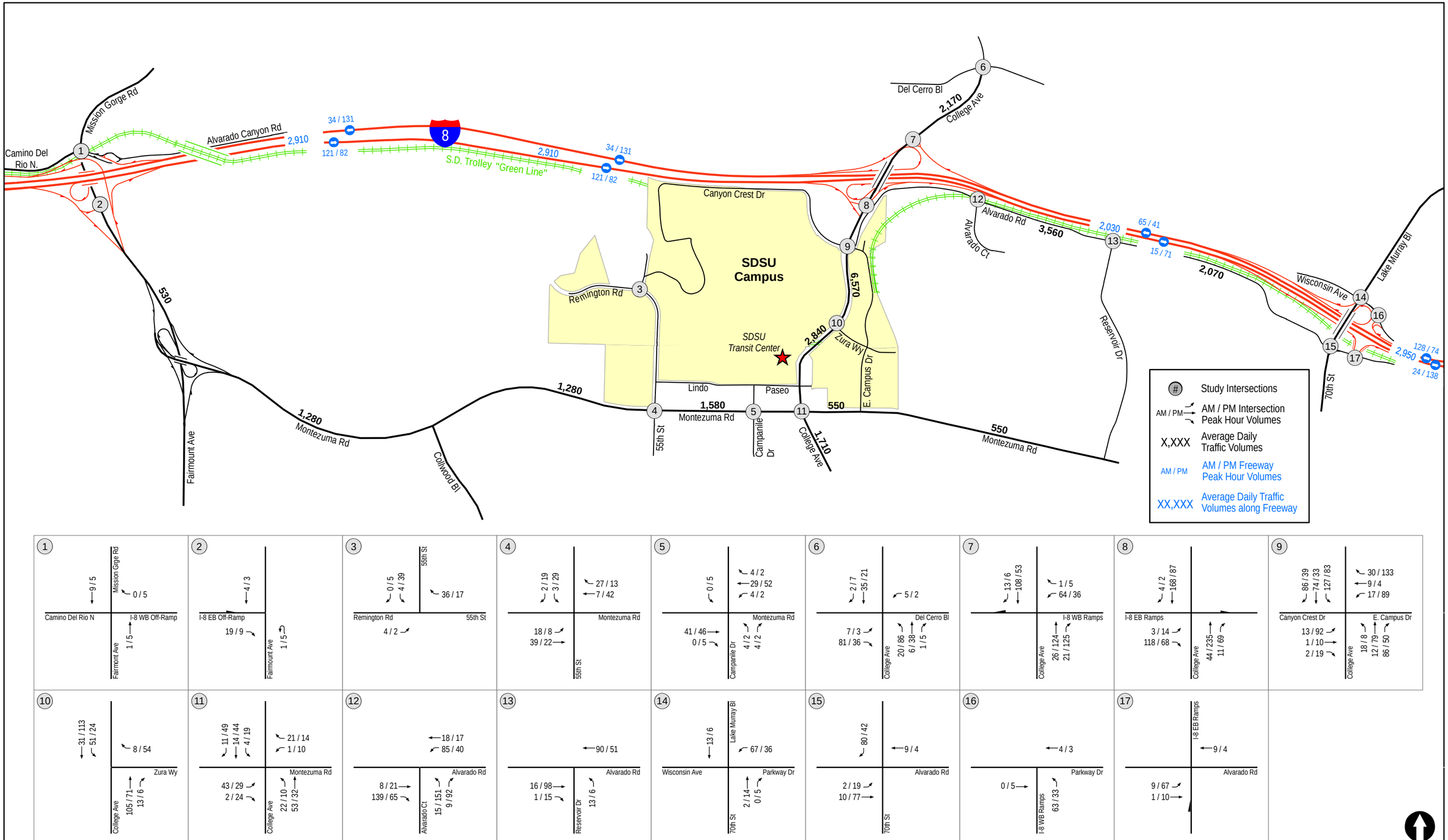

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Figure 8-5

Horizon Year (Year 2035) Total Project Traffic Volumes

SDSU Master Plan Update

9.0 ANALYSIS OF NEAR-TERM (YEAR 2022) SCENARIOS

The scenarios analyzed below are an assessment of the impact of the project traffic volumes in relation to the existing and near-term (Year 2022) without project conditions. This section includes the analysis results and discussions of the intersection, street segment, ramp meter, and freeway mainline operations. The significance of impacts is discussed in ***Section 12.0***.

9.1 Existing + Total Project Analysis

The Existing + Total Project traffic analysis is an assessment of the impact of the total project (i.e. the project at buildout) in relation to the existing conditions. Since the project in this case is a long-term project that will not reach build out for many years, the "Existing + Total Project" analysis is hypothetical in that it is not an accurate scenario upon which to assess significant impacts. This is because the Existing + Total Project scenario does not take into account future increases in background, or cumulative, traffic and, as a result, the analysis under this scenario potentially understates impacts by assuming more capacity than actually would be available; in contrast, both the Near-Term (Year 2022) and Horizon Year (Year 2035) analyses do take background traffic into account. Therefore, the Existing + Total Project analysis is provided in this case for informational purposes only; the impacts of the proposed project are assessed under the Near-Term (Year 2022) and Horizon Year (Year 2035) scenarios, which both account for future increases in background traffic and infrastructure improvements, as applicable. ***Figure 9–1*** depicts the Existing + Total Project traffic volumes.

9.1.1 *Intersection Analysis*

Intersection capacity analyses were conducted for the study intersections under Existing + Total Project conditions. ***Table 9–1*** reports the intersection operations during the peak hour conditions. The following intersections would operate at LOS E or F under the Existing + Project conditions:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the AM and PM peak hours)
- Fairmount Avenue / I-8 EB Off Ramp (LOS F during the PM peak hour)
- College Avenue / I-8 EB Ramps (LOS E during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS E during the AM peak hour, LOS F during the PM peak hour)
- College Avenue / Zura Way (LOS F during the PM peak hour)
- College Avenue / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the PM peak hour)

Appendix H contains the intersection analysis worksheets for the Existing + Total Project scenario.

TABLE 9–1
EXISTING + TOTAL PROJECT INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		Existing + Total Project	
			Delay[a]	LOS[b]	Delay	LOS
1. Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N.	Signal	AM	**82.2**	**F**	**82.4**	**F**
		PM	**122.5**	**F**	**125.6**	**F**
2. Fairmount Avenue / I-8 EB Off Ramp	Signal	AM	37.6	D	37.9	D
		PM	**106.1**	**F**	**107.0**	**F**
3. 55th Street / Remington Road	Signal	AM	8.4	A	8.5	A
		PM	10.2	B	10.4	B
4. 55th Street / Montezuma Road	Signal	AM	33.5	C	33.9	C
		PM	50.2	D	52.9	D
5. Campanile Drive / Montezuma Road	Signal	AM	30.2	C	30.3	C
		PM	29.5	C	29.9	C
6. College Avenue / Del Cerro Boulevard	Signal	AM	31.1	C	37.6	D
		PM	23.2	C	27.0	C
7. College Avenue / I-8 WB Ramps	Signal	AM	7.0	A	9.1	A
		PM	11.2	B	11.3	B
8. College Avenue / I-8 EB Ramps	Signal	AM	19.6	B	22.3	C
		PM	50.0	D	**66.7**	**E**
9. College Avenue / Canyon Crest Drive	Signal	AM	38.4	D	**58.4**	**E**
		PM	49.1	D	**119.0**	**F**
10. College Avenue / Zura Way	MSSC[c]	AM	16.2	C	22.1	C
		PM	**112.3**	**F**	**195.8**	**F**
11. College Avenue / Montezuma Road	Signal	AM	52.6	D	**58.0**	**E**
		PM	**67.7**	**E**	**82.0**	**F**
12. Alvarado Court / Alvarado Road	MSSC[d]	AM	12.7	B	16.0	C
		PM	13.3	B	23.6	C

TABLE 9–1
EXISTING + TOTAL PROJECT INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		Existing + Total Project	
			Delay[a]	LOS[b]	Delay	LOS
13. Reservoir Drive / Alvarado Road	Signal	AM	9.1	A	9.2	A
		PM	10.1	B	10.2	B
14. Lake Murray Boulevard / Parkway Drive	Signal	AM	31.8	C	33.6	C
		PM	31.2	C	32.1	C
15. 70th Street / Alvarado Road	Signal	AM	36.8	D	37.4	D
		PM	46.8	D	48.3	D
16. I-8 WB Ramps / Parkway Drive	AWSC[e]	AM	20.4	C	30.2	D
		PM	**41.8**	**E**	**54.2**	**F**
17. I-8 EB Ramps / Alvarado Road	Signal	AM	24.2	C	24.3	C
		PM	22.7	C	22.9	C

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. MSSC – Minor Street Stop Controlled intersection. The highest (worst) of the minor street right-turn delay (westbound right-turn) or major street (northbound left-turn) is reported. Left-turns from Zura Way to College Avenue are not allowed.
d. MSSC – Minor Street Stop Controlled intersection. Minor street approach delay is reported.
e. AWSC – All-Way Stop Controlled intersection.

SIGNALIZED DELAY/LOS THRESHOLDS		UNSIGNALIZED DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or F.

9.1.2 *Segment Operations*

Existing + Total Project street segment analyses were conducted for the roadways in the study area. ***Table 9–2*** reports the Existing + Total Project daily street segment operations. As shown on the table, the following segments would operate at LOS E or F under the Existing + Project conditions:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS F)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Montezuma Road to Cresita Drive (LOS E)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)
- Fairmount Avenue: Montezuma Road to I-8 (LOS F)

TABLE 9–2
EXISTING + TOTAL PROJECT SEGMENT OPERATIONS

Segment	Functional Classification	LOS E Capacity [a]	Existing			Existing + Total Project		
			Volume	LOS [b]	V/C [c]	Volume	LOS	V/C
Alvarado Road								
E. Campus Dive to Reservoir Drive	2-lane Collector *(fronting property)*	8,000	**8,800**	**F**	**1.100**	**12,360**	**F**	**1.545**
Reservoir Drive to 70th Street	2-lane Collector *(fronting property)*	8,000	**7,040**	**E**	**0.880**	**9,110**	**F**	**1.139**
College Avenue								
Del Cerro Boulevard to I-8 WB off-ramp	4-lane Major Arterial	40,000	31,330	D	0.783	33,500	D	0.838
I-8 EB Ramps to Zura Way	4-lane Major Arterial	40,000	**35,850**	**E**	**0.896**	**42,420**	**F**	**1.061**
Zura Way to Montezuma Road	4-lane Major Arterial	40,000	29,790	C	0.745	32,630	D	0.816
Montezuma Road to Cresita Drive	4-lane Collector	30,000	**27,490**	**E**	**0.916**	**29,200**	**E**	**0.973**
Montezuma Road								
Fairmount Avenue to Collwood Boulevard	4-lane Major Arterial	40,000	**52,330**	**F**	**1.308**	**53,610**	**F**	**1.340**
Collwood Boulevard to 55th Street	4-lane Major Arterial	40,000	28,950	C	0.724	30,230	D	0.756
55th Street to College Avenue	4-lane Collector	30,000	**32,570**	**F**	**1.086**	**34,150**	**F**	**1.138**
College Avenue to E. Campus Drive	4-lane Collector	30,000	21,500	D	0.717	22,050	D	0.735
E. Campus Drive to Reservoir Drive	4-lane Collector	30,000	18,960	C	0.632	19,510	C	0.650
Fairmount Avenue								
Montezuma Road to I-8	6-lane Prime Arterial	60,000	**91,350**	**F**	**1.523**	**91,880**	**F**	**1.531**

Footnotes:
a. Capacities based on City of San Diego's Roadway Classification & LOS table (See *Appendix C*).
b. Level of Service.
c. Volume to Capacity ratio.

General Notes:
1. **Bold** typeface indicates segments operating at LOS E or F.

9.1.3 *Ramp Meter Analysis*

Freeway entrance ramps that currently have ramp meters installed and in operation were analyzed under Existing + Total Project conditions. As shown in ***Table 9–4***, the following freeway ramp meters are calculated to incur a delay exceeding 15 minutes:

- SB Fairmount Avenue to EB I-8 (PM peak hour)

TABLE 9–4
EXISTING + TOTAL PROJECT RAMP METER OPERATIONS

Location/Condition	Peak Hour	Peak Hour Demand	Ramp Meter Rate (Flow)[a]	Excess Demand	Delay per Lane [b]	Queue per Lane [c]
SB Fairmount Ave to EB I-8						
Existing	PM	390	246	144	35	3600
Existing + Total Project	PM	392	246	146	36	3650
Project Increase	PM	2	NA	2	1	50
NB College Avenue to WB I-8						
Existing	AM	306	296	10	2	250
Existing + Total Project	AM	327	296	31	6	775
Project Increase	AM	21	NA	21	4	525
SB College Avenue to WB I-8						
Existing	AM	336	300	36	7	888
Existing + Total Project	AM	342	300	42	8	1050
Project Increase	AM	6	NA	6	1	162
NB College Avenue to EB I-8						
Existing	PM	350	330	20	4	500
Existing + Total Project	PM	419	330	89	16	2225
Project Increase	PM	69	NA	69	12	1725

Footnotes:
a. While meter rates were obtained from Caltrans, the rates were reduced to reflect existing ramp meter observations.
b. Delay expressed in minutes per lane.
c. Queue expressed in feet per lane.

General Notes:
1. **Bold** typeface indicates meter delays exceeding 15 minutes.
2. NA = Not Applicable.

9.1.4 *Freeway Mainline Operations*

Freeway segments were analyzed under Existing + Total Project conditions. *Appendix G* contains the detailed calculations sheets. ***Tables 9–3a*** and ***9–3b*** report the Existing + Total Project freeway segment operations. As shown on the tables, the following segments would operate at LOS E or F under the Existing + Project conditions:

I-8

- I-8 between Fairmount Avenue and Waring Road, *LOS E–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(1)–AM (WB) and LOS F(0)–PM (EB)*

TABLE 9–3A
EXISTING + TOTAL PROJECT FREEWAY SEGMENT OPERATIONS—AM PEAK HOUR

Freeway and Segment	Existing + Total Project ADT	Direction &Number of Lanes		Capacity[a]	Existing		Existing + Total Project	
					V/C[b]	LOS[c]	V/C	LOS
I-8								
Fairmount Avenue to Waring Road	238,910	EB Mainlines	5M	10,000	0.371	B	0.383	B
		WB Mainlines	6M	12,000	**0.991**	**E**	**0.994**	**E**
Waring Road to College Avenue	227,910	EB Mainlines	5M	10,000	0.354	B	0.366	B
		WB Mainlines	5M	10,000	**1.134**	**F(0)**	**1.137**	**F(0)**
College Avenue to Lake Murray Boulevard	200,030	EB Mainlines	4M+ 1A	9,200	0.530	B	0.532	B
		WB Mainlines	5M	10,000	**1.036**	**F(0)**	**1.042**	**F(0)**
Lake Murray Boulevard to Fletcher Parkway	200,950	EB Mainlines	4M+ 1A	9,200	0.530	B	0.533	B
		WB Mainlines	4M	8,000	**1.295**	**F(1)**	**1.311**	**F(1)**

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).

b. Volume to Capacity.

c. Level of Service.

LOS	V/C	LOS	V/C
A	<0.41	F(0)	1.25
B	0.62	F(1)	1.35
C	0.80	F(2)	1.45
D	0.92	F(3)	>1.46
E	1.00		

General Notes:

1. See *Appendix G* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.

TABLE 9–3B
EXISTING + TOTAL PROJECT FREEWAY SEGMENT OPERATIONS—PM PEAK HOUR

Freeway and Segment	Existing + Total Project ADT	Direction &Number of Lanes		Capacity[a]	Existing		Existing + Total Project	
					V/C[b]	LOS[c]	V/C	LOS
I-8								
Fairmount Avenue to Waring Road	238,910	EB Mainlines	5M	10,000	**1.111**	**F(0)**	**1.119**	**F(0)**
		WB Mainlines	6M	12,000	0.637	C	0.648	C
Waring Road to College Avenue	227,910	EB Mainlines	5M	10,000	**1.059**	**F(0)**	**1.068**	**F(0)**
		WB Mainlines	5M	10,000	0.729	C	0.742	C
College Avenue to Lake Murray Boulevard	200,030	EB Mainlines	4M+ 1A	9,200	**1.092**	**F(0)**	**1.100**	**F(0)**
		WB Mainlines	5M	10,000	0.636	C	0.640	C
Lake Murray Boulevard to Fletcher Parkway	200,950	EB Mainlines	4M+ 1A	9,200	**1.092**	**F(0)**	**1.107**	**F(0)**
		WB Mainlines	4M	8,000	0.795	C	0.804	D

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).

b. Volume to Capacity.

c. Level of Service.

LOS	V/C
A	<0.41
B	0.62
C	0.80
D	0.92
E	1.00

LOS	V/C
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

General Notes:

1. See *Appendix G* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.

9.2 Near-Term Analysis (Year 2022)

The Near-Term (Year 2022) with and without Project traffic volumes were calculated using the existing traffic volumes and the addition of Near-Term (Year 2022) cumulative projects traffic as described in Section 6.0. No roadway network improvements were assumed in the Near-Term analyses. ***Figure 9–2*** depicts the Near-Term (Year 2022) traffic volumes. ***Figure 9–3*** depicts the Near-Term (Year 2022) + Project traffic volumes.

9.2.1 *Intersection Analysis*

Intersection capacity analyses were conducted for the study intersections under Near-Term (Year 2022) without Project conditions. ***Table 9–5*** reports the intersection operations during the peak hour conditions. Under Near-Term (Year 2022) without Project conditions, the following intersections would operate at LOS E or F:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the AM and PM peak hours)
- Fairmount Avenue / I-8 EB Off Ramp (LOS F during the AM and PM peak hours)
- 55th Street / Montezuma Road (LOS E during the PM peak hour)
- College Avenue / I-8 EB Ramps (LOS E during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS E during the PM peak hour)
- College Avenue / Zura Way (LOS F during the PM peak hour)
- College Avenue / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the PM peak hour)

Appendix I contains the intersection analysis worksheets for the Near-Term (Year 2022) scenario.

Intersection capacity analyses were conducted for the study intersections under Near-Term (Year 2022) with Project conditions. *Table 9–5* reports the intersection operations during the peak hour conditions. As shown on the table, the following intersections would operate at LOS E or F under the Near-Term (Year 2022) with Project scenario:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the AM and PM peak hours)
- Fairmount Avenue / I-8 EB Off Ramp (LOS F during the AM and PM peak hours)
- 55th Street / Montezuma Road (LOS E during the PM peak hour)
- College Avenue / I-8 EB Ramps (LOS E during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS E during the PM peak hour)
- College Avenue / Zura Way (LOS F during the PM peak hour)
- College Avenue / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)

- I-8 WB Ramps / Parkway Drive (LOS F during the PM peak hour)

Based on the City of San Diego's significance criteria, **significant direct impacts** are identified at the following intersections as the project traffic contribution exceeds the allowable threshold:

- College Avenue / I-8 EB Ramps (LOS E during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS E during the PM peak hour)
- College Avenue / Zura Way (LOS F during the PM peak hour)
- College Avenue / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the PM peak hour)

Mitigation measures for this impact are discussed in detail in ***Section 12.1.***

Appendix J contains the intersection analysis worksheets for the Near-Term (Year 2022) + Project scenario.

TABLE 9–5
NEAR-TERM (YEAR 2022) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Near-Term (Year 2022)		Near-Term (Year 2022)+ Project		Δ[c]	Significant Impact?
			Delay[a]	LOS[b]	Delay	LOS		
1. Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N.	Signal	AM	**100.2**	**F**	**100.5**	**F**	0.3	No
		PM	**139.2**	**F**	**139.4**	**F**	0.2	No
2. Fairmount Avenue / I-8 EB Off Ramp	Signal	AM	**112.3**	**F**	**112.4**	**F**	0.1	No
		PM	**125.3**	**F**	**125.5**	**F**	0.2	No
3. 55th Street / Remington Road	Signal	AM	8.6	A	8.7	A	0.1	No
		PM	10.3	B	10.4	B	0.1	No
4. 55th Street / Montezuma Road	Signal	AM	41.0	D	41.3	D	0.3	No
		PM	**64.4**	**E**	**65.0**	**E**	0.6	No
5. Campanile Drive / Montezuma Road	Signal	AM	33.8	C	33.9	C	0.1	No
		PM	31.9	C	32.1	C	0.2	No
6. College Avenue / Del Cerro Boulevard	Signal	AM	33.3	C	34.7	C	1.4	No
		PM	24.3	C	25.0	C	0.7	No
7. College Avenue / I-8 WB Ramps	Signal	AM	7.6	A	8.0	A	0.4	No
		PM	11.7	B	12.1	B	0.4	No
8. College Avenue / I-8 EB Ramps	Signal	AM	20.8	C	21.4	C	0.6	No
		PM	**74.3**	**E**	**79.3**	**E**	**5.0**	**Yes**
9. College Avenue / Canyon Crest Drive	Signal	AM	41.6	D	46.8	D	5.2	No
		PM	**56.1**	**E**	**70.2**	**E**	**14.1**	**Yes**
10. College Avenue / Zura Way	MSSC[d]	AM	20.7	C	22.2	C	1.5	No
		PM	**178.9**	**F**	**199.5**	**F**	**20.6**	**Yes**
11. College Avenue / Montezuma Road	Signal	AM	**65.4**	**E**	**71.1**	**E**	**5.7**	**Yes**
		PM	**91.0**	**F**	**109.2**	**F**	**18.2**	**Yes**
12. Alvarado Court / Alvarado Road	MSSC[e]	AM	13.1	B	13.3	B	0.2	No
		PM	13.9	B	14.2	B	0.3	No

TABLE 9–5
NEAR-TERM (YEAR 2022) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Near-Term (Year 2022)		Near-Term (Year 2022)+ Project		Δ[c]	Significant Impact?
			Delay[a]	LOS[b]	Delay	LOS		
13. Reservoir Drive / Alvarado Road	Signal	AM	9.2	A	9.3	A	0.1	No
		PM	10.2	B	10.3	B	0.1	No
14. Lake Murray Boulevard / Parkway Drive	Signal	AM	33.9	C	34.1	C	0.2	No
		PM	32.7	C	32.9	C	0.2	No
15. 70th Street / Alvarado Road	Signal	AM	39.2	D	39.3	D	0.1	No
		PM	51.2	D	51.9	D	0.7	No
16. I-8 WB Ramps / Parkway Drive	AWSC[f]	AM	24.8	C	25.9	D	1.1	No
		PM	**59.2**	**F**	**62.1**	**F**	**2.9**	**Yes**
17. I-8 EB Ramps / Alvarado Road	Signal	AM	24.7	C	25.1	C	0.4	No
		PM	23.0	C	23.1	C	0.1	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.
d. MSSC – Minor Street Stop Controlled intersection. The highest (worst) of the minor street right-turn delay (westbound right-turn) or major street (northbound left-turn) is reported. Left-turns from Zura Way to College Avenue are not allowed.
e. MSSC – Minor Street Stop Controlled intersection. Minor street approach delay is reported.
f. AWSC – All-Way Stop Controlled intersection.

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or F.

SIGNALIZED DELAY/LOS THRESHOLDS		UNSIGNALIZED DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

9.2.2 *Segment Operations*

Near-Term (Year 2022) without Project street segment analyses were conducted for roadways in the study area. ***Table 9–6*** reports the Near-Term (Year 2022) without Project street segment operations on a daily basis. Under Near-Term (Year 2022) without Project, the following street segments would operate at LOS E or F:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)
- Fairmount Avenue: Montezuma Road to I-8 (LOS F)

Near-Term (Year 2022) with Project street segment analyses were conducted for roadways in the study area. *Table 9–6* reports the Near-Term (Year 2022) with Project street segment operations on a daily basis. As shown on the table, the following street segments would operate at LOS E or F under the Near-Term (Year 2022) with Project scenario:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)
- Fairmount Avenue: Montezuma Road to I-8 (LOS F)

Based on the City of San Diego's significance criteria, **significant direct impacts** are identified on the following street segments as the project traffic contribution exceeds the allowable thresholds:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)

Mitigation measures for these impacts are discussed in detail in *Section 12.1*.

TABLE 9–6
NEAR-TERM (YEAR 2022) + PROJECT SEGMENT OPERATIONS

Segment	Functional Classification	LOS E Capacity [a]	Near-Term (Year 2022)			Near-Term (Year 2022) + Total Project			V/C Increase	Sig?
			Volume	LOS [b]	V/C [c]	Volume	LOS	V/C		
Alvarado Road										
E. Campus Dr to Reservoir Dr	2-lane Collector *(fronting property)*	8,000	**9,340**	**F**	**1.168**	**9,610**	**F**	**1.201**	**0.033**	**Yes**
Reservoir Dr to 70th St	2-lane Collector *(fronting property)*	8,000	**7,490**	**E**	**0.936**	**7,760**	**E**	**0.970**	**0.034**	**Yes**
College Avenue										
Del Cerro Blvd to I-8 WB off-ramp	4-lane Major Arterial	40,000	33,360	D	0.834	33,910	D	0.848	0.014	No
I-8 EB Ramps to Zura Way	4-lane Major Arterial	40,000	**40,470**	**F**	**1.012**	**41,930**	**F**	**1.048**	**0.036**	**Yes**
Zura Way to Montezuma Rd	4-lane Major Arterial	40,000	33,440	D	0.836	34,050	D	0.851	0.015	No
Montezuma Rd to Cresita Drive	4-lane Collector	30,000	**30,670**	**F**	**1.022**	**31,000**	**F**	**1.033**	**0.011**	**Yes**
Montezuma Road										
Fairmount Ave to Collwood Blvd	4-lane Major Arterial	40,000	**57,790**	**F**	**1.445**	**57,970**	**F**	**1.449**	0.004	No
Collwood Blvd to 55th St	4-lane Major Arterial	40,000	33,300	D	0.833	33,480	D	0.837	0.004	No
55th St to College Ave	4-lane Collector	30,000	**35,840**	**F**	**1.195**	**36,010**	**F**	**1.200**	0.005	No
College Ave to E. Campus Dr	4-lane Collector	30,000	23,440	D	0.781	23,640	D	0.788	0.007	No
E. Campus Drive to Reservoir Drive	4-lane Collector	30,000	20,770	D	0.692	20,970	D	0.699	0.007	No

TABLE 9–6
NEAR-TERM (YEAR 2022) + PROJECT SEGMENT OPERATIONS

Segment	Functional Classification	LOS E Capacity [a]	Near-Term (Year 2022)			Near-Term (Year 2022) + Total Project			V/C Increase	Sig?
			Volume	LOS [b]	V/C [c]	Volume	LOS	V/C		
Fairmount Avenue										
Montezuma Rd to I-8	6-lane Prime Arterial	60,000	**97,070**	**F**	**1.618**	**97,140**	**F**	**1.619**	0.001	No

Footnotes:
a. Capacities based on City of San Diego's Roadway Classification & LOS table (See *Appendix C*).
b. Level of Service.
c. Volume to Capacity ratio.

General Notes:
1. **Bold** typeface indicates intersections operating at LOS E or F.

9.2.3 *Ramp Meter Analysis*

Freeway entrance ramps that currently have ramp meters installed and in operation were analyzed under Near-Term (Year 2022) without and with Project conditions. As shown in ***Table 9–8***, the following freeway ramp meter is calculated to incur a delay exceeding 15 minutes under Near-Term (Year 2022) without and with Project scenarios:

- SB Fairmount Avenue to EB I-8 (PM peak hour)

Based on the City of San Diego's significance criteria, ***no*** **significant direct impact** is identified on the above ramp meter as the project contribution to this ramp meter does not exceed the allowable thresholds.

TABLE 9–8
NEAR-TERM (YEAR 2022) + PROJECT RAMP METER OPERATIONS

Location/Condition	Peak Hour	Peak Hour Demand	Ramp Meter Rate (Flow)[a]	Excess Demand	Delay per Lane [b]	Queue per Lane [c]
SB Fairmount Ave to EB I-8						
Near-Term (Year 2022)	PM	419	246	173	42	4325
Near-Term (Year 2022) + Project	PM	419	246	173	42	4325
Project Increase	PM	0	NA	0	0	0
NB College Avenue to WB I-8						
Near-Term (Year 2022)	AM	356	296	60	12	1500
Near-Term (Year 2022) + Project	AM	367	296	71	14	1775
Project Increase	AM	11	NA	11	2	275
SB College Avenue to WB I-8						
Near-Term (Year 2022)	AM	356	300	56	11	1388
Near-Term (Year 2022) + Project	AM	358	300	58	12	1438
Project Increase	AM	2	NA	2	1	50
NB College Avenue to EB I-8						
Near-Term (Year 2022)	PM	398	330	68	12	1700
Near-Term (Year 2022) + Project	PM	412	330	82	15	2050
Project Increase	PM	14	NA	14	3	350

Footnotes:
a. While meter rates were obtained from Caltrans, the rates were reduced to reflect existing ramp meter observations.
b. Delay expressed in minutes per lane.
c. Queue expressed in feet per lane.

General Notes:
1. Bold & shading represents a potential significant impact.
2. NA = Not Applicable.

9.2.4 *Freeway Mainline Operations*

Freeway segments were analyzed under Near-Term (Year 2022) without Project conditions. ***Appendix K*** contains the detailed calculations sheets. ***Tables 9–7a*** and ***9–7b*** report the Near-Term (Year 2022) without Project freeway segment operations. The following segments were calculated to continue to operate at LOS E or F under the Near-Term (Year 2022) without Project scenario:

I-8

- I-8 between Fairmount Avenue and Waring Road, *LOS E–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(1)–AM (WB) and LOS F(0)–PM (EB)*

Freeway segments were analyzed under Near-Term (Year 2022) + Project conditions. *Appendix K* contains the detailed calculations sheets. *Tables 9–7a and 9–7b* report the Near-Term (Year 2022) + Project freeway segment operations. The following segments were calculated to operate at LOS E or F under the Near-Term (Year 2022) with Project scenario:

I-8

- I-8 between Fairmount Avenue and Waring Road, *LOS E–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(1)–AM (WB) and LOS F(0)–PM (EB)*

Based on the City of San Diego's significance criteria, there are ***no*** **significant direct impacts** identified on the above freeway segments as the project contribution to these segments does not exceed the allowable thresholds.

TABLE 9–7A
NEAR-TERM (YEAR 2022) + PROJECT FREEWAY SEGMENT OPERATIONS—AM PEAK HOUR

Freeway and Segment	Near-Term (Year 2022) + Project ADT	Direction &Number of Lanes		Capacity[a]	Near-Term (Year 2022)		Near-Term (Year 2022) + Project		V/C Delta	Significant
					V/C[b]	LOS[c]	V/C	LOS		
I-8										
Fairmount Avenue to Waring Road	239,880	EB Mainlines	5M	10,000	0.381	B	0.383	B	0.002	No
		WB Mainlines	6M	12,000	**0.998**	**E**	**0.999**	**E**	0.001	No
Waring Road to College Avenue	227,330	EB Mainlines	5M	10,000	0.361	B	0.364	B	0.003	No
		WB Mainlines	5M	10,000	**1.144**	**F(0)**	**1.146**	**F(0)**	0.002	No
College Avenue to Lake Murray Boulevard	200,380	EB Mainlines	4M+ 1A	9,200	0.540	B	0.541	B	0.001	No
		WB Mainlines	5M	10,000	**1.039**	**F(0)**	**1.041**	**F(0)**	0.002	No
Lake Murray Boulevard to Fletcher Parkway	200,520	EB Mainlines	4M+ 1A	9,200	0.534	B	0.536	B	0.002	No
		WB Mainlines	4M	8,000	**1.298**	**F(1)**	**1.301**	**F(1)**	0.003	No

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).

b. Volume to Capacity.

c. Level of Service.

LOS	V/C	LOS	V/C
A	<0.41	F(0)	1.25
B	0.62	F(1)	1.35
C	0.80	F(2)	1.45
D	0.92	F(3)	>1.46
E	1.00		

General Notes:

1. See *Appendix K* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.

TABLE 9–7B
NEAR-TERM (YEAR 2022) + PROJECT FREEWAY SEGMENT OPERATIONS—PM PEAK HOUR

Freeway and Segment	Near-Term (Year 2022) + Project ADT	Direction &Number of Lanes		Capacity[a]	Near-Term (Year 2022)		Near-Term (Year 2022) + Project		V/C Delta	Significant
					V/C[b]	LOS[c]	V/C	LOS		
I-8										
Fairmount Avenue to Waring Road	239,880	EB Mainlines	5M	10,000	**1.128**	**F(0)**	**1.131**	**F(0)**	0.003	No
		WB Mainlines	6M	12,000	0.646	C	0.648	C	0.002	No
Waring Road to College Avenue	227,330	EB Mainlines	5M	10,000	**1.070**	**F(0)**	**1.073**	**F(0)**	0.003	No
		WB Mainlines	5M	10,000	0.742	C	0.744	C	0.002	No
College Avenue to Lake Murray Boulevard	200,380	EB Mainlines	4M+ 1A	9,200	**1.106**	**F(0)**	**1.107**	**F(0)**	0.001	No
		WB Mainlines	5M	10,000	0.648	C	0.650	C	0.002	No
Lake Murray Boulevard to Fletcher Parkway	200,520	EB Mainlines	4M+ 1A	9,200	**1.098**	**F(0)**	**1.100**	**F(0)**	0.002	No
		WB Mainlines	4M	8,000	0.805	D	0.807	D	0.002	No

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).

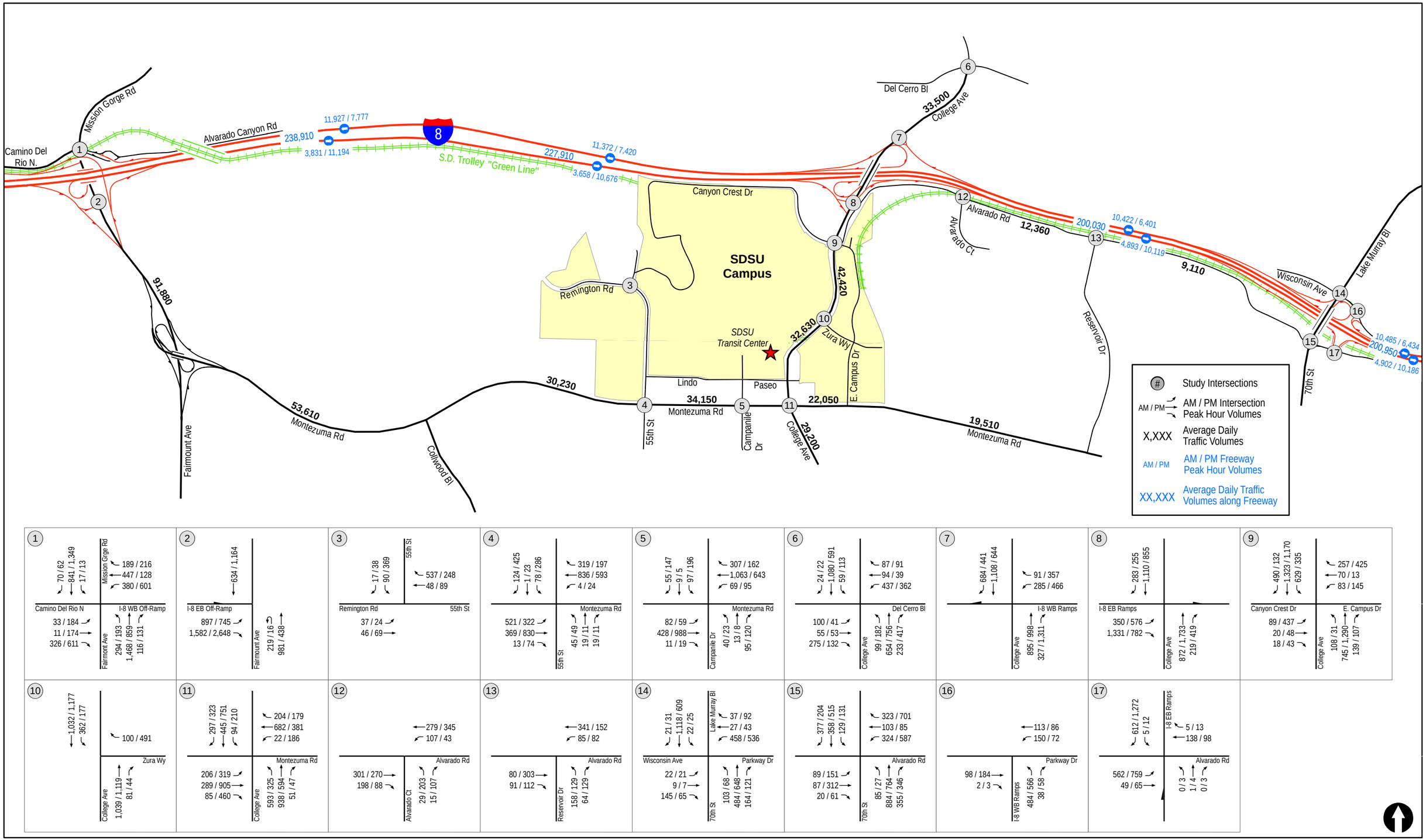
b. Volume to Capacity.

c. Level of Service.

LOS	V/C	LOS	V/C
A	<0.41	F(0)	1.25
B	0.62	F(1)	1.35
C	0.80	F(2)	1.45
D	0.92	F(3)	>1.46
E	1.00		

General Notes:

1. See *Appendix K* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.



LINSCOTT LAW & GREENSPAN engineers

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Date: 09/27/17

Figure 9-1

Existing + Project Traffic Volumes

SDSU Master Plan Update

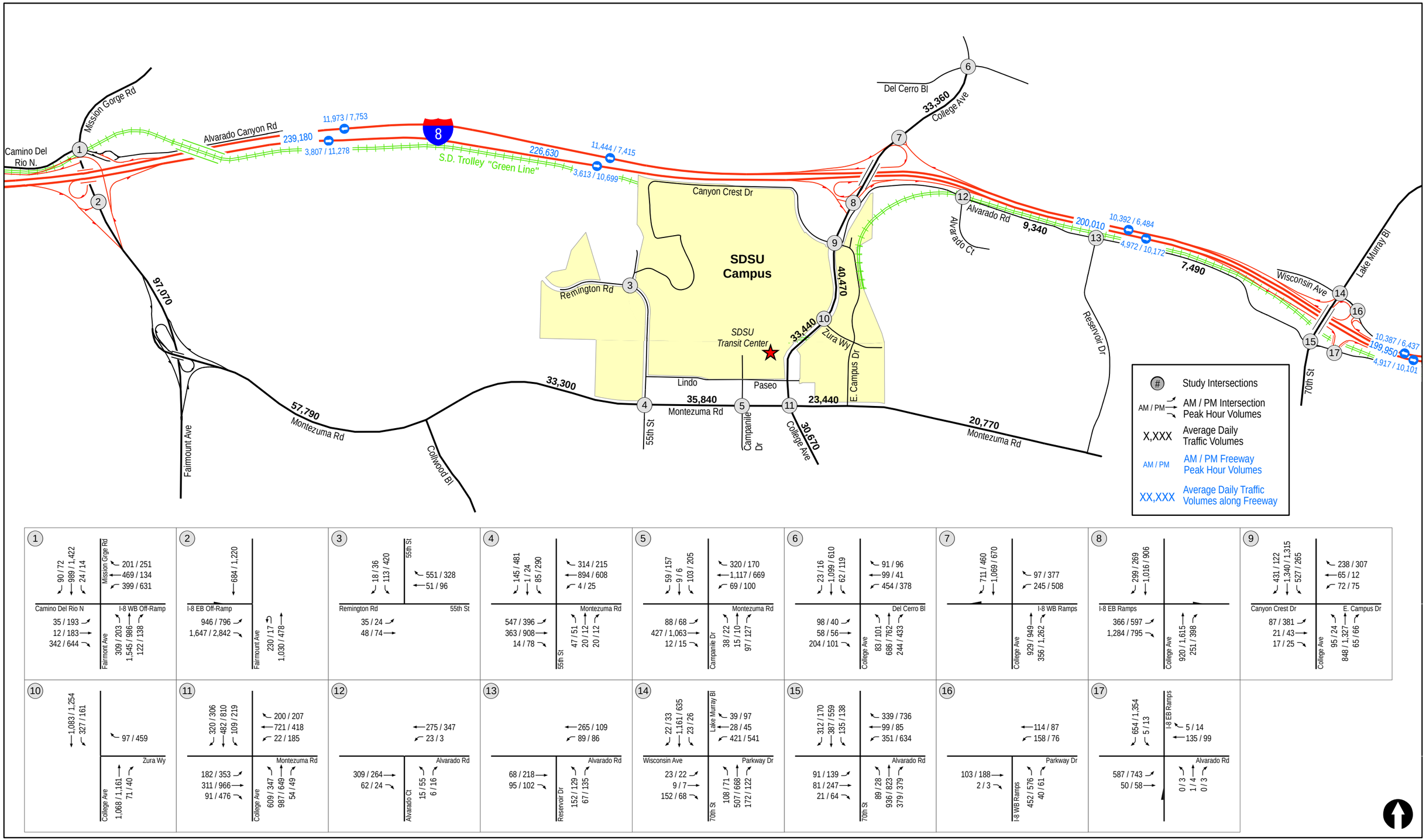

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Figure 9-2

Near-Term (Year 2022) Without Project Traffic Volumes

SDSU MASTER PLAN UPDATE

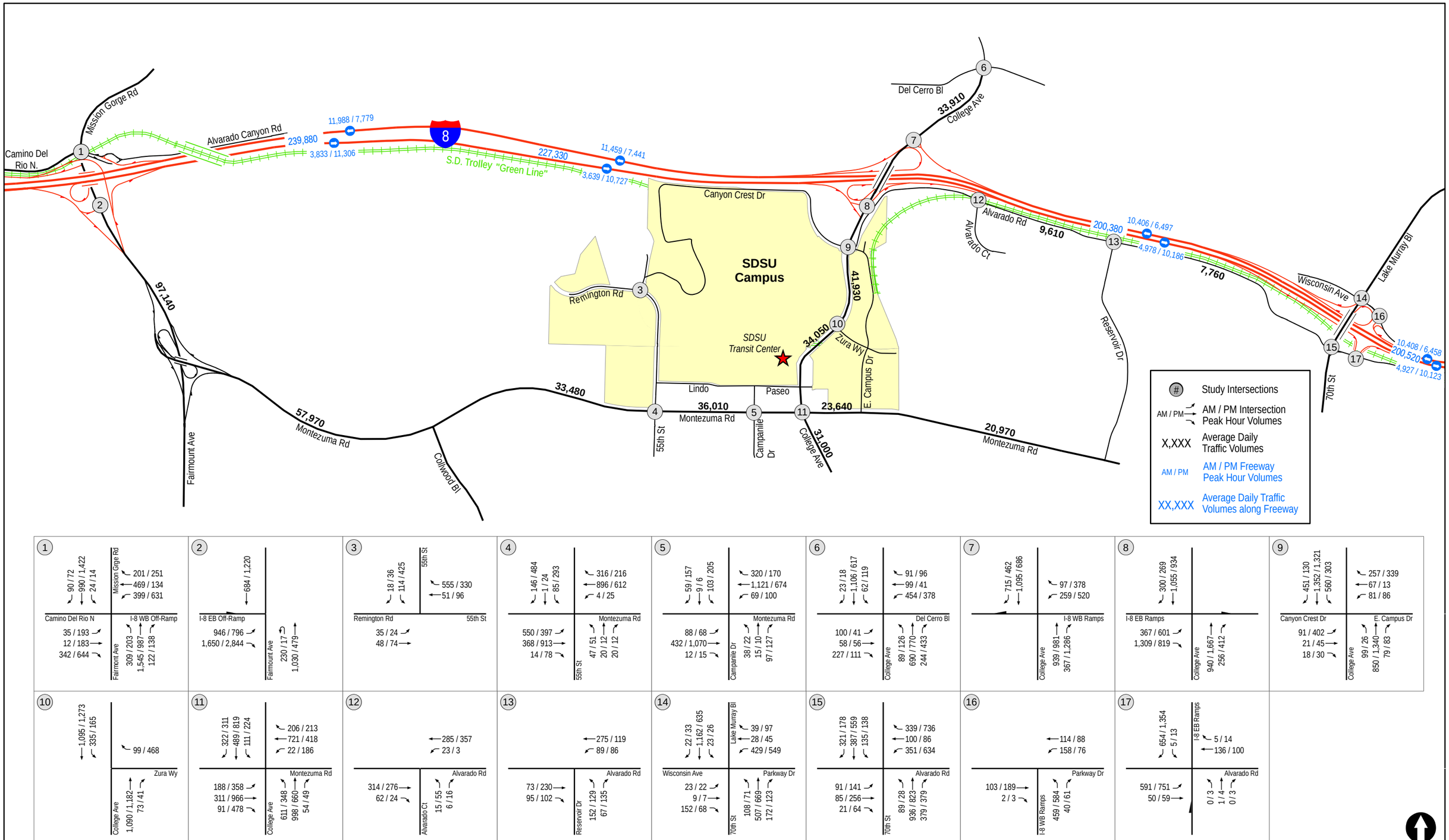

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Figure 9-3

Near-Term (Year 2022) With Project Traffic Volumes

SDSU Master Plan Update

10.0 HORIZON YEAR (YEAR 2035) ANALYSIS

A Horizon Year (Year 2035) with and without project analysis was conducted to assess the potential impact of total project traffic volumes in relation to the Horizon Year (Year 2035) conditions. This section includes the analysis results and discussions of the intersection, street segment, ramp meter and freeway mainline operations.

10.1 Volumes Development

The forecast volumes for this project were calculated using the SANDAG Series 12 model. ***Appendix K1*** contains screenshots of the Year 2035 Series 12 model forecast volumes. No roadway network improvements were assumed as a part of the Horizon Year (Year 2035) analysis.

Figure 12–2 depicts the Horizon Year (Year 2035) Without Project traffic volumes. ***Figure 12–3*** depicts the Horizon Year (Year 2035) With Project traffic volumes for the study area.

10.1.1 *Intersection Analysis*

Intersection capacity analyses were conducted for the study area intersections under Horizon Year (Year 2035) without Project conditions. ***Table 10–1*** reports the intersection operations during the peak hour conditions. As shown on the table, under the Horizon Year (Year 2035) without Project scenario, the following intersections would operate at LOS E or F:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the AM and PM peak hours)
- Fairmount Avenue / I-8 EB Off Ramp (LOS F during the AM and PM peak hours)
- 55th Street / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- Campanile Drive / Montezuma Road (LOS F during the AM peak hour)
- College Avenue / Del Cerro Boulevard (LOS E during the AM peak hour)
- College Avenue / I-8 EB Ramps (LOS F during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS F during the AM and PM peak hours)
- College Avenue / Zura Way (LOS F during the AM and PM peak hours)
- College Avenue / Montezuma Road (LOS F during the AM and PM peak hours)
- 70th Street / Alvarado Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the AM and PM peak hours)

Appendix L contains the intersection analysis worksheets for the Horizon Year (Year 2035) scenario.

Intersection capacity analyses were conducted for the study area intersections under Horizon Year (Year 2035) with Project conditions. *Table 10–1* reports the intersection operations during the peak

hour conditions. As shown on the table, the following intersections would operate at LOS E or F under the Horizon Year (Year 2035) with Project scenario:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the AM and PM peak hours)
- Fairmount Avenue / I-8 EB Off Ramp (LOS F during the AM and PM peak hours)
- 55th Street / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- Campanile Drive / Montezuma Road (LOS F during the AM peak hour)
- College Avenue / Del Cerro Boulevard (LOS E during the AM peak hour)
- College Avenue / I-8 EB Ramps (LOS E during the AM peak hour, LOS F during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS F during the AM and PM peak hours)
- College Avenue / Zura Way (LOS F during the AM and PM peak hours)
- College Avenue / Montezuma Road (LOS F during the AM and PM peak hours)
- Alvarado Court / Alvarado Road (LOS F during the PM peak hour)
- 70th Street / Alvarado Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the AM and PM peak hours)

Based on the City of San Diego's significance criteria, **significant impacts** are identified at the following intersections as the project traffic contribution exceeds the allowable threshold:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the PM peak hour)
- 55th Street / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- Campanile Drive / Montezuma Road (LOS F during the AM peak hour)
- College Avenue / I-8 EB Ramps (LOS E during the AM peak hour, LOS F during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS F during the AM and PM peak hours)
- College Avenue / Zura Way (LOS F during the AM and PM peak hours)
- College Avenue / Montezuma Road (LOS F during the AM and PM peak hours)
- Alvarado Court / Alvarado Road (LOS F during the PM peak hour)
- 70th Street / Alvarado Road (LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the AM and PM peak hours)

Mitigation measures for these impacts are discussed in detail in ***Section 12.2.***

Appendix M contains the intersection analysis worksheets for the Horizon Year (Year 2035) + Project scenario.

TABLE 10–1
HORIZON YEAR (YEAR 2035) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035)		Horizon Year (Year 2035)+ Project		Δ[c]	Significant Impact?
			Delay[a]	LOS[b]	Delay	LOS		
1. Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N.	Signal	AM	**221.2[g]**	**F**	**221.5[g]**	**F**	0.3	No
		PM	**241.7[g]**	**F**	**243.8[g]**	**F**	**2.1**	**Yes**
2. Fairmount Avenue / I-8 EB Off Ramp	Signal	AM	**240.7[g]**	**F**	**241.5[g]**	**F**	0.8	No
		PM	**194.8[g]**	**F**	**195.6[g]**	**F**	0.8	No
3. 55th Street / Remington Road	Signal	AM	10.0	A	10.7	B	0.7	No
		PM	11.0	B	11.1	B	0.1	No
4. 55th Street / Montezuma Road	Signal	AM	**59.0**	**E**	**66.0**	**E**	**7.0**	**Yes**
		PM	**107.8**	**F**	**110.7**	**F**	**2.9**	**Yes**
5. Campanile Drive / Montezuma Road	Signal	AM	**93.4**	**F**	**105.9**	**F**	**12.5**	**Yes**
		PM	47.1	D	53.4	D	6.3	No
6. College Avenue / Del Cerro Boulevard	Signal	AM	**74.8**	**E**	**76.1**	**E**	1.3	No
		PM	30.8	C	37.3	D	6.5	No
7. College Avenue / I-8 WB Ramps	Signal	AM	11.5	B	20.0	C	8.5	No
		PM	44.3	D	50.8	D	6.5	No
8. College Avenue / I-8 EB Ramps	Signal	AM	45.3	D	**55.1**	**E**	**9.8**	**Yes**
		PM	**140.0**	**F**	**182.4**	**F**	**42.4**	**Yes**
9. College Avenue / Canyon Crest Drive	Signal	AM	**81.6**	**F**	**91.4**	**F**	**9.8**	**Yes**
		PM	**102.9**	**F**	**193.6[g]**	**F**	**90.7**	**Yes**
10. College Avenue / Zura Way	MSSC[d]	AM	**50.9**	**F**	**114.8**	**F**	**63.9**	**Yes**
		PM	**393.8[g]**	**F**	**528.3[g]**	**F**	**134.5**	**Yes**
11. College Avenue / Montezuma Road	Signal	AM	**107.3**	**F**	**121.9**	**F**	**14.6**	**Yes**
		PM	**135.6**	**F**	**155.0**	**F**	**19.4**	**Yes**
12. Alvarado Court / Alvarado Road	MSSC[e]	AM	14.6	B	20.2	C	5.6	No
		PM	18.3	C	**72.2**	**F**	**53.9**	**Yes**

TABLE 10–1
HORIZON YEAR (YEAR 2035) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035)		Horizon Year (Year 2035)+ Project		Δ[c]	Significant Impact?
			Delay[a]	LOS[b]	Delay	LOS		
13. Reservoir Drive / Alvarado Road	Signal	AM	9.6	A	9.7	A	0.1	No
		PM	10.7	B	10.9	B	0.2	No
14. Lake Murray Boulevard / Parkway Drive	Signal	AM	51.0	D	54.5	D	3.5	No
		PM	39.4	D	40.8	D	1.4	No
15. 70th Street / Alvarado Road	Signal	AM	**78.9**	**E**	**79.7**	**E**	0.8	No
		PM	**94.9**	**F**	**98.2**	**F**	**3.3**	**Yes**
16. I-8 WB Ramps / Parkway Drive	AWSC[f]	AM	**65.6**	**F**	**94.7**	**F**	**29.1**	**Yes**
		PM	**128.6**	**F**	**147.6**	**F**	**19.0**	**Yes**
17. I-8 EB Ramps / Alvarado Road	Signal	AM	30.7	C	31.2	C	0.5	No
		PM	33.8	C	34.3	C	0.5	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.
d. MSSC – Minor Street Stop Controlled intersection. The highest (worst) of the minor street right-turn delay (westbound right-turn) or major street (northbound left-turn) is reported. No outbound left-turn from Zura Way are allowed.
e. MSSC – Minor Street Stop Controlled intersection. Minor street approach delay is reported.
f. AWSC – All-Way Stop Controlled intersection.
g. Delays over 180 seconds shown as exceeding calculable delay.

SIGNALIZED DELAY/LOS THRESHOLDS		UNSIGNALIZED DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or F.

10.1.2 *Street Segment Analysis*

Horizon Year (Year 2035) without Project street segment analyses were conducted for the roadways in the study area. ***Table 10–2*** reports the Horizon Year (Year 2035) without Project daily street segment operations. As shown on the table, under the Horizon Year (Year 2035) without Project scenario, the following street segments would operate at LOS E or F:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS F)
- College Avenue: Del Cerro Boulevard to I-8 WB off-ramp (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Zura Way to Montezuma Road (LOS E)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: Collwood Boulevard to 55th Street (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)
- Montezuma Road: College Avenue to E. Campus Drive (LOS E)
- Fairmount Avenue: Montezuma Road to I-8 (LOS F)

Horizon Year (Year 2035) with Project street segment analyses were conducted for the roadways in the study area. *Table 10–2* reports the Horizon Year (Year 2035) with Project daily street segment operations. As shown on the table, the following street segments would operate at LOS E or F under the Horizon Year (Year 2035) with Project scenario:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS F)
- College Avenue: Del Cerro Boulevard to I-8 WB off-ramp (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Zura Way to Montezuma Road (LOS E)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: Collwood Boulevard to 55th Street (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)
- Montezuma Road: College Avenue to E. Campus Drive (LOS E)
- Fairmount Avenue: Montezuma Road to I-8 (LOS F)

Based on the City of San Diego's significance criteria, **significant impacts** are identified on the following street segments as the project traffic contribution exceeds the allowable thresholds:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS F)
- College Avenue: Del Cerro Boulevard to I-8 WB off-ramp (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Zura Way to Montezuma Road (LOS E)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: Collwood Boulevard to 55th Street (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)

Mitigation measures for these impacts are discussed in detail in *Section 12.2.*

TABLE 10–2
HORIZON YEAR (YEAR 2035) + PROJECT SEGMENT OPERATIONS

Segment	Functional Classification	LOS E Capacity [a]	Horizon Year (Year 2035)			Horizon Year (Year 2035) + Total Project			V/C Increase	Sig?
			Volume	LOS [b]	V/C [c]	Volume	LOS	V/C		
Alvarado Road										
E. Campus Dr to Reservoir Dr	2-lane Collector *(fronting property)*	8,000	**11,340**	**F**	**1.418**	**14,900**	**F**	**1.863**	**0.445**	**Yes**
Reservoir Dr to 70th St	2-lane Collector *(fronting property)*	8,000	**14,830**	**F**	**1.854**	**16,900**	**F**	**2.113**	**0.259**	**Yes**
College Avenue										
Del Cerro Blvd to I-8 WB off-ramp	4-lane Major Arterial	40,000	**35,930**	**E**	**0.898**	**38,100**	**E**	**0.953**	**0.055**	**Yes**
I-8 EB Ramps to Zura Way	4-lane Major Arterial	40,000	**61,100**	**F**	**1.528**	**67,670**	**F**	**1.692**	**0.164**	**Yes**
Zura Way to Montezuma Rd	4-lane Major Arterial	40,000	**35,180**	**E**	**0.880**	**38,020**	**E**	**0.951**	**0.071**	**Yes**
Montezuma Rd to Cresita Drive	4-lane Collector	30,000	**32,130**	**F**	**1.071**	**33,840**	**F**	**1.128**	**0.057**	**Yes**
Montezuma Road										
Fairmount Ave to Collwood Blvd	4-lane Major Arterial	40,000	**66,740**	**F**	**1.669**	**68,020**	**F**	**1.701**	**0.032**	**Yes**
Collwood Blvd to 55th St	4-lane Major Arterial	40,000	**41,810**	**F**	**1.045**	**43,090**	**F**	**1.077**	**0.032**	**Yes**
55th St to College Ave	4-lane Collector	30,000	**38,210**	**F**	**1.274**	**39,790**	**F**	**1.326**	**0.052**	**Yes**
College Ave to E. Campus Dr	4-lane Collector	30,000	**25,410**	**E**	**0.847**	**25,960**	**E**	**0.865**	0.018	No
E. Campus Drive to Reservoir Drive	4-lane Collector	30,000	22,160	D	0.739	22,710	D	0.757	0.018	No
Fairmount Avenue										
Montezuma Rd to I-8	6-lane Prime Arterial	60,000	**98,510**	**F**	**1.642**	**99,040**	**F**	**1.651**	0.009	No

Footnotes:
a. Capacities based on City of San Diego's Roadway Classification & LOS table (See *Appendix C*).
b. Level of Service.
c. Volume to Capacity ratio.

General Notes:
1. **Bold** typeface indicates intersections operating at LOS E or F.

10.1.3 *Ramp Meter Analysis*

Freeway entrance ramps that currently have ramp meters installed and in operation were analyzed under Horizon Year (Year 2035) without and with Project conditions. As shown in ***Table 10–3***, the following freeway ramp meters would incur a delay exceeding 15 minutes under Horizon Year (Year 2035) without and with Project conditions:

- SB Fairmount Avenue to EB I-8 (PM peak hour)
- NB College Avenue to WB I-8 (AM peak hour)
- SB College Avenue to WB I-8 (AM peak hour)

Based on the City of San Diego's significance criteria, **significant impacts** are identified on the following ramp meters as the project contribution to this ramp meter exceeds the allowable thresholds:

- NB College Avenue to WB I-8 (AM peak hour)
- SB College Avenue to WB I-8 (AM peak hour)

Mitigation measures for these impacts are discussed in detail in *Section 12.2*.

TABLE 10–3
HORIZON YEAR (YEAR 2035) + PROJECT RAMP METER OPERATIONS

Location/Condition	Peak Hour	Peak Hour Demand	Ramp Meter Rate (Flow)[a]	Excess Demand	Delay per Lane [b]	Queue per Lane [c]
SB Fairmount Ave to EB I-8						
Horizon Year (Year 2035)	PM	489	246	243	59	6075
Horizon Year (Year 2035) + Project	PM	491	246	245	60	6125
Project Increase	PM	2	NA	2	1	50
NB College Avenue to WB I-8						
Horizon Year (Year 2035)	AM	419	318	101	19	2525
Horizon Year (Year 2035) + Project	AM	440	318	122	23	3050
Project Increase	AM	21	NA	21	4	525
SB College Avenue to WB I-8						
Horizon Year (Year 2035)	AM	428	336	92	16	2288
Horizon Year (Year 2035) + Project	AM	434	336	98	18	2450
Project Increase	AM	6	NA	6	2	162
NB College Avenue to EB I-8						
Horizon Year (Year 2035)	PM	445	570	0	0	0
Horizon Year (Year 2035) + Project	PM	514	570	0	0	0
Project Increase	PM	69	NA	0	0	0

Footnotes:
a. Meter Rates were obtained from Caltrans.
b. Delay expressed in minutes per lane.
c. Queue expressed in feet per lane.

General Notes:
1. Bold & shading represents a potential significant impact.
2. NA = Not Applicable.

10.1.4 *Freeway Mainline Operations*

Freeway segments were analyzed under Horizon Year (Year 2035) without Project conditions. ***Appendix N*** contains the detailed calculations sheets. ***Tables 10–4a*** and ***10–4b*** report the Horizon Year (Year 2035) without Project freeway segment operations. The following segments were calculated to operate at LOS E or F under the Horizon Year (Year 2035) without Project scenario:

I-8

- I-8 between Fairmount Avenue and Waring Road, *LOS F(0)–AM (WB) and LOS F(1)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(1)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(1)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(2)–AM (WB) and LOS F(0)–PM (EB)*

Freeway segments were analyzed under Horizon Year (Year 2035) + Project conditions. *Appendix N* contains the detailed calculations sheets. *Tables 10–4a and 10–4b* report the Horizon Year (Year 2035) + Project freeway segment operations. The following segments were calculated to operate at LOS E or F under the Horizon Year (Year 2035) with Project scenario:

I-8

- I-8 between Fairmount Avenue and Waring Road, *LOS F(0)–AM (WB) and LOS F(1)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(1)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(1)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(3)–AM (WB) and LOS F(0)–PM (EB)*

Based on the City of San Diego's significance criteria, **significant impacts** are identified on the following freeway segments as the project contribution to these freeway mainline segments exceeds the allowable thresholds:

- I-8 between Fairmount Avenue and Waring Road, *LOS F(1)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(1)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(3)–AM (WB) and LOS F(0)–PM (EB)*

Mitigation measures for these impacts are discussed in detail in *Section 12.2.*

TABLE 10–4A
HORIZON YEAR (YEAR 2035) + PROJECT FREEWAY SEGMENT OPERATIONS—AM PEAK HOUR

Freeway and Segment	Horizon Year (Year 2035) + Project ADT	Direction &Number of Lanes		Capacity[a]	Horizon Year (Year 2035)		Horizon Year (Year 2035) + Project		V/C Delta	Significant
					V/C[b]	LOS[c]	V/C	LOS		
I-8										
Fairmount Avenue to Waring Road	268,300	EB Mainlines	5M	10,000	0.410	B	0.422	B	0.012	No
		WB Mainlines	6M	12,000	**1.124**	**F(0)**	**1.127**	**F(0)**	0.003	No
Waring Road to College Avenue	252,970	EB Mainlines	5M	10,000	0.386	B	0.398	B	0.012	No
		WB Mainlines	5M	10,000	**1.271**	**F(1)**	**1.275**	**F(1)**	0.004	No
College Avenue to Lake Murray Boulevard	232,000	EB Mainlines	4M+ 1A	9,200	0.620	B	0.621	C	0.001	No
		WB Mainlines	5M	10,000	**1.207**	**F(0)**	**1.214**	**F(0)**	**0.007**	**Yes**
Lake Murray Boulevard to Fletcher Parkway	224,030	EB Mainlines	4M+ 1A	9,200	0.597	B	0.600	B	0.003	No
		WB Mainlines	4M	8,000	**1.449**	**F(2)**	**1.465**	**F(3)**	**0.016**	**Yes**

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).

b. Volume to Capacity.

c. Level of Service.

LOS	V/C	LOS	V/C
A	<0.41	F(0)	1.25
B	0.62	F(1)	1.35
C	0.80	F(2)	1.45
D	0.92	F(3)	>1.46
E	1.00		

General Notes:

1. See *Appendix N* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.

TABLE 10–4B
HORIZON YEAR (YEAR 2035) + PROJECT FREEWAY SEGMENT OPERATIONS—PM PEAK HOUR

Freeway and Segment	Horizon Year (Year 2035) + Project ADT	Direction &Number of Lanes		Capacity[a]	Horizon Year (Year 2035)		Horizon Year (Year 2035) + Project		V/C Delta	Significant
					V/C[b]	LOS[c]	V/C	LOS		
I-8										
Fairmount Avenue to Waring Road	268,300	EB Mainlines	5M	10,000	**1.255**	**F(1)**	**1.263**	**F(1)**	**0.008**	**Yes**
		WB Mainlines	6M	12,000	0.713	C	0.724	C	0.011	No
Waring Road to College Avenue	252,970	EB Mainlines	5M	10,000	**1.183**	**F(0)**	**1.191**	**F(0)**	**0.008**	**Yes**
		WB Mainlines	5M	10,000	0.806	D	0.820	D	0.014	No
College Avenue to Lake Murray Boulevard	232,000	EB Mainlines	4M+ 1A	9,200	**1.272**	**F(1)**	**1.280**	**F(1)**	**0.008**	**Yes**
		WB Mainlines	5M	10,000	0.741	C	0.745	C	0.004	No
Lake Murray Boulevard to Fletcher Parkway	224,030	EB Mainlines	4M+ 1A	9,200	**1.221**	**F(0)**	**1.236**	**F(0)**	**0.015**	**Yes**
		WB Mainlines	4M	8,000	0.890	D	0.900	D	0.010	No

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).

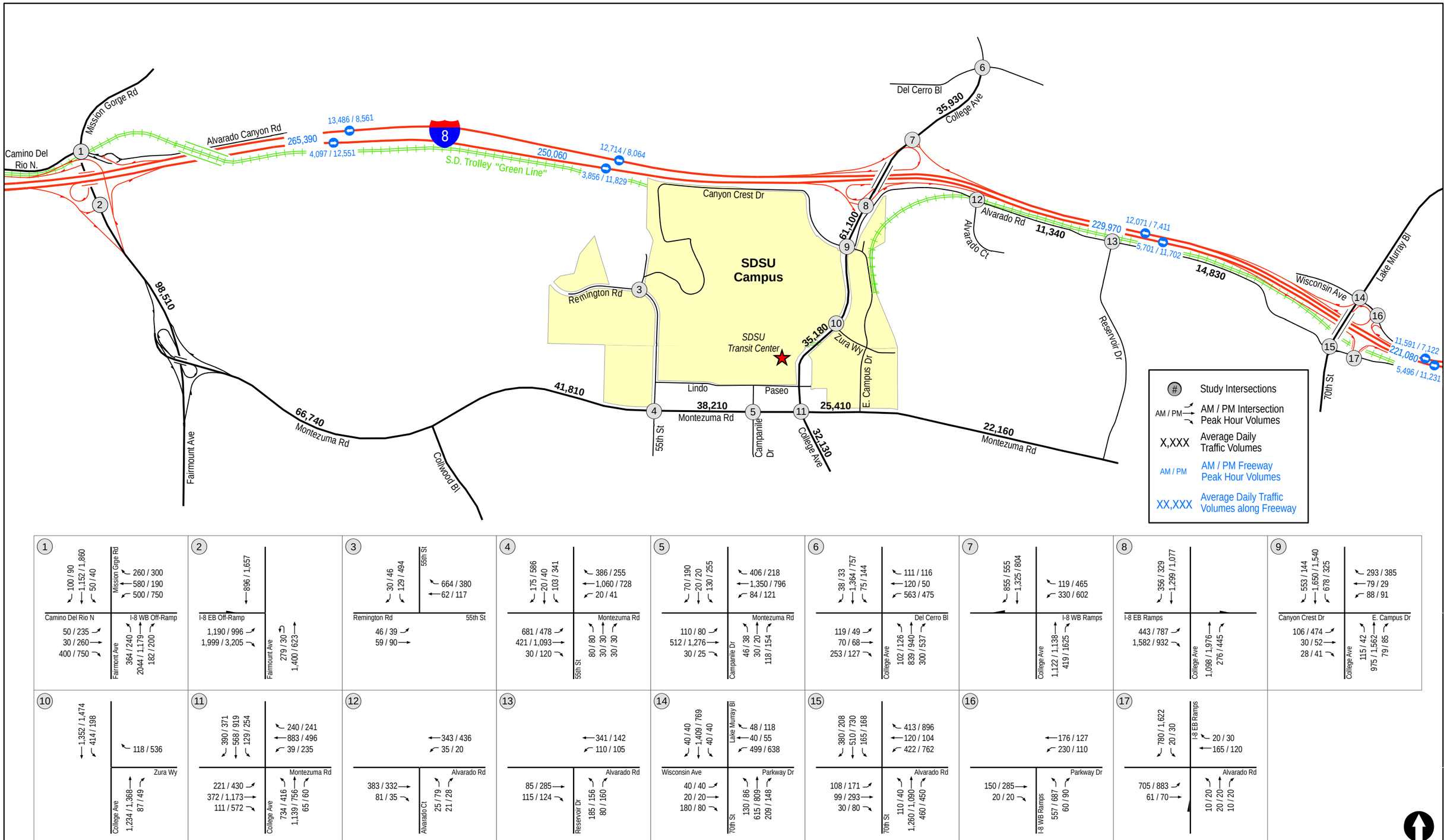
b. Volume to Capacity.

c. Level of Service.

LOS	V/C	LOS	V/C
A	<0.41	F(0)	1.25
B	0.62	F(1)	1.35
C	0.80	F(2)	1.45
D	0.92	F(3)	>1.46
E	1.00		

General Notes:

1. See *Appendix N* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.



LINSCOTT LAW & GREENSPAN engineers

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Figure 10-1

Horizon Year (Year 2035) Without Project Traffic Volumes

SDSU Master Plan Update

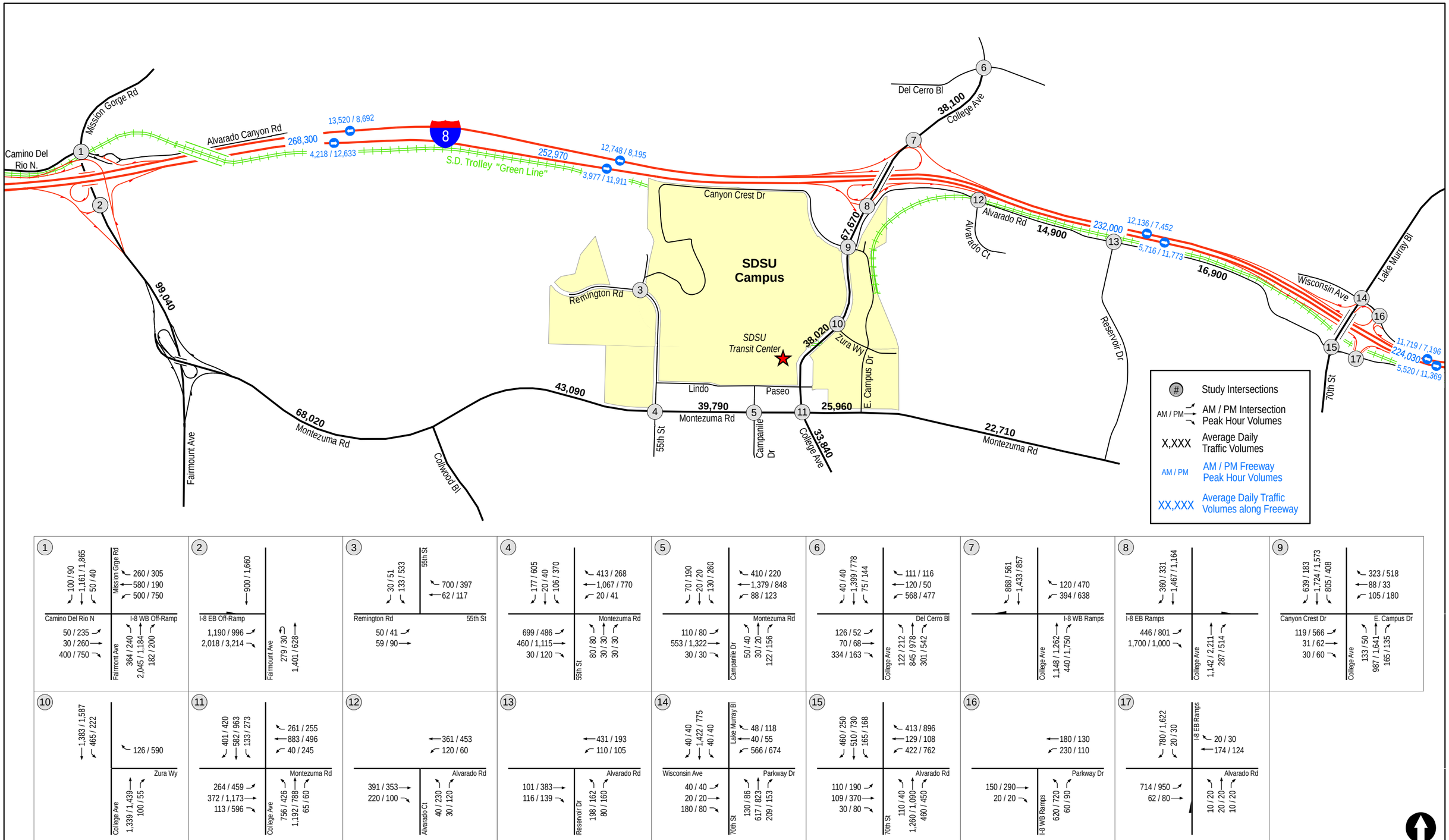

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Figure 10-2

Horizon Year (Year 2035) With Project Traffic Volumes

SDSU Master Plan Update

11.0 TRANSIT ANALYSIS

The following section presents the analysis of the project's impacts on transit facilities.

11.1 Existing Transit Setting

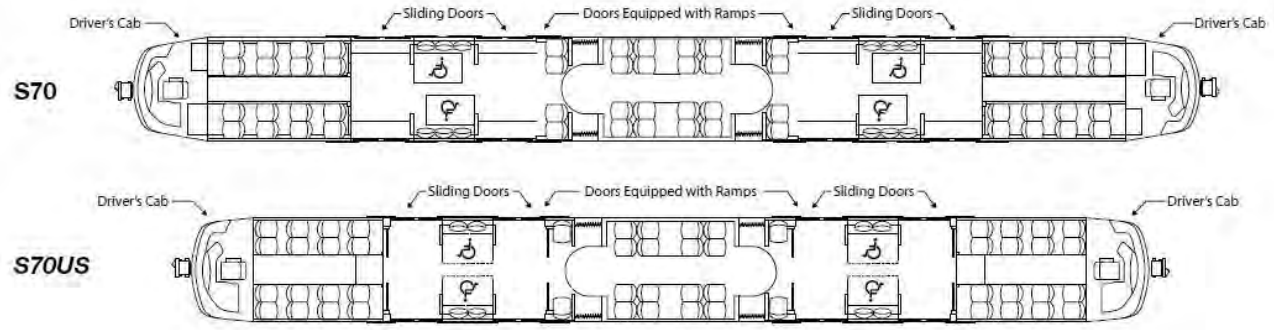
The SDSU Transit Center is conveniently located on the SDSU campus north of Hardy Avenue, between College Avenue and Campanile Drive. The Transit Center is currently served by the below grade MTS Green Line trolley, as well as seven (7) bus routes operated by MTS. The sections below provide a brief description of the trolley and buses that serve SDSU.

11.1.1 *MTS Trolley Green Line*

The MTS Trolley Green Line connects Downtown San Diego to Santee. A total of 27 stops currently exist along the Green Line with a dedicated SDSU Transit Center stop serving the campus. The general trolley hours of operation are from 3:53 AM until 12:30 AM. The trolley headways are typically 15 minutes between the hours of 6:15 AM and 8:15 PM on weekdays, with headways increasing to 30 minutes during the off-peak times.

To adequately conduct a trolley ridership analysis, LLG coordinated extensively with SANDAG and MTS to obtain information on trolley car specifications such as vehicle type, passenger capacity, and the number of cars per train.

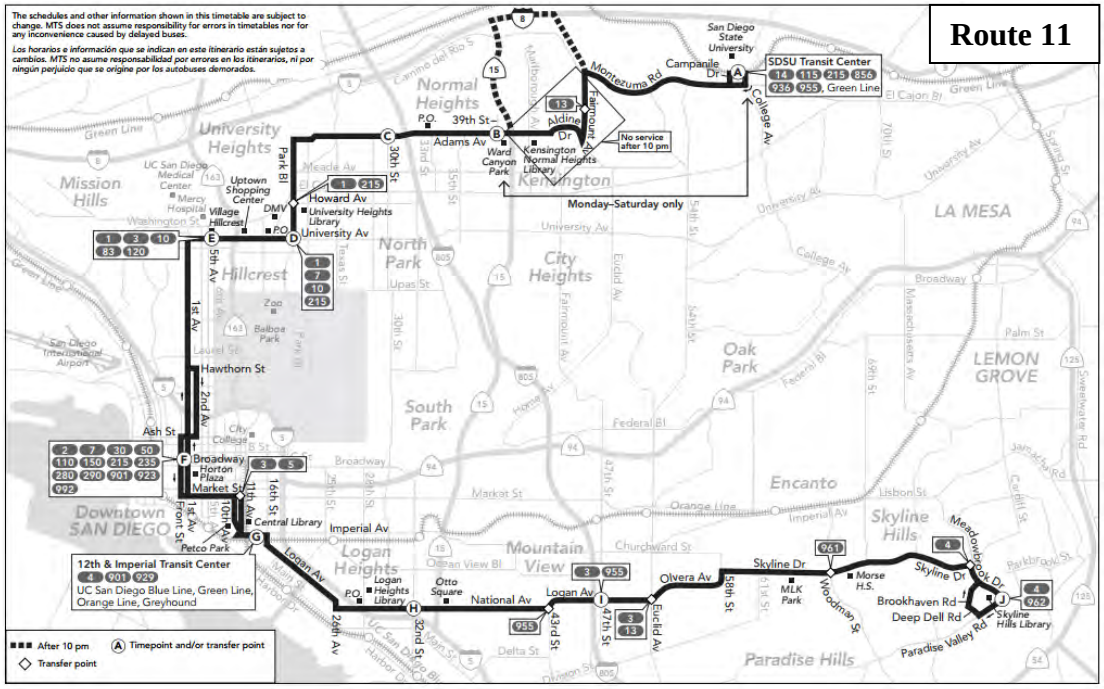
The Green Line trolley operates the S70 and S70US trolley models by Siemens USA, with a commute capacity of 120 passengers per car with 3 cars per train.



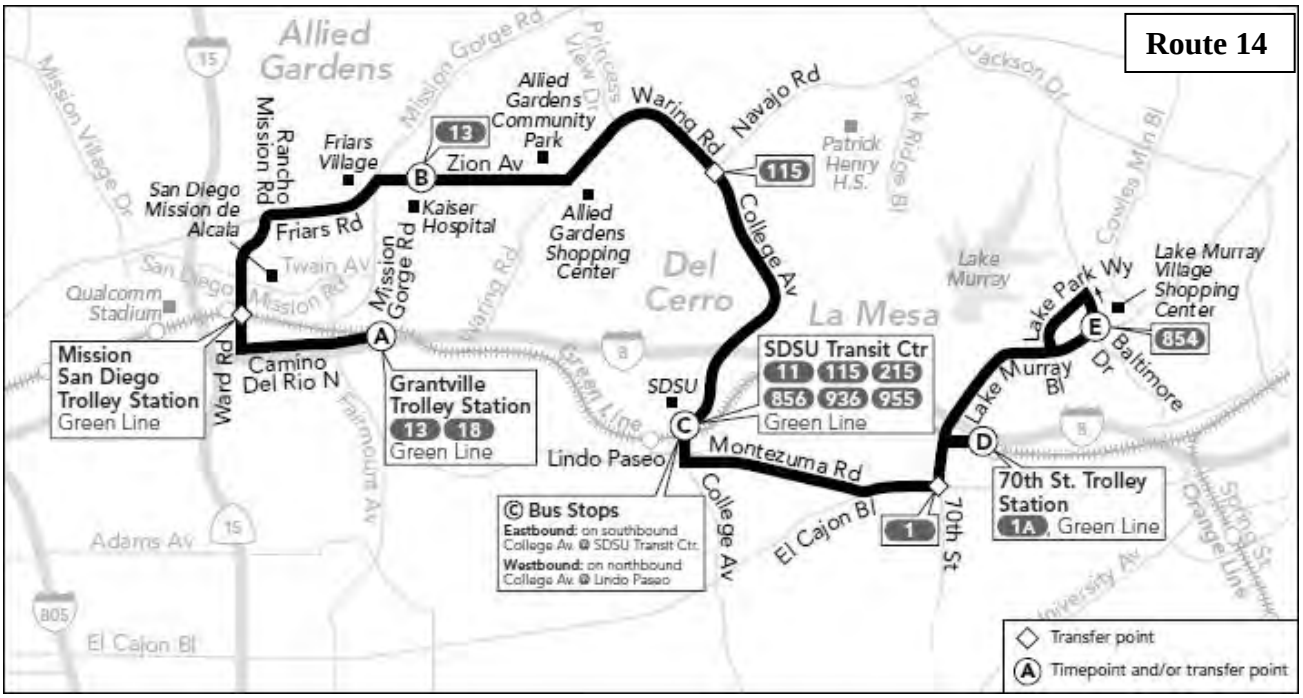
11.1.2 MTS Bus Routes

There are currently seven (7) bus routes serving the SDSU Transit Center. The information provided below reflects schedule updates by MTS as of June 11, 2017.

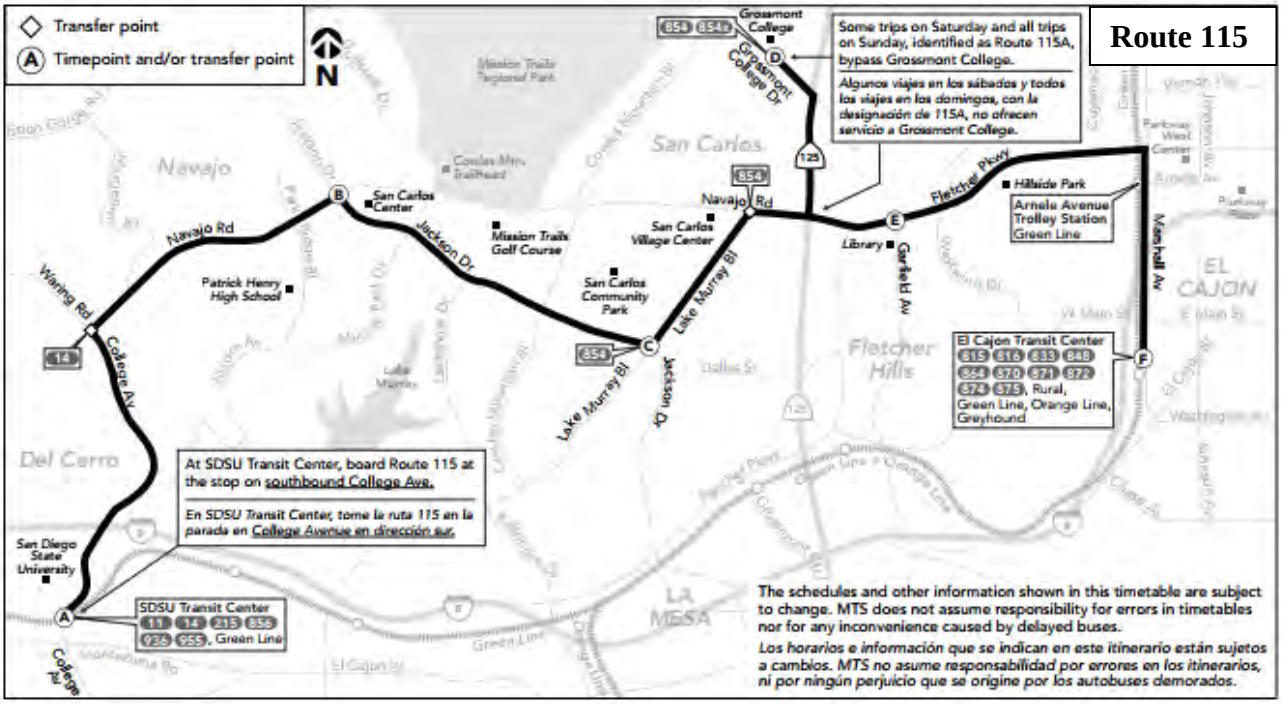
Route 11 runs west and south from the SDSU Transit Center to Downtown San Diego, and then travels east to Paradise Valley Road in the Paradise Hills community. Within the College Area community, Route 11 runs east along Montezuma Road and south along Fairmount Avenue, except after 10 PM, when Route 11 runs north along Fairmount Avenue to Interstate 8. Route 11 contains 104 stops along its route. Route 11 currently operates between 4:27 AM and 11:42 PM on weekdays, between 4:37 AM and 11:41 PM on Saturdays, and between 5:22 AM and 9:39 PM on Sundays. Route 11 runs at 15-minute headways between 6:00 AM and 6:30 PM on weekdays, and at 30-minute headways during the remaining hours of service. Route 11 operates with standard 40-foot buses, with an average capacity of 37 passengers.



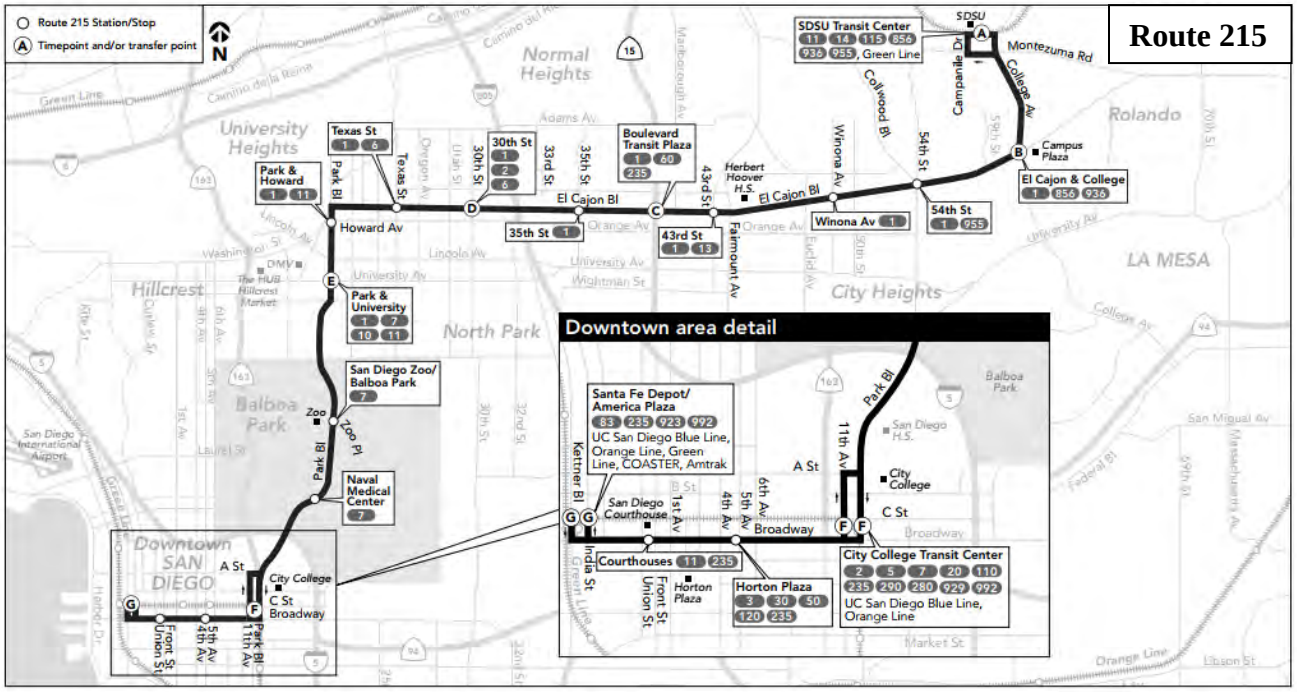
Route 14 runs east from the Grantville Trolley Station in the Navajo community to the Lake Murray Village Shopping Center in the City of La Mesa. Within the College Area community, Route 14 runs south along College Avenue to the SDSU Transit Center, and then east along Montezuma Road. Route 14 contains 35 stops along its route. Route 14 currently operates between 5:45 AM and 7:24 PM on weekdays, with headways of 60 minutes for all hours of service. Route 14 operates with minibuses, with a capacity of 26 passengers.



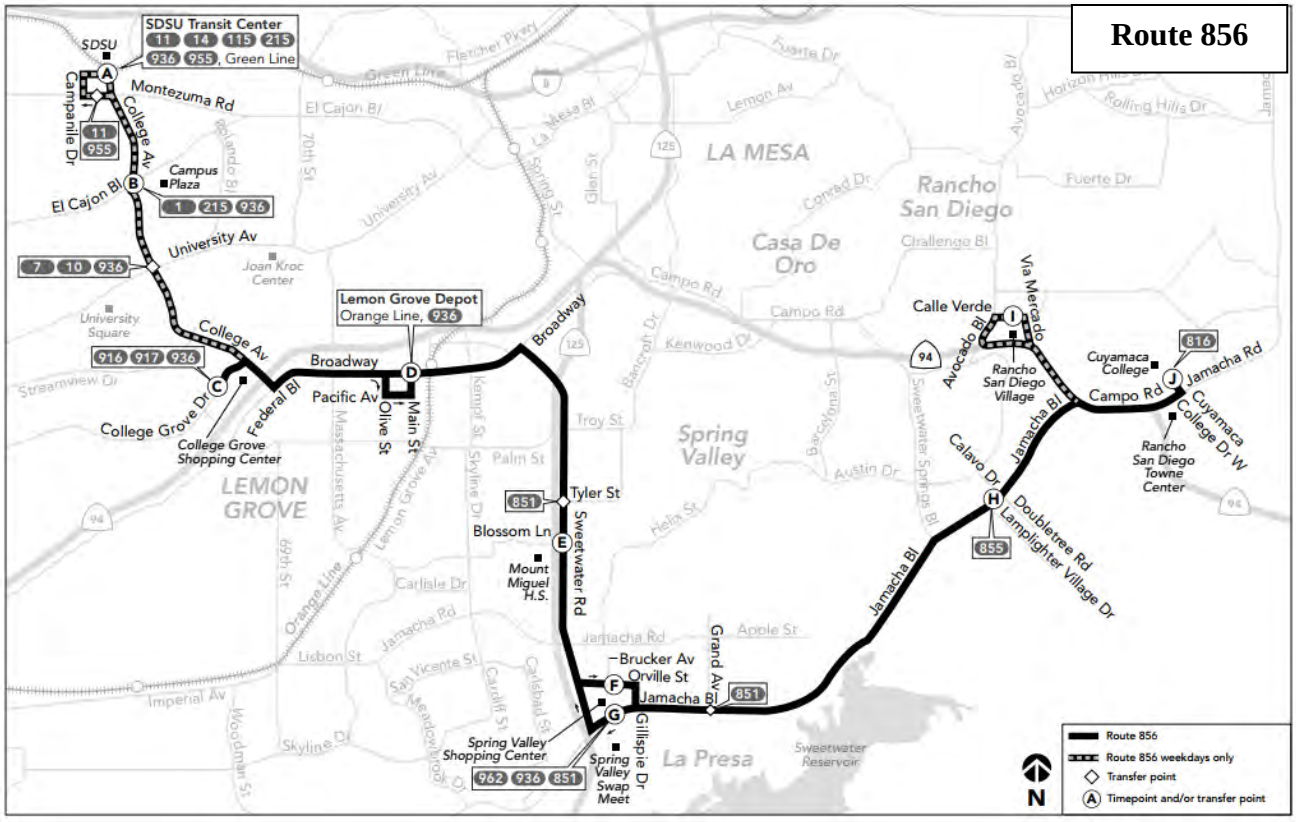
Route 115 runs east from the SDSU Transit Center to the El Cajon Transit Center in the City of El Cajon. Within the College Area community, Route 115 runs north along College Avenue towards Interstate 8. Route 115 contains 33 stops along its route. Trips after 4:25 PM on Saturday and all trips on Sunday bypass the Grossmont College stop. Route 115 currently operates between 6:09 AM and 10:34 PM on weekdays, between 6:36 AM and 9:06 PM on Saturdays, and between 6:38 AM and 6:52 PM on Sundays. Route 115 runs at 30-minute headways on weekdays before 5:56 PM, and at 60-minute headways on weekdays after 5:56 PM and on weekends. Route 115 operates with standard 40-foot buses, with an average capacity of 37 passengers.



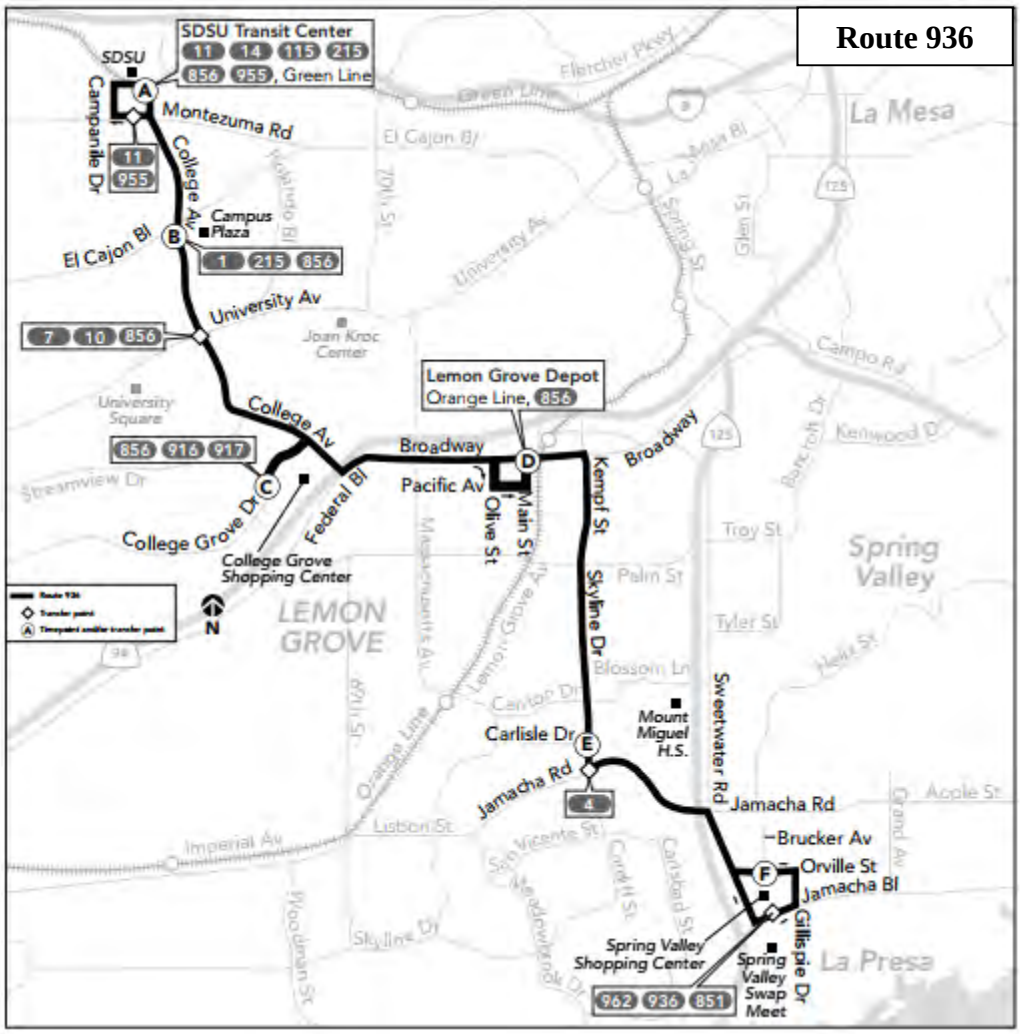
Route 215 runs south and west from the SDSU Transit Center to Downtown San Diego and is one of eight (8) bus rapid transit lines currently operated by MTS. Within the College Area community, Route 215 runs south along College Avenue, then travels west along El Cajon Boulevard towards North Park. Route 215 contains 18 stops along its route. Route 215 currently operates between 4:28 AM and 1:42 AM on weekdays and between 4:50 AM and 1:42 AM on weekends. Route 215 runs at 10-minute headways during weekday peak hours, at 30-minute headways on weekdays after 9:00 PM, and at 15-minute headways during other weekday off-peak hours and weekends. Route 215 operates with 60-foot articulated buses, with a capacity of 59 passengers.



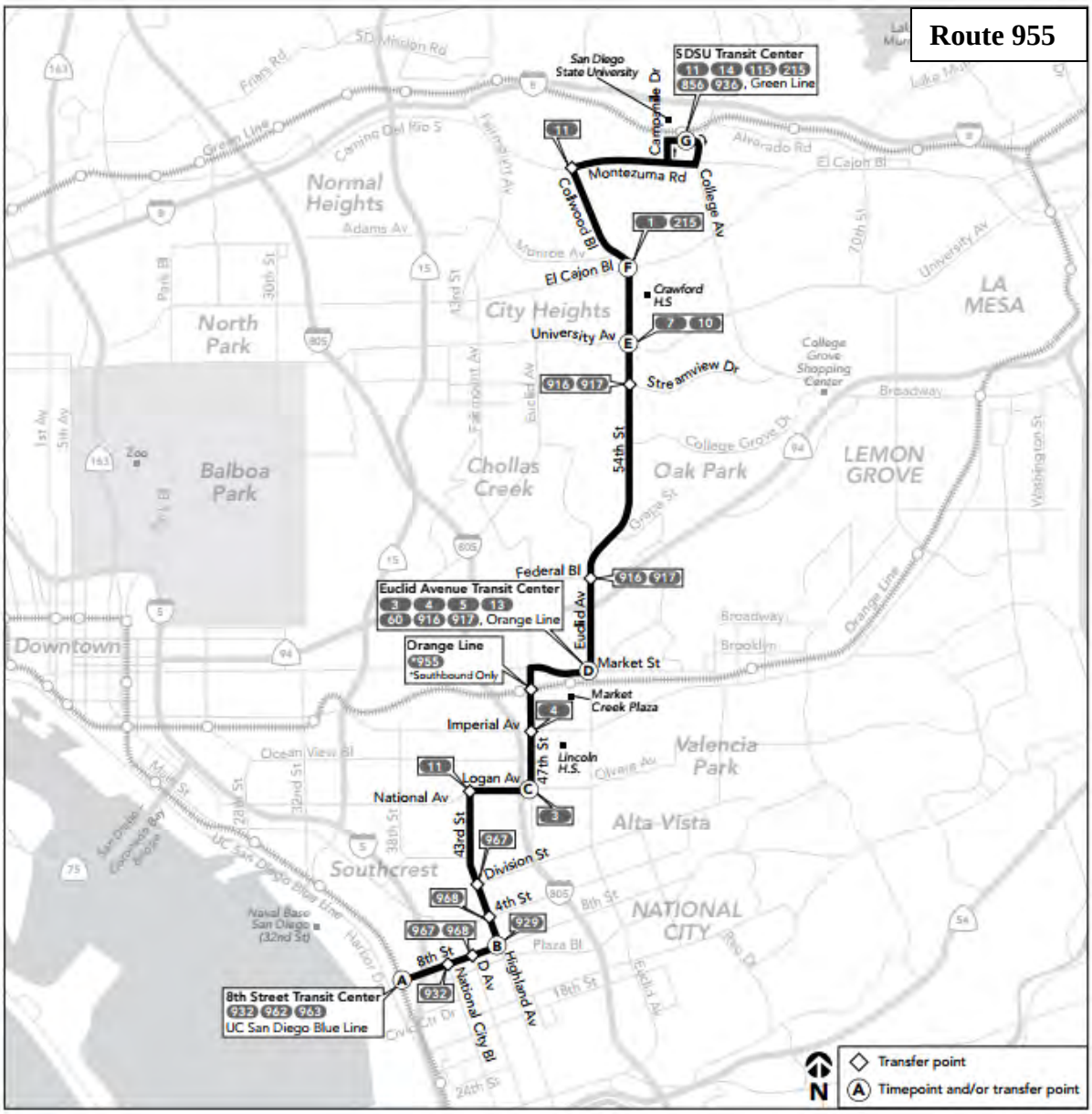
Route 856 runs south and east from the SDSU Transit Center to Cuyamaca College in Rancho San Diego. Within the College Area community, Route 856 runs south along College Avenue towards El Cajon Boulevard. Route 856 contains 51 stops along its route. On weekends, Route 856 does not operate between SDSU and College Grove Shopping Center, nor between Jamacha Boulevard and Rancho San Diego Village. Route 856 currently operates between 4:29 AM and 11:11 PM on weekdays, between 5:26 AM and 10:06 PM on Saturdays, and between 6:26 AM and 7:15 PM on Sundays. Route 856 runs at 30-minute headways on weekdays, and at 60-minute headways on weekends. Route 856 operates with standard 40-foot buses, with an average capacity of 37 passengers.



Route 936 runs south from the SDSU transit Center to Spring Valley Shopping Center in La Presa. Within the College Area community, Route 936 runs south along College Avenue towards El Cajon Boulevard. Route 936 contains 36 stops along its route. Route 936 currently operates between 4:57 AM and 10:13 PM on weekdays, between 5:14 AM and 10:13 PM on Saturdays, and between 5:14 AM and 7:55 PM on Sundays. Route 936 runs at 30-minute headways on weekdays, Saturdays, and between 11:30 AM and 4:30 PM on Sundays, and at 60-minute headways for the remaining hours of service. Route 936 operates with standard 40-foot buses, with an average capacity of 37 passengers.



Route 955 runs south from the SDSU Transit Center to the 8th Street Trolley Station in National City. Within the College Area community, Route 955 runs west along College Avenue and south along Collwood Boulevard. Route 955 contains 48 stops along its route. Route 955 currently runs between 4:55 AM and 11:40 PM on weekdays, between 5:34 and 11:40 PM on Saturdays, and between 5:58 AM and 9:41 PM on Sundays. Route 955 runs at 15-minute headways during its weekday peak and midday periods, 20-minute headways on Saturdays, and 30-minute headways during the remaining hours of service. Route 955 operates with standard 40-foot buses, with an average capacity of 37 passengers.



11.2 Analysis Approach and Methodology

LLG has prepared the following quantitative analysis based on passenger capacity methodology published in *Chapters 6 and 8* of the *Transit Capacity and Quality of Service Manual, 3rd Edition*. *Chapter 6* deals with procedures to evaluate capacities for bus transit and *Chapter 8* evaluates rail transit capacities.

Both chapters include passenger capacity calculations based on several bus/rail vehicle parameters. The design passenger capacity for each transit type (bus vs. light rail) is then compared against the forecasted ridership to determine if future demand can be met with the existing available capacity; as such, the analysis presented below is conservative in that it assumes increases in background transit ridership although it does not assume any increases in available capacity. The sections below provide details on the design passenger capacity calculations for trolleys and buses as well as existing and proposed ridership projections.

11.2.1 *Trolley Capacity*

The passenger capacity of a trolley route is determined from the following equation:

$$P = TN_cP_c(PHF)$$

where:

P = design person capacity (persons per hour (p/h)),
T = line capacity (4 trains per hour),
N_c = number of cars per train (3 cars per train),
P_c = maximum schedule load per car (120 persons per car), and
PHF = peak-hour factor – obtained from Spring 2016 ridership counts conducted by SANDAG (included in ***Appendix O***):

- 0.88 Eastbound direction – AM peak hour,
- 0.86 Westbound direction – AM peak hour,
- 0.95 Eastbound direction – PM peak hour,
- 0.82 Westbound direction – PM peak hour.

11.2.2 *Bus Capacity*

Bus passenger capacity is calculated as follows:

$$P_s = \sum_{i=1}^{n} P_{max,i}\,(PHF)N_i$$

where:

P_s = scheduled person capacity (p/h),
$P_{max,i}$ = maximum schedule load for bus model i (p/bus),
n = number of different bus models operated on the facility,

N_i = number of buses of bus model *i* scheduled to use the facility during the peak hour (bus/h), and
PHF = peak-hour factor.

Appendix O shows the maximum schedule loads, number of buses during the peak hour, and peak-hour factors for each bus route heading inbound towards SDSU and outbound from SDSU.

11.2.3 *Trolley and Bus Ridership*

Existing trolley and bus ridership counts (Spring 2016) were obtained from SANDAG. SANDAG utilizes Automatic Passenger Counting (APC) technology to compile the data.

Trolley Ridership

Project trolley trips were estimated based on the trolley calculations shown in *Tables 8–1B* (Near-Term Trolley) and *8–2B* (Horizon Year Trolley). As shown on *Tables 8–1B* and *8–2B*, the project trolley trips would comprise 5% of the total ADT (diverted from private vehicle to trolley) in the AM peak hour, and 7% of the total ADT (diverted from private vehicle to trolley) in the PM peak hour. Therefore, in the Near-Term (Year 2022), 5% (of 3,076 ADT) equating to 154 AM project trolley trips and 7% (of 3,076 ADT) equating to 215 PM project trolley trips would be generated. The in/out split is based on the 90:10 (AM) and 30:70 (PM) split shown in *Tables 8–1A and 8–2A*. Existing trolley ridership data at the SDSU Transit Center station shows 60% of trolley riders depart to/arrive from the west and 40% of trolley riders depart to/arrive from the east. Similar methodology was utilized to calculate the Horizon Year (Year 2035) trolley trips.

To estimate the *background growth in trolley ridership*, past trolley ridership data was reviewed. Data obtained from SANDAG shows a decrease in Green Line ridership of approximately 3.9 percent between 2013 and 2015. However, to be conservative, a 2 percent per year increase in ridership for 6 and 19 years (approximately 2022 and 2035) was assumed in the Near-Term (Year 2022) and Horizon Year (Year 2035) scenarios, respectively. *Appendix O* contains the detailed calculations sheets.

Bus Ridership

Project bus trips were estimated based on the existing bus to trolley ridership ratio. Based on a comparison of Year 2016 trolley and bus ridership data at the SDSU Transit Center provided by SANDAG, bus ridership was approximately 75 percent of trolley ridership; that is, for every 100 passengers who ride the trolley to/from the SDSU Transit Center, there are 75 passengers who ride the bus. Therefore, for analysis purposes, project bus ridership was assumed as 75 percent of the trolley ridership.

To estimate the *background growth in bus ridership*, past bus ridership data was reviewed. Bus ridership data obtained from SANDAG indicates an increase in passenger boardings of approximately 2.3 percent per year (2015-2016) for bus routes serving the SDSU Transit Center. Thus, a 2.5 percent per year increase in ridership for 6 and 19 years was assumed for the Near-Term

(Year 2022) and Horizon Year (Year 2035) scenarios, respectively. *Appendix O* contains the detailed calculations sheets.

11.3 Transit Capacity Analyses

The sections below provide trolley and bus analyses for the Existing + Total Project, Near-Term (Year 2022) + Project and Horizon Year (Year 2035) + Project scenarios.

11.3.1 *Green Line Trolley Analysis*

Tables 11–1, 11–2 and 11–3 report the results of the Green Line trolley analysis under Existing + Total Project, Near-Term (Year 2022) + Project, and Horizon Year (Year 2035) + Project conditions, respectively.

As shown on the table, even with the addition of the trolley riders from the project and assuming no increase in existing capacity, sufficient capacity is available to accommodate this increase. Therefore, no trolley capacity constraints are identified and the project would not result in significant impacts to available trolley capacity.

TABLE 11–1
TROLLEY ANALYSIS – EXISTING + PROJECT

Direction	**Peak Hour**	**Existing Capacity (Riders/hr)[c]**	**Existing Volume (Riders/hr)[a]**		**Project Ridership (Riders/hr)[b]**		**Existing + Project Volume (Riders/hr)**		**V>C?**	
			IN	**OUT**	**IN**	**OUT**	**IN**	**OUT**	**IN**	**OUT**
Eastbound	AM	1,268	261	144	295	22	556	166	No	No
	PM	1,368	473	446	138	214	611	660	No	No
Westbound	AM	1,239	443	413	197	33	640	446	No	No
	PM	1,181	225	289	92	321	317	610	No	No

Footnotes:

a. Existing trolley ridership data obtained from SANDAG *Assistance to Transit Operations and Planning (ATOP)* program, Year 2016.

b. Project trolley ridership is calculated as shown in *Table 8–2B*, which shows 546 total AM trips and 764 total PM trips. The in/out split is consistent with 90:10 (AM) and 30:70 (PM) per trip generation calculation. For EB and WB splits, 60%/40% was calculated based on existing trolley ridership data.

c. Existing capacity calculated using the equation shown in Section 11.2.1. For e.g.: 4 trains / hour * 3 cars/ train * 120 persons/car * 0.88 PHF = 1,268 persons/hour.

General Notes:

1. The In scenario refers to the inbound trolley towards SDSU Transit Center. The Out scenario refers to the outbound trolley from SDSU Transit Center. The total In ridership demand (i.e. Existing + Project) was calculated and compared to the existing capacity to determine if the transit demand from the project can be met. Similar methodology was used for the total Out ridership demand.

TABLE 11–2
TROLLEY ANALYSIS – NEAR-TERM (YEAR 2022) + PROJECT

Direction	Peak Hour	Existing Capacity (Riders/hr)[c]	Near-Term (Year 2022) Volume (Riders/hr)[a]		Project Ridership (Riders/hr)[b]		Near-Term (Year 2022) + Project Volume (Riders/hr)		V>C?	
			IN	OUT	IN	OUT	IN	OUT	IN	OUT
Eastbound	AM	1,268	293	162	83	6	376	168	No	No
	PM	1,368	532	502	39	60	571	562	No	No
Westbound	AM	1,239	541	465	55	9	596	474	No	No
	PM	1,181	254	352	26	90	280	442	No	No

Footnotes:

a. Trolley ridership data obtained from SANDAG shows a decrease in Green Line ridership of approximately 3.9% between 2013 and 2015. However, to be conservative, a 2%/year increase in ridership for 6 years was assumed for the Near-Term (Year 2022) scenario.

b. Project trolley ridership is calculated as shown in *Table 8–1B*, which shows 154 total AM trips and 215 total PM trips. The in/out split is consistent with 90:10 (AM) and 30:70 (PM) per trip generation calculation. For EB and WB splits, 60%/40% was calculated based on existing trolley ridership data.

c. Existing capacity calculated using the equation shown in Section 11.2.1. For e.g.: 4 trains / hour * 3 cars/ train * 120 persons/car * 0.88 PHF = 1,268 persons/hour.

General Notes:

1. The In scenario refers to inbound trolley towards SDSU Transit Center. The Out scenario refers to the outbound trolley from SDSU Transit Center. The total In ridership demand (i.e. Near-Term (Year 2022) + Project) was calculated and compared to the existing capacity to determine if the transit demand from the project can be met. Similar methodology was used for the total Out ridership demand.

TABLE 11–3
TROLLEY ANALYSIS – HORIZON YEAR (YEAR 2035) + PROJECT

Direction	Peak Hour	Existing Capacity (Riders/hr)[c]	Horizon Year (Year 2035) Volume (Riders/hr)[a]		Project Ridership (Riders/hr)[b]		Horizon Year (Year 2035) + Project Volume (Riders/hr)		V>C?	
			IN	OUT	IN	OUT	IN	OUT	IN	OUT
Eastbound	AM	1,268	381	210	295	22	676	232	No	No
	PM	1,368	689	650	138	214	827	864	No	No
Westbound	AM	1,239	645	602	197	33	842	635	No	No
	PM	1,181	327	421	92	321	419	742	No	No

Footnotes:

a. Trolley ridership data obtained from SANDAG shows a decrease in Green Line ridership of approximately 3.9% between 2013 and 2015. However, to be conservative, a 2%/year increase in ridership for 19 years was assumed for the Horizon Year (Year 2035) scenario.

b. Project trolley ridership is calculated as shown in *Table 8–2B*, which shows 546 total AM trips and 764 total PM trips. The in/out split is consistent with 90:10 (AM) and 30:70 (PM) per trip generation calculation. For EB and WB splits, 60%/40% was calculated based on existing trolley ridership data.

c. Existing capacity calculated using the equation shown in Section 11.2.1. For e.g.: 4 trains / hour * 3 cars/ train * 120 persons/car * 0.88 PHF = 1,268 persons/hour.

General Notes:

1. The In scenario refers to inbound trolley towards SDSU Transit Center, The Out scenario refers to the outbound trolley from SDSU Transit Center. The total In ridership demand (i.e. Horizon Year (Year 2035) + Project) was calculated and compared to the existing capacity to determine if the transit demand from the project can be met. Similar methodology was used for the total Out ridership demand.

11.3.2 *MTS Bus Analysis*

Tables 11–4, 11–5 and 11–6 report the results of the MTS Bus analysis under Existing + Total Project, Near-Term (Year 2022) + Project, and Horizon Year (Year 2035) + Project conditions, respectively.

As shown on the tables, even with the addition of the bus riders from the project, sufficient capacity is available to accommodate this increase. Therefore, no bus capacity constraints are identified and the Project would not result in significant impacts to bus capacity.

TABLE 11–4
MTS BUS ANALYSIS – EXISTING + PROJECT

Direction	Peak Hour	Existing Capacity (Riders/hr)[c]	Existing Volume (Riders/hr)[a]	Project Ridership (Riders/hr)[b]	Existing + Project Volume (Riders/hr)	V>C?
Inbound (towards SDSU)	AM	758	242	324	566	No
	PM	717	117	173	290	No
Outbound (from SDSU)	AM	771	114	41	155	No
	PM	804	237	401	638	No

Footnotes:

a. Existing MTS Bus ridership data obtained from SANDAG *Assistance to Transit Operations and Planning (ATOP)* program, Year 2016.

b. Based on a comparison of Year 2016 trolley and bus ridership data at the SDSU Transit Center, the bus ridership was calculated as 75% of the trolley ridership. Therefore, the project bus ridership was assumed as 75% of the trolley ridership.

c. Existing capacity was calculated using the equation shown in Section 11.2.1. The SDSU Transit Center is served by different types of buses with varying capacities. The calculations for the bus capacity are shown in *Appendix O*. The total ridership demand (i.e. Existing + Project) was calculated and compared to the existing capacity to determine if the bus demand from the project can be met.

TABLE 11–5
MTS BUS ANALYSIS – NEAR-TERM (YEAR 2022) + PROJECT

Direction	Peak Hour	Existing Capacity (Riders/hr)[c]	Near-Term (Year 2022) Volume (Riders/hr)[a]	Project Ridership (Riders/hr)[b]	Near-Term (Year 2022) + Project Volume (Riders/hr)	V>C?
Inbound (towards SDSU)	AM	758	281	104	385	No
	PM	717	136	49	185	No
Outbound (from SDSU)	AM	771	133	11	144	No
	PM	804	275	113	388	No

Footnotes:

a. Bus ridership data obtained from SANDAG indicates an increase in passenger boardings of approximately 2.29%/year for bus routes serving the SDSU Transit Center. Thus, a 2.5%/year increase in ridership for 6 years was assumed for the Near-Term (Year 2022) scenario.

b. Based on a comparison of Year 2016 trolley and bus ridership data at the SDSU Transit Center, the bus ridership was calculated as 75% of the trolley ridership. Therefore, the project bus ridership was assumed as 75% of the trolley ridership.

c. Existing capacity calculated using the equation shown in Section 11.2.1. The SDSU Transit Center is served by different types of buses with varying capacities. The calculations for the bus capacity are shown in *Appendix O*. The total ridership demand (i.e. Near-Term (Year 2022) + Project) was calculated and compared to the existing capacity to determine if the bus demand from the project can be met.

TABLE 11–6
MTS BUS ANALYSIS – HORIZON YEAR (YEAR 2035) + PROJECT

Direction	Peak Hour	Existing Capacity (Riders/hr)[c]	Horizon Year (Year 2035) Volume (Riders/hr)[a]	Project Ridership (Riders/hr)[b]	Horizon Year (Year 2035) + Project Volume (Riders/hr)	V>C?
Inbound (towards SDSU)	AM	758	387	324	711	No
	PM	717	188	173	361	No
Outbound (from SDSU)	AM	771	183	41	224	No
	PM	804	379	401	780	No

Footnotes:

a. Bus ridership data obtained from SANDAG indicates an increase in passenger boardings of approximately 2.29%/year for bus routes serving the SDSU Transit Center. Thus, a 2.5%/year increase in ridership for 19 years was assumed for the Horizon Year (Year 2035) scenario.

b. Based on a comparison of Year 2016 trolley and bus ridership data at the SDSU Transit Center, the bus ridership was calculated as 75% of the trolley ridership. Therefore, the project bus ridership was assumed as 75% of the trolley ridership.

c. Existing capacity calculated using the equation shown in Section 11.2.1. The SDSU Transit Center is served by different types of buses with varying capacities. The calculations for the bus capacity are shown in *Appendix O*. The total ridership demand (i.e. Horizon Year (Year 2035) + Project) was calculated and compared to the existing capacity to determine if the bus demand from the project can be met.

11.4 Conclusion

The above transit analysis was conducted to determine if adequate existing transit capacity is available to accommodate the proposed project. LLG coordinated with SANDAG and MTS to obtain specific route information, vehicle specifications, and trolley and bus ridership data.

Based on the design passenger capacity of the trolley and buses serving the SDSU Transit Center, sufficient capacity is available to accommodate the forecasted increase in transit riders from the project. Therefore, the proposed project would not result in significant impacts related to transit.

12.0 SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Based on the City of San Diego's significance criteria, the currently proposed SDSU 2007 Campus Master Plan would result in significant impacts at several study area intersections, street segments, ramp meters, and mainline freeway segments in the Near-Term (Year 2022) and Horizon Year (Year 2035) scenarios.

12.1 Near-Term (Year 2022)

12.1.1 *Significant Impacts – Direct*

The following is a list of the significant direct impacts resulting from the project under the Near-Term (Year 2022) scenario.

Intersections

A–1. College Avenue / I-8 Eastbound Ramps (PM peak hour)

A-2 College Avenue / Canyon Crest Drive (PM peak hour)

A–3. College Avenue / Zura Way (PM peak hour)

A–4. College Avenue / Montezuma Road (AM and PM peak hours)

A–5. I-8 WB Ramps / Parkway Drive (PM peak hour)

Street Segments

B–1. Alvarado Road: E. Campus Drive to Reservoir Drive

B–2. Alvarado Road: Reservoir Drive to 70th Street

B–3. College Avenue: I-8 Eastbound Ramps to Zura Way

B–4. College Avenue: Montezuma Road to Cresita Drive

Ramp Meter

None

Freeway Mainline

None

12.1.2 *Mitigation Measures*

The improvements listed below would mitigate the project's significant impacts identified under the Near-Term (Year 2022) scenario.

Intersections

A–1. College Avenue / I-8 Eastbound Ramps

The improvement necessary to mitigate the Project's significant impact at the College Avenue / I-8 Eastbound Ramp is to widen the northbound College Avenue approach to the on-ramp to provide an additional lane on College Avenue between Canyon Crest Drive and the I-8 EB on-ramp.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,211[6] or its equivalent[7],, SDSU shall widen the northbound College Avenue approach to the College Avenue / I-8 Eastbound Ramp to provide an additional (third) northbound lane between Canyon Crest Drive and the I-8 EB on-ramp. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego and Caltrans for review and approval. Following City and Caltrans approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to Caltrans and the City Engineer prior to constructing the subject improvements consistent with the approved City and Caltrans plans. In the event the proposed improvements are not approved and constructed in a timely manner, the impact would remain temporarily significant and unavoidable.

A-2 College Avenue / Canyon Crest Drive

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Canyon Crest Drive intersection is to widen the northbound College Avenue approach to the intersection to provide an additional lane.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,251 or its equivalent, SDSU shall widen the northbound College Avenue approach to the College Avenue / Canyon Crest Drive intersection to provide an additional (third) northbound through lane, to the reasonable satisfaction of the City Engineer. The improvements shall be completed prior to the impact occurring.

A–3. College Avenue / Zura Way

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Zura Way intersection is to install a traffic signal at the intersection. A signal warrant analysis

[6] For 2017/2018, the FTE for capacity and master planning purposes is 24,555. (See Appendix T.) The total FTE trigger is then calculated as follows: baseline FTE (i.e. 24,555) + FTE trigger shown in *Table 13–1*. *For e.g.: Impact A-1*: 24,555 baseline FTE + 656 FTE increase = 25,211 total FTE. Similar methodology was followed for other impacted locations.

[7] The phrase "or its equivalent" as used in this and other mitigation measures refers to the fact that the near-term construction of the Alvarado Hotel, in combination with construction of a portion of the Adobe Falls Faculty/Staff Housing, could trigger the identified significant impact prior to FTE enrollment actually reaching the designated trigger, in this case 25,211. Accordingly, Table 13-1, Mitigation Trigger Analysis, identifies the number of FTE equivalent hotel rooms and faculty/staff housing that would trigger the identified impact requiring mitigation.

is included in *Appendix P*, which concludes that a signal is warranted at the College Avenue / Zura Way intersection.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,608 or its equivalent, SDSU shall install a traffic signal at the College Avenue / Zura Way intersection, to the reasonable satisfaction of the City of San Diego Engineer. The improvements shall be completed prior to the impact occurring.

A–4. College Avenue / Montezuma Road

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Montezuma Road intersection is to re-stripe the eastbound Montezuma Road approach to the intersection to provide an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue, and also to install an overlap phase for the eastbound right-turn to southbound College Avenue at the intersection traffic signal.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,912 or its equivalent, SDSU shall re-stripe the eastbound Montezuma Road approach to the College Avenue / Montezuma Road intersection to provide an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue and also shall install an overlap phase for the eastbound right-turn to southbound College Avenue at the intersection traffic signal to the reasonable satisfactory to the City Engineer. The improvements shall be completed prior to the impact occurring.

A–5. I-8 Westbound Ramp / Parkway Drive

The improvement necessary to mitigate the Project's significant impacts at the I-8 Westbound Ramp / Parkway Drive intersection is to install either a traffic signal or a roundabout at the intersection, dependent upon the results of an Intersection Control Evaluation (ICE) analysis. The improvement ultimately decided upon shall be determined based on input provided by Caltrans and the City of La Mesa (the local jurisdiction), and also shall account for any queuing that could affect adjacent intersections, including the 70th Street/Parkway Drive intersection.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,795 or its equivalent, SDSU shall install a traffic signal at the I-8 Westbound Ramp / Parkway Drive intersection. To implement the improvements, SDSU shall prepare design plans and submit such plans to Caltrans and City of La Mesa for review and approval. Following Caltrans and City of La Mesa approval, SDSU shall install the traffic signal or a roundabout consistent with the approved plans. In the event the proposed improvements are not approved and constructed in a timely manner, the impact would remain temporarily significant and unavoidable.

Street Segments

B–1. Alvarado Road: E. Campus Drive to Reservoir Drive

The improvement necessary to mitigate the Project's significant impact on the segment of Alvarado Road from East Campus Drive to Reservoir Drive is to re-stripe Alvarado Road to add a two-way center left-turn lane or left turn pockets at the Alvarado Rd intersections at Alvarado Court and the Villa Alvarado Apartments driveway.

This improvement would require the removal of on-street parking on a portion of the segment, which is noted in the College Area Community Plan. The removal of on-street parking may not be feasible, however, since alternative parking spaces may not be available, although SDSU would be able to retain the on-street parking on a portion of Alvarado Road by widening the segment that fronts SDSU property between Alvarado Court and approximately 250 feet west of the Alvarado Medical Center driveway. Assuming the removal of on-street parking where necessary is feasible, prior to Full-Time Equivalent (FTE) enrollment reaching 24,910 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego Engineer, re-stripe and widen, where feasible, Alvarado Road between E. Campus Drive and Reservoir Drive to add a two-way center left-turn lane or add left turn pockets at the Alvarado Road intersections at Alvarado Court and the Villa Alvarado Apartments driveway. However, if the removal of on-street parking where necessary is not feasible, the improvements cannot be fully implemented due to right-of-way limitations and the impact would remain significant and unavoidable. .

B–2. Alvarado Road: Reservoir Drive to 70th Street

The improvement necessary to mitigate the Project's significant impact on the segment of Alvarado Road from Reservoir Drive to 70th Street is to restripe this segment of Alvarado Road to add a two-way left-turn lane or left turn pockets at the major apartment and retail driveways along Alvarado Rd.

This improvement would require the removal of on-street parking, which is noted in the College Area Community Plan, although the removal may not be feasible since alternative parking spaces may not be available. Assuming the removal of on-street parking where necessary is feasible, prior to Full-Time Equivalent (FTE) enrollment reaching 25,465 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego Engineer, re-stripe where feasible Alvarado Road between Reservoir Drive and 70th Street to add a two-way center left-turn lane or add left turn pockets at the major apartment and retail driveways along Alvarado Road. However, if the removal of on-street parking where necessary is not feasible, the improvements cannot be fully implemented due to right-of-way limitations and the impact would remain significant and unavoidable.

B–3. College Avenue: I-8 Eastbound Ramp to Zura Way

The improvement necessary to mitigate the Project's significant impact on the segment of College Avenue from Zura Way to the I-8 Eastbound Ramp is to widen this segment of College Avenue to provide an additional (third) northbound travel lane.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,862 or its equivalent, SDSU shall widen northbound College Avenue from Zura Way to the I-8 Eastbound Ramp to provide an additional (third) northbound travel lane. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego and Caltrans for review and approval. Following City and Caltrans approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to Caltrans and the City Engineer prior to constructing the subject improvements consistent with the approved City and Caltrans plans. In the event the proposed improvements are not approved and constructed in a timely manner, the impact would remain temporarily significant and unavoidable.

B–4. College Avenue: Montezuma Road to Cresita Drive

The improvement necessary to mitigate the Project's significant impact on the segment of College Avenue from Montezuma Road to Cresita Drive is to widen College Avenue and construct a raised median. However, this mitigation is infeasible in the near term because: (i) the installation of a raised median would require road widening, which in turn would require the acquisition of additional right-of-way on College Avenue between Montezuma Road and Cresita Drive that is owned by multiple individual third parties; and (ii) installation of a raised median would restrict access to the residential uses fronting College Avenue. Therefore, the road widening and installation of a raised median is infeasible and, as a result, this impact is considered significant and unavoidable.

As an alternate strategy, SDSU could widen the sidewalks on the segment of College Avenue between Montezuma Road and Cresita Drive to facilitate increased pedestrian travel, and/or restripe the road to provide for bicycle lanes, although this latter improvement would require removal of the limited existing curbside parking. Neither bicycle lanes nor widened sidewalks would reduce the identified vehicular level of service impact to less than significant.

12.1.3 *Post Mitigation Operations*

Tables 12–1 and ***12–2*** report the results of intersection and street segment mitigation analysis for the Near-Term (Year 2022) + Project conditions. As shown in the tables, if implemented, the proposed mitigation measures would reduce the project impacts to a level of less than significant. However, as previously explained, implementation of certain improvements is not feasible and, therefore, impacts at these locations are considered significant and unavoidable.

Appendix P contains the post mitigation analysis worksheets.

12.1.4 *Conceptual Improvement Sketches*

Appendix Q includes a conceptual sketch of each of the proposed improvements.

TABLE 12–1
NEAR-TERM (YEAR 2022) INTERSECTION MITIGATION ANALYSIS

Intersection	Control Type	Peak Hour	Near-Term (Year 2022) without Project		Near-Term (Year 2022) + Project			Near-Term (Year 2022) + Project With Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	Δ[c]	Delay	LOS	
8. College Avenue / I-8 EB Ramps	Signal	PM	74.3	E	79.3	E	**5.0**	37.0	D	Construct an additional (third) northbound lane on College Avenue between the I-8 EB on-ramp and Canyon Crest Drive (feasible).
9. College Avenue / Canyon Crest Drive	Signal	PM	57.9	E	71.8	E	**13.9**	43.5	D	Construct an additional (third) northbound through lane (feasible).
10. College Avenue / Zura Way	MSSC[d]	PM	178.9	F	199.5	F	**20.6**	31.4	C	Install a traffic signal (feasible).
11. College Avenue / Montezuma Rd	Signal	AM	65.4	E	71.1	E	**5.7**	51.7	D	Restripe to provide a second eastbound left-turn lane on Montezuma Road to northbound College Avenue; and install an overlap phase on the eastbound right-turn to southbound College Avenue (feasible).
		PM	91.0	F	109.2	F	**18.2**	63.4	E	

TABLE 12–1
NEAR-TERM (YEAR 2022) INTERSECTION MITIGATION ANALYSIS

Intersection	Control Type	Peak Hour	Near-Term (Year 2022) without Project		Near-Term (Year 2022) + Project			Near-Term (Year 2022) + Project With Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	Δ[c]	Delay	LOS	
16. I-8 WB Ramps / Parkway Dr	AWSC[e]	PM	59.2	F	62.1	F	**2.9**	13.8	B	Install a traffic signal (feasible).

Footnotes:

a. Average delay expressed in seconds per vehicle.

b. Level of Service.

c. Δ denotes the project-induced delay increase.

d. MSSC – Minor Street Stop Controlled intersection. The highest (worst) of the minor street right-turn delay (westbound right-turn) or major street (northbound left-turn) is reported. Left-turns from Zura Way to College Avenue are not allowed.

e. AWSC – All-Way Stop Controlled intersection.

General Notes:

1. Bold represents a significant impact

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

TABLE 12–2
NEAR-TERM (YEAR 2022) SEGMENT MITIGATION ANALYSIS

Segment	LOS E Capacity [a]	Near-Term (Year 2022) without Project			Near-Term (Year 2022) with Project				Mitigated LOS E Capacity [a]	Near-Term (Year 2022) + Project With Mitigation			Mitigation
		Volume	LOS [b]	V/C [c]	Volume	LOS [b]	V/C [c]	V/C Δ		Volume	LOS	V/C	
Alvarado Road													
E. Campus Dr to Reservoir Dr	8,000	9,340	F	1.168	9,610	F	1.201	**0.033**	15,000	9,610	C	0.641	Restripe Alvarado Road to include a two-way left-turn lane or left turn pockets at the Alvarado Rd intersections at Alvarado Court and the Villa Alvarado Apartments driveway (infeasible/feasible).
Reservoir Dr to 70th Street	8,000	7,490	E	0.936	7,760	E	0.970	**0.034**	15,000	7,760	C	0.517	Restripe Alvarado Road to include a two-way left-turn lane or left turn pockets at the major apartment and retail driveways along Alvarado Rd (infeasible/feasible).
College Avenue													
I-8 EB Ramps to Zura Way	40,000	40,470	F	1.012	41,930	F	1.048	**0.036**	50,000	41,930	D	0.839	Widen to provide an additional (third) northbound lane (feasible).
Montezuma Rd to Cresita Drive	30,000	30,670	F	1.022	31,000	F	1.033	0.011	40,000	31,000	D	0.775	Widen to provide a raised median or provide bike lanes by removing parking (infeasible)

Footnotes

a. Capacities based on City of San Diego's Roadway Classification & LOS table.
b. Average Daily Traffic
c. Volume to Capacity ratio

General Notes:

1. Bold and shading represents a potential significant impact

12.2 Horizon Year (Year 2035)

12.2.1 *Significant Impacts – Cumulative*

The following is a list of the significant cumulative impacts that would result with implementation of the proposed project under the Horizon Year (Year 2035) scenario.

Intersections

C–1. Fairmount Avenue / I-8 Westbound Off Ramp / Camino Del Rio N. (PM peak hour)

C–2. 55th Street / Montezuma Road (PM peak hour)

C–3. Campanile Drive / Montezuma Road (AM peak hour)

C–4. College Avenue / I-8 Eastbound Ramps (AM and PM peak hours)

C–5. College Avenue / Canyon Crest Drive (AM and PM peak hours)

C–6. College Avenue / Zura Way (AM and PM peak hours)

C–7. College Avenue / Montezuma Road (AM and PM peak hours)

C–8. Alvarado Court / Alvarado Road (PM peak hour)

C–9. 70th Street / Alvarado Road (PM peak hour)

C–10. I-8 WB Ramps / Parkway Drive (AM and PM peak hours)

Street Segments

D–1. Alvarado Road: E. Campus Drive to Reservoir Drive

D–2. Alvarado Road: Reservoir Drive to 70th Street

D–3. College Avenue: Del Cerro Boulevard to I-8 Westbound off-ramp

D–4. College Avenue: I-8 Eastbound Ramps to Zura Way

D–5. College Avenue: Zura Way to Montezuma Road

D–6. College Avenue: Montezuma Road to Cresita Drive

D–7. Montezuma Road: Fairmount Avenue to Collwood Boulevard

D–8. Montezuma Road: Collwood Boulevard to 55th Street

D–9. Montezuma Road: 55th Street to College Avenue

Ramp Meter

E–1. Northbound College Avenue to Westbound I-8

E–2. Southbound College Avenue to Westbound I-8

Freeway Mainline

F–1. Interstate 8: Fairmount Avenue to Waring Road (eastbound)

F–2. Interstate 8: Waring Road to College Avenue (eastbound)

F–3. Interstate 8: College Avenue to Lake Murray Boulevard (eastbound)

F–4. Interstate 8: College Avenue to Lake Murray Boulevard (westbound)

F–5. Interstate 8: Lake Murray Boulevard to Fletcher Parkway (eastbound)

F–6. Interstate 8: Lake Murray Boulevard to Fletcher Parkway (westbound)

12.2.2 *Mitigation Measures*

The improvements listed below would mitigate the Project's significant impacts identified under the Horizon Year (Year 2035) scenario.

Intersections

C–1. Fairmount Avenue / I-8 Westbound Off Ramp / Camino Del Rio N.

The improvement necessary to mitigate the Project's significant cumulative impact at the Fairmount Avenue / I-8 Westbound Off Ramp / Camino Del Rio North intersection is to widen the eastbound approach to provide an additional (second) eastbound exclusive right-turn lane on Camino Del Rio N. to southbound Fairmount Avenue at this intersection.

However, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (0.9%), nor is there a plan or program in place to construct the necessary improvements at this intersection. Therefore, the identified improvements are infeasible as they are not capable of being accomplished in a successful manner within a reasonable period of time and, as a result, this impact is considered significant and unavoidable.

C–2. 55th Street / Montezuma Road

The improvements necessary to mitigate the Project's significant cumulative impact at the 55th Street / Montezuma Road intersection are to modify the traffic signal and restripe the 55th Street southbound approach to include: one (1) dedicated southbound right-turn lane; one (1) shared southbound right/thru/left-turn lane; and one (1) dedicated southbound left-turn lane.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (10.9%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has agreed to fully fund and implement the necessary improvements and, to that end, shall prepare design plans and submit such plans to the City of San Diego for review and approval prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,762 or its equivalent. Following City approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer prior to restriping the 55th Street southbound approach to include: one (1) dedicated southbound right-turn lane; one (1) shared southbound right/thru/left-turn lane; and one (1) dedicated southbound left-turn lane, and coordinating with the City regarding the signal modification.

C–3. Campanile Drive / Montezuma Road

The improvement necessary to mitigate the Project's significant cumulative impact at the Campanile Drive / Montezuma Road intersection is to restripe the Montezuma Road westbound approach at the intersection to provide an exclusive westbound right-turn lane on Montezuma Road to northbound Campanile Drive.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (12.1%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has agreed to fully fund and implement the necessary improvements. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,670 or its equivalent, SDSU shall re-stripe the Montezuma Road westbound approach to the Campanile Drive / Montezuma Road intersection to provide an exclusive westbound right-turn lane on Montezuma Road to northbound Campanile Drive. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.

C–4. College Avenue / I-8 Eastbound Ramp

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / I-8 Eastbound Ramp intersection (provide a third northbound lane on College Avenue between Canyon Crest Drive and I-8 [A-1]) would also mitigate the Project's significant cumulative impact and no further mitigation is necessary.

C–5. College Avenue / Canyon Crest Drive

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Canyon Crest Drive intersection (widen the intersection to provide an additional (third) northbound lane [A-2]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –6. College Avenue / Zura Way

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Zura Way intersection (install a traffic signal [A-3]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –7. College Avenue / Montezuma Road

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Montezuma Road intersection (restripe the eastbound approach to include an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue and install a right-turn overlap phase [A-4]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –8. Alvarado Court / Alvarado Road

The improvement necessary to mitigate the Project's significant cumulative impact at the Alvarado Court / Alvarado Road intersection is to install a traffic signal at the intersection. A signal warrant analysis is included in *Appendix P*, which concludes that a signal is warranted at the Alvarado Court / Alvarado Road intersection.

However, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (59.8%), nor is there a plan or program in place to construct the necessary improvements at this intersection. Therefore, the identified improvement is infeasible and, as a result, this impact is considered significant and unavoidable.

C –9. 70th Street / Alvarado Road

The improvement necessary to mitigate the Project's significant cumulative impact at the 70th Street / Alvarado Road intersection is to install an overlap phase on the northbound right-turn to eastbound Alvarado Road at the intersection traffic signal.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (10.2%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has agreed to fully fund and implement the necessary improvements and, to that end, shall prepare design plans and submit such plans to the City of San Diego for review and approval prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 29,359 or its equivalent. Following City approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer prior to coordinating with the City to install an overlap phase on the northbound right-turn to eastbound Alvarado Road at the 70th Street/Alvarado Road intersection traffic signal.

C –10. Interstate 8 Westbound Ramps / Parkway Drive

The improvements to be implemented as mitigation for the Project's direct impact at the I-8 Westbound Ramps / Parkway Drive intersection (install a traffic signal or a roundabout) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

Street Segments

D–1. Alvarado Road: E. Campus Drive to Reservoir Drive

The improvements identified to mitigate the Project's direct impact to the segment of Alvarado Road from E. Campus Drive to Reservoir Drive (widen and restripe Alvarado Road to construct a two-way center left-turn lane or add left-turn pockets) would, if implemented, also mitigate the Project's significant cumulative impact at this location.

However, as previously explained in B-1, the improvements identified to mitigate the direct impacts at this location may be infeasible. If that is the case, cumulative impacts at this location would be considered significant and unavoidable.

D –2. Alvarado Road: Reservoir Drive to 70th Street

The improvements identified to mitigate the Project's direct impact to the segment of Alvarado Road from Reservoir Drive to 70th Street (restripe Alvarado Road to construct a two-way center left-turn lane or add left-turn pockets) would, if implemented, also mitigate the Project's significant cumulative impact at this location.

However, as previously explained in B-2, the improvements identified to mitigate the direct impacts at this location may be infeasible. If that is the case, cumulative impacts at this location would be considered significant and unavoidable.

D –3. College Avenue: Del Cerro Boulevard to I-8 WB off-Ramp

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of College Avenue from Del Cerro Boulevard to Interstate-8 WB off-ramp is to restripe northbound College Avenue to provide an additional lane.

However, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (32.1%), nor is there a plan or program in place to construct the necessary improvements at this segment. Furthermore, the addition of a lane to this segment of College Avenue would conflict with the Navajo Community Plan designation. Therefore, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

D –4. College Avenue: I-8 Eastbound Ramps to Zura Way

The improvements to be implemented as mitigation for the Project's direct impact to the segment of College Avenue from the I-8 Eastbound Ramps to Zura Way (widen College Avenue to provide an additional (third) northbound lane [B-3]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

D –5. College Avenue: Zura Way to Montezuma Road

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of College Avenue from Zura Way to Montezuma Road is to widen the four-lane portion of College Avenue to provide an additional travel lane.

However, implementation of the necessary improvement is infeasible because the right-of-way necessary to add a fifth lane is not available due to the proximity of buildings fronting College Avenue at this location. While the Community Plan shows College Avenue as 6-lanes between Zura Way and Montezuma Road, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (34.5%), nor is there a plan or program in place to construct the necessary improvements at this segment. Therefore, the addition of a fifth lane is infeasible and, as a result, this impact is considered significant and unavoidable.

D –6. College Avenue: Montezuma Road to Cresita Drive

The improvements identified to mitigate the Project's direct impact to the segment of College Avenue from Montezuma Road to Cresita Drive (widen College Avenue to construct a raised median) would, if implemented, also mitigate the Project's significant cumulative impact at this location. However, as previously explained in B-4, the improvements identified to mitigate the direct impacts at this location are infeasible and, therefore, the cumulative impact mitigation also is infeasible and, as a result, cumulative impacts at this location are considered significant and unavoidable.

D –7. Montezuma Road: Fairmount Avenue to Collwood Boulevard

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from Fairmount Avenue to Collwood Boulevard is to widen this segment of Montezuma Road to provide an additional eastbound travel lane.

However, implementation of the necessary improvement is infeasible because: (i) the right-of-way necessary to add a lane is not available due to the existing topography; and (ii) there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (8.2%), nor is there a plan or program in place to construct the necessary improvements at this location. Therefore, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

D –8. Montezuma Road: Collwood Boulevard to 55th Street

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from Collwood Boulevard to 55th Street is to widen this segment of Montezuma Road to provide an additional travel lane.

However, implementation of the necessary improvements is infeasible because: (i) the right-of-way necessary to add a lane is not available due to the existing topography; and (ii) there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (9.1%), nor is there a plan or program in place to construct the necessary improvements at this location. Therefore, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

D –9. Montezuma Road: 55th Street to College Avenue

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from 55th Street to College Avenue is to install a raised median along this segment of Montezuma Road.

However, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (21.9%), nor is there a plan or program in place to construct the necessary improvements at this location. Therefore, the identified improvement is infeasible and, as a result, this impact is considered significant and unavoidable.

Ramp Meter

E–1. Northbound College Avenue to I-8 Westbound

The improvement necessary to mitigate the Project's identified significant cumulative impact at the Northbound College Avenue to I-8 Westbound ramp meter is to provide additional capacity on the I-8 westbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the Interstate-8 / College Avenue interchange including the Northbound College Avenue to I-8 Westbound on-ramp. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent on the outcome of the study, California State University/SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this on-ramp, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

E–2. Southbound College Avenue to I-8 Westbound

The improvement necessary to mitigate the Project's identified significant cumulative impact at the Southbound College Avenue to I-8 Westbound ramp meter is to provide additional capacity on the I-8 westbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the Interstate-8 / College Avenue interchange including the Southbound College Avenue to I-8 Westbound on-ramp. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent on the outcome of the study, California State University/SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this on-ramp, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

Freeway Mainline

F–1. Interstate 8: Fairmount Avenue to Waring Road (eastbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact (5.4%) to the eastbound segment of Interstate-8 between Fairmount Avenue and Waring Road is to provide additional capacity on the I-8 eastbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at either the I-8 / Fairmount Avenue or I-8 / Waring Road interchange and, relatedly, on the segment of I-8 between Fairmount Avenue and Waring Road. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–2. Interstate 8: Waring Road to College Avenue (eastbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact (6.2%) to the eastbound segment of Interstate-8 between Waring Road and College Avenue is to provide additional capacity on I-8. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion

at the I-8 / College Avenue Interchange and, relatedly, on the segment of I-8 between Waring Road and College Avenue. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–3/F-4. Interstate 8: College Avenue to Lake Murray Boulevard (eastbound and westbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact to the eastbound (4.1%) and westbound (3.7%) segments of Interstate-8 between College Avenue and Lake Murray Boulevard is to provide additional capacity on I-8. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / College Avenue Interchange and, relatedly, on the segment of I-8 between College Avenue and Lake Murray Boulevard. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–5/F-6. Interstate 8: Lake Murray Boulevard to Fletcher Parkway (eastbound and westbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact to the eastbound (10.4%) and westbound (9.4%) segments of Interstate-8 between Lake Murray Boulevard and Fletcher Parkway is to provide additional capacity on the I-8 eastbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / Fletcher Parkway or I-8 / Lake Murray Boulevard interchange and, relatedly, on the segment of I-8 between Lake Murray Boulevard and Fletcher Parkway. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity

improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

12.2.3 *Post Mitigation Operations*

Tables 12–4 and ***12–5*** report the results of the intersection and street segment mitigation analysis for the Horizon Year (Year 2035) + Project conditions. As shown in the tables, if implemented, the recommended improvements would reduce the project's impacts to intersections and street segments to less than significant. However, as previously explained, implementation of certain improvements is not feasible and, therefore, impacts at these locations are considered significant and unavoidable. Additionally, mitigation to provide additional capacity to the I-8 mainline and related ramps also is infeasible and, therefore, impacts to Caltrans facilities are considered significant and unavoidable.

Appendix P contains the post mitigation analysis worksheets.

TABLE 12–4
HORIZON YEAR (YEAR 2035) INTERSECTION MITIGATION ANALYSIS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035) without Project		Horizon Year (Year 2035) with Project			With Mitigation		Mitigation (fair-share)
			Delay	LOS	Delay	LOS	Δ^f	Delay	LOS	
1. Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N.	Signal	PM	241.7	F	243.8	F	**2.1**	178.6	F	Widen to provide an additional (second) eastbound exclusive right-turn lane on Camino Del Rio N. to southbound Fairmount Avenue (infeasible).
4. 55th Street / Montezuma Road	Signal	AM	59.0	E	66.0	E	**7.0**	56.7	E	Restripe the southbound approach on the 55th Street/Montezuma Road intersection to provide: one (1) dedicated southbound right-turn lane; one (1) shared southbound right/thru/left-turn lane; and one (1) dedicated southbound left-turn lane (feasible).
		PM	107.8	F	110.7	F	**2.9**	103.2	F	
5. Campanile Dr / Montezuma Rd	Signal	AM	93.4	F	105.9	F	**12.5**	47.4	D	Restripe to provide an exclusive westbound right-turn lane on Montezuma Road to northbound Campanile Drive (feasible).
8. College Ave / I-8 EB Ramps	Signal	AM	45.3	D	55.1	E	**9.8**	54.3	D	Provide an additional (third) northbound lane between I-8 EB off-ramp and Canyon Crest Drive (feasible).
		PM	140.0	F	182.4	F	**42.4**	44.3	D	
9. College Ave / Canyon Crest Dr	Signal	AM	81.6	F	91.4	F	**9.8**	76.5	E	Provide an additional (third) northbound through lane (feasible).
		PM	103.7	F	194.3	F	**90.6**	92.4	F	
10. College Ave / Zura Way	MSSC[c]	PM	393.8	F	528.3	F	**134.5**	38.3	D	Provide a traffic signal (feasible).

TABLE 12–4
HORIZON YEAR (YEAR 2035) INTERSECTION MITIGATION ANALYSIS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035) without Project		Horizon Year (Year 2035) with Project			With Mitigation		Mitigation (fair-share)
			Delay	LOS	Delay	LOS	Δ[f]	Delay	LOS	
11. College Ave / Montezuma Rd	Signal	AM	107.3	F	121.9	F	**14.6**	80.3	F	Restripe to provide an additional (second) exclusive eastbound left-turn lane on Montezuma Road to northbound College Avenue; and an overlap phase on the eastbound right-turn to southbound College Avenue (feasible).
		PM	135.6	F	155.0	F	**19.4**	106.1	F	
12. Alvarado Ct / Alvarado Rd	MSSC[d]	PM	18.3	C	72.2	F	**53.9**	9.6	A	Install a traffic signal and provide a dedicated left-turn lane on the westbound approach (infeasible).
15. 70th St / Alvarado Rd	Signal	PM	94.9	F	98.2	F	**3.3**	86.8	F	Provide an overlap phase on northbound 70th Street to eastbound Alvarado Road (feasible).
16. I-8 WB Ramps / Parkway Dr	AWSC[e]	AM	65.6	F	94.7	F	**29.1**	18.9	B	Provide a traffic signal (feasible).
		PM	128.6	F	147.6	F	**19.0**	22.6	C	

Footnotes:

a. Average delay expressed in seconds per vehicle.

b. Level of Service.

c. MSSC – Minor Street Stop Controlled intersection. The highest (worst) of the minor street right-turn delay (westbound right-turn) or major street (northbound left-turn) is reported. Left-turns from Zura Way to College Avenue are not allowed.

d. MSSC – Minor Street Stop Controlled intersection. Minor street approach delay is reported.

e. AWSC – All-Way Stop Controlled intersection.

f. Δ denotes project induced delay increase.

General Notes:

1. Bold and shading represents a potential significant impact

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

TABLE 12–5
HORIZON YEAR (YEAR 2035) SEGMENT MITIGATION ANALYSIS

Segment	LOS E Capacity [a]	Horizon Year (Year 2035) without Project			Horizon Year (Year 2035) with Project				Mitigated LOS E Capacity [a]	With Mitigation			Mitigation (fair-share)
		Volume	LOS [b]	V/C [c]	Volume	LOS [b]	V/C [c]	V/C Δ		Volume	LOS	V/C	
Alvarado Road													
E. Campus Dr to Reservoir Dr	8,000	11,340	F	1.418	14,900	F	1.863	**0.445**	15,000 [d]	14,900	E	0.993	Widen/restripe to include a two-way left-turn lane or add left-turn pockets (infeasible/feasible).
Reservoir Dr to 70th St	8,000	14,830	F	1.854	16,900	F	2.113	**0.259**	15,000 [d]	16,900	F	1.127	Restripe Alvarado Road to include a two-way left-turn lane or add left-turn pockets (infeasible/feasible).
College Avenue													
Del Cerro Blvd to I-8 WB off-ramp	40,000	35,930	E	0.898	38,100	E	0.953	**0.055**	45,000	38,100	D	0.847	Restripe and provide an additional (third) northbound through lane (infeasible).
I-8 EB Ramps to Zura Way	40,000	61,100	F	1.528	67,670	F	1.692	**0.164**	45,000	67,670	F	1.504	Provide an additional (third) northbound through lane (feasible).
Zura Way to Montezuma Rd	40,000	35,180	E	0.880	38,020	E	0.951	**0.071**	45,000	38,020	D	0.845	Widen to provide an additional lane (infeasible).
Montezuma Rd to Cresita Drive	30,000	32,130	F	1.071	33,840	F	1.128	**0.057**	45,000	33,840	C	0.752	Widen to provide a raised median (infeasible).

TABLE 12–5
HORIZON YEAR (YEAR 2035) SEGMENT MITIGATION ANALYSIS

Segment	LOS E Capacity [a]	Horizon Year (Year 2035) without Project			Horizon Year (Year 2035) with Project				Mitigated LOS E Capacity [a]	With Mitigation			Mitigation (fair-share)
		Volume	LOS [b]	V/C [c]	Volume	LOS [b]	V/C [c]	V/C Δ		Volume	LOS	V/C	
Montezuma Road													
Fairmount Ave to Collwood Blvd	40,000	66,740	F	1.669	68,020	F	1.701	**0.032**	45,000	**68,020**	**F**	**1.512**	Widen to provide an additional lane (infeasible).
Collwood Blvd to 55th St	40,000	41,810	F	1.045	43,090	F	1.077	**0.032**	45,000	**43,090**	**E**	**0.958**	Widen to provide an additional lane (infeasible).
55th St to College Ave	30,000	38,210	F	1.274	39,790	F	1.326	**0.052**	40,000	39,790	E	0.995	Provide a raised median (infeasible).

Footnotes:

a. Capacities based on City of San Diego's Roadway Classification & LOS table.
b. Average Daily Traffic
c. Volume to Capacity ratio

General Notes:

1. Bold and shading represents a potential significant impact

12.2.4 *Mitigation Measure Fair-Share Contributions*

Table 12–6 shows fair share percentages for each of the recommended mitigation measures. These percentages have been calculated according to the following formula, which is commonly used by the City of San Diego: ***Appendix R*** includes a fair share calculation for each improvement.

Intersections: Horizon Year (Year 2035) Impact Fair Share (using entering intersection volumes and highest of AM or PM peak hour fair-share percentages) =

(Horizon Year (Year 2035) Project Traffic Volumes) / (Horizon Year (Year 2035) With Project – Existing Traffic Volumes)

Street Segments: Horizon Year (Year 2035) Impact Fair Share =

(Horizon Year (Year 2035) Project Traffic Volumes) / (Horizon Year (Year 2035) With Project – Existing Traffic Volumes)

TABLE 12–6
HORIZON YEAR (YEAR 2035) FAIR SHARE CONTRIBUTION

Mitigation Measure Number	Impacted Locations	Fair Share Percentage
C–1	Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N.	0.9%
C–2	55th Street / Montezuma Road	10.9%
C–3	Campanile Drive / Montezuma Road	12.1%
C–4	College Avenue / I-8 EB Ramps	*
C–5	College Avenue / Canyon Crest Drive intersection	*
C–6	College Avenue / Zura Way intersection	*
C–7	College Avenue / Montezuma Road intersection	*
C–8	Alvarado Court / Alvarado Road intersection	59.8%
C–9	70th Street / Alvarado Road	10.2%
C–10	I-8 WB Ramps / Parkway Drive intersection	*
D–1	Alvarado Road: E. Campus Drive to Reservoir Drive	*
D–2	Alvarado Road: Reservoir Drive to 70th Street	*
D–3	College Avenue: Del Cerro Boulevard to I-8 WB off-ramp	32.1%
D–4	College Avenue: I-8 EB Ramps to Zura Way	*
D–5	College Avenue: Zura Way to Montezuma Road	34.5%
D–6	College Avenue: Montezuma Road to Cresita Drive	*
D–7	Montezuma Road: Fairmount Avenue to Collwood Boulevard	8.2%
D–8	Montezuma Road: Collwood Boulevard to 55th Street	9.1%
D–9	Montezuma Road: 55th Street to College Avenue	21.9%

TABLE 12–6
HORIZON YEAR (YEAR 2035) FAIR SHARE CONTRIBUTION

Mitigation Measure Number	Impacted Locations	Fair Share Percentage
E–1	Northbound College Avenue to westbound I-8	15.7%
E–2	Southbound College Avenue to westbound I-8	6.1%
F–1	I-8: Fairmount Avenue to Waring Road (EB)	5.4%
F–2	I-8: Waring Road to College Avenue (EB)	6.2%
F–3	I-8: College Avenue to Lake Murray Boulevard (EB)	4.1%
F–4	I-8: College Avenue to Lake Murray Boulevard (WB)	3.7%
F–5	I-8: Lake Murray Boulevard to Fletcher Parkway (EB)	10.4%
F–6	I-8: Lake Murray Boulevard to Fletcher Parkway (WB)	9.4%

General Notes:

* indicates Near-Term (Year 2022) direct impact location.

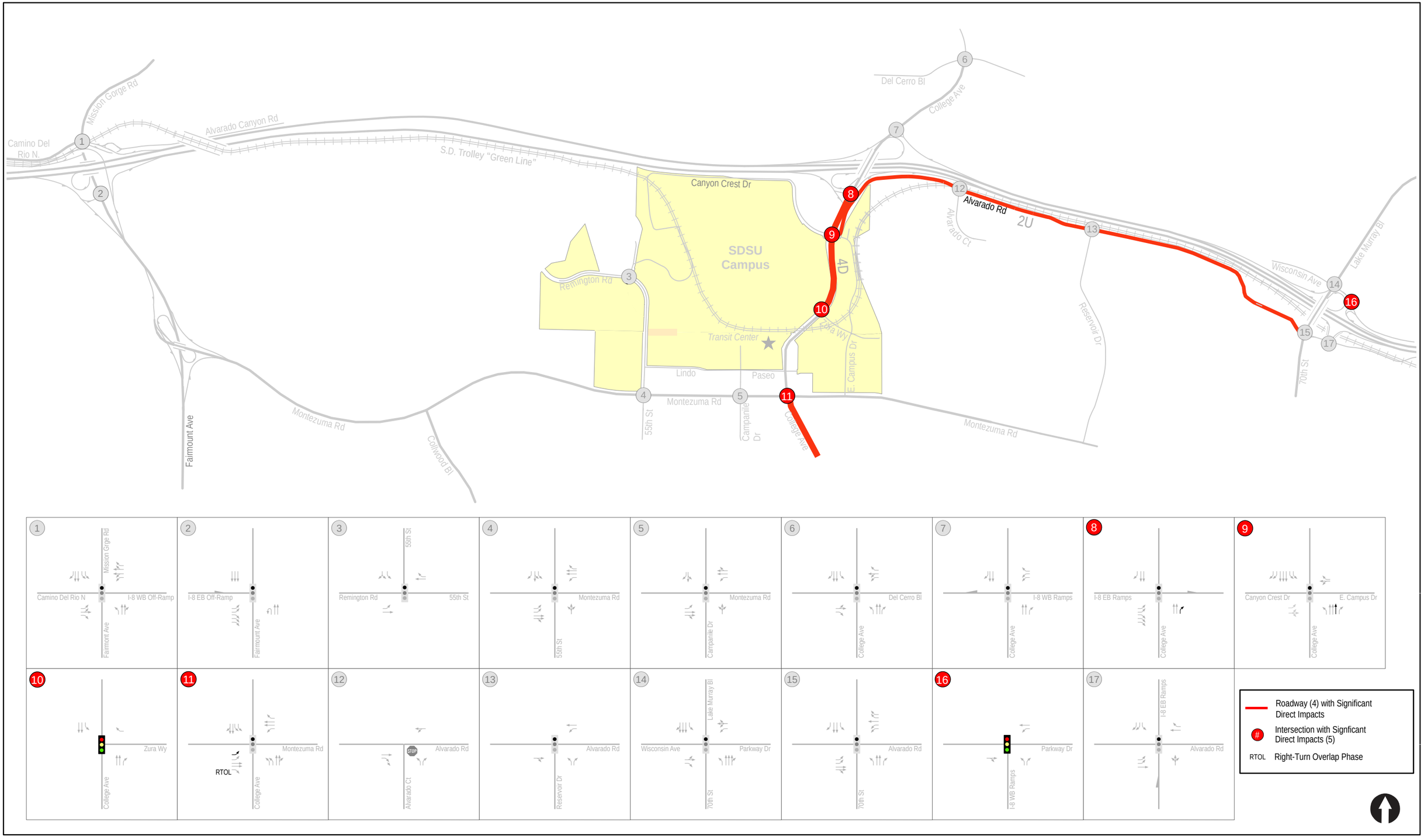


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Figure 12-1

City of San Diego Near-Term (Year 2022) Project Impacts & Mitigation Measures

SDSU MASTER PLAN UPDATE

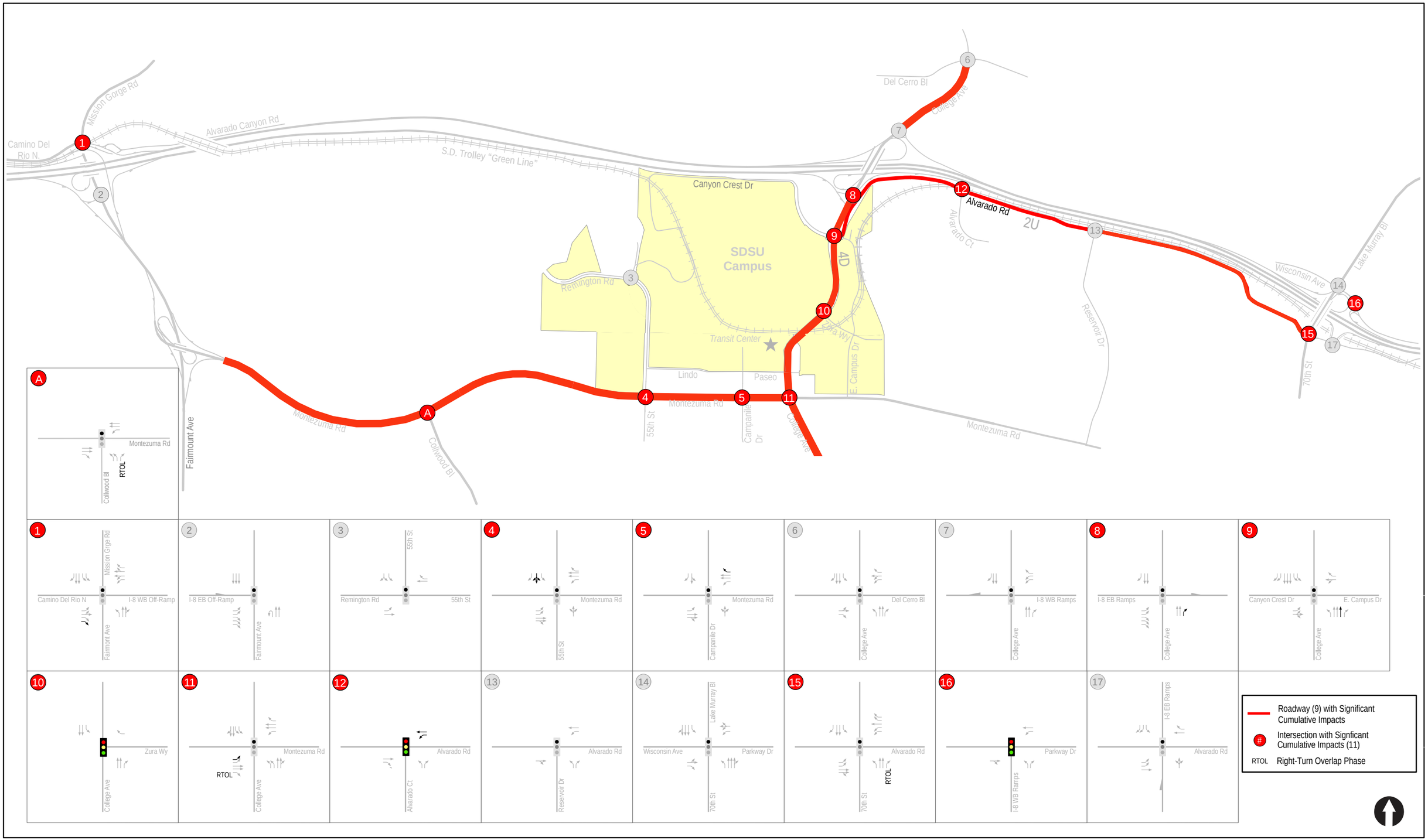

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Figure 12-2

City of San Diego Horizon Year (Year 2035) Impacts & Mitigation Measures

SDSU MASTER PLAN UPDATE

13.0 MITIGATION TRIGGER ANALYSIS

An analysis was conducted to determine the estimated number of FTE students that could be added prior to triggering a significant impact at an intersection, street segment, ramp meter, or I-8 mainline under the Near-Term (Year 2022) and Horizon Year (Year 2035) scenarios presented in this report. The analysis is provided below.

13.1 Trigger Analysis Methodology

The proposed project consists of various components that would generate vehicle trips including non-resident students, resident students, the Adobe Falls Faculty/Staff housing and the Alvarado Hotel. Each of these uses has a different trip rate metric, such as student headcount increase, dwelling units for faculty/staff housing, and rooms for the hotel. For the purposes of this analysis, all of these differing metrics were converted to a common improvement trigger metric in Full Time Equivalent (FTE) students. In addition, for purposes of this analysis only, in order to present the most conservative scenario, it was assumed that both the Adobe Falls Faculty/Staff housing and the Alvarado Hotel would be built in the initial stages of Master Plan development. This would be conservative as buildout of Adobe Falls development and Alvarado Hotel would reduce the reserve roadway capacity and thereby trigger significant impacts and corresponding mitigation measures earlier than would occur under the forecasted FTE increase scenario.

Intersections – The number of FTE students that could be added before a significant impact to an intersection would occur was determined as follows:

Based on the City of San Diego's significance criteria, the project would have a significant impact when the project adds more than 2.0 seconds of delay at LOS E operating intersections or 1.0 second for LOS F intersections. Based on the project's trip generation and trip distribution, the increase in FTE students and the associated traffic that would add exactly 2.0 seconds of delay at LOS E operating intersections or exactly 1.0 second for LOS F operations was determined for each significantly impacted location/facility.

Street Segments – The number of FTE students that could be added before a significant impact to a street segment would occur was determined as follows:

Based on the City of San Diego's significance criteria, the project would have a significant impact when the project adds more than 2% of the total traffic for LOS E operating segments or 1% of the total traffic for LOS F segments. Based on the project's trip generation and trip distribution, the increase in FTE students and the associated traffic that would add exactly 2% of the total traffic for LOS E segments or exactly 1% of the total traffic for LOS F segments was determined for each significantly impacted location/facility.

Table 13–1 shows the mitigation triggers analyses for the Near-Term (Year 2022) and Horizon Year (Year 2035) scenarios.

TABLE 13–1
MITIGATION TRIGGER ANALYSIS

Mitigation Measure Number	Impacted Locations	Alvarado Hotel FTE[a]	Adobe Falls Faculty/ Staff Housing FTE[b]	Student FTE[c]	FTE Trigger Increase[d]
Near-Term (Year 2022)					
A–1	College Avenue / I-8 EB Ramps	576	80	–	656
A–2	College Avenue / Canyon Crest Drive	576	120	–	696
A–3	College Avenue / Zura Way	53	–	–	53
A–4	College Avenue / Montezuma Road	576	661	120	1,357
A–5	I-8 WB Ramps / Parkway Drive	240	–	–	240
B–1	Alvarado Road: E. Campus Drive to Reservoir Drive	355	–	–	355
B–2	Alvarado Road: Reservoir Drive to 70th Street	576	334	–	910
B–3	College Avenue: I-8 EB Ramps to Zura Way	307	–	–	307
Horizon Year (Year 2035)					
C–2	55th Street / Montezuma Road	576	661	2,970	4,207
C–3	Campanile Drive / Montezuma Road	576	661	2,878	4,115
C–4	College Avenue / I-8 EB Ramps	*See A–1*			
C–5	College Avenue / Canyon Crest Drive	*See A–2*			
C–6	College Avenue / Zura Way	*See A–3*			
C–7	College Avenue / Montezuma Road	*See A–4*			
C–9	70th Street / Alvarado Road	576	661	3,567	4,804
C–10	I-8 WB Ramps / Parkway Drive	*See A–5*			
C–11	Montezuma Road / Collwood Boulevard	576	661	4,594	5,831
D–4	College Avenue: I-8 EB Ramps to Zura Way	*See B–3*			

Footnotes:

a. 120 room of Hotel is calculated to generate 1,200 ADT's (per *Table 8–3A*). Based on Horizon Year (Year 2035) student headcount (11,385 students) to student trips (20,830 ADT) relationship and 1.1385 FTE conversion factor (see *footnote c*), the total FTE's for Alvarado Hotel was calculated as 576 FTE's [(11,385/20,830) x (1,200/1.1385)].

b. 172 DU of Adobe Falls is calculated to generate 1,376 ADT's (per *Table 8–3A*). Based on Horizon Year (Year 2035) student headcount (11,385 students) to student trips (20,830 ADT) relationship and 1.1385 FTE conversion factor (see *footnote c*), the total FTE's for Adobe Falls housing was calculated as 661 FTE's [(11,385/20,830) x (1,376/1.1385)].

c. 11,385 student headcount = 10,000 FTE's. Therefore, 1 student headcount = 1.1385 FTE.

d. FTE Trigger Increase = Alvarado Hotel FTE + Adobe Falls FTE + Student FTE

General Notes:

1. FTE – Full Time Enrollments.
2. Significant and unmitigated impacted locations not shown in this table.

14.0 ADDITIONAL INTERSECTION ANALYSES

Based on discussions with City staff, traffic analyses of two (2) additional intersections in the Project area were conducted. The intersections are Montezuma Road / Collwood Boulevard and Montezuma Road / Yerba Santa Drive. This section presents the analysis of the Project's impacts at these two intersections.

14.1 Existing Street Network

Collwood Boulevard is a north-south roadway and is classified as a 4-lane Major Street in the College Area Community Plan. Collwood Boulevard is currently constructed as a two-lane Collector with two way left turn lane between College Avenue and 54th Street. Bike lanes are provided along Collwood Boulevard. On-street parking is generally allowed. Bus stops are provided at College Avenue. The posted speed limit is 40 mph.

Yerba Santa Drive is a north-south roadway and is classified as a 2-lane Collector in the College Area Community Plan. Yerba Santa Drive is currently constructed as a two-lane undivided roadway. Bike lanes are not provided along Yerba Santa Drive. On-street parking is allowed on the southbound direction side, north of College Avenue. There are no posted speed limit signs.

14.2 Analysis of Existing Conditions

14.2.1 *Existing Intersection Operations*

Intersection capacity analyses were conducted for the two additional intersections under Existing without and with Total Project conditions. ***Table 14–1*** reports the intersection operations during the peak hour conditions. Under Existing without and with Total Project conditions, both intersections would operate at LOS C or better.

Appendix S contains the intersection analysis worksheets for these intersections under Existing without and with Total Project scenario.

TABLE 14–1
EXISTING + TOTAL PROJECT INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		Existing + Total Project	
			Delay[a]	LOS[b]	Delay	LOS
1. Montezuma Road / Collwood Boulevard	Signal	AM	21.5	C	21.7	C
		PM	25.3	C	25.7	C
1. Montezuma Road / Yerba Santa Drive	Signal	AM	9.4	A	11.2	B
		PM	9.2	A	9.4	A

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

14.3 Near-Term (Year 2022) Analysis

Intersection capacity analyses were conducted for the two additional intersections under Near-Term (Year 2022) without and with Project conditions. ***Table 14–2*** reports the intersection operations during the peak hour conditions. Under Near-Term (Year 2022) without and with Project conditions, both intersections would operate at LOS C or better. Based on the City of San Diego's significance criteria, no significant impacts are identified at the two intersections as the Project's traffic contribution would not exceed the allowable threshold.

Appendix S contains the intersection analysis worksheets for these intersections under the Near-Term without and with Project scenarios.

TABLE 14–2
NEAR-TERM (YEAR 2022) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Near-Term (Year 2022)		Near-Term (Year 2022) + Project		Δ[c]	Significant Impact?
			Delay[a]	LOS[b]	Delay	LOS		
1. Montezuma Road / Collwood Boulevard	Signal	AM	21.6	C	21.9	C	0.3	No
		PM	31.9	C	32.1	C	0.2	No
2. Montezuma Road / Yerba Santa Drive	Signal	AM	9.5	A	11.4	B	1.9	No
		PM	9.4	A	9.5	A	0.1	No

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

14.4 Horizon Year (Year 2035) Analysis

Intersection capacity analyses were conducted for the two additional intersections under Horizon Year (Year 2035) without and with Project conditions. ***Table 14–3*** reports the intersection operations during the peak hour conditions. As shown on the table, under the Horizon Year (Year 2035) without and with Project scenario, the following intersection would operate at LOS E:

- Montezuma Road / Collwood Boulevard (LOS E during the PM peak hour)

Appendix S contains the intersection analysis worksheets for the additional intersections under Horizon Year (Year 2035) without and with Project scenario.

TABLE 14–3
HORIZON YEAR (YEAR 2035) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035)		Horizon Year (Year 2035) + Project		Δ[c]	Significant Impact?
			Delay[a]	LOS[b]	Delay	LOS		
1. Montezuma Road / Collwood Boulevard	Signal	AM	24.8	C	30.4	C	5.6	No
		PM	**55.0**	**E**	**59.6**	**E**	**4.6**	**Yes**
2. Montezuma Road / Yerba Santa Drive	Signal	AM	11.7	B	13.9	B	2.2	No
		PM	11.6	B	12.2	B	0.6	No

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.

General Notes:
1. **Bold** typeface indicates intersections operating at LOS E.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

14.5 Significant Impacts and Mitigation Measures

14.5.1 *Near-Term*

Based on the City of San Diego's significance criteria, no significant impacts are identified at the two intersections as the project traffic contribution would not exceed the allowable threshold. Therefore, no mitigation measures are required.

14.5.2 *Horizon Year (Year 2035)*

Based on the City of San Diego's significance criteria, a significant impact is identified at the intersection below as the Project's traffic contribution would exceed the allowable threshold.

C–11. Montezuma Road / Collwood Boulevard (PM peak hour)

14.5.3 *Mitigation Measures*

The improvements listed below would mitigate the Project's significant cumulative impacts identified under the Horizon Year (Year 2035) scenario.

Intersections

C –11. Montezuma Road / Collwood Boulevard

> The improvement necessary to mitigate the Project's significant cumulative impact at the Montezuma Road / Collwood Boulevard intersection is to provide a right-turn overlap phase on the northbound approach.
>
> Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (9.7%), nor is there a plan or program in place to construct the necessary improvements at this intersection. SDSU has agreed to fully fund and implement the necessary improvements. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 30,386, or its equivalent, SDSU shall modify the traffic signal at the Montezuma Road / Collwood Boulevard intersection to provide a right-turn overlap phase on the northbound approach. To implement the improvement, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.

Post Mitigation Operations

Tables 14–4 reports the result of the intersection mitigation analysis for the Horizon Year (Year 2035) + Project conditions. As shown in the table, if implemented, the recommended improvement would reduce the project's impacts to the intersection to less than significant.

Appendix S contains the post mitigation analysis worksheets.

TABLE 14–4
HORIZON YEAR (YEAR 2035) INTERSECTION MITIGATION ANALYSIS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035) without Project		Horizon Year (Year 2035) with Project			With Mitigation		Mitigation (fair-share)
			Delay	LOS	Delay	LOS	Δ[e]	Delay	LOS	
1. Montezuma Road / Collwood Road	Signal	PM	**55.0**	**E**	**59.6**	**E**	**4.6**	53.8	D	Provide a right-turn overlap phase on the northbound approach (feasible).

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.

General Notes:
1. Bold and shading represents a potential significant impact

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

15.0 PEDESTRIAN AND BICYCLE FACILITIES ASSESSMENT

An assessment of the existing bicycle / pedestrian infrastructure near the campus and a determination of recommended improvements was conducted.

15.1 Existing Pedestrian Infrastructure

A field review of the existing pedestrian infrastructure was conducted in the study area and the results are shown in ***Appendix U***. The exhibit graphically shows where sidewalks are provided. Also, ***Table 15–1*** provides additional information regarding the presence of sidewalks, including where contiguous and noncontiguous sidewalks exist.

15.2 Existing Bicycle Infrastructure

Table 15–2 shows where existing bicycle facilities are provided. It also indicates whether the bike facilities are Class 1 or Class 2 and whether bike buffers are provided. As can be seen, Class 2 bike lanes are provided on portions of Alvarado Road, College Avenue and Montezuma Road.

15.3 Pedestrian / Bike Improvements

Recently Installed Improvements

The University recently has installed several bicycle and pedestrian improvements including:

- On-campus Class I bike paths between Hardy Road and Hilltop Way, and between Union Street and Viejas Arena (Aztec Walk)(installed since 2007);
- Class II bike lanes on College Avenue between Montezuma Road and Zura Way (installed since 2007);
- Pedestrian improvements, including pedestrian signals, widened sidewalks, and bulb-outs at South Campus Plaza (east side of College Avenue), and Montezuma Road and Campanile Drive (installed since 2007).

Recommended Improvements

- Establish a Bike-Share pilot program on campus;
- Upgrade the existing Class III bicycle facilities to Class II facilities along 54th Street from Collwood Boulevard to El Cajon Boulevard, and upgrade the existing Class III bicycle facilities to Class II facilities along Collwood Boulevard from Monroe Avenue to 54th Street;
- Install a bike lane within existing curb lines on Canyon Crest Drive between Parking Lot 16 and Parking Lot 15;
- Provide shared lane markings (sharrows) on Aztec Circle Drive to alert motorists that bicyclists may be using the full travel lane.

15.4 Potential Pedestrian / Bicycle Safety Impacts

A review of potential impacts to pedestrian & bicycle movement that could result from implementation of the project mitigation measures was conducted. Based on that review, it was determined that none of the mitigation measures would result in the removal of existing bike lanes or sidewalks, nor would they result in a decrease in width of these facilities. In the one instance where a potential conflict would arise (restriping the southbound approach to the Montezuma Road / 55th

Street intersection to provide two southbound right turn movements), since there is no pedestrian crossing allowed on the west leg of the intersection, the right turn improvements would not present a pedestrian or bicycle conflict. Therefore, implementation of the recommended mitigation would not significantly impact existing pedestrian and bicycle facilities.

Additionally, several of the recommended improvements would improve bicycle/pedestrian safety. For example, the installation of a bike lane along Canyon Crest Drive would improve safety conditions for bicyclists along Canyon Crest Drive.

In addition, the installation of a new traffic signal at College Avenue and Zura Way would allow for a controlled crossing of College Avenue where one does not presently exist. This would be a positive safety improvement for both bicyclists and pedestrians.

A review of the potential conflicts between the recommended bicycle improvements and the transit circulation was conducted. No conflicts were identified. No travel lanes utilized by transit will be removed in order to provide the recommended bicycle improvements.

TABLE 15–1
EXISTING PEDESTRIAN INFRASTRUCTURE

Segment	Segment Length (Approx.)	Sidewalk (Yes / No)	Location (One Side / Both Sides)	Type (Contiguous / Noncontiguous)	Notes
Alvarado Road					
E Campus Drive to Alvarado Court	2,140'	No	–	–	
Alvarado Court to Reservoir Drive	1,880'	Yes	Both Sides	Contiguous	No westbound sidewalk between Alvarado Court and Sterling Verde Drive.
Reservoir Drive to 70th Street	3,360'	Yes	Both Sides	Contiguous	Eastbound sidewalk terminates 760' west of 70th Street. There is no westbound sidewalk between Reservoir Drive and 2,040' just east.
College Avenue					
Del Cerro Boulevard to I-8 EB Ramps	2,560'	Yes	Northbound Only	Contiguous	
I-8 EB Ramps to Canyon Crest Drive	510'	Yes	Northbound Only	Contiguous	
Canyon Crest Drive to Zura Way	1,100'	Yes	Northbound Only	Contiguous	
Zura Way to Montezuma Road	1,340'	Yes	Both Sides	Northbound – Contiguous Southbound – Noncontiguous	Southbound sidewalk is only provided between transit center and Montezuma Road.
South of Montezuma Road		Yes	Both Sides	Contiguous	
Montezuma Road					
Fairmount Avenue to Collwood Boulevard	3,290'	Yes	Eastbound Only	Contiguous	
Collwood Boulevard to Yerba Santa Drive	520'	Yes	Eastbound Only	Contiguous	
Yerba Santa Drive to 55th Street	2,580'	Yes	Westbound Only	Contiguous and Noncontiguous	The sidewalk transitions to a noncontiguous design between 54th Street and 55th Street.
55th Street and Campanile Drive	1,330'	Yes	Both Sides	Eastbound – Contiguous Westbound – Noncontiguous	
Campanile Drive to College Avenue	610'	Yes	Both Sides	Contiguous	
East of College Avenue		Yes	Both Sides	Contiguous	

TABLE 15–1
EXISTING PEDESTRIAN INFRASTRUCTURE

Segment	Segment Length (Approx.)	Sidewalk (Yes / No)	Location (One Side / Both Sides)	Type (Contiguous / Noncontiguous)	Notes
55th Street					
Remington Road and Hardy Avenue	1,070'	Yes	Both Sides	Contiguous	The northbound sidewalk transitions to a noncontiguous design between Aztec Walk and Hardy Avenue.
Hardy Avenue to Montezume Road	630'	Yes	Both Sides	Noncontiguous	
Campanile Drive					
Hardy Avenue to Lindo Paseo	340'	Yes	Both Sides	Nontiguous	
Lindo Paseo to Montezuma Road	340'	Yes	Both Sides	Contiguous	
Hardy Avenue					
55th Street and Cul-De-Sac	1,750'	Yes	Both Sides	Eastbound – Contiguous and Noncontiguous Westbound – Contiguous	Eastbound approach provides a noncontiguous design intermittently.
Lindo Paseo					
55th Street and College Avenue	1,890'	Yes	Both Sides	Eastbound – Contiguous and Noncontiguous Westbound – Contiguous	Both sides provides a noncontiguous design intermittently.

TABLE 15–2
EXISTING BICYCLE INFRASTRUCTURE

Segment	Segment Length (Approx.)	Bicycle Mobility Type	Location One Side/ Both Sides	Notes
Alvarado Road				
E Campus Drive to Alvarado Court	2,140'	Class II	Both Sides	Bike lane begins approximately 380' north of E Campus Drive.
Alvarado Court to Reservoir Drive	1,880'	Class II	Both Sides	
Reservoir Drive to 70th Street	3,360'	None	–	
College Avenue				
Del Cerro Boulevard to I-8 EB Ramps	2,560'	None	–	
I-8 EB Ramps to Canyon Crest Drive	510'	None	–	
Canyon Crest Drive to Zura Way	1,100'	None	–	
Zura Way to Montezuma Road	1,340'	Class II (buffered)	Both Sides	Southbound buffer is between Zura Way and transit center; Lindo Paseo and Montezuma Road.
South of Montezuma Road		None	–	
Montezuma Road				
Fairmount Avenue to Collwood Boulevard	3,290'	Class II (buffered)	Both Sides	
Collwood Boulevard to Yerba Santa Drive	520'	Class II (buffered)	Both Sides	
Yerba Santa Drive to 55th Street	2,580'	Class II	Both Sides	Westbound buffer is between Yerba Santa Drive and 54th Street.
55th Street and Campanile Drive	1,330'	None		
Campanile Drive to College Avenue	610'	Class II	Westbound Only	
East of College Avenue		Class II (buffered)	Both Sides	Bike lane begins approximately 450' east of College Avenue.

TABLE 15–2
EXISTING BICYCLE INFRASTRUCTURE

Segment	Segment Length (Approx.)	Bicycle Mobility Type	Location One Side/ Both Sides	Notes
55th Street				
Remington Road and Hardy Avenue	1,070'	Class II	Both Sides	
Hardy Avenue to Montezume Road	630'	Class II	Both Sides	
Campanile Drive				
Hardy Avenue to Lindo Paseo	340'	None	–	
Lindo Paseo to Montezuma Road	340'	None	–	
Hardy Avenue				
55th Street and Cul-De-Sac	1,750'	None	–	
Lindo Paseo				
55th Street and College Avenue	1,890'	None	–	

16.0 TRANSPORTATION DEMAND MANAGEMENT (TDM) MITIGATION MEASURE

As part of the 2007 Campus Master Plan, The Board of Trustees of the California State University adopted a mitigation measure requiring SDSU to develop a campus transportation demand management (TDM) program that facilitates a balanced approach to mobility, with the ultimate goal of reducing vehicle trips to and from campus in favor of alternative modes of travel. The adequacy of the mitigation measure was challenged in court, and while the litigation was pending, SDSU retained a transportation consulting firm to prepare a study evaluating potential TDM measures that would reduce the number of single-rider vehicle trips generated by SDSU students, faculty, and staff in favor of alternative forms of transportation. Following review and input by SANDAG and the Metropolitan Transit System, the study was made final.[8]

The TDM Study included a transportation and parking existing conditions analysis, a screening process for potential TDM strategies, and the development of a multi-phase implementation plan. The Study was intended "to assist and guide SDSU in its efforts to maximize its transportation resources and provide specific strategies to enable the university to invest in a transportation system that supports all modes of travel." (TDM Study, page 1-1.)

Included within the TDM Study is a series of strategies to be considered and further evaluated for implementation by SDSU. The strategies include: identifying a TDM coordinator; increasing ride-sharing and car-sharing opportunities; enhancing the existing bicycle and pedestrian network; facilitating transit ridership through various means, including financial incentives; and, prioritizing investments in on-campus housing and amenities. (TDM Study, pages 1-2 to 1-3.)

Following its review and consideration of the TDM Study strategies, SDSU recommends the Board of Trustees adopt the following mitigation measure to reduce to the extent possible the number of single-rider vehicle trips generated by the SDSU campus:

AATCP-19 Following re-approval of the 2007 Campus Master Plan by The Board of Trustees of the California State University, and no later than commencement of the Fall 2019 semester unless otherwise noted, SDSU shall take the following actions to implement or, as applicable, continue to implement, on-campus transportation demand management (TDM) strategies designed to reduce the number of vehicle trips generated by SDSU students, faculty, and staff:

1. **TDM Coordinator.** Immediately following Master Plan approval, identify the SDSU employment position with primary responsibility for overseeing implementation of TDM measures on campus including, but not limited to, the TDM measures listed in this mitigation measure, and task such position with conducting the appropriate implementation, outreach, and marketing activities.

[8] *Transportation Demand Management Program Final Report* (June 2013), Nelson Nygaard (TDM Study). A copy of the TDM Study is included as *Appendix V* to the Draft Additional Analysis.

2. **Increase Rideshare Opportunities.** SDSU, or the TDM Coordinator as applicable, shall:
   a. Provide a central digital platform location for information relating to available alternative transportation opportunities;
   b. Provide preferential vanpool/carpool parking spaces in each parking lot commensurate with demand;
   c. Allow use of shared parking passes for carpools and vanpools (shared parking passes authorize the use of one parking pass that is shared amongst all of the drivers of a designated carpool or vanpool);
   d. Connect the existing Enterprise Rent-A-Car VanPool system to the Human Resources (HR) database for more efficient ride-matching (the HR database includes information regarding home address and employment department, thereby facilitating carpool matches based on location and work schedule);
   e. Provide dedicated parking spaces and subsidies, funded through SANDAG and SDSU, towards leasing and fuel costs associated with vanpools operated through the Enterprise Rent-A-Car VanPool system;
   f. Promote ZimRide (a rideshare platform) and SANDAG's iCommute program by all appropriate means including, but not limited to, providing informational packets to all resident students during student orientation;
   g. Expand hours of operation, increase frequency, and expand the service area of the on-campus SDSU Red & Black shuttle;
   h. Facilitate continued operation of private shuttles operating between off-campus apartments and campus by identifying off-campus pick-up/drop-off locations; and,
   i. Designate on campus locations for ride-hailing services, including, but not limited to, Uber, Lyft (see *Appendix V*, *Figure 16-1* for location of existing and planned future rideshare locations).

3. **Facilitate Bicycle and Pedestrian Travel.** SDSU, or the TDM Coordinator as applicable, shall:
   a. Establish a Bike-Share pilot program on campus;
   b. Upgrade existing Class III bicycle facilities to Class II facilities along 54th Street from Collwood Boulevard to El Cajon Boulevard, and upgrade the existing Class III bicycle facilities to Class II facilities along Collwood Boulevard from Monroe Avenue to 54th Street;
   c. Install a bike lane, within the existing curb lines on Canyon Crest Drive between Lot 16 (former A Lot) and Lot 15 (former X Lot) in order to improve bicycle access to/from and within campus;
   d. Provide shared lane markings (sharrows) on Aztec Circle Drive to alert motorists that bicyclists may be using the full travel lane;

e. Provide on-campus Class I bike paths between Hardy Road and Hilltop Way, and between Union Street and Viejas Arena (Aztec Walk)(installed since 2007);
f. Provide Class II bike lanes on College Avenue between Montezuma Road and Zura Way (installed since 2007);
g. Maintain existing on-campus bike racks and continue to monitor need for additional racks as necessary; and
h. Provide pedestrian improvements, including pedestrian signals, widened sidewalks, and bulb-outs at South Campus Plaza (east side of College Avenue), and Montezuma Road and Campanile Drive (installed since 2007).

4. **Facilitate Transit Ridership.** SDSU, or the TDM Coordinator as applicable, shall:
   a. Maintain discounted Metropolitan Transit System (MTS) transit pass program for students and enable purchases by credit card;
   b. Establish a pre-tax payroll deduction program for faculty and staff purchase of MTS transit passes, provided SDSU meets the state/CSU required minimum participation level;
   c. Provide reduced cost transit passes for faculty and staff, provided SDSU meets the MTS required minimum participation level. Cost reduction will be between 10% and 25%, depending on participation level; and,
   d. Increase on-campus vehicle parking rates for single-rider student vehicles by 2025.

In light of the ongoing evolution of transportation technology and advancements, the strategies set forth above may be modified or replaced, as necessary, with alternative strategies of equal or enhanced effectiveness. Therefore, the TDM Coordinator shall annually evaluate the above strategies to ensure that the strategies are meeting the needs and priorities of the SDSU students, faculty, and staff. As new technologies and strategies become available, the strategies included in this mitigation measure can be modified in order to implement alternative technologies and/or strategies of equal or enhanced effectiveness.

In addition to the above TDM strategies, since approval in 2007 of the Campus Master Plan, SDSU has adopted student residency policies and constructed a substantial number of student housing units and amenities both on and adjacent to or within walking distance of campus that have assisted in reducing vehicle trips and related vehicle miles traveled (VMT). Since 2010, SDSU has required Freshmen enrolling from out of the SDSU service area to live on campus, and, beginning in Fall 2019, all out of service area Sophomores also will be required to live on campus. To meet these requirements and the increased demand to live on campus, SDSU has added approximately 1,350 on-campus student housing beds since 2007, and additional housing presently is being constructed and/or planned for construction on and adjacent to campus (within one block of Montezuma) that

would house an additional approximate 1,630 students by 2019 (1,330 on campus and 300 adjacent to campus). Thus, by Fall 2019, SDSU will be housing approximately 2,980 more students on and adjacent to campus than it did in 2007. In addition, since 2007, SDSU has added over 35,000 gross square feet (GSF) of retail amenities within walking distance of campus. These amenities, which include a grocery store (Trader Joe's), several restaurants, and a Verizon store, reduce the need for students, faculty, and staff to drive from the campus to shop for their goods and services. Please see *Appendix V*, *Figure 16–2* for illustration of the housing and amenities added since 2007.

17.0 CALIFORNIA STATE UNIVERSITY (CSU) SIGNIFICANCE CRITERIA

This section is provided for information purposes and presents a comparative analysis of the Project's significant impacts relating to off-site traffic operations based on application of the significance criteria provided in the California State University *Transportation Impact Study Manual* (November 2012). Under the CSU criteria, a project would result in a significant impact to off-site traffic operations under the following conditions:

- A roadway segment or intersection operates at LOS D or better under a no project scenario and the addition of project trips causes overall traffic operations on the facility to operate at LOS E or F.

- A roadway segment or intersection operates at LOS E or F under a no project scenario and the project adds both 10 or more peak hour trips and 5 seconds or more of peak hour delay [at intersections], during the same peak hour, [or in the case of segments, the project increase in volume to capacity ratio is 0.02 or more].

- If an intersection [or segment] operates at a very poor LOS F (control delay of 120 seconds or more [for intersections, and v/c ratio of 1.50 or more for segments], the significance criterion [for intersections] shall be an increase in v/c ratio of 0.02 or more [and the significance criterion for segments shall be an increase in v/c ratio of 0.01 or more].

17.1 Near-Term Significant Impacts under CSU Significance Criteria

If the CSU significance criteria were applied under the Near-Term (Year 2022) scenario, the significant impacts would be the same as those identified under the City of San Diego thresholds less the following locations; that is, impacts at the following locations would be less than significant with application of the CSU thresholds:

Intersections

I-8 WB Ramps / Parkway Drive

Street Segments

College Avenue: Montezuma Road to Cresita Drive

17.2 Horizon Year Significant Impacts under CSU Significance Criteria

If the CSU significance criteria were applied under the Horizon Year (Year 2035) scenario, the significant impacts would be the same as those identified under the City of San Diego thresholds less the following locations; that is, impacts at the following locations would be less than significant with application of the CSU thresholds:

Intersections

Fairmount Avenue / I-8 WB off-ramp / Camino Del Rio N.

70th Street / Alvarado Road

LINSCOTT
LAW &
GREENSPAN
engineers

TECHNICAL APPENDICES

SDSU MASTER PLAN UPDATE

San Diego, California
January 9, 2018

LLG Ref. 3-16-2604

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APPENDIX A

INTERSECTION AND SEGMENT MANUAL COUNT SHEETS AND TRAFFIC COUNT VALIDATION MEMO

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

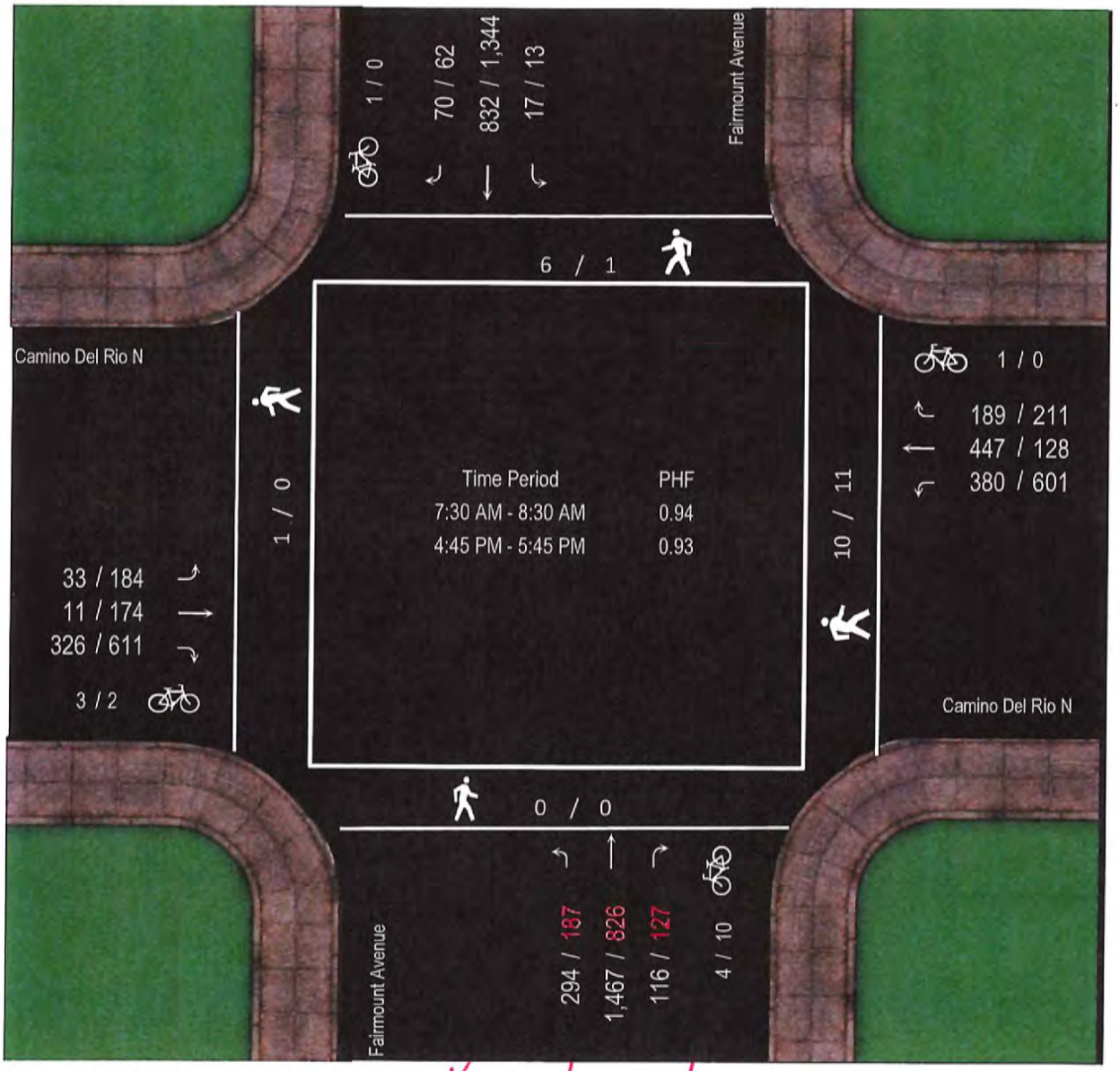
Location: Camino Del Rio N @ Fairmount Avenue

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*



Red numbers indicate balancing adjustments 193 854 131

LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: Camino Del Rio N @ Fairmount Avenue

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	10	131	0	31	107	85	31	235	99	64	0	4	797
7:15 AM	10	165	4	35	74	98	36	289	81	72	6	3	873
7:30 AM	13	203	2	26	114	120	34	423	0	96	0	5	1,036
7:45 AM	17	200	3	48	127	83	27	340	90	70	1	9	1,015
8:00 AM	28	203	7	76	107	83	29	389	94	82	5	11	1,114
8:15 AM	12	226	5	39	99	94	26	315	110	78	5	8	1,017
8:30 AM	24	202	2	34	89	118	24	322	91	59	6	10	981
8:45 AM	15	248	3	68	83	111	49	314	79	59	5	16	1,050
Total	129	1,578	26	357	800	792	256	2,627	644	580	28	66	7,883

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	70	832	17	189	447	380	116	1,467	294	326	11	33	4,182
PHF	0.63	0.92	0.61	0.62	0.88	0.79	0.85	0.87	0.67	0.85	0.55	0.75	0.94
Movement PHF		0.95			0.95			0.92			0.92		0.94

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	18	306	0	64	30	123	33	191	62	128	10	21	986
4:15 PM	20	323	4	72	43	126	32	238	42	134	22	25	1,081
4:30 PM	16	317	3	52	22	129	31	206	57	148	36	25	1,042
4:45 PM	21	309	4	42	35	136	32	212	42	158	35	35	1,061
5:00 PM	8	368	2	60	26	156	30	240	58	157	44	52	1,201
5:15 PM	17	338	3	56	33	152	42	172	42	145	50	66	1,116
5:30 PM	16	329	4	53	34	157	23	202	45	151	45	31	1,090
5:45 PM	17	252	3	60	33	133	37	161	58	180	29	32	995
Total	133	2542	23	459	256	1,112	260	1,622	406	1,201	271	287	8,572

PM Intersection Peak Hour : **4:45 PM - 5:45 PM** Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	62	1344	13	211	128	601	127	826	187	611	174	184	4468
PHF	0.74	0.913	0.813	0.879	0.914	0.957	0.756	0.86	0.806	0.967	0.87	0.697	0.93
Movement PHF		0.94			0.96			0.87			0.93		0.93

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: I-8 EB Off-Ramp @ Fairmount Avenue

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: I-8 EB Off-Ramp @ Fairmount Avenue

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	109	0	0	0	0	0	168	39	240	0	197	753
7:15 AM	0	143	0	0	0	0	0	199	54	336	0	207	939
7:30 AM	0	170	0	0	0	0	0	253	68	416	0	204	1,111
7:45 AM	0	147	0	0	0	0	0	229	37	415	0	228	1,056
8:00 AM	0	163	0	0	0	0	0	269	62	370	0	243	1,107
8:15 AM	0	150	0	0	0	0	0	229	52	362	0	222	1,015
8:30 AM	0	148	0	0	0	0	0	211	28	360	0	226	973
8:45 AM	0	189	0	0	0	0	0	195	46	388	0	247	1,065
Total	0	1,219	0	0	0	0	0	1,753	386	2,887	0	1,774	8,019

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	630	0	0	0	0	0	980	219	1,563	0	897	4,289
PHF	#####	0.93	#####	#####	#####	#####	#####	0.91	0.81	0.94	#####	0.92	0.97
Movement PHF		0.93			#DIV/0!			0.91			0.96		0.97

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	0	282	0	0	0	0	0	92	3	694	0	194	1,265
4:15 PM	0	267	0	0	0	0	0	111	4	643	0	201	1,226
4:30 PM	0	294	0	0	0	0	0	120	6	672	0	174	1,266
4:45 PM	0	318	0	0	0	0	0	110	3	630	0	176	1,237
5:00 PM	0	346	0	0	0	0	0	145	6	539	0	183	1,219
5:15 PM	0	315	0	0	0	0	0	107	9	604	0	149	1,184
5:30 PM	0	398	0	0	0	0	0	127	11	490	0	143	1,169
5:45 PM	0	305	0	0	0	0	0	96	7	620	0	160	1,188
Total	0	2525	0	0	0	0	0	908	49	4,892	0	1,380	9,754

PM Intersection Peak Hour : **4:00 PM - 5:00 PM** Intersection PHF : **0.99**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	1161	0	0	0	0	0	433	16	2639	0	745	4994
PHF	#####	0.913	#####	#####	#####	#####	#####	0.902	0.667	0.951	#####	0.927	0.99
Movement PHF		0.91			#DIV/0!			0.89			0.95		0.99

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

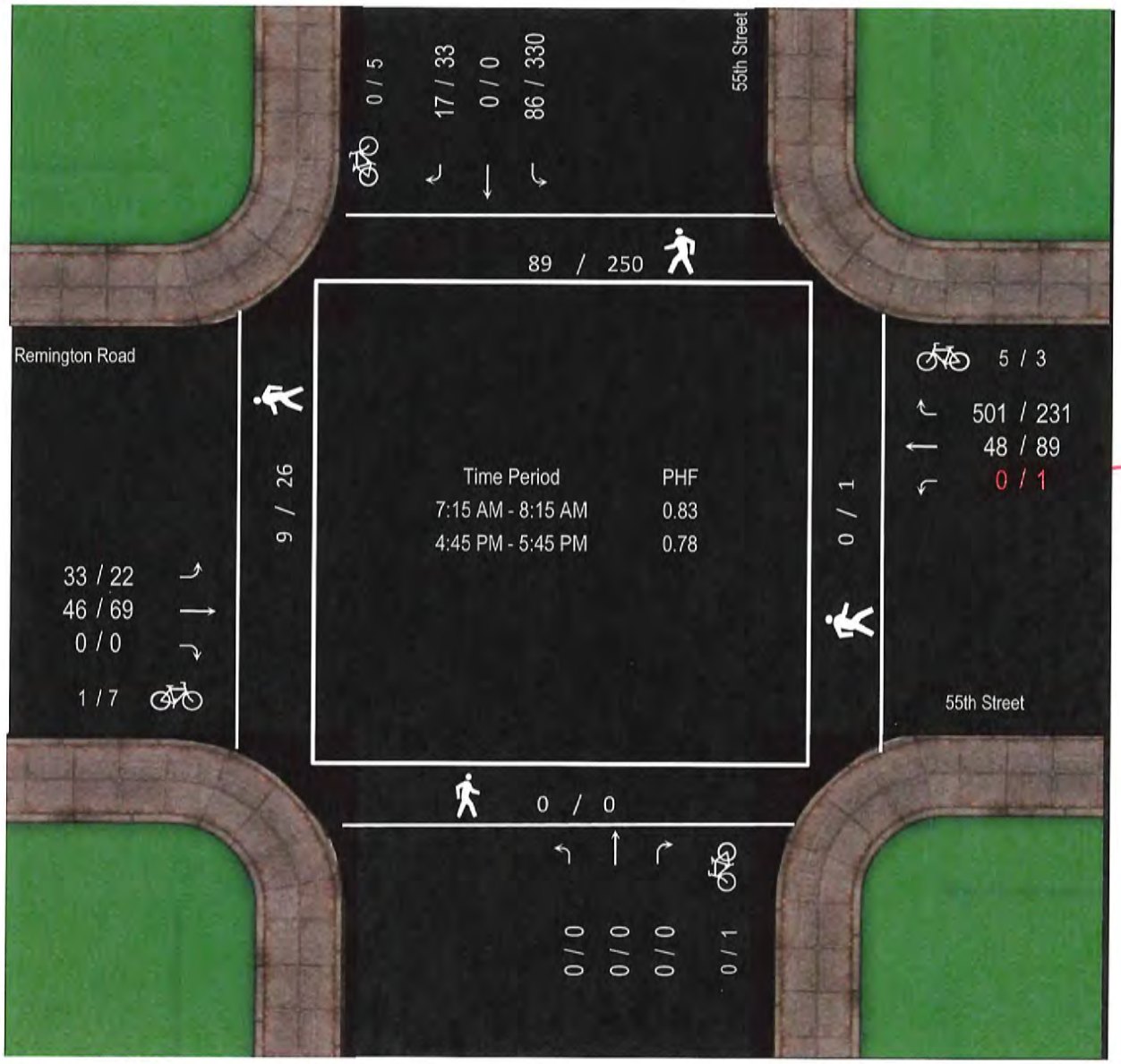
Location: Remington Road @ 55th Street

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*



DNE

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Remington Road @ 55th Street

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	3	0	8	66	11	0	0	0	0	0	18	11	117
7:15 AM	1	0	12	99	9	0	0	0	0	0	9	14	144
7:30 AM	2	0	16	153	13	0	0	0	0	0	10	10	204
7:45 AM	8	0	25	152	16	0	0	0	0	0	14	6	221
8:00 AM	6	0	33	97	10	0	0	0	0	0	13	3	162
8:15 AM	4	0	15	64	2	0	0	0	0	0	12	3	100
8:30 AM	3	0	20	90	16	0	0	0	0	0	19	7	155
8:45 AM	5	0	32	105	12	0	0	0	0	0	16	12	182
Total	32	0	161	826	89	0	0	0	0	0	111	66	1,285

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.83**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	17	0	86	501	48	0	0	0	0	0	46	33	731
PHF	0.53	#####	0.65	0.82	0.75	#####	#####	#####	#####	#####	0.82	0.59	0.83
Movement PHF		0.66			0.82			#DIV/0!			0.86		0.83

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	6	0	66	52	18	0	0	0	0	0	15	5	162
4:15 PM	6	0	58	44	26	0	0	0	0	0	18	3	155
4:30 PM	6	0	76	50	28	0	0	0	0	0	19	7	186
4:45 PM	7	0	80	64	22	1	0	0	0	0	16	2	192
5:00 PM	5	0	62	49	14	0	0	0	0	0	9	5	144
5:15 PM	10	0	118	68	27	0	0	0	0	0	18	6	247
5:30 PM	11	0	70	50	26	0	0	0	0	0	26	9	192
5:45 PM	13	0	77	50	19	0	0	0	0	0	15	4	178
Total	64	0	607	427	180	1	0	0	0	0	136	41	1,456

PM Intersection Peak Hour : **4:45 PM - 5:45 PM** Intersection PHF : **0.78**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	33	0	330	231	89	1	0	0	0	0	69	22	775
PHF	0.75	#####	0.699	0.849	0.824	0.25	#####	#####	#####	#####	0.663	0.611	0.78
Movement PHF		0.71			0.84			#DIV/0!			0.65		0.78

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Montezuma Road @ 55th Street

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Montezuma Road @ 55th Street

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	20	0	13	51	269	2	4	2	13	3	43	65	485
7:15 AM	33	0	9	89	257	0	5	1	8	0	60	86	548
7:30 AM	33	0	16	81	248	0	8	5	18	4	104	134	651
7:45 AM	25	0	17	62	157	1	3	9	7	5	99	168	553
8:00 AM	31	1	33	60	167	3	3	4	12	4	67	115	500
8:15 AM	21	0	27	38	159	1	0	1	7	3	79	88	424
8:30 AM	41	0	18	49	202	0	2	3	11	4	92	86	508
8:45 AM	35	0	31	44	174	0	3	3	10	2	90	111	503
Total	239	1	164	474	1,633	7	28	28	86	25	634	853	4,172

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.86**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	122	1	75	292	829	4	19	19	45	13	330	503	2,252
PHF	0.92	0.25	0.57	0.82	0.81	0.33	0.59	0.53	0.63	0.65	0.79	0.75	0.86
Movement PHF		0.76			0.81			0.67			0.78		0.86

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	95	3	39	37	162	3	1	1	10	13	187	55	606
4:15 PM	71	2	59	34	108	4	7	3	11	8	227	57	591
4:30 PM	94	1	62	24	121	2	4	7	12	14	192	70	603
4:45 PM	104	7	61	46	139	4	0	0	13	13	216	71	674
5:00 PM	90	6	48	27	148	5	5	6	13	18	221	75	662
5:15 PM	109	4	89	58	128	8	0	2	12	20	165	84	679
5:30 PM	103	6	59	53	136	7	6	3	11	23	206	84	697
5:45 PM	85	6	69	57	127	7	3	1	16	18	143	57	589
Total	751	35	486	336	1,069	40	26	23	98	127	1,557	553	5,101

PM Intersection Peak Hour : **4:45 PM - 5:45 PM** Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	406	23	257	184	551	24	11	11	49	74	808	314	2712
PHF	0.93	0.821	0.722	0.793	0.931	0.75	0.458	0.458	0.942	0.804	0.914	0.935	0.97
Movement PHF		0.85			0.97			0.74			0.95		0.97

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

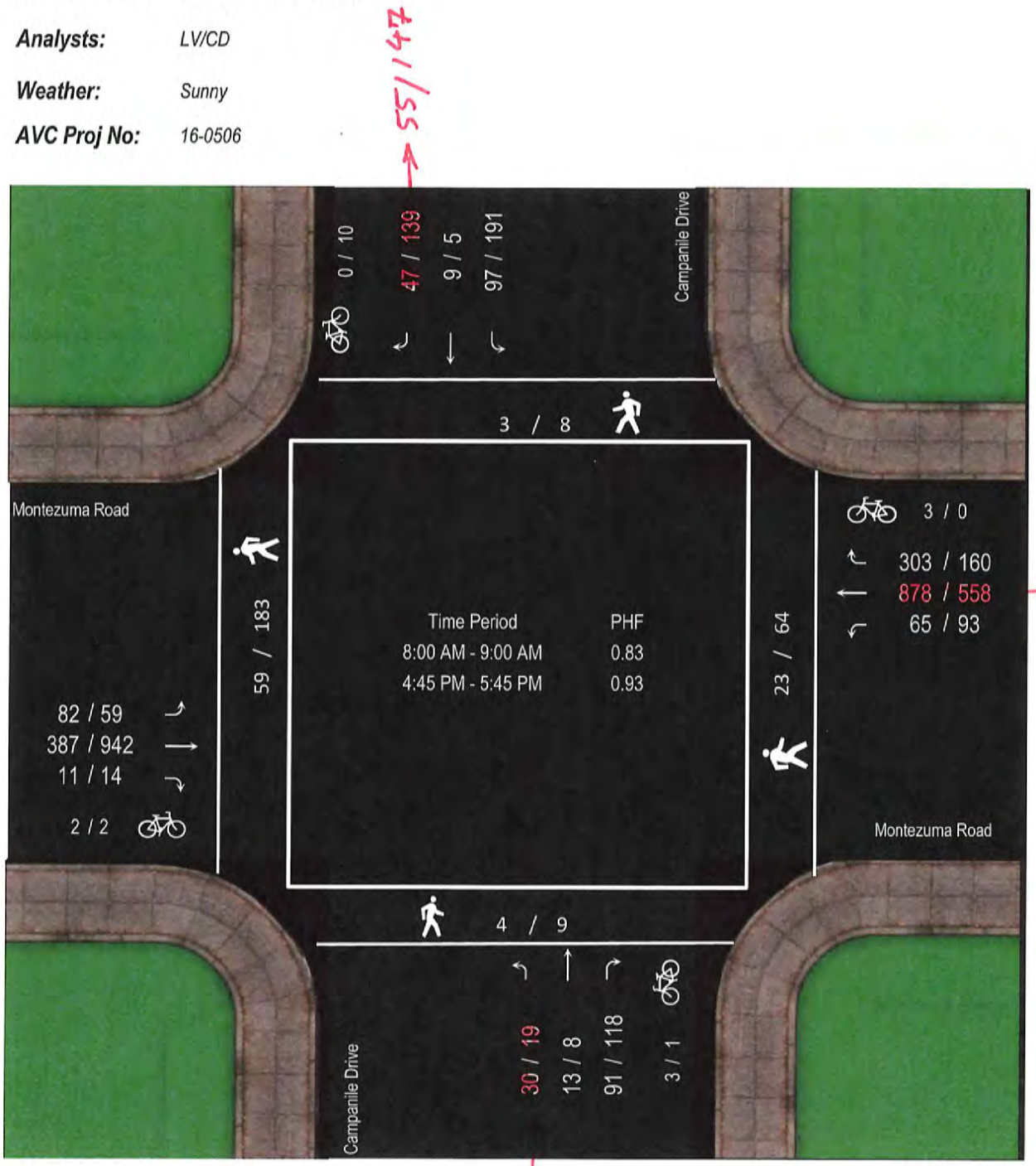
Location: Montezuma Road @ Campanile Drive

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Montezuma Road @ Campanile Drive

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	11	0	4	32	320	4	17	0	0	0	44	4	436
7:15 AM	8	1	12	53	285	8	9	1	3	3	59	12	454
7:30 AM	9	3	9	66	329	7	17	1	3	3	94	16	557
7:45 AM	9	1	23	75	240	12	8	5	2	2	86	16	479
8:00 AM	5	1	17	93	203	9	14	4	7	2	85	19	459
8:15 AM	8	2	17	56	208	8	16	0	3	1	74	22	415
8:30 AM	14	3	27	70	235	19	26	3	8	3	101	21	530
8:45 AM	20	3	36	84	232	29	35	6	12	5	127	20	609
Total	84	14	145	529	2,052	96	142	20	38	19	670	130	3,939

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.83**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	47	9	97	303	878	65	91	13	30	11	387	82	2,013
PHF	0.59	0.75	0.67	0.81	0.93	0.56	0.65	0.54	0.63	0.55	0.76	0.93	0.83
Movement PHF		0.65			0.90			0.63			0.79		0.83

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	34	3	41	53	160	34	19	2	2	0	217	19	584
4:15 PM	24	1	23	39	133	13	22	5	5	7	289	18	579
4:30 PM	46	9	44	40	111	23	22	3	1	0	200	13	512
4:45 PM	26	1	47	41	143	24	22	1	2	3	256	10	576
5:00 PM	46	2	49	37	103	31	27	3	4	3	232	14	551
5:15 PM	33	1	51	41	180	22	37	3	5	4	222	23	622
5:30 PM	34	1	44	41	132	16	32	1	8	4	232	12	557
5:45 PM	30	1	45	52	143	29	35	2	2	5	197	13	554
Total	273	19	344	344	1,105	192	216	20	29	26	1,845	122	4,535

PM Intersection Peak Hour : **4:45 PM - 5:45 PM** Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	139	5	191	160	558	93	118	8	19	14	942	59	2306
PHF	0.76	0.625	0.936	0.976	0.775	0.75	0.797	0.667	0.594	0.875	0.92	0.641	0.93
Movement PHF		0.86			0.83			0.81			0.94		0.93

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

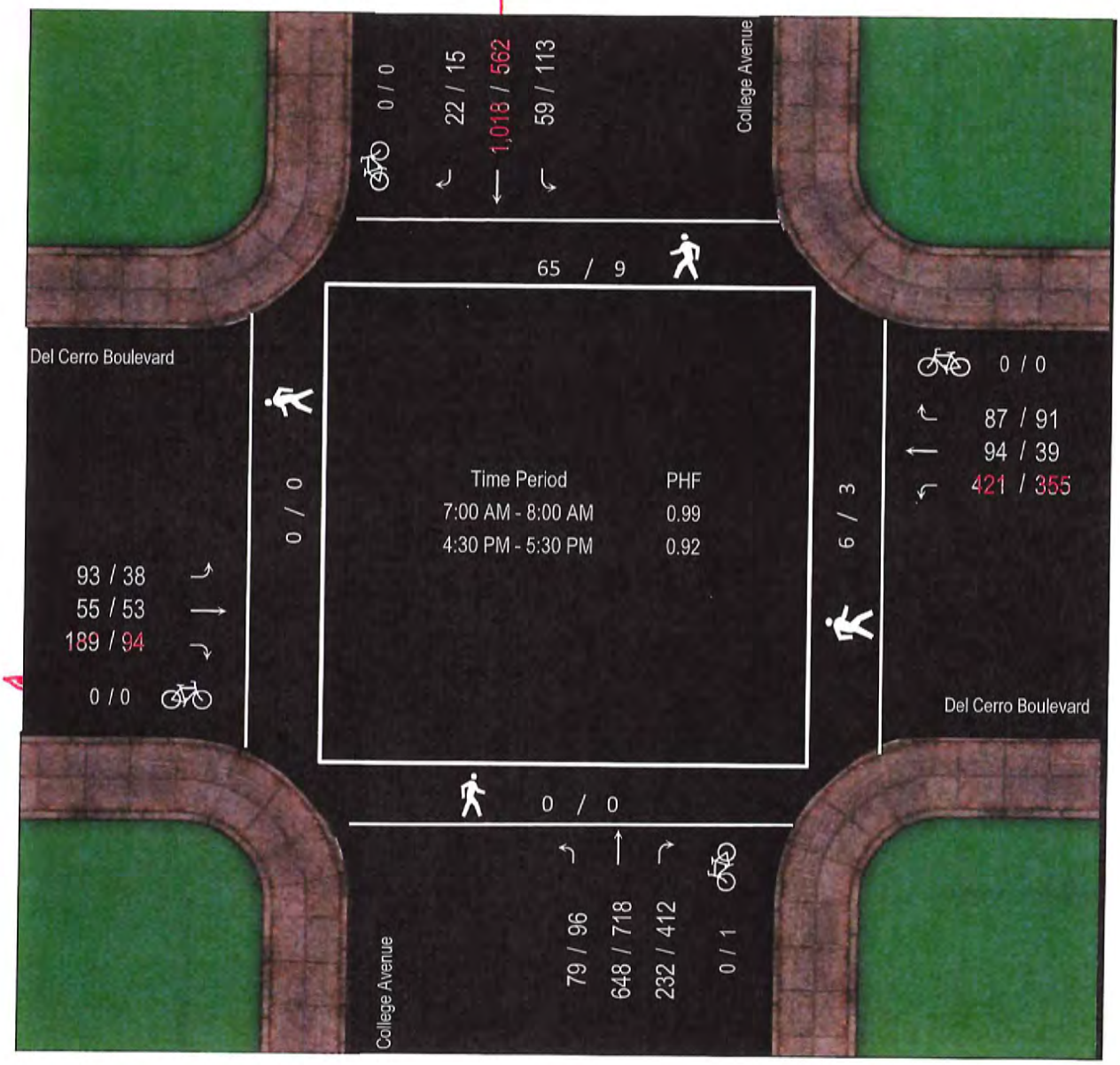
Location: Del Cerro Boulevard @ College Avenue

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*



1045 / 570

432/360

194/96

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Del Cerro Boulevard @ College Avenue

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	3	224	5	25	10	98	91	222	8	31	8	21	746
7:15 AM	2	253	11	21	17	135	76	161	20	29	6	19	750
7:30 AM	9	272	16	21	46	96	26	133	29	62	20	28	758
7:45 AM	8	269	27	20	21	92	39	132	22	67	21	25	743
8:00 AM	0	173	18	15	6	90	41	135	14	25	3	12	532
8:15 AM	6	182	21	17	6	105	37	103	17	36	10	12	552
8:30 AM	4	149	16	6	6	101	48	114	18	34	5	12	513
8:45 AM	4	172	17	10	9	92	52	122	31	25	2	6	542
Total	36	1,694	131	135	121	809	410	1,122	159	309	75	135	5,136

AM Intersection Peak Hour : **7:00 AM - 8:00 AM** Intersection PHF : **0.99**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	22	1,018	59	87	94	421	232	648	79	189	55	93	2,997
PHF	0.61	0.94	0.55	0.87	0.51	0.78	0.64	0.73	0.68	0.71	0.65	0.83	0.99
Movement PHF		0.90			0.87			0.75			0.75		0.99

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	3	148	26	19	15	83	82	190	22	17	13	9	627
4:15 PM	5	145	30	18	8	82	106	155	30	21	4	10	614
4:30 PM	4	146	38	22	18	88	97	215	23	28	20	5	704
4:45 PM	1	121	21	23	9	85	99	145	29	27	10	6	576
5:00 PM	5	135	27	24	5	91	107	181	18	25	14	14	646
5:15 PM	5	160	27	22	7	91	109	177	26	14	9	13	660
5:30 PM	1	163	27	25	8	86	100	159	40	19	9	9	646
5:45 PM	1	131	24	26	12	76	93	185	19	13	4	8	592
Total	25	1149	220	179	82	682	793	1,407	207	164	83	74	5,065

PM Intersection Peak Hour : **4:30 PM - 5:30 PM** Intersection PHF : **0.92**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	15	562	113	91	39	355	412	718	96	94	53	38	2586
PHF	0.75	0.878	0.743	0.948	0.542	0.975	0.945	0.835	0.828	0.839	0.663	0.679	0.92
Movement PHF		0.90			0.95			0.91			0.87		0.92

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: I-8 WB Ramps @ College Avenue

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: I-8 WB Ramps @ College Avenue

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	162	191	0	17	0	29	102	304	0	0	0	0	805
7:15 AM	162	255	0	10	0	34	56	247	0	0	0	0	764
7:30 AM	182	248	0	21	0	68	64	167	0	0	0	0	750
7:45 AM	165	263	0	42	0	81	84	151	0	0	0	0	786
8:00 AM	119	169	0	50	0	67	91	140	0	0	0	0	636
8:15 AM	144	179	0	33	0	97	74	124	0	0	0	0	651
8:30 AM	150	134	0	54	0	101	112	126	0	0	0	0	677
8:45 AM	145	144	0	38	0	154	86	167	0	0	0	0	734
Total	1,229	1,583	0	265	0	631	669	1,426	0	0	0	0	5,803

AM Intersection Peak Hour : **7:00 AM - 8:00 AM** Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	671	957	0	90	0	212	306	869	0	0	0	0	3,105
PHF	0.92	0.91	#####	0.54	#####	0.65	0.75	0.71	#####	#####	#####	#####	0.96
Movement PHF		0.95			0.61			0.72			#DIV/0!		0.96

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	126	122	0	80	0	98	300	214	0	0	0	0	940
4:15 PM	107	141	0	83	0	88	297	208	0	0	0	0	924
4:30 PM	119	143	0	79	0	93	287	256	0	0	0	0	977
4:45 PM	105	128	0	93	0	118	307	180	0	0	0	0	931
5:00 PM	102	149	0	92	0	108	314	214	0	0	0	0	979
5:15 PM	109	156	0	88	0	100	278	224	0	0	0	0	955
5:30 PM	104	164	0	89	0	110	257	210	0	0	0	0	934
5:45 PM	92	128	0	70	0	106	262	227	0	0	0	0	885
Total	864	1131	0	674	0	821	2,302	1,733	0	0	0	0	7,525

PM Intersection Peak Hour : **4:30 PM - 5:30 PM** Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	435	576	0	352	0	419	1186	874	0	0	0	0	3842
PHF	0.91	0.923	#####	0.946	#####	0.888	0.944	0.854	#####	#####	#####	#####	0.98
Movement PHF		0.95			0.91			0.95			#DIV/0!		0.98

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

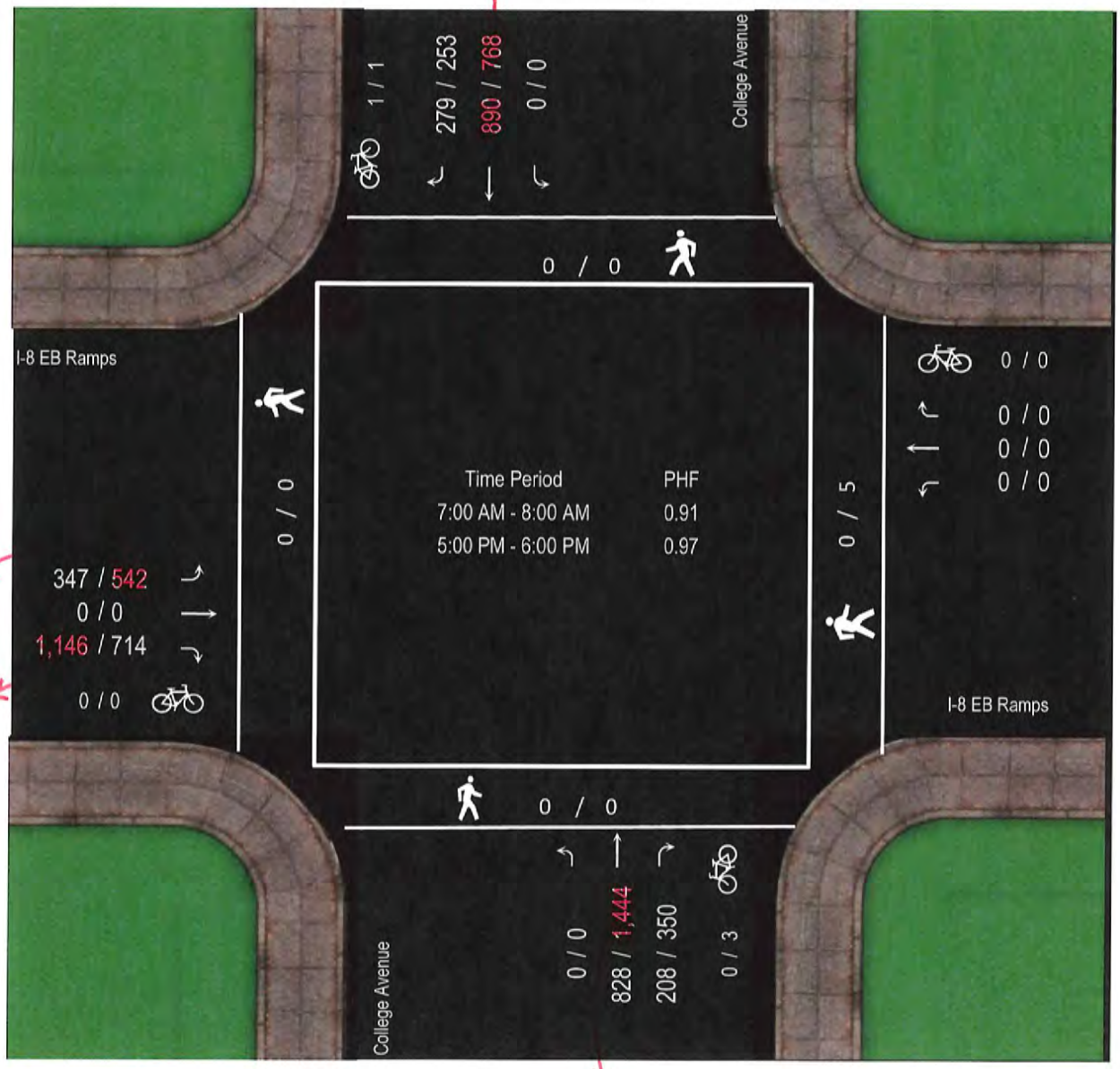
Location: I-8 EB Ramps @ College Avenue

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*



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562

1213

1498

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: I-8 EB Ramps @ College Avenue

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	49	171	0	0	0	0	55	291	0	173	0	115	854
7:15 AM	74	215	0	0	0	0	53	206	0	225	0	97	870
7:30 AM	71	245	0	0	0	0	53	163	0	360	0	68	960
7:45 AM	85	259	0	0	0	0	47	168	0	388	0	67	1,014
8:00 AM	75	161	0	0	0	0	51	156	0	302	0	75	820
8:15 AM	75	201	0	0	0	0	49	128	0	292	0	70	815
8:30 AM	54	181	0	0	0	0	55	166	0	271	0	72	799
8:45 AM	48	250	0	0	0	0	63	160	0	359	0	93	973
Total	531	1,683	0	0	0	0	426	1,438	0	2,370	0	657	7,105

AM Intersection Peak Hour : **7:00 AM - 8:00 AM** Intersection PHF : **0.91**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	279	890	0	0	0	0	208	828	0	1,146	0	347	3,698
PHF	0.82	0.86	#####	#####	#####	#####	0.95	0.71	#####	0.74	#####	0.75	0.91
Movement PHF		0.85			#DIV/0!			0.75			0.82		0.91

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	59	161	0	0	0	0	101	349	0	156	0	165	991
4:15 PM	63	166	0	0	0	0	109	359	0	160	0	146	1,003
4:30 PM	59	177	0	0	0	0	116	404	0	144	0	139	1,039
4:45 PM	60	186	0	0	0	0	97	349	0	155	0	138	985
5:00 PM	61	196	0	0	0	0	87	388	0	155	0	140	1,027
5:15 PM	65	191	0	0	0	0	86	366	0	151	0	136	995
5:30 PM	61	213	0	0	0	0	87	338	0	174	0	129	1,002
5:45 PM	66	168	0	0	0	0	90	352	0	234	0	137	1,047
Total	494	1458	0	0	0	0	773	2,905	0	1,329	0	1,130	8,089

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	253	768	0	0	0	0	350	1444	0	714	0	542	4071
PHF	0.96	0.901	#####	#####	#####	#####	0.972	0.93	#####	0.763	#####	0.968	0.97
Movement PHF		0.93			#DIV/0!			0.94			0.85		0.97

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

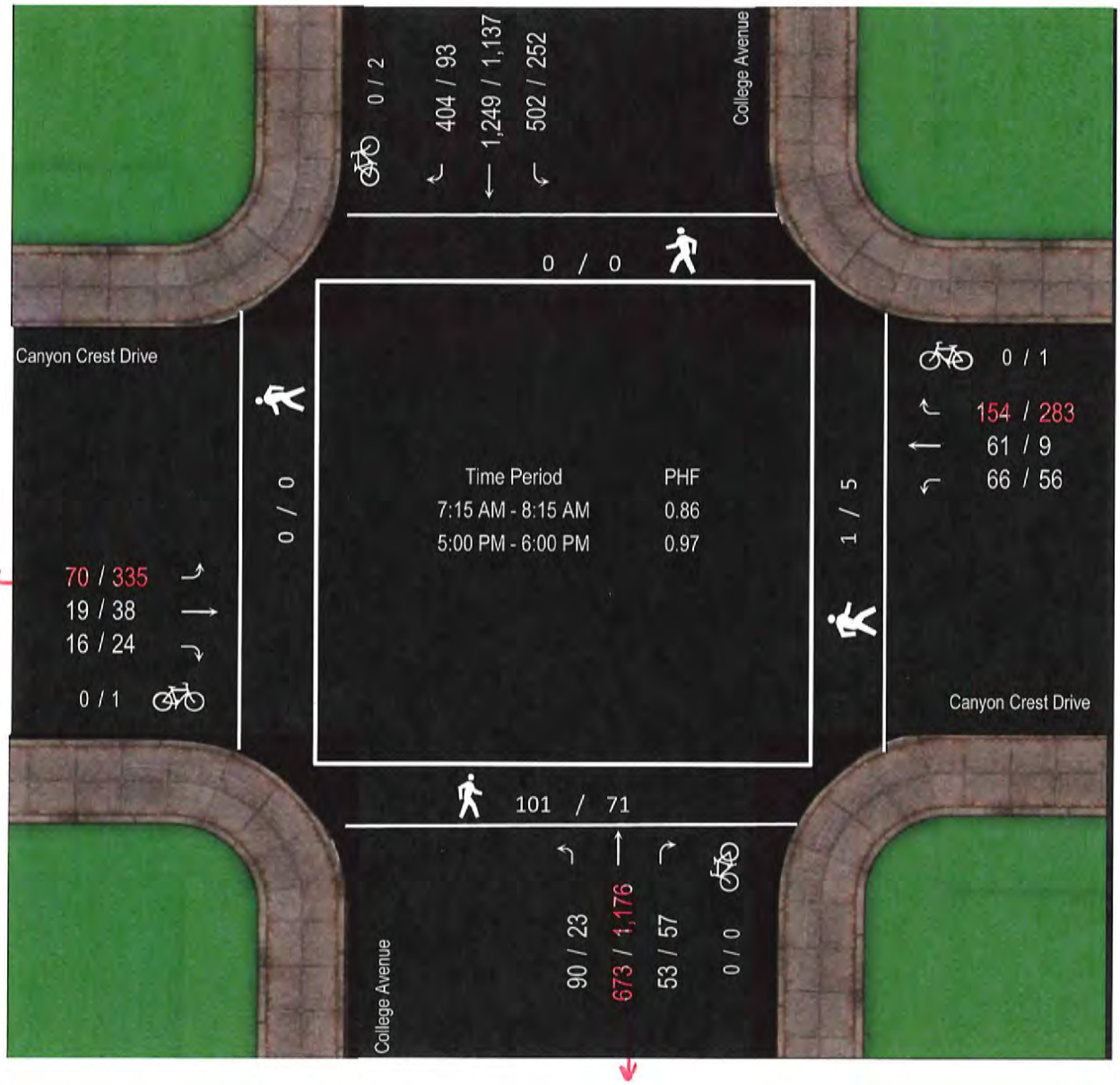
Location: Canyon Crest Drive @ College Avenue

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*



76/345

227/292

733/1211

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Canyon Crest Drive @ College Avenue

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	63	228	53	28	8	12	4	301	8	2	2	17	726
7:15 AM	69	291	80	43	13	15	9	196	9	5	2	20	752
7:30 AM	115	361	129	36	11	18	7	160	23	4	4	20	888
7:45 AM	141	352	154	40	25	18	18	163	41	6	6	12	976
8:00 AM	79	245	139	35	12	15	19	154	17	1	7	18	741
8:15 AM	84	289	120	36	5	12	16	129	16	6	5	12	730
8:30 AM	91	248	113	40	7	15	13	168	14	5	4	13	731
8:45 AM	129	318	162	29	5	9	22	177	28	7	4	17	907
Total	771	2,332	950	287	86	114	108	1,448	156	36	34	129	6,451

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.86**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	404	1,249	502	154	61	66	53	673	90	16	19	70	3,357
PHF	0.72	0.86	0.81	0.90	0.61	0.92	0.70	0.86	0.55	0.67	0.68	0.88	0.86
Movement PHF		0.83			0.85			0.92			0.94		0.86

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	22	224	71	76	4	7	28	308	3	7	7	66	823
4:15 PM	25	248	53	77	5	11	23	333	6	3	6	58	848
4:30 PM	25	246	50	90	1	16	11	339	7	5	15	91	896
4:45 PM	27	257	57	82	5	10	11	260	4	6	7	104	830
5:00 PM	23	258	70	103	0	22	14	292	4	9	4	80	879
5:15 PM	27	262	53	62	4	9	10	293	5	5	16	97	843
5:30 PM	16	314	57	75	2	12	17	268	7	4	8	82	862
5:45 PM	27	303	72	43	3	13	16	323	7	6	10	76	899
Total	192	2112	483	608	24	100	130	2,416	43	45	73	654	6,880

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	93	1137	252	283	9	56	57	1176	23	24	38	335	3483
PHF	0.86	0.905	0.875	0.687	0.563	0.636	0.838	0.91	0.821	0.667	0.594	0.863	0.97
Movement PHF		0.92			0.70			0.91			0.84		0.97

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

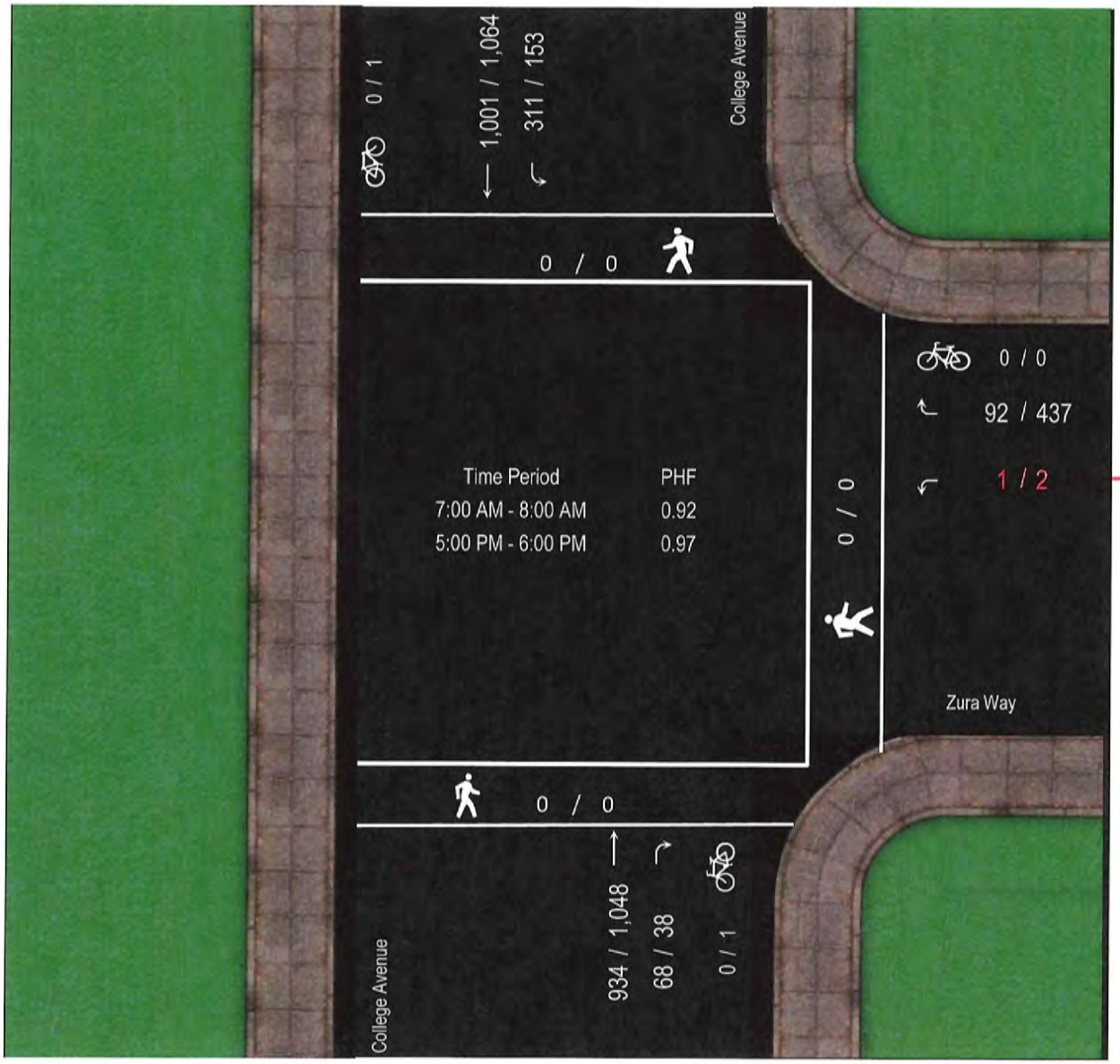
Location: Zura Way @ College Avenue

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Zura Way @ College Avenue

AM Period (7:00 AM - 9:00 AM)								
	Southbound		Westbound		Northbound			
	Thru	Left	Right	Left	Right	Thru		TOTAL
7:00 AM	184	58	26	1	5	271		545
7:15 AM	254	57	12	0	15	220		558
7:30 AM	292	91	34	0	17	217		651
7:45 AM	271	105	20	0	31	226		653
8:00 AM	177	84	28	0	21	208		518
8:15 AM	223	84	27	0	9	200		543
8:30 AM	198	70	25	0	8	264		565
8:45 AM	244	90	44	0	15	262		655
Total	1,843	639	216	1	121	1,868		4,688

AM Intersection Peak Hour : **7:00 AM - 8:00 AM** Intersection PHF : **0.92**

	Southbound		Westbound		Northbound			TOTAL
	Thru	Left	Right	Left	Right	Thru		
Volume	1,001	311	92	1	68	934		2,407
PHF	0.86	0.74	0.68	0.25	0.55	0.86		0.92
Movement PHF	0.86		0.68			0.91		0.92

PM Period (4:00 PM - 6:00 PM)								
	Southbound		Westbound		Northbound			
	Thru	Left	Right	Left	Right	Thru		TOTAL
4:00 PM	208	30	113	1	17	208		577
4:15 PM	240	22	78	1	6	209		556
4:30 PM	226	41	163	2	7	193		632
4:45 PM	222	51	102	0	11	192		578
5:00 PM	245	44	127	0	10	238		664
5:15 PM	244	32	139	1	11	281		708
5:30 PM	297	33	96	1	8	246		681
5:45 PM	278	44	75	0	9	283		689
Total	1960	297	893	6	79	1,850		5,085

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.97**

	Southbound		Westbound		Northbound			TOTAL
	Thru	Left	Right	Left	Right	Thru		
Volume	1064	153	437	2	38	1048		2742
PHF	0.896	0.869	0.786	0.5	0.864	0.926		0.97
Movement PHF	0.92		0.78			0.93		0.97

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

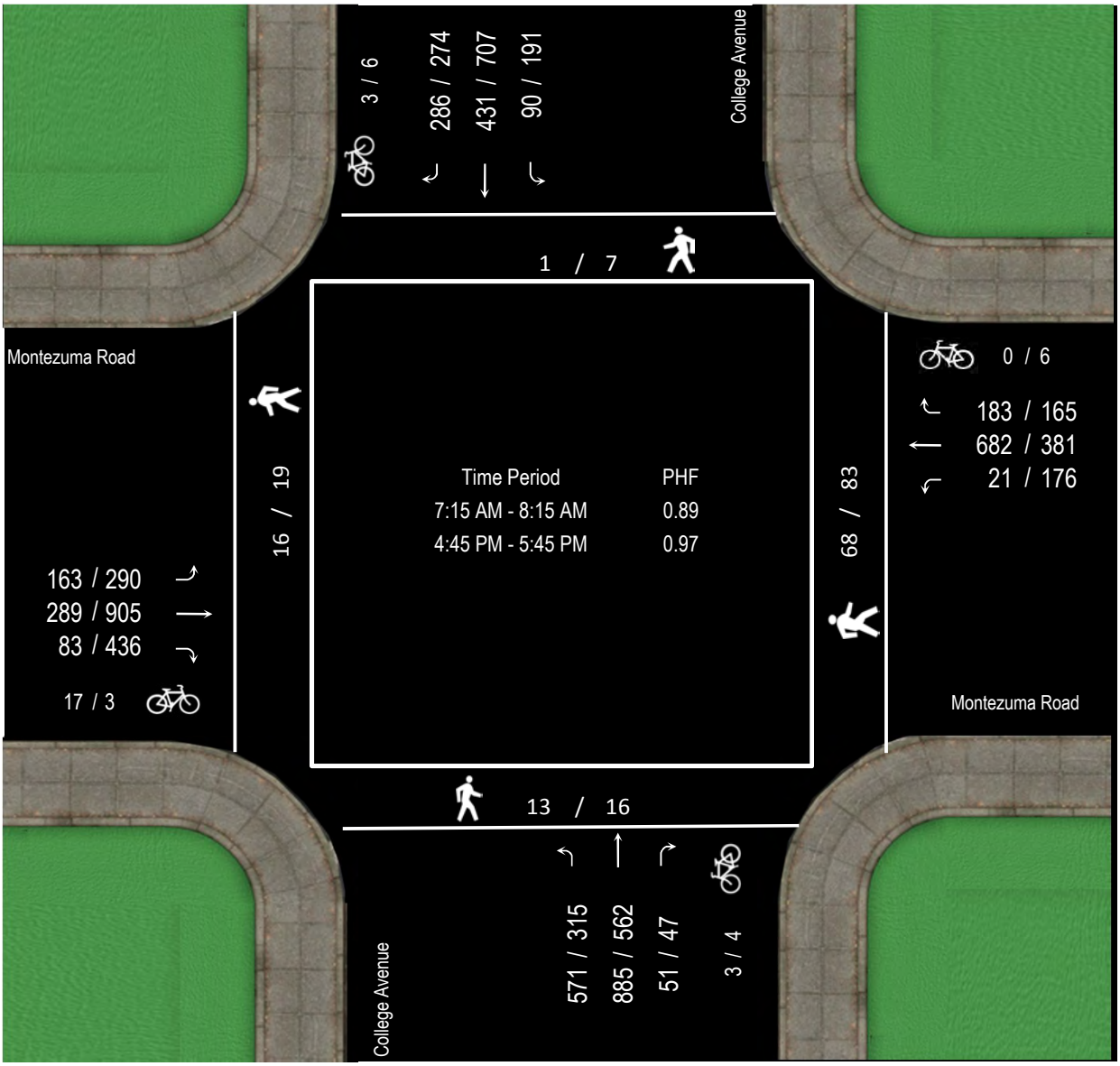
Location: Montezuma Road @ College Avenue

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Montezuma Road @ College Avenue

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	57	79	21	63	194	4	6	213	139	14	28	37	855
7:15 AM	69	96	26	39	199	5	9	222	126	13	43	35	882
7:30 AM	81	125	22	42	225	7	18	232	146	20	84	44	1,046
7:45 AM	83	118	20	39	163	5	21	213	127	41	71	46	947
8:00 AM	53	92	22	63	95	4	3	218	172	9	91	38	860
8:15 AM	78	106	27	38	127	3	11	237	101	13	81	38	860
8:30 AM	76	121	20	39	116	6	24	204	137	17	80	48	888
8:45 AM	95	112	19	41	74	5	19	217	123	29	95	41	870
Total	592	849	177	364	1,193	39	111	1,756	1,071	156	573	327	7,208

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.89**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	286	431	90	183	682	21	51	885	571	83	289	163	3,735
PHF	0.86	0.86	0.87	0.73	0.76	0.75	0.61	0.95	0.83	0.51	0.79	0.89	0.89
Movement PHF		0.88			0.81			0.95			0.85		0.89

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	41	153	44	50	160	36	13	103	81	105	212	55	1,053
4:15 PM	44	151	51	30	81	28	10	128	74	100	286	48	1,031
4:30 PM	54	156	55	35	87	42	14	119	79	105	193	62	1,001
4:45 PM	48	178	43	27	136	44	9	96	73	117	232	68	1,071
5:00 PM	80	170	46	40	48	44	8	182	90	107	229	65	1,109
5:15 PM	67	164	52	55	137	46	8	151	63	124	206	75	1,148
5:30 PM	79	195	50	43	60	42	22	133	89	88	238	82	1,121
5:45 PM	93	178	54	48	74	38	8	123	91	86	177	79	1,049
Total	506	1345	395	328	783	320	92	1,035	640	832	1,773	534	8,583

PM Intersection Peak Hour : **4:45 PM - 5:45 PM** Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	274	707	191	165	381	176	47	562	315	436	905	290	4449
PHF	0.86	0.906	0.918	0.75	0.695	0.957	0.534	0.772	0.875	0.879	0.951	0.884	0.97
Movement PHF		0.90			0.76			0.83			0.98		0.97

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Alvarado Road @ Alvarado Court

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*

Time Period	PHF
8:00 AM - 9:00 AM	0.92
4:30 PM - 5:30 PM	0.90

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Alvarado Road @ Alvarado Court

AM Period (7:00 AM - 9:00 AM)								
		Westbound		Northbound		Eastbound		
		Thru	Left	Right	Left	Right	Thru	TOTAL
7:00 AM		55	2	1	1	7	30	96
7:15 AM		60	2	2	2	2	28	96
7:30 AM		104	4	0	1	4	48	161
7:45 AM		82	7	0	0	7	58	154
8:00 AM		73	6	1	0	10	78	168
8:15 AM		43	6	2	4	15	77	147
8:30 AM		73	1	2	6	16	64	162
8:45 AM		72	9	1	4	18	74	178
Total		562	37	9	18	79	457	1,162

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.92**

		Westbound		Northbound		Eastbound		TOTAL
		Thru	Left	Right	Left	Right	Thru	
Volume		261	22	6	14	59	293	655
PHF		0.89	0.61	0.75	0.58	0.82	0.94	0.92
Movement PHF		0.87		0.63			0.96	0.92

PM Period (4:00 PM - 6:00 PM)								
		Westbound		Northbound		Eastbound		
		Thru	Left	Right	Left	Right	Thru	TOTAL
4:00 PM		77	3	5	13	4	49	151
4:15 PM		70	2	3	11	4	53	143
4:30 PM		101	1	7	8	5	65	187
4:45 PM		77	2	2	15	7	57	160
5:00 PM		84	0	2	20	5	52	163
5:15 PM		66	0	4	9	6	75	160
5:30 PM		63	0	5	6	8	55	137
5:45 PM		53	1	3	5	2	78	142
Total		591	9	31	87	41	484	1,243

PM Intersection Peak Hour : **4:30 PM - 5:30 PM** Intersection PHF : **0.90**

		Westbound		Northbound		Eastbound		TOTAL
		Thru	Left	Right	Left	Right	Thru	
Volume		328	3	15	52	23	249	670
PHF		0.812	0.375	0.536	0.65	0.821	0.83	0.90
Movement PHF		0.81		0.76			0.84	0.90

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Alvarado Road @ Reservoir Drive

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*

Time Period	PHF
7:30 AM - 8:30 AM	0.91
4:15 PM - 5:15 PM	0.82

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Alvarado Road @ Reservoir Drive

AM Period (7:00 AM - 9:00 AM)								
		Westbound		Northbound		Eastbound		
		Thru	Left	Right	Left	Right	Thru	TOTAL
7:00 AM		39	9	18	22	12	14	114
7:15 AM		54	15	15	35	12	13	144
7:30 AM		63	17	21	56	18	14	189
7:45 AM		79	20	14	40	22	17	192
8:00 AM		56	21	11	24	21	15	148
8:15 AM		53	27	18	25	29	18	170
8:30 AM		52	30	24	25	26	16	173
8:45 AM		66	34	23	19	14	22	178
Total		462	173	144	246	154	129	1,308

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.91**

		Westbound		Northbound		Eastbound		TOTAL
		Thru	Left	Right	Left	Right	Thru	
Volume		251	85	64	145	90	64	699
PHF		0.79	0.79	0.76	0.65	0.78	0.89	0.91
Movement PHF		0.85		0.68			0.82	0.91

PM Period (4:00 PM - 6:00 PM)								
		Westbound		Northbound		Eastbound		
		Thru	Left	Right	Left	Right	Thru	TOTAL
4:00 PM		30	18	30	33	20	49	180
4:15 PM		41	21	24	27	23	43	179
4:30 PM		19	17	35	27	20	63	181
4:45 PM		18	19	32	25	17	42	153
5:00 PM		23	25	38	44	37	57	224
5:15 PM		13	13	27	30	26	56	165
5:30 PM		22	19	26	33	27	40	167
5:45 PM		24	24	26	25	32	36	167
Total		190	156	238	244	202	386	1,416

PM Intersection Peak Hour : **4:15 PM - 5:15 PM** Intersection PHF : **0.82**

		Westbound		Northbound		Eastbound		TOTAL
		Thru	Left	Right	Left	Right	Thru	
Volume		101	82	129	123	97	205	737
PHF		0.616	0.82	0.849	0.699	0.655	0.813	0.82
Movement PHF		0.74		0.77			0.80	0.82

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

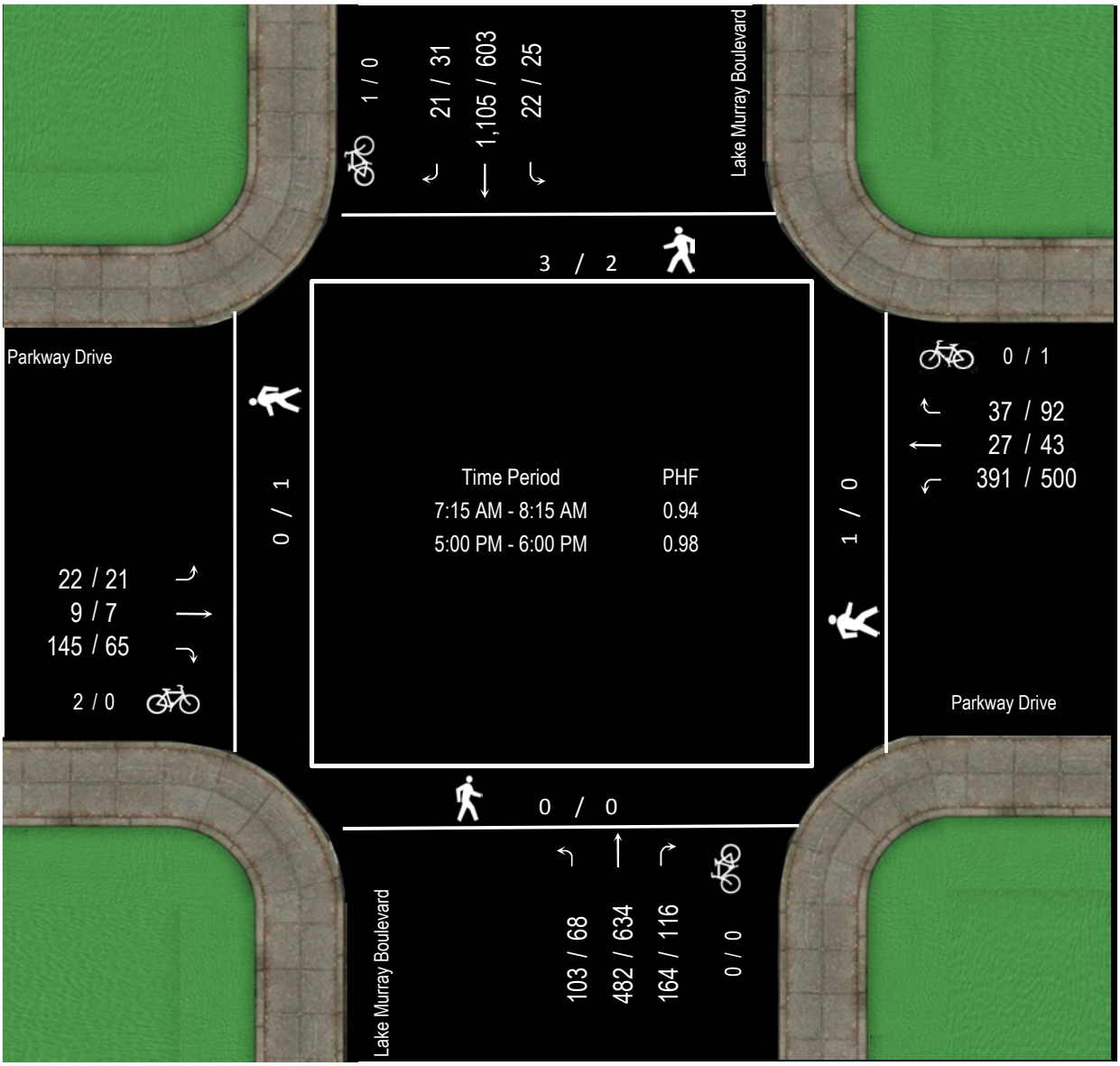
Location: Parkway Drive @ Lake Murray Boulevard

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Parkway Drive @ Lake Murray Boulevard

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	269	2	3	3	45	46	126	31	35	2	4	566
7:15 AM	4	252	6	4	11	83	44	104	26	35	2	5	576
7:30 AM	3	292	4	5	5	78	35	133	36	52	5	6	654
7:45 AM	9	276	6	9	6	115	56	130	21	35	1	7	671
8:00 AM	5	285	6	19	5	115	29	115	20	23	1	4	627
8:15 AM	5	230	4	20	7	105	32	114	13	24	2	9	565
8:30 AM	2	242	2	13	14	78	20	102	12	23	0	4	512
8:45 AM	1	219	3	16	10	91	11	117	12	27	2	6	515
Total	29	2,065	33	89	61	710	273	941	171	254	15	45	4,686

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	21	1,105	22	37	27	391	164	482	103	145	9	22	2,528
PHF	0.58	0.95	0.92	0.49	0.61	0.85	0.73	0.91	0.72	0.70	0.45	0.79	0.94
Movement PHF		0.96			0.82			0.90			0.70		0.94

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	5	151	3	18	10	111	39	157	11	29	1	7	542
4:15 PM	6	142	3	20	11	112	31	137	14	29	2	6	513
4:30 PM	5	154	2	26	18	116	25	153	11	22	2	5	539
4:45 PM	4	144	8	22	15	116	25	156	8	14	2	9	523
5:00 PM	6	152	3	30	12	116	32	169	24	17	0	4	565
5:15 PM	9	144	8	24	7	132	28	166	14	22	3	8	565
5:30 PM	6	135	9	20	10	128	30	162	19	16	2	6	543
5:45 PM	10	172	5	18	14	124	26	137	11	10	2	3	532
Total	51	1194	41	178	97	955	236	1,237	112	159	14	48	4,322

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	31	603	25	92	43	500	116	634	68	65	7	21	2205
PHF	0.78	0.876	0.694	0.767	0.768	0.947	0.906	0.938	0.708	0.739	0.583	0.656	0.98
Movement PHF		0.88			0.97			0.91			0.70		0.98

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

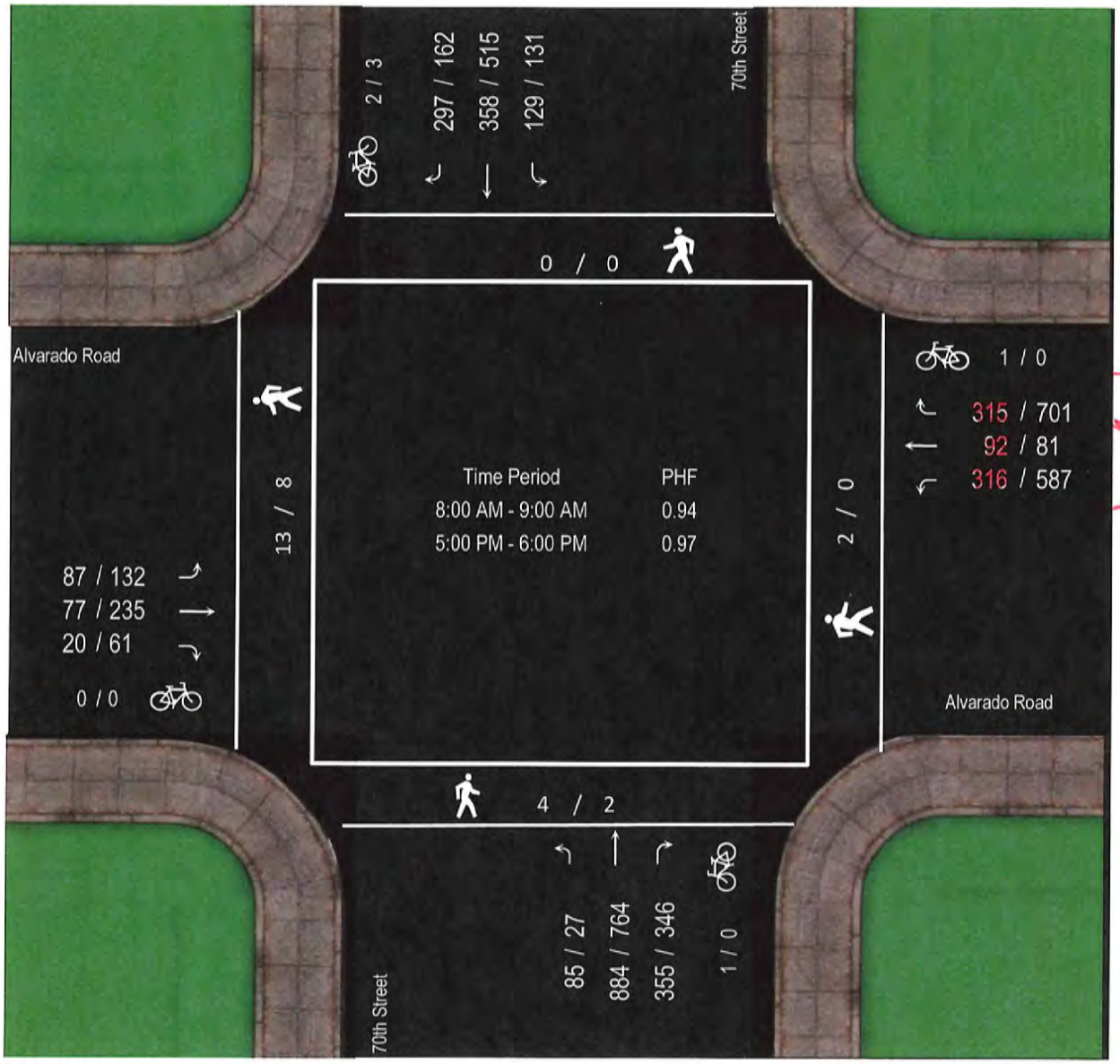
Location: Alvarado Road @ 70th Street

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Alvarado Road @ 70th Street

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	38	56	27	61	13	53	50	211	11	4	19	13	556
7:15 AM	41	72	16	73	25	65	66	195	17	1	12	7	590
7:30 AM	55	97	43	76	36	71	87	232	11	3	24	15	750
7:45 AM	77	114	32	77	32	107	77	207	20	7	28	6	784
8:00 AM	73	79	39	78	21	71	84	189	28	5	12	19	698
8:15 AM	77	93	21	78	18	76	81	223	21	5	19	16	728
8:30 AM	72	93	37	65	19	78	106	260	11	6	22	29	798
8:45 AM	75	93	32	94	34	91	84	212	25	4	24	23	791
Total	508	697	247	602	198	612	635	1,729	144	35	160	128	5,695

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	297	358	129	315	92	316	355	884	85	20	77	87	3,015
PHF	0.96	0.96	0.83	0.84	0.68	0.87	0.84	0.85	0.76	0.83	0.80	0.75	0.94
Movement PHF		0.97			0.83			0.88			0.81		0.94

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	42	129	30	143	24	111	98	172	13	12	52	55	881
4:15 PM	42	132	36	144	15	125	88	168	15	11	58	17	851
4:30 PM	33	121	49	151	10	143	95	159	13	16	63	35	888
4:45 PM	39	112	23	170	12	134	96	172	13	14	49	20	854
5:00 PM	46	124	28	141	10	147	106	206	3	16	75	34	936
5:15 PM	25	146	42	190	17	121	83	206	7	19	75	34	965
5:30 PM	31	138	23	174	16	156	91	182	10	15	34	27	897
5:45 PM	60	107	38	196	38	163	66	170	7	11	51	37	944
Total	318	1009	269	1,309	142	1,100	723	1,435	81	114	457	259	7,216

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	162	515	131	701	81	587	346	764	27	61	235	132	3742
PHF	0.68	0.882	0.78	0.894	0.533	0.9	0.816	0.927	0.675	0.803	0.783	0.892	0.97
Movement PHF		0.95			0.86			0.90			0.84		0.97

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Parkway Drive @ I-8 WB Ramps

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Parkway Drive @ I-8 WB Ramps

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	0	0	0	39	74	2	0	21	1	27	0	164
7:15 AM	0	0	0	0	38	87	1	0	28	2	34	0	190
7:30 AM	0	0	0	0	55	91	3	0	27	3	48	0	227
7:45 AM	0	0	0	0	55	73	6	0	40	3	31	0	208
8:00 AM	0	0	0	0	44	55	4	0	55	2	32	0	192
8:15 AM	0	0	0	0	16	36	3	0	99	0	21	0	175
8:30 AM	0	0	0	0	26	35	17	0	125	0	16	0	219
8:45 AM	0	0	0	0	23	24	14	0	142	0	29	0	232
Total	0	0	0	0	296	475	50	0	537	11	238	0	1,607

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.88**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	0	109	150	38	0	421	2	98	0	818
PHF	#####	#####	#####	#####	0.62	0.68	0.56	#####	0.74	0.25	0.77	#####	0.88
Movement PHF	#DIV/0!				0.65			0.74			0.74		0.88

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	0	0	0	0	18	19	16	0	114	1	38	0	206
4:15 PM	0	0	0	0	16	15	10	0	110	1	38	0	190
4:30 PM	0	0	0	0	15	21	12	0	120	0	36	0	204
4:45 PM	0	0	0	0	13	14	16	0	111	0	34	0	188
5:00 PM	0	0	0	0	22	25	9	0	115	0	44	0	215
5:15 PM	0	0	0	0	19	17	12	0	144	2	46	0	240
5:30 PM	0	0	0	0	23	10	14	0	139	1	41	0	228
5:45 PM	0	0	0	0	19	20	23	0	135	0	48	0	245
Total	0	0	0	0	145	141	112	0	988	5	325	0	1,716

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.95**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	0	83	72	58	0	533	3	179	0	928
PHF	#####	#####	#####	#####	0.902	0.72	0.63	#####	0.925	0.375	0.932	#####	0.95
Movement PHF	#DIV/0!				0.82			0.94			0.95		0.95

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Alvarado Road @ I-8 EB Ramps

Date of Count: *Tuesday, April 19, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0506*

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Alvarado Road @ I-8 EB Ramps

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	99	0	1	0	28	0	0	0	0	0	15	91	234
7:15 AM	130	0	4	2	33	0	0	0	0	0	13	96	278
7:30 AM	145	0	0	0	38	0	0	0	0	0	8	143	334
7:45 AM	186	0	2	1	30	0	0	1	0	0	16	157	393
8:00 AM	137	0	1	0	33	0	0	0	0	0	15	124	310
8:15 AM	144	0	2	4	28	0	0	0	0	0	9	129	316
8:30 AM	147	0	0	2	13	0	0	0	2	0	14	143	321
8:45 AM	197	0	6	4	19	0	0	0	3	0	13	135	377
Total	1,185	0	16	13	222	0	0	1	5	0	103	1,018	2,563

AM Intersection Peak Hour : **7:30 AM - 8:30 AM** Intersection PHF : **0.86**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	612	0	5	5	129	0	0	1	0	0	48	553	1,353
PHF	0.82	#####	0.63	0.31	0.85	#####	#####	0.25	#####	#####	0.75	0.88	0.86
Movement PHF		0.82			0.88			0.25			0.87		0.86

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	259	0	5	6	19	0	1	0	0	0	16	196	502
4:15 PM	269	0	4	6	15	0	0	2	0	0	12	181	489
4:30 PM	293	0	2	1	9	0	0	2	2	0	20	216	545
4:45 PM	292	0	3	5	22	0	0	2	2	0	15	186	527
5:00 PM	265	0	5	5	32	0	1	2	1	0	20	199	530
5:15 PM	306	0	4	6	22	0	1	1	0	0	13	181	534
5:30 PM	327	0	2	0	18	0	1	0	1	0	10	165	524
5:45 PM	374	0	1	2	22	0	0	1	1	0	12	147	560
Total	2385	0	26	31	159	0	4	10	7	0	118	1,471	4,211

PM Intersection Peak Hour : **5:00 PM - 6:00 PM** Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	1272	0	12	13	94	0	3	4	3	0	55	692	2148
PHF	0.85	#####	0.6	0.542	0.734	#####	0.75	0.5	0.75	#####	0.688	0.869	0.96
Movement PHF		0.86			0.72			0.63			0.85		0.96

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: Montezuma Rd @ Collwood Blvd

Date of Count: *Wednesday, February 12, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0162*

LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Montezuma Rd @ Collwood Blvd

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	0	0	0	0	271	6	10	0	274	78	88	0	727
7:15 AM	0	0	0	0	312	9	11	0	244	79	166	0	821
7:30 AM	0	0	0	0	368	10	17	0	236	85	158	0	874
7:45 AM	0	0	0	0	337	12	10	0	236	128	211	0	934
8:00 AM	0	0	0	0	208	20	4	0	217	90	194	0	733
8:15 AM	0	0	0	0	235	15	19	0	247	131	160	0	807
8:30 AM	0	0	0	0	259	16	20	0	195	81	328	0	899
8:45 AM	0	0	0	0	214	17	18	0	231	112	275	0	867
Total	0	0	0	0	2,204	105	109	0	1,880	784	1,580	0	6,662

AM Intersection Peak Hour : **7:45 AM - 8:45 AM** Intersection PHF : **0.90**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	0	1,039	63	53	0	895	430	893	0	3,373
PHF	#####	#####	#####	#####	0.77	0.79	0.66	#####	0.91	0.82	0.68	#####	0.90
Movement PHF	#DIV/0!				0.79			0.89			0.81		0.90

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	0	0	0	0	338	22	13	0	145	187	314	0	1,019
4:15 PM	0	0	0	0	210	28	14	0	124	172	391	0	939
4:30 PM	0	0	0	0	322	20	10	0	139	209	455	0	1,155
4:45 PM	0	0	0	0	355	45	13	0	157	212	471	0	1,253
5:00 PM	0	0	0	0	368	27	11	0	128	231	449	0	1,214
5:15 PM	0	0	0	0	278	25	25	0	124	284	407	0	1,143
5:30 PM	0	0	0	0	296	42	15	0	137	216	403	0	1,109
5:45 PM	0	0	0	0	264	31	15	0	152	203	418	0	1,083
Total	0	0	0	0	2,431	240	116	0	1,106	1,714	3,308	0	8,915

PM Intersection Peak Hour : **4:30 PM - 5:30 PM** Intersection PHF : **0.95**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	0	1323	117	59	0	548	936	1782	0	4765
PHF	#####	#####	#####	#####	0.899	0.65	0.59	#####	0.873	0.824	0.946	#####	0.95
Movement PHF	#DIV/0!				0.90			0.89			0.98		0.95

LINSCOTT LAW & GREENSPAN engineers

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

AVC

Location: Montezuma Rd @ Yerba Santa Dr

Date of Count: *Wednesday, February 12, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0162*

LINSCOTT LAW & GREENSPAN engineers

Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: Montezuma Rd @ Yerba Santa Dr

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	29	0	2	0	248	0	0	0	0	0	90	8	377
7:15 AM	23	0	1	3	298	0	0	0	0	0	164	13	502
7:30 AM	29	0	3	2	349	0	0	0	0	0	168	7	558
7:45 AM	34	0	1	8	315	0	0	0	0	0	214	7	579
8:00 AM	23	0	1	3	205	0	0	0	0	0	188	10	430
8:15 AM	13	0	1	2	237	0	0	0	0	0	165	14	432
8:30 AM	25	0	0	3	250	0	0	0	0	0	338	10	626
8:45 AM	19	0	2	1	212	0	0	0	0	0	278	15	527
Total	195	0	11	22	2,114	0	0	0	0	0	1,605	84	4,031

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.89**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	109	0	6	16	1,167	0	0	0	0	0	734	37	2,069
PHF	0.80	#####	0.50	0.50	0.84	#####	#####	#####	#####	#####	0.86	0.71	0.89
Movement PHF		0.82			0.84			#DIV/0!			0.87		0.89

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	9	0	0	0	351	0	0	0	0	0	302	25	687
4:15 PM	20	0	1	2	218	0	0	0	0	0	372	33	646
4:30 PM	13	0	4	7	329	0	0	0	0	0	431	34	818
4:45 PM	17	0	5	3	383	0	0	0	0	0	455	29	892
5:00 PM	21	0	2	3	374	0	0	0	0	0	430	30	860
5:15 PM	13	0	0	5	290	0	0	0	0	0	410	22	740
5:30 PM	25	0	3	1	313	0	0	0	0	0	388	30	760
5:45 PM	13	0	2	4	282	0	0	0	0	0	415	18	734
Total	131	0	17	25	2,540	0	0	0	0	0	3,203	221	6,137

PM Intersection Peak Hour : **4:30 PM - 5:30 PM** Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	64	0	11	18	1376	0	0	0	0	0	1726	115	3310
PHF	0.76	#####	0.55	0.643	0.898	#####	#####	#####	#####	#####	0.948	0.846	0.93
Movement PHF		0.82			0.90			#DIV/0!			0.95		0.93

24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: a. Alvarado Road btw E. Campus Drive to Reservoir Drive

Orientation: *East-West*

Date of Count: *Tuesday, April 19, 2016*

Analysts: *DASH*

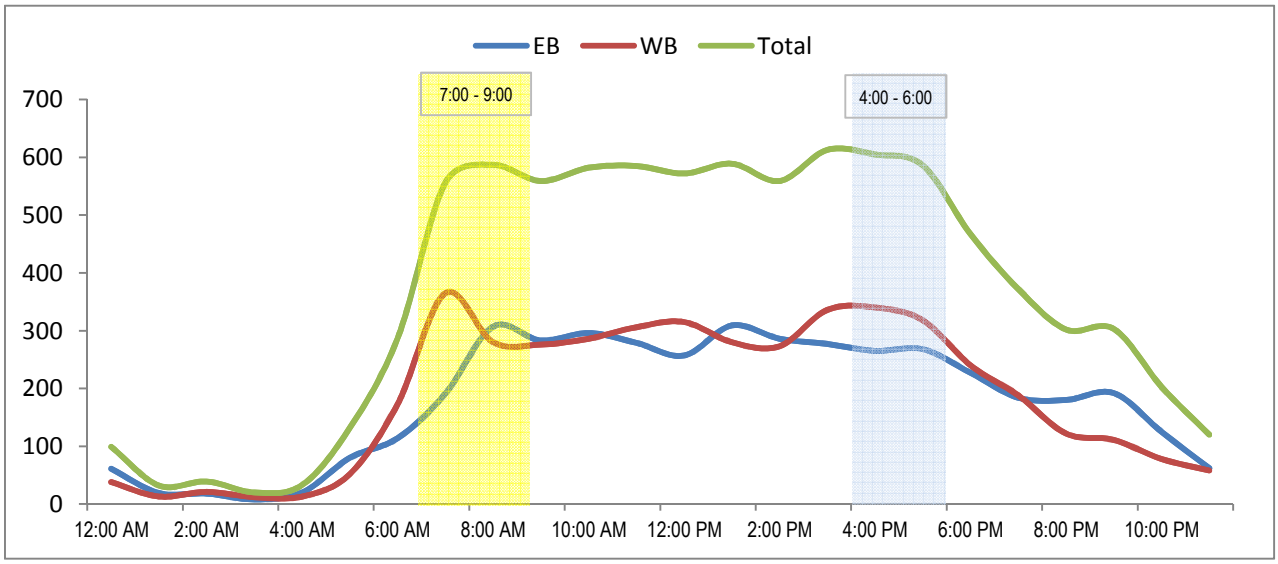
Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume ***8,802***

Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	61	38	99	12:00 PM - 1:00 PM	257	315	572
1:00 AM - 2:00 AM	19	13	32	1:00 PM - 2:00 PM	309	280	589
2:00 AM - 3:00 AM	18	21	39	2:00 PM - 3:00 PM	286	273	559
3:00 AM - 4:00 AM	8	12	20	3:00 PM - 4:00 PM	277	336	613
4:00 AM - 5:00 AM	20	13	33	4:00 PM - 5:00 PM	265	340	605
5:00 AM - 6:00 AM	80	52	132	5:00 PM - 6:00 PM	268	318	586
6:00 AM - 7:00 AM	114	173	287	6:00 PM - 7:00 PM	227	240	467
7:00 AM - 8:00 AM	191	365	556	7:00 PM - 8:00 PM	184	188	372
8:00 AM - 9:00 AM	307	280	587	8:00 PM - 9:00 PM	180	122	302
9:00 AM - 10:00 AM	283	276	559	9:00 PM - 10:00 PM	192	111	303
10:00 AM - 11:00 AM	296	286	582	10:00 PM - 11:00 PM	125	78	203
11:00 AM - 12:00 PM	279	306	585	11:00 PM - 12:00 AM	62	58	120
Total	**1,676**	**1,835**	**3,511**	**Total**	**2,632**	**2,659**	**5,291**

24-Hour EB Volume 4,308 ***24-Hour WB Volume 4,494***



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: b. Alvarado Road btw Reservoir Drive to 70th Street

Orientation: *East-West*

Date of Count: *Tuesday, April 19, 2016*

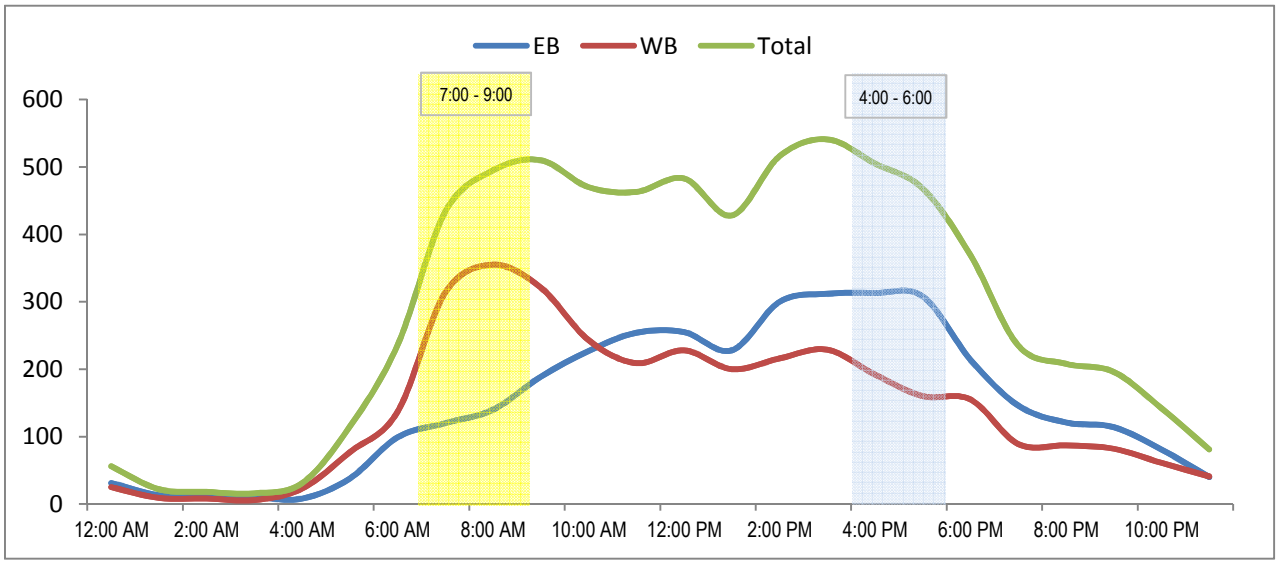
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume				***7,038***			
Time	**Hourly Volume**			**Time**	**Hourly Volume**		
	EB	**WB**	**Total**		**EB**	**WB**	**Total**
12:00 AM - 1:00 AM	31	25	56	12:00 PM - 1:00 PM	255	228	483
1:00 AM - 2:00 AM	13	9	22	1:00 PM - 2:00 PM	228	200	428
2:00 AM - 3:00 AM	10	8	18	2:00 PM - 3:00 PM	300	216	516
3:00 AM - 4:00 AM	10	6	16	3:00 PM - 4:00 PM	312	229	541
4:00 AM - 5:00 AM	8	23	31	4:00 PM - 5:00 PM	313	192	505
5:00 AM - 6:00 AM	38	77	115	5:00 PM - 6:00 PM	308	160	468
6:00 AM - 7:00 AM	99	137	236	6:00 PM - 7:00 PM	214	155	369
7:00 AM - 8:00 AM	120	314	434	7:00 PM - 8:00 PM	146	89	235
8:00 AM - 9:00 AM	140	355	495	8:00 PM - 9:00 PM	121	87	208
9:00 AM - 10:00 AM	189	321	510	9:00 PM - 10:00 PM	114	82	196
10:00 AM - 11:00 AM	227	243	470	10:00 PM - 11:00 PM	81	61	142
11:00 AM - 12:00 PM	254	209	463	11:00 PM - 12:00 AM	40	41	81
Total	**1,139**	**1,727**	**2,866**	**Total**	**2,432**	**1,740**	**4,172**

24-Hour	***EB***	***Volume***	***3,571***	***24-Hour***	***WB***	***Volume***	***3,467***



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: c. College Avenue btw Del Cerro Boulevard to I-8 EB Ramps

Orientation: *North-South*

Date of Count: *Tuesday, April 19, 2016*

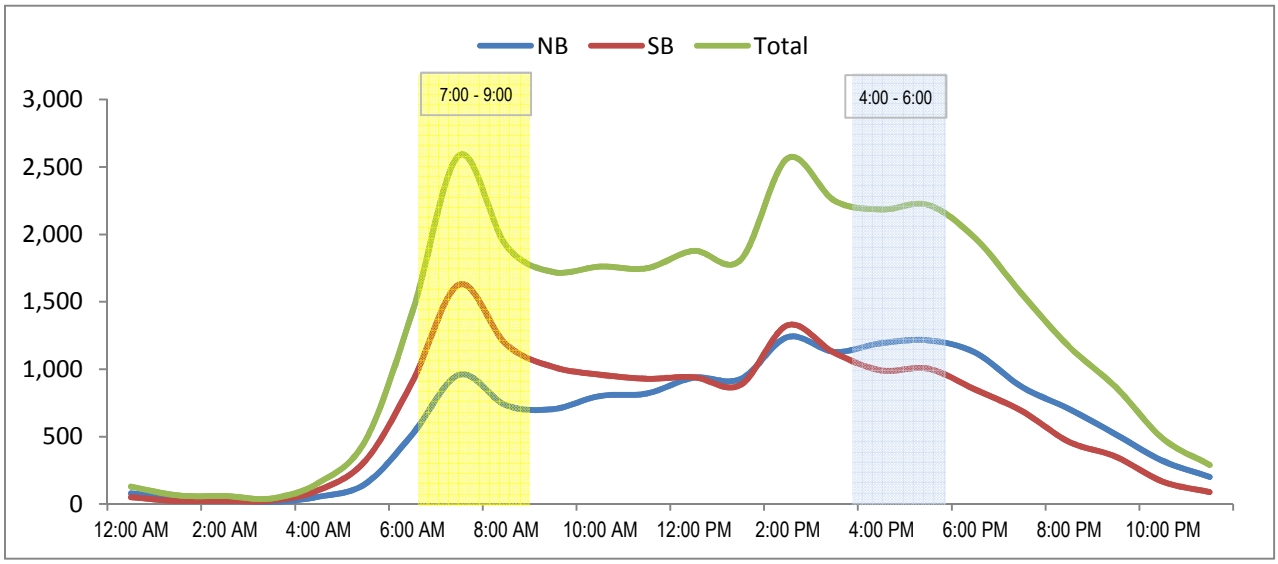
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume				*31,326*			
Time	**Hourly Volume**			**Time**	**Hourly Volume**		
	NB	**SB**	**Total**		**NB**	**SB**	**Total**
12:00 AM - 1:00 AM	79	50	129	12:00 PM - 1:00 PM	937	941	1,878
1:00 AM - 2:00 AM	41	23	64	1:00 PM - 2:00 PM	927	884	1,811
2:00 AM - 3:00 AM	36	23	59	2:00 PM - 3:00 PM	1,238	1,326	2,564
3:00 AM - 4:00 AM	16	26	42	3:00 PM - 4:00 PM	1,129	1,121	2,250
4:00 AM - 5:00 AM	54	103	157	4:00 PM - 5:00 PM	1,193	991	2,184
5:00 AM - 6:00 AM	150	322	472	5:00 PM - 6:00 PM	1,214	1,004	2,218
6:00 AM - 7:00 AM	517	907	1,424	6:00 PM - 7:00 PM	1,123	849	1,972
7:00 AM - 8:00 AM	959	1,628	2,587	7:00 PM - 8:00 PM	868	689	1,557
8:00 AM - 9:00 AM	732	1,184	1,916	8:00 PM - 9:00 PM	706	462	1,168
9:00 AM - 10:00 AM	704	1,017	1,721	9:00 PM - 10:00 PM	516	351	867
10:00 AM - 11:00 AM	801	960	1,761	10:00 PM - 11:00 PM	320	166	486
11:00 AM - 12:00 PM	820	929	1749	11:00 PM - 12:00 AM	201	89	290
Total	**4,909**	**7,172**	**12,081**	**Total**	**10,372**	**8,873**	**19,245**

24-Hour	*NB*	*Volume*	*15,281*	*24-Hour*	*SB*	*Volume*	*16,045*



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: d. College Avenue btw I-8 EB Ramps to Zura Way

Orientation: *North-South*

Date of Count: *Tuesday, April 19, 2016*

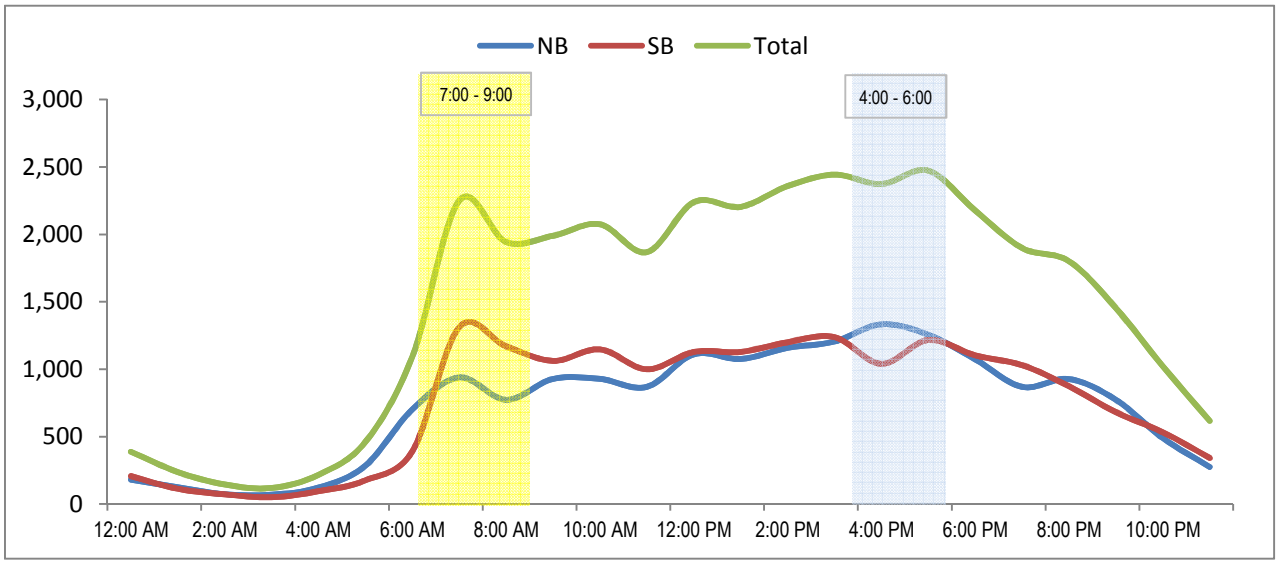
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume				*35,847*			
Time	**Hourly Volume**			**Time**	**Hourly Volume**		
	NB	**SB**	**Total**		**NB**	**SB**	**Total**
12:00 AM - 1:00 AM	181	207	388	12:00 PM - 1:00 PM	1,111	1,128	2,239
1:00 AM - 2:00 AM	124	113	237	1:00 PM - 2:00 PM	1,076	1,128	2,204
2:00 AM - 3:00 AM	73	72	145	2:00 PM - 3:00 PM	1,158	1,200	2,358
3:00 AM - 4:00 AM	69	50	119	3:00 PM - 4:00 PM	1,205	1,238	2,443
4:00 AM - 5:00 AM	122	95	217	4:00 PM - 5:00 PM	1,333	1,040	2,373
5:00 AM - 6:00 AM	285	176	461	5:00 PM - 6:00 PM	1,256	1,217	2,473
6:00 AM - 7:00 AM	702	391	1,093	6:00 PM - 7:00 PM	1,074	1,103	2,177
7:00 AM - 8:00 AM	939	1,312	2,251	7:00 PM - 8:00 PM	869	1,030	1,899
8:00 AM - 9:00 AM	773	1,170	1,943	8:00 PM - 9:00 PM	927	874	1,801
9:00 AM - 10:00 AM	928	1,062	1,990	9:00 PM - 10:00 PM	773	681	1,454
10:00 AM - 11:00 AM	928	1,147	2,075	10:00 PM - 11:00 PM	489	533	1,022
11:00 AM - 12:00 PM	869	999	1868	11:00 PM - 12:00 AM	275	342	617
Total	**5,993**	**6,794**	**12,787**	**Total**	**11,546**	**11,514**	**23,060**

24-Hour	*NB*	*Volume*	*17,539*	*24-Hour*	*SB*	*Volume*	*18,308*



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: e. College Avenue btw Zura Way to Montezuma Road

Orientation: *North-South*

Date of Count: *Tuesday, April 19, 2016*

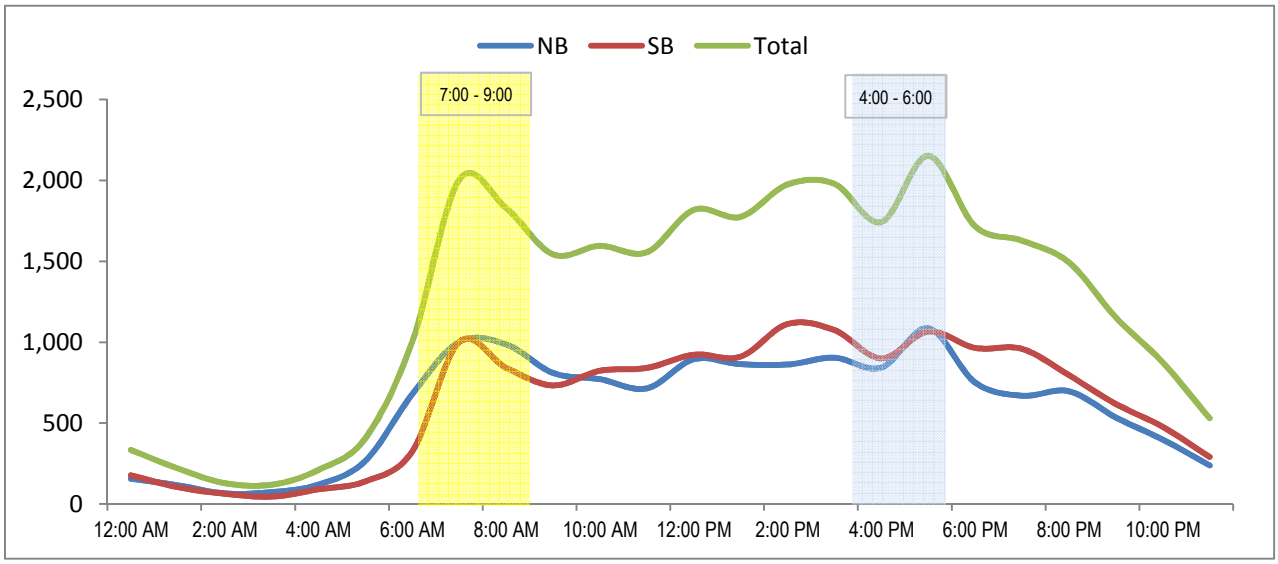
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume				***29,790***				
Time	**Hourly Volume**			**Time**	**Hourly Volume**			
	NB	**SB**	**Total**		**NB**	**SB**	**Total**
12:00 AM - 1:00 AM	156	178	334	12:00 PM - 1:00 PM	895	923	1,818
1:00 AM - 2:00 AM	116	104	220	1:00 PM - 2:00 PM	864	911	1,775
2:00 AM - 3:00 AM	66	63	129	2:00 PM - 3:00 PM	862	1,113	1,975
3:00 AM - 4:00 AM	73	46	119	3:00 PM - 4:00 PM	904	1,075	1,979
4:00 AM - 5:00 AM	120	91	211	4:00 PM - 5:00 PM	843	900	1,743
5:00 AM - 6:00 AM	267	140	407	5:00 PM - 6:00 PM	1,086	1,066	2,152
6:00 AM - 7:00 AM	679	326	1,005	6:00 PM - 7:00 PM	751	965	1,716
7:00 AM - 8:00 AM	1,002	1,002	2,004	7:00 PM - 8:00 PM	669	959	1,628
8:00 AM - 9:00 AM	987	842	1,829	8:00 PM - 9:00 PM	697	796	1,493
9:00 AM - 10:00 AM	810	733	1,543	9:00 PM - 10:00 PM	535	618	1,153
10:00 AM - 11:00 AM	772	824	1,596	10:00 PM - 11:00 PM	398	477	875
11:00 AM - 12:00 PM	715	841	1556	11:00 PM - 12:00 AM	239	291	530
Total	**5,763**	**5,190**	**10,953**	**Total**	**8,743**	**10,094**	**18,837**

24-Hour	***NB***	***Volume***	***14,506***	***24-Hour***	***SB***	***Volume***	***15,284***



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: f. College Avenue btw South of Montezuma Road

Orientation: *North-South*

Date of Count: *Tuesday, April 19, 2016*

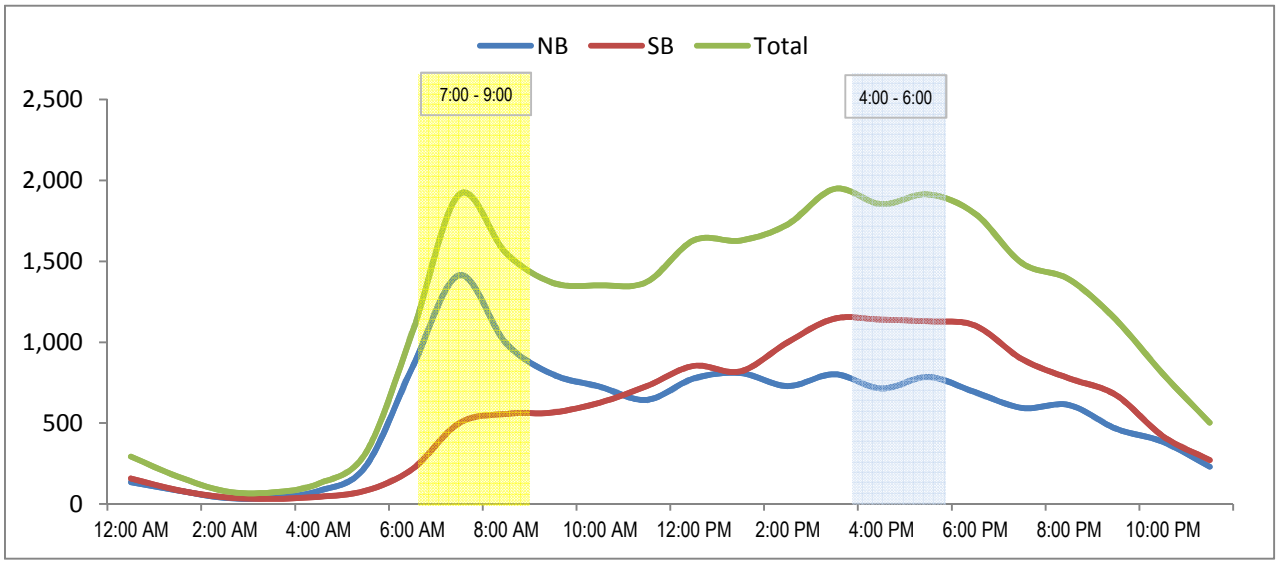
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume					*27,491*				
Time			**Hourly Volume**			**Time**			**Hourly Volume**		
			NB	**SB**	**Total**				**NB**	**SB**	**Total**
12:00 AM	-	1:00 AM	135	158	293	12:00 PM	-	1:00 PM	776	854	1,630
1:00 AM	-	2:00 AM	84	86	170	1:00 PM	-	2:00 PM	809	820	1,629
2:00 AM	-	3:00 AM	38	42	80	2:00 PM	-	3:00 PM	729	999	1,728
3:00 AM	-	4:00 AM	39	32	71	3:00 PM	-	4:00 PM	802	1,146	1,948
4:00 AM	-	5:00 AM	81	45	126	4:00 PM	-	5:00 PM	714	1,139	1,853
5:00 AM	-	6:00 AM	231	82	313	5:00 PM	-	6:00 PM	785	1,129	1,914
6:00 AM	-	7:00 AM	844	216	1,060	6:00 PM	-	7:00 PM	691	1,103	1,794
7:00 AM	-	8:00 AM	1,414	500	1,914	7:00 PM	-	8:00 PM	594	895	1,489
8:00 AM	-	9:00 AM	993	557	1,550	8:00 PM	-	9:00 PM	612	777	1,389
9:00 AM	-	10:00 AM	801	566	1,367	9:00 PM	-	10:00 PM	466	674	1,140
10:00 AM	-	11:00 AM	725	627	1,352	10:00 PM	-	11:00 PM	385	420	805
11:00 AM	-	12:00 PM	644	729	1373	11:00 PM	-	12:00 AM	231	272	503
Total			**6,029**	**3,640**	**9,669**	**Total**			**7,594**	**10,228**	**17,822**

24-Hour	*NB*	*Volume*	*13,623*	*24-Hour*	*SB*	*Volume*	*13,868*



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: g. Montezuma Road btw Fairmount Avenue to Collwood Boulevard

Orientation: *East-West*

Date of Count: *Tuesday, April 19, 2016*

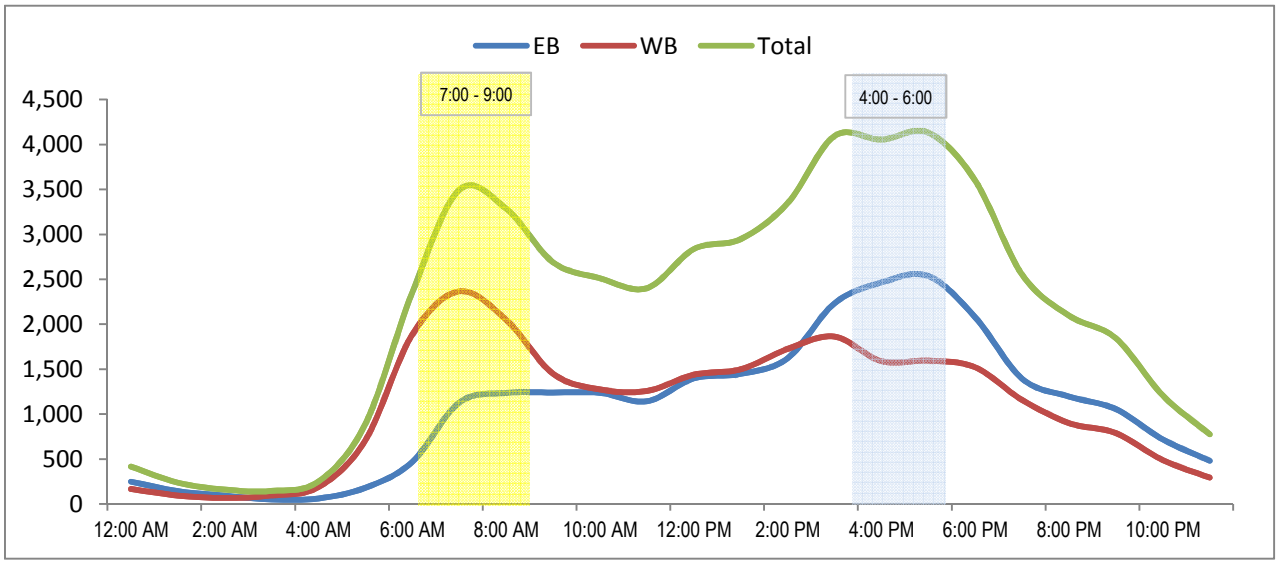
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume				52,329			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	249	167	416	12:00 PM - 1:00 PM	1,397	1,439	2,836
1:00 AM - 2:00 AM	143	95	238	1:00 PM - 2:00 PM	1,448	1,499	2,947
2:00 AM - 3:00 AM	93	67	160	2:00 PM - 3:00 PM	1,621	1,725	3,346
3:00 AM - 4:00 AM	50	96	146	3:00 PM - 4:00 PM	2,232	1,862	4,094
4:00 AM - 5:00 AM	63	189	252	4:00 PM - 5:00 PM	2,465	1,589	4,054
5:00 AM - 6:00 AM	181	711	892	5:00 PM - 6:00 PM	2,537	1,595	4,132
6:00 AM - 7:00 AM	469	1,887	2,356	6:00 PM - 7:00 PM	2,078	1,521	3,599
7:00 AM - 8:00 AM	1,129	2,366	3,495	7:00 PM - 8:00 PM	1,395	1,158	2,553
8:00 AM - 9:00 AM	1,236	2,050	3,286	8:00 PM - 9:00 PM	1,196	901	2,097
9:00 AM - 10:00 AM	1,240	1,450	2,690	9:00 PM - 10:00 PM	1,056	788	1,844
10:00 AM - 11:00 AM	1,237	1,275	2,512	10:00 PM - 11:00 PM	718	489	1,207
11:00 AM - 12:00 PM	1,143	1,258	2401	11:00 PM - 12:00 AM	482	294	776
Total	**7,233**	**11,611**	**18,844**	**Total**	**18,625**	**14,860**	**33,485**

24-Hour	EB	Volume	25,858	24-Hour	WB	Volume	26,471



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: h. Montezuma Road btw Collwood Boulevard to 55th Street

Orientation: *East-West*

Date of Count: *Tuesday, April 19, 2016*

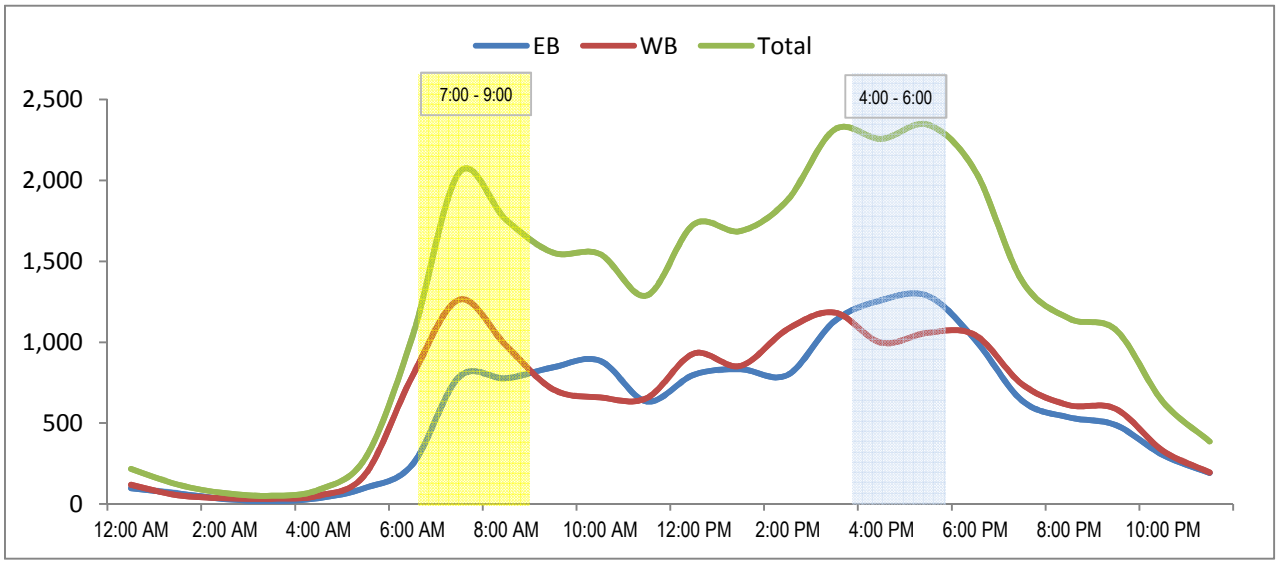
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume				28,946					
Time	Hourly Volume				Time	Hourly Volume			
	EB	WB	Total			EB	WB	Total
12:00 AM - 1:00 AM	98	119	217		12:00 PM - 1:00 PM	799	930	1,729
1:00 AM - 2:00 AM	66	54	120		1:00 PM - 2:00 PM	833	854	1,687
2:00 AM - 3:00 AM	31	36	67		2:00 PM - 3:00 PM	798	1,081	1,879
3:00 AM - 4:00 AM	18	33	51		3:00 PM - 4:00 PM	1,130	1,184	2,314
4:00 AM - 5:00 AM	36	52	88		4:00 PM - 5:00 PM	1,260	997	2,257
5:00 AM - 6:00 AM	100	185	285		5:00 PM - 6:00 PM	1,285	1,059	2,344
6:00 AM - 7:00 AM	244	790	1,034		6:00 PM - 7:00 PM	1,015	1,044	2,059
7:00 AM - 8:00 AM	786	1,263	2,049		7:00 PM - 8:00 PM	639	740	1,379
8:00 AM - 9:00 AM	777	979	1,756		8:00 PM - 9:00 PM	536	611	1,147
9:00 AM - 10:00 AM	845	709	1,554		9:00 PM - 10:00 PM	488	588	1,076
10:00 AM - 11:00 AM	886	659	1,545		10:00 PM - 11:00 PM	303	330	633
11:00 AM - 12:00 PM	634	655	1289		11:00 PM - 12:00 AM	192	195	387
Total	**4,521**	**5,534**	**10,055**		**Total**	**9,278**	**9,613**	**18,891**

24-Hour	EB	Volume	13,799	24-Hour	WB	Volume	15,147



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: i. Montezuma Road btw 55th Street to College Avenue

Orientation: *East-West*

Date of Count: *Tuesday, April 19, 2016*

Analysts: *DASH*

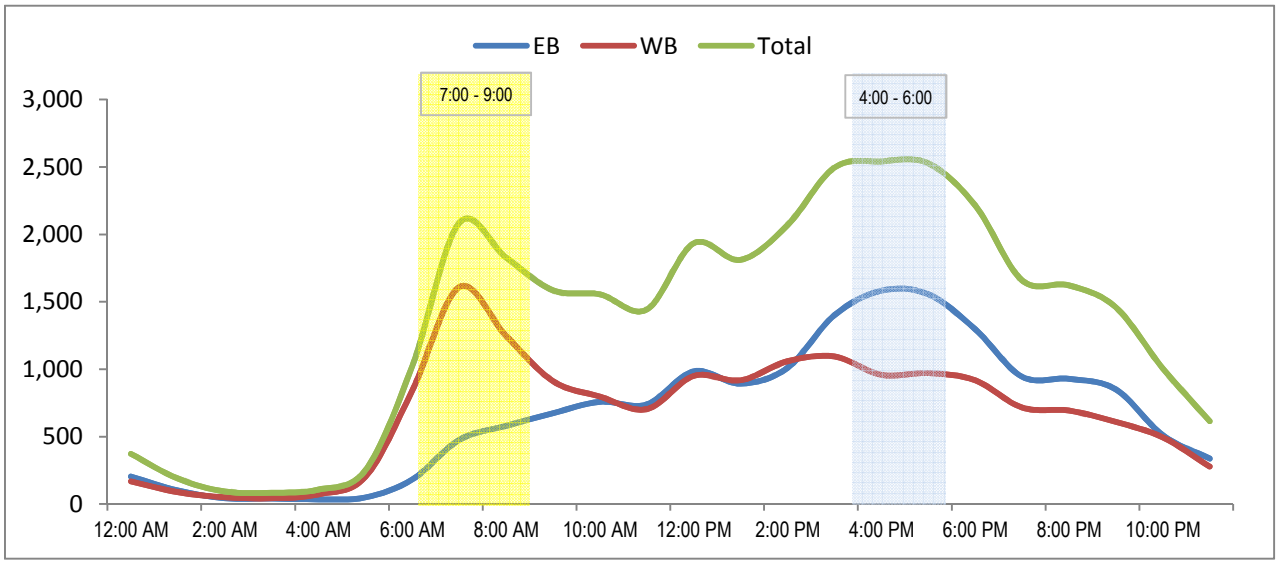
Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume ***32,570***

Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	204	168	372	12:00 PM - 1:00 PM	984	950	1,934
1:00 AM - 2:00 AM	101	88	189	1:00 PM - 2:00 PM	893	918	1,811
2:00 AM - 3:00 AM	43	50	93	2:00 PM - 3:00 PM	1,010	1,059	2,069
3:00 AM - 4:00 AM	41	43	84	3:00 PM - 4:00 PM	1,401	1,094	2,495
4:00 AM - 5:00 AM	35	72	107	4:00 PM - 5:00 PM	1,583	958	2,541
5:00 AM - 6:00 AM	49	202	251	5:00 PM - 6:00 PM	1,556	971	2,527
6:00 AM - 7:00 AM	182	843	1,025	6:00 PM - 7:00 PM	1,297	918	2,215
7:00 AM - 8:00 AM	476	1,609	2,085	7:00 PM - 8:00 PM	944	716	1,660
8:00 AM - 9:00 AM	580	1,247	1,827	8:00 PM - 9:00 PM	929	693	1,622
9:00 AM - 10:00 AM	674	911	1,585	9:00 PM - 10:00 PM	850	609	1,459
10:00 AM - 11:00 AM	758	797	1,555	10:00 PM - 11:00 PM	511	495	1,006
11:00 AM - 12:00 PM	739	704	1443	11:00 PM - 12:00 AM	337	278	615
Total	**3,882**	**6,734**	**10,616**	**Total**	**12,295**	**9,659**	**21,954**

24-Hour EB Volume 16,177 ***24-Hour WB Volume 16,393***



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: j. Montezuma Road btw College Avenue to E. Campus Drive

Orientation: *East-West*

Date of Count: *Tuesday, April 19, 2016*

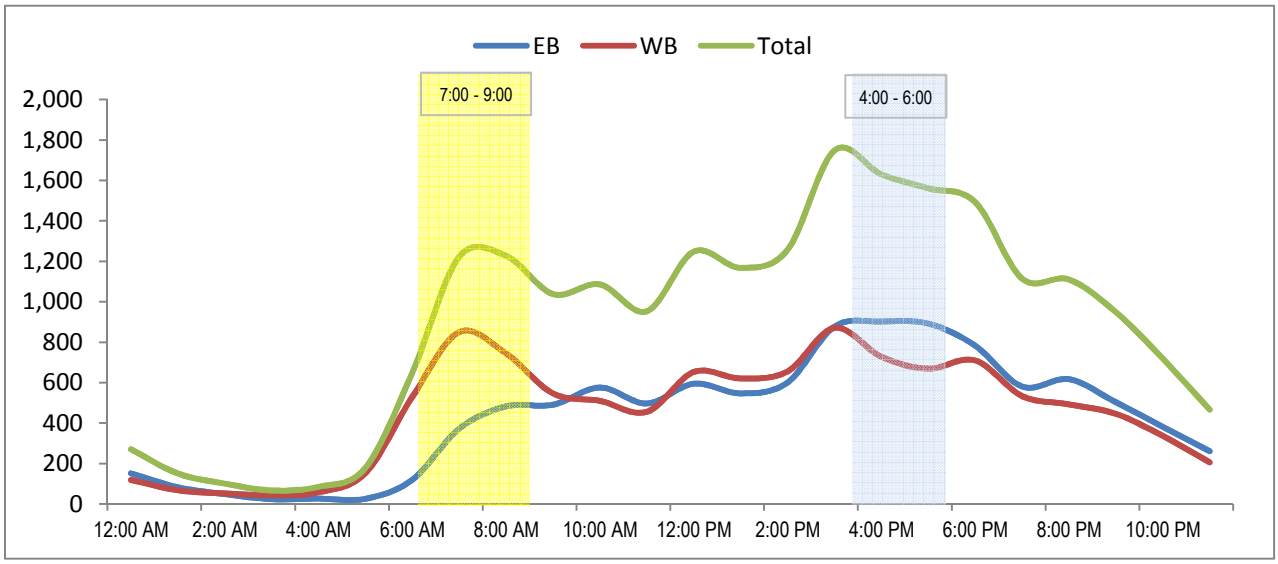
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume				21,496			
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	152	119	271	12:00 PM - 1:00 PM	595	653	1,248
1:00 AM - 2:00 AM	83	68	151	1:00 PM - 2:00 PM	547	621	1,168
2:00 AM - 3:00 AM	49	52	101	2:00 PM - 3:00 PM	601	656	1,257
3:00 AM - 4:00 AM	24	43	67	3:00 PM - 4:00 PM	877	871	1,748
4:00 AM - 5:00 AM	27	58	85	4:00 PM - 5:00 PM	902	728	1,630
5:00 AM - 6:00 AM	26	153	179	5:00 PM - 6:00 PM	892	669	1,561
6:00 AM - 7:00 AM	120	530	650	6:00 PM - 7:00 PM	783	710	1,493
7:00 AM - 8:00 AM	373	850	1,223	7:00 PM - 8:00 PM	581	534	1,115
8:00 AM - 9:00 AM	483	744	1,227	8:00 PM - 9:00 PM	617	493	1,110
9:00 AM - 10:00 AM	491	547	1,038	9:00 PM - 10:00 PM	503	446	949
10:00 AM - 11:00 AM	576	510	1,086	10:00 PM - 11:00 PM	382	337	719
11:00 AM - 12:00 PM	497	456	953	11:00 PM - 12:00 AM	261	206	467
Total	**2,901**	**4,130**	**7,031**	**Total**	**7,541**	**6,924**	**14,465**

24-Hour	EB	Volume	10,442	24-Hour	WB	Volume	11,054



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: k. Montezuma Road btw E. Campus Drive to Reservoir Drive

Orientation: *East-West*

Date of Count: *Tuesday, April 19, 2016*

Analysts: *DASH*

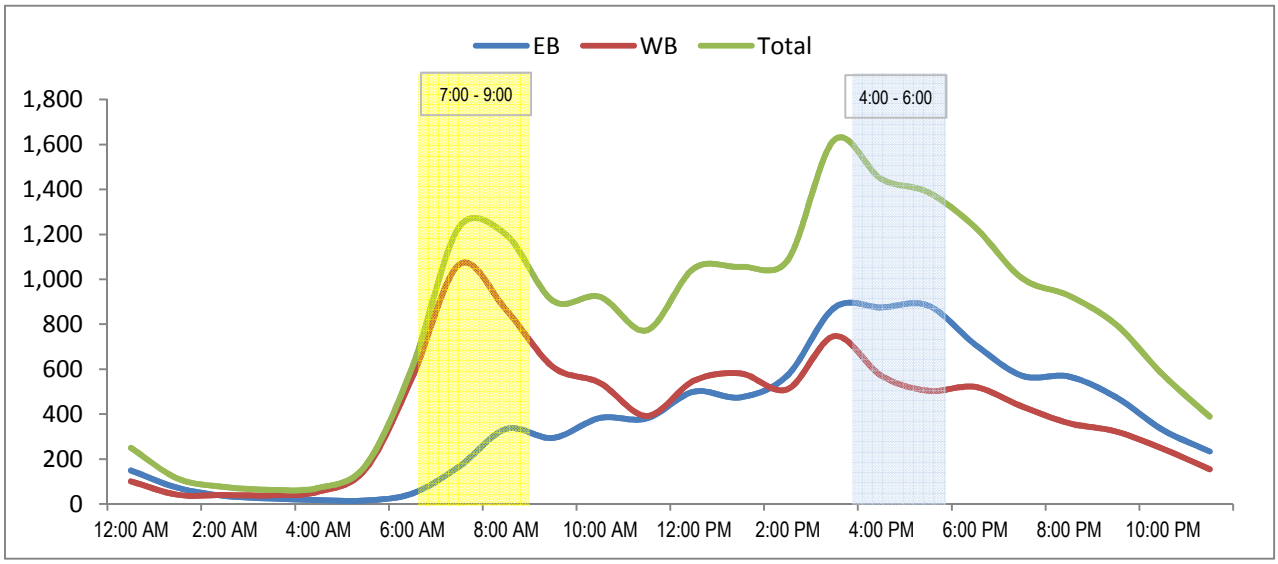
Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume ***18,955***

Time	Hourly Volume EB	Hourly Volume WB	Hourly Volume Total	Time	Hourly Volume EB	Hourly Volume WB	Hourly Volume Total
12:00 AM - 1:00 AM	149	101	250	12:00 PM - 1:00 PM	500	548	1,048
1:00 AM - 2:00 AM	72	41	113	1:00 PM - 2:00 PM	475	581	1,056
2:00 AM - 3:00 AM	36	40	76	2:00 PM - 3:00 PM	573	511	1,084
3:00 AM - 4:00 AM	24	39	63	3:00 PM - 4:00 PM	874	747	1,621
4:00 AM - 5:00 AM	17	55	72	4:00 PM - 5:00 PM	875	571	1,446
5:00 AM - 6:00 AM	16	155	171	5:00 PM - 6:00 PM	883	504	1,387
6:00 AM - 7:00 AM	47	564	611	6:00 PM - 7:00 PM	710	521	1,231
7:00 AM - 8:00 AM	167	1,066	1,233	7:00 PM - 8:00 PM	571	434	1,005
8:00 AM - 9:00 AM	334	864	1,198	8:00 PM - 9:00 PM	567	360	927
9:00 AM - 10:00 AM	294	610	904	9:00 PM - 10:00 PM	476	323	799
10:00 AM - 11:00 AM	383	539	922	10:00 PM - 11:00 PM	330	246	576
11:00 AM - 12:00 PM	381	392	773	11:00 PM - 12:00 AM	234	155	389
Total	**1,920**	**4,466**	**6,386**	**Total**	**7,068**	**5,501**	**12,569**

24-Hour EB Volume 8,988 ***24-Hour WB Volume 9,967***



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: I. Fairmount Avenue btw Montezuma to I-8

Orientation: *North-South*

Date of Count: *Tuesday, April 19, 2016*

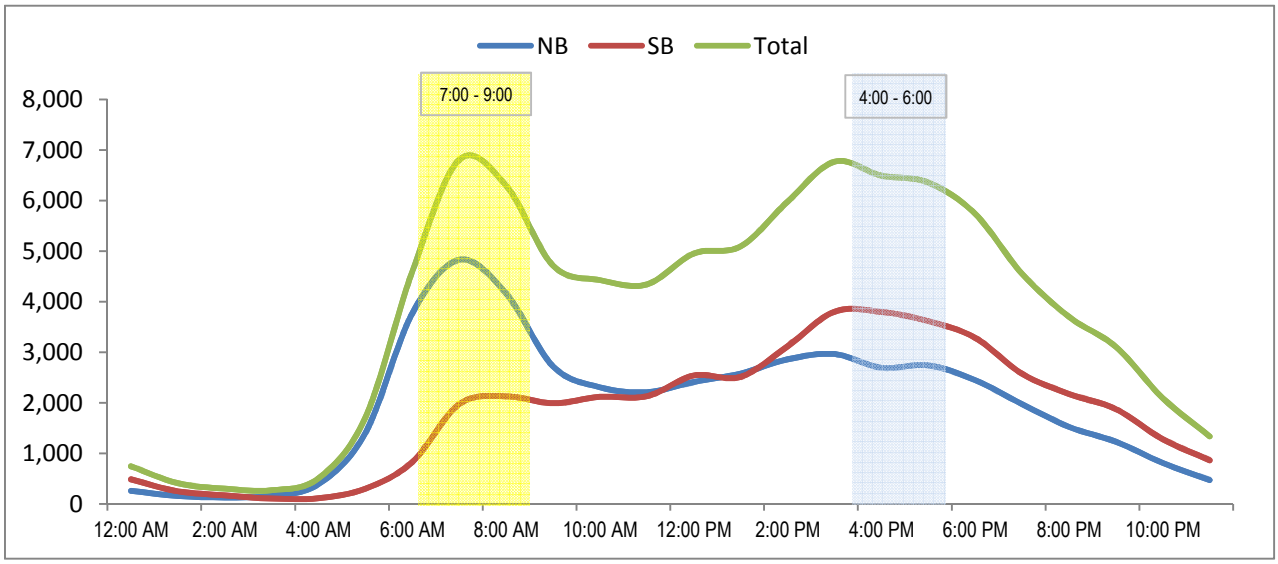
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume				91,352					
Time	Hourly Volume				Time	Hourly Volume			
	NB	SB	Total			NB	SB	Total
12:00 AM - 1:00 AM	260	488	748		12:00 PM - 1:00 PM	2,413	2,542	4,955
1:00 AM - 2:00 AM	160	252	412		1:00 PM - 2:00 PM	2,580	2,515	5,095
2:00 AM - 3:00 AM	131	173	304		2:00 PM - 3:00 PM	2,861	3,120	5,981
3:00 AM - 4:00 AM	166	107	273		3:00 PM - 4:00 PM	2,967	3,804	6,771
4:00 AM - 5:00 AM	395	116	511		4:00 PM - 5:00 PM	2,695	3,800	6,495
5:00 AM - 6:00 AM	1,410	304	1,714		5:00 PM - 6:00 PM	2,742	3,617	6,359
6:00 AM - 7:00 AM	3,771	831	4,602		6:00 PM - 7:00 PM	2,451	3,288	5,739
7:00 AM - 8:00 AM	4,832	1,976	6,808		7:00 PM - 8:00 PM	1,977	2,577	4,554
8:00 AM - 9:00 AM	4,165	2,130	6,295		8:00 PM - 9:00 PM	1,526	2,178	3,704
9:00 AM - 10:00 AM	2,723	1,993	4,716		9:00 PM - 10:00 PM	1,232	1,877	3,109
10:00 AM - 11:00 AM	2,309	2,120	4,429		10:00 PM - 11:00 PM	813	1,282	2,095
11:00 AM - 12:00 PM	2,212	2,132	4344		11:00 PM - 12:00 AM	474	865	1339
Total	**22,534**	**12,622**	**35,156**		**Total**	**24,731**	**31,465**	**56,196**

24-Hour	NB	Volume	47,265	24-Hour	SB	Volume	44,087



MEMORANDUM

To:	Mr. Laura Shinn San Diego State University	Date:	January 4, 2018
From:	John Boarman/ Shankar Ramakrishnan LLG, Engineers	LLG Ref:	3-16-2604
Subject:	SDSU Master Plan Update –Traffic Count Validation		

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Pasadena
Irvine
San Diego
Woodland Hills

This memo has been prepared to determine whether the traffic counts used in the SDSU Master Plan Update Transportation Impact Analysis (TIA) report prepared by our firm remain valid in light of the passage of time.

SDSU MASTER PLAN UPDATE TIA COUNTS

The traffic counts for the SDSU Master Plan Update TIA were conducted on Tuesday, April 19, 2016. SDSU was in session at the time of the counts. Since the counts are now more than a year old, new counts were conducted on Thursday, December 7, 2017 to determine whether there have been any substantial changes in traffic volumes within the project study area and, accordingly, whether the April 2016 counts remain valid indicators of existing conditions.

TRAFFIC COUNT VALIDATION

To conduct the exercise, several street segment counts were conducted on Thursday, December 7, 2017. During the time of the counts, SDSU and other area schools were in session. ***Table A*** shows a comparison between the SDSU Master Plan Update TIA counts (from April 2016) and the new December 2017 validation counts. ***Appendix A*** contains the street segment count sheets.

FINDINGS

As shown in *Table A*, on an overall average basis, the traffic counts have been "flat" within the SDSU project study area. Therefore, given that there has been no substantial change (i.e., increase) in traffic counts, the traffic counts used in the TIA are concluded to be valid and acceptable for use in the analysis.

cc: File

LINSCOTT LAW & GREENSPAN engineers

TABLE A
TRAFFIC COUNT VALIDATION

Street Segment	TIA Counts[a]	Validation Counts[b]	Δ	
			#	%
Alvarado Road				
Reservoir Drive to 70th Street	7,040	7,170	130	1.8%
College Avenue				
Canyon Crest Drive to Zura Way	35,850	36,880	1,030	2.9%
Zura Way to Montezuma Road	29,790	30,650	860	2.9%
Montezuma Road to Cresita Drive	27,490	27,400	-90	-0.3%
Montezuma Road				
Collwood Boulevard to 55th Street	28,950	29,210	260	0.9%
55th Street to College Avenue	32,570	29,180	-3,390	-10.4%
Average				***-0.37%***

Footnotes:
a. TIA counts were conducted on Tuesday, April 19, 2016.
b. Validation counts were conducted on Thursday, December 7, 2017.

APPENDIX A

SEGMENT MANUAL COUNT SHEETS

THURSDAY - DECEMBER 7, 2017 CITY: LA MESA - SAN DIEGO PROJECT: PTD17-1208-01

Alvarado Road – Reservoir Drive to 70th Street

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			6		5			12:00			75		70		
00:15			11		5			12:15			53		61		
00:30			3		3			12:30			55		55		
00:45			3	23	4	17	40	12:45			68	251	48	234	485
01:00			3		3			13:00			58		69		
01:15			5		3			13:15			60		65		
01:30			7		6			13:30			52		74		
01:45			1	16	3	15	31	13:45			73	243	49	257	500
02:00			6		2			14:00			76		57		
02:15			2		5			14:15			73		54		
02:30			5		4			14:30			75		61		
02:45			1	14	2	13	27	14:45			69	293	52	224	517
03:00			3		0			15:00			75		42		
03:15			2		1			15:15			79		55		
03:30			3		2			15:30			91		67		
03:45			1	9	4	7	16	15:45			80	325	59	223	548
04:00			1		2			16:00			87		51		
04:15			0		4			16:15			71		44		
04:30			1		6			16:30			87		39		
04:45			4	6	7	19	25	16:45			77	322	43	177	499
05:00			6		9			17:00			73		59		
05:15			2		8			17:15			89		53		
05:30			14		18			17:30			77		43		
05:45			17	39	42	77	116	17:45			66	305	40	195	500
06:00			5		29			18:00			60		36		
06:15			21		33			18:15			59		33		
06:30			36		32			18:30			58		43		
06:45			25	87	53	147	234	18:45			58	235	42	154	389
07:00			47		53			19:00			43		37		
07:15			20		83			19:15			38		26		
07:30			39		100			19:30			44		35		
07:45			32	138	116	352	490	19:45			28	153	17	115	268
08:00			34		99			20:00			24		22		
08:15			33		90			20:15			31		20		
08:30			38		90			20:30			33		15		
08:45			36	141	80	359	500	20:45			17	105	17	74	179
09:00			42		90			21:00			24		22		
09:15			39		89			21:15			24		21		
09:30			49		61			21:30			35		14		
09:45			46	176	68	308	484	21:45			14	97	20	77	174
10:00			47		57			22:00			16		15		
10:15			55		57			22:15			22		17		
10:30			44		61			22:30			16		14		
10:45			59	205	64	239	444	22:45			14	68	13	59	127
11:00			46		64			23:00			13		8		
11:15			53		49			23:15			16		14		
11:30			55		60			23:30			18		15		
11:45			63	217	69	242	459	23:45			13	60	14	51	111
Total Vol.				1071		1795	**2866**					2457		1840	**4297**

Daily Totals

NB	SB	EB	WB	**Combined**
		3528	3635	**7163**

	AM			**PM**		
Split %	37.4%	62.6%	**40.0%**	57.2%	42.8%	**60.0%**
Peak Hour	11:15	07:30	**07:30**	15:15	13:00	**15:15**
Volume	246	405	**543**	337	257	**569**
P.H.F.	0.82	0.87	**0.92**	0.93	0.87	**0.90**

THURSDAY - DECEMBER 7, 2017 CITY: LA MESA - SAN DIEGO PROJECT: PTD17-1208-01

College Avenue – Canyon Crest Drive to Zura Way

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	64		60					12:00	293		317				
00:15	55		40					12:15	324		341				
00:30	43		48					12:30	334		260				
00:45	45	207	33	181			388	12:45	272	1223	290	1208			2431
01:00	42		40					13:00	266		267				
01:15	36		29					13:15	321		271				
01:30	32		31					13:30	335		324				
01:45	20	130	24	124			254	13:45	287	1209	291	1153			2362
02:00	29		19					14:00	292		236				
02:15	22		18					14:15	327		308				
02:30	16		19					14:30	314		342				
02:45	12	79	12	68			147	14:45	306	1239	338	1224			2463
03:00	22		12					15:00	329		271				
03:15	23		23					15:15	262		286				
03:30	19		19					15:30	335		315				
03:45	17	81	18	72			153	15:45	286	1212	298	1170			2382
04:00	11		13					16:00	296		242				
04:15	27		13					16:15	327		246				
04:30	33		20					16:30	320		257				
04:45	45	116	23	69			185	16:45	293	1236	254	999			2235
05:00	48		31					17:00	344		306				
05:15	58		50					17:15	296		253				
05:30	110		70					17:30	310		294				
05:45	98	314	61	212			526	17:45	326	1276	247	1100			2376
06:00	112		81					18:00	292		303				
06:15	139		100					18:15	317		303				
06:30	202		97					18:30	296		263				
06:45	261	714	140	418			1132	18:45	314	1219	285	1154			2373
07:00	328		182					19:00	267		291				
07:15	243		248					19:15	304		245				
07:30	226		321					19:30	241		226				
07:45	216	1013	311	1062			2075	19:45	214	1026	220	982			2008
08:00	173		287					20:00	201		226				
08:15	206		245					20:15	224		193				
08:30	221		289					20:30	217		168				
08:45	209	809	329	1150			1959	20:45	175	817	192	779			1596
09:00	224		280					21:00	244		180				
09:15	268		299					21:15	240		186				
09:30	288		290					21:30	180		204				
09:45	219	999	266	1135			2134	21:45	234	898	168	738			1636
10:00	223		232					22:00	178		180				
10:15	212		309					22:15	139		132				
10:30	249		338					22:30	144		100				
10:45	314	998	327	1206			2204	22:45	87	548	113	525			1073
11:00	288		238					23:00	88		99				
11:15	268		250					23:15	89		75				
11:30	281		246					23:30	71		81				
11:45	283	1120	287	1021			2141	23:45	67	315	72	327			642
Total Vol.		6580		6718			**13298**			12218		11359			**23577**

Daily Totals

NB	SB	EB	WB	**Combined**
18798	18077			**36875**

	AM			**PM**		
Split %	49.5%	50.5%	**36.1%**	51.8%	48.2%	**63.9%**
Peak Hour	11:45	10:15	**11:45**	16:15	14:15	**14:15**
Volume	1234	1212	**2439**	1284	1259	**2535**
P.H.F.	0.92	0.90	**0.92**	0.94	0.92	**0.97**

THURSDAY - DECEMBER 7, 2017 CITY: LA MESA - SAN DIEGO PROJECT: PTD17-1208-01

College Avenue – Zura Way to Montezuma Road

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	51		59					12:00	234		264				
00:15	55		39					12:15	256		272				
00:30	42		46					12:30	232		255				
00:45	38	186	28	172			358	12:45	209	931	230	1021			1952
01:00	33		46					13:00	190		247				
01:15	37		28					13:15	234		232				
01:30	26		31					13:30	230		258				
01:45	20	116	29	134			250	13:45	266	920	231	968			1888
02:00	21		19					14:00	269		260				
02:15	20		15					14:15	210		290				
02:30	17		19					14:30	208		313				
02:45	8	66	13	66			132	14:45	217	904	283	1146			2050
03:00	18		15					15:00	211		308				
03:15	23		25					15:15	243		256				
03:30	15		11					15:30	246		271				
03:45	16	72	21	72			144	15:45	220	920	239	1074			1994
04:00	13		10					16:00	222		276				
04:15	24		13					16:15	197		258				
04:30	34		20					16:30	196		226				
04:45	41	112	22	65			177	16:45	193	808	288	1048			1856
05:00	47		35					17:00	234		283				
05:15	59		46					17:15	214		262				
05:30	90		59					17:30	198		265				
05:45	100	296	58	198			494	17:45	209	855	273	1083			1938
06:00	96		75					18:00	209		289				
06:15	136		92					18:15	190		254				
06:30	179		82					18:30	205		272				
06:45	261	672	116	365			1037	18:45	203	807	242	1057			1864
07:00	300		168					19:00	211		297				
07:15	266		215					19:15	171		255				
07:30	208		230					19:30	184		208				
07:45	250	1024	206	819			1843	19:45	158	724	203	963			1687
08:00	194		197					20:00	166		208				
08:15	211		204					20:15	135		201				
08:30	221		215					20:30	175		153				
08:45	205	831	237	853			1684	20:45	123	599	176	738			1337
09:00	250		218					21:00	170		168				
09:15	260		202					21:15	141		174				
09:30	243		222					21:30	125		175				
09:45	187	940	193	835			1775	21:45	146	582	166	683			1265
10:00	180		181					22:00	140		152				
10:15	208		224					22:15	111		140				
10:30	221		235					22:30	103		83				
10:45	227	836	252	892			1728	22:45	73	427	108	483			910
11:00	193		214					23:00	70		86				
11:15	199		229					23:15	65		71				
11:30	219		197					23:30	50		74				
11:45	237	848	252	892			1740	23:45	69	254	61	292			546
Total Vol.		5999		5363			**11362**			8731		10556			**19287**

Daily Totals

NB	SB	EB	WB	**Combined**
14730	15919			**30649**

	AM			**PM**		
Split %	52.8%	47.2%	**37.1%**	45.3%	54.7%	**62.9%**
Peak Hour	06:45	11:45	**11:45**	13:15	14:15	**14:00**
Volume	1035	1043	**2002**	999	1194	**2050**
P.H.F.	0.86	0.96	**0.95**	0.94	0.95	**0.97**

THURSDAY - DECEMBER 7, 2017 CITY: LA MESA - SAN DIEGO PROJECT: PTD17-1208-01

College Avenue – South of Montezuma Road

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	41		51					12:00	215		201				
00:15	39		43					12:15	231		229				
00:30	35		42					12:30	207		209				
00:45	26	141	37	173			314	12:45	161	814	207	846			1660
01:00	27		30					13:00	166		231				
01:15	24		26					13:15	214		174				
01:30	15		35					13:30	204		175				
01:45	8	74	28	119			193	13:45	212	796	252	832			1628
02:00	11		22					14:00	185		258				
02:15	16		23					14:15	188		255				
02:30	10		13					14:30	188		274				
02:45	11	48	5	63			111	14:45	196	757	269	1056			1813
03:00	12		16					15:00	199		305				
03:15	11		17					15:15	206		289				
03:30	12		11					15:30	203		300				
03:45	14	49	16	60			109	15:45	194	802	256	1150			1952
04:00	12		10					16:00	171		342				
04:15	23		13					16:15	194		299				
04:30	27		10					16:30	156		254				
04:45	31	93	12	45			138	16:45	193	714	297	1192			1906
05:00	35		15					17:00	198		315				
05:15	61		24					17:15	170		300				
05:30	89		35					17:30	158		315				
05:45	88	273	44	118			391	17:45	191	717	280	1210			1927
06:00	125		58					18:00	175		308				
06:15	172		58					18:15	159		311				
06:30	220		73					18:30	155		303				
06:45	259	776	70	259			1035	18:45	187	676	277	1199			1875
07:00	234		106					19:00	149		282				
07:15	268		146					19:15	138		248				
07:30	194		166					19:30	145		207				
07:45	208	904	148	566			1470	19:45	120	552	183	920			1472
08:00	177		137					20:00	133		212				
08:15	217		128					20:15	116		189				
08:30	255		116					20:30	143		186				
08:45	222	871	150	531			1402	20:45	135	527	167	754			1281
09:00	253		143					21:00	123		192				
09:15	229		145					21:15	134		191				
09:30	192		159					21:30	110		142				
09:45	148	822	167	614			1436	21:45	146	513	147	672			1185
10:00	152		159					22:00	88		124				
10:15	171		151					22:15	64		119				
10:30	233		156					22:30	88		90				
10:45	186	742	205	671			1413	22:45	69	309	111	444			753
11:00	149		180					23:00	66		71				
11:15	175		170					23:15	55		82				
11:30	200		145					23:30	61		62				
11:45	230	754	174	669			1423	23:45	50	232	65	280			512
Total Vol.		5547		3888			**9435**			7409		10555			**17964**

Daily Totals

NB	SB	EB	WB	**Combined**
12956	14443			**27399**

	AM			**PM**		
Split %	58.8%	41.2%	**34.4%**	41.2%	58.8%	**65.6%**
Peak Hour	06:30	11:45	**11:45**	13:15	16:45	**14:45**
Volume	981	813	**1696**	815	1227	**1967**
P.H.F.	0.92	0.89	**0.92**	0.98	0.97	**0.98**

THURSDAY - DECEMBER 7, 2017 CITY: LA MESA - SAN DIEGO PROJECT: PTD17-1208-01

Montezuma Road – Collwood Boulevard to 55th Street

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			38		35			12:00			223		230		
00:15			38		40			12:15			213		250		
00:30			24		28			12:30			203		264		
00:45			19	119	26	129	248	12:45			149	788	215	959	1747
01:00			25		15			13:00			190		181		
01:15			21		20			13:15			196		182		
01:30			18		22			13:30			192		232		
01:45			12	76	17	74	150	13:45			213	791	268	863	1654
02:00			12		21			14:00			201		321		
02:15			9		4			14:15			169		264		
02:30			5		12			14:30			238		249		
02:45			4	30	5	42	72	14:45			223	831	220	1054	1885
03:00			7		11			15:00			281		271		
03:15			3		7			15:15			330		353		
03:30			6		6			15:30			312		382		
03:45			5	21	11	35	56	15:45			300	1223	303	1309	2532
04:00			5		10			16:00			333		319		
04:15			8		13			16:15			356		253		
04:30			1		22			16:30			283		263		
04:45			7	21	27	72	93	16:45			300	1272	245	1080	2352
05:00			14		21			17:00			270		294		
05:15			12		39			17:15			323		275		
05:30			29		57			17:30			317		295		
05:45			38	93	59	176	269	17:45			327	1237	268	1132	2369
06:00			42		110			18:00			311		234		
06:15			44		150			18:15			278		239		
06:30			47		271			18:30			245		234		
06:45			95	228	246	777	1005	18:45			233	1067	297	1004	2071
07:00			111		268			19:00			193		297		
07:15			169		305			19:15			175		180		
07:30			227		273			19:30			187		138		
07:45			227	734	258	1104	1838	19:45			151	706	142	757	1463
08:00			174		173			20:00			155		141		
08:15			143		264			20:15			145		142		
08:30			228		244			20:30			143		139		
08:45			241	786	232	913	1699	20:45			137	580	132	554	1134
09:00			276		184			21:00			133		153		
09:15			221		222			21:15			152		133		
09:30			161		171			21:30			135		127		
09:45			137	795	134	711	1506	21:45			120	540	142	555	1095
10:00			146		149			22:00			118		112		
10:15			168		120			22:15			96		101		
10:30			226		170			22:30			68		88		
10:45			203	743	214	653	1396	22:45			85	367	58	359	726
11:00			136		220			23:00			72		42		
11:15			116		172			23:15			62		54		
11:30			170		199			23:30			64		43		
11:45			220	642	175	766	1408	23:45			58	256	39	178	434
Total Vol.				4288		5452	**9740**					9658		9804	**19462**

							Daily Totals			
						NB	SB	EB	WB	**Combined**
								13946	15256	**29202**
		AM						**PM**		
Split %		44.0%	56.0%	**33.4%**				49.6%	50.4%	**66.6%**
Peak Hour		08:30	07:00	**08:30**				15:30	15:15	**15:15**
Volume		966	1104	**1848**				1301	1357	**2632**
P.H.F.		0.88	0.90	**0.98**				0.91	0.89	**0.95**

PACIFIC TECHNICAL DATA

THURSDAY - DECEMBER 7, 2017 CITY: LA MESA - SAN DIEGO PROJECT: PTD17-1208-01

Montezuma Road – Campanile Drive to College Avenue

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			65		52			12:00			245		196		
00:15			63		50			12:15			218		251		
00:30			36		32			12:30			207		249		
00:45			44	208	32	166	374	12:45			182	852	223	919	1771
01:00			30		37			13:00			151		200		
01:15			40		34			13:15			159		216		
01:30			32		28			13:30			178		227		
01:45			25	127	21	120	247	13:45			218	706	228	871	1577
02:00			28		35			14:00			214		283		
02:15			26		12			14:15			188		256		
02:30			11		9			14:30			231		225		
02:45			7	72	12	68	140	14:45			216	849	209	973	1822
03:00			11		15			15:00			219		259		
03:15			14		11			15:15			316		307		
03:30			10		10			15:30			302		297		
03:45			9	44	12	48	92	15:45			307	1144	285	1148	2292
04:00			8		15			16:00			298		240		
04:15			9		17			16:15			297		241		
04:30			9		19			16:30			263		206		
04:45			8	34	18	69	103	16:45			303	1161	224	911	2072
05:00			5		24			17:00			296		273		
05:15			7		42			17:15			268		225		
05:30			12		48			17:30			339		266		
05:45			14	38	61	175	213	17:45			331	1234	234	998	2232
06:00			26		108			18:00			323		225		
06:15			38		169			18:15			279		232		
06:30			34		248			18:30			238		253		
06:45			64	162	230	755	917	18:45			263	1103	255	965	2068
07:00			74		297			19:00			226		254		
07:15			77		373			19:15			190		197		
07:30			132		285			19:30			190		148		
07:45			164	447	304	1259	1706	19:45			157	763	156	755	1518
08:00			111		230			20:00			158		150		
08:15			114		308			20:15			177		142		
08:30			120		340			20:30			189		150		
08:45			137	482	302	1180	1662	20:45			158	682	165	607	1289
09:00			159		268			21:00			179		159		
09:15			175		233			21:15			169		162		
09:30			155		184			21:30			169		138		
09:45			123	612	163	848	1460	21:45			166	683	171	630	1313
10:00			142		146			22:00			157		136		
10:15			135		146			22:15			124		146		
10:30			166		207			22:30			123		111		
10:45			207	650	227	726	1376	22:45			96	500	93	486	986
11:00			157		184			23:00			75		69		
11:15			140		172			23:15			93		72		
11:30			135		176			23:30			70		87		
11:45			158	590	207	739	1329	23:45			77	315	78	306	621
Total Vol.				3466		6153	**9619**					9992		9569	**19561**

Daily Totals

NB	SB	EB	WB	**Combined**
		13458	15722	**29180**

	AM			**PM**		
Split %	36.0%	64.0%	**33.0%**	51.1%	48.9%	**67.0%**
Peak Hour	11:45	07:00	**08:15**	17:30	15:00	**15:15**
Volume	828	1259	**1748**	1272	1148	**2352**
P.H.F.	0.84	0.84	**0.95**	0.94	0.93	**0.94**

PACIFIC TECHNICAL DATA

APPENDIX B

INTERSECTION METHODOLOGY AND LEVEL OF SERVICE ANALYSIS SHEETS

SIGNALIZED INTERSECTIONS

For signalized intersections, level of service criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. **Table 1** summarizes the delay thresholds for signalized intersections.

Level of service A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of service B describes operations with delay in the range 10.1 seconds and 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

TABLE 1

LEVEL OF SERVICE THRESHOLDS FOR SIGNALIZED INTERSECTIONS

AVERAGE CONTROL DELAY PER VEHICLE (SECONDS/VEHICLE)			LEVEL OF SERVICE
0.0	≤	10.0	A
10.1	to	20.0	B
21.1	to	35.0	C
35.1	to	55.0	D
55.1	to	80.0	E
	≥	80.0	F

Source: Highway Capacity Manual, 2000.

Level of service C describes operations with delay in the range 20.1 seconds and 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level of service D describes operations with delay in the range 35.1 seconds and 55.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or higher v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are more frequent.

Level of service E describes operations with delay in the range of 55.1 seconds to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level of service F describes operations with delay in excess of over 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

UNSIGNALIZED INTERSECTIONS

For unsignalized intersections, level of service is determined by the computed or measured control delay and is defined for each minor movement. Level of service is not defined for the intersection as a whole. **Table 2** depicts the criteria, which are based on the average control delay for any particular minor movement.

TABLE 2

LEVEL OF SERVICE THRESHOLDS FOR UNSIGNALIZED INTERSECTIONS

AVERAGE CONTROL DELAY PER VEHICLE (SECONDS/VEHICLE)	LEVEL OF SERVICE	EXPECTED DELAY TO MINOR STREET TRAFFIC
0.0 ≤ 10.0	A	Little or no delay
10.1 to 15.0	B	Short traffic delays
15.1 to 25.0	C	Average traffic delays
25.1 to 35.0	D	Long traffic delays
35.1 to 50.0	E	Very long traffic delays
≥ 50.0	F	Severe congestion

Source: Highway Capacity Manual, 2000.

Level of Service F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This level of service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits. LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

APPENDIX C

CITY OF SAN DIEGO ROADWAY CLASSIFICATION TABLE

TABLE 2 (MODIFIED)

City of San Diego Roadway Classifications, Levels of Service (LOS) and Average Daily Traffic (ADT)

		LEVEL OF SERVICE[a]				
Street Classification	**Lanes**	**A**	**B**	**C**	**D**	**E**
Freeway	8 lanes	60,000	84,000	120,000	140,000	150,000
Freeway	6 lanes	45,000	63,000	90,000	110,000	120,000
Freeway	4 lanes	30,000	42,000	60,000	70,000	80,000
Expressway	6 lanes	30,000	42,000	60,000	70,000	80,000
Prime Arterial	11 lanes	32,000	44,750	63,750	74,500	85,000
Prime Arterial	10 lanes	30,000	42,000	60,000	70,000	80,000
Prime Arterial	9 lanes	28,750	40,250	57,500	66,250	75,000
Prime Arterial	8 lanes	27,500	38,500	55,000	62,500	70,000
Prime Arterial	7 lanes	26,250	36,750	52,500	58,750	65,000
Prime Arterial	6 lanes	25,000	35,000	50,000	55,000	60,000
Prime Arterial	5 lanes	23,000	32,000	45,000	50,000	55,000
Major Arterial	6 lanes	20,000	28,000	40,000	45,000	50,000
Major Arterial	5 lanes	17,500	24,500	35,000	40,000	45,000
Major Arterial	4 lanes	15,000	21,000	30,000	35,000	40,000
Collector	5 lanes	12,500	17,500	25,000	30,000	35,000
Collector (continuous left-turn lane)	4 lanes	10,000	14,000	20,000	25,000	30,000
Major Arterial (one-way)	4 lanes	11,400	15,600	20,000	27,000	33,400
	3 lanes	8,500	11,750	15,000	20,000	25,000
	2 lanes	5,700	7,800	10,000	13,500	16,700
Collector (no Center lane) (continuous left-turn lane)	4 lanes	5,000	7,000	10,000	13,000	15,000
	3 lanes					
	2 lanes					
Collector (one-way)	2 lanes	4,500	6,250	8,750	11,000	12,500
Collector (no fronting property)	2 lanes	4,000	5,500	7,500	9,000	10,000
Collector (commercial-industrial fronting)	2 lanes	2,500	3,500	5,000	6,500	8,000
Collector (multi-family)	2 lanes	2,500	3,500	5,000	6,500	8,000
Sub-collector (single-family)	2 lanes	—	—	2,200	—	—

Footnotes:

a. Approximate recommended ADT based on City of San Diego Street Design Manual.

General Notes:

1. The volumes and the average daily level of service listed above are only intended as a general planning guideline.
2. Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.
3. ***Shaded areas indicate LLG-derived ADT capacities.***

APPENDIX D

CALTRANS PEAK HOUR DATA, TRUCK FACTORS AND RAMP OBSERVATIONS AND METER RATES

2015 Traffic Volumes on California State Highways

Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT	
11	007	IMP		1.188	CALEXICO, JCT. RTE. 98	900	8800	8400	620	7100	6500	
11	007	IMP		6.718	JCT. RTE. 8	610	6900	6400	240	3500	3450	
11	007	IMP		6.823	END OF RTE. 7	240	3500	3450				
11	008	SD	T	.407	SAN DIEGO, SUNSET CLIFFS BOULEVARD				850	12600	12000	
11	008	SD	T	.466	EB RIGHT TURN FR NIMITZ BLVD	920	13600	13000	3850	49000	46500	
11	008	SD	L	1.213	MIDWAY DRIVE	3850	49000	46500	8200	110000	102000	
11	008	SD	L	2.379	JCT. RTE. 5	8200	110000	102000	10900	143000	131000	
11	008	SD	R	.364	SAN DIEGO, MORENA BOULEVARD	10900	143000	131000	14800	203000	187000	
11	008	SD		.946	HOTEL CIRCLE/TAYLOR STREET	14800	203000	187000	15100	206000	194000	
11	008	SD		2.23	SAN DIEGO, HOTEL CIRCLE	15100	206000	194000	16600	220000	204000	
11	008	SD		2.41	SAN DIEGO, JCT. RTE. 163	16600	220000	204000	17000	226000	210000	
11	008	SD		3.04	SAN DIEGO, MISSION CENTER ROAD	17000	226000	210000	18300	241000	225000	
11	008	SD		3.902	SAN DIEGO, TEXAS STREET	18300	241000	225000	16200	215000	199000	
11	008	SD		4.378	SAN DIEGO, JCT. RTE. 805	16200	215000	199000	18800	247000	241000	
11	008	SD		5.638	JCT. RTE. 15	18800	247000	241000	16600	218000	214000	
11	008	SD		6.271	SAN DIEGO, FAIRMOUNT AVENUE	16600	218000	214000	18600	241000	236000	1
11	008	SD		7.06	SAN DIEGO, WARING ROAD	18600	241000	236000	18000	232000	225000	2
11	008	SD		8.336	COLLEGE AVENUE	18000	232000	225000	15900	203000	198000	3
11	008	SD		9.591	LA MESA, LAKE MURRAY BOULEVARD	15900	203000	198000	15500	202000	198000	4
11	008	SD		10.57	FLETCHER PARKWAY	15000	195000	191000	14200	183000	181000	
11	008	SD		10.967	SPRING STREET	13700	176000	174000	15400	197000	193000	
11	008	SD		11.101	LA MESA, EL CAJON BOULEVARD	15400	197000	193000	15600	192000	188000	
11	008	SD		11.764	JACKSON DRIVE	15600	192000	188000	15100	189000	185000	
11	008	SD		12.24	LA MESA, JCT. RTE. 125 SOUTH	15100	189000	185000	19000	238000	228000	
11	008	SD		12.654	LA MESA, SEVERIN/ FUERTE DRIVES	19000	238000	228000	18500	230000	224000	
11	008	SD		13.658	EL CAJON, EL CAJON BOULEVARD	18500	230000	224000	14100	175000	169000	
11	008	SD		14.594	WEST MAIN STREET	14100	175000	169000	12900	166000	162000	
11	008	SD		15.3	EL CAJON, JOHNSON AVENUE	12900	166000	162000	11400	148000	144000	
11	008	SD		15.8	EL CAJON, JCT. RTE. 67 NORTH	11400	148000	144000	9000	116000	113000	
11	008	SD		16.467	EL CAJON, MOLLISON AVENUE	9000	116000	113000	7700	104000	98000	
11	008	SD		17.36	EL CAJON, JCT. RTE. 54 SOUTH	7700	104000	98000	5100	67000	64000	
11	008	SD		17.829	EL CAJON, EAST MAIN STREET	5100	67000	64000	7600	96000	93000	
11	008	SD	R	18.727	GREENFIELD DRIVE	7600	96000	93000	6900	86000	81000	
11	008	SD	R	20.041	LOS COCHES UC	6900	86000	81000	5300	74000	71000	
11	008	SD	R	21.508	LOS COCHES CRK BRIDGE	5300	74000	71000	5300	74000	71000	
11	008	SD	R	21.815	HARRITT ROAD / LAKE JENNINGS PARK ROAD	5300	74000	71000	5100	59000	56000	
11	008	SD	R	25.685	HARBISON CANYON	5100	59000	56000	4250	50000	49500	
11	008	SD	R	28.464	TAVERN ROAD	4250	50000	49500	3000	35000	34500	
11	008	SD	R	31.343	WEST WILLOWS ROAD	3000	35000	34500	2100	25500	25500	

di	rte	co	pre	PM	CS	LEG	YR	AM DIR	1 WAY AM PHV	% AM K	% AM D	% AM KD	AM HR	AM DAY	AM MNTH	PM DIR	1 WAY PM PHV	% PM K	% PM D	% PM KD	PM HR	PM DAY	PM MNTH
11	8	SD	L	1.213	951	B	15	E	2274	8.05	60.5	4.87	7	TUE	FEB	W	2035	6.85	63.57	4.36	17	THU	MAR
11	8	SD	L	1.213	958	A	15	W	4379	7.58	56.53	4.29	11	SAT	AUG	W	4541	7.61	58.38	4.44	16	FRI	JUN
11	8	SD	R	0.023	859	A	15	W	7447	7.17	55.6	3.98	11	SAT	AUG	E	8048	7.75	55.57	4.31	16	TUE	JUN
11	8	SD		0.946	804	A	15	W	7690	7.1	55.81	3.96	8	TUE	SEP	E	8179	7.7	54.76	4.22	15	THU	JUL
11	8	SD		5.638	953	B	15	W	11178	6.78	68.33	4.63	7	WED	JUN	E	10697	7.78	56.97	4.43	15	FRI	MAY
11	8	SD		8.336	807	B	15	W	11343	7.41	67.98 3,4	5.04	7	FRI	JAN	E	10232	7.67	59.24 1,2	4.54	16	WED	JAN
11	8	SD		8.336	808	A	15	W	9621	6.38	76.22 1,2	4.86	6	MON	JUN	E	9672	7.98	61.24 3,4	4.89	15	FRI	OCT
11	8	SD		11.764	810	B	15	W	7861	5.73	73.04	4.19	6	WED	FEB	E	8649	8.44	54.56	4.61	15	FRI	MAY
11	8	SD		12.649	834	A	15	W	9251	6.2	66.6	4.13	6	THU	APR	E	10047	8.36	53.62	4.48	15	FRI	MAR
11	8	SD		14.594	806	B	15	W	7225	6.34	66.98	4.24	6	WED	APR	E	7352	8.3	52.04	4.32	15	MON	DEC
11	8	SD	R	18.727	824	B	15	W	4143	6.45	69.4	4.48	7	TUE	AUG	E	4277	7.97	58.02	4.62	16	THU	JUN
11	8	SD	R	20.041	888	B	15	E	3655	8.01	56.03	4.49	12	WED	DEC	E	3859	8.56	55.35	4.74	16	FRI	JUL
11	8	SD	R	23.64	979	O	15	E	2416	8.09	53.16	4.3	12	SUN	JUL	W	2905	7.22	71.57	5.17	18	THU	JAN
11	8	SD	R	65.904	981	A	15	W	998	10.83	63.85	6.91	9	FRI	JUL	E	1186	14.71	55.86	8.22	13	WED	NOV
11	8	IMP	R	10.291	993	B	15	W	995	12.28	57.51	7.06	12	MON	FEB	E	1167	12.61	65.71	8.28	19	SUN	JUL
11	8	IMP	R	10.291	994	A	15	E	940	11.35	65.01	7.38	10	WED	NOV	W	1089	14.49	58.99	8.55	13	FRI	JUL
11	8	IMP	R	36.973	982	B	15	E	1026	11.09	54.81	6.08	11	SAT	DEC	W	1162	10.72	64.2	6.88	17	SUN	NOV
11	8	IMP	R	53.497	964	A	15	W	958	10.13	69.37	7.03	11	MON	NOV	W	1068	13.9	56.39	7.84	16	SUN	NOV
11	8	IMP	R	96.986	988	B	15	E	1101	11.94	50.48	6.03	11	FRI	DEC	E	1167	9.12	70.01	6.39	18	SUN	JUL

2015 Daily Truck Traffic

RTE	DIST	CNTY	POST MILE	LEG	DESCRIPTION	VEHICLE AADT TOTAL	TRUCK AADT TOTAL	TRUCK % TOT VEH	TRUCK By Axle 2	TRUCK By Axle 3	AADT By Axle 4	TOTAL By Axle 5+	% By Axle 2	TRUCK By Axle 3	AADT By Axle 4	By Axle 5+	EAL 2-WAY (1000)	YEAR VER/ EST
8	11	SD	T0.407	A	SAN DIEGO, SUNSET CLIFFS BLVD	12,000	120	1.00	99	9	3	9	82.30	7.40	2.90	7.40	8	78E
8	11	SD	L2.379	B	JCT RTE 5 LT LANES	102,000	1,225	1.20	1,038	87	9	91	84.80	7.10	0.70	7.40	77	78V
8	11	SD	L2.379	A	JCT RTE 5 LT LANES	131,000	3,668	2.80	2,454	528	158	528	66.90	14.40	4.30	14.40	340	83V
8	11	SD	2.41	B	SAN DIEGO, JCT. RTE. 163	204,000	5,508	2.70	4,263	595	138	512	77.40	10.80	2.50	9.30	401	83E
8	11	SD	2.41	A	SAN DIEGO, JCT. RTE. 163	210,000	5,880	2.80	4,592	588	141	559	78.10	10.00	2.40	9.50	428	83E
8	11	SD	4.378	B	SAN DIEGO, JCT. RTE. 805	199,000	6,368	3.20	4,782	630	217	739	75.10	9.90	3.40	11.60	512	83E
8	11	SD	5.638	B	JCT. RTE. 15	241,000	7,231	3.00	4,230	918	304	1,779	58.50	12.70	4.20	24.60	891	83V
8	11	SD	5.638	A	JCT. RTE. 15	214,000	7,490	3.50	4,794	861	337	1,498	64.00	11.50	4.50	20.00	813	84E
8	11	SD	10.57	B	FLETCHER PARKWAY	191,000	7,067	3.70	4,226	898	247	1,696	59.80	12.70	3.50	24.00	852	84V
8	11	SD	10.57	A	FLETCHER PARKWAY	181,000	7,964	4.40	4,500	1,226	406	1,832	56.50	15.40	5.10	23.00	962	78V
8	11	SD	15.8	B	EL CAJON, JCT. RTE. 67 NORTH	144,000	6,768	4.70	3,648	887	311	1,922	53.90	13.10	4.60	28.40	918	78V
8	11	SD	15.8	A	EL CAJON, JCT. RTE. 67 NORTH	113,000	3,277	2.90	1,815	370	115	977	55.40	11.30	3.50	29.80	452	78V
8	11	SD	R18.727	B	GREENFIELD DRIVE	93,000	10,461	11.25	7,895	721	546	1,299	75.47	6.89	5.22	12.42	871	15V
8	11	SD	R18.727	A	GREENFIELD DRIVE	81,000	5,589	6.90	2,945	436	134	2,074	52.70	7.80	2.40	37.10	878	86V
8	11	SD	R37.831	B	JCT. RTE. 79 NORTH, JAPATUL VALLEY RD	24,600	2,952	12.00	1,160	174	89	1,529	39.30	5.90	3.00	51.80	597	86E
8	11	SD	R37.831	A	JCT. RTE. 79 NORTH, JAPATUL VALLEY RD	20,600	2,803	13.60	911	219	81	1,592	32.50	7.80	2.90	56.80	613	00E
8	11	SD	R51.98	B	CAMERON RD	16,300	1,906	11.69	752	91	39	1,024	39.45	4.77	2.05	53.73	394	15V
8	11	SD	R65.904	B	JCT. RTE. 94 SOUTH	15,300	2,125	13.89	760	98	49	1,218	35.78	4.59	2.29	57.34	463	05V
8	11	SD	R65.904	A	JCT. RTE. 94 SOUTH	14,400	2,040	14.16	730	94	47	1,169	35.78	4.59	2.29	57.34	444	05V
8	11	IMP	R10.01	B	JCT. RTE. 98	14,100	1,960	13.90	702	90	45	1,123	35.80	4.60	2.30	57.30	427	05E
8	11	IMP	R10.01	A	JCT. RTE. 98	12,700	1,765	13.90	632	81	41	1,011	35.80	4.60	2.30	57.30	384	05E
8	11	IMP	R23.48	A	DUNAWAY RD	13,800	1,777	12.88	587	86	37	1,067	33.03	4.84	2.08	60.05	402	15V
8	11	IMP	R29.933	B	DREW RD	13,800	2,241	16.24	664	104	41	1,432	29.63	4.63	1.85	63.89	533	05E
8	11	IMP	R37.972	B	JCT. RTE. 86	31,500	3,370	10.70	1,085	185	74	2,026	32.20	5.50	2.20	60.10	765	05E
8	11	IMP	R37.972	A	JCT. RTE. 86	33,500	3,407	10.17	1,098	186	75	2,048	32.24	5.46	2.19	60.11	773	05E
8	11	IMP	R40.944	B	JCT. RTE. 111	32,500	2,791	8.59	1,192	146	56	1,397	42.71	5.23	2.01	50.05	545	15V
8	11	IMP	R40.944	A	JCT. RTE. 111	18,600	4,277	23.00	1,095	282	111	2,789	25.60	6.60	2.60	65.20	1,043	00E
8	11	IMP	R53.497	B	JCT. RTE. 115 NORTH	13,300	3,989	30.00	1,021	263	104	2,601	25.60	6.60	2.60	65.20	973	00E
8	11	IMP	R53.497	A	JCT. RTE. 115 NORTH	13,600	3,605	26.50	923	238	94	2,350	25.60	6.60	2.60	65.20	879	00E
8	11	IMP	R65.752	B	EAST JCT. RTE. 98 WEST	13,600	3,605	26.50	923	238	94	2,350	25.60	6.60	2.60	65.20	879	00E
8	11	IMP	R65.752	A	EAST JCT. RTE. 98 WEST	16,400	3,936	24.00	1,008	260	102	2,566	25.60	6.60	2.60	65.20	959	00E
8	11	IMP	R96.544	X	4TH AVE	12,800	3,033	23.70	708	170	109	2,046	23.34	5.61	3.59	67.46	763	15V

Location (I.D.)	Route	Dir	Period	Cars per green	Sec./ Cycle	(per lane) Veh./hr	Total # lanes	HOV
SB Fairmount Ave (11308.2)	8	EB	1500 - 1900	2	7.2 - 14.6	498 - 246	1	No
NB College Ave (28.2)	8	WB	0530 - 0930	1	6.3 - 11.3	570 - 318	1	No
SB College Ave (28.1)	8	WB	0530 - 0930	1	6.1 - 10.7	588 - 336	2	No
NB College Ave (41.1)	8	EB	1500 - 1900	1	6.3	570	1	No

The meters normally operate in a traffic responsive mode.
There are 15 separate rates or steps between the slowest and the fastest discharge rate that depend on the mainlane volumes.

APPENDIX E

EXISTING INTERSECTION LEVEL OF SERVICE CALCULATION SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	11	326	380	447	189	294	1467	116	17	832	70
Future Volume (veh/h)	33	11	326	380	447	189	294	1467	116	17	832	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	24	29	354	275	679	205	320	1595	126	18	904	76
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	2	2	1
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	191	201	344	421	884	436	209	1504	118	164	1357	587
Arrive On Green	0.11	0.11	0.11	0.24	0.24	0.24	0.12	0.45	0.45	0.05	0.38	0.38
Sat Flow, veh/h	1774	1863	1463	1774	3725	1518	1774	3318	260	3442	3539	1531
Grp Volume(v), veh/h	24	29	354	275	679	205	320	844	877	18	904	76
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1518	1774	1770	1808	1721	1770	1531
Q Serve(g_s), s	1.6	1.8	14.0	18.2	22.1	14.5	15.3	58.9	58.9	0.7	27.5	4.2
Cycle Q Clear(g_c), s	1.6	1.8	14.0	18.2	22.1	14.5	15.3	58.9	58.9	0.7	27.5	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	344	421	884	436	209	802	820	164	1357	587
V/C Ratio(X)	0.13	0.14	1.03	0.65	0.77	0.47	1.53	1.05	1.07	0.11	0.67	0.13
Avail Cap(c_a), veh/h	191	201	344	491	1032	496	209	802	820	344	1357	587
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	52.5	52.6	50.6	44.8	46.2	38.4	57.3	35.5	35.5	59.2	33.2	26.0
Incr Delay (d2), s/veh	0.3	0.3	56.3	2.5	3.0	0.8	262.3	46.2	52.0	0.1	2.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.0	17.8	9.2	11.8	6.2	22.7	39.1	41.2	0.3	13.9	1.8
LnGrp Delay(d),s/veh	52.8	52.9	106.9	47.2	49.3	39.2	319.7	81.7	87.6	59.4	35.8	26.5
LnGrp LOS	D	D	F	D	D	D	F	F	F	E	D	C
Approach Vol, veh/h		407			1159			2041			998	
Approach Delay, s/veh		99.9			47.0			121.6			35.5	
Approach LOS		F			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.9	64.0		19.1	20.0	55.0		35.9
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 15	44.7		36.0
Max Q Clear Time (g_c+I1), s	2.7	60.9		16.0	17.3	29.5		24.1
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	8.1		4.5

Intersection Summary	
HCM 2010 Ctrl Delay	82.2
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	897	1563	219	0	980	630	0
Future Volume (vph)	897	1563	219	0	980	630	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.7		6.0	6.0	
Lane Util. Factor	0.97	0.76	1.00		0.95	0.91	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.85	1.00		1.00	1.00	
Flt Protected	0.95	1.00	0.95		1.00	1.00	
Satd. Flow (prot)	3433	3610	1770		3539	5085	
Flt Permitted	0.95	1.00	0.95		1.00	1.00	
Satd. Flow (perm)	3433	3610	1770		3539	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	975	1699	238	0	1065	685	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	975	1699	238	0	1065	685	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot		NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases							
Actuated Green, G (s)	67.1	67.1	20.0		50.9	26.2	
Effective Green, g (s)	67.1	67.1	20.0		50.9	26.2	
Actuated g/C Ratio	0.52	0.52	0.15		0.39	0.20	
Clearance Time (s)	6.0	6.0	4.7		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	1.0		2.0	2.0	
Lane Grp Cap (vph)	1771	1863	272		1385	1024	
v/s Ratio Prot	0.28	c0.47	c0.13		c0.30	0.13	
v/s Ratio Perm							
v/c Ratio	0.55	0.91	0.88		0.77	0.67	
Uniform Delay, d1	21.3	28.8	53.8		34.4	47.9	
Progression Factor	1.00	1.00	1.00		1.00	0.98	
Incremental Delay, d2	0.2	7.1	24.7		4.2	2.3	
Delay (s)	21.5	35.9	78.4		38.6	49.4	
Level of Service	C	D	E		D	D	
Approach Delay (s)	30.6				45.9	49.4	
Approach LOS	C				D	D	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	46	48	501	86	17
Future Volume (veh/h)	33	46	48	501	86	17
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.92	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	36	50	52	545	110	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	70	549	375	1247	2137	973
Arrive On Green	0.04	0.29	0.20	0.20	0.60	0.00
Sat Flow, veh/h	1774	1863	1863	1461	3548	1615
Grp Volume(v), veh/h	36	50	52	545	110	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1461	1774	1615
Q Serve(g_s), s	1.8	1.8	2.1	10.6	1.1	0.0
Cycle Q Clear(g_c), s	1.8	1.8	2.1	10.6	1.1	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	70	549	375	1247	2137	973
V/C Ratio(X)	0.52	0.09	0.14	0.44	0.05	0.00
Avail Cap(c_a), veh/h	79	669	496	1342	2137	973
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	0.00
Uniform Delay (d), s/veh	42.5	23.0	29.6	2.8	7.4	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.1	0.1	0.0	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	0.9	0.9	1.1	13.5	0.6	0.0
LnGrp Delay(d),s/veh	44.7	23.1	29.7	2.9	7.4	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		86	597		110	
Approach Delay, s/veh		32.1	5.2		7.4	
Approach LOS		C	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				31.5		58.7	8.4	23.0
Change Period (Y+Rc), s				4.9		4.4	4.9	* 4.9
Max Green Setting (Gmax), s				32.4		54.3	4.0	* 24
Max Q Clear Time (g_c+I1), s				3.8		3.1	3.8	12.6
Green Ext Time (p_c), s				0.2		0.3	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	503	330	13	4	829	292	45	19	19	75	1	122
Future Volume (veh/h)	503	330	13	4	829	292	45	19	19	75	1	122
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.91	1.00		0.86
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	547	359	14	4	901	317	49	21	21	83	0	133
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	609	2158	84	7	1593	687	124	53	53	284	0	109
Arrive On Green	0.18	0.62	0.62	0.01	0.90	0.90	0.14	0.14	0.14	0.08	0.00	0.08
Sat Flow, veh/h	3442	3466	135	1774	3539	1526	916	393	393	3548	0	1354
Grp Volume(v), veh/h	547	183	190	4	901	317	91	0	0	83	0	133
Grp Sat Flow(s),veh/h/ln	1721	1770	1831	1774	1770	1526	1701	0	0	1774	0	1354
Q Serve(g_s), s	19.6	5.5	5.5	0.3	6.5	4.5	6.2	0.0	0.0	2.8	0.0	10.1
Cycle Q Clear(g_c), s	19.6	5.5	5.5	0.3	6.5	4.5	6.2	0.0	0.0	2.8	0.0	10.1
Prop In Lane	1.00		0.07	1.00		1.00	0.54		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	609	1102	1140	7	1593	687	231	0	0	284	0	109
V/C Ratio(X)	0.90	0.17	0.17	0.54	0.57	0.46	0.39	0.00	0.00	0.29	0.00	1.23
Avail Cap(c_a), veh/h	699	1102	1140	56	1593	687	405	0	0	284	0	109
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.46	0.46	0.46	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.7	10.0	10.0	62.4	3.8	3.7	49.7	0.0	0.0	54.6	0.0	58.0
Incr Delay (d2), s/veh	12.3	0.3	0.3	10.1	0.7	1.0	0.4	0.0	0.0	0.6	0.0	158.8
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	10.4	2.7	2.9	0.2	2.9	2.0	2.9	0.0	0.0	1.4	0.0	8.6
LnGrp Delay(d),s/veh	63.1	10.3	10.3	72.5	4.5	4.7	50.1	0.0	0.0	55.2	0.0	216.7
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		920			1222			91			216	
Approach Delay, s/veh		41.7			4.7			50.1			154.6	
Approach LOS		D			A			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.9	84.1		15.0	26.7	62.3		22.0
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	4.6	62.1		10.1	25.6	* 41		30.0
Max Q Clear Time (g_c+I1), s	2.3	7.5		12.1	21.6	8.5		8.2
Green Ext Time (p_c), s	0.0	18.9		0.0	0.7	15.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	33.5
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	387	11	65	1034	303	36	13	91	97	9	55
Future Volume (veh/h)	82	387	11	65	1034	303	36	13	91	97	9	55
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.92	1.00		0.91
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	89	421	12	71	1124	329	39	14	99	105	10	60
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	79	1720	49	90	1335	385	64	23	161	240	23	284
Arrive On Green	0.09	0.98	0.98	0.07	0.66	0.66	0.16	0.16	0.16	0.15	0.15	0.15
Sat Flow, veh/h	1774	3508	100	1774	2688	775	400	144	1016	1627	155	1448
Grp Volume(v), veh/h	89	212	221	71	734	719	152	0	0	115	0	60
Grp Sat Flow(s),veh/h/ln	1774	1770	1838	1774	1770	1694	1559	0	0	1781	0	1448
Q Serve(g_s), s	5.6	0.4	0.4	5.0	39.6	41.6	11.4	0.0	0.0	7.4	0.0	4.4
Cycle Q Clear(g_c), s	5.6	0.4	0.4	5.0	39.6	41.6	11.4	0.0	0.0	7.4	0.0	4.4
Prop In Lane	1.00		0.05	1.00		0.46	0.26		0.65	0.91		1.00
Lane Grp Cap(c), veh/h	79	868	901	90	879	841	248	0	0	263	0	284
V/C Ratio(X)	1.13	0.24	0.25	0.79	0.84	0.85	0.61	0.00	0.00	0.44	0.00	0.21
Avail Cap(c_a), veh/h	79	868	901	149	879	841	359	0	0	438	0	427
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.50	0.50	0.50	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	0.6	0.6	58.1	17.5	17.8	49.4	0.0	0.0	49.0	0.0	42.9
Incr Delay (d2), s/veh	140.0	0.7	0.6	2.8	4.8	5.7	0.9	0.0	0.0	0.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.3	0.3	2.5	20.1	20.4	5.0	0.0	0.0	3.7	0.0	1.8
LnGrp Delay(d),s/veh	197.4	1.3	1.3	60.9	22.3	23.5	50.3	0.0	0.0	49.4	0.0	43.1
LnGrp LOS	F	A	A	E	C	C	D			D		D
Approach Vol, veh/h		522			1524			152			175	
Approach Delay, s/veh		34.7			24.7			50.3			47.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.8	66.8		23.5	10.0	67.6		24.9
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	10.6	* 36		31.0	5.6	41.2		29.0
Max Q Clear Time (g_c+I1), s	7.6	2.4		9.4	7.6	43.6		13.4
Green Ext Time (p_c), s	0.0	29.0		0.4	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	55	194	432	94	87	79	648	232	59	1045	22
Future Volume (veh/h)	93	55	194	432	94	87	79	648	232	59	1045	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	101	60	211	543	0	95	86	704	252	64	1136	24
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	141	83	279	731	0	310	110	1445	952	82	1390	588
Arrive On Green	0.12	0.12	0.12	0.21	0.00	0.21	0.06	0.41	0.41	0.05	0.39	0.39
Sat Flow, veh/h	1133	673	1463	3548	0	1503	1774	3539	1533	1774	3539	1498
Grp Volume(v), veh/h	161	0	211	543	0	95	86	704	252	64	1136	24
Grp Sat Flow(s),veh/h/ln	1806	0	1463	1774	0	1503	1774	1770	1533	1774	1770	1498
Q Serve(g_s), s	8.4	0.0	12.1	14.0	0.0	5.2	4.7	14.3	7.4	3.5	28.0	1.0
Cycle Q Clear(g_c), s	8.4	0.0	12.1	14.0	0.0	5.2	4.7	14.3	7.4	3.5	28.0	1.0
Prop In Lane	0.63		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	224	0	279	731	0	310	110	1445	952	82	1390	588
V/C Ratio(X)	0.72	0.00	0.76	0.74	0.00	0.31	0.78	0.49	0.26	0.78	0.82	0.04
Avail Cap(c_a), veh/h	224	0	279	1018	0	431	156	1484	969	173	1462	619
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	41.1	0.0	37.8	36.3	0.0	32.8	45.1	21.3	8.7	46.0	26.5	18.3
Incr Delay (d2), s/veh	9.2	0.0	10.0	1.0	0.0	0.2	9.3	0.4	0.3	5.7	3.7	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	4.7	0.0	6.2	7.0	0.0	2.2	2.6	7.0	4.8	1.8	14.3	0.4
LnGrp Delay(d),s/veh	50.3	0.0	47.8	37.3	0.0	33.0	54.4	21.8	8.9	51.7	30.2	18.3
LnGrp LOS	D		D	D		C	D	C	A	D	C	B
Approach Vol, veh/h		372			638			1042			1224	
Approach Delay, s/veh		48.9			36.7			21.4			31.1	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	46.6		17.0	10.4	45.1		25.0
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	9.5	* 41		12.1	8.6	40.3		28.0
Max Q Clear Time (g_c+I1), s	5.5	16.3		14.1	6.7	30.0		16.0
Green Ext Time (p_c), s	0.0	16.5		0.0	0.0	8.3		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	31.1
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	221	0	90	0	869	306	0	1000	671
Future Volume (veh/h)	0	0	0	221	0	90	0	869	306	0	1000	671
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				240	0	0	0	945	0	0	1087	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				310	0	143	0	2848	1274	0	2848	1274
Arrive On Green				0.09	0.00	0.00	0.00	1.00	0.00	0.00	0.80	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				240	0	0	0	945	0	0	1087	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				6.8	0.0	0.0	0.0	0.0	0.0	0.0	8.7	0.0
Cycle Q Clear(g_c), s				6.8	0.0	0.0	0.0	0.0	0.0	0.0	8.7	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				310	0	143	0	2848	1274	0	2848	1274
V/C Ratio(X)				0.77	0.00	0.00	0.00	0.33	0.00	0.00	0.38	0.00
Avail Cap(c_a), veh/h				375	0	173	0	2848	1274	0	2848	1274
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.84	0.00	0.00	0.40	0.00
Uniform Delay (d), s/veh				44.5	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0
Incr Delay (d2), s/veh				8.0	0.0	0.0	0.0	0.3	0.0	0.0	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				3.6	0.0	0.0	0.0	0.1	0.0	0.0	4.1	0.0
LnGrp Delay(d),s/veh				52.5	0.0	0.0	0.0	0.3	0.0	0.0	2.9	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					240			945			1087	
Approach Delay, s/veh					52.5			0.3			2.9	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		85.9				85.9		14.1
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		78.6				78.6		10.9
Max Q Clear Time (g_c+I1), s		2.0				10.7		8.8
Green Ext Time (p_c), s		16.2				16.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	347	0	1213	0	0	0	0	828	208	0	942	279
Future Volume (vph)	347	0	1213	0	0	0	0	828	208	0	942	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3410			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3410			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	377	0	1318	0	0	0	0	900	226	0	1024	303
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	377	0	1318	0	0	0	0	1106	0	0	1024	303
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	14.8		47.9					72.7			39.6	100.0
Effective Green, g (s)	14.8		47.9					72.7			39.6	100.0
Actuated g/C Ratio	0.15		0.48					0.73			0.40	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	508		1729					2479			1401	1536
v/s Ratio Prot	0.11		c0.37					0.32			c0.29	
v/s Ratio Perm												0.20
v/c Ratio	0.74		0.76					0.45			0.73	0.20
Uniform Delay, d1	40.8		21.4					5.5			25.7	0.0
Progression Factor	1.00		1.00					0.42			1.03	1.00
Incremental Delay, d2	5.1		1.8					0.4			3.1	0.3
Delay (s)	45.9		23.2					2.7			29.4	0.3
Level of Service	D		C					A			C	A
Approach Delay (s)		28.3			0.0			2.7			22.8	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	19	16	66	61	227	90	733	53	502	1249	404
Future Volume (veh/h)	76	19	16	66	61	227	90	733	53	502	1249	404
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	60	52	17	72	66	247	98	797	58	546	1358	439
Adj No. of Lanes	1	1	0	0	1	1	1	2	1	2	3	2
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	217	163	53	91	83	394	117	1492	658	527	2611	1744
Arrive On Green	0.12	0.12	0.12	0.10	0.10	0.10	0.07	0.42	0.42	0.05	0.17	0.17
Sat Flow, veh/h	1774	1326	434	947	868	1583	1774	3539	1561	3442	5085	2732
Grp Volume(v), veh/h	60	0	69	138	0	247	98	797	58	546	1358	439
Grp Sat Flow(s),veh/h/ln	1774	0	1760	1815	0	1583	1774	1770	1561	1721	1695	1366
Q Serve(g_s), s	3.1	0.0	3.6	7.4	0.0	9.6	5.5	16.8	2.2	15.3	24.3	10.5
Cycle Q Clear(g_c), s	3.1	0.0	3.6	7.4	0.0	9.6	5.5	16.8	2.2	15.3	24.3	10.5
Prop In Lane	1.00		0.25	0.52		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	217	0	216	174	0	394	117	1492	658	527	2611	1744
V/C Ratio(X)	0.28	0.00	0.32	0.79	0.00	0.63	0.84	0.53	0.09	1.04	0.52	0.25
Avail Cap(c_a), veh/h	568	0	563	174	0	394	117	1492	658	527	2611	1744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.58	0.58	0.58
Uniform Delay (d), s/veh	39.8	0.0	40.1	44.2	0.0	33.4	46.2	21.6	17.4	47.5	30.3	14.6
Incr Delay (d2), s/veh	0.3	0.0	0.3	20.0	0.0	2.4	38.5	1.4	0.3	39.9	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.8	4.7	0.0	6.3	3.9	8.5	1.0	10.2	11.5	5.4
LnGrp Delay(d),s/veh	40.1	0.0	40.4	64.2	0.0	35.8	84.7	23.0	17.6	87.3	30.7	14.8
LnGrp LOS	D		D	E		D	F	C	B	F	C	B
Approach Vol, veh/h		129			385			953			2343	
Approach Delay, s/veh		40.3			46.0			29.0			40.9	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	30.2	48.1		17.2	11.0	57.3		14.5
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	15.3	22.4		32.0	6.6	* 32		9.6
Max Q Clear Time (g_c+I1), s	17.3	18.8		5.6	7.5	26.3		11.6
Green Ext Time (p_c), s	0.0	3.4		0.4	0.0	5.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	38.4
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱	↰	↑↑
Traffic Vol, veh/h	1	92	934	68	311	1001
Future Vol, veh/h	1	92	934	68	311	1001
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	1	100	1015	74	338	1088

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2255	548	0	0	1035	0
Stage 1	1035	-	-	-	-	-
Stage 2	1220	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	35	480	-	-	667	-
Stage 1	303	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	17	464	-	-	656	-
Mov Cap-2 Maneuver	17	-	-	-	-	-
Stage 1	298	-	-	-	-	-
Stage 2	117	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	3.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	464	656	-
HCM Lane V/C Ratio	-	-	0.216	0.515	-
HCM Control Delay (s)	-	-	14.9	16.2	-
HCM Lane LOS	-	-	B	C	-
HCM 95th %tile Q(veh)	-	-	0.8	3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	289	83	21	682	183	571	885	51	90	431	286
Future Volume (veh/h)	163	289	83	21	682	183	571	885	51	90	431	286
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		0.95	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	177	314	90	23	741	199	621	962	55	98	468	311
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	200	1312	561	56	1025	434	673	1096	63	431	503	332
Arrive On Green	0.23	0.74	0.74	0.03	0.29	0.29	0.20	0.32	0.32	0.13	0.25	0.25
Sat Flow, veh/h	1774	3539	1513	1774	3539	1499	3442	3392	194	3442	1989	1314
Grp Volume(v), veh/h	177	314	90	23	741	199	621	502	515	98	416	363
Grp Sat Flow(s),veh/h/ln	1774	1770	1513	1774	1770	1499	1721	1770	1817	1721	1770	1534
Q Serve(g_s), s	12.2	3.5	1.3	1.6	23.7	9.9	22.3	33.8	33.8	3.2	28.9	29.2
Cycle Q Clear(g_c), s	12.2	3.5	1.3	1.6	23.7	9.9	22.3	33.8	33.8	3.2	28.9	29.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		0.86
Lane Grp Cap(c), veh/h	200	1312	561	56	1025	434	673	572	587	431	447	388
V/C Ratio(X)	0.88	0.24	0.16	0.41	0.72	0.46	0.92	0.88	0.88	0.23	0.93	0.94
Avail Cap(c_a), veh/h	220	1312	561	83	1025	434	699	666	683	431	449	389
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	10.7	3.4	59.8	40.2	19.0	49.7	40.3	40.3	49.6	46.0	46.1
Incr Delay (d2), s/veh	28.2	0.4	0.6	1.8	4.4	3.5	17.0	12.1	11.8	0.1	26.0	30.0
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	7.5	1.7	0.6	0.8	12.3	4.5	12.2	18.4	18.8	1.5	17.3	15.6
LnGrp Delay(d),s/veh	76.2	11.1	4.0	61.6	44.6	22.5	66.8	52.4	52.1	49.7	72.0	76.1
LnGrp LOS	E	B	A	E	D	C	E	D	D	D	E	E
Approach Vol, veh/h		581			963			1638			877	
Approach Delay, s/veh		29.9			40.5			57.8			71.2	
Approach LOS		C			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.2	45.8	8.4	51.6	29.0	37.0	18.6	41.4
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	10.2	47.4	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	5.2	35.8	3.6	5.5	24.3	31.2	14.2	25.7
Green Ext Time (p_c), s	1.1	4.9	0.0	21.0	0.3	0.4	0.1	6.6

Intersection Summary	
HCM 2010 Ctrl Delay	52.6
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	293	59	22	261	14	6
Future Vol, veh/h	293	59	22	261	14	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	318	64	24	284	15	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	318	0	650	318
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	332	-
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	-	-	1242	-	434	723
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	727	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1242	-	424	723
Mov Cap-2 Maneuver	-	-	-	-	424	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	710	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	424	723	-	-	1242	-
HCM Lane V/C Ratio	0.036	0.009	-	-	0.019	-
HCM Control Delay (s)	13.8	10	-	-	8	0
HCM Lane LOS	B	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	64	90	85	251	145	64
Future Volume (veh/h)	64	90	85	251	145	64
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	98	92	273	158	70
Adj No. of Lanes	1	1	1	1	1	1
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	637	520	124	1055	250	223
Arrive On Green	0.34	0.34	0.07	0.57	0.14	0.14
Sat Flow, veh/h	1863	1521	1774	1863	1774	1583
Grp Volume(v), veh/h	70	98	92	273	158	70
Grp Sat Flow(s),veh/h/ln	1863	1521	1774	1863	1774	1583
Q Serve(g_s), s	0.8	1.4	1.6	2.4	2.7	1.3
Cycle Q Clear(g_c), s	0.8	1.4	1.6	2.4	2.7	1.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	637	520	124	1055	250	223
V/C Ratio(X)	0.11	0.19	0.74	0.26	0.63	0.31
Avail Cap(c_a), veh/h	1179	962	257	1706	2882	2572
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	7.1	7.4	14.5	3.5	12.9	12.3
Incr Delay (d2), s/veh	0.1	0.2	3.2	0.1	1.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.6	0.9	1.2	1.3	0.6
LnGrp Delay(d),s/veh	7.2	7.5	17.7	3.6	13.8	12.6
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	168			365	228	
Approach Delay, s/veh	7.4			7.2	13.4	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.1	15.8				22.9		8.9
Change Period (Y+Rc), s	4.9	* 4.9				4.9		4.4
Max Green Setting (Gmax), s	4.6	* 20				29.1		51.6
Max Q Clear Time (g_c+I1), s	3.6	3.4				4.4		4.7
Green Ext Time (p_c), s	0.1	0.5				1.1		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	9	145	391	27	37	103	482	164	22	1105	21
Future Volume (veh/h)	22	9	145	391	27	37	103	482	164	22	1105	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	10	158	483	0	0	112	524	178	24	1201	23
Adj No. of Lanes	0	1	1	2	1	0	1	3	0	1	3	0
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	159	66	189	765	402	0	163	1430	469	80	1715	33
Arrive On Green	0.13	0.13	0.13	0.22	0.00	0.00	0.09	0.38	0.38	0.04	0.33	0.33
Sat Flow, veh/h	1270	529	1514	3548	1863	0	1774	3751	1229	1774	5132	98
Grp Volume(v), veh/h	34	0	158	483	0	0	112	472	230	24	793	431
Grp Sat Flow(s),veh/h/ln	1799	0	1514	1774	1863	0	1774	1695	1589	1774	1695	1841
Q Serve(g_s), s	1.6	0.0	9.4	11.4	0.0	0.0	5.6	9.2	9.7	1.2	18.7	18.8
Cycle Q Clear(g_c), s	1.6	0.0	9.4	11.4	0.0	0.0	5.6	9.2	9.7	1.2	18.7	18.8
Prop In Lane	0.71		1.00	1.00		0.00	1.00		0.77	1.00		0.05
Lane Grp Cap(c), veh/h	225	0	189	765	402	0	163	1293	606	80	1133	615
V/C Ratio(X)	0.15	0.00	0.83	0.63	0.00	0.00	0.69	0.36	0.38	0.30	0.70	0.70
Avail Cap(c_a), veh/h	281	0	236	1309	687	0	179	1293	606	173	1133	615
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	0.0	39.4	32.8	0.0	0.0	40.6	20.5	20.6	42.6	26.7	26.7
Incr Delay (d2), s/veh	0.3	0.0	18.5	1.8	0.0	0.0	7.1	0.8	1.8	0.8	3.6	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	4.9	5.8	0.0	0.0	3.1	4.5	4.5	0.6	9.3	10.6
LnGrp Delay(d),s/veh	36.3	0.0	57.9	34.7	0.0	0.0	47.7	21.3	22.4	43.4	30.3	33.2
LnGrp LOS	D		E	C			D	C	C	D	C	C
Approach Vol, veh/h		192			483			814			1248	
Approach Delay, s/veh		54.1			34.7			25.2			31.6	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.8	41.3		16.1	13.2	36.9		26.0
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9	31.1		14.4	* 9.3	30.8		34.0
Max Q Clear Time (g_c+I1), s	3.6	11.7		11.4	7.6	20.8		13.4
Green Ext Time (p_c), s	0.0	9.3		0.2	0.0	6.2		4.5

Intersection Summary	
HCM 2010 Ctrl Delay	31.8
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	77	20	324	94	323	85	884	355	129	358	297
Future Volume (veh/h)	87	77	20	324	94	323	85	884	355	129	358	297
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	95	84	22	352	102	351	92	961	386	140	389	323
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	416	437	110	422	296	693	132	1226	535	170	1302	560
Arrive On Green	0.12	0.16	0.16	0.12	0.16	0.16	0.07	0.35	0.35	0.10	0.37	0.37
Sat Flow, veh/h	3442	2780	697	3442	1863	2683	1774	3539	1546	1774	3539	1523
Grp Volume(v), veh/h	95	52	54	352	102	351	92	961	386	140	389	323
Grp Sat Flow(s),veh/h/ln	1721	1770	1708	1721	1863	1341	1774	1770	1546	1774	1770	1523
Q Serve(g_s), s	2.5	2.5	2.7	9.9	4.8	11.1	5.0	24.2	21.6	7.7	7.7	16.9
Cycle Q Clear(g_c), s	2.5	2.5	2.7	9.9	4.8	11.1	5.0	24.2	21.6	7.7	7.7	16.9
Prop In Lane	1.00		0.41	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	416	278	268	422	296	693	132	1226	535	170	1302	560
V/C Ratio(X)	0.23	0.19	0.20	0.83	0.34	0.51	0.70	0.78	0.72	0.82	0.30	0.58
Avail Cap(c_a), veh/h	416	624	602	461	674	1238	143	1226	535	188	1302	560
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	39.4	36.3	36.4	42.6	37.1	31.7	44.8	29.1	28.3	44.0	22.3	25.2
Incr Delay (d2), s/veh	0.1	0.3	0.4	11.7	0.7	0.6	10.1	5.1	8.2	20.9	0.6	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	1.2	1.3	1.3	5.4	2.6	4.1	2.8	12.6	10.4	4.8	3.9	7.7
LnGrp Delay(d),s/veh	39.5	36.6	36.7	54.3	37.8	32.3	55.0	34.2	36.4	64.9	22.9	29.4
LnGrp LOS	D	D	D	D	D	C	D	C	D	E	C	C
Approach Vol, veh/h		201			805			1439			852	
Approach Delay, s/veh		38.0			42.6			36.1			32.3	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.2	41.5	18.9	22.7	14.1	43.6	18.7	22.9
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 11	34.0	* 13	* 35	* 8	36.5	* 12	35.9
Max Q Clear Time (g_c+I1), s	9.7	26.2	11.9	4.7	7.0	18.9	4.5	13.1
Green Ext Time (p_c), s	0.0	5.6	0.2	2.7	0.0	9.9	0.1	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	36.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	20.4
Intersection LOS	C

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	98	2	0	150	109	0	421	38
Future Vol, veh/h	0	98	2	0	150	109	0	421	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	107	2	0	163	118	0	458	41
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	11	11.8	27.3
HCM LOS	B	B	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	98%	0%	100%
Vol Right, %	0%	100%	2%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	421	38	100	150	109
LT Vol	421	0	0	150	0
Through Vol	0	0	98	0	109
RT Vol	0	38	2	0	0
Lane Flow Rate	458	41	109	163	118
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.795	0.058	0.193	0.309	0.208
Departure Headway (Hd)	6.251	5.042	6.408	6.831	6.324
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	581	711	560	527	568
Service Time	3.976	2.767	4.454	4.573	4.065
HCM Lane V/C Ratio	0.788	0.058	0.195	0.309	0.208
HCM Control Delay	29	8.1	11	12.6	10.7
HCM Lane LOS	D	A	B	B	B
HCM 95th-tile Q	7.7	0.2	0.7	1.3	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	553	48	0	0	129	5	0	1	0	5	0	612
Future Volume (veh/h)	553	48	0	0	129	5	0	1	0	5	0	612
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	601	52	0	0	140	5	0	1	0	5	0	665
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	736	1400	0	0	849	706	0	5	0	12	0	0
Arrive On Green	0.21	0.75	0.00	0.00	0.46	0.46	0.00	0.00	0.00	0.01	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1550	0	1863	0	1774	5	
Grp Volume(v), veh/h	601	52	0	0	140	5	0	1	0	5	45.7	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1550	0	1863	0	1774	D	
Q Serve(g_s), s	12.4	0.5	0.0	0.0	3.3	0.1	0.0	0.0	0.0	0.2		
Cycle Q Clear(g_c), s	12.4	0.5	0.0	0.0	3.3	0.1	0.0	0.0	0.0	0.2		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	736	1400	0	0	849	706	0	5	0	12		
V/C Ratio(X)	0.82	0.04	0.00	0.00	0.16	0.01	0.00	0.20	0.00	0.43		
Avail Cap(c_a), veh/h	1337	1400	0	0	849	706	0	260	0	379		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	27.9	2.4	0.0	0.0	11.9	11.1	0.0	37.0	0.0	36.8		
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.0	0.4	0.0	0.0	21.0	0.0	8.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.9	0.3	0.0	0.0	1.8	0.1	0.0	0.1	0.0	0.1		
LnGrp Delay(d),s/veh	28.7	2.4	0.0	0.0	12.3	11.1	0.0	58.0	0.0	45.7		
LnGrp LOS	C	A			B	B		E		D		
Approach Vol, veh/h		653			145			1				
Approach Delay, s/veh		26.6			12.3			58.0				
Approach LOS		C			B			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		62.0			22.0	40.0	6.6	5.8
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		55.9			28.9	20.9	15.9	10.4
Max Q Clear Time (g_c+I1), s		2.5			14.4	5.3	2.2	2.0
Green Ext Time (p_c), s		0.3			1.5	0.3	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	174	611	601	128	211	193	854	131	13	1344	62
Future Volume (veh/h)	184	174	611	601	128	211	193	854	131	13	1344	62
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	194	197	664	653	253	153	210	928	142	14	1461	67
Adj No. of Lanes	1	1	1	2	1	1	1	2	0	2	2	1
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	191	201	344	840	441	422	209	1416	217	137	1359	588
Arrive On Green	0.11	0.11	0.11	0.24	0.24	0.24	0.12	0.46	0.46	0.04	0.38	0.38
Sat Flow, veh/h	1774	1863	1463	3548	1863	1518	1774	3064	469	3442	3539	1531
Grp Volume(v), veh/h	194	197	664	653	253	153	210	536	534	14	1461	67
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1518	1774	1770	1763	1721	1770	1531
Q Serve(g_s), s	14.0	13.7	14.0	22.4	15.6	10.5	15.3	30.4	30.4	0.5	49.9	3.7
Cycle Q Clear(g_c), s	14.0	13.7	14.0	22.4	15.6	10.5	15.3	30.4	30.4	0.5	49.9	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	344	840	441	422	209	818	815	137	1359	588
V/C Ratio(X)	1.02	0.98	1.93	0.78	0.57	0.36	1.01	0.66	0.66	0.10	1.07	0.11
Avail Cap(c_a), veh/h	191	201	344	983	516	483	209	818	815	344	1359	588
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	58.0	57.9	50.6	46.4	43.8	37.9	57.3	27.0	27.0	60.2	40.0	25.8
Incr Delay (d2), s/veh	69.2	58.2	429.4	3.4	1.2	0.5	63.8	4.1	4.1	0.1	47.2	0.4
Initial Q Delay(d3),s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	10.3	53.4	11.4	8.2	4.5	11.2	15.7	15.6	0.2	33.3	1.6
LnGrp Delay(d),s/veh	127.3	116.0	480.1	49.9	45.0	38.4	121.1	31.0	31.1	60.3	87.2	26.2
LnGrp LOS	F	F	F	D	D	D	F	C	C	E	F	C
Approach Vol, veh/h		1055			1059			1280			1542	
Approach Delay, s/veh		347.2			47.0			45.8			84.3	
Approach LOS		F			D			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	65.2		19.1	20.0	55.0		35.9
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 15	44.7		36.0
Max Q Clear Time (g_c+I1), s	2.5	32.4		16.0	17.3	51.9		24.4
Green Ext Time (p_c), s	0.0	7.6		0.0	0.0	0.0		4.1

Intersection Summary	
HCM 2010 Ctrl Delay	122.5
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	745	2639	16	0	433	1161	0
Future Volume (vph)	745	2639	16	0	433	1161	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.7		6.0	6.0	
Lane Util. Factor	0.97	0.76	1.00		0.95	0.91	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.85	1.00		1.00	1.00	
Flt Protected	0.95	1.00	0.95		1.00	1.00	
Satd. Flow (prot)	3433	3610	1770		3539	5085	
Flt Permitted	0.95	1.00	0.95		1.00	1.00	
Satd. Flow (perm)	3433	3610	1770		3539	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	810	2868	17	0	471	1262	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	810	2868	17	0	471	1262	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot		NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases							
Actuated Green, G (s)	80.0	80.0	2.0		38.0	31.3	
Effective Green, g (s)	80.0	80.0	2.0		38.0	31.3	
Actuated g/C Ratio	0.62	0.62	0.02		0.29	0.24	
Clearance Time (s)	6.0	6.0	4.7		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	1.0		2.0	2.0	
Lane Grp Cap (vph)	2112	2221	27		1034	1224	
v/s Ratio Prot	0.24	c0.79	0.01		c0.13	c0.25	
v/s Ratio Perm							
v/c Ratio	0.38	1.29	0.63		0.46	1.03	
Uniform Delay, d1	12.6	25.0	63.6		37.6	49.4	
Progression Factor	1.00	1.00	1.00		1.00	1.06	
Incremental Delay, d2	0.0	134.6	28.6		1.4	17.5	
Delay (s)	12.6	159.6	92.3		39.0	69.7	
Level of Service	B	F	F		D	E	
Approach Delay (s)	127.2				40.9	69.7	
Approach LOS	F				D	E	

Intersection Summary			
HCM 2000 Control Delay	106.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	69	89	231	330	33
Future Volume (veh/h)	22	69	89	231	330	33
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.91	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	24	75	97	251	393	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	80	502	312	1210	2168	987
Arrive On Green	0.05	0.27	0.17	0.17	0.61	0.00
Sat Flow, veh/h	1774	1863	1863	1443	3548	1615
Grp Volume(v), veh/h	24	75	97	251	393	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1443	1774	1615
Q Serve(g_s), s	1.0	2.4	3.6	3.6	3.8	0.0
Cycle Q Clear(g_c), s	1.0	2.4	3.6	3.6	3.8	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	80	502	312	1210	2168	987
V/C Ratio(X)	0.30	0.15	0.31	0.21	0.18	0.00
Avail Cap(c_a), veh/h	241	935	576	1414	2168	987
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	0.00
Uniform Delay (d), s/veh	36.0	21.7	28.5	2.3	6.6	0.0
Incr Delay (d2), s/veh	0.8	0.1	0.2	0.0	0.2	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	0.5	1.2	1.9	5.3	1.9	0.0
LnGrp Delay(d),s/veh	36.7	21.7	28.7	2.3	6.8	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		99	348		393	
Approach Delay, s/veh		25.4	9.7		6.8	
Approach LOS		C	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				25.9		52.0	7.9	18.0
Change Period (Y+Rc), s				4.9		4.4	4.4	4.9
Max Green Setting (Gmax), s				39.1		47.6	10.6	24.1
Max Q Clear Time (g_c+I1), s				4.4		5.8	3.0	5.6
Green Ext Time (p_c), s				1.2		1.2	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	314	808	74	24	551	184	49	11	11	257	23	406
Future Volume (veh/h)	314	808	74	24	551	184	49	11	11	257	23	406
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.90	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	341	878	80	26	599	200	53	12	12	297	0	441
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	398	1373	125	33	1147	490	151	34	34	1011	0	429
Arrive On Green	0.12	0.42	0.42	0.02	0.32	0.32	0.13	0.13	0.13	0.29	0.00	0.29
Sat Flow, veh/h	3442	3259	297	1774	3539	1511	1186	268	268	3548	0	1504
Grp Volume(v), veh/h	341	477	481	26	599	200	77	0	0	297	0	441
Grp Sat Flow(s),veh/h/ln	1721	1770	1787	1774	1770	1511	1722	0	0	1774	0	1504
Q Serve(g_s), s	13.0	28.6	28.6	2.0	18.5	13.8	5.5	0.0	0.0	8.8	0.0	38.2
Cycle Q Clear(g_c), s	13.0	28.6	28.6	2.0	18.5	13.8	5.5	0.0	0.0	8.8	0.0	38.2
Prop In Lane	1.00		0.17	1.00		1.00	0.69		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	398	745	753	33	1147	490	220	0	0	1011	0	429
V/C Ratio(X)	0.86	0.64	0.64	0.79	0.52	0.41	0.35	0.00	0.00	0.29	0.00	1.03
Avail Cap(c_a), veh/h	524	745	753	74	1147	490	386	0	0	1011	0	429
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	0.91	0.91	0.91	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	58.2	30.7	30.7	65.5	36.9	35.3	53.4	0.0	0.0	37.4	0.0	47.9
Incr Delay (d2), s/veh	8.5	4.2	4.1	13.3	1.5	2.3	0.4	0.0	0.0	0.2	0.0	50.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	14.8	14.9	1.1	9.2	6.1	2.6	0.0	0.0	4.3	0.0	21.9
LnGrp Delay(d),s/veh	66.7	34.9	34.9	78.8	38.4	37.6	53.7	0.0	0.0	37.5	0.0	98.8
LnGrp LOS	E	C	C	E	D	D	D			D		F
Approach Vol, veh/h		1299			825			77			738	
Approach Delay, s/veh		43.2			39.5			53.7			74.1	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	62.0		43.1	19.9	49.0		22.0
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	5.6	40.4		38.2	20.4	* 26		30.0
Max Q Clear Time (g_c+I1), s	4.0	30.6		40.2	15.0	20.5		7.5
Green Ext Time (p_c), s	0.0	7.7		0.0	0.5	4.9		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	50.2
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	942	14	93	591	160	21	8	118	191	5	147
Future Volume (veh/h)	59	942	14	93	591	160	21	8	118	191	5	147
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.92	1.00		0.93
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	64	1024	15	101	642	174	23	9	128	208	5	160
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	82	1658	24	122	1331	360	34	13	190	299	7	326
Arrive On Green	0.05	0.46	0.46	0.14	0.97	0.97	0.16	0.16	0.16	0.17	0.17	0.17
Sat Flow, veh/h	1774	3567	52	1774	2732	739	217	85	1210	1734	42	1465
Grp Volume(v), veh/h	64	508	531	101	416	400	160	0	0	213	0	160
Grp Sat Flow(s),veh/h/ln	1774	1770	1850	1774	1770	1701	1513	0	0	1776	0	1465
Q Serve(g_s), s	5.0	30.2	30.2	7.8	1.6	1.6	14.0	0.0	0.0	15.8	0.0	13.4
Cycle Q Clear(g_c), s	5.0	30.2	30.2	7.8	1.6	1.6	14.0	0.0	0.0	15.8	0.0	13.4
Prop In Lane	1.00		0.03	1.00		0.43	0.14		0.80	0.98		1.00
Lane Grp Cap(c), veh/h	82	823	860	122	863	829	237	0	0	306	0	326
V/C Ratio(X)	0.78	0.62	0.62	0.83	0.48	0.48	0.67	0.00	0.00	0.70	0.00	0.49
Avail Cap(c_a), veh/h	139	823	860	160	863	829	314	0	0	395	0	398
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.86	0.76	0.76	0.76	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.1	28.1	28.1	59.6	0.9	0.9	55.6	0.0	0.0	54.5	0.0	48.0
Incr Delay (d2), s/veh	5.3	3.0	2.9	14.8	1.5	1.5	1.5	0.0	0.0	2.0	0.0	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	15.4	16.0	4.3	0.8	0.8	5.9	0.0	0.0	7.9	0.0	5.5
LnGrp Delay(d),s/veh	71.4	31.1	31.0	74.4	2.4	2.4	57.1	0.0	0.0	56.5	0.0	48.4
LnGrp LOS	E	C	C	E	A	A	E			E		D
Approach Vol, veh/h		1103			917			160			373	
Approach Delay, s/veh		33.4			10.3			57.1			53.0	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	70.1		29.1	10.8	73.2		26.9
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	12.6	* 48		31.1	11.0	49.6		29.1
Max Q Clear Time (g_c+I1), s	9.8	32.2		17.8	7.0	3.6		16.0
Green Ext Time (p_c), s	0.0	13.6		0.8	0.0	32.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	53	96	360	39	91	96	718	412	113	570	15
Future Volume (veh/h)	38	53	96	360	39	91	96	718	412	113	570	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		0.95	1.00		0.97	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	41	58	104	421	0	99	104	780	448	123	620	16
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	70	98	251	679	0	287	134	1299	864	157	1345	569
Arrive On Green	0.09	0.09	0.09	0.19	0.00	0.19	0.08	0.37	0.37	0.09	0.38	0.38
Sat Flow, veh/h	756	1069	1429	3548	0	1498	1774	3539	1530	1774	3539	1496
Grp Volume(v), veh/h	99	0	104	421	0	99	104	780	448	123	620	16
Grp Sat Flow(s),veh/h/ln	1825	0	1429	1774	0	1498	1774	1770	1530	1774	1770	1496
Q Serve(g_s), s	4.2	0.0	5.3	8.8	0.0	4.6	4.6	14.4	14.7	5.5	10.6	0.5
Cycle Q Clear(g_c), s	4.2	0.0	5.3	8.8	0.0	4.6	4.6	14.4	14.7	5.5	10.6	0.5
Prop In Lane	0.41		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	168	0	251	679	0	287	134	1299	864	157	1345	569
V/C Ratio(X)	0.59	0.00	0.41	0.62	0.00	0.35	0.78	0.60	0.52	0.79	0.46	0.03
Avail Cap(c_a), veh/h	279	0	338	1240	0	524	287	1537	967	336	1568	663
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	35.0	0.0	30.1	29.8	0.0	28.1	36.5	20.6	11.1	35.9	18.7	15.6
Incr Delay (d2), s/veh	1.2	0.0	0.4	0.3	0.0	0.3	3.7	0.8	0.8	3.3	0.3	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	2.2	0.0	2.1	4.3	0.0	1.9	2.4	7.2	9.0	2.8	5.2	0.2
LnGrp Delay(d),s/veh	36.3	0.0	30.5	30.2	0.0	28.4	40.2	21.4	11.9	39.2	19.0	15.6
LnGrp LOS	D		C	C		C	D	C	B	D	B	B
Approach Vol, veh/h		203			520			1332			759	
Approach Delay, s/veh		33.3			29.8			19.7			22.2	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.5	36.3		12.3	10.5	37.4		20.3
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	15.3	* 35		12.3	13.0	35.6		28.1
Max Q Clear Time (g_c+I1), s	7.5	16.7		7.3	6.6	12.6		10.8
Green Ext Time (p_c), s	0.1	12.5		0.2	0.1	14.8		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	430	0	352	0	874	1186	0	591	435
Future Volume (veh/h)	0	0	0	430	0	352	0	874	1186	0	591	435
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				467	0	0	0	950	0	0	642	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				589	0	271	0	2562	1146	0	2562	1146
Arrive On Green				0.17	0.00	0.00	0.00	1.00	0.00	0.00	0.72	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				467	0	0	0	950	0	0	642	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				13.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	0.0
Cycle Q Clear(g_c), s				13.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				589	0	271	0	2562	1146	0	2562	1146
V/C Ratio(X)				0.79	0.00	0.00	0.00	0.37	0.00	0.00	0.25	0.00
Avail Cap(c_a), veh/h				1132	0	521	0	2562	1146	0	2562	1146
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.38	0.00	0.00	0.79	0.00
Uniform Delay (d), s/veh				39.8	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0
Incr Delay (d2), s/veh				2.5	0.0	0.0	0.0	0.2	0.0	0.0	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				6.4	0.0	0.0	0.0	0.1	0.0	0.0	3.0	0.0
LnGrp Delay(d),s/veh				42.2	0.0	0.0	0.0	0.2	0.0	0.0	4.8	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					467			950			642	
Approach Delay, s/veh					42.2			0.2			4.8	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		77.8				77.8		22.2
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		56.6				56.6		32.9
Max Q Clear Time (g_c+I1), s		2.0				8.1		15.0
Green Ext Time (p_c), s		10.2				10.1		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	11.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	562	0	714	0	0	0	0	1498	350	0	768	253
Future Volume (vph)	562	0	714	0	0	0	0	1498	350	0	768	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3416			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3416			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	611	0	776	0	0	0	0	1628	380	0	835	275
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	611	0	776	0	0	0	0	1988	0	0	835	275
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	20.2		69.3					67.3			18.2	100.0
Effective Green, g (s)	20.2		69.3					67.3			18.2	100.0
Actuated g/C Ratio	0.20		0.69					0.67			0.18	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	693		2501					2298			644	1536
v/s Ratio Prot	c0.18		0.21					c0.58			c0.24	
v/s Ratio Perm												0.18
v/c Ratio	0.88		0.31					0.87			1.30	0.18
Uniform Delay, d1	38.7		6.0					12.8			40.9	0.0
Progression Factor	1.00		1.00					1.59			0.75	1.00
Incremental Delay, d2	12.3		0.0					1.3			144.3	0.2
Delay (s)	51.1		6.0					21.6			175.0	0.2
Level of Service	D		A					C			F	A
Approach Delay (s)		25.9			0.0			21.6			131.7	
Approach LOS		C			A			C			F	

Intersection Summary			
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	38	24	56	9	292	23	1211	57	252	1137	93
Future Volume (veh/h)	345	38	24	56	9	292	23	1211	57	252	1137	93
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	429	0	0	61	10	317	25	1316	62	274	1236	101
Adj No. of Lanes	2	1	0	0	1	1	1	2	1	2	3	2
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	665	349	0	75	12	206	36	1683	744	279	2754	2004
Arrive On Green	0.19	0.00	0.00	0.05	0.05	0.05	0.02	0.48	0.48	0.11	0.72	0.72
Sat Flow, veh/h	3548	1863	0	1534	252	1583	1774	3539	1563	3442	5085	2735
Grp Volume(v), veh/h	429	0	0	71	0	317	25	1316	62	274	1236	101
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1786	0	1583	1774	1770	1563	1721	1695	1368
Q Serve(g_s), s	11.2	0.0	0.0	3.9	0.0	4.9	1.4	31.0	2.2	7.9	10.0	0.6
Cycle Q Clear(g_c), s	11.2	0.0	0.0	3.9	0.0	4.9	1.4	31.0	2.2	7.9	10.0	0.6
Prop In Lane	1.00		0.00	0.86		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	665	349	0	88	0	206	36	1683	744	279	2754	2004
V/C Ratio(X)	0.65	0.00	0.00	0.81	0.00	1.54	0.70	0.78	0.08	0.98	0.45	0.05
Avail Cap(c_a), veh/h	1135	596	0	88	0	206	101	1683	744	279	2754	2004
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.46	0.46	0.46
Uniform Delay (d), s/veh	37.6	0.0	0.0	47.1	0.0	43.5	48.7	21.9	14.3	44.5	7.8	2.3
Incr Delay (d2), s/veh	0.4	0.0	0.0	39.4	0.0	265.8	22.3	3.7	0.2	32.1	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	0.0	2.9	0.0	20.9	0.9	15.9	1.0	5.0	4.7	0.4
LnGrp Delay(d),s/veh	38.0	0.0	0.0	86.5	0.0	309.3	71.0	25.6	14.5	76.7	8.1	2.3
LnGrp LOS	D			F		F	E	C	B	E	A	A
Approach Vol, veh/h		429			388			1403			1611	
Approach Delay, s/veh		38.0			268.6			25.9			19.4	
Approach LOS		D			F			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	53.6		23.6	6.4	60.2		9.8
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	8.1	34.3		32.0	5.7	* 38		4.9
Max Q Clear Time (g_c+I1), s	13.2	33.0		13.2	3.4	12.0		6.9
Green Ext Time (p_c), s	0.0	1.2		1.2	0.0	20.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	49.1
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	18.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	437	1048	38	153	1064
Future Vol, veh/h	2	437	1048	38	153	1064
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	2	475	1139	41	166	1157

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2070	610	0	0	1159	0
Stage 1	1159	-	-	-	-	-
Stage 2	911	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	47	~ 437	-	-	599	-
Stage 1	261	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	33	~ 423	-	-	589	-
Mov Cap-2 Maneuver	33	-	-	-	-	-
Stage 1	257	-	-	-	-	-
Stage 2	253	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	112.3	0	1.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	423	589	-
HCM Lane V/C Ratio	-	-	1.123	0.282	-
HCM Control Delay (s)	-	-	112.3	13.5	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	17	1.2	-

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)	290	905	436	176	381	165	315	562	47	191	707	274
Future Volume (veh/h)	290	905	436	176	381	165	315	562	47	191	707	274
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.94	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	315	984	474	191	414	179	342	611	51	208	768	298
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	334	1286	550	215	1048	444	393	745	62	532	654	254
Arrive On Green	0.38	0.73	0.73	0.12	0.30	0.30	0.11	0.23	0.23	0.15	0.27	0.27
Sat Flow, veh/h	1774	3539	1512	1774	3539	1500	3442	3288	274	3442	2448	949
Grp Volume(v), veh/h	315	984	474	191	414	179	342	328	334	208	555	511
Grp Sat Flow(s),veh/h/ln	1774	1770	1512	1774	1770	1500	1721	1770	1792	1721	1770	1628
Q Serve(g_s), s	24.0	23.9	23.0	14.8	13.1	9.2	13.7	24.7	24.8	7.6	37.4	37.4
Cycle Q Clear(g_c), s	24.0	23.9	23.0	14.8	13.1	9.2	13.7	24.7	24.8	7.6	37.4	37.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		0.58
Lane Grp Cap(c), veh/h	334	1286	550	215	1048	444	393	401	406	532	473	435
V/C Ratio(X)	0.94	0.76	0.86	0.89	0.40	0.40	0.87	0.82	0.82	0.39	1.17	1.18
Avail Cap(c_a), veh/h	400	1286	550	248	1048	444	423	417	422	532	473	435
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.9	15.4	8.5	60.6	39.3	18.5	61.0	51.4	51.4	53.3	51.3	51.3
Incr Delay (d2), s/veh	22.8	3.5	13.5	25.6	1.1	2.7	15.8	12.3	12.5	0.2	98.6	100.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	11.8	11.2	8.8	6.5	4.1	7.4	13.4	13.6	3.6	31.2	28.9
LnGrp Delay(d),s/veh	65.6	19.0	22.0	86.2	40.4	21.3	76.8	63.7	63.9	53.4	149.9	151.9
LnGrp LOS	E	B	C	F	D	C	E	E	E	D	F	F
Approach Vol, veh/h		1773			784			1004			1274	
Approach Delay, s/veh		28.1			47.2			68.2			135.0	
Approach LOS		C			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	36.8	21.3	55.8	20.4	42.5	30.8	46.3
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	21.6	33.0	19.6	47.0	17.2	37.4	31.6	35.0
Max Q Clear Time (g_c+I1), s	9.6	26.8	16.8	25.9	15.7	39.4	26.0	15.1
Green Ext Time (p_c), s	1.3	2.1	0.1	18.4	0.3	0.0	0.4	17.5

Intersection Summary	
HCM 2010 Ctrl Delay	67.7
HCM 2010 LOS	E

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱		↰	↰	↱
Traffic Vol, veh/h	249	23	3	328	52	15
Future Vol, veh/h	249	23	3	328	52	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	271	25	3	357	57	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	271	0	634	271
Stage 1	-	-	-	-	271	-
Stage 2	-	-	-	-	363	-
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	-	-	1292	-	443	768
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	704	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1292	-	442	768
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	702	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	442	768	-	-	1292	-
HCM Lane V/C Ratio	0.128	0.021	-	-	0.003	-
HCM Control Delay (s)	14.3	9.8	-	-	7.8	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	205	97	82	101	123	129
Future Volume (veh/h)	205	97	82	101	123	129
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	223	105	89	110	134	140
Adj No. of Lanes	1	1	1	1	1	1
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	643	525	122	1032	266	237
Arrive On Green	0.35	0.35	0.07	0.55	0.15	0.15
Sat Flow, veh/h	1863	1521	1774	1863	1774	1583
Grp Volume(v), veh/h	223	105	89	110	134	140
Grp Sat Flow(s),veh/h/ln	1863	1521	1774	1863	1774	1583
Q Serve(g_s), s	2.8	1.5	1.5	0.9	2.2	2.6
Cycle Q Clear(g_c), s	2.8	1.5	1.5	0.9	2.2	2.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	643	525	122	1032	266	237
V/C Ratio(X)	0.35	0.20	0.73	0.11	0.50	0.59
Avail Cap(c_a), veh/h	2022	1651	937	3267	1446	1290
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	7.6	7.2	14.3	3.3	12.3	12.5
Incr Delay (d2), s/veh	0.3	0.2	3.1	0.0	0.6	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.7	0.8	0.4	1.1	1.2
LnGrp Delay(d),s/veh	7.9	7.4	17.5	3.4	12.8	13.3
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	328			199	274	
Approach Delay, s/veh	7.8			9.7	13.1	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.6	15.8				22.3		9.1
Change Period (Y+Rc), s	4.4	4.9				4.9		4.4
Max Green Setting (Gmax), s	16.6	34.1				55.1		25.6
Max Q Clear Time (g_c+I1), s	3.5	4.8				2.9		4.6
Green Ext Time (p_c), s	0.1	1.6				1.6		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	7	65	500	43	92	68	634	116	25	603	31
Future Volume (veh/h)	21	7	65	500	43	92	68	634	116	25	603	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	8	71	345	324	100	74	689	126	27	655	34
Adj No. of Lanes	0	1	1	1	1	0	1	3	0	1	3	0
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	117	41	132	559	428	132	144	1388	250	86	1431	74
Arrive On Green	0.09	0.09	0.09	0.32	0.32	0.32	0.08	0.32	0.32	0.05	0.29	0.29
Sat Flow, veh/h	1333	464	1497	1774	1357	419	1774	4302	775	1774	4940	255
Grp Volume(v), veh/h	31	0	71	345	0	424	74	541	274	27	448	241
Grp Sat Flow(s),veh/h/ln	1796	0	1497	1774	0	1776	1774	1695	1687	1774	1695	1804
Q Serve(g_s), s	1.5	0.0	4.3	15.7	0.0	20.5	3.8	12.2	12.5	1.4	10.3	10.4
Cycle Q Clear(g_c), s	1.5	0.0	4.3	15.7	0.0	20.5	3.8	12.2	12.5	1.4	10.3	10.4
Prop In Lane	0.74		1.00	1.00		0.24	1.00		0.46	1.00		0.14
Lane Grp Cap(c), veh/h	158	0	132	559	0	560	144	1094	544	86	982	523
V/C Ratio(X)	0.20	0.00	0.54	0.62	0.00	0.76	0.51	0.49	0.50	0.32	0.46	0.46
Avail Cap(c_a), veh/h	170	0	141	799	0	800	168	1094	544	168	982	523
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	40.3	0.0	41.6	27.7	0.0	29.3	42.0	26.0	26.1	43.8	27.7	27.7
Incr Delay (d2), s/veh	0.6	0.0	3.4	2.4	0.0	4.8	1.1	1.6	3.3	0.8	1.5	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	1.9	8.0	0.0	10.8	1.9	6.0	6.3	0.7	5.0	5.6
LnGrp Delay(d),s/veh	40.9	0.0	45.0	30.1	0.0	34.1	43.0	27.6	29.4	44.6	29.2	30.6
LnGrp LOS	D		D	C		C	D	C	C	D	C	C
Approach Vol, veh/h		102			769			889			716	
Approach Delay, s/veh		43.7			32.3			29.4			30.3	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	36.8		13.0	12.4	33.7		36.1
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9	27.6		9.0	* 9	27.6		42.9
Max Q Clear Time (g_c+I1), s	3.5	14.5		6.3	5.8	12.4		22.5
Green Ext Time (p_c), s	0.0	5.8		0.1	0.0	6.2		7.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.2
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	235	61	587	81	701	27	764	346	131	515	162
Future Volume (veh/h)	132	235	61	587	81	701	27	764	346	131	515	162
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	143	255	66	638	88	762	29	830	376	142	560	176
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	311	508	128	714	559	1077	70	1089	475	167	1282	551
Arrive On Green	0.09	0.18	0.18	0.21	0.30	0.30	0.04	0.31	0.31	0.09	0.36	0.36
Sat Flow, veh/h	3442	2777	702	3442	1863	2716	1774	3539	1544	1774	3539	1522
Grp Volume(v), veh/h	143	160	161	638	88	762	29	830	376	142	560	176
Grp Sat Flow(s),veh/h/ln	1721	1770	1710	1721	1863	1358	1774	1770	1544	1774	1770	1522
Q Serve(g_s), s	5.2	10.8	11.3	23.9	4.6	31.4	2.1	28.2	29.6	10.5	15.9	11.1
Cycle Q Clear(g_c), s	5.2	10.8	11.3	23.9	4.6	31.4	2.1	28.2	29.6	10.5	15.9	11.1
Prop In Lane	1.00		0.41	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	324	313	714	559	1077	70	1089	475	167	1282	551
V/C Ratio(X)	0.46	0.50	0.51	0.89	0.16	0.71	0.41	0.76	0.79	0.85	0.44	0.32
Avail Cap(c_a), veh/h	311	466	451	822	762	1372	107	1089	475	215	1282	551
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	57.3	48.7	48.9	51.2	34.1	33.9	62.3	41.6	42.1	59.2	32.1	30.5
Incr Delay (d2), s/veh	0.4	1.2	1.3	11.2	0.1	1.2	1.4	5.1	12.7	18.2	1.1	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	5.4	5.4	12.5	2.4	11.9	1.1	14.5	14.3	6.0	8.0	4.9
LnGrp Delay(d),s/veh	57.7	49.9	50.2	62.3	34.3	35.1	63.7	46.6	54.7	77.5	33.2	32.1
LnGrp LOS	E	D	D	E	C	D	E	D	D	E	C	C
Approach Vol, veh/h		464			1488			1235			878	
Approach Delay, s/veh		52.4			46.7			49.5			40.1	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	48.0	34.2	31.4	12.0	55.2	18.7	46.9
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 16	40.0	* 32	* 35	* 8	48.1	* 12	54.3
Max Q Clear Time (g_c+I1), s	12.5	31.6	25.9	13.3	4.1	17.9	7.2	33.4
Green Ext Time (p_c), s	0.1	5.6	1.6	6.1	0.0	11.9	0.1	6.1

Intersection Summary	
HCM 2010 Ctrl Delay	46.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	41.8
Intersection LOS	E

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	179	3	0	72	83	0	533	58
Future Vol, veh/h	0	179	3	0	72	83	0	533	58
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	195	3	0	78	90	0	579	63
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	13.5	11.4	58.5
HCM LOS	B	B	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	98%	0%	100%
Vol Right, %	0%	100%	2%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	533	58	182	72	83
LT Vol	533	0	0	72	0
Through Vol	0	0	179	0	83
RT Vol	0	58	3	0	0
Lane Flow Rate	579	63	198	78	90
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.007	0.088	0.365	0.162	0.174
Departure Headway (Hd)	6.255	5.045	6.644	7.472	6.961
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	579	710	540	479	513
Service Time	3.986	2.776	4.704	5.24	4.729
HCM Lane V/C Ratio	1	0.089	0.367	0.163	0.175
HCM Control Delay	64	8.3	13.5	11.7	11.2
HCM Lane LOS	F	A	B	B	B
HCM 95th-tile Q	15	0.3	1.7	0.6	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	692	55	0	0	94	13	3	4	3	12	0	1272
Future Volume (veh/h)	692	55	0	0	94	13	3	4	3	12	0	1272
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	752	60	0	0	102	14	3	4	3	13	0	1383
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	905	1297	0	0	640	531	69	0	0	28	0	0
Arrive On Green	0.26	0.70	0.00	0.00	0.34	0.34	0.03	0.03	0.03	0.02	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1546	0	0	0	1774	13	
Grp Volume(v), veh/h	752	60	0	0	102	14	10	0	0	13	37.3	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1546	0	0	0	1774	D	
Q Serve(g_s), s	14.0	0.7	0.0	0.0	2.6	0.4	0.0	0.0	0.0	0.5		
Cycle Q Clear(g_c), s	14.0	0.7	0.0	0.0	2.6	0.4	0.1	0.0	0.0	0.5		
Prop In Lane	1.00		0.00	0.00		1.00	0.30		0.30	1.00		
Lane Grp Cap(c), veh/h	905	1297	0	0	640	531	69	0	0	28		
V/C Ratio(X)	0.83	0.05	0.00	0.00	0.16	0.03	0.15	0.00	0.00	0.46		
Avail Cap(c_a), veh/h	1414	1297	0	0	640	531	173	0	0	651		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	23.6	3.2	0.0	0.0	15.5	14.8	32.4	0.0	0.0	33.1		
Incr Delay (d2), s/veh	1.3	0.1	0.0	0.0	0.5	0.1	1.2	0.0	0.0	4.2		
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		
%ile BackOfQ(50%),veh/ln	6.7	0.4	0.0	0.0	1.4	0.2	0.2	0.0	0.0	0.3		
LnGrp Delay(d),s/veh	24.9	3.3	0.0	0.0	16.0	14.9	33.5	0.0	0.0	37.3		
LnGrp LOS	C	A			B	B	C			D		
Approach Vol, veh/h		812			116			10				
Approach Delay, s/veh		23.3			15.9			33.5				
Approach LOS		C			B			C				

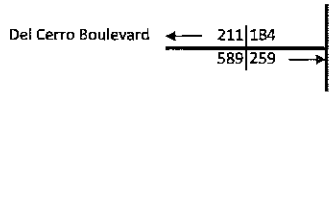
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		53.4			24.0	29.4	7.2	7.3
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		47.3			27.9	13.3	24.9	10.0
Max Q Clear Time (g_c+I1), s		2.7			16.0	4.6	2.5	2.1
Green Ext Time (p_c), s		0.3			1.9	0.2	0.0	0.0

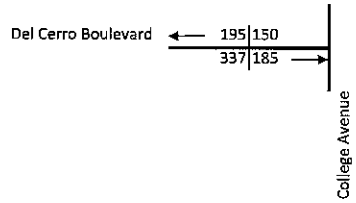
Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

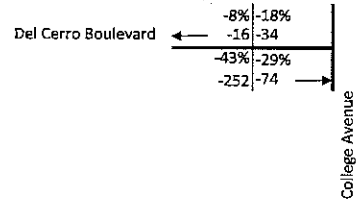
APPENDIX F

DEL CERRO BOULEVARD COUNT COMPARISON

INTERSECTION	DIRECTION	SDSU 2007 CAMPUS MASTER PLAN REVISION (2007 REPORT)						SDSU 2007 CAMPUS MASTER PLAN REVISION (2016 REPORT)						Δ					
		Ram	Rpm	Tam	Tpm	Lam	Lpm	Ram	Rpm	Tam	Tpm	Lam	Lpm	Ram	Rpm	Tam	Tpm	Lam	Lpm
6. College Avenue / Del Cerro Boulevard	Sb	22	25	823	567	70	195	22	15	1018	562	59	113	0	-10	195	-5	-11	-82
	Wb	64	102	104	43	523	325	87	91	94	39	421	355	23	-11	-10	-4	-102	30
	Nb	225	385	494	761	85	116	232	412	648	718	79	96	7	27	154	-43	-6	-20
	Eb	190	87	281	104	118	68	189	94	55	53	93	38	-1	7	-226	-51	-25	-30







Average
-30%

APPENDIX G

EXISTING & EXISTING + TOTAL PROJECT FREEWAY CALCULATION SHEETS AND RAMP METER ANALYSIS CALCULATION SHEETS

EXISTING FREEWAY SEGMENT OPERATIONS

AM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) AM	Dir Split (D) AM	Truck Factor	Peak Hour Volume AM	V/C AM	LOS AM
I-8										
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	236,000	0.0638	0.2378	0.965	3,710	0.371	B
	WB Mainlines	6M	12,000	236,000	0.0638	0.7622	0.965	11,893	**0.991**	**E**
Waring Rd to College Ave	EB Mainlines	5M	10,000	225,000	0.0638	0.2378	0.965	3,537	0.354	B
	WB Mainlines	5M	10,000	225,000	0.0638	0.7622	0.965	11,338	**1.134**	**F(0)**
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	198,000	0.0741	0.3202	0.963	4,878	0.530	B
	WB Mainlines	5M	10,000	198,000	0.0741	0.6798	0.963	10,357	**1.036**	**F(0)**
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	198,000	0.0741	0.3202	0.963	4,878	0.530	B
	WB Mainlines	4M	8,000	198,000	0.0741	0.6798	0.963	10,357	**1.295**	**F(1)**

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 /
2. Existing ADT Volumes from CALTRANS "2015 Traffic Volumes".
3. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
4. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
5. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
6. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

EXISTING FREEWAY SEGMENT OPERATIONS

PM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) PM	Dir Split (D) PM	Truck Factor	Peak Hour Volume PM	V/C PM	LOS PM
I-5										
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	236,000	0.0767	0.5924	0.965	11,112	**1.111**	**F(0)**
	WB Mainlines	6M	12,000	236,000	0.0767	0.4076	0.965	7,646	0.637	C
Waring Rd to College Ave	EB Mainlines	5M	10,000	225,000	0.0767	0.5924	0.965	10,594	**1.059**	**F(0)**
	WB Mainlines	5M	10,000	225,000	0.0767	0.4076	0.965	7,289	0.729	C
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	198,000	0.0798	0.6124	0.963	10,048	**1.092**	**F(0)**
	WB Mainlines	5M	10,000	198,000	0.0798	0.3876	0.963	6,360	0.636	C
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	198,000	0.0798	0.6124	0.963	10,048	**1.092**	**F(0)**
	WB Mainlines	4M	8,000	198,000	0.0798	0.3876	0.963	6,360	0.795	C

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 /
2. Existing ADT Volumes from CALTRANS "2015 Traffic Volumes".
3. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
4. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
5. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
6. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

EXISTING + PROJECT FREEWAY SEGMENT OPERATIONS

AM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) AM	Dir Split (D) AM	Truck Factor	Peak Hour Volume AM	V/C AM	V/C DELTA	LOS AM
I-5											
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	238,910	0.0638	0.2378	0.965	3,831	0.383	0.012	B
	WB Mainlines	6M	12,000	238,910	0.0638	0.7622	0.965	11,927	**0.994**	0.003	**E**
Waring Rd to College Ave	EB Mainlines	5M	10,000	227,910	0.0638	0.2378	0.965	3,658	0.366	0.012	B
	WB Mainlines	5M	10,000	227,910	0.0638	0.7622	0.965	11,372	**1.137**	0.003	**F(0)**
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	200,030	0.0741	0.3202	0.963	4,893	0.532	0.002	B
	WB Mainlines	5M	10,000	200,030	0.0741	0.6798	0.963	10,422	**1.042**	0.006	**F(0)**
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	200,950	0.0741	0.3202	0.963	4,902	0.533	0.003	B
	WB Mainlines	4M	8,000	200,950	0.0741	0.6798	0.963	10,485	**1.311**	0.016	**F(1)**

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 Aux)
2. Existing + P ADT Volumes from adding Project traffic onto Existing ADT Volumes.
3. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
4. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
5. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
6. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

EXISTING + PROJECT FREEWAY SEGMENT OPERATIONS

PM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) PM	Dir Split (D) PM	Truck Factor	Peak Hour Volume PM	V/C PM	V/C DELTA	LOS PM
I-5											
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	238,910	0.0767	0.5924	0.965	11,194	**1.119**	0.008	**F(0)**
	WB Mainlines	6M	12,000	238,910	0.0767	0.4076	0.965	7,777	0.648	0.011	C
Waring Rd to College Ave	EB Mainlines	5M	10,000	227,910	0.0767	0.5924	0.965	10,676	**1.068**	0.008	**F(0)**
	WB Mainlines	5M	10,000	227,910	0.0767	0.4076	0.965	7,420	0.742	0.013	C
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	200,030	0.0798	0.6124	0.963	10,119	**1.100**	0.008	**F(0)**
	WB Mainlines	5M	10,000	200,030	0.0798	0.3876	0.963	6,401	0.640	0.004	C
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	200,950	0.0798	0.6124	0.963	10,186	**1.107**	0.015	**F(0)**
	WB Mainlines	4M	8,000	200,950	0.0798	0.3876	0.963	6,434	0.804	0.009	D

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 Aux)
2. Existing + P ADT Volumes from adding Project traffic onto Existing ADT Volumes.
3. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
4. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
5. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
6. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

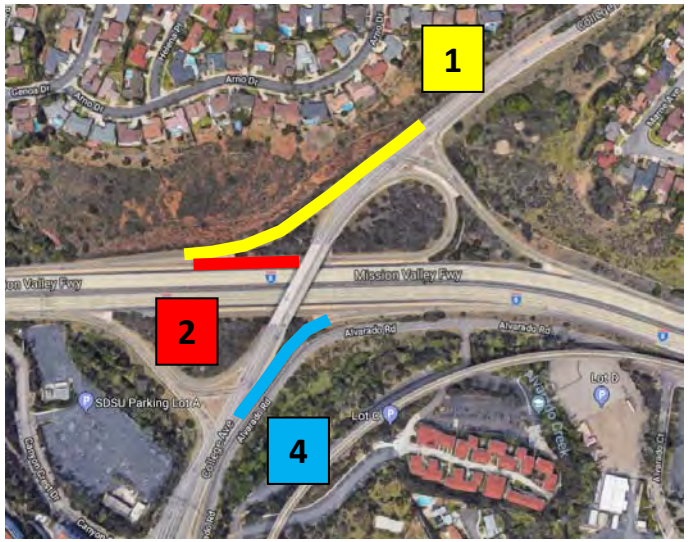
RAMP METER ANALYSIS

EXISTING, EXISTING + PROJECT

Fixed Rate Method

Location/Condition	Peak Hour	Peak Hour Demand D	Flow F	Excess Demand E	Delay (min)	Queue (ft)
I-8/College Avenue Interchange						
NB College Avenue to WB I-8					1 SOV	
Existing	AM	306	296	10	2	250
Existing + Project	AM	327	296	31	6	775
Project Increase	AM	21	296	21	4	525
SB College Avenue to WB I-8					2 SOV	
Existing	AM	336	300	36	7	888
Existing + Project	AM	342	300	42	8	1050
Project Increase	AM	6	300	6	1	162
NB College Avenue to EB I-8					1 SOV	
Existing	PM	350	330	20	4	500
Existing + Project	PM	419	330	89	16	2225
Project Increase	PM	69	330	69	12	1725
SB Fairmount Ave to EB I-8					1 SOV	
Existing	PM	390	246	144	35	3600
Existing + Project	PM	392	246	146	36	3650
Project Increase	PM	2	246	2	1	50

#	Ramp	Time of max queue observation	Queue Length (ft.)	Delay (min)
1	SB College Avenue to I-8 West	7:30 AM	900’	7.0
2	NB College Avenue to I-8 West	8:30 AM	300‘	2.0
3	SB Fairmount Avenue to I-8 East	4:30 PM	300’	2.0
4	NB College Avenue to I-8 East	5:30 PM	460’	3.0



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APPENDIX G1

TRIP GENERATION EXCERPTS FROM SDSU MASTER PLAN 2007 TRAFFIC STUDY

8.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

8.1 Trip Generation

There are three project components for which trip generation calculations were performed: (1) Student headcount and faculty/staff increase, (2) Adobe Falls Faculty housing, and (3) Alvarado Hotel. The following is a description of each.

8.1.1 *(Student Headcount and Faculty/Staff Increase)*

Student headcount projections were obtained from the University for academic years 2006/2007, 2012/2013 and 2024/2025 (see *Appendix B*). The headcount increase between 2006/2007 and 2012/2013 is 2,094 and between 2006/2007 and 2024/2025 is 11,385 students.

Resident vs. Non-Resident Students

Since the trip making _patterns of students who live on campus (termed resident students) is much different than students who do not live on campus (termed non-resident students), the important first step was to divide the student headcount increase into two categories.

The forecasted split between resident students/non-resident students is 30:70 in the near-term and 35:65 in the long term scenarios. Based on this split, the following ***Table 8–1*** shows the forecasted headcount increases

TABLE 8–1
STUDENT HEADCOUNT INCREASE

Variable	Academic Years	
	2006/2007 – 2012/2013	**2006-2007 – 2024/2025**
Resident Students	628	3,984
Non-Resident Students	1,466	7,401

A. **Non-Resident Students/Faculty/Staff**

The trip rate for **non-resident students** was based on actual counts at the campus. Road tubes were placed at all entrances/exits to the campus parking areas and the total ADT (66,807) was determined. A five-day count was conducted the week of November 13, 2006 and an average of the five weekdays was utilized. The trip rate per student was determined by dividing the total campus generated ADT of 66,807 by the 2006/2007 non-resident headcount. A rate of 2.47 ADT per student was calculated. It should be noted that since this rate is based on actual counts of all campus parking areas (**including visitors, vendors, faculty and staff**), the 2.47 rate accounts for all potential campus-related trips; including faculty/staff.

B. **Resident Students**

The resident student trip count was estimated using two different methods. The first was based on data contained in the approved College Community Redevelopment Plan EIR. *Table 5-14* from this document indicates a trip rate ranging from 3.1 to 4.4 per dwelling unit depending on the type of resident housing. However, this rate does not take into account the trip reductions, which will occur due to the relocation of students to the campus. This reduction rate is outlined in Table 5-16 of the EIR and is calculated to be 2.8 ADT per unit.

Therefore the net new trips per unit would range from 0.3 (3.1-2.8) to 1.6 (4.4-2.8) ADT per unit. The next step is to translate this "per unit" rate to a "per student" rate.

The average number of students per unit is 2.50 based on SDSU data. Therefore, the ADT per resident student would range from 0.12 to 0.64. (0.3/25=0.12 & 1.6/2.5=0.64)

Another potential source of the resident student trip rate is the University of California San Diego Master Plan EIR. This EIR documented a rate of 0.41 ADT per resident student.

Of these three potential rates (0.12, 0.41 & 0.64), **a rate of 0.64 per resident** student was utilized to be conservative.

8.1.2 *Adobe Falls Faculty/Staff Housing Component*

City of San Diego trip generation rates were utilized for the proposed faculty/staff housing at the Adobe Falls site assuming they would function similar to townhome/apartment units. A rate of 8 ADT per unit was used for the portion with densities under 20 dwelling units/acre and a rate of 6 ADT per unit was used if the density exceeded this amount.

However, it is likely that faculty housing would generate less than these amounts since many of the units will have faculty reside in them that only generate 2 ADT (to and from campus).

A 5-day count was conducted at the Cal State Fullerton faculty housing development on Lake Knoll Drive in the City of Buena Park; a development similar to what is proposed at Adobe Falls. This development is located about five miles from the campus. The trip rate was found to be 3.75 ADT per unit.

A shuttle system is proposed as part of the project that would take multiple residents to and from the development to the main campus. This shuttle is expected to reduce the overall traffic generation of the development by approximately 10 percent. It is planned to implement the shuttle system once traffic volumes on the residential roadways warrant.

8.1.3 *Alvarado Hotel*

The City of San Diego trip rate for hotels was utilized.

8.1.4 *Transit Ridership*

In order to determine the extent to which transit ridership, particularly ridership on the San Diego Trolley, would affect future vehicle trips generated by SDSU, LLG worked extensively with the San Diego Association of Governments ("SANDAG") to obtain existing and projected daily passenger trolley boardings at the SDSU station. The existing number of passenger boardings is 5,982.(see Appendix H1) SANDAG forecasts there will be 7,909 daily passenger boardings at the SDSU trolley station in the year 2010, 9,242 boardings in the year 2015, and 17,450 boardings in the year 2030. (Cite.) Through interpolation, the forecasted 2012/2013 & 2024/2025 passenger boardings are 8,442 and 14,714, respectively.

According to SANDAG, 21% of the boardings at SDSU are transfers and, therefore, passengers not originating travel at SDSU. Therefore, based on SANDAG projections, 79% of the passenger boardings at the SDSU trolley station are trips originating at SDSU. SANDAG estimates, based on these numbers, that 4,726 SDSU students, faculty and staff members presently ride the trolley to and from campus.

As shown on **Table 8-2A, Year 2012 (Near-Term) Project Trip Generation**, and **Table 8-3A, Horizon Year Project Trip Generation**, if the number of SDSU trolley riders were to remain stagnant over the next 20 years, the proposed project would generate an additional 5,607 ADT over existing vehicle trips by interim year 2012, and an additional 23,404 ADT by horizon year 2024-25. However, SANDAG does not project the number of trolley riders to remain stagnant. SANDAG projects that by the year 2012, the number of SDSU trolley riders will increase to 6,669, an increase of 1,943 additional trolley riders. (See Table 8-2B) By the year 2024-25, SANDAG projects that the number of SDSU trolley riders will increase over existing by 6,898 trolley riders to 11,624. Therefore, between now and 2024-25, during the same period when the SDSU student headcount will increase from 33,441 to 44,826, SANDAG estimates that trolley ridership will increase by 6,898 SDSU students, faculty and staff over existing numbers. (See Table 8-3B)

In order to account for this intermediate- and long-term increase in SDSU related trolley ridership, and the corresponding future shift from vehicle trips to trolley trips that will result in fewer vehicles on the roadways, the 2012 and 2024-25 trip generation projections for the proposed project have been adjusted to account for the reduced vehicle trips due to the increased trolley ridership.

To translate transit usage into vehicle trips, a vehicle occupancy rate of 1.2 people per car was utilized, based on an LLG survey conducted in May 2000. Therefore, by project buildout year 2024/25, the one-way traffic that would shift to the trolley is 5,748 trips (6,898 students ÷ 1.2 people/car). (See Table 8-3B) A five (5) % factor is applied to this amount to account for the fact that some of the shift to the trolley would be from other transit opportunities and not from personal vehicles. (See Table 8-3B) Therefore, the one-way traffic that would shift to the trolley by the year 2024/25 is 5,460 trips. (See Table 8-3B.) This number is multiplied by 2 to convert it to an ADT, which equates to a 10,920 ADT shift by the year 2024/25. (See Table 8-3C) A similar calculation was completed for 2012/2013 and the shift to the trolley was calculated to be 3,076 ADT. (See Table 8-2C)

As shown on Tables 8-2C and 8-3C, taking into account the forecasted increase in trolley ridership, the net increase in ADT that would result from the proposed project is 2,531 ADT by the year 2012, and 12,484 ADT by the year 2024-25.

8.1.5 *Trip Generation Summary*

Table 8-2A shows that the near term total trip generation ADT without assuming a future shift to the trolley is 5,607 ADT. ***Table 8-2B*** shows that the forecasted shift to the trolley is 3,076 ADT based on SANDAG boarding projections as described previously. ***Table 8-2C*** shows the net increase in traffic for the campus is 2,531 ADT.

Table 8-3A, B & C shows the total trip generation, trolley shift and net increase in campus traffic respectively, for the horizon year.

8.2 Trip Distribution & Assignment

The trip distribution and assignment for each component of the project is described below. The Student Headcount increase, Adobe Falls Faculty/Staff Housing, and the Alvarado Hotel require separate distribution and assignments given the different nature of the uses that are proposed at each site.

8.2.1 *Student Headcount and Faculty/Staff Increase*

As previously discussed in Section 2.2, it is expected that the student headcount increase from 33,441 to 44,826 would be partially accommodated in classroom facilities to be constructed on Alvarado Campus site. The remaining would be accommodated in the existing SDSU facilities on the main campus. The traffic distribution for the student headcount increase component is based on its proximity to Interstate 8 and the surrounding street network. A Select Zone Assignment for the SDSU Traffic Analysis Zone (TAZ) was obtained from SANDAG and utilized in determining the project distribution. The majority of the traffic destined for SDSU travel to and from Interstate 8. ***Figure 8–1*** illustrates this distribution.

All of the near-term project traffic was assigned to the main campus. The horizon-year project traffic was assigned with 50 percent to the main campus and 50 percent to the Alvarado Campus. The near-term assignment of traffic for the Alvarado Campus site is shown on ***Figure 8–2***. Assignment of traffic to the surrounding street system is based on the location of parking structures and lots, specific street characteristics (e.g. one-way streets), and the existing traffic conditions within the study area. The horizon year project assignment for Alvarado Campus is shown on ***Figure 8–3***.

8.2.2 *Adobe Falls Faculty/Staff Housing*

The distribution for the Adobe Falls Faculty/Staff residential component of the project is based on its proximity to the SDSU Campus and the surrounding amenities. Given that this residential project is expected to house faculty and staff affiliated with SDSU, much of the traffic is distributed to and from the SDSU campus as shown on ***Figure 8–4***. This detailed distribution, specific to the project site, also provides the project ADT volumes on the analyzed street segments. The Adobe Falls distribution to the surrounding local streets is shown in ***Figure 8–5***. The project assignment takes

into account access to and from major roadways along with the location of parking lots and structures on campus. ***Figure 8–6*** shows the Adobe Falls assignment for the near-term project traffic, and ***Figure 8–7*** shows the Adobe Falls assignment for the horizon year project traffic.

8.2.3 *Alvarado Hotel*

The distribution for the Alvarado Hotel project component is based on its proximity to the SDSU Campus and the surrounding amenities. Given that this project component is expected to be used primarily by visitors to the Campus, the majority of the traffic is distributed based on the location of the San Diego International Airport and related tourist facilities. The distribution also considers the possibility of local businesses using the hotel for meetings and conferences. ***Figure 8–8*** illustrates this distribution. The project assignment takes into account access to and from major roadways. ***Figure 8–9*** shows the hotel assignment for both the near-term and the horizon year.

Figure 8–10, total near-term project traffic volumes, is the result of the addition of the three near-term project traffic assignments. Similarly, ***Figure 8–11***, total horizon year project traffic volumes, is the result of the addition of the three horizon year project traffic assignments.

APPENDIX H

EXISTING + TOTAL PROJECT INTERSECTION LEVEL OF SERVICE CALCULATION SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	11	326	380	447	189	294	1468	116	17	841	70
Future Volume (veh/h)	33	11	326	380	447	189	294	1468	116	17	841	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	24	29	354	275	679	205	320	1596	126	18	914	76
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	2	2	1
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	192	202	345	421	884	436	209	1502	117	164	1355	586
Arrive On Green	0.11	0.11	0.11	0.24	0.24	0.24	0.12	0.45	0.45	0.05	0.38	0.38
Sat Flow, veh/h	1774	1863	1464	1774	3725	1518	1774	3318	259	3442	3539	1531
Grp Volume(v), veh/h	24	29	354	275	679	205	320	844	878	18	914	76
Grp Sat Flow(s),veh/h/ln	1774	1863	1464	1774	1863	1518	1774	1770	1808	1721	1770	1531
Q Serve(g_s), s	1.6	1.8	14.1	18.2	22.1	14.5	15.3	58.8	58.8	0.7	27.9	4.2
Cycle Q Clear(g_c), s	1.6	1.8	14.1	18.2	22.1	14.5	15.3	58.8	58.8	0.7	27.9	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	192	202	345	421	884	436	209	801	818	164	1355	586
V/C Ratio(X)	0.12	0.14	1.03	0.65	0.77	0.47	1.53	1.05	1.07	0.11	0.67	0.13
Avail Cap(c_a), veh/h	192	202	345	491	1032	496	209	801	818	344	1355	586
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	52.4	52.5	50.6	44.8	46.2	38.4	57.3	35.6	35.6	59.2	33.4	26.1
Incr Delay (d2), s/veh	0.3	0.3	55.2	2.5	3.0	0.8	262.3	47.0	52.9	0.1	2.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.0	17.7	9.2	11.8	6.2	22.7	39.2	41.3	0.3	14.1	1.8
LnGrp Delay(d),s/veh	52.7	52.8	105.8	47.2	49.3	39.2	319.7	82.6	88.5	59.4	36.1	26.5
LnGrp LOS	D	D	F	D	D	D	F	F	F	E	D	C
Approach Vol, veh/h		407			1159			2042			1008	
Approach Delay, s/veh		98.9			47.0			122.3			35.8	
Approach LOS		F			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.9	63.9		19.2	20.0	54.9		35.9
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	46.9		14.1	* 15	44.6		36.0
Max Q Clear Time (g_c+I1), s	2.7	60.8		16.1	17.3	29.9		24.1
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	7.9		4.5

Intersection Summary	
HCM 2010 Ctrl Delay	82.4
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	897	1582	219	0	981	634	0
Future Volume (vph)	897	1582	219	0	981	634	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.7		6.0	6.0	
Lane Util. Factor	0.97	0.76	1.00		0.95	0.91	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.85	1.00		1.00	1.00	
Flt Protected	0.95	1.00	0.95		1.00	1.00	
Satd. Flow (prot)	3433	3610	1770		3539	5085	
Flt Permitted	0.95	1.00	0.95		1.00	1.00	
Satd. Flow (perm)	3433	3610	1770		3539	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	975	1720	238	0	1066	689	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	975	1720	238	0	1066	689	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot		NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases							
Actuated Green, G (s)	66.6	66.6	20.2		51.4	26.5	
Effective Green, g (s)	66.6	66.6	20.2		51.4	26.5	
Actuated g/C Ratio	0.51	0.51	0.16		0.40	0.20	
Clearance Time (s)	6.0	6.0	4.7		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	1.0		2.0	2.0	
Lane Grp Cap (vph)	1758	1849	275		1399	1036	
v/s Ratio Prot	0.28	c0.48	c0.13		c0.30	0.14	
v/s Ratio Perm							
v/c Ratio	0.55	0.93	0.87		0.76	0.67	
Uniform Delay, d1	21.6	29.5	53.6		34.0	47.7	
Progression Factor	1.00	1.00	1.00		1.00	0.91	
Incremental Delay, d2	0.2	8.8	22.9		4.0	2.3	
Delay (s)	21.8	38.4	76.4		38.0	45.7	
Level of Service	C	D	E		D	D	
Approach Delay (s)	32.4				45.0	45.7	
Approach LOS	C				D	D	

Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	46	48	537	90	17
Future Volume (veh/h)	37	46	48	537	90	17
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.92	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	40	50	52	584	115	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	70	562	388	1249	2116	963
Arrive On Green	0.04	0.30	0.21	0.21	0.60	0.00
Sat Flow, veh/h	1774	1863	1863	1464	3548	1615
Grp Volume(v), veh/h	40	50	52	584	115	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1464	1774	1615
Q Serve(g_s), s	2.0	1.8	2.1	11.8	1.2	0.0
Cycle Q Clear(g_c), s	2.0	1.8	2.1	11.8	1.2	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	70	562	388	1249	2116	963
V/C Ratio(X)	0.57	0.09	0.13	0.47	0.05	0.00
Avail Cap(c_a), veh/h	78	663	491	1330	2116	963
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	0.00
Uniform Delay (d), s/veh	43.0	22.8	29.4	2.9	7.7	0.0
Incr Delay (d2), s/veh	3.5	0.0	0.1	0.1	0.0	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	1.1	0.9	1.1	14.6	0.6	0.0
LnGrp Delay(d),s/veh	46.4	22.8	29.4	3.0	7.7	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		90	636		115	
Approach Delay, s/veh		33.3	5.2		7.7	
Approach LOS		C	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				32.4		58.7	8.5	23.9
Change Period (Y+Rc), s				4.9		4.4	4.9	* 4.9
Max Green Setting (Gmax), s				32.4		54.3	4.0	* 24
Max Q Clear Time (g_c+I1), s				3.8		3.2	4.0	13.8
Green Ext Time (p_c), s				0.2		0.3	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	521	369	13	4	836	319	45	19	19	78	1	124
Future Volume (veh/h)	521	369	13	4	836	319	45	19	19	78	1	124
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.91	1.00		0.86
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	566	401	14	4	909	347	49	21	21	86	0	135
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	626	2169	76	7	1575	679	124	53	53	284	0	109
Arrive On Green	0.18	0.62	0.62	0.01	0.89	0.89	0.14	0.14	0.14	0.08	0.00	0.08
Sat Flow, veh/h	3442	3482	121	1774	3539	1525	916	393	393	3548	0	1354
Grp Volume(v), veh/h	566	203	212	4	909	347	91	0	0	86	0	135
Grp Sat Flow(s),veh/h/ln	1721	1770	1834	1774	1770	1525	1701	0	0	1774	0	1354
Q Serve(g_s), s	20.3	6.2	6.2	0.3	7.3	5.8	6.2	0.0	0.0	2.9	0.0	10.1
Cycle Q Clear(g_c), s	20.3	6.2	6.2	0.3	7.3	5.8	6.2	0.0	0.0	2.9	0.0	10.1
Prop In Lane	1.00		0.07	1.00		1.00	0.54		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	626	1102	1142	7	1575	679	231	0	0	284	0	109
V/C Ratio(X)	0.90	0.18	0.19	0.54	0.58	0.51	0.39	0.00	0.00	0.30	0.00	1.24
Avail Cap(c_a), veh/h	699	1102	1142	56	1575	679	405	0	0	284	0	109
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.40	0.40	0.40	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.5	10.1	10.1	62.4	4.2	4.2	49.7	0.0	0.0	54.6	0.0	58.0
Incr Delay (d2), s/veh	13.4	0.4	0.4	9.0	0.6	1.1	0.4	0.0	0.0	0.6	0.0	165.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	3.1	3.2	0.2	3.4	2.3	2.9	0.0	0.0	1.4	0.0	8.8
LnGrp Delay(d),s/veh	63.9	10.5	10.5	71.4	4.9	5.3	50.1	0.0	0.0	55.2	0.0	223.5
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		981			1260			91			221	
Approach Delay, s/veh		41.3			5.2			50.1			158.0	
Approach LOS		D			A			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.9	84.1		15.0	27.3	61.7		22.0
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	4.6	62.1		10.1	25.6	* 41		30.0
Max Q Clear Time (g_c+I1), s	2.3	8.2		12.1	22.3	9.3		8.2
Green Ext Time (p_c), s	0.0	20.4		0.0	0.6	16.4		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	33.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	428	11	69	1063	307	40	13	95	97	9	55
Future Volume (veh/h)	82	428	11	69	1063	307	40	13	95	97	9	55
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.92	1.00		0.91
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	89	465	12	75	1155	334	43	14	103	105	10	60
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	79	1706	44	95	1332	379	68	22	163	240	23	284
Arrive On Green	0.09	0.97	0.97	0.07	0.66	0.66	0.16	0.16	0.16	0.15	0.15	0.15
Sat Flow, veh/h	1774	3519	91	1774	2698	767	420	137	1006	1627	155	1448
Grp Volume(v), veh/h	89	233	244	75	751	738	160	0	0	115	0	60
Grp Sat Flow(s),veh/h/ln	1774	1770	1840	1774	1770	1695	1563	0	0	1781	0	1448
Q Serve(g_s), s	5.6	0.7	0.7	5.2	42.1	44.7	12.0	0.0	0.0	7.4	0.0	4.4
Cycle Q Clear(g_c), s	5.6	0.7	0.7	5.2	42.1	44.7	12.0	0.0	0.0	7.4	0.0	4.4
Prop In Lane	1.00		0.05	1.00		0.45	0.27		0.64	0.91		1.00
Lane Grp Cap(c), veh/h	79	858	892	95	874	837	253	0	0	263	0	284
V/C Ratio(X)	1.13	0.27	0.27	0.79	0.86	0.88	0.63	0.00	0.00	0.44	0.00	0.21
Avail Cap(c_a), veh/h	79	858	892	149	874	837	360	0	0	438	0	427
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.42	0.42	0.42	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	1.0	1.0	57.8	18.2	18.6	49.3	0.0	0.0	49.0	0.0	42.9
Incr Delay (d2), s/veh	139.9	0.8	0.7	2.5	4.9	6.0	1.0	0.0	0.0	0.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.4	0.4	2.6	21.4	22.1	5.3	0.0	0.0	3.7	0.0	1.8
LnGrp Delay(d),s/veh	197.3	1.8	1.7	60.3	23.1	24.7	50.3	0.0	0.0	49.4	0.0	43.1
LnGrp LOS	F	A	A	E	C	C	D			D		D
Approach Vol, veh/h		566			1564			160			175	
Approach Delay, s/veh		32.5			25.6			50.3			47.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	66.1		23.5	10.0	67.2		25.3
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	10.6	* 36		31.0	5.6	41.2		29.0
Max Q Clear Time (g_c+I1), s	7.2	2.7		9.4	7.6	46.7		14.0
Green Ext Time (p_c), s	0.0	29.4		0.4	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	55	275	437	94	87	99	654	233	59	1080	24
Future Volume (veh/h)	100	55	275	437	94	87	99	654	233	59	1080	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	109	60	299	548	0	95	108	711	253	64	1174	26
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	141	78	298	729	0	309	135	1473	964	82	1368	579
Arrive On Green	0.12	0.12	0.12	0.21	0.00	0.21	0.08	0.42	0.42	0.05	0.39	0.39
Sat Flow, veh/h	1164	641	1461	3548	0	1503	1774	3539	1534	1774	3539	1497
Grp Volume(v), veh/h	169	0	299	548	0	95	108	711	253	64	1174	26
Grp Sat Flow(s),veh/h/ln	1805	0	1461	1774	0	1503	1774	1770	1534	1774	1770	1497
Q Serve(g_s), s	9.1	0.0	12.1	14.5	0.0	5.3	6.0	14.6	7.5	3.6	30.4	1.1
Cycle Q Clear(g_c), s	9.1	0.0	12.1	14.5	0.0	5.3	6.0	14.6	7.5	3.6	30.4	1.1
Prop In Lane	0.64		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	219	0	298	729	0	309	135	1473	964	82	1368	579
V/C Ratio(X)	0.77	0.00	1.00	0.75	0.00	0.31	0.80	0.48	0.26	0.78	0.86	0.04
Avail Cap(c_a), veh/h	219	0	298	996	0	422	153	1473	964	169	1430	605
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	42.5	0.0	40.2	37.2	0.0	33.6	45.3	21.3	8.5	47.0	28.1	19.1
Incr Delay (d2), s/veh	14.2	0.0	53.4	1.3	0.0	0.2	20.1	0.4	0.2	5.7	5.4	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	5.4	0.0	12.6	7.2	0.0	2.2	3.7	7.2	4.9	1.9	15.9	0.5
LnGrp Delay(d),s/veh	56.7	0.0	93.6	38.5	0.0	33.8	65.5	21.7	8.8	52.8	33.4	19.1
LnGrp LOS	E		F	D		C	E	C	A	D	C	B
Approach Vol, veh/h		468			643			1072			1264	
Approach Delay, s/veh		80.3			37.8			23.1			34.1	
Approach LOS		F			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	48.3		17.0	12.0	45.4		25.4
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	9.5	* 41		12.1	8.6	40.3		28.0
Max Q Clear Time (g_c+I1), s	15.6	16.6		14.1	8.0	32.4		16.5
Green Ext Time (p_c), s	0.0	16.7		0.0	0.0	6.2		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	37.6
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	285	0	91	0	895	327	0	1108	684
Future Volume (veh/h)	0	0	0	285	0	91	0	895	327	0	1108	684
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				310	0	0	0	973	0	0	1204	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				373	0	172	0	2784	1246	0	2784	1246
Arrive On Green				0.11	0.00	0.00	0.00	1.00	0.00	0.00	0.79	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				310	0	0	0	973	0	0	1204	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				8.8	0.0	0.0	0.0	0.0	0.0	0.0	11.0	0.0
Cycle Q Clear(g_c), s				8.8	0.0	0.0	0.0	0.0	0.0	0.0	11.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				373	0	172	0	2784	1246	0	2784	1246
V/C Ratio(X)				0.83	0.00	0.00	0.00	0.35	0.00	0.00	0.43	0.00
Avail Cap(c_a), veh/h				375	0	173	0	2784	1246	0	2784	1246
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.83	0.00	0.00	0.30	0.00
Uniform Delay (d), s/veh				43.7	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0
Incr Delay (d2), s/veh				14.5	0.0	0.0	0.0	0.3	0.0	0.0	0.1	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				4.9	0.0	0.0	0.0	0.1	0.0	0.0	5.2	0.0
LnGrp Delay(d),s/veh				58.2	0.0	0.0	0.0	0.3	0.0	0.0	3.6	0.0
LnGrp LOS				E				A			A	
Approach Vol, veh/h					310			973			1204	
Approach Delay, s/veh					58.2			0.3			3.6	
Approach LOS					E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		84.1				84.1		15.9
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		78.6				78.6		10.9
Max Q Clear Time (g_c+I1), s		2.0				13.0		10.8
Green Ext Time (p_c), s		18.7				18.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	0	1331	0	0	0	0	872	219	0	1110	283
Future Volume (vph)	350	0	1331	0	0	0	0	872	219	0	1110	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3410			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3410			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	380	0	1447	0	0	0	0	948	238	0	1207	308
RTOR Reduction (vph)	0	0	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	380	0	1447	0	0	0	0	1165	0	0	1207	308
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	14.9		47.9					72.6			39.6	100.0
Effective Green, g (s)	14.9		47.9					72.6			39.6	100.0
Actuated g/C Ratio	0.15		0.48					0.73			0.40	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	511		1729					2475			1401	1536
v/s Ratio Prot	0.11		c0.40					0.34			c0.34	
v/s Ratio Perm												0.20
v/c Ratio	0.74		0.84					0.47			0.86	0.20
Uniform Delay, d1	40.7		22.7					5.7			27.7	0.0
Progression Factor	1.00		1.00					0.49			1.03	1.00
Incremental Delay, d2	5.1		3.5					0.4			6.3	0.3
Delay (s)	45.8		26.2					3.2			34.9	0.3
Level of Service	D		C					A			C	A
Approach Delay (s)		30.3			0.0			3.2			27.8	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	20	18	83	70	257	108	745	139	629	1323	490
Future Volume (veh/h)	89	20	18	83	70	257	108	745	139	629	1323	490
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	60	20	90	76	279	117	810	151	684	1438	533
Adj No. of Lanes	1	1	0	0	1	1	1	2	1	2	3	2
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	227	169	56	94	80	394	117	1473	649	527	2584	1744
Arrive On Green	0.13	0.13	0.13	0.10	0.10	0.10	0.07	0.42	0.42	0.05	0.17	0.17
Sat Flow, veh/h	1774	1320	440	983	830	1583	1774	3539	1561	3442	5085	2732
Grp Volume(v), veh/h	70	0	80	166	0	279	117	810	151	684	1438	533
Grp Sat Flow(s),veh/h/ln	1774	0	1760	1814	0	1583	1774	1770	1561	1721	1695	1366
Q Serve(g_s), s	3.6	0.0	4.2	9.1	0.0	9.6	6.6	17.3	6.3	15.3	26.0	12.8
Cycle Q Clear(g_c), s	3.6	0.0	4.2	9.1	0.0	9.6	6.6	17.3	6.3	15.3	26.0	12.8
Prop In Lane	1.00		0.25	0.54		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	0	225	174	0	394	117	1473	649	527	2584	1744
V/C Ratio(X)	0.31	0.00	0.36	0.95	0.00	0.71	1.00	0.55	0.23	1.30	0.56	0.31
Avail Cap(c_a), veh/h	568	0	563	174	0	394	117	1473	649	527	2584	1744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.41	0.41	0.41
Uniform Delay (d), s/veh	39.6	0.0	39.8	45.0	0.0	34.2	46.7	22.1	18.9	47.5	31.3	15.2
Incr Delay (d2), s/veh	0.3	0.0	0.4	54.1	0.0	4.9	82.9	1.5	0.8	140.4	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	2.0	7.2	0.0	7.5	5.9	8.7	2.8	17.6	12.3	6.6
LnGrp Delay(d),s/veh	39.9	0.0	40.2	99.0	0.0	39.2	129.6	23.6	19.7	187.9	31.6	15.4
LnGrp LOS	D		D	F		D	F	C	B	F	C	B
Approach Vol, veh/h		150			445			1078			2655	
Approach Delay, s/veh		40.0			61.5			34.6			68.6	
Approach LOS		D			E			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	30.2	47.6		17.7	11.0	56.8		14.5
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	15.3	22.4		32.0	6.6	* 32		9.6
Max Q Clear Time (g_c+I1), s	17.3	19.3		6.2	8.6	28.0		11.6
Green Ext Time (p_c), s	0.0	3.0		0.4	0.0	4.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	58.4
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱	↰	↑↑
Traffic Vol, veh/h	0	100	1039	81	362	1032
Future Vol, veh/h	0	100	1039	81	362	1032
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	109	1129	88	393	1122

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	605	0	0	1149	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	441	-	-	604	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	426	-	-	594	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	5.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	426	594	-
HCM Lane V/C Ratio	-	-	0.255	0.662	-
HCM Control Delay (s)	-	-	16.3	22.1	-
HCM Lane LOS	-	-	C	C	-
HCM 95th %tile Q(veh)	-	-	1	4.9	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	206	289	85	22	682	204	593	938	51	94	445	297
Future Volume (veh/h)	206	289	85	22	682	204	593	938	51	94	445	297
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		0.95	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	224	314	92	24	741	222	645	1020	55	102	484	323
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	220	1289	551	56	963	407	692	1146	62	408	504	335
Arrive On Green	0.21	0.61	0.61	0.03	0.27	0.27	0.20	0.34	0.34	0.12	0.25	0.25
Sat Flow, veh/h	1774	3539	1512	1774	3539	1495	3442	3406	184	3442	1984	1318
Grp Volume(v), veh/h	224	314	92	24	741	222	645	530	545	102	431	376
Grp Sat Flow(s),veh/h/ln	1774	1770	1512	1774	1770	1495	1721	1770	1820	1721	1770	1533
Q Serve(g_s), s	15.6	5.1	1.9	1.7	24.3	11.8	23.2	35.7	35.8	3.4	30.3	30.5
Cycle Q Clear(g_c), s	15.6	5.1	1.9	1.7	24.3	11.8	23.2	35.7	35.8	3.4	30.3	30.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.86
Lane Grp Cap(c), veh/h	220	1289	551	56	963	407	692	596	612	408	449	389
V/C Ratio(X)	1.02	0.24	0.17	0.43	0.77	0.55	0.93	0.89	0.89	0.25	0.96	0.96
Avail Cap(c_a), veh/h	220	1289	551	83	963	407	699	666	684	408	449	389
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	16.7	5.3	59.9	42.2	21.2	49.5	39.6	39.6	50.5	46.4	46.4
Incr Delay (d2), s/veh	65.2	0.4	0.6	1.9	5.9	5.2	19.0	13.7	13.4	0.1	32.3	36.4
Initial Q Delay(d3),s/veh	0.2	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	11.6	2.6	0.9	0.8	12.6	5.4	12.8	19.6	20.1	1.6	18.8	16.9
LnGrp Delay(d),s/veh	115.4	17.2	5.9	61.8	48.1	26.4	68.5	53.2	53.0	50.6	78.7	82.9
LnGrp LOS	F	B	A	E	D	C	E	D	D	D	E	F
Approach Vol, veh/h		630			987			1720			909	
Approach Delay, s/veh		50.4			43.6			58.9			77.3	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.3	47.5	8.4	50.8	29.7	37.1	20.0	39.2
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	10.2	47.4	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	5.4	37.8	3.7	7.1	25.2	32.5	17.6	26.3
Green Ext Time (p_c), s	1.1	4.7	0.0	20.9	0.1	0.0	0.0	6.3

Intersection Summary	
HCM 2010 Ctrl Delay	58.0
HCM 2010 LOS	E

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	301	198	107	279	29	15
Future Vol, veh/h	301	198	107	279	29	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	327	215	116	303	32	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	327	0	863	327
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	536	-
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	-	-	1233	-	325	714
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1233	-	288	714
Mov Cap-2 Maneuver	-	-	-	-	288	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	521	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	16
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	288	714	-	-	1233	-
HCM Lane V/C Ratio	0.109	0.023	-	-	0.094	-
HCM Control Delay (s)	19	10.2	-	-	8.2	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.3	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	80	91	110	341	158	64
Future Volume (veh/h)	80	91	110	341	158	64
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	87	99	120	371	172	70
Adj No. of Lanes	1	1	1	1	1	1
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	617	504	153	1056	266	237
Arrive On Green	0.33	0.33	0.09	0.57	0.15	0.15
Sat Flow, veh/h	1863	1520	1774	1863	1774	1583
Grp Volume(v), veh/h	87	99	120	371	172	70
Grp Sat Flow(s),veh/h/ln	1863	1520	1774	1863	1774	1583
Q Serve(g_s), s	1.1	1.5	2.2	3.5	3.0	1.3
Cycle Q Clear(g_c), s	1.1	1.5	2.2	3.5	3.0	1.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	617	504	153	1056	266	237
V/C Ratio(X)	0.14	0.20	0.78	0.35	0.65	0.29
Avail Cap(c_a), veh/h	1140	930	248	1650	2786	2487
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	7.7	7.9	14.7	3.8	13.1	12.4
Incr Delay (d2), s/veh	0.1	0.2	3.3	0.2	1.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.7	1.2	1.8	1.5	0.6
LnGrp Delay(d),s/veh	7.8	8.0	18.0	4.0	14.1	12.7
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	186			491	242	
Approach Delay, s/veh	7.9			7.4	13.7	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.7	15.8				23.5		9.3
Change Period (Y+Rc), s	4.9	* 4.9				4.9		4.4
Max Green Setting (Gmax), s	4.6	* 20				29.1		51.6
Max Q Clear Time (g_c+I1), s	4.2	3.5				5.5		5.0
Green Ext Time (p_c), s	0.1	0.5				1.5		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	9	145	458	27	37	103	484	164	22	1118	21
Future Volume (veh/h)	22	9	145	458	27	37	103	484	164	22	1118	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	10	158	556	0	0	112	526	178	24	1215	23
Adj No. of Lanes	0	1	1	2	1	0	1	3	0	1	3	0
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	158	66	188	831	436	0	160	1390	454	79	1667	32
Arrive On Green	0.12	0.12	0.12	0.23	0.00	0.00	0.09	0.37	0.37	0.04	0.32	0.32
Sat Flow, veh/h	1270	529	1513	3548	1863	0	1774	3754	1225	1774	5134	97
Grp Volume(v), veh/h	34	0	158	556	0	0	112	473	231	24	802	436
Grp Sat Flow(s),veh/h/ln	1799	0	1513	1774	1863	0	1774	1695	1589	1774	1695	1841
Q Serve(g_s), s	1.6	0.0	9.7	13.5	0.0	0.0	5.8	9.7	10.2	1.2	19.9	19.9
Cycle Q Clear(g_c), s	1.6	0.0	9.7	13.5	0.0	0.0	5.8	9.7	10.2	1.2	19.9	19.9
Prop In Lane	0.71		1.00	1.00		0.00	1.00		0.77	1.00		0.05
Lane Grp Cap(c), veh/h	224	0	188	831	436	0	160	1255	588	79	1101	598
V/C Ratio(X)	0.15	0.00	0.84	0.67	0.00	0.00	0.70	0.38	0.39	0.30	0.73	0.73
Avail Cap(c_a), veh/h	273	0	230	1272	668	0	174	1255	588	168	1101	598
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	40.6	33.0	0.0	0.0	41.9	21.9	22.0	43.9	28.3	28.3
Incr Delay (d2), s/veh	0.3	0.0	20.0	2.0	0.0	0.0	8.6	0.9	2.0	0.8	4.2	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	5.1	6.9	0.0	0.0	3.2	4.7	4.7	0.6	9.9	11.3
LnGrp Delay(d),s/veh	37.4	0.0	60.6	35.0	0.0	0.0	50.5	22.7	24.0	44.7	32.6	35.9
LnGrp LOS	D		E	C			D	C	C	D	C	D
Approach Vol, veh/h		192			556			816			1262	
Approach Delay, s/veh		56.5			35.0			26.9			34.0	
Approach LOS		E			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	41.2		16.4	13.2	36.9		28.3
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9	31.1		14.4	* 9.3	30.8		34.0
Max Q Clear Time (g_c+I1), s	3.2	12.2		11.7	7.8	21.9		15.5
Green Ext Time (p_c), s	0.0	9.3		0.2	0.0	5.7		5.0

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	87	20	324	103	323	85	884	355	129	358	377
Future Volume (veh/h)	89	87	20	324	103	323	85	884	355	129	358	377
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	97	95	22	352	112	351	92	961	386	140	389	410
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	416	451	101	422	297	695	132	1225	535	170	1301	560
Arrive On Green	0.12	0.16	0.16	0.12	0.16	0.16	0.07	0.35	0.35	0.10	0.37	0.37
Sat Flow, veh/h	3442	2854	637	3442	1863	2683	1774	3539	1546	1774	3539	1523
Grp Volume(v), veh/h	97	58	59	352	112	351	92	961	386	140	389	410
Grp Sat Flow(s),veh/h/ln	1721	1770	1721	1721	1863	1342	1774	1770	1546	1774	1770	1523
Q Serve(g_s), s	2.5	2.8	3.0	9.9	5.3	11.1	5.0	24.2	21.6	7.7	7.8	23.1
Cycle Q Clear(g_c), s	2.5	2.8	3.0	9.9	5.3	11.1	5.0	24.2	21.6	7.7	7.8	23.1
Prop In Lane	1.00		0.37	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	416	279	272	422	297	695	132	1225	535	170	1301	560
V/C Ratio(X)	0.23	0.21	0.22	0.84	0.38	0.51	0.70	0.78	0.72	0.82	0.30	0.73
Avail Cap(c_a), veh/h	416	624	607	461	673	1237	143	1225	535	188	1301	560
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	39.5	36.4	36.5	42.6	37.3	31.7	44.9	29.2	28.3	44.1	22.3	27.2
Incr Delay (d2), s/veh	0.1	0.4	0.4	11.7	0.8	0.6	10.2	5.1	8.2	20.9	0.6	8.2
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	1.2	1.4	1.5	5.4	2.8	4.1	2.8	12.6	10.4	4.8	3.9	10.9
LnGrp Delay(d),s/veh	39.6	36.8	36.9	54.3	38.1	32.3	55.1	34.2	36.5	65.0	22.9	35.4
LnGrp LOS	D	D	D	D	D	C	E	C	D	E	C	D
Approach Vol, veh/h		214			815			1439			939	
Approach Delay, s/veh		38.1			42.6			36.2			34.6	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.2	41.5	18.9	22.8	14.1	43.6	18.7	22.9
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 11	34.0	* 13	* 35	* 8	36.5	* 12	35.9
Max Q Clear Time (g_c+I1), s	9.7	26.2	11.9	5.0	7.0	25.1	4.5	13.1
Green Ext Time (p_c), s	0.0	5.7	0.2	2.8	0.0	7.7	0.1	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	37.4
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	30.2
Intersection LOS	D

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	98	2	0	150	113	0	484	38
Future Vol, veh/h	0	98	2	0	150	113	0	484	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	107	2	0	163	123	0	526	41
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	11.4	12.3	42.8
HCM LOS	B	B	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	98%	0%	100%
Vol Right, %	0%	100%	2%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	484	38	100	150	113
LT Vol	484	0	0	150	0
Through Vol	0	0	98	0	113
RT Vol	0	38	2	0	0
Lane Flow Rate	526	41	109	163	123
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.921	0.058	0.202	0.321	0.224
Departure Headway (Hd)	6.302	5.092	6.682	7.089	6.58
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	579	703	536	507	545
Service Time	4.033	2.823	4.738	4.84	4.331
HCM Lane V/C Ratio	0.908	0.058	0.203	0.321	0.226
HCM Control Delay	45.5	8.1	11.4	13.2	11.2
HCM Lane LOS	E	A	B	B	B
HCM 95th-tile Q	11.5	0.2	0.7	1.4	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	562	49	0	0	138	5	0	1	0	5	0	612
Future Volume (veh/h)	562	49	0	0	138	5	0	1	0	5	0	612
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	611	53	0	0	150	5	0	1	0	5	0	665
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	742	1400	0	0	845	704	0	5	0	12	0	0
Arrive On Green	0.22	0.75	0.00	0.00	0.45	0.45	0.00	0.00	0.00	0.01	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1550	0	1863	0	1774	5	
Grp Volume(v), veh/h	611	53	0	0	150	5	0	1	0	5	45.7	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1550	0	1863	0	1774	D	
Q Serve(g_s), s	12.6	0.5	0.0	0.0	3.6	0.1	0.0	0.0	0.0	0.2		
Cycle Q Clear(g_c), s	12.6	0.5	0.0	0.0	3.6	0.1	0.0	0.0	0.0	0.2		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	742	1400	0	0	845	704	0	5	0	12		
V/C Ratio(X)	0.82	0.04	0.00	0.00	0.18	0.01	0.00	0.20	0.00	0.43		
Avail Cap(c_a), veh/h	1198	1400	0	0	845	704	0	260	0	379		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	27.8	2.4	0.0	0.0	12.1	11.1	0.0	37.0	0.0	36.8		
Incr Delay (d2), s/veh	1.1	0.1	0.0	0.0	0.5	0.0	0.0	21.0	0.0	8.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	6.1	0.3	0.0	0.0	1.9	0.1	0.0	0.1	0.0	0.1		
LnGrp Delay(d),s/veh	28.9	2.4	0.0	0.0	12.5	11.1	0.0	58.0	0.0	45.7		
LnGrp LOS	C	A			B	B		E		D		
Approach Vol, veh/h		664			155			1				
Approach Delay, s/veh		26.8			12.5			58.0				
Approach LOS		C			B			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		62.0			22.1	39.9	6.6	5.8
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		55.9			25.9	23.9	15.9	10.4
Max Q Clear Time (g_c+I1), s		2.5			14.6	5.6	2.2	2.0
Green Ext Time (p_c), s		0.3			1.4	0.3	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	174	611	601	128	216	193	859	131	13	1349	62
Future Volume (veh/h)	184	174	611	601	128	216	193	859	131	13	1349	62
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	194	197	664	653	256	157	210	934	142	14	1466	67
Adj No. of Lanes	1	1	1	2	1	1	1	2	0	2	2	1
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	191	201	332	840	441	422	195	1417	215	137	1386	600
Arrive On Green	0.11	0.11	0.11	0.24	0.24	0.24	0.11	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	1774	1863	1463	3548	1863	1518	1774	3067	466	3442	3539	1532
Grp Volume(v), veh/h	194	197	664	653	256	157	210	539	537	14	1466	67
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1518	1774	1770	1764	1721	1770	1532
Q Serve(g_s), s	14.0	13.7	14.0	22.4	15.8	10.9	14.3	30.6	30.6	0.5	50.9	3.6
Cycle Q Clear(g_c), s	14.0	13.7	14.0	22.4	15.8	10.9	14.3	30.6	30.6	0.5	50.9	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	332	840	441	422	195	818	815	137	1386	600
V/C Ratio(X)	1.02	0.98	2.00	0.78	0.58	0.37	1.08	0.66	0.66	0.10	1.06	0.11
Avail Cap(c_a), veh/h	191	201	332	983	516	483	195	818	815	344	1386	600
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	58.0	57.9	51.1	46.4	43.9	38.0	57.9	27.0	27.1	60.2	39.5	25.2
Incr Delay (d2), s/veh	69.2	58.2	461.3	3.4	1.2	0.5	86.1	4.1	4.2	0.1	41.0	0.4
Initial Q Delay(d3),s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	10.3	54.5	11.4	8.3	4.6	11.7	15.9	15.9	0.2	32.7	1.6
LnGrp Delay(d),s/veh	127.3	116.0	512.5	49.8	45.1	38.5	144.0	31.2	31.2	60.3	80.5	25.5
LnGrp LOS	F	F	F	D	D	D	F	C	C	E	F	C
Approach Vol, veh/h		1055			1066			1286			1547	
Approach Delay, s/veh		367.6			47.0			49.6			77.9	
Approach LOS		F			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	65.2		19.1	19.0	56.0		35.9
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 14	45.7		36.0
Max Q Clear Time (g_c+I1), s	2.5	32.6		16.0	16.3	52.9		24.4
Green Ext Time (p_c), s	0.0	7.6		0.0	0.0	0.0		4.1

Intersection Summary	
HCM 2010 Ctrl Delay	125.6
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	745	2648	16	0	438	1164	0
Future Volume (vph)	745	2648	16	0	438	1164	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.7		6.0	6.0	
Lane Util. Factor	0.97	0.76	1.00		0.95	0.91	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.85	1.00		1.00	1.00	
Flt Protected	0.95	1.00	0.95		1.00	1.00	
Satd. Flow (prot)	3433	3610	1770		3539	5085	
Flt Permitted	0.95	1.00	0.95		1.00	1.00	
Satd. Flow (perm)	3433	3610	1770		3539	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	810	2878	17	0	476	1265	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	810	2878	17	0	476	1265	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot		NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases							
Actuated Green, G (s)	80.0	80.0	2.0		38.0	31.3	
Effective Green, g (s)	80.0	80.0	2.0		38.0	31.3	
Actuated g/C Ratio	0.62	0.62	0.02		0.29	0.24	
Clearance Time (s)	6.0	6.0	4.7		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	1.0		2.0	2.0	
Lane Grp Cap (vph)	2112	2221	27		1034	1224	
v/s Ratio Prot	0.24	c0.80	0.01		c0.13	c0.25	
v/s Ratio Perm							
v/c Ratio	0.38	1.30	0.63		0.46	1.03	
Uniform Delay, d1	12.6	25.0	63.6		37.6	49.4	
Progression Factor	1.00	1.00	1.00		1.00	1.02	
Incremental Delay, d2	0.0	136.6	28.6		1.5	18.4	
Delay (s)	12.6	161.6	92.3		39.1	68.8	
Level of Service	B	F	F		D	E	
Approach Delay (s)	128.9				40.9	68.8	
Approach LOS	F				D	E	

Intersection Summary			
HCM 2000 Control Delay	107.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	69	89	248	369	38
Future Volume (veh/h)	24	69	89	248	369	38
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.91	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	26	75	97	270	439	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	76	476	299	1235	2251	1024
Arrive On Green	0.04	0.26	0.16	0.16	0.63	0.00
Sat Flow, veh/h	1774	1863	1863	1438	3548	1615
Grp Volume(v), veh/h	26	75	97	270	439	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1438	1774	1615
Q Serve(g_s), s	1.2	2.6	3.9	4.0	4.4	0.0
Cycle Q Clear(g_c), s	1.2	2.6	3.9	4.0	4.4	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	76	476	299	1235	2251	1024
V/C Ratio(X)	0.34	0.16	0.32	0.22	0.20	0.00
Avail Cap(c_a), veh/h	97	730	531	1415	2251	1024
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	0.00
Uniform Delay (d), s/veh	39.3	24.4	31.4	2.2	6.4	0.0
Incr Delay (d2), s/veh	1.0	0.1	0.2	0.0	0.2	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	0.6	1.4	2.0	6.2	2.2	0.0
LnGrp Delay(d),s/veh	40.3	24.5	31.6	2.2	6.6	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		101	367		439	
Approach Delay, s/veh		28.5	10.0		6.6	
Approach LOS		C	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				26.5		58.0	8.0	18.5
Change Period (Y+Rc), s				4.9		4.4	4.4	4.9
Max Green Setting (Gmax), s				33.1		53.6	4.6	24.1
Max Q Clear Time (g_c+I1), s				4.6		6.4	3.2	6.0
Green Ext Time (p_c), s				1.2		1.4	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	322	830	74	24	593	197	49	11	11	286	23	425
Future Volume (veh/h)	322	830	74	24	593	197	49	11	11	286	23	425
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.90	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	350	902	80	26	645	214	53	12	12	329	0	462
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	407	1377	122	33	1138	486	151	34	34	1011	0	429
Arrive On Green	0.12	0.42	0.42	0.02	0.32	0.32	0.13	0.13	0.13	0.29	0.00	0.29
Sat Flow, veh/h	3442	3268	290	1774	3539	1510	1186	268	268	3548	0	1504
Grp Volume(v), veh/h	350	488	494	26	645	214	77	0	0	329	0	462
Grp Sat Flow(s),veh/h/ln	1721	1770	1789	1774	1770	1510	1722	0	0	1774	0	1504
Q Serve(g_s), s	13.4	29.6	29.6	2.0	20.3	15.0	5.5	0.0	0.0	9.8	0.0	38.2
Cycle Q Clear(g_c), s	13.4	29.6	29.6	2.0	20.3	15.0	5.5	0.0	0.0	9.8	0.0	38.2
Prop In Lane	1.00		0.16	1.00		1.00	0.69		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	407	745	753	33	1138	486	220	0	0	1011	0	429
V/C Ratio(X)	0.86	0.66	0.66	0.79	0.57	0.44	0.35	0.00	0.00	0.33	0.00	1.08
Avail Cap(c_a), veh/h	524	745	753	74	1138	486	386	0	0	1011	0	429
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	0.89	0.89	0.89	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	58.0	31.0	31.0	65.5	37.7	35.9	53.4	0.0	0.0	37.7	0.0	47.9
Incr Delay (d2), s/veh	9.3	4.5	4.4	13.0	1.8	2.6	0.4	0.0	0.0	0.2	0.0	65.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	15.3	15.5	1.1	10.2	6.6	2.6	0.0	0.0	4.8	0.0	23.6
LnGrp Delay(d),s/veh	67.3	35.5	35.4	78.5	39.5	38.5	53.7	0.0	0.0	37.9	0.0	113.6
LnGrp LOS	E	D	D	E	D	D	D			D		F
Approach Vol, veh/h		1332			885			77			791	
Approach Delay, s/veh		43.8			40.4			53.7			82.1	
Approach LOS		D			D			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	62.0		43.1	20.2	48.7		22.0
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	5.6	40.4		38.2	20.4	* 26		30.0
Max Q Clear Time (g_c+I1), s	4.0	31.6		40.2	15.4	22.3		7.5
Green Ext Time (p_c), s	0.0	7.2		0.0	0.5	3.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	52.9
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	988	19	95	643	162	23	8	120	196	5	147
Future Volume (veh/h)	59	988	19	95	643	162	23	8	120	196	5	147
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.92	1.00		0.93
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	64	1074	21	103	699	176	25	9	130	213	5	160
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	82	1634	32	124	1347	339	37	13	190	302	7	328
Arrive On Green	0.05	0.46	0.46	0.14	0.97	0.97	0.16	0.16	0.16	0.17	0.17	0.17
Sat Flow, veh/h	1774	3546	69	1774	2780	700	231	83	1201	1735	41	1466
Grp Volume(v), veh/h	64	536	559	103	445	430	164	0	0	218	0	160
Grp Sat Flow(s),veh/h/ln	1774	1770	1845	1774	1770	1710	1516	0	0	1776	0	1466
Q Serve(g_s), s	5.0	32.8	32.8	7.9	2.2	2.2	14.3	0.0	0.0	16.2	0.0	13.4
Cycle Q Clear(g_c), s	5.0	32.8	32.8	7.9	2.2	2.2	14.3	0.0	0.0	16.2	0.0	13.4
Prop In Lane	1.00		0.04	1.00		0.41	0.15		0.79	0.98		1.00
Lane Grp Cap(c), veh/h	82	815	850	124	857	828	240	0	0	309	0	328
V/C Ratio(X)	0.78	0.66	0.66	0.83	0.52	0.52	0.68	0.00	0.00	0.71	0.00	0.49
Avail Cap(c_a), veh/h	139	815	850	160	857	828	315	0	0	395	0	398
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	0.73	0.73	0.73	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.1	29.2	29.2	59.4	1.2	1.2	55.6	0.0	0.0	54.4	0.0	47.8
Incr Delay (d2), s/veh	5.2	3.5	3.4	15.2	1.6	1.7	1.9	0.0	0.0	2.4	0.0	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	16.7	17.4	4.4	1.1	1.1	6.1	0.0	0.0	8.1	0.0	5.5
LnGrp Delay(d),s/veh	71.3	32.7	32.6	74.6	2.8	2.9	57.5	0.0	0.0	56.8	0.0	48.2
LnGrp LOS	E	C	C	E	A	A	E			E		D
Approach Vol, veh/h		1159			978			164			378	
Approach Delay, s/veh		34.8			10.4			57.5			53.2	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.2	69.5		29.3	10.8	72.8		27.1
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	12.6	* 48		31.1	11.0	49.6		29.1
Max Q Clear Time (g_c+I1), s	9.9	34.8		18.2	7.0	4.2		16.3
Green Ext Time (p_c), s	0.0	11.9		0.8	0.0	33.7		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	29.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	53	132	362	39	91	182	756	417	113	591	22
Future Volume (veh/h)	41	53	132	362	39	91	182	756	417	113	591	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.95	1.00		0.97	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	45	58	143	423	0	99	198	822	453	123	642	24
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	86	111	365	662	0	279	233	1336	873	155	1180	496
Arrive On Green	0.11	0.11	0.11	0.19	0.00	0.19	0.13	0.38	0.38	0.09	0.33	0.33
Sat Flow, veh/h	796	1027	1449	3548	0	1497	1774	3539	1531	1774	3539	1488
Grp Volume(v), veh/h	103	0	143	423	0	99	198	822	453	123	642	24
Grp Sat Flow(s),veh/h/ln	1823	0	1449	1774	0	1497	1774	1770	1531	1774	1770	1488
Q Serve(g_s), s	4.7	0.0	7.3	9.6	0.0	5.0	9.5	16.5	16.0	5.9	12.9	1.0
Cycle Q Clear(g_c), s	4.7	0.0	7.3	9.6	0.0	5.0	9.5	16.5	16.0	5.9	12.9	1.0
Prop In Lane	0.44		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	197	0	365	662	0	279	233	1336	873	155	1180	496
V/C Ratio(X)	0.52	0.00	0.39	0.64	0.00	0.35	0.85	0.62	0.52	0.79	0.54	0.05
Avail Cap(c_a), veh/h	257	0	412	1141	0	481	264	1414	907	309	1442	606
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	36.8	0.0	28.0	32.8	0.0	31.0	37.1	22.0	11.8	39.1	23.7	19.7
Incr Delay (d2), s/veh	0.8	0.0	0.3	0.4	0.0	0.3	18.3	1.0	0.8	3.4	0.5	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	2.4	0.0	2.9	4.7	0.0	2.1	5.9	8.2	9.8	3.1	6.3	0.4
LnGrp Delay(d),s/veh	37.6	0.0	28.3	33.2	0.0	31.2	55.4	23.1	12.6	42.5	24.2	19.8
LnGrp LOS	D		C	C		C	E	C	B	D	C	B
Approach Vol, veh/h		246			522			1473			789	
Approach Delay, s/veh		32.2			32.8			24.2			26.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	39.8		14.3	15.9	35.9		21.2
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	15.3	* 35		12.3	13.0	35.6		28.1
Max Q Clear Time (g_c+I1), s	7.0	18.5		9.3	11.5	14.9		11.6
Green Ext Time (p_c), s	0.1	12.0		0.2	0.1	14.2		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	27.0
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	466	0	357	0	998	1311	0	644	441
Future Volume (veh/h)	0	0	0	466	0	357	0	998	1311	0	644	441
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				507	0	0	0	1085	0	0	700	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				617	0	284	0	2533	1133	0	2533	1133
Arrive On Green				0.18	0.00	0.00	0.00	1.00	0.00	0.00	0.72	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				507	0	0	0	1085	0	0	700	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				14.2	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0
Cycle Q Clear(g_c), s				14.2	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				617	0	284	0	2533	1133	0	2533	1133
V/C Ratio(X)				0.82	0.00	0.00	0.00	0.43	0.00	0.00	0.28	0.00
Avail Cap(c_a), veh/h				891	0	410	0	2533	1133	0	2533	1133
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.13	0.00	0.00	0.75	0.00
Uniform Delay (d), s/veh				39.5	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Incr Delay (d2), s/veh				4.1	0.0	0.0	0.0	0.1	0.0	0.0	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				7.1	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
LnGrp Delay(d),s/veh				43.6	0.0	0.0	0.0	0.1	0.0	0.0	5.2	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					507			1085			700	
Approach Delay, s/veh					43.6			0.1			5.2	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		77.0				77.0		23.0
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		63.6				63.6		25.9
Max Q Clear Time (g_c+I1), s		2.0				9.0		16.2
Green Ext Time (p_c), s		12.6				12.4		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	576	0	782	0	0	0	0	1733	419	0	855	255
Future Volume (vph)	576	0	782	0	0	0	0	1733	419	0	855	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3413			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3413			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	626	0	850	0	0	0	0	1884	455	0	929	277
RTOR Reduction (vph)	0	0	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	626	0	850	0	0	0	0	2318	0	0	929	277
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	20.4		69.3					67.1			18.2	100.0
Effective Green, g (s)	20.4		69.3					67.1			18.2	100.0
Actuated g/C Ratio	0.20		0.69					0.67			0.18	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	700		2501					2290			644	1536
v/s Ratio Prot	c0.18		0.24					c0.68			c0.26	
v/s Ratio Perm												0.18
v/c Ratio	0.89		0.34					1.01			1.44	0.18
Uniform Delay, d1	38.8		6.2					16.5			40.9	0.0
Progression Factor	1.00		1.00					1.33			0.84	1.00
Incremental Delay, d2	13.6		0.0					9.1			207.3	0.2
Delay (s)	52.3		6.2					31.0			241.5	0.2
Level of Service	D		A					C			F	A
Approach Delay (s)		25.8			0.0			31.0			186.1	
Approach LOS		C			A			C			F	

Intersection Summary			
HCM 2000 Control Delay	66.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	437	48	43	145	13	425	31	1290	107	335	1170	132
Future Volume (veh/h)	437	48	43	145	13	425	31	1290	107	335	1170	132
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	556	0	0	158	14	462	34	1402	116	364	1272	143
Adj No. of Lanes	2	1	0	0	1	1	1	2	1	2	3	2
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	765	402	0	80	7	206	43	1584	699	279	2588	1991
Arrive On Green	0.22	0.00	0.00	0.05	0.05	0.05	0.02	0.45	0.45	0.08	0.51	0.51
Sat Flow, veh/h	3548	1863	0	1636	145	1583	1774	3539	1562	3442	5085	2732
Grp Volume(v), veh/h	556	0	0	172	0	462	34	1402	116	364	1272	143
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1781	0	1583	1774	1770	1562	1721	1695	1366
Q Serve(g_s), s	14.6	0.0	0.0	4.9	0.0	4.9	1.9	36.2	4.4	8.1	16.4	1.5
Cycle Q Clear(g_c), s	14.6	0.0	0.0	4.9	0.0	4.9	1.9	36.2	4.4	8.1	16.4	1.5
Prop In Lane	1.00		0.00	0.92		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	765	402	0	87	0	206	43	1584	699	279	2588	1991
V/C Ratio(X)	0.73	0.00	0.00	1.97	0.00	2.24	0.78	0.89	0.17	1.31	0.49	0.07
Avail Cap(c_a), veh/h	1135	596	0	87	0	206	101	1584	699	279	2588	1991
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.28	0.28	0.28
Uniform Delay (d), s/veh	36.5	0.0	0.0	47.6	0.0	43.5	48.5	25.3	16.5	46.0	16.1	4.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	475.4	0.0	575.4	25.7	7.6	0.5	144.9	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	0.0	0.0	13.9	0.0	38.6	1.2	19.2	2.0	9.4	7.7	1.0
LnGrp Delay(d),s/veh	37.0	0.0	0.0	523.0	0.0	618.9	74.3	32.9	17.0	190.9	16.3	4.0
LnGrp LOS	D			F		F	E	C	B	F	B	A
Approach Vol, veh/h		556			634			1552			1779	
Approach Delay, s/veh		37.0			592.9			32.6			51.0	
Approach LOS		D			F			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	50.7		26.5	6.8	56.9		9.8
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	8.1	34.3		32.0	5.7	* 38		4.9
Max Q Clear Time (g_c+I1), s	10.1	38.2		16.6	3.9	18.4		6.9
Green Ext Time (p_c), s	0.0	0.0		1.6	0.0	16.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	119.0
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	32.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	491	1119	44	177	1177
Future Vol, veh/h	0	491	1119	44	177	1177
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	534	1216	48	192	1279

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	648	0	0	1236	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	~ 413	-	-	559	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	~ 399	-	-	550	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	195.8	0	2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	399	550	-
HCM Lane V/C Ratio	-	-	1.338	0.35	-
HCM Control Delay (s)	-	-	195.8	15	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	24.9	1.6	-

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)	319	905	460	186	381	179	325	594	47	210	751	323
Future Volume (veh/h)	319	905	460	186	381	179	325	594	47	210	751	323
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		0.94	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	347	984	500	202	414	195	353	646	51	228	816	351
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	1256	536	225	978	413	402	758	60	532	632	271
Arrive On Green	0.41	0.71	0.71	0.13	0.28	0.28	0.12	0.23	0.23	0.15	0.27	0.27
Sat Flow, veh/h	1774	3539	1511	1774	3539	1496	3442	3305	261	3442	2367	1014
Grp Volume(v), veh/h	347	984	500	202	414	195	353	345	352	228	609	558
Grp Sat Flow(s),veh/h/ln	1774	1770	1511	1774	1770	1496	1721	1770	1796	1721	1770	1612
Q Serve(g_s), s	26.5	25.5	28.5	15.7	13.4	10.5	14.1	26.2	26.3	8.4	37.4	37.4
Cycle Q Clear(g_c), s	26.5	25.5	28.5	15.7	13.4	10.5	14.1	26.2	26.3	8.4	37.4	37.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		0.63
Lane Grp Cap(c), veh/h	365	1256	536	225	978	413	402	406	412	532	473	431
V/C Ratio(X)	0.95	0.78	0.93	0.90	0.42	0.47	0.88	0.85	0.85	0.43	1.29	1.30
Avail Cap(c_a), veh/h	400	1256	536	248	978	413	423	417	423	532	473	431
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.76	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.6	16.8	9.7	60.2	41.5	20.3	60.9	51.7	51.7	53.6	51.3	51.3
Incr Delay (d2), s/veh	25.8	3.8	21.0	28.2	1.3	3.8	17.2	15.6	15.7	0.2	145.1	149.3
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	15.5	12.7	14.4	9.5	6.7	4.8	7.7	14.5	14.9	4.0	37.3	34.5
LnGrp Delay(d),s/veh	66.3	20.6	30.7	88.4	42.9	24.2	78.0	67.3	67.4	53.8	196.4	200.6
LnGrp LOS	E	C	C	F	D	C	E	E	E	D	F	F
Approach Vol, veh/h		1831			811			1050			1395	
Approach Delay, s/veh		32.0			49.7			70.9			174.8	
Approach LOS		C			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	37.2	22.2	54.6	20.7	42.5	33.2	43.6
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	21.6	33.0	19.6	47.0	17.2	37.4	31.6	35.0
Max Q Clear Time (g_c+I1), s	10.4	28.3	17.7	30.5	16.1	39.4	28.5	15.4
Green Ext Time (p_c), s	1.3	1.8	0.1	14.9	0.2	0.0	0.3	17.4

Intersection Summary	
HCM 2010 Ctrl Delay	82.0
HCM 2010 LOS	F

Intersection	
Int Delay, s/veh	7.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	270	88	43	345	203	107
Future Vol, veh/h	270	88	43	345	203	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	293	96	47	375	221	116

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	293	0	761	293
Stage 1	-	-	-	-	293	-
Stage 2	-	-	-	-	468	-
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	-	-	1269	-	373	746
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	630	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1269	-	355	746
Mov Cap-2 Maneuver	-	-	-	-	355	-
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	23.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	355	746	-	-	1269	-
HCM Lane V/C Ratio	0.622	0.156	-	-	0.037	-
HCM Control Delay (s)	30.4	10.7	-	-	7.9	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	4	0.6	-	-	0.1	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	303	112	105	152	129	129
Future Volume (veh/h)	303	112	105	152	129	129
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	329	122	114	165	140	140
Adj No. of Lanes	1	1	1	1	1	1
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	632	516	147	1042	266	238
Arrive On Green	0.34	0.34	0.08	0.56	0.15	0.15
Sat Flow, veh/h	1863	1520	1774	1863	1774	1583
Grp Volume(v), veh/h	329	122	114	165	140	140
Grp Sat Flow(s),veh/h/ln	1863	1520	1774	1863	1774	1583
Q Serve(g_s), s	4.5	1.8	2.0	1.4	2.3	2.6
Cycle Q Clear(g_c), s	4.5	1.8	2.0	1.4	2.3	2.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	632	516	147	1042	266	238
V/C Ratio(X)	0.52	0.24	0.77	0.16	0.53	0.59
Avail Cap(c_a), veh/h	1983	1619	919	3204	1418	1265
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	8.5	7.6	14.4	3.4	12.6	12.7
Incr Delay (d2), s/veh	0.6	0.2	3.3	0.1	0.6	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.8	1.1	0.7	1.2	1.2
LnGrp Delay(d),s/veh	9.1	7.8	17.7	3.5	13.2	13.6
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	451			279	280	
Approach Delay, s/veh	8.7			9.3	13.4	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.1	15.8				22.8		9.2
Change Period (Y+Rc), s	4.4	4.9				4.9		4.4
Max Green Setting (Gmax), s	16.6	34.1				55.1		25.6
Max Q Clear Time (g_c+I1), s	4.0	6.5				3.4		4.6
Green Ext Time (p_c), s	0.2	2.3				2.3		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	7	65	536	43	92	68	648	121	25	609	31
Future Volume (veh/h)	21	7	65	536	43	92	68	648	121	25	609	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	8	71	365	352	100	74	704	132	27	662	34
Adj No. of Lanes	0	1	1	1	1	0	1	3	0	1	3	0
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	116	40	130	580	453	129	142	1356	251	85	1406	72
Arrive On Green	0.09	0.09	0.09	0.33	0.33	0.33	0.08	0.32	0.32	0.05	0.28	0.28
Sat Flow, veh/h	1333	464	1496	1774	1387	394	1774	4282	792	1774	4943	252
Grp Volume(v), veh/h	31	0	71	365	0	452	74	555	281	27	453	243
Grp Sat Flow(s),veh/h/ln	1796	0	1496	1774	0	1782	1774	1695	1683	1774	1695	1805
Q Serve(g_s), s	1.6	0.0	4.4	16.9	0.0	22.2	3.9	13.0	13.3	1.4	10.7	10.8
Cycle Q Clear(g_c), s	1.6	0.0	4.4	16.9	0.0	22.2	3.9	13.0	13.3	1.4	10.7	10.8
Prop In Lane	0.74		1.00	1.00		0.22	1.00		0.47	1.00		0.14
Lane Grp Cap(c), veh/h	156	0	130	580	0	582	142	1074	533	85	965	513
V/C Ratio(X)	0.20	0.00	0.55	0.63	0.00	0.78	0.52	0.52	0.53	0.32	0.47	0.47
Avail Cap(c_a), veh/h	167	0	139	785	0	788	165	1074	533	165	965	513
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	41.2	0.0	42.5	27.7	0.0	29.4	42.8	27.1	27.2	44.6	28.7	28.7
Incr Delay (d2), s/veh	0.6	0.0	3.8	2.4	0.0	5.5	1.1	1.8	3.7	0.8	1.6	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	2.0	8.6	0.0	11.8	2.0	6.4	6.7	0.7	5.3	5.8
LnGrp Delay(d),s/veh	41.8	0.0	46.3	30.1	0.0	35.0	43.9	28.9	30.9	45.4	30.3	31.8
LnGrp LOS	D		D	C		C	D	C	C	D	C	C
Approach Vol, veh/h		102			817			910			723	
Approach Delay, s/veh		44.9			32.8			30.7			31.4	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.4	36.8		13.0	12.5	33.7		37.8
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9	27.6		9.0	* 9	27.6		42.9
Max Q Clear Time (g_c+I1), s	3.6	15.3		6.4	5.9	12.8		24.2
Green Ext Time (p_c), s	0.0	5.7		0.1	0.0	6.3		7.2

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	312	61	587	85	701	27	764	346	131	515	204
Future Volume (veh/h)	151	312	61	587	85	701	27	764	346	131	515	204
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	164	339	66	638	92	762	29	830	376	142	560	222
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	305	577	111	710	584	1114	70	1063	463	166	1256	540
Arrive On Green	0.09	0.20	0.20	0.21	0.31	0.31	0.04	0.30	0.30	0.09	0.35	0.35
Sat Flow, veh/h	3442	2945	566	3442	1863	2717	1774	3539	1543	1774	3539	1522
Grp Volume(v), veh/h	164	202	203	638	92	762	29	830	376	142	560	222
Grp Sat Flow(s),veh/h/ln	1721	1770	1741	1721	1863	1359	1774	1770	1543	1774	1770	1522
Q Serve(g_s), s	6.2	14.0	14.4	24.5	4.8	31.3	2.2	29.1	30.6	10.7	16.4	14.9
Cycle Q Clear(g_c), s	6.2	14.0	14.4	24.5	4.8	31.3	2.2	29.1	30.6	10.7	16.4	14.9
Prop In Lane	1.00		0.32	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	305	347	341	710	584	1114	70	1063	463	166	1256	540
V/C Ratio(X)	0.54	0.58	0.60	0.90	0.16	0.68	0.42	0.78	0.81	0.85	0.45	0.41
Avail Cap(c_a), veh/h	317	457	449	805	739	1340	105	1063	463	211	1256	540
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	59.1	49.5	49.6	52.4	33.6	33.1	63.6	43.3	43.9	60.5	33.5	33.0
Incr Delay (d2), s/veh	0.8	1.6	1.7	12.0	0.1	1.1	1.5	5.7	14.3	19.5	1.1	2.3
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	3.0	7.0	7.1	12.8	2.5	11.8	1.1	15.0	14.9	6.1	8.2	6.6
LnGrp Delay(d),s/veh	59.9	51.0	51.3	64.4	33.7	34.2	65.1	49.0	58.1	80.0	34.7	35.3
LnGrp LOS	E	D	D	E	C	C	E	D	E	F	C	D
Approach Vol, veh/h		569			1492			1235			924	
Approach Delay, s/veh		53.7			47.1			52.2			41.8	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.4	47.8	34.7	33.7	12.0	55.2	18.7	49.6
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 16	40.0	* 32	* 35	* 8	48.1	* 13	53.8
Max Q Clear Time (g_c+I1), s	12.7	32.6	26.5	16.4	4.2	18.4	8.2	33.3
Green Ext Time (p_c), s	0.1	5.2	1.5	6.2	0.0	12.2	0.1	6.4

Intersection Summary	
HCM 2010 Ctrl Delay	48.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	54.2
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	184	3	0	72	86	0	566	58
Future Vol, veh/h	0	184	3	0	72	86	0	566	58
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	200	3	0	78	93	0	615	63
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	13.8	11.6	77.1
HCM LOS	B	B	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	98%	0%	100%
Vol Right, %	0%	100%	2%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	566	58	187	72	86
LT Vol	566	0	0	72	0
Through Vol	0	0	184	0	86
RT Vol	0	58	3	0	0
Lane Flow Rate	615	63	203	78	93
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.077	0.089	0.371	0.161	0.179
Departure Headway (Hd)	6.302	5.092	6.843	7.695	7.184
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	578	708	528	469	503
Service Time	4.002	2.792	4.843	5.395	4.884
HCM Lane V/C Ratio	1.064	0.089	0.384	0.166	0.185
HCM Control Delay	84.2	8.3	13.8	11.9	11.4
HCM Lane LOS	F	A	B	B	B
HCM 95th-tile Q	18.2	0.3	1.7	0.6	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	759	65	0	0	98	13	3	4	3	12	0	1272
Future Volume (veh/h)	759	65	0	0	98	13	3	4	3	12	0	1272
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	825	71	0	0	107	14	3	4	3	13	0	1383
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	979	1297	0	0	600	498	69	0	0	28	0	0
Arrive On Green	0.28	0.70	0.00	0.00	0.32	0.32	0.03	0.03	0.03	0.02	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1545	0	0	0	1774	13	
Grp Volume(v), veh/h	825	71	0	0	107	14	10	0	0	13	37.3	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1545	0	0	0	1774	D	
Q Serve(g_s), s	15.3	0.8	0.0	0.0	2.8	0.4	0.0	0.0	0.0	0.5		
Cycle Q Clear(g_c), s	15.3	0.8	0.0	0.0	2.8	0.4	0.1	0.0	0.0	0.5		
Prop In Lane	1.00		0.00	0.00		1.00	0.30		0.30	1.00		
Lane Grp Cap(c), veh/h	979	1297	0	0	600	498	69	0	0	28		
V/C Ratio(X)	0.84	0.05	0.00	0.00	0.18	0.03	0.15	0.00	0.00	0.46		
Avail Cap(c_a), veh/h	1414	1297	0	0	600	498	173	0	0	651		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	22.9	3.3	0.0	0.0	16.5	15.7	32.4	0.0	0.0	33.1		
Incr Delay (d2), s/veh	2.2	0.1	0.0	0.0	0.6	0.1	1.2	0.0	0.0	4.2		
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		
%ile BackOfQ(50%),veh/ln	7.5	0.4	0.0	0.0	1.5	0.2	0.2	0.0	0.0	0.3		
LnGrp Delay(d),s/veh	25.1	3.3	0.0	0.0	17.2	15.8	33.5	0.0	0.0	37.3		
LnGrp LOS	C	A			B	B	C			D		
Approach Vol, veh/h		896			121			10				
Approach Delay, s/veh		23.4			17.0			33.5				
Approach LOS		C			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		53.4			25.4	28.0	7.2	7.3
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		47.3			27.9	13.3	24.9	10.0
Max Q Clear Time (g_c+I1), s		2.8			17.3	4.8	2.5	2.1
Green Ext Time (p_c), s		0.3			2.0	0.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	22.9
HCM 2010 LOS	C

APPENDIX I

NEAR-TERM (YEAR 2022) INTERSECTION LEVEL OF SERVICE CALCULATION SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	12	342	399	469	201	309	1545	122	24	989	90
Future Volume (veh/h)	35	12	342	399	469	201	309	1545	122	24	989	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	26	30	372	289	712	218	336	1679	133	26	1075	98
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	2	2	1
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	191	201	344	432	906	466	209	1441	113	210	1336	578
Arrive On Green	0.11	0.11	0.11	0.24	0.24	0.24	0.12	0.43	0.43	0.06	0.38	0.38
Sat Flow, veh/h	1774	1863	1463	1774	3725	1519	1774	3317	260	3442	3539	1531
Grp Volume(v), veh/h	26	30	372	289	712	218	336	886	926	26	1075	98
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1519	1774	1770	1807	1721	1770	1531
Q Serve(g_s), s	1.7	1.9	14.0	19.1	23.2	15.2	15.3	56.5	56.5	0.9	35.3	5.5
Cycle Q Clear(g_c), s	1.7	1.9	14.0	19.1	23.2	15.2	15.3	56.5	56.5	0.9	35.3	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	344	432	906	466	209	769	785	210	1336	578
V/C Ratio(X)	0.14	0.15	1.08	0.67	0.79	0.47	1.61	1.15	1.18	0.12	0.80	0.17
Avail Cap(c_a), veh/h	191	201	344	491	1032	517	209	769	785	344	1336	578
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	52.5	52.6	50.6	44.5	46.0	36.7	57.3	36.8	36.8	57.8	36.2	26.9
Incr Delay (d2), s/veh	0.3	0.3	72.1	2.9	3.6	0.7	295.3	83.5	93.7	0.1	5.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.0	19.3	9.7	12.4	6.4	24.6	45.4	48.6	0.4	18.1	2.4
LnGrp Delay(d),s/veh	52.8	52.9	122.7	47.4	49.6	37.5	352.7	120.3	130.5	57.9	41.4	27.5
LnGrp LOS	D	D	F	D	D	D	F	F	F	E	D	C
Approach Vol, veh/h		428			1219			2148			1199	
Approach Delay, s/veh		113.6			46.9			161.0			40.6	
Approach LOS		F			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.6	61.6		19.1	20.0	54.2		36.7
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 15	44.7		36.0
Max Q Clear Time (g_c+I1), s	2.9	58.5		16.0	17.3	37.3		25.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	5.4		4.4

Intersection Summary	
HCM 2010 Ctrl Delay	100.2
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	946	1647	0	230	1030	684	0
Future Volume (vph)	946	1647	0	230	1030	684	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	
Lane Util. Factor	0.97	0.76			0.95	0.91	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	
Frt	1.00	0.85			1.00	1.00	
Flt Protected	0.95	1.00			0.99	1.00	
Satd. Flow (prot)	3433	3610			3507	5085	
Flt Permitted	0.95	1.00			0.62	1.00	
Satd. Flow (perm)	3433	3610			2204	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1028	1790	0	250	1120	743	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	1028	1790	0	0	1370	743	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot		NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases							
Actuated Green, G (s)	67.7	67.7			50.3	50.3	
Effective Green, g (s)	67.7	67.7			50.3	50.3	
Actuated g/C Ratio	0.52	0.52			0.39	0.39	
Clearance Time (s)	6.0	6.0			6.0	6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	
Lane Grp Cap (vph)	1787	1879			852	1967	
v/s Ratio Prot	0.30	c0.50				0.15	
v/s Ratio Perm					c0.62		
v/c Ratio	0.58	0.95			1.61	0.38	
Uniform Delay, d1	21.3	29.6			39.9	28.6	
Progression Factor	1.00	1.00			1.00	0.98	
Incremental Delay, d2	0.3	11.4			279.1	0.3	
Delay (s)	21.6	41.0			318.9	28.3	
Level of Service	C	D			F	C	
Approach Delay (s)	33.9				318.9	28.3	
Approach LOS	C				F	C	

Intersection Summary			
HCM 2000 Control Delay	112.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	48	51	551	113	18
Future Volume (veh/h)	37	48	51	551	113	18
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.93	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	40	52	55	599	142	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	71	567	393	1249	2108	959
Arrive On Green	0.04	0.30	0.21	0.21	0.59	0.00
Sat Flow, veh/h	1774	1863	1863	1465	3548	1615
Grp Volume(v), veh/h	40	52	55	599	142	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1465	1774	1615
Q Serve(g_s), s	2.0	1.8	2.2	12.3	1.5	0.0
Cycle Q Clear(g_c), s	2.0	1.8	2.2	12.3	1.5	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	71	567	393	1249	2108	959
V/C Ratio(X)	0.57	0.09	0.14	0.48	0.07	0.00
Avail Cap(c_a), veh/h	78	660	489	1325	2108	959
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	0.00
Uniform Delay (d), s/veh	43.1	22.8	29.3	2.9	7.8	0.0
Incr Delay (d2), s/veh	3.6	0.0	0.1	0.1	0.1	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	1.1	0.9	1.1	15.0	0.8	0.0
LnGrp Delay(d),s/veh	46.7	22.8	29.4	3.1	7.9	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		92	654		142	
Approach Delay, s/veh		33.2	5.3		7.9	
Approach LOS		C	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				32.7		58.7	8.5	24.2
Change Period (Y+Rc), s				4.9		4.4	4.9	* 4.9
Max Green Setting (Gmax), s				32.4		54.3	4.0	* 24
Max Q Clear Time (g_c+I1), s				3.8		3.5	4.0	14.3
Green Ext Time (p_c), s				0.2		0.4	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	547	363	14	4	894	314	47	20	20	85	1	145
Future Volume (veh/h)	547	363	14	4	894	314	47	20	20	85	1	145
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.91	1.00		0.86
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	595	395	15	4	972	341	51	22	22	93	0	158
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	651	2156	82	7	1544	665	125	54	54	284	0	109
Arrive On Green	0.19	0.62	0.62	0.01	0.87	0.87	0.14	0.14	0.14	0.08	0.00	0.08
Sat Flow, veh/h	3442	3470	131	1774	3539	1525	913	394	394	3548	0	1354
Grp Volume(v), veh/h	595	201	209	4	972	341	95	0	0	93	0	158
Grp Sat Flow(s),veh/h/ln	1721	1770	1832	1774	1770	1525	1701	0	0	1774	0	1354
Q Serve(g_s), s	21.4	6.1	6.1	0.3	9.8	6.5	6.4	0.0	0.0	3.1	0.0	10.1
Cycle Q Clear(g_c), s	21.4	6.1	6.1	0.3	9.8	6.5	6.4	0.0	0.0	3.1	0.0	10.1
Prop In Lane	1.00		0.07	1.00		1.00	0.54		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	651	1099	1138	7	1544	665	233	0	0	284	0	109
V/C Ratio(X)	0.91	0.18	0.18	0.54	0.63	0.51	0.41	0.00	0.00	0.33	0.00	1.46
Avail Cap(c_a), veh/h	699	1099	1138	56	1544	665	405	0	0	284	0	109
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.28	0.28	0.28	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.1	10.2	10.2	62.4	5.2	4.9	49.7	0.0	0.0	54.7	0.0	58.0
Incr Delay (d2), s/veh	15.3	0.4	0.4	6.4	0.6	0.8	0.4	0.0	0.0	0.7	0.0	248.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	3.1	3.2	0.2	4.4	2.6	3.1	0.0	0.0	1.6	0.0	11.3
LnGrp Delay(d),s/veh	65.3	10.6	10.6	68.8	5.7	5.7	50.1	0.0	0.0	55.4	0.0	306.5
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		1005			1317			95			251	
Approach Delay, s/veh		43.0			5.9			50.1			213.5	
Approach LOS		D			A			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.9	83.9		15.0	28.2	60.6		22.2
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	4.6	62.1		10.1	25.6	* 41		30.0
Max Q Clear Time (g_c+I1), s	2.3	8.1		12.1	23.4	11.8		8.4
Green Ext Time (p_c), s	0.0	21.5		0.0	0.5	16.3		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	41.0
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	427	12	69	1117	320	38	15	97	103	9	59
Future Volume (veh/h)	88	427	12	69	1117	320	38	15	97	103	9	59
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.92	1.00		0.92
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	96	464	13	75	1214	348	41	16	105	112	10	64
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	79	1691	47	95	1329	373	64	25	165	245	22	287
Arrive On Green	0.09	0.96	0.96	0.07	0.65	0.65	0.16	0.16	0.16	0.15	0.15	0.15
Sat Flow, veh/h	1774	3510	98	1774	2707	759	395	154	1013	1635	146	1450
Grp Volume(v), veh/h	96	234	243	75	784	778	162	0	0	122	0	64
Grp Sat Flow(s),veh/h/ln	1774	1770	1838	1774	1770	1697	1563	0	0	1781	0	1450
Q Serve(g_s), s	5.6	0.8	0.8	5.2	47.3	51.3	12.2	0.0	0.0	7.9	0.0	4.7
Cycle Q Clear(g_c), s	5.6	0.8	0.8	5.2	47.3	51.3	12.2	0.0	0.0	7.9	0.0	4.7
Prop In Lane	1.00		0.05	1.00		0.45	0.25		0.65	0.92		1.00
Lane Grp Cap(c), veh/h	79	852	886	95	869	833	254	0	0	267	0	287
V/C Ratio(X)	1.22	0.27	0.27	0.79	0.90	0.93	0.64	0.00	0.00	0.46	0.00	0.22
Avail Cap(c_a), veh/h	79	852	886	149	869	833	360	0	0	438	0	427
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.36	0.36	0.36	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	1.2	1.2	57.8	19.3	20.1	49.3	0.0	0.0	48.9	0.0	42.8
Incr Delay (d2), s/veh	170.4	0.8	0.8	2.2	6.2	8.6	1.0	0.0	0.0	0.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.6	0.6	2.6	24.3	25.8	5.3	0.0	0.0	3.9	0.0	1.9
LnGrp Delay(d),s/veh	227.8	2.0	2.0	60.0	25.5	28.7	50.3	0.0	0.0	49.4	0.0	42.9
LnGrp LOS	F	A	A	E	C	C	D			D		D
Approach Vol, veh/h		573			1637			162			186	
Approach Delay, s/veh		39.8			28.6			50.3			47.2	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	65.7		23.8	10.0	66.8		25.4
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	10.6	* 36		31.0	5.6	41.2		29.0
Max Q Clear Time (g_c+I1), s	7.2	2.8		9.9	7.6	53.3		14.2
Green Ext Time (p_c), s	0.0	30.0		0.4	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	58	204	454	99	91	83	686	244	62	1099	23
Future Volume (veh/h)	98	58	204	454	99	91	83	686	244	62	1099	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	107	63	222	570	0	99	90	746	265	67	1195	25
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	138	81	279	746	0	316	114	1449	961	86	1393	589
Arrive On Green	0.12	0.12	0.12	0.21	0.00	0.21	0.06	0.41	0.41	0.05	0.39	0.39
Sat Flow, veh/h	1137	669	1461	3548	0	1504	1774	3539	1533	1774	3539	1498
Grp Volume(v), veh/h	170	0	222	570	0	99	90	746	265	67	1195	25
Grp Sat Flow(s),veh/h/ln	1806	0	1461	1774	0	1504	1774	1770	1533	1774	1770	1498
Q Serve(g_s), s	9.1	0.0	12.1	15.1	0.0	5.6	5.0	15.7	7.9	3.7	30.8	1.0
Cycle Q Clear(g_c), s	9.1	0.0	12.1	15.1	0.0	5.6	5.0	15.7	7.9	3.7	30.8	1.0
Prop In Lane	0.63		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	219	0	279	746	0	316	114	1449	961	86	1393	589
V/C Ratio(X)	0.78	0.00	0.80	0.76	0.00	0.31	0.79	0.52	0.28	0.78	0.86	0.04
Avail Cap(c_a), veh/h	219	0	279	996	0	422	153	1451	962	169	1430	605
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	42.5	0.0	39.0	37.1	0.0	33.3	46.0	22.1	8.7	46.9	27.7	18.7
Incr Delay (d2), s/veh	14.6	0.0	13.6	1.6	0.0	0.2	12.5	0.5	0.3	5.5	5.4	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	5.4	0.0	6.9	7.5	0.0	2.3	2.8	7.8	5.3	2.0	16.0	0.4
LnGrp Delay(d),s/veh	57.2	0.0	52.6	38.7	0.0	33.5	58.5	22.6	9.0	52.4	33.1	18.7
LnGrp LOS	E		D	D		C	E	C	A	D	C	B
Approach Vol, veh/h		392			669			1101			1287	
Approach Delay, s/veh		54.6			37.9			22.2			33.9	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	47.6		17.0	10.8	46.1		25.9
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	9.5	* 41		12.1	8.6	40.3		28.0
Max Q Clear Time (g_c+I1), s	5.7	17.7		14.1	7.0	32.8		17.1
Green Ext Time (p_c), s	0.0	16.6		0.0	0.0	6.4		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	33.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	245	0	97	0	929	356	0	1069	711
Future Volume (veh/h)	0	0	0	245	0	97	0	929	356	0	1069	711
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				266	0	0	0	1010	0	0	1162	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				334	0	154	0	2824	1263	0	2824	1263
Arrive On Green				0.10	0.00	0.00	0.00	1.00	0.00	0.00	0.80	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				266	0	0	0	1010	0	0	1162	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				7.6	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0
Cycle Q Clear(g_c), s				7.6	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				334	0	154	0	2824	1263	0	2824	1263
V/C Ratio(X)				0.80	0.00	0.00	0.00	0.36	0.00	0.00	0.41	0.00
Avail Cap(c_a), veh/h				375	0	173	0	2824	1263	0	2824	1263
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.80	0.00	0.00	0.35	0.00
Uniform Delay (d), s/veh				44.2	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Incr Delay (d2), s/veh				10.2	0.0	0.0	0.0	0.3	0.0	0.0	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				4.1	0.0	0.0	0.0	0.1	0.0	0.0	4.7	0.0
LnGrp Delay(d),s/veh				54.4	0.0	0.0	0.0	0.3	0.0	0.0	3.2	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					266			1010			1162	
Approach Delay, s/veh					54.4			0.3			3.2	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		85.2				85.2		14.8
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		78.6				78.6		10.9
Max Q Clear Time (g_c+I1), s		2.0				11.9		9.6
Green Ext Time (p_c), s		18.6				18.3		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.6
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	0	1284	0	0	0	0	920	251	0	1016	299
Future Volume (vph)	366	0	1284	0	0	0	0	920	251	0	1016	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3401			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3401			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	398	0	1396	0	0	0	0	1000	273	0	1104	325
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	398	0	1396	0	0	0	0	1250	0	0	1104	325
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	15.2		47.9					72.3			39.6	100.0
Effective Green, g (s)	15.2		47.9					72.3			39.6	100.0
Actuated g/C Ratio	0.15		0.48					0.72			0.40	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	521		1729					2458			1401	1536
v/s Ratio Prot	0.12		c0.39					0.37			c0.31	
v/s Ratio Perm												0.21
v/c Ratio	0.76		0.81					0.51			0.79	0.21
Uniform Delay, d1	40.7		22.1					6.1			26.5	0.0
Progression Factor	1.00		1.00					0.59			1.04	1.00
Incremental Delay, d2	5.9		2.7					0.4			4.1	0.3
Delay (s)	46.6		24.8					3.9			31.7	0.3
Level of Service	D		C					A			C	A
Approach Delay (s)		29.7			0.0			3.9			24.5	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	21	17	72	65	238	95	848	65	527	1340	431
Future Volume (veh/h)	87	21	17	72	65	238	95	848	65	527	1340	431
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	68	61	18	78	71	259	103	922	71	573	1457	468
Adj No. of Lanes	1	1	0	0	1	1	1	2	1	2	3	2
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	226	174	51	91	83	394	117	1475	650	527	2588	1744
Arrive On Green	0.13	0.13	0.13	0.10	0.10	0.10	0.07	0.42	0.42	0.05	0.17	0.17
Sat Flow, veh/h	1774	1365	403	950	865	1583	1774	3539	1561	3442	5085	2732
Grp Volume(v), veh/h	68	0	79	149	0	259	103	922	71	573	1457	468
Grp Sat Flow(s),veh/h/ln	1774	0	1768	1815	0	1583	1774	1770	1561	1721	1695	1366
Q Serve(g_s), s	3.5	0.0	4.1	8.1	0.0	9.6	5.8	20.5	2.8	15.3	26.3	11.2
Cycle Q Clear(g_c), s	3.5	0.0	4.1	8.1	0.0	9.6	5.8	20.5	2.8	15.3	26.3	11.2
Prop In Lane	1.00		0.23	0.52		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	0	225	174	0	394	117	1475	650	527	2588	1744
V/C Ratio(X)	0.30	0.00	0.35	0.86	0.00	0.66	0.88	0.62	0.11	1.09	0.56	0.27
Avail Cap(c_a), veh/h	568	0	566	174	0	394	117	1475	650	527	2588	1744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50
Uniform Delay (d), s/veh	39.6	0.0	39.9	44.5	0.0	33.7	46.3	23.0	17.8	47.5	31.4	14.7
Incr Delay (d2), s/veh	0.3	0.0	0.3	30.5	0.0	3.2	48.2	2.0	0.3	55.0	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	2.0	5.5	0.0	6.8	4.4	10.4	1.3	11.3	12.5	5.8
LnGrp Delay(d),s/veh	39.9	0.0	40.2	75.0	0.0	36.9	94.5	25.0	18.2	102.4	31.8	14.9
LnGrp LOS	D		D	E		D	F	C	B	F	C	B
Approach Vol, veh/h		147			408			1096			2498	
Approach Delay, s/veh		40.1			50.8			31.1			44.9	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	30.2	47.7		17.6	11.0	56.9		14.5
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	15.3	22.4		32.0	6.6	* 32		9.6
Max Q Clear Time (g_c+I1), s	17.3	22.5		6.1	7.8	28.3		11.6
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	3.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	41.6
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱	↰	↑↑
Traffic Vol, veh/h	0	97	1068	71	327	1083
Future Vol, veh/h	0	97	1068	71	327	1083
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	105	1161	77	355	1177

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	620	0	0	1181	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	431	-	-	587	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	417	-	-	577	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.5	0	4.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	417	577	-
HCM Lane V/C Ratio	-	-	0.253	0.616	-
HCM Control Delay (s)	-	-	16.5	20.7	-
HCM Lane LOS	-	-	C	C	-
HCM 95th %tile Q(veh)	-	-	1	4.2	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	311	91	22	721	200	609	987	54	109	482	320
Future Volume (veh/h)	182	311	91	22	721	200	609	987	54	109	482	320
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		0.95	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	198	338	99	24	784	217	662	1073	59	118	524	348
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	220	1281	547	56	955	403	699	1104	61	456	504	334
Arrive On Green	0.25	0.72	0.72	0.03	0.27	0.27	0.20	0.32	0.32	0.13	0.25	0.25
Sat Flow, veh/h	1774	3539	1512	1774	3539	1494	3442	3401	187	3442	1986	1317
Grp Volume(v), veh/h	198	338	99	24	784	217	662	558	574	118	467	405
Grp Sat Flow(s),veh/h/ln	1774	1770	1512	1774	1770	1494	1721	1770	1818	1721	1770	1533
Q Serve(g_s), s	13.6	4.1	1.5	1.7	26.2	11.2	23.9	39.2	39.2	3.9	32.0	32.0
Cycle Q Clear(g_c), s	13.6	4.1	1.5	1.7	26.2	11.2	23.9	39.2	39.2	3.9	32.0	32.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.86
Lane Grp Cap(c), veh/h	220	1281	547	56	955	403	699	574	590	456	449	389
V/C Ratio(X)	0.90	0.26	0.18	0.43	0.82	0.54	0.95	0.97	0.97	0.26	1.04	1.04
Avail Cap(c_a), veh/h	220	1281	547	83	955	403	699	574	590	456	449	389
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.7	11.7	3.7	59.9	43.1	20.2	49.5	42.0	42.0	49.1	47.0	47.0
Incr Delay (d2), s/veh	34.0	0.5	0.7	1.9	7.9	5.1	21.7	30.4	30.1	0.1	52.8	56.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	2.1	0.7	0.8	13.8	5.2	13.5	23.9	24.5	1.9	22.2	19.6
LnGrp Delay(d),s/veh	80.6	12.2	4.4	61.8	51.0	25.3	71.2	72.4	72.1	49.2	99.8	103.6
LnGrp LOS	F	B	A	E	D	C	E	E	E	D	F	F
Approach Vol, veh/h		635			1025			1794			990	
Approach Delay, s/veh		32.3			45.8			71.9			95.3	
Approach LOS		C			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.1	46.0	8.4	50.5	30.0	37.1	20.0	38.9
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	16.7	40.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	5.9	41.2	3.7	6.1	25.9	34.0	15.6	28.2
Green Ext Time (p_c), s	1.8	0.0	0.0	22.4	0.0	0.0	0.0	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	65.4
HCM 2010 LOS	E

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱		↰	↰	↱
Traffic Vol, veh/h	309	62	23	275	15	6
Future Vol, veh/h	309	62	23	275	15	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	336	67	25	299	16	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	336	0	685	336
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	349	-
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	-	-	1223	-	414	706
Stage 1	-	-	-	-	724	-
Stage 2	-	-	-	-	714	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1223	-	404	706
Mov Cap-2 Maneuver	-	-	-	-	404	-
Stage 1	-	-	-	-	724	-
Stage 2	-	-	-	-	696	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	404	706	-	-	1223	-
HCM Lane V/C Ratio	0.04	0.009	-	-	0.02	-
HCM Control Delay (s)	14.3	10.1	-	-	8	0
HCM Lane LOS	B	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	68	95	89	265	152	67
Future Volume (veh/h)	68	95	89	265	152	67
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	74	103	97	288	165	73
Adj No. of Lanes	1	1	1	1	1	1
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	631	515	128	1050	260	232
Arrive On Green	0.34	0.34	0.07	0.56	0.15	0.15
Sat Flow, veh/h	1863	1520	1774	1863	1774	1583
Grp Volume(v), veh/h	74	103	97	288	165	73
Grp Sat Flow(s),veh/h/ln	1863	1520	1774	1863	1774	1583
Q Serve(g_s), s	0.9	1.5	1.7	2.6	2.8	1.3
Cycle Q Clear(g_c), s	0.9	1.5	1.7	2.6	2.8	1.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	631	515	128	1050	260	232
V/C Ratio(X)	0.12	0.20	0.76	0.27	0.64	0.31
Avail Cap(c_a), veh/h	1167	953	254	1690	2854	2547
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	7.3	7.5	14.6	3.6	12.9	12.3
Incr Delay (d2), s/veh	0.1	0.2	3.4	0.1	1.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.7	1.0	1.3	1.4	0.6
LnGrp Delay(d),s/veh	7.4	7.7	18.0	3.7	13.8	12.5
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	177			385	238	
Approach Delay, s/veh	7.6			7.3	13.4	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.2	15.8				23.0		9.1
Change Period (Y+Rc), s	4.9	* 4.9				4.9		4.4
Max Green Setting (Gmax), s	4.6	* 20				29.1		51.6
Max Q Clear Time (g_c+I1), s	3.7	3.5				4.6		4.8
Green Ext Time (p_c), s	0.1	0.5				1.2		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	9	152	421	28	39	108	507	172	23	1161	22
Future Volume (veh/h)	23	9	152	421	28	39	108	507	172	23	1161	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	25	10	165	519	0	0	117	551	187	25	1262	24
Adj No. of Lanes	0	1	1	2	1	0	1	3	0	1	3	0
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	166	66	195	796	418	0	162	1396	458	81	1680	32
Arrive On Green	0.13	0.13	0.13	0.22	0.00	0.00	0.09	0.37	0.37	0.05	0.33	0.33
Sat Flow, veh/h	1285	514	1515	3548	1863	0	1774	3748	1231	1774	5133	98
Grp Volume(v), veh/h	35	0	165	519	0	0	117	497	241	25	833	453
Grp Sat Flow(s),veh/h/ln	1799	0	1515	1774	1863	0	1774	1695	1588	1774	1695	1841
Q Serve(g_s), s	1.6	0.0	10.0	12.5	0.0	0.0	6.0	10.1	10.6	1.3	20.6	20.6
Cycle Q Clear(g_c), s	1.6	0.0	10.0	12.5	0.0	0.0	6.0	10.1	10.6	1.3	20.6	20.6
Prop In Lane	0.71		1.00	1.00		0.00	1.00		0.77	1.00		0.05
Lane Grp Cap(c), veh/h	232	0	195	796	418	0	162	1263	592	81	1109	602
V/C Ratio(X)	0.15	0.00	0.84	0.65	0.00	0.00	0.72	0.39	0.41	0.31	0.75	0.75
Avail Cap(c_a), veh/h	275	0	232	1282	673	0	175	1263	592	170	1109	602
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.4	0.0	40.1	33.2	0.0	0.0	41.6	21.7	21.9	43.5	28.2	28.2
Incr Delay (d2), s/veh	0.3	0.0	21.1	1.9	0.0	0.0	10.4	0.9	2.1	0.8	4.7	8.4
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	0.8	0.0	5.3	6.3	0.0	0.0	3.4	4.9	5.0	0.6	10.3	11.8
LnGrp Delay(d),s/veh	36.7	0.0	61.2	35.1	0.0	0.0	52.1	22.6	23.9	44.2	33.0	36.7
LnGrp LOS	D		E	D			D	C	C	D	C	D
Approach Vol, veh/h		200			519			855			1311	
Approach Delay, s/veh		56.9			35.1			27.0			34.4	
Approach LOS		E			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	41.2		16.7	13.3	36.9		27.2
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9.3	31.1		14.4	* 9.3	30.8		34.0
Max Q Clear Time (g_c+I1), s	3.3	12.6		12.0	8.0	22.6		14.5
Green Ext Time (p_c), s	0.0	9.6		0.2	0.0	5.5		4.8

Intersection Summary	
HCM 2010 Ctrl Delay	33.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	81	21	351	99	339	89	936	379	135	387	312
Future Volume (veh/h)	91	81	21	351	99	339	89	936	379	135	387	312
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	99	88	23	382	108	368	97	1017	412	147	421	339
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	413	431	108	446	306	719	132	1203	525	177	1292	556
Arrive On Green	0.12	0.15	0.15	0.13	0.16	0.16	0.07	0.34	0.34	0.10	0.37	0.37
Sat Flow, veh/h	3442	2781	697	3442	1863	2685	1774	3539	1546	1774	3539	1522
Grp Volume(v), veh/h	99	55	56	382	108	368	97	1017	412	147	421	339
Grp Sat Flow(s),veh/h/ln	1721	1770	1708	1721	1863	1343	1774	1770	1546	1774	1770	1522
Q Serve(g_s), s	2.6	2.7	2.9	10.9	5.1	11.7	5.4	26.6	24.0	8.1	8.6	18.2
Cycle Q Clear(g_c), s	2.6	2.7	2.9	10.9	5.1	11.7	5.4	26.6	24.0	8.1	8.6	18.2
Prop In Lane	1.00		0.41	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	413	274	264	446	306	719	132	1203	525	177	1292	556
V/C Ratio(X)	0.24	0.20	0.21	0.86	0.35	0.51	0.73	0.85	0.78	0.83	0.33	0.61
Avail Cap(c_a), veh/h	413	619	598	458	669	1242	142	1203	525	186	1292	556
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	39.9	36.9	36.9	42.6	37.1	31.4	45.3	30.6	29.7	44.2	22.9	25.9
Incr Delay (d2), s/veh	0.1	0.4	0.4	14.6	0.7	0.6	14.0	7.4	11.2	23.4	0.7	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.3	1.4	6.1	2.7	4.4	3.1	14.2	11.8	5.2	4.3	8.3
LnGrp Delay(d),s/veh	40.0	37.2	37.3	57.2	37.8	31.9	59.3	38.0	40.9	67.6	23.6	30.9
LnGrp LOS	D	D	D	E	D	C	E	D	D	E	C	C
Approach Vol, veh/h		210			858			1526			907	
Approach Delay, s/veh		38.6			43.9			40.1			33.4	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.7	41.1	19.7	22.6	14.2	43.6	18.7	23.5
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 11	34.0	* 13	* 35	* 8	36.5	* 12	35.9
Max Q Clear Time (g_c+I1), s	10.1	28.6	12.9	4.9	7.4	20.2	4.6	13.7
Green Ext Time (p_c), s	0.0	4.2	0.1	2.9	0.0	10.0	0.1	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	39.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	24.8
Intersection LOS	C

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	103	2	0	158	114	0	452	40
Future Vol, veh/h	0	103	2	0	158	114	0	452	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	112	2	0	172	124	0	491	43
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	11.4	12.3	34.6
HCM LOS	B	B	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	98%	0%	100%
Vol Right, %	0%	100%	2%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	452	40	105	158	114
LT Vol	452	0	0	158	0
Through Vol	0	0	103	0	114
RT Vol	0	40	2	0	0
Lane Flow Rate	491	43	114	172	124
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.864	0.062	0.209	0.333	0.223
Departure Headway (Hd)	6.329	5.119	6.579	6.985	6.477
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	575	700	544	513	554
Service Time	4.062	2.851	4.633	4.735	4.227
HCM Lane V/C Ratio	0.854	0.061	0.21	0.335	0.224
HCM Control Delay	36.9	8.2	11.4	13.2	11.1
HCM Lane LOS	E	A	B	B	B
HCM 95th-tile Q	9.6	0.2	0.8	1.4	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	587	50	0	0	135	5	0	1	0	5	0	654
Future Volume (veh/h)	587	50	0	0	135	5	0	1	0	5	0	654
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	638	54	0	0	147	5	0	1	0	5	0	711
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	769	1406	0	0	839	698	0	5	0	12	0	0
Arrive On Green	0.22	0.75	0.00	0.00	0.45	0.45	0.00	0.00	0.00	0.01	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1550	0	1863	0	1774	5	
Grp Volume(v), veh/h	638	54	0	0	147	5	0	1	0	5	46.2	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1550	0	1863	0	1774	D	
Q Serve(g_s), s	13.3	0.6	0.0	0.0	3.6	0.1	0.0	0.0	0.0	0.2		
Cycle Q Clear(g_c), s	13.3	0.6	0.0	0.0	3.6	0.1	0.0	0.0	0.0	0.2		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	769	1406	0	0	839	698	0	5	0	12		
V/C Ratio(X)	0.83	0.04	0.00	0.00	0.18	0.01	0.00	0.20	0.00	0.43		
Avail Cap(c_a), veh/h	1228	1406	0	0	839	698	0	257	0	351		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	27.9	2.3	0.0	0.0	12.4	11.4	0.0	37.5	0.0	37.3		
Incr Delay (d2), s/veh	1.3	0.1	0.0	0.0	0.5	0.0	0.0	21.0	0.0	8.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	6.4	0.3	0.0	0.0	1.9	0.1	0.0	0.1	0.0	0.1		
LnGrp Delay(d),s/veh	29.2	2.4	0.0	0.0	12.8	11.5	0.0	58.5	0.0	46.2		
LnGrp LOS	C	A			B	B		E		D		
Approach Vol, veh/h		692			152			1				
Approach Delay, s/veh		27.1			12.8			58.5				
Approach LOS		C			B			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		63.0			23.0	40.0	6.6	5.8
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		56.9			26.9	23.9	14.9	10.4
Max Q Clear Time (g_c+I1), s		2.6			15.3	5.6	2.2	2.0
Green Ext Time (p_c), s		0.3			1.5	0.3	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	183	644	631	134	251	203	986	138	14	1422	72
Future Volume (veh/h)	193	183	644	631	134	251	203	986	138	14	1422	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	204	207	700	689	278	182	221	1072	150	15	1546	78
Adj No. of Lanes	1	1	1	2	1	1	1	2	0	2	2	1
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	191	201	344	866	454	437	209	1406	196	144	1334	577
Arrive On Green	0.11	0.11	0.11	0.24	0.24	0.24	0.12	0.45	0.45	0.04	0.38	0.38
Sat Flow, veh/h	1774	1863	1463	3548	1863	1519	1774	3106	434	3442	3539	1531
Grp Volume(v), veh/h	204	207	700	689	278	182	221	610	612	15	1546	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1519	1774	1770	1771	1721	1770	1531
Q Serve(g_s), s	14.0	14.0	14.0	23.7	17.2	12.6	15.3	37.4	37.6	0.5	49.0	4.4
Cycle Q Clear(g_c), s	14.0	14.0	14.0	23.7	17.2	12.6	15.3	37.4	37.6	0.5	49.0	4.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	344	866	454	437	209	801	801	144	1334	577
V/C Ratio(X)	1.07	1.03	2.04	0.80	0.61	0.42	1.06	0.76	0.76	0.10	1.16	0.14
Avail Cap(c_a), veh/h	191	201	344	983	516	487	209	801	801	344	1334	577
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	58.0	58.0	50.6	46.1	43.7	37.7	57.3	29.7	29.8	59.9	40.5	26.6
Incr Delay (d2), s/veh	84.2	72.1	476.0	4.1	1.7	0.6	78.6	6.7	6.8	0.1	80.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.1	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	11.3	11.2	57.9	12.1	9.1	5.4	12.0	19.8	19.9	0.3	38.8	1.9
LnGrp Delay(d),s/veh	142.2	130.3	526.7	50.2	45.4	38.3	135.9	36.5	36.6	60.1	120.9	27.1
LnGrp LOS	F	F	F	D	D	D	F	D	D	E	F	C
Approach Vol, veh/h		1111			1149			1443			1639	
Approach Delay, s/veh		382.2			47.2			51.7			115.9	
Approach LOS		F			D			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.1	63.9		19.1	20.0	54.1		36.8
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 15	44.7		36.0
Max Q Clear Time (g_c+I1), s	2.5	39.6		16.0	17.3	51.0		25.7
Green Ext Time (p_c), s	0.0	5.2		0.0	0.0	0.0		4.1

Intersection Summary	
HCM 2010 Ctrl Delay	139.2
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	796	2842	0	17	478	1220	0
Future Volume (vph)	796	2842	0	17	478	1220	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	
Lane Util. Factor	0.97	0.76			0.95	0.91	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	
Frt	1.00	0.85			1.00	1.00	
Flt Protected	0.95	1.00			1.00	1.00	
Satd. Flow (prot)	3433	3610			3533	5085	
Flt Permitted	0.95	1.00			0.73	1.00	
Satd. Flow (perm)	3433	3610			2575	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	865	3089	0	18	520	1326	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	865	3089	0	0	538	1326	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot		NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases							
Actuated Green, G (s)	80.0	80.0			38.0	38.0	
Effective Green, g (s)	80.0	80.0			38.0	38.0	
Actuated g/C Ratio	0.62	0.62			0.29	0.29	
Clearance Time (s)	6.0	6.0			6.0	6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	
Lane Grp Cap (vph)	2112	2221			752	1486	
v/s Ratio Prot	0.25	c0.86				c0.26	
v/s Ratio Perm					0.21		
v/c Ratio	0.41	1.39			0.72	0.89	
Uniform Delay, d1	12.9	25.0			41.2	44.0	
Progression Factor	1.00	1.00			1.00	1.06	
Incremental Delay, d2	0.0	178.7			5.8	0.9	
Delay (s)	12.9	203.7			46.9	47.6	
Level of Service	B	F			D	D	
Approach Delay (s)	162.0				46.9	47.6	
Approach LOS	F				D	D	

Intersection Summary			
HCM 2000 Control Delay	125.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	74	96	328	420	36
Future Volume (veh/h)	40	74	96	328	420	36
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.92	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	43	80	104	357	493	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	83	531	340	1212	2123	966
Arrive On Green	0.05	0.28	0.18	0.18	0.60	0.00
Sat Flow, veh/h	1774	1863	1863	1452	3548	1615
Grp Volume(v), veh/h	43	80	104	357	493	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1452	1774	1615
Q Serve(g_s), s	1.9	2.6	3.8	5.7	5.2	0.0
Cycle Q Clear(g_c), s	1.9	2.6	3.8	5.7	5.2	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	83	531	340	1212	2123	966
V/C Ratio(X)	0.52	0.15	0.31	0.29	0.23	0.00
Avail Cap(c_a), veh/h	236	915	564	1387	2123	966
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	0.00
Uniform Delay (d), s/veh	37.0	21.3	28.2	2.5	7.5	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.2	0.0	0.3	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	1.0	1.3	2.0	7.8	2.6	0.0
LnGrp Delay(d),s/veh	38.9	21.3	28.3	2.6	7.7	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		123	461		493	
Approach Delay, s/veh		27.4	8.4		7.7	
Approach LOS		C	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				27.6		52.0	8.1	19.4
Change Period (Y+Rc), s				4.9		4.4	4.4	4.9
Max Green Setting (Gmax), s				39.1		47.6	10.6	24.1
Max Q Clear Time (g_c+I1), s				4.6		7.2	3.9	7.7
Green Ext Time (p_c), s				1.6		1.5	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	396	908	78	25	608	215	51	12	12	290	24	481
Future Volume (veh/h)	396	908	78	25	608	215	51	12	12	290	24	481
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.90	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	430	987	85	27	661	234	55	13	13	334	0	523
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	481	1374	118	34	1056	449	151	36	36	1011	0	429
Arrive On Green	0.14	0.42	0.42	0.02	0.30	0.30	0.13	0.13	0.13	0.29	0.00	0.29
Sat Flow, veh/h	3442	3278	282	1774	3539	1506	1169	276	276	3548	0	1504
Grp Volume(v), veh/h	430	533	539	27	661	234	81	0	0	334	0	523
Grp Sat Flow(s),veh/h/ln	1721	1770	1790	1774	1770	1506	1721	0	0	1774	0	1504
Q Serve(g_s), s	16.5	33.5	33.5	2.0	21.6	17.3	5.8	0.0	0.0	10.0	0.0	38.2
Cycle Q Clear(g_c), s	16.5	33.5	33.5	2.0	21.6	17.3	5.8	0.0	0.0	10.0	0.0	38.2
Prop In Lane	1.00		0.16	1.00		1.00	0.68		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	481	742	750	34	1056	449	222	0	0	1011	0	429
V/C Ratio(X)	0.89	0.72	0.72	0.80	0.63	0.52	0.36	0.00	0.00	0.33	0.00	1.22
Avail Cap(c_a), veh/h	524	742	750	74	1056	449	385	0	0	1011	0	429
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	0.87	0.87	0.87	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	56.6	32.3	32.3	65.5	40.6	39.0	53.3	0.0	0.0	37.8	0.0	47.9
Incr Delay (d2), s/veh	15.8	5.9	5.9	12.8	2.4	3.7	0.4	0.0	0.0	0.2	0.0	118.3
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	8.9	17.6	17.8	1.1	10.9	7.7	2.8	0.0	0.0	4.9	0.0	29.9
LnGrp Delay(d),s/veh	72.4	38.3	38.2	78.3	43.0	42.8	53.7	0.0	0.0	38.0	0.0	166.2
LnGrp LOS	E	D	D	E	D	D	D			D		F
Approach Vol, veh/h		1502			922			81			857	
Approach Delay, s/veh		48.0			44.0			53.7			116.2	
Approach LOS		D			D			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.0	61.8		43.1	23.1	45.6		22.2
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	5.6	40.4		38.2	20.4	* 26		30.0
Max Q Clear Time (g_c+I1), s	4.0	35.5		40.2	18.5	23.6		7.8
Green Ext Time (p_c), s	0.0	4.3		0.0	0.3	2.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	64.4
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	1063	15	100	669	170	22	10	127	205	6	157
Future Volume (veh/h)	68	1063	15	100	669	170	22	10	127	205	6	157
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.92	1.00		0.93
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	74	1155	16	109	727	185	24	11	138	223	7	171
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	93	1607	22	130	1305	332	34	16	195	306	10	344
Arrive On Green	0.05	0.45	0.45	0.15	0.94	0.94	0.16	0.16	0.16	0.18	0.18	0.18
Sat Flow, veh/h	1774	3570	49	1774	2772	705	210	96	1210	1723	54	1468
Grp Volume(v), veh/h	74	572	599	109	464	448	173	0	0	230	0	171
Grp Sat Flow(s),veh/h/ln	1774	1770	1850	1774	1770	1708	1517	0	0	1777	0	1468
Q Serve(g_s), s	5.8	36.8	36.8	8.4	4.5	4.5	15.1	0.0	0.0	17.1	0.0	14.2
Cycle Q Clear(g_c), s	5.8	36.8	36.8	8.4	4.5	4.5	15.1	0.0	0.0	17.1	0.0	14.2
Prop In Lane	1.00		0.03	1.00		0.41	0.14		0.80	0.97		1.00
Lane Grp Cap(c), veh/h	93	797	833	130	833	804	245	0	0	316	0	344
V/C Ratio(X)	0.79	0.72	0.72	0.84	0.56	0.56	0.71	0.00	0.00	0.73	0.00	0.50
Avail Cap(c_a), veh/h	139	797	833	160	833	804	315	0	0	395	0	409
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.80	0.69	0.69	0.69	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.6	31.3	31.3	58.9	2.3	2.3	55.5	0.0	0.0	54.3	0.0	46.9
Incr Delay (d2), s/veh	7.5	4.5	4.3	16.7	1.8	1.9	2.9	0.0	0.0	3.4	0.0	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	19.0	19.8	4.7	2.2	2.2	6.5	0.0	0.0	8.7	0.0	5.8
LnGrp Delay(d),s/veh	73.1	35.7	35.6	75.7	4.1	4.2	58.5	0.0	0.0	57.8	0.0	47.3
LnGrp LOS	E	D	D	E	A	A	E			E		D
Approach Vol, veh/h		1245			1021			173			401	
Approach Delay, s/veh		37.9			11.8			58.5			53.3	
Approach LOS		D			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.7	68.0		29.8	11.8	70.9		27.5
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	12.6	* 48		31.1	11.0	49.6		29.1
Max Q Clear Time (g_c+I1), s	10.4	38.8		19.1	7.8	6.5		17.1
Green Ext Time (p_c), s	0.0	8.6		0.8	0.0	34.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	31.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	56	101	378	41	96	101	762	433	119	610	16
Future Volume (veh/h)	40	56	101	378	41	96	101	762	433	119	610	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		0.95	1.00		0.97	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	43	61	110	443	0	104	110	828	471	129	663	17
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	71	101	261	689	0	291	140	1298	869	163	1343	568
Arrive On Green	0.09	0.09	0.09	0.19	0.00	0.19	0.08	0.37	0.37	0.09	0.38	0.38
Sat Flow, veh/h	755	1070	1433	3548	0	1499	1774	3539	1530	1774	3539	1496
Grp Volume(v), veh/h	104	0	110	443	0	104	110	828	471	129	663	17
Grp Sat Flow(s),veh/h/ln	1825	0	1433	1774	0	1499	1774	1770	1530	1774	1770	1496
Q Serve(g_s), s	4.6	0.0	5.7	9.6	0.0	5.0	5.1	16.1	16.3	5.9	11.9	0.6
Cycle Q Clear(g_c), s	4.6	0.0	5.7	9.6	0.0	5.0	5.1	16.1	16.3	5.9	11.9	0.6
Prop In Lane	0.41		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	173	0	261	689	0	291	140	1298	869	163	1343	568
V/C Ratio(X)	0.60	0.00	0.42	0.64	0.00	0.36	0.78	0.64	0.54	0.79	0.49	0.03
Avail Cap(c_a), veh/h	270	0	337	1198	0	506	277	1484	949	324	1514	640
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	36.2	0.0	30.8	30.9	0.0	29.0	37.6	21.8	11.6	37.0	19.7	16.2
Incr Delay (d2), s/veh	1.3	0.0	0.4	0.4	0.0	0.3	3.6	1.1	0.9	3.3	0.3	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	2.3	0.0	2.3	4.7	0.0	2.1	2.6	8.0	10.0	3.0	5.9	0.2
LnGrp Delay(d),s/veh	37.4	0.0	31.2	31.2	0.0	29.3	41.2	22.9	12.5	40.3	20.0	16.2
LnGrp LOS	D		C	C		C	D	C	B	D	C	B
Approach Vol, veh/h		214			547			1409			809	
Approach Delay, s/veh		34.2			30.9			20.8			23.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	37.3		12.8	11.0	38.4		21.1
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	15.3	* 35		12.3	13.0	35.6		28.1
Max Q Clear Time (g_c+I1), s	7.9	18.3		7.7	7.1	13.9		11.6
Green Ext Time (p_c), s	0.1	12.3		0.2	0.1	15.0		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	24.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	508	0	377	0	949	1262	0	670	460
Future Volume (veh/h)	0	0	0	508	0	377	0	949	1262	0	670	460
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				552	0	0	0	1032	0	0	728	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				680	0	313	0	2469	1104	0	2469	1104
Arrive On Green				0.20	0.00	0.00	0.00	1.00	0.00	0.00	0.70	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				552	0	0	0	1032	0	0	728	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				15.3	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0
Cycle Q Clear(g_c), s				15.3	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				680	0	313	0	2469	1104	0	2469	1104
V/C Ratio(X)				0.81	0.00	0.00	0.00	0.42	0.00	0.00	0.29	0.00
Avail Cap(c_a), veh/h				1132	0	521	0	2469	1104	0	2469	1104
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.23	0.00	0.00	0.77	0.00
Uniform Delay (d), s/veh				38.4	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0
Incr Delay (d2), s/veh				2.4	0.0	0.0	0.0	0.1	0.0	0.0	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				7.5	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0
LnGrp Delay(d),s/veh				40.8	0.0	0.0	0.0	0.1	0.0	0.0	6.0	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					552			1032			728	
Approach Delay, s/veh					40.8			0.1			6.0	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		75.2				75.2		24.8
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		56.6				56.6		32.9
Max Q Clear Time (g_c+I1), s		2.0				9.8		17.3
Green Ext Time (p_c), s		12.1				11.9		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	597	0	795	0	0	0	0	1615	398	0	906	269
Future Volume (vph)	597	0	795	0	0	0	0	1615	398	0	906	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3411			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3411			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	649	0	864	0	0	0	0	1755	433	0	985	292
RTOR Reduction (vph)	0	0	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	649	0	864	0	0	0	0	2166	0	0	985	292
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	20.7		69.3					66.8			18.2	100.0
Effective Green, g (s)	20.7		69.3					66.8			18.2	100.0
Actuated g/C Ratio	0.21		0.69					0.67			0.18	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	710		2501					2278			644	1536
v/s Ratio Prot	c0.19		0.24					c0.64			c0.28	
v/s Ratio Perm												0.19
v/c Ratio	0.91		0.35					0.95			1.53	0.19
Uniform Delay, d1	38.8		6.2					15.1			40.9	0.0
Progression Factor	1.00		1.00					1.58			0.79	1.00
Incremental Delay, d2	16.0		0.0					1.3			245.6	0.3
Delay (s)	54.8		6.2					25.1			278.0	0.3
Level of Service	D		A					C			F	A
Approach Delay (s)		27.0			0.0			25.1			214.5	
Approach LOS		C			A			C			F	

Intersection Summary			
HCM 2000 Control Delay	74.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	381	43	25	75	12	307	24	1327	66	265	1315	122
Future Volume (veh/h)	381	43	25	75	12	307	24	1327	66	265	1315	122
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	473	0	0	82	13	334	26	1442	72	288	1429	133
Adj No. of Lanes	2	1	0	0	1	1	1	2	1	2	3	2
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	699	367	0	76	12	206	36	1649	728	279	2702	2002
Arrive On Green	0.20	0.00	0.00	0.05	0.05	0.05	0.02	0.47	0.47	0.08	0.53	0.53
Sat Flow, veh/h	3548	1863	0	1541	244	1583	1774	3539	1563	3442	5085	2734
Grp Volume(v), veh/h	473	0	0	95	0	334	26	1442	72	288	1429	133
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1786	0	1583	1774	1770	1563	1721	1695	1367
Q Serve(g_s), s	12.3	0.0	0.0	4.9	0.0	4.9	1.5	36.7	2.6	8.1	18.3	1.4
Cycle Q Clear(g_c), s	12.3	0.0	0.0	4.9	0.0	4.9	1.5	36.7	2.6	8.1	18.3	1.4
Prop In Lane	1.00		0.00	0.86		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	699	367	0	87	0	206	36	1649	728	279	2702	2002
V/C Ratio(X)	0.68	0.00	0.00	1.09	0.00	1.62	0.71	0.87	0.10	1.03	0.53	0.07
Avail Cap(c_a), veh/h	1135	596	0	87	0	206	101	1649	728	279	2702	2002
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.15	0.15	0.15
Uniform Delay (d), s/veh	37.2	0.0	0.0	47.6	0.0	43.5	48.7	24.1	15.0	46.0	15.3	3.9
Incr Delay (d2), s/veh	0.4	0.0	0.0	121.4	0.0	301.4	22.5	6.8	0.3	29.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.0	0.0	5.4	0.0	22.9	0.9	19.4	1.2	5.0	8.5	0.9
LnGrp Delay(d),s/veh	37.6	0.0	0.0	169.3	0.0	344.9	71.2	30.9	15.2	75.7	15.4	3.9
LnGrp LOS	D			F		F	E	C	B	F	B	A
Approach Vol, veh/h		473			429			1540			1850	
Approach Delay, s/veh		37.6			306.0			30.8			23.9	
Approach LOS		D			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	52.6		24.6	6.5	59.1		9.8
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	8.1	34.3		32.0	5.7	* 38		4.9
Max Q Clear Time (g_c+I1), s	10.1	38.7		14.3	3.5	20.3		6.9
Green Ext Time (p_c), s	0.0	0.0		1.3	0.0	15.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	56.1
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	27.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	459	1161	40	161	1254
Future Vol, veh/h	0	459	1161	40	161	1254
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	499	1262	43	175	1363

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	671	0	0	1282	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	~ 399	-	-	537	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	~ 386	-	-	528	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	178.9	0	1.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	386	528	-
HCM Lane V/C Ratio	-	-	1.293	0.331	-
HCM Control Delay (s)	-	-	178.9	15.2	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	22.4	1.4	-

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)	353	966	476	185	418	207	347	649	49	219	810	306
Future Volume (veh/h)	353	966	476	185	418	207	347	649	49	219	810	306
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.94	1.00		0.94	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	384	1050	517	201	454	225	377	705	53	238	880	333
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	362	1342	574	172	962	406	421	775	58	537	660	249
Arrive On Green	0.41	0.76	0.76	0.10	0.27	0.27	0.12	0.23	0.23	0.16	0.27	0.27
Sat Flow, veh/h	1774	3539	1514	1774	3539	1495	3442	3319	249	3442	2472	930
Grp Volume(v), veh/h	384	1050	517	201	454	225	377	376	382	238	629	584
Grp Sat Flow(s),veh/h/ln	1774	1770	1514	1774	1770	1495	1721	1770	1799	1721	1770	1633
Q Serve(g_s), s	28.6	24.7	25.4	13.6	15.0	12.5	15.1	28.9	29.0	8.8	37.4	37.4
Cycle Q Clear(g_c), s	28.6	24.7	25.4	13.6	15.0	12.5	15.1	28.9	29.0	8.8	37.4	37.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.57
Lane Grp Cap(c), veh/h	362	1342	574	172	962	406	421	413	420	537	473	436
V/C Ratio(X)	1.06	0.78	0.90	1.17	0.47	0.55	0.90	0.91	0.91	0.44	1.33	1.34
Avail Cap(c_a), veh/h	362	1342	574	172	962	406	423	417	424	537	473	436
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.71	0.71	0.71	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	13.5	7.2	63.2	42.6	21.1	60.6	52.2	52.3	53.5	51.3	51.3
Incr Delay (d2), s/veh	56.4	3.3	15.0	120.4	1.7	5.3	20.4	23.8	23.8	0.2	162.4	167.8
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	19.6	12.3	12.4	12.4	7.5	5.8	8.4	16.9	17.2	4.2	39.6	37.2
LnGrp Delay(d),s/veh	97.8	16.8	22.2	183.6	44.2	26.4	81.0	76.0	76.0	53.8	213.7	219.1
LnGrp LOS	F	B	C	F	D	C	F	E	E	D	F	F
Approach Vol, veh/h		1951			880			1135			1451	
Approach Delay, s/veh		34.2			71.5			77.7			189.6	
Approach LOS		C			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.3	37.8	18.0	58.0	21.5	42.5	33.0	43.0
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	21.6	33.0	13.6	53.0	17.2	37.4	28.6	38.0
Max Q Clear Time (g_c+I1), s	10.8	31.0	15.6	27.4	17.1	39.4	30.6	17.0
Green Ext Time (p_c), s	1.4	0.9	0.0	22.9	0.0	0.0	0.0	19.1

Intersection Summary	
HCM 2010 Ctrl Delay	91.0
HCM 2010 LOS	F

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱		↩	↰	↱
Traffic Vol, veh/h	264	24	3	347	55	16
Future Vol, veh/h	264	24	3	347	55	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	287	26	3	377	60	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	287	0	671	287
Stage 1	-	-	-	-	287	-
Stage 2	-	-	-	-	384	-
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	-	-	1275	-	422	752
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1275	-	421	752
Mov Cap-2 Maneuver	-	-	-	-	421	-
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	686	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	421	752	-	-	1275	-
HCM Lane V/C Ratio	0.142	0.023	-	-	0.003	-
HCM Control Delay (s)	15	9.9	-	-	7.8	0
HCM Lane LOS	C	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	218	102	86	109	129	135
Future Volume (veh/h)	218	102	86	109	129	135
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	237	111	93	118	140	147
Adj No. of Lanes	1	1	1	1	1	1
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	638	520	125	1027	276	246
Arrive On Green	0.34	0.34	0.07	0.55	0.16	0.16
Sat Flow, veh/h	1863	1521	1774	1863	1774	1583
Grp Volume(v), veh/h	237	111	93	118	140	147
Grp Sat Flow(s),veh/h/ln	1863	1521	1774	1863	1774	1583
Q Serve(g_s), s	3.0	1.6	1.6	1.0	2.3	2.7
Cycle Q Clear(g_c), s	3.0	1.6	1.6	1.0	2.3	2.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	638	520	125	1027	276	246
V/C Ratio(X)	0.37	0.21	0.74	0.11	0.51	0.60
Avail Cap(c_a), veh/h	2002	1634	928	3235	1431	1277
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	7.9	7.4	14.5	3.4	12.3	12.5
Incr Delay (d2), s/veh	0.3	0.2	3.3	0.0	0.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.7	0.9	0.5	1.2	1.2
LnGrp Delay(d),s/veh	8.2	7.6	17.7	3.5	12.8	13.3
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	348			211	287	
Approach Delay, s/veh	8.0			9.7	13.1	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.6	15.8				22.4		9.3
Change Period (Y+Rc), s	4.4	4.9				4.9		4.4
Max Green Setting (Gmax), s	16.6	34.1				55.1		25.6
Max Q Clear Time (g_c+I1), s	3.6	5.0				3.0		4.7
Green Ext Time (p_c), s	0.1	1.7				1.7		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	7	68	541	45	97	71	668	122	26	635	33
Future Volume (veh/h)	22	7	68	541	45	97	71	668	122	26	635	33
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	8	74	371	353	105	77	726	133	28	690	36
Adj No. of Lanes	0	1	1	1	1	0	1	3	0	1	3	0
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	117	39	130	584	452	134	143	1351	244	87	1396	72
Arrive On Green	0.09	0.09	0.09	0.33	0.33	0.33	0.08	0.31	0.31	0.05	0.28	0.28
Sat Flow, veh/h	1347	449	1496	1774	1371	408	1774	4299	778	1774	4938	256
Grp Volume(v), veh/h	32	0	74	371	0	458	77	571	288	28	473	253
Grp Sat Flow(s),veh/h/ln	1795	0	1496	1774	0	1779	1774	1695	1686	1774	1695	1804
Q Serve(g_s), s	1.6	0.0	4.6	17.3	0.0	22.7	4.1	13.5	13.8	1.5	11.3	11.5
Cycle Q Clear(g_c), s	1.6	0.0	4.6	17.3	0.0	22.7	4.1	13.5	13.8	1.5	11.3	11.5
Prop In Lane	0.75		1.00	1.00		0.23	1.00		0.46	1.00		0.14
Lane Grp Cap(c), veh/h	156	0	130	584	0	586	143	1066	530	87	958	510
V/C Ratio(X)	0.20	0.00	0.57	0.63	0.00	0.78	0.54	0.54	0.54	0.32	0.49	0.50
Avail Cap(c_a), veh/h	165	0	138	779	0	782	164	1066	530	164	958	510
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	41.4	0.0	42.8	27.8	0.0	29.6	43.1	27.6	27.7	44.9	29.2	29.2
Incr Delay (d2), s/veh	0.6	0.0	4.9	2.4	0.0	5.8	1.2	1.9	4.0	0.8	1.8	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	2.1	8.8	0.0	12.0	2.0	6.6	7.0	0.8	5.6	6.2
LnGrp Delay(d),s/veh	42.1	0.0	47.7	30.2	0.0	35.3	44.3	29.5	31.7	45.6	31.0	32.7
LnGrp LOS	D		D	C		D	D	C	C	D	C	C
Approach Vol, veh/h		106			829			936			754	
Approach Delay, s/veh		46.0			33.0			31.4			32.1	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	36.8		13.1	12.6	33.7		38.3
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9	27.6		9.0	* 9	27.6		42.9
Max Q Clear Time (g_c+I1), s	13.5	15.8		6.6	6.1	13.5		24.7
Green Ext Time (p_c), s	0.0	5.7		0.1	0.0	6.4		7.2

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	247	64	634	85	736	28	823	379	138	559	170
Future Volume (veh/h)	139	247	64	634	85	736	28	823	379	138	559	170
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	151	268	70	689	92	800	30	895	412	150	608	185
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	304	513	131	751	587	1130	71	1045	456	174	1252	538
Arrive On Green	0.09	0.19	0.19	0.22	0.32	0.32	0.04	0.30	0.30	0.10	0.35	0.35
Sat Flow, veh/h	3442	2771	707	3442	1863	2718	1774	3539	1543	1774	3539	1522
Grp Volume(v), veh/h	151	169	169	689	92	800	30	895	412	150	608	185
Grp Sat Flow(s),veh/h/ln	1721	1770	1709	1721	1863	1359	1774	1770	1543	1774	1770	1522
Q Serve(g_s), s	5.7	11.7	12.2	26.6	4.8	33.3	2.2	32.4	34.9	11.3	18.2	12.2
Cycle Q Clear(g_c), s	5.7	11.7	12.2	26.6	4.8	33.3	2.2	32.4	34.9	11.3	18.2	12.2
Prop In Lane	1.00		0.41	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	304	328	317	751	587	1130	71	1045	456	174	1252	538
V/C Ratio(X)	0.50	0.52	0.53	0.92	0.16	0.71	0.42	0.86	0.90	0.86	0.49	0.34
Avail Cap(c_a), veh/h	304	455	440	802	744	1359	104	1045	456	210	1252	538
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	59.1	49.9	50.1	52.0	33.5	33.2	63.8	45.2	46.1	60.4	34.3	32.3
Incr Delay (d2), s/veh	0.5	1.3	1.4	14.8	0.1	1.4	1.5	9.0	24.0	22.4	1.4	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	5.8	5.9	14.2	2.5	12.6	1.1	17.2	17.9	6.6	9.2	5.4
LnGrp Delay(d),s/veh	59.6	51.2	51.5	66.8	33.7	34.5	65.3	54.2	70.0	82.8	35.6	34.1
LnGrp LOS	E	D	D	E	C	C	E	D	E	F	D	C
Approach Vol, veh/h		489			1581			1337			943	
Approach Delay, s/veh		53.9			48.5			59.3			42.8	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.1	47.3	36.4	32.3	12.1	55.2	18.7	50.0
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 16	40.0	* 32	* 35	* 8	48.1	* 12	54.3
Max Q Clear Time (g_c+I1), s	13.3	36.9	28.6	14.2	4.2	20.2	7.7	35.3
Green Ext Time (p_c), s	0.1	2.5	1.1	6.4	0.0	12.8	0.1	6.2

Intersection Summary	
HCM 2010 Ctrl Delay	51.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	59.2
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	188	3	0	76	87	0	576	61
Future Vol, veh/h	0	188	3	0	76	87	0	576	61
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	204	3	0	83	95	0	626	66
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	14.1	11.8	84.8
HCM LOS	B	B	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	98%	0%	100%
Vol Right, %	0%	100%	2%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	576	61	191	76	87
LT Vol	576	0	0	76	0
Through Vol	0	0	188	0	87
RT Vol	0	61	3	0	0
Lane Flow Rate	626	66	208	83	95
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.103	0.094	0.382	0.171	0.182
Departure Headway (Hd)	6.341	5.13	6.906	7.766	7.254
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	576	703	525	465	497
Service Time	4.041	2.83	4.906	5.466	4.954
HCM Lane V/C Ratio	1.087	0.094	0.396	0.178	0.191
HCM Control Delay	92.9	8.4	14.1	12.1	11.6
HCM Lane LOS	F	A	B	B	B
HCM 95th-tile Q	19.4	0.3	1.8	0.6	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	743	58	0	0	99	14	3	4	3	13	0	1354
Future Volume (veh/h)	743	58	0	0	99	14	3	4	3	13	0	1354
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	808	63	0	0	108	15	3	4	3	14	0	1472
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	962	1296	0	0	608	504	69	0	0	30	0	0
Arrive On Green	0.28	0.70	0.00	0.00	0.33	0.33	0.03	0.03	0.03	0.02	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1545	0	0	0	1774	14	
Grp Volume(v), veh/h	808	63	0	0	108	15	10	0	0	14	37.1	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1545	0	0	0	1774	D	
Q Serve(g_s), s	15.0	0.7	0.0	0.0	2.8	0.4	0.0	0.0	0.0	0.5		
Cycle Q Clear(g_c), s	15.0	0.7	0.0	0.0	2.8	0.4	0.1	0.0	0.0	0.5		
Prop In Lane	1.00		0.00	0.00		1.00	0.30		0.30	1.00		
Lane Grp Cap(c), veh/h	962	1296	0	0	608	504	69	0	0	30		
V/C Ratio(X)	0.84	0.05	0.00	0.00	0.18	0.03	0.15	0.00	0.00	0.46		
Avail Cap(c_a), veh/h	1412	1296	0	0	608	504	167	0	0	650		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	23.1	3.3	0.0	0.0	16.4	15.6	32.4	0.0	0.0	33.1		
Incr Delay (d2), s/veh	2.0	0.1	0.0	0.0	0.6	0.1	1.2	0.0	0.0	4.0		
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		
%ile BackOfQ(50%),veh/ln	7.3	0.4	0.0	0.0	1.5	0.2	0.2	0.0	0.0	0.3		
LnGrp Delay(d),s/veh	25.1	3.3	0.0	0.0	17.0	15.7	33.5	0.0	0.0	37.1		
LnGrp LOS	C	A			B	B	C			D		
Approach Vol, veh/h		871			123			10				
Approach Delay, s/veh		23.5			16.8			33.5				
Approach LOS		C			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		53.4			25.1	28.3	7.3	7.3
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		47.3			27.9	13.3	24.9	10.0
Max Q Clear Time (g_c+I1), s		2.7			17.0	4.8	2.5	2.1
Green Ext Time (p_c), s		0.3			2.0	0.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

APPENDIX J

NEAR-TERM (YEAR 2022) + PROJECT INTERSECTION LEVEL OF SERVICE CALCULATION SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	12	342	399	469	201	309	1545	122	24	990	90
Future Volume (veh/h)	35	12	342	399	469	201	309	1545	122	24	990	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	26	30	372	289	712	218	336	1679	133	26	1076	98
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	2	2	1
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	192	202	345	432	906	466	209	1438	113	210	1333	577
Arrive On Green	0.11	0.11	0.11	0.24	0.24	0.24	0.12	0.43	0.43	0.06	0.38	0.38
Sat Flow, veh/h	1774	1863	1464	1774	3725	1519	1774	3317	260	3442	3539	1531
Grp Volume(v), veh/h	26	30	372	289	712	218	336	886	926	26	1076	98
Grp Sat Flow(s),veh/h/ln	1774	1863	1464	1774	1863	1519	1774	1770	1807	1721	1770	1531
Q Serve(g_s), s	1.7	1.9	14.1	19.1	23.2	15.2	15.3	56.4	56.4	0.9	35.4	5.5
Cycle Q Clear(g_c), s	1.7	1.9	14.1	19.1	23.2	15.2	15.3	56.4	56.4	0.9	35.4	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	192	202	345	432	906	466	209	767	783	210	1333	577
V/C Ratio(X)	0.14	0.15	1.08	0.67	0.79	0.47	1.61	1.16	1.18	0.12	0.81	0.17
Avail Cap(c_a), veh/h	192	202	345	491	1032	517	209	767	783	344	1333	577
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	52.4	52.5	50.6	44.5	46.0	36.7	57.3	36.8	36.8	57.8	36.3	27.0
Incr Delay (d2), s/veh	0.3	0.3	70.8	2.9	3.6	0.7	295.3	84.4	94.6	0.1	5.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.0	19.2	9.7	12.4	6.4	24.6	45.5	48.7	0.4	18.3	2.4
LnGrp Delay(d),s/veh	52.7	52.8	121.4	47.4	49.6	37.5	352.7	121.2	131.4	57.9	41.6	27.6
LnGrp LOS	D	D	F	D	D	D	F	F	F	E	D	C
Approach Vol, veh/h		428			1219			2148			1200	
Approach Delay, s/veh		112.4			46.9			161.8			40.8	
Approach LOS		F			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.6	61.5		19.2	20.0	54.1		36.7
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	46.9		14.1	* 15	44.6		36.0
Max Q Clear Time (g_c+I1), s	2.9	58.4		16.1	17.3	37.4		25.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	5.3		4.4

Intersection Summary	
HCM 2010 Ctrl Delay	100.5
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	946	1650	0	230	1030	684	0
Future Volume (vph)	946	1650	0	230	1030	684	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	
Lane Util. Factor	0.97	0.76			0.95	0.91	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	
Frt	1.00	0.85			1.00	1.00	
Flt Protected	0.95	1.00			0.99	1.00	
Satd. Flow (prot)	3433	3610			3507	5085	
Flt Permitted	0.95	1.00			0.62	1.00	
Satd. Flow (perm)	3433	3610			2204	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1028	1793	0	250	1120	743	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	1028	1793	0	0	1370	743	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot	Perm	NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases				8			
Actuated Green, G (s)	67.7	67.7			50.3	50.3	
Effective Green, g (s)	67.7	67.7			50.3	50.3	
Actuated g/C Ratio	0.52	0.52			0.39	0.39	
Clearance Time (s)	6.0	6.0			6.0	6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	
Lane Grp Cap (vph)	1787	1879			852	1967	
v/s Ratio Prot	0.30	c0.50				0.15	
v/s Ratio Perm					c0.62		
v/c Ratio	0.58	0.95			1.61	0.38	
Uniform Delay, d1	21.3	29.7			39.9	28.6	
Progression Factor	1.00	1.00			1.00	1.00	
Incremental Delay, d2	0.3	11.6			279.1	0.3	
Delay (s)	21.6	41.3			318.9	28.8	
Level of Service	C	D			F	C	
Approach Delay (s)	34.1				318.9	28.8	
Approach LOS	C				F	C	

Intersection Summary			
HCM 2000 Control Delay	112.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	48	51	555	114	18
Future Volume (veh/h)	38	48	51	555	114	18
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.93	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	41	52	55	603	143	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	72	569	394	1249	2104	958
Arrive On Green	0.04	0.31	0.21	0.21	0.59	0.00
Sat Flow, veh/h	1774	1863	1863	1465	3548	1615
Grp Volume(v), veh/h	41	52	55	603	143	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1465	1774	1615
Q Serve(g_s), s	2.1	1.8	2.2	12.5	1.6	0.0
Cycle Q Clear(g_c), s	2.1	1.8	2.2	12.5	1.6	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	72	569	394	1249	2104	958
V/C Ratio(X)	0.57	0.09	0.14	0.48	0.07	0.00
Avail Cap(c_a), veh/h	77	659	488	1323	2104	958
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	0.00
Uniform Delay (d), s/veh	43.2	22.7	29.3	3.0	7.9	0.0
Incr Delay (d2), s/veh	4.4	0.0	0.1	0.1	0.1	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	1.1	0.9	1.1	15.1	0.8	0.0
LnGrp Delay(d),s/veh	47.6	22.7	29.4	3.1	8.0	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		93	658		143	
Approach Delay, s/veh		33.7	5.3		8.0	
Approach LOS		C	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				32.9		58.7	8.6	24.3
Change Period (Y+Rc), s				4.9		4.4	4.9	* 4.9
Max Green Setting (Gmax), s				32.4		54.3	4.0	* 24
Max Q Clear Time (g_c+I1), s				3.8		3.6	4.1	14.5
Green Ext Time (p_c), s				0.2		0.4	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	550	368	14	4	896	316	47	20	20	85	1	146
Future Volume (veh/h)	550	368	14	4	896	316	47	20	20	85	1	146
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.91	1.00		0.86
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	598	400	15	4	974	343	51	22	22	93	0	159
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	654	2157	81	7	1541	664	125	54	54	284	0	109
Arrive On Green	0.19	0.62	0.62	0.01	0.87	0.87	0.14	0.14	0.14	0.08	0.00	0.08
Sat Flow, veh/h	3442	3472	130	1774	3539	1524	913	394	394	3548	0	1354
Grp Volume(v), veh/h	598	203	212	4	974	343	95	0	0	93	0	159
Grp Sat Flow(s),veh/h/ln	1721	1770	1832	1774	1770	1524	1701	0	0	1774	0	1354
Q Serve(g_s), s	21.5	6.2	6.2	0.3	9.9	6.6	6.4	0.0	0.0	3.1	0.0	10.1
Cycle Q Clear(g_c), s	21.5	6.2	6.2	0.3	9.9	6.6	6.4	0.0	0.0	3.1	0.0	10.1
Prop In Lane	1.00		0.07	1.00		1.00	0.54		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	654	1099	1138	7	1541	664	233	0	0	284	0	109
V/C Ratio(X)	0.91	0.18	0.19	0.54	0.63	0.52	0.41	0.00	0.00	0.33	0.00	1.46
Avail Cap(c_a), veh/h	699	1099	1138	56	1541	664	405	0	0	284	0	109
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.28	0.28	0.28	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.0	10.2	10.2	62.4	5.2	5.0	49.7	0.0	0.0	54.7	0.0	58.0
Incr Delay (d2), s/veh	15.5	0.4	0.4	6.3	0.6	0.8	0.4	0.0	0.0	0.7	0.0	252.3
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	11.6	3.1	3.2	0.2	4.4	2.8	3.1	0.0	0.0	1.6	0.0	11.4
LnGrp Delay(d),s/veh	65.5	10.6	10.6	68.7	5.8	5.8	50.1	0.0	0.0	55.4	0.0	310.2
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		1013			1321			95			252	
Approach Delay, s/veh		43.0			6.0			50.1			216.2	
Approach LOS		D			A			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.9	83.9		15.0	28.3	60.5		22.2
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	4.6	62.1		10.1	25.6	* 41		30.0
Max Q Clear Time (g_c+I1), s	2.3	8.2		12.1	23.5	11.9		8.4
Green Ext Time (p_c), s	0.0	21.6		0.0	0.5	16.4		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	41.3
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	432	12	69	1121	320	38	15	97	103	9	59
Future Volume (veh/h)	88	432	12	69	1121	320	38	15	97	103	9	59
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.92	1.00		0.92
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	96	470	13	75	1218	348	41	16	105	112	10	64
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	79	1692	47	95	1330	372	64	25	165	245	22	287
Arrive On Green	0.09	0.96	0.96	0.07	0.65	0.65	0.16	0.16	0.16	0.15	0.15	0.15
Sat Flow, veh/h	1774	3511	97	1774	2710	757	395	154	1013	1635	146	1450
Grp Volume(v), veh/h	96	236	247	75	786	780	162	0	0	122	0	64
Grp Sat Flow(s),veh/h/ln	1774	1770	1839	1774	1770	1697	1563	0	0	1781	0	1450
Q Serve(g_s), s	5.6	0.8	0.8	5.2	47.5	51.7	12.2	0.0	0.0	7.9	0.0	4.7
Cycle Q Clear(g_c), s	5.6	0.8	0.8	5.2	47.5	51.7	12.2	0.0	0.0	7.9	0.0	4.7
Prop In Lane	1.00		0.05	1.00		0.45	0.25		0.65	0.92		1.00
Lane Grp Cap(c), veh/h	79	853	886	95	869	833	254	0	0	267	0	287
V/C Ratio(X)	1.22	0.28	0.28	0.79	0.91	0.94	0.64	0.00	0.00	0.46	0.00	0.22
Avail Cap(c_a), veh/h	79	853	886	121	869	833	360	0	0	438	0	427
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.35	0.35	0.35	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	1.2	1.2	57.8	19.4	20.1	49.3	0.0	0.0	48.9	0.0	42.8
Incr Delay (d2), s/veh	170.4	0.8	0.8	7.1	6.1	8.6	1.0	0.0	0.0	0.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.5	0.5	2.8	24.3	25.8	5.3	0.0	0.0	3.9	0.0	1.9
LnGrp Delay(d),s/veh	227.8	2.0	2.0	64.9	25.5	28.7	50.3	0.0	0.0	49.4	0.0	42.9
LnGrp LOS	F	A	A	E	C	C	D			D		D
Approach Vol, veh/h		579			1641			162			186	
Approach Delay, s/veh		39.4			28.8			50.3			47.2	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	65.7		23.8	10.0	66.8		25.4
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	8.6	* 38		31.0	5.6	41.2		29.0
Max Q Clear Time (g_c+I1), s	7.2	2.8		9.9	7.6	53.7		14.2
Green Ext Time (p_c), s	0.0	31.7		0.4	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	58	227	454	99	91	89	690	244	62	1106	23
Future Volume (veh/h)	100	58	227	454	99	91	89	690	244	62	1106	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	109	63	247	570	0	99	97	750	265	67	1202	25
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	138	80	286	745	0	316	122	1455	963	86	1383	585
Arrive On Green	0.12	0.12	0.12	0.21	0.00	0.21	0.07	0.41	0.41	0.05	0.39	0.39
Sat Flow, veh/h	1144	661	1460	3548	0	1504	1774	3539	1533	1774	3539	1497
Grp Volume(v), veh/h	172	0	247	570	0	99	97	750	265	67	1202	25
Grp Sat Flow(s),veh/h/ln	1806	0	1460	1774	0	1504	1774	1770	1533	1774	1770	1497
Q Serve(g_s), s	9.3	0.0	12.1	15.2	0.0	5.6	5.4	15.9	7.9	3.7	31.4	1.0
Cycle Q Clear(g_c), s	9.3	0.0	12.1	15.2	0.0	5.6	5.4	15.9	7.9	3.7	31.4	1.0
Prop In Lane	0.63		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	218	0	286	745	0	316	122	1455	963	86	1383	585
V/C Ratio(X)	0.79	0.00	0.86	0.76	0.00	0.31	0.79	0.52	0.28	0.78	0.87	0.04
Avail Cap(c_a), veh/h	218	0	286	991	0	420	152	1455	963	168	1423	602
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	42.8	0.0	39.5	37.3	0.0	33.5	45.9	22.1	8.7	47.1	28.2	18.9
Incr Delay (d2), s/veh	16.1	0.0	22.2	1.7	0.0	0.2	15.9	0.5	0.3	5.5	6.0	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	5.6	0.0	8.4	7.6	0.0	2.3	3.2	7.8	5.3	2.0	16.5	0.4
LnGrp Delay(d),s/veh	59.0	0.0	61.8	38.9	0.0	33.7	61.9	22.6	9.0	52.6	34.2	19.0
LnGrp LOS	E		E	D		C	E	C	A	D	C	B
Approach Vol, veh/h		419			669			1112			1294	
Approach Delay, s/veh		60.6			38.2			22.8			34.9	
Approach LOS		E			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	48.0		17.0	11.3	46.0		25.9
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	9.5	* 41		12.1	8.6	40.3		28.0
Max Q Clear Time (g_c+I1), s	5.7	17.9		14.1	7.4	33.4		17.2
Green Ext Time (p_c), s	0.0	16.6		0.0	0.0	5.8		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	34.7
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	259	0	97	0	939	367	0	1095	715
Future Volume (veh/h)	0	0	0	259	0	97	0	939	367	0	1095	715
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				282	0	0	0	1021	0	0	1190	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				349	0	160	0	2809	1257	0	2809	1257
Arrive On Green				0.10	0.00	0.00	0.00	1.00	0.00	0.00	0.79	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				282	0	0	0	1021	0	0	1190	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				8.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	0.0
Cycle Q Clear(g_c), s				8.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				349	0	160	0	2809	1257	0	2809	1257
V/C Ratio(X)				0.81	0.00	0.00	0.00	0.36	0.00	0.00	0.42	0.00
Avail Cap(c_a), veh/h				375	0	173	0	2809	1257	0	2809	1257
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.79	0.00	0.00	0.32	0.00
Uniform Delay (d), s/veh				44.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0
Incr Delay (d2), s/veh				11.7	0.0	0.0	0.0	0.3	0.0	0.0	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				4.4	0.0	0.0	0.0	0.1	0.0	0.0	5.0	0.0
LnGrp Delay(d),s/veh				55.7	0.0	0.0	0.0	0.3	0.0	0.0	3.4	0.0
LnGrp LOS				E				A			A	
Approach Vol, veh/h					282			1021			1190	
Approach Delay, s/veh					55.7			0.3			3.4	
Approach LOS					E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		84.8				84.8		15.2
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		78.6				78.6		10.9
Max Q Clear Time (g_c+I1), s		2.0				12.5		10.0
Green Ext Time (p_c), s		19.3				18.9		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	367	0	1309	0	0	0	0	940	256	0	1055	300
Future Volume (vph)	367	0	1309	0	0	0	0	940	256	0	1055	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3401			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3401			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	399	0	1423	0	0	0	0	1022	278	0	1147	326
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	399	0	1423	0	0	0	0	1277	0	0	1147	326
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	15.2		47.9					72.3			39.6	100.0
Effective Green, g (s)	15.2		47.9					72.3			39.6	100.0
Actuated g/C Ratio	0.15		0.48					0.72			0.40	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	521		1729					2458			1401	1536
v/s Ratio Prot	0.12		c0.39					0.38			c0.32	
v/s Ratio Perm												0.21
v/c Ratio	0.77		0.82					0.52			0.82	0.21
Uniform Delay, d1	40.7		22.4					6.1			27.0	0.0
Progression Factor	1.00		1.00					0.63			1.04	1.00
Incremental Delay, d2	6.0		3.1					0.3			4.9	0.3
Delay (s)	46.7		25.6					4.2			32.9	0.3
Level of Service	D		C					A			C	A
Approach Delay (s)		30.2			0.0			4.2			25.7	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	21	18	81	67	257	99	850	79	560	1352	451
Future Volume (veh/h)	91	21	18	81	67	257	99	850	79	560	1352	451
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	71	62	20	88	73	279	108	924	86	609	1470	490
Adj No. of Lanes	1	1	0	0	1	1	1	2	1	2	3	2
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	228	171	55	95	79	394	117	1470	648	527	2580	1744
Arrive On Green	0.13	0.13	0.13	0.10	0.10	0.10	0.07	0.42	0.42	0.05	0.17	0.17
Sat Flow, veh/h	1774	1332	430	991	822	1583	1774	3539	1560	3442	5085	2732
Grp Volume(v), veh/h	71	0	82	161	0	279	108	924	86	609	1470	490
Grp Sat Flow(s),veh/h/ln	1774	0	1762	1813	0	1583	1774	1770	1560	1721	1695	1366
Q Serve(g_s), s	3.6	0.0	4.3	8.8	0.0	9.6	6.1	20.7	3.4	15.3	26.6	11.7
Cycle Q Clear(g_c), s	3.6	0.0	4.3	8.8	0.0	9.6	6.1	20.7	3.4	15.3	26.6	11.7
Prop In Lane	1.00		0.24	0.55		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	0	227	174	0	394	117	1470	648	527	2580	1744
V/C Ratio(X)	0.31	0.00	0.36	0.92	0.00	0.71	0.92	0.63	0.13	1.16	0.57	0.28
Avail Cap(c_a), veh/h	568	0	564	174	0	394	117	1470	648	527	2580	1744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.46	0.46	0.46
Uniform Delay (d), s/veh	39.5	0.0	39.8	44.8	0.0	34.2	46.4	23.1	18.1	47.5	31.6	14.8
Incr Delay (d2), s/veh	0.3	0.0	0.4	46.3	0.0	4.9	59.4	2.0	0.4	80.7	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	2.1	6.7	0.0	7.5	4.9	10.4	1.5	13.2	12.6	6.1
LnGrp Delay(d),s/veh	39.8	0.0	40.2	91.2	0.0	39.2	105.9	25.2	18.5	128.1	32.0	15.0
LnGrp LOS	D		D	F		D	F	C	B	F	C	B
Approach Vol, veh/h		153			440			1118			2569	
Approach Delay, s/veh		40.0			58.2			32.5			51.6	
Approach LOS		D			E			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	30.2	47.5		17.8	11.0	56.7		14.5
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	15.3	22.4		32.0	6.6	* 32		9.6
Max Q Clear Time (g_c+I1), s	17.3	22.7		6.3	8.1	28.6		11.6
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	3.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	46.8
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	99	1090	73	335	1095
Future Vol, veh/h	0	99	1090	73	335	1095
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	108	1185	79	364	1190

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	632	0	0	1205	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	423	-	-	575	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	409	-	-	565	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	5.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	409	565	-
HCM Lane V/C Ratio	-	-	0.263	0.644	-
HCM Control Delay (s)	-	-	16.9	22.2	-
HCM Lane LOS	-	-	C	C	-
HCM 95th %tile Q(veh)	-	-	1	4.6	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	188	311	91	22	721	206	611	998	54	111	489	322
Future Volume (veh/h)	188	311	91	22	721	206	611	998	54	111	489	322
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		0.95	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	204	338	99	24	784	224	664	1085	59	121	532	350
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	220	1281	547	56	955	403	699	1051	57	511	506	333
Arrive On Green	0.25	0.72	0.72	0.03	0.27	0.27	0.20	0.31	0.31	0.15	0.25	0.25
Sat Flow, veh/h	1774	3539	1512	1774	3539	1494	3442	3403	185	3442	1994	1310
Grp Volume(v), veh/h	204	338	99	24	784	224	664	564	580	121	472	410
Grp Sat Flow(s),veh/h/ln	1774	1770	1512	1774	1770	1494	1721	1770	1818	1721	1770	1535
Q Serve(g_s), s	14.2	4.1	1.5	1.7	26.2	11.3	24.0	38.9	38.9	3.9	32.0	32.0
Cycle Q Clear(g_c), s	14.2	4.1	1.5	1.7	26.2	11.3	24.0	38.9	38.9	3.9	32.0	32.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.85
Lane Grp Cap(c), veh/h	220	1281	547	56	955	403	699	546	561	511	449	390
V/C Ratio(X)	0.93	0.26	0.18	0.43	0.82	0.56	0.95	1.03	1.03	0.24	1.05	1.05
Avail Cap(c_a), veh/h	220	1281	547	83	955	403	699	546	561	511	449	390
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	11.7	3.7	59.9	43.1	19.1	49.6	43.5	43.6	47.4	47.0	47.0
Incr Delay (d2), s/veh	40.2	0.5	0.7	1.9	7.9	5.4	22.2	47.1	46.8	0.1	56.3	59.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	2.1	0.7	0.8	13.8	5.3	13.6	26.1	26.8	1.9	22.6	20.0
LnGrp Delay(d),s/veh	87.1	12.2	4.4	61.8	51.0	24.6	71.8	90.6	90.3	47.4	103.3	106.9
LnGrp LOS	F	B	A	E	D	C	E	F	F	D	F	F
Approach Vol, veh/h		641			1032			1808			1003	
Approach Delay, s/veh		34.8			45.5			83.6			98.0	
Approach LOS		C			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.1	44.0	8.4	50.5	30.0	37.1	20.0	38.9
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	18.7	38.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	5.9	40.9	3.7	6.1	26.0	34.0	16.2	28.2
Green Ext Time (p_c), s	2.0	0.0	0.0	22.6	0.0	0.0	0.0	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	71.1
HCM 2010 LOS	E

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱		↰	↰	↱
Traffic Vol, veh/h	314	62	23	285	15	6
Future Vol, veh/h	314	62	23	285	15	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	341	67	25	310	16	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	341	0	701	341
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	360	-
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	-	-	1218	-	405	701
Stage 1	-	-	-	-	720	-
Stage 2	-	-	-	-	706	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1218	-	395	701
Mov Cap-2 Maneuver	-	-	-	-	395	-
Stage 1	-	-	-	-	720	-
Stage 2	-	-	-	-	688	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	395	701	-	-	1218	-
HCM Lane V/C Ratio	0.041	0.009	-	-	0.021	-
HCM Control Delay (s)	14.5	10.2	-	-	8	0
HCM Lane LOS	B	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	73	95	95	275	152	67
Future Volume (veh/h)	73	95	95	275	152	67
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	79	103	103	299	165	73
Adj No. of Lanes	1	1	1	1	1	1
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	629	513	133	1052	260	232
Arrive On Green	0.34	0.34	0.07	0.56	0.15	0.15
Sat Flow, veh/h	1863	1520	1774	1863	1774	1583
Grp Volume(v), veh/h	79	103	103	299	165	73
Grp Sat Flow(s),veh/h/ln	1863	1520	1774	1863	1774	1583
Q Serve(g_s), s	0.9	1.5	1.8	2.7	2.8	1.3
Cycle Q Clear(g_c), s	0.9	1.5	1.8	2.7	2.8	1.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	629	513	133	1052	260	232
V/C Ratio(X)	0.13	0.20	0.78	0.28	0.64	0.32
Avail Cap(c_a), veh/h	1163	949	254	1684	2844	2538
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	7.4	7.6	14.6	3.6	12.9	12.3
Incr Delay (d2), s/veh	0.1	0.2	3.6	0.1	1.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.7	1.0	1.4	1.4	0.6
LnGrp Delay(d),s/veh	7.5	7.7	18.3	3.8	13.9	12.6
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	182			402	238	
Approach Delay, s/veh	7.6			7.5	13.5	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.3	15.8				23.1		9.1
Change Period (Y+Rc), s	4.9	* 4.9				4.9		4.4
Max Green Setting (Gmax), s	4.6	* 20				29.1		51.6
Max Q Clear Time (g_c+I1), s	3.8	3.5				4.7		4.8
Green Ext Time (p_c), s	0.1	0.5				1.2		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.3
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	9	152	429	28	39	108	507	172	23	1162	22
Future Volume (veh/h)	23	9	152	429	28	39	108	507	172	23	1162	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	25	10	165	527	0	0	117	551	187	25	1263	24
Adj No. of Lanes	0	1	1	2	1	0	1	3	0	1	3	0
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	166	66	195	803	422	0	161	1391	457	81	1675	32
Arrive On Green	0.13	0.13	0.13	0.23	0.00	0.00	0.09	0.37	0.37	0.05	0.33	0.33
Sat Flow, veh/h	1285	514	1515	3548	1863	0	1774	3748	1231	1774	5133	98
Grp Volume(v), veh/h	35	0	165	527	0	0	117	497	241	25	834	453
Grp Sat Flow(s),veh/h/ln	1799	0	1515	1774	1863	0	1774	1695	1588	1774	1695	1841
Q Serve(g_s), s	1.6	0.0	10.1	12.7	0.0	0.0	6.1	10.2	10.6	1.3	20.8	20.8
Cycle Q Clear(g_c), s	1.6	0.0	10.1	12.7	0.0	0.0	6.1	10.2	10.6	1.3	20.8	20.8
Prop In Lane	0.71		1.00	1.00		0.00	1.00		0.77	1.00		0.05
Lane Grp Cap(c), veh/h	232	0	195	803	422	0	161	1259	590	81	1106	600
V/C Ratio(X)	0.15	0.00	0.85	0.66	0.00	0.00	0.73	0.39	0.41	0.31	0.75	0.75
Avail Cap(c_a), veh/h	274	0	231	1278	671	0	175	1259	590	169	1106	600
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.5	0.0	40.2	33.2	0.0	0.0	41.8	21.9	22.0	43.6	28.4	28.4
Incr Delay (d2), s/veh	0.3	0.0	21.3	2.0	0.0	0.0	10.7	0.9	2.1	0.8	4.8	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	5.3	6.4	0.0	0.0	3.4	4.9	5.0	0.6	10.5	12.0
LnGrp Delay(d),s/veh	36.8	0.0	61.5	35.1	0.0	0.0	52.4	22.8	24.1	44.4	33.2	37.0
LnGrp LOS	D		E	D			D	C	C	D	C	D
Approach Vol, veh/h		200			527			855			1312	
Approach Delay, s/veh		57.2			35.1			27.2			34.7	
Approach LOS		E			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	41.2		16.8	13.3	36.9		27.5
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9.3	31.1		14.4	* 9.3	30.8		34.0
Max Q Clear Time (g_c+I1), s	3.3	12.6		12.1	8.1	22.8		14.7
Green Ext Time (p_c), s	0.0	9.6		0.2	0.0	5.5		4.8

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	85	21	351	100	339	89	936	379	135	387	321
Future Volume (veh/h)	91	85	21	351	100	339	89	936	379	135	387	321
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	99	92	23	382	109	368	97	1017	412	147	421	349
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	413	435	104	446	307	720	132	1203	525	177	1292	556
Arrive On Green	0.12	0.15	0.15	0.13	0.16	0.16	0.07	0.34	0.34	0.10	0.37	0.37
Sat Flow, veh/h	3442	2808	674	3442	1863	2685	1774	3539	1546	1774	3539	1522
Grp Volume(v), veh/h	99	57	58	382	109	368	97	1017	412	147	421	349
Grp Sat Flow(s),veh/h/ln	1721	1770	1713	1721	1863	1343	1774	1770	1546	1774	1770	1522
Q Serve(g_s), s	2.6	2.8	3.0	10.9	5.2	11.7	5.4	26.6	24.0	8.1	8.6	18.9
Cycle Q Clear(g_c), s	2.6	2.8	3.0	10.9	5.2	11.7	5.4	26.6	24.0	8.1	8.6	18.9
Prop In Lane	1.00		0.39	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	413	274	265	446	307	720	132	1203	525	177	1292	556
V/C Ratio(X)	0.24	0.21	0.22	0.86	0.36	0.51	0.73	0.85	0.78	0.83	0.33	0.63
Avail Cap(c_a), veh/h	413	619	599	458	668	1242	142	1203	525	186	1292	556
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	39.9	36.9	37.0	42.6	37.1	31.4	45.3	30.6	29.7	44.2	22.9	26.2
Incr Delay (d2), s/veh	0.1	0.4	0.4	14.6	0.7	0.6	14.0	7.4	11.2	23.4	0.7	5.3
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	1.2	1.4	1.4	6.1	2.7	4.4	3.1	14.2	11.8	5.2	4.3	8.7
LnGrp Delay(d),s/veh	40.0	37.3	37.4	57.2	37.8	31.9	59.3	38.0	40.9	67.6	23.6	31.5
LnGrp LOS	D	D	D	E	D	C	E	D	D	E	C	C
Approach Vol, veh/h		214			859			1526			917	
Approach Delay, s/veh		38.6			43.9			40.1			33.6	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.7	41.1	19.7	22.6	14.2	43.6	18.7	23.6
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 11	34.0	* 13	* 35	* 8	36.5	* 12	35.9
Max Q Clear Time (g_c+I1), s	10.1	28.6	12.9	5.0	7.4	20.9	4.6	13.7
Green Ext Time (p_c), s	0.0	4.2	0.1	2.9	0.0	9.8	0.1	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	39.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	25.9
Intersection LOS	D

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	103	2	0	158	114	0	459	40
Future Vol, veh/h	0	103	2	0	158	114	0	459	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	112	2	0	172	124	0	499	43
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	11.4	12.4	36.3
HCM LOS	B	B	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	98%	0%	100%
Vol Right, %	0%	100%	2%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	459	40	105	158	114
LT Vol	459	0	0	158	0
Through Vol	0	0	103	0	114
RT Vol	0	40	2	0	0
Lane Flow Rate	499	43	114	172	124
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.878	0.062	0.21	0.335	0.224
Departure Headway (Hd)	6.334	5.124	6.609	7.014	6.506
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	574	699	542	512	551
Service Time	4.068	2.857	4.665	4.765	4.257
HCM Lane V/C Ratio	0.869	0.062	0.21	0.336	0.225
HCM Control Delay	38.8	8.2	11.4	13.3	11.1
HCM Lane LOS	E	A	B	B	B
HCM 95th-tile Q	10	0.2	0.8	1.5	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	591	50	0	0	136	5	0	1	0	5	0	654
Future Volume (veh/h)	591	50	0	0	136	5	0	1	0	5	0	654
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	642	54	0	0	148	5	0	1	0	5	0	711
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	771	1406	0	0	838	697	0	5	0	12	0	0
Arrive On Green	0.22	0.75	0.00	0.00	0.45	0.45	0.00	0.00	0.00	0.01	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1550	0	1863	0	1774	5	
Grp Volume(v), veh/h	642	54	0	0	148	5	0	1	0	5	46.2	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1550	0	1863	0	1774	D	
Q Serve(g_s), s	13.4	0.6	0.0	0.0	3.6	0.1	0.0	0.0	0.0	0.2		
Cycle Q Clear(g_c), s	13.4	0.6	0.0	0.0	3.6	0.1	0.0	0.0	0.0	0.2		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	771	1406	0	0	838	697	0	5	0	12		
V/C Ratio(X)	0.83	0.04	0.00	0.00	0.18	0.01	0.00	0.20	0.00	0.43		
Avail Cap(c_a), veh/h	1182	1406	0	0	838	697	0	257	0	351		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	27.9	2.3	0.0	0.0	12.4	11.5	0.0	37.5	0.0	37.3		
Incr Delay (d2), s/veh	1.8	0.1	0.0	0.0	0.5	0.0	0.0	21.0	0.0	8.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	6.5	0.3	0.0	0.0	2.0	0.1	0.0	0.1	0.0	0.1		
LnGrp Delay(d),s/veh	29.7	2.4	0.0	0.0	12.9	11.5	0.0	58.5	0.0	46.2		
LnGrp LOS	C	A			B	B		E		D		
Approach Vol, veh/h		696			153			1				
Approach Delay, s/veh		27.6			12.8			58.5				
Approach LOS		C			B			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		63.0			23.0	40.0	6.6	5.8
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		56.9			25.9	24.9	14.9	10.4
Max Q Clear Time (g_c+I1), s		2.6			15.4	5.6	2.2	2.0
Green Ext Time (p_c), s		0.3			1.5	0.3	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.1
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	183	644	631	134	251	203	987	138	14	1422	72
Future Volume (veh/h)	193	183	644	631	134	251	203	987	138	14	1422	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	204	207	700	689	278	182	221	1073	150	15	1546	78
Adj No. of Lanes	1	1	1	2	1	1	1	2	0	2	2	1
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	191	201	343	866	454	437	207	1406	196	144	1336	578
Arrive On Green	0.11	0.11	0.11	0.24	0.24	0.24	0.12	0.45	0.45	0.04	0.38	0.38
Sat Flow, veh/h	1774	1863	1463	3548	1863	1519	1774	3107	433	3442	3539	1531
Grp Volume(v), veh/h	204	207	700	689	278	182	221	610	613	15	1546	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1519	1774	1770	1771	1721	1770	1531
Q Serve(g_s), s	14.0	14.0	14.0	23.7	17.2	12.6	15.2	37.5	37.6	0.5	49.1	4.3
Cycle Q Clear(g_c), s	14.0	14.0	14.0	23.7	17.2	12.6	15.2	37.5	37.6	0.5	49.1	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	343	866	454	437	207	801	801	144	1336	578
V/C Ratio(X)	1.07	1.03	2.04	0.80	0.61	0.42	1.07	0.76	0.76	0.10	1.16	0.13
Avail Cap(c_a), veh/h	191	201	343	983	516	487	207	801	801	344	1336	578
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	58.0	58.0	50.7	46.1	43.7	37.7	57.4	29.7	29.8	59.9	40.5	26.5
Incr Delay (d2), s/veh	84.2	72.1	479.3	4.1	1.7	0.6	80.9	6.8	6.8	0.1	79.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.1	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	11.3	11.2	57.9	12.1	9.1	5.4	12.1	19.8	19.9	0.3	38.7	1.9
LnGrp Delay(d),s/veh	142.2	130.3	530.0	50.2	45.4	38.3	138.3	36.5	36.6	60.1	119.9	27.0
LnGrp LOS	F	F	F	D	D	D	F	D	D	E	F	C
Approach Vol, veh/h		1111			1149			1444			1639	
Approach Delay, s/veh		384.3			47.2			52.1			114.9	
Approach LOS		F			D			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.1	63.9		19.1	19.9	54.2		36.8
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 15	44.8		36.0
Max Q Clear Time (g_c+I1), s	2.5	39.6		16.0	17.2	51.1		25.7
Green Ext Time (p_c), s	0.0	5.2		0.0	0.0	0.0		4.1

Intersection Summary	
HCM 2010 Ctrl Delay	139.4
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	796	2844	0	17	479	1220	0
Future Volume (vph)	796	2844	0	17	479	1220	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	
Lane Util. Factor	0.97	0.76			0.95	0.91	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	
Frt	1.00	0.85			1.00	1.00	
Flt Protected	0.95	1.00			1.00	1.00	
Satd. Flow (prot)	3433	3610			3533	5085	
Flt Permitted	0.95	1.00			0.73	1.00	
Satd. Flow (perm)	3433	3610			2575	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	865	3091	0	18	521	1326	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	865	3091	0	0	539	1326	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot		NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases							
Actuated Green, G (s)	80.0	80.0			38.0	38.0	
Effective Green, g (s)	80.0	80.0			38.0	38.0	
Actuated g/C Ratio	0.62	0.62			0.29	0.29	
Clearance Time (s)	6.0	6.0			6.0	6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	
Lane Grp Cap (vph)	2112	2221			752	1486	
v/s Ratio Prot	0.25	c0.86				c0.26	
v/s Ratio Perm					0.21		
v/c Ratio	0.41	1.39			0.72	0.89	
Uniform Delay, d1	12.9	25.0			41.2	44.0	
Progression Factor	1.00	1.00			1.00	1.06	
Incremental Delay, d2	0.0	179.1			5.8	0.9	
Delay (s)	12.9	204.1			47.0	47.5	
Level of Service	B	F			D	D	
Approach Delay (s)	162.3				47.0	47.5	
Approach LOS	F				D	D	

Intersection Summary			
HCM 2000 Control Delay	125.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	74	96	330	425	36
Future Volume (veh/h)	42	74	96	330	425	36
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.92	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	46	80	104	359	498	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	85	533	341	1212	2120	965
Arrive On Green	0.05	0.29	0.18	0.18	0.60	0.00
Sat Flow, veh/h	1774	1863	1863	1452	3548	1615
Grp Volume(v), veh/h	46	80	104	359	498	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1452	1774	1615
Q Serve(g_s), s	2.0	2.6	3.8	5.7	5.2	0.0
Cycle Q Clear(g_c), s	2.0	2.6	3.8	5.7	5.2	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	85	533	341	1212	2120	965
V/C Ratio(X)	0.54	0.15	0.31	0.30	0.23	0.00
Avail Cap(c_a), veh/h	236	914	563	1385	2120	965
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	0.00
Uniform Delay (d), s/veh	37.1	21.2	28.2	2.6	7.5	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.2	0.1	0.3	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	1.0	1.3	2.0	7.8	2.6	0.0
LnGrp Delay(d),s/veh	39.1	21.3	28.3	2.6	7.8	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		126	463		498	
Approach Delay, s/veh		27.8	8.4		7.8	
Approach LOS		C	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				27.7		52.0	8.2	19.5
Change Period (Y+Rc), s				4.9		4.4	4.4	4.9
Max Green Setting (Gmax), s				39.1		47.6	10.6	24.1
Max Q Clear Time (g_c+I1), s				4.6		7.2	4.0	7.7
Green Ext Time (p_c), s				1.6		1.5	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	397	913	78	25	612	216	51	12	12	293	24	484
Future Volume (veh/h)	397	913	78	25	612	216	51	12	12	293	24	484
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.90	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	432	992	85	27	665	235	55	13	13	337	0	526
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	483	1375	118	34	1054	449	151	36	36	1011	0	429
Arrive On Green	0.14	0.42	0.42	0.02	0.30	0.30	0.13	0.13	0.13	0.29	0.00	0.29
Sat Flow, veh/h	3442	3279	281	1774	3539	1506	1169	276	276	3548	0	1504
Grp Volume(v), veh/h	432	535	542	27	665	235	81	0	0	337	0	526
Grp Sat Flow(s),veh/h/ln	1721	1770	1791	1774	1770	1506	1721	0	0	1774	0	1504
Q Serve(g_s), s	16.5	33.7	33.8	2.0	21.8	17.4	5.8	0.0	0.0	10.1	0.0	38.2
Cycle Q Clear(g_c), s	16.5	33.7	33.8	2.0	21.8	17.4	5.8	0.0	0.0	10.1	0.0	38.2
Prop In Lane	1.00		0.16	1.00		1.00	0.68		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	483	742	751	34	1054	449	222	0	0	1011	0	429
V/C Ratio(X)	0.89	0.72	0.72	0.80	0.63	0.52	0.36	0.00	0.00	0.33	0.00	1.23
Avail Cap(c_a), veh/h	524	742	751	74	1054	449	385	0	0	1011	0	429
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	0.87	0.87	0.87	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	56.6	32.4	32.4	65.5	40.7	39.1	53.3	0.0	0.0	37.8	0.0	47.9
Incr Delay (d2), s/veh	16.0	6.0	5.9	12.8	2.5	3.8	0.4	0.0	0.0	0.2	0.0	121.1
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	8.9	17.7	17.9	1.1	11.0	7.7	2.8	0.0	0.0	4.9	0.0	30.2
LnGrp Delay(d),s/veh	72.6	38.4	38.4	78.2	43.2	42.9	53.7	0.0	0.0	38.0	0.0	169.0
LnGrp LOS	E	D	D	E	D	D	D			D		F
Approach Vol, veh/h		1509			927			81			863	
Approach Delay, s/veh		48.2			44.1			53.7			117.8	
Approach LOS		D			D			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.0	61.8		43.1	23.2	45.5		22.2
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	5.6	40.4		38.2	20.4	* 26		30.0
Max Q Clear Time (g_c+I1), s	4.0	35.8		40.2	18.5	23.8		7.8
Green Ext Time (p_c), s	0.0	4.1		0.0	0.3	2.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	65.0
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	1070	15	100	674	170	22	10	127	205	6	157
Future Volume (veh/h)	68	1070	15	100	674	170	22	10	127	205	6	157
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.92	1.00		0.93
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	74	1163	16	109	733	185	24	11	138	223	7	171
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	93	1607	22	130	1308	330	34	16	195	306	10	344
Arrive On Green	0.05	0.45	0.45	0.15	0.94	0.94	0.16	0.16	0.16	0.18	0.18	0.18
Sat Flow, veh/h	1774	3571	49	1774	2778	701	210	96	1210	1723	54	1468
Grp Volume(v), veh/h	74	576	603	109	467	451	173	0	0	230	0	171
Grp Sat Flow(s),veh/h/ln	1774	1770	1850	1774	1770	1709	1517	0	0	1777	0	1468
Q Serve(g_s), s	5.8	37.2	37.2	8.4	4.6	4.6	15.1	0.0	0.0	17.1	0.0	14.2
Cycle Q Clear(g_c), s	5.8	37.2	37.2	8.4	4.6	4.6	15.1	0.0	0.0	17.1	0.0	14.2
Prop In Lane	1.00		0.03	1.00		0.41	0.14		0.80	0.97		1.00
Lane Grp Cap(c), veh/h	93	797	833	130	833	805	245	0	0	316	0	344
V/C Ratio(X)	0.79	0.72	0.72	0.84	0.56	0.56	0.71	0.00	0.00	0.73	0.00	0.50
Avail Cap(c_a), veh/h	139	797	833	160	833	805	315	0	0	395	0	409
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.80	0.74	0.74	0.74	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.6	31.4	31.4	58.9	2.3	2.3	55.5	0.0	0.0	54.3	0.0	46.9
Incr Delay (d2), s/veh	7.5	4.5	4.4	17.8	2.0	2.1	2.9	0.0	0.0	3.4	0.0	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	19.1	19.9	4.8	2.3	2.2	6.5	0.0	0.0	8.7	0.0	5.8
LnGrp Delay(d),s/veh	73.1	35.9	35.7	76.7	4.3	4.4	58.5	0.0	0.0	57.8	0.0	47.3
LnGrp LOS	E	D	D	E	A	A	E			E		D
Approach Vol, veh/h		1253			1027			173			401	
Approach Delay, s/veh		38.0			12.0			58.5			53.3	
Approach LOS		D			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.7	68.0		29.8	11.8	70.9		27.5
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	12.6	* 48		31.1	11.0	49.6		29.1
Max Q Clear Time (g_c+I1), s	10.4	39.2		19.1	7.8	6.6		17.1
Green Ext Time (p_c), s	0.0	8.3		0.8	0.0	34.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	56	111	378	41	96	126	770	433	119	617	18
Future Volume (veh/h)	41	56	111	378	41	96	126	770	433	119	617	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.95	1.00		0.97	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	45	61	121	443	0	104	137	837	471	129	671	20
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	77	105	296	687	0	290	171	1293	865	163	1276	538
Arrive On Green	0.10	0.10	0.10	0.19	0.00	0.19	0.10	0.37	0.37	0.09	0.36	0.36
Sat Flow, veh/h	774	1050	1439	3548	0	1499	1774	3539	1529	1774	3539	1493
Grp Volume(v), veh/h	106	0	121	443	0	104	137	837	471	129	671	20
Grp Sat Flow(s),veh/h/ln	1824	0	1439	1774	0	1499	1774	1770	1529	1774	1770	1493
Q Serve(g_s), s	4.7	0.0	6.2	9.7	0.0	5.1	6.4	16.5	16.5	6.0	12.6	0.7
Cycle Q Clear(g_c), s	4.7	0.0	6.2	9.7	0.0	5.1	6.4	16.5	16.5	6.0	12.6	0.7
Prop In Lane	0.42		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	182	0	296	687	0	290	171	1293	865	163	1276	538
V/C Ratio(X)	0.58	0.00	0.41	0.64	0.00	0.36	0.80	0.65	0.54	0.79	0.53	0.04
Avail Cap(c_a), veh/h	267	0	363	1185	0	501	274	1468	941	321	1498	632
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	36.2	0.0	29.7	31.3	0.0	29.4	37.2	22.2	11.8	37.4	21.2	17.4
Incr Delay (d2), s/veh	1.1	0.0	0.3	0.4	0.0	0.3	3.3	1.2	0.9	3.3	0.4	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	2.4	0.0	2.5	4.8	0.0	2.1	3.3	8.2	10.2	3.1	6.2	0.3
LnGrp Delay(d),s/veh	37.3	0.0	30.0	31.6	0.0	29.7	40.5	23.4	12.7	40.7	21.6	17.5
LnGrp LOS	D		C	C		C	D	C	B	D	C	B
Approach Vol, veh/h		227			547			1445			820	
Approach Delay, s/veh		33.4			31.3			21.5			24.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	37.5		13.3	12.5	37.1		21.2
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	15.3	* 35		12.3	13.0	35.6		28.1
Max Q Clear Time (g_c+I1), s	8.0	18.5		8.2	8.4	14.6		11.7
Green Ext Time (p_c), s	0.1	12.2		0.2	0.1	14.8		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	520	0	378	0	981	1286	0	686	462
Future Volume (veh/h)	0	0	0	520	0	378	0	981	1286	0	686	462
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				565	0	0	0	1066	0	0	746	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				681	0	313	0	2467	1104	0	2467	1104
Arrive On Green				0.20	0.00	0.00	0.00	1.00	0.00	0.00	0.70	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				565	0	0	0	1066	0	0	746	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				15.8	0.0	0.0	0.0	0.0	0.0	0.0	8.1	0.0
Cycle Q Clear(g_c), s				15.8	0.0	0.0	0.0	0.0	0.0	0.0	8.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				681	0	313	0	2467	1104	0	2467	1104
V/C Ratio(X)				0.83	0.00	0.00	0.00	0.43	0.00	0.00	0.30	0.00
Avail Cap(c_a), veh/h				960	0	442	0	2467	1104	0	2467	1104
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.17	0.00	0.00	0.75	0.00
Uniform Delay (d), s/veh				38.5	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0
Incr Delay (d2), s/veh				4.3	0.0	0.0	0.0	0.1	0.0	0.0	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				7.9	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0
LnGrp Delay(d),s/veh				42.8	0.0	0.0	0.0	0.1	0.0	0.0	6.1	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					565			1066			746	
Approach Delay, s/veh					42.8			0.1			6.1	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		75.1				75.1		24.9
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		61.6				61.6		27.9
Max Q Clear Time (g_c+I1), s		2.0				10.1		17.8
Green Ext Time (p_c), s		12.8				12.6		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	601	0	819	0	0	0	0	1667	412	0	934	269
Future Volume (vph)	601	0	819	0	0	0	0	1667	412	0	934	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3410			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3410			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	653	0	890	0	0	0	0	1812	448	0	1015	292
RTOR Reduction (vph)	0	0	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	653	0	890	0	0	0	0	2238	0	0	1015	292
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	20.8		69.2					66.7			18.3	100.0
Effective Green, g (s)	20.8		69.2					66.7			18.3	100.0
Actuated g/C Ratio	0.21		0.69					0.67			0.18	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	714		2498					2274			647	1536
v/s Ratio Prot	c0.19		0.25					c0.66			c0.29	
v/s Ratio Perm												0.19
v/c Ratio	0.91		0.36					0.98			1.57	0.19
Uniform Delay, d1	38.7		6.3					16.1			40.9	0.0
Progression Factor	1.00		1.00					1.50			0.85	1.00
Incremental Delay, d2	16.0		0.0					3.1			262.8	0.3
Delay (s)	54.7		6.3					27.3			297.7	0.3
Level of Service	D		A					C			F	A
Approach Delay (s)		26.8			0.0			27.3			231.3	
Approach LOS		C			A			C			F	

Intersection Summary			
HCM 2000 Control Delay	79.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	402	45	30	86	13	339	26	1340	83	303	1321	130
Future Volume (veh/h)	402	45	30	86	13	339	26	1340	83	303	1321	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	503	0	0	93	14	368	28	1457	90	329	1436	141
Adj No. of Lanes	2	1	0	0	1	1	1	2	1	2	3	2
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	723	380	0	76	11	206	38	1625	718	279	2663	1999
Arrive On Green	0.20	0.00	0.00	0.05	0.05	0.05	0.02	0.46	0.46	0.08	0.52	0.52
Sat Flow, veh/h	3548	1863	0	1552	234	1583	1774	3539	1563	3442	5085	2733
Grp Volume(v), veh/h	503	0	0	107	0	368	28	1457	90	329	1436	141
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1785	0	1583	1774	1770	1563	1721	1695	1367
Q Serve(g_s), s	13.2	0.0	0.0	4.9	0.0	4.9	1.6	37.8	3.3	8.1	18.7	1.5
Cycle Q Clear(g_c), s	13.2	0.0	0.0	4.9	0.0	4.9	1.6	37.8	3.3	8.1	18.7	1.5
Prop In Lane	1.00		0.00	0.87		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	723	380	0	87	0	206	38	1625	718	279	2663	1999
V/C Ratio(X)	0.70	0.00	0.00	1.22	0.00	1.79	0.73	0.90	0.13	1.18	0.54	0.07
Avail Cap(c_a), veh/h	1135	596	0	87	0	206	101	1625	718	279	2663	1999
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	36.9	0.0	0.0	47.6	0.0	43.5	48.6	24.9	15.5	46.0	15.8	3.9
Incr Delay (d2), s/veh	0.5	0.0	0.0	167.9	0.0	373.4	23.0	8.2	0.4	84.7	0.1	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	6.5	0.0	0.0	6.5	0.0	27.0	1.0	20.3	1.5	7.1	8.8	1.0
LnGrp Delay(d),s/veh	37.4	0.0	0.0	215.5	0.0	416.9	71.7	33.0	15.9	130.7	15.9	3.9
LnGrp LOS	D			F		F	E	C	B	F	B	A
Approach Vol, veh/h		503			475			1575			1906	
Approach Delay, s/veh		37.4			371.5			32.7			34.8	
Approach LOS		D			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	51.9		25.3	6.6	58.4		9.8
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	8.1	34.3		32.0	5.7	* 38		4.9
Max Q Clear Time (g_c+I1), s	10.1	39.8		15.2	3.6	20.7		6.9
Green Ext Time (p_c), s	0.0	0.0		1.4	0.0	15.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	70.2
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	30.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	468	1182	41	165	1273
Future Vol, veh/h	0	468	1182	41	165	1273
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	509	1285	45	179	1384

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	682	0	0	1305	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	~ 392	-	-	526	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	~ 379	-	-	517	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	199.5	0	1.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	379	517	-
HCM Lane V/C Ratio	-	-	1.342	0.347	-
HCM Control Delay (s)	-	-	199.5	15.6	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	24.1	1.5	-

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)	358	966	478	186	418	213	348	660	49	224	819	311
Future Volume (veh/h)	358	966	478	186	418	213	348	660	49	224	819	311
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		0.94	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	389	1050	520	202	454	232	378	717	53	243	890	338
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	324	1426	611	160	1098	466	449	790	58	465	597	225
Arrive On Green	0.37	0.81	0.81	0.09	0.31	0.31	0.13	0.24	0.24	0.13	0.24	0.24
Sat Flow, veh/h	1774	3539	1517	1774	3539	1503	3442	3324	246	3442	2466	931
Grp Volume(v), veh/h	389	1050	520	202	454	232	378	381	389	243	637	591
Grp Sat Flow(s),veh/h/ln	1774	1770	1517	1774	1770	1503	1721	1770	1800	1721	1770	1627
Q Serve(g_s), s	25.6	19.8	19.8	12.6	14.2	12.5	15.0	29.3	29.4	9.2	33.9	33.9
Cycle Q Clear(g_c), s	25.6	19.8	19.8	12.6	14.2	12.5	15.0	29.3	29.4	9.2	33.9	33.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.57
Lane Grp Cap(c), veh/h	324	1426	611	160	1098	466	449	421	428	465	428	394
V/C Ratio(X)	1.20	0.74	0.85	1.27	0.41	0.50	0.84	0.91	0.91	0.52	1.49	1.50
Avail Cap(c_a), veh/h	324	1426	611	160	1098	466	629	454	462	580	428	394
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	10.0	4.9	63.7	38.2	19.7	59.4	51.9	51.9	56.4	53.0	53.1
Incr Delay (d2), s/veh	108.9	2.4	10.2	159.5	1.2	3.8	5.3	21.4	21.3	0.3	231.2	237.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.2	9.5	9.3	13.2	7.1	5.7	7.5	16.8	17.1	4.4	44.1	41.2
LnGrp Delay(d),s/veh	153.3	12.4	15.1	223.2	39.4	23.5	64.7	73.3	73.2	56.7	284.3	291.0
LnGrp LOS	F	B	B	F	D	C	E	E	E	E	F	F
Approach Vol, veh/h		1959			888			1148			1471	
Approach Delay, s/veh		41.1			77.0			70.4			249.4	
Approach LOS		D			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.3	38.4	17.0	61.3	22.7	39.0	30.0	48.3
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	23.6	35.9	12.6	49.1	25.6	33.9	25.6	36.1
Max Q Clear Time (g_c+I1), s	11.2	31.4	14.6	21.8	17.0	35.9	27.6	16.2
Green Ext Time (p_c), s	1.5	1.9	0.0	24.3	1.3	0.0	0.0	18.2

Intersection Summary	
HCM 2010 Ctrl Delay	109.2
HCM 2010 LOS	F

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱		↲	↰	↱
Traffic Vol, veh/h	276	24	3	357	55	16
Future Vol, veh/h	276	24	3	357	55	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	300	26	3	388	60	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	300	0	695	300
Stage 1	-	-	-	-	300	-
Stage 2	-	-	-	-	395	-
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	-	-	1261	-	408	740
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	681	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1261	-	407	740
Mov Cap-2 Maneuver	-	-	-	-	407	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	679	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	407	740	-	-	1261	-
HCM Lane V/C Ratio	0.147	0.024	-	-	0.003	-
HCM Control Delay (s)	15.4	10	-	-	7.9	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	230	102	95	119	129	135
Future Volume (veh/h)	230	102	95	119	129	135
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	250	111	103	129	140	147
Adj No. of Lanes	1	1	1	1	1	1
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	634	518	133	1031	275	246
Arrive On Green	0.34	0.34	0.08	0.55	0.16	0.16
Sat Flow, veh/h	1863	1520	1774	1863	1774	1583
Grp Volume(v), veh/h	250	111	103	129	140	147
Grp Sat Flow(s),veh/h/ln	1863	1520	1774	1863	1774	1583
Q Serve(g_s), s	3.3	1.7	1.8	1.1	2.3	2.8
Cycle Q Clear(g_c), s	3.3	1.7	1.8	1.1	2.3	2.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	634	518	133	1031	275	246
V/C Ratio(X)	0.39	0.21	0.77	0.13	0.51	0.60
Avail Cap(c_a), veh/h	1990	1625	923	3216	1423	1270
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	8.0	7.5	14.5	3.4	12.4	12.6
Incr Delay (d2), s/veh	0.4	0.2	3.6	0.0	0.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.7	1.0	0.6	1.2	1.2
LnGrp Delay(d),s/veh	8.4	7.7	18.1	3.5	12.9	13.4
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	361			232	287	
Approach Delay, s/veh	8.2			10.0	13.2	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.8	15.8				22.6		9.4
Change Period (Y+Rc), s	4.4	4.9				4.9		4.4
Max Green Setting (Gmax), s	16.6	34.1				55.1		25.6
Max Q Clear Time (g_c+I1), s	3.8	5.3				3.1		4.8
Green Ext Time (p_c), s	0.1	1.8				1.8		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	7	68	549	45	97	71	669	123	26	635	33
Future Volume (veh/h)	22	7	68	549	45	97	71	669	123	26	635	33
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	8	74	376	359	105	77	727	134	28	690	36
Adj No. of Lanes	0	1	1	1	1	0	1	3	0	1	3	0
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	117	39	130	589	457	134	143	1345	245	87	1390	72
Arrive On Green	0.09	0.09	0.09	0.33	0.33	0.33	0.08	0.31	0.31	0.05	0.28	0.28
Sat Flow, veh/h	1347	449	1496	1774	1377	403	1774	4294	781	1774	4938	256
Grp Volume(v), veh/h	32	0	74	376	0	464	77	572	289	28	473	253
Grp Sat Flow(s),veh/h/ln	1795	0	1496	1774	0	1780	1774	1695	1685	1774	1695	1804
Q Serve(g_s), s	1.6	0.0	4.7	17.6	0.0	23.1	4.1	13.7	13.9	1.5	11.4	11.5
Cycle Q Clear(g_c), s	1.6	0.0	4.7	17.6	0.0	23.1	4.1	13.7	13.9	1.5	11.4	11.5
Prop In Lane	0.75		1.00	1.00		0.23	1.00		0.46	1.00		0.14
Lane Grp Cap(c), veh/h	156	0	130	589	0	591	143	1062	528	87	955	508
V/C Ratio(X)	0.21	0.00	0.57	0.64	0.00	0.79	0.54	0.54	0.55	0.32	0.49	0.50
Avail Cap(c_a), veh/h	165	0	137	777	0	779	163	1062	528	163	955	508
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	41.6	0.0	43.0	27.8	0.0	29.6	43.3	27.8	27.9	45.0	29.4	29.4
Incr Delay (d2), s/veh	0.6	0.0	5.0	2.5	0.0	5.9	1.2	2.0	4.0	0.8	1.8	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	2.1	9.0	0.0	12.3	2.1	6.6	7.1	0.8	5.6	6.2
LnGrp Delay(d),s/veh	42.3	0.0	48.0	30.2	0.0	35.5	44.5	29.8	32.0	45.8	31.2	32.9
LnGrp LOS	D		D	C		D	D	C	C	D	C	C
Approach Vol, veh/h		106			840			938			754	
Approach Delay, s/veh		46.3			33.2			31.7			32.3	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	36.8		13.1	12.6	33.7		38.6
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9	27.6		9.0	* 9	27.6		42.9
Max Q Clear Time (g_c+I1), s	13.5	15.9		6.7	6.1	13.5		25.1
Green Ext Time (p_c), s	0.0	5.7		0.1	0.0	6.4		7.2

Intersection Summary	
HCM 2010 Ctrl Delay	32.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	256	64	634	86	736	28	823	379	138	559	178
Future Volume (veh/h)	141	256	64	634	86	736	28	823	379	138	559	178
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	153	278	70	689	93	800	30	895	412	150	608	193
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	296	515	127	745	587	1121	70	1084	473	169	1282	551
Arrive On Green	0.09	0.18	0.18	0.22	0.31	0.31	0.04	0.31	0.31	0.10	0.36	0.36
Sat Flow, veh/h	3442	2794	689	3442	1863	2718	1774	3539	1543	1774	3539	1522
Grp Volume(v), veh/h	153	174	174	689	93	800	30	895	412	150	608	193
Grp Sat Flow(s),veh/h/ln	1721	1770	1713	1721	1863	1359	1774	1770	1543	1774	1770	1522
Q Serve(g_s), s	5.9	12.4	12.9	27.4	5.0	34.4	2.3	32.8	35.3	11.7	18.5	12.9
Cycle Q Clear(g_c), s	5.9	12.4	12.9	27.4	5.0	34.4	2.3	32.8	35.3	11.7	18.5	12.9
Prop In Lane	1.00		0.40	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	296	326	316	745	587	1121	70	1084	473	169	1282	551
V/C Ratio(X)	0.52	0.53	0.55	0.93	0.16	0.71	0.43	0.83	0.87	0.89	0.47	0.35
Avail Cap(c_a), veh/h	296	443	429	781	724	1322	102	1084	473	169	1282	551
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	61.1	51.5	51.7	53.6	34.5	34.4	65.6	45.0	45.8	62.5	34.3	32.5
Incr Delay (d2), s/veh	0.7	1.4	1.5	16.4	0.1	1.5	1.5	7.2	19.3	38.2	1.3	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	6.2	6.2	14.7	2.6	13.1	1.2	17.1	17.5	7.5	9.3	5.7
LnGrp Delay(d),s/veh	61.8	52.9	53.2	70.0	34.6	35.9	67.1	52.2	65.2	100.7	35.6	34.3
LnGrp LOS	E	D	D	E	C	D	E	D	E	F	D	C
Approach Vol, veh/h		501			1582			1337			951	
Approach Delay, s/veh		55.7			50.7			56.5			45.6	
Approach LOS		E			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	49.9	36.9	32.9	12.2	57.7	18.7	51.1
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 13	42.8	* 32	* 35	* 8	48.1	* 12	54.3
Max Q Clear Time (g_c+I1), s	13.7	37.3	29.4	14.9	4.3	20.5	7.9	36.4
Green Ext Time (p_c), s	0.0	4.2	0.8	6.4	0.0	12.8	0.1	6.1

Intersection Summary	
HCM 2010 Ctrl Delay	51.9
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	62.1
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	189	3	0	76	88	0	584	61
Future Vol, veh/h	0	189	3	0	76	88	0	584	61
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	205	3	0	83	96	0	635	66
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	14.1	11.8	89.2
HCM LOS	B	B	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	98%	0%	100%
Vol Right, %	0%	100%	2%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	584	61	192	76	88
LT Vol	584	0	0	76	0
Through Vol	0	0	189	0	88
RT Vol	0	61	3	0	0
Lane Flow Rate	635	66	209	83	96
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.117	0.094	0.379	0.169	0.182
Departure Headway (Hd)	6.333	5.122	6.931	7.792	7.28
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	578	704	522	463	495
Service Time	4.033	2.822	4.931	5.492	4.98
HCM Lane V/C Ratio	1.099	0.094	0.4	0.179	0.194
HCM Control Delay	97.6	8.4	14.1	12.1	11.6
HCM Lane LOS	F	A	B	B	B
HCM 95th-tile Q	20.1	0.3	1.8	0.6	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	751	59	0	0	100	14	3	4	3	13	0	1354
Future Volume (veh/h)	751	59	0	0	100	14	3	4	3	13	0	1354
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	816	64	0	0	109	15	3	4	3	14	0	1472
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	969	1296	0	0	604	501	69	0	0	30	0	0
Arrive On Green	0.28	0.70	0.00	0.00	0.32	0.32	0.03	0.03	0.03	0.02	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1545	0	0	0	1774	14	
Grp Volume(v), veh/h	816	64	0	0	109	15	10	0	0	14	37.1	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1545	0	0	0	1774	D	
Q Serve(g_s), s	15.2	0.7	0.0	0.0	2.9	0.5	0.0	0.0	0.0	0.5		
Cycle Q Clear(g_c), s	15.2	0.7	0.0	0.0	2.9	0.5	0.1	0.0	0.0	0.5		
Prop In Lane	1.00		0.00	0.00		1.00	0.30		0.30	1.00		
Lane Grp Cap(c), veh/h	969	1296	0	0	604	501	69	0	0	30		
V/C Ratio(X)	0.84	0.05	0.00	0.00	0.18	0.03	0.15	0.00	0.00	0.46		
Avail Cap(c_a), veh/h	1402	1296	0	0	604	501	167	0	0	650		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	23.0	3.3	0.0	0.0	16.5	15.7	32.4	0.0	0.0	33.1		
Incr Delay (d2), s/veh	2.2	0.1	0.0	0.0	0.7	0.1	1.2	0.0	0.0	4.0		
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		
%ile BackOfQ(50%),veh/ln	7.4	0.4	0.0	0.0	1.6	0.2	0.2	0.0	0.0	0.3		
LnGrp Delay(d),s/veh	25.2	3.3	0.0	0.0	17.1	15.8	33.5	0.0	0.0	37.1		
LnGrp LOS	C	A			B	B	C			D		
Approach Vol, veh/h		880			124			10				
Approach Delay, s/veh		23.6			17.0			33.5				
Approach LOS		C			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		53.4			25.2	28.2	7.3	7.3
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		47.3			27.7	13.5	24.9	10.0
Max Q Clear Time (g_c+I1), s		2.7			17.2	4.9	2.5	2.1
Green Ext Time (p_c), s		0.3			2.0	0.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.1
HCM 2010 LOS	C

APPENDIX K

NEAR-TERM (YEAR 2022) & NEAR-TERM (YEAR 2022) + PROJECT FREEWAY CALCULATION SHEETS AND RAMP METER ANALYSIS CALCULATION SHEETS

NEAR-TERM FREEWAY SEGMENT OPERATIONS

AM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) AM	Dir Split (D) AM	Truck Factor	Peak Hour Volume AM	V/C AM	LOS AM
I-5										
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	239,180	0.0638	0.2378	0.965	3,807	0.381	B
	WB Mainlines	6M	12,000	239,180	0.0638	0.7622	0.965	11,973	**0.998**	**E**
Waring Rd to College Ave	EB Mainlines	5M	10,000	226,630	0.0638	0.2378	0.965	3,613	0.361	B
	WB Mainlines	5M	10,000	226,630	0.0638	0.7622	0.965	11,444	**1.144**	**F(0)**
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	200,010	0.0741	0.3202	0.963	4,972	0.540	B
	WB Mainlines	5M	10,000	200,010	0.0741	0.6798	0.963	10,392	**1.039**	**F(0)**
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	199,950	0.0741	0.3202	0.963	4,917	0.534	B
	WB Mainlines	4M	8,000	199,950	0.0741	0.6798	0.963	10,387	**1.298**	**F(1)**

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 /
2. Near-Term ADT Volumes from adding cumulative traffic onto Existing ADT Volumes.
3. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
4. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
5. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
6. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

NEAR-TERM FREEWAY SEGMENT OPERATIONS

PM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) AM	Dir Split (D) AM	Truck Factor	Peak Hour Volume AM	V/C AM	LOS AM
I-5										
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	239,180	0.0767	0.5924	0.965	11,278	**1.128**	**F(0)**
	WB Mainlines	6M	12,000	239,180	0.0767	0.4076	0.965	7,753	0.646	C
Waring Rd to College Ave	EB Mainlines	5M	10,000	226,630	0.0767	0.5924	0.965	10,699	**1.070**	**F(0)**
	WB Mainlines	5M	10,000	226,630	0.0767	0.4076	0.965	7,415	0.742	C
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	200,010	0.0798	0.6124	0.963	10,172	**1.106**	**F(0)**
	WB Mainlines	5M	10,000	200,010	0.0798	0.3876	0.963	6,484	0.648	C
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	199,950	0.0798	0.6124	0.963	10,101	**1.098**	**F(0)**
	WB Mainlines	4M	8,000	199,950	0.0798	0.3876	0.963	6,437	0.805	D

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 /
2. Near-Term ADT Volumes from adding cumulative traffic onto Existing ADT Volumes.
3. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
4. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
5. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
6. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

NEAR-TERM + PROJECT FREEWAY SEGMENT OPERATIONS

AM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) AM	Dir Split (D) AM	Truck Factor	Peak Hour Volume AM	V/C AM	V/C DELTA	LOS AM
I-5											
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	239,880	0.0638	0.2378	0.965	3,833	0.383	0.003	B
	WB Mainlines	6M	12,000	239,880	0.0638	0.7622	0.965	11,988	**0.999**	0.001	**E**
Waring Rd to College Ave	EB Mainlines	5M	10,000	227,330	0.0638	0.2378	0.965	3,639	0.364	0.003	B
	WB Mainlines	5M	10,000	227,330	0.0638	0.7622	0.965	11,459	**1.146**	0.001	**F(0)**
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	200,380	0.0741	0.3202	0.963	4,978	0.541	0.001	B
	WB Mainlines	5M	10,000	200,380	0.0741	0.6798	0.963	10,406	**1.041**	0.001	**F(0)**
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	200,520	0.0741	0.3202	0.963	4,927	0.536	0.001	B
	WB Mainlines	4M	8,000	200,520	0.0741	0.6798	0.963	10,408	**1.301**	0.003	**F(1)**

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 Aux)
2. Near-Term + P ADT Volumes from adding Project traffic onto Near-Term ADT Volumes.
3. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
4. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
5. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
6. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

NEAR-TERM + PROJECT FREEWAY SEGMENT OPERATIONS

PM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) PM	Dir Split (D) PM	Truck Factor	Peak Hour Volume PM	V/C PM	V/C DELTA	LOS PM	
I-5												
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	239,880	0.0767	0.5924	0.965	11,306	**1.131**	0.003	**F(0)**	
	WB Mainlines	6M	12,000	239,880	0.0767	0.4076	0.965	7,779	0.648	0.002	C	
Waring Rd to College Ave	EB Mainlines	5M	10,000	227,330	0.0767	0.5924	0.965	10,727	**1.073**	0.003	**F(0)**	
	WB Mainlines	5M	10,000	227,330	0.0767	0.4076	0.965	7,441	0.744	0.003	C	
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	200,380	0.0798	0.6124	0.963	10,186	**1.107**	0.002	**F(0)**	
	WB Mainlines	5M	10,000	200,380	0.0798	0.3876	0.963	6,497	0.650	0.001	C	
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	200,520	0.0798	0.6124	0.963	10,123	**1.100**	0.002	**F(0)**	NO
	WB Mainlines	4M	8,000	200,520	0.0798	0.3876	0.963	6,458	0.807	0.003	D	

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 Aux)
2. Near-Term + P ADT Volumes from adding Project traffic onto Near-Term ADT Volumes.
3. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
4. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
5. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
6. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

RAMP METER ANALYSIS

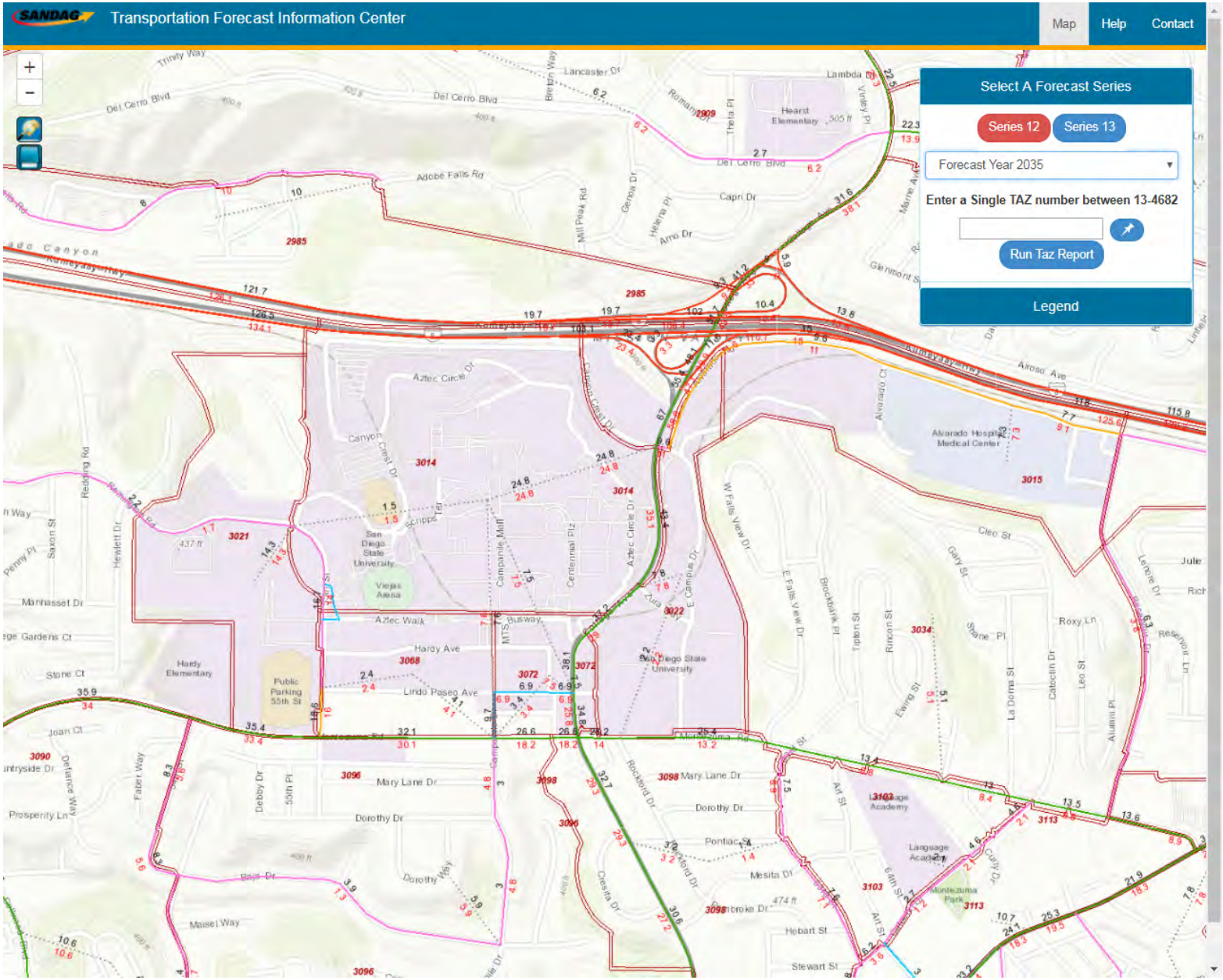
NEAR-TERM, NEAR-TERM + PROJECT

Fixed Rate Method

Location/Condition	Peak Hour	Peak Hour Demand D	Flow F	Excess Demand E	Delay (min)	Queue (ft)
I-8/College Avenue Interchange						
NB College Avenue to WB I-8					1 SOV	
Near-Term	AM	356	296	60	12	1500
Near-Term + Project	AM	367	296	71	14	1775
Project Increase	AM	11	296	11	2	275
SB College Avenue to WB I-8					2 SOV	
Near-Term	AM	356	300	56	11	1388
Near-Term + Project	AM	358	300	58	12	1438
Project Increase	AM	2	300	2	1	50
NB College Avenue to EB I-8					1 SOV	
Near-Term	PM	398	330	68	12	1700
Near-Term + Project	PM	412	330	82	15	2050
Project Increase	PM	14	330	14	3	350
SB Fairmount Ave to EB I-8					1 SOV	
Near-Term	PM	419	246	173	42	4325
Near-Term + Project	PM	419	246	173	42	4325
Project Increase	PM	0	246	0	0	0

APPENDIX K1

SANDAG SERIES 12 YEAR 2035 FORECAST VOLUMES


SANDAG
Transportation Forecast Information Center
Map
Help
Contact
Select A Forecast Series
Series 12
Series 13
Forecast Year 2035
Enter a Single TAZ number between 13-4682
Run Taz Report
Legend
Del Cerro Blvd
Adobe Falls Rd
Aztec Circle Dr
Aztec Walk
Hardy Ave
Lindo Paseo Ave
Mary Lane Dr
Dorothy Dr
San Diego State University
Hardy Elementary
Public Parking 55th St
Hearst Elementary
Alvarado Hospital Medical Center
Language Academy
Montezuma Park

APPENDIX L

HORIZON YEAR (YEAR 2035) INTERSECTION LEVEL OF SERVICE CALCULATION SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	30	400	500	580	260	364	2044	182	50	1152	100
Future Volume (veh/h)	50	30	400	500	580	260	364	2044	182	50	1152	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	44	48	435	362	884	283	396	2222	198	54	1252	109
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	2	2	1
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	191	201	344	476	1001	545	209	1261	110	295	1246	538
Arrive On Green	0.11	0.11	0.11	0.27	0.27	0.27	0.12	0.38	0.38	0.09	0.35	0.35
Sat Flow, veh/h	1774	1863	1463	1774	3725	1523	1774	3283	287	3442	3539	1528
Grp Volume(v), veh/h	44	48	435	362	884	283	396	1179	1241	54	1252	109
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1523	1774	1770	1801	1721	1770	1528
Q Serve(g_s), s	3.0	3.1	14.0	24.4	29.6	19.2	15.3	49.9	49.9	1.9	45.8	6.5
Cycle Q Clear(g_c), s	3.0	3.1	14.0	24.4	29.6	19.2	15.3	49.9	49.9	1.9	45.8	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	344	476	1001	545	209	680	692	295	1246	538
V/C Ratio(X)	0.23	0.24	1.26	0.76	0.88	0.52	1.90	1.73	1.79	0.18	1.00	0.20
Avail Cap(c_a), veh/h	191	201	344	491	1032	558	209	680	692	344	1246	538
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	53.1	53.1	50.6	43.7	45.6	33.3	57.3	40.0	40.0	55.2	42.1	29.4
Incr Delay (d2), s/veh	0.6	0.6	140.4	6.6	9.0	0.8	421.0	336.7	363.3	0.1	26.6	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	1.5	1.6	25.8	12.8	16.5	8.1	31.9	87.9	94.6	0.9	26.9	2.9
LnGrp Delay(d),s/veh	53.7	53.7	191.0	50.3	54.6	34.1	478.3	376.7	403.3	55.3	68.7	30.2
LnGrp LOS	D	D	F	D	D	C	F	F	F	E	F	C
Approach Vol, veh/h		527			1529			2816			1415	
Approach Delay, s/veh		167.1			49.8			402.7			65.2	
Approach LOS		F			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.9	55.0		19.1	20.0	50.9		40.0
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 15	44.7		36.0
Max Q Clear Time (g_c+I1), s	3.9	51.9		16.0	17.3	47.8		31.6
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	221.2
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	1190	1999	0	279	1400	896	0
Future Volume (vph)	1190	1999	0	279	1400	896	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	
Lane Util. Factor	0.97	0.76			0.95	0.91	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	
Frt	1.00	0.85			1.00	1.00	
Flt Protected	0.95	1.00			0.99	1.00	
Satd. Flow (prot)	3433	3610			3510	5085	
Flt Permitted	0.95	1.00			0.56	1.00	
Satd. Flow (perm)	3433	3610			1992	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1293	2173	0	303	1522	974	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	1293	2173	0	0	1825	974	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot		NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases							
Actuated Green, G (s)	68.0	68.0			50.0	50.0	
Effective Green, g (s)	68.0	68.0			50.0	50.0	
Actuated g/C Ratio	0.52	0.52			0.38	0.38	
Clearance Time (s)	6.0	6.0			6.0	6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	
Lane Grp Cap (vph)	1795	1888			766	1955	
v/s Ratio Prot	0.38	c0.60				0.19	
v/s Ratio Perm					c0.92		
v/c Ratio	0.72	1.15			2.38	0.50	
Uniform Delay, d1	23.7	31.0			40.0	30.5	
Progression Factor	1.00	1.00			1.00	1.02	
Incremental Delay, d2	1.2	74.6			626.2	0.1	
Delay (s)	25.0	105.6			666.2	31.1	
Level of Service	C	F			F	C	
Approach Delay (s)	75.5				666.2	31.1	
Approach LOS	E				F	C	

Intersection Summary			
HCM 2000 Control Delay	240.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.74		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	113.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	59	62	664	129	30
Future Volume (veh/h)	46	59	62	664	129	30
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.93	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	50	64	67	722	86	90
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	75	611	436	1253	1018	926
Arrive On Green	0.04	0.33	0.23	0.23	0.57	0.57
Sat Flow, veh/h	1774	1863	1863	1473	1774	1615
Grp Volume(v), veh/h	50	64	67	722	86	90
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1473	1774	1615
Q Serve(g_s), s	2.6	2.3	2.7	17.5	2.1	2.4
Cycle Q Clear(g_c), s	2.6	2.3	2.7	17.5	2.1	2.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	75	611	436	1253	1018	926
V/C Ratio(X)	0.67	0.10	0.15	0.58	0.08	0.10
Avail Cap(c_a), veh/h	75	638	472	1282	1018	926
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	44.7	22.1	28.8	3.4	9.0	9.1
Incr Delay (d2), s/veh	16.8	0.0	0.1	0.4	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.2	1.4	18.8	1.0	3.4
LnGrp Delay(d),s/veh	61.4	22.2	28.9	3.8	9.2	9.3
LnGrp LOS	E	C	C	A	A	A
Approach Vol, veh/h		114	789		176	
Approach Delay, s/veh		39.4	5.9		9.3	
Approach LOS		D	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.0		58.7	8.9	27.1
Change Period (Y+Rc), s				4.9		4.4	4.9	* 4.9
Max Green Setting (Gmax), s				32.4		54.3	4.0	* 24
Max Q Clear Time (g_c+I1), s				4.3		4.4	4.6	19.5
Green Ext Time (p_c), s				0.2		0.4	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.0
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	681	421	30	20	1060	386	80	30	30	103	20	175
Future Volume (veh/h)	681	421	30	20	1060	386	80	30	30	103	20	175
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.92	1.00		0.86
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	740	458	33	22	1152	420	87	33	33	128	0	190
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	699	1962	141	30	1423	612	153	58	58	284	0	109
Arrive On Green	0.20	0.59	0.59	0.03	0.80	0.80	0.16	0.16	0.16	0.08	0.00	0.08
Sat Flow, veh/h	3442	3336	239	1774	3539	1521	973	369	369	3548	0	1354
Grp Volume(v), veh/h	740	242	249	22	1152	420	153	0	0	128	0	190
Grp Sat Flow(s),veh/h/ln	1721	1770	1805	1774	1770	1521	1711	0	0	1774	0	1354
Q Serve(g_s), s	25.6	8.2	8.3	1.5	23.0	15.2	10.4	0.0	0.0	4.3	0.0	10.1
Cycle Q Clear(g_c), s	25.6	8.2	8.3	1.5	23.0	15.2	10.4	0.0	0.0	4.3	0.0	10.1
Prop In Lane	1.00		0.13	1.00		1.00	0.57		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	699	1041	1062	30	1423	612	269	0	0	284	0	109
V/C Ratio(X)	1.06	0.23	0.23	0.73	0.81	0.69	0.57	0.00	0.00	0.45	0.00	1.75
Avail Cap(c_a), veh/h	699	1041	1062	56	1423	612	407	0	0	284	0	109
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.2	12.4	12.4	60.6	9.6	8.9	49.1	0.0	0.0	55.3	0.0	58.0
Incr Delay (d2), s/veh	50.5	0.5	0.5	1.1	0.5	0.6	0.7	0.0	0.0	1.2	0.0	372.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.0	4.1	4.3	0.8	10.6	6.2	5.0	0.0	0.0	2.2	0.0	15.0
LnGrp Delay(d),s/veh	100.7	12.9	12.9	61.7	10.1	9.5	49.8	0.0	0.0	56.5	0.0	430.4
LnGrp LOS	F	B	B	E	B	A	D			E		F
Approach Vol, veh/h		1231			1594			153			318	
Approach Delay, s/veh		65.7			10.7			49.8			279.9	
Approach LOS		E			B			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	79.7		15.0	30.0	56.3		24.7
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	4.0	62.1		10.1	25.6	* 41		30.0
Max Q Clear Time (g_c+I1), s	3.5	10.3		12.1	27.6	25.0		12.4
Green Ext Time (p_c), s	0.0	28.0		0.0	0.0	12.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	59.0
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	512	30	84	1350	406	46	30	118	130	20	70
Future Volume (veh/h)	110	512	30	84	1350	406	46	30	118	130	20	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.93	1.00		0.92
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	120	557	33	91	1467	441	50	33	128	141	22	76
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	84	1491	88	113	1233	350	68	45	173	252	39	313
Arrive On Green	0.10	0.88	0.88	0.08	0.61	0.61	0.18	0.18	0.18	0.16	0.16	0.16
Sat Flow, veh/h	1774	3382	200	1774	2697	766	376	248	962	1545	241	1459
Grp Volume(v), veh/h	120	291	299	91	933	975	211	0	0	163	0	76
Grp Sat Flow(s),veh/h/ln	1774	1770	1812	1774	1770	1694	1586	0	0	1786	0	1459
Q Serve(g_s), s	6.0	3.6	3.7	6.3	57.6	57.6	15.9	0.0	0.0	10.6	0.0	5.5
Cycle Q Clear(g_c), s	6.0	3.6	3.7	6.3	57.6	57.6	15.9	0.0	0.0	10.6	0.0	5.5
Prop In Lane	1.00		0.11	1.00		0.45	0.24		0.61	0.87		1.00
Lane Grp Cap(c), veh/h	84	780	799	113	809	774	286	0	0	291	0	313
V/C Ratio(X)	1.42	0.37	0.37	0.80	1.15	1.26	0.74	0.00	0.00	0.56	0.00	0.24
Avail Cap(c_a), veh/h	84	780	799	149	809	774	365	0	0	439	0	434
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	0.09	0.09	0.09	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.0	4.4	4.4	56.9	24.7	24.7	48.8	0.0	0.0	48.6	0.0	41.4
Incr Delay (d2), s/veh	243.8	1.3	1.3	1.6	70.7	117.7	3.9	0.0	0.0	0.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	1.9	1.9	3.2	43.6	51.8	7.3	0.0	0.0	5.3	0.0	2.2
LnGrp Delay(d),s/veh	300.8	5.7	5.7	58.5	95.5	142.4	52.7	0.0	0.0	49.2	0.0	41.6
LnGrp LOS	F	A	A	E	F	F	D			D		D
Approach Vol, veh/h		710			1999			211			239	
Approach Delay, s/veh		55.6			116.7			52.7			46.8	
Approach LOS		E			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	60.6		25.4	10.4	62.6		27.6
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	10.6	* 36		31.0	6.0	40.8		29.0
Max Q Clear Time (g_c+I1), s	8.3	5.7		12.6	8.0	59.6		17.9
Green Ext Time (p_c), s	0.0	29.7		0.5	0.0	0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	93.4
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	70	253	563	120	111	102	839	300	75	1364	38
Future Volume (veh/h)	119	70	253	563	120	111	102	839	300	75	1364	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.97	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	129	76	275	705	0	121	111	912	326	82	1483	41
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	141	83	307	856	0	365	140	1274	932	105	1203	506
Arrive On Green	0.12	0.12	0.12	0.24	0.00	0.24	0.08	0.36	0.36	0.06	0.34	0.34
Sat Flow, veh/h	1136	670	1463	3548	0	1512	1774	3539	1529	1774	3539	1489
Grp Volume(v), veh/h	205	0	275	705	0	121	111	912	326	82	1483	41
Grp Sat Flow(s),veh/h/ln	1806	0	1463	1774	0	1512	1774	1770	1529	1774	1770	1489
Q Serve(g_s), s	10.9	0.0	12.1	18.3	0.0	6.4	6.0	21.7	10.5	4.4	33.1	1.8
Cycle Q Clear(g_c), s	10.9	0.0	12.1	18.3	0.0	6.4	6.0	21.7	10.5	4.4	33.1	1.8
Prop In Lane	0.63		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	224	0	307	856	0	365	140	1274	932	105	1203	506
V/C Ratio(X)	0.91	0.00	0.90	0.82	0.00	0.33	0.79	0.72	0.35	0.78	1.23	0.08
Avail Cap(c_a), veh/h	224	0	307	1020	0	434	339	1486	1024	173	1203	506
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	42.2	0.0	38.0	35.0	0.0	30.5	44.1	26.9	9.9	45.2	32.2	21.8
Incr Delay (d2), s/veh	36.8	0.0	26.1	4.0	0.0	0.2	3.7	1.8	0.4	4.7	112.2	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	7.8	0.0	9.5	9.5	0.0	2.7	3.1	10.8	7.3	2.3	34.8	0.8
LnGrp Delay(d),s/veh	79.0	0.0	64.1	39.1	0.0	30.7	47.8	28.7	10.2	49.9	144.3	21.9
LnGrp LOS	E		E	D		C	D	C	B	D	F	C
Approach Vol, veh/h		480			826			1349			1606	
Approach Delay, s/veh		70.4			37.8			25.8			136.4	
Approach LOS		E			D			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.2	41.9		17.0	12.1	39.9		28.4
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	9.5	* 41		12.1	18.6	30.3		28.0
Max Q Clear Time (g_c+I1), s	16.4	23.7		14.1	8.0	35.1		20.3
Green Ext Time (p_c), s	0.0	11.4		0.0	0.1	0.0		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	74.8
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	330	0	119	0	1122	419	0	1325	855
Future Volume (veh/h)	0	0	0	330	0	119	0	1122	419	0	1325	855
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				359	0	0	0	1220	0	0	1440	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				375	0	173	0	2782	1244	0	2782	1244
Arrive On Green				0.11	0.00	0.00	0.00	1.00	0.00	0.00	0.79	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				359	0	0	0	1220	0	0	1440	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				10.4	0.0	0.0	0.0	0.0	0.0	0.0	14.7	0.0
Cycle Q Clear(g_c), s				10.4	0.0	0.0	0.0	0.0	0.0	0.0	14.7	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				375	0	173	0	2782	1244	0	2782	1244
V/C Ratio(X)				0.96	0.00	0.00	0.00	0.44	0.00	0.00	0.52	0.00
Avail Cap(c_a), veh/h				375	0	173	0	2782	1244	0	2782	1244
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.69	0.00	0.00	0.09	0.00
Uniform Delay (d), s/veh				44.3	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0
Incr Delay (d2), s/veh				35.3	0.0	0.0	0.0	0.3	0.0	0.0	0.1	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				6.8	0.0	0.0	0.0	0.1	0.0	0.0	7.0	0.0
LnGrp Delay(d),s/veh				79.6	0.0	0.0	0.0	0.3	0.0	0.0	3.9	0.0
LnGrp LOS				E				A			A	
Approach Vol, veh/h					359			1220			1440	
Approach Delay, s/veh					79.6			0.3			3.9	
Approach LOS					E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		84.0				84.0		16.0
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		78.6				78.6		10.9
Max Q Clear Time (g_c+I1), s		2.0				16.7		12.4
Green Ext Time (p_c), s		29.0				27.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	443	0	1582	0	0	0	0	1098	276	0	1299	356
Future Volume (vph)	443	0	1582	0	0	0	0	1098	276	0	1299	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3409			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3409			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	482	0	1720	0	0	0	0	1193	300	0	1412	387
RTOR Reduction (vph)	0	0	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	482	0	1720	0	0	0	0	1471	0	0	1412	387
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	16.5		53.3					71.0			34.2	100.0
Effective Green, g (s)	16.5		53.3					71.0			34.2	100.0
Actuated g/C Ratio	0.16		0.53					0.71			0.34	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	566		1924					2420			1210	1536
v/s Ratio Prot	0.14		c0.48					0.43			c0.40	
v/s Ratio Perm												0.25
v/c Ratio	0.85		0.89					0.61			1.17	0.25
Uniform Delay, d1	40.6		20.8					7.4			32.9	0.0
Progression Factor	1.00		1.00					0.67			1.16	1.00
Incremental Delay, d2	11.4		5.7					0.3			82.7	0.3
Delay (s)	51.9		26.5					5.3			120.8	0.3
Level of Service	D		C					A			F	A
Approach Delay (s)		32.1			0.0			5.3			94.9	
Approach LOS		C			A			A			F	

Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	30	28	88	79	293	115	975	79	678	1650	553
Future Volume (veh/h)	106	30	28	88	79	293	115	975	79	678	1650	553
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	89	69	30	96	86	318	125	1060	86	737	1793	601
Adj No. of Lanes	1	1	0	0	1	1	1	2	1	2	3	2
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	243	166	72	92	82	359	117	1518	670	451	2537	1744
Arrive On Green	0.14	0.14	0.14	0.10	0.10	0.10	0.07	0.43	0.43	0.04	0.16	0.16
Sat Flow, veh/h	1774	1214	528	957	858	1583	1774	3539	1561	3442	5085	2731
Grp Volume(v), veh/h	89	0	99	182	0	318	125	1060	86	737	1793	601
Grp Sat Flow(s),veh/h/ln	1774	0	1741	1815	0	1583	1774	1770	1561	1721	1695	1365
Q Serve(g_s), s	4.6	0.0	5.2	9.6	0.0	9.6	6.6	24.4	3.3	13.1	33.3	14.4
Cycle Q Clear(g_c), s	4.6	0.0	5.2	9.6	0.0	9.6	6.6	24.4	3.3	13.1	33.3	14.4
Prop In Lane	1.00		0.30	0.53		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	0	239	174	0	359	117	1518	670	451	2537	1744
V/C Ratio(X)	0.37	0.00	0.41	1.04	0.00	0.88	1.07	0.70	0.13	1.63	0.71	0.34
Avail Cap(c_a), veh/h	568	0	557	174	0	359	117	1518	670	451	2537	1744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	39.2	0.0	39.5	45.2	0.0	37.4	46.7	23.3	17.3	47.8	34.9	15.4
Incr Delay (d2), s/veh	0.3	0.0	0.4	80.4	0.0	21.4	102.5	2.7	0.4	286.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	2.5	8.7	0.0	10.6	6.6	12.5	1.5	24.2	15.7	7.5
LnGrp Delay(d),s/veh	39.5	0.0	39.9	125.7	0.0	58.8	149.3	26.0	17.7	334.4	35.0	15.5
LnGrp LOS	D		D	F		E	F	C	B	F	D	B
Approach Vol, veh/h		188			500			1271			3131	
Approach Delay, s/veh		39.7			83.2			37.5			101.7	
Approach LOS		D			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.0	48.9		18.6	11.0	55.9		14.5
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	13.1	24.6		32.0	6.6	* 32		9.6
Max Q Clear Time (g_c+I1), s	15.1	26.4		7.2	8.6	35.3		11.6
Green Ext Time (p_c), s	0.0	0.0		0.6	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	81.6
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	7.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱	↰	↑↑
Traffic Vol, veh/h	0	118	1234	87	414	1352
Future Vol, veh/h	0	118	1234	87	414	1352
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	128	1341	95	450	1470

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	711	0	0	1361	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	375	-	-	501	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	363	-	-	493	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.2	0	11.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	363	493	-
HCM Lane V/C Ratio	-	-	0.353	0.913	-
HCM Control Delay (s)	-	-	20.2	50.9	-
HCM Lane LOS	-	-	C	F	-
HCM 95th %tile Q(veh)	-	-	1.6	10.6	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	372	111	39	883	240	734	1139	65	129	568	390
Future Volume (veh/h)	221	372	111	39	883	240	734	1139	65	129	568	390
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		0.95	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	240	404	121	42	960	261	798	1238	71	140	617	424
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	220	1254	535	70	955	403	699	1101	63	456	496	341
Arrive On Green	0.25	0.71	0.71	0.04	0.27	0.27	0.20	0.32	0.32	0.13	0.25	0.25
Sat Flow, veh/h	1774	3539	1511	1774	3539	1494	3442	3392	194	3442	1954	1342
Grp Volume(v), veh/h	240	404	121	42	960	261	798	645	664	140	559	482
Grp Sat Flow(s),veh/h/ln	1774	1770	1511	1774	1770	1494	1721	1770	1817	1721	1770	1527
Q Serve(g_s), s	15.6	5.4	2.0	2.9	34.0	14.0	25.6	40.9	40.9	4.6	32.0	32.0
Cycle Q Clear(g_c), s	15.6	5.4	2.0	2.9	34.0	14.0	25.6	40.9	40.9	4.6	32.0	32.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		0.88
Lane Grp Cap(c), veh/h	220	1254	535	70	955	403	699	574	590	456	449	388
V/C Ratio(X)	1.09	0.32	0.23	0.60	1.01	0.65	1.14	1.12	1.13	0.31	1.24	1.24
Avail Cap(c_a), veh/h	220	1254	535	83	955	403	699	574	590	456	449	388
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	12.6	4.0	59.6	46.0	20.9	50.2	42.5	42.6	49.4	47.0	47.0
Incr Delay (d2), s/veh	86.1	0.6	0.9	3.5	30.4	7.8	80.1	76.1	76.9	0.1	127.0	129.8
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	12.8	2.7	0.9	1.5	20.6	6.6	19.9	32.1	33.1	2.2	31.5	27.4
LnGrp Delay(d),s/veh	133.5	13.3	5.0	63.1	76.4	28.8	130.3	118.6	119.4	49.6	174.0	176.8
LnGrp LOS	F	B	A	E	F	C	F	F	F	D	F	F
Approach Vol, veh/h		765			1263			2107			1181	
Approach Delay, s/veh		49.7			66.1			123.3			160.4	
Approach LOS		D			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.1	46.0	9.3	49.6	30.0	37.1	20.0	38.9
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	16.7	40.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	6.6	42.9	4.9	7.4	27.6	34.0	17.6	36.0
Green Ext Time (p_c), s	2.2	0.0	0.0	26.5	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	107.3
HCM 2010 LOS	F

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	383	81	35	343	25	21
Future Vol, veh/h	383	81	35	343	25	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	416	88	38	373	27	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	416	0	865	416
Stage 1	-	-	-	-	416	-
Stage 2	-	-	-	-	449	-
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	-	-	1143	-	324	637
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	643	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1143	-	310	637
Mov Cap-2 Maneuver	-	-	-	-	310	-
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	310	637	-	-	1143	-
HCM Lane V/C Ratio	0.088	0.036	-	-	0.033	-
HCM Control Delay (s)	17.7	10.9	-	-	8.3	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	85	115	110	341	185	80
Future Volume (veh/h)	85	115	110	341	185	80
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	92	125	120	371	201	87
Adj No. of Lanes	1	1	1	1	1	1
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	601	490	153	1031	305	272
Arrive On Green	0.32	0.32	0.09	0.55	0.17	0.17
Sat Flow, veh/h	1863	1519	1774	1863	1774	1583
Grp Volume(v), veh/h	92	125	120	371	201	87
Grp Sat Flow(s),veh/h/ln	1863	1519	1774	1863	1774	1583
Q Serve(g_s), s	1.2	2.1	2.2	3.8	3.6	1.6
Cycle Q Clear(g_c), s	1.2	2.1	2.2	3.8	3.6	1.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	601	490	153	1031	305	272
V/C Ratio(X)	0.15	0.26	0.78	0.36	0.66	0.32
Avail Cap(c_a), veh/h	1106	902	241	1601	2704	2414
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	8.2	8.5	15.2	4.2	13.1	12.3
Incr Delay (d2), s/veh	0.1	0.2	3.3	0.2	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.9	1.2	1.9	1.8	0.7
LnGrp Delay(d),s/veh	8.3	8.7	18.5	4.4	14.0	12.5
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	217			491	288	
Approach Delay, s/veh	8.5			7.8	13.6	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.8	15.8				23.6		10.2
Change Period (Y+Rc), s	4.9	* 4.9				4.9		4.4
Max Green Setting (Gmax), s	4.6	* 20				29.1		51.6
Max Q Clear Time (g_c+I1), s	4.2	4.1				5.8		5.6
Green Ext Time (p_c), s	0.1	0.7				1.5		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	20	180	499	40	48	130	615	209	40	1409	40
Future Volume (veh/h)	40	20	180	499	40	48	130	615	209	40	1409	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	43	22	196	621	0	0	141	668	227	43	1532	43
Adj No. of Lanes	0	1	1	2	1	0	1	3	0	1	3	0
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	170	87	217	872	458	0	164	1251	417	111	1552	44
Arrive On Green	0.14	0.14	0.14	0.25	0.00	0.00	0.09	0.34	0.34	0.06	0.31	0.31
Sat Flow, veh/h	1193	610	1520	3548	1863	0	1774	3731	1242	1774	5078	143
Grp Volume(v), veh/h	65	0	196	621	0	0	141	606	289	43	1023	552
Grp Sat Flow(s),veh/h/ln	1803	0	1520	1774	1863	0	1774	1695	1583	1774	1695	1830
Q Serve(g_s), s	3.2	0.0	12.8	16.1	0.0	0.0	7.9	14.6	15.0	2.3	30.2	30.2
Cycle Q Clear(g_c), s	3.2	0.0	12.8	16.1	0.0	0.0	7.9	14.6	15.0	2.3	30.2	30.2
Prop In Lane	0.66		1.00	1.00		0.00	1.00		0.78	1.00		0.08
Lane Grp Cap(c), veh/h	258	0	217	872	458	0	164	1137	531	111	1036	559
V/C Ratio(X)	0.25	0.00	0.90	0.71	0.00	0.00	0.86	0.53	0.54	0.39	0.99	0.99
Avail Cap(c_a), veh/h	258	0	217	1197	628	0	164	1137	531	158	1036	559
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	0.0	42.5	34.7	0.0	0.0	45.1	27.1	27.2	45.4	34.8	34.8
Incr Delay (d2), s/veh	0.5	0.0	35.8	2.4	0.0	0.0	33.2	1.8	4.0	0.8	25.0	35.0
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	1.6	0.0	7.5	8.1	0.0	0.0	5.4	7.1	7.1	1.2	17.7	20.6
LnGrp Delay(d),s/veh	38.9	0.0	78.3	37.2	0.0	0.0	78.3	28.9	31.2	46.2	59.8	69.8
LnGrp LOS	D		E	D			E	C	C	D	E	E
Approach Vol, veh/h		261			621			1036			1618	
Approach Delay, s/veh		68.5			37.2			36.3			62.9	
Approach LOS		E			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	39.9		19.0	14.0	36.9		30.9
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9.3	31.1		14.4	* 9.3	30.8		34.0
Max Q Clear Time (g_c+I1), s	14.3	17.0		14.8	9.9	32.2		18.1
Green Ext Time (p_c), s	0.0	9.8		0.0	0.0	0.0		5.2

Intersection Summary	
HCM 2010 Ctrl Delay	51.0
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	99	30	422	120	413	110	1260	460	165	510	380
Future Volume (veh/h)	108	99	30	422	120	413	110	1260	460	165	510	380
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	117	108	33	459	130	449	120	1370	500	179	554	413
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	397	482	141	440	359	800	136	1155	504	179	1240	533
Arrive On Green	0.12	0.18	0.18	0.13	0.19	0.19	0.08	0.33	0.33	0.10	0.35	0.35
Sat Flow, veh/h	3442	2679	782	3442	1863	2695	1774	3539	1545	1774	3539	1521
Grp Volume(v), veh/h	117	70	71	459	130	449	120	1370	500	179	554	413
Grp Sat Flow(s),veh/h/ln	1721	1770	1692	1721	1863	1347	1774	1770	1545	1774	1770	1521
Q Serve(g_s), s	3.2	3.5	3.8	13.3	6.3	14.7	7.0	34.0	33.6	10.5	12.6	25.2
Cycle Q Clear(g_c), s	3.2	3.5	3.8	13.3	6.3	14.7	7.0	34.0	33.6	10.5	12.6	25.2
Prop In Lane	1.00		0.46	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	397	318	305	440	359	800	136	1155	504	179	1240	533
V/C Ratio(X)	0.30	0.22	0.23	1.04	0.36	0.56	0.88	1.19	0.99	1.00	0.45	0.77
Avail Cap(c_a), veh/h	397	595	569	440	642	1210	136	1155	504	179	1240	533
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	42.2	36.4	36.6	45.4	36.5	31.2	47.6	35.1	34.9	46.8	26.0	30.2
Incr Delay (d2), s/veh	0.2	0.3	0.4	55.0	0.6	0.6	42.5	92.5	38.0	67.5	1.2	10.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.7	1.8	9.6	3.3	5.5	5.0	31.4	19.7	8.5	6.4	12.1
LnGrp Delay(d),s/veh	42.4	36.8	36.9	100.4	37.1	31.8	90.1	127.6	72.9	114.3	27.2	40.7
LnGrp LOS	D	D	D	F	D	C	F	F	E	F	C	D
Approach Vol, veh/h		258			1038			1990			1146	
Approach Delay, s/veh		39.4			62.8			111.6			45.7	
Approach LOS		D			E			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.2	41.1	20.0	25.8	14.7	43.6	18.7	27.1
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 11	34.0	* 13	* 35	* 8	36.5	* 12	35.9
Max Q Clear Time (g_c+I1), s	12.5	36.0	15.3	5.8	9.0	27.2	5.2	16.7
Green Ext Time (p_c), s	0.0	0.0	0.0	3.6	0.0	7.8	0.1	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	78.9
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	65.6
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	150	20	0	230	176	0	557	60
Future Vol, veh/h	0	150	20	0	230	176	0	557	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	163	22	0	250	191	0	605	65
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	14.5	16.6	112
HCM LOS	B	C	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	88%	0%	100%
Vol Right, %	0%	100%	12%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	557	60	170	230	176
LT Vol	557	0	0	230	0
Through Vol	0	0	150	0	176
RT Vol	0	60	20	0	0
Lane Flow Rate	605	65	185	250	191
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.179	0.105	0.353	0.508	0.363
Departure Headway (Hd)	7.009	5.792	7.483	7.889	7.377
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	521	623	484	460	492
Service Time	4.709	3.492	5.483	5.589	5.077
HCM Lane V/C Ratio	1.161	0.104	0.382	0.543	0.388
HCM Control Delay	123.1	9.2	14.5	18.5	14.2
HCM Lane LOS	F	A	B	C	B
HCM 95th-tile Q	21.9	0.4	1.6	2.8	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	705	61	0	0	165	20	10	20	10	20	0	780
Future Volume (veh/h)	705	61	0	0	165	20	10	20	10	20	0	780
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	766	66	0	0	179	22	11	22	11	22	0	848
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	886	1276	0	0	660	548	54	0	0	43	0	0
Arrive On Green	0.26	0.68	0.00	0.00	0.35	0.35	0.08	0.08	0.08	0.02	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1546	0	0	0	1774	22	
Grp Volume(v), veh/h	766	66	0	0	179	22	44	0	0	22	43.6	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1546	0	0	0	1774	D	
Q Serve(g_s), s	17.7	1.0	0.0	0.0	5.7	0.8	0.0	0.0	0.0	1.0		
Cycle Q Clear(g_c), s	17.7	1.0	0.0	0.0	5.7	0.8	0.1	0.0	0.0	1.0		
Prop In Lane	1.00		0.00	0.00		1.00	0.25		0.25	1.00		
Lane Grp Cap(c), veh/h	886	1276	0	0	660	548	54	0	0	43		
V/C Ratio(X)	0.86	0.05	0.00	0.00	0.27	0.04	0.81	0.00	0.00	0.52		
Avail Cap(c_a), veh/h	1197	1276	0	0	660	548	114	0	0	318		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	29.5	4.3	0.0	0.0	19.2	17.6	35.5	0.0	0.0	40.1		
Incr Delay (d2), s/veh	4.1	0.1	0.0	0.0	1.0	0.1	28.1	0.0	0.0	3.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.9	0.5	0.0	0.0	3.1	0.3	1.4	0.0	0.0	0.5		
LnGrp Delay(d),s/veh	33.6	4.3	0.0	0.0	20.2	17.7	63.6	0.0	0.0	43.6		
LnGrp LOS	C	A			C	B	E			D		
Approach Vol, veh/h		832			201			44				
Approach Delay, s/veh		31.2			19.9			63.6				
Approach LOS		C			B			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		63.0			27.5	35.5	8.1	12.0
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		56.9			28.9	21.9	14.9	10.4
Max Q Clear Time (g_c+I1), s		3.0			19.7	7.7	3.0	2.1
Green Ext Time (p_c), s		0.4			1.7	0.4	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	30.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	260	750	750	190	300	240	1179	200	40	1860	90
Future Volume (veh/h)	235	260	750	750	190	300	240	1179	200	40	1860	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	255	283	815	831	348	217	261	1282	217	43	2022	98
Adj No. of Lanes	1	1	1	2	1	1	1	2	0	2	2	1
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	191	201	344	946	496	531	209	1186	199	271	1254	541
Arrive On Green	0.11	0.11	0.11	0.27	0.27	0.27	0.12	0.39	0.39	0.08	0.35	0.35
Sat Flow, veh/h	1774	1863	1463	3548	1863	1523	1774	3018	506	3442	3539	1528
Grp Volume(v), veh/h	255	283	815	831	348	217	261	746	753	43	2022	98
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1523	1774	1770	1754	1721	1770	1528
Q Serve(g_s), s	14.0	14.0	14.0	29.2	21.9	14.1	15.3	51.1	51.1	1.5	46.1	5.8
Cycle Q Clear(g_c), s	14.0	14.0	14.0	29.2	21.9	14.1	15.3	51.1	51.1	1.5	46.1	5.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	344	946	496	531	209	696	689	271	1254	541
V/C Ratio(X)	1.33	1.41	2.37	0.88	0.70	0.41	1.25	1.07	1.09	0.16	1.61	0.18
Avail Cap(c_a), veh/h	191	201	344	983	516	547	209	696	689	344	1254	541
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	58.0	58.0	50.6	45.7	43.0	32.5	57.3	39.4	39.4	55.9	42.0	29.0
Incr Delay (d2), s/veh	181.8	211.7	625.3	9.0	4.0	0.5	145.8	55.4	62.0	0.1	279.5	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.5	19.0	72.1	15.5	11.9	6.0	15.9	35.6	36.6	0.7	71.1	2.5
LnGrp Delay(d),s/veh	239.8	269.7	676.0	54.6	47.0	33.0	203.1	94.9	101.4	56.0	321.4	29.7
LnGrp LOS	F	F	F	D	D	C	F	F	F	E	F	C
Approach Vol, veh/h		1353			1396			1760			2163	
Approach Delay, s/veh		508.8			49.4			113.7			302.9	
Approach LOS		F			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.9	56.2		19.1	20.0	51.2		39.7
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 15	44.7		36.0
Max Q Clear Time (g_c+I1), s	3.5	53.1		16.0	17.3	48.1		31.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	241.7
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	996	3205	0	30	623	1657	0
Future Volume (vph)	996	3205	0	30	623	1657	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	
Lane Util. Factor	0.97	0.76			0.95	0.91	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	
Frt	1.00	0.85			1.00	1.00	
Flt Protected	0.95	1.00			1.00	1.00	
Satd. Flow (prot)	3433	3610			3531	5085	
Flt Permitted	0.95	1.00			0.56	1.00	
Satd. Flow (perm)	3433	3610			1982	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1083	3484	0	33	677	1801	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	1083	3484	0	0	710	1801	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot		NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases							
Actuated Green, G (s)	80.0	80.0			38.0	38.0	
Effective Green, g (s)	80.0	80.0			38.0	38.0	
Actuated g/C Ratio	0.62	0.62			0.29	0.29	
Clearance Time (s)	6.0	6.0			6.0	6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	
Lane Grp Cap (vph)	2112	2221			579	1486	
v/s Ratio Prot	0.32	c0.97				0.35	
v/s Ratio Perm					c0.36		
v/c Ratio	0.51	1.57			1.23	1.21	
Uniform Delay, d1	14.0	25.0			46.0	46.0	
Progression Factor	1.00	1.00			1.00	1.07	
Incremental Delay, d2	0.1	258.1			116.5	96.0	
Delay (s)	14.1	283.1			162.5	145.3	
Level of Service	B	F			F	F	
Approach Delay (s)	219.3				162.5	145.3	
Approach LOS	F				F	F	

Intersection Summary			
HCM 2000 Control Delay	194.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	117.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	48	90	117	380	494	46
Future Volume (veh/h)	48	90	117	380	494	46
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.92	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	52	98	127	413	584	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	92	557	359	1210	2081	947
Arrive On Green	0.05	0.30	0.19	0.19	0.59	0.00
Sat Flow, veh/h	1774	1863	1863	1457	3548	1615
Grp Volume(v), veh/h	52	98	127	413	584	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1457	1774	1615
Q Serve(g_s), s	2.3	3.2	4.8	7.1	6.6	0.0
Cycle Q Clear(g_c), s	2.3	3.2	4.8	7.1	6.6	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	92	557	359	1210	2081	947
V/C Ratio(X)	0.57	0.18	0.35	0.34	0.28	0.00
Avail Cap(c_a), veh/h	232	897	553	1361	2081	947
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	0.00
Uniform Delay (d), s/veh	37.6	21.1	28.4	2.8	8.3	0.0
Incr Delay (d2), s/veh	2.0	0.1	0.2	0.1	0.3	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	1.2	1.6	2.5	9.2	3.3	0.0
LnGrp Delay(d),s/veh	39.6	21.1	28.6	2.8	8.6	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		150	540		584	
Approach Delay, s/veh		27.5	8.9		8.6	
Approach LOS		C	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.2		52.0	8.6	20.6
Change Period (Y+Rc), s				4.9		4.4	4.4	4.9
Max Green Setting (Gmax), s				39.1		47.6	10.6	24.1
Max Q Clear Time (g_c+I1), s				5.2		8.6	4.3	9.1
Green Ext Time (p_c), s				1.9		1.9	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	478	1093	120	41	728	255	80	30	30	341	40	586
Future Volume (veh/h)	478	1093	120	41	728	255	80	30	30	341	40	586
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.95	1.00		0.92	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	520	1188	130	45	791	277	87	33	33	402	0	637
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	416	1216	133	58	1035	440	149	57	57	1011	0	429
Arrive On Green	0.12	0.38	0.38	0.03	0.29	0.29	0.15	0.15	0.15	0.29	0.00	0.29
Sat Flow, veh/h	3442	3193	348	1774	3539	1505	972	369	369	3548	0	1504
Grp Volume(v), veh/h	520	657	661	45	791	277	153	0	0	402	0	637
Grp Sat Flow(s),veh/h/ln	1721	1770	1771	1774	1770	1505	1710	0	0	1774	0	1504
Q Serve(g_s), s	16.2	48.9	49.4	3.4	27.3	21.4	11.1	0.0	0.0	12.2	0.0	38.2
Cycle Q Clear(g_c), s	16.2	48.9	49.4	3.4	27.3	21.4	11.1	0.0	0.0	12.2	0.0	38.2
Prop In Lane	1.00		0.20	1.00		1.00	0.57		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	416	674	675	58	1035	440	263	0	0	1011	0	429
V/C Ratio(X)	1.25	0.97	0.98	0.78	0.76	0.63	0.58	0.00	0.00	0.40	0.00	1.49
Avail Cap(c_a), veh/h	416	674	675	74	1035	440	383	0	0	1011	0	429
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	0.72	0.72	0.72	1.00	0.00	0.00	0.98	0.00	0.98
Uniform Delay (d), s/veh	58.9	40.8	41.0	64.3	43.2	41.1	52.7	0.0	0.0	38.6	0.0	47.9
Incr Delay (d2), s/veh	131.0	28.9	30.2	18.5	3.9	4.9	0.8	0.0	0.0	0.3	0.0	230.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.3	29.3	29.7	2.0	13.9	9.4	5.3	0.0	0.0	6.0	0.0	43.3
LnGrp Delay(d),s/veh	189.9	69.7	71.1	82.8	47.1	46.0	53.5	0.0	0.0	38.9	0.0	278.5
LnGrp LOS	F	E	E	F	D	D	D			D		F
Approach Vol, veh/h		1838			1113			153			1039	
Approach Delay, s/veh		104.2			48.3			53.5			185.8	
Approach LOS		F			D			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.8	56.6		43.1	20.6	44.8		25.5
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	5.6	40.4		38.2	16.2	* 31		30.0
Max Q Clear Time (g_c+I1), s	5.4	51.4		40.2	18.2	29.3		13.1
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	1.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	107.8
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	1276	25	121	796	218	38	20	154	255	20	190
Future Volume (veh/h)	80	1276	25	121	796	218	38	20	154	255	20	190
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.96	1.00		0.93	1.00		0.93
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	87	1387	27	132	865	237	41	22	167	277	22	207
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	108	1405	27	153	1147	314	50	27	203	329	26	391
Arrive On Green	0.06	0.40	0.40	0.17	0.84	0.84	0.18	0.18	0.18	0.20	0.20	0.20
Sat Flow, veh/h	1774	3545	69	1774	2721	745	276	148	1124	1649	131	1478
Grp Volume(v), veh/h	87	692	722	132	562	540	230	0	0	299	0	207
Grp Sat Flow(s),veh/h/ln	1774	1770	1845	1774	1770	1697	1548	0	0	1780	0	1478
Q Serve(g_s), s	6.8	54.2	54.4	10.1	19.1	19.2	20.0	0.0	0.0	22.6	0.0	16.9
Cycle Q Clear(g_c), s	6.8	54.2	54.4	10.1	19.1	19.2	20.0	0.0	0.0	22.6	0.0	16.9
Prop In Lane	1.00		0.04	1.00		0.44	0.18		0.73	0.93		1.00
Lane Grp Cap(c), veh/h	108	701	731	153	746	715	280	0	0	355	0	391
V/C Ratio(X)	0.81	0.99	0.99	0.86	0.75	0.75	0.82	0.00	0.00	0.84	0.00	0.53
Avail Cap(c_a), veh/h	139	701	731	160	746	715	322	0	0	395	0	425
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.52	0.52	0.52	0.51	0.51	0.51	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	64.9	41.9	41.9	57.1	7.8	7.9	55.2	0.0	0.0	53.9	0.0	44.5
Incr Delay (d2), s/veh	10.0	21.4	21.3	19.5	3.6	3.8	12.2	0.0	0.0	12.6	0.0	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	30.7	32.0	5.7	9.5	9.1	9.5	0.0	0.0	12.4	0.0	6.9
LnGrp Delay(d),s/veh	74.9	63.3	63.3	76.6	11.5	11.6	67.3	0.0	0.0	66.5	0.0	45.0
LnGrp LOS	E	E	E	E	B	B	E			E		D
Approach Vol, veh/h		1501			1234			230			506	
Approach Delay, s/veh		64.0			18.5			67.3			57.7	
Approach LOS		E			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.5	60.5		32.8	12.9	64.0		30.2
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	12.6	* 48		31.1	11.0	49.6		29.1
Max Q Clear Time (g_c+I1), s	12.1	56.4		24.6	8.8	21.2		22.0
Green Ext Time (p_c), s	0.0	0.0		0.8	0.0	26.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	47.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	68	127	475	50	116	126	940	537	144	757	33
Future Volume (veh/h)	49	68	127	475	50	116	126	940	537	144	757	33
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.95	1.00		0.97	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	53	74	138	555	0	126	137	1022	584	157	823	36
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	81	113	305	747	0	316	168	1264	879	190	1307	552
Arrive On Green	0.11	0.11	0.11	0.21	0.00	0.21	0.09	0.36	0.36	0.11	0.37	0.37
Sat Flow, veh/h	761	1063	1447	3548	0	1504	1774	3539	1529	1774	3539	1494
Grp Volume(v), veh/h	127	0	138	555	0	126	137	1022	584	157	823	36
Grp Sat Flow(s),veh/h/ln	1825	0	1447	1774	0	1504	1774	1770	1529	1774	1770	1494
Q Serve(g_s), s	6.4	0.0	8.1	14.1	0.0	6.9	7.3	25.1	25.7	8.3	18.3	1.5
Cycle Q Clear(g_c), s	6.4	0.0	8.1	14.1	0.0	6.9	7.3	25.1	25.7	8.3	18.3	1.5
Prop In Lane	0.42		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	195	0	305	747	0	316	168	1264	879	190	1307	552
V/C Ratio(X)	0.65	0.00	0.45	0.74	0.00	0.40	0.81	0.81	0.66	0.83	0.63	0.07
Avail Cap(c_a), veh/h	234	0	336	1039	0	440	240	1287	889	281	1313	554
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	41.2	0.0	33.8	35.5	0.0	32.7	42.6	27.9	14.5	42.0	24.9	19.6
Incr Delay (d2), s/veh	2.7	0.0	0.4	1.0	0.0	0.3	8.8	4.3	2.3	7.7	1.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	3.2	7.0	0.0	2.9	4.0	13.0	16.0	4.5	9.1	0.6
LnGrp Delay(d),s/veh	43.9	0.0	34.2	36.5	0.0	33.0	51.5	32.2	16.8	49.7	25.9	19.6
LnGrp LOS	D		C	D		C	D	C	B	D	C	B
Approach Vol, veh/h		265			681			1743			1016	
Approach Delay, s/veh		38.9			35.8			28.5			29.4	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.7	41.1		15.1	13.5	42.2		25.1
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	15.3	* 35		12.3	13.0	35.6		28.1
Max Q Clear Time (g_c+I1), s	10.3	27.7		10.1	9.3	20.3		16.1
Green Ext Time (p_c), s	0.1	6.6		0.2	0.1	13.1		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	30.8
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	602	0	465	0	1138	1625	0	804	555
Future Volume (veh/h)	0	0	0	602	0	465	0	1138	1625	0	804	555
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				654	0	0	0	1237	0	0	874	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				513	0	236	0	2640	1181	0	2640	1181
Arrive On Green				0.15	0.00	0.00	0.00	1.00	0.00	0.00	0.75	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				654	0	0	0	1237	0	0	874	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				14.9	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0
Cycle Q Clear(g_c), s				14.9	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				513	0	236	0	2640	1181	0	2640	1181
V/C Ratio(X)				1.28	0.00	0.00	0.00	0.47	0.00	0.00	0.33	0.00
Avail Cap(c_a), veh/h				513	0	236	0	2640	1181	0	2640	1181
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.62	0.00
Uniform Delay (d), s/veh				42.5	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0
Incr Delay (d2), s/veh				138.5	0.0	0.0	0.0	0.1	0.0	0.0	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				16.9	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0
LnGrp Delay(d),s/veh				181.0	0.0	0.0	0.0	0.1	0.0	0.0	4.5	0.0
LnGrp LOS				F				A			A	
Approach Vol, veh/h					654			1237			874	
Approach Delay, s/veh					181.0			0.1			4.5	
Approach LOS					F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		80.0				80.0		20.0
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		74.6				74.6		14.9
Max Q Clear Time (g_c+I1), s		2.0				10.3		16.9
Green Ext Time (p_c), s		17.5				17.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.3
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	787	0	932	0	0	0	0	1976	445	0	1077	329
Future Volume (vph)	787	0	932	0	0	0	0	1976	445	0	1077	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3420			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3420			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	855	0	1013	0	0	0	0	2148	484	0	1171	358
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	855	0	1013	0	0	0	0	2612	0	0	1171	358
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	21.3		69.3					66.2			18.2	100.0
Effective Green, g (s)	21.3		69.3					66.2			18.2	100.0
Actuated g/C Ratio	0.21		0.69					0.66			0.18	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	731		2501					2264			644	1536
v/s Ratio Prot	c0.25		0.28					c0.76			c0.33	
v/s Ratio Perm												0.23
v/c Ratio	1.17		0.41					1.15			1.82	0.23
Uniform Delay, d1	39.4		6.6					16.9			40.9	0.0
Progression Factor	1.00		1.00					1.47			0.85	1.00
Incremental Delay, d2	90.6		0.0					69.8			372.3	0.2
Delay (s)	130.0		6.6					94.7			407.2	0.2
Level of Service	F		A					F			F	A
Approach Delay (s)		63.1			0.0			94.7			311.9	
Approach LOS		E			A			F			F	

Intersection Summary			
HCM 2000 Control Delay	140.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	100.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	474	52	41	91	29	385	42	1562	85	325	1540	144
Future Volume (veh/h)	474	52	41	91	29	385	42	1562	85	325	1540	144
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	598	0	0	99	32	418	46	1698	92	353	1674	157
Adj No. of Lanes	2	1	0	0	1	1	1	2	1	2	3	2
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	798	419	0	66	21	206	59	1551	684	279	2497	1967
Arrive On Green	0.22	0.00	0.00	0.05	0.05	0.05	0.03	0.44	0.44	0.05	0.33	0.33
Sat Flow, veh/h	3548	1863	0	1356	438	1583	1774	3539	1562	3442	5085	2730
Grp Volume(v), veh/h	598	0	0	131	0	418	46	1698	92	353	1674	157
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1795	0	1583	1774	1770	1562	1721	1695	1365
Q Serve(g_s), s	15.7	0.0	0.0	4.9	0.0	4.9	2.6	43.8	3.5	8.1	28.3	2.2
Cycle Q Clear(g_c), s	15.7	0.0	0.0	4.9	0.0	4.9	2.6	43.8	3.5	8.1	28.3	2.2
Prop In Lane	1.00		0.00	0.76		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	798	419	0	88	0	206	59	1551	684	279	2497	1967
V/C Ratio(X)	0.75	0.00	0.00	1.49	0.00	2.03	0.78	1.10	0.13	1.27	0.67	0.08
Avail Cap(c_a), veh/h	1135	596	0	88	0	206	101	1551	684	279	2497	1967
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	36.1	0.0	0.0	47.6	0.0	43.5	48.0	28.1	16.8	47.3	26.6	5.7
Incr Delay (d2), s/veh	0.9	0.0	0.0	270.9	0.0	480.5	20.0	53.5	0.4	122.5	0.1	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	7.8	0.0	0.0	9.0	0.0	33.1	1.6	32.8	1.6	8.6	13.2	1.5
LnGrp Delay(d),s/veh	37.0	0.0	0.0	318.4	0.0	524.0	68.0	81.6	17.2	169.8	26.7	5.7
LnGrp LOS	D			F		F	E	F	B	F	C	A
Approach Vol, veh/h		598			549			1836			2184	
Approach Delay, s/veh		37.0			474.9			78.0			48.3	
Approach LOS		D			F			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	49.8		27.4	7.7	55.1		9.8
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	8.1	34.3		32.0	5.7	* 38		4.9
Max Q Clear Time (g_c+I1), s	10.1	45.8		17.7	4.6	30.3		6.9
Green Ext Time (p_c), s	0.0	0.0		1.7	0.0	7.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	102.9
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	59.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	536	1368	49	198	1474
Future Vol, veh/h	0	536	1368	49	198	1474
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	583	1487	53	215	1602

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	783	0	0	1507	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	~ 337	-	-	440	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	~ 326	-	-	433	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 393.8	0	2.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	326	433	-
HCM Lane V/C Ratio	-	-	1.787	0.497	-
HCM Control Delay (s)	-	-	$ 393.8	21.3	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	37.8	2.7	-

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)	430	1173	572	235	496	241	416	756	60	254	919	371
Future Volume (veh/h)	430	1173	572	235	496	241	416	756	60	254	919	371
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.94	1.00		0.94	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	467	1275	622	255	539	262	452	822	65	276	999	403
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	362	1390	596	147	961	406	423	779	62	531	649	257
Arrive On Green	0.41	0.79	0.79	0.08	0.27	0.27	0.12	0.24	0.24	0.15	0.27	0.27
Sat Flow, veh/h	1774	3539	1516	1774	3539	1495	3442	3304	261	3442	2431	963
Grp Volume(v), veh/h	467	1275	622	255	539	262	452	440	447	276	722	680
Grp Sat Flow(s),veh/h/ln	1774	1770	1516	1774	1770	1495	1721	1770	1796	1721	1770	1625
Q Serve(g_s), s	28.6	38.7	37.9	11.6	18.3	15.1	17.2	33.0	33.0	10.3	37.4	37.4
Cycle Q Clear(g_c), s	28.6	38.7	37.9	11.6	18.3	15.1	17.2	33.0	33.0	10.3	37.4	37.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		0.59
Lane Grp Cap(c), veh/h	362	1390	596	147	961	406	423	417	423	531	473	434
V/C Ratio(X)	1.29	0.92	1.04	1.73	0.56	0.65	1.07	1.06	1.06	0.52	1.53	1.57
Avail Cap(c_a), veh/h	362	1390	596	147	961	406	423	417	423	531	473	434
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.29	0.29	0.29	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	13.3	7.1	64.2	43.8	21.9	61.4	53.5	53.5	54.4	51.3	51.3
Incr Delay (d2), s/veh	136.0	3.8	32.6	357.4	2.4	7.7	63.4	59.4	59.1	0.4	248.0	265.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	27.6	18.8	20.1	20.3	9.3	7.1	11.9	23.0	23.3	4.9	50.8	48.8
LnGrp Delay(d),s/veh	177.4	17.0	39.7	421.6	46.2	29.6	124.8	112.9	112.6	54.9	299.3	317.2
LnGrp LOS	F	B	F	F	D	C	F	F	F	D	F	F
Approach Vol, veh/h		2364			1056			1339			1678	
Approach Delay, s/veh		54.7			132.7			116.8			266.3	
Approach LOS		D			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	38.1	16.0	59.9	21.6	42.5	33.0	42.9
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	21.6	33.0	11.6	55.0	17.2	37.4	28.6	38.0
Max Q Clear Time (g_c+I1), s	12.3	35.0	13.6	40.7	19.2	39.4	30.6	20.3
Green Ext Time (p_c), s	1.6	0.0	0.0	13.9	0.0	0.0	0.0	17.1

Intersection Summary	
HCM 2010 Ctrl Delay	135.6
HCM 2010 LOS	F

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	332	35	20	436	79	28
Future Vol, veh/h	332	35	20	436	79	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	361	38	22	474	86	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	361	0	878	361
Stage 1	-	-	-	-	361	-
Stage 2	-	-	-	-	517	-
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	-	-	1198	-	318	684
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	598	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1198	-	310	684
Mov Cap-2 Maneuver	-	-	-	-	310	-
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	583	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	18.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	310	684	-	-	1198	-
HCM Lane V/C Ratio	0.277	0.044	-	-	0.018	-
HCM Control Delay (s)	21	10.5	-	-	8.1	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0.1	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	285	124	105	142	156	160
Future Volume (veh/h)	285	124	105	142	156	160
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	310	135	114	154	170	174
Adj No. of Lanes	1	1	1	1	1	1
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	611	498	147	1012	314	280
Arrive On Green	0.33	0.33	0.08	0.54	0.18	0.18
Sat Flow, veh/h	1863	1519	1774	1863	1774	1583
Grp Volume(v), veh/h	310	135	114	154	170	174
Grp Sat Flow(s),veh/h/ln	1863	1519	1774	1863	1774	1583
Q Serve(g_s), s	4.5	2.2	2.1	1.4	2.9	3.4
Cycle Q Clear(g_c), s	4.5	2.2	2.1	1.4	2.9	3.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	611	498	147	1012	314	280
V/C Ratio(X)	0.51	0.27	0.77	0.15	0.54	0.62
Avail Cap(c_a), veh/h	1911	1559	886	3088	1367	1220
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	9.0	8.2	14.9	3.8	12.5	12.7
Incr Delay (d2), s/veh	0.6	0.3	3.2	0.1	0.5	0.8
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	0.9	1.1	0.7	1.5	1.5
LnGrp Delay(d),s/veh	9.6	8.5	18.2	3.8	13.0	13.5
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	445			268	344	
Approach Delay, s/veh	9.3			9.9	13.3	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.2	15.8				23.0		10.3
Change Period (Y+Rc), s	4.4	4.9				4.9		4.4
Max Green Setting (Gmax), s	16.6	34.1				55.1		25.6
Max Q Clear Time (g_c+I1), s	4.1	6.5				3.4		5.4
Green Ext Time (p_c), s	0.1	2.2				2.3		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	10.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	20	80	638	55	118	86	809	148	40	769	40
Future Volume (veh/h)	40	20	80	638	55	118	86	809	148	40	769	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.98	1.00		0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	43	22	87	440	413	128	93	879	161	43	836	43
Adj No. of Lanes	0	1	1	1	1	0	1	3	0	1	3	0
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	102	52	128	641	490	152	143	1221	222	109	1312	67
Arrive On Green	0.09	0.09	0.09	0.36	0.36	0.36	0.08	0.28	0.28	0.06	0.27	0.27
Sat Flow, veh/h	1193	610	1491	1774	1356	420	1774	4292	781	1774	4941	253
Grp Volume(v), veh/h	65	0	87	440	0	541	93	693	347	43	573	306
Grp Sat Flow(s),veh/h/ln	1803	0	1491	1774	0	1777	1774	1695	1683	1774	1695	1804
Q Serve(g_s), s	3.6	0.0	5.9	21.9	0.0	29.1	5.3	19.1	19.3	2.4	15.5	15.6
Cycle Q Clear(g_c), s	3.6	0.0	5.9	21.9	0.0	29.1	5.3	19.1	19.3	2.4	15.5	15.6
Prop In Lane	0.66		1.00	1.00		0.24	1.00		0.46	1.00		0.14
Lane Grp Cap(c), veh/h	154	0	128	641	0	642	143	965	479	109	900	479
V/C Ratio(X)	0.42	0.00	0.68	0.69	0.00	0.84	0.65	0.72	0.72	0.39	0.64	0.64
Avail Cap(c_a), veh/h	156	0	129	732	0	733	154	965	479	154	900	479
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	45.1	0.0	46.2	28.2	0.0	30.5	46.4	33.4	33.5	46.9	33.7	33.8
Incr Delay (d2), s/veh	1.8	0.0	13.5	3.4	0.0	9.5	6.2	4.6	9.2	0.9	3.4	6.4
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	1.8	0.0	2.9	11.2	0.0	16.0	2.8	9.6	10.2	1.2	7.7	8.6
LnGrp Delay(d),s/veh	46.9	0.0	59.7	31.6	0.0	39.9	52.5	38.0	42.7	47.8	37.2	40.2
LnGrp LOS	D		E	C		D	D	D	D	D	D	D
Approach Vol, veh/h		152			981			1133			922	
Approach Delay, s/veh		54.2			36.2			40.7			38.7	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	35.7		13.5	13.1	33.7		43.7
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9	27.6		9.0	* 9	27.6		42.9
Max Q Clear Time (g_c+I1), s	14.4	21.3		7.9	7.3	17.6		31.1
Green Ext Time (p_c), s	0.0	4.3		0.1	0.0	6.1		6.5

Intersection Summary	
HCM 2010 Ctrl Delay	39.4
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	293	80	762	104	896	40	1090	450	168	730	208
Future Volume (veh/h)	171	293	80	762	104	896	40	1090	450	168	730	208
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	186	318	87	828	113	974	43	1185	489	183	793	226
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	282	584	157	744	647	1251	80	965	420	195	1194	513
Arrive On Green	0.08	0.21	0.21	0.22	0.35	0.35	0.05	0.27	0.27	0.11	0.34	0.34
Sat Flow, veh/h	3442	2739	736	3442	1863	2721	1774	3539	1541	1774	3539	1520
Grp Volume(v), veh/h	186	203	202	828	113	974	43	1185	489	183	793	226
Grp Sat Flow(s),veh/h/ln	1721	1770	1705	1721	1863	1360	1774	1770	1541	1774	1770	1520
Q Serve(g_s), s	7.7	15.0	15.5	31.7	6.2	44.4	3.5	40.0	40.0	15.0	28.1	17.0
Cycle Q Clear(g_c), s	7.7	15.0	15.5	31.7	6.2	44.4	3.5	40.0	40.0	15.0	28.1	17.0
Prop In Lane	1.00		0.43	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	282	377	363	744	647	1251	80	965	420	195	1194	513
V/C Ratio(X)	0.66	0.54	0.55	1.11	0.17	0.78	0.54	1.23	1.16	0.94	0.66	0.44
Avail Cap(c_a), veh/h	282	422	407	744	690	1313	97	965	420	195	1194	513
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	65.4	51.3	51.5	57.5	33.2	33.6	68.5	53.3	53.3	64.8	41.5	37.8
Incr Delay (d2), s/veh	4.5	1.2	1.3	68.6	0.1	2.9	2.1	111.7	96.8	46.9	2.9	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	7.5	7.4	22.1	3.2	17.1	1.8	34.4	28.3	9.9	14.1	7.5
LnGrp Delay(d),s/veh	69.9	52.5	52.8	126.0	33.4	36.6	70.6	165.0	150.1	111.7	44.4	40.5
LnGrp LOS	E	D	D	F	C	D	E	F	F	F	D	D
Approach Vol, veh/h		591			1915			1717			1202	
Approach Delay, s/veh		58.1			75.1			158.4			53.9	
Approach LOS		E			E			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.8	47.1	38.4	38.4	13.3	56.6	18.7	58.1
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 16	40.0	* 32	* 35	* 8	48.1	* 12	54.3
Max Q Clear Time (g_c+I1), s	17.0	42.0	33.7	17.5	5.5	30.1	9.7	46.4
Green Ext Time (p_c), s	0.0	0.0	0.0	7.5	0.0	13.0	0.1	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	94.9
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	128.6
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	285	20	0	110	127	0	687	90
Future Vol, veh/h	0	285	20	0	110	127	0	687	90
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	310	22	0	120	138	0	747	98
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	22.1	14.3	205.3
HCM LOS	C	B	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	93%	0%	100%
Vol Right, %	0%	100%	7%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	687	90	305	110	127
LT Vol	687	0	0	110	0
Through Vol	0	0	285	0	127
RT Vol	0	90	20	0	0
Lane Flow Rate	747	98	332	120	138
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.446	0.156	0.614	0.254	0.274
Departure Headway (Hd)	6.97	5.752	7.676	8.814	8.297
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	530	627	474	410	436
Service Time	4.67	3.452	5.676	6.514	5.997
HCM Lane V/C Ratio	1.409	0.156	0.7	0.293	0.317
HCM Control Delay	230.9	9.5	22.1	14.5	14.1
HCM Lane LOS	F	A	C	B	B
HCM 95th-tile Q	36.5	0.5	4	1	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	883	70	0	0	120	30	20	20	20	30	0	1622
Future Volume (veh/h)	883	70	0	0	120	30	20	20	20	30	0	1622
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.97	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	960	76	0	0	130	33	22	22	22	33	0	1763
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	1085	1174	0	0	435	359	64	0	0	59	0	0
Arrive On Green	0.32	0.63	0.00	0.00	0.23	0.23	0.10	0.10	0.10	0.03	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1537	0	0	0	1774	33	
Grp Volume(v), veh/h	960	76	0	0	130	33	66	0	0	33	38.8	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1537	0	0	0	1774	D	
Q Serve(g_s), s	19.9	1.2	0.0	0.0	4.3	1.3	0.0	0.0	0.0	1.4		
Cycle Q Clear(g_c), s	19.9	1.2	0.0	0.0	4.3	1.3	0.1	0.0	0.0	1.4		
Prop In Lane	1.00		0.00	0.00		1.00	0.33		0.33	1.00		
Lane Grp Cap(c), veh/h	1085	1174	0	0	435	359	64	0	0	59		
V/C Ratio(X)	0.89	0.06	0.00	0.00	0.30	0.09	1.03	0.00	0.00	0.56		
Avail Cap(c_a), veh/h	1279	1174	0	0	435	359	85	0	0	588		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	24.4	5.4	0.0	0.0	23.7	22.5	30.5	0.0	0.0	35.7		
Incr Delay (d2), s/veh	6.2	0.1	0.0	0.0	1.8	0.5	101.4	0.0	0.0	3.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.4	0.6	0.0	0.0	2.4	0.6	3.1	0.0	0.0	0.7		
LnGrp Delay(d),s/veh	30.6	5.5	0.0	0.0	25.4	23.0	132.4	0.0	0.0	38.8		
LnGrp LOS	C	A			C	C	F			D		
Approach Vol, veh/h		1036			163			66				
Approach Delay, s/veh		28.7			25.0			132.4				
Approach LOS		C			C			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		53.4			29.8	23.6	8.6	13.1
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		47.3			27.9	13.3	24.9	10.0
Max Q Clear Time (g_c+I1), s		3.2			21.9	6.3	3.4	2.1
Green Ext Time (p_c), s		0.4			1.8	0.2	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C

APPENDIX M

HORIZON YEAR (YEAR 2035) + PROJECT INTERSECTION LEVEL OF SERVICE CALCULATION SHEETS

HCM 2010 Signalized Intersection Summary
1: Fairmont Ave/Fairmount Ave & Camino del Rio N/I-8 WB Off Ramp

10/13/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	30	400	500	580	260	364	2045	182	50	1161	100
Future Volume (veh/h)	50	30	400	500	580	260	364	2045	182	50	1161	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	44	48	435	362	884	283	396	2223	198	54	1262	109
Adj No. of Lanes	1	1	1	1	2	1	1	2	0	2	2	1
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	191	201	344	476	1001	545	209	1261	110	295	1246	538
Arrive On Green	0.11	0.11	0.11	0.27	0.27	0.27	0.12	0.38	0.38	0.09	0.35	0.35
Sat Flow, veh/h	1774	1863	1463	1774	3725	1523	1774	3283	287	3442	3539	1528
Grp Volume(v), veh/h	44	48	435	362	884	283	396	1179	1242	54	1262	109
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1523	1774	1770	1801	1721	1770	1528
Q Serve(g_s), s	3.0	3.1	14.0	24.4	29.6	19.2	15.3	49.9	49.9	1.9	45.8	6.5
Cycle Q Clear(g_c), s	3.0	3.1	14.0	24.4	29.6	19.2	15.3	49.9	49.9	1.9	45.8	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	344	476	1001	545	209	680	692	295	1246	538
V/C Ratio(X)	0.23	0.24	1.26	0.76	0.88	0.52	1.90	1.74	1.80	0.18	1.01	0.20
Avail Cap(c_a), veh/h	191	201	344	491	1032	558	209	680	692	344	1246	538
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	53.1	53.1	50.6	43.7	45.6	33.3	57.3	40.0	40.0	55.2	42.1	29.4
Incr Delay (d2), s/veh	0.6	0.6	140.4	6.6	9.0	0.8	421.0	337.0	363.6	0.1	28.6	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	1.5	1.6	25.8	12.8	16.5	8.1	31.9	88.0	94.6	0.9	27.3	2.9
LnGrp Delay(d),s/veh	53.7	53.7	191.0	50.3	54.6	34.1	478.3	377.0	403.6	55.3	70.7	30.2
LnGrp LOS	D	D	F	D	D	C	F	F	F	E	F	C
Approach Vol, veh/h		527			1529			2817			1425	
Approach Delay, s/veh		167.1			49.8			403.0			67.0	
Approach LOS		F			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.9	55.0		19.1	20.0	50.9		40.0
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 15	44.7		36.0
Max Q Clear Time (g_c+I1), s	3.9	51.9		16.0	17.3	47.8		31.6
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	221.5
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

HCM Signalized Intersection Capacity Analysis
2: Fairmont Ave & I-8 EB Off Ramp

10/13/2017

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	1190	2018	0	279	1401	900	0
Future Volume (vph)	1190	2018	0	279	1401	900	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	
Lane Util. Factor	0.97	0.76			0.95	0.91	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	
Frt	1.00	0.85			1.00	1.00	
Flt Protected	0.95	1.00			0.99	1.00	
Satd. Flow (prot)	3433	3610			3510	5085	
Flt Permitted	0.95	1.00			0.56	1.00	
Satd. Flow (perm)	3433	3610			1990	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1293	2193	0	303	1523	978	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	1293	2193	0	0	1826	978	0
Confl. Peds. (#/hr)		10					
Turn Type	Prot	Prot	Prot	Perm	NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases				8			
Actuated Green, G (s)	67.7	67.7			50.3	50.3	
Effective Green, g (s)	67.7	67.7			50.3	50.3	
Actuated g/C Ratio	0.52	0.52			0.39	0.39	
Clearance Time (s)	6.0	6.0			6.0	6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	
Lane Grp Cap (vph)	1787	1879			769	1967	
v/s Ratio Prot	0.38	c0.61				0.19	
v/s Ratio Perm					c0.92		
v/c Ratio	0.72	1.17			2.37	0.50	
Uniform Delay, d1	24.0	31.1			39.9	30.3	
Progression Factor	1.00	1.00			1.00	1.02	
Incremental Delay, d2	1.3	81.4			622.5	0.1	
Delay (s)	25.2	112.5			662.4	30.9	
Level of Service	C	F			F	C	
Approach Delay (s)	80.1				662.4	30.9	
Approach LOS	F				F	C	

Intersection Summary			
HCM 2000 Control Delay	241.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.75		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	113.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	59	62	700	133	30
Future Volume (veh/h)	50	59	62	700	133	30
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.93	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	54	64	67	761	176	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	74	623	449	1256	2017	918
Arrive On Green	0.04	0.33	0.24	0.24	0.57	0.00
Sat Flow, veh/h	1774	1863	1863	1476	3548	1615
Grp Volume(v), veh/h	54	64	67	761	176	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1476	1774	1615
Q Serve(g_s), s	2.9	2.3	2.7	19.4	2.2	0.0
Cycle Q Clear(g_c), s	2.9	2.3	2.7	19.4	2.2	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	74	623	449	1256	2017	918
V/C Ratio(X)	0.73	0.10	0.15	0.61	0.09	0.00
Avail Cap(c_a), veh/h	74	632	468	1271	2017	918
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	0.00
Uniform Delay (d), s/veh	45.2	21.9	28.5	3.6	9.4	0.0
Incr Delay (d2), s/veh	26.4	0.0	0.1	0.6	0.1	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	2.0	1.2	1.4	20.1	1.1	0.0
LnGrp Delay(d),s/veh	71.6	22.0	28.6	4.2	9.4	0.0
LnGrp LOS	E	C	C	A	A	
Approach Vol, veh/h		118	828		176	
Approach Delay, s/veh		44.7	6.1		9.4	
Approach LOS		D	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.8		58.7	8.9	27.9
Change Period (Y+Rc), s				4.9		4.4	4.9	* 4.9
Max Green Setting (Gmax), s				32.4		54.3	4.0	* 24
Max Q Clear Time (g_c+I1), s				4.3		4.2	4.9	21.4
Green Ext Time (p_c), s				0.2		0.5	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	10.7
HCM 2010 LOS	B

Notes
User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	699	460	30	20	1067	413	80	30	30	106	20	177
Future Volume (veh/h)	699	460	30	20	1067	413	80	30	30	106	20	177
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.92	1.00		0.84
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	760	500	33	22	1160	449	87	33	33	131	0	192
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	702	2002	132	30	1448	623	153	58	58	256	0	96
Arrive On Green	0.20	0.60	0.60	0.03	0.82	0.82	0.16	0.16	0.16	0.07	0.00	0.07
Sat Flow, veh/h	3442	3358	221	1774	3539	1522	973	369	369	3548	0	1332
Grp Volume(v), veh/h	760	263	270	22	1160	449	153	0	0	131	0	192
Grp Sat Flow(s),veh/h/ln	1721	1770	1810	1774	1770	1522	1711	0	0	1774	0	1332
Q Serve(g_s), s	25.7	8.9	8.9	1.5	21.8	16.5	10.4	0.0	0.0	4.5	0.0	9.1
Cycle Q Clear(g_c), s	25.7	8.9	8.9	1.5	21.8	16.5	10.4	0.0	0.0	4.5	0.0	9.1
Prop In Lane	1.00		0.12	1.00		1.00	0.57		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	702	1055	1079	30	1448	623	269	0	0	256	0	96
V/C Ratio(X)	1.08	0.25	0.25	0.73	0.80	0.72	0.57	0.00	0.00	0.51	0.00	2.00
Avail Cap(c_a), veh/h	702	1055	1079	56	1448	623	407	0	0	256	0	96
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.2	12.1	12.1	60.6	8.7	8.3	49.1	0.0	0.0	56.3	0.0	58.5
Incr Delay (d2), s/veh	58.5	0.6	0.6	1.1	0.4	0.7	0.7	0.0	0.0	1.8	0.0	482.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.9	4.5	4.6	0.8	10.1	6.6	5.0	0.0	0.0	2.3	0.0	16.3
LnGrp Delay(d),s/veh	108.7	12.6	12.6	61.7	9.2	8.9	49.8	0.0	0.0	58.1	0.0	541.1
LnGrp LOS	F	B	B	E	A	A	D			E		F
Approach Vol, veh/h		1293			1631			153			323	
Approach Delay, s/veh		69.1			9.8			49.8			345.2	
Approach LOS		E			A			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	80.7		14.0	30.1	57.2		24.7
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	4.0	63.1		9.1	25.7	* 42		30.0
Max Q Clear Time (g_c+I1), s	3.5	10.9		11.1	27.7	23.8		12.4
Green Ext Time (p_c), s	0.0	29.7		0.0	0.0	14.3		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	66.0
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	553	30	88	1379	410	50	30	122	130	20	70
Future Volume (veh/h)	124	553	30	88	1379	410	50	30	122	130	20	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.93	1.00		0.92
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	135	601	33	96	1499	446	54	33	133	141	22	76
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	65	1477	81	118	1258	352	71	44	176	252	39	295
Arrive On Green	0.07	0.87	0.87	0.09	0.62	0.62	0.18	0.18	0.18	0.16	0.16	0.16
Sat Flow, veh/h	1774	3399	186	1774	2707	758	390	238	960	1545	241	1459
Grp Volume(v), veh/h	135	312	322	96	948	997	220	0	0	163	0	76
Grp Sat Flow(s),veh/h/ln	1774	1770	1815	1774	1770	1696	1587	0	0	1786	0	1459
Q Serve(g_s), s	4.6	4.5	4.5	6.7	58.6	58.6	16.6	0.0	0.0	10.6	0.0	5.5
Cycle Q Clear(g_c), s	4.6	4.5	4.5	6.7	58.6	58.6	16.6	0.0	0.0	10.6	0.0	5.5
Prop In Lane	1.00		0.10	1.00		0.45	0.25		0.60	0.87		1.00
Lane Grp Cap(c), veh/h	65	769	789	118	822	788	291	0	0	291	0	295
V/C Ratio(X)	2.08	0.41	0.41	0.81	1.15	1.27	0.76	0.00	0.00	0.56	0.00	0.26
Avail Cap(c_a), veh/h	65	769	789	135	822	788	365	0	0	439	0	417
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	0.09	0.09	0.09	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.4	5.0	5.0	56.6	24.1	24.1	48.8	0.0	0.0	48.6	0.0	42.6
Incr Delay (d2), s/veh	535.3	1.5	1.5	2.7	69.9	120.3	4.9	0.0	0.0	0.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	2.4	2.5	3.4	44.2	53.3	7.7	0.0	0.0	5.3	0.0	2.2
LnGrp Delay(d),s/veh	593.7	6.5	6.5	59.3	94.0	144.4	53.7	0.0	0.0	49.2	0.0	42.8
LnGrp LOS	F	A	A	E	F	F	D			D		D
Approach Vol, veh/h		769			2041			220			239	
Approach Delay, s/veh		109.6			117.0			53.7			47.2	
Approach LOS		F			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.8	59.8		25.4	9.0	63.6		28.0
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	9.6	* 37		31.0	4.6	42.2		29.0
Max Q Clear Time (g_c+I1), s	8.7	6.5		12.6	6.6	60.6		18.6
Green Ext Time (p_c), s	0.0	30.0		0.5	0.0	0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	105.9
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	70	334	568	120	111	122	845	301	75	1399	40
Future Volume (veh/h)	126	70	334	568	120	111	122	845	301	75	1399	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.97	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	137	76	363	710	0	121	133	918	327	82	1521	43
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	131	73	292	829	0	353	143	1409	980	104	1333	563
Arrive On Green	0.11	0.11	0.11	0.23	0.00	0.23	0.08	0.40	0.40	0.06	0.38	0.38
Sat Flow, veh/h	1161	644	1454	3548	0	1510	1774	3539	1532	1774	3539	1495
Grp Volume(v), veh/h	213	0	363	710	0	121	133	918	327	82	1521	43
Grp Sat Flow(s),veh/h/ln	1805	0	1454	1774	0	1510	1774	1770	1532	1774	1770	1495
Q Serve(g_s), s	12.1	0.0	12.1	20.5	0.0	7.1	8.0	22.6	10.7	4.9	40.3	2.0
Cycle Q Clear(g_c), s	12.1	0.0	12.1	20.5	0.0	7.1	8.0	22.6	10.7	4.9	40.3	2.0
Prop In Lane	0.64		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	204	0	292	829	0	353	143	1409	980	104	1333	563
V/C Ratio(X)	1.04	0.00	1.24	0.86	0.00	0.34	0.93	0.65	0.33	0.78	1.14	0.08
Avail Cap(c_a), veh/h	204	0	292	928	0	395	143	1409	980	157	1333	563
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	47.5	0.0	43.4	39.3	0.0	34.2	48.9	26.2	9.2	49.7	33.4	21.4
Incr Delay (d2), s/veh	75.0	0.0	135.6	6.7	0.0	0.2	54.7	1.3	0.3	6.9	73.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	0.0	19.6	10.8	0.0	3.0	6.1	11.2	7.5	2.6	33.1	0.8
LnGrp Delay(d),s/veh	122.4	0.0	179.0	45.9	0.0	34.4	103.6	27.5	9.6	56.6	106.4	21.5
LnGrp LOS	F		F	D		C	F	C	A	E	F	C
Approach Vol, veh/h		576			831			1378			1646	
Approach Delay, s/veh		158.1			44.2			30.6			101.7	
Approach LOS		F			D			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.7	49.4		17.0	13.0	47.1		29.9
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	9.5	* 41		12.1	8.6	40.3		28.0
Max Q Clear Time (g_c+I1), s	6.9	24.6		14.1	10.0	42.3		22.5
Green Ext Time (p_c), s	0.0	14.5		0.0	0.0	0.0		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	76.1
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	394	0	120	0	1148	440	0	1433	868
Future Volume (veh/h)	0	0	0	394	0	120	0	1148	440	0	1433	868
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				428	0	0	0	1248	0	0	1558	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				375	0	173	0	2782	1244	0	2782	1244
Arrive On Green				0.11	0.00	0.00	0.00	1.00	0.00	0.00	0.79	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				428	0	0	0	1248	0	0	1558	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				10.9	0.0	0.0	0.0	0.0	0.0	0.0	16.8	0.0
Cycle Q Clear(g_c), s				10.9	0.0	0.0	0.0	0.0	0.0	0.0	16.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				375	0	173	0	2782	1244	0	2782	1244
V/C Ratio(X)				1.14	0.00	0.00	0.00	0.45	0.00	0.00	0.56	0.00
Avail Cap(c_a), veh/h				375	0	173	0	2782	1244	0	2782	1244
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.67	0.00	0.00	0.09	0.00
Uniform Delay (d), s/veh				44.5	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0
Incr Delay (d2), s/veh				90.6	0.0	0.0	0.0	0.4	0.0	0.0	0.1	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				9.9	0.0	0.0	0.0	0.1	0.0	0.0	8.0	0.0
LnGrp Delay(d),s/veh				135.1	0.0	0.0	0.0	0.4	0.0	0.0	4.2	0.0
LnGrp LOS				F				A			A	
Approach Vol, veh/h					428			1248			1558	
Approach Delay, s/veh					135.1			0.4			4.2	
Approach LOS					F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		84.0				84.0		16.0
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		78.6				78.6		10.9
Max Q Clear Time (g_c+I1), s		2.0				18.8		12.9
Green Ext Time (p_c), s		32.7				29.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.0
HCM 2010 LOS	C

HCM Signalized Intersection Capacity Analysis
8: College Ave & I-8EB Ramp

10/13/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	446	0	1700	0	0	0	0	1142	287	0	1467	360
Future Volume (vph)	446	0	1700	0	0	0	0	1142	287	0	1467	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3409			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3409			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	485	0	1848	0	0	0	0	1241	312	0	1595	391
RTOR Reduction (vph)	0	0	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	485	0	1848	0	0	0	0	1531	0	0	1595	391
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	16.5		47.9					71.0			39.6	100.0
Effective Green, g (s)	16.5		47.9					71.0			39.6	100.0
Actuated g/C Ratio	0.16		0.48					0.71			0.40	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	566		1729					2420			1401	1536
v/s Ratio Prot	0.14		c0.51					0.45			c0.45	
v/s Ratio Perm												0.25
v/c Ratio	0.86		1.07					0.63			1.14	0.25
Uniform Delay, d1	40.6		26.1					7.6			30.2	0.0
Progression Factor	1.00		1.00					0.80			1.06	1.00
Incremental Delay, d2	11.8		42.7					0.1			69.1	0.3
Delay (s)	52.4		68.7					6.2			101.0	0.3
Level of Service	D		E					A			F	A
Approach Delay (s)		65.3			0.0			6.2			81.2	
Approach LOS		E			A			A			F	

Intersection Summary			
HCM 2000 Control Delay	55.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	31	30	105	88	323	133	987	165	805	1724	639
Future Volume (veh/h)	119	31	30	105	88	323	133	987	165	805	1724	639
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	98	77	33	114	96	351	145	1073	179	875	1874	695
Adj No. of Lanes	1	1	0	0	1	1	1	2	1	2	3	2
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	252	173	74	95	80	394	117	1422	627	527	2512	1744
Arrive On Green	0.14	0.14	0.14	0.10	0.10	0.10	0.07	0.40	0.40	0.05	0.16	0.16
Sat Flow, veh/h	1774	1220	523	984	829	1583	1774	3539	1560	3442	5085	2730
Grp Volume(v), veh/h	98	0	110	210	0	351	145	1073	179	875	1874	695
Grp Sat Flow(s),veh/h/ln	1774	0	1743	1814	0	1583	1774	1770	1560	1721	1695	1365
Q Serve(g_s), s	5.0	0.0	5.8	9.6	0.0	9.6	6.6	26.0	7.8	15.3	35.1	16.7
Cycle Q Clear(g_c), s	5.0	0.0	5.8	9.6	0.0	9.6	6.6	26.0	7.8	15.3	35.1	16.7
Prop In Lane	1.00		0.30	0.54		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	252	0	248	174	0	394	117	1422	627	527	2512	1744
V/C Ratio(X)	0.39	0.00	0.44	1.21	0.00	0.89	1.24	0.75	0.29	1.66	0.75	0.40
Avail Cap(c_a), veh/h	568	0	558	174	0	394	117	1422	627	527	2512	1744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	39.0	0.0	39.3	45.2	0.0	36.2	46.7	25.7	20.2	47.5	35.9	16.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	134.5	0.0	20.8	160.6	3.8	1.1	298.5	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	2.8	11.3	0.0	11.6	8.4	13.4	3.5	29.1	16.6	8.8
LnGrp Delay(d),s/veh	39.3	0.0	39.7	179.7	0.0	57.0	207.3	29.4	21.3	346.0	36.1	16.1
LnGrp LOS	D		D	F		E	F	C	C	F	D	B
Approach Vol, veh/h		208			561			1397			3444	
Approach Delay, s/veh		39.5			103.0			46.9			110.8	
Approach LOS		D			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	30.2	46.2		19.1	11.0	55.4		14.5
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	15.3	22.4		32.0	6.6	* 32		9.6
Max Q Clear Time (g_c+I1), s	17.3	28.0		7.8	8.6	37.1		11.6
Green Ext Time (p_c), s	0.0	0.0		0.6	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	91.4
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	16.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	126	1339	100	465	1383
Future Vol, veh/h	0	126	1339	100	465	1383
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	137	1455	109	505	1503

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	768	0	0	1475	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	344	-	-	~ 453	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	333	-	-	~ 445	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.2	0	28.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	333	~ 445	-
HCM Lane V/C Ratio	-	-	0.411	1.136	-
HCM Control Delay (s)	-	-	23.2	114.8	-
HCM Lane LOS	-	-	C	F	-
HCM 95th %tile Q(veh)	-	-	1.9	18.1	-

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)	264	372	113	40	883	261	756	1192	65	133	582	401
Future Volume (veh/h)	264	372	113	40	883	261	756	1192	65	133	582	401
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		0.95	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	287	404	123	43	960	284	822	1296	71	145	633	436
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	220	1253	535	71	955	403	699	1104	60	456	496	341
Arrive On Green	0.21	0.59	0.59	0.04	0.27	0.27	0.20	0.32	0.32	0.13	0.25	0.25
Sat Flow, veh/h	1774	3539	1511	1774	3539	1494	3442	3402	186	3442	1953	1343
Grp Volume(v), veh/h	287	404	123	43	960	284	822	673	694	145	573	496
Grp Sat Flow(s),veh/h/ln	1774	1770	1511	1774	1770	1494	1721	1770	1819	1721	1770	1527
Q Serve(g_s), s	15.6	7.3	2.8	3.0	34.0	15.5	25.6	40.9	40.9	4.8	32.0	32.0
Cycle Q Clear(g_c), s	15.6	7.3	2.8	3.0	34.0	15.5	25.6	40.9	40.9	4.8	32.0	32.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.88
Lane Grp Cap(c), veh/h	220	1253	535	71	955	403	699	574	590	456	449	388
V/C Ratio(X)	1.31	0.32	0.23	0.61	1.01	0.70	1.18	1.17	1.18	0.32	1.28	1.28
Avail Cap(c_a), veh/h	220	1253	535	83	955	403	699	574	590	456	449	388
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	18.1	5.8	59.5	46.0	21.3	50.2	42.5	42.6	49.5	47.0	47.0
Incr Delay (d2), s/veh	165.2	0.6	0.9	4.4	30.4	9.9	93.5	94.6	96.0	0.1	140.5	143.8
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	17.7	3.6	1.3	1.6	20.6	7.5	21.2	35.0	36.2	2.3	33.2	28.9
LnGrp Delay(d),s/veh	215.2	18.8	6.7	63.9	76.4	31.2	143.7	137.1	138.5	49.6	187.5	190.8
LnGrp LOS	F	B	A	E	F	C	F	F	F	D	F	F
Approach Vol, veh/h		814			1287			2189			1214	
Approach Delay, s/veh		86.2			66.0			140.0			172.4	
Approach LOS		F			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.1	46.0	9.4	49.5	30.0	37.1	20.0	38.9
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	16.7	40.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	6.8	42.9	5.0	9.3	27.6	34.0	17.6	36.0
Green Ext Time (p_c), s	2.3	0.0	0.0	25.8	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	121.9
HCM 2010 LOS	F

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	391	220	120	361	40	30
Future Vol, veh/h	391	220	120	361	40	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	425	239	130	392	43	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	425	0	1078	425
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	653	-
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	-	-	1134	-	242	629
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	518	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1134	-	206	629
Mov Cap-2 Maneuver	-	-	-	-	206	-
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	442	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	20.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	206	629	-	-	1134	-
HCM Lane V/C Ratio	0.211	0.052	-	-	0.115	-
HCM Control Delay (s)	27.1	11	-	-	8.6	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	0.2	-	-	0.4	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	101	116	113	431	198	80
Future Volume (veh/h)	101	116	113	431	198	80
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	110	126	123	468	215	87
Adj No. of Lanes	1	1	1	1	1	1
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	592	483	157	1023	320	285
Arrive On Green	0.32	0.32	0.09	0.55	0.18	0.18
Sat Flow, veh/h	1863	1518	1774	1863	1774	1583
Grp Volume(v), veh/h	110	126	123	468	215	87
Grp Sat Flow(s),veh/h/ln	1863	1518	1774	1863	1774	1583
Q Serve(g_s), s	1.5	2.1	2.3	5.2	3.9	1.6
Cycle Q Clear(g_c), s	1.5	2.1	2.3	5.2	3.9	1.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	592	483	157	1023	320	285
V/C Ratio(X)	0.19	0.26	0.78	0.46	0.67	0.30
Avail Cap(c_a), veh/h	1089	888	237	1577	2664	2377
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	8.5	8.7	15.3	4.7	13.1	12.2
Incr Delay (d2), s/veh	0.1	0.3	4.5	0.3	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.9	1.3	2.7	1.9	0.7
LnGrp Delay(d),s/veh	8.6	9.0	19.8	5.0	14.1	12.4
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	236			591	302	
Approach Delay, s/veh	8.8			8.0	13.6	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.9	15.8				23.8		10.6
Change Period (Y+Rc), s	4.9	* 4.9				4.9		4.4
Max Green Setting (Gmax), s	4.6	* 20				29.1		51.6
Max Q Clear Time (g_c+I1), s	4.3	4.1				7.2		5.9
Green Ext Time (p_c), s	0.1	0.7				1.9		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	20	180	566	40	48	130	617	209	40	1422	40
Future Volume (veh/h)	40	20	180	566	40	48	130	617	209	40	1422	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	43	22	196	694	0	0	141	671	227	43	1546	43
Adj No. of Lanes	0	1	1	2	1	0	1	3	0	1	3	0
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	147	75	187	947	497	0	163	1249	414	111	1548	43
Arrive On Green	0.12	0.12	0.12	0.27	0.00	0.00	0.09	0.33	0.33	0.06	0.30	0.30
Sat Flow, veh/h	1193	610	1513	3548	1863	0	1774	3735	1238	1774	5079	141
Grp Volume(v), veh/h	65	0	196	694	0	0	141	608	290	43	1032	557
Grp Sat Flow(s),veh/h/ln	1803	0	1513	1774	1863	0	1774	1695	1583	1774	1695	1831
Q Serve(g_s), s	3.3	0.0	12.5	18.0	0.0	0.0	7.9	14.7	15.1	2.4	30.8	30.8
Cycle Q Clear(g_c), s	3.3	0.0	12.5	18.0	0.0	0.0	7.9	14.7	15.1	2.4	30.8	30.8
Prop In Lane	0.66		1.00	1.00		0.00	1.00		0.78	1.00		0.08
Lane Grp Cap(c), veh/h	223	0	187	947	497	0	163	1133	529	111	1033	558
V/C Ratio(X)	0.29	0.00	1.05	0.73	0.00	0.00	0.86	0.54	0.55	0.39	1.00	1.00
Avail Cap(c_a), veh/h	223	0	187	1260	661	0	163	1133	529	158	1033	558
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.3	0.0	44.3	33.8	0.0	0.0	45.3	27.3	27.4	45.5	35.1	35.1
Incr Delay (d2), s/veh	0.7	0.0	78.9	2.6	0.0	0.0	33.8	1.8	4.1	0.8	27.8	37.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	9.3	9.1	0.0	0.0	5.4	7.1	7.2	1.2	18.3	21.3
LnGrp Delay(d),s/veh	41.0	0.0	123.2	36.4	0.0	0.0	79.1	29.1	31.5	46.4	62.9	73.0
LnGrp LOS	D		F	D			E	C	C	D	E	E
Approach Vol, veh/h		261			694			1039			1632	
Approach Delay, s/veh		102.8			36.4			36.6			65.9	
Approach LOS		F			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	39.9		17.1	14.0	36.9		33.1
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9.3	31.1		12.5	* 9.3	30.8		35.9
Max Q Clear Time (g_c+I1), s	14.4	17.1		14.5	9.9	32.8		20.0
Green Ext Time (p_c), s	0.0	9.8		0.0	0.0	0.0		5.9

Intersection Summary	
HCM 2010 Ctrl Delay	54.5
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	109	30	422	129	413	110	1260	460	165	510	460
Future Volume (veh/h)	110	109	30	422	129	413	110	1260	460	165	510	460
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	120	118	33	459	140	449	120	1370	500	179	554	500
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	397	490	132	440	357	797	136	1157	505	179	1242	534
Arrive On Green	0.12	0.18	0.18	0.13	0.19	0.19	0.08	0.33	0.33	0.10	0.35	0.35
Sat Flow, veh/h	3442	2737	735	3442	1863	2695	1774	3539	1545	1774	3539	1521
Grp Volume(v), veh/h	120	75	76	459	140	449	120	1370	500	179	554	500
Grp Sat Flow(s),veh/h/ln	1721	1770	1702	1721	1863	1347	1774	1770	1545	1774	1770	1521
Q Serve(g_s), s	3.3	3.8	4.0	13.3	6.8	14.7	7.0	34.0	33.5	10.5	12.5	33.1
Cycle Q Clear(g_c), s	3.3	3.8	4.0	13.3	6.8	14.7	7.0	34.0	33.5	10.5	12.5	33.1
Prop In Lane	1.00		0.43	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	397	317	305	440	357	797	136	1157	505	179	1242	534
V/C Ratio(X)	0.30	0.24	0.25	1.04	0.39	0.56	0.88	1.18	0.99	1.00	0.45	0.94
Avail Cap(c_a), veh/h	506	595	573	440	584	1126	136	1157	505	179	1242	534
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	42.2	36.6	36.7	45.4	36.8	31.2	47.5	35.0	34.8	46.8	26.0	32.6
Incr Delay (d2), s/veh	0.2	0.4	0.4	54.6	0.7	0.6	42.2	92.0	37.7	67.1	1.2	26.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.9	1.9	9.6	3.6	5.5	5.0	31.3	19.6	8.5	6.3	17.7
LnGrp Delay(d),s/veh	42.3	37.0	37.1	99.9	37.5	31.9	89.7	127.0	72.6	113.9	27.1	58.7
LnGrp LOS	D	D	D	F	D	C	F	F	E	F	C	E
Approach Vol, veh/h		271			1048			1990			1233	
Approach Delay, s/veh		39.4			62.4			111.1			52.5	
Approach LOS		D			E			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.2	41.1	20.0	25.7	14.7	43.6	18.7	27.0
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 11	34.0	* 13	* 35	* 8	36.5	* 15	32.6
Max Q Clear Time (g_c+I1), s	12.5	36.0	15.3	6.0	9.0	35.1	5.3	16.7
Green Ext Time (p_c), s	0.0	0.0	0.0	3.7	0.0	1.4	0.2	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	79.7
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	94.7
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	150	20	0	230	180	0	620	60
Future Vol, veh/h	0	150	20	0	230	180	0	620	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	163	22	0	250	196	0	674	65
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	15	17.2	161.3
HCM LOS	B	C	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	88%	0%	100%
Vol Right, %	0%	100%	12%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	620	60	170	230	180
LT Vol	620	0	0	230	0
Through Vol	0	0	150	0	180
RT Vol	0	60	20	0	0
Lane Flow Rate	674	65	185	250	196
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.314	0.105	0.354	0.509	0.371
Departure Headway (Hd)	7.021	5.804	7.766	8.169	7.655
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	526	622	466	445	473
Service Time	4.721	3.504	5.766	5.869	5.355
HCM Lane V/C Ratio	1.281	0.105	0.397	0.562	0.414
HCM Control Delay	176	9.2	15	19	14.8
HCM Lane LOS	F	A	B	C	B
HCM 95th-tile Q	28.9	0.4	1.6	2.8	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	714	62	0	0	174	20	10	20	10	20	0	780
Future Volume (veh/h)	714	62	0	0	174	20	10	20	10	20	0	780
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	776	67	0	0	189	22	11	22	11	22	0	848
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	892	1276	0	0	656	545	54	0	0	43	0	0
Arrive On Green	0.26	0.68	0.00	0.00	0.35	0.35	0.08	0.08	0.08	0.02	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1546	0	0	0	1774	22	
Grp Volume(v), veh/h	776	67	0	0	189	22	44	0	0	22	43.6	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1546	0	0	0	1774	D	
Q Serve(g_s), s	17.9	1.0	0.0	0.0	6.1	0.8	0.0	0.0	0.0	1.0		
Cycle Q Clear(g_c), s	17.9	1.0	0.0	0.0	6.1	0.8	0.1	0.0	0.0	1.0		
Prop In Lane	1.00		0.00	0.00		1.00	0.25		0.25	1.00		
Lane Grp Cap(c), veh/h	892	1276	0	0	656	545	54	0	0	43		
V/C Ratio(X)	0.87	0.05	0.00	0.00	0.29	0.04	0.81	0.00	0.00	0.52		
Avail Cap(c_a), veh/h	1156	1276	0	0	656	545	114	0	0	318		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	29.4	4.3	0.0	0.0	19.4	17.7	35.5	0.0	0.0	40.1		
Incr Delay (d2), s/veh	4.9	0.1	0.0	0.0	1.1	0.1	28.1	0.0	0.0	3.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	9.1	0.5	0.0	0.0	3.3	0.3	1.4	0.0	0.0	0.5		
LnGrp Delay(d),s/veh	34.3	4.4	0.0	0.0	20.5	17.8	63.6	0.0	0.0	43.6		
LnGrp LOS	C	A			C	B	E			D		
Approach Vol, veh/h		843			211			44				
Approach Delay, s/veh		31.9			20.2			63.6				
Approach LOS		C			C			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		63.0			27.6	35.4	8.1	12.0
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		56.9			27.9	22.9	14.9	10.4
Max Q Clear Time (g_c+I1), s		3.0			19.9	8.1	3.0	2.1
Green Ext Time (p_c), s		0.5			1.6	0.4	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	31.2
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
1: Fairmont Ave/Fairmount Ave & Camino del Rio N/I-8 WB Off Ramp

10/13/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	260	750	750	190	305	240	1184	200	40	1865	90
Future Volume (veh/h)	235	260	750	750	190	305	240	1184	200	40	1865	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	255	283	815	831	350	221	261	1287	217	43	2027	98
Adj No. of Lanes	1	1	1	2	1	1	1	2	0	2	2	1
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	191	201	332	946	497	531	195	1187	198	271	1281	553
Arrive On Green	0.11	0.11	0.11	0.27	0.27	0.27	0.11	0.39	0.39	0.08	0.36	0.36
Sat Flow, veh/h	1774	1863	1463	3548	1863	1523	1774	3020	504	3442	3539	1529
Grp Volume(v), veh/h	255	283	815	831	350	221	261	749	755	43	2027	98
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1523	1774	1770	1754	1721	1770	1529
Q Serve(g_s), s	14.0	14.0	14.0	29.2	22.1	14.4	14.3	51.1	51.1	1.5	47.0	5.7
Cycle Q Clear(g_c), s	14.0	14.0	14.0	29.2	22.1	14.4	14.3	51.1	51.1	1.5	47.0	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	332	946	497	531	195	696	689	271	1281	553
V/C Ratio(X)	1.33	1.41	2.46	0.88	0.70	0.42	1.34	1.08	1.10	0.16	1.58	0.18
Avail Cap(c_a), veh/h	191	201	332	983	516	547	195	696	689	344	1281	553
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	58.0	58.0	51.1	45.7	43.1	32.6	57.9	39.5	39.5	55.9	41.5	28.3
Incr Delay (d2), s/veh	181.8	211.7	664.6	9.0	4.2	0.5	182.3	56.6	63.3	0.1	265.9	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.5	19.0	73.2	15.5	11.9	6.2	16.9	35.9	36.8	0.7	70.3	2.5
LnGrp Delay(d),s/veh	239.8	269.7	715.7	54.6	47.2	33.1	240.2	96.0	102.8	56.0	307.4	29.0
LnGrp LOS	F	F	F	D	D	C	F	F	F	E	F	C
Approach Vol, veh/h		1353			1402			1765			2168	
Approach Delay, s/veh		532.7			49.4			120.2			289.8	
Approach LOS		F			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.9	56.2		19.1	19.0	52.1		39.8
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 14	45.7		36.0
Max Q Clear Time (g_c+I1), s	3.5	53.1		16.0	16.3	49.0		31.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	243.8
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

HCM Signalized Intersection Capacity Analysis
2: Fairmont Ave & I-8 EB Off Ramp

10/13/2017

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	996	3214	0	30	628	1660	0
Future Volume (vph)	996	3214	0	30	628	1660	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	
Lane Util. Factor	0.97	0.76			0.95	0.91	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	
Frt	1.00	0.85			1.00	1.00	
Flt Protected	0.95	1.00			1.00	1.00	
Satd. Flow (prot)	3433	3610			3531	5085	
Flt Permitted	0.95	1.00			0.56	1.00	
Satd. Flow (perm)	3433	3610			1982	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1083	3493	0	33	683	1804	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	1083	3493	0	0	716	1804	0
Confl. Peds. (#/hr)	10	10					
Turn Type	Prot	Prot	Prot	Perm	NA	NA	
Protected Phases	2	2	3		8	4	
Permitted Phases				8			
Actuated Green, G (s)	80.0	80.0			38.0	38.0	
Effective Green, g (s)	80.0	80.0			38.0	38.0	
Actuated g/C Ratio	0.62	0.62			0.29	0.29	
Clearance Time (s)	6.0	6.0			6.0	6.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	
Lane Grp Cap (vph)	2112	2221			579	1486	
v/s Ratio Prot	0.32	c0.97				0.35	
v/s Ratio Perm					c0.36		
v/c Ratio	0.51	1.57			1.24	1.21	
Uniform Delay, d1	14.0	25.0			46.0	46.0	
Progression Factor	1.00	1.00			1.00	1.00	
Incremental Delay, d2	0.1	259.9			120.8	96.9	
Delay (s)	14.1	284.9			166.8	143.1	
Level of Service	B	F			F	F	
Approach Delay (s)	220.8				166.8	143.1	
Approach LOS	F				F	F	

Intersection Summary			
HCM 2000 Control Delay	195.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.7
Intersection Capacity Utilization	118.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	49	90	117	397	533	51
Future Volume (veh/h)	49	90	117	397	533	51
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.92	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	53	98	127	432	630	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	92	553	359	1218	2101	956
Arrive On Green	0.05	0.30	0.19	0.19	0.59	0.00
Sat Flow, veh/h	1774	1863	1863	1457	3548	1615
Grp Volume(v), veh/h	53	98	127	432	630	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1457	1774	1615
Q Serve(g_s), s	2.4	3.3	4.9	7.6	7.4	0.0
Cycle Q Clear(g_c), s	2.4	3.3	4.9	7.6	7.4	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	92	553	359	1218	2101	956
V/C Ratio(X)	0.58	0.18	0.35	0.35	0.30	0.00
Avail Cap(c_a), veh/h	182	825	536	1357	2101	956
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	0.00
Uniform Delay (d), s/veh	38.8	21.9	29.3	2.8	8.5	0.0
Incr Delay (d2), s/veh	2.1	0.1	0.2	0.1	0.4	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	1.2	1.7	2.6	9.9	3.7	0.0
LnGrp Delay(d),s/veh	41.0	21.9	29.5	2.8	8.8	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		151	559		630	
Approach Delay, s/veh		28.6	8.9		8.8	
Approach LOS		C	A		A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.8		54.0	8.7	21.0
Change Period (Y+Rc), s				4.9		4.4	4.4	4.9
Max Green Setting (Gmax), s				37.1		49.6	8.6	24.1
Max Q Clear Time (g_c+I1), s				5.3		9.4	4.4	9.6
Green Ext Time (p_c), s				2.0		2.0	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	486	1115	120	41	770	268	80	30	30	370	40	605
Future Volume (veh/h)	486	1115	120	41	770	268	80	30	30	370	40	605
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.92	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	528	1212	130	45	837	291	87	33	33	433	0	658
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	524	1334	143	58	1051	447	149	57	57	884	0	373
Arrive On Green	0.15	0.42	0.42	0.03	0.30	0.30	0.15	0.15	0.15	0.25	0.00	0.25
Sat Flow, veh/h	3442	3202	342	1774	3539	1506	972	369	369	3548	0	1495
Grp Volume(v), veh/h	528	668	674	45	837	291	153	0	0	433	0	658
Grp Sat Flow(s),veh/h/ln	1721	1770	1775	1774	1770	1506	1710	0	0	1774	0	1495
Q Serve(g_s), s	20.4	47.4	47.9	3.4	29.2	22.6	11.1	0.0	0.0	14.0	0.0	33.4
Cycle Q Clear(g_c), s	20.4	47.4	47.9	3.4	29.2	22.6	11.1	0.0	0.0	14.0	0.0	33.4
Prop In Lane	1.00		0.19	1.00		1.00	0.57		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	524	737	740	58	1051	447	263	0	0	884	0	373
V/C Ratio(X)	1.01	0.91	0.91	0.78	0.80	0.65	0.58	0.00	0.00	0.49	0.00	1.77
Avail Cap(c_a), veh/h	524	737	740	74	1051	447	383	0	0	884	0	373
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	0.67	0.67	0.67	1.00	0.00	0.00	0.97	0.00	0.97
Uniform Delay (d), s/veh	56.8	36.6	36.8	64.3	43.4	41.0	52.7	0.0	0.0	43.0	0.0	50.3
Incr Delay (d2), s/veh	41.2	16.8	17.5	17.4	4.3	4.9	0.8	0.0	0.0	0.4	0.0	355.1
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	12.7	26.4	27.0	1.9	14.9	10.0	5.3	0.0	0.0	6.9	0.0	50.6
LnGrp Delay(d),s/veh	98.1	53.4	54.2	81.7	47.7	45.9	53.5	0.0	0.0	43.4	0.0	405.4
LnGrp LOS	F	D	D	F	D	D	D			D		F
Approach Vol, veh/h		1870			1173			153			1091	
Approach Delay, s/veh		66.3			48.5			53.5			261.7	
Approach LOS		E			D			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.8	61.4		38.3	24.8	45.4		25.5
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	5.6	45.2		33.4	20.4	* 31		30.0
Max Q Clear Time (g_c+I1), s	5.4	49.9		35.4	22.4	31.2		13.1
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	110.7
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	1322	30	123	848	220	40	20	156	260	20	190
Future Volume (veh/h)	80	1322	30	123	848	220	40	20	156	260	20	190
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.96	1.00		0.93	1.00		0.93
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	87	1437	33	134	922	239	43	22	170	283	22	207
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
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	108	1382	32	155	1153	298	52	26	205	333	26	394
Arrive On Green	0.06	0.39	0.39	0.17	0.84	0.84	0.18	0.18	0.18	0.20	0.20	0.20
Sat Flow, veh/h	1774	3530	81	1774	2759	714	283	145	1121	1652	128	1479
Grp Volume(v), veh/h	87	719	751	134	591	570	235	0	0	305	0	207
Grp Sat Flow(s),veh/h/ln	1774	1770	1842	1774	1770	1703	1549	0	0	1780	0	1479
Q Serve(g_s), s	6.8	54.8	54.8	10.3	23.0	23.3	20.5	0.0	0.0	23.1	0.0	16.8
Cycle Q Clear(g_c), s	6.8	54.8	54.8	10.3	23.0	23.3	20.5	0.0	0.0	23.1	0.0	16.8
Prop In Lane	1.00		0.04	1.00		0.42	0.18		0.72	0.93		1.00
Lane Grp Cap(c), veh/h	108	693	721	155	740	712	283	0	0	358	0	394
V/C Ratio(X)	0.81	1.04	1.04	0.87	0.80	0.80	0.83	0.00	0.00	0.85	0.00	0.53
Avail Cap(c_a), veh/h	139	693	721	160	740	712	322	0	0	395	0	425
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.51	0.51	0.51	0.48	0.48	0.48	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	64.9	42.6	42.6	57.0	8.6	8.6	55.1	0.0	0.0	53.9	0.0	44.3
Incr Delay (d2), s/veh	9.8	34.9	35.4	19.2	4.4	4.7	13.3	0.0	0.0	13.8	0.0	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	33.5	34.9	5.8	11.4	11.1	9.8	0.0	0.0	12.7	0.0	6.9
LnGrp Delay(d),s/veh	74.8	77.5	78.0	76.2	13.0	13.2	68.4	0.0	0.0	67.7	0.0	44.7
LnGrp LOS	E	F	F	E	B	B	E			E		D
Approach Vol, veh/h		1557			1295			235			512	
Approach Delay, s/veh		77.6			19.7			68.4			58.4	
Approach LOS		E			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.6	59.8		33.1	12.9	63.5		30.5
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	12.6	* 48		31.1	11.0	49.6		29.1
Max Q Clear Time (g_c+I1), s	12.3	56.8		25.1	8.8	25.3		22.5
Green Ext Time (p_c), s	0.0	0.0		0.8	0.0	23.1		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	53.4
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	68	163	477	50	116	212	978	542	144	778	40
Future Volume (veh/h)	52	68	163	477	50	116	212	978	542	144	778	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.97	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	57	74	177	557	0	126	230	1063	589	157	846	43
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	1
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	97	126	385	737	0	312	230	1252	869	189	1170	492
Arrive On Green	0.12	0.12	0.12	0.21	0.00	0.21	0.13	0.35	0.35	0.11	0.33	0.33
Sat Flow, veh/h	793	1030	1462	3548	0	1503	1774	3539	1528	1774	3539	1488
Grp Volume(v), veh/h	131	0	177	557	0	126	230	1063	589	157	846	43
Grp Sat Flow(s),veh/h/ln	1823	0	1462	1774	0	1503	1774	1770	1528	1774	1770	1488
Q Serve(g_s), s	6.8	0.0	10.3	14.8	0.0	7.3	13.0	27.8	27.6	8.7	21.1	2.0
Cycle Q Clear(g_c), s	6.8	0.0	10.3	14.8	0.0	7.3	13.0	27.8	27.6	8.7	21.1	2.0
Prop In Lane	0.44		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	224	0	385	737	0	312	230	1252	869	189	1170	492
V/C Ratio(X)	0.59	0.00	0.46	0.76	0.00	0.40	1.00	0.85	0.68	0.83	0.72	0.09
Avail Cap(c_a), veh/h	224	0	385	995	0	421	230	1252	869	269	1257	528
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	41.6	0.0	31.9	37.3	0.0	34.3	43.6	29.9	15.7	43.9	29.5	23.1
Incr Delay (d2), s/veh	2.7	0.0	0.3	1.4	0.0	0.3	59.3	6.0	2.5	9.7	2.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	4.2	7.4	0.0	3.1	10.1	14.6	16.8	4.8	10.6	0.8
LnGrp Delay(d),s/veh	44.2	0.0	32.2	38.8	0.0	34.7	102.9	36.0	18.2	53.6	31.6	23.2
LnGrp LOS	D		C	D		C	F	D	B	D	C	C
Approach Vol, veh/h		308			683			1882			1046	
Approach Delay, s/veh		37.3			38.0			38.6			34.5	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.1	42.3		17.2	17.4	39.9		25.7
Change Period (Y+Rc), s	4.4	* 6.8		4.9	4.4	6.8		4.9
Max Green Setting (Gmax), s	15.3	* 35		12.3	13.0	35.6		28.1
Max Q Clear Time (g_c+I1), s	10.7	29.8		12.3	15.0	23.1		16.8
Green Ext Time (p_c), s	0.1	4.8		0.0	0.0	10.0		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	37.3
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	638	0	470	0	1262	1750	0	857	561
Future Volume (veh/h)	0	0	0	638	0	470	0	1262	1750	0	857	561
Number				3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln				1863	0	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h				693	0	0	0	1372	0	0	932	0
Adj No. of Lanes				2	0	1	0	2	1	0	2	1
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	0	2	0	2	2	0	2	2
Cap, veh/h				513	0	236	0	2640	1181	0	2640	1181
Arrive On Green				0.15	0.00	0.00	0.00	1.00	0.00	0.00	0.75	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				693	0	0	0	1372	0	0	932	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				14.9	0.0	0.0	0.0	0.0	0.0	0.0	9.1	0.0
Cycle Q Clear(g_c), s				14.9	0.0	0.0	0.0	0.0	0.0	0.0	9.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				513	0	236	0	2640	1181	0	2640	1181
V/C Ratio(X)				1.35	0.00	0.00	0.00	0.52	0.00	0.00	0.35	0.00
Avail Cap(c_a), veh/h				513	0	236	0	2640	1181	0	2640	1181
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.57	0.00
Uniform Delay (d), s/veh				42.5	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
Incr Delay (d2), s/veh				170.6	0.0	0.0	0.0	0.1	0.0	0.0	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				19.2	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0
LnGrp Delay(d),s/veh				213.2	0.0	0.0	0.0	0.1	0.0	0.0	4.6	0.0
LnGrp LOS				F				A			A	
Approach Vol, veh/h					693			1372			932	
Approach Delay, s/veh					213.2			0.1			4.6	
Approach LOS					F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		80.0				80.0		20.0
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		74.6				74.6		14.9
Max Q Clear Time (g_c+I1), s		2.0				11.1		16.9
Green Ext Time (p_c), s		21.1				20.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.8
HCM 2010 LOS	D

HCM Signalized Intersection Capacity Analysis
8: College Ave & I-8EB Ramp

10/13/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	801	0	1000	0	0	0	0	2211	514	0	1164	331
Future Volume (vph)	801	0	1000	0	0	0	0	2211	514	0	1164	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3416			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3416			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	871	0	1087	0	0	0	0	2403	559	0	1265	360
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	871	0	1087	0	0	0	0	2942	0	0	1265	360
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	21.3		69.3					66.2			18.2	100.0
Effective Green, g (s)	21.3		69.3					66.2			18.2	100.0
Actuated g/C Ratio	0.21		0.69					0.66			0.18	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	731		2501					2261			644	1536
v/s Ratio Prot	c0.25		0.30					c0.86			c0.36	
v/s Ratio Perm												0.23
v/c Ratio	1.19		0.43					1.30			1.96	0.23
Uniform Delay, d1	39.4		6.7					16.9			40.9	0.0
Progression Factor	1.00		1.00					1.31			0.85	1.00
Incremental Delay, d2	99.5		0.0					135.8			437.3	0.2
Delay (s)	138.8		6.8					158.0			472.2	0.2
Level of Service	F		A					F			F	A
Approach Delay (s)		65.5			0.0			158.0			367.7	
Approach LOS		E			A			F			F	

Intersection Summary			
HCM 2000 Control Delay	182.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	566	62	60	180	33	518	50	1641	135	408	1573	183
Future Volume (veh/h)	566	62	60	180	33	518	50	1641	135	408	1573	183
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	724	0	0	196	36	563	54	1784	147	443	1710	199
Adj No. of Lanes	2	1	0	0	1	1	1	2	1	2	3	2
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	896	470	0	74	14	206	69	1453	640	279	2326	1951
Arrive On Green	0.25	0.00	0.00	0.05	0.05	0.05	0.04	0.41	0.41	0.05	0.31	0.31
Sat Flow, veh/h	3548	1863	0	1510	277	1583	1774	3539	1560	3442	5085	2726
Grp Volume(v), veh/h	724	0	0	232	0	563	54	1784	147	443	1710	199
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1787	0	1583	1774	1770	1560	1721	1695	1363
Q Serve(g_s), s	19.2	0.0	0.0	4.9	0.0	4.9	3.0	41.0	6.1	8.1	30.1	2.8
Cycle Q Clear(g_c), s	19.2	0.0	0.0	4.9	0.0	4.9	3.0	41.0	6.1	8.1	30.1	2.8
Prop In Lane	1.00		0.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	896	470	0	88	0	206	69	1453	640	279	2326	1951
V/C Ratio(X)	0.81	0.00	0.00	2.65	0.00	2.74	0.78	1.23	0.23	1.59	0.74	0.10
Avail Cap(c_a), veh/h	1135	596	0	88	0	206	101	1453	640	279	2326	1951
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	35.1	0.0	0.0	47.6	0.0	43.5	47.6	29.5	19.2	47.3	29.2	5.9
Incr Delay (d2), s/veh	2.7	0.0	0.0	773.8	0.0	794.4	20.6	108.9	0.8	266.7	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	0.0	0.0	21.2	0.0	51.1	1.9	41.9	2.8	14.2	14.2	2.0
LnGrp Delay(d),s/veh	37.8	0.0	0.0	821.3	0.0	837.9	68.2	138.3	20.0	313.9	29.4	5.9
LnGrp LOS	D			F		F	E	F	C	F	C	A
Approach Vol, veh/h		724			795			1985			2352	
Approach Delay, s/veh		37.8			833.1			127.7			81.0	
Approach LOS		D			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	47.0		30.2	8.3	51.7		9.8
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	8.1	34.3		32.0	5.7	* 38		4.9
Max Q Clear Time (g_c+I1), s	10.1	43.0		21.2	5.0	32.1		6.9
Green Ext Time (p_c), s	0.0	0.0		1.9	0.0	5.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	193.6
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	81.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	590	1439	55	222	1587
Future Vol, veh/h	0	590	1439	55	222	1587
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
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	641	1564	60	241	1725

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	822	0	0	1584	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	~ 317	-	-	411	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	~ 307	-	-	404	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 528.3	0	3.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	307	404	-
HCM Lane V/C Ratio	-	-	2.089	0.597	-
HCM Control Delay (s)	-	-	$ 528.3	26.3	-
HCM Lane LOS	-	-	F	D	-
HCM 95th %tile Q(veh)	-	-	46.9	3.8	-

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)	459	1173	596	245	496	255	426	788	60	273	963	420
Future Volume (veh/h)	459	1173	596	245	496	255	426	788	60	273	963	420
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.94	1.00		0.94	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	499	1275	648	266	539	277	463	857	65	297	1047	457
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
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	362	1340	573	172	961	406	423	782	59	531	635	269
Arrive On Green	0.41	0.76	0.76	0.10	0.27	0.27	0.12	0.24	0.24	0.15	0.27	0.27
Sat Flow, veh/h	1774	3539	1514	1774	3539	1495	3442	3317	252	3442	2377	1007
Grp Volume(v), veh/h	499	1275	648	266	539	277	463	457	465	297	771	733
Grp Sat Flow(s),veh/h/ln	1774	1770	1514	1774	1770	1495	1721	1770	1799	1721	1770	1614
Q Serve(g_s), s	28.6	43.8	36.9	13.6	18.3	16.2	17.2	33.0	33.0	11.2	37.4	37.4
Cycle Q Clear(g_c), s	28.6	43.8	36.9	13.6	18.3	16.2	17.2	33.0	33.0	11.2	37.4	37.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.62
Lane Grp Cap(c), veh/h	362	1340	573	172	961	406	423	417	424	531	473	431
V/C Ratio(X)	1.38	0.95	1.13	1.54	0.56	0.68	1.10	1.10	1.10	0.56	1.63	1.70
Avail Cap(c_a), veh/h	362	1340	573	172	961	406	423	417	424	531	473	431
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.18	0.18	0.18	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	15.9	8.2	63.2	43.8	22.2	61.4	53.5	53.5	54.8	51.3	51.3
Incr Delay (d2), s/veh	172.7	4.0	63.2	271.3	2.4	9.0	71.9	72.6	72.3	0.8	293.8	324.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	31.3	21.3	24.3	19.6	9.3	7.6	12.4	24.5	24.9	5.4	56.8	55.5
LnGrp Delay(d),s/veh	214.1	19.8	71.4	334.5	46.2	31.1	133.3	126.1	125.8	55.6	345.1	375.9
LnGrp LOS	F	B	F	F	D	C	F	F	F	E	F	F
Approach Vol, veh/h		2422			1082			1385			1801	
Approach Delay, s/veh		73.7			113.2			128.4			309.9	
Approach LOS		E			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	38.1	18.0	57.9	21.6	42.5	33.0	42.9
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	21.6	33.0	13.6	53.0	17.2	37.4	28.6	38.0
Max Q Clear Time (g_c+I1), s	13.2	35.0	15.6	45.8	19.2	39.4	30.6	20.3
Green Ext Time (p_c), s	1.6	0.0	0.0	7.1	0.0	0.0	0.0	17.1

Intersection Summary	
HCM 2010 Ctrl Delay	155.0
HCM 2010 LOS	F

Intersection	
Int Delay, s/veh	19.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	353	100	60	453	230	120
Future Vol, veh/h	353	100	60	453	230	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	384	109	65	492	250	130

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	384	0	1007	384
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	623	-
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	-	-	1174	-	267	664
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	535	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1174	-	~ 247	664
Mov Cap-2 Maneuver	-	-	-	-	~ 247	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	494	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	72.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	247	664	-	-	1174	-
HCM Lane V/C Ratio	1.012	0.196	-	-	0.056	-
HCM Control Delay (s)	103.8	11.7	-	-	8.2	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	9.9	0.7	-	-	0.2	-

Notes

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	383	139	105	193	162	160
Future Volume (veh/h)	383	139	105	193	162	160
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	416	151	114	210	176	174
Adj No. of Lanes	1	1	1	1	1	1
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	653	534	148	1042	310	277
Arrive On Green	0.35	0.35	0.08	0.56	0.17	0.17
Sat Flow, veh/h	1863	1521	1774	1863	1774	1583
Grp Volume(v), veh/h	416	151	114	210	176	174
Grp Sat Flow(s),veh/h/ln	1863	1521	1774	1863	1774	1583
Q Serve(g_s), s	6.5	2.5	2.2	2.0	3.2	3.6
Cycle Q Clear(g_c), s	6.5	2.5	2.2	2.0	3.2	3.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	653	534	148	1042	310	277
V/C Ratio(X)	0.64	0.28	0.77	0.20	0.57	0.63
Avail Cap(c_a), veh/h	1814	1481	841	2931	1297	1157
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	9.5	8.2	15.7	3.8	13.2	13.4
Incr Delay (d2), s/veh	0.9	0.3	3.2	0.1	0.6	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	1.1	1.2	1.0	1.6	1.6
LnGrp Delay(d),s/veh	10.4	8.5	18.9	3.9	13.8	14.3
LnGrp LOS	B	A	B	A	B	B
Approach Vol, veh/h	567			324	350	
Approach Delay, s/veh	9.9			9.2	14.1	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.3	17.2				24.5		10.5
Change Period (Y+Rc), s	4.4	4.9				4.9		4.4
Max Green Setting (Gmax), s	16.6	34.1				55.1		25.6
Max Q Clear Time (g_c+I1), s	4.2	8.5				4.0		5.6
Green Ext Time (p_c), s	0.1	2.9				3.0		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	20	80	674	55	118	86	823	153	40	775	40
Future Volume (veh/h)	40	20	80	674	55	118	86	823	153	40	775	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.98	1.00		0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	43	22	87	460	441	128	93	895	166	43	842	43
Adj No. of Lanes	0	1	1	1	1	0	1	3	0	1	3	0
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	101	51	126	657	511	148	141	1200	221	108	1293	66
Arrive On Green	0.08	0.08	0.08	0.37	0.37	0.37	0.08	0.28	0.28	0.06	0.26	0.26
Sat Flow, veh/h	1193	610	1490	1774	1380	401	1774	4281	790	1774	4943	252
Grp Volume(v), veh/h	65	0	87	460	0	569	93	708	353	43	577	308
Grp Sat Flow(s),veh/h/ln	1803	0	1490	1774	0	1781	1774	1695	1681	1774	1695	1804
Q Serve(g_s), s	3.6	0.0	6.0	23.2	0.0	31.2	5.4	20.0	20.2	2.5	16.0	16.1
Cycle Q Clear(g_c), s	3.6	0.0	6.0	23.2	0.0	31.2	5.4	20.0	20.2	2.5	16.0	16.1
Prop In Lane	0.66		1.00	1.00		0.22	1.00		0.47	1.00		0.14
Lane Grp Cap(c), veh/h	152	0	126	657	0	660	141	950	471	108	887	472
V/C Ratio(X)	0.43	0.00	0.69	0.70	0.00	0.86	0.66	0.74	0.75	0.40	0.65	0.65
Avail Cap(c_a), veh/h	154	0	127	722	0	724	151	950	471	151	887	472
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	45.9	0.0	47.0	28.2	0.0	30.7	47.1	34.5	34.6	47.6	34.6	34.7
Incr Delay (d2), s/veh	1.9	0.0	14.7	3.8	0.0	11.2	6.8	5.3	10.5	0.9	3.7	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	3.0	12.1	0.0	17.4	2.9	10.0	10.7	1.2	7.9	8.9
LnGrp Delay(d),s/veh	47.8	0.0	61.6	32.0	0.0	41.9	53.9	39.8	45.1	48.5	38.3	41.5
LnGrp LOS	D		E	C		D	D	D	D	D	D	D
Approach Vol, veh/h		152			1029			1154			928	
Approach Delay, s/veh		55.7			37.5			42.6			39.9	
Approach LOS		E			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	35.7		13.5	13.1	33.7		45.2
Change Period (Y+Rc), s	* 4.7	6.1		4.6	* 4.7	6.1		6.1
Max Green Setting (Gmax), s	* 9	27.6		9.0	* 9	27.6		42.9
Max Q Clear Time (g_c+I1), s	14.5	22.2		8.0	7.4	18.1		33.2
Green Ext Time (p_c), s	0.0	3.8		0.1	0.0	6.0		5.9

Intersection Summary	
HCM 2010 Ctrl Delay	40.8
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	370	80	762	108	896	40	1090	450	168	730	250
Future Volume (veh/h)	190	370	80	762	108	896	40	1090	450	168	730	250
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	207	402	87	828	117	974	43	1185	489	183	793	272
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	283	621	133	738	648	1268	80	940	409	205	1189	511
Arrive On Green	0.08	0.22	0.22	0.21	0.35	0.35	0.05	0.27	0.27	0.12	0.34	0.34
Sat Flow, veh/h	3442	2883	617	3442	1863	2721	1774	3539	1540	1774	3539	1520
Grp Volume(v), veh/h	207	245	244	828	117	974	43	1185	489	183	793	272
Grp Sat Flow(s),veh/h/ln	1721	1770	1731	1721	1863	1360	1774	1770	1540	1774	1770	1520
Q Serve(g_s), s	8.6	18.4	18.8	31.3	6.4	43.7	3.5	38.8	38.8	14.9	28.0	21.1
Cycle Q Clear(g_c), s	8.6	18.4	18.8	31.3	6.4	43.7	3.5	38.8	38.8	14.9	28.0	21.1
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	283	381	373	738	648	1268	80	940	409	205	1189	511
V/C Ratio(X)	0.73	0.64	0.65	1.12	0.18	0.77	0.54	1.26	1.19	0.89	0.67	0.53
Avail Cap(c_a), veh/h	283	429	420	738	693	1334	97	940	409	210	1189	511
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	65.4	52.2	52.3	57.4	33.2	32.8	68.2	53.6	53.6	63.7	41.5	39.2
Incr Delay (d2), s/veh	8.2	2.7	3.1	72.2	0.1	2.7	2.1	125.7	109.3	33.2	3.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	9.3	9.3	22.3	3.3	16.9	1.7	35.4	28.9	9.2	14.1	9.4
LnGrp Delay(d),s/veh	73.7	54.9	55.4	129.5	33.3	35.4	70.3	179.3	162.9	96.8	44.5	43.2
LnGrp LOS	E	D	E	F	C	D	E	F	F	F	D	D
Approach Vol, veh/h		696			1919			1717			1248	
Approach Delay, s/veh		60.7			75.9			171.9			51.9	
Approach LOS		E			E			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	45.9	38.0	38.6	13.3	56.2	18.7	57.9
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 17	38.8	* 31	* 35	* 8	48.1	* 12	54.3
Max Q Clear Time (g_c+I1), s	16.9	40.8	33.3	20.8	5.5	30.0	10.6	45.7
Green Ext Time (p_c), s	0.0	0.0	0.0	7.1	0.0	13.2	0.1	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	98.2
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	147.6
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	290	20	0	110	130	0	720	90
Future Vol, veh/h	0	290	20	0	110	130	0	720	90
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	315	22	0	120	141	0	783	98
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	23	14.5	234.8
HCM LOS	C	B	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	94%	0%	100%
Vol Right, %	0%	100%	6%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	720	90	310	110	130
LT Vol	720	0	0	110	0
Through Vol	0	0	290	0	130
RT Vol	0	90	20	0	0
Lane Flow Rate	783	98	337	120	141
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.521	0.157	0.625	0.254	0.281
Departure Headway (Hd)	6.997	5.779	7.822	8.989	8.471
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	524	624	465	402	427
Service Time	4.697	3.479	5.822	6.689	6.171
HCM Lane V/C Ratio	1.494	0.157	0.725	0.299	0.33
HCM Control Delay	263	9.6	23	14.7	14.4
HCM Lane LOS	F	A	C	B	B
HCM 95th-tile Q	40.7	0.6	4.2	1	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	950	80	0	0	124	30	20	20	20	30	0	1622
Future Volume (veh/h)	950	80	0	0	124	30	20	20	20	30	0	1622
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.97	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
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1900	1863	1900	1863	0	1863
Adj Flow Rate, veh/h	1033	87	0	0	135	33	22	22	22	33	0	1763
Adj No. of Lanes	2	1	0	0	1	1	0	1	0	1	0	2
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	0	0	2	2	2	2	2	2	0	2
Cap, veh/h	1147	1174	0	0	401	331	64	0	0	59	0	0
Arrive On Green	0.33	0.63	0.00	0.00	0.22	0.22	0.10	0.10	0.10	0.03	0.00	0.00
Sat Flow, veh/h	3442	1863	0	0	1863	1535	0	0	0	1774	33	
Grp Volume(v), veh/h	1033	87	0	0	135	33	66	0	0	33	38.8	
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1863	1535	0	0	0	1774	D	
Q Serve(g_s), s	21.5	1.4	0.0	0.0	4.6	1.3	0.0	0.0	0.0	1.4		
Cycle Q Clear(g_c), s	21.5	1.4	0.0	0.0	4.6	1.3	0.1	0.0	0.0	1.4		
Prop In Lane	1.00		0.00	0.00		1.00	0.33		0.33	1.00		
Lane Grp Cap(c), veh/h	1147	1174	0	0	401	331	64	0	0	59		
V/C Ratio(X)	0.90	0.07	0.00	0.00	0.34	0.10	1.03	0.00	0.00	0.56		
Avail Cap(c_a), veh/h	1279	1174	0	0	401	331	85	0	0	588		
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00		
Uniform Delay (d), s/veh	23.8	5.4	0.0	0.0	24.9	23.6	30.5	0.0	0.0	35.7		
Incr Delay (d2), s/veh	7.8	0.1	0.0	0.0	2.3	0.6	101.4	0.0	0.0	3.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	11.4	0.7	0.0	0.0	2.6	0.6	3.1	0.0	0.0	0.7		
LnGrp Delay(d),s/veh	31.6	5.5	0.0	0.0	27.2	24.2	132.4	0.0	0.0	38.8		
LnGrp LOS	C	A			C	C	F			D		
Approach Vol, veh/h		1120			168			66				
Approach Delay, s/veh		29.6			26.6			132.4				
Approach LOS		C			C			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6	7	8
Phs Duration (G+Y+Rc), s		53.4			31.1	22.3	8.6	13.1
Change Period (Y+Rc), s		6.1			6.1	6.1	6.1	5.6
Max Green Setting (Gmax), s		47.3			27.9	13.3	24.9	10.0
Max Q Clear Time (g_c+I1), s		3.4			23.5	6.6	3.4	2.1
Green Ext Time (p_c), s		0.4			1.6	0.2	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	34.3
HCM 2010 LOS	C

APPENDIX N

HORIZON YEAR (YEAR 2035) & HORIZON YEAR (YEAR 2035) + PROJECT FREEWAY CALCULATION SHEETS AND RAMP METER ANALYSIS CALCULATION SHEETS

HORIZON YEAR FREEWAY SEGMENT OPERATIONS

AM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) AM	Dir Split (D) AM	Truck Factor	Peak Hour Volume AM	V/C AM	LOS AM
I-8										
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	265,390	0.0638	0.2378	0.965	4,097	0.410	B
	WB Mainlines	6M	12,000	265,390	0.0638	0.7622	0.965	13,486	**1.124**	**F(0)**
Waring Rd to College Ave	EB Mainlines	5M	10,000	250,060	0.0638	0.2378	0.965	3,856	0.386	B
	WB Mainlines	5M	10,000	250,060	0.0638	0.7622	0.965	12,714	**1.271**	**F(1)**
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	229,970	0.0741	0.3202	0.963	5,701	0.620	B
	WB Mainlines	5M	10,000	229,970	0.0741	0.6798	0.963	12,071	**1.207**	**F(0)**
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	221,080	0.0741	0.3202	0.963	5,496	0.597	B
	WB Mainlines	4M	8,000	221,080	0.0741	0.6798	0.963	11,591	**1.449**	**F(2)**

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 /
2. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
3. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
4. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
5. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

HORIZON YEAR FREEWAY SEGMENT OPERATIONS

PM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) PM	Dir Split (D) PM	Truck Factor	Peak Hour Volume PM	V/C PM	LOS PM
I-8										
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	265,390	0.0767	0.5924	0.965	12,551	**1.255**	**F(1)**
	WB Mainlines	6M	12,000	265,390	0.0767	0.4076	0.965	8,561	0.713	C
Waring Rd to College Ave	EB Mainlines	5M	10,000	250,060	0.0767	0.5924	0.965	11,829	**1.183**	**F(0)**
	WB Mainlines	5M	10,000	250,060	0.0767	0.4076	0.965	8,064	0.806	D
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	229,970	0.0798	0.6124	0.963	11,702	**1.272**	**F(1)**
	WB Mainlines	5M	10,000	229,970	0.0798	0.3876	0.963	7,411	0.741	C
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	221,080	0.0798	0.6124	0.963	11,231	**1.221**	**F(0)**
	WB Mainlines	4M	8,000	221,080	0.0798	0.3876	0.963	7,122	0.890	D

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 /
2. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
3. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
4. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
5. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

HORIZON YEAR + PROJECT FREEWAY SEGMENT OPERATIONS

AM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) AM	Dir Split (D) AM	Truck Factor	Peak Hour Volume AM	V/C AM	V/C DELTA	LOS AM
I-8											
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	268,300	0.0638	0.2378	0.965	4,218	0.422	0.012	B
	WB Mainlines	6M	12,000	268,300	0.0638	0.7622	0.965	13,520	**1.127**	0.003	**F(0)**
Waring Rd to College Ave	EB Mainlines	5M	10,000	252,970	0.0638	0.2378	0.965	3,977	0.398	0.012	B
	WB Mainlines	5M	10,000	252,970	0.0638	0.7622	0.965	12,748	**1.275**	0.003	**F(1)**
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	232,000	0.0741	0.3202	0.963	5,716	0.621	0.002	C
	WB Mainlines	5M	10,000	232,000	0.0741	0.6798	0.963	12,136	**1.214**	**0.006**	**F(0)**
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	224,030	0.0741	0.3202	0.963	5,520	0.600	0.003	B
	WB Mainlines	4M	8,000	224,030	0.0741	0.6798	0.963	11,719	**1.465**	**0.016**	**F(3)**

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 Aux)
2. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
3. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
4. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
5. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

HORIZON YEAR + PROJECT FREEWAY SEGMENT OPERATIONS

PM Peak Hour

Freeway and Segment	Direction, Number of Lanes & Capacity			ADT	Peak Hour % (K) PM	Dir Split (D) PM	Truck Factor	Peak Hour Volume PM	V/C PM	V/C DELTA	LOS PM
I-8											
Fairmount Ave to Waring Rd	EB Mainlines	5M	10,000	268,300	0.0767	0.5924	0.965	12,633	**1.263**	**0.008**	**F(1)**
	WB Mainlines	6M	12,000	268,300	0.0767	0.4076	0.965	8,692	0.724	0.011	C
Waring Rd to College Ave	EB Mainlines	5M	10,000	252,970	0.0767	0.5924	0.965	11,911	**1.191**	**0.008**	**F(0)**
	WB Mainlines	5M	10,000	252,970	0.0767	0.4076	0.965	8,195	0.820	0.013	D
College Ave to Lake Murray Blvd	EB Mainlines	4M+ 1A	9,200	232,000	0.0798	0.6124	0.963	11,773	**1.280**	**0.008**	**F(1)**
	WB Mainlines	5M	10,000	232,000	0.0798	0.3876	0.963	7,452	0.745	0.004	C
Lake Murray Blvd to Fletcher Pkwy	EB Mainlines	4M+ 1A	9,200	224,030	0.0798	0.6124	0.963	11,369	**1.236**	**0.015**	**F(0)**
	WB Mainlines	4M	8,000	224,030	0.0798	0.3876	0.963	7,196	0.900	0.009	D

Notes:
1. Capacity calculated at 2000 ADT per main line lane, 1200 ADT per HOV lane and 1200 ADT per aux lane (M: Mainline, HOV: High Occupancy Vehicle A: Aux. Ex. 4M+2A=4 Mainline + 2 Aux)
2. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2015 Traffic Volumes".
3. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
4. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
5. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

RAMP METER ANALYSIS

HORIZON YEAR, HORIZON YEAR + PROJECT

Fixed Rate Method

Location/Condition	Peak Hour	Peak Hour Demand D	Flow F	Excess Demand E	Delay (min)	Queue (ft)
I-8/College Avenue Interchange						
NB College Avenue to WB I-8					1 SOV	
Near-Term	AM	419	318	101	19	2525
Near-Term + Project	AM	440	318	122	23	3050
Project Increase	AM	21	318	21	4	525
SB College Avenue to WB I-8					2 SOV	
Near-Term	AM	428	336	92	16	2288
Near-Term + Project	AM	434	336	98	18	2450
Project Increase	AM	6	336	6	2	162
NB College Avenue to EB I-8					1 SOV	
Near-Term	PM	445	570	0	0	0
Near-Term + Project	PM	514	570	0	0	0
Project Increase	PM	69	570	0	0	0
SB Fairmount Ave to EB I-8					1 SOV	
Near-Term	PM	489	246	243	59	6075
Near-Term + Project	PM	491	246	245	60	6125
Project Increase	PM	2	246	2	1	50

APPENDIX O

MTS RIDERSHIP INFORMATION AND CALCULATION

	353			408			415			423			430		
Eastbound	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
12th/Imperial															
Gaslamp Quarter	6	0	6	2	0	2	1	0	1	2	0	2	1	0	1
Convention Center	2	0	7	1	0	3	1	0	2	0	0	3	0	0	1
Seaport Village	2	0	9	1	0	4	0	0	2	0	0	3	1	0	2
Santa Fe	9	2	17	3	1	6	2	1	3	3	1	5	1	0	2
County Center/Little Italy	2	0	18	1	0	7	1	0	4	1	0	5	0	0	2
Middletown	1	0	19	1	0	8	0	0	4	0	0	5	1	0	3
Washinton St	1	0	19	0	0	8	0	0	4	1	0	6	0	0	3
Old Town	3	4	18	1	2	7	1	1	4	1	1	7	0	3	0
Morena/Linda Vista	1	2	18	0	1	7	0	1	4	1	1	7			
Fashion Valley	1	1	17	1	1	7	0	1	3	1	1	7			
Hazard Center	2	0	19	0	0	7	0	0	3	0	0	7			
Mission Valley	0	1	19	0	0	7	0	0	3	0	0	7			
Rio Vista	0	0	19	0	0	7	0	0	3	0	0	7			
Fenton Parkway	1	1	19	0	0	7	0	0	3	0	0	7			
Qualcomm Stadium	0	0	19	0	0	7	0	3	0	1	0	8			
Mission San Diego	0	1	19	1	0	7				0	0	8			
Grantville	1	1	18	0	0	7				0	1	7			
SDSU	2	2	18	1	2	6				1	1	7			
Alvarado	1	1	17	0	0	6				1	0	7			
70th St	1	1	18	1	0	7				1	0	8			
Grossmont	1	6	13	0	2	5				1	2	7			
Amaya Drive	0	0	13	0	0	5				0	0	6			
El Cajon	3	3	12	2	1	6				3	2	7			
Arnele Avenue	1	5	9	0	1	5				1	1	8			
Gillespie Field	1	1	8	0	1	4				0	2	6			
Santee	0	8	0	0	4	0				0	6	0			
	41			18			8			21			4		

	438			445			451			500			506		
Eastbound	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
12th/Imperial							7	0	7				13	0	13
Gaslamp Quarter	2	0	2	1	0	1	2	0	9	2	0	2	3	1	15
Convention Center	2	0	3	1	0	2	1	0	10	1	0	3	1	1	15
Seaport Village	1	0	4	0	0	2	1	0	10	0	0	3	0	2	13
Santa Fe	4	1	6	1	1	3	3	1	13	1	1	3	6	2	18
County Center/Little Italy	1	0	7	1	0	3	1	0	14	1	0	4	1	1	18
Middletown	0	0	8	0	0	3	0	0	14	0	0	4	0	1	17
Washinton St	1	1	8	1	0	4	1	1	14	0	1	4	3	1	20
Old Town	3	2	9	1	1	4	4	5	13	0	4	0	4	8	16
Morena/Linda Vista	1	1	10	0	1	4	1	1	13				3	3	16
Fashion Valley	1	2	8	1	1	4	2	4	11				1	4	14
Hazard Center	0	1	8	0	0	4	0	1	10				1	1	13
Mission Valley	0	0	8	0	1	3	1	1	9				2	0	14
Rio Vista	0	0	8	0	0	3	1	0	10				2	1	15
Fenton Parkway	0	0	8	0	0	3	0	0	10				0	0	15
Qualcomm Stadium	0	0	8	0	3	0	2	0	11				0	0	15
Mission San Diego	3	0	11				1	0	13				1	2	14
Grantville	0	1	10				0	2	10				3	2	15
SDSU	5	2	14				1	2	10				4	3	17
Alvarado	0	0	14				0	0	10				0	1	16
70th St	1	0	15				1	1	10				2	0	18
Grossmont	1	2	14				1	3	9				1	3	16
Amaya Drive	0	0	14				1	0	10				0	0	16
El Cajon	4	4	14				9	5	14				10	5	21
Arnele Avenue	2	3	13				1	3	12				1	8	15
Gillespie Field	0	5	8				1	3	10				0	6	9
Santee	0	8	0				0	10	0				0	9	0
	34			9			44			5			64		

	521			536			551			606			621		
Eastbound	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
12th/Imperial	72	0	72	88	0	88	70	0	70	85	0	85	108	0	108
Gaslamp Quarter	3	6	69	4	3	89	2	4	68	2	5	83	4	5	107
Convention Center	3	5	67	2	6	85	3	4	67	3	8	78	4	4	107
Seaport Village	1	4	63	1	5	81	1	4	65	3	4	77	4	10	101
Santa Fe	10	1	72	19	2	98	22	3	85	16	3	90	22	6	117
County Center/Little Italy	2	5	68	2	11	89	4	4	84	5	4	92	5	5	116
Middletown	1	2	67	1	4	86	1	2	83	3	4	90	3	4	114
Washinton St	1	2	67	1	7	80	3	5	80	2	5	88	3	7	111
Old Town	13	37	43	8	52	37	24	48	56	9	51	46	21	71	60
Morena/Linda Vista	3	8	37	2	7	32	2	6	52	2	8	40	3	9	55
Fashion Valley	2	11	28	7	7	31	3	18	37	9	11	38	7	20	41
Hazard Center	0	5	23	1	5	27	2	10	29	2	7	32	1	7	35
Mission Valley	1	4	20	1	1	27	2	2	29	2	2	32	2	3	35
Rio Vista	1	3	18	2	3	26	0	2	28	1	4	30	1	5	31
Fenton Parkway	1	0	18	1	1	25	1	1	28	2	4	27	1	2	29
Qualcomm Stadium	1	0	19	1	0	25	0	0	27	1	1	27	0	1	29
Mission San Diego	1	1	19	2	2	25	1	2	26	2	1	28	2	1	29
Grantville	2	6	15	2	6	21	3	6	23	2	3	27	2	5	26
SDSU	9	3	22	9	3	27	10	6	28	6	10	23	6	9	23
Alvarado	1	1	22	1	2	26	1	3	26	1	1	23	1	2	22
70th St	1	1	22	3	1	28	2	2	26	3	1	24	4	1	25
Grossmont	1	4	19	2	5	26	2	5	23	2	5	21	3	10	18
Amaya Drive	0	0	19	1	1	26	1	2	22	1	1	21	1	0	18
El Cajon	11	6	25	7	10	23	12	12	22	8	9	19	18	9	27
Arnele Avenue	4	4	25	2	7	18	1	5	18	3	3	20	3	2	27
Gillespie Field	0	13	13	0	7	11	0	6	12	1	9	12	1	14	13
Santee	0	13	0	0	11	0	0	12	0	0	12	0	0	13	0
	143			168			174			176			227		

	636			651			706			721			736		
Eastbound	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
12th/Imperial	123	0	123	100	0	100	141	0	141	143	0	143	137	0	137
Gaslamp Quarter	2	7	118	38	6	132	5	11	134	6	8	141	8	8	137
Convention Center	5	7	116	5	7	130	3	9	129	6	7	140	13	9	141
Seaport Village	2	9	108	3	7	126	2	8	123	2	14	129	3	15	129
Santa Fe	22	4	127	26	3	148	22	4	141	24	4	148	28	6	150
County Center/Little Italy	7	9	125	6	9	146	11	7	145	9	8	149	6	13	144
Middletown	4	5	124	4	5	145	3	4	144	2	4	147	2	4	141
Washinton St	6	9	121	4	5	144	3	6	141	7	7	147	6	7	141
Old Town	19	73	67	30	85	90	14	74	81	25	94	78	22	95	68
Morena/Linda Vista	3	12	58	5	7	88	5	10	76	5	7	75	4	7	65
Fashion Valley	11	15	54	12	21	79	12	19	69	10	21	64	11	14	62
Hazard Center	2	9	47	3	12	71	4	10	63	3	12	55	3	12	53
Mission Valley	2	3	46	3	4	70	3	4	63	2	5	52	2	4	51
Rio Vista	1	4	43	4	6	68	7	4	66	6	6	52	3	6	49
Fenton Parkway	4	3	45	5	5	68	16	2	79	10	2	60	4	3	49
Qualcomm Stadium	1	1	45	2	1	68	2	1	80	2	1	61	1	1	50
Mission San Diego	4	3	46	3	2	69	4	4	81	2	4	60	2	5	47
Grantville	7	7	46	7	8	67	6	4	82	6	5	60	5	6	45
SDSU	11	22	35	10	36	40	9	61	30	8	38	31	12	26	31
Alvarado	2	3	35	2	5	37	2	3	29	1	4	28	2	3	30
70th St	4	2	37	4	4	38	3	2	30	3	1	30	5	1	33
Grossmont	3	13	26	4	10	32	2	9	23	4	8	26	2	12	23
Amaya Drive	1	1	26	1	5	28	2	3	23	1	1	25	1	1	23
El Cajon	14	10	29	17	15	31	14	11	26	12	15	22	8	12	18
Arnele Avenue	2	5	27	3	6	27	2	5	23	2	4	19	2	4	16
Gillespie Field	1	12	15	1	17	10	1	11	13	0	9	11	0	6	10
Santee	0	15	0	0	10	0	0	13	0	0	11	0	0	10	0
	261			301			300			301			291		

	751			806			821			836			851		
Eastbound	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
12th/Imperial	115	0	115	109	0	109	112	0	112	109	0	109	100	0	100
Gaslamp Quarter	4	6	113	10	6	113	4	6	111	5	5	109	6	5	100
Convention Center	6	7	112	5	5	113	6	4	112	6	5	111	4	4	101
Seaport Village	3	5	110	2	5	111	3	6	110	2	9	104	3	6	97
Santa Fe	26	5	131	27	6	131	28	4	134	31	5	130	28	5	121
County Center/Little Italy	8	13	127	10	11	131	8	8	134	8	11	128	7	7	121
Middletown	3	3	126	2	3	130	2	4	131	3	4	126	5	2	124
Washinton St	4	6	124	4	6	127	4	7	128	5	7	125	4	7	120
Old Town	22	77	69	26	70	83	28	79	77	18	76	67	25	70	75
Morena/Linda Vista	4	5	69	6	7	81	8	6	79	6	5	68	6	7	75
Fashion Valley	13	14	68	15	17	79	11	15	75	17	15	70	17	18	73
Hazard Center	4	8	63	3	10	72	4	9	71	5	7	68	3	6	70
Mission Valley	2	3	62	2	4	69	1	6	66	3	5	66	3	7	66
Rio Vista	3	7	58	5	6	69	3	6	63	4	5	66	3	6	63
Fenton Parkway	4	4	58	8	4	73	5	4	65	8	5	69	6	10	59
Qualcomm Stadium	2	0	59	2	1	74	2	1	66	2	1	70	1	1	60
Mission San Diego	2	3	58	3	3	75	3	2	67	5	2	73	3	2	61
Grantville	5	10	53	8	14	69	5	15	57	10	8	74	6	7	60
SDSU	11	27	37	10	45	34	11	35	34	15	50	39	11	34	36
Alvarado	2	4	35	3	4	33	2	4	31	1	6	35	2	6	32
70th St	3	2	36	5	1	36	2	3	31	4	2	37	3	2	33
Grossmont	3	10	28	2	17	21	3	11	23	4	13	27	2	11	23
Amaya Drive	1	3	27	1	1	20	2	2	22	1	1	27	1	2	22
El Cajon	9	14	22	8	10	18	8	11	20	9	15	22	9	10	21
Arnele Avenue	1	6	17	1	3	16	2	5	17	2	6	17	1	6	16
Gillespie Field	0	2	15	0	3	13	0	2	15	0	2	15	0	1	15
Santee	0	15	0	0	13	0	0	15	0	0	15	0	0	15	0
	261			277			268			284			257		

	453			453 (1)			504			519			523		
Westbound	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
Santee							14	0	14	9	0	9			
Gillespie Field							3	0	17	1	0	10			
Arnele Avenue							9	1	24	3	1	12			
El Cajon							17	4	37	11	3	20			
Amaya Drive							5	1	42	3	2	22			
Grossmont							12	2	51	7	1	28			
70th St							6	1	56	5	1	32			
Alvarado							4	1	60	3	0	35			
SDSU							13	6	67	8	3	39			
Grantville							6	3	70	8	2	46			
Mission San Diego							6	2	74	3	2	47			
Qualcomm Stadium				4	0	4	1	0	75	3	0	50	4	0	4
Fenton Parkway				1	0	6	4	1	78	3	1	52	2	0	6
Rio Vista				1	0	7	1	1	77	1	1	52	2	0	8
Mission Valley				0	0	7	1	1	77	1	2	52	1	0	9
Hazard Center				3	0	10	2	3	76	3	3	51	2	0	11
Fashion Valley				2	1	11	3	19	61	11	8	54	2	2	11
Morena/Linda Vista				3	0	14	3	6	58	5	4	55	3	1	13
Old Town	17	0	17	8	2	19	13	21	50	25	21	59	17	4	26
Washington St	2	0	18	1	1	20	2	2	49	3	6	56	3	1	28
Middletown	0	1	17	1	0	20	1	2	47	2	4	54	1	1	28
County Center/Little Italy	1	0	18	0	1	20	1	3	46	3	5	52	0	1	27
Santa Fe	0	10	9	1	6	14	2	22	26	4	24	32	1	12	16
Seaport Village	1	0	10	0	0	15	2	2	26	2	1	32	1	1	16
Convention Center	1	0	10	2	0	17	1	3	24	1	2	32	1	0	18
Gaslamp Quarter	0	1	10	2	1	18	2	6	20	1	4	30	1	1	17
12th/Imperial	0	10	0	0	18	0	0	20	0	0	30	0	0	17	0
	22			31			132			132			41		

	523 (1)			534			549			604			619		
Westbound	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
Santee				8	0	8	9	0	9	11	0	11	19	0	19
Gillespie Field				2	0	10	2	0	11	2	0	12	4	1	23
Arnele Avenue				3	0	13	5	0	16	9	0	21	7	0	29
El Cajon				28	3	39	19	4	31	35	5	51	21	7	43
Amaya Drive				3	0	41	3	2	33	8	2	56	6	1	48
Grossmont				14	4	51	17	4	46	18	4	71	20	4	64
70th St				5	1	56	5	2	49	10	2	79	13	1	75
Alvarado				6	2	59	6	0	54	7	1	85	11	1	86
SDSU				13	4	68	20	6	68	19	7	97	21	12	94
Grantville				3	2	69	10	4	74	11	4	104	20	4	111
Mission San Diego				2	1	71	4	1	78	7	2	108	5	2	114
Qualcomm Stadium				2	0	72	2	2	78	4	0	112	3	1	117
Fenton Parkway				3	0	75	5	1	82	6	2	117	6	2	121
Rio Vista				2	1	76	3	2	83	4	3	118	6	4	124
Mission Valley				1	2	76	2	2	84	4	4	118	4	3	125
Hazard Center				6	3	79	6	2	89	4	2	119	8	5	127
Fashion Valley				3	18	64	11	16	83	8	21	107	15	24	119
Morena/Linda Vista				10	4	70	5	4	84	7	4	109	9	8	121
Old Town	6	0	6	13	38	45	28	40	72	20	61	68	33	54	99
Washington St	2	0	7	3	2	47	5	2	74	5	3	69	5	4	100
Middletown	0	0	8	3	3	47	4	3	76	5	2	72	2	6	97
County Center/Little Italy	2	1	9	2	5	44	3	8	71	3	8	67	3	8	93
Santa Fe	1	4	6	2	23	23	2	40	34	10	39	38	4	57	40
Seaport Village	0	0	6	2	2	23	1	2	33	1	3	36	2	4	38
Convention Center	1	0	7	1	2	22	1	3	31	2	3	35	1	6	33
Gaslamp Quarter	1	0	8	1	8	16	2	4	29	1	10	26	1	9	25
12th/Imperial	0	8	0	0	16	0	0	29	0	0	26	0	0	25	0
	13			144			183			220			252		

	634			649			704			719			734		
Westbound	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
Santee	15	0	15	22	0	22	16	0	16	17	0	17	22	0	22
Gillespie Field	3	0	18	3	1	24	2	1	17	4	1	21	4	4	22
Arnele Avenue	5	0	23	8	1	31	8	0	25	5	0	25	7	1	29
El Cajon	33	6	50	30	9	52	42	5	62	25	7	43	35	9	55
Amaya Drive	4	2	52	10	2	60	10	3	69	9	1	51	8	4	59
Grossmont	21	5	68	28	5	83	24	10	82	48	4	95	33	9	83
70th St	9	2	75	16	2	97	13	3	92	12	4	103	9	3	89
Alvarado	8	1	82	11	1	106	15	1	106	26	1	128	16	2	103
SDSU	27	12	97	31	16	121	27	31	101	18	67	78	31	35	100
Grantville	18	4	111	20	6	135	12	8	106	12	8	82	14	8	105
Mission San Diego	7	1	117	9	3	141	7	3	109	7	2	87	7	3	109
Qualcomm Stadium	5	1	122	4	1	144	3	0	111	5	0	92	4	1	112
Fenton Parkway	7	2	126	9	2	151	10	3	118	9	3	97	9	4	118
Rio Vista	6	2	130	8	5	154	6	5	120	10	3	104	7	4	121
Mission Valley	4	4	131	4	6	151	4	5	120	5	4	105	4	5	120
Hazard Center	8	5	134	9	8	152	6	7	118	7	6	107	7	8	120
Fashion Valley	13	29	119	17	25	144	13	28	103	16	17	106	20	27	113
Morena/Linda Vista	11	6	123	18	7	154	13	6	110	17	6	116	12	7	118
Old Town	28	53	98	47	63	138	29	49	91	39	39	116	31	42	107
Washington St	5	4	99	5	5	138	5	3	92	6	3	119	8	3	111
Middletown	2	4	97	4	4	138	3	2	93	5	3	121	4	3	112
County Center/Little Italy	4	10	91	7	23	122	5	12	86	6	17	111	7	17	102
Santa Fe	4	55	40	13	77	58	4	50	40	4	74	41	8	62	47
Seaport Village	2	4	37	1	5	54	1	4	37	1	4	38	2	4	45
Convention Center	2	5	33	1	7	48	1	6	33	1	4	34	2	6	41
Gaslamp Quarter	4	8	28	3	15	37	1	6	28	1	6	30	1	7	35
12th/Imperial	0	28	0	0	37	0	0	28	0	0	30	0	0	35	0
	254			337			279			317			311		

	749			804			819			834			849		
Westbound	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
Santee	15	0	15	15	0	15	14	0	14	17	0	17	13	0	13
Gillespie Field	3	1	17	4	1	17	3	1	16	3	1	20	2	0	14
Arnele Avenue	5	1	22	6	1	22	5	1	19	5	2	23	4	1	17
El Cajon	25	6	41	36	5	53	24	5	39	32	6	48	34	4	47
Amaya Drive	7	3	46	8	2	60	8	1	45	6	2	52	6	1	52
Grossmont	19	5	60	28	8	80	25	6	64	28	9	71	17	5	64
70th St	7	3	64	7	2	84	6	2	68	7	3	76	7	2	69
Alvarado	12	1	76	16	4	96	23	2	89	16	2	90	27	1	95
SDSU	22	24	74	27	34	89	24	43	70	25	39	76	21	49	67
Grantville	13	5	82	14	9	94	9	14	65	10	6	79	9	4	72
Mission San Diego	6	2	85	5	3	96	5	2	68	3	1	81	6	1	77
Qualcomm Stadium	3	1	88	2	1	97	2	1	69	3	1	83	1	1	77
Fenton Parkway	6	3	91	5	3	99	5	2	72	5	3	85	5	7	75
Rio Vista	5	3	92	4	4	99	3	3	73	4	4	86	4	3	76
Mission Valley	5	5	92	3	7	95	2	5	70	3	7	82	3	6	72
Hazard Center	6	5	94	7	6	96	6	5	72	6	4	84	6	5	73
Fashion Valley	13	16	92	15	22	89	16	18	70	19	19	84	11	16	69
Morena/Linda Vista	10	6	95	10	7	91	7	6	70	7	6	85	6	5	70
Old Town	33	35	92	25	41	76	29	29	70	26	35	76	34	31	73
Washington St	4	4	93	4	3	77	5	3	72	5	3	78	3	3	74
Middletown	3	3	93	3	2	79	3	1	74	2	2	78	2	2	73
County Center/Little Italy	6	13	86	6	8	77	5	9	70	5	7	75	5	7	70
Santa Fe	11	48	49	4	38	43	5	30	44	5	31	50	5	29	47
Seaport Village	1	4	46	2	5	40	3	5	41	2	6	47	2	5	44
Convention Center	2	6	41	1	7	34	2	6	37	2	7	41	2	7	39
Gaslamp Quarter	1	11	31	1	6	29	1	6	32	1	5	37	1	6	34
12th/Imperial	0	31	0	0	29	0	0	32	0	0	37	0	0	34	0
	244			258			238			246			236		

	904			919			934			949			1004		
Westbound	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
Santee	16	0	16	23	0	23	12	0	12	14	0	14	18	0	18
Gillespie Field	2	0	18	3	1	24	2	1	14	2	0	15	1	1	18
Arnele Avenue	6	2	22	4	3	26	5	1	18	5	1	19	6	3	22
El Cajon	33	5	49	22	6	42	28	5	42	23	5	37	28	6	44
Amaya Drive	5	1	53	7	2	48	4	2	44	6	1	42	5	2	47
Grossmont	26	7	72	17	8	57	18	9	53	19	8	53	21	10	58
70th St	6	3	76	6	4	60	4	3	55	6	2	56	5	3	60
Alvarado	15	3	87	19	2	77	10	1	63	9	2	64	12	2	71
SDSU	24	32	79	18	38	57	27	19	72	22	21	65	20	27	64
Grantville	11	5	85	9	4	62	9	6	74	9	6	69	10	5	69
Mission San Diego	3	2	86	3	1	64	4	1	77	4	2	71	3	2	70
Qualcomm Stadium	2	1	87	1	1	64	1	1	78	2	1	73	2	1	71
Fenton Parkway	6	6	87	4	3	65	5	5	78	6	5	74	7	6	72
Rio Vista	4	4	87	5	3	67	4	4	78	6	4	75	5	4	73
Mission Valley	4	9	82	4	6	64	4	8	75	7	7	75	6	8	70
Hazard Center	7	7	83	5	5	63	5	6	75	9	6	78	6	5	72
Fashion Valley	14	21	76	13	16	60	12	18	69	20	20	79	15	18	68
Morena/Linda Vista	6	8	74	6	7	59	6	7	67	7	7	79	6	6	68
Old Town	28	31	72	34	24	69	30	29	69	49	30	99	30	27	71
Washington St	6	3	75	4	3	70	6	3	71	6	3	101	4	3	73
Middletown	1	1	75	1	1	71	3	1	73	2	3	101	2	1	73
County Center/Little Italy	4	9	70	4	7	68	6	7	71	7	11	97	5	7	71
Santa Fe	3	26	46	4	27	45	7	29	49	6	35	68	5	25	51
Seaport Village	2	5	43	2	5	42	2	4	46	2	7	63	2	8	46
Convention Center	2	5	40	2	4	40	2	7	42	3	7	59	2	5	44
Gaslamp Quarter	2	5	37	2	6	37	3	8	37	2	6	55	2	10	35
12th/Imperial	0	37	0	0	37	0	0	37	0	0	55	0	0	35	0
	240			221			221			254			228		

EB Hourly Volumes (IN)	53	35	50	58	72	75	87	98	123	167	221	255	255	241	228	225	254	260
EB Hourly Volumes (OUT)	54	37	53	69	88	93	99	100	108	121	127	136	132	129	134	136	144	144
WB Hourly Volumes (IN)	208	233	284	307	359	380	423	443	412	403	364	351	371	361	348	322	291	274
WB Hourly Volumes (OUT)	243	272	327	356	409	413	397	400	353	341	332	308	302	292	279	274	273	257

EB AM Peak Hour (IN)	261	PHF=	0.8801		
EB AM Peak Hour (OUT)	144	PHF=	0.9142		
EB PM Peak Hour (IN)	473	PHF=	0.9482		
EB PM Peak Hour (OUT)	446	PHF=	0.9627		
WB AM Peak Hour (IN)	443	PHF=	0.8648		
WB AM Peak Hour (OUT)	413	PHF=	0.8539		
WB PM Peak Hour (IN)	225	PHF=	0.8248		
WB PM Peak Hour (OUT)	289	PHF=	0.8737		
EB Off SDSU	1923			1,277	1,923
EB On SDSU	1277				
WB Off SDSU	1322				
WB On SDSU	1881				
Riders from West	2599				
Riders from east	3804				
West %	0.406				
East %	0.594				
Total	6403				

906			921			936			951			1006			1021			1036		
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
96	0	96	84	0	84	82	0	81	85	0	85	77	0	77	72	0	72	63	0	63
5	4	98	5	4	85	7	5	83	5	6	85	9	4	82	7	3	76	9	3	69
5	4	99	6	3	88	6	4	86	4	4	86	6	5	84	5	3	78	4	3	70
3	6	95	3	6	85	4	6	84	4	4	86	5	5	83	5	7	76	4	4	70
26	5	117	37	6	116	28	4	107	35	5	115	21	4	101	34	5	106	29	5	94
11	5	122	9	6	118	8	6	108	7	5	117	9	5	105	9	6	109	8	7	95
2	2	122	3	2	119	2	2	108	1	3	116	2	2	105	1	2	108	2	1	96
4	6	120	5	6	118	3	5	107	5	5	115	5	4	105	4	5	107	4	4	96
16	67	69	25	72	71	17	62	62	25	64	76	19	52	72	25	59	72	19	53	63
5	6	69	6	6	70	5	7	60	7	4	78	6	6	71	5	6	71	4	5	62
11	16	63	12	20	62	14	15	59	16	22	72	17	18	71	16	21	67	13	18	57
3	6	60	3	7	58	4	9	54	3	6	69	4	8	67	3	9	61	5	7	55
5	7	59	3	9	52	3	8	48	4	9	64	5	9	63	4	9	56	4	9	51
6	5	60	3	5	50	3	5	46	4	5	63	7	5	66	3	3	55	3	4	50
11	7	64	4	6	48	3	5	45	5	6	62	10	7	69	5	10	50	3	8	45
2	1	64	1	1	48	2	1	45	2	1	63	3	1	72	1	1	51	1	1	45
5	3	67	2	2	48	2	2	46	3	2	64	5	2	75	3	2	51	2	2	45
8	5	70	6	6	49	6	5	47	7	5	65	8	6	77	6	6	52	6	5	46
10	49	31	15	25	38	12	24	35	11	36	40	18	50	45	21	24	49	17	20	43
2	5	28	2	7	33	3	5	33	2	5	37	2	9	38	3	9	43	3	6	41
3	2	30	2	2	33	4	2	35	2	4	36	5	3	40	2	3	42	5	3	43
5	10	25	4	14	23	5	15	26	2	15	23	3	15	29	3	16	29	4	17	30
1	2	24	1	2	23	1	1	26	1	2	22	2	3	28	1	3	27	1	2	29
8	10	22	9	12	20	10	13	22	8	13	17	7	16	19	7	16	18	9	16	21
1	5	18	2	5	17	1	6	18	2	5	14	2	5	16	3	6	15	3	6	17
0	1	17	0	2	16	1	1	17	0	2	13	0	2	14	0	2	14	0	2	15
0	17	0	0	16	0	0	17	0	0	13	0	0	14	0	0	14	0	0	15	0
256			251			235			251			259			248			226		

1051			1106			1121			1136			1151			1206			1221		
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
74	0	74	76	0	76	65	0	65	69	0	69	70	0	70	65	0	65	70	0	70
16	3	87	6	4	78	12	3	74	6	4	71	13	5	78	13	5	73	8	3	76
5	3	89	4	3	79	7	4	77	6	4	74	6	4	79	8	5	76	7	3	80
6	5	90	7	6	80	5	4	77	6	6	74	6	4	80	6	5	78	5	6	79
33	5	119	43	5	118	37	6	108	40	5	109	38	5	113	42	6	113	36	6	109
7	7	119	11	7	121	8	6	110	8	6	110	7	7	113	8	8	113	7	7	109
2	3	119	2	2	122	2	2	109	2	2	110	2	3	113	2	4	112	2	3	108
3	9	113	3	10	115	4	7	107	5	9	105	3	6	109	4	6	110	3	6	106
25	61	77	22	58	78	28	54	81	21	55	72	43	53	99	29	54	85	33	53	85
6	6	77	5	5	78	5	6	81	5	7	70	7	6	100	8	7	86	6	9	82
18	23	73	17	21	74	16	19	77	17	19	68	23	26	97	18	22	82	17	23	77
5	8	70	5	7	71	5	7	75	6	7	66	6	9	95	6	9	79	5	7	75
7	10	67	7	11	66	6	11	70	8	10	65	11	13	93	9	10	78	6	11	70
4	5	67	4	4	66	4	5	68	3	4	64	3	5	91	4	5	77	4	5	69
4	8	63	8	7	67	5	9	65	8	7	65	7	12	86	8	10	75	7	8	67
1	2	63	2	1	68	1	2	65	1	1	65	1	1	86	2	2	74	1	2	66
2	2	63	3	2	69	2	2	65	3	3	65	2	3	86	2	3	73	2	4	64
8	7	63	9	10	68	6	9	62	8	8	65	6	11	81	7	8	73	4	9	59
15	28	50	17	33	52	28	30	60	25	31	59	24	33	71	20	30	62	31	24	66
2	7	45	2	8	46	2	11	51	2	10	50	3	11	62	2	10	54	2	13	54
3	4	45	5	3	48	4	5	50	5	4	52	4	4	62	4	5	53	3	4	52
4	15	34	4	17	35	4	18	36	5	17	40	4	23	44	4	18	39	4	22	34
1	2	33	1	3	33	1	5	32	1	4	38	1	4	41	1	3	37	1	4	32
8	16	24	7	17	23	10	17	24	8	22	24	9	24	26	10	22	25	11	18	24
3	6	21	2	5	21	2	7	19	3	7	19	4	6	24	3	7	22	2	7	19
1	2	19	0	3	18	0	3	17	0	3	17	1	4	20	1	3	20	1	2	17
0	19	0	0	18	0	0	17	0	0	17	0	0	20	0	0	20	0	0	17	0
265			273			268			273			304			287			277		

1236			1251			1306			1321			1336			1351			1406		
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
74	0	74	62	0	62	76	0	76	68	0	68	69	0	69	74	0	74	66	0	66
7	4	77	8	4	67	9	4	81	7	5	70	8	6	71	9	6	77	13	7	72
7	4	79	7	3	71	8	4	85	7	4	73	7	4	75	7	5	79	7	4	74
6	5	81	6	5	72	7	5	87	7	6	74	8	5	77	6	6	79	8	7	75
41	6	115	32	6	98	49	8	127	40	6	108	40	9	108	40	9	110	40	6	109
11	8	118	8	7	99	14	8	133	10	7	111	9	7	109	10	10	110	11	8	112
2	3	118	1	2	98	2	2	133	1	3	109	1	3	108	2	2	110	3	3	112
4	7	115	4	5	97	5	7	132	3	5	108	4	5	107	4	6	108	4	7	109
30	59	86	31	47	81	35	61	105	42	52	98	31	54	84	42	57	92	30	54	85
6	7	85	7	5	82	9	7	108	8	7	99	6	7	83	8	7	93	7	7	85
19	24	80	22	23	81	21	28	100	18	32	85	20	27	76	24	26	91	19	23	81
6	8	78	6	8	79	7	8	99	5	10	80	6	9	74	6	9	87	6	9	78
8	10	76	7	11	75	9	14	94	6	9	77	9	11	71	8	12	84	9	10	76
3	6	73	4	5	74	6	8	91	4	6	75	4	6	69	4	6	82	4	4	76
4	10	68	4	7	71	8	11	89	6	9	73	5	9	64	4	9	77	6	8	73
2	2	68	4	2	74	2	2	88	1	2	72	1	2	63	2	3	77	1	2	72
2	3	67	2	4	72	3	4	88	2	4	70	3	3	63	3	4	75	4	4	73
7	8	65	11	11	72	13	10	91	6	8	68	6	10	59	7	11	71	9	10	71
28	28	65	19	32	59	31	45	77	45	28	85	35	22	72	22	28	65	24	28	67
3	11	56	2	8	53	2	15	64	2	20	67	3	13	61	3	10	58	3	11	59
6	5	57	3	4	51	5	6	63	4	5	65	5	5	62	4	5	57	5	5	59
5	26	36	3	20	34	5	26	43	4	30	39	6	27	42	4	21	41	4	22	41
2	3	34	1	4	32	1	4	39	2	6	35	1	5	38	1	4	37	1	4	38
8	19	23	11	17	26	9	24	24	8	20	23	10	21	27	9	22	24	10	23	25
3	8	18	3	6	22	3	8	20	3	7	19	3	8	23	3	7	20	2	8	20
0	2	16	1	2	21	4	3	22	1	4	17	1	4	20	1	2	19	2	4	18
0	16	0	0	21	0	0	22	0	0	17	0	0	20	0	0	19	0	0	18	0
295			272			343			310			301			304			296		

1421			1436			1451			1506			1521			1536			155	
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF
76	0	76	73	0	73	76	0	76	93	0	93	79	0	79	79	0	79	73	0
14	6	84	12	8	78	11	7	80	10	7	96	12	7	84	14	6	87	16	7
8	5	86	8	4	82	9	4	85	8	4	100	9	6	88	10	4	93	7	4
7	7	86	8	8	82	8	7	87	11	9	102	12	8	92	13	9	97	10	10
44	7	123	55	7	129	46	8	125	51	10	143	57	11	138	56	11	141	61	9
9	9	123	10	9	130	11	10	126	11	9	145	14	9	143	14	12	143	15	9
2	2	124	3	2	131	3	2	127	3	4	144	3	4	143	4	3	144	5	4
5	8	120	4	8	127	5	7	125	6	9	141	6	10	139	6	9	140	9	7
49	61	108	36	61	102	53	55	123	42	65	119	54	66	126	60	61	140	75	66
10	9	109	9	10	101	9	9	122	8	11	116	7	9	124	8	13	135	11	13
20	28	101	25	26	100	25	28	119	22	24	114	30	29	125	27	28	133	30	32
6	8	99	6	9	97	8	10	117	5	10	109	9	11	123	8	15	126	7	14
9	11	97	11	12	96	11	12	115	8	12	105	10	13	120	9	14	121	13	15
4	5	96	5	7	94	5	5	115	6	7	105	5	7	118	4	6	119	5	8
6	8	93	6	11	88	5	10	110	7	10	102	5	10	112	5	9	114	5	14
1	3	92	2	2	88	1	2	108	1	4	99	1	3	111	1	4	112	3	4
3	4	90	3	5	86	3	5	106	4	5	98	3	6	108	3	5	109	3	7
7	12	85	8	12	82	8	13	101	7	10	95	7	13	101	7	16	100	8	18
25	34	75	35	34	83	52	40	114	22	38	79	27	33	96	25	32	93	23	38
5	12	69	3	13	73	3	19	98	2	11	70	2	13	85	3	9	87	3	10
4	6	66	6	7	72	4	10	91	4	6	68	5	7	82	5	8	83	4	9
3	25	44	5	28	49	6	32	65	6	26	48	5	30	57	6	30	59	5	31
2	3	43	2	5	45	2	12	55	2	6	44	1	6	52	1	8	53	1	7
10	28	25	10	27	28	11	32	35	11	26	29	14	31	34	9	32	30	11	37
3	7	20	3	9	22	4	11	28	3	9	23	3	10	27	2	9	23	4	9
3	3	20	1	5	19	4	6	25	2	4	21	1	6	23	1	5	19	2	6
0	20	0	0	19	0	0	25	0	0	21	0	0	23	0	0	19	0	0	21
332			350			382			356			383			377			410	

1019			1034			1049			1104			1119			1134			1149		
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
16	0	16	13	0	13	15	0	15	16	0	16	16	0	16	14	0	14	21	0	21
2	0	18	2	0	14	2	0	17	2	0	18	2	0	17	2	0	16	3	1	24
7	2	24	6	2	19	7	2	22	5	3	21	7	2	21	5	1	20	6	2	28
20	6	37	19	5	33	20	7	35	24	7	38	21	7	36	26	6	40	19	7	40
7	2	42	4	2	36	3	2	36	3	2	39	3	2	37	4	2	42	4	2	42
20	7	54	17	9	44	18	8	46	17	8	49	19	8	48	18	9	50	21	12	52
6	3	58	6	3	46	6	3	49	5	4	50	4	3	49	6	4	52	5	4	54
30	2	86	11	2	56	9	2	55	10	2	58	15	1	63	12	1	63	15	2	67
22	48	60	37	19	73	25	17	64	23	20	62	24	28	59	37	22	78	37	27	77
8	4	64	10	5	78	11	4	70	7	5	63	10	4	65	8	6	79	12	7	83
4	2	66	4	2	81	3	2	72	4	2	66	4	2	68	3	2	80	5	2	85
1	1	67	2	1	81	1	1	72	2	1	66	1	1	68	1	1	80	2	1	85
6	5	68	6	7	79	6	5	73	6	5	68	9	4	72	7	7	80	10	6	89
5	3	70	5	5	80	6	4	75	6	3	71	7	4	75	5	5	80	8	5	92
7	8	69	7	8	79	6	9	72	7	7	70	7	8	74	7	9	79	11	11	92
7	5	71	6	5	80	7	5	74	8	5	73	10	6	78	8	6	80	9	7	95
19	16	74	16	22	74	20	18	76	13	19	67	21	21	78	18	22	76	19	27	86
6	6	74	6	6	74	6	5	76	5	6	67	9	6	81	7	7	77	9	6	89
41	28	86	37	26	86	51	29	98	37	25	79	56	29	108	36	29	83	57	31	115
5	3	88	5	3	88	4	3	99	3	5	78	8	4	111	5	3	84	9	4	120
2	1	89	2	2	87	2	2	100	2	1	79	2	1	113	1	1	85	2	2	121
6	10	84	6	9	84	7	10	96	5	7	77	9	11	110	5	8	82	7	9	119
5	30	59	5	33	56	4	38	63	6	30	52	6	41	75	4	33	53	6	46	79
4	7	56	3	7	52	3	7	59	3	6	48	3	8	71	3	6	50	5	10	74
3	6	53	3	5	50	3	6	56	4	4	49	4	7	69	2	6	47	3	8	69
2	6	50	1	13	38	3	8	51	3	7	45	3	8	63	2	11	39	2	7	65
0	50	0	0	38	0	0	51	0	0	45	0	0	63	0	0	39	0	0	65	0
260			240			249			227			279			245			309		

1204			1219			1234			1249			1304			1319			1334		
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
23	0	23	20	0	20	18	0	18	17	0	17	18	0	18	19	0	19	14	0	14
2	0	25	3	0	23	3	0	21	4	0	21	3	0	21	3	1	22	3	0	17
8	2	31	6	3	27	8	2	26	7	3	25	8	3	26	8	3	28	7	2	22
24	10	45	24	9	41	25	11	40	18	10	33	24	10	40	19	10	36	21	10	34
4	2	47	3	2	42	3	3	40	3	3	33	5	2	43	5	2	39	3	2	35
20	12	55	20	10	52	20	11	49	20	7	46	20	10	53	21	8	51	15	8	42
7	5	57	5	3	55	4	3	50	5	4	48	5	5	53	5	4	52	5	4	42
9	1	65	11	2	64	8	2	56	8	2	54	12	2	63	20	2	71	7	2	47
39	20	85	31	23	72	44	17	82	42	17	78	33	26	71	42	35	78	59	15	91
10	8	87	11	6	77	8	7	83	9	6	81	26	6	91	13	6	85	10	8	93
4	3	88	5	2	80	4	2	85	4	2	83	3	2	92	4	2	86	4	4	93
1	2	88	2	1	80	2	2	84	1	1	83	1	1	92	2	2	86	1	3	91
10	6	91	9	6	83	10	8	86	9	9	83	9	8	93	10	8	88	8	9	91
6	5	93	7	5	85	5	6	85	5	7	81	5	5	93	7	4	91	5	6	90
8	8	93	10	10	86	9	9	84	10	10	81	10	11	92	11	9	93	10	9	91
10	7	96	10	6	90	10	6	88	9	6	83	8	6	95	13	6	100	8	5	94
21	28	89	21	25	85	23	24	87	18	24	77	22	26	91	22	28	94	20	24	90
9	7	91	9	6	88	6	6	86	6	7	76	7	8	90	8	8	94	6	7	90
55	34	112	55	33	110	50	30	106	61	29	108	50	35	105	69	36	127	51	30	111
12	3	120	9	4	115	5	3	108	5	4	109	6	3	108	9	4	132	8	4	114
3	2	120	4	2	117	2	2	108	2	2	109	2	2	107	3	2	133	2	2	114
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1349			1404			1419			1434			1449			1504			1519		
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
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1534			1549			1604			1619			1634			1649			170	
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LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
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LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
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53	12	8	40	10	7	32	12	8	32	9	7	31	11	7	27	10	6	32	7	4	21	7	6	25	13	5	26	8	6	26	7	3	19	9	4	24	6	4	16	10	6	24	5	4	22	10	7	32	6	6	29	8	4	23	5	2	17	4	2	15									
52	4	5	39	3	3	32	3	3	32	3	3	31	3	2	28	3	3	31	2	1	22	2	2	25	2	2	26	2	2	26	2	1	19	1	2	23	1	1	16	1	2	23	1	1	21	1	2	31	2	2	30	1	2	22	1	1	17	1	1	15									
58	7	2	44	5	2	35	6	1	36	7	1	36	10	1	37	6	1	36	4	1	26	4	1	28	4	1	28	3	1	28	3	1	21	2	1	24	2	1	17	2	2	23	2	1	22	2	2	31	3	1	31	1	2	21	1	1	17	1	1	15									
77	26	15	55	34	13	57	32	15	53	25	15	46	26	18	44	30	15	51	16	10	32	13	8	33	13	9	32	12	10	30	12	7	26	20	6	38	14	6	25	19	7	35	11	6	27	22	11	43	13	9	35	10	7	24	6	4	19	3	5	13	9	0	9	8	0	8	9	0	9
80	7	5	57	6	6	57	5	6	52	3	6	43	4	5	43	3	9	45	3	4	32	4	4	32	4	4	32	2	4	29	3	2	27	2	6	33	4	3	26	1	7	29	4	3	27	3	6	40	2	3	34	2	3	23	2	3	18	0	1	12	1	0	9	0	0	8	1	1	9
80	5	3	58	4	3	58	4	2	54	2	2	43	2	3	43	2	3	44	2	2	33	3	1	34	1	1	31	2	2	28	1	2	26	1	3	31	1	2	25	1	2	28	1	1	27	1	3	38	2	2	34	1	1	23	1	1	18	0	1	11	0	0	9	0	0	8	0	0	9
83	2	2	59	1	1	58	2	2	53	2	1	43	1	1	43	1	1	44	1	1	33	3	1	36	1	0	33	1	1	29	1	1	27	1	2	30	1	1	25	1	2	27	1	1	27	2	1	39	1	1	34	1	1	23	0	1	17	0	0	11	0	0	9	0	0	8	0	0	9
87	8	5	62	8	9	57	6	7	53	7	4	46	7	5	45	6	3	46	3	2	34	5	3	38	5	2	35	4	2	31	3	1	28	2	3	29	2	3	25	3	2	28	1	1	27	4	3	39	3	3	34	2	1	23	1	1	17	0	1	11	1	0	10	0	0	8	0	1	9
94	9	3	68	8	4	61	6	4	55	4	3	47	3	3	46	4	3	47	2	2	34	3	2	39	3	2	36	3	2	31	1	2	28	3	2	31	1	2	24	2	3	27	2	1	27	2	3	38	2	1	34	2	1	24	1	1	18	0	0	11	1	1	10	1	1	8	1	0	9
97	10	7	71	11	6	65	11	7	59	7	5	49	9	4	50	9	4	51	8	4	38	6	4	41	6	4	37	7	3	35	5	2	31	6	3	34	6	2	28	7	2	31	6	3	30	7	2	43	6	3	38	3	3	25	3	1	19	1	1	12	1	0	11	0	0	8	1	0	10
104	10	4	77	13	4	74	11	5	66	9	4	54	8	5	54	6	4	54	5	2	41	7	3	45	5	3	39	4	3	36	4	3	32	4	3	35	4	2	30	5	3	32	4	2	32	6	4	45	4	3	39	4	2	27	5	2	22	1	0	12	1	1	11	0	0	8	1	1	10
105	24	18	84	21	19	76	22	16	72	19	14	59	20	14	60	16	15	56	10	10	42	14	13	46	12	9	42	10	9	37	14	7	39	9	10	33	11	7	34	14	8	39	13	5	40	14	8	51	12	7	44	7	4	30	5	2	25	1	1	12	1	1	12	1	0	8	1	1	10
109	6	5	84	5	5	76	5	5	72	5	4	59	5	5	59	6	5	56	4	4	42	5	5	46	4	4	42	3	3	37	4	3	40	2	4	32	3	3	33	4	6	37	4	3	41	5	5	51	4	4	44	3	3	30	3	2	26	1	1	12	0	0	12	1	1	8	1	1	10
145	61	28	118	45	26	95	55	24	103	38	17	80	49	20	89	35	17	74	44	12	74	38	16	68	46	15	74	28	13	52	37	12	65	21	11	42	35	11	58	22	11	48	28	11	58	45	15	82	31	14	61	30	9	51	20	7	39	9	3	18	3	2	13	3	1	10	5	2	13
148	6	3	121	6	4	97	6	3	106	5	2	83	5	3	91	4	3	75	4	2	76	6	2	72	5	2	77	6	2	56	3	3	65	4	2	44	5	2	61	4	2	50	2	1	59	4	2	83	2	3	61	2	2	52	2	2	39	0	1	17	1	0	13	0	1	10	0	1	12
148	2	3	120	2	2	97	2	2	105	2	2	82	2	2	91	1	2	74	2	2	76	2	2	72	1	2	76	1	2	55	1	2	64	1	2	43	1	2	60	1	1	50	1	1	58	2	2	83	2	1	61	1	1	52	1	1	39	0	0	17	0	0	13	0	0	10	0	0	12
145	7	14	113	6	11	92	5	12	98	5	8	79	5	10	86	5	10	68	4	7	73	4	6	70	4	7	72	5	6	54	3	6	62	3	5	41	2	5	57	3	5	48	2	4	56	5	8	80	4	5	60	4	4	52	3	4	37	1	1	17	1	1	13	1	1	10	0	1	11
104	7	37	83	6	30	68	6	31	73	5	22	62	5	26	66	4	23	49	7	25	55	4	22	53	5	22	55	5	17	43	3	18	47	3	14	29	3	18	42	3	14	37	3	18	41	3	26	56	3	16	47	2	16	39	2	13	26	2	4	14	1	3	11	1	2	8	1	3	10
101	5	8	80	5	6	67	3	6	71	4	3	62	3	4	65	4	3	49	3	2	56	2	4	51	3	4	54	4	3	44	3	3	47	3	3	29	5	2	45	3	3	37	3	2	41	5	3	58	3	1	48	5	1	42	4	1	28	0	1	14	0	1	10	1	0	9	1	1	10
95	3	9	73	2	7	63	2	8	65	3	7	58	3	9	59	2	6	45	2	5	54	2	5	47	2	7	50	1	4	41	2	3	46	2	4	27	2	3	44	2	3	35	3	4	40	3	4	57	1	3	47	3	3	42	2	2	28	1	1	13	0	1	9	0	0	8	1	2	9
84	3	10	67	4	13	54	3	10	58	3	10	51	3	9	53	4	9	40	4	9	48	3	7	43	6	7	48	3	9	35	4	8	42	4	6	26	3	9	39	6	6	35	5	4	41	5	15	47	5	10	42	3	6	40	5	2	31	1	2	12	1	1	10	1	1	8	0	1	9
0	0	67	0	0	54	0	0	58	0	0	51	0	0	53	0	4	44	0	0	48	0	5	48	0	0	48	0	4	39	0	0	42	0	5	31	0	0	39	0	5	41	0	0	41	0	0	47	0	0	42	0	0	40	0	4	35	0	4	16	0	3	13	0	3	11	0	4	12	0
	275			245			247			207			220			201			167			175			169			152			140			133			133			146			129			191			152			121			93			50			26			21			27		

413	442	452	**473**	467	459	448	408	396	355	317	292	251	218	206	192	126	133	122	118	101	75	47	37
369	400	411	434	**446**	434	421	380	360	342	308	283	236	194	179	171	118	130	120	105	85	43	85	43
218	212	190	174	152	145	145	135	127	118	110	106	101	90	86	86	76	63	53	39	32			
289	281	255	243	212	201	195	174	161	148	127	121	126	119	123	124	104	78	59	43	32			

	429			455			511			524			539			551		
Inbound (NB)	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
Paradise Valley Rd/Meadowbrook Dr																		
Paradise Valley Rd/Deep Dell Rd																		
Deep Dell Rd/Paradise Valley Rd	1	0	1	3	0	2	1	0	1	1	0	1	3	1	2	1	0	1
Brookhaven Rd/Woodway Ct	1	0	2	0	0	3	1	0	2	0	0	1	0	0	2	0	0	1
Meadowbrook Dr/Skyline Dr	1	0	3	0	0	3	0	0	2	0	0	1	1	0	3	0	0	1
Skyline Dr/Deerock Pl	0	0	3	0	0	3	1	0	3	0	0	1	0	0	3	0	0	1
Skyline Dr/Siena St	0	0	3	0	0	3	0	0	3	0	0	2	0	0	3	1	0	2
Skyline Dr/Sychar Rd	1	0	4	1	0	4	0	0	3	2	0	3	1	0	4	1	0	2
Skyline Dr/Tuther Way	0	0	4	1	0	5	0	0	3	0	0	3	0	0	4	0	0	2
Skyline Dr/69th St	0	0	4	0	0	6	0	0	4	0	0	3	1	0	5	0	0	3
Skyline Dr/Rio Lindo Dr	1	0	5	0	0	6	0	0	4	0	0	3	0	0	5	0	0	3
Skyline Dr/Leghorn Av	2	0	7	0	0	6	1	0	5	0	0	3	0	0	5	0	0	3
Skyline Dr/Detroit Pl	0	0	7	0	0	6	0	0	5	0	0	3	0	0	5	0	0	3
Skyline Dr/O*Meara St	0	0	7	0	0	6	0	0	5	0	0	3	0	0	5	0	0	3
Skyline Dr/Ozzie Way	0	0	8	0	0	6	1	0	5	0	0	3	0	0	5	0	0	3
Skyline Dr/Radio Dr	0	0	8	0	0	6	0	0	5	0	0	3	0	0	5	0	0	3
58th St/Mira Flores Dr	0	0	8	0	0	6	0	0	6	0	0	3	0	0	6	0	0	3
Olvera Av/Las Flores Ter	0	0	8	0	0	6	0	0	6	0	0	3	0	0	6	0	0	3
Olvera Av/San Onofre Ter	0	0	8	0	0	6	0	0	6	0	0	3	0	0	6	0	0	3
Olvera Av/Santa Isabel Dr	0	0	8	0	0	6	0	0	6	0	0	3	0	0	6	1	0	5
Olvera Av/Gwen St	0	0	8	0	0	6	0	0	6	0	0	3	0	0	6	0	0	5
Olvera Av/Euclid Av	1	0	9	1	0	7	0	0	6	0	0	3	0	0	6	0	0	5
Logan Av/Euclid Av	0	0	9	0	0	7	0	0	6	0	0	4	0	0	7	0	0	5
Logan Av/Jarrett Ct	0	0	9	0	0	7	0	0	7	1	0	5	1	0	7	0	0	5
Logan Av/47th St	0	0	9	0	0	7	0	0	6	1	0	5	1	1	7	1	0	5
Logan Av/46th St	2	0	11	0	0	7	0	0	7	0	0	5	1	0	8	0	0	5
Logan Av/45th St	1	0	12	0	0	8	0	0	7	0	0	6	1	0	9	2	0	7
Logan Av/Dominion St	0	0	12	0	0	8	0	0	7	0	0	6	0	0	9	1	0	8
National Av/San Pasqual St	2	0	14	2	0	9	2	0	9	1	0	7	3	0	13	1	0	10
National Av/41st St	0	0	14	0	0	10	2	0	11	1	0	8	1	0	14	1	0	10
National Av/40th St	0	0	14	1	0	11	2	0	13	1	0	8	2	0	15	5	0	15
National Av/38th St	1	0	15	5	0	16	1	0	14	3	0	12	2	0	17	6	0	20
National Av/36th St	2	0	18	1	0	17	0	0	14	2	0	14	1	0	18	1	0	21
National Av/35th St	4	0	21	2	0	18	1	0	15	1	0	15	3	0	21	1	0	23
National Av/33rd St	0	0	21	0	0	18	0	0	15	0	0	15	0	0	21	0	0	23
National Av/32nd St	3	0	24	1	0	19	0	0	16	2	1	17	3	0	23	2	0	24
National Av/30th St	1	0	25	1	0	20	0	0	16	2	0	19	2	0	25	1	0	26
National Av/29th St	0	0	25	0	0	20	1	0	16	0	1	18	0	0	25	1	0	26
National Av/28th St	0	2	23	1	1	20	0	1	15	1	1	18	1	3	23	1	2	25
National Av/27th St	0	0	23	0	0	20	0	0	15	0	0	18	0	0	23	0	0	25
National Av/26th St	0	0	23	0	0	20	0	1	15	0	0	18	0	0	22	0	0	25
Logan Av/Sampson St	1	1	23	1	2	19	2	0	16	0	1	18	2	0	25	1	0	26
Logan Av/I-5 Ramp	0	0	23	0	0	19	0	0	16	0	0	18	0	0	25	0	0	26
Logan Av/Cesar Chavez Pkwy	1	1	23	2	1	19	1	0	16	0	0	18	1	1	25	1	2	25
Logan Av/Beardsley St	0	0	23	0	0	19	0	0	16	0	0	18	0	0	25	1	0	25
Logan Av/Sigsbee St	0	0	23	0	0	19	0	0	16	0	0	18	0	0	25	0	0	26
Imperial Av/15th St	0	0	23	0	0	19	0	0	16	0	0	18	0	0	25	0	0	26
12th/Imperial Transit Center	1	12	12	3	10	12	1	6	11	3	7	14	3	13	14	1	13	14
11th Av/K St	0	1	12	0	0	12	0	0	11	0	0	14	0	0	14	0	0	14
Market St/10th Av	0	0	12	0	0	12	1	0	12	1	0	15	0	0	15	1	0	15
Market St/8th Av	0	0	12	0	0	12	0	0	12	0	0	15	0	0	15	0	0	15
Market St/6th Av	0	0	12	0	0	12	0	0	12	0	1	14	0	0	15	0	0	15
Market St/4th Av	0	1	11	0	0	12	0	1	11	0	0	14	0	0	15	0	1	14
1st Av/G St	0	1	11	0	1	11	0	1	10	0	1	14	0	1	14	0	2	13
1st Av/Broadway	0	6	5	0	5	6	0	5	6	0	6	8	1	5	10	1	4	10
1st Av/C St	0	0	5	0	0	7	0	0	6	0	1	8	0	1	9	0	0	10
1st Av/Ash St	0	0	5	0	2	5	0	1	5	0	0	8	1	0	10	0	1	9
1st Av/Elm St	0	0	5	0	1	4	0	0	5	0	0	8	0	0	10	0	0	9
1st Av/Grape St	0	0	5	0	0	4	0	0	5	0	0	8	0	0	10	0	0	9
1st Av/Ivy St	0	0	5	0	1	4	0	0	5	0	0	8	0	0	10	1	0	10
1st Av/Laurel St	0	0	5	0	0	4	0	0	5	0	0	7	0	1	9	0	0	9
1st Av/Nutmeg St	0	0	5	0	0	4	0	1	4	0	0	7	0	0	9	0	0	9
1st Av/Quince St	0	0	5	0	0	4	0	0	4	0	0	7	0	1	8	0	0	9
1st Av/Spruce St	0	0	5	0	0	4	0	0	4	0	0	7	0	0	8	0	0	9
1st Av/Upas St	0	0	5	0	0	4	0	0	4	0	0	7	0	0	8	0	0	9
1st Av/Walnut St	0	0	5	0	0	4	0	0	4	0	0	7	0	0	8	0	0	9
1st Av/Brookes Av	0	0	5	0	0	4	0	0	4	0	0	7	0	0	9	0	0	9
1st Av/Robinson Av	0	0	5	0	0	4	0	0	4	0	0	7	0	0	8	0	0	9
University Av/3rd Av	0	0	5	0	0	4	0	1	4	0	1	6	0	1	7	0	0	9
University Av/5th Av	2	1	6	0	1	4	0	1	3	1	0	7	0	1	6	1	2	7
University Av/8th Av	0	0	6	0	0	4	0	0	3	0	0	7	0	0	6	0	0	7
University Av/10th Av	0	0	6	0	0	4	0	0	3	0	0	7	0	0	6	1	0	8
University Av/Vermont St	0	0	6	0	0	4	0	0	3	0	0	7	0	0	6	0	0	8
University Av/Richmond St	0	0	6	0	0	4	0	0	3	0	0	7	0	0	6	0	0	8
University Av/Herbert St	0	0	6	0	0	3	0	0	3	0	0	7	0	0	6	0	0	8
Park Bl/University Av	0	0	5	1	0	3	0	0	3	0	0	7	1	0	6	0	1	7
Park Bl/Polk Av	0	0	5	0	0	3	0	0	3	0	0	7	0	0	6	0	0	7
Park Bl/Howard Av	0	0	5	0	0	3	0	0	3	0	0	7	0	0	6	0	0	7
Park Bl/El Cajon Bl	0	0	5	0	0	3	0	0	3	0	0	7	0	0	6	0	0	7
Park Bl/Meade Av	0	0	5	0	0	4	0	0	3	0	0	7	0	0	6	0	0	7
Park Bl/Monroe Av	0	0	5	0	0	3	0	0	3	0	0	7	0	0	6	0	0	7
Park Bl/Madison Av	0	0	5	0	0	3	0	0	4	0	1	7	0	1	5	0	0	8
Adams Av/Georgia St	0	0	5	0	0	3	0	0	4	0	0	7	0	0	6	0	0	8
Adams Av/Florida St	0	0	5	1	0	4	0	0	4	0	0	7	0	0	6	0	0	8
Adams Av/Louisiana St	0	0	5	0	0	4	0	0	4	0	0	7	0	0	6	0	0	8
Adams Av/Arizona St	0	0	5	0	0	4	0	0	4	0	0	6	0	0	6	0	0	8
Adams Av/Idaho St	0	0	5	0	0	4	0	0	4	0	0	7	0	0	6	0	0	8
Adams Av/30th St	0	0	5	0	0	4	1	0	5	0	0	7	0	0	6	0	0	8
Adams Av/Boundary St	0	0	5	0	0	4	0	0	5	0	0	7	0	0	6	0	0	9
Adams Av/W Mountain View Dr	0	0	5	0	0	4	0	0	5	0	0	7	0	0	6	0	0	9
Adams Av/32nd St	0	0	6	0	0	4	0	0	5	0	0	7	0	0	6	1	0	10
Adams Av/33rd St	0	1	5	0	0	5	0	0	5	1	0	8	0	0	7	0	0	9
Adams Av/34th St	0	0	5	0	0	4	0	0	5	0	0	8	0	0	7	0	0	10
Adams Av/35th St	1	0	6	1	0	5	1	0	6	0	0	9	0	0	7	0	1	9
Adams Av/Cherokee Av	0	0	5	0	0	5	0	0	6	0	1	8	1	0	7	1	0	10
Adams Av/39th St	0	0	5	0	0	5	0	0	6	0	0	9	0	0	7	0	0	10
Adams Av/Kensington Dr	0	0	5	0	0	5	0	0	6	0	0	8	0	0	7	0	1	10
Adams Av/Biona Dr	0	0	5	0	0	5	0	0	6	0	0	8	0	0	7	0	0	10
Fairmount Av/Talmadge Canyon Row	0	0	5	0	0	5	0	0	6	0	0	8	0	0	7	0	0	10
Montezuma Rd/Collwood Bl	0	0	5	0	0	5	0	0	7	0	0	8	0	0	7	0	1	9
Montezuma Rd/54th St	0	1	5	0	0	5	0	0	7	0	0	9	0	0	7	0	0	9
Montezuma Rd/55th St	0	1	4	0	0	5	0	0	7	0	0	9	0	0	7	0	0	9
Campanile Dr/Montezuma Rd	0	0	4	0	0	5	0	1	6	0	0	8	0	0	7	0	0	9
SDSU Transit Center	0	4	0	0	5	0	0	6	0	0	8	0	0	7	0	0	9	0
	30			29			21			25			38			39		

	557			604			610			617			623			630		
Inbound (NB)	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
Paradise Valley Rd/Meadowbrook Dr	2	0	2	1	0	1	1	1	0	1	0	1	3	0	3	1	0	1
Paradise Valley Rd/Deep Dell Rd	0	0	2	0	0	2	0	0	0	0	0	1	0	0	3	2	0	3
Deep Dell Rd/Paradise Valley Rd	1	0	3	1	0	2	1	0	1	1	0	2	1	0	3	7	0	10
Brookhaven Rd/Woodway Ct	0	0	4	0	0	2	0	0	1	0	0	2	0	0	3	1	0	10
Meadowbrook Dr/Skyline Dr	0	0	4	1	0	3	1	0	2	1	0	3	0	0	4	1	0	12
Skyline Dr/Deerock Pl	0	0	4	0	0	3	0	0	3	0	0	3	0	0	4	0	0	12
Skyline Dr/Siena St	0	0	5	0	0	3	1	0	3	0	0	3	1	0	5	1	0	12
Skyline Dr/Sychar Rd	0	0	5	0	0	4	0	0	3	1	0	4	0	0	5	1	0	14
Skyline Dr/Tuther Way	0	0	5	0	0	4	0	0	4	0	0	4	0	0	5	0	0	14
Skyline Dr/69th St	0	1	4	0	0	4	0	0	3	1	0	4	0	0	5	0	5	9
Skyline Dr/Rio Lindo Dr	1	0	5	0	0	4	0	0	4	1	0	5	0	0	5	0	0	9
Skyline Dr/Leghorn Av	0	0	5	0	0	4	0	0	3	0	0	5	0	0	5	1	0	10
Skyline Dr/Detroit Pl	0	0	5	0	0	4	0	0	4	0	0	5	0	0	5	0	0	11
Skyline Dr/O*Meara St	0	0	5	0	0	4	1	0	4	0	1	4	0	0	5	0	0	11
Skyline Dr/Ozzie Way	0	0	5	0	0	4	0	0	4	0	0	4	0	0	5	0	2	9
Skyline Dr/Radio Dr	0	0	5	0	0	5	0	0	5	0	0	5	0	0	5	0	0	9
58th St/Mira Flores Dr	0	0	5	0	0	5	0	0	5	0	0	5	0	0	5	0	0	9
Olvera Av/Las Flores Ter	0	0	5	0	0	5	0	0	5	0	0	5	0	0	5	0	0	9
Olvera Av/San Onofre Ter	0	0	5	0	0	5	0	0	5	0	0	5	0	0	5	0	0	9
Olvera Av/Santa Isabel Dr	0	0	5	0	0	5	0	0	5	0	0	5	0	0	5	0	0	9
Olvera Av/Gwen St	0	0	5	0	0	5	0	0	5	0	0	5	0	0	5	0	0	10
Olvera Av/Euclid Av	1	0	6	0	0	5	1	1	5	0	1	5	0	0	5	0	0	10
Logan Av/Euclid Av	0	0	6	0	0	5	1	0	6	0	0	5	0	0	6	0	1	9
Logan Av/Jarrett Ct	0	0	6	1	0	6	1	0	7	1	0	6	1	0	6	3	1	11
Logan Av/47th St	1	0	7	0	0	6	1	0	8	1	0	6	0	0	6	1	0	11
Logan Av/46th St	0	0	7	1	0	7	0	0	8	0	0	7	0	0	7	0	0	11
Logan Av/45th St	1	0	8	1	0	8	1	0	9	1	0	8	1	0	8	2	0	13
Logan Av/Dominion St	0	0	8	0	0	8	0	0	9	0	0	8	0	0	8	0	0	13
National Av/San Pasqual St	2	0	10	2	0	10	1	0	10	1	0	9	2	0	9	1	0	14
National Av/41st St	0	0	10	0	0	10	1	0	10	1	0	10	3	0	13	1	0	16
National Av/40th St	2	0	12	0	0	10	1	0	11	1	0	11	0	0	13	1	0	17
National Av/38th St	2	0	13	3	0	13	2	0	13	4	0	15	4	0	17	4	0	21
National Av/36th St	1	0	15	2	0	15	1	0	15	2	0	16	2	0	18	2	0	23
National Av/35th St	1	0	16	2	0	17	1	0	15	2	0	18	4	0	22	4	0	27
National Av/33rd St	0	0	16	0	0	17	0	0	15	0	0	18	1	0	23	1	0	28
National Av/32nd St	2	0	18	2	0	19	1	0	17	2	0	20	3	0	25	3	0	30
National Av/30th St	1	0	19	3	0	22	0	0	17	2	0	22	1	0	25	2	0	32
National Av/29th St	1	0	20	1	0	23	0	0	17	0	0	22	1	0	26	1	0	33
National Av/28th St	0	0	20	1	1	22	0	0	17	2	0	24	1	0	27	0	1	33
National Av/27th St	0	0	20	0	0	22	0	0	17	0	0	24	0	0	27	0	0	33
National Av/26th St	0	0	20	1	0	23	0	0	17	1	0	25	0	0	27	0	0	33
Logan Av/Sampson St	0	1	20	2	0	25	1	0	18	1	0	25	2	0	29	1	0	34
Logan Av/I-5 Ramp	0	0	20	0	0	25	0	0	18	0	0	25	0	0	29	0	0	34
Logan Av/Cesar Chavez Pkwy	0	1	20	1	1	25	1	1	18	2	1	26	1	1	29	0	1	33
Logan Av/Beardsley St	0	0	20	0	0	25	0	0	18	0	0	26	1	0	30	0	0	34
Logan Av/Sigsbee St	0	0	19	0	0	25	0	0	18	0	0	26	0	0	30	0	0	34
Imperial Av/15th St	0	0	20	0	0	25	0	1	17	1	2	25	1	0	30	0	0	33
12th/Imperial Transit Center	2	13	8	2	14	14	2	12	7	4	17	12	2	27	5	5	24	14
11th Av/K St	0	0	8	0	0	14	0	0	7	0	0	12	0	0	5	0	1	13
Market St/10th Av	0	0	8	0	1	14	0	0	7	1	0	13	1	0	5	1	0	14
Market St/8th Av	0	0	8	0	0	14	0	0	7	0	0	13	0	0	5	0	0	14
Market St/6th Av	0	0	7	0	1	13	0	0	7	0	0	12	0	0	5	0	0	14
Market St/4th Av	0	0	7	0	0	13	1	0	7	1	1	12	1	1	5	1	1	14
1st Av/G St	0	1	6	1	2	11	0	1	7	1	1	12	0	1	4	1	1	13
1st Av/Broadway	0	3	3	1	3	9	0	3	4	1	2	10	0	2	3	2	4	12
1st Av/C St	0	0	3	0	0	9	0	0	3	0	0	10	0	1	1	1	1	12
1st Av/Ash St	0	3	0	1	1	9	0	3	0	1	1	9	0	1	0	0	2	10
1st Av/Elm St				1	1	9				0	1	8				1	1	10
1st Av/Grape St				0	0	9				0	0	9				0	0	10
1st Av/Ivy St				0	0	9				0	0	9				0	1	9
1st Av/Laurel St				0	0	9				0	0	9				0	1	9
1st Av/Nutmeg St				0	0	9				0	0	9				0	0	9
1st Av/Quince St				0	0	9				0	0	9				0	0	9
1st Av/Spruce St				0	0	9				0	0	8				0	0	9
1st Av/Upas St				0	0	8				0	0	8				0	0	9
1st Av/Walnut St				0	0	9				0	0	8				0	0	9
1st Av/Brookes Av				0	0	9				0	0	8				0	0	9
1st Av/Robinson Av				0	0	8				0	0	8				0	1	8
University Av/3rd Av				0	1	8				0	1	7				0	1	7
University Av/5th Av				1	0	8				0	1	7				1	2	6
University Av/8th Av				0	0	8				1	0	7				0	0	6
University Av/10th Av				0	0	8				1	0	8				0	0	6
University Av/Vermont St				0	0	8				0	0	8				0	0	6
University Av/Richmond St				0	0	7				0	0	7				0	0	6
University Av/Herbert St				0	0	7				0	1	7				0	0	6
Park Bl/University Av				0	1	7				2	1	8				1	1	7
Park Bl/Polk Av				0	0	7				0	0	8				0	0	7
Park Bl/Howard Av				0	0	7				1	1	7				1	0	8
Park Bl/El Cajon Bl				0	0	7				0	0	7				0	0	8
Park Bl/Meade Av				0	0	7				0	1	7				0	0	7
Park Bl/Monroe Av				1	0	8				0	0	7				0	0	7
Park Bl/Madison Av				1	0	8				0	1	5				1	1	7
Adams Av/Georgia St				0	0	8				0	0	6				0	0	7
Adams Av/Florida St				0	0	8				0	0	6				0	0	7
Adams Av/Louisiana St				0	0	9				0	0	6				0	0	7
Adams Av/Arizona St				0	0	9				1	1	6				0	0	7
Adams Av/Idaho St				0	0	9				0	0	6				0	1	6
Adams Av/30th St				1	1	9				1	0	7				0	0	6
Adams Av/Boundary St				1	0	10				0	0	7				0	0	6
Adams Av/W Mountain View Dr				0	0	10				0	0	7				0	0	6
Adams Av/32nd St				1	0	10				1	0	7				1	0	7
Adams Av/33rd St				0	0	10				0	0	7				0	0	7
Adams Av/34th St				1	0	10				0	1	7				0	1	7
Adams Av/35th St				0	0	10				1	1	8				1	1	7
Adams Av/Cherokee Av				1	0	11				0	0	8				0	0	7
Adams Av/39th St				0	0	11				0	0	8				0	0	7
Adams Av/Kensington Dr				0	0	11				0	0	8				0	0	7
Adams Av/Biona Dr				0	0	11				0	0	8				0	0	7
Fairmount Av/Talmadge Canyon Row				0	0	11				0	0	8				0	0	7
Montezuma Rd/Collwood Bl				0	0	11				1	0	9				0	0	7
Montezuma Rd/54th St				0	0	11				0	0	9				0	0	7
Montezuma Rd/55th St				0	0	11				0	0	9				0	0	7
Campanile Dr/Montezuma Rd				0	1	10				0	0	8				0	1	6
SDSU Transit Center				0	10	0				0	8	0				0	6	0
	21			40			23			50			38			60		

	637			645			652			700			707	
Inbound (NB)	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF
Paradise Valley Rd/Meadowbrook Dr	6	0	6	2	1	2	5	0	5	6	1	5	4	2
Paradise Valley Rd/Deep Dell Rd	0	0	6	0	0	2	1	0	6	2	0	6	0	0
Deep Dell Rd/Paradise Valley Rd	2	0	8	1	0	2	2	0	8	9	0	15	3	0
Brookhaven Rd/Woodway Ct	2	0	10	2	0	5	3	0	11	3	0	18	1	0
Meadowbrook Dr/Skyline Dr	2	0	13	1	0	5	7	0	18	2	0	20	1	0
Skyline Dr/Deerock Pl	0	0	13	0	0	6	0	0	18	1	0	20	0	0
Skyline Dr/Siena St	2	0	14	1	0	7	1	0	19	2	0	22	1	0
Skyline Dr/Sychar Rd	1	0	15	0	0	7	1	0	20	2	0	23	1	0
Skyline Dr/Tuther Way	0	0	15	0	0	7	0	1	19	1	1	23	0	1
Skyline Dr/69th St	0	2	13	0	2	5	0	4	15	0	11	13	1	3
Skyline Dr/Rio Lindo Dr	0	0	13	0	0	5	0	0	15	0	0	13	0	0
Skyline Dr/Leghorn Av	0	0	13	0	0	5	0	0	15	3	0	16	1	0
Skyline Dr/Detroit Pl	0	0	13	0	0	5	1	0	16	0	0	16	0	0
Skyline Dr/O*Meara St	0	0	13	0	0	5	0	1	15	0	6	11	0	1
Skyline Dr/Ozzie Way	0	2	11	1	1	5	1	3	12	1	1	10	0	0
Skyline Dr/Radio Dr	0	0	11	0	0	5	0	0	12	0	0	10	0	0
58th St/Mira Flores Dr	0	0	12	1	0	6	0	0	13	0	0	11	0	0
Olvera Av/Las Flores Ter	0	0	12	0	0	6	0	0	13	0	0	11	0	0
Olvera Av/San Onofre Ter	0	0	12	0	0	6	0	0	13	0	0	11	0	0
Olvera Av/Santa Isabel Dr	0	0	12	0	0	6	1	0	14	1	0	11	0	0
Olvera Av/Gwen St	0	0	12	0	0	6	0	0	14	0	0	11	0	0
Olvera Av/Euclid Av	0	1	11	0	2	5	0	2	12	1	2	10	0	1
Logan Av/Euclid Av	1	0	11	1	0	5	3	0	15	1	0	11	0	0
Logan Av/Jarrett Ct	2	0	13	1	0	7	4	0	19	2	0	13	1	0
Logan Av/47th St	1	0	13	1	0	7	1	0	19	0	0	13	0	0
Logan Av/46th St	0	0	14	1	0	8	0	0	20	0	0	14	0	0
Logan Av/45th St	2	0	15	1	0	9	1	0	21	1	0	14	0	0
Logan Av/Dominion St	0	0	15	0	0	9	0	0	21	0	0	15	0	0
National Av/San Pasqual St	2	0	16	3	0	12	4	0	25	3	0	17	1	0
National Av/41st St	1	0	18	2	0	14	2	0	27	2	0	18	1	0
National Av/40th St	2	0	19	2	0	15	1	0	28	1	0	19	1	0
National Av/38th St	5	0	24	6	0	21	8	1	35	5	0	24	2	0
National Av/36th St	2	0	26	3	0	23	3	0	38	3	0	27	2	0
National Av/35th St	5	0	31	4	0	27	3	0	41	5	0	32	2	0
National Av/33rd St	1	0	32	1	0	28	1	0	41	0	0	32	0	0
National Av/32nd St	3	0	35	4	0	31	1	0	42	3	1	34	1	0
National Av/30th St	2	0	36	2	0	32	1	0	43	1	0	35	1	0
National Av/29th St	1	1	36	1	1	32	1	3	40	1	2	33	0	1
National Av/28th St	1	1	36	1	1	32	1	1	40	1	1	32	1	0
National Av/27th St	0	0	36	0	0	32	0	0	40	0	0	33	0	0
National Av/26th St	0	0	36	0	0	32	0	0	40	0	0	33	0	0
Logan Av/Sampson St	2	0	38	1	0	33	1	0	41	1	1	33	0	0
Logan Av/I-5 Ramp	0	0	38	0	0	33	0	0	41	0	0	33	0	0
Logan Av/Cesar Chavez Pkwy	0	1	37	1	2	32	0	2	39	0	1	32	0	0
Logan Av/Beardsley St	0	0	37	0	0	32	0	0	39	0	0	32	0	0
Logan Av/Sigsbee St	0	0	37	0	0	32	0	0	39	0	1	31	0	0
Imperial Av/15th St	0	0	37	1	1	32	1	0	39	1	1	31	0	0
12th/Imperial Transit Center	1	28	10	4	21	15	2	27	14	3	19	15	1	9
11th Av/K St	0	2	8	0	1	14	0	2	12	0	3	12	0	2
Market St/10th Av	1	0	8	3	1	17	2	1	13	2	1	14	1	1
Market St/8th Av	0	0	8	0	1	16	0	0	13	0	0	14	0	0
Market St/6th Av	0	1	8	1	0	17	0	0	13	0	1	14	0	0
Market St/4th Av	0	1	7	1	2	15	0	1	12	2	1	14	2	1
1st Av/G St	0	1	6	1	2	14	0	2	11	1	1	14	0	1
1st Av/Broadway	0	3	4	2	4	12	0	5	6	2	4	12	0	3
1st Av/C St	0	1	3	2	1	13	1	0	6	1	1	13	0	0
1st Av/Ash St	0	3	0	1	2	13	0	6	0	3	2	14	0	3
1st Av/Elm St				1	1	12				1	1	13		
1st Av/Grape St				0	1	11				0	1	13		
1st Av/Ivy St				0	1	11				0	1	11		
1st Av/Laurel St				0	0	10				0	1	11		
1st Av/Nutmeg St				0	0	10				0	0	10		
1st Av/Quince St				0	0	10				0	0	10		
1st Av/Spruce St				0	1	10				0	0	10		
1st Av/Upas St				0	0	10				0	0	10		
1st Av/Walnut St				0	0	10				0	0	10		
1st Av/Brookes Av				0	0	10				0	0	10		
1st Av/Robinson Av				0	1	9				0	0	10		
University Av/3rd Av				0	1	8				0	1	9		
University Av/5th Av				1	1	8				1	1	10		
University Av/8th Av				0	0	8				0	0	10		
University Av/10th Av				0	0	7				0	0	10		
University Av/Vermont St				0	0	8				0	0	10		
University Av/Richmond St				0	1	7				0	1	9		
University Av/Herbert St				0	1	7				0	1	8		
Park Bl/University Av				2	1	8				2	1	9		
Park Bl/Polk Av				0	0	7				0	0	8		
Park Bl/Howard Av				1	0	8				0	1	8		
Park Bl/El Cajon Bl				0	0	8				0	0	8		
Park Bl/Meade Av				0	0	8				0	0	8		
Park Bl/Monroe Av				0	0	8				0	0	8		
Park Bl/Madison Av				0	1	8				0	0	8		
Adams Av/Georgia St				0	0	8				0	0	7		
Adams Av/Florida St				0	0	8				0	0	7		
Adams Av/Louisiana St				0	0	8				0	0	7		
Adams Av/Arizona St				0	0	8				0	0	7		
Adams Av/Idaho St				0	0	8				0	0	7		
Adams Av/30th St				1	0	8				0	0	7		
Adams Av/Boundary St				0	0	8				0	0	7		
Adams Av/W Mountain View Dr				0	0	9				0	0	7		
Adams Av/32nd St				0	0	9				0	0	8		
Adams Av/33rd St				0	0	9				1	0	8		
Adams Av/34th St				0	1	8				1	1	8		
Adams Av/35th St				1	0	9				1	0	8		
Adams Av/Cherokee Av				1	0	9				1	1	8		
Adams Av/39th St				0	0	10				0	0	8		
Adams Av/Kensington Dr				0	1	9				0	1	7		
Adams Av/Biona Dr				0	0	9				0	0	7		
Fairmount Av/Talmadge Canyon Row				0	1	8				0	0	7		
Montezuma Rd/Collwood Bl				0	0	8				0	0	7		
Montezuma Rd/54th St				0	0	9				0	0	7		
Montezuma Rd/55th St				0	0	8				0	0	7		
Campanile Dr/Montezuma Rd				0	0	8				0	0	6		
SDSU Transit Center				0	8	0				0	6	0		
	50			69			65			87			30	

	715			722			730			737			745			800			815			830			846			902			917			932			946			1001			1016			1031			1046			1101			1116			1131		
Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
2	3	2	1	3	0	3	4	0	4	2	0	2	4	0	4	6	0	6	4	0	4	5	0	5	3	0	3	5	0	5	5	0	5	5	0	5	2	0	2	3	0	3	3	0	3	2	0	2	2	0	2	5	0	5	4	0	4	1	0	1
2	0	0	2	0	0	3	0	0	4	0	0	2	0	0	5	0	0	6	0	0	4	0	0	5	0	0	3	0	0	5	0	0	5	0	0	5	0	0	2	0	0	3	0	0	3	0	0	2	0	0	2	0	0	5	0	0	4	0	0	1
6	3	0	5	1	0	5	2	0	6	1	0	3	1	0	6	3	0	9	2	0	6	2	0	7	1	0	5	2	0	7	1	0	6	1	0	7	0	0	3	1	0	4	1	0	4	1	0	3	1	0	3	2	0	7	1	0	5	2	0	3
7	0	0	5	0	0	5	0	0	6	0	0	3	1	0	6	1	0	9	1	0	7	1	0	7	0	0	5	1	0	8	1	0	6	1	0	7	0	0	3	0	0	4	0	0	4	0	0	3	0	0	4	0	0	7	0	0	5	0	0	3
8	2	0	7	1	0	6	1	0	7	0	0	4	2	0	8	3	0	13	1	0	8	2	0	10	1	0	6	3	0	11	1	0	7	1	0	8	1	0	4	1	0	5	1	0	5	1	0	4	1	0	4	1	0	8	0	0	6	1	0	4
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	0	0	8				0	0	6				0	0	9	0	0	10	0	0	9	0	0	7	0	0	9	0	0	10	0	0	8	0	0	9	0	0	7	0	0	6	0	0	11	0	0	9	0	0	10	0	0	11	0	0	9	0	0	9
	0	0	8				0	0	6				0	0	9	0	0	10	0	0	9	0	0	7	0	0	9	0	0	10	0	0	8	0	0	9	0	0	7	0	0	6	0	0	11	0	0	9	0	0	9	0	0	11	0	0	9	0	0	8
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	0	0	9				0	0	6				0	0	9	1	0	11	1	0	10	1	0	8	1	1	9	1	1	10	0	0	8	1	0	9	1	1	7	1	1	6	1	0	12	1	0	9	1	1	9	1	0	11	1	1	9	1	0	9
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	0	0	9				0	0	6				0	0	9	0	0	11	0	0	10	0	0	8	0	0	9	0	0	10	0	0	8	0	0	9	0	0	7	0	0	6	0	0	11	0	0	9	0	0	9	0	0	11	0	0	9	0	0	8
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	0	1	9				0	0	6				1	0	10	0	0	10	1	0	11	0	0	8	1	1	9	0	1	10	0	0	8	0	0	9	0	1	6	1	0	6	0	1	10	0	1	8	0	1	8	0	1	9	0	1	8	1	1	7
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	1	1	9				1	1	6				1	1	10	1	1	10	1	1	11	1	1	8	1	1	9	1	1	10	1	1	8	1	1	9	1	1	6	0	1	6	0	1	9	0	1	7	1	1	8	0	1	8	0	1	7	1	1	6
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	0	1	8				0	1	5				0	1	10	0	1	10	0	1	10	0	1	8	0	0	9	0	1	9	0	0	8	0	1	9	0	0	6	0	1	5	0	1	9	0	1	6	0	1	7	0	1	8	0	1	6	0	0	6
	0	0	9				0	0	5				0	0	10	0	0	10	0	0	11	0	0	8	0	0	9	0	0	10	0	0	8	0	0	9	0	0	6	0	0	5	0	0	9	0	0	7	0	0	7	0	0	8	0	0	6	0	0	6
	0	0	8				0	0	6				0	0	10	0	0	10	0	0	11	0	0	7	0	0	9	0	0	9	0	0	8	0	0	9	0	0	6	0	0	5	0	0	9	0	0	7	0	0	7	0	0	8	0	0	6	0	0	6
	0	0	8				0	0	5				0	0	10	0	0	10	0	0	10	0	0	7	0	0	9	0	0	9	0	0	8	0	0	9	0	0	6	0	0	5	0	0	9	0	0	7	0	0	7	0	0	8	0	0	6	0	0	6
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	0	0	8				0	0	6				0	0	10	0	1	9	0	0	10	0	0	7	0	0	8	0	0	9	0	0	7	0	0	8	0	1	5	0	0	5	0	0	8	0	0	6	0	0	7	0	0	8	0	0	6	0	0	5
	0	8	0				0	6	0				0	10	0	0	9	0	0	10	0	0	7	0	0	8	0	0	9	0	0	7	0	0	8	0	0	5	0	0	5	0	0	8	0	0	6	0	0	7	0	0	8	0	0	6	0	0	4	1
	50			27			54			18			62			86			64			65			62			76			46			65			48			68			57			49			56			67			59			70			

1146			1202			1217			1232			1247		
ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
3	0	3	3	0	3	2	0	2	2	0	2	2	0	2
0	0	3	0	0	3	0	0	2	0	0	2	0	0	2
1	0	4	1	0	4	1	0	3	1	0	3	1	0	3
0	0	4	1	0	5	1	0	4	0	0	3	0	0	3
1	0	5	1	0	6	1	0	4	1	0	4	0	0	4
0	0	5	0	0	6	0	0	5	0	0	4	0	0	4
1	0	6	0	0	6	0	0	5	0	0	4	1	0	4
1	0	7	1	0	7	1	0	6	1	0	5	1	0	5
0	0	7	0	0	7	0	0	6	0	0	5	0	0	5
0	0	7	1	0	8	1	0	7	1	0	6	0	0	5
0	0	7	0	0	8	0	0	7	0	0	6	0	0	5
0	0	7	1	0	8	0	0	7	0	0	6	0	0	5
0	0	8	0	0	9	0	0	7	0	0	6	0	0	5
1	0	8	0	0	9	0	0	7	0	0	7	0	0	5
0	0	8	0	0	9	0	0	8	1	0	7	2	0	7
0	0	9	0	0	9	0	0	8	0	0	8	0	0	7
0	0	9	0	0	10	1	0	8	0	0	8	1	0	7
0	0	9	0	0	10	0	0	8	0	0	8	0	0	8
0	0	9	0	0	10	0	0	8	0	0	8	0	0	7
1	0	10	0	0	10	0	0	9	0	0	8	0	0	8
0	0	10	0	0	10	0	0	9	0	0	8	0	0	8
0	1	9	1	2	9	0	1	8	0	2	7	0	2	7
1	0	10	1	0	10	1	0	9	1	0	8	2	0	8
0	0	10	1	0	11	0	0	9	0	0	8	1	0	9
1	0	10	1	0	11	1	0	10	1	0	8	1	1	9
0	0	10	0	0	11	0	0	10	0	0	8	0	0	9
1	0	11	1	0	12	1	0	10	0	0	8	1	0	9
1	0	11	0	1	12	0	0	11	1	1	8	1	0	9
1	0	12	2	0	13	1	0	11	1	0	9	2	1	10
0	0	12	1	0	14	1	0	13	0	0	10	1	0	11
1	0	13	1	0	15	0	0	13	0	0	10	0	0	11
2	1	14	2	1	16	3	0	15	1	1	11	2	1	12
1	1	14	1	1	16	1	1	15	1	1	10	1	1	12
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0	1	17	1	1	18	1	1	18	1	1	14	0	1	14
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0	0	17	0	0	19	0	0	19	0	0	14	0	0	15
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1	1	18	1	1	19	1	1	19	0	1	14	1	1	15
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0	0	17	0	0	18	0	0	18	0	0	14	0	0	14
2	1	19	3	1	20	2	1	19	2	0	16	1	1	14
4	11	12	5	11	14	4	11	12	7	10	12	5	7	12
1	1	12	1	1	14	1	1	12	1	1	12	1	0	12
2	1	13	3	2	15	3	1	14	3	1	14	2	1	14
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1	1	13	1	1	15	1	1	14	1	1	14	0	1	13
0	2	12	1	2	14	1	2	13	1	1	13	1	2	12
1	2	11	3	3	15	3	2	14	2	3	13	2	2	12
1	2	10	3	2	16	2	2	14	3	2	14	2	2	12
1	0	11	1	0	17	1	0	15	1	0	15	1	0	13
1	1	11	2	2	16	2	2	15	2	3	15	1	1	12
0	1	10	1	2	15	1	1	15	1	2	14	0	2	11
0	0	10	0	0	15	0	0	15	0	0	14	0	1	11
0	1	10	1	1	14	1	1	15	0	1	13	0	1	10
0	1	10	0	0	14	0	1	15	0	1	13	0	1	10
0	0	10	0	0	14	0	0	14	0	0	13	0	0	10
0	0	10	0	0	13	0	0	14	0	0	12	0	0	10
0	0	10	0	0	13	0	0	14	0	1	12	0	0	10
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0	0	10	1	0	14	0	0	13	0	0	12	0	0	10
0	0	10	0	0	14	0	0	13	0	0	12	0	0	10
0	0	10	0	1	13	0	0	13	0	0	12	0	0	9
0	2	9	1	2	12	0	1	12	1	2	10	1	1	9
3	1	10	3	2	13	2	2	12	3	1	12	4	1	11
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0	1	11	0	1	13	1	1	12	1	1	13	0	1	11
1	1	10	1	1	13	1	1	13	2	1	14	1	1	12
0	1	10	0	1	13	1	1	12	1	1	14	0	1	11
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2	2	9	3	4	12	2	4	10	4	4	13	4	3	12
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0	1	8	1	1	12	1	2	10	1	1	12	0	1	11
0	0	8	0	1	11	0	1	9	0	1	11	0	1	10
0	0	8	0	0	11	0	0	9	1	0	11	0	0	10
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0	1	8	0	1	11	0	1	9	0	1	11	0	0	9
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0	0	7	0	0	10	0	0	8	0	0	10	0	0	9
0	0	7	0	0	11	0	0	9	0	0	10	0	0	9
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0	0	8	0	0	11	0	0	9	0	0	10	0	0	8
0	1	7	0	1	11	0	1	9	0	1	10	0	1	7
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0	1	6	0	1	7	0	2	6	1	2	6	0	1	5
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0	1	5	0	1	7	0	1	5	0	1	5	0	0	5
0	0	5	0	0	6	0	0	5	0	0	6	0	0	4
0	0	5	0	0	6	0	0	5	0	0	6	0	0	4
0	0	5	0	0	6	0	0	5	0	0	5	0	0	4
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0	0	5	0	1	6	0	0	4	0	0	5	0	0	4
0	0	4	0	0	5	0	0	4	0	0	5	0	0	4
0	4	0	0	5	0	0	4	0	0	5	0	0	4	0
47			67			57			61			54		

1302			1317			1332			1348			1404		
ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
1	0	1	2	0	2	3	0	3	1	0	1	4	0	4
0	0	1	0	0	2	0	0	3	0	0	1	0	0	4
1	0	2	1	0	3	1	0	4	1	0	2	2	0	6
0	0	2	0	0	3	1	0	5	0	0	2	1	0	6
1	0	3	1	0	4	1	0	5	1	0	3	1	0	8
0	0	3	0	0	4	0	0	5	0	0	3	0	0	7
0	0	3	0	0	4	0	0	6	0	0	3	0	0	8
1	0	4	1	0	5	1	1	6	1	0	4	1	0	8
0	0	4	0	0	5	0	0	6	0	0	4	0	0	8
1	0	4	0	0	5	0	0	6	0	0	4	1	1	9
0	0	4	0	0	5	0	0	6	0	0	4	0	0	9
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0	0	5	0	0	6	0	0	7	0	0	5	0	0	8
1	0	6	0	0	6	1	0	7	0	0	5	0	0	8
3	0	9	1	0	6	1	0	8	1	0	5	1	0	9
1	0	10	1	0	7	1	0	8	1	0	6	0	0	9
1	0	10	0	0	8	1	0	9	0	0	6	0	0	9
0	0	10	0	0	8	0	0	9	0	0	6	0	0	9
0	0	10	0	0	8	0	0	9	0	0	6	0	0	10
0	0	10	0	0	8	0	0	10	0	0	6	0	0	10
0	0	10	0	0	8	0	0	10	0	0	6	0	0	10
0	2	9	0	1	7	1	2	9	0	1	5	0	1	9
1	0	10	1	0	8	1	0	9	0	0	6	1	0	10
1	0	10	1	0	9	2	0	11	1	0	6	0	0	10
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0	0	5	0	0	5	0	1	6	0	0	4	0	0	7
0	4	0	0	5	0	0	6	0	0	4	0	0	7	0
70			65			86			63			65		

1419			1434			1450			1505			1521		
ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
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0	0	3	0	0	3	0	0	3	0	0	8	0	0	3
0	0	3	1	0	3	2	0	4	2	1	9	1	0	3
0	0	3	0	0	4	0	0	5	0	0	9	0	0	4
1	0	4	1	0	5	1	0	5	1	0	11	1	0	5
0	0	4	0	0	5	0	0	5	0	0	11	0	0	5
0	0	5	0	0	5	0	0	5	0	0	11	0	0	5
1	0	5	1	0	6	1	0	6	0	0	11	0	0	5
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10	0	16	3	0	9	1	0	7	1	0	12	1	0	6
0	0	16	0	0	9	0	0	7	0	0	12	0	0	7
0	2	15	1	0	10	1	0	7	0	0	12	0	0	6
0	0	15	0	0	10	0	0	8	0	0	12	0	1	6
0	0	15	0	0	10	0	0	8	0	0	13	3	0	9
1	0	15	1	0	10	2	0	10	5	0	18	5	0	14
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0	0	15	0	0	10	0	0	11	0	0	19	0	0	15
0	0	15	0	0	11	0	0	11	0	0	19	0	0	15
0	0	15	0	0	11	0	0	11	0	0	19	0	0	15
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1	3	12	1	2	8	0	2	9	0	2	17	0	3	12
1	0	12	1	0	10	1	0	10	1	0	18	1	0	13
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3	2	14	3	1	12	2	1	16	1	1	18	2	1	13
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1	0	15	1	0	13	1	1	16	1	1	17	1	1	12
1	0	15	2	0	14	1	1	16	1	1	17	0	0	13
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0	1	15	1	1	15	0	3	15	0	1	18	0	1	13
2	2	15	3	1	17	2	1	15	2	1	18	2	1	14
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0	0	7	0	0	5	0	0	5	0	0	7	0	0	4
0	7	0	0	5	0	0	5	0	0	7	0	0	4	0
78			92			77			76			65		

1536			1551			1606			1621			1636			165	
ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF
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1	0	3	0	0	3	1	0	5	0	0	2	0	0	4	0	0
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0	0	15	0	0	17	0	1	18	0	0	17	0	0	17	0	0
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0	0	14	0	0	16	0	1	17	0	1	15	0	0	16	1	1
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1	1706			1721			1737			1753			1808			1824			1851			1921			1952			2022			2053			2153		
Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
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9	0	0	8	0	0	10	0	0	9	0	0	7	0	0	7	0	0	5	0	0	7	0	0	9	0	0	8	0	0	9	0	0	7	0	0	4
8	0	0	8	0	0	10	0	0	9	0	0	7	0	0	7	0	0	5	0	0	7	0	0	9	0	0	8	0	0	9	0	0	7	0	0	4
7	0	1	7	0	1	9	0	2	7	0	1	6	0	1	6	0	0	5	0	1	6	0	1	8	0	1	7	0	1	8	0	0	7	0	0	4
5	0	1	7	0	2	7	0	1	6	0	2	5	0	2	5	0	2	3	0	1	6	0	1	7	0	1	6	0	1	7	0	1	6	0	1	3
4	0	2	5	0	1	7	0	0	6	0	1	4	0	0	5	0	0	3	0	1	5	0	1	7	0	1	5	0	1	6	0	1	5	0	0	3
4	0	1	4	0	1	6	0	1	5	0	1	4	0	1	4	0	0	3	1	1	5	1	1	6	0	0	5	0	0	6	0	1	5	0	0	3
3	0	1	4	0	1	5	0	1	4	0	1	3	0	1	4	0	1	3	0	1	4	0	1	6	0	1	5	0	1	6	0	1	4	0	0	3
3	0	0	4	0	0	5	0	0	4	0	0	3	0	0	3	0	0	3	0	0	4	0	0	5	0	0	5	0	0	6	0	0	4	0	0	2
2	0	0	4	0	0	5	0	0	4	0	0	2	0	0	3	0	0	2	0	0	4	0	0	5	0	0	4	0	0	6						
2	0	0	4	0	0	5	0	0	4	0	0	2	0	0	3	0	0	2	0	0	4	0	0	5	0	0	4	0	0	6						
2	0	0	3	0	0	5	0	0	4	0	0	2	0	0	3	0	0	2	0	0	4	0	0	5	0	0	4	0	0	6						
2	0	0	3	0	0	4	0	0	4	0	0	2	0	0	3	0	0	2	0	0	4	0	0	5	0	0	4	0	0	6	0	0	4	0	0	2
2	0	0	3	0	0	4	0	0	4	0	0	2	0	0	3	0	0	2	0	0	3	0	0	5	0	0	4	0	0	6	0	0	4	0	0	2
2	0	0	3	0	0	4	0	0	4	0	0	2	0	0	3	0	0	2	0	0	3	0	0	5	0	0	4	0	0	6	0	0	4	0	0	2
2	0	0	3	0	0	4	0	0	4	0	0	2	0	0	3	0	0	2	0	0	3	0	0	5	0	0	4	0	0	6	0	0	3	0	0	2
0	0	3	0	0	4	0	0	4	0	0	2	0	0	3	0	0	2	0	0	3	0	0	5	0	1	4	0	0	5	0	0	3	0	0	2	0
	42			51			44			36			32			31			40			32			35			21			18			13		

Outbound (SB)	434			504			533			600			614			628			640			655			710			723			736			751			806			821			836			851			906	
	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF
SDSU Transit Center	0	0	0	1	1	0	0	0	0	3	0	3	2	1	1	2	0	2	2	0	2	1	0	1	6	0	6	9	0	9	5	0	5	3	0	3	4	0	4	3	0	3	2	0	2	4	0	4	3	0
Montezuma Rd/College Av	1	0	1	0	0	0	0	0	0	1	0	5	0	0	1	0	0	3	0	0	2	1	0	1	0	0	6	0	0	9	0	0	5	0	0	3	1	0	5	1	0	4	1	0	3	1	0	5	0	0
Montezuma Rd/55th St	0	0	1	0	0	0	1	0	1	0	0	5	0	0	1	0	0	3	0	0	2	0	0	1	0	0	6	0	2	7	0	0	5	0	0	3	0	0	5	0	0	4	0	0	3	0	0	5	0	0
Montezuma Rd/54th St	0	0	1	0	0	0	0	0	1	0	0	5	0	0	1	0	0	3	0	0	2	0	0	1	0	0	6	0	0	7	0	0	5	0	0	4	0	0	5	0	0	4	0	0	3	0	0	5	0	0
Montezuma Rd/Collwood Bl	0	0	1	0	0	0	0	0	1	0	0	5	0	0	1	0	0	3	0	0	2	0	0	1	0	0	6	0	0	7	0	0	5	0	0	4	0	0	5	0	0	4	0	0	3	0	0	5	0	0
Adams Av/Biona Dr	0	0	1	0	0	0	0	0	1	0	0	5	0	0	1	0	0	3	0	0	2	0	0	2	0	0	6	0	0	7	0	0	5	0	0	4	0	0	5	0	0	4	0	0	3	0	0	5	0	0
Adams Av/Kensington Dr	0	0	1	0	0	1	0	0	1	0	0	5	0	0	2	1	0	4	2	0	4	1	0	2	0	0	7	2	0	9	1	0	6	1	0	5	0	0	5	0	0	4	0	0	3	0	1	5	1	0
Adams Av/39th St	0	0	1	0	0	1	0	0	1	0	0	5	0	0	2	0	0	4	1	0	5	1	0	3	0	0	7	0	0	9	0	0	6	0	1	4	1	0	5	0	0	5	0	0	4	0	0	5	0	0
Adams Av/Cherokee Av	0	0	1	1	0	2	1	0	2	1	0	6	2	0	4	2	0	5	1	0	6	1	0	4	1	0	8	1	0	10	1	0	6	1	0	5	1	1	5	2	0	6	1	0	4	2	0	7	2	0
Adams Av/35th St	0	0	1	1	0	3	1	0	2	1	0	7	0	0	4	1	0	7	1	0	7	1	0	5	1	0	9	2	1	11	1	0	7	2	0	7	2	0	6	0	0	6	0	0	4	1	0	7	0	0
Adams Av/Hawley Bl	0	0	1	1	0	4	1	0	4	1	0	8	1	0	4	2	0	9	1	0	8	1	0	6	1	0	10	2	1	12	1	0	7	1	0	7	1	0	7	1	0	7	1	0	5	2	0	9	1	0
Adams Av/33rd St	2	0	3	3	0	7	3	0	6	1	0	9	1	0	6	4	0	13	2	0	10	2	0	8	2	0	12	2	0	14	3	0	10	3	0	10	2	0	9	2	0	9	2	0	6	2	0	11	1	1
Adams Av/32nd St	0	0	3	0	0	7	0	0	6	0	0	10	0	0	6	1	0	14	2	0	12	3	0	12	1	0	13	1	0	15	2	0	11	1	0	12	1	0	10	1	0	9	1	0	7	1	0	11	0	0
Adams Av/W Mountain View Dr	0	0	3	0	0	7	1	0	7	0	0	10	0	0	6	1	0	15	0	0	12	0	0	12	1	0	14	0	0	16	0	0	12	0	0	12	1	0	11	1	0	10	1	0	8	0	0	12	0	0
Adams Av/30th St	0	1	3	0	0	7	1	0	9	0	0	10	1	0	7	0	0	15	2	0	14	1	0	12	1	0	15	1	0	16	1	0	12	1	0	13	1	0	11	1	1	10	1	1	8	1	1	11	1	1
Adams Av/Utah St	0	0	3	0	0	7	1	0	9	0	0	10	1	0	7	0	0	15	0	0	14	1	0	13	0	0	14	0	0	16	0	0	12	1	0	13	0	0	11	0	0	10	1	0	9	0	0	11	1	0
Adams Av/Arizona St	0	0	3	0	0	7	0	0	9	0	0	10	1	0	8	1	0	16	0	0	14	1	1	13	2	1	15	0	0	16	0	0	12	0	1	13	1	1	11	0	0	10	0	0	9	0	1	11	0	0
Adams Av/Panorama Dr (E)	0	0	3	0	0	7	0	0	9	0	0	10	0	0	8	1	0	17	0	0	14	0	0	13	0	0	15	0	0	16	0	0	13	0	0	13	0	0	11	0	0	10	0	0	9	0	0	11	0	0
Adams Av/Florida St	0	0	3	0	0	7	1	0	10	1	0	11	1	0	8	0	0	17	0	0	15	0	0	13	0	0	16	0	0	16	1	0	13	0	0	13	0	0	11	0	0	10	0	0	9	0	0	12	0	0
Adams Av/Park Bl	0	0	3	0	0	7	0	0	10	0	0	11	0	0	8	0	0	17	0	0	15	0	0	13	0	0	16	0	0	16	0	0	13	0	0	13	0	0	11	0	0	10	0	0	9	0	0	11	0	0
Park Bl/Madison Av	0	0	3	0	0	7	0	0	10	1	0	11	0	0	8	0	0	17	1	0	15	1	0	14	1	0	17	1	0	17	1	0	15	1	0	14	0	0	11	1	0	10	0	0	10	0	0	11	1	0
Park Bl/Monroe Av	0	0	3	0	0	7	0	0	10	0	0	11	0	0	9	0	0	17	0	0	15	0	0	14	1	0	18	1	0	17	0	0	15	0	0	14	0	0	11	0	0	10	0	0	10	1	0	12	0	0
Park Bl/Meade Av	1	0	3	0	0	7	0	0	10	0	0	11	1	0	10	1	0	17	1	0	17	2	0	16	0	0	18	0	0	18	0	0	15	0	0	14	0	1	11	1	0	11	0	1	9	0	0	12	0	0
Park Bl/Howard Av	0	1	3	0	0	7	0	1	9	0	0	11	0	0	10	0	2	16	0	0	17	0	2	14	0	2	16	0	1	17	0	1	14	0	1	13	1	1	10	1	1	11	1	1	9	0	1	11	1	1
Park Bl/Polk Av	0	0	3	0	0	7	0	0	9	0	0	11	0	0	10	0	0	16	0	0	17	0	0	14	0	0	16	0	0	17	0	0	14	0	0	14	0	0	10	0	0	11	0	0	10	0	0	11	0	0
Park Bl/University Av	0	1	3	1	1	6	1	0	10	1	3	9	1	4	7	3	4	15	3	6	13	2	3	13	2	3	15	2	3	16	2	2	14	3	2	14	2	2	10	3	2	12	3	1	11	2	2	12	3	1
University Av/Normal St	0	0	3	0	0	6	0	0	10	0	0	9	1	0	7	1	0	15	0	0	13	0	0	13	0	0	15	0	0	16	0	0	14	0	0	14	0	0	10	0	0	12	0	0	11	1	0	12	1	0
University Av/Richmond St	0	0	3	0	0	6	0	0	10	0	0	9	0	0	7	0	2	14	1	0	13	0	0	13	0	0	15	1	0	17	0	0	14	0	0	14	0	0	10	0	0	12	0	0	11	1	0	13	1	1
University Av/Vermont St	0	0	3	0	0	6	0	0	10	0	0	9	1	0	8	0	0	14	1	0	14	1	1	13	1	1	16	1	0	18	1	1	15	0	1	14	1	1	10	0	1	11	1	1	11	1	1	13	1	1
University Av/9th Av	1	0	3	0	0	6	0	0	10	0	1	9	0	0	8	0	1	13	0	1	13	1	1	14	0	0	16	1	0	18	1	0	16	0	0	14	2	0	12	0	0	11	0	0	11	0	0	13	0	0
University Av/7th Av	0	0	4	0	0	6	0	1	10	0	0	9	0	0	8	0	0	13	0	0	13	0	0	14	0	0	17	1	0	19	0	0	16	0	0	14	0	0	12	0	0	11	0	0	11	0	0	13	1	0
University Av/6th Av	0	1	3	0	1	5	0	3	7	0	1	8	0	1	7	0	1	13	0	1	13	1	1	14	0	1	15	0	1	19	0	1	15	0	2	13	1	1	12	1	2	10	1	2	10	1	1	13	1	1
University Av/4th Av	0	0	3	2	1	6	0	0	7	0	0	8	0	0	7	0	3	10	0	1	12	1	1	14	1	1	15	1	1	18	1	1	14	1	1	12	1	1	12	1	1	10	1	1	9	1	1	13	1	1
1st Av/Robinson Av	0	0	3	0	0	6	1	0	8	1	0	9	0	0	7	1	0	10	2	0	14	2	1	15	2	0	17	1	0	19	1	0	15	1	0	13	0	0	12	1	0	10	0	0	10	0	0	13	0	0
1st Av/Brookes Av	0	0	3	0	0	6	0	0	8	1	0	9	0	0	7	0	0	11	0	0	15	1	0	16	1	0	17	1	0	20	1	0	15	2	0	15	0	0	12	0	0	10	0	0	9	0	0	13	0	0
1st Av/Walnut Av	0	0	3	0	0	6	0	0	8	0	0	9	1	0	8	1	0	11	1	0	16	2	0	18	1	0	18	0	0	21	0	0	16	1	0	16	0	0	12	0	0	10	1	0	10	0	0	13	0	0
1st Av/Thorn St	0	0	4	0	0	6	0	0	8	0	0	9	0	0	8	0	0	11	0	0	16	0	0	19	0	0	18	0	0	21	0	0	16	1	0	17	0	0	12	0	0	10	0	0	10	0	0	13	0	0
1st Av/Redwood St	0	0	4	0	0	6	0	1	8	0	0	9	0	0	8	0	0	12	1	0	17	0	0	19	0	0	18	0	0	21	0	0	16	1	0	17	0	0	12	0	0	11	0	0	10	0	0	13	0	0
1st Av/Nutmeg St	0	0	4	0	0	7	0	0	8	0	1	9	0	0	8	0	0	11	0	0	17	0	1	18	0	0	18	0	0	21	0	0	16	0	0	16	0	1	12	0	0	11	0	0	10	0	1	13	0	0
1st Av/Laurel St	0	0	4	0	0	7	0	0	8	1	1	8	1	0	8	0	0	11	0	0	17	1	1	18	1	0	18	1	0	21	0	0	16	1	0	17	0	0	12	0	0	11	0	0	10	0	0	13	0	0
1st Av/Juniper St	0	0	4	1	0	7	0	0	8	0	0	8	0	0	8	0	0	11	1	0	18	1	0	18	1	0	19	0	0	21	1	0	16	1	1	16	1	0	12	1	0	11	1	0	11	0	0	13	0	0
Hawthorn St/2nd Av	0	0	4	0	0	7	0	0	8	1	0	9	0	0	9	1	0	12	1	0	18	0	0	19	0	0	19	0	0	22	0	0	17	0	1	16	0	0	12	0	0	11	0	0	11	0	1	13	0	0
2nd Av/Fir St	1	0	5	0	0	7	0	0	8	0	0	9	0	0	9	0	0	12	0	0	18	0	0	18	0	0	19	0	0	21	0	1	16	1	1	16	0	1	12	0	0	11	0	0	11	0	0	12	1	0
2nd Av/Elm St	0	0	5	1	1	8	2	1	9	8	0	17	3	0	12	3	1	15	1	1	19	1	0	19	1	0	20	1	0	22	1	0	17	2	1	17	0	1	12	1	1	11	2	0	12	1	0	13	1	0
2nd Av/Beech St	0	0	5	0	0	8	0	0	9	1	1	17	0	1	11	0	1	14	0	2	17	1	2	18	1	1	20	1	2	21	1	2	16	1	2	16	0	1	11	1	1	11	1	1	12	1	2	12	1	1
2nd Av/Ash St	1	1	4	0	1	6	0	2	7	0	1	17	0	1	10	0	1	13	0	1	17	0	2	16	0	2	18	0	2	19	0	2	15	0	2	14	0	1	10	0	2	10	0	1	11	1	1	12	1	1
Front St/B St	0	0	4	1	0	7	0	0	7	0	2	15	0	2	8	0	2	11	0	3	13	1	3	14	1	3	15	0	4	16	0	2	13	0	2	12	0	1	9	1	2	9	1	2	10	1	1	11	1	1
Front St/Broadway	0	0	4	0	1	6	0	1	7	0	1	14	1	1	8	0	2	9	0	4	10	0	3	12	1	3	12	0	3	13	0	3	10	0	5	8	0	4	5	1	3	7	1	3	8	0	3	9	1	2
Front St/F St	0	0	4	0	1	5	2	1	7	0	0	14	0	1	7	0	1	8	0	1	8	0	1	10	0	1	12	0	1	12	0	1	9	0	1	7	0	0	5	0	1	6	0	1	8	1	1	9	0	1
Market St/3rd Av	1	0	5	0	0	5	1	0	8	1	0	15	1	0	8	1	0	9	1	1	9	0	1	10	0	1	12	0	1	12	0	1	9	1	1	6	1	0	5	1	1	6	1	1	8	1	1	10	1	1
Market St/6th Av	0	0	5	0	0	5	0	0	8	0	1	14	0	1	7	0	0	9	0	0	9	0	0	10	0	1	11	1	2	10	1	2	8	1	0	8	0	0	5	0	0	6	1	0	8	1	1	10	1	0
Market St/10th Av	0	0	5	1	0	6	0	0	8	0	2	12	0	1	6	0	2	8	0	1	8	0	0	9	0	1	10	0	1	9	1	1	8	0	0	8	0	1	5	0	0	6	1	1	8	1	1	9	0	1
10th Av/Island Av	0	0	5	0	0	6	0	0	8	1	0	13	0	0	6	0	0	8	0	0	8	0	0	9	0	0	11	0	0	9	0	0	8	0	0	7	0	0	5	0	0	6	0	0	8	0	0	9	0	0
10th Av/Park Bl (Petco Park)	0	0	5	0	0	6	0	0	8	0	0	13	0	0	6	0	1	7	0	0	8	0	0	9	0	0	11	0	0	9	0	0	7	0	1	6	0	0	5	0	0	6	0	1	7	0	1	9	0	1
12th/Imperial Transit Center	3	3	5	3	2	8	10	4	14	7	5	14	5	2	9	5	3	9	8	4	12	8	4	13	7	2	16	6	3	13	6	2	11	6	2	11	5	2	8	6	2	9	7	2	12	7	2	13	6	3
Imperial Av/16th St	0	0	4	1	0	8	0	1	14	1	3	12	1	1	9	1	1	9	1	1	11	1	2	11	2	1	17	1	1	13	1	1	11	1	1	11	1	0	9	0	1	8	1	1	12	1	1	12	2	2
Logan Av/Sigsbee St	0	0	4	0	0	8	0	0	14	0	0	12	0	0	9	0	0	9	0	0	11	0	0	11	1	0	17	0	0	13	0	0	11	0	0	11	0	0	9	0	0	8	0	0	12	0	0	13	0	0
Logan Av/Beardsley St	0	0	4	0	0	8	0	0	14	0	0	12	0	0	9	0	0	9	0	1	10	0	1	10	1	1	17	0	1	12	0	1	11	0	1	10	0	0	9	1	1	8	1	1	11	1	1	12	1	1
Logan Av/Cesar E Chavez Pkwy	0	0	4	0	0	8	0	0	14	0	0	11	0	0	9	0	0	9	0	0	10	0	1	10	0	1	17	0	1	12	1	0	11	1	1	10	1	0	10	2	0	10	2	1	12	2	1	13	2	1
Logan Av/Cesar E Chavez Pkwy (Chicano Park)	0	0	4	0	0	8	0	0	14	0	0	11	0	0	9	0	0	9	0	0	10	0	0	10	0	0	17	0	0	12	0	0	11	0	0	10	0	0	10	0	0	10	0	0	12	0	0	13	0	0
Logan Av/Sampson St	0	0	4	0	0	8	0	0	14	0	0	11	0	0	9	0	1	8	0	1	10	0	1	10	0	0	17	0	1	12	0	1	11	0	1	10	0	0	10	0	0	9	0	1	12	0	1	13	0	1
26th St/Sicard St	0	0	4	0	0	7	0	0	14	0	0	11	0	0	9	0	0	8	0	0	9	0	1	9	0	0	17	0	0	12	0	0	11	0	0	10	0	0	10	0	0	9	0	0	12	0	0	13	0	0
National Av/27th St	0	0	4	0	0	7	0	0	14	1	0	12	0	0	9	0	0	8	0	1	8	0	0	9	0	0	16	0	0	11	0	0	11	0	0	10	0	0	9	0	0	9	0	0	12	0	0	12	0	0
National Av/29th St	0	0	4	0	0	7	0	1	13	2	1	14	0	0	9	0	0	7	0	0	8	0	0	9	1	0	17	0	1	11	0	1	10	0	1	9	1	1	10	0	1	9	1	1	12	1	1	12	0	1
National Av/30th St	1	0	5	0	1	6	0	0	13	1	0	14	0	0	9	0	0	7	1	0	9	1	0	9	0	0	16	0	0	11	0	0	10	1	1	9	0	0	10	0	1	9	0	2	10	0	1	12	0	1
National Av/32nd St	0	0	5	0	0	6	0	0	13	0	1	14	0	0	9	0	0	7	3	0	11	0	0	9	1	0	17	1	0	11	1	0	10	0	0	9	0	0	10	0	0	8	0	0	10	0	1	11	0	1
National Av/33rd St	0	0	5	0	0	6	0	0	13	0	0	14	1	0	10	0	0	8	0	0	11	0	0	9	0	0	17	0	0	11	0	0	10	0	0	9	0	0	10	0	0	9	0	0	10	0	0	11	0	0
National Av/35th St	0	1	4	0	0	6	0	0	13	1	0	15	0	1	9	0	0	7	0	1	10	0	1	8	1	1	17	0	1	11	0	1	9	0	2	7	0	2	9	0	1	8	0	1	9	0	1	11	0	2
National Av/36th St	0	0	4	0	1	5	1	0	14	1	0	16	0	0	9	0	0	7	0	0	10	0	0	8	0	1	16	0	0	11	1	1	9	1	1	7	0	1	9	1	1	8	1	1	9	0	1	10	1	1
National Av/38th St	0	0	4	0	0	5	2	2	14	1	0	17	1	0	10	1	0	8	1	0	11	1	0	8	0	1	15	0	1	10	1	1	9	1	1	7	0	0	9	1	1	8	0	1	8	1	1	9	0	1
National Av/40th St	0	1	3	0	0	5	3	0	17	1	1	17	1	0	10	2	0	10	3	0	13	0	1	8	0	0	15	0	0	10	0	0	9	0	0	7	0	0	9	0	0	8	0	0	8	0	1	9	0	1
National Av/41st St	0	0	3	0	0	5	2	0	18	1	0	18	0	0	11	3	0	12	0	0	13	0	0	8	0	0	15	0	0	10	0	0	9	0	0	7	0	0	8	0	0	8	0	0	8	0	0	9	0	0
Logan Av/43rd St	0	0	3	0	0	5	3	1	20	2	2	18	1	1	10	0	1	12	0	1	12	1	2	7	1	2	14	0	2	9	1	2	8	0	2	6	0	1	8	0	1	7	1	2	7	1	1	9	0	2
Logan Av/44th St	0	0	2	0	0	5	0	0	20	0	0	18	0	0	10	0	0	12	0	0	12	0	0	7	0	0	14	0	0	9	0	0	7	0	0	6	0	0	8	0	0	7	0	0	7	0	0	9	0	0
Logan Av/45th St	0	0	2	0	0	5	0	0	20	2	0	19	0	0	10	1	0	13	0	0	12	0	0	7	0	1	14	0	0	8	0	0	7	0	0	5	0	0	8	0	0	7	0	0	7	0	0	9	0	0
Logan Av/46th St	0	0	2	0	0	5	0	0	20	0	0	19	0	0	10	0	0	13	0	0	12	0	0	7	0	0	14	0	0	8	0	0	7	0	0	5	0	0	8	0	0	6	0	0	7	0	0	9	0	0
Logan Av/47th St	1	0	2	0	1	4	2	2	20	1	1	19	1	1	10	1	1	13	0	1	11	2	1	9	1	1	13	0	1	8	1	0	8	1	1	5	0	0	7	0	0	6	0	1	6	0	1	8	0	0
Logan Av/49th St	0	1	2	0	1	3	2	0	22	1	1	18	2	1	12	0	1	12	0	4	7	0	1	8	0	1	12	0	0	8	0	1	8	0	1	5	0	0	7	0	1	5	0	1	6	0	0	8	0	0
Olvera Av/Euclid Av	1	0	2	0	0	3	2	1	23	1	1	19	1	1	13	3	0	14	0	1	6	1	1	8	1	2	12	0	1	8	1	1	8	1	1	4	1	1	7	1	1	5	1	1	6	1	1	8	1	1
Olvera Av/Gwen St	0	0	2	0	0	3	1	0	24	1	0	19	2	0	14	0	0	15	0	0	6	0	0	8	0	0	12	0	0	8	0	0	8	0	0	4	0	0	7	0	0	5	0	0	6	0	0	8	0	0
Olvera Av/Santa Isabel Dr	0	0	2	0	0	3	0	0	24	0	0	20	0	0	14	0	0	15	0	0	6	0	0	8	0	0	12	0	0	8	0	0	7	1	1	4	0	0	7	0	0	5	0	0	6	0	0	8	0	0
Olvera Av/San Onofre Ter	0	0	2	0	0	3	0	0	24	0	0	20	0	0	14	0	0	15	0	0	6	0	0	8	0	0	12	0	0	8	0	0	7	0	0	4	0	0	7	0	0	5	0	0	6	0	0	7	0	0
Olvera Av/Las Flores Ter	0	0	2	0	0	3	0	0	24	0	0	20	0	0	15	0	0	15	0	0	7	0	0	8	0	0	12	0	0	8	0	0	7	0	0	4	0	0	7	0	0	5	0	0	6	0	0	7	0	0
58th St/Mira Flores Dr	0	0	2	0	0	3	0	0	24	0	0	20	0	0	15	0	0	15	0	0	7	0	0	8	0	0	12	0	0	8	0	0	7	0	0	4	0	0	6	0	0	5	0	0	6	0	0	7	0	0
Skyline Dr/Radio Dr	0	0	2	0	0	3	0	0	23	0	1	19	0	3	11	0	1	14	0	1	6	0	2	6	0	4	9	0	1	6	0	1	6	0	1	3	0	1	6	0	0	5	0	0	5	0	0	7	0	0
Skyline Dr/61st St	0	0	2	0	0	3	1	5	19	1	11	9	0	6	6	0	9	5	0	1	4	0	1	5	0	1	8	0	1	6	0	0	6	0	0	3	0	1	5	0	1	3	0	0	5	0	0	7	0	0
Skyline Dr/O*Meara St	0	0	2	0	0	3	0	0	19	0	0	9	0	0	6	0	0	5	0	0	4	0	0	5	0	0	8	0	0	6	0	0	6	0	0	3	0	0	5	0	0	3	0	0	5	0	0	7	0	0
Skyline Dr/Detroit Pl	0	0	2	0	0	3	0	0	19	0	0	9	0	0	6	0	0	4	0	0	4	0	0	5	0	0	7	0	0	6	0	0	6	0	0	3	0	1	4	0	0	3	0	0	5	0	2	5	0	0
Skyline Dr/Woodman St	0	0	2	0	0	3	0	1	18	0	1	8	0	0	6	0	0	4	0	0	4	0	0	5	0	1	7	0	0	5	0	0	6	0	0	3	0	0	4	0	0	3	0	1	4	0	1	4	0	0
Skyline Dr/Rio Lindo Dr	0	0	2	0	0	3	0	0	18	0	0	9	0	0	6	0	0	4	0	0	4	0	0	5	0	0	7	0	0	5	0	0	6	0	0	3	0	0	4	0	0	3	0	0	4	0	0	4	0	0
Skyline Dr/69th St	0	0	2	0	0	2	0	12	6	0	4	5	0	2	4	0	1	3	0	0	4	0	1	4	0	1	6	0	0	5	0	1	5	0	1	2	0	0	4	0	0	3	0	0	4	0	0	4	0	0
Skyline Dr/Buccaneer Dr	0	0	2	0	0	2	0	0	6	0	1	4	0	0	4	0	0	3	0	0	4	0	0	4	0	0	6	0	0	5	0	0	5	0	0	2	0	0	4	0	0	3	0	0	4	0	0	4	0	0
Skyline Dr/Sychar Rd	0	0	2	0	0	2	0	1	5	0	0	4	0	0	4	0	0	3	0	0	4	0	0	4	0	0	5	0	0	5	0	0	5	0	0	2	0	1	3	0	0	2	0	1	3	0	0	3	0	1
Skyline Dr/Siena St	0	0	2	0	0	2	0	0	5	0	0	4	0	0	4	0	0	3	0	0	4	0	0	4	0	0	5	0	0	5	0	0	5	0	0	2	0	0	3	0	0	2	0	0	3	0	0	3	0	0
Skyline Dr/Deerock Pl	0	0	2	0	0	2	0	0	5	0	0	3	0	0	4	0	0	3	0	0	4	0	0	4	0	0	5	0	0	5	0	0	5	0	0	2	0	0	3	0	0	2	0	0	3	0	0	3	0	0
Meadowbrook Dr/Skyline Dr	0	1	1	0	0	2	0	2	3	0	0	3	0	0	4	0	0	3	0	0	3	0	1	3	0	0	5	0	0	4	0	0	5	0	0	1	0	1	2	0	0	2	0	0	2	0	0	3	0	0
Meadowbrook Dr/Brookhaven Rd	0	0	1	0	0	2	0	0	3	0	1	3	0	0	4	0	0	3	0	0	3	0	0	3	0	0	5	0	0	4	0	0	4	0	0	1	0	0	2	0	0	2	0	0	2	0	0	2	0	0
Meadowbrook Dr/Brookmeadow Pl	0	0	1	0	0	2	0	0	3	0	0	2	0	0	3	0	0	3	0	0	3	0	0	2	0	0	5	0	0	4	0	0	4	0	0	1	0	0	2	0	0	2	0	0	2	0	0	2	0	0
Paradise Valley Rd/Meadowbrook Dr	0	1	0	0	2	0	0	3	0	0	2	0	0	3	0	0	3	0	0	3	0	0	2	0	0	5	0	0	4	0	0	4	0	0	1	0	0	2	0	0	2	0	0	2	0	0	2	0	0	4
	14			18			47			52			37			45			46			49			49			43			43			46			35			39			43			45			42	
NB Hourly Volumes												23			26			35			30			40			40			42			42			40			40			41			32			38		
SB Hourly Volumes												3			4			6			8			9			12			20			23			24			**27**			24			12			13		

NB AM Peak Hour 42 PHF= 0.84
NB PM Peak Hour 24 PHF= 0.857

SB AM Peak Hour 27 PHF= 0.6
SB PM Peak Hour 41 PHF= 0.851

NB AM (peak bus activity) V= 28 PHF= 0.875
NB PM (peak bus activity) V= 12 PHF= 0.75

SB AM (peak bus activity) V= 27 PHF= 0.75
SB PM (peak bus activity) V= 41 PHF= 0.855

	920			935			950			1005			1020			1033			1048			1103			1118			1133			1148			1203			1218			1233			1247			1303			1318			1333			1348			1403		
Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
3	4	0	4	4	0	4	6	0	6	6	0	6	4	0	4	4	0	4	4	0	4	6	0	6	5	0	5	5	0	5	4	0	4	1	0	1	5	0	5	5	0	5	3	0	3	6	0	6	6	0	6	6	0	6	5	0	5	7	0	7
3	0	0	5	0	0	4	0	0	6	0	0	6	0	0	5	0	0	4	0	0	4	0	0	6	0	0	5	0	0	5	1	0	4	2	1	2	1	0	6	0	0	6	0	0	3	0	0	6	0	0	6	0	0	6	0	0	6	1	0	7
3	0	0	5	0	0	4	0	0	6	0	0	6	0	0	5	0	0	4	0	0	4	0	0	6	0	0	5	0	0	6	0	0	4	0	0	3	0	0	6	0	0	6	0	0	3	0	0	6	0	0	6	0	0	6	0	0	6	0	0	7
3	0	0	5	0	0	4	0	0	6	0	0	6	0	0	5	0	0	4	0	0	4	0	0	6	0	0	5	0	0	6	0	0	4	0	0	3	0	0	6	0	0	6	0	0	3	0	0	6	0	0	6	0	0	6	0	0	5	0	0	7
3	0	0	5	0	0	4	0	0	6	0	0	6	0	0	5	0	0	4	0	0	4	0	0	6	0	0	5	0	0	6	0	0	4	0	0	3	0	0	6	0	0	6	0	0	3	0	0	6	0	0	7	0	0	6	0	0	5	0	0	7
3	0	0	5	0	0	4	0	0	6	0	0	6	0	0	5	0	0	4	0	0	4	0	0	6	0	0	5	0	0	6	0	0	4	0	0	3	0	0	6	0	0	7	0	0	3	1	0	7	0	0	7	0	0	6	0	0	5	0	0	7
4	0	0	5	1	0	5	1	1	6	1	0	7	1	0	5	0	0	4	1	0	5	0	0	7	1	0	6	1	0	7	1	0	5	0	0	3	1	0	7	1	0	7	0	0	4	1	0	8	0	0	7	0	0	7	1	0	6	1	0	7
4	0	0	5	1	0	5	0	0	6	0	0	7	0	0	5	0	0	5	0	0	5	0	0	7	0	0	6	0	0	7	0	0	5	0	0	3	0	0	7	0	0	7	0	0	4	0	0	8	0	0	7	0	0	7	0	0	6	0	0	7
6	1	0	6	1	0	6	1	1	7	1	0	7	1	0	6	1	0	5	1	0	6	1	0	7	1	0	7	1	0	8	1	0	5	1	0	4	1	0	8	1	0	7	1	0	4	2	0	9	1	0	8	1	1	7	1	1	7	1	1	7
6	0	0	6	1	0	6	0	0	7	0	0	7	0	0	6	0	0	5	1	0	6	0	0	8	0	0	7	0	0	8	1	0	6	1	1	4	1	0	8	0	1	7	1	0	4	0	1	9	1	0	8	0	0	7	1	0	7	1	0	7
7	1	0	8	2	0	8	2	0	9	2	0	9	1	0	7	1	0	6	1	0	7	1	1	8	0	0	8	1	0	9	1	0	7	1	0	5	1	0	9	0	0	7	1	0	5	1	0	9	1	0	9	0	0	8	1	0	8	1	0	7
8	1	0	9	2	0	9	2	0	11	1	0	10	2	0	8	1	0	7	1	0	8	1	0	9	1	0	8	1	0	10	1	0	8	1	0	6	1	0	10	1	0	8	1	0	6	1	1	10	1	1	9	1	0	9	2	0	9	1	1	8
8	0	0	9	1	0	9	0	0	11	1	0	11	0	0	8	0	0	7	0	0	9	0	0	9	1	0	9	1	0	10	1	0	8	1	0	6	1	0	10	0	0	8	1	0	6	0	0	10	1	0	9	0	0	9	1	0	9	0	0	7
8	0	0	9	0	0	10	0	0	11	0	0	11	1	0	9	0	0	7	0	0	9	0	0	9	0	0	9	0	0	10	0	0	9	0	0	6	0	0	10	0	0	8	0	0	6	0	0	10	0	0	9	0	0	9	0	0	9	0	0	7
8	1	1	9	1	1	9	1	1	11	1	1	10	1	1	9	0	1	7	1	1	9	1	1	9	1	0	9	1	1	11	1	1	8	0	1	6	1	1	10	0	1	8	0	1	6	1	1	9	0	1	9	0	1	9	0	1	9	1	1	7
9	0	0	9	1	0	10	1	0	12	1	0	11	0	0	9	0	0	7	0	0	9	0	0	9	0	0	9	0	0	10	0	0	8	0	0	6	0	0	10	0	0	8	0	0	6	0	0	9	0	0	9	0	0	9	0	0	9	0	0	7
9	0	0	9	0	0	10	0	1	12	0	0	11	0	0	9	0	0	7	0	0	9	0	0	9	0	0	9	0	0	10	0	0	8	0	0	5	0	0	10	0	0	8	0	0	6	0	0	9	0	0	9	0	0	9	0	0	9	0	0	7
9	0	0	9	0	0	10	0	0	11	0	0	11	0	0	9	0	0	7	0	0	9	0	0	9	0	0	9	0	0	10	0	0	8	0	0	5	0	0	10	0	0	8	0	0	6	0	0	9	0	0	9	0	0	9	0	0	9	0	0	7
8	0	0	10	0	0	10	0	0	11	0	0	11	0	0	9	0	0	7	0	0	9	0	0	9	0	0	9	0	0	10	0	0	8	0	0	5	0	0	10	0	0	8	0	0	7	0	0	9	0	0	9	0	0	9	0	0	9	0	0	7
8	0	0	10	0	0	10	0	0	11	0	0	11	0	0	9	0	0	7	0	0	9	0	0	9	0	0	9	0	0	10	0	0	8	0	0	5	0	0	10	0	0	8	0	0	7	0	0	9	0	0	9	0	0	9	0	0	9	0	0	7
9	0	0	10	0	0	10	0	0	12	0	0	11	1	0	10	0	0	7	0	0	9	0	0	9	0	0	9	0	0	11	1	0	9	1	0	5	1	0	10	1	0	9	0	0	7	1	0	10	1	0	10	1	0	9	1	0	9	1	0	8
9	0	0	9	0	0	10	0	0	12	0	0	12	0	0	10	0	0	8	0	0	9	0	0	10	0	0	9	0	0	11	0	0	9	0	0	6	1	0	11	0	0	9	1	0	8	1	0	10	0	0	10	1	0	10	0	0	10	0	0	8
9	0	0	10	0	0	10	0	0	12	0	0	12	0	0	10	0	0	8	0	0	10	1	0	10	0	0	9	0	0	11	0	0	9	0	0	6	1	0	12	0	0	9	0	0	8	0	0	10	0	0	10	0	0	10	1	0	10	1	0	9
9	0	1	9	1	1	10	0	1	12	1	1	12	1	1	10	1	1	8	1	1	10	1	1	10	1	1	9	1	1	11	1	1	9	1	0	7	1	1	12	0	1	8	1	1	8	1	1	11	1	1	10	2	1	11	1	1	10	1	1	9
9	0	0	9	0	0	11	0	0	12	0	0	12	0	0	10	0	0	8	0	0	10	0	0	10	0	0	10	0	0	11	0	0	9	0	0	7	0	0	12	0	0	8	0	0	8	0	0	11	0	0	10	0	0	11	0	0	10	0	0	9
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12			16			17			23			23			20			24			24			23			23			19			19			14			15			15			18			19			20			21			23			24

1404			1418			1419			1433			1434			1448			1449			1503			1504			1518		
ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
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1519			1533			1534			1548			1549			1603			1604			1618			1619			1633			1634	
ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF
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37			63			34			59			36			57			32			57			35			56			40	
		24			23			24			24			21			21			21			19			18			16		
		23			25			25			24			24			25			25			29			29			29		

4	1647			1649			1702			1704			1717			1719			1733			1734			1748			1805			1821			1836			1910			1944			2014			2049			2119			2219		
Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
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	1	1	15				0	1	13				1	1	13				1	1	11				0	0	11	1	0	11	0	0	8	0	0	7	0	0	10	0	0	10	0	0	7	0	0	9	0	0	9	0	0	12
	1	4	13				2	2	12				1	1	13				1	1	10				1	1	12	1	1	10	1	1	8	1	0	7	1	1	10	1	1	11	1	1	7	1	1	9	1	0	10	2	1	13
	1	1	14				1	1	13				1	0	13				1	0	11				1	0	13	1	0	11	1	0	9	1	0	8	1	0	11	2	0	12	1	0	8	1	0	10	1	0	10	3	0	16
	1	1	14				1	2	11				1	1	13				0	1	11				1	1	13	0	1	11	0	1	8	0	1	7	1	1	11	1	0	12	1	0	9	1	1	9	0	1	10	1	0	17
	0	0	14				0	0	11				0	0	13				0	0	10				0	0	12	0	0	10	0	0	8	0	0	7	0	0	11	0	0	12	0	0	9	0	0	9	0	0	10	0	0	17
	0	0	14				1	0	12				0	0	13				0	0	11				0	0	13	0	0	11	0	0	8	0	0	7	0	0	11	0	0	12	0	0	9	0	0	9	0	0	10	0	0	17
27	18	2	30	20	0	20	15	3	24	21	0	21	15	3	25	20	0	20	14	2	22	16	0	16	14	2	25	12	2	21	10	2	17	11	2	17	12	2	21	16	2	26	11	1	19	13	1	21	8	1	17	11	1	27
28	2	2	29	1	1	21	1	1	24	1	1	21	1	1	24	1	1	20	1	1	22	1	1	16	2	1	26	1	2	21	2	2	17	0	0	17	1	1	21	1	1	26	0	1	18	0	1	20	0	0	17	0	1	27
27	0	0	29	0	0	20	0	0	24	0	0	20	0	1	23	0	0	20	0	0	22	0	0	16	0	0	26	0	0	20	0	0	17	0	0	17	0	0	21	0	0	26	0	0	18	0	0	20	0	0	17	0	0	27
27	0	1	28	0	0	20	0	0	23	0	0	20	0	0	23	0	0	20	0	0	21	0	0	16	0	0	26	0	0	20	0	0	16	0	0	16	0	0	21	0	1	25	0	0	18	0	0	20	0	0	16	0	0	27
28	1	0	29	1	0	21	2	1	24	1	0	21	1	1	23	1	1	20	1	0	21	1	0	16	1	1	26	0	0	21	1	1	17	1	0	17	2	0	23	1	0	26	2	0	20	0	0	20	1	0	17	0	1	26
28	1	1	29	0	0	21	0	0	24	0	0	21	0	0	23	0	0	20	0	0	22	0	0	16	0	0	26	0	0	21	0	0	17	0	0	18	0	0	23	0	0	26	0	0	20	0	0	20	0	0	17	0	0	26
27	0	1	28	0	1	20	1	1	24	1	1	21	0	1	23	0	1	20	0	1	21	0	0	16	0	1	25	0	2	19	0	1	17	0	1	17	1	0	23	0	0	26	0	0	19	0	1	20	0	0	17	0	0	26
27	0	0	28	0	0	20	0	0	24	0	0	21	0	0	23	0	0	20	0	0	21	0	0	16	0	0	25	0	0	19	0	0	16	0	0	17	0	0	23	0	0	26	0	0	19	0	0	20	0	0	17	0	0	26
27	0	0	28	0	0	20	0	0	24	0	0	21	0	0	23	0	0	19	0	0	21	0	0	16	0	0	25	0	0	19	0	0	16	0	0	17	0	1	22	0	0	26	0	0	19	0	0	20	0	0	17	0	0	26
26	1	2	27	1	1	19	1	2	23	1	2	20	1	1	22	1	1	19	0	1	21	1	1	16	1	1	25	0	0	19	0	0	16	1	0	17	1	0	23	1	1	26	0	0	19	0	0	20	1	0	18	0	1	25
25	1	1	26	1	2	19	1	1	23	0	2	18	0	1	22	0	1	19	0	1	20	1	1	16	0	1	24	0	1	18	0	1	16	0	1	17	0	1	22	0	1	25	0	0	19	0	1	19	0	0	17	0	1	24
23	1	2	25	0	2	17	1	1	23	0	1	18	1	1	21	1	1	18	1	1	20	1	1	16	0	1	23	0	1	18	0	1	16	0	1	16	1	1	22	0	1	25	1	1	19	0	0	19	0	1	17	0	1	23
23	0	0	25	0	0	17	0	0	23	0	0	17	0	0	21	0	0	18	0	0	20	0	0	16	0	0	23	0	0	18	0	0	15	0	0	16	0	0	22	0	0	25	0	0	19	0	0	19	0	0	17	0	0	23
21	1	3	23	0	2	16	0	2	21	0	2	15	0	2	20	0	2	16	0	2	18	0	2	14	0	2	21	0	1	17	0	1	14	0	2	15	0	2	20	0	2	23	0	1	17	0	1	19	0	1	16	0	1	22
20	1	1	22	1	1	15	1	3	19	1	1	14	1	2	19	1	2	15	0	1	17	0	2	13	1	2	19	0	1	16	0	1	14	0	1	14	0	1	19	0	1	22	0	1	17	0	1	18	0	1	15	0	1	21
15	1	5	18	0	4	12	1	4	16	0	3	11	0	2	17	0	3	13	0	3	14	0	3	10	0	4	15	0	2	14	0	1	13	0	2	13	1	2	18	0	3	19	1	2	16	0	2	17	0	2	13	0	3	18
14	0	2	17	0	1	11	0	1	15	0	1	10	0	1	15	0	1	12	0	1	14	0	1	9	0	1	15	0	1	13	0	1	12	0	1	12	0	1	17	0	1	18	0	1	15	0	0	17	0	1	12	0	1	18
13	0	1	16	0	1	10	0	1	14	0	1	10	0	1	15	0	1	11	0	1	13	0	1	8	0	1	14	0	1	12	0	0	12	0	1	11	0	1	16	0	1	18	0	1	14	0	0	16	0	1	11	0	1	17
11	1	2	14	0	2	9	0	3	11	1	2	9	1	2	14	1	2	10	0	2	11	0	2	7	0	3	12	0	2	11	1	2	11	0	1	10	1	2	15	1	2	17	0	3	12	1	3	14	0	2	9	0	3	14
11	0	0	14	0	0	9	0	0	11	0	0	8	0	0	14	0	0	9	0	0	11	0	0	7	0	0	11	0	0	11	0	0	11	0	0	10	0	0	15	0	0	18	0	0	12	0	0	14	0	0	9	0	0	14
9	0	1	13	0	1	8	0	1	11	0	1	7	0	1	13	0	1	8	0	1	10	0	1	6	0	1	11	0	1	10	0	1	10	0	1	10	0	1	14	0	1	16	0	1	12	0	1	13	0	1	8	0	0	13
9	0	0	13	0	0	8	0	1	10	0	0	8	0	0	13	0	0	8	0	0	10	0	0	6	0	0	11	0	0	10	0	0	10	0	0	10	0	1	14	0	0	16	0	1	11	0	0	13	0	0	8	0	0	13
8	0	1	13	0	1	7	0	1	10	0	1	7	0	1	12	0	1	8	0	1	9	0	0	6	0	0	11	1	1	9	0	0	10	0	1	9	0	1	13	0	1	15	0	1	10	0	1	13	0	1	8	0	1	12
8	0	1	12	0	1	7	0	1	9	0	1	6	0	1	11	0	1	7	0	1	9	0	1	5	0	1	10	0	1	9	0	1	9	0	1	8	0	1	12	0	1	15	0	1	10	0	1	12	0	1	8	0	1	11
7	2	2	12	1	1	7	1	1	9	1	1	7	1	1	11	1	1	7	1	1	9	1	1	5	1	1	10	1	1	9	1	1	9	1	0	8	2	1	13	2	1	16	1	1	10	1	1	12	1	1	8	0	1	10
7	0	0	12	0	0	7	0	0	9	0	0	6	0	0	11	0	0	7	0	0	9	0	0	5	0	0	9	0	0	9	0	0	9	0	0	8	0	0	12	0	0	16	0	0	10	0	0	12	0	0	8	0	0	10
7	0	0	11	0	0	7	0	0	8	0	0	6	0	0	11	0	0	7	0	0	8	0	0	5	0	0	9	0	0	9	0	0	9	0	0	8	0	0	12	0	0	16	0	0	10	0	0	12	0	0	8	0	0	10
7	0	0	11	0	0	7	0	0	8	0	0	6	0	0	11	0	0	7	0	0	8	0	0	5	0	0	9	0	0	9	0	0	9	0	0	8	0	0	12	0	0	16	0	0	10	0	0	12	0	1	7	0	0	9
7	0	0	11	0	0	7	0	0	8	0	0	6	0	0	11	0	0	7	0	0	8	0	0	5	0	0	9	0	0	9	0	0	8	0	0	8	0	0	12	0	0	15	0	0	9	0	0	11	0	0	6	0	0	9
6	0	0	11	0	1	6	0	1	8	0	1	5	0	0	10	0	0	7	0	0	8	0	0	5	0	1	8	0	1	8	0	0	8	0	1	7	0	1	11	0	1	15	0	0	9	0	0	11	0	0	6	0	1	9
6	0	0	10	0	0	6	0	0	8	0	0	5	0	0	10	0	1	6	0	0	7	0	0	4	0	0	7	0	0	8	0	0	8	0	0	6	0	0	11	0	1	14	0	0	9	0	1	10	0	0	6	0	0	8
6	0	0	10	0	1	6	0	0	7	0	0	5	0	1	10	0	0	6	0	1	7	0	1	4	0	0	7	0	1	7	0	0	8	0	0	6	0	1	10	0	0	13	0	1	8	0	1	10	0	1	5	0	1	7
6	0	0	10	0	1	5	0	0	7	0	0	5	0	0	9	0	0	6	0	0	7	0	0	4	0	0	7	0	0	7	0	0	7	0	0	6	0	1	10	0	0	13	0	1	7	0	0	10	0	0	5	0	0	7
6	0	0	10	0	0	5	0	0	7	0	0	5	0	0	9	0	0	6	0	0	6	0	0	4	0	0	6	0	0	7	0	0	7	0	0	6	0	0	9	0	0	12	0	0	7	0	0	9	0	0	4	0	1	7
6	0	0	10	0	0	5	0	0	7	0	0	5	0	0	9	0	0	6	0	0	6	0	0	4	0	0	6	0	0	7	0	0	7	0	0	6	0	1	9	0	1	11	0	0	7	0	0	9	0	0	4	0	1	6
6	0	0	9	0	0	5	0	0	7	0	0	4	0	0	9	0	0	5	0	0	6	0	0	4	0	0	6	0	0	7	0	0	7	0	0	5	0	0	9	0	0	11	0	0	7	0	0	9	0	0	4	0	0	6
5	0	0	9	0	0	5	0	0	7	0	0	5	0	0	9	0	0	6	0	0	6	0	0	4	0	0	6	0	0	6	0	0	7	0	0	5	0	0	9	0	1	10	0	0	6	0	0	9	0	0	4	0	0	6
5	0	0	9	0	0	5	0	0	7	0	0	5	0	0	9	0	0	5	0	0	6	0	0	4	0	0	6	0	0	6	0	0	7	0	0	5	0	0	9	0	0	10	0	0	6	0	0	9	0	0	4	0	0	6
4	0	1	8	0	1	5	0	2	5	0	1	4	0	2	7	0	1	5	0	1	5	0	1	3	0	1	5	0	1	5	0	1	6	0	0	5	0	1	8	0	2	8	0	1	5	0	1	8	0	1	3	0	0	5
4	0	0	7	0	0	4	0	1	4	0	0	3	0	1	7	0	0	4	0	1	4	0	0	2	0	1	4	0	0	5	0	0	6	0	0	4	0	1	7	0	0	7	0	0	5	0	0	8	0	0	3	0	0	5
4	0	0	7	0	0	4	0	0	4	0	0	3	0	0	6	0	0	4	0	0	4	0	0	2	0	0	4	0	0	5	0	0	5	0	0	4	0	0	7	0	1	7	0	1	4	0	0	8	0	0	3	0	1	4
3	0	1	6	0	2	2	0	1	3	0	1	2	0	1	6	0	1	4	0	1	3	0	1	2	0	1	3	0	1	4	0	1	5	0	1	3	0	1	6	0	1	6	0	1	4	0	2	6	0	0	2	0	1	4
2	0	0	6	0	0	2	0	0	3	0	0	2	0	0	5	0	1	3	0	0	3	0	0	1	0	0	3	0	0	4	0	0	4	0	1	3	0	0	5	0	1	5	0	0	3	0	1	5	0	1	1	0	1	3
1	0	1	5	0	0	2	0	1	2	0	0	2	0	0	5	0	1	2	0	1	2	0	0	1	0	0	3	0	1	3	0	0	4	0	0	2	0	0	5	0	1	4	0	0	3	0	0	5	0	0	1	0	2	2
0	0	5	0	0	2	0	0	3	0	0	2	0	0	5	0	0	3	0	0	3	0	0	1	0	0	3	0	0	3	0	0	4	0	0	2	0	0	5	0	0	5	0	0	3	0	0	5	0	0	1	0	0	2	0
	72			31			68			31			60			31			54			25			59			50			44			40			54			54			42			42			35			42		

13	11	**12**	13	13	13	11	10	10	9	10	9	2						
29	36	30	39	32	**41**	26	32	32	33	32	30	29	21	15	11	10	12	6

Inbound (Eastbound)	545			644			737			837			937			1037			1137			1237			1337			1437			1537			1637			1737			1838		
	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
Grantville Trolley Station	0		0	1		1	1		1	3		3	1		1	2		2	1		1	0		0	3		3	1		1	3		3	2		2	2		2	8		8
Camino Del Rio N/Mission Gorge Rd			0			1			1			3			1			2			1			0			3			1			3			2			2			8
Ward Rd/Mission San Diego Trolley			0	3		4			1			3			1			2	1		2	1		1			3			1	1		4			2	1		3			8
Rancho Mission Rd/San Diego Mission Rd			0	3		7			1	1		4			1			2			2	2	1	2			3			1			4			2			3		1	7
Rancho Mission Rd/Friars Rd			0	3	1	9			1		1	3			1	1		3	1	1	2			2	1		4	1		2	2	2	4		1	1		2	1		5	2
Mission Gorge Rd/Zion Av			0	1		10			1		2	1			1	1		4	3	1	4		1	1			4	1	1	2	1		5			1			1			2
Zion Av/Crawford St (Kaiser)			0	2		12			1	1		2	2		3		2	2			4	1		2	1	2	3			2	1		6	1		2			1	1		3
Zion Av/Seaman St			0			12			1			2			3			2	1		5			2			3			2			6			2			1			3
Zion Av/Cartwright St			0	2		14			1			2			3			2			5			2			3			2			6		1	1			1			3
Zion Av/Estrella Av			0			14	2		3			2			3			2			5			2			3			2			6			1			1			3
Zion Av/Winona Av			0			14			3			2			3			2			5	1		3			3		1	1		1	5			1			1			3
Zion Av/51st St			0		5	9			3	1		3			3			2		3	2			3		3	0			1			5			1			1			3
Zion Av/Waring Rd			0			9			3			3			3		1	1		1	1			3			0			1		1	4	3		4	1	1	1	1	2	2
Waring Rd/Greenbrier Av			0		4	5		1	2			3			3		1	0	1		2			3			0			1			4			4			1		1	1
Waring Rd/Mound Av			0			5	2		4	2	1	4			3	1		1			2			3	1		1			1		1	3			4			1			1
Waring Rd/Birchwood St			0		1	4			4			4			3			1			2	1		4	1		2			1			3			4			1		1	0
Waring Rd/Eldridge St	1		1			4			4			4			3			1			2			4	1		3			1			3			4			1			0
Waring Rd/Galewood St			1			4			4			4			3			1		1	1			4			3	1	1	1			3			4			1			0
College Av/Lance St			1	1	4	1	1	2	3			4	1		4			1			1			4			3			1			3		1	3			1			0
College Av/Rockhurst Dr	3		4			1			3			4			4			1			1			4			3			1			3			3			1			0
College Av/Del Cerro Bl			4			1			3			4	1	2	3		1	0			1	2		6			3	1		2			3			3			1			0
College Av/Alvarado Rd			4	1		2			3		1	3			3			0			1			6			3			2			3			3			1			0
College Av/SDSU Transit Center		4	0		2	0		3	0		3	0		3	0			0	6	1	6		5	1	4	3	4		2	0	8	3	8	1	3	1	2	1	2	2		2
Montezuma Rd/63rd St			0			0			0			0			0	1		1			6			1			4			0		1	7			1			2			2
Montezuma Rd/Gary St			0			0			0			0			0			1			6			1			4			0			7			1			2			2
Montezuma Rd/Reservoir Dr			0			0			0			0			0			1		2	4			1		2	2			0		5	2		1	0	1		3			2
El Cajon Bl/68th St			0			0			0			0			0		1	0			4			1		1	1			0	1	2	1			0	2		5			2
70th St/El Cajon Bl	1		1	1		1			0			0			0			0	1		5			1	4		5			0			1			0			5			2
70th St/Saranac St			1			1			0			0			0	1		1			5			1			5			0			1			0			5			2
70th St Trolley Station		1	0		1	0			0			0			0		1	0		1	4	1	1	1	1	5	1	1		1	1		2	1		1		3	2		1	1
Lake Murray Bl/Parkway Dr			0			0			0	1		1			0			0			4			1			1			1			2		1	0		2	0			1
Lake Murray Bl/Kiowa Dr			0			0			0		1	0			0			0			4			1		1	0			1			2			0			0			1
Lake Murray Bl/Shasta Ln			0			0			0			0			0			0			4			1			0			1			2			0			0			1
Baltimore Dr/Lake Murray Bl			0		0	0			0		0	0		0	0			0		4	0		1	0		0	0		1	0		2	0		0	0		0	0		1	0
	5			18			6			9			5			7			15			9			17			6			18			8			9			12		

Outbound (Westbound)	638			738			834			936			1036			1136			1234			1334			1434			1534			1634			1736		
	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load	ON	OFF	Load
Baltimore Dr/Lake Murray Bl	0		0	4		4	2		2	0		0	1		1	2		2	0		0	0		0	4		4	0		0	1		1	1		1
Lake Murray Bl/Maryland Av			0			4	1		3			0			1			2	1		1			0			4	1		1			1		1	0
Lake Murray Bl/Kiowa Dr	3		3			4			3			0			1			2			1			0	1		5	1		2			1			0
Lake Murray Bl/Connecticut Av			3			4	1		4	1		1			1	1		3			1			0			5			2			1			0
70th St Trolley Station	1	3	1	2	2	4	1	3	2			1	1	1	1		1	2			1	1		1		1	4		2	0			1			0
70th St/Saranac St			1			4		1	1			1			1			2			1			1		1	3			0			1			0
El Cajon Bl/70th St			1		2	2			1			1		1	0			2			1		1	0	1	2	2			0		1	0			0
El Cajon Bl/67th St			1	1	1	2			1			1			0			2	2		3			0		1	1			0	2		2			0
Montezuma Rd/Reservoir Dr			1	1		3	1		2	2		3			0	1		3	2	1	4	2		2	1		2	1		1	2		4			0
Montezuma Rd/Catoctin Dr			1	5		8	1		3	1		4			0	1		4	4		8	2		4	3		5	3		4		1	3			0
Montezuma Rd/63rd St			1			8			3			4			0			4			8			4			5			4			3			0
College Av/Lindo Paseo	2		3	4	8	4	1	3	1		3	1	2		2	2	4	2	4	7	5	2	4	2	10	5	10	3	3	4	5	1	7	1		1
College Av/Alvarado Rd			3			4			1			1			2			2			5			2			10		1	3			7			1
College Av/Del Cerro Bl		1	2		3	1			1			1			2			2			5			2	1	1	10			3		3	4	1		2
College Av/Rockhurst Dr			2			1			1			1			2		1	1			5			2			10			3			4			2
College Av/St Therese Wy			2			1			1			1			2			1			5			2			10			3			4			2
College Av/Camino Rico			2	1		2			1			1			2			1			5			2	3		13			3			4			2
Waring Rd/Galewood St			2	1		3			1			1	1		3			1		1	4			2			13			3			4			2
Waring Rd/Eldridge St			2	2		5			1			1			3			1			4			2			13			3			4			2
Waring Rd/Birchwood St			2			5	1		2			1			3			1			4			2		1	12	1	1	3			4			2
Waring Rd/Princess View Dr		1	1		1	4		1	1			1		1	2			1		3	1			2			12			3		1	3			2
Waring Rd/Greenbrier Av			1			4			1			1			2	1		2			1			2			12			3			3			2
Zion Av/Glenroy St		1	0			4			1	1		2	1		3		1	1	2	1	2			2	5	3	14			3	1	1	3	1		3
Zion Av/51st St			0	1		5			1			2			3			1			2	3		5	3	1	16			3	1		4			3
Zion Av/Winona Av	1		1			5			1			2			3			1			2			5			16			3			4			3
Zion Av/Estrella Av			1			5			1			2			3			1			2			5		1	15			3			4		1	2
Zion Av/Clara Lee Av			1			5			1			2			3			1			2			5			15			3			4			2
Zion Av/Seaman St			1			5			1			2			3			1			2			5			15			3		1	3			2
Zion Av/Archwood Av			1			5			1			2		2	1		1	0			2			5		2	13		1	2			3		1	1
Mission Gorge Rd/Zion Av			1			5			1			2			1			0			2			5			13			2		1	2			1
Friars Rd/Riverdale St			1			5			1		1	1			1			0			2	1	1	5	1	4	10		1	1			2			1
Rancho Mission Rd/Friars Rd		1	0			5			1			1			1	1		1			2	1	3	3		4	6			1		1	1			1
Rancho Mission Rd/San Diego Mission Rd			0			5			1			1			1		1	0			2			3			6			1	1		2			1
Ward Rd/Mission San Diego Trolley			0		1	4			1			1			1			0	1		3		1	2		4	2			1		1	1		1	0
Grantville Trolley Station			0		4	0		1	0		1	0		1	0		0	0		3	0		2	0		2	0		1	0		1	0		0	0
	7			22			9			5			6			9			16			12			33			10			13			4		

EB AM Peak Hour	4	PHF=	1.0	
EB PM Peak Hour	6	PHF=	1.0	
WB AM Peak Hour	8	PHF=	1.0	
WB PM Peak Hour	8	PHF=	1.0	
EB AM (peak bus activity)	V=	3	PHF=	1.0
EB PM (peak bus activity)	V=	3	PHF=	1.0
WB AM (peak bus activity)	V=	4	PHF=	1.0
WB PM (peak bus activity)	V=	7	PHF=	1.0

Outbound (Eastbound)	609			626			656			726			756			826			856			926			956		
	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
College Av/SDSU Transit Center				13	0	13	10	0	10	7	0	7	7	0	7	7	0	7	7	0	7	5	0	5	6	0	6
Montezuma Rd/College Av				1	0	14	1	0	10	1	0	8	0	0	7	1	0	8	1	0	8	0	0	5	0	0	6
Campanile Dr/Montezuma Rd				0	0	14	0	0	10	0	0	8	0	0	7	0	0	8	0	0	8	0	0	5	0	0	6
College Av/Lindo Paseo				3	0	16	6	0	16	4	0	12	4	0	12	7	0	15	6	0	14	3	0	8	3	0	10
College Av/Del Cerro Bl				0	0	16	3	0	19	1	0	13	0	1	11	0	2	13	1	1	14	0	1	7	0	1	9
College Av/Rockhurst Dr				0	0	16	0	0	18	0	0	12	0	0	11	0	0	12	0	0	14	0	0	7	0	0	9
College Av/St Therese Wy				0	0	16	0	0	18	0	0	12	0	0	11	0	0	12	0	0	14	0	0	7	0	0	9
College Av/Camino Rico				0	0	16	5	0	24	0	0	12	0	0	11	0	1	11	0	0	14	0	1	6	0	0	9
Navajo Rd/College Av				1	0	17	1	0	25	1	0	12	0	0	12	0	0	11	1	0	16	0	0	6	0	0	9
Navajo Rd/Camino Estrellado				0	0	17	0	0	24	0	0	12	0	0	12	0	0	11	0	1	15	0	0	6	0	0	9
Navajo Rd/Park Ridge Bl				0	8	9	1	12	13	0	6	6	0	2	10	1	1	11	1	3	12	0	0	6	0	1	8
Jackson Dr/Navajo Rd				0	2	7	1	4	11	0	0	6	1	1	10	1	1	10	0	2	11	1	1	6	1	1	8
Jackson Dr/Golfcrest Dr				0	0	7	0	0	11	1	0	7	0	0	10	1	1	10	1	1	11	0	1	5	1	1	9
Jackson Dr/Lake Shore Dr				0	0	7	0	0	11	0	0	7	0	0	10	0	0	10	0	0	11	0	0	5	0	0	9
Jackson Dr/Twin Lake Dr				0	0	6	0	0	11	0	0	7	0	0	10	0	0	10	0	0	11	0	0	5	0	0	9
Jackson Dr/Cowles Mountain Bl				0	0	6	0	0	11	0	0	7	0	0	10	0	0	10	0	0	11	0	0	5	0	0	9
Jackson Dr/Lake Badin Av				0	0	6	0	0	11	0	0	7	1	0	10	0	0	10	0	0	11	0	0	5	0	0	9
Jackson Dr/Boulder Lake Av				0	1	6	0	0	11	0	0	7	0	0	10	0	0	10	0	0	11	0	0	5	0	0	9
Lake Murray Bl/Jackson Dr	1	1	0	0	0	6	0	0	11	0	0	7	0	0	10	0	0	11	0	0	10	0	0	5	0	0	9
Lake Murray Bl/Lake Aral Dr	0	0	0	0	0	6	0	1	11	0	0	7	0	0	10	0	0	11	0	0	11	0	0	6	0	0	9
Lake Murray Bl/Lake Arrowhead Dr	2	0	2	1	0	6	2	0	12	0	0	7	1	0	11	0	1	10	0	1	10	0	0	6	0	0	9
Lake Murray Bl/Lynnhaven Ln	0	0	2	0	0	6	0	0	13	0	0	7	1	0	11	0	1	9	1	1	9	0	0	6	0	0	8
Lake Murray Bl/Navajo Rd	0	0	2	1	0	7	1	0	13	0	0	7	0	0	11	0	0	9	1	2	8	1	0	6	0	0	9
Navajo Rd/Jaffe Ct	0	0	2	0	0	7	0	0	13	0	0	8	0	0	11	0	0	9	0	0	9	0	0	6	0	0	9
Grossmont College	0	0	2	0	3	4	0	8	5	0	6	2	1	4	8	3	7	4	6	5	9	3	5	4	4	5	8
Navajo Rd/Medford St	0	0	2	0	0	4	0	0	5	0	0	2	0	0	8	0	0	4	0	0	9	0	0	5	0	0	7
Navajo Rd/Medford St	1	0	3	0	0	4	1	0	6	1	0	3	0	0	8	0	0	4	0	0	10	0	0	4	0	0	7
Fletcher Pkwy/Navajo Rd	0	0	3	0	0	4	0	0	6	0	0	3	0	0	8	0	0	5	0	0	10	0	0	4	0	0	7
Fletcher Pkwy/Garfield Av	0	0	3	0	0	4	0	0	6	0	0	3	0	0	9	0	0	5	1	0	10	0	0	5	0	0	7
Fletcher Pkwy/Westwind Dr	0	0	3	0	0	4	0	0	6	0	0	3	0	1	8	0	0	5	0	0	10	0	0	5	0	0	7
Fletcher Pkwy/Cuyamaca St	0	0	3	0	0	4	0	0	6	0	0	3	0	0	8	0	0	4	0	0	10	0	0	5	0	0	7
Marshall Av/Arnele Trolley Station	0	0	3	0	1	3	0	1	5	0	1	2	0	2	6	0	1	3	0	1	9	0	1	4	0	0	7
El Cajon Transit Center	0	3	0	0	3	0	0	5	0	0	2	0	0	6	0	0	3	0	0	9	0	0	4	0	1	7	0
	4			20			32			18			18			24			28			15			18		

Inbound (Westbound)	557			607			707			737			807			837			907			937			1007		
	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
El Cajon Transit Center				5	1	3	24	0	24	13	0	13	17	0	17	16	0	16	16	0	16	12	0	12	11	0	11
Marshall Av/Arnele Av				0	0	3	1	0	25	1	0	14	1	0	17	2	0	18	0	0	17	0	0	12	0	0	11
Fletcher Pkwy/Marshall Av				0	0	3	1	0	26	1	0	14	1	0	18	0	0	18	1	0	18	0	0	12	0	0	11
Fletcher Pkwy/Cuyamaca St				0	0	3	1	0	27	0	0	15	1	0	19	1	0	18	0	0	18	0	0	12	0	0	11
Fletcher Pkwy/Hacienda Dr				0	0	3	0	2	25	0	0	15	0	1	17	1	2	18	0	1	18	0	1	11	0	0	11
Fletcher Pkwy/Garfield Av				0	0	3	0	0	25	0	0	15	0	0	18	0	0	18	0	0	18	0	1	10	0	1	9
Navajo Rd/Medford St				0	0	3	2	2	25	1	1	15	0	0	18	0	0	18	1	0	19	0	2	9	0	0	9
Grossmont College				1	1	2	0	17	8	1	14	2	1	13	5	2	14	6	4	15	8	1	6	4	4	6	8
Navajo Rd/Hwy 125 Off Ramp				0	0	2	0	0	8	0	0	2	0	0	5	1	0	7	0	0	9	0	0	5	0	0	7
Lake Murray Bl/Navajo Rd				1	0	3	5	0	13	2	0	4	1	1	6	1	0	8	1	1	9	0	0	5	0	0	7
Lake Murray Bl/Lynnhaven Ln				1	0	4	3	0	16	1	0	5	1	0	6	0	0	8	1	0	10	2	0	7	3	0	10
Lake Murray Bl/San Carlos Dr				0	0	4	4	1	19	0	0	5	2	0	9	0	0	9	0	0	10	0	0	7	0	0	10
Lake Murray Bl/Lake Adlon Dr				0	0	4	0	0	19	0	0	5	1	0	10	0	0	9	0	0	10	0	0	7	0	0	10
Lake Murray Bl/Jackson Dr	0	0	0	1	0	4	0	0	19	0	0	5	1	0	11	0	0	9	0	0	10	0	0	7	0	0	10
Jackson Dr/Boulder Lake Av	0	0	0	0	0	4	0	0	19	0	0	5	0	0	11	0	0	9	0	0	10	0	0	7	0	0	10
Jackson Dr/Lake Badin Av	0	0	0	0	0	4	1	0	20	1	0	6	1	1	11	0	0	9	0	0	10	0	0	7	0	0	10
Jackson Dr/Cowles Mountain Bl	0	0	0	1	0	5	5	0	25	2	0	8	1	0	12	0	0	9	1	0	10	0	0	8	1	0	11
Jackson Dr/Twin Lake Dr	0	0	0	0	0	5	0	0	25	1	0	9	0	0	12	0	0	9	1	0	11	0	0	8	0	0	11
Jackson Dr/Lake Shore Dr	0	0	0	0	1	4	0	0	26	0	0	9	0	0	12	0	0	9	0	0	11	0	0	8	0	0	11
Jackson Dr/Golfcrest Dr	0	0	0	0	0	5	3	0	29	1	0	10	0	0	12	0	0	9	1	1	11	2	1	9	0	1	10
Jackson Dr/Hyde Park Dr	0	0	0	0	0	5	0	0	29	0	0	10	0	0	12	0	0	9	0	0	10	0	0	9	0	0	10
Navajo Rd/Jackson Dr	4	0	4	2	0	7	3	5	28	2	0	13	2	0	13	0	0	9	1	0	11	0	0	10	0	0	10
Navajo Rd/Park Ridge Bl	2	0	6	0	1	6	3	9	22	1	0	14	1	0	14	1	0	10	1	0	12	0	1	9	0	3	7
Navajo Rd/Margerum Av	0	0	6	0	0	6	1	0	23	0	0	14	0	0	14	0	0	10	0	0	11	0	0	9	0	0	7
College Av/Lance St	0	0	6	1	0	6	2	3	22	0	1	13	1	0	15	0	0	10	1	2	11	0	0	9	1	0	8
College Av/Rockhurst Dr	0	0	6	0	0	6	0	0	22	0	0	13	0	0	15	0	0	10	0	0	11	0	0	10	0	0	8
College Av/Del Cerro Bl	0	0	6	0	0	6	2	1	23	0	0	14	1	0	17	0	0	10	0	0	11	0	0	10	1	0	8
College Av/Alvarado Rd	0	0	6	0	0	6	0	0	23	0	0	14	0	1	16	0	0	10	0	0	10	0	0	10	0	0	8
College Av/SDSU Transit Center	0	6	0	0	5	1	0	23	0	0	14	0	0	16	0	0	9	1	0	10	0	0	10	0	0	8	0
	6			12			63			32			35			27			33			22			21		

EB Vols: 16
WB Vols: 37

EB AM (peak bus activity)	V=	17	PHF=	0.85
EB PM (peak bus activity)	V=	21	PHF=	0.95
WB AM (peak bus activity)	V=	37	PHF=	0.80
WB PM (peak bus activity)	V=	23	PHF=	0.82

1026			1056			1126			1156			1226			1256			1326			1356			1426			1456			1526			1556			
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
5	0	5	5	0	5	6	0	6	5	0	5	6	0	6	6	0	6	6	0	6	4	0	4	5	0	5	6	0	6	8	0	8	8	0	8	10
0	0	6	0	0	5	0	0	7	0	0	6	0	0	6	0	0	6	0	0	6	0	0	5	0	0	5	0	0	6	0	0	9	0	0	8	0
0	0	6	0	0	5	0	0	7	0	0	6	0	0	6	0	0	6	0	0	6	0	0	5	0	0	5	0	0	6	0	0	9	0	0	8	0
2	0	8	2	0	7	1	0	8	3	0	8	2	0	8	3	0	9	1	0	8	3	0	8	2	0	7	1	0	7	3	0	12	2	0	10	4
0	1	7	0	1	7	0	1	7	0	1	8	1	1	8	0	0	9	1	1	8	1	1	7	0	1	7	0	1	6	0	2	11	0	1	10	0
0	0	7	0	0	6	0	0	7	0	0	8	0	0	8	0	0	9	0	0	8	0	0	7	0	0	7	0	0	6	0	0	11	0	0	10	0
0	0	7	0	0	6	0	0	7	0	0	8	0	0	8	0	0	9	0	0	8	0	0	7	0	0	7	0	0	6	0	0	11	0	0	10	0
0	0	7	0	0	7	0	0	7	0	0	8	0	0	8	0	0	9	0	0	7	0	0	7	0	0	6	0	0	6	0	0	10	0	0	9	0
0	0	7	0	0	7	0	0	7	0	0	9	0	0	8	0	0	9	0	0	7	0	0	7	0	0	6	0	0	6	0	0	10	0	0	10	0
0	0	7	0	0	6	0	0	7	0	0	8	0	0	8	0	0	9	0	0	7	0	1	7	0	0	6	0	0	6	0	0	10	0	0	10	0
0	1	6	0	0	6	1	0	8	0	1	7	0	0	7	0	1	9	0	0	7	0	1	6	19	1	24	2	1	7	1	1	10	1	1	10	1
0	0	6	1	1	6	1	1	8	1	1	7	0	0	7	1	1	9	0	2	5	0	1	6	2	1	26	1	1	8	1	1	9	0	1	9	0
0	0	6	0	0	6	0	0	8	1	0	8	2	1	9	0	0	9	1	0	6	1	1	5	1	1	26	2	0	9	1	1	9	0	1	9	1
0	0	6	0	0	6	0	0	8	0	0	8	0	0	9	0	0	8	0	0	6	0	0	5	0	0	26	0	0	9	0	0	9	0	0	9	0
0	0	5	0	0	6	0	0	8	0	0	8	0	0	8	0	0	8	0	0	6	0	0	5	0	0	26	0	0	9	0	0	9	0	0	8	0
0	0	6	0	0	5	0	0	7	0	0	7	0	0	8	0	1	8	0	0	5	0	0	5	0	2	24	0	1	8	0	2	7	0	1	7	0
0	0	6	0	0	6	0	0	8	0	0	8	0	0	8	0	0	8	0	0	5	0	0	5	0	0	24	0	0	8	0	0	7	0	0	7	0
0	0	6	0	0	6	0	0	7	0	0	7	0	0	8	0	0	8	0	0	5	0	0	5	0	0	24	0	0	8	0	0	7	0	0	7	0
0	0	6	0	0	6	0	0	7	0	1	7	0	0	8	0	0	8	0	1	5	0	0	5	0	2	22	1	1	7	0	1	6	0	1	6	0
0	0	6	0	0	6	0	0	7	0	0	7	0	0	8	1	0	8	0	0	4	0	0	5	0	1	21	0	0	7	0	0	6	0	1	6	0
0	0	6	0	0	5	2	0	9	0	0	6	0	3	6	0	1	8	0	0	4	0	1	4	1	5	17	0	1	6	0	1	5	0	1	6	0
1	0	6	1	0	6	1	1	9	0	0	6	0	0	6	1	0	8	0	0	4	1	0	4	0	4	13	1	1	6	0	1	4	0	0	5	1
0	0	6	0	0	6	0	0	9	1	0	7	0	1	5	0	0	8	0	0	4	0	0	5	1	3	11	0	1	6	0	1	4	1	1	5	0
0	0	6	0	0	6	0	0	9	0	0	7	0	1	5	1	1	8	0	0	4	0	0	4	0	2	10	0	0	6	0	0	4	0	0	5	0
9	3	11	3	3	6	5	4	10	14	4	18	5	2	7	8	6	11	13	1	15	11	2	13	8	2	16	17	1	22	10	1	13	8	1	12	10
0	0	11	0	0	6	0	0	10	0	0	17	0	0	7	0	0	10	0	1	15	0	0	13	0	1	16	0	0	21	0	0	13	0	0	12	0
0	0	11	0	0	6	0	0	10	0	0	17	1	0	8	0	0	11	1	0	15	0	0	13	1	0	16	0	0	21	0	0	13	0	0	12	0
0	0	12	0	0	6	0	0	10	0	1	17	0	0	8	0	0	11	0	0	15	0	0	13	0	0	16	0	0	21	0	0	13	0	0	12	0
0	0	12	1	0	7	1	0	10	1	0	17	1	0	8	0	0	11	2	0	17	1	0	14	1	0	16	1	0	21	1	0	13	1	0	13	1
0	0	12	0	0	7	0	0	10	0	0	17	0	0	8	0	0	11	0	0	17	0	0	14	0	0	16	0	0	22	0	0	13	0	0	13	0
0	0	11	0	0	7	0	2	8	0	1	17	0	1	8	0	1	10	0	0	17	0	1	13	0	1	15	0	1	21	0	0	13	0	0	13	0
0	3	8	0	0	7	0	5	3	0	3	13	0	1	7	0	1	8	0	4	12	0	2	11	0	4	12	0	3	18	0	2	12	0	2	11	0
0	8	0	0	7	0	0	3	0	0	13	0	0	7	0	0	8	0	0	12	0	0	11	0	0	12	0	0	18	0	0	12	0	0	11	0	0
21			15			20			29			19			24			25			23			44			34			28			24			3

1037			1107			1137			1207			1237			1307			1337			1407			1437			1507			1537			1607			
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
7	0	7	13	0	13	14	0	14	7	0	7	4	0	4	12	0	12	12	0	12	10	0	10	11	0	11	6	0	6	7	0	7	10	0	10	4
1	1	6	1	0	15	1	0	14	1	0	8	0	0	4	1	0	12	1	0	13	0	0	10	3	0	14	0	0	6	0	0	7	0	0	11	1
0	0	6	0	1	14	0	0	14	0	0	8	3	3	4	0	0	13	0	0	14	0	0	10	1	0	15	0	0	6	1	0	7	1	0	12	0
1	0	7	0	0	14	0	0	15	0	0	8	0	0	4	0	0	12	0	0	14	0	0	10	0	0	15	0	0	6	0	0	7	0	1	10	0
0	0	7	0	0	14	0	0	15	0	0	8	0	0	4	0	0	12	0	0	13	0	0	9	0	0	15	0	0	6	0	1	7	0	0	10	0
1	2	5	0	0	14	0	1	14	0	1	7	0	1	3	1	0	12	1	1	13	2	4	7	0	1	14	1	1	6	1	1	7	0	0	10	0
0	0	5	0	1	13	1	0	14	1	0	8	0	0	2	0	1	12	0	0	13	0	0	7	0	0	14	0	0	6	0	1	6	0	0	10	0
4	4	6	3	7	9	2	12	5	10	5	13	1	1	2	4	7	10	4	2	15	3	1	9	5	4	15	11	1	15	4	1	9	7	4	14	5
0	1	5	0	0	9	0	0	5	0	1	12	0	0	3	0	0	10	1	0	15	0	0	9	1	0	16	0	0	15	0	0	9	1	0	14	1
0	1	4	0	0	9	0	0	5	1	1	12	0	0	3	1	0	10	0	1	15	1	0	9	0	1	15	0	1	14	1	1	9	0	0	14	0
1	0	5	0	0	10	1	0	6	1	1	12	0	0	3	1	0	11	0	1	14	1	0	11	0	0	15	1	0	14	0	0	9	1	0	15	0
0	0	5	0	0	9	0	0	6	0	0	12	0	0	3	0	0	11	0	1	14	0	0	11	0	4	11	1	0	15	1	0	10	0	0	15	0
0	0	5	0	0	10	0	0	6	0	0	12	0	0	3	0	0	11	0	1	12	0	0	11	0	0	11	0	0	14	0	0	10	0	0	14	0
0	0	5	0	0	10	0	0	6	1	0	12	0	0	3	0	0	12	0	0	13	0	0	11	0	0	11	0	0	14	0	0	10	0	0	14	0
0	0	5	0	0	10	0	0	6	0	0	12	0	0	3	0	0	12	0	0	13	0	0	11	0	0	11	0	0	14	0	0	10	0	0	13	0
0	0	6	0	0	10	0	0	6	0	0	12	0	0	3	0	0	12	0	0	13	0	0	12	1	1	11	0	1	13	0	0	10	0	0	13	0
0	0	5	0	0	10	0	0	7	0	0	13	0	0	3	0	0	12	0	0	13	0	0	12	0	0	11	0	0	13	0	0	10	0	0	13	0
0	0	6	0	0	10	0	0	7	0	0	12	0	0	3	0	0	12	0	0	13	0	0	12	0	0	11	0	0	13	0	0	11	0	0	13	0
0	0	6	0	0	10	0	0	7	0	0	12	0	0	3	0	0	12	0	0	13	0	0	12	0	0	11	0	0	13	0	0	11	0	0	13	0
1	0	7	1	0	11	0	0	7	0	1	12	0	0	2	1	1	12	1	0	14	0	0	12	2	2	11	1	0	14	0	1	10	0	2	11	0
0	0	7	0	0	11	0	0	7	0	0	12	0	0	2	0	0	12	0	1	13	0	0	12	1	0	12	1	0	14	1	0	10	0	1	10	0
0	1	6	0	0	12	1	0	8	1	0	13	1	0	4	0	0	12	2	0	15	0	0	13	2	0	14	2	0	15	1	0	11	0	2	8	1
2	0	8	1	0	12	1	0	8	1	0	14	0	0	4	1	0	13	1	0	15	3	0	16	6	1	19	6	0	22	2	1	12	5	0	13	1
0	0	8	0	0	13	0	0	9	1	0	15	0	0	4	1	0	14	0	1	15	0	0	16	1	0	20	1	7	15	0	0	12	0	0	13	0
0	1	7	0	0	13	0	0	9	0	1	14	0	0	4	0	0	14	0	0	15	0	1	16	1	1	20	1	0	16	1	0	13	0	1	11	0
0	0	7	0	0	14	0	0	9	0	0	14	0	0	4	0	0	14	0	0	15	0	0	16	0	2	18	0	1	15	0	0	13	0	0	11	0
2	0	10	3	0	17	1	0	10	2	1	15	0	0	4	2	0	15	2	4	12	1	1	16	2	0	20	0	0	15	1	0	14	0	0	11	1
0	0	10	0	0	17	0	0	10	0	0	15	0	0	4	0	0	15	0	0	12	0	0	16	0	0	20	0	0	15	0	0	14	0	0	11	0
0	10	0	0	17	0	0	9	1	0	15	0	0	3	0	0	15	0	0	12	0	0	16	0	0	20	0	0	15	0	0	14	0	0	11	0	0
21			27			25			28			11			27			29			26			37			31			21			29			1

1626		1656			1726			1756			1856			1956			2056			2156		
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
0	10	11	0	11	7	0	7	12	0	12	14	0	14	7	0	7	7	0	7	4	0	4
0	10	0	0	11	0	0	7	0	0	12	0	0	14	0	0	7	0	0	7	0	0	4
0	10	0	0	11	0	0	7	0	0	12	0	0	14	0	0	7	0	0	7	0	0	4
0	14	4	0	15	2	0	10	3	0	14	4	0	17	2	0	9	2	0	8	2	0	6
2	12	0	1	14	0	1	9	0	2	13	0	2	15	0	1	8	0	1	8	0	1	5
0	12	0	0	13	0	0	8	0	0	13	0	0	15	0	0	8	0	0	8	0	0	5
0	12	0	0	13	0	0	8	0	0	13	0	0	15	0	0	8	0	0	8	0	0	5
1	11	0	0	13	0	1	8	0	0	13	0	1	15	0	0	8	0	0	8	0	0	4
0	11	1	0	14	0	0	8	0	0	13	0	0	15	0	0	8	0	0	7	0	0	4
0	11	0	0	14	0	0	8	0	0	12	0	0	14	0	0	8	0	0	7	0	0	4
2	10	1	2	12	0	1	8	0	1	11	0	2	13	0	0	7	0	0	7	0	0	4
1	9	0	2	10	0	2	6	0	4	7	0	4	9	0	1	6	0	1	6	0	1	4
2	8	0	2	8	0	0	6	0	0	7	0	1	9	0	0	6	0	1	5	0	0	3
0	8	0	0	8	0	0	6	0	0	7	0	0	9	0	0	6	0	0	5	0	0	3
0	8	0	1	8	0	0	6	0	0	7	0	0	8	0	0	6	0	0	5	0	0	3
1	7	0	2	6	0	1	5	0	1	7	0	1	7	0	1	5	0	0	5	0	0	3
0	7	0	0	6	0	0	5	0	1	6	0	0	7	0	0	5	0	0	5	0	0	3
0	7	0	0	6	0	0	5	0	0	6	0	0	7	0	0	5	0	1	5	0	0	3
1	6	0	0	6	0	0	5	0	0	6	0	0	7	0	0	5	0	0	5	0	0	3
0	6	0	0	6	0	0	5	0	0	6	0	0	6	0	0	5	0	0	4	0	0	3
0	6	1	1	6	0	0	4	0	1	5	0	0	6	0	0	5	0	0	5	0	0	3
1	6	1	1	5	0	1	4	0	1	4	0	1	5	0	0	5	0	1	4	0	0	2
1	5	0	1	5	0	1	4	0	0	4	0	0	5	0	0	4	0	1	3	0	1	2
0	5	0	0	5	0	0	4	0	0	5	0	0	5	0	0	4	0	0	3	0	0	2
1	14	11	1	15	5	1	8	6	2	9	5	0	10	3	0	7	2	0	5	1	0	2
0	15	0	0	16	0	0	8	0	0	9	0	0	10	0	0	7	0	0	5	0	0	2
0	15	0	0	16	0	0	8	0	0	9	0	0	10	0	0	8	0	0	5	0	0	2
0	15	0	0	16	0	0	8	0	0	9	0	0	10	0	0	8	0	0	5	0	0	2
0	15	1	0	16	0	0	8	0	0	9	0	0	10	0	0	8	0	0	6	0	0	2
0	15	0	0	16	0	0	8	0	0	9	0	0	10	0	0	8	0	0	6	0	0	2
1	15	0	0	16	0	0	8	0	0	9	0	0	10	0	0	8	0	0	6	0	0	2
1	14	0	2	14	0	1	7	0	2	7	0	1	9	0	1	7	0	1	5	0	1	1
14	0	0	14	0	1	7	0	0	7	0	0	9	0	0	7	0	0	5	0	0	1	0
50		33			19			23			25			14			12			8		

1637		1707			1737			1807			1907			2007			2107		
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
0	4	11	0	11	6	0	6	10	0	10	5	0	5	5	0	5	3	0	3
0	5	0	0	11	0	0	7	1	0	10	0	0	5	0	0	5	0	0	4
0	5	0	1	10	1	0	7	0	0	10	0	0	5	0	0	5	0	0	4
0	5	0	0	10	0	0	7	0	0	10	0	0	5	0	0	5	0	0	4
0	5	0	1	10	0	0	7	0	0	10	0	0	5	0	0	5	0	0	4
0	4	0	0	10	0	0	7	0	1	9	0	0	5	0	0	5	0	0	4
1	4	0	0	10	0	0	6	0	0	9	0	0	5	0	0	4	0	0	3
0	8	3	2	12	3	2	7	4	3	11	7	0	12	1	0	5	2	0	5
0	9	0	0	12	0	1	7	0	0	11	0	0	12	0	0	5	0	0	5
1	8	0	1	11	0	0	6	0	1	10	0	1	11	0	0	5	0	1	4
0	8	1	1	11	0	0	6	0	0	10	0	0	11	0	0	5	0	0	4
0	8	0	0	12	0	0	6	0	0	10	0	0	11	0	0	5	0	1	3
0	8	0	0	12	0	0	6	0	0	10	0	0	11	0	0	5	0	0	3
0	9	0	0	12	0	0	7	0	0	9	0	1	10	0	0	5	0	0	3
0	9	0	0	12	0	0	7	0	0	9	0	0	10	0	0	5	0	0	3
0	9	0	0	12	0	0	7	0	0	9	0	1	9	0	0	5	0	0	3
0	9	0	0	12	0	0	7	0	0	9	0	0	9	0	0	5	0	0	3
0	9	0	0	12	0	0	7	0	0	9	0	0	9	0	0	5	0	0	3
0	9	0	0	12	1	0	8	0	0	9	0	0	9	0	0	5	0	0	3
1	8	0	1	11	0	1	7	0	1	9	0	1	8	0	0	4	0	0	3
0	8	0	0	11	0	1	6	0	0	9	0	0	8	0	0	4	0	0	3
0	9	1	0	12	1	0	7	0	0	9	0	0	8	1	0	5	0	0	3
1	9	0	0	12	0	0	7	0	1	8	0	0	8	0	0	5	0	0	3
0	9	0	0	12	0	0	7	0	0	8	0	0	8	0	0	5	0	0	2
0	9	1	0	12	1	0	7	0	0	9	0	0	8	0	0	5	0	0	3
0	9	0	0	12	0	0	7	0	0	9	0	0	8	0	0	5	0	0	3
0	9	2	0	14	1	0	8	1	0	9	0	0	8	0	0	5	0	0	3
0	9	0	0	14	0	0	8	0	0	9	0	0	8	0	0	5	0	0	3
8	2	0	14	0	0	7	1	0	10	0	0	8	0	0	5	0	0	2	1
46		21			15			19			12			8			6		

21
23

Inbound (Eastbound)	430			500			515			530			544			559			614			627			637			647			657			705			715			725		
	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
State St/A St	1	1	0	1	1	0	2	0	2	2	0	2	1	0	1	2	0	2	2	0	2	2	0	2	1	1	0	3	0	3	2	0	2	1	0	1	1	0	1	1	0	0
Santa Fe Depot Transit Center	0	0	0	1	0	1	0	0	2	0	0	2	0	0	1	0	0	2	5	0	6	2	0	3	1	0	1	1	0	4	0	0	2	3	0	4	1	0	2	1	0	1
Broadway/1st Av	0	0	1	0	0	1	0	0	3	0	0	2	1	0	2	0	0	2	1	0	8	0	0	4	1	1	1	0	0	4	1	0	3	1	0	4	1	0	3	0	0	2
Broadway/6th Av	3	0	3	0	0	2	0	0	3	0	0	2	0	0	2	2	0	4	1	0	8	0	0	4	1	0	3	1	0	5	3	0	5	1	0	5	2	1	5	1	1	3
11th Av/Broadway	1	0	4	4	0	5	6	0	9	10	0	12	17	0	19	11	0	15	18	1	26	15	0	18	10	0	13	11	0	16	14	1	19	17	1	21	15	0	19	14	1	16
Park Bl/Naval Hospital	0	0	4	0	1	4	0	2	7	0	3	10	0	8	11	0	4	11	0	8	18	0	4	15	0	2	11	1	1	16	0	2	17	0	4	17	0	2	17	0	2	14
Park Bl/Zoo Pl	0	0	4	0	0	4	0	0	7	0	0	10	0	0	11	0	0	11	0	0	18	0	0	15	0	1	11	0	1	15	0	0	16	0	1	17	0	0	16	0	0	14
Park Bl/University Av	1	0	5	2	0	6	0	1	6	1	2	9	1	2	10	1	1	10	1	2	17	1	3	13	1	2	10	1	1	15	1	4	13	2	3	15	1	2	16	2	2	14
Park Bl/Howard Av	0	1	4	1	0	7	0	0	6	0	0	9	1	0	11	1	1	11	3	1	18	1	2	12	1	1	9	0	3	13	1	2	13	0	3	13	1	2	14	1	2	13
El Cajon Bl/Texas St	1	1	4	1	1	7	1	0	7	0	0	9	2	0	12	1	0	12	1	1	19	0	1	12	2	1	9	1	1	13	1	1	13	1	2	11	1	2	13	1	3	11
El Cajon Bl/30th St	1	0	5	1	0	8	1	0	7	2	0	11	4	1	15	2	1	13	2	2	18	2	2	12	3	1	12	2	1	14	2	2	13	2	2	12	2	3	12	3	2	13
El Cajon Bl/35th St	0	1	4	2	0	10	1	1	8	2	1	12	2	1	16	1	1	14	2	1	19	1	1	12	6	1	16	4	0	17	3	1	14	2	1	12	1	1	12	2	1	14
El Cajon Bl/I-15 Transit Plaza	0	1	3	1	3	8	1	2	7	2	3	11	1	3	14	6	2	17	2	4	17	4	2	15	3	3	16	4	2	19	4	2	16	3	2	13	3	2	13	2	2	14
El Cajon Bl/43rd St	1	1	3	1	2	6	2	1	7	1	3	10	1	3	12	1	2	16	1	5	12	2	4	13	2	6	12	2	6	14	3	2	16	3	3	13	2	2	12	2	3	12
El Cajon Bl/Winona Av	3	1	5	2	3	6	1	1	7	6	2	14	4	2	14	7	3	19	4	2	14	5	2	15	5	2	15	5	2	18	3	3	16	4	2	15	3	2	13	3	1	14
El Cajon Bl/54th St	0	0	5	1	0	6	1	1	6	2	1	16	2	3	13	2	3	18	4	2	16	2	1	16	1	2	15	2	2	17	2	2	16	2	2	15	2	2	13	2	2	14
College Av/El Cajon Bl	1	0	6	0	2	4	1	1	6	1	2	14	1	2	11	2	1	19	2	3	15	2	2	16	1	2	14	2	2	17	2	3	16	2	4	13	2	2	13	2	4	12
SDSU Transit Center	0	6	0	0	4	0	0	6	0	0	14	0	0	11	0	0	19	0	0	15	0	0	16	0	0	14	0	0	17	0	0	16	0	0	13	0	0	13	0	0	12	0
	15			19			18			31			37			40			49			40			41			39			42			43			37			38		

Outbound (Westbound)	430			435			450			505			520			535			549			604			614			624			635			645			655			705		
	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
SDSU Transit Center				3	0	3	2	0	2	1	0	1	2	0	2	5	1	4	2	0	2	4	0	4	6	2	4	4	0	4	5	0	5	3	1	2	5	0	5	6	1	5
El Cajon Bl/College Av				3	0	6	2	0	3	2	0	3	3	0	5	5	0	8	2	0	5	3	0	7	2	0	6	4	1	7	3	0	8	5	0	7	3	0	8	4	0	9
El Cajon Bl/54th St				4	0	10	2	0	5	1	0	3	0	0	5	2	0	10	1	0	6	2	0	8	2	0	8	3	0	10	5	1	12	3	1	8	4	1	11	5	1	13
El Cajon Bl/Winona Av				3	0	13	3	0	8	2	1	5	2	1	7	7	1	16	5	0	11	8	1	15	7	0	15	7	1	16	8	1	19	10	1	18	10	1	20	10	1	22
El Cajon Bl/43rd St				1	0	13	1	0	9	1	0	5	2	1	8	2	0	18	2	0	13	4	2	17	4	2	16	5	1	21	4	3	20	5	2	21	5	2	23	5	3	24
El Cajon Bl/I-15 Transit Plaza	1	0	1	1	1	13	1	1	8	0	0	5	0	1	8	0	3	15	1	2	12	1	5	13	1	3	15	2	4	19	2	3	18	2	3	20	2	4	20	3	4	23
El Cajon Bl/35th St	2	0	3	1	0	14	1	0	9	1	0	6	1	0	9	1	0	16	3	0	15	2	0	15	2	1	16	2	0	21	5	1	22	5	0	24	4	1	23	3	1	25
El Cajon Bl/30th St	1	0	4	1	1	14	2	1	10	1	0	7	2	0	11	1	2	14	2	2	14	3	1	17	2	2	16	3	2	22	4	3	24	4	3	26	2	3	23	3	4	24
El Cajon Bl/Texas St	2	0	6	1	0	15	0	0	11	2	0	8	1	0	11	4	1	17	4	0	18	5	1	21	4	1	19	4	1	25	5	1	28	6	1	31	3	1	25	4	3	25
Park Bl/Howard Av	1	0	7	0	0	15	1	0	12	2	0	9	1	0	12	1	0	18	1	0	18	2	0	22	1	0	20	3	1	27	5	1	32	3	1	33	3	1	28	3	1	27
Park Bl/University Av	1	1	7	1	1	15	2	0	13	0	0	10	1	0	13	1	1	19	3	1	20	3	2	23	3	2	21	3	5	24	4	4	32	4	4	33	4	3	28	4	3	28
Park Bl/Zoo Pl	0	0	7	0	0	15	0	0	13	0	0	10	0	0	13	0	0	19	0	0	21	0	0	23	1	0	22	1	0	25	0	0	32	1	1	33	0	0	28	1	1	28
Park Bl/Inspiration Point Way	0	0	7	0	0	15	0	0	13	0	0	10	0	1	12	0	2	17	1	1	20	0	1	23	0	2	20	0	4	21	0	6	26	0	5	29	0	2	26	0	2	27
Park Bl/Broadway	0	3	4	0	9	6	0	4	9	0	3	7	0	4	8	0	6	11	1	7	14	1	8	15	1	9	12	1	9	13	0	12	15	0	15	14	0	14	12	0	13	13
Broadway/5th Av	0	1	3	0	2	4	0	2	7	0	2	5	0	2	6	0	3	7	0	4	11	0	4	11	0	4	7	1	4	9	0	4	10	0	5	9	0	4	9	0	3	10
Broadway/Union St	0	0	3	0	1	3	0	3	4	0	2	3	0	2	4	0	2	5	0	6	5	0	7	4	0	4	3	0	5	4	0	5	6	0	5	4	0	4	5	0	5	6
India St/C St	0	1	2	0	1	1	0	4	1	0	2	2	0	3	2	0	3	2	0	2	3	0	2	2	0	2	1	0	3	1	0	4	2	0	3	2	0	3	2	0	3	2
State St/A St	0	2	0	0	1	0	0	1	0	0	1	0	0	2	0	0	2	0	0	3	0	0	2	0	0	1	0	0	1	0	0	1	1	0	1	0	0	1	1	0	2	0
	8			19			18			13			17			29			30			37			36			43			51			51			46			53		

EB Vols 85
WB Vols

EB AM (peak bus activity) V= 85 PHF= 0.81
EB PM (peak bus activity) V= 47 PHF= 0.86

WB AM (peak bus activity) V= 32 PHF= 0.82
WB PM (peak bus activity) V= 85 PHF= 0.77

735			745			755			805			816			828			843			858			913			928			943			957			1012			1027			1042			1057			111	
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF
1	0	1	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	1	0	1	2	0	2	3	0	3	2	0	2	2	0	2	2	0	2	4	0	4	2	0
1	0	2	2	0	3	1	0	2	1	0	3	1	0	2	4	0	5	2	0	4	3	0	4	4	0	5	3	0	5	3	0	5	2	0	5	2	0	4	3	0	5	2	0	4	6	0	10	3	0
0	0	2	1	1	3	1	0	3	1	0	4	1	0	3	1	0	6	2	0	5	1	0	6	2	0	8	5	0	9	2	0	7	4	0	9	3	0	7	3	0	8	2	0	6	3	0	13	2	0
1	0	3	2	0	4	1	0	4	2	0	5	3	0	6	2	0	8	3	0	8	2	0	8	3	0	10	3	0	12	4	0	10	4	1	12	4	1	10	3	0	10	3	0	9	3	1	16	3	0
11	0	13	15	1	19	9	0	13	13	1	18	14	1	19	15	1	22	19	1	26	15	1	22	16	1	26	19	1	30	15	1	25	14	1	25	20	1	29	15	1	24	14	1	22	24	1	38	14	1
0	1	12	0	2	17	0	1	12	0	1	18	0	1	18	0	2	20	0	2	24	0	1	21	0	2	24	0	2	29	0	2	23	0	1	24	0	1	28	0	1	24	0	1	21	1	1	37	0	1
0	1	12	0	1	17	0	1	11	0	1	16	0	2	16	0	3	17	0	3	21	0	4	18	1	5	20	1	7	22	0	4	20	1	5	20	0	5	24	1	4	20	0	4	17	1	7	31	1	3
1	2	11	1	3	15	1	2	10	2	4	14	2	4	15	2	3	15	2	6	18	2	3	17	3	3	19	2	4	21	3	3	19	2	3	19	2	4	21	3	4	19	2	3	16	3	4	30	2	3
1	2	10	1	2	13	0	1	9	0	2	13	1	3	12	0	2	13	1	3	16	1	2	16	1	2	19	2	2	21	1	2	18	1	2	18	1	3	19	1	2	18	1	2	16	1	3	28	1	2
1	2	9	1	2	13	1	1	9	1	2	13	2	2	12	1	2	12	2	3	15	2	2	15	2	3	18	2	3	20	1	2	17	1	2	17	1	3	18	1	2	17	2	2	15	2	3	27	1	2
2	2	9	3	2	13	3	2	9	3	2	14	3	2	13	3	2	13	4	4	16	3	3	15	3	4	17	2	4	18	4	3	17	3	4	16	3	4	17	3	3	17	4	3	16	4	5	26	3	3
1	1	10	2	2	14	2	1	11	3	1	15	3	1	15	2	2	13	2	2	16	2	2	15	2	2	17	2	3	17	2	1	17	1	2	15	2	2	17	1	2	17	2	2	16	1	3	24	2	2
3	2	11	4	2	16	2	1	11	4	2	17	4	2	17	2	2	14	4	2	18	4	2	18	3	2	17	4	2	19	2	2	17	4	1	18	2	2	17	4	2	18	2	3	15	3	2	25	1	2
2	2	10	2	4	14	1	2	10	2	3	16	2	3	16	2	3	13	3	3	18	3	3	17	2	4	15	4	5	18	3	4	17	3	3	18	3	3	16	2	4	17	4	4	14	4	5	23	3	4
3	1	11	4	1	17	3	1	12	4	2	18	4	2	18	6	2	17	4	2	19	3	3	18	4	3	16	3	4	18	4	3	18	3	3	18	4	3	16	3	3	16	3	3	15	4	4	23	3	4
1	2	10	1	2	16	1	2	11	2	2	18	2	2	18	2	2	16	3	3	19	3	3	17	3	3	16	2	3	16	2	3	16	2	4	17	3	4	16	2	3	15	3	3	15	3	3	22	2	2
1	2	9	2	5	14	2	3	10	2	4	16	3	4	17	2	3	15	3	5	17	2	5	14	2	5	12	2	4	15	3	6	14	2	4	14	3	5	14	2	5	12	3	5	13	2	6	18	2	7
0	9	0	0	14	0	0	10	0	0	16	0	0	17	0	0	15	0	0	17	0	0	14	0	0	12	0	0	15	0	0	14	0	0	14	0	0	14	0	0	12	0	0	13	0	0	18	0	0	8
29			42			29			43			45			45			56			49			52			58			50			49			55			49			48			68			45		

715			725			735			745			755			805			815			825			835			845			855			906			920			935			950			1005			102	
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF
3	0	3	6	0	6	6	0	6	3	0	3	6	0	6	6	0	6	3	0	3	6	0	6	7	0	7	5	0	5	8	0	8	8	0	8	8	0	8	10	0	10	9	0	9	12	0	12	10	0
4	0	7	3	1	8	5	1	10	2	0	5	3	1	9	5	1	11	5	0	8	2	1	7	4	1	10	3	1	8	3	1	10	4	1	11	4	2	11	3	1	12	5	2	13	6	3	15	5	2
3	0	10	4	1	12	4	1	14	5	0	10	5	1	13	6	1	15	2	1	10	3	1	9	3	1	11	3	0	10	3	2	11	4	1	13	5	2	14	4	1	14	5	2	16	4	2	17	4	2
5	1	14	8	1	19	6	2	18	4	0	14	7	1	19	9	1	22	8	1	16	7	1	14	6	1	16	5	0	15	6	1	15	6	2	18	5	1	18	4	1	17	6	2	19	6	2	20	3	2
5	2	18	4	2	21	4	2	21	3	2	15	3	3	19	5	3	25	2	2	17	4	2	16	3	2	18	3	1	17	3	2	16	4	2	20	5	3	20	4	3	19	4	2	21	5	3	22	4	2
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5	1	27	3	2	23	3	1	25	2	1	16	3	1	23	4	1	27	2	1	17	1	1	16	3	1	18	3	1	21	2	1	15	2	1	21	2	1	21	2	0	19	3	1	26	5	1	27	3	1
4	1	30	2	1	24	2	1	26	2	1	17	2	2	23	2	2	28	2	1	18	2	1	17	1	1	18	2	2	21	2	2	15	2	1	22	2	1	21	2	1	20	3	2	27	3	2	27	2	2
4	2	31	2	2	24	3	2	27	2	2	17	3	3	23	3	4	27	3	3	18	3	3	17	3	3	18	4	3	22	2	2	16	5	2	24	4	3	22	4	2	21	4	3	28	4	4	28	5	3
0	0	31	0	1	23	0	1	26	0	1	17	0	2	21	0	1	26	0	1	18	0	1	16	0	1	17	0	2	20	0	1	15	0	1	23	0	2	20	0	1	20	0	2	27	0	2	27	0	2
0	0	31	0	0	23	0	1	25	0	1	16	0	1	20	0	1	25	0	1	17	0	0	16	0	0	17	0	1	20	0	0	16	1	1	23	1	0	21	0	0	20	1	0	27	1	1	26	1	1
0	18	13	0	13	10	0	12	14	0	8	8	0	9	12	0	14	12	0	10	8	0	9	7	0	10	7	0	14	6	0	9	8	1	14	9	0	10	11	0	11	10	0	16	12	1	16	11	1	15
0	3	10	0	3	8	0	3	12	0	2	6	0	4	8	0	4	8	0	3	5	0	2	5	0	3	4	0	3	3	0	2	5	0	5	4	0	4	7	0	3	7	0	5	7	0	5	6	0	4
0	5	5	0	3	4	0	7	5	0	4	3	0	4	4	0	4	3	0	2	3	0	2	3	0	1	3	0	2	2	0	2	4	0	3	2	0	3	4	0	2	5	0	2	5	0	3	3	0	2
0	3	2	0	3	2	0	3	2	0	2	1	0	1	3	0	2	2	0	1	2	0	2	2	0	1	2	0	1	0	0	2	2	0	1	0	0	2	3	0	1	4	0	2	4	0	1	2	0	1
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45			42			45			30			40			50			36			35			38			38			36			45			45			42			53			56			49		

2	1127			1142			1157			1212			1227			1242			1257			1312			1327			1339			1350			1400			1410			1420			1431			1441			
LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
2	1	0	1	2	0	2	5	0	5	5	0	5	3	0	3	2	0	2	3	0	3	1	0	1	1	0	1	2	0	2	1	1	0	1	0	1	1	1	0	3	0	3	3	0	2	1	0	1	1
4	2	0	3	3	0	4	1	0	6	3	0	7	2	0	6	1	0	3	3	0	5	2	0	3	2	0	3	1	0	4	1	0	1	2	0	3	2	0	2	2	0	5	2	0	5	1	0	2	1
6	3	0	5	2	0	6	3	0	9	2	0	9	3	0	8	2	0	5	2	0	7	3	0	6	3	0	6	1	0	5	2	0	3	2	0	5	2	0	4	2	0	7	2	0	7	3	0	5	2
9	5	0	9	5	1	11	4	0	13	4	1	13	6	1	13	4	0	8	4	1	11	5	0	10	4	0	10	5	0	10	3	0	6	4	1	9	5	0	9	3	0	9	4	0	11	5	1	10	5
22	18	1	27	15	0	25	17	1	29	18	1	30	26	1	38	20	1	27	22	1	32	18	1	28	18	1	27	19	1	28	12	1	17	15	1	24	21	1	29	13	1	22	24	1	34	25	1	34	12
21	0	1	26	0	1	25	0	1	28	0	1	30	0	1	37	1	1	28	0	1	31	0	2	26	1	1	26	1	2	27	0	0	17	1	1	24	1	2	28	1	1	22	1	0	34	1	1	34	1
18	1	3	24	1	2	23	1	3	27	1	3	28	1	2	36	0	2	27	3	2	32	1	2	26	1	2	26	1	2	27	2	1	19	1	1	24	1	1	28	1	1	22	1	1	34	1	1	34	1
17	3	5	22	3	5	21	3	5	26	3	4	26	3	6	33	3	5	25	3	4	31	3	4	25	4	4	26	4	5	26	1	3	17	2	3	23	3	3	27	4	2	23	3	4	33	4	6	32	3
17	2	2	21	2	3	20	2	3	25	1	4	23	2	5	30	1	3	24	1	4	28	2	4	22	1	4	23	1	3	24	0	2	15	1	3	21	1	2	26	0	3	21	1	5	29	1	3	30	1
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16	2	2	18	2	3	20	2	3	23	1	2	21	2	4	25	1	3	20	2	3	25	1	3	18	1	3	18	1	4	19	1	2	13	1	3	20	1	3	21	1	2	17	2	3	23	1	4	25	1
15	4	2	20	3	2	20	3	2	24	2	2	21	5	3	27	1	1	20	4	2	26	2	2	18	3	3	18	1	2	18	1	2	12	6	3	23	2	2	21	2	2	17	6	3	26	3	3	25	3
15	3	4	19	4	5	19	3	5	23	2	4	18	4	6	25	2	4	18	5	5	26	3	5	15	2	4	15	3	4	17	2	3	12	5	5	23	3	5	20	4	4	17	6	6	26	3	6	22	3
13	4	5	18	4	5	18	3	6	20	2	4	16	4	6	23	2	5	15	3	5	24	2	4	13	2	4	13	2	4	15	1	3	9	2	6	20	2	5	16	1	4	14	2	6	22	3	6	20	1
14	3	4	17	3	4	17	2	3	19	2	3	14	2	5	20	2	4	13	3	5	21	2	4	11	1	4	11	2	4	14	0	2	8	1	5	17	1	4	14	2	3	12	2	5	19	1	5	16	1
8	3	6	13	2	5	14	3	5	16	2	5	12	3	7	15	2	5	10	1	6	17	2	4	9	1	4	8	3	5	12	2	3	6	3	7	13	2	5	11	2	4	10	2	6	15	3	7	13	1
0	0	13	0	0	13	0	0	16	0	0	12	0	0	15	0	0	10	0	0	17	0	0	9	0	0	8	0	0	12	0	0	6	0	0	13	0	0	11	0	0	10	0	0	15	0	0	13	0	0
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1741			1751			1801			1813			1828			1843			1858			1914			1929			1944		
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1717			1727			1737			1747			1757			1807			1817			1827			1840			1855		
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3	1	11	2	1	14	1	2	11	2	1	15	2	1	17	1	1	13	1	1	10	1	1	11	1	1	13	1	1	14
2	1	11	2	2	14	3	2	11	2	2	15	2	2	16	3	2	14	1	2	10	1	1	11	1	2	13	2	3	13
2	0	12	1	0	15	2	0	13	2	0	17	1	0	17	1	0	14	1	0	10	1	0	12	1	0	13	1	0	13
1	0	12	1	0	16	1	0	14	0	0	17	0	0	17	2	0	15	0	0	10	0	0	12	1	0	13	1	0	14
0	7	6	1	11	6	0	9	4	0	10	7	0	9	7	0	10	5	0	7	3	0	7	5	0	9	5	0	10	4
0	2	4	0	3	3	0	2	3	0	3	4	0	2	6	0	2	3	0	2	1	0	1	4	0	2	2	0	2	2
0	1	3	0	1	2	0	1	2	0	1	3	0	1	5	0	1	2	0	1	1	0	0	3	0	0	2	0	1	1
0	1	2	0	2	0	0	1	1	0	1	2	0	1	4	0	1	1	0	1	0	0	1	3	0	0	2	0	1	0
0	2	0	0	0	0	0	1	0	0	2	0	0	3	1	0	1	0	0	0	0	0	3	0	0	2	0	0	0	0
29			46			40			38			43			42			30			28			40			42		

1959			2014			2028			2044			2059			2129			2159			2229			2300			2330			2400			2430			100		
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
3	0	3	1	0	1	2	0	2	2	0	2	1	0	1	1	0	1	2	0	2	3	0	3	1	0	1	1	0	1	2	0	2	2	0	2	0	0	0
1	0	4	1	0	3	2	0	4	1	0	2	1	0	2	2	0	3	1	0	3	3	0	5	3	0	3	3	0	4	3	0	4	2	0	4	1	0	1
2	0	6	1	0	3	1	0	5	1	0	3	1	0	2	1	0	4	2	0	5	2	0	7	1	0	4	2	0	6	1	0	5	0	0	4	1	0	2
3	0	8	2	0	6	2	1	6	3	0	6	2	0	4	6	0	10	7	0	11	7	0	14	6	0	10	5	0	10	4	0	9	3	0	7	4	0	6
8	0	16	8	0	13	8	1	13	6	0	11	10	0	14	12	1	21	13	0	24	9	1	22	8	0	17	6	0	16	5	0	13	4	0	10	5	0	10
0	0	16	0	0	13	0	0	13	0	0	11	0	0	14	0	0	21	0	0	23	0	0	22	0	0	17	0	0	16	0	0	13	0	0	10	0	0	10
0	0	16	0	0	13	1	0	14	0	0	11	0	0	14	0	1	21	0	0	24	0	0	22	0	0	17	0	0	16	0	0	13	0	0	10	0	0	10
2	1	17	3	2	14	2	1	15	2	1	13	2	1	15	3	2	21	2	1	25	1	2	22	3	1	19	2	1	16	2	2	13	2	1	10	1	1	11
0	1	16	0	1	14	0	1	14	0	1	12	1	1	15	1	2	20	1	2	23	1	3	20	0	2	17	0	1	15	0	1	13	0	1	10	0	0	10
1	1	16	1	1	13	2	1	14	1	1	11	2	2	14	2	2	20	1	3	22	1	2	19	1	2	17	1	1	14	0	1	12	0	1	9	0	0	10
4	2	18	4	3	14	2	2	14	2	2	11	2	2	14	4	3	21	3	5	21	1	2	17	2	3	16	1	3	13	1	2	11	0	2	8	0	2	9
1	3	16	1	2	12	0	2	12	0	2	10	1	3	12	1	3	19	0	4	17	1	3	15	0	2	15	0	2	11	0	2	10	0	1	8	0	1	8
1	2	16	2	1	13	1	1	12	2	1	11	2	1	12	2	2	19	3	2	18	2	1	15	1	3	13	1	2	10	0	2	8	0	1	7	0	1	7
2	2	15	2	2	13	2	3	11	2	1	12	1	2	12	2	3	18	1	3	16	0	3	13	0	2	12	0	2	8	0	2	6	0	1	6	0	1	6
1	6	10	1	4	10	1	4	8	1	5	8	0	4	8	0	7	11	1	6	11	1	5	8	0	4	8	1	3	6	0	2	4	0	2	4	0	2	4
1	3	8	1	3	7	0	2	7	1	2	6	0	2	6	1	5	8	0	2	9	0	2	7	1	2	6	0	2	4	0	1	3	0	1	4	0	1	4
1	3	6	1	4	4	1	2	5	1	3	4	1	2	5	2	3	7	0	4	6	0	2	5	0	3	3	0	2	3	0	1	2	0	2	2	0	1	2
0	6	0	0	5	0	0	5	0	0	5	0	0	4	1	0	7	0	0	5	1	0	5	0	0	3	0	0	3	0	0	2	0	0	2	0	0	2	0
31			29			27			24			27			40			40			31			28			23			18			15			14		

1910			1925			1940			1955			2011			2026			2041			2056			2123			2152			2222			2252			2322			2352			2422			2452		
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
16	0	16	10	0	10	11	0	11	10	0	10	11	0	11	9	0	9	8	0	8	11	0	11	13	0	13	15	0	15	10	0	10	11	0	11	12	0	12	7	0	7	4	0	4	3	0	3
4	4	17	3	2	11	3	2	12	2	1	10	5	2	14	3	2	10	3	2	9	2	1	12	4	1	15	2	3	15	4	2	13	1	2	10	2	3	10	0	2	6	1	1	4	0	0	3
3	2	17	2	1	11	3	2	12	1	1	11	2	3	13	1	1	10	1	1	9	2	2	12	2	1	16	3	2	16	2	1	13	1	1	9	1	2	9	1	2	6	1	1	4	0	0	3
2	3	16	2	1	12	2	2	12	2	2	10	3	3	13	2	1	10	1	2	9	2	3	11	3	3	17	3	2	17	2	2	12	1	1	9	1	2	9	1	1	6	1	1	5	0	0	4
2	2	15	2	2	12	3	2	13	2	2	10	4	2	14	1	1	10	2	2	9	3	2	12	3	3	16	2	3	16	1	2	11	1	2	7	1	1	8	0	1	5	0	0	4	0	0	4
2	3	14	1	2	12	1	1	13	1	1	10	2	2	15	1	2	10	1	2	8	1	2	11	1	3	15	1	2	15	1	2	10	0	1	7	1	1	8	1	1	5	0	1	4	0	0	4
2	2	14	1	1	11	1	2	13	1	1	10	2	2	14	1	1	10	1	1	8	1	2	10	1	1	14	1	2	13	1	2	9	1	1	7	0	1	7	0	0	5	0	0	4	0	1	3
1	4	11	2	3	11	1	3	11	2	3	9	2	3	13	1	2	9	2	3	7	1	2	9	2	3	13	2	3	12	1	1	9	2	1	7	1	2	6	1	1	6	1	0	5	1	1	3
2	1	12	1	0	11	1	1	12	2	1	10	1	1	13	1	1	9	1	1	7	0	1	9	1	1	13	1	1	13	1	1	9	1	1	8	0	0	6	1	1	6	0	0	5	0	0	3
1	2	11	1	1	11	1	1	12	1	1	10	1	2	12	1	1	10	1	0	8	1	0	9	2	1	14	2	1	13	1	0	10	2	1	8	0	0	7	0	0	6	0	0	5	0	0	4
2	2	11	2	2	12	1	1	12	1	1	11	1	2	11	1	1	10	2	2	8	2	1	10	2	2	13	2	2	13	3	2	11	3	2	10	1	1	6	1	1	6	1	0	5	0	0	4
0	1	11	0	0	12	0	0	12	0	0	10	0	1	11	0	0	10	0	0	8	0	0	9	0	0	13	0	0	13	0	0	11	0	0	10	0	0	6	0	0	6	0	0	4	0	0	4
0	0	11	0	0	12	1	0	13	0	0	10	0	0	11	0	0	10	0	0	8	0	0	9	0	1	12	0	0	13	0	0	11	0	0	10	1	0	7	0	0	5	0	0	5	0	0	4
0	6	5	0	7	5	0	8	5	0	7	3	0	8	3	0	6	4	0	6	2	0	5	5	0	8	5	0	6	6	0	7	4	0	6	5	0	4	3	0	3	2	1	2	3	0	2	2
0	1	3	0	2	3	0	2	3	0	2	2	0	2	1	0	3	2	0	1	1	0	2	2	0	2	3	0	4	2	0	1	3	0	2	3	0	1	2	0	0	2	0	1	2	0	1	1
0	1	3	0	1	2	0	1	2	0	1	1	0	1	1	0	0	1	0	0	1	0	0	2	0	0	3	0	1	1	0	1	2	0	0	3	0	0	2	0	0	1	0	0	2	0	0	1
0	0	2	0	0	2	0	1	2	0	1	1	0	1	0	0	0	1	0	1	0	0	0	2	0	0	3	0	1	1	0	1	1	0	1	2	0	0	2	0	1	0	0	1	0	0	1	0
0	2	1	0	2	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	2	0	0	3	0	0	1	0	0	1	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
38			28			30			25			35			25			23			26			34			34			27			24			21			15			11			7		

Inbound (Northbound)	428			500			530			551			626			648			718			748			818			848			918		
	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
Cuyamaca College										1	1	0				1	0	1	2	0	2	4	0	4	3	0	3	3	0	3	3	0	3
Cuyamaca College Dr/Jamacha Rd										1	0	1				0	0	1	1	0	3	0	0	4	0	0	3	1	0	4	0	0	3
Jamacha Rd/Campo Rd										0	0	1				0	0	1	0	0	3	0	0	4	0	0	4	0	0	5	0	0	3
Calle Verde/Via Mercado										0	0	1				0	0	1	0	0	4	0	0	4	0	0	4	0	0	4	0	0	3
Calle Verde/Avocado Bl	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	4	1	2	3	1	0	5	0	0	5	0	0	3
Jamacha Bl/Trace Rd	0	0	1	0	0	0	1	0	1	0	0	2	0	0	0	1	0	2	0	0	4	0	0	3	0	0	5	0	0	5	1	0	3
Jamacha Bl/Calavo Dr	0	0	1	0	0	0	1	0	2	0	0	2	0	0	0	1	0	3	0	0	5	1	0	3	0	0	5	0	0	5	0	0	3
Jamacha Bl/Lamplighter Village	2	0	3	1	0	1	0	0	2	1	0	3	2	0	2	2	0	4	0	0	5	1	0	4	1	0	6	1	0	5	0	0	4
Jamacha Bl/Sweetwater Springs Bl	0	0	3	0	0	1	0	0	2	0	0	4	0	0	2	1	0	5	1	0	6	0	0	4	0	0	6	2	0	7	1	0	4
Jamacha Bl/Spring Glen Ln	1	0	4	1	0	2	0	0	2	0	0	4	0	0	2	0	0	6	0	0	6	0	0	5	0	0	7	0	0	8	0	0	4
Jamacha Bl/Whitestone Rd	0	0	4	0	0	2	0	0	2	0	0	4	2	0	4	0	0	6	0	0	6	0	0	5	0	0	7	0	0	8	0	0	5
Jamacha Bl/Maya St	1	0	5	0	0	2	0	0	2	0	0	4	0	0	4	0	0	6	1	0	7	0	0	5	0	0	7	0	0	8	0	0	5
Jamacha Bl/Omega St	0	0	5	0	0	2	0	0	2	0	0	4	0	0	4	0	0	6	0	0	7	0	0	5	0	0	7	0	0	8	0	0	5
Jamacha Bl/San Diego St	2	0	7	1	0	3	4	0	6	1	0	6	2	0	6	1	0	8	2	0	9	1	1	5	1	0	8	1	0	9	1	0	6
Jamacha Bl/San Juhn St	0	0	7	0	0	3	1	0	6	0	0	6	0	0	6	0	0	8	0	0	9	0	0	6	0	0	9	0	0	9	0	0	6
Jamacha Bl/La Presa Av	0	0	7	1	0	4	2	0	8	2	0	8	1	0	7	3	0	11	2	0	11	2	0	8	3	0	11	1	0	10	1	0	7
Jamacha Bl/Ramona Av	0	0	7	0	0	4	1	0	9	0	0	8	0	0	7	0	0	11	0	0	11	0	0	8	0	0	11	0	0	10	0	0	7
Jamacha Bl/Grand Av	3	0	11	3	0	7	2	0	11	2	0	10	6	0	13	5	0	15	9	0	19	5	0	12	4	0	15	5	1	14	1	0	8
Jamacha Bl/Kempton St	0	0	11	0	0	7	0	0	11	1	0	10	0	0	13	1	1	15	1	0	20	1	0	13	0	0	15	0	0	15	0	0	8
Jamacha Bl/Thayer Dr	0	0	11	0	0	7	0	0	11	0	0	10	1	0	14	0	0	15	0	0	20	0	0	13	0	0	15	0	0	15	0	0	8
Jamacha Bl/Gillispie Dr	0	0	11	1	0	8	0	1	11	2	1	12	1	3	12	1	2	14	3	1	22	2	1	15	1	2	14	0	1	14	1	1	8
Sweetwater Rd/Orville St	0	0	12	0	0	8	1	0	11	0	0	12	1	0	12	1	0	15	5	0	27	1	0	16	2	0	16	1	0	14	1	0	9
Sweetwater Rd/St George St	2	0	14	1	0	9	3	0	14	2	0	14	2	0	14	2	1	16	3	1	29	4	1	19	2	1	17	2	0	16	2	0	11
Sweetwater Rd/Spring Vista Wy	0	0	14	0	0	9	0	0	14	1	0	14	1	0	15	1	0	17	1	0	30	1	0	20	0	0	18	1	0	17	0	0	11
Sweetwater Rd/Harness St	0	0	14	1	0	10	0	0	14	0	0	15	0	0	15	0	0	17	1	0	30	0	0	20	0	0	18	0	0	17	1	0	11
Sweetwater Rd/Blossom Ln	0	0	15	1	0	11	0	0	15	0	0	15	1	2	14	0	3	14	1	10	20	0	1	20	2	0	20	0	0	17	0	1	11
Sweetwater Rd/Tyler St	1	0	16	2	0	13	2	0	16	2	0	17	6	0	19	1	0	15	3	0	23	2	0	21	1	0	21	1	1	18	1	1	12
Sweetwater Rd/Troy St	2	0	18	1	1	14	1	0	17	2	0	19	4	1	22	3	0	17	3	0	26	2	0	23	1	0	22	3	1	19	3	1	15
Broadway/Sweetwater Rd	0	0	18	1	0	14	1	0	18	0	0	19	0	0	22	0	0	18	0	0	26	0	0	23	1	0	23	0	0	20	0	0	15
Broadway/St John's Plaza	0	0	18	0	0	14	0	0	18	1	0	20	1	0	24	0	0	18	1	0	27	0	0	23	0	0	23	1	0	21	1	0	15
Broadway/Washington St	0	0	18	0	0	14	1	0	19	0	0	20	0	0	24	1	0	19	1	0	27	0	0	24	1	0	24	0	0	21	0	0	16
Broadway/Grove St	0	0	18	0	0	14	0	0	19	0	0	20	0	0	24	0	0	19	0	3	25	0	1	22	0	1	23	0	1	20	0	0	16
Broadway/Main St	0	11	8	3	11	7	5	10	14	4	11	13	5	17	12	5	9	15	5	15	15	7	11	18	2	14	11	3	12	11	5	10	11
Broadway/Buena Vista Av	0	0	8	0	0	7	0	0	14	0	0	13	0	0	12	0	0	15	1	1	15	0	1	18	0	1	11	0	1	11	1	1	11
Broadway/West St	0	0	8	0	0	7	0	0	13	0	0	13	0	0	12	0	0	15	0	0	15	0	0	17	0	0	10	0	1	10	0	1	11
Broadway/Massachusetts Av	1	0	9	0	1	7	2	2	13	1	1	13	1	2	10	1	2	14	1	1	14	1	2	16	1	1	10	0	1	9	0	2	10
Broadway/7080	0	0	9	0	0	6	0	0	13	0	1	13	0	1	9	0	3	11	0	1	13	0	2	15	0	1	9	0	1	8	0	2	8
College Av/Federal Bl	0	0	9	2	1	7	1	3	10	0	2	12	0	1	9	1	1	11	1	1	12	1	1	15	0	0	9	0	0	9	1	0	8
Grove Transit Center	1	0	10	0	1	6	1	1	10	1	0	12	2	2	9	3	1	14	4	2	15	4	2	17	2	1	10	3	2	9	1	2	8
College Av/College Grove Dr	0	0	10	0	1	6	0	0	10	1	0	13	1	0	9	2	0	16	2	0	17	1	0	17	1	0	11	1	0	10	1	0	9
College Av/Billman St	1	0	11	1	0	7	2	0	12	3	0	16	2	0	12	2	0	18	1	0	18	2	0	19	0	0	11	1	0	11	1	0	10
College Av/University Av	0	1	10	1	0	8	2	2	11	2	2	15	2	2	12	4	5	17	4	4	17	4	4	19	1	1	11	2	2	12	3	2	11
College Av/Adelaide Av	0	0	10	0	0	8	0	0	11	1	0	17	0	0	12	1	0	17	0	0	18	0	0	19	0	0	11	0	0	12	0	0	10
College Av/El Cajon Bl	0	2	8	0	0	8	0	0	11	0	1	16	0	2	11	0	2	15	0	3	15	0	3	16	0	2	9	0	3	9	0	3	7
College Av/El Cajon Bl	0	0	7	0	0	8	1	0	11	1	2	15	2	1	12	1	1	16	0	1	14	1	1	15	1	1	10	1	2	8	0	1	7
College Av/Arosa St	0	0	7	0	0	8	0	0	11	1	0	16	0	0	12	0	0	16	0	0	14	0	0	16	0	0	10	0	0	8	0	0	7
College Av/Mesita Dr	1	0	8	0	0	8	0	0	11	0	1	15	0	0	12	0	0	16	0	0	14	0	0	15	0	0	10	0	0	8	0	0	7
College Av/Pontiac St	0	0	8	0	0	8	0	0	11	0	0	15	0	0	12	0	0	16	0	0	14	0	0	15	0	0	10	0	0	8	0	0	7
Montezuma Rd/College Av	0	0	8	0	2	7	0	1	10	0	1	14	0	1	10	0	1	15	0	2	12	0	2	13	0	1	9	0	1	7	0	0	7
Campanile Dr/Montezuma Rd	0	0	8	0	0	7	0	0	10	0	0	14	0	1	10	0	3	12	0	0	12	0	1	12	0	0	9	0	0	7	0	0	6
SDSU Transit Center	0	8	0	0	7	0	0	10	0	0	14	0	0	10	0	0	12	0	0	12	0	0	10	2	0	9	0	0	7	0	0	6	0
	23			25			33			38			46			47			62			52			38			40			36		

Outbound (Southbound)	538			608			638			707			737			805			835			905			935			1005			1035		
	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
SDSU Transit Center	4	0	4	2	0	2	3	0	3	4	0	4	4	0	4	7	0	7	3	0	3	6	0	6	5	0	5	4	0	4	7	0	7
College Av/Cresita Dr	0	0	4	0	0	2	0	0	3	0	0	4	0	0	4	0	0	7	0	0	3	0	0	6	0	0	5	0	0	4	0	0	7
College Av/Mesita Dr	0	0	4	0	0	2	0	0	3	0	0	4	0	0	4	0	0	7	0	0	3	0	0	6	0	0	5	0	0	4	0	0	7
College Av/Arosa St	0	0	4	0	0	3	0	0	3	0	0	4	0	0	4	0	0	7	0	0	3	0	0	6	0	0	5	0	0	4	0	0	7
College Av/Soria Dr	1	0	5	0	0	3	0	0	3	1	0	4	0	0	4	0	0	7	0	0	3	0	0	7	0	0	5	0	0	4	0	0	7
College Av/El Cajon Bl	1	0	5	1	0	4	1	0	4	3	0	7	1	0	5	1	0	7	2	0	4	2	0	8	2	0	7	3	0	7	3	1	9
College Av/Adelaide Av	0	0	5	0	0	4	0	0	4	0	0	7	0	0	5	0	0	7	0	0	4	0	0	8	0	0	7	0	0	6	0	0	9
College Av/View Pl	0	0	5	0	0	4	0	0	4	0	0	7	0	0	5	0	0	7	0	0	4	0	0	8	0	0	7	0	0	6	0	0	9
College Av/University Av	1	0	6	1	0	4	0	0	4	0	0	8	0	0	5	0	0	8	0	1	4	0	1	7	0	0	6	0	1	6	1	1	8
College Av/University Av	2	0	8	5	1	8	2	0	7	4	1	10	2	0	7	3	0	10	3	0	7	3	1	9	2	1	7	3	1	8	3	0	11
College Av/Streamview Dr	0	0	8	0	0	8	1	1	7	2	0	12	1	0	7	0	1	10	1	0	7	0	0	9	1	0	8	0	1	7	1	0	11
College Av/College Grove Dr	0	0	8	0	0	8	0	0	7	0	1	11	0	0	7	0	0	10	0	0	7	0	0	9	0	0	8	0	0	7	0	0	11
Grove Transit Center	0	1	7	0	1	8	1	2	6	2	0	12	1	1	7	7	2	15	3	1	9	2	1	10	1	1	7	2	2	7	2	3	10
College Av/College Grove Dr	0	1	7	0	0	8	1	0	6	1	0	13	1	1	7	0	1	15	1	0	10	1	1	9	1	0	8	1	1	7	1	1	11
Federal Bl/College Av	0	1	6	1	0	8	1	0	7	0	0	12	1	0	7	1	0	15	1	1	9	0	1	9	0	0	8	0	0	7	1	0	12
Broadway/7081	0	0	6	0	0	8	0	0	7	0	0	12	0	0	7	1	1	15	1	0	10	1	0	9	1	0	9	0	1	7	1	1	12
Broadway/Massachusetts Av	1	1	6	3	0	12	3	0	10	5	1	17	2	0	9	2	0	17	2	0	11	1	1	10	2	0	10	2	0	8	2	1	14
Broadway/West St	0	0	6	0	0	12	0	0	10	0	0	17	0	0	9	0	0	17	0	0	12	1	0	11	0	0	10	0	0	8	1	0	15
Broadway/Buena Vista Av	1	0	7	2	0	14	0	0	10	1	0	18	1	1	10	0	0	17	0	1	11	0	1	10	0	0	10	0	1	8	0	1	14
Main St/Broadway	10	2	14	7	4	17	8	4	14	13	6	25	7	4	12	8	5	20	6	6	11	7	3	14	6	4	13	6	5	9	6	7	14
Broadway/Grove St	0	0	14	3	1	20	2	0	15	1	0	26	0	0	13	1	0	20	1	1	10	1	0	14	1	0	13	0	0	9	1	0	14
Broadway/Washington St	0	0	14	0	0	20	0	0	15	0	0	26	0	0	13	0	0	21	0	0	10	0	1	14	0	0	13	1	0	10	1	1	14
Broadway/Sweetwater Rd	0	0	14	1	0	20	0	0	16	1	0	27	1	0	14	0	0	21	0	0	11	0	1	13	0	0	13	0	0	10	0	0	14
Sweetwater Rd/Troy St	0	1	13	0	2	19	1	1	16	2	2	27	1	0	14	1	1	21	0	0	11	1	1	13	1	2	13	0	1	9	1	2	13
Sweetwater Rd/Palm St	0	0	13	0	0	19	1	0	16	0	0	27	0	0	14	0	0	21	1	0	11	0	0	12	0	0	13	0	0	9	0	0	13
Sweetwater Rd/Tyler St	0	0	13	0	0	19	0	0	16	0	0	26	1	2	13	0	0	21	0	0	11	0	0	13	0	0	13	0	0	9	1	1	13
Sweetwater Rd/Blossom Ln	0	1	13	0	10	9	0	4	13	0	16	11	1	3	11	0	1	20	0	1	10	0	1	11	0	0	13	0	1	8	0	0	13
Sweetwater Rd/Spring Vista Wy	0	0	13	0	0	9	0	0	13	0	0	11	0	0	11	0	0	20	0	0	10	0	0	12	0	0	13	0	0	8	0	0	13
Sweetwater Rd/Jamacha Rd	0	3	10	1	1	9	2	2	13	1	2	10	2	1	12	4	1	23	1	1	10	1	1	11	2	1	13	1	1	7	1	1	12
Orville St/Brucker Dr	1	1	10	2	1	11	7	1	19	1	0	11	4	0	15	2	4	21	2	1	10	2	1	12	3	1	14	2	1	8	2	2	12
Orville St/Gillespie Dr	0	0	10	0	0	11	0	0	19	0	0	11	0	0	15	0	0	21	0	0	10	0	0	12	0	0	14	0	0	8	0	0	12
Gillespie Dr/Jamacha Bl	2	0	12	1	0	12	1	0	20	1	0	12	1	0	16	3	0	24	1	0	11	1	0	13	1	0	15	1	0	9	1	0	13
Jamacha Bl/Kempton St	0	1	11	0	0	12	1	0	20	0	0	13	0	0	17	1	0	25	0	0	11	0	0	13	1	0	16	0	0	9	0	0	12
Jamacha Bl/Grand Av	2	1	13	2	0	13	1	1	21	1	1	13	2	3	16	1	3	23	1	1	11	0	1	12	1	1	15	0	1	8	0	2	11
Jamacha Bl/Ramona Av	0	0	13	0	0	14	0	0	21	0	0	12	0	0	16	1	0	23	0	0	11	0	0	12	0	0	15	0	0	8	0	0	10
Jamacha Bl/La Presa Av	0	0	13	1	0	14	1	0	22	1	1	12	0	1	15	0	0	23	0	0	11	0	0	12	0	0	15	0	0	8	0	0	10
Jamacha Bl/San Miguel St	0	0	13	0	0	14	0	0	22	0	0	12	0	0	15	0	0	23	0	0	11	0	0	12	0	0	14	0	0	7	0	0	10
Jamacha Bl/San Diego St	1	1	14	1	0	14	2	0	24	0	0	12	0	0	15	0	1	22	0	0	11	0	0	12	0	0	15	0	1	7	0	0	10
Jamacha Bl/Maya St	0	0	14	0	1	13	0	0	24	0	0	12	0	0	15	0	0	22	0	0	11	0	0	11	0	0	15	0	0	7	0	0	10
Jamacha Bl/Whitestone Rd	0	0	14	0	0	14	0	0	24	0	0	12	0	0	15	0	0	22	0	0	11	0	0	11	0	0	15	0	0	7	0	0	10
Jamacha Bl/Pointe Pkwy	0	0	14	0	0	14	0	0	24	0	0	12	0	0	15	0	0	22	0	0	11	0	0	11	0	0	14	0	0	7	0	0	10
Jamacha Bl/Sweetwater Springs Bl	0	2	12	0	0	13	0	2	22	0	1	11	1	1	15	0	1	21	0	1	10	0	0	11	0	0	14	0	0	7	0	0	10
Jamacha Bl/Lamplighter Village	0	0	12	0	0	13	0	0	22	0	0	11	0	0	15	0	0	21	0	1	9	0	0	11	0	1	13	0	0	7	0	1	9
Jamacha Bl/Lamplighter Village Dr	0	6	6	1	3	12	2	6	18	2	1	11	3	2	16	1	1	21	2	1	11	1	1	12	1	1	13	1	0	7	4	0	13
Jamacha Bl/Trace Rd	0	0	6	1	0	13	0	0	19	0	0	11	0	0	16	0	0	21	0	0	11	0	0	12	1	0	14	0	0	8	0	0	13
Calle Verde/Avocado Bl	1	2	4	0	0	12	0	2	17	0	3	9	0	1	16	0	1	21	0	1	10	0	1	11	0	1	14	1	1	7	1	2	12
Calle Verde/Via Mercado	0	0	4	0	0	12	0	0	17	0	0	9	0	0	16	0	0	21	0	0	10	0	0	11	0	0	14	0	0	7	0	0	12
Jamacha Rd/Campo Rd	0	2	2	0	2	10	0	1	16	0	2	7	0	3	13	0	1	20	0	1	9	0	1	10	0	1	12	0	1	6	0	2	10
Cuyamaca College Dr/Jamacha Rd	0	1	1	0	0	10	0	1	15	0	2	5	0	1	12	0	1	19	0	1	8	0	1	8	0	1	11	0	1	6	0	2	9
Cuyamaca College	0	1	0	0	10	0	0	15	0	0	5	0	0	12	0	0	19	0	0	8	0	0	8	0	0	11	0	0	6	0	0	9	0
	30			39			46			49			42			48			34			35			37			31			43		

NB Vols 24

SB Vols 14

NB AM (peak bus activity)	V=	24	PHF=	0.97
NB PM (peak bus activity)	V=	6	PHF=	0.92
SB AM (peak bus activity)	V=	14	PHF=	0.70
SB PM (peak bus activity)	V=	20	PHF=	1.00

948			1018			1048			1118			1148			1218			1247			1317			1346			1416			1445			1515			1545			1616			
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
5	0	5	4	0	4	6	0	6	6	0	6	5	0	5	11	0	11	8	2	6	5	0	5	9	0	9	9	0	9	7	0	7	7	0	7	7	0	7	6	0	6	4
1	0	6	2	0	6	2	0	8	1	0	7	1	0	6	1	0	12	1	0	7	1	0	7	3	0	11	2	1	11	2	0	9	2	0	9	1	0	8	3	0	9	2
0	0	6	0	1	6	0	0	8	1	0	7	1	0	7	2	0	14	0	0	7	0	0	7	1	0	12	1	0	12	0	0	9	3	0	12	1	0	9	1	0	10	1
0	0	6	0	0	6	0	0	8	0	0	7	0	0	7	0	0	13	0	0	8	0	0	7	0	0	12	0	0	11	1	0	10	0	0	12	0	0	9	0	0	9	0
1	0	6	1	0	6	1	0	8	1	0	8	0	0	7	2	0	15	1	0	8	1	0	8	1	1	11	2	0	13	0	0	10	1	0	13	1	1	9	1	1	9	1
0	0	6	0	0	6	0	0	8	0	0	8	0	0	7	0	0	15	0	0	8	0	0	8	0	0	11	0	0	13	0	0	10	0	0	13	0	0	9	0	0	9	0
0	0	6	0	0	6	0	1	8	0	2	7	0	1	6	0	2	14	0	1	8	0	1	7	0	1	11	0	1	12	0	1	9	0	2	11	0	0	8	0	0	9	0
1	0	7	1	0	8	1	0	8	1	0	7	0	0	6	1	0	14	1	0	8	1	0	7	1	0	11	1	0	12	0	0	9	2	0	13	1	0	9	1	0	10	1
0	0	7	2	0	9	0	0	8	1	0	8	0	0	6	1	0	15	0	0	8	2	0	9	3	0	14	5	0	17	2	0	11	15	0	27	6	0	16	2	0	11	4
0	0	7	0	0	9	0	0	8	0	1	8	0	0	7	0	0	15	0	0	9	0	0	10	0	0	14	0	0	17	0	0	11	0	0	27	0	0	16	0	0	11	0
0	0	7	1	0	10	0	0	8	0	0	8	0	0	7	0	0	15	0	0	9	0	0	10	0	0	15	0	0	17	0	0	11	0	0	27	0	0	15	0	0	12	0
0	0	7	0	0	10	0	0	8	0	0	8	0	0	7	0	0	15	0	0	9	0	0	9	0	1	14	0	0	17	0	0	11	0	0	27	1	0	16	1	0	12	0
0	0	7	0	0	10	0	0	8	0	0	8	0	0	7	0	0	15	0	0	9	0	0	9	0	0	14	0	0	17	0	0	11	0	0	27	0	0	16	0	0	12	0
1	0	8	1	0	11	2	0	10	1	0	9	1	0	7	1	0	16	2	0	10	1	0	11	0	0	14	1	0	17	1	1	11	1	2	26	1	2	15	1	1	12	0
0	0	8	0	0	11	0	0	10	0	0	9	0	0	7	0	0	16	0	0	11	0	0	11	0	0	14	0	0	17	0	0	11	0	1	25	0	0	15	0	0	12	0
1	0	9	0	1	10	1	0	11	1	0	10	0	0	8	1	1	16	1	0	11	1	0	11	1	0	15	1	0	17	1	0	12	0	1	25	0	1	14	0	0	12	1
0	0	9	0	0	10	0	0	11	0	0	10	0	0	8	0	0	16	0	0	11	0	0	11	0	0	15	0	0	18	0	0	12	0	1	24	0	0	14	0	0	12	0
3	1	11	4	0	14	2	0	12	2	0	12	2	0	9	2	1	18	1	1	12	2	1	13	1	1	15	2	2	17	1	1	12	2	5	21	0	2	13	1	1	12	1
0	0	12	0	0	15	0	0	13	0	0	12	0	0	9	0	0	18	1	0	12	0	0	13	0	1	15	0	0	17	0	0	12	0	2	20	1	1	12	0	0	12	0
0	0	12	0	0	15	0	0	13	0	0	12	0	0	9	0	0	18	0	0	12	0	0	13	0	0	15	0	0	17	0	0	12	0	1	19	0	0	12	0	0	12	0
3	2	12	2	2	15	2	3	12	2	2	12	3	2	10	1	3	16	1	3	11	1	2	12	1	3	13	1	4	14	2	3	11	1	5	16	2	5	9	1	3	10	1
1	0	13	2	0	16	1	0	13	3	0	15	2	0	12	1	0	17	1	0	12	1	0	12	1	0	14	2	0	15	1	0	12	1	0	17	3	0	12	1	0	10	1
3	1	15	3	0	19	2	1	14	3	1	17	2	1	13	3	2	18	2	1	13	1	1	12	1	1	14	2	2	15	1	1	12	3	2	18	2	1	12	1	1	10	1
0	0	15	1	0	19	0	0	14	0	0	17	0	0	13	0	1	18	0	0	13	0	0	12	0	0	14	0	0	15	1	0	12	0	1	17	0	0	12	0	0	10	0
1	0	15	0	0	19	1	0	15	0	0	17	0	0	13	0	0	18	0	0	13	1	0	13	0	0	14	2	0	17	1	0	13	0	0	17	0	0	12	0	0	10	0
0	1	15	1	0	20	0	0	15	1	0	18	1	0	14	2	1	19	4	0	16	1	0	14	1	0	14	12	3	26	6	1	18	5	1	21	4	0	15	1	0	11	1
1	0	16	1	0	21	1	0	16	1	0	18	1	0	15	1	0	20	1	0	17	1	0	14	0	0	15	1	0	27	1	0	18	2	1	22	1	0	16	0	0	11	0
2	0	18	2	0	23	1	0	17	2	1	19	2	0	17	1	1	21	1	1	18	1	0	15	1	1	14	1	1	27	1	0	19	2	1	23	1	0	17	1	1	12	2
0	0	18	0	0	23	0	0	16	0	0	19	0	0	17	0	0	21	0	0	17	0	0	15	0	0	15	0	0	27	0	0	19	0	0	23	0	1	16	0	0	12	0
1	0	19	1	0	23	0	0	17	1	0	19	0	0	18	0	0	21	1	0	18	1	0	16	0	0	15	0	1	26	0	0	19	1	0	23	1	0	17	0	0	12	0
0	0	19	0	0	23	1	0	17	0	0	19	0	0	18	1	0	22	0	0	19	1	0	16	0	0	15	1	1	26	0	0	19	0	0	23	0	0	17	0	0	12	0
0	1	18	0	1	22	0	0	17	0	1	18	0	1	17	0	1	21	0	1	17	0	1	15	0	1	14	0	2	25	0	1	19	0	1	22	0	0	16	0	0	11	0
5	11	12	4	15	11	6	9	13	8	10	16	5	9	14	5	11	15	6	11	13	5	8	11	8	8	14	8	15	17	6	11	13	7	12	17	7	7	16	7	6	12	5
0	0	12	0	0	11	1	1	13	1	1	17	1	1	14	0	1	14	0	1	12	1	1	11	1	1	14	1	1	17	0	1	12	1	1	17	0	1	15	0	0	12	0
0	0	11	0	0	11	1	0	13	1	1	17	0	1	13	0	1	14	1	0	12	0	0	11	0	1	13	0	1	16	0	1	12	1	1	17	0	1	15	0	1	12	0
1	2	11	0	2	9	2	3	12	2	3	15	1	2	11	1	1	13	1	3	10	1	2	10	1	4	10	1	3	14	1	3	10	1	3	15	1	1	14	1	2	10	0
0	1	10	0	1	9	0	3	9	0	1	14	3	2	12	1	2	13	1	2	10	0	1	10	1	1	10	1	1	13	0	0	9	1	1	14	1	2	13	1	1	10	0
0	1	10	0	0	9	1	1	10	1	1	14	0	1	11	0	0	13	0	1	9	0	0	9	0	1	10	0	2	12	0	1	9	0	1	13	0	1	13	0	1	10	1
2	2	10	3	3	9	3	3	10	4	4	13	2	5	9	2	4	10	5	3	11	2	4	8	2	2	10	3	4	11	1	2	8	3	4	12	2	2	12	2	3	10	2
0	0	10	1	0	10	1	0	11	1	0	14	1	0	10	1	0	11	0	0	11	1	0	9	1	0	10	1	0	12	1	0	8	0	0	12	1	0	13	1	0	10	1
1	0	10	1	1	10	2	0	12	2	0	15	1	0	10	1	0	12	1	0	11	1	0	9	1	0	11	1	0	13	0	1	8	1	1	12	1	1	13	0	1	10	0
1	2	10	2	3	9	4	4	12	3	4	14	2	3	10	3	3	12	3	3	11	3	3	9	3	3	10	4	5	12	1	2	8	2	4	9	3	3	12	2	4	8	1
0	0	10	0	0	9	0	0	12	0	1	14	0	0	10	0	0	12	0	0	11	0	0	9	0	0	10	0	1	11	0	0	8	0	0	9	1	1	12	0	0	8	0
0	2	8	0	3	6	0	6	6	0	3	11	0	2	8	0	3	9	0	4	7	0	4	5	0	3	8	1	4	8	0	1	7	0	4	5	1	3	10	0	1	7	0
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0	0	9	0	0	6	0	0	5	0	0	11	0	0	7	0	0	10	0	0	7	0	0	5	0	0	7	0	0	7	0	0	5	0	0	5	0	0	9	0	0	5	0
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1105			1134			1204			1234			1304			1334			1404			1434			1504			1534			1604			1634			1704			1735			
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
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0	11	0	0	6	0	0	4	0	0	4	0	0	2	0	0	5	0	0	4	0	0	3	0	0	2	0	0	2	0	0	3	0	0	2	1	0	2	0	0	2	0	1
42			38			43			50			43			44			38			51			69			51			49			59			45			50			3

1646		1716			1753			1823			1908			2008			2116		
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
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0	6	0	0	2	1	0	2	2	0	5	2	0	7	1	0	5	1	0	4
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0	11	0	0	6	0	0	7	0	0	6	0	0	8	0	0	6	0	0	4
0	11	0	0	6	0	0	7	0	0	6	0	0	8	0	0	6	0	0	4
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1	10	1	1	6	2	0	9	2	0	8	2	1	10	1	0	8	2	0	7
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1	7	1	1	6	0	3	9	1	2	8	1	1	7	1	1	8	1	0	5
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4	6	1	3	5	2	4	6	1	3	6	0	2	4	1	2	7	1	2	6
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3	0	0	3	0	0	2	0	0	3	0	1	4	0	0	5	0	0	2	0
5		28			37			25			28			24			19		

1805		1836			1906			2006			2122			2223		
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
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0	8	0	0	10	0	0	7	0	0	6	0	0	7	0	0	8
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1	10	4	1	13	1	0	8	1	0	7	1	0	8	1	0	9
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0	10	0	0	13	0	0	8	0	0	7	0	0	8	0	0	9
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1	10	4	1	16	2	1	10	3	0	9	3	0	10	2	0	11
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2	8	1	3	11	1	1	7	1	1	7	2	1	7	1	1	8
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2	14	9	2	18	9	2	15	14	2	20	6	2	11	7	2	13
0	14	1	0	18	1	0	16	2	1	21	1	0	12	0	0	13
0	14	0	0	18	0	0	16	0	1	21	0	0	12	0	0	12
0	14	0	0	18	0	0	16	0	1	20	0	0	12	0	0	12
1	12	0	3	15	0	2	14	0	3	18	0	1	11	0	1	12
0	12	0	0	15	0	0	14	0	0	18	0	0	11	0	0	11
1	11	0	1	14	0	1	13	0	2	16	0	1	10	0	2	9
0	11	0	0	14	0	0	13	0	1	15	0	1	9	0	0	9
0	11	0	0	14	0	1	12	0	0	15	0	0	9	0	0	9
2	9	0	3	12	0	2	11	1	3	12	0	2	7	0	5	5
1	9	1	1	11	0	1	10	1	1	12	0	0	7	0	0	4
0	9	0	0	11	0	0	10	0	0	12	0	0	7	0	0	4
0	10	1	0	12	1	0	11	1	0	12	1	0	7	0	0	4
0	9	0	1	11	0	0	11	0	0	12	0	0	7	0	0	4
2	8	0	3	9	0	4	7	0	3	9	0	3	4	0	2	3
0	7	0	0	8	0	0	6	0	0	8	0	0	4	0	0	3
1	6	0	2	7	0	1	6	0	2	7	0	0	4	0	1	2
0	7	0	0	7	0	0	6	0	0	7	0	0	4	0	0	2
1	5	0	2	5	0	1	4	0	1	5	0	1	3	0	0	2
0	5	0	0	5	0	0	4	0	0	5	0	0	2	0	0	2
0	5	0	1	4	0	1	4	0	0	5	0	0	2	0	0	1
0	5	0	0	4	0	0	4	0	0	5	0	0	2	0	0	1
1	4	0	0	4	0	0	3	0	0	4	0	0	1	0	0	1
3	2	0	1	2	0	2	2	0	1	4	0	1	0	0	0	1
0	2	0	0	2	0	0	2	0	1	3	0	0	0	0	0	0
0	2	0	0	2	0	0	2	0	0	3	0	0	0	0	0	0
0	1	0	0	2	0	0	2	0	1	3	0	0	0	0	0	0
0	1	0	0	2	0	0	1	0	0	2						
1	0	0	0	1	0	0	1	0	0	2						
0	0	0	0	1	0	1	0	0	1	1						
1	0	0	1	0	0	0	0	0	1	0						
3		37			29			34			24			24		

Inbound (Northbound)	458			528			558			628			658			728			758			
	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
Gillespie Dr/Jamacha Bl	0	0	0	0	0	0	1	0	1	3	0	3	3	0	3	6	0	6	3	0	3	4
Jamacha Bl/Gillispie Dr	0	0	0	0	0	0	0	0	1	0	0	3	1	0	4	1	0	7	1	0	4	1
Sweetwater Rd/Orville St	0	0	1	0	0	0	0	0	2	1	0	5	0	0	4	1	0	7	1	0	4	1
Sweetwater Rd/St George St	1	0	2	3	0	3	0	0	2	3	0	8	2	0	6	2	0	10	3	0	7	4
Jamacha Rd/Sweetwater Rd	0	0	2	1	0	4	1	0	3	0	0	8	1	0	7	1	0	11	1	0	8	1
Jamacha Rd/Elkelton Bl	1	0	3	0	0	5	2	0	4	3	1	10	3	0	9	1	0	12	2	0	10	2
Jamacha Rd/Darby St	0	0	3	0	0	5	0	0	5	2	0	12	2	0	11	0	0	12	1	0	11	0
Jamacha Rd/Osage Dr	0	0	3	0	0	5	0	0	5	0	0	12	0	0	11	0	0	12	0	0	12	0
Cardiff St/Carlisle Dr	0	0	4	0	0	5	2	0	6	2	1	13	2	0	14	1	0	13	1	0	12	3
Skyline Dr/Canton Dr	0	0	4	0	0	5	1	0	7	3	0	16	2	0	16	2	0	15	2	0	14	1
Skyline Dr/Alton Dr	3	0	7	0	0	5	1	0	8	2	1	17	3	0	19	2	0	17	5	0	19	3
Skyline Dr/Mt Vernon St	0	0	7	0	0	5	2	0	10	1	0	19	1	1	19	3	0	20	1	0	20	1
Skyline Dr/Palm St	0	0	7	0	0	5	0	0	10	1	0	19	1	0	19	1	0	21	1	0	21	1
Skyline Dr/Lincoln St	0	0	7	0	0	5	0	0	10	0	0	19	0	0	19	0	0	21	0	0	21	0
Kempf St/Golden Av	0	0	7	0	0	5	0	1	10	0	0	19	0	0	19	0	0	20	0	1	20	0
Broadway/Grove St	0	0	7	0	0	5	0	0	10	0	0	19	0	0	19	0	1	20	0	0	20	0
Broadway/Main St	1	3	4	4	3	7	2	5	7	3	11	12	4	10	13	4	13	11	7	12	14	5
Broadway/Buena Vista Av	0	0	4	0	0	7	1	0	7	1	0	12	0	0	13	0	0	10	0	1	13	1
Broadway/West St	0	0	4	0	0	6	0	0	7	0	0	12	0	1	13	0	0	10	0	1	13	0
Broadway/Massachusetts Av	0	0	5	0	0	6	1	0	8	1	1	12	1	1	13	1	1	10	1	2	11	1
Broadway/7080	0	0	5	0	0	6	0	0	8	0	1	11	0	1	12	0	1	9	0	1	11	1
College Av/Federal Bl	0	0	5	0	1	6	0	0	7	0	1	11	1	0	12	0	0	9	0	1	10	1
Grove Transit Center	0	0	5	0	1	5	1	1	7	2	0	12	2	2	12	5	2	12	5	1	14	2
College Av/College Grove Dr	0	0	5	0	0	5	0	0	7	1	0	13	1	0	13	1	0	13	1	0	15	1
College Av/Billman St	2	0	7	3	0	8	1	0	8	3	0	15	2	1	14	2	1	15	2	1	16	1
College Av/University Av	1	1	7	0	1	8	1	1	8	2	5	13	4	3	15	2	4	13	2	4	15	3
College Av/Adelaide Av	0	0	7	0	0	8	0	0	8	0	0	13	1	0	16	0	0	13	0	0	15	0
College Av/El Cajon Bl	0	0	7	0	0	7	0	1	7	0	2	11	0	3	13	0	2	11	0	2	13	0
College Av/El Cajon Bl	0	2	5	0	0	7	1	1	7	2	1	11	1	1	14	1	1	12	1	1	13	2
College Av/Arosa St	0	0	5	0	0	7	0	0	7	0	0	12	0	0	14	0	0	12	0	0	13	0
College Av/Mesita Dr	0	0	5	0	0	7	0	0	7	0	0	12	0	0	14	0	0	12	0	0	13	0
College Av/Pontiac St	0	0	5	0	0	7	0	0	7	0	0	12	0	0	14	0	0	12	0	0	13	0
Montezuma Rd/College Av	0	1	4	0	0	7	0	0	7	0	2	10	0	1	13	0	1	11	0	1	12	0
Campanile Dr/Montezuma Rd	0	0	4	0	0	7	0	0	7	0	0	10	0	3	10	0	1	10	0	0	12	0
SDSU Transit Center	0	4	0	0	7	0	0	7	0	0	10	0	0	10	0	0	10	0	0	12	0	0
	12			14			17			34			34			35			41			3

Outbound (Southbound)	553			623			653			721			751			820			850			
	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
SDSU Transit Center	2	0	2	3	0	3	4	0	4	3	0	3	4	0	4	3	0	3	4	0	4	6
College Av/Cresita Dr	0	0	2	0	0	3	0	0	4	0	0	3	0	0	4	0	0	3	0	0	4	0
College Av/Mesita Dr	0	0	2	0	0	3	0	0	4	0	0	3	0	0	4	0	0	3	0	0	4	0
College Av/Arosa St	0	0	2	0	0	3	0	0	4	0	0	3	0	0	4	0	0	3	0	0	4	0
College Av/Soria Dr	0	0	2	0	0	3	0	0	4	0	0	3	0	0	4	0	0	3	0	0	3	0
College Av/El Cajon Bl	0	0	2	1	0	4	3	0	8	1	0	4	2	0	5	1	0	4	1	0	4	3
College Av/Adelaide Av	0	0	2	0	0	4	0	0	8	0	0	4	1	0	6	0	0	4	0	0	4	0
College Av/View Pl	0	0	2	0	0	4	0	0	8	0	0	4	0	0	6	0	0	4	0	0	4	0
College Av/University Av	0	0	2	0	0	4	0	0	7	1	0	5	0	0	6	0	0	3	0	1	4	0
College Av/University Av	0	0	2	2	0	6	1	1	7	2	0	6	1	0	6	1	0	4	1	0	5	4
College Av/Streamview Dr	0	0	2	1	1	5	0	0	7	1	0	7	0	1	6	0	0	5	0	0	5	1
College Av/College Grove Dr	0	0	2	0	0	5	0	0	7	0	0	7	0	0	6	0	0	4	0	0	5	0
Grove Transit Center	0	0	2	0	0	5	1	1	7	0	1	7	0	1	5	6	2	8	1	1	4	1
College Av/College Grove Dr	0	0	2	0	0	5	1	0	8	1	0	7	0	0	5	1	0	9	1	0	5	1
Federal Bl/College Av	1	0	3	0	0	6	1	0	8	1	0	8	1	0	5	1	0	9	1	0	6	0
Broadway/7081	0	0	3	0	0	6	0	0	8	0	0	7	0	0	5	1	0	9	1	0	6	2
Broadway/Massachusetts Av	0	0	4	1	1	6	2	0	9	3	1	9	1	0	6	2	0	11	1	0	7	2
Broadway/West St	0	0	4	0	0	6	0	0	9	0	0	9	0	0	6	0	0	11	1	0	8	0
Broadway/Buena Vista Av	1	0	4	0	0	6	0	1	9	0	0	9	0	0	6	0	0	11	0	0	8	0
Main St/Broadway	2	2	5	3	4	5	3	4	8	5	5	9	4	3	7	4	6	8	4	4	8	5
Broadway/Grove St	0	0	5	0	0	5	0	0	8	0	0	9	0	0	7	0	0	8	1	0	8	1
Skyline Dr/Lincoln St	0	0	5	0	0	5	0	0	8	0	0	9	0	0	7	0	0	8	0	0	8	0
Skyline Dr/Palm St	0	0	5	0	0	6	0	0	8	0	2	8	0	1	7	0	1	7	0	1	7	0
Skyline Dr/Mt Vernon St	0	0	5	1	0	6	0	0	8	0	0	8	0	0	7	0	0	6	0	1	6	0
Skyline Dr/Dayton Dr	0	0	5	0	0	6	0	0	8	0	0	8	0	1	7	0	0	7	0	0	6	0
Skyline Dr/Canton Dr	0	0	5	0	0	6	0	1	7	0	1	7	0	0	7	0	0	6	0	0	6	0
Skyline Dr/Sanford Dr	0	0	5	0	0	6	0	0	7	0	0	7	0	0	7	0	0	6	0	0	6	0
Cardiff St/Carlisle Dr	0	0	4	1	0	7	0	0	7	1	0	7	0	0	7	0	1	6	0	0	6	0
Jamacha Rd/Cardiff St	0	0	5	0	0	7	1	0	8	0	0	7	1	0	7	0	0	6	1	0	7	1
Jamacha Rd/Osage Dr	0	0	5	0	0	7	0	0	8	0	0	7	0	0	7	0	0	6	0	0	7	0
Jamacha Rd/Darby St	0	0	4	0	0	6	0	0	8	0	0	7	0	0	7	0	0	6	0	0	7	0
Jamacha Rd/Elkelton Bl	0	1	3	0	1	6	0	4	4	0	1	6	0	0	7	0	1	6	0	1	6	0
Sweetwater Rd/Jamacha Rd	0	1	2	0	2	4	0	1	3	0	2	5	0	1	6	0	1	5	0	1	5	0
Orville St/Brucker Dr	0	0	2	0	1	3	0	1	2	0	1	4	0	1	5	0	1	4	0	2	3	0
Orville St/Gillespie Dr	0	0	2	0	0	3	0	0	2	0	1	3	0	0	4	0	0	4	0	0	2	0
Gillespie Dr/Jamacha Bl	0	2	0	0	3	0	0	2	0	0	3	0	0	4	0	0	4	0	0	2	0	0
	9			15			19			20			18			21			19			3

NB Vols		20
SB Vols	7	

NB AM (peak bus activity)	V=	20	PHF=	0.98
NB PM (peak bus activity)	V=	9	PHF=	0.99
SB AM (peak bus activity)	V=	7	PHF=	0.97
SB PM (peak bus activity)	V=	25	PHF=	0.96

828		858			928			958			1028			1058			1128			1158			1228			1258			
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
0	4	5	0	5	9	0	9	5	0	5	2	0	2	3	0	3	2	0	2	3	0	3	2	0	2	3	0	2	5
0	5	1	0	6	1	0	10	1	0	6	2	0	4	1	0	4	1	0	3	1	0	4	1	0	3	1	0	4	1
0	6	1	0	7	1	0	11	1	0	7	1	0	5	1	0	5	1	0	4	1	0	5	1	0	4	1	0	5	1
0	9	3	0	9	2	1	13	2	0	9	3	0	8	2	0	6	1	0	5	1	0	7	1	0	5	2	0	6	1
0	10	1	0	10	1	0	13	0	0	9	1	0	9	1	0	7	1	0	6	1	0	8	1	0	6	1	0	8	1
0	12	2	0	12	2	0	14	1	0	10	1	0	9	1	0	9	2	0	8	1	0	8	3	1	8	1	1	8	2
0	12	0	0	12	0	0	15	1	0	11	1	0	9	0	0	9	0	0	8	0	0	8	1	1	8	0	0	8	0
0	13	0	0	13	0	0	15	0	0	11	0	0	9	0	0	9	0	0	8	0	0	8	0	0	8	0	0	8	0
0	15	3	0	15	1	0	16	2	1	12	3	1	11	2	0	10	1	1	9	2	1	10	2	1	9	1	1	9	2
0	16	0	0	15	0	0	16	0	0	13	0	0	12	0	0	11	1	0	9	1	0	11	0	0	9	1	0	10	0
0	19	2	0	17	1	0	17	2	0	14	2	0	14	2	0	13	3	0	12	2	0	13	1	0	11	1	0	10	1
0	19	1	0	18	1	0	18	1	0	15	2	0	16	1	0	14	1	0	14	1	0	14	1	0	12	1	0	11	0
0	20	1	0	19	1	0	18	1	0	16	1	0	16	1	0	14	1	0	14	1	0	14	2	0	13	0	0	11	1
0	20	0	0	19	0	0	18	0	0	16	0	0	16	0	0	14	0	0	14	1	0	15	0	0	13	0	0	11	0
0	20	0	0	19	0	0	18	0	1	15	0	1	16	0	0	14	0	0	14	0	1	14	0	0	13	0	0	11	0
1	19	0	1	18	0	1	18	0	1	15	0	2	15	0	1	13	0	1	13	0	0	14	0	1	12	0	0	11	1
14	11	6	8	16	6	8	16	7	8	13	8	10	13	9	8	14	7	10	11	8	7	15	7	7	12	6	7	11	9
1	11	1	1	15	1	1	16	1	1	14	1	0	13	1	1	15	1	1	11	1	1	15	1	1	12	1	0	11	1
0	11	0	0	15	0	0	16	0	0	14	1	1	13	0	0	15	0	1	11	0	1	15	0	1	11	0	0	11	0
1	11	1	2	15	1	2	15	1	2	12	1	3	12	1	3	13	1	2	10	1	2	13	2	2	11	1	2	10	1
1	10	0	2	13	1	2	14	0	2	11	1	2	11	1	2	12	1	2	8	1	2	13	1	1	11	1	2	9	1
1	10	1	1	13	0	1	13	0	1	10	1	1	11	1	1	12	1	1	8	0	0	13	0	1	10	0	1	8	0
3	9	3	1	15	2	2	14	3	3	11	4	4	11	3	4	11	2	4	7	3	5	11	4	6	8	3	3	9	3
0	10	1	0	15	1	0	15	1	0	12	2	0	13	1	0	11	1	0	7	1	0	11	1	0	9	1	0	10	0
0	11	2	0	17	1	0	16	1	0	13	1	1	13	2	1	12	1	0	8	1	1	12	1	1	9	1	0	10	1
3	11	3	4	15	4	3	17	2	3	12	3	4	12	2	4	11	3	2	9	4	3	13	4	5	9	3	2	11	3
0	11	0	0	15	0	0	17	0	0	12	0	0	12	0	0	11	0	0	8	0	0	12	0	1	8	0	0	11	0
3	8	0	3	13	0	4	13	0	4	8	0	5	8	1	6	6	0	3	6	1	5	8	0	2	6	0	4	8	0
1	9	1	2	12	1	1	13	1	0	9	1	2	7	2	2	6	1	1	7	1	1	7	2	2	6	1	1	8	1
0	9	0	0	12	0	0	14	0	0	9	0	0	7	0	0	6	0	0	7	0	0	7	0	0	6	0	0	8	0
0	9	0	0	12	0	0	14	0	0	9	0	0	7	0	0	6	0	0	7	0	0	7	0	0	6	0	0	8	0
0	9	0	0	12	0	0	13	0	0	9	0	0	7	0	0	6	0	0	7	0	0	7	0	0	6	0	0	8	0
1	8	0	1	11	0	1	13	0	0	9	0	1	6	0	0	6	0	0	6	0	0	7	0	1	5	0	0	8	0
1	6	0	1	11	0	0	13	0	0	9	0	0	6	0	0	6	0	0	6	0	1	6	0	0	5	0	0	8	0
6	0	0	11	0	0	13	0	0	9	0	0	6	0	0	5	0	0	6	0	0	6	0	0	5	0	0	8	0	0
37		34			31			32			41			36			33			36			37			31			3

920		950			1020			1050			1120			1149			1219			1249			1319			1349			
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
0	6	3	0	3	4	0	4	3	0	3	4	0	4	4	0	4	6	0	6	7	0	7	6	0	6	6	0	6	7
0	6	0	0	3	0	0	4	0	0	3	0	0	4	0	0	4	0	0	6	0	0	6	0	0	6	0	0	6	0
0	6	0	0	3	0	0	4	0	0	3	0	0	4	0	0	4	0	0	6	0	0	6	0	0	6	0	0	6	0
0	7	0	0	3	0	0	4	0	0	3	0	0	4	0	0	4	0	0	6	0	0	6	0	0	6	0	0	6	0
1	6	0	0	3	0	0	4	1	0	4	0	0	4	0	0	4	0	0	6	0	0	7	1	0	7	0	0	6	1
1	8	2	0	5	3	0	7	4	0	7	4	1	8	4	1	7	4	1	9	4	1	10	6	1	12	6	0	11	5
0	8	0	0	5	0	0	7	0	0	7	0	0	8	0	0	7	0	0	9	0	0	10	0	0	12	0	0	11	0
0	8	0	0	5	0	0	7	0	0	7	0	0	8	0	0	7	0	0	9	0	0	10	0	0	12	0	0	11	0
1	7	0	1	4	0	1	6	0	1	6	0	2	6	0	1	7	0	1	8	0	1	9	0	2	10	0	1	10	0
1	9	3	0	7	3	1	8	4	1	10	5	1	10	6	1	12	4	1	12	3	1	11	6	1	14	4	1	13	5
1	10	1	0	7	1	1	9	0	1	9	1	1	9	1	1	11	0	1	11	0	1	11	1	1	14	0	1	12	0
0	9	0	0	7	0	0	9	0	0	9	0	0	9	0	0	11	0	1	11	0	1	10	0	1	13	0	0	11	0
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0	11	1	1	8	2	2	9	1	2	8	1	1	10	1	1	10	0	1	8	1	1	9	3	2	13	2	1	11	1
0	12	1	0	8	2	1	10	1	1	8	2	1	11	2	1	12	2	1	9	2	1	10	3	1	15	2	1	12	3
0	12	0	0	8	0	0	10	0	0	9	0	0	11	1	0	12	1	0	9	0	0	10	1	0	15	0	0	12	1
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7	10	4	4	8	5	7	8	7	4	11	5	6	9	7	7	12	7	4	12	10	5	15	12	7	19	9	4	16	10
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0	10	0	0	8	0	0	7	0	0	12	0	1	8	0	1	11	0	1	12	0	2	14	0	3	16	0	2	15	0
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0	8	0	0	7	0	0	6	0	0	9	0	0	7	0	0	8	0	0	10	0	1	10	0	0	13	0	0	12	0
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3	5	0	1	6	0	1	3	0	2	4	0	1	4	0	3	4	0	2	6	0	2	6	0	4	5	0	2	6	0
2	3	0	3	3	0	1	1	0	2	3	0	2	2	0	2	3	0	2	4	0	3	4	0	2	3	0	3	3	0
0	3	0	0	3	0	0	1	0	0	3	0	0	2	0	0	3	0	0	4	0	0	3	0	1	3	0	0	3	0
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52		24			28			30			30			33			31			35			46			38			4

1328		1358			1428			1458			1528			1558			1628			1658			1728			1758			
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
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0	6	1	0	5	1	0	4	1	0	5	1	0	5	2	0	4	1	0	4	0	0	3	0	0	2	1	0	3	0
0	8	1	0	6	2	0	6	1	0	6	1	0	6	1	0	5	1	0	5	1	0	3	1	0	3	1	0	4	1
0	9	2	0	8	2	1	7	3	0	9	2	0	8	2	0	6	2	0	6	3	0	6	2	0	5	2	0	6	1
0	10	1	0	8	0	0	8	0	0	9	1	0	8	0	0	7	1	0	7	1	0	7	0	0	5	1	0	7	1
0	12	1	0	10	2	1	9	2	0	11	2	0	10	1	1	7	1	0	7	2	0	8	1	0	6	1	0	8	1
0	11	0	0	10	0	0	9	0	0	11	0	0	10	0	0	7	0	0	8	0	0	8	0	0	6	0	0	8	0
0	11	0	0	10	0	0	9	0	0	11	0	0	10	0	0	7	0	0	8	0	0	9	0	0	6	0	0	8	0
1	12	1	0	10	1	2	9	2	1	12	1	1	10	1	1	7	0	1	7	1	1	8	1	0	7	1	1	8	1
0	13	0	0	10	1	0	10	1	0	12	1	0	11	1	0	8	0	0	7	0	0	9	0	0	7	0	0	8	0
0	14	1	0	11	0	0	10	1	0	12	0	0	11	0	0	8	0	0	7	1	0	9	0	0	7	1	1	8	0
0	14	1	0	11	1	0	10	1	0	13	0	0	11	1	1	8	0	0	7	0	0	9	0	0	7	0	0	8	0
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1	14	0	0	12	0	0	10	0	1	13	0	0	12	0	0	9	0	0	8	0	0	9	0	0	7	0	0	8	0
1	14	0	0	12	0	1	9	0	1	12	0	1	12	0	1	9	0	0	7	0	0	9	0	1	7	0	0	8	0
8	16	8	6	14	9	5	13	6	5	13	11	6	17	7	4	11	7	4	11	7	5	11	5	4	8	4	3	8	4
1	16	0	0	14	1	0	14	1	0	13	1	1	17	1	0	12	0	0	11	1	0	11	1	0	9	0	0	8	0
1	15	0	1	13	1	1	13	0	1	13	0	1	17	0	1	11	0	0	11	0	1	11	0	1	8	0	0	8	0
2	13	1	2	12	1	2	11	1	2	12	1	3	15	0	2	9	1	2	10	0	2	9	0	2	6	1	1	8	1
2	13	0	2	11	1	2	10	1	1	11	1	2	14	0	1	9	1	2	9	1	1	10	1	1	7	0	0	8	0
1	12	1	1	10	1	1	10	0	1	11	0	1	13	0	1	9	0	1	8	0	1	9	0	0	7	0	0	7	0
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1	12	1	1	10	1	1	11	1	0	12	1	2	13	1	1	13	1	1	10	1	1	12	1	0	8	0	1	8	0
5	11	3	3	11	3	4	10	2	4	10	3	5	11	4	5	12	2	3	8	3	5	9	1	3	6	2	3	7	1
0	11	0	0	11	0	0	10	0	0	10	0	0	11	0	0	11	0	0	8	0	0	8	0	0	6	0	0	7	0
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1	8	0	1	6	1	0	8	1	1	6	1	1	7	1	1	7	1	1	5	1	1	5	1	1	5	0	1	5	0
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1	7	0	0	6	0	1	8	0	1	6	0	0	7	0	1	6	0	0	5	0	0	5	0	0	4	0	0	4	0
0	7	0	0	6	0	0	8	0	0	6	0	0	7	0	0	6	0	0	5	0	0	4	0	0	4	0	0	4	0
7	0	0	6	0	0	8	0	0	6	0	0	7	0	0	6	0	0	5	0	0	4	0	0	4	0	0	4	0	0
5		29			33			30			37			31			26			30			21			21			1

1419		1449			1519			1549			1619			1648			1718			1750			1820			1850			
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
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0	7	0	0	9	0	0	13	0	0	8	0	0	13	0	0	12	0	0	8	0	0	10	0	0	13	0	0	9	0
0	7	0	0	9	0	0	13	0	0	8	0	0	13	0	0	12	0	0	8	0	0	10	0	0	13	0	0	9	0
0	7	0	0	9	0	0	13	0	0	8	0	0	13	0	0	12	0	0	8	0	0	10	0	0	13	0	1	8	0
1	7	1	0	9	1	1	13	0	0	8	0	1	13	0	0	12	1	0	8	1	1	10	0	1	12	0	0	8	0
1	11	3	1	12	3	0	16	4	1	11	5	1	17	4	1	15	4	0	12	6	1	15	3	1	15	3	1	10	1
0	11	0	0	12	0	0	15	0	0	11	0	0	17	0	1	14	0	1	11	0	0	14	0	1	14	0	0	10	0
0	11	0	0	12	0	0	15	0	0	11	0	0	16	0	0	14	0	0	11	0	0	14	0	0	14	0	0	10	0
1	10	0	2	9	0	3	13	0	1	10	0	3	14	0	2	13	0	1	11	0	2	13	0	2	13	0	1	10	0
0	14	3	1	12	5	2	16	5	1	14	5	1	18	6	1	18	2	1	12	3	1	15	2	1	14	3	1	12	2
1	14	0	2	10	0	2	14	0	2	12	0	2	16	1	3	16	0	2	11	1	2	14	0	2	13	1	1	11	0
1	12	0	1	10	0	1	14	0	1	12	0	1	14	0	1	15	0	0	10	0	1	13	0	1	12	0	1	10	0
3	11	1	2	8	2	3	13	1	4	10	2	4	12	2	3	14	1	3	8	1	4	10	1	2	11	1	2	9	1
1	12	2	1	10	1	1	13	2	1	11	3	1	14	2	2	14	1	1	8	1	1	11	1	2	10	1	0	9	1
0	12	1	0	10	1	1	13	0	0	10	0	1	13	0	0	14	0	0	8	1	0	11	0	1	9	0	0	10	0
1	12	2	1	11	2	0	14	1	1	11	2	1	14	2	1	16	1	1	8	1	0	12	0	0	9	1	0	10	1
1	14	1	1	12	3	1	16	1	1	11	1	1	15	1	2	15	1	1	9	2	1	13	1	1	9	1	0	11	1
1	14	0	0	11	0	0	16	1	0	11	1	0	15	1	1	15	0	0	9	1	1	13	0	0	9	0	1	10	0
1	14	0	1	11	0	1	15	0	1	10	0	1	15	0	0	14	0	1	8	0	1	12	0	0	9	0	0	10	0
5	18	11	5	17	11	5	21	12	4	18	13	6	22	17	4	27	9	4	14	9	5	15	7	2	14	7	3	13	7
1	19	3	0	20	2	1	23	2	1	20	1	1	22	1	1	27	1	0	14	2	0	17	1	0	15	1	0	14	1
0	21	0	0	20	0	1	23	0	0	19	0	0	22	0	0	27	0	0	14	0	0	17	0	0	15	0	0	14	0
1	20	0	1	20	0	1	22	0	1	18	0	2	21	0	1	26	0	0	14	0	1	16	0	1	14	0	1	14	0
1	19	0	2	18	0	2	21	0	2	16	0	2	19	0	3	24	0	1	13	0	1	15	0	1	13	0	1	13	0
1	18	0	1	17	0	3	18	0	2	14	0	2	17	1	4	20	0	1	11	0	3	12	0	2	12	0	1	12	0
1	17	0	2	15	0	2	17	0	1	13	0	1	16	0	2	18	0	1	11	0	1	11	0	1	11	0	1	12	0
0	17	0	1	14	0	1	16	0	0	13	0	1	15	0	1	18	0	0	10	0	1	10	0	1	11	0	1	11	0
2	15	0	3	11	0	3	14	0	2	11	0	2	13	0	3	15	0	1	10	0	2	9	0	2	9	0	1	10	0
0	15	0	0	11	0	0	14	0	0	11	1	0	14	1	0	16	0	0	10	0	0	9	0	0	9	0	0	10	0
0	15	0	0	11	0	0	14	0	0	11	0	0	13	0	0	15	0	0	10	0	0	8	0	0	9	0	0	10	0
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4	9	0	2	7	0	3	8	0	3	4	0	3	7	0	3	8	0	3	5	0	2	4	0	2	6	0	2	6	0
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1	4	0	1	4	0	1	3	0	0	2	0	1	2	0	1	3	0	0	3	0	1	2	0	1	4	0	0	4	0
4	0	0	4	0	0	3	0	0	2	0	0	2	0	0	3	0	0	3	0	0	2	0	0	4	0	0	4	0	0
4		40			47			39			49			52			33			40			32			29			2

9

1828		1900			1930			1958			2045		
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
0	2	2	0	2	3	0	3	3	0	3	2	0	2
0	2	1	0	3	0	0	3	1	0	4	0	0	2
0	3	0	0	3	0	0	3	1	0	5	0	0	2
0	4	1	0	4	0	0	3	1	0	6	1	0	3
0	5	0	0	4	0	0	4	0	0	6	0	0	3
0	5	1	0	5	1	0	4	0	0	6	1	0	4
0	6	0	0	5	0	0	4	0	0	7	0	0	4
0	6	0	0	5	0	0	4	0	0	7	0	0	4
1	6	1	0	5	0	0	4	1	0	7	1	0	4
0	6	0	0	5	0	0	4	0	0	7	0	1	4
0	6	1	0	6	0	0	4	0	0	7	0	0	4
0	6	0	0	6	0	0	4	0	0	7	0	0	4
0	6	1	0	6	0	0	4	0	0	7	0	0	4
0	6	0	0	6	0	0	4	0	0	7	0	0	4
0	6	0	0	6	0	0	4	0	0	7	0	0	4
0	6	0	0	6	0	0	4	0	0	7	0	0	4
3	7	2	3	6	2	2	4	3	2	7	2	2	4
0	7	0	0	6	0	0	5	0	0	7	0	0	4
0	7	0	0	6	0	0	4	0	0	7	0	0	4
1	7	0	1	5	0	1	4	1	1	7	0	0	4
0	7	0	0	5	0	0	4	0	0	8	0	0	4
0	7	0	0	5	0	0	4	0	1	7	0	0	4
2	7	2	1	5	2	1	6	3	1	9	1	0	5
0	7	1	0	6	0	0	6	0	0	9	0	0	5
1	7	0	0	6	0	1	6	0	1	9	0	0	5
2	6	1	2	5	2	2	5	1	2	8	0	1	4
0	6	0	0	5	0	0	5	0	0	8	0	0	4
1	5	0	1	4	0	1	4	0	2	6	0	0	4
2	3	0	1	3	1	0	4	0	1	6	0	1	3
0	3	0	0	3	0	0	4	0	0	6	0	0	3
0	3	0	0	3	0	0	4	0	0	6	0	0	3
0	3	0	0	3	0	0	4	0	0	6	0	0	3
0	3	0	0	2	0	0	4	0	0	5	0	0	3
0	3	0	0	2	0	0	4	0	0	5	0	0	3
3	0	0	2	0	0	4	0	0	5	0	0	3	0
.6		15			11			14			9		

1921		1951			2022			2052			2137		
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
0	7	10	0	10	8	0	8	10	0	10	3	0	3
0	7	0	0	10	0	0	8	0	0	10	0	0	3
0	7	0	0	10	0	0	8	0	0	10	0	0	3
0	7	0	0	10	0	0	8	0	0	10	0	0	3
1	6	0	1	9	0	0	8	0	1	10	0	0	3
1	7	2	1	11	1	1	8	2	1	11	0	0	3
0	7	0	0	11	0	0	8	0	0	11	0	0	3
0	7	0	0	11	0	0	8	0	0	11	0	0	3
1	6	0	1	10	0	1	7	0	1	10	0	0	3
0	8	4	1	13	1	0	8	2	1	12	0	0	4
1	6	0	2	11	0	1	6	0	2	10	0	0	3
0	6	0	1	10	0	1	6	0	0	10	0	0	3
1	6	1	2	10	2	1	6	1	2	10	1	0	3
0	6	1	1	10	0	0	6	1	0	11	1	0	4
0	6	0	0	10	0	0	6	0	0	10	0	0	4
0	6	1	0	11	0	0	7	0	0	11	0	0	4
0	6	2	2	10	1	1	7	1	1	11	0	0	4
0	7	1	1	10	0	0	7	0	0	11	0	0	4
0	7	0	1	10	0	0	6	0	1	10	0	0	5
3	10	7	3	13	3	3	7	6	3	13	3	1	6
0	11	1	1	14	0	0	7	0	1	13	0	0	6
0	11	0	0	14	0	0	7	0	0	13	0	0	6
0	11	0	0	14	0	0	7	0	0	13	0	0	6
1	10	0	1	13	0	0	7	0	0	12	0	0	6
1	9	0	0	13	0	0	7	0	1	12	0	1	5
1	8	0	1	12	0	0	6	0	0	11	0	0	5
1	7	0	0	12	0	0	6	0	0	11	0	0	5
0	7	0	0	12	0	0	6	0	0	11	0	0	5
1	7	0	1	11	0	1	5	0	1	10	0	1	4
0	7	0	0	11	0	0	5	0	0	10	0	0	4
0	7	0	0	11	0	0	5	0	0	10	0	0	4
0	6	0	0	11	0	1	5	0	0	10	0	0	3
1	6	0	2	9	0	1	4	0	1	9	0	1	2
3	3	0	5	5	0	2	2	0	6	4	0	1	1
1	2	0	2	3	0	1	1	0	0	4	0	0	1
1	1	0	0	2	0	0	1	0	0	3	0	0	0
1	0	0	2	0	0	1	0	1	4	0	0	0	0
:2		32			18			27			10		

Inbound (Northbound)	456			511			525			540			553			608			620			635			650			705		
	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
8th Street Transit Center	1	1	0	3	0	3	3	0	3	5	1	4	4	0	4	7	1	6	6	1	5	11	0	11	9	0	9	8	0	8
8th St/National City Bl	0	0	0	0	0	3	0	0	3	0	0	4	0	0	4	0	0	6	0	0	5	0	0	11	1	0	9	1	0	9
8th St/C Av	0	0	0	0	0	3	0	0	3	0	1	4	0	0	4	1	0	7	1	0	6	2	0	14	0	0	9	0	0	9
8th St/F Av	0	0	0	0	0	3	0	0	3	0	0	4	0	0	4	0	0	7	0	0	6	0	0	14	0	0	9	0	0	9
Highland Av/8th St	1	0	1	1	0	3	0	0	3	2	0	6	1	0	4	1	1	7	1	0	7	2	0	15	1	0	10	2	0	11
Highland Av/4th St	0	0	1	0	0	4	0	0	3	0	0	6	2	0	7	1	0	7	1	0	7	1	0	16	0	1	10	0	1	10
Highland Av/Division St	1	0	2	0	0	4	1	0	4	1	0	7	0	0	7	0	0	8	3	0	10	1	0	17	2	0	11	1	0	12
Highland Av/Eta St	0	0	2	0	1	4	0	0	4	0	0	7	1	0	8	1	0	9	1	0	11	2	0	19	2	1	13	1	0	13
43rd St/Delta St	2	0	3	1	0	5	1	0	4	1	0	8	2	0	10	2	0	11	4	1	13	3	1	22	8	0	21	4	1	17
43rd St/Beta St	0	0	4	0	0	5	0	0	4	0	0	8	0	0	10	1	0	11	0	0	14	2	0	23	1	0	22	0	0	16
43rd St/Hwy 805	0	0	4	0	0	4	0	1	3	0	1	7	0	0	10	0	0	11	0	0	14	1	1	23	1	0	23	0	0	16
43rd St/Keeler Av	0	0	4	1	0	5	1	0	5	1	0	7	1	0	11	1	0	13	2	0	15	2	0	25	1	0	24	1	0	17
Logan Av/43rd St	0	0	3	0	1	5	0	0	4	1	2	7	1	2	10	2	2	13	2	1	15	3	2	25	1	2	22	2	2	17
Logan Av/44th St	0	0	3	0	0	5	0	0	4	0	1	5	0	0	10	0	0	13	0	0	15	0	0	25	0	0	22	0	0	17
Logan Av/45th St	0	0	3	0	0	5	0	0	4	0	0	5	0	0	10	1	0	13	1	0	16	2	0	27	1	0	23	1	0	18
Logan Av/46th St	0	0	3	0	0	5	0	0	4	0	0	5	0	0	10	1	0	14	0	0	17	0	0	27	0	0	23	0	0	18
47th St/Logan Av	1	0	4	0	0	5	0	0	4	2	0	7	0	0	10	1	0	14	1	0	17	0	0	27	1	0	24	1	1	19
47th St/T St	0	0	4	0	0	5	0	0	4	0	0	7	0	0	10	0	0	15	0	0	18	0	0	27	0	0	24	0	0	19
47th St/Ocean View Bl	0	0	4	0	0	5	0	0	4	0	0	7	0	0	10	0	0	15	0	0	17	0	1	27	0	3	20	0	1	19
Imperial Av/47th St	0	0	5	0	0	5	0	0	4	0	0	7	0	0	10	0	0	15	0	0	18	0	1	27	0	1	20	0	1	18
Imperial Av/49th St	1	0	6	0	0	5	0	0	5	0	0	7	0	0	10	0	2	13	1	5	14	0	8	19	1	7	14	1	7	12
Euclid Av/Naranja St	0	0	6	0	0	5	0	0	4	0	1	7	0	1	9	0	1	12	0	1	13	0	1	18	0	2	12	0	3	10
Euclid Ave Station	8	4	10	5	2	7	5	2	7	3	3	7	11	5	14	6	4	15	11	7	18	8	5	20	10	4	17	8	5	13
Euclid Av/Guymon St	0	0	10	0	0	7	0	0	7	0	0	7	0	0	14	0	0	14	0	0	17	0	0	20	0	1	17	0	0	14
Euclid Av/Hilltop Dr	0	0	10	0	0	7	0	0	8	0	0	7	0	0	15	0	0	14	0	0	17	0	0	20	0	0	17	0	0	14
Euclid Av/Federal Bl	1	7	3	0	4	4	1	4	5	1	2	6	2	3	13	2	3	13	3	5	16	4	4	20	2	3	16	2	4	12
54th St/Wendover Pl	0	0	4	0	0	4	0	0	5	0	0	6	1	0	14	1	0	14	0	0	16	1	0	21	1	0	17	1	0	12
54th St/Pirotte Dr	0	0	4	0	0	4	0	0	5	0	0	6	0	0	14	0	0	14	0	0	16	0	0	21	0	0	17	1	0	13
54th St/Laurel St	0	0	4	0	0	4	0	0	6	0	0	7	1	0	15	1	0	15	0	0	16	0	0	21	0	0	17	0	0	13
54th St/Nutmeg St	0	0	4	1	0	5	0	0	6	0	0	7	0	1	14	0	0	15	0	0	16	1	0	23	0	0	17	0	0	13
54th St/College Grove Dr	1	0	4	0	0	5	1	0	6	1	0	8	3	0	17	1	0	16	2	0	19	1	0	24	2	0	19	1	0	14
54th St/Redwood St	0	0	5	0	0	5	0	0	6	0	0	8	1	0	18	0	0	16	1	0	19	0	0	24	2	0	20	1	0	15
54th St/Marvin St	0	0	5	0	0	5	0	0	6	0	0	8	0	0	18	1	0	17	0	0	19	0	0	24	0	0	20	0	0	15
54th St/Streamview Dr	0	0	5	2	0	7	2	0	8	1	0	9	3	0	20	2	0	18	1	0	20	2	0	27	0	0	21	1	0	16
54th St/Lea St	0	0	5	0	1	6	0	0	8	0	0	9	0	1	20	0	0	18	0	1	20	0	0	27	0	1	20	0	0	16
54th St/University Av	0	1	4	1	1	6	0	1	7	0	1	8	2	3	19	2	4	16	1	5	16	1	6	22	1	4	17	1	3	14
54th St/University Av	0	0	4	0	0	6	0	0	7	0	0	8	0	0	18	0	1	15	0	3	14	0	1	21	0	1	17	0	1	14
54th St/54th Pl	0	1	3	0	0	6	0	0	7	0	0	8	0	2	17	0	2	13	0	1	13	0	1	20	0	0	17	0	1	13
54th St/Trojan Av	0	0	3	1	0	7	0	1	7	1	1	8	0	2	14	1	2	11	0	1	12	0	1	20	0	1	16	0	0	13
54th St/El Cajon Bl	0	1	2	0	0	7	0	1	6	1	1	8	0	3	12	0	3	8	0	4	9	0	6	14	1	3	14	0	4	9
Collwood Bl/Monroe Av	0	0	2	0	0	7	0	0	6	0	0	8	0	0	12	0	0	9	0	0	9	0	0	14	0	0	14	0	0	9
Collwood Bl/4819	0	0	2	0	0	7	0	0	6	0	0	8	0	0	12	0	0	8	0	0	9	1	0	16	1	0	15	0	0	9
Montezuma Rd/Collwood Bl	0	0	2	0	0	7	0	0	6	0	0	8	0	0	12	0	0	8	0	0	9	0	0	16	0	0	15	0	0	9
Montezuma Rd/54th St	0	0	2	0	0	7	0	0	6	0	1	7	0	0	12	0	0	8	0	0	9	0	0	16	0	0	15	0	0	9
Montezuma Rd/55th St	0	0	2	0	0	7	0	0	6	0	0	7	0	0	12	0	0	8	0	0	9	0	0	16	0	0	15	0	0	9
Campanile Dr/Montezuma Rd	0	0	2	0	0	6	0	0	5	0	0	7	0	1	12	0	0	8	0	0	9	0	1	15	0	3	12	0	1	8
SDSU Transit Center	0	2	0	0	6	0	0	5	0	0	7	0	0	12	0	0	8	0	0	9	0	0	15	0	0	12	0	0	8	0
	18			20			17			26			40			38			47			58			53			44		

Outbound (Southbound)	504			534			548			602			616			631			644			659			714			729		
	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
SDSU Transit Center	1	0	1	0	0	0	1	0	1	0	0	0	1	0	0	3	0	3	3	0	3	1	0	1	2	0	2	4	0	4
Montezuma Rd/College Av	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	3	0	0	1	0	0	3	0	0	4
Montezuma Rd/55th St	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	3	0	0	2	0	0	3	0	0	4
Montezuma Rd/54th St	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	3	1	0	4	0	0	2	0	0	3	0	0	4
Collwood Bl/Montezuma Rd	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	3	0	0	4	0	0	2	0	0	3	0	0	4
Collwood Bl/4600	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	3	0	0	4	0	0	2	0	0	3	0	0	4
Collwood Bl/4400	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	3	0	0	4	0	0	2	0	0	3	0	0	4
Collwood Bl/4200	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	3	0	0	4	0	0	2	0	0	3	0	0	4
Collwood Bl/Monroe Av	0	0	0	0	0	0	0	0	1	1	0	1	2	0	2	0	0	3	0	0	4	0	0	2	0	0	3	0	0	4
54th St/El Cajon Bl	0	0	0	1	0	1	0	0	1	0	0	1	1	0	3	2	0	5	2	0	6	4	0	6	3	1	5	2	0	6
54th St/Trojan Av	0	0	1	1	0	2	0	0	1	1	0	2	1	0	3	1	0	5	2	0	8	2	0	7	2	0	7	1	0	7
54th St/University Av	1	0	1	1	1	2	1	0	2	2	1	3	7	0	10	3	1	7	6	1	13	4	0	11	3	1	9	1	1	8
54th St/Lea St	0	0	1	0	0	2	0	0	2	0	0	3	1	0	10	0	0	8	0	0	13	0	0	12	0	0	10	0	0	8
54th St/Streamview Dr	0	0	1	0	0	2	1	0	2	1	0	4	0	0	11	1	0	8	0	0	13	0	0	12	0	0	9	0	0	8
54th St/Redwood St	1	0	2	0	0	2	0	0	3	0	0	4	0	0	11	1	0	9	0	0	13	0	0	12	0	0	10	0	0	8
54th St/Krenning St	1	0	3	0	0	3	0	0	2	0	0	4	1	0	12	1	0	9	1	1	13	1	0	13	1	0	11	0	0	8
54th St/Nutmeg St	0	0	3	0	0	2	0	0	2	0	0	4	0	0	12	1	1	9	0	0	14	0	0	13	1	0	12	0	0	8
54th St/Laurel St	2	1	5	0	0	2	0	0	3	0	0	4	0	0	12	0	0	9	0	0	14	0	0	14	0	0	12	0	0	8
54th St/Pirotte Dr	0	0	5	0	0	2	0	0	3	0	0	4	0	0	12	0	0	10	0	0	14	0	0	14	0	0	12	0	0	8
54th St/Haniman St	1	0	6	0	0	3	0	0	3	1	0	5	1	0	13	0	0	10	0	0	14	0	0	14	0	0	12	0	0	8
Euclid Av/54th St	1	0	6	2	0	5	2	0	4	1	0	6	1	1	13	3	1	12	1	1	14	2	2	14	1	1	12	2	1	9
Euclid Av/Federal Bl	2	0	8	1	0	6	3	0	7	6	0	12	4	1	16	3	0	14	4	1	18	3	0	16	4	0	16	3	1	11
Euclid Av/Hilltop Dr	0	0	8	0	0	6	0	0	7	0	0	13	0	1	15	1	0	15	0	0	17	0	1	16	0	0	16	0	0	11
Euclid Av/Guymon St	0	0	8	0	0	6	0	0	7	0	0	13	0	0	15	0	0	15	0	0	18	0	0	16	0	0	16	0	0	11
Euclid Ave Station	2	6	4	1	4	3	0	5	3	2	8	6	4	8	10	5	8	12	4	8	14	3	11	8	2	9	8	3	7	7
Euclid Av/Unity Place Drwy	0	0	4	0	0	3	0	0	3	0	0	7	0	0	10	0	0	12	1	0	15	0	0	8	1	0	9	0	0	7
Euclid Av/Euclid Health Ctr	0	1	4	0	0	3	0	0	3	0	0	7	0	0	10	0	0	12	0	0	15	0	0	8	0	0	9	0	0	8
Imperial Av/50th St	0	0	4	0	0	3	1	0	3	0	0	6	0	0	10	0	0	12	0	0	15	0	0	8	1	0	9	0	0	8
Imperial Av/49th St	0	0	4	0	0	3	0	0	3	0	0	6	0	3	6	1	6	7	1	5	10	0	2	6	0	1	8	0	0	7
47th St/Imperial Av	0	0	4	0	0	3	0	0	3	0	0	6	0	0	6	0	0	7	0	0	10	0	0	6	0	0	8	0	0	7
47th St/Ocean View Bl	0	0	4	0	0	3	0	0	3	0	0	6	0	0	6	0	0	7	0	0	10	0	0	6	0	0	8	0	0	7
47th St/T St	0	0	4	0	0	3	0	0	3	0	0	6	0	0	6	0	0	7	0	0	10	0	0	6	0	0	8	0	0	7
Logan Av/47th St	0	0	3	1	0	4	1	0	4	1	0	6	1	1	6	0	1	7	1	0	10	0	1	5	1	1	8	1	1	6
Logan Av/46th St	0	0	4	1	0	5	1	0	4	0	0	6	0	0	6	0	0	7	0	0	10	0	0	5	0	0	8	0	0	6
Logan Av/45th St	0	0	4	0	0	5	0	0	5	0	0	6	0	0	6	0	0	7	0	0	10	1	0	6	1	0	9	0	0	6
Logan Av/Dominion St	0	0	4	0	0	5	0	0	5	0	0	6	0	1	6	0	0	7	0	0	10	0	1	5	0	1	8	0	0	6
43rd St/National Av	0	0	4	1	0	6	1	0	5	2	0	8	0	0	6	0	0	7	0	0	10	1	0	6	1	0	8	0	0	6
43rd St/Keeler Av	0	0	4	1	0	6	0	0	5	1	0	9	0	0	6	0	0	7	0	0	10	1	0	7	0	0	8	1	0	7
43rd St/Hwy 805	0	0	4	0	1	6	0	0	6	0	0	9	1	0	7	1	0	7	1	0	10	1	0	7	1	0	9	1	1	7
43rd St/Delta St	1	1	4	2	1	7	2	1	7	4	0	13	5	0	12	5	0	12	3	1	12	2	0	9	1	0	10	2	1	8
Highland Av/Eta St	2	0	6	2	0	8	3	0	10	2	0	15	4	0	16	2	1	14	2	0	13	3	0	11	2	1	11	1	0	9
Highland Av/Division St	0	0	6	0	0	8	0	0	10	1	0	16	2	0	18	2	1	15	0	0	14	1	0	12	0	0	12	1	0	9
Highland Av/2nd St	0	0	6	0	0	9	1	0	11	1	0	16	0	0	18	0	0	16	0	0	14	1	1	13	1	1	12	0	1	9
8th St/Highland Av	0	1	6	1	1	9	1	2	9	1	6	11	1	3	16	1	2	14	1	4	10	1	4	10	0	5	7	1	3	7
8th St/E Av	0	0	6	0	0	9	0	0	9	0	0	10	0	0	15	0	0	14	0	0	10	0	0	9	0	0	7	0	0	7
8th St/C Av	0	0	6	0	0	9	1	0	10	0	1	10	1	1	15	0	0	15	0	0	10	0	0	9	0	1	7	0	1	6
W 8th St/Roosevelt Av	0	1	5	0	3	6	0	1	8	0	1	10	0	1	15	0	1	14	0	2	9	0	2	8	0	1	6	0	0	6
8th Street Transit Center	0	5	0	0	5	1	0	8	0	0	10	0	0	15	0	0	14	0	0	9	0	0	8	0	0	6	0	0	6	0
	17			18			20			30			40			40			38			36			32			29		

NB Vols
SB Vols

NB AM (peak bus activity)	V=	45	PHF=	0.76
NB PM (peak bus activity)	V=	17	PHF=	0.62
SB AM (peak bus activity)	V=	13	PHF=	0.70
SB PM (peak bus activity)	V=	38	PHF=	0.89

720			735			750			806			821			836			851			906			921			936			951			1006			102	
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF
11	0	11	7	0	7	10	0	10	9	0	9	6	0	6	6	0	6	6	0	6	4	0	4	6	0	6	7	0	7	6	0	6	6	0	6	5	0
0	0	12	0	0	7	1	0	10	1	0	10	1	0	6	1	0	7	0	0	6	1	0	5	1	0	6	0	0	7	0	0	6	1	0	6	1	0
0	0	12	0	0	7	1	0	10	0	0	10	1	0	7	0	0	7	1	0	7	1	0	5	0	0	7	0	0	7	0	0	6	0	0	6	1	0
0	0	12	0	0	7	0	0	10	0	0	10	0	0	6	0	0	7	1	0	7	0	0	5	0	0	7	1	0	8	0	0	6	1	1	7	0	0
1	1	12	1	1	8	1	0	11	2	2	11	1	1	7	2	1	8	3	0	10	3	0	8	2	1	8	3	1	10	1	1	6	2	1	8	3	0
0	0	12	1	0	9	0	0	11	0	0	11	0	0	7	0	1	8	1	1	9	1	1	8	1	0	9	1	1	9	1	1	7	1	1	9	1	1
1	1	13	1	0	9	1	1	11	1	0	11	0	0	7	1	0	8	1	0	10	1	0	8	0	0	9	0	1	9	0	0	7	1	0	9	0	0
1	1	13	0	0	9	1	0	12	1	0	12	0	0	7	1	0	9	1	0	11	0	0	9	1	0	9	0	0	9	1	0	8	1	0	10	1	0
5	1	17	2	0	11	3	1	13	4	1	14	1	0	8	2	1	10	1	1	11	2	1	10	1	1	10	1	0	9	1	0	9	1	1	10	2	1
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744			759			814			829			844			900			915			930			945			1000			1015			1030			104	
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF
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13

0	1035			1050			1105			1120			1135			1150			1205			1220			1235			1250			1305			1320			
LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
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5	1100			1115			1130			1145			1200			1215			1230			1245			1300			1315			1330			1345			
LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON
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OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
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1359		1413			1428			1443			1458			1513			1528			1543			1558			1613			1628			1643			1658		
OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
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1649			1704			1719			1734			1751			1820			1852			1922			1954			2024			2054			2124			215	
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF
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3	4	14	1	4	14	1	2	10	2	3	14	2	3	12	2	4	17	2	5	14	1	4	10	2	4	11	1	2	9	1	2	11	0	2	7	1	2
1	2	13	1	1	14	0	0	10	1	0	14	0	1	11	1	1	16	1	1	14	0	1	10	0	1	11	0	0	8	0	0	10	0	1	7	0	0
0	0	13	0	0	14	0	0	10	0	0	14	0	0	11	0	0	16	0	0	14	0	0	10	0	0	11	0	0	8	0	0	10	0	0	7	0	0
0	0	13	0	1	13	0	0	10	0	0	14	0	0	11	0	0	16	0	0	14	0	0	10	0	0	11	0	0	8	0	0	10	0	0	7	0	0
0	0	13	0	0	13	0	0	10	0	0	14	0	0	11	0	1	15	0	0	14	0	0	10	0	0	11	0	0	8	0	0	10	0	0	7	0	0
0	0	13	1	0	13	0	0	9	0	0	14	0	1	11	0	1	15	0	1	14	0	0	10	0	0	11	0	0	8	0	0	10	0	0	6	0	0
0	1	13	0	1	13	0	1	9	0	1	13	0	1	11	0	1	14	1	1	14	1	1	9	0	1	10	1	1	8	0	0	9	0	0	6	0	0
0	0	12	0	0	13	0	0	9	0	0	13	0	0	11	0	0	14	0	0	14	0	0	9	0	0	10	0	0	8	0	0	9	0	0	6	0	0
0	0	12	1	0	13	0	0	9	0	0	14	0	0	11	0	0	14	0	0	14	0	0	9	0	0	10	0	0	8	0	0	9	0	0	6	0	0
0	0	12	0	1	13	0	0	9	0	0	13	0	0	10	0	1	13	0	0	14	0	0	9	0	0	10	0	0	8	0	0	9	0	0	6	0	0
2	4	11	1	5	9	0	3	6	1	4	11	1	3	9	2	4	11	1	4	11	1	2	8	1	3	8	3	3	8	1	2	8	0	2	4	0	1
0	0	11	0	0	9	0	0	6	0	0	11	0	0	9	0	0	11	0	0	11	0	0	8	0	0	8	1	0	8	0	0	8	0	0	4	0	0
0	0	10	0	0	9	0	0	6	0	0	11	0	0	9	0	0	11	0	0	10	0	0	8	0	0	8	0	0	8	0	1	7	0	0	4	0	0
0	1	9	0	1	8	0	1	5	0	1	10	0	1	9	0	1	10	0	1	10	0	1	7	0	1	7	0	0	8	0	0	7	0	0	3	0	1
1	3	7	0	4	4	0	3	2	1	5	7	1	3	7	0	6	4	1	3	9	0	4	4	1	2	5	0	4	5	1	2	6	0	1	2	0	1
0	0	7	0	0	4	0	0	2	0	0	6	0	0	7	0	0	4	0	0	8	0	0	4	0	0	5	0	0	5	0	0	6	0	0	2	0	0
0	0	7	0	0	3	0	0	2	0	0	6	0	0	6	0	0	4	0	0	8	0	0	4	0	0	5	0	0	4	0	0	6	0	0	2	0	0
0	0	7	0	0	3	0	0	2	0	0	6	0	0	6	0	0	4	0	0	8	0	0	4	0	0	5	0	0	4	0	0	6	0	0	2	0	0
0	0	7	0	0	3	0	0	2	0	0	6	0	0	6	0	0	4	0	0	8	0	0	4	0	0	5	0	0	4	0	0	6	0	0	2	0	0
0	0	6	0	0	3	0	0	2	0	0	6	0	0	6	0	0	3	0	0	8	0	0	4	0	0	5	0	0	4	0	0	6	0	0	2	0	0
0	0	6	0	0	3	0	0	2	0	0	6	0	0	6	0	0	3	0	0	8	0	0	3	0	0	5	0	0	4	0	0	6	0	0	2	0	0
0	6	0	0	3	0	0	2	0	0	6	0	0	6	0	0	3	0	0	8	0	0	3	0	0	5	0	0	4	0	0	6	0	0	2	0	0	5
45			46			29			42			40			52			47			39			38			28			27			22			26		

1713			1730			1745			1800			1815			1830			1845			1901			1919			1949			2018			2048			212	
ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF
10	0	10	8	0	8	9	0	9	8	0	8	8	0	8	6	0	6	6	0	6	7	0	7	6	0	6	10	0	10	9	0	9	5	0	5	8	0
0	0	10	0	0	8	0	0	9	0	0	8	0	0	8	0	0	7	0	0	6	0	0	7	0	0	7	0	0	11	0	0	9	0	0	6	0	0
0	0	10	0	0	8	0	0	9	0	0	8	0	0	8	0	0	7	0	0	6	0	0	7	0	0	7	0	0	11	1	0	9	0	0	6	0	0
0	0	10	0	0	8	0	0	9	0	0	8	0	0	8	0	0	7	0	0	6	0	0	7	0	0	7	0	0	10	0	0	9	0	0	6	0	0
0	0	10	0	0	8	0	0	9	0	1	8	0	0	8	0	0	6	0	0	6	0	1	6	0	0	6	0	0	11	0	0	9	0	1	6	0	1
0	0	10	0	0	7	0	0	9	0	0	7	0	0	8	0	0	6	0	0	6	0	0	6	0	0	7	0	0	11	0	0	9	0	0	6	0	0
0	0	10	0	0	7	0	0	9	0	0	7	0	0	8	0	0	6	0	0	6	0	0	6	0	0	7	0	0	10	0	0	9	0	0	6	0	0
0	0	10	0	0	7	0	0	9	0	0	7	1	0	8	0	0	6	0	0	6	0	0	6	0	0	7	0	0	11	0	0	9	0	0	6	0	0
0	0	10	0	0	7	0	0	9	0	0	7	0	0	8	0	0	6	0	0	6	0	0	6	0	0	7	0	0	10	0	0	8	0	0	5	0	0
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1	0	16	1	0	12	1	1	13	1	0	12	1	0	11	1	0	9	0	0	8	1	0	10	1	0	11	0	0	14	0	0	12	0	0	7	0	0
6	3	19	4	2	14	5	2	16	6	2	15	6	2	15	3	1	11	5	1	12	3	1	12	4	1	13	5	3	16	6	2	15	3	1	9	3	1
0	0	19	0	0	14	0	1	15	0	0	15	0	0	15	0	0	11	0	0	12	0	0	11	0	0	13	0	0	16	0	0	15	0	0	9	0	0
0	1	18	0	1	14	0	1	15	0	1	14	0	1	14	0	1	10	0	1	11	0	1	10	0	1	13	0	0	16	0	1	14	0	0	9	0	1
0	1	17	0	1	13	0	1	14	0	1	14	0	1	13	0	1	10	0	0	11	0	1	10	0	1	12	1	1	15	1	1	14	0	0	9	0	1
0	1	16	0	0	13	0	1	14	0	1	13	0	1	13	0	1	10	0	1	11	0	0	10	0	1	12	0	1	15	0	1	13	0	0	9	0	0
0	0	16	0	0	13	0	0	14	0	0	13	0	0	13	0	0	10	0	0	11	0	0	10	0	0	12	0	0	15	0	0	13	0	0	9	0	0
0	1	15	0	0	12	0	0	14	0	0	13	0	1	12	0	0	10	0	0	11	0	0	9	0	0	11	0	1	15	0	0	13	0	0	9	0	0
0	0	15	0	0	12	0	0	14	0	0	13	0	0	12	0	0	9	0	0	11	0	0	9	0	0	11	0	1	14	0	0	12	0	0	9	0	0
0	0	15	0	0	12	0	0	14	0	0	13	0	0	12	0	1	9	0	0	10	0	0	9	0	0	11	0	0	14	0	1	11	0	1	8	0	0
1	2	14	2	2	11	1	1	13	1	1	12	1	1	11	0	1	8	1	1	10	1	1	8	1	1	11	1	1	13	1	2	10	0	1	8	0	1
2	1	15	1	1	11	1	1	13	2	1	14	2	0	13	1	1	8	3	1	13	1	0	9	2	0	12	2	1	14	1	1	11	1	1	8	0	1
0	0	14	0	0	11	0	0	12	0	0	13	0	0	12	0	0	8	0	1	12	0	0	9	0	0	12	0	0	14	0	0	10	0	0	8	0	0
0	0	14	0	0	11	0	0	12	0	0	13	0	0	13	0	0	8	0	0	12	0	0	9	0	0	12	0	0	14	0	0	10	0	0	8	0	0
5	9	11	3	7	8	4	6	10	4	8	10	4	7	10	4	5	7	4	8	8	4	6	7	6	7	11	7	13	9	5	6	9	6	5	9	7	6
3	0	13	1	0	9	1	0	11	2	0	11	1	0	11	1	0	9	2	0	10	1	0	8	1	0	12	1	0	9	2	0	10	1	1	10	1	0
0	0	13	0	0	9	0	0	12	0	0	12	0	0	11	0	0	9	0	1	9	0	0	8	0	0	12	0	0	9	0	0	10	0	0	10	0	0
0	1	13	0	1	9	0	1	11	0	1	11	0	1	10	0	2	7	0	1	9	0	1	8	0	1	11	0	1	8	0	1	9	0	1	9	0	2
0	0	13	0	0	9	0	0	11	0	0	11	0	0	10	0	0	7	0	0	9	0	0	8	0	0	11	0	0	8	0	0	9	0	0	9	0	0
0	0	13	0	0	9	0	0	11	0	0	11	0	0	10	0	0	7	0	0	8	0	0	8	0	0	11	0	0	8	0	0	9	0	0	9	0	0
0	0	13	0	0	9	0	0	12	0	0	11	0	0	10	0	0	7	0	0	9	0	0	8	0	0	11	0	0	8	0	0	9	0	0	9	0	0
0	0	13	0	0	9	0	0	11	0	0	11	0	0	10	0	0	7	0	0	9	0	0	8	0	0	11	0	0	8	0	0	8	0	0	9	0	0
2	1	14	0	0	9	1	0	12	0	1	10	0	1	9	0	0	7	1	1	9	0	1	7	1	1	11	0	1	8	0	1	8	0	1	9	0	1
0	0	14	0	0	9	0	0	12	0	0	11	0	0	9	0	0	7	0	0	9	0	0	7	0	0	11	0	0	7	0	0	8	0	0	8	0	0
0	1	13	0	1	9	0	0	12	0	1	10	0	0	9	0	0	7	0	0	9	0	0	7	0	0	11	0	0	7	0	1	7	0	0	8	0	0
0	0	13	0	0	8	0	1	11	0	0	10	0	0	9	0	0	7	0	0	9	0	0	7	0	0	11	0	0	7	0	0	8	0	0	8	0	0
0	1	11	1	0	9	0	0	11	1	1	11	1	1	9	0	1	6	1	1	9	0	0	7	1	0	11	1	1	8	1	1	9	0	0	8	0	0
0	1	11	0	0	9	0	0	10	0	0	10	0	0	9	0	1	6	0	0	9	0	0	7	0	0	11	0	0	8	0	0	8	0	0	8	0	0
1	1	11	1	1	9	1	1	10	1	1	11	1	1	9	0	1	5	1	1	8	1	1	7	1	1	11	1	1	8	1	1	9	1	0	9	1	0
1	1	11	1	1	9	0	1	9	1	1	10	1	1	8	0	1	5	1	1	8	0	1	6	1	2	10	1	1	7	0	1	8	0	1	9	0	0
0	1	11	0	1	9	0	1	9	0	1	9	0	1	7	0	0	5	0	0	8	0	0	6	0	1	9	0	1	6	0	1	8	0	0	8	0	1
1	0	11	0	0	9	0	0	9	0	0	9	0	0	8	1	0	5	0	0	7	0	0	6	0	0	9	0	0	6	0	0	8	0	0	9	0	0
0	1	10	0	0	9	0	0	8	0	0	9	0	0	8	0	0	5	0	0	7	0	0	6	0	0	9	0	1	6	0	0	8	0	0	9	0	0
1	3	8	0	3	5	0	1	8	1	3	6	1	3	5	0	1	4	1	2	6	0	2	4	1	2	8	1	1	5	0	2	6	1	3	7	1	2
0	0	8	0	0	5	0	0	8	0	0	6	0	0	5	0	0	4	0	0	6	0	0	4	0	0	8	0	0	5	0	0	6	0	0	7	0	0
0	1	7	0	1	4	0	0	7	0	0	6	0	0	5	0	0	3	1	1	6	0	0	4	0	0	8	0	0	5	0	1	5	0	0	7	0	1
0	1	7	0	0	4	0	0	7	0	0	5	0	0	4	0	0	3	0	0	6	0	0	4	0	0	8	0	0	5	0	0	5	0	0	7	0	0
0	7	0	0	5	0	0	7	0	0	6	0	0	4	0	0	3	0	0	6	0	0	4	0	0	8	0	0	5	0	0	5	0	0	7	0	0	5
44			32			34			37			34			24			32			28			33			41			34			29			27		

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LOAD
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0	2150			2220			2250		
LOAD	ON	OFF	LOAD	ON	OFF	LOAD	ON	OFF	LOAD
8	9	0	9	8	0	8	6	0	6
8	0	0	9	0	0	8	0	0	6
8	0	0	9	0	0	9	0	0	7
8	0	0	9	0	0	9	0	0	7
7	0	0	9	0	1	8	0	1	5
7	0	0	9	0	0	7	0	0	5
7	0	0	9	0	0	7	0	0	5
7	0	0	9	0	0	7	0	0	5
7	0	0	9	0	0	7	0	1	5
9	2	1	9	1	1	8	1	1	5
9	0	0	9	0	1	7	0	1	5
12	1	1	10	2	1	8	1	1	5
12	0	0	10	0	0	8	0	0	5
11	0	1	9	0	0	8	0	0	5
10	0	0	9	0	0	8	0	0	4
10	0	0	9	0	0	7	0	0	5
10	0	0	9	0	0	7	0	0	4
10	0	0	9	0	0	7	0	0	4
10	0	0	8	0	0	7	0	0	4
9	0	0	8	0	0	7	0	0	4
9	0	1	7	0	1	6	0	0	4
9	1	1	7	0	0	6	0	0	4
9	0	0	7	0	0	6	0	0	4
9	0	0	7	0	0	6	0	0	4
10	5	4	7	4	3	7	4	3	5
11	1	0	9	1	0	8	0	0	5
11	0	1	8	0	0	8	0	0	5
9	0	1	7	0	1	7	0	0	5
9	0	0	7	0	0	7	0	0	5
10	0	0	7	0	0	7	0	0	5
9	0	0	7	0	0	7	0	0	5
9	0	0	7	0	0	6	0	0	5
9	0	1	7	0	1	6	0	0	5
8	0	0	7	0	0	6	0	0	5
8	0	0	7	0	0	5	0	0	5
8	0	0	7	0	0	5	0	0	5
8	1	0	7	0	0	5	0	0	5
8	0	0	7	0	0	5	0	0	5
8	1	0	8	0	0	5	0	0	5
8	0	1	7	0	1	4	0	1	4
8	0	2	6	0	1	3	0	0	4
8	0	0	5	0	0	3	0	0	4
8	0	0	5	0	0	3	0	0	4
6	0	3	3	0	2	1	0	2	3
6	0	0	3	0	0	1	0	0	3
5	0	0	2	0	0	1	0	0	3
5	0	0	2	0	0	1	0	1	2
0	0	2	0	0	1	0	0	2	0
	24			19			15		

		Inbound (towards SDSU)				Outbound (from SDSU)			
		AM Peak		PM Peak		AM Peak		PM Peak	
Route #	Max load	# buses	PHF	# buses	PHF	# buses	PHF	# buses	PHF
11	37	4	0.88	4	0.75	5	0.75	5	0.86
14	26	1	1	1	1	1	1	1	1
115	37	2	0.8	2	0.82	2	0.85	2	0.95
215	59	6	0.81	6	0.81	6	0.82	6	0.77
856	37	2	0.97	2	0.92	3	0.7	2	1
936	37	2	0.98	2	0.99	2	0.97	2	0.96
955	37	4	0.76	4	0.62	4	0.7	4	0.89

	Inbound AM	Inbound PM	Outbound AM	Outbound PM
P_11	130.24	111	138.75	159.1
P_14	26	26	26	26
P_115	59.2	60.68	62.9	70.3
P_215	286.74	286.74	290.28	272.58
P_856	71.78	68.08	77.7	74
P_936	72.52	73.26	71.78	71.04
P_955	112.48	91.76	103.6	131.72
TOTAL	**758.96**	**717.52**	**771.01**	**804.74**

APPENDIX P

POST MITIGATION INTERSECTION LEVEL OF SERVICE CALCULATION SHEETS AND SIGNAL WARRANT CALCULATIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	188	311	91	22	721	206	611	998	54	111	489	322
Future Volume (veh/h)	188	311	91	22	721	206	611	998	54	111	489	322
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	204	338	99	24	784	224	664	1085	59	121	532	350
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	2	2	0
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	253	1170	830	56	1022	433	720	1243	68	424	558	366
Arrive On Green	0.15	0.66	0.66	0.03	0.29	0.29	0.21	0.37	0.37	0.12	0.28	0.28
Sat Flow, veh/h	3442	3539	1507	1774	3539	1499	3442	3404	185	3442	1998	1313
Grp Volume(v), veh/h	204	338	99	24	784	224	664	564	580	121	471	411
Grp Sat Flow(s),veh/h/ln	1721	1770	1507	1774	1770	1499	1721	1770	1820	1721	1770	1541
Q Serve(g_s), s	7.2	5.0	0.3	1.7	25.5	11.4	23.8	37.4	37.4	4.0	32.9	33.0
Cycle Q Clear(g_c), s	7.2	5.0	0.3	1.7	25.5	11.4	23.8	37.4	37.4	4.0	32.9	33.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.85
Lane Grp Cap(c), veh/h	253	1170	830	56	1022	433	720	646	664	424	494	430
V/C Ratio(X)	0.81	0.29	0.12	0.43	0.77	0.52	0.92	0.87	0.87	0.29	0.95	0.96
Avail Cap(c_a), veh/h	268	1170	830	84	1022	433	765	765	787	424	496	432
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.9	15.1	3.5	59.9	40.9	19.6	48.8	37.3	37.3	50.2	44.6	44.6
Incr Delay (d2), s/veh	14.0	0.6	0.3	1.9	5.5	4.4	15.5	10.2	10.0	0.1	29.0	32.0
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	3.9	2.5	0.6	0.8	13.2	5.2	12.9	20.0	20.5	1.9	20.1	17.9
LnGrp Delay(d),s/veh	66.9	15.7	3.8	61.8	46.4	23.9	64.3	47.5	47.3	50.3	73.6	76.6
LnGrp LOS	E	B	A	E	D	C	E	D	D	D	E	E
Approach Vol, veh/h		641			1032			1808			1003	
Approach Delay, s/veh		30.2			41.9			53.6			72.0	
Approach LOS		C			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.9	51.1	8.4	46.6	30.8	40.3	13.7	41.3
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	8.8	54.5	6.0	37.9	28.0	35.3	9.8	34.1
Max Q Clear Time (g_c+I1), s	6.0	39.4	3.7	7.0	25.8	35.0	9.2	27.5
Green Ext Time (p_c), s	0.8	6.6	0.0	19.9	0.6	0.2	0.0	5.6

Intersection Summary	
HCM 2010 Ctrl Delay	51.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	601	0	819	0	0	0	0	1667	412	0	934	269
Future Volume (vph)	601	0	819	0	0	0	0	1667	412	0	934	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1	6.1		6.4	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.97		1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3433		3610					3539	1528		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1528		3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	653	0	890	0	0	0	0	1812	448	0	1015	292
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	151	0	0	0
Lane Group Flow (vph)	653	0	890	0	0	0	0	1812	297	0	1015	292
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									2 4			Free
Actuated Green, G (s)	21.1		62.9					66.4	66.4		24.6	100.0
Effective Green, g (s)	21.1		62.9					66.4	66.4		24.6	100.0
Actuated g/C Ratio	0.21		0.63					0.66	0.66		0.25	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	724		2270					2349	1014		870	1536
v/s Ratio Prot	c0.19		0.25					c0.51			c0.29	
v/s Ratio Perm									0.19			0.19
v/c Ratio	0.90		0.39					0.77	0.29		1.17	0.19
Uniform Delay, d1	38.4		9.1					11.6	7.0		37.7	0.0
Progression Factor	1.00		1.00					1.33	0.30		0.76	1.00
Incremental Delay, d2	14.2		0.0					0.2	0.1		86.5	0.3
Delay (s)	52.6		9.2					15.6	2.2		115.3	0.3
Level of Service	D		A					B	A		F	A
Approach Delay (s)		27.6			0.0			13.0			89.6	
Approach LOS		C			A			B			F	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	402	45	30	86	13	339	26	1340	83	303	1321	130
Future Volume (veh/h)	402	45	30	86	13	339	26	1340	83	303	1321	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.98	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	503	0	0	93	14	368	28	1457	90	329	1436	141
Adj No. of Lanes	2	1	0	0	1	1	1	3	1	2	3	2
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	724	380	0	180	27	334	38	1923	589	327	2321	1812
Arrive On Green	0.20	0.00	0.00	0.12	0.12	0.12	0.02	0.38	0.38	0.03	0.15	0.15
Sat Flow, veh/h	3548	1863	0	1552	234	1583	1774	5085	1558	3442	5085	2726
Grp Volume(v), veh/h	503	0	0	107	0	368	28	1457	90	329	1436	141
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1785	0	1583	1774	1695	1558	1721	1695	1363
Q Serve(g_s), s	13.1	0.0	0.0	5.6	0.0	11.6	1.6	25.0	3.8	9.5	26.4	2.8
Cycle Q Clear(g_c), s	13.1	0.0	0.0	5.6	0.0	11.6	1.6	25.0	3.8	9.5	26.4	2.8
Prop In Lane	1.00		0.00	0.87		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	724	380	0	207	0	334	38	1923	589	327	2321	1812
V/C Ratio(X)	0.70	0.00	0.00	0.52	0.00	1.10	0.73	0.76	0.15	1.01	0.62	0.08
Avail Cap(c_a), veh/h	1174	617	0	207	0	334	73	1923	589	327	2321	1812
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.49	0.49	0.49
Uniform Delay (d), s/veh	36.9	0.0	0.0	41.6	0.0	39.5	48.6	27.1	20.5	48.4	34.3	9.8
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.0	0.0	79.3	23.0	2.9	0.6	36.4	0.6	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	6.5	0.0	0.0	2.8	0.0	16.5	1.0	12.1	1.7	6.2	12.6	1.7
LnGrp Delay(d),s/veh	37.4	0.0	0.0	42.6	0.0	118.8	71.7	30.0	21.1	84.9	34.9	9.8
LnGrp LOS	D			D		F	E	C	C	F	C	A
Approach Vol, veh/h		503			475			1575			1906	
Approach Delay, s/veh		37.4			101.6			30.2			41.7	
Approach LOS		D			F			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	43.8		25.3	6.6	51.6		16.5
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	9.5	25.1		33.1	4.1	* 32		11.6
Max Q Clear Time (g_c+I1), s	11.5	27.0		15.1	3.6	28.4		13.6
Green Ext Time (p_c), s	0.0	0.0		1.4	0.0	2.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.5
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	468	1182	41	165	1273
Future Volume (veh/h)	0	468	1182	41	165	1273
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863
Adj Flow Rate, veh/h	0	509	1285	45	179	1384
Adj No. of Lanes	0	0	2	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	2	2	2	2
Cap, veh/h	0	482	1553	679	216	2135
Arrive On Green	0.00	0.31	0.44	0.44	0.12	0.60
Sat Flow, veh/h	0	1550	3632	1547	1774	3632
Grp Volume(v), veh/h	0	510	1285	45	179	1384
Grp Sat Flow(s),veh/h/ln	0	1553	1770	1547	1774	1770
Q Serve(g_s), s	0.0	29.0	29.8	1.6	9.2	23.8
Cycle Q Clear(g_c), s	0.0	29.0	29.8	1.6	9.2	23.8
Prop In Lane	0.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	0	483	1553	679	216	2135
V/C Ratio(X)	0.00	1.06	0.83	0.07	0.83	0.65
Avail Cap(c_a), veh/h	0	483	1632	714	304	2391
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	32.1	23.1	15.1	40.0	12.1
Incr Delay (d2), s/veh	0.0	56.4	3.5	0.0	12.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	19.9	15.2	0.7	5.3	11.7
LnGrp Delay(d),s/veh	0.0	88.5	26.6	15.2	52.5	12.6
LnGrp LOS		F	C	B	D	B
Approach Vol, veh/h	510		1330			1563
Approach Delay, s/veh	88.5		26.2			17.1
Approach LOS	F		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	15.3	44.9				60.2		33.0
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	16.0	43.0				63.0		29.0
Max Q Clear Time (g_c+I1), s	11.2	31.8				25.8		31.0
Green Ext Time (p_c), s	0.2	9.1				21.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	358	966	478	186	418	213	348	660	49	224	819	311
Future Volume (veh/h)	358	966	478	186	418	213	348	660	49	224	819	311
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.94	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	389	1050	520	202	454	232	378	717	53	243	890	338
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	2	2	0
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	438	1039	623	207	1000	423	398	836	62	703	842	318
Arrive On Green	0.25	0.59	0.59	0.12	0.28	0.28	0.12	0.25	0.25	0.20	0.34	0.34
Sat Flow, veh/h	3442	3539	1500	1774	3539	1497	3442	3325	246	3442	2477	935
Grp Volume(v), veh/h	389	1050	520	202	454	232	378	381	389	243	634	594
Grp Sat Flow(s),veh/h/ln	1721	1770	1500	1774	1770	1497	1721	1770	1801	1721	1770	1643
Q Serve(g_s), s	15.2	41.1	13.7	15.9	14.8	11.5	15.3	28.8	28.8	8.5	47.6	47.6
Cycle Q Clear(g_c), s	15.2	41.1	13.7	15.9	14.8	11.5	15.3	28.8	28.8	8.5	47.6	47.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.57
Lane Grp Cap(c), veh/h	438	1039	623	207	1000	423	398	445	453	703	602	559
V/C Ratio(X)	0.89	1.01	0.83	0.98	0.45	0.55	0.95	0.86	0.86	0.35	1.05	1.06
Avail Cap(c_a), veh/h	570	1039	623	207	1000	423	398	605	616	703	602	559
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	1.00	1.00	1.00	1.00	1.00	1.00	0.69	0.69	0.69
Uniform Delay (d), s/veh	51.2	28.9	8.7	61.7	41.3	16.5	61.5	50.0	50.0	47.7	46.2	46.2
Incr Delay (d2), s/veh	8.1	26.0	9.1	55.9	1.5	5.0	31.9	10.0	10.0	0.1	45.9	49.8
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	7.7	23.4	7.0	11.0	7.5	5.3	9.0	15.3	15.6	4.0	30.9	29.3
LnGrp Delay(d),s/veh	59.3	54.9	17.7	117.6	42.8	21.6	93.4	60.0	60.0	47.8	92.1	96.0
LnGrp LOS	E	F	B	F	D	C	F	E	E	D	F	F
Approach Vol, veh/h		1959			888			1148			1471	
Approach Delay, s/veh		45.9			54.3			71.0			86.3	
Approach LOS		D			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.0	40.3	20.7	46.0	20.6	52.7	22.2	44.5
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	15.9	47.9	16.3	41.1	16.2	47.6	23.2	34.2
Max Q Clear Time (g_c+I1), s	10.5	30.8	17.9	43.1	17.3	49.6	17.2	16.8
Green Ext Time (p_c), s	1.0	4.4	0.0	0.0	0.0	0.0	0.6	16.1

Intersection Summary	
HCM 2010 Ctrl Delay	63.4
HCM 2010 LOS	E

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	189	3	76	88	584	61
Future Volume (veh/h)	189	3	76	88	584	61
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.95	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863
Adj Flow Rate, veh/h	205	3	83	96	635	0
Adj No. of Lanes	1	0	1	1	1	1
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	364	5	107	668	785	701
Arrive On Green	0.20	0.20	0.06	0.36	0.44	0.00
Sat Flow, veh/h	1829	27	1774	1863	1774	1583
Grp Volume(v), veh/h	0	208	83	96	635	0
Grp Sat Flow(s),veh/h/ln	0	1856	1774	1863	1774	1583
Q Serve(g_s), s	0.0	4.1	1.9	1.4	12.5	0.0
Cycle Q Clear(g_c), s	0.0	4.1	1.9	1.4	12.5	0.0
Prop In Lane		0.01	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	369	107	668	785	701
V/C Ratio(X)	0.00	0.56	0.78	0.14	0.81	0.00
Avail Cap(c_a), veh/h	0	924	485	1622	2516	2245
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	14.5	18.6	8.7	9.7	0.0
Incr Delay (d2), s/veh	0.0	1.4	11.5	0.1	2.0	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	0.0	2.2	1.2	0.7	6.4	0.0
LnGrp Delay(d),s/veh	0.0	15.9	30.1	8.8	11.8	0.0
LnGrp LOS		B	C	A	B	
Approach Vol, veh/h	208			179	635	
Approach Delay, s/veh	15.9			18.7	11.8	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		21.8	6.4	12.0				18.4
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		57.0	11.0	20.0				35.0
Max Q Clear Time (g_c+I1), s		14.5	3.9	6.1				3.4
Green Ext Time (p_c), s		3.3	0.1	1.0				1.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	699	460	30	20	1067	413	80	30	30	106	20	177
Future Volume (veh/h)	699	460	30	20	1067	413	80	30	30	106	20	177
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.92	1.00		0.84
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	760	500	33	22	1160	449	87	33	33	131	0	192
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	841	2002	132	30	1305	560	153	58	58	256	0	96
Arrive On Green	0.24	0.60	0.60	0.03	0.74	0.74	0.16	0.16	0.16	0.07	0.00	0.07
Sat Flow, veh/h	3442	3358	221	1774	3539	1517	973	369	369	3548	0	1332
Grp Volume(v), veh/h	760	263	270	22	1160	449	153	0	0	131	0	192
Grp Sat Flow(s),veh/h/ln	1721	1770	1810	1774	1770	1517	1711	0	0	1774	0	1332
Q Serve(g_s), s	27.0	8.9	8.9	1.5	31.4	24.0	10.4	0.0	0.0	4.5	0.0	9.1
Cycle Q Clear(g_c), s	27.0	8.9	8.9	1.5	31.4	24.0	10.4	0.0	0.0	4.5	0.0	9.1
Prop In Lane	1.00		0.12	1.00		1.00	0.57		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	841	1055	1079	30	1305	560	269	0	0	256	0	96
V/C Ratio(X)	0.90	0.25	0.25	0.73	0.89	0.80	0.57	0.00	0.00	0.51	0.00	2.00
Avail Cap(c_a), veh/h	1073	1055	1079	56	1305	560	407	0	0	256	0	96
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.2	12.1	12.1	60.6	14.6	13.6	49.1	0.0	0.0	56.3	0.0	58.5
Incr Delay (d2), s/veh	7.9	0.6	0.6	1.1	1.0	1.2	0.7	0.0	0.0	1.8	0.0	482.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	4.5	4.6	0.8	15.0	9.9	5.0	0.0	0.0	2.3	0.0	16.3
LnGrp Delay(d),s/veh	54.1	12.6	12.6	61.7	15.5	14.7	49.8	0.0	0.0	58.1	0.0	541.1
LnGrp LOS	D	B	B	E	B	B	D			E		F
Approach Vol, veh/h		1293			1631			153			323	
Approach Delay, s/veh		37.0			15.9			49.8			345.2	
Approach LOS		D			B			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	80.7		14.0	35.2	52.1		24.7
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	4.0	63.1		9.1	39.3	* 29		30.0
Max Q Clear Time (g_c+I1), s	3.5	10.9		11.1	29.0	33.4		12.4
Green Ext Time (p_c), s	0.0	29.7		0.0	1.8	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	56.7
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	553	30	88	1379	410	50	30	122	130	20	70
Future Volume (veh/h)	124	553	30	88	1379	410	50	30	122	130	20	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.93	1.00		0.92
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	135	601	33	96	1499	446	54	33	133	141	22	76
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	0	1	1
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	65	1477	81	118	1645	710	71	44	176	252	39	295
Arrive On Green	0.07	0.87	0.87	0.09	0.62	0.62	0.18	0.18	0.18	0.16	0.16	0.16
Sat Flow, veh/h	1774	3399	186	1774	3539	1527	390	238	960	1545	241	1459
Grp Volume(v), veh/h	135	312	322	96	1499	446	220	0	0	163	0	76
Grp Sat Flow(s),veh/h/ln	1774	1770	1815	1774	1770	1527	1587	0	0	1786	0	1459
Q Serve(g_s), s	4.6	4.5	4.5	6.7	46.7	23.0	16.6	0.0	0.0	10.6	0.0	5.5
Cycle Q Clear(g_c), s	4.6	4.5	4.5	6.7	46.7	23.0	16.6	0.0	0.0	10.6	0.0	5.5
Prop In Lane	1.00		0.10	1.00		1.00	0.25		0.60	0.87		1.00
Lane Grp Cap(c), veh/h	65	769	789	118	1645	710	291	0	0	291	0	295
V/C Ratio(X)	2.08	0.41	0.41	0.81	0.91	0.63	0.76	0.00	0.00	0.56	0.00	0.26
Avail Cap(c_a), veh/h	65	769	789	135	1645	710	365	0	0	439	0	417
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	0.09	0.09	0.09	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.4	5.0	5.0	56.6	21.8	17.3	48.8	0.0	0.0	48.6	0.0	42.6
Incr Delay (d2), s/veh	535.3	1.5	1.5	2.7	1.0	0.4	4.9	0.0	0.0	0.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	2.4	2.5	3.4	22.6	9.6	7.7	0.0	0.0	5.3	0.0	2.2
LnGrp Delay(d),s/veh	593.7	6.5	6.5	59.3	22.8	17.6	53.7	0.0	0.0	49.2	0.0	42.8
LnGrp LOS	F	A	A	E	C	B	D			D		D
Approach Vol, veh/h		769			2041			220			239	
Approach Delay, s/veh		109.6			23.4			53.7			47.2	
Approach LOS		F			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.8	59.8		25.4	9.0	63.6		28.0
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	9.6	* 37		31.0	4.6	42.2		29.0
Max Q Clear Time (g_c+I1), s	8.7	6.5		12.6	6.6	48.7		18.6
Green Ext Time (p_c), s	0.0	29.5		0.5	0.0	0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	47.4
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	446	0	1700	0	0	0	0	1142	287	0	1467	360
Future Volume (vph)	446	0	1700	0	0	0	0	1142	287	0	1467	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1	6.1		6.4	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.97		1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3433		3610					3539	1530		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1530		3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	485	0	1848	0	0	0	0	1241	312	0	1595	391
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	86	0	0	0
Lane Group Flow (vph)	485	0	1848	0	0	0	0	1241	226	0	1595	391
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									2 4			Free
Actuated Green, G (s)	16.1		47.9					71.4	71.4		39.6	100.0
Effective Green, g (s)	16.1		47.9					71.4	71.4		39.6	100.0
Actuated g/C Ratio	0.16		0.48					0.71	0.71		0.40	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	552		1729					2526	1092		1401	1536
v/s Ratio Prot	0.14		c0.51					0.35			c0.45	
v/s Ratio Perm									0.15			0.25
v/c Ratio	0.88		1.07					0.49	0.21		1.14	0.25
Uniform Delay, d1	41.0		26.1					6.3	4.8		30.2	0.0
Progression Factor	1.00		1.00					0.46	0.01		1.06	1.00
Incremental Delay, d2	14.3		42.7					0.1	0.0		69.1	0.3
Delay (s)	55.3		68.7					3.0	0.1		101.0	0.3
Level of Service	E		E					A	A		F	A
Approach Delay (s)		66.0			0.0			2.4			81.2	
Approach LOS		E			A			A			F	

Intersection Summary			
HCM 2000 Control Delay	54.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	31	30	105	88	323	133	987	165	805	1724	639
Future Volume (veh/h)	119	31	30	105	88	323	133	987	165	805	1724	639
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.98	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	98	77	33	114	96	351	145	1073	179	875	1874	695
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	2	3	2
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	252	173	74	49	41	397	178	2034	624	692	2571	1777
Arrive On Green	0.14	0.14	0.14	0.05	0.05	0.05	0.10	0.40	0.40	0.07	0.17	0.17
Sat Flow, veh/h	1774	1220	523	984	829	1583	1774	5085	1560	3442	5085	2732
Grp Volume(v), veh/h	98	0	110	210	0	351	145	1073	179	875	1874	695
Grp Sat Flow(s),veh/h/ln	1774	0	1743	1814	0	1583	1774	1695	1560	1721	1695	1366
Q Serve(g_s), s	5.0	0.0	5.8	5.0	0.0	5.0	8.0	16.0	7.8	20.1	35.0	16.5
Cycle Q Clear(g_c), s	5.0	0.0	5.8	5.0	0.0	5.0	8.0	16.0	7.8	20.1	35.0	16.5
Prop In Lane	1.00		0.30	0.54		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	252	0	248	91	0	397	178	2034	624	692	2571	1777
V/C Ratio(X)	0.39	0.00	0.44	2.32	0.00	0.88	0.81	0.53	0.29	1.26	0.73	0.39
Avail Cap(c_a), veh/h	571	0	561	91	0	397	277	2034	624	692	2571	1777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	39.0	0.0	39.3	47.5	0.0	36.0	44.1	22.8	20.3	46.7	35.2	15.4
Incr Delay (d2), s/veh	0.4	0.0	0.5	625.3	0.0	19.6	10.1	1.0	1.2	120.3	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	2.8	18.2	0.0	11.5	4.4	7.6	3.5	21.1	16.5	8.8
LnGrp Delay(d),s/veh	39.3	0.0	39.7	672.8	0.0	55.6	54.1	23.8	21.5	167.0	35.3	15.4
LnGrp LOS	D		D	F		E	D	C	C	F	D	B
Approach Vol, veh/h		208			561			1397			3444	
Approach Delay, s/veh		39.5			286.6			26.7			64.8	
Approach LOS		D			F			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	46.0		19.1	14.4	56.6		9.9
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	20.1	22.0		32.2	15.6	* 28		5.0
Max Q Clear Time (g_c+I1), s	22.1	18.0		7.8	10.0	37.0		7.0
Green Ext Time (p_c), s	0.0	3.9		0.6	0.2	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	76.5
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	264	372	113	40	883	261	756	1192	65	133	582	401
Future Volume (veh/h)	264	372	113	40	883	261	756	1192	65	133	582	401
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		0.96	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	287	404	123	43	960	284	822	1296	71	145	633	436
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	2	2	0
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	290	1106	826	71	949	401	773	1414	77	286	536	368
Arrive On Green	0.14	0.52	0.52	0.04	0.27	0.27	0.22	0.42	0.42	0.08	0.27	0.27
Sat Flow, veh/h	3442	3539	1504	1774	3539	1494	3442	3404	186	3442	1956	1345
Grp Volume(v), veh/h	287	404	123	43	960	284	822	673	694	145	573	496
Grp Sat Flow(s),veh/h/ln	1721	1770	1504	1774	1770	1494	1721	1770	1821	1721	1770	1532
Q Serve(g_s), s	10.5	8.5	0.6	3.0	33.8	17.0	28.3	45.2	45.4	5.1	34.5	34.5
Cycle Q Clear(g_c), s	10.5	8.5	0.6	3.0	33.8	17.0	28.3	45.2	45.4	5.1	34.5	34.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.88
Lane Grp Cap(c), veh/h	290	1106	826	71	949	401	773	735	756	286	485	419
V/C Ratio(X)	0.99	0.37	0.15	0.61	1.01	0.71	1.06	0.92	0.92	0.51	1.18	1.18
Avail Cap(c_a), veh/h	290	1106	826	121	949	401	773	772	795	286	485	419
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87
Uniform Delay (d), s/veh	54.1	22.7	4.8	59.5	46.1	25.7	48.8	34.7	34.8	55.3	45.8	45.8
Incr Delay (d2), s/veh	48.5	0.9	0.4	3.1	32.0	10.1	50.6	15.4	15.5	0.5	99.0	102.0
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	6.9	4.2	1.1	1.5	20.7	8.1	18.8	25.2	26.0	2.4	30.1	26.5
LnGrp Delay(d),s/veh	102.6	23.6	5.2	62.7	78.1	35.9	99.4	50.1	50.3	55.8	144.7	147.8
LnGrp LOS	F	C	A	E	F	D	F	D	D	E	F	F
Approach Vol, veh/h		814			1287			2189			1214	
Approach Delay, s/veh		48.7			68.3			68.7			135.3	
Approach LOS		D			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	57.4	9.4	44.3	32.7	39.6	15.0	38.7
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	7.8	55.0	8.6	35.8	28.3	34.5	10.6	33.8
Max Q Clear Time (g_c+I1), s	7.1	47.4	5.0	10.5	30.3	36.5	12.5	35.8
Green Ext Time (p_c), s	0.3	4.9	0.0	20.2	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	80.3
HCM 2010 LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	150	20	230	180	620	60
Future Volume (veh/h)	150	20	230	180	620	60
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.94	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863
Adj Flow Rate, veh/h	163	22	250	196	674	0
Adj No. of Lanes	1	0	1	1	1	1
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	268	36	316	778	779	695
Arrive On Green	0.17	0.17	0.18	0.42	0.44	0.00
Sat Flow, veh/h	1594	215	1774	1863	1774	1583
Grp Volume(v), veh/h	0	185	250	196	674	0
Grp Sat Flow(s),veh/h/ln	0	1809	1774	1863	1774	1583
Q Serve(g_s), s	0.0	5.3	7.5	3.8	19.2	0.0
Cycle Q Clear(g_c), s	0.0	5.3	7.5	3.8	19.2	0.0
Prop In Lane		0.12	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	304	316	778	779	695
V/C Ratio(X)	0.00	0.61	0.79	0.25	0.87	0.00
Avail Cap(c_a), veh/h	0	518	571	1267	1397	1247
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	21.5	22.0	10.6	14.2	0.0
Incr Delay (d2), s/veh	0.0	2.0	4.5	0.2	3.0	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	0.0	2.8	4.1	2.0	10.0	0.0
LnGrp Delay(d),s/veh	0.0	23.5	26.5	10.8	17.2	0.0
LnGrp LOS		C	C	B	B	
Approach Vol, veh/h	185			446	674	
Approach Delay, s/veh	23.5			19.6	17.2	
Approach LOS	C			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		28.5	13.9	13.4				27.3
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		44.0	18.0	16.0				38.0
Max Q Clear Time (g_c+I1), s		21.2	9.5	7.3				5.8
Green Ext Time (p_c), s		3.3	0.6	1.0				1.5

Intersection Summary	
HCM 2010 Ctrl Delay	18.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	260	750	750	190	305	240	1184	200	40	1865	90
Future Volume (veh/h)	235	260	750	750	190	305	240	1184	200	40	1865	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.87	1.00		0.96	1.00		0.97	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	255	283	815	831	350	221	261	1287	217	43	2027	98
Adj No. of Lanes	1	1	2	2	1	1	1	2	0	2	2	1
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	191	201	646	946	497	531	195	1187	198	271	1281	553
Arrive On Green	0.11	0.11	0.11	0.27	0.27	0.27	0.11	0.39	0.39	0.08	0.36	0.36
Sat Flow, veh/h	1774	1863	2766	3548	1863	1523	1774	3020	504	3442	3539	1529
Grp Volume(v), veh/h	255	283	815	831	350	221	261	749	755	43	2027	98
Grp Sat Flow(s),veh/h/ln	1774	1863	1383	1774	1863	1523	1774	1770	1754	1721	1770	1529
Q Serve(g_s), s	14.0	14.0	14.0	29.2	22.1	14.4	14.3	51.1	51.1	1.5	47.0	5.7
Cycle Q Clear(g_c), s	14.0	14.0	14.0	29.2	22.1	14.4	14.3	51.1	51.1	1.5	47.0	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	646	946	497	531	195	696	689	271	1281	553
V/C Ratio(X)	1.33	1.41	1.26	0.88	0.70	0.42	1.34	1.08	1.10	0.16	1.58	0.18
Avail Cap(c_a), veh/h	191	201	646	983	516	547	195	696	689	344	1281	553
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	58.0	58.0	51.3	45.7	43.1	32.6	57.9	39.5	39.5	55.9	41.5	28.3
Incr Delay (d2), s/veh	181.8	211.7	129.7	9.0	4.2	0.5	182.3	56.6	63.3	0.1	265.9	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.5	19.0	23.3	15.5	11.9	6.2	16.9	35.9	36.8	0.7	70.3	2.5
LnGrp Delay(d),s/veh	239.8	269.7	181.1	54.6	47.2	33.1	240.2	96.0	102.8	56.0	307.4	29.0
LnGrp LOS	F	F	F	D	D	C	F	F	F	E	F	C
Approach Vol, veh/h		1353			1402			1765			2168	
Approach Delay, s/veh		210.7			49.4			120.2			289.8	
Approach LOS		F			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.9	56.2		19.1	19.0	52.1		39.8
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 14	45.7		36.0
Max Q Clear Time (g_c+I1), s	3.5	53.1		16.0	16.3	49.0		31.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	178.6
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	486	1115	120	41	770	268	80	30	30	370	40	605
Future Volume (veh/h)	486	1115	120	41	770	268	80	30	30	370	40	605
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.95	1.00		0.92	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	528	1212	130	45	837	291	87	33	33	433	0	658
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
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	573	1265	135	58	924	391	149	57	57	961	0	406
Arrive On Green	0.17	0.40	0.40	0.03	0.26	0.26	0.15	0.15	0.15	0.27	0.00	0.27
Sat Flow, veh/h	3442	3201	342	1774	3539	1498	972	369	369	3548	0	1501
Grp Volume(v), veh/h	528	668	674	45	837	291	153	0	0	433	0	658
Grp Sat Flow(s),veh/h/ln	1721	1770	1774	1774	1770	1498	1710	0	0	1774	0	1501
Q Serve(g_s), s	20.2	49.1	49.7	3.4	30.7	23.9	11.1	0.0	0.0	13.6	0.0	36.3
Cycle Q Clear(g_c), s	20.2	49.1	49.7	3.4	30.7	23.9	11.1	0.0	0.0	13.6	0.0	36.3
Prop In Lane	1.00		0.19	1.00		1.00	0.57		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	573	699	701	58	924	391	263	0	0	961	0	406
V/C Ratio(X)	0.92	0.96	0.96	0.78	0.91	0.74	0.58	0.00	0.00	0.45	0.00	1.62
Avail Cap(c_a), veh/h	580	699	701	87	924	391	383	0	0	961	0	406
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	0.67	0.67	0.67	1.00	0.00	0.00	0.97	0.00	0.97
Uniform Delay (d), s/veh	55.0	39.4	39.6	64.3	47.9	45.4	52.7	0.0	0.0	40.6	0.0	48.8
Incr Delay (d2), s/veh	19.7	24.7	25.9	7.4	10.2	8.4	0.8	0.0	0.0	0.3	0.0	289.3
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	11.2	28.7	29.4	1.8	16.3	10.8	5.3	0.0	0.0	6.7	0.0	47.6
LnGrp Delay(d),s/veh	74.7	64.1	65.4	71.7	58.1	53.8	53.5	0.0	0.0	40.9	0.0	338.1
LnGrp LOS	E	E	E	E	E	D	D			D		F
Approach Vol, veh/h		1870			1173			153			1091	
Approach Delay, s/veh		67.6			57.5			53.5			220.2	
Approach LOS		E			E			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.8	58.5		41.2	26.7	40.6		25.5
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	6.6	41.3		36.3	22.6	* 26		30.0
Max Q Clear Time (g_c+I1), s	5.4	51.7		38.3	22.2	32.7		13.1
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	103.2
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	801	0	1000	0	0	0	0	2211	514	0	1164	331
Future Volume (vph)	801	0	1000	0	0	0	0	2211	514	0	1164	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1	6.1		6.4	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.97		1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3433		3610					3539	1529		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1529		3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	871	0	1087	0	0	0	0	2403	559	0	1265	360
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	80	0	0	0
Lane Group Flow (vph)	871	0	1087	0	0	0	0	2403	479	0	1265	360
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									2 4			Free
Actuated Green, G (s)	19.8		53.5					67.7	67.7		34.0	100.0
Effective Green, g (s)	19.8		53.5					67.7	67.7		34.0	100.0
Actuated g/C Ratio	0.20		0.54					0.68	0.68		0.34	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	679		1931					2395	1035		1203	1536
v/s Ratio Prot	c0.25		0.30					c0.68			0.36	
v/s Ratio Perm									0.31			0.23
v/c Ratio	1.28		0.56					1.00	0.46		1.05	0.23
Uniform Delay, d1	40.1		15.5					16.1	7.6		33.0	0.0
Progression Factor	1.00		1.00					0.80	0.26		0.61	1.00
Incremental Delay, d2	138.3		0.2					6.3	0.1		35.3	0.2
Delay (s)	178.4		15.7					19.3	2.1		55.4	0.2
Level of Service	F		B					B	A		E	A
Approach Delay (s)		88.1			0.0			16.1			43.2	
Approach LOS		F			A			B			D	

Intersection Summary			
HCM 2000 Control Delay	44.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	566	62	60	180	33	518	50	1641	135	408	1573	183
Future Volume (veh/h)	566	62	60	180	33	518	50	1641	135	408	1573	183
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.98	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	724	0	0	196	36	563	54	1784	147	443	1710	199
Adj No. of Lanes	2	1	0	0	1	1	1	3	1	2	3	2
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	896	470	0	168	31	367	70	1569	479	416	2010	1777
Arrive On Green	0.25	0.00	0.00	0.11	0.11	0.11	0.04	0.31	0.31	0.04	0.13	0.13
Sat Flow, veh/h	3548	1863	0	1510	277	1583	1774	5085	1553	3442	5085	2716
Grp Volume(v), veh/h	724	0	0	232	0	563	54	1784	147	443	1710	199
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1787	0	1583	1774	1695	1553	1721	1695	1358
Q Serve(g_s), s	19.2	0.0	0.0	11.1	0.0	11.1	3.0	30.8	7.2	12.1	32.9	3.8
Cycle Q Clear(g_c), s	19.2	0.0	0.0	11.1	0.0	11.1	3.0	30.8	7.2	12.1	32.9	3.8
Prop In Lane	1.00		0.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	896	470	0	198	0	367	70	1569	479	416	2010	1777
V/C Ratio(X)	0.81	0.00	0.00	1.17	0.00	1.53	0.78	1.14	0.31	1.06	0.85	0.11
Avail Cap(c_a), veh/h	1139	598	0	198	0	367	170	1569	479	416	2010	1777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.45	0.45	0.45
Uniform Delay (d), s/veh	35.1	0.0	0.0	44.5	0.0	38.4	47.6	34.6	26.4	48.0	40.6	9.9
Incr Delay (d2), s/veh	2.7	0.0	0.0	117.0	0.0	253.1	16.5	70.2	1.7	48.0	2.2	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	9.7	0.0	0.0	11.9	0.0	35.9	1.8	24.6	3.3	8.5	15.9	2.5
LnGrp Delay(d),s/veh	37.8	0.0	0.0	161.5	0.0	291.5	64.1	104.8	28.1	96.0	42.8	9.9
LnGrp LOS	D			F		F	E	F	C	F	D	A
Approach Vol, veh/h		724			795			1985			2352	
Approach Delay, s/veh		37.8			253.5			98.0			50.0	
Approach LOS		D			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.0	36.8		30.2	8.3	45.5		16.0
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	12.1	24.0		32.1	9.6	* 28		11.1
Max Q Clear Time (g_c+I1), s	14.1	32.8		21.2	5.0	34.9		13.1
Green Ext Time (p_c), s	0.0	0.0		1.9	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	92.4
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	590	1439	55	222	1587
Future Volume (vph)	0	590	1439	55	222	1587
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes		1.00	1.00	0.91	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		0.86	1.00	0.85	1.00	1.00
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1611	3539	1445	1770	3539
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1611	3539	1445	1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	641	1564	60	241	1725
RTOR Reduction (vph)	0	192	0	22	0	0
Lane Group Flow (vph)	0	449	1564	38	241	1725
Confl. Peds. (#/hr)		20		20	20	
Turn Type		Prot	NA	Perm	Prot	NA
Protected Phases		3	2		1	6
Permitted Phases				2		
Actuated Green, G (s)		31.0	50.5	50.5	16.0	70.5
Effective Green, g (s)		31.0	50.5	50.5	16.0	70.5
Actuated g/C Ratio		0.28	0.46	0.46	0.15	0.64
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		456	1632	666	258	2278
v/s Ratio Prot		c0.28	c0.44		c0.14	0.49
v/s Ratio Perm				0.03		
v/c Ratio		0.98	0.96	0.06	0.93	0.76
Uniform Delay, d1		39.0	28.5	16.3	46.2	13.6
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		37.8	13.5	0.0	38.3	1.5
Delay (s)		76.8	42.0	16.4	84.5	15.0
Level of Service		E	D	B	F	B
Approach Delay (s)	76.8		41.1			23.6
Approach LOS	E		D			C

Intersection Summary			
HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	459	1173	596	245	496	255	426	788	60	273	963	420
Future Volume (veh/h)	459	1173	596	245	496	255	426	788	60	273	963	420
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	499	1275	648	266	539	277	463	857	65	297	1047	457
Adj No. of Lanes	2	2	1	1	2	1	2	2	0	2	2	0
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	545	1165	661	160	924	389	359	997	76	503	816	346
Arrive On Green	0.32	0.66	0.66	0.09	0.26	0.26	0.10	0.30	0.30	0.15	0.34	0.34
Sat Flow, veh/h	3442	3539	1507	1774	3539	1492	3442	3320	252	3442	2384	1011
Grp Volume(v), veh/h	499	1275	648	266	539	277	463	457	465	297	769	735
Grp Sat Flow(s),veh/h/ln	1721	1770	1507	1774	1770	1492	1721	1770	1802	1721	1770	1625
Q Serve(g_s), s	19.5	46.1	26.6	12.6	18.6	16.8	14.6	34.1	34.1	11.3	47.9	47.9
Cycle Q Clear(g_c), s	19.5	46.1	26.6	12.6	18.6	16.8	14.6	34.1	34.1	11.3	47.9	47.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.62
Lane Grp Cap(c), veh/h	545	1165	661	160	924	389	359	532	541	503	605	556
V/C Ratio(X)	0.92	1.09	0.98	1.67	0.58	0.71	1.29	0.86	0.86	0.59	1.27	1.32
Avail Cap(c_a), veh/h	629	1165	661	160	924	389	359	732	745	503	605	556
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.18	0.18	0.18	1.00	1.00	1.00	1.00	1.00	1.00	0.57	0.57	0.57
Uniform Delay (d), s/veh	46.9	23.9	7.8	63.7	45.1	23.8	62.7	46.2	46.2	55.9	46.0	46.1
Incr Delay (d2), s/veh	3.6	45.3	10.7	325.7	2.7	10.5	149.9	8.6	8.5	0.7	129.3	151.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	29.3	10.7	20.6	9.4	8.0	14.4	17.9	18.2	5.4	45.1	44.9
LnGrp Delay(d),s/veh	50.5	69.2	18.5	389.4	47.8	34.4	212.6	54.8	54.6	56.6	175.4	197.7
LnGrp LOS	D	F	B	F	D	C	F	D	D	E	F	F
Approach Vol, veh/h		2422			1082			1385			1801	
Approach Delay, s/veh		51.8			128.3			107.5			164.9	
Approach LOS		D			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.8	47.2	17.0	51.0	19.0	53.0	26.6	41.4
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	4.6	57.9	12.6	46.1	14.6	47.9	25.6	33.1
Max Q Clear Time (g_c+I1), s	13.3	36.1	14.6	48.1	16.6	49.9	21.5	20.6
Green Ext Time (p_c), s	0.0	6.0	0.0	0.0	0.0	0.0	0.6	12.2

Intersection Summary	
HCM 2010 Ctrl Delay	106.1
HCM 2010 LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	353	100	60	453	230	120
Future Volume (veh/h)	353	100	60	453	230	120
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	384	109	65	492	250	130
Adj No. of Lanes	1	1	1	1	1	1
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	743	632	94	1047	385	344
Arrive On Green	0.40	0.40	0.05	0.56	0.22	0.22
Sat Flow, veh/h	1863	1583	1774	1863	1774	1583
Grp Volume(v), veh/h	384	109	65	492	250	130
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1863	1774	1583
Q Serve(g_s), s	5.7	1.6	1.3	5.7	4.7	2.5
Cycle Q Clear(g_c), s	5.7	1.6	1.3	5.7	4.7	2.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	743	632	94	1047	385	344
V/C Ratio(X)	0.52	0.17	0.69	0.47	0.65	0.38
Avail Cap(c_a), veh/h	2158	1835	636	3032	1615	1442
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	8.2	7.0	16.9	4.7	12.9	12.1
Incr Delay (d2), s/veh	0.6	0.1	8.7	0.3	1.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.7	0.9	3.0	2.4	1.2
LnGrp Delay(d),s/veh	8.8	7.2	25.6	5.0	14.8	12.8
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	493			557	380	
Approach Delay, s/veh	8.4			7.4	14.1	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		11.9	5.9	18.5				24.4
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		33.0	13.0	42.0				59.0
Max Q Clear Time (g_c+I1), s		6.7	3.3	7.7				7.7
Green Ext Time (p_c), s		1.2	0.1	6.8				7.1

Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	370	80	762	108	896	40	1090	450	168	730	250
Future Volume (veh/h)	190	370	80	762	108	896	40	1090	450	168	730	250
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	207	402	87	828	117	974	43	1185	489	183	793	272
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
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	283	621	133	738	648	1268	80	940	749	205	1189	511
Arrive On Green	0.08	0.22	0.22	0.21	0.35	0.35	0.05	0.27	0.27	0.12	0.34	0.34
Sat Flow, veh/h	3442	2883	617	3442	1863	2721	1774	3539	1540	1774	3539	1520
Grp Volume(v), veh/h	207	245	244	828	117	974	43	1185	489	183	793	272
Grp Sat Flow(s),veh/h/ln	1721	1770	1731	1721	1863	1360	1774	1770	1540	1774	1770	1520
Q Serve(g_s), s	8.6	18.4	18.8	31.3	6.4	43.7	3.5	38.8	35.3	14.9	28.0	21.1
Cycle Q Clear(g_c), s	8.6	18.4	18.8	31.3	6.4	43.7	3.5	38.8	35.3	14.9	28.0	21.1
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	283	381	373	738	648	1268	80	940	749	205	1189	511
V/C Ratio(X)	0.73	0.64	0.65	1.12	0.18	0.77	0.54	1.26	0.65	0.89	0.67	0.53
Avail Cap(c_a), veh/h	283	429	420	738	693	1334	97	940	749	210	1189	511
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	65.4	52.2	52.3	57.4	33.2	32.8	68.2	53.6	28.9	63.7	41.5	39.2
Incr Delay (d2), s/veh	8.2	2.7	3.1	72.2	0.1	2.7	2.1	125.7	4.4	33.2	3.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	9.3	9.3	22.3	3.3	16.9	1.7	35.4	15.8	9.2	14.1	9.4
LnGrp Delay(d),s/veh	73.7	54.9	55.4	129.5	33.3	35.4	70.3	179.3	33.3	96.8	44.5	43.2
LnGrp LOS	E	D	E	F	C	D	E	F	C	F	D	D
Approach Vol, veh/h		696			1919			1717			1248	
Approach Delay, s/veh		60.7			75.9			135.0			51.9	
Approach LOS		E			E			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	45.9	38.0	38.6	13.3	56.2	18.7	57.9
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 17	38.8	* 31	* 35	* 8	48.1	* 12	54.3
Max Q Clear Time (g_c+I1), s	16.9	40.8	33.3	20.8	5.5	30.0	10.6	45.7
Green Ext Time (p_c), s	0.0	0.0	0.0	7.1	0.0	13.2	0.1	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	86.8
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

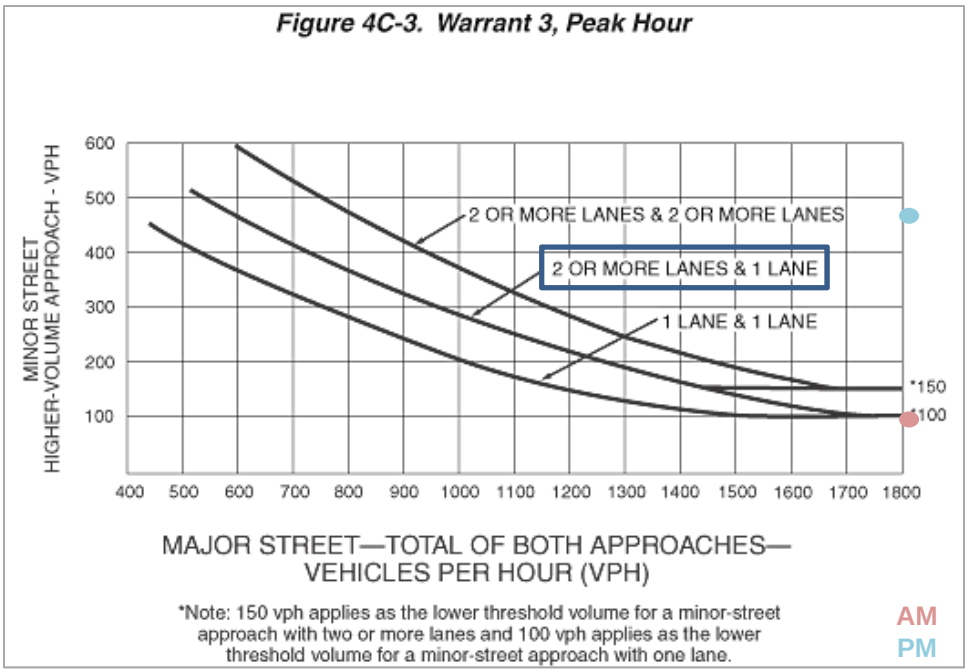
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	290	20	110	130	720	90
Future Volume (veh/h)	290	20	110	130	720	90
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.95	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863
Adj Flow Rate, veh/h	315	22	120	141	783	0
Adj No. of Lanes	1	0	1	1	1	1
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	390	27	155	703	880	785
Arrive On Green	0.23	0.23	0.09	0.38	0.50	0.00
Sat Flow, veh/h	1715	120	1774	1863	1774	1583
Grp Volume(v), veh/h	0	337	120	141	783	0
Grp Sat Flow(s),veh/h/ln	0	1834	1774	1863	1774	1583
Q Serve(g_s), s	0.0	11.0	4.2	3.2	25.2	0.0
Cycle Q Clear(g_c), s	0.0	11.0	4.2	3.2	25.2	0.0
Prop In Lane		0.07	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	417	155	703	880	785
V/C Ratio(X)	0.00	0.81	0.78	0.20	0.89	0.00
Avail Cap(c_a), veh/h	0	551	253	943	1403	1252
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	23.1	28.2	13.2	14.4	0.0
Incr Delay (d2), s/veh	0.0	6.6	8.1	0.1	4.7	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	0.0	6.3	2.4	1.7	13.3	0.0
LnGrp Delay(d),s/veh	0.0	29.7	36.3	13.4	19.0	0.0
LnGrp LOS		C	D	B	B	
Approach Vol, veh/h	337			261	783	
Approach Delay, s/veh	29.7			23.9	19.0	
Approach LOS	C			C	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		35.3	9.5	18.4				27.9
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		50.0	9.0	19.0				32.0
Max Q Clear Time (g_c+I1), s		27.2	6.2	13.0				5.2
Green Ext Time (p_c), s		4.2	0.1	1.0				1.9

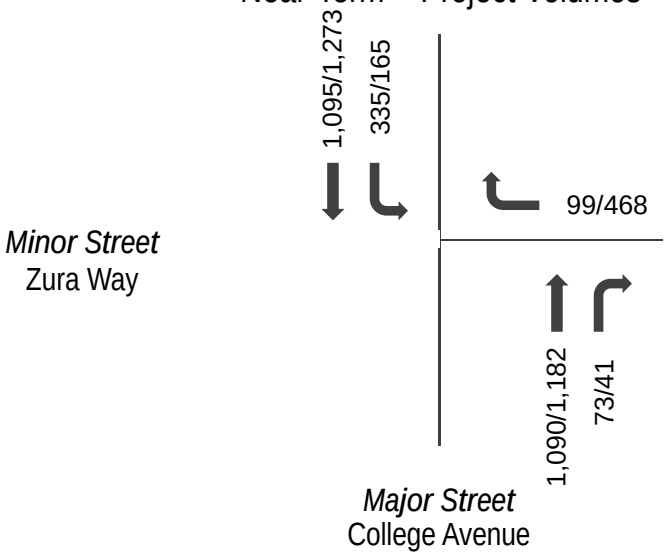
Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C

Intersection #10
College Avenue / Zura Way

Near-Term + Project



Near-Term + Project Volumes



AM Peak Hour

Minor Street:	99
Major Street:	2,593

PM Peak Hour

Minor Street:	468
Major Street:	2,661

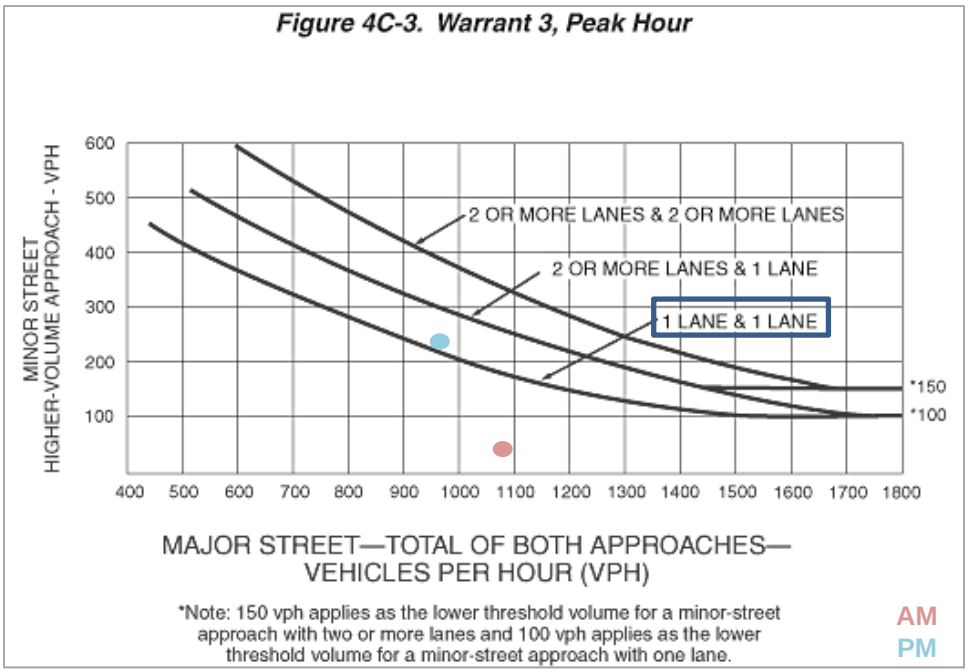
General Note:

1. Based on MUTCD guidelines, all the right-turn volumes were included due to downhill speeds and sight distance on College Avenue and that the minor street right-turn merges into the curb lane on College Avenue.

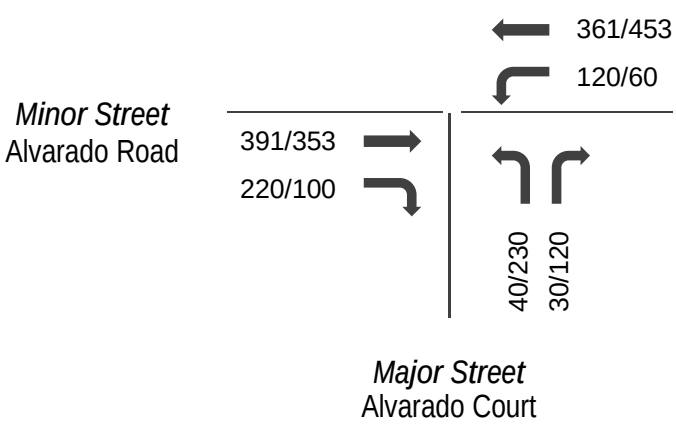
RESULT: SIGNAL WARRANTED

Intersection #12
Alvarado Court / Alvarado Road

Horizon Year + Project



Horizon Year + Project Volumes



AM Peak Hour

Minor Street:	40
Major Street:	1,092

PM Peak Hour

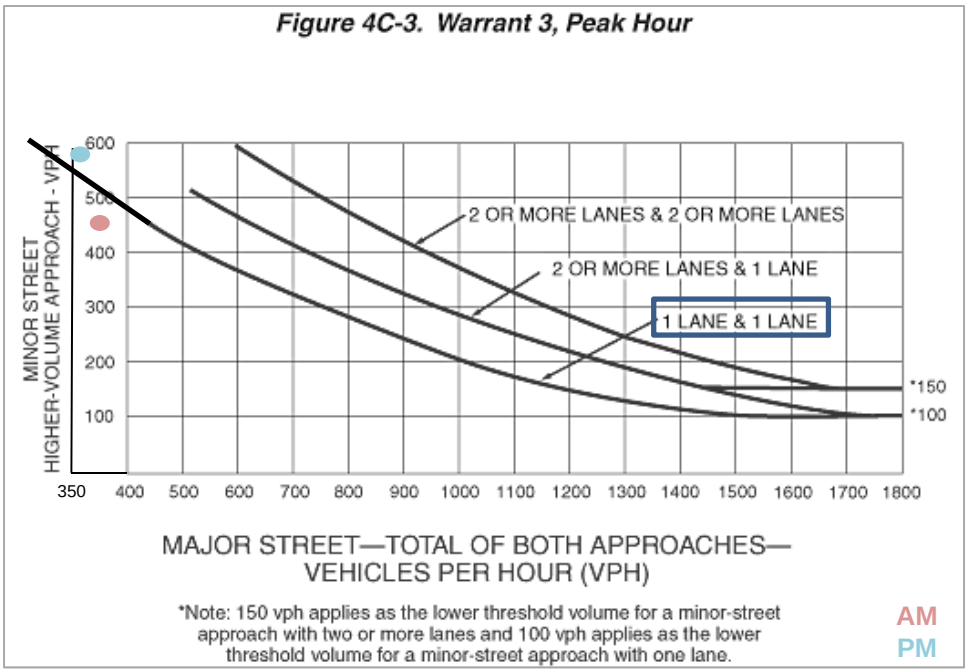
Minor Street:	230
Major Street:	966

General Note:
1. Based on MUTCD guidelines, right-turn volumes were discounted from the minor street approach.

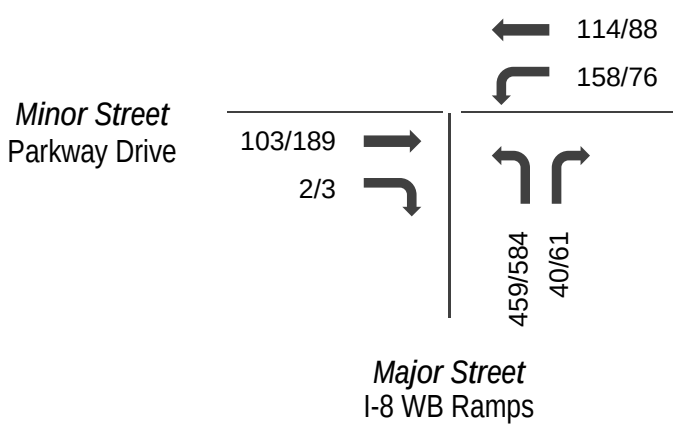
RESULT: SIGNAL WARRANTED

Intersection #16
I-8 WB Ramps / Parkway Drive

Near-Term + Project



Horizon Year + Project Volumes



AM Peak Hour

Minor Street:	459
Major Street:	377

PM Peak Hour

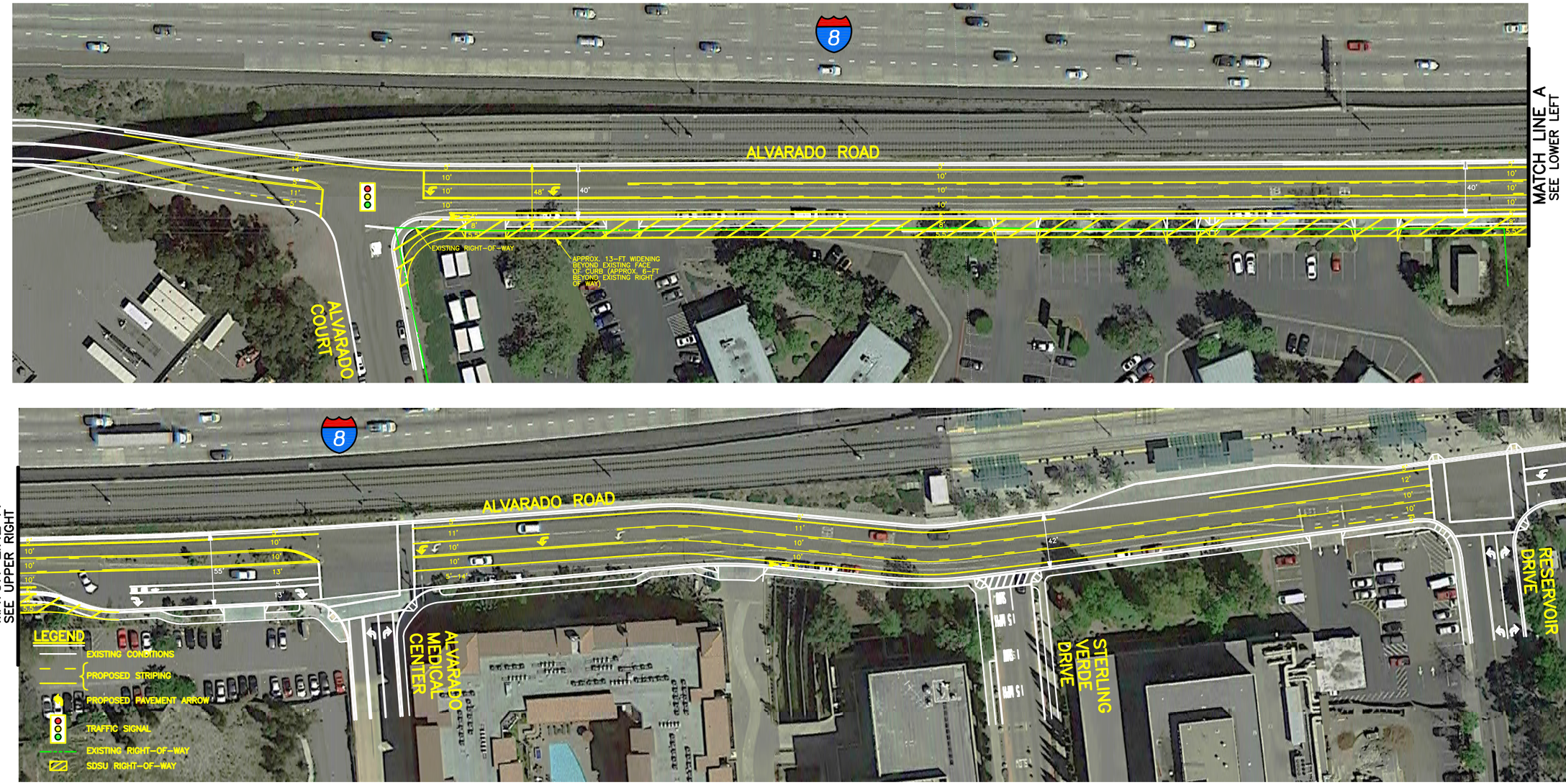
Minor Street:	584
Major Street:	356

General Note:
1. Based on MUTCD guidelines, right-turn volumes were discounted from the minor street approach.

RESULT: SIGNAL WARRANTED

APPENDIX Q

CONCEPTUAL SKETCHES – MITIGATION



NOTES:

- Signalize Alvarado Court/Alvarado Road intersection
- Restripe to provide a two-way left-turn lane or left-turn pockets
- On-street parking to be retained on SDSU fronting portion.
- On-street parking to be removed between Alvarado Medical Center and Reservoir Drive.

NORTH

SCALE: 1"=80'

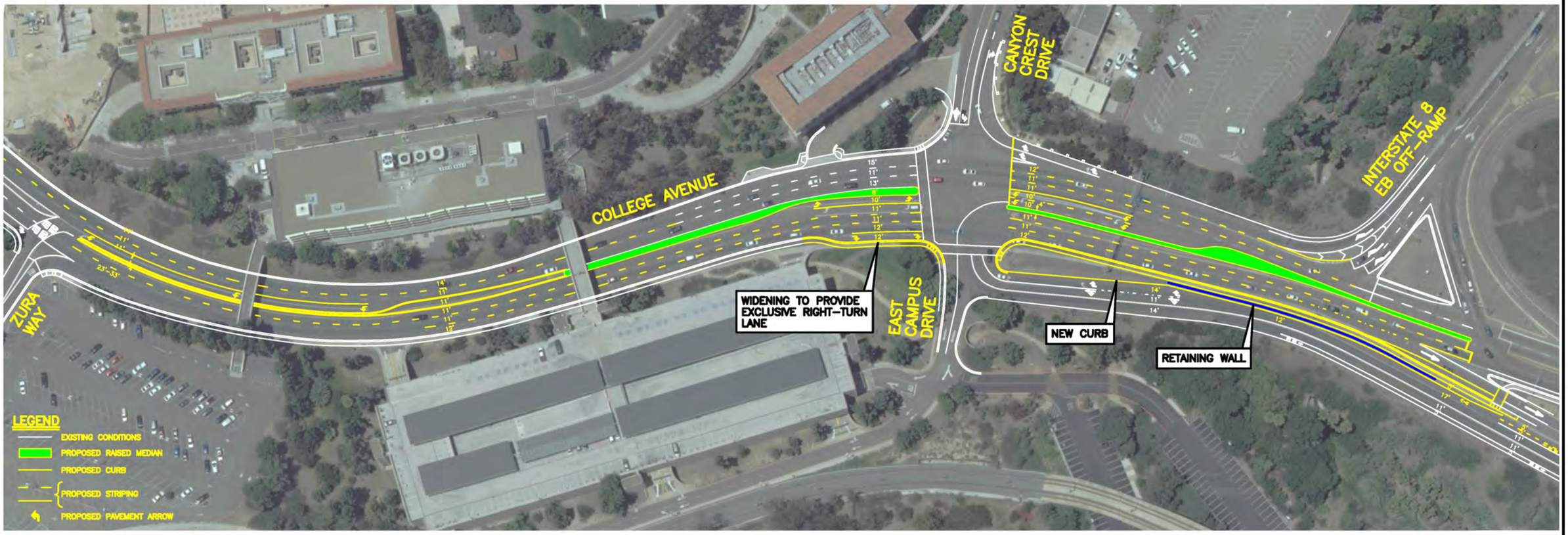
CONCEPTUAL ONLY

REV. 1/9/2018
N:\2604\Design\LLG2604-FIG B-1 (Alt).dwg

LINSCOTT LAW & GREENSPAN engineers

Figure B-1

Alvarado Road: Alvardo Court to Reservoir Drive Mitigation Measure



NOTES:

- Third northbound through lane
- Widen to retain northbound right-turn lane at East Campus Drive
- New retaining wall on Alvarado Road

NORTH

SCALE: 1"=120'

CONCEPTUAL ONLY

REV. 10/2/2017
N:\2604\Design\LLG2604-FIG B-2.dwg

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Figure B-2

College Avenue: Zura Way to I-8 Mitigation Measure

SDSU MASTER PLAN UPDATE

NOTES:

– Widening to provide an additional eastbound right–turn lane.

NORTH

SCALE: 1"=50'

CONCEPTUAL ONLY

REV. 10/2/2017
N:\2604\Design\LLG2604–FIG C–1.dwg

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Figure C-1

Camino Del Rio North/Fairmount Avenue Intersection Mitigation Measure

NOTES:

– Restripe southbound approach to include a shared left–thru–right lane.

NORTH

CONCEPTUAL ONLY

SCALE: 1"=50'

REV. 10/2/2017
N:\2604\Design\LLG2604–FIG C–2.dwg

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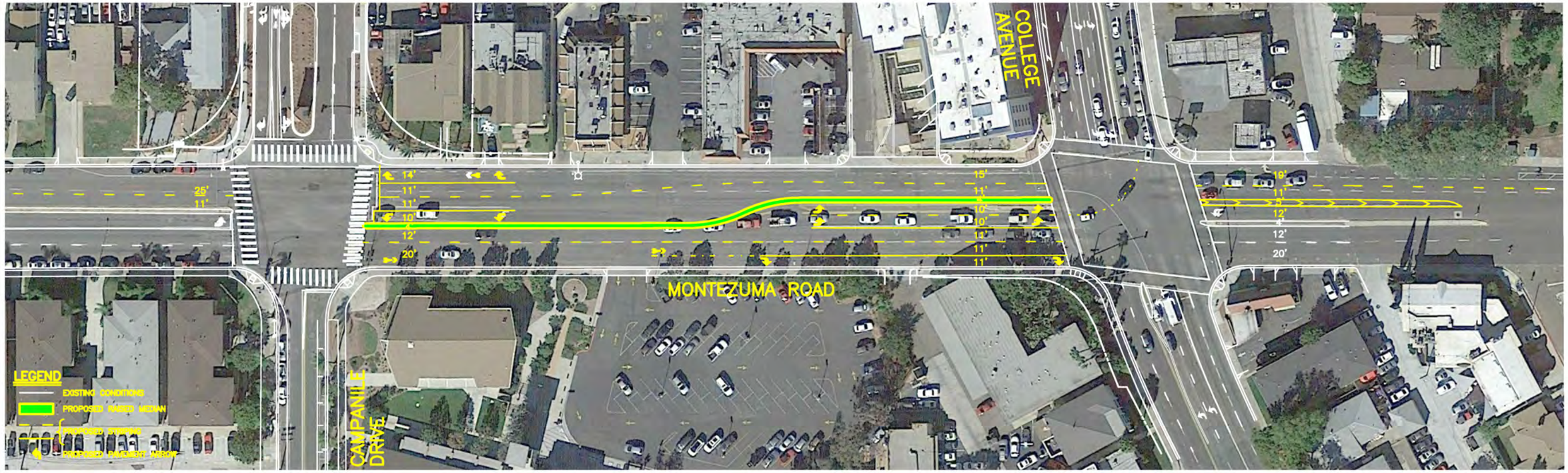
Figure C-2

55th Street/Montezuma Road Intersection Mitigation Measure



NOTES:

- Second eastbound left–turn lane proposed with raised median
- No widening

NORTH

SCALE: 1"=80'

CONCEPTUAL ONLY

REV. 10/2/2017
N:\2604\Design\LLG2604–FIG C–3.dwg

LINSCOTT LAW & GREENSPAN engineers

Figure C-3

College Avenue/Montezuma Road Intersection Mitigation Measure

SDSU MASTER PLAN UPDATE

NOTES:
- Restripe to provide a two-way left-turn lane or left-turn pockets
- On-street parking to be removed

CONCEPTUAL ONLY

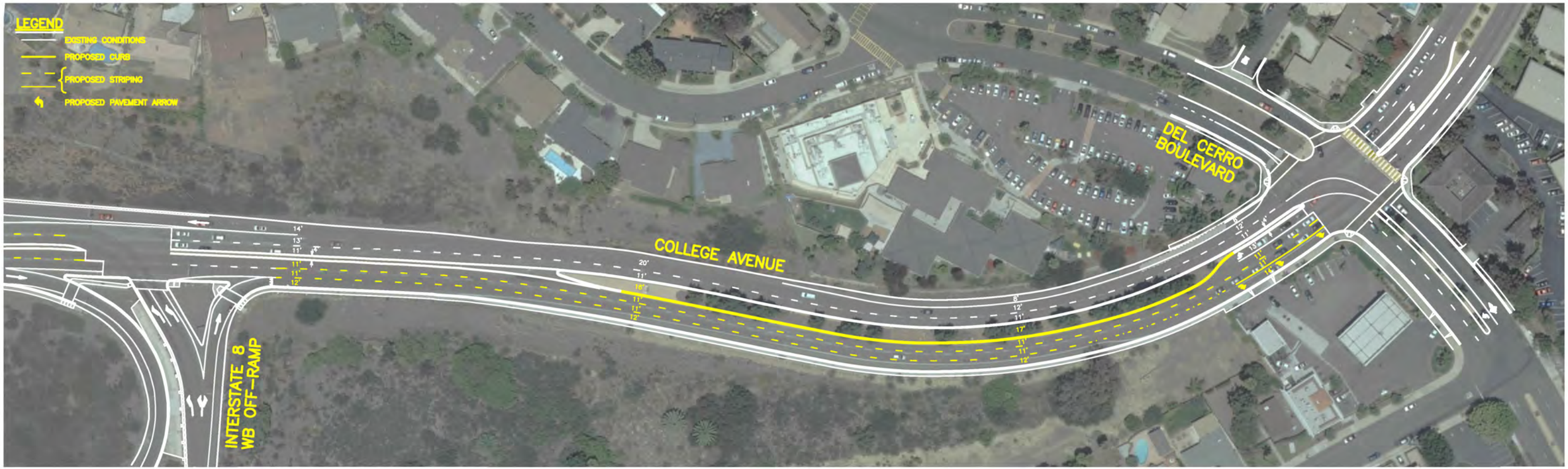
REV. 1/9/2018
N:\2604\Design\LLG2604-FIG D-2.dwg

LINSCOTT LAW & GREENSPAN engineers

Figure D-2

Alvarado Road: Reservoir Drive to 70th Street Mitigation Measure

SDSU MASTER PLAN UPDATE



NOTES:
- Third northbound through lane
- No widening

NORTH

CONCEPTUAL ONLY

SCALE: 1"=120'

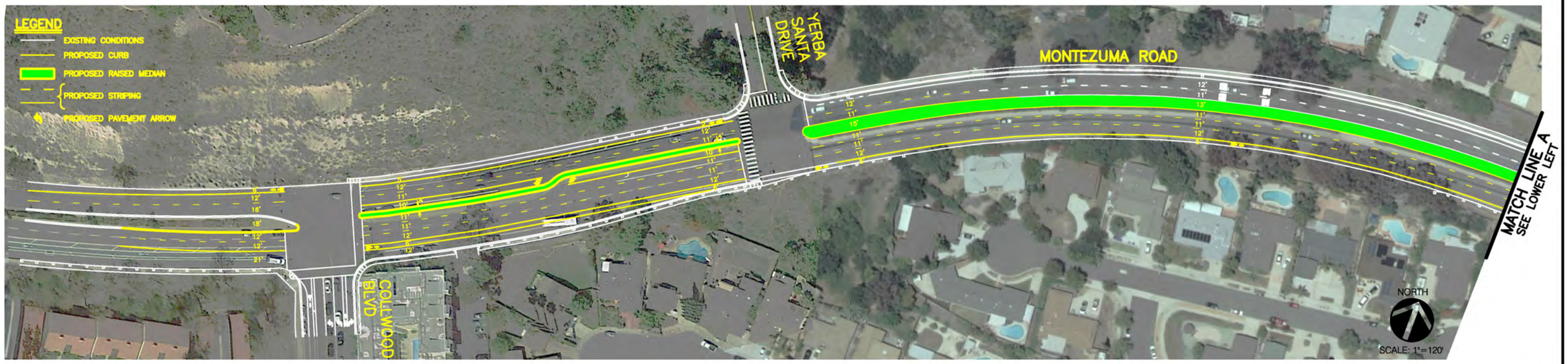
REV. 10/2/2017
N:\2604\Design\LLG2604-FIG D-3.dwg

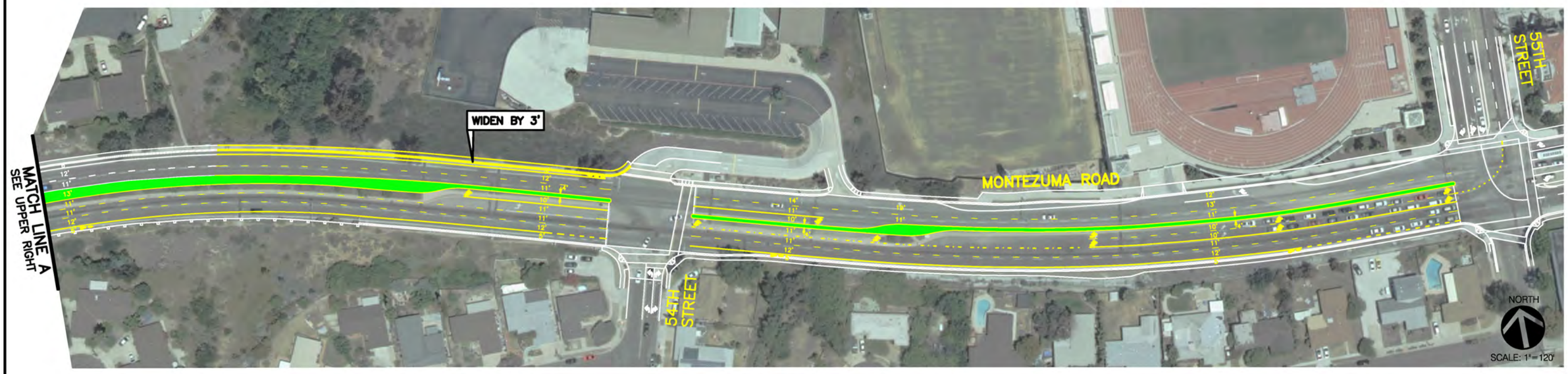
LINSCOTT LAW & GREENSPAN engineers

Figure D-3

College Avenue: I-8 to Del Cerro Boulevard Mitigation Measure

SDSU MASTER PLAN UPDATE





NOTES:
- Third eastbound through lane
- Widening required on the north curb at 54th Street

CONCEPTUAL ONLY

REV. 10/2/2017
N:\2604\Design\LLG2604-FIG D-8.dwg

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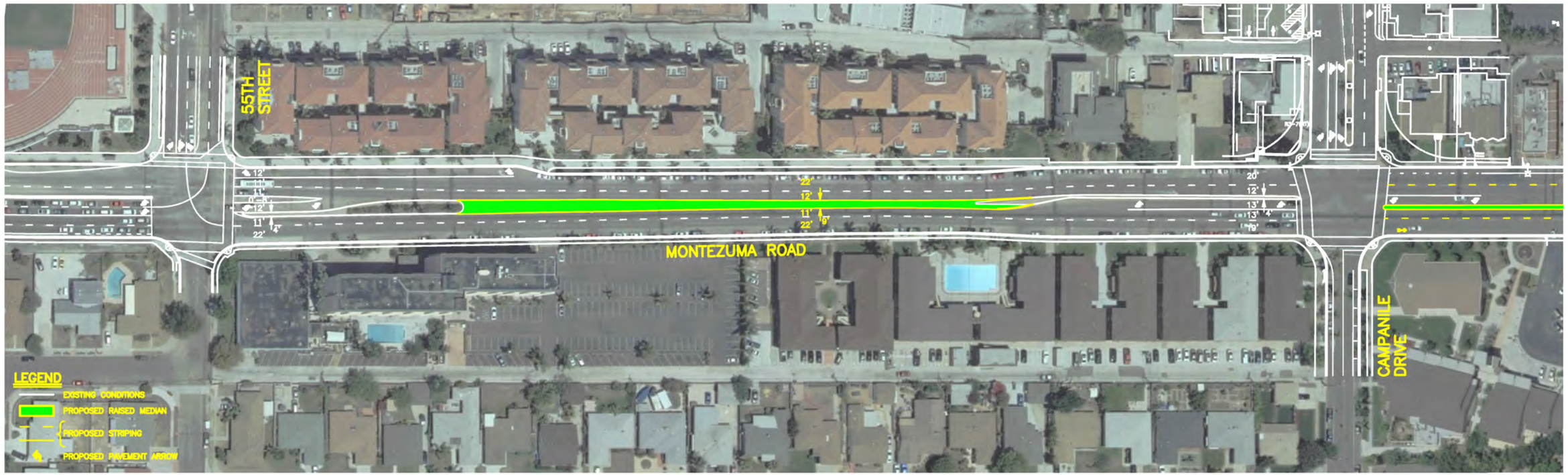
Figure D-8

Montezuma Road: Collwood Boulevard to 55th Street Mitigation Measure



NOTES:
- Raised median proposed
- No widening

NORTH

SCALE: 1"=120'

CONCEPTUAL ONLY

REV. 10/2/2017
N:\2604\Design\LLG2604-FIG D-9.dwg

LINSCOTT LAW & GREENSPAN engineers

Figure D-9

Montezuma Road: 55th Street to College Avenue Mitigation Measure

APPENDIX R

FAIR SHARE CALCULATIONS

Table M–1A
SDSU Master Plan Update
Near-Term Mitigation Improvements Cost Calculations
January 9, 2018

Impacted Locations	Mitigation Improvement Description	% Contribution [a]
Intersections		
A-1: College Avenue / I-8 EB Ramps *(AM Peak)*	Widen to accommodate a third NB through lane	*See A-2*
A-2: College Avenue / Canyon Crest Drive *(AM Peak)*	Widen to accommodate a third NB through lane	100.0%
A-3: College Avenue / Zura Way *(AM Peak)*	Install a traffic signal	100.0%
A-4: College Avenue / Montezuma Road *(AM Peak)*	Restripe to provide a second eastbound left-turn lane and right-turn overlap phase	100.0%
A-5: I-8 WB Ramps / Parkway Drive *(PM Peak)*	Install a traffic signal	100.0%
Segments		
B-1: Alvarado Road, E. Campus Drive to Reservoir Drive	Widen/restripe to provide a center turn lane or left-turn pockets (restripe requires removal of on-street parking)	100.0%
B-2: Alvarado Road, Reservoir Drive to 70th Street	Restripe to provide a center turn lane or left-turn pockets (requires removal of on-street parking)	100.0%
B-3: College Avenue, I-8 EB Ramps to Zura Way	Widen to accommodate a third NB through lane	*See A-2*
B-4: College Avenue, Montezuma Road to Cresita Drive	Widen to add a raised median (physically infeasible)[c]	–

Footnotes:

a. City of San Diego deems Near-Term impacts as Direct Impacts and therefore, 100% contribution.

Table M–2A
SDSU Master Plan Update
Year 2035 (Horizon Year) Mitigation Improvement Cost Calculations
January 9, 2018

Impacted Locations	Mitigation Improvement Description	Year 2035 Project Traffic	Year 2035 + Project Traffic	Existing Traffic	% Horizon Year Fair Share [a]
Intersections [b]					
C-1: Fairmount Avenue / I-8 WB off-ramp *(PM Peak)*	Widen to provide an additional EB right-turn lane	15	6,109	4,506	0.9%
C-2: 55th Street / Montezuma Road *(AM Peak)*	Restripe to provide a southbound shared right-thru-left-turn lane	96	3,132	2,252	10.9%
C-3: Campanile Drive / Montezuma Road *(PM Peak)*	Restripe to provide a dedicated westbound right-turn lane	116	3,309	2,349	12.1%
C-4: College Avenue / I-8 EB Ramps *(PM Peak)*	Widen to accommodate a third NB through lane	475	6,021	4,145	*Near-Term Impact (see Table M-1A)*
C-5: College Avenue / Canyon Crest Drive *(PM Peak)*	Widen to accommodate a third NB through lane	639	5,409	3,537	*Near-Term Impact (see Table M-1A)*
C-6: College Avenue / Zura Way *(PM Peak)*	Install a traffic signal	268	3,893	2,740	*Near-Term Impact (see Table M-1A)*
C-7: College Avenue / Montezuma Road *(PM Peak)*	Restripe to provide a second eastbound left-turn lane and right-turn overlap phase	231	6,154	4,449	*Near-Term Impact (see Table M-1A)*
C-8: Alvarado Court / Alvarado Road *(PM Peak)*	Install a traffic signal	386	1,316	670	59.8%
C-9: 70th Street / Alvarado Road *(PM Peak)*	Provide a NB right-turn overlap phase	142	5,134	3,742	10.2%
C-10: I-8 WB Ramps / Parkway Drive *(AM Peak)*	Install a traffic signal	67	1,260	818	*Near-Term Impact (see Table M-1A)*
Segments					
D-1: Alvarado Road, E. Campus Drive to Reservoir Drive	Widen/restripe to provide a center turn lane or left-turn pockets (restripe requires removal of on-street parking)	3,560	14,900	8,800	*Near-Term Impact (see Table M-1A)*
D-2: Alvarado Road, Reservoir Drive to 70th Street	Restripe to provide a center turn lane or left-turn pockets (requires removal of on-street parking)	2,070	16,900	7,040	*Near-Term Impact (see Table M-1A)*
D-3: College Avenue, Del Cerro Boulevard to I-8 EB Ramps	Restripe to provide a third northbound through lane	2,170	38,100	31,330	32.1%
D-4: College Avenue, I-8 EB Ramps to Zura Way	Widen to accommodate a third NB through lane	6,570	67,670	35,850	*Near-Term Impact (see Table M-1A)*
D-5:College Avenue, Zura Way to Montezuma Road	Widen to provide an additional lane (physically infeasible)	2,840	38,020	29,790	34.5%
D-6: College Avenue, Montezuma Road to Cresita Drive	Widen to provide a raised median (physically infeasible)	1,710	33,840	27,490	26.9%
D-7: Montezuma Road, Fairmount Avenue to Collwood Boulevard	Widen to provide an additional lane (physically infeasible)	1,280	68,020	52,330	8.2%
D-8: Montezuma Road, Collwood Boulevard to 55th Street	Widen to provide an additional lane	1,280	43,090	28,950	9.1%
D-9: Montezuma Road, 55th Street to College Avenue	Intall a raised median	1,580	39,790	32,570	21.9%
Ramp Meters					
E-1: Northbound College Avenue to westbound I-8	Support Caltrans in obtaining funds from Legislature to prepare a PSR-PDS	21	440	306	15.7%
E-2: Soutbound College Avenue to westbound I-8		6	434	336	6.1%
Freeway Mainlines					
F-1: I-8 - Fairmount Avenue to Waring Road (EB, PM peak)	Support Caltrans in obtaining funds from Legislature to prepare a PSR-PDS	82	12,633	11,112	5.4%
F-2: I-8 - Waring Road to College Avenue (EB, PM peak)		82	11,911	10,594	6.2%
F-3: I-8 - College Avenue to Lake Murray Boulevard (EB, PM peak)		71	11,773	10,048	4.1%
F-4: I-8 - College Avenue to Lake Murray Boulevard (WB, AM peak)		65	12,136	10,357	3.7%
F-5: I-8 - Lake Murray Boulevard to Fletcher Parkway (EB, PM peak)		138	11,369	10,048	10.4%
F-6: I-8 - Lake Murray Boulevard to Fletcher Parkway (WB, AM peak)		128	11,719	10,357	9.4%

Footnotes:

a. Fair share percentages calculated as

$$\frac{\text{Horizon Year Project Traffic}}{(\text{Year 2035 + Project Traffic}) - (\text{Existing Traffic})}$$

b. Intersection fair share contributions are calculated to result in higher fair-share perecentage depending on higher of the AM and PM entering peak hour volumes.

General Notes:

There may be minor rounding errors on the above calculations.
Green highlighted rowns indicate locations where SDSU has agreed to fully fund and implement the necessary improvements.

APPENDIX S

ADDITIONAL TRAFFIC ANALYSIS CALCULATION SHEETS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	953	459	68	1295	955	57
Future Volume (veh/h)	953	459	68	1295	955	57
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1059	510	76	1439	1061	63
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1750	1277	96	2064	1136	523
Arrive On Green	0.49	0.49	0.11	1.00	0.33	0.33
Sat Flow, veh/h	3632	1524	1774	3632	3442	1583
Grp Volume(v), veh/h	1059	510	76	1439	1061	63
Grp Sat Flow(s),veh/h/ln	1770	1524	1774	1770	1721	1583
Q Serve(g_s), s	27.2	11.1	5.3	0.0	37.6	3.5
Cycle Q Clear(g_c), s	27.2	11.1	5.3	0.0	37.6	3.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1750	1277	96	2064	1136	523
V/C Ratio(X)	0.61	0.40	0.80	0.70	0.93	0.12
Avail Cap(c_a), veh/h	1750	1277	169	2064	1371	631
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.80	0.80	1.00	1.00
Uniform Delay (d), s/veh	23.0	2.9	55.5	0.0	40.9	29.4
Incr Delay (d2), s/veh	1.6	0.9	4.5	1.6	9.8	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	13.6	4.9	2.7	0.5	19.4	1.5
LnGrp Delay(d),s/veh	24.5	3.8	60.0	1.6	50.7	29.5
LnGrp LOS	C	A	E	A	D	C
Approach Vol, veh/h	1569			1515	1124	
Approach Delay, s/veh	17.8			4.5	49.5	
Approach LOS	B			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.2	68.8				80.0		46.0
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	12.0	* 49				64.9		50.2
Max Q Clear Time (g_c+I1), s	7.3	29.2				2.0		39.6
Green Ext Time (p_c), s	0.0	13.2				30.9		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	970	1246	18	7	117
Future Volume (veh/h)	40	970	1246	18	7	117
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	45	1090	1400	20	8	131
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	58	2764	2547	36	11	184
Arrive On Green	0.06	1.00	0.71	0.71	0.13	0.13
Sat Flow, veh/h	1774	3632	3664	51	89	1459
Grp Volume(v), veh/h	45	1090	693	727	140	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1559	0
Q Serve(g_s), s	3.1	0.0	23.3	23.3	10.9	0.0
Cycle Q Clear(g_c), s	3.1	0.0	23.3	23.3	10.9	0.0
Prop In Lane	1.00			0.03	0.06	0.94
Lane Grp Cap(c), veh/h	58	2764	1263	1321	197	0
V/C Ratio(X)	0.78	0.39	0.55	0.55	0.71	0.00
Avail Cap(c_a), veh/h	135	2764	1263	1321	395	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.5	0.0	8.5	8.5	52.8	0.0
Incr Delay (d2), s/veh	6.5	0.3	1.7	1.7	1.8	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	1.7	0.1	11.8	12.3	4.8	0.0
LnGrp Delay(d),s/veh	64.9	0.3	10.2	10.2	54.6	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1135	1420		140	
Approach Delay, s/veh		2.9	10.2		54.6	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		105.0		21.0	8.5	96.5		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 83		31.9	9.6	68.4		
Max Q Clear Time (g_c+I1), s		2.0		12.9	5.1	25.3		
Green Ext Time (p_c), s		29.6		0.2	0.0	31.2		

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1902	999	125	1413	585	63
Future Volume (veh/h)	1902	999	125	1413	585	63
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	2002	1052	132	1487	616	66
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2160	1247	138	2551	681	313
Arrive On Green	0.61	0.61	0.16	1.00	0.20	0.20
Sat Flow, veh/h	3632	1529	1774	3632	3442	1583
Grp Volume(v), veh/h	2002	1052	132	1487	616	66
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583
Q Serve(g_s), s	68.0	56.6	9.9	0.0	23.4	4.7
Cycle Q Clear(g_c), s	68.0	56.6	9.9	0.0	23.4	4.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2160	1247	138	2551	681	313
V/C Ratio(X)	0.93	0.84	0.96	0.58	0.90	0.21
Avail Cap(c_a), veh/h	2160	1247	138	2551	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.67	0.67	1.00	1.00
Uniform Delay (d), s/veh	23.4	7.9	56.4	0.0	52.5	45.0
Incr Delay (d2), s/veh	8.4	7.1	50.7	0.7	9.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	35.6	25.7	6.8	0.2	12.0	2.1
LnGrp Delay(d),s/veh	31.8	15.0	107.1	0.7	61.7	45.1
LnGrp LOS	C	B	F	A	E	D
Approach Vol, veh/h	3054			1619	682	
Approach Delay, s/veh	26.0			9.3	60.1	
Approach LOS	C			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.8	88.3				103.1		30.9
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	10.4	* 74				88.7		34.4
Max Q Clear Time (g_c+I1), s	11.9	70.0				2.0		25.4
Green Ext Time (p_c), s	0.0	4.3				37.3		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	123	1842	1469	20	12	69
Future Volume (veh/h)	123	1842	1469	20	12	69
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	132	1981	1580	22	13	74
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	154	2893	2492	35	22	126
Arrive On Green	0.17	1.00	0.70	0.70	0.10	0.10
Sat Flow, veh/h	1774	3632	3665	50	232	1319
Grp Volume(v), veh/h	132	1981	782	820	88	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1568	0
Q Serve(g_s), s	9.7	0.0	32.1	32.2	7.2	0.0
Cycle Q Clear(g_c), s	9.7	0.0	32.1	32.2	7.2	0.0
Prop In Lane	1.00			0.03	0.15	0.84
Lane Grp Cap(c), veh/h	154	2893	1234	1292	150	0
V/C Ratio(X)	0.86	0.68	0.63	0.63	0.59	0.00
Avail Cap(c_a), veh/h	207	2893	1234	1292	363	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.19	0.19	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.5	0.0	11.0	11.0	58.1	0.0
Incr Delay (d2), s/veh	4.1	0.3	2.5	2.4	1.4	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	4.9	0.1	16.3	17.3	3.2	0.0
LnGrp Delay(d),s/veh	58.6	0.3	13.5	13.4	59.5	0.0
LnGrp LOS	E	A	B	B	E	
Approach Vol, veh/h		2113	1602		88	
Approach Delay, s/veh		3.9	13.4		59.5	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		116.1		17.9	16.0	100.1		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 92		31.0	15.6	71.3		
Max Q Clear Time (g_c+I1), s		2.0		9.2	11.7	34.2		
Green Ext Time (p_c), s		75.5		0.1	0.1	30.9		

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1010	459	68	1304	955	57
Future Volume (veh/h)	1010	459	68	1304	955	57
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1122	510	76	1449	1061	63
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1750	1277	96	2064	1136	523
Arrive On Green	0.49	0.49	0.11	1.00	0.33	0.33
Sat Flow, veh/h	3632	1524	1774	3632	3442	1583
Grp Volume(v), veh/h	1122	510	76	1449	1061	63
Grp Sat Flow(s),veh/h/ln	1770	1524	1774	1770	1721	1583
Q Serve(g_s), s	29.6	11.1	5.3	0.0	37.6	3.5
Cycle Q Clear(g_c), s	29.6	11.1	5.3	0.0	37.6	3.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1750	1277	96	2064	1136	523
V/C Ratio(X)	0.64	0.40	0.80	0.70	0.93	0.12
Avail Cap(c_a), veh/h	1750	1277	169	2064	1371	631
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.79	0.79	1.00	1.00
Uniform Delay (d), s/veh	23.6	2.9	55.5	0.0	40.9	29.4
Incr Delay (d2), s/veh	1.8	0.9	4.5	1.6	9.8	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	14.8	4.9	2.7	0.5	19.4	1.5
LnGrp Delay(d),s/veh	25.4	3.8	60.0	1.6	50.7	29.5
LnGrp LOS	C	A	E	A	D	C
Approach Vol, veh/h	1632			1525	1124	
Approach Delay, s/veh	18.7			4.5	49.5	
Approach LOS	B			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.2	68.8				80.0		46.0
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	12.0	* 49				64.9		50.2
Max Q Clear Time (g_c+I1), s	7.3	31.6				2.0		39.6
Green Ext Time (p_c), s	0.0	12.4				31.2		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	1027	1255	18	7	117
Future Volume (veh/h)	40	1027	1255	18	7	117
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	45	1154	1410	20	8	131
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	58	2764	2547	36	11	184
Arrive On Green	0.03	0.78	0.71	0.71	0.13	0.13
Sat Flow, veh/h	1774	3632	3664	51	89	1459
Grp Volume(v), veh/h	45	1154	698	732	140	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1559	0
Q Serve(g_s), s	3.2	13.4	23.5	23.6	10.9	0.0
Cycle Q Clear(g_c), s	3.2	13.4	23.5	23.6	10.9	0.0
Prop In Lane	1.00			0.03	0.06	0.94
Lane Grp Cap(c), veh/h	58	2764	1262	1321	197	0
V/C Ratio(X)	0.78	0.42	0.55	0.55	0.71	0.00
Avail Cap(c_a), veh/h	107	2764	1262	1321	395	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.73	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	60.5	4.5	8.6	8.6	52.8	0.0
Incr Delay (d2), s/veh	6.0	0.3	1.8	1.7	1.8	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	1.7	6.5	12.1	12.6	4.8	0.0
LnGrp Delay(d),s/veh	66.5	4.8	10.3	10.2	54.6	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1199	1430		140	
Approach Delay, s/veh		7.1	10.3		54.6	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		105.0		21.0	8.5	96.5		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 83		31.9	7.6	70.4		
Max Q Clear Time (g_c+I1), s		15.4		12.9	5.2	25.6		
Green Ext Time (p_c), s		30.5		0.2	0.0	32.3		

Intersection Summary	
HCM 2010 Ctrl Delay	11.2
HCM 2010 LOS	B

Notes
User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1932	999	125	1474	585	63
Future Volume (veh/h)	1932	999	125	1474	585	63
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	2034	1052	132	1552	616	66
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2160	1247	138	2551	681	313
Arrive On Green	0.61	0.61	0.16	1.00	0.20	0.20
Sat Flow, veh/h	3632	1529	1774	3632	3442	1583
Grp Volume(v), veh/h	2034	1052	132	1552	616	66
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583
Q Serve(g_s), s	70.6	56.6	9.9	0.0	23.4	4.7
Cycle Q Clear(g_c), s	70.6	56.6	9.9	0.0	23.4	4.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2160	1247	138	2551	681	313
V/C Ratio(X)	0.94	0.84	0.96	0.61	0.90	0.21
Avail Cap(c_a), veh/h	2160	1247	138	2551	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.64	0.64	1.00	1.00
Uniform Delay (d), s/veh	23.9	7.9	56.4	0.0	52.5	45.0
Incr Delay (d2), s/veh	9.8	7.1	49.0	0.7	9.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	37.1	25.7	6.7	0.2	12.0	2.1
LnGrp Delay(d),s/veh	33.7	15.0	105.4	0.7	61.7	45.1
LnGrp LOS	C	B	F	A	E	D
Approach Vol, veh/h	3086			1684	682	
Approach Delay, s/veh	27.3			8.9	60.1	
Approach LOS	C			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.8	88.3				103.1		30.9
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	10.4	* 74				88.7		34.4
Max Q Clear Time (g_c+I1), s	11.9	72.6				2.0		25.4
Green Ext Time (p_c), s	0.0	1.7				40.4		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	123	1872	1530	20	12	69
Future Volume (veh/h)	123	1872	1530	20	12	69
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	132	2013	1645	22	13	74
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	154	2893	2493	33	22	126
Arrive On Green	0.17	1.00	0.70	0.70	0.10	0.10
Sat Flow, veh/h	1774	3632	3667	48	232	1319
Grp Volume(v), veh/h	132	2013	813	854	88	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1568	0
Q Serve(g_s), s	9.7	0.0	34.5	34.6	7.2	0.0
Cycle Q Clear(g_c), s	9.7	0.0	34.5	34.6	7.2	0.0
Prop In Lane	1.00			0.03	0.15	0.84
Lane Grp Cap(c), veh/h	154	2893	1234	1292	150	0
V/C Ratio(X)	0.86	0.70	0.66	0.66	0.59	0.00
Avail Cap(c_a), veh/h	207	2893	1234	1292	363	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.15	0.15	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.5	0.0	11.3	11.4	58.1	0.0
Incr Delay (d2), s/veh	3.3	0.2	2.8	2.7	1.4	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	4.8	0.1	17.7	18.5	3.2	0.0
LnGrp Delay(d),s/veh	57.9	0.2	14.1	14.0	59.5	0.0
LnGrp LOS	E	A	B	B	E	
Approach Vol, veh/h		2145	1667		88	
Approach Delay, s/veh		3.8	14.1		59.5	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		116.1		17.9	16.0	100.1		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 92		31.0	15.6	71.3		
Max Q Clear Time (g_c+I1), s		2.0		9.2	11.7	36.6		
Green Ext Time (p_c), s		76.6		0.1	0.1	29.9		

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1031	459	68	1385	955	57
Future Volume (veh/h)	1031	459	68	1385	955	57
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1146	510	76	1539	1061	63
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1751	1277	95	2064	1136	523
Arrive On Green	0.49	0.49	0.11	1.00	0.33	0.33
Sat Flow, veh/h	3632	1524	1774	3632	3442	1583
Grp Volume(v), veh/h	1146	510	76	1539	1061	63
Grp Sat Flow(s),veh/h/ln	1770	1524	1774	1770	1721	1583
Q Serve(g_s), s	30.5	11.1	5.3	0.0	37.6	3.5
Cycle Q Clear(g_c), s	30.5	11.1	5.3	0.0	37.6	3.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1751	1277	95	2064	1136	523
V/C Ratio(X)	0.65	0.40	0.80	0.75	0.93	0.12
Avail Cap(c_a), veh/h	1751	1277	135	2064	1371	631
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.76	0.76	1.00	1.00
Uniform Delay (d), s/veh	23.8	2.9	55.6	0.0	40.9	29.4
Incr Delay (d2), s/veh	1.9	0.9	9.9	1.9	9.8	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	15.3	4.9	2.8	0.5	19.4	1.5
LnGrp Delay(d),s/veh	25.7	3.8	65.4	1.9	50.7	29.5
LnGrp LOS	C	A	E	A	D	C
Approach Vol, veh/h	1656			1615	1124	
Approach Delay, s/veh	19.0			4.9	49.5	
Approach LOS	B			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.2	68.8				80.0		46.0
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	9.6	* 51				64.9		50.2
Max Q Clear Time (g_c+I1), s	7.3	32.5				2.0		39.6
Green Ext Time (p_c), s	0.0	13.4				34.4		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	1048	1336	18	7	117
Future Volume (veh/h)	40	1048	1336	18	7	117
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	45	1178	1501	20	8	131
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	58	2764	2550	34	11	184
Arrive On Green	0.06	1.00	0.71	0.71	0.13	0.13
Sat Flow, veh/h	1774	3632	3668	48	89	1459
Grp Volume(v), veh/h	45	1178	742	779	140	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1559	0
Q Serve(g_s), s	3.1	0.0	26.1	26.2	10.9	0.0
Cycle Q Clear(g_c), s	3.1	0.0	26.1	26.2	10.9	0.0
Prop In Lane	1.00			0.03	0.06	0.94
Lane Grp Cap(c), veh/h	58	2764	1263	1322	197	0
V/C Ratio(X)	0.78	0.43	0.59	0.59	0.71	0.00
Avail Cap(c_a), veh/h	135	2764	1263	1322	395	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.5	0.0	8.9	8.9	52.8	0.0
Incr Delay (d2), s/veh	6.0	0.3	2.0	1.9	1.8	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	1.6	0.1	13.3	13.9	4.8	0.0
LnGrp Delay(d),s/veh	64.5	0.3	10.9	10.9	54.6	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1223	1521		140	
Approach Delay, s/veh		2.7	10.9		54.6	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		105.0		21.0	8.5	96.5		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 83		31.9	9.6	68.4		
Max Q Clear Time (g_c+I1), s		2.0		12.9	5.1	28.2		
Green Ext Time (p_c), s		33.7		0.2	0.0	31.6		

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2088	999	125	1547	585	63
Future Volume (veh/h)	2088	999	125	1547	585	63
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	2198	1052	132	1628	616	66
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2160	1247	138	2551	681	313
Arrive On Green	0.61	0.61	0.16	1.00	0.20	0.20
Sat Flow, veh/h	3632	1529	1774	3632	3442	1583
Grp Volume(v), veh/h	2198	1052	132	1628	616	66
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583
Q Serve(g_s), s	81.8	56.6	9.9	0.0	23.4	4.7
Cycle Q Clear(g_c), s	81.8	56.6	9.9	0.0	23.4	4.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2160	1247	138	2551	681	313
V/C Ratio(X)	1.02	0.84	0.96	0.64	0.90	0.21
Avail Cap(c_a), veh/h	2160	1247	138	2551	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.59	0.59	1.00	1.00
Uniform Delay (d), s/veh	26.1	7.9	56.4	0.0	52.5	45.0
Incr Delay (d2), s/veh	23.9	7.1	46.8	0.7	9.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	46.8	25.7	6.6	0.3	12.0	2.1
LnGrp Delay(d),s/veh	50.0	15.0	103.2	0.7	61.7	45.1
LnGrp LOS	F	B	F	A	E	D
Approach Vol, veh/h	3250			1760	682	
Approach Delay, s/veh	38.6			8.4	60.1	
Approach LOS	D			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.8	88.3				103.1		30.9
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	10.4	* 74				88.7		34.4
Max Q Clear Time (g_c+I1), s	11.9	83.8				2.0		25.4
Green Ext Time (p_c), s	0.0	0.0				44.2		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	31.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	123	2028	1603	20	12	69
Future Volume (veh/h)	123	2028	1603	20	12	69
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	132	2181	1724	22	13	74
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	154	2893	2495	32	22	126
Arrive On Green	0.17	1.00	0.70	0.70	0.10	0.10
Sat Flow, veh/h	1774	3632	3670	46	232	1319
Grp Volume(v), veh/h	132	2181	851	895	88	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1853	1568	0
Q Serve(g_s), s	9.7	0.0	37.6	37.8	7.2	0.0
Cycle Q Clear(g_c), s	9.7	0.0	37.6	37.8	7.2	0.0
Prop In Lane	1.00			0.02	0.15	0.84
Lane Grp Cap(c), veh/h	154	2893	1234	1292	150	0
V/C Ratio(X)	0.86	0.75	0.69	0.69	0.59	0.00
Avail Cap(c_a), veh/h	207	2893	1234	1292	363	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.5	0.0	11.8	11.8	58.1	0.0
Incr Delay (d2), s/veh	2.0	0.2	3.2	3.1	1.4	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	4.8	0.1	19.3	20.2	3.2	0.0
LnGrp Delay(d),s/veh	56.6	0.2	15.0	14.9	59.5	0.0
LnGrp LOS	E	A	B	B	E	
Approach Vol, veh/h		2313	1746		88	
Approach Delay, s/veh		3.4	14.9		59.5	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		116.1		17.9	16.0	100.1		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 92		31.0	15.6	71.3		
Max Q Clear Time (g_c+I1), s		2.0		9.2	11.7	39.8		
Green Ext Time (p_c), s		81.3		0.1	0.1	28.2		

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Notes
User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1039	459	68	1388	955	57
Future Volume (veh/h)	1039	459	68	1388	955	57
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1154	510	76	1542	1061	63
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1755	1277	96	2069	1132	521
Arrive On Green	0.50	0.50	0.11	1.00	0.33	0.33
Sat Flow, veh/h	3632	1524	1774	3632	3442	1583
Grp Volume(v), veh/h	1154	510	76	1542	1061	63
Grp Sat Flow(s),veh/h/ln	1770	1524	1774	1770	1721	1583
Q Serve(g_s), s	30.7	11.1	5.3	0.0	37.7	3.5
Cycle Q Clear(g_c), s	30.7	11.1	5.3	0.0	37.7	3.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1755	1277	96	2069	1132	521
V/C Ratio(X)	0.66	0.40	0.80	0.75	0.94	0.12
Avail Cap(c_a), veh/h	1755	1277	169	2069	1289	593
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.76	0.76	1.00	1.00
Uniform Delay (d), s/veh	23.7	2.9	55.5	0.0	41.0	29.6
Incr Delay (d2), s/veh	1.9	0.9	4.3	1.9	11.5	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	15.4	4.9	2.7	0.5	19.6	1.5
LnGrp Delay(d),s/veh	25.7	3.8	59.8	1.9	52.5	29.6
LnGrp LOS	C	A	E	A	D	C
Approach Vol, veh/h	1664			1618	1124	
Approach Delay, s/veh	19.0			4.6	51.2	
Approach LOS	B			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.2	69.0				80.2		45.8
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	12.0	* 52				67.9		47.2
Max Q Clear Time (g_c+I1), s	7.3	32.7				2.0		39.7
Green Ext Time (p_c), s	0.0	13.7				35.3		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	21.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	1056	1339	18	7	117
Future Volume (veh/h)	40	1056	1339	18	7	117
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	45	1187	1504	20	8	131
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	58	2764	2550	34	11	184
Arrive On Green	0.03	0.78	0.71	0.71	0.13	0.13
Sat Flow, veh/h	1774	3632	3668	47	89	1459
Grp Volume(v), veh/h	45	1187	744	780	140	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1853	1559	0
Q Serve(g_s), s	3.2	13.9	26.2	26.3	10.9	0.0
Cycle Q Clear(g_c), s	3.2	13.9	26.2	26.3	10.9	0.0
Prop In Lane	1.00			0.03	0.06	0.94
Lane Grp Cap(c), veh/h	58	2764	1262	1321	197	0
V/C Ratio(X)	0.78	0.43	0.59	0.59	0.71	0.00
Avail Cap(c_a), veh/h	107	2764	1262	1321	395	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	60.5	4.6	8.9	8.9	52.8	0.0
Incr Delay (d2), s/veh	5.9	0.4	2.0	1.9	1.8	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	1.7	6.9	13.3	13.9	4.8	0.0
LnGrp Delay(d),s/veh	66.4	4.9	11.0	10.9	54.6	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1232	1524		140	
Approach Delay, s/veh		7.2	10.9		54.6	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		105.0		21.0	8.5	96.5		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 83		31.9	7.6	70.4		
Max Q Clear Time (g_c+I1), s		15.9		12.9	5.2	28.3		
Green Ext Time (p_c), s		31.7		0.2	0.0	32.9		

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2094	999	125	1554	585	63
Future Volume (veh/h)	2094	999	125	1554	585	63
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	2204	1052	132	1636	616	66
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2160	1247	138	2551	681	313
Arrive On Green	0.61	0.61	0.16	1.00	0.20	0.20
Sat Flow, veh/h	3632	1529	1774	3632	3442	1583
Grp Volume(v), veh/h	2204	1052	132	1636	616	66
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583
Q Serve(g_s), s	81.8	56.6	9.9	0.0	23.4	4.7
Cycle Q Clear(g_c), s	81.8	56.6	9.9	0.0	23.4	4.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2160	1247	138	2551	681	313
V/C Ratio(X)	1.02	0.84	0.96	0.64	0.90	0.21
Avail Cap(c_a), veh/h	2160	1247	138	2551	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.58	0.58	1.00	1.00
Uniform Delay (d), s/veh	26.1	7.9	56.4	0.0	52.5	45.0
Incr Delay (d2), s/veh	24.6	7.1	46.6	0.7	9.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	47.0	25.7	6.6	0.3	12.0	2.1
LnGrp Delay(d),s/veh	50.7	15.0	103.0	0.7	61.7	45.1
LnGrp LOS	F	B	F	A	E	D
Approach Vol, veh/h	3256			1768	682	
Approach Delay, s/veh	39.2			8.4	60.1	
Approach LOS	D			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.8	88.3				103.1		30.9
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	10.4	* 74				88.7		34.4
Max Q Clear Time (g_c+I1), s	11.9	83.8				2.0		25.4
Green Ext Time (p_c), s	0.0	0.0				44.6		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	123	2034	1610	20	12	69
Future Volume (veh/h)	123	2034	1610	20	12	69
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	132	2187	1731	22	13	74
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	154	2893	2495	32	22	126
Arrive On Green	0.17	1.00	0.70	0.70	0.10	0.10
Sat Flow, veh/h	1774	3632	3670	45	232	1319
Grp Volume(v), veh/h	132	2187	855	898	88	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1853	1568	0
Q Serve(g_s), s	9.7	0.0	37.9	38.1	7.2	0.0
Cycle Q Clear(g_c), s	9.7	0.0	37.9	38.1	7.2	0.0
Prop In Lane	1.00			0.02	0.15	0.84
Lane Grp Cap(c), veh/h	154	2893	1234	1292	150	0
V/C Ratio(X)	0.86	0.76	0.69	0.69	0.59	0.00
Avail Cap(c_a), veh/h	207	2893	1234	1292	363	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.5	0.0	11.9	11.9	58.1	0.0
Incr Delay (d2), s/veh	2.0	0.2	3.2	3.1	1.4	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	4.8	0.1	19.4	20.3	3.2	0.0
LnGrp Delay(d),s/veh	56.6	0.2	15.1	15.0	59.5	0.0
LnGrp LOS	E	A	B	B	E	
Approach Vol, veh/h		2319	1753		88	
Approach Delay, s/veh		3.4	15.0		59.5	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		116.1		17.9	16.0	100.1		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 92		31.0	15.6	71.3		
Max Q Clear Time (g_c+I1), s		2.0		9.2	11.7	40.1		
Green Ext Time (p_c), s		81.5		0.1	0.1	28.1		

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1071	530	82	1507	1100	72
Future Volume (veh/h)	1071	530	82	1507	1100	72
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1190	589	91	1674	1222	80
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1564	1263	112	1911	1285	591
Arrive On Green	0.44	0.44	0.13	1.00	0.37	0.37
Sat Flow, veh/h	3632	1521	1774	3632	3442	1583
Grp Volume(v), veh/h	1190	589	91	1674	1222	80
Grp Sat Flow(s),veh/h/ln	1770	1521	1774	1770	1721	1583
Q Serve(g_s), s	35.6	14.7	6.3	0.0	43.5	4.2
Cycle Q Clear(g_c), s	35.6	14.7	6.3	0.0	43.5	4.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1564	1263	112	1911	1285	591
V/C Ratio(X)	0.76	0.47	0.81	0.88	0.95	0.14
Avail Cap(c_a), veh/h	1564	1263	169	1911	1371	631
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.69	0.69	1.00	1.00
Uniform Delay (d), s/veh	29.6	3.5	54.3	0.0	38.4	26.1
Incr Delay (d2), s/veh	3.5	1.2	6.6	4.2	13.5	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	18.1	6.5	3.3	1.1	22.9	1.8
LnGrp Delay(d),s/veh	33.1	4.7	60.9	4.2	51.8	26.1
LnGrp LOS	C	A	E	A	D	C
Approach Vol, veh/h	1779			1765	1302	
Approach Delay, s/veh	23.7			7.1	50.2	
Approach LOS	C			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.4	62.2				74.6		51.4
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	12.0	* 49				64.9		50.2
Max Q Clear Time (g_c+I1), s	8.3	37.6				2.0		45.5
Green Ext Time (p_c), s	0.0	9.2				39.0		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	24.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	51	1092	1448	30	10	141
Future Volume (veh/h)	51	1092	1448	30	10	141
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	57	1227	1627	34	11	158
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	73	2707	2440	51	14	207
Arrive On Green	0.08	1.00	0.69	0.69	0.14	0.14
Sat Flow, veh/h	1774	3632	3636	74	101	1454
Grp Volume(v), veh/h	57	1227	811	850	170	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1847	1564	0
Q Serve(g_s), s	4.0	0.0	33.2	33.4	13.2	0.0
Cycle Q Clear(g_c), s	4.0	0.0	33.2	33.4	13.2	0.0
Prop In Lane	1.00			0.04	0.06	0.93
Lane Grp Cap(c), veh/h	73	2707	1219	1272	223	0
V/C Ratio(X)	0.78	0.45	0.67	0.67	0.76	0.00
Avail Cap(c_a), veh/h	135	2707	1219	1272	396	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.57	0.57	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.3	0.0	11.3	11.3	52.0	0.0
Incr Delay (d2), s/veh	3.9	0.3	2.9	2.8	2.1	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	2.0	0.1	17.0	17.8	5.8	0.0
LnGrp Delay(d),s/veh	61.2	0.3	14.1	14.1	54.0	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1284	1661		170	
Approach Delay, s/veh		3.0	14.1		54.0	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		103.0		23.0	9.6	93.4		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 83		31.9	9.6	68.4		
Max Q Clear Time (g_c+I1), s		2.0		15.2	6.0	35.4		
Green Ext Time (p_c), s		36.2		0.2	0.0	28.6		

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2230	1150	155	1629	680	86
Future Volume (veh/h)	2230	1150	155	1629	680	86
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	2347	1211	163	1715	716	91
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2062	1248	138	2453	777	357
Arrive On Green	0.58	0.58	0.16	1.00	0.23	0.23
Sat Flow, veh/h	3632	1528	1774	3632	3442	1583
Grp Volume(v), veh/h	2347	1211	163	1715	716	91
Grp Sat Flow(s),veh/h/ln	1770	1528	1774	1770	1721	1583
Q Serve(g_s), s	78.1	78.1	10.4	0.0	27.3	6.3
Cycle Q Clear(g_c), s	78.1	78.1	10.4	0.0	27.3	6.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2062	1248	138	2453	777	357
V/C Ratio(X)	1.14	0.97	1.18	0.70	0.92	0.25
Avail Cap(c_a), veh/h	2062	1248	138	2453	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.49	0.49	1.00	1.00
Uniform Delay (d), s/veh	28.0	11.8	56.6	0.0	50.7	42.6
Incr Delay (d2), s/veh	68.8	19.3	113.1	0.8	13.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	57.5	46.0	9.4	0.3	14.3	2.8
LnGrp Delay(d),s/veh	96.8	31.2	169.7	0.8	63.7	42.8
LnGrp LOS	F	C	F	A	E	D
Approach Vol, veh/h	3558			1878	807	
Approach Delay, s/veh	74.4			15.5	61.3	
Approach LOS	E			B	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.8	84.6				99.4		34.6
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	10.4	* 74				88.7		34.4
Max Q Clear Time (g_c+I1), s	12.4	80.1				2.0		29.3
Green Ext Time (p_c), s	0.0	0.0				48.6		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	55.0
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	142	2174	1702	30	20	82
Future Volume (veh/h)	142	2174	1702	30	20	82
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	153	2338	1830	32	22	88
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	175	2849	2395	42	34	135
Arrive On Green	0.20	1.00	0.67	0.67	0.11	0.11
Sat Flow, veh/h	1774	3632	3650	62	314	1255
Grp Volume(v), veh/h	153	2338	908	954	111	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1849	1583	0
Q Serve(g_s), s	11.2	0.0	46.1	46.7	9.0	0.0
Cycle Q Clear(g_c), s	11.2	0.0	46.1	46.7	9.0	0.0
Prop In Lane	1.00			0.03	0.20	0.79
Lane Grp Cap(c), veh/h	175	2849	1192	1245	171	0
V/C Ratio(X)	0.87	0.82	0.76	0.77	0.65	0.00
Avail Cap(c_a), veh/h	207	2849	1192	1245	366	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.0	0.0	14.7	14.8	57.4	0.0
Incr Delay (d2), s/veh	3.2	0.3	4.6	4.5	1.6	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	5.6	0.1	23.7	25.2	4.0	0.0
LnGrp Delay(d),s/veh	56.2	0.3	19.3	19.3	58.9	0.0
LnGrp LOS	E	A	B	B	E	
Approach Vol, veh/h		2491	1862		111	
Approach Delay, s/veh		3.7	19.3		58.9	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		114.5		19.5	17.6	96.8		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 92		31.0	15.6	71.3		
Max Q Clear Time (g_c+I1), s		2.0		11.0	13.2	48.7		
Green Ext Time (p_c), s		84.5		0.2	0.0	21.3		

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1128	530	82	1516	1100	72
Future Volume (veh/h)	1128	530	82	1516	1100	72
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1253	589	91	1684	1222	80
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1562	1263	113	1911	1285	591
Arrive On Green	0.44	0.44	0.08	0.72	0.37	0.37
Sat Flow, veh/h	3632	1521	1774	3632	3442	1583
Grp Volume(v), veh/h	1253	589	91	1684	1222	80
Grp Sat Flow(s),veh/h/ln	1770	1521	1774	1770	1721	1583
Q Serve(g_s), s	38.6	14.7	6.3	46.0	43.5	4.2
Cycle Q Clear(g_c), s	38.6	14.7	6.3	46.0	43.5	4.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1562	1263	113	1911	1285	591
V/C Ratio(X)	0.80	0.47	0.80	0.88	0.95	0.14
Avail Cap(c_a), veh/h	1562	1263	169	1911	1371	631
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.68	0.68	1.00	1.00
Uniform Delay (d), s/veh	30.4	3.5	56.9	14.6	38.4	26.1
Incr Delay (d2), s/veh	4.4	1.2	6.3	4.4	13.5	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	19.8	6.5	3.3	23.2	22.9	1.8
LnGrp Delay(d),s/veh	34.9	4.8	63.2	19.0	51.8	26.1
LnGrp LOS	C	A	E	B	D	C
Approach Vol, veh/h	1842			1775	1302	
Approach Delay, s/veh	25.2			21.3	50.2	
Approach LOS	C			C	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.4	62.1				74.6		51.4
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	12.0	* 49				64.9		50.2
Max Q Clear Time (g_c+I1), s	8.3	40.6				48.0		45.5
Green Ext Time (p_c), s	0.0	7.2				14.3		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	30.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	51	1149	1457	30	10	141
Future Volume (veh/h)	51	1149	1457	30	10	141
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	57	1291	1637	34	11	158
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	73	2707	2440	51	14	207
Arrive On Green	0.04	0.76	0.69	0.69	0.14	0.14
Sat Flow, veh/h	1774	3632	3636	73	101	1454
Grp Volume(v), veh/h	57	1291	816	855	170	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1847	1564	0
Q Serve(g_s), s	4.0	17.0	33.6	33.8	13.2	0.0
Cycle Q Clear(g_c), s	4.0	17.0	33.6	33.8	13.2	0.0
Prop In Lane	1.00			0.04	0.06	0.93
Lane Grp Cap(c), veh/h	73	2707	1219	1272	223	0
V/C Ratio(X)	0.78	0.48	0.67	0.67	0.76	0.00
Avail Cap(c_a), veh/h	107	2707	1219	1272	396	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.51	0.51	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	59.8	5.5	11.3	11.4	52.0	0.0
Incr Delay (d2), s/veh	5.8	0.3	2.9	2.9	2.1	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	2.1	8.4	17.3	18.1	5.8	0.0
LnGrp Delay(d),s/veh	65.7	5.8	14.3	14.2	54.0	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1348	1671		170	
Approach Delay, s/veh		8.3	14.2		54.0	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		103.0		23.0	9.6	93.4		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 83		31.9	7.6	70.4		
Max Q Clear Time (g_c+I1), s		19.0		15.2	6.0	35.8		
Green Ext Time (p_c), s		35.2		0.2	0.0	29.9		

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2260	1150	155	1690	680	86
Future Volume (veh/h)	2260	1150	155	1690	680	86
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	2379	1211	163	1779	716	91
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2030	1234	154	2453	777	357
Arrive On Green	0.57	0.57	0.17	1.00	0.23	0.23
Sat Flow, veh/h	3632	1528	1774	3632	3442	1583
Grp Volume(v), veh/h	2379	1211	163	1779	716	91
Grp Sat Flow(s),veh/h/ln	1770	1528	1774	1770	1721	1583
Q Serve(g_s), s	76.9	76.9	11.6	0.0	27.3	6.3
Cycle Q Clear(g_c), s	76.9	76.9	11.6	0.0	27.3	6.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2030	1234	154	2453	777	357
V/C Ratio(X)	1.17	0.98	1.06	0.73	0.92	0.25
Avail Cap(c_a), veh/h	2030	1234	154	2453	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.45	0.45	1.00	1.00
Uniform Delay (d), s/veh	28.6	12.9	55.4	0.0	50.7	42.6
Incr Delay (d2), s/veh	83.0	21.6	65.6	0.9	13.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	60.6	48.4	8.4	0.3	14.3	2.8
LnGrp Delay(d),s/veh	111.6	34.5	121.0	0.9	63.7	42.8
LnGrp LOS	F	C	F	A	E	D
Approach Vol, veh/h	3590			1942	807	
Approach Delay, s/veh	85.6			10.9	61.3	
Approach LOS	F			B	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	16.0	83.4				99.4		34.6
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	11.6	* 73				88.7		34.4
Max Q Clear Time (g_c+I1), s	13.6	78.9				2.0		29.3
Green Ext Time (p_c), s	0.0	0.0				51.7		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	59.6
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	142	2204	1763	30	20	82
Future Volume (veh/h)	142	2204	1763	30	20	82
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	153	2370	1896	32	22	88
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	175	2849	2397	40	34	135
Arrive On Green	0.20	1.00	0.67	0.67	0.11	0.11
Sat Flow, veh/h	1774	3632	3652	60	314	1255
Grp Volume(v), veh/h	153	2370	939	989	111	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1850	1583	0
Q Serve(g_s), s	11.2	0.0	49.5	50.2	9.0	0.0
Cycle Q Clear(g_c), s	11.2	0.0	49.5	50.2	9.0	0.0
Prop In Lane	1.00			0.03	0.20	0.79
Lane Grp Cap(c), veh/h	175	2849	1192	1246	171	0
V/C Ratio(X)	0.87	0.83	0.79	0.79	0.65	0.00
Avail Cap(c_a), veh/h	207	2849	1192	1246	366	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.0	0.0	15.2	15.3	57.4	0.0
Incr Delay (d2), s/veh	3.2	0.3	5.3	5.3	1.6	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	5.6	0.1	25.8	27.1	4.0	0.0
LnGrp Delay(d),s/veh	56.2	0.3	20.6	20.6	58.9	0.0
LnGrp LOS	E	A	C	C	E	
Approach Vol, veh/h		2523	1928		111	
Approach Delay, s/veh		3.7	20.6		58.9	
Approach LOS		A	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		114.5		19.5	17.6	96.8		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 92		31.0	15.6	71.3		
Max Q Clear Time (g_c+I1), s		2.0		11.0	13.2	52.2		
Green Ext Time (p_c), s		85.0		0.2	0.0	18.3		

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2260	1150	155	1690	680	86
Future Volume (veh/h)	2260	1150	155	1690	680	86
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	2379	1211	163	1779	716	91
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2136	1280	101	2453	777	447
Arrive On Green	0.60	0.60	0.11	1.00	0.23	0.23
Sat Flow, veh/h	3632	1529	1774	3632	3442	1583
Grp Volume(v), veh/h	2379	1211	163	1779	716	91
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583
Q Serve(g_s), s	80.9	80.9	7.6	0.0	27.3	5.9
Cycle Q Clear(g_c), s	80.9	80.9	7.6	0.0	27.3	5.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2136	1280	101	2453	777	447
V/C Ratio(X)	1.11	0.95	1.62	0.73	0.92	0.20
Avail Cap(c_a), veh/h	2136	1280	101	2453	884	496
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.45	0.45	1.00	1.00
Uniform Delay (d), s/veh	26.6	9.4	59.4	0.0	50.7	36.6
Incr Delay (d2), s/veh	58.5	15.2	298.5	0.9	13.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	56.5	40.7	12.0	0.3	14.3	2.6
LnGrp Delay(d),s/veh	85.1	24.6	357.9	0.9	63.7	36.7
LnGrp LOS	F	C	F	A	E	D
Approach Vol, veh/h	3590			1942	807	
Approach Delay, s/veh	64.7			30.8	60.7	
Approach LOS	E			C	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.0	87.4				99.4		34.6
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	7.6	* 77				88.7		34.4
Max Q Clear Time (g_c+I1), s	9.6	82.9				2.0		29.3
Green Ext Time (p_c), s	0.0	0.0				51.7		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	53.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX T

MEMO, DEFINING ENROLLMENT FOR THE SDSU MASTER PLAN

SAN DIEGO STATE UNIVERSITY

Planning, Design & Construction
Business and Financial Affairs
5500 Campanile Drive
San Diego CA 92182 · 1624
Tel: 619 · 594 · 5224
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Memo

To: Sarah Lozano, Dudek

From: Laura Shinn, Director of Planning, SDSU

Date: September 18, 2017

Subject: Defining Enrollment for the SDSU Master Plan

For the purposes of Master Planning and related Environmental Impact Reports (EIRs), the California State University projects an enrollment that most closely relates to the capacity and use of academic facilities on the main campus in order to ensure that proposed projects are planned to meet capacity needs. The enrollment figure used for this purpose differs from other published enrollment figures in a number of ways.

Master Plan enrollment is based on Full Time Equivalent (FTE) enrollment, which translates students taking more or less than a full course load (15 units) into a full time equivalent based on standardized conversion factors. The total FTE enrollment figure used for campus capacity and master planning is based on the Academic Year (AY), which *excludes*:

a. Summer enrollment FTE
b. FTE enrollment from courses taught off-site, such as student teaching in schools or clinical courses taught in a medical facility.
c. FTE enrollment from courses taught outside of instructional spaces, such as courses taught in an outdoor space, or which are not taught face to face, such as video, televised or web based courses.

For 2017/2018, the FTE for capacity and master planning purposes is projected to be 24,555.[1] *Based on current projections, this figure will remain under 25,000 FTE through 2019/2020. As of this date, SDSU's FTE for capacity and master planning purposes is projected to be:*

24,740 in 18/19
24,905 in 19/20
25,702 in 20/21

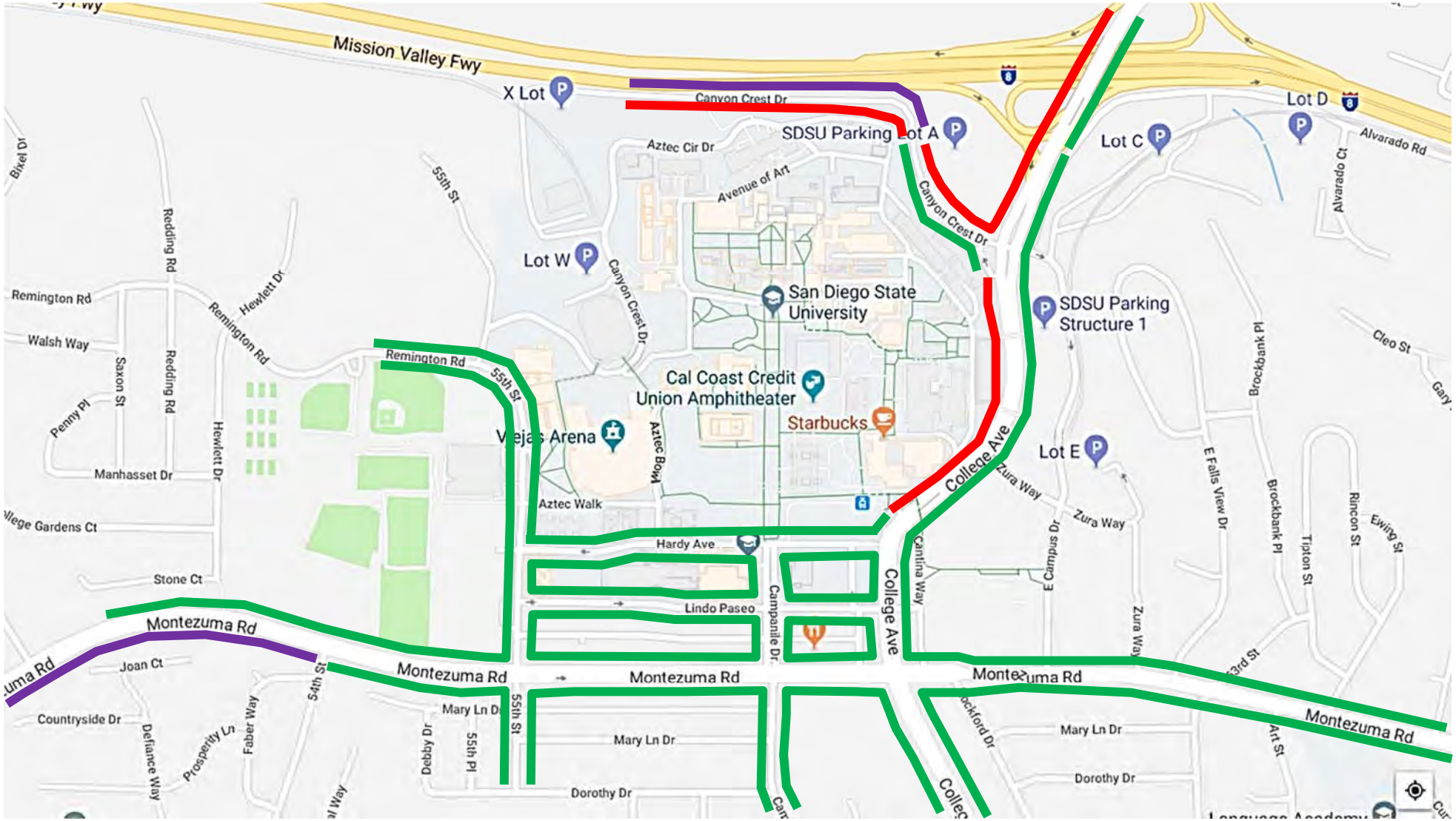
FTE figures published on SDSU's website are based on actual (not projected) hours and include all courses taken by students enrolled on the San Diego campus regardless of where the instruction is delivered. This figure includes course hours taken at off-campus locations and through on-line delivery. *Fall 2016 enrollment was just under 31,000 FTE, as published by the SDSU Analytic Studies and Institutional Research website. Published fall 2015 FTE was just under 30,000.*

[1] The information contained in this memorandum is based in part on a September 18, 2017 phone conversation with Theresa Tsik, Associate Facility Planner, California State University, Capital Planning, Design & Construction.

THE CALIFORNIA STATE UNIVERSITY · BAKERSFIELD · CHANNEL ISLANDS · CHICO · DOMINGUEZ HILLS · EAST BAY · FRESNO · FULLERTON · HUMBOLDT · LONG BEACH · LOS ANGELES · MARITIME ACADEMY · MONTEREY BAY · NORTHRIDGE · POMONA · SACRAMENTO · SAN BERNARDINO · SAN DIEGO · SAN FRANCISCO · SAN JOSE · SAN LUIS OBISPO · SAN MARCOS · SONOMA · STANISLAUS

APPENDIX U

EXISTING PEDESTRIAN FACILITIES



Legend

Green: Sidewalk exist

Red: Sidewalk does not exist

Purple: Sidewalk feasible

APPENDIX V

TRANSPORTATION DEMAND MANAGEMENT PROGRAM
FINAL REPORT (JUNE 2013); *FIGURE 16–1* AND *FIGURE 16–2*

San Diego State University

TRANSPORTATION DEMAND MANAGEMENT PROGRAM

FINAL Report

NELSON NYGAARD

June 2013

In association with

FEHR & PEERS

TMS

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Cover Images

Left: Flickr User - let's call this the quiet city

Top right: Flickr User - San Diego Shooter

Bottom right: Flickr User - Roman Phototrend.fr

1 EXECUTIVE SUMMARY

Each day, thousands of students, faculty, staff, and visitors travel to, from, and around San Diego State University (SDSU). With campus facilities and student enrollment expected to expand over the coming decades in order to meet increased demands for higher education, it is important to weigh the effects of growth on the parking and transportation system. In the context of increasing construction costs for parking facilities and declining resources, the University has sought to evaluate how it can invest in cost-effective strategies for managing parking demand and increasing the use of transit, bicycling, and walking at SDSU.

This report is the culmination of a series of tasks including an in-depth transportation and parking existing conditions analysis, the development of a financial and parking demand model, a screening process for potential transportation demand management (TDM) strategies, and the development of a multi-phase implementation plan. Ultimately, this TDM Program seeks to assist and guide SDSU in its efforts to maximize its transportation resources and provides specific strategies to enable the University to invest in a transportation system that supports all modes of travel.

PROGRAM BACKGROUND

In 2007, SDSU officials and the CSU Board of Trustees approved a campus master plan revision to guide the future growth of SDSU. One of the mitigation measures adopted by the Board of Trustees in connection with its approval of the master plan requires that SDSU develop a campus TDM program that facilitates a balanced approach to mobility, with the ultimate goal of reducing vehicle trips to campus in favor of alternate modes of travel.

SDSU's continued success in its efforts to develop into a world-class university is dependent in part on the existing transportation system and related infrastructure that serve the campus. SDSU recognizes that an efficient transportation system can play a prominent role in facilitating future campus growth and accommodating it in an effective manner. This TDM Program is one of the tools available to SDSU to assist it in accommodating that future growth by reducing vehicle trips to campus in favor of alternate modes of travel, thereby reducing the impact that future growth has on the campus and surrounding communities.

TDM STRATEGIES AND IMPLEMENTATION

In consultation with SDSU staff, this TDM Program analyzes a series of fourteen TDM strategies to be considered and further evaluated. If deemed feasible, these TDM strategies will be utilized by SDSU to meet its goals for a more efficient transportation network that provides a variety of travel options for students, faculty, staff, and campus visitors.1 The strategies are organized and

[1] For the purposes of this TDM Program, "feasible" is defined as capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

presented according to a proposed timeline for implementation that is activated primarily by increases in the Total School Population (TSP), which is the total number of students, faculty, and staff attending or working on campus.

For those TDM strategies SDSU determines to be feasible, implementation would occur under one of three different timelines – upon approval, short-term, or long-term – based on consideration of numerous factors, including campus parking utilization rates and potential transportation-related impacts attributable to campus growth.

In summary, for Fall 2011 SDSU maintained a TSP of 33,849. Under the proposed TDM Program action items, Fall 2011 would establish the TDM baseline requiring that TDM strategies termed "Upon Approval" be implemented. Short-term strategies would be implemented when the campus reaches 35,500 TSP. Under current campus population projections, this would occur in approximately 2016/17. It is proposed that Long-term strategies will be implemented once the campus reaches a 90% parking utilization rate or 36,500-40,000 TSP depending on parking deficits and/or significant unavoidable traffic impacts. Under current projections, this would occur in approximately 2018/19.

Figure 1-1 provides a summary description of the fourteen strategies and their implementation timelines.

Figure 1-1 List of TDM Strategies

#	Strategy	Summary	Timeline
1	Preferential Parking	Implement preferential parking for carpools and vanpools	Upon Approval
2	Subsidized Transit Passes	Provide subsidized transit passes to students and faculty/staff	Long-term (36,500-40,000 TSP)
3	Pre-Tax Benefit	Allow employees to pay for transit passes with pre-federal tax income	Upon Approval
4	Compass Cards	Work with SANDAG to provide Compass Cards to all faculty and staff	Upon Approval
5	Red & Black Shuttle	Invest in enhancements to the Red & Black shuttle	Long-term (36,500-40,000 TSP)
6	Bicycle and Pedestrian Network	Invest in enhancements to the bicycle and pedestrian network	Short-term (35,500 TSP)
7	Bicycle and Pedestrian Network "Plus"	Invest in additional enhancements to the bicycle and pedestrian network	Long-term (36,500-40,000 TSP)
8	Ridesharing	Enhance ridesharing programs and coordinate with existing regional programs	Upon Approval
9	SDSU GRH Program	Implement an SDSU-specific Guaranteed Ride Home Program	Long-term (36,500-40,000 TSP)
10	Car Sharing	Expand and diversify on-campus car sharing	Upon Approval
11	On- and Near-Campus Housing and Amenities	Prioritize investments in on-campus housing and amenities	Long-term (36,500-40,000 TSP)
12	TDM Outreach and Marketing	Improve TDM program outreach and marketing	Short-term (35,500 TSP)

#	Strategy	Summary	Timeline
13	TDM Staffing & Coordinator	Allocate additional staff time and hire a dedicated TDM coordinator to implement and manage TDM programs	Short-term (35,500 TSP)
14	Annual Monitoring and Evaluation	Implement annual monitoring and evaluation program	Short-term (35,500 TSP)

Upon Approval Strategies

1. Implement preferential parking for carpools and vanpools

Providing preferential parking for carpools and vanpools is a proven strategy for incentivizing ridesharing and reducing vehicle trips. Many parking structures near employment centers or at transit stations designate "prime" parking spaces (i.e. on the first floor or the shortest walking distance) for vanpools and carpools. By designating prime spaces for such vehicles the parking search time can be reduced, thereby increasing convenience for those that carpool or vanpool.

It is recommended that the following parking structures and lots be evaluated for preferential parking and implemented, if feasible.

- PS 1, PS 2, and PS 4
- Lot A, F, G, and U

3. Allow employees to pay for transit passes with pre-federal tax income

Internal Revenue Code Section 132 (f) allows employers to offer employees the opportunity to set aside a portion of their salary to pay for certain transportation expenses. The employee will not be taxed on amounts set aside and used for qualified expenses (that is, pre-tax dollars used to pay commuting expenses). Currently, SDSU allows faculty/staff to use pre-tax dollars to pay for parking permits. It is recommended that SDSU evaluate and, to the extent feasible, extend this benefit to cover transit expenses for SDSU faculty/staff as a means to encourage transit use and offer the same financial incentives to existing or potential transit riders as those offered to motorists.

4. Work with SANDAG to provide Compass Cards to faculty and staff

In recent years, universal transit cards have been implemented at numerous transit agencies around the country. The goal of these new "smart cards" is to increase convenience for transit passengers by allowing individuals to pre-load a transit fare onto the card and then simply "tag" the card on an electronic reader when boarding a transit vehicle. Administered by the San Diego Association of Governments (SANDAG), Compass Card is the San Diego region's new transit "smart card." Compass Cards are not currently available for SDSU faculty or staff.

In order to make transit as convenient and attractive as possible for SDSU affiliates, it is recommended that SDSU evaluate and, if feasible, collaborate with SANDAG to ensure that the Compass Card is available at SDSU and is coordinated with any existing or future SDSU specific transit discounts. SDSU participation in the Compass Card program will allow students, staff, and faculty to enjoy system enhancements that may be added to the card in the future, such as bike locker access and trip tracking in iCommute.

8. Enhance ridesharing programs and coordinate with regional programs

Offering incentives to faculty, staff, and students who choose to share a ride to/from campus can amount to significant reductions in roadway infrastructure needs as well as parking acquisition and maintenance costs.

iCommute is a publicly operated regional TDM program serving the San Diego region that helps inform and connect commuters with alternative commuting resources. The iCommute program was developed by SANDAG as part of the regional 511 transportation information program and was outlined as a key tool in realizing Sustainable Communities and Transportation Demand Management goals included in their *2050 Regional Transportation Plan (RTP)*. iCommute staff work directly with employers, schools, universities, and individual patrons to launch and grow their alternative commuter programs. It is recommended that SDSU evaluate and, to the extent feasible, collaborate with iCommute staff to help implement and strengthen existing TDM programs and strategies on campus, including having a variety of marketing materials available to students and faculty/staff on-demand or at special events (i.e. student orientation).

10. Expand and diversify on-campus car sharing

Car sharing programs allow people to have on-demand access to a shared fleet of vehicles on an as-needed basis at an hourly or mileage rate. Car sharing has become very popular on college campuses. Through car sharing, individuals gain the benefits of private vehicle use without the costs and responsibilities of ownership.

Currently, SDSU students, faculty, and staff are eligible for a reduced membership rate when joining Zipcar, and receive $35 of free driving after joining. It is recommended that SDSU evaluate and, if feasible, expand existing car sharing services at SDSU to further increase transportation options for students and faculty/staff, especially as the campus continues to grow in the coming years. SDSU could include the location of additional car sharing pods throughout campus, in conjunction with plans for campus expansion.

Short-term Strategies

6. Invest in enhancements to the bicycle and pedestrian network

Improvements to bicycle and pedestrian infrastructure, especially in terms of enhanced safety, comfort, and direct access, has been shown to dramatically increase rates of non-motorized travel. Improvements to sidewalks and intersection crossings, as well as the addition of new bicycle lanes and secure bicycle parking, are simple and cost-effective investments that can have dramatic impacts on the use of these modes.

Pedestrian Improvements

To encourage walking and to further remove the barriers to pedestrian access around campus, it is recommended that SDSU evaluate targeted infrastructure improvements, if feasible, at the following intersections:

- College Avenue and Montezuma Road
- College Avenue and Canyon Crest Drive
- Montezuma Road and 55th Street
- Montezuma Road and Campanile Drive

Although all of these intersections are served by signals and have standard crosswalks and pedestrian countdowns, the following improvements could be made where feasible:

- High-visibility crosswalks
- Bulb outs
- Pedestrian refuge islands
- Wider sidewalks
- Grade separated crossings

Bicycle Improvements

In order to continue to increase the mode share for bicyclists commuting to campus, a holistic approach needs to be taken regarding bicycling on campus. Specific bicycling improvements include:

- New bicycle facilities that have been integrated and coordinated with City and County road improvement projects
- New and improved bicycle parking
- Bicycle repair stands
- Coordinated bicycle and pedestrian wayfinding system
- Bicycle safety and education classes
- Various promotional activities
- Improved safety and enforcement

12. Improve TDM Program Outreach and Marketing

An effective outreach and marketing program is a key component of any successful TDM program. Universities that have had the most tangible success with their TDM efforts have invested substantial time and money in promoting and marketing their TDM programs. It is recommended that SDSU evaluate and, if feasible, invest in improvements in three primary marketing areas:

- Transportation website, including the SDSU mobile application (if feasible)
- Social media
- Outreach materials and information

13. Allocate additional staff time and hire a dedicated TDM coordinator to implement and manage TDM programs

A new TDM program at SDSU will undoubtedly require additional staff time to coordinate the development, implementation, and evaluation of the specific strategies described in this memorandum. It is important that TDM programs are properly staffed so that the various strategies operate as efficiently as possible.

TDM coordinators are professionals whose role it is to promote and administer TDM programs. TDM coordinators can bring a diverse level of expertise in TDM program management and direct experience in implementing complex TDM strategies at large institutions with diverse transportation needs. It is recommended that SDSU evaluate and, if feasible, allocate additional employee hours to implement and manage the TDM Program.

14. Annual Monitoring and Evaluation

A robust monitoring and evaluation program is a crucial component of an effective TDM program. Consistent evaluation of TDM strategies enables objective assessments of program performance and allows adjustments to be made to programs to maximize efficiencies. Publishing and disseminating performance data of TDM programs in annual reports also fosters greater transparency, accountability, and public trust. The key components of a well-designed monitoring and evaluation program are:

- Identifying metrics that measure different dimensions of TDM program objectives
- Using data collection techniques that fit with and support operations
- Collecting performance information at regular intervals
- Comparing data over time
- Using reports to document performance, identify obstacles and opportunities, and discuss potential adjustments

Long-Term Strategies

2. Provide subsidized transit passes to students and faculty/staff

The primary objective of this strategy is to further incentivize the use of local and regional transit and reduce vehicle trips. Universities may contract with a transit provider to allow students, employees, or both to have unlimited free rides (often by showing a campus ID card). The university pays the transit agency an annual lump sum based on expected student ridership, and students simply show their university identification to board the bus. As a result of the passes, transit ridership typically increases, and some people shift from driving to riding transit to reach campus.

The following subsidies are recommended for evaluation and implementation, if feasible:

- Students
  - Semester Pass:
    - Increase SDSU fare subsidy to $90 per semester (approximate 50% subsidy). Students would pay $85 for a semester pass.
  - Discontinue monthly subsidy because it would no longer be cost-competitive with semester passes
  - Ensure that Compass Cards are available prior to implementation
- Faculty/staff
  - Monthly Pass:
    - Provide $40 subsidy for monthly passes.
  - Ensure that Compass Cards are available prior to implementation

5. Invest in enhancements to the Red & Black shuttle

SDSU currently operates the “Red & Black” shuttle, which offers service to and from the outer parking lots around campus. The Red & Black shuttle service operates Monday through Friday between the hours of 5 PM - 10 PM. While current Red & Black shuttle service does provide a valuable service to campus affiliates, its limited span, frequency, capacity of vehicles, and minimal

marketing all limit the service's ability to serve as a consistent, reliable, and convenient transportation option for SDSU students and faculty/staff.

This strategy is designed to improve the operation of SDSU's current shuttle system through targeted improvements that will allow the shuttles to better serve the campus and complement other proposed TDM strategies. The specific recommendations for evaluation and implementation, if feasible, are outlined below.

- Service Span: Extend service hours from 7:30 AM – 11 PM, Monday to Friday
- Service Frequency: Maintain frequency of every 10-12 minutes.
- Type of Vehicles: Purchase "cutaway" buses as a means to increase capacity of the shuttle system and enhance customer experience.
- Number of Vehicles: Three cutaway vehicles to provide consistent service.
- Routing and stops:
  - East Campus Drive at Tenochca Residence Hall, near Parking Structure 3 and Parking Structure 6
  - Viejas Arena at 55th Street
  - Chapultepec Residence Hall
  - Across from W Lot at the steps leading up to West Commons
  - Alvarado Medical Center
  - East Campus Drive between E Lot South and F Lot
  - Lots T, X, C, and D
  - Implement potential new stops at the following locations:
    - Near student housing on Hardy Avenue
    - North end of 55th Street near Albert's College Apartments
    - Montezuma Road near 55th Street
    - College Avenue near Lot F and Lot G
- Operators: Continue to use student drivers as a means of maintaining low operating costs.
- Passenger Amenities: Outlined below are key improvements that should be made at all Red & Black shuttle stops.
  - Flag Signs
  - Benches and Shelters
  - Lighting and Trash Receptacles
  - Service branding
  - Advanced passenger information systems, such as real-time displays.
  - Real-time arrival information on SDSU mobile application (if feasible)
  - Wi-Fi (if feasible)

7. Invest in additional enhancements to the bicycle and pedestrian network

Strategy 6 describes short-term actions SDSU should take to improve bicycle and pedestrian conditions. Outlined below are additional investments SDSU could evaluate and make in the long term, if feasible, to further improve bicycle and pedestrian conditions.

- Install more secure bicycle parking and implement an on-campus bike station
- Install triple bike racks on all buses serving SDSU
- Implement an SDSU Bicycle Share program
- Continue to prioritize additional safety improvements to key access roads

9. Implement an SDSU-specific Guaranteed Ride Home program

As discussed in Strategy 8, SANDAG operates a GRH program that provides commuters who regularly carpool, vanpool, bike, walk, or take transit to work with a reliable ride home in an emergency (usually a taxi ride). In the future, SDSU may wish to establish, if feasible, an SDSU-specific GRH program that would offer rides to SDSU affiliates who arrive to school via ridesharing, biking, walking, or transit.

It is important to note that the SANDAG GRH program is currently open to students. SANDAG is currently analyzing the GRH program to determine whether it will be expanded to include all forms of transit as eligible modes. Currently, trolley and local bus riders are not eligible for a ride home.

11. Prioritize Long-term Investments in On-campus Housing and Amenities

This strategy seeks to increase the supply of on-campus housing, amenities, and services for both students and faculty/staff. By providing additional residential, shopping, and recreational options near campus, SDSU can significantly reduce the number of commuting students and faculty/staff, as well as reduce the number of daily trips that are made for other purposes.

Specific additional long-term investments could include, if feasible:

- Additional on-campus or nearby student housing, including housing options for undergraduate students, graduate students, faculty, and staff, as well as families with or without children. Housing options should include dormitories, apartments, and townhouses.
- Additional on-campus meal plans and dining options.
- Additional amenities including:
  - Retail services
  - Banking services
  - Medical and pharmacy
  - Postal services
  - Computer and technology services
  - Religious services
  - Cultural and social programming
  - Athletics and recreation

PARKING ASSESSMENT

As part of SDSU's efforts to improve its transportation services, a detailed assessment of on-campus parking conditions was undertaken. This assessment included a comprehensive inventory of existing and proposed facilities, as well as two parking studies (March 2012 and September 2012) to document existing parking trends and behaviors.

Inventory

Figure 1-2 provides a summary of the surveyed parking inventory at the SDSU campus by facility type (parking structure versus surface lot) and by user group. The majority of parking is located within parking structures (75% of spaces), while 74% of all parking spaces are designated for students and 20% for faculty/staff.

Figure 1-2 Inventory of SDSU Parking Facilities

Type	Surface		Structure		Total	
	#	%	#	%	#	%
Student	2,508	73%	7,746	74%	10,254	74%
Faculty/Staff	493	14%	2,214	21%	2,707	20%
SV/SP	182	5%	281	3%	463	3%
Disabled	67	2%	161	2%	228	2%
Metered (Visitor)	186	5%	0	0%	186	1%
Loading	1	0%	0	0%	1	0%
TOTAL	**3,437**	**25%**	**10,402**	**75%**	**13,839**	**100%**

Occupancy

In March and September 2012, SDSU staff conducted parking occupancy counts on a Tuesday and Wednesday at 11 AM, 2 PM, and 6 PM. During both counts, peak parking demand occurred at 11 AM on Tuesday (see Figure 1-3). Occupancy was slightly lower on Wednesday during both the March and September counts. In addition, there was slightly higher demand in September given the higher enrollment during the Fall semester.

Figure 1-3 Parking Occupancy, Spring vs. Fall

Count Period	Tuesday			Wednesday		
	11 AM	2 PM	6 PM	11 AM	2 PM	6 PM
Spring 2012	74%	66%	36%	62%	63%	32%
Fall 2012	78%	72%	38%	66%	60%	27%

Figures 1-5 and 1-6 provide a more detailed look at the peak occupancy data from the Spring 2012 count period. These maps highlight several notable trends. As noted above, occupancies were higher on Tuesday than Wednesday. However, despite those occupancy differences, a number of facilities are heavily utilized on both days. For example, PS 2, PS 4, and lots W, U, T, and F all experience occupancy rates close to or above 95% on both days.

By contrast, many of the parking facilities located to the east of College Avenue were utilized far less, regardless of the day. For example, at the time of this survey, lots C and D, as well as PS 3 and PS 6, did not exceed an occupancy rate of 65%. In fact, lot D (399 spaces) was essentially empty on both days. These trends indicate that these facilities are viewed as less convenient by motorists given their distance from the campus core and the inconvenience of crossing College Avenue.

Based on the peak parking demand of each group and their respective population figures, basic demand ratios can be derived, as shown in Figure 1-4. In the Spring 2012 semester, there were 3,052 resident students, 24,783 commuter students (including full- and part-time students), and 3,308 faculty/staff. Using the occupancy data from the parking counts, we can establish that the peak parking demand rates for these three groups are .52, .26, and .67 vehicles per person, respectively (.33 for all groups combined). In the Fall 2012 semester, there were 2,827 resident students, 28,016 commuter students, and 3,308 faculty/staff[2]. Using the occupancy data from the parking counts, we can establish that the peak parking demand rates for these three groups are .52, .26, and .66 vehicles per person, respectively (.32 for all groups combined). This is very similar to what was observed in the March 2012 counts.

Figure 1-4 Peak Parking Demand Ratios, Spring and Fall 2012

User Group	Spring 2012			Fall 2012		
	Population	Parking Demand	Demand Ratio	Population	Parking Demand	Demand Ratio
Resident Students	3,052	1,598	0.52	2,827	1,480	0.52
Commuter Students	24,783	6,479	0.26	28,016	7,198	0.26
Faculty/Staff	3,308	2,221	0.67	3,308	2,169	0.66
Total	31,143	10,298	0.33	34,151	10,847	0.32

[2] It should be noted that some students choose to park as a visitor for $1 per hour. This analysis did not attempt to identify the number of students who do this, but it is estimated to be a small number because parking at the hourly rate for an extended period of time or for multiple periods costs much more than the hourly equivalent of a student permit.

Figure 1-5 Peak Parking Occupancy, Tuesday at 11 AM (Spring 2012)

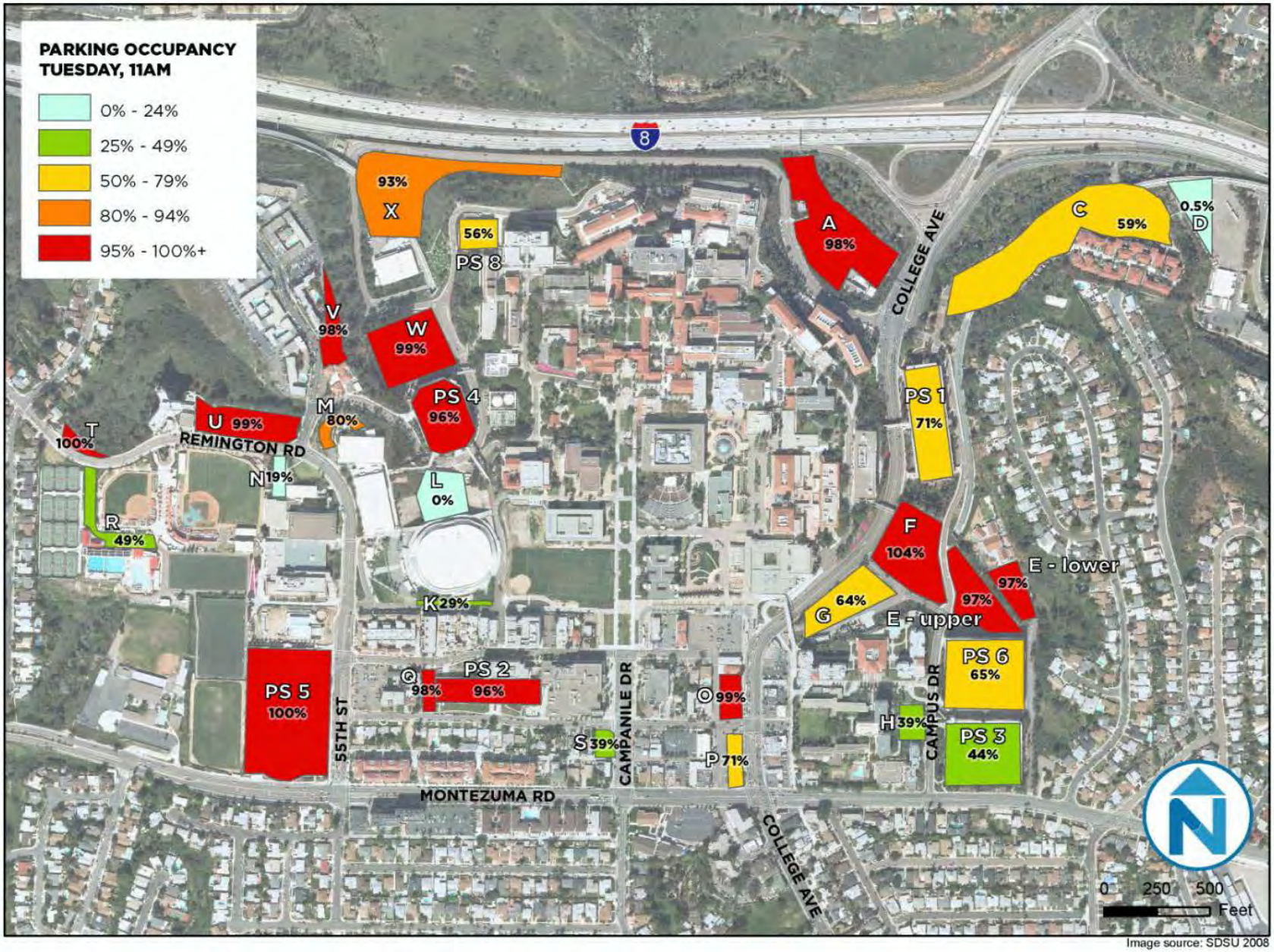


Image source: SDSU 2008

Figure 1-6 Peak Parking Occupancy, Wednesday at 11 AM (Spring 2012)

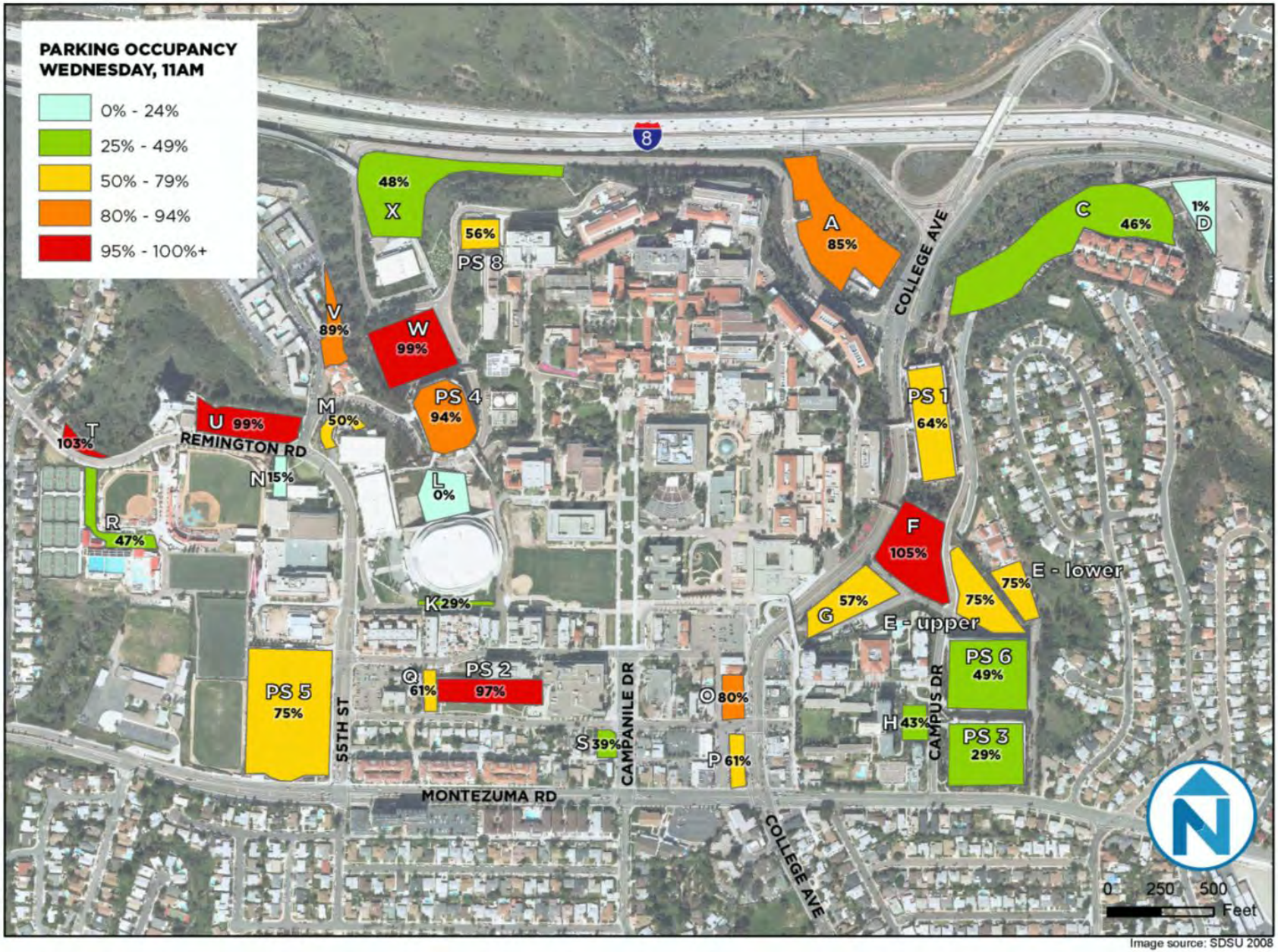


Image source: SDSU 2008

Parking Demand and Financial Modeling

In order to estimate the future parking supply and demand at SDSU and gauge the travel and financial implications of new TDM strategies, a multi-stage parking model was developed. The following inputs were the major components of the financial model. Many of these inputs were documented and assessed in Appendix B.

- Campus population of commuter students, resident students, and faculty/staff from 2011/12
- Number of parking spaces on campus
- Parking utilization rates, based on the March 2012 study
- Future plans for campus parking supply
- Current and projected revenues and expenditures, including proposed TDM measures and parking permit sales

As with any modeling exercise where information is limited for key inputs, a number of assumptions were made for the financial modeling of the proposed TDM program. In general, a best estimate was used based on existing campus programs and revenues, experience with other cities, and professional judgment. This model used the assumptions listed below:

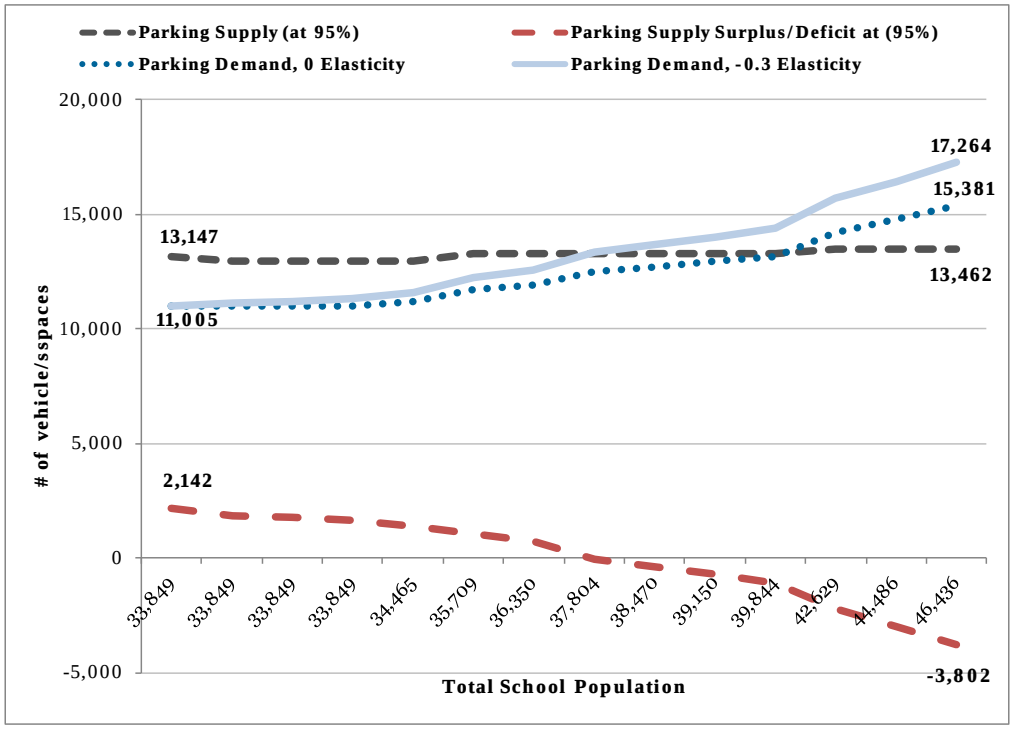
- Increases in campus population by user group were estimated based on consultation with SDSU staff. A linear growth rate was assumed from 2011/12 to 2024/25.
- Price elasticity of demand for parking was assumed to be -0.3 (i.e. a 10% increase in parking price reduces parking demand by approximately 3%).
- Annual inflation rate of 3%.
- Revenue and expenditure projections from 2011/12 to 2024/25 were based on existing parking fees and no scheduled fee increases.
- For all parking spaces, this study uses an "effective parking supply factor" of 95%. Effective supply is defined as the total number of parking spaces in a lot, less the percentage of spaces that the parking operator wishes to have vacant even at the typical peak hour.

Scenario 1 – Baseline Scenario

As documented in Appendix A, an increase in both student enrollment and the number of faculty/staff will result in a parking deficit, given current policies. In order to gauge at what point that deficit will occur, the Baseline Scenario examines the increased parking demand associated with an increasing school population and accounts for inflationary effects by incorporating a parking price elasticity of -0.3.

Figure 1-7 illustrates the impact of an assumed parking price elasticity of -0.3 on projected parking demand. Given the growth projections for SDSU and assumed price elasticities, the Baseline Scenario results in an effective parking deficit when the total school population reaches approximately 37,500. This analysis assumes no parking price increases.

Figure 1-7 Projected Parking Demand, No Price Increases

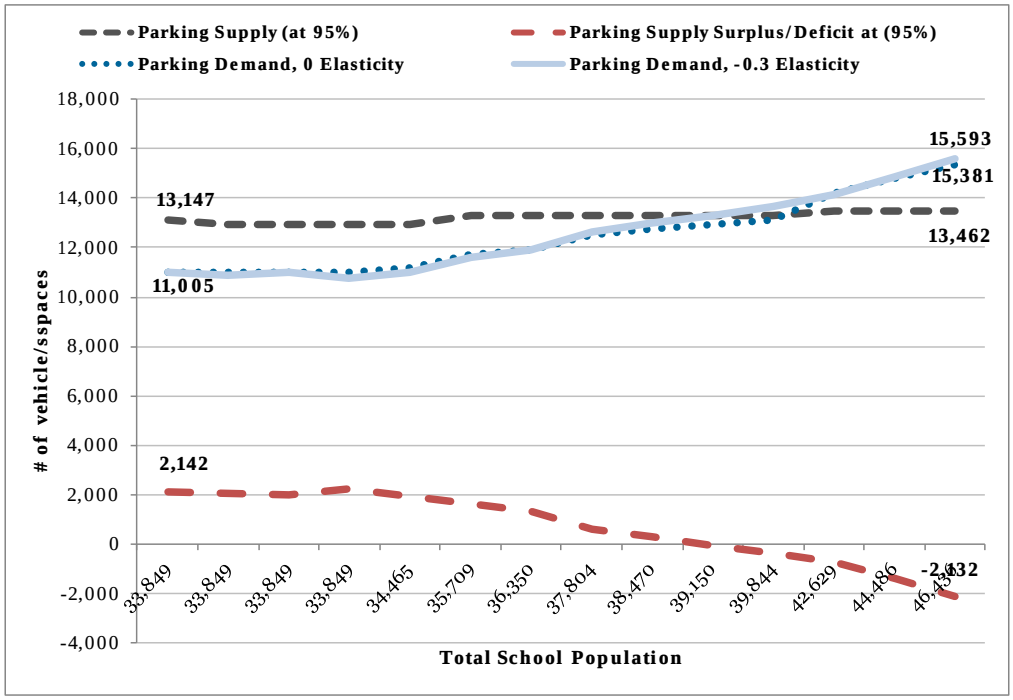


Scenario 2 – Preferred TDM Scenario

The Baseline Scenario described above assumes that there is no change from the current TDM program utilized by SDSU. The Preferred Scenario projects the parking demand and financial impacts of instituting or expanding TDM measures in a phased manner, while still weighing the effects of parking price elasticity.

In the Preferred Scenario, the expanded TDM program will delay a parking deficit until the total school population reaches approximately 39,150, a level slightly higher than that of the Baseline Scenario. At this time, SDSU does not anticipate implementing any parking fee increases for its affiliates. As a result, the model reflects that the real cost of parking permits will continually become less expensive, resulting in a corresponding increase in parking demand. Some of this additional parking demand will be offset by implementation of the other TDM strategies described in Chapter 2. As shown in Figure 1-8, however, without changes to parking prices, SDSU will have a parking deficit of more than 2,100 spaces by the time campus population approaches 46,500. This analysis further indicates that pricing of parking is one of the most effective means to reduce parking demand.

Figure 1-8 Projected Parking Demand



TRAVEL SURVEY

In the Fall of 2012, SDSU distributed a campus-wide travel survey to faculty, staff, and students. The survey included a series of questions about how SDSU affiliates travel to and from campus, their experiences with existing transportation services at SDSU, and how future services may impact their travel behavior. A total of 4,791 responses were received for a response rate of approximately 13%. While not necessarily definitive of campus travel habits and patterns, the survey findings, in combination with prior studies, provide useful information for consideration in developing appropriate campus TDM measures. Key findings are summarized below:

- **Affiliate Status:** Roughly 77% of the survey responses were by students, while 23% of responses were by SDSU staff or faculty members.
- **Mode of Travel:** In all, driving alone was the most common travel mode at 58%, with transit second at 17% of responses. When analyzed according to affiliate status, however, the mode shares varied quite substantially. In brief, faculty and staff were much more likely to drive alone to campus than take transit or another mode. Post-graduate and undergraduate students drive alone at a much lower rate and instead take transit, walk, or bike more frequently.
- **Home Zip Code and Trip Distance:** The most frequent zip code for survey respondents was 92115, which encompasses the SDSU campus and neighborhoods to the south between I-8 and Highway 94. In general, most affiliates are within the greater San Diego County, but it is also evident that many SDSU affiliates live a substantial distance from the campus and commute from neighborhoods throughout the region.

  The most common trip distance for all affiliates is 10-20 miles at 29%. It should be noted that 38% of all affiliates live within five miles of campus and almost one-fourth live within two miles of campus.
- **Travel Time:** The most common travel time for all affiliates was 10-20 minutes at 37%, while roughly 21% of campus affiliates had less than a ten minute commute to campus. Only 8% of affiliates had a trip of more than 45 minutes. About 8% of undergraduates are commuting more than 45 minutes to get to SDSU.
- **Use of Transit:** In all, the most common reason selected for not using transit was the fact that transit was not time competitive with other modes of travel. This was the case for all of the affiliate groups. The location of the bus stops was also chosen as a primary reason for limited transit use among faculty and staff, but was less of an issue for students. Affiliates did not indicate that safety and cost were primary factors in reducing transit use, but undergraduate students put safety concerns at the highest rate of all the groups.
- **Bicycling and Walking:** In all, the most common reason selected for not bicycling or walking was that SDSU was too far from their home. For example, 71% of the undergraduate students indicate that it is too far to bicycle or walk, which is relatively consistent with the finding that about only 30% of undergraduates live within two miles of campus.
- **Transportation Improvements:** A subsidized transit pass was the most popular of the measures, with 69% of respondents indicating a subsidized pass would definitely or potentially make them more likely to use transit. Students also indicated that additional bicycle infrastructure would make them more likely to bicycle. Additional car sharing vehicles was the program with the lowest preference among all affiliate groups.

IMPLEMENTATION AND MONITORING

Implementation Phasing

The following measures and thresholds for gauging the need for TDM strategies are recommended for evaluation and implementation, if feasible, based on analysis of impacts associated with Total School Population (TSP) growth. TSP includes all commuter students, resident students, faculty, and staff.

Defining Total School Population

To arrive at TSP, SDSU campus population figures were gathered. In Fall 2011, there were a total of 30,541 undergraduate and graduate students, full and part-time, enrolled at SDSU. Enrollment in Spring 2012 was about 9-10% lower, which is typical of the enrollment patterns at SDSU. As shown in Figure 1-9 the student population includes both resident and commuter students. The number of resident students listed in the figure is based on 100% occupancy of the number of beds on-campus, which was equal to 3,052 in 2011-12. In addition, there were 3,308 faculty and staff employed at SDSU in 2011-12. As to the number of "commuter students," the number listed in Figure 1-9, is somewhat misleading in that a number of students living off-campus actually reside in the immediate vicinity of the campus within walking or biking distance. As such, not all of the Commuter Students listed in Figure 1-9 utilize vehicles to get to campus.

Figure 1-9 SDSU Campus Population, 2011-12[3]

Group	Fall 2011	Spring 2012
Commuter Students	27,489	24,783
Resident Students	3,052	3,052
Faculty/Staff[4]	3,308	3,308
Total School Population	**33,849**	**31,143**

Like most campuses across California, SDSU is expected to experience growth in enrollment and employment over the coming years. While the student population and level of employment vary from year to year based on a number of factors (most notably the state budget), it was assumed for the purposes of this study that the campus population would remain relatively steady until 2015 and then increase at a 2% linear growth rate until 2024[5]. It is important to emphasize that the population projections are based on the best estimates of future growth and they may change in the future.

Defining Implementation Thresholds and Actions

The TDM strategies addressed in this program are organized according to a proposed timeline for implementation activated primarily by increases in the TSP. Specifically, this TDM Program

[3] Source for student enrollment: http://university-stats.sdsu.edu/app/summary.cfm?Rep=4

[4] Source: http://bfa.sdsu.edu/~budfin/factsheet.htm

[5] SDSU staff selected 2024 as the horizon year for the purposes of the TDM study, while 2030 was the horizon year as part of the Master Plan EIR.

proposes a timeline for TDM strategies in terms of – upon approval, short-term, and long-term implementation.

For those TDM strategies SDSU determines are feasible, "upon approval" strategies would be implemented upon approval of the TDM Program. "Short-term" strategies would be implemented when the campus reaches 35,500 TSP. For reference purposes, in Fall 2011 the SDSU TSP was 33,849, and under current population projections, SDSU would reach a 35,500 TSP in approximately 2016/17. "Long-term" strategies would be implemented once the campus reaches a 90% parking utilization rate or 36,500-40,000 TSP, depending on parking deficits and/or significant unavoidable traffic impacts. Under current projections, this would occur in approximately 2018/19.

Upon Approval

- Threshold: Upon approval in order to more efficiently manage and assess existing campus parking and traffic demands.
- Measures
  - Preferential carpool/vanpool parking
  - Provide Compass Cards
  - Pre-Tax employee transit passes
  - Enhance rideshare programs
  - Expand carsharing

Short-Term

- Threshold: 35,500 TSP (based on potential significant unavoidable traffic related impacts identified in the SDSU Campus Master Plan EIR, 2007).
- Measures
  - Upon Approval TDM measures
  - Improve outreach and marketing
  - TDM staffing and coordinator
  - Implement annual monitoring
  - Bicycle and Pedestrian infrastructure improvements

Long Term

- Threshold: 90% campus-wide parking utilization or 36,500 - 40,000 TSP, depending on future parking deficits and/or potential significant unavoidable traffic related impacts.
- Measures
  - Upon Approval and Short-Term TDM measures
  - Subsidized transit passes
  - Red & Black Shuttle enhancements
  - Additional Bicycle and Pedestrian infrastructure improvements
  - Implement SDSU Guaranteed Ride Home (GRH) Program
  - Prioritize on-campus housing and amenities

Program Monitoring

One of the most critical elements in developing a TDM program is monitoring its performance. By observing how travel behavior changes over time, SDSU will have the tools to determine the proper time to implement various TDM measures, gauge their effectiveness, and possess quantifiable data that will allow a prioritization of the campus's financial and personnel resources. Monitoring should consist of the following elements:

Transportation Survey

SDSU recently developed a transportation survey designed to assess travel behaviors and TDM program preferences. Results from the survey establish a "baseline" condition by which future surveys can be used to evaluate TDM program performance. Moving forward, the survey should be conducted at the same time each year and should strive for consistency in the questions asked. If desired, this information also allows for calculations of Average Vehicle Ridership (AVR) as well as greenhouse gas emissions (GHG).

Parking Utilization

Parking occupancy counts should be conducted annually in late September or early October to coincide with the transportation survey. The counts should be conducted on peak usage days (e.g. Tuesday and Wednesday) to ensure that the highest points of parking demand are accurately reflected in the data. It is ideal that counts be conducted every hour, but it is also possible to select particular times of the day (e.g. 11 AM, 2 PM, 6 PM) to obtain a representative sample of parking patterns at various times. It is important, though, that parking counts be conducted during the same weeks, days, and times each year to allow for annual comparisons. In addition, occupancy counts should be distinguished by space type (e.g. faculty/staff, disabled).

Transit Ridership and Pass Sales

SDSU should request ridership data for transit routes serving the campus to determine the overall use of transit by SDSU employees and students as well as use of individual routes. Data on sales of transit passes should also be secured from internal sources that sell the passes as well as MTS. Tracking this data can help SDSU determine how particular TDM measures (e.g. transit pass subsidies) are impacting mode choice. This information can help direct marketing efforts and target funds to oversubscribed programs. In addition, SDSU can utilize this data to make calculations regarding cost effectiveness.

2 TDM STRATEGIES

This chapter describes the proposed TDM strategies which could be utilized by SDSU, if deemed feasible, to meet its goals for a more efficient transportation network that provides a variety of travel options for students, faculty, staff, and campus visitors. For each proposed strategy, a general description is provided summarizing the strategy and its desired outcome. In addition, the analysis includes a description of how the strategy would be specifically applied to the SDSU context and an estimate of the costs to implement each strategy.

The strategies are organized according to a proposed timeline for implementation. More specifically, three implementation phases are proposed. The "upon approval" phase includes actions that SDSU would work to implement as soon as the TDM Program is approved. The "short-term" phase includes those strategies that would be implemented within one to two years of the Program's approval, based on SDSU reaching certain thresholds related to campus population and parking demand. Finally, the "long-term" phase includes strategies that would be implemented much farther in the future (>10 years), based on SDSU reaching certain thresholds related to campus population and parking demand. The specific thresholds or "triggers" are discussed in greater detail in Chapter 4. Figure 2-1 lists the proposed TDM strategies.

Figure 2-1 List of Proposed TDM Strategies

#	Strategy	Summary	Timeline
1	Preferential Parking	Implement preferential parking for carpools and vanpools	Upon Approval
2	Subsidized Transit Passes	Provide subsidized transit passes to students and faculty/staff	Long-term (36,500-40,000 TSP)
3	Pre-Tax Benefit	Allow employees to pay for transit passes with pre-federal tax income	Upon Approval
4	Compass Cards	Work with SANDAG to provide Compass Cards to all faculty and staff	Upon Approval
5	Red & Black Shuttle	Invest in enhancements to the Red & Black shuttle	Long-term (36,500-40,000 TSP)
6	Bicycle and Pedestrian Network	Invest in enhancements to the bicycle and pedestrian network	Short-term (35,500 TSP)
7	Bicycle and Pedestrian Network "Plus"	Invest in additional enhancements to the bicycle and pedestrian network	Long-term (36,500-40,000 TSP)
8	Ridesharing	Enhance ridesharing programs and coordinate with existing regional programs	Upon Approval
9	SDSU GRH Program	Implement an SDSU-specific Guaranteed Ride Home Program	Long-term (36,500-40,000 TSP)

#	Strategy	Summary	Timeline
10	Car Sharing	Expand and diversify on-campus car sharing	Upon Approval
11	On- and Near-Campus Housing and Amenities	Prioritize investments in on-campus housing and amenities	Long-term (36,500-40,000 TSP)
12	TDM Outreach and Marketing	Improve TDM program outreach and marketing	Short-term (35,500 TSP)
13	TDM Staffing & Coordinator	Allocate additional staff time and hire a dedicated TDM coordinator to implement and manage TDM programs	Short-term (35,500 TSP)
14	Annual Monitoring and Evaluation	Implement annual monitoring and evaluation program	Short-term (35,500 TSP)

UPON APPROVAL STRATEGIES

1. Implement preferential parking for carpools and vanpools

Overview

Providing preferential parking for carpools and vanpools is a proven strategy for incentivizing ridesharing and reducing vehicle trips. Many parking structures near employment centers or at transit stations designate "prime" parking spaces (i.e. on the first floor or the shortest walking distance) for vanpools and carpools. By designating prime spaces for such vehicles the parking search time can be reduced, thereby increasing convenience for those that carpool or vanpool.

Implementation at SDSU

In the past, SDSU has designated spaces in certain garages for carpools and vanpools. However, due to the low participation rates of these ridesharing programs, many of these spaces have since been reallocated to general parking. Moving forward, it is recommended that preferential parking be evaluated and, if feasible, implemented on a more robust scale. As improvements and modifications are made to SDSU's ridesharing programs and the campus population continues to increase, preferential parking will be needed to ensure the successful implementation of ridesharing on campus.

It is recommended that the following parking structures and lots be evaluated for preferential parking. In general, the facilities with the highest demand should have the greatest number of designated spaces. Proper signage and marketing of these spaces is also key to ensuring that potential rideshare participants are aware of the parking benefits inherent in program participation.

- PS 1, PS 2, and PS 4
- Lot A, F, G, and U

Cost Estimate

None to minimal cost impact.

3. Allow employees to pay for transit passes with pre-federal tax income

Overview

Internal Revenue Code Section 132 (f) allows employers to offer employees the opportunity to set aside a portion of their salary to pay for certain transportation expenses. The employee will not be taxed on amounts set aside and used for qualified expenses (that is, pre-tax dollars used to pay commuting expenses). Qualified transportation expenses generally include payments for the use of mass transportation and for parking. For 2012, the maximum monthly pre-tax contribution is $125 for mass transit and $245 for parking.

Implementation at SDSU

Currently, SDSU allows faculty/staff to use pre-tax dollars to pay for parking permits. It is recommended that SDSU evaluate and, if feasible, extend this benefit to cover transit expenses for SDSU faculty/staff as a means to encourage transit use and offer the same financial incentives to existing or potential transit riders as those offered to motorists.

Cost Estimate

Minimal administrative costs.

4. Work with SANDAG to provide Compass Cards to faculty and staff

Overview

In recent years, universal transit cards have been implemented at numerous transit agencies around the country. The goal of these new "smart cards" is to increase convenience for transit passengers by allowing individuals to pre-load a transit fare onto the card and then simply "tag" the card on an electronic reader when boarding a transit vehicle. These cards eliminate the need to continually purchase individual tickets or monthly passes, and facilitate easy reloading of transit fares. Smart cards also benefit transit agencies because they increase customer convenience and the attractiveness of riding transit, while allowing faster loading on transit vehicles. As a result, buses and trains can reduce their dwell time and better adhere to schedules.

Implementation at SDSU

Administered by the San Diego Association of Governments (SANDAG), Compass Card is the San Diego region's new transit "smart card." Compass Cards are not currently available for SDSU faculty or staff. As a result, faculty and staff must purchase passes each month or semester. In order to make transit as convenient and attractive as possible for SDSU affiliates, it is recommended that SDSU evaluate and, if feasible, collaborate with SANDAG to ensure that the Compass Card is available at SDSU and is coordinated with any existing or future SDSU-specific transit discounts. This small but important step is crucial to ensuring that transit is a viable, convenient, and attractive option for SDSU affiliates.

In addition, SDSU participation in the Compass Card program will allow students, staff, and faculty to enjoy system enhancements that may be added to the card in the future, such as bike locker access and trip tracking in iCommute.

Cost Estimate

The Compass Card program is administered by SANDAG and would not result in increased capital costs for SDSU. However, experience with other universities in the San Diego region indicates that the implementation of the Compass Card has the potential to increase administrative costs for SDSU. As the Compass Card is implemented more broadly at universities, some of the current administrative challenges should be addressed and costs may decrease over time.

8. Enhance ridesharing programs and coordinate with regional programs

Overview

Offering incentives to faculty, staff, and students who choose to share a ride to/from campus can amount to significant reductions in roadway infrastructure needs as well as parking acquisition and maintenance costs. Research conducted by the Washington State Department of Transportation found that when employers provide a cash incentive and support for ridesharing (such as ride matching services and a Guaranteed Ride Home program), vehicle trips can be reduced by nearly 25%.

Implementation at SDSU

It is recommended that SDSU evaluate and, if feasible, implement one or more of the following ridesharing programs.

iCommute

iCommute is a publicly operated regional TDM program serving the San Diego region that helps inform commuters and connect them with alternative commuting resources. The iCommute program was developed by SANDAG as part of the regional 511 transportation information program and was outlined as a key tool in realizing Sustainable Communities and Transportation Demand Management goals included in their *2050 Regional Transportation Plan (RTP)*. iCommute staff work directly with employers, schools, universities, and individual patrons to launch and grow their alternative commuter programs. iCommute staff also provide jurisdictions with technical support on TDM planning and policy development. In addition, TripTracker is iCommute's online system to track and measure the economic and environmental savings of regional commute trips. Commuters track their alternative commute trips and become eligible for monthly iCommute incentives and prize drawings.

There are collaboration opportunities between SDSU and iCommute staff that would help implement and strengthen existing TDM programs and strategies on campus. These opportunities include:

- Develop an SDSU-specific network on iCommute's ridesharing network. The network could be exclusive to individuals with an SDSU email address and would only match SDSU students, faculty, and staff for ridesharing opportunities. A similar network has been established for the CSU San Marcos campus.
- Provide SDSU-specific incentives on the TripTracker network. These incentives would only be available to SDSU faculty, staff, and students who log a certain number of alternative commuting trips to and from campus on the TripTracker network. Incentives such as gift certificates/discounts to Aztec Shops, gift cards to local retail and restaurant establishments surrounding the campus, and free single-day parking passes could all be

utilized to entice commuters to use alternative modes of transportation. Incentives can be issued to users after reaching trip milestones or can be made available via monthly drawings in which only users who logged a certain number of trips would be eligible.

- Invite iCommute staff to participate in on-campus fairs such as Welcome Week, Health fairs, or other events. iCommute staff have indicated that they would be very interested in setting up a booth at on-campus events to help advertise, inform, and answer questions regarding the iCommute program with SDSU faculty, staff, and students.
- Automatically enroll incoming students into the iCommute program. If the University is comfortable sharing student information with SANDAG, the iCommute program can automatically enroll incoming students into the program. Students would receive an email from iCommute during the first week of school informing them that they have been enrolled in the program and to validate their membership if they are interested in continuing their membership. If a student decides not to validate their membership, then their account would expire after seven days.
- Develop a ridesharing GIS database to help link ridesharing opportunities for SDSU faculty and staff. iCommute staff can develop a GIS database that geographically (by address or zip code) locates all SDSU faculty and staff members and informs them of potential rideshare mates.
- iCommute can also generate reports specific to SDSU in terms of Vehicle Miles Traveled and GHG emissions reduced via the TripTracker function. These reports may be a useful tool to analyze emissions and/or encourage non-registrants to participate/track trips.

Carpooling

Carpooling programs that can connect potential riders, offer discounted parking rates, and provide exclusive parking spots in desirable locations can be an effective TDM strategy for reducing both vehicular trips and overall parking demand.

SDSU's challenges regarding carpooling are primarily related to scheduling. While there are employees and staff with traditional workday schedules, many students and faculty have class schedules that have them arriving and departing from the campus at various times of day. A dynamic rideshare program would address this issue by allowing participants to find a match for a one-time shared trip on short notice. This type of carpooling generally makes use of three recent technological advances:

- GPS navigation devices to determine a driver's route and arrange the shared ride
- Smart phones for a traveler to request a ride from wherever they happen to be
- Social networks to establish trust and accountability between drivers and passengers

Carpooling services and networks such as Zimride and iCommute have already been established within the San Diego region and currently serve the SDSU campus. Increasing faculty/staff and student awareness of these programs by advertising them on campus and within registration materials could potentially be an effective as well as cost-effective TDM measure.

Zimride is a social network for carpooling open to SDSU staff, faculty, and students with a campus email address. Membership is free and participants are able to connect with others interested in forming a carpool. The university offers the option of one shared parking permit per carpool which allows multiple names to be registered with the permit. Registrants are given an SP 700 permit which is valid for easy access parking in two parking structures on either side of the campus.

The iCommute program recently completed the first phase of its Carpool Incentive Pilot Project with CSU San Marcos faculty and staff. All participants in the program who carpooled to work a minimum of 12 times per month earned a $50 gas card during the three months of the Pilot. iCommute staff has indicated that they would be happy to invite SDSU faculty and staff to apply for the second phase of the pilot program, which is scheduled to start in the next fiscal year.

Vanpooling

Vanpooling generally utilizes rented vans supplied by employers, nonprofit organizations, or government agencies. Most vanpools are self-supporting, as operating costs are divided among passengers (7-15). The van itself is leased and paid for by the riders, with the primary driver being the leaseholder. Vanpool participants report saving up to $3,000 or more a year on gas and car maintenance costs, not to mention reduced stress and commuting time. Vanpooling is particularly suitable for longer commutes (15 miles or more each way).

There are four primary types of vanpool programs:

1. Owner/operators are individuals who buy/lease a vehicle for vanpooling. Riders generally meet at a central location and pay the owner a set monthly fee. Affordable insurance and adequate coverage are the major issues with this option.
2. Employers can buy vehicles for use by their employees. The employer (or a group of employers) organizes the vanpool riders and insures and maintains the vehicles. The employer may charge a fee to ride in the van, and/or subsidize the service.
3. Employers can also lease vehicles for use by their employees. The issues associated with implementation of this option are similar to those an employer faces when purchasing vans.
4. Third-party vanpool providers are private organizations (either for-profit or nonprofit) that operate vanpool services for commuters, companies, and government agencies. A vanpool vendor leases the vanpool vehicle for a monthly fee that includes the vehicle operating cost, insurance, and maintenance. The vendor can contract directly with one or more employees. The group of users typically pays the monthly lease fee.

In San Diego, individuals or employers can lease a vehicle through one of SANDAG's iCommute contracted vanpool vendors (Enterprise Rideshare or vRide) and receive up to $400 per month to help offset the cost of the lease. Vanpool drivers are offered month-to-month leases on passenger vans that include maintenance, roadside assistance, and insurance costs. Participation in this program removes the administrative burden from the employer since the vanpool participants work directly with iCommute and the vendor.

It can be challenging to convince people that they do not need to bring their personal car to campus, which is why many agencies and employers try to incentivize participation. The UCSD vanpool program offers a five-day free trial period which helps convince people that they can find ways to get around without the need for a personal vehicle. Another example is the CSU San Marcos campus, which offers a comprehensive commuter benefit program, including designated parking spaces for carpoolers and vanpoolers, free of charge.

SDSU currently provides a voluntary vanpool operation program to faculty and staff through a contract with Enterprise Rent-a-Car Corporation. It is recommended that the SDSU vanpool coordinator at the Department of Public Safety evaluate coordinating with iCommute staff to look for additional program opportunities and incentives for the current vanpooling program.

Guaranteed Ride Home

One of the barriers to ridesharing to work is the fear that an individual will not be able to get home quickly in the event of an unexpected event or emergency. Guaranteed Ride Home (GRH) programs provide commuters who regularly carpool, vanpool, bike, walk, or take transit to work with a reliable ride home (usually a taxi ride) when such instances arise. GRH programs are generally considered a support program for broader TDM efforts.

San Diego County currently has a GRH program, which provides an unscheduled ride home for commuters who carpool, vanpool, bike, walk, or use the COASTER or Premium Express Bus service to get to work at least three times per week. With a $3 co-pay, pre-registered participants can use this program Monday through Friday if:

- They experience a personal or family illness or emergency
- They must work unscheduled overtime (with a supervisor's approval)
- Their rideshare partner becomes unavailable

It is recommended that SDSU evaluate collaborating with SANDAG and the iCommute staff to ensure that SDSU affiliates are aware of the GRH program and can utilize it effectively to get home from SDSU, if needed.

Cost Estimate

Minimal administrative costs to establish working relationship with SANDAG and Zimride to promote existing regional rideshare programs.

10. Expand and diversify on-campus car sharing

Overview

Car sharing programs allow people to have on-demand access to a shared fleet of vehicles on an as-needed basis at an hourly or mileage rate. Car sharing has become very popular on college campuses. For example, Zipcar operates on more than 100 campuses, including almost 30 in California alone. Through car sharing, individuals gain the benefits of private vehicle use without the costs and responsibilities of ownership. In addition, research has shown that car sharing reduces vehicle ownership and vehicle trips. A U.C. Berkeley study of San Francisco's City CarShare found that members drive nearly 50% less after joining.

Implementation at SDSU

It is recommended that SDSU evaluate and, if feasible, implement one or more of the following on-campus car sharing programs.

Currently, SDSU students, faculty, and staff are eligible for a reduced membership rate when joining Zipcar, and receive $35 of free driving after joining. There are two Zipcar pods on campus, one in the H Lot (two vehicles), and another in the S Lot (four vehicles). Both of these pods are located on the southern edge of campus, away from existing activity centers.

An expansion of existing car sharing services at SDSU would further increase transportation options for students and faculty/staff, especially as the campus continues to grow in the coming years. SDSU could include the location of additional car sharing pods throughout campus, in conjunction with plans for campus expansion. Potential additional locations for pods include:

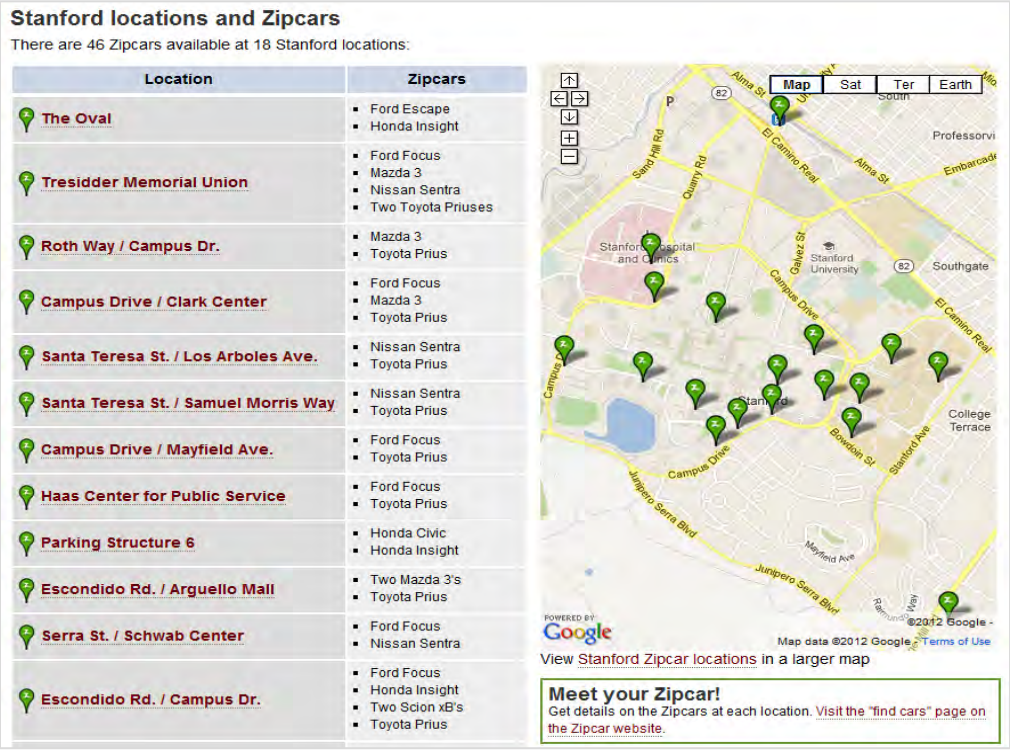
- The first floor of all existing major garages, including parking structures 1, 2, 3, 4, 5, and 6.
- In additional lots closest to the heart of campus, including lots A, F, G, W, X. Car share spaces should be those most convenient and closest to academic buildings.
- At or near existing on-campus residence halls and apartments.
- At or near future on-campus residence halls and apartments, preferably in the ground level of any provided off-street parking.

While it is likely infeasible for every location listed above to receive Zipcar pods, an assortment of new pods throughout campus would help make the service a convenient, hassle-free option for most students, faculty, and staff.

SDSU could also consider various car sharing incentive programs, such as a greater enrollment discount than what is already offered, or associated additional discounts for those who join commute clubs or purchase transit passes. For example, at the University of Washington, students, faculty, and staff who purchase a U-PASS transit pass benefit from heavily discounted car sharing rates. At Stanford University, students, faculty, and staff who are also part of the Commute Club receive car sharing discounts ($96 per year in driving credit) in addition to those provided to all campus members ($10 off membership fees; $35 in driving credit). Members also received $50 in referral credits when referring a new member.

Campus websites can also help to make car sharing an easy transportation alternative. As show in Figure 2-2, Stanford University's website lists and maps all on-campus Zipcar pod locations, and has easy links for vehicle reservation services. This page is directly accessible from the Parking & Transportation Services homepage.

Figure 2-2 Map of Zipcar Pods on Stanford Campus



Stanford locations and Zipcars

There are 46 Zipcars available at 18 Stanford locations:

Location	Zipcars
The Oval	Ford Escape Honda Insight
Tresidder Memorial Union	Ford Focus Mazda 3 Nissan Sentra Two Toyota Priuses
Roth Way / Campus Dr.	Mazda 3 Toyota Prius
Campus Drive / Clark Center	Ford Focus Mazda 3 Toyota Prius
Santa Teresa St. / Los Arboles Ave.	Nissan Sentra Toyota Prius
Santa Teresa St. / Samuel Morris Way	Nissan Sentra Toyota Prius
Campus Drive / Mayfield Ave.	Ford Focus Toyota Prius
Haas Center for Public Service	Ford Focus Toyota Prius
Parking Structure 6	Honda Civic Honda Insight
Escondido Rd. / Arguello Mall	Two Mazda 3's Toyota Prius
Serra St. / Schwab Center	Ford Focus Nissan Sentra
Escondido Rd. / Campus Dr.	Ford Focus Honda Insight Two Scion xB's Toyota Prius

View Stanford Zipcar locations in a larger map

Meet your Zipcar!
Get details on the Zipcars at each location. Visit the "find cars" page on the Zipcar website.

SDSU could easily implement expanded car sharing services as a part of an expanded TDM program. As on-campus car sharing services are provided by Zipcar, however, any expansion of car sharing at SDSU would have to be implemented in collaboration with the private car sharing company. Implementation would depend largely on the timeline of the private car sharing vendor and their determination of the viability of the SDSU market for additional car sharing vehicles.

Finally, SDSU should also work with other car sharing companies to expand and diversify the types of car sharing services provided at SDSU. For example, SDSU has already collaborated with car2go to add their vehicles on campus. Car2go is another car sharing program that provides a fleet of free-floating, low-emission, self-service smart cars distributed throughout the city. Unlike traditional car sharing programs, car2go allows its members to use the vehicle for as long as they like, without committing to a specific return time or location. They can finish the rental in any authorized parking space within the car2go business area.

Cost Estimate

None to minimal. The costs for implementation would be the responsibility of the private car sharing company.

SHORT-TERM STRATEGIES

6. Invest in enhancements to the bicycle and pedestrian network

Overview

With nearly 300 days of sunshine and less than 12 inches of rain annually, the climate in San Diego lends itself well to commuting by foot or by bicycle. However, to substantially increase walking and bicycling commute rates to SDSU, some improvements to the existing pedestrian and bicycle infrastructure need to be made. Improvements to bicycle and pedestrian infrastructure, especially in terms of enhanced safety, comfort, and direct access, have been shown to dramatically increase rates of non-motorized travel. Improvements to sidewalks and intersection crossings, as well as the addition of new bicycle lanes and secure bicycle parking are simple and cost-effective investments that can have dramatic impacts on the use of these modes. It is recommended that SDSU evaluate and, if feasible, implement appropriate bicycle and pedestrian network enhancements, as described below.

Implementation at SDSU

Pedestrian Improvements

On campus, pedestrians are fairly well served by a connected system of sidewalks, walkways, pedestrian bridges, and plazas. The majority of pedestrians accessing campus come from either College Avenue or Montezuma Road. These four-lane arterials also act as regional access points for the surrounding neighborhoods, taking large volumes of vehicles to I-8. SDSU has recognized the conflict between pedestrians and motorists, and has installed three pedestrian bridges across College Avenue. To encourage walking and to further remove the barriers to pedestrian access around campus, SDSU should evaluate and implement, if feasible, targeted infrastructure improvements at the following intersections:

- College Avenue and Montezuma Road
- College Avenue and Canyon Crest Drive
- Montezuma Road and 55th Street
- Montezuma Road and Campanile Drive

Although all of these intersections are served by signals and have standard crosswalks and pedestrian countdowns, the following improvements should be evaluated and made where feasible:

- Adjust signal timing and extend crossing phase to properly accommodate high pedestrian volumes
- High-visibility crosswalks
- Bulb outs
- Pedestrian refuge islands
- Wider sidewalks
- Grade-separated crossings

Bicycle Improvements

In recent years, SDSU has made strides towards becoming a more bicycle-friendly campus. In order to continue to increase the mode share for bicyclists commuting to campus, a holistic

approach needs to be taken regarding bicycling on campus. SDSU should continue to work with students and the greater community to identify and prioritize specific locations for improved and additional on-street bicycle facilities. Specific bicycling improvements include:

- **New bicycle facilities:** Access to campus from the surrounding communities is an issue that needs to be addressed with local and regional agencies specifically targeting improvements to the bicycle facilities around campus (Montezuma Road and College Avenue). Therefore, SDSU should consider consulting with SANDAG and the City of San Diego regarding the installation of new bicycle facilities on key access routes to and from SDSU, as described in the *City of San Diego Bicycle Master Plan*[6]. Additional infrastructure improvements are also described in the *2009 SDSU Bike and Skateboard Access Safety Study*[7]. All projects should be coordinated with City and County roadway improvement projects.
- **New and improved bicycle parking:** San Diego State University currently has 1,257 dedicated bicycle parking stalls. The majority of the bicycle parking stock is antiquated and only supports locking of the bicycle wheel. The *SDSU Bike and Skateboard Access Safety Study* outlined new bicycle parking guidelines, which call for SDSU bicycle parking facilities to hold 3,300 bicycles that are able to lock bicycles at least at two contact points (the frame and one wheel). New racks cost $150-$300 per two-bike racks. To ensure that the new racks are being installed in the area with the greatest need, SDSU should consider conducting a bicycle parking study every 4-6 years, if feasible.
- **Bicycle repair stands:** Along with the update to the bicycle parking stock, SDSU should install self-service bicycle repair stands (e.g. Dero Fixit - $900 per unit[8]) near key entry points to campus, student living facilities, recreation centers, and the bicycle parking areas with the highest demand. These stands let bicyclists put air in their tires or make minor adjustments to their bicycle with the securely provided tools.
- **Coordinated bicycle and pedestrian wayfinding system:** Wayfinding is a crucial component to a safe, convenient, and accessible network of pedestrian and bicycle facilities. It is recommended that SDSU evaluate developing a coordinated bicycle/pedestrian wayfinding system to ensure that regular SDSU affiliates and visitors can easily access key destinations.
- **Provide bicycle safety and education classes:** SDSU is one of the leaders of higher education in the region. Keeping with that theme, an educational program should be started to help educate students and faculty/staff regarding the rules of the road for all users. The San Diego County Bicycle Association offers monthly classes to help teach the League of American Bicyclists Smart Cycling Program. This program is available for bicyclists of all ability levels that want to learn more about bicycle safety. Bike San Diego may also be a resource for volunteers to conduct education classes.

  At the most basic level a bicycle "rodeo" (i.e. bicycle safety clinic) should be held during welcome week for SDSU freshmen, as well as on campus in May in coordination with National Bike Month. Finally, Traffic Skills 101 and 201 programs could also be offered on a larger scale. These programs are run in two parts: in-class and on-road. The class could

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[6] http://www.sandiego.gov/planning/programs/transportation/mobility/bicycleplan.shtml

[7] http://as.sdsu.edu/greenlove/SDSU_Bike_Access.pdf

[8] http://www.dero.com/products/fixit/

be offered as a "for credit" physical education adjunct class through the School of Education and Physical Activity.

- **Various promotional activities:** To help promote bicycle commuting to campus, an encouragement program should be set up. Activities could include the following:
  - Student bicycle/pedestrian advocacy group
  - Student bicycling club with annual contests and events
  - Bicycle commuter club with promotions and discounts
  - Distribution of SDSU specific bicycle maps, including iCommute's San Diego Regional Bike Map
  - Discounts at bicycle retailers and local businesses
- **Improve safety and enforcement:** Enforcement of bicycle laws is the responsibility of both the SDSU Police Department and the City of San Diego Police Department. A liaison should be made available in both agencies to act as the conduit between the campus cycling community and the agencies themselves.

  Until recently, it was illegal to ride a bicycle through most parts of the campus core. Bicyclists are now able to access most points of campus on designated bicycle facilities. However, there is still some confusion as to where bicyclists can and cannot ride. Dismount zones should be clearly marked. Additional wayfinding and bike etiquette signage will also help to improve safety.

  Off campus, the San Diego Police Department needs to monitor the main access roads during peak commute hours. Increased monitoring of the two major roadways around campus (College Avenue and Montezuma Road) could lead to increased safety for all users of the road.

  Finally, bicycle theft is always a concern, and even with the addition of secured bicycle parking, the SDSU Police Department still encourages the licensing and registration of bicycles, as well as the reporting of any theft or suspicious activity. To help increase the number of registered bicycles, a future student advocacy group could offer incentives for individuals who register their bicycle.

Cost Estimate

$90,000 to $115,000 per year. Does not include capital costs for new pedestrian or bicycle facilities.

12. Improve TDM Program Outreach and Marketing

Overview

An effective outreach and marketing program is a key component of any successful TDM program. If your target audience is unaware that alternative travel options or financial incentives are available, it will be difficult to achieve trip reduction and mode shift goals. Universities that have had the most tangible success with their TDM efforts have invested substantial time and money in promoting and marketing their TDM programs. Key components of these efforts include a transportation and TDM website, the use of social media, and targeted outreach activities at campus events.

Implementation at SDSU

It is recommended that SDSU evaluate and, if feasible, implement one or more of the following TDM Program outreach and marketing efforts. Transportation and TDM Website

Currently, the SDSU website includes information regarding the University's parking program, including information on permits, pricing, regulations, visitor parking, and non-car commute alternatives. However, parking and transportation information is not presented clearly, concisely, or in a coordinated fashion. Furthermore, information is housed on the SDSU Police Department page, which is not intuitive and contributes to the difficulty of finding relevant information.

A streamlined, stand-alone, user-friendly transportation webpage affords students, faculty, staff, and campus visitors a complete picture of all the transportation alternatives available for trips to campus. When travelers are aware of all options, programs, and incentives, they are more likely to take advantage of transportation alternatives. Specific components of a high-quality campus transportation website that SDSU could provide include the following essential components:

- Specific sections/pages for each user type (student, faculty, staff, visitor)
- Specific sections/pages for each service/mode, including:
  - Parking: information on permit costs, forms, lot locations, citations, payment options, etc.
  - Shuttles and Transit: information on shuttle/transit services (routes, frequency, costs, etc.), passes, incentives, etc.
  - Bicycling: information on bicycling routes, amenities, incentives, programs, safety tips, etc.
  - Walking: information on walking routes, amenities, incentives, programs, safety tips, etc.
  - Ridesharing/Ridematching/Carpooling/Vanpooling/Car sharing: information on program specifics, incentives, enrollment procedures, etc.
- Ordering function for parking permits
- Payment and appeal function for parking citations
- Easy to read campus maps, including:
  - Parking facilities (segregated by type)
  - Transit/shuttle routes
  - Bicycle/pedestrian facilities and access
- Links to non-campus transportation resources, such as local transit agencies and commuter programs

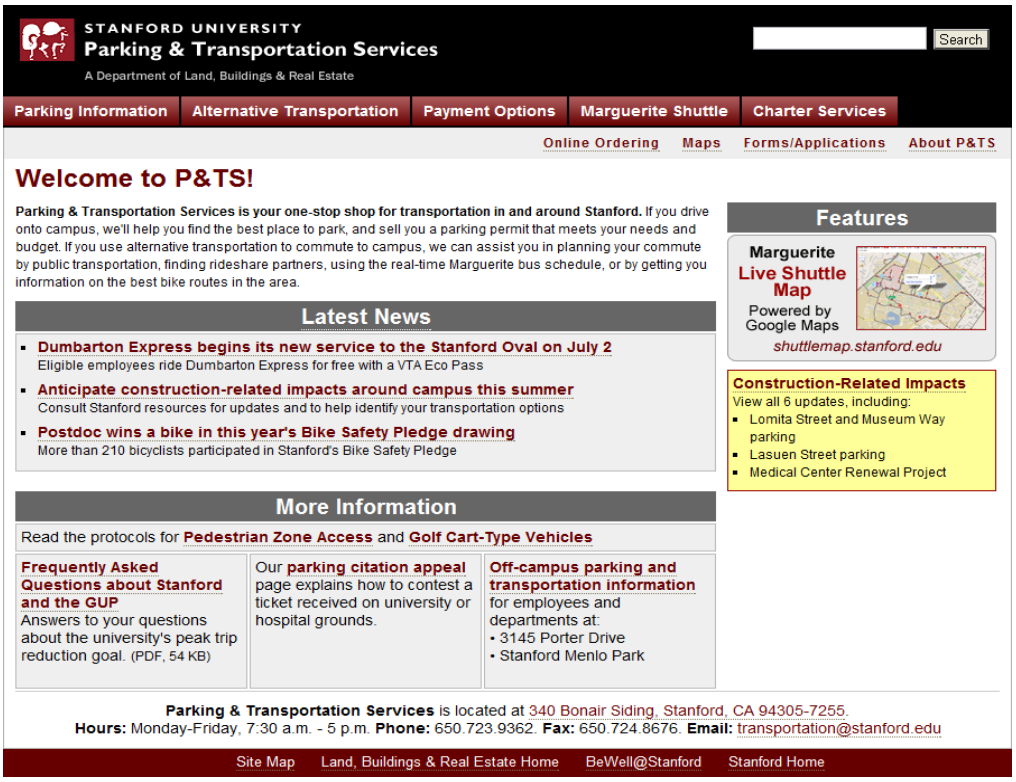
Additionally, potential components of a more robust website/TDM program could include:

- Real-time parking information (availability)
- Real-time shuttle arrival/departures information and maps
- If feasible, use of SDSU mobile application to disseminate transportation program and real-time information
- Car sharing pod locations and reservation services
- Bike sharing pod locations and reservation services

Figure 2-3 shows the Stanford University Parking & Transportation Services webpage, an example of a website with easy-to-find links to core services and information. Stanford also

provides a real-time mapping page of its Marguerite shuttle services, with all stops and current shuttle locations[9]. Users can click on their stop and get information on the arrival time of the next shuttle.

Figure 2-3 Stanford University Parking & Transportation Services Webpage



The UC San Diego website[10] clearly separates information out by both user type (students, faculty/staff, or visitor), and transportation mode (parking, shuttle, alternatives). Space is also provided for news and event updates, contact information, and user comments. All information is contained in a readable transportation-specific site. The implementation of a similar website at SDSU would greatly increase the navigability of its transportation system and programs, increasing the likelihood that students, faculty, staff, and visitors will take advantage of transportation alternatives. Such a website will be particularly important once SDSU expands its TDM program and campus, as existing and new students, faculty, and staff will need to familiarize themselves with any new programs.

Social Media

Many colleges and universities use social media to disseminate information about travel choices, improve access to services, offer promotional rewards, and generate "buzz" about travel choices among existing and potential client groups. For example, UCLA's Transportation program has a dedicated Twitter feed and Facebook page which offer program updates and useful information to followers (see Figures 2-4 and 2-5). These pages also allow people to post and discuss relevant

[9] http://transportation.stanford.edu/marguerite/MargueriteSched.shtml#online

[10] http://blink.ucsd.edu/sponsor/trans-services/index.html

transportation issues and concerns. UCLA also has a YouTube channel[11] where informational videos are posted on the university's various commute programs.

Figure 2-4 UCLA Twitter Feed

Figure 2-5 UCLA Facebook Page

[11] http://www.youtube.com/user/BeAGreenCommuter

It is recommended that SDSU evaluate coordinating with the Associated Students to develop a dedicated social media presence for its current and future transportation and TDM programs. This strategy will be a crucial component to its communication and outreach efforts, especially among students who utilize social media as part of their everyday lives. Any social media efforts should be well integrated within a new transportation and TDM website.

Informational Materials and Campus Outreach

SDSU should also develop a suite of new or updated outreach and marketing materials to distribute to campus affiliates. Materials should be consistently branded and reinforce other marketing strategies. These materials could include:

- Parking and shuttle maps
- Bicycle route maps
- Informational flyers or brochures on parking and other TDM programs
- Discount or promotional materials
- "How To" or "FAQ" brochures

These materials should be distributed to campus affiliates in a variety of ways, including:

- Orientation materials for freshman, transfers, and newly hired faculty/staff
- SDSU Transit Center and major bus stops
- Dormitories, residence halls, and on-campus housing
- All on-campus and nearby retail businesses
- Transportation booths or tables should be set up at all major campus events

Cost Estimate

Costs will depend on the complexity of the website, especially if real-time parking or shuttle information is included. It is estimated that costs to develop a website and social media platforms would be approximately $20,000-$30,000 per year. Ongoing staff costs to administer and manage outreach and marketing should also be evaluated (see Strategy 13).

13. Allocate additional staff time and hire a dedicated TDM coordinator to implement and manage TDM programs

Overview

A new TDM program at SDSU will undoubtedly require additional staff time to coordinate the development, implementation, and evaluation of the specific strategies described in this memorandum. It is important that TDM programs are properly staffed so that the various strategies operate as efficiently as possible.

TDM coordinators are professionals whose role it is to promote and administer TDM programs. TDM coordinators can bring a diverse level of expertise in TDM program management and direct experience in implementing complex TDM strategies at large institutions with diverse transportation needs.

Implementation at SDSU

In the short-term phase, it is recommended that SDSU evaluate and, if feasible, allocate additional staff time to implement and manage the various TDM actions. However, given the

breadth and depth of the proposed TDM strategies for SDSU, it also is recommended that SDSU evaluate eventually hiring, if feasible, a TDM coordinator to implement the TDM program. This position can supplement key work performed by existing SDSU staff and help to coordinate efforts across key departments. Key responsibilities for this position would include:

- Monitor the SDSU parking permit program and evaluate the efficacy of pricing structures to achieve desired occupancy targets
- Coordinate with SANDAG regarding all joint SDSU and regional programs, such as Compass Cards and transit passes, ridesharing, and iCommute
- Manage the implementation and operations of enhanced SDSU Red & Black shuttle service
- Coordinate with SANDAG and City of San Diego to implement key bicycle and pedestrian facility improvements
- Manage all transportation marketing and outreach efforts
- Coordinate with car sharing companies to expand and diversify car sharing services
- Coordinate with SANDAG and other local jurisdictions to secure short-term and long-term funding for TDM programs
- Oversee all data collection and program evaluation efforts, including annual TDM reporting

Cost Estimate

$15,000-$75,000 per year depending on level of TDM staffing required.

14. Develop an annual monitoring and evaluation program

Overview

A robust monitoring and evaluation program is a crucial component of an effective TDM program. Consistent evaluation of TDM strategies enables objective assessments of program performance and allows adjustments to be made to programs to maximize efficiencies. Publishing and disseminating performance data of TDM programs in annual reports also fosters greater transparency, accountability, and public trust.

The key components of a well-designed monitoring and evaluation program are:

- Identifying metrics that measure different dimensions of TDM program objectives including:
  - Trip generation
  - Means of travel
  - Parking demand and adequacy of capacity
  - Transit ridership
  - Customer satisfaction
- Using data collection techniques that fit with and support operations
- Collecting performance information at regular intervals
- Comparing data over time

- Using reports to document performance, identify obstacles and opportunities, and discuss potential adjustments

Implementation at SDSU

The objective of the SDSU TDM program is to help reduce campus-generated vehicle trips in favor of alternate modes of travel by providing students and employees with choices and incentives that make not driving to campus attractive. To ensure that this objective is met, it is recommended that SDSU evaluate and, if feasible, establish an annual monitoring and evaluation program for its TDM efforts. The recommended monitoring and evaluation actions for evaluation include:

- *Conduct an annual student and faculty/staff travel demand survey using iCommute's services.* Conduct an annual travel survey to estimate faculty/staff and student mode splits to campus, as well as general levels of satisfaction with transportation and TDM programs. Employees and students would be questioned on their satisfaction levels with available travel choices, the travel choices they use, interest/practicality of modes that are not used, and other attitudinal characteristics. The intent of gathering and assessing this information is to help refine facilities and services available to the campus population.

  The employee survey should be sent to all faculty and staff. The survey of students should be conducted using a sampling procedure. SDSU should offer incentives, such as drawings for gift cards, to generate a higher response rate.
- *Conduct and analyze parking occupancy each semester for motor vehicles and bicycles.* Parking occupancy counts for vehicles should be conducted on two or three weekdays (Tuesday, Wednesday, and/or Thursday) on an hourly basis from 8 AM to 6 PM. Counts should take place during the middle of both the Fall and Spring semesters. Data collection methods should be consistent to allow for easy comparisons across years. Bicycle occupancy counts should be conducted at all SDSU bicycle parking facilities during the peak period of one weekday during both the Fall and Spring semesters.
- *Conduct annual bicycle counts:* Bicycle counts should be done at major access points during specific times in order to ensure the ability to measure change in the future. Counts should be volume-based segment counts and capture information about directionality, location in the right-of-way, and gender.
- *Gather transit ridership data from San Diego MTS.* SDSU should work with San Diego MTS to gather ridership data for routes that serve SDSU. Tracking transit ridership will help SDSU evaluate transit use to and from campus and evaluate the effectiveness of any existing or future transit incentives.
- *Count daily Red & Black shuttle ridership by route and stop.* SDSU should collect ridership data for its Red & Black shuttle to enable ongoing assessments of system performance and ensure future shuttle plans are informed by robust data. At a minimum, shuttle drivers can continue to record ridership information. However, as the system grows in the future, SDSU may need to invest in automated passenger counting (APC) systems.
- *Monitor traffic collisions near SDSU campus:* SDSU should work with SANDAG and the City of San Diego to collect collision data regarding bicycle, pedestrian, and vehicle

collisions on roads that serve the SDSU campus. Collision data can be obtained through the Statewide Integrated Traffic Records System (SWITRS) database[12].

- *Prepare an annual report describing travel demand, survey results, occupancy data, and safety trends.* Reports summarizing data and offering observations about performance should be prepared no less than once a year. Year-to-year comparisons should be made along with identification of milestones or events that may have occurred. A version of the report that is suitable for external distribution should be prepared and posted online.

Cost Estimate

Monitoring and evaluation costs are estimated to be approximately $10,000 per year based on the following assumptions:

- Employee and student survey: low to minimal if iCommute's services are used
- Vehicle and bicycle parking utilization: minimal if counts are collected by students using data collection tools and supervised by Parking Services staff
- Transit ridership: minimal costs for collecting data from MTS and the Red & Black shuttle operations group.

[12] http://iswitrs.chp.ca.gov/Reports/jsp/userLogin.jsp

LONG-TERM STRATEGIES

2. Provide subsidized transit passes to students and faculty/staff

Overview

In recent years, growing numbers of transit agencies have teamed with universities or employers to provide subsidized transit passes. The primary objective of this strategy is to further incentivize the use of local and regional transit and reduce vehicle trips. Universities typically contract with a transit provider to allow students, employees, or both to have unlimited free rides (often by showing a campus ID card). The university pays the transit agency an annual lump sum based on expected student ridership, and students simply show their university identification to board the bus.

As a result of the passes, transit ridership typically increases, and some people shift from driving to riding transit to reach campus. As Figures 2-6 and 2-7 illustrate, subsidized transit passes are usually an especially effective strategy for reducing the number of car trips at universities and increasing transit ridership. By removing any immediate financial cost barrier to using transit and some of the inconvenience, including the need to search for spare change for each trip, people become much more likely to take transit.

Figure 2-6 Effects of Transit Pass Introduction[13]

Location	Drive share to work		Transit share to work	
	Before	After	Before	After
Municipalities				
Santa Clara (VTA)	76%	60%	11%	27%
Bellevue, Washington	81%	57%	13%	18%
Ann Arbor, Michigan	N/A	(4%)	20%	25%
Downtown Boulder, Colorado	56%	36%	15%	34%
Universities				
UCLA (faculty and staff)	46%	42%	8%	13%
Univ. of Washington, Seattle	33%	24%	21%	36%
Univ. of British Colombia	68%	57%	26%	38%
Univ. of Wisconsin, Milwaukee	54%	41%	12%	26%
Colorado Univ. Boulder (students)	43%	33%	4%	7%

[13] Results from programs with 100% subsidies.

Figure 2-7 Transit Ridership Growth from Pass Programs[14]

University	Year began	1st year increase in student ridership			Subsequent growth rate
		Before	After	Change	(% per year)
CSU Sacramento	1992	315,000	537,700	71%	2%
University of California Davis	1990	587,000	1,054,000	79%	10%
University of Wisconsin, Madison	1996	812,000	1,653,000	104%	NA
University of Illinois, Urbana-Champaign	1989	1,058,000	3,102,000	193%	8%
University of Colorado, Boulder	1990	300,000	900,000	200%	8%

San Diego MTS currently charges the standard fare of $72 for a regional monthly pass and $100 for a "premium express" regional monthly pass. SDSU students are eligible to purchase a monthly pass for $57.60. In addition, SDSU students can purchase a semester pass for $155 (which includes a $20 subsidy from SDSU from the normal costs of $175 per semester). A $6 per month subsidy for faculty/staff on the $72 monthly passes was recently discontinued. All passes are administered as "paper" passes. Outlined below for evaluation are specific recommendations for improvements to SDSU's transit pass program in the long-term. It is recommended that SDSU evaluate and, if feasible, implement appropriate transit pass subsidies.

Implementation at SDSU

- Students
  - Semester Pass:
    - Increase SDSU fare subsidy to $90 per semester (approximate 50% subsidy). Students would pay $85 for a semester pass.
  - Discontinue monthly subsidy because it would no longer be cost-competitive with semester passes
  - Ensure that Compass Cards are available prior to implementation
- Faculty/staff
  - Monthly Pass:
    - Provide $40 subsidy for monthly passes.
  - Ensure that Compass Cards are available prior to implementation

Cost Estimate

Figure 2-8 provides a summary of the projected costs to implement the transit pass program described above. The costs for the transit pass program were based on the following methodology:

[14] Results from programs with 100% subsidies.

- Based on information contained in the SDSU 2007 Campus Master Plan Revision EIR, near-term projections are that approximately 6,669 SDSU-affiliated persons will utilize the trolley to ride to campus. For purposes of this study, it was assumed that bus ridership would be minimal; the vast majority of transit ridership to and from campus is via the Green Line.
- Faculty/staff ridership was calculated by multiplying faculty/staff transit share (assumed to be 3%)[15] by the number of faculty/staff in 2011-12. Student transit ridership was calculated as the difference between total ridership and faculty/staff ridership. It was assumed that all SDSU transit riders would purchase a transit pass.
- It was assumed that no student monthly passes would be purchased.
- It was assumed that faculty/staff would buy nine monthly passes.

It is estimated that the transit pass program would cost about $1.221 million to implement. It is important to note that this figure does not include the revenue impacts from decreases in parking permit sales. These revenue decreases are accounted for in the financial modeling, as described below. Administrative costs to manage the program are not included, although these costs are assumed to be accounted for in Strategy 13.

Finally, while it might appear that the cost per rider is substantial ($183 per year), it is important to remember that the transit pass program would be substantially more cost-effective than the estimated annual cost per parking space in a new surface lot ($444 per commuter per year) or a new parking structure ($1,773 per commuter per year), as detailed in Appendix B.

Figure 2-8 Cost Estimates for Subsidized Transit Pass Program

Estimated Students Who Will Ride Transit	6,550
# of passes purchased (annual)	13,100
Cost to SDSU per Pass	$90
Estimated Student Cost	$1,179,000
Estimated F/S Who Will Ride Transit	119
# of passes purchased (annual)	1,072
Cost to SDSU per Pass	$40
Estimated F/S Cost	$42,872
Total Annual Cost	$1,221,872
Cost per Rider	$183

5. Invest in enhancements to the Red & Black shuttle

Overview

SDSU currently operates the "Red & Black" shuttle, which offers service to and from the outer parking lots around campus. The Red & Black shuttle service operates Monday through Friday between the hours of 5 PM-10 PM. Two large passenger vans operate in tandem, completing the campus loop route every 15-20 minutes. Campus Shuttle stops are located around the main campus activity areas including: Remington Road (off 55th Street), Aztec Circle Drive, Canyon Crest Drive, East Campus Drive, and Campanile Drive.

[15] Based on transit mode share for faculty/staff at similar campuses (e.g. CSU San Marcos).

Ridership fluctuates from month to month, but averaged approximately 114 riders per month from March 2011 to April 2012 (does not include June or July). While current Red & Black shuttle service does provide a valuable service to campus affiliates, its limited span, frequency, vehicle capacity, and marketing all limit the service's ability to serve as a consistent, reliable, and convenient transportation option for SDSU students and faculty/staff.

This strategy is designed to improve the operation of SDSU's current shuttle system through targeted improvements that will allow the shuttles to better serve the campus and complement other proposed TDM strategies. The primary objectives of an enhanced shuttle system are to:

1. Continue to provide a safe and secure travel option for intra-campus trips
2. Complement new parking pricing strategies designed to redistribute parking demand to the more remote, and underutilized, parking facilities
3. Better enable SDSU to serve demand for intra-campus trips as the campus population increases in the coming years
4. Establish a framework for possible future expansion of the shuttle system beyond the immediate vicinity of the SDSU campus

It is important to note that the consultant team evaluated the option of significantly expanding the SDSU shuttle system to serve not only the immediate campus, but also local and regional destinations. However, it was determined that given the existing robust transit service provided by San Diego MTS, an additional SDSU shuttle system serving local and regional destinations would be largely duplicative and not cost-effective for the University at this time.

As shown in Figure 2-9, there are seven bus lines and one trolley line directly serving the SDSU campus. These routes provide consistent peak-hour service from the early morning to late at night and serve destinations throughout the greater San Diego region. The Green Line and routes #11, #14, and #15 account for more than 10,000 boardings and alightings per day at the SDSU campus. The vast majority of the transit ridership to and from campus is via the Green Line, which serves downtown San Diego and offers the most direct connections to many of the beach communities where many students and faculty/staff live.

Figure 2-9 Existing Transit Routes Serving SDSU Campus

Transit Route	From	To	M-F			Saturday		Sunday	
			Service Hours	Peak Headway (min)	Off-Peak Headway (min)	Service Hours	Headway (min)	Service Hours	Headway (min)
11	Skyline Hills	SDSU	4:30 am-11 pm	15	15; 30-35 late pm	4:30 am-11 pm	30	No Service	No Service
14	Grantville Trolley	Lake Murray	6 am-9 pm	60	60	No Service	No Service	No Service	No Service
15	SDSU	Downtown	5 am -1 am	10-15	15; 30-35 late pm	5 am -12 am	20	5 am -12 am	30
115	SDSU	El Cajon TC	6 am-10 pm	30	30; 60 late pm	7 am-8 pm	60	7 am-6 pm	60
856	Cuyamaca College	SDSU	4 am-10 pm	30	30; 60 late pm	No Service	No Service	No Service	No Service
936	SDSU	Spring Valley	4 am-10 pm	30	30	5 am-9 pm	30	6 am – 9 pm	40
955	SDSU	Downtown	5 am-10 pm	15	15; 30 after 7 pm	5 am-10 pm	30	6 am-9 pm	30; 60 after 7 pm
Green Line Trolley	Santee	Old Town	5 am-12 am	15	15; 30 9.15 pm – 12.30 am	5 am-12 am	15-20	5 am-12 am	30

Therefore, it is recommended that SDSU not establish a shuttle system that would largely compete with existing transit service. A shuttle system on a local or regional scale would likely be less cost-effective at increasing transit mode share to campus than simply increasing transit subsidies. As described in Strategy 2, it is recommended that SDSU evaluate increasing local and regional transit ridership in the long term by offering more substantial transit pass subsidies to students and faculty/staff.

Implementation at SDSU

This section outlines specific recommendations for how to improve the Red & Black shuttle. It is recommended that SDSU evaluate and, if feasible, purchase new shuttle vehicles, invest in new marketing and branding, and expand service hours. The specific recommendations for evaluation are outlined below.

- Service Span: Extend service hours from 7:30 AM – 11 PM, Monday to Friday, as a means to provide easier connections between campus destinations and redistribute parking demand during peak periods. Due to the limited population living on campus and the lack of weekend employment, Saturday and Sunday shuttle service is not currently justified. If campus housing is expanded significantly in the future, weekend service may be appropriate. Therefore, the number of service days would be estimated at 195 per year (no service for the equivalent of approximately two and a half months).
- Service Frequency: Maintain frequency of every 10-12 minutes.
- Type of Vehicles: Purchase "cutaway" buses as a means to increase capacity of the shuttle system and enhance customer experience. Cutaways are usually less than 30 feet in

length and seat between 12 and 25 ambulatory passengers with two wheelchair tie-downs and one door in the front of the vehicle. Cutaways allow for more flexibility than larger buses and are able to operate on smaller neighborhood roads.

- Number of Vehicles: The current Red & Black shuttle utilizes two passenger vans to provide 15-minute headways. Based on this operating schedule it is assumed that it takes approximately 30 minutes to complete the entire Red & Black shuttle route. Under this proposal, it is recommended that SDSU evaluate maintaining 10-12 minute headways, which would require the purchase of three cutaway vehicles to provide consistent service.[16]
- Routing and stops:
  - East Campus Drive at Tenochca Residence Hall, near Parking Structure 3 and Parking Structure 6
  - Viejas Arena at 55th Street
  - Chapultepec Residence Hall
  - Across from W Lot at the steps leading up to West Commons
  - Alvarado Medical Center
  - East Campus Drive between E Lot South and F Lot
  - Lots T, X, C, and D
  - Implement potential new stops at the following locations:
    - Near student housing on Hardy Avenue
    - North end of 55th Street near Albert's College Apartments
    - Montezuma Road near 55th Street
    - College Avenue near Lot F and Lot G
- Operators: Continue to use student drivers as a means of maintaining low operating costs. Numerous universities (such as UC San Diego and UC Davis) successfully utilize student drivers to operate their shuttle systems, driving large shuttle vehicles. However, these universities have well-established driver training programs and SDSU will need to augment its driver recruitment, training, and certification efforts to ensure that its student drivers meet licensing and safety requirements.

  Alternatively, SDSU could contract its shuttle operations through a third party. Contracting drivers will increase costs; however, contracting the operations would also reduce administrative costs and staff time required to manage student drivers.
- Passenger Amenities: Passenger amenities are a key factor in maintaining customer satisfaction and increasing ridership. More specifically, the Red & Black shuttle stops have limited and inconsistent passenger amenities, such as benches and signage. Outlined below are key improvements that should be made at all Red & Black shuttle stops.
  - Flag Signs: At a minimum, every on-street stop should feature a clearly legible sign displaying route numbers and names, days and hours of operation, frequencies during these periods, the stop identification number, and a telephone number to call for more information. Signs should be at least 12" x 18", should be mounted at least

[16] It is also recommended that the existing passenger vans be kept in SDSU fleet to provide backup or emergency service.

six feet above the ground, and should be visible from at least 100 feet away. They should also be placed perpendicular to the street so that they are visible from both directions, and each side should be identical.

- Benches and Shelters: When surveyed, existing and potential shuttle riders frequently cite benches and shelters among their most requested improvements. At a minimum, benches and shelters that offer seating both sufficient for several passengers and relatively comfortable should be provided.

  Shelters come in a variety of shapes, sizes, and price ranges. Many firms sell off-the-shelf, utilitarian models that can be installed in a few hours. Alternately, transit providers or municipalities may have architects develop custom designs reflecting local climate and character, although these can add significant cost.

  Wherever possible, locations should be prominently displayed on shelters, either using adjacent intersections or landmarks. Naming stops helps passengers to think of them as "places," not just stops, and helps to convey a sense of permanence that can serve to attract new riders.
- Lighting and Trash Receptacles: Lighting can enhance both actual and perceived safety. Lighting should be at a pedestrian scale (rather than standard, auto-oriented "cobra" streetlights, which tend to cast irregular yellow-tinted pools of light onto roadways), and should illuminate the entire front half of a stop (illuminating riders boarding and exiting from both front and back doors). Trash receptacles also have a significant psychological impact, which can in turn impact ridership. Receptacles also need to be emptied on a regular basis, as scattered trash sends a signal to potential users that stops are not valued and/or are dangerous.
- Service branding: It is recommended that SDSU evaluate additional investments in branding for the Red & Black service and better disseminate information about its operations.
- Advanced passenger information systems, such as real-time displays.
- Real-time arrival information on SDSU mobile application (if feasible)
- Wi-Fi (if feasible)

Cost Estimate

Outlined below are estimates for capital and operating costs for the service improvements and changes to the Red & Black shuttle to be evaluated. All costs should be considered approximate and complete costs are not necessarily included. For example, costs for stop improvements will depend to a great extent on site-specific conditions that will require additional analysis, as well as staff determinations about appropriate levels of investment.

<u>Capital Costs</u>

- Vehicles: Cutaway vehicles range in size (21-27 feet) and features. As a result, costs can range from $45,000 - $75,000. A price of $70,000 per vehicle was assumed in our analysis. Vehicles that include automated passenger counting (APC) systems would likely cost more.
- Passenger amenities: Costs for new stops might range from as little as a few thousand dollars to several hundred thousand dollars (for bus bulbs or bus bays requiring curb relocations). For this reason, it is difficult to estimate total costs for stops. Major elements of stops are likely to cost approximately:

- Flag sign and pole with canister: $1,000
- Bench: $1,000
- Real-time display: $4,000
- Shelter: $15,000
- Costs for other elements such as lighting and sidewalks will vary depending on site-specific conditions.

It was assumed that the proposed improvements would result in an average cost of $4,000 per stop location.

Operating Costs

Transit operating costs are typically estimated using a simple formula: hours of revenue service multiplied by average cost per hour. This method is widely used for sketch-level cost estimates such as those provided here, and has a proven track record of roughly approximating actual costs.

The first step in any such calculation is to determine the average cost per hour to operate each vehicle, including labor, fuel, maintenance, administrative, marketing, and other costs. For this exercise, two ranges were developed based on professional judgment:

- For service operating with the use of student drivers, $40 per hour
- For service operating with contracted drivers, $80 per hour

The number of vehicle hours was approximated based upon the service span, service days provided, and number of vehicles required to achieve the proposed headways. Figure 2-10 includes a summary of the estimated up-front capital costs and the annual operating costs.

Figure 2-10 Estimate of Red & Black Shuttle Costs

Scenario	Service Hours	Service Days	Vehicles Required	Total Hours	# of Stops	Annual Operating Cost		Capital Costs		Total Cost (Year 1)	
						"Student" (per hour)	"Contracted" (per hour)	Per vehicle	Amenities (per stop)	"Low"	"High"
						$40	$80	$70,000	$4,000		
Long-term	15.5	195	3	9,068	14	$362,700	$725,400	$210,000	$56,000	$628,700	$991,400

7. Invest in additional enhancements to the bicycle and pedestrian network

Strategy 6 describes short-term actions SDSU should evaluate to improve bicycle and pedestrian conditions. Outlined below are additional investments SDSU could make in the long term, if feasible, to further improve bicycle and pedestrian conditions.

- **Install more secure bicycle parking and implement an on-campus bike station:** To encourage long-term bicycle parking or overnight bicycle parking, more secure bike parking should be made available. The addition of bicycle lockers at the Aztec Recreation Center (ARC) would help encourage a multi-modal commute to and from campus. More secure bike parking could also be implemented with the creation of an on-campus "bike station." Bike stations are increasingly common investments near transit stations or on college campuses, as they provide a "one-stop" shop for bicycling needs and information.
- **Install triple bike racks on all buses serving SDSU:** An average two-mile bicycle commute can be made at a comfortable pace in around 10 minutes. Due to land use restrictions, topography and SDSU's history of being a commuter campus, a majority of the students live outside of the comfortable two-mile bicycle commute zone. To encourage more people to bicycle to campus, a stronger relationship needs to be made between cycling and transit.

  Bicycles are currently permitted on all San Diego MTS vehicles that access SDSU. Bicyclists are allowed to walk right onto the trolley with their bicycle or load their bicycle onto one of the front racks of the bus. To help with the loading/unloading of bicycles from the bus, a demonstration bus-bike rack should be installed at the SDSU Transit Center. Busses are currently limited to two bikes on the current rack set up. SDSU should work with San Diego MTS to install bus racks that accommodate three bicycles[17].

  In addition, new bicycle parking will provided in more accessible and conspicuous locations at the new Student Union.
- **Implement an SDSU Bicycle Share program:** In recent years, bike sharing systems have become a popular infrastructure investment that significantly increases access to low-cost, short-term bicycle rentals. The latest generation of bicycle sharing programs utilize GPS technology and credit cards to allow individuals to easily rent a bicycle, while allowing seamless tracking of bicycle usage by station.

  SDSU has recently implemented a small bicycle rental program, called Aztec Bike, which allows students and faculty/staff to rent bicycles on a monthly basis. Depending on the success of this program, the growth in campus population, demand for parking, the convenience and safety of riding to and from campus, and a host of other external factors, a bicycle sharing system may be worth evaluating and implementing in the long term.

  SDSU is also evaluating a partnership with the City of San Diego to expand the proposed bike sharing program for San Diego to SDSU. The City's program is projected to begin in 2013, with the goal of expansion to SDSU by 2014-15.
- **Continue to prioritize additional safety improvements to key access roads:** SDSU should continue to work with SANDAG and the City of San Diego to prioritize the

[17] http://www.sportworks.com/products/transit_racks/

implementation of additional safety improvements to key routes, especially Montezuma Road and College Avenue.

Cost Estimate

- Bike station: approximately $580,000 in capital costs, $130,000 in annual operating costs.
- Additional bicycle lockers: $25,000 per year.
- Bicycle sharing system: $40,000 in capital costs, and another $14,000 in annual operating costs
- Bicycle racks: TBD.

9. Implement an SDSU-specific Guaranteed Ride Home program

As discussed in Strategy 8, SANDAG operates a GRH program that provides commuters who regularly carpool, vanpool, bike, walk, or take transit to work with a reliable ride home in an emergency (usually a taxi ride). It is important to note that the SANDAG GRH program is currently open to students. SANDAG is currently analyzing the GRH program to determine whether it will be expanded to include all forms of transit as eligible modes. Currently, trolley and local bus riders are not eligible for a ride home.

In the future, SDSU may wish to establish an SDSU-specific GRH program that would offer rides to SDSU affiliates who arrive to school via ridesharing, biking, walking, or transit. Annual costs were conservatively estimated for an expanded and more aggressively marketed program. With higher participation rates than the current SANDAG program, costs were estimated at approximately $25,000 to $30,000.

11. Prioritize Long-term Investments in On-Campus Housing and Amenities

Overview

This strategy seeks to increase the supply of on-campus housing, amenities, and services for both students and faculty/staff. By providing additional residential, shopping, and recreational options near campus, colleges and universities can significantly reduce the number of commuting students and faculty/staff, as well as reduce the number of daily trips that are made for other purposes.

The land use context for different universities can vary dramatically, as some institutions have developed primarily as “commuter” campuses, while others have traditionally housed many of their students and faculty/staff on campus or in immediately adjacent neighborhoods. As demand for higher education continues to increase and enrollments are projected to rise substantially, universities of all types have explored how to increase their housing stock. For example, UCLA and Stanford University have both prioritized the expansion of on-campus housing options for all levels of students and faculty/staff. In addition, these universities also provide on-campus amenities like various on-campus dining options and daily services.

Implementation at SDSU

SDSU has traditionally been a “commuter” campus with a limited number of students and faculty/staff living on campus. It is clear, however, that there is additional demand for more opportunities to live on campus. The 2007 Campus Master Plan identified this need and

prioritized substantial investment in building more on-campus housing and providing more amenities and services. In fact, the Campus Master Plan sets a goal of providing 10,000 new beds by 2025, enabling SDSU to house 100% of its freshman and 94% of its sophomores in university-managed housing. Additionally, the Plaza Linda Verde project will bring 1,600 new beds and substantial new retail opportunities, such as a full-service grocery store, to the campus.

Clearly, SDSU has prioritized the transformation of its campus into a new and robust community. Nevertheless, additional investments in this strategy over the long term will enable SDSU to continue to increase enrollment, provide a variety of housing options for potential students, and further reduce vehicle trips.

Specific additional long-term investments for evaluation could include:

- Additional on-campus or nearby student housing, including housing options for undergraduate students, graduate students, faculty/staff, as well as families with or without children. Housing options should strive to include dormitories, apartments, and townhouses.
- Additional on-campus meal plans and dining options.
- Additional amenities including:
  - Retail services
  - Banking services
  - Medical and pharmacy
  - Postal services
  - Computer and technology services
  - Religious services
  - Cultural and social programming
  - Athletics and recreation

Cost Estimate

Not able to be determined at this time

Figure 2-11 Summary of Proposed TDM Strategies

Strategy	Description	Implementation - Upon Approval	Implementation - Short-term	Implementation - Long-term	Estimated Cost Impact	Potential Trip Reduction Impact
1. Preferential Parking	Providing preferential parking for carpools and vanpools is a proven strategy for incentivizing ridesharing and reducing vehicle trips.	SDSU to evaluate the feasibility of the following lots and structures for the implementation of preferential parking: PS 1, PS 2, PS 4, Lots F, G, U, and A.	Same	Same	None to Minimal	Low
2. Subsidized Transit Passes	Increase subsidy on transit passes to students. Re-implement and increase subsidy for faculty and staff when demand increases to meet the requirement of both SANDAG and the State Controller's Office for minimal participation.	None	None	Dependent upon resources available and collective bargaining agreements, SDSU to evaluate the feasibility of the following subsidy programs: • **Students:** Increase SDSU fare subsidy to $90 per semester (students would pay $85 per semester). Discontinue monthly pass subsidy. • **Faculty/staff:** Provide $40 subsidy for monthly passes.	Approximately $1.045 million per year	High
3. Pre-Tax Benefit	If feasible, allow employees to pay for transit passes with pre-federal-tax income as permitted under IRS section 132 (f).	SDSU allows faculty/staff to use pre-tax dollars to be used to pay for parking permits. It is recommended that SDSU evaluate and, if feasible, extend this benefit to cover transit expenses for SDSU faculty/staff as a means to encourage transit use and offer the same financial incentives to existing or potential transit riders as motorists.	Same	Same	Minimal	High
4. Compass Cards	Re-examine the viability of deployment of Compass Cards for use by faculty and staff	SDSU to evaluate and, if feasible, collaborate with SANDAG to ensure that the Compass Card is available at SDSU and is coordinated with any existing or future SDSU specific transit discounts.	Same	Same	Potential increase in administrative costs	Medium
5. Red & Black Shuttle	Invest in enhancements to the Red & Black shuttle as a means to ensure safe campus travel and serve trips to and from parking lots. Establish framework for potential expansion beyond immediate campus.	None	None	SDSU to evaluate the feasibility of the following: • Service Span: 7:30 AM - 11 PM • Frequency: 10-12 minutes • Type of Vehicle: "Cutaway" buses • # of vehicles: 3 cutaways with vans in reserve • Routing: 13-14 stops, similar route • Operators: Student recommended, contractors optional • Passenger Amenities: Stop improvements, marketing, branding	• Capital costs (1st year): $266,000 • Operating costs (annual): $362,700	High

Strategy	Description	Implementation - Upon Approval	Implementation - Short-term	Implementation - Long-term	Estimated Cost Impact	Potential Trip Reduction Impact
6. Bicycle and Pedestrian Network	Invest in bicycle and pedestrian infrastructure and programming as a means to increase the safety, convenience, and attractiveness of these travel modes.	None	SDSU to evaluate the feasibility of the following: • Work with SANDAG and City to install bicycle and pedestrian facilities on key streets serving the SDSU campus • Perform a detailed bicycle parking study • Replace bicycle parking racks with more efficient racks • Increase bicycle parking stock to support 3,300 bicycles • Add self-service bicycle repair stands • Develop coordinated bicycle/pedestrian wayfinding program • Develop bicycle commuter program • Distribute local and regional bicycle maps • Provide traffic skills classes • Offer discount programs with local bicycle retailers • Improve safety and enforcement	N/A	Approximately $90,000 to $115,000 per year (not including capital costs for street improvements)	Medium
7. Bicycle and Pedestrian Network "Plus"	Invest in bicycle and pedestrian infrastructure and programming as a means to increase the safety, convenience, and attractiveness of these travel modes.	None	None	SDSU to evaluate the feasibility of the following: • All Short-term actions • Implement an on-campus bike station • Install triple bike bus racks on all buses serving SDSU • Establish a bicycle sharing program • Add secure bike parking (lockers) on campus • Targeted improvements to College Ave. and Montezuma Rd.	• Bike station: approximately $580,000 in capital costs, $130,000 in annual operating costs. • Additional bicycle lockers: $25,000 per year • Bicycle sharing system: $40,000 in capital costs, and another $14,000 in annual operating costs	Medium to High
8. Ridesharing	Work with SANDAG to better integrate iCommute program and increase attractiveness of ridesharing.	SDSU to evaluate the feasibility of the following: • Online commuter information center • Promote iCommute and increase awareness of Guaranteed-Ride-Home program • Ensure that SDSU network is on iCommute Trip Tracker	None	None	Minimal	Medium
9. SDSU GRH Program	Implement a Guaranteed-Ride-Home program through SDSU	None	None	Implement a Guaranteed Ride Home program through SDSU	$25,000 to $30,000	Low to Medium
10. Car Sharing	Work with car sharing companies to expand and diversify car sharing on campus.	SDSU to evaluate the feasibility of the following: • Work with Zipcar to evaluate additional car sharing at the following facilities: 1st floor of all parking structures; Parking lots close to campus core; Near on-campus housing. • Continue to work with Car2Go to expand operations on campus	Same	Same	Minimal	Low to Medium

Strategy	Description	Implementation - Upon Approval	Implementation - Short-term	Implementation - Long-term	Estimated Cost Impact	Potential Trip Reduction Impact
11. On- and Near-Campus Housing and Amenities	Continue to prioritize the development of additional on-campus housing, amenities, and services for both students and faculty/staff.	None	None	TBD	TBD	Medium
12. TDM Outreach and Marketing	Increase investments in TDM outreach and marketing.	None	SDSU to evaluate the feasibility of the following: • Transportation and TDM website: Develop new, stand-alone website which provides key information and resources. • Social media: Develop social media platforms for TDM programs, including Twitter and Facebook. • Materials and Outreach: Develop informational materials to distribute throughout campus and at key events.	Same	$20,000 - $30,000 in capital costs plus ongoing administrative costs	Low
13. TDM Staffing & Coordinator	Increase staffing capabilities at SDSU to manage and administer TDM programs, including the hiring of a dedicated TDM coordinator.	None	SDSU to evaluate the feasibility of assigning additional staff in a cost-effective and efficient manner, and hiring a dedicated TDM coordinator.	N/A	$15,000 to $75,000	Low to Medium
14. Annual Monitoring and Evaluation	Develop an annual monitoring and evaluation program to document parking occupancies, mode shifts, and TDM program satisfaction.	None	SDSU to evaluate the feasibility of the following: • Conduct an annual student and faculty/staff travel demand survey using iCommute's services. • Conduct and analyze parking occupancy each semester for motor vehicles and bicycles. • Conduct annual bicycle counts: • Gather transit ridership data from San Diego MTS. • Count daily Red & Black shuttle ridership by route and stop. • Monitor traffic collisions near SDSU campus. • Prepare an annual report describing travel demand, survey results, occupancy data, and safety trends.	Same	$10,000 per year	Low

3 PARKING ASSESSMENT

OCCUPANCY SURVEYS

As part of SDSU's efforts to improve its transportation services, a detailed assessment of on-campus parking conditions was undertaken. This assessment included a comprehensive inventory of existing and proposed facilities, as well as two parking studies (March 2012 and September 2012) to document existing parking trends and behaviors. Included below is a brief summary of the findings from those two parking studies. A more detailed discussion of parking occupancy and parking behavior is included in Appendix B.

Spring 2012

Figure 3-1 provides a summary of the surveyed parking inventory at the SDSU campus by facility type (parking structure versus surface lot) and by user group. The majority of parking is located within the parking structures (75% of spaces), while 74% of all parking spaces are designated for students and 20% for faculty/staff.

Figure 3-1 Inventory of SDSU Parking Facilities[18]

Type	Surface		Structure		Total	
	#	%	#	%	#	%
Student	2,508	73%	7,746	74%	10,254	74%
Faculty/Staff	493	14%	2,214	21%	2,707	20%
SV/SP	182	5%	281	3%	463	3%
Disabled	67	2%	161	2%	228	2%
Metered (Visitor)	186	5%	0	0%	186	1%
Loading	1	0%	0	0%	1	0%
TOTAL	**3,437**	**25%**	**10,402**	**75%**	**13,839**	**100%**

In March 2012, SDSU staff conducted parking occupancy counts on a Tuesday and Wednesday at 11 AM, 2 PM, and 6 PM. Peak parking demand occurred at 11 AM on Tuesday when 74% of all parking spaces were occupied (see Figure 3-2). Occupancy was slightly lower during the Wednesday count when peak occupancy dropped to 62%. Figure 3-3 highlights the parking occupancies by each user group during the peak Tuesday observation period.

[18] Only includes vehicle parking spaces (no motorcycles) and only those spaces counted as part of the March 2012 occupancy counts. In all, there are 14,394 vehicle spaces and 282 motorcycle spaces on campus.

Figure 3-2 Parking Occupancy, by Day

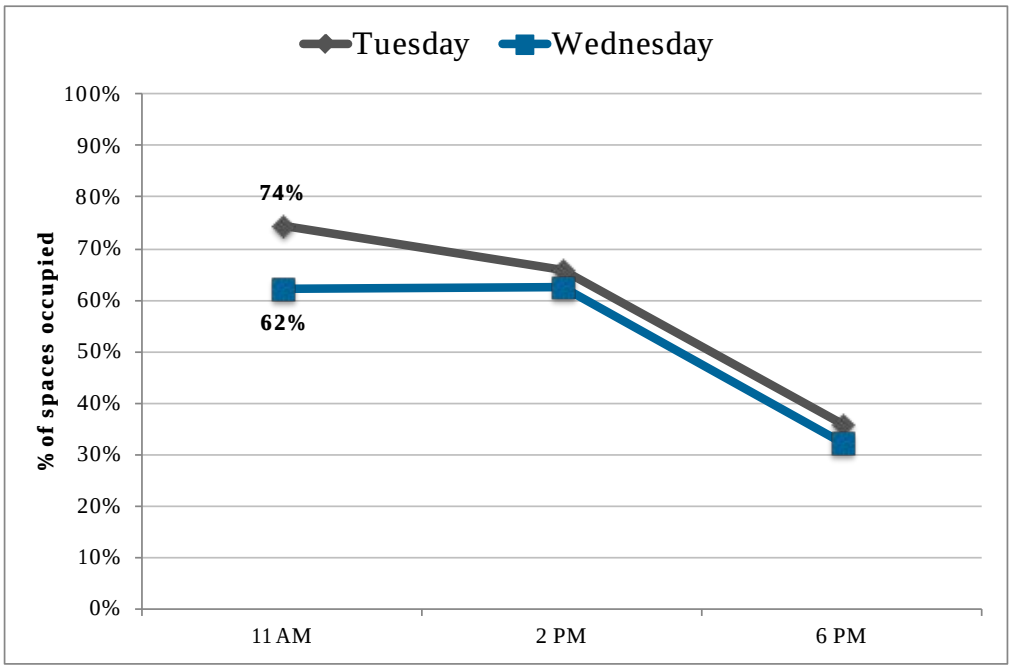
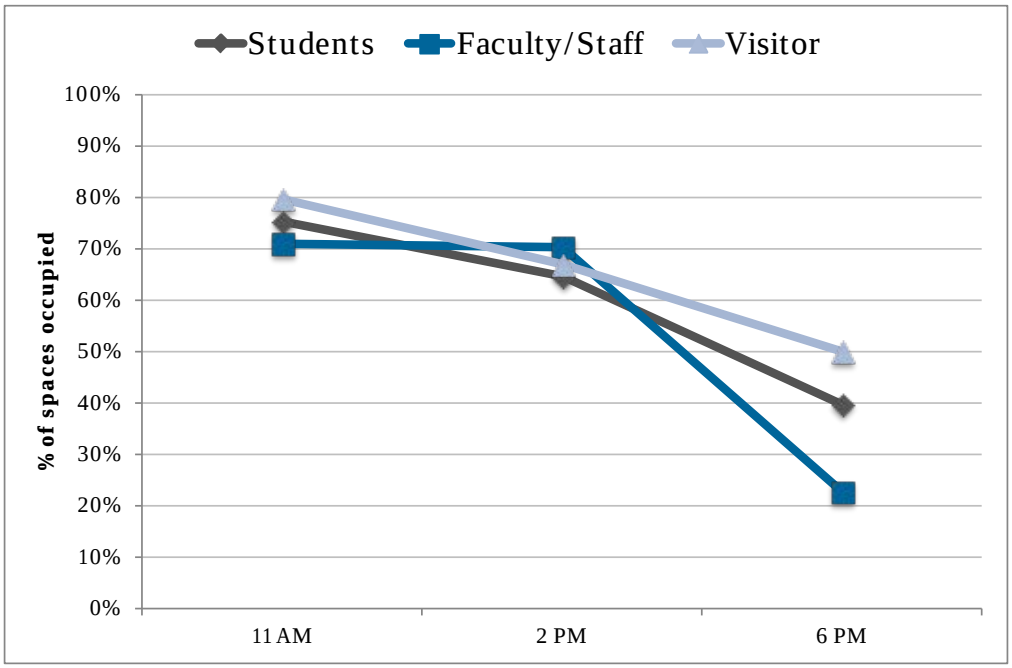


Figure 3-3 Parking Occupancy, by User Group (Tuesday)



Based on the peak parking demand of each group and their respective population figures, basic demand ratios can be derived, as shown in Figure 3-4. In the Spring 2012 semester, there were 3,052 resident students[19], 24,783 commuter students[20], and 3,308 faculty/staff[21]. Using the occupancy data from the

[19] Based on number of on-campus beds and assumption that they are 100% occupied.

[20] http://asir.sdsu.edu/app/summary.cfm?Rep=4

[21] http://bfa.sdsu.edu/~budfin/factsheet.htm

parking counts, we can establish that the peak parking demand rates for these three groups are .52, .26, and .67 vehicles per person, respectively (.33 for all groups combined).[22]

Figure 3-4 Peak Parking Demand Ratios, Spring 2012

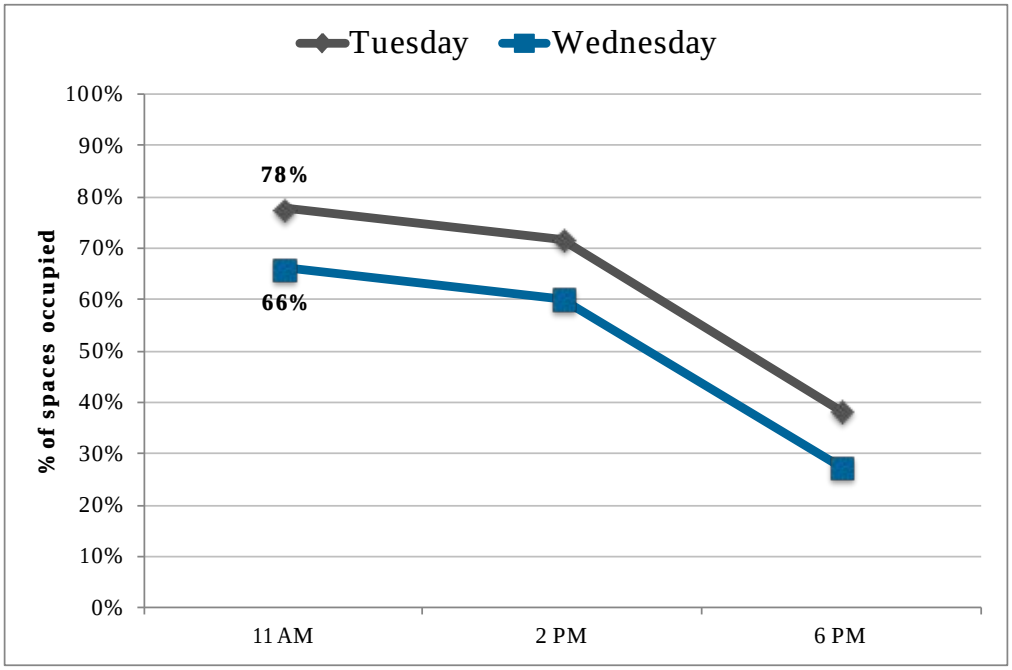
User Group	Population	Parking Demand	Demand Ratio
Resident Students	3,052	1,598	0.52
Commuter Students	24,783	6,479	0.26
Faculty/Staff	3,308	2,221	0.67
Total	31,143	10,298	0.33

Fall 2012

In September of 2012, SDSU staff conducted another parking study to evaluate the level of occupancy and parking behavior at SDSU. The methodology from the March counts were duplicated and parking data was gathered for a Tuesday and Wednesday. In general, parking trends were similar across the two observation periods, with slightly higher demand in September, which is not surprising given the higher enrollment during the Fall semester.

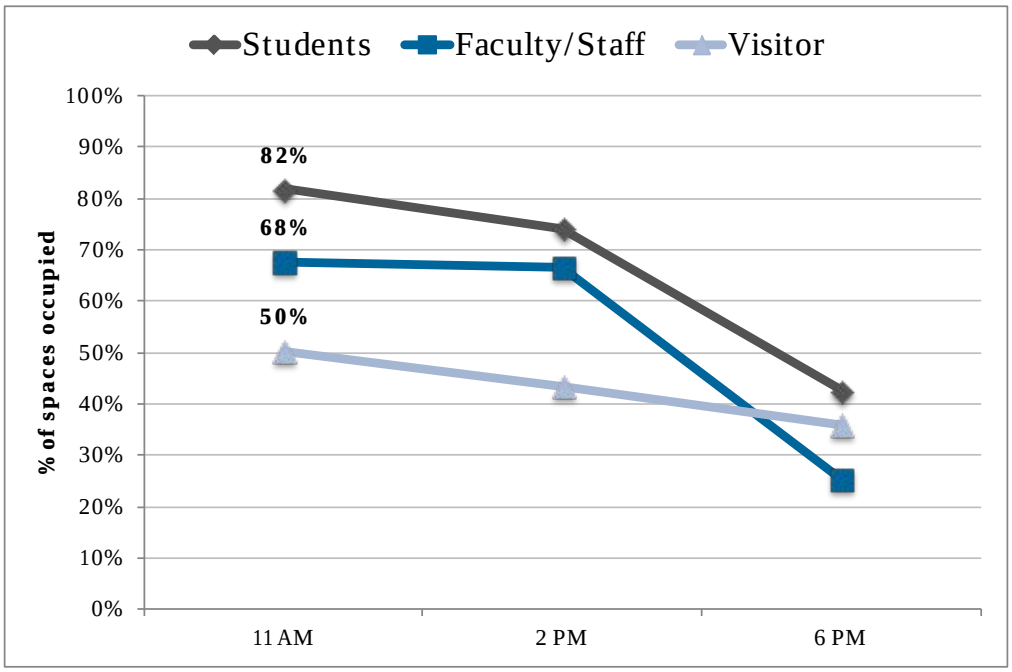
Once again, peak parking demand occurred at 11 AM on Tuesday when 78% of all parking spaces were occupied (see Figure 3-5). Occupancy was slightly lower during the Wednesday count when peak occupancy dropped to 66%. Figure 3-6 highlights the parking occupancies by each user group during the peak Tuesday observation period.

Figure 3-5 Parking Occupancy, by Day



[22] Although ITE parking demand rates are drawn from generalized national studies, it is useful to note here that SDSU's overall peak parking ratio of .33 closely corresponds with that of suburban university sites surveyed by ITE, which show a rate of .30.

Figure 3-6 Parking Occupancy, by User Group (Tuesday)



Based on the peak parking demand of each group and their respective population figures, basic demand ratios were derived again for September, as shown in Figure 3-7. In the Fall 2012 semester, there were 2,827 resident students[23], 28,016 commuter students[24], and 3,308 faculty/staff[25]. Using the occupancy data from the parking counts, we can establish that the peak parking demand rates for these three groups are .52, .26, and .66 vehicles per person, respectively (.32 for all groups combined). This is very similar to what was observed in the March 2012 counts.

Figure 3-7 Peak Parking Demand Ratios, Fall 2012

User Group	Population	Parking Demand	Demand Ratio
Resident Students	2,827	1,480	0.52
Commuter Students	28,016	7,198	0.26
Faculty/Staff	3,308	2,169	0.66
Total	34,151	10,847	0.32

[23] Based on number of on-campus beds and assumption that they are 100% occupied.

[24] http://asir.sdsu.edu/app/summary.cfm?Rep=4

[25] http://bfa.sdsu.edu/~budfin/factsheet.htm

PARKING DEMAND AND FINANCIAL MODELING

In order to estimate the future parking supply and demand at SDSU and gauge the travel and financial implications of new TDM strategies, a multi-stage parking model was developed. The steps in developing the model included:

1. Reviewing current parking supply and demand and current population, by user group (commuter students, resident students, faculty/staff). This data was obtained via the occupancy study conducted in March of 2012 and presented above, as well as in Appendix B.

2. Estimating future population of each user group.

3. Estimating future parking demand for each user group based on existing parking demand ratios (observed parked vehicles per person).

4. Projecting parking supply changes based on proposed loss or addition of parking facilities.

5. Measuring the revenue and expenditure impacts of both new TDM strategies and the effects of those measures on parking permit sales.

The following inputs were the major components of the financial model. Many of these inputs were documented and assessed in Appendix B.

- Campus population of commuter students, resident students, and faculty/staff from 2011/12
- Number of parking spaces on campus
- Parking utilization rates, based on the March 2012 study
- Future plans for campus parking supply
- Current and projected revenues and expenditures, including proposed TDM measures and parking permit sales

It is important to emphasize that the model utilized in this analysis is not designed to allow for specific or fine-grained estimates of the travel impacts of individual infrastructure investments. For example, the model will not be able to estimate the parking or travel demand impacts of the installation of a new bicycle parking facility. Nevertheless, this analysis will be crucial in determining which types of strategies to implement and the degree to which SDSU should invest in each potential strategy.

Model Assumptions

As with any modeling exercise where information is limited for key inputs, a number of assumptions were made for the financial modeling of the proposed TDM program. In general, a best estimate was used based on existing campus programs and revenues, experience with other cities, and professional judgment. This model used the assumptions listed below:

- Increases in campus population by user group were estimated based on consultation with SDSU staff. A linear growth rate was assumed from 2011/12 to 2024/25.
- Price elasticity of demand for parking was assumed to be -0.3 (i.e. a 10% increase in parking price reduces parking demand by approximately 3%).
- Annual inflation rate of 3%.
- Revenue and expenditure projections from 2011/12 to 2024/25 were based on existing parking fees and no scheduled fee increases.
- For all parking spaces, this study uses an “effective parking supply factor” of 95%. Effective supply is defined as the total number of parking spaces in a lot, less the percentage of spaces that the

parking operator wishes to have vacant even at the typical peak hour. Choosing an effective parking supply factor of 95% means that the operator wishes to have 5% of the parking supply vacant at peak hour. For the purposes of this analysis, the effective supply calculation combines commuter student, visitor, and faculty/staff spaces.

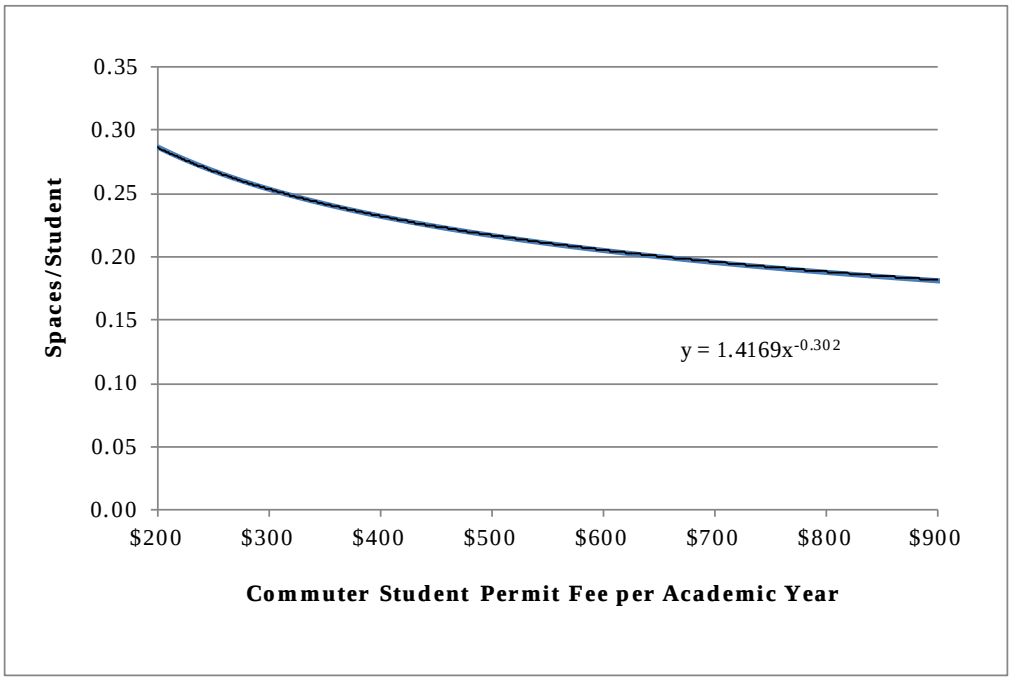
Scenario 1 – Baseline Scenario

Future Parking Supply and Demand

As documented in Appendix A, an increase in both student enrollment and the number of faculty/staff will result in a parking deficit, given current policies. In order to gauge at what point that deficit will occur, the Baseline Scenario examines the increased parking demand associated with an increasing school population and accounts for inflationary effects by incorporating a parking price elasticity of -0.3. This number represents a "midpoint" in values found in the national transportation research literature on parking demand elasticity with respect to price, which range from -.01 to -0.6, with -0.3 being the most frequently cited value.[26]

Figures 3-8 through 3-10 illustrate the effect of a -0.3 parking price elasticity on the demand of spaces per commuter student, spaces per resident student, and space per faculty/staff member. In brief, the figures demonstrate the fundamental principle of demand – as prices increase, demand declines.

Figure 3-8 Commuter Student Elasticity Curve



[26] Litman, Todd (2012). *Understanding Transport Demands and Elasticities: How Prices and Other Factors Affect Travel Behavior*. VTPI. http://www.vtpi.org/elasticities.pdf

Figure 3-9 Resident Student Elasticity Curve

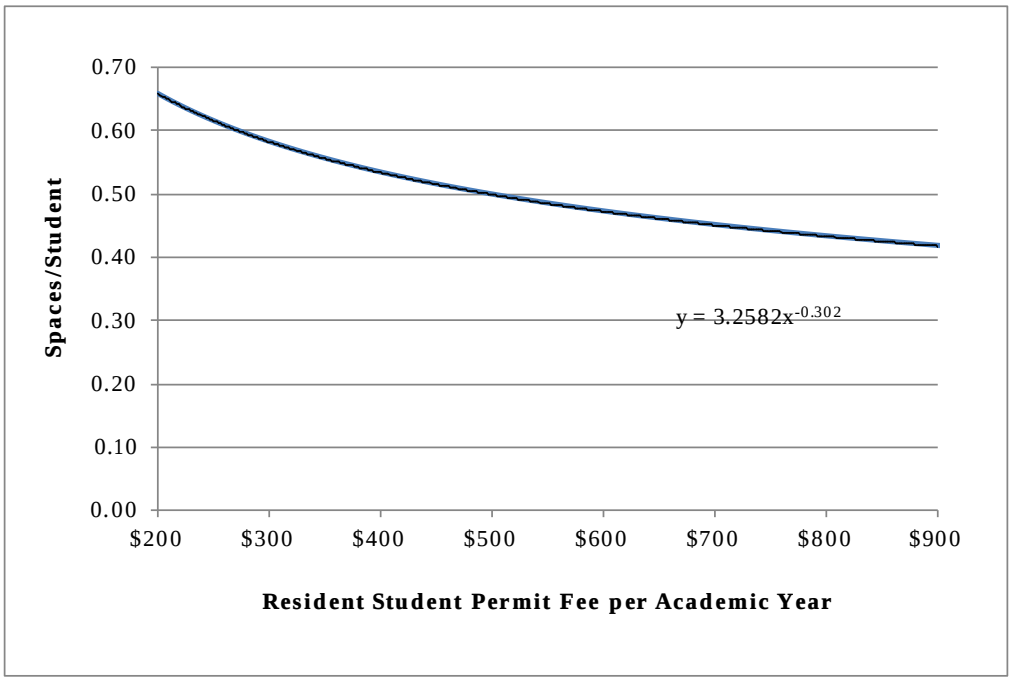
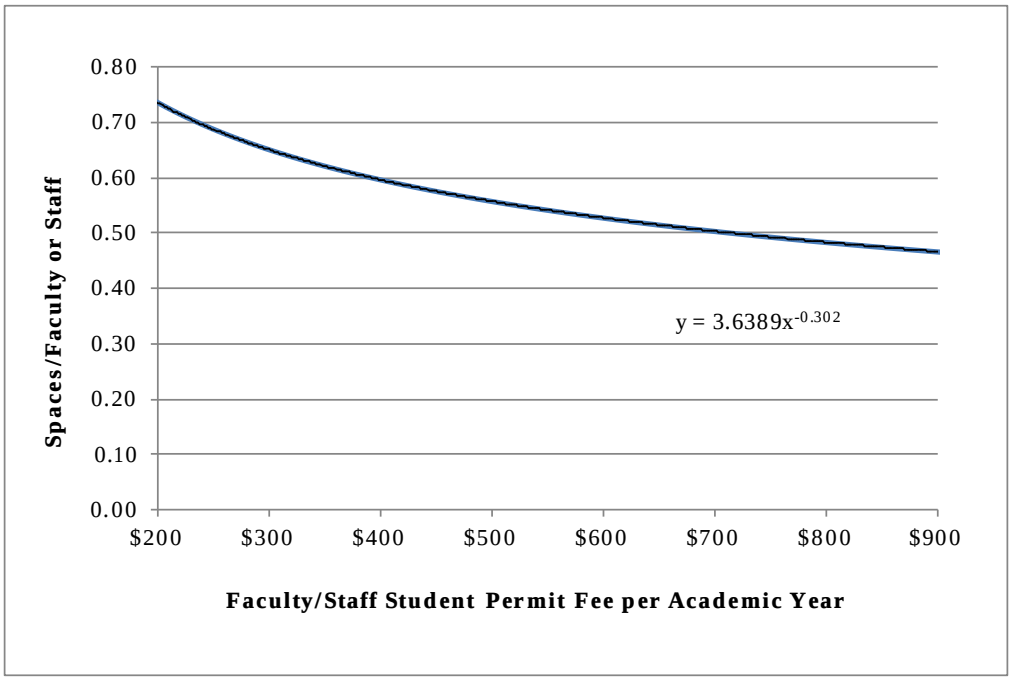
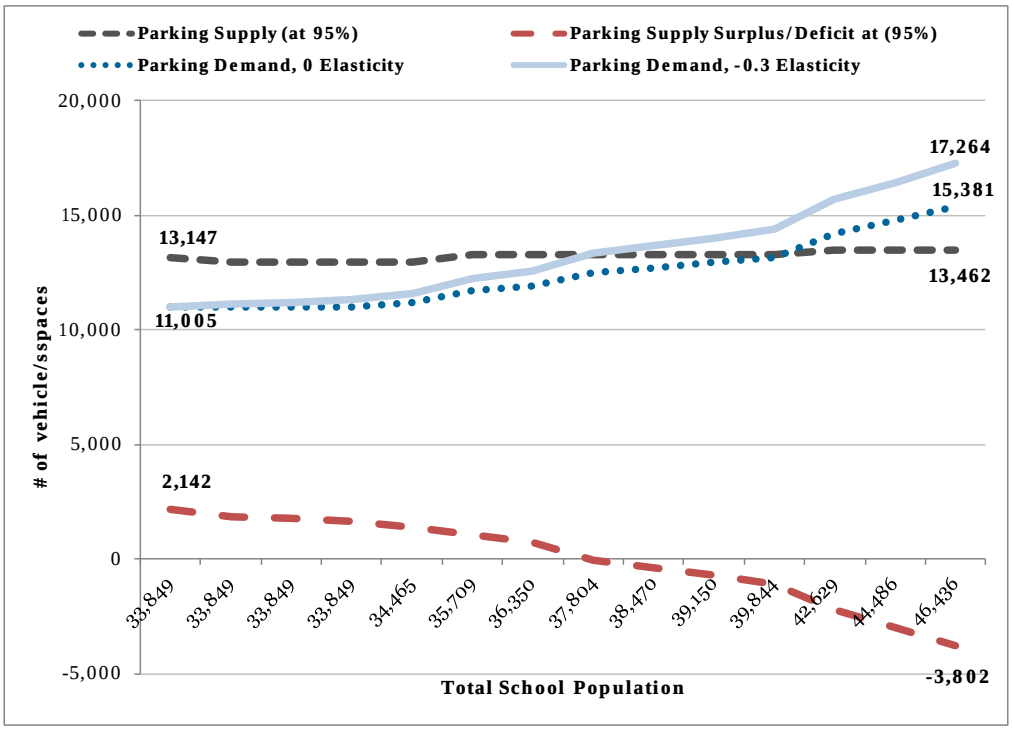


Figure 3-10 Faculty/Staff Student Elasticity Curve



Figures 3-11 and 3-12 illustrate the impact of an assumed parking price elasticity of -0.3 on projected parking demand. Given the growth projections for SDSU and assumed price elasticities, the Baseline Scenario results in an effective parking deficit when the total school population reaches approximately 37,500. This analysis assumes no parking price increases.

Figure 3-11 Projected Parking Demand, No Price Increases



Although not anticipated to occur, if commuter and resident student parking prices were raised beginning in the next school year to simply keep "real" parking prices at current levels (i.e. inflation-adjusted), a deficit would not occur until the total school population has reached approximately 39,500. Figure 3-12 illustrates this trend.

Figure 3-12 Projected Parking Demand, Price Increases Match Inflation

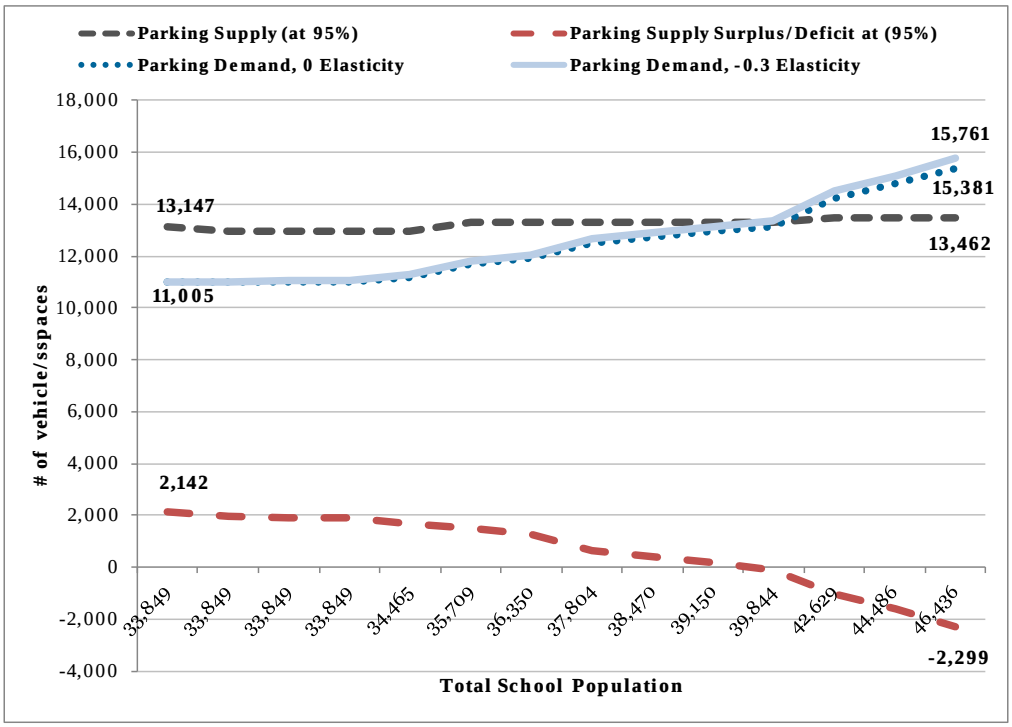


Figure 3-13 Summary of Projected Parking Demand, "Baseline" Scenario

Commuter Students & Visitors	27,489	27,489	27,489	27,489	28,039	28,600	29,172	29,755	30,350	30,957	31,576	33,155	34,813	36,553
Resident Students	3,052	3,052	3,052	3,052	3,052	3,668	3,668	4,468	4,468	4,468	4,468	5,484	5,484	5,484
Faculty/Staff	3,308	3,308	3,308	3,308	3,374	3,442	3,510	3,581	3,652	3,725	3,800	3,990	4,189	4,399
Total School Population	33,849	33,849	33,849	33,849	34,465	35,709	36,350	37,804	38,470	39,150	39,844	42,629	44,486	46,436
Projected Commuter Student Parking Demand, Assuming an Elasticity of "0"	7,187	7,187	7,187	7,187	7,330	7,477	7,626	7,779	7,935	8,093	8,255	8,668	9,101	9,556
Projected Resident Student Parking Demand, Assuming an Elasticity of "0"	1,598	1,598	1,598	1,598	1,598	1,920	1,920	2,339	2,339	2,339	2,339	2,871	2,871	2,871
Projected Faculty/Staff Parking Demand, Assuming an Elasticity of "0"	2,221	2,221	2,221	2,221	2,265	2,311	2,357	2,404	2,452	2,501	2,551	2,679	2,813	2,953
Projected Total Parking Demand, Assuming an Elasticity of "0"	11,005	11,005	11,005	11,005	11,194	11,708	11,904	12,522	12,726	12,934	13,146	14,218	14,785	15,381
Price Index Assuming 3% Inflation	1.00	1.03	1.06	1.09	1.13	1.16	1.19	1.23	1.27	1.30	1.34	1.38	1.43	1.47
Commuter Student Price Increase Projected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Commuter Student Price, in Current Year Dollars	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270
Commuter Student Price in Real Dollars	$ 270	$ 262	$ 255	$ 247	$ 240	$ 233	$ 226	$ 220	$ 213	$ 207	$ 201	$ 195	$ 189	$ 184
% Reduction in Commuter Student Demand Resulting from the Projected Price Increase, Assuming an Elasticity of -0.3	0.0%	-0.8%	-1.7%	-2.6%	-3.6%	-4.5%	-5.4%	-6.4%	-7.3%	-8.3%	-9.3%	-10.2%	-11.2%	-12.2%
Resident Student Price Increase Projected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Resident Student Price, in Current Year Dollars	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426
Resident Student Price in Real Dollars	$ 426	$ 414	$ 402	$ 390	$ 378	$ 367	$ 357	$ 346	$ 336	$ 326	$ 317	$ 308	$ 299	$ 290
% Reduction in ResidentStudent Demand Resulting from the Projected Price Increase, Assuming an Elasticity of -0.3	0.0%	-0.9%	-1.8%	-2.7%	-3.6%	-4.5%	-5.5%	-6.4%	-7.4%	-8.3%	-9.3%	-10.3%	-11.3%	-12.3%
Faculty/Staff Price Increase Projected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Faculty/Staff Price, in Current Year Dollars	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270
Faculty/Staff Price in Real Dollars	$ 270	$ 262	$ 255	$ 247	$ 240	$ 233	$ 226	$ 220	$ 213	$ 207	$ 201	$ 195	$ 189	$ 184
% Reduction in Faculty/Staff Demand Resulting from the Projected Price Increase, Assuming an Elasticity of -0.3	0.0%	-0.8%	-1.7%	-2.6%	-3.6%	-4.5%	-5.4%	-6.4%	-7.3%	-8.3%	-9.3%	-10.2%	-11.2%	-12.2%
Adjusted Commuter Student Parking Demand (After Adjusting for Elasticity)	7,187	7,246	7,311	7,377	7,592	7,813	8,041	8,275	8,516	8,764	9,020	9,556	10,123	10,725
Adjusted Resident Student Parking Demand (After Adjusting for Elasticity)	1,598	1,612	1,626	1,641	1,656	2,008	2,026	2,490	2,512	2,535	2,557	3,167	3,195	3,224
Adjusted Faculty/Staff Parking Demand (After Adjusting for Elasticity)	2,221	2,239	2,260	2,280	2,346	2,415	2,485	2,557	2,632	2,709	2,788	2,953	3,129	3,315
Adjusted Total Parking Demand (After Adjusting for Elasticity)	11,005	11,097	11,197	11,297	11,594	12,235	12,551	13,322	13,660	14,008	14,365	15,676	16,447	17,264
Projected Supply	13,839	13,640	13,640	13,640	13,640	13,980	13,980	13,980	13,980	13,980	13,980	14,170	14,170	14,170
Projected Effective Supply (95%)	13,147	12,958	12,958	12,958	12,958	13,281	13,281	13,281	13,281	13,281	13,281	13,462	13,462	13,462
Projected Total Campus Surplus/Deficit	2,834	2,543	2,443	2,343	2,046	1,745	1,429	658	320	-28	-385	-1,506	-2,277	-3,094
Projected Total Campus Effective Supply Surplus/Deficit (95%)	**2,142**	**1,861**	**1,761**	**1,661**	**1,364**	**1,046**	**730**	**-41**	**-379**	**-727**	**-1,084**	**-2,214**	**-2,986**	**-3,802**

Parking System Revenue and Expense Review

Parking expense and revenue data supplied by SDSU indicates that a Baseline Scenario, while resulting in an eventual deficit in parking spaces, will be revenue-neutral.

Scenario 2 – Preferred TDM Scenario

The Baseline Scenario described above assumes that there is no change from the current TDM program utilized by SDSU. The Preferred Scenario projects the parking demand and financial impacts of instituting or expanding TDM measures in a phased manner as described in Chapter 2 and 5, while still weighing the effects of parking price elasticity.

In the Preferred Scenario, the expanded TDM program will delay a parking deficit until the total school population reaches approximately 39,150, a level slightly higher than that of the Baseline Scenario. At this time, SDSU does not anticipate implementing any parking fee increases for its affiliates. As a result, the model reflects that the real cost of parking permits will continually become less expensive, resulting in a corresponding increase in parking demand. Some of this additional parking demand will be offset by implementation of the other TDM strategies described in Chapter 2. As shown in Figures 3-14 and 3-15, however, without changes to parking prices, SDSU will have a parking deficit of more than 2,100 spaces by the time campus population approaches 46,500. This analysis further indicates that pricing of parking is one of the most effective means of reducing parking demand.

Figure 3-14 Projected Parking Demand

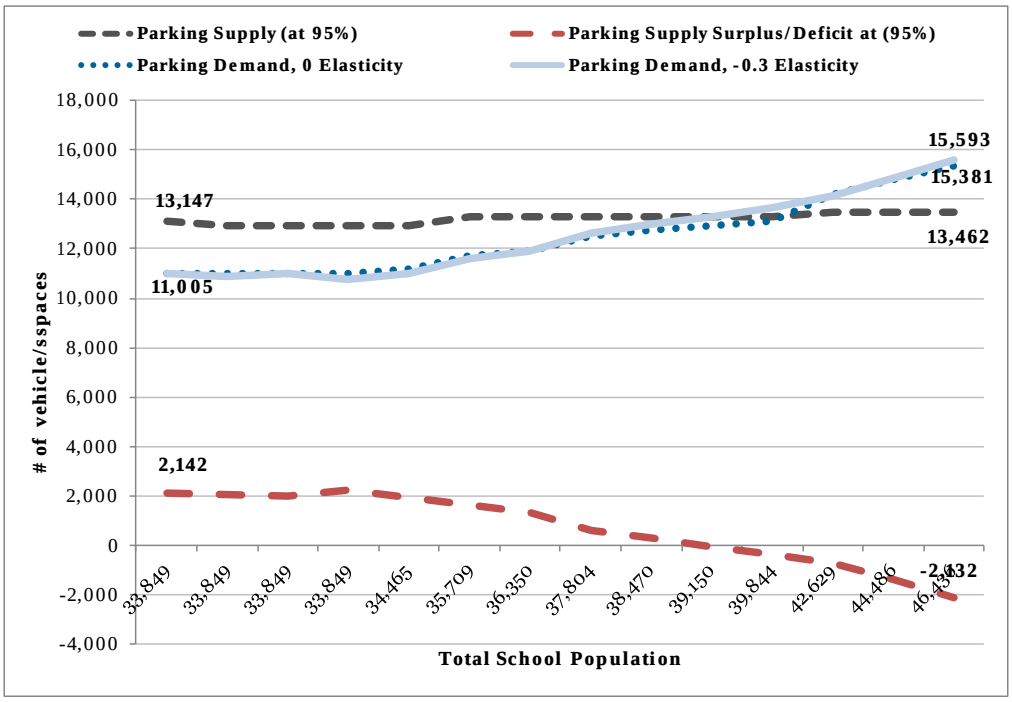


Figure 3-15 Projected Parking Demand, "Preferred" Scenario

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Commuter Students & Visitors	27,489	27,489	27,489	27,489	28,039	28,600	29,172	29,755	30,350	30,957	31,576	33,155	34,813	36,553
Resident Students	3,052	3,052	3,052	3,052	3,052	3,668	3,668	4,468	4,468	4,468	4,468	5,484	5,484	5,484
Faculty/Staff	3,308	3,308	3,308	3,308	3,374	3,442	3,510	3,581	3,652	3,725	3,800	3,990	4,189	4,399
Total School Population	33,849	33,849	33,849	33,849	34,465	35,709	36,350	37,804	38,470	39,150	39,844	42,629	44,486	46,436
Projected Commuter Student Parking Demand, Assuming an Elasticity of 0	7,187	7,187	7,187	7,187	7,330	7,477	7,626	7,779	7,935	8,093	8,255	8,668	9,101	9,556
Projected Resident Student Parking Demand, Assuming an Elasticity of 0	1,598	1,598	1,598	1,598	1,598	1,920	1,920	2,339	2,339	2,339	2,339	2,871	2,871	2,871
Projected Faculty/Staff Parking Demand, Assuming an Elasticity of 0	2,221	2,221	2,221	2,221	2,265	2,311	2,357	2,404	2,452	2,501	2,551	2,679	2,813	2,953
Projected Total Parking Demand, Assuming an Elasticity of "0"	11,005	11,005	11,005	11,005	11,194	11,708	11,904	12,522	12,726	12,934	13,146	14,218	14,785	15,381
Price Index Assuming 3% Inflation	1.00	1.03	1.06	1.09	1.13	1.16	1.19	1.23	1.27	1.30	1.34	1.38	1.43	1.47
Commuter Student Price Increase Projected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Commuter Student Price, in Current Year Dollars	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270
Commuter Student Price in Real Dollars	$ 270	$ 262	$ 255	$ 247	$ 240	$ 233	$ 226	$ 220	$ 213	$ 207	$ 201	$ 195	$ 189	$ 184
% Reduction in Commuter Student Demand Resulting from the Projected Price Increase, Assuming an Elasticity of -0.3	0.0%	1.2%	0.3%	2.5%	1.6%	0.7%	-0.2%	-1.1%	-2.0%	-2.9%	-3.8%	1.9%	1.0%	0.1%
Resident Student Price Increase Projected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Resident Student Price, in Current Year Dollars	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426	$ 426
Resident Student Price in Real Dollars	$ 426	$ 414	$ 402	$ 390	$ 378	$ 367	$ 357	$ 346	$ 336	$ 326	$ 317	$ 308	$ 299	$ 290
% Reduction in ResidentStudent Demand Resulting from the Projected Price Increase, Assuming an Elasticity of -0.3	0.0%	1.1%	0.3%	2.4%	1.6%	0.7%	-0.2%	-1.1%	-2.0%	-2.9%	-3.9%	-2.0%	-2.9%	-3.9%
Faculty/Staff Price Increase Projected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Faculty/Staff Price, in Current Year Dollars	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270	$ 270
Faculty/Staff Price in Real Dollars	$ 270	$ 262	$ 255	$ 247	$ 240	$ 233	$ 226	$ 220	$ 213	$ 207	$ 201	$ 195	$ 189	$ 184
% Reduction in Faculty/Staff Demand Resulting from the Projected Price Increase, Assuming an Elasticity of -0.3	0.0%	1.2%	0.3%	2.5%	1.6%	0.7%	-0.2%	-1.1%	-2.0%	-2.9%	-3.8%	-2.0%	-2.9%	-3.8%
Adjusted Commuter Student Parking Demand (After Adjusting for Elasticity)	7,187	7,101	7,165	7,008	7,212	7,422	7,639	7,861	8,090	8,326	8,569	8,505	9,010	9,545
Adjusted Resident Student Parking Demand (After Adjusting for Elasticity)	1,598	1,580	1,594	1,559	1,573	1,907	1,924	2,365	2,386	2,408	2,429	2,929	2,956	2,982
Adjusted Faculty/Staff Parking Demand (After Adjusting for Elasticity)	2,221	2,195	2,214	2,166	2,229	2,294	2,361	2,430	2,500	2,573	2,648	2,732	2,894	3,066
Adjusted Total Parking Demand (After Adjusting for Elasticity)	11,005	10,876	10,973	10,733	11,014	11,623	11,924	12,656	12,977	13,307	13,646	14,166	14,860	15,593
Projected Supply	13,839	13,640	13,640	13,640	13,640	13,980	13,980	13,980	13,980	13,980	13,980	14,170	14,170	14,170
Projected Effective Supply (95%)	13,147	12,958	12,958	12,958	12,958	13,281	13,281	13,281	13,281	13,281	13,281	13,462	13,462	13,462
Projected Total Campus Surplus/Deficit	2,834	2,764	2,667	2,907	2,626	2,357	2,056	1,324	1,003	673	334	4	-690	-1,423
Projected Total Campus Effective Supply Surplus/Deficit (95%)	**2,142**	**2,082**	**1,985**	**2,225**	**1,944**	**1,658**	**1,357**	**625**	**304**	**-26**	**-365**	**-704**	**-1,398**	**-2,132**

Parking System Revenue and Expense Review

At this time, SDSU has indicated no plans to raise or adjust their parking fees to finance the additional costs of the proposed TDM programs and policies outlined in Chapter 2. As a result, implementation of any new TDM programs will require SDSU to either utilize existing parking revenue, other university resources, or identify new sources of revenue. Potential new funding mechanisms are described in greater detail below.

POTENTIAL FUNDING STRATEGIES

Outlined below is a brief summary of potential funding strategies by which to finance implementation of an SDSU TDM program. Not surprisingly, in the current economic context transportation funding is a major uncertainty as there is greater competition for increasingly scarce local, regional, state, and federal dollars. As a result, universities and colleges typically make significant financial commitments to ensure that their TDM programs can be implemented on an effective scale. Moving forward, SDSU will have to balance its desire for reductions in parking demand and vehicle trips with the financial costs of program implementation. Potential funding sources include:

- **Parking revenue:** Many universities across the country dedicate portions of their parking revenue to fund their TDM and transportation programs, and have found that the use of parking revenue to finance TDM efforts has proven to be far more cost effective than typical supply-side strategies (i.e. building new parking facilities). Furthermore, by using the revenue they generate from parking, these universities do not need to rely on general fund revenue for their transportation programs.

  SDSU's most conspicuous funding source is the revenue it generates from its parking facilities. As SDSU moves forward with implementation of its TDM program, it should continue to evaluate the use of pricing of its parking facilities to better manage demand, as well as to generate additional revenue to finance new transportation programs that support its goals for reduced parking demand.
- **Capital Grant Programs:** It is recommended that SDSU evaluate opportunities to collaborate with the City and County of San Diego to fund capital projects, such as bicycle, pedestrian, and transit improvements. Because universities tend to generate high numbers of bicyclist, pedestrians, and transit riders, other cities and counties have been very successful in bolstering their regional and state funding applications and securing grant funding through such partnerships. Potential grant programs include:
  - Bicycle Transportation Account (Caltrans)
  - *TransNet Active Transportation Grant Program* (SANDAG)
  - *Transportation Development Act (TDA) Article 3* (SANDAG)
  - *TransNet Smart Growth Incentive Program* (SANDAG)
- **Other:**
  - Advertising revenue (Red & Black shuttle, bike sharing, etc.)
  - Developer fees and assessments

4 CAMPUS TRAVEL SURVEY

In the Fall of 2012 SDSU distributed a campus-wide travel survey to faculty, staff, and students. The survey included a series of questions about how SDSU affiliates travel to and from campus, their experiences with existing transportation services at SDSU, and how future services may impact their travel behavior. The survey was distributed online via SurveyMonkey and a total of 4,791 responses were received for a response rate of approximately 13%.[27] For future surveys, SDSU may wish to utilize incentives to increase student participation, such as a cash or prize.

The results of the survey are based on a relatively small sample of the campus population. As such, the results must be considered in conjunction with other studies conducted by SDSU over the years to reach any definitive conclusion regarding campus travel habits and patterns. Nevertheless, the survey results provide useful information in establishing a "baseline" scenario for future surveys.

This chapter provides a summary of the findings from the survey and establishes the baseline scenario by which future surveys can be utilized to track progress towards campus transportation and sustainability goals.

AFFILIATE STATUS

Figure 4-1 shows the breakdown of survey responses by affiliate status. In brief, roughly 77% of the survey responses were from students, while 23% of responses were from SDSU staff or faculty members. In comparison to the proportion of actual number of affiliates, faculty and staff were slightly overrepresented in the survey.

Figure 4-1 Number of Survey Respondents, by Affiliate Status

Affiliate Status	#	%
Student	3,287	69%
Staff	786	16%
Post-grad Student	369	8%
Faculty	349	7%
TOTAL	**4,791**	**100%**

[27] Based on 37,388 students, faculty, and staff in FY 2011-12 (http://bfa.sdsu.edu/~budfin/pdf/1112FactsSheet.pdf).

MODE OF TRAVEL

Survey respondents were asked to indicate their primary mode of travel to campus. Figure 4-2 summarizes the results. In all, driving alone was the most common travel mode at 58%, with transit second at 17% of responses. When analyzed according to affiliate status, however, the mode shares varied quite substantially. In brief, faculty and staff were much more likely to drive alone to campus than take transit or another mode. Post-graduate and undergraduate students drive alone at a much lower rate and instead take transit, walk, or bike more frequently. Given that many undergraduates live close to campus, it is not surprising that the walk share for these students is at 18%. Biking rates are relatively consistent across the affiliate groups, with approximately 6% of undergrads bicycling to campus. Staff members had the lowest bicycling rates at 1%.

Figure 4-2 Mode Share to Campus, by Affiliate Status

Mode	All	Faculty	Staff	Post-Grad	Undergrad
Drive Alone	58%	79%	84%	67%	48%
Transit	17%	9%	6%	17%	20%
Walk	13%	3%	2%	3%	18%
Rideshare	6%	4%	7%	7%	7%
Bike	5%	4%	1%	5%	6%
Other	1%	1%	1%	1%	2%

The survey also asked respondents to indicate how many days each week they come to campus by a particular mode. Figure 4-3 shows that walking and driving alone were the most consistently used modes (5 days per week). By contrast, “other,” ridesharing, or bicycling were the modes that were more likely to be utilized on only one or two days of the week.

Figure 4-3 Frequency of Mode of Travel

Mode	1-2 days	3-4 days	5 days
Drive Alone	26%	34%	40%
Transit	29%	34%	37%
Walk	23%	22%	55%
Rideshare	62%	24%	14%
Bike	47%	23%	30%
Other	63%	18%	19%

HOME ZIP CODE AND TRIP DISTANCE

Figure 4-4 summarizes the home zip code for the survey respondents. The most frequent zip code for survey respondents was 92115, which encompasses the SDSU campus and neighborhoods to the south between I-8 and Highway 94. In general, most affiliates are within the greater San

Diego County, but it is also evident that many SDSU affiliates live a substantial distance from the campus and commute from neighborhoods throughout the region.

Figure 4-5 summarizes travel distance to campus, as estimated by the respondent. The most common trip distance for all affiliates is 10-20 miles at 29%. It should be noted that 38% of all affiliates live within five miles of campus and almost one-fourth live within two miles of campus. By contrast, as shown in Figure 4-2, about 18% of affiliates walk or bike to campus. More specifically, 8% of staff members live within two miles of campus, yet only 3% walk or bike to campus.

Undergraduate students have the most diverse profile of resident distance from campus. For example, 10% indicate they live on campus and another 20% live within two miles. However, another 28% state that they are commuting between 10-20 miles to get to campus. Finally, 10% of undergraduate students live more than 20 miles from SDSU.

Figure 4-4 Residence Zip Code

Zip Code	#	%
92115 - San Diego	1,009	21.1%
92120 - San Diego	209	4.4%
91942 - La Mesa	183	3.8%
92109 - San Diego	147	3.1%
92116 - San Diego	130	2.7%
92126 - San Diego	123	2.6%
92104 - San Diego	122	2.5%
92020 - El Cajon	105	2.2%
All Others	2,761	57.7%
TOTAL	4,789	100.0%

Figure 4-5 Trip Distance to Campus, by Affiliate Status

Distance	All	Faculty	Staff	Post-Grad	Undergrad
Live on campus	7%	0%	0%	0%	10%
Less than 1 mile	8%	4%	2%	4%	10%
1-2 miles	9%	7%	6%	10%	10%
2-5 miles	14%	20%	18%	15%	12%
5-10 miles	21%	26%	28%	28%	19%
10-20 miles	29%	26%	33%	28%	28%
20+ miles	12%	18%	12%	15%	10%

TRAVEL TIME

Figure 4-6 summarizes the travel time to campus by affiliate status. The most common travel time for all affiliates was 10-20 minutes at 37%, while roughly 21% of campus affiliates had less than a ten minute commute to campus. Only 8% of affiliates had a trip of more than 45 minutes. Not surprisingly, undergraduate students had the largest share of individuals with the shortest commute time to campus. However, 8% of undergraduates are commuting more than 45 minutes to get to SDSU.

Figure 4-6 Travel Time to Campus, by Affiliate Status

Travel Time	All	Faculty	Staff	Post-Grad	Undergrad
< 10 minutes	21%	19%	17%	13%	23%
10-20 minutes	37%	36%	40%	40%	35%
20-30 minutes	23%	20%	25%	23%	23%
30-45 minutes	11%	15%	11%	13%	10%
45+ minutes	8%	9%	6%	10%	8%

USE OF TRANSIT

Question #7 of the survey asked respondents to select from a series of issues for why they do not utilize the various transit services to and from SDSU more frequently. In all, the most common reason selected was the fact that transit was not time competitive with other modes of travel. This was the case for all of the affiliate groups. The location of the bus stops was also chosen as a primary reason for limited transit use for faculty and staff, but was less of an issue for students. Affiliates did not indicate that safety and cost were primary factors in reducing transit use, but undergraduate students did indicate safety concerns at the highest rate of all the groups. The complete results are shown in Figure 4-7 on the following page.

BICYCLING AND WALKING

Question #8 of the survey asked respondents to select from a series of issues for why they do not bicycle or walk more to campus. In all, the most common reason selected was that SDSU was too far from their home to bicycle or walk. For example, 71% of the undergraduate students indicate that it is too far to bicycle or walk, which is relatively consistent with the finding that about only 30% of undergraduates live within two miles of campus. Traffic safety was seen as a bigger deterrent for faculty and staff than students, which is likely reflective of the fact that faculty and staff tend to live farther away and may not have access to any of the bicycle or pedestrian facilities directly serving campus. The complete results are shown in Figure 4-8 on the following page.

TRANSPORTATION IMPROVEMENTS

Survey respondents were asked to identify which transportation programs and improvements would encourage them to utilize transit, bicycling, walking, or ridesharing more frequently. Figure 4-9 summarizes the results. In general, a subsidized transit pass was the most popular of the measures with 69% of respondents indicating a subsidized pass would definitely or potentially make them more likely to use transit. Students also indicated that additional bicycle

infrastructure would make them more likely to bicycle. Additional car sharing vehicles was the program with the lowest preference among all affiliate groups.

Figure 4-7 Factors Preventing Transit Use, by Affiliate Status

Stated Reason	ALL			Faculty			Staff			Post Grad			Undergrad		
	Yes	Maybe	No	Yes	Maybe	No	Yes	Maybe	No	Yes	Maybe	No	Yes	Maybe	No
R&B Shuttle doesn't run during day	7%	10%	84%	2%	6%	92%	4%	6%	90%	3%	11%	87%	8%	11%	81%
Not worth buying pass	25%	9%	66%	30%	10%	60%	7%	4%	89%	45%	11%	43%	25%	10%	66%
Too expensive	26%	21%	53%	25%	16%	58%	30%	18%	51%	19%	21%	60%	25%	22%	53%
Safety	28%	16%	55%	11%	8%	80%	23%	15%	61%	28%	16%	57%	31%	17%	52%
Already take transit	27%	4%	68%	20%	6%	75%	14%	3%	83%	28%	2%	70%	30%	5%	65%
Off-campus activities after school	50%	10%	40%	62%	9%	29%	63%	13%	25%	51%	8%	41%	46%	10%	45%
Inconvenient bus stops	54%	11%	35%	71%	9%	20%	69%	6%	25%	62%	12%	26%	47%	12%	40%
Slower than other mode	74%	8%	18%	78%	7%	15%	83%	6%	11%	79%	7%	14%	71%	9%	20%

Figure 4-8 Factors Preventing Bicycling and/or Walking to Campus, by Affiliate Status

Stated Reason	ALL			Faculty			Staff			Post Grad			Undergrad		
	Yes	Maybe	No	Yes	Maybe	No	Yes	Maybe	No	Yes	Maybe	No	Yes	Maybe	No
Not ready in time	31%	13%	56%	21%	18%	62%	38%	14%	48%	30%	12%	58%	30%	13%	57%
Already walk/bike	30%	3%	67%	18%	3%	80%	11%	2%	88%	17%	4%	78%	36%	3%	61%
Too hilly	42%	13%	45%	51%	14%	34%	56%	9%	34%	40%	10%	49%	38%	13%	48%
Traffic safety	42%	13%	45%	61%	13%	26%	63%	9%	27%	45%	12%	44%	35%	14%	51%
Weather	43%	19%	38%	41%	18%	41%	57%	19%	24%	36%	14%	50%	41%	19%	40%
Personal security	43%	14%	42%	32%	11%	57%	49%	12%	38%	42%	10%	48%	43%	16%	41%
Get sweaty	47%	16%	37%	53%	16%	30%	67%	10%	23%	44%	15%	41%	43%	17%	40%
Carry too much	59%	13%	29%	68%	11%	21%	58%	14%	28%	60%	13%	28%	58%	12%	30%
Too far	74%	6%	20%	80%	7%	13%	80%	7%	13%	82%	6%	12%	71%	6%	23%

Figure 4-9 Likelihood of Measure to Increase Transit, Rideshare, Bicycling, or Walking, by Affiliate Status

TDM Measure	ALL			Faculty			Staff			Post Grad			Undergrad		
	Yes	Maybe	No	Yes	Maybe	No	Yes	Maybe	No	Yes	Maybe	No	Yes	Maybe	No
More car sharing	18%	19%	63%	11%	12%	77%	14%	14%	72%	12%	20%	68%	20%	21%	59%
Pre-tax deductions	29%	20%	51%	29%	18%	53%	37%	19%	44%	25%	19%	56%	28%	20%	52%
On- or near-campus housing	30%	15%	55%	10%	5%	85%	9%	8%	83%	18%	12%	70%	38%	17%	45%
Ridematching program	31%	23%	46%	13%	19%	68%	29%	20%	51%	31%	23%	46%	34%	24%	42%
More bicycle routes	34%	15%	50%	28%	14%	59%	21%	13%	65%	35%	14%	51%	38%	16%	46%
More bicycle parking	36%	14%	49%	20%	12%	68%	19%	11%	70%	28%	17%	55%	42%	15%	43%
Increased shuttle frequency / daytime service	39%	18%	43%	23%	14%	63%	25%	17%	58%	37%	19%	44%	43%	19%	38%
Preferential parking for ridesharing	38%	20%	42%	12%	13%	75%	25%	17%	58%	34%	21%	45%	44%	20%	36%
Financial incentives to drive alone less	51%	19%	31%	28%	21%	51%	45%	21%	34%	55%	17%	28%	53%	18%	28%
Subsidized transit passes	51%	18%	31%	36%	17%	47%	45%	18%	36%	52%	16%	31%	54%	19%	28%

5 TDM IMPLEMENTATION & MONITORING

This chapter presents an implementation plan for the TDM measures outlined in Chapter 2. The chapter provides a brief background of proposed TDM strategies and describes the methodology used to determine the type of measures and point at which they are activated by campus needs related to enrollment growth, increased parking demand, and critical traffic levels. Finally, it offers a program to monitor the success of the University's TDM program to allow staff to evaluate its success and make necessary adjustments over time.

APPROACH

The following principles should guide implementation of the TDM strategies recommended for evaluation and implementation, if feasible.

1. The TDM strategies and individual measures recommended for evaluation should be implemented over three phases to address potential parking and traffic congestion that may arise as the campus population grows.
    - Phase 1 (i.e. Upon Approval – TSP = > 33,849) consists of enhancements to existing TDM measures and lower cost new measures that should be taken in the near future.
    - Phase 2 (i.e. Short-Term – TSP = > 35,500) includes a more active TDM effort that may be needed to maintain good access to the campus in light of campus growth. Phase 1 measures are a part of Phase 2.
    - Phase 3 (i.e. Long-Term – TSP = > 36,500 – 40,000) continues Phase 1 and 2 measures while adding several new aggressive TDM measures that may be needed to ensure accessibility.
2. The cost of TDM strategies recommended for evaluation should be considered in the context of SDSU's transportation revenue and implemented as adequate funding is identified.
3. An active monitoring program providing information on the performance of the campus transportation system should be used to apprise staff if and when more effective TDM measures may be needed to reduce traffic and parking-related impacts associated with the future growth of the University.
4. Implementation of more effective TDM measures should be considered if and when the campus population increases.
5. The monitoring program should be used to assess the effectiveness of TDM measures as they are implemented.

NEEDS ASSESSMENT

A principle guiding the implementation of the TDM program is to augment TDM efforts if and when there is a need to ensure convenient parking on campus and access by transit, bicycling, walking, and ridesharing. The measure that best represents the overall demand for campus-related travel is Total School Population (TSP), a figure that includes all commuter students, resident students, faculty, and staff. Changes in TSP will impact travel demand for all modes and will influence the need for parking, transit service, and pedestrian/bicycle infrastructure. The impact of the TSP on campus access (and the need for increased TDM activity) is measured best by the adequacy of parking and the level of service of the street system in the vicinity of the campus.

Figure 5-1 shows the adequacy of campus parking (as measured by parking utilization at 95% use) under a Baseline Scenario, in which campus programs and travel behavior are assumed to be unchanged. Given no change in policy, a parking deficit occurs when TSP reaches approximately 37,700 persons.

Figure 5-1 Baseline Scenario Parking Demand

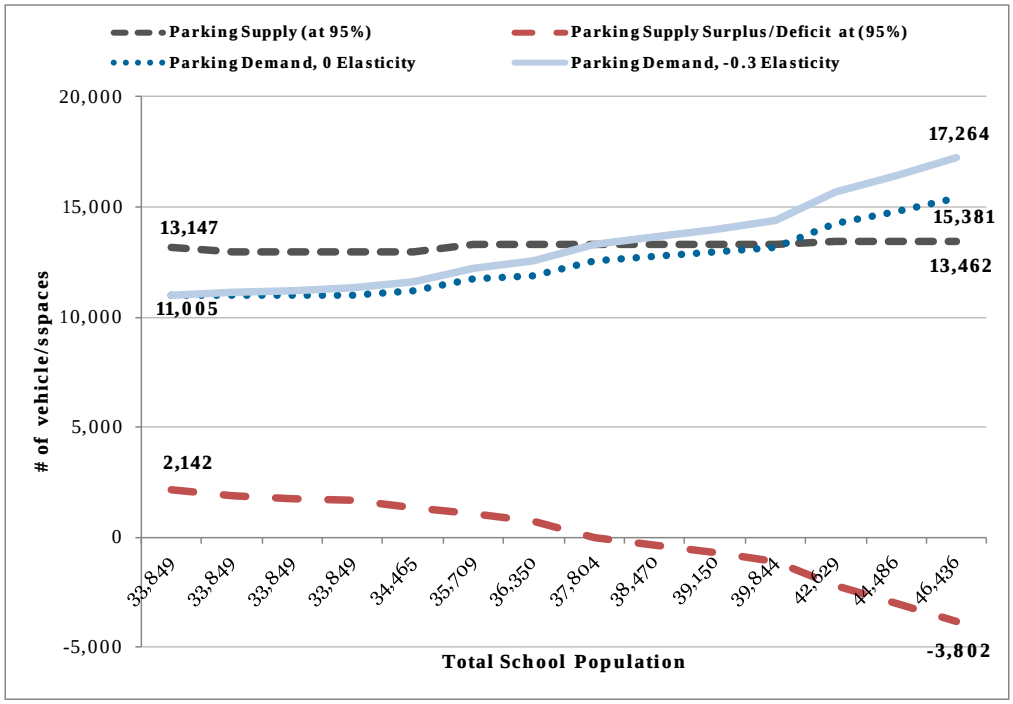
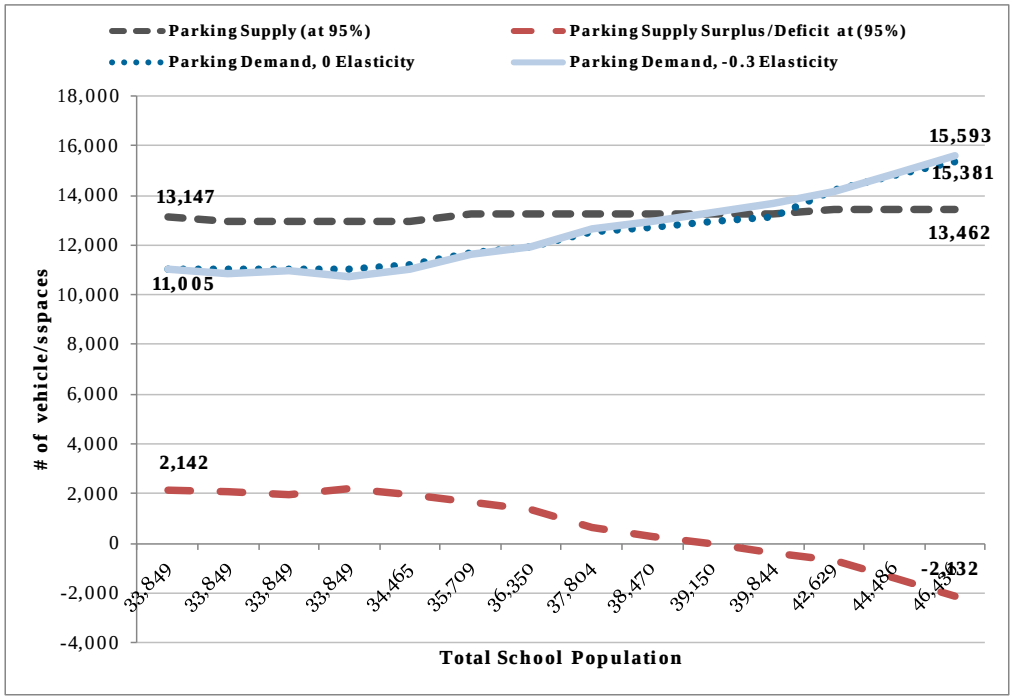


Figure 5-2 shows an estimate of parking demand in a "preferred" scenario that reflects the effects of the TDM strategies described in Chapter 2. Given the anticipated TDM program, the parking supply is estimated to be adequate until the TSP reaches approximately 39,000 people.

Figure 5-2 Preferred Scenario Parking Demand



IMPLEMENTATION PHASING

Given the assessment of needs, the following measures and thresholds for gauging the need for TDM strategies are recommended for evaluation based on analysis of impacts associated with TSP growth. A detailed description of each measure can be found in the Chapter 2.

Upon Approval

- Threshold: It is recommended that the feasibility of these measures be evaluated for implementing upon approval in order to more efficiently manage and assess existing campus parking and traffic demands.
- Measures
  - Preferential carpool/vanpool parking
  - Provide Compass Cards
  - Pre-tax employee transit passes
  - Enhance rideshare programs
  - Expand carsharing
- Net Costs
  - To be determined based on financing plan as yet to be finalized by SDSU

Short-Term

- Threshold: 35,500 TSP (based on potential significant unavoidable traffic related impacts identified in the SDSU Campus Master Plan EIR, 2007).
- Measures

  - Upon Approval TDM measures
  - Improve outreach and marketing
  - TDM staffing and coordinator
  - Implement annual monitoring
  - Bicycle and pedestrian infrastructure improvements
- Cost
  - To be determined based on financing plan as yet to be finalized by SDSU

Long Term

- Threshold: 90% campus-wide parking utilization or 36,500 - 40,000 TSP, depending on future parking deficits and/or potential significant unavoidable traffic related impacts.
- Measures
  - Upon Approval and short-term TDM measures
  - Subsidized transit passes
  - Red & Black Shuttle enhancements
  - Additional bicycle and pedestrian infrastructure improvements
  - Implement SDSU Guaranteed Ride Home (GRH) Program
  - Prioritize on-campus housing and amenities
- Cost
  - To be determined based on financing plan as yet to be finalized by SDSU

PROGRAM MONITORING

One of the most critical elements in developing a TDM program is monitoring its performance. By observing how travel behavior changes over time, SDSU will have the tools to determine the proper time to implement various TDM measures, gauge their effectiveness, and possess quantifiable data that will allow a prioritization of the campus's financial and personnel resources. Monitoring should consist of transportation surveys conducted annually among employees and students, observations of parking utilization, and review of transit data provided by the Metropolitan Transit System (MTS). SDSU should conduct a trial of this monitoring program in the near future to test the protocols and refine the procedures in developing a sound monitoring methodology.

Transportation Survey

A transportation survey should reveal students, faculty, and staff means of travel to and from campus, attitudes toward existing travel options as well as their potential to change travel behavior. As described in Chapter 4, SDSU recently developed a transportation survey designed to assess travel behaviors and TDM program preferences. Results from the survey establish a "baseline" condition by which future surveys can be used to evaluate TDM program performance. Moving forward, the survey should be conducted at the same time each year and should strive for consistency in the questions asked. If desired, this information also allows for calculations of Average Vehicle Ridership (AVR). In addition, to improve accuracy for calculating trip distance, questions should ask respondents to provide home location and zip code.

To increase student participation SDSU should evaluate the use of various incentives. For example, SDSU could hold a cash or prize drawing for survey respondents. Alternatively, SDSU could include the survey in the student portal and require students to complete the survey as a condition of receiving their grades or registering for classes.

Average Vehicle Ridership (AVR)

Average vehicle ridership is the ratio of students and staff to vehicles arriving at the campus. The higher the AVR, the more students and staff there are in relation to the number of vehicles, which means more students and staff are riding together, using transit, biking, or walking, or even working from home. This measure utilizes mode split data in order to calculate AVR. This measure will enable SDSU to monitor the effect of TDM and parking programs on reducing the number of campus affiliates who are driving alone to campus.

Mode split data collected in the transportation survey will enable campuses to calculate their AVR. To calculate AVR:

1. Calculate the total number of survey respondents who drive alone. Calculate the total number of survey respondents who carpooled or vanpooled by the size of their carpool or vanpool (i.e. total number of respondents in two person carpools, etc).
1. Divide the total number of drive alone responses by one. Divide the total number of carpoolers or vanpoolers for each size category by the size of their carpool or vanpool. For example, if there are a total of 100 survey respondents in a two-person carpool divide 100 by 2.
2. Sum the results from step two. This is the total number of vehicles.
3. Divide the number of survey respondents (all modes) by the number of vehicles to calculate AVR.

Level of Difficulty: Low

The time required is approximately 8 to 10 hours.

Cost: Low

Given the low level of difficulty it may make most sense for SDSU to calculate AVR itself to reduce costs. If a consultant is used for the transportation survey this calculation could be included in the survey analysis. If an outside consultant is hired the cost could range from $1,000 to $2,000.

Key Considerations:

The design of the transportation survey will influence how easy it is to obtain necessary data such persons per vehicle.

Parking Utilization

Parking occupancy counts should be conducted annually in late September or early October to coincide with the transportation survey. The counts should be conducted on peak usage days (e.g. Tuesday and Wednesday) to ensure that the highest points of parking demand are accurately reflected in the data. It is ideal that counts be conducted every hour, but it is also possible to select particular times of the day (e.g. 11 AM, 2 PM, 6 PM) to obtain a representative sample of parking patterns at various times. It is important, though, that parking counts be conducted during the same weeks, days, and times each year to allow for annual comparisons. In addition, occupancy counts should be distinguished by space type (e.g. faculty/staff, disabled).

Level of Difficulty: Low

Parking utilization counts are relatively easy to conduct. Ideally, parking or security staff can be used to inventory and count spaces.

Cost: Low to Mid

If SDSU is able to use available staff, parking counts can be relatively low cost. However, if staff are unavailable, costs can escalate somewhat. Furthermore, analysis of the parking data will require additional staff time.

Key Considerations:

It is essential that count times are uniform year to year to allow for annual comparisons of data.

Transit Ridership and Pass Sales

SDSU should request ridership data for transit routes serving the campus to determine the overall use of transit by SDSU employees and students as well as use of individual routes. Data on sales of transit passes should also be secured from internal sources that sell the passes as well as MTS. Tracking this data can help SDSU determine how particular TDM measures (e.g. transit pass subsidies) are impacting mode choice. This information can help direct marketing efforts and target funds to oversubscribed programs. In addition, SDSU can utilize this data to make calculations regarding cost-effectiveness. Metrics to track the efficacy of specific TDM measures include:

1. Total TDM/transportation measure costs
2. Cost per trip
3. Cost per participant
4. Cost-effectiveness (measured in marginal or average costs)

Level of Difficulty: Low

The collection and analysis of relevant data should be relatively simple as MTS makes its transit information publicly available.

Cost: Low

Given the availability of MTS data, the staff time necessary to make cost calculations is relatively low.

Key Considerations:

Tracking transit ridership and pass sales rates is a key role for a TDM coordinator. SDSU may wish to delay in performing a complex analysis of transit ridership data until staff resources are properly allocated.

6 APPENDIX A – CAMPUS POLICIES & POPULATION

This appendix provides an overview of the plans and policies that will guide the future development of SDSU and travel to and from the campus. The policy framework sets the context for a future TDM program and explains campus priorities and how they relate to the transportation planning efforts occurring at the local and regional level. In addition, this chapter summarizes the campus population and housing data and offers projections for campus population growth.

SDSU CAMPUS

Founded in 1897, SDSU is the oldest higher education facility in the greater San Diego region and one of the oldest campuses in the California State University (CSU) system. SDSU is home to more than 30,000 students, faculty, and staff each semester. There are several thousand units of on-campus housing, yet the majority of the students and faculty/staff live off campus and commute to school.

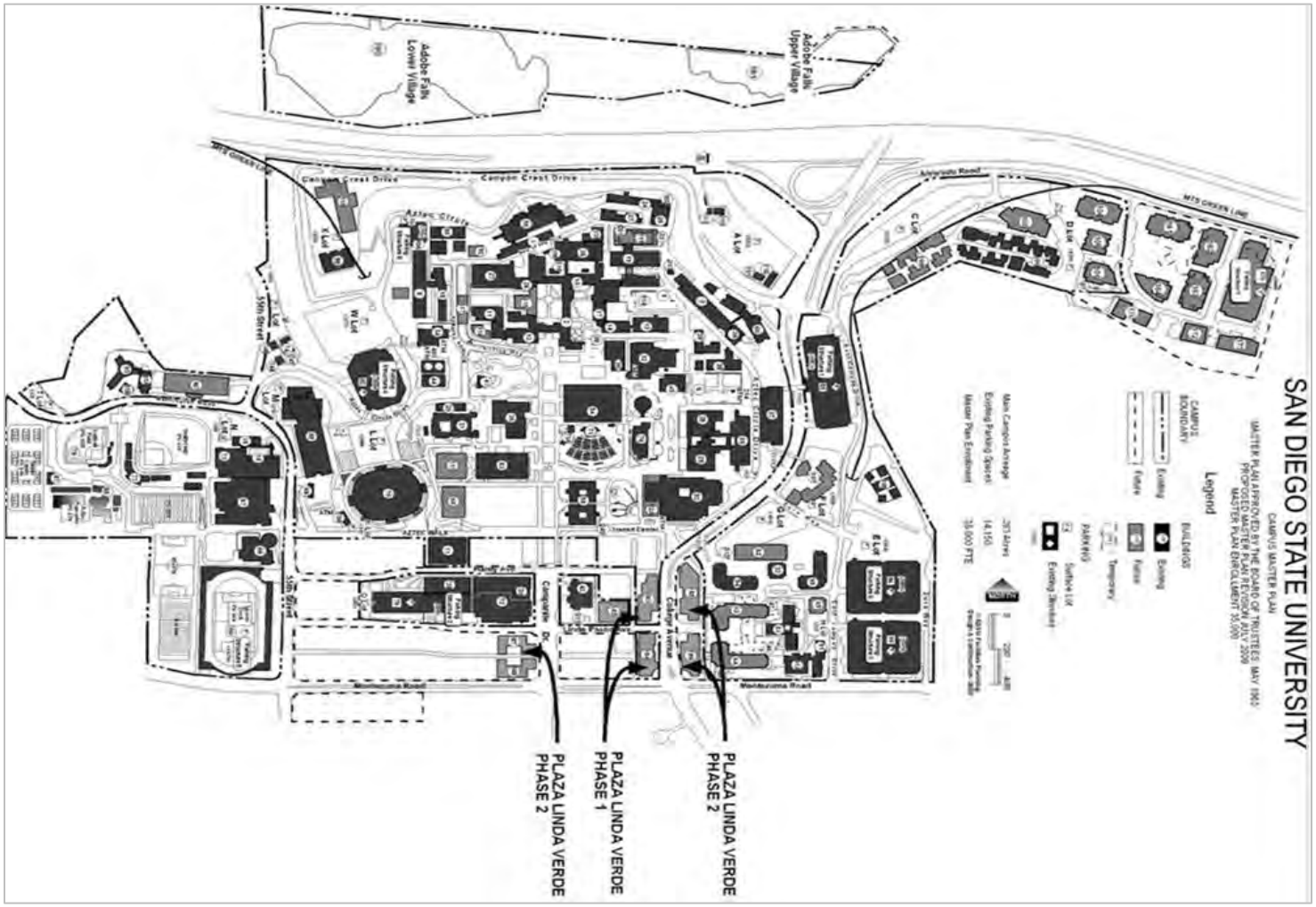
The campus is located in the central portion of San Diego County and is just south of the I-8 freeway at College Avenue and to the east of I-15. The academic, research, and student services are primarily located near the center of campus, between College Avenue and 55th Street. The majority of the athletic facilities are located at the western edge of campus, while the majority of student housing is situated in the southeast portion of the campus near College Avenue and Montezuma Road. There is a limited internal street network through the campus as vehicles and parking facilities are kept to the perimeter of the campus. Bicycle and pedestrian travel are prioritized in the campus core. Finally, SDSU is located along the Green Line of the San Diego Trolley (extended to SDSU in 2005), which runs below grade through the campus. The trolley station is located at the SDSU Transit Center just south of the Aztec Green.

EXISTING POLICY FRAMEWORK

SDSU Master Plan

SDSU has a physical campus master plan which is a key document in guiding the future growth and development of the campus. In 2007, a campus master plan revision was approved by the California State University Board of Trustees. This master plan revision included student housing and classroom facilities to address an increase in the master plan enrollment ceiling from 25,000 full-time equivalent students (FTES) to 35,000 FTES. In May 2011, the Board of Trustees subsequently adopted a revised campus master plan in connection with its approval of the Plaza Linda Verde project, a mixed-use development that would provide an additional 90,000 square feet of retail uses and housing for an additional 1,600 students on campus (see Figure 6-1.)

Figure 6-1 Existing Campus Master Plan



Source: SDSU Campus Master Plan (May 2011)

Relevance to SDSU TDM Program

The SDSU TDM Program should support both the policy goals and physical development pattern as envisioned by the Campus Master Plan. Development of a campus TDM Program was included as a mitigation measure to further reduce the level of impact on the campus and surrounding communities. TDM strategies will facilitate active transportation solutions for walking and bicycling, in addition to increased incentives for car sharing and transit, with the objective of reducing vehicle trips to campus in favor of alternate modes of travel.

Beyond the Campus Master Plan, CSU, as a state agency, is generally exempt from local plans and regulations, such as city and county general plans and related regulations. The exemption is based on the doctrine of sovereign immunity, and applies where the state, in this case CSU, is operating in its governmental capacity by utilizing its power and responsibility in connection with the construction and development of CSU campuses. Nevertheless, CSU considers local plans and regulations to be of interest to each CSU campus because each campus is situated within a local community. As such, CSU traditionally attempts to work cooperatively with local communities, and to consider local plans and policies. The following is a summary of some of these local plans and policies.

City of San Diego General Plan and Mobility Element

The City of San Diego adopted its General Plan Update in 2008 to provide a strategic framework for how the City will grow while maintaining the qualities that best define San Diego. The plan calls for redevelopment, infill, and new growth to be targeted into compact, mixed-use, and walkable communities that are connected to a regional transit system. The plan encourages communities to increase personal transportation choices and minimize transportation impacts through design that pays attention to the needs of people traveling by foot, bicycle, and transit, as well as the automobile.

The Mobility Element of the City's General Plan is part of a larger body of plans and programs that guide the development and management of the transportation system. The Mobility Element contains policies that promote a multimodal transportation network that gets people where they want to go and minimizes environmental and neighborhood impacts. The element also includes policies related to regional collaboration, parking, the movement of goods, and other components of the transportation system. These policies advance a strategy for relieving congestion and increasing transportation choices in a manner that strengthens the General Plan's land use vision. In recognition of the diversity of San Diego's communities and the range of transportation issues that exist within them, the Mobility Element contains a variety of strategies and potential improvements that may be utilized where appropriate to develop area-specific solutions to community parking and traffic issues.

Relevance to SDSU TDM Program

TDM strategies are a key component of the City's General Plan and Mobility Element as a means to reduce congestion and vehicle emissions that degrade air quality and contribute to global climate change. These strategies are primarily directed at weekday commuters and are structured to:

- Improve transportation options and reduce use of single-occupant vehicle trips by encouraging alternative modes of travel such as carpooling, vanpooling, transit use, bicycling, and walking;
- Support the use of alternative modes of travel by encouraging on-site amenities, programs, and incentives such as the use of car sharing vehicles, bicycle lockers, guaranteed ride home programs, and commuter benefits;
- Alter the timing of travel to less congested time periods, through strategies such as alternative work schedules;
- Reduce the number of commute trips through strategies such as telecommuting and alternative work schedules.

The City also supports TDM through land use and parking strategies that require development project designs and development review policies that offer incentives to projects that implement TDM plans and programs.

SANDAG Regional Transportation Plan

In 2011, the San Diego Association of Governments (SANDAG) adopted the 2050 Regional Transportation Plan (RTP) as the region's long-range mobility plan. The plan outlines goals for sustainable living, enhanced mobility, economic prosperity, social equity, and environmental conservation.

The RTP plans for and identifies projects for multiple modes of transportation in order to preserve natural resources, to promote smart growth, and to maximize investments. The RTP calls for transit service miles to double by 2050, including 156 new miles of trolley and SPRINTER service. The plan also emphasizes active transportation projects and programs to encourage more residents to add cycling and walking to their routines.

Relevance to SDSU TDM Program

The RTP establishes the basis for state funding of local and regional transportation projects, and is a prerequisite for federal funding. The plan prioritizes and allocates the expenditure of regional, state, and federal transportation funds to implement RTP projects, and hence knowledge of and coordination with applicable projects will be important. Additionally coordination with the TDM features of the RTP will also be important and could provide opportunities for leveraging support and funding of similar strategies that emphasize active transportation, smart growth, and transit. Projects which incorporate TDM and align with SANDAG's priorities can become eligible for state funding.

City of San Diego Bicycle Master Plan

The City of San Diego Bicycle Master Plan (June 2011) outlines a comprehensive system of investments in bicycle infrastructure and programming within San Diego city limits through 2030 with the ultimate goal of increasing rates of bicycling, particularly for trips of less than five miles. The Plan includes a bicycle needs analysis, which highlights routes with the greatest propensity for bicycling activity. The Plan recommends major investments in bicycle facilities, spot improvements, and support facilities (bicycle parking, maintenance, signage, bicycle signal detection, etc.), including a total of 878 miles of new bike lanes and routes, 40 miles of new bicycle boulevards, and seven miles of cycle tracks. Recommendations also include bicycle

programming such as educational, enforcement, encouragement, monitoring, and evaluation efforts.

Relevance to SDSU TDM Program

Recommended infrastructure improvements in the SDSU campus area include:

- New Class II or Class III facilities along College Avenue
- The closure of a gap in the Class II facility along Montezuma Road, between Campanile Drive and 55th Street
- New Class III facilities along 54th Street
- New Class III facilities along Aztec Circle Drive

Of the proposed improvements above, only the new facilities along 54th Street received high priority status by the Plan's analysis (ranking 8th overall), meaning it is most likely to receive funding in the near term. Programming recommendations relevant to SDSU include a proposed Bike Commuter Challenge Program, which engages workplaces and employees in a competition with prizes for those that log the most bicycling or walking trips.

San Diego Regional Bicycle Plan (SANDAG)

Adopted in 2010, the San Diego Regional Bicycle Plan, created by SANDAG, outlines a unified bicycle network for the San Diego Region through 2050. Its focus is on connections between activity centers, transit facilities, and regional trail systems, as well as bicycle education, marketing and awareness campaigns, encouragement, enforcement, and monitoring and evaluation programs. The proposed regional network informed the development of the City of San Diego Bicycle Plan. It includes no new facilities not found in the City Plan within the SDSU campus area.

City of San Diego Pedestrian Master Plan

The City of San Diego Pedestrian Master Plan, adopted in December 2006, is intended to guide future City plans and implementations of pedestrian projects based upon technical analysis and community input. It includes a Pedestrian Priority Model, which is used to determine which areas of the City should be prioritized for the preparation of community Pedestrian Master Plans based upon a set of existing pedestrian attractors, pedestrian generators, and pedestrian detractors.

Relevance to SDSU TDM Program

The "College Area" around SDSU was ranked 13th out of 57 analyzed neighborhoods. Currently, only five neighborhoods have begun the community pedestrian master planning process, including City Heights, Greater Golden Hill, Normal Heights, Greater North Park, and Southeastern San Diego.

College Area Community Plan

SDSU is located on the northern edge of the College Area Community Planning Area. The College Area Community Plan was adopted in 1989 and addresses issues such as the location and density of new housing, future roadway requirements, and related policies governing future growth and development. While a number of residents have expressed the desire to preserve the single-family

character of the community, the adopted Plan recognizes the need for additional multi-family housing for the growing community and university population. The Community Plan also addresses traffic congestion issues related to the large university-oriented population and through traffic traveling to and from adjacent communities. At the time, recommendations were made for street widening and road realignment projects, which included provisions for separate bicycle and pedestrian facilities.

Relevance to SDSU TDM Program

Local community plans can assist in both identifying the physical environment and establishing the local policy context for the community. Consistency and coordination with local community plans will be an important consideration for the SDSU TDM Program. Unfortunately the College Area Community Plan is over 20 years old and is likely not consistent with either the policy directives of the updated City of San Diego General Plan, or recent SDSU campus master planning activities.

CAMPUS POPULATION & HOUSING

In Fall 2011, there were a total of 30,541 undergraduate and graduate students, full and part-time, enrolled at SDSU. Enrollment in Spring 2012 was about 9-10% lower, which is typical of the enrollment patterns at SDSU. As shown in Figure 6-2, the student population includes both resident and commuter students. The number of resident students listed in the figure is based on 100% occupancy of the number of beds on-campus, which was equal to 3,052 in 2011-12. In addition, there were 3,308 faculty and staff employed at SDSU in 2011-12. As to the number of "commuter students," the number listed in Figure 6-2 is somewhat misleading in that a number of students living off-campus actually reside in the immediate vicinity of the campus within walking or biking distance. As such, not all of the Commuter Students listed in Figure 6-2 utilize vehicles to get to campus.

Figure 6-2 SDSU Campus Population, 2011-12[28]

Group	Fall 2011	Spring 2012
Commuter Students	27,489	24,783
Resident Students	3,052	3,052
Faculty/Staff[29]	3,308	3,308
Total Population	**33,849**	**31,143**

Like most campuses across California, SDSU is expecting to experience growth in enrollment and employment over the coming years. While the student population and level of employment vary from year to year based on a number of factors (most notably the state budget), it was assumed for the purposes of this study that the campus population would remain relatively steady until 2015 and then increase at a 2% linear growth rate until 2024[30]. It is important to emphasize that

[28] Source for student enrollment: http://university-stats.sdsu.edu/app/summary.cfm?Rep=4

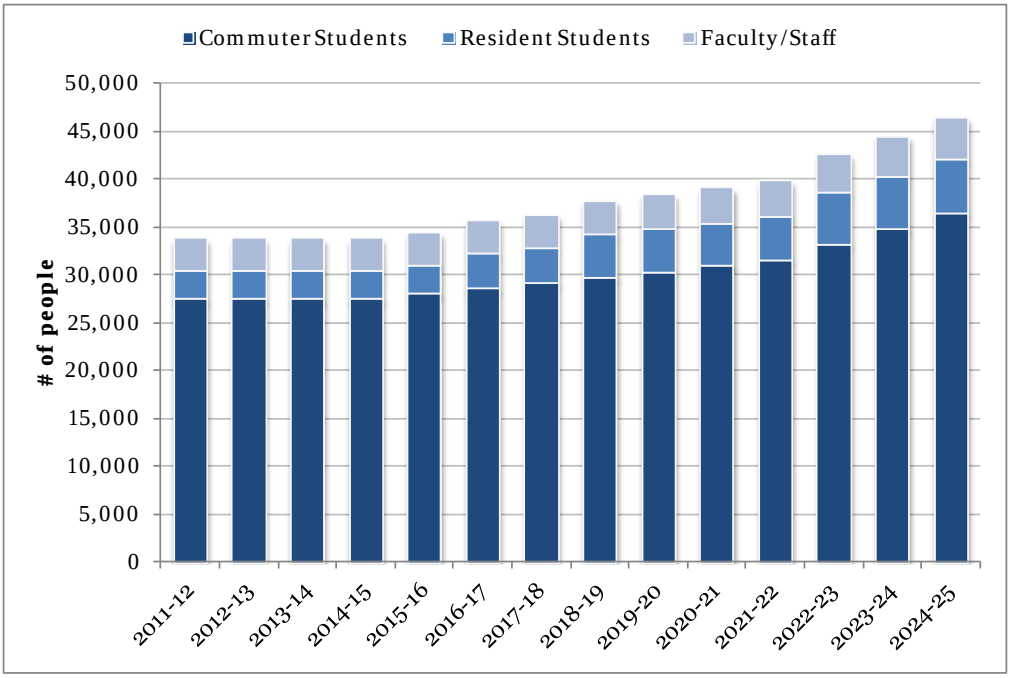
[29] Source: http://bfa.sdsu.edu/~budfin/factsheet.htm

[30] SDSU staff selected 2024 as the horizon year for the purposes of the TDM study, while 2030 was the horizon year as part of the Master Plan EIR.

the population projections are based on the best estimates of future growth and they may change in the future.

The number of on-campus beds is also projected to increase by approximately 2,400 in the same time period. The majority of these new beds will be added as part of the Plaza Linda Verde (PLV) development[31]. PLV is designed to be a mixed-use project along College Avenue and Campanile Drive that combines new student apartments (616 beds in Phase 1 in 2016-17 and 1,016 beds in Phase 2 in 2022-23) with ground floor retail and a community grocery store. Another 800 beds are projected for development as part of the Student Housing Phase 1 plan in 2018-19. Additional on-campus housing is projected for SDSU, but it was assumed that this housing would not be built until after 2024. Figure 6-3 provides a summary of the projected growth in students and faculty/staff at SDSU until 2024.

Figure 6-3 Projected Growth in Campus Population



[31] http://newscenter.sdsu.edu/plazalindaverde/project.aspx

7 APPENDIX B - MULTIMODAL INFRASTRUCTURE ASSESSMENT

ROADWAY SYSTEM

The SDSU campus is located just south of I-8 and east of I-15. The main arterial corridors that serve the campus are College Avenue running north/south through the center of the campus, and Montezuma Road running east/west along the southern boundary of the campus. College Avenue provides access to I-8 to the north and SR-94 to the south, as well as connection points to El Cajon Boulevard and University Avenue which are major arterials within the region. Montezuma Road provides an additional connection to I-8 (via Fairmont Avenue), as well as to El Cajon Boulevard.

Roadway Descriptions and Classifications

College Avenue is a north/south roadway that cuts through the eastern side of campus and provides access to both I-8 to the north and SR- 94 to the south. College Avenue is a 4-lane major roadway with a raised median and a posted speed limit of 45 mph. On-street parking is not permitted along either side of the roadway within the campus area.

55th Street arcs west where it transitions to Remington Road and where the right hand four-lane intersection becomes the extension of 55th Street. This extension in turn intersects the west end of Aztec Circle Drive, which is the main access for PS 4 and the only through route to other campus public roads. On-street parking is not permitted along the 4-lane part of the roadway; however, on-street parking is permitted on both sides of the 2-lane section of the roadway north of Aztec Circle Drive. The posted speed limit is 25 mph.

Campanile Drive is a short north/south roadway that provides access to the KPBS facilities on campus, as well as the SDSU transit center. Campanile Drive is currently constructed as a 4-lane major roadway with a median (partly raised and partly painted) and a posted speed limit of 25 mph. On-street parking is currently not permitted on Campanile Drive.

East Campus Drive extends along the eastern edge of campus and provides access to numerous student parking facilities. East Campus Drive is a 2-lane, one-way street between Alvarado Road and the fourth floor entrance to Parking Structure 1 and continues as a 2-lane two-way until its southern terminus point at Montezuma Road. East Campus drive has a posted speed limit of 25 mph. On-street parking is currently not permitted on East Campus Drive.

Montezuma Road is an east/west roadway that runs along the southern border of Campus. Montezuma Road is currently constructed as a 4-lane major roadway with a median (partly raised and partly painted) and has a posted speed limit of 35 mph. On-street parking is permitted on both sides of the street.

Lindo Paseo Drive begins at 55th Street one-way eastbound to Campanile Drive and continues as a two-way connector to College Ave. **Hardy Avenue** is the corresponding one-way westbound route from Campanile Drive to 55th Street. It has a two-way continuance to the east of Campanile Drive servicing several residences but with no through connection to College Avenue. Both Lindo Paseo Drive and Hardy Avenue provide access to PS 2, as well as many student residences. Both are single lane with limited on-street parking and a posted speed limit of 25 mph.

Canyon Crest Drive begins at College Avenue as the east-west continuation of Alvarado Road. At the College Avenue intersection it is a four-lane collector for Lot A and continues as two lanes with a continuous center turn lane servicing Lot X and the main shipping/receiving dock. At the northwest extent of campus it arcs to a north-south two-lane route ending at the connection with Aztec Circle Drive near PS 4. Canyon Crest Drive has a posted speed limit of 25 mph and on-street parking is not permitted on either side of the roadway.

Aztec Circle Drive is the only access route to PS 4 from either 55th Street or Canyon Crest Drive. Past the intersection with Canyon Crest Drive it is designated as limited access for authorized vehicles and the posted speed limit is 15 mph. There is normally a connection at the east end with southbound College Avenue, but that is temporarily closed due to construction through 2013.

Alvarado Road begins the multi-lane intersection with College Avenue opposite Canyon Crest Drive and continues north as a two-lane east-west frontage road paralleling Interstate 8. At the College Avenue intersection it is also the two-lane, one-way entrance to PS 1 and Lot C, as well as to East Campus Drive. Alvarado Road connects to Lots C and D and serves medical research facilities related to SDSU.

In addition, there exist a number of smaller streets that complete the internal street network of the campus and provide vehicular access to campus buildings and facilities. These streets are typically 2-lane streets with reduced speeds and limited on-street parking. Finally, the following signalized intersections serve as the primary access points to the campus:

- Montezuma Road / 55th Street
- Montezuma Road/ Campanile Drive
- Montezuma Road / College Avenue
- College Avenue / Lindo Paseo Drive
- College Avenue / Canyon Crest Drive / East Campus Drive/ Alvarado Road

Traffic Volumes and Network Operations

Daily traffic volumes on the two key roadway segments that serve the campus are summarized in Figure 7-1. Figure 7-2 summarizes the level of service (LOS) for these segments. Both major roadways, Montezuma Road and College Avenue, currently operate at LOS D, which is acceptable according to City of San Diego standards. Under both near-term and future year without project conditions (assuming no changes in campus land uses or increases in campus population) both roadways are projected to operate at an unacceptable level of service (LOS E and F) due to increased traffic unrelated to the campus.

Figure 7-1 Daily Traffic Volumes on Roadway Segments

Street Name	Existing (2006)	Near Term (2012)	Near Term + Project (2012)	Future (2030)	Future + Project (2030)
College Avenue	33,950	37,480	38,090	53,200	56,040
Montezuma Road	24,460	30,990	31,160	33,430	35,010

Source: Linscott, Law, & Greenspan Engineers, SDSU 2007 Campus Master Plan Revision

Figure 7-2 LOS on Roadway Segments

Street Name	Existing (2006)	Near Term (2012)	Near Term + Project (2012)	Future (2030)	Future + Project (2030)
College Avenue	D	E	E	F	F
Montezuma Road	D	F	F	F	F

Source: Linscott, Law, & Greenspan Engineers, SDSU 2007 Campus Master Plan Revision

LOS for the following key intersections serving the SDSU campus was derived from the SDSU Campus Master Plan EIR. Figure 7-3 displays AM and PM peak LOS for the key intersections serving the SDSU campus. The intersections which serve as major access points to the SDSU campus are currently operating at an acceptable level of service D or better during peak hours, with the exception of the following two intersections:

- Montezuma Road / 55th Street – LOS E during AM peak hour
- College Avenue / Canyon Crest Drive / East Campus Drive – LOS E during the AM and PM peak hours

All key intersections serving the campus are projected to operate at substandard LOS E or F during both peak hours under near-term and future year conditions, with the exception of the following:

- Montezuma Road / 55th Street – operates at LOS D during the PM peak hour under near-term and near-term plus project conditions.
- Montezuma Road / Campanile Drive – operates at LOS D during the AM peak under near-term conditions.

Figure 7-3 LOS at Major Intersections

Intersection	Existing		Near Term (2012)		Near Term + Project (2012)		Future (2030)		Future + Project (2030)	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Montezuma Road / 55th Street	E	C	F	D	F	D	F	E	F	E
Montezuma Road / Campanile Drive	C	C	D	E	D	E	F	F	F	F
Montezuma Road / College Avenue	D	D	F	F	F	F	F	F	F	F
College Avenue / Canyon Crest Drive / East Campus Drive	E	E	F	F	F	F	F	F	F	F

Source: Linscott, Law, & Greenspan Engineers, SDSU 2007 Campus Master Plan Revision

Proposed Mitigations

Figure 7-4 summarizes mitigation measures proposed in the SDSU Campus Master plan and corresponding LOS with the implemented improvements. Once implemented, the mitigation measure roadway improvements would reduce the impacts of the Master Plan project to less-than- significant, consistent with CEQA's requirements. However, as shown, even with implementation of the proposed mitigation measures, the key intersection serving the campus will continue to operate at substandard LOS E or F under future year conditions due to cumulative traffic. (As noted, these improvements are intended to mitigate the impacts created by the changes proposed in the SDSU Campus Master Plan and are therefore not required to achieve an acceptable LOS.)

Figure 7-4 LOS at Key Intersections with Proposed Mitigations

Intersection	Mitigation	Mitigated Near-term (2012)		Mitigated Future (2030)	
		AM	PM	AM	PM
Montezuma Rd. / 55th St.	Provide an exclusive WB right-turn lane at intersection	N/A	N/A	F	D
Montezuma Rd. / Campanile Dr.	Provide second SB left-turn lane and exclusive right-turn lane on NB approach	N/A	N/A	E	E
Montezuma Rd. / College Ave.	Provide a exclusive right-turn lane on NB approach, and an additional NB through lane and exclusive NB right-turn lane on College Ave.	E	F	F	F
College Ave. / Canyon Crest Dr. / East Campus Dr.	Provide additional left-turn lane on EB and WB approaches, and an additional NB through lane on College Ave.	D	E	F	F

Source: Linscott, Law, & Greenspan Engineers, SDSU 2007 Campus Master Plan Revision

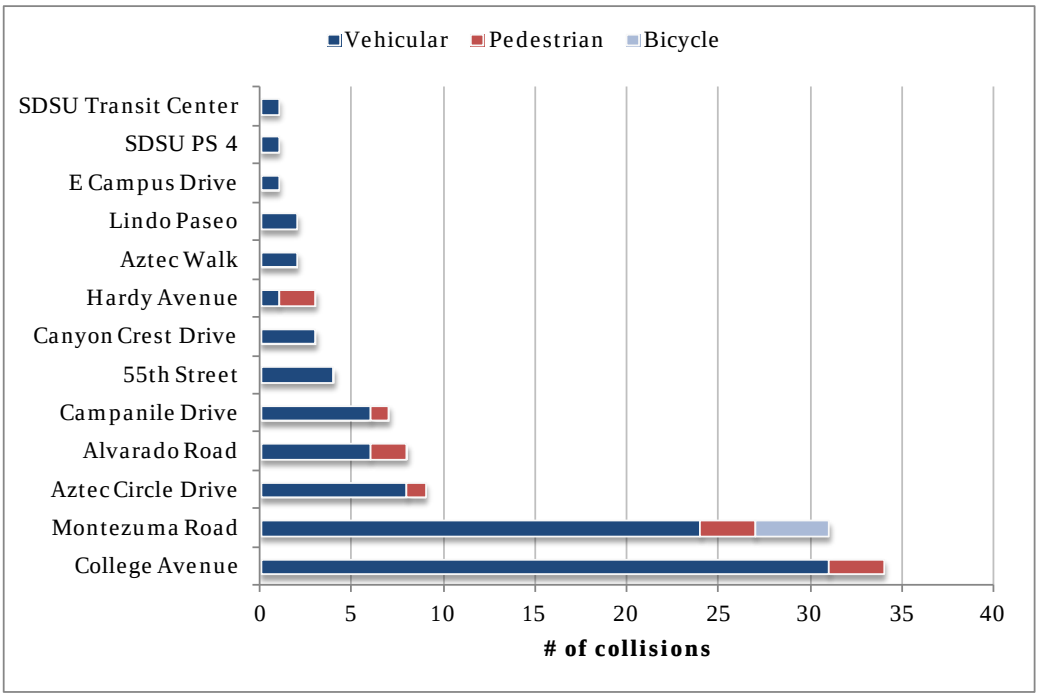
Roadway Collisions

Collision data was collected over a five year span, between August 2006 and August 2011, and is summarized in Figures 7-5 and 7-6[32]. The data shows total collisions for this period of time as well as collisions between vehicles and pedestrians, vehicles and bicyclists, and vehicles only. Figure 7-5 summarizes the collisions along roadway segments within the SDSU campus, while Figure 7-6 summarizes collisions at intersections.

Sixty-five of the 106 roadway segment collisions (61%) occurred on either College Avenue or Montezuma Road (Figure 7-5). These are the two main roads at the perimeter of campus and both have high traffic speeds and volumes. Furthermore, all of the bicyclist-related collisions occurred on Montezuma Road. Collisions where pedestrians were involved are scattered throughout the study area. Aztec Circle Drive experienced a relatively high number of collisions, especially considering it is a two-lane road. Campanile Drive also experienced a relatively high number of collisions considering it is a short stretch of road with a speed limit of 25 mph.

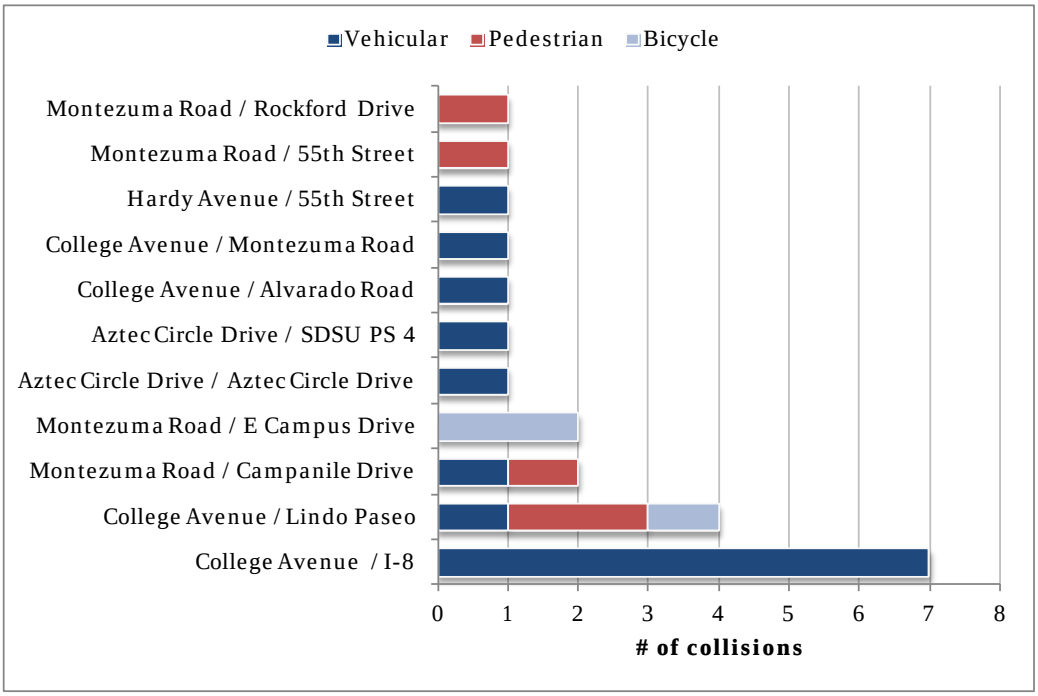
As shown in Figure 7-6, the highest number of collisions occurred at the intersection of College Avenue and I-8. The intersection between College Avenue and Lindo Paseo Avenue also experienced a relatively high number of collisions. It should be noted that three of the four collisions at this location involved either a pedestrian or a bicyclist. About 60% of collisions that involved pedestrians or bicyclists occurred at intersections along Montezuma Road.

Figure 7-5 Collision Summary by Roadway Segment (8/2006 – 8/2011)



[32] Source: California Highway Patrol and the Statewide Integrated Traffic Records System (SWITRS)

Figure 7-6 Collision Summary by Intersection (8/2006 – 8/2011)



PARKING

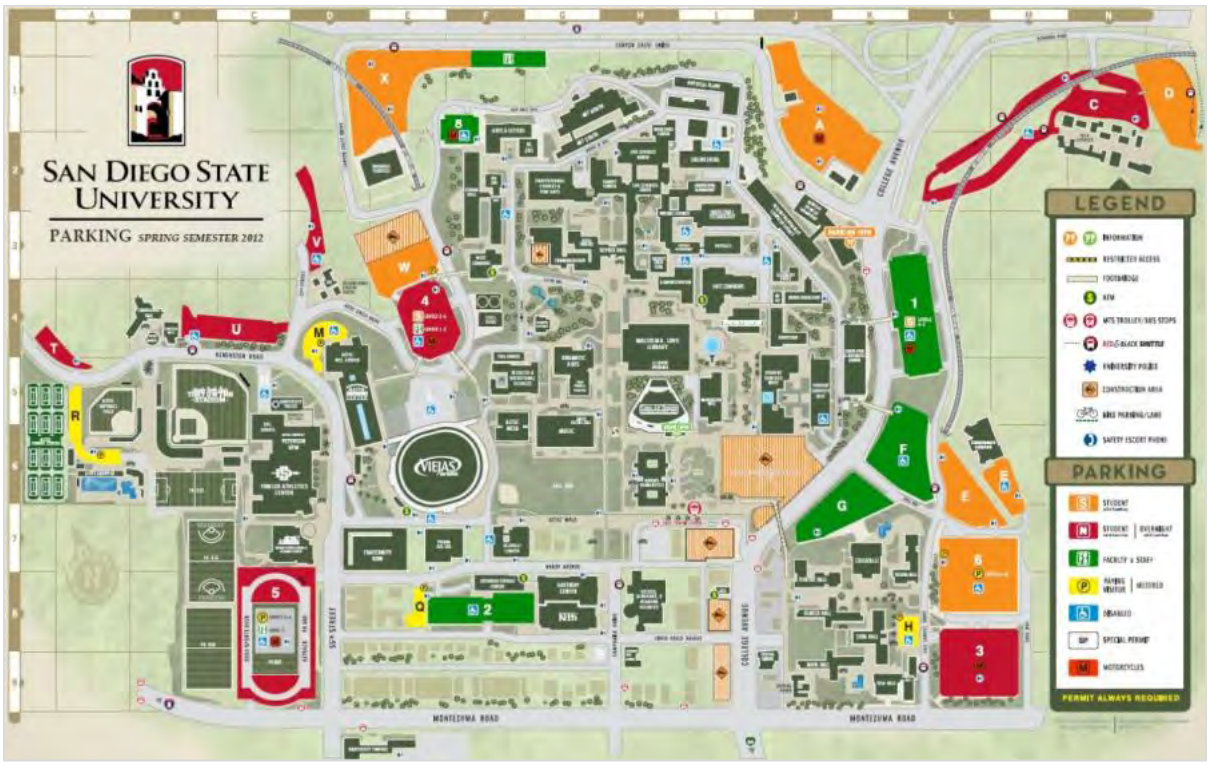
Regulations

Currently, parking permits are required when parking on campus at all times, regardless of whether or not classes are in session. The purchase of a permit, however, does not guarantee a space in a specific lot. The following types of lots are provided:

- Student lots
- Student overnight lots
- Faculty/staff lots
- Visitor pay machine permit lots

Additionally, various lots have designated spaces for Special Permits (SP), service/vendors (SV), motorcycles, and the disabled. At the entrance to each campus lot or structure, signs and symbols alert motorists to the permits accepted in each facility. SDSU employs seven full-time parking officers who patrol campus lots on foot, by bicycle, or in vehicles, and issue citations when vehicles are parked on campus without the proper permit. Citations begin at $30 for expired meters or non-visible parking permits and increase to $300 for illegally parking in a handicapped zone.

Figure 7-7 Map of SDSU Parking Facilities and Regulations



Source: https://sunspot.sdsu.edu/map/sdsu_map.pdf

Types of Parking Permits

SDSU has a wide variety of parking permits. In all, 11 distinct permits are sold for on-campus parking, each of which comes in two types: Type 1 (valid for one day only) and Type 3 (valid for multiple consecutive dates). In addition, hourly permits (1-8 hours) are also sold. Permits are non-transferable and may not be shared. The following types of permits are available at SDSU:

- Faculty/Staff Permit (**F/S**)
- Adjunct Faculty/Staff Permit (**AF/AS**)
- Emeritus or Retired Faculty/Staff Permit (**RF/RS**)[33]
- Student Permit (**S**), valid from 6 AM – 1 AM
- Student Overnight Permit (**N**), valid from 1 AM – 6 AM
- Special Permit (**SP**) provided to designated employee vehicles only (not students)
- Advance Parking Permit (**APP**) available for purchase by SDSU departments and auxiliary organizations for use by guests, valid in F/S lots
- Short- and Long-Term Business Permits (**SBP, LBP**) valid in S/V areas for one hour, and then in F/S and Student parking areas for the remainder of the day
- Service/Vendor Permit (**S/V**)
- After Hours Permits (**AH**, valid in SP or S/V areas only) provided free to University departments, valid from 4:30 PM to 6:30 AM during weekdays and at all hours during weekends
- CSU San Marcos Faculty/Staff

Vehicles are limited to parking only at lots that accept that type of permit. Figure 7-8 shows what permits are accepted at campus lots and for which parking space type. In student parking areas, students, faculty/staff, visitor, and short- and long- term business permits are accepted. In student overnight parking areas, between the hours of 1 AM and 6 AM, only overnight permits are accepted. In faculty/staff parking areas, faculty/staff permits (including adjunct or retired faculty/staff and CSU San Marcos faculty/staff) and short- and long-term business permits are accepted. In visitor parking areas, only visitor permits available for purchase at multi-space meters are accepted. Service/Vendor, disabled, motorcycle, and Special Permit spaces are located throughout various on-campus lots.

[33] Provided free of charge with the appropriate numbers of years of service at separation.

Figure 7-8 Parking Permit Types, Hours, and Acceptable Lots

Parking Type	Accepted Permits	Campus Lots
Student (6 AM – 1 AM)	S, F/S, Visitor, SBP, LBP	A, D, E, P, W, X, PS 1 (L4-L5; all levels after 3:30), G (after 3:30), C, T, U, V, PS 3, PS 4 (L3-L8), PS 5 and PS 6
Student Overnight (1 AM – 6 AM)	N	C, T, U, V, PS 3, PS 4 (L3-L8), PS 5 and PS 6
Faculty/Staff (all hours)	F/S, APP, AF/AS, RF/RS, , SBP, LBP	F, G, X, PS 1 (L1-L3 and L6), PS 2 (L1-L6), PS 4 (L1-L3), PS 5 (L2), and PS 8
Visitor (Metered)	Visitor	H, M, R, S, W, PS 5 and PS 6
Service/Vendor	S/V, SBP, LBP, AH	Spaces in various lots/areas
Disabled Spaces	Disabled placard & appropriate permit	C, F, H, K, M, N, P, R, V, W, X; PS 1, 2, 4, 5, 6, and 8; and the campus core
Motorcycles	All	A, C, E, F, N, U, W, and PS 1, 2, 3, 4, 5, 6, and 8
Special	SP, AH	Spaces in various lots/areas

Pricing and Fee Structures

Permit prices range from $5 for a one-day pass, to $213 for a semester overnight student pass. The specific permit pricing scheme is as follows:

- Day Pass (S, F/S, Visitor, S/V): $5
- Week Pass (S, F/S, Visitor, S/V): $11 (day), $17 (day + overnight)
- Monthly (S/V): $44
- Semester Student Pass: $135 (day), $213 (day + overnight)
- Semester Faculty/Staff Pass: $135 (day + overnight)[34]
- Summer Passes: $60 per summer session, $90 entire summer

Visitors can park on an hourly basis at appropriate lots for a fee of $1 per hour (maximum of eight hours). There are 19 pay stations on campus, only six of which accept payment by credit card,

[34] $135 is the base rate for faculty/staff, but there are different price levels depending upon the collective bargaining agreement for each staff member.

including those located at the Parking Information Booth in Lot S and W, and Parking Structures 5 and 6.

Figure 7-9 provides an overview of the number of permits sold by user group for Fall 2010 and Spring 2011. The base semester rates for these groups are $135 (commuter students), $135 (faculty/staff)[35], and $213 (resident students), although a number of permits are sold at a discount rate. The number of permits sold in Spring 2011 were slightly higher than in Fall 2010, with the majority of permits purchased by commuter students.

Figure 7-9 Permits Sold, by User Group

User Group	Fall 2010	Spring 2011
Student - Commuter	15,484	15,690
Student - Resident	1,330	1,646
Faculty / Staff	934	1,042
TOTAL	**17,748**	**18,378**

Source: SDSU

Parking Information Systems

The SDSU Police website[36] includes basic information regarding the University's parking permits, pricing, regulations, visitor parking, and non-car commute alternatives. Furthermore, the Parking Services office, located in the University Police building on Remington Road, is open Monday through Friday, 9 AM to 4 PM, offering information on parking recourses, lot locations, permit types, and permit pricing structures.

The Parking Information Kiosk, located next to the Chemical Sciences Laboratory off of College Avenue, is open on weekdays between 7:30 AM and 4:30 PM, and is intended mostly for campus visitors unfamiliar with the University's parking program. Two full-time staff members and student assistants staff Parking Services and the Parking Information Kiosk.

Parking Inventory

Figure 7-10 provides a summary of the surveyed parking inventory at the SDSU campus by facility type (parking structure versus surface lot) and by user group. The majority of parking is located within the parking structures (75% of spaces), while 74% of all parking spaces are designated for students and 20% for faculty/staff.

[35] It is important to note that the majority of Faculty/Staff parking permits are distributed via annual payroll deductions.

[36] http://police.sdsu.edu/parkinginfo.htm

Figure 7-10 Overview of SDSU Parking Supply[37]

Type	Surface		Structure		Total	
	#	%	#	%	#	%
Student	2,508	73%	7,746	74%	10,254	74%
Faculty/Staff	493	14%	2,214	21%	2,707	20%
SV/SP	182	5%	281	3%	463	3%
Disabled	67	2%	161	2%	228	2%
Metered (Visitor)	186	5%	0	0%	186	1%
Loading	1	0%	0	0%	1	0%
TOTAL	**3,437**	**25%**	**10,402**	**75%**	**13,839**	**100%**

Figure 7-11 shows the location and inventory of the campus parking facilities.[38] Two primary observations can be made. First, the majority of parking facilities are located on the perimeter of campus as the campus core has been preserved primarily for pedestrian travel. More specifically, a large amount of the parking is located to the east of College Avenue and in the northwest portion of the campus. Connections across College Avenue, which is a six-lane arterial that serves as the primary connection to/from the campus and I-8, are provided via a series of elevated pedestrian walkways.

The largest share of inventory is located in PS 1, PS 3, PS 4, PS 5, and PS 6, which have 9,679, or approximately 69% of the total parking inventory. A number of smaller surface lots are also dispersed around the periphery of the campus serving students, faculty/staff, and visitors. Since the occupancy count in March, surface lots O (visitor), P (student), and W (student) have all been closed for various construction activities.

[37] Only includes vehicle parking spaces (no motorcycles) and only those spaces counted as part of the March 2012 occupancy counts. In all, there are 14,394 vehicle spaces and 282 motorcycle spaces on campus.

[38] Does not include motorcycle/cart parking spaces. Lot L is included in the inventory map, but was omitted from the inventory and occupancy calculations because this lot is not available for student or faculty/staff parking.

Figure 7-11 SDSU Parking Inventory

Image source: SDSU 2008

Parking Occupancy and Demand Ratios

In March 2012, SDSU staff conducted parking occupancy counts on a Tuesday and Wednesday at 11 AM, 2 PM, and 6 PM. Peak parking demand occurred at 11 AM on Tuesday when 74% of all parking spaces were occupied (see Figure 7-12). Occupancy was slightly lower during the Wednesday count when peak occupancy dropped to 62%. Figure 7-13 highlights the parking occupancies by each user group during the peak Tuesday observation period.

Figure 7-12 Parking Occupancy, by Day

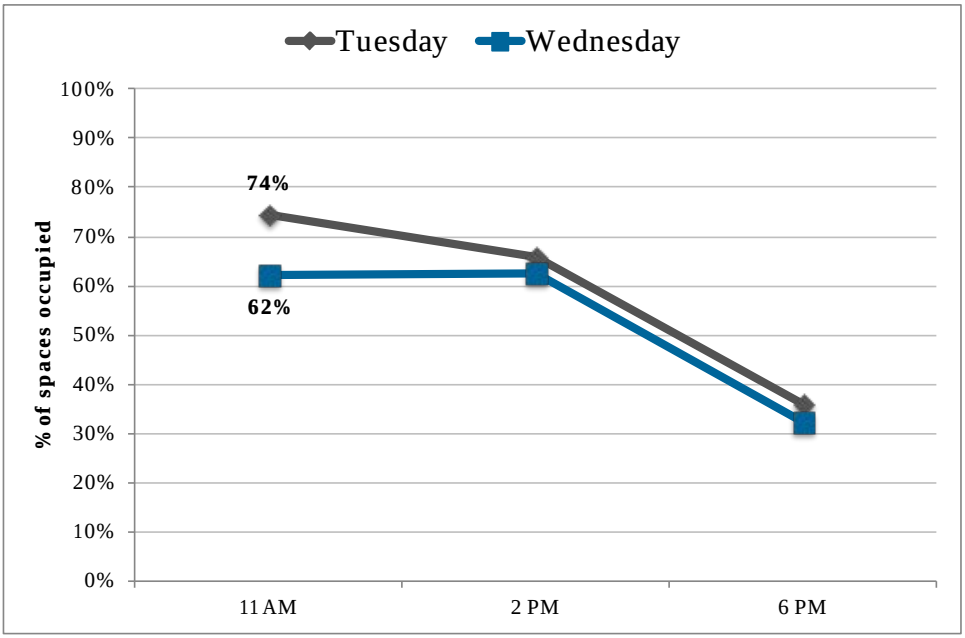
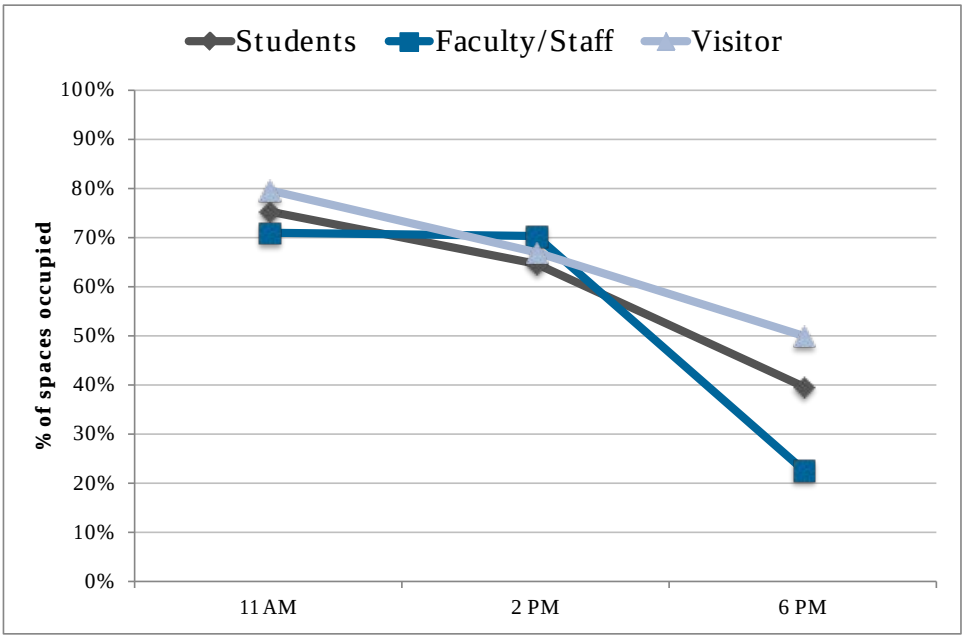


Figure 7-13 Parking Occupancy, by User Group (Tuesday)



Figures 7-15 and 7-16 include peak occupancy maps for Tuesday and Wednesday. These maps highlight several notable observations. As discussed above, at the time of this survey, occupancies were higher on Tuesday than Wednesday. However, despite those occupancy differences, a number of facilities are heavily utilized on both days. For example, PS 2, PS 4, and lots W, U, T, and F all experience occupancy rates close to or above 95% on both days.

By contrast, many of the parking facilities located to the east of College Avenue were utilized far less, regardless of the day. For example, at the time of this survey, lots C and D, as well as PS 3 and PS 6 did not exceed an occupancy rate of 65%. In fact, lot D (399 spaces) was essentially empty on both days. These trends indicate that these facilities are viewed as less convenient by motorists given their distance from the campus core and the inconvenience of crossing College Avenue.

Other occupancy observations to highlight include:

- Lot X was at 93% on Tuesday, but only 48% on Wednesday.
- PS 3 and PS 6 are utilized far less than the adjacent surface lots (E, F, and G).
- PS 1 experienced 100% occupancy of its student spaces at peak hour while only 53% of its faculty/staff spaces were occupied at the same time (faculty/staff spaces peaked at 57% at 2 PM). PS 1 currently has a large number of faculty/staff parking spaces designated for "academic guests," which come to campus in large numbers approximately three to five times per year. Figure 7-14 highlights the occupancy differences in the facilities where both student and faculty/staff parking is allowed.

Figure 7-14 Student and Faculty/Staff Occupancy in Shared Parking Facilities

Facility	Tuesday			Wednesday		
	Student	Faculty / Staff	Total	Student	Faculty / Staff	Total
Lot C	59%	40%	59%	46%	0%	46%
Lot X	96%	75%	93%	47%	55%	48%
PS 1	100%	53%	71%	90%	48%	64%
PS 3	43%	67%	44%	28%	67%	29%
PS 4	100%	84%	96%	99%	80%	94%
PS 5	102%	49%	100%	76%	54%	75%

Figure 7-15 Peak Parking Demand, Tuesday at 11 AM

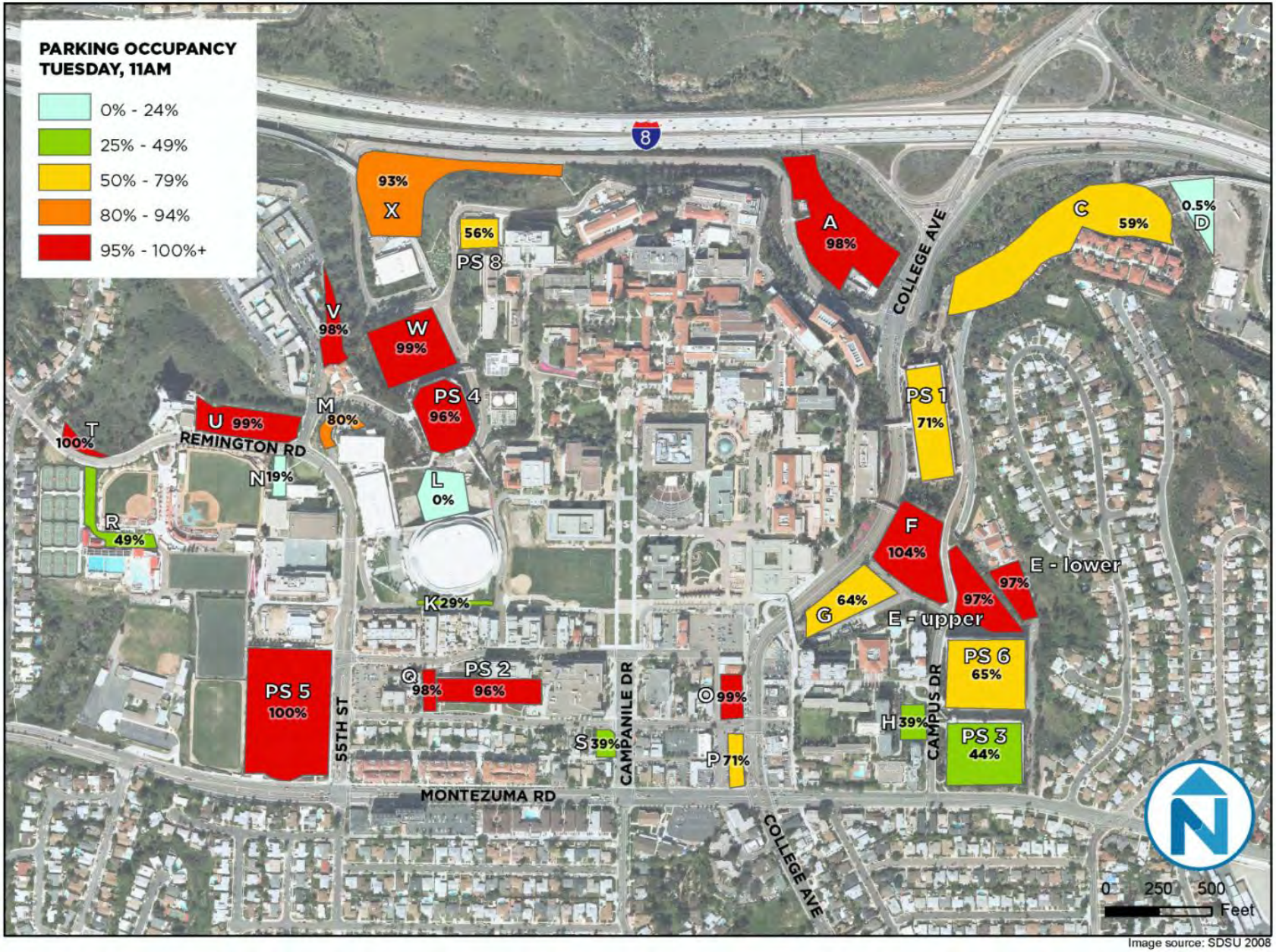


Image source: SDSU 2008

Figure 7-16 Peak Parking Demand, Wednesday at 11 AM

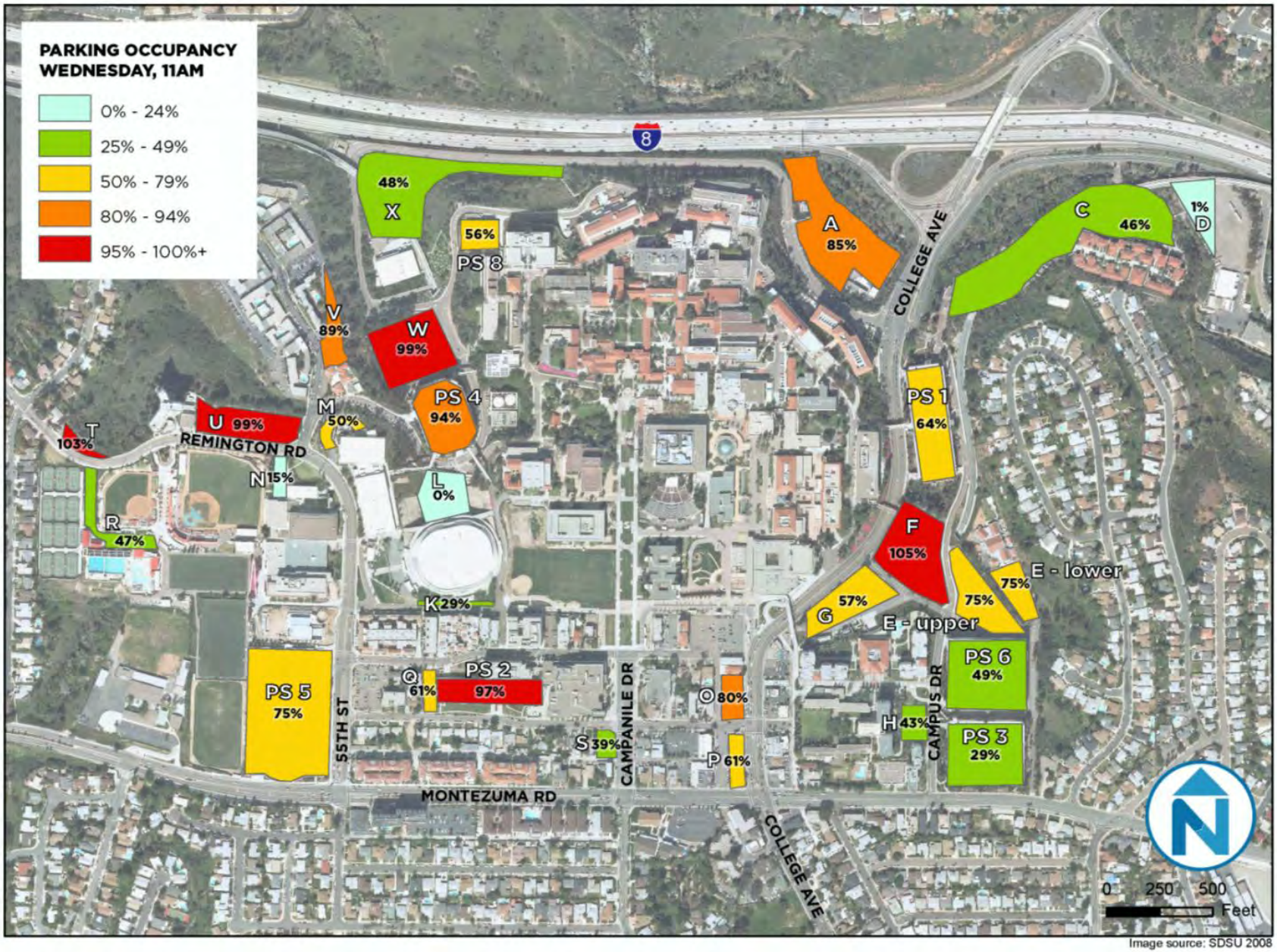


Image source: SDSU 2008

Based on the peak parking demand of each group and their respective population figures, basic demand ratios can be derived, as shown in Figure 7-17. In the Spring 2012 semester, there were 3,052 resident students[39], 24,783 commuter students[40], and 3,308 faculty/staff[41]. Using the occupancy data from the parking counts, we can establish that the peak parking demand rates for these three groups are .52, .26, and .67 vehicles per person, respectively (.33 for all groups combined).[42]

Using the demand ratios determined as part of the Spring 2012 parking counts, an estimation of parking demand was developed for Fall 2011 based on that semester's campus population. Because the Fall semester typically experiences higher enrollment, this estimation was developed to determine the highest possible peak parking demand for SDSU.

Figure 7-17 Peak Parking Demand Ratios, Spring 2012

User Group	Population	Parking Demand	Demand Ratio
Resident Students	3,052	1,598	**0.52**
Commuter Students	24,783	6,479	**0.26**
Faculty/Staff	3,308	2,221	**0.67**
Total	31,143	10,298	**0.33**

Figure 7-18 Peak Parking Demand, Fall 2011 (Estimated)

User Group	Population	Parking Demand	Demand Ratio
Resident Students	3,052	1,598	0.52
Commuter Students	27,489	7,187	0.26
Faculty/Staff	3,308	2,221	0.67
Total	33,849	**11,005**	0.33

Projected Parking Demand and Supply

Using the peak parking ratios from Fall 2011 (Figure 7-18), in combination with growth estimates for the campus population[43], we can calculate future parking demand and supply. By 2024, total peak-period demand is expected to rise from 11,005 to 15,381 spaces. It should be noted that these figures reflect a "baseline" scenario strictly based on current parking demand rates, and do

[39] Based on number of on-campus beds and assumption that they are 100% occupied.

[40] http://asir.sdsu.edu/app/summary.cfm?Rep=4

[41] http://bfa.sdsu.edu/~budfin/factsheet.htm

[42] Although ITE parking demand rates are drawn from generalized national studies, it is useful to note here that SDSU's overall peak parking ratio of .33 closely corresponds with that of suburban university sites surveyed by ITE, which show a rate of .30.

[43] Linear 2% growth rate was assumed beginning in 2015 and continuing until 2024.

not take into account changes in parking behavior due to higher permit price increases, improved pedestrian and bicycle facilities, or more robust TDM measures.

Given the current and future peak parking demand figures, we can also develop an estimate for the effective supply of parking. This study uses an "effective" parking supply factor of 95%. Effective supply is defined as the total number of parking spaces, less the percentage of spaces that the parking operator wishes to have vacant even at the typical peak hour. A 5% vacancy rate provides a cushion of spaces to reduce the search time for the last few available parking stalls and to allow for the dynamics of vehicles moving in and out of parking stalls during peak periods. This cushion also allows for unanticipated variations in parking activity, temporary loss of spaces due to improperly parked vehicles, construction, special events, and other factors.

For example, there are currently 13,839 spaces supplied for the entire University with 11,005 spaces[44] occupied at peak hour. An appropriate or effective amount of parking for this demand would be 11,585 spaces (11,005/.95). Since there are 13,839 spaces currently built, there is a parking "oversupply" of 2,254 spaces. By applying this 5% "cushion" in 2024, we can estimate the amount of appropriate supply to be 16,190 spaces. Figure 7-19 provides a summary of these findings.

Figure 7-19 Parking Demand and Effective Supply, Existing and Projected

User Group	2011			2024		
	Population (A)	Peak Parking Demand (B)	Appropriate Parking Supply (C)= B/.95	Population (D)	Peak Parking Demand (E)	Appropriate Parking Supply (F) = E/.95
Commuter Students	27,489	7,187	7,565	36,553	9,556	10,059
Resident Students	3,052	1,598	1,682	5,484	2,871	3,022
Faculty/Staff	3,308	2,221	2,338	4,399	2,953	3,109
TOTAL	**33,849**	**11,022**	**11,585**	**46,436**	**15,381**	**16,190**

Figure 7-20 shows the projected campus population growth. This figure has been included again below for reference. It is these population growth trends that will be one of the key factors in determining future parking demand, which is illustrated in Figure 7-21. Figure 7-21 shows how parking demand and supply are projected to change from 2011 to 2024, with the parking supply shown at the 95% effective supply rate. In brief, it is projected that SDSU's supply will be able to accommodate the projected demand until SDSU population grows to approximately 37,800. In 2019 projected demand (13,660 spaces) is expected to exceed 95% of the actual supply (13,281 spaces). Once again, Figure 7-21 is reflective of the current baseline scenario and assumes no parking management or TDM strategies are in place.

Figure 7-21 also shows the impacts of price elasticity on parking demand under the baseline scenario and with no parking price increases. In brief, if parking prices are not adjusted, inflation will decrease the costs to purchase a permit (i.e. a $135 dollar permit in 2024 will be much cheaper than a $135 permit in 2012), thereby increasing the number of people who will choose to

[44] Based on Fall 2011 parking estimate.

park. Moving forward, this study assumes a parking elasticity of -.3, or a 10% increase in parking fees results in a 3% decline in demand.

Figure 7-20 Projected Growth in Campus Population

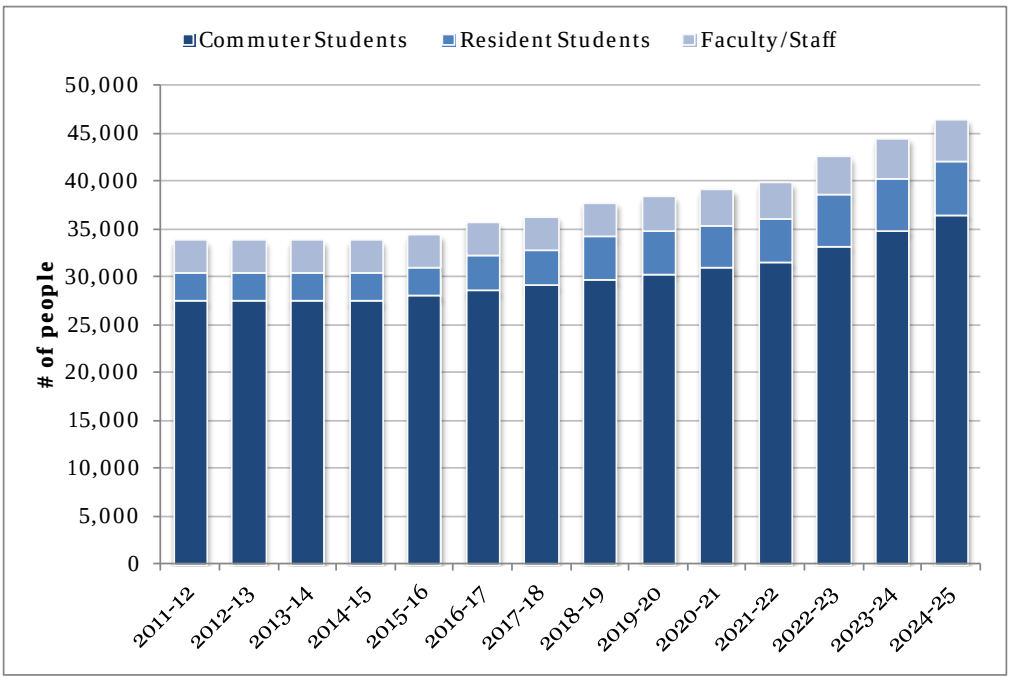
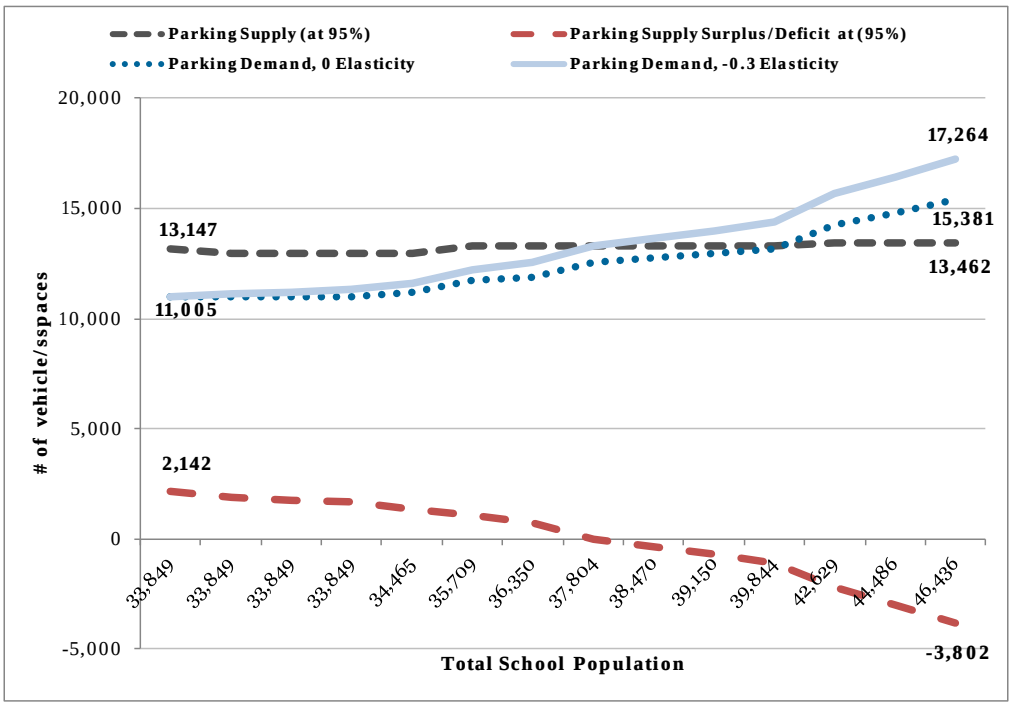


Figure 7-21 SDSU Parking Demand and Elasticity



TRANSIT SYSTEM

Local and Regional Transit

The SDSU Campus is well-served by transit. The main transit stop is the SDSU Transit Center located northwest of the intersection between College Avenue and Hardy Avenue. As illustrated in Figure 7-22, the main transit corridors are Montezuma Road (served by MTS bus routes 11 and 955 from the west and 14 from the east) and College Avenue (served by the MTS bus route 14 and 115 from the north and 15, 856, and 936 from the south). The Green Line Trolley runs east/west through the campus with a stop at the SDSU Transit Center, where there are connections to the local bus routes. All of the routes begin and terminate at the SDSU campus with the exception of Route 14 and the Green Line Trolley.

Figure 7-22 Local Bus and Trolley Network

Source: San Diego MTS

Routes 11, 15, 936, 955, and the Trolley all operate seven days a week. Routes 115 and 856 do not operate on Sunday and Route 14 does not operate on the weekend. Figure 7-23 summarizes service hours and frequency of the various routes serving the SDSU campus. As shown, the headways vary between 15 minutes and one hour.

Figure 7-23 Transit Routes for the SDSU Campus, Service Hours and Headways

Transit Route	From	To	M-F			Saturday		Sunday	
			Service Hours	Peak Headway (min)	Off-Peak Headway (min)	Service Hours	Headway (min)	Service Hours	Headway (min)
11	Skyline Hills	SDSU	4:30am-11pm	15	15; 30-35 late pm	4:30am-11pm	30	No Service	No Service
14	Grantville Trolley	Lake Murray	6am-9pm	60	60	No Service	No Service	No Service	No Service
15	SDSU	Downtown	5am-1am	10-15	15; 30-35 late pm	5am-12am	20	5am-12am	30
115	SDSU	El Cajon TC	6am-10pm	30	30; 60 late pm	7am-8pm	60	7am-6pm	60
856	Cuyamaca College	SDSU	4am-10pm	30	30; 60 late pm	No Service	No Service	No Service	No Service
936	SDSU	Spring Valley	4am-10pm	30	30	5am-9pm	30	6 am – 9 pm	40
955	SDSU	Downtown	5am-10pm	15	15; 30 after 7 pm	5am-10pm	30	6am-9pm	30; 60 after 7 pm
Green Line Trolley	Santee	Old Town	5am-12am	15	15; 30 after 9.15 pm – 12.30 am	5am-12am	15-20	5am-12am	30

Campus Shuttles

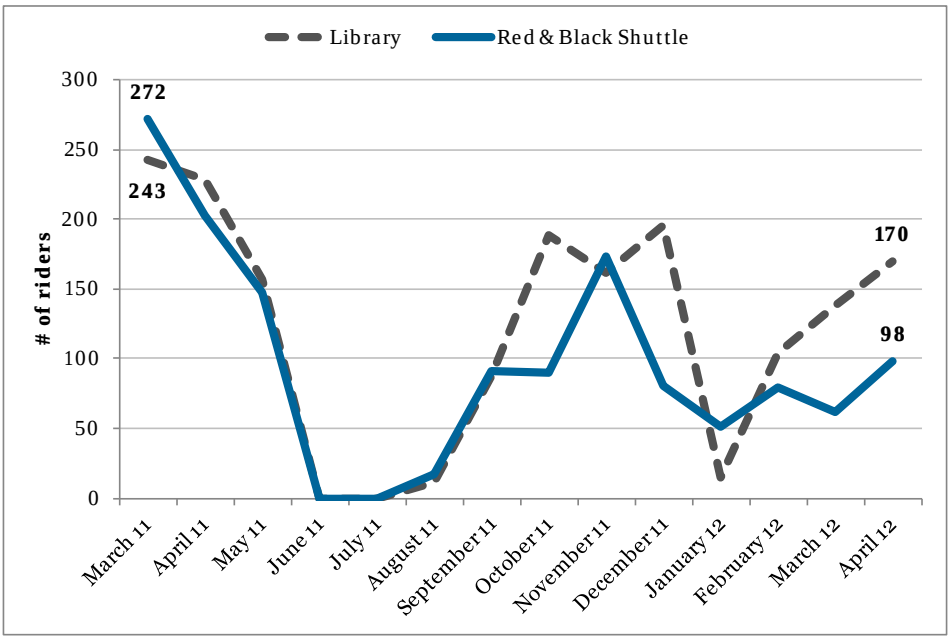
SDSU Shuttles

The University offers two free shuttle services for campus affiliates. The first is a Library shuttle which provides service from the Library to the parking facilities. The Library shuttle is operational during the Fall and Spring semesters Sunday through Thursday, 10:45 PM to 2:30 AM.

The second is the "Red & Black" shuttle, which provides service to and from the outer lots around campus. The Red & Black shuttle operates during the Fall and Spring semesters Monday through Friday between the hours of 5-10 PM. Two large passenger vans operate in tandem, completing the campus loop route every 15-20 minutes. Campus Shuttle stops are located around the main activity areas including: Remington Road (off 55th Street), Aztec Circle Drive, Canyon Crest Drive, East Campus Drive, and Campanile Drive.

Figure 7-24 shows the available ridership data for the two shuttle services. Ridership fluctuates a great deal depending on the time of year with the highest ridership in March and April and another peak in the winter. From March 2011 to April 2012 there were 1,702 riders for the Library shuttle and 1,364 riders for the Red & Black Shuttle.

Figure 7-24 SDSU Campus Daily Shuttle Ridership



SDSU staff members have also provided some cost estimates for the operations of the Red & Black Shuttle, as shown in Figure 7-25. In brief, it costs SDSU roughly $28,000 per year to operate the shuttle. The very low operating costs are largely due to the cost savings gained by utilizing student drivers.

Figure 7-25 Annual Costs of Red & Black Shuttle

Costs	$ Amount
Student Assistants	$12,000
OE&E	$14,000
Fuel (estimated)	$2,000
Total	**$28,000**

Source: SDSU

Private Shuttles

It should also be noted that several of the apartment buildings and student residential complexes near campus provide private shuttle service to and from SDSU for their residents. For example, there are a number of apartment complexes in the area of Montezuma Road and El Cajon Boulevard. Private shuttles for those complexes operate on weekdays and run a continuous 30-minute loop between 7:20 AM and 5:30 PM.

Future Transit Plans

The 2050 SANDAG RTP establishes regional goals for a comprehensive transit network. These goals include an emphasis on increased peak period transit mode share, maximized transit ridership, development of a cost-effective and implementable transit system, and support for an efficient and effective transportation system. Regionally, the plan calls for six new trolley lines, ten new streetcar lines, 11 new bus rapid transit (BRT) lines, 21 new Rapid Bus routes, 16 new shuttle/revised local routes, upgrades to trolley and SPRINTER lines, and an extension of the SPRINTER light rail to Fig Street in Escondido and additional park-and-ride facilities.

Figure 7-26 shows the future transit projects related to the SDSU campus. These projects will improve the options for alternative modes of transportation and are designed to help relieve traffic congestion in the area.

Figure 7-26 Final SDSU-Related 2050 RTP Transit Projects

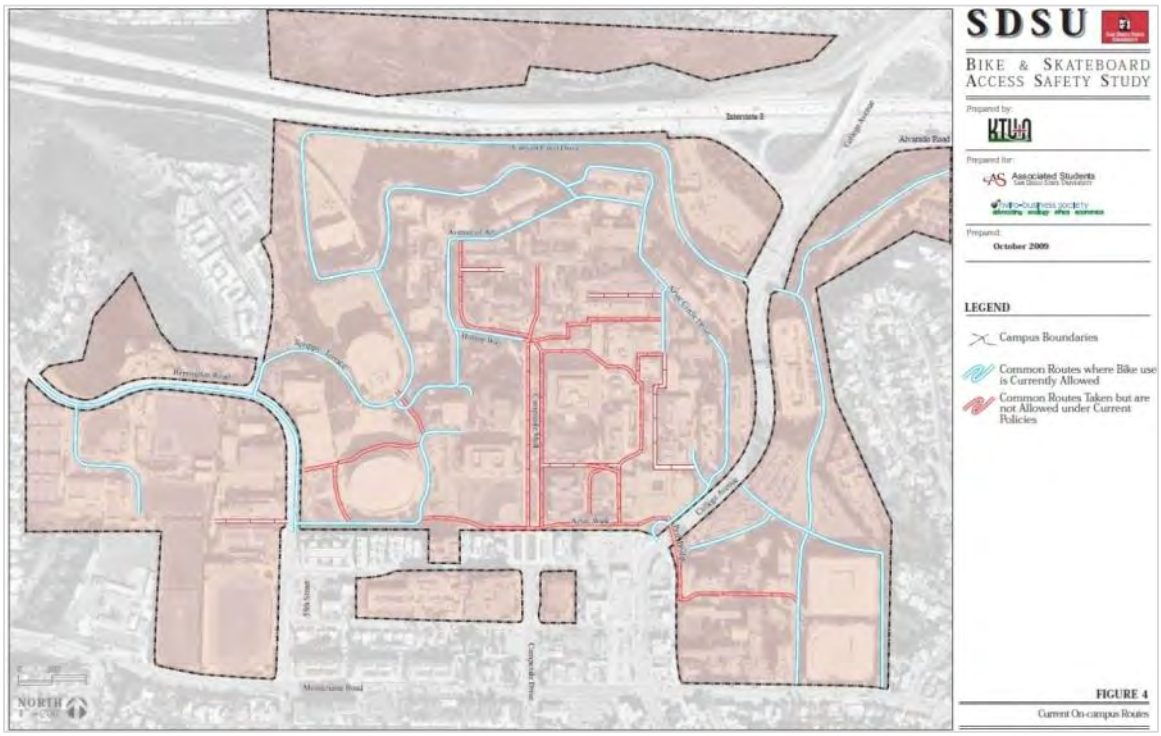
Decade	Service	Route	Description	Peak Headway (min)	Off-Peak Headway (min)
2018	Rapid	15	Mid-City Rapid (SDSU-downtown) via Mid-City, El Cajon and Park Blvds.	10	10
2020			Local Bus Routes – 15 minutes in key corridors	15	15
2035	Trolley	560	Mid-City to downtown (Phase 1) via El Cajon and Park Blvds.	7.5	7.5
2035	Trolley	563	Pacific Beach to El Cajon via Clairemont, Kearny Mesa, Mission Valley, SDSU	7.5	10
2035	Rapid	11	Spring Valley to SDSU via Southeastern San Diego, Downtown, Hillcrest, Mid-City	10	10
2035	Rapid	636	SDSU to Spring Valley via East San Diego, Lemon Grove, Skyline	10	10
2050	Trolley	560	SDSU to downtown (Phase 2) via Mid-City, El Cajon and Park Blvds.	7.5	7.5

NON-MOTORIZED TRAVEL

Bicycle Travel

Bicyclists can access the campus at College Avenue, Montezuma Road, and Alvarado Road. Bicycle facilities in the area consist of Class II (on-street striped bike lanes) and Class III (on-street signed bicycle route) facilities. The designated bicycle routes follow major streets, but undesignated local streets are also used extensively by bicyclists. There are Class II bike lanes along sections of Montezuma Road, as well as on 55th Street all the way to Remington Road. The newly constructed Campanile Bike Lane is a north-south route following the western leg of Campanile Mall. The northernmost segment sweeps west toward Hilltop Drive. Striping and signage along the route help to minimize conflicts between cyclists and pedestrians, as shown in Figure 7-27. Current campus policies do not allow for bicycle use in much of the campus core[45].

Figure 7-27 Existing SDSU Bicycle Network



Source: SDSU Bike and Skateboard Access Safety Study

Key Issues

Increasing traffic volumes: As the campus and adjacent areas have grown, there has been an increase in traffic volumes and vehicle speeds to, from, and around SDSU. These conditions can, under certain circumstances, make it difficult for bicyclists to safely travel on many of the major roadways.

[45] SDSU Police Code Section 100.02

Location of campus population: While the trend is shifting, the current University is primarily a commuter-based campus, with the majority of the population living off-campus at a distance that makes bicycle riding difficult due to the lack of regional connections and dedicated bicycle facilities. The number of campus access points for bicyclists is limited based on topography and the minimal connectivity of the adjacent roadway network.

Integration of mixed travel modes: A large share of on-campus bicycle use now occurs in areas considered "pedestrian only." SDSU should evaluate the feasibility of better integrating bike facilities to improve the safety issues associated with mixed travel modes on campus walkways and roadways. Consideration should also be given to accommodating the access needs of those in electric carts and other service vehicles.

Bicycle parking facilities: The number of bicycle parking spaces on campus is potentially inadequate to accommodate increased bicycle use and some of the existing facilities are in remote locations. Since bicycle use is restricted in the core of the campus, bicyclists are often required to leave their bikes a significant distance from their destinations.

College Avenue overcrossing: The intersection most affecting bicycle access to the SDSU campus is the College Avenue overcrossing of I-8. The overcrossing features high volumes of traffic at high speeds, and with no bicycle facilities along College Avenue, residents on the north side of I-8 have limited options to travel the short distance to campus.

Planned Bicycle Improvements

The *City of San Diego Bikeway Master Plan*[46] proposes Class II bike lanes along College Avenue between Montezuma Road and I-8. The bicycle lanes are proposed to extend north across I-8 providing a safe connection between campus and SDSU residences. The bicycle lanes are also proposed to extend south of Montezuma Road connecting to Class II bike lanes at El Cajon Boulevard and University Avenue.

In 2009, SDSU completed the *SDSU Bike and Skateboard Access Safety Study*, which identified opportunities for increasing non-motorized access and proposed several strategies for improving bicycle access, mobility, and safety at SDSU. As part of the study, on-campus bicycle lanes are proposed to improve connections between existing bicycle facilities. The Aztec Walk Bike Lane Project has been implemented to improve the connection between College Avenue and 55th Street as it intersects with the recently completed Campanile Bike Lane Project and the proposed Campanile to Hardy Connector. Lastly, the Music Building Bike Lane Project connects the Campanile Bike Lane Project with an existing path which extends south of Viejas Arena and connects with 55th Street. Figure 7-28 includes the proposed bike facilities within the campus boundary.

In addition, the 2009 Safety Study outlines a series of recommendations related to increasing and improving bicycle parking. The Safety Study identifies more than two dozen potential locations for new bicycle racks and lockers. Finally, the Study makes a series of recommendations for new bicycle facilities on streets, which connect to the campus, primarily College Avenue.

Beginning in Fall 2012, the SDSU Associated Students will offer a new "Aztec Bike" rental program through the Aztec Recreation Center (ARC). The program will allow SDSU students,

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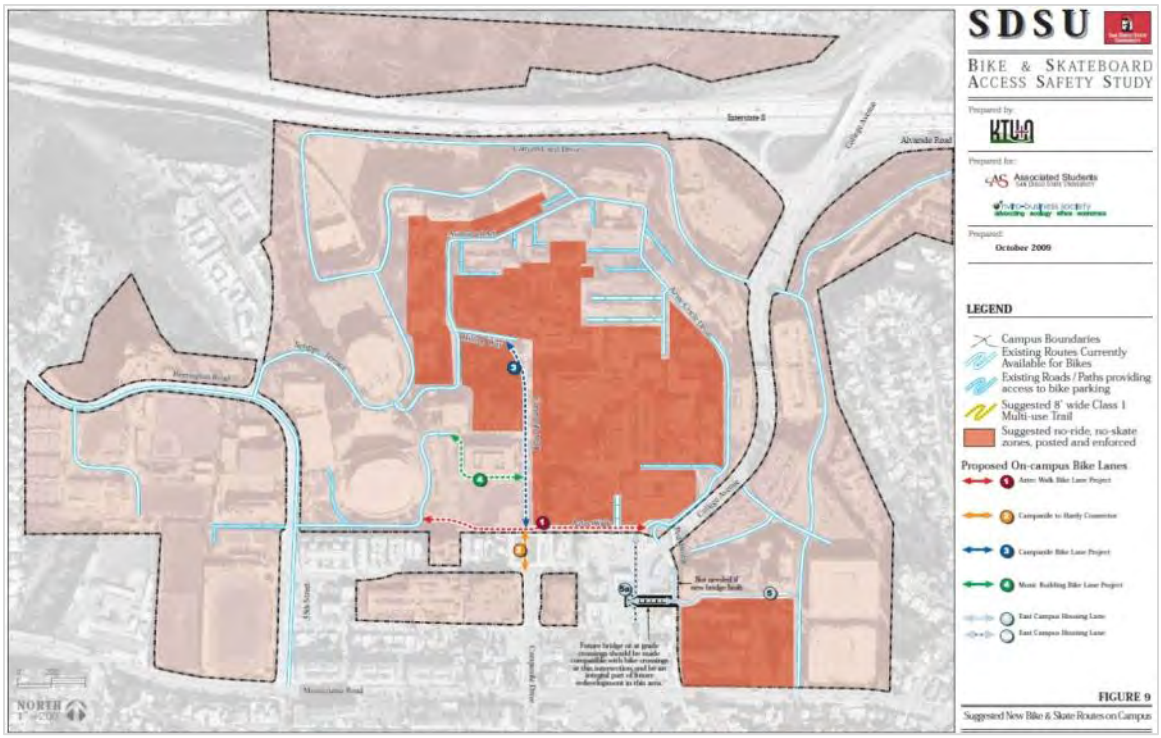
[46] See page 96, Figure 6-2:
http://www.sandiego.gov/planning/programs/transportation/mobility/pdf/sdbicyclemasterplanfinal2011.pdf

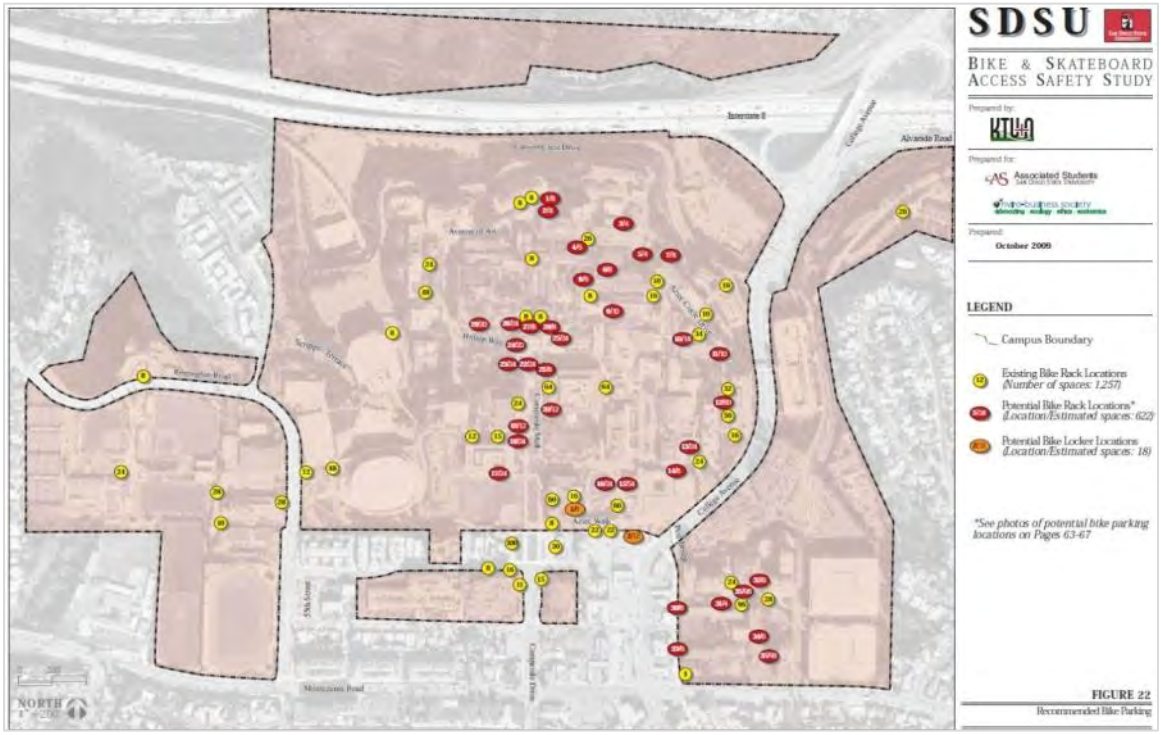
faculty, and staff to rent one of 10 bikes for one month. The cost of the rental will be $30 per month for active ARC members and $35 per month for non-members.

Figure 7-28 Proposed On-campus Bicycle Facilities



Source: SDSU Bike and Skateboard Access Safety Study

Figure 7-29 Existing and Proposed Bicycle Parking



Source: SDSU Bike and Skateboard Access Safety Study

Pedestrian Travel

There is a high level of pedestrian activity within the SDSU campus. Several specific land uses attract and produce high pedestrian concentrations and activity, including the SDSU Transit Center, areas with retail activity and restaurants, parking facilities, the athletic facilities in the western part of the campus, and academic buildings and facilities. The campus is served by three pedestrian bridges across College Avenue at strategic points near parking facilities, and three more across Aztec Circle Drive at PS 4. The bridges provide safe connections between parking facilities and the campus core which has very limited vehicle access.

Within the campus, there is a network of pedestrian trails starting at the intersection of Campanile Drive and Hardy Avenue north to Hepner Hall and around the central facilities. The central campus facilities are interconnected with a rich pedestrian trail network.

All streets running through the campus have adequate sidewalks on either side of the streets. Many of the intersections within campus are stop controlled to slow traffic. Crosswalks are also present at the primary intersections near the campus.

Key Issues

College Avenue (between Montezuma Road and Hardy Avenue): The three parking facilities, restaurants, and classroom facilities along this roadway, as well as the soon-to-be-completed Aztec Student Union, generate heavy pedestrian traffic. While there are ample sidewalk facilities, there is no buffer between the sidewalk and the roadway to further protect pedestrians from high speed traffic on College Avenue. Crossings at grade along College Avenue can also be challenging

for pedestrians due to the high volumes of fast moving traffic, especially at peak periods. According to the UT-San Diego, approximately 11% of all city speeding citations between September 2010 and September 2011 were written on College Avenue between El Cajon Boulevard and Montezuma Road.

Montezuma Road (between College Avenue and 55th Street): Montezuma Road separates residential apartments from the campus. As a result, there are several intersections with a high demand for safe pedestrian crossings. The intersection with College Avenue is a key access point to the Aztec Student Union and SDSU Transit Center, and therefore sees heavy pedestrian traffic.

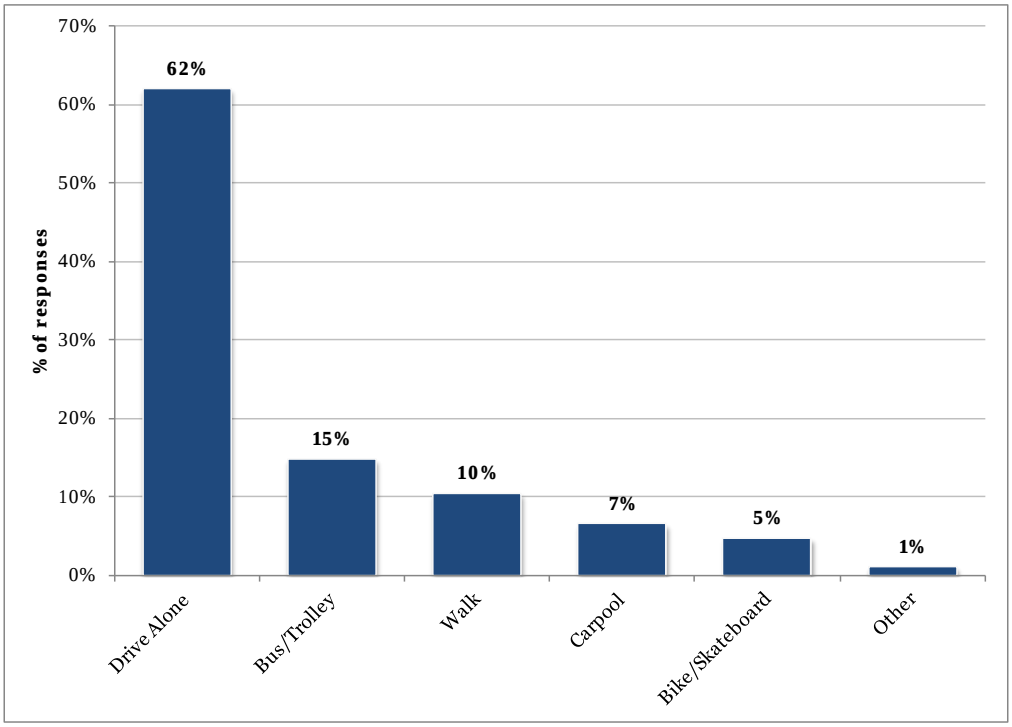
Heading west on Montezuma Road, pedestrian facilities include sidewalks and a buffer from the on-street parking, as well as a green strip. There is heavy foot traffic along this segment as people access the athletic facilities on the west side of the campus. Violations of the 35 mph speed limit are a common occurrence and create a safety concern for pedestrians in the area. The intersection with 55th Street is a key access point with high pedestrian demand as it connects to the SDSU PS 5 / Sports Deck, Viejas Arena, and the Fowler Athletics Center.

Another consideration should be the implementation of high visibility crosswalks at key accesses and major intersections to improve safety for pedestrians. Furthermore, crosswalks at the key intersections should be wider than standard in consideration of the high pedestrian volumes.

SDSU Mode Split

Prior to the recently distributed travel survey (see Chapter 4), the Associated Students conducted a 2010 survey of students asking basic demographic and travel behavior questions. One of the questions asked about travel to campus and Figure 7-30 summarizes the results from 2,889 survey responses. In brief, the majority of students drive alone to campus (62%), although there are a substantial number of students utilizing transit, carpools, and non-motorized modes. Moving forward, it will be important for SDSU to better track and monitor campus mode splits for all of its affiliates so that it can properly evaluate the effectiveness of its TDM programs.

Figure 7-30 SDSU Student Mode Split



Source: https://newscenter.sdsu.edu/dus/regionalsustainability/files/00659-AS2010_Student_Transportation_Survey.pdf

EXISTING TDM PROGRAMS

SDSU's existing TDM program is relatively limited, relying mostly on non-University resources provided by public agencies and private companies in the San Diego area. Program elements include:

- Transit Pass subsidies
- Carsharing programs
- Ridesharing programs
- Carpool and vanpool services
- Parking lot shuttle services

Transit Pass Subsidies

SDSU students, faculty, and staff are eligible to purchase discounted transit passed for unlimited rides on SDMTS bus and trolley routes. Monthly passes are available for $57.60 (a $14.40, or 20% discount), and semester passes are available for $155 (including a $20 subsidy from the University). Faculty/staff members were able to purchase paper passes for $66 per month, but the paper passes and faculty discounts were recently discontinued due to staff now being able to purchase the new Compass Card.

SDMTS offers discounted transit passes to students of most universities in the San Diego Area. Semester passes ranges from a high of $187 (Grossmont College), to a low of $47 (University of California, San Diego).

Carsharing

SDSU students, faculty, and staff are eligible for a reduced membership rate when joining Zipcar, and receive $35 of free driving after joining. There are two Zipcar pods on campus, one in the H Lot (two vehicles), and another in the S Lot (four vehicles).

Ridesharing

Zimride

Zimride operates SDSU's private ridesharing social network, allowing users to request or offer rides for commutes, road trips, popular events, and trips to the airport. It is open only to SDSU students, staff, and faculty, free of charge. Registrants must have a valid SDSU email address to sign up for the program.

iCommute

The iCommute program is offered by the San Diego Association of Governments (SANDAG) and is free to all students, faculty, and staff. The ridematching program helps students, staff, and faculty locate other people traveling to the SDSU campus that live near their place of residence. Through the program's website, users can coordinate carpools and vanpools, as well as bicycle and transit "buddy" rides. The program encourages students to arrive on campus via non single occupant auto modes, and to travel in groups whenever possible.

Carpools registered with iCommute or Zimride are allowed shared rights to a single parking permit, meaning it can be shared between different vehicles and individuals of the same carpool.

Carpool and Vanpool Services

Carpool Services

SDSU faculty and staff that wish to carpool but do not want to join Zimride or iCommute are eligible for certain benefits if they register their carpool with Parking Services. Only one F/S permit is required per carpool, and it is interchangeable for all vehicles of persons in the carpool. Registrants are also given a Special Permit (SP 700), which allows the permit holder(s) greater flexibility as to where they can park, including the first levels of PS 1 and PS 4 garages.

Vanpool Operation

SDSU's vanpool operation provides faculty and staff the opportunity to rideshare with other SDSU employees living near one another. The program is administered through a contract with Enterprise Rent-A-Car, allowing employees to coordinate and set up services for the discounted rate of $400 per month. Eight- and nine-passenger vans are available. The University's contract with Enterprise Rent-A-Car also allows faculty and staff to rent vehicles for University-related business or personal use at a discounted rate.

LIFE CYCLE COST ESTIMATES

To compare the cost-effectiveness of the University's investments in transportation facilities, a "high level" cost/benefit analysis was performed for the programs and facilities of each

transportation mode. A life cycle cost analysis calculates the cost of a system or piece of infrastructure, such as a shuttle system or parking structure, over its entire lifespan.

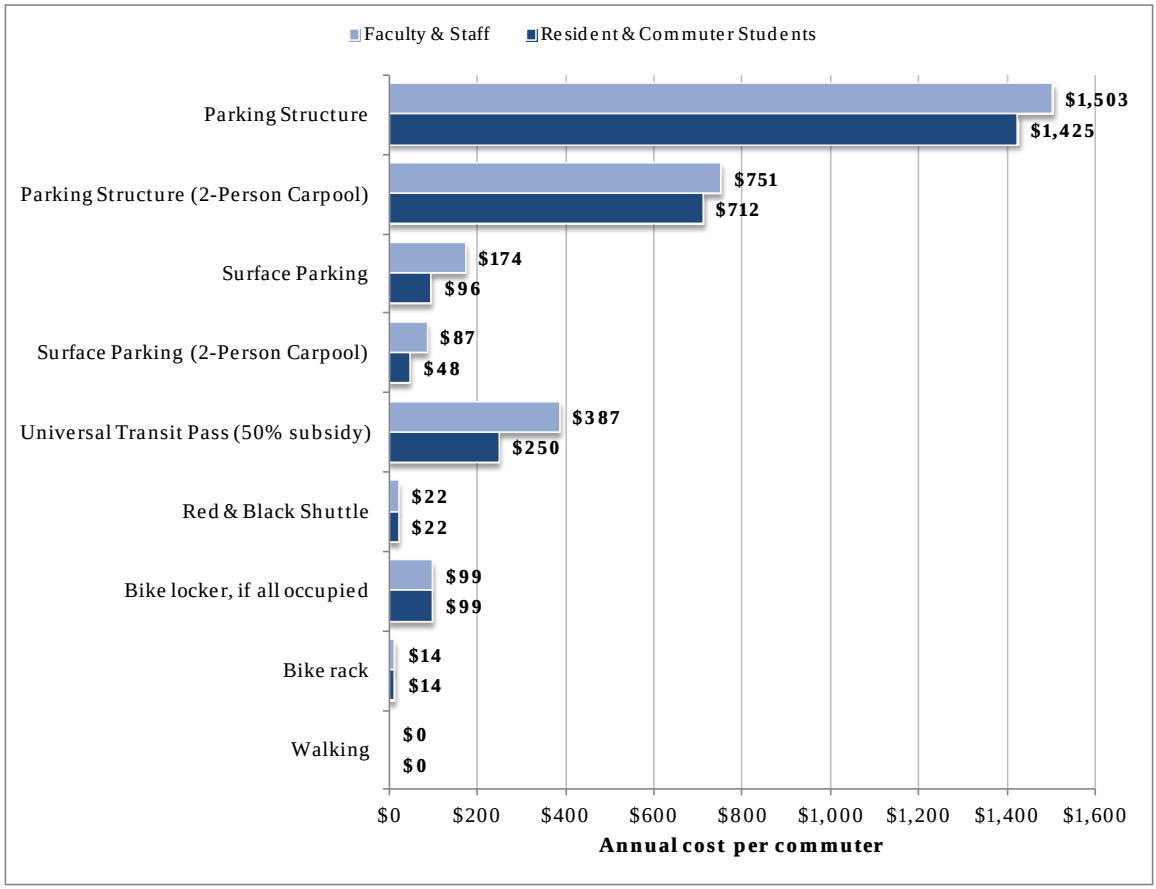
In brief, the methodology utilized for this analysis translates all capital costs into annual costs, and then expresses the cost of each transportation facility in terms of its *cost per year*. For example, if a parking structure is expected to last 30 years, the capital costs can be translated into annual costs by spreading the cost of building and financing it over its expected 30-year lifespan, using a long-term interest rate. This annual cost can then be usefully compared to, for example, the annual cost of operating a transit system or vanpool program.

Figure 7-31 summarizes the life cycle cost estimates for SDSU's alternative transportation programs[47] and for the cost of its parking facilities[48]. The figures show the net cost to SDSU to accommodate each commuter, whether by alternative transportation or different types of parking. The net cost to SDSU of a transportation program or facility is defined as the total cost for the program incurred by the University less any user fees received. The estimates assume current policies, including current permit prices for parking. Where cost information was not readily available estimates were based on industry cost standards.

[47] Transit pass estimates include the following assumptions: 14.9% of commuter student population and 9% of faculty/staff population ride transit; Student transit passes split evenly between monthly and semester passes; Faculty/staff transit passes split evenly between monthly and monthly premium passes

[48] Parking cost estimates include the following assumptions: $18,800 for structured parking spaces (including soft costs); $3,000 per space for surface parking; land costs are $0; O&M for surface ($250 per space per year) and structure ($550 per space per year); 30 year life cycle; 5% interest rate.

Figure 7-31 Net cost to SDSU per commuter



8 APPENDIX C - TRAVEL DEMAND ANALYSIS

In connection with preparation of the 2007 Campus Master Plan, the SDSU Office of Facilities Planning, Design and Construction conducted an inventory of existing on-campus student housing and off-campus multi-family housing units located in the surrounding area that are available to students. In addition to the on-campus inventory, the survey considered off campus multi-family housing managed by SDSU, off-campus multi-family housing units located within one-half to one mile of campus with access to campus *via* private shuttle, and off-campus multi-family housing without shuttle access located within 1 mile of campus. Conclusions regarding the percentage of SDSU student occupants for each category were derived based on existing campus data and interviews with on-site private property managers. Since that time, SDSU has conducted a subsequent inventory of available student housing in connection with preparation of a TDM program.

Figure 8-1, Student Housing Distribution On and Nearby SDSU, summarizes the student housing located within the SDSU vicinity and the percentage of students occupying those units. Although a substantial percentage of the privately owned off-campus housing units located between one-half to one mile of campus likely are occupied by SDSU students, for purposes of this analysis, a zero percent occupancy rate was assumed, thereby understating the number of students currently residing within one mile of campus.

Figure 8-1 Student Housing Distribution On and Nearby SDSU

Location	Number of Beds	Estimate % Occupied by SDSU Students	Total
On-Campus	3,052	100%	3,052
Off-Campus – Within 0.5 Mile – SDSU Managed	1,114	100%	1,114
Off-Campus – Within 0.5 Mile or Served by Shuttle	4,313	90%	3,881
Off-Campus – Within 0.5 to 1.0 Mile – Privately Owned/Operated	1,983	0%	0
TOTAL	10,462	-	8,047

Source: SDSU

Figure 8-1 shows that as of the 2012/2013 academic school year, 4,166 beds were available to SDSU students for housing, either on campus or off campus, within facilities managed by SDSU solely for the purpose of student housing. Based on SDSU records and apartment manager

interviews, SDSU estimates that approximately 90% of the occupants of an additional 4,313 beds located within one-half to one mile of campus, which are serviced by a private shuttle to/from SDSU, house SDSU students. Lastly, as indicated in Figure 8-1, an additional 1,983 beds are located within private apartment complexes located between one-half to one mile from campus that are available to students. As previously noted, while Figure 8-1 depicts zero percent of students residing in these privately owned/operated housing located between one-half to one mile of campus, it is reasonable to assume that many of these beds in fact are occupied by SDSU students. Based on this information, which assumes a zero percent occupancy of certain facilities likely housing a sizable number of SDSU students, SDSU conservatively estimates that 31% to 33% of current SDSU students either live on campus or within one mile of campus.

Figure 8-2 provides a summary of walking and bicycling "sheds." The sheds are based on distances that the average individual will typically walk or bike to his or her destination. The sheds are calculated based on the existing road network and its connections to the primary access points to campus. For the SDSU campus, the access points include major intersections and the pedestrian bridges that traverse College Avenue. It is important to note that this analysis does not include an evaluation of the quality of the walking or bicycling environment, but is strictly based on the existing connectivity of the road network.

A couple of observations are worth noting. First, the sheds extend to the south far more than they do to the north. This is reflective of the barrier that I-8 creates for pedestrians and bicyclists wishing to access areas to the north of campus. As SDSU develops strategies to improve walking and bicycling, access north along College Avenue should be a primary consideration. Second, much of the new development planned for SDSU, such as the PLV site, are within the ¼-mile walk shed to campus. As such, strategies to maximize access to campus for these new residents should be focused on pedestrian mobility.

Third, all of the existing parking facilities fall within the ½-mile walk shed, including the underutilized lots C and D. Nevertheless, the topography and hills in this area can make pedestrian travel more challenging. As a result, enhanced shuttle service may be an effective strategy for distributing parking demand more evenly. Finally, the shed map further reinforces the degree to which the major arterials, such as College Avenue, Montezuma Road, and El Cajon Boulevard, determine a bicyclist's ability to travel. The north-south and east-west extents of the sheds are largely defined by these three streets. Consequently, targeted bicycle improvements to these streets are particularly important in improving bicyclist accessibility and mobility.

Figure 8-2 SDSU Walking and Bicycling Sheds

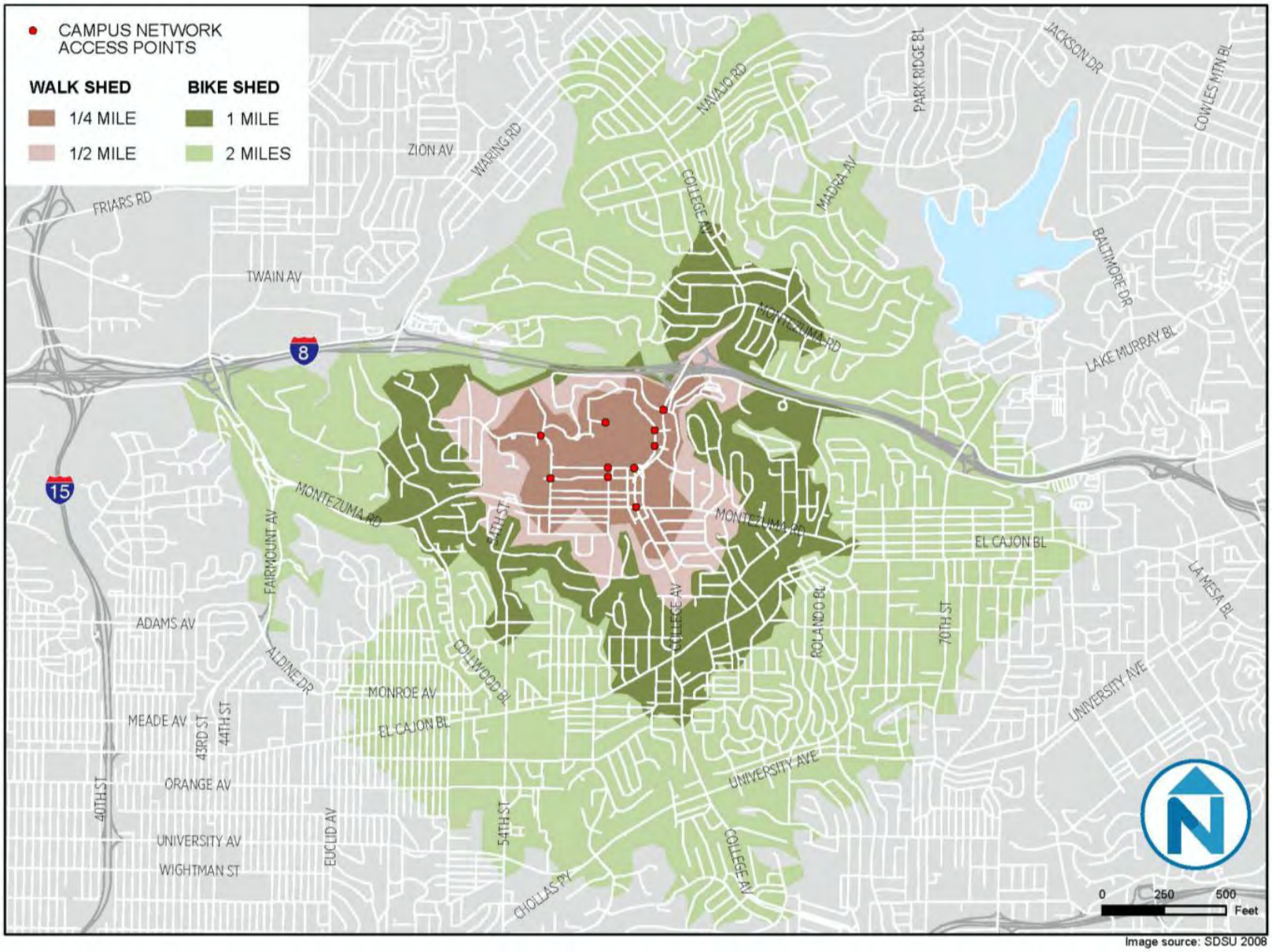


Image source: SDSU 2008

9 APPENDIX D – CAMPUS TDM BEST PRACTICES

This appendix includes several best practice case studies of colleges and universities that have recognized the capacity, economic, and environmental advantages of balancing transportation needs and investing in alternatives to the automobile. All have been successful in shifting trips from single occupant vehicles to alternative modes via the various campus parking and TDM programs described in detail below. The purpose of these case studies is to illustrate TDM programs at universities in similar land use contexts as SDSU, as well as other innovative programs successfully implemented in universities of different sizes and land use settings, yet are still relevant to SDSU. While SDSU's existing TDM efforts include some of the program types described below, the selected case studies highlight best practices that could be evaluated by SDSU and, to the extent feasible, utilized by SDSU moving forward.

The case studies selected from universities located in similar "inner suburban" contexts to SDSU include:

- Stanford University (Stanford, CA)
- California State University, Long Beach (Long Beach, CA)
- University of California, Los Angeles (Los Angeles, CA)
- University of California, San Diego (San Diego, CA)
- University of Southern California (Los Angeles, CA)

Additionally, the following other universities were chosen because their programs offer relevant examples of particularly innovative yet relevant transportation solutions:

- University of Minnesota, Twin Cities (Minneapolis, MN)
- Portland State University (Portland, OR)
- University of Washington, Seattle (Seattle, WA)
- Massachusetts Institute of Technology (Cambridge, MA)

The case studies are organized by mode of travel, creating a varied menu of potential TDM programs. The program types include:

- Bicycle and pedestrian amenities and incentive programs
- Parking pricing programs
- Ridematching programs
- Subsidized transit programs
- Carpool and vanpool incentive programs
- Campus housing and amenity programs
- Social media and enhanced technology strategies

BICYCLE / PEDESTRIAN AMENITIES AND INCENTIVE PROGRAMS

University of Minnesota

ZAP Twin Cities

The University of Minnesota offers points and rewards for non-vehicular trips made on- and off-campus. The ZAP Twin Cities program, created by the University's Parking and Transportation Services in January 2012, tracks trips with a chip installed on bikes and read by cellular towers, which then send a bicyclist's ID number to a campus database.

Currently, the University has installed 16 towers, with plans for at least four more. A tag attached to a participant's bicycle is recognized by readers in the towers when a bicyclist comes within 30 feet of it. Within the first four months of the program's inception, 607 riders had signed up, many more than the 350-500 riders the University predicted would utilize the program. The program began with an initial pilot consisting of 100 participants.

Incentives are based on trips taken and vary between employees and students. Employees can earn points which they can utilize for a discount on insurance premiums. Students can earn bicycle-related prizes such as tools, lights, and bells. Both students and employees earn $65 worth of credit at the campus Bike Center after completing 40 rides.

A challenge for the program will be to diversify the incentives offered to continue to entice program participants to complete trips via bicycle. The University is considering adding gift cards to local businesses and restaurants in the future. The ZAP program is part of the University's greater effort to increase biking to and from campus above the current 10% mode share.

Additional Bicycle and Pedestrian Programs

Other bicycle incentive programs and amenities offered by the University of Minnesota include:

- **Bike Sharing**: In 2012, the University of Minnesota partnered with the City of Minneapolis to launch a public bike sharing system - "Nice Ride." Season passes can be purchased for $50, and the first 30 minutes of each rental is free. Ten pods are distributed throughout campus.
- **Guaranteed Ride Home Program**: University students, faculty, and staff who ride their bikes or walk to campus three or more days per week are eligible for Metro Transit's program, receiving two coupons every six months, which are good for a free transit ride or $25 cab fare.
- **Bicycle safety and maintenance courses**: Free courses available for all members of the public are held at the Campus Bike Center.
- **Electronic bike trip planning kiosk**: For use by all members of the public, this kiosk enables users to map the best routes to their desired destination.
- **On-campus bicycle repair service**: A repair shop open to all members of the public. Does charge repair fees for service.
- **Secure bicycle parking and shower/changing facilities**: Open only to members of the Campus Bike Center (memberships costs $85 per year).

Stanford University

Clean Air Cash Rewards Program

Stanford University offers cash incentives to students, faculty, and staff who ride their bicycles, take transit, or walk to and from campus. Dubbed the "Clean Air Cash Rewards" program, commuters that register for the Stanford University Commute Club are eligible for up to $300 in "Clean Air Cash" per year. Students, faculty, and staff are paid $25 for each month they qualify for the program. Eligibility requirements include:

- Non car commuter
- Non-resident of student housing
- Non-parking permit holder
- Primary commute is to main campus
- Based at Stanford's main campus at least 20 hours per week during normal weekday business hours
- Minimum of eight (undergraduate) or six (graduate) units per quarter

Additionally, students, faculty, and staff who join the Commuter Club but do not qualify for the Clean Air Cash Rewards program can purchase up to eight daily parking passes per month (online or in person), on demand. This enables infrequent drivers to save money by not having to purchase full monthly parking permits.

Bicycle Education Programs

The University offers several bike educational opportunities, ranging from traditional courses and lessons to a bicycle-specific "mascot" that makes appearances at both bike specific events and general campus events. Specifically, the bicycle education programs include:

- Bike safety and citation diversion classes: twice monthly one hour classes that allow bicyclists cited at Stanford to take a class in lieu of paying a fine
- Bike repair clinics at the Campus Bike Shop
- Bicycle riding lessons
- Friday Bicycle Safety Stations: from 11 AM to 2 PM every Friday, bicycle program staff are available to register bikes, conduct safety checks, provide information handouts, and answer questions
- A bicycle safety mascot, dubbed "Sprocket Man," who helps reach out to the campus community about bicycling safety by handing out informational flyers at campus events

Additional Bicycle and Pedestrian Programs

Stanford has various other programs and amenities that encourage bicycle use and walking. These include:

- Approximately 12,000 bike rack spaces located throughout the main campus
- A full-time campus Bicycle Coordinator, available for questions from students interested in bicycling to and from campus
- Four campus bicycle repair stands that enable bicyclists to make minor repairs and pump their tires for free
- Free bicycle safety lights with bicycle registration

- Clothes lockers and showers available for a $16 annual fee
- An emergency ride home program, free for all students, faculty, and staff who do not drive to campus (complementary taxi ride or car rental)
- Bicycle racks on the free Marguerite campus shuttle

No Net New Commute Trips

As a part of its General Use Permit (GUP), Stanford agreed to mitigate the transportation impacts of its planned development and population growth through a program of "no net new commute trips." The University cannot exceed the 2001 measured number of vehicles entering and exiting the university during peak periods throughout the life of the GUP. As such, Parking & Transportation Services has developed a number of programs and options to encourage the use of alternative transportation, including the bicycle programs chronicled above.

Congestion and Parking Relief Incentives (Capri)

In the spring of 2012, the University expanded their existing TDM program by introducing the Capri (Congestion and Parking Relief Incentives), a program with the objective to reduce peak hour traffic in the area.

Employees with an A or C parking permit are eligible to enroll in Capri. Once enrolled, drivers receive a unique identification tag that is placed on the inside of their windshield. Scanners installed at the 10 main campus entry points detect users who avoid the weekday 8-9 AM peak hour by arriving between 7-8 AM or 9-10 AM, or avoid the evening peak hour of 5-6 PM and leave instead between 4-5 PM or 6-7 PM. The system automatically awards credits to those drivers who arrive or depart during the designated off-peak hours Monday through Friday. These credits can then be used for an online game that pays random cash prizes of $2 to $50. Accumulated rewards are disbursed monthly via Stanford's payroll or through automatic bank deposits.

Given that this program has only been in place for a few months it is not yet possible to calculate the exact impacts this program has had on reducing peak hour traffic. It is also important to note that the program has begun to transition to the use of GPS or smartphone technology to track the travel patterns of the program participants. Campus officials believe this shift in technology platform will allow for expansion of the program in a highly cost-effective manner.

Portland State University[49]

On-Campus Bike Shop

The PSU Bike Hub is a one-stop campus bike shop specifically designed for students, faculty, and staff. The shop offers tools, guided assistance for students to learn basic to advanced bike maintenance skills, and member discounted rates on repairs, parts, and merchandise. The PSU Bike Hub is also the place where students manage their bike parking permits.

Secure Permit Parking & Outdoor Parking

The University offers four long-term biking facilities on campus with controlled-access entry. Each area has surveillance cameras to record all entries and exits. Permits cost $15 per term or $45 for the year. Students also benefit from access to basic maintenance and air pump tools at the parking stations, as well

[49] Interview with Ian Stude, Portland State University, Transportation Options Coordinator, April 12, 2012.

as vending machines for other small accessories. The permit parking areas offer a total of 232 parking spaces across several structures (ranging from 14 to 86 spaces). The campus also offers hundreds of outdoor bike racks throughout the campus. A limited number of bike lockers are also available to the biking community on campus, rentable through the City of Portland's Bike Program.[50]

The introduction of the bike shop in 2004 has had a noticeable impact on bicycle mode split, tripling it from 4% in 2003 to the current 12% level (see Figure 9-1). The University increased capacity of the bike shop in 2010, expanding it from 200 square feet to 1,000 square feet, which helped increase membership from 300 to about 1,300-1,400 users.

BIKE to PSU Challenge

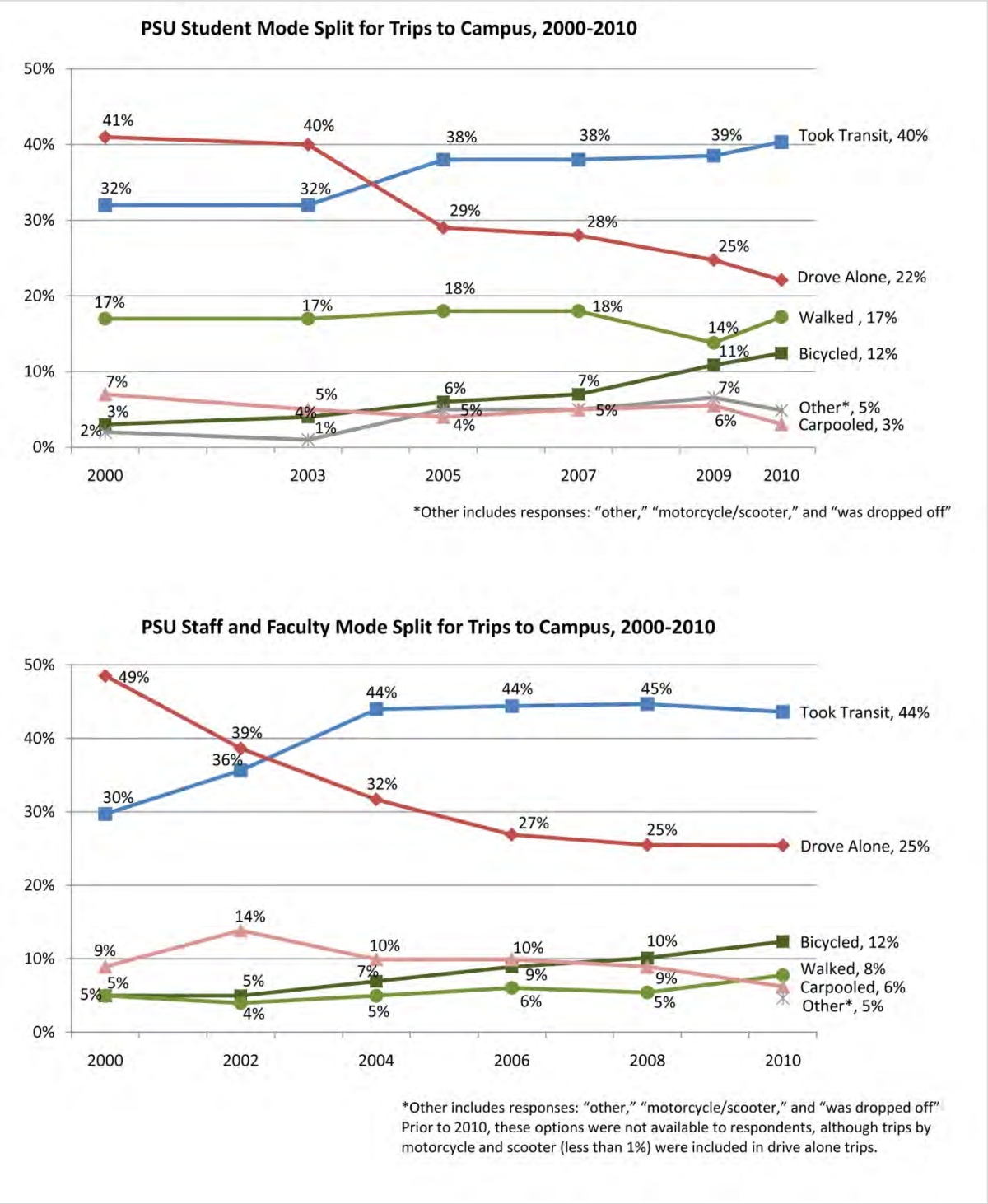
The annual *Bike to PSU Challenge* in May is the University's major annual push to encourage bicycle commutes to campus. The program is aimed at student participation although faculty, staff, and local residents are also invited to participate in the challenge. The project website, *biketopsu.com*, allows participants to see live statistics highlighting the number of riders actively logging trips, total teams, miles logged, pounds of CO_2 saved, and calories burned. Last year, over 800 participants and 100 teams logged trips on the website, totaling some 83,000 miles.

Bike Rental Program

PSU's new bike rental program, VikeBike, aims to address one of the major barriers to biking on campus – the initial cost of purchasing a bicycle. The program offers students a refurbished bicycle at a rental cost of $45 per term during the fall, winter, and spring terms. The rental program includes lock and helmet accessories, a bike parking permit, and access to the Bike Hub center for fix-it-yourself and bike repair services. The program is relatively new and PSU is still marketing and testing the program. In 2012, PSU will be tying the VikeBike Program to the Commute Challenge and making rental bikes available free for one month for students who do not own a bicycle.

[50]Portland State University. 2012. Bicycling for Students. http://www.pdx.edu/transportation/bicycles

Figure 9-1 PSU Mode Split, 2000-2010



PARKING PRICING

University of California, Los Angeles (UCLA)

UCLA has a tiered parking system that differentiates between students and other users. All UCLA faculty, staff, and employed graduate students are eligible to apply for an employee parking permit. Undergraduate and graduate students can apply for student parking permits, which are assigned according to a point system. Students accumulate points based on class standing, commute distance, employment, dependent children, and professional school obligations. Organized carpools are given the highest priority, and permits are distributed to those with the highest number of points. The cost of permits varies from $204 per quarter to $375 per quarter, depending on time of access (e.g., daytime only, or evening and weekend only, or both) and location (some permits limit users to certain areas). Clean fuel vehicles receive a discount ($162 per quarter for individuals and two-person carpools, $99 per quarter for three-person carpools), as do zero-emission vehicles ($99 per quarter).

UCLA's system of parking pricing is designed to manage parking demand and limit vehicle trips to campus. Prior to 2006, UCLA had a voluntary agreement with the City of Los Angeles to cap the number of daily vehicle trips to and from campus at 139,500. Although the agreement expired, the campus continues to employ a variety of TDM strategies such as campus shuttles, a universal transit pass, bicycle parking, carpool incentives, ridematching programs, and carsharing to lower the drive-alone rate to campus.

UCLA Transportation has conducted a cordon count each year since 1990 during the fall quarter to track the University's progress, counting the number of trips made in and out of campus by car and bus over the course of one week. In 2011, the number of vehicle trips to and from UCLA averaged 102,027 per day, more than 3% less than 2010 and almost 20% less than its peak in 2003. Vehicle counts are lower now than when the cordon counts first began. These results have occurred even as both student and employee populations on campus experienced significant growth.

In addition, UCLA conducts an annual employee travel survey, required by the local Air Quality Management District. The information from the survey and the cordon count are published in a yearly "State of the Commute" report.[51] The report shows that the drive alone rate in 2011 was roughly 53% for UCLA employees, and just over 25% for commuting students. By contrast, the drive alone rate for all Los Angeles County commuters was close to 72% in 2010.

Massachusetts Institute of Technology (MIT)[52]

Parking permits

A significant portion of MIT's on-campus parking facilities are located on the west side of the roughly 1.25 mile long campus. These facilities, named the Westgate lots and located further from the campus core, experience low levels of demand. Accordingly, the University implemented a zone-based parking permit pricing system to encourage more evenly distributed parking demand. MIT offers discounted remote parking for the Westgate lots, located a ten-minute walk away from the center of campus.

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[51] http://www.transportation.ucla.edu/portal/pdf/2011StateoftheCommuteReport.pdf
[52] Interview with Larry Brutti, Operations Manager, MIT Parking and Transportation, April 11, 2012.

Student Parking Permits

Only upperclassman undergraduates and graduate students are eligible for parking permits. First year undergraduate students are not permitted to bring a car on campus. Students may apply for resident, commuter, carpool, and occasional/evening permits. However, residential permits are only valid in specific locations associated with the student's area of residence. Discounted permits are offered to commuter students and carpoolers who park in the remote Westgate lots. A campus shuttle serves the Westgate lots at seven to ten-minute headways during peak hours and every 20 minutes during off-peak hours. Occasional and evening permits are available with a baseline $60 permit fee, plus a $5-per-day fee for the first twelve uses in a month and $12 per day for the remaining days in the month. The occasional user fee is tracked on the member's ID and posted to their university account, each time they swipe in and out of a parking lot or garage.

Some exceptions to the parking fee structure are "Economy Student Resident Permits" granted to graduate students who live near the Westgate lots and request to be eligible for the same rate as economy parkers. This has been conducted on a trial basis for the last two years, but is not yet posted to the permanent fee structure.

Figure 9-2 Student Parking Rates

Type of Parking Permit	Annual Fee
Student Resident	$1,074
Student Commuter/Economy Parking	$700
Student Carpool	$383
Occasional/Evening Parking	Sticker: $60
	Day Rate: $5/day for first 12 uses in one month; $12/day for remainder of days in month
Replacement Stickers	With old sticker: $10
	Without old sticker: $40

Employee parking

MIT offers employees a variety of commuter parking permits based on the frequency of parking needed as well as the proximity to the campus. A 35% discounted Economy Regular Commuter permit is offered to those who wish to park remotely and walk or shuttle to campus. Discounted parking permits are also provided for carpool/vanpool parking permits at half the regular commuter rate. Occasional and evening parking permit rates follow the same fee structure for students and faculty and staff.

Figure 9-3 Employee Parking Rates

Type of Parking Permit	Annual Fee
Regular Commuter	$1,074
Economy Regular Commuter	$700
Carpool/Vanpool Parking	$537
Occasional/Evening Parking	Sticker: $60
	Day Rate: $5/day for first 12 uses in one month; $12/day for remainder of days in month
Economy Occasional Parking	Sticker: $60
	Day Rate: $2.50 for first 12 uses in one month; $12/day for remainder of days in month
Retired Faculty Parking	Prof. Emeritus with Compensation $1,074
	Prof. Emeritus, No Compensation, $180

In total, MIT manages 4,200 spaces and sold a total of 8,000 permits in 2011-2012 (for students, faculty, staff, and contractors). MIT's parking permit strategy is coupled with a subsidized transit pass program. Market-rate parking in the area costs about $3,000/year per space, meaning the University is subsidizing parking at a rate of 65%. The University's transit subsidy is limited to 50%. MIT's aim has been to achieve equilibrium between the two subsidies, but the continuously increasing costs of parking, especially since the construction of two new campus parking structures, have made it difficult to curb the parking subsidy. Instead, MIT is now looking to increase the transit subsidy to balance demand.

The combined parking pricing and transit subsidy program has had a noticeable effect on parking demand. The current ratio of full-time parkers to occasional parkers is 2,500: 2,000. Five years ago there were only roughly 1,000 occasional parkers. Today, of the 10,000 students at MIT, only 4.2% (420) have parking permits, compared to 25% who have subsidized transit passes. Several years ago, over 1,000 students were parking on campus, but travel behavior is shifting as both the cost of parking and shuttle services for students increase.

RIDEMATCHING PROGRAMS

California State University, Long Beach (CSULB)

CSULB has contracted with Zimride to provide online ridematching services. Zimride has a website that combines Facebook and a proprietary route-matching algorithm to allow members to share seats in their cars or catch a ride. With this service, CSULB students, faculty and staff can find classmates and colleagues and share a ride to campus. Because Zimride uses the Facebook platform, drivers and riders can view other user profiles for common networks, interests, and friends before deciding to share a ride. Drivers offer rides, listing a price they would like people to pay so they can share their costs, and riders can respond or post a request for rides.

The incentive for users is that the service is free for them and it defrays their cost of travel by splitting transportation costs with other users. As an additional incentive, faculty, staff, and student assistants who carpool are eligible for Employee Rideshare Rewards, including being entered for monthly "Beach Buck" drawings totaling $100 per month. Beach Bucks are usable at local businesses.

The number of participants in the program is about 1,560. CSULB Sustainable Transportation Program operates the ridematching program with funding from the Citation and Parking Revenue. There are no capital costs and operating costs are about $14,000.

PEER-TO-PEER CAR SHARING

Portland State University

In January, 2012 a program called Getaround launched at Portland State University (PSU) and, a month later, in the City of Portland. Getaround is a car sharing community which helps people rent each other's cars. Renters have access to a large selection of vehicles, while car owners set their price with a lower limit of $3 per hour and $15 per day, and determine who can rent their vehicle and when. Insurance is included with every rental and there are no sign-up or annual fees.

PSU has set aside 10 discounted reserved parking spaces for vehicle owners that are participating in the Getaround pilot program. Of those 10, five are currently being rented and three more are in the process of signing up. The five cars on campus range in price from $5 to $15 per hour and $35 to $60 per 24-hour day and include full insurance but not gas. Discounted parking spaces are offered only to PSU affiliates, but the vehicles can be rented by anyone who meets Getaround's criteria and whose rental request is approved by the owner.

In addition to these five owners, another 12 are sharing their cars in the PSU zip code. A number of other vehicle owners residing in the PSU zip code have also signed up. However, a study being conducted by the Oregon Transportation Research and Education Consortium (OTREC) in partnership with the City of Portland and funded by the Federal Highway Administration has offered new participants a $300 incentive to postpone renting their cars for six weeks so that baseline driving behavior data can be collected, and there have been fewer than expected participants. Once the baseline period is over, it is expected that there will be about 25 participating vehicle owners in the PSU zip code.

In the larger Portland area, several hundred vehicle owners have signed up to participate in the Getaround program and most of them are participating in the OTREC study. There are approximately 10 renters signed up for every owner.

To promote the program, Getaround conducts on-campus tabling events and distributes flyers at cafes and via a range of on-campus clubs. They also recently initiated an "Evangelist" program under which students earn referral credits by telling their friends about Getaround. In addition, Getaround offers students and employees a $25 initial free trip coupon when they join. PSU has also been helping promote Getaround by distributing flyers to students, faculty, and staff on campus, and providing links to Getaround on various web sites. PSU TAPS sent several emails to PSU students, faculty, and staff announcing the pilot program.

Given that the program just recently launched, no data on levels of usage is available yet. In addition it is too early to measure the success of the program; however, PSU feels that based on the peer reviews of on-campus owners' vehicles, Getaround will fill an important niche in their TDM program particularly with students due to its peer-to-peer structure and ability to further reduce the need to bring a car to campus. The University expects that the number of cars being offered by commuters and on-campus residents will continue to increase over time, especially once potential participants aren't being held back by the OTREC study.

Given that this program is in the initial stages at PSU, there are several potential areas to tweak it to better meet the needs of the University. Getaround is currently building a "closed network" functionality, which will limit the on-campus network to campus affiliates, enabling owners to make their vehicles available

only to other PSU members if they so choose. Getaround is also developing a function to enable departmental billing for employee use of Getaround vehicles for business-related trips.

Getaround has offered to install free "car kits" in all PSU pilot project participant vehicles, which will make the Getaround rental process more convenient for short-term, spontaneous rentals. This will enable greater use of commuter's vehicles, which are typically only available for short daytime trips, compared to vehicles owned by on-campus residents which are typically available for longer trips. Currently only one on-campus vehicle has a carkit installed.

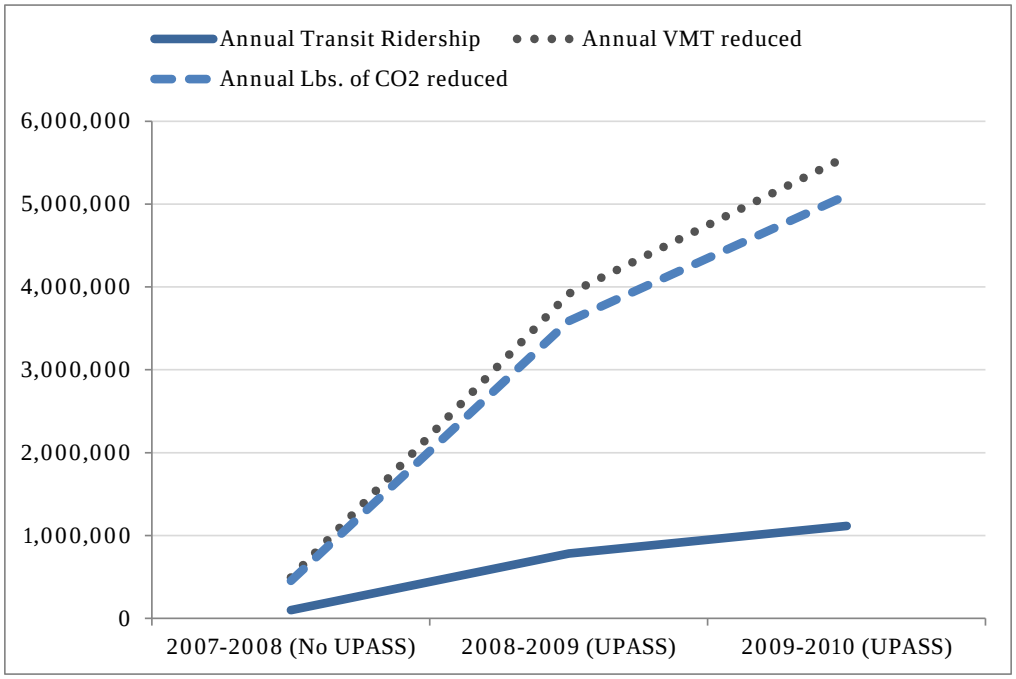
SUBSIDIZED TRANSIT

California State University, Long Beach (CSULB)[53]

CSULB contracts with Long Beach Transit for the U-Pass, which provides free rides to all students, faculty, and staff. This pass allows users to travel by transit throughout the campus and City of Long Beach. The program began in 2008, providing an annual travel benefit, and has recently been scaled back so that the pass is only valid during academic terms.

The program costs $525,000 per year, which amounts to $.49 per ride. The U-Pass has been a highly successful TDM program, providing an average of 9,000 unique CSULB transit riders each month with over a million free boardings annually. This translates to an annual reduction of over five million pounds of CO_2. The University's transit pass has had a significant impact since it was introduced, increasing ridership, reducing vehicle miles traveled, and lowering annual pounds of CO_2, as shown in Figure 9-4.

Figure 9-4 Long Beach Transit Ridership, VMT, and CO_2 Emissions



In addition to the student subsidized U-Pass, the University provides subsidized transit passes for University employees, including student employees who may need to commute longer distances through

[53] Interview and email correspondence with Elissa Thomas. CSULB Parking, Rideshare Coordinator, April 19, 2012.

the Los Angeles County Municipal Transit Authority (MTA) and Orange County Transit Authority (OCTA) systems.

The MTA pass is subsidized at an annual rate of 65%, costing $315 instead of the standard $900 rate. The OCTA pass, which costs $150 for a 120-day Semester Pass, is fully subsidized. The full subsidy is offered as there are very few riders on the OCTA system, and they are typically either very committed to taking long trips on public transportation or have a greater financial need. Annual program costs are roughly equal: $5,000 per year for OCTA for very few users and about $8,000 per year for MTA. The University perceives these two subsidized transit programs as a key strategy for their growth. Investing in transit has proven to be more cost effective, as the cost of one space in a parking structure is equal to 204,082 Long Beach Transit trips.

University of Washington, Seattle

UW Seattle's U-PASS program allows students, faculty, and staff at the University of Washington to ride a variety of Seattle-area transit services, including:

- Express, local, and commuter buses (King County Metro Transit, Community Transit, Pierce Transit, Kitsap Transit, Everett Transit, and Sound Transit)
- Commuter rail (Sounder Train)
- Light rail (Link light rail)
- Streetcar (Seattle Streetcar)
- Paratransit services
- Water Taxis (King County Water Taxis)

The U-PASS includes full-fare coverage for all transit services. Additionally, U-PASS holders are eligible for various other benefits, including:

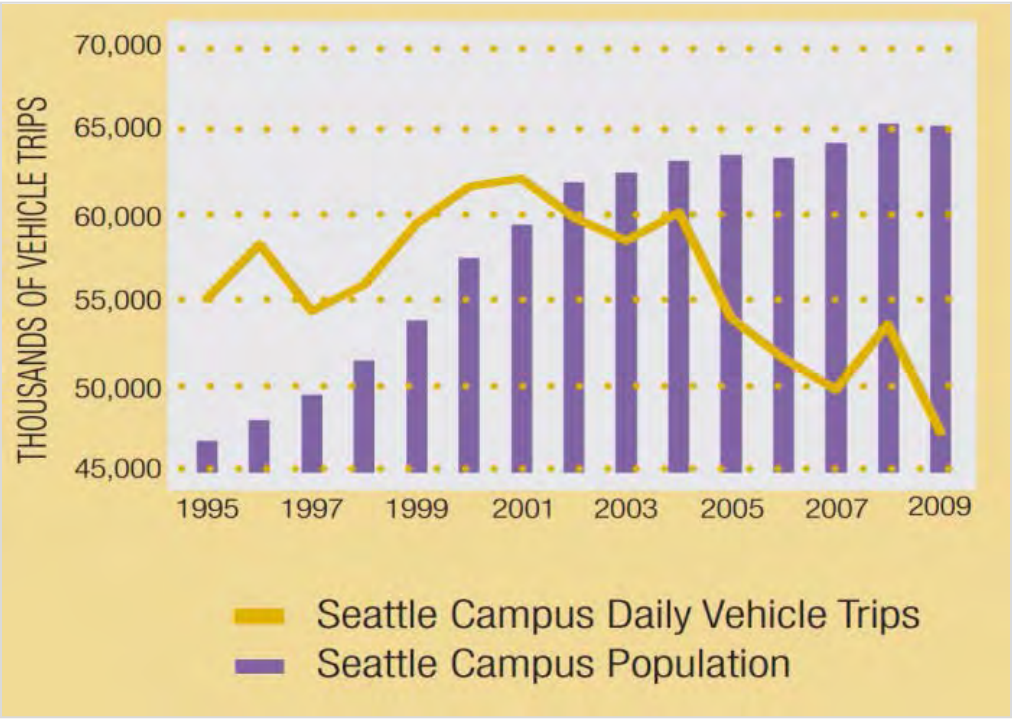
- Discounted carpool parking permits
- Subsidized vanpool fares
- Free rides on the NightRide Shuttle (nighttime shuttles run every 20 minutes picking up passengers from 6 locations around campus before dropping passengers off at requested destinations within one of two zones)
- Discounted car sharing rates (service provided by Zipcar)
- Discounts and special offers at many local businesses

The passes cost $132 per quarter for students, faculty, and staff. However, students who qualify for the Universal Student U-PASS program receive the passes at a 50% discounted rate ($76 per quarter). These students include:

- Those registered in state-funded courses
- Those registered for classes and enrolled in a fee-based degree major through Professional & Continuing Education (PCE) who pay the Services and Activities Fee

As a result of the U-PASS program, the University most recently estimated that approximately 11.5 million trips were shifted to alternative modes in 2008, accounting for 9.6% of all King County Metro trips of that year. Approximately 83% of students and 59% of faculty and staff are U-PASS members, and as a result of the program, the University has been able to reduce daily vehicle trips to campus while also expanding (see Figure 9-5 below). While the campus population has grown 28% since the creation of the U-PASS, vehicle trips to campus are at their lowest rate in 27 years. Currently, 79% of commute trips to UW Seattle are via non-drive-alone modes.

Figure 9-5 Reduction in Daily Vehicle Trips to UW Seattle[54]



University of California, San Diego (UCSD)

Like SDSU, UCSD offers subsidized SDMTS transit passes to students, faculty, and staff who live off campus and do not own annual, quarterly, or monthly parking permits. By joining the "Transit/Coaster Club," members of the UCSD community are eligible for discounted transit passes for the following fees[55]:

- MTS regional monthly pass (excluding Premium Express and rural routes; full price is $70):
  - Students (quarterly): $47
  - Students (monthly): $31
  - Faculty and Staff (monthly): $44
- MTS regional monthly pass, with Premium Express bus service: $70 (full price $100)
- Coaster monthly passes
  - 2 zones: $111 (full price is $150)
  - 3 zones: $127 (full price is $165)

Additionally, Transit/Coaster Club members enjoy the following other incentives:

- Complimentary Occasional Use parking permit allowing 10 days of parking per quarter
- Enrollment in SANDAG's Guaranteed Ride Home Program
- Zipcar driving credits equaling $8 per calendar month

For students, faculty, and staff not enrolled in the Transit/Coaster Club, those holding a valid UCSD ID can obtain a free UCSD Bus Zone sticker, allowing free rides on MTS buses servicing the campus area.

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[54] 2010 U-PASS Profile (http://www.washington.edu/facilities/transportation/commuterservices/files/reports/U-PASS_Profile2010.pdf

[55] http://blink.ucsd.edu/facilities/transportation/commuting/solutions/transit-coaster.html

University of Southern California (USC)

USC provides a $30 monthly subsidy to all employees who do not drive to campus. Faculty members often change their means of travel during a typical year due to significant variation on schedules each semester. For example, when teaching, many faculty often drive or carpool to work. During their research periods or other times when schedules are more flexible, they may use transit. All employees are eligible for a week's trial for all Metro bus/light rail services and a four-trip trial pass on commuter rail trains.

Graduate students are usually not eligible for a transit pass student discount because many do not have enough credits to qualify as a full-time student. The University has addressed this eligibility requirement by providing graduate students with access to a discounted transit fare stored value card that is valid for the entire semester. The program has proven so successful that the price of the card has dropped from an initial $75 to $25 as more students have taken advantage of the fare.

Transit's popularity at USC is likely due to the campus' proximity to bus and rail transit. USC is served by several bus lines, light rail, commuter/express buses, and a shuttle that serves the entire USC neighborhood and connects to LA Union Station and the University's health science campus. The USC shuttle offers convenient and reliable transportation service that operates at 15-minute headways during AM and PM peak commuting hours and 30-minute headways at all other times. Employees using transit ranges from 800-1,500 employees throughout the year, with higher use of transit during the summer.

The use of transit and other commute travel options at USC has allowed the University to reach a 1.70 AVR (Average Vehicle Ridership) since 2007.

CARPOOL AND VANPOOL INCENTIVES

California State University, Long Beach (CSULB)

CSULB's Rideshare Rewards program allows University employees (faculty, staff, and student assistants) to accumulate $1/day in reward points for each day they walk, bike, carpool, vanpool, motorcycle, or drive a hybrid or electric vehicle to campus. The reward is also valid for each day of telecommuting or each day an employee does not travel to campus due to a compressed work week. The reward points can be redeemed at the University Parking Office for gift cards to local businesses (Lowe's, various restaurants, and a bike shop) or transferred onto a University ID card for use at any of the on-campus shops.

The Rideshare Rewards Program has been in effect since 1989. There are currently 1,500 carpoolers alone in the program. The program requirements have recently changed to allow student University employees to receive rideshare points. The program is funded by Citation & Parking Revenue, with no capital costs, and an operating cost of $50,500.

University of Washington, Seattle

Permit Carpools

At the University of Washington, Seattle, organized carpools of students, faculty, and staff traveling inbound to campus at least 3 days a week are eligible to purchase quarterly or annual carpool permits. Permits allow motorists to park in designated carpool areas, which are often closer to main campus and offer increased convenience. The cost of the permits is the same as a non-carpool permit ($423 per quarter), but the cost is split between carpool participants. Additionally, all faculty and staff carpool participants receive a complimentary U-PASS, affording them unlimited rides on most local and regional transit systems, as well as a suite of other non-transit benefits (see U-PASS case study above).

Impromptu Carpooling

Students, faculty, and staff can also purchase an impromptu carpool permit at a cost of $3. The program enables infrequent carpools to still enjoy the parking benefits afforded to quarterly/annual carpools while also enjoying the flexibility of utilizing different modes to access campus. The permits are valid for one day only.

Furthermore, self-service impromptu carpooling is also available in the E1 parking lot for $2 per vehicle per day. This service limits impromptu carpools to parking in the E1 lot (a 3,000+ space surface lot located on the periphery of campus), encouraging use of a large but underutilized peripheral parking facility.

Vanpooling

U-PASS holders receive $70 off their monthly vanpool fare if vanpooling 3+ days per week, and $35 off their fare if vanpooling 2 days per week. Each vanpool driver receives a free U-PASS and is allowed some personal use of the van. One backup driver per van also receives a free U-PASS.

CAMPUS HOUSING AND AMENITIES

University of California, Los Angeles (UCLA)

Housing

UCLA has an overwhelming demand for campus housing. Currently, UCLA offers freshman guaranteed housing for the first three consecutive years with transfer students guaranteed campus housing for two years. The University has very limited housing for graduate students, student couples, students with children, and students with families through UCLA-owned University Apartments. Currently, 94% of freshmen live on campus compared to 23% of graduate students.[56]

The 2011-2021 Campus Housing Master Plan aims to offer guaranteed housing for all undergraduate students, for all four years. The University has several construction projects scheduled to run through 2013 to expand their bed capacity by 1,500 undergraduate beds and to renovate existing high-rise buildings. The University has made a complete transformation over the past 25 years from a commuter campus to a school with housing choices and an abundance of living amenities and support. Nearly all undergraduates live on campus or within walking distance. Providing additional graduate housing continues to be a campus priority. Based on several studies, the University believes that "students who live on campus perform better academically, have more contact with faculty, and are happier with their college experience than students who commute."[57]

Meal Plans and Cafes

UCLA Dining Services offers a variety of dining options for students, faculty, staff, and guests. There are three to five eating establishments across each of the five main campus districts: Residence Halls, North Campus, Central Campus, South Campus, and Health Sciences, reducing the need for students to travel and maximizing their dining options.

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[56] UCLA. 2012. *UCLA Student Housing Master Plan 2011-2021*. http://www.housing.ucla.edu/shmp/SHMP-2021-v1-19WEB.pdf
[57] UCLA. 2012. *Living on Campus*. http://map.ais.ucla.edu/portal/site/UCLA/menuitem.789d0eb6c76e7ef0d66b02ddf848344a/?vgnextoid=7120064a9a7d1010VgnVCM1000008f8443a4RCRD

Other Amenities

Like many universities, UCLA offers shopping, ATMs, postal services, athletics and recreation, medical and pharmacy, and cultural facilities directly on campus to cater to every student and campus affiliate need. More than 15 campus shops offer students and affiliates all the essentials from computer and technology items to textbooks and general convenience items.

Stanford University

Housing

Stanford University offers a variety of housing and amenities to meet the needs of students. Nearly all undergraduates and 50% of graduate students live on campus. Stanford provides housing for single undergraduates and graduates, couples without children, and students with children.

Campus Meals & Cafes

The University offers ten campus dining halls, ten campus Stanford-operated cafes, and several privately-operated cafes, open to anyone in the Stanford community including students, faculty, staff, affiliates, and guests. Only Row House dining halls are reserved for residents.

All undergraduates living in student housing are required to purchase a meal plan, except for students living in apartments. Thus, the majority of student meals are purchased on-campus, greatly reducing the demand on students' time and travel for meals. Graduate and apartment students, and staff and faculty may also purchase a meal plan, Cardinal dollars (with a 10% value added for affiliates), or a combination of these to either have their meals at one or multiple dining halls. For staff, the University offers a special Department Lunch Card to encourage staff to eat at any of the eight featured dining halls. Anyone from the Stanford community may purchase meals in cash from most eating establishments.

Other Amenities

Stanford offers shopping, banking, post office, athletics and recreation, health, religious, and cultural and social programming services and facilities directly on campus to cater to every student and affiliate need. Tressider Union serves as the central hub of student services and is open every day (except holidays) until 2 AM. The student union includes banks, the bike shop, Tressider Express convenience store, and many other services.

University of Southern California (USC)

Housing Subsidy

USC plays a very active role in shaping the growth and development of the surrounding communities. USC offers a $50,000 subsidy over seven years (approximately $595 a month) for all employees that relocate to the neighborhood surrounding the campus to encourage university and staff to live close to work. This 4.3 square mile area is served by USC shuttles, a wealth of public transit, and is in close enough proximity to campus for employees to walk or bicycle to work. Employees living in this area are eligible to receive a $30 dollar transit subsidy. Staff and faculty living in this area are eligible to use a taxi service operated by USC that picks up and drops off within the USC neighborhood area at no cost.

SOCIAL MEDIA AND ENHANCED TECHNOLOGY

University of Southern California (USC)

Mobile Applications

USC Transportation has developed a mobile application for all students, faculty, and staff to access its services and transportation information. The app displays:

- Parking lot locations
- USC TRAM schedules with real-time information
- Public transit information
- Zimride ridematching
- Zipcar carshare reservations
- News and service updates
- Campus Cruiser services

USC's Transportation group uses Facebook and Twitter to notify all students, faculty, and staff about news, construction alerts, and delays regarding any USC Transportation service. The app has grown into a one-stop service for all USC Transportation information. The app builds on the previous work of USC's shuttle group, who initially designed an app to provide students, faculty, and staff with real-time access to its services. The USC shuttle system has served as a catalyst for many transportation programs at USC by decreasing the barriers of using various forms of transit choices and increasing the attractiveness of alternative transportation options.

University of California, Los Angeles (UCLA)

Social Media

UCLA's Transportation Program has a strong and active social media presence through its blog, Facebook, Twitter, and YouTube accounts. The success of UCLA's social media effort is dependent upon how loyal its followers are. By having a direct channel to communicate with its constituents, UCLA Transportation is able to use the latest social media tools for a variety of purposes.

- The hub of UCLA Transportation's social media activity can be found at its "Be a Green Commuter" blog. The blog is used to promote events, post transportation news and updates affecting campus affiliates, share transportation videos and photos, and host testimonials from students and faculty. The blog features direct links to the many various social media tools that UCLA Transportation utilizes and maintains.
- The Twitter account is used to post/retweet news from the other various offices (e.g., public transit, municipalities), which notifies users with quick and easily digestible amounts of information.
- The YouTube account hosts videos made by UCLA Transportation, making it easier to share these videos over other social networks.
- The Facebook page allows for sharing information widely while allowing fans to quickly and easily repost links or have discussions with other users regarding transportation information and services.

As of June 2012, the UCLA Transportation social media brand has attracted the following levels of use for its various platforms:

- Facebook – 1,010 fans and 17 active discussions from various Facebook members
- Twitter – 696 followers and 1,342 tweets
- YouTube – 15 videos uploaded and 6,485 video views
- Blog – 2,513 subscribers

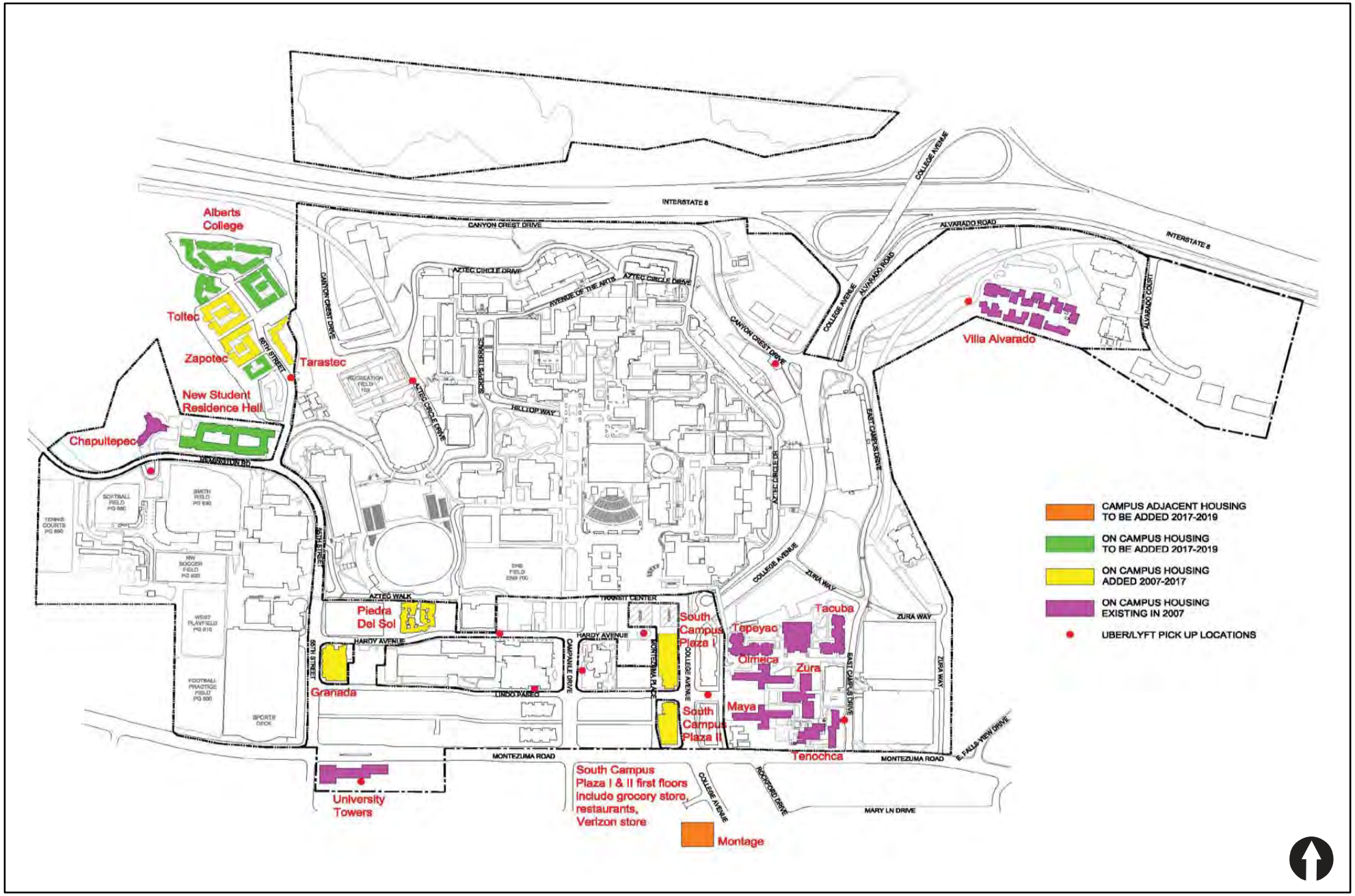

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Figure 16-1

Existing and Future Rideshare Locations

SDSU MASTER PLAN UPDATE

Campus Housing Capacity

Name	Beds	Location	Type
Campus Adjacent Housing to be Added 2017-2019			
Montage	300	Campus Adjacent	New Construction, leased from private party and managed by SDSU Housing
Total	**300**		
On Campus Housing to be Added 2017-2019			
New Student Residence Hall	800	On Campus	New Construction
Alberts College	530	On Campus	Lease Additional Apartments
Total	**1330**		
On Campus Housing Added 2007-2017			
Piedra Del Sol	258	On Campus	Leased for SDSU housing
Granada	272	On Campus	Acquired and converted to SDSU housing
Toltec	62	On Campus	Leased for SDSU housing
Zpaotec	62	On Campus	Leased for SDSU housing
Tarastec	82	On Campus	Leased for SDSU housing
South Campus Plaza	632	On Campus	Constructed by SDSU as Residence Hall
	1368		
On Campus Housing Existing in 2007			
Chapultepec	604	On Campus	Constructed by SDSU as Residence Hall
Maya	204	On Campus	Constructed by SDSU as Residence Hall
Olmeca	204	On Campus	Constructed by SDSU as Residence Hall
Tacuba	379	On Campus	Constructed by SDSU as Residence Hall
University Towers	542	On Campus	Acquired and converted to SDSU housing
Tenochca	382	On Campus	Constructed by SDSU as Residence Hall
Tepayac	379	On Campus	Constructed by SDSU as Residence Hall
Villa Alvarado	332	On Campus	Constructed by SDSU as Residence Hall
Zura	612	On Campus	Constructed by SDSU as Residence Hall
Total	**3638**		
Additional Potential Capacity			
South Campus Plaza	110	On Campus	Add density by adding more occupants per room
Alberts College	130	On Campus	Add density by adding more occupants per room
Triple Zura	110	On Campus	Add density by adding more occupants per room
Triple Tenochca	194	On Campus	Add density by adding more occupants per room
Triple Maya	102	On Campus	Add density by adding more occupants per room
Triple Olmeca	102	On Campus	Add density by adding more occupants per room
Triple Chapultepec	202	On Campus	Add density by adding more occupants per room
Total	**950**		

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Figure 16-2

Housing and Amenities in project vicinity

SDSU Master Plan Update