APPENDIX K

Transportation Technical Report

TRANSPORTATION IMPACT ANALYSIS

SDSU STUDENT HOUSING

San Diego, California
March 17, 2017

LLG Ref. 3-16-2694

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SDSU STUDENT HOUSING

San Diego, California
March 17, 2017

1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has prepared this analysis of potential transportation-related impacts associated with the proposed San Diego State University (SDSU) New Student Housing Project ("Project"), to be located on the western portion of the SDSU campus.

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

The traffic analysis presented in this report addresses the following subjects:

- Project Description
- Existing Conditions
- Analysis Approach and Methodology
- Significance Criteria
- Existing Analysis
- Cumulative Projects
- Project Trip Generation/ Distribution/ Assignment
- Existing + Total Project Analysis
- Near-Term Analysis
- Horizon Year Analysis
- Transit Analysis
- VMT Analysis
- Parking Assessment
- Access and Other Issues
- Alternative Project Sites Discussion
- Significance of Impacts and Mitigation Measures
- Post Mitigation Operations

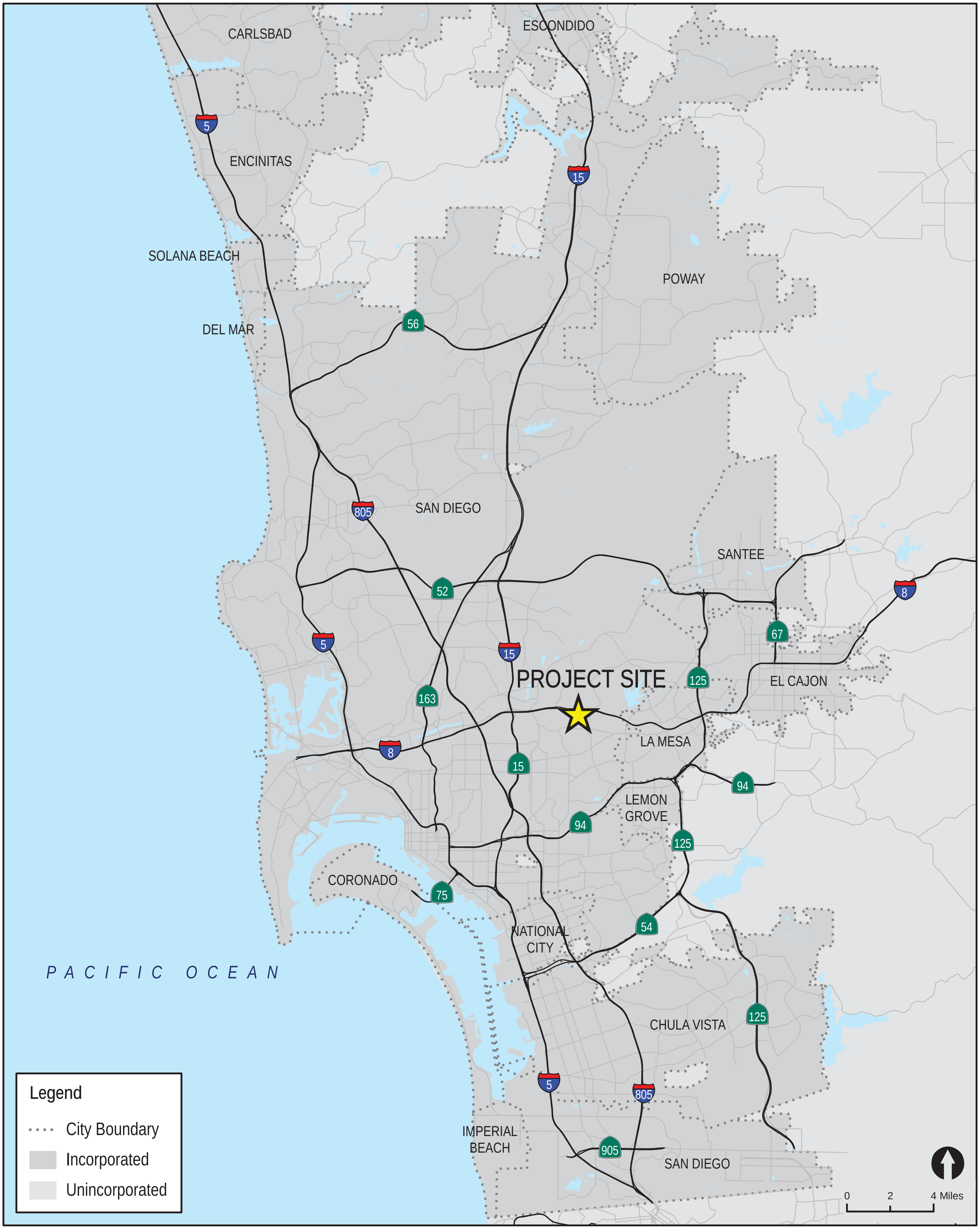

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Figure 1-1

Vicinity Map

SDSU Student Housing

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Figure 1-2

Project Area Map

SDSU Student Housing

2.0 PROJECT DESCRIPTION

2.1 Project Location and Description

The Project proposes the construction of a student housing complex 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 2,566 beds and will be developed in the following three (3) phases:

- Phase I: up to 850 beds
- Phase II: up to an additional 850 beds (1,700 beds total)
- Phase III: up to an additional 866 beds (2,566 beds total)

The Project also includes a dining hall and may include a swimming pool, outdoor gathering spaces, and green spaces. A portion of the Project extends onto the location of existing Parking Lot 9 and requires its permanent removal. Access to the Project is proposed via a future road off of 55th Street.

2.2 Project Features

The following transportation-related improvements would be incorporated as Project features:

- A dedicated pick-up/drop-off zone within the Project site to reduce congestion and emergency access issues due to loading and unloading along Remington Road.

- Synchronization of the traffic signals along 55th Street between Montezuma Road and Remington Road to improve the flow of traffic.

- Repainting of the red curbs along Remington Road and modifying the wording on the existing parking signs from “No Parking” to “No Stopping at Any Time”. Several signs will be posted at short intervals along Remington Road. SDSU campus police and SDPD police will enforce these restrictions.

- Placement of a permanent sign on Remington Road at the SDSU campus boundary with the College View Estates neighborhood that reads “No SDSU or Event Parking in Residential Neighborhood – Violators May be Fined and/or Towed Away.” Parking guards will continue to be posted on Remington Road at the College View Estates entrance to discourage parking in the residential neighborhood during large events at Viejas Arena and during baseball games. A temporary sandwich board sign also will be placed at the corner of 55th Street and Remington Road during such events that reads “No Event Parking Beyond This Point.”

- Additional lighting along Remington Road will be provided to help motorists better see bicyclists, skate boarders and pedestrians utilizing the street in the evening.

3.0 EXISTING CONDITIONS

Effective evaluation of the traffic impacts associated with the proposed Project requires an understanding of the existing transportation system within the Project area. ***Figure 3–1*** illustrates existing road conditions in the Project study area, including signalized intersections and lane configurations. The study area was determined based on those intersections and street segments to which the Project would add 50 or more peak hour trips, and includes the following intersections and street segments based on the anticipated distribution of the Project traffic and area of potential impact. Of particular note, based on the SANDAG traffic model, the distribution of Project traffic would be primarily to the east on Remington Road towards 55^{th} Street or on Canyon Crest Drive. Specifically, the model showed that approximately 98% of Project generated traffic would drive east on Remington Road or Canyon Crest Drive while approximately 2% would drive west on Remington, into the College View Estates neighborhood. (See ***Figure 8–1***.) As a result, the proposed Project would add less than 50 peak hour trips to the roads located in the College View Estates; 50 peak hour trips is the City of San Diego threshold for inclusion in a traffic analysis. Therefore, given the low traffic volumes, a Level of service (LOS) analysis of the neighborhood roads is not required as it is certain the proposed Project would not result in significant traffic capacity impacts in the community. Nonetheless, the analysis presented in this report does consider the Project's potential impacts relative to traffic flow and congestion on Remington Road entering and exiting the neighborhood, as well as the proposed Project's potential parking-related impacts on the neighborhood.

Intersections

1. Montezuma Road / Collwood Blvd
2. Montezuma Road / Yerba Santa Drive
3. 55th St / Canyon Crest Drive
4. 55th Street / Remington Road
5. 55th Street / Hardy Avenue
6. 55th St / Montezuma Road
7. Montezuma Rd / Campanile Drive
8. College Avenue / I-8 WB Ramps
9. College Avenue / I-8 EB Ramps
10. College Avenue / Canyon Crest Avenue
11. College Avenue / Zura Way
12. College Avenue / Montezuma Way

Street Segments

Montezuma Road

- Collwood Boulevard to 55th Street
- 55th Street to College Avenue
- East of College Avenue

Remington Road

- West of 55th Street

55th Street

- Remington Road to Montezuma Road

College Ave

- Canyon Crest Drive to Zura Way
- Zura Way to Montezuma Road
- Montezuma Road to Arosa Street

3.1 Existing Street Network

The principal roadways in the Project study area are described briefly below. Roadway classification was determined from a review of the *City of San Diego General Plan*, *City of San Diego Street Design Manual* and information gathered from field observations. The following is a description of the primary roads that comprise the existing street network in the study area.

Montezuma Road is classified as a 4-Lane Major Arterial in the *City of San Diego General Plan*. It is currently constructed as a divided four lane roadway from Collwood Boulevard to 55th Street, an undivided four lane roadway between 55th Street and a divided four-lane roadway east of College Avenue. Bike lanes are provided on Montezuma Road from Collwood Boulevard to 55th Street and east of College Ave. Montezuma has a posted speed limit of 40 MPH (miles per hour) from Collwood Boulevard to 55th Street in the westbound direction and 45 MPH in the eastbound direction with a speed limit of 35 MPH from 55th Street to east of College Avenue. Montezuma Road is serviced by the San Diego Metropolitan Transit System (MTS) Bus Routes 11 and 955. Parking is generally prohibited on Montezuma Road with the exception of the segment between 55th Street and Campanile Drive.

Remington Road is classified as a 2-Lane Collector (no fronting property) and is currently constructed as a two lane undivided roadway with a speed limit of 30 MPH. Bike lanes are provided and parking is prohibited.

55th Street is classified as a 4-Lane Collector and is currently constructed as a four lane undivided roadway with a speed limit of 25 MPH. Parking is generally prohibited. Bike lanes are provided on 55th Street.

College Avenue is classified as a 4-Lane Major Arterial from the I-8 Ramps to Montezuma Road and as a 4-Lane Collector with a TWLTL (Two-Way Left-Turn Lane) south of Montezuma Road. College Avenue is currently constructed as a four lane undivided roadway from the I-8 Ramps to Montezuma Road and as a four lane undivided roadway south of Montezuma Road. College Avenue has a speed limit of 40 MPH from the I-8 Ramps to Zura Way and a 35 MPH from Zura Way to south of Montezuma Road. College Avenue is serviced by MTS Bus Routes 14 and 115.

3.2 Existing Bicycle Network

Currently, there is a Class II bike lane on Montezuma Road between Collwood Boulevard and 55th Street that continues east of College Ave. There is also a Class II Bike lane along Remington Road east of 55th Street and along 55th Street from Remington Road to Montezuma Road.

3.3 Existing Pedestrian Conditions

Sidewalks are provided along the northern side of Montezuma Road in the entirety of the study area. Sidewalks also are provided along both sides of Remington Road and 55th Street in the entirety of the study area as well. Continuous sidewalks are provided on the eastern side of College Avenue from the I-8 ramps to south of Montezuma Road.

3.4 Existing Transit Conditions

The study area is serviced by the San Diego MTS via both bus and light rail. Montezuma Road from Collwood Boulevard to Campanile Drive is serviced by Bus Routes 11 and 955. In addition, a bus stop on Montezuma Road between Campanile Drive and College Drive serves as a hub for Bus Routes 11, 15, 115, 856, 936, and 955. College Avenue is serviced by Bus Routes 14 and 115.

In addition to these bus routes, the SDSU Transit Center is in close vicinity of the Project area. The SDSU Transit Center has a trolley stop for the Green Line, which runs roughly parallel to Interstate 8 with a western terminus at Old Town San Diego and an eastern terminus at Santee, California. The SDSU Transit Center also includes a bus stop for Bus Routes 11, 14, 115, 215, 856, 936, and 955. Bus Route 215 is a Bus Rapid Transit (BRT) service that provides a quick and easy way to travel to and from SDSU and Downtown San Diego.

3.5 Existing Traffic Volumes

Table 3–1 summarizes available average daily traffic volumes (ADTs) from counts conducted in April and December 2016. Counts at all study area intersections, including bicycle and pedestrian counts, were conducted in April and December 2016 between the hours of 7:00-9:00 AM and 4:00-6:00PM while SDSU and all local schools were in session.

Figure 3–2 shows the Existing Traffic Volumes. ***Appendix A*** contains the manual count sheets.

TABLE 3–1
EXISTING TRAFFIC VOLUMES

Street Segment	ADT[a]	Date
Montezuma Road		
Collwood Blvd to 55th St	28,950	April 2016
55th St to College Ave	32,570	April 2016
East of College Ave	21,500	April 2016
Remington Avenue		
West of 55th St	3,110	Dec 2016
55th Street		
Remington Rd to Montezuma Rd	18,110	Dec 2016
College Avenue		
Canyon Crest Drive to Zura Way	35,850	April 2016
Zura Way to Montezuma Rd	29,790	April 2016
Montezuma Rd to Arosa St	27,500	April 2016

Footnotes:

a. Average Daily Traffic Volumes.

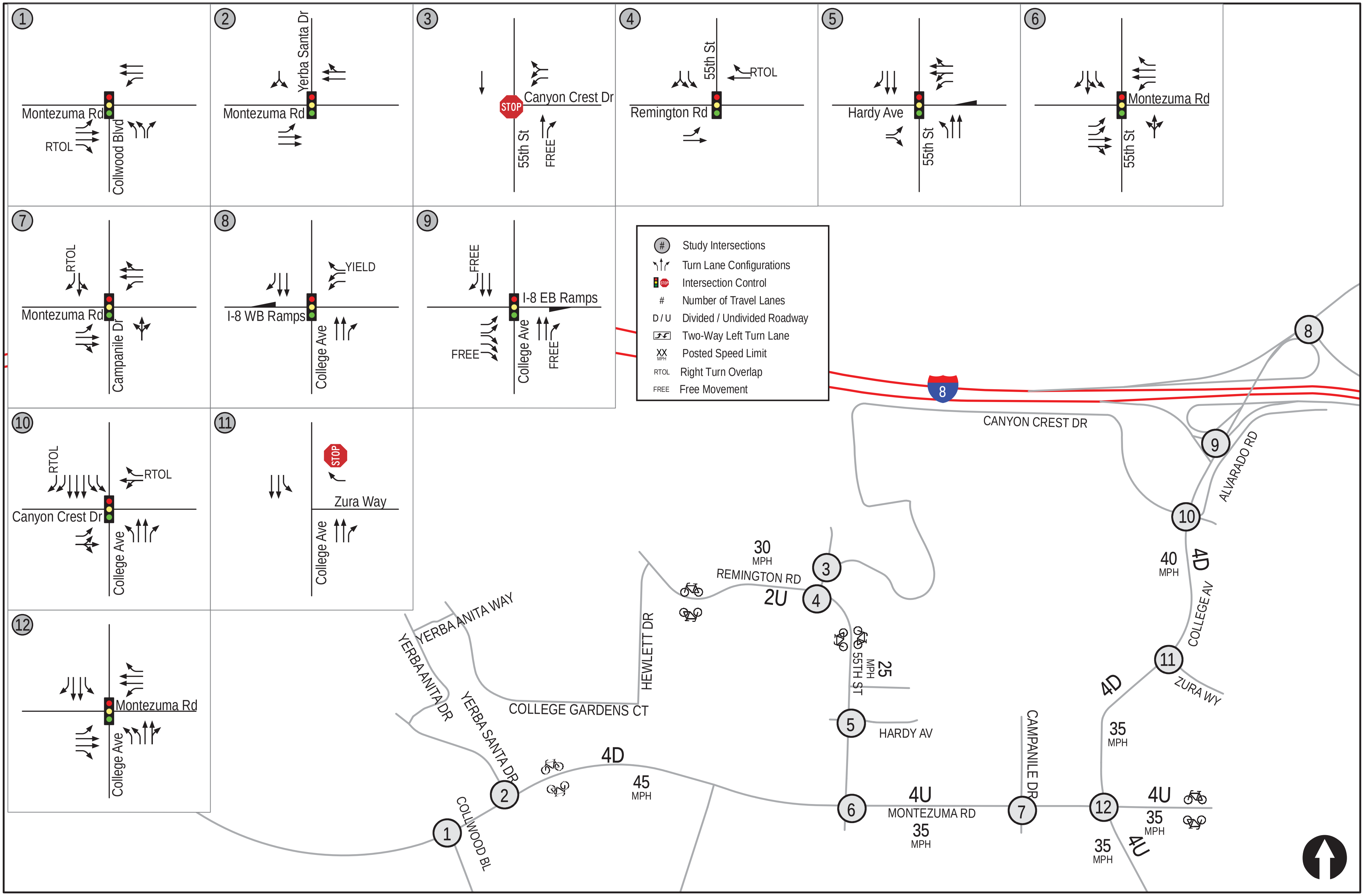

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Figure 3-1

Existing Conditions Diagram

SDSU Student Housing

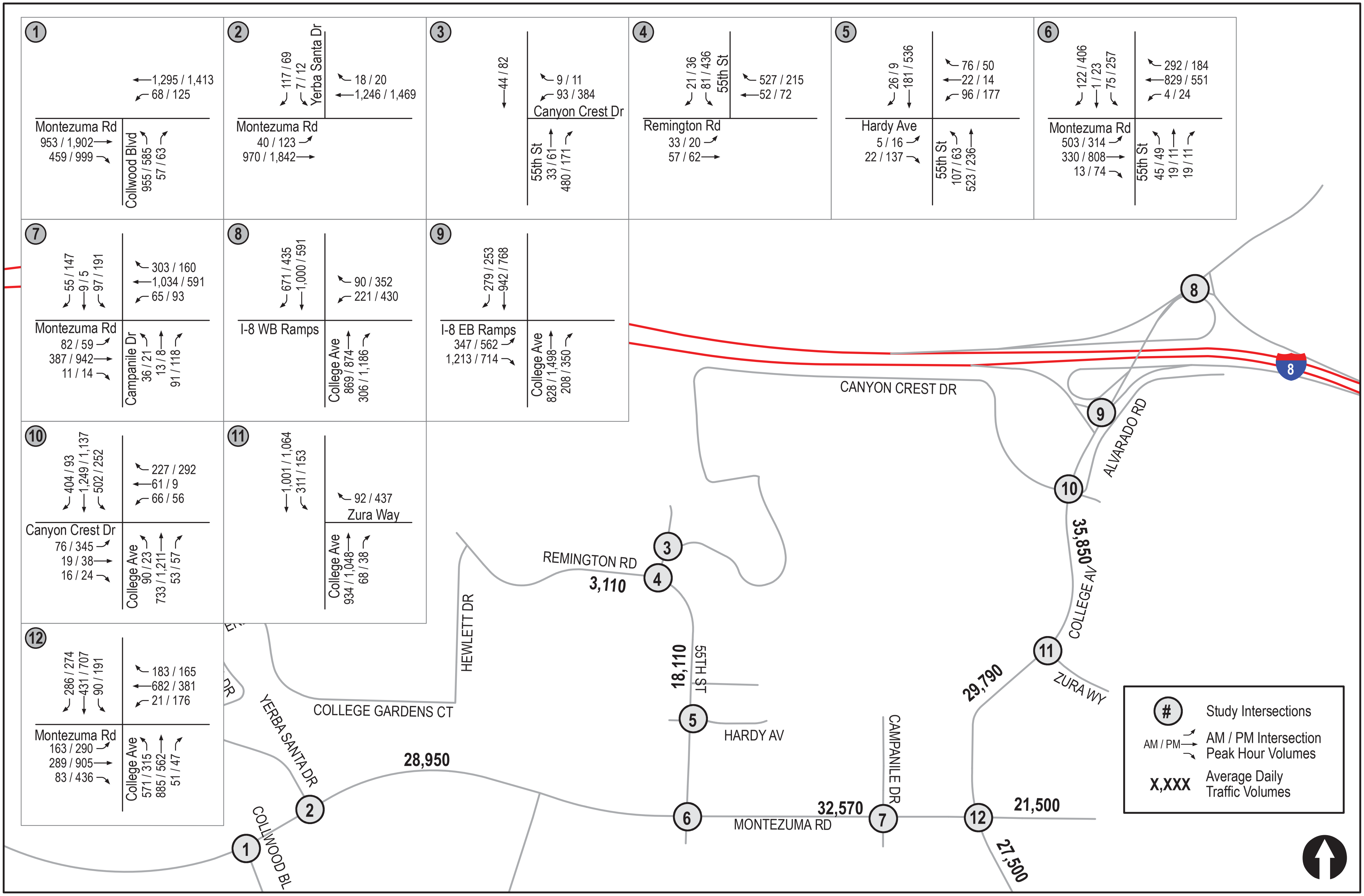

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Figure 3-2

Study Area Existing Traffic Volumes

SDSU Student Housing

4.0 ANALYSIS APPROACH AND METHODOLOGY

4.1 Analysis Approach

The following scenarios were analyzed in the traffic report:

- Existing Conditions
- Existing + Total Project Conditions
- Existing + Cumulative Projects Conditions
- Existing + Cumulative Projects + Project Phase I Conditions
- Existing + Cumulative Projects + Project Phase I + Phase II Conditions
- Existing + Cumulative Projects + Total Project Conditions
- Horizon Year without Project Conditions
- Horizon Year with Project Conditions

In connection with the analysis presented here, LLG reviewed the *Preliminary Draft Report Interstate 8 Corridor Study* (August 2016), which was conducted under the management of the San Diego Association of Governments (SANDAG), with key participation and guidance provided by a project study team comprised of Caltrans, the City of San Diego, MTS, and SANDAG staff. The purpose and objective of the study is to provide "multimodal planning-level assessment, including the corridor's transit services, bike and pedestrian facilities, transportation demand and system management, I-8 freeway facility, local roadways, and freight service characteristics." Based on the assessment, the I-8 Corridor Study presents a preferred multimodal implementation strategy, including recommendations for both near-term next steps and long-term planning purposes. Excerpts from the corridor study related to the Project study area are included in ***Appendix B***. Based on the anticipated distribution of Project traffic, the Project would not add 100 or more peak hour trips in either direction of the I-8 freeway (the threshold established by Caltrans) and, thus, a freeway analysis was not warranted for this Project.

4.2 Analysis Methodology

Level of service, or LOS, is the term used to denote the different operating conditions which 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. LOS provides an index to the operational qualities of a roadway segment or an intersection. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

4.2.1 *Intersections*

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 18 of the *2010 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 focuses more on specific controller set ups.

As a result, two (2) of the intersections within the study area do not produce results using the HCM 2010 methodology:

- 55th Street / Hardy Avenue (Split phasing)
- College Avenue / I-8 EB Ramps (Right turn overlaps with through movement)

Therefore, the HCM 2000 methodology was used in the analysis of the above intersections. HCM 2010 methodology was used in the analysis of the remaining eight (8) signalized study intersections.

The delay values (represented in seconds) were qualified with a corresponding intersection LOS. A more detailed explanation of the methodology is provided in ***Appendix C***.

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS was determined based upon the procedures found in Chapter 19 and Chapter 20 of the *2010 Highway Capacity Manual (HCM),* with the assistance of the *Synchro 9* computer software. A more detailed explanation of the methodology are attached in ***Appendix C***.

4.2.2 *Street Segments*

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

5.0 SIGNIFICANCE CRITERIA

Under CEQA Guidelines, Appendix G, in considering whether the proposed Project would have a significant impact related to transportation/traffic, the following inquiries are to be addressed:

Would the project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? (The proposed Project would not result in a change in air traffic patterns and, therefore, no further analysis of this criterion is required.)

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)? (The proposed Project does not include design features or incompatible uses that would substantially increase hazards, and, therefore, no further analysis of this criterion is required.)

e) Result in inadequate emergency access?

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

In considering the Appendix G criteria, the California State University *Transportation Impact Study Manual* (November 2012) provides the following guidance in assessing whether a project's transportation-related impacts are significant:

Off-Site Traffic Operations

- 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, during the same peak hour.

- If an intersection operates at a very poor LOS F (control delay of 120 seconds or more), the significance criterion shall be an increase in v/c ratio of 0.02 or more.

Bicycle Facilities

- A project significantly disrupts existing or planned bicycle facilities or significantly conflicts with applicable non-automotive transportation plans, guidelines, policies, or standards.

Pedestrian Facilities and Americans with Disabilities Act (ADA) compliance

- A project fails to provide safe pedestrian connections between campus buildings and adjacent streets and transit facilities.

- A project significantly disrupts existing or planned pedestrian facilities or significantly conflicts with applicable non-automotive transportation plans, guidelines, policies, or standards.

Transit

- A project significantly disrupts existing or planned transit facilities and services or significantly conflicts with applicable transit plans, guidelines, policies, or standards.

Intersection Traffic Control

- The addition of project traffic causes an all-way stop-controlled or side street stop-controlled intersection to meet Caltrans signal warrant criteria.

Transportation Plan Consistency

- A project significantly conflicts or creates significant inconsistencies with applicable transportation policies or the Campus Master Plan transportation policies.

Safety

- Directly or indirectly cause or expose all users (motorists, pedestrians, bicyclists, and bus riders) to a permanent and substantial transportation hazard due to a new or existing physical design feature or incompatible uses.

Construction Period (Temporary)

- The construction of a project creates a temporary but prolonged significant impact due to lane closures, need for temporary signals, emergency vehicles access, traffic hazards to bikes/pedestrians, damage to roadbed, truck traffic on roadways not designated as truck routes, etc.

On-Site Circulation

- Project designs for on-site circulation, access, and parking areas are inconsistent with the circulation and parking plans in the Campus Master Plan or with applicable roadway design standards.

- A project fails to provide adequate accessibility for service and delivery trucks on-site, including access to truck loading areas.

- A project fails to provide adequate accessibility for buses accessing appropriate drop-off areas on-campus.

- A project fails to provide adequate accessibility for pedestrians and bicyclists.

In considering these criteria, while SDSU as a state agency is not subject to local planning regulations such as the City of San Diego traffic guidelines, the City's thresholds of significance are utilized in this case to assess Project impacts relative to criteria a) and b). According to the City's *Significance Determination Thresholds* dated July 2016, 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, 2007, 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 Level of Service 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	**Speed (mph)**	**V/C**	**Speed (mph)**	**Delay (sec.)**	**Delay (min.)**
E	0.010	1.0	0.02	1.0	2.0	2.0
F	0.005	0.5	0.01	0.5	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 freeway LOS E is 2 minutes. The allowable increase in delay at a ramp meter with more than 15 minutes delay and 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
4. Speed = Arterial speed measured in miles per hour

Also, according to the City of San Diego's *Significance Determination Thresholds*, other possible significant impacts that are not accounted for in *Table 5–1* include the following:

- If a project would increase traffic hazards to motor vehicles, bicyclists or pedestrians due to proposed non-standard design features (e.g., poor sight distance, proposed driveway onto an access-restricted roadway), the impact would be significant.

- If a project would result in the construction of a roadway which is inconsistent with the General Plan and/or a community plan, the impact would be significant if the proposed roadway would not properly align with other existing or planned roadways.

- If a project would result in a substantial restriction in access to publicly or privately owned land, the impact would be significant.

6.0 ANALYSIS OF EXISTING CONDITIONS

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

6.1 Peak Hour Intersection Levels of Service

Table 6–1 summarizes the existing intersection LOS for the study area intersections. As shown in *Table 6–1*, the study area intersections currently operate acceptably at LOS D or better during the AM and PM peak hours with the exception of:

- College Avenue / Zura Way (LOS F during the PM peak hour).

Appendix E contains the existing peak hour intersection analyses worksheets.

Hardy Elementary School is located immediately west of the SDSU campus. Access to its parking lot is provided via Montezuma Road, west of the 55th Street intersection. The elementary school is open to students beginning at 7:15 AM and regular school dismissal is at 2:20 PM (except on Wednesdays, when dismissal is at 11:30 AM). The Project would not generate a large amount of traffic during the elementary school's AM peak hour. Additionally, the Project PM peak hour would not coincide with the elementary school's PM peak hour. Therefore, the proposed Project would not significantly affect or impact traffic operations during the elementary school's daily opening or dismissal periods.

TABLE 6–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay[a]	LOS[b]
1. Montezuma Road / Collwood Boulevard	Signal	AM PM	21.5 25.3	C C
2. Montezuma Road / Yerba Santa Drive	Signal	AM PM	9.4 9.2	A A
3. 55th Street / Canyon Crest Drive	AWSC[c]	AM PM	17.1 11.6	C B
4. 55th Street / Remington Road	Signal	AM PM	9.1 10.9	A B
5. 55th Street / Hardy Avenue	Signal	AM PM	27.4 36.5	C D
6. 55th Street / Montezuma Road	Signal	AM PM	33.5 50.0	C D
7. Montezuma Road / Campanile Drive	Signal	AM PM	31.0 29.5	C C
8. College Avenue / I-8 WB Ramps	Signal	AM PM	7.2 11.2	A B
9. College Avenue / I-8 EB Ramps	Signal	AM PM	19.2 15.7	B B
10. College Avenue / Canyon Crest Avenue	Signal	AM PM	38.4 50.0	D D
11. College Avenue / Zura Way	OWSC[d]	AM PM	16.2 >100	C F
12. College Avenue / Montezuma Way	Signal	AM PM	46.5 45.7	D D

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. AWSC – All-Way Stop Controlled Intersection.
d. OWSC – One-Way Stop Controlled intersection.

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

6.2 Daily Street Segment Levels of Service

Table 6–2 summarizes the existing street segment operations for the study area segments. As shown in *Table 6–2*, the study street segments currently operate acceptably at LOS D or better with the exception of the following segments:

- Montezuma Road: 55th Street to College Avenue (LOS F);
- College Avenue: Canyon Crest Drive to Zura Way (LOS E); and
- College Avenue: Montezuma Road to Arosa Street (LOS E).

TABLE 6–2
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Classification	Capacity (LOS E) [a]	ADT [b]	LOS [c]	V/C [d]
Montezuma Road					
Collwood Blvd to 55th St	4-Lane Major Arterial	40,000	28,950	0.724	C
55th St to College Ave	4-Lane Collector (TWLTL)	30,000	32,570	1.086	F
East of College Ave	4-Lane Collector (TWLTL)	30,000	21,500	0.717	D
Remington Rd					
West of 55th St	2-Lane Collector (no fronting property)	10,000	3,110	0.311	A
55th St					
Remington Rd to Montezuma Rd	4-Lane Collector	30,000	18,110	0.604	C
College Ave					
Canyon Crest Drive to Zura Way	4-Lane Major Arterial	40,000	35,850	0.896	E
Zura Way to Montezuma Rd	4-Lane Major Arterial	40,000	29,790	0.745	C
Montezuma Rd to Arosa St	4-Lane Collector (TWLTL)	30,000	27,500	0.917	E

Footnotes:

a. Capacities based on the City of San Diego's Roadway Classification Table (See *Appendix D*).

b. Average Daily Traffic Volumes.

c. Level of Service.

d. Volume to Capacity.

7.0 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 forty-two (42) cumulative projects were identified.

Table 7–1 contains the list of cumulative projects. ***Figure 7–1*** shows the existing + cumulative projects traffic volumes.

Appendix F contains more detailed cumulative projects information.

Table 7–1
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
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
College Community Redevelopment Area					
3	5566 Lindo Paseo	5566 Lindo Paseo	Demolish existing residences and construct a 7,771 SF, 26-bed fraternity house.	In planning process	Unknown
4	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.	Approved	Through 2025
5	SDSU Religious Centers Project	West of Campanile Drive, along Lindo Paseo and Hardy Avenue	Unknown.	Anticipated future proposal	Unknown
6	Sorority Row Housing Project	West side of College Avenue, south of Montezuma Road	Housing project for 215 student-sorority members on 1.56-acre vacant parcel. Project will include 65 apartments and 5 sorority chapter houses.	In planning process	Unknown
7	Capstone	5030 College Avenue	Construct 94 residential apartment units (374 beds)	Under Construction	2017

Table 7–1
Cumulative Projects Summary

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
8	Aztec Inn at SDSU	Northwest corner of Campanile Drive and Montezuma Road	74-room hotel with associated meeting rooms and retail and service areas.	On hold	On hold
9	Aztec Court Apartments	6229–6245 Montezuma Road	Demolish existing residences and construct 25 DUs	Approved	Unknown
City of San Diego					
10	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.	Proposed	Unknown
11	Montezuma South	Near SE corner of College Avenue and Montezuma Road	450 beds.	Anticipated future proposal	Through 2025
12	Grantville Trolley Station Transit Oriented Development ("TOD")	4510 Alvarado Canyon Road	Approximately 900 beds	Anticipated future proposal	Unknown
San Diego State University					
13	San Diego State Master Plan Update	San Diego State University Campus	The project proposed an increase of student headcount from 33,441 to 44,826 (25,000 Full Time Equivalent Students (FTE) to 35,000 FTE.	Approval Suspended	Unknown
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	Campus Conference Center	East of 55th Street, immediately east of Viejas Arena	Three-story, 70,000 SF building to provide meeting/conference space, office space, food services and retail services. The building would consist of 1 subterranean and 2 above-ground floors.	Approval Suspended	Unknown

Table 7–1
Cumulative Projects Summary

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
17	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
18	Olmeca/Maya Reconstruction	North of Montezuma Road, east of existing residence halls and Parking Structures 3 and 6	Two 10-story buildings (approximately 350,000 SF in size each) to house approximately 1,600 students.	Approval Suspended	Unknown
19	G Lot Residence Hall and Student and Residential Life Administration Building	G Parking Lot	Ten-story, 350,000 GSF building to house approximately 800 students; and two-story, 15,000 GSF office and meeting space	Approval Suspended	Unknown
20	Villa Alvarado Residential Hall Expansion	South of Interstate 8, east of College Avenue on C Lot	Additional apartments (approximately 50 two-bedroom apartments) in 2-3 story structures to provide an additional 200 beds.	Approval Suspended	Unknown
21	Alvarado Hotel	South of Interstate 8, adjacent to Alvarado Road	Approximately 120-room hotel for visitors to SDSU. Facilities may also include a business center, exercise room, and several meeting rooms.	Approval Suspended	Unknown
22	Alvarado Campus – D Lot	South of Alvarado Road, north of an undeveloped slope and Alvarado Creek on D Lot	Approximately 280,000 SF of instructional and research space.	Approval Suspended	Unknown
23	Alvarado Campus-Alvarado Medical Center	South of Alvarado Road, north of an undeveloped slope and Alvarado Creek at the existing Alvarado Medical Center	Approximately 332,285 SF of instructional and research space and a 1,840-car multi-story parking structure.	Approval Suspended	Unknown
24	Adobe Falls Phase I	North of Interstate 8, south of Adobe Falls Road	Housing for SDSU faculty and staff.	Approval Suspended	Unknown
25	Adobe Falls Phase II	North of Interstate 8, south of Adobe Falls Road	Housing for SDSU faculty and staff.	Approval Suspended	Unknown
26	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

Table 7–1
Cumulative Projects Summary

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
27	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
28	Recreation Field	North of Parking Structure 4	Replace construction staging area with artificial turf recreation field.	Complete	2016
29	Main Campus Gateway	N. Site of Montezuma and Campanile	Create Gateway with decorative tower, walls, landscaping and identity signage.	Complete	2016
30	Open Air Theater Concourse Improvements	South of Love Library	Replace temporary restrooms and concession stands with permanent code-compliant structures. No seating increase.	Under construction	2017
31	Tenochca Tower Renovations	Northwest corner of Montezuma Road and College Avenue	Replace deteriorated components and systems in bed tower.	Under construction	2017
32	South Campus Plaza Tenant Improvements		Finish unfinished retail space for up to eight (8) tenants in first floor retail.	Under construction	Unknown
33	Tenochca/Tula Replacement	Northwest corner of Montezuma Road and College Avenue	Demolish 20,000 GSF of existing conference and study community space and replace in two locations with 21,174 GSF of new construction.	In design	Unknown
34	Cuicacalli Community Kitchen	5150 E. Campus Drive	Add a community kitchen within existing building envelope.	Proposed	Unknown
35	Don Powell Theater Seating Bowl Replacement	North of Music Building	Demolish existing seating bowl, loppy and restrooms and replace with addition to provide accessible seating and other facilities.	Proposed	Unknown
36	Education Building Replacement	North of Student Services West Building	Demolish 17,300 GSF and build 57,800GSF	Proposed	Unknown
City of La Mesa					
37	Jessie Avenue	4888 Jessie Avenue	47 townhomes and two commercial units.	Approved	Unknown
38	Parks Avenue Townhomes	Parks Avenue and El Cajon Boulevard	10 townhomes and one live/work unit.	Approved	Unknown

Table 7–1
Cumulative Projects Summary

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
39	Comanche Apartments	Comanche Drive and El Cajon Boulevard	19 townhomes with a small commercial component	In planning process	Unknown
40	Montebello North	5017 Thorne Drive	General Plan Amendment and rezone for multiple unit residential structure	In planning process	Unknown
41	Park Station Specific Plan	Several parcels centered around 4999 Baltimore Drive	Specific Plan for mixed-use development.	In planning process	Unknown
42	Lowell Street	North end of Lowell Street	Five-unit planned residential development.	In planning process	Unknown

End of List

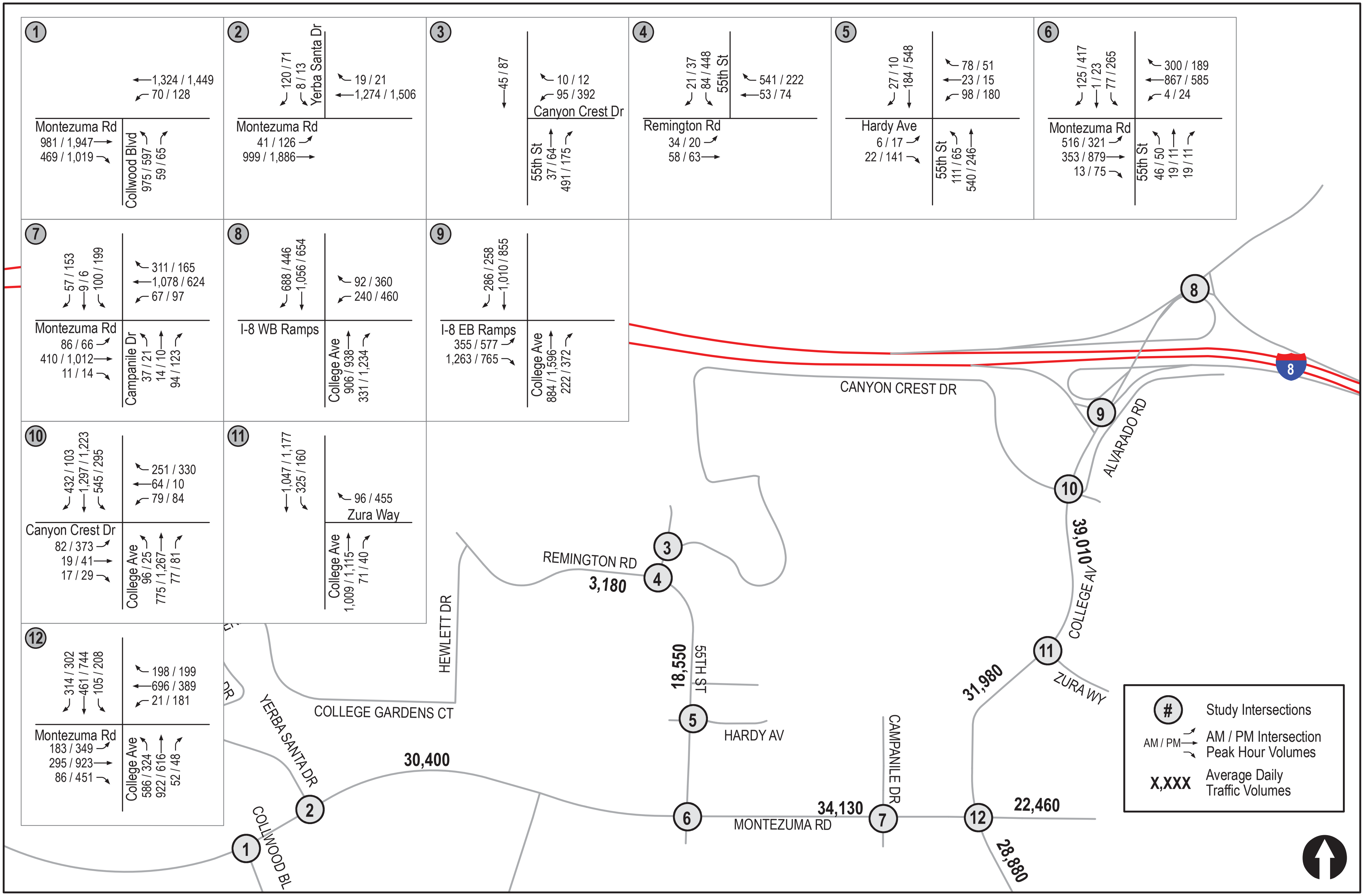

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Figure 7-1

Existing + Cumulative Projects Traffic Volumes

SDSU Student Housing

8.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

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

8.1 Trip Generation

Trip generation rates were researched in the SANDAG and City of San Diego trip generation manuals for a student housing use such as the proposed Project. Neither source has published rates for student housing. As a result, several student housing traffic studies were reviewed to determine an appropriate trip generation rate for the proposed Project.

In April 2015, a traffic impact analysis was prepared for the University of California, San Diego's (UCSD) Mesa Housing Project. Mesa Housing, like this Project, proposed construction of on-campus student housing. To determine the trip generation rate, a specific trip generation study was performed at the One Miramar Apartments which is considered a comparable use since this site also provides on-campus student housing. To calculate the site-specific rate generated from the One Miramar Apartments, daily traffic volumes were collected over a three-day period. Based on the data collected, a daily trip generation rate of 1.34 trips per bed was calculated.

In *The Paseo at San Diego State University EIR* (2005), City of San Diego staff approved the use of a daily trip generation rate of 3.1 trips per dwelling unit (DU) for high density student housing. The average number of beds per unit in The Paseo project was 2.5. Therefore, the daily trip generation rate of 3.1 per DU converts to 1.24 trips per bed.

Lastly, a trip generation study conducted during the Fall 2009, the Chapman University Residence Halls Trip Generation Survey, resulted in a daily trip generation rate of 1.46 trips per bed.

Based on the three potential trip generation rates determined in connection with these three student housing projects (1.24, 1.34, and 1.46), LLG determined to utilized the most conservative of the three, a trip generation rate of 1.46 per bed.

As previously noted, the SDSU Transit Center, which serves as a hub for trolley and bus service, is located in close proximity (approximately 0.5 miles) to the site of the proposed Project. Based on this close location and the fact that about 2/3 of students who reside on campus do not bring a vehicle to campus, a 10% transit (trolley and bus) mode split was determined appropriate; that is, of the total number of vehicle trips that potentially would be generated by the proposed Project, 10% of the trips would be made via transit (trolley and bus) instead of by automobile, while the remaining 90% would be made via automobile. Since the trip generation rate is based on a campus with similar pedestrian and bicycle opportunities as SDSU, a separate pedestrian and bicycle mode split percentage was not applied in the trip generation calculations.

As previously noted, the proposed Project would be constructed in three separate phases:

- Phase I: up to 850 beds

- Phase II: up to an additional 850 beds (1,700 beds total)
- Phase III: up to an additional 866 beds (2,566 beds total)

As a result, the traffic analysis presented here addresses the three phases individually, with trip generation for each phase calculated separately. ***Table 8–1*** tabulates the Project Phase I trip generation. Phase I would generate approximately 1,117 ADT with 12 inbound / 10 outbound trips during the AM peak hour and 39 inbound / 33 outbound trips during the PM peak hour. The peak hour percentage assignments were determined based on the Chapman University Residence Halls Trip Generation Survey.

TABLE 8–1
PROJECT PHASE I TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour				PM Peak Hour			
		Rate	Volume	% of ADT	In:Out Split	Volume		% of ADT	In:Out Split	Volume	
						In	Out			In	Out
Student Housing	850 beds	1.46/bed	1,241	1.98%	52:48	13	12	6.39%	54:46	43	37
Mode Split - Transit	10%		(124)			(1)	(2)			(4)	(4)
Total		—	**1,117**	—	—	**12**	**10**	—	—	**39**	**33**

Table 8–2 tabulates the Project Phase I in combination with Phase II trip generation. The Phases I + II would generate approximately 2,233 ADT with 23 inbound / 22 outbound trips during the AM peak hour and 77 inbound / 66 outbound trips during the PM peak hour.

TABLE 8–2
PROJECT PHASE I + PHASE II TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour				PM Peak Hour			
		Rate	Volume	% of ADT	In:Out Split	Volume		% of ADT	In:Out Split	Volume	
						In	Out			In	Out
Student Housing	1,700 beds	1.46/bed	2,481	1.98%	52:48	26	24	6.39%	54:46	86	73
Mode Split - Transit	10%		(248)			(3)	(2)			(9)	(7)
Total		—	**2,233**	—	—	**23**	**22**	—	—	**77**	**66**

Table 8–3 tabulates the total Project trip generation. As shown, total Project would generate approximately 3,370 ADT with 35 inbound / 32 outbound trips during the AM peak hour and 117 inbound / 99 outbound trips during the PM peak hour.

TABLE 8–3

TOTAL PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		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
Student Housing	2,566 beds	1.46/bed	3,744	1.98%	52:48	39	36	6.39%	54:46	130	110
Mode Split - Transit	10%		(374)			(4)	(4)			(13)	(11)
Total		—	**3,370**	—	—	**35**	**32**	—	—	**117**	**99**

8.2 Trip Distribution/Assignment

The traffic that would be generated by the Project was distributed and assigned to the street system based on several factors, including a Select Zone Assignment (SZA) plot obtained from SANDAG, existing traffic counts, and site access parameters.

With respect to access and trip distribution, the Project site will provide limited parking and most of these spaces would be reserved for Americans with Disability Act (ADA) needs and housing complex staff and personnel. Therefore, students residing at the Project who choose to bring cars to campus would not park on-site but would be free to park in any of the student designated parking facilities on campus. The lots nearest the Project site are Parking Lot 10A (located west of the Project site) and Parking Structure 12 (located east of the Project site). Because Lot 10A contains a limited number of parking spaces (33), for the purpose of this study, Parking Structure 12 was assumed to be the origin/destination of the majority of Project traffic. Based on the expected distribution, 5% of the Project-generated traffic would travel to and from the Project site directly, while the other 95% would travel to and from Parking Structure 12 on Canyon Crest Drive. As previously noted, based on the SZA plot, 2% of the Project-generated traffic would access the Project from the west, through the College View Estates area, via Remington Road.

Figure 8–1 shows the Project traffic distribution. ***Figures 8–2***, ***8–3***, and ***8–4*** show the Project Phase I, Project Phase I and Phase II, and total Project volumes, respectively, as distributed on the study area roadways.

8.3 Regional Traffic Benefit

An important consideration for student housing land uses is that, while they do add traffic to the area in the immediate vicinity of campus, they significantly shorten or eliminate much longer trips. For instance, if the Project were not built, students would live in other areas of San Diego, including locales such as Pacific Beach or Mission Valley and, as a result, they would need to drive to the university. These distances likely would be greater than the distances they would drive on a daily basis as students residing on-campus. In addition, the area surrounding the SDSU campus provides a variety of resources for personal needs such as grocery stores, recreational facilities, etc., further reducing the need to travel longer distances. These characteristics associated with the location of the Project result in substantially reducing the number of vehicle miles traveled, as well as impacts on regional roads such as I-8. Therefore, the proposed Project is considered a net benefit in terms of regional traffic impacts.

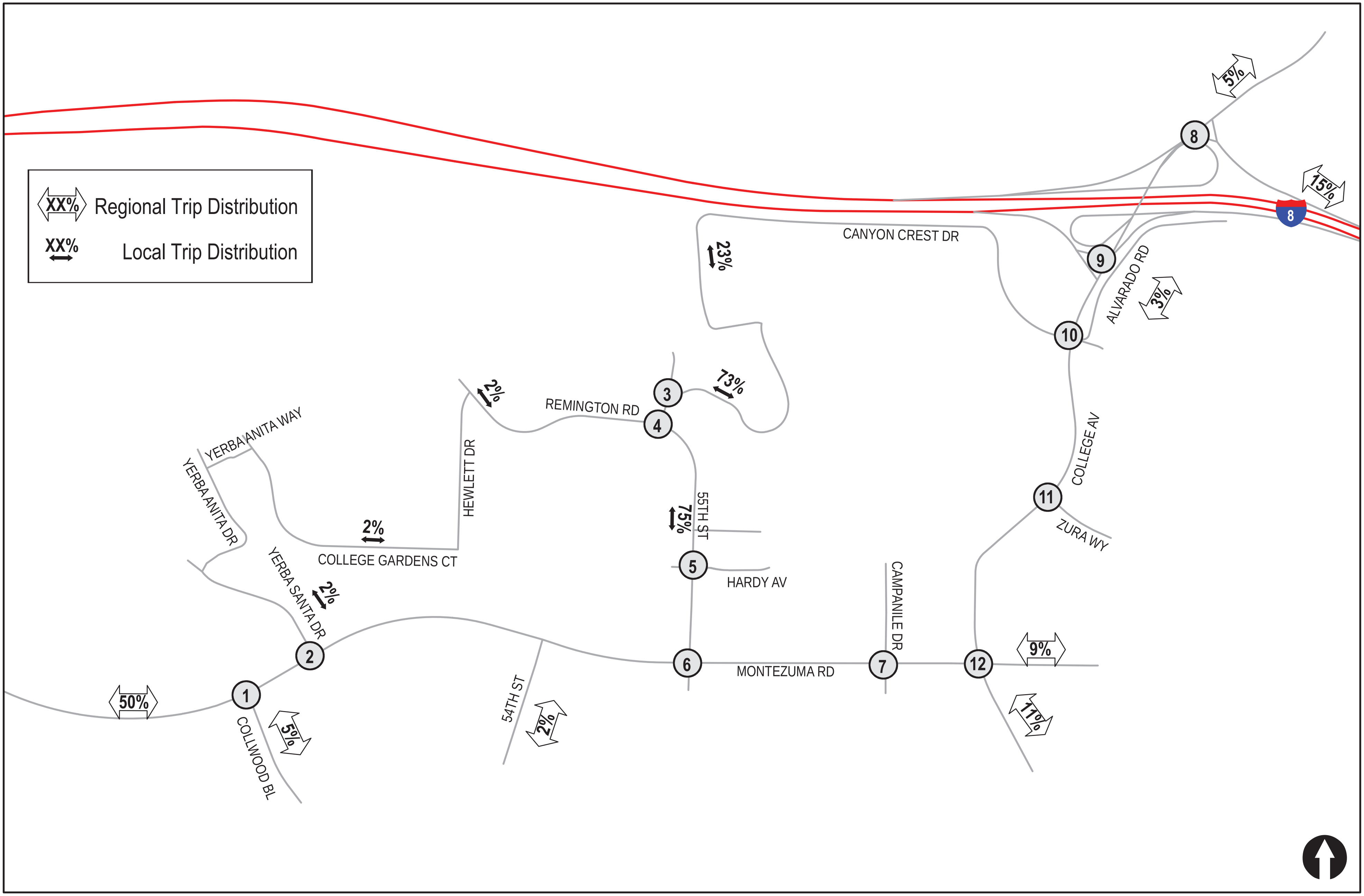

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Figure 8-1

Project Traffic Distribution

SDSU Student Housing

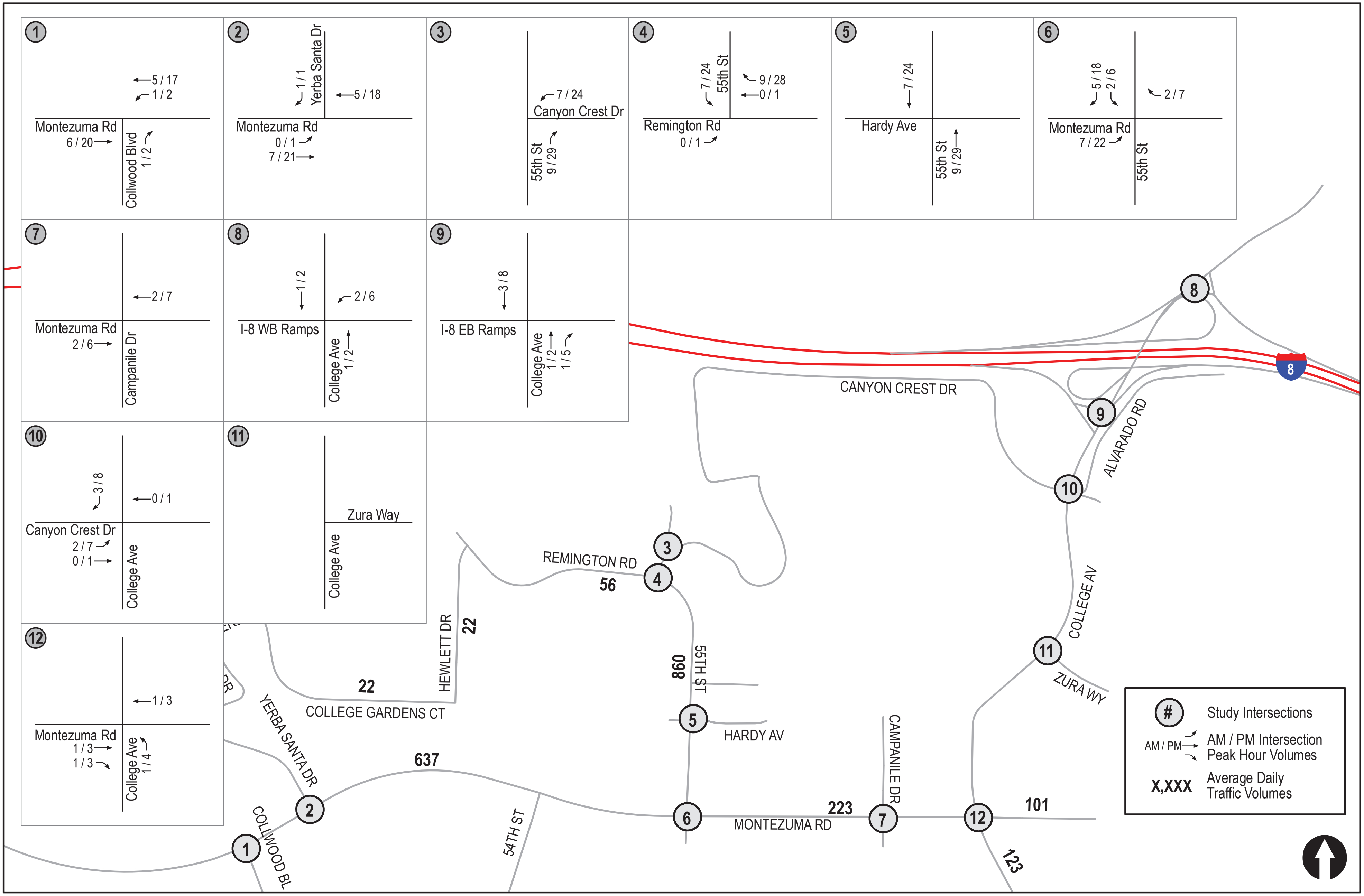

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Figure 8-2

Project Phase I Traffic Volumes

SDSU Student Housing

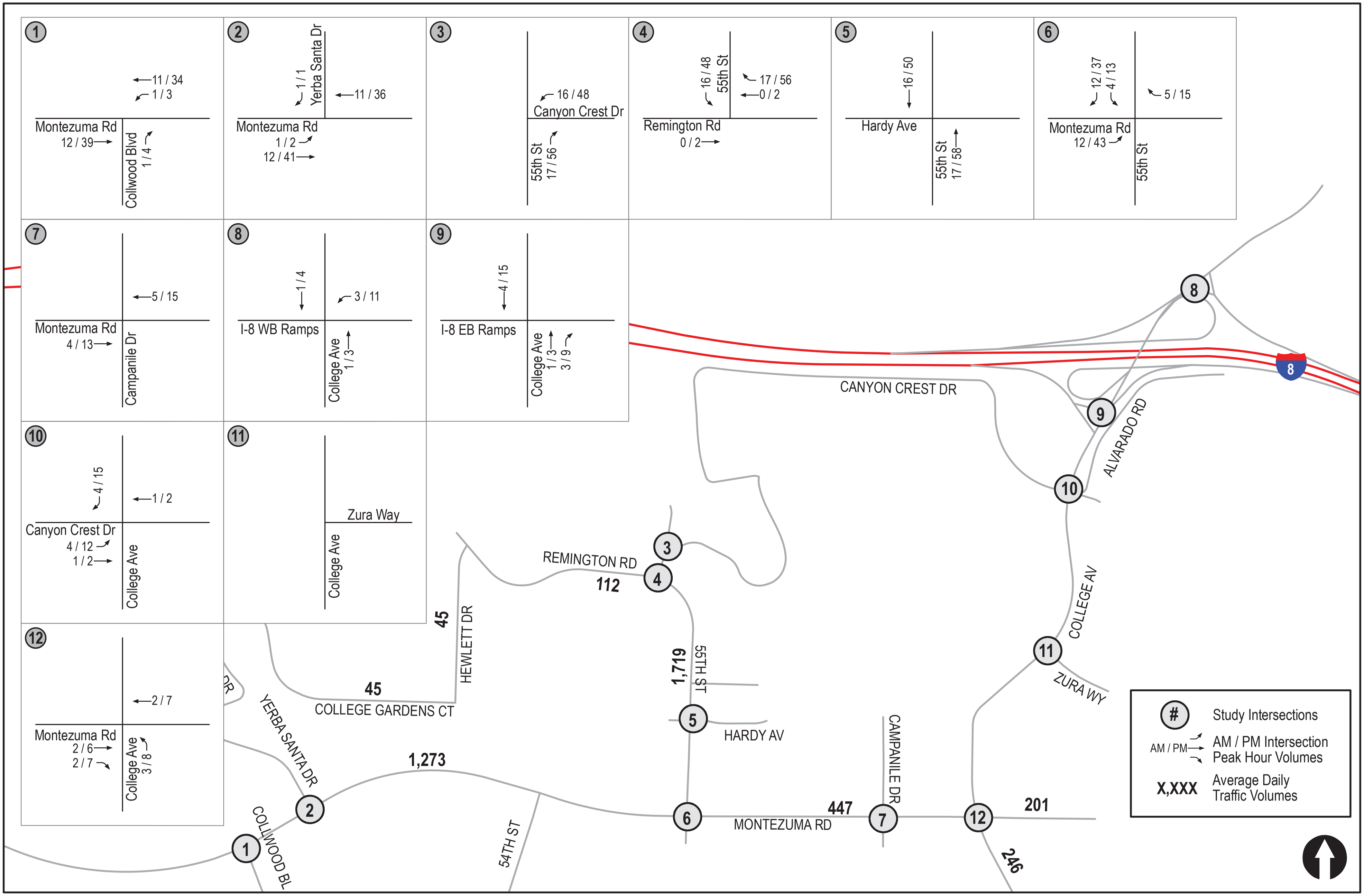

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Figure 8-3

Project Phase I + Phase II Traffic Volumes

SDSU Student Housing

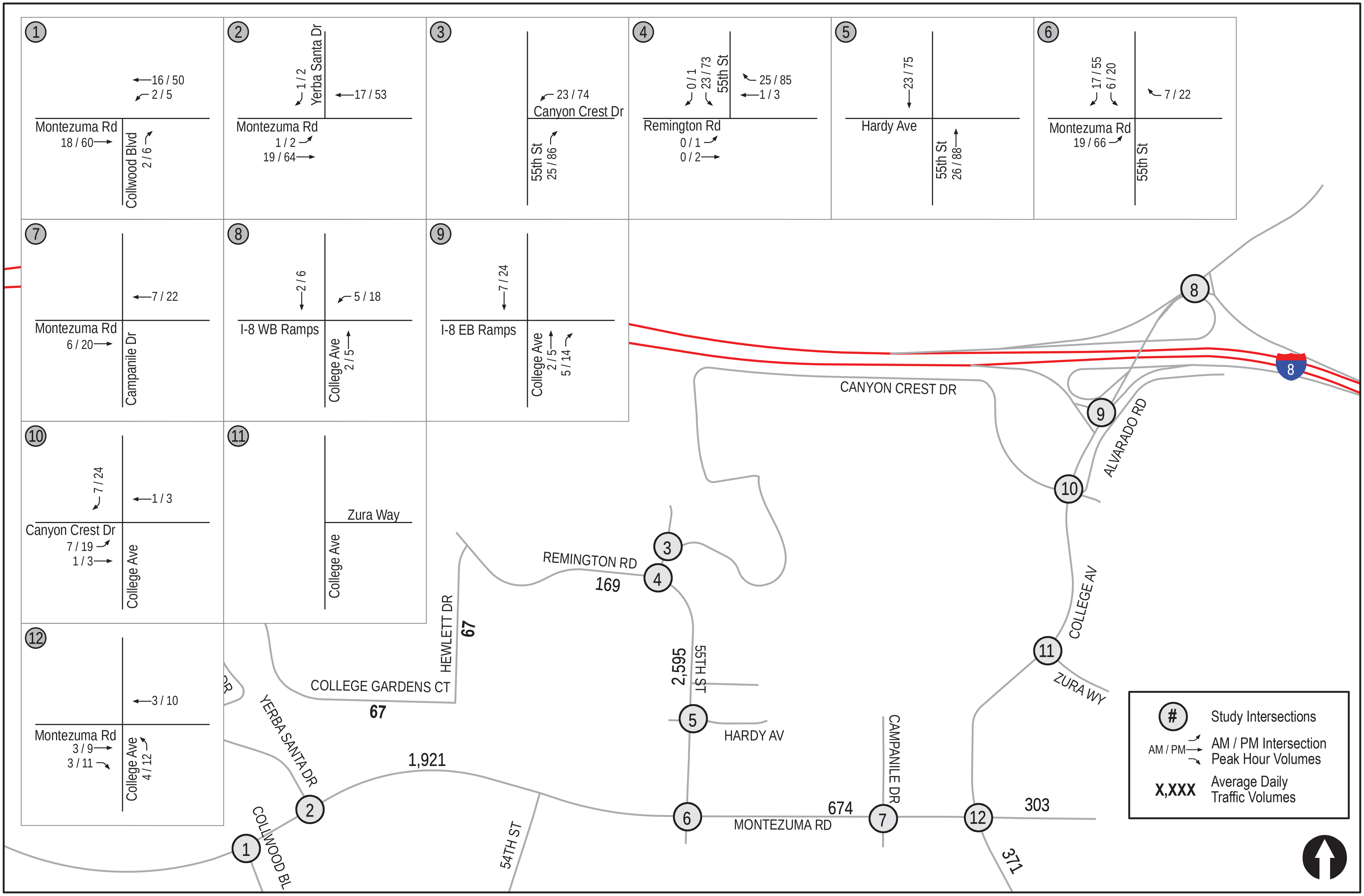

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Figure 8-4

Total Project Traffic Volumes

SDSU Student Housing

9.0 ANALYSIS OF NEAR-TERM SCENARIOS

The scenarios analyzed below provide an assessment of the impact of the Project traffic volumes in relation to the existing and near-term with Project conditions. Specifically, this section includes the analysis results of the intersection and street segment operations under the following scenarios: Existing + Project, Existing + Cumulative + Project Phase I, Existing + Cumulative + Project Phases I and II, and Existing + Cumulative + Total Project. Determination of the significance of the impacts under each scenario is discussed in ***Section 16.0***.

9.1 Existing + Total Project

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. Because the Project will be developed over the long-term, an "Existing + Total Project" analysis is not an accurate scenario for which to determine significant impacts. This is because the scenario does not account for the growth in background or cumulative traffic and, as a result may understate impacts, nor does this scenario account for future road improvements that may be constructed and, as a result may overstate impacts. For these reasons, the Existing + Total Project analysis is presented for informational purposes only; significant impacts were assessed against the Near-Term and Horizon Year scenarios, each of which accounts for cumulative traffic growth and future infrastructure improvements.

Figure 9–1 shows the Existing + total Project volumes.

9.1.1 *Intersection Analysis*

Table 9–1 summarizes the peak hour intersection operations under Existing + Total Project conditions. As shown in *Table 9–1*, with the addition of Total Project traffic, the study area intersections would continue to operate acceptably at LOS D or better during the AM and PM peak hours with the exception of the following intersections:

- 55th Street / Montezuma Road (LOS E during the PM peak hour); and
- College Avenue / Zura Way (LOS F during the PM peak hour).

Please see ***Appendix G*** for the Existing + Total Project peak hour intersection analyses worksheets.

9.1.2 *Segment Operations*

Table 9–2 summarizes the Existing + Total Project street segment operations. As shown in *Table 9–2*, with the addition of Total Project traffic, the study area street segments would continue to operate acceptably at LOS D or better with the exception of the following segments:

- Montezuma Road: 55th Street to College Avenue (LOS F);
- College Avenue: Canyon Crest Drive to Zura Way (LOS E); and
- College Avenue: Montezuma Road to Arosa Street (LOS E).

9.2 Existing + Cumulative Projects (Without Project)

9.2.1 *Intersection Analysis*

Table 9–3 summarizes the peak hour intersection operations under Existing + Cumulative Projects (Without Project) conditions. As shown in *Table 9–3*, under this scenario the study area intersections would operate acceptably at LOS D or better during the AM and PM peak hours with the exception of the following intersections:

- College Avenue / Canyon Crest Avenue (LOS E during the PM peak hour);
- College Avenue / Zura Way (LOS F during the PM peak hour); and
- College Avenue / Montezuma Road (LOS E during the PM peak hour).

Please see *Appendix G* for the Existing + Cumulative Projects (Without Project) peak hour intersection analyses worksheets.

9.2.2 *Segment Operations*

Table 9–4 summarizes the Existing + Cumulative Projects (Without Project) street segment operations. As shown in *Table 9–4*, the study area street segments would operate acceptably at LOS D or better with the exception of the following segments:

- Montezuma Road: 55th Street to College Avenue (LOS F);
- College Avenue: Canyon Crest Drive to Zura Way (LOS E); and
- College Avenue: Montezuma Road to Arosa Street (LOS E).

9.3 Existing + Cumulative Projects + Project Phase I

9.3.1 *Intersection Analysis*

Table 9–3 summarizes the peak hour intersection operations under Existing + Cumulative Projects + Project Phase I conditions. As shown in *Table 9–3*, with the addition of Project Phase I traffic, the study area intersections would continue to operate acceptably at LOS D or better during the AM and PM peak hours with the exception of the following intersections:

- College Avenue / Canyon Crest Avenue (LOS E during the PM peak hour);
- College Avenue / Zura Way (LOS F during the PM peak hour); and
- College Avenue / Montezuma Road (LOS E during the PM peak hour).

Based on the City of San Diego's significance criteria, the proposed Project would not result in significant impacts at the above intersections as the Project's traffic contribution to these intersections would not exceed the allowable thresholds. Please see *Appendix G* for the Existing + Cumulative Projects + Project Phase I peak hour intersection analyses worksheets.

9.3.2 *Segment Operations*

Table 9–4 summarizes the Existing + Cumulative Projects + Project Phase I street segment operations. As shown in *Table 9–4*, with the addition of Project Phase I traffic, the study area street segments would continue to operate acceptably at LOS D or better with the exception of the following segments:

- Montezuma Road: 55th Street to College Avenue (LOS F);
- College Avenue: Canyon Crest Drive to Zura Way (LOS E); and
- College Avenue: Montezuma Road to Arosa Street (LOS E).

Based on the City of San Diego's significance criteria, the proposed Project would not result in significant impacts on the above street segments as the Project's traffic contribution to these intersections would not exceed the allowable thresholds.

Figure 9–2 shows the Existing + Cumulative Projects + Project Phase I volumes.

9.4 Existing + Cumulative Projects + Project Phase I + Project Phase II

9.4.1 *Intersection Analysis*

Table 9–3 summarizes the peak hour intersection operations under Existing + Cumulative Projects + Project Phase I + Phase II conditions. As shown in *Table 9–3*, with the addition of Project Phase I + Phase II traffic, the study area intersections would continue to operate acceptably at LOS D or better during the AM and PM peak hours with the exception of the following intersections:

- 55th Street / Montezuma Road (LOS E during the PM peak hour);
- College Avenue / Canyon Crest Avenue (LOS E during the PM peak hour);
- College Avenue / Zura Way (LOS F during the PM peak hour); and
- College Avenue / Montezuma Road (LOS E during the PM peak hour).

Based on the City of San Diego's significance criteria, the proposed Project would result in a significant impact at the 55th Street / Montezuma Road intersection as the Project's traffic contribution would exceed the allowable thresholds. Mitigation for this impact is discussed in ***Section 16.2***. Please see *Appendix G* for the Existing + Cumulative Projects + Project Phase I + Phase II peak hour intersection analyses worksheets.

9.4.2 *Segment Operations*

Table 9–4 summarizes the Existing + Cumulative Projects + Project Phase I + Phase II street segment operations. As shown in *Table 9–4*, with the addition of Project Phase I + Phase II traffic, the study area street segments would continue to operate acceptably at LOS D or better with the exception of the following segments:

- Montezuma Road: 55th Street to College Avenue (LOS F);
- College Avenue: Canyon Crest Drive to Zura Way (LOS E); and
- College Avenue: Montezuma Road to Arosa Street (LOS E).

Based on the City of San Diego's significance criteria, the proposed Project would result in a significant impact on Montezuma Road between 55th Street and College Avenue as the Project's traffic contribution would exceed the allowable thresholds. Mitigation for this impact is discussed in *Section 16.2*.

Figure 9–3 shows the Existing + Cumulative Projects + Project Phase I + Project Phase II volumes.

9.5 Existing + Cumulative Projects + Total Project

9.5.1 *Intersection Analysis*

Table 9–3 summarizes the peak hour intersection operations under Existing + Cumulative Projects + Total Project conditions. As shown in *Table 9–3*, with the addition of Total Project traffic, the study area intersections would continue to operate acceptably at LOS D or better during the AM and PM peak hours with the exception of the following intersections:

- 55th Street / Montezuma Road (LOS E during both the AM and PM peak hours);
- College Avenue / Canyon Crest Avenue (LOS E during the PM peak hour);
- College Avenue / Zura Way (LOS F during the PM peak hour); and
- College Avenue / Montezuma Road (LOS E during the PM peak hour).

Based on the City of San Diego's significance criteria, the proposed Project would result in a significant impact at the 55th Street / Montezuma Road intersection as the Project's traffic contribution would exceed the allowable thresholds. Mitigation for this impact is discussed in *Section 16.2*. Please see *Appendix G* for the Existing + Cumulative Projects + Total Project peak hour intersection analyses worksheets.

9.5.2 *Segment Operations*

Table 9–4 summarizes the Existing + Cumulative Projects + Total Project street segment operations. As shown in *Table 9–4*, with the addition of Total Project traffic, the study area street segments would continue to operate acceptably at LOS D or better with the exception of the following segments:

- Montezuma Road: 55th Street to College Avenue (LOS F);
- College Avenue: Canyon Crest Drive to Zura Way (LOS E); and
- College Avenue: Montezuma Road to Arosa Street (LOS E).

Based on the City of San Diego's significance criteria, the proposed Project would result in a significant impact on Montezuma Road between 55th Street and College Avenue as the Project's traffic contribution would exceed the allowable thresholds. Mitigation for this impact is discussed in *Section 16.2*.

Figure 9–4 shows the Existing + Cumulative Projects + Total Project volumes.

TABLE 9–1
NEAR-TERM INTERSECTION OPERATIONS (EXISTING + PROJECT)

Intersection	Control Type	Peak Hour	Existing		Existing + Total Project		Δ[c]
			Delay[a]	LOS[b]	Delay	LOS	
1. Montezuma Road / Collwood Blvd	Signal	AM PM	21.5 25.3	C C	21.5 27.0	C C	0.0 1.7
2. Montezuma Road / Yerba Santa Drive	Signal	AM PM	9.4 9.2	A A	9.5 9.4	A A	0.1 0.2
3. 55th Street / Canyon Crest Drive	AWSC[d]	AM PM	17.1 11.6	C B	20.7 14.4	C B	3.6 2.8
4. 55th Street / Remington Road	Signal	AM PM	9.1 10.9	A B	9.8 11.5	A B	0.7 0.6
5. 55th Street / Hardy Avenue	Signal	AM PM	27.4 36.5	C D	27.4 36.5	C D	0.0 0.0
6. 55th Street / Montezuma Road	Signal	AM PM	33.5 50.0	C D	39.3 60.0	D E	5.8 10.0
7. Montezuma Road / Campanile Drive	Signal	AM PM	31.0 29.5	C C	31.0 29.6	C C	0.0 0.1
8. College Avenue / I-8 WB Ramps	Signal	AM PM	7.2 11.2	A B	7.3 11.5	A B	0.1 0.3
9. College Avenue / I-8 EB Ramps	Signal	AM PM	19.2 15.7	B B	19.2 15.7	B B	0.0 0.0
10. College Avenue / Canyon Crest Avenue	Signal	AM PM	38.4 50.0	D D	38.5 50.0	D D	0.1 0.0
11. College Avenue / Zura Way	OWSC[e]	AM PM	16.2 >100	C F	16.2 >100	C F	0.0 0.0
12. College Avenue / Montezuma Way	Signal	AM PM	46.5 45.7	D D	46.5 45.9	D D	0.0 0.2

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. AWSC – All-Way Stop Controlled intersection
e. OWSC – One-Way Stop Controlled

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 9–2
NEAR-TERM SEGMENT OPERATIONS (EXISTING + PROJECT)

Street Segment	Near Term Capacity (LOS E)[a]	Existing			Existing + Total Project			Δ[e]
		ADT[b]	V/C[c]	LOS[d]	ADT	V/C	LOS	
Montezuma Road								
Collwood Boulevard to 55th Street	40,000	28,950	0.724	C	30,871	0.772	D	0.048
55th Street to College Avenue	30,000	32,570	1.086	F	33,244	1.108	F	0.022
East of College Ave	30,000	21,500	0.717	D	21,803	0.727	D	0.010
Remington Rd								
West of 55th St	10,000	3,110	0.311	A	3,279	0.328	A	0.017
55th St								
Remington Rd to Montezuma Rd	30,000	18,110	0.604	C	20,705	0.690	D	0.087
College Ave								
Canyon Crest Drive to Zura Way	40,000	35,850	0.896	E	35,850	0.896	E	0.000
Zura Way to Montezuma Rd	40,000	29,790	0.745	C	29,790	0.745	C	0.000
Montezuma Rd to Arosa St	30,000	27,500	0.917	E	27,871	0.929	E	0.012

Footnotes:

a. Capacities based on the City of San Diego's Roadway Classification & LOS table (See *Appendix D*).
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

Table 9–3
Near-Term Intersection Operations (Existing + Project + Cumulative Projects)

Intersection	Control Type	Peak Hour	Existing + Cumulative Projects		Existing + Cumulative Projects + Project Phase I		Δ[c]	Existing + Cumulative Projects + Project Phase I + Project Phase II		Δ	Existing + Cumulative Projects + Total Project		Δ
			Delay[a]	LOS[b]	Delay	LOS		Delay	LOS		Delay	LOS	
1. Montezuma Rd / Collwood Blvd	Signal	AM	21.9	C	21.9	C	0.0	21.9	C	0.0	21.9	C	0.0
		PM	27.1	C	27.9	C	0.8	28.6	C	1.5	29.5	C	2.4
2. Montezuma Rd / Yerba Santa Dr	Signal	AM	9.7	A	9.7	A	0.0	9.7	A	0.0	9.7	A	0.0
		PM	9.3	A	9.5	A	0.2	9.6	A	0.3	9.7	A	0.4
3. 55th St / Canyon Crest Dr	AWSC[d]	AM	18.2	C	19.4	C	1.2	20.7	C	2.5	22.1	C	3.9
		PM	12.0	B	12.7	B	0.7	13.6	B	1.6	14.7	B	2.7
4. 55th St / Remington Rd	Signal	AM	9.2	A	9.8	A	0.6	9.9	A	0.7	9.9	A	0.7
		PM	11.1	B	11.4	B	0.3	11.5	B	0.4	11.5	B	0.4
5. 55th St / Hardy Ave	Signal	AM	27.4	C	27.4	C	0.0	27.5	C	0.1	27.6	C	0.2
		PM	36.7	D	36.7	D	0.0	36.8	D	0.1	36.9	D	0.2
6. 55th St / Montezuma Rd	Signal	AM	34.0	C	35.5	D	1.5	38.0	D	4.0	39.8	D	5.8
		PM	51.8	D	54.9	D	3.1	**58.3**	**E**	**6.5**	**62.1**	**E**	**>10**
7. Montezuma Rd / Campanile Dr	Signal	AM	33.2	C	33.2	C	0.0	33.2	C	0.0	33.2	C	0.0
		PM	31.1	C	31.1	C	0.0	31.2	C	0.1	31.2	C	0.1
8. College Ave / I-8 WB Ramps	Signal	AM	7.7	A	7.7	A	0.0	7.7	A	0.0	7.8	A	0.1
		PM	11.3	B	11.5	B	0.2	11.5	B	0.2	11.7	B	0.4
9. College Ave / I-8 EB Ramps	Signal	AM	20.0	B	20.0	B	0.0	20.0	B	0.0	20.0	B	0.0
		PM	16.4	B	16.4	B	0.0	16.4	B	0.0	16.5	B	0.1
10. College Ave / Canyon Crest Ave	Signal	AM	44.4	D	44.4	D	0.0	44.5	D	0.1	44.5	D	0.1
		PM	69.0	E	69.0	E	0.0	69.1	E	0.1	69.1	E	0.1

TABLE 9–3
NEAR-TERM INTERSECTION OPERATIONS (EXISTING + PROJECT + CUMULATIVE PROJECTS)

Intersection	Control Type	Peak Hour	Existing + Cumulative Projects		Existing + Cumulative Projects + Project Phase I		Δ[c]	Existing + Cumulative Projects + Project Phase I + Project Phase II		Δ	Existing + Cumulative Projects + Total Project		Δ
			Delay[a]	LOS[b]	Delay	LOS		Delay	LOS		Delay	LOS	
11. College Ave / Zura Way	OWSC[e]	AM	18.7	C	18.7	C	0.0	18.7	C	0.0	18.7	C	0.0
		PM	>100	F	>100	F	0.0	>100	F	0.0	>100	F	0.0
12. College Ave / Montezuma Way	Signal	AM	53.5	D	53.5	D	0.0	53.5	D	0.0	53.5	D	0.0
		PM	58.1	E	58.1	E	0.0	58.1	E	0.0	58.1	E	0.0

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. AWSC – All-Way Stop Controlled intersection
e. OWSC – One-Way Stop Controlled intersection.

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 9–4
NEAR-TERM STREET SEGMENT OPERATIONS (EXISTING + PROJECT + CUMULATIVE PROJECTS)

Street Segment	Near Term Capacity (LOS E)[a]	Existing + Cumulative Projects			Existing + Cumulative Projects + Project Phase I			Δ[e]	Existing + Cumulative Projects + Project Phase I + Project Phase II			Δ	Existing + Project + Cumulative Projects			Δ
		ADT[b]	V/C[c]	LOS[d]	ADT	V/C	LOS		ADT	V/C	LOS		ADT	V/C	LOS	
Montezuma Road																
Collwood Boulevard to 55th Street	40,000	30,400	0.760	D	31,037	0.776	D	0.016	31,673	0.792	D	0.032	32,321	0.808	D	0.048
55th Street to College Avenue	30,000	34,130	1.138	F	34,353	1.145	F	0.007	**34,577**	**1.153**	**F**	**0.015**	**34,804**	**1.160**	**F**	**0.022**
East of College Avenue	30,000	22,460	0.749	D	22,561	0.752	D	0.003	22,661	0.755	D	0.007	22,763	0.759	D	0.010
Remington Rd																
West of 55th Street	10,000	3,180	0.318	A	3,236	0.324	A	0.006	3,292	0.329	A	0.011	3,349	0.335	A	0.017
55th St																
Remington Road to Montezuma Road	30,000	18,550	0.618	C	19,410	0.647	C	0.029	20,269	0.676	D	0.057	21,145	0.705	D	0.087
College Ave																
Canyon Crest Drive to Zura Way	40,000	39,010	0.975	E	39,010	0.975	E	0.000	39,010	0.975	E	0.000	39,010	0.975	E	0.000
Zura Way to Montezuma Road	40,000	31,980	0.800	D	31,980	0.800	D	0.000	31,980	0.800	D	0.000	31,980	0.800	D	0.000
Montezuma Road to Arosa St	30,000	28,880	0.963	E	29,003	0.967	E	0.004	29,126	0.971	E	0.008	29,251	0.975	E	0.012

Footnotes:

a. Capacities based on the City of San Diego's Roadway Classification & LOS table (See *Appendix D*).
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

General Notes:

1. Bold and shaded typeface indicates a potentially significant impact.

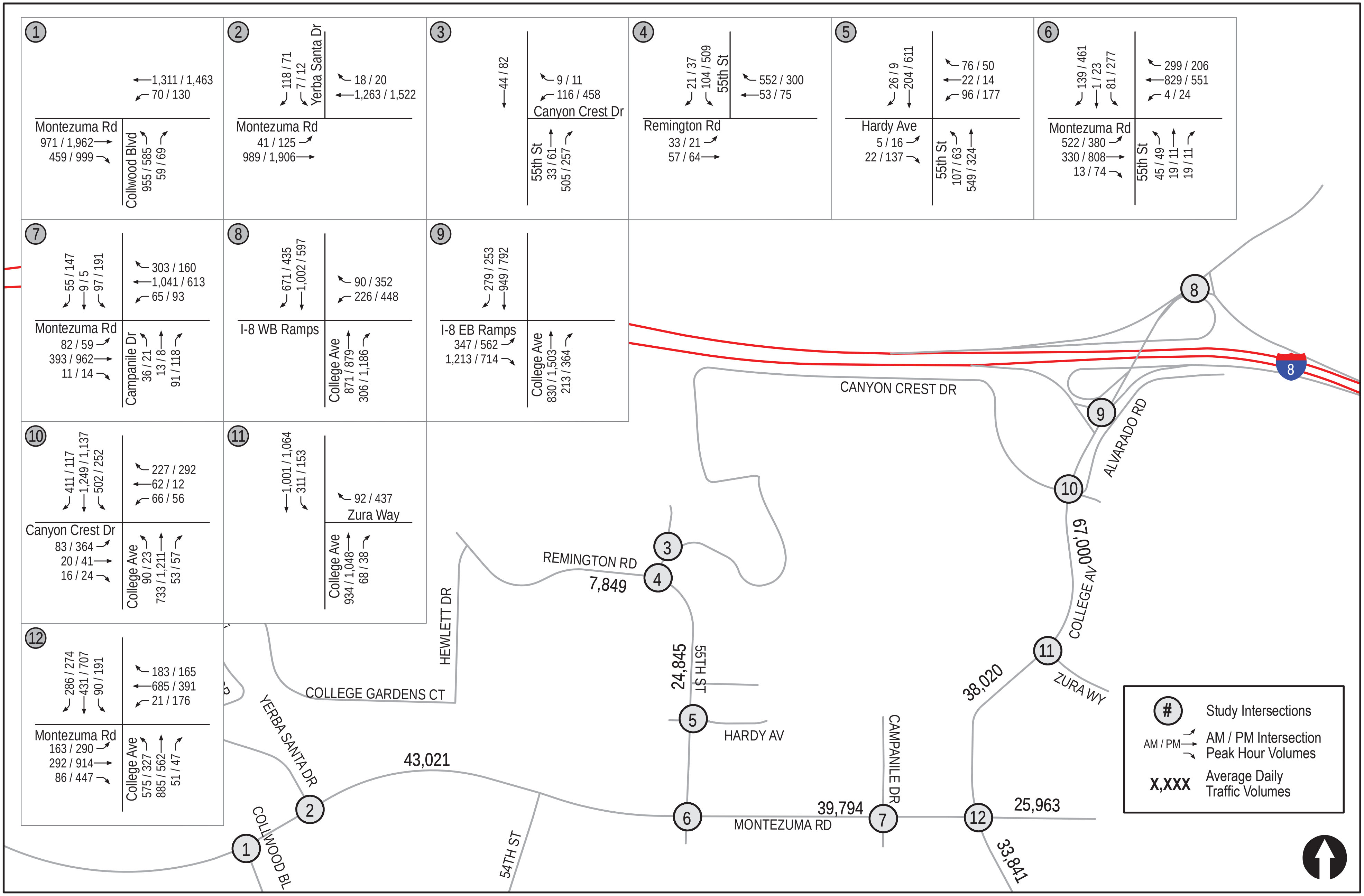

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Figure 9-1

Existing + Total Project Traffic Volumes

SDSU Student Housing

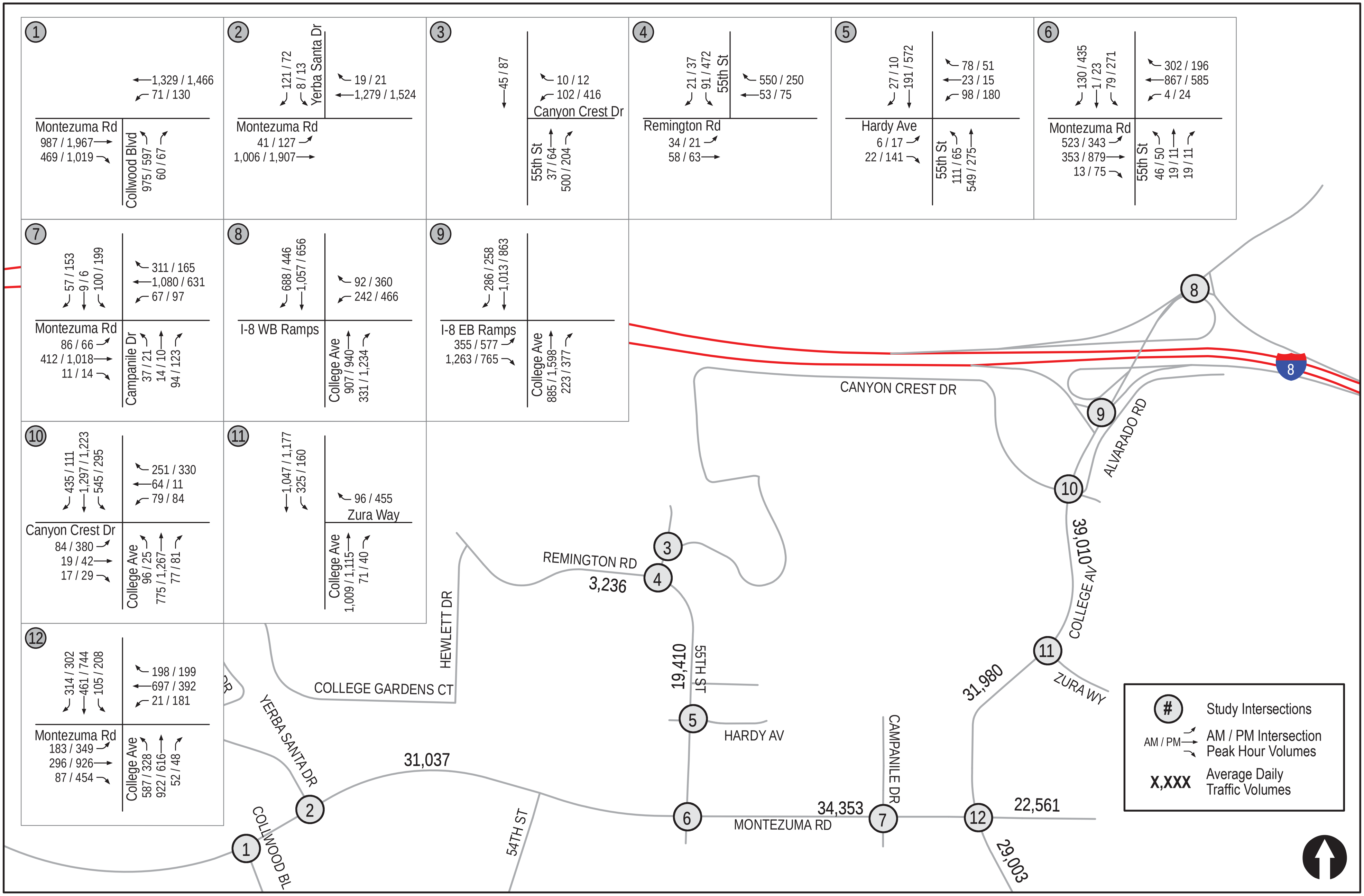

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Figure 9-2

Existing + Cumulative Projects + Project Phase I Traffic Volumes

SDSU Student Housing

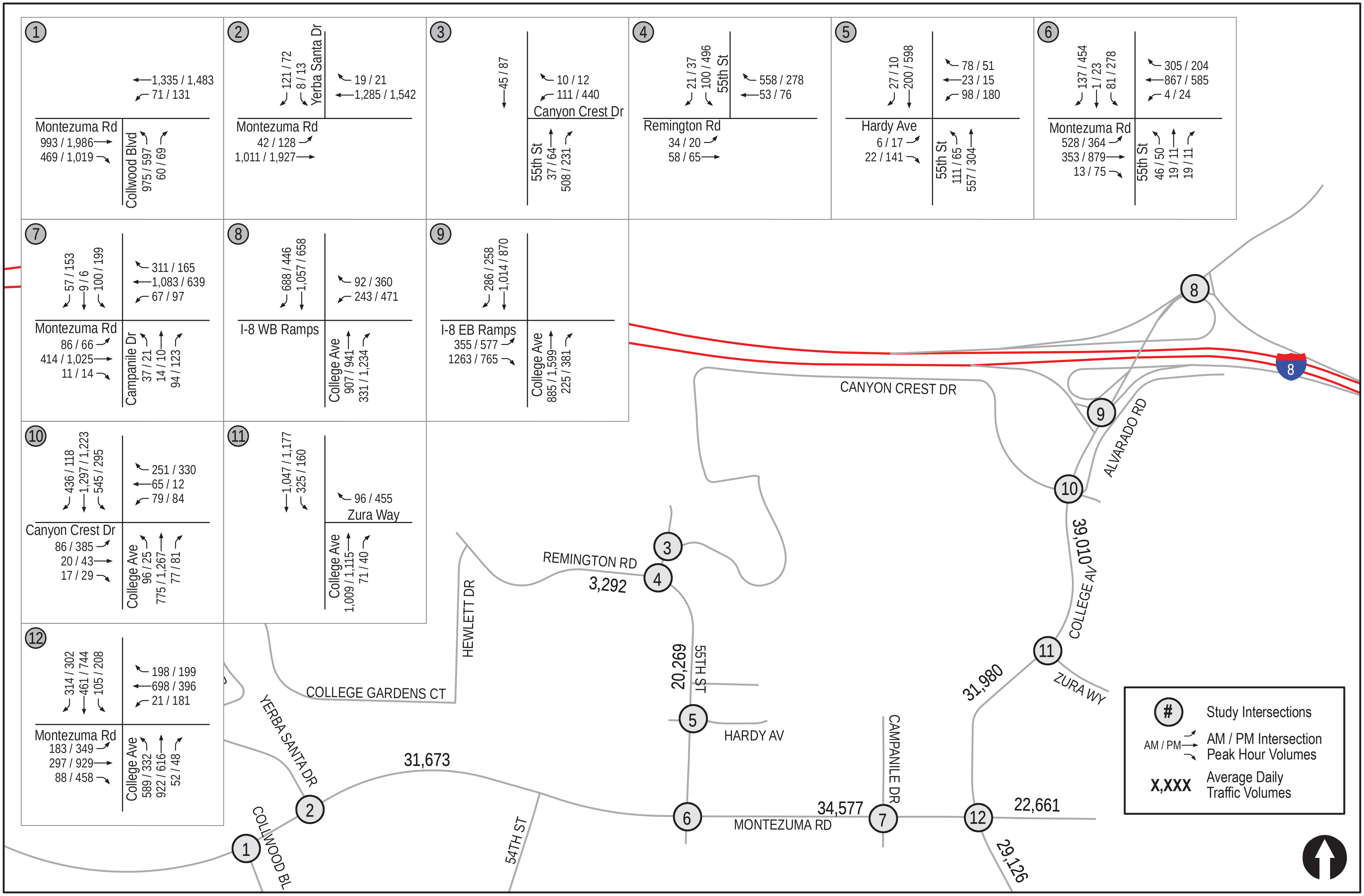

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Figure 9-3

Existing + Cumulative Projects + Project Phase I + Phase II Traffic Volumes

SDSU Student Housing

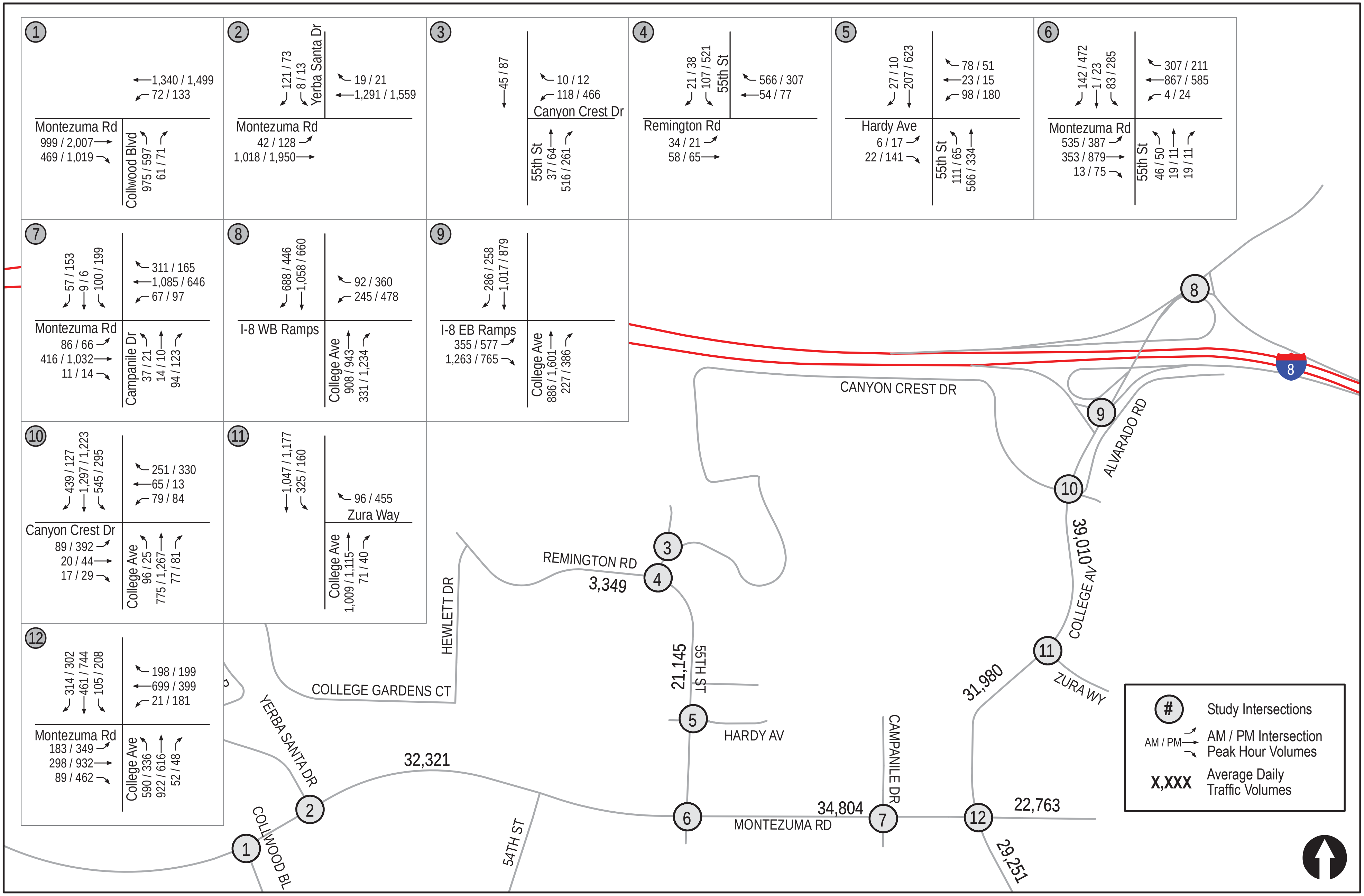

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Figure 9-4

Existing + Cumulative Projects + Total Project Traffic Volumes

SDSU Student Housing

10.0 ANALYSIS OF HORIZON YEAR SCENARIOS

This section presents analysis of a long-range, Horizon Year scenario, under conditions with and without Project traffic volumes. The analysis was conducted to assess the potential impact of the total Project traffic volumes in relation to Horizon Year (circa 2035) conditions. This section presents the analysis results of the intersection and street segment operations.

10.1 Forecast Model Background

The SANDAG 2050 Regional Transportation Plan (RTP) was adopted by the SANDAG Board of Directors on October 15, 2013. The forecast serves as the foundation for *San Diego Forward: The Regional Plan* and other planning documents prepared across the region. In developing the RTP, the SANDAG "Series 13" traffic forecast model series was prepared. Because Series 13 is the most recent long-range traffic model approved and adopted by SANDAG and for that reason was used for forecasting Horizon Year traffic volumes for the long-range analysis.

10.2 Volumes Development

The Year 2035 SANDAG Series 13 Model forecast ADT volumes were used to calculate peak hour volumes based partially on the existing relationship between ADT and peak hour volumes.

Several other traffic engineering principles and factors such as the K-factor (the proportion of daily volume that occurs during the peak period) and D-factor (the directional split of the traffic volumes) were also considered in the forecast analysis. The forecast volumes were also checked for consistency between intersections, where no driveways or roadways exist between intersections, and were compared to existing volumes for accuracy.

Figure 10–1 shows the Horizon Year without Project traffic volumes. ***Figure 10–2*** shows the Horizon Year with Project traffic volumes.

10.3 Horizon Year without Project

10.3.1 *Intersection Analysis*

Table 10–1 summarizes the peak hour intersection operations under Horizon Year without Project conditions. As shown in *Table 10–1*, the following study area intersections would operate at LOS E or F during either the AM or PM peak hours under this scenario:

- 55th Street / Montezuma Road (LOS F during the PM peak hour);
- Montezuma Road / Campanile Drive (LOS F during the AM peak hour);
- College Avenue / Canyon Crest Avenue (LOS F during both the AM and PM peak hours);
- College Avenue / Zura Way (LOS F during both the AM and PM peak hours); and
- College Avenue / Montezuma Road (LOS F during both the AM and PM peak hours).

Please see ***Appendix H*** for the Horizon Year without Project peak hour intersection analyses worksheets.

10.3.2 *Segment Operations*

Table 10–2 summarizes the Horizon Year without Project street segment operations. As shown in *Table 10–2*, the following study area street segments would operate at LOS E or F under this scenario:

- Montezuma Road: Collwood Boulevard to 55th Street (LOS F);
- Montezuma Road: 55th Street to College Avenue (LOS F);
- Montezuma Road: East of College Avenue (LOS E);
- College Avenue: Canyon Crest Drive to Zura Way (LOS F);
- College Avenue: Zura Way to Montezuma Road (LOS E); and
- College Avenue: Montezuma Road to Arosa Street (LOS E).

10.4 Horizon Year + Total Project

10.4.1 *Intersection Analysis*

Table 10–1 summarizes the peak hour intersection operations under Horizon Year + Total Project conditions. As shown in *Table 10–1*, with the addition of total Project traffic, the following study area intersections would operate at LOS E or F during either the AM or PM peak hours under this scenario:

- 55th Street / Montezuma Road (LOS E during the AM and LOS F during the PM peak hours);
- Montezuma Road / Campanile Drive (LOS F during the AM peak hour);
- College Avenue / Canyon Crest Avenue (LOS F during both the AM and PM peak hours);
- College Avenue / Zura Way (LOS F during both the AM and PM peak hours); and
- College Avenue / Montezuma Road (LOS F during both the AM and PM peak hours).

Based on the City of San Diego's significance criteria, the proposed Project would result in a significant impact at the 55th Street / Montezuma Road intersection as the Project's traffic contribution would exceed the allowable thresholds. Mitigation for this impact is discussed in *Section 16.2*. Please see *Appendix H* for the Horizon Year + Project peak hour intersection analyses worksheets.

10.4.2 *Segment Operations*

Table 10–2 summarizes the Horizon Year + Project street segment operations. As shown in *Table 10–2*, with the addition of total Project traffic, the following study area street segments would operate at LOS E or F under this scenario:

- Montezuma Road: Collwood Boulevard to 55th Street (LOS F);
- Montezuma Road: 55th Street to College Avenue (LOS F);
- Montezuma Road: East of College Avenue (LOS E);
- College Avenue: Canyon Crest Drive to Zura Way (LOS F);
- College Avenue: Zura Way to Montezuma Road (LOS E); and

- College Avenue: Montezuma Road to Arosa Street (LOS E).

Based on the City of San Diego's significance criteria, the proposed Project would result in significant impacts on the following street segments as the Project's traffic contribution would exceed the allowable thresholds:

- Montezuma Road: Collwood Boulevard to 55th Street (LOS F);
- Montezuma Road: 55th Street to College Avenue (LOS F);
- College Avenue: Montezuma Road to Arosa Street (LOS E).

Mitigation for these impacts is discussed in *Section 16.2*.

TABLE 10–1
HORIZON YEAR INTERSECTION OPERATIONS

Intersection	Peak Hour	Horizon Year without Project		Horizon Year with Project		Delay Increase	Sig?[c]
		Delay[a]	LOS[b]	Delay	LOS		
1. Montezuma Road / Collwood Blvd	AM	24.2	C	24.4	C	0.2	No
	PM	49.4	D	54.4	D	5.0	No
2. Montezuma Road / Yerba Santa Drive	AM	11.4	B	11.6	B	0.2	No
	PM	11.5	B	12.1	B	0.6	No
3. 55th Street / Canyon Crest Drive	AM	20.6	C	24.6	C	4.0	No
	PM	14.4	B	18.9	C	4.5	No
4. 55th Street / Remington Road	AM	10.6	B	12.1	B	1.5	No
	PM	11.0	B	12.7	B	1.7	No
5. 55th Street / Hardy Avenue	AM	30.4	C	30.5	C	0.1	No
	PM	40.5	D	40.9	D	0.4	No
6. 55th Street / Montezuma Road	AM	**52.9**	**D**	**61.0**	**E**	**8.1**	**Yes**
	PM	**88.6**	**F**	**>100**	**F**	**>10**	**Yes**
7. Montezuma Road / Campanile Drive	AM	93.1	F	88.2	F	-4.9	No
	PM	51.7	D	53.2	D	1.5	No
8. College Avenue / I-8 WB Ramps	AM	19.6	B	20.4	C	0.8	No
	PM	46.4	D	50.8	D	4.4	No
9. College Avenue / I-8 EB Ramps	AM	53.5	D	54.1	D	0.6	No
	PM	40.5	D	42.6	D	2.1	No
10. College Avenue / Canyon Crest Avenue	AM	91.4	F	91.4	F	0.0	No
	PM	>100	F	>100	F	0.4	No
11. College Avenue / Zura Way	AM	>100	F	>100	F	0.0	No
	PM	>100	F	>100	F	0.0	No
12. College Avenue / Montezuma Way	AM	99.6	F	>100	F	0.5	No
	PM	>100	F	>100	F	0.9	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Sig = Significant project impacts based on Significance Criteria.

SIGNALIZED DELAY/LOS THRESHOLDS Delay	LOS	UNSIGNALIZED DELAY/LOS THRESHOLDS 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 10–2
HORIZON YEAR STREET SEGMENT OPERATIONS

Street Segment	Capacity (LOS E) [a]	Horizon Year without Project			Horizon Year With Project			Δ[e]	Sig? [f]
		ADT[b]	LOS [c]	V/C [d]	ADT	LOS	V/C		
Montezuma Road									
Collwood Blvd to 55th St	40,000	**41,100**	**F**	**1.028**	**43,021**	**1.076**	**F**	**0.044**	**Impact**
55th St to College Ave	30,000	**39,120**	**F**	**1.304**	**39,794**	**1.326**	**F**	**0.021**	**Impact**
East of College Ave	30,000	25,660	E	0.855	25,963	0.865	E	0.009	None
Remington Rd									
West of 55th St	10,000	7,680	D	0.768	7,849	0.785	D	0.015	None
55th St									
Hardy Ave to Montezuma	30,000	22,250	D	0.742	24,845	0.828	D	0.079	None
College Ave									
Canyon Crest Drive to Zura Way	40,000	67,000	F	1.675	67,000	1.675	F	0.000	None
Zura Way to Montezuma Rd	40,000	38,020	E	0.951	38,020	0.951	E	0.000	None
Montezuma Rd to Arosa St	30,000	**33,470**	**F**	**1.116**	**33,841**	**1.128**	**F**	**0.011**	**Impact**

Footnotes:

a. Capacities based on the City of San Diego's Roadway Classification & LOS table (See *Appendix D*).
b. Average Daily Traffic.
c. Level of Service.
d. Volume to Capacity.
e. Δ denotes a project-induced increase in the Volume to Capacity (V/C) ratio.
f. Sig = Significant project impact based on Significance Criteria.

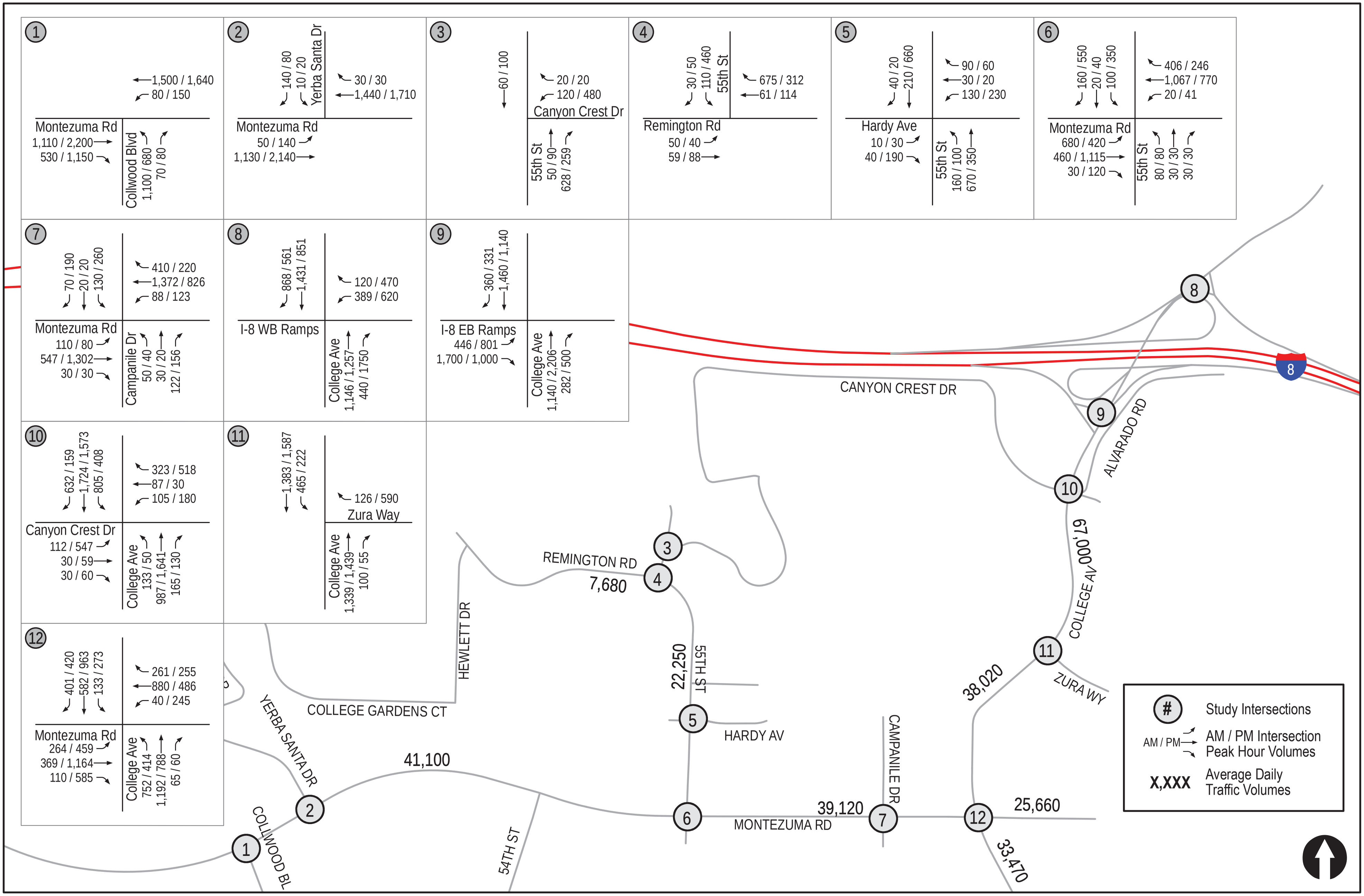

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Figure 10-1

Horizon Year without Project Traffic Volumes

SDSU Student Housing

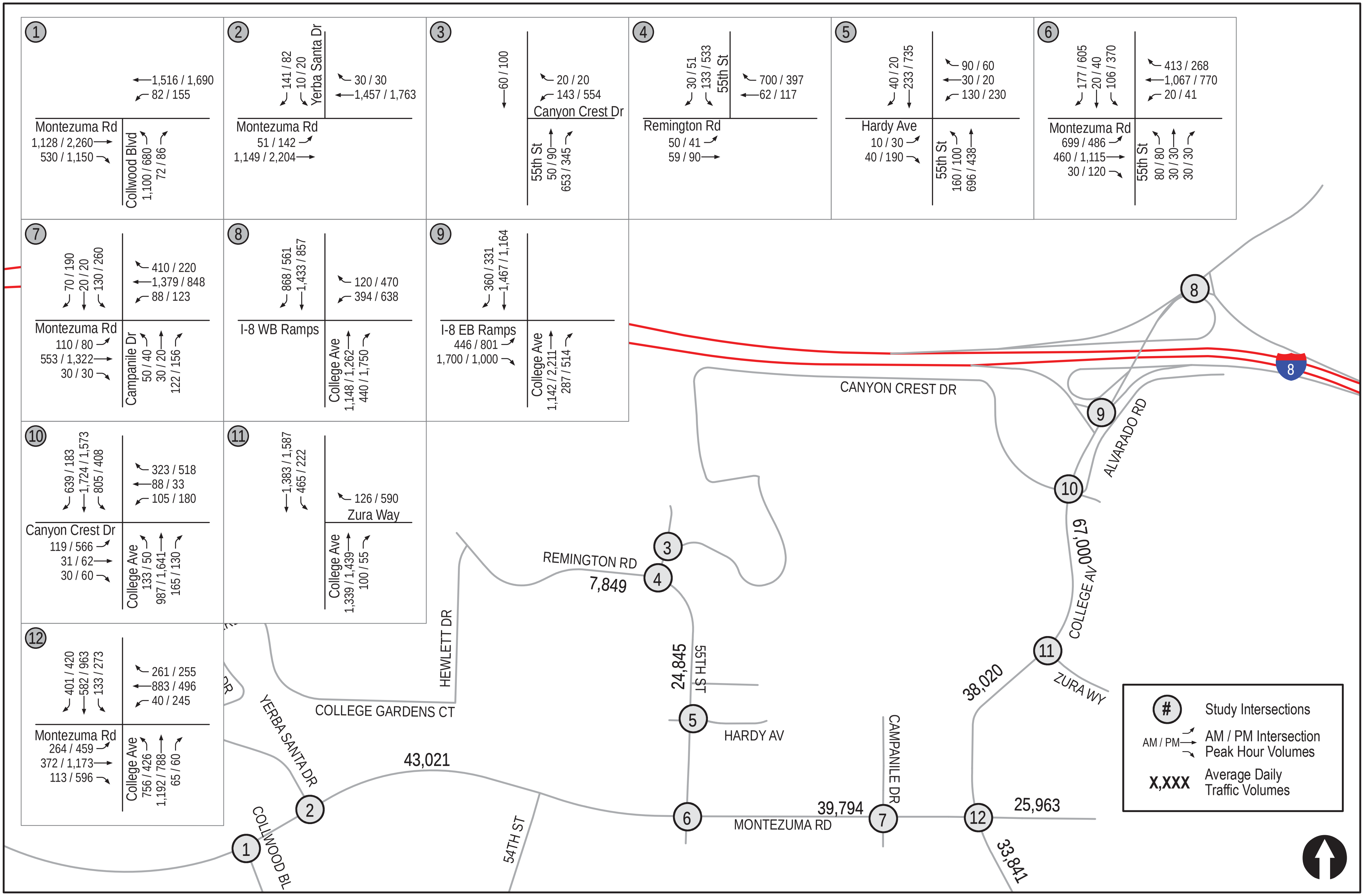

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Figure 10-2

Horizon Year + Total Project Traffic Volumes

SDSU Student Housing

11.0 TRANSIT ANALYSIS

This section presents an analysis of the Project's impact on those transit facilities that serve the Project area.

11.1 Existing Transit Setting

The SDSU Transit Center is located on the SDSU campus north of Hardy Avenue, between College Avenue and Campanile Drive. The location is approximately 0.5 miles from the site of the proposed Project. The Transit Center currently is served by the below grade MTS Green Line trolley, as well as several MTS bus routes including Routes 11, 15, 115, 856, 936, and 955. A brief description of the trolley line and bus routes that serve SDSU is provided below.

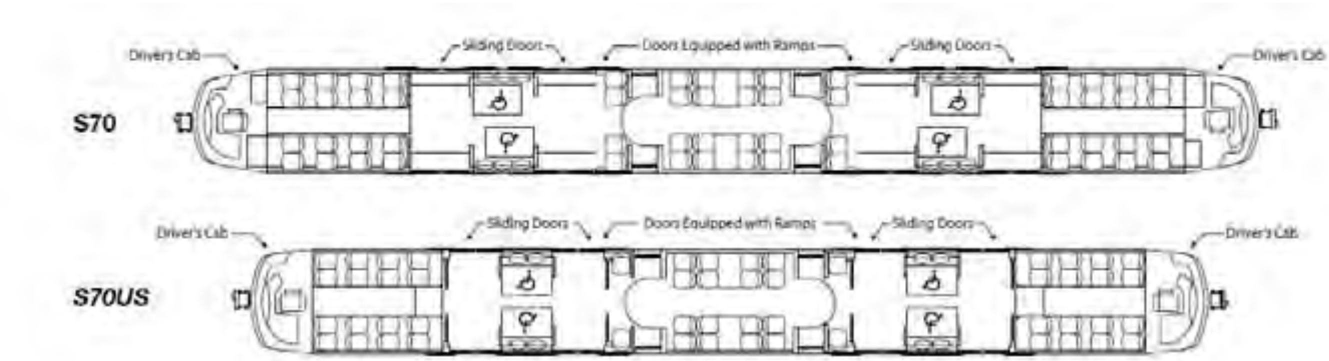
11.1.1 *MTS Trolley*

The MTS Trolley Green Line connects Downtown San Diego to Santee. There currently are a total of 27 stops along the Green Line with a dedicated stop at the SDSU Transit Center serving the campus. Trolley hours of operation are from 3:53 AM until 12:30 AM. The trolley headways are typically 15 minutes during the AM and PM peak hours, 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 manufactured by Siemens USA. Each trolley car has a commute capacity of 120 passengers with 3 cars per train.

Siemens S70 trolley vehicle in use on the Green Line

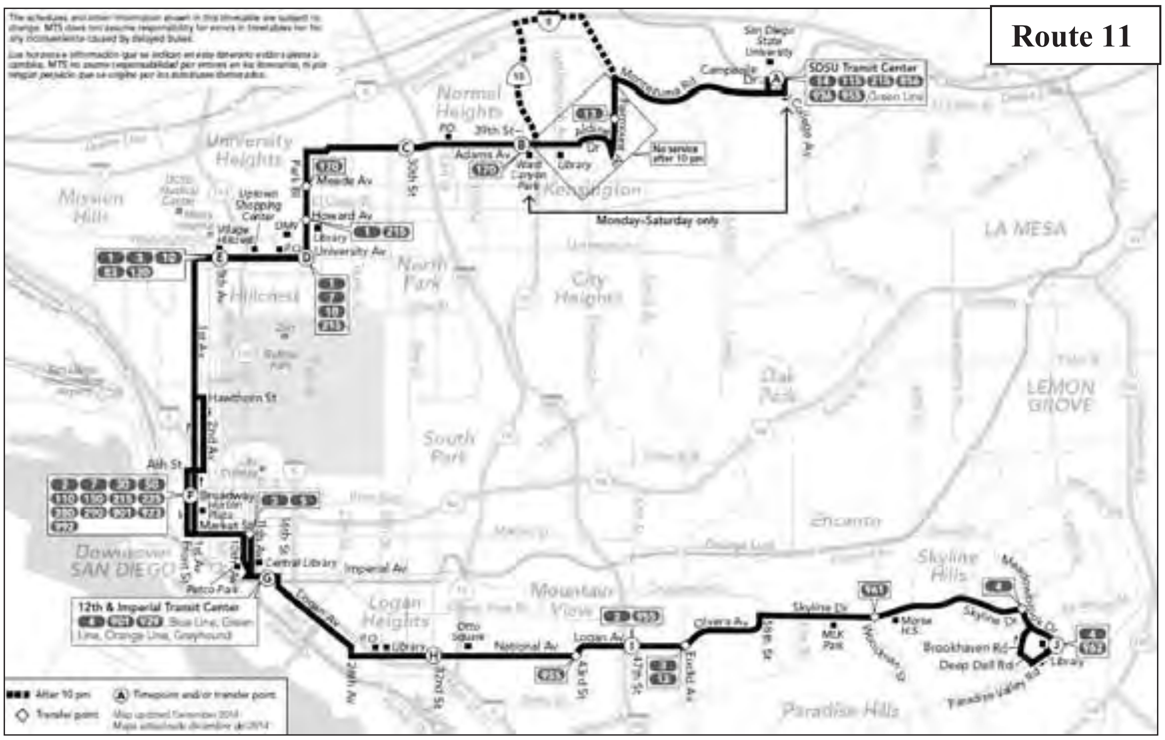


Green Line Trolley typical seating arrangement

11.1.2 MTS Bus Routes

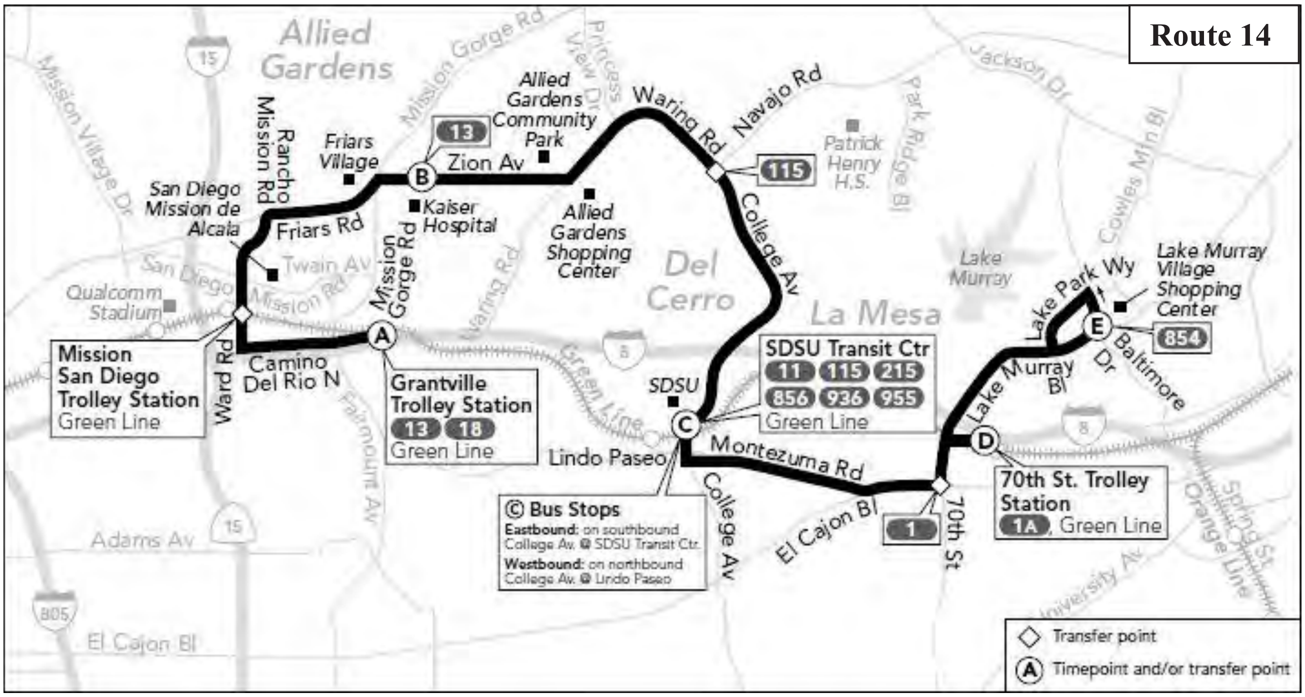
There are currently seven (7) bus routes serving the SDSU Transit Center.

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 has 104 stops along its route, and currently operates between 4:29 AM and 11:38 PM on weekdays, between 4:40 AM and 11:38 PM on Saturdays, and between 5:21 AM and 9:42 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.



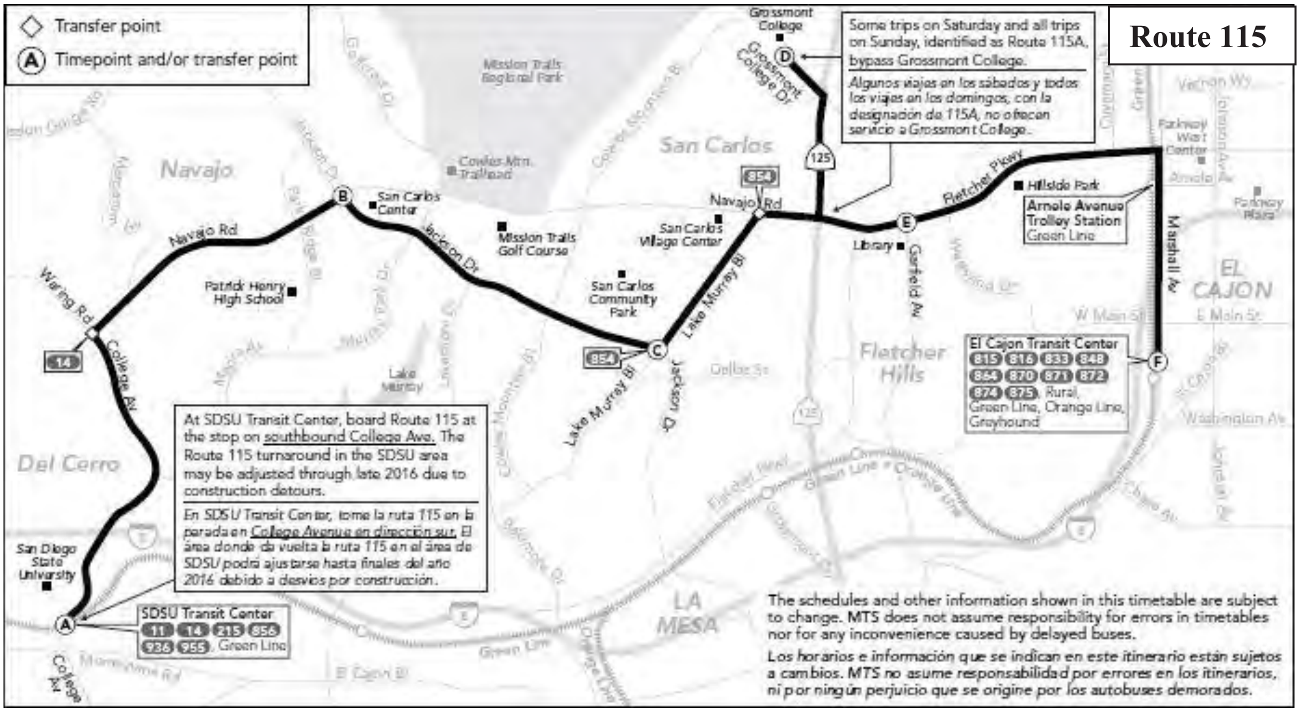
MTS Standard 40' Bus (Routes 11, 115, 856, 936, and 955)

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 has 35 stops along its route, and 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.

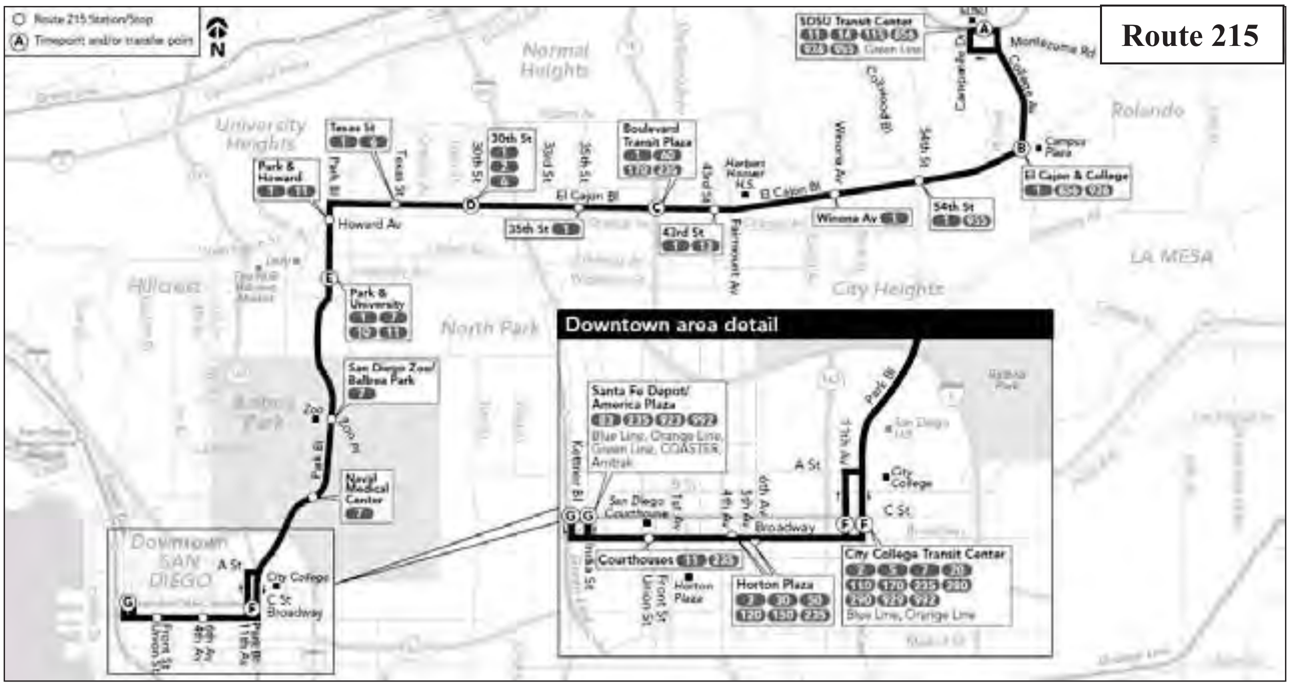


MTS Minibus (Route 14 only)

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 has 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.



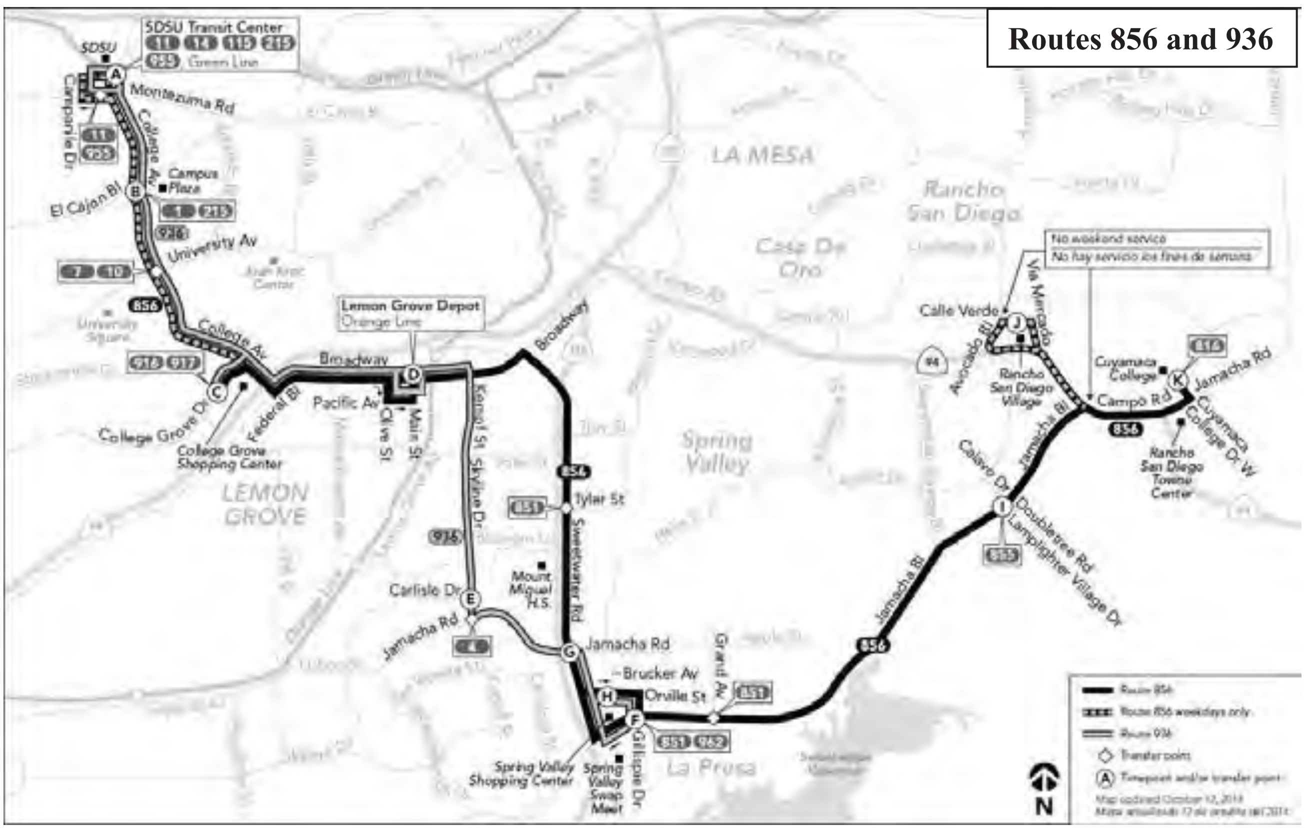
Route 215 runs south and west from the SDSU Transit Center to Downtown San Diego and is one of eight (8) bus rapid transit lines currently operated by MTS. Within the College Area community, Route 215 runs south along College Avenue, then travels west along El Cajon Boulevard towards North Park. Route 215 has 18 stops along its route, and currently operates between 4:30 AM and 1:39 AM on weekdays and between 4:50 AM and 1:39 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.



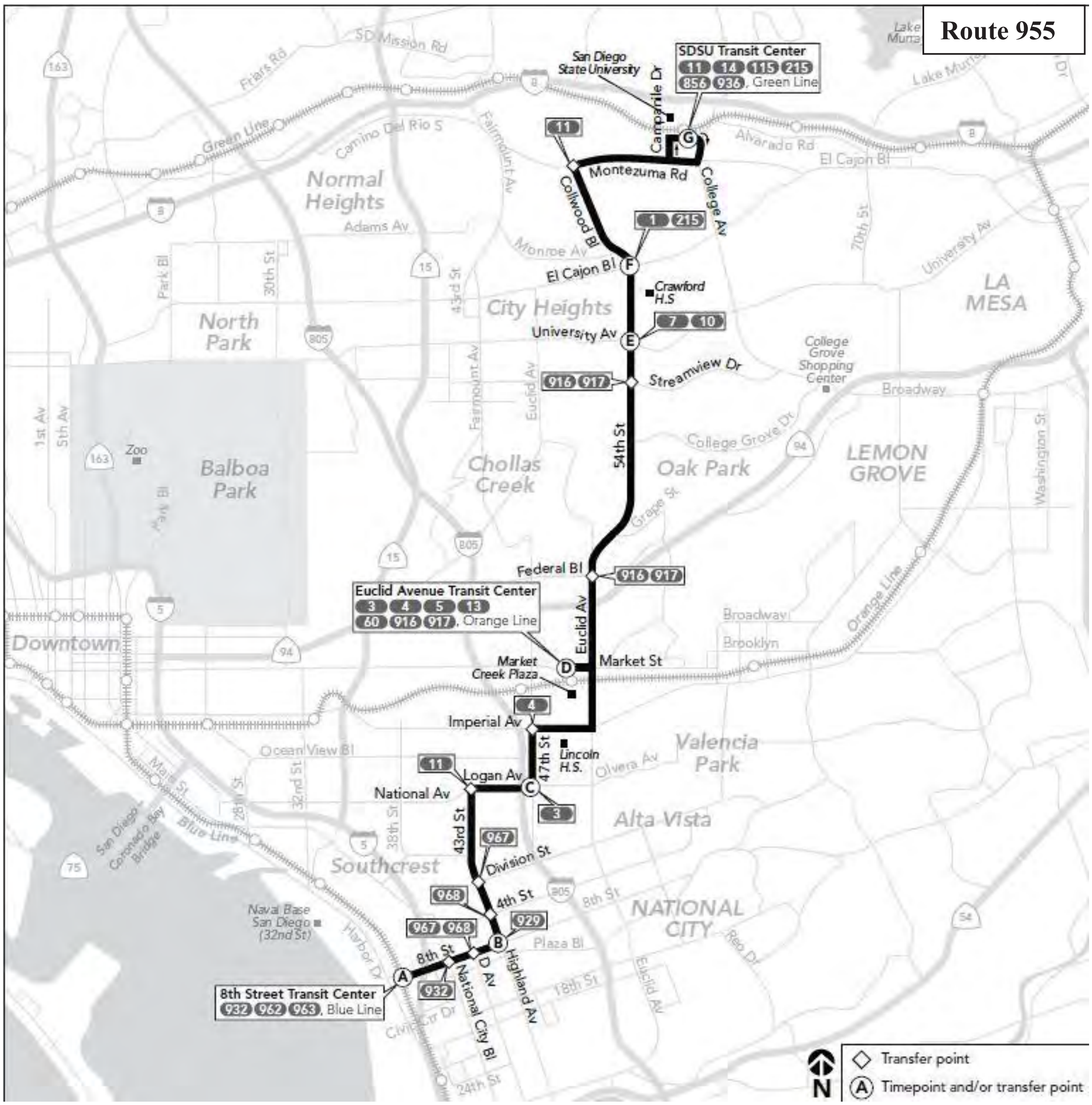
MTS Rapid 60' Articulated Bus (Route 215 only)

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 has 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 4:28 AM and 11:13 PM on weekdays, between 5:27 AM and 10:06 PM on Saturdays, and between 6:27 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 has 36 stops along its route, and currently operates between 4:58 AM and 10:14 PM on weekdays, between 5:15 AM and 10:41 PM on Saturdays, and between 5:15 AM and 7:53 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 has 48 stops along its route, and 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

Neither the City of San Diego nor SANDAG specifies a methodology for the preparation of quantitative trolley analyses and associated impact determination in its published guidelines for the preparation of traffic studies. Therefore, LLG has prepared the following quantitative analysis based on passenger capacity methodology published in *Chapter 8* of the *Transit Capacity and Quality of Service Manual, 3rd Edition*, which evaluates rail transit capacities.

The Manual includes passenger capacity calculations based on several rail vehicle parameters. The design passenger capacity for rail transit is then compared against the forecasted ridership to determine if future demand can be met with the available capacity. The analysis below provide details of the design passenger capacity calculations for trolleys and existing and proposed ridership projections.

11.2.1 *Trolley Capacity*

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

$$P = TN_cP_c(PHF)$$

where:

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

- 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 *Trolley Ridership*

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

As discussed in Section 8.1, due to the proximity of the SDSU Transit Center to the site of the proposed Project and the fact that students who reside on campus are less likely to bring a vehicle to campus, a 10% transit mode split was included as part of the transportation analysis. Although the 10% transit mode split includes both trolley and bus trips, to be conservative the 10% transit mode split was applied to trolley trips only. Therefore, as shown in *Table 8–3*, LLG expects that 374 Project ADT would actually be trolley trips rather than vehicle trips. Further, it is forecasted that Project trolley trips would comprise 5% of the total ADT in the AM peak hour, and 7% of the total ADT in the PM peak hour. Therefore, 5% of 374 ADT, which equates to 20 AM Project trolley trips, and 7% of 374 ADT, which equates to 27 PM Project trolley trips, are forecasted. The in/out split is consistent with 52:48 (AM) and 54:46 (PM) per the trip generation calculation in *Table 8–3*. As to directional split, existing trolley ridership data at the SDSU Transit Center station shows 60% of trolley riders travel to/from the west and 40% of trolley riders to/from the east.

Table 11–1 shows the projected Project trolley ridership based on the mode, peak hour, and directional splits explained above.

TABLE 11–1
PROJECT TROLLEY RIDERSHIP CALCULATIONS

Direction	Peak Hour	Daily Project Ridership (Riders/day)	Peak Hour Project Ridership (Riders/hr)[a]		
			IN	OUT	TOTAL
Eastbound	AM	374	6	6	12
	PM		9	7	16
Westbound	AM		4	4	8
	PM		6	5	11

Footnotes:

a. The in/out split is consistent with 52:48 (AM) and 54:46 (PM) per trip generation calculation. For EB and WB splits, 60%/40% was calculated based on existing trolley ridership data.

To estimate future trolley ridership levels, past trolley ridership data was reviewed. Trolley ridership data obtained from SANDAG shows a *decrease* in Green Line ridership of approximately 3.5 percent per year between 2013 and 2015. However, for purposes of this analysis, recognizing that the decrease may be an aberration, a 2 percent per year *increase* in ridership was assumed. Specifically, a 2 percent annual increase for 4 and 19 years was assumed as part of the Near-Term and Horizon Year scenarios, respectively. *Appendix I* contains the detailed calculations sheets.

11.3 Transit Capacity Analyses

11.3.1 *Green Line Trolley Analysis*

Tables 11–2, ***11–3***, and ***11–4*** report the results of the Green Line trolley analysis under Existing + Total Project, Near-Term + Project, and Horizon Year + Project conditions, respectively. As shown on the tables, in each case, projected ridership volumes (V) would be lower than projected capacity (C). Thus, even with the addition of trolley riders from the Project, sufficient capacity is projected to be available to accommodate the increased demand. Therefore, no trolley capacity constraints are identified.

TABLE 11–2
TROLLEY ANALYSIS – EXISTING + PROJECT

Direction	Peak Hour	Calculated Capacity (Riders/hr)	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	6	6	267	150	No	No
	PM	1,368	473	446	9	7	482	453	No	No
Westbound	AM	1,239	443	413	4	4	447	417	No	No
	PM	1,181	225	289	6	5	231	294	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 11–1***, which shows 20 total AM trips and 27 total PM trips. The in/out split is consistent with 52:48 (AM) and 54:46 (PM) per trip generation calculation. For EB and WB splits, 60%/40% was calculated based on existing trolley ridership data.

TABLE 11–3
TROLLEY ANALYSIS – NEAR-TERM + PROJECT

Direction	Peak Hour	Calculated Capacity (Riders/hr)	Near-Term Volume (Riders/hr)[a]		Project Ridership (Riders/hr)[b]		Near-Term + Project Volume (Riders/hr)		V>C?	
			IN	OUT	IN	OUT	IN	OUT	IN	OUT
Eastbound	AM	1,268	366	162	6	6	372	168	No	No
	PM	1,368	551	543	9	7	560	550	No	No
Westbound	AM	1,239	535	456	4	4	539	460	No	No
	PM	1,181	270	403	6	5	276	408	No	No

Footnotes:

a. Trolley ridership data obtained from SANDAG shows a decrease in Green Line ridership of approximately 3.5%/year between 2013 and 2015. However, to be conservative, a 2%/year increase in ridership for 4 years was assumed for the Near-Term scenario.

b. Project trolley ridership is calculated as shown in *Table 11–1*, which shows 20 total AM trips and 27 total PM trips. The in/out split is consistent with 52:48 (AM) and 54:46 (PM) per trip generation calculation. For EB and WB splits, 60%/40% was calculated based on existing trolley ridership data.

TABLE 11–4
TROLLEY ANALYSIS – HORIZON YEAR + PROJECT

Direction	Peak Hour	Calculated Capacity (Riders/hr)	Horizon Year Volume (Riders/hr)[a]		Project Ridership (Riders/hr)[b]		Horizon Year + Project Volume (Riders/hr)		V>C?	
			IN	OUT	IN	OUT	IN	OUT	IN	OUT
Eastbound	AM	1,268	676	232	6	6	682	238	No	No
	PM	1,368	827	864	9	7	836	871	No	No
Westbound	AM	1,239	842	635	4	4	846	639	No	No
	PM	1,181	419	742	6	5	425	747	No	No

Footnotes:

a. Trolley ridership data obtained from SANDAG shows a decrease in Green Line ridership of approximately 3.5%/year between 2013 and 2015. However, to be conservative, a 2%/year increase in ridership for 19 years was assumed for the Horizon Year scenario.

b. Project trolley ridership is calculated as shown in *Table 11–1*, which shows 20 total AM trips and 27 total PM trips. The in/out split is consistent with 52:48 (AM) and 54:46 (PM) per trip generation calculation. For EB and WB splits, 60%/40% was calculated based on existing trolley ridership data.

11.3.2 *MTS Bus Analysis*

As seen in ***Table 11–5***, based on existing bus ridership data at the SDSU Transit Center, bus ridership is less than trolley ridership. Additionally, student bus ridership is dispersed throughout the day due to the varying schedules of students. Because there currently is sufficient bus capacity on the MTS bus routes serving SDSU, and it is forecasted that the proposed Project would add a minimal number of additional riders, the proposed Project is not expected to result in significant impacts related to bus capacity.

TABLE 11–5
MTS BUS ANALYSIS – EXISTING + PROJECT

Direction	Peak Hour	Calculated Capacity (Riders/hr)	Existing Volume (Riders/hr)[a]	V>C?
Inbound (towards SDSU)	AM	758	242	No
	PM	717	117	No
Outbound (from SDSU)	AM	771	114	No
	PM	804	237	No

Footnotes:

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

11.4 Conclusion

Based on the design passenger capacity of the trolley serving the SDSU Transit Center, sufficient capacity would be available to accommodate the forecasted increase in trolley riders that would result from the Project. Sufficient capacity also would be available to accommodate the minimal forecasted increase in bus riders that would result from the Project. Therefore, no significant transit capacity impacts are identified with the Project.

12.0 VMT ANALYSIS

This section presents analysis of the Project's Vehicle Miles Traveled (VMT).

12.1 VMT's Background and Senate Bill SB 743

VMT is defined as a measurement of miles traveled by vehicles within a specified region for a specified time period and is a measure of network use or efficiency. There are multiple ways to express VMT, although generally VMT are calculated by multiplying all vehicle trips generated by a project times their associated trip lengths, or by multiplying traffic volumes on roadway links by the associated trip distance of each link. VMT is often estimated for a typical weekday.

On September 27, 2013, Governor Jerry Brown signed SB 743 into law, starting a process that is expected to change the way transportation impact analysis is conducted under CEQA. Within the State's CEQA Guidelines, these changes will include elimination of auto delay, LOS, and similar measurements of vehicular roadway capacity and traffic congestion as the basis for determining significant impacts.

In January 2016, the State Office of Planning and Research (OPR) issued the *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA* (Draft Guidelines), which provided recommendations for updating the State's CEQA Guidelines in response to SB 743 and contained recommendations for VMT analysis methodology in an accompanying *Technical Advisory on Evaluating Transportation Impacts in CEQA* (Technical Advisory). The Draft Guidelines, including the Technical Advisory, recommended use of automobile VMT per capita as the preferred CEQA transportation metric, along with the elimination of auto delay/LOS for CEQA purposes statewide.

12.2 Implementation Timeline on SB 743

For land use projects, the Technical Advisory recommends that automobile VMT per capita be measured by land use type for specific trip purposes or tours depending on the type of forecasting model being used. The OPR Draft Guidelines presently are being revised in response to comments and OPR plans to submit new materials to the Resources Agency for formal rulemaking sometime during the first half of 2017. The Resources Agency will then distribute the revised CEQA Guidelines for public review and comment with formal approval expected sometime in mid- to late 2017. Based on the Draft OPR Guidelines, lead agencies will have up to two years to implement the revised CEQA Guidelines upon their formal approval.

OPR's Technical Advisory contains recommendations for VMT methodology and significance thresholds, although the Draft Guidelines provide that the lead agency, in this case The Board of Trustees of the California State University, has discretion in this regard. As previously explained, the final implementation steps for the revised Guidelines have not yet been completed and, therefore, compliance with the OPR Draft Guidelines is not mandatory. Nevertheless, an SB 743 VMT analysis compliance review has been prepared for the Project.

12.3 Determination of Significance

The Draft Guidelines Technical Advisory described above includes recommendations for how to estimate and forecast VMT. For a project with multiple land uses, such as residential, commercial, etc., the automobile VMT associated with each land use should be quantified separately. Further, the automobile VMT from specific trip purposes or travel tours should be isolated.

The OPR Draft Guidelines include a recommended significance threshold:

> A development project that results in vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact if the project is not within 15% of the existing VMT/capita.

However, and relevant to the proposed Project, the Draft Guidelines also provide that development projects that are located within one-half (1/2) mile of either an existing major transit stop or a stop along an existing high quality transit corridor are deemed to be located in "Transit Priority Areas" (TPA's) and, therefore, may be presumed to cause a less than significant transportation impact. Similarly, development projects that decrease vehicle miles traveled in the project area compared to existing conditions may be considered to have a less than significant transportation impact.

12.4 Project VMT

As previously noted, the site of the proposed Project is located within one-half (1/2) mile of the existing SDSU Transit Center, including the MTS trolley station and bus center. Therefore, based on OPR's Draft Guidelines, the proposed Project's transportation-related impacts are less than significant based on the Project's proximity to transit.

For information purposes, however, Project-related VMT and Average Vehicle Trip Length (ATL) data for the proposed Project were derived from a SANDAG Series 12 model run for the forecast year 2035.

Table 12–1 shows the results of the VMT model run under with Project conditions. The VMT, total number of trips generated, and ATL per assigned vehicle trip are shown in the table. Under the "No Project" scenario, the land use type would be a parking lot, which does not generate vehicle trips by itself and, therefore, would not have an associated VMT and ATL. The "With Project" scenario evaluates one land use type –student housing – and the ATL per assigned trip of 3.4 miles was used in the "With Project" calculations. Using the ATL from the model, the total daily VMT generated by the Project is calculated by multiplying the Project ATL by the Project trip generation.

TABLE 12–1
VEHICLE MILES TRAVELED & AVERAGE TRIP LENGTH (WITH PROJECT)

Vehicle Miles Traveled (mi)	Average Daily Vehicle Trips	Average Trip Length (mi)
11,458	3,370	3.4

Source:
1. SANDAG Series 12 Year 2035 Select Zone Assignment, conducted January 2017.

This methodology, however, does not take into account the fact that the proposed Project actually would result in a *decrease* in VMT rather than an increase. This is because the proposed Project would provide on campus housing for 2,566 students who presently reside off-campus and, therefore, must commute to school. They commute to school by various means, including by single-occupancy vehicle, carpooling, transit, including bus and trolley, biking, and walking. To determine the amount of VMT generated by these commuting students, LLG inquired of SANDAG, the regional transportation agency. Upon inquiry, LLG learned that SANDAG does not have available to it VMT data for college students. Therefore, LLG was unable to ascertain the existing VMT generated by the 2,566 students who commute to school and, therefore, is unable to conduct a quantitative analysis.

From a qualitative perspective, based on a travel survey conducted by SDSU in April 2015, on average, off-campus students live approximately 12 miles away from campus. Based on this data, it is LLG's professional judgment that the VMT that would be generated by the proposed Project, as illustrated in *Table 12-1*, is less than the VMT presently generated by the 2,566 students that would be housed by the proposed Project. As discussed in Section 8.3, an important consideration for student housing land uses is that, while they do add traffic to the area in the immediate vicinity of campus, they significantly shorten or eliminate much longer trips. For instance, if the Project were not built, students would live in other areas of San Diego, including locales such as Pacific Beach or Mission Valley and, as a result, they would need to drive to the university. These distances likely would be greater than the distances they would drive on a daily basis as students residing on-campus. In addition, the area surrounding the SDSU campus provides a variety of resources for personal needs such as grocery stores, recreational facilities, etc., further reducing the need to travel longer distances. These characteristics associated with the location of the Project result in substantially reducing the number of vehicle miles traveled, as well as impacts on regional roads such as I-8. Therefore, the proposed Project is considered a net benefit in terms of regional traffic impacts.

13.0 PARKING ASSESSMENT

13.1 Campus Parking

While the CEQA Guidelines no longer require that an EIR assess a project's potential parking related impacts, in response to comments raised by residents of the College View Estates residential neighborhood, which is located directly to the west of the SDSU campus and the site of the proposed Project, an analysis of parking-related issues has been conducted.

13.1.1 *Project Parking Demand*

The proposed Project consists of the development of on-campus student housing, which would increase the number of resident students. Because the Project would not result in an increase in student enrollment above existing levels, the effect of the Project would be a shift in students presently living off-campus to on-campus.

Based on Fall 2015 SDSU parking permit sales, approximately 32% of on-campus resident students bring a vehicle to campus. Based on this percentage, the proposed Project would generate a parking demand for 822 vehicles/parking spaces (32% x 2,566 students). Additionally, based on Fall 2015 parking permit sales, approximately 46% of off-campus students bought a student parking permit and, therefore, presumably drive to campus. Based on this percentage, the proposed Project would reduce parking demand attributable to the 2,566 students who would now be living on campus in the amount of approximately 1,180 vehicles/parking spaces (46% x 2,566 students). Therefore, the net parking demand would decrease as a result of the Project from approximately 1,180 parking spaces to approximately 822 spaces.

13.1.2 *Removal of Lot 9*

Phase I of the proposed Project would be constructed on Parking Lot 9 and, as a result, Lot 9 would be permanently removed from the SDSU parking inventory. Parking Lot 9 currently provides 139 parking spaces for students, 6 spaces for housing-related activities, 3 spaces for loading/unloading, 4 special permit parking spaces, and 4 motorcycle spaces.

Therefore, the proposed Project would result in the removal of approximately 150 parking spaces from the campus inventory. However, as explained above, the Project also would result in a reduction in demand for parking in the amount of 358 spaces (1,180 – 822). Therefore, even with the loss of Lot 9 parking, the proposed Project would result in a net increase in supply of approximately 200 spaces (358 – 150 = 208).

Additionally, based on parking occupancy surveys conducted by LLG in February 2017 and previous parking occupancy surveys conducted by SDSU, Parking Structure 12 and Parking Lot 7, which are near the site of the proposed Project, can reach full capacity by mid-morning. However, at the same time, the parking occupancy for the campus as a whole is approximately 80%. This means that approximately 1,900 parking spaces remain available for student parking, which is more than enough to accommodate the approximate 800-space parking demand that would be generated by the Project, as well as the removal of Parking Lot 9. Finally, it should be noted that since construction of the SDSU Transit Center, the demand for on-campus parking has decreased and this trend could continue as more students shift from driving to riding the trolley or taking the bus to/from campus.

13.1.3 *Construction Staging*

During the construction of all Project phases, construction staging will be conducted in Parking Lot 11, which currently provides 16-20 parking spaces. Additional laydown space for all phases, if necessary, would be available in Parking Lot 17C. As noted above, parking spaces will be available in other parking lots campuswide for the small amount of vehicles that normally park in Parking Lot 11 when the lot is used for construction staging.

13.1.4 *Conclusion*

Based on the shift of students presently residing off-campus to on-campus as a result of the proposed Project, in combination with the excess parking supply on campus, the proposed Project would not result in a significant impact related to parking.

13.2 College View Estates Spillover Parking

The College View Estates (CVE) neighborhood can be accessed from the SDSU campus via Remington Road. The CVE neighborhood lies within the City of San Diego's Area B (SDSU/College Area) residential permit parking district, which means on-street parking is prohibited Monday through Friday from 8 AM to 7 PM, except for vehicles displaying valid permits, or valid disabled placards. SDSU students and other non-CVE residents are legally permitted to park on the streets only between the hours of 7 PM and 8AM and on weekends.

The CVE neighborhood is located within the jurisdiction of the City of San Diego Police Department, with supplemental law enforcement assistance provided by SDSU campus police as necessary. Regular enforcement of the existing residential parking permit program limits campus spillover parking during the times of enforcement (Monday through Friday from 8 AM to 7 PM). Continued enforcement following construction of the proposed Project would continue to limit campus spillover parking during these times. It also is noted that the parking demand that would be generated by the Project would be by students living on-campus It is unlikely that these students would park in the CVE neighborhood at night, only to have to move their vehicle and park on-campus before 8 AM once the Area B enforcement begins. Changes to the existing parking permit program that may be desired by the CVE residents are beyond the scope of the proposed Project and this analysis.

As discussed in Section 2.2 of this report, the following improvements would be incorporated as Project features to help curtail campus parking spillover into the CVE neighborhood:

- Placement of a permanent sign on Remington Road at the SDSU campus boundary with the College View Estates neighborhood that reads "No SDSU or Event Parking in Residential Neighborhood – Violators May be Fined and/or Towed Away." Parking guards will continue to be posted on Remington Road at the College View Estates entrance to discourage parking in the residential neighborhood during large events at Viejas Arena and during baseball games. A temporary sandwich board sign also will be placed at the corner of 55th Street and Remington Road during such events that reads "No Event Parking Beyond This Point."

14.0 ACCESS AND OTHER ISSUES

14.1 Access

Access to the Project site is proposed via a future road to be constructed in a general east-west direction off of 55th Street, and would be located along the north edge of the Project site. As noted in Section 8.2, limited parking will be available at the Project site, and most of these spaces would be reserved for ADA needs and housing complex personnel, such as custodial and maintenance staff and food service. As such, traffic on the access road would be limited. Internal circulation within the proposed Project site is designed primarily around pedestrian needs.

The following access-related improvements and features would be incorporated as part of the Project:

- Sight distance and curb radius will be provided in conformance with City of San Diego standards at all Project driveways.
- Sufficient ADA compliant pedestrian access to all Project facilities will be provided.
- Adequate bicycle parking would be provided within the Project site.

14.2 Emergency Response Time

With respect to emergency response times, the proposed Project would increase vehicle traffic nominally in the vicinity of SDSU and could affect emergency response times. However, it is not expected that the increased traffic would result in significant impacts in the form of increased emergency response times. This conclusion is based on two reasons.

First, emergency response vehicles have the right-of-way and are exempted from rules of the road in emergency situations. Specifically, upon the approach of an emergency vehicle that is sounding a siren, the surrounding traffic must yield the right-of-way and immediately drive to the right-hand edge or curb of the highway, clear of any intersection, and stop until the emergency vehicle has passed (Vehicle Code §21806). If required, drivers of emergency vehicles are trained to utilize center turn lanes, or travel in opposing through lanes to pass through crowded intersections. Additionally, when driven in response to an emergency call, and if the driver sounds a siren, emergency vehicles are exempted from the general rules of the road, such as right of way and speed limits (Vehicle Code §21055; San Diego Municipal Code §81.06). In addition, the roadway configuration of 55th Street and Remington Road is such that there is adequate right-of-way for emergency vehicles to maneuver around traffic, even under congested conditions. Based on field observations, 55th Street/Remington Road between Montezuma Road and Hewlett Drive is 37 feet wide. Even assuming cars are illegally parked on one side of the street, this leaves approximately 30 feet of roadway, which is a sufficient width for cars traveling in opposite directions to pull over next to the parked car and for the emergency vehicle to pass.

14.3 Remington Road / 55th Street

14.3.1 *Traffic Flow/Congestion*

As shown in *Tables 9–2, 9–4,* and *10–2*, traffic operations along Remington Road and 55th Street would operate at an acceptable LOS with the addition of Project traffic.

As discussed in Section 2.2, to improve traffic flow, synchronization of the five (5) traffic signals along 55th Street between Montezuma Road and Remington Road would be incorporated as a Project feature. Signal synchronization is expected to improve the flow of traffic along 55th Street and Remington Road.

Based on SDSU's Fall 2015 "On Campus Move-In Guide", students moving into the Chapultepec Residence Hall are directed to park in Parking Structure 12 and to access that parking structure via College Avenue and Canyon Crest Drive rather than via 55th Street and Remington. Similar directions would be provided for move-in operations for the Project. Per the Student Housing License Agreement, students are required to move out by 8 PM on the day of their last final exam or on the last designated move-out date, whichever comes first. This move-out schedule distributes the traffic related to move-out operations over several days.

14.3.2 *Red Zone Violations*

Under existing conditions, drivers illegally stop their vehicles along Remington Road to either drop-off or pick-up students or deliveries despite the No Parking red curb. When drivers stop, the two-lane road effectively becomes one lane resulting in increased congestion and potential safety hazards. As discussed in Section 2.2, as a Project feature the red curbs along Remington Road would be re-painted and the existing signs would be modified from "No Parking" to "No Stopping at Any Time" signs. Several signs would be posted at short intervals in the area. Accordingly, anyone using these areas as loading zones would be ticketed.

Additionally, the Project would include a dedicated pick-up/drop-off zone within the Project site. Off street delivery trucks and ride-hailing and ride-sharing vehicles could park in this area rather than idle along Remington Road and 55th Street. This would further assist in reducing congestion on Remington Road due to loading and unloading. These Project features would help prevent unsafe traffic conditions due to stopped or idling vehicles along Remington Road.

14.4 Construction Trips

Construction of each development phase of the proposed Project would occur in several phases. The construction phase that would generate the most traffic is the grading phase. For Phase I of the proposed Project, the duration of the grading phase would be approximately 37 days. For Phase II of the Project, the duration of the grading phase is estimated at approximately 47 days. For Phase III of the Project, the duration of the grading phase is estimated at approximately 37 days.

Construction-related traffic in the form of equipment and employee trips would be coming and going to/from the Project site throughout Project development. As a result, potentially significant construction-related traffic impacts could occur without mitigation. It is, therefore, recommended that a traffic control plan (TCP) be developed and implemented prior to beginning construction. The primary function of a TCP is to provide for the safe and effective movement of road users through or around temporary traffic control zones. The TCP in this case would institute construction traffic management controls in accordance with City standards and the Caltrans *California Manual of Uniform Traffic Control Devices* (2014 edition). These traffic management controls would include measures determined on the basis of site-specific conditions, including the use of construction signs, delineators, and lane closures. The TCP would limit peak hour construction employee and delivery trips, and include graphics illustrating the placement of signage, striping, traffic personnel, and road cones, as applicable.

With implementation of the TCP, any potential construction traffic-related impacts would be less than significant.

14.5 Pedestrian and Bicycle Circulation

Based on a review of the *City of San Diego Bicycle Master Plan*, the *College Area Community Plan* and field observations, bike lanes currently are provided along Remington Road/55th Street from Hewlett Drive to Montezuma Road, and along Montezuma Road from the west to east termini, with a segment of Bike Route between 55th Street and Campanile Drive. Bicycle parking facilities are provided throughout the SDSU campus. The *College Area Community Plan* recommends that bicycle parking facilities be required as part of all new commercial and multifamily residential development projects. As discussed in Section 14.1 of this report, the Project would provide adequate bicycle parking within the Project site.

Based on a review of the City of San Diego's *Pedestrian Master Plan Phase 4* report and field observations, sidewalks and walkways are provided throughout the SDSU campus and along study area roadways. As discussed in Section 14.1 of this report, the internal circulation within the proposed Project site would be designed primarily around pedestrian needs, and sufficient ADA compliant pedestrian access to all Project facilities would be provided.

Therefore, the proposed Project would be consistent with adopted policies, plans, and programs regarding bicycle and pedestrian facilities.

15.0 ALTERNATIVE PROJECT SITES

Two (2) alternative Project sites have been identified and a qualitative analysis was conducted for comparative purposes to determine the differences in significant impacts between the proposed Project and both alternatives. ***Attachment J*** contains a map showing the location of the two alternative Project sites.

15.1 Intersection Analysis

Based on a qualitative analysis, both alternative sites are estimated to result in the following differences in significant impacts as compared to the proposed Project, for both the near-term and long-term scenarios:

- Removal of impact at 55th Street/Montezuma Road (Intersection #6)
- New impact at College Avenue / Canyon Crest Avenue (Intersection #10)
- New impact at College Avenue / Zura Way (Intersection #11)

15.2 Segment Operations

Project trip distribution was estimated for both alternative project sites to forecast near-term and long-term segment ADT volumes. ***Table 15–1*** and ***Table 15–2*** summarizes the estimated near-term and long-term street segment operations. As shown in *Table 15–1* and *Table 15–2*, the alternative sites result in the following differences in significance impacts when compared to the proposed Project:

Near-Term
Both alternatives result in a new impact at College Avenue between Canyon Crest Drive and Zura Way.

Long-Term
Both alternatives result in a new impact at the following locations:

- College Avenue between Canyon Crest Drive and Zura Way
- College Avenue between Zura Way and Montezuma Road

Table 15–1
Alternative Sites Near-Term Street Segment Operations

Street Segment	Near Term Capacity (LOS E)[a]	Existing + Cumulative Projects			Existing + Cumulative Projects +Total Project			Δ[e]	Existing + Cumulative Projects + Project Alternative 1			Δ	Existing + Cumulative Projects + Project Alternative 2			Δ
		ADT[b]	V/C[c]	LOS[d]	ADT	V/C	LOS		ADT	V/C	LOS		ADT	V/C	LOS	
Montezuma Road																
Collwood Boulevard to 55th Street	40,000	30,400	0.760	D	32,321	0.808	D	0.048	31,310	0.783	D	0.023	30,973	0.774	D	0.014
55th Street to College Avenue	30,000	34,130	1.138	F	**34,804**	**1.160**	**F**	**0.022**	35,040	1.168	**F**	0.030	**34,703**	**1.157**	**F**	**0.019**
East of College Avenue	30,000	22,460	0.749	D	22,763	0.759	D	0.010	22,763	0.759	D	0.010	22,763	0.759	D	0.010
Remington Rd																
West of 55th Street	10,000	3,180	0.318	A	3,349	0.335	A	0.017	3,180	0.318	A	0.000	3,180	0.318	A	0.000
55th St																
Remington Road to Montezuma Road	30,000	18,550	0.618	C	21,145	0.705	D	0.087	18,550	0.618	C	0.000	18,550	0.618	C	0.000
College Ave																
Canyon Crest Drive to Zura Way	40,000	39,010	0.975	E	39,010	0.975	E	0.000	40,796	1.020	**F**	0.045	**40,257**	**1.006**	**F**	**0.031**
Zura Way to Montezuma Road	40,000	31,980	0.800	D	31,980	0.800	D	0.000	33,564	0.839	D	0.040	33,227	0.831	D	0.031
Montezuma Road to Arosa St	30,000	28,880	0.963	E	29,251	0.975	E	0.012	29,251	0.975	E	0.012	29,251	0.975	E	0.012

Footnotes:

a. Capacities based on the City of San Diego's Roadway Classification & LOS table (See *Appendix D*).
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

General Notes:

1. Bold and shaded typeface indicates a potentially significant impact.

TABLE 15–2
ALTERNATIVE SITES LONG-TERM STREET SEGMENT OPERATIONS

Street Segment	Near Term Capacity (LOS E)[a]	Year 2035			Year 2035 + Total Project			Δ[e]	Year 2035 + Project Alternative 1			Δ	Year 2035 + Project Alternative 2			Δ
		ADT[b]	V/C[c]	LOS[d]	ADT	V/C	LOS		ADT	V/C	LOS		ADT	V/C	LOS	
Montezuma Road																
Collwood Boulevard to 55th Street	40,000	41,100	1.028	F	**43,021**	**1.076**	**F**	**0.048**	**42,010**	**1.050**	**F**	**0.023**	**41,673**	**1.042**	**F**	**0.014**
55th Street to College Avenue	30,000	39,120	1.304	F	**39,794**	**1.326**	**F**	**0.022**	**40,030**	**1.334**	**F**	**0.030**	**39,693**	**1.323**	**F**	**0.019**
East of College Avenue	30,000	25,660	0.855	E	25,963	0.865	E	0.010	25,963	0.865	E	0.010	25,963	0.865	E	0.010
Remington Rd																
West of 55th Street	10,000	7,680	0.768	D	7,849	0.785	D	0.017	7,680	0.768	D	0.000	7,680	0.768	D	0.000
55th St																
Remington Road to Montezuma Road	30,000	22,250	0.742	D	24,845	0.828	D	0.087	22,250	0.742	D	0.000	22,250	0.742	D	0.000
College Ave																
Canyon Crest Drive to Zura Way	40,000	67,000	1.675	F	67,000	1.675	F	0.000	**68,786**	**1.720**	**F**	**0.045**	**68,247**	**1.706**	**F**	**0.031**
Zura Way to Montezuma Road	40,000	38,020	0.951	E	38,020	0.951	E	0.000	**39,604**	**0.990**	**E**	**0.040**	**39,267**	**0.982**	**E**	**0.031**
Montezuma Road to Arosa St	30,000	33,470	1.116	F	**33,841**	**1.128**	**F**	**0.012**	**33,841**	**1.128**	**F**	**0.012**	**33,841**	**1.128**	**F**	**0.012**

Footnotes:

a. Capacities based on the City of San Diego's Roadway Classification & LOS table (See *Appendix D*).
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

General Notes:

1. Bold and shaded typeface indicates a potentially significant impact.

16.0 SIGNIFICANCE OF IMPACTS AND MITIGATION MEASURES

Based on the City of San Diego's significance criteria, the proposed Project would result in potentially significant impacts at several study area intersections and street segments in the Near-Term and Horizon Year scenarios as identified below. These significant impacts would occur with implementation of Project Phases II and III; the development of Project Phase I would not result in significant impacts requiring mitigation in the form of road improvements.

While the proposed Project would result in significant impacts, as discussed in Section 8.3, the Project would result in a net benefit in terms of regional traffic since the development of additional student housing on the SDSU campus would significantly shorten or eliminate much longer trips associated with students commuting from distant locales such as Pacific Beach or Mission Valley. In addition, the area surrounding the SDSU campus provides a variety of resources for personal needs such as grocery stores, recreational facilities, etc., further reducing the need to travel longer distances. These characteristics associated with the location of the Project result in substantially reducing the number of vehicle miles traveled, as well as impacts on regional roads such as I-8. Therefore, the proposed Project is considered a net benefit in terms of regional traffic impacts.

16.1 Significance of Impacts

The following is a list of the locations that would be significantly impacted with the addition of Project traffic, based on the established significance criteria. Direct and/or cumulative impacts are noted, as well as the Project phase during which the impact would occur.

Intersections

A-1 55th Street / Montezuma Road (Direct and Cumulative – Phase II only)

Street Segments

B-1 Montezuma Road: 55th Street to College Avenue (Direct and Cumulative – Phase II only)

B-2 Montezuma Road: Collwood Boulevard to 55th Street (Cumulative – Phase III only)

B-3 College Avenue: Montezuma Road to Arosa Street (Cumulative – Phase III only)

Construction

C-1 Temporary Construction Impacts (Phases I, II, and III)

16.2 Mitigation Measures

The improvements listed below would mitigate the identified significant impacts associated with the Project. All impacts would be mitigated to less than significant with the exception of the impact on College Avenue between Montezuma Road and Arosa Street that would result under the Phase III, full Project buildout scenario.

Intersections

A-1 55th Street / Montezuma Road

Prior to issuance of a certificate of occupancy for the Phase II development, SDSU, or its designee, shall restripe the southbound approach to 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.

Street Segments

B-1 Montezuma Road: 55th Street to College Avenue

Prior to issuance of a certificate of occupancy for the Phase II development, SDSU shall pay a fair-share (9.3%) towards providing a raised median on Montezuma Road between 55th Street and College Avenue. Per the City of San Diego street standards, addition of a raised median would result in a roadway capacity increase of 10,000 ADT.

B-2 Montezuma Road: Collwood Boulevard to 55th Street

Significant impacts to the segment of Montezuma Road between Collwood Boulevard and 55th Street would not occur until Phase III of the Project. The improvement necessary to mitigate the identified impact is widening the segment of Montezuma Road between Collwood Boulevard and 55th Street. However, this portion of Montezuma Road is classified and currently constructed as a 4 lane Major. Widening beyond the Community Plan classification is not feasible due to physical constraints. Therefore, this impact, which would not occur until Phase III of the proposed Project, is significant and unavoidable.

B-3 College Avenue: Montezuma Road to Arosa Street

Prior to issuance of a certificate of occupancy for the Phase III development, SDSU shall pay a fair-share (5.9%) towards providing a raised median on College Avenue between Montezuma Road and Arosa Street. Per the City of San Diego street standards, addition of a raised median would result in a roadway capacity increase of 10,000 ADT.

Construction

C-1 Project Vicinity

Prior to the commencement of construction activities, SDSU, or its designee, shall prepare and implement a traffic control plan (TCP). The primary function of the TCP shall be to provide for the safe and effective movement of vehicles, pedestrians, and bicyclists through or around temporary traffic control zones. The TCP shall institute construction traffic management controls in accordance with City standards and the Caltrans *California Manual of Uniform Traffic Control Devices* (2014 edition). These traffic management controls will include measures determined on the basis of site-specific conditions, including the use of construction signs, delineators, and lane closures. The TCP will limit peak hour construction employee and delivery trips, and include graphics illustrating the placement of signage, striping, traffic personnel, and road cones, as applicable.

With implementation of the TCP, any potential construction traffic-related impacts would be less than significant.

16.3 Post-Mitigation Operations

Tables 16–1 and ***16–2*** illustrate the results of the intersection post-mitigation analysis for the Near-Term and Horizon Year conditions, respectively. ***Tables 16–3*** and ***16–4*** illustrate the results of the street segment post-mitigation analysis for the Near-Term and Horizon Year conditions, respectively. As shown in the tables, the proposed mitigation measures would reduce the Project impacts to less than significant with the exception of the significant impact on Montezuma Road between Collwood Boulevard and 55th Street under Phase III Project buildout conditions.

Please see ***Appendix K*** for the mitigated peak hour intersection analyses worksheets.

TABLE 16–1
NEAR-TERM INTERSECTION POST-MITIGATION OPERATIONS (EXISTING + PROJECT + CUMULATIVE PROJECTS)

Intersection	Control Type	Peak Hour	Existing + Cumulative Projects		Existing + Cumulative Projects + Project Phase I + Project Phase II		With Mitigation		Existing + Cumulative Projects + Total Project		With Mitigation	
			Delay[a]	LOS[b]	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
6. 55th St / Montezuma Rd	Signal	AM PM	34.0 51.8	C D	38.0 58.3	D E	29.0 43.8	C D	39.8 62.1	D E	30.0 45.0	C D

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

SIGNALIZED DELAY/LOS THRESHOLDS Delay	LOS	UNSIGNALIZED DELAY/LOS THRESHOLDS 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 16–2
HORIZON YEAR INTERSECTION POST-MITIGATION OPERATIONS

Intersection	Control Type	Peak Hour	Horizon Year without Project		Horizon Year with Project		With Mitigation	
			Delay[a]	LOS[b]	Delay	LOS	Delay	LOS
6. 55th St / Montezuma Rd	Signal	AM PM	52.9 88.6	D F	61.0 >100	E F	49.8 83.6	D F

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

SIGNALIZED DELAY/LOS THRESHOLDS Delay	LOS	UNSIGNALIZED DELAY/LOS THRESHOLDS 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 16–3
NEAR-TERM STREET SEGMENT POST-MITIGATION OPERATIONS (EXISTING + PROJECT + CUMULATIVE PROJECTS)

Street Segment	Near Term Capacity (LOS E)[a]	Existing + Cumulative Projects			Existing + Cumulative Projects + Project Phase I + Project Phase II			Existing + Project + Cumulative Projects			Mitigated Capacity (LOS E)[a]	Existing + Cumulative Projects + Project Phase I + Project Phase II With Mitigation			Existing + Project + Cumulative Projects With Mitigation		
		ADT[b]	V/C[c]	LOS[d]	ADT	V/C	LOS	ADT	V/C	LOS		ADT	V/C	LOS	ADT	V/C	LOS
Montezuma Road 55th St to College Ave	30,000	34,130	1.138	F	34,577	1.153	F	34,804	1.160	F	40,000	34,577	0.864	D	34,804	0.870	D

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

TABLE 16–4
HORIZON YEAR STREET SEGMENT POST-MITIGATION OPERATIONS

Street Segment	Capacity (LOS E) [a]	Horizon Year without Project			Horizon Year with Project			Mitigated Capacity (LOS E)[a]	With Mitigation		
		ADT[b]	LOS [c]	V/C [d]	ADT	LOS	V/C		ADT	LOS	V/C
Montezuma Road											
55th St to College Ave	30,000	39,120	F	1.304	39,794	1.326	F	40,000	39,794	E	0.995
College Ave											
Montezuma Rd to Arosa St	30,000	33,470	F	1.116	33,841	1.128	F	40,000	33,841	D	0.846

Footnotes:
a. Capacities based on the City of San Diego's Roadway Classification & LOS table (See *Appendix D*).
b. Average Daily Traffic.
c. Level of Service.
d. Volume to Capacity.

APPENDICES

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TECHNICAL APPENDICES

SDSU STUDENT HOUSING

San Diego, California
March 17, 2017

LLG Ref. 3-16-2694

APPENDICES

APPENDIX

A. Intersection and Segment Manual Count Sheets

B. Excerpts from the *Preliminary Draft Report Interstate 8 Corridor Study* (August 2016)

C. Intersection Methodology Sheets

D. City of San Diego Roadway Classification Table

E. Existing Intersection Analysis Calculation Sheets

F. Cumulative Projects Information

G. Near-Term Analysis Calculation Sheets

H. Horizon Year Analysis Calculation Sheets

I. MTS Information

J. Alternative Project Site Locations

K. Post-Mitigation Analysis Calculation Sheets

APPENDIX A

INTERSECTION AND SEGMENT MANUAL COUNT SHEETS

Turn Count Summary

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

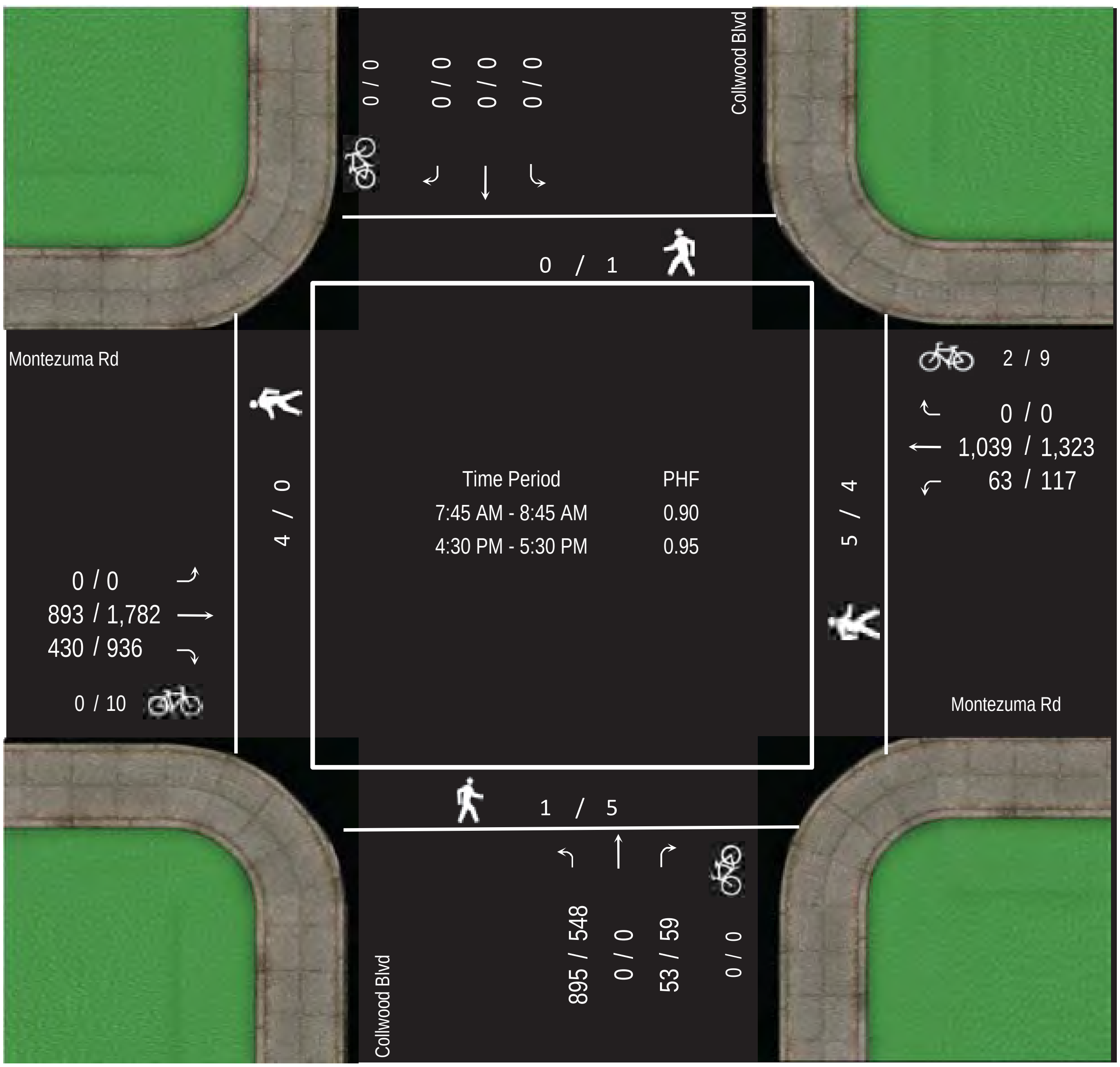
Location: Montezuma Rd @ Collwood Blvd

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

AVC

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

Turn Count Summary

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

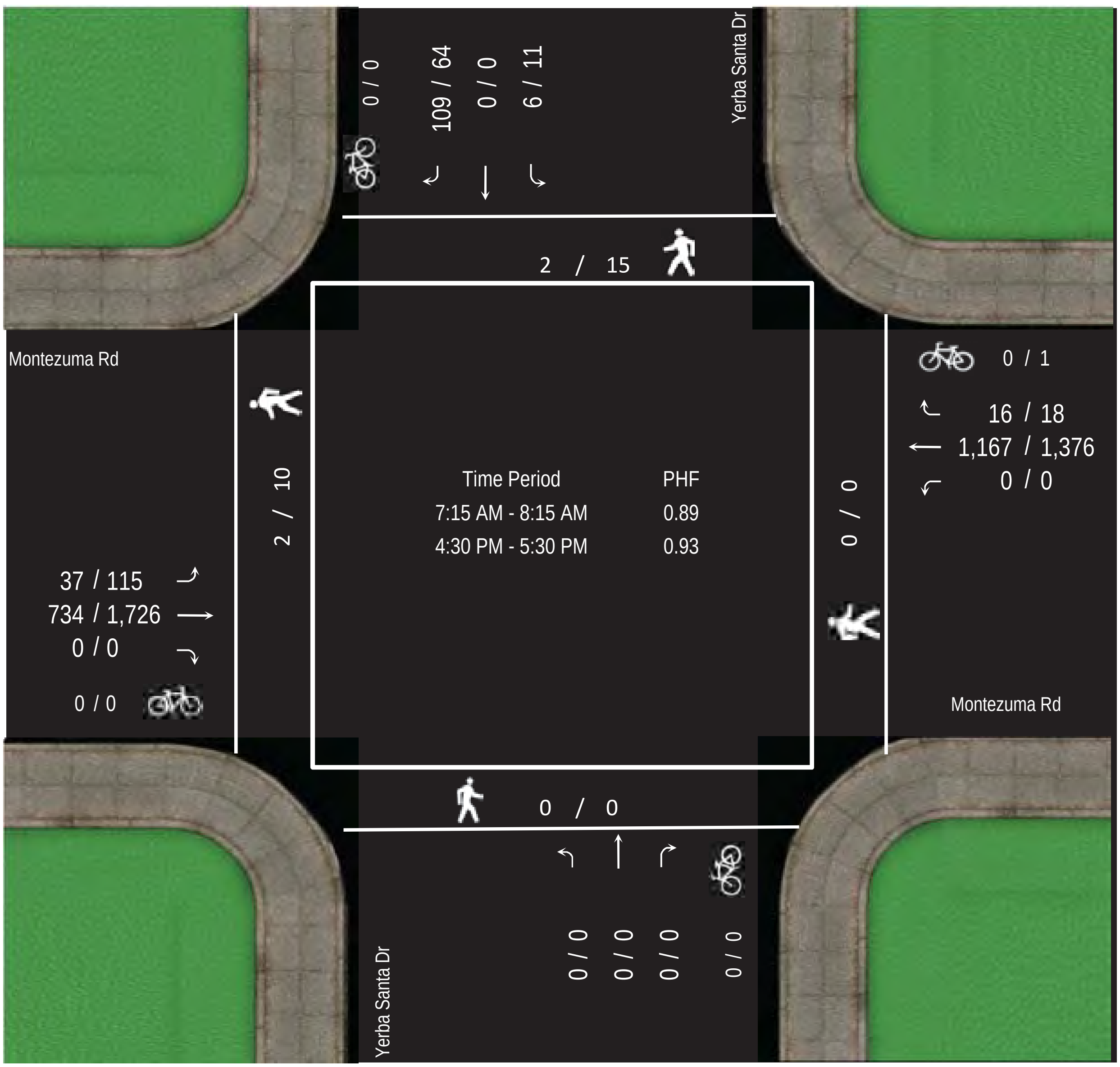
Location: Montezuma Rd @ Yerba Santa Dr

Date of Count: *Wednesday, February 12, 2014*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *14-0162*



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

Turn Count Summary

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

Location:	Canyon Crest Drive	@	55th Street
Date of Count:	*Tuesday, December 13, 2016*		
Analysts:	*LV/CD*		
Weather:	*Sunny*		
AVC Proj No:	*16-0608*		

Vehicular Count

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

Location: Canyon Crest Drive @ 55th Street

AM Period (7:00 AM - 9:00 AM)								
	Southbound		Westbound		Northbound			
	Thru	Left	Right	Left	Right	Thru		TOTAL
7:00 AM	7	1	3	7	35	5		58
7:15 AM	10	2	0	12	69	4		97
7:30 AM	7	0	2	13	106	7		135
7:45 AM	9	0	1	14	94	6		124
8:00 AM	12	0	2	17	81	11		123
8:15 AM	17	2	4	12	80	10		125
8:30 AM	5	1	2	26	91	3		128
8:45 AM	10	2	1	38	128	9		188
Total	77	8	15	139	684	55		978

AM Intersection Peak Hour : **8:00 AM - 9:00 AM** Intersection PHF : **0.75**

	Southbound		Westbound		Northbound			TOTAL
	Thru	Left	Right	Left	Right	Thru		
Volume	44	5	9	93	380	33		564
PHF	0.65	0.63	0.56	0.61	0.74	0.75		0.75
Movement PHF	0.64		0.65			0.75		0.75

PM Period (4:00 PM - 6:00 PM)								
	Southbound		Westbound		Northbound			
	Thru	Left	Right	Left	Right	Thru		TOTAL
4:00 PM	15	2	3	53	41	12		126
4:15 PM	19	0	3	133	33	18		206
4:30 PM	35	1	4	87	50	16		193
4:45 PM	13	2	1	77	40	16		149
5:00 PM	15	1	3	87	48	11		165
5:15 PM	12	1	6	61	41	17		138
5:30 PM	20	0	1	63	35	13		132
5:45 PM	9	1	1	70	19	14		114
Total	138	8	22	631	307	117		1,223

PM Intersection Peak Hour : **4:15 PM - 5:15 PM** Intersection PHF : **0.87**

	Southbound		Westbound		Northbound			TOTAL
	Thru	Left	Right	Left	Right	Thru		
Volume	82	4	11	384	171	61		713
PHF	0.586	0.5	0.688	0.722	0.855	0.847		0.87
Movement PHF	0.60		0.73			0.88		0.87

Turn Count Summary

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

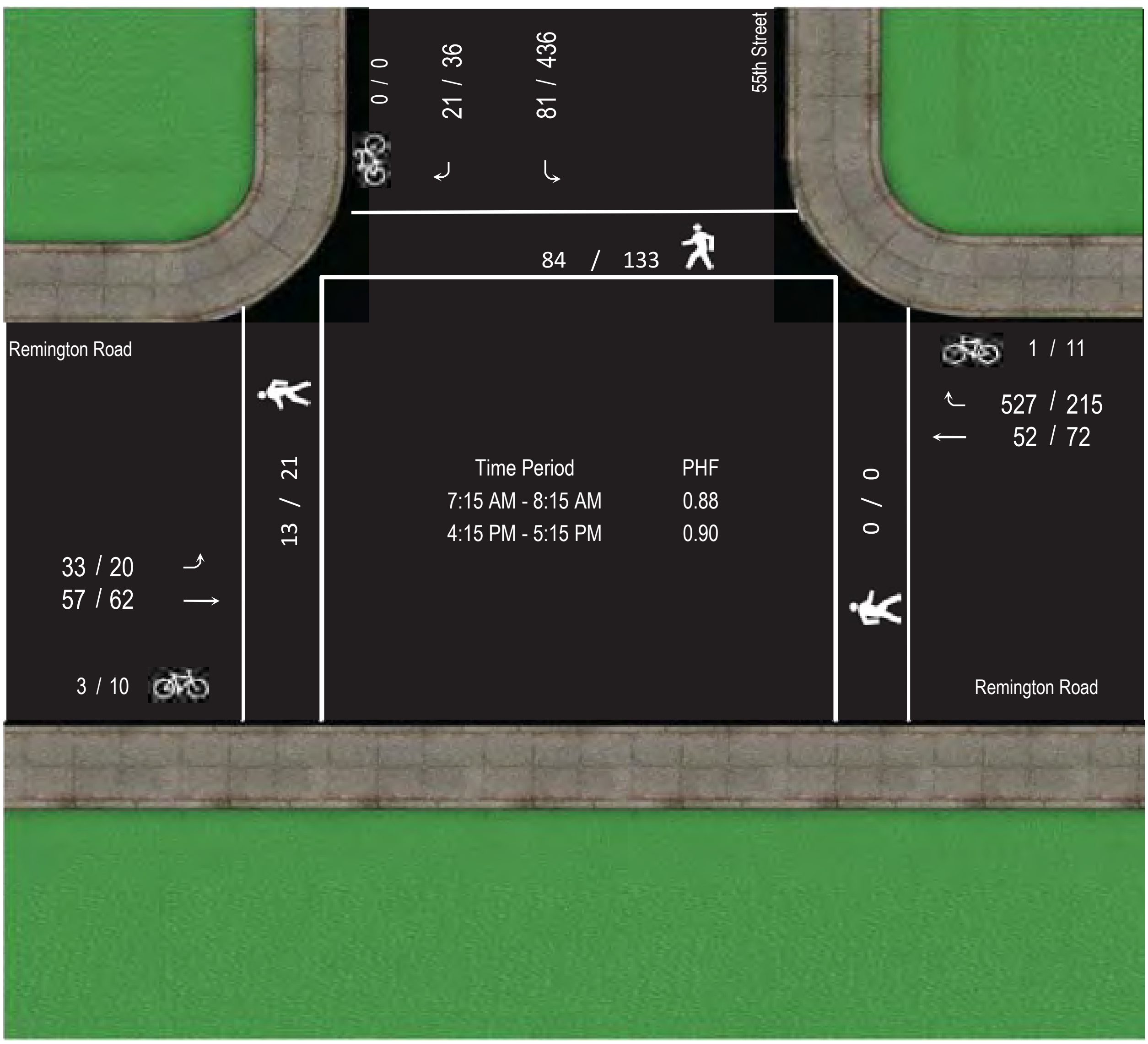
Location: Remington Road @ 55th Street

Date of Count: *Tuesday, December 13, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0608*



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			Eastbound		
	Right	Left	Right	Thru		Thru	Left	TOTAL
7:00 AM	3	11	75	10		11	9	119
7:15 AM	6	18	115	16		19	9	183
7:30 AM	9	15	162	10		12	10	218
7:45 AM	2	22	139	8		12	5	188
8:00 AM	4	26	111	18		14	9	182
8:15 AM	6	30	85	13		12	8	154
8:30 AM	2	33	93	12		20	2	162
8:45 AM	7	47	89	18		13	6	180
Total	39	202	869	105		113	58	1,386

AM Intersection Peak Hour : **7:15 AM - 8:15 AM** Intersection PHF : **0.88**

	Southbound		Westbound			Eastbound		TOTAL
	Right	Left	Right	Thru		Thru	Left	
Volume	21	81	527	52		57	33	771
PHF	0.58	0.78	0.81	0.72		0.75	0.83	0.88
Movement PHF	0.85			0.84		0.80		0.88

PM Period (4:00 PM - 6:00 PM)								
	Southbound		Westbound			Eastbound		
	Right	Left	Right	Thru		Thru	Left	TOTAL
4:00 PM	14	57	58	17		25	3	174
4:15 PM	12	135	49	13		19	5	233
4:30 PM	10	118	54	18		18	8	226
4:45 PM	7	85	59	18		13	4	186
5:00 PM	7	98	53	23		12	3	196
5:15 PM	4	75	43	24		16	13	175
5:30 PM	9	74	46	20		14	7	170
5:45 PM	8	70	31	18		18	4	149
Total	71	712	393	151		135	47	1,509

PM Intersection Peak Hour : **4:15 PM - 5:15 PM** Intersection PHF : **0.90**

	Southbound		Westbound			Eastbound		TOTAL
	Right	Left	Right	Thru		Thru	Left	
Volume	36	436	215	72		62	20	841
PHF	0.75	0.807	0.911	0.783		0.816	0.625	0.90
Movement PHF	0.80			0.93		0.79		0.90

Turn Count Summary

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

Location: Hardy Avenue @ 55th Street

Date of Count: *Tuesday, December 13, 2016*

Analysts: *LV/CD*

Weather: *Sunny*

AVC Proj No: *16-0608*

Vehicular Count

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

Location: Hardy Avenue @ 55th Street

AM Period (7:00 AM - 9:00 AM)	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	2	24	0	5	0	8	0	82	11	0	0	0	132
7:15 AM	6	40	0	13	1	12	0	130	19	0	0	0	221
7:30 AM	3	30	0	27	4	12	1	136	28	2	0	3	246
7:45 AM	9	33	0	23	6	32	0	129	29	4	0	1	266
8:00 AM	3	41	0	13	7	24	0	128	30	2	0	1	249
8:15 AM	6	49	0	16	6	20	0	93	23	6	0	1	220
8:30 AM	8	58	0	9	3	20	1	136	25	10	0	1	271
8:45 AM	6	60	0	8	5	14	0	96	24	8	0	4	225
Total	43	335	0	114	32	142	2	930	189	32	0	11	1,830

AM Intersection Peak Hour : **7:45 AM - 8:45 AM** Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	26	181	0	61	22	96	1	486	107	22	0	4	1,006
PHF	0.72	0.78	#####	0.66	0.79	0.75	0.25	0.89	0.89	0.55	#####	1.00	0.93
Movement PHF		0.78			0.73			0.92			0.59		0.93

PM Period (4:00 PM - 6:00 PM)	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	3	85	0	13	5	43	0	60	18	34	0	5	266
4:15 PM	2	176	0	4	4	32	0	59	16	36	0	4	333
4:30 PM	2	144	0	17	5	59	0	49	14	52	2	7	351
4:45 PM	2	104	0	11	3	37	0	69	19	16	0	4	265
5:00 PM	3	112	0	18	2	49	0	59	14	33	0	1	291
5:15 PM	4	102	0	13	1	41	0	62	18	24	0	6	271
5:30 PM	3	91	0	7	1	23	0	46	12	24	0	2	209
5:45 PM	2	103	0	4	2	23	0	49	7	24	0	1	215
Total	21	917	0	87	23	307	0	453	118	243	2	30	2,201

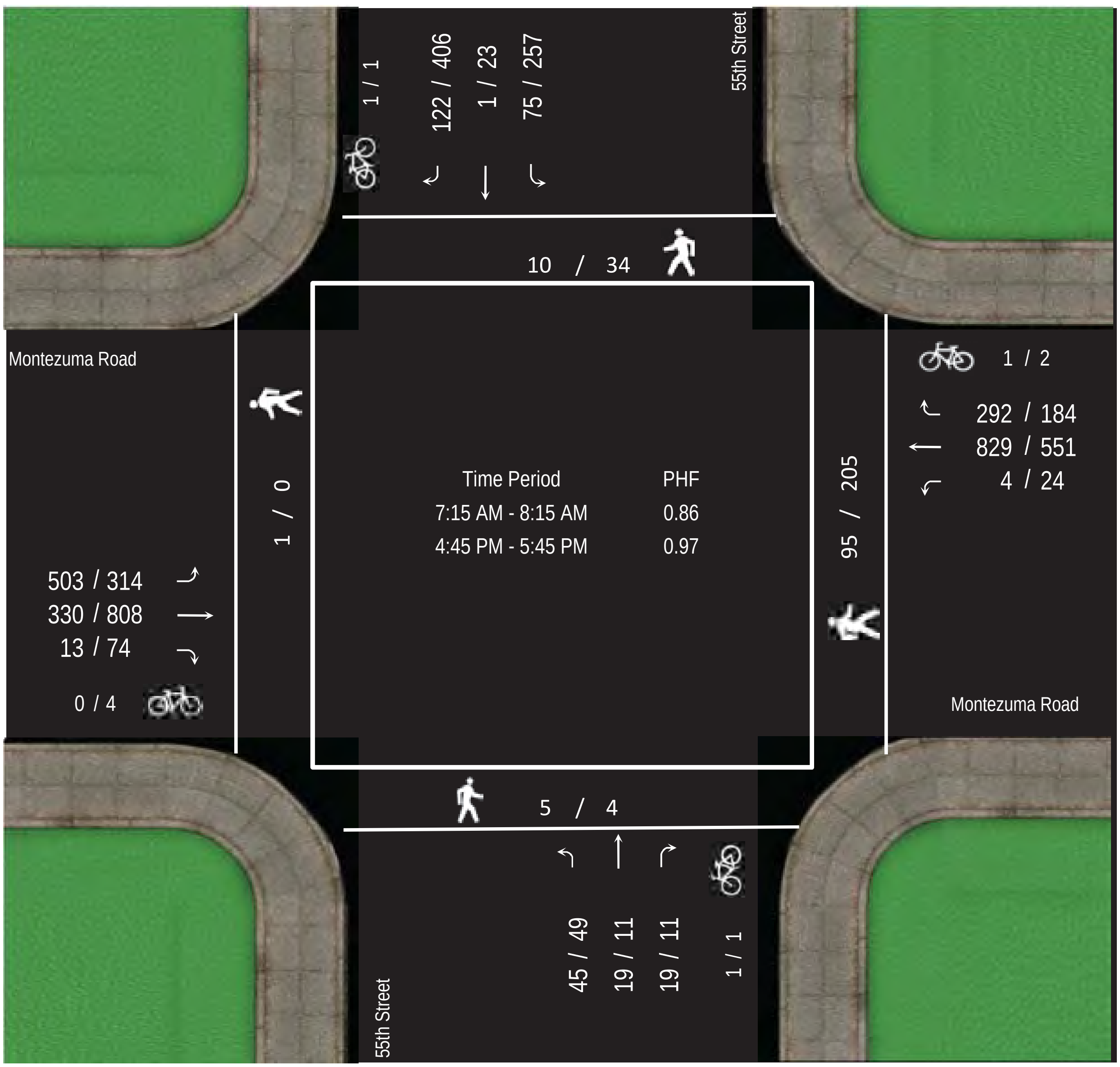
PM Intersection Peak Hour : **4:15 PM - 5:15 PM** Intersection PHF : **0.88**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	9	536	0	50	14	177	0	236	63	137	2	16	1240
PHF	0.75	0.761	#####	0.694	0.7	0.75	#####	0.855	0.829	0.659	0.25	0.571	0.88
Movement PHF		0.77			0.74			0.85			0.64		0.88

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

Turn Count Summary

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

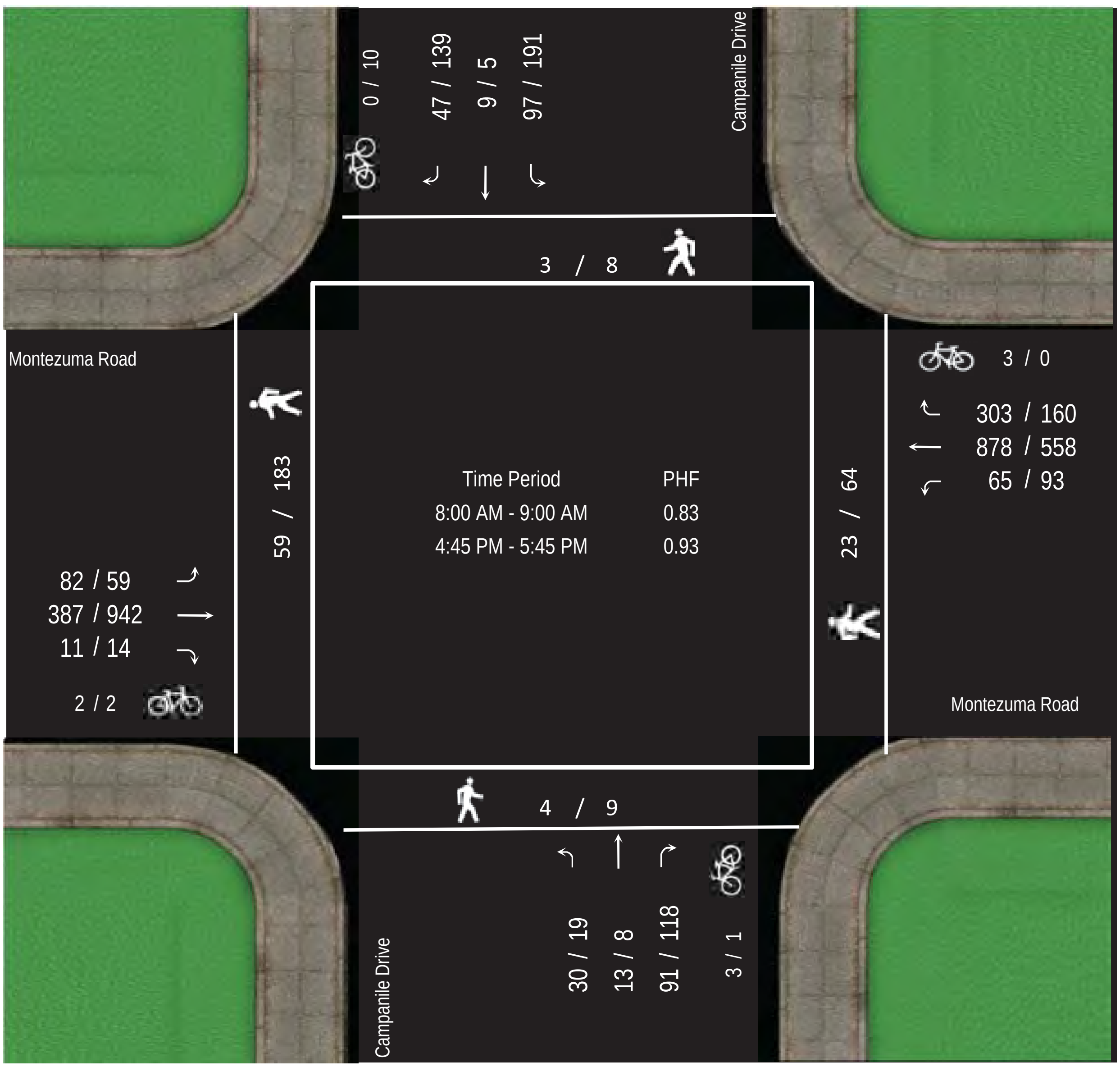
Location: Montezuma Road @ Campanile Drive

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

Turn Count Summary

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

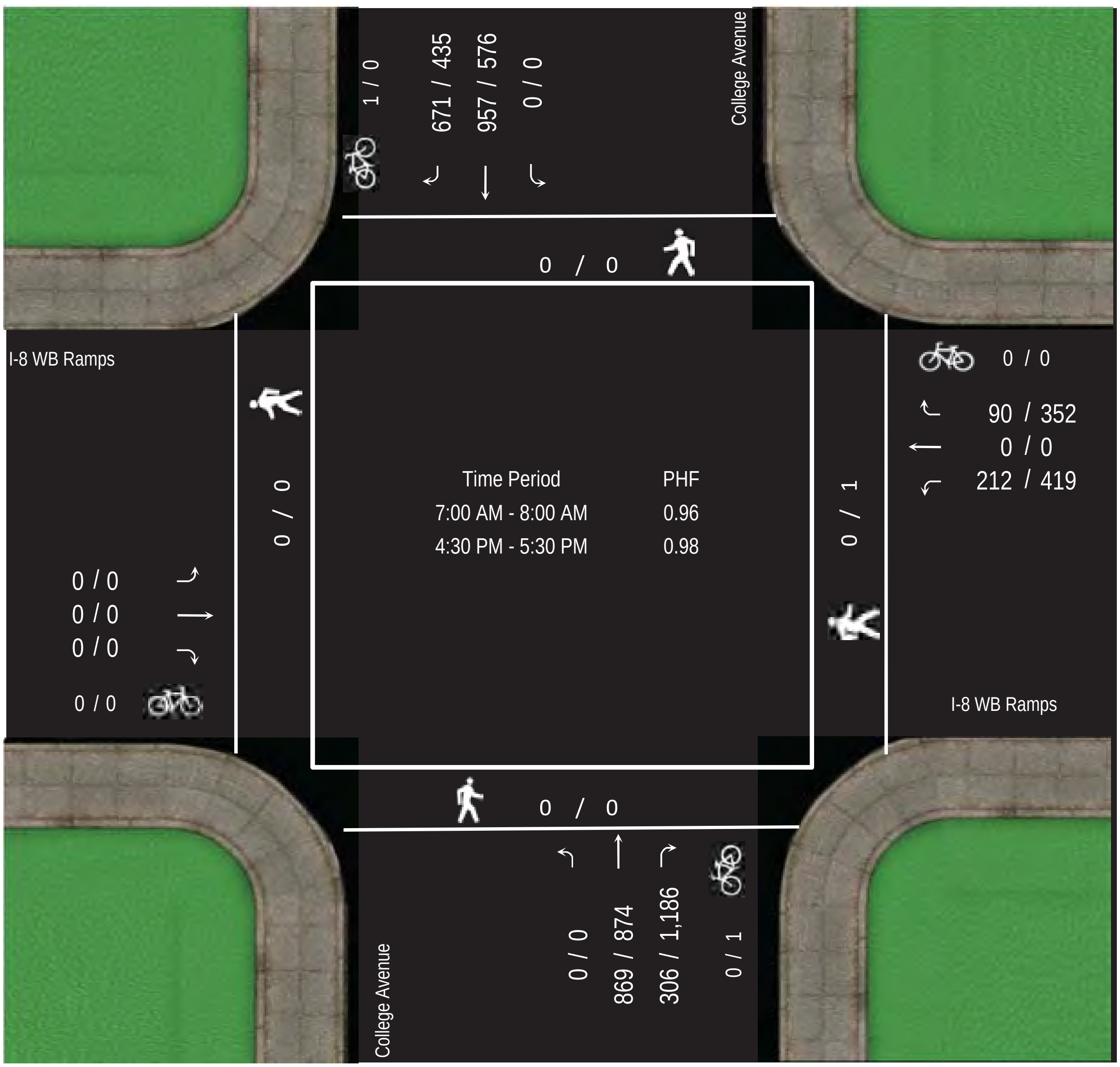
Location: I-8 WB Ramps @ College Avenue

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

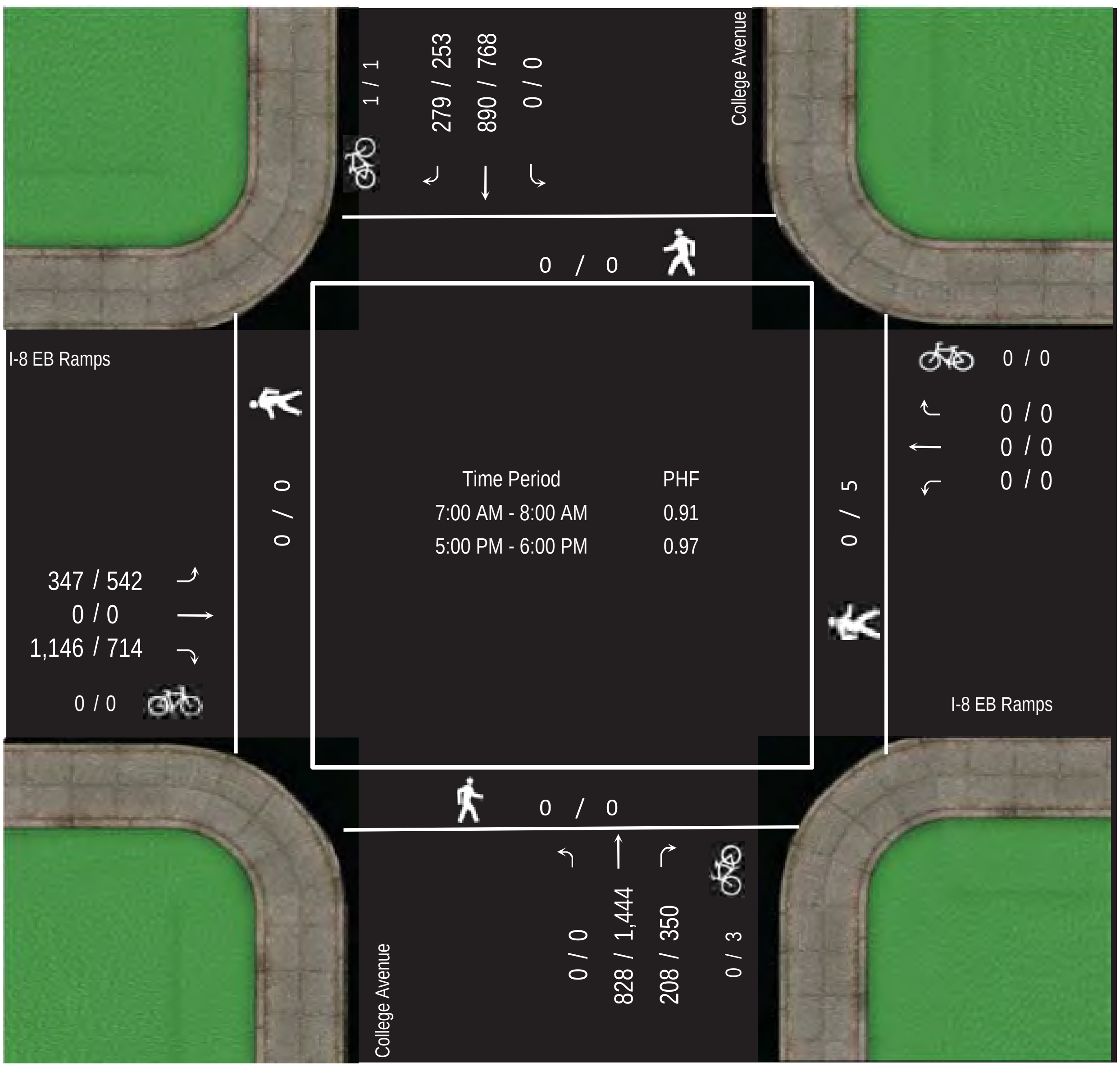
PM Intersection Peak Hour : **4:30 PM - 5:30 PM** Intersection PHF : **0.98**

	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*		



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

Turn Count Summary

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

Location: Canyon Crest Drive @ 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: 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

Turn Count Summary

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

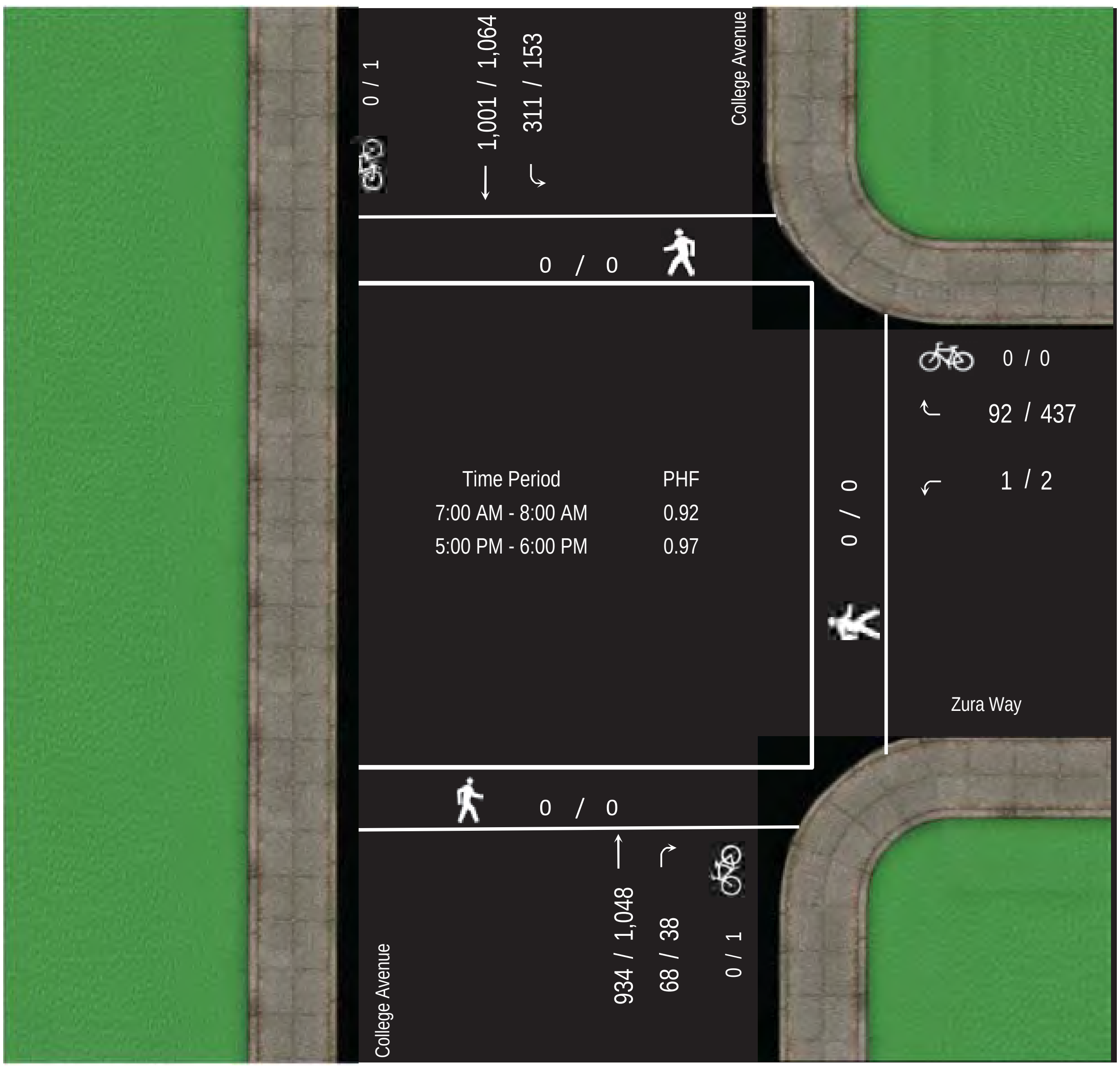
Location: Zura Way @ College Avenue

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

AVC

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

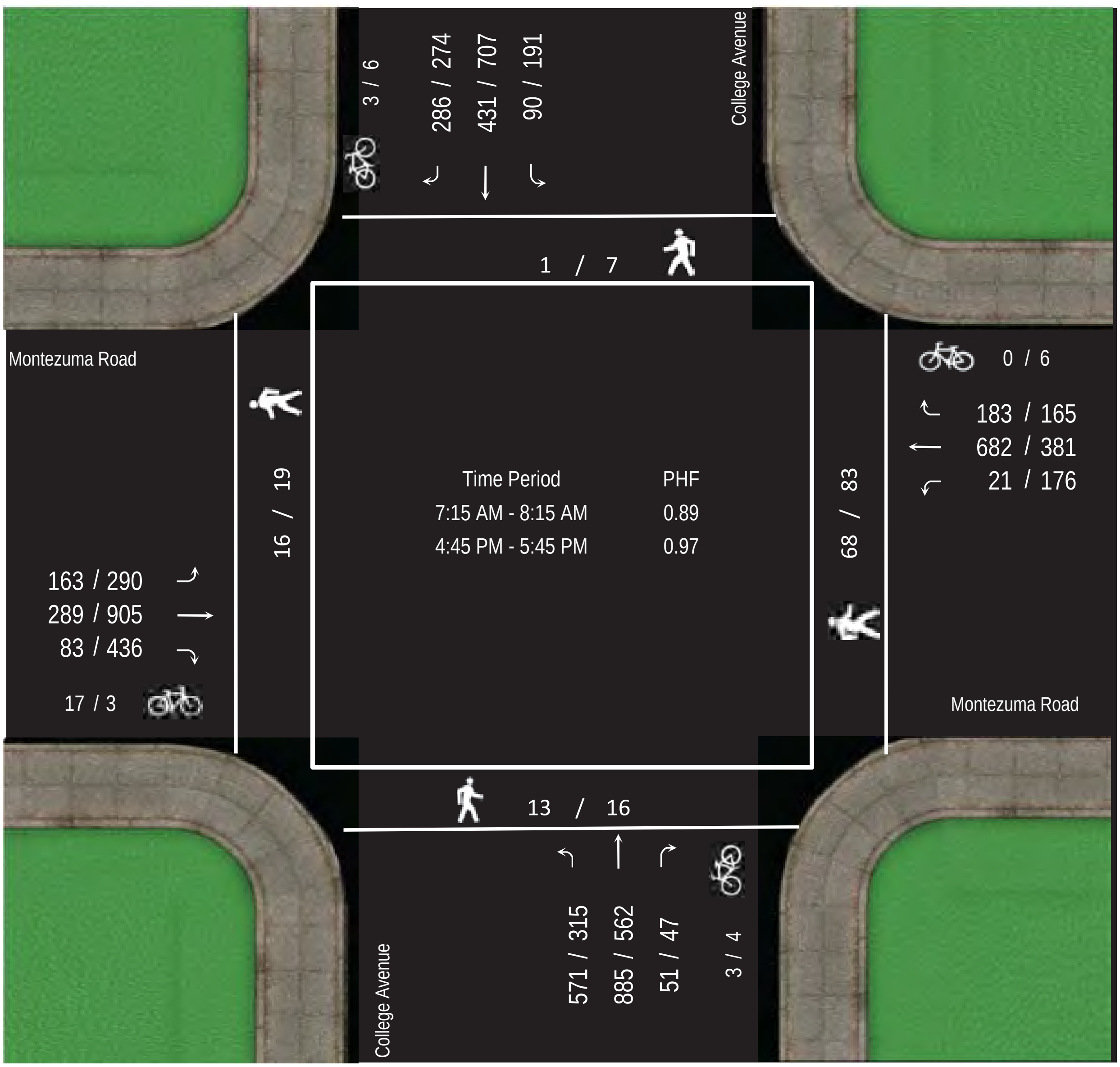
Location: Montezuma Road @ College Avenue

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

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*

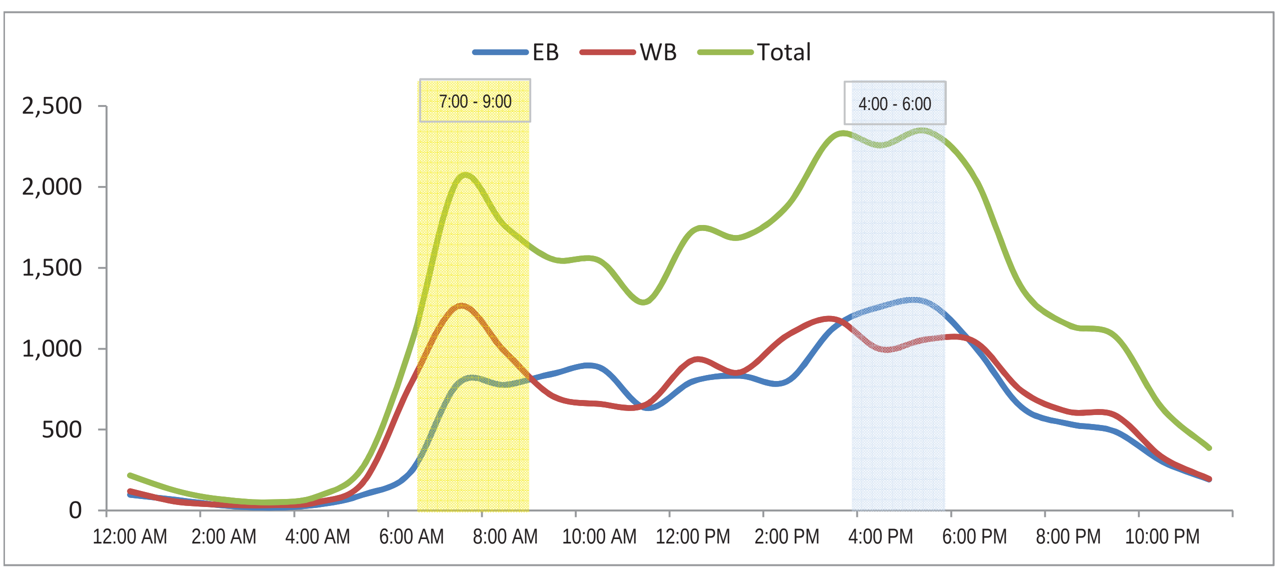
Analysts: *DASH*

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

LINSCOTT LAW & GREENSPAN engineers

AVC

Location: i. Montezuma Road btw 55th Street to College Avenue

Orientation: *East-West*

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

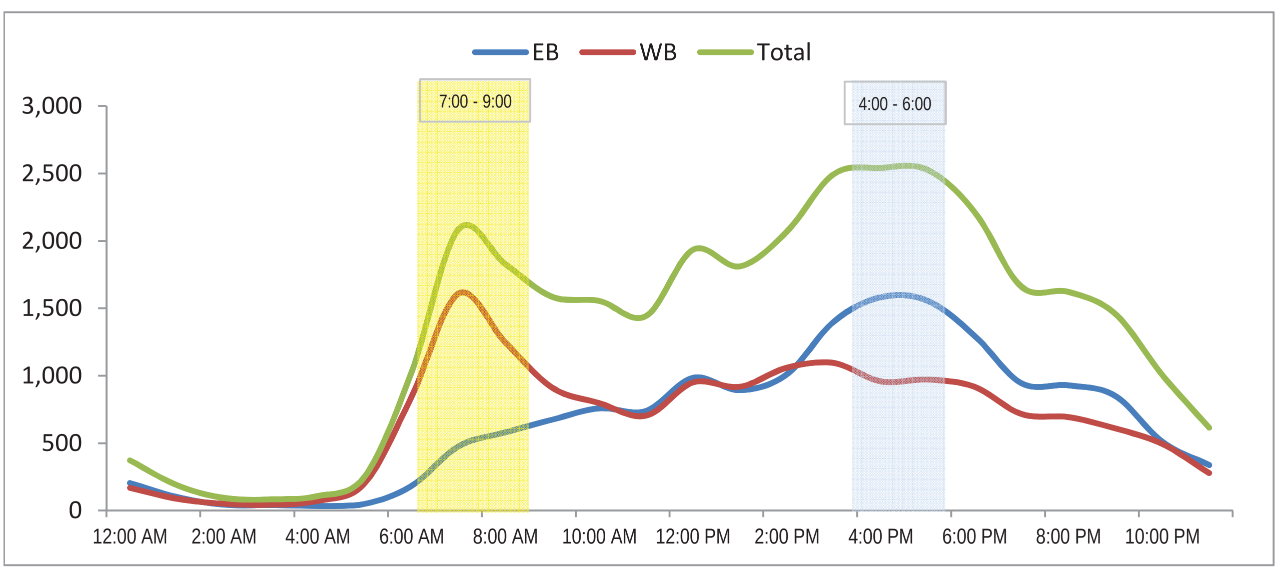
Analysts: *DASH*

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*

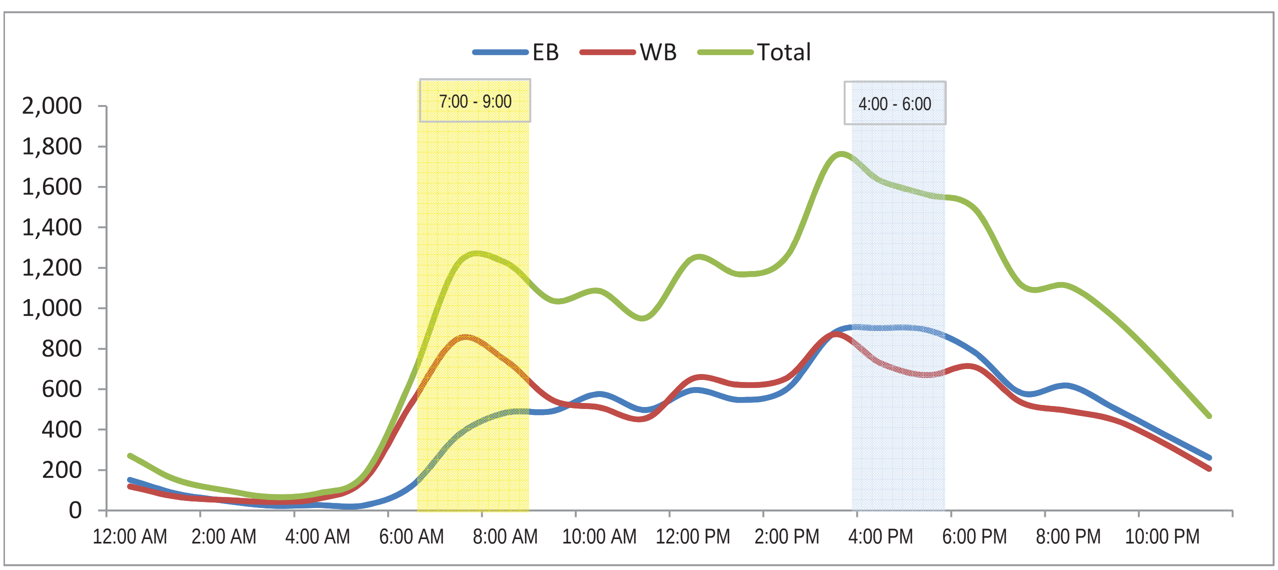
Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume: 21,496

Time			Hourly Volume EB	WB	Total	Time			Hourly Volume 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: 1. Remington Road just west of 55th Street

Orientation: *East-West*

Date of Count: *Tuesday, December 13, 2016*

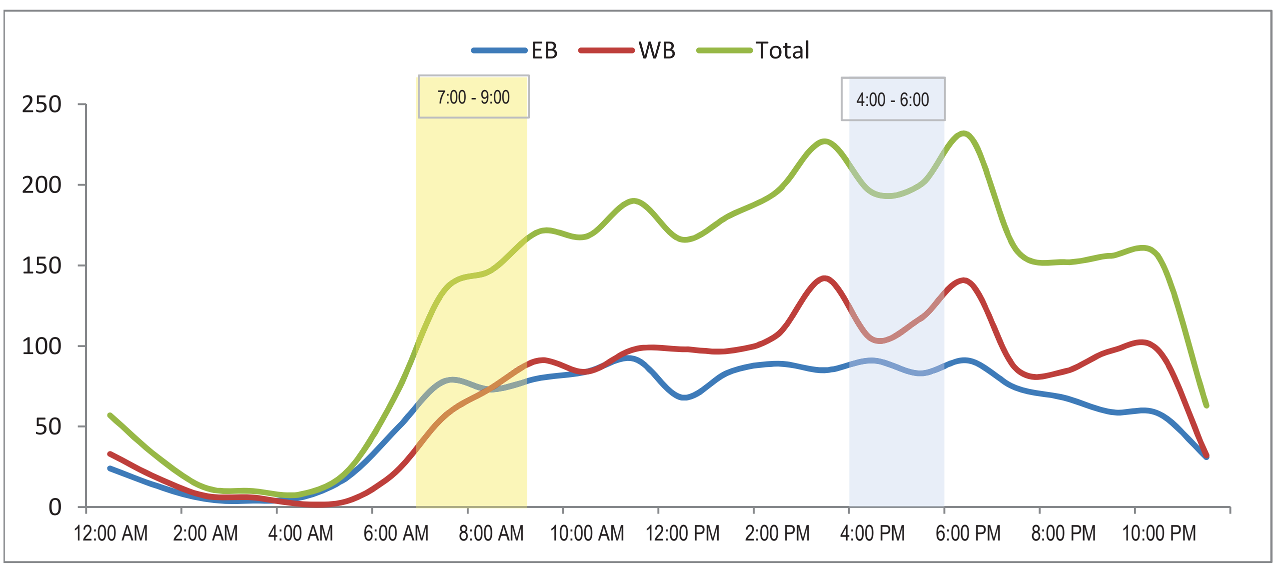
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0608*

24 Hour Segment Volume							3,103
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	24	33	57	12:00 PM - 1:00 PM	68	98	166
1:00 AM - 2:00 AM	13	18	31	1:00 PM - 2:00 PM	84	97	181
2:00 AM - 3:00 AM	5	7	12	2:00 PM - 3:00 PM	89	107	196
3:00 AM - 4:00 AM	4	6	10	3:00 PM - 4:00 PM	85	142	227
4:00 AM - 5:00 AM	6	2	8	4:00 PM - 5:00 PM	91	104	195
5:00 AM - 6:00 AM	19	4	23	5:00 PM - 6:00 PM	83	117	200
6:00 AM - 7:00 AM	48	22	70	6:00 PM - 7:00 PM	91	140	231
7:00 AM - 8:00 AM	78	56	134	7:00 PM - 8:00 PM	74	86	160
8:00 AM - 9:00 AM	73	74	147	8:00 PM - 9:00 PM	68	84	152
9:00 AM - 10:00 AM	80	91	171	9:00 PM - 10:00 PM	59	97	156
10:00 AM - 11:00 AM	84	84	168	10:00 PM - 11:00 PM	58	97	155
11:00 AM - 12:00 PM	92	98	190	11:00 PM - 12:00 AM	31	32	63
Total	**526**	**495**	**1,021**	**Total**	**881**	**1,201**	**2,082**

24-Hour EB Volume	1,407	24-Hour WB Volume	1,696



24 Hour Segment Count

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

LINSCOTT LAW & GREENSPAN engineers

AVC

Location: 3. 55th Street btw Lindo Paseo to Montezuma Road

Orientation: *North-South*

Date of Count: *Tuesday, December 13, 2016*

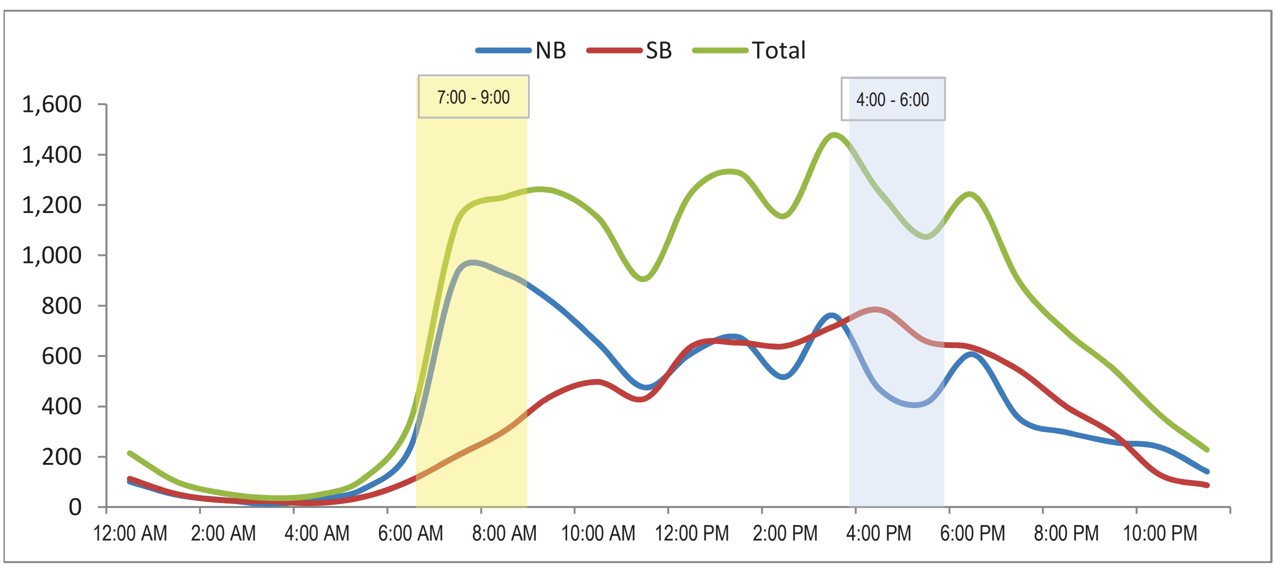
Analysts: *DASH*

Weather: *Sunny*

AVC Proj. No: *16-0608*

24 Hour Segment Volume								***18,108***
Time	**Hourly Volume**				**Time**	**Hourly Volume**		
	NB	**SB**	**Total**			**NB**	**SB**	**Total**
12:00 AM - 1:00 AM	101	113	214		12:00 PM - 1:00 PM	612	639	1,251
1:00 AM - 2:00 AM	49	52	101		1:00 PM - 2:00 PM	675	653	1,328
2:00 AM - 3:00 AM	28	27	55		2:00 PM - 3:00 PM	517	640	1,157
3:00 AM - 4:00 AM	13	23	36		3:00 PM - 4:00 PM	762	715	1,477
4:00 AM - 5:00 AM	32	16	48		4:00 PM - 5:00 PM	470	784	1,254
5:00 AM - 6:00 AM	73	41	114		5:00 PM - 6:00 PM	414	659	1,073
6:00 AM - 7:00 AM	240	106	346		6:00 PM - 7:00 PM	607	633	1,240
7:00 AM - 8:00 AM	933	205	1,138		7:00 PM - 8:00 PM	351	542	893
8:00 AM - 9:00 AM	929	302	1,231		8:00 PM - 9:00 PM	297	399	696
9:00 AM - 10:00 AM	817	441	1,258		9:00 PM - 10:00 PM	258	291	549
10:00 AM - 11:00 AM	652	497	1,149		10:00 PM - 11:00 PM	238	128	366
11:00 AM - 12:00 PM	475	431	906		11:00 PM - 12:00 AM	141	87	228
Total	**4,342**	**2,254**	**6,596**		**Total**	**5,342**	**6,170**	**11,512**

24-Hour	***NB***	***Volume***	***9,684***	***24-Hour***	***SB***	***Volume***	***8,424***



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*

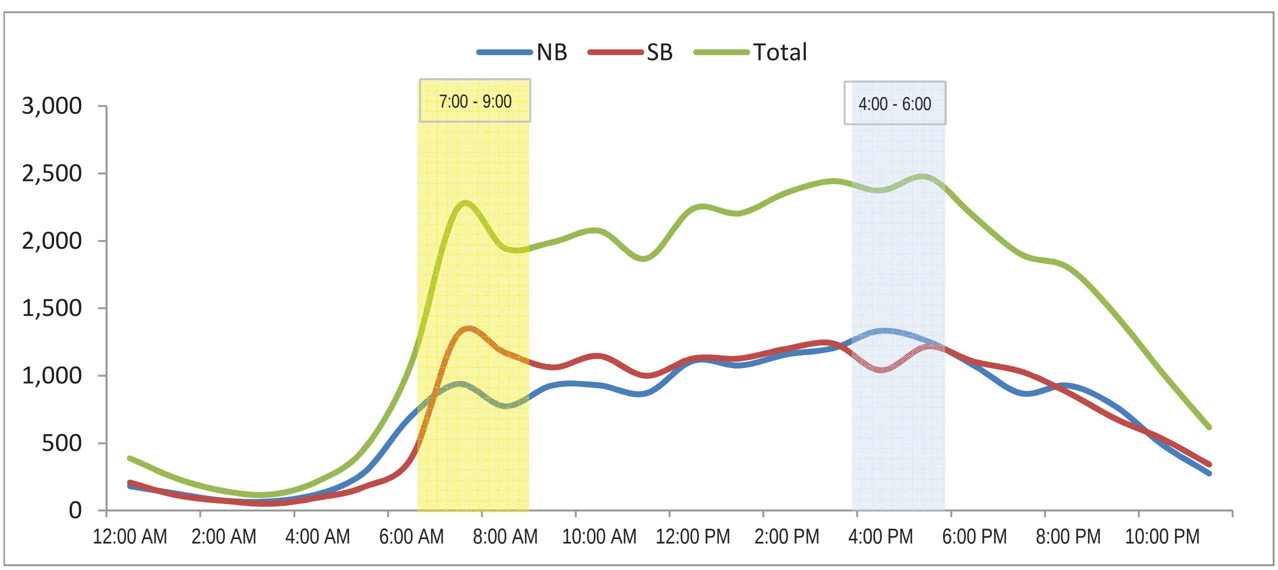
Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume ***35,847***

Time			Hourly Volume NB	SB	Total	Time			Hourly Volume 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*

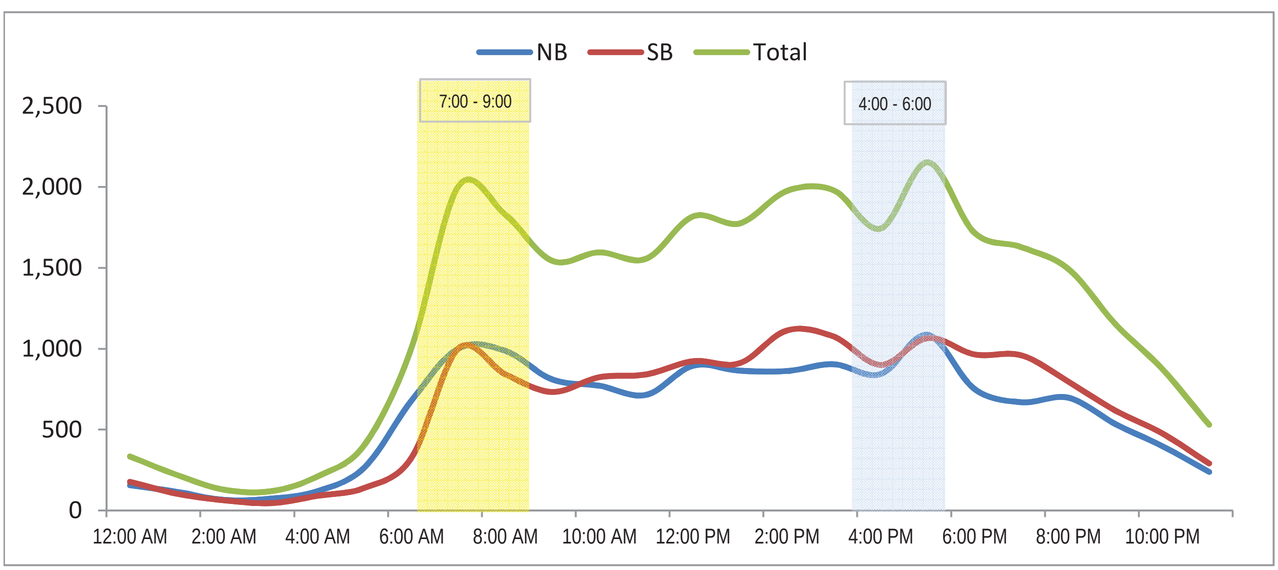
Weather: *Sunny*

AVC Proj. No: *16-0506*

24 Hour Segment Volume **29,790**

Time	Hourly Volume NB	SB	Total	Time	Hourly Volume 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*

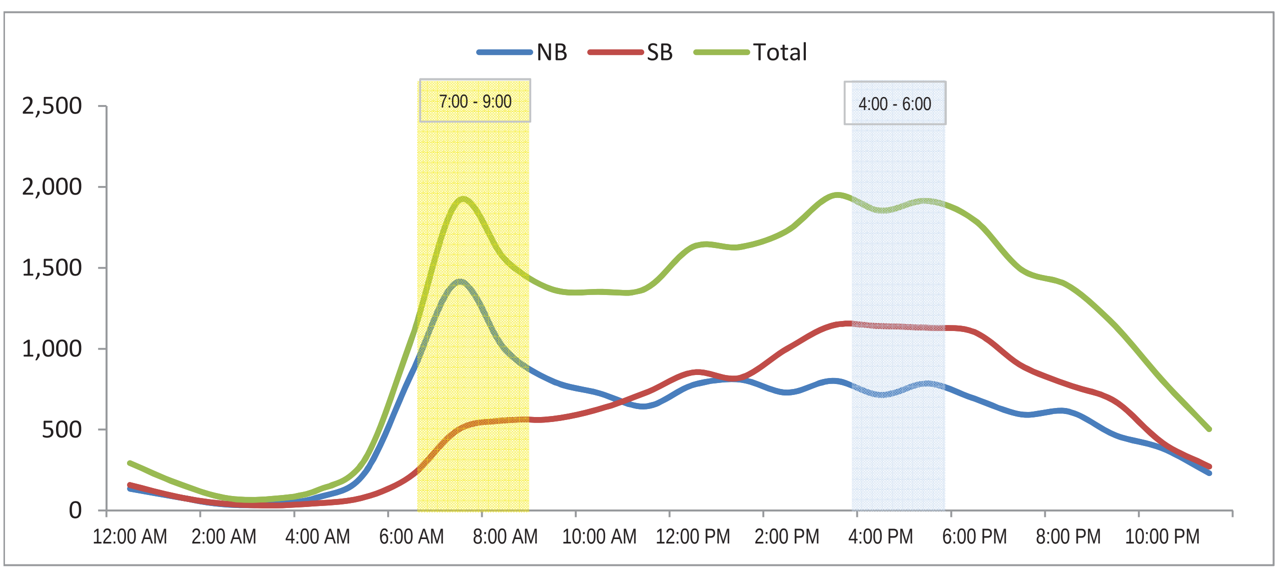
Analysts: *DASH*

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



SAN DIEGO STATE UNIVERSITY #7 & #12 PARKING SURVEY

AVC 17-0620 LLG 3-16-2694

		Structure #7		Structure #12	
Date	Time	Vehicles	Motorcycles	Vehicles	Motorcycles
Wednesday	Capacity	1,432	10	1,969	140
2/1/2017	10:00	951	7	1,773	8
	15:00	1,054	4	1,886	17
	20:00	685	2	862	7

Date	Time	Vehicles	Motorcycles	Vehicles	Motorcycles
Thursday	Capacity	1,432	10	1,969	140
2/2/2017	10:00	1,302	6	1,926	13
	15:00	1,155	1	1,727	14
	20:00	614	2	504	5

Date	Time	Vehicles	Motorcycles	Vehicles	Motorcycles
Saturday	Capacity	1,432	10	1,969	140
2/4/2017	10:00	567	0	286	0
	15:00	836	2	336	1
	20:00	275	0	100	0

(#) : available space

2(4) 37 (1) 32 35 34 4

Time	Demand
9:30 a.m.	144

Supply : 149

LINSCOTT LAW & GREENSPAN engineers

APPENDIX B

EXCERPTS FROM THE *PRELIMINARY DRAFT REPORT INTERSTATE 8 CORRIDOR STUDY* (AUGUST 2016)

2.2.2.1 Transit System

The following section describes the corridor's existing transit services and facilities, which primarily consist of light rail transit (LRT) and local bus routes operated by MTS.

Green Line LRT (Trolley)

The Green Line is the only rail transit service directly serving the east-west orientation of the I-8 corridor and one of three lines in the MTS LRT system, also known as the San Diego Trolley. The line connects Downtown San Diego with the east county cities of La Mesa, El Cajon, and Santee running predominantly west-to-east through the center of the study corridor from Old Town Transit Center to 70th Street Station. From the 70th Street Station, the line continues to the El Cajon Transit Center and Santee Town Center. The Green Line currently operates at 15-minute headways in both the peak and off-peak periods.

With 13 stations in the study area, the Green Line provides direct access to numerous residential, commercial, and office centers, as well as the majority of the corridor's key activity centers. The corridor's LRT stations are shown in Table 2-3 with their daily average boardings. As of 2010, the Green Line served an average of 18,584 passengers daily.

Transit Centers

As shown in Table 2-3, among the study area's 13 LRT stations are three designated transit centers (TCs). These provide access to the Green Line LRT service, numerous bus routes and (in the case of Old Town TC) regional and interregional rail services.

- ***Old Town TC:*** Provides connections to the Green Line LRT, one express bus route, and nine local bus routes. Also connects to the COASTER commuter rail service to Oceanside, as well as Amtrak's Pacific Surfliner interregional rail service to Los Angeles and San Luis Obispo.
- ***Fashion Valley TC:*** Provides connections to the Green Line LRT, one express bus route, and six local bus routes.
- ***SDSU TC:*** Provides connections to the Green Line LRT and seven local bus routes.

Table 2-3: Study Area LRT Stations

Station	Average Weekday LRT Boardings (2010)	Connecting Services
Old Town TC	4,675	Bus Routes 8, 9, 10, 28, 30, 35, 44, 88, 105, 150; COASTER; Amtrak
Morena/Linda Vista	709	Bus Route 44
Fashion Valley TC	2,337	Bus Routes 6, 28, 25, 41, 88, 120, 928
Hazard Center	783	-
Mission Valley Center	1,110	Bus Route 6
Rio Vista	556	-
Fenton Parkway	568	-

Traffic Management Center is the central management location for all monitoring and data collection on the freeway.

Arterial

The Regional Arterial Management System leverages a common traffic signal control architecture which allows for coordinated multi-jurisdictional operations. The I-8 Corridor Study has identified roadway segments and intersections to be analyzed at a planning level. These roadways and arterials serve as a starting point for the development of the comprehensive arterial system to be included in an ICMS.

Transit

The Regional Transit Management System (RTMS) is a multi-agency transit management system with a centralized implementation for voice/data communications, automatic vehicle location, and traveler information functions. The system provides for the capture of performance data on scheduled arrivals and departures and includes ridership data collected through automatic passenger counters. The I-8 Corridor Study has identified the primary west-east routes within the study area.

All of the study area's full-size bus fleet fixed route bus service are currently using the RTMS management tool with the exception of mini-buses operating on routes 14, 18, 25, 84, and 88. The Centralized Traffic Control (CTC) system is fully integrated within the Green Line Trolley service.

2.2.2.5 Freeway System

The existing freeway network plays a major role in providing connectivity to the land uses and activity centers within the corridor study area. Five of the San Diego region's 13 freeways pass through the study area and intersect at four interchanges, making it one of the more heavily utilized travel corridors in the region. Appendix A-2 provides a narrative overview for all of the Corridor Study freeway segments within the study area.

2.2.2.6 Arterial Street System

The corridor study area contains numerous arterial roadways which were designated for detailed analysis by the PST, many of which are oriented west-to-east and can serve as alternatives to the I-8 freeway. Table 2-5 provides the arterial streets included in the Corridor Study, and Appendix A-3 provides a narrative overview for the Corridor Study arterial streets analyzed within the study area.

Table 2-5: Arterial Street System

Roadway	1st Cross Street	2nd Cross Street
Friars Road	Sea World Drive	Mission Gorge Road
Mission Gorge Road	Fairmount Avenue	Friars Road
College Avenue	Del Cerro Boulevard	Montezuma Road
Montezuma Road	Fairmount Avenue	College Avenue
Fairmount Avenue	Mission Gorge Road	Montezuma Road
Napa Street	Morena Boulevard	Friars Road
Morena Boulevard	Tecolote Road	Napa Street
Tecolote Road	I-5	Morena Boulevard
Sea World Drive	West Mission Bay Drive	I-5
Sunset Cliffs Boulevard	West Mission Bay Drive	Nimitz Boulevard
Nimitz Boulevard	Sunset Cliffs Boulevard	West Point Loma Boulevard
West Point Loma Boulevard	Sunset Cliffs Boulevard	Midway Drive
Sports Arena Boulevard	Midway Drive	Rosecrans Street
Rosecrans Street	Pacific Highway/Taylor Street	Sports Arena Boulevard
Taylor Street	Pacific Highway	Morena Boulevard

Source: Corridor Study Project Study Team (PST)

2.2.2.7 Freight Service Characteristics

The I-8 freeway is the main freight east-west corridor for San Diego County, continuing into Imperial County to Arizona. In its entirety, I-8 from Sunset Cliffs Boulevard to the Arizona State Line is a National Highway System (NHS) route. This freeway facility has been designated by Caltrans District 11 as a State Highway impacted by the North American Free Trade Agreement. The portion of I-8 between I-5 to the Arizona border is a designated route in the National Network for Surface Transportation Assistance Act for trucks. I-8 west of I-5 is a terminal access route to the national network; additionally I-8 serves as an alternative to I-10.

Through multiple goods movement trade corridors, the I-8 corridor facilitates the movement of freight domestically to San Diego, the Los Angeles metropolitan region, the Imperial Valley, Yuma, and throughout the country. International freight to and from Mexico also uses the I-8 to transport goods. In 2014, the Otay Mesa Port of Entry (POE) handled about $40 billion in two-way trade while the Calexico-East Port of Entry POE processed approximately $15 billion in trade. The Tecate POE, with access to I-8 via State Road (SR) 188 to SR 94 or SR 94 to Buckman Springs Road, generates additional demand on I-8, as Caltrans traffic count data suggests that about 20 percent of the trucks coming north from the Tecate POE head east on SR 94 toward I-8. The Tecate POE accounts for nearly $700 million worth of goods moved between the two countries. Additionally the *Analysis of Freeway Operational Strategies Related to the Use of Managed Lanes by Trucks Study* has identified significant truck traffic demand in San Diego's East County.

Within the I-8 Corridor Study, the majority of freight- and commercial-related trips are primarily associated with freight and commercial vehicle attractor land uses; most notably retail. This is in contrast to freight generator corridors which include areas along SR 905 in Otay Mesa and Miramar Road in Kearny Mesa, which involve shipper production facilities and/or warehouses for distribution. The most prevalent type of land use within the study area attracting truckload

typically include pick-up truck-like services, such as pest control or landscaping, and also have a wider utility of business for land use attractors including commercial, industrial, and residential. Within the I-8 corridor study area, land uses lend themselves to all three of these truck classifications.

This is important because there is a direct correlation between population growth and consumption of goods and services. As San Diego's local economy continues to grow over time, all of these types of truck classifications will see their demand grow in line with population consumption of physical goods.

2.2.3 Corridor Study Travel Characteristics

Trips or "person-trips" are generated based on land use and travel. The SANDAG Series 12 Forecast incorporates the relationships between land use and travel characteristics to estimate the number of person-trips that either start or end within the study area. Table 2-6 shows the number of person-trips within the corridor study area for existing conditions (2008).

Table 2-6: Study Area Existing Trip Generation

Purpose	Person-Trips (2008)
Work	232,710
Non-Work	1,856,890
Total	**2,089,600**

Source: SANDAG Series 12 Forecast; these numbers are subject to change based upon further studies and/or analysis.

As shown, non-work trips make up roughly 90 percent of the overall trips within the corridor study area, while work trips account for the remaining 10 percent.

The manner in which person-trips are distributed among particular travel modes (drive alone, carpool, transit, etc.) is based on the type of trip, the availability to make a particular trip using each mode, travel time, and traveler behavior, among other factors. A summary of existing mode share by trip type (work and non-work) is shown in Table 2-7.

Table 2-7: Existing (2008) Study Area Mode Share by Trip Type

	Work		Non-Work		Total	
Travel Mode	Person Trips[1]	Mode Share	Person Trips[1]	Mode Share	Person Trips[1]	Mode Share
Drove Alone	173,868	75%	912,608	49%	1,086,496	52%
Carpool	24,604	11%	838,244	45%	862,848	41%
Transit (includes school bus)	24,616	11%	34,391	2%	59,007	3%
Active (bike/ped)	3,660	4%	71,651	4%	61,251	4%
Total	**232,708**		**1,856,894**		**2,089,602**	

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

[1] Trips with either or both trip ends in the study corridor.

As shown in Table 2-7, over 90 percent of existing trips are made by travelers who either drive alone or carpool. Transit mode share accounts for 3 percent of daily person-trips within the study corridor, and increases to 11 percent for work-related trips. Active transportation, which includes bicycle and pedestrian trips, accounts for 4 percent of the daily person-trips.

VMT is the total distance traveled by all vehicles in a given area, over a given period of time. Table 2-8 provides a summary of existing daily VMT by roadway facility type.

Table 2-8: Existing Daily VMT – I-8 Corridor

Facility Type	VMT[1]	% of Study Area VMT
Freeways	5,291,715	73.2%
Arterials	1,382,018	19.1%
Collectors/Locals	556,841	7.7%
Total for Study Area	**7,230,574**	**100%**

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

[1] *Vehicle miles traveled per day.*

As shown, nearly 75 percent of daily VMT occurs along freeways within the study area, and predominantly along I-8.

Based upon the identified major freight attractor clusters and access to the Interstates 5, 15, and 8, SR 163, freeways, and local arterials, Table 2-9 provides a summary of existing commercial vehicle average daily traffic (ADT) and commercial vehicle ADTs as a percentage of total vehicle ADTs by vehicle classification (heavy, medium, and light duty). As shown below, commercial vehicle ADTs reflected just over 2 percent of total vehicle ADTs, with light and medium duty commercial vehicle classifications making up over 80 percent of all commercial vehicle ADTs.

Table 2-9: Existing Commercial Vehicle ADTs and Percentage of Total Vehicle ADTs – I-8 Corridor

Commercial Vehicle Classification	ADTs[1]	% of Study Area Total ADTs
Light Duty	411,055	1.1%
Medium Duty	285,053	0.8%
Heavy Duty	151,508	0.4%
Total for Study Area	**847,616**	**2.2%**

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

[1] *Commercial vehicle average daily traffic.*

I-8 provides connectivity throughout the length of the corridor, giving freeway users access to a variety of land uses and activity centers both within and outside the study area. Of all trips using I-8 for some portion of their trip, nearly 70 percent of users begin or finish their trip within the corridor study area, including 12 percent whose trips are located entirely within the corridor. The remaining

30 percent of I-8 travelers use the freeway only as a conduit to travel between points outside the study area. Table 2-10 contains a summary of these trip interactions.

Table 2-10: Trip Interactions Among I-8 Users

Trip Origin	Trip Destination: Outside Corridor Study Area	Trip Destination: Within Corridor Study Area
Outside Corridor Study Area	31.1%	21.1%
Within Corridor Study Area	35.4%	12.4%

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

When assessing the 70 percent of user trips beginning or finishing within the corridor study area, nearly 33 percent of the total daily trips are either entirely within the study area or have a destination activity within the study area, while the remaining 35 percent originate in the study area with a destination outside of the corridor. On a typical weekday, work trips and many service-based activities along the corridor occur, such as shopping. Based on this information, at any given time during a weekday it can be assumed that a minimum of around 33 percent of the users will be performing trip-based tasks within the corridor study area.

This is an important element in depicting the narrative of the corridor study area. Long-range land use plans and forecasts expect further residential density to occur in the study area which will potentially increase the study area trip origins and destinations as well as the trips located entirely within the corridor. Therefore, improvement concepts for alternative scenarios should consider these trip-related dynamics.

However, the above assessment encompasses only freeway travel. The I-8 Corridor Study also assesses the roadway network surrounding the I-8, where bicycle and pedestrian travel takes place. It is important to note that bicycle and pedestrian trips within the corridor are likely to be comprised primarily of short trips of two miles or less, and are for utilitarian purposes such as commuting to work or school, or activities such as shopping. Recommended bicycle and pedestrian improvements within the corridor will therefore be oriented to utilitarian trip making.

2.3 Existing Performance, Deficiencies, and Network Design

The following sections provide an overview of existing performance, deficiencies, and network design for transit services, active transportation, the I-8 freeway facility and arterial streets.

2.3.1 Transit System

The following section describes the performance of the existing corridor transit system, along with a summary of the constraints and operational issues that transit faces in the corridor.

Transit System Ridership and Mode Share

Table 2-11 shows the average weekday transit boardings by key study corridor transit route for 2010. The Green Line LRT boasts the strongest ridership by far, with over 18,000 riders each day. The most popular bus lines in the corridor are Route 11 (connecting SDSU, Mid-City, Downtown, and Southeast San Diego), Route 30 (connecting University City, UC San Diego, Old Town, and Downtown), and Route 13 (connecting Grantville, Mid-City, Southeast San Diego, and National City).

Table 2.11: Average Weekday Transit Boardings by Route (Existing)

Route	Mode	Average Weekday Boardings (2010)
530	Green Line LRT	18,584
1	Local Bus	4,952
6	Local Bus	1,788
8	Local Bus	1,762
9	Local Bus	1,434
10	Local Bus	4,268
11	Local Bus	8,166
13	Local Bus	6,100
14	Local Bus	226
15	Local Bus	4,960
18	Local Bus	210
30	Local Bus	6,347
35	Local Bus	1,612
88	Local Bus	310
928	Local Bus	1,211
20	Express Bus	3,681
120	Express Bus	3,400
150	Express Bus	2,059

Source: San Diego MTS

Transit System Constraints and Operational Issues

Existing transit trips account for 11 percent of work trips and 3 percent of all trips in the corridor (Table 2.7). The Green Line LRT has moderately strong ridership and is a central piece of the existing and planned LRT network, serving three transit centers in the study area and providing connections to numerous bus lines and other regional transit services. However, despite the region's considerable and growing investment in transit in the corridor, several factors continue to inhibit viability of transit in the I-8 study corridor.

Less Transit Supportive Land Use and Development Patterns

Large portions of the corridor feature auto-oriented, suburban-style development patterns; conditions that tend to inhibit the competitiveness of both rail and bus transit compared to automobile travel. Low-density design features such as multi-lane arterial roads and large surface parking lots create wide distances between the corridor's transit stations and many of its activity centers, making many destinations reachable to transit riders only if they are willing to walk or bike

Capacity Constraints

Many transit stations and infrastructure in the corridor are nearing their maximum capacities for transit vehicles, which greatly limits the ability to expand transit service. Finding space at corridor transit centers to increase bus connections is the largest concern, but capacity issues also extend to the Green Line.

Examples include:

- ***Old Town Transit Center and SDSU Transit Center Bus Services:*** Both of these busy transit centers are nearly at capacity for bus operations, with very little space remaining to add more routes or even increase frequencies on existing routes. With both population and transit use on the rise, it will be increasingly important to find new ways to increase bus services at these transit centers and deal with growing capacity problems elsewhere.
- ***Green Line LRT Express Service:*** The Green Line LRT would require a third track, at a minimum, with four tracks being preferred by MTS to support express service, which is not an immediate need, but may become more important as the corridor's population and transit ridership continue to grow. Physical constraints in certain parts of the rail alignment are likely to limit the ability to build a continuous third and fourth track throughout the corridor. The implementation of express service along the Green Line would also require modifications to each of the LRT stations in order to support additional tracks, including new trackwork, station platform modifications and, in some cases, additional station bypass infrastructure. Additional trackwork and/or infrastructure would likely require expansion of the LRT right-of-way both within, and in close proximity to, each station area, which could be limited by physical constraints as well.

2.3.2 Active Transportation Network

The corridor's bicycle and pedestrian facilities vary in quality and connectivity, with some areas fairly well developed (e.g., SDSU) and other areas hampered by poor connections and lower-density land uses (e.g., shopping centers in Mission Valley).

Active Transportation Deficiencies

Beyond being vital infrastructure for bicycle and pedestrian trips, active transportation facilities are also important access points to public transportation, as the vast majority of transit riders begin and end their travel with some form of active transportation. Bicycle and pedestrian deficiencies therefore not only discourage cyclists and walkers, but also can degrade the quality and reliability of transit service. As such, this high-level analysis has focused on the areas surrounding the corridor's major activity centers in addition to its transit access points.

Figures A-1 through A-6, located in Appendix A-4, show active transportation deficiencies at six key corridor locations, including the corridor's three transit centers. The majority of the bicycle and pedestrian challenges in the corridor can be sorted into the following general categories:

Table 2-13: Existing Roadway Segment Conditions

Roadway	1st Cross Street	2nd Cross Street	Classification	LOS E Capacity	Existing Conditions ADT Count	V/C	LOS
College Avenue	Del Cerro Blvd	I-8	4-Lane Major	40,000	37,900	0.95	E
	I-8	Alvarado Rd	4-Lane Major	40,000	28,500	0.71	C
	Alvarado Rd	Montezuma Rd	4-Lane Major	40,000	28,500	0.71	C
Montezuma Road	Fairmount Ave	Collwood Blvd	4-Lane Major	40,000	49,300	1.23	F
	Collwood Blvd	54th St	4-Lane Major	40,000	28,600	0.72	C
	54th St	55th St	4-Lane Major	40,000	28,600	0.72	C
	55th St	Campanile Dr	4-Lane Collector	30,000	27,600	0.92	E
	Campanile Dr	College Ave	4-Lane Collector	30,000	20,500	0.68	D
Fairmount Avenue	Mission Gorge Rd	I-8	4-Lane Major	40,000	47,700	1.19	F
	I-8	Camino del Rio South	6-Lane Primary	60,000	66,000	1.10	F
	Camino del Rio South	Montezuma Rd	6-Lane Primary	60,000	66,000	1.10	F
Mission Gorge Road	Fairmount Ave	Twain Ave	4-Lane Collector	30,000	25,000	0.83	D
	Twain Ave	Friars Rd	4-Lane Collector	30,000	42,600	1.42	F
Friars Road	Napa St	Via Las Cumbres	4-Lane Major	40,000	23,800	0.60	C
	Via Las Cumbres	Fashion Valley Rd	4-Lane Major	40,000	23,800	0.60	C
	Fashion Valley Rd	Avenida de las Tiendas	5-Lane Primary	50,000	56,500	1.13	F
	Avenida de las Tiendas	Ulric St	6-Lane Primary	60,000	56,500	0.94	E
	Ulric St	SR 163	6-Lane Primary	60,000	33,300	0.56	B
	SR 163	Frazee Rd	6-Lane Primary	60,000	41,200	0.69	C
	Frazee Rd	Mission Center Rd	6-Lane Expressway	80,000	41,200	0.52	B
	Mission Center Rd	Qualcomm Way	6-Lane Expressway	80,000	39,900	0.50	B
	Qualcomm Way	Rio Bonito Wy/I-805	6-Lane Expressway	80,000	37,700	0.47	B
	Rio Bonito Wy/I-805	River Run Dr	6-Lane Expressway	80,000	38,700	0.48	B
	River Run Dr	Northside Dr	6-Lane Primary	60,000	38,700	0.65	C
	Northside Dr	Mission Village Dr	6-Lane Expressway	80,000	38,700	0.48	B
	Mission Village Dr	I-15	6-Lane Expressway	80,000	41,800	0.52	B

As shown in Table 2-13, a total of 16 roadway segments currently operate at substandard LOS. In general, roadways within the study area tend to operate at substandard LOS near activity centers such as SDSU, SeaWorld, and Fashion Valley Mall, as well as near heavily utilized freeway-arterial interchanges, such as along Fairmount Avenue near I-8. These areas also correlate with many of the study's identified freight clusters and represent impacts for truckload deliveries.

Intersection Volumes/LOS (AM/PM Peak Hour)

Existing conditions at signalized and un-signalized intersections were analyzed at key locations throughout the study corridor, in particular at locations at and adjacent to critical interchanges along I-8 and SR 163. Intersection capacity analysis was done using thresholds and methodologies defined in the City of San Diego's Traffic Impact Study Manual and the 2000 HCM.

LOS for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and loss of travel time. Specifically, LOS criteria are stated in terms of the average control delay per vehicle for the peak 15-minute period within the hour analyzed. The average control delay includes initial deceleration delay, queue move-up time and final acceleration time in addition to the stop delay. The LOS for un-signalized intersections is determined by the computed or measured control delay and is defined for each minor movement. At an all-way stop controlled intersection, the delay reported is the average control delay of the intersection. At a one- or two-way stop controlled intersection, the delay reported represents the worst movement, which are typically the left-turns from the minor street approach. Within the City of San Diego, for all signalized and un-signalized intersections, LOS D or better is considered acceptable LOS (except for Centre City/Downtown, where LOS E or better is considered acceptable LOS).

Existing intersection conditions are summarized below in Table 2-14.

Table 2-14: Existing Intersection Level of Service

	INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	EXISTING DELAY (a)	EXISTING LOS (b)
1	College Avenue @ I-8 WB Ramps	Signal	AM	8.0	A
			PM	9.5	A
2	College Avenue @ I-8 EB Ramps	Signal	AM	23.2	C
			PM	21.7	C
3	College Avenue @ Alvarado Road	Signal	AM	22.5	C
			PM	44.1	D
4	Fairmount Avenue @ Mission Gorge Road	Signal	AM	17.3	B
			PM	20.3	C
5	Fairmount Avenue @ Camino Del Rio N	Signal	AM	35.9	D
			PM	76.6	E
6	Fairmount Avenue @ I-8 EB Off Ramp	Signal	AM	31.0	C
			PM	50.8	D
7	Qualcomm Way @ Camino De La Reina	Signal	AM	18.3	B
			PM	31.9	C
8	Qualcomm Way @ Camino Del Rio N	Signal	AM	19.1	B
			PM	29.2	C

Table 2-17: Corridor Population and Employment

	Existing (2008)	2035 Amount	2035 % Increase from 2008	2050 Amount	2050 % Increase from 2008
Population					
Corridor Study Area	190,000	294,000	55%	349,000	84%
Region	3,132,000	4,026,000	29%	4,385,000	40%
% within Corridor Study Area	6%	7%		8%	
Employment					
Corridor Study Area	151,000	173,000	15%	184,000	22%
Region	1,501,000	1,813,000	21%	2,000,300	33%
% within Corridor Study Area	10%	10%		9%	

Source: SANDAG Series 12 Forecast; these numbers are subject to change based upon further studies and/or analysis.

As shown, by 2050, population levels within the study corridor will increase by approximately 159,000 (84%) over existing levels. Employment levels within the corridor are forecast to increase by a significantly lesser percent than population, increasing by approximately 33,000 or 22 percent. The I-8 corridor's proportion of regional population and employment will stay fairly constant between existing and future year 2035 and 2050 conditions. When compared to employment growth, the higher level of population growth is a good indication of a higher rate of potential increased trip activity for trips occurring completely within the study area and trips originating within the study area as depicted in Table 2-10.

2.4.2.2 Land Use

Table 2-18 provides a summary of the projected growth in study corridor land uses by type for the years 2035 and 2050. As shown, the number of residential units is projected to increase by 48 percent and 85 percent by the forecast years of 2035 and 2050, respectively. Commercial land uses will show a similar and slightly greater proportional increase over the study timeframe. The extent of office related land uses in the study corridor are forecast to decrease slightly, with a more significant decrease forecast for industrial/business park land uses (approximately 60%) by both 2035 and 2050.

While the SANDAG Series 12 Forecast was utilized for the land use assessment for future network operations and performance, land use overrides were developed for specific redevelopment areas within the study including Midway, the Riverwalk Golf Course, Quarry Falls, Qualcomm Stadium and Grantville. These overrides were developed by incorporating the most current site-specific detailed information from the City of San Diego for consistent future planning assumptions, and were identical to the land use inputs provided for the development of the most recent Regional Growth Forecast (Series 13). Appendix A.9 provides comparative trip generation and land use by zone tables illustrating where overrides occurred.

Table 2-18: Summary of Corridor Land Use – 2008 to 2050

Land Use	Units	Existing (2008) Units	2035 Total Units	% Change from 2008	2050 Total Units	% Change from 2008
Residential	du	86,861	128,860	48%	160,898	85%
Commercial/Retail	acre	1,001	1,639	64%	1,841	84%
Office	acre	455	414	-9%	525	15%
Industrial/Business Park	acre	505	205	-59%	225	-56%
Public Facilities or Utilities	acre	4,959	4,843	-2%	5,746	16%
Parks, Recreation, and Tourism	acre	945	952	1%	1,274	35%
Vacant/Inactive	acre	2,616	2,478	-5%	2,989	14%

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

2.4.2.3 Travel Characteristics

Corridor Trip Making

Table 2-19 summarizes the projected growth in person trips for the study corridor. As shown, in 2035 approximately 3.05 million person trips will occur in the I-8 Corridor on a daily basis, representing an increase of 45.8 percent over existing levels. By the year 2050, approximately 3.2 million person trips will take place in the study corridor. Approximately 9.0 percent of the daily person trips will be work related, declining from 11 percent in 2008.

Table 2-19: Daily Person-Trips – I-8 Corridor

Purpose	Existing (2008)	2035 Amount	2035 % Change from 2008	2050 Amount	2050 % Change from 2008
Work	232,710	273,770	17.6%	291,460	25.2%
Non-Work	1,856,890	2,772,430	49.3%	2,917,840	57.1%
Total	2,089,600	3,046,200	45.8%	3,209,300	53.6%

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

Mode Share

Table 2-20 and Table 2-21 display the projected mode choice for the 2035 and 2050 No-Build conditions.

Table 2-20: Projected Mode Share – 2035 No-Build

Travel Mode	2035 No-Build Work Person Trips[1]	Work Mode Share	Non-Work Person Trips[1]	Non-Work Mode Share	Total Person Trips	Total Mode Share
Drove Alone	198,366	72%	1,392,701	50%	1,591,067	52%
Carpool	26,242	10%	1,237,755	45%	1,263,997	41%
Transit (includes school bus)	38,668	14%	51,924	2%	90,592	3%
Active (bike/ped)[2]	10,490	4%	90,045	3%	100,535	3%
Totals	**273,766**		**2,772,425**		**3,046,191**	

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

Table 2-21: Projected Mode Share – 2050 No-Build

Travel Mode	2050 No-Build Work Person Trips[1]	Work Mode Share	Non-Work Person Trips[1]	Non-Work Mode Share	Total Person Trips	Total Mode Share
Drove Alone	207,605	71%	1,463,240	50%	1,670,845	52%
Carpool	27,373	9%	1,305,417	45%	1,332,790	42%
Transit (includes school bus)	44,988	15%	52,340	2%	97,328	3%
Active (bike/ped)	11,484	4%	96,841	3%	108,325	3%
Totals	**291,460**		**2,917,838**		**3,209,298**	

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

Compared with existing conditions, the percent of trips by mode is not projected to change significantly under either of the future year 2035 or 2050 no-build scenarios, with the only exception being transit work-based trips. As shown, the percent of trips projected to drive alone in both 2035 and 2050 is 52 percent, with a substantially higher percent (71-72%) of work trips also projected to drive alone. Under the future year no-build scenarios, a relatively small proportion of corridor work trips are projected to carpool (9-10%), with over 40 percent of total trips projected as carpool trips.

[2] It should be noted that the SANDAG Series 12 Forecast does not assign a trip table to the active transportation network (bike/ped). In addition, the mode share in the model for active transportation is strictly associated with the Travel Behavior Survey, most recently updated as of 2006.

Under future year 2035 and 2050 no-build scenarios, approximately 14 to 15 percent of work trips are projected to utilize transit, with 3.0 percent of total corridor trips using transit. The work trip increase reflects a 28 to 36 percent increase in transit mode during this period.

Corridor Vehicle Miles of Travel (VMT)

Table 2-22 displays the growth in corridor VMT for the future year 2035 and 2050 no-build scenarios. As shown, corridor daily VMT will increase from an existing 7.2 million, to 8.9 million in 2035 (a 23% increase), and to 9.7 million by 2050 (a 35% increase). The majority of the VMT (69-70%) will continue to occur on the corridor's freeway system with approximately 20 percent projected to occur on arterial roadways. Compared with existing conditions, the distribution of VMT by roadway type is not projected to change significantly under either of the future year no-build scenarios. Marginal shifts for arterials and collector/local roads do display higher traffic demand.

On the commercial vehicle side, there is a similar breakdown of commercial vehicle trips versus total vehicle trips as explained in sections 2.2.3 and 2.3.3.

Table 2-22: Daily Vehicle Miles of Travel (VMT) by Facility Type – I-8 Corridor

Facility Type	Existing (2008) VMT	Existing (2008) % of Study Area VMT	2035 VMT	2035 % of Study Area VMT	2035 VMT % Change from 2008	2050 VMT	2050 % of Study Area VMT	2050 VMT % Change from 2008
Freeways	5,291,715	73.2%	6,227,623	70.1%	18%	6,768,454	69.6%	28%
Arterials	1,382,018	19.1%	1,922,570	21.6%	39%	2,145,427	22.1%	55%
Collectors/Locals	556,841	7.7%	731,724	8.2%	31%	814,887	8.4%	46%
Total	**7,230,574**	**100%**	**8,881,967**	**100%**	**23%**	**9,728,768**	**100%**	**35%**

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

2.4.3 Future Year Transit System Performance

The following section describes the transit system utilization within the I-8 study corridor for the 2050 No-Build scenario.

2.4.3.1 Transit System Ridership and Mode Share

Table 2-23 shows the average weekday transit boardings by route for the 2050 No-Build forecast. As with the existing conditions, the Green Line LRT boasts the strongest ridership by far, with over 45,000 riders each day in 2050. The most popular bus lines in the corridor are Route 11 (connecting SDSU, Mid-City, Downtown, and Southeast San Diego), Route 30 (connecting University City, UC San Diego, Old Town, and Downtown), and Route 13 (connecting Grantville, Mid-City, Southeast San Diego, and National City).

Table 2-23: Average Weekday Transit Boardings by Route (2050 No-Build)

Route	Mode	Average Weekday Boardings (2050 No-Build)
530	Green Line LRT	45,098
1	Local Bus	8,404
6	Local Bus	6,726
8	Local Bus	3,844
9	Local Bus	5,221
10	Local Bus	5,361
	BRT	15,715
11	Local Bus	7,985
	BRT	7,639
13	Local Bus	8,316
14	Local Bus	6,282
15	Local Bus	3,864
18	Local Bus	414
30	Local Bus	9,709
35	Local Bus	5,898
88	Local Bus	423
928	Local Bus	1,929
20	Express Bus	1,346
120	Express Bus	7,160
150	Express Bus	-

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

As shown previously in Table 2.18 and Table 2.21, trip-making in the corridor is projected to grow by 54 percent between the existing (2008) and 2050 No-Build scenarios, while corridor VMT is projected to grow by 35 percent. Some of this difference is the result of increased transit use in the corridor. Table 2-20 shows that, between 2008 and 2050 No-Build, the share of work trips taken via transit is projected to rise from 11 percent to 15 percent. However, as a share of all trips, transit use is projected to remain at 3 percent. While the work-trip increase would constitute a notable gain for transit, ultimately it would do little to alter the overwhelming dominance of the private automobile in the I-8 corridor. This information does suggest that there is possibly latent demand based upon the issues raised in the transit section with regard to first and last mile, safe routes to transit, and other transit reliability operational issues.

2.4.3.2 Transit System Constraints and Operational Issues

The 2050 No-Build scenario generally poses the same set of transit constraints and operational problems as outlined in Section 2.1.4.1 for existing conditions:

- Low transit supportive land use and development patterns
- Traffic congestion on bus routes
- Lack of supporting infrastructure to access transit
- Capacity constraints

In the absence of improvements, growth in the corridor will compound travel demand and congestion will increase for all modes. While increased traffic congestion would likely incentivize more travelers to choose transit—especially the Green Line LRT—this effect will be counteracted by the negative impacts of that congestion on local bus operations.

Capacity constraints will become particularly severe under the 2050 No-Build scenario. While Green Line LRT ridership is expected to increase steadily, future-year LRT service levels under both the 2050 No-Build scenario are expected to remain the same. As a result, passenger load volumes could potentially exceed LRT vehicle load capacities. Future-year load capacity summaries for the Green Line LRT are included in Table 2-24 below.

Table 2-24: LRT Load Capacity Summary – Seated Capacity

Route	Direction	Trains per Hour	Cars per Train	Load Capacity[1,2]	Max Peak Hour Load[3]	Station
530 (Green Line LRT)	**Seated Capacity**					
	Westbound	4	3	720	1,197	Mission San Diego
	Eastbound	4	3	720	1,443	Morena-Linda Vista
	Commute Capacity					
	Westbound	4	3	1,344	1,197	Mission San Diego
	Eastbound	4	3	1,344	1,443	Morena-Linda Vista

[1] *Seated capacity based on capacity of 60 passengers per vehicle, per Siemens S70 low floor vehicle specifications.*
[2] *Commute capacity based on a vehicle load capacity of 112 passengers per vehicle. The capacity was derived by applying a "commute factor" to the seated capacity of 60 passengers. The commute factor is the ratio of commute to seated capacities for the Siemens S70 low floor vehicle.*
[3] *Maximum peak hour load is equal to 25 percent of the peak period thru trips, which were taken from the SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.*

As shown, peak-hour ridership along the Green Line is projected to exceed seated capacity in the eastbound direction at the Morena/Linda Vista station, and in the westbound direction at the Mission San Diego station under the future year 2050 No-Build scenario. The Mission San Diego

Table 2-25: Future Daily Volumes

I-8 Freeway Section	2008 ADT			2050 ADT			Growth (2008-2050)		
	EB	WB	Total	EB	WB	Total	EB	WB	Total
Sports Arena Bo to I-5	51,616	50,003	101,619	70,168	61,522	131,690	36%	23%	30%
I-5 to SR 163	102,713	108,999	211,712	132,976	136,837	269,813	29%	26%	27%
SR 163 to I-805	111,871	122,732	234,603	142,142	154,078	296,220	27%	26%	26%
I-805 to I-15	131,666	131,040	262,705	139,294	147,902	287,196	6%	13%	9%
I-15 to Fairmount Ave	120,000	117,626	237,625	133,939	127,427	261,366	12%	8%	10%
Fairmount Avenue to College Avenue	116,734	119,394	236,128	124,264	122,043	246,307	6%	2%	4%
College Ave to 70th Street	111,341	108,865	220,205	119,707	123,276	242,983	8%	13%	10%
East of 70th Street	105,887	98,124	204,011	114,445	105,929	220,374	8%	8%	8%

Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis.

As shown above, the growth in total daily volumes along the I-8 freeway between existing and 2050 No-Build ranges is between 4 percent and 30 percent. The growth in volumes tends to be greatest towards the western end of the I-8 freeway corridor, and becomes less so moving towards the east. The busiest segment in terms of total traffic volumes shifts west to the segment between SR 163 and I-805.

The 2050 No-Build freeway mainline segment conditions are summarized in Tables A-5 and A-6 in Appendix A-8.

Table 2-27: 2050 Roadway Segment Conditions[1]

Roadway	1st Cross Street	2nd Cross Street	Classification	LOS E Capacity	2050 No-Build		
					ADT	V/C	LOS
College Avenue	Del Cerro Boulevard	I-8	4-Lane Major	40,000	47,400	1.19	F
	I-8	Alvarado Road	4-Lane Major	40,000	39,000	0.98	E
	Alvarado Road	Montezuma Road	4-Lane Major	40,000	44,800	1.12	F
Montezuma Road	Fairmount Avenue	Collwood Boulevard	4-Lane Major	40,000	68,200	1.71	F
	Collwood Boulevard	54th Street	4-Lane Major	40,000	38,400	0.96	E
	54th Street	55th Street	4-Lane Major	40,000	38,800	0.97	E
	55th Street	Campanile Drive	4-Lane Collector	30,000	35,800	1.19	F
	Campanile Drive	College Avenue	4-Lane Collector	30,000	26,500	0.88	E
Fairmount Avenue	Mission Gorge Road	I-8	4-Lane Collector	30,000	76,500	2.55	F
	I-8	Camino del Rio South	6-Lane Primary	60,000	98,200	1.64	F
	Camino del Rio South	Montezuma Road	6-Lane Primary	60,000	93,900	1.57	F
Mission Gorge Road	Fairmount Avenue	Twain Avenue	4-Lane Collector	30,000	33,100	1.10	F
	Twain Avenue	Friars Road	4-Lane Collector	30,000	55,900	1.86	F
Friars Road	Napa Street	Via Las Cumbres	4-Lane Major	40,000	56,200	1.41	F
	Via Las Cumbres	Fashion Valley Road	4-Lane Major	40,000	40,000	1.00	E
	Fashion Valley Road	Avenida de las Tiendas	5-Lane Primary	50,000	107,700	2.15	F
	Avenida de las Tiendas	Ulric Street	6-Lane Primary	60,000	103,800	1.73	F
	Ulric Street	SR 163	6-Lane Primary	60,000	46,500	0.78	C
	SR 163	Frazee Road	6-Lane Primary	60,000	45,900	0.77	C
	Frazee Road	Mission Center Road	6-Lane Expressway	80,000	60,200	0.75	D
	Mission Center Road	Qualcomm Way	6-Lane Expressway	80,000	55,900	0.70	C
	Qualcomm Way	Rio Bonito Way/I-805	6-Lane Expressway	80,000	60,700	0.76	D
	Rio Bonito Way/I-805	River Run Drive	6-Lane Expressway	80,000	57,000	0.71	C
	River Run Drive	Northside Drive	6-Lane Primary	60,000	59,100	0.99	E

[1] *Source: SANDAG Series 12 Forecast, these numbers are subject to change based upon further studies and/or analysis*

As shown, a total of 30 roadway segments are projected to operate at substandard LOS in the 2050 No-Build scenario, which is 14 more than under existing conditions.

2.4.5.2 Intersection Volumes/LOS (AM/PM Peak Hour)

To generate future year peak-hour volumes from existing volumes, an initial comparison of 2008, 2035, and 2050 SANDAG Series 12 traffic forecast models was performed. To estimate the future year turning movement volumes at the study intersections, the existing turning movements at each respective study intersection were factored up based on the projected ADT volumes along each segment. Each respective movement was derived using an iterative approach that balances the inflows and outflows for each approach. The input values include the existing turning movement volumes and future year peak-hour approach and departure volumes along each leg of the intersection. The future peak-hour approach volumes were estimated by applying the existing peak-hour factor (K-factor) and directional distributional percentage (D-factor) to the future ADT volumes along each approach. A more detailed description of the methodology used to forecast turning movement volumes is contained in National Cooperative Highway Research Program (NCHRP) 255: Highway Traffic Data for Urbanized Area Project Planning and Design, Chapter 8. An Excel model computes the forecast turning volumes from existing turning movement volumes and forecasted approach and departure volumes by the techniques described in NCHRP 255.

Table 2-28 shows the projected intersection LOS for the 2050 No-Build condition.

Table 2-28: 2050 No-Build Intersection Level of Service

	INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	2050 No-Build DELAY (a)	LOS (b)
1	College Avenue @ I-8 Westbound Ramps	Signal	AM	11.8	B
			PM	21.9	C
2	College Avenue @ I-8 Eastbound Ramps	Signal	AM	86.9	F
			PM	30.8	C
3	College Avenue @ Alvarado Road	Signal	AM	34.3	C
			PM	140.9	F
4	Fairmount Avenue @ Mission Gorge Road	Signal	AM	23.0	C
			PM	82.9	F
5	Fairmount Avenue @ Camino Del Rio North	Signal	AM	ECL	F
			PM	ECL	F
6	Fairmount Avenue @ I-8 Eastbound Off Ramp	Signal	AM	121.1	F
			PM	ECL	F
7	Qualcomm Way @ Camino De La Reina	Signal	AM	20.3	C
			PM	38.4	D
8	Qualcomm Way @ Camino Del Rio North	Signal	AM	26.4	C
			PM	81.5	F
9	Qualcomm Way @ I-8 Ramps	Signal	AM	8.1	A
			PM	14.8	B
10	Texas Street @ Camino Del Rio South	Signal	AM	107.0	F
			PM	155.1	F
11	Mission Center Road @ Friars Rd Westbound	Signal	AM	14.1	B
			PM	27.9	C
12	Mission Center Road @ Friars Rd Eastbound	Signal	AM	14.8	B
			PM	25.1	C

Table 3-3: Projected 2050 ModeShare by Trip Type, I-8 Corridor

	2050 I-8 Corridor No-Build						2050 – Alternative A						2050 – Alternative B					
	Work		Non-Work		Total		Work		Non-Work		Total		Work		Non-Work		Total	
Travel Mode	Person Trips¹	Mode Share	Person Trips¹	Mode Share	Person Trips¹	Mode Share	Person Trips¹	Mode Share	Person Trips¹	Mode Share	Person Trips¹	Mode Share	Person Trips¹	Mode Share	Person Trips¹	Mode Share	Person Trips¹	Mode Share
Drove Alone	207,605	71%	1,463,240	50%	1,670,845	52%	206,922	71%	1,462,535	50%	1,669,457	52%	207,559	71%	1,462,091	50%	1,669,650	52%
Carpool	27,373	9%	1,305,417	45%	1,332,790	42%	27,273	9%	1,304,509	45%	1,331,782	42%	27,462	9%	1,304,374	45%	1,331,836	42%
Transit (includes school bus)	44,998	15%	52,340	2%	97,338	3%	45,623	16%	52,654	2%	98,277	3%	44,792	15%	52,310	2%	97,102	3%
Active (bike/ped)	11,484	4%	96,841	3%	108,325	3%	11,441	4%	96,481	3%	107,922	3%	11,412	4%	96,455	3%	107,867	3%
Totals	291,460		2,917,838		3,209,298		291,259		2,916,179		3,207,438		291,225		2,916,230		3,206,455	

Source: SANDAG Series 12 Regional Transportation Model, these numbers are subject to change based upon further studies and/or analysis.

3.3.1.3 Vehicle Miles Traveled

Vehicle miles traveled (VMT) is the total distance traveled by all vehicles in a given area, over a given period of time. Table 3-4 provides a summary of corridor daily VMT by roadway facility type for Alternatives A and B, as well as the No-Build under future year 2050 conditions.

As shown, nearly 70 percent of daily VMT occurs along freeways within the study area for both the No-Build and each of the alternatives. This is slightly lower than the 75 percent that occurs along freeways within the study area under existing conditions. In general, compared to the No-Build alternative, there is a slight increase in VMT on the arterial roadways under both Alternatives A and B, with the more significant increase on Alternative B with the associated higher level of roadway investment under this alternative.

Table 3-4: Projected 2050 Daily VMT, I-8 Corridor

	2050 I-8 Corridor No-Build			2050 – Alternative A			2050 – Alternative B-1		
Facility Type	VMT	% of Study Area VMT	VMT % Change from 2008	VMT	% of Study Area VMT	VMT % Change from No-Build	VMT	% of Study Area VMT	VMT % Change from No-Build
Freeways	6,073,772	67.9%	14.8%	6,052,029	68.0%	-0.4%	6,102,599	67.5%	0.5%
Arterials	2,072,980	23.2%	58.0%	2,083,216	23.4%	0.5%	2,148,170	23.8%	3.6%
Collectors/Locals	798,048	8.9%	43.3%	768,529	8.6%	-3.7%	785,271	8.7%	1.6%
Total for Study Area	**8,944,800**	**100%**	23.7%	**8,903,774**	**100%**	23.1%	**9,035,041**	**100%**	25.0%

Source: SANDAG Series 12 Regional Transportation Model, these numbers are subject to change based upon further studies and/or analysis.

3.3.2 Transit Operations

This section describes the performance of the corridor transit system under the improvement alternatives, using the No-Build conditions as a baseline for evaluation. This is followed by a discussion of constraints and additional opportunities to realize transit benefits in the I-8 study corridor.

3.3.2.1 Transit Ridership and Mode Share

Table 3-5 shows the average weekday transit boardings by key study corridor transit route for 2050 under each improvement alternative.

3.3.2.1.1 Alternative A: Green Line Frequency Increase

Increasing the frequency of the Green Line LRT showed the best improvements in ridership in 2050, with Alternative A yielding a 6 percent increase in daily transit riders over the No-Build scenario among studied routes. The Green Line's ridership accounted for nearly all of this increase; an impressive 25 percent boost, or an additional 11,000 daily riders.

Table 3-5: Projected 2050 Transit Ridership[8]

Line	Description	Mode	2050 No-Build	Improvement Alternatives (with % change from 2050 No-Build) 2050 Alt A		2050 Alt #1		2050 Alt #2	
530	San Diego Trolley Green Line (Downtown-Santee)	LRT	45,059	56,480	[illegible]	45,179	0%	43,950	[illegible]
560	San Diego Trolley Brown Line (Downtown-SDSU)	LRT	31,085	30,621	-2%	31,081	0%	30,980	-1%
170	I-8 Express Bus	Express Bus	—	—	—	68	—	—	—
630	Friars Rd BRT/Rapid Bus	BRT	—	—	—	—	—	5,003	—
1	Hillcrest-Grossmont TC via El Cajon Bl	Local Bus	8,404	8,398	0%	8,395	0%	8,412	0%
6	Fashion Valley-North Park via Mission Valley	Local Bus	6,726	6,358	-5%	6,783	+1%	6,582	-2%
8	Old Town-Pacific Beach via Mission Beach	Local Bus	3,844	3,830	0%	3,730	-3%	3,306	-14%
9	Old Town-Pacific Beach via SeaWorld/Ingraham	Local Bus	5,221	5,459	+5%	5,399	+3%	4,578	-12%
10	Old Town-University and College via University Av	Local Bus	5,361	5,395	+1%	5,356	0%	5,346	0%
		BRT	15,715	15,660	0%	15,711	0%	15,461	-2%
11	SDSU-Skyline Hills via Adams/Downtown/Imperial	Local Bus	7,995	8,025	0%	7,977	0%	7,981	0%
		BRT	7,619	7,644	0%	7,609	0%	7,588	-1%
13	24th St Trolley-Kaiser Hospital via Euclid/Grantville	Local Bus	8,316	8,302	0%	8,224	-1%	8,188	-2%
14	Grantville-Lake Murray Bl via Kaiser Hospital/SDSU	Local Bus	6,282	6,306	0%	6,223	-1%	5,704	-9%
44	SDSU-Downtown Limited Stops via El Cajon Bl	Local Bus	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	Grantville-Camino del Rio	Local Bus	414	256	-38%	413	0%	408	-1%
30	Downtown-UTC/VAMC via Old Town/PB/La Jolla	BRT	9,760	9,692	0%	9,641	-1%	9,428	-3%
35	Old Town-Ocean Beach via Midway/Cable	Local Bus	5,898	5,915	0%	5,963	+1%	5,976	+1%
88	Old Town-Fashion Valley via Hotel Circle	Local Bus	423	471	+11%	499	+18%	483	+14%
928	Fashion Valley-Kearny Mesa via Serra Mesa	Local Bus	1,929	1,917	-1%	1,959	+2%	1,796	-7%
20	Downtown-Del Lago Station via Fashion Valley	Express Bus	1,346	1,404	+4%	1,378	+2%	1,541	+14%
120	Downtown-Kearny Mesa TC (via Fashion Valley)	BRT	7,160	7,238	+1%	7,120	-1%	7,441	+4%
Study Routes Unlinked Boardings			**182,529**	**193,207**	+5.85%	**182,553**	+0.01%	**183,994**	+0.80%
Transit System Unlinked Boardings			**866,571**	**870,816**	+0.49%	**865,510**	-0.12%	**865,031**	-0.18%
Transit System Linked Trips			**399,723**	**400,788**	+0.27%	**399,181**	-0.14%	**399,617**	-0.03%

[8] Source: SANDAG Series 12 Regional Transportation Model, these numbers are subject to change based upon further studies and/or analysis.

Table 3-9: Projected 2050 Roadway Segment Conditions*

Roadway	1st Cross Street	2nd Cross Street	Existing Classification: Class	Existing Classification: LOS E Capacity	2050 No-Build: ADT	2050 No-Build: V/C	2050 No-Build: LOS	2050 Alt A: LOS E Cap	2050 Alt A: AVOL	2050 Alt A: V/C	2050 Alt A: LOS	2050 Alt A: ADT Delta	2050 Alt B: LOS E Cap	2050 Alt B: AVD	2050 Alt B: V/C	2050 Alt B: LOS	2050 Alt B: ADT Delta
College Ave	Del Cerro Boulevard	I-8	4-Lane Major	40000	47400	1.19	F	40000	45900	1.15	F	-1500	40000	4700#	1.18	F	-400
	I-8	Alvarado Rd	4-Lane Major	40000	39000	0.98	E	60000	40800	0.68	C	1800	60000	3550#	0.59	C	-3500
	Alvarado Rd	Montezuma Road	4-Lane Major	40000	44800	1.12	F	60000	47100	0.79	C	2300	60000	5280#	0.88	D	8000
Montezuma Rd	Fairmount Avenue	Collwood Blvd	4-Lane Major	40000	68200	1.71	F	40000	67600	1.69	F	-600	40000	6500#	1.63	F	-3200
	Collwood Blvd	54th St	4-Lane Major	40000	38400	0.96	E	40000	37900	0.95	E	-500	40000	3630#	0.91	E	-2100
	54th St	55th St	4-Lane Major	40000	38800	0.97	E	40000	38700	0.97	E	-100	40000	3640#	0.91	E	-2400
	55th St	Campanile Dr	4-Lane Major	40000	35800	0.90	E	40000	35700	0.89	E	-100	40000	3320#	0.83	D	-2600
	Campanile Dr	College Avenue	4-Lane Major	40000	26500	0.66	C	40000	26300	0.66	C	-200	40000	2490#	0.62	C	-1600
Fairmount Ave*	Mission Gorge Road	I-8	4-Lane Collector	30000	80000	2.67	F	60000	80000	1.33	F	0	60000	7610#	1.27	F	-3900
	I-8	Camino del Rio S	6-Lane Primary	60000	98200	1.64	F	60000	96500	1.61	F	-1700	60000	9330#	1.56	F	-4900
	Camino del Rio S	Montezuma Road	6-Lane Primary	60000	91900	1.57	F	60000	92800	1.55	F	-1100	60000	9730#	1.62	F	3400
Mission Gorge Rd	Fairmount Avenue	Twain Ave	4-Lane Collector	30000	40450	1.35	F	30000	43150	1.10	F	-7900	30000	3090#	1.03	F	-9500
	Twain Ave	Friars Road	4-Lane Collector	30000	56000	1.87	F	30000	56800	1.89	F	800	30000	5590#	1.86	F	-100
Friars Rd	Napa Street	Via Las Cumbres	4-Lane Major	40000	56200	1.41	F	40000	28300	0.71	C	-27900	40000	3210#	0.80	D	-24100
	Via Las Cumbres	Fashion Valley Rd	4-Lane Major	40000	40000	1.00	E	60000	34400	0.57	B	5600	60000	3790#	0.63	C	-2100
	Fashion Valley Rd	Avenida de las Tiendas	5-Lane Primary	50000	107700	2.15	F	50000	101500	2.02	F	-6200	50000	[illegible]	1.78	F	-18900
	Avenida de las Tiendas	Ulric St	6-Lane Primary	60000	103800	1.73	F	80000	96700	1.21	F	7100	80000	9080#	1.14	F	13000
	Ulric St	SR 163	6-Lane Primary	60000	46500	0.78	C	80000	45600	0.57	C	-900	80000	4260#	0.53	C	-3900

* Source: SANDAG Series 12 Regional Transportation Model, these numbers are subject to change based upon further studies and/or analysis. All lane collector roadway segments include center turn lanes (CTLs) unless otherwise indicated.

Table 3-18: College Avenue (Alternatives A and B – Pros/Cons)

Pros	Cons
Alternative A: "T-up" All Ramps	
+ "T-ing up" of ramps enhances bike/pedestrian safety + Widening of College from 4 to 6 lanes improves capacity and intersection performance	
Alternative B: "T-up" All Ramps; Construct Flyover On-Ramp to I-8 WB	
+ "T-ing up" of ramps enhances bike/ped safety + Widening of College from 4 to 6 lanes improves capacity and intersection performance + Flyover reduces NBR turn volumes at intersection of College/I-8 WB ramps, which improves conditions for bike/pedestrian traffic	- Flyover attracts higher volumes on College Ave south of Alvarado Rd (approx. 5000 increase from Alt A) - High construction costs, esp. flyover - Flyover introduces new merge point on I-8 WB close to the Waring Rd exit.

3.3.5 Preliminary Cost Estimates

This section contains rough-order of magnitude (ROM) cost estimates for the major transit and freeway and improvements planned under Alternatives A and B. While the future no build deficiency and alternatives evaluation relied upon the 2050 RTP/SCS Series 12 Growth Forecast, the Regional Plan cost information was used for comparative purposes in this section as it provided the most current cost information from the region's most recently adopted plan.

3.3.5.1 Transit Improvement Costs

Preliminary ROM transit costs can be divided into two categories: (1) the capital cost of building the physical infrastructure and purchase transit vehicles; and (2) the operations and maintenance (O&M) cost of running the transit service, including fuel, staffing and basic upkeep.

3.3.5.1.1 Capital Cost of New Routes

Table 3-19 shows the estimated capital cost of the new transit services planned in each improvement alternative.

San Diego State University Focus Area

- ***Montezuma Class-II Bike Lanes:*** Construct Class-II Bike Lanes on Montezuma Road where missing.
- ***SDSU Bicycle/Pedestrian Bridge at I-8:*** Construct a multimodal connection between SDSU and the neighborhood north of I-8 including an alternative for a pedestrian bridge over I-8 at the campus.
- ***Transit Station Access Improvements:*** Multimodal access improvements to the SDSU and Alvarado Trolley Stations

4.9 Cost Estimates

High-level, rough order-of-magnitude planning costs ranges were developed for each high priority project. Reflecting that this is a planning level cost estimate, low, medium, and high cost factors have been used. Additionally, substantial contingencies have been added to the cost estimate to reflect planning, design, and environmental clearance costs, construction management, and construction contingencies. If concepts move to design and engineering phases, more precise costs will need to be developed.

Where available, cost estimates provided in previous planning studies were used. Sources for high priority cost estimates include:

- **San Diego River Trail:** Interim and Operational Improvements Opportunities
- SANDAG Regional Bike Plan Early Action Plan (EAP)
- City of San Diego Bike Master Plan

Primarily, many of the pedestrian, bicycle, and traffic calming project elements were derived using per unit cost estimate factors from Fehr and Peers' work on Safe Routes to School Projects and the Fehr and Peers engineering team's cost estimating spreadsheets.

5.3.6 Strategies Specific to San Diego State University

SDSU recently developed a formal TDM Plan[25] that included a set of 14 travel demand strategies deemed feasible for implementation (Table 5-5). The need to promote and encourage transportation alternatives is high given planned campus growth/expansion along College Avenue. As a large employer in the eastern portion of the I-8 corridor, SDSU is encouraged to partner with SANDAG, the City of San Diego, and MTS to implement all recommended TDM strategies.

Table 5-5: List of TDM Strategies for San Diego State University

#	TDM Strategy	Description	Timeline
1	Preferential Parking	Implement preferential parking for carpools and vanpools	Upon Approval
2	Pre-Tax Benefit	Allow employees to pay for transit passes with pre-federal tax income	Upon Approval
3	Compass Cards	Work with SANDAG to provide Compass Cards to all faculty and staff	Upon Approval
4	Ridesharing	Enhance ridesharing programs and coordinate with existing regional programs	Upon Approval
5	Carsharing	Expand and diversify on-campus carsharing	Upon Approval
6	Bicycle and Pedestrian Network	Invest in enhancements to the bicycle and pedestrian network	Short-term (35,500 TSP[26])
7	TDM Outreach and Marketing	Improve TDM program outreach and marketing	Short-term (35,500 TSP)
8	TDM Staffing and Coordinator	Allocate additional staff time and hire a dedicated TDM coordinator to implement and manage TDM programs	Short-term (35,500 TSP)
9	Annual Monitoring and Evaluation	Implement annual monitoring and evaluation program	Short-term (35,500 TSP)
10	Subsidized Transit Passes	Provide subsidized transit passes to faculty and staff as is currently offered to students.	Long-term (36,500-40,000 TSP)
11	Red and Black Shuttle	Invest in enhancements to the Red and Black shuttle	Long-term (36,500-40,000 TSP)
12	Bicycle and Pedestrian Network "Plus"	Invest in additional enhancements to the bicycle and pedestrian network	Long-term (36,500-40,000 TSP)
13	SDSU GRH Program	Implement an SDSU-specific Guaranteed Ride Home Program	Long-term (36,500-40,000 TSP)
14	On- and Near-Campus Housing and Amenities	Prioritize investments in on-campus housing and amenities	Long-term (36,500-40,000 TSP)

[25] San Diego State University. Transportation Demand Management Program - Final Report. Nelson Nygaard. June 2013.
[26] TSP refers to the Total School Population, which is the total number of students, faculty, and staff attending or working on campus, and serves as the threshold for short-term or long-term implementation for several of these strategies.

- Since the development of the TDM plan, SDSU has already implemented some key TDM solutions:
    - Student (non-overnight) parking passes are no longer priced lower than a semester transit pass.
    - The number of reserved parking spots has been reduced.
    - A parking survey was conducted in April 2015 to better understand the parking and commute needs of faculty, students, and staff (over 3,000 responses were received).
- SDSU could consider going beyond just offering subsidized Compass Cards to developing a U-PASS program like the University of Washington whereby both student and employee U-PASS holders receive additional benefits that go beyond unlimited transit rides (e.g., carshare program discounts, emergency ride home, vanpool fare credits, discount priority carpool parking).
- TDM for special events at SDSU can be implemented similar to Valley View and Qualcomm Stadium events. The purchase of a parking permit at the time of event ticket purchase can assist with estimating demand while also helping to determine which parking structure event-goers may access. LA Live implements similar strategies for those events at Staples Center and surrounding developments.
- SDSU already offers a 13-stop fixed route (loop) Red and Black Shuttle service for students, staff, and faculty. A Library Shuttle also operates Sunday through Thursday from 10:40 p.m. to 2:30 a.m. during the fall and spring semesters. A more robust shuttle network that better links riders to campus-adjacent destinations could be evaluated. For example, UC San Diego offers a city shuttle option that connects nearby residential and retail locations to campus from morning until night to complement *SuperLoop* service. Additionally, expansion of the Red and Black Shuttle's operating hours beyond 5 to 10 p.m. could be explored.
- Existing carshare services could also be utilized for connecting students, staff, and faculty to nearby destinations. In conjunction with a U-PASS or similar program, carshare memberships could be discounted for transit pass holders.

Figure 7-22: College Avenue and I-8 Pedestrian-Bicycle Bridge at San Diego State University

APPENDIX

Uptown/North Park/Mid-City

Land use in Uptown, North Park, and Mid-City consists of medium- to high-density residential, featuring both single-family and multi-family homes, as well as many areas of mixed-use development. Several commercial corridors traverse the area, including El Cajon Boulevard, Adams Avenue, University Avenue, Washington Street, and 30th Street. With streets laid out in the traditional grid pattern, Uptown, North Park, and Mid-City are some of San Diego's densest urban neighborhoods. Key activity centers include Mission Hills Park, Pioneer Park, Scripps Mercy Hospital, and UC San Diego Medical Center.

Eastern Corridor:

College/Navajo

East of Mission Valley and Mid-City, the study area rises in elevation and begins to take on a more suburban style of development. This area includes the College Area community south of I-8, portions of the Navajo community north of I-8, and a small piece of the neighboring city of La Mesa at the study area's eastern tip. This subarea contains mostly residential land use and low- to medium-density development.

College Area

Land use in the College Area community consists mostly of the 280-acre San Diego State University (SDSU) campus, the Alvarado Hospital Medical Center (including several adjacent medical facilities), and surrounding residential areas. Small commercial districts also exist at the SDSU campus and along El Cajon Boulevard, featuring retail, office, and medical uses. Key activity centers include the SDSU campus, SDSU Transit Center, and Alvarado Hospital Medical Center.

Navajo/Grantville

Land use in the Navajo community is largely residential, with suburban-style, single-family homes occupying most of its footprint. At its western end, the community also contains the Grantville commercial and industrial district, located near Mission Gorge Road in the study area. Key activity centers include Grantville Neighborhood Park, Kaiser Foundation Hospital, Cowles Mountain, and Mission Trails Regional Park.

A-2: I-8 Corridor Study Freeway System Overview

Interstate 8

Interstate 8 (I-8) runs west-to-east from its western terminus in Ocean Beach to 70th Street within the study area, providing direct access to several major arterial roadways within Mission Valley, College Avenue, and nearly all of the activity centers within the study area. Beyond the study area, I-8 continues east to Arizona.

The initial segment of the freeway was constructed between 1947 and 1950 as part of the Alvarado Canyon Freeway, a bypass of the old U.S. 80 routing along El Cajon Boulevard and La Mesa Boulevard. In 1964, I-8 was officially designated by the California State Legislature, and the U.S. 80 designation was removed. Construction of the "Ocean Beach Freeway" section west of

Friars Road is classified as a four-lane Major Arterial from Napa Street to Fashion Valley Road, a five-lane Prime Arterial from Fashion Valley Road to Avenida De Las Tiendas, a six-lane Prime Arterial from Avenida De Las Tiendas to Frazee Road, a six-lane Expressway from Frazee Road to River Run Road, a six-lane Prime Arterial from River Run Road to Northside Drive, a six-lane Expressway from Northside Drive to the I-15 southbound ramps, a six-lane Prime Arterial from the I-15 southbound ramps to the I-15 northbound ramps, a seven-lane Prime Arterial from the Interstate 15 northbound ramps to Rancho Mission Road, and a six-lane Prime Arterial from Rancho Mission Road to Mission Gorge Road. The speed limit along Friars Road is 50 mph.

Between Fashion Valley Road and Frazee Road, Friars Road also serves as a major transit corridor, with several transit bus routes utilizing the roadway to provide connectivity to the surrounding communities and a number of key activity centers. Between Fashion Valley Road, the SR 163 southbound ramps, Qualcomm Way, and the I-15 southbound ramps, Friars Road facilitates truckload deliveries to big-box retailers including JC Penny, Macy's, Nordstrom, and Target near SR 163 and Costco, IKEA, and Lowes near I-15.

Mission Gorge Road

Within the study area, Mission Gorge traverses north-south from Fairmount Avenue to Friars Road. Mission Gorge Road is classified as a four-lane Collector within the study area. The speed limit along Mission Gorge Road is 30 mph.

Mission Gorge Road is served by MTS bus Route 13, which provides connectivity between the Grantville Community of San Diego to the north and the City of National City to the south. Truckload deliveries are provided within these limits to Home Depot, Kaiser Zion Hospital, and Honda and Toyota car dealerships.

College Avenue

Within the study area, College Avenue runs north-south from Del Cerro Boulevard to Montezuma Road. It is classified as a four-lane Major Arterial roadway from Del Cerro Boulevard to Montezuma Road. The speed limit along College Avenue is 35 mph.

Transit bus service along College Avenue includes MTS Routes 14 and 215 connecting the SDSU Transit Center with the Navajo, Del Cerro, and Grantville communities to the north and east of SDSU.

Montezuma Road

Within the study area, Montezuma Road runs east-west between Fairmount Avenue and College Avenue. It is classified as a four-lane Major Arterial roadway from Fairmount Avenue to 55th Street, and a four-lane Collector from 55th Street to College Avenue. The speed limit is 50 mph from Fairmount Avenue to Collwood Boulevard, 40 mph from Collwood Boulevard to 55th Street, and 35 mph from 55th Street to College Avenue.

Transit bus service along Montezuma Road includes MTS Route 11, connecting SDSU with Mid-City, Downtown, and East San Diego.

Figure A4-6: Active Transportation Deficiencies (SDSU)

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A-5: Freeway Design Deficiencies and Performance

Freeway Design Deficiencies

The majority of I-8 within the study area was designed and built in the 1950s and 1960s, before many of the current design guidelines were in place. There are several elements of the existing I-8 freeway system that, as a result of being deficient by today's standards, contribute to the inability to serve the current travel demand in an adequate manner.

The Highway Capacity Manual (HCM) establishes procedures to evaluate freeway facilities and their ability to process and serve traffic volumes. In this evaluation, a freeway is composed of various uniform segments broken down into three separate types; merge and diverge, weaving, and basic. Each segment is assigned a "level of service" (LOS) based on the freedom to maneuver within the traffic stream.

The review of the existing I-8 freeway also included a comparison with current freeway design standards, as outlined in the Caltrans Highway Design Manual (HDM), to identify potential problem areas. The HDM is a publication developed by Caltrans that provides design methods, policies and standards for highways, and other transportation facilities. The standards in the HDM generally conform to the standards and policies set forth in the American Association of State Highway and Transportation Officials publications, which are nationwide standards. The most current HDM is the sixth edition, published in 2012. Since the completion of the original I-8 freeway, the standards and policies in the HDM have been updated numerous times to conform to current nationwide standards. As such, standards established in the 1960's may not meet current standards.

Non-Standard Shoulder Widths

According to the HDM, the Caltrans standard for freeway shoulders is ten feet (three meters). Existing shoulder widths vary between two and ten feet (0.6-3.0m).

Non-Standard Interchange Spacing

According to the HDM (Section 501.3), the Caltrans standard for interchange spacing in urban areas is one mile (1.6 km) and two miles (3.2 km) between freeway-to-freeway interchanges. These minimum distances are measured between centerlines of adjacent intersecting roadways.

Within in the study section, I-8 interconnects with four freeways facilities; I-5, SR 163, I-805, and I-15. Existing interchange spacing ranges from approximately 1.25 miles to 2.5 miles between these facilities. The two segments of I-8 between SR 163, I-805, and I-15 are not to today's Caltrans standard (2 mi.); however, braided ramps on I-805 help to improve operations within these two segments.

Existing interchange spacing varies from approximately 0.35 miles (0.56 km) to 1.25 miles (2 km). The spacing between interchanges is not to today's Caltrans standard (1 mi.) for 9 of the 13 segments. Some of the closely spaced interchanges utilize auxiliary lanes and ramp meters to help accommodate the non-standard spacing. The following freeway sections are the most constrained:

- ***I-5 to Morena Boulevard (Both Directions):*** This section is approximately 1,900 feet (0.36 mi.) in length and is comprised of three on-ramps and two off-ramps.
- ***Morena Boulevard to Taylor Street (Eastbound):*** This section is approximately 3,000 feet (0.57 mi.) in length and comprised of a short weave segment.
- ***Taylor Street to Hotel Circle (Both Directions):*** This section is approximately 5,200 feet (0.98 mi.) in length.
- ***Hotel Circle to SR 162 (Eastbound):*** This section is approximately 2,600 feet (0.5 mi.) in length and comprised of a short weave segment.
- ***SR 163 to Mission Center Road (Westbound):*** This section is approximately 3,200 feet (0.6 mi.) in length and comprised of a short weave segment.

Non-Standard Ramp Geometry

All movements onto and off of a freeway are made at ramp junctions. These junctions must be designed to permit high-speed merging and diverging maneuvers. All of the ramps along the study section of I-8 were originally constructed as single lane entrance ramps. Various improvements to the entrance ramps have been added over time and include widening, restriping, modification and/or metering. As an example, some of the existing entrance ramps have had ramp metering added and have been restriped from a single lane ramp with shoulder to a two-lane ramp with no shoulder.

As a result, the geometric characteristics of the on- and off-ramps throughout the corridor vary greatly; the length and type of acceleration or deceleration lanes(s) and the proximity of other

ramps all have different effects on the merging and diverging operations throughout the corridor. Merge and diverge characteristics create non-uniform flows and transitions, resulting in added congestion at junctions.

According to the HDM, special attention should always be given to exit ramps that end in a hook ("Hook" ramps) to ensure adequate sight distance, deceleration length prior to the end of the anticipated queue and super elevation. The following hook ramps in the study area are low-capacity with less than desirable geometrics:

- Taylor Street Ramps (I-8 Eastbound and Westbound)
- Hotel Circle Ramps (I-8 Eastbound and Westbound)
- Mission Center Road Ramps (I-8 Westbound)

An interchange is expected to have an on- and off-ramp for each direction of travel. When this is not the case it can lead to driver confusion and wrong-way movements. Below are key interchange connections that are missing from the study section:

- Mission Bay Drive to I-8 Westbound
- I-8 Eastbound to I-5 Northbound
- I-5 Southbound to I-8 Westbound

Non-Standard Weaving Length

Freeway weave sections are locations where two streams of traffic cross paths while traveling in the same direction without the aid of traffic control devices (signals, stop signs, etc.). A weave segment is formed when an entrance ramp of one interchange is closely followed by an exit ramp of another interchange. With weave segments, the acceleration and deceleration lanes are often joined with an auxiliary lane. Auxiliary lanes allow entering traffic to accelerate to a higher speed before merging with mainline traffic.

The ability for a weave section to adequately facilitate movement between two streams of traffic is largely dependent on the length of the section. According to the HDM (Section 504.7), the standard length of a weave section is dependent on the number of vehicles utilizing the weave section; a rough approximation being one foot of length per weaving vehicle per hour to operate at LOS C. Weaving segments require more intense lane-changing maneuvers, therefore drivers are subject to operational issues and design requirements.

Along the study section of I-8, there are a total of eight weave sections between an on-ramp and off-ramp. Since the spacing between consecutive interchanges is mostly below standard, the distances between most consecutive entrance and exit ramps are also below standard. Here are five examples of these weave segments that are not to today's Caltrans standard. Based on existing peak-hour volumes, the weave segments within the study section that are not to today's standard are shown below:

- ***I-8 Eastbound (I-5 Northbound On-ramp to Taylor Street Off-ramp):*** This segment is approximately 950 feet in length with approximately 2,400 weaving vehicles in the peak-hour.

- ***I-8 Eastbound (Hotel Circle On-ramp to SR 163 Off-ramp):*** This segment is approximately 1,100 feet in length with approximately 2,200 weaving vehicles in the peak-hour.
- ***I-8 Eastbound (I-805 On-ramp to I-15 Northbound Off-ramp):*** This segment is approximately 4,200 feet in length with approximately 4,400 weaving vehicles in the peak-hour.
- ***I-8 Westbound (I-15 On-ramp to I-805 Off-ramp):*** This segment is approximately 4,000 feet in length with approximately 4,000 weaving vehicles in the peak-hour.
- ***I-8 Westbound (Mission Center Road On-ramp to SR 163 Northbound Off-ramp):*** This segment is approximately 1,400 feet in length with approximately 2,800 weaving vehicles in the peak-hour.

A-6: Existing Condition Mainline Segment and Ramp Volumes/LOS and Areas of Congestion

The mainline segments of the freeway can be divided into three types: (1) merge and diverge segments; (2) weave segments; and (3) basic segments.

Merge and Diverge Segments: A merge segment is defined as a location where two or more traffic streams combine to form a single traffic stream. The action of a merging vehicle entering the mainstream traffic creates congestion downstream of the on-ramp. This area of higher lane-changing rates is considered the ramp influence area. To account for the ramp influence area, it was assumed for analysis purposes that each merge segment starts at the point where the edges of the travel lanes of the merging roadways meet and ends 1,500 feet downstream of that point.

A diverge segment is defined as a location where a single traffic stream divides to form two or more separate traffic streams. The action of diverging vehicles leaving the mainstream traffic causes the redistribution of mainstream traffic to avoid the exiting vehicles. Similar to merge segments, this area of higher lane-changing rates is considered the ramp influence area. To account for the ramp influence area, it was assumed for analysis purposes that each diverge segment starts at the point where the edges of the travel lanes of the merging roadways meet and end at a point 1,500 feet upstream of that point.

As described previously, merge and diverge segment LOS is defined in terms of density and ranges from the best, A to the worst, F. At LOS A, unrestricted operations exist, and the density is low enough to permit smooth merging or diverging in the main traffic stream. In comparison, at LOS E operating conditions are approaching capacity; small changes in demand or disruptions within the traffic stream can cause both ramp and freeway queues to form. At LOS F, queues form on both the ramp and the freeway mainline as demand exceeds the capacity of the merge and diverge area.

Weave Segments: A weave segment is defined as a location where two or more traffic streams traveling in the same general direction cross paths along a significant length of freeway. They are formed when an off-ramp closely follows an on-ramp with a continuous auxiliary lane connecting the two ramps. To account for the additional turbulence in mainstream traffic created by the extra lane changing, the influence area of each weave segment is 500 feet upstream of the entry point and 500 feet downstream of the exit point. Entry and exit points are defined as the points where the edges of the merging and diverging lanes meet.

Like other mainline segments, weave segment LOS is defined in terms of density and ranges from A to F. However, the density thresholds in weaving segments are higher than basic freeway segments because it is believed that drivers will tolerate higher densities in areas where a lot of lane changing is expected.

Basic Segments: A basic freeway segment is anything outside the influence areas of merging, diverging, or weaving maneuvers. In basic segments, lane-changing activity is reflective of drivers' normal desire to pass and/or change lanes. However, basic segments are highly affected by upstream and downstream merge, diverge and weave segments. Bottlenecks can be created within basic segments when flow is constricted at upstream and downstream segments.

As described previously, basic segment LOS is defined in terms of density and ranges from A to F, with freeway conditions ranging from unimpeded ability to maneuver within the traffic stream (LOS A) to highly congested segments, with limited gaps within the traffic stream (LOS F). In all cases, segment breakdown occurs when the ratio of demand to capacity exceeds one. Freeway mainline segments within the study area were analyzed using methodologies outlined in the 2000 version of the HCM. Existing freeway volume data was obtained from Caltrans PeMS data (October 2, 2007, to October 11, 2007).

The existing freeway mainline segment conditions are summarized in Tables A-1 and A-2 for the a.m. and p.m. peak hours, respectively.

Table A-3: Existing Ramp Roadway Segment Conditions – AM Peak Hour

Direction	Segment	Type	Capacity	Volume	V/C[a]	LOS
		INTERSTATE 8				
Eastbound	Sports Arena Blvd. SB	On-Ramp	1,200	2,113	0.66	D
	Sports Arena Blvd. NB	On-Ramp	1,200	700	0.58	C
	I-5 SB	Off-Ramp	1,200	1,532	1.28	**F**
	I-5 SB	On-Ramp	3,200	1,840	0.58	C
	Camino Del Rio West	On-Ramp	1,200	89	0.07	A
	I-5 NB	On-Ramp	1,600	1,498	0.94	**E**
	Taylor St.	Off-Ramp	1,200	350	0.29	B
	Taylor St.	On-Ramp	1,200	455	0.38	B
	Hotel Circle South	Off-Ramp	1,200	378	0.32	B
	Hotel Circle South	On-Ramp	1,600	940	0.59	C
	SR 163 SB	Off-Ramp	1,600	553	0.35	B
	SR 163 NB	Off-Ramp	3,200	2,796	0.87	**E**
	Mission Center Rd.	Off-Ramp	1,200	401	0.33	B
	SR 163 NB	On-Ramp	1,600	1,678	1.05	**F**
	Mission Center Rd.	On-Ramp	1,200	296	0.25	A
	Qualcomm Way	Off-Ramp	1,200	1,032	0.86	**E**
	I-805	Off-Ramp	2,400	1,253	0.52	C
	Qualcomm Way	On-Ramp	1,200	803	0.67	D
	I-805	On-Ramp	3,200	2,566	0.80	D
	I-15 SB	Off-Ramp	1,600	545	0.34	B
	I-15 NB	Off-Ramp	1,200	1,096	0.91	**E**
	I-15 SB	On-Ramp	3,200	2,531	0.79	D
	Fairmount Ave. SB	On-Ramp	1,200	211	0.18	A
	Fairmount Ave. NB	On-Ramp	1,200	514	0.43	B
	Waring Rd.	Off-Ramp	1,200	501	0.42	B
	Waring Rd.	On-Ramp	1,200	263	0.22	A
	College Ave.	Off-Ramp	2,400	1,776	0.74	D
	College Ave.	On-Ramp	1,200	337	0.28	B

a- V/C = Volume to Capacity Ratio

Bold values indicate intersections operating at LOS E or F.

Table A-3: Existing Ramp Roadway Segment Conditions – AM Peak Hour (Cont'd)

Direction	Segment	Type	Capacity	Volume	V/C[a]	LOS
		INTERSTATE 8				
Westbound	College Ave.	Off-Ramp	1,200	546	0.46	C
	College Ave.	On-Ramp	1,200	1,238	1.03	**F**
	Waring Rd.	Off-Ramp	1,200	177	0.15	A
	Waring Rd.	On-Ramp	1,600	1,044	0.65	D
	Fairmount Ave.	Off-Ramp	1,200	901	0.75	D
	I-15 NB	Off-Ramp	2,400	2,465	1.03	**F**
	I-15 SB	Off-Ramp	1,200	771	0.64	D
	I-15	On-Ramp	1,200	1,938	1.62	**F**
	I-805	Off-Ramp	3,200	3,618	1.13	**F**
	Qualcomm Way	Off-Ramp	1,200	959	0.80	D
	I-805	On-Ramp	1,600	2,315	1.45	**F**
	Qualcomm Way	On-Ramp	1,200	1,135	0.95	**E**
	Mission Center Rd.	Off-Ramp	1,200	1,428	1.19	**F**
	Mission Center Rd.	On-Ramp	1,600	925	0.58	C
	SR 163 NB	Off-Ramp	2,400	2,328	0.97	**F**
	SR 163 SB	Off-Ramp	1,600	1,895	1.18	**F**
	SR 163 SB	On-Ramp	3,200	2,005	0.61	C
	SR-168 NB	On-Ramp	1,200	522	0.44	B
	Fashion Valley Rd.	On-Ramp	1,200	218	0.18	A
	Taylor St.	Off-Ramp	1,200	1,100	0.92	**E**
	Taylor St.	On-Ramp	1,600	1,000	0.63	C
	Morena Blvd.	Off-Ramp	1,200	1,100	0.92	**E**
	I-5 SB	Off-Ramp	3,200	2,496	0.78	D
	I-5 NB	Off-Ramp	1,600	1,934	1.21	**F**
	I-5	On-Ramp	3,200	761	0.24	A
	Mission Bay Dr.	Off-Ramp	2,400	1,500	0.63	C

a- V/C = Volume to Capacity Ratio

Bold values indicate intersections operating at LOS E or F.

Table A-4: Existing Ramp Roadway Segment Conditions – PM Peak Hour

Direction	INTERSTATE 8 Segment	Type	Capacity	Volume	V/C[a]	LOS
Eastbound	Sports Arena Blvd. SB	On-Ramp	1,200	1,525	0.48	C
	Sports Arena Blvd. NB	On-Ramp	1,200	602	0.50	C
	I-5 SB	Off-Ramp	1,200	1,424	1.19	**F**
	I-5 SB	On-Ramp	3,200	2,678	0.84	D
	Camino Del Rio West	On-Ramp	1,200	629	0.52	C
	I-5 NB	On-Ramp	1,600	1,809	1.13	**F**
	Taylor St.	Off-Ramp	1,200	1,045	0.87	**E**
	Taylor St.	On-Ramp	1,200	785	0.65	D
	Hotel Circle South	Off-Ramp	1,200	296	0.25	A
	Hotel Circle South	On-Ramp	1,600	1,800	1.13	**F**
	SR 163 SB	Off-Ramp	1,600	775	0.48	C
	SR 163 NB	Off-Ramp	3,200	2,646	0.83	D
	Mission Center Rd.	Off-Ramp	1,200	557	0.46	C
	SR 163 NB	On-Ramp	1,600	2,497	1.56	**F**
	Mission Center Rd.	On-Ramp	1,200	1,297	1.08	**E**
	Qualcomm Way	Off-Ramp	1,200	1,139	0.95	**E**
	I-805	Off-Ramp	2,400	2,489	1.04	**F**
	Qualcomm Way	On-Ramp	1,200	1,103	0.92	**E**
	I-805	On-Ramp	3,200	3,767	1.18	**F**
	I-15 SB	Off-Ramp	1,600	868	0.54	C
	I-15 NB	Off-Ramp	1,200	1,352	1.13	**F**
	I-15 SB	On-Ramp	3,200	3,881	1.21	**F**
	Fairmount Ave. SB	On-Ramp	1,200	537	0.45	C
	Fairmount Ave. NB	On-Ramp	1,200	473	0.39	B
	Waring Rd.	Off-Ramp	1,200	650	0.54	C
	Waring Rd.	On-Ramp	1,200	362	0.30	B
	College Ave.	Off-Ramp	2,400	1,182	0.49	C
	College Ave.	On-Ramp	1,200	782	0.65	D

a- V/C = Volume to Capacity Ratio

Bold values indicate intersections operating at LOS E or F.

Table A-4: Existing Ramp Roadway Segment Conditions – PM Peak Hour (Cont'd)

Direction	INTERSTATE 8 Segment	Type	Capacity	Volume	V/C[a]	LOS
Westbound	College Ave.	Off-Ramp	1,200	733	0.61	C
	College Ave.	On-Ramp	1,200	1,634	1.36	**F**
	Waring Rd.	Off-Ramp	1,200	199	0.17	A
	Waring Rd.	On-Ramp	1,600	506	0.32	B
	Fairmount Ave.	Off-Ramp	1,200	731	0.61	C
	I-15 NB	Off-Ramp	2,400	1,429	0.60	C
	I-15 SB	Off-Ramp	1,200	651	0.54	C
	I-15	On-Ramp	1,200	1,697	1.41	**F**
	I-805	Off-Ramp	3,200	2,557	0.80	D
	Qualcomm Way	Off-Ramp	1,200	765	0.64	C
	I-805	On-Ramp	1,600	1,795	1.12	**F**
	Qualcomm Way	On-Ramp	1,200	1,544	1.29	**F**
	Mission Center Rd.	Off-Ramp	1,200	1,563	1.30	**F**
	Mission Center Rd.	On-Ramp	1,600	1,182	0.74	D
	SR 163 NB	Off-Ramp	2,400	1,697	0.71	D
	SR 163 SB	Off-Ramp	1,600	1,714	1.07	**F**
	SR 163 SB	On-Ramp	3,200	2,298	0.72	D
	SR-163 NB	On-Ramp	1,200	491	0.41	B
	Fashion Valley Rd.	On-Ramp	1,200	487	0.41	B
	Taylor St.	Off-Ramp	1,200	800	0.67	D
	Taylor St.	On-Ramp	1,600	800	0.50	C
	Morena Blvd.	Off-Ramp	1,200	800	0.67	D
	I-5 SB	Off-Ramp	3,200	2,189	0.68	D
	I-5 NB	Off-Ramp	1,600	2,143	1.34	**F**
	I-5	On-Ramp	3,200	1,263	0.39	B
	Mission Bay Dr.	Off-Ramp	2,400	2,500	1.04	**F**

a- V/C = Volume to Capacity Ratio

Bold values indicate intersections operating at LOS E or F.

Figure A6-11: Existing Areas of Congestion – PM Peak (Mission Gorge Rd. to College Ave.)

DRAFT

Figure A6-12: Existing Areas of Congestion – PM Peak (College Ave. to 70th St.)

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A-7: Causes of Arterial Roadway Congestion and Intersection Design Deficiencies

Congestion and poor traffic operations on arterial roadways constrain travel speeds, create delays, and generally restrict access to key corridor activity centers during peak travel periods. Congestion on the arterial street system is generally a factor of the following:

- Areas of capacity constraint where traffic flows exceed the design capacity of the roadway segment.
- Poor intersection operations due to excessive through volumes and conflicting turn movements.
- Closely spaced intersections, with the potential for spillback to adjacent intersections.
- Traffic spillback from congested freeway entry points.
- Lack of east-west and north-south arterials.

While individual intersections generally have acceptable peak hour LOS under existing conditions in both the a.m. and p.m. peak hours, traffic spillback occurs through closely spaced intersections along arterial roadways accessing I-8. As shown in Figures A6-1 through A6-12, this can be a significant cause of congestion.

A-10: Future No-Build Mainline Segment and Ramp Volumes/LOS and Areas of Congestion

Table A-5: 2050 No-Build Freeway Mainline Segment Conditions – AM Peak Hour

Direction	Segment (INTERSTATE 8)	Type	Peak Hour Volume	Density[a]	LOS
Eastbound	Sunset Cliffs Blvd. to Sports Arena Blvd. SB On-Ramp	Basic	2,576	20	C
	Sports Arena Blvd. On-Ramps to I-5 SB Off-Ramp	Weave	2,576		F
	I-5 SB Off Ramp to I-5 SB On-Ramp	Basic	3,546	32	D
	I-5 SB On Ramp to Camino Del Rio West On-Ramp	Basic	5,486	23	C
	Camino Del Rio West On-Ramp	Merge	5,486	19	B
	I-5 NB On-Ramp to Taylor St. Off-Ramp	Weave	5,578		F
	Taylor St. Off-Ramp to Taylor St. On-Ramp	Basic	8,147	40	E
	Taylor St. On-Ramp	Merge	8,147	31	D
	Taylor St. On-Ramp to Hotel Circle South Off-Ramp	Basic	8,236	39	E
	Hotel Circle South Off-Ramp	Diverge	8,236	40	E
	Hotel Circle South On-Ramp to SR 163 SB Off-Ramp	Weave	7,550		F
	SR 163 NB Off-Ramp	Diverge	7,277	41	E
	Mission Center Rd. Off-Ramp	Diverge	4,485	23	C
	Mission Center Rd. Off-Ramp to SR 163 NB On-Ramp	Basic	4,570	19	C
	SR 163 NB On-Ramp	Merge	4,570	20	C
	Mission Center Rd. On-Ramp	Merge	6,171	19	B
	Qualcomm Way Off-Ramp	Diverge	6,916	32	D
	Qualcomm Way Off-Ramp to I-805 Off-Ramp	Basic	5,559	19	C
	I-805 Off-Ramp	Diverge	5,559	26	C
	I-805 Off-Ramp to Qualcomm Way On-Ramp	Basic	4,367	17	B
	Qualcomm Way On-Ramp	Merge	4,367	24	C
	Qualcomm Way On-Ramp to I-805 On Ramp	Basic	4,778	20	C
	I-805 On-Ramp to I-15 NB Off-Ramp	Weave	4,778		F
	I-15 NB Off-Ramp to I-15 SB On-Ramp	Basic	4,564	18	B
	I-15 SB On-Ramp to Fairmount Ave. SB On-Ramp	Basic	6,548	17	B
	Fairmount. Ave SB On-Ramp	Merge	6,548	28	C
	Fairmount Ave. NB On-Ramp to Waring Rd. Off-Ramp	Weave	6,879	30	D
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	6,833	22	C
	Waring Rd. On-Ramp	Merge	6,833	22	C
	Waring Rd. On-Ramp to College Ave. Off-Ramp	Basic	7,376	24	C
	College Ave. Off-Ramp	Diverge	7,376	31	D
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	5,859	18	C
	College Ave. On-Ramp	Merge	5,859	19	B

a-Density is measured in pc/hr/ln. If density is not shown, volume exceeded capacity.

Bold values indicate intersections operating at LOS E or F

Table A-5: 2050 No-Build Freeway Mainline Segment Conditions – AM Peak Hour (Cont'd.)

Direction	Segment (INTERSTATE 8)	Type	Peak Hour Volume	Density[a]	LOS
Westbound	College Ave. Off-Ramp	Diverge	11,508	44	F
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	[illegible]	[illegible]	[illegible]
	College Ave. On-Ramp	Merge	10,635	58	F
	College Ave. On-Ramp to Waring Rd. Off-Ramp	Basic	12,162	58	F
	Waring Rd. Off-Ramp	Diverge	12,162	44	F
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	11,581	51	F
	Waring Rd. On-Ramp to Fairmount Ave. Off-Ramp	Basic	13,214	45	F
	Fairmount Ave. Off-Ramp	Diverge	13,214	65	F
	Fairmount Ave. Off-Ramp to I-15 NB Off-Ramp	Basic	11,664	35	E
	I-15 NB Off-Ramp	Diverge	11,664	42	E
	I-15 SB Off-Ramp	Diverge	9,365	46	F
	I-15 SB Off Ramp to I-15 On-Ramp	Basic	8,515	42	E
	I-15 On-Ramp to I-805 Off-Ramp	Weave	8,515		F
	Qualcomm Way Off-Ramp	Diverge	9,603	46	F
	Qualcomm Way Off-Ramp to I-805 On-Ramp	Basic	8,651	43	E
	I-805 On-Ramp to Mission Center Rd. Off-Ramp	Weave	8,651		F
	Mission Center Rd. Off-Ramp to Mission Center Rd. On-Ramp	Basic	10,150	72	F
	Mission Center Rd. On-Ramp to SR 163 NB Off-Ramp	Weave	10,150		F
	SR 163 SB Off-Ramp	Diverge	8,384	37	E
	SR 163 SB Off-Ramp to SR 163 SB On-Ramp	Basic	6,939	54	F
	SR 163 On-Ramps	Merge	9,639	42	E
	SR 163 NB On-Ramp to Fashion Valley Rd. On-Ramp	Basic	10,918	44	E
	Fashion Valley Rd. On-Ramp	Merge	10,918	55	F
	Fashion Valley Rd. On-Ramp to Taylor St. Off-Ramp	Basic	11,101	46	F
	Taylor St. Off-Ramp	Diverge	11,101	47	F
	Taylor St. Off-Ramp to Taylor St. On-Ramp	Basic	9,021	50	F
	Taylor St. On-Ramp	Merge	9,021	54	F
	Morena Blvd. Off-Ramp	Diverge	10,671	43	E
	I-5 SB Off-Ramp	Diverge	9,302	57	E
	I-5 NB Off-Ramp	Diverge	5,036	36	E
	I-5 NB Off-Ramp to I-5 On-Ramp	Basic	2,625	22	C
	I-5 On-Ramp to Mission Bay Dr. Off-Ramp	Basic	3,801	16	B
	Mission Bay Dr. Off-Ramp	Diverge	3,801	19	B
	Mission Bay Dr. Off-Ramp to Sunset Cliffs Blvd.	Basic	3,202	26	D

a- Density is measured in pc/hr/ln. If density is not shown, volume exceeded capacity.

Bold values indicate intersections operating at LOS E or F.

Table A-6: 2050 No-Build Freeway Mainline Segment Conditions – PM Peak Hour

Direction	INTERSTATE 8 Segment	Type	Volume	Density[a]	LOS
Eastbound	Sunset Cliffs Blvd. to Sports Arena Blvd. SB On-Ramp	Basic	2,015	16	B
	Sports Arena Blvd. On Ramps to I-5 SB Off Ramp	Weave	2,015	28	C
	I-5 SB Off Ramp to I-5 SB On-Ramp	Basic	3,338	29	D
	I-5 SB On Ramp to Camino Del Rio West On-Ramp	Basic	6,243	27	D
	Camino Del Rio West On-Ramp	Merge	6,243	30	D
	I-5 NB On-Ramp to Taylor St. Off-Ramp	Weave	7,461		**F**
	Taylor St. Off-Ramp to Taylor St. On-Ramp	Basic	9,551	59	**F**
	Taylor St. On-Ramp	Merge	9,551	45	**F**
	Taylor St. On-Ramp to Hotel Circle South Off-Ramp	Basic	10,725	82	**F**
	Hotel Circle South Off-Ramp	Diverge	10,725	50	**F**
	Hotel Circle South On-Ramp to SR 163 SB Off-Ramp	Weave	10,188		**F**
	SR 163 NB Off-Ramp	Diverge	10,512	54	**F**
	Mission Center Rd. Off-Ramp	Diverge	7,352	36	**E**
	Mission Center Rd. Off-Ramp to SR 163 NB On-Ramp	Basic	7,541	35	D
	SR 163 NB On-Ramp	Merge	7,541	40	**E**
	Mission Center Rd. On-Ramp	Merge	6,171	32	D
	Qualcomm Way Off-Ramp	Diverge	11,211	47	**F**
	Qualcomm Way Off-Ramp to I-805 Off-Ramp	Basic	9,714	37	**E**
	I-805 Off-Ramp	Diverge	9,714	52	**E**
	I-805 Off-Ramp to Qualcomm Way On-Ramp	Basic	7,068	30	D
	Qualcomm Way On-Ramp	Merge	7,068	36	**E**
	Qualcomm Way On-Ramp to I-805 On Ramp	Basic	8,422	43	**E**
	I-805 On-Ramp to I-15 NB Off-Ramp	Weave	8,422		**F**
	I-15 NB Off-Ramp to I-15 SB On-Ramp	Basic	7,912	36	**E**
	I-15 SB On-Ramp to Fairmount Ave. SB On-Ramp	Basic	10,913	32	D
	Fairmount Ave. SB On-Ramp	Merge	10,913	47	**E**
	Fairmount Ave. NB On-Ramp to Waring Rd. Off-Ramp	Weave	11,756		**F**
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	10,558	41	**E**
	Waring Rd. On-Ramp	Merge	10,558	32	**F**
	Waring Rd. On-Ramp to College Ave. Off-Ramp	Basic	10,985	45	**E**
	College Ave. Off-Ramp	Diverge	10,985	45	**E**
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	9,146	32	D
	College Ave. On-Ramp	Merge	9,146	31	D

a- Density is measured in pc/h/ln. If density is not shown, volume exceeded capacity.
Bold values indicate intersections operating at LOS E or F.

Table A-6: 2050 No-Build Freeway Mainline Segment Conditions – PM Peak Hour (Cont'd.)

Direction	INTERSTATE 8 Segment	Type	Volume	Density[a]	LOS
Westbound	College Ave. Off-Ramp	Diverge	7,361	32	D
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	6,477	20	C
	College Ave. On-Ramp	Merge	6,477	30	D
	College Ave. On-Ramp to Waring Rd. Off-Ramp	Basic	8,413	28	D
	Waring Rd. Off-Ramp	Diverge	8,413	32	D
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	7,944	26	C
	Waring Rd. On-Ramp to Fairmount Ave. Off-Ramp	Basic	8,865	24	C
	Fairmount Ave. Off-Ramp	Diverge	8,865	46	**E**
	Fairmount Ave. Off-Ramp to I-15 NB Off-Ramp	Basic	7,720	20	C
	I-15 NB Off-Ramp	Diverge	7,720	37	**E**
	I-15 SB Off-Ramp	Diverge	6,387	33	D
	I-15 SB Off Ramp to I-15 On-Ramp	Basic	5,702	23	C
	I-15 On-Ramp to I-805 Off-Ramp	Weave	5,702	27	**F**
	Qualcomm Way Off-Ramp	Diverge	7,077	38	**E**
	Qualcomm Way Off-Ramp to I-805 On-Ramp	Basic	6,224	25	C
	I-805 On-Ramp to Mission Center Rd. Off Ramp	Weave	6,224		**F**
	Mission Center Rd. Off-Ramp to Mission Center Rd. On Ramp	Basic	8,2647	41	**E**
	Mission Center Rd. On-Ramp to SR 163 NB Off-Ramp	Weave	8,267	45	**E**
	SR 163 SB Off-Ramp	Diverge	7,569	43	**E**
	SR 163 SB Off-Ramp to SR 163 SB On-Ramp	Basic	5,757	36	**E**
	SR 163 On-Ramps	Merge	8,852	24	C
	SR 163 NB On-Ramp to Fashion Valley Rd. On-Ramp	Basic	9,931	37	**E**
	Fashion Valley Rd. On-Ramp	Merge	9,931	34	**F**
	Fashion Valley Rd. On-Ramp to Taylor St. Off-Ramp	Basic	10,407	40	**E**
	Taylor St. Off-Ramp	Diverge	10,407	42	**E**
	Taylor St. Off-Ramp to Taylor St. On-Ramp	Basic	8,891	48	**F**
	Taylor St. On-Ramp	Merge	8,891	37	**E**
	Morena Blvd. Off-Ramp	Diverge	10,415	41	**E**
	I-5 SB Off-Ramp	Diverge	9,477	54	**E**
	I-5 NB Off-Ramp	Diverge	5,565	40	**E**
	I-5 NB Off-Ramp to I-5 On-Ramp	Basic	3,575	32	D
	I-5 On-Ramp to Mission Bay Dr. Off-Ramp	Basic	5,517	23	C
	Mission Bay Dr. Off Ramp	Diverge	5,517	33	D
	Mission Bay Dr. Off-Ramp to Sunset Cliffs Blvd.	Basic	3,842	35	D

a- Density is measured in pc/h/ln. If density is not shown, volume exceeded capacity.
Bold values indicate intersections operating at LOS E or F.

Table A-7: 2050 No-Build Ramp Roadway Segment Conditions – AM Peak Hour

Direction	INTERSTATE 8					
	Segment	Type	Capacity	Volume	V/C[a]	LOS
Eastbound	Sports Arena Blvd. SB	On-Ramp	1,200	2,520	0.88	E
	Sports Arena Blvd. NB	On-Ramp	1,200	1,137	0.95	E
	I-5 SB	Off-Ramp	1,200	2,382	1.99	F
	I-5 SB	On-Ramp	3,200	1,836	0.57	C
	Camino Del Rio West	On-Ramp	1,200	172	0.14	A
	I-5 NB	On-Ramp	1,600	2,606	1.63	F
	Taylor St.	Off-Ramp	1,200	524	0.44	B
	Taylor St.	On-Ramp	1,200	564	0.47	C
	Hotel Circle South	Off-Ramp	1,200	686	0.57	C
	Hotel Circle South	On-Ramp	1,600	1,910	1.19	F
	SR 163 SB	Off-Ramp	1,600	808	0.50	C
	SR 163 NB	Off-Ramp	3,200	3,960	1.24	F
	Mission Center Rd.	Off-Ramp	1,200	453	0.38	B
	SR 163 NB	On-Ramp	1,600	1,500	1.00	F
	Mission Center Rd.	On-Ramp	1,200	480	0.40	B
	Qualcomm Way	Off-Ramp	1,200	1,357	1.13	F
	I-805	Off-Ramp	2,400	1,791	0.75	D
	Qualcomm Way	On-Ramp	1,200	997	0.83	D
	I-805	On-Ramp	3,200	2,901	0.91	E
	I-15 SB	Off-Ramp	1,600	725	0.45	C
	I-15 NB	Off-Ramp	1,200	1,554	1.30	F
	I-15 SB	On-Ramp	3,200	2,411	0.75	D
	Fairmount Ave. SB	On-Ramp	1,200	331	0.28	B
	Fairmount Ave. NB	On-Ramp	1,200	841	0.70	D
	Waring Rd.	Off-Ramp	1,200	588	0.57	C
	Waring Rd.	On-Ramp	1,200	456	0.38	B
	College Ave.	Off-Ramp	2,400	2,288	0.95	E
	College Ave.	On-Ramp	1,200	483	0.40	B

a- V/C = Volume to Capacity Ratio

Bold values indicate intersections operating at LOS E or F.

Table A-7: 2050 No-Build Ramp Roadway Segment Conditions – AM Peak Hour (Cont'd.)

Direction	INTERSTATE 8					
	Segment	Type	Capacity	Volume	V/C[a]	LOS
Westbound	College Ave.	Off-Ramp	1,200	738	0.61	C
	College Ave.	On-Ramp	1,200	1,499	1.25	F
	Waring Rd.	Off-Ramp	1,200	308	0.26	A
	Waring Rd.	On-Ramp	1,600	1,722	1.08	F
	Fairmount Ave.	Off-Ramp	1,200	1,517	1.26	F
	I-15 NB	Off-Ramp	2,400	2,299	0.96	E
	I-15 SB	Off-Ramp	1,200	949	0.79	D
	I-15	On-Ramp	1,200	2,302	1.92	F
	I-805	Off-Ramp	3,200	4,175	1.30	F
	Qualcomm Way	Off-Ramp	1,200	1,362	1.14	F
	I-805	On-Ramp	1,600	2,653	1.66	F
	Qualcomm Way	On-Ramp	1,200	1,687	1.41	F
	Mission Center Rd.	Off-Ramp	1,200	1,532	1.28	F
	Mission Center Rd.	On-Ramp	1,600	1,037	0.65	D
	SR 163 NB	Off-Ramp	2,400	2,554	1.06	F
	SR 163 SB	Off-Ramp	1,600	2,356	1.47	F
	SR 163 SB	On-Ramp	3,200	2,700	0.84	D
	SR 163 NB	On-Ramp	1,200	657	0.55	C
	Fashion Valley Rd.	On-Ramp	1,200	558	0.47	C
	Taylor St.	Off-Ramp	1,200	1,808	1.51	F
	Taylor St.	On-Ramp	1,600	2,010	1.26	F
	Morena Blvd.	Off-Ramp	1,200	1,056	0.88	E
	I-5 SB	Off-Ramp	3,200	4,774	1.49	F
	I-5 NB[b]	Off-Ramp	3,200	2,512	0.78	D
	I-5	On-Ramp	3,200	1,038	0.32	B
	Mission Bay Dr.	Off-Ramp	2,400	1,890	0.79	D

a- V/C = Volume to Capacity Ratio

b- Second lane added in No-Build Condition

Bold values indicate intersections operating at LOS E or F.

Table A-3: 2050 No-Build Ramp Roadway Segment Conditions – PM Peak Hour

Direction	Segment	Type	Capacity	Volume	V/C[a]	LOS
	INTERSTATE 8					
Eastbound	Sports Arena Blvd. SB	On-Ramp	1,200	2,095	0.64	C
	Sports Arena Blvd. NB	On-Ramp	1,200	978	0.82	D
	I-5 SB	Off-Ramp	1,200	2,214	**1.85**	**F**
	I-5 SB	On-Ramp	3,200	2,672	0.83	D
	Camino Del Rio West	On-Ramp	1,200	1,218	**1.01**	**F**
	I-5 NB	On-Ramp	1,600	3,147	**1.97**	**F**
	Taylor St.	Off-Ramp	1,200	1,563	**1.30**	**F**
	Taylor St.	On-Ramp	1,200	973	0.81	D
	Hotel Circle South	Off-Ramp	1,200	537	0.45	C
	Hotel Circle South	On-Ramp	1,600	3,657	**2.29**	**F**
	SR 163 SB	Off-Ramp	1,600	1,132	0.71	D
	SR 163 NB	Off-Ramp	3,200	3,747	**1.17**	**F**
	Mission Center Rd.	Off-Ramp	1,200	629	0.52	C
	SR 163 NB	On-Ramp	1,600	2,382	**1.49**	**F**
	Mission Center Rd.	On-Ramp	1,200	2,103	**1.75**	**F**
	Qualcomm Way	Off-Ramp	1,200	1,498	**1.25**	**F**
	I-805	Off-Ramp	2,400	3,557	**1.48**	**F**
	Qualcomm Way	On-Ramp	1,200	1,369	**1.14**	**F**
	I-805	On-Ramp	3,200	4,258	**1.33**	**F**
	I-15 SB	Off-Ramp	1,600	1,155	0.72	D
	I-15 NB	Off-Ramp	1,200	1,917	**1.60**	**F**
	I-15 SB	On-Ramp	3,200	3,597	**1.16**	**F**
	Fairmount Ave. SB	On-Ramp	1,200	844	0.70	D
	Fairmount Ave. NB	On-Ramp	1,200	774	0.65	D
	Waring Rd.	Off-Ramp	1,200	892	0.74	D
	Waring Rd.	On-Ramp	1,200	627	0.52	C
	College Ave.	Off-Ramp	2,400	1,523	0.63	C
	College Ave.	On-Ramp	1,200	1,122	0.93	**E**

a- V/C = Volume to Capacity Ratio

Bold values indicate intersections operating at LOS E or F.

Table A-8: 2050 No-Build Ramp Roadway Segment Conditions – PM Peak Hour (Cont'd.)

Direction	Segment	Type	Capacity	Volume	V/C[a]	LOS
	INTERSTATE 8					
Westbound	College Ave.	Off-Ramp	1,200	990	0.83	D
	College Ave.	On-Ramp	1,200	1,978	**1.65**	**F**
	Waring Rd.	Off-Ramp	1,200	346	0.29	B
	Waring Rd.	On-Ramp	1,600	835	0.52	C
	Fairmount Ave.	Off-Ramp	1,200	1,231	**1.03**	**F**
	I-15 NB	Off-Ramp	2,400	1,333	0.56	C
	I-15 SB	Off-Ramp	1,200	801	0.67	D
	I-15	On-Ramp	1,200	2,016	**1.68**	**F**
	I-805	Off-Ramp	3,200	2,951	**0.92**	**E**
	Qualcomm Way	Off-Ramp	1,200	1,082	**0.91**	**E**
	I-805	On-Ramp	1,600	2,057	**1.29**	**F**
	Qualcomm Way	On-Ramp	1,200	2,295	**1.91**	**F**
	Mission Center Rd.	Off-Ramp	1,200	1,677	**1.40**	**F**
	Mission Center Rd.	On-Ramp	1,600	1,325	0.83	D
	SR 163 NB	Off-Ramp	2,400	1,861	0.78	D
	SR 163 SB	Off-Ramp	1,600	2,131	**1.33**	**F**
	SR 163 SB	On-Ramp	3,200	3,095	**0.97**	**E**
	SR-168 NB	On-Ramp	1,200	618	0.51	C
	Fashion Valley Rd.	On-Ramp	1,200	1,247	**1.04**	**F**
	Taylor St.	Off-Ramp	1,200	1,315	**1.10**	**F**
	Taylor St.	On-Ramp	1,600	1,608	**1.01**	**F**
	Morena Blvd.	Off-Ramp	1,200	768	0.64	C
	I-5 SB	Off-Ramp	3,200	4,187	**1.31**	**F**
	I-5 NB[b]	Off-Ramp	3,200	2,783	**0.87**	**E**
	I-5	On-Ramp	3,200	1,723	0.54	C
	Mission Bay Dr.	Off-Ramp	2,400	3,149	**1.31**	**F**

a- V/C = Volume to Capacity Ratio

b- Second lane added in No-Build Condition

Bold values indicate intersections operating at LOS E or F.

Figure A10-11: Areas of Congestion - PM Peak
(Mission Gorge Rd to College Ave)

Figure A10-12: Areas of Congestion - PM Peak
(College Ave to 70th St)

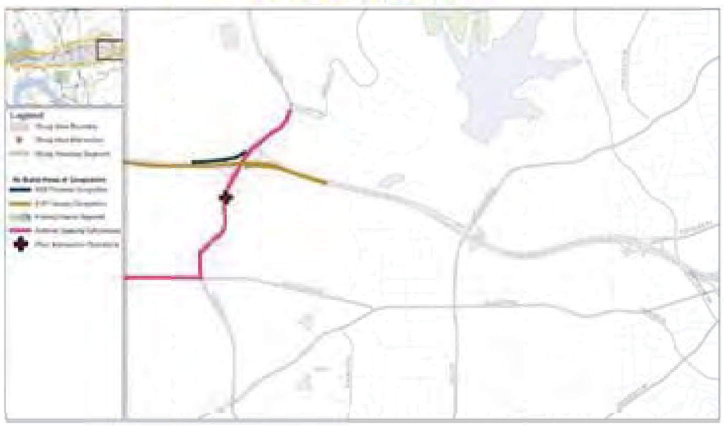


Figure B-16: Alternative B Concept (College Ave)

B-3: No-Build and Improvement Alternatives Freeway, Ramp, and Intersection Extended Data Tables and Improvement Alternatives A and B Congestion Maps

Tables B-1 through B-6 compare the no build freeway segment conditions with improvement alternatives A and B.

Table 8-1: 2050 No-Build Freeway Mainline Segment Conditions – AM Peak Hour

Direction	Segment (INTERSTATE 8)	Type	Peak Hour Volume	Density[a]	LOS
Eastbound	Sunset Cliffs Blvd. to Sports Arena Blvd. SB On-Ramp	Basic	2,576	20	C
	Sports Arena Blvd. On Ramps to I-5 CD Off-Ramp	Weave	2,576		**F**
	I-5 SB Off Ramp to I-5 SB On-Ramp	Basic	3,546	32	D
	I-5 SB On Ramp to Camino Del Rio West On-Ramp	Basic	5,406	23	C
	Camino Del Rio West On-Ramp	Merge	5,406	19	B
	I-5 NB On-Ramp to Taylor St. Off-Ramp	Weave	5,578		**F**
	Taylor St. Off-Ramp to Taylor St. On-Ramp	Basic	8,147	40	**E**
	Taylor St. On-Ramp	Merge	8,147	31	D
	Taylor St. On-Ramp to Hotel Circle South Off-Ramp	Basic	8,236	39	**E**
	Hotel Circle South Off-Ramp	Diverge	8,236	40	**E**
	Hotel Circle South On-Ramp to SR 163 SB Off-Ramp	Weave	7,550		**F**
	SR 163 NB Off-Ramp	Diverge	7,277	41	**E**
	Mission Center Rd. Off-Ramp	Diverge	4,485	23	C
	Mission Center Rd. Off-Ramp to SR 163 NB On-Ramp	Basic	4,570	19	C
	SR 163 NB On-Ramp	Merge	4,570	28	C
	Mission Center Rd. On-Ramp	Merge	6,171	19	B
	Qualcomm Way Off-Ramp	Diverge	6,916	32	D
	Qualcomm Way Off-Ramp to I-805 Off-Ramp	Basic	5,559	19	C
	I-805 Off-Ramp	Diverge	5,559	26	C
	I-805 Off-Ramp to Qualcomm Way On-Ramp	Basic	4,367	17	B
	Qualcomm Way On-Ramp	Merge	4,367	24	C
	Qualcomm Way On-Ramp to I-805 On Ramp	Basic	4,778	20	C
	I-805 On-Ramp to I-15 NB Off-Ramp	Weave	4,778		**F**
	I-15 NB Off-Ramp to I-15 SB On-Ramp	Basic	4,564	18	B
	I-15 SB On-Ramp to Fairmount Ave. SB On-Ramp	Basic	6,548	17	B
	Fairmount Ave. SB On-Ramp	Merge	6,548	28	C
	Fairmount Ave. NB On-Ramp to Waring Rd. Off-Ramp	Weave	6,879	30	D
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	6,833	22	C
	Waring Rd. On-Ramp	Merge	6,833	22	C
	Waring Rd. On-Ramp to College Ave. Off-Ramp	Basic	7,376	24	C
	College Ave. Off-Ramp	Diverge	7,376	31	D
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	5,859	18	C
	College Ave. On-Ramp	Merge	5,859	19	B

a. Density is measured in pc/hr/ln. If density is not shown, volume exceeded capacity.
Bold values in shaded celled indicate intersections operating at LOS E or F

Table 8-1: 2050 No-Build Freeway Mainline Segment Conditions – AM Peak Hour (Cont'd.)

Direction	Segment (INTERSTATE 8)	Type	Peak Hour Volume	Density[a]	LOS
Westbound	College Ave. Off-Ramp	Diverge	11,504	44	**F**
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	10,630	44	**E**
	College Ave. On-Ramp	Merge	10,635	58	**F**
	College Ave. On-Ramp to Waring Rd. Off-Ramp	Basic	12,152	58	**F**
	Waring Rd. Off-Ramp	Diverge	12,152	44	**F**
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	11,581	51	**F**
	Waring Rd. On-Ramp to Fairmount Ave. Off-Ramp	Basic	13,214	45	**F**
	Fairmount Ave. Off-Ramp	Diverge	13,214	65	**F**
	Fairmount Ave. Off-Ramp to I-15 NB Off-Ramp	Basic	11,654	35	**E**
	I-15 NB Off-Ramp	Diverge	11,654	42	**E**
	I-15 SB Off-Ramp	Diverge	9,365	46	**F**
	I-15 SB Off Ramp to I-15 On-Ramp	Basic	8,515	42	**E**
	I-15 On-Ramp to I-805 Off-Ramp	Weave	8,515		**F**
	Qualcomm Way Off-Ramp	Diverge	9,603	45	**F**
	Qualcomm Way Off-Ramp to I-805 On-Ramp	Basic	8,651	43	**E**
	I-805 On-Ramp to Mission Center Rd. Off-Ramp	Weave	8,651		**F**
	Mission Center Rd. Off-Ramp to Mission Center Rd. On-Ramp	Basic	10,150	72	**F**
	Mission Center Rd. On-Ramp to SR 163 NB Off-Ramp	Weave	10,150		**F**
	SR 163 SB Off-Ramp	Diverge	8,384	37	**E**
	SR 163 SB Off-Ramp to SR 163 SB On-Ramp	Basic	6,939	54	**F**
	SR 163 On-Ramps	Merge	9,639	42	**E**
	SR 163 NB On-Ramp to Fashion Valley Rd. On-Ramp	Basic	10,918	44	**E**
	Fashion Valley Rd. On-Ramp	Merge	10,918	55	**F**
	Fashion Valley Rd. On-Ramp to Taylor St. Off-Ramp	Basic	11,101	46	**F**
	Taylor St. Off-Ramp	Diverge	11,101	47	**F**
	Taylor St. Off-Ramp to Taylor St. On-Ramp	Basic	9,021	50	**F**
	Taylor St. On-Ramp	Merge	9,021	54	**F**
	Morena Blvd. Off-Ramp	Diverge	10,671	43	**E**
	I-5 SB Off-Ramp	Diverge	9,302	52	**E**
	I-5 NB Off-Ramp	Diverge	5,036	38	**E**
	I-5 NB Off-Ramp to I-5 On-Ramp	Basic	2,625	23	C
	I-5 On-Ramp to Mission Bay Dr. Off-Ramp	Basic	3,801	16	B
	Mission Bay Dr. Off-Ramp	Diverge	3,801	19	B
	Mission Bay Dr. Off-Ramp to Sunset Cliffs Blvd.	Basic	3,202		D

a. Density is measured in pc/hr/ln. If density is not shown, volume exceeded capacity.
Bold values in shaded celled indicate intersections operating at LOS E or F

Table B-2: 2050 No-Build Freeway Mainline Segment Conditions – PM Peak Hour

Direction	Segment (INTERSTATE 8)	Type	Volume	Density[a]	LOS
Eastbound	Sunset Cliffs Blvd. to Sports Arena Blvd. SB On-Ramp	Basic	2,015	16	B
	Sports Arena Blvd. On-Ramps to I-5 SB Off-Ramp	Weave	2,015	[illegible]	C
	I-5 SB Off Ramp to I-5 SB On-Ramp	Basic	3,338	29	D
	I-5 SB On Ramp to Camino Del Rio West On-Ramp	Basic	6,243	27	D
	Camino Del Rio West On-Ramp	Merge	6,243	30	D
	I-5 NB On-Ramp to Taylor St. Off-Ramp	Weave	7,461		**F**
	Taylor St. Off-Ramp to Taylor St. On-Ramp	Basic	9,551	59	**F**
	Taylor St. On-Ramp	Merge	9,551	45	**F**
	Taylor St. On-Ramp to Hotel Circle South Off-Ramp	Basic	10,725	82	**F**
	Hotel Circle South Off-Ramp	Diverge	10,725	50	**F**
	Hotel Circle South On-Ramp to SR 163 SB Off-Ramp	Weave	10,188		**F**
	SR 163 NB Off-Ramp	Diverge	10,512	54	**E**
	Mission Center Rd. Off-Ramp	Diverge	7,352	36	**E**
	Mission Center Rd. Off-Ramp to SR 163 NB On-Ramp	Basic	7,541	35	D
	SR 163 NB On-Ramp	Merge	7,541	40	**E**
	Mission Center Rd. On-Ramp	Merge	6,171	32	D
	Qualcomm Way Off-Ramp	Diverge	11,211	47	**F**
	Qualcomm Way Off-Ramp to I-805 Off-Ramp	Basic	9,714	37	**E**
	I-805 Off-Ramp	Diverge	9,714	52	**E**
	I-805 Off-Ramp to Qualcomm Way On-Ramp	Basic	7,068	30	D
	Qualcomm Way On-Ramp	Merge	7,068	36	**E**
	Qualcomm Way On-Ramp to I-805 On Ramp	Basic	8,422	43	**E**
	I-805 On-Ramp to I-15 NB Off-Ramp	Weave	8,422		**F**
	I-15 NB Off-Ramp to I-15 SB On-Ramp	Basic	7,912	36	**E**
	I-15 SB On-Ramp to Fairmount Ave. SB On-Ramp	Basic	10,913	32	D
	Fairmount Ave. SB On-Ramp	Merge	10,913	47	**E**
	Fairmount Ave. NB On-Ramp to Waring Rd. Off-Ramp	Weave	11,756		**F**
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	10,558	41	**E**
	Waring Rd. On-Ramp	Merge	10,558	32	**F**
	Waring Rd. On-Ramp to College Ave. Off-Ramp	Basic	10,985	45	**E**
	College Ave. Off-Ramp	Diverge	10,985	45	**E**
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	9,146	32	D
	College Ave. On-Ramp	Merge	9,146	31	D

a. Density is measured in pc/hr/ln. If density is not shown, volume exceeded capacity.
Bold values in shaded celled indicate intersections operating at LOS E or F

Table B-2: 2050 No-Build Freeway Mainline Segment Conditions – PM Peak Hour (Cont'd.)

Direction	Segment (INTERSTATE 8)	Type	Volume	Density[a]	LOS
Westbound	College Ave. Off-Ramp	Diverge	7,361	32	D
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	[illegible]	[illegible]	[illegible]
	College Ave. On-Ramp	Merge	6,477	30	D
	College Ave. On-Ramp to Waring Rd. Off-Ramp	Basic	8,413	28	D
	Waring Rd. Off-Ramp	Diverge	8,413	32	D
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	7,944	26	C
	Waring Rd. On Ramp to Fairmount Ave. Off-Ramp	Basic	8,865	24	C
	Fairmount Ave. Off-Ramp	Diverge	8,865	46	**E**
	Fairmount Ave. Off-Ramp to I-15 NB Off-Ramp	Basic	7,720	20	C
	I-15 NB Off-Ramp	Diverge	7,720	37	**E**
	I-15 SB Off-Ramp	Diverge	6,387	33	D
	I-15 SB Off Ramp to I-15 On Ramp	Basic	5,202	23	C
	I-15 On-Ramp to I-805 Off-Ramp	Weave	5,202	27	**F**
	Qualcomm Way Off-Ramp	Diverge	7,077	38	**E**
	Qualcomm Way Off-Ramp to I-805 On-Ramp	Basic	6,224	25	C
	I-805 On-Ramp to Mission Center Rd. Off-Ramp	Weave	6,224		**F**
	Mission Center Rd. Off-Ramp to Mission Center Rd. On-Ramp	Basic	8,267	41	**E**
	Mission Center Rd. On-Ramp to SR 163 NB Off-Ramp	Weave	8,267	45	**E**
	SR 163 SB Off-Ramp	Diverge	7,569	43	**E**
	SR 163 SB Off-Ramp to SR 163 SB On-Ramp	Basic	[illegible]	36	**E**
	SR 163 On-Ramps	Merge	8,852	24	C
	SR 163 NB On-Ramp to Fashion Valley Rd. On-Ramp	Basic	9,931	37	**E**
	Fashion Valley Rd. On-Ramp	Merge	9,931	34	**F**
	Fashion Valley Rd. On-Ramp to Taylor St. Off-Ramp	Basic	10,407	40	**E**
	Taylor St. Off-Ramp	Diverge	10,407	42	**E**
	Taylor St. Off-Ramp to Taylor St. On-Ramp	Basic	8,891	48	**F**
	Taylor St. On-Ramp	Merge	8,891	37	**E**
	Morena Blvd. Off-Ramp	Diverge	10,415	41	**E**
	I-5 SB Off-Ramp	Diverge	9,477	54	**E**
	I-5 NB Off-Ramp	Diverge	5,565	40	**E**
	I-5 NB Off-Ramp to I-5 On-Ramp	Basic	3,575	32	D
	I-5 On-Ramp to Mission Bay Dr. Off-Ramp	Basic	5,517	23	C
	Mission Bay Dr. Off-Ramp	Diverge	5,517	33	D
	Mission Bay Dr. Off-Ramp to Sunset Cliffs Blvd.	Basic	3,842	35	D

a. Density is measured in pc/hr/ln. If density is not shown, volume exceeded capacity.
Bold values in shaded celled ind cate intersections operating at LOS E or F

Table B-3: Alternative A Freeway Mainline Segment Conditions – AM Peak Hour

Direction	INTERSTATE 8 Segment	Type	Peak Hour Volume	Density[a]	LOS
Eastbound	Sunset Cliffs to Sports Arena Blvd. SB On-Ramp	Basic	2,569	20	C
	Sports Arena SB On-Ramp to I-5 SB Off-Ramp	Weave	2,569		**F**
	I-5 SB Off-Ramp - I-5 SB On-Ramp	Basic	3,495	30	D
	I-5 SB On-Ramp to Camino Del Rio West On-Ramp	Basic	5,273	21	C
	Camino Del Rio West On-Ramp	Merge	5,273	21	C
	I-5 NB On-Ramp to Via Las Cumbres Off-Ramp	Weave	5,623	35	D
	Via Las Cumbres On-Ramp	Merge	7,482	30	D
	Via Las Cumbres On-Ramp to SR 163 SB Off-Ramp	Basic	6,926	22	C
	SR 163 SB Off-Ramp	Diverge	6,926	29	D
	SR 163 NB Off-Ramp	Diverge	6,115	43	**E**
	Mission Center Rd. Off-Ramp	Diverge	2,462	15	B
	Mission Center Rd. Off-Ramp to SR 163 NB On-Ramp	Basic	4,664	18	C
	SR 163 NB On-Ramp	Merge	4,664	27	C
	Mission Center Rd. On-Ramp to Qualcomm Way Off-Ramp	Weave	6,203	25	C
	I-805 Off-Ramp	Diverge	5,635	34	D
	I-805 Off-Ramp to Qualcomm Way On-Ramp	Basic	4,386	17	B
	Qualcomm Way On-Ramp	Merge	4,386	25	C
	Qualcomm Way On-Ramp to I-805 On-Ramp	Basic	4,729	18	C
	I-805 On-Ramp to I-15 NB Off-Ramp	Weave	4,729		**F**
	I-15 NB Off-Ramp to I-15 SB On-Ramp	Basic	4,469	17	B
	I-15 SB On-Ramp to Fairmount Ave. SB On-Ramp	Basic	6,349	16	B
	Fairmount Ave. SB On-Ramp	Merge	6,349	27	C
	Fairmount Ave. NB On-Ramp to Waring Rd. Off-Ramp	Weave	6,670	29	D
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	6,691	21	C
	Waring Rd. On-Ramp	Merge	6,691	24	C
	Waring Rd. On-Ramp to College Ave. Off-Ramp	Basic	7,237	23	C
	College Ave. Off-Ramp	Diverge	7,237	31	D
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	5,839	18	C
	College Ave. On-Ramp	Merge	5,839	23	C

a. Density is measured in pc/hr/ln. If density is not shown, volume exceeded capacity
Bold values in shaded celled indicate intersections operating at LOS E or F

Table B-3: Alternative A Freeway Mainline Segment Conditions – AM Peak Hour (Cont'd.)

Direction	INTERSTATE 8 Segment	Type	Peak Hour Volume	Density	LOS
Westbound	College Ave. Off-Ramp	Diverge	11,462	43	**F**
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	10,603	42	**E**
	College Ave. On-Ramp	Merge	10,603	58	**F**
	College Ave. On-Ramp to Waring Rd. Off-Ramp	Basic	12,138	58	**F**
	Waring Rd. Off-Ramp	Diverge	12,138	44	**F**
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	11,565	51	**F**
	Waring Rd. On-Ramp	Basic	12,841	42	**E**
	Fairmount Ave. Off-Ramp	Diverge	12,841	53	**E**
	Fairmount Ave. Off Ramp to I-15 NB Off-Ramp	Basic	11,351	34	D
	I-15 NB Off-Ramp	Diverge	11,351	39	**E**
	I-15 SB Off-Ramp	Diverge	9,302	46	**F**
	I-15 SB Off Ramp to I-15 On-Ramp	Basic	8,513	42	**E**
	I-15 On-Ramp to I-805 Off-Ramp	Weave	8,513		**F**
	Qualcomm Way Off-Ramp	Diverge	9,998	53	**F**
	Qualcomm Way Off-Ramp to I-805 On-Ramp	Basic	8,688	44	**E**
	I-805 On-Ramp to Mission Center Rd. Off-Ramp	Weave	8,688		**F**
	Mission Center Rd. Off-Ramp to Mission Center Rd. On-Ramp	Basic	12,032	164	**F**
	Mission Center Rd. On-Ramp to SR 163 NB Off-Ramp	Weave	12,032		**F**
	SR 163 SB Off-Ramp	Diverge	8,394	38	**E**
	SR 163 SB Off-Ramp to SR 163 SB On-Ramp	Basic	6,831	49	**F**
	SR 163 SB On Ramp to SR 163 NB On-Ramp	Merge	6,831	41	**E**
	SR 163 NB On-Ramp to Via Las Cumbres Off-Ramp	Basic	13,783	93	**F**
	Via Las Cumbres Off-Ramp	Diverge	13,783	55	**F**
	Via Las Cumbres Off-Ramp to Via Las Cumbres On-Ramp	Basic	8,963	31	D
	Via Las Cumbres On-Ramp	Merge	8,963	44	**E**
	Morena Blvd. Off-Ramp	Diverge	10,195	41	**E**
	I-5 SB Off-Ramp	Diverge	9,133	49	**E**
	I-5 NB Off-Ramp	Diverge	4,196	33	D
	I-5 NB Off-Ramp to I-5 On-Ramp	Basic	2,602	20	C
	I-5 On-Ramp	Basic	3,781	15	B
	Mission Bay Dr. Off-Ramp	Diverge	3,781	18	B
	Mission Bay Dr. Off-Ramp to Sunset Cliffs Blvd.	Basic	1,852	15	B

Table 8-4: Alternative A Freeway Mainline Segment Conditions – PM Peak Hour

Direction	Segment (INTERSTATE 8)	Type	Peak Hour Volume	Density	LOS
Eastbound	Sunset Cliffs to Sports Arena Blvd. SB On-Ramp	Basic	3,009	16	B
	Sports Arena SB On-Ramp to I-5 SB Off-Ramp	Weave	7,009	29	D
	I-5 SB Off-Ramp - I-5 SB On-Ramp	Basic	3,291	27	D
	I-5 SB On-Ramp to Camino Del Rio West On-Ramp	Basic	6,090	25	C
	Camino Del Rio West On-Ramp	Merge	6,090	41	**E**
	I-5 NB On-Ramp to Via Las Cumbres Off-Ramp	Weave	8,567		**F**
	Via Las Cumbres On-Ramp	Merge	9,743	37	**F**
	Via Las Cumbres On-Ramp to SR 163 SB Off-Ramp	Basic	10,005	37	**E**
	SR 163 SB Off-Ramp	Diverge	10,005	41	**E**
	SR 163 NB Off-Ramp	Diverge	8,868	57	**F**
	Mission Center Rd. Off-Ramp	Diverge	5,411	28	D
	Mission Center Rd. Off-Ramp to SR 163 NB On-Ramp	Basic	7,696	35	D
	SR 163 NB On-Ramp	Merge	7,696	40	**E**
	Mission Center Rd. On-Ramp to Qualcomm Way Off-Ramp	Weave	9,986		**F**
	I-805 Off-Ramp	Diverge	9,678	56	**E**
	I-805 Off-Ramp to Qualcomm Way On-Ramp	Basic	7,100	30	D
	Qualcomm Way On-Ramp	Merge	7,100	37	**E**
	Qualcomm Way On-Ramp to I-805 On-Ramp	Basic	8,336	40	**E**
	I-805 On-Ramp to I-15 NB Off-Ramp	Weave	8,336		**F**
	I-15 NB Off-Ramp to I-15 SB On-Ramp	Basic	7,745	35	D
	I-15 SB On-Ramp to Fairmount Ave. SB On-Ramp	Basic	10,581	30	D
	Fairmount Ave. SB On-Ramp	Merge	10,581	46	**E**
	Fairmount Ave. NB On-Ramp to Waring Rd. Off-Ramp	Weave	11,397		**F**
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	10,339	39	**E**
	Waring Rd. On-Ramp	Merge	10,339	34	D
	Waring Rd. On-Ramp to College Ave. Off-Ramp	Basic	10,778	43	**E**
	College Ave. Off-Ramp	Diverge	10,778	45	**E**
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	9,114	32	D
	College Ave. On-Ramp	Merge	9,114	36	**E**

a. Density is measured in pc/h/ln. If density is not shown, volume exceeded capacity.
Bold values in shaded celled indicate intersections operating at LOS E or F

Table 8-4: Alternative A Freeway Mainline Segment Conditions – PM Peak Hour (Cont'd.)

Direction	Segment (INTERSTATE 8)	Type	Peak Hour Volume	Density	LOS
Westbound	College Ave. Off-Ramp	Diverge	7,837	31	D
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	6,457	20	C
	College Ave. On-Ramp	Merge	6,457	30	D
	College Ave. On-Ramp to Waring Rd. Off-Ramp	Basic	8,397	28	D
	Waring Rd. Off-Ramp	Diverge	8,397	32	D
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	7,933	26	C
	Waring Rd. On-Ramp	Basic	8,615	23	C
	Fairmount Ave. Off-Ramp	Diverge	8,615	44	**E**
	Fairmount Ave. Off Ramp to I-15 NB Off-Ramp	Basic	7,513	20	C
	I-15 NB Off-Ramp	Diverge	7,513	34	D
	I-15 SB Off-Ramp	Diverge	6,325	33	D
	I-15 SB Off-Ramp to I-15 On-Ramp	Basic	5,700	23	C
	I-15 On-Ramp to I-805 Off-Ramp	Weave	5,700		**F**
	Qualcomm Way Off-Ramp	Diverge	7,369	40	**E**
	Qualcomm Way Off-Ramp to I-805 On-Ramp	Basic	6,251	25	C
	I-805 On-Ramp to Mission Center Rd. Off-Ramp	Weave	6,251		**F**
	Mission Center Rd. Off-Ramp to Mission Center Rd. On-Ramp	Basic	10,527	76	**F**
	Mission Center Rd. On-Ramp to SR 163 NB Off-Ramp	Weave	10,527		**F**
	SR 163 SB Off-Ramp	Diverge	7,562	43	**E**
	SR 163 SB Off-Ramp to SR 163 SB On-Ramp	Basic	5,668	34	D
	SR 163 SB On Ramp to SR 163 NB On-Ramp	Merge	5,668	36	**E**
	SR 163 NB On-Ramp to Via Las Cumbres Off-Ramp	Basic	12,537	64	**F**
	Via Las Cumbres Off-Ramp	Diverge	12,537	47	**F**
	Via Las Cumbres Off-Ramp to Via Las Cumbres On-Ramp	Basic	8,834	30	D
	Via Las Cumbres On-Ramp	Merge	8,834	42	**F**
	Morena Blvd. Off-Ramp	Diverge	11,365	44	**F**
	I-5 SB Off-Ramp	Diverge	10,593	55	**E**
	I-5 NB Off-Ramp	Diverge	6,263	43	**E**
	I-5 NB Off-Ramp to I-5 On-Ramp	Basic	3,544	30	D
	I-5 On-Ramp	Basic	5,489	22	C
	Mission Bay Dr. Off-Ramp	Diverge	5,489	32	D
	Mission Bay Dr. Off-Ramp to Sunset Cliffs Blvd.	Basic	2,222	17	B

Table B-5: Alternative B Freeway Mainline Segment Conditions – AM Peak Hour

Direction	INTERSTATE 8 Segment	Type	Peak Hour Volume	Density	LOS
Eastbound	Sunset Cliffs Blvd. to Sports Arena Blvd. On-Ramp	Basic	4,090	35	**E**
	Sports Arena Blvd. On-Ramp	Merge	4,090	35	**E**
	Sports Arena Blvd. On-Ramp to I-5 Off-Ramp	Basic	5,503	22	C
	I-5 Off-Ramp	Diverge	5,503	44	**E**
	I-5 Off-Ramp to I-5 SB On-Ramp	Basic	2,601	20	C
	I-5 SB On-Ramp to Camino Del Rio West On-Ramp	Basic	4,566	18	B
	Camino Del Rio West On-Ramp	Merge	4,566	19	B
	Camino Del Rio West On-Ramp to Morena Blvd. On Ramp	Basic	7,848	26	C
	Morena Blvd. On-Ramp to New Hotel Circle Off-Ramp	Weave	7,848	38	**E**
	New Hotel Circle Off-Ramp to New Hotel Circle On-Ramp	Basic	7,774	25	C
	New Hotel Circle On-Ramp to SR 163 SB Off-Ramp	Weave	7,774	38	**E**
	SR 163 NB Off-Ramp	Diverge	7,616	26	C
	Mission Center Rd. Off-Ramp	Diverge	4,771	42	**E**
	Mission Center Rd. Off-Ramp to SR 163 NB On-Ramp	Basic	4,851	19	C
	SR 163 NB On-Ram[	Merge	4,851	20	B
	Mission Center Rd. On-Ramp to Qualcomm Way Off-Ramp	Weave	5,353	23	C
	I-805 Off-Ramp	Diverge	7,359	25	C
	I-805 Off-Ramp to Qualcomm Way On-Ramp	Basic	4,531	18	B
	Qualcomm Way On-Ramp	Merge	4,531	33	D
	Qualcomm Way On-Ramp to I-805 On-Ramp	Basic	4,823	20	C
	I-805 On-Ramp to I-15 NB Off-Ramp	Weave	4,823	37	**E**
	I-15 NB Off-Ramp to Fairmount Ave. SB On-Ramp	Basic	4,705	18	C
	Fairmount Ave. SB On-Ramp	Merge	4,705	32	D
	Fairmount Ave. NB On-Ramp to Waring Rd. Off-Ramp	Weave	6,288	27	C
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	6,714	21	C
	Waring Rd. On-Ramp	Merge	6,714	25	C
	Waring Rd. On-Ramp to College Ave. Off-Ramp	Basic	7,282	23	C
	College Ave. Off Ramp	Diverge	7,282	20	B
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	5,864	18	C
	College Ave. On-Ramp	Merge	5,864	36	**E**

a. Density is measured in pc/hr/ln. If density is not shown, volume exceeded capacity.
Bold values in shaded celled indicate intersections operating at LOS E or F

Table B-5: Alternative B Freeway Mainline Segment Conditions – AM Peak Hour (Cont'd.)

Direction	INTERSTATE 8 Segment	Type	Peak Hour Volume	Density	LOS
Westbound	College Ave. Off-Ramp	Diverge	11,298	43	**F**
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	10,367	40	**E**
	College Ave. On-Ramp	Merge	10,367	50	**F**
	College Ave. NB On-Ramp	Merge	11,164	56	**F**
	College Ave. NB On-Ramp to Waring Rd. Off-Ramp	Basic	12,796	69	**F**
	Waring Rd. Off-Ramp	Diverge	12,796	46	**F**
	Waring Rd. Off-Ramp to Waring Rd. Off-Ramp	Basic	12,150	58	**F**
	Waring Rd. On-Ramp	Basic	13,405	47	**F**
	Fairmount Ave. Off-Ramp	Diverge	13,405	66	**F**
	Fairmount Ave. Off-Ramp to I-15 NB Off-Ramp	Basic	11,851	36	**E**
	I-15 SB Off-Ramp	Diverge	11,851	41	**E**
	I-15 SB Off-Ramp to I-15 On-Ramp	Diverge	9,617	48	**F**
	I-15 SB Off-Ramp to I-15 On-Ramp	Basic	8,717	44	**E**
	I-15 On-Ramp to I-805 Off-Ramp	Weave	8,717		**F**
	Qualcomm Way Off-Ramp	Diverge	9,463	48	**F**
	Qualcomm Way Off-Ramp to I-805 On-Ramp	Basic	8,690	44	**E**
	I-805 On-Ramp to Mission Center Rd. Off-Ramp	Weave	8,690		**F**
	Mission Center Rd. Off-Ramp to SR 163 NB Off-Ramp	Basic	10,399	40	**E**
	SR 163 NB Off-Ramp	Diverge	10,399	48	**E**
	SR 163 SB Off Ramp	Diverge	7,465	31	D
	SR 163 SB Off Ramp to SR 163 SB On-Ramp	Basic	6,116	38	**E**
	SR 163 On-Ramp	Merge	6,116	49	**E**
	SR 163 On-Ramp to Taylor St. On-Ramp	Basic	10,226	39	**E**
	Tyalor St. On Ramp	Merge	10,226	53	**F**
	Morena Blvd. Off Ramp	Diverge	11,251	49	**F**
	I-5 SB Off-Ramp	Diverge	9,442	52	**E**
	I-5 NB Off-Ramp	Diverge	4,863	35	**E**
	I-5 NB Off-Ramp to I-5 SB On-Ramp	Basic	2,412	19	C
	I-5 On Ramp	Merge	2,412	21	C
	Mission Bay Dr. Off-Ramp	Diverge	3,936	19	B
	Mission Bay Dr. Off-Ramp to Sunset Cliffs Blvd.	Basic	2,080	15	B

Table B-6: Alternative 8 Freeway Mainline Segment Conditions – PM Peak Hour

Direction	INTERSTATE 8 Segment	Type	Peak Hour Volume	Density	LOS
Eastbound	Sunset Cliffs Blvd. to Sports Arena Blvd. On-Ramp	Basic	3,167	26	C
	Sports Arena Blvd. On-Ramp	Merge	3,167	28	C
	Sports Arena Blvd. On-Ramp to I-5 Off-Ramp	Basic	4,669	18	C
	I-5 Off-Ramp	Diverge	4,669	41	**E**
	I-5 Off-Ramp to I-5 SB On-Ramp	Basic	2,449	19	C
	I-5 SB On-Ramp to Camino Del Rio West On-Ramp	Basic	5,273	21	C
	Camino Del Rio West On-Ramp	Merge	5,273	40	**E**
	Camino Del Rio West On-Ramp to Morena Blvd. On Ramp	Basic	9,783	36	**E**
	Morena Blvd. On-Ramp to New Hotel Circle Off-Ramp	Weave	9,783		**F**
	New Hotel Circle Off-Ramp to New Hotel Circle On-Ramp	Basic	9,394	33	D
	New Hotel Circle On-Ramp to SR 163 SB Off-Ramp	Weave	9,394		**F**
	SR 163 NB Off-Ramp	Diverge	9,329	46	**F**
	Mission Center Rd. Off-Ramp	Diverge	7,821	53	**E**
	Mission Center Rd. Off-Ramp to SR 163 NB On-Ramp	Basic	8,004	37	**E**
	SR 163 NB On-Ramp	Merge	8,004	28	C
	Mission Center Rd. On-Ramp to Qualcomm Way Off-Ramp	Weave	8,702		**F**
	I-805 Off-Ramp	Diverge	10,910	45	**E**
	I-805 Off-Ramp to Qualcomm Way On-Ramp	Basic	7,333	32	D
	Qualcomm Way On-Ramp	Merge	7,333	57	**F**
	Qualcomm Way On-Ramp to I-805 On-Ramp	Basic	8,501	44	**E**
	I-805 On-Ramp to I-15 NB Off-Ramp	Weave	8,501		**F**
	I-15 NB Off-Ramp to Fairmount Ave. SB On-Ramp	Basic	8,155	38	**E**
	Fairmount Ave. SB On-Ramp	Merge	8,155	47	**E**
	Fairmount Ave. NB On-Ramp to Waring Rd. Off-Ramp	Weave	10,107		**F**
	Waring Rd. Off-Ramp to Waring Rd. On-Ramp	Basic	10,374	40	**E**
	Waring Rd. On-Ramp	Merge	10,374	35	**F**
	Waring Rd. On-Ramp to College Ave. Off-Ramp	Basic	10,844	44	**E**
	College Ave. Off-Ramp	Diverge	10,844	41	**E**
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	9,153	32	D
	College Ave. On-Ramp	Merge	9,153	38	**E**

a. Density is measured in pc/h/ln. If density is not shown, volume exceeded capacity.
Bold values in shaded celled indicate intersections operating at LOS E or F

Table B-6: Alternative 8 Freeway Mainline Segment Conditions – PM Peak Hour (Cont'd.)

Direction	INTERSTATE 8 Segment	Type	Peak Hour Volume	Density	LOS
Westbound	College Ave. Off-Ramp	Diverge	7,229	31	D
	College Ave. Off-Ramp to College Ave. On-Ramp	Basic	6,313	20	C
	College Ave. On-Ramp	Merge	6,313	22	C
	College Ave. NB On-Ramp	Merge	7,365	23	C
	College Ave. NB On-Ramp to Waring Rd. Off-Ramp	Basic	8,852	30	D
	Waring Rd. Off-Ramp	Diverge	8,852	33	D
	Waring Rd. Off-Ramp to Waring Rd. Off-Ramp	Basic	8,335	28	D
	Waring Rd. On-Ramp	Basic	8,993	24	C
	Fairmount Ave. Off-Ramp	Diverge	8,993	46	**E**
	Fairmount Ave. Off-Ramp to I-15 NB Off-Ramp	Basic	7,844	21	C
	I-15 SB Off-Ramp	Diverge	7,844	36	**E**
	I-15 SB Off-Ramp to I-15 On-Ramp	Diverge	6,549	35	D
	I-15 SB Off-Ramp to I-15 On-Ramp	Basic	5,837	23	C
	I-15 On-Ramp to I-805 Off-Ramp	Weave	5,837		**F**
	Qualcomm Way Off-Ramp	Diverge	6,974	36	**E**
	Qualcomm Way Off-Ramp to I-805 On-Ramp	Basic	6,252	25	C
	I-805 On-Ramp to Mission Center Rd. Off-Ramp	Weave	6,252		**F**
	Mission Center Rd. Off-Ramp to SR 163 NB Off-Ramp	Basic	8,419	28	D
	SR 163 NB Off-Ramp	Diverge	8,419	37	**E**
	SR 163 SB Off Ramp	Diverge	6,279	35	D
	SR 163 SB Off Ramp to SR 163 SB On-Ramp	Basic	5,075	28	D
	SR 163 On-Ramp	Merge	5,075	44	**E**
	SR 163 On-Ramp to Taylor St. On-Ramp	Basic	9,301	33	D
	Tyalor St. On Ramp	Merge	9,301	39	**F**
	Morena Blvd. Off Ramp	Diverge	10,581	45	**E**
	I-5 SB Off-Ramp	Diverge	9,619	53	**E**
	I-5 NB Off-Ramp	Diverge	5,374	40	**E**
	I-5 NB Off-Ramp to I-5 SB On-Ramp	Basic	3,285	27	D
	I-5 On Ramp	Merge	3,285	29	D
	Mission Bay Dr. Off-Ramp	Diverge	5,816	35	D
	Mission Bay Dr. Off-Ramp to Sunset Cliffs Blvd.	Basic	2,496	20	C

Tables B-7 through B-12 compare the no build ramp volume and level of service with the improvement alternatives A and B.

Table B-7: 2050 No-Build Ramp Roadway Segment Conditions – AM Peak Hour

	INTERSTATE 8					
Direction	**Segment**	**Type**	**Capacity**	**Volume**	**V/C[a]**	**LOS**
Eastbound	Sports Arena Blvd. SB	On-Ramp	3,200	2,820	0.88	**E**
	Sports Arena Blvd. NB	On-Ramp	1,200	1,137	0.95	**E**
	I-5 SB	Off-Ramp	1,200	2,382	1.99	**F**
	I-5 SB	On-Ramp	3,200	1,836	0.57	C
	Camino Del Rio West	On-Ramp	1,200	172	0.14	A
	I-5 NB	On-Ramp	1,600	2,606	1.63	**F**
	Taylor St.	Off-Ramp	1,200	524	0.44	B
	Taylor St.	On-Ramp	1,200	564	0.47	C
	Hotel Circle South	Off-Ramp	1,200	686	0.57	C
	Hotel Circle South	On-Ramp	1,600	1,910	1.19	**F**
	SR 163 SB	Off-Ramp	1,600	808	0.50	C
	SR 163 NB	Off-Ramp	3,200	3,960	1.24	**F**
	Mission Center Rd.	Off-Ramp	1,200	453	0.38	B
	SR 163 NB	On-Ramp	1,600	1,606	1.00	**F**
	Mission Center Rd.	On-Ramp	1,200	480	0.40	B
	Qualcomm Way	Off-Ramp	1,200	1,357	1.13	**F**
	I-805	Off-Ramp	2,400	1,791	0.75	D
	Qualcomm Way	On-Ramp	1,200	997	0.83	D
	I-805	On-Ramp	3,200	2,901	0.91	**E**
	I-15 SB	Off-Ramp	1,600	725	0.45	C
	I-15 NB	Off-Ramp	1,200	1,554	1.30	**F**
	I-15 SB	On-Ramp	3,200	2,411	0.75	D
	Fairmount Ave SB	On-Ramp	1,200	331	0.28	B
	Fairmount Ave NB	On-Ramp	1,200	841	0.70	D
	Waring Rd.	Off-Ramp	1,200	688	0.57	C
	Waring Rd.	On-Ramp	1,200	456	0.38	B
	College Ave.	Off-Ramp	2,400	2,288	0.95	**E**
	College Ave.	On-Ramp	1,200	483	0.40	B

a. V/C = Volume to Capacity Ratio
Bold values in shaded cells indicate intersections operating at LOS E or F.

Table B-7: 2050 No-Build Ramp Roadway Segment Conditions – AM Peak Hour (Cont'd.)

	INTERSTATE 8					
Direction	**Segment**	**Type**	**Capacity**	**Volume**	**V/C[a]**	**LOS**
Westbound	College Ave	Off-Ramp	1,200	738	0.61	C
	College Ave	On-Ramp	1,200	1,499	1.25	**F**
	Waring Rd.	Off-Ramp	1,200	308	0.26	A
	Waring Rd.	On-Ramp	1,600	1,722	1.08	**F**
	Fairmount Ave.	Off-Ramp	1,200	1,517	1.26	**F**
	I-15 NB	Off-Ramp	2,400	2,299	0.96	**E**
	I-15 SB	Off-Ramp	1,200	949	0.79	D
	I-15	On-Ramp	1,200	2,302	1.92	**F**
	I-805	Off-Ramp	3,200	4,175	1.30	**F**
	Qualcomm Way	Off-Ramp	1,200	1,362	1.14	**F**
	I-805	On-Ramp	1,600	2,653	1.66	**F**
	Qualcomm Way	On-Ramp	1,200	1,687	1.41	**F**
	Mission Center Rd.	Off-Ramp	1,200	1,532	1.28	**F**
	Mission Center Rd.	On-Ramp	1,600	1,037	0.65	D
	SR 163 NB	Off-Ramp	2,400	2,554	1.06	**F**
	SR 163 SB	Off-Ramp	1,600	2,356	1.47	**F**
	SR 163 SB	On-Ramp	3,200	2,700	0.84	D
	SR-168 NB	On-Ramp	1,200	657	0.55	C
	Fashion Valley Rd.	On-Ramp	1,200	558	0.47	C
	Taylor St.	Off-Ramp	1,200	1,808	1.51	**F**
	Taylor St.	On-Ramp	1,600	2,010	1.26	**F**
	Morena Blvd.	Off-Ramp	1,200	1,056	0.88	**E**
	I-5 SB	Off-Ramp	3,200	4,774	1.49	**F**
	I-5 NB[b]	Off-Ramp	3,200	2,512	0.78	D
	I-5	On-Ramp	3,200	1,038	0.32	B
	Mission Bay Dr.	Off-Ramp	2,400	1,890	0.79	D

a. V/C = Volume to Capacity Ratio
b. Second lane added in No-Build Condition
Bold values indicate intersections operating at LOS E or F.

Table B-8: 2050 No-Build Ramp Roadway Segment Conditions – PM Peak Hour

Direction	Segment	INTERSTATE 8 Type	Capacity	Volume	V/C[a]	LOS
Eastbound	Sports Arena Blvd. SB	On-Ramp	3,200	2,035	0.64	C
	Sports Arena Blvd. NB	On-Ramp	1,200	[illegible]	0.87	D
	I-5 SB	Off-Ramp	1,200	2,214	1.85	**F**
	I-5 SB	On-Ramp	3,200	2,672	0.83	D
	Camino Del Rio West	On-Ramp	1,200	1,218	1.01	**F**
	I-5 NB	On-Ramp	1,600	3,147	1.97	**F**
	Taylor St.	Off-Ramp	1,200	1,563	1.30	**F**
	Taylor St.	On-Ramp	1,200	973	0.81	D
	Hotel Circle South	Off-Ramp	1,200	537	0.45	C
	Hotel Circle South	On-Ramp	1,600	3,657	2.29	**F**
	SR 163 SB	Off-Ramp	1,600	1,132	0.71	D
	SR 163 NB	Off-Ramp	3,200	3,747	1.17	**F**
	Mission Center Rd.	Off-Ramp	1,200	629	0.52	C
	SR 163 NB	On-Ramp	1,600	2,382	1.49	**F**
	Mission Center Rd.	On-Ramp	1,200	2,103	1.75	**F**
	Qualcomm Way	Off-Ramp	1,200	1,498	1.25	**F**
	I-805	Off-Ramp	2,400	3,557	1.48	**F**
	Qualcomm Way	On-Ramp	1,200	1,369	1.14	**F**
	I-805	On-Ramp	3,200	4,258	1.33	**F**
	I-15 SB	Off-Ramp	1,600	1,155	0.72	D
	I-15 NB	Off-Ramp	1,200	1,917	1.60	**F**
	I-15 SB	On-Ramp	3,200	3,697	1.16	**F**
	Fairmount Ave. SB	On-Ramp	1,200	844	0.70	D
	Fairmount Ave. NB	On-Ramp	1,200	774	0.65	D
	Waring Rd.	Off-Ramp	1,200	892	0.74	D
	Waring Rd.	On-Ramp	1,200	627	0.52	C
	College Ave.	Off-Ramp	2,400	1,523	0.63	C
	College Ave.	On-Ramp	1,200	1,122	0.93	**E**

a. V/C = Volume to Capacity Ratio
Bold values in shaded cells indicate intersections operating at LOS E or F.

Table B-8: 2050 No-Build Ramp Roadway Segment Conditions – PM Peak Hour (Cont'd.)

Direction	Segment	INTERSTATE 8 Type	Capacity	Volume	V/C[a]	LOS
Westbound	College Ave.	Off-Ramp	1,200	990	0.83	D
	College Ave.	On-Ramp	1,200	1,978	1.65	**F**
	Waring Rd.	Off-Ramp	1,200	346	0.29	B
	Waring Rd.	On-Ramp	1,600	835	0.52	C
	Fairmount Ave.	Off-Ramp	1,200	1,231	1.03	**F**
	I-15 NB	Off-Ramp	2,400	1,333	0.56	C
	I-15 SB	Off-Ramp	1,200	801	0.67	D
	I-15	On-Ramp	1,200	2,016	1.68	**F**
	I-805	Off-Ramp	3,200	2,951	0.92	**E**
	Qualcomm Way	Off-Ramp	1,200	1,087	0.91	**E**
	I-805	On-Ramp	1,600	2,057	1.29	**F**
	Qualcomm Way	On-Ramp	1,200	2,295	1.91	**F**
	Mission Center Rd.	Off-Ramp	1,200	1,677	1.40	**F**
	Mission Center Rd.	On-Ramp	1,600	1,325	0.83	D
	SR 163 NB	Off-Ramp	2,400	1,861	0.78	D
	SR 163 SB	Off-Ramp	1,600	2,131	1.33	**F**
	SR 163 SB	On-Ramp	3,200	3,095	0.97	**E**
	SR-168 NB	On-Ramp	1,200	618	0.51	C
	Fashion Valley Rd.	On-Ramp	1,200	1,247	1.04	**F**
	Taylor St.	Off-Ramp	1,200	1,315	1.10	**F**
	Taylor St.	On-Ramp	1,600	1,608	1.01	**F**
	Morena Blvd.	Off-Ramp	1,200	768	0.64	C
	I-5 SB	Off-Ramp	3,200	4,187	1.31	**F**
	I-5 NB[b]	Off-Ramp	3,200	2,783	0.87	**E**
	I-5	On-Ramp	3,200	1,723	0.54	C
	Mission Bay Dr.	Off-Ramp	2,400	3,149	1.31	**F**

a. V/C = Volume to Capacity Ratio
b. Second lane added in No-Build Condition
Bold values indicate intersections operating at LOS E or F.

Table B-9: Alternative A Ramp Roadway Segment Conditions – AM Peak Hour

Direction	Segment	INTERSTATE 8 Type	Capacity	Volume	V/C*	LOS
Eastbound	Sports Arena SB	On-Ramp	1,200	3,169	0.99	E
	Sports Arena NB	On-Ramp	1,200	1,359	1.13	F
	I-8 EB	Off-Ramp	1,300	[illegible]	[illegible]	F
	I-5 SB	On-Ramp	3,200	1,323	0.41	B
	Camino Del Rio West	On-Ramp	1,200	350	0.29	B
	I-5 NB	On-Ramp	3,200	2,604	0.81	D
	Via Las Cumbres	Off-Ramp	2,400	1,150	0.48	C
	Via Las Cumbres	On-Ramp	2,400	1,430	0.60	C
	SR 163 SB	Off-Ramp	1,600	811	0.51	C
	SR 163 NB	Off-Ramp	3,200	3,653	1.14	F
	Mission Center Rd.	Off-Ramp	1,200	534	0.45	C
	SR 163 NB	On-Ramp	1,600	1,539	0.96	E
	Mission Center Rd.	On-Ramp	1,200	369	0.31	B
	Qualcomm Way	Off-Ramp	1,200	1,050	0.88	E
	I-805	Off-Ramp	2,400	1,669	0.70	D
	Qualcomm Way	On-Ramp	1,200	867	0.72	D
	I-805	On-Ramp	3,200	2,826	0.88	E
	I-15 SB	Off-Ramp	1,600	747	0.47	C
	I-15 NB	Off-Ramp	1,200	1,990	1.66	F
	I-15 SB	On-Ramp	3,200	2,285	0.71	D
	Fairmount Ave. SB	On-Ramp	1,200	321	0.27	A
	Fairmount Ave. NB	On-Ramp	1,200	851	0.71	D
	Waring Rd.	Off-Ramp	1,200	616	0.51	C
	Waring Rd.	On-Ramp	1,200	461	0.38	B
	College Ave.	Off-Ramp	2,400	2,111	0.88	E
	College Ave.	On-Ramp	1,200	523	0.44	B

Table B-9: Alternative A Ramp Roadway Segment Conditions – AM Peak Hour (Cont'd)

Direction	Segment	INTERSTATE 8 Type	Capacity	Volume	V/C*	LOS
Westbound	College Ave.	Off-Ramp	1,200	734	0.61	C
	College Ave.	On-Ramp	1,200	1,505	1.25	F
	Waring Rd.	Off-Ramp	1,200	305	0.25	[illegible]
	Waring Rd.	On-Ramp	1,600	1,317	0.82	D
	Fairmount Ave.	Off-Ramp	1,200	1,466	1.22	F
	I-15 NB	Off-Ramp	2,400	2,049	0.85	E
	I-15 SB	Off-Ramp	1,200	936	0.78	D
	I-15	On-Ramp	1,200	2,456	2.05	F
	I-805	Off-Ramp	3,200	4,015	1.25	F
	Qualcomm	Off-Ramp	1,200	1,744	1.45	F
	I-805	On-Ramp	1,600	2,665	1.67	F
	Qualcomm	On-Ramp	1,200	1,808	1.51	F
	Mission Center Rd.	Off-Ramp	1,200	1,481	1.23	F
	Mission Center Rd.	On-Ramp	1,600	812	0.51	C
	SR 163 NB	Off-Ramp	2,400	2,443	1.02	F
	SR 163 SB	Off-Ramp	1,600	2,423	1.51	F
	SR 163 SB	On-Ramp	3,200	2,561	0.80	D
	SR 163 NB	On-Ramp	1,200	1,109	0.92	E
	Via Las Cumbres	Off-Ramp	3,200	1,700	0.53	C
	Via Las Cumbres	On-Ramp	3,200	1,232	0.39	B
	Morena Blvd.	Off-Ramp	1,200	1,062	0.89	E
	I-5 SB	Off-Ramp	3,200	[illegible]	[illegible]	F
	I-5 NB	Off-Ramp	3,200	2,604	0.81	D
	I-5	On-Ramp	3,200	1,042	0.33	B
	Mission Bay Dr.	Off-Ramp	2,400	1,850	0.77	D

Table B-10: Alternative A Ramp Roadway Segment Conditions – PM Peak Hour

Direction	INTERSTATE 8 Segment	Type	Capacity	Volume	V/C*	LOS
Eastbound	Sports Arena SB	On-Ramp	3,200	2,287	0.71	D
	Sports Arena NB	On-Ramp	1,200	1,169	0.97	E
	I-8 EB	Off-Ramp	1,200	3,860	3.78	F
	I-5 SB	On-Ramp	3,200	1,926	0.60	C
	Camino Del Rio West	On-Ramp	1,200	2,477	2.06	F
	I-5 NB	On-Ramp	3,200	3,144	0.98	E
	Via Las Cumbres	Off-Ramp	2,400	1,900	0.79	D
	Via Las Cumbres	On-Ramp	2,400	1,600	0.67	D
	SR 163 SB	Off-Ramp	1,600	1,137	0.71	D
	SR 163 NB	Off-Ramp	3,200	3,457	1.08	F
	Mission Center Rd.	Off-Ramp	1,200	741	0.62	C
	SR 163 NB	On-Ramp	1,600	2,290	1.43	F
	Mission Center Rd.	On-Ramp	1,200	1,617	1.35	F
	Qualcomm Way	Off-Ramp	1,200	1,159	0.97	E
	I-805	Off-Ramp	2,400	3,316	1.38	F
	Qualcomm Way	On-Ramp	1,200	1,191	0.99	E
	I-805	On-Ramp	3,200	4,149	1.30	F
	I-15 SB	Off-Ramp	1,600	1,190	0.74	D
	I-15 NB	Off-Ramp	1,200	2,454	2.05	F
	I-15 SB	On-Ramp	3,200	3,503	1.09	F
	Fairmount Ave. SB	On-Ramp	1,200	816	0.68	D
	Fairmount Ave. NB	On-Ramp	1,200	784	0.65	D
	Waring Rd.	Off-Ramp	1,200	799	0.67	D
	Waring Rd.	On-Ramp	1,200	634	0.53	C
	College Ave.	Off-Ramp	2,400	1,405	0.59	C
	College Ave.	On-Ramp	1,200	1,214	1.01	F

Table B-10: Alternative A Ramp Roadway Segment Conditions – PM Peak Hour (Cont'd)

Direction	INTERSTATE 8 Segment	Type	Capacity	Volume	V/C*	LOS
Westbound	College Ave.	Off-Ramp	1,200	986	0.82	D
	College Ave.	On-Ramp	1,200	1,986	1.66	F
	Waring Rd.	Off-Ramp	1,200	343	0.30	B
	Waring Rd.	On-Ramp	1,600	638	0.40	B
	Fairmount Ave.	Off-Ramp	1,200	1,190	0.99	E
	I-15 NB	Off-Ramp	2,400	1,188	0.50	C
	I-15 SB	Off-Ramp	1,200	790	0.66	D
	I-15	On-Ramp	1,200	2,150	1.79	F
	I-805	Off-Ramp	3,200	2,837	0.89	E
	Qualcomm	Off-Ramp	1,200	1,391	1.16	F
	I-805	On-Ramp	1,600	2,066	1.29	F
	Qualcomm	On-Ramp	1,200	2,459	2.05	F
	Mission Center Rd.	Off-Ramp	1,200	1,620	1.35	F
	Mission Center Rd.	On-Ramp	1,600	1,038	0.65	D
	SR 163 NB	Off-Ramp	2,400	1,781	0.74	D
	SR 163 SB	Off-Ramp	1,600	2,191	1.37	F
	SR 163 SB	On-Ramp	3,200	2,935	0.92	E
	SR 163 NB	On-Ramp	1,200	1,043	0.87	E
	Via Las Cumbres	Off-Ramp	3,200	950	0.30	B
	Via Las Cumbres	On-Ramp	3,200	2,531	0.79	D
	Morena Blvd.	Off-Ramp	1,200	772	0.64	D
	I-5 SB	Off-Ramp	3,200	4,330	1.35	F
	I-5 NB	Off-Ramp	3,200	2,886	0.90	E
	I-5	On-Ramp	3,200	1,730	0.54	C
	Mission Bay Dr.	Off-Ramp	2,400	3,084	1.29	F

Table B-11: Alternative B Ramp Roadway Segment Conditions – AM Peak Hour

Direction	Segment	INTERSTATE 8 Type	Capacity	Volume	V/C*	LOS
Eastbound	Sports Arena	On-Ramp	2,400	2,164	0.90	E
	I-5	Off-Ramp	2,400	3,988	1.66	F
	I-5 SB	On-Ramp	2,400	1,323	0.83	C
	Camino Del Rio West	On-Ramp	1,200	387	0.32	B
	I-5 NB	On-Ramp	1,600	2,044	1.28	F
	Morena Blvd.	On-Ramp	1,200	280	0.23	A
	New Hotel Circle	Off-Ramp	2,400	1,170	0.49	C
	New Hotel Circle	On-Ramp	3,200	1,328	0.42	B
	SR 163 SB	Off-Ramp	1,600	884	0.55	C
	SR 163 NB	Off-Ramp	3,200	3,843	1.20	F
	Mission Center Rd.	Off-Ramp	1,600	502	0.31	B
	SR 163 NB	On-Ramp	1,200	1,548	1.29	F
	Mission Center Rd.	On-Ramp	1,600	420	0.26	A
	Qualcomm Way	On-Ramp	1,600	1,234	0.77	D
	I-805	Off-Ramp	2,400	1,759	0.73	D
	Qualcomm Way	On-Ramp	1,200	756	0.63	C
	I-805	On-Ramp	2,400	2,946	1.23	F
	I-15 SB	Off-Ramp	1,600	622	0.39	B
	I-15 NB	Off-Ramp	1,600	1,583	0.99	E
	Fairmount Ave. SB	On-Ramp	1,200	401	0.33	B
	Fairmount Ave. NB	On-Ramp	1,200	938	0.78	D
	I-15 SB	On-Ramp	4,800	[illegible]	[illegible]	[illegible]
	Waring Rd.	Off-Ramp	1,200	609	0.51	C
	Waring Rd.	On-Ramp	1,200	484	0.40	B
	College Ave.	Off-Ramp	2,400	2,140	0.89	E
	College Ave.	On-Ramp	1,200	511	0.43	B

Table B-11: Alternative B Ramp Roadway Segment Conditions – AM Peak Hour (Cont'd)

Direction	Segment	INTERSTATE 8 Type	Capacity	Volume	V/C*	LOS
Westbound	College Ave.	Off-Ramp	1,200	769	0.64	D
	College Ave.	On-Ramp	1,200	797	0.66	D
	College Ave. NB	On-Ramp	1,300	707	0.60	C
	Waring Rd.	Off-Ramp	1,200	337	0.28	B
	Waring Rd.	On-Ramp	1,600	1,285	0.80	D
	Fairmount Ave.	Off-Ramp	1,200	1,511	1.26	F
	I-15 NB	Off-Ramp	2,400	2,234	0.93	E
	I-15 SB	Off-Ramp	1,200	1,090	0.91	E
	I-15	On-Ramp	1,200	2,274	1.90	F
	I-805	Off-Ramp	3,200	4,154	1.30	F
	Qualcomm Way	Off-Ramp	1,200	1,175	0.98	E
	I-805	On-Ramp	1,600	2,509	1.57	F
	Qualcomm Way	On-Ramp	1,200	1,728	1.44	F
	Mission Center Rd.	Off-Ramp	1,200	1,138	0.95	E
	SR 163 NB	Off-Ramp	2,400	2,934	1.22	F
	SR 163 SB	Off-Ramp	1,600	1,723	1.08	F
	SR 163 SB	On-Ramp	3,200	2,491	0.78	D
	SR 163 NB	On-Ramp	1,200	1,359	1.13	F
	Taylor St.	On-Ramp	3,200	953	0.30	B
	Morena Blvd.	Off-Ramp	1,200	1,805	1.50	F
	I-5 SB	Off-Ramp	3,200	5,271	1.65	F
	I-5 NB	Off-Ramp	3,200	1,980	0.61	D
	I-5 SB	On-Ramp	3,200	922	0.29	B
	I-5 NB	On-Ramp	3,200	602	0.19	A
	Mission Bay Dr.	Off-Ramp	2,400	1,984	0.83	D

Table B-12: Alternative 8 Ramp Roadway Segment Conditions – PM Peak Hour

Direction	Segment	INTERSTATE 8 Type	Capacity	Volume	V/C*	LOS
Eastbound	Sports Arena	On-Ramp	2,400	1,636	0.65	D
	I-5	Off-Ramp	2,400	3,707	1.54	F
	I-8 EB	On-Ramp	4,000	3,317	0.83	E
	Camino Del Rio West	On-Ramp	1,200	2,735	2.28	F
	I-5 NB	On-Ramp	1,600	2,468	1.54	F
	Morena Blvd.	On-Ramp	1,200	600	0.50	C
	New Hotel Circle	Off-Ramp	2,400	1,910	0.80	D
	New Hotel Circle	On-Ramp	3,200	1,975	0.62	C
	SR 163 SB	Off-Ramp	1,600	1,239	0.77	D
	SR 163 NB	Off-Ramp	3,200	3,637	1.14	F
	Mission Center Rd.	Off-Ramp	1,600	698	0.44	B
	SR 163 NB	On-Ramp	1,200	2,303	1.92	F
	Mission Center Rd.	On-Ramp	1,600	1,839	1.15	F
	Qualcomm Way	On-Ramp	1,600	1,362	0.85	E
	I-805	Off-Ramp	2,400	3,494	1.46	F
	Qualcomm Way	On-Ramp	1,200	1,038	0.87	E
	I-805	On-Ramp	2,400	4,324	1.80	F
	I-15 SB	Off-Ramp	1,600	990	0.62	C
	I-15 NB	Off-Ramp	1,600	1,952	1.22	F
	Fairmount Ave. SB	On-Ramp	1,200	1,020	0.85	D
	Fairmount Ave. NB	On-Ramp	1,200	863	0.72	D
	I-15 SB	On-Ramp	4,800	2,857	0.59	C
	Waring Rd.	Off-Ramp	1,200	790	0.66	D
	Waring Rd.	On-Ramp	1,200	666	0.56	C
	College Ave.	Off-Ramp	2,400	1,425	0.59	C
	College Ave.	On-Ramp	1,200	1,186	0.99	E

Table B-12: Alternative 8 Ramp Roadway Segment Conditions – PM Peak Hour (Cont'd)

Direction	Segment	INTERSTATE 8 Type	Capacity	Volume	V/C*	LOS
Westbound	College Ave.	Off-Ramp	1,200	1,032	0.86	E
	College Ave.	On-Ramp	1,200	1,052	0.88	E
	College Ave NB	On-Ramp	1,200	934	0.78	D
	Waring Rd.	Off-Ramp	1,200	379	0.32	B
	Waring Rd.	On-Ramp	1,600	623	0.39	B
	Fairmount Ave.	Off-Ramp	1,200	1,226	1.02	F
	I-15 NB	Off-Ramp	2,400	1,295	0.54	C
	I-15 SB	Off-Ramp	1,200	921	0.77	D
	I-15	On-Ramp	1,200	1,991	1.66	F
	I-805	Off-Ramp	3,200	2,936	0.92	E
	Qualcomm Way	Off-Ramp	1,200	937	0.78	D
	I-805	On-Ramp	1,600	1,945	1.22	F
	Qualcomm Way	On-Ramp	1,200	2,351	1.96	F
	Mission Center Rd.	Off-Ramp	1,200	1,245	1.04	F
	SR 163 NB	Off-Ramp	2,400	2,139	0.89	E
	SR 163 SB	Off-Ramp	1,600	1,558	0.97	E
	SR 163 SB	On-Ramp	3,200	2,855	0.89	E
	SR 163 NB	On-Ramp	1,200	1,278	1.07	F
	Taylor St.	On-Ramp	3,200	2,011	0.63	C
	Morena Blvd.	Off-Ramp	1,200	1,313	1.09	F
	I-5 SB	Off-Ramp	3,200	4,623	1.44	F
	I-5 NB	Off-Ramp	3,200	2,883	0.90	E
	I-5 SB	On-Ramp	3,200	1,531	0.48	C
	I-5 NB	On-Ramp	3,200	1,000	0.31	B
	Mission Bay Dr.	Off-Ramp	2,400	3,307	1.38	F

Figure B-20: Alternative A: Areas of Congestion – AM Peak (I-805 to Mission Gorge Rd.)

Figure B-21: Alternative A: Areas of Congestion – AM Peak (Mission Gorge Rd. to College Ave.)

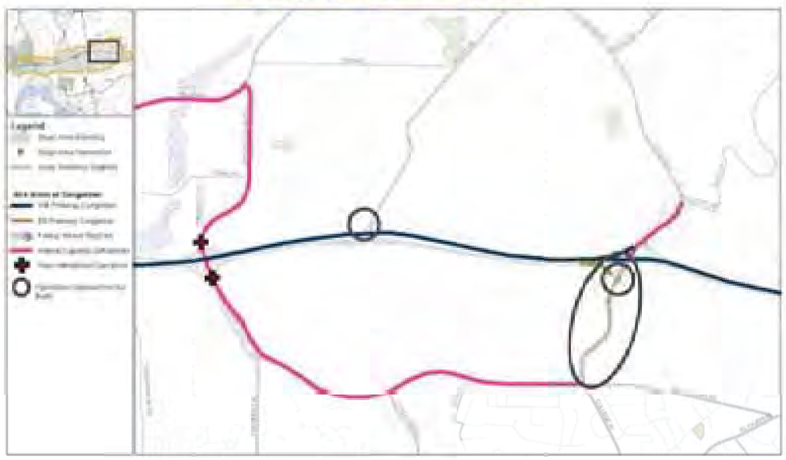


Figure B-26: Alternative A: Areas of Congestion – PM Peak (I-805 to Mission Gorge Rd.)

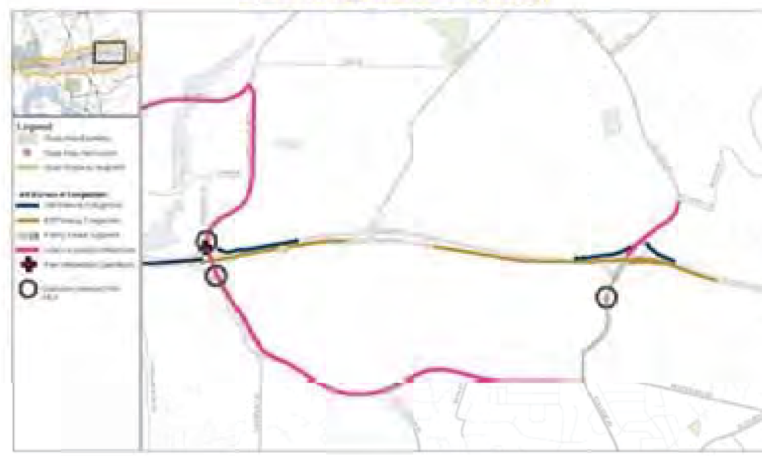
Figure B-27: Alternative A: Areas of Congestion – PM Peak (Mission Gorge Rd. to College Ave)

Figure B-32: Alternative B: Areas of Congestion – AM Peak
(I-805 to Mission Gorge Rd.)

Figure B-33: Alternative B: Areas of Congestion – AM Peak
(Mission Gorge Rd. to College Ave.)

Figure B-38: Alternative B: Areas of Congestion – PM Peak
(I-805 to Mission Gorge Rd.)

Figure B-39: Alternative B: Areas of Congestion – PM Peak
(Mission Gorge Rd. to College Ave.)



College Avenue

College Avenue between I-8 and Montezuma Road is planned to be widened to six lanes per the 2050 RTP/SCS. As part of this improvement a raised median would be constructed along the segment. This improvement coincides with the alternatives proposed and is included in the cost estimates.

In Alternative A, both the eastbound and westbound hook ramps would be reconfigured perpendicular to College Avenue. The "T'ing-up" of the on-ramp and off-ramp will tighten up the interchange and improve the safety for bicyclist and pedestrians by slowing vehicles turning onto and off of the ramps. There is not expected to be any right of way requirements with this alternative. Figure B-53 displays the proposed improvements at this location as assumed under Alternative A.

Under Alternative B, the Alternative A improvements are expanded to include an I-8 westbound flyover on-ramp, providing a direct connection from northbound College Avenue to westbound I-8 via the construction of a two lane overhead structure. This structure would eliminate a significant volume of traffic traveling northbound on the College Avenue Bridge. To extend over College Avenue and I-8, the bridge will have to be very tall, thus increasing the cost of the bridge. There would not be expected to be any right of way requirements with this alternative. Figure B-54 displays the proposed improvements at this location as assumed under Alternative B.

Figure B-53: Alternative A Concept (College Ave.)

Figure B-54: Alternative B Concept (College Ave.)

B-5: Environmental Constraints

2050 RTP Improvements Environmental Evaluation

The 2050 RTP improvements were addressed in the Program EIR for the SANDAG 2050 RTP including its Sustainable Communities Strategy (SCS). The RTP Final Program EIR (RTP EIR) was certified as being completed in compliance with the California Environmental Quality Act (Public Resource Code §21000 *et seq.*, "CEQA") by the SANDAG Board of Directors on October 28, 2011. However, the RTP EIR is currently the subject of ongoing litigation over its consistency with the state's most recent environmental laws and policies. The case is pending appeal to the California Supreme Court, and is not expected to be resolved for another one to two years. In the meantime, as discussed below, an updated regional plan and environmental document have been prepared, which are also relevant to this high-level alternatives analysis.

SANDAG must prepare an RTP every four years (Government Code Section 65080 *et seq.*; 23 United States Code [U.S.C.] Section 134). The RTP includes an SCS consisting of land use, housing, and transportation strategies that, if implemented, would allow the region to meet its regional targets for greenhouse gas (GHG) emissions reductions from passenger vehicle use established by the California Air Resources Board (Sustainable Communities and Climate Protection Act of 2008, SB 375, Chapter 728, Statutes of 2008). Recently, SANDAG released San Diego Forward: The Regional Plan, which is an update of the RCP and the 2050 RTP/SCS, combined into one document. SANDAG also prepared a Program EIR to evaluate the environmental impacts that would occur if San Diego Forward: The Regional Plan was adopted and implemented. The SANDAG Board of Directors authorized the Draft Program EIR for release at its April 24, 2015, meeting, and it was released to the public on May 21, 2015. The public review period ended July 15, 2015. SANDAG is now preparing a Final Program EIR including written responses to significant environmental concerns raised in comments on the Draft EIR. The Final EIR may include revisions to the Draft EIR,

SDSU

The SDSU focus area consists mostly of the San Diego State University campus, medical facilities along Alvarado Road, and residential uses. Small commercial districts also exist to primarily support SDSU patrons.

Around SDSU

The focus area is characterized with greatly varying terrain and poor bicycle and pedestrian access and connections between major routes. To help encourage biking and walking in the focus area, providing more continuous facilities, especially in and around the education institutions, is necessary. Additionally, to provide better connections between SDSU and the neighborhoods located in the northern portion of the focus area construction of large infrastructures over the I-8 corridor (i.e. bridge, over-crossing, or flyovers) will be needed.

Demographics

Population
32,429

Employment
14,977

Median income
$57,659

Regional Transit Connections
- **Green Line Trolley**
- **SDSU Transit Center**
- **Alvarado Trolley Station**
- **Routes 1, 11, 14, 115, 856, 936, 955**

- SDSU Transit Center: This transit center is located in the Aztec Green on the south portion of the SDSU campus and is the only underground station in the MTS system. Connections are provided to the Green Line LRT and seven local bus routes.

Smart Growth Opportunity Areas

In an effort to better connect land use and transportation, over 200 existing, planned, or potential smart growth areas have been identified in the San Diego region and then categorized into a smart growth "place type." The map on the following page depicts smart growth opportunity areas that fall within or are adjacent to the SDSU focus area.

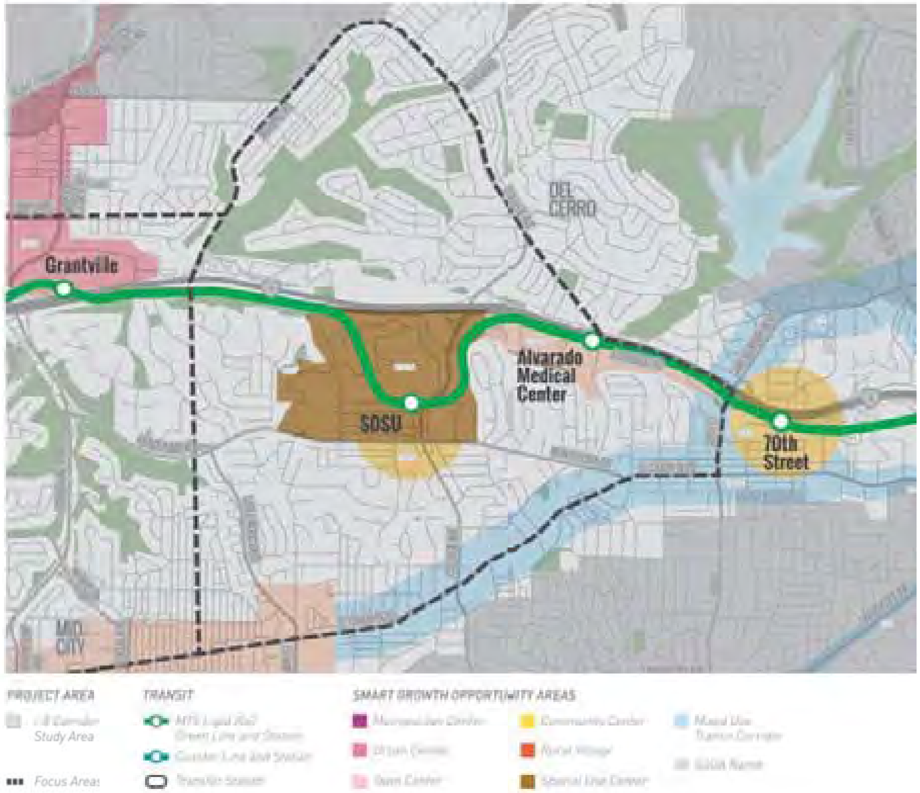
Active Transportation Deficiencies

The SDSU focus area offers poor access for those who walk and bike between SDSU and the neighborhoods located in the northern portion of the focus area. With the I-8 being a large barrier, construction of a bridge or flyover has been propose to provide better connectivity. Overall, details on key active transportation deficiencies are presented the Existing Active Transportation Deficiencies map.

ABOVE: I-8 / College Ave.: I-8 acts as a major barrier between the SDSU campus and the residential neighborhood to the north

ABOVE: SDSU Campus Cycletracks and Pedestrian Walkways

Transit Stations & Smart Growth Opportunity Areas



Walking & Biking

Places to Walk & Bike To

- San Diego State University (Main Campus)
- SDSU Transit Center
- Viejas Arena (Sporting/musical event venue)
- Hardy Elementary School
- Hearst Elementary School
- Multi-family housing within 1/2 mi of campus
- Office/medical on Alvarado Rd.
- Alvarado Hospital on Alvarado Rd.

Key Adjacent Attractions

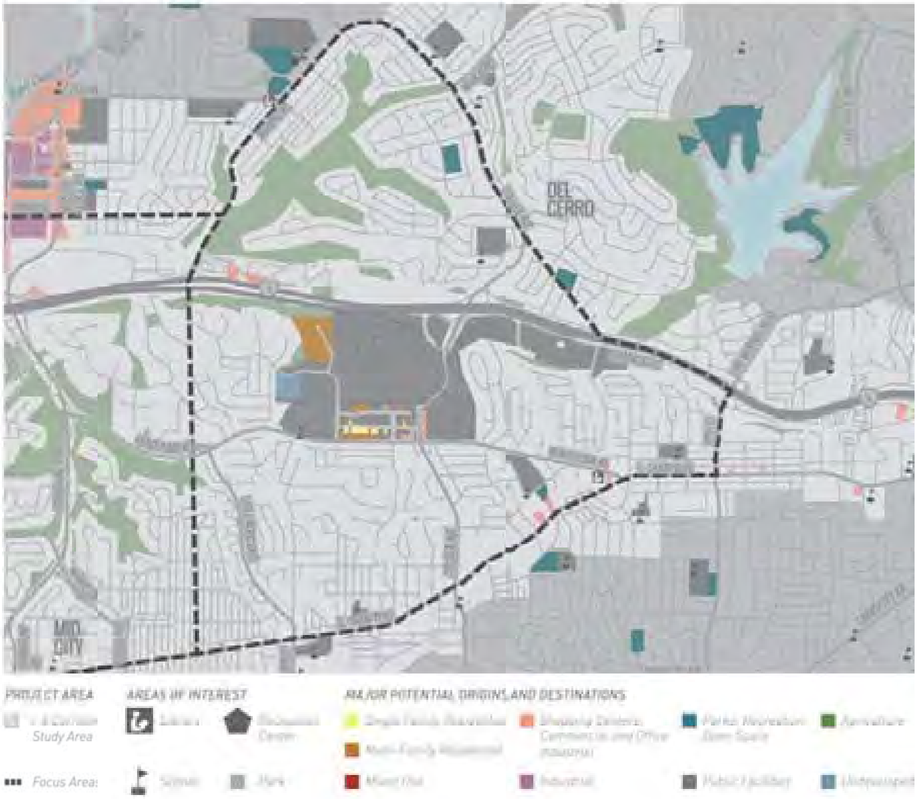
- Lake Murray
- Mission Trails Regional Park
- Cowles Mountain

Key Pedestrian & Bicycle Facilities

- Montezuma Trail
- 3 pedestrian bridges over College Avenue providing direct connection to SDSU
- Class II facilities along Alvarado Road

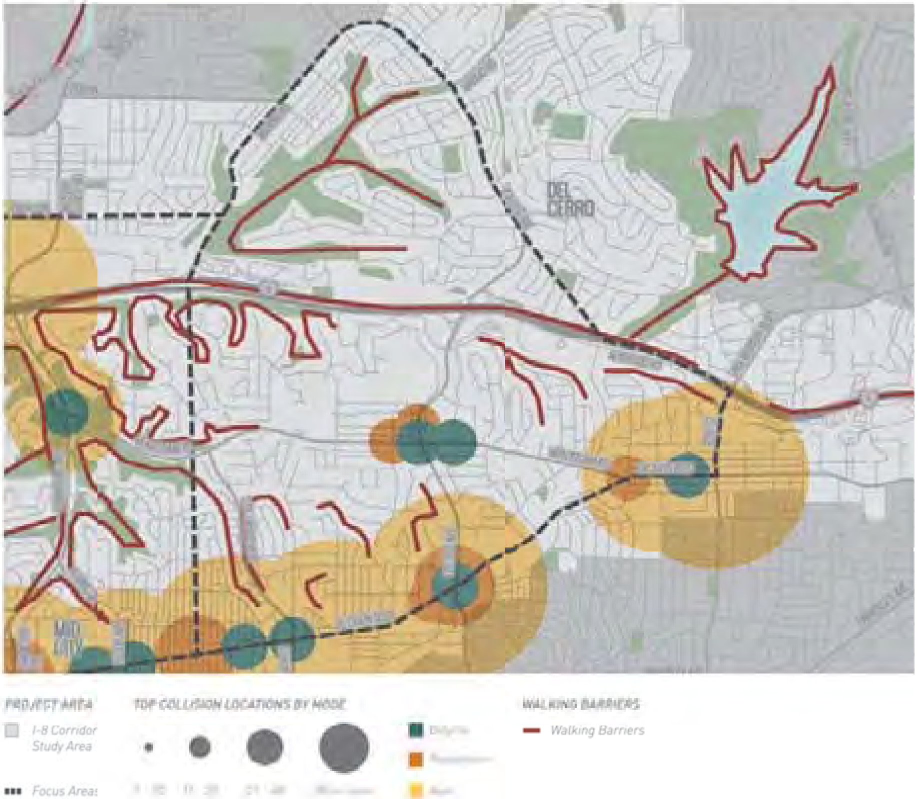

SDSU Transit Center

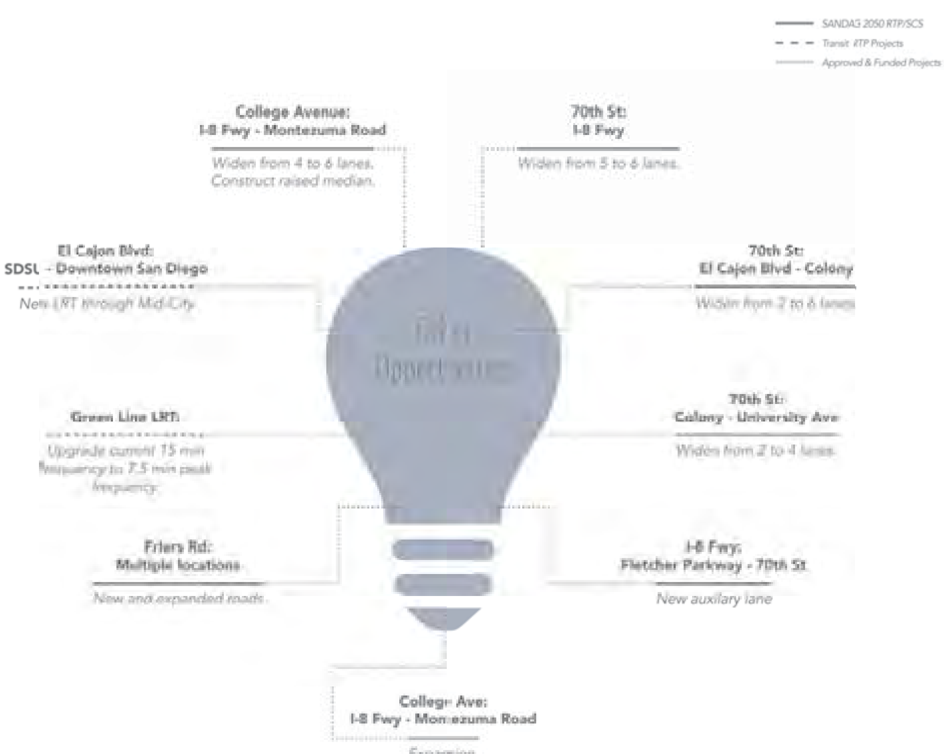
Major Land Use Origins & Destinations



Existing Active Transportation Deficiencies

Collision Mapping





Prcject 6.5
I-8Pedestrian Bridge over I-8 at SDSU

APPENDIX C
INTERSECTION METHODOLOGY 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 D

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
Prime Arterial[4]	4 lanes[4]	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)	4 lanes	5,000	7,000	10,000	13,000	15,000
	3 lanes					
(continuous left-turn lane)	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.***
4. Classification and capacity derived specifically for Kearny Villa Road in order to reflect the unique characteristics of this roadway.

APPENDIX E

EXISTING INTERSECTION 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)		0.98	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	2.8	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	58.8				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	19.0				56.7		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

Notes

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		* 93		31.9	9.6	58.4		
Max Q Clear Time (g_c+I1), s		2.0		12.9	5.1	25.3		
Green Ext Time (p_c), s		75.1		0.2	0.0	41.2		

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Notes

Intersection										
Intersection Delay, s/veh	17.1									
Intersection LOS	C									

Movement	WBU	WBL	WBR	NBU	NBT	NBR	EBU	SBL	SBT
Traffic Vol, veh/h	0	93	9	0	33	480	0	0	44
Future Vol, veh/h	0	93	9	0	33	480	0	0	44
Peak Hour Factor	0.92	0.75	0.75	0.92	0.75	0.75	0.92	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	124	12	0	44	640	0	0	59
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.3	19.2	9.1
HCM LOS	B	C	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	78%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	23%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	480	62	40	44
LT Vol	0	0	62	31	0
Through Vol	33	0	0	0	44
RT Vol	0	480	0	9	0
Lane Flow Rate	44	640	83	53	59
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.082	0.77	0.152	0.094	0.089
Departure Headway (Hd)	5.033	4.33	6.632	6.359	5.458
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	712	838	537	559	653
Service Time	2.781	2.058	4.42	4.147	3.52
HCM Lane V/C Ratio	0.062	0.764	0.155	0.095	0.09
HCM Control Delay	8.1	20	10.6	9.8	9.1
HCM Lane LOS	A	C	B	A	A
HCM 95th-tile Q	0.2	7.6	0.5	0.3	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	57	52	527	81	21
Future Volume (veh/h)	33	57	52	527	81	21
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.79	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	38	65	59	599	58	60
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	70	614	445	1206	1015	924
Arrive On Green	0.04	0.33	0.24	0.24	0.57	0.57
Sat Flow, veh/h	1774	1863	1863	1258	1774	1615
Grp Volume(v), veh/h	38	65	59	599	58	60
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1258	1774	1615
Q Serve(g_s), s	2.0	2.3	2.4	16.3	1.4	1.6
Cycle Q Clear(g_c), s	2.0	2.3	2.4	16.3	1.4	1.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	70	614	445	1206	1015	924
V/C Ratio(X)	0.54	0.11	0.13	0.50	0.06	0.06
Avail Cap(c_a), veh/h	75	636	471	1225	1015	924
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	28.4	3.2	9.0	9.0
Incr Delay (d2), s/veh	2.9	0.0	0.0	0.1	0.1	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	1.0	1.2	1.2	15.5	0.7	2.3
LnGrp Delay(d),s/veh	47.6	22.1	28.4	3.4	9.1	9.1
LnGrp LOS	D	C	C	A	A	A
Approach Vol, veh/h		103	658		118	
Approach Delay, s/veh		31.5	5.6		9.1	
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				36.2		58.7	8.6	27.5
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		3.6	4.0	18.3
Green Ext Time (p_c), s				0.2		0.3	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	22	96	22	76	107	523	0	0	181	26
Future Volume (vph)	5	0	22	96	22	76	107	523	0	0	181	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.91	1.00	0.94		1.00	1.00			1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.91		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1444	1610	2883		1770	3539			3539	1528
Flt Permitted	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1444	1610	2883		1770	3539			3539	1528
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	0	24	103	24	82	115	562	0	0	195	28
RTOR Reduction (vph)	0	0	20	0	66	0	0	0	0	0	0	18
Lane Group Flow (vph)	5	0	4	72	71	0	115	562	0	0	195	10
Confl. Peds. (#/hr)			51			55						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	23.2		23.2	24.3	24.3		12.5	63.8			46.9	46.9
Effective Green, g (s)	20.2		20.0	24.0	24.0		12.6	63.8			40.0	40.0
Actuated g/C Ratio	0.18		0.18	0.19	0.19		0.10	0.51			0.37	0.37
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	325		265	310	556		175	1791			1317	568
v/s Ratio Prot	0.00			c0.04	0.02		c0.06	c0.16			0.06	
v/s Ratio Perm			c0.00									0.01
v/c Ratio	0.02		0.02	0.23	0.13		0.66	0.31			0.15	0.02
Uniform Delay, d1	42.1		42.1	43.0	42.1		54.7	18.3			26.3	25.0
Progression Factor	1.00		1.00	1.00	1.00		1.36	0.57			1.00	1.00
Incremental Delay, d2	0.0		0.0	0.1	0.0		5.2	0.4			0.2	0.1
Delay (s)	42.1		42.1	43.1	42.1		79.4	10.8			26.5	25.1
Level of Service	D		D	D	D		E	B			C	C
Approach Delay (s)		42.1			42.5			22.5			26.3	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	72.5%	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)	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	599	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	0.99	0.00	0.99
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	158.5
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	10.4	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	216.5
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			154.5	
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	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	4.0	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

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	1445
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	1445
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	0.63	0.63	0.63	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	3.6	6.0	7.1	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	20.4	20.7	5.0	0.0	0.0	3.7	0.0	1.8
LnGrp Delay(d),s/veh	197.4	1.3	1.3	61.6	23.5	24.9	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			25.9			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	98.8		23.5	16.0	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	29.6		0.4	0.0	0.0		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			31.0									
HCM 2010 LOS			C									
Notes												

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	0.88	0.00	0.00	1.00	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	0.4	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
%ile BackOfQ(50%),veh/ln				3.6	0.0	0.0	0.0	0.1	0.0	0.0	4.2	0.0
LnGrp Delay(d),s/veh				52.5	0.0	0.0	0.0	0.3	0.0	0.0	3.1	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					240			945			1087	
Approach Delay, s/veh					52.5			0.3			3.1	
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		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			7.2									
HCM 2010 LOS			A									

HCM Signalized Intersection Capacity Analysis
9: College Ave & I-8EB Ramp

Existing AM
2/10/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↓↓	↱
Traffic Volume (vph)	347	6	1213	6	0	0	0	828	208	0	942	279
Future Volume (vph)	347	6	1213	6	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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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	6	0	0	0	900	226	0	1024	303
RTOR Reduction (vph)	0	0	0	6	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	377	0	1318	0	0	0	0	900	226	0	1024	303
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	14.8		47.9					72.7	100.0		39.6	100.0
Effective Green, g (s)	14.8		47.9					72.7	100.0		39.6	100.0
Actuated g/C Ratio	0.15		0.48					0.73	1.00		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					2572	1536		1401	1536
v/s Ratio Prot	0.11		c0.37					0.25			c0.29	
v/s Ratio Perm									0.15			0.20
v/c Ratio	0.74		0.76					0.35	0.15		0.73	0.20
Uniform Delay, d1	40.8		21.4					5.0	0.0		25.7	0.0
Progression Factor	1.00		1.00					0.23	1.00		1.03	1.00
Incremental Delay, d2	5.1		1.8					0.3	0.2		3.1	0.3
Delay (s)	45.9		23.2					1.5	0.2		29.4	0.3
Level of Service	D		C					A	A		C	A
Approach Delay (s)		28.3			0.0			1.2			22.8	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.2	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			

HCM 2010 Signalized Intersection Summary
10: College Ave & Canyon Crest Dr

Existing AM
2/10/2017

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	20.2	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

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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	16	464	-	-	656	-
Mov Cap-2 Maneuver	16	-	-	-	-	-
Stage 1	298	-	-	-	-	-
Stage 2	115	-	-	-	-	-

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	1863
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	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	200	1379	590	56	1092	464	973	1096	63	189	828	347
Arrive On Green	0.23	0.78	0.78	0.03	0.31	0.31	0.20	0.32	0.32	0.11	0.23	0.23
Sat Flow, veh/h	1774	3539	1515	1774	3539	1503	3442	3392	194	1774	3539	1484
Grp Volume(v), veh/h	177	314	90	23	741	199	621	502	515	98	468	311
Grp Sat Flow(s),veh/h/ln	1774	1770	1515	1774	1770	1503	1721	1770	1817	1774	1770	1484
Q Serve(g_s), s	12.2	3.0	1.0	1.6	23.1	9.8	22.3	33.8	33.8	6.6	14.7	19.3
Cycle Q Clear(g_c), s	12.2	3.0	1.0	1.6	23.1	9.8	22.3	33.8	33.8	6.6	14.7	19.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	200	1379	590	56	1092	464	973	572	587	189	828	347
V/C Ratio(X)	0.88	0.23	0.15	0.41	0.68	0.43	0.92	0.88	0.88	0.52	0.57	0.90
Avail Cap(c_a), veh/h	220	1379	590	83	1092	464	599	666	683	189	899	377
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	8.8	2.7	59.8	38.1	19.0	49.8	40.3	40.3	53.2	42.6	26.6
Incr Delay (d2), s/veh	28.2	0.4	0.5	1.8	3.4	2.9	17.1	12.1	11.8	1.2	0.8	22.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	1.5	0.5	0.8	11.8	4.4	12.2	18.4	18.8	3.3	7.3	10.1
LnGrp Delay(d),s/veh	76.2	9.2	3.3	61.6	41.5	21.9	66.8	52.4	52.1	54.4	43.4	49.0
LnGrp LOS	E	A	A	E	D	C	E	D	D	D	D	D
Approach Vol, veh/h		581			963			1638			877	
Approach Delay, s/veh		28.7			37.9			57.8			46.6	
Approach LOS		C			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	17.8	45.8	8.4	54.0	29.0	34.6	18.6	43.8
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	8.6	35.8	3.6	5.0	24.3	21.3	14.2	25.1
Green Ext Time (p_c), s	0.4	4.9	0.0	21.2	0.3	3.4	0.1	7.1

Intersection Summary	
HCM 2010 Ctrl Delay	46.5
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
1: Collwood Blvd & Montezuma Rd

Existing PM
2/10/2017

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				86.0		1.1
Intersection Summary								
HCM 2010 Ctrl Delay			25.3					
HCM 2010 LOS			C					
Notes								

HCM 2010 Signalized Intersection Summary
2: Montezuma Rd & Yerba Santa Dr

Existing PM
2/10/2017

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	123	1842	1489	20	12	69		
Future Volume (veh/h)	123	1842	1489	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	2482	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	4.5	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		69.7		0.1	0.1	37.0		
Intersection Summary								
HCM 2010 Ctrl Delay			9.2					
HCM 2010 LOS			A					
Notes								

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	WBU	WBL	WBR	NBU	NBT	NBR	EBU	SBL	SBT
Traffic Vol, veh/h	0	384	11	0	61	171	0	0	82
Future Vol, veh/h	0	384	11	0	61	171	0	0	82
Peak Hour Factor	0.92	0.87	0.87	0.92	0.87	0.87	0.92	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	441	13	0	70	197	0	0	94
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	13	9.9	10
HCM LOS	B	A	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	92%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	8%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	171	256	139	82
LT Vol	0	0	256	128	0
Through Vol	61	0	0	0	82
RT Vol	0	171	0	11	0
Lane Flow Rate	70	197	294	160	94
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.115	0.284	0.485	0.259	0.154
Departure Headway (Hd)	5.911	5.203	5.934	5.838	5.885
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	602	684	600	609	605
Service Time	3.687	2.979	3.711	3.636	3.959
HCM Lane V/C Ratio	0.116	0.288	0.49	0.263	0.155
HCM Control Delay	9.5	10.1	14.3	10.7	10
HCM Lane LOS	A	B	B	B	A
HCM 95th-tile Q	0.4	1.2	2.6	1	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	62	72	215	436	36
Future Volume (veh/h)	20	62	72	215	436	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			0.70	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	22	69	80	239	521	0
Adj No. of Lanes	1	1	1	1	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	0
Cap, veh/h	73	625	453	1149	1972	897
Arrive On Green	0.04	0.34	0.24	0.24	0.56	0.00
Sat Flow, veh/h	1774	1863	1863	1110	3548	1615
Grp Volume(v), veh/h	22	69	80	239	521	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1110	1774	1615
Q Serve(g_s), s	1.0	2.2	2.9	4.7	6.6	0.0
Cycle Q Clear(g_c), s	1.0	2.2	2.9	4.7	6.6	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	73	625	453	1149	1972	897
V/C Ratio(X)	0.30	0.11	0.18	0.21	0.26	0.00
Avail Cap(c_a), veh/h	220	850	524	1192	1972	897
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	39.9	19.6	25.6	2.2	9.9	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.1	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	0.5	1.1	1.5	5.5	3.3	0.0
LnGrp Delay(d),s/veh	40.7	19.7	25.7	2.2	10.2	0.0
LnGrp LOS	D	B	C	A	B	
Approach Vol, veh/h		91	319		521	
Approach Delay, s/veh		24.7	8.1		10.2	
Approach LOS		C	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				33.7		52.0	7.9	25.7
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				4.2		8.6	3.0	6.7
Green Ext Time (p_c), s				1.4		1.6	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	137	177	14	50	63	236	0	0	536	9
Future Volume (vph)	16	0	137	177	14	50	63	236	0	0	536	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.97	1.00	0.96		1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.95		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1383	1610	3012		1770	3539			3539	1527
Flt Permitted	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1383	1610	3012		1770	3539			3539	1527
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	18	0	156	201	16	57	72	268	0	0	609	10
RTOR Reduction (vph)	0	0	122	6	42	0	0	0	0	0	0	6
Lane Group Flow (vph)	18	0	34	100	132	0	72	268	0	0	609	4
Confl. Peds. (#/hr)			78			70						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	29.0		29.0	24.7	24.7		8.7	65.6			52.5	52.5
Effective Green, g (s)	29.0		29.0	24.7	24.7		8.7	65.6			52.5	52.5
Actuated g/C Ratio	0.22		0.22	0.18	0.18		0.06	0.49			0.39	0.39
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	383		299	296	555		114	1732			1386	598
v/s Ratio Prot	0.01			c0.06	0.04		c0.04	0.08			c0.17	
v/s Ratio Perm			c0.02									0.00
v/c Ratio	0.05		0.11	0.34	0.24		0.63	0.15			0.44	0.01
Uniform Delay, d1	41.6		42.2	47.5	46.6		61.1	18.9			29.9	24.8
Progression Factor	1.00		1.00	1.00	1.00		1.03	1.37			1.00	1.00
Incremental Delay, d2	0.0		0.1	0.2	0.1		7.2	0.2			1.0	0.0
Delay (s)	41.6		42.2	47.8	46.7		70.0	26.1			31.0	24.9
Level of Service	D		D	D	D		E	C			C	C
Approach Delay (s)		42.2			47.1			35.4			30.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	76.4%	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)	314	908	74	24	551	184	49	11	11	257	23	406
Future Volume (veh/h)	314	908	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	0.92	0.00	0.92
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	49.2
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	6.7	14.8	14.9	1.1	9.2	6.1	2.6	0.0	0.0	4.3	0.0	21.7
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	97.1
LnGrp LOS	E	C	C	E	D	D	D			D		F
Approach Vol, veh/h		1298			825			77			736	
Approach Delay, s/veh		43.2			38.5			53.7			73.1	
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	50.0
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
7: Campanile Dr & Montezuma Rd

Existing PM
3/10/2017

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		0.82	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	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	298	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	3587	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	15.6	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	15.6	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	0.77	0.77	0.77	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	15.1	1.5	1.6	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	2.8	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	74.7	2.4	2.5	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			10.4			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 Signalized Intersection Summary
8: College Ave & I-8WB Ramp

Existing PM
2/10/2017

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	0.61	0.00	0.00	1.00	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	0.3	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				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	0.3	0.0	0.0	4.9	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					467			950			642	
Approach Delay, s/veh					42.2			0.3			4.9	
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		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

HCM Signalized Intersection Capacity Analysis
9: College Ave & I-8EB Ramp

Existing PM
2/10/2017

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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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	0	0	0	0	0
Lane Group Flow (vph)	611	0	776	0	0	0	0	1628	380	0	835	275
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	21.2		53.9					66.3	100.0		33.6	100.0
Effective Green, g (s)	21.2		53.9					66.3	100.0		33.6	100.0
Actuated g/C Ratio	0.21		0.54					0.66	1.00		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)	727		1945					2346	1536		1189	1536
v/s Ratio Prot	c0.18		0.21					c0.46			0.24	
v/s Ratio Perm									0.25			0.18
v/c Ratio	0.84		0.40					0.69	0.25		0.70	0.18
Uniform Delay, d1	37.8		13.5					10.5	0.0		28.9	0.0
Progression Factor	1.00		1.00					0.55	1.00		0.79	1.00
Incremental Delay, d2	8.3		0.0					0.5	0.1		3.4	0.2
Delay (s)	46.1		13.6					6.2	0.1		26.2	0.2
Level of Service	D		B					A	A		C	A
Approach Delay (s)		27.9			0.0			5.1			19.8	
Approach LOS		C			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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SDSU Student Housing

Synchro 9 Report

HCM 2010 Signalized Intersection Summary
10: College Ave & Canyon Crest Dr

Existing PM
2/10/2017

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	565	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	565	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	0.81	0.81	0.81
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	43.7	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	5.5	0.0	0.0	2.9	0.0	20.9	0.9	15.9	1.0	5.4	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	88.2	8.2	2.3
LnGrp LOS	D			F		F	E	C	B	F	A	A
Approach Vol, veh/h		429			388			1403			1611	
Approach Delay, s/veh		38.0			268.6			25.9			21.5	
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	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	9.9	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	58.0
HCM 2010 LOS	D

Notes

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SDSU Student Housing

Synchro 9 Report

Intersection	
Int Delay, s/veh	15.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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	249	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	112.3	0	1.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1		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		0.96	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	1863
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	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	334	1361	582	215	1122	477	394	745	62	237	870	366
Arrive On Green	0.38	0.77	0.77	0.12	0.32	0.32	0.11	0.23	0.23	0.13	0.25	0.25
Sat Flow, veh/h	1774	3539	1515	1774	3539	1504	3442	3288	274	1774	3539	1487
Grp Volume(v), veh/h	315	984	474	191	414	179	342	328	334	208	768	298
Grp Sat Flow(s),veh/h/ln	1774	1770	1515	1774	1770	1504	1721	1770	1792	1774	1770	1487
Q Serve(g_s), s	24.0	20.3	19.1	14.8	12.7	9.1	13.7	24.7	24.8	16.1	29.3	17.5
Cycle Q Clear(g_c), s	24.0	20.3	19.1	14.8	12.7	9.1	13.7	24.7	24.8	16.1	29.3	17.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	334	1361	582	215	1122	477	394	401	406	237	870	366
V/C Ratio(X)	0.94	0.72	0.81	0.89	0.37	0.38	0.87	0.82	0.82	0.88	0.88	0.82
Avail Cap(c_a), veh/h	400	1361	582	248	1122	477	423	417	422	274	985	397
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	12.3	6.5	60.6	37.0	18.5	51.0	51.4	51.4	59.5	50.9	21.7
Incr Delay (d2), s/veh	22.8	2.7	9.7	25.6	0.9	2.2	15.5	12.3	12.5	21.9	9.6	12.0
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	13.8	10.1	9.1	8.8	6.4	4.1	7.4	13.4	13.6	9.4	15.4	8.4
LnGrp Delay(d),s/veh	65.6	15.0	16.2	86.2	37.9	20.8	76.5	63.7	63.9	81.5	60.4	33.7
LnGrp LOS	E	B	B	F	D	C	E	E	E	F	E	C
Approach Vol, veh/h		1773			784			1004			1274	
Approach Delay, s/veh		24.3			45.6			68.1			57.6	
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	23.1	36.8	21.3	58.7	20.4	39.5	30.8	49.3
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	18.1	26.8	16.8	22.3	15.7	31.3	26.0	14.7
Green Ext Time (p_c), s	0.6	2.1	0.1	21.2	0.3	3.1	0.4	17.6

Intersection Summary		
HCM 2010 Ctrl Delay		45.7
HCM 2010 LOS		D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	971	459	70	1311	955	59
Future Volume (veh/h)	971	459	70	1311	955	59
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	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	1079	510	78	1457	1061	66
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	1746	1275	98	2064	1137	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	1079	510	78	1457	1061	66
Grp Sat Flow(s),veh/h/ln	1770	1524	1774	1770	1721	1583
Q Serve(g_s), s	28.0	11.2	5.4	0.0	37.6	3.7
Cycle Q Clear(g_c), s	28.0	11.2	5.4	0.0	37.6	3.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1746	1275	98	2064	1137	523
V/C Ratio(X)	0.62	0.40	0.80	0.71	0.93	0.13
Avail Cap(c_a), veh/h	1746	1275	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	23.3	3.0	55.4	0.0	40.9	29.5
Incr Delay (d2), s/veh	1.7	0.9	4.4	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	14.0	4.9	2.8	0.5	19.4	1.6
LnGrp Delay(d),s/veh	24.9	3.9	59.8	1.6	50.6	29.5
LnGrp LOS	C	A	E	A	D	C
Approach Vol, veh/h	1589			1535	1127	
Approach Delay, s/veh	18.2			4.6	49.4	
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	11.3	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	7.4	30.0				2.0		39.6
Green Ext Time (p_c), s	0.0	18.3				57.1		2.0

Intersection Summary		
HCM 2010 Ctrl Delay		21.5
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	989	1263	18	7	118
Future Volume (veh/h)	41	989	1263	18	7	118
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	46	1111	1419	20	8	133
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	59	2760	2541	36	11	186
Arrive On Green	0.07	1.00	0.71	0.71	0.13	0.13
Sat Flow, veh/h	1774	3632	3664	50	88	1460
Grp Volume(v), veh/h	46	1111	703	736	142	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1559	0
Q Serve(g_s), s	3.2	0.0	23.9	24.0	11.0	0.0
Cycle Q Clear(g_c), s	3.2	0.0	23.9	24.0	11.0	0.0
Prop In Lane	1.00			0.03	0.06	0.94
Lane Grp Cap(c), veh/h	59	2760	1259	1318	199	0
V/C Ratio(X)	0.78	0.40	0.56	0.56	0.71	0.00
Avail Cap(c_a), veh/h	135	2760	1259	1318	395	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.4	0.0	8.7	8.7	52.8	0.0
Incr Delay (d2), s/veh	6.2	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	0.1	12.1	12.7	4.8	0.0
LnGrp Delay(d),s/veh	64.6	0.3	10.5	10.4	54.6	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1157	1439		142	
Approach Delay, s/veh		2.9	10.4		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		104.8		21.2	8.6	96.3		
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		13.0	5.2	26.0		
Green Ext Time (p_c), s		75.6		0.2	0.0	40.7		

Intersection Summary		
HCM 2010 Ctrl Delay		9.5
HCM 2010 LOS		A

Notes

Intersection										
Intersection Delay, s/veh	20.7									
Intersection LOS	C									

Movement	WBU	WBL	WBR	NBU	NBT	NBR	EBU	SBL	SBT
Traffic Vol, veh/h	0	116	9	0	33	505	0	0	44
Future Vol, veh/h	0	116	9	0	33	505	0	0	44
Peak Hour Factor	0.92	0.75	0.75	0.92	0.75	0.75	0.92	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	155	12	0	44	673	0	0	59
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.8	23.9	9.3
HCM LOS	B	C	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	81%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	19%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	505	77	48	44
LT Vol	0	0	77	39	0
Through Vol	33	0	0	0	44
RT Vol	0	505	0	9	0
Lane Flow Rate	44	673	103	64	59
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.083	0.829	0.196	0.117	0.091
Departure Headway (Hd)	5.138	4.434	6.811	6.602	5.613
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	695	815	529	546	631
Service Time	2.887	2.183	4.531	4.302	3.709
HCM Lane V/C Ratio	0.063	0.826	0.195	0.117	0.094
HCM Control Delay	8.2	24.9	11.2	10.2	9.3
HCM Lane LOS	A	C	B	B	A
HCM 95th-tile Q	0.2	9.4	0.7	0.4	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	57	53	552	104	21
Future Volume (veh/h)	33	57	53	552	104	21
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.44	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	38	65	60	627	140	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	69	632	464	1068	2001	911
Arrive On Green	0.04	0.34	0.25	0.25	0.56	0.00
Sat Flow, veh/h	1774	1863	1863	702	3548	1615
Grp Volume(v), veh/h	38	65	60	627	140	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	702	1774	1615
Q Serve(g_s), s	2.0	2.3	2.4	24.0	1.7	0.0
Cycle Q Clear(g_c), s	2.0	2.3	2.4	24.0	1.7	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	69	632	464	1068	2001	911
V/C Ratio(X)	0.55	0.10	0.13	0.59	0.07	0.00
Avail Cap(c_a), veh/h	74	632	464	1068	2001	911
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	45.4	21.8	28.0	3.9	9.5	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	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	1.1	1.2	1.2	16.7	0.9	0.0
LnGrp Delay(d),s/veh	48.8	21.8	28.1	4.5	9.6	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		103	687		140	
Approach Delay, s/veh		31.7	6.6		9.6	
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				37.6		58.7	8.7	28.9
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		3.7	4.0	26.0
Green Ext Time (p_c), s				0.2		0.4	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		9.8
HCM 2010 LOS		A

Notes

HCM Signalized Intersection Capacity Analysis
5: 55th St & Hardy Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	22	96	22	76	107	549	0	0	204	26
Future Volume (vph)	5	0	22	96	22	76	107	549	0	0	204	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.91	1.00	0.94		1.00	1.00			1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.91		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1444	1610	2883		1770	3539			3539	1528
Flt Permitted	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1444	1610	2883		1770	3539			3539	1528
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	0	24	103	24	82	115	590	0	0	219	28
RTOR Reduction (vph)	0	0	20	0	66	0	0	0	0	0	0	18
Lane Group Flow (vph)	5	0	4	72	71	0	115	590	0	0	219	10
Confl. Peds. (#/hr)			51			55						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	23.2		23.2	24.3	24.3		12.6	63.8			46.6	46.6
Effective Green, g (s)	23.2		23.2	24.0	24.0		12.0	63.8			46.6	46.6
Actuated g/C Ratio	0.18		0.18	0.19	0.19		0.10	0.51			0.37	0.37
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	325		265	310	556		177	1791			1314	567
v/s Ratio Prot	0.00			c0.04	0.02		c0.06	c0.17			0.06	
v/s Ratio Perm			c0.00									0.01
v/c Ratio	0.02		0.02	0.23	0.13		0.65	0.33			0.17	0.02
Uniform Delay, d1	42.1		42.1	43.0	42.1		54.6	18.4			26.5	25.1
Progression Factor	1.00		1.00	1.00	1.00		1.39	0.61			1.00	1.00
Incremental Delay, d2	0.0		0.0	0.1	0.0		4.6	0.4			0.3	0.1
Delay (s)	42.1		42.1	43.1	42.1		80.7	11.6			26.8	25.1
Level of Service	D		D	D	D		F	B			C	C
Approach Delay (s)		42.1			42.5			22.9			26.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
6: 55th St & Montezuma Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	522	330	13	4	829	299	45	19	19	81	1	139
Future Volume (veh/h)	522	330	13	4	829	299	45	19	19	81	1	139
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		0.86	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	567	359	14	4	901	325	49	21	21	89	0	151
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	627	2158	84	7	1574	678	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	3466	135	1774	3539	1525	916	393	393	3548	0	1354
Grp Volume(v), veh/h	567	183	190	4	901	325	91	0	0	89	0	151
Grp Sat Flow(s),veh/h/ln	1721	1770	1831	1774	1770	1525	1701	0	0	1774	0	1354
Q Serve(g_s), s	20.3	5.5	5.5	0.3	7.2	5.2	6.2	0.0	0.0	3.0	0.0	10.1
Cycle Q Clear(g_c), s	20.3	5.5	5.5	0.3	7.2	5.2	6.2	0.0	0.0	3.0	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	627	1102	1140	7	1574	678	231	0	0	284	0	109
V/C Ratio(X)	0.90	0.17	0.17	0.54	0.57	0.48	0.39	0.00	0.00	0.31	0.00	1.39
Avail Cap(c_a), veh/h	699	1102	1140	56	1574	678	405	0	0	264	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	0.45	0.45	0.45	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	50.5	10.0	10.0	62.4	4.3	4.1	49.7	0.0	0.0	54.7	0.0	58.0
Incr Delay (d2), s/veh	13.5	0.3	0.3	10.0	0.7	1.1	0.4	0.0	0.0	0.6	0.0	222.2
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	10.9	2.7	2.9	0.2	3.4	2.2	2.9	0.0	0.0	1.5	0.0	10.5
LnGrp Delay(d),s/veh	64.0	10.3	10.3	72.3	4.9	5.2	50.1	0.0	0.0	55.3	0.0	280.1
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		940			1230			91			240	
Approach Delay, s/veh		42.7			5.2			50.1			196.8	
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	61.6		22.0
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	4.0	62.1		10.1	25.6	* 41		30.0
Max Q Clear Time (g_c+I1), s	2.3	7.5		12.1	22.3	9.2		8.2
Green Ext Time (p_c), s	0.0	19.1		0.0	0.6	15.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	39.3
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			↰↓	↱
Traffic Volume (veh/h)	82	393	11	65	1041	303	36	13	91	97	9	55
Future Volume (veh/h)	82	393	11	65	1041	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	427	12	71	1132	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	1721	48	90	1338	383	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	3510	98	1774	2693	771	400	144	1016	1627	155	1446
Grp Volume(v), veh/h	89	215	224	71	738	723	152	0	0	115	0	60
Grp Sat Flow(s),veh/h/ln	1774	1770	1838	1774	1770	1695	1559	0	0	1781	0	1446
Q Serve(g_s), s	5.6	0.4	0.4	5.0	40.0	42.2	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	40.0	42.2	11.4	0.0	0.0	7.4	0.0	4.4
Prop In Lane	1.00		0.05	1.00		0.45	0.26		0.65	0.91		1.00
Lane Grp Cap(c), veh/h	79	868	901	90	879	842	248	0	0	263	0	284
V/C Ratio(X)	1.13	0.25	0.25	0.79	0.84	0.86	0.61	0.00	0.00	0.44	0.00	0.21
Avail Cap(c_a), veh/h	79	868	901	149	879	842	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	0.62	0.62	0.62	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	17.9	49.4	0.0	0.0	49.0	0.0	42.9
Incr Delay (d2), s/veh	140.0	0.7	0.7	3.5	6.1	7.3	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	20.8	21.1	5.0	0.0	0.0	3.7	0.0	1.8
LnGrp Delay(d),s/veh	197.4	1.3	1.3	61.6	23.7	25.2	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		528			1532			152			175	
Approach Delay, s/veh		34.3			26.1			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	68.8		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	7.0	2.4		9.4	7.6	44.2		13.4
Green Ext Time (p_c), s	0.0	29.2		0.4	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	31.0
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↑↑	↱
Traffic Volume (veh/h)	0	0	0	226	0	90	0	871	306	0	1002	671
Future Volume (veh/h)	0	0	0	226	0	90	0	871	306	0	1002	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				246	0	0	0	947	0	0	1089	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				316	0	145	0	2843	1272	0	2843	1272
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				246	0	0	0	947	0	0	1089	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				7.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7	0.0
Cycle Q Clear(g_c), s				7.0	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				316	0	145	0	2843	1272	0	2843	1272
V/C Ratio(X)				0.78	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	2843	1272	0	2843	1272
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	0.88	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				44.4	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0
Incr Delay (d2), s/veh				8.5	0.0	0.0	0.0	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				3.7	0.0	0.0	0.0	0.1	0.0	0.0	4.4	0.0
LnGrp Delay(d),s/veh				52.9	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					246			947			1089	
Approach Delay, s/veh					52.9			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		85.7				85.7		14.3
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		9.0
Green Ext Time (p_c), s		16.3				16.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
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	830	213	0	949	279
Future Volume (vph)	347	0	1213	0	0	0	0	830	213	0	949	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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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	902	232	0	1032	303
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	377	0	1318	0	0	0	0	902	232	0	1032	303
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	14.7		47.9					72.8	100.0		39.5	100.0
Effective Green, g (s)	14.7		47.9					72.8	100.0		39.5	100.0
Actuated g/C Ratio	0.15		0.48					0.73	1.00		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)	504		1729					2576	1536		1401	1536
v/s Ratio Prot	0.11		c0.37					0.25			c0.29	
v/s Ratio Perm									0.15			0.20
v/c Ratio	0.75		0.76					0.35	0.15		0.74	0.20
Uniform Delay, d1	40.9		21.4					5.0	0.0		25.8	0.0
Progression Factor	1.00		1.00					0.23	1.00		1.02	1.00
Incremental Delay, d2	5.3		1.8					0.3	0.2		3.2	0.3
Delay (s)	46.1		23.2					1.4	0.2		29.5	0.3
Level of Service	D		C					A	A		C	A
Approach Delay (s)		28.3			0.0			1.2			22.8	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	66.8%	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)	83	20	16	66	62	227	90	733	53	502	1249	411
Future Volume (veh/h)	83	20	16	66	62	227	90	733	53	502	1249	411
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	64	58	17	72	67	247	98	797	58	546	1358	447
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	222	171	50	90	84	394	117	1482	654	527	2597	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	1367	401	941	875	1583	1774	3539	1561	3442	5085	2732
Grp Volume(v), veh/h	64	0	75	139	0	247	98	797	58	546	1358	447
Grp Sat Flow(s),veh/h/ln	1774	0	1768	1816	0	1583	1774	1770	1561	1721	1695	1366
Q Serve(g_s), s	3.3	0.0	3.9	7.5	0.0	9.6	5.5	16.9	2.2	15.3	24.3	10.7
Cycle Q Clear(g_c), s	3.3	0.0	3.9	7.5	0.0	9.6	5.5	16.9	2.2	15.3	24.3	10.7
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	222	0	221	174	0	394	117	1482	654	527	2597	1744
V/C Ratio(X)	0.29	0.00	0.34	0.80	0.00	0.63	0.84	0.54	0.09	1.04	0.52	0.26
Avail Cap(c_a), veh/h	568	0	566	174	0	394	117	1482	654	527	2597	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	39.7	0.0	40.0	44.2	0.0	33.4	46.2	21.8	17.5	47.5	30.5	14.6
Incr Delay (d2), s/veh	0.3	0.0	0.3	20.8	0.0	2.4	38.5	1.4	0.3	39.8	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	1.6	0.0	1.9	4.8	0.0	6.3	3.9	8.5	1.0	10.2	11.6	5.5
LnGrp Delay(d),s/veh	40.0	0.0	40.3	65.0	0.0	35.8	84.7	23.2	17.8	87.2	30.9	14.8
LnGrp LOS	D		D	E		D	F	C	B	F	C	B
Approach Vol, veh/h		139			386			953			2351	
Approach Delay, s/veh		40.1			46.3			29.2			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	20.2	47.9		17.4	11.0	57.1		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	18.9		5.9	7.5	26.3		11.6
Green Ext Time (p_c), s	0.0	3.3		0.4	0.0	5.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	38.5
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	92	934	68	311	1001
Future Vol, veh/h	0	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	0	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	3.33			2.22	-
Pot Cap-1 Maneuver	35	480	-	-	667	-
Stage 1	303	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	16	464	-	-	656	-
Mov Cap-2 Maneuver	16	-	-	-	-	-
Stage 1	298	-	-	-	-	-
Stage 2	115	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	3.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1		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)	183	292	86	21	685	183	575	885	51	90	431	286
Future Volume (veh/h)	183	292	86	21	685	183	575	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	1863
Adj Flow Rate, veh/h	177	317	93	23	745	199	625	962	55	98	468	311
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	200	1375	589	56	1088	462	976	1096	63	190	828	347
Arrive On Green	0.23	0.78	0.78	0.03	0.31	0.31	0.20	0.32	0.32	0.11	0.23	0.23
Sat Flow, veh/h	1774	3539	1515	1774	3539	1503	3442	3392	194	1774	3539	1484
Grp Volume(v), veh/h	177	317	93	23	745	199	625	502	515	98	468	311
Grp Sat Flow(s),veh/h/ln	1774	1770	1515	1774	1770	1503	1721	1770	1817	1774	1770	1484
Q Serve(g_s), s	12.2	3.1	1.1	1.6	23.3	9.8	22.5	33.8	33.8	6.6	14.7	19.3
Cycle Q Clear(g_c), s	12.2	3.1	1.1	1.6	23.3	9.8	22.5	33.8	33.8	6.6	14.7	19.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	200	1375	589	56	1088	462	976	572	587	190	828	347
V/C Ratio(X)	0.88	0.23	0.16	0.41	0.68	0.43	0.92	0.88	0.88	0.51	0.57	0.90
Avail Cap(c_a), veh/h	220	1375	589	83	1088	462	599	666	683	190	899	377
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	8.9	2.7	59.8	38.3	19.0	49.7	40.3	40.3	53.1	42.6	26.6
Incr Delay (d2), s/veh	28.2	0.4	0.6	1.8	3.5	2.9	17.4	12.1	11.8	1.1	0.8	22.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	1.5	0.5	0.8	11.9	4.4	12.3	18.4	18.8	3.3	7.3	10.1
LnGrp Delay(d),s/veh	76.2	9.3	3.3	61.6	41.8	21.9	67.1	52.4	52.1	54.2	43.4	49.0
LnGrp LOS	E	A	A	E	D	C	E	D	D	D	D	D
Approach Vol, veh/h		587			967			1642			877	
Approach Delay, s/veh		28.5			38.1			57.9			46.6	
Approach LOS		C			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	17.9	45.8	8.4	53.9	29.1	34.6	18.6	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	10.2	47.4	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	8.6	35.8	3.6	5.1	24.5	21.3	14.2	25.3
Green Ext Time (p_c), s	0.4	4.9	0.0	21.3	0.3	3.4	0.1	7.0

Intersection Summary	
HCM 2010 Ctrl Delay	46.5
HCM 2010 LOS	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Traffic Volume (veh/h)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
Future Volume (veh/h)	1962	999	130	1463	585	69		
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	2065	1052	137	1540	616	73		
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	2065	1052	137	1540	616	73		
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583		
Q Serve(g_s), s	73.1	56.6	10.3	0.0	23.4	5.2		
Cycle Q Clear(g_c), s	73.1	56.6	10.3	0.0	23.4	5.2		
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)	0.96	0.84	1.00	0.60	0.90	0.23		
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	24.4	7.9	56.6	0.0	52.5	45.2		
Incr Delay (d2), s/veh	11.5	7.1	59.8	0.7	9.1	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	39.0	25.7	7.3	0.2	12.0	2.3		
LnGrp Delay(d),s/veh	35.9	15.0	116.4	0.7	61.6	45.3		
LnGrp LOS	D	B	F	A	E	D		
Approach Vol, veh/h	3117			1677	689			
Approach Delay, s/veh	28.8			10.1	59.9			
Approach LOS	C			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	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	12.3	75.1				2.0		25.4
Green Ext Time (p_c), s	0.0	0.0				86.2		1.1

Intersection Summary		
HCM 2010 Ctrl Delay		27.0
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
Future Volume (veh/h)	125	1906	1522	20	12	71		
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	134	2049	1637	22	13	76		
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	156	2888	2485	33	22	128		
Arrive On Green	0.18	1.00	0.70	0.70	0.10	0.10		
Sat Flow, veh/h	1774	3632	3667	48	226	1324		
Grp Volume(v), veh/h	134	2049	809	850	90	0		
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1566	0		
Q Serve(g_s), s	9.8	0.0	34.4	34.6	7.4	0.0		
Cycle Q Clear(g_c), s	9.8	0.0	34.4	34.6	7.4	0.0		
Prop In Lane	1.00			0.03	0.14	0.84		
Lane Grp Cap(c), veh/h	156	2888	1230	1288	151	0		
V/C Ratio(X)	0.86	0.71	0.66	0.66	0.59	0.00		
Avail Cap(c_a), veh/h	207	2888	1230	1288	363	0		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.10	0.10	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	54.4	0.0	11.5	11.5	58.0	0.0		
Incr Delay (d2), s/veh	2.4	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	4.9	0.1	17.6	18.4	3.3	0.0		
LnGrp Delay(d),s/veh	56.8	0.2	14.2	14.2	59.4	0.0		
LnGrp LOS	E	A	B	B	E			
Approach Vol, veh/h		2183	1659		90			
Approach Delay, s/veh		3.6	14.2		59.4			
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		116.0		18.0	16.2	99.8		
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		9.4	11.8	36.6		
Green Ext Time (p_c), s		89.9		0.1	0.1	34.6		

Intersection Summary		
HCM 2010 Ctrl Delay		9.4
HCM 2010 LOS		A

Notes

HCM 2010 AWSC
3: 55th St & Canyon Crest Dr

Intersection	
Intersection Delay, s/veh	14.4
Intersection LOS	B

Movement	WBU	WBL	WBR	NBU	NBT	NBR	EBU	SBL	SBT
Traffic Vol, veh/h	0	458	11	0	61	257	0	0	82
Future Vol, veh/h	0	458	11	0	61	257	0	0	82
Peak Hour Factor	0.92	0.87	0.87	0.92	0.87	0.87	0.92	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	526	13	0	70	295	0	0	94
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	16.4	12.3	10.7
HCM LOS	C	B	B

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	93%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	7%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	257	305	164	82
LT Vol	0	0	305	153	0
Through Vol	61	0	0	0	82
RT Vol	0	257	0	11	0
Lane Flow Rate	70	295	351	188	94
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.122	0.457	0.617	0.327	0.157
Departure Headway (Hd)	6.274	5.584	6.334	6.252	6.369
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	571	647	572	576	564
Service Time	4.01	3.301	4.058	3.976	4.408
HCM Lane V/C Ratio	0.123	0.456	0.614	0.326	0.167
HCM Control Delay	9.9	12.9	16.8	12	10.7
HCM Lane LOS	A	B	C	B	B
HCM 95th-tile Q	0.4	2.4	4.2	1.4	0.6

HCM 2010 Signalized Intersection Summary
4: Remington Rd & 55th St

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	64	75	300	509	37
Future Volume (veh/h)	21	64	75	300	509	37
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.42	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	23	71	83	333	604	0
Adj No. of Lanes	1	1	1	1	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	0
Cap, veh/h	72	670	503	1026	1900	865
Arrive On Green	0.04	0.36	0.27	0.27	0.54	0.00
Sat Flow, veh/h	1774	1863	1863	660	3548	1615
Grp Volume(v), veh/h	23	71	83	333	604	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	660	1774	1615
Q Serve(g_s), s	1.1	2.3	3.0	17.6	8.5	0.0
Cycle Q Clear(g_c), s	1.1	2.3	3.0	17.6	8.5	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	72	670	503	1026	1900	865
V/C Ratio(X)	0.32	0.11	0.17	0.32	0.32	0.00
Avail Cap(c_a), veh/h	212	819	505	1027	1900	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.5	18.9	24.8	3.4	11.6	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.1	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	0.6	1.2	1.6	8.1	4.2	0.0
LnGrp Delay(d),s/veh	42.4	19.0	24.9	3.5	12.0	0.0
LnGrp LOS	D	B	C	A	B	
Approach Vol, veh/h		94	416		604	
Approach Delay, s/veh		24.7	7.7		12.0	
Approach LOS		C	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.9		52.0	8.0	28.9
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				4.3		10.5	3.1	19.6
Green Ext Time (p_c), s				3.9		1.9	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	137	177	14	50	63	324	0	0	611	9
Future Volume (vph)	16	0	137	177	14	50	63	324	0	0	611	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.9	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.97	1.00	0.96		1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.95		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1383	1616	3012		1770	3539			3539	1527
Flt Permitted	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1383	1616	3012		1770	3539			3539	1527
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	18	0	156	201	16	57	72	368	0	0	694	10
RTOR Reduction (vph)	0	0	122	0	42	0	0	0	0	0	0	6
Lane Group Flow (vph)	18	0	34	100	132	0	72	368	0	0	694	4
Confl. Peds. (#/hr)			78			70						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	29.0		29.0	24.7	24.7		8.7	65.6			52.5	52.5
Effective Green, g (s)	29.0		29.0	24.7	24.7		8.7	65.6			52.5	52.5
Actuated g/C Ratio	0.22		0.22	0.18	0.18		0.06	0.49			0.39	0.39
Clearance Time (s)	4.9		4.9	4.9	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	383		299	296	555		114	1732			1386	598
v/s Ratio Prot	0.01			c0.06	0.04		c0.04	0.10			c0.20	
v/s Ratio Perm			c0.02									0.00
v/c Ratio	0.05		0.11	0.34	0.24		0.63	0.21			0.50	0.01
Uniform Delay, d1	41.6		42.2	47.5	46.6		61.1	19.5			30.8	24.8
Progression Factor	1.00		1.00	1.00	1.00		0.99	1.45			1.00	1.00
Incremental Delay, d2	0.0		0.1	0.2	0.1		6.8	0.2			1.3	0.0
Delay (s)	41.6		42.2	47.8	46.7		67.1	28.5			32.1	24.9
Level of Service	D		D	D	D		E	C			C	C
Approach Delay (s)		42.2			47.1			34.8			32.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	76.4%	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)	386	808	74	24	551	206	49	11	11	277	23	461
Future Volume (veh/h)	386	808	74	24	551	206	49	11	11	277	23	461
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	413	878	80	26	599	224	53	12	12	319	0	501
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	466	1373	125	33	1077	459	151	34	34	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	3259	297	1774	3539	1507	1186	268	268	3548	0	1504
Grp Volume(v), veh/h	413	477	481	26	599	224	77	0	0	319	0	501
Grp Sat Flow(s),veh/h/ln	1721	1770	1787	1774	1770	1507	1722	0	0	1774	0	1504
Q Serve(g_s), s	15.8	28.6	28.6	2.0	19.0	16.3	5.5	0.0	0.0	9.5	0.0	38.2
Cycle Q Clear(g_c), s	15.8	28.6	28.6	2.0	19.0	16.3	5.5	0.0	0.0	9.5	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	466	745	753	33	1077	459	220	0	0	1011	0	429
V/C Ratio(X)	0.89	0.64	0.64	0.79	0.56	0.49	0.35	0.00	0.00	0.32	0.00	1.17
Avail Cap(c_a), veh/h	524	745	753	74	1077	459	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	0.90	0.90	0.90	1.00	0.00	0.00	0.89	0.00	0.89
Uniform Delay (d), s/veh	56.9	30.7	30.7	65.5	39.0	38.1	53.4	0.0	0.0	37.6	0.0	47.9
Incr Delay (d2), s/veh	14.4	4.2	4.1	13.2	1.9	3.3	0.4	0.0	0.0	0.2	0.0	96.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	14.8	14.9	1.1	9.6	7.2	2.6	0.0	0.0	4.7	0.0	27.3
LnGrp Delay(d),s/veh	71.3	34.9	34.9	78.7	40.9	41.4	53.7	0.0	0.0	37.8	0.0	144.2
LnGrp LOS	E	C	C	E	D	D	D			D		F
Approach Vol, veh/h		1371			849			77			820	
Approach Delay, s/veh		45.8			42.2			53.7			102.8	
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	6.9	62.0		43.1	22.5	46.4		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	17.8	21.0		7.5
Green Ext Time (p_c), s	0.0	7.7		0.0	0.3	4.5		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		60.0
HCM 2010 LOS		E

Notes

HCM 2010 Signalized Intersection Summary
7: Campanile Dr & Montezuma Rd

Existing + Proj PM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			↰↑↱			↰↑	↱
Traffic Volume (veh/h)	59	962	14	93	613	160	21	8	116	191	5	147
Future Volume (veh/h)	59	962	14	93	613	160	21	8	116	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		0.95
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	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	64	1046	15	101	666	174	23	9	126	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	1659	24	122	1343	351	34	13	190	296	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	3568	51	1774	2756	719	217	85	1210	1734	42	1465
Grp Volume(v), veh/h	64	519	542	101	427	413	160	0	0	213	0	160
Grp Sat Flow(s),veh/h/ln	1774	1776	1850	1774	1770	1706	1513	0	0	1776	0	1465
Q Serve(g_s), s	5.0	31.1	31.1	7.8	1.6	1.6	14.0	0.0	0.0	15.6	0.0	13.4
Cycle Q Clear(g_c), s	5.0	31.1	31.1	7.8	1.6	1.6	14.0	0.0	0.0	15.6	0.0	13.4
Prop In Lane	1.00		0.03	1.00		0.42	0.14		0.80	0.98		1.00
Lane Grp Cap(c), veh/h	82	823	860	122	863	831	237	0	0	306	0	326
V/C Ratio(X)	0.78	0.63	0.63	0.83	0.50	0.50	0.67	0.00	0.00	0.70	0.00	0.49
Avail Cap(c_a), veh/h	139	823	860	147	863	831	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	28.4	28.4	59.6	0.9	0.9	55.6	0.0	0.0	54.5	0.0	48.0
Incr Delay (d2), s/veh	5.2	3.1	3.0	18.8	1.6	1.6	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	15.8	16.5	4.4	0.8	0.8	5.9	0.0	0.0	7.9	0.0	5.5
LnGrp Delay(d),s/veh	71.3	31.5	31.4	78.4	2.5	2.5	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		1125			941			160			373	
Approach Delay, s/veh		33.7			10.7			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	11.6	* 49		31.1	11.0	49.6		29.1
Max Q Clear Time (g_c+I1), s	9.8	33.1		17.6	7.0	3.6		16.0
Green Ext Time (p_c), s	0.0	13.8		0.8	0.0	32.6		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		29.6
HCM 2010 LOS		C

Notes

HCM 2010 Signalized Intersection Summary
8: College Ave & I-8WB Ramp

Existing + Proj PM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↑↑	↱
Traffic Volume (veh/h)	0	0	0	448	0	352	0	879	1186	0	597	435
Future Volume (veh/h)	0	0	0	448	0	352	0	879	1186	0	597	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				487	0	0	0	955	0	0	649	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				610	0	281	0	2540	1136	0	2540	1136
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				487	0	0	0	955	0	0	649	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				13.6	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0
Cycle Q Clear(g_c), s				13.6	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				610	0	281	0	2540	1136	0	2540	1136
V/C Ratio(X)				0.80	0.00	0.00	0.00	0.38	0.00	0.00	0.26	0.00
Avail Cap(c_a), veh/h				1132	0	521	0	2540	1136	0	2540	1136
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	0.60	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				39.4	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0
Incr Delay (d2), s/veh				2.5	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				6.6	0.0	0.0	0.0	0.1	0.0	0.0	3.2	0.0
LnGrp Delay(d),s/veh				41.9	0.0	0.0	0.0	0.3	0.0	0.0	5.1	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					487			955			649	
Approach Delay, s/veh					41.9			0.3			5.1	
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		77.2				77.2		22.8
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				8.3		15.6
Green Ext Time (p_c), s		10.3				10.2		2.2

Intersection Summary		
HCM 2010 Ctrl Delay		11.5
HCM 2010 LOS		B

HCM Signalized Intersection Capacity Analysis
9: College Ave & I-8EB Ramp

Existing + Proj PM
2/15/2017

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	1503	364	0	792	353
Future Volume (vph)	562	0	714	0	0	0	0	1503	364	0	792	353
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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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	1634	396	0	861	275
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	611	0	776	0	0	0	0	1634	396	0	861	275
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	21.2		53.9					66.3	100.0		33.6	100.0
Effective Green, g (s)	21.2		53.9					66.3	100.0		33.6	100.0
Actuated g/C Ratio	0.21		0.54					0.66	1.00		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)	727		1945					2346	1536		1189	1536
v/s Ratio Prot	c0.18		0.21					c0.46			0.24	
v/s Ratio Perm									0.26			0.18
v/c Ratio	0.84		0.40					0.70	0.26		0.72	0.18
Uniform Delay, d1	37.8		13.5					10.6	0.0		29.1	0.0
Progression Factor	1.00		1.00					0.54	1.00		0.78	1.00
Incremental Delay, d2	8.3		0.0					0.4	0.1		3.7	0.2
Delay (s)	46.1		13.6					6.1	0.1		26.6	0.2
Level of Service	D		B					A	A		C	A
Approach Delay (s)		27.9			0.0			5.0			20.2	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary
10: College Ave & Canyon Crest Dr

Existing + Proj PM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	384	41	24	56	12	292	23	1211	57	252	1137	117
Future Volume (veh/h)	384	41	24	56	12	292	23	1211	57	252	1137	117
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	452	0	0	61	13	317	25	1316	62	274	1236	127
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	683	359	0	72	15	206	36	1665	736	279	2728	2004
Arrive On Green	0.19	0.00	0.00	0.05	0.05	0.05	0.02	0.47	0.47	0.11	0.71	0.71
Sat Flow, veh/h	3548	1863	0	1475	314	1583	1774	3539	1563	3442	5085	2735
Grp Volume(v), veh/h	452	0	0	74	0	317	25	1316	62	274	1236	127
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1789	0	1583	1774	1770	1563	1721	1695	1367
Q Serve(g_s), s	11.8	0.0	0.0	4.1	0.0	4.9	1.4	31.3	2.2	7.9	10.3	0.8
Cycle Q Clear(g_c), s	11.8	0.0	0.0	4.1	0.0	4.9	1.4	31.3	2.2	7.9	10.3	0.8
Prop In Lane	1.00		0.00	0.82		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	683	359	0	88	0	206	36	1665	736	279	2728	2004
V/C Ratio(X)	0.66	0.00	0.00	0.84	0.00	1.54	0.70	0.79	0.08	0.98	0.45	0.06
Avail Cap(c_a), veh/h	1135	596	0	88	0	206	101	1665	736	279	2728	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	0.80	0.80	0.80
Uniform Delay (d), s/veh	37.4	0.0	0.0	47.2	0.0	43.5	48.7	22.3	14.6	44.5	8.1	2.3
Incr Delay (d2), s/veh	0.4	0.0	0.0	47.4	0.0	265.8	22.3	3.9	0.2	43.3	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	5.8	0.0	0.0	3.2	0.0	20.9	0.9	16.1	1.0	5.4	4.9	0.5
LnGrp Delay(d),s/veh	37.8	0.0	0.0	94.5	0.0	309.3	71.0	26.2	14.8	87.8	8.5	2.4
LnGrp LOS	D			F		F	E	C	B	F	A	A
Approach Vol, veh/h		452			391			1403			1637	
Approach Delay, s/veh		37.8			268.7			26.5			21.3	
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	53.1		24.1	6.4	59.7		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	9.9	33.3		13.8	3.4	12.3		6.9
Green Ext Time (p_c), s	0.0	0.9		1.3	0.0	20.2		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		50.0
HCM 2010 LOS		D

Notes

HCM 2010 TWSC
11: College Ave & Zura Way

Existing + Proj PM
2/15/2017

Intersection						
Int Delay, s/veh	15.7					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	437	1048	38	153	1064
Future Vol, veh/h	0	437	1048	38	153	1064
Conflicting Peds, #/hr	0	30	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	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	249	-	-	-	-	-

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

HCM 2010 Signalized Intersection Summary
12: College Ave & Montezuma Rd

Existing + Proj PM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	290	914	447	176	391	165	327	562	47	191	707	274
Future Volume (veh/h)	290	914	447	176	391	165	327	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		0.96	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	1863
Adj Flow Rate, veh/h	315	993	486	191	425	179	355	611	51	208	768	298
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	334	1351	578	215	1112	473	404	745	62	242	870	366
Arrive On Green	0.38	0.76	0.76	0.12	0.31	0.31	0.12	0.23	0.23	0.14	0.25	0.25
Sat Flow, veh/h	1774	3539	1514	1774	3539	1504	3442	3288	274	1774	3539	1487
Grp Volume(v), veh/h	315	993	486	191	425	179	355	328	334	208	768	298
Grp Sat Flow(s),veh/h/ln	1774	1770	1514	1774	1770	1504	1721	1770	1792	1774	1770	1487
Q Serve(g_s), s	24.0	21.2	20.9	14.8	13.1	9.1	14.2	24.7	24.8	16.1	29.3	17.5
Cycle Q Clear(g_c), s	24.0	21.2	20.9	14.8	13.1	9.1	14.2	24.7	24.8	16.1	29.3	17.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	334	1351	578	215	1112	473	404	401	406	242	870	366
V/C Ratio(X)	0.94	0.74	0.84	0.89	0.38	0.38	0.88	0.82	0.82	0.86	0.88	0.82
Avail Cap(c_a), veh/h	400	1351	578	248	1112	473	423	417	422	274	945	397
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)	0.79	0.79	0.79	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	12.8	6.8	60.6	37.4	18.5	60.8	51.4	51.4	59.2	50.9	21.7
Incr Delay (d2), s/veh	22.5	2.9	11.2	25.6	1.0	2.3	17.4	12.3	12.5	19.5	9.6	12.0
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	13.8	10.5	10.1	8.8	6.6	4.1	7.7	13.4	13.6	9.2	15.4	8.4
LnGrp Delay(d),s/veh	65.4	15.6	18.0	86.2	38.4	20.8	78.2	63.7	63.9	78.7	60.4	33.7
LnGrp LOS	E	B	B	F	D	C	E	E	E	E	E	C
Approach Vol, veh/h		1794			795			1017			1274	
Approach Delay, s/veh		25.0			45.9			68.8			57.1	
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	23.5	36.8	21.3	58.3	20.8	39.5	30.8	48.9
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	19.6	47.0	17.2	37.4	31.6	35.0
Max Q Clear Time (g_c+I1), s	18.1	26.8	16.8	23.2	16.2	31.3	26.0	15.1
Green Ext Time (p_c), s	0.6	2.1	0.1	20.7	0.2	3.1	0.4	17.6

Intersection Summary	
HCM 2010 Ctrl Delay	45.9
HCM 2010 LOS	D

APPENDIX F

CUMULATIVE PROJECTS INFORMATION

INTERSECTION	DIRECTION	FINAL Cumulative Volumes						Adjustments						Other Cumulative Projects (2% of Existing)					
		Ram	Rpm	Tam	Tpm	Lam	Lpm	Ram	Rpm	Tam	Tpm	Lam	Lpm	Ram	Rpm	Tam	Tpm	Lam	Lpm
1. Montezuma Road / Collwood Blvd	Sb	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0	0	0	0
	Wb	0	0	29	36	2	3	-	-	-	-	-	-	0	0	26	29	2	3
	Nb	2	2	0	0	20	12	-	-	-	-	-	-	2	2	0	0	20	12
	Eb	10	20	28	40	0	0	-	-	-	-	-	-	10	20	30	39	0	0
2. Montezuma Road / Vista Santa Dr	Sb	3	2	0	0	1	1	-	-	-	-	-	-	3	2	0	0	1	1
	Wb	1	1	28	37	0	0	-	-	-	-	-	-	1	1	25	30	0	0
	Nb	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0	0	0	0
	Eb	0	0	29	44	1	3	-	-	1	1	-	-	0	0	20	37	1	3
3. 55th St / Canyon Crest Dr	Sb	0	0	1	5	0	0	-	-	(1)	(2)	-	-	0	0	1	2	0	0
	Wb	1	1	0	0	2	8	-	-	-	-	-	-	1	1	0	0	2	8
	Nb	11	4	4	3	0	0	1	-	(1)	(1)	-	-	10	4	1	2	0	0
	Eb	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0	0	0	0
4. 55th Street / Remington Rd	Sb	0	1	0	0	3	12	-	-	-	-	-	-						
	Wb	14	7	1	2	0	0	-	-	-	-	-	-						
	Nb	0	0	0	0	0	0	-	-	-	-	-	-						
	Eb	0	0	1	1	1	0	-	-	-	-	-	-						
5. 55th Street / Hardy Ave	Sb	1	1	3	12	0	0	-	-	(2)	(4)	-	-	1	1	4	11	0	0
	Wb	2	1	1	1	2	3	-	-	-	-	-	(1)	2	1	1	1	2	4
	Nb	0	0	17	10	4	2	-	-	2	3	-	-	0	0	11	5	3	2
	Eb	0	4	0	0	1	1	(1)	-	-	-	-	-	1	3	0	0	1	1
6. 55th St / Montezuma Rd	Sb	3	11	0	0	2	8	-	-	-	-	-	-						
	Wb	8	5	38	34	0	0	-	-	-	-	-	-						
	Nb	0	0	0	0	1	1	-	-	-	-	-	-						
	Eb	0	1	21	71	11	7	-	-	-	-	-	-						
7. Montezuma Rd / Campanile Dr	Sb	2	5	0	1	3	8	-	-	-	-	-	-						
	Wb	8	5	44	33	2	4	-	-	-	-	-	-						
	Nb	3	5	1	2	1	0	-	-	-	-	-	-						
	Eb	0	0	23	70	4	7	-	-	-	-	-	-						
8. College Ave / I-8 WB Ramps	Sb	17	11	56	63	0	0	-	-	-	-	-	-						
	Wb	2	8	0	0	19	30	-	-	-	-	-	-						
	Nb	25	48	37	64	0	0	-	-	-	-	-	-						
	Eb	0	0	0	0	0	0	-	-	-	-	-	-						
9. College Ave / I-8 EB Ramps	Sb	7	5	68	87	0	0	-	-	-	-	-	-						
	Wb	0	0	0	0	0	0	-	-	-	-	-	-						
	Nb	14	22	56	98	0	0	-	-	-	-	-	-						
	Eb	50	51	0	0	8	15	-	-	-	-	-	-						
10. College Ave / Canyon Crest Ave	Sb	28	10	48	86	43	43	-	-	-	-	-	-						
	Wb	24	38	3	1	13	28	-	-	-	-	-	-						
	Nb	24	24	42	56	6	2	-	-	-	-	-	-						
	Eb	1	5	0	3	6	28	-	-	-	-	-	-						
11. College Ave / Zura Way	Sb	0	0	46	113	14	7	-	-	-	-	-	-						
	Wb	4	18	0	0	0	0	-	-	-	-	-	-						
	Nb	3	2	75	67	0	0	-	-	-	-	-	-						
	Eb	0	0	0	0	0	0	-	-	-	-	-	-						
12. College Ave / Montezuma Way	Sb	28	28	30	37	15	17	-	-	-	-	-	-						
	Wb	15	34	14	8	0	5	-	-	-	-	-	-						
	Nb	1	1	37	54	15	9	-	-	-	-	-	-						
	Eb	3	15	6	18	20	58	-	-	-	-	-	-						

INTERSECTION	DIRECTION	Factored SDSU Master Plan Traffic						Factor	SDSU Master Plan Near-Term Project						SDSU Master Plan Horizon Year Project						TOTAL CUMULATIVE (From SDSU Master Plan #2804)					
		Ram	Rpm	Tam	Tpm	Lam	Lpm		Ram	Rpm	Tam	Tpm	Lam	Lpm	Ram	Rpm	Tam	Tpm	Lam	Lpm	Ram	Rpm	Tam	Tpm	Lam	Lpm
1. Montezuma Road / Collwood Blvd	Sb	0	0	0	0	0	0	100%																		
	Wb	0	0	3	7	0	0	2%			3	7					9	61								
	Nb	0	0	0	0	0	0																			
	Eb	0	0	8	6	0	0				8	6					57	30								
2. Montezuma Road / Vista Santa Dr	Sb	0	0	0	0	0	0																			
	Wb	0	0	3	7	0	0				3	7					9	61								
	Nb	0	0	0	0	0	0																			
	Eb	0	0	8	6	0	0				8	6					57	30								
3. 55th St / Canyon Crest Dr	Sb	0	0	1	5	0	0				1	5					1	5								
	Wb	0	0	0	0	0	0												3	39						
	Nb	0	0	4	2	0	0				4	2			36	17	4	2								
	Eb	0	0	0	0	0	0																			
4. 55th Street / Remington Rd	Sb	0	0	0	0	1	5		0	0	0	0	1	5	0	5	0	0	4	39	0	1	0	0	2	7
	Wb	4	2	0	0	0	0		4	2	0	0	0	0	36	17	0	0	0	0	10	5	1	2	0	0
	Nb	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Eb	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	4	2	0	0	1	1	1	0
5. 55th Street / Hardy Ave	Sb	0	0	1	5	0	0				1	5					4	39								
	Wb	0	0	0	0	0	0																			
	Nb	0	0	4	2	1	0				4	2	1	0			36	17	9	6						
	Eb	0	1	0	0	0	0		0	1					1	0										
6. 55th St / Montezuma Rd	Sb	1	3	0	0	0	3		1	3	0	0	0	3	2	19	0	0	3	29	2	8	0	0	2	5
	Wb	2	1	2	4	0	0		2	1	2	4	0	0	27	13	7	42	0	0	6	4	36	30	0	0
	Nb	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
	Eb	0	0	5	5	1	1		0	0	5	5	1	1	0	0	19	77	18	6	0	1	16	66	10	6
7. Montezuma Rd / Campanile Dr	Sb	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	5	2	5	0	1	3	8
	Wb	0	0	4	5	0	0		0	0	4	5	0	0	4	2	29	52	4	2	8	5	40	28	2	4
	Nb	0	0	0	0	0	0		0	0	0	0	0	0	4	2	0	0	4	2	3	5	1	2	1	0
	Eb	0	0	5	7	0	0		0	0	5	7	0	0	0	5	41	46	0	0	0	0	18	63	4	7
8. College Ave / I-8 WB Ramps	Sb	4	2	26	16	0	0		4	2	26	16	0	0	13	6	108	53	0	0	13	9	30	47	0	0
	Wb	0	1	0	0	14	12		0	1	0	0	14	12	1	5	0	0	64	36	2	7	0	0	5	18
	Nb	11	24	10	32	0	0		11	24	10	32	0	0	21	125	26	124	0	0	14	24	27	32	0	0
	Eb	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. College Ave / I-8 EB Ramps	Sb	1	0	39	28	0	0		1	0	39	28	0	0	4	2	168	87	0	0	6	5	29	59	0	0
	Wb	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Nb	5	14	20	52	0	0		5	14	20	52	0	0	11	59	44	235	0	0	9	8	36	46	0	0
	Eb	25	24	0	0	1	4		25	24	0	0	1	4	118	58	0	0	3	14	25	27	0	0	7	11
10. College Ave / Canyon Crest Ave	Sb	20	8	12	6	33	38		20	8	12	6	33	38	86	38	74	33	127	60	8	2	36	80	10	5
	Wb	19	32	2	1	9	11		19	32	2	1	9	11	30	133	9	4	17	69	5	6	1	0	4	17
	Nb	14	17	2	13	4	2		14	17	2	13	4	2	86	50	12	79	18	8	10	7	40	43	2	0
	Eb	1	5	0	2	4	21		1	5	0	2	4	21	2	19	1	10	13	92	0	0	0	1	2	7
11. College Ave / Zura Way	Sb	0	0	12	19	6	4		0	0	12	19	6	4	0	0	31	113	31	26	0	0	34	94	6	3
	Wb	2	9	0	0	0	0		2	9	0	0	0	0	8	54	0	0	0	0	2	9	0	0	0	0
	Nb	2	1	22	21	0	0		2	1	22	21	0	0	13	8	105	71	0	0	1	1	53	46	0	0
	Eb	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12. College Ave / Montezuma Way	Sb	2	5	7	9	2	5		2	5	7	9	2	5	11	48	14	44	4	19	26	23	23	28	13	12
	Wb	6	6	0	0	0	1		6	6	0	0	0	1	21	14	0	0	1	10	9	28	14	8	0	4
	Nb	0	0	11	11	2	1		0	0	11	11	2	1	0	0	53	32	22	10	1	1	26	43	13	8
	Eb	0	2	0	0	6	5		0	2	0	0	6	5	2	24	0	0	43	20	3	13	6	18	14	54

APPENDIX G

NEAR-TERM ANALYSIS CALCULATION SHEETS

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Traffic Volume (veh/h)	981	469	70	1324	975	59		
Future Volume (veh/h)	981	469	70	1324	975	59		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		0.98	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	1090	521	78	1471	1083	66		
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	1724	1275	98	2042	1158	533		
Arrive On Green	0.49	0.46	0.11	1.00	0.34	0.34		
Sat Flow, veh/h	3632	1524	1774	3632	3442	1583		
Grp Volume(v), veh/h	1090	521	78	1471	1083	66		
Grp Sat Flow(s),veh/h/ln	1770	1524	1774	1770	1721	1583		
Q Serve(g_s), s	28.8	11.6	5.4	0.0	38.4	3.6		
Cycle Q Clear(g_c), s	28.8	11.6	5.4	0.0	38.4	3.6		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1724	1275	98	2042	1158	533		
V/C Ratio(X)	0.63	0.41	0.80	0.72	0.94	0.12		
Avail Cap(c_a), veh/h	1724	1275	169	2042	1371	631		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.78	0.78	1.00	1.00		
Uniform Delay (d), s/veh	24.0	3.0	55.4	0.0	40.5	29.0		
Incr Delay (d2), s/veh	1.8	1.0	4.4	1.8	10.2	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	14.5	5.2	2.8	0.5	19.8	1.6		
LnGrp Delay(d),s/veh	25.7	4.0	59.7	1.8	50.7	29.0		
LnGrp LOS	C	A	E	A	D	C		
Approach Vol, veh/h	1611			1549	1149			
Approach Delay, s/veh	18.7			4.7	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	11.3	67.9				79.2		46.8
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	7.4	38.8				2.0		40.4
Green Ext Time (p_c), s	0.0	17.6				57.4		2.0

Intersection Summary		
HCM 2010 Ctrl Delay		21.9
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	41	998	1274	19	8	120		
Future Volume (veh/h)	41	998	1274	19	8	120		
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	46	1122	1431	21	9	135		
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	59	2754	2534	37	12	187		
Arrive On Green	0.07	1.00	0.71	0.71	0.13	0.13		
Sat Flow, veh/h	1774	3632	3662	52	97	1453		
Grp Volume(v), veh/h	46	1122	709	743	145	0		
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1851	1561	0		
Q Serve(g_s), s	3.2	0.0	24.4	24.5	11.2	0.0		
Cycle Q Clear(g_c), s	3.2	0.0	24.4	24.5	11.2	0.0		
Prop In Lane	1.00			0.03	0.06	0.93		
Lane Grp Cap(c), veh/h	59	2754	1257	1315	201	0		
V/C Ratio(X)	0.78	0.41	0.56	0.57	0.72	0.00		
Avail Cap(c_a), veh/h	135	2754	1257	1315	395	0		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.74	0.74	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	58.4	0.0	8.8	8.8	52.7	0.0		
Incr Delay (d2), s/veh	6.1	0.3	1.8	1.8	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	12.5	13.0	4.9	0.0		
LnGrp Delay(d),s/veh	64.5	0.3	10.7	10.6	54.5	0.0		
LnGrp LOS	E	A	B	B	D			
Approach Vol, veh/h		1168	1452		145			
Approach Delay, s/veh		2.9	10.6		54.5			
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		104.6		21.4	8.6	96.1		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 83		31.9	9.6	58.4		
Max Q Clear Time (g_c+I1), s		2.0		13.2	5.2	26.5		
Green Ext Time (p_c), s		75.9		0.2	0.0	40.4		

Intersection Summary		
HCM 2010 Ctrl Delay		9.7
HCM 2010 LOS		A

Notes

Intersection	
Intersection Delay, s/veh	18.2
Intersection LOS	C

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Traffic Vol, veh/h	0	95	10	0	37	491	0	0	45
Future Vol, veh/h	0	95	10	0	37	491	0	0	45
Peak Hour Factor	0.92	0.75	0.75	0.92	0.75	0.75	0.92	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	127	13	0	49	655	0	0	60
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.4	20.5	9.1
HCM LOS	B	C	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	76%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	24%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	491	63	42	45
LT Vol	0	0	63	32	0
Through Vol	37	0	0	0	45
RT Vol	0	491	0	10	0
Lane Flow Rate	49	655	84	56	60
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.069	0.79	0.157	0.099	0.091
Departure Headway (Hd)	5.049	4.346	6.675	6.384	5.459
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	709	831	534	557	649
Service Time	2.781	2.078	4.466	4.175	3.559
HCM Lane V/C Ratio	0.069	0.788	0.157	0.101	0.092
HCM Control Delay	8.2	21.4	10.7	9.9	9.1
HCM Lane LOS	A	C	B	A	A
HCM 95th-tile Q	0.2	8.2	0.6	0.3	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	58	53	541	84	21
Future Volume (veh/h)	34	58	53	541	84	21
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.80	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	39	66	60	615	60	62
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	71	818	448	1206	1012	921
Arrive On Green	0.04	0.33	0.24	0.24	0.57	0.57
Sat Flow, veh/h	1774	1863	1863	1260	1774	1615
Grp Volume(v), veh/h	39	66	60	615	60	62
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1260	1774	1615
Q Serve(g_s), s	2.1	2.3	2.4	17.2	1.4	1.6
Cycle Q Clear(g_c), s	2.1	2.3	2.4	17.2	1.4	1.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	71	818	448	1206	1012	921
V/C Ratio(X)	0.55	0.11	0.13	0.51	0.06	0.07
Avail Cap(c_a), veh/h	75	634	470	1221	1012	921
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	44.9	22.0	28.4	3.3	9.1	9.1
Incr Delay (d2), s/veh	3.7	0.0	0.0	0.1	0.1	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	1.1	1.2	1.2	16.1	0.7	2.4
LnGrp Delay(d),s/veh	48.6	22.1	28.4	3.5	9.2	9.3
LnGrp LOS	D	C	C	A	A	A
Approach Vol, veh/h		105	675		122	
Approach Delay, s/veh		31.9	5.7		9.2	
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				36.5		58.7	8.7	27.8
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		3.6	4.1	19.2
Green Ext Time (p_c), s				0.2		0.3	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	22	98	23	78	111	540	0	0	184	27
Future Volume (vph)	6	0	22	98	23	78	111	540	0	0	184	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.92	1.00	0.94		1.00	1.00			1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.91		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1461	1610	2880		1770	3539			3539	1528
Flt Permitted	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1461	1610	2880		1770	3539			3539	1528
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	0	24	105	25	84	119	581	0	0	198	29
RTOR Reduction (vph)	0	0	20	0	68	0	0	0	0	0	0	18
Lane Group Flow (vph)	6	0	4	75	71	0	119	581	0	0	198	11
Confl. Peds. (#/hr)			51			55						10
Confl. Bikes (#/hr)						10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	23.2		23.2	24.3	24.3		12.8	63.8			46.6	46.6
Effective Green, g (s)	23.2		23.2	24.3	24.3		12.8	63.8			46.6	46.6
Actuated g/C Ratio	0.18		0.18	0.19	0.19		0.10	0.51			0.37	0.37
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	325		269	310	555		179	1791			1308	565
v/s Ratio Prot	c0.00			c0.05	0.02		c0.07	c0.16			0.06	
v/s Ratio Perm			0.00									0.01
v/c Ratio	0.02		0.02	0.24	0.13		0.66	0.32			0.15	0.02
Uniform Delay, d1	42.1		42.1	43.1	42.1		54.5	18.4			26.5	25.2
Progression Factor	1.00		1.00	1.00	1.00		1.35	0.57			1.00	1.00
Incremental Delay, d2	0.0		0.0	0.1	0.0		5.4	0.4			0.2	0.1
Delay (s)	42.1		42.1	43.2	42.1		78.9	10.9			26.7	25.3
Level of Service	D		D	D	D		E	B			C	C
Approach Delay (s)		42.1			42.5			22.5			26.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	72.5%	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)	516	353	13	4	867	300	46	19	19	77	1	125
Future Volume (veh/h)	516	353	13	4	867	300	46	19	19	77	1	125
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	561	384	14	4	942	326	50	21	21	85	0	136
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	621	2164	79	7	1579	680	126	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	3476	126	1774	3539	1525	905	389	388	3548	0	1354
Grp Volume(v), veh/h	561	195	203	4	942	326	92	0	0	85	0	136
Grp Sat Flow(s),veh/h/ln	1721	1770	1833	1774	1770	1525	1702	0	0	1774	0	1354
Q Serve(g_s), s	20.1	5.5	5.9	0.3	7.7	5.1	6.2	0.0	0.0	2.8	0.0	10.1
Cycle Q Clear(g_c), s	20.1	5.9	5.9	0.3	7.7	5.1	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	621	1101	1141	7	1579	680	232	0	0	284	0	109
V/C Ratio(X)	0.90	0.18	0.18	0.54	0.60	0.48	0.40	0.00	0.00	0.30	0.00	1.25
Avail Cap(c_a), veh/h	699	1101	1141	56	1579	680	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	0.37	0.37	0.37	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	50.5	10.1	10.1	62.4	4.2	4.0	49.7	0.0	0.0	54.6	0.0	58.0
Incr Delay (d2), s/veh	13.2	0.4	0.3	8.3	0.6	0.9	0.4	0.0	0.0	0.6	0.0	168.7
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	10.7	3.0	3.1	0.2	3.5	2.1	3.0	0.0	0.0	1.4	0.0	8.9
LnGrp Delay(d),s/veh	63.7	10.4	10.4	70.7	4.8	4.9	50.1	0.0	0.0	55.2	0.0	226.6
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		959			1272			92			221	
Approach Delay, s/veh		41.6			5.0			50.1			160.7	
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	84.0		15.0	27.2	61.8		22.1
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	2.3	7.9		12.1	22.1	9.7		8.2
Green Ext Time (p_c), s	0.0	20.4		0.0	0.6	16.3		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	34.0
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	410	11	67	1078	311	37	14	94	100	9	57
Future Volume (veh/h)	86	410	11	67	1078	311	37	14	94	100	9	57
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	93	446	12	73	1172	338	40	15	102	109	10	62
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	1708	46	92	1333	378	64	24	163	243	22	286
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	3515	94	1774	2701	765	388	149	1014	1631	150	1449
Grp Volume(v), veh/h	93	224	234	73	761	749	157	0	0	119	0	62
Grp Sat Flow(s),veh/h/ln	1774	1770	1839	1774	1770	1696	1551	0	0	1781	0	1449
Q Serve(g_s), s	5.6	0.8	0.8	5.1	43.4	46.4	11.8	0.0	0.0	7.7	0.0	4.5
Cycle Q Clear(g_c), s	5.6	0.8	0.8	5.1	43.4	46.4	11.8	0.0	0.0	7.7	0.0	4.5
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	860	894	92	874	837	251	0	0	265	0	286
V/C Ratio(X)	1.18	0.26	0.26	0.79	0.87	0.90	0.63	0.00	0.00	0.45	0.00	0.22
Avail Cap(c_a), veh/h	79	860	894	121	874	837	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	0.55	0.55	0.55	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	0.9	0.9	58.0	18.4	18.9	49.3	0.0	0.0	48.9	0.0	42.8
Incr Delay (d2), s/veh	157.1	0.7	0.7	9.9	6.9	8.6	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	6.2	0.4	0.4	2.8	22.7	23.2	5.2	0.0	0.0	3.8	0.0	1.8
LnGrp Delay(d),s/veh	214.5	1.6	1.6	67.8	25.3	27.5	50.3	0.0	0.0	49.4	0.0	43.0
LnGrp LOS	F	A	A	E	C	C	D			D		D
Approach Vol, veh/h		561			1583			157			161	
Approach Delay, s/veh		37.6			26.3			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	11.0	68.2		23.6	10.0	67.2		25.2
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	6.6	* 38		31.0	5.6	41.2		29.0
Max Q Clear Time (g_c+I1), s	7.1	2.8		9.7	7.6	48.4		13.8
Green Ext Time (p_c), s	0.0	31.2		0.4	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.2
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	240	0	92	0	906	331	0	1056	686
Future Volume (veh/h)	0	0	0	240	0	92	0	906	331	0	1056	686
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				261	0	0	0	985	0	0	1148	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				330	0	152	0	2828	1265	0	2828	1265
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				261	0	0	0	985	0	0	1148	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				7.4	0.0	0.0	0.0	0.0	0.0	0.0	9.6	0.0
Cycle Q Clear(g_c), s				7.4	0.0	0.0	0.0	0.0	0.0	0.0	9.6	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				330	0	152	0	2828	1265	0	2828	1265
V/C Ratio(X)				0.79	0.00	0.00	0.00	0.35	0.00	0.00	0.41	0.00
Avail Cap(c_a), veh/h				375	0	173	0	2828	1265	0	2828	1265
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	0.87	0.00	0.00	1.00	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				9.8	0.0	0.0	0.0	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				4.0	0.0	0.0	0.0	0.1	0.0	0.0	4.8	0.0
LnGrp Delay(d),s/veh				54.0	0.0	0.0	0.0	0.3	0.0	0.0	3.4	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					261			985			1148	
Approach Delay, s/veh					54.0			0.3			3.4	
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		85.3				85.3		14.7
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				11.6		9.4
Green Ext Time (p_c), s		17.9				17.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Traffic Volume (vph)	355	0	1263	6	0	0	0	884	222	0	1010	286
Future Volume (vph)	355	0	1263	6	0	0	0	884	222	0	1010	286
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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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)	386	0	1373	6	0	0	0	961	241	0	1098	311
RTOR Reduction (vph)	0	0	0	6	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	386	0	1373	0	0	0	0	961	241	0	1098	311
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	15.0		47.9					72.5	100.0		39.6	100.0
Effective Green, g (s)	15.0		47.9					72.5	100.0		39.6	100.0
Actuated g/C Ratio	0.15		0.48					0.72	1.00		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)	514		1729					2565	1536		1401	1536
v/s Ratio Prot	0.11		c0.38					0.27			c0.31	
v/s Ratio Perm									0.16			0.20
v/c Ratio	0.75		0.79					0.37	0.16		0.78	0.20
Uniform Delay, d1	40.7		21.9					5.2	0.0		26.4	0.0
Progression Factor	1.00		1.00					0.25	1.00		1.03	1.00
Incremental Delay, d2	5.4		2.4					0.2	0.1		4.0	0.3
Delay (s)	46.1		24.3					1.6	0.1		31.4	0.3
Level of Service	D		C					A	A		C	A
Approach Delay (s)		29.1			0.0			1.3			24.5	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	69.7%	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)	82	19	17	79	64	251	96	775	77	545	1257	432
Future Volume (veh/h)	82	19	17	79	64	251	96	775	77	545	1257	432
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	64	56	18	86	70	273	104	842	84	592	1410	470
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	222	187	54	96	76	394	117	1483	654	527	2599	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	1303	429	999	813	1583	1774	3539	1561	3442	5085	2732
Grp Volume(v), veh/h	64	0	74	156	0	273	104	842	84	592	1410	470
Grp Sat Flow(s),veh/h/ln	1774	0	1762	1813	0	1583	1774	1770	1561	1721	1695	1366
Q Serve(g_s), s	3.3	0.0	3.8	8.5	0.0	9.6	5.8	18.1	3.3	15.3	25.4	11.3
Cycle Q Clear(g_c), s	3.3	0.0	3.8	8.5	0.0	9.6	5.8	18.1	3.3	15.3	25.4	11.3
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	222	0	220	174	0	394	117	1483	654	527	2599	1744
V/C Ratio(X)	0.29	0.00	0.34	0.90	0.00	0.69	0.89	0.57	0.13	1.12	0.54	0.27
Avail Cap(c_a), veh/h	568	0	564	174	0	394	117	1483	654	527	2599	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	0.52	0.52	0.52
Uniform Delay (d), s/veh	39.7	0.0	40.0	44.7	0.0	34.1	46.3	22.1	17.8	47.5	30.9	14.8
Incr Delay (d2), s/veh	0.3	0.0	0.3	39.3	0.0	4.3	50.4	1.6	0.4	68.9	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	1.6	0.0	1.9	6.1	0.0	7.3	4.5	9.1	1.5	12.3	12.0	5.6
LnGrp Delay(d),s/veh	40.0	0.0	40.3	84.0	0.0	38.4	96.7	23.7	18.2	116.4	31.3	15.0
LnGrp LOS	D		D	F		D	F	C	B	F	C	B
Approach Vol, veh/h		138			429			1030			2472	
Approach Delay, s/veh		40.2			55.0			30.6			48.6	
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	20.2	47.9		17.4	11.0	57.1		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	20.1		5.8	7.8	27.4		11.6
Green Ext Time (p_c), s	0.0	2.2		0.4	0.0	4.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.4
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	96	1009	71	325	1047
Future Vol, veh/h	0	96	1009	71	325	1047
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	104	1097	77	353	1138

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2393	588	0	0	1117	0
Stage 1	1117	-	-	-	-	-
Stage 2	1276	-	-	-	-	-
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	28	452	-	-	621	-
Stage 1	275	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	11	437	-	-	611	-
Mov Cap-2 Maneuver	11	-	-	-	-	-
Stage 1	270	-	-	-	-	-
Stage 2	94	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	4.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT
Capacity (veh/h)	-	-	437	611	-
HCM Lane V/C Ratio	-	-	0.239	0.578	-
HCM Control Delay (s)	-	-	15.8	18.7	-
HCM Lane LOS	-	-	C	C	-
HCM 95th %tile Q(veh)	-	-	0.9	3.7	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (veh/h)	183	296	86	21	696	198	586	922	52	105	461	314
Future Volume (veh/h)	183	296	86	21	696	198	586	922	52	105	461	314
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	1863
Adj Flow Rate, veh/h	199	321	93	23	757	215	637	1002	57	114	501	341
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	220	1348	577	56	1023	433	988	1044	59	231	845	354
Arrive On Green	0.25	0.76	0.76	0.03	0.29	0.29	0.20	0.31	0.31	0.13	0.24	0.24
Sat Flow, veh/h	1774	3539	1514	1774	3539	1499	3442	3393	193	1774	3539	1485
Grp Volume(v), veh/h	199	321	93	23	757	215	637	523	536	114	501	341
Grp Sat Flow(s),veh/h/ln	1774	1770	1514	1774	1770	1499	1721	1770	1816	1774	1770	1485
Q Serve(g_s), s	13.7	3.3	1.2	1.6	24.4	10.7	22.9	36.5	36.6	7.5	15.8	21.1
Cycle Q Clear(g_c), s	13.7	3.3	1.2	1.6	24.4	10.7	22.9	36.5	36.6	7.5	15.8	21.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	220	1348	577	56	1023	433	988	545	559	231	845	354
V/C Ratio(X)	0.91	0.24	0.16	0.41	0.74	0.50	0.93	0.96	0.96	0.49	0.59	0.96
Avail Cap(c_a), veh/h	220	1348	577	83	1023	433	999	546	561	263	899	377
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	9.7	3.0	59.8	40.5	18.9	49.6	42.8	42.8	50.9	42.5	25.8
Incr Delay (d2), s/veh	35.0	0.4	0.6	1.8	4.8	4.0	18.2	28.6	28.1	0.6	1.1	35.7
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	8.8	1.7	0.6	0.8	12.6	4.9	12.6	22.2	22.7	3.7	7.8	12.1
LnGrp Delay(d),s/veh	81.7	10.1	3.6	61.6	45.3	22.9	67.7	71.4	71.0	51.5	43.6	61.6
LnGrp LOS	F	B	A	E	D	C	E	E	E	D	D	E
Approach Vol, veh/h		613			995			1696			956	
Approach Delay, s/veh		32.3			40.9			69.9			51.0	
Approach LOS		C			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	20.8	43.9	8.4	52.9	29.5	35.2	20.0	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	18.7	38.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	9.5	38.6	3.6	5.3	24.9	23.1	15.7	26.4
Green Ext Time (p_c), s	1.6	0.2	0.0	21.8	0.2	3.3	0.0	6.2

Intersection Summary	
HCM 2010 Ctrl Delay	53.5
HCM 2010 LOS	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Traffic Volume (veh/h)	1947	1019	128	1448	597	65		
Future Volume (veh/h)	1947	1019	128	1448	597	65		
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	2049	1073	135	1525	628	68		
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	2149	1247	138	2540	692	318		
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	2049	1073	135	1525	628	68		
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583		
Q Serve(g_s), s	72.4	60.4	10.2	0.0	23.9	4.8		
Cycle Q Clear(g_c), s	72.4	60.4	10.2	0.0	23.9	4.8		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2149	1247	138	2540	692	318		
V/C Ratio(X)	0.95	0.86	0.98	0.60	0.91	0.21		
Avail Cap(c_a), veh/h	2149	1247	138	2540	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	24.5	8.3	56.5	0.0	52.3	44.7		
Incr Delay (d2), s/veh	11.2	7.9	55.3	0.7	9.7	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	38.3	27.7	7.1	0.2	12.3	2.1		
LnGrp Delay(d),s/veh	35.7	16.2	111.8	0.7	62.1	44.8		
LnGrp LOS	D	B	F	A	E	D		
Approach Vol, veh/h	3122			1660	696			
Approach Delay, s/veh	29.0			9.7	60.4			
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	87.9				102.7		31.3
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	12.2	74.4				2.0		25.9
Green Ext Time (p_c), s	0.0	0.0				86.1		1.0
Intersection Summary								
HCM 2010 Ctrl Delay			27.1					
HCM 2010 LOS			C					
Notes								

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	126	1888	1506	21	13	71		
Future Volume (veh/h)	126	1888	1506	21	13	71		
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	135	2028	1619	23	14	76		
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	158	2886	2477	35	23	127		
Arrive On Green	0.18	1.00	0.69	0.69	0.10	0.10		
Sat Flow, veh/h	1774	3632	3664	51	242	1311		
Grp Volume(v), veh/h	135	2028	801	841	91	0		
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1570	0		
Q Serve(g_s), s	9.9	0.0	34.0	34.1	7.4	0.0		
Cycle Q Clear(g_c), s	9.9	0.0	34.0	34.1	7.4	0.0		
Prop In Lane	1.00			0.03	0.15	0.84		
Lane Grp Cap(c), veh/h	158	2886	1227	1284	153	0		
V/C Ratio(X)	0.85	0.70	0.65	0.65	0.60	0.00		
Avail Cap(c_a), veh/h	318	2886	1227	1284	598	0		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.12	0.12	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	54.2	0.0	11.5	11.5	58.0	0.0		
Incr Delay (d2), s/veh	0.8	0.2	2.7	2.6	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	17.4	18.2	3.3	0.0		
LnGrp Delay(d),s/veh	54.9	0.2	14.2	14.1	59.4	0.0		
LnGrp LOS	D	A	B	B	E			
Approach Vol, veh/h		2163	1642		91			
Approach Delay, s/veh		3.6	14.2		59.4			
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		115.9		18.1	16.3	99.5		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 72		51.0	24.0	42.9		
Max Q Clear Time (g_c+I1), s		2.0		9.4	11.9	36.1		
Green Ext Time (p_c), s		70.0		0.1	0.1	6.8		
Intersection Summary								
HCM 2010 Ctrl Delay			9.3					
HCM 2010 LOS			A					
Notes								

Intersection										
Intersection Delay, s/veh	12									
Intersection LOS	B									

Movement	WBU	WBL	WBR	NBU	NBT	NBR	EBU	SBU	SBT
Traffic Vol, veh/h	0	392	12	0	64	175	0	0	87
Future Vol, veh/h	0	392	12	0	64	175	0	0	87
Peak Hour Factor	0.92	0.87	0.87	0.92	0.87	0.87	0.92	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	451	14	0	74	201	0	0	100
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	13.6	10	10.2
HCM LOS	B	A	B

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	92%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	8%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	64	175	261	143	87
LT Vol	0	0	261	131	0
Through Vol	64	0	0	0	87
RT Vol	0	175	0	12	0
Lane Flow Rate	74	201	300	164	100
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.122	0.293	0.507	0.272	0.164
Departure Headway (Hd)	5.952	5.344	6.074	5.973	6.022
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	596	670	598	605	599
Service Time	3.752	3.044	3.774	3.673	4.022
HCM Lane V/C Ratio	0.124	0.297	0.502	0.271	0.167
HCM Control Delay	9.6	10.2	14.9	10.9	10.2
HCM Lane LOS	A	B	B	B	B
HCM 95th-tile Q	0.4	1.2	2.9	1.1	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	63	74	222	448	37
Future Volume (veh/h)	20	63	74	222	448	37
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.71	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	22	70	82	247	536	0
Adj No. of Lanes	1	1	1	1	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	0
Cap, veh/h	73	636	465	1152	1954	889
Arrive On Green	0.04	0.34	0.25	0.25	0.55	0.00
Sat Flow, veh/h	1774	1863	1863	1121	3548	1615
Grp Volume(v), veh/h	22	70	82	247	536	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1121	1774	1615
Q Serve(g_s), s	1.0	2.2	3.0	4.9	6.9	0.0
Cycle Q Clear(g_c), s	1.0	2.2	3.0	4.9	6.9	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	73	636	465	1152	1954	889
V/C Ratio(X)	0.30	0.11	0.18	0.21	0.27	0.00
Avail Cap(c_a), veh/h	218	843	519	1185	1954	889
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	40.2	19.5	25.5	2.2	10.3	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.1	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	0.5	1.2	1.5	5.6	3.4	0.0
LnGrp Delay(d),s/veh	41.1	19.5	25.5	2.2	10.6	0.0
LnGrp LOS	D	B	C	A	B	
Approach Vol, veh/h		92	329		536	
Approach Delay, s/veh		24.7	8.0		10.6	
Approach LOS		C	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				34.4		52.0	8.0	26.5
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				4.2		8.9	3.0	6.9
Green Ext Time (p_c), s				1.5		1.7	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

Notes

HCM Signalized Intersection Capacity Analysis
5: 55th St & Hardy Ave

Existing + Cumulative Proj PM
2/10/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	141	186	15	51	65	246	0	0	546	10
Future Volume (vph)	17	0	141	186	15	51	65	246	0	0	546	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.87	1.00	0.96		1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.95		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1383	1610	3014		1770	3539			3539	1527
Flt Permitted	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1383	1610	3014		1770	3539			3539	1527
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	19	0	160	205	17	58	74	280	0	0	623	11
RTOR Reduction (vph)	0	0	125	0	42	0	0	0	0	0	0	7
Lane Group Flow (vph)	19	0	35	102	136	0	74	280	0	0	623	4
Confl. Peds. (#/hr)			78			70						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	29.0		29.0	24.7	24.7		8.8	65.6			52.4	52.4
Effective Green, g (s)	29.0		29.0	24.7	24.7		8.8	65.6			52.4	52.4
Actuated g/C Ratio	0.22		0.22	0.18	0.18		0.07	0.49			0.39	0.39
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	383		299	296	555		116	1732			1383	597
v/s Ratio Prot	0.01			c0.06	0.05		c0.04	0.08			c0.18	
v/s Ratio Perm			c0.03									0.00
v/c Ratio	0.05		0.12	0.34	0.25		0.64	0.16			0.45	0.01
Uniform Delay, d1	41.6		42.2	47.6	46.7		61.0	19.0			30.2	24.9
Progression Factor	1.00		1.00	1.00	1.00		1.03	1.38			1.00	1.00
Incremental Delay, d2	0.0		0.1	0.3	0.1		7.2	0.2			1.1	0.0
Delay (s)	41.6		42.3	47.9	46.8		69.8	26.4			31.2	24.9
Level of Service	D		D	D	D		E	C			C	C
Approach Delay (s)		42.2			47.2			35.5			31.1	
Approach LOS		D			D			D			C	

Intersection Summary				
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.36			
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	18.1	
Intersection Capacity Utilization	76.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
6: 55th St & Montezuma Rd

Existing + Cumulative Proj PM
2/10/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	321	879	75	24	585	189	50	11	11	265	23	417
Future Volume (veh/h)	321	879	75	24	585	189	50	11	11	265	23	417
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	349	955	82	26	636	205	54	12	12	306	0	453
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	406	1380	118	33	1138	485	152	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	3279	282	1774	3539	1510	1193	265	265	3548	0	1504
Grp Volume(v), veh/h	349	515	522	26	636	205	78	0	0	306	0	453
Grp Sat Flow(s),veh/h/ln	1721	1770	1791	1774	1770	1510	1723	0	0	1774	0	1504
Q Serve(g_s), s	13.3	31.9	31.9	2.0	19.9	14.3	5.5	0.0	0.0	9.0	0.0	38.2
Cycle Q Clear(g_c), s	13.3	31.9	31.9	2.0	19.9	14.3	5.5	0.0	0.0	9.0	0.0	38.2
Prop In Lane	1.00		0.16	1.00		1.00	0.69		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	406	745	754	33	1138	485	220	0	0	1011	0	429
V/C Ratio(X)	0.86	0.69	0.69	0.79	0.56	0.42	0.35	0.00	0.00	0.30	0.00	1.06
Avail Cap(c_a), veh/h	524	745	754	74	1138	485	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	0.91	0.00	0.91
Uniform Delay (d), s/veh	58.0	31.7	31.7	65.5	37.6	35.7	53.4	0.0	0.0	37.5	0.0	47.9
Incr Delay (d2), s/veh	9.2	5.2	5.2	13.1	1.8	2.4	0.4	0.0	0.0	0.2	0.0	57.3
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	6.5	16.7	16.9	1.1	10.0	6.3	2.7	0.0	0.0	4.4	0.0	22.6
LnGrp Delay(d),s/veh	67.2	36.9	36.9	78.6	39.4	38.1	53.7	0.0	0.0	37.6	0.0	105.2
LnGrp LOS	E	D	D	E	D	D	D			D		F
Approach Vol, veh/h		1386			867			78			759	
Approach Delay, s/veh		44.5			40.2			53.7			78.0	
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	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	33.9		40.2	15.3	21.9		7.5
Green Ext Time (p_c), s	0.0	5.5		0.0	0.5	3.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	51.8
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	1012	14	97	624	165	21	10	123	199	6	153
Future Volume (veh/h)	66	1012	14	97	624	165	21	10	123	199	6	153
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		0.95
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	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	72	1100	15	105	678	179	23	11	134	216	7	166
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	91	1030	22	126	1309	345	33	16	193	302	10	339
Arrive On Green	0.05	0.46	0.46	0.14	0.95	0.95	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1774	3571	49	1774	2748	725	207	99	1209	1721	56	1467
Grp Volume(v), veh/h	72	545	570	105	436	421	168	0	0	223	0	166
Grp Sat Flow(s),veh/h/ln	1774	1770	1850	1774	1770	1704	1516	0	0	1777	0	1467
Q Serve(g_s), s	5.6	33.9	33.9	8.1	3.2	3.3	14.7	0.0	0.0	16.6	0.0	13.6
Cycle Q Clear(g_c), s	5.6	33.9	33.9	8.1	3.2	3.3	14.7	0.0	0.0	16.6	0.0	13.6
Prop In Lane	1.00		0.03	1.00		0.43	0.14		0.80	0.97		1.00
Lane Grp Cap(c), veh/h	91	808	845	126	843	811	242	0	0	312	0	339
V/C Ratio(X)	0.79	0.67	0.67	0.83	0.52	0.52	0.69	0.00	0.00	0.71	0.00	0.49
Avail Cap(c_a), veh/h	139	808	845	160	843	811	315	0	0	395	0	407
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)	0.83	0.83	0.83	0.77	0.77	0.77	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.7	29.9	29.9	59.3	1.8	1.8	55.6	0.0	0.0	54.4	0.0	47.2
Incr Delay (d2), s/veh	6.5	3.8	3.6	18.8	1.8	1.8	2.3	0.0	0.0	2.8	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	2.9	17.3	18.1	4.6	1.6	1.6	6.3	0.0	0.0	8.4	0.0	5.6
LnGrp Delay(d),s/veh	72.2	33.6	33.5	78.1	3.6	3.7	57.9	0.0	0.0	57.2	0.0	47.6
LnGrp LOS	E	C	C	E	A	A	E			E		D
Approach Vol, veh/h		1187			962			168			389	
Approach Delay, s/veh		35.9			11.5			57.9			53.1	
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	14.3	68.9		29.5	11.6	71.7		27.3
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	10.1	35.9		18.6	7.6	5.3		16.7
Green Ext Time (p_c), s	0.0	11.0		0.8	0.0	33.0		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		31.1
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	460	0	360	0	938	1234	0	654	446
Future Volume (veh/h)	0	0	0	460	0	360	0	938	1234	0	654	446
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				500	0	0	0	1020	0	0	711	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				616	0	283	0	2535	1134	0	2535	1134
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				500	0	0	0	1020	0	0	711	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				14.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.0
Cycle Q Clear(g_c), s				14.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				616	0	283	0	2535	1134	0	2535	1134
V/C Ratio(X)				0.81	0.00	0.00	0.00	0.40	0.00	0.00	0.28	0.00
Avail Cap(c_a), veh/h				960	0	442	0	2535	1134	0	2535	1134
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	0.55	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				39.4	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Incr Delay (d2), s/veh				3.0	0.0	0.0	0.0	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				6.9	0.0	0.0	0.0	0.1	0.0	0.0	3.6	0.0
LnGrp Delay(d),s/veh				42.5	0.0	0.0	0.0	0.3	0.0	0.0	5.3	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					500			1020			711	
Approach Delay, s/veh					42.5			0.3			5.3	
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		61.6				61.6		27.9
Max Q Clear Time (g_c+I1), s		2.0				9.1		16.0
Green Ext Time (p_c), s		11.8				11.7		1.9

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)	577	0	765	0	0	0	0	1596	372	0	855	258
Future Volume (vph)	577	0	765	0	0	0	0	1596	372	0	855	258
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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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)	627	0	832	0	0	0	0	1735	404	0	929	280
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	627	0	832	0	0	0	0	1735	404	0	929	280
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	20.7		53.9					66.8	100.0		33.6	100.0
Effective Green, g (s)	20.7		53.9					66.8	100.0		33.6	100.0
Actuated g/C Ratio	0.21		0.54					0.07	1.00		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)	710		1945					2364	1536		1189	1536
v/s Ratio Prot	c0.18		0.23					c0.49			0.26	
v/s Ratio Perm									0.26			0.18
v/c Ratio	0.88		0.43					0.73	0.26		0.78	0.18
Uniform Delay, d1	38.5		13.8					10.6	0.0		29.9	0.0
Progression Factor	1.00		1.00					0.56	1.00		0.72	1.00
Incremental Delay, d2	12.2		0.1					0.2	0.0		4.8	0.2
Delay (s)	50.7		13.9					6.3	0.0		26.3	0.2
Level of Service	D		B					A	A		C	A
Approach Delay (s)		29.7			0.0			5.1			20.3	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	69.0%	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)	373	41	29	84	10	330	25	1267	81	295	1223	103
Future Volume (veh/h)	373	41	29	84	10	330	25	1267	81	295	1223	103
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	467	0	0	91	11	359	27	1377	88	321	1329	112
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	695	365	0	78	9	206	37	1654	730	279	2706	2001
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	1591	192	1583	1774	3539	1563	3442	5085	2734
Grp Volume(v), veh/h	467	0	0	102	0	359	27	1377	88	321	1329	112
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1783	0	1583	1774	1770	1563	1721	1695	1367
Q Serve(g_s), s	12.2	0.0	0.0	4.9	0.0	4.9	1.5	33.9	3.2	8.1	16.6	1.2
Cycle Q Clear(g_c), s	12.2	0.0	0.0	4.9	0.0	4.9	1.5	33.9	3.2	8.1	16.6	1.2
Prop In Lane	1.00		0.00	0.89		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	695	365	0	87	0	206	37	1654	730	279	2706	2001
V/C Ratio(X)	0.67	0.00	0.00	1.17	0.00	1.74	0.72	0.83	0.12	1.15	0.49	0.06
Avail Cap(c_a), veh/h	1135	596	0	87	0	206	101	1654	730	279	2706	2001
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	0.75	0.75	0.75
Uniform Delay (d), s/veh	37.2	0.0	0.0	47.6	0.0	43.5	48.7	23.2	15.0	46.0	14.8	3.9
Incr Delay (d2), s/veh	0.4	0.0	0.0	148.3	0.0	354.2	22.7	5.1	0.3	94.8	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	6.0	0.0	0.0	6.0	0.0	25.9	1.0	17.6	1.4	7.5	7.9	0.8
LnGrp Delay(d),s/veh	37.7	0.0	0.0	195.8	0.0	397.7	71.4	28.3	15.4	140.7	15.3	3.9
LnGrp LOS	D			F		F	E	C	B	F	B	A
Approach Vol, veh/h		467			461			1492			1762	
Approach Delay, s/veh		37.7			353.1			28.3			37.4	
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	13.6	52.7		24.5	6.5	59.2		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	10.1	35.9		14.2	3.5	18.6		6.9
Green Ext Time (p_c), s	0.0	0.0		1.3	0.0	16.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	69.0
HCM 2010 LOS	E

Notes

Intersection							
Int Delay, s/veh	24.8						

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	455	1115	40	160	1177
Future Vol, veh/h	0	455	1115	40	160	1177
Conflicting Peds, #/hr	0	30	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	495	1212	43	174	1279

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2220	646	0	0	1232	0
Stage 1	1232	-	-	-	-	-
Stage 2	988	-	-	-	-	-
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	37	~ 414	-	-	561	-
Stage 1	238	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	24	~ 400	-	-	552	-
Mov Cap-2 Maneuver	24	-	-	-	-	-
Stage 1	234	-	-	-	-	-
Stage 2	216	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	155.7	0	1.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 400	552	-
HCM Lane V/C Ratio	-	- 1.236	0.315	-
HCM Control Delay (s)	-	- 155.7	14.5	-
HCM Lane LOS	-	- F	B	-
HCM 95th %tile Q(veh)	-	- 20.8	1.3	-

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)	348	923	451	181	389	199	324	616	48	206	744	302
Future Volume (veh/h)	349	923	451	181	389	199	324	616	48	206	744	302
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	1863
Adj Flow Rate, veh/h	379	1003	490	197	423	216	352	670	52	226	809	328
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	324	1411	605	160	1083	460	467	771	60	256	854	358
Arrive On Green	0.37	0.80	0.80	0.09	0.31	0.31	0.14	0.23	0.23	0.14	0.24	0.24
Sat Flow, veh/h	1774	3539	1517	1774	3539	1502	3442	3310	257	1774	3539	1486
Grp Volume(v), veh/h	379	1003	490	197	423	216	352	358	364	226	809	328
Grp Sat Flow(s),veh/h/ln	1774	1770	1517	1774	1770	1502	1721	1770	1797	1774	1770	1486
Q Serve(g_s), s	25.8	18.5	17.2	12.6	13.2	11.4	13.8	27.2	27.3	17.5	31.5	20.2
Cycle Q Clear(g_c), s	25.8	18.5	17.2	12.6	13.2	11.4	13.8	27.2	27.3	17.5	31.5	20.2
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	324	1411	605	160	1083	460	467	412	418	256	854	358
V/C Ratio(X)	1.17	0.71	0.81	1.23	0.39	0.47	0.75	0.87	0.87	0.88	0.95	0.92
Avail Cap(c_a), veh/h	324	1411	605	160	1083	460	529	454	461	299	857	360
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)	0.75	0.75	0.75	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	10.4	4.9	63.7	38.3	19.1	58.2	51.6	51.7	58.8	52.3	23.2
Incr Delay (d2), s/veh	98.1	2.3	8.7	147.6	1.1	3.4	2.2	16.0	16.0	21.0	19.3	27.4
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	21.3	9.1	8.1	12.7	6.6	5.2	6.7	15.1	15.4	10.1	17.7	10.9
LnGrp Delay(d),s/veh	142.5	12.7	13.6	211.3	39.4	22.5	60.4	67.6	67.7	79.8	71.5	50.6
LnGrp LOS	F	B	B	F	D	C	E	E	E	E	E	D
Approach Vol, veh/h		1872			836			1074			1363	
Approach Delay, s/veh		39.2			75.5			65.3			67.9	
Approach LOS		D			E			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	24.6	37.7	17.0	60.7	23.4	38.9	30.0	47.7
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	23.6	35.9	12.6	49.1	25.6	33.9	25.6	36.1
Max Q Clear Time (g_c+I1), s	19.5	29.3	14.6	20.5	15.8	33.5	27.8	15.2
Green Ext Time (p_c), s	0.7	2.4	0.0	24.6	1.1	0.3	0.0	18.6

Intersection Summary		
HCM 2010 Ctrl Delay		58.1
HCM 2010 LOS		E

HCM 2010 Signalized Intersection Summary
1: Collwood Blvd & Montezuma Rd

Existing + Cumulative Proj + Proj Phase I AM
2/15/2017

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	987	469	71	1329	975	60
Future Volume (veh/h)	987	469	71	1329	975	60
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	1097	521	79	1477	1083	67
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	1721	1274	99	2042	1158	533
Arrive On Green	0.49	0.49	0.11	1.00	0.34	0.34
Sat Flow, veh/h	3632	1524	1774	3632	3442	1583
Grp Volume(v), veh/h	1097	521	79	1477	1083	67
Grp Sat Flow(s),veh/h/ln	1770	1524	1774	1770	1721	1583
Q Serve(g_s), s	29.1	11.6	5.5	0.0	38.4	3.7
Cycle Q Clear(g_c), s	29.1	11.6	5.5	0.0	38.4	3.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1721	1274	99	2042	1158	533
V/C Ratio(X)	0.64	0.41	0.80	0.72	0.94	0.13
Avail Cap(c_a), veh/h	1721	1274	169	2042	1371	631
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.78	0.78	1.00	1.00
Uniform Delay (d), s/veh	24.1	3.0	55.3	0.0	40.5	29.0
Incr Delay (d2), s/veh	1.8	1.0	4.3	1.8	10.2	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	14.6	5.2	2.8	0.5	19.8	1.6
LnGrp Delay(d),s/veh	25.9	4.0	59.6	1.8	50.7	29.0
LnGrp LOS	C	A	E	A	D	C
Approach Vol, veh/h	1618			1556	1150	
Approach Delay, s/veh	18.8			4.7	49.4	
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	11.4	67.8				79.2		48.8
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	7.5	31.1				2.0		40.4
Green Ext Time (p_c), s	0.0	17.3				57.5		2.0

Intersection Summary		
HCM 2010 Ctrl Delay		21.9
HCM 2010 LOS		C

Notes

HCM 2010 Signalized Intersection Summary
2: Montezuma Rd & Yerba Santa Dr

Existing + Cumulative Proj + Proj Phase I AM
2/15/2017

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	1006	1279	19	6	121
Future Volume (veh/h)	41	1006	1279	19	8	121
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	46	1130	1437	21	9	136
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	59	2752	2532	37	12	188
Arrive On Green	0.07	1.00	0.71	0.71	0.13	0.13
Sat Flow, veh/h	1774	3632	3662	52	96	1454
Grp Volume(v), veh/h	46	1130	712	746	146	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1561	0
Q Serve(g_s), s	3.2	0.0	24.6	24.7	11.3	0.0
Cycle Q Clear(g_c), s	3.2	0.0	24.6	24.7	11.3	0.0
Prop In Lane	1.00			0.03	0.06	0.93
Lane Grp Cap(c), veh/h	59	2752	1256	1314	202	0
V/C Ratio(X)	0.78	0.41	0.57	0.57	0.72	0.00
Avail Cap(c_a), veh/h	135	2752	1256	1314	395	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.4	0.0	8.9	8.9	52.7	0.0
Incr Delay (d2), s/veh	6.1	0.3	1.9	1.8	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	12.5	13.1	5.0	0.0
LnGrp Delay(d),s/veh	64.4	0.3	10.8	10.7	54.5	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1176	1458		146	
Approach Delay, s/veh		2.8	10.7		54.5	
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		104.6		21.4	8.6	96.0		
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		13.3	5.2	26.7		
Green Ext Time (p_c), s		76.1		0.2	0.0	40.2		

Intersection Summary		
HCM 2010 Ctrl Delay		9.7
HCM 2010 LOS		A

Notes

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	C

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Traffic Vol, veh/h	0	102	10	0	37	500	0	0	45
Future Vol, veh/h	0	102	10	0	37	500	0	0	45
Peak Hour Factor	0.92	0.75	0.75	0.92	0.75	0.75	0.92	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	136	13	0	49	667	0	0	60
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.5	22.1	9.2
HCM LOS	B	C	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	77%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	23%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	500	68	44	45
LT Vol	0	0	68	34	0
Through Vol	37	0	0	0	45
RT Vol	0	500	0	10	0
Lane Flow Rate	49	667	91	59	60
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.07	0.811	0.169	0.108	0.092
Departure Headway (Hd)	5.081	4.378	6.706	6.531	5.539
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	704	827	530	550	642
Service Time	2.817	2.114	4.506	4.231	3.617
HCM Lane V/C Ratio	0.07	0.807	0.172	0.107	0.093
HCM Control Delay	8.2	23.1	10.9	10	9.2
HCM Lane LOS	A	C	B	A	A
HCM 95th-tile Q	0.2	8.8	0.6	0.4	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	58	53	550	91	21
Future Volume (veh/h)	34	58	53	550	91	21
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.63	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	39	66	60	625	64	66
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	71	633	464	1141	1000	910
Arrive On Green	0.04	0.34	0.25	0.25	0.56	0.56
Sat Flow, veh/h	1774	1863	1863	998	1774	1615
Grp Volume(v), veh/h	39	66	60	625	64	66
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	998	1774	1615
Q Serve(g_s), s	2.1	2.3	2.4	24.0	1.6	1.8
Cycle Q Clear(g_c), s	2.1	2.3	2.4	24.0	1.6	1.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	71	633	464	1141	1000	910
V/C Ratio(X)	0.55	0.10	0.13	0.55	0.06	0.07
Avail Cap(c_a), veh/h	74	633	464	1141	1000	910
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	45.4	21.8	28.1	3.9	9.5	9.6
Incr Delay (d2), s/veh	4.1	0.0	0.0	0.3	0.1	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	1.1	1.2	1.2	16.6	0.8	2.8
LnGrp Delay(d),s/veh	49.6	21.8	28.1	4.3	9.6	9.7
LnGrp LOS	D	C	C	A	A	A
Approach Vol, veh/h		105	685		130	
Approach Delay, s/veh		32.1	6.3		9.7	
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				37.6		58.7	8.7	28.9
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		3.8	4.1	26.0
Green Ext Time (p_c), s				0.2		0.3	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

Notes

HCM Signalized Intersection Capacity Analysis — Existing + Cumulative Proj + Proj Phase I AM
5: 55th St & Hardy Ave — 2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	22	98	23	78	111	549	0	0	191	27
Future Volume (vph)	6	0	22	98	23	78	111	549	0	0	191	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.92	1.00	0.94		1.00	1.00			1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.91		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1461	1610	2880		1770	3539			3539	1528
Flt Permitted	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1461	1610	2880		1770	3539			3539	1528
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	0	24	105	25	84	119	590	0	0	205	29
RTOR Reduction (vph)	0	0	20	0	68	0	0	0	0	0	0	18
Lane Group Flow (vph)	6	0	4	75	71	0	119	590	0	0	205	11
Confl. Peds. (#/hr)			51			55						10
Confl. Bikes (#/hr)						10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	23.2		23.2	24.3	24.3		12.8	63.8			46.6	46.6
Effective Green, g (s)	20.2		20.2	24.0	24.0		12.0	63.8			46.0	46.0
Actuated g/C Ratio	0.16		0.16	0.19	0.19		0.10	0.51			0.37	0.37
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	325		269	310	555		179	1791			1306	565
v/s Ratio Prot	c0.00			c0.05	0.02		c0.07	c0.17			0.06	
v/s Ratio Perm			0.00									0.01
v/c Ratio	0.02		0.02	0.24	0.13		0.66	0.33			0.16	0.02
Uniform Delay, d1	42.1		42.1	43.1	42.1		54.5	18.4			26.5	25.2
Progression Factor	1.00		1.00	1.00	1.00		1.36	0.57			1.00	1.00
Incremental Delay, d2	0.0		0.0	0.1	0.0		5.4	0.4			0.3	0.1
Delay (s)	42.1		42.1	43.2	42.1		79.6	10.8			26.8	25.3
Level of Service	D		D	D	D		E	B			C	C
Approach Delay (s)		42.1			42.5			22.4			26.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary — Existing + Cumulative Proj + Proj Phase I AM
6: 55th St & Montezuma Rd — 2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	585	355	15	4	887	382	49	15	19	79	1	156
Future Volume (veh/h)	523	353	13	4	867	302	46	19	19	79	1	130
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	568	384	14	4	942	328	50	21	21	87	0	141
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	628	2164	79	7	1572	678	126	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	3476	126	1774	3539	1525	905	389	388	3548	0	1354
Grp Volume(v), veh/h	568	195	203	4	942	328	92	0	0	87	0	141
Grp Sat Flow(s),veh/h/ln	1721	1770	1833	1774	1770	1525	1702	0	0	1774	0	1354
Q Serve(g_s), s	20.4	5.9	5.9	0.3	8.0	5.3	6.2	0.0	0.0	2.9	0.0	10.1
Cycle Q Clear(g_c), s	20.4	5.9	5.9	0.3	8.0	5.3	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	628	1101	1141	7	1572	678	232	0	0	284	0	109
V/C Ratio(X)	0.90	0.18	0.18	0.54	0.60	0.48	0.40	0.00	0.00	0.31	0.00	1.30
Avail Cap(c_a), veh/h	699	1101	1141	56	1572	678	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	0.37	0.37	0.37	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	50.4	10.1	10.1	62.4	4.4	4.2	49.7	0.0	0.0	54.6	0.0	58.0
Incr Delay (d2), s/veh	13.6	0.4	0.3	8.3	0.6	0.9	0.4	0.0	0.0	0.6	0.0	186.1
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	10.9	3.0	3.1	0.2	3.5	2.2	3.0	0.0	0.0	1.5	0.0	9.4
LnGrp Delay(d),s/veh	64.0	10.4	10.4	70.6	5.0	5.1	50.1	0.0	0.0	55.3	0.0	244.0
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		966			1274			92			228	
Approach Delay, s/veh		41.9			5.2			50.1			172.0	
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	84.0		15.0	27.4	61.6		22.1
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	2.3	7.9		12.1	22.4	10.0		8.2
Green Ext Time (p_c), s	0.0	20.4		0.0	0.6	16.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.5
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary — Existing + Cumulative Proj + Proj Phase I AM
7: Campanile Dr & Montezuma Rd
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	412	11	67	1080	311	37	14	94	100	9	57
Future Volume (veh/h)	86	412	11	67	1080	311	37	14	94	100	9	57
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	93	448	12	73	1174	338	40	15	102	109	10	62
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	1708	46	92	1334	377	64	24	163	240	22	286
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	3515	94	1774	2702	764	388	149	1014	1631	150	1449
Grp Volume(v), veh/h	93	225	235	73	762	750	157	0	0	119	0	62
Grp Sat Flow(s),veh/h/ln	1774	1770	1839	1774	1770	1696	1551	0	0	1781	0	1449
Q Serve(g_s), s	5.6	0.6	0.6	5.1	43.5	46.5	11.8	0.0	0.0	7.7	0.0	4.5
Cycle Q Clear(g_c), s	5.6	0.6	0.6	5.1	43.5	46.5	11.8	0.0	0.0	7.7	0.0	4.5
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	860	894	92	874	837	251	0	0	265	0	286
V/C Ratio(X)	1.18	0.26	0.26	0.79	0.87	0.90	0.63	0.00	0.00	0.45	0.00	0.22
Avail Cap(c_a), veh/h	79	860	894	121	874	837	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	0.55	0.55	0.55	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	0.9	0.9	58.0	18.4	18.9	49.3	0.0	0.0	48.9	0.0	42.8
Incr Delay (d2), s/veh	157.1	0.7	0.7	9.9	6.9	8.7	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	6.2	0.4	0.4	2.8	22.7	23.6	5.2	0.0	0.0	3.8	0.0	1.8
LnGrp Delay(d),s/veh	214.5	1.6	1.6	67.8	25.4	27.6	50.3	0.0	0.0	49.4	0.0	43.0
LnGrp LOS	F	A	A	E	C	C	D			D		D
Approach Vol, veh/h		553			1585			157			161	
Approach Delay, s/veh		37.4			28.4			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	11.0	68.2		23.6	10.0	67.2		25.2
Change Period (Y+Rc), s	4.4	4.5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	6.6	38		31.0	5.6	41.2		29.0
Max Q Clear Time (g_c+I1), s	7.1	2.6		9.7	7.6	48.5		13.8
Green Ext Time (p_c), s	0.0	31.2		0.4	0.0	0.0		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		33.3
HCM 2010 LOS		C

Notes

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SDSU Student Housing

HCM 2010 Signalized Intersection Summary — Existing + Cumulative Proj + Proj Phase I AM
8: College Ave & I-8WB Ramp
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	242	0	92	0	907	331	0	1057	686
Future Volume (veh/h)	0	0	0	242	0	92	0	907	331	0	1057	686
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				263	0	0	0	986	0	0	1149	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				332	0	153	0	2826	1264	0	2826	1264
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				263	0	0	0	986	0	0	1149	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				7.5	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0
Cycle Q Clear(g_c), s				7.5	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				332	0	153	0	2826	1264	0	2826	1264
V/C Ratio(X)				0.79	0.00	0.00	0.00	0.35	0.00	0.00	0.41	0.00
Avail Cap(c_a), veh/h				375	0	173	0	2826	1264	0	2826	1264
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	0.87	0.00	0.00	1.00	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				10.0	0.0	0.0	0.0	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				4.0	0.0	0.0	0.0	0.1	0.0	0.0	4.8	0.0
LnGrp Delay(d),s/veh				54.2	0.0	0.0	0.0	0.3	0.0	0.0	3.4	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					263			986			1149	
Approach Delay, s/veh					54.2			0.3			3.4	
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		85.3				85.3		14.7
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				11.7		9.5
Green Ext Time (p_c), s		17.9				17.7		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		7.7
HCM 2010 LOS		A

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SDSU Student Housing

HCM Signalized Intersection Capacity Analysis — Existing + Cumulative Proj + Proj Phase I AM

9: College Ave & I-8EB Ramp

2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	0	1263	0	0	0	0	885	223	0	1013	286
Future Volume (vph)	355	0	1263	0	0	0	0	885	223	0	1013	286
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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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)	386	0	1373	0	0	0	0	962	242	0	1101	311
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	386	0	1373	0	0	0	0	962	242	0	1101	311
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	15.0		47.9					72.5	100.0		39.6	100.0
Effective Green, g (s)	15.0		47.9					72.5	100.0		39.6	100.0
Actuated g/C Ratio	0.15		0.48					0.72	1.00		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)	514		1729					2565	1536		1401	1536
v/s Ratio Prot	0.11		c0.38					0.27			c0.31	
v/s Ratio Perm									0.16			0.20
v/c Ratio	0.75		0.79					0.38	0.16		0.79	0.20
Uniform Delay, d1	40.7		21.9					5.2	0.0		26.5	0.0
Progression Factor	1.00		1.00					0.25	1.00		1.03	1.00
Incremental Delay, d2	5.4		2.4					0.2	0.1		4.1	0.3
Delay (s)	46.1		24.3					1.5	0.1		31.5	0.3
Level of Service	D		C					A	A		C	A
Approach Delay (s)		29.1			0.0			1.3			24.6	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary — Existing + Cumulative Proj + Proj Phase I AM

10: College Ave & Canyon Crest Dr

2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	19	17	79	64	251	96	775	77	545	1257	435
Future Volume (veh/h)	84	19	17	79	64	251	96	775	77	545	1257	435
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	65	57	18	86	70	273	104	842	84	592	1410	473
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	222	168	53	96	76	394	117	1482	653	527	2597	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	1340	423	999	813	1583	1774	3539	1561	3442	5085	2732
Grp Volume(v), veh/h	65	0	75	156	0	273	104	842	84	592	1410	473
Grp Sat Flow(s),veh/h/ln	1774	0	1763	1813	0	1583	1774	1770	1561	1721	1695	1366
Q Serve(g_s), s	3.3	0.0	3.9	8.5	0.0	9.6	5.8	18.1	3.3	15.3	25.4	11.4
Cycle Q Clear(g_c), s	3.3	0.0	3.9	8.5	0.0	9.6	5.8	18.1	3.3	15.3	25.4	11.4
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	222	0	221	174	0	394	117	1482	653	527	2597	1744
V/C Ratio(X)	0.29	0.00	0.34	0.90	0.00	0.69	0.89	0.57	0.13	1.12	0.54	0.27
Avail Cap(c_a), veh/h	568	0	564	174	0	394	117	1482	653	527	2597	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	0.52	0.52	0.52
Uniform Delay (d), s/veh	39.7	0.0	39.9	44.7	0.0	34.1	46.3	22.2	17.9	47.5	30.9	14.8
Incr Delay (d2), s/veh	0.3	0.0	0.3	39.3	0.0	4.3	50.4	1.6	0.4	68.9	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	1.6	0.0	1.9	6.1	0.0	7.3	4.5	9.2	1.5	12.3	12.0	5.8
LnGrp Delay(d),s/veh	40.0	0.0	40.3	84.0	0.0	38.4	96.7	23.8	18.3	116.3	31.3	15.0
LnGrp LOS	D		D	F		D	F	C	B	F	C	B
Approach Vol, veh/h		140			429			1030			2475	
Approach Delay, s/veh		40.1			55.0			30.7			48.5	
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	20.2	47.9		17.4	11.0	57.1		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	20.1		5.9	7.8	27.4		11.6
Green Ext Time (p_c), s	0.0	2.2		0.4	0.0	4.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.4
HCM 2010 LOS	D

Notes

HCM 2010 TWSC — Existing + Cumulative Proj + Proj Phase I AM
11: College Ave & Zura Way — 2/15/2017

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	96	1009	71	325	1047
Future Vol, veh/h	0	96	1009	71	325	1047
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	104	1097	77	353	1138

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2393	588	0	0	1117	0
Stage 1	1117	-	-	-	-	-
Stage 2	1276	-	-	-	-	-
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	28	452	-	-	621	-
Stage 1	275	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	11	437	-	-	611	-
Mov Cap-2 Maneuver	11	-	-	-	-	-
Stage 1	270	-	-	-	-	-
Stage 2	94	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	4.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	437	611	-
HCM Lane V/C Ratio	-	-	0.239	0.578	-
HCM Control Delay (s)	-	-	15.8	16.7	-
HCM Lane LOS	-	-	C	C	-
HCM 95th %tile Q(veh)	-	-	0.9	3.7	-

HCM 2010 Signalized Intersection Summary — Existing + Cumulative Proj + Proj Phase I AM
12: College Ave & Montezuma Rd — 2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	296	87	21	697	198	587	922	52	105	461	314
Future Volume (veh/h)	183	296	87	21	697	198	587	922	52	105	461	314
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	1863
Adj Flow Rate, veh/h	199	322	95	23	758	215	608	1002	57	114	501	341
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	220	1348	577	56	1022	433	987	1044	59	231	845	354
Arrive On Green	0.25	0.76	0.76	0.03	0.29	0.29	0.20	0.31	0.31	0.13	0.24	0.24
Sat Flow, veh/h	1774	3539	1514	1774	3539	1499	3442	3393	193	1774	3539	1485
Grp Volume(v), veh/h	199	322	95	23	758	215	608	523	536	114	501	341
Grp Sat Flow(s),veh/h/ln	1774	1770	1514	1774	1770	1499	1721	1770	1816	1774	1770	1485
Q Serve(g_s), s	13.7	3.3	1.2	1.6	24.4	10.7	22.9	36.5	36.6	7.5	15.8	21.1
Cycle Q Clear(g_c), s	13.7	3.3	1.2	1.6	24.4	10.7	22.9	36.5	36.6	7.5	15.8	21.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	220	1348	577	56	1022	433	987	545	559	231	845	354
V/C Ratio(X)	0.91	0.24	0.16	0.41	0.74	0.50	0.93	0.96	0.96	0.49	0.59	0.96
Avail Cap(c_a), veh/h	220	1348	577	83	1022	433	599	546	561	263	899	377
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	9.7	3.0	59.8	40.6	18.9	49.5	42.8	42.8	50.9	42.5	25.8
Incr Delay (d2), s/veh	35.0	0.4	0.6	1.8	4.9	4.0	18.2	28.6	28.1	0.6	1.1	35.7
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	8.8	1.7	0.6	0.8	12.6	4.9	12.6	22.2	22.7	3.7	7.8	12.1
LnGrp Delay(d),s/veh	81.7	10.1	3.6	61.6	45.4	22.9	67.8	71.4	71.0	51.5	43.6	61.6
LnGrp LOS	F	B	A	E	D	C	E	E	E	D	D	E
Approach Vol, veh/h		616			996			1697			956	
Approach Delay, s/veh		32.2			40.9			69.9			51.0	
Approach LOS		C			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	20.8	43.9	8.4	52.9	29.6	35.2	20.0	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	18.7	38.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	9.5	38.6	3.6	5.3	24.9	23.1	15.7	26.4
Green Ext Time (p_c), s	1.6	0.2	0.0	21.9	0.2	3.3	0.0	6.2

Intersection Summary	
HCM 2010 Ctrl Delay	53.5
HCM 2010 LOS	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1967	1019	130	1466	597	67
Future Volume (veh/h)	1967	1019	130	1466	597	67
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	2071	1073	137	1543	628	71
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	2149	1247	138	2540	692	318
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	2071	1073	137	1543	628	71
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583
Q Serve(g_s), s	74.2	60.4	10.3	0.0	23.9	5.0
Cycle Q Clear(g_c), s	74.2	60.4	10.3	0.0	23.9	5.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2149	1247	138	2540	692	318
V/C Ratio(X)	0.96	0.86	1.00	0.61	0.91	0.22
Avail Cap(c_a), veh/h	2149	1247	138	2540	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.62	0.62	1.00	1.00
Uniform Delay (d), s/veh	24.9	8.3	56.6	0.0	52.3	44.8
Incr Delay (d2), s/veh	12.6	7.9	59.1	0.7	9.7	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	39.7	27.7	7.3	0.2	12.3	2.2
LnGrp Delay(d),s/veh	37.5	16.2	115.7	0.7	62.1	44.9
LnGrp LOS	D	B	F	A	E	D
Approach Vol, veh/h	3144			1680	699	
Approach Delay, s/veh	30.2			10.1	60.3	
Approach LOS	C			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	87.9				102.7		31.3
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	12.3	76.2				2.0		25.9
Green Ext Time (p_c), s	0.0	0.0				86.2		1.0

Intersection Summary		
HCM 2010 Ctrl Delay		27.9
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	127	1907	1524	21	13	72
Future Volume (veh/h)	127	1907	1524	21	13	72
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	137	2051	1639	23	14	77
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	160	2884	2471	35	23	128
Arrive On Green	0.18	1.00	0.69	0.69	0.10	0.10
Sat Flow, veh/h	1774	3632	3664	50	239	1314
Grp Volume(v), veh/h	137	2051	811	851	92	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1570	0
Q Serve(g_s), s	10.0	0.0	34.9	35.1	7.5	0.0
Cycle Q Clear(g_c), s	10.0	0.0	34.9	35.1	7.5	0.0
Prop In Lane	1.00			0.03	0.15	0.84
Lane Grp Cap(c), veh/h	160	2884	1224	1281	154	0
V/C Ratio(X)	0.86	0.71	0.66	0.66	0.60	0.00
Avail Cap(c_a), veh/h	318	2884	1224	1281	598	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.08	0.08	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.1	0.0	11.7	11.8	57.9	0.0
Incr Delay (d2), s/veh	0.5	0.1	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	4.9	0.1	17.9	18.7	3.3	0.0
LnGrp Delay(d),s/veh	54.6	0.1	14.6	14.5	59.3	0.0
LnGrp LOS	D	A	B	B	E	
Approach Vol, veh/h		2188	1662		92	
Approach Delay, s/veh		3.5	14.5		59.3	
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		115.8		18.2	16.5	99.3		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 72		51.0	24.0	42.9		
Max Q Clear Time (g_c+I1), s		2.0		9.5	12.0	37.1		
Green Ext Time (p_c), s		70.0		0.2	0.1	5.8		

Intersection Summary		
HCM 2010 Ctrl Delay		9.5
HCM 2010 LOS		A

Notes

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Traffic Vol, veh/h	0	416	12	0	64	204	0	0	87
Future Vol, veh/h	0	416	12	0	64	204	0	0	87
Peak Hour Factor	0.92	0.87	0.87	0.92	0.87	0.87	0.92	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	478	14	0	74	234	0	0	100
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	14.4	10.7	10.4
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	92%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	8%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	64	204	277	151	87
LT Vol	0	0	277	139	0
Through Vol	64	0	0	0	87
RT Vol	0	204	0	12	0
Lane Flow Rate	74	234	319	173	100
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.123	0.347	0.547	0.292	0.17
Departure Headway (Hd)	6.153	5.444	6.172	6.076	6.137
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	586	666	587	594	586
Service Time	3.853	3.144	3.877	3.781	4.159
HCM Lane V/C Ratio	0.126	0.351	0.543	0.291	0.171
HCM Control Delay	9.7	11	16.1	11.3	10.4
HCM Lane LOS	A	B	C	B	B
HCM 95th-tile Q	0.4	1.5	3.3	1.2	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	63	75	250	472	37
Future Volume (veh/h)	21	63	75	250	472	37
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.53	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	23	70	83	278	562	0
Adj No. of Lanes	1	1	1	1	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	0
Cap, veh/h	72	664	496	1076	1910	869
Arrive On Green	0.04	0.36	0.27	0.27	0.54	0.00
Sat Flow, veh/h	1774	1863	1863	840	3548	1615
Grp Volume(v), veh/h	23	70	83	278	562	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	840	1774	1615
Q Serve(g_s), s	1.1	2.2	3.0	8.5	7.7	0.0
Cycle Q Clear(g_c), s	1.1	2.2	3.0	8.5	7.7	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	72	664	496	1076	1910	869
V/C Ratio(X)	0.32	0.11	0.17	0.26	0.29	0.00
Avail Cap(c_a), veh/h	213	823	508	1081	1910	869
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	41.2	19.0	24.9	2.5	11.2	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.1	0.0	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	0.6	1.2	1.6	6.7	3.9	0.0
LnGrp Delay(d),s/veh	42.2	19.0	25.0	2.6	11.6	0.0
LnGrp LOS	D	B	C	A	B	
Approach Vol, veh/h		93	361		562	
Approach Delay, s/veh		24.8	7.7		11.6	
Approach LOS		C	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.4		52.0	8.0	28.5
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				4.2		9.7	3.1	10.5
Green Ext Time (p_c), s				2.3		1.8	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	6	141	186	15	51	65	275	0	0	572	10
Future Volume (vph)	17	6	141	186	15	51	65	275	0	0	572	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.87	1.00	0.96		1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.95		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1383	1610	3014		1770	3539			3539	1527
Flt Permitted	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1383	1610	3014		1770	3539			3539	1527
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	19	0	160	205	17	58	74	312	0	0	650	11
RTOR Reduction (vph)	0	0	125	6	42	0	0	0	0	0	0	7
Lane Group Flow (vph)	19	0	35	102	136	0	74	313	0	0	650	4
Confl. Peds. (#/hr)			78			70						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	29.0		29.0	24.7	24.7		8.8	65.6			52.4	52.4
Effective Green, g (s)	29.0		29.0	24.7	24.7		8.8	65.6			52.4	52.4
Actuated g/C Ratio	0.22		0.22	0.18	0.18		0.07	0.49			0.39	0.39
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	383		299	296	555		116	1732			1383	597
v/s Ratio Prot	0.01			c0.06	0.05		c0.04	0.09			c0.18	
v/s Ratio Perm			c0.03									0.00
v/c Ratio	0.05		0.12	0.34	0.25		0.64	0.18			0.47	0.01
Uniform Delay, d1	41.6		42.2	47.6	46.7		61.0	19.2			30.4	24.9
Progression Factor	1.00		1.00	1.00	1.00		0.99	1.44			1.00	1.00
Incremental Delay, d2	0.0		0.1	0.3	0.1		7.1	0.2			1.1	0.0
Delay (s)	41.6		42.3	47.9	46.8		67.8	27.8			31.6	24.9
Level of Service	D		D	D	D		E	C			C	C
Approach Delay (s)		42.2			47.2			35.5			31.5	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	76.4%	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)	343	879	75	24	585	196	50	11	11	271	23	435
Future Volume (veh/h)	343	879	75	24	585	196	50	11	11	271	23	435
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	373	955	82	26	636	213	54	12	12	313	0	473
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	429	1380	118	33	1114	475	152	34	34	1011	0	429
Arrive On Green	0.12	0.42	0.42	0.02	0.31	0.31	0.13	0.13	0.13	0.29	0.00	0.29
Sat Flow, veh/h	3442	3279	282	1774	3539	1509	1190	265	265	3548	0	1504
Grp Volume(v), veh/h	373	515	522	26	636	213	78	0	0	313	0	473
Grp Sat Flow(s),veh/h/ln	1721	1770	1791	1774	1770	1509	1723	0	0	1774	0	1504
Q Serve(g_s), s	14.3	31.9	31.9	2.0	20.1	15.1	5.5	0.0	0.0	9.3	0.0	38.2
Cycle Q Clear(g_c), s	14.3	31.9	31.9	2.0	20.1	15.1	5.5	0.0	0.0	9.3	0.0	38.2
Prop In Lane	1.00		0.16	1.00		1.00	0.69		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	429	745	754	33	1114	475	220	0	0	1011	0	429
V/C Ratio(X)	0.87	0.69	0.69	0.79	0.57	0.45	0.35	0.00	0.00	0.31	0.00	1.10
Avail Cap(c_a), veh/h	524	745	754	74	1114	475	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	0.90	0.00	0.90
Uniform Delay (d), s/veh	57.6	31.7	31.7	65.5	38.4	36.6	53.4	0.0	0.0	37.6	0.0	47.9
Incr Delay (d2), s/veh	11.1	5.2	5.2	13.0	1.9	2.7	0.4	0.0	0.0	0.2	0.0	72.5
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	7.4	16.7	16.9	1.1	10.1	6.8	2.7	0.0	0.0	4.5	0.0	24.4
LnGrp Delay(d),s/veh	68.7	36.9	36.9	78.5	40.2	39.3	53.7	0.0	0.0	37.7	0.0	120.4
LnGrp LOS	E	D	D	E	D	D	D			D		F
Approach Vol, veh/h		1410			875			78			786	
Approach Delay, s/veh		45.3			41.2			53.7			87.5	
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	21.1	47.8		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	33.9		40.2	16.3	22.1		7.5
Green Ext Time (p_c), s	0.0	5.5		0.0	0.4	3.7		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	54.9
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary Existing + Cumulative Proj + Proj Phase I PM
7: Campanile Dr & Montezuma Rd 2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	1016	14	97	631	165	21	10	123	199	6	153
Future Volume (veh/h)	66	1016	14	97	631	165	21	10	123	199	6	153
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		0.95
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	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	72	1107	15	105	686	179	23	11	134	216	7	166
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	91	1631	22	126	1312	342	33	16	193	302	10	339
Arrive On Green	0.05	0.46	0.46	0.14	0.95	0.95	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1774	3572	48	1774	2756	719	207	99	1209	1721	56	1467
Grp Volume(v), veh/h	72	548	574	105	440	425	168	0	0	223	0	166
Grp Sat Flow(s),veh/h/ln	1774	1770	1851	1774	1770	1705	1516	0	0	1777	0	1467
Q Serve(g_s), s	5.6	34.2	34.2	8.1	3.3	3.3	14.7	0.0	0.0	16.6	0.0	13.8
Cycle Q Clear(g_c), s	5.6	34.2	34.2	8.1	3.3	3.3	14.7	0.0	0.0	16.6	0.0	13.8
Prop In Lane	1.00		0.03	1.00		0.42	0.14		0.80	0.97		1.00
Lane Grp Cap(c), veh/h	91	808	845	126	843	812	242	0	0	312	0	339
V/C Ratio(X)	0.79	0.68	0.68	0.83	0.52	0.52	0.69	0.00	0.00	0.71	0.00	0.49
Avail Cap(c_a), veh/h	139	808	845	160	843	812	315	0	0	395	0	407
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)	0.83	0.83	0.83	0.77	0.77	0.77	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.7	30.0	30.0	59.3	1.8	1.8	55.6	0.0	0.0	54.4	0.0	47.2
Incr Delay (d2), s/veh	6.5	3.8	3.7	16.7	1.8	1.9	2.3	0.0	0.0	2.8	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	2.9	17.5	18.2	4.6	1.6	1.6	6.3	0.0	0.0	8.4	0.0	5.6
LnGrp Delay(d),s/veh	72.1	33.8	33.6	76.0	3.6	3.7	57.9	0.0	0.0	57.2	0.0	47.6
LnGrp LOS	E	C	C	E	A	A	E			E		D
Approach Vol, veh/h		1194			970			168			389	
Approach Delay, s/veh		36.0			11.5			57.9			53.1	
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	14.3	68.9		29.5	11.6	71.7		27.3
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	10.1	36.2		18.6	7.6	5.3		16.7
Green Ext Time (p_c), s	0.0	10.8		0.8	0.0	33.3		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		31.1
HCM 2010 LOS		C

Notes

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SDSU Student Housing

HCM 2010 Signalized Intersection Summary Existing + Cumulative Proj + Proj Phase I PM
8: College Ave & I-8WB Ramp 2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	466	0	360	0	940	1234	0	656	446
Future Volume (veh/h)	0	0	0	466	0	360	0	940	1234	0	656	446
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	1022	0	0	713	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				623	0	286	0	2527	1131	0	2527	1131
Arrive On Green				0.18	0.00	0.00	0.00	1.00	0.00	0.00	0.71	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				507	0	0	0	1022	0	0	713	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	7.2	0.0
Cycle Q Clear(g_c), s				14.2	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				623	0	286	0	2527	1131	0	2527	1131
V/C Ratio(X)				0.81	0.00	0.00	0.00	0.40	0.00	0.00	0.28	0.00
Avail Cap(c_a), veh/h				960	0	442	0	2527	1131	0	2527	1131
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	0.55	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				39.3	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0
Incr Delay (d2), s/veh				3.2	0.0	0.0	0.0	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				7.0	0.0	0.0	0.0	0.1	0.0	0.0	3.6	0.0
LnGrp Delay(d),s/veh				42.5	0.0	0.0	0.0	0.3	0.0	0.0	5.4	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					507			1022			713	
Approach Delay, s/veh					42.5			0.3			5.4	
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		76.8				76.8		23.2
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				9.2		16.2
Green Ext Time (p_c), s		11.9				11.7		1.9

Intersection Summary		
HCM 2010 Ctrl Delay		11.5
HCM 2010 LOS		B

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SDSU Student Housing

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	577	0	765	0	0	0	0	1598	377	0	863	258
Future Volume (vph)	577	0	765	0	0	0	0	1598	377	0	863	258
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	4.0		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	0.87		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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)	627	0	832	0	0	0	0	1737	410	0	938	280
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	627	0	832	0	0	0	0	1737	410	0	938	280
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	20.7		53.9					66.8	100.0		33.6	100.0
Effective Green, g (s)	20.7		53.9					66.8	100.0		33.6	100.0
Actuated g/C Ratio	0.21		0.54					0.67	1.00		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)	710		1945					2364	1536		1189	1536
v/s Ratio Prot	c0.18		0.23					c0.49			0.27	
v/s Ratio Perm									0.27			0.18
v/c Ratio	0.88		0.43					0.73	0.27		0.79	0.18
Uniform Delay, d1	38.5		13.8					10.6	0.0		30.0	0.0
Progression Factor	1.00		1.00					0.56	1.00		0.72	1.00
Incremental Delay, d2	12.2		0.1					0.2	0.0		5.0	0.2
Delay (s)	50.7		13.9					6.2	0.0		26.6	0.2
Level of Service	D		B					A	A		C	A
Approach Delay (s)		29.7			0.0			5.1			20.5	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	69.1%	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)	380	42	29	84	11	330	25	1267	81	295	1223	111
Future Volume (veh/h)	380	42	29	84	11	330	25	1267	81	295	1223	111
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	476	0	0	91	12	359	27	1377	88	321	1329	121
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	702	368	0	77	10	206	37	1646	727	279	2696	2001
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	1576	208	1583	1774	3539	1563	3442	5085	2734
Grp Volume(v), veh/h	476	0	0	103	0	359	27	1377	88	321	1329	121
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1784	0	1583	1774	1770	1563	1721	1695	1367
Q Serve(g_s), s	12.4	0.0	0.0	4.9	0.0	4.9	1.5	34.1	3.2	8.1	16.6	1.3
Cycle Q Clear(g_c), s	12.4	0.0	0.0	4.9	0.0	4.9	1.5	34.1	3.2	8.1	16.6	1.3
Prop In Lane	1.00		0.00	0.88		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	702	368	0	87	0	206	37	1646	727	279	2696	2001
V/C Ratio(X)	0.68	0.00	0.00	1.18	0.00	1.74	0.72	0.84	0.12	1.15	0.49	0.06
Avail Cap(c_a), veh/h	1135	596	0	87	0	206	101	1646	727	279	2696	2001
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	0.75	0.75	0.75
Uniform Delay (d), s/veh	37.2	0.0	0.0	47.6	0.0	43.5	48.7	23.4	15.2	46.0	14.9	3.9
Incr Delay (d2), s/veh	0.4	0.0	0.0	152.1	0.0	354.2	22.7	5.2	0.3	94.6	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	6.1	0.0	0.0	6.1	0.0	25.9	1.0	17.6	1.4	7.5	7.9	0.8
LnGrp Delay(d),s/veh	37.6	0.0	0.0	199.6	0.0	397.7	71.4	28.6	15.5	140.6	15.4	3.9
LnGrp LOS	D			F		F	E	C	B	F	B	A
Approach Vol, veh/h		476			462			1492			1771	
Approach Delay, s/veh		37.6			353.6			28.6			37.3	
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	13.6	52.5		24.7	6.5	59.0		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	36.1		14.4	3.5	18.6		6.9
Green Ext Time (p_c), s	0.0	0.0		1.3	0.0	16.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	69.0
HCM 2010 LOS	E
Notes	

Intersection	
Int Delay, s/veh	24.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	455	1115	40	160	1177
Future Vol, veh/h	0	455	1115	40	160	1177
Conflicting Peds, #/hr	0	30	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	495	1212	43	174	1279

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2220	646	0	0	1232	0
Stage 1	1232	-	-	-	-	-
Stage 2	988	-	-	-	-	-
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	37	~ 414	-	-	561	-
Stage 1	238	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	24	~ 400	-	-	552	-
Mov Cap-2 Maneuver	24	-	-	-	-	-
Stage 1	234	-	-	-	-	-
Stage 2	216	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	155.7	0	1.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT
Capacity (veh/h)	-	-	400	552	-
HCM Lane V/C Ratio	-	-	1.236	0.315	-
HCM Control Delay (s)	-	-	155.7	14.5	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	20.8	1.3	-

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)	348	926	454	181	392	199	328	616	48	206	744	302
Future Volume (veh/h)	349	926	454	181	392	199	328	616	48	206	744	302
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	1863
Adj Flow Rate, veh/h	379	1007	493	197	426	216	357	670	52	226	809	328
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	324	1411	605	160	1082	459	488	771	60	256	854	358
Arrive On Green	0.37	0.80	0.80	0.09	0.31	0.31	0.14	0.23	0.23	0.14	0.24	0.24
Sat Flow, veh/h	1774	3539	1517	1774	3539	1502	3442	3310	257	1774	3539	1486
Grp Volume(v), veh/h	379	1007	493	197	426	216	357	358	364	226	809	328
Grp Sat Flow(s),veh/h/ln	1774	1770	1517	1774	1770	1502	1721	1770	1797	1774	1770	1486
Q Serve(g_s), s	25.8	18.7	17.5	12.6	13.3	11.4	14.0	27.2	27.3	17.5	31.5	20.2
Cycle Q Clear(g_c), s	25.8	18.7	17.5	12.6	13.3	11.4	14.0	27.2	27.3	17.5	31.5	20.2
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	324	1411	605	160	1082	459	488	412	418	256	854	358
V/C Ratio(X)	1.17	0.71	0.82	1.23	0.39	0.47	0.76	0.87	0.87	0.88	0.95	0.92
Avail Cap(c_a), veh/h	324	1411	605	160	1082	459	529	454	461	299	857	360
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)	0.75	0.75	0.75	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	10.4	4.9	63.7	38.3	19.1	58.3	51.6	51.7	58.8	52.3	23.2
Incr Delay (d2), s/veh	98.0	2.3	8.9	147.6	1.1	3.4	2.5	16.0	16.0	21.0	19.3	27.4
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	21.3	9.1	8.2	12.7	6.7	5.2	6.8	15.1	15.4	10.1	17.7	10.9
LnGrp Delay(d),s/veh	142.4	12.8	13.8	211.3	39.4	22.5	60.8	67.6	67.7	79.7	71.5	50.6
LnGrp LOS	F	B	B	F	D	C	E	E	E	E	E	D
Approach Vol, veh/h		1879			839			1079			1363	
Approach Delay, s/veh		39.2			75.4			65.4			67.9	
Approach LOS		D			E			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	24.6	37.7	17.0	60.7	23.4	38.9	30.0	47.7
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	23.6	35.9	12.6	49.1	25.6	33.9	25.6	36.1
Max Q Clear Time (g_c+I1), s	19.5	29.3	14.6	20.7	16.0	33.5	27.8	15.3
Green Ext Time (p_c), s	0.7	2.4	0.0	24.5	1.1	0.3	0.0	18.6

Intersection Summary	
HCM 2010 Ctrl Delay	58.1
HCM 2010 LOS	E

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	993	469	71	1335	975	60
Future Volume (veh/h)	993	469	71	1335	975	60
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	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	1103	521	79	1483	1083	67
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	1721	1274	99	2042	1158	533
Arrive On Green	0.49	0.48	0.11	1.00	0.34	0.34
Sat Flow, veh/h	3632	1524	1774	3632	3442	1583
Grp Volume(v), veh/h	1103	521	79	1483	1083	67
Grp Sat Flow(s),veh/h/ln	1770	1524	1774	1770	1721	1583
Q Serve(g_s), s	29.3	11.6	5.5	0.0	38.4	3.7
Cycle Q Clear(g_c), s	29.3	11.6	5.5	0.0	38.4	3.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1721	1274	99	2042	1158	533
V/C Ratio(X)	0.64	0.41	0.80	0.73	0.94	0.13
Avail Cap(c_a), veh/h	1721	1274	169	2042	1371	631
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.78	0.78	1.00	1.00
Uniform Delay (d), s/veh	24.1	3.0	55.3	0.0	40.5	29.0
Incr Delay (d2), s/veh	1.8	1.0	4.3	1.8	10.2	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	14.7	5.2	2.8	0.5	19.8	1.6
LnGrp Delay(d),s/veh	26.0	4.0	59.6	1.8	50.7	29.0
LnGrp LOS	C	A	E	A	D	C
Approach Vol, veh/h	1624			1562	1150	
Approach Delay, s/veh	18.9			4.7	49.4	
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	11.4	67.8				79.2		48.8
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	7.5	31.3				2.0		40.4
Green Ext Time (p_c), s	0.0	17.1				57.7		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.9
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	1011	1285	19	8	121
Future Volume (veh/h)	42	1011	1285	19	8	121
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	47	1136	1444	21	9	136
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	60	2752	2530	37	12	188
Arrive On Green	0.07	1.00	0.71	0.71	0.13	0.13
Sat Flow, veh/h	1774	3632	3662	52	96	1454
Grp Volume(v), veh/h	47	1136	715	750	146	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1561	0
Q Serve(g_s), s	3.3	0.0	24.9	25.0	11.3	0.0
Cycle Q Clear(g_c), s	3.3	0.0	24.9	25.0	11.3	0.0
Prop In Lane	1.00			0.03	0.06	0.93
Lane Grp Cap(c), veh/h	60	2752	1254	1312	202	0
V/C Ratio(X)	0.78	0.41	0.57	0.57	0.72	0.00
Avail Cap(c_a), veh/h	135	2752	1254	1312	395	0
HCM Platoon Ratio	2.00	2.00	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	58.3	0.0	9.0	9.0	52.7	0.0
Incr Delay (d2), s/veh	5.9	0.3	1.9	1.8	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	12.6	13.2	5.0	0.0
LnGrp Delay(d),s/veh	64.2	0.3	10.9	10.8	54.5	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1183	1465		146	
Approach Delay, s/veh		2.9	10.8		54.5	
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		104.6		21.4	8.7	95.9		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 92		31.9	9.6	58.4		
Max Q Clear Time (g_c+I1), s		2.0		13.3	5.3	27.0		
Green Ext Time (p_c), s		76.2		0.2	0.0	40.0		

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Notes

Intersection	
Intersection Delay, s/veh	20.7
Intersection LOS	C

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Traffic Vol, veh/h	0	111	10	0	37	508	0	0	45
Future Vol, veh/h	0	111	10	0	37	508	0	0	45
Peak Hour Factor	0.92	0.75	0.75	0.92	0.75	0.75	0.92	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	148	13	0	49	677	0	0	60
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.7	23.9	9.3
HCM LOS	B	C	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	79%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	21%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	508	74	47	45
LT Vol	0	0	74	37	0
Through Vol	37	0	0	0	45
RT Vol	0	508	0	10	0
Lane Flow Rate	49	677	99	63	60
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.07	0.831	0.188	0.115	0.093
Departure Headway (Hd)	5.123	4.419	6.844	6.586	5.598
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	697	820	528	548	634
Service Time	2.87	2.166	4.544	4.286	3.692
HCM Lane V/C Ratio	0.07	0.826	0.188	0.115	0.095
HCM Control Delay	8.3	25	11.1	10.1	9.3
HCM Lane LOS	A	C	B	B	A
HCM 95th-tile Q	0.2	9.5	0.7	0.4	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	58	53	558	100	21
Future Volume (veh/h)	34	58	53	558	100	21
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.48	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	39	66	60	634	136	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	71	633	464	1081	2000	910
Arrive On Green	0.04	0.34	0.25	0.25	0.56	0.00
Sat Flow, veh/h	1774	1863	1863	757	3548	1615
Grp Volume(v), veh/h	39	66	60	634	136	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	757	1774	1615
Q Serve(g_s), s	2.1	2.3	2.4	24.0	1.7	0.0
Cycle Q Clear(g_c), s	2.1	2.3	2.4	24.0	1.7	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	71	633	464	1081	2000	910
V/C Ratio(X)	0.55	0.10	0.13	0.59	0.07	0.00
Avail Cap(c_a), veh/h	74	633	464	1081	2000	910
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	45.4	21.8	28.1	3.9	9.5	0.0
Incr Delay (d2), s/veh	4.1	0.0	0.0	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	1.1	1.2	1.2	16.9	0.8	0.0
LnGrp Delay(d),s/veh	49.6	21.8	28.1	4.5	9.6	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		105	694		136	
Approach Delay, s/veh		32.1	6.5		9.6	
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				37.6		58.7	8.7	28.9
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		3.7	4.1	26.0
Green Ext Time (p_c), s				0.2		0.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A

Notes

HCM Signalized Intersection Capacity Analysis
5: 55th St & Hardy Ave

Ex+Cumulative Proj+Proj Phases I&II AM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	22	98	23	78	111	557	0	0	200	27
Future Volume (vph)	6	0	22	98	23	78	111	557	0	0	200	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.92	1.00	0.94		1.00	1.00			1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.91		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1461	1610	2880		1770	3539			3539	1528
Flt Permitted	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1461	1610	2880		1770	3539			3539	1528
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	0	24	105	25	84	119	599	0	0	215	29
RTOR Reduction (vph)	0	0	20	0	68	0	0	0	0	0	0	18
Lane Group Flow (vph)	6	0	4	75	71	0	119	599	0	0	215	11
Confl. Peds. (#/hr)			51			55						10
Confl. Bikes (#/hr)						10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	23.2		23.2	24.3	24.3		12.8	63.8			46.6	46.6
Effective Green, g (s)	20.2		20.0	24.0	24.0		12.0	60.8			40.0	46.6
Actuated g/C Ratio	0.18		0.18	0.19	0.19		0.10	0.51			0.37	0.37
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	325		269	310	555		179	1791			1308	565
v/s Ratio Prot	c0.00			c0.05	0.02		c0.07	c0.17			0.06	
v/s Ratio Perm			0.00									0.01
v/c Ratio	0.02		0.02	0.24	0.13		0.66	0.33			0.16	0.02
Uniform Delay, d1	42.1		42.1	43.1	42.1		54.5	18.5			26.6	25.2
Progression Factor	1.00		1.00	1.00	1.00		1.37	0.59			1.00	1.00
Incremental Delay, d2	0.0		0.0	0.1	0.0		5.3	0.4			0.3	0.1
Delay (s)	42.1		42.1	43.2	42.1		80.1	11.3			26.9	25.3
Level of Service	D		D	D	D		F	B			C	C
Approach Delay (s)		42.1			42.5			22.7			26.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
6: 55th St & Montezuma Rd

Ex+Cumulative Proj+Proj Phases I&II AM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	528	353	13	4	867	305	46	19	19	61	1	137
Future Volume (veh/h)	528	353	13	4	867	305	46	19	19	61	1	137
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	574	384	14	4	942	332	50	21	21	89	0	149
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	633	2164	79	7	1567	675	126	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	3476	126	1774	3539	1525	905	389	388	3548	0	1354
Grp Volume(v), veh/h	574	195	203	4	942	332	92	0	0	89	0	149
Grp Sat Flow(s),veh/h/ln	1721	1770	1833	1774	1770	1525	1702	0	0	1774	0	1354
Q Serve(g_s), s	29.6	5.9	5.9	0.3	8.2	5.6	6.2	0.0	0.0	3.0	0.0	10.1
Cycle Q Clear(g_c), s	29.6	5.9	5.9	0.3	8.2	5.6	6.2	0.0	0.0	3.0	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	633	1101	1141	7	1567	675	232	0	0	284	0	109
V/C Ratio(X)	0.91	0.18	0.18	0.54	0.60	0.49	0.40	0.00	0.00	0.31	0.00	1.37
Avail Cap(c_a), veh/h	699	1101	1141	56	1567	675	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	0.37	0.37	0.37	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	50.4	10.1	10.1	62.4	4.5	4.3	49.7	0.0	0.0	54.7	0.0	58.0
Incr Delay (d2), s/veh	13.9	0.4	0.3	8.2	0.6	0.9	0.4	0.0	0.0	0.6	0.0	214.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	3.0	3.1	0.2	3.8	2.4	3.0	0.0	0.0	1.5	0.0	10.3
LnGrp Delay(d),s/veh	64.3	10.4	10.4	70.6	5.1	5.3	50.1	0.0	0.0	55.3	0.0	272.8
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		972			1278			92			238	
Approach Delay, s/veh		42.2			5.4			50.1			191.5	
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	84.0		15.0	27.6	61.4		22.1
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	2.3	7.9		12.1	22.6	10.2		8.2
Green Ext Time (p_c), s	0.0	20.5		0.0	0.6	16.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	38.0
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	414	11	67	1083	311	37	14	94	100	9	57
Future Volume (veh/h)	86	414	11	67	1083	311	37	14	94	100	9	57
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	93	450	12	73	1177	338	40	15	102	109	10	62
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	1708	45	92	1335	376	64	24	163	243	22	286
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	3516	94	1774	2704	762	398	149	1014	1631	150	1449
Grp Volume(v), veh/h	93	226	236	73	763	752	157	0	0	119	0	62
Grp Sat Flow(s),veh/h/ln	1774	1770	1839	1774	1770	1696	1561	0	0	1781	0	1449
Q Serve(g_s), s	5.6	0.6	0.6	5.1	43.7	46.8	11.8	0.0	0.0	7.7	0.0	4.5
Cycle Q Clear(g_c), s	5.6	0.6	0.6	5.1	43.7	46.8	11.8	0.0	0.0	7.7	0.0	4.5
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	860	894	92	874	837	251	0	0	265	0	286
V/C Ratio(X)	1.18	0.26	0.26	0.79	0.87	0.90	0.63	0.00	0.00	0.45	0.00	0.22
Avail Cap(c_a), veh/h	79	860	894	121	874	837	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	0.55	0.55	0.55	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	0.9	0.9	58.0	18.5	19.0	49.3	0.0	0.0	48.9	0.0	42.8
Incr Delay (d2), s/veh	157.0	0.7	0.7	9.8	7.0	8.8	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	6.2	0.4	0.4	2.8	22.7	23.8	5.2	0.0	0.0	3.8	0.0	1.8
LnGrp Delay(d),s/veh	214.4	1.7	1.6	67.8	25.4	27.8	50.3	0.0	0.0	49.4	0.0	43.0
LnGrp LOS	F	A	A	E	C	C	D			D		D
Approach Vol, veh/h		555			1588			157			161	
Approach Delay, s/veh		37.3			26.5			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	11.0	66.2		23.6	10.0	67.2		25.2				
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9				
Max Green Setting (Gmax), s	6.6	* 38		31.0	5.6	41.2		29.0				
Max Q Clear Time (g_c+I1), s	7.1	2.6		9.7	7.6	48.8		13.8				
Green Ext Time (p_c), s	0.0	31.2		0.4	0.0	0.0		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			33.2									
HCM 2010 LOS			C									
Notes												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	243	0	92	0	907	331	0	1057	686
Future Volume (veh/h)	0	0	0	243	0	92	0	907	331	0	1057	686
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				264	0	0	0	986	0	0	1149	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				333	0	153	0	2826	1264	0	2826	1264
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				264	0	0	0	986	0	0	1149	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				7.5	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0
Cycle Q Clear(g_c), s				7.5	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				333	0	153	0	2826	1264	0	2826	1264
V/C Ratio(X)				0.79	0.00	0.00	0.00	0.35	0.00	0.00	0.41	0.00
Avail Cap(c_a), veh/h				375	0	173	0	2826	1264	0	2826	1264
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	0.87	0.00	0.00	1.00	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				10.1	0.0	0.0	0.0	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				4.0	0.0	0.0	0.0	0.1	0.0	0.0	4.8	0.0
LnGrp Delay(d),s/veh				54.3	0.0	0.0	0.0	0.3	0.0	0.0	3.4	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					264			986			1149	
Approach Delay, s/veh					54.3			0.3			3.4	
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				11.7		9.5				
Green Ext Time (p_c), s		17.9				17.7		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			7.7									
HCM 2010 LOS			A									

HCM Signalized Intersection Capacity Analysis
9: College Ave & I-8EB Ramp

Ex+Cumulative Proj+Proj Phases I&II AM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	0	1263	6	0	0	0	885	225	0	1014	286
Future Volume (vph)	355	0	1263	6	0	0	0	885	225	0	1014	286
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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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)	386	0	1373	6	0	0	0	962	245	0	1102	311
RTOR Reduction (vph)	0	0	0	6	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	386	0	1373	0	0	0	0	962	245	0	1102	311
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	15.0		47.9					72.5	100.0		39.6	100.0
Effective Green, g (s)	15.0		47.9					72.5	100.0		39.6	100.0
Actuated g/C Ratio	0.15		0.48					0.72	1.00		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)	514		1729					2565	1536		1401	1536
v/s Ratio Prot	0.11		c0.38					0.27			c0.31	
v/s Ratio Perm									0.16			0.20
v/c Ratio	0.75		0.79					0.38	0.16		0.79	0.20
Uniform Delay, d1	40.7		21.9					5.2	0.0		26.5	0.0
Progression Factor	1.00		1.00					0.25	1.00		1.03	1.00
Incremental Delay, d2	5.4		2.4					0.2	0.1		4.1	0.3
Delay (s)	46.1		24.3					1.5	0.1		31.4	0.3
Level of Service	D		C					A	A		C	A
Approach Delay (s)		29.1			0.0			1.3			24.6	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary
10: College Ave & Canyon Crest Dr

Ex+Cumulative Proj+Proj Phases I&II AM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	20	17	79	65	251	96	775	77	545	1257	436
Future Volume (veh/h)	86	20	17	79	65	251	96	775	77	545	1257	436
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	66	50	18	86	71	273	104	842	84	592	1410	474
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	224	171	52	95	79	394	117	1478	652	527	2592	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	1353	413	983	820	1583	1774	3539	1561	3442	5085	2732
Grp Volume(v), veh/h	66	0	77	157	0	273	104	842	84	592	1410	474
Grp Sat Flow(s),veh/h/ln	1774	0	1766	1813	0	1583	1774	1770	1561	1721	1695	1366
Q Serve(g_s), s	3.4	0.0	4.0	8.6	0.0	9.6	5.8	18.2	3.3	15.3	25.4	11.4
Cycle Q Clear(g_c), s	3.4	0.0	4.0	8.6	0.0	9.6	5.8	18.2	3.3	15.3	25.4	11.4
Prop In Lane	1.00		0.23	0.55		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	224	0	223	174	0	394	117	1478	652	527	2592	1744
V/C Ratio(X)	0.29	0.00	0.35	0.90	0.00	0.69	0.89	0.57	0.13	1.12	0.54	0.27
Avail Cap(c_a), veh/h	568	0	565	174	0	394	117	1478	652	527	2592	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	0.51	0.51	0.51
Uniform Delay (d), s/veh	39.6	0.0	39.9	44.7	0.0	34.1	46.3	22.2	17.9	47.5	30.9	14.7
Incr Delay (d2), s/veh	0.3	0.0	0.3	40.6	0.0	4.3	50.4	1.6	0.4	68.8	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	6.2	0.0	7.3	4.5	9.2	1.5	12.3	12.1	5.9
LnGrp Delay(d),s/veh	39.9	0.0	40.3	85.4	0.0	38.4	96.7	23.8	18.3	116.3	31.4	14.9
LnGrp LOS	D		D	F		D	F	C	B	F	C	B
Approach Vol, veh/h		143			430			1030			2476	
Approach Delay, s/veh		40.1			55.5			30.7			48.5	
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	20.2	47.8		17.5	11.0	57.0		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	20.2		6.0	7.8	27.4		11.6
Green Ext Time (p_c), s	0.0	2.1		0.4	0.0	4.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.5
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	96	1009	71	325	1047
Future Vol, veh/h	0	96	1009	71	325	1047
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	104	1097	77	353	1138

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2393	588	0	0	1117	0
Stage 1	1117	-	-	-	-	-
Stage 2	1276	-	-	-	-	-
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	3.33	-	-	2.22	-
Pot Cap-1 Maneuver	28	452	-	-	621	-
Stage 1	275	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	11	437	-	-	611	-
Mov Cap-2 Maneuver	11	-	-	-	-	-
Stage 1	270	-	-	-	-	-
Stage 2	94	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	4.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 437	611	-
HCM Lane V/C Ratio	-	- 0.239	0.578	-
HCM Control Delay (s)	-	- 15.8	18.7	-
HCM Lane LOS	-	- C	C	-
HCM 95th %tile Q(veh)	-	- 0.9	3.7	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	297	88	21	698	198	589	922	52	105	461	314
Future Volume (veh/h)	183	297	88	21	698	198	589	922	52	105	461	314
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	1863
Adj Flow Rate, veh/h	199	323	96	23	759	215	640	1002	57	114	501	341
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	220	1346	576	56	1020	432	688	1044	59	232	845	354
Arrive On Green	0.25	0.76	0.76	0.03	0.29	0.29	0.20	0.31	0.31	0.13	0.24	0.24
Sat Flow, veh/h	1774	3539	1514	1774	3539	1499	3442	3393	193	1774	3539	1485
Grp Volume(v), veh/h	199	323	96	23	759	215	640	523	536	114	501	341
Grp Sat Flow(s),veh/h/ln	1774	1770	1514	1774	1770	1499	1721	1770	1816	1774	1770	1485
Q Serve(g_s), s	13.7	3.4	1.2	1.6	24.5	10.7	23.0	36.5	36.6	7.5	15.8	21.1
Cycle Q Clear(g_c), s	13.7	3.4	1.2	1.6	24.5	10.7	23.0	36.5	36.6	7.5	15.8	21.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	220	1346	576	56	1020	432	688	545	559	232	845	354
V/C Ratio(X)	0.91	0.24	0.17	0.41	0.74	0.50	0.93	0.96	0.96	0.49	0.59	0.96
Avail Cap(c_a), veh/h	220	1346	576	83	1020	432	699	546	561	263	899	377
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	9.7	3.0	59.8	40.6	18.9	49.5	42.8	42.8	50.9	42.5	25.8
Incr Delay (d2), s/veh	35.0	0.4	0.6	1.8	4.9	4.1	18.4	28.6	28.1	0.6	1.1	35.7
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	8.8	1.7	0.6	0.8	12.6	4.9	12.7	22.2	22.7	3.7	7.8	12.1
LnGrp Delay(d),s/veh	81.7	10.2	3.6	61.6	45.5	23.0	68.0	71.4	71.0	51.5	43.6	61.6
LnGrp LOS	F	B	A	E	D	C	E	E	E	D	D	E
Approach Vol, veh/h		618			997			1699			956	
Approach Delay, s/veh		32.2			41.0			70.0			50.9	
Approach LOS		C			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	20.9	43.9	8.4	52.8	29.6	35.2	20.0	41.2
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	18.7	38.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	9.5	38.6	3.6	5.4	25.0	23.1	15.7	26.5
Green Ext Time (p_c), s	1.6	0.2	0.0	21.9	0.2	3.3	0.0	6.2

Intersection Summary		
HCM 2010 Ctrl Delay		53.5
HCM 2010 LOS		D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1986	1019	131	1483	597	69
Future Volume (veh/h)	1986	1019	131	1483	597	69
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	2091	1073	138	1561	628	73
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	2149	1247	138	2540	692	318
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	2091	1073	138	1561	628	73
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583
Q Serve(g_s), s	76.0	60.4	10.4	0.0	23.9	5.2
Cycle Q Clear(g_c), s	76.0	60.4	10.4	0.0	23.9	5.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2149	1247	138	2540	692	318
V/C Ratio(X)	0.97	0.86	1.00	0.61	0.91	0.23
Avail Cap(c_a), veh/h	2149	1247	138	2540	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.61	0.61	1.00	1.00
Uniform Delay (d), s/veh	25.3	8.3	56.6	0.0	52.3	44.8
Incr Delay (d2), s/veh	14.0	7.9	60.6	0.7	9.7	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	41.1	27.7	7.4	0.2	12.3	2.3
LnGrp Delay(d),s/veh	39.3	16.2	117.2	0.7	62.0	45.0
LnGrp LOS	D	B	F	A	E	D
Approach Vol, veh/h	3164			1699	701	
Approach Delay, s/veh	31.4			10.2	60.3	
Approach LOS	C			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	87.9				102.7		31.3
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	78.0				2.0		25.9
Green Ext Time (p_c), s	0.0	0.0				86.2		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	128	1927	1542	21	13	72
Future Volume (veh/h)	128	1927	1542	21	13	72
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	138	2072	1658	23	14	77
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	161	2884	2470	34	23	128
Arrive On Green	0.18	1.00	0.69	0.69	0.10	0.10
Sat Flow, veh/h	1774	3632	3685	49	239	1314
Grp Volume(v), veh/h	138	2072	820	861	92	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1570	0
Q Serve(g_s), s	10.1	0.0	35.7	35.9	7.5	0.0
Cycle Q Clear(g_c), s	10.1	0.0	35.7	35.9	7.5	0.0
Prop In Lane	1.00			0.03	0.15	0.84
Lane Grp Cap(c), veh/h	161	2884	1223	1280	154	0
V/C Ratio(X)	0.86	0.72	0.67	0.67	0.60	0.00
Avail Cap(c_a), veh/h	318	2884	1223	1280	598	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	54.0	0.0	11.9	11.9	57.9	0.0
Incr Delay (d2), s/veh	0.5	0.1	2.9	2.8	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	18.3	19.2	3.3	0.0
LnGrp Delay(d),s/veh	54.5	0.1	14.8	14.8	59.3	0.0
LnGrp LOS	D	A	B	B	E	
Approach Vol, veh/h		2210	1681		92	
Approach Delay, s/veh		3.5	14.8		59.3	
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		115.8		18.2	16.6	99.2		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 72		51.0	24.0	42.9		
Max Q Clear Time (g_c+I1), s		2.0		9.5	12.1	37.9		
Green Ext Time (p_c), s		70.0		0.2	0.1	5.0		

Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A

Notes

Intersection									
Intersection Delay, s/veh	13.8								
Intersection LOS	B								

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Traffic Vol, veh/h	0	440	12	0	64	231	0	0	87
Future Vol, veh/h	0	440	12	0	64	231	0	0	87
Peak Hour Factor	0.92	0.87	0.87	0.92	0.87	0.87	0.92	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	506	14	0	74	266	0	0	100
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	15.5	11.5	10.6
HCM LOS	C	B	B

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	92%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	8%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	64	231	293	159	87
LT Vol	0	0	293	147	0
Through Vol	64	0	0	0	87
RT Vol	0	231	0	12	0
Lane Flow Rate	74	266	337	182	100
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.127	0.406	0.587	0.313	0.174
Departure Headway (Hd)	6.216	5.507	6.268	6.177	6.267
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	577	653	577	584	573
Service Time	3.951	3.241	3.989	3.898	4.302
HCM Lane V/C Ratio	0.128	0.407	0.584	0.312	0.175
HCM Control Delay	9.9	12	17.5	11.7	10.6
HCM Lane LOS	A	B	C	B	B
HCM 95th-tile Q	0.4	2	3.8	1.3	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	65	76	278	496	37
Future Volume (veh/h)	20	65	76	278	496	37
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.46	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	22	72	84	309	589	0
Adj No. of Lanes	1	1	1	1	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	0
Cap, veh/h	72	670	502	1043	1901	865
Arrive On Green	0.04	0.36	0.27	0.27	0.54	0.00
Sat Flow, veh/h	1774	1863	1863	721	3548	1615
Grp Volume(v), veh/h	22	72	84	309	589	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	721	1774	1615
Q Serve(g_s), s	1.1	2.3	3.1	13.0	8.2	0.0
Cycle Q Clear(g_c), s	1.1	2.3	3.1	13.0	8.2	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	72	670	502	1043	1901	865
V/C Ratio(X)	0.31	0.11	0.17	0.30	0.31	0.00
Avail Cap(c_a), veh/h	212	820	505	1044	1901	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.4	19.0	24.8	3.0	11.5	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.1	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	0.5	1.2	1.6	7.5	4.1	0.0
LnGrp Delay(d),s/veh	42.3	19.0	24.9	3.0	11.9	0.0
LnGrp LOS	D	B	C	A	B	
Approach Vol, veh/h		94	393		589	
Approach Delay, s/veh		24.4	7.7		11.9	
Approach LOS		C	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.8		52.0	8.0	28.8
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				4.3		10.2	3.1	15.0
Green Ext Time (p_c), s				3.2		1.9	0.0	1.9

Intersection Summary		
HCM 2010 Ctrl Delay		11.5
HCM 2010 LOS		B
Notes		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	141	186	15	51	65	304	0	0	598	10
Future Volume (vph)	17	0	141	186	15	51	65	304	0	0	598	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.5		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.87	1.00	0.96		1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.95		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1383	1616	3014		1770	3539			3539	1527
Flt Permitted	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1383	1616	3014		1770	3539			3539	1527
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	19	0	160	205	17	58	74	345	0	0	680	11
RTOR Reduction (vph)	0	0	125	6	42	0	0	0	0	0	0	7
Lane Group Flow (vph)	19	0	35	102	136	0	74	345	0	0	680	4
Confl. Peds. (#/hr)			70			70						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	29.0		29.0	24.7	24.7		8.8	65.6			52.4	52.4
Effective Green, g (s)	29.0		29.0	24.7	24.7		8.8	65.6			52.4	52.4
Actuated g/C Ratio	0.22		0.22	0.18	0.18		0.07	0.49			0.39	0.39
Clearance Time (s)	4.9		4.9	4.5	4.5		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	383		299	296	555		116	1732			1383	597
v/s Ratio Prot	0.01			c0.06	0.05		c0.04	0.10			c0.19	
v/s Ratio Perm			c0.03									0.00
v/c Ratio	0.05		0.12	0.34	0.25		0.64	0.20			0.49	0.01
Uniform Delay, d1	41.6		42.2	47.6	46.7		61.0	19.3			30.8	24.9
Progression Factor	1.00		1.00	1.00	1.00		0.99	1.47			1.00	1.00
Incremental Delay, d2	0.0		0.1	0.3	0.1		6.9	0.2			1.3	0.0
Delay (s)	41.6		42.3	47.9	46.8		67.1	28.7			32.0	24.9
Level of Service	D		D	D	D		E	C			C	C
Approach Delay (s)		42.2			47.2			35.5			31.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	76.4%	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)	384	879	75	24	585	204	50	11	11	276	23	454
Future Volume (veh/h)	384	879	75	24	585	204	50	11	11	276	23	454
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	396	855	82	26	636	222	54	12	12	320	0	493
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	450	1380	118	33	1092	465	152	34	34	1011	0	429
Arrive On Green	0.13	0.42	0.42	0.02	0.31	0.31	0.13	0.13	0.13	0.29	0.00	0.29
Sat Flow, veh/h	3442	3279	282	1774	3539	1508	1193	265	265	3548	0	1504
Grp Volume(v), veh/h	396	515	522	26	636	222	78	0	0	320	0	493
Grp Sat Flow(s),veh/h/ln	1721	1770	1791	1774	1770	1508	1723	0	0	1774	0	1504
Q Serve(g_s), s	15.1	31.9	31.9	2.0	20.3	16.0	5.5	0.0	0.0	9.5	0.0	38.2
Cycle Q Clear(g_c), s	15.1	31.9	31.9	2.0	20.3	16.0	5.5	0.0	0.0	9.5	0.0	38.2
Prop In Lane	1.00		0.16	1.00		1.00	0.69		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	450	745	754	33	1092	465	220	0	0	1011	0	429
V/C Ratio(X)	0.88	0.69	0.69	0.79	0.58	0.48	0.35	0.00	0.00	0.32	0.00	1.15
Avail Cap(c_a), veh/h	524	745	754	74	1092	465	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	0.88	0.88	0.88	1.00	0.00	0.00	0.89	0.00	0.89
Uniform Delay (d), s/veh	57.2	31.7	31.7	65.5	38.1	37.6	53.4	0.0	0.0	37.6	0.0	47.9
Incr Delay (d2), s/veh	13.0	5.2	5.2	13.0	2.0	3.1	0.4	0.0	0.0	0.2	0.0	89.3
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	8.0	16.7	16.9	1.1	10.2	7.1	2.7	0.0	0.0	4.7	0.0	26.4
LnGrp Delay(d),s/veh	70.1	36.9	36.9	78.5	41.1	40.7	53.7	0.0	0.0	37.8	0.0	137.2
LnGrp LOS	E	D	D	E	D	D	D			D		F
Approach Vol, veh/h		1433			884			78			813	
Approach Delay, s/veh		46.1			42.1			53.7			98.1	
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	21.9	46.9		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	33.9		40.2	17.1	22.3		7.5
Green Ext Time (p_c), s	0.0	5.5		0.0	0.4	3.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	58.3
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	1025	14	97	639	165	21	10	123	196	6	153
Future Volume (veh/h)	66	1025	14	97	639	165	21	10	123	196	6	153
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		0.95
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	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	72	1114	15	105	695	179	23	11	134	216	7	166
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	91	1631	22	126	1316	339	33	16	193	302	10	339
Arrive On Green	0.05	0.46	0.46	0.14	0.95	0.95	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1774	3572	48	1774	2765	712	207	99	1209	1721	56	1467
Grp Volume(v), veh/h	72	552	577	105	445	429	168	0	0	223	0	166
Grp Sat Flow(s),veh/h/ln	1774	1770	1851	1774	1770	1707	1516	0	0	1777	0	1467
Q Serve(g_s), s	5.6	34.5	34.5	8.1	3.4	3.4	14.7	0.0	0.0	16.6	0.0	13.6
Cycle Q Clear(g_c), s	5.6	34.5	34.5	8.1	3.4	3.4	14.7	0.0	0.0	16.6	0.0	13.6
Prop In Lane	1.00		0.03	1.00		0.42	0.14		0.80	0.97		1.00
Lane Grp Cap(c), veh/h	91	808	845	126	843	813	242	0	0	312	0	339
V/C Ratio(X)	0.79	0.68	0.68	0.84	0.53	0.53	0.69	0.00	0.00	0.71	0.00	0.49
Avail Cap(c_a), veh/h	139	808	845	147	843	813	315	0	0	395	0	407
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)	0.83	0.83	0.83	0.76	0.76	0.76	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.7	30.0	30.0	59.3	1.8	1.8	55.6	0.0	0.0	54.4	0.0	47.2
Incr Delay (d2), s/veh	6.4	3.9	3.7	20.6	1.8	1.9	2.3	0.0	0.0	2.8	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	2.9	17.7	18.5	4.7	1.6	1.6	6.3	0.0	0.0	8.4	0.0	5.6
LnGrp Delay(d),s/veh	72.1	33.9	33.8	79.9	3.6	3.7	57.9	0.0	0.0	57.2	0.0	47.6
LnGrp LOS	E	C	C	E	A	A	E			E		D
Approach Vol, veh/h		1201			979			168			389	
Approach Delay, s/veh		36.1			11.8			57.9			53.1	
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	14.3	58.9		29.5	11.6	71.7		27.3
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	11.6	* 49		31.1	11.0	49.6		29.1
Max Q Clear Time (g_c+I1), s	10.1	36.5		18.6	7.6	5.4		16.7
Green Ext Time (p_c), s	0.0	11.4		0.8	0.0	33.5		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		31.2
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	471	0	360	0	941	1234	0	658	446
Future Volume (veh/h)	0	0	0	471	0	360	0	941	1234	0	658	446
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				512	0	0	0	1023	0	0	715	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				628	0	289	0	2522	1128	0	2522	1128
Arrive On Green				0.18	0.00	0.00	0.00	1.00	0.00	0.00	0.71	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				512	0	0	0	1023	0	0	715	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				14.3	0.0	0.0	0.0	0.0	0.0	0.0	7.3	0.0
Cycle Q Clear(g_c), s				14.3	0.0	0.0	0.0	0.0	0.0	0.0	7.3	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				628	0	289	0	2522	1128	0	2522	1128
V/C Ratio(X)				0.82	0.00	0.00	0.00	0.41	0.00	0.00	0.28	0.00
Avail Cap(c_a), veh/h				960	0	442	0	2522	1128	0	2522	1128
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	0.55	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				39.3	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0
Incr Delay (d2), s/veh				3.3	0.0	0.0	0.0	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				7.0	0.0	0.0	0.0	0.1	0.0	0.0	3.6	0.0
LnGrp Delay(d),s/veh				42.5	0.0	0.0	0.0	0.3	0.0	0.0	5.5	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					512			1023			715	
Approach Delay, s/veh					42.5			0.3			5.5	
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		76.7				76.7		23.3
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				9.3		16.3
Green Ext Time (p_c), s		11.9				11.8		2.0

Intersection Summary		
HCM 2010 Ctrl Delay		11.5
HCM 2010 LOS		B

HCM Signalized Intersection Capacity Analysis
9: College Ave & I-8EB Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	577	0	765	6	0	0	0	1599	381	0	870	258
Future Volume (vph)	577	0	765	6	0	0	0	1599	381	0	870	258
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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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)	627	0	832	6	0	0	0	1738	414	0	946	280
RTOR Reduction (vph)	0	0	0	6	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	627	0	832	0	0	0	0	1738	414	0	946	280
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	20.7		53.9					66.8	100.0		33.6	100.0
Effective Green, g (s)	20.7		53.9					66.8	100.0		33.6	100.0
Actuated g/C Ratio	0.21		0.54					0.67	1.00		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)	710		1945					2364	1536		1189	1536
v/s Ratio Prot	c0.18		0.23					c0.49			c0.27	
v/s Ratio Perm									0.27			0.18
v/c Ratio	0.88		0.43					0.74	0.27		0.80	0.18
Uniform Delay, d1	38.5		13.8					10.8	0.0		30.1	0.0
Progression Factor	1.00		1.00					0.56	1.00		0.72	1.00
Incremental Delay, d2	12.2		0.1					0.2	0.0		5.2	0.2
Delay (s)	50.7		13.9					6.2	0.0		26.7	0.2
Level of Service	D		B					A	A		C	A
Approach Delay (s)		29.7			0.0			5.0			20.7	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary
10: College Ave & Canyon Crest Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	385	43	29	84	12	330	25	1267	81	295	1223	116
Future Volume (veh/h)	385	43	29	84	12	330	25	1267	81	295	1223	116
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	481	0	0	91	13	359	27	1377	88	321	1329	126
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	706	370	0	77	11	206	37	1643	725	279	2690	2001
Arrive On Green	0.20	0.00	0.00	0.05	0.05	0.05	0.02	0.46	0.46	0.08	0.53	0.53
Sat Flow, veh/h	3548	1863	0	1562	223	1583	1774	3539	1563	3442	5085	2734
Grp Volume(v), veh/h	481	0	0	104	0	359	27	1377	88	321	1329	126
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1785	0	1583	1774	1770	1563	1721	1695	1367
Q Serve(g_s), s	12.6	0.0	0.0	4.9	0.0	4.9	1.5	34.1	3.2	8.1	16.7	1.3
Cycle Q Clear(g_c), s	12.6	0.0	0.0	4.9	0.0	4.9	1.5	34.1	3.2	8.1	16.7	1.3
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	706	370	0	87	0	206	37	1643	725	279	2690	2001
V/C Ratio(X)	0.68	0.00	0.00	1.19	0.00	1.74	0.72	0.84	0.12	1.15	0.49	0.06
Avail Cap(c_a), veh/h	1135	596	0	87	0	206	101	1643	725	279	2690	2001
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	0.74	0.74	0.74
Uniform Delay (d), s/veh	37.1	0.0	0.0	47.6	0.0	43.5	48.7	23.5	15.2	46.0	15.0	3.9
Incr Delay (d2), s/veh	0.4	0.0	0.0	155.9	0.0	354.2	22.7	5.3	0.3	94.5	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	6.2	0.0	0.0	6.2	0.0	25.9	1.0	17.6	1.4	7.5	7.9	0.9
LnGrp Delay(d),s/veh	37.6	0.0	0.0	203.4	0.0	397.7	71.4	28.8	15.6	140.4	15.5	3.9
LnGrp LOS	D			F		F	E	C	B	F	B	A
Approach Vol, veh/h		481			463			1492			1776	
Approach Delay, s/veh		37.6			354.1			28.8			37.2	
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	13.6	52.4		24.8	6.5	58.9		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	36.1		14.6	3.5	18.7		6.9
Green Ext Time (p_c), s	0.0	0.0		1.4	0.0	15.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	69.1
HCM 2010 LOS	E

Notes

Intersection						
Int Delay, s/veh	24.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	455	1115	40	160	1177
Future Vol, veh/h	0	455	1115	40	160	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	495	1212	43	174	1279

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2220	646	0	0	1232	0
Stage 1	1232	-	-	-	-	-
Stage 2	988	-	-	-	-	-
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	3.33			2.22	
Pot Cap-1 Maneuver	37	~ 414	-	-	561	-
Stage 1	238	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	24	~ 400	-	-	552	-
Mov Cap-2 Maneuver	24	-	-	-	-	-
Stage 1	234	-	-	-	-	-
Stage 2	216	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	155.7	0	1.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	400	552	-
HCM Lane V/C Ratio	-	-	1.236	0.315	-
HCM Control Delay (s)	-	-	155.7	14.5	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	20.8	1.3	-

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)	349	929	458	181	396	199	332	616	48	208	744	302
Future Volume (veh/h)	349	929	458	181	396	199	332	616	48	208	744	302
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	1863
Adj Flow Rate, veh/h	379	1010	498	197	430	216	361	670	52	226	809	328
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	324	1411	605	160	1082	459	488	771	60	256	854	358
Arrive On Green	0.37	0.80	0.80	0.09	0.31	0.31	0.14	0.23	0.23	0.14	0.24	0.24
Sat Flow, veh/h	1774	3539	1517	1774	3539	1502	3442	3310	257	1774	3539	1486
Grp Volume(v), veh/h	379	1010	498	197	430	216	361	358	364	226	809	328
Grp Sat Flow(s),veh/h/ln	1774	1770	1517	1774	1770	1502	1721	1770	1797	1774	1770	1486
Q Serve(g_s), s	25.8	18.9	18.0	12.6	13.4	11.4	14.2	27.2	27.3	17.5	31.5	20.2
Cycle Q Clear(g_c), s	25.8	18.9	18.0	12.6	13.4	11.4	14.2	27.2	27.3	17.5	31.5	20.2
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	324	1411	605	160	1082	459	488	412	418	256	854	358
V/C Ratio(X)	1.17	0.72	0.82	1.23	0.40	0.47	0.77	0.87	0.87	0.88	0.95	0.92
Avail Cap(c_a), veh/h	324	1411	605	160	1082	459	529	454	461	299	857	360
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)	0.74	0.74	0.74	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	10.4	5.0	63.7	38.4	19.1	58.4	51.6	51.7	58.7	52.3	23.2
Incr Delay (d2), s/veh	97.9	2.3	9.2	147.6	1.1	3.4	2.7	16.0	16.0	20.9	19.3	27.4
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	21.3	9.2	8.6	12.7	6.7	5.2	6.9	15.1	15.4	10.1	17.7	10.9
LnGrp Delay(d),s/veh	142.3	12.8	14.2	211.3	39.5	22.5	61.1	67.6	67.7	79.7	71.5	50.6
LnGrp LOS	F	B	B	F	D	C	E	E	E	E	E	D
Approach Vol, veh/h		1887			843			1083			1363	
Approach Delay, s/veh		39.2			75.3			65.5			67.9	
Approach LOS		D			E			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	24.6	37.7	17.0	60.7	23.4	38.9	30.0	47.7
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	23.6	35.9	12.6	49.1	25.6	33.9	25.6	36.1
Max Q Clear Time (g_c+I1), s	19.5	29.3	14.6	20.9	16.2	33.5	27.8	15.4
Green Ext Time (p_c), s	0.7	2.4	0.0	24.5	1.1	0.3	0.0	18.5

Intersection Summary		
HCM 2010 Ctrl Delay		58.1
HCM 2010 LOS		E

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	989	469	72	1340	975	61
Future Volume (veh/h)	989	469	72	1340	975	61
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	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	1110	521	80	1489	1083	68
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	1719	1273	100	2042	1158	533
Arrive On Green	0.49	0.46	0.11	1.00	0.34	0.34
Sat Flow, veh/h	3632	1524	1774	3632	3442	1583
Grp Volume(v), veh/h	1110	521	80	1489	1083	68
Grp Sat Flow(s),veh/h/ln	1770	1524	1774	1770	1721	1583
Q Serve(g_s), s	29.6	11.6	5.5	0.0	38.4	3.8
Cycle Q Clear(g_c), s	29.6	11.6	5.5	0.0	38.4	3.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1719	1273	100	2042	1158	533
V/C Ratio(X)	0.65	0.41	0.80	0.73	0.94	0.13
Avail Cap(c_a), veh/h	1719	1273	169	2042	1371	631
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.78	0.78	1.00	1.00
Uniform Delay (d), s/veh	24.3	3.0	55.2	0.0	40.5	29.0
Incr Delay (d2), s/veh	1.9	1.0	4.3	1.8	10.2	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	14.8	5.2	2.8	0.5	19.8	1.6
LnGrp Delay(d),s/veh	26.2	4.0	59.5	1.8	50.7	29.0
LnGrp LOS	C	A	E	A	D	C
Approach Vol, veh/h	1631			1569	1151	
Approach Delay, s/veh	19.1			4.8	49.4	
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	11.5	67.7				79.2		46.8
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	7.5	31.6				2.0		40.4
Green Ext Time (p_c), s	0.0	16.8				57.8		2.0

Intersection Summary		
HCM 2010 Ctrl Delay		21.9
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	1018	1291	19	6	121
Future Volume (veh/h)	42	1018	1291	19	6	121
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	47	1144	1451	21	9	136
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	60	2752	2530	37	12	188
Arrive On Green	0.07	1.00	0.71	0.71	0.13	0.13
Sat Flow, veh/h	1774	3632	3563	52	96	1454
Grp Volume(v), veh/h	47	1144	719	753	146	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1561	0
Q Serve(g_s), s	3.3	0.0	25.1	25.2	11.3	0.0
Cycle Q Clear(g_c), s	3.3	0.0	25.1	25.2	11.3	0.0
Prop In Lane	1.00			0.03	0.06	0.93
Lane Grp Cap(c), veh/h	60	2752	1254	1312	202	0
V/C Ratio(X)	0.78	0.42	0.57	0.57	0.72	0.00
Avail Cap(c_a), veh/h	135	2752	1254	1312	395	0
HCM Platoon Ratio	2.00	2.00	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	58.3	0.0	9.0	9.0	52.7	0.0
Incr Delay (d2), s/veh	5.9	0.3	1.9	1.8	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	12.8	13.4	5.0	0.0
LnGrp Delay(d),s/veh	64.2	0.3	10.9	10.8	54.5	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1191	1472		146	
Approach Delay, s/veh		2.9	10.9		54.5	
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		104.6		21.4	8.7	95.9		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 83		31.9	8.6	58.4		
Max Q Clear Time (g_c+I1), s		2.0		13.3	5.3	27.2		
Green Ext Time (p_c), s		76.4		0.2	0.0	38.9		

Intersection Summary		
HCM 2010 Ctrl Delay		9.7
HCM 2010 LOS		A

Notes

Intersection									
Intersection Delay, s/veh	22.1								
Intersection LOS	C								

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Traffic Vol, veh/h	0	118	10	0	37	516	0	0	45
Future Vol, veh/h	0	118	10	0	37	516	0	0	45
Peak Hour Factor	0.92	0.75	0.75	0.92	0.75	0.75	0.92	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	157	13	0	49	688	0	0	60
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.9	25.7	9.3
HCM LOS	B	D	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	80%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	20%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	516	79	49	45
LT Vol	0	0	79	39	0
Through Vol	37	0	0	0	45
RT Vol	0	516	0	10	0
Lane Flow Rate	49	688	105	65	60
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.071	0.85	0.2	0.121	0.094
Departure Headway (Hd)	5.154	4.45	6.88	6.634	5.646
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	693	812	524	543	628
Service Time	2.904	2.2	4.68	4.334	3.745
HCM Lane V/C Ratio	0.071	0.847	0.2	0.122	0.096
HCM Control Delay	8.3	26.9	11.3	10.2	9.3
HCM Lane LOS	A	D	B	B	A
HCM 95th-tile Q	0.2	10.1	0.7	0.4	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	58	54	586	107	21
Future Volume (veh/h)	34	58	54	586	107	21
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.44	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	39	66	61	643	144	0
Adj No. of Lanes	1	1	1	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	71	633	464	1067	2000	910
Arrive On Green	0.04	0.34	0.25	0.25	0.56	0.00
Sat Flow, veh/h	1774	1863	1863	702	3548	1615
Grp Volume(v), veh/h	39	66	61	643	144	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	702	1774	1615
Q Serve(g_s), s	2.1	2.3	2.4	24.0	1.8	0.0
Cycle Q Clear(g_c), s	2.1	2.3	2.4	24.0	1.8	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	71	633	464	1067	2000	910
V/C Ratio(X)	0.55	0.10	0.13	0.60	0.07	0.00
Avail Cap(c_a), veh/h	74	633	464	1067	2000	910
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	45.4	21.8	28.1	3.9	9.6	0.0
Incr Delay (d2), s/veh	4.1	0.0	0.0	0.7	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	1.2	1.3	17.2	0.9	0.0
LnGrp Delay(d),s/veh	49.6	21.8	28.1	4.6	9.6	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		105	704		144	
Approach Delay, s/veh		32.1	6.7		9.6	
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				37.6		58.7	8.7	28.9
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		3.8	4.1	26.0
Green Ext Time (p_c), s				0.2		0.4	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		9.9
HCM 2010 LOS		A

Notes

HCM Signalized Intersection Capacity Analysis
5: 55th St & Hardy Ave

Existing + Cumulative Proj + Total Proj AM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	22	98	23	78	111	566	0	0	207	27
Future Volume (vph)	6	0	22	98	23	78	111	566	0	0	207	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.92	1.00	0.94		1.00	1.00			1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.91		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1461	1610	2880		1770	3539			3539	1528
Flt Permitted	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1461	1610	2880		1770	3539			3539	1528
Peak-hour factor, PHF	0.93	0.90	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	0	24	105	25	84	119	609	0	0	223	29
RTOR Reduction (vph)	0	0	20	0	68	0	0	0	0	0	0	18
Lane Group Flow (vph)	6	0	4	75	71	0	119	609	0	0	223	11
Confl. Peds. (#/hr)			51			55						10
Confl. Bikes (#/hr)						10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	23.2		23.2	24.3	24.3		12.8	63.8			46.6	46.6
Effective Green, g (s)	23.2		23.2	24.3	24.3		12.8	63.8			46.6	46.6
Actuated g/C Ratio	0.18		0.18	0.19	0.19		0.10	0.51			0.37	0.37
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	325		269	310	555		179	1791			1306	565
v/s Ratio Prot	c0.00			c0.05	0.02		c0.07	c0.17			0.06	
v/s Ratio Perm			0.00									0.01
v/c Ratio	0.02		0.02	0.24	0.13		0.66	0.34			0.17	0.02
Uniform Delay, d1	42.1		42.1	43.1	42.1		54.5	18.5			26.7	25.2
Progression Factor	1.00		1.00	1.00	1.00		1.38	0.61			1.00	1.00
Incremental Delay, d2	0.0		0.0	0.1	0.0		5.3	0.4			0.3	0.1
Delay (s)	42.1		42.1	43.2	42.1		80.7	11.7			27.0	25.3
Level of Service	D		D	D	D		F	B			C	C
Approach Delay (s)		42.1			42.5			23.0			26.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
6: 55th St & Montezuma Rd

Existing + Cumulative Proj + Total Proj AM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	535	353	13	4	867	307	46	19	19	83	1	142
Future Volume (veh/h)	535	353	13	4	867	307	46	19	19	83	1	142
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		0.86	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	582	384	14	4	942	334	50	21	21	91	0	154
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	646	2164	79	7	1559	672	126	53	53	284	0	109
Arrive On Green	0.19	0.62	0.62	0.01	0.88	0.88	0.14	0.14	0.14	0.08	0.00	0.08
Sat Flow, veh/h	3442	3476	126	1774	3539	1525	925	389	388	3548	0	1354
Grp Volume(v), veh/h	582	195	203	4	942	334	92	0	0	91	0	154
Grp Sat Flow(s),veh/h/ln	1721	1770	1833	1774	1770	1525	1702	0	0	1774	0	1354
Q Serve(g_s), s	20.9	5.5	5.9	0.3	8.5	5.8	6.2	0.0	0.0	3.1	0.0	10.1
Cycle Q Clear(g_c), s	20.9	5.9	5.9	0.3	8.5	5.8	6.2	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	646	1101	1141	7	1559	672	232	0	0	284	0	109
V/C Ratio(X)	0.91	0.18	0.18	0.54	0.60	0.50	0.40	0.00	0.00	0.32	0.00	1.42
Avail Cap(c_a), veh/h	699	1101	1141	56	1559	672	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	0.36	0.36	0.36	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	50.2	10.1	10.1	62.4	4.7	4.5	49.7	0.0	0.0	54.7	0.0	58.0
Incr Delay (d2), s/veh	14.4	0.4	0.3	8.2	0.6	1.0	0.4	0.0	0.0	0.7	0.0	233.3
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	3.0	3.1	0.2	3.8	2.4	3.0	0.0	0.0	1.5	0.0	10.8
LnGrp Delay(d),s/veh	64.7	10.4	10.4	70.5	5.3	5.5	50.1	0.0	0.0	55.4	0.0	291.2
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		980			1280			92			245	
Approach Delay, s/veh		42.6			5.6			50.1			203.6	
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	84.0		15.0	27.8	81.1		22.1
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	2.3	7.9		12.1	22.9	10.5		8.2
Green Ext Time (p_c), s	0.0	20.5		0.0	0.6	16.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (veh/h)	86	416	11	67	1085	311	37	14	94	100	9	57
Future Volume (veh/h)	86	416	11	67	1085	311	37	14	94	100	9	57
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	93	452	12	73	1179	338	40	15	102	109	10	62
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	1709	45	92	1335	376	64	24	163	243	22	286
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	3516	93	1774	2705	761	388	149	1014	1631	150	1449
Grp Volume(v), veh/h	93	227	237	73	764	753	157	0	0	119	0	62
Grp Sat Flow(s),veh/h/ln	1774	1770	1840	1774	1770	1697	1551	0	0	1781	0	1449
Q Serve(g_s), s	5.6	0.6	0.6	5.1	43.8	46.9	11.8	0.0	0.0	7.7	0.0	4.5
Cycle Q Clear(g_c), s	5.6	0.6	0.6	5.1	43.8	46.9	11.8	0.0	0.0	7.7	0.0	4.5
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	860	894	92	874	838	251	0	0	265	0	286
V/C Ratio(X)	1.18	0.26	0.26	0.79	0.87	0.90	0.63	0.00	0.00	0.45	0.00	0.22
Avail Cap(c_a), veh/h	79	860	894	121	874	838	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	0.55	0.55	0.55	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	0.9	0.9	58.0	18.5	19.0	49.3	0.0	0.0	48.9	0.0	42.8
Incr Delay (d2), s/veh	157.0	0.7	0.7	9.8	7.0	8.8	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	6.2	0.4	0.4	2.8	22.8	23.7	5.2	0.0	0.0	3.8	0.0	1.8
LnGrp Delay(d),s/veh	214.4	1.7	1.6	67.8	25.5	27.8	50.3	0.0	0.0	49.4	0.0	43.0
LnGrp LOS	F	A	A	E	C	C	D			D		D
Approach Vol, veh/h		557			1590			157			181	
Approach Delay, s/veh		37.2			28.5			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	11.0	68.2		23.6	10.0	67.2		25.2
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	6.6	* 38		31.0	5.6	41.2		29.0
Max Q Clear Time (g_c+I1), s	7.1	2.6		9.7	7.6	48.9		13.8
Green Ext Time (p_c), s	0.0	31.2		0.4	0.0	0.0		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		33.3
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (veh/h)	0	0	0	245	0	92	0	906	331	0	1058	686
Future Volume (veh/h)	0	0	0	245	0	92	0	906	331	0	1058	686
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	987	0	0	1150	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	987	0	0	1150	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	9.7	0.0
Cycle Q Clear(g_c), s				7.6	0.0	0.0	0.0	0.0	0.0	0.0	9.7	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	0.35	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	0.87	0.00	0.00	1.00	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	0.4	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
%ile BackOfQ(50%),veh/ln				4.1	0.0	0.0	0.0	0.1	0.0	0.0	4.8	0.0
LnGrp Delay(d),s/veh				54.4	0.0	0.0	0.0	0.3	0.0	0.0	3.5	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					266			987			1150	
Approach Delay, s/veh					54.4			0.3			3.5	
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				11.7		9.6
Green Ext Time (p_c), s		18.0				17.7		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		7.8
HCM 2010 LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Traffic Volume (vph)	355	6	1263	6	0	0	0	886	227	0	1017	286
Future Volume (vph)	355	6	1263	6	0	0	0	886	227	0	1017	286
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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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)	386	0	1373	6	0	0	0	963	247	0	1105	311
RTOR Reduction (vph)	0	0	0	6	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	386	0	1373	0	0	0	0	963	247	0	1105	311
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	15.0		47.9					72.5	100.0		39.6	100.0
Effective Green, g (s)	15.0		47.9					72.5	100.0		39.6	100.0
Actuated g/C Ratio	0.15		0.48					0.72	1.00		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)	514		1729					2565	1536		1401	1536
v/s Ratio Prot	0.11		c0.38					0.27			c0.31	
v/s Ratio Perm									0.16			0.20
v/c Ratio	0.75		0.79					0.38	0.16		0.79	0.20
Uniform Delay, d1	40.7		21.9					5.2	0.0		26.5	0.0
Progression Factor	1.00		1.00					0.25	1.00		1.03	1.00
Incremental Delay, d2	5.4		2.4					0.2	0.1		4.1	0.3
Delay (s)	46.1		24.3					1.5	0.1		31.5	0.3
Level of Service	D		C					A	A		C	A
Approach Delay (s)		29.1			0.0			1.2			24.7	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	69.9%	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)	89	20	17	79	65	251	96	775	77	545	1257	439
Future Volume (veh/h)	89	20	17	79	65	251	96	775	77	545	1257	439
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	62	18	86	71	273	104	842	84	592	1410	477
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	175	51	95	79	394	117	1474	650	527	2585	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	1371	398	983	820	1583	1774	3539	1561	3442	5085	2732
Grp Volume(v), veh/h	68	0	80	157	0	273	104	842	84	592	1410	477
Grp Sat Flow(s),veh/h/ln	1774	0	1769	1813	0	1583	1774	1770	1561	1721	1695	1366
Q Serve(g_s), s	3.5	0.0	4.1	8.6	0.0	9.6	5.8	18.2	3.3	15.3	25.4	11.4
Cycle Q Clear(g_c), s	3.5	0.0	4.1	8.6	0.0	9.6	5.8	18.2	3.3	15.3	25.4	11.4
Prop In Lane	1.00		0.22	0.55		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	0	226	174	0	394	117	1474	650	527	2585	1744
V/C Ratio(X)	0.30	0.00	0.35	0.90	0.00	0.69	0.89	0.57	0.13	1.12	0.55	0.27
Avail Cap(c_a), veh/h	568	0	566	174	0	394	117	1474	650	527	2585	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	0.51	0.51	0.51
Uniform Delay (d), s/veh	39.6	0.0	39.9	44.7	0.0	34.1	46.3	22.3	18.0	47.5	31.0	14.7
Incr Delay (d2), s/veh	0.3	0.0	0.4	40.6	0.0	4.3	50.4	1.6	0.4	68.8	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	6.2	0.0	7.3	4.5	9.2	1.5	12.3	12.0	5.9
LnGrp Delay(d),s/veh	39.8	0.0	40.2	85.4	0.0	38.4	96.7	24.0	18.4	116.3	31.5	14.9
LnGrp LOS	D		D	F		D	F	C	B	F	C	B
Approach Vol, veh/h		148			430			1030			2479	
Approach Delay, s/veh		40.0			55.5			30.8			48.5	
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	20.2	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	20.2		6.1	7.8	27.4		11.6
Green Ext Time (p_c), s	0.0	2.1		0.4	0.0	4.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.5
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	96	1009	71	325	1047
Future Vol, veh/h	0	96	1009	71	325	1047
Conflicting Peds, #/hr	0	30	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	104	1097	77	353	1138

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2393	588	0	0	1117	0
Stage 1	1117	-	-	-	-	-
Stage 2	1276	-	-	-	-	-
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	28	452	-	-	621	-
Stage 1	275	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	11	437	-	-	611	-
Mov Cap-2 Maneuver	11	-	-	-	-	-
Stage 1	270	-	-	-	-	-
Stage 2	84	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	4.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 437	611	-
HCM Lane V/C Ratio	-	- 0.239	0.576	-
HCM Control Delay (s)	-	- 15.8	18.7	-
HCM Lane LOS	-	- C	C	-
HCM 95th %tile Q(veh)	-	- 0.9	3.7	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	298	89	21	699	198	590	922	52	105	461	314
Future Volume (veh/h)	183	298	89	21	699	198	590	922	52	105	461	314
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	1863
Adj Flow Rate, veh/h	199	324	97	23	760	215	641	1002	57	114	501	341
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	220	1345	576	56	1019	432	589	1044	59	233	845	354
Arrive On Green	0.25	0.76	0.76	0.03	0.29	0.29	0.20	0.31	0.31	0.13	0.24	0.24
Sat Flow, veh/h	1774	3539	1514	1774	3539	1498	3442	3393	193	1774	3539	1485
Grp Volume(v), veh/h	199	324	97	23	760	215	641	523	536	114	501	341
Grp Sat Flow(s),veh/h/ln	1774	1770	1514	1774	1770	1498	1721	1770	1816	1774	1770	1485
Q Serve(g_s), s	13.7	3.4	1.2	1.6	24.5	10.7	23.1	36.5	36.6	7.5	15.8	21.1
Cycle Q Clear(g_c), s	13.7	3.4	1.2	1.6	24.5	10.7	23.1	36.5	36.6	7.5	15.8	21.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	220	1345	576	56	1019	432	589	545	559	233	845	354
V/C Ratio(X)	0.91	0.24	0.17	0.41	0.75	0.50	0.93	0.96	0.96	0.49	0.59	0.96
Avail Cap(c_a), veh/h	220	1345	576	83	1019	432	599	546	561	263	899	377
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	9.8	3.0	59.8	40.7	18.9	49.5	42.8	42.8	50.8	42.5	25.8
Incr Delay (d2), s/veh	35.0	0.4	0.6	1.8	5.0	4.1	18.5	28.6	28.1	0.6	1.1	35.7
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	8.8	1.7	0.6	0.8	12.7	4.9	12.7	22.2	22.7	3.7	7.8	12.1
LnGrp Delay(d),s/veh	81.7	10.2	3.6	61.6	45.6	23.0	68.0	71.4	71.0	51.4	43.6	61.6
LnGrp LOS	F	B	A	E	D	C	E	E	E	D	D	E
Approach Vol, veh/h		620			998			1700			956	
Approach Delay, s/veh		32.1			41.1			70.0			50.9	
Approach LOS		C			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	20.9	43.5	8.4	52.8	29.6	35.2	20.0	41.2
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	18.7	38.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	9.5	38.6	3.6	5.4	25.1	23.1	15.7	26.5
Green Ext Time (p_c), s	1.6	0.2	0.0	22.0	0.2	3.3	0.0	6.1

Intersection Summary	
HCM 2010 Ctrl Delay	53.5
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
1: Collwood Blvd & Montezuma Rd

Existing + Cumulative Proj + Total Proj PM
2/15/2017

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2007	1019	133	1499	597	71
Future Volume (veh/h)	2007	1019	133	1499	597	71
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	2113	1073	140	1578	628	75
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	2149	1247	138	2540	692	318
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	2113	1073	140	1578	628	75
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583
Q Serve(g_s), s	78.0	60.4	10.4	0.0	23.9	5.3
Cycle Q Clear(g_c), s	78.0	60.4	10.4	0.0	23.9	5.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2149	1247	138	2540	692	318
V/C Ratio(X)	0.98	0.86	1.02	0.62	0.91	0.24
Avail Cap(c_a), veh/h	2149	1247	138	2540	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.60	0.60	1.00	1.00
Uniform Delay (d), s/veh	25.7	8.3	56.6	0.0	52.3	44.9
Incr Delay (d2), s/veh	15.8	7.9	63.9	0.7	9.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.2	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	42.8	27.7	7.5	0.2	12.3	2.3
LnGrp Delay(d),s/veh	41.5	16.2	120.6	0.7	62.0	45.0
LnGrp LOS	D	B	F	A	E	D
Approach Vol, veh/h	3186			1718	703	
Approach Delay, s/veh	33.0			10.5	60.2	
Approach LOS	C			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	87.9				102.7		31.3
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	80.0				2.0		25.9
Green Ext Time (p_c), s	0.0	0.0				86.2		1.0

Intersection Summary		
HCM 2010 Ctrl Delay		29.5
HCM 2010 LOS		C

Notes

HCM 2010 Signalized Intersection Summary
2: Montezuma Rd & Yerba Santa Dr

Existing + Cumulative Proj + Total Proj PM
2/15/2017

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	128	1950	1589	21	13	73
Future Volume (veh/h)	128	1950	1589	21	13	73
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	138	2097	1676	23	14	78
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	161	2882	2468	34	23	129
Arrive On Green	0.18	1.00	0.69	0.69	0.10	0.10
Sat Flow, veh/h	1774	3632	3666	49	236	1317
Grp Volume(v), veh/h	138	2097	829	870	93	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1852	1570	0
Q Serve(g_s), s	10.1	0.0	36.5	36.7	7.6	0.0
Cycle Q Clear(g_c), s	10.1	0.0	36.5	36.7	7.6	0.0
Prop In Lane	1.00			0.03	0.15	0.84
Lane Grp Cap(c), veh/h	161	2882	1222	1279	154	0
V/C Ratio(X)	0.86	0.73	0.68	0.68	0.60	0.00
Avail Cap(c_a), veh/h	318	2882	1222	1279	597	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	54.0	0.0	12.1	12.1	57.9	0.0
Incr Delay (d2), s/veh	0.5	0.1	3.0	2.9	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	18.8	19.7	3.4	0.0
LnGrp Delay(d),s/veh	54.5	0.1	15.1	15.0	59.3	0.0
LnGrp LOS	D	A	B	B	E	
Approach Vol, veh/h		2235	1699		93	
Approach Delay, s/veh		3.5	15.1		59.3	
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		115.7		18.3	16.6	99.2		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 72		51.0	24.0	42.9		
Max Q Clear Time (g_c+I1), s		2.0		9.6	12.1	38.7		
Green Ext Time (p_c), s		70.0		0.2	0.1	4.2		

Intersection Summary		
HCM 2010 Ctrl Delay		9.7
HCM 2010 LOS		A

Notes

Intersection									
Intersection Delay, s/veh	14.7								
Intersection LOS	B								

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Traffic Vol, veh/h	0	466	12	0	64	261	0	0	87
Future Vol, veh/h	0	466	12	0	64	261	0	0	87
Peak Hour Factor	0.92	0.87	0.87	0.92	0.87	0.87	0.92	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	536	14	0	74	300	0	0	100
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	16.9	12.6	10.8
HCM LOS	C	B	B

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	90%	0%
Vol Thru, %	100%	0%	0%	3%	100%
Vol Right, %	0%	100%	0%	7%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	64	261	311	167	87
LT Vol	0	0	311	155	0
Through Vol	64	0	0	0	87
RT Vol	0	261	0	12	0
Lane Flow Rate	74	300	357	192	100
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.129	0.467	0.633	0.336	0.178
Departure Headway (Hd)	6.319	5.608	6.377	6.29	6.413
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	567	642	568	573	559
Service Time	4.058	3.348	4.101	4.014	4.453
HCM Lane V/C Ratio	0.131	0.467	0.629	0.335	0.179
HCM Control Delay	10	13.2	19.5	12.2	10.8
HCM Lane LOS	A	B	C	B	B
HCM 95th-tile Q	0.4	2.5	4.4	1.5	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	65	77	307	521	38
Future Volume (veh/h)	21	65	77	307	521	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			0.42	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	23	72	86	341	616	0
Adj No. of Lanes	1	1	1	1	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	0
Cap, veh/h	72	671	503	1026	1900	865
Arrive On Green	0.04	0.36	0.27	0.27	0.54	0.00
Sat Flow, veh/h	1774	1863	1863	660	3548	1615
Grp Volume(v), veh/h	23	72	86	341	616	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	660	1774	1615
Q Serve(g_s), s	1.1	2.3	3.1	18.5	8.7	0.0
Cycle Q Clear(g_c), s	1.1	2.3	3.1	18.5	8.7	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	72	671	503	1026	1900	865
V/C Ratio(X)	0.32	0.11	0.17	0.33	0.33	0.00
Avail Cap(c_a), veh/h	212	819	505	1027	1900	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.4	18.9	24.8	3.5	11.6	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.1	0.1	0.5	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	0.6	1.2	1.6	8.4	4.3	0.0
LnGrp Delay(d),s/veh	42.4	19.0	24.9	3.6	12.1	0.0
LnGrp LOS	D	B	C	A	B	
Approach Vol, veh/h		95	427		616	
Approach Delay, s/veh		24.6	7.9		12.1	
Approach LOS		C	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.9		52.0	8.0	28.9
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				4.3		10.7	3.1	20.5
Green Ext Time (p_c), s				4.0		2.0	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	141	186	15	51	65	334	0	0	623	10
Future Volume (vph)	17	0	141	186	15	51	65	334	0	0	623	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.87	1.00	0.96		1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.95		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1383	1616	3014		1770	3539			3539	1527
Flt Permitted	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1383	1616	3014		1770	3539			3539	1527
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	19	0	160	205	17	58	74	380	0	0	708	11
RTOR Reduction (vph)	0	0	125	0	42	0	0	0	0	0	0	7
Lane Group Flow (vph)	19	0	35	102	136	0	74	380	0	0	708	4
Confl. Peds. (#/hr)			78			70						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	29.0		29.0	24.7	24.7		8.8	65.6			52.4	52.4
Effective Green, g (s)	29.0		29.0	24.7	24.7		8.8	65.6			52.4	52.4
Actuated g/C Ratio	0.22		0.22	0.18	0.18		0.07	0.49			0.39	0.39
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	383		299	296	555		116	1732			1383	597
v/s Ratio Prot	0.01			c0.06	0.05		c0.04	0.11			c0.20	
v/s Ratio Perm			c0.03									0.00
v/c Ratio	0.05		0.12	0.34	0.25		0.64	0.22			0.51	0.01
Uniform Delay, d1	41.6		42.2	47.6	46.7		61.0	19.6			31.1	24.9
Progression Factor	1.00		1.00	1.00	1.00		0.97	1.50			1.00	1.00
Incremental Delay, d2	0.0		0.1	0.3	0.1		6.8	0.2			1.4	0.0
Delay (s)	41.6		42.3	47.9	46.8		66.2	29.7			32.4	24.9
Level of Service	D		D	D	D		E	C			C	C
Approach Delay (s)		42.2			47.2			35.6			32.3	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	76.4%	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)	387	879	75	24	585	211	50	11	11	285	23	472
Future Volume (veh/h)	387	879	75	24	585	211	50	11	11	285	23	472
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	421	955	82	26	636	229	54	12	12	328	0	513
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	473	1380	118	33	1068	455	152	34	34	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	282	1774	3539	1507	1193	265	265	3548	0	1504
Grp Volume(v), veh/h	421	515	522	26	636	229	78	0	0	328	0	513
Grp Sat Flow(s),veh/h/ln	1721	1770	1791	1774	1770	1507	1723	0	0	1774	0	1504
Q Serve(g_s), s	16.1	31.9	31.9	2.0	20.5	16.8	5.5	0.0	0.0	9.8	0.0	38.2
Cycle Q Clear(g_c), s	16.1	31.9	31.9	2.0	20.5	16.8	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		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	473	745	754	33	1068	455	220	0	0	1011	0	429
V/C Ratio(X)	0.89	0.69	0.69	0.79	0.60	0.50	0.35	0.00	0.00	0.32	0.00	1.20
Avail Cap(c_a), veh/h	524	745	754	74	1068	455	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	0.88	0.88	0.88	1.00	0.00	0.00	0.88	0.00	0.88
Uniform Delay (d), s/veh	56.8	31.7	31.7	65.5	39.8	38.5	53.4	0.0	0.0	37.7	0.0	47.9
Incr Delay (d2), s/veh	15.0	5.2	5.2	13.0	2.2	3.5	0.4	0.0	0.0	0.2	0.0	107.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	16.7	16.9	1.1	10.3	7.4	2.7	0.0	0.0	4.8	0.0	28.6
LnGrp Delay(d),s/veh	71.8	36.9	36.9	78.5	42.0	42.0	53.7	0.0	0.0	37.9	0.0	155.1
LnGrp LOS	E	D	D	E	D	D	D			D		F
Approach Vol, veh/h		1458			891			78			841	
Approach Delay, s/veh		47.0			43.0			53.7			109.4	
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	22.8	46.0		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	33.9		40.2	18.1	22.5		7.5
Green Ext Time (p_c), s	0.0	5.6		0.0	0.3	3.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	62.1
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	1032	14	97	846	165	21	10	123	199	6	153
Future Volume (veh/h)	66	1032	14	97	846	165	21	10	123	199	6	153
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		0.95
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	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	72	1122	15	105	702	179	23	11	134	216	7	166
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	91	1631	22	126	1320	336	33	16	193	302	10	339
Arrive On Green	0.05	0.46	0.46	0.14	0.95	0.95	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1774	3573	48	1774	2771	706	207	99	1209	1721	56	1467
Grp Volume(v), veh/h	72	556	581	105	448	433	168	0	0	223	0	166
Grp Sat Flow(s),veh/h/ln	1774	1770	1851	1774	1770	1708	1516	0	0	1777	0	1467
Q Serve(g_s), s	5.6	34.8	34.8	8.1	3.4	3.4	14.7	0.0	0.0	16.6	0.0	13.8
Cycle Q Clear(g_c), s	5.6	34.8	34.8	8.1	3.4	3.4	14.7	0.0	0.0	16.6	0.0	13.8
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	91	808	845	126	843	813	242	0	0	312	0	339
V/C Ratio(X)	0.79	0.69	0.69	0.84	0.53	0.53	0.69	0.00	0.00	0.71	0.00	0.49
Avail Cap(c_a), veh/h	139	808	845	147	843	813	315	0	0	395	0	407
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)	0.83	0.83	0.83	0.76	0.76	0.76	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.7	30.1	30.1	59.3	1.8	1.8	55.6	0.0	0.0	54.4	0.0	47.2
Incr Delay (d2), s/veh	6.4	4.0	3.8	20.5	1.8	1.9	2.3	0.0	0.0	2.8	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	2.9	17.9	18.6	4.7	1.7	1.6	6.3	0.0	0.0	8.4	0.0	5.6
LnGrp Delay(d),s/veh	72.1	34.1	33.9	79.8	3.7	3.7	57.9	0.0	0.0	57.2	0.0	47.6
LnGrp LOS	E	C	C	E	A	A	E			E		D
Approach Vol, veh/h		1209			986			168			389	
Approach Delay, s/veh		36.3			11.8			57.9			53.1	
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	14.3	58.9		29.5	11.6	71.7		27.3
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	11.6	* 49		31.1	11.0	49.6		29.1
Max Q Clear Time (g_c+I1), s	10.1	36.8		18.6	7.6	5.4		16.7
Green Ext Time (p_c), s	0.0	11.1		0.8	0.0	33.7		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		31.2
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	478	0	360	0	943	1234	0	660	446
Future Volume (veh/h)	0	0	0	478	0	360	0	943	1234	0	660	446
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				520	0	0	0	1025	0	0	717	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				636	0	293	0	2514	1124	0	2514	1124
Arrive On Green				0.18	0.00	0.00	0.00	1.00	0.00	0.00	0.71	0.00
Sat Flow, veh/h				3442	0	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h				520	0	0	0	1025	0	0	717	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s				14.5	0.0	0.0	0.0	0.0	0.0	0.0	7.4	0.0
Cycle Q Clear(g_c), s				14.5	0.0	0.0	0.0	0.0	0.0	0.0	7.4	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				636	0	293	0	2514	1124	0	2514	1124
V/C Ratio(X)				0.82	0.00	0.00	0.00	0.41	0.00	0.00	0.29	0.00
Avail Cap(c_a), veh/h				960	0	442	0	2514	1124	0	2514	1124
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	0.54	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				39.1	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0
Incr Delay (d2), s/veh				3.4	0.0	0.0	0.0	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				7.2	0.0	0.0	0.0	0.1	0.0	0.0	3.7	0.0
LnGrp Delay(d),s/veh				42.6	0.0	0.0	0.0	0.3	0.0	0.0	5.6	0.0
LnGrp LOS				D				A			A	
Approach Vol, veh/h					520			1025			717	
Approach Delay, s/veh					42.6			0.3			5.6	
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		76.4				76.4		23.6
Change Period (Y+Rc), s		5.4				5.4		5.1
Max Green Setting (Gmax), s		61.6				61.5		27.9
Max Q Clear Time (g_c+I1), s		2.0				9.4		16.5
Green Ext Time (p_c), s		12.0				11.8		2.0

Intersection Summary		
HCM 2010 Ctrl Delay		11.7
HCM 2010 LOS		B

HCM Signalized Intersection Capacity Analysis — Existing + Cumulative Proj + Total Proj PM
9: College Ave & I-8EB Ramp — 2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	577	6	765	6	0	0	0	1601	386	0	879	258
Future Volume (vph)	577	6	765	6	0	0	0	1601	386	0	879	258
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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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)	627	0	832	6	0	0	0	1740	420	0	955	280
RTOR Reduction (vph)	0	0	0	6	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	627	0	832	0	0	0	0	1740	420	0	955	280
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	20.7		53.9					66.8	100.0		33.6	100.0
Effective Green, g (s)	20.7		53.9					66.8	100.0		33.6	100.0
Actuated g/C Ratio	0.21		0.54					0.07	1.00		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)	710		1945					2364	1536		1189	1536
v/s Ratio Prot	c0.18		0.23					c0.49			c0.27	
v/s Ratio Perm									0.27			0.18
v/c Ratio	0.88		0.43					0.74	0.27		0.80	0.18
Uniform Delay, d1	38.5		13.8					10.6	0.0		30.2	0.0
Progression Factor	1.00		1.00					0.55	1.00		0.71	1.00
Incremental Delay, d2	12.2		0.1					0.2	0.0		5.4	0.2
Delay (s)	50.7		13.9					6.2	0.0		27.0	0.2
Level of Service	D		B					A	A		C	A
Approach Delay (s)		29.7			0.0			5.0			20.9	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary — Existing + Cumulative Proj + Total Proj PM
10: College Ave & Canyon Crest Dr — 2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	392	44	29	84	13	330	25	1267	81	295	1223	127
Future Volume (veh/h)	392	44	29	84	13	330	25	1267	81	295	1223	127
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	490	0	0	91	14	359	27	1377	88	321	1329	138
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	713	374	0	76	12	206	37	1635	722	279	2680	2001
Arrive On Green	0.20	0.00	0.00	0.05	0.05	0.05	0.02	0.46	0.46	0.08	0.53	0.53
Sat Flow, veh/h	3548	1863	0	1547	236	1583	1774	3539	1563	3442	5085	2734
Grp Volume(v), veh/h	490	0	0	105	0	359	27	1377	88	321	1329	138
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1785	0	1583	1774	1770	1563	1721	1695	1367
Q Serve(g_s), s	12.8	0.0	0.0	4.9	0.0	4.9	1.5	34.3	3.2	8.1	16.7	1.4
Cycle Q Clear(g_c), s	12.8	0.0	0.0	4.9	0.0	4.9	1.5	34.3	3.2	8.1	16.7	1.4
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	713	374	0	87	0	206	37	1635	722	279	2680	2001
V/C Ratio(X)	0.69	0.00	0.00	1.20	0.00	1.74	0.72	0.84	0.12	1.15	0.50	0.07
Avail Cap(c_a), veh/h	1135	596	0	87	0	206	101	1635	722	279	2680	2001
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	0.74	0.74	0.74
Uniform Delay (d), s/veh	37.0	0.0	0.0	47.6	0.0	43.5	48.7	23.7	15.3	46.0	15.1	3.9
Incr Delay (d2), s/veh	0.4	0.0	0.0	159.7	0.0	354.2	22.7	5.4	0.3	94.3	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	6.3	0.0	0.0	6.3	0.0	25.9	1.0	17.9	1.4	7.5	7.9	1.0
LnGrp Delay(d),s/veh	37.5	0.0	0.0	207.2	0.0	397.7	71.4	29.1	15.7	140.3	15.6	3.9
LnGrp LOS	D			F		F	E	C	B	F	B	A
Approach Vol, veh/h		490			464			1492			1788	
Approach Delay, s/veh		37.5			354.6			29.1			37.1	
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	52.2		25.0	6.5	58.7		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	36.3		14.8	3.5	18.7		6.9
Green Ext Time (p_c), s	0.0	0.0		1.4	0.0	16.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	69.1
HCM 2010 LOS	E

Notes

Intersection	
Int Delay, s/veh	24.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	455	1115	40	160	1177
Future Vol, veh/h	0	455	1115	40	160	1177
Conflicting Peds, #/hr	0	30	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	495	1212	43	174	1279

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2220	646	0	0	1232	0
Stage 1	1232	-	-	-	-	-
Stage 2	988	-	-	-	-	-
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	37	~ 414	-	-	561	-
Stage 1	238	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	24	~ 400	-	-	552	-
Mov Cap-2 Maneuver	24	-	-	-	-	-
Stage 1	234	-	-	-	-	-
Stage 2	216	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	155.7	0	1.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 400	552	-
HCM Lane V/C Ratio	-	- 1.236	0.315	-
HCM Control Delay (s)	-	- 155.7	14.5	-
HCM Lane LOS	-	- F	B	-
HCM 95th %tile Q(veh)	-	- 20.8	1.3	-

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)	348	932	462	181	399	199	354	616	48	208	744	302
Future Volume (veh/h)	349	932	462	181	399	199	354	616	48	208	744	302
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	1863
Adj Flow Rate, veh/h	379	1013	502	197	434	216	385	670	52	226	809	328
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	324	1411	605	160	1082	459	488	771	60	256	854	358
Arrive On Green	0.37	0.80	0.80	0.09	0.31	0.31	0.14	0.23	0.23	0.14	0.24	0.24
Sat Flow, veh/h	1774	3539	1517	1774	3539	1502	3442	3310	257	1774	3539	1486
Grp Volume(v), veh/h	379	1013	502	197	434	216	385	358	364	226	809	328
Grp Sat Flow(s),veh/h/ln	1774	1770	1517	1774	1770	1502	1721	1770	1797	1774	1770	1486
Q Serve(g_s), s	25.8	19.0	18.4	12.6	13.6	11.4	14.4	27.2	27.3	17.5	31.5	20.2
Cycle Q Clear(g_c), s	25.8	19.0	18.4	12.6	13.6	11.4	14.4	27.2	27.3	17.5	31.5	20.2
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	324	1411	605	160	1082	459	488	412	418	256	854	358
V/C Ratio(X)	1.17	0.72	0.83	1.23	0.40	0.47	0.78	0.87	0.87	0.88	0.95	0.92
Avail Cap(c_a), veh/h	324	1411	605	160	1082	459	529	454	461	299	857	360
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)	0.74	0.74	0.74	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	10.5	5.0	63.7	38.5	19.1	58.5	51.6	51.7	58.7	52.3	23.2
Incr Delay (d2), s/veh	97.7	2.4	9.5	147.6	1.1	3.4	3.0	16.0	16.0	20.9	19.3	27.4
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	21.2	9.2	8.7	12.7	6.8	5.2	7.0	15.1	15.4	10.1	17.7	10.9
LnGrp Delay(d),s/veh	142.1	12.8	14.5	211.3	39.6	22.5	61.5	67.6	67.7	79.7	71.5	50.6
LnGrp LOS	F	B	B	F	D	C	E	E	E	E	E	D
Approach Vol, veh/h		1894			847			1087			1363	
Approach Delay, s/veh		39.2			75.2			65.6			67.9	
Approach LOS		D			E			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	24.6	37.7	17.0	60.7	23.4	38.9	30.0	47.7
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	23.6	35.9	12.6	49.1	25.6	33.9	25.6	36.1
Max Q Clear Time (g_c+I1), s	19.5	29.3	14.6	21.0	16.4	33.5	27.8	15.6
Green Ext Time (p_c), s	0.7	2.4	0.0	24.4	1.1	0.3	0.0	18.4

Intersection Summary	
HCM 2010 Ctrl Delay	58.1
HCM 2010 LOS	E

APPENDIX H

HORIZON YEAR ANALYSIS CALCULATION SHEETS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1110	530	80	1500	1100	70
Future Volume (veh/h)	1110	530	80	1500	1100	70
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	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	1207	576	87	1630	1196	76
Adj No. of Lanes	2	1	1	2	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	2
Cap, veh/h	1596	1267	108	1935	1263	581
Arrive On Green	0.45	0.45	0.12	1.00	0.37	0.37
Sat Flow, veh/h	3632	1522	1774	3632	3442	1583
Grp Volume(v), veh/h	1207	576	87	1630	1196	76
Grp Sat Flow(s),veh/h/ln	1770	1522	1774	1770	1721	1583
Q Serve(g_s), s	35.8	14.0	6.0	0.0	42.5	4.0
Cycle Q Clear(g_c), s	35.8	14.0	6.0	0.0	42.5	4.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1596	1267	108	1935	1263	581
V/C Ratio(X)	0.76	0.45	0.81	0.84	0.95	0.13
Avail Cap(c_a), veh/h	1596	1267	169	1935	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	28.8	3.4	54.6	0.0	38.7	26.5
Incr Delay (d2), s/veh	3.4	1.2	4.9	3.3	12.8	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	18.2	6.2	3.1	0.9	22.3	1.8
LnGrp Delay(d),s/veh	32.2	4.5	59.5	3.3	51.5	26.6
LnGrp LOS	C	A	E	A	D	C
Approach Vol, veh/h	1783			1717	1272	
Approach Delay, s/veh	23.3			6.1	50.0	
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	12.1	63.3				75.4		50.6
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	8.0	37.8				2.0		44.5
Green Ext Time (p_c), s	0.0	11.0				59.8		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	24.2
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1130	1440	30	10	140
Future Volume (veh/h)	50	1130	1440	30	10	140
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	56	1270	1618	34	11	157
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	72	2708	2443	51	14	206
Arrive On Green	0.08	1.00	0.69	0.69	0.14	0.14
Sat Flow, veh/h	1774	3632	3635	74	102	1453
Grp Volume(v), veh/h	56	1270	807	845	169	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1847	1564	0
Q Serve(g_s), s	3.9	0.0	32.8	33.0	13.1	0.0
Cycle Q Clear(g_c), s	3.9	0.0	32.8	33.0	13.1	0.0
Prop In Lane	1.00			0.04	0.07	0.93
Lane Grp Cap(c), veh/h	72	2708	1220	1274	222	0
V/C Ratio(X)	0.78	0.47	0.66	0.66	0.76	0.00
Avail Cap(c_a), veh/h	310	2708	1220	1274	608	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	11.2	11.2	52.0	0.0
Incr Delay (d2), s/veh	3.9	0.3	2.8	2.7	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	2.0	0.1	16.9	17.6	5.8	0.0
LnGrp Delay(d),s/veh	61.2	0.3	14.0	13.9	54.0	0.0
LnGrp LOS	E	A	B	B	D	
Approach Vol, veh/h		1326	1652		169	
Approach Delay, s/veh		2.9	14.0		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	9.5	93.5		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 66		49.0	22.0	38.9		
Max Q Clear Time (g_c+I1), s		2.0		15.1	5.9	35.0		
Green Ext Time (p_c), s		62.8		0.3	0.0	3.9		

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	20.4
Intersection LOS	C

Movement	WBU	WBL	WBR	NBU	NBT	NBR	EBU	SBL	SBT
Traffic Vol, veh/h	0	120	30	0	50	628	0	0	60
Future Vol, veh/h	0	120	30	0	50	628	0	0	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	130	33	0	54	683	0	0	65
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.5	23.7	9.3
HCM LOS	B	C	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	67%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	33%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	628	80	60	60
LT Vol	0	0	80	40	0
Through Vol	50	0	0	0	60
RT Vol	0	628	0	20	0
Lane Flow Rate	54	683	87	65	65
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.077	0.832	0.166	0.117	0.101
Departure Headway (Hd)	5.093	4.39	6.863	6.459	5.565
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	702	819	526	558	638
Service Time	2.808	2.135	4.563	4.159	3.582
HCM Lane V/C Ratio	0.077	0.834	0.165	0.116	0.102
HCM Control Delay	8.3	24.9	10.9	10	9.3
HCM Lane LOS	A	C	B	A	A
HCM 95th-tile Q	0.2	9.5	0.6	0.4	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	59	61	675	110	30
Future Volume (veh/h)	50	59	61	675	110	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	66	734	76	80
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	615	440	1254	1015	924
Arrive On Green	0.04	0.33	0.24	0.24	0.57	0.57
Sat Flow, veh/h	1774	1863	1863	1474	1774	1615
Grp Volume(v), veh/h	54	64	66	734	76	80
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1474	1774	1615
Q Serve(g_s), s	2.9	2.3	2.7	18.0	1.8	2.1
Cycle Q Clear(g_c), s	2.9	2.3	2.7	18.0	1.8	2.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	75	615	440	1254	1015	924
V/C Ratio(X)	0.72	0.10	0.15	0.59	0.07	0.09
Avail Cap(c_a), veh/h	75	636	471	1278	1015	924
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	44.9	22.1	28.7	3.5	9.1	9.1
Incr Delay (d2), s/veh	25.5	0.0	0.1	0.4	0.1	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	1.9	1.2	1.4	19.3	0.9	3.0
LnGrp Delay(d),s/veh	70.4	22.1	28.8	3.9	9.2	9.3
LnGrp LOS	E	C	C	A	A	A
Approach Vol, veh/h		118	800		156	
Approach Delay, s/veh		44.2	6.0		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				36.2		58.7	8.9	27.3
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				4.3		4.1	4.9	20.0
Green Ext Time (p_c), s				0.2		0.4	0.0	1.3

Intersection Summary		
HCM 2010 Ctrl Delay		10.6
HCM 2010 LOS		B

Notes

HCM Signalized Intersection Capacity Analysis
5: 55th St & Hardy Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	40	130	30	90	160	670	0	0	210	40
Future Volume (vph)	10	0	40	130	30	90	160	670	0	0	210	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.9	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.91	1.00	0.95		1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.92		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1444	1610	2915		1770	3539			3539	1528
Flt Permitted	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1444	1610	2915		1770	3539			3539	1528
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	0	43	140	32	97	172	720	0	0	226	43
RTOR Reduction (vph)	0	0	35	6	78	0	0	0	0	0	0	28
Lane Group Flow (vph)	11	0	8	92	99	0	172	720	0	0	226	15
Confl. Peds. (#/hr)			51			55						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	23.2		23.2	24.5	24.5		15.7	63.6			43.5	43.5
Effective Green, g (s)	20.2		20.2	24.5	24.5		15.7	63.6			40.5	40.5
Actuated g/C Ratio	0.18		0.18	0.19	0.19		0.12	0.50			0.35	0.35
Clearance Time (s)	4.9		4.9	4.9	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	325		265	313	566		220	1786			1221	527
v/s Ratio Prot	c0.01			c0.06	0.03		c0.10	c0.20			0.06	
v/s Ratio Perm			0.01									0.01
v/c Ratio	0.03		0.03	0.29	0.17		0.78	0.40			0.19	0.03
Uniform Delay, d1	42.2		42.2	43.4	42.3		53.5	18.4			28.9	27.3
Progression Factor	1.00		1.00	1.00	1.00		1.30	0.62			1.00	1.00
Incremental Delay, d2	0.0		0.0	0.2	0.1		11.1	0.5			0.3	0.1
Delay (s)	42.2		42.2	43.6	42.4		80.8	12.5			29.2	27.4
Level of Service	D		D	D	D		F	B			C	C
Approach Delay (s)		42.2			42.8			25.7			28.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
6: 55th St & Montezuma Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	680	460	30	20	1067	406	80	30	30	160	20	160
Future Volume (veh/h)	680	460	30	20	1067	406	80	30	30	160	20	160
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	739	500	33	22	1160	441	87	33	33	125	0	174
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	1975	130	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	3358	221	1774	3539	1521	973	369	369	3548	0	1354
Grp Volume(v), veh/h	739	263	270	22	1160	441	153	0	0	125	0	174
Grp Sat Flow(s),veh/h/ln	1721	1770	1810	1774	1770	1521	1711	0	0	1774	0	1354
Q Serve(g_s), s	25.6	9.0	9.1	1.5	23.5	17.0	10.4	0.0	0.0	4.2	0.0	10.1
Cycle Q Clear(g_c), s	25.6	9.0	9.1	1.5	23.5	17.0	10.4	0.0	0.0	4.2	0.0	10.1
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	699	1041	1064	30	1423	612	269	0	0	284	0	109
V/C Ratio(X)	1.06	0.25	0.25	0.73	0.82	0.72	0.57	0.00	0.00	0.44	0.00	1.60
Avail Cap(c_a), veh/h	699	1041	1064	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	0.99	0.00	0.99
Uniform Delay (d), s/veh	50.2	12.5	12.6	60.6	9.7	9.1	49.1	0.0	0.0	55.3	0.0	58.0
Incr Delay (d2), s/veh	50.0	0.6	0.6	1.1	0.5	0.7	0.7	0.0	0.0	1.1	0.0	309.4
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	17.0	4.5	4.7	0.8	11.0	7.0	5.0	0.0	0.0	2.1	0.0	13.1
LnGrp Delay(d),s/veh	100.2	13.1	13.1	61.7	10.2	9.7	49.8	0.0	0.0	56.4	0.0	367.3
LnGrp LOS	F	B	B	E	B	A	D			E		F
Approach Vol, veh/h		1272			1623			153			299	
Approach Delay, s/veh		63.7			10.6			49.6			237.3	
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	11.1		12.1	27.6	25.5		12.4
Green Ext Time (p_c), s	0.0	29.2		0.0	0.0	12.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	52.9
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
7: Campanile Dr & Montezuma Rd

Horizon Year AM
2/13/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	547	30	88	1372	410	50	30	122	130	20	70
Future Volume (veh/h)	124	547	30	88	1372	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	595	33	96	1491	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	82	118	1256	354	71	44	176	252	39	295
Arrive On Green	0.07	0.87	0.87	0.13	0.93	0.93	0.18	0.18	0.18	0.16	0.16	0.16
Sat Flow, veh/h	1774	3396	188	1774	2703	762	390	238	960	1545	241	1459
Grp Volume(v), veh/h	135	310	318	96	945	992	220	0	0	163	0	76
Grp Sat Flow(s),veh/h/ln	1774	1770	1815	1774	1770	1695	1587	0	0	1786	0	1459
Q Serve(g_s), s	4.6	4.4	4.4	6.6	58.6	58.6	16.6	0.0	0.0	10.6	0.0	5.5
Cycle Q Clear(g_c), s	4.6	4.4	4.4	6.6	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	770	789	118	822	788	291	0	0	291	0	295
V/C Ratio(X)	2.08	0.40	0.40	0.82	1.15	1.26	0.76	0.00	0.00	0.56	0.00	0.26
Avail Cap(c_a), veh/h	65	770	789	149	822	788	365	0	0	439	0	417
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	0.11	0.11	0.11	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.4	4.9	4.9	53.9	4.4	4.4	48.8	0.0	0.0	48.6	0.0	42.6
Incr Delay (d2), s/veh	535.4	1.5	1.5	2.4	68.5	118.0	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	2.4	3.3	38.0	47.2	7.7	0.0	0.0	5.3	0.0	2.2
LnGrp Delay(d),s/veh	593.8	6.4	6.4	56.3	73.0	122.4	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		763			2033			220			239	
Approach Delay, s/veh		110.4			96.3			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	10.6	* 36		31.0	4.6	42.2		29.0				
Max Q Clear Time (g_c+I1), s	6.6	6.4		12.6	6.6	60.6		18.6				
Green Ext Time (p_c), s	0.0	29.1		0.5	0.0	0.0		0.4				

Intersection Summary	
HCM 2010 Ctrl Delay	93.1
HCM 2010 LOS	F

Notes

HCM 2010 Signalized Intersection Summary
8: College Ave & I-8WB Ramp

Horizon Year AM
2/13/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	389	0	120	0	1146	440	0	1431	866
Future Volume (veh/h)	0	0	0	389	0	120	0	1146	440	0	1431	866
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				423	0	0	0	1246	0	0	1555	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				423	0	0	0	1246	0	0	1555	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)				1.13	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	0.77	0.00	0.00	1.00	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				85.8	0.0	0.0	0.0	0.4	0.0	0.0	0.8	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				9.6	0.0	0.0	0.0	0.2	0.0	0.0	6.3	0.0
LnGrp Delay(d),s/veh				130.3	0.0	0.0	0.0	0.4	0.0	0.0	4.9	0.0
LnGrp LOS				F				A			A	
Approach Vol, veh/h					423			1246			1555	
Approach Delay, s/veh					130.3			0.4			4.9	
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		32.6				29.6		0.0				

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

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	1140	282	0	1460	360
Future Volume (vph)	446	0	1700	0	0	0	0	1140	282	0	1460	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	4.0		5.4	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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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	1239	307	0	1587	391
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	485	0	1848	0	0	0	0	1239	307	0	1587	391
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	16.5		47.9					71.0	100.0		39.6	100.0
Effective Green, g (s)	16.5		47.9					71.0	100.0		39.6	100.0
Actuated g/C Ratio	0.16		0.48					0.71	1.00		0.40	1.00
Clearance Time (s)	6.1		6.1								5.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	566		1729					2512	1536		1401	1536
v/s Ratio Prot	0.14		c0.51					0.35			c0.45	
v/s Ratio Perm									0.20			0.25
v/c Ratio	0.86		1.07					0.49	0.20		1.13	0.25
Uniform Delay, d1	40.6		26.1					6.5	0.0		30.2	0.0
Progression Factor	1.00		1.00					0.46	1.00		1.05	1.00
Incremental Delay, d2	11.8		42.7					0.1	0.0		66.8	0.3
Delay (s)	52.4		68.7					3.0	0.0		98.6	0.3
Level of Service	D		E					A	A		F	A
Approach Delay (s)		65.3			0.0			2.4			79.3	
Approach LOS		E			A			A			E	

Intersection Summary			
HCM 2000 Control Delay	53.5	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	92.4%	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)	112	30	30	105	87	323	133	987	165	805	1724	632
Future Volume (veh/h)	112	30	30	105	87	323	133	987	165	805	1724	632
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	94	72	33	114	95	351	145	1073	179	875	1874	687
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	248	187	76	95	79	394	117	1430	630	527	2522	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	1191	546	989	824	1583	1774	3539	1560	3442	5085	2730
Grp Volume(v), veh/h	94	0	105	209	0	351	145	1073	179	875	1874	687
Grp Sat Flow(s),veh/h/ln	1774	0	1738	1813	0	1583	1774	1770	1560	1721	1695	1365
Q Serve(g_s), s	4.8	0.0	5.5	9.6	0.0	9.6	6.6	25.9	7.7	15.3	35.1	16.6
Cycle Q Clear(g_c), s	4.8	0.0	5.5	9.6	0.0	9.6	6.6	25.9	7.7	15.3	35.1	16.6
Prop In Lane	1.00		0.31	0.55		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	248	0	243	174	0	394	117	1430	630	527	2522	1744
V/C Ratio(X)	0.38	0.00	0.43	1.20	0.00	0.89	1.24	0.75	0.28	1.66	0.74	0.39
Avail Cap(c_a), veh/h	568	0	556	174	0	394	117	1430	630	527	2522	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	39.1	0.0	39.4	45.2	0.0	36.2	46.7	25.5	20.1	47.5	35.7	16.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	132.5	0.0	20.8	160.6	3.7	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	2.4	0.0	2.7	11.2	0.0	11.6	8.4	13.4	3.5	29.1	16.5	6.7
LnGrp Delay(d),s/veh	39.4	0.0	39.8	177.7	0.0	57.0	207.3	29.2	21.2	346.0	35.9	16.1
LnGrp LOS	D		D	F		E	F	C	C	F	D	B
Approach Vol, veh/h		199			560			1397			3436	
Approach Delay, s/veh		39.6			102.1			46.6			110.9	
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	20.2	46.4		18.9	11.0	55.6		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	27.9		7.5	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

Intersection	
Int Delay, s/veh	15.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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	3238	768	0	0	1475	0
Stage 1	1475	-	-	-	-	-
Stage 2	1763	-	-	-	-	-
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	7	344	-	-	~ 453	-
Stage 1	177	-	-	-	-	-
Stage 2	123	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	7	333	-	-	~ 445	-
Mov Cap-2 Maneuver	7	-	-	-	-	-
Stage 1	174	-	-	-	-	-
Stage 2	121	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.2	0	28.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT
Capacity (veh/h)	-	-	333	~ 445	-
HCM Lane V/C Ratio	-	-	0.411	1.136	-
HCM Control Delay (s)	-	-	22.2	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)	284	369	110	40	880	261	752	1192	65	133	582	401
Future Volume (veh/h)	284	369	110	40	880	261	752	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		0.95	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	1863
Adj Flow Rate, veh/h	287	401	120	43	957	284	817	1296	71	145	633	436
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	220	1288	550	71	991	419	599	1104	60	217	863	363
Arrive On Green	0.21	0.61	0.61	0.04	0.28	0.28	0.20	0.32	0.32	0.12	0.24	0.24
Sat Flow, veh/h	1774	3539	1512	1774	3539	1497	3442	3402	186	1774	3539	1487
Grp Volume(v), veh/h	287	401	120	43	957	284	817	673	694	145	633	436
Grp Sat Flow(s),veh/h/ln	1774	1770	1512	1774	1770	1497	1721	1770	1819	1774	1770	1487
Q Serve(g_s), s	15.8	6.9	2.6	3.0	33.6	15.5	25.6	40.9	40.9	9.8	20.8	22.6
Cycle Q Clear(g_c), s	15.8	6.9	2.6	3.0	33.6	15.5	25.6	40.9	40.9	9.8	20.8	22.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	220	1288	550	71	991	419	599	574	590	217	863	363
V/C Ratio(X)	1.31	0.31	0.22	0.61	0.97	0.68	1.17	1.17	1.18	0.67	0.73	1.20
Avail Cap(c_a), veh/h	220	1288	550	83	991	419	599	574	590	235	899	378
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)	0.94	0.94	0.94	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	17.1	5.3	59.5	44.8	21.3	50.2	42.5	42.6	52.8	43.9	25.8
Incr Delay (d2), s/veh	165.3	0.6	0.9	4.4	21.4	8.5	90.7	94.6	96.0	4.8	3.1	114.7
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	17.7	3.4	1.2	1.6	19.4	7.4	20.9	35.0	36.2	5.1	10.5	20.8
LnGrp Delay(d),s/veh	215.2	17.6	6.1	63.9	66.2	29.9	140.9	137.1	138.5	57.6	47.0	140.5
LnGrp LOS	F	B	A	E	E	C	F	F	F	E	D	F
Approach Vol, veh/h		808			1284			2184			1214	
Approach Delay, s/veh		86.1			58.1			139.0			81.9	
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	19.8	46.0	9.4	50.8	30.0	35.8	20.0	40.2
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	16.7	40.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	11.8	42.9	5.0	8.9	27.6	24.6	17.8	35.6
Green Ext Time (p_c), s	1.5	0.0	0.0	25.9	0.0	3.6	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		99.6
HCM 2010 LOS		E

HCM 2010 Signalized Intersection Summary
1: Collwood Blvd & Montezuma Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2200	1150	150	1640	680	80
Future Volume (veh/h)	2200	1150	150	1640	680	80
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	2316	1211	158	1726	716	84
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	2110	1268	114	2454	776	357
Arrive On Green	0.60	0.60	0.13	1.00	0.23	0.23
Sat Flow, veh/h	3632	1529	1774	3632	3442	1583
Grp Volume(v), veh/h	2316	1211	158	1726	716	84
Grp Sat Flow(s),veh/h/ln	1770	1529	1774	1770	1721	1583
Q Serve(g_s), s	79.9	79.9	8.6	0.0	27.3	5.8
Cycle Q Clear(g_c), s	79.9	79.9	8.6	0.0	27.3	5.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2110	1268	114	2454	776	357
V/C Ratio(X)	1.10	0.95	1.39	0.70	0.92	0.24
Avail Cap(c_a), veh/h	2110	1268	114	2454	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.46	0.46	1.00	1.00
Uniform Delay (d), s/veh	27.1	10.2	58.4	0.0	50.8	42.5
Incr Delay (d2), s/veh	52.0	16.5	197.6	0.8	13.1	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	53.9	42.8	10.4	0.3	14.3	2.6
LnGrp Delay(d),s/veh	79.0	26.8	256.0	0.8	63.9	42.6
LnGrp LOS	F	C	F	A	E	D
Approach Vol, veh/h	3527			1884	800	
Approach Delay, s/veh	61.1			22.2	61.7	
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	13.0	86.4				99.4		34.6
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	8.6	* 76				88.7		34.4
Max Q Clear Time (g_c+I1), s	10.6	81.9				2.0		29.3
Green Ext Time (p_c), s	0.0	0.0				86.1		0.9

Intersection Summary		
HCM 2010 Ctrl Delay		49.4
HCM 2010 LOS		D

Notes

HCM 2010 Signalized Intersection Summary
2: Montezuma Rd & Yerba Santa Dr

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	140	2140	1710	30	20	80
Future Volume (veh/h)	140	2140	1710	30	20	80
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	151	2301	1839	32	22	86
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	174	2852	2401	42	34	134
Arrive On Green	0.20	1.00	0.67	0.67	0.11	0.11
Sat Flow, veh/h	1774	3632	3650	62	320	1250
Grp Volume(v), veh/h	151	2301	912	959	109	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1849	1584	0
Q Serve(g_s), s	11.1	0.0	46.3	46.9	8.8	0.0
Cycle Q Clear(g_c), s	11.1	0.0	46.3	46.9	8.8	0.0
Prop In Lane	1.00			0.03	0.20	0.79
Lane Grp Cap(c), veh/h	174	2852	1194	1248	169	0
V/C Ratio(X)	0.87	0.81	0.76	0.77	0.64	0.00
Avail Cap(c_a), veh/h	318	2852	1194	1248	603	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	14.6	14.7	57.4	0.0
Incr Delay (d2), s/veh	0.5	0.2	4.7	4.6	1.5	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	5.4	0.1	23.8	25.3	3.9	0.0
LnGrp Delay(d),s/veh	53.5	0.2	19.3	19.3	58.9	0.0
LnGrp LOS	D	A	B	B	E	
Approach Vol, veh/h		2452	1871		109	
Approach Delay, s/veh		3.5	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		114.6		19.4	17.5	97.0		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 72		51.0	24.0	42.9		
Max Q Clear Time (g_c+I1), s		2.0		10.8	13.1	48.9		
Green Ext Time (p_c), s		70.0		0.2	0.1	0.0		

Intersection Summary		
HCM 2010 Ctrl Delay		11.5
HCM 2010 LOS		B

Notes

Intersection	
Intersection Delay, s/veh	14.4
Intersection LOS	B

Movement	WBU	WBL	WBR	NBU	NBT	NBR	EBU	SBL	SBT
Traffic Vol, veh/h	0	480	30	0	90	259	0	0	100
Future Vol, veh/h	0	480	30	0	90	259	0	0	100
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	522	22	0	98	282	0	0	109
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	16.6	12.1	11
HCM LOS	C	B	B

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	89%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	11%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	259	320	180	100
LT Vol	0	0	320	160	0
Through Vol	90	0	0	0	100
RT Vol	0	259	0	20	0
Lane Flow Rate	98	282	348	196	109
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.172	0.438	0.619	0.341	0.193
Departure Headway (Hd)	6.318	5.608	6.407	6.272	6.395
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	567	642	563	575	561
Service Time	4.056	3.346	4.135	4	4.437
HCM Lane V/C Ratio	0.173	0.439	0.618	0.341	0.194
HCM Control Delay	10.4	12.7	19	12.2	11
HCM Lane LOS	B	B	C	B	B
HCM 95th-tile Q	0.6	2.2	4.2	1.5	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑	↱	↰↰	
Traffic Volume (veh/h)	40	88	114	312	460	50
Future Volume (veh/h)	40	88	114	312	460	50
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	43	96	124	339	550	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	518	330	1219	2157	982
Arrive On Green	0.05	0.28	0.18	0.18	0.61	0.00
Sat Flow, veh/h	1774	1863	1863	1448	3548	1615
Grp Volume(v), veh/h	43	96	124	339	550	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1448	1774	1615
Q Serve(g_s), s	1.9	3.2	4.8	5.4	5.9	0.0
Cycle Q Clear(g_c), s	1.9	3.2	4.8	5.4	5.9	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	83	518	330	1219	2157	982
V/C Ratio(X)	0.52	0.19	0.38	0.28	0.25	0.00
Avail Cap(c_a), veh/h	187	847	550	1391	2157	982
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	38.0	22.4	29.6	2.5	7.4	0.0
Incr Delay (d2), s/veh	1.8	0.1	0.3	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	1.7	2.5	7.5	2.9	0.0
LnGrp Delay(d),s/veh	39.8	22.5	29.9	2.5	7.7	0.0
LnGrp LOS	D	C	C	A	A	
Approach Vol, veh/h		139	463		550	
Approach Delay, s/veh		27.8	9.8		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		54.0	8.2	19.3
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				5.2		7.9	3.9	7.4
Green Ext Time (p_c), s				1.6		1.7	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

Notes

HCM Signalized Intersection Capacity Analysis
5: 55th St & Hardy Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	190	230	20	60	100	350	0	0	660	20
Future Volume (vph)	30	0	190	230	20	60	100	350	0	0	660	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.9	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.87	1.00	0.96		1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.95		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1383	1610	3029		1770	3539			3539	1526
Flt Permitted	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1383	1610	3029		1770	3539			3539	1526
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	34	0	216	261	23	68	114	398	0	0	750	23
RTOR Reduction (vph)	0	0	169	0	36	0	0	0	0	0	0	15
Lane Group Flow (vph)	34	0	47	130	186	0	114	398	0	0	750	8
Confl. Peds. (#/hr)			78			70						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	29.0		29.0	25.0	25.0		13.0	65.3			47.9	47.9
Effective Green, g (s)	29.0		29.0	25.0	25.0		13.0	65.3			47.9	47.9
Actuated g/C Ratio	0.22		0.22	0.19	0.19		0.10	0.49			0.36	0.36
Clearance Time (s)	4.9		4.9	4.9	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	383		299	300	565		171	1724			1265	545
v/s Ratio Prot	0.02			c0.08	0.06		c0.06	0.11			c0.21	
v/s Ratio Perm			c0.03									0.01
v/c Ratio	0.09		0.16	0.43	0.33		0.67	0.23			0.59	0.02
Uniform Delay, d1	41.9		42.6	48.2	47.2		58.4	19.6			35.1	27.8
Progression Factor	1.00		1.00	1.00	1.00		0.95	1.70			1.00	1.00
Incremental Delay, d2	0.0		0.1	0.4	0.1		5.7	0.2			2.0	0.1
Delay (s)	42.0		42.7	48.6	47.4		61.4	33.9			37.1	27.9
Level of Service	D		D	D	D		E	C			D	C
Approach Delay (s)		42.6			47.8			40.0			36.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
6: 55th St & Montezuma Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	420	1115	120	41	770	246	80	30	30	350	40	550
Future Volume (veh/h)	420	1115	120	41	770	246	80	30	30	350	40	550
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	457	1212	130	45	837	267	87	33	33	411	0	598
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	505	1219	130	58	944	400	149	57	57	1011	0	429
Arrive On Green	0.15	0.38	0.38	0.03	0.27	0.27	0.15	0.15	0.15	0.29	0.00	0.29
Sat Flow, veh/h	3442	3201	342	1774	3539	1500	972	369	369	3548	0	1504
Grp Volume(v), veh/h	457	668	674	45	837	267	153	0	0	411	0	598
Grp Sat Flow(s),veh/h/ln	1721	1770	1773	1774	1770	1500	1710	0	0	1774	0	1504
Q Serve(g_s), s	17.5	50.3	50.9	3.4	30.4	21.3	11.1	0.0	0.0	12.6	0.0	38.2
Cycle Q Clear(g_c), s	17.5	50.3	50.9	3.4	30.4	21.3	11.1	0.0	0.0	12.6	0.0	38.2
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	505	674	675	58	944	400	263	0	0	1011	0	429
V/C Ratio(X)	0.91	0.99	1.00	0.78	0.89	0.67	0.58	0.00	0.00	0.41	0.00	1.40
Avail Cap(c_a), veh/h	524	674	675	74	944	400	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	0.69	0.69	0.69	1.00	0.00	0.00	0.82	0.00	0.82
Uniform Delay (d), s/veh	56.3	41.3	41.4	64.3	47.2	43.8	52.7	0.0	0.0	38.7	0.0	47.9
Incr Delay (d2), s/veh	18.2	32.6	34.2	17.7	8.8	6.0	0.8	0.0	0.0	0.2	0.0	189.2
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	9.8	30.8	31.3	1.9	16.0	9.5	5.3	0.0	0.0	6.2	0.0	38.3
LnGrp Delay(d),s/veh	74.5	73.8	75.6	82.1	56.0	49.8	53.5	0.0	0.0	39.0	0.0	237.1
LnGrp LOS	E	E	E	F	E	D	D			D		F
Approach Vol, veh/h		1799			1149			153			1009	
Approach Delay, s/veh		74.7			55.6			53.5			156.4	
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	56.8		43.1	24.1	41.3		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	20.4	* 26		30.0
Max Q Clear Time (g_c+I1), s	5.4	52.9		40.2	19.5	32.4		13.1
Green Ext Time (p_c), s	0.0	0.0		0.0	0.2	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	88.6
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	1302	30	123	826	220	40	20	156	260	20	190
Future Volume (veh/h)	80	1302	30	123	826	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		0.95
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	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	87	1415	33	134	898	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	1146	305	52	26	205	333	28	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	3529	82	1774	2741	728	283	145	1121	1652	128	1479
Grp Volume(v), veh/h	87	709	739	134	579	558	235	0	0	305	0	207
Grp Sat Flow(s),veh/h/ln	1774	1770	1841	1774	1770	1700	1549	0	0	1780	0	1479
Q Serve(g_s), s	6.8	54.8	54.8	10.3	21.7	21.9	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	21.7	21.9	20.5	0.0	0.0	23.1	0.0	16.8
Prop In Lane	1.00		0.04	1.00		0.43	0.18		0.72	0.93		1.00
Lane Grp Cap(c), veh/h	108	690	721	155	740	711	283	0	0	358	0	394
V/C Ratio(X)	0.81	1.02	1.03	0.87	0.78	0.78	0.83	0.00	0.00	0.85	0.00	0.53
Avail Cap(c_a), veh/h	139	690	721	160	740	711	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)	0.53	0.53	0.53	0.49	0.49	0.49	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	8.5	8.5	55.1	0.0	0.0	53.9	0.0	44.3
Incr Delay (d2), s/veh	10.2	30.8	31.1	19.3	4.1	4.3	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	3.8	32.7	34.1	5.8	10.8	10.4	9.8	0.0	0.0	12.7	0.0	6.9
LnGrp Delay(d),s/veh	75.1	73.4	73.7	76.3	12.5	12.6	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		1535			1271			235			512	
Approach Delay, s/veh		73.7			19.4			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		36.5
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	23.9		22.5
Green Ext Time (p_c), s	0.0	0.0		0.8	0.0	24.2		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		51.7
HCM 2010 LOS		D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	620	0	470	0	1257	1750	0	851	561
Future Volume (veh/h)	0	0	0	620	0	470	0	1257	1750	0	851	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				674	0	0	0	1366	0	0	925	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				674	0	0	0	1366	0	0	925	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	9.0	0.0
Cycle Q Clear(g_c), s				14.9	0.0	0.0	0.0	0.0	0.0	0.0	9.0	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)				1.31	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	1.00	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				154.9	0.0	0.0	0.0	0.1	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				18.1	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0
LnGrp Delay(d),s/veh				197.4	0.0	0.0	0.0	0.1	0.0	0.0	4.7	0.0
LnGrp LOS				F				A			A	
Approach Vol, veh/h					674			1366			925	
Approach Delay, s/veh					197.4			0.1			4.7	
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				11.0		16.9
Green Ext Time (p_c), s		20.9				20.4		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		49.4
HCM 2010 LOS		D

HCM Signalized Intersection Capacity Analysis
9: College Ave & I-8EB Ramp

Horizon Year PM
2/13/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	801	0	1000	6	0	0	0	2206	500	0	1140	331
Future Volume (vph)	801	0	1000	6	0	0	0	2206	500	0	1140	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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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	6	0	0	0	2398	543	0	1239	360
RTOR Reduction (vph)	0	0	0	6	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	871	0	1087	0	0	0	0	2398	543	0	1239	360
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	23.9		53.9					63.6	100.0		33.6	100.0
Effective Green, g (s)	23.9		53.9					63.6	100.0		33.6	100.0
Actuated g/C Ratio	0.24		0.54					0.64	1.00		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)	820		1945					2250	1536		1189	1536
v/s Ratio Prot	c0.25		0.30					c0.68			0.35	
v/s Ratio Perm									0.35			0.23
v/c Ratio	1.06		0.56					1.07	0.35		1.04	0.23
Uniform Delay, d1	38.0		15.2					18.2	0.0		33.2	0.0
Progression Factor	1.00		1.00					0.70	1.00		0.61	1.00
Incremental Delay, d2	49.3		0.2					30.7	0.1		32.6	0.2
Delay (s)	87.3		15.4					43.5	0.1		53.0	0.2
Level of Service	F		B					D	A		D	A
Approach Delay (s)		47.4			0.0			35.5			41.1	
Approach LOS		D			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary
10: College Ave & Canyon Crest Dr

Horizon Year PM
2/13/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	547	59	60	180	30	518	50	1641	130	408	1573	159
Future Volume (veh/h)	547	59	60	180	30	518	50	1641	130	408	1573	159
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		0.96
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	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	701	0	0	196	33	563	54	1784	141	443	1710	173
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	878	461	0	75	13	206	69	1470	648	279	2352	1951
Arrive On Green	0.25	0.00	0.00	0.05	0.05	0.05	0.04	0.42	0.42	0.05	0.31	0.31
Sat Flow, veh/h	3548	1863	0	1529	257	1583	1774	3539	1560	3442	5085	2726
Grp Volume(v), veh/h	701	0	0	229	0	563	54	1784	141	443	1710	173
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1786	0	1583	1774	1770	1560	1721	1695	1363
Q Serve(g_s), s	18.5	0.0	0.0	4.9	0.0	4.9	3.0	41.5	5.8	8.1	30.0	2.5
Cycle Q Clear(g_c), s	18.5	0.0	0.0	4.9	0.0	4.9	3.0	41.5	5.8	8.1	30.0	2.5
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	878	461	0	88	0	206	69	1470	648	279	2352	1951
V/C Ratio(X)	0.80	0.00	0.00	2.62	0.00	2.74	0.78	1.21	0.22	1.59	0.73	0.09
Avail Cap(c_a), veh/h	1135	596	0	88	0	206	101	1470	648	279	2352	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	0.47	0.47	0.47
Uniform Delay (d), s/veh	35.3	0.0	0.0	47.6	0.0	43.5	47.6	29.2	18.8	47.3	28.9	5.9
Incr Delay (d2), s/veh	2.3	0.0	0.0	759.2	0.0	794.4	20.6	102.5	0.8	273.1	1.0	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	9.3	0.0	0.0	20.9	0.0	51.1	1.9	41.1	2.6	14.4	14.2	1.7
LnGrp Delay(d),s/veh	37.6	0.0	0.0	806.8	0.0	837.9	68.2	131.7	19.5	320.4	29.8	5.9
LnGrp LOS	D			F		F	E	F	B	F	C	A
Approach Vol, veh/h		701			792			1979			2326	
Approach Delay, s/veh		37.6			828.9			122.0			83.4	
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	47.5		29.7	8.3	52.2		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	10.1	43.5		20.5	5.0	32.0		6.9
Green Ext Time (p_c), s	0.0	0.0		1.8	0.0	5.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	192.9
HCM 2010 LOS	F

Notes

Intersection						
Int Delay, s/veh	81.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	590	1439	55	222	1587
Future Vol, veh/h	0	590	1439	55	222	1587
Conflicting Peds, #/hr	0	30	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	2929	822	0	0	1584	0
Stage 1	1584	-	-	-	-	-
Stage 2	1345	-	-	-	-	-
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	12	~ 317	-	-	411	-
Stage 1	154	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	5	~ 307	-	-	404	-
Mov Cap-2 Maneuver	5	-	-	-	-	-
Stage 1	151	-	-	-	-	-
Stage 2	82	-	-	-	-	-

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	1184	585	245	486	255	414	786	60	273	963	420
Future Volume (veh/h)	459	1184	585	245	486	255	414	786	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	1863
Adj Flow Rate, veh/h	499	1265	636	266	528	277	450	857	65	297	1047	457
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	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	362	1340	573	172	961	406	423	782	59	274	945	399
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	1774	3539	1493
Grp Volume(v), veh/h	499	1265	636	266	528	277	450	457	465	297	1047	457
Grp Sat Flow(s),veh/h/ln	1774	1770	1514	1774	1770	1495	1721	1770	1799	1774	1770	1493
Q Serve(g_s), s	28.6	42.6	36.9	13.6	17.9	16.2	17.2	33.0	33.0	21.6	37.4	23.5
Cycle Q Clear(g_c), s	28.6	42.6	36.9	13.6	17.9	16.2	17.2	33.0	33.0	21.6	37.4	23.5
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	362	1340	573	172	961	406	423	417	424	274	945	399
V/C Ratio(X)	1.38	0.94	1.11	1.54	0.55	0.68	1.06	1.10	1.10	1.08	1.11	1.15
Avail Cap(c_a), veh/h	362	1340	573	172	961	406	423	417	424	274	945	399
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)	0.21	0.21	0.21	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	15.7	8.2	63.2	43.7	22.2	51.4	53.5	53.5	59.2	51.3	20.3
Incr Delay (d2), s/veh	173.3	4.1	55.3	271.3	2.3	9.0	61.9	72.6	72.3	79.0	63.3	91.0
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	31.3	20.8	23.1	19.6	9.0	7.6	11.8	24.5	24.9	16.6	28.8	19.8
LnGrp Delay(d),s/veh	214.7	19.8	63.5	334.5	45.9	31.1	123.3	126.1	125.8	138.2	114.6	111.3
LnGrp LOS	F	B	F	F	D	C	F	F	F	F	F	F
Approach Vol, veh/h		2400			1071			1372			1801	
Approach Delay, s/veh		71.9			113.8			125.1			117.7	
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	23.6	35.0	15.6	44.6	19.2	39.4	30.6	19.9
Green Ext Time (p_c), s	0.0	0.0	0.0	8.2	0.0	0.0	0.0	17.5

Intersection Summary		
HCM 2010 Ctrl Delay		102.0
HCM 2010 LOS		F

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)		0.98	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	1226	576	89	1648	1196	78		
Adj No. of Lanes	2	1	1	2	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	2		
Cap, veh/h	1591	1265	110	1935	1263	581		
Arrive On Green	0.45	0.45	0.12	1.00	0.37	0.37		
Sat Flow, veh/h	3632	1522	1774	3632	3442	1583		
Grp Volume(v), veh/h	1226	576	89	1648	1196	78		
Grp Sat Flow(s),veh/h/ln	1770	1522	1774	1770	1721	1583		
Q Serve(g_s), s	36.8	14.1	6.2	0.0	42.5	4.1		
Cycle Q Clear(g_c), s	36.8	14.1	6.2	0.0	42.5	4.1		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1591	1265	110	1935	1263	581		
V/C Ratio(X)	0.77	0.46	0.81	0.85	0.95	0.13		
Avail Cap(c_a), veh/h	1591	1265	169	1935	1371	631		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.68	0.68	1.00	1.00		
Uniform Delay (d), s/veh	29.2	3.4	54.5	0.0	38.7	26.6		
Incr Delay (d2), s/veh	3.7	1.2	5.7	3.4	12.7	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	18.7	6.2	3.2	0.9	22.3	1.8		
LnGrp Delay(d),s/veh	32.9	4.6	60.1	3.4	51.5	26.6		
LnGrp LOS	C	A	E	A	D	C		
Approach Vol, veh/h	1802			1737	1274			
Approach Delay, s/veh	23.8			6.4	49.9			
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	12.2	63.2				75.4		50.6
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	8.2	38.8				2.0		44.5
Green Ext Time (p_c), s	0.0	10.1				60.1		1.7

Intersection Summary			
HCM 2010 Ctrl Delay			24.4
HCM 2010 LOS			C

Notes

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	2706	2439	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	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	0.0	33.6	33.9	13.2	0.0		
Cycle Q Clear(g_c), s	4.0	0.0	33.6	33.9	13.2	0.0		
Prop In Lane	1.00			0.04	0.06	0.93		
Lane Grp Cap(c), veh/h	73	2706	1218	1271	223	0		
V/C Ratio(X)	0.78	0.48	0.67	0.67	0.76	0.00		
Avail Cap(c_a), veh/h	310	2706	1218	1271	608	0		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.55	0.55	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	57.2	0.0	11.4	11.4	52.0	0.0		
Incr Delay (d2), s/veh	3.7	0.3	2.9	2.9	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	2.0	0.1	17.3	18.1	5.8	0.0		
LnGrp Delay(d),s/veh	60.9	0.3	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		2.9	14.3		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		102.9		23.1	9.6	93.3		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 66		49.0	22.0	38.9		
Max Q Clear Time (g_c+I1), s		2.0		15.2	6.0	35.9		
Green Ext Time (p_c), s		63.0		0.3	0.0	3.0		

Intersection Summary			
HCM 2010 Ctrl Delay			11.6
HCM 2010 LOS			B

Notes

Intersection	
Intersection Delay, s/veh	24.0
Intersection LOS	C

Movement	WBU	WBL	WBR	NBU	NBT	NBR	EBU	SBL	EBT
Traffic Vol, veh/h	0	143	30	0	50	653	0	0	60
Future Vol, veh/h	0	143	30	0	50	653	0	0	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	155	22	0	54	710	0	0	65
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.9	29.1	9.5
HCM LOS	B	D	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	70%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	30%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	653	95	68	60
LT Vol	0	0	95	48	0
Through Vol	50	0	0	0	60
RT Vol	0	653	0	20	0
Lane Flow Rate	54	710	104	74	65
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.078	0.882	0.2	0.135	0.103
Departure Headway (Hd)	5.179	4.476	6.956	6.597	5.801
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	689	802	519	546	622
Service Time	2.906	2.232	4.696	4.297	3.801
HCM Lane V/C Ratio	0.078	0.885	0.2	0.136	0.105
HCM Control Delay	8.4	30.7	11.4	10.3	9.5
HCM Lane LOS	A	D	B	B	A
HCM 95th-tile Q	0.3	11.4	0.7	0.5	0.3

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			0.44	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	635	463	1065	1996	909
Arrive On Green	0.04	0.34	0.25	0.25	0.56	0.00
Sat Flow, veh/h	1774	1863	1863	701	3548	1615
Grp Volume(v), veh/h	54	64	67	761	176	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	701	1774	1615
Q Serve(g_s), s	2.9	2.3	2.7	24.0	2.2	0.0
Cycle Q Clear(g_c), s	2.9	2.3	2.7	24.0	2.2	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	74	635	463	1065	1996	909
V/C Ratio(X)	0.73	0.10	0.14	0.71	0.09	0.00
Avail Cap(c_a), veh/h	74	635	463	1065	1996	909
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	45.7	21.7	28.3	4.0	9.7	0.0
Incr Delay (d2), s/veh	28.0	0.0	0.1	2.0	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	20.7	1.1	0.0
LnGrp Delay(d),s/veh	73.8	21.7	28.3	6.0	9.8	0.0
LnGrp LOS	E	C	C	A	A	
Approach Vol, veh/h		118	828		176	
Approach Delay, s/veh		45.5	7.8		9.8	
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				37.8		58.7	8.9	28.9
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	26.0
Green Ext Time (p_c), s				0.2		0.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Notes

HCM Signalized Intersection Capacity Analysis
5: 55th St & Hardy Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	40	130	30	90	160	696	0	0	233	40
Future Volume (vph)	10	0	40	130	30	90	160	696	0	0	233	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.9	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.91	1.00	0.95		1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.92		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1444	1610	2915		1770	3539			3539	1528
Flt Permitted	0.95		1.00	0.95	0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1444	1610	2915		1770	3539			3539	1528
Peak-hour factor, PHF	0.93	0.90	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	0	43	140	32	97	172	748	0	0	251	43
RTOR Reduction (vph)	0	0	35	0	78	0	0	0	0	0	0	28
Lane Group Flow (vph)	11	0	8	92	99	0	172	748	0	0	251	15
Confl. Peds. (#/hr)			51			55						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	23.2		23.2	24.5	24.5		18.5	63.6			42.7	42.7
Effective Green, g (s)	20.2		20.2	24.0	24.0		16.0	63.6			40.7	40.7
Actuated g/C Ratio	0.16		0.16	0.19	0.19		0.13	0.50			0.34	0.34
Clearance Time (s)	4.9		4.9	4.9	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	325		265	313	566		231	1786			1199	517
v/s Ratio Prot	c0.01			c0.06	0.03		c0.10	c0.21			0.07	
v/s Ratio Perm			0.01									0.01
v/c Ratio	0.03		0.03	0.29	0.17		0.74	0.42			0.21	0.03
Uniform Delay, d1	42.2		42.2	43.4	42.3		52.7	19.6			29.6	27.8
Progression Factor	1.00		1.00	1.00	1.00		1.43	0.66			1.00	1.00
Incremental Delay, d2	0.0		0.0	0.2	0.1		7.8	0.5			0.4	0.1
Delay (s)	42.2		42.2	43.6	42.4		83.3	13.4			30.0	27.9
Level of Service	D		D	D	D		F	B			C	C
Approach Delay (s)		42.2			42.8			26.5			29.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
6: 55th St & Montezuma Rd

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		0.86
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	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	699	1975	130	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	3358	221	1774	3539	1521	973	369	369	3548	0	1354
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	1521	1711	0	0	1774	0	1354
Q Serve(g_s), s	25.6	9.0	9.1	1.5	23.5	17.8	10.4	0.0	0.0	4.4	0.0	10.1
Cycle Q Clear(g_c), s	25.6	9.0	9.1	1.5	23.5	17.8	10.4	0.0	0.0	4.4	0.0	10.1
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	699	1041	1064	30	1423	612	269	0	0	284	0	109
V/C Ratio(X)	1.09	0.25	0.25	0.73	0.82	0.73	0.57	0.00	0.00	0.46	0.00	1.77
Avail Cap(c_a), veh/h	699	1041	1064	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	0.98	0.00	0.98
Uniform Delay (d), s/veh	50.2	12.5	12.6	60.6	9.7	9.1	49.1	0.0	0.0	55.3	0.0	58.0
Incr Delay (d2), s/veh	60.1	0.6	0.6	1.1	0.5	0.7	0.7	0.0	0.0	1.2	0.0	380.0
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	18.0	4.5	4.7	0.8	11.0	7.1	5.0	0.0	0.0	2.2	0.0	15.3
LnGrp Delay(d),s/veh	110.3	13.1	13.1	61.7	10.2	9.9	49.8	0.0	0.0	56.5	0.0	437.9
LnGrp LOS	F	B	B	E	B	A	D			E		F
Approach Vol, veh/h		1293			1631			153			323	
Approach Delay, s/veh		70.2			10.6			49.6			283.3	
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	11.1		12.1	27.6	25.5		12.4
Green Ext Time (p_c), s	0.0	29.3		0.0	0.0	12.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	61.0
HCM 2010 LOS	E

Notes

HCM 2010 Signalized Intersection Summary
7: Campanile Dr & Montezuma Rd

Horizon Year + Proj AM
2/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	553	30	88	1379	410	50	30	122	130	20	70
Future Volume (veh/h)	110	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	120	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	1478	81	118	1258	352	71	44	176	252	39	295
Arrive On Green	0.07	0.87	0.87	0.13	0.93	0.93	0.18	0.18	0.18	0.16	0.15	0.16
Sat Flow, veh/h	1774	3399	186	1774	2707	758	390	238	960	1545	241	1459
Grp Volume(v), veh/h	120	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	6.6	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	6.6	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	770	790	118	822	788	291	0	0	291	0	295
V/C Ratio(X)	1.85	0.41	0.41	0.82	1.15	1.27	0.76	0.00	0.00	0.56	0.00	0.26
Avail Cap(c_a), veh/h	65	770	790	149	822	788	365	0	0	439	0	417
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	0.10	0.10	0.10	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.4	4.9	4.9	53.9	4.4	4.4	48.8	0.0	0.0	48.6	0.0	42.6
Incr Delay (d2), s/veh	435.5	1.5	1.5	2.2	70.1	120.4	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	10.1	2.4	2.5	3.3	38.4	47.8	7.7	0.0	0.0	5.3	0.0	2.2
LnGrp Delay(d),s/veh	493.9	6.5	6.4	56.1	74.5	124.9	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		754			2041			220			239	
Approach Delay, s/veh		84.0			98.2			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	10.6	* 36		31.0	4.6	42.2		29.0
Max Q Clear Time (g_c+I1), s	8.6	6.5		12.6	6.6	60.6		18.6
Green Ext Time (p_c), s	0.0	29.6		0.5	0.0	0.0		0.4

Intersection Summary		
HCM 2010 Ctrl Delay		88.2
HCM 2010 LOS		F

Notes

HCM 2010 Signalized Intersection Summary
8: College Ave & I-8WB Ramp

Horizon Year + Proj AM
2/15/2017

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	0.77	0.00	0.00	1.00	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	0.8	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	0.2	0.0	0.0	6.3	0.0
LnGrp Delay(d),s/veh				135.1	0.0	0.0	0.0	0.4	0.0	0.0	4.9	0.0
LnGrp LOS				F				A			A	
Approach Vol, veh/h					428			1248			1558	
Approach Delay, s/veh					135.1			0.4			4.9	
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		20.4
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	446	6	1700	6	0	0	0	1142	287	0	1467	360
Future Volume (vph)	446	6	1700	6	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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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	6	0	0	0	1241	312	0	1595	391
RTOR Reduction (vph)	0	0	0	6	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	485	0	1848	0	0	0	0	1241	312	0	1595	391
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	16.5		47.9					71.0	100.0		39.6	100.0
Effective Green, g (s)	16.5		47.9					71.0	100.0		39.6	100.0
Actuated g/C Ratio	0.16		0.48					0.71	1.00		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					2512	1536		1401	1536
v/s Ratio Prot	0.14		c0.51					0.35			c0.45	
v/s Ratio Perm									0.20			0.25
v/c Ratio	0.86		1.07					0.49	0.20		1.14	0.25
Uniform Delay, d1	40.6		26.1					6.5	0.0		30.2	0.0
Progression Factor	1.00		1.00					0.45	1.00		1.05	1.00
Incremental Delay, d2	11.8		42.7					0.1	0.0		69.1	0.3
Delay (s)	52.4		68.7					3.0	0.0		101.0	0.3
Level of Service	D		E					A	A		F	A
Approach Delay (s)		65.3			0.0			2.4			81.2	
Approach LOS		E			A			A			F	

Intersection Summary			
HCM 2000 Control Delay	54.1	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		0.99	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	0.06	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	3.6	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			110.6	
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	20.2	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		E

Notes

Intersection						
Int Delay, s/veh	15.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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	3238	768	0	0	1475	0
Stage 1	1475	-	-	-	-	-
Stage 2	1763	-	-	-	-	-
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	3.33			2.22	
Pot Cap-1 Maneuver	7	344	-	-	~ 453	-
Stage 1	177	-	-	-	-	-
Stage 2	123	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	7	333	-	-	~ 445	-
Mov Cap-2 Maneuver	7	-	-	-	-	-
Stage 1	174	-	-	-	-	-
Stage 2	121	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.2	0	28.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1		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)	284	372	113	40	883	261	756	1192	65	133	582	401
Future Volume (veh/h)	284	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		0.95	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	1863
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	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	220	1288	550	71	991	419	599	1104	60	217	863	363
Arrive On Green	0.21	0.61	0.61	0.04	0.28	0.28	0.20	0.32	0.32	0.12	0.24	0.24
Sat Flow, veh/h	1774	3539	1512	1774	3539	1497	3442	3402	186	1774	3539	1487
Grp Volume(v), veh/h	287	404	123	43	960	284	822	673	694	145	633	436
Grp Sat Flow(s),veh/h/ln	1774	1770	1512	1774	1770	1497	1721	1770	1819	1774	1770	1487
Q Serve(g_s), s	15.8	7.0	2.6	3.0	33.8	15.5	25.6	40.9	40.9	9.8	20.8	22.6
Cycle Q Clear(g_c), s	15.8	7.0	2.6	3.0	33.8	15.5	25.6	40.9	40.9	9.8	20.8	22.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	220	1288	550	71	991	419	599	574	590	217	863	363
V/C Ratio(X)	1.31	0.31	0.22	0.61	0.97	0.68	1.18	1.17	1.18	0.67	0.73	1.20
Avail Cap(c_a), veh/h	220	1288	550	83	991	419	599	574	590	235	899	378
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	17.1	5.3	59.5	44.8	21.3	50.2	42.5	42.6	52.8	43.9	25.8
Incr Delay (d2), s/veh	165.2	0.6	0.9	4.4	22.0	8.5	93.5	94.6	96.0	4.8	3.1	114.7
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	17.7	3.4	1.2	1.6	19.6	7.4	21.2	35.0	36.2	5.1	10.5	20.8
LnGrp Delay(d),s/veh	215.2	17.7	6.2	63.9	66.8	29.9	143.7	137.1	138.5	57.6	47.0	140.5
LnGrp LOS	F	B	A	E	E	C	F	F	F	E	D	F
Approach Vol, veh/h		814			1287			2189			1214	
Approach Delay, s/veh		85.6			58.6			140.0			81.9	
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	19.8	46.0	9.4	50.8	30.0	35.8	20.0	40.2
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	16.7	40.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	11.8	42.9	5.0	9.0	27.6	24.6	17.8	35.8
Green Ext Time (p_c), s	1.5	0.0	0.0	26.0	0.0	3.6	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		100.1
HCM 2010 LOS		E

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	2110	1268	114	2453	776	357
Arrive On Green	0.60	0.60	0.13	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	79.9	79.9	8.6	0.0	27.3	6.3
Cycle Q Clear(g_c), s	79.9	79.9	8.6	0.0	27.3	6.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2110	1268	114	2453	776	357
V/C Ratio(X)	1.13	0.95	1.43	0.73	0.92	0.25
Avail Cap(c_a), veh/h	2110	1268	114	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	0.42	0.42	1.00	1.00
Uniform Delay (d), s/veh	27.1	10.2	58.4	0.0	50.8	42.6
Incr Delay (d2), s/veh	64.1	16.5	214.1	0.8	13.1	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	42.8	10.9	0.3	14.3	2.8
LnGrp Delay(d),s/veh	91.1	26.8	272.5	0.8	63.9	42.8
LnGrp LOS	F	C	F	A	E	D
Approach Vol, veh/h	3590			1942	807	
Approach Delay, s/veh	69.4			23.6	61.5	
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	13.0	86.4				99.4		34.6
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	8.6	* 78				88.7		34.4
Max Q Clear Time (g_c+I1), s	10.6	81.9				2.0		29.3
Green Ext Time (p_c), s	0.0	0.0				86.1		0.9

Intersection Summary		
HCM 2010 Ctrl Delay		54.4
HCM 2010 LOS		D

Notes

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	176	2848	2384	40	34	136
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	49.6	50.4	9.0	0.0
Cycle Q Clear(g_c), s	11.2	0.0	49.6	50.4	9.0	0.0
Prop In Lane	1.00			0.03	0.20	0.79
Lane Grp Cap(c), veh/h	176	2848	1190	1244	171	0
V/C Ratio(X)	0.87	0.83	0.79	0.79	0.65	0.00
Avail Cap(c_a), veh/h	318	2848	1190	1244	603	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	52.9	0.0	15.3	15.4	57.3	0.0
Incr Delay (d2), s/veh	0.5	0.3	5.4	5.3	1.5	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	5.5	0.1	25.8	27.4	4.0	0.0
LnGrp Delay(d),s/veh	53.4	0.3	20.7	20.7	58.9	0.0
LnGrp LOS	D	A	C	C	E	
Approach Vol, veh/h		2523	1928		111	
Approach Delay, s/veh		3.5	20.7		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		114.4		19.6	17.7	96.7		
Change Period (Y+Rc), s		* 6.6		5.1	4.4	6.6		
Max Green Setting (Gmax), s		* 72		51.0	24.0	42.9		
Max Q Clear Time (g_c+I1), s		2.0		11.0	13.2	52.4		
Green Ext Time (p_c), s		70.0		0.2	0.1	0.0		

Intersection Summary		
HCM 2010 Ctrl Delay		12.1
HCM 2010 LOS		B

Notes

HCM 2010 AWSC
3: 55th St & Canyon Crest Dr

Horizon Year + Proj PM
2/14/2017

Intersection	
Intersection Delay, s/veh	18.9
Intersection LOS	C

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Traffic Vol, veh/h	0	554	30	0	90	345	0	0	100
Future Vol, veh/h	0	554	30	0	90	345	0	0	100
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	602	22	0	98	375	0	0	109
Number of Lanes	0	2	0	0	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	22.2	16.2	11.6
HCM LOS	C	C	B

Lane	NBLn1	NBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	100%	90%	0%
Vol Thru, %	100%	0%	0%	0%	100%
Vol Right, %	0%	100%	0%	10%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	345	369	205	100
LT Vol	0	0	369	185	0
Through Vol	90	0	0	0	100
RT Vol	0	345	0	20	0
Lane Flow Rate	98	375	401	222	109
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.179	0.613	0.748	0.407	0.205
Departure Headway (Hd)	6.591	5.88	6.704	6.585	6.784
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	543	611	538	547	528
Service Time	4.346	3.605	4.443	4.324	4.842
HCM Lane V/C Ratio	0.18	0.614	0.745	0.406	0.206
HCM Control Delay	10.8	17.6	26.8	13.6	11.6
HCM Lane LOS	B	C	D	B	B
HCM 95th-tile Q	0.6	4.2	6.4	2	0.8

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SDSU Student Housing

Synchro 9 Report

HCM 2010 Signalized Intersection Summary
4: Remington Rd & 55th St

Horizon Year + Proj PM
2/14/2017

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	90	117	397	533	51
Future Volume (veh/h)	41	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			0.41	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	45	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	81	665	490	1030	1922	875
Arrive On Green	0.05	0.36	0.26	0.26	0.54	0.00
Sat Flow, veh/h	1774	1863	1863	656	3548	1615
Grp Volume(v), veh/h	45	98	127	432	630	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	656	1774	1615
Q Serve(g_s), s	2.3	3.3	4.9	24.1	9.1	0.0
Cycle Q Clear(g_c), s	2.3	3.3	4.9	24.1	9.1	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	81	665	490	1030	1922	875
V/C Ratio(X)	0.56	0.15	0.26	0.42	0.33	0.00
Avail Cap(c_a), veh/h	167	755	490	1030	1922	875
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	42.8	20.0	26.7	4.1	11.7	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.1	0.1	0.5	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	1.2	1.7	2.6	10.8	4.5	0.0
LnGrp Delay(d),s/veh	45.0	20.0	26.8	4.2	12.2	0.0
LnGrp LOS	D	C	C	A	B	
Approach Vol, veh/h		143	559		630	
Approach Delay, s/veh		27.9	9.3		12.2	
Approach LOS		C	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				37.6		54.0	8.6	29.0
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		11.1	4.3	26.1
Green Ext Time (p_c), s				5.4		2.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

Notes

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SDSU Student Housing

Synchro 9 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱	↰	↰↑↱		↰	↑↑			↑↑	↱
Traffic Volume (vph)	30	0	190	230	20	60	100	436	0	0	735	20
Future Volume (vph)	30	0	190	230	20	60	100	436	0	0	735	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Lane Util. Factor	1.00		1.00	0.91	0.91		1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00		0.87	1.00	0.96		1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.95		1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770		1383	1610	3029		1770	3539			3539	1526
Flt Permitted	0.95		1.00	0.95	0.97		0.95	1.00			1.00	1.00
Satd. Flow (perm)	1770		1383	1610	3029		1770	3539			3539	1526
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	34	0	216	261	23	68	114	498	0	0	835	23
RTOR Reduction (vph)	0	0	169	0	36	0	0	0	0	0	0	15
Lane Group Flow (vph)	34	0	47	130	186	0	114	498	0	0	835	8
Confl. Peds. (#/hr)			78			70						10
Confl. Bikes (#/hr)			10			10						10
Turn Type	Prot		Perm	Split	NA		Prot	NA			NA	Perm
Protected Phases	7			8	8		5	2			6	
Permitted Phases			7									6
Actuated Green, G (s)	29.0		29.0	25.0	25.0		13.0	65.3			47.9	47.9
Effective Green, g (s)	29.0		29.0	25.0	25.0		13.0	65.3			47.9	47.9
Actuated g/C Ratio	0.22		0.22	0.19	0.19		0.10	0.49			0.36	0.36
Clearance Time (s)	4.9		4.9	4.5	4.9		4.4	4.9			4.9	4.9
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0	3.3			3.4	3.4
Lane Grp Cap (vph)	383		299	300	565		171	1724			1265	545
v/s Ratio Prot	0.02			c0.08	0.06		c0.06	0.14			c0.24	
v/s Ratio Perm			c0.03									0.01
v/c Ratio	0.09		0.16	0.43	0.33		0.67	0.29			0.66	0.02
Uniform Delay, d1	41.9		42.6	48.2	47.2		58.4	20.5			36.2	27.8
Progression Factor	1.00		1.00	1.00	1.00		0.91	1.69			1.00	1.00
Incremental Delay, d2	0.0		0.1	0.4	0.1		5.5	0.3			2.7	0.1
Delay (s)	42.0		42.7	48.6	47.4		58.5	35.0			38.9	27.9
Level of Service	D		D	D	D		E	C			D	C
Approach Delay (s)		42.6			47.8			39.4			38.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	78.7%	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)	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	524	1219	130	58	925	391	149	57	57	1011	0	429
Arrive On Green	0.15	0.38	0.38	0.03	0.26	0.26	0.15	0.15	0.15	0.29	0.00	0.29
Sat Flow, veh/h	3442	3201	342	1774	3539	1498	972	369	369	3548	0	1504
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	1773	1774	1770	1498	1710	0	0	1774	0	1504
Q Serve(g_s), s	20.4	50.3	50.9	3.4	30.7	23.9	11.1	0.0	0.0	13.3	0.0	38.2
Cycle Q Clear(g_c), s	20.4	50.3	50.9	3.4	30.7	23.9	11.1	0.0	0.0	13.3	0.0	38.2
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	674	675	58	925	391	263	0	0	1011	0	429
V/C Ratio(X)	1.01	0.99	1.00	0.78	0.91	0.74	0.58	0.00	0.00	0.43	0.00	1.54
Avail Cap(c_a), veh/h	524	674	675	74	925	391	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	0.67	0.67	0.67	1.00	0.00	0.00	0.77	0.00	0.77
Uniform Delay (d), s/veh	56.8	41.3	41.4	64.3	47.9	45.4	52.7	0.0	0.0	39.0	0.0	47.9
Incr Delay (d2), s/veh	41.2	32.6	34.2	17.4	10.1	8.4	0.8	0.0	0.0	0.2	0.0	249.7
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	12.7	30.6	31.3	1.9	16.3	10.8	5.3	0.0	0.0	6.5	0.0	45.5
LnGrp Delay(d),s/veh	98.1	73.8	75.6	81.7	58.0	53.8	53.5	0.0	0.0	39.2	0.0	297.6
LnGrp LOS	F	E	E	F	E	D	D			D		F
Approach Vol, veh/h		1870			1173			153			1091	
Approach Delay, s/veh		81.3			57.9			53.5			195.1	
Approach LOS		F			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	56.6		43.1	24.8	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	5.6	40.4		38.2	20.4	* 26		30.0
Max Q Clear Time (g_c+I1), s	5.4	52.9		40.2	22.4	32.7		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	102.9
HCM 2010 LOS	F

Notes

HCM 2010 Signalized Intersection Summary
7: Campanile Dr & Montezuma Rd

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	3536	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	690	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	690	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)	0.50	0.50	0.50	0.45	0.45	0.45	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	34.6	35.1	18.3	4.2	4.4	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	3.8	33.4	34.9	5.8	11.3	11.0	9.8	0.0	0.0	12.7	0.0	6.9
LnGrp Delay(d),s/veh	74.6	77.2	77.7	75.3	12.7	13.0	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		77.3			19.3			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	18.6	59.8		33.1	12.9	63.5		36.5				
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			53.3									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary
8: College Ave & I-8WB Ramp

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	1.00	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	0.4	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
%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	4.8	0.0
LnGrp LOS				F				A			A	
Approach Vol, veh/h					693			1372			932	
Approach Delay, s/veh					213.2			0.1			4.8	
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									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	801	6	1000	6	0	0	0	2211	514	0	1164	331
Future Volume (vph)	801	6	1000	6	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	4.0		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	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433		3610					3539	1536		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	6	0	0	0	2403	559	0	1265	360
RTOR Reduction (vph)	0	0	0	6	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	871	0	1087	0	0	0	0	2403	559	0	1265	360
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA	Free		NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases									Free			Free
Actuated Green, G (s)	23.9		53.9					63.6	100.0		33.6	100.0
Effective Green, g (s)	23.9		53.9					63.6	100.0		33.6	100.0
Actuated g/C Ratio	0.24		0.54					0.64	1.00		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)	820		1945					2250	1536		1189	1536
v/s Ratio Prot	c0.25		0.30					c0.68			0.36	
v/s Ratio Perm									0.36			0.23
v/c Ratio	1.06		0.56					1.07	0.36		1.06	0.23
Uniform Delay, d1	38.0		15.2					18.2	0.0		33.2	0.0
Progression Factor	1.00		1.00					0.77	1.00		0.61	1.00
Incremental Delay, d2	49.3		0.2					31.7	0.1		39.7	0.2
Delay (s)	87.3		15.4					45.8	0.1		60.0	0.2
Level of Service	F		B					D	A		E	A
Approach Delay (s)		47.4			0.0			37.1			46.7	
Approach LOS		D			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.6	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)	598	88	80	188	85	516	58	1641	188	480	1575	188
Future Volume (veh/h)	568	62	60	180	33	518	50	1641	130	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	141	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	207	69	1449	639	282	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	141	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	40.9	5.9	8.2	30.1	2.8
Cycle Q Clear(g_c), s	19.2	0.0	0.0	4.9	0.0	4.9	3.0	40.9	5.9	8.2	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	207	69	1449	639	282	2326	1951
V/C Ratio(X)	0.81	0.00	0.00	2.65	0.00	2.71	0.78	1.23	0.22	1.57	0.74	0.10
Avail Cap(c_a), veh/h	1135	596	0	88	0	207	101	1449	639	282	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	0.45	0.45	0.45
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	785.0	20.6	110.2	0.8	264.0	1.0	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	9.7	0.0	0.0	21.2	0.0	50.9	1.9	42.1	2.6	14.2	14.3	2.0
LnGrp Delay(d),s/veh	37.8	0.0	0.0	821.3	0.0	828.4	68.2	139.7	20.0	311.3	30.2	6.0
LnGrp LOS	D			F		F	E	F	B	F	C	A
Approach Vol, veh/h		724			795			1979			2352	
Approach Delay, s/veh		37.8			826.3			129.2			81.1	
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	13.1	46.9		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	8.2	34.2		32.0	5.7	* 38		4.9
Max Q Clear Time (g_c+I1), s	10.2	42.9		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	193.3
HCM 2010 LOS	F

Notes

Intersection						
Int Delay, s/veh	81.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	590	1439	55	222	1587
Future Vol, veh/h	0	590	1439	55	222	1587
Conflicting Peds, #/hr	0	30	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	2929	822	0	0	1584	0
Stage 1	1584	-	-	-	-	-
Stage 2	1345	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.83	3.33			2.22	-
Pot Cap-1 Maneuver	12	~ 317	-	-	411	-
Stage 1	154	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	5	~ 307	-	-	404	-
Mov Cap-2 Maneuver	5	-	-	-	-	-
Stage 1	151	-	-	-	-	-
Stage 2	82	-	-	-	-	-

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	786	60	273	963	420
Future Volume (veh/h)	459	1173	596	245	496	255	426	786	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	1863
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	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	362	1340	573	172	961	406	415	782	59	274	953	402
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	1774	3539	1494
Grp Volume(v), veh/h	499	1275	648	266	539	277	463	457	465	297	1047	457
Grp Sat Flow(s),veh/h/ln	1774	1770	1514	1774	1770	1495	1721	1770	1799	1774	1770	1494
Q Serve(g_s), s	28.6	43.8	37.0	13.6	18.3	16.2	16.9	33.0	33.0	21.6	37.7	23.7
Cycle Q Clear(g_c), s	28.6	43.8	37.0	13.6	18.3	16.2	16.9	33.0	33.0	21.6	37.7	23.7
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	362	1340	573	172	961	406	415	417	424	274	953	402
V/C Ratio(X)	1.38	0.95	1.13	1.54	0.56	0.68	1.11	1.10	1.10	1.08	1.10	1.14
Avail Cap(c_a), veh/h	362	1340	573	172	961	406	415	417	424	274	953	402
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	8.3	63.2	43.8	22.2	61.6	53.5	53.5	59.2	51.1	20.1
Incr Delay (d2), s/veh	172.7	4.0	63.2	271.3	2.4	9.0	79.0	72.6	72.3	79.0	59.9	87.4
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	31.3	21.3	24.4	19.6	9.3	7.6	12.6	24.5	24.9	16.6	28.3	19.5
LnGrp Delay(d),s/veh	214.1	19.8	71.5	334.5	46.2	31.1	140.6	126.1	125.8	138.2	111.1	107.5
LnGrp LOS	F	B	F	F	D	C	F	F	F	F	F	F
Approach Vol, veh/h		2422			1082			1385			1801	
Approach Delay, s/veh		73.7			113.2			130.8			114.6	
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	21.3	42.8	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	16.9	37.7	28.6	38.0
Max Q Clear Time (g_c+I1), s	23.6	35.0	15.6	45.8	18.9	38.7	38.6	20.3
Green Ext Time (p_c), s	0.0	0.0	0.0	7.1	0.0	0.0	0.0	17.1

Intersection Summary	
HCM 2010 Ctrl Delay	102.9
HCM 2010 LOS	F

APPENDIX I

MTS INFORMATION

SERIAL_NUMBER	SCHEDULE_NAME	SURVEY_DATE	SURVEY_STATUS	SURVEY_TYPE	SURVEY_SOURCE	PATTERN_ID	ROUTE_NUMBER	ROUTE_NAME	DIRECTION_NAME	BRANCH	SERVICE_CODE	SERVICE_TYPE	SERVICE_MODE	TRIP_START_TIME	TIME_PERIOD
11280061	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 14:19:00	Midday
11280058	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 13:34:00	Midday
11280110	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 20:04:00	PM Late
11280082	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 20:19:00	PM Late
11280107	MTS_Jan16 (Weekday)		2		0	51530110	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 0:30:00	Other
11280064	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 15:04:00	PM Peak
11280077	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 18:19:00	PM Late
11280073	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 17:19:00	PM Peak
11280083	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 20:49:00	PM Late
11280105	MTS_Jan16 (Weekday)		2		0	51530110	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 23:30:00	PM Late
11280112	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 19:04:00	PM Late
11280069	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 16:19:00	PM Peak
11280065	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 15:19:00	PM Peak
11280071	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 16:49:00	PM Peak
11280072	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 17:04:00	PM Peak
11280066	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 15:34:00	PM Peak
11280062	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 14:34:00	Midday
11280106	MTS_Jan16 (Weekday)		2		0	51530110	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 0:00:00	Other
11280068	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 16:04:00	PM Peak
11280076	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 18:04:00	PM Late
11280057	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 13:19:00	Midday
11280080	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 19:19:00	PM Late
11280100	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 22:49:00	PM Late
11280067	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 15:49:00	PM Peak
11280097	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 21:19:00	PM Late
11280078	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 18:34:00	PM Late
11280070	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 16:34:00	PM Peak
11280098	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 21:49:00	PM Late
11280081	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 19:49:00	PM Late
11280075	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 17:49:00	PM Peak
11280101	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 23:19:00	PM Late
11280099	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 22:19:00	PM Late
11280059	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 13:49:00	Midday
11280060	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 14:04:00	Midday
11280063	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 14:49:00	Midday
11280074	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 17:34:00	PM Peak
11280079	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 18:49:00	PM Late
11280111	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 19:34:00	PM Late
11280113	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 20:34:00	PM Late
11280049	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 11:19:00	Midday
11280033	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 7:19:00	AM Peak
11280037	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 8:19:00	AM Peak
11280038	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 8:34:00	AM Peak
11280056	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 13:04:00	Midday
11280047	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 10:49:00	Midday
11280039	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 8:49:00	AM Peak
11280040	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 9:04:00	Midday
11280048	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 11:04:00	Midday
11280025	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 5:19:00	AM Early
11280024	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 5:04:00	AM Early
11280036	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 8:04:00	AM Peak
11280051	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 11:49:00	Midday
11280034	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 7:34:00	AM Peak
11280050	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 11:34:00	Midday
11280035	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 7:49:00	AM Peak
11280046	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 10:34:00	Midday
11280032	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 7:04:00	AM Peak
11280027	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 5:49:00	AM Early
11280045	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 10:19:00	Midday
11280030	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 6:34:00	AM Peak
11280042	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 9:34:00	Midday
11280053	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 12:19:00	Midday
11280054	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 12:34:00	Midday
11280044	MTS_Jan16 (Weekday)		2		0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 10:04:00	Midday

11280055	MTS_Jan16 (Weekday)	2	0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 12:49:00	Midday
11280031	MTS_Jan16 (Weekday)	2	0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 6:49:00	AM Peak
11280028	MTS_Jan16 (Weekday)	2	0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 6:04:00	AM Peak
11280029	MTS_Jan16 (Weekday)	2	0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 6:19:00	AM Peak
11280052	MTS_Jan16 (Weekday)	2	0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 12:04:00	Midday
11280041	MTS_Jan16 (Weekday)	2	0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 9:19:00	Midday
11280043	MTS_Jan16 (Weekday)	2	0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 9:49:00	Midday
11280026	MTS_Jan16 (Weekday)	2	0	51530105	530	Route #530 Green Line	West	to Imperial	MTS	Corridor	Rail	12/30/1899 5:34:00	AM Early
11280095	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 21:36:00	PM Late
11280103	MTS_Jan16 (Weekday)	2	0	51530107	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 23:06:00	PM Late
11280104	MTS_Jan16 (Weekday)	2	0	51530107	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 23:36:00	PM Late
11280102	MTS_Jan16 (Weekday)	2	0	51530107	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 22:36:00	PM Late
11280096	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 22:06:00	PM Late
11280094	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 21:06:00	PM Late
11280092	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 20:06:00	PM Late
11280093	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 20:36:00	PM Late
11280007	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 15:36:00	PM Peak
11279981	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 9:06:00	Midday
11279995	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 12:36:00	Midday
11279998	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 13:21:00	Midday
11279990	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 11:21:00	Midday
11279982	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 9:21:00	Midday
11279983	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 9:36:00	Midday
11279997	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 13:06:00	Midday
11279999	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 13:36:00	Midday
11279973	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 7:06:00	AM Peak
11279988	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 10:51:00	Midday
11279996	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 12:51:00	Midday
11279965	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 5:06:00	AM Early
11280000	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 13:51:00	Midday
11279961	MTS_Jan16 (Weekday)	2	0	51530125	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 4:08:00	AM Early
11279970	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 6:21:00	AM Peak
11279984	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 9:51:00	Midday
11279972	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 6:51:00	AM Peak
11280008	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 15:51:00	PM Peak
11280003	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 14:36:00	Midday
11279974	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 7:21:00	AM Peak
11279971	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 6:36:00	AM Peak
11279979	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 8:36:00	AM Peak
11279976	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 7:51:00	AM Peak
11279963	MTS_Jan16 (Weekday)	2	0	51530125	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 4:38:00	AM Early
11279989	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 11:06:00	Midday
11279987	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 10:36:00	Midday
11279977	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 8:06:00	AM Peak
11280005	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 15:06:00	PM Peak
11279991	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 11:36:00	Midday
11279985	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 10:06:00	Midday
11279993	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 12:06:00	Midday
11279968	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 5:51:00	AM Early
11280006	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 15:21:00	PM Peak
11279986	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 10:21:00	Midday
11280002	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 14:21:00	Midday
11279960	MTS_Jan16 (Weekday)	2	0	51530125	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 3:53:00	Other
11279978	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 8:21:00	AM Peak
11279967	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 5:36:00	AM Early
11279962	MTS_Jan16 (Weekday)	2	0	51530125	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 4:23:00	AM Early
11279992	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 11:51:00	Midday
11279966	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 5:21:00	AM Early
11280004	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 14:51:00	Midday
11279994	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 12:21:00	Midday
11279969	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 6:06:00	AM Peak
11279975	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 7:36:00	AM Peak
11279964	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 4:51:00	AM Early
11279980	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 8:51:00	AM Peak
11280001	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 14:06:00	Midday

11280013	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 17:06:00	PM Peak
11280020	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 18:51:00	PM Late
11280019	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 18:36:00	PM Late
11280012	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 16:51:00	PM Peak
11280021	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 19:06:00	PM Late
11280018	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 18:21:00	PM Late
11280022	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 19:21:00	PM Late
11280023	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 19:36:00	PM Late
11280017	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 18:06:00	PM Late
11280016	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 17:51:00	PM Peak
11280014	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 17:21:00	PM Peak
11280009	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 16:06:00	PM Peak
11280010	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 16:21:00	PM Peak
11280015	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 17:36:00	PM Peak
11280011	MTS_Jan16 (Weekday)	2	0	51530103	530	Route #530 Green Line	East	to Santee	MTS	Corridor	Rail	12/30/1899 16:36:00	PM Peak

SERVICE_PERIOD	TRIP_NUMBER	BLOCK_NUMBER	RUN_NUMBER	VEHICLE_NUMBER	VEHICLE_DESCRIPTION	VEHICLE_SEATS	CONDITION_NUMBER	CHECKER_NAME	COMMENTS	SORT_ORDER	STOP_ID	MAIN_CROSS_STREET
Weekday	83	1815698	0		NA	181.85	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	77	1815690	0		NA	187	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	129	1815696	0		NA	181.2	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	131	1815687	0		NA	143.08	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	151	1815700	0		NA	142	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	89	1815696	0		NA	181.33	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	115	1815689	0		NA	186	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	107	1815700	0		NA	182.57	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	135	1815689	0		NA	143.67	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	147	1815691	0		NA	135.67	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	121	1815697	0		NA	182.77	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	99	1815691	0		NA	182.18	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	91	1815687	0		NA	186	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	103	1815698	0		NA	181.09	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	105	1815699	0		NA	182.57	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	93	1815688	0		NA	186	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	85	1815699	0		NA	183.69	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	149	1815698	0		NA	145.87	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	97	1815690	0		NA	182.46	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	113	1815688	0		NA	186	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	75	1815689	0		NA	186	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	123	1815698	0		NA	182	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	143	1815687	0		NA	144.33	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	95	1815689	0		NA	188.4	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	137	1815691	0		NA	140	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	117	1815690	0		NA	188	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	101	1815697	0		NA	178.13	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	139	1815698	0		NA	144.29	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	127	1815700	0		NA	184	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	111	1815687	0		NA	187.2	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	145	1815689	0		NA	148	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	141	1815700	0		NA	136	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	79	1815691	0		NA	189.82	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	81	1815697	0		NA	177.67	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	87	1815700	0		NA	181	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	109	1815696	0		NA	176.73	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	119	1815691	0		NA	188	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	125	1815699	0		NA	183.43	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	133	1815688	0		NA	176	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	59	1815691	0		NA	188.4	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	27	1815700	0		NA	183	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	35	1815689	0		NA	188	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	37	1815690	0		NA	187	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	73	1815688	0		NA	185.33	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	55	1815689	0		NA	187.38	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	39	1815691	0		NA	189	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	41	1815697	0		NA	181.85	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	57	1815690	0		NA	183.14	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	7	1815687	0		NA	185	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	5	1815696	0		NA	183.27	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	33	1815688	0		NA	186	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	63	1815698	0		NA	181.85	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	29	1815696	0		NA	184	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	61	1815697	0		NA	181.85	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	31	1815687	0		NA	185	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	53	1815688	0		NA	184.8	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	25	1815699	0		NA	182.18	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	15	1815689	0		NA	187	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	51	1815687	0		NA	185.45	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	21	1815697	0		NA	182.77	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	45	1815699	0		NA	184.29	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	67	1815700	0		NA	182.77	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	69	1815696	0		NA	183.27	0		This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	49	1815696	0		NA	182	0		This is the average of one or more trips.	90	75062	SDSU Transit Center

Weekday	71	1815687	0	NA	185.54	0	This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	23	1815698	0	NA	181.85	0	This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	17	1815690	0	NA	187.71	0	This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	19	1815691	0	NA	189.82	0	This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	65	1815699	0	NA	182.77	0	This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	43	1815698	0	NA	182	0	This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	47	1815700	0	NA	181.85	0	This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	13	1815688	0	NA	186	0	This is the average of one or more trips.	90	75062	SDSU Transit Center
Weekday	144	1815687	0	NA	143.2	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	150	1815698	0	NA	145.87	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	152	1815700	0	NA	136	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	148	1815691	0	NA	132.8	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	146	1815689	0	NA	130.22	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	142	1815700	0	NA	142	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	138	1815691	0	NA	139.11	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	140	1815698	0	NA	147.71	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	104	1815698	0	NA	183	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	52	1815687	0	NA	184.8	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	80	1815691	0	NA	189.33	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	86	1815699	0	NA	181.09	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	70	1815696	0	NA	182.18	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	54	1815688	0	NA	185.14	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	56	1815689	0	NA	189.33	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	84	1815698	0	NA	181.85	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	88	1815700	0	NA	182.77	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	36	1815689	0	NA	188	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	66	1815699	0	NA	182.18	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	82	1815697	0	NA	181.09	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	20	1815691	0	NA	189.6	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	90	1815696	0	NA	181.09	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	4	1815687	0	NA	184.36	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	30	1815696	0	NA	183	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	58	1815690	0	NA	181.67	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	34	1815688	0	NA	184	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	106	1815699	0	NA	182	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	96	1815689	0	NA	180	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	38	1815690	0	NA	187	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	32	1815687	0	NA	185.45	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	48	1815700	0	NA	182	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	42	1815697	0	NA	183	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	12	1815689	0	NA	186	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	68	1815700	0	NA	182.57	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	64	1815698	0	NA	181.85	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	44	1815698	0	NA	182.18	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	100	1815691	0	NA	188.4	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	72	1815687	0	NA	186	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	60	1815691	0	NA	189.6	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	76	1815689	0	NA	186	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	26	1815699	0	NA	183.27	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	102	1815697	0	NA	181.85	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	62	1815697	0	NA	182.18	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	94	1815688	0	NA	185.14	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	2	1815696	0	NA	183.43	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	46	1815699	0	NA	182.77	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	24	1815698	0	NA	182	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	8	1815688	0	NA	185.33	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	74	1815688	0	NA	185.14	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	22	1815697	0	NA	183.6	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	98	1815690	0	NA	181.82	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	78	1815690	0	NA	187.64	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	28	1815700	0	NA	183	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	40	1815691	0	NA	189.33	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	16	1815690	0	NA	186.46	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	50	1815696	0	NA	182.67	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	92	1815687	0	NA	185.54	0	This is the average of one or more trips.	190	75063	SDSU Transit Center

Weekday	116	1815689	0	NA	187.2	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	130	1815696	0	NA	181.2	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	128	1815700	0	NA	181.09	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	114	1815688	0	NA	185.33	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	132	1815687	0	NA	141.09	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	126	1815699	0	NA	180	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	134	1815688	0	NA	185.14	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	136	1815689	0	NA	146.46	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	124	1815698	0	NA	181.2	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	122	1815697	0	NA	182	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	118	1815690	0	NA	186.67	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	108	1815700	0	NA	182.57	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	110	1815696	0	NA	182.67	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	120	1815691	0	NA	188	0	This is the average of one or more trips.	190	75063	SDSU Transit Center
Weekday	112	1815687	0	NA	187.2	0	This is the average of one or more trips.	190	75063	SDSU Transit Center

TRAVEL_DIRECTION	TIMEPOINT	SEGMENT_MILES	TIME_SCHEDULED	TIME_ACTUAL_ARRIVE	TIME_ACTUAL_DEPART	DWELL_TIME	RUNNING_TIME_ACTUAL	PASSENGERS_ON	PASSENGERS_OFF	PASSENGERS_IN	PASSENGERS_SPOT	WHEELCHAIRS	BICYCLES	COMMENT_NUMBER
	-1	1.58	12/30/1899 14:45:00	1/1/1900 14:47	1/1/1900 14:48	0.65	3.75	30.69	16.38	66.3		0		
	-1	1.58	12/30/1899 14:00:00	1/1/1900 14:01	1/1/1900 14:02	0.6	3.73	46.91	13.49	88.99		0		
	-1	1.58	12/30/1899 20:30:00	1/1/1900 20:31	1/1/1900 20:31	0.61	3.68	11.69	4.69	32.19		0		
	-1	1.58	12/30/1899 20:45:00	1/1/1900 20:46	1/1/1900 20:46	0.52	3.67	8.76	5.53	17.76		0		
	-1	1.58	12/30/1899 0:30:00	1/1/1900 0:29	1/1/1900 0:30		3.73	9.29	0	9.29		0		
	-1	1.58	12/30/1899 15:30:00	1/1/1900 15:31	1/1/1900 15:31	0.78	3.68	57.88	20.33	100.77		0		
	-1	1.58	12/30/1899 18:45:00	1/1/1900 18:43	1/1/1900 18:44	0.66	3.85	22.79	12.69	48.49		0		
	-1	1.58	12/30/1899 17:45:00	1/1/1900 17:48	1/1/1900 17:49	0.72	3.94	22.28	15.35	56.14		0		
	-1	1.58	12/30/1899 21:15:00	1/1/1900 21:16	1/1/1900 21:16	0.51	3.62	6.08	5.41	23.33		0		
	-1	1.58	12/30/1899 23:30:00	1/1/1900 23:29	1/1/1900 23:30		3.68	5.66	0	5.66		0		
	-1	1.58	12/30/1899 19:30:00	1/1/1900 19:31	1/1/1900 19:32	0.58	3.81	9.23	7.3	26.69		0		
	-1	1.58	12/30/1899 16:45:00	1/1/1900 16:46	1/1/1900 16:46	0.58	3.73	29.63	21.27	62.18		0		
	-1	1.58	12/30/1899 15:45:00	1/1/1900 15:48	1/1/1900 15:49	0.62	3.62	33.24	31.74	64.41		0		
	-1	1.58	12/30/1899 17:15:00	1/1/1900 17:17	1/1/1900 17:17	0.67	3.58	25.72	16.9	63.27		0		
	-1	1.58	12/30/1899 17:30:00	1/1/1900 17:32	1/1/1900 17:33	0.68	3.75	32.85	13.57	73.14		0		
	-1	1.58	12/30/1899 16:00:00	1/1/1900 16:01	1/1/1900 16:01	0.55	3.62	33.74	16.49	59.49		0		
	-1	1.58	12/30/1899 15:00:00	1/1/1900 15:00	1/1/1900 15:01	0.84	3.68	34.84	16.23	73.46		0		
	-1	1.58	12/30/1899 0:00:00	1/1/1900 19:09	1/1/1900 19:10		4.45	5.59	0.39	5.19		0		
	-1	1.58	12/30/1899 16:30:00	1/1/1900 16:32	1/1/1900 16:33	0.64	3.66	28.61	15.92	68.61		0		
	-1	1.58	12/30/1899 18:30:00	1/1/1900 18:31	1/1/1900 18:31	0.6	3.75	19.99	15.29	38.89		0		
	-1	1.58	12/30/1899 13:45:00	1/1/1900 13:47	1/1/1900 13:47	0.61	3.69	29.58	23.41	61.49		0		
	-1	1.58	12/30/1899 19:45:00	1/1/1900 19:47	1/1/1900 19:47	0.55	3.67	11.24	6.99	29.08		0		
	-1	1.58	12/30/1899 23:15:00	1/1/1900 23:16	1/1/1900 23:16	0.48	3.55	3.08	3.49	14.74		0		
	-1	1.58	12/30/1899 16:15:00	1/1/1900 16:15	1/1/1900 16:16	0.57	3.73	27.89	11.89	66.19		0		
	-1	1.58	12/30/1899 21:45:00	1/1/1900 21:48	1/1/1900 21:48	0.59	3.57	17.55	10.77	32.77		0		
	-1	1.58	12/30/1899 19:00:00	1/1/1900 19:01	1/1/1900 19:02	0.59	3.67	32.66	17.88	52.44		0		
	-1	1.58	12/30/1899 17:00:00	1/1/1900 17:01	1/1/1900 17:02	0.9	3.67	33.86	15.99	73.53		0		
	-1	1.58	12/30/1899 22:15:00	1/1/1900 22:15	1/1/1900 22:16	0.78	3.64	15.14	10.42	38.64		0		
	-1	1.58	12/30/1899 20:15:00	1/1/1900 20:15	1/1/1900 20:15	0.61	3.69	8.41	6.41	21.08		0		
	-1	1.58	12/30/1899 18:15:00	1/1/1900 18:18	1/1/1900 18:19	0.73	3.67	26.19	13.99	44.59		0		
	-1	1.58	12/30/1899 23:45:00	1/1/1900 23:48	1/1/1900 23:48	0.54	3.58	1.66	6.99	12.58		0		
	-1	1.58	12/30/1899 22:45:00	1/1/1900 22:46	1/1/1900 22:46	0.58	3.53	4.79	9.09	22.49		0		
	-1	1.58	12/30/1899 14:15:00	1/1/1900 14:17	1/1/1900 14:17	0.56	3.75	41.99	9.36	79.81		0		
	-1	1.58	12/30/1899 14:30:00	1/1/1900 14:30	1/1/1900 14:31	0.66	3.73	26.49	12.41	57.16		0		
	-1	1.58	12/30/1899 15:15:00	1/1/1900 15:16	1/1/1900 15:16	0.62	3.71	39.66	24.99	75.58		0		
	-1	1.58	12/30/1899 18:00:00	1/1/1900 18:02	1/1/1900 18:03	0.53	3.74	24.81	12.63	42.27		0		
	-1	1.58	12/30/1899 19:15:00	1/1/1900 19:14	1/1/1900 19:15	0.62	3.63	17.16	9.83	33.16		0		
	-1	1.58	12/30/1899 20:00:00	1/1/1900 20:01	1/1/1900 20:01	0.51	3.78	8.35	9.21	23.42		0		
	-1	1.58	12/30/1899 21:00:00	1/1/1900 21:01	1/1/1900 21:02	0.48	3.77	10.14	5.28	27.99		0		
	-1	1.58	12/30/1899 11:45:00	1/1/1900 11:47	1/1/1900 11:47	0.59	4.16	18.39	27.19	55.09		0		
	-1	1.58	12/30/1899 7:45:00	1/1/1900 7:46	1/1/1900 7:47	0.66	3.73	17.91	73.49	81.74		0		
	-1	1.58	12/30/1899 8:45:00	1/1/1900 8:46	1/1/1900 8:47	0.58	3.78	17.99	33.16	64.58		0		
	-1	1.58	12/30/1899 9:00:00	1/1/1900 9:01	1/1/1900 9:02	0.6	3.81	21.74	28.99	64.66		0		
	-1	1.58	12/30/1899 13:30:00	1/1/1900 13:32	1/1/1900 13:33	0.95	3.83	24.22	28.22	56.88		0		
	-1	1.58	12/30/1899 11:15:00	1/1/1900 11:18	1/1/1900 11:18	0.56	3.82	20.38	12.07	62.84		0		
	-1	1.58	12/30/1899 9:15:00	1/1/1900 9:16	1/1/1900 9:17	0.66	3.62	21.49	46.62	56.24		0		
	-1	1.58	12/30/1899 9:30:00	1/1/1900 9:33	1/1/1900 9:34	0.6	3.88	21.07	27.07	75.76		0		
	-1	1.58	12/30/1899 11:30:00	1/1/1900 11:32	1/1/1900 11:33	0.59	3.67	21.78	18.35	56.42		0		
	-1	1.58	12/30/1899 5:45:00	1/1/1900 5:45	1/1/1900 5:45	0.47	3.75	5.74	3.99	39.41		0		
	-1	1.58	12/30/1899 5:30:00	1/1/1900 5:31	1/1/1900 5:31	0.51	3.66	14.09	6.54	67.18		0		
	-1	1.58	12/30/1899 8:30:00	1/1/1900 8:32	1/1/1900 8:33	0.58	3.73	24.62	34.24	93.24		0		
	-1	1.58	12/30/1899 12:15:00	1/1/1900 12:16	1/1/1900 12:17	0.63	3.69	30.23	19.3	66.07		0		
	-1	1.58	12/30/1899 8:00:00	1/1/1900 8:02	1/1/1900 8:02	0.56	3.9	33.83	38.83	106.49		0		
	-1	1.58	12/30/1899 12:00:00	1/1/1900 12:01	1/1/1900 12:02	0.59	3.7	35.38	21.38	76.76		0		
	-1	1.58	12/30/1899 8:15:00	1/1/1900 8:15	1/1/1900 8:16	0.64	3.88	20.91	15.33	69.83		0		
	-1	1.58	12/30/1899 11:00:00	1/1/1900 11:03	1/1/1900 11:04	0.68	3.61	31.29	14.29	73.79		0		
	-1	1.58	12/30/1899 7:30:00	1/1/1900 7:31	1/1/1900 7:31	0.64	3.89	20.81	31.45	83.81		0		
	-1	1.58	12/30/1899 6:15:00	1/1/1900 6:16	1/1/1900 6:16	0.53	3.72	21.49	5.99	78.83		0		
	-1	1.58	12/30/1899 10:45:00	1/1/1900 10:48	1/1/1900 10:48	0.56	3.63	19.09	37.09	52.27		0		
	-1	1.58	12/30/1899 7:00:00	1/1/1900 7:01	1/1/1900 7:02	0.58	3.67	29.38	9.23	110.69		0		
	-1	1.58	12/30/1899 10:00:00	1/1/1900 10:01	1/1/1900 10:01	0.56	3.83	21.35	18.99	53.49		0		
	-1	1.58	12/30/1899 12:45:00	1/1/1900 12:47	1/1/1900 12:48	0.59	3.8	29.69	16.07	70.99		0		
	-1	1.58	12/30/1899 13:00:00	1/1/1900 13:02	1/1/1900 13:02	0.6	3.73	29.36	9.54	65.45		0		
	-1	1.58	12/30/1899 10:30:00	1/1/1900 10:33	1/1/1900 10:34	0.61	3.84	19.66	19.08	66.66		0		

-1	1.58	12/30/1899 13:15:00	1/1/1900 13:17	1/1/1900 13:18	0.58	3.79	41.84	16.69	81.69	0
-1	1.58	12/30/1899 7:15:00	1/1/1900 7:16	1/1/1900 7:17	0.53	3.75	29.53	13.84	124.15	0
-1	1.58	12/30/1899 6:30:00	1/1/1900 6:30	1/1/1900 6:31	0.57	3.66	19.49	6.21	91.85	0
-1	1.58	12/30/1899 6:45:00	1/1/1900 6:46	1/1/1900 6:46	0.59	3.53	21.72	8.18	94.99	0
-1	1.58	12/30/1899 12:30:00	1/1/1900 12:31	1/1/1900 12:32	0.62	3.8	31.23	17.84	71.99	0
-1	1.58	12/30/1899 9:45:00	1/1/1900 9:47	1/1/1900 9:48	0.67	3.91	16.83	34.24	58.24	0
-1	1.58	12/30/1899 10:15:00	1/1/1900 10:18	1/1/1900 10:19	0.53	3.93	18.99	16.53	63.38	0
-1	1.58	12/30/1899 6:00:00	1/1/1900 6:00	1/1/1900 6:01	0.69	3.65	9.69	4.59	64.59	0
-1	0.82	12/30/1899 22:15:00	1/1/1900 22:16	1/1/1900 22:16	0.53	2.62	10.39	16.39	43.19	0
-1	0	12/30/1899 23:45:00	1/1/1900 23:45	1/1/1900 23:47			0.79	16.53	0.06	0
-1	0	12/30/1899 0:15:00	1/1/1900 0:18	1/1/1900 0:18			0.29	13.39	0	0
-1	0	12/30/1899 23:15:00	1/1/1900 23:18	1/1/1900 23:19			0.49	18.09	0	0
-1	0.82	12/30/1899 22:45:00	1/1/1900 22:48	1/1/1900 22:49	0.55	2.65	9.11	15.33	38.66	0
-1	0.82	12/30/1899 21:45:00	1/1/1900 21:47	1/1/1900 21:48	0.65	2.74	15.89	18.79	53.29	0
-1	0.82	12/30/1899 20:45:00	1/1/1900 20:46	1/1/1900 20:47	0.64	2.74	20.11	25.11	60.33	0
-1	0.82	12/30/1899 21:15:00	1/1/1900 21:16	1/1/1900 21:16	0.58	2.53	13.64	20.64	51.92	0
-1	0.82	12/30/1899 16:15:00	1/1/1900 16:17	1/1/1900 16:17	0.59	2.79	18.91	28.41	79.49	0
-1	0.82	12/30/1899 9:45:00	1/1/1900 9:47	1/1/1900 9:48	0.54	2.76	6.99	36.09	26.49	0
-1	0.82	12/30/1899 13:15:00	1/1/1900 13:19	1/1/1900 13:19	0.6	2.8	26.66	23.55	60.44	0
-1	0.82	12/30/1899 14:00:00	1/1/1900 14:01	1/1/1900 14:02	0.65	2.66	42.99	27.45	85.9	0
-1	0.82	12/30/1899 12:00:00	1/1/1900 12:01	1/1/1900 12:01	0.61	2.68	21.45	19.45	56.18	0
-1	0.82	12/30/1899 10:00:00	1/1/1900 10:02	1/1/1900 10:03	0.55	2.66	11.57	22.85	30.14	0
-1	0.82	12/30/1899 10:15:00	1/1/1900 10:16	1/1/1900 10:17	0.64	2.73	12.44	18.66	34.22	0
-1	0.82	12/30/1899 13:45:00	1/1/1900 13:48	1/1/1900 13:49	0.61	2.83	23.76	38.23	62.99	0
-1	0.82	12/30/1899 14:15:00	1/1/1900 14:17	1/1/1900 14:17	0.56	2.94	33.92	20.99	72.15	0
-1	0.82	12/30/1899 7:45:00	1/1/1900 7:47	1/1/1900 7:48	0.63	2.83	7.16	46.99	27.91	0
-1	0.82	12/30/1899 11:30:00	1/1/1900 11:32	1/1/1900 11:33	0.57	2.73	16.45	31.45	45.54	0
-1	0.82	12/30/1899 13:30:00	1/1/1900 13:32	1/1/1900 13:33	0.57	2.81	20.45	29.81	61.09	0
-1	0.82	12/30/1899 5:45:00	1/1/1900 5:47	1/1/1900 5:48	0.43	2.51	6.09	1.79	14.89	0
-1	0.82	12/30/1899 14:30:00	1/1/1900 14:34	1/1/1900 14:34	0.62	2.74	18.45	28.9	55.9	0
-1	0.82	12/30/1899 4:45:00	1/1/1900 4:46	1/1/1900 4:47	0.48	2.77	0.45	1.63	6.18	0
-1	0.82	12/30/1899 7:00:00	1/1/1900 7:00	1/1/1900 7:01	0.55	2.76	4.62	9.99	25.49	0
-1	0.82	12/30/1899 10:30:00	1/1/1900 10:31	1/1/1900 10:32	0.72	2.73	10.08	30.08	39.41	0
-1	0.82	12/30/1899 7:30:00	1/1/1900 7:31	1/1/1900 7:32	0.62	2.68	9.66	39.66	38.66	0
-1	0.82	12/30/1899 16:30:00	1/1/1900 16:33	1/1/1900 16:33	0.58	2.77	18.83	34.74	83.91	0
-1	0.82	12/30/1899 15:15:00	1/1/1900 15:17	1/1/1900 15:17	0.59	2.73	25.16	28.33	74.24	0
-1	0.82	12/30/1899 8:00:00	1/1/1900 8:02	1/1/1900 8:03	0.52	2.79	8.58	31.08	32.58	0
-1	0.82	12/30/1899 7:15:00	1/1/1900 7:15	1/1/1900 7:16	0.64	2.8	12.09	19.45	34.45	0
-1	0.82	12/30/1899 9:15:00	1/1/1900 9:19	1/1/1900 9:19	0.56	2.79	16.24	44.24	41.24	0
-1	0.82	12/30/1899 8:30:00	1/1/1900 8:32	1/1/1900 8:32	0.52	2.72	7.99	22.58	30.49	0
-1	0.82	12/30/1899 5:15:00	1/1/1900 5:17	1/1/1900 5:18	0.43	2.64	3.59	1.29	13.09	0
-1	0.82	12/30/1899 11:45:00	1/1/1900 11:47	1/1/1900 11:48	0.62	2.85	16.78	28.42	47.21	0
-1	0.82	12/30/1899 11:15:00	1/1/1900 11:16	1/1/1900 11:17	0.49	2.79	13.46	15.84	40.99	0
-1	0.82	12/30/1899 8:45:00	1/1/1900 8:47	1/1/1900 8:47	0.53	2.75	8.99	37.9	29.54	0
-1	0.82	12/30/1899 15:45:00	1/1/1900 15:47	1/1/1900 15:48	0.61	2.73	23.59	41.59	75.89	0
-1	0.82	12/30/1899 12:15:00	1/1/1900 12:18	1/1/1900 12:18	0.69	2.8	22.49	29.29	59.39	0
-1	0.82	12/30/1899 10:45:00	1/1/1900 10:48	1/1/1900 10:49	0.61	2.9	16.29	36.99	39.19	0
-1	0.82	12/30/1899 12:45:00	1/1/1900 12:48	1/1/1900 12:48	0.63	2.82	14.74	20.74	57.49	0
-1	0.82	12/30/1899 6:30:00	1/1/1900 6:32	1/1/1900 6:32	0.58	2.88	8.18	5.45	26.27	0
-1	0.82	12/30/1899 16:00:00	1/1/1900 16:03	1/1/1900 16:04	0.64	2.62	21.92	35.38	87.23	0
-1	0.82	12/30/1899 11:00:00	1/1/1900 11:01	1/1/1900 11:01	0.53	2.66	22.99	22.27	50.9	0
-1	0.82	12/30/1899 15:00:00	1/1/1900 15:01	1/1/1900 15:02	0.58	2.84	27.57	32.99	79.85	0
-1	0.82	12/30/1899 4:30:00	1/1/1900 4:32	1/1/1900 4:33	0.54	2.67	2.71	3.57	14.71	0
-1	0.82	12/30/1899 9:00:00	1/1/1900 9:01	1/1/1900 9:01	0.5	2.7	7.15	24.84	24.46	0
-1	0.82	12/30/1899 6:15:00	1/1/1900 6:16	1/1/1900 6:17	0.57	2.81	9.49	4.58	25.49	0
-1	0.82	12/30/1899 5:00:00	1/1/1900 5:00	1/1/1900 5:01	0.5	2.62	0.22	0	6.55	0
-1	0.82	12/30/1899 12:30:00	1/1/1900 12:32	1/1/1900 12:33	0.69	2.63	18.14	38.71	63.71	0
-1	0.82	12/30/1899 6:00:00	1/1/1900 6:01	1/1/1900 6:01	0.46	2.75	6.19	3.29	19.39	0
-1	0.82	12/30/1899 15:30:00	1/1/1900 15:34	1/1/1900 15:34	0.72	2.69	56.36	40.09	119.63	0
-1	0.82	12/30/1899 13:00:00	1/1/1900 13:01	1/1/1900 13:02	0.73	2.66	24.27	21.9	55.54	0
-1	0.82	12/30/1899 6:45:00	1/1/1900 6:47	1/1/1900 6:47	0.56	2.82	4.16	7.74	19.33	0
-1	0.82	12/30/1899 8:15:00	1/1/1900 8:17	1/1/1900 8:17	0.54	2.67	7.66	21.77	28.22	0
-1	0.82	12/30/1899 5:30:00	1/1/1900 5:31	1/1/1900 5:32	0.44	2.75	0.69	1.69	9.53	0
-1	0.82	12/30/1899 9:30:00	1/1/1900 9:32	1/1/1900 9:33	0.6	2.78	11.22	28.22	37.66	0
-1	0.82	12/30/1899 14:45:00	1/1/1900 14:48	1/1/1900 14:49	0.68	2.74	19.99	26.38	57.07	0

-1	0.82	12/30/1899 17:45:00	1/1/1900 17:47	1/1/1900 17:47	0.6	2.74	19.39	31.29	97.19	0
-1	0.82	12/30/1899 19:30:00	1/1/1900 19:31	1/1/1900 19:32	0.7	2.71	12.19	30.49	43.79	0
-1	0.82	12/30/1899 19:15:00	1/1/1900 19:16	1/1/1900 19:17	0.58	2.71	14.09	20.36	49.72	0
-1	0.82	12/30/1899 17:30:00	1/1/1900 17:31	1/1/1900 17:31	0.68	2.83	27.99	28.33	112.88	0
-1	0.82	12/30/1899 19:45:00	1/1/1900 19:45	1/1/1900 19:46	0.61	2.75	12.54	19.36	35.9	0
-1	0.82	12/30/1899 19:00:00	1/1/1900 19:02	1/1/1900 19:02	0.58	2.8	20.63	22.27	51.63	0
-1	0.82	12/30/1899 20:00:00	1/1/1900 20:02	1/1/1900 20:02	0.52	2.76	11.99	19.99	41.42	0
-1	0.82	12/30/1899 20:15:00	1/1/1900 20:17	1/1/1900 20:18	0.55	2.64	8.76	11.69	32.76	0
-1	0.82	12/30/1899 18:45:00	1/1/1900 18:49	1/1/1900 18:49	0.77	2.82	38.79	31.19	89.19	0
-1	0.82	12/30/1899 18:30:00	1/1/1900 18:32	1/1/1900 18:33	0.69	2.74	30.99	34.33	87.66	0
-1	0.82	12/30/1899 18:00:00	1/1/1900 18:02	1/1/1900 18:02	0.57	2.67	23.77	30.22	93.66	0
-1	0.82	12/30/1899 16:45:00	1/1/1900 16:48	1/1/1900 16:49	0.61	2.7	25.21	41.64	96.64	0
-1	0.82	12/30/1899 17:00:00	1/1/1900 17:01	1/1/1900 17:02	0.62	2.71	24.88	25.33	107.44	0
-1	0.82	12/30/1899 18:15:00	1/1/1900 18:15	1/1/1900 18:15	0.61	2.58	17.99	21.16	67.66	0
-1	0.82	12/30/1899 17:15:00	1/1/1900 17:17	1/1/1900 17:18	0.68	2.7	25.09	33.89	100.89	0

APPENDIX J

ALTERNATIVE PROJECT SITE LOCATIONS

SDSU
New Student Housing Project EIR

SAN DIEGO STATE UNIVERSITY

Figure 6.0-3
Alternative Site Alternatives

APPENDIX K

POST-MITIGATION ANALYSIS CALCULATION SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	528	353	13	4	887	305	46	19	19	81	1	137
Future Volume (veh/h)	528	353	13	4	887	305	46	19	19	81	1	137
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		0.76
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	574	384	14	4	942	332	50	21	21	55	0	181
Adj No. of Lanes	2	2	0	1	2	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	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	633	2164	79	7	1567	675	136	53	53	142	0	193
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	3476	126	1774	3539	1525	925	389	388	1774	0	2404
Grp Volume(v), veh/h	574	195	203	4	942	332	92	0	0	55	0	181
Grp Sat Flow(s),veh/h/ln	1721	1770	1833	1774	1770	1525	1702	0	0	1774	0	1202
Q Serve(g_s), s	20.6	5.9	5.9	0.3	8.2	5.6	6.2	0.0	0.0	4.0	0.0	9.4
Cycle Q Clear(g_c), s	20.6	5.9	5.9	0.3	8.2	5.6	6.2	0.0	0.0	4.0	0.0	9.4
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	633	1101	1141	7	1567	675	232	0	0	142	0	193
V/C Ratio(X)	0.91	0.18	0.18	0.54	0.60	0.49	0.40	0.00	0.00	0.41	0.00	0.94
Avail Cap(c_a), veh/h	699	1101	1141	56	1567	675	405	0	0	142	0	193
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	0.37	0.37	0.37	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	50.4	10.1	10.1	62.4	4.5	4.3	49.7	0.0	0.0	55.1	0.0	57.6
Incr Delay (d2), s/veh	13.9	0.4	0.3	8.2	0.6	0.9	0.4	0.0	0.0	2.0	0.0	47.5
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	11.0	3.0	3.1	0.2	3.8	2.4	3.0	0.0	0.0	2.0	0.0	4.4
LnGrp Delay(d),s/veh	64.3	10.4	10.4	70.6	5.1	5.3	50.1	0.0	0.0	57.1	0.0	105.1
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		972			1278			92			240	
Approach Delay, s/veh		42.2			5.4			50.1			93.3	
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	84.0		15.0	27.6	61.4		22.1
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	2.3	7.9		11.4	22.6	10.2		8.2
Green Ext Time (p_c), s	0.0	20.5		0.0	0.6	16.2		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		29.0
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	364	879	75	24	585	204	50	11	11	276	23	454
Future Volume (veh/h)	364	879	75	24	585	204	50	11	11	276	23	454
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		0.90	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	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	396	955	82	26	636	222	54	12	12	210	0	609
Adj No. of Lanes	2	2	0	1	2	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	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	450	1518	130	33	1240	531	152	34	34	431	0	697
Arrive On Green	0.13	0.46	0.46	0.02	0.35	0.35	0.13	0.13	0.13	0.24	0.00	0.24
Sat Flow, veh/h	3442	3280	282	1774	3539	1515	1190	265	265	1774	0	2867
Grp Volume(v), veh/h	396	515	522	26	636	222	78	0	0	210	0	609
Grp Sat Flow(s),veh/h/ln	1721	1770	1792	1774	1770	1515	1723	0	0	1774	0	1433
Q Serve(g_s), s	15.1	29.6	29.6	2.0	19.1	14.9	5.5	0.0	0.0	13.6	0.0	27.4
Cycle Q Clear(g_c), s	15.1	29.6	29.6	2.0	19.1	14.9	5.5	0.0	0.0	13.6	0.0	27.4
Prop In Lane	1.00		0.16	1.00		1.00	0.69		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	450	819	829	33	1240	531	220	0	0	431	0	697
V/C Ratio(X)	0.88	0.63	0.63	0.79	0.51	0.42	0.35	0.00	0.00	0.49	0.00	0.87
Avail Cap(c_a), veh/h	524	819	829	74	1240	531	386	0	0	506	0	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.88	0.88	0.88	1.00	0.00	0.00	0.89	0.00	0.89
Uniform Delay (d), s/veh	57.2	27.3	27.3	65.5	34.5	33.1	53.4	0.0	0.0	43.5	0.0	48.7
Incr Delay (d2), s/veh	13.0	3.6	3.6	13.0	1.3	2.1	0.4	0.0	0.0	0.8	0.0	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	8.0	15.3	15.5	1.1	9.5	6.5	2.7	0.0	0.0	6.7	0.0	11.7
LnGrp Delay(d),s/veh	70.1	30.9	30.9	78.5	35.8	35.3	53.7	0.0	0.0	44.3	0.0	57.2
LnGrp LOS	E	C	C	E	D	D	D			D		E
Approach Vol, veh/h		1433			884			78			819	
Approach Delay, s/veh		41.7			36.9			53.7			53.9	
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	6.9	67.6		37.5	21.9	52.6		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		29.4	17.1	21.1		7.5
Green Ext Time (p_c), s	0.0	7.3		3.2	0.4	4.5		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		43.8
HCM 2010 LOS		D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	535	353	13	4	867	307	46	19	19	83	1	142
Future Volume (veh/h)	535	353	13	4	867	307	46	19	19	83	1	142
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		0.76
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	582	384	14	4	942	334	50	21	21	60	0	166
Adj No. of Lanes	2	2	0	1	2	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	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	640	2164	79	7	1559	672	136	53	53	142	0	193
Arrive On Green	0.19	0.62	0.62	0.01	0.88	0.88	0.14	0.14	0.14	0.08	0.00	0.08
Sat Flow, veh/h	3442	3476	126	1774	3539	1525	925	389	388	1774	0	2404
Grp Volume(v), veh/h	582	195	203	4	942	334	92	0	0	60	0	166
Grp Sat Flow(s),veh/h/ln	1721	1770	1833	1774	1770	1525	1702	0	0	1774	0	1202
Q Serve(g_s), s	20.9	5.9	5.9	0.3	8.5	5.8	6.2	0.0	0.0	4.1	0.0	9.7
Cycle Q Clear(g_c), s	20.9	5.9	5.9	0.3	8.5	5.8	6.2	0.0	0.0	4.1	0.0	9.7
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	640	1101	1141	7	1559	672	232	0	0	142	0	193
V/C Ratio(X)	0.91	0.18	0.18	0.54	0.60	0.50	0.40	0.00	0.00	0.42	0.00	0.97
Avail Cap(c_a), veh/h	699	1101	1141	56	1559	672	405	0	0	142	0	193
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	0.36	0.36	0.36	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	50.2	10.1	10.1	62.4	4.7	4.5	49.7	0.0	0.0	55.2	0.0	57.8
Incr Delay (d2), s/veh	14.4	0.4	0.3	8.2	0.6	1.0	0.4	0.0	0.0	2.0	0.0	54.4
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	11.2	3.0	3.1	0.2	3.8	2.4	3.0	0.0	0.0	2.1	0.0	4.7
LnGrp Delay(d),s/veh	64.7	10.4	10.4	70.5	5.3	5.5	50.1	0.0	0.0	57.2	0.0	112.2
LnGrp LOS	E	B	B	E	A	A	D			E		F
Approach Vol, veh/h		980			1280			92			246	
Approach Delay, s/veh		42.6			5.6			50.1			98.8	
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	84.0		15.0	27.8	61.1		22.1
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	2.3	7.9		11.7	22.9	18.5		8.2
Green Ext Time (p_c), s	0.0	20.5		0.0	0.6	16.1		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		30.0
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	387	879	75	24	585	211	50	11	11	285	23	472
Future Volume (veh/h)	387	879	75	24	585	211	50	11	11	285	23	472
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		0.90	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	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	421	955	82	26	636	229	54	12	12	215	0	631
Adj No. of Lanes	2	2	0	1	2	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	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	473	1498	129	33	1195	511	152	34	34	442	0	716
Arrive On Green	0.14	0.46	0.46	0.02	0.34	0.34	0.13	0.13	0.13	0.25	0.00	0.25
Sat Flow, veh/h	3442	3280	282	1774	3539	1513	1193	265	265	1774	0	2872
Grp Volume(v), veh/h	421	515	522	26	636	229	78	0	0	215	0	631
Grp Sat Flow(s),veh/h/ln	1721	1770	1792	1774	1770	1513	1723	0	0	1774	0	1436
Q Serve(g_s), s	16.1	29.9	29.9	2.0	19.4	15.8	5.5	0.0	0.0	13.9	0.0	28.3
Cycle Q Clear(g_c), s	16.1	29.9	29.9	2.0	19.4	15.8	5.5	0.0	0.0	13.9	0.0	28.3
Prop In Lane	1.00		0.16	1.00		1.00	0.69		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	473	808	818	33	1195	511	220	0	0	442	0	716
V/C Ratio(X)	0.89	0.64	0.64	0.79	0.53	0.45	0.35	0.00	0.00	0.49	0.00	0.88
Avail Cap(c_a), veh/h	524	808	818	74	1195	511	386	0	0	506	0	819
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	0.88	0.88	0.88	1.00	0.00	0.00	0.88	0.00	0.88
Uniform Delay (d), s/veh	56.8	27.9	27.9	65.5	35.8	34.6	53.4	0.0	0.0	43.0	0.0	48.4
Incr Delay (d2), s/veh	15.0	3.8	3.8	13.0	1.5	2.5	0.4	0.0	0.0	0.8	0.0	9.1
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	15.5	15.6	1.1	9.8	7.0	2.7	0.0	0.0	6.9	0.0	12.2
LnGrp Delay(d),s/veh	71.8	31.7	31.7	78.5	37.3	37.1	53.7	0.0	0.0	43.7	0.0	57.5
LnGrp LOS	E	C	C	E	D	D	D			D		E
Approach Vol, veh/h		1458			891			78			846	
Approach Delay, s/veh		43.3			38.5			53.7			54.0	
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	6.9	66.8		38.3	22.8	50.8		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	31.9		30.3	18.1	21.4		7.5
Green Ext Time (p_c), s	0.0	7.1		3.1	0.3	4.2		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		45.0
HCM 2010 LOS		D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	699	460	30	20	1087	413	80	30	30	166	20	177
Future Volume (veh/h)	699	460	30	20	1087	413	80	30	30	166	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		0.94	1.00		0.96	1.00		0.92	1.00		0.75
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	84	0	240
Adj No. of Lanes	2	2	0	1	2	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	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	727	1617	106	218	1426	613	153	58	58	137	0	183
Arrive On Green	0.21	0.48	0.48	0.25	0.81	0.81	0.16	0.16	0.16	0.08	0.00	0.08
Sat Flow, veh/h	3442	3357	221	1774	3539	1521	973	369	369	1774	0	2376
Grp Volume(v), veh/h	760	263	270	22	1160	449	153	0	0	84	0	240
Grp Sat Flow(s),veh/h/ln	1721	1770	1808	1774	1770	1521	1711	0	0	1774	0	1188
Q Serve(g_s), s	26.6	11.4	11.5	1.2	23.3	17.6	10.4	0.0	0.0	5.8	0.0	9.7
Cycle Q Clear(g_c), s	26.6	11.4	11.5	1.2	23.3	17.6	10.4	0.0	0.0	5.8	0.0	9.7
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	727	853	871	218	1426	613	269	0	0	137	0	183
V/C Ratio(X)	1.05	0.31	0.31	0.10	0.81	0.73	0.57	0.00	0.00	0.62	0.00	1.31
Avail Cap(c_a), veh/h	727	853	871	218	1426	613	407	0	0	137	0	183
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	0.98	0.00	0.98
Uniform Delay (d), s/veh	49.7	19.9	19.9	42.2	9.6	9.0	49.1	0.0	0.0	56.3	0.0	58.2
Incr Delay (d2), s/veh	46.0	0.9	0.9	0.0	0.5	0.7	0.7	0.0	0.0	8.0	0.0	173.4
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	17.3	5.8	5.9	0.6	10.7	7.1	5.0	0.0	0.0	3.2	0.0	7.6
LnGrp Delay(d),s/veh	95.7	20.8	20.8	42.2	10.1	9.7	49.8	0.0	0.0	64.3	0.0	231.6
LnGrp LOS	F	C	C	D	B	A	D			E		F
Approach Vol, veh/h		1293			1631			153			324	
Approach Delay, s/veh		54.9			10.4			49.8			188.2	
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	20.4	66.3		14.6	31.0	55.7		24.7
Change Period (Y+Rc), s	4.9	* 5.6		4.9	4.4	4.9		4.9
Max Green Setting (Gmax), s	5.8	* 61		9.7	26.6	40.6		30.0
Max Q Clear Time (g_c+I1), s	3.2	13.5		11.7	28.8	25.3		12.4
Green Ext Time (p_c), s	2.2	5.2		0.0	0.0	10.1		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		49.8
HCM 2010 LOS		D
Notes		

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		0.96	1.00		0.91	1.00		0.90
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	282	0	815
Adj No. of Lanes	2	2	0	1	2	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	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	564	1300	139	150	1185	506	142	54	54	403	0	648
Arrive On Green	0.16	0.41	0.41	0.08	0.33	0.33	0.15	0.15	0.15	0.23	0.00	0.23
Sat Flow, veh/h	3442	3202	342	1774	3539	1513	971	368	368	1774	0	2850
Grp Volume(v), veh/h	528	668	674	45	837	291	153	0	0	282	0	815
Grp Sat Flow(s),veh/h/ln	1721	1770	1774	1774	1770	1513	1708	0	0	1774	0	1425
Q Serve(g_s), s	22.7	54.0	54.6	3.6	30.9	23.8	12.6	0.0	0.0	21.9	0.0	34.1
Cycle Q Clear(g_c), s	22.7	54.0	54.6	3.6	30.9	23.8	12.6	0.0	0.0	21.9	0.0	34.1
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	564	718	720	150	1185	506	250	0	0	403	0	648
V/C Ratio(X)	0.94	0.93	0.94	0.30	0.71	0.57	0.61	0.00	0.00	0.70	0.00	1.26
Avail Cap(c_a), veh/h	564	718	720	150	1185	506	342	0	0	403	0	648
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	0.77	0.00	0.77
Uniform Delay (d), s/veh	61.9	42.5	42.7	64.5	43.5	41.1	59.0	0.0	0.0	53.2	0.0	58.0
Incr Delay (d2), s/veh	22.8	20.2	21.1	0.3	2.4	3.2	0.9	0.0	0.0	4.1	0.0	125.6
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	12.6	30.4	31.0	1.8	15.5	10.4	6.0	0.0	0.0	11.2	0.0	24.7
LnGrp Delay(d),s/veh	84.7	62.7	63.8	64.7	45.9	44.3	59.9	0.0	0.0	57.4	0.0	183.6
LnGrp LOS	F	E	E	E	D	D	E			E		F
Approach Vol, veh/h		1870			1173			153			1097	
Approach Delay, s/veh		69.3			46.2			60.9			151.1	
Approach LOS		E			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.6	66.5		39.0	29.0	55.1		26.9
Change Period (Y+Rc), s	4.9	* 5.6		4.9	4.4	4.9		4.9
Max Green Setting (Gmax), s	5.2	* 61		34.1	24.6	42.2		30.0
Max Q Clear Time (g_c+I1), s	5.8	56.6		36.1	24.7	32.9		14.6
Green Ext Time (p_c), s	0.0	3.4		0.0	0.0	5.2		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		83.6
HCM 2010 LOS		F
Notes		