APPENDIX 3.12

Traffic Impact Analysis, Plaza Linda Verde,
Linscott Law & Greenspan (August 2010)

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TRAFFIC IMPACT ANALYSIS

PLAZA LINDA VERDE

San Diego, California
August 6, 2010

LLG Ref. 3-08-1857

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SDSU PLAZA LINDA VERDE

San Diego, California
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1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers ("LLG") has been retained to prepare a traffic study for the San Diego State University ("SDSU") Plaza Linda Verde project ("Proposed Project"). The purpose of this study is to assess the traffic impacts to the local circulation system as a result of the Proposed Project in both the near- and long-term scenarios.

The mixed-use Proposed Project is located north of Montezuma Road and both east and west of College Avenue in the City of San Diego.

The Proposed Project would be developed in multiple phases, and a detailed project description is presented in Section 2.0 of this report.

The traffic analysis presented in this report includes the following:

- Project Description
- Analysis Approach and Methodology
- Existing Conditions Description
- Analysis Approach and Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Cumulative Projects Traffic
- Project Traffic Generation, Distribution & Assignment
- Analysis of Near-Term Scenarios
- Analysis of Long-Term Scenarios
- Congestion Management Program Compliance (CMP)
- Construction Traffic
- College Avenue/Lindo Paseo Driveway Access
- Parking Assessment
- Transit Assessment
- Pedestrian/Bicycle Circulation
- Roadway Closures/Street Vacations
- Emergency Vehicle Access
- Alternative Mitigation Measure Diversion Analysis Significant Impacts and Mitigation Measures
- Post Mitigation Operations
- Reduced Project Alternative – Qualitative Impact Comparison

2.0 PROJECT DESCRIPTION

2.1 Project Description

The proposed San Diego State University Plaza Linda Verde project consists of the development of additional on-campus student housing and retail services to support SDSU and the surrounding community. The Proposed Project is a mixed-use development featuring ground-floor commercial and upper-floor student housing, student apartments, additional parking facilities to accommodate increased parking demand within the area, a Campus Green featuring a public promenade, and pedestrian malls in place of existing streets/alleys linking the proposed mixed-use buildings to the main campus.

The Proposed Project would be located adjacent to the main SDSU campus, which is located approximately 8 miles east of downtown San Diego. The existing boundaries of the SDSU campus generally are Hardy Avenue on the south, East Campus Drive on the east, 55th Street/Remington Road on the west, and Adobe Falls Road/Del Cerro Boulevard (north of Interstate 8 [I-8]) on the north. The Proposed Project would be developed on property located south of the existing Campus Master Plan boundary, generally between Aztec Walk and Montezuma Road. The land on which the Proposed Project would be developed is currently owned by SDSU, the SDSU Foundation, and private entities. Lands currently owned by private entities would be purchased by SDSU prior to development.

The project consists of the demolition of existing structures and parking lots and is on an approximately 18-acre site located immediately south of the SDSU main campus. The development of certain portions of the Proposed Project, primarily including the pedestrian malls, would be contingent upon the vacation of certain existing vehicular rights-of-way; if the subject vacations are not approved, the Proposed Project would proceed on a modified basis.

In conjunction with the Proposed Project, SDSU also is proposing to amend the SDSU Campus Master Plan boundary such that the southern campus boundary between 55th Street and one block east of College Avenue would extend south generally from Aztec Walk to Montezuma Road.

The Proposed Project would consist of development of the following five project components:

I. **Mixed-Use Retail/Student Housing**. This project component consists of the development of four ground-floor retail and upper-floor residential buildings located south of Hardy Avenue, north of Montezuma Road, and west and east of College Avenue. Collectively, the four buildings would contain approximately 294 apartments to house approximately 1,216 students, and also would contain approximately 90,000 gross square feet of university/ community-serving retail uses.

II. **Student Apartments**. This project component would consist of two four-story buildings located west of Campanile Drive, north of Montezuma Road, and south of Lindo Paseo. Collectively, the two buildings would contain approximately 96 apartments to house 416 students.

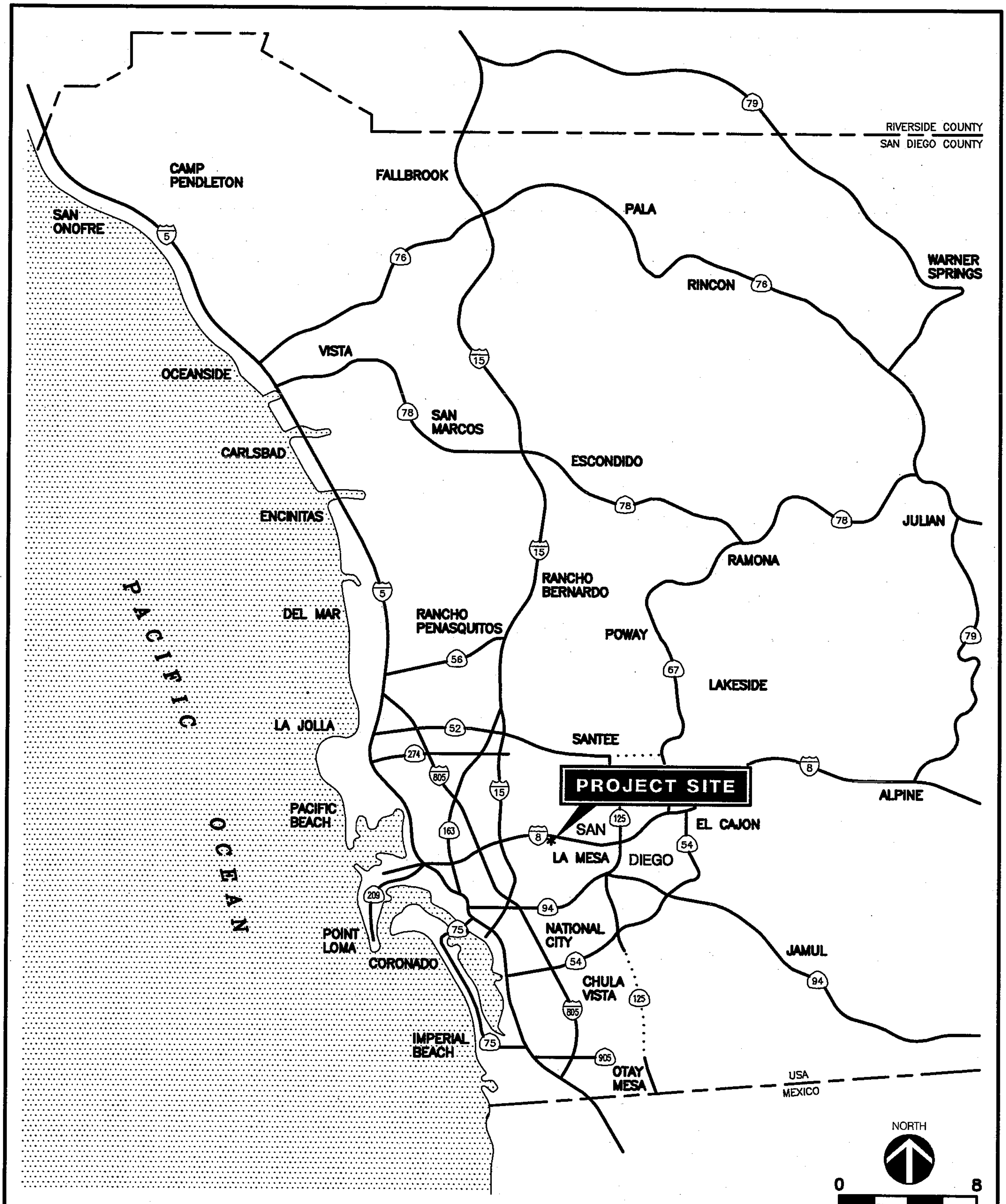
III. **Parking Facilities**. A freestanding parking structure would be constructed at the northwest corner of Lindo Paseo and Montezuma Place. The structure would consist of five levels—one underground parking deck and four aboveground decks—and would provide approximately 342 parking spaces. The parking structure also would support approximately 1,815 net square feet of ground-floor retail space. The Mixed-Use Retail/Student Housing buildings to be developed east of College Avenue would contain underground parking for an additional 160 to 220 vehicles, depending on the ultimate configuration.

IV. Campus Green. A Campus Green is planned for development south of the existing SDSU Transit Center and would consist of active and passive recreational areas for public use.

V. Pedestrian Malls. The Proposed Project also would include two pedestrian malls, in place of existing streets/alleys, to be located along the western and eastern flanks of the main mixed-use building area. These corridors would facilitate non-motorized movement between the proposed buildings and main campus and would support meeting/resting space and outdoor eating facilities associated with the adjacent retail shops. This project component would be ancillary to the Mixed-Use Retail/Student Housing component and would not be essential to development of the overall project site.

This traffic analysis assesses 90,000 total gross square feet of retail and 400 student housing units. These are the number of student housing units is slightly higher than what is currently proposed. Thus, the results of this traffic study are slightly conservative.

Figure 2–1 shows the project vicinity and ***Figure 2–2*** shows the project area map. ***Figure 2–3*** shows the proposed site plan.



Source: LLG Engineers, 2009
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Figure 2-1

Vicinity Map

PLAZA LINDA VERDE

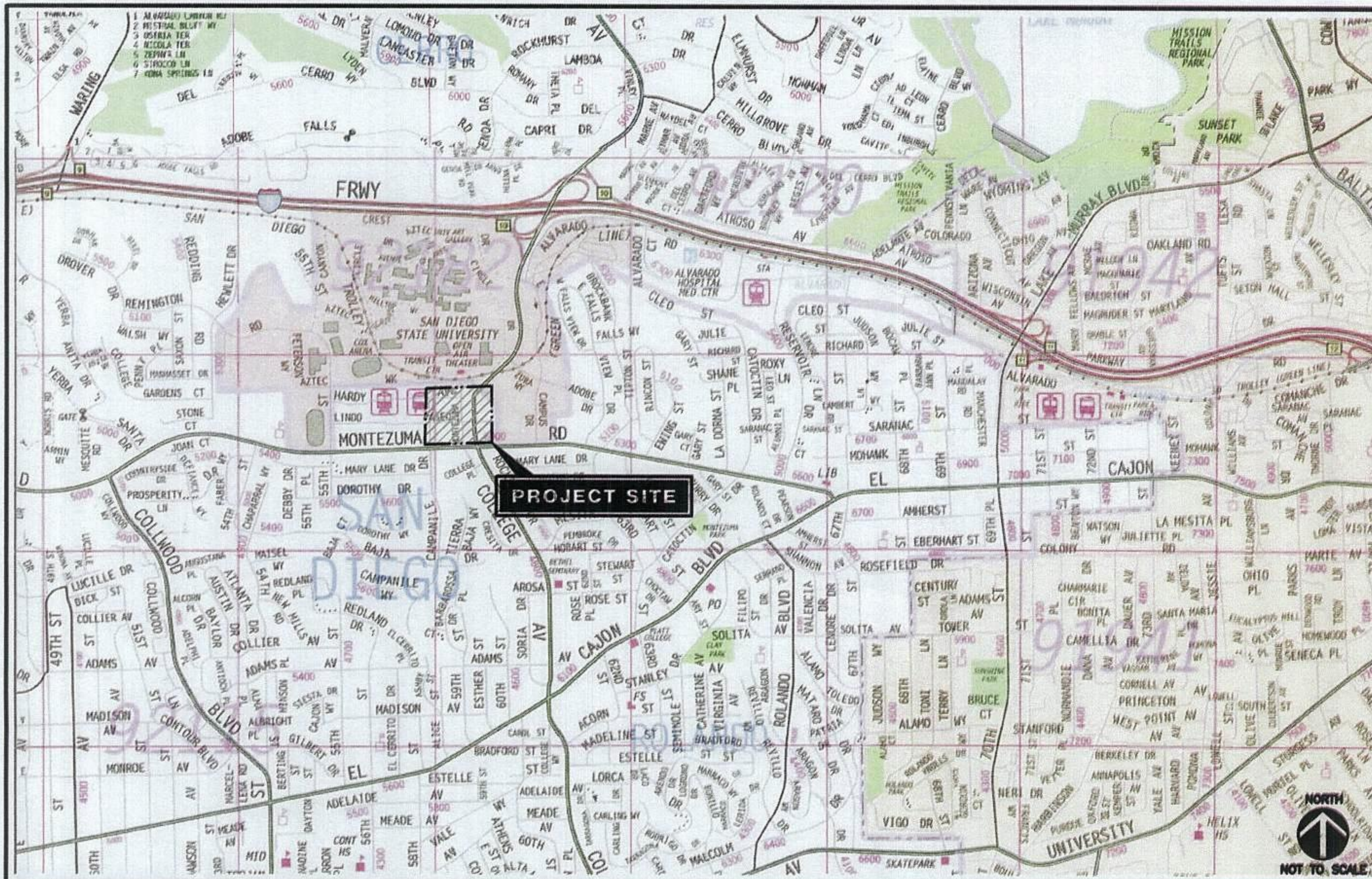

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Figure 2-2

Project Area Map

PLAZA LINDA VERDE

Source: Wallace Roberts & Todd, Inc. 2009
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Figure 2-3

Project Site Plan

PLAZA LINDA VERDE

3.0 EXISTING CONDITIONS

The project study area was determined based on a Select Zone Assignment. The Select Zone assignment was prepared by SANDAG and predicts the project trip assignments on the street network using a computer model. The assignment of project traffic is described later in this report. ***Figure 3–1*** illustrates the existing street network.

The specific study area includes the following intersections and street segments which were determined using the 50 peak hour trip thresholds as a guideline.

Intersections

- College Avenue / I–8 WB Ramps
- College Avenue / I–8 EB Ramps
- College Avenue / Canyon Crest Drive
- College Avenue / Zura Way
- College Avenue / Lindo Paseo
- College Avenue / Montezuma Road
- College Avenue / El Cajon Boulevard
- Montezuma Road / Collwood Boulevard
- Montezuma Road / 55th Street
- Montezuma Road / Campanile Drive
- Montezuma Road / Catoctin Drive
- Montezuma Road / El Cajon Boulevard

Street Segments

- College Avenue: Canyon Crest Drive to Zura Way
- College Avenue: Zura Way to Montezuma Road
- College Avenue: Montezuma Road to El Cajon Boulevard
- Montezuma Road: Collwood Boulevard to 55th Street
- Montezuma Road: 55th Street to College Avenue
- Montezuma Road: College Avenue to Catoctin Drive

Since the project adds less than 50 peak hour trips to Interstate 8 and adds less than 20 peak hour trips on any individual ramp meter, it was not necessary to conduct a freeway or ramp meter analysis as part of the Congestion Management Program requirements (see Section 11.0 for more details).

3.1 Existing Street Network

The current *City of San Diego Street Design Manual* (November 2002) generally applies to new roadways only. The majority of roadways within the study area were built under the previous standards, which may vary from the current standards described below.

Six-Lane Primary Arterials should be 98 feet wide in 142 feet of Right-of-Way (R/W), providing six through lanes, bike lanes, and a raised median/left-turn lane. Six-Lane Major Streets should be 112 feet wide in 140 to 152 feet of R/W, providing six through lanes, bike lanes, and a raised median/left-turn lane. Four-Lane Major Streets should be 76 feet wide in 120 feet of R/W, providing four through lanes, bike lanes, and a raised median/left-turn lane. Four-Lane Collectors with a Two-Way Left-Turn Lane should be 82 feet wide in 110 to 122 feet of R/W, providing four through lanes, bike lanes, left-turn lanes, and curbside parking. Two-Lane Collectors with a Two-Way Left-Turn Lane should be 54 feet wide in 78 to 94 feet of R/W and provide two through lanes, bike lanes, and curbside parking. Two-Lane Collectors with Bike Lanes should be 46 feet wide in 70 to 96 feet of R/W, providing two through lanes, bike lanes, and curbside parking. Two-Lane Collectors should be 36 feet wide in 60 to 86 feet of R/W and provide two through lanes and curbside parking.

The principal roadways in the project study area are described briefly below. Roadway classifications were determined from a review of the College Area and Navajo Community Plans, field observations, and information obtained from Caltrans. This information is provided in ***Appendix A***.

Interstate 8 (I-8) is an interstate freeway operated by CALTRANS. I-8 is an east-west facility spanning San Diego and Imperial Counties. This facility provides access to the Fairmount Avenue, Waring Road, College Avenue and Lake Murray / 70th Street interchanges within the project vicinity.

Campanile Drive is classified as a Collector road according to the College Area Community Plan. Campanile Drive is a two-lane, divided roadway with a northerly termination at the SDSU trolley station. The speed limit is not posted and parking is intermittently limited.

College Avenue is classified as a Major Arterial according to the College Area Community Plan. College Avenue is a four-lane intermittently divided roadway within the project vicinity. The speed limit is generally 35 mph, parking is prohibited and infrequent bus stops are provided.

Montezuma Road is classified as a Major Arterial according to the College Area Community Plan. Montezuma Road is a four-lane, divided roadway south of the SDSU Campus. The posted speed limit is 35mph, bus stops are provided, and curbside parking is permitted along the roadway.

55th Street is classified as a Collector road according to the College Area Community Plan. 55th Street is a north-south, four-lane undivided roadway located to the west of the SDSU Campus. Parking is not permitted north of Montezuma Road in the vicinity of the Campus and the posted speed limit is 25mph.

Collwood Boulevard is classified as a Major Arterial according to the College Area Community Plan. Collwood Boulevard is a three lane undivided roadway south of Montezuma Road with two northbound lanes and one southbound lane. Parking is permitted and bike lanes are provided at frequent locations.

Lindo Paseo is an unclassified roadway according to the College Area Community Plan. Lindo Paseo is a one lane undivided (one-way) eastbound roadway between 55th Street and Campanile Drive. Parking is allowed along the roadway.

Zura Way is an unclassified roadway according to the College Area Community Plan. Zura Way provides one lane of undivided travel in a generally east-west direction. This roadway connects College Avenue with East Campus Drive via a series of parking lots. The Zura Way / College Avenue intersection is an unsignalized two-way stop controlled intersection; Left turns onto College Avenue are prohibited.

El Cajon Boulevard is classified as a Major Arterial according to the College Area Community Plan. El Cajon Boulevard is a four lane divided roadway. Parking is permitted intermittently and bike lanes are provided.

3.2 Existing Traffic Volumes

3.2.1 *Peak Hour Intersection Turing Movement Volumes*

Weekday manual peak hour intersection counts were conducted in December 2008 while all local schools were in session. Weekday counts were conducted during both the AM (7:00-9:00) and PM (4:00-6:00) peak periods. ***Figure 3–2*** shows the existing peak hour and daily traffic volumes in the study area.

3.2.2 *Daily Segment Volumes*

Bi-directional daily traffic counts were conducted on the study area street segments in December 2008, while the college was in session. Traffic counts at two study area segments along Montezuma Road where obtained in February 2008. *Figure 3–2* depicts the 24-hour segment volumes along the study area segments.

Table 3–1 summarizes the ADT counts. ***Appendix B*** contains the manual intersection and street segment count sheets.

TABLE 3–1
EXISTING TRAFFIC VOLUMES

Street Segment	ADT [a]	Date	Source
College Avenue			
Canyon Crest Drive to Zura Way	44,000	December 2008	LLG
Zura Way to Lindo Paseo	30,000	December 2008	LLG
Montezuma Road to El Cajon Boulevard	29,100	December 2008	LLG
Montezuma Road			
Collwood Road to 55th Street	30,600	February 2008	LLG
55th Street to Campanile Drive	26,100	February 2008	LLG
College Avenue to Catoctin Drive	14,800	December 2008	LLG

Footnotes:

a. Average Daily Traffic Volumes.

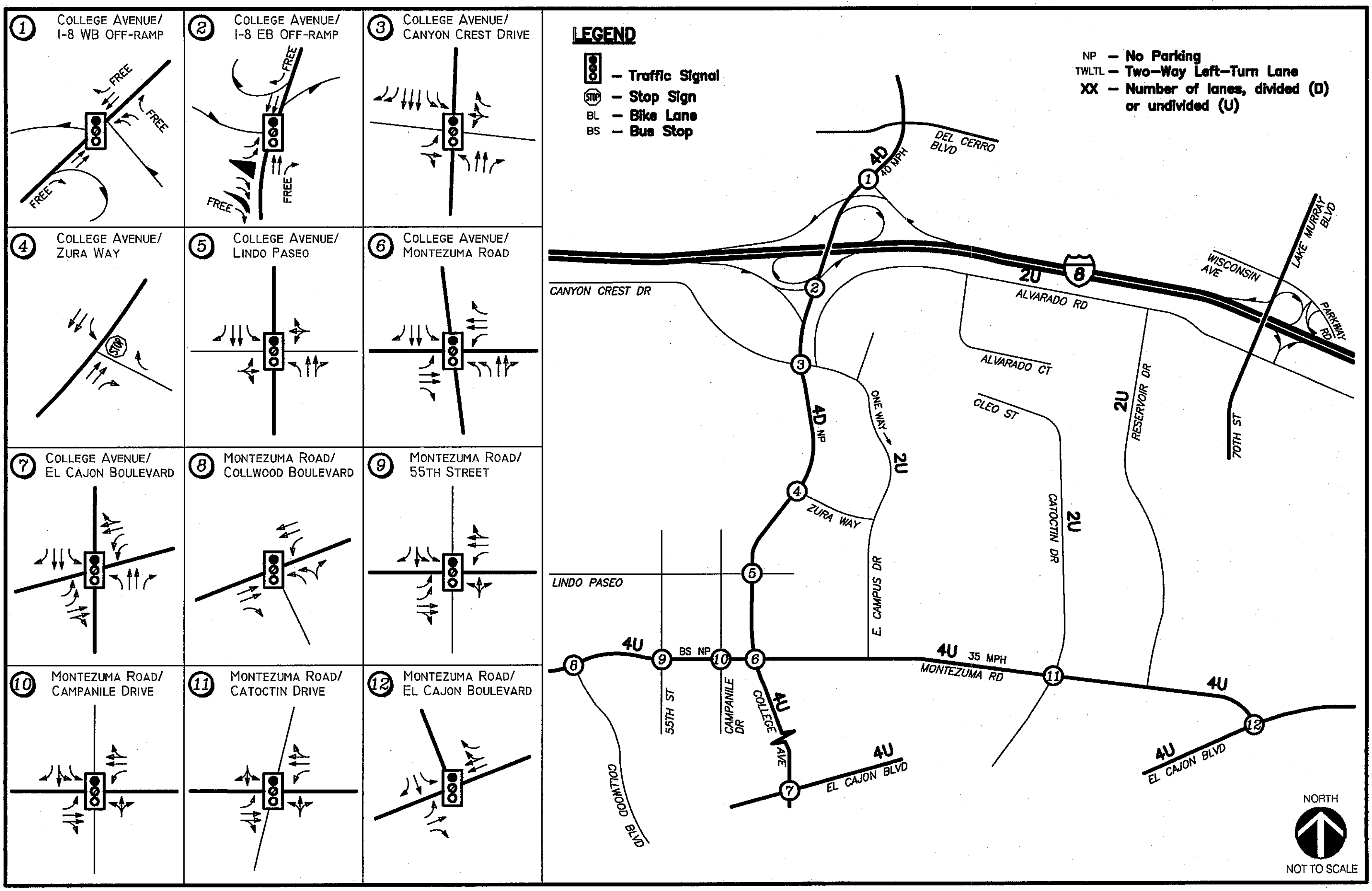

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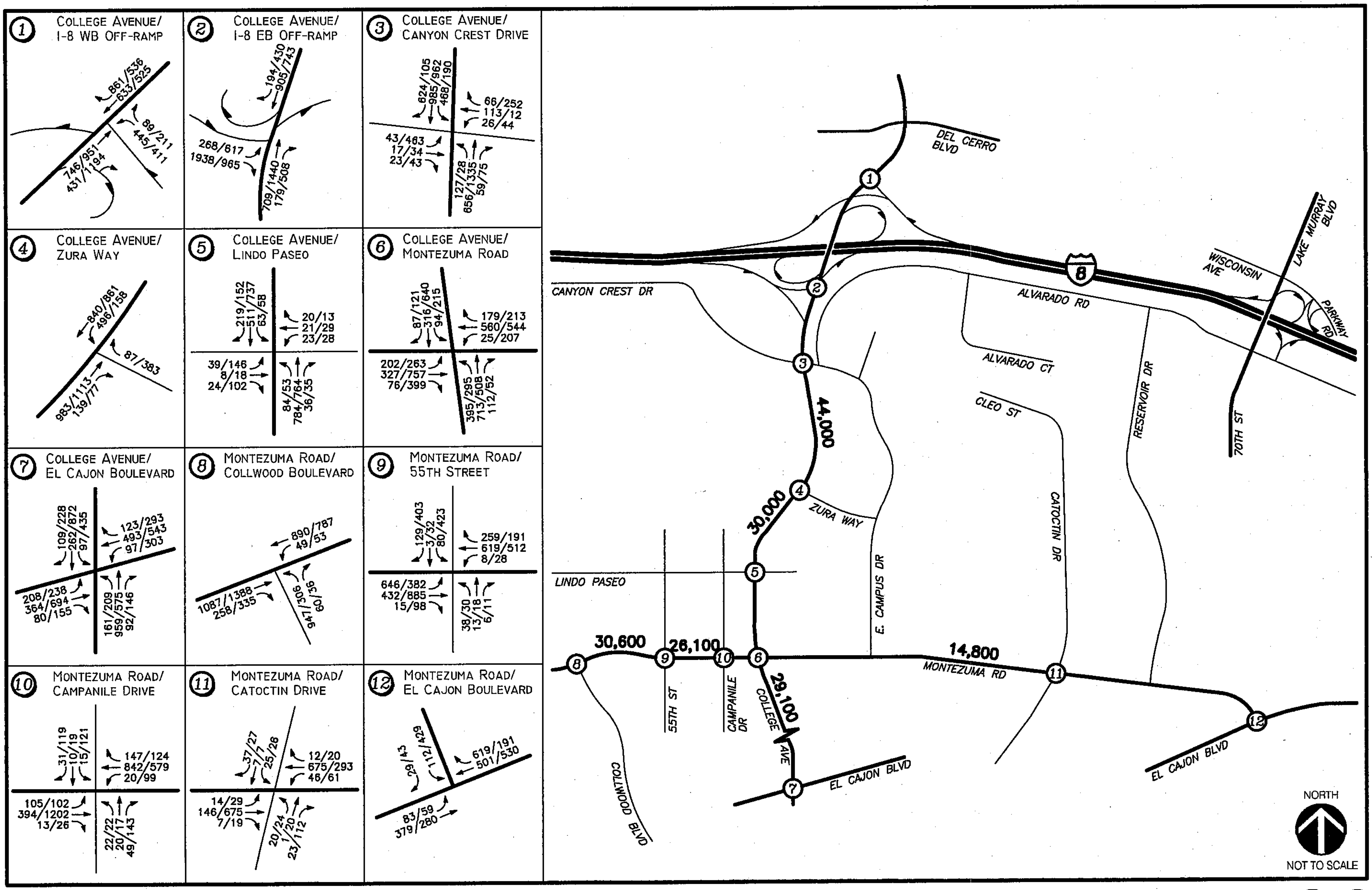
Figure 3-1

Existing Roadway Network

PLAZA LINDA VERDE



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NOTES:

- ADT (Average Daily Traffic) shown midblock
- AM/PM peak hour volumes are shown at the intersections

Figure 3-2

Existing Traffic Volumes AM/PM Peak Hours & ADT

PLAZA LINDA VERDE

4.0 ANALYSIS APPROACH AND METHODOLOGY

4.1 Analysis Overview

This traffic study is organized into the several sections, pursuant to standards of practice in the San Diego region. Generally, the LOS analyses summarize Near-term and Long-term (2030) traffic operations in the study area, and compares Proposed Project impacts to a no-build baseline.

In addition to the LOS analyses, the report includes assessments of potential traffic impacts to regional Congestion Management Program roadways, impacts related to project construction, driveway access, parking, transit, pedestrian and bicycle circulation, and proposed street vacations and roadway closures.

Table 4–1 provides an overview of the various analyses completed in this traffic impact report, lists their respective sections, and briefly describes each analysis.

TABLE 4–1
ANALYSIS OVERVIEW

Scenario/ Element		Report Section	Description
Near-Term	Existing	6.0	Summarizes the existing intersection and street segment LOS in the study area.
	Existing + Near-Term Cumulative	9.0	Includes the effects of 33 near-term cumulative projects in the study area. The results of this analysis form the baseline against which near-term net project impacts are measured.
	Existing + Near-Term Cumulative + University-Serving Retail	9.0	This analysis measures the near-term net project impacts of <u>only the university-serving retail scenario</u>. This is for reference only.
	Existing + Near-Term Cumulative + University/Community-Serving Retail	9.0	This analysis measures the near-term net project impacts of <u>only the university/community-serving retail scenario</u>. This is for reference only.
	Existing + Near-Term Cumulative + University -Serving Retail + Student Housing	9.0	This analysis measures the near-term net project impacts of <u>both the university-serving retail scenario and the student housing</u>. These results are measured against *Existing + Near-Term Cumulative* results to determine impacts based on the significance criteria in Section 5.0.
	Existing + Near-Term Cumulative + University/Community-Serving Retail + Student Housing	9.0	This analysis measures the near-term net project impacts of <u>both the university/community-serving retail scenario and the student housing</u>. These results are measured against *Existing + Near-Term Cumulative* results to determine impacts based on the significance criteria in Section 5.0.

Continued

TABLE 4–1 *continued*
ANALYSIS OVERVIEW

	Scenario/ Element	Report Section	Description
Long-Term (2030)	Long-Term (2030) Without Project	10.0	Includes the effects of buildout of the study area land uses and network. The results of this analysis form the baseline against which long-term net project impacts are measured.
Long-Term (2030)	Long-Term (2030) + University - Serving Retail	10.0	This analysis measures the long-term net project impacts of only the university-serving retail scenario. This is for reference only.
Long-Term (2030)	Long-Term (2030) + University/Community-Serving Retail	10.0	This analysis measures the long-term net project impacts of only the university/community-serving retail scenario. This is for reference only.
Long-Term (2030)	Long-Term (2030) + University - Serving Retail + Student Housing	10.0	This analysis measures the long-term net project impacts of both the university-serving retail scenario and the student housing. These results are measured against *Long-Term (2030) Without Project* results to determine impacts based on the significance criteria in Section 5.0.
Long-Term (2030)	Long-Term (2030) + University/Community-Serving Retail + Student Housing	10.0	This analysis measures the long-term net project impacts of both the university/community-serving retail scenario and the student housing. These results are measured against *Long-Term (2030) Without Project* results to determine impacts based on the significance criteria in Section 5.0.
Other	Congestion Management Compliance	11.0	This section discusses the study's compliance with respect to the regional Congestion Management Program (CMP)
Other	Construction Traffic Impacts	12.0	This section discusses the potential traffic impacts associated with construction of the project.
Other	College Avenue/ Lindo Paseo Driveway Access	13.0	This section discusses the potential traffic impacts associated with the parking garage access proposed at College Avenue/ Lindo Paseo.
Other	Parking	14.0	This section discusses the potential impacts associated with parking for the proposed project.
Other	Transit	15.0	This section discusses the potential impacts of the project on local transit.
Other	Pedestrian/ Bicycle Circulation	16.0	This section discusses the potential impacts of the project on pedestrian and bicycle circulation.
Other	Roadway Closures/ Street Vacations	17.0	This section discusses the potential impacts of the proposed road closures and street vacations in the study area.
Other	Emergency Vehicle Access	18.0	This section discusses the emergency vehicle access/circulation in the study area.

For the purposes of segregating volumes and delays between the two project entities (retail and student housing), an analysis adding only the retail portion of the Proposed Project was conducted.

4.2 Net Project Analysis

The mixed-use development consists of seven new buildings that would replace approximately 24 existing parcels in the study area. Many of these parcels are developed and currently generating traffic. Therefore, this analysis summarizes the existing site traffic, and subtracts it from Proposed Project traffic to yield net project traffic volumes. This net total traffic is then added to near-term and long-term baseline (no-build) traffic volumes to determine potential significant impacts. *Section 8.0 (Trip Generation)* provides more specific information on the gross and net project traffic generation.

4.3 Retail Scenarios

At this time, the exact retail tenants are unknown. The analysis classifies the retail uses as either "university/community-serving" retail uses, or as "university-serving" retail uses. The differences between these two retail types would be based largely upon the intended consumer demographic, and the subsequent retailers that would serve that demographic. The following describes each retail type in detail.

4.3.1 *University/Community-Serving Retail*

The demographic for university/community-serving retail uses would include both students and non-students living the College Area neighborhood, as well as those living in adjacent communities, such as Del Cerro, Rolando, Talmadge and La Mesa, for example. Retail uses that would attract consumers from the greater community (not just SDSU students and faculty) would likely be larger, national chain or franchise retailers. However, independent specialty retailers providing goods or services appealing to consumers county-wide would also attract trips from outside of the SDSU area, and therefore be considered a university/community-serving retailer.

University/community-serving retailers would generate higher traffic volumes than university-serving retailers, since more of the former's trips would originate in locations outside of the immediate SDSU area, and university/community-serving retail uses could include both retail and restaurant land uses.

4.3.2 *University-Serving Retail*

The demographic for university-serving retail uses would largely include faculty/staff and students and living on campus and in the College Area neighborhood. University-serving retail uses would be smaller, independent businesses such as bookstores, repair shops, record stores, coffee shops and small restaurants, which would rely heavily on the nearby concentration of students and faculty/staff SDSU for their business.

In contrast to university/community-serving retailers, these businesses would attract the vast majority of their trips from patrons already on campus, and would generate few trips from outside the College Area. Also, fewer vehicle trips would be expected, as patrons would be located close to their target market, making bike/walk trips very attractive. University-serving retail uses could include both retail and restaurant land uses.

The analyses assess the impacts of each of these retail options (called "*scenarios*") against the near-term baseline separately, since the traffic generation characteristics with each scenario are unique.

The student-housing traffic is added to each scenario separately such that those trips are segregated from the entire project. *Sections 9.0* and *10.0* contain the Near-term and Long-term (2030) analyses.

4.4 Level of Service Concept

Level of service (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. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions (free-flow) and LOS F representing the worst operating conditions (gridlock). Level of service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

4.5 Intersection Analysis Methodology

4.5.1 *Signalized intersections*

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 16 of the *2000 Highway Capacity Manual (HCM),* with the assistance of the *Synchro* (version 6.0) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS). A more detailed explanation of the methodology is attached in ***Appendix C***.

4.5.2 *Unsignalized intersections*

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and Levels of Service (LOS) were determined based upon the procedures found in Chapter 17 of the *2000 Highway Capacity Manual (HCM),* with the assistance of the *Synchro* (version 6.0) computer software. A more detailed explanation of the methodology is attached in *Appendix C.*

4.5.3 *Intersecting Lane Volume (ILV)*

Caltrans requires that State-owned intersections be analyzed using ***Intersecting Lane Volume (ILV)*** methodology as described in Chapter 400, Topic 406 of the Department Highway Design Manual. The ILV methodology is based on the concept that the capacity of intersecting lanes of traffic is 1,500 vehicles per hour. For the typical local street interchange there is usually a critical intersection of a ramp and the crossroads that establishes the capacity of the interchange.

Neither the City of San Diego nor Caltrans consider the ILV methodology as an approved methodology for determining significance of impacts. ILV methodology is basic, and does not allow for the sophisticated analysis that the HCM methodology discussed in 4.5.1 does. In some cases, ILV results will vary dramatically from HCM results. However, the local Caltrans District 11 requests ILV analyses be included for informational purposes.

Table 4–2 summarizes the ILV capacities.

TABLE 4–2
ILV CAPACITIES

UNDER (ILV/hr<1200)	NEAR (ILV/hr 1200 – 1500)	OVER (ILV/hr >1500)
Denotes stable flow with slight but acceptable delay. Occasional signal loading may develop. Free mid-block operations.	Denotes unstable flow with considerable delay. Some vehicles occasionally wait two or more cycles to pass through the intersection. Continuous backup occurs at some approaches.	Denotes stop and go operation with severe delay and heavy congestion[a]. Traffic volume is limited by maximum discharge rates of each phase. Continuous backup in varying degrees occurs on all approaches. Where downstream capacity is restrictive, mainline congestion can impede orderly discharge through the intersection.

Footnotes:

a. The amount of congestion depends on how much the ILV/hr value exceeds 1500. Observed flow rates will normally not exceed 1500 ILV/hr and the excess will be delayed in a queue.

4.6 Street Segments Methodology

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

The Proposed Project would add additional daily and peak-hour traffic volumes to the existing street system, including roadway segments and intersections that are already operating at undesirable LOS E and LOS F. Technical studies such as this traffic impact study rely on published significance criteria to provide definitive guidance on when and how a significant project impact is determined. As a state entity, CSU/SDSU is not subject to local planning directives, including those of the City of San Diego. Notwithstanding, for the purposes of this analysis, the City of San Diego significance criteria was applied.

In addition to the City of San Diego guidelines, the California Environmental Quality Act (CEQA) has published guidelines that include a checklist in Appendix G to evaluate project impacts based on seventeen criteria. Criterion XV of this appendix relates specifically to Transportation/Traffic impacts.

The following is detailed discussion of both the City of San Diego and the general CEQA significance criteria.

5.1 City of San Diego Significance Criteria

According to the City of San Diego's *Significance Determination Thresholds* report dated January 2007, a project is considered to have a significant impact if the new project traffic has decreased the operations of surrounding roadways by a City defined threshold. For projects deemed complete on or after January 1, 2007, the City defined threshold by roadway type or intersection is shown in ***Table 5–1***.

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

> "*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 may be 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
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E	0.010	1.0	0.02	1.0	2.0	1.0[c]
F	0.005	0.5	0.01	0.5	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 impact is only considered significant if the total delay exceeds 15 minutes.

General Notes:

- Delay = Average control delay per vehicle measured in seconds for intersections, or minutes for ramp meters.
- LOS = Level of Service
- V/C = Volume to Capacity Ratio (capacity at LOS E should be used)
- Speed = Arterial speed measured in miles per hour for Congestion Management Program (CMP) analyses

5.2 California Environmental Quality Act (CEQA) "Appendix G" Checklist

The published 2009 CEQA Statute & Guidelines provide a checklist in Appendix G specifically related to transportation and traffic impacts. These consist of seven questions, listed "a" through "g". The analyst must answer whether the project would result in "Potentially Significant Impact", "Less than Significant with Mitigation Incorporation", "Less than Significant Impact", or "No Impact". This traffic study addresses each of these questions, where applicable. ***Table 5–2*** lists the seven questions and shows which sections within this traffic impact study address them.

TABLE 5–2
CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)
TRAFFIC IMPACT SIGNIFICANT THRESHOLDS

	CEQA Question	Corresponding Traffic Study Section
a)	Would the project 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?	Section 9.0 – *Analysis of Near-term Traffic Volumes;* Section 10.0 – *Analysis of Long-term Traffic Volumes;* Section 15.0 – *Transit;* and Section 16.0 – *Pedestrian/Bicycle Circulation*
b)	Would the project 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 or designated roads or highways?	Section 9.0 – *Analysis of Near-term Traffic Volumes;* Section 10.0 – *Analysis of Long-term Traffic Volumes*, and Section 11.0 – *Congestion Management Program Compliance*
c)	Would the project 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?	*(This is not applicable to this traffic impact study)*
d)	Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?	Section 13.0 – *College Avenue/ Lindo Paseo Driveway Access*
e)	Would the project result in inadequate emergency access?	Section 18.0 – *Emergency Vehicle Access*
f)	Would the project result in inadequate parking capacity? (Note: While this criteria has been removed from the CEQA Guidelines, an analysis of available parking capacity nevertheless was conducted.)	Section 14.0 – *Parking*
g)	Would the project conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities supporting Scenario transportation (e.g., bus turnouts, bicycle racks)?	Section 15.0 – *Transit;* and Section 16.0 – *Pedestrian/Bicycle Circulation;*

Source: *2009 California Environmental Quality Act – Statute & Guidelines*

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. ***Appendix E*** contains the existing conditions analysis worksheets and ILV operations sheets.

6.1 Peak Hour Intersection Analysis

Table 6–1 summarizes the peak hour intersection operations for existing conditions. As shown in *Table 6–1,* all study area signalized intersections are calculated to currently operate at LOS D or better except the following:

2. College Avenue / I-8 EB Off-Ramp (LOS E during the AM peak hour)
3. College Avenue / Canyon Crest Drive (LOS E during the PM peak hour)
4. College Avenue / Zura Way (LOS F during the AM peak hour)
7. College Avenue / El Cajon Boulevard (LOS E during the PM peak hour)

In addition, the unsignalized intersection of College Avenue and Zura Way is calculated to operate at LOS F for southbound left-turn onto Zura Way during the AM peak hour and LOS C during the PM peak hour.

6.2 Daily Street Segment Analysis

Table 6–2 summarizes the existing segment operations. As shown in *Table 6–2,* all segments in the study area are calculated to operate at LOS D or better except the following:

5. College Avenue between Canyon Crest Drive and Zura Way (LOS F)
6. Montezuma Road between 55th Street and College Avenue (LOS E)

6.3 ILV Operations

Table 6–3 summarizes the results of the existing ILV analysis. As shown in *Table 6–3,* the College Avenue / I-8 interchange is calculated to operate under capacity during both the AM and PM peak hours.

TABLE 6–1
EXISTING PEAK HOUR INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay[a]	LOS[b]
1. College Avenue / I–8 Westbound Ramps	Signal	AM PM	9.3 8.3	A A
2. College Avenue / I–8 Eastbound Ramps	Signal	AM PM	77.0 15.2	E B
3. College Avenue / Canyon Crest Drive	Signal	AM PM	48.6 57.5	D E
4. College Avenue / Zura Way	TWSC[c]	AM PM	67.0 16.2	F C
5. College Avenue / Lindo Paseo	Signal	AM PM	11.9 20.1	B C
6. College Avenue / Montezuma Road	Signal	AM PM	36.6 45.7	D D
7. College Avenue / El Cajon Boulevard	Signal	AM PM	36.6 56.4	D E
8. Montezuma Road / Collwood Boulevard	Signal	AM PM	21.2 24.7	C C
9. Montezuma Road / 55th Street	Signal	AM PM	41.2 34.1	D C
10. Montezuma Road / Campanile Drive	Signal	AM PM	28.0 34.2	C C
11. Montezuma Road / Catoctin Drive	Signal	AM PM	20.0 20.4	B C
12. Montezuma Road / El Cajon Boulevard	Signal	AM PM	24.6 20.7	C C

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

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 6–2
EXISTING DAILY STREET SEGMENT OPERATIONS

Street Segment	Capacity (LOS E) [a]	ADT [b]	LOS [c]	V/C [d]
College Avenue				
Canyon Crest Drive to Zura Way	40,000	44,000	F	1.100
Zura Way to Montezuma Road	40,000	30,000	C	0.750
Montezuma Road to El Cajon Boulevard	40,000	29,100	C	0.728
Montezuma Road				
Collwood Boulevard to 55th Street	40,000	30,600	C	0.765
55th Street to College Avenue	30,000	26,100	E	0.870
College Avenue to Catoctin Drive	30,000	14,800	C	0.493

Footnotes:

a. Capacities based on City of San Diego Roadway Classification Table.

b. Average Daily Traffic Volumes.

c. Level of Service.

d. Volume to Capacity.

TABLE 6–3
EXISTING ILV OPERATIONS

Intersection	Peak Hour	Existing	
		Total Operating Level (ILV / Hour)	Capacity[a]
College Ave / I-8 WB Ramps	AM PM	596 682	Under Under
College Ave / I-8 EB Ramps	AM PM	615 1124	Under Under

Footnote:

a. CAPACITY is shown as *UNDER* capacity, *NEAR* capacity or *OVER* capacity;
Under Capacity = <1200 ILV/Hour
Near Capacity = >1200 but < 1500 ILV/Hour
Over Capacity = >1500 ILV/Hour

General Notes:

1. See *Appendix E* for ILV calculation sheets.

7.0 NEAR-TERM CUMULATIVE

There are other planned projects in the project vicinity, which will add traffic to the roadways surrounding the project site. Based on a review of other potential projects within the area, discussions with City of San Diego staff, and a review of the SDSU Master Plan Update (completed June 2007) it was determined that the following cumulative development projects listed on ***Table** 7–1* were included in the traffic analysis. ***Figure** 7–1* shows a summary of the total near-term cumulative project traffic assignment. ***Figure** 7–2* shows the existing + near-term cumulative traffic volumes.

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	Mesa Commons I[a]	El Cajon Boulevard and Catoctin Drive	Mixed-use project containing 52 DUs and 2,833 square feet ("SF") of retail. Residential component includes 16 row homes, 31 condominium units, and 5 rental units.	Approved	2015
3	Mesa Commons II[a]	4883, 4905, and 4915 Catoctin Drive, northeast of Art Street	33 "for sale" attached row home-style units in seven buildings, and seven detached single-family units (170 total beds).	Approved	2015
4	Centrepoint[a]	Intersection of 63rd Street and El Cajon Boulevard	63 townhouse units and 249 residential flats. The project will also include nearly 4,000 SF of retail space, 610 off-street parking spaces, open space, and recreational facilities.	Approved	Fall 2013

Continued Next Page

TABLE 7–1
CUMULATIVE PROJECTS SUMMARY (CONT'D)

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
5	Chollas Triangle Redevelopment Project	Southside 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					
6	5566 Lindo Paseo	5566 Lindo Paseo	Demolish existing residences and construct a 7,771 SF, 26-bed fraternity house.	In planning process	Unknown
7	Village Lindo Paseo (formerly known as Plaza Lindo Paseo)	5565 – 5619 Lindo Paseo	Demolish five existing single-family DUs on six lots and construct an 896-bed student dormitory facility. The project also proposes an underground parking facility and accessory uses.	In planning process	2011/2012
8	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
9	Plaza Lindo Paseo	5649–5691 Lindo Paseo	Demolish existing structures and construct 45 residential condominiums, 4 commercial condominiums, and 2 fraternity houses.	Approved	2011/2012

Continued Next Page

TABLE 7–1
CUMULATIVE PROJECTS SUMMARY (CONT'D)

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
10	Wesley House	5716 Hardy Avenue	200 beds.	Anticipated future proposal	Unknown
11	SDSU Religious Centers Project	West of Campanile Drive, along Lindo Paseo and Hardy Avenue	Unknown.	Anticipated future proposal	Unknown
12	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
13	5030 College LLC	5030 College Avenue	Construct 107 rental DUs on a vacant site (site of SDSU Sorority Housing project that was approved but not constructed).	In planning process	Unknown
14	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

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TABLE 7–1
CUMULATIVE PROJECTS SUMMARY (CONT'D)

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
15	Alvarado Apartments (The Dinerstein Companies)	6599 Alvarado Road	Redesignate 9.9 acres of Institutional land to Very High Residential Land; construct 664 rental DUs and 2,800 SF of retail.	In planning process	2011
16	Collwood Apartments	4929 Collwood Boulevard	Demolish existing 167-unit apartment building and construct 260 units.	Completed, undergoing inspections	Fall 2010
17	Aztec Court Apartments	6229–6245 Montezuma Road	Demolish existing residences and construct 25 DUs.	In planning process	Unknown

Continued Next Page

TABLE 7–1
CUMULATIVE PROJECTS SUMMARY (CONT'D)

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
City of San Diego					
18	Parc @ 54 (formerly Park at 54th Street)	4079 54th Street	90-unit apartment complex.	Completed	November 2009
19	Centrepoint-Grantville	Block bounded by Vandever Avenue, Fairmont 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
20	Montezuma South	Near SE corner of College Avenue and Montezuma Road	450 beds.	Anticipated future proposal	Through 2025
21	Grantville Trolley Station Transit Oriented Development ("TOD")	4510 Alvarado Canyon Road	Approximately 900 beds.	Anticipated future proposal	Unknown
22	Kohl's Department Store	3450 College Avenue	73,872 SF of retail development.	Proposed	Unknown
23	-Levanto Townhomes	4525 Waring Road	100 units (multi-family complex).	Completed	June 2010

Continued Next Page

TABLE 7–1
CUMULATIVE PROJECTS SUMMARY (CONT'D)

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
San Diego State University					
24	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
25	Parma Payne Goodall Alumni Center	55th Street between Athletics Center and Sports Deck	New 28,000 SF Alumni Center to house the offices of the Alumni Association, Annual Giving, and staff of University Advancement.	Completed	October 2009
26	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
27	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.	Approved	Unknown

Continued Next Page

TABLE 7-1
CUMULATIVE PROJECTS SUMMARY (CONT'D)

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
28	Aztec Center Expansion	West of College Avenue, northeast of Aztec Transit Center	Construction of additional meeting spaces; a multi-purpose theatre; a 24-hour study lounge; and expanded and improved office spaces for student organizations, student activities, and student life.	Approved	2012
29	Storm/Nasatir Halls Renovation	East of Aztec Circle Drive, south of parking structure 8	Upgrade structures to meet current Health and Safety Code standards, correct deferred maintenance issues, and improve energy conservation.	On hold	2012
30	Remington Road median	Western campus boundary, north of softball and baseball fields	Construct median in Remington Road.	In design (awaiting City permit)	Unknown
31	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
32	Bioscience TI	South of Canyon Crest Drive, west of A Lot adjacent to the Life Sciences North Building	Renovations to internal utilities.	Completed	2009

Continued Next Page

Table 7–1
Cumulative Projects Summary (cont'd)

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
33	Student Housing Phase I	East of College Avenue, north of Montezuma Road on G Lot	10-story building (approximately 350,000 SF in size) to house 95–105 suite-style residential units.	Approved	Unknown
34	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.	Approved	Unknown
35	U Lot Residence Hall	North of Remington Road, west of 55th Street atop Parking Structure 7	10-story building (approximately 350,000 SF in size) to house approximately 800 students and redesign Parking Structure 7 to accommodate 750 vehicles.	Approved	Unknown
36	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.	Approved	Unknown
37	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.	Approved	Unknown

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TABLE 7–1
CUMULATIVE PROJECTS SUMMARY (CONT'D)

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
38	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.	Approved	Unknown
39	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.	Approved	Unknown
40	Adobe Falls Phase I	North of Interstate 8, south of Adobe Falls Road	Housing for SDSU faculty and staff.	Approved	Unknown
41	Adobe Falls Phase II	North of Interstate 8, south of Adobe Falls Road	Housing for SDSU faculty and staff.	Approved	Unknown
42	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
43	Tennis Locker Rooms	South of Remington Road, west of the Aztec Aquaplex	Construct additional locker rooms.	Complete	2009

Continued Next Page

TABLE 7–1
CUMULATIVE PROJECTS SUMMARY (CONT'D)

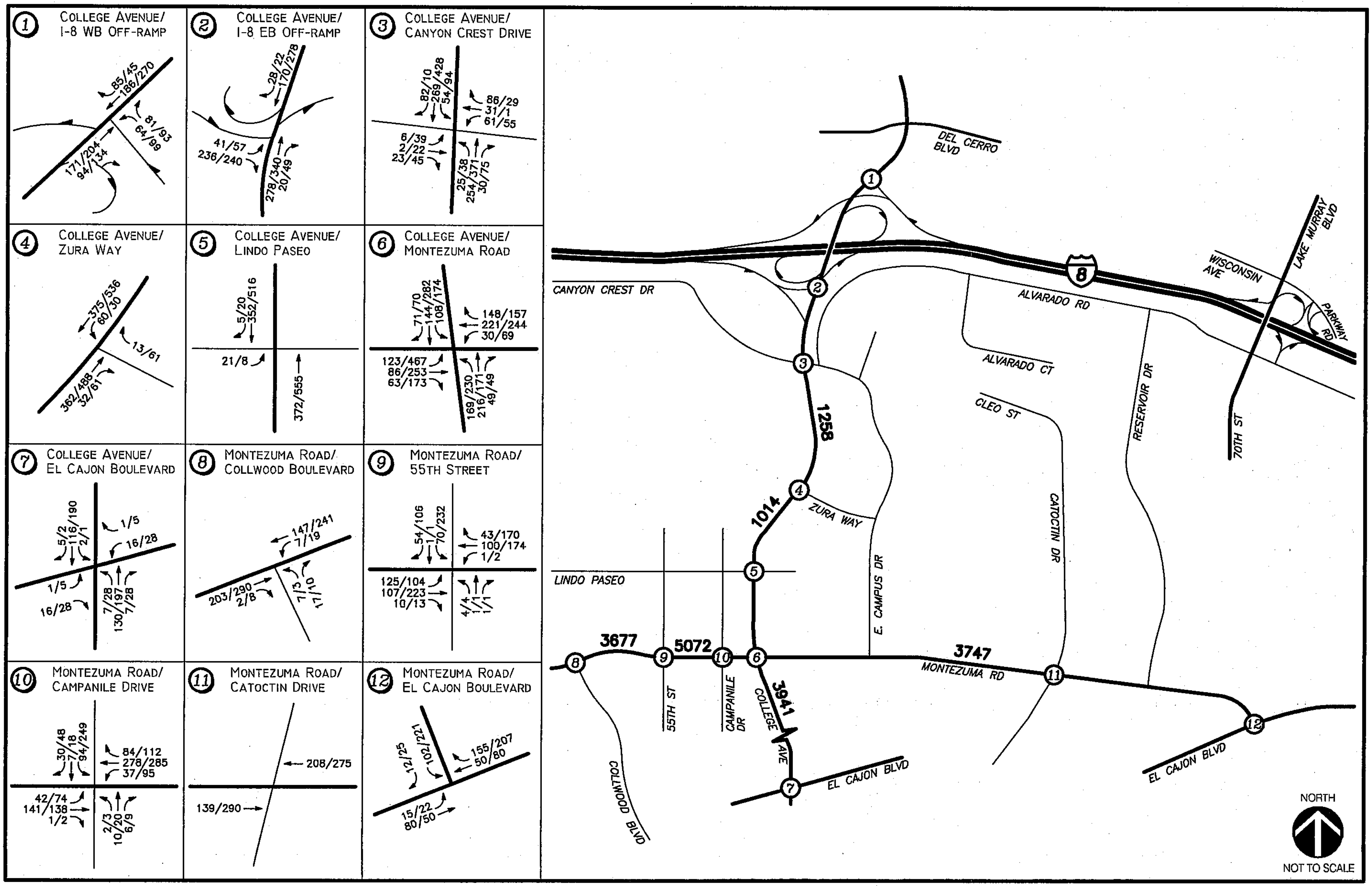
C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year
44	Telecom-Infrastructure	Campus wide	Upgrade the campus telecommunication infrastructure to meet CSU standards.	Complete	Complete
City of San Diego Metropolitan Water Department					
45	Alvarado Water Treatment Plant	Located adjacent to Lake Murray near the City of San Diego's eastern boundary with La Mesa	Plant capacity will be increased to 200 million gallons per day to provide increased capacity and improve reliability.	Proposed	2011
City of La Mesa Redevelopment Agency					
46	Grossmont Transit Station	Southside of Fletcher Parkway at Grossmont Center Drive	TOD project to include a 527-unit apartment complex and a two-level (600 space) parking structure.	Completed, undergoing inspections	2010s
City of La Mesa					
47	Coleman College Site (former)	7380 Parkway Drive	9.2 acres redeveloped as 150 senior housing units.	On hold	Unknown
48	Jessie Avenue	4888 Jessie Avenue	47 townhomes and two commercial units.	Approved	Unknown
49	Parks Avenue Townhomes	Parks Avenue and El Cajon Boulevard	10 townhomes and one live/work unit.	Approved	Unknown

Continued Next Page

TABLE 7–1
CUMULATIVE PROJECTS SUMMARY (CONT'D)

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

End of List



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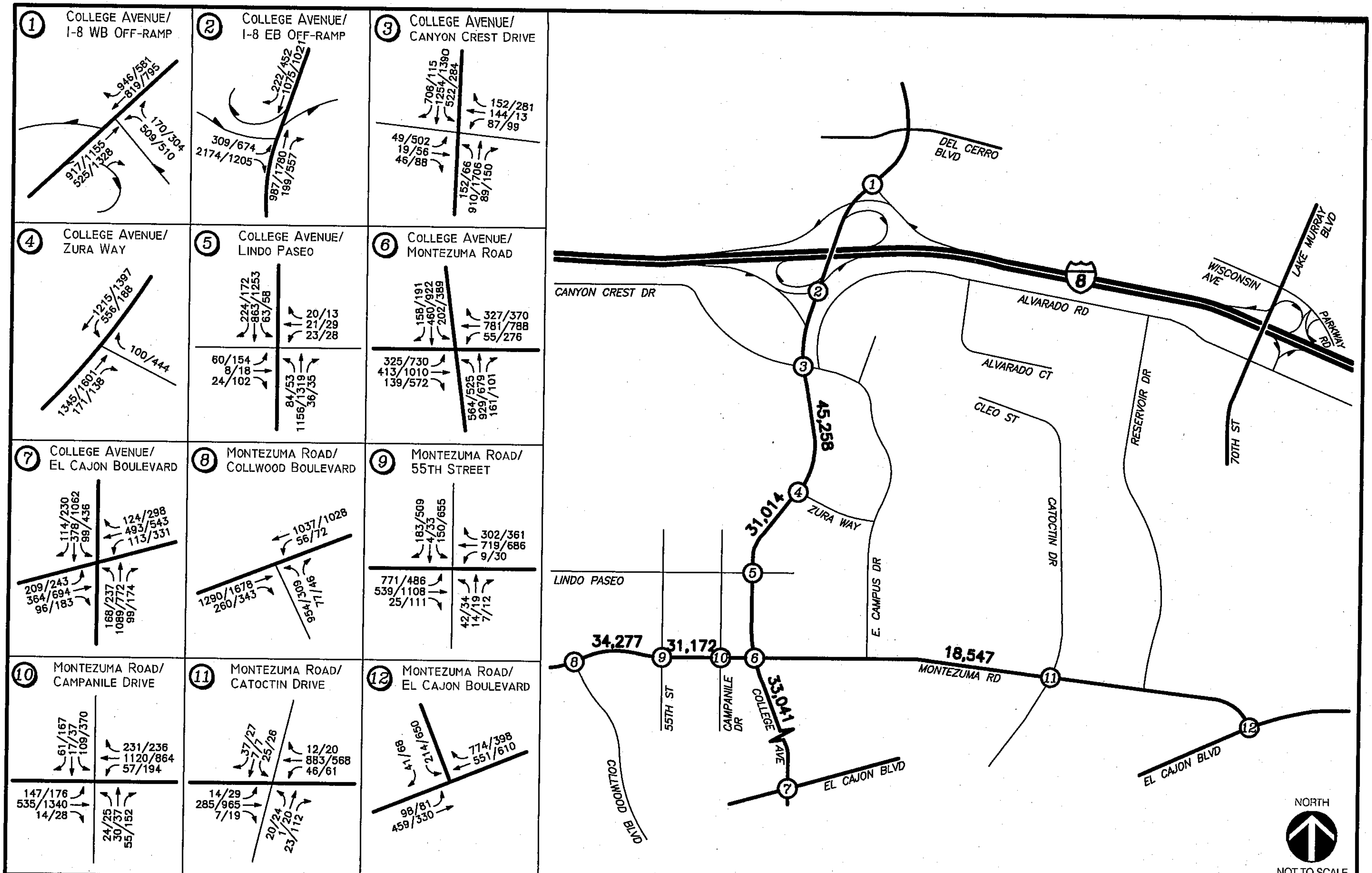
NOTES:
- **ADT (Average Daily Traffic) shown midblock**
- **AM/PM peak hour volumes are shown at the intersections**

Figure 7-1

Near-Term Cumulative Traffic Volumes AM/PM Peak Hours & ADT

PLAZA LINDA VERDE



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NOTES:

- ADT (Average Daily Traffic) shown midblock
- AM/PM peak hour volumes are shown at the intersections

Figure 7-2

Existing + Near-Term Cumulative Traffic Volumes
AM/PM Peak Hours & ADT

PLAZA LINDA VERDE

8.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

8.1 Trip Generation Overview

The proposed Plaza Linda Verde retail/residential mixed use redevelopment will replace existing land uses on 24 parcels in the study area. This existing traffic was summarized from *The Paseo at San Diego State University EIR* and removed from the gross traffic generation for both the university/community-serving and university-serving retail scenarios to yield the net new traffic for the project.

Separate trip generation calculations were completed for both the university/community-serving and university-serving retail scenarios, based on their respective characteristics discussed in Section 4.0. Trip generation rates were based on City-approved retail trip rates published in the *College Community Redevelopment EIR* and *The Paseo at San Diego State University EIR.*

Trip generation was also calculated for the proposed student housing component of the project, using City-approved trip rates published in the *College Community Redevelopment EIR.*

The following is a detailed discussion of the trip generation calculations.

8.1.1 *Existing Site Traffic to be Removed*

The Proposed Project comprises seven buildings to be built on existing, occupied parcels within the study area. The Proposed Project has two primary trip generating components: 90,000 total square feet of retail use, and 400 total dwelling units of student housing, as assumed in this study. The current project description proposes slightly lower values. As stated in Section 4.0, the existing parcels upon which the project would be built are currently occupied and generating traffic. ***Figure 8–1*** shows the existing parcels to be removed. This existing traffic was summarized based on occupancy information provided by the applicant, as well as on a summary of existing land use trip generation contained in the traffic study prepared for *The Paseo at San Diego State University EIR (Section 3.2, p. 3-11).*

Table 8–1 shows the summary of the existing trip generation for the parcels to be redeveloped as part of the Proposed Project. This table shows the parcel-by-parcel reference to the summary table presented in the Paseo EIR traffic study, as well as the land use, size, and daily and peak hour traffic calculations. In total, the existing parcels are calculated to currently generate 3,113 ADT, with 110 inbound/ 90 outbound AM peak hour trips, and 132 inbound/ 127 outbound PM peak hour trips. These existing volumes were subtracted from the gross Plaza Linda Verde project traffic generation to yield the net project traffic generation for use in the analysis.

Appendix F contains the existing parcel trip generation information from *The Paseo at San Diego State University EIR.*

8.1.2 *University/Community-Serving Retail Scenario – Trip Generation*

Section 4.3.1 discussed in detail the characteristics associated with university/community-serving retail uses. Generally, retailers in the university/community-serving retail scenario would be stand alone, higher-profile, regional or national chains or franchises that would generate higher vehicle trips from a greater distance than university-serving retailers. University/community-serving retail uses would provide goods and services that would appeal to a wider demographic than just SDSU faculty/staff, students and local College Area residents.

A total of 90,000 square feet of retail development is proposed for the project for either retail scenario. Since exact tenants and land uses are unknown, the 90,000 SF was split in two to account for both higher (grocery and restaurant, for example) and lower (general retail, bike shop, dry cleaners, etc.) trip-generating retail uses. This is to allow the development to have flexibility to include a variety of retail land uses later on, when specific tenants are identified. Approximately one half (44,000 SF) was assessed using a higher trip generation rate, while the other half (46,000) was assessed using a lower rate. This would account for some higher generating uses (such as restaurant or grocery store) within the overall university/community-serving retail scenario.

Commercial/retail trip generation rates from both *The Paseo at San Diego State University EIR* and the *College Community Redevelopment EIR* were reviewed for applicability to the Proposed Project. Upon review, it was determined that the rates shown in both EIRs were comparable at 31.4 trips/ 1,000 SF for "retail". The Paseo EIR included an additional trip generation rate of 100 trips/ 1,000 SF for "restaurant" uses (Section 3.2, p. 3-9).

Thus, a trip generation rate of **100 trips/ 1,000 SF** was applied to 44,000 SF of the project square footage which is assumed to be developed as restaurants or grocery stores, based on rates published in *The Paseo at San Diego State University EIR*. This would allow for the development of higher trip generating commercial retail uses, including high-turnover, sit down restaurants and grocery stores (e.g., national chains). While the Paseo at San Diego State traffic study refers to the "100" trip rate as "restaurant", this rate would also cover grocery stores/supermarkets since the City of San Diego's published cumulative trip rate is higher for sit down restaurants than for grocery stores (104 trips/1,000 SF vs. 90 trips/1,000 SF, respectively). A combined pass-by/diverted/mixed use reduction of 48% was applied to this square footage, based on the percentage used in the *The Paseo at San Diego State University EIR (Section 3.2, p. 3-9).*

A rate of **31.4 trips/ 1,000 SF** (based on rates published in both the *College Community Redevelopment EIR* and *Paseo EIR [Section 3.2, p. 3-9]*) was applied to the balance of the retail (46,000 SF) to account for less intensive retail/commercial uses.

8.1.3 *University-Serving Retail Scenario – Trip Generation*

Section 4.3.2 discussed in detail the characteristics associated with university-serving retail uses, which would include retail uses/commercial uses that would generate fewer trips, and from closer distances as compared to university/community-serving retailers. Examples of university-serving retailers would include a locally-owned restaurant or store, catering primarily to faculty and students, and "commons"-type groups of retail and restaurants. This retail use would not attract as many vehicle trips as would a stand-alone national chain restaurant or store that would cater to both students and residents from adjacent communities.

As previously described, university-serving retail would be comprised of tenants that would serve students and faculty/staff already on campus. This would not include grocery stores such as Trader Joe's and stand alone restaurants such as Chili's or McDonalds. University-serving retail would generate very little new vehicular trips and the overall rate would be expected to be a small fraction of a "university/community-serving" retail rate. There are no published trip rates for "university-serving" retail. To be conservative, a full 50% of the university/community-serving retail trip rates discussed above, and based on the Paseo and Redevelopment EIRs, was utilized in this report.

A rate of **50 trips/1,000 SF** was applied to 44,000 SF of restaurant/ retail, while a rate of **15.7 trips/1,000 SF** was applied to 46,000 SF of retail. The same pass-by/diverted/mixed use combined reduction of 48% used in the university/community-serving retail assessment was applied to these square footages.

8.1.4 *Student Housing Trip Generation*

Student housing trip generation is unique among the trip rates associated with the various types of residential projects (e.g., single family, apartment, condominium, etc). Student housing and apartment/condominium land uses have similarities (high density, low trip generation), but trip rates for student housing are considered lower than typical multi-family rates. This is because unlike other multi-family dwellings (such as apartments), many students do not have cars, and those who do tend to make fewer trips since many trip ends associated with students lie within the sphere of the campus area. These include work (school) and pleasure trips (gym, sports fields), as well as trips to grocery stores, laundromats, drug stores, etc. Bike and walk trips are also easy and convenient within the sphere of the campus area.

LLG reviewed the trip generation rates published in both *The Paseo at San Diego State University EIR* the *College Community Redevelopment EIR*. The residential trip rate in the Paseo EIR was 3.1 trips/ DU for "high density" residential (Section 3.2, p. 3-9). This rate was approved by City Staff for use in that document. The Redevelopment EIR used a more conservative residential rate of 4.44 trips/ DU (Section 3, p. 3-15) that was also approved by City Staff. Based on a review of the particular Plaza Linda Verde project in terms of density and location, a residential rate of **4.44 trips/unit** was used in this study.

Section 8.3 of this report discusses the very real phenomenon that the provision of on-campus housing eliminates the need for those students to otherwise drive to campus, thereby resulting in a decrease in regional traffic. The student housing aspect of the project embodies smart growth principles by placing the trip origin (the student) very near their primary destination (the university). A trip reduction of this nature would be considered reasonable and, in fact, would provide a more accurate assessment of trip generation. However, in light of the relatively small difference in project trip generation (about 1,200 ADT) that would result from assuming that the student housing would eliminate some trips (which would be reflected in a reduced trip generation rate), and the fact that the number of significant impacts would be unchanged if the analysis made this assumption, the traffic analysis does not factor into the calculations the potential decrease in commuter trips that would result. Therefore, the impact analysis overstates the trip generation.

8.1.5 *Trip Generation Summary*

Table 8–2 and ***Table 8–3*** show summaries of the gross and net trip generation for the university/community-serving retail scenario, respectively. ***Table 8–4*** and ***Table 8–5*** show summaries of the gross trip and net trip generation for the university-serving retail scenario, respectively.

These tables show that the net new trips calculated within the study area are higher for the university/community-serving retail scenario, as would be expected. The calculated net ADT for this scenario (both retail and student housing) are 2,396 ADT, with 46 inbound/ 139 outbound net AM peak hour trips, and 195 inbound/ 84 outbound net PM peak hour trips.

By contrast, the university-serving retail scenario results in lower traffic volumes on a daily (ADT) basis, and peak hour basis. The calculated net ADT for this scenario (both retail and student housing) is 529 ADT, with -19 inbound/ 82 outbound net AM peak hour trips, and 101 inbound/ 8 outbound net PM peak hour trips. The net-negative AM inbound trips are calculated due to the change in trip characteristics from the existing to proposed land uses. For the purposes of the analysis, LLG did not subtract trips from the existing traffic volumes for this net negative value, but rather considered the change as “zero”.

8.2 Trip Distribution/Assignment

The retail and student housing land uses are completely different with respect to their trip-origin/destination characteristics. Therefore, separate distributions and assignments were developed for each.

To determine the overall project’s regional trip distribution percentages, a Select Zone Assignment (SZA) for the SDSU Traffic Analysis Zone (TAZ) was obtained from SANDAG. The model was reviewed to ensure that both retail and residential land uses were accounted for in the SDSU TAZ. This information was used as a starting point to develop two separate traffic distributions: one for the retail component of the project and one for the student housing component.

Figure 8–2a shows the retail traffic distribution. To be conservative, the retail traffic distribution for university-serving retail was assumed to be the same as university/community-serving retail, even though the former’s trip lengths would be shorter. ***Figure 8–2b*** shows the student housing traffic distribution.

The net project traffic volumes for the university/community-serving and university-serving retail scenarios were multiplied against these distribution percentages to calculate the project traffic volumes in the study area. ***Figure 8–3*** shows the assignment of university/community-serving retail project peak hour volumes and ADT. ***Figure 8–4*** shows the assignment of university-serving retail project peak hour volumes and ADT. ***Figure 8–5*** shows the assignment of student housing project peak hour volumes and ADT.

The project traffic assignments described above were added to the existing + near-term cumulative (baseline) traffic volumes shows on *Figure 7–2* to develop the various "*existing + cumulative + project*" traffic volumes.

Figure 8–6 shows the assignment of existing + near-term cumulative + university/community-serving retail project peak hour volumes and ADT. ***Figure 8–7*** shows the assignment of existing + near-term cumulative + university-serving retail project peak hour volumes and ADT. **These volumes represent the addition of only retail traffic volumes, and are for informational purposes only.**

Figure 8–8 shows the assignment of existing + near-term cumulative + university/community-serving retail + student housing project peak hour volumes and ADT. Figure 8–9 shows the assignment of existing + near-term cumulative + university-serving retail + student housing project peak hour volumes and ADT. The volumes on these two figures represent the total project for each scenario, and are compared to the existing + near-term cumulative (baseline) traffic volumes in the analyses presented in Section 9.0.

8.3 Regional Net Traffic Decrease

The additional student housing proposed by the project would eliminate the need for those students to otherwise drive to campus, thereby resulting in a decrease in regional traffic. Development of the Proposed Project would be expected to result in a net decrease in commuter peak hour trips on Interstate 8, and other regional roadways in the area. This is because the student housing component will allow students who would have otherwise needed to commute to campus for classes to be located immediately adjacent to SDSU, thereby essentially converting a regional peak hour vehicle trip into a walk or bike trip. Please note, however, this information is provided for informational purposes only; no quantitative adjustments were made to the impacts analysis to account for this decrease in regional traffic. Also, the existing and proposed mixed-use developments (including the Proposed Project) would provide goods and services for the residents of the proposed student housing component that also would not require a vehicle trip.

The project is not increasing the number of students or faculty, so no new "to/from SDSU" school trips would occur. To the contrary, the project is eliminating these trips that would otherwise have occurred.

TABLE 8–1
EXISTING LAND USE TRAFFIC TO BE REMOVED

Parcel Location [a]	Paseo Map ID#/ Parcel #	Use	Size [b]	Daily Rate [c]	ADT [d]	AM Peak Hour						PM Peak Hour					
						% AM	In:Out	Split	In	Out	Total	% PM	In:Out	Split	In	Out	Total
1	1	Parking Lot	0 ksf	0 /ksf	0	0%	0%	0%	0	0	0	0%	0%	0%	0	0	0
2	18	Parking Lot	0 ksf	0 /ksf	0	0%	0%	0%	0	0	0	0%	0%	0%	0	0	0
3	19	Parking Lot	0 ksf	0 /ksf	0	0%	0%	0%	0	0	0	0%	0%	0%	0	0	0
4	20	-	3.721 ksf	18 /ksf	67	13%	90 %	10%	8	1	9	14%	20%	80%	4	7	9
5	21	-	1.825 ksf	18 /ksf	33	13%	90%	10%	4	0	4	14%	20%	80%	1	4	5
6	22	Parking Lot	0 ksf	0 /ksf	0	0%	0%	0%	0	0	0	0%	0%	0%	0	0	0
7	23	Parking Lot	0 ksf	0 /ksf	0	0%	0%	0%	0	0	0	0%	0%	0%	0	0	0
8	7	Residential	25 du	4.1 /du	103	8%	20%	80%	2	7	9	10%	70%	30%	9	3	10
9	13	Residential	1 du	4.1 /du	4	8%	20%	80%	0	0	0	10%	70%	30%	0	0	0
10	24	Parking Lot	0 ksf	0 /ksf	0	0%	0%	0%	0	0	0	0%	0%	0%	0	0	0
11	25	Parking Lot	0 ksf	0 /ksf	0	0%	0%	0%	0	0	0	0%	0%	0%	0	0	0
12	31	-	5.98 ksf	36 /ksf	215	3%	60%	40%	4	3	7	9%	50%	50%	10	10	20
13	32	-	1.224 ksf	18 /ksf	22	13%	90%	10%	3	0	3	14%	20%	80%	1	2	3
14	28	-	2.795 ksf	420 /ksf	1174	4%	60%	40%	28	19	47	8%	50%	50%	47	47	94
15	27	-	2.4 ksf	350 /ksf	840	9%	50%	50%	38	38	76	7%	50%	50%	29	29	58
16	30	-	1.52 ksf	104 /ksf	158	4%	60%	40%	4	3	7	8%	50%	50%	7	7	14
17	26	-	2.28 ksf	104 /ksf	237	8%	50%	50%	9	9	18	8%	60%	40%	13	8	19
18	29	Gas Station	8 fs	30 /ksf	240	8%	50%	50%	10	10	20	8%	50%	50%	10	10	20
19	5721	Residential	1 du	4.1 /du	4	8%	20%	80%	0	0	0	10%	70%	30%	0	0	0

Continued

TABLE 8-1 *continued*
EXISTING LAND USE TRAFFIC TO BE REMOVED

Parcel Location	Paseo Map ID#/ Parcel #	Use	Size	Daily Rate	ADT	AM Peak Hour						PM Peak Hour					
						% AM	In:Out	Split	In	Out	Total	% PM	In:Out	Split	In	Out	Total
21	5118-5132	Parking Lot	0 ksf	0 /ksf	0	0%	0%	0%	0	0	0	0%	0%	0%	0	0	0
22	5734	Residential	1 du	4.1 /du	4	8%	20%	80%	0	0	0	10%	70%	30%	0	0	0
23	5742	Residential	1 du	4.1 /du	4	8%	20%	80%	0	0	0	10%	70%	30%	0	0	0
24	5750	Residential	1 du	4.1 /du	4	8%	20%	80%	0	0	0	10%	70%	30%	0	0	0
Total Existing Trips to be Removed					***3113***				***110***	***90***	***200***				***132***	***127***	***259***

Footnotes:

a. "Parcel Location" based on Plaza Linda Verde EIR figures.

b. Size of land use presented as "1,000 square feet" (ksf), "dwelling unit" (du), or "fueling station" (fs).

c. "Daily Rate" and all trip generation rate information are taken from the Paseo EIR Traffic Study source table.

d. ADT = Average Daily Traffic

General Notes:

1. Source: *The Paseo at San Diego State University EIR* Traffic Study
2. Additional land use data provided by SDSU (four digit parcel numbers). Trip generation rates for these parcels are based on those published in the Paseo EIR Traffic Study.
3. Shaded values represent parcels that do not generate traffic (e.g., parking lots).
4. (-) = land use not defined in Paseo EIR Traffic Study source table.

TABLE 8–2
UNIVERSITY/COMMUNITY-SERVING RETAIL GROSS TRIP GENERATION

Location	Use [a]	Size [b]	Daily Rate	ADT	AM Peak Hour						PM Peak Hour					
					% AM	In:Out	Split	In	Out	Total	% PM	In:Out	Split	In	Out	Total
Building 1	a. Residential	90 du	4.44/ du	400	8%	20%	80%	6	26	32	11%	70%	30%	31	13	44
	b. Retail	12.5 ksf	31.4/ ksf	393	4%	60%	40%	9	6	15	11%	50%	50%	22	22	44
	c. Retail	12.5 ksf	100 (.52/ /ksf	650	8%	50%	50%	26	26	52	8%	60%	40%	31	21	52
			Subtotal – Bldg 1	*1440*				*41*	*58*	*99*				*84*	*56*	*140*
Building 2	a. Residential	60 du	4.44/ du	266	8%	20%	80%	4	17	21	11%	70%	30%	21	9	30
	b. Retail	10 ksf	31.4/ ksf	314	4%	60%	40%	8	5	13	11%	50%	50%	17	17	34
	c. Retail	10 ksf	100 (.52)/ ksf	520	8%	50%	50%	21	21	42	8%	60%	40%	25	17	42
			Subtotal – Bldg 2	*1100*				*33*	*43*	*76*				*63*	*43*	*106*
Building 3	a. Retail	2 ksf	31.4/ ksf	63	4%	60%	40%	2	1	3	11%	50%	50%	3	3	6
Building 4	a. Residential	60 du	4.44/ du	266	8%	20%	80%	4	17	21	11%	70%	30%	21	9	30
	b. Retail	10 ksf	31.4/ ksf	314	4%	60%	40%	8	5	13	11%	50%	50%	17	17	34
	c. Retail	10 ksf	100 (.52)/ ksf	520	8%	50%	50%	21	21	42	8%	60%	40%	25	17	42
			Subtotal – Bldg 4	*1100*				*33*	*43*	*76*				*63*	*43*	*106*
Building 5	a. residential	90 du	4.44/l du	400	8%	20%	80%	6	26	32	11%	70%	30%	31	13	44
	b. retail	11.5 ksf	31.4/ du	361	4%	60%	40%	9	6	15	11%	50%	50%	20	20	40
	c. retail	11.5 ksf	100 (.52)/ ksf	598	8%	50%	50%	24	24	48	8%	60%	40%	29	19	48
			Subtotal – Bldg 5	*1359*				*39*	*56*	*95*				*80*	*52*	*132*
Building 6	a. residential	50 du	4.44 du	222	8%	20%	80%	4	14	18	11%	70%	30%	17	7	24
Building 7	a. residential	50 du	4.44 du	222	8%	20%	80%	4	14	18	11%	70%	30%	17	7	24
Total Residential		*400 du*	–	*1776*				*28*	*114*	*142*				*138*	*58*	*196*
Total Retail		*90 ksf*	–	*3733*	-	-	-	*128*	*115*	*243*	-	-	-	*189*	*153*	*342*
Total Gross Trips				***5509***	-	-	-	***156***	***229***	***385***	-	-	-	***327***	***211***	***538***

Footnotes:

a. The 90,000 square feet of total retail land use is assessed as 44,000 square feet at 31.4 trips/ksf, and 46,000 sf at 100 trips/ ksf (See Section 8.1for discussion).
b. Size of land use presented as "1,000 square feet" (ksf), or "dwelling unit" (du).

General Notes:

1. Trip Generation Rates are based on trip rates published in *College Community Redevelopment EIR*, and the *Paseo EIR*.
2. ADT = Average Daily Traffic
3. The "Total Gross Trips" represent project traffic prior to removal of traffic volumes associated with existing land uses to be redeveloped with the Proposed Project.

TABLE 8–3
UNIVERSITY/COMMUNITY-SERVING RETAIL NET TRIP GENERATION

Location	Use [a]	Size [b]	Daily Rate	ADT	AM Peak Hour						PM Peak Hour					
					% AM	In:Out	Split	In	Out	Total	% PM	In:Out	Split	In	Out	Total
Building 1	a. Residential	90 du	4.44/ du	400	8%	20%	80%	6	26	32	11%	70%	30%	31	13	44
	b. Retail	12.5 ksf	31.4/ ksf	393	4%	60%	40%	9	6	15	11%	50%	50%	22	22	44
	c. Retail	12.5 ksf	100 (.52)/ ksf	650	8%	50%	50%	26	26	52	8%	60%	40%	31	21	52
	Subtotal – Bldg 1			*1443*				*41*	*58*	*99*				*84*	*56*	*140*
Building 2	a. Residential	60 du	4.44/ du	266	8%	20%	80%	4	17	21	11%	70%	30%	21	9	30
	b. Retail	10 ksf	31.4/ ksf	314	4%	60%	40%	8	5	13	11%	50%	50%	17	17	34
	c. Retail	10 ksf	100 (.52)/ ksf	520	8%	50%	50%	21	21	42	8%	60%	40%	25	17	42
	Subtotal – Bldg 2			*1100*				*33*	*43*	*76*				*63*	*43*	*106*
Building 3	a. Retail	2 ksf	31.4/ ksf	63	4%	60%	40%	2	1	3	11%	50%	50%	3	3	6
Building 4	a. Residential	60 du	4.44/ du	266	8%	20%	80%	4	17	21	11%	70%	30%	21	9	30
	b. Retail	10 ksf	31.4/ ksf	314	4%	60%	40%	8	5	13	11%	50%	50%	17	17	34
	c. Retail	10 ksf	100 (.52)/ ksf	520	8%	50%	50%	21	21	42	8%	60%	40%	25	17	42
	Subtotal – Bldg 4			*1100*				*33*	*43*	*76*				*63*	*43*	*106*
Building 5	a. Residential	90 du	4.44/ du	400	8%	20%	80%	6	26	32	11%	70%	30%	31	13	44
	b. Retail	11.5 ksf	31.4/ ksf	361	4%	60%	40%	9	6	15	11%	50%	50%	20	20	40
	c. Retail	11.5 ksf	100 (.52)/ ksf	598	8%	50%	50%	24	24	48	8%	60%	40%	29	19	48
	Subtotal – Bldg 5			*1359*				*39*	*56*	*95*				*80*	*52*	*132*
Building 6	a. Residential	50 du	4.44/ du	222	8%	20%	80%	4	14	18	11%	70%	30%	17	7	24
Building 7	a. Residential	50 du	4.44/ du	222	8%	20%	80%	4	14	18	11%	70%	30%	17	7	24
Total Residential		*400*	–	*1776*	-	-	-	*28*	*114*	*142*	-	-	-	*138*	*58*	*196*
Total Retail		*90*	–	*3733*	-	-	-	*128*	*115*	*243*	-	-	-	*189*	*153*	*342*
Total Gross Tips				***5509***	-	-	-	***156***	***229***	***385***	-	-	-	***327***	***211***	***538***
Total Existing Land Uses' Trips (Subtracted)				***(3113)***	-	-	-	***(110)***	***(90)***	***(200)***	-	-	-	***(132)***	***(127)***	***(259)***
Total Net Project Trips				***2396***	-	-	-	***46***	***139***	***185***	-	-	-	***195***	***84***	***279***

Footnotes:

a. The 90,000 square feet of total retail land use is assessed as 44,000 square feet at 31.4 trips/ksf, and 46,000 sf at 100 trips/ ksf (See Section 8.1 for discussion).

b. Size of land use presented as "1,000 square feet" (ksf), or "dwelling unit" (du).

General Notes:

1. Trip Generation Rates are based on trip rates published in *College Community Redevelopment EIR*, and the *Paseo EIR*.
2. ADT = Average Daily Traffic
3. The "Total Gross Trips" represent project traffic prior to removal of traffic volumes associated with existing land uses to be redeveloped with the Proposed Project.
4. The "Total Existing Land Uses' Trips" are the summary of trips from *Table 8–1* to be removed with redevelopment of the Proposed Project.
5. The "Total Net Project Trips" are the volumes used in the LOS analyses in *Sections 9.0* and *10.0* of this traffic study.

TABLE 8-4
UNIVERSITY-SERVING RETAIL GROSS TRIP GENERATION

Location	Use	Size	Daily Rate	ADT	AM Peak Hour						PM Peak Hour					
					% AM	In:Out	Split	In	Out	Total	% PM	In:Out	Split	In	Out	Total
Building 1	a. Residential	90 du	4.44/du	400	8%	20%	80%	6	26	32	11%	70%	30%	31	13	44
	b. Retail	12.5 ksf	15.7 / ksf	196	4%	60%	40%	5	3	8	11%	50%	50%	11	11	22
	c. Retail	12.5 ksf	50 (.52)/ ksf	325	8%	50%	50%	13	13	26	8%	60%	40%	16	10	26
	Subtotal – Bldg 1			*921*				*24*	*42*	*66*				*58*	*34*	*92*
Building 2	a. Residential	60 du	4.44/ du	266	8%	20%	80%	4	17	21	11%	70%	30%	21	9	30
	b. Retail	10 ksf	15.7/ ksf	157	4%	60%	40%	4	3	7	11%	50%	50%	9	9	18
	c. Retail	10 ksf	50 (.52)/ ksf	260	8%	50%	50%	10	10	20	8%	60%	40%	12	8	20
	Subtotal – Bldg 2			*683*				*18*	*30*	*48*				*42*	*26*	*68*
Building 3	a. Retail	2 ksf	15.7/ ksf	31	4%	60%	40%	1	1	2	11%	50%	50%	2	2	4
Building 4	a. Residential	60 du	4.44/ du	266	8%	20%	80%	4	17	21	11%	70%	30%	21	9	30
	b. Retail	10 ksf	15.7/ ksf	157	4%	60%	40%	4	3	7	11%	50%	50%	9	9	18
	c. Retail	10 ksf	50 (.52)/ ksf	260	8%	50%	50%	10	10	20	8%	60%	40%	12	8	20
	Subtotal – Bldg 4			*683*				*18*	*30*	*48*				*42*	*26*	*68*
Building 5	a. Residential	90 du	4.44/ du	400	8%	20%	80%	6	26	32	11%	70%	30%	31	13	44
	b. Retail	11.5 ksf	15.7/ ksf	181	4%	60%	40%	4	3	7	11%	50%	50%	10	10	20
	c. Retail	11.5 ksf	50 (.52)/ ksf	299	8%	50%	50%	12	12	24	8%	60%	40%	14	10	24
	Subtotal – Bldg 5			*880*				*22*	*41*	*63*				*55*	*33*	*88*
Building 6	a. Residential	50 du	4.44 du	222	8%	20%	80%	4	14	18	11%	70%	30%	17	7	24
Building 7	a. Residential	50 du	4.44 du	222	8%	20%	80%	4	14	18	11%	70%	30%	17	7	24
Total Residential		*400 du*	-	*1776*	-	-	-	*28*	*114*	*142*	-	-	-	*138*	*58*	*196*
Total Retail		*90 ksf*	-	*1866*	-	-	-	*63*	*58*	*121*	-	-	-	*95*	*77*	*172*
Total Gross Tips				***3642***	-	-	-	***91***	***172***	***263***	-	-	-	***233***	***135***	***368***

Footnotes:

a. The 90,000 square feet of total retail land use is assessed as 44,000 square feet at 31.4 trips/ksf, and 46,000 sf at 100 trips/ ksf to reflect higher and lower-trip generating potential retail uses.

b. Size of land use presented as "1,000 square feet" (ksf), or "dwelling unit" (du).

General Notes:

1. Trip Generation Rates are based on trip rates published in *College Community Redevelopment EIR*, and the *Paseo EIR*.
2. ADT = Average Daily Traffic
3. The "Total Gross Trips" represent project traffic prior to removal of traffic volumes associated with existing land uses to be redeveloped with the Proposed Project.

TABLE 8-5
UNIVERSITY-SERVING RETAIL NET TRIP GENERATION

Location	Use	Size	Daily Rate	ADT	AM Peak Hour % AM	AM In:Out	AM Split	AM In	AM Out	AM Total	PM Peak Hour % PM	PM In:Out	PM Split	PM In	PM Out	PM Total
Building 1	a. Residential	90 du	4.44/ du	400	8%	20%	80%	6	26	32	11%	70%	30%	31	13	44
	b. Retail	12.5 ksf	15.7/ ksf	196	4%	60%	40%	5	3	8	11%	50%	50%	11	11	22
	c. Retail	12.5 ksf	50 (.52)/ ksf	325	8%	50%	50%	13	13	26	8%	60%	40%	16	10	26
	Subtotal – Bldg 1			*921*				*24*	*42*	*66*				*58*	*34*	*92*
Building 2	a. Residential	60 du	4.44/ du	266	8%	20%	80%	4	17	21	11%	70%	30%	21	9	30
	b. Retail	10 ksf	15.7/ ksf	157	4%	60%	40%	4	3	7	11%	50%	50%	9	9	18
	c. Retail	10 ksf	50 (.52)/ ksf	260	8%	50%	50%	10	10	20	8%	60%	40%	12	8	20
	Subtotal – Bldg 2			*683*				*18*	*30*	*48*				*42*	*36*	*68*
Building 3	a. Retail	2 ksf	15.7/ ksf	31	4%	60%	40%	1	1	2	11%	50%	50%	2	2	4
Building 4	a. Residential	60 du	4.44/ du	266	8%	20%	80%	4	17	21	11%	70%	30%	21	9	30
	b. Retail	10 ksf	15.7/ ksf	157	4%	60%	40%	4	3	7	11%	50%	50%	9	9	18
	c. Retail	10 ksf	50 (.52)/ ksf	260	8%	50%	50%	10	10	20	8%	60%	40%	12	8	20
	Subtotal – Bldg 4			*683*				*18*	*30*	*48*				*42*	*36*	*68*
Building 5	a. Residential	90 du	4.44/ du	400	8%	20%	80%	6	26	32	11%	70%	30%	31	13	44
	b. Retail	11.5 ksf	15.7/ ksf	181	4%	60%	40%	4	3	7	11%	50%	50%	10	10	20
	c. Retail	11.5 ksf	50 (.52)/ ksf	299	8%	50%	50%	12	12	24	8%	60%	40%	14	10	24
	Subtotal – Bldg 5			*880*				*22*	*41*	*63*				*55*	*33*	*88*
Building 6	a. Residential	50 du	4.44/ du	222	8%	20%	80%	4	14	18	11%	70%	30%	17	7	24
Building 7	a. Residential	50 du	4.44/ du	222	8%	20%	80%	4	14	18	11%	70%	30%	17	7	24
	Total Residential	*400 du*	-	*1776*	-	-	-	*28*	*114*	*142*	-	-	-	*138*	*58*	*196*
	Total Retail	*90 ksf*	-	*1866*	-	-	-	*63*	*58*	*121*	-	-	-	*95*	*77*	*172*
	Total Gross Tips			***3642***	-	-	-	***91***	***172***	***263***	-	-	-	***233***	***135***	***368***
	Total Existing Land Uses Trips (Subtracted)			***(3113)***	-	-	-	***(110)***	***(90)***	***(200)***	-	-	-	***(132)***	***(127)***	***(259)***
	Total Net Project Trips			***529***	-	-	-	***-19***	***82***	***63***	-	-	-	***101***	***8***	***109***

Footnotes:

a. The 90,000 square feet of total retail land use is assessed as 44,000 square feet at 31.4 trips/ksf, and 46,000 sf at 100 trips/ ksf to reflect higher and lower-trip generating potential retail uses.

b. Size of land use presented as "1,000 square feet" (ksf), or "dwelling unit" (du).

General Notes:

1. Trip Generation Rates are based on trip rates published in *College Community Redevelopment EIR*, and the *Paseo EIR*.
2. ADT = Average Daily Traffic
3. The "Total Gross Trips" represent project traffic prior to removal of traffic volumes associated with existing land uses to be redeveloped with the Proposed Project.
4. The "Total Existing Land Uses' Trips" are the summary of trips from *Table 8–1* to be removed with redevelopment of the Proposed Project.
5. The "Total Net Project Trips" are the volumes used in the LOS analyses in *Sections 9.0* and *10.0* of this traffic study.

Source: Dudek, 2009
N:\1857\Figures\LLG1857 FIG8-1

LEGEND

- Existing Campus Boundary
- Existing Parcels

Figure 8-1

Parcels to be Redeveloped

PLAZA LINDA VERDE

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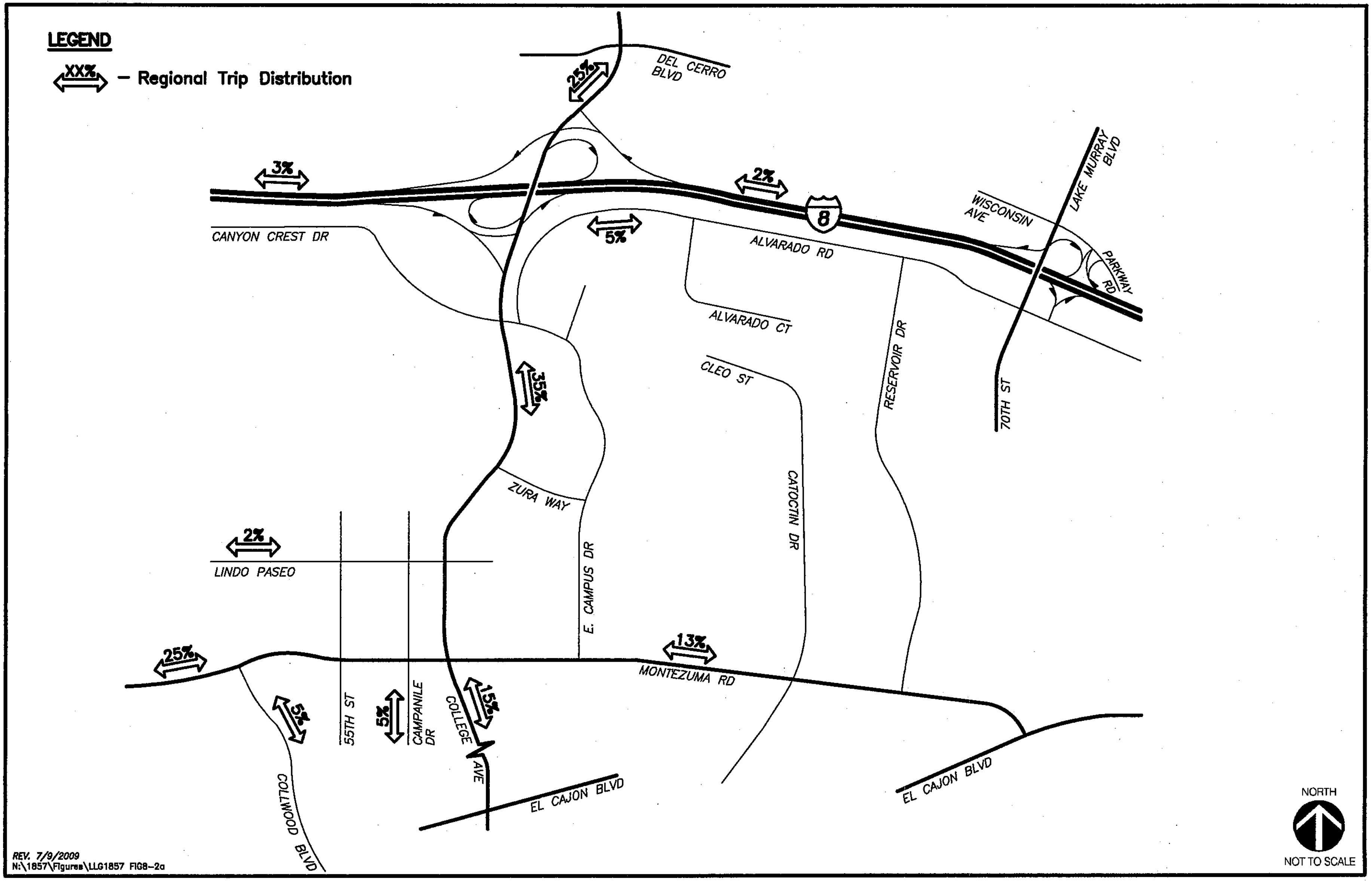

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Figure 8-2a

Retail Project Component Trip Distribution

PLAZA LINDA VERDE

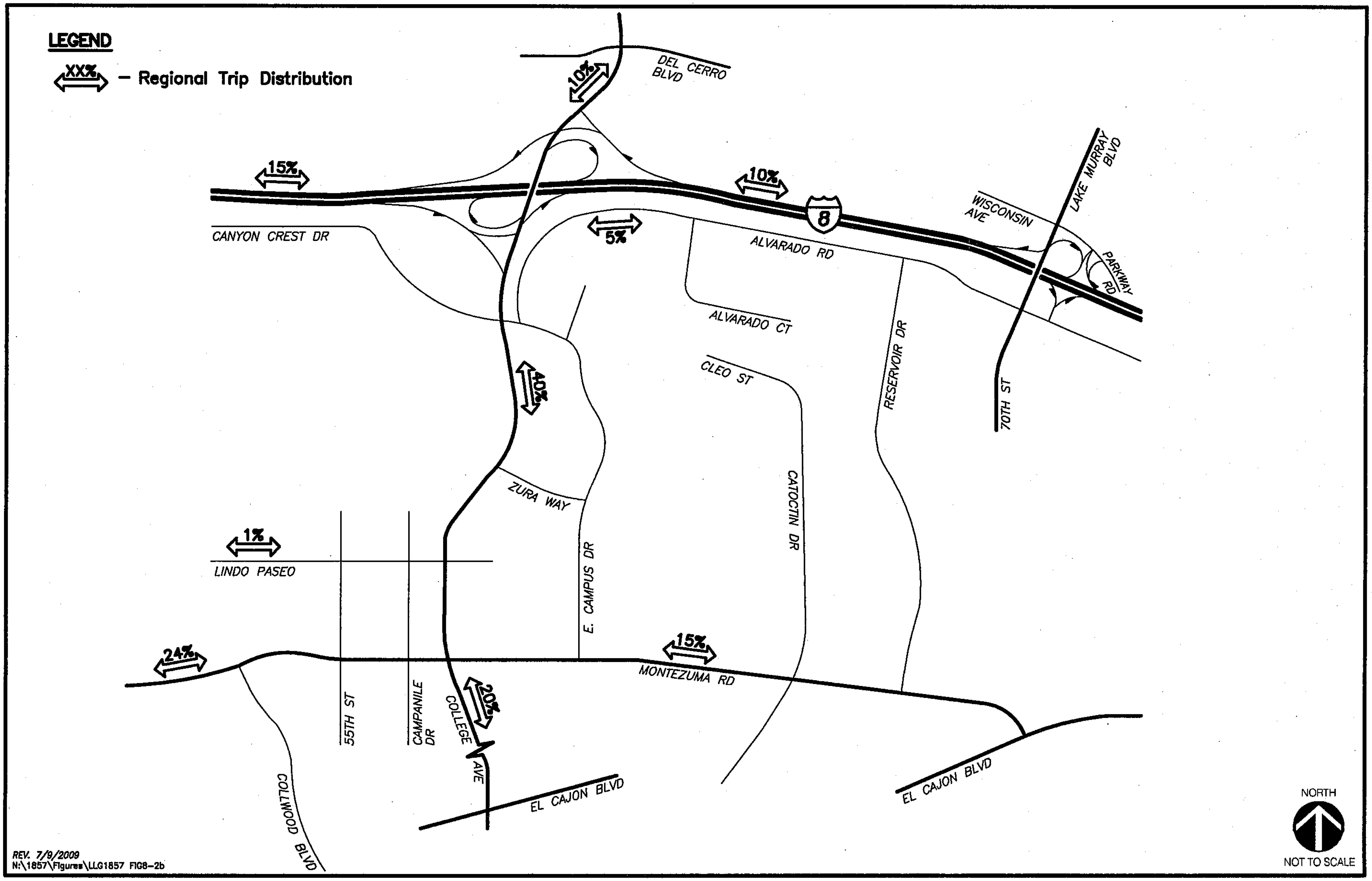

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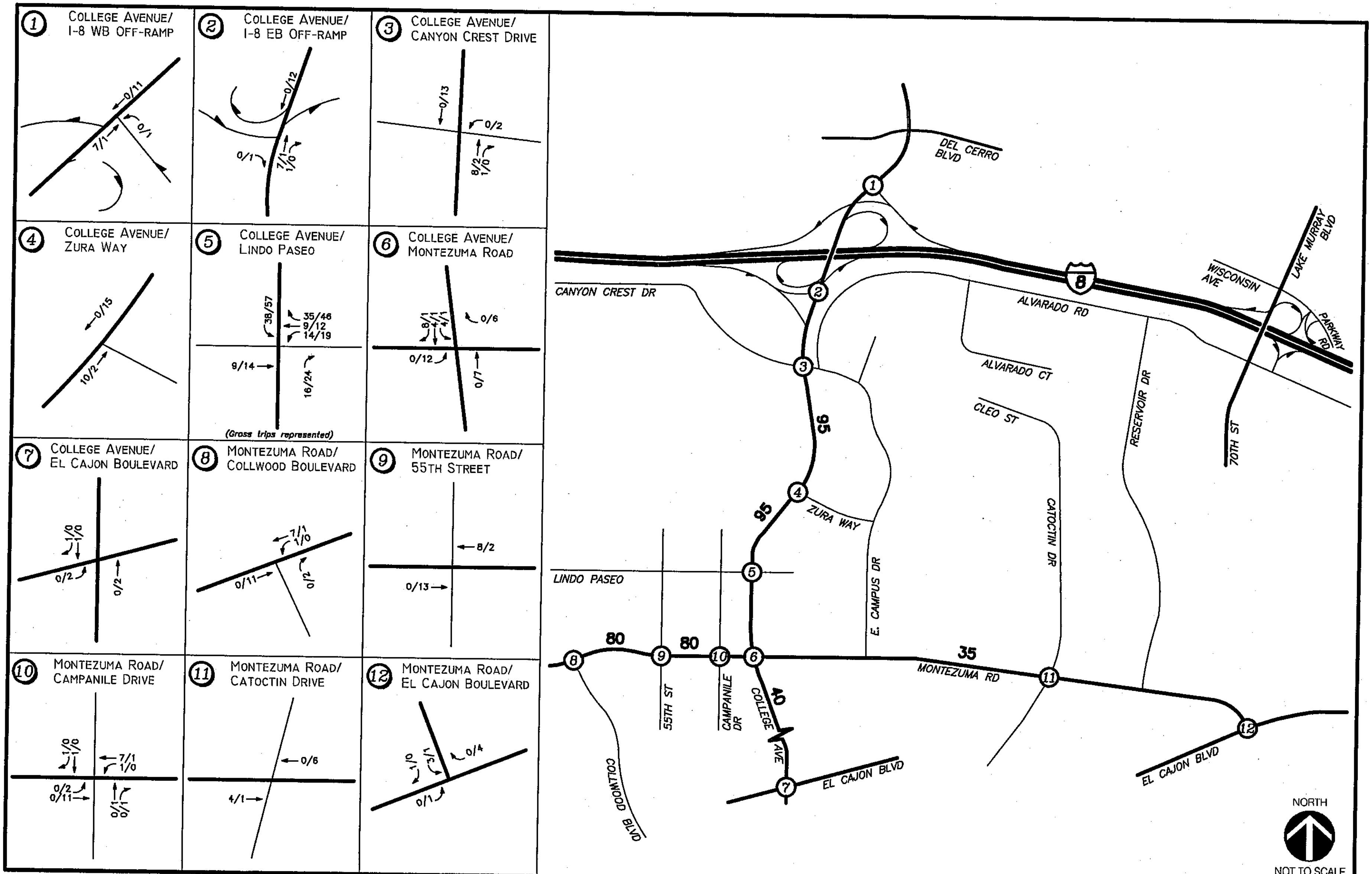
Figure 8-2b

Student Housing Component Trip Distribution

PLAZA LINDA VERDE



REV. 5/18/2009
N:\1857\Figures\LLG1857 FIG8-3

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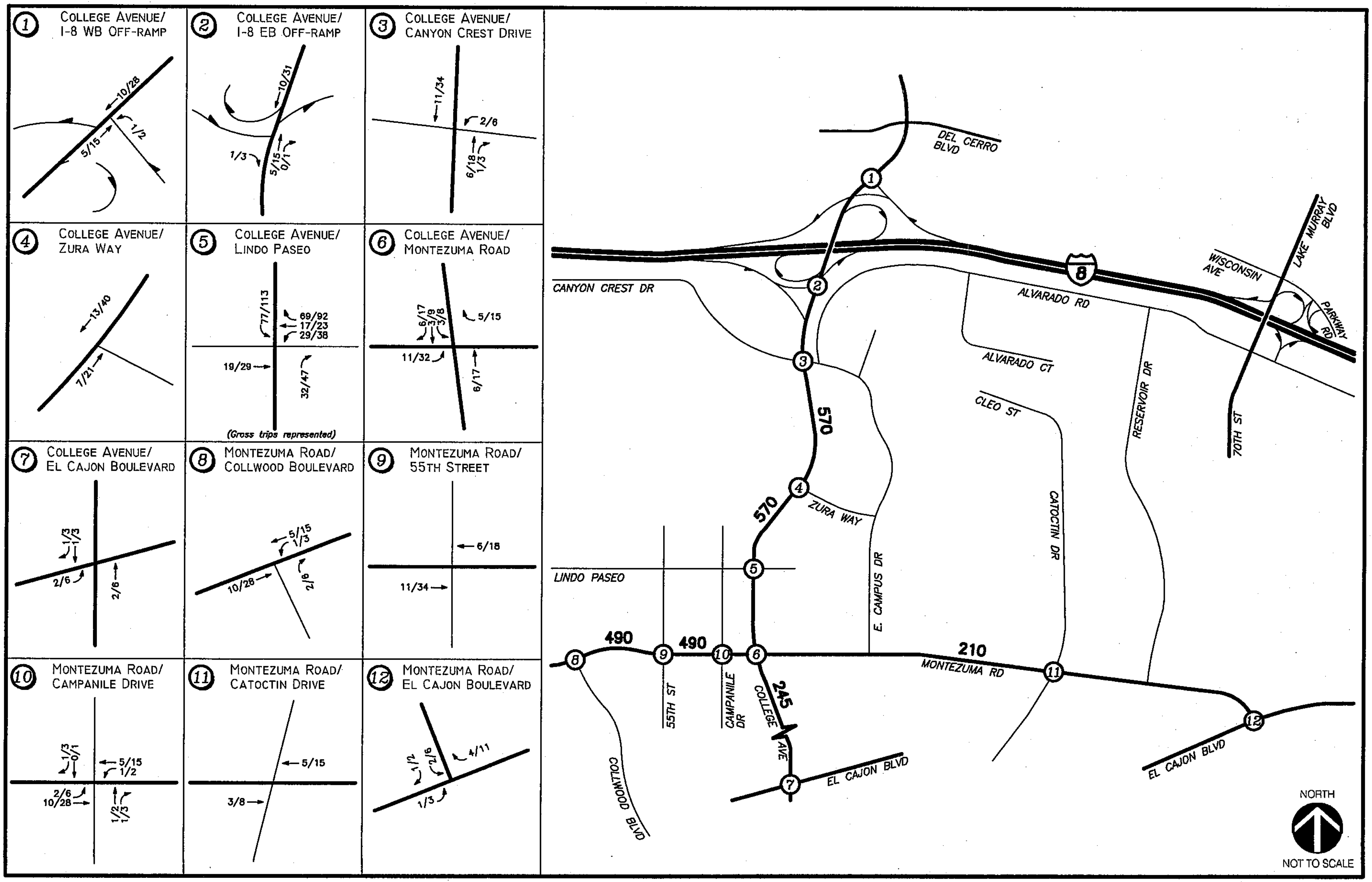
NOTES:

- AM/PM peak hour volumes are shown at the intersections
- ADT (Average Daily Traffic) shown midblock.

Figure 8-3

University-Serving Retail Component Project Traffic Volumes AM/PM Peak Hours & ADT

PLAZA LINDA VERDE



REV. 5/18/2009
N:\1857\Figures\LLG1857 FIG8-4

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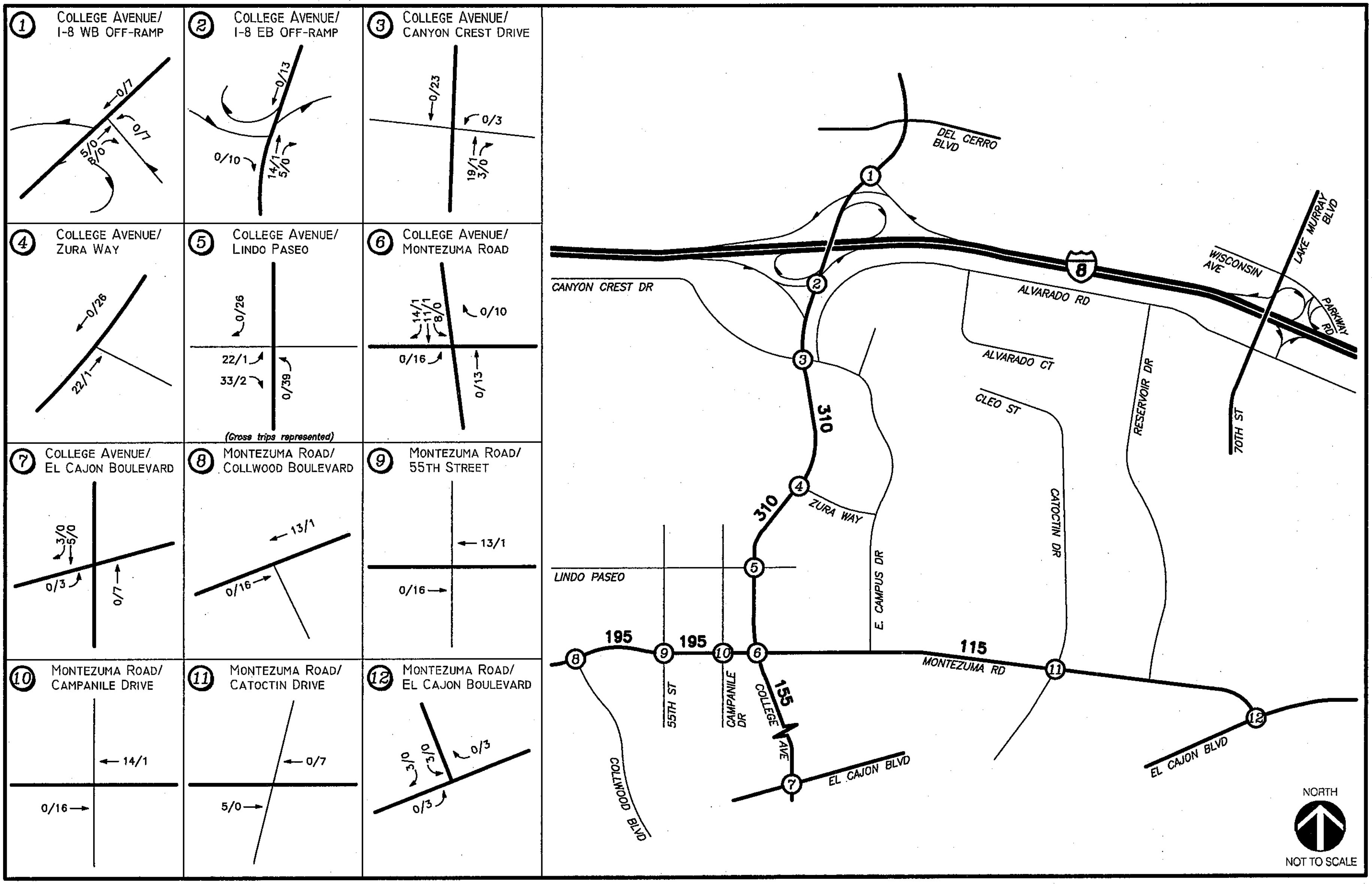
NOTES:
- ADT (Average Daily Traffic) shown midblock
- AM/PM peak hour volumes are shown at the intersections

Figure 8-4

University/ Community-Serving Retail Component
Project Traffic Volumes
AM/PM Peak Hours & ADT

Plaza Linda Verde



LINSCOTT
LAW &
GREENSPAN
engineers

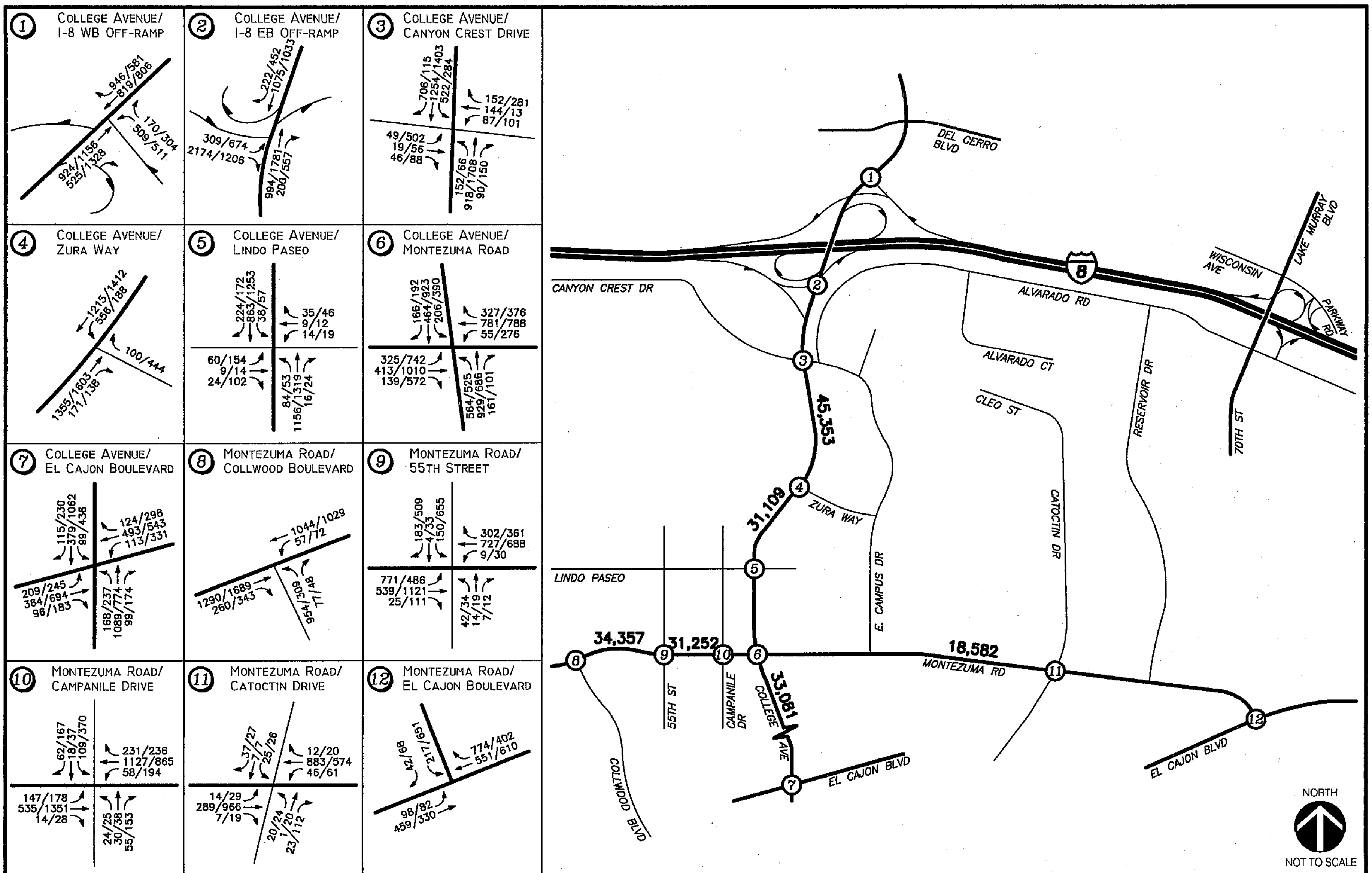
REV. 10/1/2009
N:\1857\Figures\LLG1857 FIG8-5

NOTES:
- ADT (Average Daily Traffic) shown midblock
- AM/PM peak hour volumes are shown at the intersections

Figure 8-5

Student Housing Component - Project Traffic Volumes
AM/PM Peak Hours & ADT

PLAZA LINDA VERDE



LINSCOTT LAW & GREENSPAN engineers

REV. 10/1/2009
N:\1857\Figures\LLG1857 FIG8-6

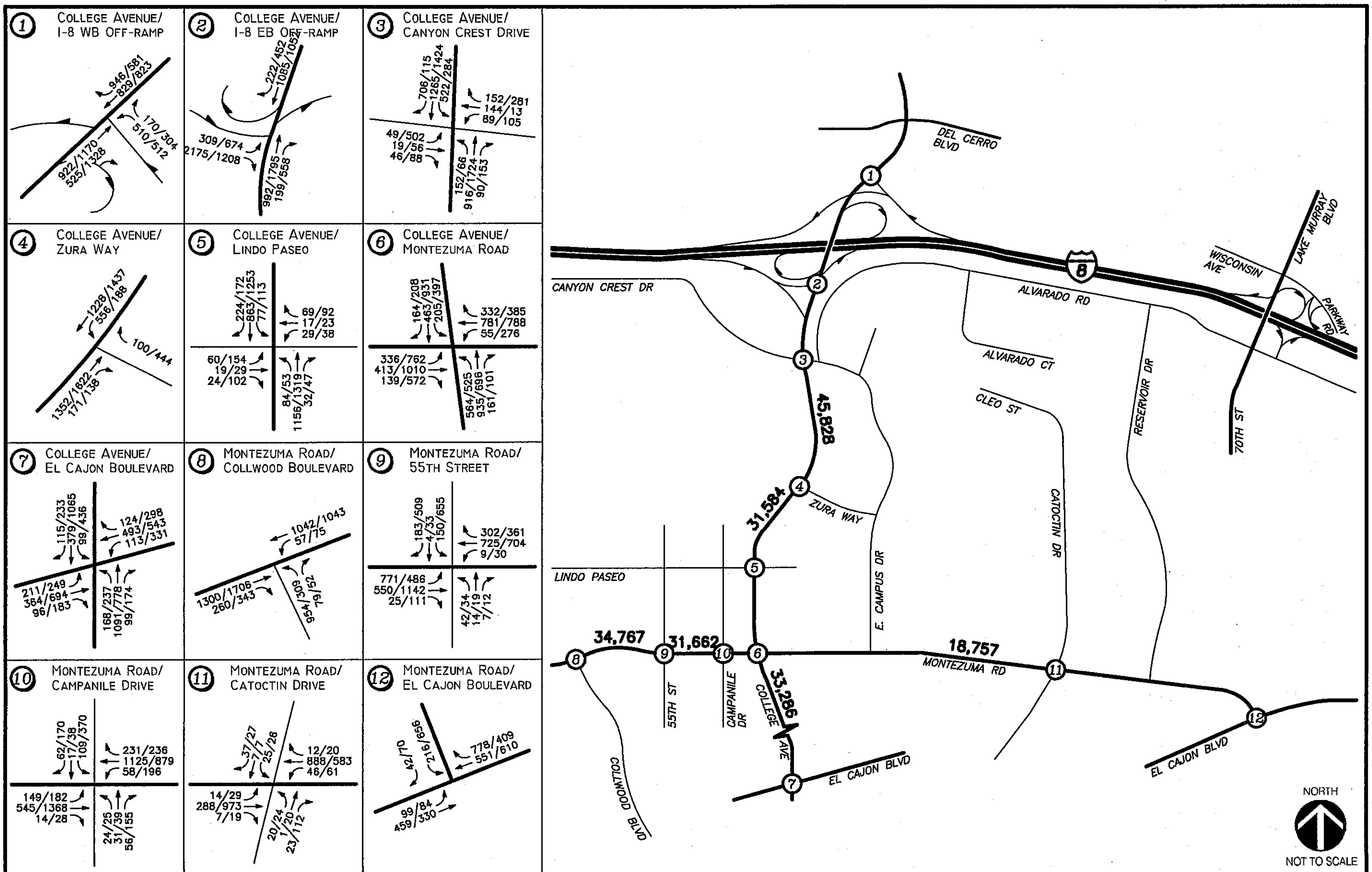
NOTES:

- ADT (Average Daily Traffic) shown midblock
- AM/PM peak hour volumes are shown at the intersections

Figure 8-6

Existing + Near-Term Cumulative + University-Serving Retail Traffic Volumes AM/PM Peak Hours & ADT

PLAZA LINDA VERDE



LINSCOTT LAW & GREENSPAN engineers

REV. 10/1/2009
N:\1857\Figures\LLG1857 FIG8-7

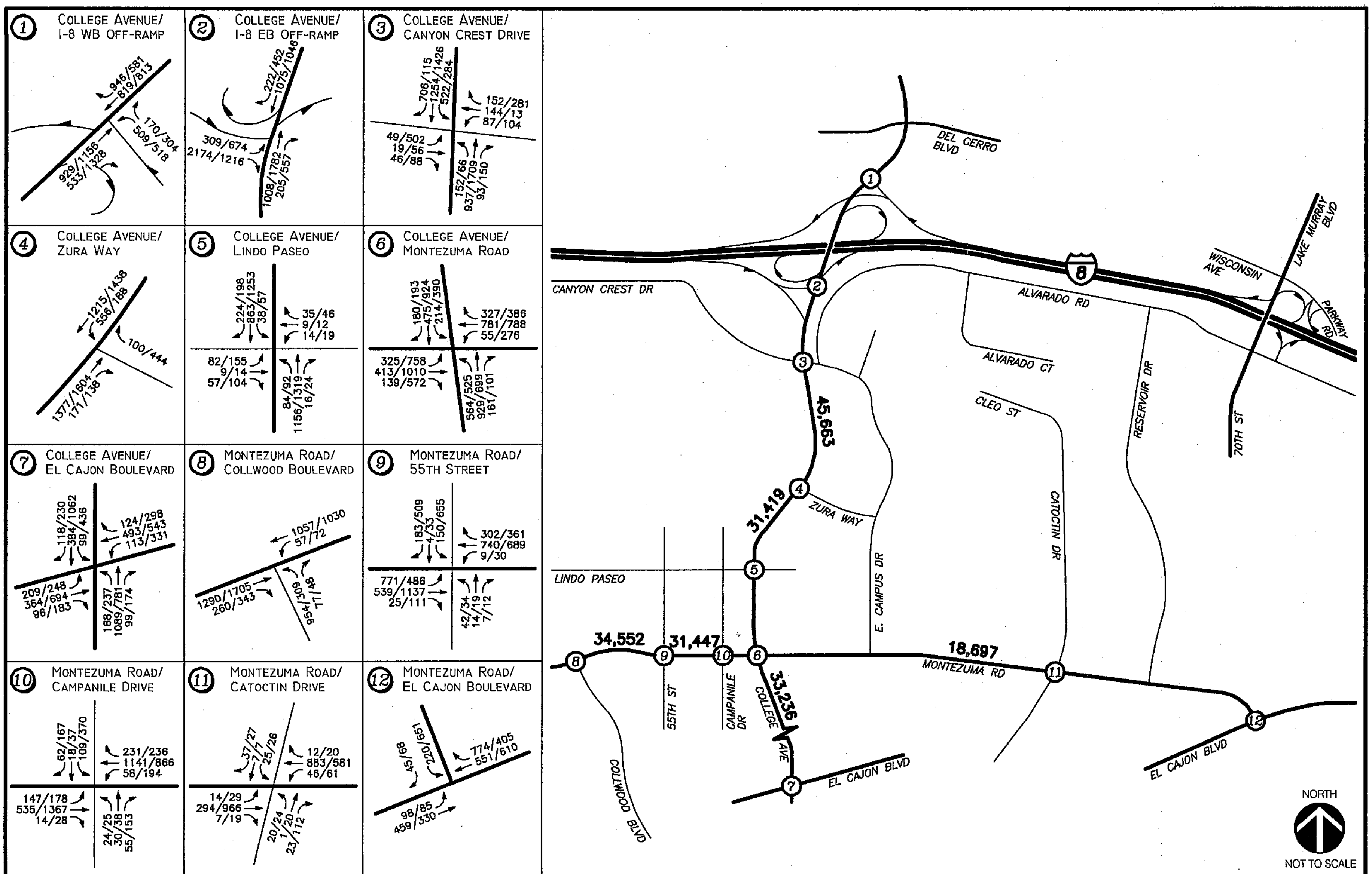
NOTES:

- **ADT (Average Daily Traffic) shown midblock**
- **AM/PM peak hour volumes are shown at the intersections**

Figure 8-7

Existing + Near-Term Cumulative + University/ Community-Serving Retail Traffic Volumes AM/PM Peak Hours & ADT

PLAZA LINDA VERDE



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REV. 8/11/2010
N:\1857\Figures\LLG1857 FIG8-8

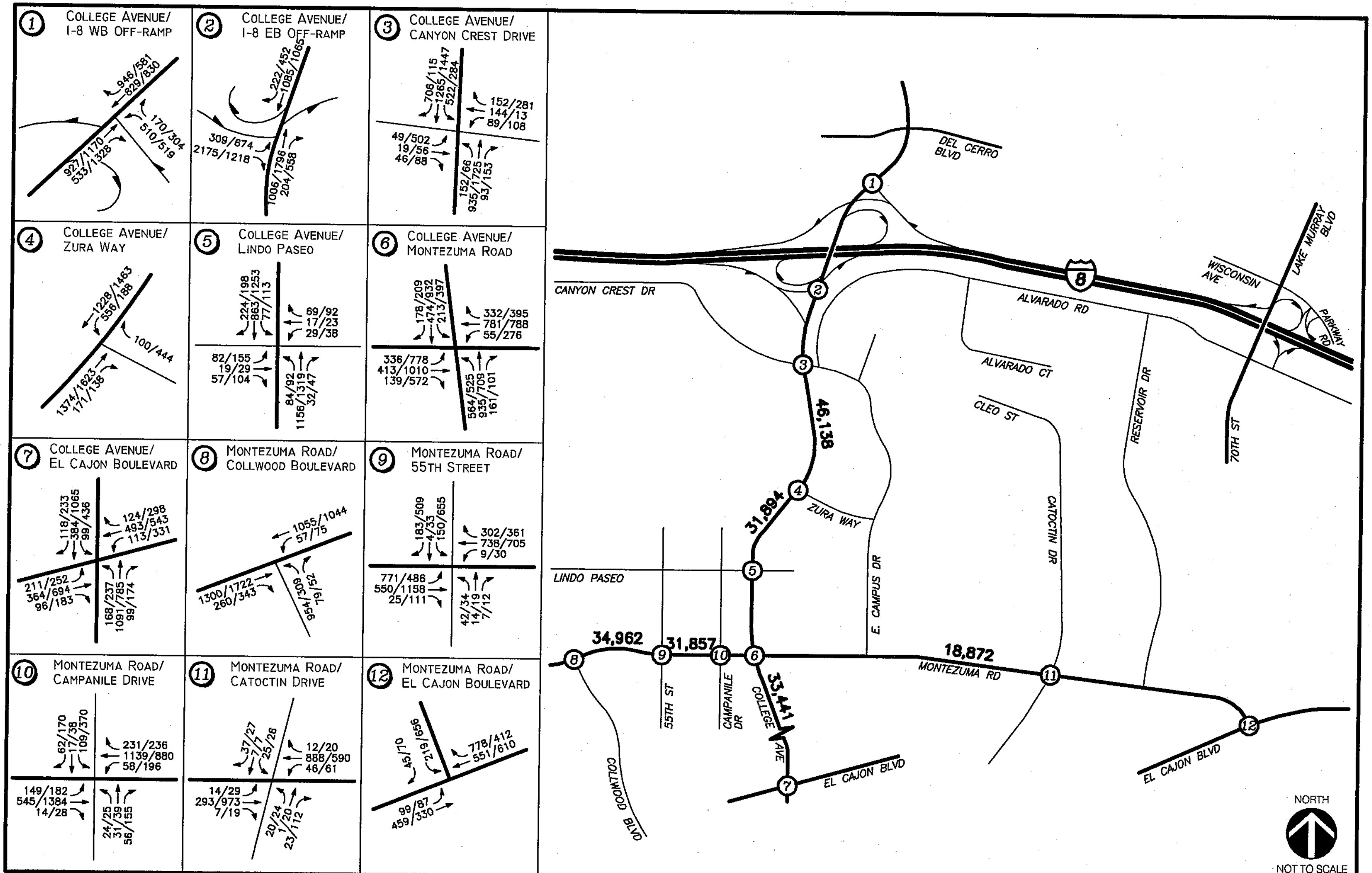
NOTES:

- ADT (Average Daily Traffic) shown midblock
- AM/PM peak hour volumes are shown at the intersections

Figure 8-8

Existing + Near-Term Cumulative + University-Serving Retail + Student Housing Traffic Volumes
AM/PM Peak Hours & ADT

PLAZA LINDA VERDE



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REV. 8/11/2010
N:\1857\Figures\LLG1857 FIG8-9

NOTES:

- **ADT (Average Daily Traffic) shown midblock**
- **AM/PM peak hour volumes are shown at the intersections**

Figure 8-9

Existing + Near-Term Cumulative + University/ Community-Serving Retail + Student Housing Traffic Volumes AM/PM Peak Hours & ADT

Plaza Linda Verde

9.0 ANALYSIS OF NEAR-TERM SCENARIOS

The following scenarios were analyzed under near-term traffic conditions to determine the impacts of the "university-serving retail" scenario relative to the "university/community-serving retail" scenario, in combination with the student housing:

- Existing + Near-Term Cumulative (Baseline)
- Existing + Near-Term Cumulative + University-Serving Retail-only
- Existing + Near-Term Cumulative + University/Community-Serving Retail-only
- Existing + Near-Term Cumulative + University-Serving Retail + Student Housing
- Existing + Near-Term Cumulative + University/Community-Serving Retail + Student Housing

The two scenarios that present the "retail-only" impacts are informational, and are included to help determine what, if any, impacts the student housing component has by itself. These results are summarized in *Sections 9.2* and *9.3*.

The "total project" impacts (retail + student housing) are measured against the published significance criteria to determine the overall project impacts. These results are summarized in *Sections 9.4* and *9.5*.

Table 9–1 shows the peak hour intersection analysis results comparison for all scenarios. ***Table 9–2*** shows the daily street segment analysis results comparison for all scenarios. ***Table 9–3*** shows the ILV operations comparison results for all scenarios. ***Appendix G*** contains the near-term intersection worksheets and ILV operations sheets.

9.1 Existing + Near-Term Cumulative

The Existing + Near-Term Cumulative traffic volumes were calculated using the existing traffic volumes and the addition of near-term cumulative traffic as described in *Section 7.0*. The results of these analyses form the baseline against which the total project impacts for both retail scenarios ("university -serving retail + student housing" and "university/community`-serving retail + student housing") are measured in *Sections 9.4* and *9.5,* respectively.

9.1.1 *Peak Hour Intersection Analysis*

Table 9–1 summarizes the peak hour intersection operations for the Existing + Near-Term Cumulative (Baseline) scenario. This table shows that the following study area intersections are calculated to operate at LOS E or worse with the addition of near-term cumulative project traffic:

2. College Avenue/ I-8 Eastbound Ramps (LOS F during the AM peak hour)
3. College Avenue/ Canyon Crest Drive (LOS E/F during the AM/PM peak hours, respectively)
4. College Avenue/ Zura Way (LOS F during both AM/PM peak hours)
6. College Avenue/ Montezuma Road (LOS F during both AM/PM peak hours)
7. College Avenue/ El Cajon Boulevard (LOS E during the PM peak hour)

10. Montezuma Road/ Campanile Drive (LOS E during the PM peak hour)

In several cases, the LOS degrades to LOS E or LOS F with the addition of the cumulative projects' traffic volumes.

9.1.2 *Daily Street Segment Operations*

Table 9–2 summarizes the study area segment operations in the study area in the Existing + Near-Term Cumulative (Baseline) scenario. This table shows that all of the study area segments are calculated to operate at LOS D or better conditions on a daily basis with the exception of the following two segments:

- College Avenue: between Canyon Crest Drive and Zura Way (LOS F)
- Montezuma Road: between 55th Street and College Avenue (LOS F)

These two segments continue to operate at LOS F with the addition of the cumulative projects' traffic volumes.

9.1.3 *ILV Operations*

Table 9–3 summarizes the results of the Existing + Near-Term Cumulative (Baseline) ILV analysis. This table shows that the College Avenue/ I-8 interchange is calculated to operate "Under" or "Near" capacity during both the AM and PM peak hours.

As discussed in *Section 4.5.3*, the ILV method of analysis does not reliably correlate with the more advanced HCM method of signalized intersection analysis. This is evidenced in this case, where the ILV results show the College Avenue/ I-8 Eastbound Ramps operating at "Under" capacity (indicating good LOS), whereas the HCM method (discussed in *Section 9.1.1* above) shows LOS F operations.

Findings of significance are made using the results of the HCM method. Therefore, the ILV results should be considered informational.

9.2 Existing + Near-Term Cumulative + University-Serving Retail

This section presents the results of the University-Serving Retail project traffic when added to the Existing + Near-Term Cumulative traffic. The student housing component of the Proposed Project is not included in these volumes. Therefore, these results are informational, for use in determining the relative effects of student housing. These results **are not** for determining the ultimate findings of significance.

9.2.1 *Peak Hour Intersection Analysis*

Table 9–1 summarizes the peak hour intersection operations with the addition of the University-Serving Retail project traffic volumes. This table shows that with the addition of retail-only project traffic to the near-term baseline, the following study area intersections are calculated to continue to operate at LOS E or worse:

2. College Avenue/ I-8 Eastbound Ramps (LOS F during the AM peak hour)
3. College Avenue/ Canyon Crest Drive (LOS E/F during the AM/PM peak hours, respectively)
4. College Avenue/ Zura Way (LOS F during both AM/PM peak hours)
6. College Avenue/ Montezuma Road (LOS F during both AM/PM peak hours)
7. College Avenue/ El Cajon Boulevard (LOS E during the PM peak hour)
10. Montezuma Road/ Campanile Drive (LOS E during the PM peak hour)

Again, these results are informational. Findings of significance for the University-Serving Retail scenario (including Student Housing) are shown in *Section 9.4*.

9.2.2 *Daily Street Segment Operations*

Table 9–2 summarizes the study area segment operations in the study area with the addition of University-Serving Retail-only project traffic volumes. This table shows that the majority of the study area segments are calculated to continue to operate at LOS D or better on a daily basis with the following exceptions:

- College Avenue: between Canyon Crest Drive and Zura Way (LOS F)
- Montezuma Road: between 55th Street and College Avenue (LOS F)

The addition of the University-Serving Retail-only traffic does not degrade any study area segment LOS. While these results are informational, findings of significance for the University-Serving Retail scenario (including Student Housing) can be found in *Section 9.4*.

9.2.3 *ILV Operations*

Table 9–3 summarizes the results of the Existing + Near-Term Cumulative + University-Serving Retail-only ILV analysis. This table shows that the College Avenue/ I-8 interchange is calculated to continue to operate "Under" or "Near" capacity during both the AM and PM peak hours. Again, ILV results are for informational purposes only.

9.3 Existing + Near-Term Cumulative + University/Community-Serving Retail

This section presents the results of the University/Community-Serving Retail project traffic when added to the Existing + Near-Term Cumulative traffic. The student housing component of the Proposed Project is not included in these volumes. Therefore, these results are informational, for use in determining the relative effects of student housing. These results **are not** for determining the ultimate findings of significance.

9.3.1 *Peak Hour Intersection Analysis*

Table 9–1 summarizes the peak hour intersection operations with the addition of the University/Community-Serving Retail project traffic volumes. This table shows that with the addition of the retail-only project traffic to the near-term baseline, the following study area intersections are calculated to continue to operate at LOS E or worse:

2. College Avenue / I-8 Eastbound Ramps (LOS F during the AM peak hour)

3. College Avenue / Canyon Crest Drive (LOS E/F during both AM/PM peak hours)
4. College Avenue / Zura Way (LOS F during both AM/PM peak hours)
6. College Avenue / Montezuma Road (LOS F during both AM/PM peak hours)
7. College Avenue / El Cajon Boulevard (LOS E during the PM peak hour)
10. Montezuma Road / Campanile Drive (LOS E during the PM peak hour)

Again, these results are informational. Findings of significance for the University/Community-Serving Retail scenario (including Student Housing) are shown in *Section 9.5*.

9.3.2 *Daily Street Segment Operations*

Table 9–2 summarizes the study area segment operations in the study area with the addition of University/Community-Serving Retail-only traffic volumes. This table shows that the majority of the study area segments are calculated to continue to operate at LOS D or better on a daily basis with the following exceptions:

- College Avenue: between Canyon Crest Drive and Zura Way (LOS F)
- Montezuma Road: between 55th Street and College Avenue (LOS F)

The addition of the University/Community-Serving Retail-only traffic does not degrade any study area segment LOS. While these results are informational, findings of significance for the University/Community-Serving Retail scenario (including Student Housing) can be found in *Section 9.5*.

9.3.3 *ILV Operations*

Table 9–3 summarizes the results of the Existing + Near-Term Cumulative + University/Community-Serving Retail ILV analysis. This table shows that the College Avenue / I-8 interchange is calculated to continue to operate "Under" or "Near" capacity during both the AM and PM peak hours. Again, ILV results are for informational purposes only.

9.4 Existing + Near-Term Cumulative + University-Serving Retail + Student Housing

This section presents the results of the University-Serving Retail and Student Housing total project traffic when added to the Existing + Near-Term Cumulative (Baseline) traffic. The results of these analyses are compared to the Existing + Near-Term Cumulative baseline results to determine significance of impacts. ***These results are for use in determining the ultimate findings of significance.***

9.4.1 *Peak Hour Intersection Analysis*

Table 9–1 summarizes the peak hour intersection operations with the addition of the University-Serving Retail + Student Housing total project traffic volumes. This table shows that with the addition of total project traffic, the following study area intersections are calculated to continue to operate at LOS E or worse:

2. College Avenue / I-8 Eastbound Ramps (LOS F during the AM peak hour)

3. College Avenue / Canyon Crest Drive (LOS E/F during the AM/PM peak hours, respectively)
4. College Avenue / Zura Way (LOS F during both AM/PM peak hours)
6. College Avenue / Montezuma Road (LOS F during both AM/PM peak hours)
7. College Avenue / El Cajon Boulevard (LOS E during the PM peak hour)
10. Montezuma Road / Campanile Drive (LOS E during the PM peak hour)

The proposed University-Serving Retail + Student Housing total project exceeds the allowable increase in delay at the College Avenue/Zura Way unsignalized intersection, and the College Avenue/Canyon Crest Drive and College Avenue/Montezuma Road signalized intersections. Based on the City's published significance criteria, ***significant impacts are calculated*** at these three intersections. The remaining four intersections are not considered significant since the project adds less than the maximum increase of allowable delay for a poorly operating intersection.

9.4.2 *Daily Street Segment Operations*

Table 9–2 summarizes the study area segment operations in the study area with the addition of the University-Serving Retail + Student Housing total project traffic volumes. This table shows that the majority of the study area segments are calculated to continue to operate at LOS D or better on a daily basis with the following exceptions:

- College Avenue: between Canyon Crest Drive and Zura Way (LOS F)
- Montezuma Road: between 55th Street and College Avenue (LOS F)

Although the street segments listed above continue to operate at LOS F, the increase in v/c due to the total project is less than 0.01. Therefore, based on the City's significance criteria, these study area segments ***are deemed not significant.***

9.4.3 *ILV Operations*

Table 9–3 summarizes the ILV operations with the addition of the University-Serving Retail + Student Housing total project traffic volumes. This table shows that the College Avenue/I-8 interchange is calculated to continue to operate "Under" or "Near" capacity during both the AM and PM peak hours. This does not compare to the accepted HCM-method analysis results shown in *Table 9–1*. The ILV summaries should be considered for informational purposes only.

9.5 Existing + Cumulative + University/Community-Serving Retail + Student Housing

This section presents the results of the University/Community-Serving Retail and Student Housing total project traffic when added to the Existing + Near-Term Cumulative (Baseline) traffic. The results of these analyses are compared to the Existing + Near-Term Cumulative baseline results to determine significance of impacts. ***These results are for use in determining the ultimate findings of significance.***

9.5.1 *Peak Hour Intersection Analysis*

Table 9–1 summarizes the peak hour intersection operations with the addition of the University/Community-Serving Retail + Student Housing total project traffic volumes. This table shows that with the addition of total project traffic, the following study area intersections are calculated to continue to operate at LOS E or worse:

2. College Avenue / I-8 Eastbound Ramps (LOS F during the AM peak hour)
3. College Avenue / Canyon Crest Drive (LOS E/F during the AM/PM peak hours, respectively)
4. College Avenue / Zura Way (LOS F during both AM/PM peak hours)
6. College Avenue / Montezuma Road (LOS F during both AM/PM peak hours)
7. College Avenue / El Cajon Boulevard (LOS E during the PM peak hour)
10. Montezuma Road / Campanile Drive (LOS E during the PM peak hour)

The proposed University/Community-Serving Retail + Student Housing total project exceeds the allowable increase in delay at the College Avenue/Zura Way unsignalized intersection, and the College Avenue/Canyon Crest Drive and College Avenue/Montezuma Road signalized intersections. Based on the City's published significance criteria, ***significant impacts are calculated*** at these three locations. The remaining four intersections are not considered significant since the project adds less than the maximum increase of allowable delay for a poorly operating intersection.

9.5.2 *Daily Street Segment Operations*

Table 9–2 summarizes the study area segment operations in the study area with the addition of University/Community-Serving Retail + Student Housing total project traffic volumes. This table shows that the majority of the study area segments are calculated to continue to operate at LOS D or better on a daily basis with the following exceptions:

- College Avenue: between Canyon Crest Drive and Zura Way (LOS F)
- Montezuma Road: between 55th Street and College Avenue (LOS F)

The increase in v/c due to the total project exceeds the allowable threshold of 0.01. Therefore, ***significant impacts are calculated*** at these two study area segments.

9.5.3 *ILV Operations*

Table 9–3 summarizes the ILV operations with the addition of the University/Community-Serving Retail + Student Housing total project traffic volumes. This table shows that the College Avenue/I-8 interchange is calculated to continue to operate "Under" or "Near" capacity during both the AM and PM peak hours. This does not compare to the accepted HCM-method analysis results shown in *Table 9–1*. The ILV summaries should be considered for informational purposes only.

TABLE 9–1
NEAR-TERM PEAK HOUR INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		(Baseline) Existing + Near-Term Cumulative		(Retail Only) Existing + Near-Term Cumulative + University-Serving Retail			(Retail Only) Existing + Near-Term Cumulative + University/Community-Serving Retail			(Total Project) Existing + Near-Term Cumulative + University-Serving Retail + Student Housing				(Total Project) Existing + Near-Term Cumulative + University/Community-Serving Retail + Student Housing				Would Additional Traffic Due to Student Housing Cause the Impact?	
			Delay[a]	LOS[b]	Delay	LOS	Delay	LOS	Δ[c]	Delay	LOS	Δ	Delay	LOS	Δ	Sig?	Delay	LOS	Δ	Sig?	University Retail	University/ Community Retail
1. College Avenue / I–8 Westbound Ramps	Signal	AM	9.3	A	9.8	A	9.8	A	0.0	9.8	A	0.0	9.8	A	0.0	–	9.8	A	0.0	–	–	–
		PM	8.3	A	9.1	A	9.1	A	0.0	9.1	A	0.0	9.1	A	0.0		9.1	A	0.0			
2. College Avenue / I–8 Eastbound Ramps	Signal	AM	77.0	E	109.7	F	109.7	F	0.0	109.7	F	0.0	109.7	F	0.0	–	109.7	F	0.0	–	–	–
		PM	15.2	B	38.8	D	39.3	D	0.5	40.6	D	1.8	39.7	D	0.9		41.4	D	2.6			
3. College Avenue / Canyon Crest Drive	Signal	AM	48.6	D	68.5	E	69.5	E	1.0	69.0	E	0.5	**72.0**	**E**	**3.5**	Yes	**71.4**	**E**	**2.9**	Yes	Yes	–
		PM	57.5	E	148.9	F	149.1	F	0.2	**152.8**	**F**	**3.9**	**150.2**	**F**	**1.3**		**153.4**	**F**	**4.5**			
4. College Avenue / Zura Way	TWSC[d]	AM	67.0	F	408.0	F	**478.8**	**F**	**>5.0**	**420.6**	**F**	**>5.0**	**468.5**	**F**	**>5.0**	Yes	**463.3**	**F**	**>5.0**	Yes	–	–
		PM	16.2	C	95.6	F	95.4	F	-0.2	**128.2**	**F**	**>5.0**	96.0	F	0.4		**128.8**	**F**	**>5.0**			
5. College Avenue / Lindo Paseo	Signal	AM	11.9	B	12.6	B	11.5	B	-1.1	14.6	B	2.0	13.9	B	1.3	–	17.0	B	4.4	–	–	–
		PM	20.1	C	23.3	C	23.3	C	0.0	30.9	C	7.7	25.1	C	1.8		32.9	C	9.6			
6. College Avenue / Montezuma Road	Signal	AM	36.6	D	119.0	F	119.0	F	0.0	**121.1**	**F**	**2.1**	119.1	F	0.1		**121.3**	**F**	**2.3**	Yes	–	–
		PM	45.7	D	176.0	F	**178.6**	**F**	**2.6**	**183.7**	**F**	**>5.0**	**181.6**	**F**	**>5.0**	Yes	**187.0**	**F**	**>5.0**			
7. College Avenue / El Cajon Boulevard	Signal	AM	36.6	D	38.3	D	38.3	D	0.0	38.3	D	0.0	38.3	D	0.0	–	38.3	D	0.0	–	–	–
		PM	56.4	E	69.8	E	69.8	E	0.0	70.4	E	0.6	70.4	E	0.8		70.9	F	1.1			
8. Montezuma Road / Collwood Boulevard	Signal	AM	21.2	C	24.0	C	24.0	C	0.0	24.1	C	0.1	24.0	C	0.0	–	24.1	C	0.1	–	–	–
		PM	24.7	C	49.7	D	51.2	D	1.5	53.7	D	4.0	53.3	D	3.6		56.0	D	6.3			
9. Montezuma Road / 55th Street	Signal	AM	33.8	C	52.5	D	53.1	D	0.6	52.7	D	0.2	54.0	D	1.5	–	53.7	D	1.2	–	–	–
		PM	33.0	C	40.3	D	40.6	D	0.3	42.0	D	1.7	41.8	D	1.5		42.4	D	2.1			
10. Montezuma Road / Campanile Drive	Signal	AM	28.0	C	45.1	D	45.8	D	0.7	46.0	D	0.9	47.0	D	1.9	–	47.2	D	2.1	–	–	–
		PM	34.2	C	72.1	E	72.8	E	0.7	73.3	E	1.2	73.6	E	1.5		75.6	E	3.5			
11. Montezuma Road / Catoctin Drive	Signal	AM	20.0	B	21.1	C	21.1	C	0.0	21.1	C	0.0	21.1	C	0.0	–	21.1	C	0.0	–	–	–
		PM	20.4	C	21.9	C	21.9	C	0.0	21.9	C	0.0	21.9	C	0.0		21.9	C	0.0			
12. Montezuma Road / El Cajon Boulevard	Signal	AM	24.6	C	24.9	C	24.9	C	0.0	24.9	C	0.0	24.9	C	0.0	–	24.9	C	0.0	–	–	–
		PM	20.7	C	22.0	C	22.0	C	0.0	22.0	C	0.0	22.0	C	0.0		22.2	C	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. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:

1. BOLD typeface and shading indicates a significant impact.
2. (–) = Not significant
3. "Retail Only" results are compared to "Total Project" results to determine if impacts are due to the student housing component.

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

TABLE 9–2
NEAR-TERM SEGMENT OPERATIONS

Segment	LOS E Capacity[a]	Existing			(Baseline) Existing + Near-Term Cumulative			(Retail Only) Existing + Near-Term Cumulative + University-Serving Retail				(Retail Only) Existing + Near-Term Cumulative + University/Community-Serving Retail				(Total Project) Existing + Near-Term Cumulative + University-Serving Retail + Student Housing					(Total Project) Existing + Near-Term Cumulative + University/Community-Serving Retail + Student Housing					Would Additional Traffic Due to Student Housing Cause the Impact?	
		ADT[b]	LOS[c]	V/C[d]	ADT	LOS	V/C	ADT	LOS	V/C	Δ[e]	ADT	LOS	V/C	Δ[e]	ADT	LOS	V/C	Δ	Sig?	ADT	LOS	V/C	Δ	Sig?	University Retail	University/ Community Retail
College Avenue																											
Canyon Crest Drive to Zura Way	40,000	44,000	F	1.100	45,258	F	1.131	45,353	F	1.134	0.003	45,828	F	1.146	0.015	45,663	F	1.141	0.010	–	**46,138**	**F**	**1.153**	**0.022**	Yes	–	Yes
Zura Way to Montezuma Road	40,000	30,000	C	0.750	31,014	D	0.775	31,109	D	0.778	0.003	31,584	D	0.790	0.015	31,419	D	0.785	0.010	–	31,894	D	0.797	0.022	–	–	–
Montezuma Road to El Cajon Boulevard	40,000	29,100	C	0.728	33,041	D	0.826	33,081	D	0.827	0.001	33,286	D	0.832	0.006	33,236	D	0.831	0.005	–	33,441	D	0.836	0.010	–	–	–
Montezuma Road																											
Collwood Boulevard to 55th Street	40,000	30,600	C	0.765	34,277	D	0.857	34,357	D	0.859	0.002	34,767	D	0.870	0.013	34,552	D	0.864	0.007	–	34,962	D	0.874	0.017	–	–	–
55th Street to College Avenue	30,000	26,100	E	0.870	31,172	F	1.039	31,252	F	1.042	0.003	31,662	F	1.055	0.016	31,447	F	1.048	0.009	–	**31,857**	**F**	**1.062**	**0.023**	Yes	–	Yes
College Avenue to Catoctin Drive	30,000	14,800	C	0.493	18,547	C	0.618	18,582	C	0.619	0.001	18,757	C	0.625	0.007	18,697	C	0.623	0.005	–	18,872	C	0.629	0.011	–	–	–

Footnotes:

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

General Notes:

1. BOLD typeface and shading indicates a significant impact.
2. (–) = Not significant
3. "Retail Only" results are compared to "Total Project" results to determine if impacts are due to the student housing component.

TABLE 9–3
NEAR-TERM ILV OPERATIONS

Intersection	Peak Hour	Existing		Existing + Cumulative Projects		Existing + Cumulative Projects + University-Serving Retail		Existing + Cumulative Projects + University/Community-Serving Retail		Existing + Cumulative Projects + University-Serving Retail + Student Housing		Existing + Cumulative Projects + University/Community-Serving Retail + Student Housing	
		Total Operating Level (ILV / Hour)	Capacity	Total Operating Level (ILV/ Hour)	Capacity	Total Operating Level (ILV/ Hour)	Capacity	Total Operating Level (ILV/ Hour)	Capacity	Total Operating Level (ILV/ Hour)	Capacity	Total Operating Level (ILV/ Hour)	Capacity
1. College Avenue / I–8 Westbound Ramps	AM	596	Under	714	Under	716	Under	716	Under	721	Under	720	Under
	PM	682	Under	833	Under	834	Under	841	Under	837	Under	845	Under
2. College Avenue / I–8 Eastbound Ramps	AM	586	Under	693	Under	693	Under	698	Under	692	Under	698	Under
	PM	1,029	Under	1,227	Near	1,228	Near	1,235	Near	1,228	Near	1,235	Near

Footnote:

a. CAPACITY is shown as *UNDER* capacity, *NEA NEAR* capacity or *OVER* capacity;
Under *Capacity* = <1200 ILV/Hour
Near Capacity = >1200 but < 1500 ILV/Hour
Over Capacity = >1500 ILV/Hour

General *Notes:*

- See *Appendix E* for ILV calculation sheets.

10.0 ANALYSIS OF LONG-TERM SCENARIOS

The following scenarios were analyzed in the Long-Term (Year 2030) to determine the comparative impacts of the "university-serving retail" scenario and the "university/community-serving retail scenario" in combination with the student housing:

- Long-Term (2030) Without Project (Baseline)
- Long-Term (2030) + University-Serving Retail-only
- Long-Term (2030) + University/Community-Serving Retail-only
- Long-Term (2030) + University-Serving Retail + Student Housing
- Long-Term (2030) + University/Community-Serving Retail + Student Housing

The two scenarios that present the "retail-only" impacts are informational, and are included to help determine what, if any, impacts the student housing component has by itself. These results are summarized in *Sections 10.3* and *10.4*.

The "total project" impacts (retail + student housing) are measured against the published significance criteria to determine the overall project impacts. These results are summarized in *Sections 10.5* and *10.6*.

Table 10–1 shows the peak hour intersection analysis results for all scenarios. ***Table 10–2*** shows the daily street segment analysis results for all scenarios. ***Table 10–3*** shows the ILV operations for all scenarios. ***Appendix H*** contains the intersection analysis worksheets and ILV operations sheets.

10.1 Long-Term (2030) Traffic Forecasts

Long-term (Year 2030) traffic volumes were forecast using the SANDAG Series 10 model volumes for the Year 2030. In addition, traffic generated by cumulative project that were assumed not already in the model were added to the Year 2030 forecast volumes. Additionally, these forecasts include the total SDSU Master Plan, and are consistent with the forecast volumes analyzed in that traffic study.

Figure 10–1 shows the Long-term (2030) Without Project traffic volumes. ***Figure 10–2*** shows the Year 2030 + University-Serving Retail project traffic volumes. ***Figure 10–3*** depicts the Year 2030 + University/Community-Serving Retail traffic volumes. ***Figure 10–4*** depicts the Year 2030 + University-Serving Retail + Student Housing traffic volumes. ***Figure 10–5*** depicts the Year 2030 + University/Community-Serving Retail + Student Housing traffic volumes.

10.2 Long-Term (2030) without Project Operations

The Long-term (2030) Without Project (Baseline) traffic volumes were analyzed to determine the peak hour intersection and daily segment analysis results. These results form the baseline against which the total project impacts for both retail scenarios (university/community-serving retail + student housing and university-serving retail + student housing) are measured in *Sections 10.5* and *10.6*, respectively.

10.2.1 *Peak Hour Intersection Analysis*

Table 10–1 summarizes the Year 2030 without project (Baseline) peak hour intersection operations. This table shows that the majority of the study area intersections are calculated to operate at LOS E or worse during both the AM and PM peak hours.

10.2.2 *Daily Street Segment Analysis*

Table 10–2 summarizes the Year 2030 without project (Baseline) study area segment operations in the study area. This table shows that the majority of the study area segments are calculated to operate at LOS E or worse conditions on a daily basis.

10.2.3 *ILV Operations*

Table 10–3 summarizes the results of the Year 2030 without project (Baseline) ILV analysis. This table shows that the College Avenue/I-8 interchange is calculated to operate under capacity during both the AM and PM peak hours with the exception of the College Avenue/I-8 Eastbound ramps, which is calculated to operate at over capacity during the PM peak hour. This does not compare to the accepted HCM-method analysis results shown in *Table 10–1*. The ILV summaries should be considered for informational purposes only.

10.3 Year 2030 + University-Serving Retail

This section presents the results of the University-Serving Retail project traffic when added to the Long-term (2030) Without Project traffic. The student housing component of the Proposed Project is not included in these volumes. Therefore, these results are informational, for use in determining the relative effects of student housing. These results **are not** for determining the ultimate findings of significance.

10.3.1 *Peak Hour Intersection Analysis*

Table 10–1 summarizes the peak hour intersection operations with the addition of the University-Serving Retail project traffic volumes. As shown in *Table 10–1*, with the addition of retail-only project traffic, the majority of the study area intersections are calculated to continue to operate at LOS E or worse conditions. Again, these results are informational. Findings of significance for the University-Serving retail scenario (including student housing) are shown in *Section 10.5*.

10.3.2 *Daily Street Segment Analysis*

Table 10–2 summarizes the study area segment operations with the addition of the University-Serving Retail-only project traffic volumes. As shown in *Table 10–2,* the majority of the study area segments are calculated to continue to operate at LOS E or worse conditions on a daily basis. Again, these results are informational. Findings of significance for the University-Serving retail scenario (including student housing) are shown in *Section 10.5*.

10.3.3 *ILV Operations*

Table 10–3 summarizes the results of the Year 2030 + University-Serving Retail-only ILV analysis. As shown in *Table 10–3*, the College Avenue/I-8 interchange is calculated to operate under capacity during both the AM and PM peak hours with the exception of the College Avenue/I-8 Eastbound ramps, which is calculated to continue to operate at over capacity during the PM peak hour. Again, the ILV summaries are not used to determine significant impacts, and should be considered for informational purposes only.

10.4 Year 2030 + University/Community-Serving Retail

This section presents the results of the University/Community-Serving Retail project traffic when added to the Long-term (2030) Without Project (Baseline) traffic. The student housing component of the Proposed Project is not included in these volumes. Therefore, these results are informational, for use in determining the relative effects of student housing. These results **are not** for determining the ultimate findings of significance.

10.4.1 *Peak Hour Intersection Analysis*

Table 10–1 summarizes the peak hour intersection operations with the addition of the University/Community-Serving Retail-only project traffic volumes. As shown in *Table 10–1,* with the addition of retail-only project traffic, the majority of the study area intersections are calculated to continue to operate at LOS E or worse conditions. Again, these results are informational. Findings of significance for the University/Community-Serving retail scenario (including student housing) are shown in *Section 10.6.*

10.4.2 *Daily Street Segment Analysis*

Table 10–2 summarizes the study area segment operations with the addition of the University/Community-Serving Retail-only project traffic volumes. As shown in *Table 10–2,* the majority of the study area segments are calculated to continue to operate at LOS E or worse conditions on a daily basis. Again, these results are informational. Findings of significance for the University/Community-Serving retail scenario (including student housing) are shown in *Section 10.6.*

10.4.3 *ILV Operations*

Table 10–3 summarizes the results of the Year 2030 + University/Community-Serving retail-only ILV analysis. As shown in *Table 10–3*, the College Avenue/I-8 interchange is calculated to operate under capacity during both the AM and PM peak hours with the exception of the College Avenue/I-8 Eastbound ramps, which is calculated to continue to operate at over capacity during the PM peak hour. Again, the ILV summaries should be considered for informational purposes only.

10.5 Year 2030 + University-Serving Retail + Student Housing

This section presents the results of the University-Serving Retail and Student Housing total project traffic when added to the Long-term Without Project (Baseline) traffic. The results of these analyses are compared to the Long-term Without Project baseline results. ***These results are for use in determining the ultimate findings of significance.***

10.5.1 *Peak Hour Intersection Analysis*

Table 10–1 summarizes the peak hour intersection operations with the University-Serving Retail + Student Housing total project traffic volumes. As shown in *Table 10–1*, with the addition of project traffic, the majority of the study area intersections are calculated to continue to operate at LOS E or worse conditions.

The proposed University-Serving Retail + Student Housing total project exceeds the allowable increases in delay based on the established significance criteria at the following intersections:

2. College Avenue / I-8 Eastbound Ramps (LOS F during the PM peak hour)
3. College Avenue / Canyon Crest Drive (LOS F during both AM/PM peak hours)
4. College Avenue / Zura Way (LOS F during both AM/PM peak hours)
6. College Avenue / Montezuma Road (LOS F during the PM peak hour)
9. Montezuma Road / 55th Street (LOS F during the AM peak hour)
10. Montezuma Road / Campanile Drive (LOS F during both AM/PM peak hours)

Based on the City's significance criteria, project impacts at these six intersections ***were deemed cumulatively significant***.

10.5.2 *Daily Street Segment Analysis*

Table 10–2 summarizes the study area segment operations with the proposed University-Serving Retail + Student Housing total project traffic volumes. As shown in *Table 10–2,* the majority of the study area segments are calculated to continue to operate at LOS E or worse conditions on a daily basis. However, the project-attributable increase in v/c does not exceed those allowable based on the City's significance criteria. Therefore, project impacts at these three study area intersections are ***were deemed not cumulatively significant.***

10.5.3 *ILV Operations*

Table 10–3 summarizes the ILV operations with the addition of the University-Serving Retail + Student Housing total project traffic volumes. As shown in *Table 10–3*, the College Avenue/I-8 interchange is calculated to operate under capacity during both the AM and PM peak hours with the exception of the College Avenue/I-8 Eastbound ramps, which is calculated to continue to operate at over capacity during the PM peak hour. Again, the ILV summaries should be considered for informational purposes only.

10.6 Year 2030 + University/Community-Serving Retail + Student Housing

This section presents the results of the University-Serving Retail and Student Housing project traffic when added to the Long-term Without Project traffic. The results of these analyses are compared to the Long-term Without Project baseline results. ***These results are for use in determining the ultimate findings of significance.***

10.6.1 *Peak Hour Intersection Analysis*

Table 10–1 summarizes the peak hour intersection operations with the University/Community-Serving Retail + Student Housing total project traffic volumes. As shown in *Table 10–1*, with the addition of total project traffic, the majority of the study area intersections are calculated to continue to operate at LOS E or worse conditions.

The proposed University/Community-Serving Retail + Student Housing total project exceeds the allowable increases in delay based on the established significance criteria at the following intersections:

2. College Avenue / I-8 Eastbound Ramps (LOS F during the PM peak hour)
3. College Avenue / Canyon Crest Drive (LOS F during both AM/PM peak hours)
4. College Avenue / Zura Way (LOS F during both AM/PM peak hours)
6. College Avenue / Montezuma Road (LOS F during both AM/PM peak hours)
9. Montezuma Road / 55th Street (LOS F during both AM/PM peak hours)
10. Montezuma Road / Campanile Drive (LOS F during AM/PM peak hours)

Based on the City's significance criteria, project impacts at these seven intersections ***were deemed cumulatively significant***.

10.6.2 *Daily Street Segment Analysis*

Table 10–2 summarizes the study area segment operations with the University/Community-Serving Retail + Student Housing total project traffic volumes. As shown in *Table 10–2,* the majority of the study area segments are calculated to continue to operate at LOS E or worse conditions on a daily basis.

The University/Community-Serving Retail + Student Housing total project increases the v/c at the following three study area segments operating at LOS F by 0.01:

- College Avenue: between Canyon Crest Drive and Zura Way
- College Avenue: between Zura Way and Montezuma Road
- Montezuma Road: between 55th Street and College Avenue

Based on the City's significance criteria, project impacts at these three study area segments ***were deemed cumulatively significant***.

10.6.3 *ILV Operations*

Table 10–3 summarizes the ILV operations with the addition of the University/Community-Serving Retail + Student Housing total project traffic volumes. As shown in *Table 10–3*, the College Avenue/I-8 interchange is calculated to operate under capacity during both the AM and PM peak hours with the exception of the College Avenue/I-8 Eastbound ramps, which is calculated to continue to operate at over capacity during the PM peak hour. Again, the ILV summaries should be considered for informational purposes only.

TABLE 10–1
LONG-TERM (2030) PEAK HOUR INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Long-Term (2030) Without Project		(Retail Only) Long-Term (2030) + University-Serving Retail			(Retail Only) Long-Term (2030) + University/Community-Serving Retail			(Total Project) Long-Term (2030) + University-Serving Retail + Student Housing				(Total Project) Long-Term (2030) + University/Community-Serving Retail + Student Housing				Would Additional Traffic Due to Student Housing Cause the Impact?	
			Delay[a]	LOS[b]	Delay	LOS	Δ[c]	Delay	LOS	Δ	Delay	LOS	Δ	Sig?	Delay	LOS	Δ	Sig?	University Retail	University Community Retail
1. College Avenue / I-8 Westbound Ramps	Signal	AM PM	11.2 63.9	B E	11.2 63.9	B E	0.0 0.0	11.2 63.9	B E	0.1 0.0	11.2 63.9	B E	0.0 0.0	–	11.1 63.9	B E	0.0 0.0	–	–	–
2. College Avenue / I-8 Eastbound Ramps	Signal	AM PM	156.2 107.5	F F	156.3 107.8	F F	0.1 0.3	156.3 **109.6**	F **F**	0.1 **2.1**	156.4 **108.6**	F **F**	0.2 **1.1**	Yes	156.2 **110.1**	F **F**	0.0 **2.6**	Yes	Yes	–
3. College Avenue / Canyon Crest Drive	Signal	AM PM	214.1 426.3	F F	215.1 427.0	F F	1.0 0.7	**216.4** **434.1**	**F** **F**	**1.3** **>5.0**	**217.5** **430.2**	**F** **F**	**3.4** **3.9**	Yes	**218.8** **436.3**	**F** **F**	**4.7** **>5.0**	Yes	Yes	–
4. College Avenue / Zura Way	TWSC[d]	AM PM	765.8 1021.0	F F	**773.0** **1029.8**	**F** **F**	**>5.0** **>5.0**	**822.7** **1262.2**	**F** **F**	**>5.0** **>5.0**	**830.6** **1046.9**	**F** **F**	**>5.0** **>5.0**	Yes	**905.0** **1230.6**	**F** **F**	**>5.0** **>5.0**	Yes	–	–
5. College Avenue / Lindo Paseo	Signal	AM PM	13.1 24.8	B C	14.7 25.3	B C	1.6 0.5	18.7 28.6	B C	5.6 3.8	16.6 27.3	B C	3.5 2.5	–	22.7 48.4	C D	9.6 18.4	–	–	–
6. College Avenue / Montezuma Road	Signal	AM PM	176.6 336.0	F F	176.6 **339.5**	F **F**	0.0 **3.5**	**178.5** **346.2**	**F** **F**	**1.9** **>5.0**	176.7 **343.9**	F **F**	0.1 **>5.0**	Yes	**178.5** **350.5**	**F** **F**	**1.9** **>5.0**	Yes	–	–
7. College Avenue / El Cajon Boulevard	Signal	AM PM	132.4 202.1	F F	132.4 202.2	F F	0.0 0.1	132.9 202.6	F F	0.5 0.5	132.6 202.6	F F	0.2 0.5	–	133.1 202.4	F F	0.7 0.3	–	–	–
8. Montezuma Road / Collwood Boulevard	Signal	AM PM	43.6 155.9	D F	43.8 156.3	D F	0.2 0.4	44.7 156.5	D F	0.9 0.6	44.0 156.5	D F	0.4 0.6	–	44.9 156.9	D F	1.3 1.0	–	–	–
9. Montezuma Road / 55th Street	Signal	AM PM	134.0 148.0	F F	134.7 148.3	F F	0.7 0.3	134.6 **151.3**	F **F**	0.6 **3.3**	**137.2** 148.6	**F** F	**3.2** 0.6	Yes	**136.6** **151.7**	**F** **F**	**2.6** **3.7**	Yes	Yes	–
10. Montezuma Road / Campanile Drive	Signal	AM PM	82.2 219.4	F F	83.0 220.3	F F	0.8 0.9	83.3 **225.2**	F **F**	1.1 **>5.0**	**85.0** **221.5**	**F** **F**	**2.8** **2.1**	Yes	**85.3** **226.5**	**F** **F**	**3.1** **>5.0**	Yes	Yes	–
11. Montezuma Road / Catoctin Drive	Signal	AM PM	25.5 32.5	C C	25.5 32.7	C C	0.0 0.2	25.8 33.1	C C	0.3 0.6	25.5 32.6	C C	0.0 0.1	–	25.7 33.1	C C	0.2 0.6	–	–	–
12. Montezuma Road / El Cajon Boulevard	Signal	AM PM	76.0 80.1	E F	76.0 80.2	E F	0.0 0.1	76.3 80.2	E F	0.3 0.1	76.0 80.6	E F	0.0 0.5	–	76.2 80.6	E F	0.2 0.5	–	–	–

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:

1. BOLD typeface indicates a significant impact.
2. (–) = Not significant
3. "Retail Only" results are compared to "Total Project" results to determine if impacts are due to student housing component.

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 10–2
LONG-TERM (2030) SEGMENT OPERATIONS

Segment	Buildout LOS E Capacity[a]	Long-Term (2030) Without Project			(Retail Only) Long-Term (2030) + University-Serving Retail				(Retail Only) Long-Term (2030) + University/Community-Serving Retail				(Total Project) Long-Term (2030) + University-Serving Retail + Student Housing					(Total Project) Long-Term (2030) + University/Community-Serving Retail + Student Housing					Would Additional Traffic Due to Student Housing Cause the Impact?	
		ADT[b]	LOS[c]	V/C[d]	ADT	LOS	V/C	Δ[e]	ADT	LOS	V/C	Δ[e]	ADT	LOS	V/C	Δ	Sig?	ADT	LOS	V/C	Δ	Sig?	University Retail	University/ Community Retail
College Avenue																								
Canyon Crest Drive to Zura Way	40,000	76,140	F	1.904	76,235	F	1.906	0.002	**76,710**	**F**	**1.918**	**0.014**	76,545	F	1.914	0.010	–	**77,020**	**F**	**1.926**	**0.022**	Yes	–	–
Zura Way to Montezuma Road	40,000	56,040	F	1.401	56,135	F	1.403	0.002	**56,610**	**F**	**1.415**	**0.014**	56,445	F	1.411	0.010	–	**56,920**	**F**	**1.423**	**0.022**	Yes	–	–
Montezuma Road to El Cajon Boulevard	40,000	40,200	F	1.005	40,240	F	1.006	0.001	40,445	F	1.011	0.006	40,395	F	1.010	0.005	–	40,600	F	1.015	0.010	–	–	–
Montezuma Road																								
Collwood Boulevard to 55th Street	40,000	33,850	D	0.846	33,930	D	0.848	0.002	34,430	D	0.861	0.015	34,125	D	0.853	0.007	–	34,625	D	0.866	0.020	–	–	–
55th Street to College Avenue	30,000	35,010	F	1.167	35,090	F	1.170	0.003	**35,500**	**F**	**1.183**	**0.016**	35,285	F	1.176	0.009	–	**35,695**	**F**	**1.190**	**0.023**	Yes	–	Yes
College Avenue to Catoctin Drive	30,000	28,800	E	0.960	28,835	E	0.961	0.001	29,010	E	0.967	0.007	28,950	E	0.965	0.005	–	29,125	E	0.971	0.011	–	–	–

Footnotes:

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

General Notes:

1. BOLD typeface and shading indicates a significant impact.
2. (–) = Not significant
3. "Retail Only" results are compared to "Total Project" results to determine if impacts are due to the student housing component.

TABLE 10–3
LONG-TERM ILV OPERATIONS

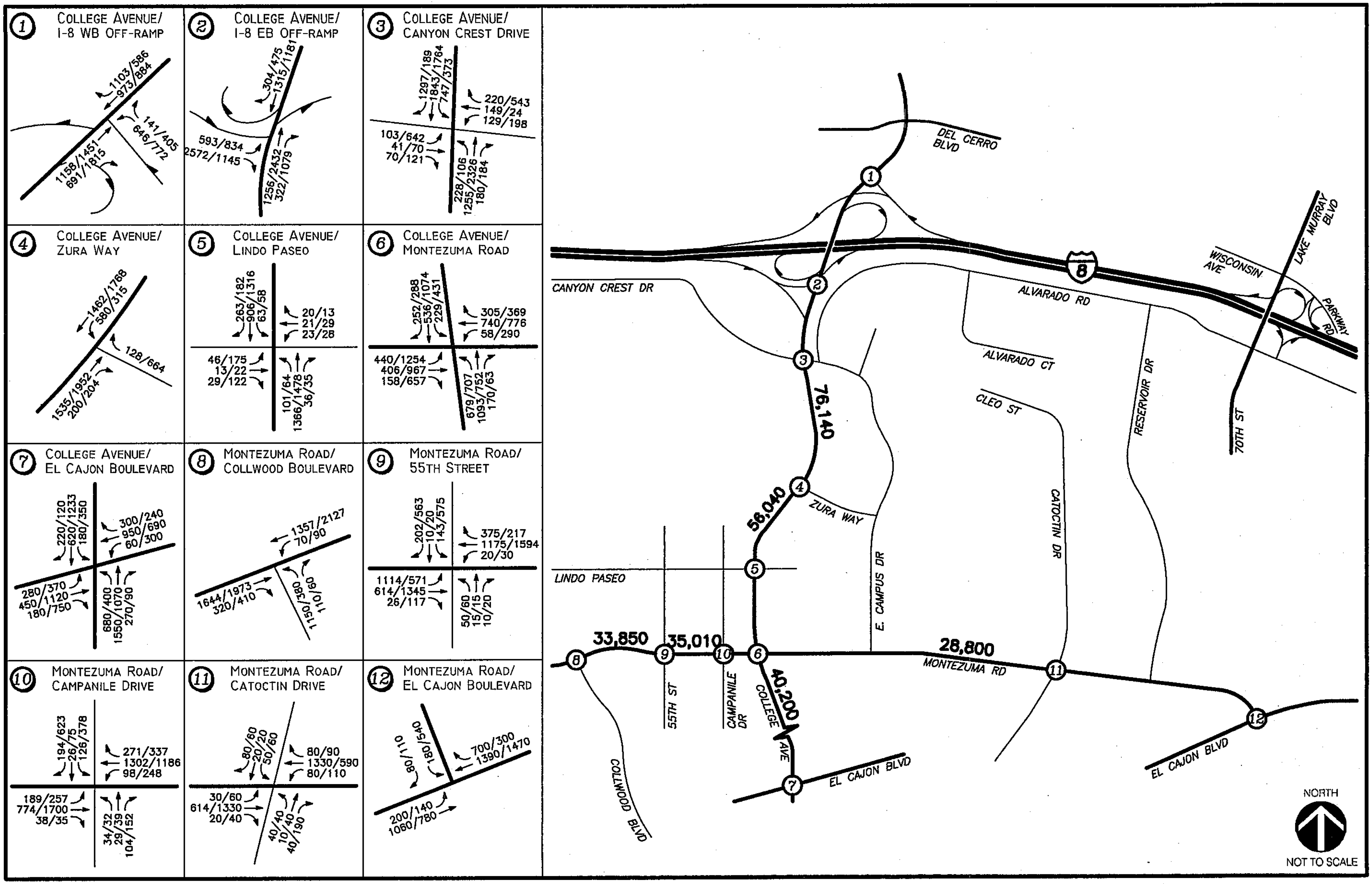
Intersection	Peak Hour	Long-Term (2030) Without Project		Long-Term (2030) + University-Serving Retail		Long-Term (2030) + University/Community-Serving Retail		Long-Term (2030) + University-Serving Retail + Student Housing		Long-Term (2030) + University/Community-Serving Retail + Student Housing	
		Total Operating Level (ILV/ Hour)	Capacity	Total Operating Level (ILV/ Hour)	Capacity	Total Operating Level (ILV/ Hour)	Capacity	Total Operating Level (ILV/ Hour)	Capacity	Total Operating Level (ILV/ Hour)	Capacity
1. College Avenue / I–8 Westbound Ramps	AM	902	Under	906	Under	906	Under	908	Under	907	Under
	PM	1,112	Under	1,113	Under	1,120	Under	1,116	Under	1,124	Under
2. College Avenue / I–8 Eastbound Ramps	AM	955	Under	955	Under	959	Under	955	Under	960	Under
	PM	1,633	Over	1,634	Over	1,648	Over	1,638	Over	1,641	Over

Footnotes:

a. CAPACITY is shown as *UNDER* capacity, *NEAR* capacity or *OVER* capacity;
Under *Capacity* = <1200 ILV/Hour
Near Capacity = >1200 but < 1500 ILV/Hour
Over Capacity = >1500 ILV/Hour

General Notes:

- See *Appendix E* for ILV calculation sheets.



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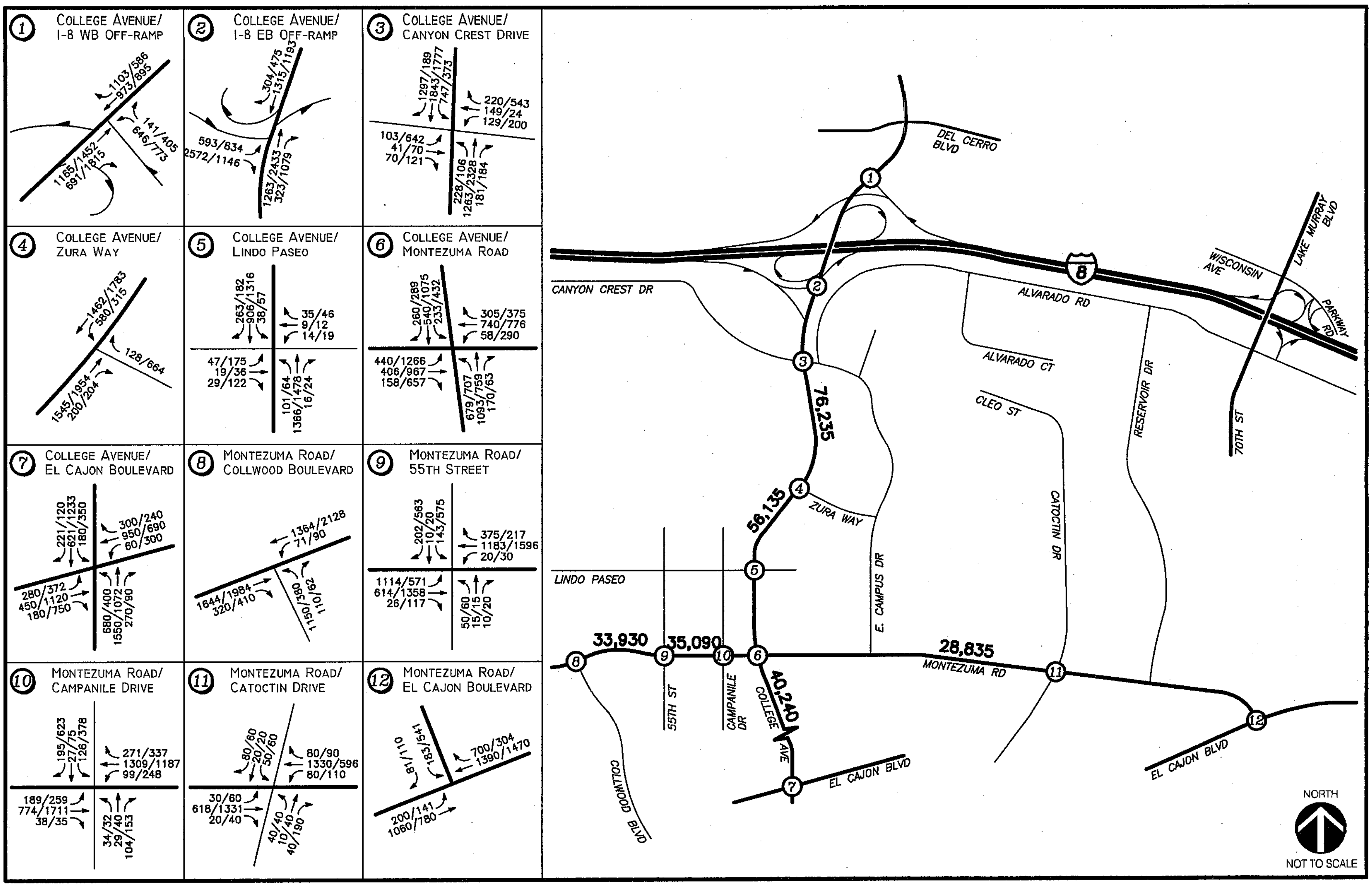
NOTES:

- ADT (Average Daily Traffic) shown midblock
- AM/PM peak hour volumes are shown at the intersections

Figure 10-1

Long-Term (2030) Without Project Traffic Volumes AM/PM Peak Hours & ADT

PLAZA LINDA VERDE



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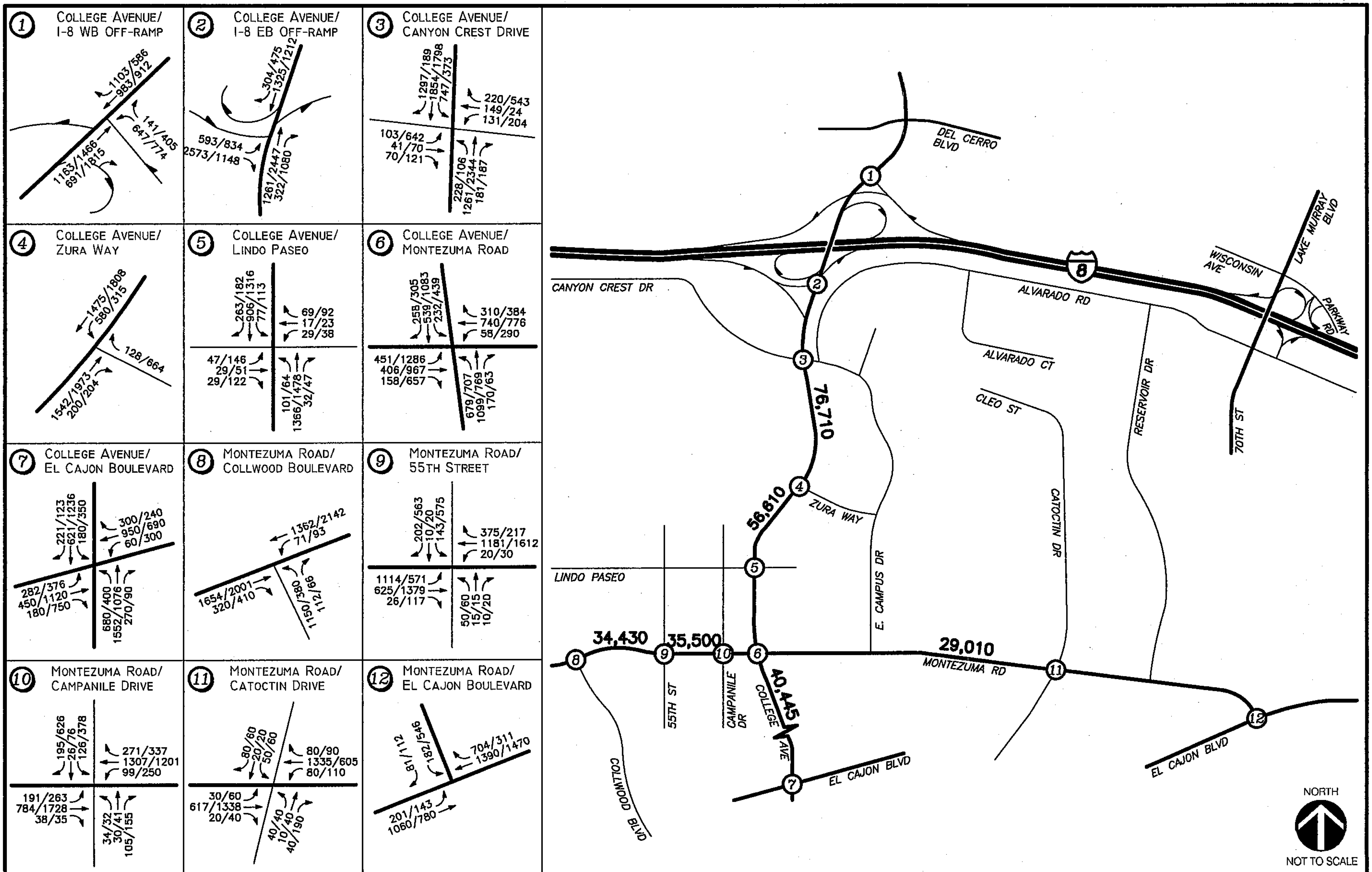
NOTES:

- ADT (Average Daily Traffic) shown midblock
- AM/PM peak hour volumes are shown at the intersections

Figure 10-2

Long-Term (2030) + University-Serving Retail Traffic Volumes
AM/PM Peak Hours & ADT

PLAZA LINDA VERDE



REV. 7/9/2009
N:\1857\Figures\LLG1857 FIG10-3

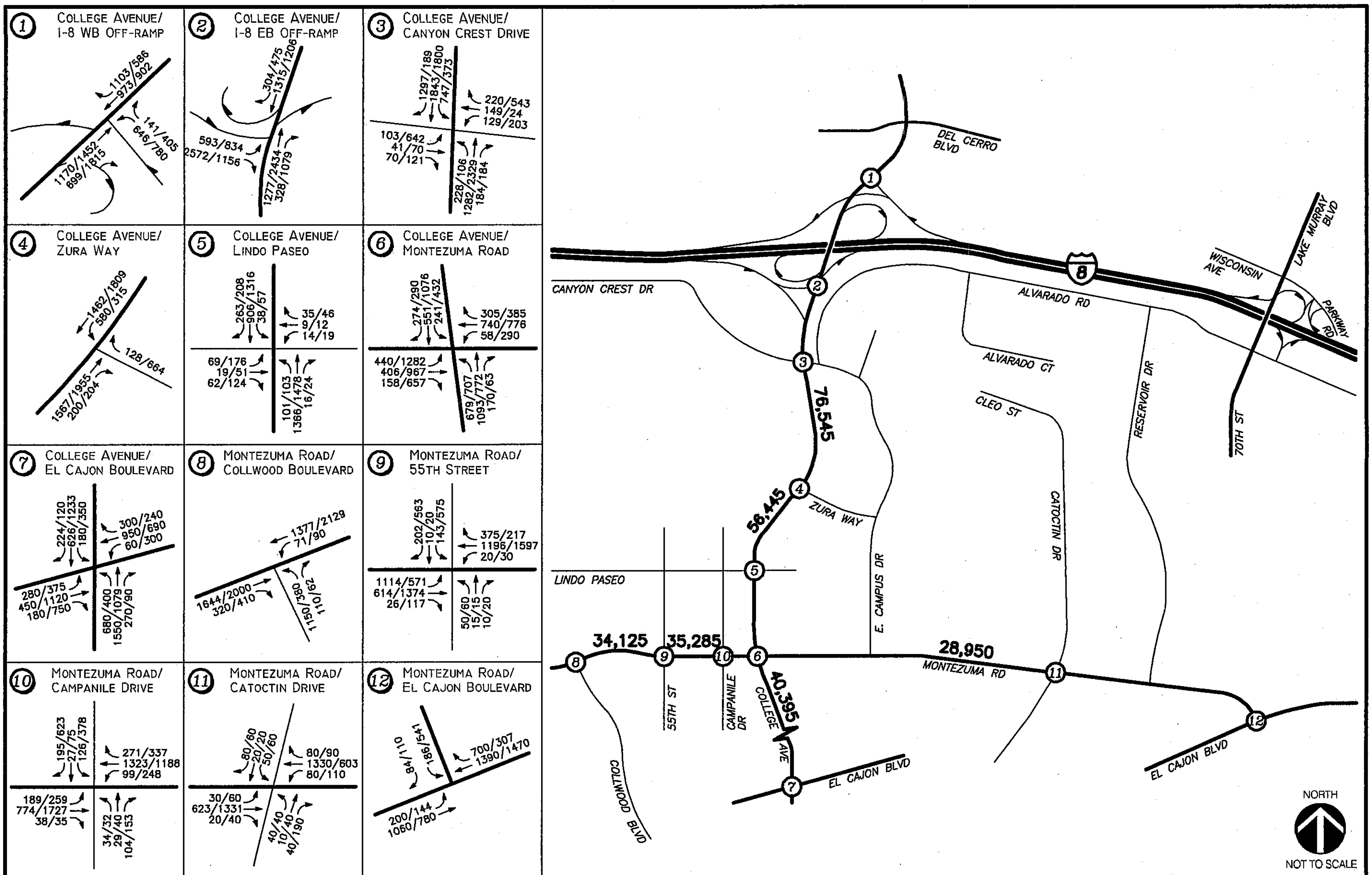
NOTES:
- ADT (Average Daily Traffic) shown midblock
- AM/PM peak hour volumes are shown at the intersections

LINSCOTT LAW & GREENSPAN engineers

Figure 10-3

Long-Term (2030) + University/ Community-Serving Retail Traffic Volumes
AM/PM Peak Hours & ADT

PLAZA LINDA VERDE



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engineers

REV. 8/11/2010
N:\1857\Figures\LLG1857 FIG10-4

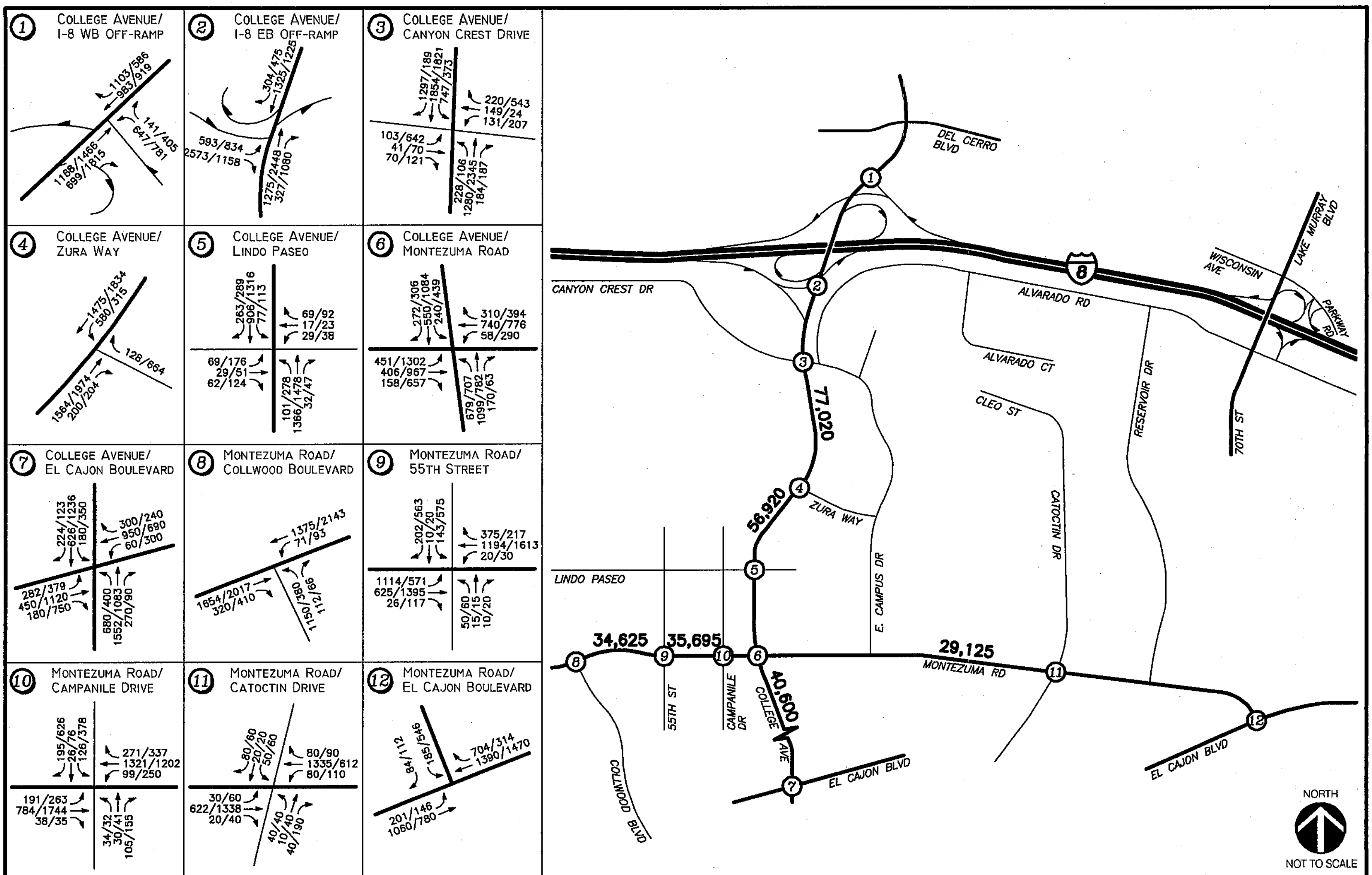
NOTES:

- **ADT (Average Daily Traffic) shown midblock**
- **AM/PM peak hour volumes are shown at the intersections**

Figure 10-4

Long-Term (2030) + University-Serving Retail + Student Housing Traffic Volumes AM/PM Peak Hours & ADT

PLAZA LINDA VERDE



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REV. 8/11/2010
N:\1857\Figures\LLG1857 FIG10-5

NOTES:
- ADT (Average Daily Traffic) shown midblock
- AM/PM peak hour volumes are shown at the intersections

Figure 10-5

Long-Term (2030) + University/ Community-Serving Retail + Student Housing Traffic Volumes
AM/PM Peak Hours & ADT

PLAZA LINDA VERDE

11.0 CONGESTION MANAGEMENT PROGRAM COMPLIANCE

The 2008 Congestion Management Program (CMP) is intended to link land use, transportation and air quality through level of service performance. The CMP requires an Enhanced CEQA Review of select principal arterials and freeway segments for projects that are expected to generate more than 2,400 ADT or more than 200 directional peak hour trips. Within the study area, Interstate 8 is the only roadway identified in the CMP.

As shown in *Table 8–3* and *Table 8–5*, the Proposed Project does not generate trips in excess of these thresholds. However, to be conservative, a CMP review and analysis was conducted for Interstate 8, using the Caltrans-approved peak hour volume/capacity methodology.

Tables 11–1, 11–2, 11–3 and ***11–4*** show the results of the CMP peak hour freeway analysis. These tables show that the project-induced increase in volume/capacity for any LOS E or worse-operating freeway segment does not exceed the minimum allowable increase of 0.01. ***Therefore, no significant project impacts are calculated.***

TABLE 11–1
NEAR-TERM FREEWAY MAINLINE OPERATIONS
UNIVERSITY-SERVING RETAIL

Freeway Segment	Dir.	# of Lanes	Hourly Capacity[a]	ADT	Existing Peak Hour Volume[b]		Near-Term Cumulative Project Volume		(Baseline) Existing + Near-Term Cumulative						University-Serving Retail + Student Housing Project Volume		(Total Project) Existing + Near-Term Cumulative + University-Serving Retail + Student Housing							
									Volume		V/C[b]		LOS[c]				Volume		V/C		LOS		Δ[d]	
					AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Interstate 8																								
Waring Road to College Avenue	EB	5	10,000	223,860	5,830	9,010	277	297	6,107	9,307	0.611	0.931	B	E	3	11	6,110	9,318	0.611	0.932	B	E	–	0.001
	WB	5	10,000		9,780	6,810	179	179	9,959	6,989	0.996	0.699	E	C	11	0	9,970	6,989	0.997	0.699	E	C	0.001	–
College Avenue to Lake Murray Boulevard	EB	4 + 1	9,200	193,190	4,040	7,970	48	71	4,085	8,041	0.444	0.874	B	D	6	0	4,091	8,041	0.445	0.874	B	D	–	–
	WB	5	10,000		9,300	5,740	145	192	9,445	5,932	0.945	0.593	E	B	0	8	9,445	5,940	0.945	0.594	E	B	0.000	–

TABLE 11–2
NEAR-TERM FREEWAY MAINLINE OPERATIONS
UNIVERSITY/COMMUNITY-SERVING RETAIL

Freeway Segment	Dir.	# of Lanes	Hourly Capacity[a]	ADT	Existing Peak Hour Volume		Near-Term Cumulative Project Volume		(Baseline) Existing + Near-Term Cumulative						University/Community-Serving Retail + Student Housing Project Volume		(Total Project) Existing + Near-Term Cumulative + University/Community-Serving Retail + Student Housing							
									Volume		V/C[b]		LOS[c]				Volume		V/C		LOS		Δ[d]	
					AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Interstate 8																								
Waring Road to College Avenue	EB	5	10,000	223,860	5,830	9,010	277	297	6,107	9,307	0.611	0.931	B	E	1	13	6,108	9,320	0.611	0.932	B	E	–	0.001
	WB	5	10,000		9,780	6,810	179	179	9,959	6,989	0.996	0.699	E	C	12	5	9,971	6,994	0.997	0.699	E	C	0.001	–
College Avenue to Lake Murray Boulevard	EB	4 + 1	9,200	193,190	4,040	7,970	48	71	4,085	8,041	0.444	0.874	B	D	5	1	4,090	8,042	0.445	0.874	B	D	–	–
	WB	5	10,000		9,300	5,740	145	192	9,445	5,932	0.945	0.593	E	B	1	9	9,446	5,941	0.945	0.594	E	B	0.000	–

Footnotes:

a. Capacities calculated at 2,000 vph per lane and 1,200 vph per auxiliary lane
b. V/C = Peak Hour Volume / Hourly Capacity
c. Level of Service
d. Δ = Project-attributable increase in V/C at LOS E or worse operating segment.

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45

TABLE 11–3
LONG-TERM (2030) FREEWAY MAINLINE OPERATIONS
UNIVERSITY-SERVING RETAIL

Freeway Segment	Dir.	# of Lanes	Hourly Capacity[a]	ADT	(Baseline) Long-Term (2030) Without Project						University-Serving Retail + Student Housing Project Volume		(Total Project) Long-Term (2030) + University-Serving Retail + Student Housing							
					Volume		V/C [b]		LOS [c]				Volume		V/C		LOS		Δ [d]	
					AM	PM	AM	PM	AM	PM	AM	AM	PM	PM	AM	PM	AM	PM	AM	PM
Interstate 8																				
Waring Road to College Avenue	EB	5	10,000	245,000	7,070	11,292	0.707	1.129	C	F(0)	3	11	7,073	11,301	0.707	1.130	C	F(0)	–	0.001
	WB	5	10,000		11,844	7,394	1.184	0.739	F(0)	C	11	0	11,855	7,394	1.186	0.739	F(0)	C	0.002	–
College Avenue to Lake Murray Boulevard	EB	4 + 1	9,200	232,000	5,760	11,266	0.626	1.225	C	F(0)	6	0	5,766	11,266	0.627	1.225	C	F(0)	–	0.000
	WB	5	10,000		11,754	7,501	1.175	0.750	F(0)	C	0	8	11,754	7,509	1.175	0.751	F(0)	C	0.000	–

TABLE 11–4
LONG-TERM (2030) FREEWAY MAINLINE OPERATIONS
UNIVERSITY/COMMUNITY-SERVING RETAIL

Freeway Segment	Dir.	# of Lanes	Hourly Capacity[a]	ADT	(Baseline) Long-Term (2030) Without Project						University/ Community-Serving Retail + Student Housing Project Volume		(Total Project) Long-Term (2030) + University/Community-Serving Retail + Student Housing							
					Volume		V/C [b]		LOS [c]				Volume		V/C		LOS		Δ [d]	
					AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Interstate 8																				
Waring Road to College Avenue	EB	5	10,000	245,000	7,070	11,292	0.707	1.129	C	F(0)	1	13	7,071	11,305	0.707	1.131	C	F(0)	–	0.002
	WB	5	10,000		11,844	7,394	1.184	0.739	F(0)	C	12	5	11,856	7,399	1.186	0.740	F(0)	C	0.002	–
College Avenue to Lake Murray Boulevard	EB	4 + 1	9,200	232,000	5,760	11,266	0.626	1.225	C	F(0)	5	1	5,765	11,267	0.627	1.225	C	F(0)	–	0.000
	WB	5	10,000		11,754	7,501	1.175	0.750	F(0)	C	1	9	11,755	7,510	1.176	0.751	F(0)	C	0.001	–

Footnotes:

a. Capacities calculated at 2,000 vph per lane and 1,200 vph per auxiliary lane
b. V/C = Peak Hour Volume / Hourly Capacity
c. Level of Service
d. Δ = Project-attributable increase in V/C at LOS E or worse operating segment.

LOS	V/C
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

12.0 CONSTRUCTION TRAFFIC

Typically, substantial traffic generating components of any construction period include: demolition; excavation and grading; pouring of foundation, and; construction of the buildings. Other effects of construction include temporary road closures due to staging of equipment/materials, and trenching, among other things.

These elements all have varying effects on the nearby circulation system depending on a host of variables, including: the length of time each phase takes; the amount of material being moved to/from the site; which parts of the site are under construction, and; the hours of construction proposed. As discussed in Section 1.0, Project Description, Project Phase 1 construction is proposed to proceed as follows: Building 1, followed by Building 3, followed by Building 2. Under Phase II, Buildings 4 and 5 would be constructed simultaneously, followed by the simultaneous consecution of Buildings 6 and 7. Therefore, all 7 buildings would not be constructed simultaneously, and, instead, construction of no more than two buildings at a time presently is envisioned. If some construction phases could occur at night or on weekends, traffic impacts would be less.

Due to the uncertainty associated with the project construction, for purposes of this analysis, the traffic impacts associated with construction ***are considered potentially significant***. It is recommended that a construction traffic control plan (TCP) be prepared to mitigate the potential impact.

13.0 COLLEGE AVENUE/ LINDO PASEO DRIVEWAY ACCESS

The conceptual project site plan is shown on *Figure 2–1*. Based on the project description, 220 parking spaces are proposed in subterranean parking beneath Buildings 4 & 5, and would be served by what is currently the east leg of the College Avenue/ Lindo Paseo signalized intersection. In the future, the alleyway that runs parallel College Avenue (east of College Avenue) will be vacated. Also, the existing retail land uses on the east side of College Avenue between Montezuma Road and Hardy Avenue will be replaced with the proposed land uses for Buildings 4 and 5 (150 combined dwelling units of student housing and 43,000 SF of retail).

The analysis provided in *Table 9–1* (near-term) and *Table 10–1* (long-term) account for the removal of the existing commercial land uses' traffic volumes. The existing volumes for the turning movements to/from the new project driveway (the east leg of the College Avenue/ Lindo Paseo intersection) were removed, and the gross traffic volumes for Buildings 4 and 5 were added to the intersection. Thus, the resulting "+ project" LOS presented in the summary tables represents the operations with the existing land uses zeroed out, and the total traffic associated with Buildings 4 and 5 added in.

It is recommended that a westbound left/thru lane and dedicated a right-turn lane on Lindo Paseo be provided to allow for adequate queuing of outbound trips from Buildings 4 and 5. The analysis shows that LOS D or better operations can be maintained at the College Avenue/ Lindo Paseo intersection with this westbound geometry.

The site plan for Buildings 4 and 5 is currently in a conceptual form. Specific dimensions and locations of the entry points to the subterranean parking garage are yet to be developed. Inbound queues to/from the parking garage could spill back and affect operations at the College Avenue/ Lindo Paseo intersection, resulting in a potential significant impact. The ultimate design of the garage entry should be designed to ensure that adequate throating and appropriate entry-gate controls (if any) are designed to accommodate peak traffic volumes.

As the final garage access and entry design are yet to be developed, for purposes of this analysis, the traffic impacts associated with access to Buildings 4 and 5 at the College Avenue/ Lindo Paseo intersections ***are considered potentially significant***. It is recommended that the subterranean garage entry be designed in a manner that ensures adequate throating and that appropriate entry-gate controls (if any) are designed to accommodate peak traffic volumes.

14.0 PARKING

14.1 Parking Supply

As stated in the project description, the project proposes to construct a parking structure located north of Lindo Paseo and west of Building 1, at the northwest corner of Lindo Paseo and Montezuma Place. The proposes five-storey parking structure would provide five levels of above ground parking and one level of below ground parking, totaling approximately 340 parking spaces in support of the retail component of the Proposed Project. The eastern portion of the parking structure would feature a ground-floor rentable retail space, accessible to pedestrians via an entrance opening to the adjacent public promenade.

An additional 160-220 spaces of project parking are proposed in subterranean parking associated with the Buildings 4 and 5, which will be located east of College Avenue. Thus, the project proposes to develop approximately 500-560 new off-street parking spaces.

Development of the various project buildings will result in the *loss* of approximately 288 existing off-street parking spaces from the affected SDSU surface parking lots serving students, faculty, staff and visitors, as shown in ***Table 14–1*** below:

TABLE 14–1
SDSU PARKING LOTS TO BE REMOVED

Proposed Building	Location	SDSU Lot Affected	Spaces
Campus Green	North of Hardy Drive, west of College Avenue	"5-Star" Lot [a]	- 123
Building 1	North of Lindo Paseo, between Montezuma Place and College Avenue	Lot O [b]	- 88
Building 2	Northwest corner of College Avenue and Montezuma Road	Lot P [b]	- 39
Building 6	Southwest corner of Lindo Paseo and Campanile	Lot S [b]	- 38
Net Parking Loss			***- 288***

Footnotes:

a. This lot is owned by the SDSU Foundation and currently leased to 5-Star Parking Management as public, for-pay parking.
b. This lot is a formal SDSU campus lot by permit only.

According to SDSU parking administrators, a maximum of 5% of the parking demand for the 288 spaces listed above is estimated to be used by non-SDSU related activities, such as patronization of adjacent retail uses, etc. This is equal to approximately 15 spaces. Those businesses not directly related to SDSU, and the related parking demand will be replaced by the Proposed Project, which will provide parking to serve itself. Thus, there is no parking impact to existing businesses since they will be replaced with development of the Proposed Project.

14.2 Residential Parking Demand

The project proposes to construct 400 units of residential student housing. To determine the appropriate residential parking ratios for the Proposed Project, LLG reviewed the parking analyses for both the *College Community Plan Redevelopment EIR (p. 3-51)* and *The Paseo at San Diego State University EIR*. Information from both EIR's is provided in ***Appendix I***. Upon review it was determined that the Paseo EIR used general "multifamily" residential parking ratios (and not student housing ratios) within a shared-parking analysis, whereas the Redevelopment EIR used parking ratios developed specifically for "medium/medium-high-density" and "high/very-high-density" student housing.

A shared parking analysis is not appropriate for the Proposed Project based on the land use mix and the need for specific parking for housing units.

Since the residential component of the Proposed Project is student housing, LLG determined that the Redevelopment EIR parking ratios were appropriate.

Table 3-15 of the *College Community Plan Redevelopment EIR* presents parking ratios for "medium-medium high density" residential at 1.87 parking spaces per unit. For "high density" and "very high density" residential, the ratios are lower at 1.56 parking spaces per unit. The medium-density ratios were deemed most applicable to the Proposed Project as proposed. These ratios are also the higher of the two, which yields a more conservative analysis.

Using the higher ratio (1.87 parking spaces per unit) for "high density/very high density", the residential student housing parking demand is calculated to be 748 spaces. Residential student housing parking for the entire development will not be provided on-site, but will occur in campus parking lots such as structures 3 and 6. A detailed parking study was conducted for the *SDSU Master Plan EIR,* which identified an overall parking supply of 15,591 parking spaces. It also identifies an overall demand of 12,103 spaces, which resulted in a campus-wide surplus of 3,488 spaces. The parking study data is provided in ***Appendix J***. This surplus can accommodate the student-housing demand of 748 spaces and the loss of 288 surface lot spaces.

Therefore, no significant parking impacts are calculated with respect to the residential student housing component.

14.3 Retail Parking Demand

As previously stated, the 90,000 square feet of "retail" development is assumed to be developed as 50% retail and 50% restaurant. To determine the appropriate retail parking ratios for the Proposed Project, LLG reviewed the parking analyses for both the *College Community Plan Redevelopment EIR (p. 3-51)* and *The Paseo at San Diego State University EIR (Appendix I)*. Upon review it was determined that the Paseo EIR used standard city commercial parking ratios for restaurant and retail in a shared-parking analysis, whereas the Redevelopment EIR used a retail parking ratio developed specifically for the "Core Subarea" of SDSU.

Again, no shared parking analysis was prepared for the Proposed Project as was prepared for the Paseo project, so Paseo ratios were not used. Additionally, the retail density proposed in the Redevelopment EIR project was 14,000 SF so the low "Core Subarea" ratios used in that study would be appropriate for a smaller mixed use development, but not applicable to the Proposed Project given its proposed square footage of 90,000 SF, and the corresponding potential for higher trip and parking generating retail uses. In lieu of either of these parking ratios, LLG instead determined that ratios based on the project's zoning and the City's published municipal code would be most appropriate.

The Proposed Project's commercial zoning is CN-1-2. The published *City of San Diego Municipal Code* general parking requirement for the CN-1-2 zone for restaurant ("eating and drinking establishment") is 12.8 spaces per 1,000 square feet, and for retail is 4.3 spaces per 1,000 square feet. These are general parking ratios used for this type of zoning in many low to medium density parts of the City.

However, the municipal code also acknowledges reduced parking requirement in specified areas throughout the city, called "planned districts", which generally have a high density and a complementary mix of land uses that justify a lower ratio. Currently, the College Area is not identified as a planned district. Nonetheless, SDSU and its surrounding area exhibit many of the characteristics of these typically older, denser districts that comprise many of these planned district areas including Golden Hill, Old Town, La Jolla and others. The City acknowledges that parking ratios lower than the general parking ratios are appropriate in most of these planned districts, since many have high density and mixed-use characteristics, as well as transit opportunities. These are all qualities that the Proposed Project development offers, and in addition, there are thousands of students, faculty, staff and visitors on campus every day that will serve as potential patrons of the retail/restaurant portion of the project.

Table 14–2 shows a summary of the various planned district parking ratios compared with the general City ratios described above. This table shows that within the planned districts, the highest ratios (which typically coincide with the general ratios) are for lower-density districts such as Carmel Valley and Otay Mesa. ***Table 14–2*** shows that on average, the percent-reduction in retail parking demand for planned districts as compared to the general ratios varies from 78% (eating/drinking establishment) to 56% (retail).

TABLE 14–2
"PLANNED DISTRICT" RETAIL PARKING RATIO COMPARISON

"Planned Districts"	Density and Ratio			
	Eating/Drinking Establishment [a]		Retail [b]	
	Lower Planned District Ratio	Higher Planned District Ratio	Lower Planned District Ratio	Higher Planned District Ratio
Barrio Logan: Subdistrict B[c]	1.00	–	1.00	–
Barrio Logan: Except Subdistrict B	2.10	–	2.10	–
Carmel Valley[d]	–	12.80	–	4.30
Cass Street	4.30	–	2.00	–
Central Urbanized	2.10	–	2.10	–
Golden Hill	1.25	–	1.25	–
La Jolla	4.30	–	1.70	–
La Jolla Shores	1.00	–	1.00	–
Mid City: CN-3, CV-3	1.25	–	1.25	–
Mid City: Except CN-3, CV-3	2.10	–	2.10	–
Mount Hope	2.80	–	2.80	–
Mission Valley: CV	4.30	–	2.10	–
Mission Valley: Except CV	4.30	–	2.10	–
Otay Mesa[d]	–	12.80	–	4.30
Old Town	3.40	–	3.40	–
Southeast San Diego	5.00	–	2.10	–
San Ysidro	4.30	–	2.10	–
West Lewis Street[c]	1.00	–	1.00	–
Average	***2.80***	***12.80***	***1.9***	***4.30***
Percent Reduction [e]	***78%***	***100%***	***56%***	***100%***

Footnotes:

a. Source: City of San Diego Municipal Code, Table 142-05E (ratios shown are "minimum required within a transit district")
b. Source: City of San Diego Municipal Code, Table 142-05D (ratios shown are "minimum required within a transit district")
c. Alley Access. For properties with alley access, one parking space per 10 linear feet of alley frontage may be provided instead of the parking ratio shown in Table 142-05D.
d. Ratios for these planned districts are also the general ratios published for project's CN-1-2 commercial zoning (minimum required within a transit district).
e. Percentages shown under planned district ratios represent the average percentage of reduction from the general ratios.

General Note:

1. Planned district rates shown represent rates within a transit area.

With respect to the Proposed Project, it is considered inaccurate to utilize general municipal code parking ratios which would be applicable to developments with lower densities and less synergistic, complementary land uses (e.g., development with little if any mixed-use interactions). For example, the proposed retail is located literally adjacent to a major university campus, which provides a substantial pool of ped/bike trips by virtue of the on-site student housing, and also a large pool of potential patrons who have already parked on campus. Also, the Proposed Project itself is a mixed-use project, which further reduces traffic (and therefore parking) by providing housing directly above the proposed retail uses. Finally, use of the general parking ratios would presume that parking characteristics for the Proposed Project would be the same as those for a similar development in a lower density, more auto-oriented neighborhood such as Carmel Valley or Otay Mesa (see *Table 14–2*). Clearly, the density, mixed-use opportunity, synergy of uses and ped/walk trips in the vicinity of

SDSU are much higher than those of a general, typical suburban area associated with the general parking ratio. As such, it is reasonable that parking requirements for the Proposed Project would be less.

Based on these factors, it is considered appropriate to utilize the City's lower planned district ratios for the Proposed Project. *Table 14–2* shows that among all of the planned district ratios, the maximum ratio for restaurant ("eating and drinking establishment") is 5.0 spaces/1,000 sf, and the maximum ratio for "retail" is 3.40 spaces/1,000 sf. While lower than the general parking ratios for the project's zoning, these proposed ratios are higher than the average of all of the planned district ratios, as shown in *Table 14–2*.

Utilizing these ratios, the Proposed Project's total retail parking demand would be calculated as follows:

- Eating/Drinking Establishment – 5.00 spaces/1,000 sf * 45,000 sf = 225 spaces
- Retail – 3.40 spaces/1,000 sf * 45,000 sf = 153 spaces
- ***Total Parking Demand: 194 + 153 = 378 spaces***

Using the above assumptions, 378 spaces would be required for the proposed restaurant/retail uses. To be conservative, a 20% factor of safety was added (76 spaces), resulting in a total calculated retail parking requirement of 454 spaces. Since 500-560 spaces are proposed, adequate parking is being provided and no significant parking impacts would occur. ***Therefore, no significant parking impacts are calculated with respect to either the university-serving or university/community-serving retail components.***

15.0 TRANSIT

15.1 Existing Transit Service

The SDSU Transit Center connects the campus to the bus and trolley routes that serve the greater San Diego area, including the airport, train station and Qualcomm Stadium, where the Aztec football team plays. Students are able to purchase a discounted, unlimited transit-use semester pass.

Buses stop on the street level mezzanine. The green-line San Diego Trolley stops at the station located 55 feet underground. Trolley riders emerge from the station onto Aztec Green, a one-acre park that serves as a gateway to campus.

The following is a brief description of the existing transit service at SDSU:

15.1.1 *Bus Routes*

The San Diego Metropolitan Transit System (MTS) operates the following six bus routes which serve SDSU directly. All routes are "bike buses" and provide wheelchair lift service.

- *Bus Route 11*: runs from Paradise Hills at Paradise Valley Road, through downtown and Hillcrest, to campus
- *Bus Route 14*: runs from the Grantville Trolley Station eastward along Mission Gorge Road, Zion Avenue, Waring Road, College Avenue, Montezuma Drive and Lake Murray Boulevard, terminating at Baltimore Drive in La Mesa.
- *Bus Route 15*: runs from the Union Street Downtown to University Heights, then along El Cajon Boulevard to campus
- *Bus Route 955*: runs from the SDSU campus through southeastern San Diego to National City
- *Bus Route 115*: runs north and east from campus, through the neighborhoods of Del Cerro, Allied Gardens, Navajo, San Carlos, and Fletcher Hills, terminating in El Cajon on W. Marshall Avenue
- *Bus Route 936*: runs southeast from campus to the Spring Valley Shopping Center on Gillespie Drive
- *Bus Route 856*: runs from the SDSU campus through southeastern San Diego to Lemon Grove, Spring Valley, La Presa and Rancho San Diego

15.1.2 *Trolley Service*

As mentioned, SDSU is served by the Green Line trolley service between Santee and Old Town. Existing ridership at the SDSU Transit Center for fiscal year 2008 was 8,046 total riders/weekday, according to SANDAG records.

Along the green-line route, transfers are possible to the red-line (Mission Valley to Downtown), the Blue Line (Old Town to San Ysidro), and the Orange Line (Downtown to El Cajon). Transfers from the trolley to bus routes 11, 14, 15, 115, 856, 936, 955 are possible from the vicinity of the Transit Center, although only 6 routes serve SDSU directly.

15.2.1 Quantitative Assessment – MTS System

As to quantifying the potential impacts associated with the increased transit usage, neither the City of San Diego nor SANDAG publish guidelines specifying a methodology within traffic studies for the preparation of quantitative transit analyses. Therefore, LLG devised a method by which existing Green Line trolley ridership, in combination with increased ridership attributable to the Project, would be measured against the capacity of the trolley and the impacts assessed accordingly. **This type of analysis can be utilized for projects with a short buildout timeframe (several years), but accuracy would be limited for long-range projects (10-15 years) given the lack of accurate long-range transit facility data that is available.**

The following methodology is based on volume to capacity (V/C) methodology published in the Highway Capacity Manual (HCM).

Capacity:

Maximum "person-capacity" for the trolley system was determined using the following equation from the HCM:

$$P = \frac{3{,}600\ N_c P_c (PHF)}{h_{min}}$$

where:

P = maximum single track capacity in passengers per peak-hour direction,
N_c = number of cars per train = 2 (data obtained from MTS),
P_c = maximum allowed passenger load per car = 200 (data obtained from MTS),
h_{min} = minimum train headway (s), = 900 (data obtained from MTS), and
PHF = Peak hour factor = obtained from October 2008 ridership counts conducted by SANDAG

- 0.65 Eastbound Direction – AM peak
- 0.85 Westbound directions – AM peak
- 0.79 Eastbound Direction – PM peak
- 0.71 Westbound directions – PM peak

Based on the above formula, the maximum capacity (riders/hour) for the Green Line in the vicinity of the SDSU station was calculated for both the AM and PM peak hours. ***Table 15–1*** summarizes the calculated peak hour person capacity information.

Volume:

Existing trolley ridership information (volume) was obtained from October 2008 ridership counts conducted by SANDAG. *Table 15–1* summarizes the peak hour ridership information.

Project related ridership was estimated based on the project trip generation, distribution and the Proposed Project land uses, as well as the potential mode-split of the project trip generation between vehicular trips and "other" (e.g., pedestrian/bicycle trips, transit, etc.) trips. This mode-split assumption was based on information published in the trip generation calculations for *The College Community Redevelopment Project EIR (Table 3–10)* and the *Paseo EIR (p. 3-9)*, which determined that the amount of "other" trips associated with faculty/staff and students was 20% and 30%, respectively. Therefore, LLG applied a composite rate of 25% to the Proposes Project trip generation to estimate the potential increase in ridership associated with the Proposed Project. It should be noted that because this approach assumes that all non-vehicular trips (e.g., pedestrian, bicycle, bus and other) are trolley trips, the resulting ridership projections are higher than would be expected, and therefore conservative.

Table 15–1 summarizes the peak hour project and the peak hour Existing + Project ridership information.

Appendix M contains excerpts from the HCM used to develop this analysis methodology.

TABLE 15–1
TROLLEY ANALYSIS – VOLUME/CAPACITY METHOD
SAN DIEGO STATE UNIVERSITY

Direction	Peak Hour	Calculated Capacity (Riders/hr)	Existing	Project Ridership (Riders/hr)	Existing + Project
			Volume (Riders/hr)		Volume (Riders/hr)
Eastbound	AM	1,040	366	25	391
	PM	1,264	391	36	427
Westbound	AM	1,360	579	25	604
	PM	1,136	154	36	190

Table 15–1 shows that in the study area, the peak-hour ridership volume on the trolley system accounts for less than 50% of the estimated capacity. The forecasted peak hour project contribution is a modest 25-36 riders and can be accommodated within the capacity of the system.

With respect to the bus system, MTS runs six bus lines to the campus as described in *Section 15.1.1*. As compared to the trolley which runs on fixed lines and has limitations on the number and sizes of trains that can be run, the bus system is flexible. MTS regularly reviews the efficiency and level of service of its routes, and makes adjustments to routes, headways, and bus sizes depending on demand. The Proposed Project is expected to generate very few additional bus passengers.

15.2 Potential Project Impacts

The Proposed Project consists of both student residential housing, and retail land uses (either university-serving or university/community-serving retail). The student housing component places students within walking distance of many of their trip ends (e.g., classrooms, athletic facilities, commons and on-campus retail, etc.). As such, this element of the project would not be considered a major generator of new transit trips. Some new transit trips by the student housing residents would be expected to areas outside of the College Area community, such as trips downtown or to Mission Valley. However, the number of increased trips is expected to be relatively small, and would not occur during peak travel periods when demand is greatest. Additionally, by locating housing near the campus destination, the student housing component of the project could have the effect of reducing transit ridership to/from the university as these students would no longer be commuting to the campus for classes.

With respect to retail trips, both the university-serving and university/community-serving retail uses are expected to draw from relatively close to the project site. As stated previously in the report, the university/community-serving retail scenario could generate more vehicle trips if the tenants are comprised of retailers that appeal to other sectors of the population than students. While again it is possible that the development of such retail space could increase transit ridership, the relatively small scale of the development would not be expected to create a significant impact.

Thus, the proposed Project (student housing + retail component) is expected to generate little increase in transit ridership demand. A meeting was held with MTS staff and they agreed that the Proposed Project would generate low additional transit ridership. ***Appendix L*** contains a copy of the meeting notes. For the transit ridership demand that is generated, it can be served by either the trolley or the bus system. The trolley system is calculated to operate below capacity, and the bus system is flexible enough to be scaled to any demands potential demand changes that occur. ***Ultimately, no significant impacts to the bus or trolley system are calculated.***

16.0 PEDESTRIAN/ BICYCLE CIRCULATION

Existing conditions at the site of the Proposed Project provide pedestrian facilities along all roadway segments that traverse and border the site.

With respect to bicyclists, east and westbound Montezuma Road is striped for Class II bicycle facilities between Campanile Drive and College Avenue. College Avenue is neither signed nor striped for bicycle facilities. (Class I bicycle facilities [Bicycle Path] are a paved right-of-way completely separated from any street or highway; Class II facilities [Bicycle Lane] are a striped and stenciled lane for one-way travel on a street or highway; Class III facilities [Bicycle Route] are a shared right-of-way designated by signs only, with bicycle traffic sharing the roadway with motor vehicles.)

The Mobility Element of the City of San Diego General Plan states that development, maintenance, and support of the bicycle network are guided by the City's Bicycle Master Plan ("BMP"). The BMP contains detailed policies, action items, and network maps, and addresses issues such as bikeway planning, community involvement facility design, bikeway classifications, multi-modal integration, safety and education, and support facilities. The BMP is intended to provide a citywide perspective that is enhanced with more detailed community plan level recommendations and refinements. (General Plan, March 2008, ME-36.)

The BMP is not intended to override the existing community plans or other existing plans. (BMP (May 2002) p. 3.) In that regard, and specific to the proposed project, the College Area Community Plan recommends the completion of Class II bike lanes on College Avenue. (BMP p. 22; see also College Area Community Plan, p. 65.) The BMP, meanwhile, recommends the segment of College Avenue in the vicinity of the proposed project as a "Top Priority Proposed Class 3 Bikeway." (BMP pp. 63, 70, 115.)

The City presently is in the process of revising the BMP and has issued a Draft Bicycle Master Plan Update (March 2010). The Draft BMP Update depicts College Avenue between I-8 and Montezuma Road as a "Class II or III". (Draft BMP Update, p. 133.) This segment of College Avenue does not appear on the BMP Update Top Priority Project List. (Addendum to March 2010 Draft City of San Diego Bicycle Master Plan Update: Revised Top Priority Project List; BMP Update p. 178.)

While CSU/SDSU as a state entity is not subject to local land use plans such as the Community Plan and Bicycle Master Plan, the Proposed Project includes sufficient right-of-way on College Avenue for the ultimate development of Class II bicycle lanes in the areas fronting the project. Specifically, Buildings 1, 2, 4, and 5 have been designed to provide adequate setback to facilitate the placement of Class II bicycle lanes within the College Avenue right-of-way. (See Project Description, Section 1.5.5.) Because these improvements would be implemented within the City of San Diego right-of-way, the improvements would require the approval of the City and would be implemented by the City, with CSU funding assistance. As such, the proposed Project would not result in significant impacts relative to bicycle plans.

There are no physical elements of the Proposed Project that would increase traffic hazards to pedestrians or bicyclists. Additionally, although the Proposed Project would increase vehicle traffic volumes in the vicinity of the campus, the increase in vehicle traffic volumes would not be substantial enough to result in or cause increased safety risks to pedestrian or bicyclists.

A review of the roadway improvement mitigation measures proposed to mitigate the identified significant impacts to roadway carrying capacities was conducted to determine if the improvements potentially could result in increased vehicle speeds on the mitigated roadways and, therefore, increased safety risks to pedestrians and bicyclists. (See Section 3.12.7, Mitigation Measures.)

The proposed mitigation measures along the College Avenue project frontage would widen the roadway for motorized vehicles by approximately 10 feet. This amount of widening would not result in a measurable increase in vehicular travel speeds. In addition, the current controlled pedestrian crossings on College Avenue will continue to exist at both the Lindo Paseo and Montezuma Road intersections, providing safe crossing for pedestrians and bicyclists at these locations. It also is noted that the proposed Project would include the construction of sidewalks along the College Avenue frontage from Montezuma Road north to the new pedestrian bridge, which will facilitate pedestrian and bicyclist movements outside the vehicular right of way. For these reasons, no significant impacts to pedestrian or bicycle movements are expected to occur as a result of implementation of the Proposed Project or the proposed College Avenue mitigation measures along the project frontage.

As to the other roadways that are the subject of the mitigation improvements, the mitigation measures could result in minor widening (less than 10 feet) of roadways, which also would not measurably increase roadway speeds. Therefore, no significant impacts to pedestrians or bicyclists are expected at these locations either.

17.0 ROADWAY CLOSURES/ STREET VACATIONS

The Proposed Project description includes several road closures/ street vacations in the project area, as shown on the site plan (*Figure 2–1*). The following is a brief description of these proposed modifications.

Montezuma Place

The project proposes to vacate Montezuma Place between Lindo Paseo and Hardy Avenue. This is to provide a pedestrian promenade between the proposed Building 1 and Building 3. Currently, this roadway serves residences to the west and a parking lot to the east. Traffic volumes on this portion of Montezuma Place primarily serve these uses, both of which will be removed and replaced with development of the project.

North of Hardy Avenue, the project proposes to vacate Montezuma Place for development of the Campus Green element of the project. This is currently a parking lot serving the transit station (approximately 122 spaces). Again, this portion of Montezuma Place currently only serves this existing parking lot, which will be removed as part of the project. Counts in March 2008 indicated approximately 820 ADT on this portion of Montezuma Place. This is a small amount of traffic that will be redistributed from Montezuma Place to the adjacent circulation system, would therefore not have a significant impact.

Between Lindo Paseo and Montezuma Road, the project proposes to vacate the existing diagonal-parking street easement which serves adjacent businesses. This portion of Montezuma Road does not carry much cut-through traffic, other than traffic destined to businesses on the west side of the street (approximately 870 ADT). Elimination of the diagonal parking would not affect vehicle flow on this segment.

Hardy Avenue

The project proposes to vacate Hardy Avenue between Montezuma Place and College Avenue. This is currently blocked from vehicular traffic by bollards, and appears to be an easement for a sewer or other utility line. No traffic or circulation impacts are expected with this vacation.

The project proposes to terminate Hardy Avenue at its intersection with Montezuma Place. The Campus Green will be developed to the north, Building 1 to the east, and Building 3 to the south. A remaining residential complex will remain adjacent to the cul-de-sac, and will be expected to have access from it. With the redevelopment of the adjacent area as part of the project (especially the vacation of Montezuma Place between Lindo Paseo and Hardy Avenue discussed above), no traffic impacts would be expected for the proposed Hardy Avenue modification since there would be no demand for through trips. Currently, the major demand for this portion of Hardy Avenue is for the transit station parking lot, which will be removed with development of the Campus Green. Accordingly, no significant impacts to traffic circulation are expected.

Lindo Paseo/Alley East of College Avenue
East of College Avenue, Lindo Paseo is proposed to be vacated in order to provide access to the underground parking proposed beneath Buildings 4 and 5. Currently, this very short portion of Lindo Paseo provides access to a small amount of metered parking for businesses on the south side of Lindo Paseo, as well as access to the 7-Eleven convenience store located on the north side. Lindo Paseo currently connects to an alleyway that runs parallel to College Avenue. This alleyway also provides access to parking and deliveries for businesses both north and south of Lindo Paseo. Counts in March 2009 showed between 1,450 and 1,920 ADT on this alleyway. However, this traffic is largely associated with the businesses that will be removed as Buildings 4 and 5 are developed. Therefore, the current demand associated with both Lindo Paseo and the alleyway will be terminated. *Section 13.0* discusses the driveway recommendations for this vacated portion.

In summary, several small roadways within the project area are proposed to be modified, vacated or otherwise changed. Upon review, it is clear that these roadways exist now to serve the current micro parking or retail demands placed upon them by the existing land uses (which will be removed). They do not function in any meaningful way as circulation roadways providing anything other than micro access within the study area. As discussed above, the development of the various buildings within the project area will remove and replace these existing businesses and residences with new retail and residential uses. Parking will be provided in new locations, and the proposed roadway system (including street vacations) will be designed to accommodate these revised demands. ***Therefore, the vacation of these roadways would not result in a significant impact to traffic circulation.***

18.0 EMERGENCY VEHICLE ACCESS

An important consideration in evaluating the effects of a project on the circulation system is its potential impact to emergency vehicle response times. It is recognized that Alvarado Hospital, for instance, is located within 1 mile of the project site.

When evaluating emergency access it is important to note that emergency vehicles have the right-of-way and, therefore, are able to bypass traffic when driving to their destination. Specifically, drivers are required to pull to the right side of the road and stop to allow emergency vehicles to pass. If required, drivers of emergency vehicles are trained to utilize center turn lanes or to travel in opposing through lanes to pass through crowded intersections. Thus, the access entitled to emergency vehicles allows these vehicles to negotiate typical street conditions in urban areas such as the College Area, therefore ***no significant impacts to emergency vehicle access are expected.***

19.0 ALTERNATIVE MITIGATION MEASURE DIVERSION ANALYSIS

An alternative design for College Avenue has been presented that proposes to retain the majority of College Avenue in its current configuration as a 4-lane road. College Avenue is classified as a 6-lane roadway and is planned to be widened to 6-lanes in the future. The intent of this design would be to enhance the pedestrian experience along the College Avenue corridor in the vicinity of the campus in part by limiting additional vehicle capacity on College Avenue. By limiting additional capacity on College Avenue, however, this alternative design could result in the re-direction of traffic loads to other area roadways, thereby impacting these roads. This section provides an analysis of the potential impacts of the alternative design.

19.1 College Area Arterial Roadways

There are three major arterial roadways that provide regional access to SDSU and the surrounding College Area: Fairmount Avenue, College Avenue, and 70th Street. Two of these three arterials provide direct access to Montezuma Road, which provides local access to/from the College Area and adjacent neighborhoods. The following is a brief discussion of the College Area arterial roadways that could be affected by a reduction in capacity on College Avenue:

Fairmount Avenue serves to link I-8 and the neighborhoods of Kensington, Talmadge and City Heights, as well as providing efficient access to the western terminus of Montezuma Road and the College Area. Existing daily weekday traffic volumes on Fairmount Avenue are 78,800 ADT.

College Avenue serves as the primary link for regional SDSU traffic using the I-8 corridor. In addition, College Avenue is also an important Circulation Element roadway serving residents of the College Area, including the adjacent Rolando and Talmadge neighborhoods. College Avenue between El Cajon Boulevard and I-8 currently carries between 29,000 to 44,000 ADT during weekdays with SDSU in session. This traffic is comprised of both SDSU traffic and local residential and commercial traffic.

70th Street provides access to/from I-8 for the community of Rolando, as well as the City of La Mesa to the east. The eastern portion of the College Area can be accessed from 70th Street via El Cajon Boulevard to Montezuma Road. Existing daily weekday traffic volumes on Fairmount Avenue are 20,300 ADT.

Montezuma Road runs parallel to I-8 and El Cajon Boulevard, and provides access to SDSU and the College Area and I-8 via Fairmount Avenue. Montezuma Road also serves regional traffic to SDSU using 70th Street and El Cajon Boulevard. Existing daily weekday traffic volumes on Montezuma Road range from 14,800 to 30,600 ADT between Collwood Boulevard and Catoctin Drive.

19.2 Diverted Trips Estimation

The SANDAG traffic model was used to determine the potential amount of traffic that could divert from College Avenue to other roadways if the ultimate capacity on College Avenue were reduced from 6-lanes to 4-lanes as proposed in this alternative. The regional model is an appropriate tool for this analysis because it is in essence a "gravity model", which means that it connects trip attractors with trip generators using the roadway system as efficiently as possible; this means using the shortest routes on the largest (and presumably least constrained) roadways. When the capacities of the roadways in the system are changed, the model recognizes the increase or decrease in capacity (and the resultant change in constraint), and adjusts routes and volumes accordingly. However, the model will always seek to connect the generated trips with the attractions.

Specific to this analysis, the model recognizes the substantial trip attraction which is the SDSU campus. Additionally, under the model, the campus will attract the requisite number of trips regardless of whether the roadways serving it are two lanes or twenty lanes. Since the College Avenue capacity would reduce from 6-lanes to 4-lanes under the alternative design, some trips on College Avenue would be diverted to the adjacent, parallel routes to the west and east, which are Fairmount Avenue and 70th Street, respectively. Due to the close proximity of the SDSU campus and parking garages to I-8, it is likely that the nature of the diverted trips would be residential, not SDSU related. In other words, drivers using College Avenue as a route from I-8 to more distant (2+ miles) residential destinations along the El Cajon Boulevard or University Avenue corridors could be expected to more readily travel out-of-direction on parallel routes to avoid congestion on a 4-lane College Avenue than would a commuting student or faculty member of SDSU, whose destination is along College Avenue and within 1/10 mile of I-8.

Based on the model runs conducted, the diverted ADT from College Avenue commensurate with the reduction in capacity from 6-lanes to 4-lanes was 4,000 ADT. For perspective, this equates to approximately 9%-14% of existing traffic volumes on College Avenue. For the purposes of this analysis, this diverted traffic was considered to be non-SDSU related for the reasons explained above. This traffic was distributed to Fairmount Avenue and 70th Street assuming a 75:25 split, respectively, based on existing daily traffic volumes on these roadways. These volumes were then distributed along Montezuma Road and El Cajon Boulevard to the neighborhoods along these corridors, again using existing traffic volumes as the basis of distribution.

19.3 Analysis

To assess the potential impacts to the surrounding streets that would result from the diverted traffic, a long-term street segment analysis was conducted for segments on Fairmount Avenue, 70th Street and Montezuma Road using roadway capacities consistent with the long-term street segment analysis utilized in Section 10.0. These long-term segment volumes represent the "No Diversion, 6-Lane College Avenue" baseline condition. The diverted volumes discussed above (4,000 ADT) were added to the long-term baseline volumes to yield "With Diversion, 4-Lane College Avenue" conditions. The LOS for each condition was calculated, as was the volume/capacity (V/C) ratio. The change in the V/C ratio was then calculated, and compared to the City of San Diego's significance criteria (*Section 5.0*) to determine if the reduction in lanes would result in a significant impact.

Table 19–1 shows the analysis results.

TABLE 19–1
LONG-TERM (2030)
STREET SEGMENT OPERATIONS
WITHOUT AND WITH COLLEGE AVENUE DIVERSION

Street Segment	Long Term Capacity (LOS E) [a]	No Diversion (6-Lane College Avenue)			With Diversion (4-Lane College Avenue)				
		ADT [b]	V/C [c]	LOS [d]	ADT	V/C	LOS	Δ [e]	Sig?
Fairmount Avenue *(+3,000 ADT)*									
Montezuma Road to I-8	60,000	89,000	1.483	F	**92,000**	**1.533**	**F**	**0.050**	**Yes**
Montezuma Road *(+ Variable ADT)*									
Collwood Boulevard to 55th Street	40,000	33,850	0.846	D	35,650	0.891	D	0.045	No
55th Street to College Avenue	30,000	35,010	1.167	F	**36,510**	**1.217**	**F**	**0.050**	**Yes**
College Avenue to Catoctin Drive	30,000	28,800	0.960	E	**30,150**	**1.005**	**F**	**0.045**	**Yes**
70th Street *(+1,000 ADT)*									
Alvarado Road to El Cajon Boulevard	40,000	33,000	0.825	D	34,000	0.850	D	0.025	No

Source:

SANDAG Series 11 Traffic Model.

LLG Plaza Linda Verde Traffic Study, June 2010.

Footnotes:

a) Capacities based on City of San Diego Roadway Classification & LOS table.
b) Average Daily Traffic
c) Volume ÷ Capacity
d) Level of Service
e) Δ denotes a decrease in volume to capacity ratio attributable to diversion of trips from College Avenue onto these segments.

Table 19–1 shows that the diversion of 4,000 ADT from College Avenue to Fairmount Avenue, 70th Street and Montezuma Road would cause significant cumulative impacts at the following locations:

- Fairmount Avenue from Montezuma Road to I-8
- Montezuma Road from 55th Street to College Avenue
- Montezuma Road from College Avenue to Catoctin Drive

19.4 Summary/Conclusions

The proposed alternative design for College Avenue that maintains a 4-lane cross section would result in approximately 4,000 ADT to be diverted from College Avenue to adjacent arterial roadways in the study area. These diverted trips would result in increases in traffic volumes on several roadways forecasted to operate at LOS F at buildout. The V/C contribution of the diverted trips would exceed the allowable increase in V/C on one segment on Fairmount Avenue, and two segments on Montezuma Road.

There are no feasible mitigation measures that would provide sufficient additional capacity on Fairmount Avenue to accommodate the increased traffic, i.e., due to existing physical constraints and lack of available right-of-way, the significantly impacted segment cannot be sufficiently widened to add the necessary additional travel lanes. Therefore, this impact would remain significant and unmitigated. With respect to Montezuma Road, improvements to the impacted segments that would bring the road up to Major Road standards would increase the capacity from 30,000 ADT to 40,000 ADT. This would reduce the identified significant impact to the segment of Montezuma from 55th Street to College Avenue to less than significant. However, improvement to Major Road standards would not reduce the significant impacts to the second segment (College Avenue to Catoctin Drive), and improvements beyond these standards are not feasible due to existing physical constraints, lack of available right-of-way and the fact that existing structures would likely need to be demolished in order to provide for a six-lane facility. Therefore, the significant impacts to Montezuma Road between College Avenue and Catoctin Drive would remain significant and unmitigated.

20.0 SIGNIFICANCE OF IMPACTS AND MITIGATION MEASURES

Based on the City of San Diego significance criteria, significant impacts were determined at several study area intersections and street segments in the near-term and long-term scenarios.

20.1 Significance of Impacts

The following is a list of the significant impacts based on the established significance criteria for each of the two project scenarios

20.1.1 *Near Term (University-Serving Retail Scenario)*

Intersections

A–1. College Avenue/ Canyon Crest Drive

A–2. College Avenue/ Zura Way

A–3. College Avenue/ Montezuma Road

20.1.2 *Near Term (University/Community-Serving Retail Scenario)*

Intersections

B–1. College Avenue/ Canyon Crest Drive

B–2. College Avenue/ Zura Way

B–3. College Avenue/ Montezuma Road

Street Segments

C–1. College Avenue: Canyon Crest Drive to Zura Way

C-2. Montezuma Road: 55th Street to College Avenue

20.1.3 *Long-Term (University-Serving Retail Scenario)*

Intersections

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

D–2. College Avenue/ Canyon Crest Drive

D–3. College Avenue/ Zura Way

D–4. College Avenue/ Montezuma Road

D–5. Montezuma Road/ 55th Street

D–6. Montezuma Road/ Campanile Drive

20.1.4 *Long-Term (University/Community-Serving Retail Scenario)*

Intersections

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

E–2. College Avenue/ Canyon Crest Drive

E–3. College Avenue/ Zura Way

E–4. College Avenue/ Montezuma Road

E–5. Montezuma Road/ 55th Street

E–6. Montezuma Road/ Campanile Drive

Street Segments

F–1. College Avenue: Canyon Crest Drive to Zura Way

F–2. College Avenue: Zura Way to Montezuma Road

F-3. Montezuma Road: 55th Street to College Avenue

20.1.5 *Both Retail Scenarios*

Other

G–1. Construction Impacts

G–2. College Avenue/Lindo Paseo Driveway Access Impacts

20.2 Mitigation Measures

The mitigation measures (MMs) listed below are intended to mitigate the direct and cumulative impacts associated with the Plaza Linda Verde mixed-use development project.

20.2.1 *Near Term (University-Serving Retail Scenario)*

Intersections

Mitigation Measure A–1: College Avenue/ Canyon Crest Drive

- Contribute a fair share towards restriping College Avenue to provide an additional (third) northbound through lane from 500 feet south of the Canyon Crest Drive intersection to the I-8 Eastbound Ramps.

Mitigation Measure A–2: College Avenue/ Zura Way

- Contribute a fair share towards the provision of a traffic signal at the intersection. No widening of College Avenue is necessary to mitigate this impact.

- An Alternate mitigation would be to prohibit southbound left-turns at the intersection. As a result of this mitigation option, an additional southbound left-turn lane would be necessary at the College Avenue/ Montezuma Road intersection.

Mitigation Measure A-3: College Avenue/ Montezuma Road

- Contribute a fair share towards widening the College Avenue/ Montezuma Road intersection to provide an additional (second) left turn lane at the southbound and westbound approaches.

20.2.2 *Near Term (University/Community-Serving Retail Scenario)*

Intersections

Mitigation Measure B–1: College Avenue/ Canyon Crest Drive

- Contribute a fair share towards restriping College Avenue to provide an additional (third) northbound through lane from 500 feet south of the Canyon Crest Drive intersection to the I-8 Eastbound Ramps.

Mitigation Measure B–2: College Avenue/ Zura Way

- Contribute a fair share towards the provision of a traffic signal at the intersection. No widening of College Avenue is necessary to mitigate this impact.

- An Alternate mitigation would be to prohibit southbound left-turns at the intersection. As a result of this mitigation option, an additional southbound left-turn lane would be necessary at the College Avenue / Montezuma Road intersection.

Mitigation Measure B-3: College Avenue/ Montezuma Road

- Contribute a fair share towards the widening of the College Avenue/ Montezuma Road intersection to provide an additional (second) left turn lane at the southbound and westbound approaches.

Street Segments

Mitigation Measure C–1: College Avenue: Canyon Crest Drive to Zura Way

- Contribute a fair share towards restriping College Avenue to provide an additional (third) northbound through lane on College Avenue between I-8 and Zura Way.

Mitigation Measure C–2: Montezuma Road: 55th Street to College Avenue

- Contribute a fair share towards providing a raised median on Montezuma Road between 55th Street and College Avenue.

20.2.3 *Long-Term (University-Serving Retail Scenario)*

Intersections

Mitigation Measure D–1: College Avenue/ I-8 Eastbound Ramps

- The fair share contribution towards restriping College Avenue to provide an additional northbound through lane from 500 feet south of Canyon Crest Drive to the I-8 Eastbound Ramps (MM A–1/B–1) would mitigate this cumulative impact.

Mitigation Measure D–2: College Avenue/ Canyon Crest Drive

- The fair share contribution towards restriping College Avenue to provide an additional northbound through lane from 500 feet south of the Canyon Crest Drive intersection to the I-8 Eastbound Ramps (MM A–1/B–1) would mitigate this cumulative impact.

Mitigation Measure D–3: College Avenue/ Zura Way

- The fair share contribution towards installing a traffic signal at the College Avenue/ Zura Way intersection (MM A–2/B–2) would mitigate this cumulative impact.

Mitigation Measure D–4: College Avenue/ Montezuma Road

- The fair share contribution towards widening the College Avenue/Montezuma Road intersection to provide an additional (second) left turn lane at the southbound and westbound approaches (MM A–3/B–3) would mitigate this cumulative impact.

Mitigation Measure D–5: 55th Street/ Montezuma Road

- Contribute a fair share towards the provision of a right-turn overlap phase for the westbound approach at the 55th Street / Montezuma Road intersection.

Mitigation Measure D–6: Montezuma Road/ Campanile Drive

- Contribute a fair share towards widening Campanile Drive to provide a 75-foot long dedicated right-turn lane on the northbound approach.

20.2.4 *Long-Term (University/Community-Serving Retail Scenario)*

Intersections

Mitigation Measure E–1: College Avenue/ I-8 EB Ramps

- The fair share contribution towards restriping College Avenue to provide an additional northbound through lane from 500 feet south of the Canyon Crest Drive intersection to the I-8 Eastbound Ramps (MM A–1/B–1) would mitigate this cumulative impact.

Mitigation Measure E–2: College Avenue/ Canyon Crest Drive

- The fair share contribution towards restriping College Avenue to provide an additional northbound through lane from 500 feet south of the Canyon Crest Drive intersection to the I-8 Eastbound Ramps (MM A–1/B–1) would mitigate this cumulative impact.

Mitigation Measure E–3: College Avenue/ Zura Way

- The fair share contribution towards installing a traffic signal at the College Avenue/ Zura Way intersection (MM A–2/B–2) would mitigate this cumulative impact.

Mitigation Measure E–4: College Avenue/ Montezuma Road

- The fair share contribution towards widening the College Avenue/Montezuma Road intersection to provide an additional (second) left turn lane at the southbound and westbound approaches (MM A–3/B–3) would mitigate this cumulative impact.

Mitigation Measure E–5: 55th Street/ Montezuma Road

- Contribute a fair share towards the provision of a right-turn overlap phase for the westbound approach at the 55th Street / Montezuma Road intersection.

Mitigation Measure E–6: Montezuma Road/ Campanile Drive

- Contribute a fair share towards widening Campanile Drive to provide a 75-foot long dedicated right-turn lane on the northbound approach.

Street Segments

Mitigation Measure F–1: College Avenue: Canyon Crest Drive to Zura Way

- The fair share contribution to the restriping of College Avenue to provide an additional (third) northbound through lane between I-8 EB Ramps and Zura Way (B-3) would mitigate this cumulative impact.

Mitigation Measure F–2: College Avenue: Zura Way to Montezuma Road

- Contribute a fair share towards widening the southbound approach of College Avenue at Montezuma Road to provide a second left-turn lane. This extra lane results in a 7-lane cross section on College Avenue between Montezuma Road and Lindo Paseo. Also, provide a third northbound through lane on College Avenue between Lindo Paseo and Zura Way.

Mitigation Measure F–3: Montezuma Road: 55th Street to College Avenue

- The fair share contribution towards providing a raised median on Montezuma Road between 55th Street and College Avenue (MM C-2) would mitigate this cumulative impact.

20.2.5 *Both Retail Scenarios*

Other

Mitigation Measure G–1: Construction Impacts

- Prepare appropriate Traffic Control Plans to ensure maximum roadway capacity during the construction period

Mitigation Measure G–2: College Avenue/Lindo Paseo Driveway Access Impacts

- Ensure that the ultimate site plan, including any access control to the subterranean garages located in Buildings 4 and 5, be designed in a manner that ensures adequate throating and that appropriate entry-gate controls (if any) are designed to accommodate peak traffic volumes.

Table 20–1 shows a summary of the near-term and long-term impacts and mitigation measures for both the university-serving and university/community-serving retail scenarios.

TABLE 20–1
NEAR-TERM PROJECT IMPACT/MITIGATION SUMMARY

	Impact	Location	Significant Impact? University - Serving Retail + Residential	Significant Impact? University/ Community - Serving Retail + Residential	Mitigation	Correspond-ing Impact from Master Plan	Does Additional Student Housing Cause the Impact?
Near-Term	*Intersections (University- Serving Retail)*						
	A-1	3. College Avenue/ Canyon Crest Drive (signalized)	✓	✓	Contribute fair share towards restriping College Avenue to provide an additional (third) NB thru lane	A-3	✓
	A-2	4. College Avenue/ Zura Way (unsignalized)	✓	✓	Contribute a fair share towards the provision of a traffic signal at the intersection. No widening of College Avenue is necessary. An Alternate mitigation would be to prohibit southbound left-turns at the intersection. As a result of this mitigation option, an additional southbound left-turn lane would be necessary at the College Avenue/ Montezuma Road intersection.	A-4	–
	A-3	6. College Avenue/ Montezuma Road (signalized)	✓	✓	Contribute fair share towards widening the College Avenue/Montezuma Road intersection to provide an additional (second) left-turn lane at the SB and WB approaches.	A-5	–
	Intersections (University/Community- Serving Retail)						
	B-1	3. College Avenue/ Canyon Crest Drive (signalized)	✓	✓	Contribute fair share towards restriping College Avenue to provide an additional (third) NB thru lane	A-3	–
	B-2	4. College Avenue/ Zura Way (unsignalized)	✓	✓	Contribute a fair share towards the provision of a traffic signal at the intersection. No widening of College Avenue is necessary. An Alternate mitigation would be to prohibit southbound left-turns at the intersection. As a result of this mitigation option, an additional southbound left-turn lane would be necessary at the College Avenue/ Montezuma Road intersection.	A-4	–
	B-3	6. College Avenue/ Montezuma Road (signalized)	✓	✓	Contribute fair share towards widening the College Avenue/Montezuma Road intersection to provide an additional (second) left-turn lane at the SB and WB approaches	A-5	–
	Segments (University/Community- Serving Retail)						
	C-1	College Avenue: Canyon Crest Drive to Zura Way	–	✓	Contribute fair share towards restriping College Avenue to provide an additional (third) NB thru lane	B-3	✓
	C-2	Montezuma Road: 55th Street to College Avenue	–	✓	Contribute a fair share towards providing a raised median on Montezuma Road between 55th Street and College Avenue	F-8	✓

TABLE 20–2
LONG-TERM PROJECT IMPACT/MITIGATION SUMMARY

	Impact	Location	Significant Impact?		Mitigation	Correspond-ing Impact from Master Plan	Does Additional Student Housing Cause the Impact?
Long-Term	*Intersections (University-Serving Retail)*						
	D-1	2. College Avenue/ I-8 Eastbound Ramps (signalized)	✓	✓	The fair share contribution towards restriping College Avenue to provide an additional NB thru lane from 500 feet south of the Canyon Crest Drive intersection to the I-8 Eastbound Ramps (MM A-1/B-1) will mitigate this cumulative impact	A-2, E-6	✓
	D-2	3. College Avenue/ Canyon Crest Drive (signalized)	✓	✓	The fair share towards restriping College Avenue to provide an additional NB thru lane from 500 feet south of the Canyon Crest Drive intersection to the I-8 Eastbound Ramps (MM A-1/B-1) will mitigate this cumulative impact	E-7	✓
	D-3	4. College Avenue/ Zura Way (unsignalized)	✓	✓	The fair share contribution towards installing a traffic signal at this intersection (MM A-2/B-2) will mitigate this cumulative impact	E-8	--
	D-4	6. College Avenue/ Montezuma Road (signalized)	✓	✓	The fair-share towards widening the College Avenue/Montezuma Road intersection to provide an additional (second) left-turn lane at the SB and WB approaches (MM A-3/B-3) will mitigate this cumulative impact	E-9	--
	D-5	9. Montezuma Road/ 55th Street (signalized)	✓	✓	Contribute a fair share towards the provision of a right-turn overlap phase for the WB approach at the Montezuma Road/55th Street intersection	E-2	✓
	D-6	10. Montezuma Road/ Campanile Drive (signalized)	✓	✓	Contribution a fair share towards widening Campanile Drive to provide a 75-foot long dedicated NB right-turn lane	E-3	✓

Continued

TABLE 20–2 CONT'D
LONG-TERM PROJECT IMPACT/MITIGATION SUMMARY

	Impact	Location	Significant Impact?		Mitigation	Correspond-ing Impact from Master Plan	Does Additional Student Housing Cause the Impact?
Long-Term	*Intersections (University/Community-Serving Retail)*						
	E-1	2. College Avenue/ I-8 Eastbound Ramps (signalized)	✓	✓	The fair share contribution towards restriping College Avenue to provide an additional NB thru lane from 500 feet south of the Canyon Crest Drive intersection to the I-8 Eastbound Ramps (MM A-1/B-1) will mitigate this cumulative impact	A-2, E-6	–
	E-2	3. College Avenue/ Canyon Crest Drive (signalized)	✓	✓	The fair share contribution towards restriping College Avenue to provide an additional NB thru lane from 500 feet south of the Canyon Crest Drive intersection to the I-8 Eastbound Ramps (MM A-1/B-1) will mitigate this cumulative impact	E-7	–
	E-3	4. College Avenue/ Zura Way (unsignalized)	✓	✓	The fair share contribution towards installing a traffic signal at this intersection (MM A-2/B-2) will mitigate this cumulative impact	E-8	–
	E-4	6. College Avenue/ Montezuma Road (signalized)	✓	✓	The fair-share contribution towards the widening the College Avenue/ Montezuma Road intersection to provide an additional (second) left-turn lane at the SB and WB approaches (MM B-3) will mitigate this cumulative impact	E-9	–
	E-5	9. Montezuma Road/ 55th Street (signalized)	✓	✓	Contribute a fair share towards the provision of a right-turn overlap phase for the WB approach at the Montezuma Road/55th Street intersection	E-2	–
	E-6	10. Montezuma Road/ Campanile Drive (signalized)	✓	✓	Contribution a fair share towards widening Campanile Drive to provide a 75-foot long dedicated NB right-turn lane on Campanile Drive	E-3	–

Continued

TABLE 20–2 CON'T
LONG-TERM PROJECT IMPACT/MITIGATION SUMMARY

Impact		Location	Significant Impact?		Mitigation	Correspond-ing Impact from Master Plan	Does Additional Student Housing Cause the Impact?
	Segments (University/Community-Serving Retail)						
	F-1	College Avenue: Canyon Crest Drive to Zura Way	–	✓	The fair share contribution to the restriping of College Avenue to provide an additional (third) NB thru lane (MM A-2/B-2) will mitigate this cumulative impact	F-4	✓
	F-2	College Avenue: Zura Way to Montezuma Road	–	✓	Contribute a fair share towards widening the southbound approach on College Avenue at Montezuma Road to provide a second left-turn lane. This extra lane results in a 7-lane cross section on College Avenue between Montezuma Road and Lindo Paseo. Also, provide a third northbound through lane on College Avenue between Lindo Paseo and Zura Way	F-5	✓
	F-3	Montezuma Road: 55th Street to College Avenue	–	✓	The fair share contribution towards providing a raised median on Montezuma Road between 55th Street and College Avenue (MM C-2) will mitigate this cumulative impact	F-8	✓
Other	*Other (Both Retail Scenarios)*						
	G-1	Construction Impacts	✓	✓	Prepare appropriate Traffic Control Plans to ensure maximum roadway capacity during the construction period	N/A	–
	G-2	College Avenue/ Lindo Paseo Driveway Impacts	✓	✓	Ensure that the ultimate site plan, including any access control to the subterranean garages located in Buildings 4 and 5, be designed in a manner that ensures adequate throating and that appropriate entry-gate controls (if any) are designed to accommodate peak hour traffic	N/A	–

Source: LLG 2009

20.3 Mitigation Measure Fair Share Contributions

Table 20–3 and ***Table 20–4*** show fair share percentages for each of the mitigation measures listed above. These percentages are calculated based on a commonly used City of San Diego formula:

$$\text{Near-Term Project Impact Fair Share \%} = \frac{\text{(Project Volumes)}}{\text{(Existing + Cumulative + Project Volumes)} - \text{(Existing Traffic Volumes)}}$$

$$\text{Long-Term Project Impact Fair Share \%} = \frac{\text{(Project Volumes)}}{\text{(Year 2030 + Project Volumes)} - \text{(Existing Traffic Volumes)}}$$

The impacts identified in the Plaza Linda Verde study were calculated for the *SDSU 2007 Campus Master Plan Revision* EIR traffic study as well (*Tables 16–2* and *16–3*).

TABLE 20–3
NEAR-TERM MITIGATION FAIR SHARE CONTRIBUTIONS

	Mitigation Measure Number	Impacted Locations	Near Term Impacts Fair Share Percentage: University Serving Retail %	University/ Community Serving Retail %	Student Housing %
Near-Term	*Intersections: (University-Serving Retail)*				
	A–1	3. College Avenue/ Canyon Crest Drive	1.13%	N/A	2.18%
	A–2	4. College Avenue/ Zura Way	1.26%	N/A	2.33%
	A–3	6. College Avenue / Montezuma Road	1.00%	N/A	1.47%
	Intersections: (University/ Community-Serving Retail)				
	B–1	3. College Avenue/ Canyon Crest Drive	N/A	3.53%	2.18%
	B–2	4. College Avenue/ Zura Way	N/A	3.77%	2.33%
	B–3	6. College Avenue / Montezuma Road	N/A	3.21%	1.80%
	Segments: (University/ Community-Serving Retail)				
	C–1	College Avenue: Canyon Crest Drive to Zura Way	N/A	29.49%	5.74%
	C–2	Montezuma Road: 55th Street to College Avenue	N/A	6.77%	0.91%

General Notes:

- Student housing fair share percentages (%) could potentially vary between University-Serving and University/ Community-Serving Retail based on which peak hour (or both) has been impacted.
- N/A = Not applicable for this scenario.

TABLE 20–4
LONG-TERM AND OTHER MITIGATION FAIR SHARE CONTRIBUTIONS

	Mitigation Measure Number	Impacted Locations	Year 2030 Impacts Fair Share Percentage		
			University Serving Retail %	University/ Community Serving Retail %	Student Housing %
Long-Term	*Intersections: (University-Serving Retail)*				
	D–1	2. College Avenue/ I-8 Eastbound Ramps	0.79%	N/A	1.35%
	D–2	3. College Avenue/ Canyon Crest Drive	0.51%	N/A	0.95%
	D–3	4. College Avenue/ Zura Way	0.73%	N/A	1.32%
	D–4	6. College Avenue/ Montezuma Road	0.72%	N/A	1.06%
	D–5	9. Montezuma Road/ 55th Street	0.32%	N/A	0.52%
	D–6	10. Montezuma Road/ Campanile Drive	0.67%	N/A	0.80%
	Intersections: (University/ Community-Serving Retail)				
	E–1	2. College Avenue/ I-8 Eastbound Ramps	N/A	2.77%	1.35%
	E–2	3. College Avenue/ Canyon Crest Drive	N/A	1.57%	0.95%
	E–3	4. College Avenue/ Zura Way	N/A	2.16%	1.32%
	E–4	6. College Avenue/ Montezuma Road	N/A	2.26%	1.27%
	E–5	9. Montezuma Road/ 55th Street	N/A	2.00%	0.88%
	E–6	10. Montezuma Road/ Campanile Drive	N/A	2.05%	0.80%
	Segments: (University/ Community Serving Retail)				
	F–1	College Avenue: Canyon Crest Drive to Zura Way	N/A	1.74%	0.33%
	F–3	College Avenue: Zura Way to Montezuma Road	N/A	2.14%	0.40%
	F–3	Montezuma Road: 55th Street to College Avenue	N/A	5.21%	0.72%

General Notes:
- N/A = Not applicable for this scenario.

The fair share contribution calculations for each impacted location listed below can be found in ***Appendix M***.

21.0 POST MITIGATION OPERATIONS

With the implementation of the mitigation measures recommended in Section 19.2, all impacts are mitigated to below a level of significance. The "University/Community-Serving Retail + Student Housing" scenario is the higher trip generator of the two retail scenarios studied. The impact locations are identical for both this and the less intense "University-Serving Retail + Student Housing" scenarios, as are proposed mitigation measures. This section shows how the proposed mitigation measures would result in acceptable LOS at the impacted locations for the more intensive "University/Community-Serving Retail + Student Housing" project, so it is reasoned that the mitigation would suffice for the less intensive "University-Serving + Student Housing" scenario as well.

It should be noted that the provision of a raised median on Montezuma Road (proposed mitigation measures C-2 and F-3) will limit the driveways serving uses along this segment to right-turns. Field reviews show that very few vehicles currently make the left-turn into the driveways since there are no mid-block left-turn lanes along Montezuma Road at the driveways. Field reviews also show very few left-turns are made out at the driveways, since high volumes on Montezuma Road make this movement very difficult. Therefore, the provision of a raised median will result in a nominal amount of displaced left-turns, which will be served as eastbound and westbound u-turns at the College Avenue/Montezuma Road and Montezuma Road/55th Street signalized intersections, respectively.

Table 21–1 and ***Table 21–2*** show summaries of the mitigated near-term intersection and street segment calculations for the "University/Community-Serving Retail + Student Housing" scenario, respectively.

Appendix N contains the mitigated analysis worksheets.

TABLE 21–1
MITIGATED NEAR-TERM INTERSECTION CALCULATIONS
UNIVERSITY/COMMUNITY-SERVING RETAIL + STUDENT HOUSING

Intersection	Control Type	Peak Hour	(Baseline) Existing + Near-Term Cumulative		(Total Project) Existing + Near-Term Cumulative + University/Community-Serving Retail + Student Housing			With Mitigation		
			Delay [a]	LOS [b]	Delay	LOS	Δ[d]	Delay	LOS	Δ[d]
3. College Avenue/ Canyon Crest Drive	Signal	AM	68.5	E	71.4	E	2.9	50.6	D	-17.9
		PM	148.9	F	153.4	F	4.5	76.9	E	-72.0
4. College Avenue/ Zura Way	OWSC [c]	AM	408.0	F	463.3	F	>5.0	26.4	C	-381.6
		PM	95.6	F	128.8	F	>5.0	49.2	D	-46.4
6. College Avenue/ Montezuma Road	Signal	AM	119.0	F	121.3	F	2.3	59.7	E	-59.3
		PM	176.0	F	187.0	F	>5.0	144.5	F	-31.5

Footnotes:

a. Average delay expressed in seconds per vehicle.

b. Level of Service.

c. OWSC – One-Way Stop Controlled intersection. Minor street approach delay is reported.

d. Δ denotes project induced delay increase.

General Notes:

Bold and shading represents a significant impact

SIGNALIZED Delay	SIGNALIZED LOS	UNSIGNALIZED Delay	UNSIGNALIZED LOS
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
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 21–2
MITIGATED NEAR-TERM SEGMENT OPERATIONS
UNIVERSITY/COMMUNITY-SERVING RETAIL + STUDENT HOUSING

Segment	LOS E Capacity [a]	(Baseline) Existing + Near-Term Cumulative			(Total Project) Existing + Near-Term Cumulative + University/Community-Serving Retail + Student Housing				Mitigated LOS E Capacity [a]	With Mitigation		
		Volume	LOS [b]	V/C [c]	Volume	LOS [b]	V/C [c]	Δ		Volume	LOS	V/C
College Avenue												
Canyon Crest Drive to Zura Way	40,000	45,258	F	1.131	45,933	F	1.148	0.017	45,000	45,933	F	1.021
Montezuma Road												
55th Street to College Avenue	30,000	31,172	F	1.039	31,662	F	1.055	0.016	35,000	31,662	E	0.905

Footnotes:

a. Capacities based on City of San Diego's Roadway Classification & LOS table. The mitigation includes the addition of a 3rd northbound lane on College Avenue. An additional capacity of 5,000 ADT is assumed. The mitigation includes the addition of a raised median on Montezuma Road. The increase in capacity between a Collector and a Major road is 10,000 ADT. The raised median is part of the description of a Major that yields this increase. Therefore, an additional capacity of 5,000 ADT is assumed for the capacity provided by a raised median.

b. Average Daily Traffic

c. Volume to Capacity ratio

Table 21–3 and ***Table 21–4*** show summaries of the mitigated long-term (2030) intersection and street segment calculations for the "University/Community-Serving Retail + Student Housing" scenario, respectively.

TABLE 21–3
MITIGATED LONG-TERM (2030) INTERSECTION CALCULATIONS
UNIVERSITY/COMMUNITY-SERVING RETAIL + STUDENT HOUSING

Intersection	Control Type	Peak Hour	Long-Term (2030) Without Project		(Total Project) Long-Term (2030) + University/Community-Serving Retail + Student Housing			With Mitigation		
			Delay [a]	LOS [b]	Delay	LOS	Δ[d]	Delay	LOS	Δ[d]
2. College Avenue/ I-8 Eastbound Ramps	Signal	AM	132.5	F	135.0	F	2.5	117.6	F	-14.9
		PM	107.5	F	110.1	F	2.6	35.8	D	-71.7
3. College Avenue/ Canyon Crest Drive	Signal	AM	214.1	F	218.8	F	4.7	88.6	F	-125.5
		PM	426.3	F	436.3	F	>5.0	195.9	F	-230.4
4. College Avenue/ Zura Way	OWSC [c]	AM	765.8	F	905.0	F	>5.0	46.3	D	-719.5
		PM	102.1	F	107.5	F	>5.0	121.9	F	-899.1
6. College Avenue/ Montezuma Road	Signal	AM	176.6	F	178.5	F	1.9	115.9	F	-60.7
		PM	336.0	F	350.5	F	>5.0	169.9	F	-166.1
9. Montezuma Road/ 55th Street	Signal	AM	134.0	F	136.6	F	2.6	123.5	F	-10.5
		PM	148.0	F	151.7	F	3.7	136.4	F	-11.6
10. Montezuma Road/ Campanile Drive	Signal	AM	82.2	F	85.3	F	3.1	78.7	F	-3.5
		PM	219.4	F	226.5	F	>5.0	186.2	F	-33.2

Footnotes:

a. Average delay expressed in seconds per vehicle.

b. Level of Service.

c. OWSC – One-Way Stop Controlled intersection. Minor street approach delay is reported.

d. Δ denotes project induced delay increase.

General Notes:

Bold and shading represents a significant impact

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 21–4
MITIGATED LONG-TERM (2030) SEGMENT OPERATIONS
UNIVERSITY/COMMUNITY-SERVING RETAIL + STUDENT HOUSING

Segment	LOS E Capacity [a]	Long-Term (2030) Without Project			(Total Project) Long-Term (2030) + University/Community-Serving Retail + Student Housing				Mitigated LOS E Capacity [a]	With Mitigation		
		Volume	**LOS [b]**	**V/C [c]**	**Volume**	**LOS [b]**	**V/C [c]**	**Δ**		**Volume**	**LOS**	**V/C**
College Avenue												
Canyon Crest Drive to Zura Way	40,000	76,140	F	1.904	76,815	F	1.920	0.016	45,000	76,815	F	1.707
Zura Way to Montezuma Road	40,000	56,040	F	1.401	56,715	F	1.418	0.017	45,000	56,715	F	1.260
Montezuma Road												
55th Street to College Avenue	30,000	35,010	F	1.167	35,565	F	1.186	0.019	35,000	35,565	F	1.016

Footnotes:

a. Capacities based on City of San Diego's Roadway Classification & LOS table. The mitigation includes the addition of a 3rd northbound lane on College Avenue. An additional capacity of 5,000 ADT is assumed. The mitigation includes the addition of a raised median on Montezuma Road. The increase in capacity between a Collector and a Major road is 10,000 ADT. The raised median is part of the description of a Major that yields this increase. Therefore, an additional capacity of 5,000 ADT is assumed for the capacity provided by a raised median.

b. Average Daily Traffic

c. Volume to Capacity ratio

22.0 REDUCED PROJECT ALTERNATIVE – QUALITATIVE IMPACT COMPARISON

A reduced Project Alternative has been considered which would construct 195 dwelling units and 38,605 square feet (sf) of commercial retail. This reduced intensity yields slightly less than half of the Proposed Project, which proposes 400 dwelling units and 90,000 sf of retail. A qualitative analysis of potential reductions to the Proposed Project's significant impacts (listed above in *Section 19.0)* was prepared, using identical trip generation rates for both the retail and residential land uses as used for the Proposed Project, and identical trip distribution throughout the study area.

When compared to the Proposed Project's trip generation, The Project Alternative would generate 642 less ADT with 26 less total AM peak hour trips, and 16 less total PM peak hour trips.

22.1 Near-Term Impact Assessment

LLG reviewed the Proposed Project's near-term intersection and street segment impacts (shown in *Tables 9–1* and *9–2, respectively*) to determine if a reduced project contribution to these locations could result in the determination of no near-term impacts, based on whether the increase over the allowable thresholds (seconds of delay for intersections, V/C increase for segments) was minor or great. The five impacted locations that were reviewed included:

- College Avenue / Canyon Crest Drive (Impact A-1, B-1)
- College Avenue / Zura Way (Impact A-2, B-2)
- College Avenue / Montezuma Road (Impact A-3, B-3)
- College Avenue from Canyon Crest Drive to Zura Way (Impact C-1)
- Montezuma Road from 55th Street to College Avenue (Impact C-2)

Based on the reduced project traffic volumes associated with the Project Alternative, LLG estimates that near-term impacts would remain at the following two locations:

- College Avenue / Zura Way (Impact A-2, B-2)
- College Avenue / Montezuma Road (Impact A-3, B-3)

As shown in *Table 9–1*, the delay increase due to the project is in excess of 2.1 seconds at LOS F intersections. If the Project Alternative were to result in a 50% reduction in delay increase at these locations (commensurate with a 50% reduction in trip generation), it is reasoned that the delay increase would still exceed 1.0 second, which would be the allowable maximum at these LOS F-operating intersections.

22.2 Long-Term Impact Assessment

LLG reviewed the Proposed Project's long-term intersection and street segment impacts (shown in *Tables 10–1* and *10–2, respectively*) to determine if a reduced project contribution to these locations could result in the determination of no long-term impacts using the method described above. The nine impacted locations that were reviewed included:

- College Avenue / I-8 Eastbound Ramps (Impact D-1, E-1)
- College Avenue / Canyon Crest Drive (Impact D-2, E-2)
- College Avenue / Zura Way (Impact D-3, E-3)
- College Avenue / Montezuma Road (Impact D-4, E-4)
- Montezuma Road / 55th Street (Impact D-5, E-5)
- Montezuma Road / Campanile Drive (Impact D-6, E-6)
- College Avenue from Canyon Crest Drive to Zura Way (Impact F-1)
- College Avenue from Zura Way to Montezuma Road (Impact F-2)
- Montezuma Road from 55th Street to College Avenue (Impact F-3)

Based on the reduced project traffic volumes associated with the Project Alternative, LLG estimates that long-term impacts would remain at the following five locations:

- College Avenue / Canyon Crest Drive (Impact D-2, E-2)
- College Avenue / Zura Way (Impact D-3, E-3)
- College Avenue / Montezuma Road (Impact D-4, E-4)
- Montezuma Road / 55th Street (Impact D-5, E-5)
- Montezuma Road / Campanile Drive (Impact D-6, E-6)

Again, were the adjusted delay increases of the Project Alternative to result in a 50% reduction at these locations, the remaining delay increase would continue to be in excess of 1.0 second, and cumulative project impacts would continue to be calculated.

LINSCOTT
LAW &
GREENSPAN
engineers

TECHNICAL APPENDICES

PLAZA LINDA VERDE

San Diego, California
August 6, 2010

LLG Ref. 3-08-1857

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APPENDIX A

COLLEGE AREA AND NAVAJO COMMUNITY PLANS EXCERPT

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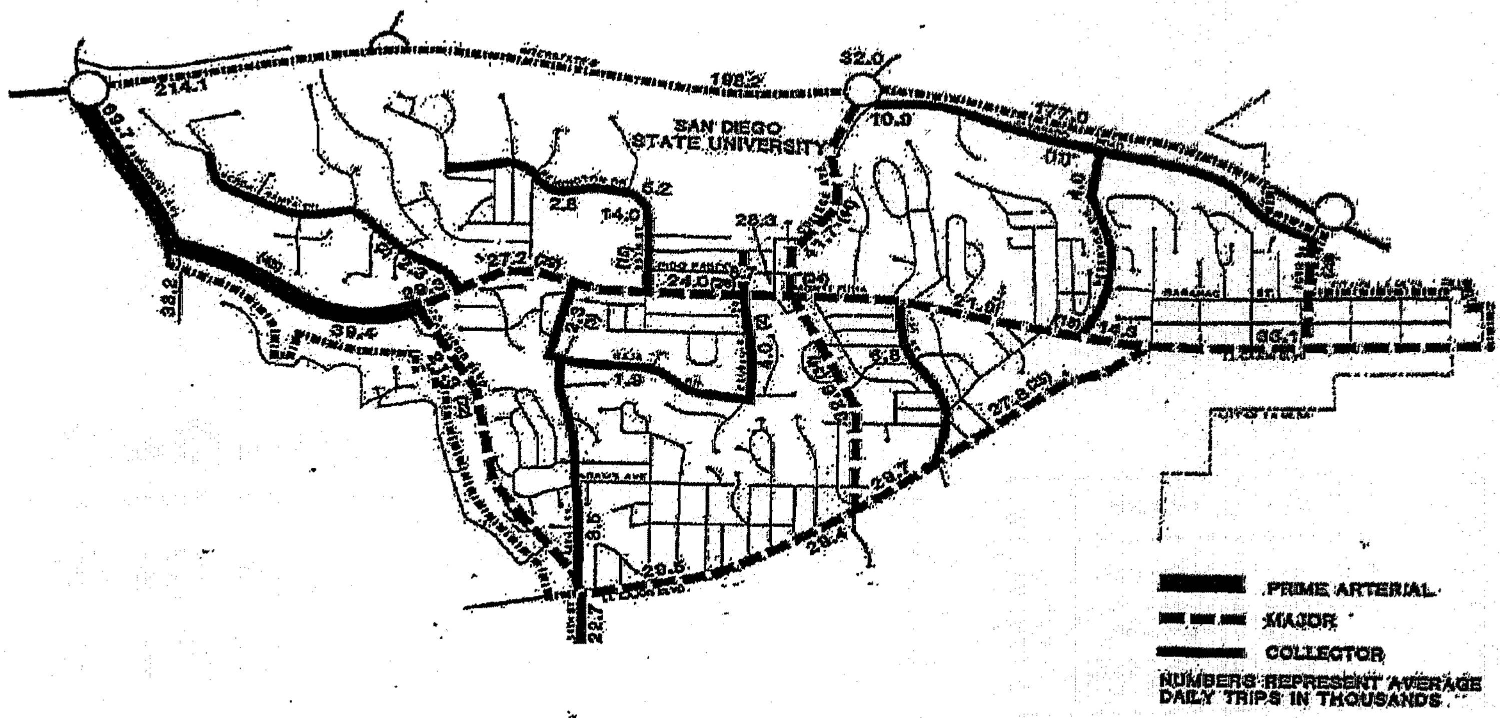
COLLEGE AREA COMMUNITY PLAN

1989

Printed on recycled paper.
This information, or this document (or portions thereof), will be made available in alternative formats upon request.

The following information has been incorporated into this October 2003 posting of the College Area Community Plan:

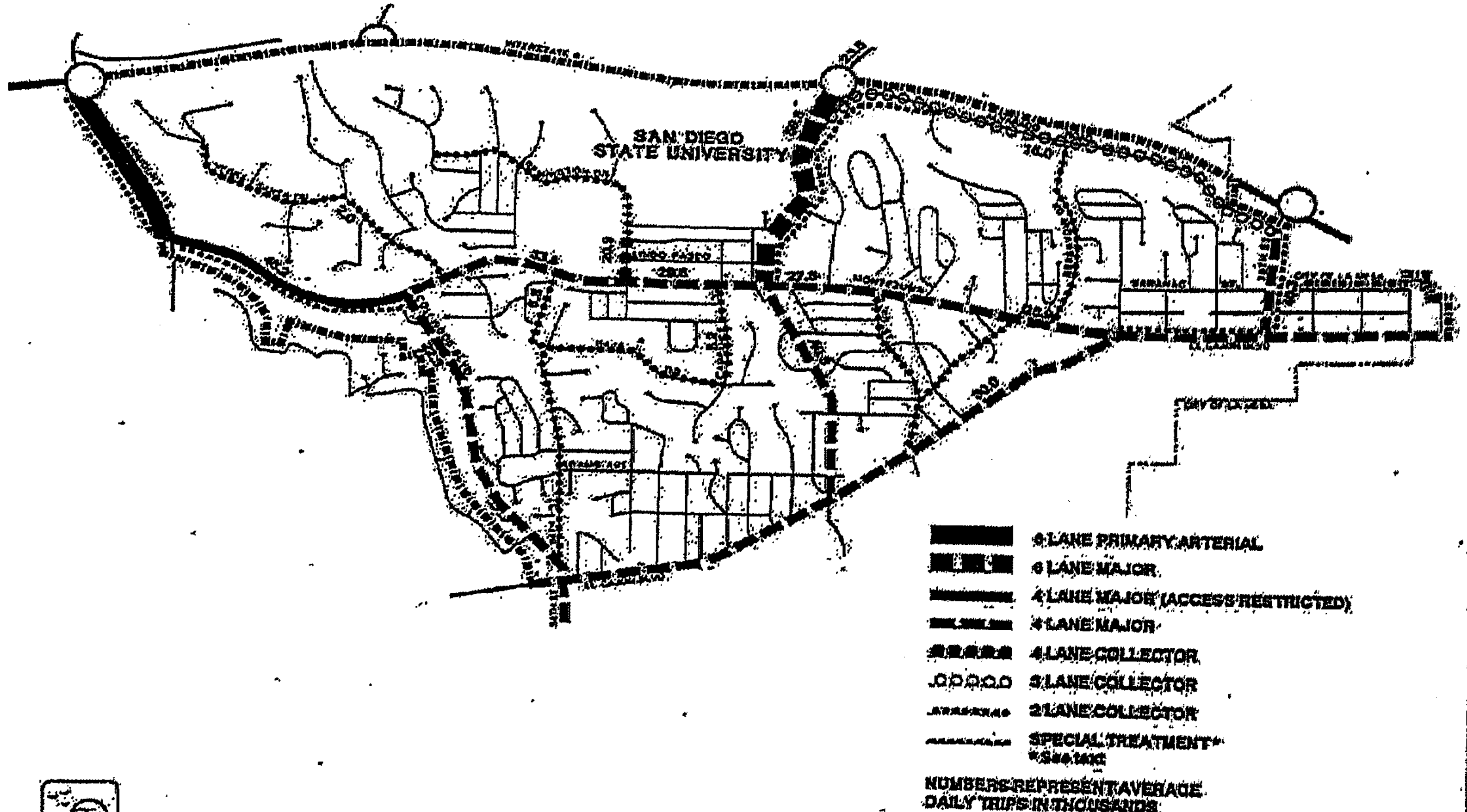
Amendment	Date Approved by Planning Commission	Resolution Number	Date Adopted by City Council	Resolution Number
Adoption of the College Area Community Plan	January 12, 1989	0354-PC	May 2, 1989	R-273373
College Community Redevelopment Plan (SDSU Element)	September 16, 1993	**	October 12, 1993	R-282801
Mission Valley East Trolley Extension	March 2, 2000	2931-PC	August 5, 2002	R-296980



EXISTING STREET CLASSIFICATIONS AND TRAFFIC VOLUMES - 1986 (1992)

COLLEGE AREA COMMUNITY PLAN
CITY OF SAN DIEGO • PLANNING DEPARTMENT

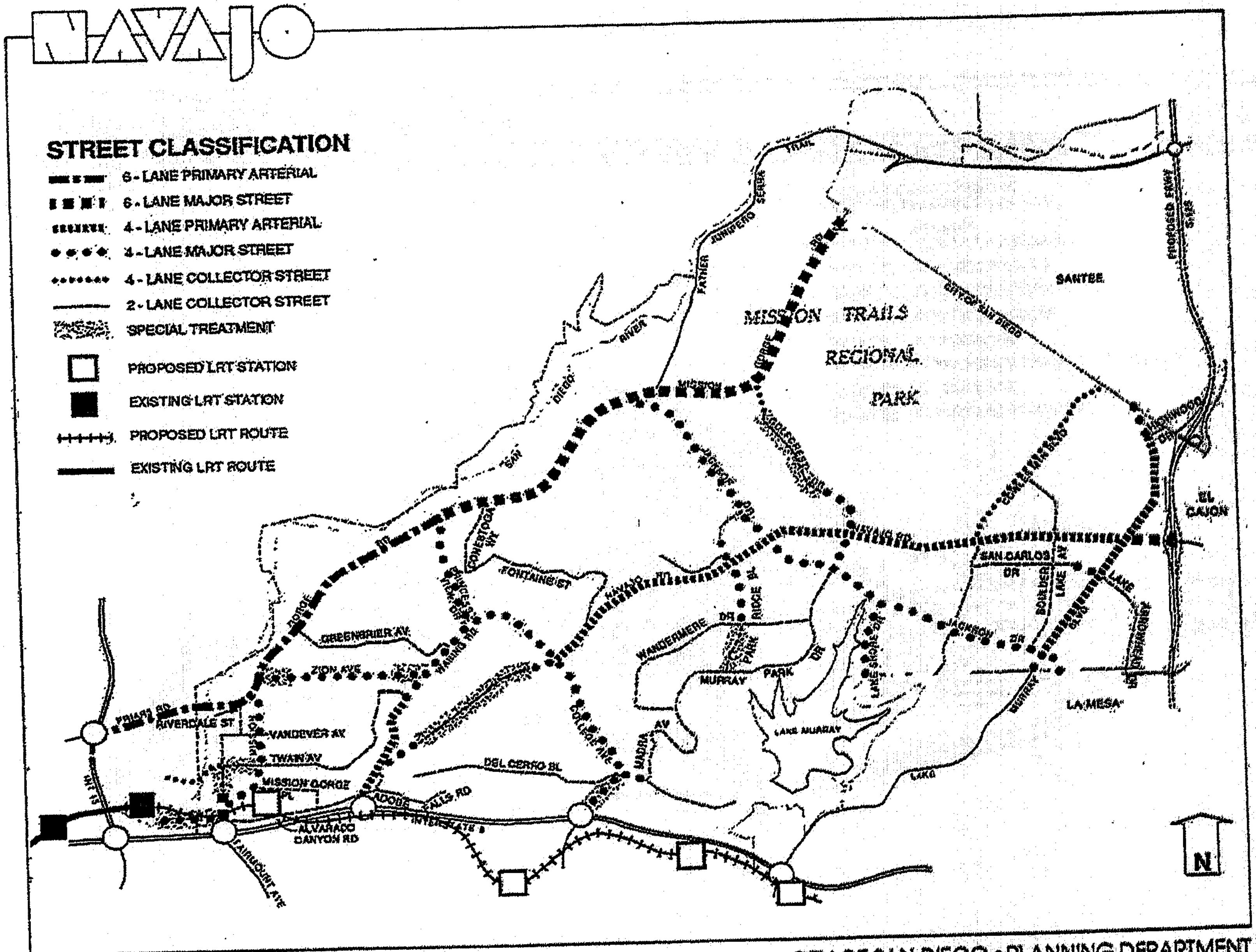
FIGURE 10



FUTURE STREET CLASSIFICATIONS & TRAFFIC VOLUMES

COLLEGE AREA COMMUNITY PLAN
CITY OF SAN DIEGO • PLANNING DEPARTMENT

FIGURE 11


NAVAJO
STREET CLASSIFICATION
6 - LANE PRIMARY ARTERIAL
6 - LANE MAJOR STREET
4 - LANE PRIMARY ARTERIAL
4 - LANE MAJOR STREET
4 - LANE COLLECTOR STREET
2 - LANE COLLECTOR STREET
SPECIAL TREATMENT
PROPOSED LRT STATION
EXISTING LRT STATION
PROPOSED LRT ROUTE
EXISTING LRT ROUTE
MISSION TRAILS
REGIONAL
PARK
SANTEE
EL CAJON
LA MESA
LAKE MURRAY
FRIARS RD
RIVERDALE ST
VANDEVER AV
TWAIN AV
MISSION GORGE
ALVARADO CANYON RD
FAIRMOUNT AVE
GREENBRIER AV
ZION AVE
FONTAINE ST
DEL CERRO BL
WANDERMERE DR
MURRAY PARK
SAN CARLOS DR
JACKSON DR
NAVAJO RD
PROPOSED FRWY
SAN DIEGO RIVER
N

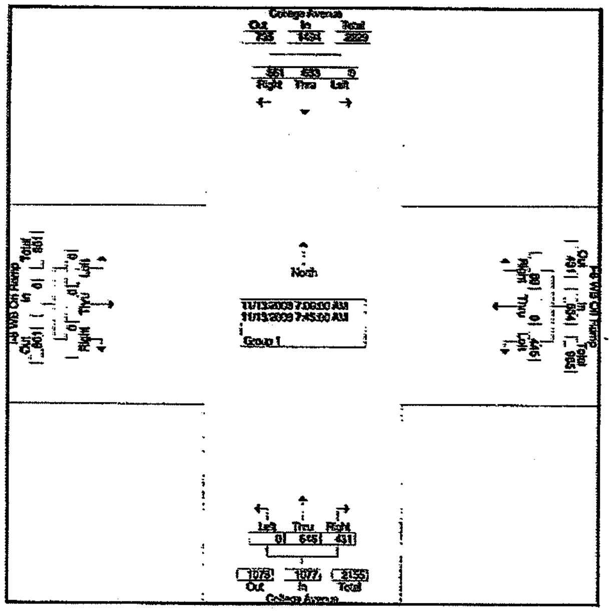
APPENDIX B

INTERSECTION AND SEGMENT MANUAL COUNT SHEETS

TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry
Counted By: B. Reid & C. Mattmiller
Board #: D1-1424 & D1-1425
Loc: College Ave & I-8 WB Ramps

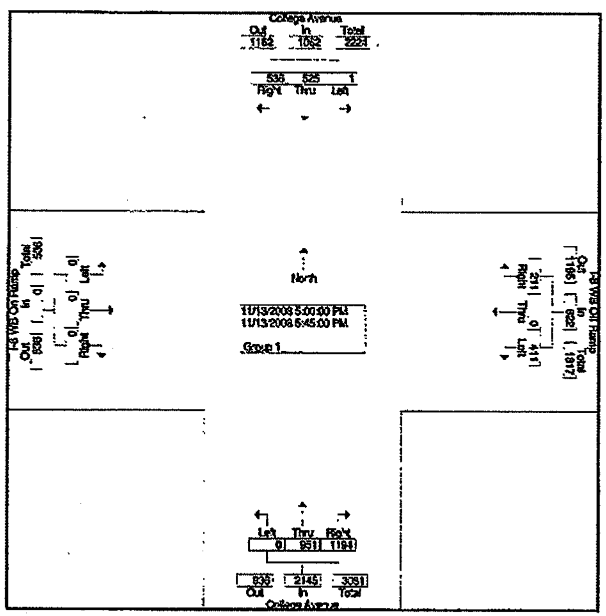
File Name : 08198010
Site Code : 00198010
Start Date : 11/13/2008
Page No : 2



TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry
Counted By: B. Reid & C. Mattmiller
Board #: D1-1424 & D1-1425
Loc: College Ave & I-8 WB Ramps

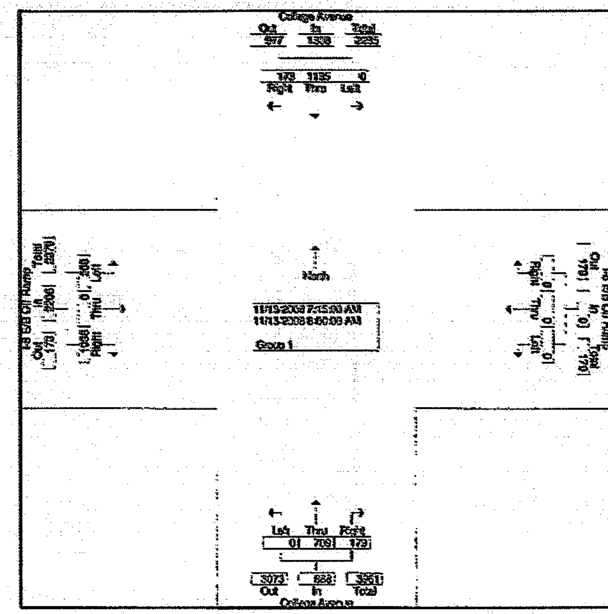
File Name : 08198011
Site Code : 00198011
Start Date : 11/13/2008
Page No : 2



TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry
Counted By: W. Williford & B. Vockeroth
Board #: D1-1307 & D1-1426
Loc: College Avenue & I-8 E/B Ramps

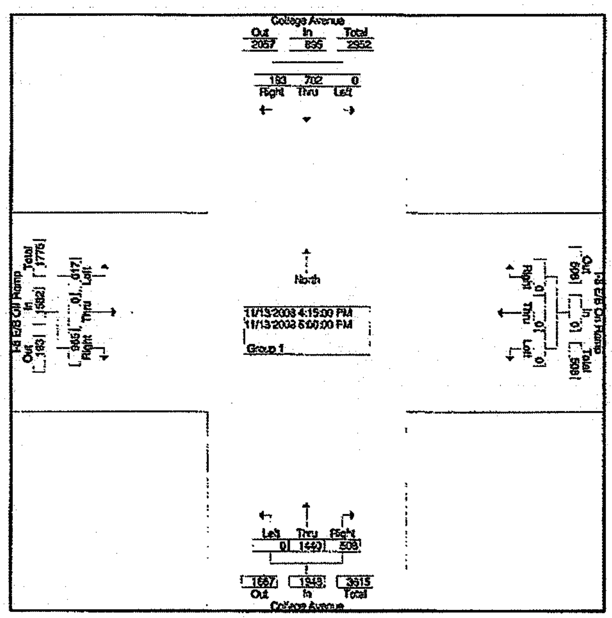
File Name : 08198020
Site Code : 00198020
Start Date : 11/13/2008
Page No : 2



TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

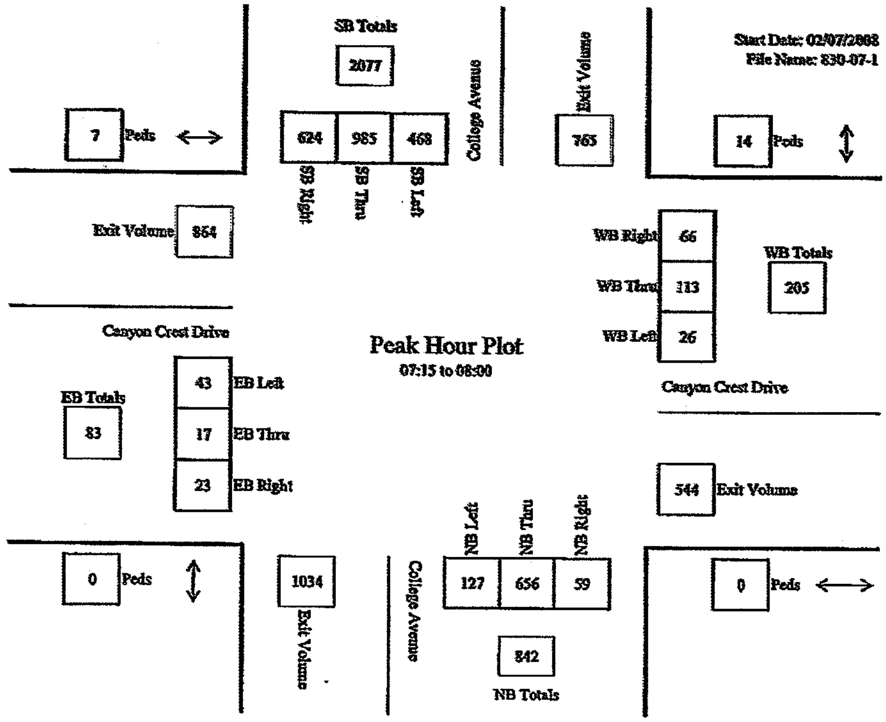
Weather : Clear & Dry
Counted By: W. Williford & B. Vockeroth
Board #: D1-1307 & D1-1426
Loc: College Avenue & I-8 E/B Ramps

File Name : 08198021
Site Code : 00198021
Start Date : 11/13/2008
Page No : 2



Linscott Law & Greenspan

4542 Ruffner Street, Suite 100, San Diego, CA 92111



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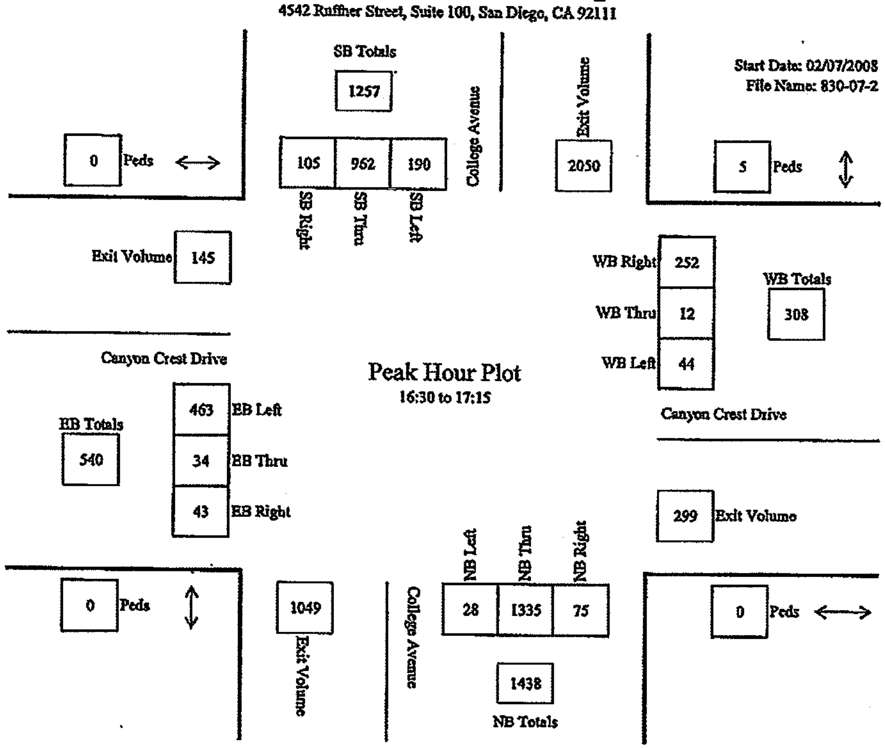

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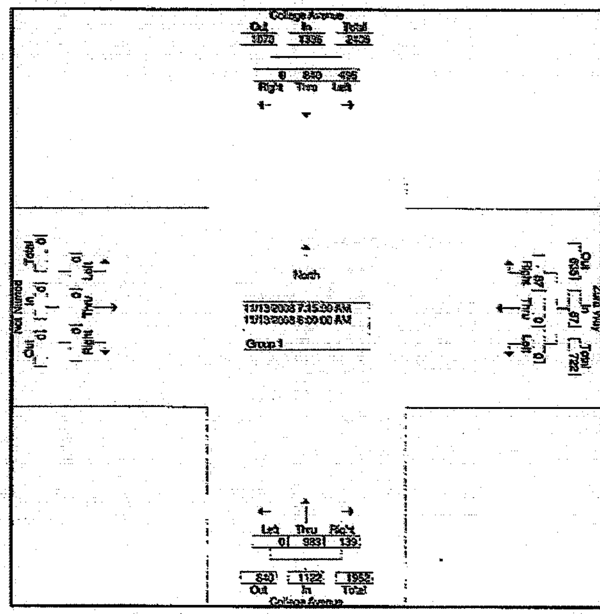
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry
Counted By: D. Wellman
Board #: D1-1429
Loc:College Ave & Zura Way

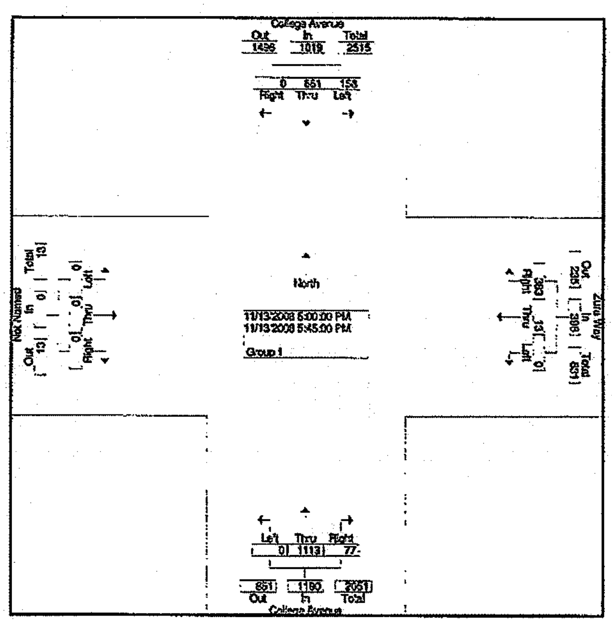
File Name : 08198030
Site Code : 00198030
Start Date : 11/13/2008
Page No : 2



TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry
Counted By: D. Wellman
Board #: D1-1429
Loc:College Ave & Zura Way

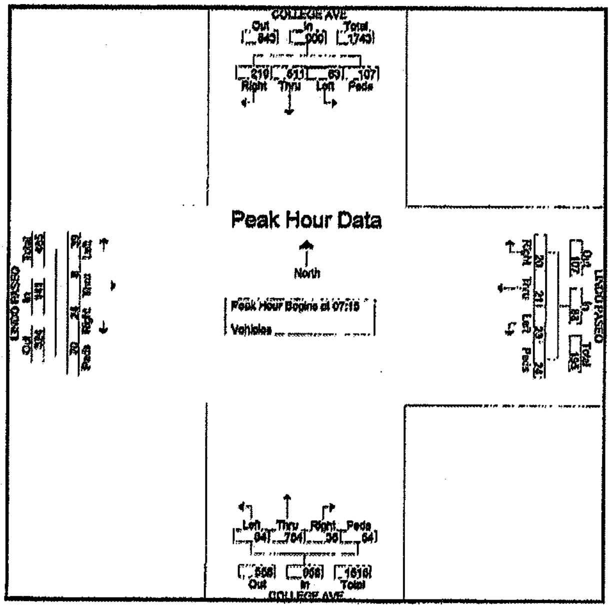
File Name : 08198031
Site Code : 00198031
Start Date : 11/13/2008
Page No : 2



True Count
3401 First Ave #123
San Diego, CA 92103

File Name : 9041.01.COLLEGE AVE.LINDO PASEO
Site Code : 00000000
Start Date : 6/7/2009
Page No : 2

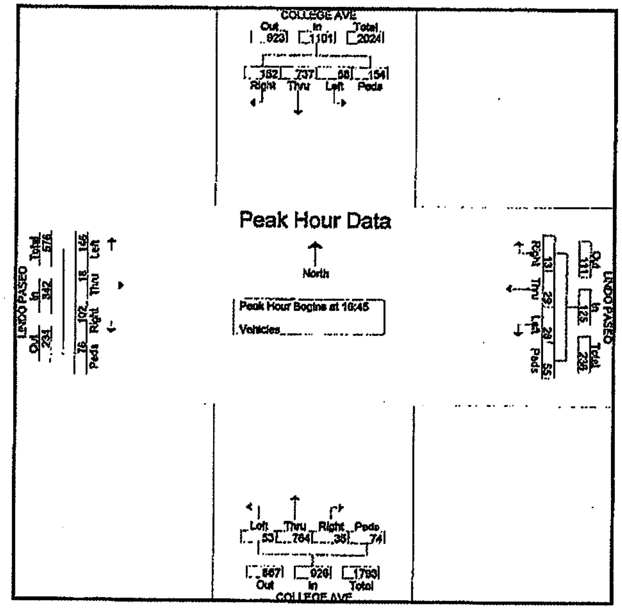
	COLLEGE AVE Southbound					LINDO PASEO Westbound					COLLEGE AVE Northbound					LINDO PASEO Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15																					
07:15	8	149	53	14	224	6	3	4	5	18	12	191	8	8	219	3	0	2	19	24	485
07:30	17	131	57	31	236	6	8	3	10	27	28	186	16	17	247	13	1	5	15	34	544
07:45	17	106	54	38	215	5	3	8	6	22	28	250	6	15	299	12	4	9	23	48	584
08:00	21	125	55	24	225	6	7	5	3	21	16	157	6	14	193	11	3	8	13	35	474
Total Volume	63	511	219	107	900	23	21	20	24	88	84	784	36	54	958	39	8	24	70	141	2087
% App. Total	7	56.8	24.3	11.9		26.1	23.9	22.7	27.3		8.8	81.8	3.8	5.6		27.7	5.7	17	49.6		
PHF	.750	.857	.961	.764	.953	.958	.656	.625	.600	.815	.750	.784	.563	.794	.801	.750	.500	.667	.761	.734	.893



True Count
3401 First Ave #123
San Diego, CA 92103

File Name : 9041.01.COLLEGE AVE.LINDO PASEO
Site Code : 00000000
Start Date : 6/7/2009
Page No : 3

	COLLEGE AVE Southbound					LINDO PASEO Westbound					COLLEGE AVE Northbound					LINDO PASEO Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	11	189	41	40	281	5	7	4	14	30	10	191	10	26	237	31	2	26	26	85	633
17:00	21	170	29	46	266	9	8	4	17	38	15	190	5	10	220	47	5	38	26	116	640
17:15	9	187	38	28	262	3	8	2	11	24	15	216	11	13	255	35	6	21	15	77	618
17:30	17	191	44	40	292	11	6	3	13	33	13	167	9	25	214	33	5	17	9	64	603
Total Volume	58	737	152	154	1101	28	29	13	55	125	53	764	35	74	926	146	18	102	76	342	2494
% App. Total	5.3	66.9	13.8	14		22.4	23.2	10.4	44		5.7	82.5	3.8	8		42.7	5.3	29.8	22.2		
PHF	.690	.965	.864	.837	.943	.636	.906	.813	.809	.822	.883	.884	.795	.712	.908	.777	.750	.671	.731	.737	.974



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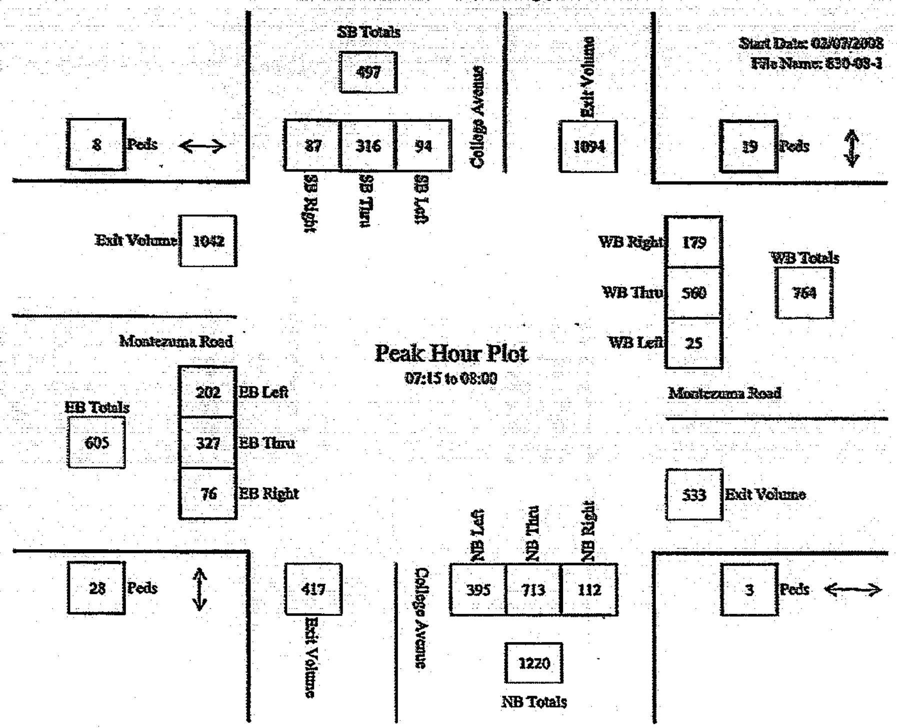
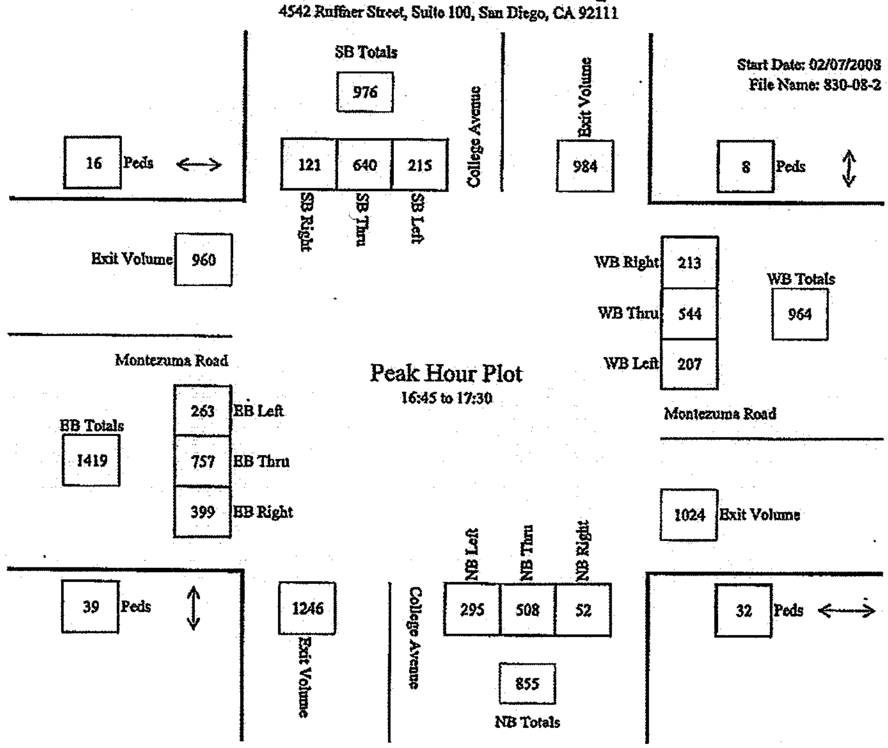


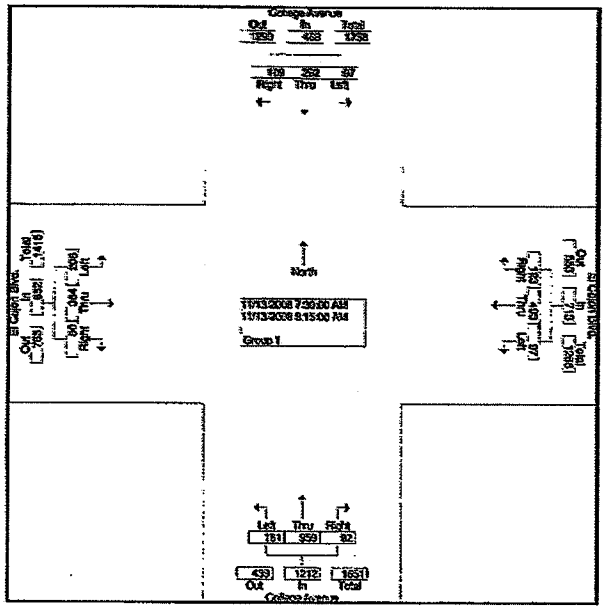
Linscott Law & Greenspan
4542 Ruffner Street, Suite 100, San Diego, CA 92111



TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry
Counted By: C. Niggel
Board #: D1-1430
Loc: College Ave & El Cajon Blvd

File Name : 08198040
Site Code : 00198040
Start Date : 11/13/2008
Page No : 2



TDSSW, Inc.
PO Box 1544
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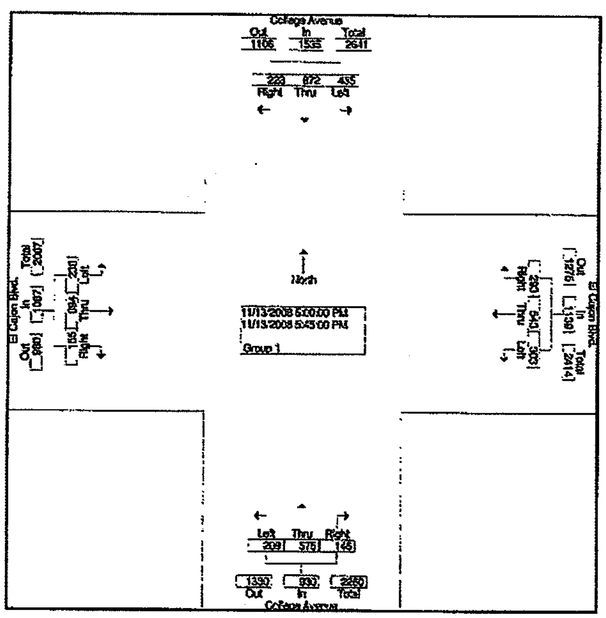
(619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry
Counted By: C. Niggel
Board #: D1-1430
Loc: College Ave & El Cajon Blvd

File Name : 08198041
Site Code : 00198041
Start Date : 11/13/2008
Page No : 2



Linscott Law & Greenspan

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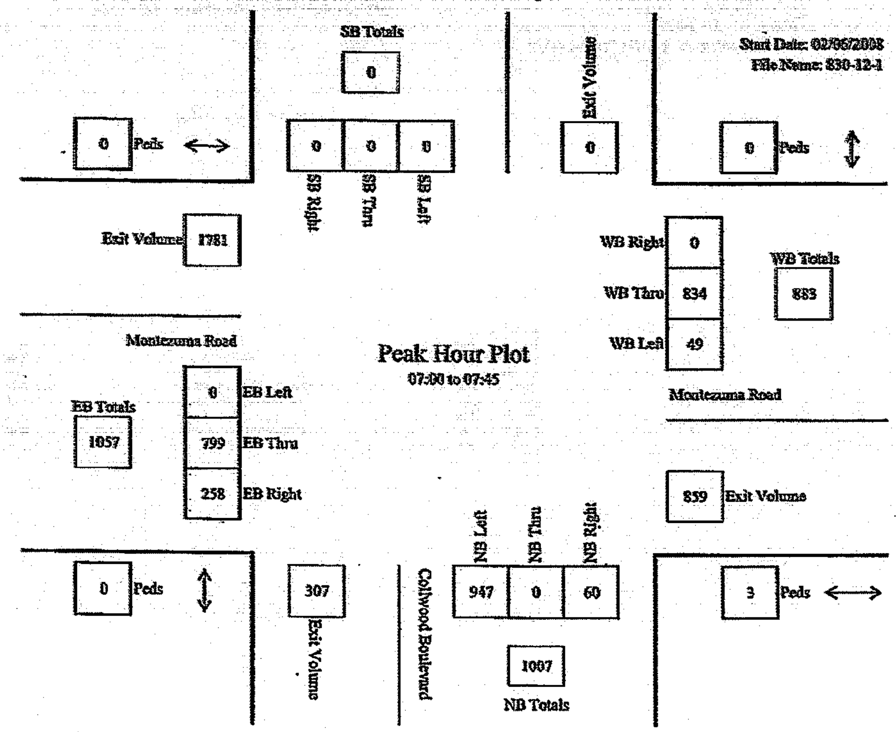

Linscott Law & Greenspan

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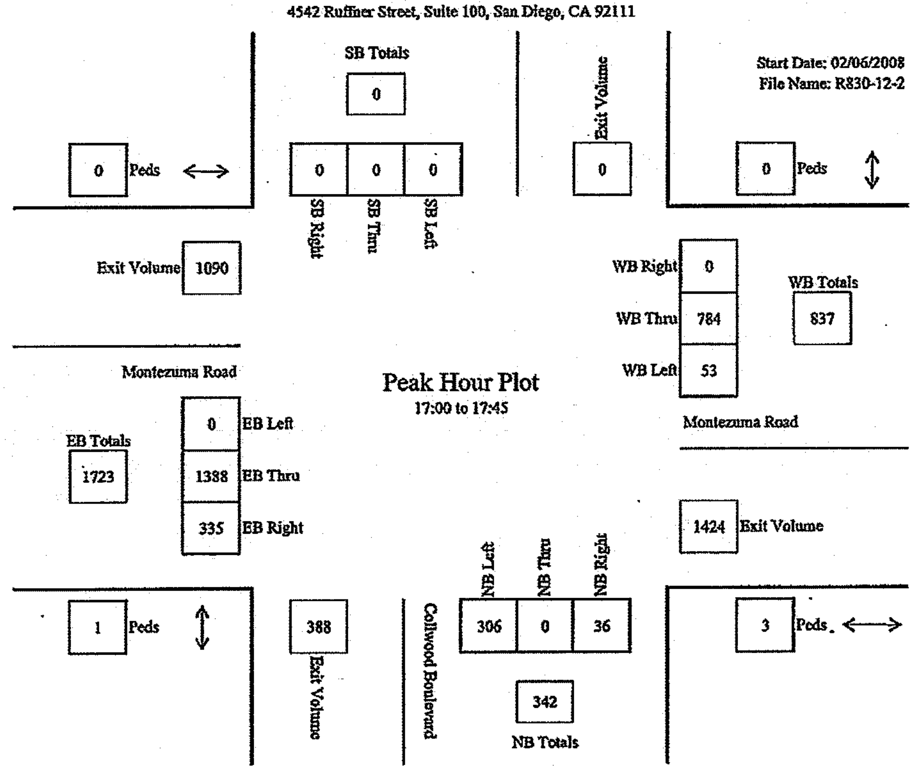
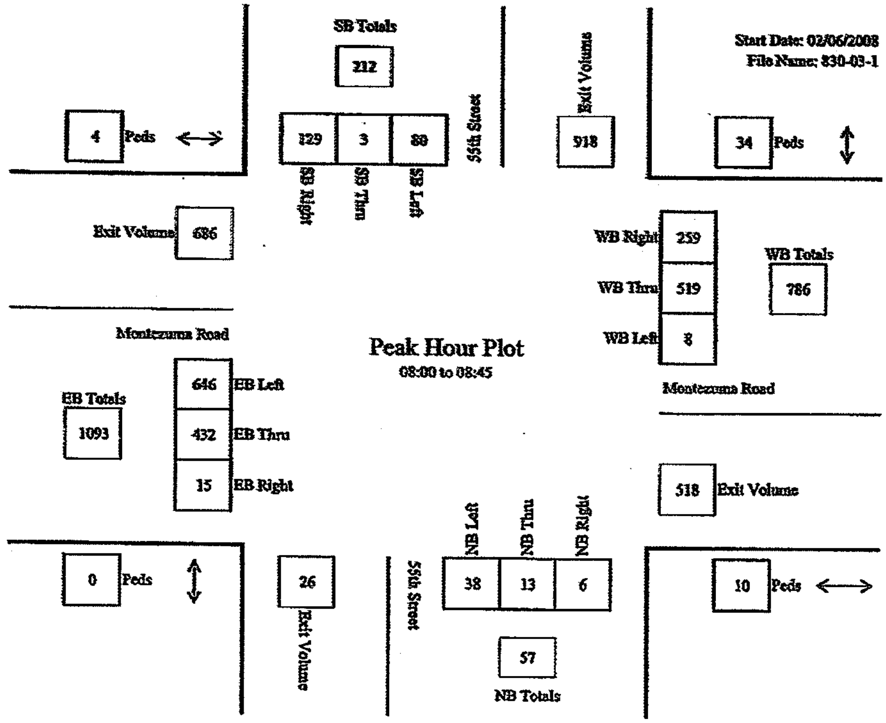


Linscott Law & Greenspan

4542 Ruffner Street, Suite 100, San Diego, CA 92111



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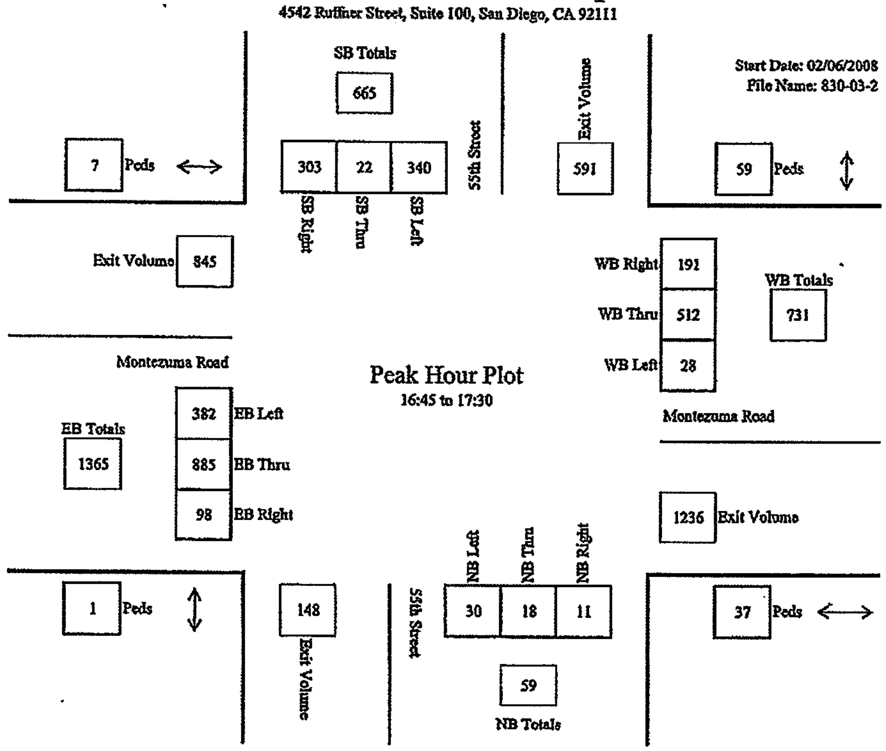
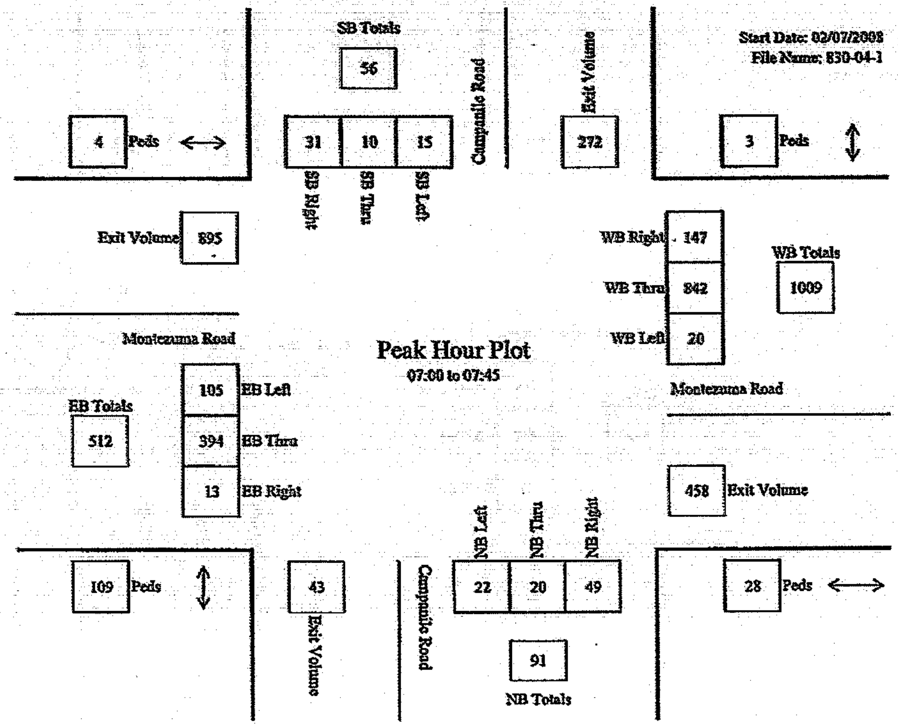


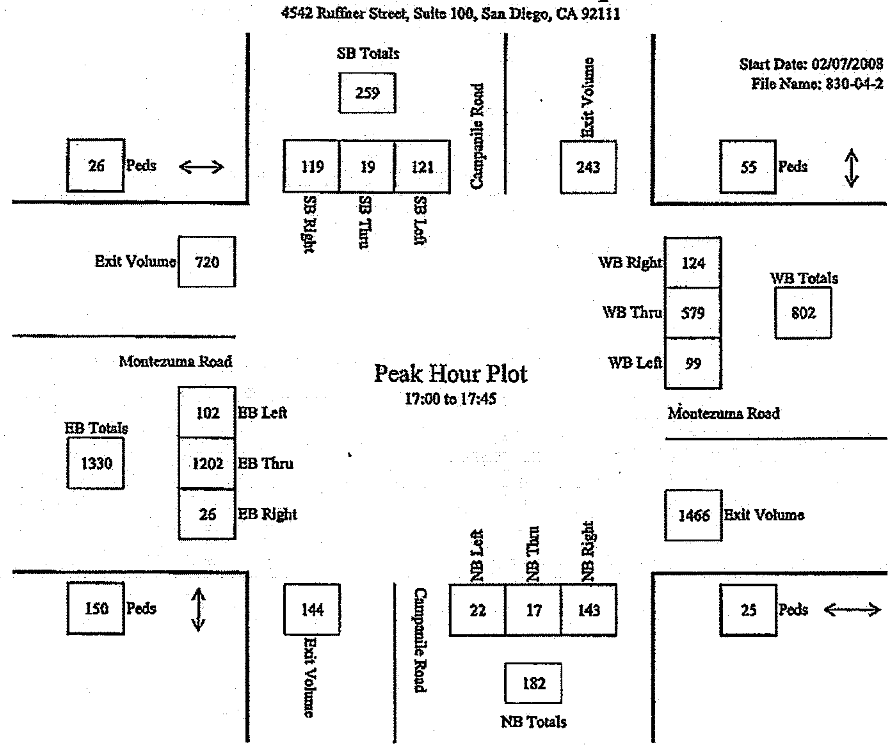
Linscott Law & Greenspan

4542 Ruffner Street, Suite 100, San Diego, CA 92111



Linscott Law & Greenspan

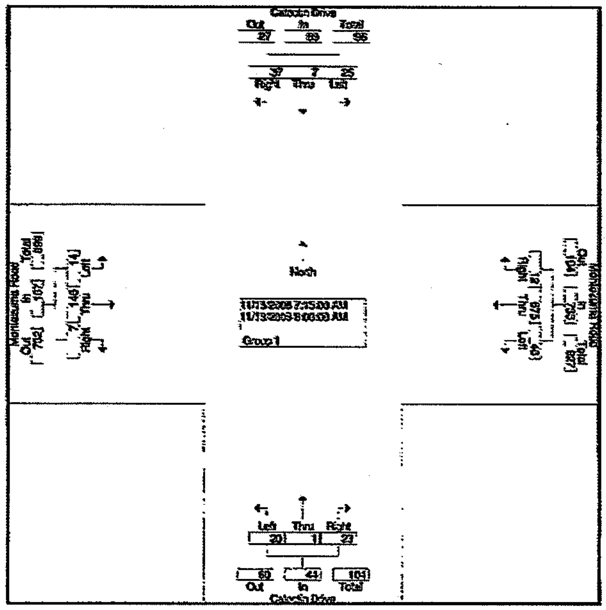
4542 Ruffner Street, Suite 100, San Diego, CA 92111



Weather : Clear & Dry
Counted By: S. Thiel
Board #: D1-1431
Loc: Catoctin Dr & Montezuma Rd

TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

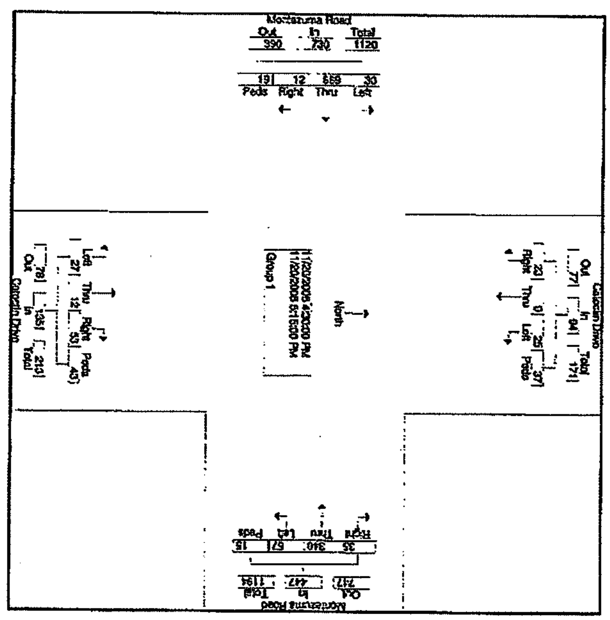
File Name : 08198050
Site Code : 00198050
Start Date : 11/13/2008
Page No : 2



Weather : Clear & Dry
Counted By: C. Parish
Board #: D1-1306
Loc: Catoctin Dr & Montezuma Rd

TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

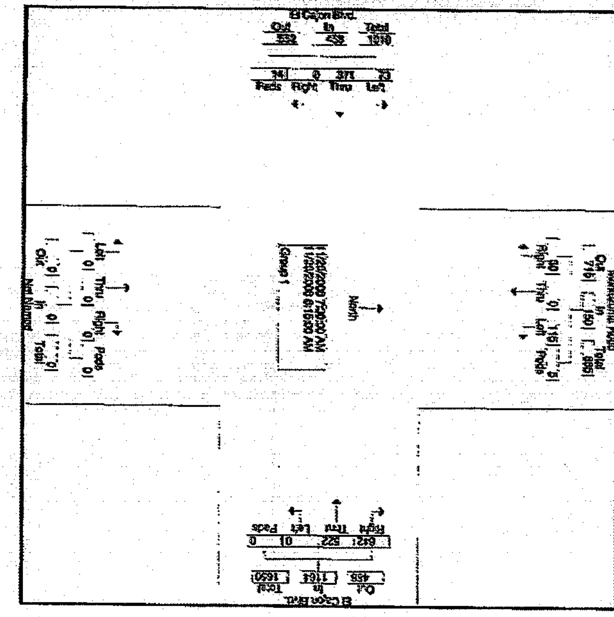
File Name : 08198051b
Site Code : 00198051
Start Date : 11/20/2008
Page No : 2



Weather : Clear & Dry
Counted by: C. Niggle
Board # : D1-1307
Loc: Montezuma Rd & El Cajon Blvd

TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

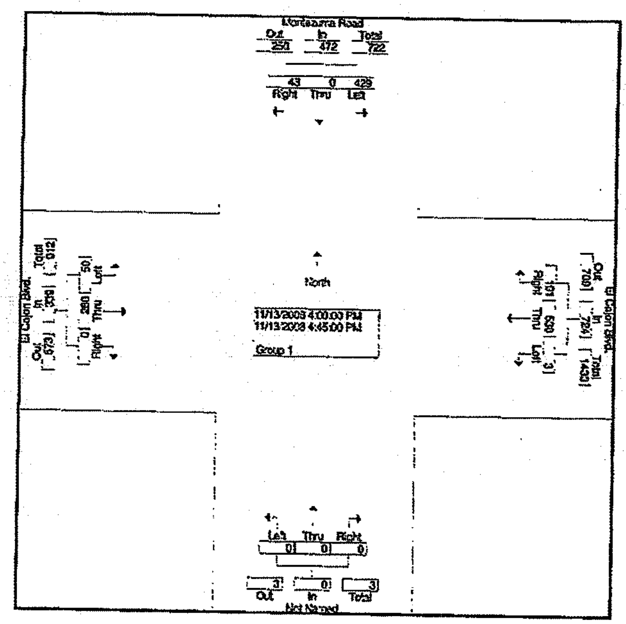
File Name : 08198060b
Site Code : 00198060
Start Date : 11/20/2008
Page No : 2



Weather : Clear & Dry
Counted By: J. Fort & B. Tymick
Board #: D1-2172 & 2173
Loc: Montezuma Rd & El Cajon Blvd

TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

File Name : 08198061
Site Code : 00198061
Start Date : 11/13/2008
Page No : 2



TDSSW,Inc.
Event Counts

EventCount-10 -- English (ENU)

Datasets:

Site: [19804E] Montezuma Road - Btwn College Avenue & Catoctin Drive
Input A: 2 - East bound. - Added to totals. (1)
Input B: 0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration: 16:51 Monday, December 08, 2008 => 15:39 Saturday, December 13, 2008
File: Z:\mcdata\LLG\2008\198\19804E13Dec2008.EC0 (Base)
Identifier: A578EM15 MC56-1 [MC55] (c)Microcom 07/08/99
Algorithm: Event Count
Data type: Axle sensors - Separate (Count)

Profile:

Filter time: 17:00 Monday, December 08, 2008 => 8:00 Friday, December 12, 2008
Name: Factory default profile
Scheme: Count events divided by two.
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Events = 25833 / 26842 (96.24%)

* Monday, December 08, 2008=2787 (incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	685	599	426	360	328	249	140	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	152	172	141	97	66	82	43	30
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	205	177	100	95	93	59	29	29
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	166	125	93	85	73	58	37	22
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	162	125	92	83	76	50	31	17

* Tuesday, December 09, 2008=7349, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
98	62	33	17	17	19	53	192	280	235	298	333	495	418	473	744	762	736	565	372	377	361	241	140	
30	25	15	5	7	4	9	38	60	46	58	101	109	98	153	117	200	174	152	97	88	80	67	42	37
29	16	8	0	6	6	6	47	61	56	80	62	141	75	118	210	179	222	154	105	114	98	76	44	36
22	8	5	4	2	6	15	42	87	78	57	82	127	95	91	213	179	164	136	85	90	91	61	42	33
17	13	5	8	2	4	23	65	72	55	103	88	118	147	111	204	196	158	143	85	85	92	37	21	22

AM Peak 1145 - 1245 (465), AM PHF=0.82 PM Peak 1515 - 1615 (835), PM PHF=0.98

* Wednesday, December 10, 2008=7530, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
128	54	38	19	15	10	47	149	261	237	284	308	505	501	526	620	820	778	594	368	368	401	227	172	
37	21	14	6	7	3	7	25	55	60	84	98	145	125	160	144	182	212	172	129	72	99	72	43	29
36	17	8	5	3	0	11	42	44	67	59	98	114	121	97	162	220	188	164	93	107	103	53	41	21
33	8	10	4	3	1	12	35	78	60	60	87	116	113	139	180	192	197	138	75	85	104	53	40	23
22	8	6	4	2	6	17	47	84	62	81	105	130	142	130	134	226	181	120	71	104	95	49	40	24

AM Peak 1145 - 1245 (480), AM PHF=0.83 PM Peak 1615 - 1715 (850), PM PHF=0.94

* Thursday, December 11, 2008=7585, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
97	60	41	19	16	27	59	176	253	268	301	362	506	449	584	700	791	775	561	392	335	364	247	202	
29	27	12	7	7	8	12	43	50	58	64	104	112	90	174	149	196	198	171	107	73	102	68	59	37
21	6	17	3	5	0	12	39	50	53	65	76	124	104	151	179	176	218	149	98	91	106	65	59	32
23	18	9	5	1	6	19	39	67	85	70	91	142	107	138	199	192	189	128	99	79	86	52	46	25
24	9	3	4	3	13	16	55	86	72	102	91	128	140	121	173	227	176	113	88	92	70	62	30	29

AM Peak 1145 - 1245 (469), AM PHF=0.83 PM Peak 1630 - 1730 (829), PM PHF=0.91

* Friday, December 12, 2008=582 (incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
123	93	50	31	26	22	49	189	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
37	33	16	11	10	6	6	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	26	14	9	6	4	12	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	19	11	6	3	5	13	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	15	9	5	7	7	18	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TDSSW,Inc.
Event Counts

EventCount-10 -- English (ENU)

Datasets:

Site: [19804W] Montezuma Road - Btwn College Avenue & Catoctin Drive
Input A: 4 - West bound. - Added to totals. (1)
Input B: 0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration: 16:51 Monday, December 08, 2008 => 15:42 Saturday, December 13, 2008
File: Z:\mcdata\LLG\2008\198\19804W13Dec2008.EC0 (Plus)
Identifier: M17451EC MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm: Event Count
Data type: Axle sensors - Separate (Count)

Profile:

Filter time: 17:00 Monday, December 08, 2008 => 8:00 Friday, December 12, 2008
Name: Factory default profile
Scheme: Count events divided by two.
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Events = 24740 / 26276 (94.15%)

* Monday, December 08, 2008=1873 (incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	424	398	334	200	230	195	114	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	90	70	56	51	57	28	20
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	111	72	70	41	57	63	28	16
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	113	135	90	48	53	40	32	18
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	101	94	55	69	33	28	9

* Tuesday, December 09, 2008=7243, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
63	39	19	22	28	71	282	792	525	560	429	377	466	474	365	418	409	441	487	274	264	199	203	107	
20	9	6	4	5	8	32	123	151	192	78	78	154	84	96	82	111	108	86	60	65	48	48	35	30
16	11	9	5	5	12	45	164	100	184	83	90	127	94	94	127	92	180	101	73	61	60	42	31	15
10	7	2	10	6	20	76	236	129	102	124	84	94	159	81	114	100	110	112	66	66	56	51	22	21
9	12	2	3	12	31	90	269	145	82	144	125	91	137	94	95	106	103	180	66	72	45	41	15	16

AM Peak 0715 - 0815 (820), AM PHF=0.76 PM Peak 1315 - 1415 (486), PM PHF=0.76

* Wednesday, December 10, 2008=7102, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
81	41	15	13	26	83	217	658	698	478	403	376	409	448	356	466	417	476	435	284	230	243	167	94	
30	20	5	5	3	7	28	102	168	93	68	70	81	97	83	100	104	103	96	82	59	80	45	37	18
15	7	3	3	6	15	43	142	133	100	90	82	93	97	82	112	111	140	94	71	58	67	47	32	10
21	9	5	3	7	23	65	208	203	144	125	104	125	127	95	152	99	109	117	71	60	72	39	24	20
15	5	2	2	10	38	81	206	194	141	120	114	110	127	96	107	103	124	129	60	55	48	36	13	22

AM Peak 0715 - 0815 (722), AM PHF=0.87 PM Peak 1700 - 1800 (476), PM PHF=0.86

* Thursday, December 11, 2008=7410, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
70	39	23	20	21	80	268	759	590	585	426	379	468	460	368	495	424	409	468	285	215	214	215	127	
18	12	6	3	4	18	39	118	150	226	78	91	120	116	96	113	97	120	101	90	43	64	67	40	25
10	11	9	3	2	14	42	173	147	163	83	92	129	120	83	120	89	91	105	71	50	47	69	34	26
20	6	5	4	5	18	81	235	131	102	134	78	109	117	100	142	100	96	132	62	57	56	44	31	23
22	10	3	10	10	30	106	233	162	94	111	118	110	107	89	120	134	92	130	62	65	47	42	22	16

AM Peak 0715 - 0815 (790), AM PHF=0.85 PM Peak 1500 - 1600 (495), PM PHF=0.87

* Friday, December 12, 2008=1112 (incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
84	78	36	33	42	64	225	550	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
25	22	6	7	5	12	34	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	25	15	10	12	8	53	132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	17	9	10	7	19	63	151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	14	6	6	10	25	77	159	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TDSSW,Inc.
Event Counts

EventCount-10 -- English (ENU)

Datasets:

Site: [19803N] College Avenue - Btwn Montezuma Road & El Cajon Blvd
Input A: 1 - North bound. - Added to totals. (1)
Input B: 0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration: 16:31 Monday, December 08, 2008 => 16:09 Saturday, December 13, 2008
File: Z:\mcdata\LLG\2008\198\19803N13Dec2008.EC0 (Plus)
Identifier: M272CHN1 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm: Event Count
Data type: Axle sensors - Separate (Count)

Profile:

Filter time: 17:00 Monday, December 08, 2008 => 8:00 Friday, December 12, 2008
Name: Factory default profile
Scheme: Count events divided by two.
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Events = 49208 / 52588 (93.57%)

* Monday, December 08, 2008=3494 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	787	724	566	453	417	332	218	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	198	151	161	121	110	85	65	58
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	194	191	147	124	115	82	44	44
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	199	194	131	103	101	92	57	27
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	196	188	127	105	85	73	49	24

* Tuesday, December 09, 2008=13928, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
153	68	54	50	66	189	501	1440	872	900	867	750	946	845	716	800	789	826	847	575	514	461	383	220	
58	19	14	18	15	25	73	254	210	313	175	186	266	175	172	200	212	211	212	152	145	110	121	52	50
44	22	15	11	12	36	95	316	179	252	176	172	238	206	149	211	175	215	201	133	118	103	89	56	35
27	17	12	11	15	71	122	457	231	187	273	179	218	234	182	252	188	194	220	160	121	123	77	54	43
24	10	13	10	24	57	211	413	262	156	241	213	224	230	213	225	214	206	214	130	130	117	86	58	27

AM Peak 0700 - 0800 (1440), AM PHF=0.79 PM Peak 1200 - 1300 (946), PM PHF=0.89

* Wednesday, December 10, 2008=14643, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
155	88	61	44	77	183	539	1279	1109	938	767	1002	999	987	807	949	800	861	887	585	544	458	344	200	
50	23	19	11	16	25	73	267	275	248	158	209	272	228	204	217	195	222	208	169	144	119	110	51	47
35	25	14	14	16	35	108	300	249	230	175	264	243	237	188	244	207	206	200	154	153	133	99	58	38
43	27	14	8	20	54	136	367	292	229	229	253	260	253	211	263	197	212	236	137	138	111	80	42	40
27	13	14	11	25	69	222	345	296	231	205	276	224	269	204	225	201	221	215	125	109	95	55	49	34

AM Peak 0715 - 0815 (1284), AM PHF=0.87 PM Peak 1200 - 1300 (999), PM PHF=0.92

* Thursday, December 11, 2008=14826, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
159	84	43	40	52	200	514	1376	949	984	875	880	1015	986	806	964	814	833	849	622	564	498	442	267	
47	22	20	9	11	27	61	268	265	330	202	194	304	212	211	250	192	243	203	179	151	123	116	84	47
38	25	7	7	13	40	104	331	205	264	184	200	272	238	180	241	196	208	221	158	141	115	119	68	53
40	21	8	7	14	58	135	409	243	202	271	218	238	255	200	248	206	199	222	138	107	146	118	57	47
34	16	8	17	14	75	214	368	236	192	218	268	209	201	215	217	220	183	203	147	165	114	89	58	33

AM Peak 0700 - 0800 (1376), AM PHF=0.84 PM Peak 1200 - 1300 (1015), PM PHF=0.83

* Friday, December 12, 2008=2316 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
180	153	98	39	71	177	497	1101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
47	36	30	10	16	21	69	239	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	27	28	11	13	40	95	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	46	24	9	17	52	133	305	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	44	16	9	25	56	200	287	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TDSSW,Inc.
Event Counts

EventCount-10 -- English (ENU)

Datasets:

Site: [19803S] College Avenue - Btwn Montezuma Road & El Cajon Blvd
Input A: 3 - South bound. - Added to totals. (1)
Input B: 0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration: 16:33 Monday, December 08, 2008 => 16:50 Saturday, December 13, 2008
File: Z:\mcdata\LLG\2008\198\19803S13Dec2008.EC0 (Plus)
Identifier: A594KV0T MC56-1 [MC55] (c)Microcom 07/06/99
Algorithm: Event Count
Data type: Axle sensors - Separate (Count)

Profile:

Filter time: 17:00 Monday, December 08, 2008 => 8:00 Friday, December 12, 2008
Name: Factory default profile
Scheme: Count events divided by two.
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Events = 50203 / 52915 (94.87%)

* Monday, December 08, 2008=4833 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1103	995	764	600	651	380	261	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	201	254	230	187	163	98	74	44
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	264	314	191	166	165	115	79	47
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	310	218	179	169	171	86	51	39
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	239	269	164	158	152	81	57	28

* Tuesday, December 09, 2008=14574, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
158	98	69	31	40	72	217	465	482	715	664	849	1041	859	1056	1236	1251	1200	1074	828	795	685	402	267	
44	37	18	5	7	11	46	86	116	159	173	227	230	194	253	233	308	331	283	220	163	184	149	98	57
47	28	19	9	11	12	44	110	102	184	132	189	275	174	257	309	303	290	298	220	200	191	133	69	57
39	21	16	8	10	25	52	117	129	200	143	203	301	212	270	332	311	310	272	186	185	170	90	52	25
28	12	16	9	12	24	75	152	135	172	216	230	235	275	276	342	329	269	261	192	183	160	91	56	31

AM Peak 1145 - 1245 (1036), AM PHF=0.86 PM Peak 1515 - 1615 (1311), PM PHF=0.93

* Wednesday, December 10, 2008=14517, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
170	116	52	43	37	69	200	470	526	680	703	820	1011	973	1034	1195	1196	1291	1003	770	780	620	462	292	
57	34	17	17	9	9	38	76	132	189	193	194	297	287	204	270	300	314	290	213	170	179	141	80	61
57	30	17	5	6	12	50	100	118	141	172	205	290	225	216	301	274	337	290	194	187	190	116	76	63
25	27	10	6	9	23	63	135	140	152	183	172	211	228	272	279	289	282	247	186	183	165	106	73	48
31	25	8	15	13	25	61	155	136	168	164	249	213	233	262	279	333	358	280	177	204	165	85	57	42

AM Peak 1145 - 1245 (1047), AM PHF=0.88 PM Peak 1630 - 1730 (1263), PM PHF=0.95

* Thursday, December 11, 2008=14925, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
226	93	53	37	53	76	201	470	538	648	702	834	1026	912	1196	1246	1352	1179	1023	846	704	760	405	358	
61	31	20	9	14	18	43	81	134	158	172	187	255	219	277	260	316	298	257	209	227	211	141	108	59
83	26	10	10	10	21	35	117	113	155	161	201	275	208	303	333	384	334	255	191	195	188	125	98	65
40	25	10	6	14	12	51	131	141	190	163	222	274	215	250	313	277	300	230	186	161	186	96	85	51
42	11	13	12	15	25	72	141	140	145	206	214	222	270	366	351	365	244	281	216	203	174	119	68	36

AM Peak 1145 - 1245 (1016), AM PHF=0.93 PM Peak 1530 - 1630 (1314), PM PHF=0.93

* Friday, December 12, 2008=1353 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
227	131	89	62	55	85	208	497	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
55	40	30	17	11	9	28	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85	34	22	18	15	20	44	115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	22	15	16	9	27	56	147	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	35	21	11	20	29	80	151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TDSSW,Inc.
Event Counts

EventCount-10 -- English (ENU)

Datasets:

Site:	[19802] College Avenue - Btwn Zura Way & Montezuma Road
Input A:	1 - North bound. - Added to totals. (1)
Input B:	0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration:	15:56 Monday, December 08, 2008 => 16:34 Saturday, December 13, 2008
File:	Z:\mcdata\LLG\2008\198\19802N13Dec2008.EC0 (Base)
Identifier:	A56374S4 MC56-1 [MC55] (c)Microcom 07/06/99
Algorithm:	Event Count
Data type:	Axle sensors - Separate (Count)

Profile:

Filter time:	17:00 Monday, December 08, 2008 => 8:00 Friday, December 12, 2008
Name:	Factory default profile
Scheme:	Count events divided by two.
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	Events = 52114 / 56139 (92.83%)

* Monday, December 08, 2008=4022 (incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	858	853	625	504	505	399	278	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	239	200	173	122	144	103	93	59
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	205	233	163	143	141	126	50	46
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	204	143	125	115	95	66	41
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	188	208	146	114	105	75	69	33

* Tuesday, December 09, 2008=14837, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
181	96	71	73	84	226	498	1042	813	889	863	787	1001	910	890	991	949	954	957	649	624	596	433	238	
55	28	11	22	17	28	80	243	233	227	170	226	251	193	256	229	245	240	256	196	153	137	135	65	67
48	26	28	20	15	46	95	229	171	280	183	174	255	227	210	225	212	249	221	162	159	154	126	66	47
41	19	14	16	20	82	139	207	187	199	272	181	259	249	193	270	264	237	236	151	142	152	95	53	56
33	23	18	15	32	72	184	303	202	183	238	206	236	241	231	267	238	228	244	140	170	153	77	54	37

AM Peak 0715 - 0815 (1072), AM PHF=0.88 PM Peak 1515 - 1615 (1007), PM PHF=0.93

* Wednesday, December 10, 2008=15221, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
207	121	102	67	100	241	505	1007	911	916	806	949	1089	1022	865	1033	959	952	915	639	586	591	400	238	
67	35	26	20	10	31	81	247	232	262	109	227	329	205	243	225	232	231	217	218	137	150	141	70	36
47	32	25	18	21	40	108	239	191	215	179	233	280	216	217	268	222	259	226	154	158	157	100	64	50
56	35	29	19	31	75	134	249	235	210	223	255	236	275	189	263	255	217	239	133	143	147	87	54	48
37	19	22	10	32	95	182	272	253	229	215	234	244	266	216	277	250	249	233	134	148	137	72	42	42

AM Peak 1130 - 1230 (1088), AM PHF=0.83 PM Peak 1200 - 1300 (1089), PM PHF=0.83

* Thursday, December 11, 2008=15678, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
176	118	60	63	65	244	515	1060	801	844	814	890	1051	1026	952	1108	994	1086	931	682	641	641	500	316	
36	39	19	11	16	42	84	273	241	256	179	208	263	224	288	259	223	283	219	201	160	181	123	64	63
50	37	16	17	13	36	104	240	177	251	178	249	296	246	199	290	217	293	255	180	176	145	151	88	59
48	26	13	16	19	80	145	257	178	233	217	216	260	263	213	203	279	273	220	146	139	173	121	70	43
42	16	12	19	17	86	100	290	205	204	240	217	224	295	252	276	275	237	237	146	160	142	105	74	40

AM Peak 0700 - 0800 (1060), AM PHF=0.91 PM Peak 1630 - 1730 (1130), PM PHF=0.96

* Friday, December 12, 2008=2355 (incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
205	185	133	66	108	222	508	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
63	43	43	13	22	34	77	251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
59	38	33	17	27	43	106	224	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	55	36	22	22	71	143	227	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	49	21	14	35	74	182	228	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TDSSW,Inc.
Event Counts

EventCount-10 -- English (ENU)

Datasets:

Site:	[19802] College Avenue - Btwn Zura Way & Montezuma Road
Input A:	3 - South bound. - Added to totals. (1)
Input B:	0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration:	15:57 Monday, December 08, 2008 => 15:27 Saturday, December 13, 2008
File:	Z:\mcdata\LLG\2008\198\19802S13Dec2008.EC0 (Base)
Identifier:	A5590GBV MC56-1 [MC55] (c)Microcom 07/06/99
Algorithm:	Event Count
Data type:	Axle sensors - Separate (Count)

Profile:

Filter time:	17:00 Monday, December 08, 2008 => 8:00 Friday, December 12, 2008
Name:	Factory default profile
Scheme:	Count events divided by two.
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	Events = 50291 / 54117 (92.93%)

* Monday, December 08, 2008=4242 (incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	914	877	674	608	578	355	242	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	220	252	211	149	145	121	74	38
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	237	247	174	164	152	94	68	49
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	256	190	155	147	136	71	52	33
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	195	188	134	148	141	69	47	21

* Tuesday, December 09, 2008=14719, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
141	74	66	42	72	106	331	731	776	948	803	842	1050	861	1046	1155	1021	1005	1072	689	662	618	432	220	
38	25	26	10	14	20	68	127	217	259	159	191	244	209	241	231	271	255	291	200	163	156	135	82	58
49	18	15	17	15	22	68	191	164	259	200	222	292	213	240	275	261	269	251	174	173	171	125	50	42
33	19	14	6	16	34	79	201	198	234	220	202	253	228	298	303	253	210	256	151	158	163	96	47	32
21	12	11	9	27	30	116	212	197	196	224	227	261	211	267	342	226	262	274	164	168	128	76	41	38

AM Peak 1145 - 1245 (986), AM PHF=0.85 PM Peak 1530 - 1630 (1197), PM PHF=0.88

* Wednesday, December 10, 2008=14546, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
170	82	64	44	42	111	294	736	869	879	797	887	1098	1008	968	995	973	946	966	681	700	667	378	259	
58	20	21	12	8	15	56	124	195	254	184	188	254	245	191	225	238	231	207	182	184	168	95	91	53
42	19	17	11	6	22	64	173	192	197	166	218	288	268	262	289	257	230	250	166	150	167	111	53	63
32	21	15	13	15	27	87	223	252	193	201	205	270	260	257	248	248	260	257	171	181	177	98	69	40
38	22	11	8	13	47	87	216	230	235	246	276	286	235	258	233	230	225	252	162	185	155	74	46	36

AM Peak 1145 - 1245 (1096), AM PHF=0.94 PM Peak 1200 - 1300 (1098), PM PHF=0.90

* Thursday, December 11, 2008=15027, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
192	84	55	52	64	104	290	758	808	876	829	885	1041	981	1078	1088	965	964	954	786	726	660	429	298	
53	34	12	12	16	23	58	143	209	194	196	219	294	219	264	271	273	230	189	241	185	159	115	50	56
63	18	16	17	9	20	48	195	181	274	187	212	264	232	287	284	236	243	221	171	173	182	125	109	65
40	19	10	12	15	24	72	226	181	233	209	225	240	256	261	270	204	259	265	182	164	177	88	71	40
36	13	17	11	24	37	112	194	237	175	237	229	243	274	266	263	252	226	279	192	204	142	101	68	37

AM Peak 1145 - 1245 (1027), AM PHF=0.87 PM Peak 1445 - 1545 (1091), PM PHF=0.96

* Friday, December 12, 2008=1757 (incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
196	124	99	63	71	125	295	785	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
56	34	30	15	9	16	49	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	29	26	23	18	10	62	208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	29	27	14	17	41	70	234	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	32	16	11	28	50	114	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TDSSW,Inc.
Event Counts

EventCount-10 -- English (ENU)

Datasets:

Site: [19801N] College Avenue - Btwn EB Off Ramp & Zura Way
Input A: 1 - North bound. - Added to totals. (1)
Input B: 0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration: 15:30 Monday, December 08, 2008 => 16:01 Saturday, December 13, 2008
File: Z:\mcdata\LLG\2008\198\19801N13Dec2008.EC0 (Plus)
Identifier: M2869KMY MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm: Event Count
Data type: Axle sensors - Separate (Count)

Profile:

Filter time: 17:00 Monday, December 08, 2008 => 8:00 Friday, December 12, 2008
Name: Factory default profile
Scheme: Count events divided by two.
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Events = 89305 / 96919 (92.14%)

* Monday, December 08, 2008=8466 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1970	1805	1318	1169	1174	646	384	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	475	478	459	301	324	212	112	78
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	492	533	321	297	311	184	81	66
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	483	381	254	306	237	136	105	63
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	520	413	284	265	302	114	86	66

* Tuesday, December 09, 2008=25967, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
273	142	91	71	86	247	563	1196	984	1300	1258	1449	1923	1564	1722	1896	2073	2033	1903	1290	1390	1320	796	379	
78	49	17	21	15	35	76	311	278	307	233	524	455	339	549	456	557	537	454	416	319	259	337	101	87
66	40	30	20	18	48	96	272	208	406	247	292	510	364	479	483	471	522	465	311	368	309	201	110	69
63	24	21	13	22	80	162	325	246	314	395	280	496	409	318	497	520	528	473	266	347	324	150	86	84
66	29	23	17	33	84	227	282	252	273	383	353	462	452	376	460	525	466	511	297	356	428	108	82	51

AM Peak 1145 - 1245 (1814), AM PHF=0.89 PM Peak 1645 - 1745 (2112), PM PHF=0.98

* Wednesday, December 10, 2008=25972, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
291	164	123	86	103	249	559	1172	1078	1153	1204	1660	1995	1842	1658	1901	1924	2069	1785	1179	1185	1421	629	349	
87	52	33	22	18	35	85	335	256	370	343	421	541	559	499	430	550	532	449	455	229	347	250	107	66
69	43	29	25	21	40	121	276	233	203	252	386	604	401	425	541	450	587	407	288	313	396	155	89	85
84	46	33	23	31	75	134	289	276	259	335	410	432	404	372	488	435	438	459	236	304	391	121	76	69
51	23	28	16	32	99	219	272	313	349	354	443	418	478	362	442	489	512	470	200	339	287	103	77	60

AM Peak 1145 - 1245 (2020), AM PHF=0.84 PM Peak 1700 - 1800 (2069), PM PHF=0.88

* Thursday, December 11, 2008=26187, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
280	178	85	74	68	254	566	1160	961	1301	1212	1513	2031	1757	1800	1939	2086	2159	1776	1278	1221	1326	741	421	
66	70	26	13	18	44	86	326	255	332	248	424	454	364	585	493	585	532	456	388	264	380	209	117	82
85	50	27	13	13	38	109	282	228	366	276	357	585	397	437	519	424	496	471	300	306	282	213	110	74
69	35	21	19	21	83	155	250	189	297	290	353	542	459	360	485	509	602	388	270	304	360	181	89	71
60	23	11	29	16	89	216	302	289	306	398	379	450	537	418	442	568	529	461	320	347	304	138	105	49

AM Peak 1145 - 1245 (1960), AM PHF=0.84 PM Peak 1645 - 1745 (2198), PM PHF=0.91

* Friday, December 12, 2008=2712 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
276	224	157	72	112	221	539	1111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
82	51	50	15	23	35	83	336	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	56	39	15	26	42	112	266	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	63	41	21	25	71	151	271	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	54	27	21	38	73	193	238	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TDSSW,Inc.
Event Counts

EventCount-10 -- English (ENU)

Datasets:

Site: [19801S] College Avenue - Btwn EB Off Ramp & Zura Way
Input A: 3 - South bound. - Added to totals. (1)
Input B: 0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration: 15:31 Monday, December 08, 2008 => 15:29 Saturday, December 13, 2008
File: Z:\mcdata\LLG\2008\198\19801S13Dec2008.EC0 (Base)
Identifier: A643QTA4 MC56-1 [MC55] (c)Microcom 07/06/99
Algorithm: Event Count
Data type: Axle sensors - Separate (Count)

Profile:

Filter time: 17:00 Monday, December 08, 2008 => 8:00 Friday, December 12, 2008
Name: Factory default profile
Scheme: Count events divided by two.
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Events = 60705 / 66290 (91.57%)

* Monday, December 08, 2008=4761 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	993	1097	741	664	699	392	269	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	229	274	233	172	199	134	83	45
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	274	299	199	172	164	96	80	40
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	265	290	166	160	183	85	53	39
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	234	143	160	153	77	53	28

* Tuesday, December 09, 2008=17879, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
161	74	77	43	78	117	386	1136	1018	1290	1154	1084	1303	1082	1148	1262	1133	1113	1218	764	721	706	460	246	
45	25	29	15	13	18	77	188	314	388	238	251	384	244	271	280	320	282	256	231	172	169	130	90	64
49	18	12	15	16	30	77	267	241	381	268	275	336	288	268	310	289	299	309	181	201	211	151	57	90
39	21	17	6	19	36	93	326	254	287	346	246	285	288	332	364	287	237	320	175	163	167	99	55	34
28	10	19	7	30	33	139	355	209	234	302	312	298	262	277	320	237	295	321	177	185	159	80	44	42

AM Peak 0845 - 0945 (1345), AM PHF=0.87 PM Peak 1515 - 1615 (1322), PM PHF=0.91

* Wednesday, December 10, 2008=17694, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
190	80	72	52	49	118	335	1024	1324	1243	1034	1110	1218	1360	1085	1256	1079	1030	1165	751	776	758	424	285	
64	15	22	17	7	14	60	159	305	321	234	225	276	379	250	281	261	236	228	207	200	193	113	99	59
50	21	18	15	7	25	69	216	284	268	212	270	316	346	272	338	273	257	299	172	176	194	118	61	72
34	24	13	11	18	29	106	329	372	316	289	265	330	332	303	315	272	277	321	189	191	199	104	75	44
42	20	19	9	17	50	100	318	363	338	299	350	298	303	260	302	273	261	317	183	209	172	89	50	45

AM Peak 0815 - 0915 (1340), AM PHF=0.90 PM Peak 1300 - 1400 (1360), PM PHF=0.90

* Thursday, December 11, 2008=18164, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
220	87	64	54	74	118	339	1183	1120	1235	1190	1111	1265	1182	1180	1260	1049	1034	1258	893	782	742	463	388	
59	36	13	18	10	22	63	194	290	344	235	271	360	269	200	318	298	257	330	283	204	181	122	108	63
72	18	17	14	12	26	57	285	234	371	270	267	331	271	294	310	243	270	276	188	194	195	130	123	65
44	21	14	11	16	25	87	358	260	277	357	251	295	326	299	336	238	241	324	197	178	196	99	85	43
45	12	20	11	20	45	132	346	330	243	318	322	279	316	291	296	272	266	328	225	206	171	113	72	42

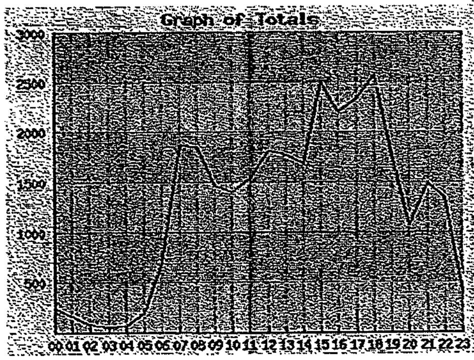
AM Peak 0845 - 0945 (1322), AM PHF=0.89 PM Peak 1200 - 1300 (1265), PM PHF=0.88

* Friday, December 12, 2008=2186 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
215	131	113	73	76	135	331	1092	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
63	36	34	21	9	21	38	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	30	25	24	18	19	70	273	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	28	33	16	20	42	83	313	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	37	21	12	29	53	140	336	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Daily Vehicle Volume Report

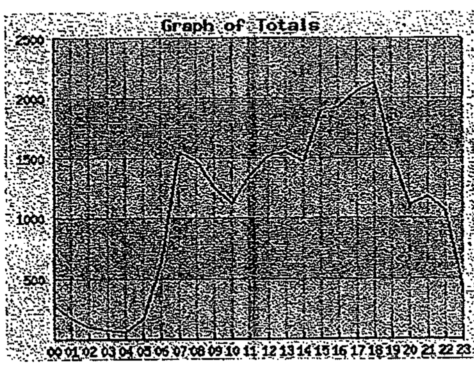
Location:
Montezuma Rd btwn Collwood Blvd and 55th St
File Number: 83019-2
Counter ID: SP102
Report Duration:
Wednesday Feb 06, 2008 - 00:00 to
Wednesday Feb 06, 2008 - 23:59
Other Notes:
None at this time.



Time	East Bound Volume	West Bound Volume	Total Volume
00:00 - 00:59	143	106	249
01:00 - 01:59	87	74	161
02:00 - 02:59	49	30	79
03:00 - 03:59	33	27	60
04:00 - 04:59	25	41	66
05:00 - 05:59	78	122	200
06:00 - 06:59	244	448	692
07:00 - 07:59	814	1046	1860
08:00 - 08:59	1068	788	1856
09:00 - 09:59	811	651	1462
10:00 - 10:59	749	649	1398
11:00 - 11:59	691	833	1524
12:00 - 12:59	760	1050	1810
13:00 - 13:59	874	902	1776
14:00 - 14:59	808	876	1684
15:00 - 15:59	1310	1194	2504
16:00 - 16:59	1194	1010	2204
17:00 - 17:59	1400	936	2336
18:00 - 18:59	1515	1060	2575
19:00 - 19:59	1047	729	1776
20:00 - 20:59	520	545	1065
21:00 - 21:59	505	988	1493
22:00 - 22:59	304	1032	1336
23:00 - 23:59	199	211	410
Total	**15228**	**15348**	**39576**
AM Peak Hour	8:00 8:59	7:00 7:59	7:30 8:29
Volume	1068	1046	1935
PM Peak Hour	18:00 18:59	21:30 22:29	18:00 18:59
Volume	1515	1532	2575

Daily Vehicle Volume Report

Location:
Montezuma Rd btwn 55th St and Campanile Dr
File Number: 83020-2
Counter ID: SP102
Report Duration:
Wednesday Feb 06, 2008 - 00:00 to
Wednesday Feb 06, 2008 - 23:59
Other Notes:
None at this time.



Time	West Bound Volume	East Bound Volume	Total Volume
00:00 - 00:59	117	165	282
01:00 - 01:59	84	88	172
02:00 - 02:59	43	54	97
03:00 - 03:59	38	37	75
04:00 - 04:59	41	20	61
05:00 - 05:59	131	41	172
06:00 - 06:59	511	129	640
07:00 - 07:59	1122	420	1542
08:00 - 08:59	956	523	1479
09:00 - 09:59	643	611	1254
10:00 - 10:59	588	528	1116
11:00 - 11:59	740	616	1356
12:00 - 12:59	775	742	1517
13:00 - 13:59	808	734	1542
14:00 - 14:59	766	702	1468
15:00 - 15:59	912	993	1905
16:00 - 16:59	829	1090	1919
17:00 - 17:59	850	1207	2057
18:00 - 18:59	953	1178	2131
19:00 - 19:59	937	590	1527
20:00 - 20:59	584	527	1111
21:00 - 21:59	564	615	1179
22:00 - 22:59	470	588	1058
23:00 - 23:59	204	221	425
Total	**13666**	**12419**	**26085**
AM Peak Hour	7:00 7:59	11:00 11:59	7:15 8:14
Volume	1122	616	1578
PM Peak Hour	18:30 19:29	17:30 18:29	18:00 18:59
Volume	1034	1262	2131

APPENDIX E

EXISTING INTERSECTION ANALYSIS AND ILV OPERATIONS SHEETS

Plaza Linda Verde Mixed-Use
6/23/2009

1: I-8WB Ramp & College Ave
Ex AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	445	0	89	0	748	431	0	633	861
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	484	0	97	0	811	468	0	688	936
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	484	0	97	0	811	468	0	688	936
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				18.0		100.0		74.0	100.0		74.0	100.0
Effective Green, g (s)				18.0		100.0		74.0	100.0		74.0	100.0
Actuated g/C Ratio				0.18		1.00		0.74	1.00		0.74	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				595		1555		2619	1536		2619	1536
v/s Ratio Prot								0.23			0.19	
v/s Ratio Perm				c0.15		0.06			0.30			c0.61
v/c Ratio				0.81		0.06		0.31	0.30		0.26	0.61
Uniform Delay, d1				39.4		0.0		4.4	0.0		4.2	0.0
Progression Factor				1.00		1.00		1.15	1.00		1.00	1.00
Incremental Delay, d2				8.4		0.1		0.3	0.5		0.2	1.8
Delay (s)				47.7		0.1		5.4	0.5		4.4	1.8
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			39.8			3.6			2.9	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Plaza Linda Verde Mixed-Use
6/23/2009

2: I-8EB Ramp & College Ave
Ex AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	268	0	1938	0	0	0	0	709	179	0	905	194
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)	291	0	2107	0	0	0	0	771	195	0	984	211
RTOR Reduction (vph)	0	0	63	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	291	0	2044	0	0	0	0	771	195	0	984	211
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1553		1614					1593	1536		1593	1536
v/s Ratio Prot								0.22			c0.28	
v/s Ratio Perm	0.09		c0.60						0.13			0.14
v/c Ratio	0.19		1.27					0.48	0.13		0.62	0.14
Uniform Delay, d1	15.4		26.5					19.3	0.0		20.9	0.0
Progression Factor	1.00		1.00					0.52	1.00		0.83	1.00
Incremental Delay, d2	0.1		125.1					0.9	0.1		1.6	0.2
Delay (s)	15.5		151.6					10.9	0.1		19.0	0.2
Level of Service	B		F					B	A		B	A
Approach Delay (s)		135.1			0.0			8.8			15.7	
Approach LOS		F			A			A			B	

Intersection Summary

HCM Average Control Delay	77.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.8%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1798	1506		1846	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1798	1506		1846	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	43	17	23	26	113	66	127	656	59	468	985	624
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)	47	18	25	28	123	72	138	713	64	509	1071	678
RTOR Reduction (vph)	0	0	23	0	0	51	0	0	44	0	0	614
Lane Group Flow (vph)	0	65	2	0	151	21	138	713	20	509	1071	64
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		9.5	9.5		13.0	29.7	13.4	31.8	31.8	29.7	48.1	9.5
Effective Green, g (s)		9.5	9.5		13.0	29.7	13.4	31.8	31.8	29.7	48.1	9.5
Actuated g/C Ratio		0.10	0.10		0.13	0.30	0.13	0.32	0.32	0.30	0.48	0.10
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		171	143		240	470	237	1125	479	1020	2446	265
v/s Ratio Prot		c0.04			c0.08	0.01	c0.08	c0.20		c0.15	0.21	0.02
v/s Ratio Perm			0.00						0.01			
v/c Ratio		0.38	0.02		0.63	0.05	0.58	0.63	0.04	0.50	0.44	0.24
Uniform Delay, d1		42.5	41.0		41.2	25.0	40.7	29.1	23.6	29.0	17.1	41.9
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.86	0.78	3.49
Incremental Delay, d2		1.4	0.0		5.1	0.0	3.6	2.7	0.2	0.0	0.1	0.0
Delay (s)		43.9	41.1		46.3	25.1	44.3	31.9	23.7	24.9	13.4	146.5
Level of Service		D	D		D	C	D	C	C	C	B	F
Approach Delay (s)		43.1			39.5			33.2			55.9	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM Average Control Delay	48.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	87	983	139	496	840
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	95	1068	151	539	913
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.93	0.94			0.94	
vC, conflicting volume	2623	574			1240	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2481	486			1193	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	80			0	
cM capacity (veh/h)	0	480			538	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	95	534	534	151	539	457	457
Volume Left	0	0	0	0	539	0	0
Volume Right	95	0	0	151	0	0	0
cSH	480	1700	1700	1700	538	1700	1700
Volume to Capacity	0.20	0.31	0.31	0.09	1.00	0.27	0.27
Queue Length 95th (ft)	18	0	0	0	357	0	0
Control Delay (s)	14.3	0.0	0.0	0.0	67.0	0.0	0.0
Lane LOS	B				F		
Approach Delay (s)	14.3	0.0			24.9		
Approach LOS	B						

Intersection Summary			
Average Delay	13.5		
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.96		1.00	0.99		1.00	0.95	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1731			1752		1770	3516		1770	3380	
Flt Permitted		0.81			0.88		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1434			1562		1770	3516		1770	3380	
Volume (vph)	39	8	24	23	21	20	84	784	36	63	511	219
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)	42	9	26	25	23	22	91	852	39	68	555	238
RTOR Reduction (vph)	0	18	0	0	16	0	0	2	0	0	22	0
Lane Group Flow (vph)	0	59	0	0	54	0	91	889	0	68	771	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		8.4			8.4		9.1	64.7		8.1	63.7	
Effective Green, g (s)		8.4			8.4		9.1	64.7		8.1	63.7	
Actuated g/C Ratio		0.09			0.09		0.10	0.69		0.09	0.68	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		129			141		173	2441		154	2310	
v/s Ratio Prot							c0.05	c0.25		0.04	0.23	
v/s Ratio Perm		c0.04			0.03							
v/c Ratio		0.46			0.38		0.53	0.36		0.44	0.33	
Uniform Delay, d1		40.2			39.9		40.0	5.8		40.4	6.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.5			1.7		2.9	0.4		2.0	0.4	
Delay (s)		42.8			41.7		42.9	6.3		42.4	6.4	
Level of Service		D			D		D	A		D	A	
Approach Delay (s)		42.8			41.7			9.6			9.3	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1460	1770	3539	1464	3433	3433		1770	3539	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1460	1770	3539	1464	3433	3433		1770	3539	1468
Volume (vph)	202	327	76	25	560	179	395	713	112	94	316	87
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)	220	355	83	27	609	195	429	775	122	102	343	95
RTOR Reduction (vph)	0	0	68	0	0	152	0	12	0	0	0	69
Lane Group Flow (vph)	220	355	15	27	609	43	429	885	0	102	343	26
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	16.5	16.5	16.5	20.0	20.0	20.0	13.1	28.1		9.3	24.3	24.3
Effective Green, g (s)	16.5	16.5	16.5	20.0	20.0	20.0	13.1	28.1		9.3	24.3	24.3
Actuated g/C Ratio	0.18	0.18	0.18	0.22	0.22	0.22	0.15	0.31		0.10	0.27	0.27
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	325	650	268	394	787	326	500	1073		183	957	397
v/s Ratio Prot	c0.12	0.10		0.02	c0.17		c0.12	c0.26		0.06	0.10	
v/s Ratio Perm			0.01			0.03						0.02
v/c Ratio	0.68	0.55	0.06	0.07	0.77	0.13	0.86	0.83		0.56	0.36	0.06
Uniform Delay, d1	34.2	33.3	30.3	27.6	32.8	28.0	37.5	28.6		38.3	26.5	24.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.5	0.9	0.1	0.1	4.8	0.2	13.6	7.2		3.6	1.0	0.3
Delay (s)	39.7	34.2	30.4	27.7	37.8	28.2	51.1	35.9		42.0	27.5	24.7
Level of Service	D	C	C	C	D	C	D	D		D	C	C
Approach Delay (s)		35.6			35.1			40.8			29.8	
Approach LOS		D			D			D			C	

Intersection Summary

HCM Average Control Delay	36.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.9%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3444		3433	3433		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3444		3433	3433		1770	3539	1583	1770	3539	1583
Volume (vph)	208	364	80	97	493	123	161	959	92	97	262	109
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)	226	396	87	105	536	134	175	1042	100	105	285	118
RTOR Reduction (vph)	0	16	0	0	19	0	0	0	56	0	0	73
Lane Group Flow (vph)	226	467	0	105	651	0	175	1042	44	105	285	45
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	11.5	31.7		6.1	26.3		15.3	48.2	48.2	9.5	42.4	42.4
Effective Green, g (s)	11.5	31.7		6.1	26.3		15.3	48.2	48.2	9.5	42.4	42.4
Actuated g/C Ratio	0.10	0.28		0.05	0.24		0.14	0.43	0.43	0.09	0.38	0.38
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	354	979		188	810		243	1530	684	151	1346	602
v/s Ratio Prot	c0.07	0.14		0.03	c0.19		c0.10	c0.29		0.06	0.08	
v/s Ratio Perm									0.03			0.03
v/c Ratio	0.64	0.48		0.56	0.80		0.72	0.68	0.06	0.70	0.21	0.07
Uniform Delay, d1	48.0	33.0		51.4	40.2		46.1	25.5	18.5	49.6	23.3	22.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.8	0.4		3.6	5.8		10.0	2.5	0.2	13.0	0.4	0.2
Delay (s)	51.8	33.4		55.0	46.0		56.1	27.9	18.7	62.6	23.6	22.3
Level of Service	D	C		D	D		E	C	B	E	C	C
Approach Delay (s)		39.3			47.2			31.0			31.4	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	36.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.11	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	206	3539	3433	1583
Volume (vph)	1087	258	49	890	947	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1182	280	53	967	1029	65
RTOR Reduction (vph)	0	0	0	0	0	18
Lane Group Flow (vph)	1182	280	53	967	1029	47
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	36.2	81.5	36.2	36.2	45.3	45.3
Effective Green, g (s)	36.2	81.5	36.2	36.2	45.3	45.3
Actuated g/C Ratio	0.40	0.91	0.40	0.40	0.51	0.51
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1431	1583	83	1431	1738	801
v/s Ratio Prot	c0.33	0.09		0.27	c0.30	
v/s Ratio Perm		0.09	0.26			0.03
v/c Ratio	0.83	0.18	0.64	0.68	0.59	0.06
Uniform Delay, d1	23.8	0.4	21.4	21.8	15.6	11.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0	0.1	15.0	1.3	1.5	0.1
Delay (s)	27.9	0.5	36.4	23.1	17.1	11.4
Level of Service	C	A	D	C	B	B
Approach Delay (s)	22.6			23.8	16.7	
Approach LOS	C			C	B	

Intersection Summary

HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑↱		↰	↑↑↱			↰↑↱		↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		0.95	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.96			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3508		1688	3308			1759		1681	1691	1456
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3508		1688	3308			1759		1681	1691	1456
Volume (vph)	646	432	15	8	619	259	38	13	6	80	3	129
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)	702	470	16	9	673	282	41	14	7	87	3	140
RTOR Reduction (vph)	0	2	0	0	44	0	0	4	0	0	0	118
Lane Group Flow (vph)	702	484	0	9	911	0	0	58	0	44	46	22
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	23.3	52.7		0.8	30.2			16.0		16.0	16.0	16.0
Effective Green, g (s)	23.3	52.7		0.8	30.2			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.23	0.52		0.01	0.30			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	788	1821		13	984			277		265	267	230
v/s Ratio Prot	c0.20	0.14		0.01	c0.28			c0.03		0.03	c0.03	
v/s Ratio Perm												0.02
v/c Ratio	0.89	0.27		0.69	0.93			0.21		0.17	0.17	0.10
Uniform Delay, d1	37.9	13.8		50.2	34.6			37.2		37.0	37.0	36.6
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	12.3	0.1		96.3	14.0			1.7		1.3	1.4	0.8
Delay (s)	50.2	13.7		146.5	48.5			38.9		38.3	38.4	37.4
Level of Service	D	B		F	D			D		D	D	D
Approach Delay (s)		35.2			49.5			38.9			37.8	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	41.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	101.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.0%	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	↰	↑↑↱		↰	↑↑↱			↰↑↱		↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.96		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.98			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	1.00
Satd. Flow (prot)	1770	3510		1770	3402			1639		1681	1770	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	1.00	1.00
Satd. Flow (perm)	1770	3510		1770	3402			1639		1681	1770	1583
Volume (vph)	105	394	13	20	842	147	22	20	49	15	10	31
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)	114	428	14	22	915	160	24	22	53	16	11	34
RTOR Reduction (vph)	0	2	0	0	15	0	0	40	0	0	0	31
Lane Group Flow (vph)	114	440	0	22	1060	0	0	59	0	16	11	3
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	7.9	42.2		2.2	36.6			16.1		16.1	16.1	7.9
Effective Green, g (s)	7.9	42.2		2.2	36.5			16.1		16.1	16.1	7.9
Actuated g/C Ratio	0.09	0.46		0.02	0.39			0.17		0.17	0.17	0.09
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	151	1600		42	1341			285		292	308	135
v/s Ratio Prot	c0.06	0.13		0.01	c0.31			c0.04		c0.01	0.01	0.00
v/s Ratio Perm												
v/c Ratio	0.75	0.27		0.52	0.79			0.21		0.05	0.04	0.02
Uniform Delay, d1	41.4	15.7		44.7	24.7			32.8		31.9	31.8	38.8
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	19.1	0.1		11.3	3.3			1.6		0.4	0.2	0.1
Delay (s)	60.5	15.8		56.0	27.9			34.4		32.3	32.0	38.9
Level of Service	E	B		E	C			C		C	C	D
Approach Delay (s)		24.9			28.5			34.4			35.9	
Approach LOS		C			C			C			D	

Intersection Summary

HCM Average Control Delay	28.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	92.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.0%	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	↰	↑↱		↰	↑↱			✥			✥	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.93			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3514		1770	3530			1693			1698	
Flt Permitted	0.95	1.00		0.95	1.00			0.91			0.92	
Satd. Flow (perm)	1770	3514		1770	3530			1571			1598	
Volume (vph)	14	146	7	46	675	12	20	1	23	25	7	37
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	159	8	50	734	13	22	1	25	27	8	40
RTOR Reduction (vph)	0	5	0	0	1	0	0	13	0	0	21	0
Lane Group Flow (vph)	15	162	0	50	746	0	0	35	0	0	54	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	14.7		4.6	18.2			29.7			29.7	
Effective Green, g (s)	1.1	14.7		4.6	18.2			29.7			29.7	
Actuated g/C Ratio	0.02	0.24		0.08	0.30			0.49			0.49	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	32	847		133	1053			765			778	
v/s Ratio Prot	0.01	0.05		c0.03	c0.21							
v/s Ratio Perm								0.02			c0.03	
v/c Ratio	0.47	0.19		0.38	0.71			0.05			0.07	
Uniform Delay, d1	29.7	18.4		26.8	19.0			8.2			8.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	10.5	0.1		1.8	2.2			0.1			0.2	
Delay (s)	40.1	18.5		28.6	21.2			8.3			8.5	
Level of Service	D	B		C	C			A			A	
Approach Delay (s)		20.3			21.7			8.3			8.5	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	20.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	61.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↱	↱	↰↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	0.96	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3270	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3270	1441	3433	1583
Volume (vph)	83	379	501	619	112	29
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	412	545	673	122	32
RTOR Reduction (vph)	0	0	24	356	0	17
Lane Group Flow (vph)	90	412	689	149	122	15
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	8.2	38.0	25.8	25.8	41.3	41.3
Effective Green, g (s)	8.2	38.0	25.8	25.8	41.3	41.3
Actuated g/C Ratio	0.09	0.44	0.30	0.30	0.47	0.47
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	166	1540	966	426	1624	749
v/s Ratio Prot	c0.05	0.12	c0.21	0.10	c0.04	0.01
v/s Ratio Perm						
v/c Ratio	0.54	0.27	0.71	0.35	0.08	0.02
Uniform Delay, d1	37.8	15.8	27.4	24.2	12.6	12.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.1	2.5	0.5	0.1	0.0
Delay (s)	41.3	15.8	30.0	24.7	12.7	12.3
Level of Service	D	B	C	C	B	B
Approach Delay (s)		20.4	27.8		12.6	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	87.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

1: I-8WB Ramp & College Ave

Ex PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	411	0	211	0	951	1194	0	525	536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	447	0	229	0	1034	1298	0	571	583
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	447	0	229	0	1034	1298	0	571	583
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				17.0		100.0		75.0	100.0		75.0	100.0
Effective Green, g (s)				17.0		100.0		75.0	100.0		75.0	100.0
Actuated g/C Ratio				0.17		1.00		0.75	1.00		0.75	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				562		1555		2654	1536		2654	1536
v/s Ratio Prot								0.29			0.16	
v/s Ratio Perm				0.14		0.15			c0.84			0.38
v/c Ratio				0.80		0.15		0.39	0.85		0.22	0.38
Uniform Delay, d1				39.8		0.0		4.4	0.0		3.7	0.0
Progression Factor				1.00		1.00		1.03	1.00		1.00	1.00
Incremental Delay, d2				7.7		0.2		0.3	4.3		0.2	0.7
Delay (s)				47.5		0.2		4.8	4.3		3.9	0.7
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			31.5			4.5			2.3	
Approach LOS		A			C			A			A	

Intersection Summary

HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2: I-8EB Ramp & College Ave

Ex PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	617	0	965	0	0	0	0	1440	508	0	743	430
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)	671	0	1049	0	0	0	0	1565	552	0	808	467
RTOR Reduction (vph)	0	0	131	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	671	0	918	0	0	0	0	1565	552	0	808	467
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	35.9		35.9					56.1	100.0		56.1	100.0
Effective Green, g (s)	35.9		35.9					56.1	100.0		56.1	100.0
Actuated g/C Ratio	0.36		0.36					0.56	1.00		0.56	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1186		1233					1985	1536		1985	1536
v/s Ratio Prot								c0.44			0.23	
v/s Ratio Perm	0.20		c0.27						0.36			0.30
v/c Ratio	0.57		0.74					0.79	0.36		0.41	0.30
Uniform Delay, d1	25.8		28.0					17.3	0.0		12.5	0.0
Progression Factor	1.00		1.00					0.72	1.00		0.74	1.00
Incremental Delay, d2	0.6		2.5					0.3	0.1		0.6	0.5
Delay (s)	26.4		30.5					12.7	0.1		9.9	0.5
Level of Service	C		C					B	A		A	A
Approach Delay (s)		28.9			0.0			9.4			6.4	
Approach LOS		C			A			A			A	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1780	1506		1792	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1780	1506		1792	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	463	34	43	44	12	252	28	1335	75	190	962	105
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)	503	37	47	48	13	274	30	1451	82	207	1046	114
RTOR Reduction (vph)	0	0	34	0	0	242	0	0	33	0	0	87
Lane Group Flow (vph)	0	540	13	0	61	32	30	1451	49	207	1046	27
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		7.4	11.7	4.9	40.9	40.9	11.7	47.7	24.0
Effective Green, g (s)		24.0	24.0		7.4	11.7	4.9	40.9	40.9	11.7	47.7	24.0
Actuated g/C Ratio		0.24	0.24		0.07	0.12	0.05	0.41	0.41	0.12	0.48	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		427	361		133	185	87	1447	616	402	2426	669
v/s Ratio Prot		c0.30			c0.03	0.02	0.02	c0.41		c0.06	0.21	0.01
v/s Ratio Perm			0.01						0.03			
v/c Ratio		1.26	0.04		0.46	0.17	0.34	1.00	0.08	0.51	0.43	0.04
Uniform Delay, d1		38.0	29.1		44.4	39.8	46.0	29.6	18.1	41.5	17.2	29.2
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.01	0.85	1.79
Incremental Delay, d2		136.6	0.0		2.5	0.4	2.4	24.3	0.3	0.9	0.4	0.0
Delay (s)		174.6	29.2		46.9	40.2	48.4	53.9	18.3	42.7	15.1	52.3
Level of Service		F	C		D	D	D	D	B	D	B	D
Approach Delay (s)		163.0			41.4			51.9			22.4	
Approach LOS		F			D			D			C	

Intersection Summary

HCM Average Control Delay	57.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	383	1113	77	158	861
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	416	1210	84	172	936
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.91	0.88			0.88	
vC, conflicting volume	2041	645			1313	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1656	464			1222	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	10			65	
cM capacity (veh/h)	52	465			491	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	416	605	605	84	172	468	468
Volume Left	0	0	0	0	172	0	0
Volume Right	416	0	0	84	0	0	0
cSH	465	1700	1700	1700	491	1700	1700
Volume to Capacity	0.90	0.36	0.36	0.05	0.35	0.28	0.28
Queue Length 95th (ft)	245	0	0	0	39	0	0
Control Delay (s)	49.8	0.0	0.0	0.0	16.2	0.0	0.0
Lane LOS	E				C		
Approach Delay (s)	49.8	0.0			2.6		
Approach LOS	E						

Intersection Summary

Average Delay	8.3		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

5: Lindo Paseo & College Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↑↱		↰	↑↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.98		1.00	0.99		1.00	0.97	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1719			1781		1770	3516		1770	3449	
Flt Permitted		0.80			0.83		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1414			1510		1770	3516		1770	3449	
Volume (vph)	146	18	102	28	29	13	53	764	35	58	737	152
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)	159	20	111	30	32	14	58	830	38	63	801	165
RTOR Reduction (vph)	0	19	0	0	7	0	0	2	0	0	11	0
Lane Group Flow (vph)	0	271	0	0	69	0	58	866	0	63	955	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		23.3			23.3		7.3	56.2		7.5	56.4	
Effective Green, g (s)		23.3			23.3		7.3	56.2		7.5	56.4	
Actuated g/C Ratio		0.24			0.24		0.07	0.57		0.08	0.57	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		333			355		131	1996		134	1965	
v/s Ratio Prot							0.03	0.25		c0.04	c0.28	
v/s Ratio Perm		c0.19			0.05							
v/c Ratio		0.81			0.19		0.44	0.43		0.47	0.49	
Uniform Delay, d1		35.8			30.3		43.9	12.3		43.8	12.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		14.1			0.3		2.4	0.7		2.6	0.9	
Delay (s)		49.8			30.6		46.3	13.0		46.4	13.5	
Level of Service		D			C		D	B		D	B	
Approach Delay (s)		49.8			30.6			15.1			15.6	
Approach LOS		D			C			B			B	

Intersection Summary

HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	99.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

6: Montezuma Rd & College Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰↰	↑↑↱		↰	↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1460	1770	3539	1457	3433	3464		1770	3539	1460
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1460	1770	3539	1457	3433	3464		1770	3539	1460
Volume (vph)	263	757	399	207	544	213	295	508	52	215	640	121
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)	286	823	434	225	591	232	321	552	57	234	696	132
RTOR Reduction (vph)	0	0	267	0	0	181	0	8	0	0	0	100
Lane Group Flow (vph)	286	823	167	225	591	51	321	601	0	234	696	32
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	21.5	21.5	21.5	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	21.5	21.5	21.5	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.25	0.25	0.25	0.22	0.22	0.22	0.12	0.25		0.12	0.25	0.25
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	436	871	359	390	780	321	423	853		218	871	359
v/s Ratio Prot	0.16	c0.23		0.13	c0.17		0.09	0.17		c0.13	c0.20	
v/s Ratio Perm			0.11			0.04						0.02
v/c Ratio	0.66	0.94	0.47	0.58	0.76	0.16	0.76	0.71		1.07	0.80	0.09
Uniform Delay, d1	33.0	36.1	31.3	33.9	35.6	30.7	41.4	33.5		42.8	34.5	28.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.5	18.4	1.0	2.1	4.2	0.2	7.6	4.9		81.8	7.6	0.5
Delay (s)	36.6	54.5	32.2	36.0	39.8	30.9	49.0	38.4		124.5	42.1	28.8
Level of Service	D	D	C	D	D	C	D	D		F	D	C
Approach Delay (s)		44.9			37.0			42.0			58.6	
Approach LOS		D			D			D			E	

Intersection Summary

HCM Average Control Delay	45.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3442		3433	3353		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3442		3433	3353		1770	3539	1583	1770	3539	1583
Volume (vph)	238	694	155	303	543	293	209	575	146	435	872	228
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)	259	754	168	329	590	318	227	625	159	473	948	248
RTOR Reduction (vph)	0	16	0	0	59	0	0	0	126	0	0	163
Lane Group Flow (vph)	259	906	0	329	849	0	227	625	33	473	948	85
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	10.0	32.7		12.0	34.7		17.8	25.0	25.0	33.1	40.3	40.3
Effective Green, g (s)	10.0	32.7		12.0	34.7		17.8	25.0	25.0	33.1	40.3	40.3
Actuated g/C Ratio	0.08	0.28		0.10	0.29		0.15	0.21	0.21	0.28	0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	289	947		347	979		265	745	333	493	1201	537
v/s Ratio Prot	0.08	c0.26		c0.10	0.25		0.13	0.18		c0.27	c0.27	
v/s Ratio Perm									0.02			0.05
v/c Ratio	0.90	0.96		0.95	0.87		0.86	0.84	0.10	0.96	0.79	0.16
Uniform Delay, d1	53.9	42.4		53.1	39.9		49.3	45.0	37.8	42.2	35.4	27.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.8	19.4		34.6	8.2		22.8	10.9	0.6	30.0	5.3	0.6
Delay (s)	81.7	61.7		87.6	48.0		72.0	55.9	38.4	72.2	40.7	28.0
Level of Service	F	E		F	D		E	E	D	E	D	C
Approach Delay (s)		66.1			58.6			56.8			47.8	
Approach LOS		E			E			E			D	

Intersection Summary

HCM Average Control Delay	56.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	118.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	165	3539	3433	1583
Volume (vph)	1388	335	53	787	306	36
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1509	364	58	855	333	39
RTOR Reduction (vph)	0	0	0	0	0	7
Lane Group Flow (vph)	1509	364	58	855	333	32
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	45.2	90.3	45.2	45.2	45.1	45.1
Effective Green, g (s)	45.2	90.3	45.2	45.2	45.1	45.1
Actuated g/C Ratio	0.46	0.92	0.46	0.46	0.46	0.46
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1627	1583	76	1627	1575	726
v/s Ratio Prot	c0.43	c0.11		0.24	0.10	
v/s Ratio Perm		0.12	0.35			0.02
v/c Ratio	0.93	0.23	0.76	0.53	0.21	0.04
Uniform Delay, d1	25.0	0.4	22.1	18.9	15.9	14.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.5	0.1	35.7	0.3	0.3	0.1
Delay (s)	34.6	0.5	57.8	19.2	16.2	14.8
Level of Service	C	A	E	B	B	B
Approach Delay (s)	27.9			21.7	16.1	
Approach LOS	C			C	B	

Intersection Summary

HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	4.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.99		1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.96			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	0.96	1.00
Satd. Flow (prot)	3433	3448		1770	3332			1748		1681	1696	1469
Flt Permitted	0.95	1.00		0.95	1.00			0.98		0.95	0.96	1.00
Satd. Flow (perm)	3433	3448		1770	3332			1748		1681	1696	1469
Volume (vph)	382	885	98	28	512	191	30	18	11	423	32	403
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)	415	962	107	30	557	208	33	20	12	460	35	438
RTOR Reduction (vph)	0	9	0	0	38	0	0	8	0	0	0	359
Lane Group Flow (vph)	415	1060	0	30	727	0	0	57	0	241	254	79
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	15.6	38.3		2.3	25.0			16.1		16.1	16.1	16.1
Effective Green, g (s)	15.6	38.3		2.3	25.0			16.1		16.1	16.1	16.1
Actuated g/C Ratio	0.18	0.43		0.03	0.28			0.18		0.18	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	603	1487		46	938			317		305	307	266
v/s Ratio Prot	c0.12	c0.31		0.02	0.22			c0.03		0.14	c0.15	
v/s Ratio Perm												0.05
v/c Ratio	0.69	0.71		0.65	0.77			0.18		0.79	0.83	0.30
Uniform Delay, d1	34.3	20.7		42.9	29.3			30.8		34.7	35.0	31.5
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	3.3	1.6		28.5	4.1			1.2		18.6	21.9	2.9
Delay (s)	37.6	22.4		71.4	33.4			32.0		53.3	56.9	34.3
Level of Service	D	C		E	C			C		D	E	C
Approach Delay (s)		26.6			34.8			32.0			45.4	
Approach LOS		C			C			C			D	

Intersection Summary

HCM Average Control Delay	34.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.94		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (prot)	1770	3520		1770	3375			1555		1681	1707	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (perm)	1770	3520		1770	3375			1555		1681	1707	1583
Volume (vph)	102	1202	26	99	579	124	22	17	143	121	19	119
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)	111	1307	28	108	629	135	24	18	155	132	21	129
RTOR Reduction (vph)	0	2	0	0	19	0	0	129	0	0	0	118
Lane Group Flow (vph)	111	1333	0	108	745	0	0	68	0	75	78	11
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	7.9	41.0		6.0	39.1			16.1		16.1	16.1	7.9
Effective Green, g (s)	7.9	41.0		6.0	39.1			16.1		16.1	16.1	7.9
Actuated g/C Ratio	0.08	0.43		0.06	0.41			0.17		0.17	0.17	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	147	1516		112	1386			263		284	289	131
v/s Ratio Prot	0.06	c0.38		c0.06	0.22			c0.04		0.04	c0.05	0.01
v/s Ratio Perm												
v/c Ratio	0.76	0.88		0.96	0.54			0.26		0.26	0.27	0.08
Uniform Delay, d1	42.7	24.8		44.5	21.2			34.4		34.4	34.4	40.3
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	19.6	6.2		73.2	0.4			2.4		2.3	2.3	0.3
Delay (s)	62.3	31.0		117.6	21.6			36.7		36.7	36.7	40.6
Level of Service	E	C		F	C			D		D	D	D
Approach Delay (s)		33.4			33.5			36.7			38.5	
Approach LOS		C			C			D			D	

Intersection Summary

HCM Average Control Delay	34.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	95.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.3%	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	↰	↑↑↱		↰	↑↑↱			✥			✥	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3524		1770	3505			1670			1714	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.88	
Satd. Flow (perm)	1770	3524		1770	3505			1619			1534	
Volume (vph)	29	675	19	61	293	20	24	20	112	26	7	27
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)	32	734	21	66	318	22	26	22	122	28	8	29
RTOR Reduction (vph)	0	2	0	0	6	0	0	67	0	0	16	0
Lane Group Flow (vph)	32	753	0	66	334	0	0	103	0	0	49	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	2.8	20.3		4.9	22.4			30.2			30.2	
Effective Green, g (s)	2.8	20.3		4.9	22.4			30.2			30.2	
Actuated g/C Ratio	0.04	0.30		0.07	0.33			0.45			0.45	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	74	1061		129	1165			725			687	
v/s Ratio Prot	0.02	c0.21		c0.04	0.10							
v/s Ratio Perm								c0.06			0.03	
v/c Ratio	0.43	0.71		0.51	0.29			0.14			0.07	
Uniform Delay, d1	31.5	20.9		30.1	16.6			11.0			10.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.0	2.2		3.4	0.1			0.4			0.2	
Delay (s)	35.5	23.1		33.5	16.7			11.4			10.8	
Level of Service	D	C		C	B			B			B	
Approach Delay (s)		23.6			19.5			11.4			10.8	
Approach LOS		C			B			B			B	

Intersection Summary

HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↑↱	↱	↰↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	59	280	530	191	429	43
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	304	576	208	466	47
RTOR Reduction (vph)	0	0	0	157	0	22
Lane Group Flow (vph)	64	304	576	51	466	25
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	5.2	28.0	18.8	18.8	41.2	41.2
Effective Green, g (s)	5.2	28.0	18.8	18.8	41.2	41.2
Actuated g/C Ratio	0.07	0.36	0.24	0.24	0.53	0.53
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	119	1284	826	351	1832	845
v/s Ratio Prot	c0.04	0.09	c0.17	0.04	c0.14	0.02
v/s Ratio Perm						
v/c Ratio	0.54	0.24	0.70	0.14	0.25	0.03
Uniform Delay, d1	34.8	17.2	26.6	22.9	9.7	8.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.6	0.1	2.6	0.2	0.3	0.1
Delay (s)	39.5	17.2	29.2	23.1	10.0	8.6
Level of Service	D	B	C	C	B	A
Approach Delay (s)		21.1	27.6		9.9	
Approach LOS		C	C		A	

Intersection Summary

HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

ILV OPERATIONS

Existing-AM

INTERSECTION

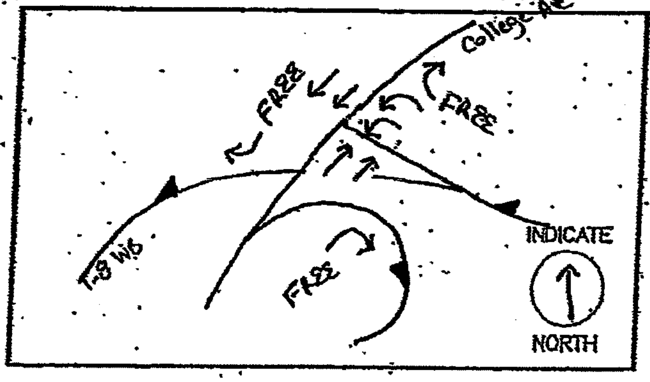
Signalized Intersection
CAPACITY ANALYSIS

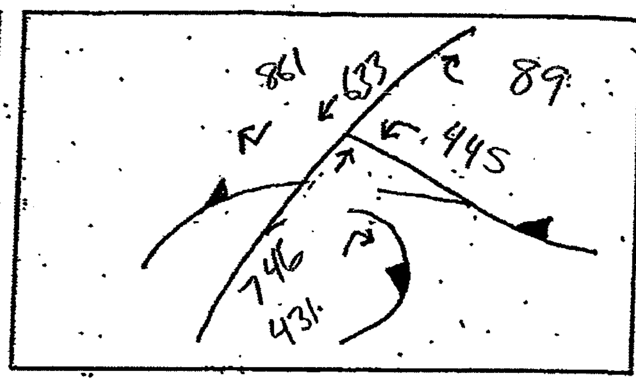
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ____

BY CL DATE 5/27/09

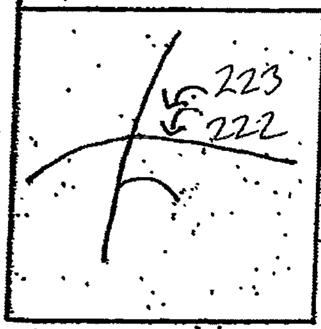
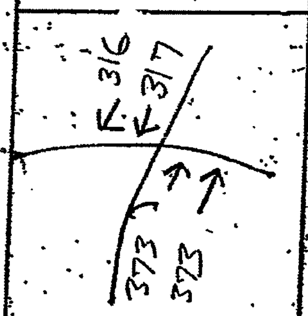
TIME ____ AM PM (AM circled)

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
223	373		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
596

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Existing - PM

INTERSECTION

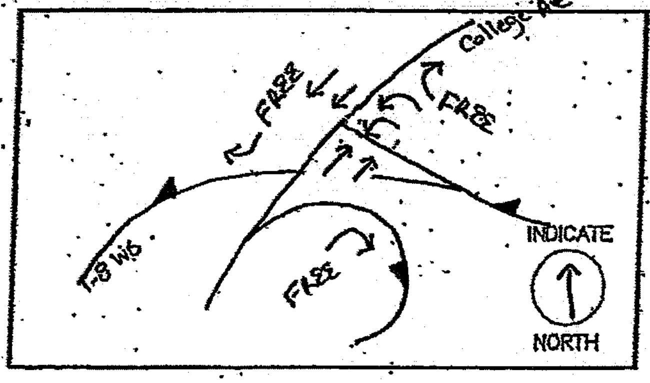
Signalized Intersection
CAPACITY ANALYSIS

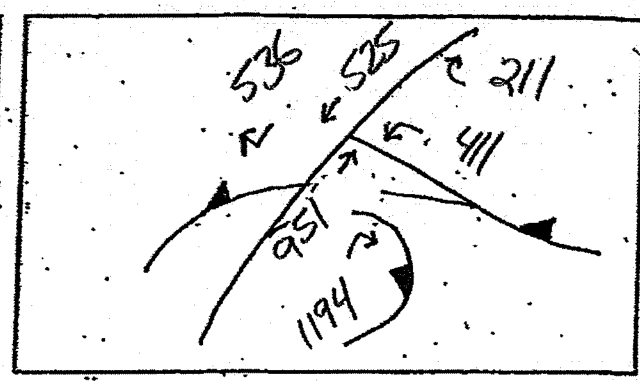
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

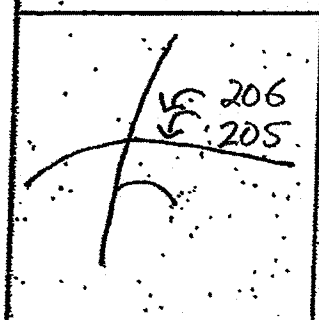
TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
206	476		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
682

☐ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Existing - AM

INTERSECTION

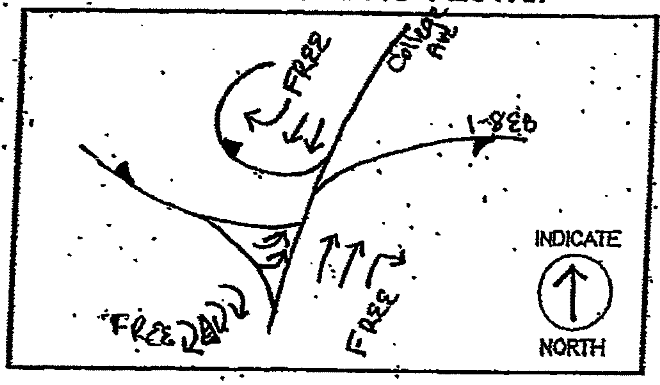
Signalized Intersection CAPACITY ANALYSIS

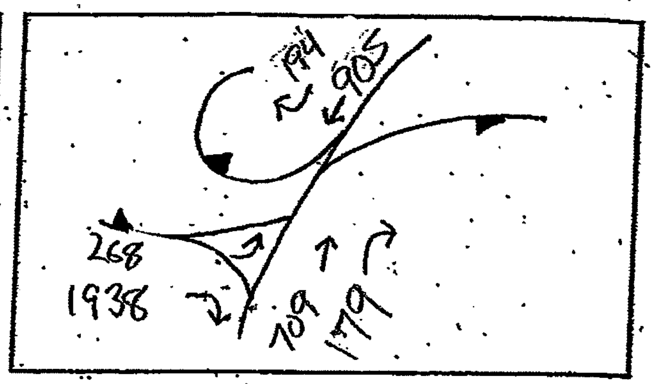
INTERSECTION College Ave / I-8 EB Ramps   DIST. CO. RTE. P.M. ____

BY CL   DATE 5/27/09

TIME ____ AM PM

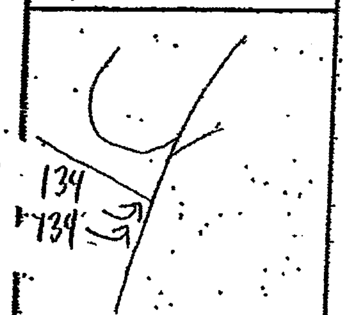
DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1



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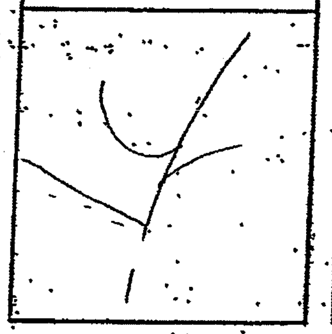

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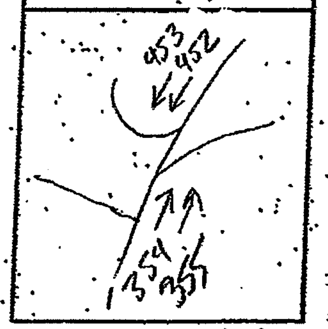


PHASE 4

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
134		452	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
586

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Existing - PM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

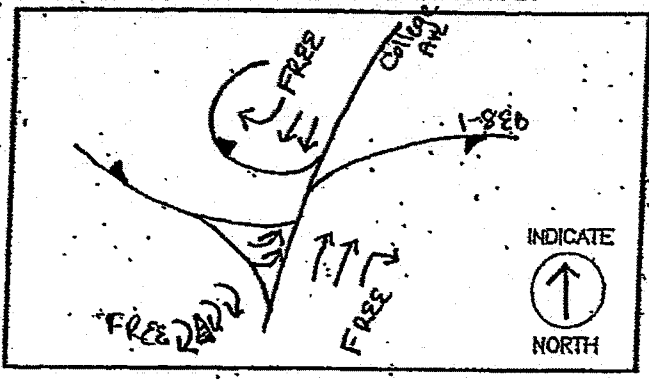
INTERSECTION *College Ave / I-8 EB Ramps*

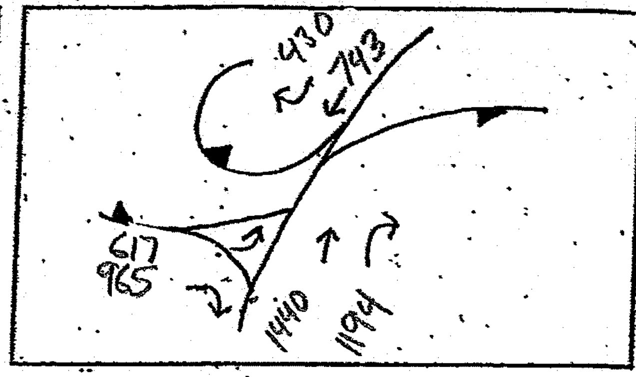
DIST. CO. RTE. P.M. ______

BY *CL* DATE *5/27/09*

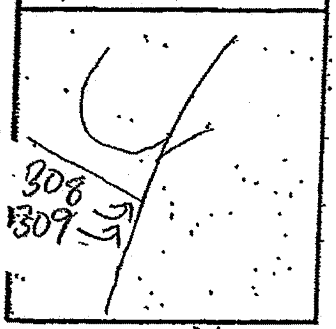
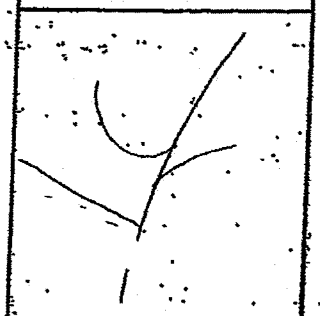
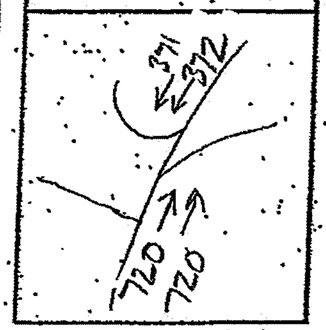
TIME ______ AM / PM (circled: PM)

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
309		720	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1029

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

APPENDIX F

EXISTING PARCEL TRIP GENERATION – *"THE PASEO AT SDSU EIR"*

TRANSPORTATION ANALYSIS

for

THE PASEO

Prepared for

SAN DIEGO STATE UNIVERSITY FOUNDATION

Fifth Review Draft: October 1, 2004

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TRAFFIC PLANNING & ENGINEERING, MARKETING & PROJECT SUPPORT
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3. Add a second right turn lane for the southbound to westbound rights at College Avenue and Montezuma Road;

4. Add acceleration/deceleration lane for project College Avenue garage access;

5. Pedestrian overcrossing structure across College Avenue at Lindo Paseo;

6. Provide additional median landscaping on College Avenue from Montezuma Road to the University pedestrian structure;

7. Remove existing traffic signal at Lindo Paseo and College Avenue;

8. Extend left turn storage for south to eastbound College Avenue at Montezuma Road.

3.2 PROJECT TRAFFIC GENERATION

The approved College Community Redevelopment Plan program EIR had an extensive traffic analysis which established some traffic generation rates for the project, see <u>**Appendix A**</u>. Trip generation for the currently proposed Paseo project was determined in consultation with City of San Diego staff. It was determined that all square footage used for trip generation purposes should be based on Gross Floor Area (GFA) rather than Gross Leaseable Area (GLA). Further, some rates from the original Program EIR completed for the College Area Redevelopment Project in 1993 were modified. The result is the trip generation table shown in **Table 3-1.** As shown in this table, there are 15,955 Average Daily Trips (ADT) estimated to be generated by the Paseo project, however, as discussed in the next section of this report, not all trips are new trips because the project also will remove many existing high traffic generating uses such as Jack in the Box, McDonald's and the 7-11 store.

TABLE 3-1

Paseo Proposed Project Traffic Generation

Use	Amount		*Trip Rate	ADT	AM PEAK HOUR					PM PEAK HOUR				
					%**	#	In/Out	In	Out	%**	#	In/Out	In	Out
High Density	470	DU	3.1 DU	1,457	8%	117	2 : 8	23	93	11%	160	7 : 3	112	48
Commercial/ Retail	153,500	SF	31.4 / 1000 SF	4,820	4%	193	6 : 4	116	77	11%	530	5 : 5	265	265
Sit.down Restaurant	60,000	SF	100 /1,000(.52)	3,120	8%	250	5 : 5	125	125	8%	250	6 : 4	150	100
Religious Center	4,500	SF	31.4 /1000***	141	4%	6	6 : 4	3	2	11%	16	5 : 5	8	8
Theater	2,900	Seat	1.53 / Seat	4,437	.3%					8%	355	7 : 3	248	106
Office	110,000	SF	18 /1000 SF	1,980	13%	257	9 : 1	232	26	14%	277	2 : 8	55	222
			Totals	15,955		822		499	323		1,588		839	749

2799-TAB3-1D.wpd

* Source: Approved Rate by City of San Diego Staff

** Source: Table 3-1, Final Program EIR Traffic Study, JHK and Associates, December 1992

*** A more conservative, Commercial/Retail rate was used for this use in order to allow the Religious Center use to be converted to a retail use at a later date if the center is not located on the project site.

Note:

SF= Square Feet
DU= Dwelling Units
ADT = Average Daily Traffic
% = Peak hour percentage of ADT for each use, do not add.

APPENDIX G

NEAR-TERM INTERSECTION ANALYSIS AND ILV OPERATIONS SHEETS

EXISTING + CUMULATIVE PROJECTS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	509	0	170	0	917	525	0	819	946
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	553	0	185	0	997	571	0	890	1028
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	553	0	185	0	997	571	0	890	1028
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				20.1		100.0		71.9	100.0		71.9	100.0
Effective Green, g (s)				20.1		100.0		71.9	100.0		71.9	100.0
Actuated g/C Ratio				0.20		1.00		0.72	1.00		0.72	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				664		1555		2545	1536		2545	1536
v/s Ratio Prot								0.28			0.25	
v/s Ratio Perm				c0.17		0.12			0.37			c0.67
v/c Ratio				0.83		0.12		0.39	0.37		0.35	0.67
Uniform Delay, d1				38.3		0.0		5.5	0.0		5.3	0.0
Progression Factor				1.00		1.00		1.27	1.00		1.00	1.00
Incremental Delay, d2				8.8		0.2		0.4	0.6		0.4	2.3
Delay (s)				47.1		0.2		7.4	0.6		5.7	2.3
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			35.4			4.9			3.9	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	309	0	2174	0	0	0	0	987	199	0	1075	222
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)	336	0	2363	0	0	0	0	1073	216	0	1168	241
RTOR Reduction (vph)	0	0	35	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	336	0	2328	0	0	0	0	1073	216	0	1168	241
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1553		1614					1593	1536		1593	1536
v/s Ratio Prot								0.30			c0.33	
v/s Ratio Perm	0.10		c0.68						0.14			0.16
v/c Ratio	0.22		1.44					0.67	0.14		0.73	0.16
Uniform Delay, d1	15.6		26.5					21.7	0.0		22.8	0.0
Progression Factor	1.00		1.00					0.87	1.00		0.81	1.00
Incremental Delay, d2	0.1		202.6					0.8	0.1		2.6	0.2
Delay (s)	15.7		229.1					19.7	0.1		20.8	0.2
Level of Service	B		F					B	A		C	A
Approach Delay (s)		202.6			0.0			16.4			17.3	
Approach LOS		F			A			B			B	

Intersection Summary

HCM Average Control Delay	109.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

3: Canyon Crest Dr & College Ave
Ex + CP AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1798	1506		1828	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1798	1506		1828	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	49	19	46	87	144	152	152	910	89	522	1254	706
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)	53	21	50	95	157	165	165	989	97	567	1363	767
RTOR Reduction (vph)	0	0	45	0	0	113	0	0	74	0	0	690
Lane Group Flow (vph)	0	74	5	0	252	52	165	989	23	567	1363	77
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		10.0	10.0		18.6	31.3	15.0	24.1	24.1	31.3	40.4	10.0
Effective Green, g (s)		10.0	10.0		18.6	31.3	15.0	24.1	24.1	31.3	40.4	10.0
Actuated g/C Ratio		0.10	0.10		0.19	0.31	0.15	0.24	0.24	0.31	0.40	0.10
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		180	151		340	495	266	853	363	1075	2054	279
v/s Ratio Prot		c0.04			c0.14	0.03	c0.09	c0.28		0.17	c0.27	0.03
v/s Ratio Perm			0.00						0.02			
v/c Ratio		0.41	0.03		0.74	0.10	0.62	1.16	0.06	0.53	0.66	0.27
Uniform Delay, d1		42.2	40.6		38.4	24.4	39.8	38.0	29.3	28.3	24.3	41.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.88	0.87	3.50
Incremental Delay, d2		1.5	0.1		8.4	0.1	4.4	84.7	0.3	0.0	0.2	0.0
Delay (s)		43.8	40.7		46.9	24.5	44.3	122.7	29.6	24.8	21.3	146.0
Level of Service		D	D		D	C	D	F	C	C	C	F
Approach Delay (s)		42.5			38.0			105.1			57.5	
Approach LOS		D			D			F			E	

Intersection Summary

HCM Average Control Delay	68.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

4: Zura Way & College Ave
Ex + CP AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	100	1345	171	556	1215
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	109	1462	186	604	1321
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.87	0.83			0.83	
vC, conflicting volume	3351	771			1668	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2983	527			1602	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	73			0	
cM capacity (veh/h)	0	400			332	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	109	731	731	186	604	660	660
Volume Left	0	0	0	0	604	0	0
Volume Right	109	0	0	186	0	0	0
cSH	400	1700	1700	1700	332	1700	1700
Volume to Capacity	0.27	0.43	0.43	0.11	1.82	0.39	0.39
Queue Length 95th (ft)	27	0	0	0	994	0	0
Control Delay (s)	17.3	0.0	0.0	0.0	408.0	0.0	0.0
Lane LOS	C				F		
Approach Delay (s)	17.3	0.0			128.1		
Approach LOS	C						

Intersection Summary

Average Delay	67.5		
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

5: Lindo Paseo & College Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.96			0.96		1.00	1.00		1.00	0.97	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1741			1752		1770	3523		1770	3430	
Flt Permitted		0.78			0.88		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1400			1569		1770	3523		1770	3430	
Volume (vph)	60	8	24	23	21	20	84	1156	36	63	863	224
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)	65	9	26	25	23	22	91	1257	39	68	938	243
RTOR Reduction (vph)	0	13	0	0	16	0	0	1	0	0	11	0
Lane Group Flow (vph)	0	87	0	0	54	0	91	1295	0	68	1170	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.0			10.0		9.1	63.9		8.0	62.8	
Effective Green, g (s)		10.0			10.0		9.1	63.9		8.0	62.8	
Actuated g/C Ratio		0.11			0.11		0.10	0.68		0.09	0.67	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		149			167		172	2397		151	2294	
v/s Ratio Prot							c0.05	c0.37		0.04	0.34	
v/s Ratio Perm		c0.06			0.03							
v/c Ratio		0.59			0.32		0.53	0.54		0.45	0.51	
Uniform Delay, d1		40.0			38.8		40.4	7.6		40.9	7.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.8			1.1		2.9	0.9		2.1	0.8	
Delay (s)		45.8			39.9		43.3	8.5		43.0	8.6	
Level of Service		D			D		D	A		D	A	
Approach Delay (s)		45.8			39.9			10.7			10.5	
Approach LOS		D			D			B			B	

Intersection Summary

HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	93.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

6: Montezuma Rd & College Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1459	3433	3421		1770	3539	1459
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1459	3433	3421		1770	3539	1459
Volume (vph)	325	413	139	55	781	327	564	929	161	202	460	158
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)	353	449	151	60	849	355	613	1010	175	220	500	172
RTOR Reduction (vph)	0	0	117	0	0	213	0	14	0	0	0	130
Lane Group Flow (vph)	353	449	34	60	849	142	613	1171	0	220	500	42
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	22.4	22.4	22.4	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	22.4	22.4	22.4	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.23	0.23	0.23	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	403	806	332	432	863	356	419	834		216	863	356
v/s Ratio Prot	c0.20	0.13		0.03	c0.24		c0.18	c0.34		0.12	0.14	
v/s Ratio Perm			0.02			0.10						0.03
v/c Ratio	0.88	0.56	0.10	0.14	0.98	0.40	1.46	1.40		1.02	0.58	0.12
Uniform Delay, d1	36.7	33.6	30.1	29.1	37.0	31.2	43.2	37.2		43.2	32.8	29.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	18.7	0.8	0.1	0.1	26.6	0.7	221.1	189.3		66.1	2.8	0.7
Delay (s)	55.4	34.5	30.2	29.3	63.6	31.9	264.3	226.5		109.3	35.6	29.6
Level of Service	E	C	C	C	E	C	F	F		F	D	C
Approach Delay (s)		41.5			53.0			239.4			52.6	
Approach LOS		D			D			F			D	

Intersection Summary

HCM Average Control Delay	119.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3429		3433	3432		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3429		3433	3432		1770	3539	1583	1770	3539	1583
Volume (vph)	209	364	96	113	493	124	168	1089	99	99	378	114
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)	227	396	104	123	536	135	183	1184	108	108	411	124
RTOR Reduction (vph)	0	20	0	0	19	0	0	0	55	0	0	75
Lane Group Flow (vph)	227	480	0	123	652	0	183	1184	53	108	411	49
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	11.2	29.1		7.7	25.6		16.3	51.2	51.2	10.6	45.5	45.5
Effective Green, g (s)	11.2	29.1		7.7	25.6		16.3	51.2	51.2	10.6	45.5	45.5
Actuated g/C Ratio	0.10	0.25		0.07	0.22		0.14	0.45	0.45	0.09	0.40	0.40
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	336	871		231	767		252	1581	707	164	1405	629
v/s Ratio Prot	c0.07	c0.14		0.04	c0.19		c0.10	c0.33		0.06	0.12	
v/s Ratio Perm									0.03			0.03
v/c Ratio	0.68	0.55		0.53	0.85		0.73	0.75	0.08	0.66	0.29	0.08
Uniform Delay, d1	49.9	37.1		51.7	42.7		47.0	26.4	18.1	50.3	23.6	21.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.3	0.8		2.4	9.0		10.0	3.3	0.2	9.2	0.5	0.2
Delay (s)	55.2	37.8		54.1	51.6		57.0	29.7	18.4	59.4	24.1	21.7
Level of Service	E	D		D	D		E	C	B	E	C	C
Approach Delay (s)		43.3			52.0			32.2			29.6	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	38.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	114.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	171	3539	3433	1583
Volume (vph)	1290	260	56	1037	954	77
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1402	283	61	1127	1037	84
RTOR Reduction (vph)	0	0	0	0	0	10
Lane Group Flow (vph)	1402	283	61	1127	1037	74
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	43.5	88.6	43.5	43.5	45.1	45.1
Effective Green, g (s)	43.5	88.6	43.5	43.5	45.1	45.1
Actuated g/C Ratio	0.45	0.92	0.45	0.45	0.47	0.47
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1594	1583	77	1594	1603	739
v/s Ratio Prot	c0.40	0.08		0.32	c0.30	
v/s Ratio Perm		0.10	0.36			0.05
v/c Ratio	0.88	0.18	0.79	0.71	0.65	0.10
Uniform Delay, d1	24.2	0.4	22.7	21.4	19.7	14.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.9	0.1	41.2	1.5	2.0	0.3
Delay (s)	30.1	0.5	63.9	22.9	21.7	14.7
Level of Service	C	A	E	C	C	B
Approach Delay (s)	25.1			25.0	21.2	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	96.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		0.96	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3497		1700	3373			1758		1681	1691	1454
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3497		1700	3373			1758		1681	1691	1454
Volume (vph)	771	539	25	9	719	192	42	14	7	108	4	183
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)	838	586	27	10	782	209	46	15	8	117	4	199
RTOR Reduction (vph)	0	3	0	0	23	0	0	5	0	0	0	168
Lane Group Flow (vph)	838	610	0	10	968	0	0	64	0	59	62	31
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	24.0	54.4		0.8	31.2			16.0		16.0	16.0	16.0
Effective Green, g (s)	24.0	54.4		0.8	31.2			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.23	0.53		0.01	0.30			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	798	1843		13	1020			273		261	262	225
v/s Ratio Prot	c0.24	0.17		0.01	c0.29			c0.04		0.04	c0.04	
v/s Ratio Perm												0.02
v/c Ratio	1.05	0.33		0.77	0.95			0.23		0.23	0.24	0.14
Uniform Delay, d1	39.6	14.0		51.1	35.2			38.2		38.2	38.2	37.6
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	45.8	0.1		128.6	17.0			2.0		2.0	2.1	1.3
Delay (s)	85.4	14.1		179.7	52.3			40.2		40.2	40.4	38.9
Level of Service	F	B		F	D			D		D	D	D
Approach Delay (s)		55.3			53.5			40.2			39.4	
Approach LOS		E			D			D			D	

Intersection Summary

HCM Average Control Delay	52.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.9%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.96		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	0.96	1.00
Satd. Flow (prot)	1770	3515		1770	3378			1648		1681	1706	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (perm)	1770	3515		1770	3378			1648		1681	1706	1583
Volume (vph)	147	535	14	57	1120	231	24	30	55	109	17	61
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)	160	582	15	62	1217	251	26	33	60	118	18	66
RTOR Reduction (vph)	0	2	0	0	17	0	0	37	0	0	0	61
Lane Group Flow (vph)	160	595	0	62	1451	0	0	82	0	66	70	5
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	48.0		4.8	44.8			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	48.0		4.8	44.8			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.48		0.05	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	140	1674		84	1501			262		267	271	126
v/s Ratio Prot	c0.09	c0.17		0.04	c0.43			c0.05		0.04	c0.04	0.00
v/s Ratio Perm												
v/c Ratio	1.14	0.36		0.74	0.97			0.31		0.25	0.26	0.04
Uniform Delay, d1	46.4	16.6		47.4	27.3			37.5		37.1	37.2	42.9
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	119.6	0.1		28.3	15.8			3.1		2.2	2.3	0.1
Delay (s)	166.0	16.8		75.7	43.1			40.6		39.3	39.5	43.0
Level of Service	F	B		E	D			D		D	D	D
Approach Delay (s)		48.3			44.4			40.6			40.6	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	45.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.5%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.93			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3526		1770	3532			1693			1698	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.92	
Satd. Flow (perm)	1770	3526		1770	3532			1567			1594	
Volume (vph)	14	285	7	46	883	12	20	1	23	25	7	37
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	310	8	50	960	13	22	1	25	27	8	40
RTOR Reduction (vph)	0	2	0	0	1	0	0	14	0	0	22	0
Lane Group Flow (vph)	15	316	0	50	972	0	0	34	0	0	53	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	19.8		4.7	23.4			29.9			29.9	
Effective Green, g (s)	1.1	19.8		4.7	23.4			29.9			29.9	
Actuated g/C Ratio	0.02	0.30		0.07	0.35			0.45			0.45	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	29	1051		125	1245			706			718	
v/s Ratio Prot	0.01	0.09		c0.03	c0.28							
v/s Ratio Perm								0.02			c0.03	
v/c Ratio	0.52	0.30		0.40	0.78			0.05			0.07	
Uniform Delay, d1	32.4	18.0		29.5	19.2			10.3			10.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	14.7	0.2		2.1	3.2			0.1			0.2	
Delay (s)	47.1	18.1		31.6	22.5			10.4			10.6	
Level of Service	D	B		C	C			B			B	
Approach Delay (s)		19.4			22.9			10.4			10.6	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	66.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	0.96	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3258	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3258	1441	3433	1583
Volume (vph)	98	459	551	774	214	41
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	107	499	599	841	233	45
RTOR Reduction (vph)	0	0	28	426	0	25
Lane Group Flow (vph)	107	499	782	204	233	20
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	9.1	43.0	29.9	29.9	41.3	41.3
Effective Green, g (s)	9.1	43.0	29.9	29.9	41.3	41.3
Actuated g/C Ratio	0.10	0.47	0.32	0.32	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	175	1649	1055	467	1536	708
v/s Ratio Prot	c0.06	0.14	c0.24	0.14	c0.07	0.01
v/s Ratio Perm						
v/c Ratio	0.61	0.30	0.74	0.44	0.15	0.03
Uniform Delay, d1	39.9	15.3	27.8	24.6	15.1	14.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.2	0.1	2.8	0.7	0.2	0.1
Delay (s)	46.1	15.4	30.6	25.2	15.3	14.3
Level of Service	D	B	C	C	B	B
Approach Delay (s)		20.8	28.3		15.2	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	92.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/19/2009

1: I-8WB Ramp & College Ave
Ex + CP PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	510	0	304	0	1155	1328	0	795	581
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	554	0	330	0	1255	1443	0	864	632
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	554	0	330	0	1255	1443	0	864	632
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				20.1		100.0		71.9	100.0		71.9	100.0
Effective Green, g (s)				20.1		100.0		71.9	100.0		71.9	100.0
Actuated g/C Ratio				0.20		1.00		0.72	1.00		0.72	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				664		1555		2545	1536		2545	1536
v/s Ratio Prot								0.35			0.24	
v/s Ratio Perm				0.17		0.21			c0.94			0.41
v/c Ratio				0.83		0.21		0.49	0.94		0.34	0.41
Uniform Delay, d1				38.4		0.0		6.1	0.0		5.2	0.0
Progression Factor				1.00		1.00		0.94	1.00		1.00	1.00
Incremental Delay, d2				8.9		0.3		0.2	4.8		0.4	0.8
Delay (s)				47.2		0.3		6.0	4.8		5.6	0.8
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			29.7			5.3			3.6	
Approach LOS		A			C			A			A	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/19/2009

2: I-8EB Ramp & College Ave
Ex + CP PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	674	0	1205	0	0	0	0	1780	557	0	1021	452
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)	733	0	1310	0	0	0	0	1935	605	0	1110	491
RTOR Reduction (vph)	0	0	44	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	733	0	1266	0	0	0	0	1935	605	0	1110	491
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.2		44.2					47.8	100.0		47.8	100.0
Effective Green, g (s)	44.2		44.2					47.8	100.0		47.8	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1460		1518					1692	1536		1692	1536
v/s Ratio Prot								c0.55			0.31	
v/s Ratio Perm	0.22		c0.37						0.39			0.32
v/c Ratio	0.50		0.83					1.14	0.39		0.66	0.32
Uniform Delay, d1	20.0		24.7					26.1	0.0		19.8	0.0
Progression Factor	1.00		1.00					0.81	1.00		0.80	1.00
Incremental Delay, d2	0.3		4.1					65.4	0.1		1.8	0.5
Delay (s)	20.3		28.8					86.5	0.1		17.6	0.5
Level of Service	C		C					F	A		B	A
Approach Delay (s)		25.7			0.0			65.9			12.3	
Approach LOS		C			A			E			B	

Intersection Summary

HCM Average Control Delay	38.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/19/2009

3: Canyon Crest Dr & College Ave
Ex + CP PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1783	1506		1784	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1783	1506		1784	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	502	56	88	99	13	281	66	1706	150	284	1390	115
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)	546	61	96	108	14	305	72	1854	163	309	1511	125
RTOR Reduction (vph)	0	0	62	0	0	260	0	0	58	0	0	90
Lane Group Flow (vph)	0	607	34	0	122	45	72	1854	105	309	1511	35
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		11.7	14.9	8.2	33.4	33.4	14.9	40.1	24.0
Effective Green, g (s)		24.0	24.0		11.7	14.9	8.2	33.4	33.4	14.9	40.1	24.0
Actuated g/C Ratio		0.24	0.24		0.12	0.15	0.08	0.33	0.33	0.15	0.40	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		428	361		209	236	145	1182	503	512	2039	669
v/s Ratio Prot		c0.34			c0.07	0.03	0.04	c0.52		c0.09	0.30	0.01
v/s Ratio Perm			0.02						0.07			
v/c Ratio		1.42	0.09		0.58	0.19	0.50	1.57	0.21	0.60	0.74	0.05
Uniform Delay, d1		38.0	29.5		41.8	37.3	43.9	33.3	23.8	39.8	25.5	29.3
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.02	0.83	1.45
Incremental Delay, d2		201.5	0.1		4.1	0.4	2.7	260.0	0.9	1.3	1.6	0.0
Delay (s)		239.5	29.7		46.0	37.7	46.6	293.3	24.8	41.7	22.7	42.4
Level of Service		F	C		D	D	D	F	C	D	C	D
Approach Delay (s)		210.9			40.0			263.8			27.0	
Approach LOS		F			D			F			C	

Intersection Summary

HCM Average Control Delay	148.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/19/2009

4: Zura Way & College Ave
Ex + CP PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	444	1601	138	188	1397
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	483	1740	150	204	1518
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.83	0.69			0.69	
vC, conflicting volume	2928	910			1910	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1990	415			1869	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			5	
cM capacity (veh/h)	2	390			215	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	483	870	870	150	204	759	759
Volume Left	0	0	0	0	204	0	0
Volume Right	483	0	0	150	0	0	0
cSH	390	1700	1700	1700	215	1700	1700
Volume to Capacity	1.24	0.51	0.51	0.09	0.95	0.45	0.45
Queue Length 95th (ft)	511	0	0	0	202	0	0
Control Delay (s)	157.4	0.0	0.0	0.0	95.6	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	157.4	0.0			11.3		
Approach LOS	F						

Intersection Summary

Average Delay	23.3		
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.98		1.00	1.00		1.00	0.98	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1721			1781		1770	3526		1770	3475	
Flt Permitted		0.80			0.83		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1410			1512		1770	3526		1770	3475	
Volume (vph)	154	18	102	28	29	13	53	1319	35	58	1253	172
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)	167	20	111	30	32	14	58	1434	38	63	1362	187
RTOR Reduction (vph)	0	18	0	0	7	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	280	0	0	69	0	58	1471	0	63	1542	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		23.9			23.9		7.3	56.1		7.5	56.3	
Effective Green, g (s)		23.9			23.9		7.3	56.1		7.5	56.3	
Actuated g/C Ratio		0.24			0.24		0.07	0.56		0.08	0.57	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		339			363		130	1988		133	1966	
v/s Ratio Prot							0.03	0.42		c0.04	c0.44	
v/s Ratio Perm		c0.20			0.05							
v/c Ratio		0.83			0.19		0.45	0.74		0.47	0.78	
Uniform Delay, d1		35.8			30.1		44.2	16.2		44.1	16.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.0			0.3		2.4	2.5		2.7	3.2	
Delay (s)		50.8			30.4		46.6	18.8		46.8	20.1	
Level of Service		D			C		D	B		D	C	
Approach Delay (s)		50.8			30.4			19.8			21.1	
Approach LOS		D			C			B			C	

Intersection Summary

HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.8%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3434		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3434		1770	3539	1457
Volume (vph)	730	1010	572	276	788	370	525	679	101	389	922	191
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)	793	1098	622	300	857	402	571	738	110	423	1002	208
RTOR Reduction (vph)	0	0	231	0	0	173	0	12	0	0	0	157
Lane Group Flow (vph)	793	1098	391	300	857	229	571	836	0	423	1002	51
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	824		212	849	350
v/s Ratio Prot	c0.45	0.31		0.17	c0.24		0.17	0.24		c0.24	c0.28	
v/s Ratio Perm			0.27			0.16						0.04
v/c Ratio	1.87	1.29	1.12	0.71	1.01	0.66	1.39	1.01		2.00	1.18	0.15
Uniform Delay, d1	38.0	38.0	38.0	34.8	38.0	34.3	44.0	38.0		44.0	38.0	29.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	398.6	140.7	83.6	6.3	33.2	4.4	188.1	35.0		464.3	93.2	0.9
Delay (s)	436.6	178.7	121.6	40.0	71.2	38.7	232.1	73.0		508.3	131.2	30.8
Level of Service	F	F	F	D	E	D	F	E		F	F	C
Approach Delay (s)		246.0			56.8			137.0			216.1	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	176.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	119.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

7: El Cajon Blvd & College Ave

Ex + CP + PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3428		3433	3351		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3428		3433	3351		1770	3539	1583	1770	3539	1583
Volume (vph)	243	694	183	331	543	298	237	772	174	436	1062	230
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)	264	754	199	360	590	324	258	839	189	474	1154	250
RTOR Reduction (vph)	0	20	0	0	62	0	0	0	141	0	0	136
Lane Group Flow (vph)	264	933	0	360	852	0	258	839	48	474	1154	114
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	10.0	32.0		13.0	35.0		18.0	28.0	28.0	31.0	41.0	41.0
Effective Green, g (s)	10.0	32.0		13.0	35.0		18.0	28.0	28.0	31.0	41.0	41.0
Actuated g/C Ratio	0.08	0.27		0.11	0.29		0.15	0.23	0.23	0.26	0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	286	914		372	977		266	826	369	457	1209	541
v/s Ratio Prot	0.08	c0.27		c0.10	c0.25		0.15	0.24		c0.27	c0.33	
v/s Ratio Perm									0.03			0.07
v/c Ratio	0.92	1.02		0.97	0.87		0.97	1.02	0.13	1.04	0.95	0.21
Uniform Delay, d1	54.6	44.0		53.3	40.4		50.7	46.0	36.4	44.5	38.6	28.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.5	35.2		37.7	8.7		46.2	35.3	0.7	52.1	17.0	0.9
Delay (s)	88.1	79.2		91.0	49.0		97.0	81.3	37.1	96.6	55.6	28.9
Level of Service	F	E		F	D		F	F	D	F	E	C
Approach Delay (s)		81.1			60.9			77.9			62.4	
Approach LOS		F			E			E			E	

Intersection Summary			
HCM Average Control Delay	69.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

8: Montezuma Rd & Collwood Blvd

Ex + CP + PM

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1678	343	72	1028	309	46
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1824	373	78	1117	336	50
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1824	373	78	1117	336	47
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	c0.52	c0.11		0.32	0.10	
v/s Ratio Perm		0.13	0.49			0.03
v/c Ratio	1.10	0.24	1.04	0.67	0.22	0.07
Uniform Delay, d1	26.5	0.4	26.5	20.5	16.8	15.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	53.5	0.1	115.4	1.1	0.3	0.2
Delay (s)	80.0	0.5	141.9	21.6	17.1	15.8
Level of Service	F	A	F	C	B	B
Approach Delay (s)	66.5			29.5	16.9	
Approach LOS	E			C	B	

Intersection Summary			
HCM Average Control Delay	49.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

9: Montezuma Rd & 55th St
Ex + CP + PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.93		0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3453		1770	3539	1467		1745		1681	1695	1464
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3453		1770	3539	1467		1745		1681	1695	1464
Volume (vph)	486	1108	111	30	686	241	34	19	12	525	33	509
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)	528	1204	121	33	746	262	37	21	13	571	36	553
RTOR Reduction (vph)	0	7	0	0	0	190	0	8	0	0	0	386
Lane Group Flow (vph)	528	1318	0	33	746	72	0	63	0	296	311	167
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	17.3	42.0		2.3	27.0	27.0		16.0		22.1	22.1	22.1
Effective Green, g (s)	17.3	42.0		2.3	27.0	27.0		16.0		22.1	22.1	22.1
Actuated g/C Ratio	0.18	0.43		0.02	0.27	0.27		0.16		0.22	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	604	1474		.41	971	403		284		378	381	329
v/s Ratio Prot	c0.15	c0.38		0.02	0.21			c0.04		0.18	c0.18	
v/s Ratio Perm						0.05						0.11
v/c Ratio	0.87	0.89		0.80	0.77	0.18		0.22		0.78	0.82	0.51
Uniform Delay, d1	39.5	26.1		47.8	32.8	27.2		35.8		35.9	36.2	33.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	13.3	7.3		69.0	3.7	0.2		1.8		14.9	17.3	5.5
Delay (s)	52.8	33.5		116.8	36.5	27.5		37.6		50.8	53.6	38.9
Level of Service	D	C		F	D	C		D		D	D	D
Approach Delay (s)		39.0			36.8			37.6			45.9	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	40.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

10: Montezuma Rd & Campanile Dr
Ex + CP + PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			0.94		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (prot)	1770	3520		1770	3338			1580		1681	1700	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (perm)	1770	3520		1770	3338			1580		1681	1700	1583
Volume (vph)	176	1340	28	194	864	236	25	37	152	370	37	167
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)	191	1457	30	211	939	257	27	40	165	402	40	182
RTOR Reduction (vph)	0	2	0	0	25	0	0	89	0	0	0	167
Lane Group Flow (vph)	191	1485	0	211	1171	0	0	143	0	215	227	15
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	44.6		6.0	42.6			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	44.6		6.0	42.6			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.45		0.06	0.43			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	144	1592		108	1442			256		273	276	128
v/s Ratio Prot	0.11	c0.42		c0.12	0.35			c0.09		0.13	c0.13	0.01
v/s Ratio Perm												
v/c Ratio	1.33	0.93		1.95	0.81			0.56		0.79	0.82	0.12
Uniform Delay, d1	45.3	25.6		46.3	24.5			38.1		39.7	39.9	42.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	186.8	10.4		461.0	3.6			8.6		20.2	23.4	0.4
Delay (s)	232.1	36.0		507.3	28.1			46.6		59.8	63.3	42.4
Level of Service	F	D		F	C			D		E	E	D
Approach Delay (s)		58.3			100.0			46.6			56.0	
Approach LOS		E			F			D			E	

Intersection Summary

HCM Average Control Delay	72.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	98.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3529		1770	3521			1670			1714	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.87	
Satd. Flow (perm)	1770	3529		1770	3521			1616			1524	
Volume (vph)	29	965	19	61	588	20	24	20	112	26	7	27
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)	32	1049	21	66	617	22	26	22	122	28	8	29
RTOR Reduction (vph)	0	1	0	0	2	0	0	74	0	0	17	0
Lane Group Flow (vph)	32	1069	0	66	637	0	0	96	0	0	48	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	2.8	28.9		5.2	31.3			30.4			30.4	
Effective Green, g (s)	2.8	28.9		5.2	31.3			30.4			30.4	
Actuated g/C Ratio	0.04	0.38		0.07	0.41			0.40			0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	65	1333		120	1441			642			606	
v/s Ratio Prot	0.02	c0.30		c0.04	0.18							
v/s Ratio Perm								c0.06			0.03	
v/c Ratio	0.49	0.80		0.55	0.44			0.15			0.08	
Uniform Delay, d1	36.2	21.2		34.5	16.3			14.8			14.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.8	3.6		5.4	0.2			0.5			0.3	
Delay (s)	41.9	24.8		39.9	16.5			15.3			14.6	
Level of Service	D	C		D	B			B			B	
Approach Delay (s)		25.3			18.7			15.3			14.6	
Approach LOS		C			B			B			B	

Intersection Summary

HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	81	330	610	398	650	68
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	359	663	433	707	74
RTOR Reduction (vph)	0	0	0	312	0	38
Lane Group Flow (vph)	88	359	663	121	707	36
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	8.0	35.6	23.6	23.6	41.2	41.2
Effective Green, g (s)	8.0	35.6	23.6	23.6	41.2	41.2
Actuated g/C Ratio	0.09	0.42	0.28	0.28	0.49	0.49
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	167	1486	943	401	1668	769
v/s Ratio Prot	c0.05	0.10	c0.20	0.08	c0.21	0.02
v/s Ratio Perm						
v/c Ratio	0.53	0.24	0.70	0.30	0.42	0.05
Uniform Delay, d1	36.6	15.9	27.5	24.1	14.1	11.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	0.1	2.4	0.4	0.8	0.1
Delay (s)	39.6	16.0	29.9	24.5	14.9	11.6
Level of Service	D	B	C	C	B	B
Approach Delay (s)		20.6	27.7		14.6	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	84.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

ILV Operations

Ex+CP- AM

INTERSECTION

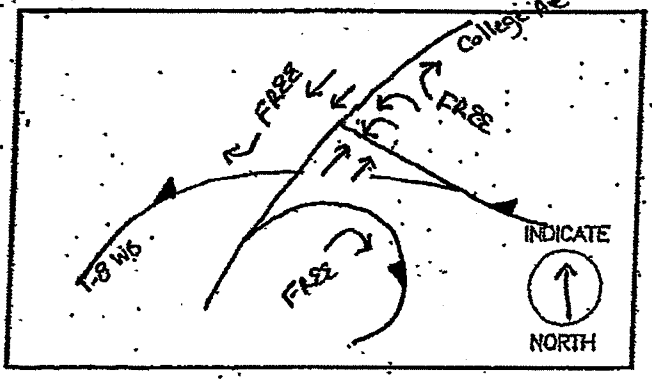
Signalized Intersection
CAPACITY ANALYSIS

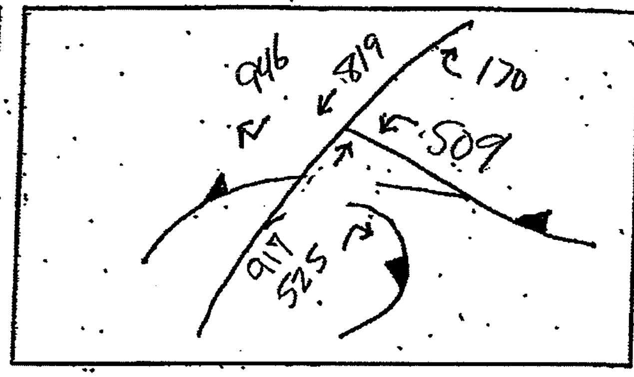
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ____

BY CL DATE 5/27/09

TIME ____ AM PM

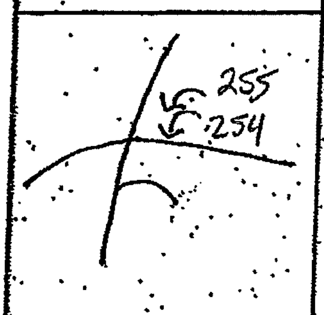
DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1



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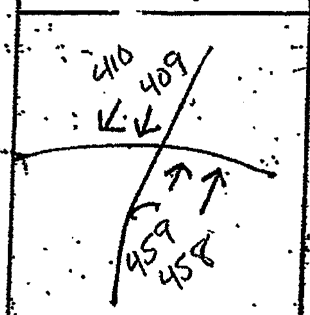


PHASE 3

PHASE 4

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
255	459		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
714

☐ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY).

REMARKS:

Ex+CP- PM

INTERSECTION

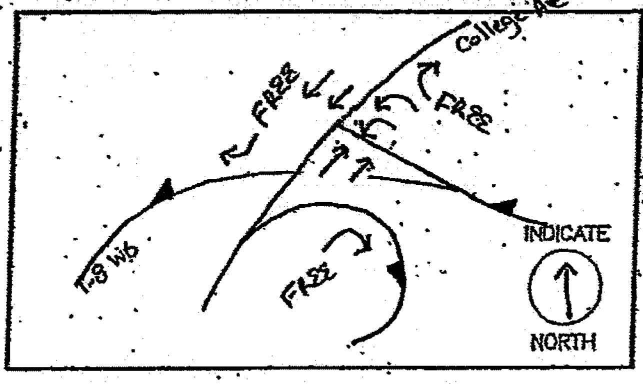
Signalized Intersection
CAPACITY ANALYSIS

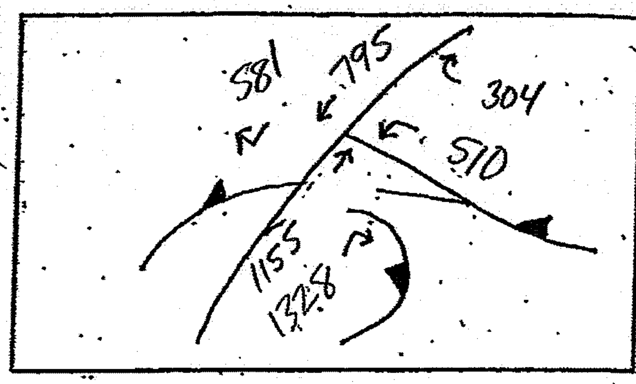
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ____________

BY CL DATE 5/27/09

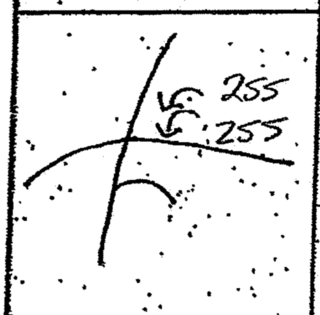
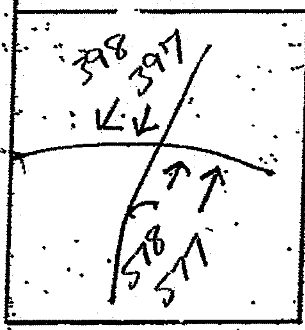
TIME ____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
255	578		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
833

☐ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Ex+CP- AM

INTERSECTION

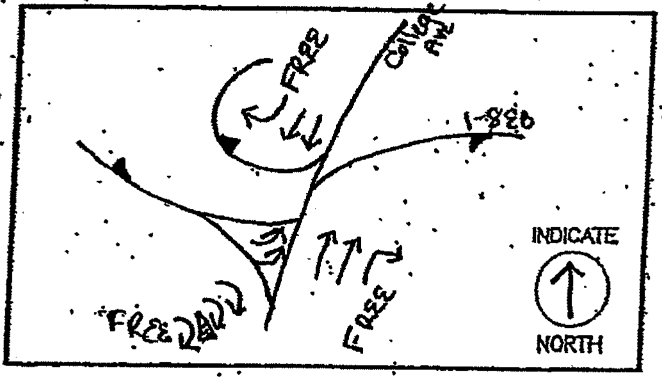
Signalized Intersection
CAPACITY ANALYSIS

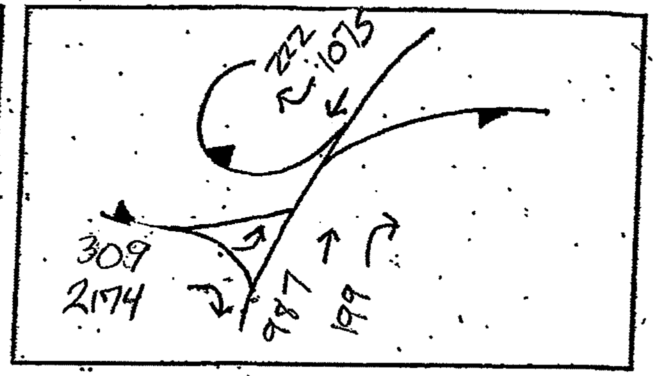
INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

TIME ______ ☒ AM PM

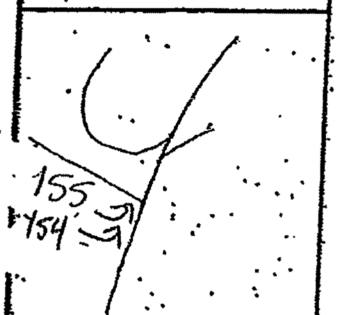
DIAGRAM AND TRAFFIC FLOWS:



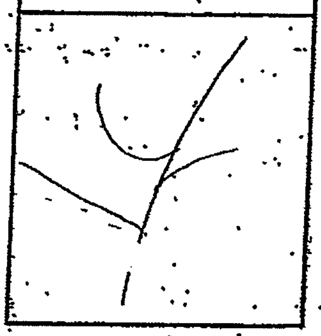


LANE VOLUMES (ILV/HR)

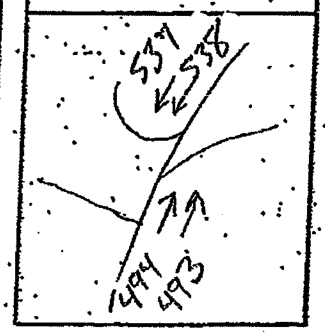
PHASE 1



PHASE 2



PHASE 3



PHASE 4

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
155		538	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
693

☒ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Ext + CP - AM

INTERSECTION

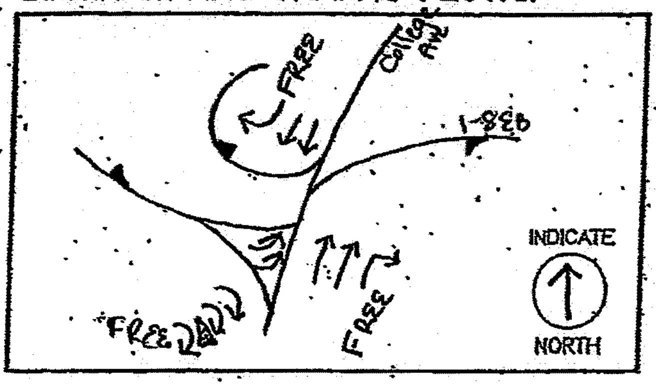
Signalized Intersection
CAPACITY ANALYSIS

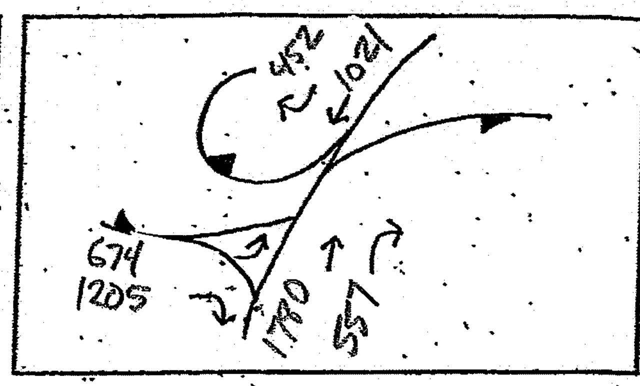
INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/21/09

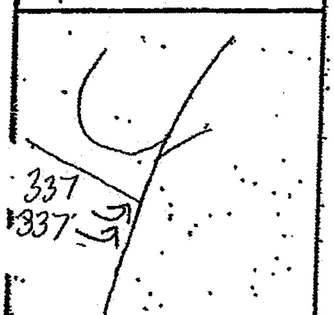
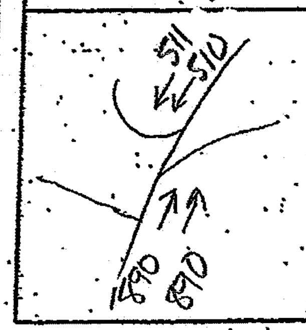
TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
337		890	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1227

- ☐ < 1200 ILV/HR.
- ☒ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

EXISTING + CUMULATIVE PROJECTS + UNIVERSITY SERVING RETAIL OPERATIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	509	0	170	0	924	525	0	820	946
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	553	0	185	0	1004	571	0	891	1028
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	553	0	185	0	1004	571	0	891	1028
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				20.1		100.0		71.9	100.0		71.9	100.0
Effective Green, g (s)				20.1		100.0		71.9	100.0		71.9	100.0
Actuated g/C Ratio				0.20		1.00		0.72	1.00		0.72	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				664		1555		2545	1536		2545	1536
v/s Ratio Prot								0.28			0.25	
v/s Ratio Perm				c0.17		0.12			0.37			c0.67
v/c Ratio				0.83		0.12		0.39	0.37		0.35	0.67
Uniform Delay, d1				38.3		0.0		5.5	0.0		5.3	0.0
Progression Factor				1.00		1.00		1.26	1.00		1.00	1.00
Incremental Delay, d2				8.8		0.2		0.4	0.6		0.4	2.3
Delay (s)				47.1		0.2		7.3	0.6		5.7	2.3
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			35.4			4.9			3.9	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3272		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3272		3434					3539	1536		3539	1536
Volume (vph)	309	0	2174	0	0	0	0	994	200	0	1075	222
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)	336	0	2363	0	0	0	0	1080	217	0	1168	241
RTOR Reduction (vph)	0	0	35	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	336	0	2328	0	0	0	0	1080	217	0	1168	241
Confl. Peds. (#/hr)	20		20						20			20
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1538		1614					1593	1536		1593	1536
v/s Ratio Prot								0.31			c0.33	
v/s Ratio Perm	0.10		c0.68						0.14			0.16
v/c Ratio	0.22		1.44					0.68	0.14		0.73	0.16
Uniform Delay, d1	15.7		26.5					21.8	0.0		22.6	0.0
Progression Factor	1.00		1.00					0.88	1.00		0.81	1.00
Incremental Delay, d2	0.1		202.6					0.8	0.1		2.6	0.2
Delay (s)	15.7		229.1					20.0	0.1		20.8	0.2
Level of Service	B		F					B	A		C	A
Approach Delay (s)		202.6			0.0			16.6			17.3	
Approach LOS		F			A			B			B	

Intersection Summary

HCM Average Control Delay	109.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

3: Canyon Crest Dr & College Ave

Ex + CP + USR AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑	↱	↰↰	↑↑↑	↱↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1798	1506		1828	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1798	1506		1828	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	49	19	46	87	144	152	152	918	90	522	1254	706
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)	53	21	50	95	157	165	165	998	98	567	1363	767
RTOR Reduction (vph)	0	0	45	0	0	113	0	0	74	0	0	690
Lane Group Flow (vph)	0	74	5	0	252	52	165	998	24	567	1363	77
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		10.0	10.0		18.6	31.3	15.0	24.1	24.1	31.3	40.4	10.0
Effective Green, g (s)		10.0	10.0		18.6	31.3	15.0	24.1	24.1	31.3	40.4	10.0
Actuated g/C Ratio		0.10	0.10		0.19	0.31	0.15	0.24	0.24	0.31	0.40	0.10
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		180	151		340	495	266	853	363	1075	2054	279
v/s Ratio Prot		c0.04			c0.14	0.03	c0.09	c0.28		0.17	c0.27	0.03
v/s Ratio Perm			0.00						0.02			
v/c Ratio		0.41	0.03		0.74	0.10	0.62	1.17	0.07	0.53	0.66	0.27
Uniform Delay, d1		42.2	40.6		38.4	24.4	39.8	38.0	29.3	28.3	24.3	41.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.88	0.87	3.50
Incremental Delay, d2		1.5	0.1		8.4	0.1	4.4	89.0	0.4	0.0	0.2	0.0
Delay (s)		43.8	40.7		46.9	24.5	44.3	126.9	29.6	24.8	21.3	146.0
Level of Service		D	D		D	C	D	F	C	C	C	F
Approach Delay (s)		42.5			38.0			108.6			57.5	
Approach LOS		D			D			F			E	

Intersection Summary

HCM Average Control Delay	69.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

4: Zura Way & College Ave

Ex + CP + USR AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱	↰	↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	100	1355	171	556	1216
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	109	1473	186	604	1321
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.86	0.85			0.85	
vC, conflicting volume	3362	776			1679	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3073	566			1623	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	72			0	
cM capacity (veh/h)	0	386			333	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	109	736	736	186	604	660	660
Volume Left	0	0	0	0	604	0	0
Volume Right	109	0	0	186	0	0	0
cSH	386	1700	1700	1700	333	1700	1700
Volume to Capacity	0.28	0.43	0.43	0.11	1.82	0.39	0.39
Queue Length 95th (ft)	28	0	0	0	991	0	0
Control Delay (s)	18.0	0.0	0.0	0.0	405.4	0.0	0.0
Lane LOS	C				F		
Approach Delay (s)	18.0	0.0			127.3		
Approach LOS	C						

Intersection Summary

Average Delay	66.9		
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.97			0.92		1.00	1.00		1.00	0.97	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1742			1691		1770	3532		1770	3430	
Flt Permitted		0.80			0.93		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1441			1593		1770	3532		1770	3430	
Volume (vph)	60	9	24	14	9	35	84	1156	16	38	863	224
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)	65	10	26	15	10	38	91	1257	17	41	938	243
RTOR Reduction (vph)	0	13	0	0	34	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	88	0	0	29	0	91	1274	0	41	1170	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		9.9			9.9		8.9	65.9		5.3	62.3	
Effective Green, g (s)		9.9			9.9		8.9	65.9		5.3	62.3	
Actuated g/C Ratio		0.11			0.11		0.10	0.71		0.06	0.67	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		153			169		169	2500		101	2295	
v/s Ratio Prot							c0.05	c0.36		0.02	0.34	
v/s Ratio Perm		c0.06			0.02							
v/c Ratio		0.58			0.17		0.54	0.51		0.41	0.51	
Uniform Delay, d1		39.6			37.9		40.1	6.2		42.4	7.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.2			0.5		3.3	0.7		2.7	0.8	
Delay (s)		44.8			38.4		43.4	7.0		45.0	8.5	
Level of Service		D			D		D	A		D	A	
Approach Delay (s)		44.8			38.4			9.4			9.8	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	93.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1459	3433	3421		1770	3539	1459
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1459	3433	3421		1770	3539	1459
Volume (vph)	325	413	139	55	781	327	564	929	161	206	464	166
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)	353	449	151	60	849	355	613	1010	175	224	504	180
RTOR Reduction (vph)	0	0	117	0	0	213	0	14	0	0	0	136
Lane Group Flow (vph)	353	449	34	60	849	142	613	1171	0	224	504	44
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	22.4	22.4	22.4	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	22.4	22.4	22.4	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.23	0.23	0.23	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	403	806	332	432	863	356	419	834		216	863	356
v/s Ratio Prot	c0.20	0.13		0.03	c0.24		c0.18	c0.34		0.13	0.14	
v/s Ratio Perm			0.02			0.10						0.03
v/c Ratio	0.88	0.56	0.10	0.14	0.98	0.40	1.46	1.40		1.04	0.58	0.12
Uniform Delay, d1	36.7	33.6	30.1	29.1	37.0	31.2	43.2	37.2		43.2	32.8	29.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	18.7	0.8	0.1	0.1	26.5	0.7	221.1	189.3		71.2	2.9	0.7
Delay (s)	55.4	34.5	30.2	29.3	63.5	31.9	264.3	226.5		114.4	35.7	29.7
Level of Service	E	C	C	C	E	C	F	F		F	D	C
Approach Delay (s)		41.5			53.0			239.4			53.9	
Approach LOS		D			D			F			D	

Intersection Summary

HCM Average Control Delay	119.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3429		3433	3432		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3429		3433	3432		1770	3539	1583	1770	3539	1583
Volume (vph)	209	364	96	113	493	124	168	1089	99	99	379	115
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)	227	396	104	123	536	135	183	1184	108	108	412	125
RTOR Reduction (vph)	0	20	0	0	19	0	0	0	55	0	0	75
Lane Group Flow (vph)	227	480	0	123	652	0	183	1184	53	108	412	50
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	11.2	29.1		7.7	25.6		16.3	51.2	51.2	10.6	45.5	45.5
Effective Green, g (s)	11.2	29.1		7.7	25.6		16.3	51.2	51.2	10.6	45.5	45.5
Actuated g/C Ratio	0.10	0.25		0.07	0.22		0.14	0.45	0.45	0.09	0.40	0.40
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	336	871		231	767		252	1581	707	164	1405	629
v/s Ratio Prot	c0.07	c0.14		0.04	c0.19		c0.10	c0.33		0.06	0.12	
v/s Ratio Perm									0.03			0.03
v/c Ratio	0.68	0.55		0.53	0.85		0.73	0.75	0.08	0.66	0.29	0.08
Uniform Delay, d1	49.9	37.1		51.7	42.7		47.0	26.4	18.1	50.3	23.6	21.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.3	0.8		2.4	9.0		10.0	3.3	0.2	9.2	0.5	0.2
Delay (s)	55.2	37.8		54.1	51.6		57.0	29.7	18.4	59.4	24.1	21.8
Level of Service	E	D		D	D		E	C	B	E	C	C
Approach Delay (s)		43.3			52.0			32.2			29.6	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	38.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	114.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	169	3539	3433	1583
Volume (vph)	1290	260	57	1044	954	77
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1402	283	62	1135	1037	84
RTOR Reduction (vph)	0	0	0	0	0	10
Lane Group Flow (vph)	1402	283	62	1135	1037	74
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	44.0	89.1	44.0	44.0	45.1	45.1
Effective Green, g (s)	44.0	89.1	44.0	44.0	45.1	45.1
Actuated g/C Ratio	0.45	0.92	0.45	0.45	0.46	0.46
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1604	1583	77	1604	1595	735
v/s Ratio Prot	c0.40	0.08		0.32	c0.30	
v/s Ratio Perm		0.10	0.37			0.05
v/c Ratio	0.87	0.18	0.81	0.71	0.65	0.10
Uniform Delay, d1	24.0	0.4	22.9	21.4	19.9	14.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.1	43.8	1.5	2.1	0.3
Delay (s)	29.7	0.4	66.7	22.8	22.0	14.9
Level of Service	C	A	E	C	C	B
Approach Delay (s)	24.7			25.1	21.5	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	23.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	97.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	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	↰↰	↑↑↱		↰	↑↑↱			✥		↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		0.96	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3497		1700	3374			1758		1681	1691	1454
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3497		1700	3374			1758		1681	1691	1454
Volume (vph)	771	539	25	9	727	192	42	14	7	108	4	183
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)	838	586	27	10	790	209	46	15	8	117	4	199
RTOR Reduction (vph)	0	3	0	0	23	0	0	5	0	0	0	168
Lane Group Flow (vph)	838	610	0	10	976	0	0	64	0	59	62	31
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	24.0	54.4		0.8	31.2			16.0		16.0	16.0	16.0
Effective Green, g (s)	24.0	54.4		0.8	31.2			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.23	0.53		0.01	0.30			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	798	1843		13	1020			273		261	262	225
v/s Ratio Prot	c0.24	0.17		0.01	c0.29			c0.04		0.04	c0.04	
v/s Ratio Perm												0.02
v/c Ratio	1.05	0.33		0.77	0.96			0.23		0.23	0.24	0.14
Uniform Delay, d1	39.6	14.0		51.1	35.3			38.2		38.2	38.2	37.6
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	45.8	0.1		128.6	18.5			2.0		2.0	2.1	1.3
Delay (s)	85.4	14.1		179.7	53.8			40.2		40.2	40.4	38.9
Level of Service	F	B		F	D			D		D	D	D
Approach Delay (s)		55.3			55.0			40.2			39.4	
Approach LOS		E			E			D			D	

Intersection Summary

HCM Average Control Delay	53.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.1%	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	↰	↑↑↱		↰	↑↑↱			✥		↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.96		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3515		1770	3378			1648		1681	1708	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3515		1770	3378			1648		1681	1708	1583
Volume (vph)	147	535	14	58	1127	231	24	30	55	109	18	62
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)	160	582	15	63	1225	251	26	33	60	118	20	67
RTOR Reduction (vph)	0	2	0	0	17	0	0	37	0	0	0	62
Lane Group Flow (vph)	160	595	0	63	1459	0	0	82	0	67	71	5
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	48.0		4.8	44.8			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	48.0		4.8	44.8			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.48		0.05	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	140	1674		84	1501			262		267	271	126
v/s Ratio Prot	c0.09	c0.17		0.04	c0.43			c0.05		0.04	c0.04	0.00
v/s Ratio Perm												
v/c Ratio	1.14	0.36		0.75	0.97			0.31		0.25	0.26	0.04
Uniform Delay, d1	46.4	16.6		47.4	27.4			37.5		37.1	37.2	42.9
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	119.6	0.1		30.8	16.9			3.1		2.2	2.3	0.1
Delay (s)	166.0	16.8		78.2	44.3			40.6		39.4	39.6	43.0
Level of Service	F	B		E	D			D		D	D	D
Approach Delay (s)		48.3			45.7			40.6			40.6	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	45.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

11: Montezuma Rd & Catoctin Drive

Ex + CP + USR AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.93			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3526		1770	3532			1693			1698	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.92	
Satd. Flow (perm)	1770	3526		1770	3532			1567			1594	
Volume (vph)	14	289	7	46	883	12	20	1	23	25	7	37
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	314	8	50	960	13	22	1	25	27	8	40
RTOR Reduction (vph)	0	2	0	0	1	0	0	14	0	0	22	0
Lane Group Flow (vph)	15	320	0	50	972	0	0	34	0	0	53	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	19.8		4.7	23.4			29.9			29.9	
Effective Green, g (s)	1.1	19.8		4.7	23.4			29.9			29.9	
Actuated g/C Ratio	0.02	0.30		0.07	0.35			0.45			0.45	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	29	1051		125	1245			706			718	
v/s Ratio Prot	0.01	0.09		c0.03	c0.28							
v/s Ratio Perm								0.02			c0.03	
v/c Ratio	0.52	0.30		0.40	0.78			0.05			0.07	
Uniform Delay, d1	32.4	18.0		29.5	19.2			10.3			10.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	14.7	0.2		2.1	3.2			0.1			0.2	
Delay (s)	47.1	18.1		31.6	22.5			10.4			10.6	
Level of Service	D	B		C	C			B			B	
Approach Delay (s)		19.4			22.9			10.4			10.6	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	66.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

12: El Cajon Blvd & Montezuma Road

Ex + CP + USR AM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	0.96	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1703	3539	3262	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1703	3539	3262	1441	3433	1583
Volume (vph)	98	459	551	774	217	42
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	107	499	599	841	236	46
RTOR Reduction (vph)	0	0	26	434	0	25
Lane Group Flow (vph)	107	499	775	205	236	21
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	9.3	42.8	29.5	29.5	41.3	41.3
Effective Green, g (s)	9.3	42.8	29.5	29.5	41.3	41.3
Actuated g/C Ratio	0.10	0.46	0.32	0.32	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	172	1645	1045	462	1539	710
v/s Ratio Prot	c0.06	0.14	c0.24	0.14	c0.07	0.01
v/s Ratio Perm						
v/c Ratio	0.62	0.30	0.74	0.44	0.15	0.03
Uniform Delay, d1	39.7	15.4	27.9	24.8	15.0	14.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.8	0.1	2.9	0.7	0.2	0.1
Delay (s)	46.5	15.5	30.8	25.5	15.3	14.3
Level of Service	D	B	C	C	B	B
Approach Delay (s)		21.0	28.4		15.1	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	92.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	511	0	304	0	1156	1328	0	806	581
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	555	0	330	0	1257	1443	0	876	632
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	555	0	330	0	1257	1443	0	876	632
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				20.1		100.0		71.9	100.0		71.9	100.0
Effective Green, g (s)				20.1		100.0		71.9	100.0		71.9	100.0
Actuated g/C Ratio				0.20		1.00		0.72	1.00		0.72	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				664		1555		2545	1536		2545	1536
v/s Ratio Prot								0.36			0.25	
v/s Ratio Perm				0.17		0.21			c0.94			0.41
v/c Ratio				0.84		0.21		0.49	0.94		0.34	0.41
Uniform Delay, d1				38.4		0.0		6.1	0.0		5.2	0.0
Progression Factor				1.00		1.00		0.94	1.00		1.00	1.00
Incremental Delay, d2				9.0		0.3		0.2	4.8		0.4	0.8
Delay (s)				47.3		0.3		6.0	4.8		5.6	0.8
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			29.8			5.3			3.6	
Approach LOS		A			C			A			A	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	674	0	1206	0	0	0	0	1781	557	0	1033	452
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)	733	0	1311	0	0	0	0	1936	605	0	1123	491
RTOR Reduction (vph)	0	0	42	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	733	0	1269	0	0	0	0	1936	605	0	1123	491
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.3		44.3					47.7	100.0		47.7	100.0
Effective Green, g (s)	44.3		44.3					47.7	100.0		47.7	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1464		1521					1688	1536		1688	1536
v/s Ratio Prot								c0.55			0.32	
v/s Ratio Perm	0.22		c0.37						0.39			0.32
v/c Ratio	0.50		0.83					1.15	0.39		0.67	0.32
Uniform Delay, d1	19.9		24.6					26.1	0.0		20.0	0.0
Progression Factor	1.00		1.00					0.81	1.00		0.80	1.00
Incremental Delay, d2	0.3		4.1					66.9	0.1		1.9	0.5
Delay (s)	20.2		28.7					88.1	0.1		17.8	0.5
Level of Service	C		C					F	A		B	A
Approach Delay (s)		25.7			0.0			67.1			12.6	
Approach LOS		C			A			E			B	

Intersection Summary

HCM Average Control Delay	39.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1783	1506		1784	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1783	1506		1784	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	502	56	88	101	13	281	66	1708	150	284	1403	115
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)	546	61	96	110	14	305	72	1857	163	309	1525	125
RTOR Reduction (vph)	0	0	62	0	0	260	0	0	58	0	0	89
Lane Group Flow (vph)	0	607	34	0	124	45	72	1857	105	309	1525	36
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		11.8	14.8	8.2	33.4	33.4	14.8	40.0	24.0
Effective Green, g (s)		24.0	24.0		11.8	14.8	8.2	33.4	33.4	14.8	40.0	24.0
Actuated g/C Ratio		0.24	0.24		0.12	0.15	0.08	0.33	0.33	0.15	0.40	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		428	361		211	234	145	1182	503	508	2034	669
v/s Ratio Prot		c0.34			c0.07	0.03	0.04	c0.52		c0.09	0.30	0.01
v/s Ratio Perm			0.02						0.07			
v/c Ratio		1.42	0.09		0.59	0.19	0.50	1.57	0.21	0.61	0.75	0.05
Uniform Delay, d1		38.0	29.5		41.8	37.4	43.9	33.3	23.8	39.9	25.7	29.3
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.02	0.83	1.42
Incremental Delay, d2		201.5	0.1		4.1	0.4	2.7	261.1	0.9	1.3	1.6	0.0
Delay (s)		239.5	29.7		45.9	37.8	46.6	294.4	24.8	41.9	22.9	41.6
Level of Service		F	C		D	D	D	F	C	D	C	D
Approach Delay (s)		210.9			40.1			264.9			27.1	
Approach LOS		F			D			F			C	

Intersection Summary

HCM Average Control Delay	149.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	444	1603	138	188	1412
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	483	1742	150	204	1535
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.83	0.69			0.69	
vC, conflicting volume	2938	911			1912	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2002	417			1873	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			5	
cM capacity (veh/h)	2	389			215	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	483	871	871	150	204	767	767
Volume Left	0	0	0	0	204	0	0
Volume Right	483	0	0	150	0	0	0
cSH	389	1700	1700	1700	215	1700	1700
Volume to Capacity	1.24	0.51	0.51	0.09	0.95	0.45	0.45
Queue Length 95th (ft)	513	0	0	0	203	0	0
Control Delay (s)	158.6	0.0	0.0	0.0	96.4	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	158.6	0.0			11.3		
Approach LOS	F						

Intersection Summary

Average Delay	23.4		
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.92		1.00	1.00		1.00	0.98	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1719			1692		1770	3530		1770	3475	
Flt Permitted		0.78			0.90		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1381			1543		1770	3530		1770	3475	
Volume (vph)	154	14	102	19	12	46	53	1319	24	57	1253	172
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)	167	15	111	21	13	50	58	1434	26	62	1362	187
RTOR Reduction (vph)	0	18	0	0	38	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	275	0	0	46	0	58	1459	0	62	1542	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		24.0			24.0		7.3	56.0		7.5	56.2	
Effective Green, g (s)		24.0			24.0		7.3	56.0		7.5	56.2	
Actuated g/C Ratio		0.24			0.24		0.07	0.56		0.08	0.56	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		333			372		130	1987		133	1963	
v/s Ratio Prot							0.03	0.41		c0.04	c0.44	
v/s Ratio Perm		c0.20			0.03							
v/c Ratio		0.83			0.12		0.45	0.73		0.47	0.79	
Uniform Delay, d1		35.8			29.5		44.2	16.2		44.1	16.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.2			0.2		2.4	2.5		2.6	3.2	
Delay (s)		51.0			29.7		46.6	18.7		46.7	20.2	
Level of Service		D			C		D	B		D	C	
Approach Delay (s)		51.0			29.7			19.7			21.2	
Approach LOS		D			C			B			C	

Intersection Summary

HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3435		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3435		1770	3539	1457
Volume (vph)	742	1010	572	276	788	376	525	686	101	390	923	192
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)	807	1098	622	300	857	409	571	746	110	424	1003	209
RTOR Reduction (vph)	0	0	231	0	0	173	0	11	0	0	0	157
Lane Group Flow (vph)	807	1098	391	300	857	236	571	845	0	424	1003	52
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	824		212	849	350
v/s Ratio Prot	c0.46	0.31		0.17	c0.24		0.17	0.25		c0.24	c0.28	
v/s Ratio Perm			0.27			0.16						0.04
v/c Ratio	1.90	1.29	1.12	0.71	1.01	0.68	1.39	1.03		2.00	1.18	0.15
Uniform Delay, d1	38.0	38.0	38.0	34.8	38.0	34.5	44.0	38.0		44.0	38.0	30.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	413.2	140.7	83.6	5.3	33.2	5.1	188.1	37.9		466.4	93.7	0.9
Delay (s)	451.2	178.7	121.6	40.0	71.2	39.6	232.1	75.9		510.4	131.7	30.9
Level of Service	F	F	F	D	E	D	F	E		F	F	C
Approach Delay (s)		251.7			57.0			138.4			216.9	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	178.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	120.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3428		3433	3351		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3428		3433	3351		1770	3539	1583	1770	3539	1583
Volume (vph)	245	694	183	331	543	298	237	774	174	436	1062	230
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)	266	754	199	360	590	324	258	841	189	474	1154	250
RTOR Reduction (vph)	0	20	0	0	62	0	0	0	141	0	0	136
Lane Group Flow (vph)	266	933	0	360	852	0	258	841	48	474	1154	114
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	10.0	32.0		13.0	35.0		18.0	28.0	28.0	31.0	41.0	41.0
Effective Green, g (s)	10.0	32.0		13.0	35.0		18.0	28.0	28.0	31.0	41.0	41.0
Actuated g/C Ratio	0.08	0.27		0.11	0.29		0.15	0.23	0.23	0.26	0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	266	914		372	977		266	826	369	457	1209	541
v/s Ratio Prot	0.08	c0.27		c0.10	c0.25		0.15	0.24		c0.27	c0.33	
v/s Ratio Perm									0.03			0.07
v/c Ratio	0.93	1.02		0.97	0.87		0.97	1.02	0.13	1.04	0.95	0.21
Uniform Delay, d1	54.7	44.0		53.3	40.4		50.7	46.0	36.4	44.5	38.6	28.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	35.1	35.2		37.7	8.7		46.2	35.9	0.7	52.1	17.0	0.9
Delay (s)	89.8	79.2		91.0	49.0		97.0	81.9	37.1	96.6	55.6	28.9
Level of Service	F	E		F	D		F	F	D	F	E	C
Approach Delay (s)		81.5			60.9			78.4			62.4	
Approach LOS		F			E			E			E	

Intersection Summary

HCM Average Control Delay	69.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1689	343	72	1029	309	48
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1836	373	78	1118	336	52
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1836	373	78	1118	336	49
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	c0.52	c0.11		0.32	0.10	
v/s Ratio Perm		0.13	0.49			0.03
v/c Ratio	1.10	0.24	1.04	0.67	0.22	0.07
Uniform Delay, d1	26.5	0.4	26.5	20.6	16.8	15.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	56.4	0.1	115.4	1.1	0.3	0.2
Delay (s)	82.9	0.5	141.9	21.6	17.1	15.8
Level of Service	F	A	F	C	B	B
Approach Delay (s)	68.9			29.5	16.9	
Approach LOS	E			C	B	

Intersection Summary

HCM Average Control Delay	51.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

9: Montezuma Rd & 55th St
Ex + CP + USR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.93		0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3454		1770	3539	1467		1745		1681	1695	1464
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3454		1770	3539	1467		1745		1681	1695	1464
Volume (vph)	486	1121	111	30	688	238	34	19	12	524	33	509
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)	528	1218	121	33	748	259	37	21	13	570	36	553
RTOR Reduction (vph)	0	7	0	0	0	188	0	8	0	0	0	386
Lane Group Flow (vph)	528	1332	0	33	748	71	0	63	0	295	311	167
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	17.3	42.0		2.3	27.0	27.0		16.0		22.1	22.1	22.1
Effective Green, g (s)	17.3	42.0		2.3	27.0	27.0		16.0		22.1	22.1	22.1
Actuated g/C Ratio	0.18	0.43		0.02	0.27	0.27		0.16		0.22	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	604	1474		41	971	403		284		378	381	329
v/s Ratio Prot	c0.15	c0.39		0.02	0.21			c0.04		0.18	c0.18	
v/s Ratio Perm						0.05						0.11
v/c Ratio	0.87	0.90		0.80	0.77	0.18		0.22		0.78	0.82	0.51
Uniform Delay, d1	39.5	26.3		47.8	32.8	27.2		35.8		35.9	36.2	33.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	13.3	8.1		69.0	3.8	0.2		1.8		14.7	17.3	5.5
Delay (s)	52.8	34.4		116.8	36.7	27.4		37.6		50.6	53.6	38.9
Level of Service	D	C		F	D	C		D		D	D	D
Approach Delay (s)		39.6			36.9			37.6			45.8	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	40.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

10: Montezuma Rd & Campanile Dr
Ex + CP + USR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			0.94		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (prot)	1770	3520		1770	3338			1581		1681	1700	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (perm)	1770	3520		1770	3338			1581		1681	1700	1583
Volume (vph)	178	1351	28	194	865	236	25	38	153	370	37	167
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)	193	1468	30	211	940	257	27	41	166	402	40	182
RTOR Reduction (vph)	0	2	0	0	25	0	0	88	0	0	0	167
Lane Group Flow (vph)	193	1496	0	211	1172	0	0	146	0	215	227	15
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	44.7		6.0	42.7			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	44.7		6.0	42.7			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.45		0.06	0.43			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	143	1594		108	1444			256		273	276	128
v/s Ratio Prot	0.11	c0.43		c0.12	0.35			c0.09		0.13	c0.13	0.01
v/s Ratio Perm												
v/c Ratio	1.35	0.94		1.95	0.81			0.57		0.79	0.82	0.12
Uniform Delay, d1	45.4	25.7		46.4	24.5			38.2		39.7	40.0	42.1
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	196.3	11.0		461.0	3.6			8.9		20.2	23.4	0.4
Delay (s)	241.6	36.7		507.3	28.1			47.1		59.9	63.4	42.5
Level of Service	F	D		F	C			D		E	E	D
Approach Delay (s)		60.1			99.9			47.1			56.1	
Approach LOS		E			F			D			E	

Intersection Summary

HCM Average Control Delay	72.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	98.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

11: Montezuma Rd & Catoctin Drive
Ex + CP + USR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✥			✥	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3529		1770	3521			1670			1714	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.87	
Satd. Flow (perm)	1770	3529		1770	3521			1616			1524	
Volume (vph)	29	966	19	61	574	20	24	20	112	26	7	27
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)	32	1050	21	66	624	22	26	22	122	28	8	29
RTOR Reduction (vph)	0	1	0	0	2	0	0	74	0	0	17	0
Lane Group Flow (vph)	32	1070	0	66	644	0	0	96	0	0	48	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	2.8	28.9		5.2	31.3			30.4			30.4	
Effective Green, g (s)	2.8	28.9		5.2	31.3			30.4			30.4	
Actuated g/C Ratio	0.04	0.38		0.07	0.41			0.40			0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	65	1333		120	1441			642			606	
v/s Ratio Prot	0.02	c0.30		c0.04	0.18							
v/s Ratio Perm								c0.06			0.03	
v/c Ratio	0.49	0.80		0.55	0.45			0.15			0.08	
Uniform Delay, d1	36.2	21.3		34.5	16.3			14.8			14.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.8	3.6		5.4	0.2			0.5			0.3	
Delay (s)	41.9	24.8		39.9	16.6			15.3			14.6	
Level of Service	D	C		D	B			B			B	
Approach Delay (s)		25.3			18.7			15.3			14.6	
Approach LOS		C			B			B			B	

Intersection Summary

HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

12: El Cajon Blvd & Montezuma Road
Ex + CP + USR PM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↑↱	↱	↰↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	82	330	610	402	651	68
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	359	663	437	708	74
RTOR Reduction (vph)	0	0	0	315	0	38
Lane Group Flow (vph)	89	359	663	122	708	36
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	8.0	35.6	23.6	23.6	41.2	41.2
Effective Green, g (s)	8.0	35.6	23.6	23.6	41.2	41.2
Actuated g/C Ratio	0.09	0.42	0.28	0.28	0.49	0.49
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	167	1486	943	401	1668	769
v/s Ratio Prot	c0.05	0.10	c0.20	0.08	c0.21	0.02
v/s Ratio Perm						
v/c Ratio	0.53	0.24	0.70	0.30	0.42	0.05
Uniform Delay, d1	36.6	15.9	27.5	24.1	14.1	11.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.1	2.4	0.4	0.8	0.1
Delay (s)	39.9	16.0	29.9	24.5	14.9	11.6
Level of Service	D	B	C	C	B	B
Approach Delay (s)		20.7	27.7		14.6	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	84.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

ILV OPERATIONS

Ex+CP+USR-AM

INTERSECTION

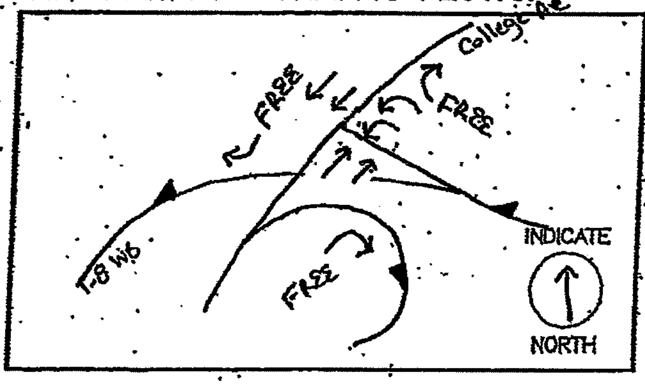
Signalized Intersection
CAPACITY ANALYSIS

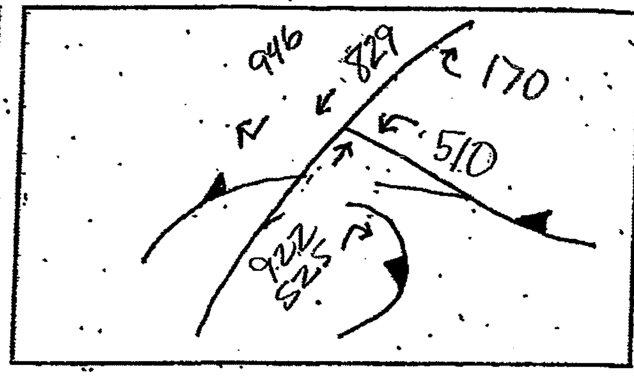
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

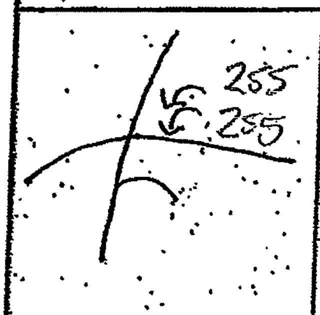
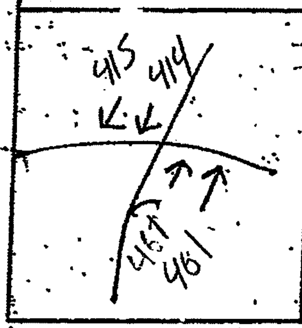
TIME ______ AM/PM (AM circled)

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
255	461		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
716

☒ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY).

REMARKS:

Ex+CP+USR - PM

INTERSECTION

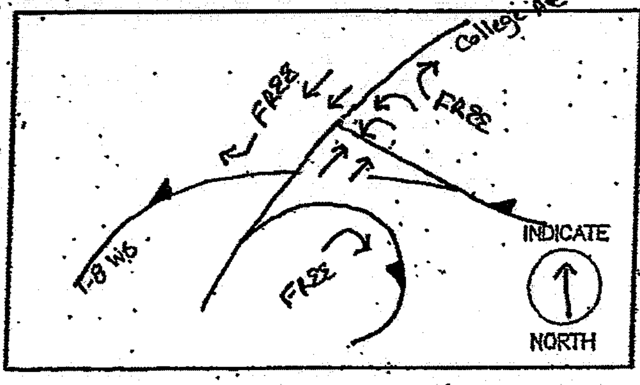
Signalized Intersection
CAPACITY ANALYSIS

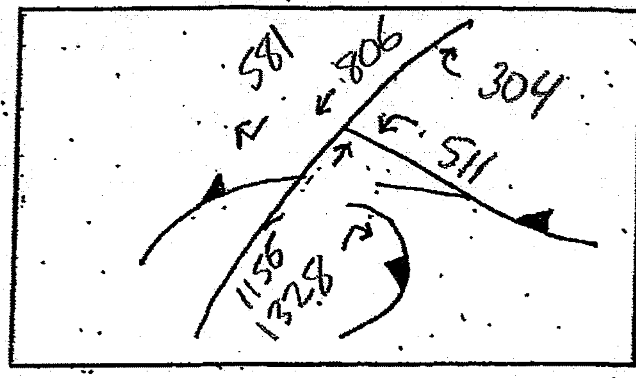
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

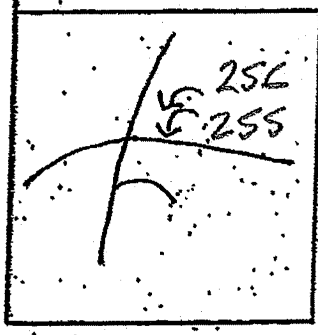
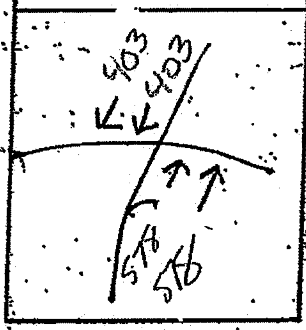
TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
256	578		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
834

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Ex+Cpt USR - AM

INTERSECTION

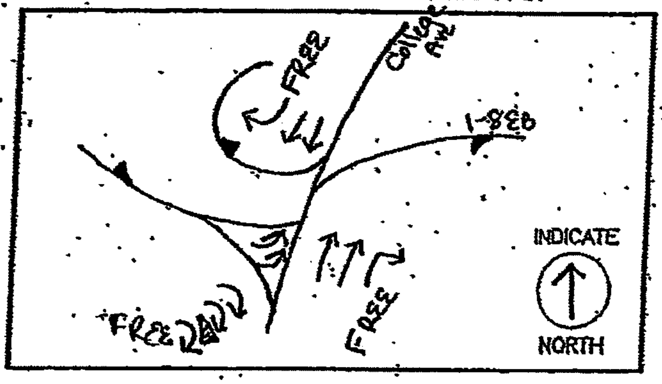
Signalized Intersection
CAPACITY ANALYSIS

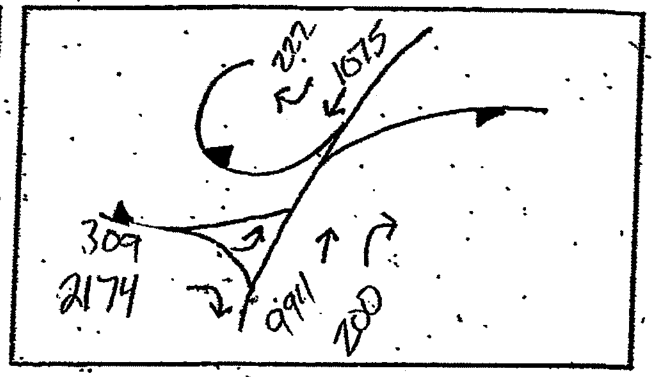
INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

TIME ______ AM PM

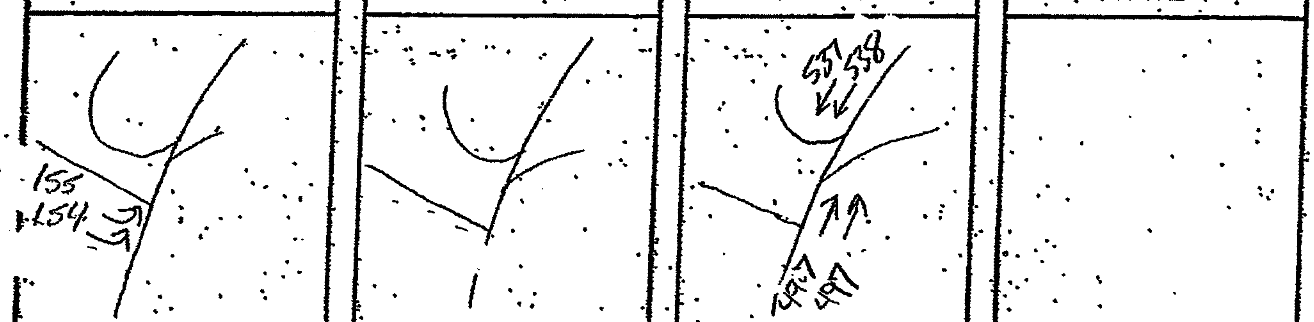
DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4



CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
155		538	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
693

☒ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Exist+USR - PM

INTERSECTION

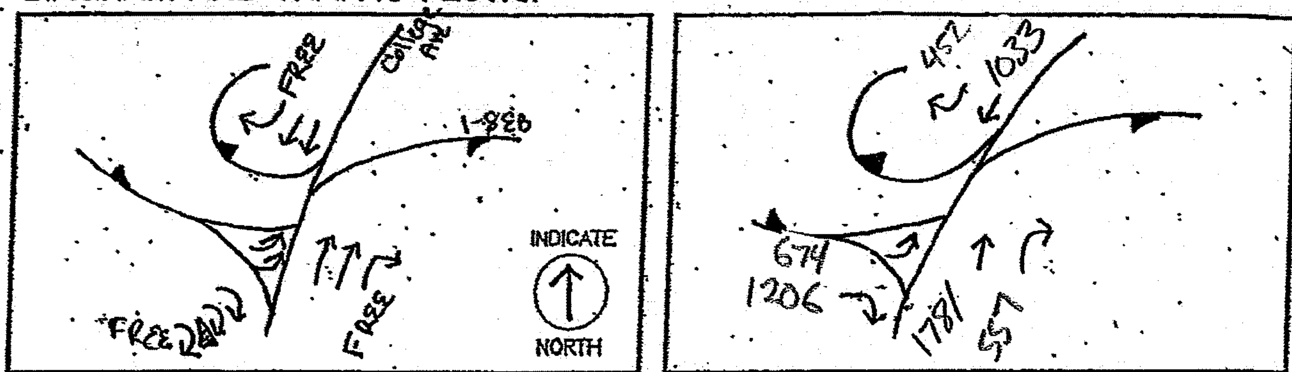
Signalized Intersection
CAPACITY ANALYSIS

INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

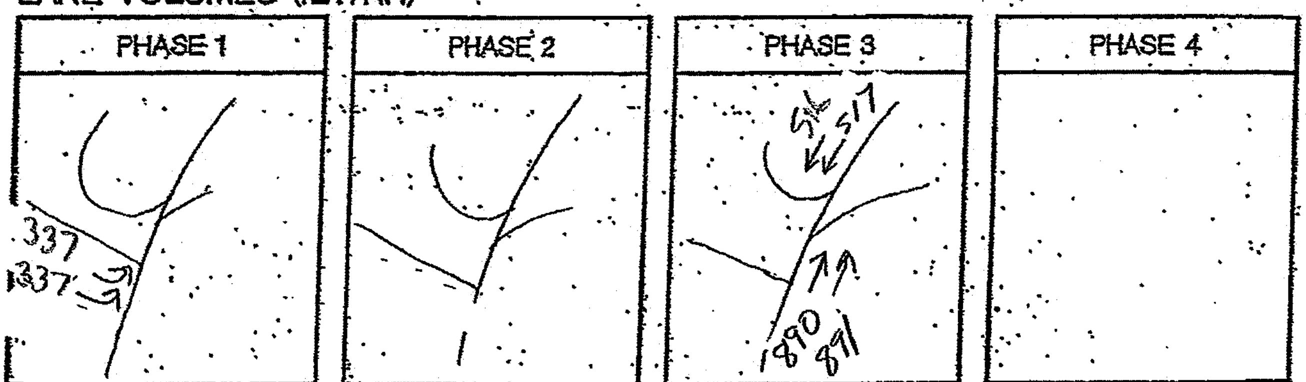
BY CL DATE 5/27/09

TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:



LANE VOLUMES (ILV/HR)



CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
337		891	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1228

☐ < 1200 ILV/HR.

☒ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

EXISTING + CUMULATIVE PROJECTS + COMMUNITY SERVING RETAIL OPERATIONS

Plaza Linda Verde Mixed-Use
6/22/2009

1: I-8WB Ramp & College Ave
Ex + CP + CSR AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	510	0	170	0	922	525	0	829	946
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	554	0	185	0	1002	571	0	901	1028
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	554	0	185	0	1002	571	0	901	1028
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				20.1		100.0		71.9	100.0		71.9	100.0
Effective Green, g (s)				20.1		100.0		71.9	100.0		71.9	100.0
Actuated g/C Ratio				0.20		1.00		0.72	1.00		0.72	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				664		1555		2545	1536		2545	1536
v/s Ratio Prot								0.28			0.25	
v/s Ratio Perm				c0.17		0.12			0.37			c0.67
v/c Ratio				0.83		0.12		0.39	0.37		0.35	0.67
Uniform Delay, d1				38.4		0.0		5.5	0.0		5.3	0.0
Progression Factor				1.00		1.00		1.26	1.00		1.00	1.00
Incremental Delay, d2				8.9		0.2		0.4	0.6		0.4	2.3
Delay (s)				47.2		0.2		7.3	0.6		5.7	2.3
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			35.4			4.9			3.9	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/22/2009

2: I-8EB Ramp & College Ave
Ex + CP + CSR AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	309	0	2175	0	0	0	0	992	199	0	1085	222
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)	336	0	2364	0	0	0	0	1078	216	0	1179	241
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	336	0	2330	0	0	0	0	1078	216	0	1179	241
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1553		1614					1593	1536		1593	1536
v/s Ratio Prot								0.30			c0.33	
v/s Ratio Perm	0.10		c0.68						0.14			0.16
v/c Ratio	0.22		1.44					0.68	0.14		0.74	0.16
Uniform Delay, d1	15.6		26.5					21.7	0.0		22.7	0.0
Progression Factor	1.00		1.00					0.88	1.00		0.81	1.00
Incremental Delay, d2	0.1		203.2					0.8	0.1		2.7	0.2
Delay (s)	15.7		229.7					19.9	0.1		21.0	0.2
Level of Service	B		F					B	A		C	A
Approach Delay (s)		203.1			0.0			16.6			17.4	
Approach LOS		F			A			B			B	

Intersection Summary

HCM Average Control Delay	109.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1798	1506		1828	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1798	1506		1828	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	49	19	46	89	144	152	152	916	90	522	1265	706
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)	53	21	50	97	157	165	165	996	98	567	1375	767
RTOR Reduction (vph)	0	0	45	0	0	114	0	0	74	0	0	690
Lane Group Flow (vph)	0	74	5	0	254	51	165	996	24	567	1375	77
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		10.0	10.0		18.7	31.2	14.9	24.1	24.1	31.2	40.4	10.0
Effective Green, g (s)		10.0	10.0		18.7	31.2	14.9	24.1	24.1	31.2	40.4	10.0
Actuated g/C Ratio		0.10	0.10		0.19	0.31	0.15	0.24	0.24	0.31	0.40	0.10
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		180	151		342	494	264	853	363	1071	2054	279
v/s Ratio Prot		c0.04			c0.14	0.03	c0.09	c0.28		0.17	c0.27	0.03
v/s Ratio Perm			0.00						0.02			
v/c Ratio		0.41	0.03		0.74	0.10	0.62	1.17	0.07	0.53	0.67	0.27
Uniform Delay, d1		42.2	40.6		38.4	24.5	39.9	38.0	29.3	28.3	24.3	41.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.88	0.87	3.47
Incremental Delay, d2		1.5	0.1		8.4	0.1	4.6	88.0	0.4	0.0	0.2	0.0
Delay (s)		43.8	40.7		46.8	24.6	44.5	126.0	29.6	24.9	21.4	144.4
Level of Service		D	D		D	C	D	F	C	C	C	F
Approach Delay (s)		42.5			38.1			107.8			57.0	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM Average Control Delay	69.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	100	1352	171	556	1228
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	109	1470	186	604	1335
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.87	0.83			0.83	
vC, conflicting volume	3366	775			1675	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2969	516			1607	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	73			0	
cM capacity (veh/h)	0	402			327	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	109	735	735	186	604	667	667
Volume Left	0	0	0	0	604	0	0
Volume Right	109	0	0	186	0	0	0
cSH	402	1700	1700	1700	327	1700	1700
Volume to Capacity	0.27	0.43	0.43	0.11	1.85	0.39	0.39
Queue Length 95th (ft)	27	0	0	0	1008	0	0
Control Delay (s)	17.2	0.0	0.0	0.0	420.6	0.0	0.0
Lane LOS	C				F		
Approach Delay (s)	17.2	0.0			131.1		
Approach LOS	C						

Intersection Summary			
Average Delay	69.1		
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.97			0.92		1.00	1.00		1.00	0.97	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1753			1690		1770	3525		1770	3430	
Flt Permitted		0.63			0.89		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1129			1526		1770	3525		1770	3430	
Volume (vph)	60	19	24	29	17	69	84	1156	32	77	863	224
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)	65	21	26	32	18	75	91	1257	35	84	938	243
RTOR Reduction (vph)	0	11	0	0	53	0	0	1	0	0	12	0
Lane Group Flow (vph)	0	101	0	0	72	0	91	1291	0	84	1169	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.4			10.4		8.7	60.7		8.3	60.3	
Effective Green, g (s)		10.4			10.4		8.7	60.7		8.3	60.3	
Actuated g/C Ratio		0.11			0.11		0.10	0.66		0.09	0.66	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		128			174		168	2341		161	2263	
v/s Ratio Prot							c0.05	c0.37		0.05	0.34	
v/s Ratio Perm		c0.09			0.05							
v/c Ratio		0.79			0.41		0.54	0.55		0.52	0.52	
Uniform Delay, d1		39.4			37.7		39.4	8.1		39.7	8.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		27.5			1.6		3.5	0.9		3.0	0.8	
Delay (s)		67.0			39.3		43.0	9.1		42.7	8.9	
Level of Service		E			D		D	A		D	A	
Approach Delay (s)		67.0			39.3			11.3			11.1	
Approach LOS		E			D			B			B	

Intersection Summary

HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	91.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1458	3433	3421		1770	3539	1458
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1458	3433	3421		1770	3539	1458
Volume (vph)	336	413	139	55	781	332	564	935	161	205	463	164
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)	365	449	151	60	849	361	613	1016	175	223	503	178
RTOR Reduction (vph)	0	0	116	0	0	210	0	14	0	0	0	135
Lane Group Flow (vph)	365	449	35	60	849	151	613	1177	0	223	503	43
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	22.8	22.8	22.8	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	22.8	22.8	22.8	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.23	0.23	0.23	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	408	817	336	430	860	354	417	831		215	860	354
v/s Ratio Prot	c0.21	0.13		0.03	c0.24		c0.18	c0.34		0.13	0.14	
v/s Ratio Perm			0.02			0.10						0.03
v/c Ratio	0.89	0.55	0.10	0.14	0.99	0.43	1.47	1.42		1.04	0.58	0.12
Uniform Delay, d1	36.8	33.5	29.9	29.3	37.2	31.6	43.4	37.4		43.4	33.0	29.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	21.3	0.8	0.1	0.1	27.3	0.8	224.2	194.7		71.4	2.9	0.7
Delay (s)	58.1	34.2	30.1	29.5	64.5	32.4	267.6	232.1		114.8	35.9	29.9
Level of Service	E	C	C	C	E	C	F	F		F	D	C
Approach Delay (s)		42.6			53.7			244.2			54.2	
Approach LOS		D			D			F			D	

Intersection Summary

HCM Average Control Delay	121.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3429		3433	3432		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3429		3433	3432		1770	3539	1583	1770	3539	1583
Volume (vph)	211	364	96	113	493	124	168	1091	99	99	379	115
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)	229	396	104	123	536	135	183	1186	108	108	412	125
RTOR Reduction (vph)	0	20	0	0	19	0	0	0	55	0	0	75
Lane Group Flow (vph)	229	480	0	123	652	0	183	1186	53	108	412	50
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	11.2	29.1		7.7	25.6		16.3	51.2	51.2	10.6	45.5	45.5
Effective Green, g (s)	11.2	29.1		7.7	25.6		16.3	51.2	51.2	10.6	45.5	45.5
Actuated g/C Ratio	0.10	0.25		0.07	0.22		0.14	0.45	0.45	0.09	0.40	0.40
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	336	871		231	767		252	1581	707	164	1405	629
v/s Ratio Prot	c0.07	c0.14		0.04	c0.19		c0.10	c0.34		0.06	0.12	
v/s Ratio Perm									0.03			0.03
v/c Ratio	0.68	0.55		0.53	0.85		0.73	0.75	0.08	0.66	0.29	0.08
Uniform Delay, d1	50.0	37.1		51.7	42.7		47.0	26.4	18.1	50.3	23.6	21.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.8		2.4	9.0		10.0	3.3	0.2	9.2	0.5	0.2
Delay (s)	55.6	37.8		54.1	51.6		57.0	29.7	18.4	59.4	24.1	21.8
Level of Service	E	D		D	D		E	C	B	E	C	C
Approach Delay (s)		43.4			52.0			32.2			29.6	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	38.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	114.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	169	3539	3433	1583
Volume (vph)	1300	260	57	1042	954	79
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1413	283	62	1133	1037	86
RTOR Reduction (vph)	0	0	0	0	0	10
Lane Group Flow (vph)	1413	283	62	1133	1037	76
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	44.1	89.2	44.1	44.1	45.1	45.1
Effective Green, g (s)	44.1	89.2	44.1	44.1	45.1	45.1
Actuated g/C Ratio	0.45	0.92	0.45	0.45	0.46	0.46
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1606	1583	77	1606	1593	734
v/s Ratio Prot	c0.40	0.08		0.32	c0.30	
v/s Ratio Perm		0.10	0.37			0.05
v/c Ratio	0.88	0.18	0.81	0.71	0.65	0.10
Uniform Delay, d1	24.1	0.4	22.9	21.3	20.0	14.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.9	0.1	43.8	1.4	2.1	0.3
Delay (s)	30.0	0.4	66.7	22.8	22.1	15.0
Level of Service	C	A	E	C	C	B
Approach Delay (s)	25.1			25.0	21.5	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	97.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.5%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		0.96	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3498		1702	3374			1758		1681	1691	1454
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3498		1702	3374			1758		1681	1691	1454
Volume (vph)	771	550	25	9	725	191	42	14	7	108	4	183
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)	838	598	27	10	788	208	46	15	8	117	4	199
RTOR Reduction (vph)	0	3	0	0	23	0	0	5	0	0	0	168
Lane Group Flow (vph)	838	622	0	10	973	0	0	64	0	59	62	31
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	24.0	54.4		0.8	31.2			16.0		16.0	16.0	16.0
Effective Green, g (s)	24.0	54.4		0.8	31.2			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.23	0.53		0.01	0.30			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	798	1844		13	1020			273		261	262	225
v/s Ratio Prot	c0.24	0.18		0.01	c0.29			c0.04		0.04	c0.04	
v/s Ratio Perm												0.02
v/c Ratio	1.05	0.34		0.77	0.95			0.23		0.23	0.24	0.14
Uniform Delay, d1	39.6	14.0		51.1	35.3			38.2		38.2	38.2	37.6
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	45.8	0.1		128.6	18.0			2.0		2.0	2.1	1.3
Delay (s)	85.4	14.1		179.7	53.3			40.2		40.2	40.4	38.9
Level of Service	F	B		F	D			D		D	D	D
Approach Delay (s)		55.0			54.5			40.2			39.4	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	52.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.96		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (prot)	1770	3516		1770	3378			1648		1681	1706	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (perm)	1770	3516		1770	3378			1648		1681	1706	1583
Volume (vph)	149	545	14	58	1125	231	24	31	56	109	17	62
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)	162	592	15	63	1223	251	26	34	61	118	18	67
RTOR Reduction (vph)	0	2	0	0	17	0	0	37	0	0	0	62
Lane Group Flow (vph)	162	605	0	63	1457	0	0	84	0	66	70	5
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	48.0		4.8	44.8			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	48.0		4.8	44.8			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.48		0.05	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	140	1674		84	1501			262		267	271	126
v/s Ratio Prot	c0.09	c0.17		0.04	c0.43			c0.05		0.04	c0.04	0.00
v/s Ratio Perm												
v/c Ratio	1.16	0.36		0.75	0.97			0.32		0.25	0.26	0.04
Uniform Delay, d1	46.4	16.7		47.4	27.4			37.6		37.1	37.2	42.9
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	124.5	0.1		30.8	16.7			3.2		2.2	2.3	0.1
Delay (s)	170.9	16.8		78.2	44.0			40.8		39.3	39.5	43.0
Level of Service	F	B		E	D			D		D	D	D
Approach Delay (s)		49.3			45.4			40.8			40.6	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	46.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.93			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3526		1770	3532			1693			1698	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.92	
Satd. Flow (perm)	1770	3526		1770	3532			1567			1594	
Volume (vph)	14	288	7	46	888	12	20	1	23	25	7	37
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	313	8	50	965	13	22	1	25	27	8	40
RTOR Reduction (vph)	0	2	0	0	1	0	0	14	0	0	22	0
Lane Group Flow (vph)	15	319	0	50	977	0	0	34	0	0	53	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	19.9		4.7	23.5			29.9			29.9	
Effective Green, g (s)	1.1	19.9		4.7	23.5			29.9			29.9	
Actuated g/C Ratio	0.02	0.30		0.07	0.35			0.45			0.45	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	29	1055		125	1248			705			717	
v/s Ratio Prot	0.01	0.09		c0.03	c0.28							
v/s Ratio Perm								0.02			c0.03	
v/c Ratio	0.52	0.30		0.40	0.78			0.05			0.07	
Uniform Delay, d1	32.4	18.0		29.6	19.2			10.3			10.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	14.7	0.2		2.1	3.3			0.1			0.2	
Delay (s)	47.1	18.1		31.6	22.5			10.4			10.6	
Level of Service	D	B		C	C			B			B	
Approach Delay (s)		19.4			22.9			10.4			10.6	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	0.96	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1719	3539	3257	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1719	3539	3257	1441	3433	1583
Volume (vph)	99	459	551	778	216	42
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	499	599	846	235	46
RTOR Reduction (vph)	0	0	28	429	0	25
Lane Group Flow (vph)	108	499	784	204	235	21
Heavy Vehicles (%)	5%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	9.3	43.2	29.9	29.9	41.4	41.4
Effective Green, g (s)	9.3	43.2	29.9	29.9	41.4	41.4
Actuated g/C Ratio	0.10	0.47	0.32	0.32	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	173	1651	1052	465	1535	708
v/s Ratio Prot	c0.06	0.14	c0.24	0.14	c0.07	0.01
v/s Ratio Perm						
v/c Ratio	0.62	0.30	0.75	0.44	0.15	0.03
Uniform Delay, d1	40.0	15.3	28.0	24.7	15.2	14.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.8	0.1	2.9	0.7	0.2	0.1
Delay (s)	46.8	15.4	30.9	25.4	15.4	14.4
Level of Service	D	B	C	C	B	B
Approach Delay (s)		21.0	28.5		15.2	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	92.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

1: I-8WB Ramp & College Ave

Ex + CP +CSR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	512	0	304	0	1170	1328	0	823	581
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	557	0	330	0	1272	1443	0	895	632
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	557	0	330	0	1272	1443	0	895	632
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				20.2		100.0		71.8	100.0		71.8	100.0
Effective Green, g (s)				20.2		100.0		71.8	100.0		71.8	100.0
Actuated g/C Ratio				0.20		1.00		0.72	1.00		0.72	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				667		1555		2541	1536		2541	1536
v/s Ratio Prot								0.36			0.25	
v/s Ratio Perm				0.17		0.21			c0.94			0.41
v/c Ratio				0.84		0.21		0.50	0.94		0.35	0.41
Uniform Delay, d1				38.3		0.0		6.2	0.0		5.3	0.0
Progression Factor				1.00		1.00		0.94	1.00		1.00	1.00
Incremental Delay, d2				8.9		0.3		0.2	4.5		0.4	0.8
Delay (s)				47.2		0.3		6.0	4.5		5.7	0.8
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			29.7			5.2			3.7	
Approach LOS		A			C			A			A	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2: I-8EB Ramp & College Ave

Ex + CP +CSR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	674	0	1208	0	0	0	0	1795	558	0	1052	452
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)	733	0	1313	0	0	0	0	1951	607	0	1143	491
RTOR Reduction (vph)	0	0	40	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	733	0	1273	0	0	0	0	1951	607	0	1143	491
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.3		44.3					47.7	100.0		47.7	100.0
Effective Green, g (s)	44.3		44.3					47.7	100.0		47.7	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1464		1521					1688	1536		1688	1536
v/s Ratio Prot								c0.55			0.32	
v/s Ratio Perm	0.22		c0.37						0.40			0.32
v/c Ratio	0.50		0.84					1.16	0.40		0.68	0.32
Uniform Delay, d1	19.9		24.7					26.1	0.0		20.2	0.0
Progression Factor	1.00		1.00					0.81	1.00		0.80	1.00
Incremental Delay, d2	0.3		4.2					70.8	0.1		2.0	0.5
Delay (s)	20.2		28.9					92.1	0.1		18.1	0.5
Level of Service	C		C					F	A		B	A
Approach Delay (s)		25.8			0.0			70.2			12.8	
Approach LOS		C			A			E			B	

Intersection Summary

HCM Average Control Delay	40.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.5%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1783	1506		1783	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1783	1506		1783	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	502	56	88	105	13	281	66	1724	153	284	1424	115
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)	546	61	96	114	14	305	72	1874	166	309	1548	125
RTOR Reduction (vph)	0	0	62	0	0	260	0	0	59	0	0	87
Lane Group Flow (vph)	0	607	34	0	128	45	72	1874	107	309	1548	38
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		12.0	14.8	8.2	33.2	33.2	14.8	39.8	24.0
Effective Green, g (s)		24.0	24.0		12.0	14.8	8.2	33.2	33.2	14.8	39.8	24.0
Actuated g/C Ratio		0.24	0.24		0.12	0.15	0.08	0.33	0.33	0.15	0.40	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		428	361		214	234	145	1175	500	508	2024	669
v/s Ratio Prot		c0.34			c0.07	0.03	0.04	c0.53		c0.09	c0.30	0.01
v/s Ratio Perm			0.02						0.07			
v/c Ratio		1.42	0.09		0.60	0.19	0.50	1.59	0.21	0.61	0.76	0.06
Uniform Delay, d1		38.0	29.5		41.7	37.4	43.9	33.4	24.0	39.9	26.0	29.3
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.02	0.83	1.39
Incremental Delay, d2		201.5	0.1		4.4	0.4	2.7	271.7	1.0	1.3	1.8	0.0
Delay (s)		239.5	29.7		46.2	37.8	46.6	305.1	25.0	41.9	23.4	40.6
Level of Service		F	C		D	D	D	F	C	D	C	D
Approach Delay (s)		210.9			40.2			274.3			27.4	
Approach LOS		F			D			F			C	

Intersection Summary

HCM Average Control Delay	152.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	107.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	444	1622	138	188	1437
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	483	1763	150	204	1562
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.81	0.64			0.64	
vC, conflicting volume	2973	922			1933	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1954	308			1895	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			0	
cM capacity (veh/h)	0	424			195	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	483	882	882	150	204	781	781
Volume Left	0	0	0	0	204	0	0
Volume Right	483	0	0	150	0	0	0
cSH	424	1700	1700	1700	195	1700	1700
Volume to Capacity	1.14	0.52	0.52	0.09	1.05	0.46	0.46
Queue Length 95th (ft)	440	0	0	0	234	0	0
Control Delay (s)	117.6	0.0	0.0	0.0	126.2	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	117.6	0.0			14.8		
Approach LOS	F						

Intersection Summary

Average Delay	19.9		
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

5: Lindo Paseo & College Ave
Ex + CP + CSR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.92		1.00	0.99		1.00	0.98	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1690		1770	3521		1770	3475	
Flt Permitted		0.68			0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1208			1484		1770	3521		1770	3475	
Volume (vph)	154	29	102	38	23	92	53	1319	47	113	1253	172
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)	167	32	111	41	25	100	58	1434	51	123	1362	187
RTOR Reduction (vph)	0	16	0	0	44	0	0	2	0	0	7	0
Lane Group Flow (vph)	0	294	0	0	122	0	58	1483	0	123	1542	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		30.0			30.0		7.8	54.9		12.8	59.9	
Effective Green, g (s)		30.0			30.0		7.8	54.9		12.8	59.9	
Actuated g/C Ratio		0.27			0.27		0.07	0.50		0.12	0.55	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		330			406		126	1762		207	1897	
v/s Ratio Prot							0.03	0.42		c0.07	c0.44	
v/s Ratio Perm		c0.24			0.08							
v/c Ratio		0.89			0.30		0.46	0.84		0.59	0.81	
Uniform Delay, d1		38.3			31.5		48.9	23.6		46.0	20.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		24.5			0.4		2.7	5.1		4.5	3.9	
Delay (s)		62.8			32.0		51.6	28.7		50.5	24.3	
Level of Service		E			C		D	C		D	C	
Approach Delay (s)		62.8			32.0			29.6			26.2	
Approach LOS		E			C			C			C	

Intersection Summary

HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

6: Montezuma Rd & College Ave
Ex + CP + CSR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3437		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3437		1770	3539	1457
Volume (vph)	762	1010	572	276	788	385	525	696	101	397	931	208
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)	828	1098	622	300	857	418	571	757	110	432	1012	226
RTOR Reduction (vph)	0	0	231	0	0	172	0	11	0	0	0	168
Lane Group Flow (vph)	828	1098	391	300	857	246	571	856	0	432	1012	58
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	825		212	849	350
v/s Ratio Prot	c0.47	0.31		0.17	c0.24		0.17	0.25		c0.24	c0.29	
v/s Ratio Perm			0.27			0.17						0.04
v/c Ratio	1.95	1.29	1.12	0.71	1.01	0.70	1.39	1.04		2.04	1.19	0.17
Uniform Delay, d1	38.0	38.0	38.0	34.8	38.0	34.7	44.0	38.0		44.0	38.0	30.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	435.2	140.7	83.6	5.3	33.2	6.3	188.1	41.3		483.1	98.0	1.0
Delay (s)	473.2	178.7	121.6	40.0	71.2	41.0	232.1	79.3		527.1	136.0	31.1
Level of Service	F	F	F	D	E	D	F	E		F	F	C
Approach Delay (s)		260.5			57.3			140.0			223.0	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	183.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	122.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
12/14/2009

7: El Cajon Blvd & College Ave
Ex + CP + CSR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3428		3433	3351		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3428		3433	3351		1770	3539	1583	1770	3539	1583
Volume (vph)	249	694	183	331	543	298	237	778	174	436	1065	233
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)	271	754	199	360	590	324	258	846	189	474	1158	253
RTOR Reduction (vph)	0	20	0	0	62	0	0	0	140	0	0	137
Lane Group Flow (vph)	271	933	0	360	852	0	258	846	49	474	1158	116
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	10.0	32.0		13.0	35.0		18.0	28.0	28.0	31.0	41.0	41.0
Effective Green, g (s)	10.0	32.0		13.0	35.0		18.0	28.0	28.0	31.0	41.0	41.0
Actuated g/C Ratio	0.08	0.27		0.11	0.29		0.15	0.23	0.23	0.26	0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	286	914		372	977		266	826	369	457	1209	541
v/s Ratio Prot	0.08	c0.27		c0.10	c0.25		0.15	0.24		c0.27	c0.33	
v/s Ratio Perm									0.03			0.07
v/c Ratio	0.95	1.02		0.97	0.87		0.97	1.02	0.13	1.04	0.96	0.21
Uniform Delay, d1	54.7	44.0		53.3	40.4		50.7	46.0	36.4	44.5	38.7	28.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.8	35.2		37.7	8.7		46.2	37.6	0.7	52.1	17.6	0.9
Delay (s)	93.6	79.2		91.0	49.0		97.0	83.6	37.1	96.6	56.2	29.0
Level of Service	F	E		F	D		F	F	D	F	E	C
Approach Delay (s)		82.4			60.9			79.5			62.7	
Approach LOS		F			E			E			E	

Intersection Summary

HCM Average Control Delay	70.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
12/14/2009

8: Montezuma Rd & Collwood Blvd
Ex + CP + CSR PM

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1706	343	75	1043	309	52
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1854	373	82	1134	336	57
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1854	373	82	1134	336	54
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	c0.52	c0.11		0.32	0.10	
v/s Ratio Perm		0.13	0.52			0.03
v/c Ratio	1.11	0.24	1.09	0.68	0.22	0.08
Uniform Delay, d1	26.5	0.4	26.5	20.7	16.8	15.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	60.6	0.1	131.7	1.2	0.3	0.2
Delay (s)	87.1	0.5	158.2	21.8	17.1	15.9
Level of Service	F	A	F	C	B	B
Approach Delay (s)	72.6			31.0	16.9	
Approach LOS	E			C	B	

Intersection Summary

HCM Average Control Delay	53.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

9: Montezuma Rd & 55th St

Ex + CP + CSR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑↱		↰	↑↑	↱		↰↑↱		↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.93		0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3455		1770	3539	1467		1745		1681	1695	1463
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3455		1770	3539	1467		1745		1681	1695	1463
Volume (vph)	486	1142	111	30	704	238	34	19	12	524	33	509
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)	528	1241	121	33	765	259	37	21	13	570	36	553
RTOR Reduction (vph)	0	7	0	0	0	188	0	8	0	0	0	399
Lane Group Flow (vph)	528	1355	0	33	765	71	0	63	0	295	311	154
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	17.3	42.2		2.3	27.2	27.2		17.0		21.1	21.1	21.1
Effective Green, g (s)	17.3	42.2		2.3	27.2	27.2		17.0		21.1	21.1	21.1
Actuated g/C Ratio	0.18	0.43		0.02	0.28	0.28		0.17		0.21	0.21	0.21
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	602	1479		41	978	405		301		360	363	313
v/s Ratio Prot	c0.15	c0.39		0.02	0.22			c0.04		0.18	c0.18	
v/s Ratio Perm						0.05						0.11
v/c Ratio	0.88	0.92		0.80	0.78	0.18		0.21		0.82	0.86	0.49
Uniform Delay, d1	39.6	26.5		47.9	33.0	27.2		35.0		36.9	37.3	34.1
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	13.6	9.1		69.0	4.2	0.2		1.6		18.5	22.1	5.5
Delay (s)	53.2	35.7		116.9	37.2	27.4		36.6		55.4	59.4	39.5
Level of Service	D	D		F	D	C		D		E	E	D
Approach Delay (s)		40.6			37.3			36.6			48.9	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	42.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	98.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

10: Montezuma Rd & Campanile Dr

Ex + CP + CSR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			↰↑↱		↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			0.94		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (prot)	1770	3520		1770	3338			1579		1681	1700	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (perm)	1770	3520		1770	3338			1579		1681	1700	1583
Volume (vph)	182	1368	28	196	879	236	25	39	155	370	38	170
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)	198	1487	30	213	955	257	27	42	168	402	41	185
RTOR Reduction (vph)	0	2	0	0	25	0	0	86	0	0	0	167
Lane Group Flow (vph)	198	1515	0	213	1187	0	0	151	0	216	227	18
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	10.0	45.5		6.0	41.5			16.0		18.0	18.0	10.0
Effective Green, g (s)	10.0	45.5		6.0	41.5			16.0		18.0	18.0	10.0
Actuated g/C Ratio	0.10	0.45		0.06	0.41			0.16		0.18	0.18	0.10
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	174	1578		105	1365			249		298	301	156
v/s Ratio Prot	0.11	c0.43		c0.12	0.36			c0.10		0.13	c0.13	0.01
v/s Ratio Perm												
v/c Ratio	1.14	0.96		2.03	0.87			0.61		0.72	0.75	0.12
Uniform Delay, d1	45.8	27.1		47.8	27.5			39.8		39.4	39.6	41.7
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	110.2	14.3		494.5	6.2			10.5		14.3	16.0	0.3
Delay (s)	155.9	41.6		542.3	33.7			50.3		53.7	55.7	42.1
Level of Service	F	D		F	C			D		D	E	D
Approach Delay (s)		54.7			109.7			50.3			51.0	
Approach LOS		D			F			D			D	

Intersection Summary

HCM Average Control Delay	73.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	101.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

11: Montezuma Rd & Catoctin Drive

Ex + CP + CSR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3529		1770	3521			1670			1714	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.87	
Satd. Flow (perm)	1770	3529		1770	3521			1616			1524	
Volume (vph)	29	973	19	61	583	20	24	20	112	26	7	27
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)	32	1058	21	66	634	22	26	22	122	28	8	29
RTOR Reduction (vph)	0	1	0	0	2	0	0	74	0	0	18	0
Lane Group Flow (vph)	32	1078	0	66	654	0	0	96	0	0	47	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	2.9	29.1		5.2	31.4			30.4			30.4	
Effective Green, g (s)	2.9	29.1		5.2	31.4			30.4			30.4	
Actuated g/C Ratio	0.04	0.38		0.07	0.41			0.40			0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	67	1339		120	1441			641			604	
v/s Ratio Prot	0.02	c0.31		c0.04	0.19							
v/s Ratio Perm								c0.06			0.03	
v/c Ratio	0.48	0.80		0.55	0.45			0.15			0.08	
Uniform Delay, d1	36.2	21.3		34.6	16.4			14.9			14.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.3	3.6		5.4	0.2			0.5			0.3	
Delay (s)	41.4	24.9		40.0	16.7			15.4			14.7	
Level of Service	D	C		D	B			B			B	
Approach Delay (s)		25.4			18.8			15.4			14.7	
Approach LOS		C			B			B			B	

Intersection Summary

HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

12: El Cajon Blvd & Montezuma Road

Ex + CP + CSR PM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	84	330	610	409	656	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	359	663	445	713	76
RTOR Reduction (vph)	0	0	0	321	0	39
Lane Group Flow (vph)	91	359	663	124	713	37
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	8.1	35.7	23.6	23.6	41.2	41.2
Effective Green, g (s)	8.1	35.7	23.6	23.6	41.2	41.2
Actuated g/C Ratio	0.10	0.42	0.28	0.28	0.49	0.49
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	169	1488	942	401	1666	768
v/s Ratio Prot	c0.05	0.10	c0.20	0.09	c0.21	0.02
v/s Ratio Perm						
v/c Ratio	0.54	0.24	0.70	0.31	0.43	0.05
Uniform Delay, d1	36.6	15.9	27.5	24.2	14.2	11.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.1	2.4	0.4	0.8	0.1
Delay (s)	39.9	15.9	29.9	24.6	15.0	11.6
Level of Service	D	B	C	C	B	B
Approach Delay (s)		20.8	27.8		14.7	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	84.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

ILV OPERATIONS

Ex+CPA CSR- AM

INTERSECTION

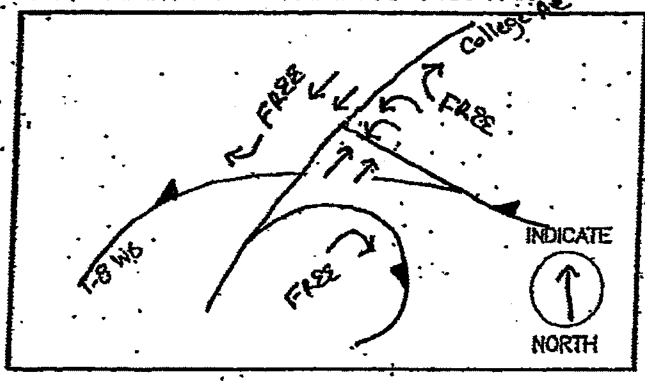
Signalized Intersection
CAPACITY ANALYSIS

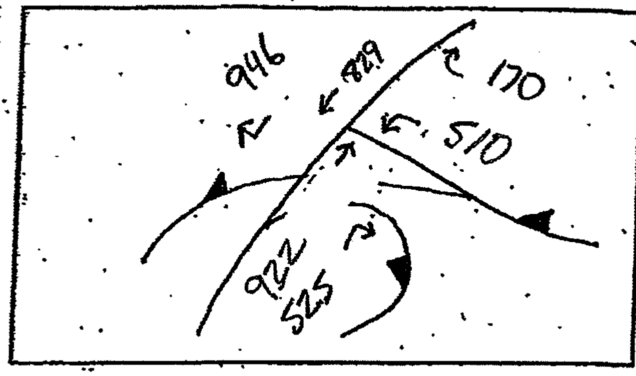
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ____

BY CL DATE 5/27/09

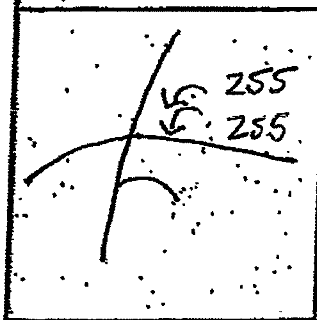
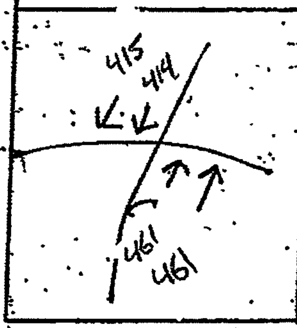
TIME ____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
255	461		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
716

☒ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Ex+CP+CSR - PM

INTERSECTION

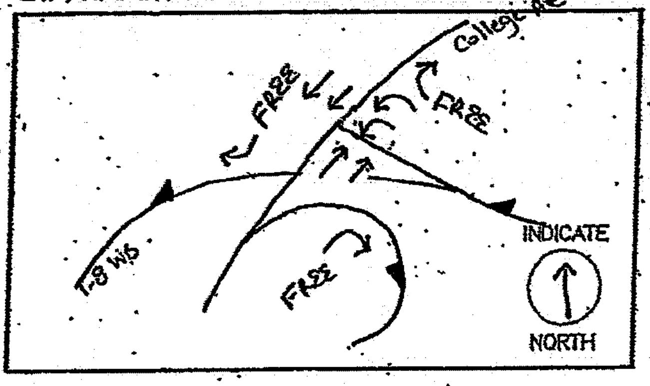
Signalized Intersection
CAPACITY ANALYSIS

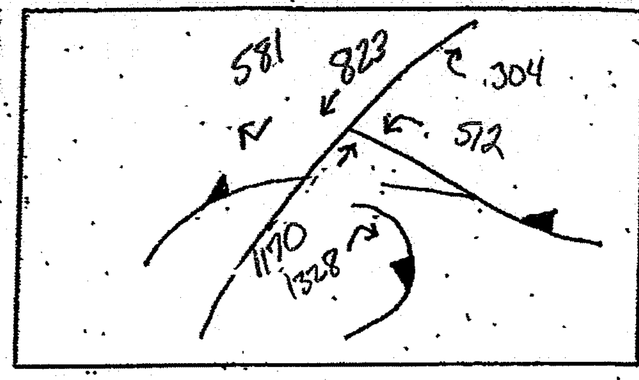
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ________

BY CL DATE ________

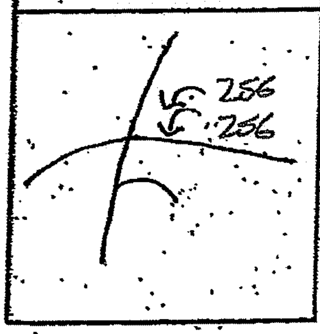
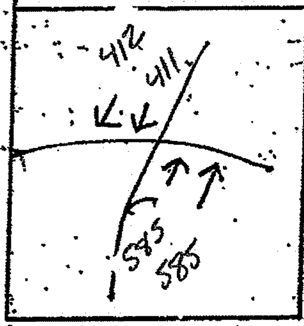
TIME ________ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
256	585		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
841

- [x] < 1200 ILV/HR.
- [ ] > 1200 BUT < 1500 ILV/HR.
- [ ] > 1500 ILV/HR (CAPACITY)

REMARKS:

Ex+CP+CSR-AM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

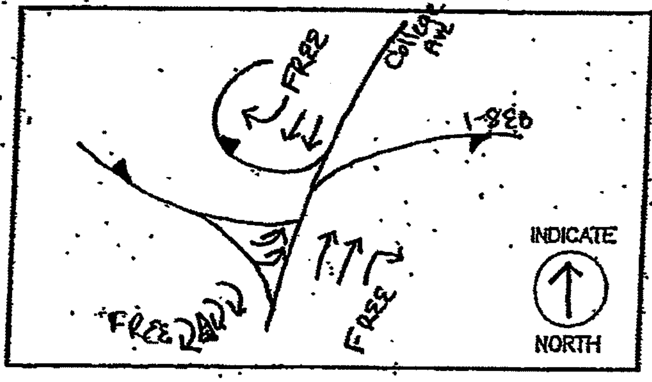
INTERSECTION College Ave / I-8 EB Ramps

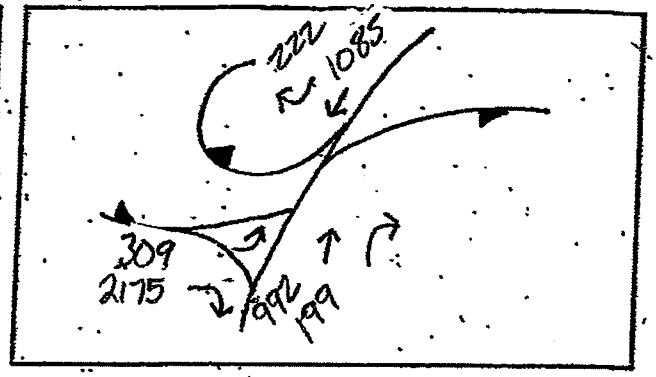
DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

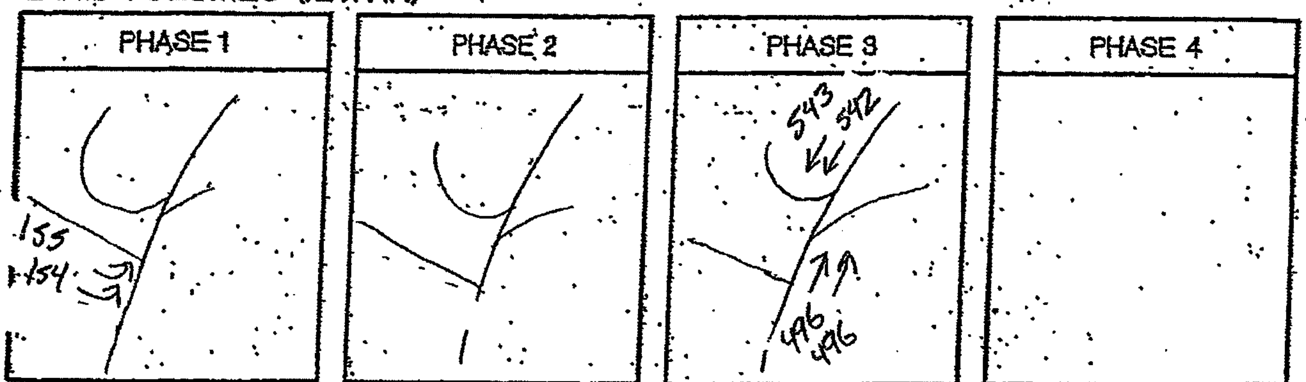
TIME AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)



CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
155		543	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
698

☒ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY).

REMARKS:

Ext CP+CSR- PM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

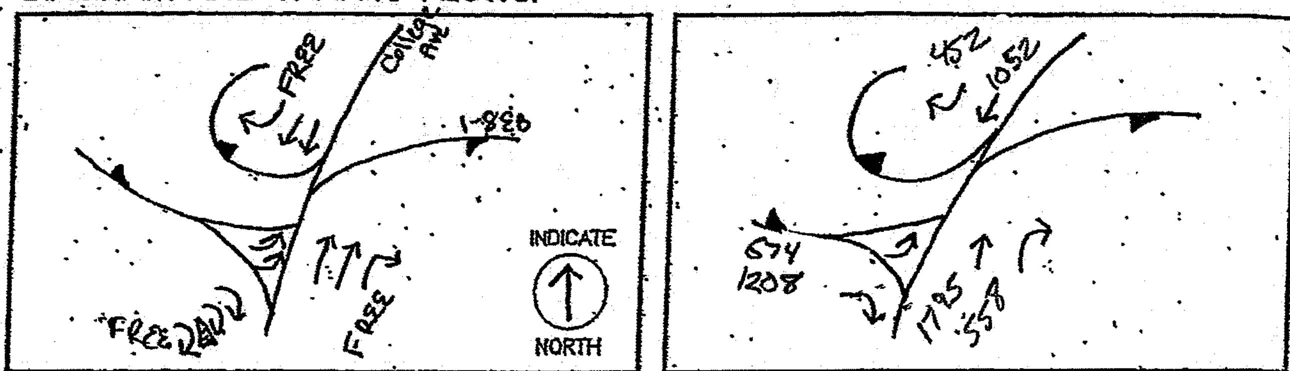
INTERSECTION College Ave / I-8 EB Ramps

DIST. CO. RTE. P.M. ________

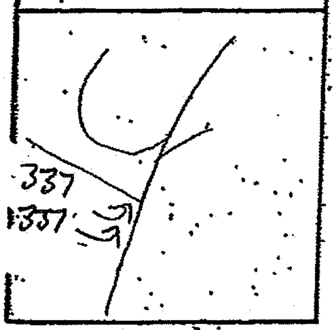
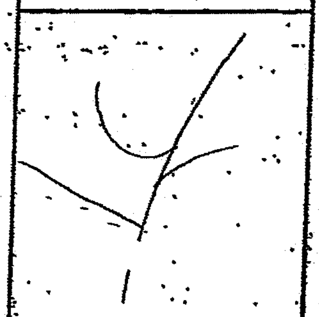
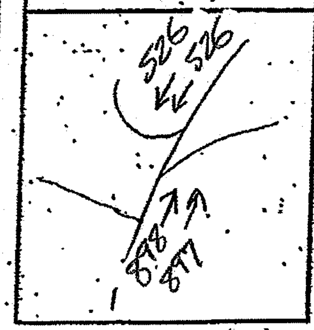
BY CL DATE 5/27/09

TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:



LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
337		898	

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
1235

- ☐ < 1200 ILV/HR.
- ☒ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

EXISTING + CUMULATIVE PROJECTS + UNIVERSITY SERVING RETAIL + STUDENT HOUSING OPERATIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	511	0	170	0	929	533	0	819	946
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	555	0	185	0	1010	579	0	890	1028
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	555	0	185	0	1010	579	0	890	1028
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				20.1		100.0		71.9	100.0		71.9	100.0
Effective Green, g (s)				20.1		100.0		71.9	100.0		71.9	100.0
Actuated g/C Ratio				0.20		1.00		0.72	1.00		0.72	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				664		1555		2545	1536		2545	1536
v/s Ratio Prot								0.29			0.25	
v/s Ratio Perm				c0.17		0.12			0.38			c0.67
v/c Ratio				0.84		0.12		0.40	0.38		0.35	0.67
Uniform Delay, d1				38.4		0.0		5.5	0.0		5.3	0.0
Progression Factor				1.00		1.00		1.24	1.00		1.00	1.00
Incremental Delay, d2				9.0		0.2		0.4	0.6		0.4	2.3
Delay (s)				47.3		0.2		7.3	0.6		5.7	2.3
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			35.5			4.8			3.9	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	309	0	2176	0	0	0	0	1008	205	0	1075	222
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)	336	0	2365	0	0	0	0	1096	223	0	1168	241
RTOR Reduction (vph)	0	0	35	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	336	0	2330	0	0	0	0	1096	223	0	1168	241
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1553		1614					1593	1536		1593	1536
v/s Ratio Prot								0.31			c0.33	
v/s Ratio Perm	0.10		c0.68						0.15			0.16
v/c Ratio	0.22		1.44					0.69	0.15		0.73	0.16
Uniform Delay, d1	15.6		26.5					21.9	0.0		22.8	0.0
Progression Factor	1.00		1.00					0.90	1.00		0.81	1.00
Incremental Delay, d2	0.1		203.2					0.7	0.1		2.6	0.2
Delay (s)	15.7		229.7					20.5	0.1		20.8	0.2
Level of Service	B		F					C	A		C	A
Approach Delay (s)		203.1			0.0			17.0			17.2	
Approach LOS		F			A			B			B	

Intersection Summary

HCM Average Control Delay	109.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1798	1506		1828	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1798	1506		1828	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	49	19	46	87	144	152	152	937	93	522	1254	706
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)	53	21	50	95	157	165	165	1018	101	567	1363	767
RTOR Reduction (vph)	0	0	45	0	0	113	0	0	74	0	0	690
Lane Group Flow (vph)	0	74	5	0	252	52	165	1018	27	567	1363	77
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		10.0	10.0		18.6	31.3	15.0	24.1	24.1	31.3	40.4	10.0
Effective Green, g (s)		10.0	10.0		18.6	31.3	15.0	24.1	24.1	31.3	40.4	10.0
Actuated g/C Ratio		0.10	0.10		0.19	0.31	0.15	0.24	0.24	0.31	0.40	0.10
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		180	151		340	495	266	853	363	1075	2054	279
v/s Ratio Prot		c0.04			c0.14	0.03	c0.09	c0.29		0.17	c0.27	0.03
v/s Ratio Perm			0.00						0.02			
v/c Ratio		0.41	0.03		0.74	0.10	0.62	1.19	0.07	0.53	0.66	0.27
Uniform Delay, d1		42.2	40.6		38.4	24.4	39.8	38.0	29.3	28.3	24.3	41.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.87	0.87	3.50
Incremental Delay, d2		1.5	0.1		8.4	0.1	4.4	98.5	0.4	0.0	0.2	0.0
Delay (s)		43.8	40.7		46.9	24.5	44.3	136.5	29.7	24.8	21.3	145.9
Level of Service		D	D		D	C	D	F	C	C	C	F
Approach Delay (s)		42.5			38.0			116.2			57.5	
Approach LOS		D			D			F			E	

Intersection Summary

HCM Average Control Delay	72.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	100	1377	171	556	1215
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	109	1497	186	604	1321
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.88	0.81			0.81	
vC, conflicting volume	3386	788			1703	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2938	510			1634	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	73			0	
cM capacity (veh/h)	0	400			314	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	109	748	748	186	604	660	660
Volume Left	0	0	0	0	604	0	0
Volume Right	109	0	0	186	0	0	0
cSH	400	1700	1700	1700	314	1700	1700
Volume to Capacity	0.27	0.44	0.44	0.11	1.92	0.39	0.39
Queue Length 95th (ft)	27	0	0	0	1043	0	0
Control Delay (s)	17.3	0.0	0.0	0.0	454.6	0.0	0.0
Lane LOS	C				F		
Approach Delay (s)	17.3	0.0			142.7		
Approach LOS	C						

Intersection Summary

Average Delay	74.4		
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.92		1.00	1.00		1.00	0.97	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1718			1691		1770	3532		1770	3430	
Flt Permitted		0.82			0.92		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1452			1581		1770	3532		1770	3430	
Volume (vph)	82	9	57	14	9	35	84	1156	16	38	863	224
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)	89	10	62	15	10	38	91	1257	17	41	938	243
RTOR Reduction (vph)	0	21	0	0	32	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	140	0	0	31	0	91	1274	0	41	1168	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		13.8			13.8		8.8	62.4		5.2	58.8	
Effective Green, g (s)		13.8			13.8		8.8	62.4		5.2	58.8	
Actuated g/C Ratio		0.15			0.15		0.09	0.67		0.06	0.63	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		215			234		167	2360		99	2159	
v/s Ratio Prot							c0.05	c0.36		0.02	0.34	
v/s Ratio Perm		c0.10			0.02							
v/c Ratio		0.65			0.13		0.54	0.54		0.41	0.54	
Uniform Delay, d1		37.5			34.6		40.4	8.0		42.6	9.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		6.6			0.3		3.6	0.9		2.8	1.0	
Delay (s)		44.1			34.8		44.0	8.9		45.4	10.7	
Level of Service		D			C		D	A		D	B	
Approach Delay (s)		44.1			34.8			11.3			11.9	
Approach LOS		D			C			B			B	

Intersection Summary

HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1459	3433	3421		1770	3539	1459
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1459	3433	3421		1770	3539	1459
Volume (vph)	325	413	139	55	781	327	564	929	161	214	475	180
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)	353	449	151	60	849	355	613	1010	175	233	516	196
RTOR Reduction (vph)	0	0	117	0	0	213	0	14	0	0	0	148
Lane Group Flow (vph)	353	449	34	60	849	142	613	1171	0	233	516	48
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	22.4	22.4	22.4	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	22.4	22.4	22.4	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.23	0.23	0.23	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	403	806	332	432	863	356	419	834		216	863	356
v/s Ratio Prot	c0.20	0.13		0.03	c0.24		c0.18	c0.34		0.13	0.15	
v/s Ratio Perm			0.02			0.10						0.03
v/c Ratio	0.88	0.56	0.10	0.14	0.98	0.40	1.46	1.40		1.08	0.60	0.13
Uniform Delay, d1	36.7	33.6	30.1	29.1	37.0	31.2	43.2	37.2		43.2	32.9	29.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	18.7	0.8	0.1	0.1	26.5	0.7	221.1	189.3		83.7	3.1	0.8
Delay (s)	55.4	34.5	30.2	29.3	63.5	31.9	264.3	226.5		126.9	36.0	29.9
Level of Service	E	C	C	C	E	C	F	F		F	D	C
Approach Delay (s)		41.5			53.0			239.4			57.1	
Approach LOS		D			D			F			E	

Intersection Summary

HCM Average Control Delay	119.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.0%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3429		3433	3432		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3429		3433	3432		1770	3539	1583	1770	3539	1583
Volume (vph)	209	364	96	113	493	124	168	1089	99	99	384	118
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)	227	396	104	123	536	135	183	1184	108	108	417	128
RTOR Reduction (vph)	0	20	0	0	19	0	0	0	55	0	0	77
Lane Group Flow (vph)	227	480	0	123	652	0	183	1184	53	108	417	51
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	11.2	29.1		7.7	25.6		16.3	51.2	51.2	10.6	45.5	45.5
Effective Green, g (s)	11.2	29.1		7.7	25.6		16.3	51.2	51.2	10.6	45.5	45.5
Actuated g/C Ratio	0.10	0.25		0.07	0.22		0.14	0.45	0.45	0.09	0.40	0.40
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	336	871		231	767		252	1581	707	164	1405	629
v/s Ratio Prot	c0.07	c0.14		0.04	c0.19		c0.10	c0.33		0.06	0.12	
v/s Ratio Perm									0.03			0.03
v/c Ratio	0.68	0.55		0.53	0.85		0.73	0.75	0.08	0.66	0.30	0.08
Uniform Delay, d1	49.9	37.1		51.7	42.7		47.0	26.4	18.1	50.3	23.6	21.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.3	0.8		2.4	9.0		10.0	3.3	0.2	9.2	0.5	0.3
Delay (s)	55.2	37.8		54.1	51.6		57.0	29.7	18.4	59.4	24.2	21.8
Level of Service	E	D		D	D		E	C	B	E	C	C
Approach Delay (s)		43.3			52.0			32.2			29.5	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	38.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	114.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	169	3539	3433	1583
Volume (vph)	1290	260	57	1057	954	77
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1402	283	62	1149	1037	84
RTOR Reduction (vph)	0	0	0	0	0	10
Lane Group Flow (vph)	1402	283	62	1149	1037	74
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	44.0	89.1	44.0	44.0	45.1	45.1
Effective Green, g (s)	44.0	89.1	44.0	44.0	45.1	45.1
Actuated g/C Ratio	0.45	0.92	0.45	0.45	0.46	0.46
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1604	1583	77	1604	1595	735
v/s Ratio Prot	c0.40	0.08		0.32	c0.30	
v/s Ratio Perm		0.10	0.37			0.05
v/c Ratio	0.87	0.18	0.81	0.72	0.65	0.10
Uniform Delay, d1	24.0	0.4	22.9	21.5	19.9	14.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.1	43.8	1.6	2.1	0.3
Delay (s)	29.7	0.4	66.7	23.0	22.0	14.9
Level of Service	C	A	E	C	C	B
Approach Delay (s)	24.7			25.3	21.5	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	97.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

9: Montezuma Rd & 55th St
Ex + CP +USR + SH AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		0.96	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3497		1700	3377			1758		1681	1691	1454
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3497		1700	3377			1758		1681	1691	1454
Volume (vph)	771	539	25	9	740	191	42	14	7	108	4	183
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)	838	586	27	10	804	208	46	15	8	117	4	199
RTOR Reduction (vph)	0	3	0	0	22	0	0	5	0	0	0	168
Lane Group Flow (vph)	838	610	0	10	990	0	0	64	0	59	62	31
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	24.0	54.4		0.8	31.2			16.0		16.0	16.0	16.0
Effective Green, g (s)	24.0	54.4		0.8	31.2			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.23	0.53		0.01	0.30			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	798	1843		13	1021			273		261	262	225
v/s Ratio Prot	c0.24	0.17		0.01	c0.29			c0.04		0.04	c0.04	
v/s Ratio Perm												0.02
v/c Ratio	1.05	0.33		0.77	0.97			0.23		0.23	0.24	0.14
Uniform Delay, d1	39.6	14.0		51.1	35.5			38.2		38.2	38.2	37.6
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	45.8	0.1		128.6	20.8			2.0		2.0	2.1	1.3
Delay (s)	85.4	14.1		179.7	56.3			40.2		40.2	40.4	38.9
Level of Service	F	B		F	E			D		D	D	D
Approach Delay (s)		55.3			57.5			40.2			39.4	
Approach LOS		E			E			D			D	

Intersection Summary

HCM Average Control Delay	54.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

10: Montezuma Rd & Campanile Dr
Ex + CP +USR + SH AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.96		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3515		1770	3380			1648		1681	1708	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3515		1770	3380			1648		1681	1708	1583
Volume (vph)	147	535	14	58	1141	231	24	30	55	109	18	62
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)	160	582	15	63	1240	251	26	33	60	118	20	67
RTOR Reduction (vph)	0	2	0	0	17	0	0	37	0	0	0	62
Lane Group Flow (vph)	160	595	0	63	1474	0	0	82	0	67	71	5
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	48.0		4.8	44.8			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	48.0		4.8	44.8			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.48		0.05	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	140	1674		84	1502			262		267	271	126
v/s Ratio Prot	c0.09	c0.17		0.04	c0.44			c0.05		0.04	c0.04	0.00
v/s Ratio Perm												
v/c Ratio	1.14	0.36		0.75	0.98			0.31		0.25	0.26	0.04
Uniform Delay, d1	46.4	16.6		47.4	27.6			37.5		37.1	37.2	42.9
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	119.6	0.1		30.8	18.9			3.1		2.2	2.3	0.1
Delay (s)	166.0	16.8		78.2	46.5			40.6		39.4	39.6	43.0
Level of Service	F	B		E	D			D		D	D	D
Approach Delay (s)		48.3			47.7			40.6			40.6	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	47.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

11: Montezuma Rd & Catoctin Drive

Ex + CP +USR + SH AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.93			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3526		1770	3532			1693			1698	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.92	
Satd. Flow (perm)	1770	3526		1770	3532			1567			1594	
Volume (vph)	14	294	7	46	883	12	20	1	23	25	7	37
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	320	8	50	960	13	22	1	25	27	8	40
RTOR Reduction (vph)	0	2	0	0	1	0	0	14	0	0	22	0
Lane Group Flow (vph)	15	326	0	50	972	0	0	34	0	0	53	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	19.8		4.7	23.4			29.9			29.9	
Effective Green, g (s)	1.1	19.8		4.7	23.4			29.9			29.9	
Actuated g/C Ratio	0.02	0.30		0.07	0.35			0.45			0.45	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	29	1051		125	1245			706			718	
v/s Ratio Prot	0.01	0.09		c0.03	c0.28							
v/s Ratio Perm								0.02			c0.03	
v/c Ratio	0.52	0.31		0.40	0.78			0.05			0.07	
Uniform Delay, d1	32.4	18.0		29.5	19.2			10.3			10.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	14.7	0.2		2.1	3.2			0.1			0.2	
Delay (s)	47.1	18.2		31.6	22.5			10.4			10.6	
Level of Service	D	B		C	C			B			B	
Approach Delay (s)		19.5			22.9			10.4			10.6	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	66.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

12: El Cajon Blvd & Montezuma Road

Ex + CP +USR + SH AM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	0.96	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3258	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3258	1441	3433	1583
Volume (vph)	98	459	551	774	220	45
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	107	499	599	841	239	49
RTOR Reduction (vph)	0	0	28	426	0	27
Lane Group Flow (vph)	107	499	782	204	239	22
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	9.1	43.0	29.9	29.9	41.3	41.3
Effective Green, g (s)	9.1	43.0	29.9	29.9	41.3	41.3
Actuated g/C Ratio	0.10	0.47	0.32	0.32	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	175	1649	1055	467	1536	708
v/s Ratio Prot	c0.06	0.14	c0.24	0.14	c0.07	0.01
v/s Ratio Perm						
v/c Ratio	0.61	0.30	0.74	0.44	0.16	0.03
Uniform Delay, d1	39.9	15.3	27.8	24.6	15.1	14.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.2	0.1	2.8	0.7	0.2	0.1
Delay (s)	46.1	15.4	30.6	25.2	15.4	14.4
Level of Service	D	B	C	C	B	B
Approach Delay (s)		20.8	28.3		15.2	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	92.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

1: I-8WB Ramp & College Ave
Ex + CP + USR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	518	0	304	0	1156	1328	0	813	581
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	563	0	330	0	1257	1443	0	884	632
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	563	0	330	0	1257	1443	0	884	632
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				20.4		100.0		71.6	100.0		71.6	100.0
Effective Green, g (s)				20.4		100.0		71.6	100.0		71.6	100.0
Actuated g/C Ratio				0.20		1.00		0.72	1.00		0.72	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				674		1555		2534	1536		2534	1536
v/s Ratio Prot								0.36			0.25	
v/s Ratio Perm				0.17		0.21			c0.94			0.41
v/c Ratio				0.84		0.21		0.50	0.94		0.35	0.41
Uniform Delay, d1				38.2		0.0		6.3	0.0		5.4	0.0
Progression Factor				1.00		1.00		0.94	1.00		1.00	1.00
Incremental Delay, d2				8.8		0.3		0.2	4.7		0.4	0.8
Delay (s)				47.0		0.3		6.1	4.7		5.8	0.8
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			29.7			5.3			3.7	
Approach LOS		A			C			A			A	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2: I-8EB Ramp & College Ave
Ex + CP + USR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.98		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	674	0	1216	0	0	0	0	1782	557	0	1046	452
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)	733	0	1322	0	0	0	0	1937	605	0	1137	491
RTOR Reduction (vph)	0	0	41	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	733	0	1281	0	0	0	0	1937	605	0	1137	491
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.4		44.4					47.6	100.0		47.6	100.0
Effective Green, g (s)	44.4		44.4					47.6	100.0		47.6	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1467		1525					1685	1536		1685	1536
v/s Ratio Prot								c0.55			0.32	
v/s Ratio Perm	0.22		c0.37						0.39			0.32
v/c Ratio	0.50		0.84					1.15	0.39		0.67	0.32
Uniform Delay, d1	19.8		24.7					26.2	0.0		20.2	0.0
Progression Factor	1.00		1.00					0.81	1.00		0.79	1.00
Incremental Delay, d2	0.3		4.4					68.0	0.1		2.0	0.5
Delay (s)	20.1		29.0					89.3	0.1		18.0	0.5
Level of Service	C		C					F	A		B	A
Approach Delay (s)		25.8			0.0			68.1			12.7	
Approach LOS		C			A			E			B	

Intersection Summary

HCM Average Control Delay	39.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1783	1506		1783	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1783	1506		1783	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	502	56	88	104	13	281	66	1709	150	284	1426	115
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)	546	61	96	113	14	305	72	1858	163	309	1550	125
RTOR Reduction (vph)	0	0	62	0	0	260	0	0	58	0	0	87
Lane Group Flow (vph)	0	607	34	0	127	45	72	1858	105	309	1550	38
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		12.0	14.8	8.2	33.2	33.2	14.8	39.8	24.0
Effective Green, g (s)		24.0	24.0		12.0	14.8	8.2	33.2	33.2	14.8	39.8	24.0
Actuated g/C Ratio		0.24	0.24		0.12	0.15	0.08	0.33	0.33	0.15	0.40	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		428	361		214	234	145	1175	500	508	2024	669
v/s Ratio Prot		c0.34			c0.07	0.03	0.04	c0.52		c0.09	c0.30	0.01
v/s Ratio Perm			0.02						0.07			
v/c Ratio		1.42	0.09		0.59	0.19	0.50	1.58	0.21	0.61	0.77	0.06
Uniform Delay, d1		38.0	29.5		41.7	37.4	43.9	33.4	24.0	39.9	26.1	29.3
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.01	0.83	1.40
Incremental Delay, d2		201.5	0.1		4.4	0.4	2.7	265.7	1.0	1.3	1.8	0.0
Delay (s)		239.5	29.7		46.1	37.8	46.6	299.1	24.9	41.8	23.4	41.0
Level of Service		F	C		D	D	D	F	C	D	C	D
Approach Delay (s)		210.9			40.2			269.0			27.4	
Approach LOS		F			D			F			C	

Intersection Summary

HCM Average Control Delay	150.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	444	1604	138	188	1438
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	483	1743	150	204	1563
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.82	0.69			0.69	
vC, conflicting volume	2954	912			1913	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2029	423			1875	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			5	
cM capacity (veh/h)	2	387			215	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	483	872	872	150	204	782	782
Volume Left	0	0	0	0	204	0	0
Volume Right	483	0	0	150	0	0	0
cSH	387	1700	1700	1700	215	1700	1700
Volume to Capacity	1.25	0.51	0.51	0.09	0.95	0.46	0.46
Queue Length 95th (ft)	518	0	0	0	203	0	0
Control Delay (s)	161.6	0.0	0.0	0.0	96.0	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	161.6	0.0			11.1		
Approach LOS	F						

Intersection Summary

Average Delay	23.6		
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.92		1.00	1.00		1.00	0.98	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1718			1692		1770	3530		1770	3467	
Flt Permitted		0.78			0.90		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1381			1542		1770	3530		1770	3467	
Volume (vph)	155	14	104	19	12	46	92	1319	24	57	1253	198
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)	168	15	113	21	13	50	100	1434	26	62	1362	215
RTOR Reduction (vph)	0	19	0	0	38	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	277	0	0	46	0	100	1459	0	62	1568	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		24.2			24.2		9.3	56.2		7.5	54.4	
Effective Green, g (s)		24.2			24.2		9.3	56.2		7.5	54.4	
Actuated g/C Ratio		0.24			0.24		0.09	0.56		0.08	0.54	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		335			374		165	1986		133	1888	
v/s Ratio Prot							c0.06	0.41		0.04	c0.45	
v/s Ratio Perm		c0.20			0.03							
v/c Ratio		0.83			0.12		0.61	0.73		0.47	0.83	
Uniform Delay, d1		35.9			29.6		43.5	16.3		44.3	18.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.3			0.1		6.2	2.5		2.6	4.4	
Delay (s)		51.2			29.7		49.7	18.8		46.9	23.3	
Level of Service		D			C		D	B		D	C	
Approach Delay (s)		51.2			29.7			20.7			24.2	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	99.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3437		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3437		1770	3539	1457
Volume (vph)	758	1010	572	276	788	386	525	699	101	390	924	193
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)	824	1098	622	300	857	420	571	760	110	424	1004	210
RTOR Reduction (vph)	0	0	231	0	0	172	0	11	0	0	0	157
Lane Group Flow (vph)	824	1098	391	300	857	248	571	859	0	424	1004	53
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	825		212	849	350
v/s Ratio Prot	c0.47	0.31		0.17	c0.24		0.17	0.25		c0.24	c0.28	
v/s Ratio Perm			0.27			0.17						0.04
v/c Ratio	1.94	1.29	1.12	0.71	1.01	0.71	1.39	1.04		2.00	1.18	0.15
Uniform Delay, d1	38.0	38.0	38.0	34.8	38.0	34.8	44.0	38.0		44.0	38.0	30.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	431.0	140.7	83.6	5.3	33.2	6.5	188.1	42.4		466.4	94.1	0.9
Delay (s)	469.0	178.7	121.6	40.0	71.2	41.3	232.1	80.4		510.4	132.1	30.9
Level of Service	F	F	F	D	E	D	F	F		F	F	C
Approach Delay (s)		258.8			57.3			140.5			217.1	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	181.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	121.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

7: El Cajon Blvd & College Ave

Ex + CP + USR+SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3428		3433	3351		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3428		3433	3351		1770	3539	1583	1770	3539	1583
Volume (vph)	248	694	183	331	543	298	237	781	174	436	1062	230
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)	270	754	199	360	590	324	258	849	189	474	1154	250
RTOR Reduction (vph)	0	20	0	0	62	0	0	0	140	0	0	136
Lane Group Flow (vph)	270	933	0	360	852	0	258	849	49	474	1154	114
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	10.0	32.0		13.0	35.0		18.0	28.0	28.0	31.0	41.0	41.0
Effective Green, g (s)	10.0	32.0		13.0	35.0		18.0	28.0	28.0	31.0	41.0	41.0
Actuated g/C Ratio	0.08	0.27		0.11	0.29		0.15	0.23	0.23	0.26	0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	286	914		372	977		266	826	369	457	1209	541
v/s Ratio Prot	0.08	c0.27		c0.10	c0.25		0.15	0.24		c0.27	c0.33	
v/s Ratio Perm									0.03			0.07
v/c Ratio	0.94	1.02		0.97	0.87		0.97	1.03	0.13	1.04	0.95	0.21
Uniform Delay, d1	54.7	44.0		53.3	40.4		50.7	46.0	36.4	44.5	38.6	28.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.2	35.2		37.7	8.7		46.2	38.6	0.8	52.1	17.0	0.9
Delay (s)	92.9	79.2		91.0	49.0		97.0	84.6	37.2	96.6	55.6	28.9
Level of Service	F	E		F	D		F	F	D	F	E	C
Approach Delay (s)		82.2			60.9			80.2			62.4	
Approach LOS		F			E			F			E	

Intersection Summary

HCM Average Control Delay	70.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

8: Montezuma Rd & Collwood Blvd

Ex + CP + USR+SH PM

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1705	343	72	1030	309	48
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1853	373	78	1120	336	52
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1853	373	78	1120	336	49
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	c0.52	c0.11		0.32	0.10	
v/s Ratio Perm		0.13	0.49			0.03
v/c Ratio	1.11	0.24	1.04	0.67	0.22	0.07
Uniform Delay, d1	26.5	0.4	26.5	20.5	16.8	15.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	60.4	0.1	115.4	1.1	0.3	0.2
Delay (s)	86.9	0.5	141.9	21.6	17.1	15.8
Level of Service	F	A	F	C	B	B
Approach Delay (s)	72.4			29.5	16.9	
Approach LOS	E			C	B	

Intersection Summary

HCM Average Control Delay	53.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.93		0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3455		1770	3539	1467		1745		1681	1695	1464
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3455		1770	3539	1467		1745		1681	1695	1464
Volume (vph)	486	1137	111	30	689	238	34	19	12	524	33	509
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)	528	1236	121	33	749	259	37	21	13	570	36	553
RTOR Reduction (vph)	0	7	0	0	0	188	0	8	0	0	0	399
Lane Group Flow (vph)	528	1350	0	33	749	71	0	63	0	295	311	154
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	17.3	42.0		2.3	27.0	27.0		17.0		21.1	21.1	21.1
Effective Green, g (s)	17.3	42.0		2.3	27.0	27.0		17.0		21.1	21.1	21.1
Actuated g/C Ratio	0.18	0.43		0.02	0.27	0.27		0.17		0.21	0.21	0.21
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	604	1475		41	971	403		301		360	363	314
v/s Ratio Prot	c0.15	c0.39		0.02	0.21			c0.04		0.18	c0.18	
v/s Ratio Perm						0.05						0.11
v/c Ratio	0.87	0.91		0.80	0.77	0.18		0.21		0.82	0.86	0.49
Uniform Delay, d1	39.5	26.5		47.8	32.9	27.2		34.9		36.8	37.2	33.9
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	13.3	9.1		69.0	3.8	0.2		1.6		18.5	22.1	5.4
Delay (s)	52.8	35.6		116.8	36.7	27.4		36.5		55.3	59.3	39.3
Level of Service	D	D		F	D	C		D		E	E	D
Approach Delay (s)		40.4			36.9			36.5			48.7	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			0.94		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (prot)	1770	3520		1770	3338			1581		1681	1700	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (perm)	1770	3520		1770	3338			1581		1681	1700	1583
Volume (vph)	178	1367	28	194	866	236	25	38	153	370	37	167
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)	193	1486	30	211	941	257	27	41	166	402	40	182
RTOR Reduction (vph)	0	2	0	0	25	0	0	88	0	0	0	167
Lane Group Flow (vph)	193	1514	0	211	1173	0	0	146	0	215	227	15
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	45.0		6.0	43.0			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	45.0		6.0	43.0			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.45		0.06	0.43			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	143	1600		107	1450			256		272	275	128
v/s Ratio Prot	0.11	c0.43		c0.12	0.35			c0.09		0.13	c0.13	0.01
v/s Ratio Perm												
v/c Ratio	1.35	0.95		1.97	0.81			0.57		0.79	0.83	0.11
Uniform Delay, d1	45.5	25.8		46.5	24.4			38.3		39.9	40.1	42.2
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	196.3	12.0		469.2	3.4			8.9		20.5	23.8	0.4
Delay (s)	241.8	37.8		515.7	27.8			47.2		60.4	63.9	42.6
Level of Service	F	D		F	C			D		E	E	D
Approach Delay (s)		60.9			100.9			47.2			58.5	
Approach LOS		E			F			D			E	

Intersection Summary

HCM Average Control Delay	73.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	99.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

11: Montezuma Rd & Catoctin Drive

Ex + CP + USR+SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3529		1770	3521			1670			1714	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.87	
Satd. Flow (perm)	1770	3529		1770	3521			1616			1524	
Volume (vph)	29	966	19	61	581	20	24	20	112	26	7	27
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)	32	1050	21	66	632	22	26	22	122	28	8	29
RTOR Reduction (vph)	0	1	0	0	2	0	0	74	0	0	17	0
Lane Group Flow (vph)	32	1070	0	66	652	0	0	96	0	0	48	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	2.8	28.9		5.2	31.3			30.4			30.4	
Effective Green, g (s)	2.8	28.9		5.2	31.3			30.4			30.4	
Actuated g/C Ratio	0.04	0.38		0.07	0.41			0.40			0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	65	1333		120	1441			642			606	
v/s Ratio Prot	0.02	c0.30		c0.04	0.19							
v/s Ratio Perm								c0.06			0.03	
v/c Ratio	0.49	0.80		0.55	0.45			0.15			0.08	
Uniform Delay, d1	36.2	21.3		34.5	16.4			14.8			14.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.8	3.6		5.4	0.2			0.5			0.3	
Delay (s)	41.9	24.8		39.9	16.6			15.3			14.6	
Level of Service	D	C		D	B			B			B	
Approach Delay (s)		25.3			18.7			15.3			14.6	
Approach LOS		C			B			B			B	

Intersection Summary

HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

12: El Cajon Blvd & Montezuma Road

Ex + CP + USR+SH PM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	85	330	610	405	651	68
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	359	663	440	708	74
RTOR Reduction (vph)	0	0	0	318	0	38
Lane Group Flow (vph)	92	359	663	122	708	36
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	8.1	35.7	23.6	23.6	41.2	41.2
Effective Green, g (s)	8.1	35.7	23.6	23.6	41.2	41.2
Actuated g/C Ratio	0.10	0.42	0.28	0.28	0.49	0.49
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	169	1488	942	401	1666	768
v/s Ratio Prot	c0.05	0.10	c0.20	0.08	c0.21	0.02
v/s Ratio Perm						
v/c Ratio	0.54	0.24	0.70	0.31	0.42	0.05
Uniform Delay, d1	36.6	15.9	27.5	24.2	14.2	11.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.1	2.4	0.4	0.8	0.1
Delay (s)	40.2	15.9	29.9	24.6	15.0	11.6
Level of Service	D	B	C	C	B	B
Approach Delay (s)		20.9	27.8		14.6	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	84.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

ILV OPERATIONS

Ex+CP+USR+SH-AM

INTERSECTION

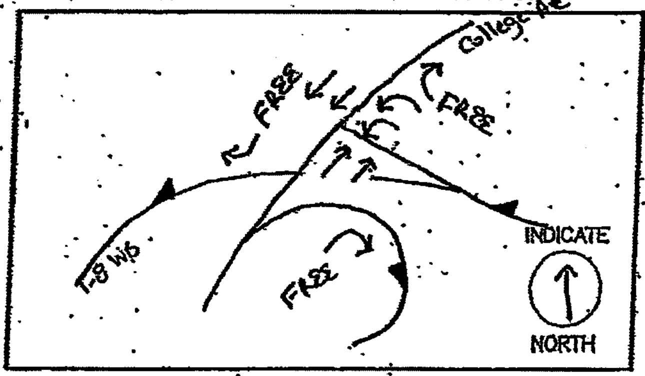
Signalized Intersection
CAPACITY ANALYSIS

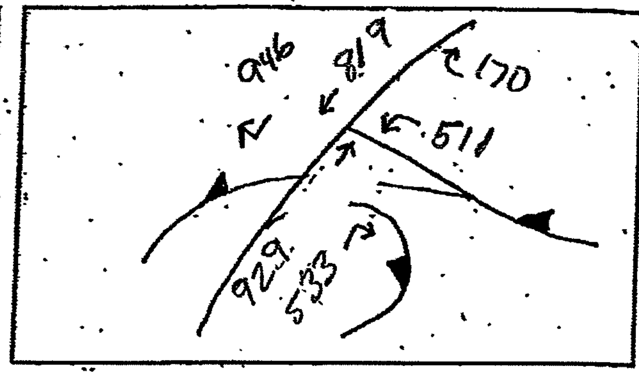
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ____

BY CL DATE 5/27/09

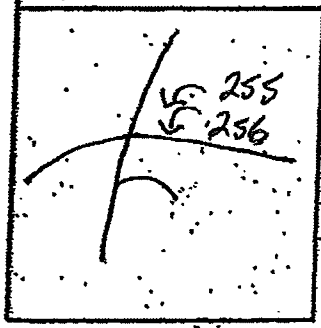
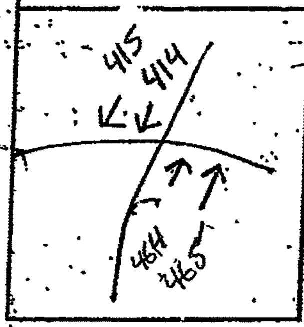
TIME ____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
256	465		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
721

☒ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Ex+CP+USR+SH-PM

INTERSECTION

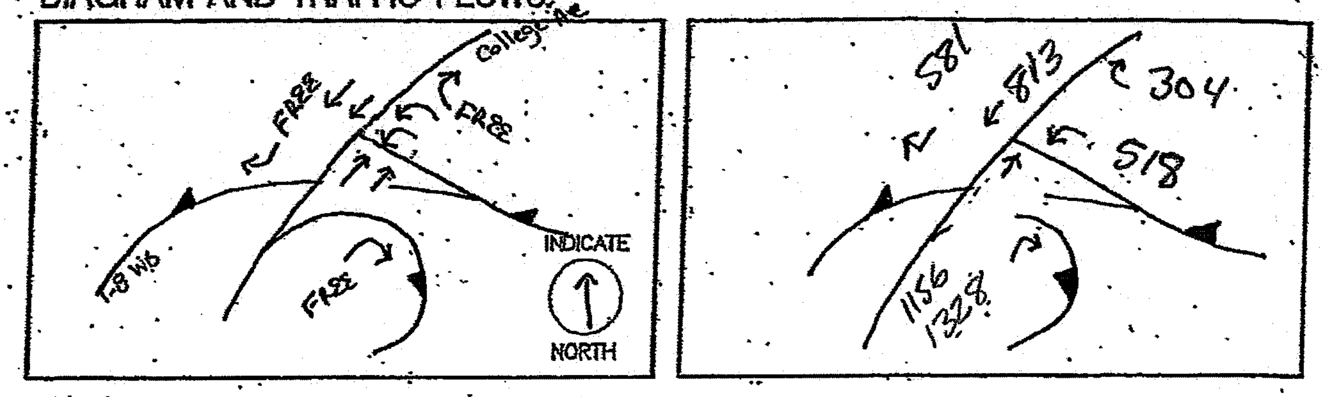
Signalized Intersection
CAPACITY ANALYSIS

INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

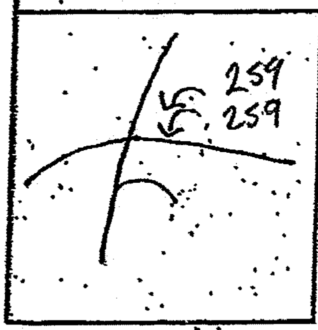
TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:

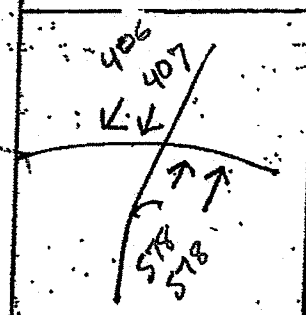


LANE VOLUMES (ILV/HR)

PHASE 1



PHASE 2



PHASE 3

PHASE 4

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
259	578		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
837

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

EX+CP+U5R+5H-AM

INTERSECTION

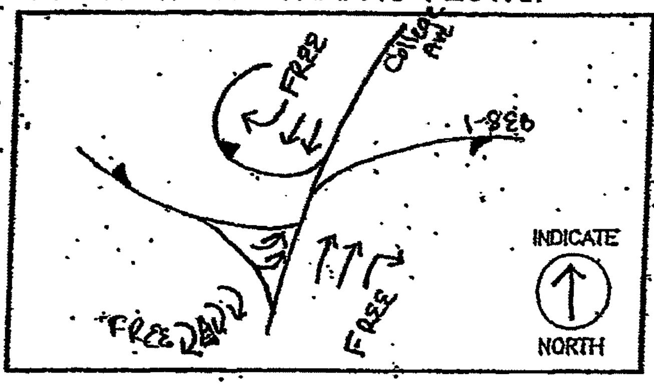
Signalized Intersection
CAPACITY ANALYSIS

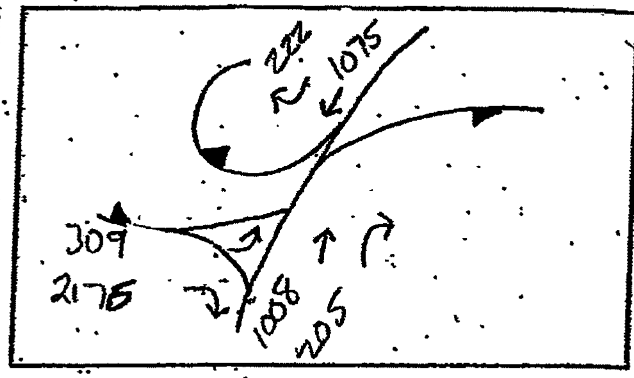
INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE ______

TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:



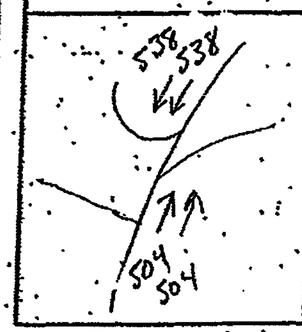


LANE VOLUMES (ILV/HR)

PHASE 1

PHASE 2

PHASE 3



PHASE 4

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
154		538	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
692

- [x] < 1200 ILV/HR.
- [ ] > 1200 BUT < 1500 ILV/HR.
- [ ] > 1500 ILV/HR (CAPACITY)

REMARKS:

Ex+CP+USR+SH – PM

INTERSECTION

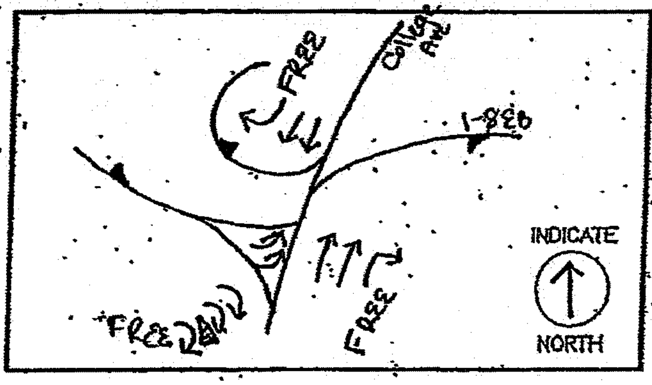
Signalized Intersection
CAPACITY ANALYSIS

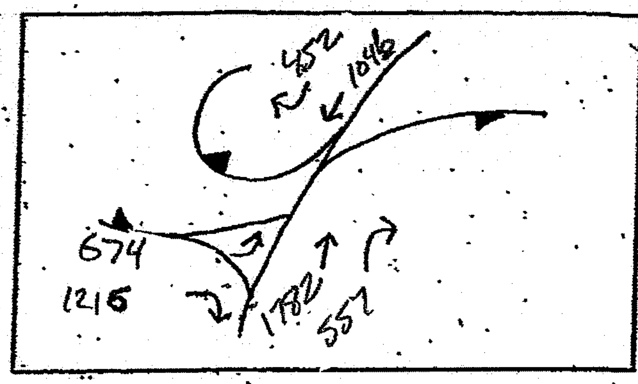
INTERSECTION College Ave / I-8 EB Ramps   DIST. CO. RTE. P.M. ____________

BY CL DATE ____________

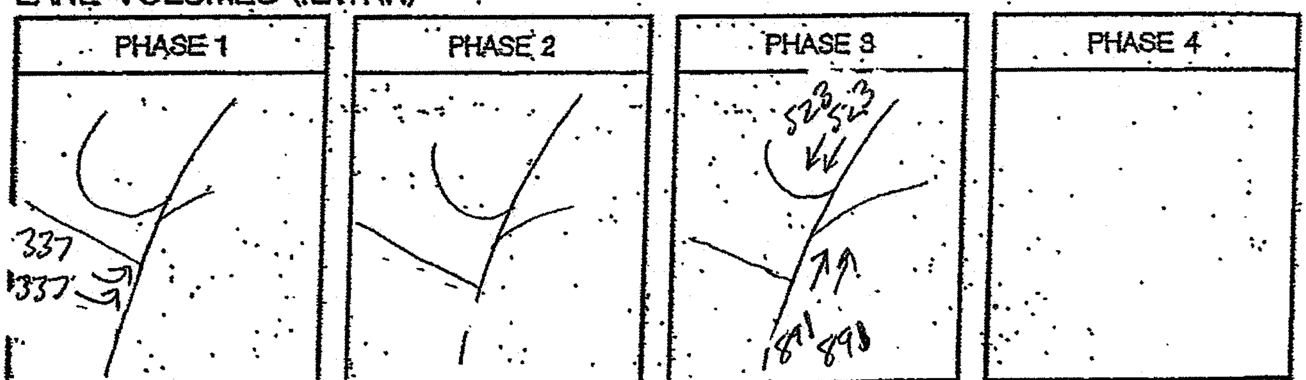
TIME ______ AM/PM (PM circled)

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)



CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
337		891	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1228

- ☐ < 1200 ILV/HR.
- ☒ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY).

REMARKS:

EXISTING + CUMULATIVE PROJECTS + COMMUNITY SERVING RETAIL + STUDENT HOUSING OPERATIONS

Plaza Linda Verde Mixed-Use
6/22/2009

1: I-8WB Ramp & College Ave
Ex + CP + CSR + SH AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	511	0	170	0	927	533	0	829	946
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	555	0	185	0	1008	579	0	901	1028
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	555	0	185	0	1008	579	0	901	1028
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				20.1		100.0		71.9	100.0		71.9	100.0
Effective Green, g (s)				20.1		100.0		71.9	100.0		71.9	100.0
Actuated g/C Ratio				0.20		1.00		0.72	1.00		0.72	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				664		1555		2545	1536		2545	1536
v/s Ratio Prot								0.28			0.25	
v/s Ratio Perm				c0.17		0.12			0.38			c0.67
v/c Ratio				0.84		0.12		0.40	0.38		0.35	0.67
Uniform Delay, d1				38.4		0.0		5.5	0.0		5.3	0.0
Progression Factor				1.00		1.00		1.25	1.00		1.00	1.00
Incremental Delay, d2				9.0		0.2		0.4	0.6		0.4	2.3
Delay (s)				47.3		0.2		7.3	0.6		5.7	2.3
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			35.5			4.8			3.9	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Plaza Linda Verde Mixed-Use
6/22/2009

2: I-8EB Ramp & College Ave
Ex + CP + CSR + SH AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	309	0	2176	0	0	0	0	1006	204	0	1085	222
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)	336	0	2365	0	0	0	0	1093	222	0	1179	241
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	336	0	2331	0	0	0	0	1093	222	0	1179	241
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1553		1614					1593	1536		1593	1536
v/s Ratio Prot								0.31			c0.33	
v/s Ratio Perm	0.10		c0.68						0.14			0.16
v/c Ratio	0.22		1.44					0.69	0.14		0.74	0.16
Uniform Delay, d1	15.6		26.5					21.9	0.0		22.7	0.0
Progression Factor	1.00		1.00					0.90	1.00		0.81	1.00
Incremental Delay, d2	0.1		203.5					0.7	0.1		2.7	0.2
Delay (s)	15.7		230.0					20.4	0.1		21.0	0.2
Level of Service	B		F					C	A		C	A
Approach Delay (s)		203.3			0.0			17.0			17.4	
Approach LOS		F			A			B			B	

Intersection Summary

HCM Average Control Delay	109.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1798	1506		1828	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1798	1506		1828	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	49	19	46	89	144	152	152	935	93	522	1265	706
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)	53	21	50	97	157	165	165	1016	101	567	1375	767
RTOR Reduction (vph)	0	0	45	0	0	114	0	0	74	0	0	690
Lane Group Flow (vph)	0	74	5	0	254	51	165	1016	27	567	1375	77
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		10.0	10.0		18.7	31.2	14.9	24.1	24.1	31.2	40.4	10.0
Effective Green, g (s)		10.0	10.0		18.7	31.2	14.9	24.1	24.1	31.2	40.4	10.0
Actuated g/C Ratio		0.10	0.10		0.19	0.31	0.15	0.24	0.24	0.31	0.40	0.10
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		180	151		342	494	264	853	363	1071	2054	279
v/s Ratio Prot		c0.04			c0.14	0.03	c0.09	c0.29		0.17	c0.27	0.03
v/s Ratio Perm			0.00						0.02			
v/c Ratio		0.41	0.03		0.74	0.10	0.62	1.19	0.07	0.53	0.67	0.27
Uniform Delay, d1		42.2	40.6		38.4	24.5	39.9	38.0	29.3	28.3	24.3	41.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.88	0.87	3.47
Incremental Delay, d2		1.5	0.1		8.4	0.1	4.6	97.6	0.4	0.0	0.2	0.0
Delay (s)		43.8	40.7		46.8	24.6	44.5	135.5	29.7	24.9	21.4	144.6
Level of Service		D	D		D	C	D	F	C	C	C	F
Approach Delay (s)		42.5			38.1			115.5			57.0	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM Average Control Delay	71.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	100	1374	171	556	1228
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	109	1493	186	604	1335
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.88	0.80			0.80	
vC, conflicting volume	3390	787			1699	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2883	478			1623	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	74			0	
cM capacity (veh/h)	0	411			311	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	109	747	747	186	604	667	667
Volume Left	0	0	0	0	604	0	0
Volume Right	109	0	0	186	0	0	0
cSH	411	1700	1700	1700	311	1700	1700
Volume to Capacity	0.26	0.44	0.44	0.11	1.94	0.39	0.39
Queue Length 95th (ft)	26	0	0	0	1051	0	0
Control Delay (s)	16.9	0.0	0.0	0.0	463.3	0.0	0.0
Lane LOS	C				F		
Approach Delay (s)	16.9	0.0			144.4		
Approach LOS	C						

Intersection Summary			
Average Delay	75.6		
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.92		1.00	1.00		1.00	0.97	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1727			1690		1770	3525		1770	3430	
Flt Permitted		0.70			0.88		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1245			1513		1770	3525		1770	3430	
Volume (vph)	82	19	57	29	17	69	84	1156	32	77	863	224
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)	89	21	62	32	18	75	91	1257	35	84	938	243
RTOR Reduction (vph)	0	19	0	0	50	0	0	1	0	0	13	0
Lane Group Flow (vph)	0	153	0	0	75	0	91	1291	0	84	1168	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		15.3			15.3		8.7	57.9		8.4	57.6	
Effective Green, g (s)		15.3			15.3		8.7	57.9		8.4	57.6	
Actuated g/C Ratio		0.16			0.16		0.09	0.62		0.09	0.62	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		204			247		165	2181		159	2111	
v/s Ratio Prot							c0.05	c0.37		0.05	0.34	
v/s Ratio Perm		c0.12			0.05							
v/c Ratio		0.75			0.30		0.55	0.59		0.53	0.55	
Uniform Delay, d1		37.3			34.5		40.6	10.7		40.7	10.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		14.0			0.7		3.9	1.2		3.1	1.1	
Delay (s)		51.3			35.2		44.5	11.9		43.9	11.5	
Level of Service		D			D		D	B		D	B	
Approach Delay (s)		51.3			35.2			14.1			13.7	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	93.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1458	3433	3421		1770	3539	1458
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1458	3433	3421		1770	3539	1458
Volume (vph)	336	413	139	55	781	332	564	935	161	213	474	178
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)	365	449	151	60	849	361	613	1016	175	232	515	193
RTOR Reduction (vph)	0	0	116	0	0	210	0	14	0	0	0	146
Lane Group Flow (vph)	365	449	35	60	849	151	613	1177	0	232	515	47
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	22.8	22.8	22.8	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	22.8	22.8	22.8	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.23	0.23	0.23	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	408	817	336	430	860	354	417	831		215	860	354
v/s Ratio Prot	c0.21	0.13		0.03	c0.24		c0.18	c0.34		0.13	0.15	
v/s Ratio Perm			0.02			0.10						0.03
v/c Ratio	0.89	0.55	0.10	0.14	0.99	0.43	1.47	1.42		1.08	0.60	0.13
Uniform Delay, d1	36.8	33.5	29.9	29.3	37.2	31.6	43.4	37.4		43.4	33.1	29.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	21.3	0.8	0.1	0.1	27.3	0.8	224.2	194.7		84.0	3.1	0.8
Delay (s)	58.1	34.2	30.1	29.5	64.5	32.4	267.6	232.1		127.4	36.2	30.0
Level of Service	E	C	C	C	E	C	F	F		F	D	C
Approach Delay (s)		42.6			53.7			244.2			57.4	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM Average Control Delay	121.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.7%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3429		3433	3432		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3429		3433	3432		1770	3539	1583	1770	3539	1583
Volume (vph)	211	364	96	113	493	124	168	1091	99	99	384	118
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)	229	396	104	123	536	135	183	1186	108	108	417	128
RTOR Reduction (vph)	0	20	0	0	19	0	0	0	55	0	0	77
Lane Group Flow (vph)	229	480	0	123	652	0	183	1186	53	108	417	51
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	11.2	29.1		7.7	25.6		16.3	51.2	51.2	10.6	45.5	45.5
Effective Green, g (s)	11.2	29.1		7.7	25.6		16.3	51.2	51.2	10.6	45.5	45.5
Actuated g/C Ratio	0.10	0.25		0.07	0.22		0.14	0.45	0.45	0.09	0.40	0.40
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	336	871		231	767		252	1581	707	164	1405	629
v/s Ratio Prot	c0.07	c0.14		0.04	c0.19		c0.10	c0.34		0.06	0.12	
v/s Ratio Perm									0.03			0.03
v/c Ratio	0.68	0.55		0.53	0.85		0.73	0.75	0.08	0.66	0.30	0.08
Uniform Delay, d1	50.0	37.1		51.7	42.7		47.0	26.4	18.1	50.3	23.6	21.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.8		2.4	9.0		10.0	3.3	0.2	9.2	0.5	0.3
Delay (s)	55.6	37.8		54.1	51.6		57.0	29.7	18.4	59.4	24.2	21.8
Level of Service	E	D		D	D		E	C	B	E	C	C
Approach Delay (s)		43.4			52.0			32.2			29.5	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	38.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	114.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	169	3539	3433	1583
Volume (vph)	1300	260	57	1055	954	79
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1413	283	62	1147	1037	86
RTOR Reduction (vph)	0	0	0	0	0	10
Lane Group Flow (vph)	1413	283	62	1147	1037	76
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	44.1	89.2	44.1	44.1	45.1	45.1
Effective Green, g (s)	44.1	89.2	44.1	44.1	45.1	45.1
Actuated g/C Ratio	0.45	0.92	0.45	0.45	0.46	0.46
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1606	1583	77	1606	1593	734
v/s Ratio Prot	c0.40	0.08		0.32	c0.30	
v/s Ratio Perm		0.10	0.37			0.05
v/c Ratio	0.88	0.18	0.81	0.71	0.65	0.10
Uniform Delay, d1	24.1	0.4	22.9	21.5	20.0	14.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.9	0.1	43.8	1.5	2.1	0.3
Delay (s)	30.0	0.4	66.7	23.0	22.1	15.0
Level of Service	C	A	E	C	C	B
Approach Delay (s)	25.1			25.2	21.5	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	97.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

9: Montezuma Rd & 55th St

Ex + CP+CSR+SH AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		0.96	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3498		1702	3377			1758		1681	1691	1454
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3498		1702	3377			1758		1681	1691	1454
Volume (vph)	771	550	25	9	738	191	42	14	7	108	4	183
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)	838	598	27	10	802	208	46	15	8	117	4	199
RTOR Reduction (vph)	0	3	0	0	22	0	0	5	0	0	0	168
Lane Group Flow (vph)	838	622	0	10	988	0	0	64	0	59	62	31
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	24.0	54.4		0.8	31.2			16.0		16.0	16.0	16.0
Effective Green, g (s)	24.0	54.4		0.8	31.2			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.23	0.53		0.01	0.30			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	798	1844		13	1021			273		261	262	225
v/s Ratio Prot	c0.24	0.18		0.01	c0.29			c0.04		0.04	c0.04	
v/s Ratio Perm												0.02
v/c Ratio	1.05	0.34		0.77	0.97			0.23		0.23	0.24	0.14
Uniform Delay, d1	39.6	14.0		51.1	35.5			38.2		38.2	38.2	37.6
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	45.8	0.1		128.6	20.4			2.0		2.0	2.1	1.3
Delay (s)	85.4	14.1		179.7	55.9			40.2		40.2	40.4	38.9
Level of Service	F	B		F	E			D		D	D	D
Approach Delay (s)		55.0			57.2			40.2			39.4	
Approach LOS		D			E			D			D	

Intersection Summary

HCM Average Control Delay	53.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

10: Montezuma Rd & Campanile Dr

Ex + CP+CSR+SH AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.96		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (prot)	1770	3516		1770	3380			1648		1681	1706	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (perm)	1770	3516		1770	3380			1648		1681	1706	1583
Volume (vph)	149	545	14	58	1139	231	24	31	56	109	17	62
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)	162	592	15	63	1238	251	26	34	61	118	18	67
RTOR Reduction (vph)	0	2	0	0	17	0	0	37	0	0	0	62
Lane Group Flow (vph)	162	605	0	63	1472	0	0	84	0	66	70	5
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	48.0		4.8	44.8			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	48.0		4.8	44.8			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.48		0.05	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	140	1674		84	1502			262		267	271	126
v/s Ratio Prot	c0.09	c0.17		0.04	c0.44			c0.05		0.04	c0.04	0.00
v/s Ratio Perm												
v/c Ratio	1.16	0.36		0.75	0.98			0.32		0.25	0.26	0.04
Uniform Delay, d1	46.4	16.7		47.4	27.6			37.6		37.1	37.2	42.9
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	124.5	0.1		30.8	18.6			3.2		2.2	2.3	0.1
Delay (s)	170.9	16.8		78.2	46.2			40.8		39.3	39.5	43.0
Level of Service	F	B		E	D			D		D	D	D
Approach Delay (s)		49.3			47.5			40.8			40.6	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	47.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	76.0%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.93			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3526		1770	3532			1693			1698	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.92	
Satd. Flow (perm)	1770	3526		1770	3532			1567			1594	
Volume (vph)	14	293	7	46	888	12	20	1	23	25	7	37
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	318	8	50	965	13	22	1	25	27	8	40
RTOR Reduction (vph)	0	2	0	0	1	0	0	14	0	0	22	0
Lane Group Flow (vph)	15	324	0	50	977	0	0	34	0	0	53	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	19.9		4.7	23.5			29.9			29.9	
Effective Green, g (s)	1.1	19.9		4.7	23.5			29.9			29.9	
Actuated g/C Ratio	0.02	0.30		0.07	0.35			0.45			0.45	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	29	1055		125	1248			705			717	
v/s Ratio Prot	0.01	0.09		c0.03	c0.28							
v/s Ratio Perm								0.02			c0.03	
v/c Ratio	0.52	0.31		0.40	0.78			0.05			0.07	
Uniform Delay, d1	32.4	18.0		29.6	19.2			10.3			10.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	14.7	0.2		2.1	3.3			0.1			0.2	
Delay (s)	47.1	18.1		31.6	22.5			10.4			10.6	
Level of Service	D	B		C	C			B			B	
Approach Delay (s)		19.4			22.9			10.4			10.6	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	0.96	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1719	3539	3257	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1719	3539	3257	1441	3433	1583
Volume (vph)	99	459	551	778	219	45
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	499	599	846	238	49
RTOR Reduction (vph)	0	0	28	429	0	27
Lane Group Flow (vph)	108	499	784	204	238	22
Heavy Vehicles (%)	5%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	9.3	43.2	29.9	29.9	41.4	41.4
Effective Green, g (s)	9.3	43.2	29.9	29.9	41.4	41.4
Actuated g/C Ratio	0.10	0.47	0.32	0.32	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	173	1651	1052	465	1535	708
v/s Ratio Prot	c0.06	0.14	c0.24	0.14	c0.07	0.01
v/s Ratio Perm						
v/c Ratio	0.62	0.30	0.75	0.44	0.16	0.03
Uniform Delay, d1	40.0	15.3	28.0	24.7	15.2	14.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.8	0.1	2.9	0.7	0.2	0.1
Delay (s)	46.8	15.4	30.9	25.4	15.4	14.4
Level of Service	D	B	C	C	B	B
Approach Delay (s)		21.0	28.5		15.3	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	92.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/22/2009

1: I-8WB Ramp & College Ave
Ex + CP + CSR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	519	0	304	0	1170	1328	0	830	581
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	564	0	330	0	1272	1443	0	902	632
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	564	0	330	0	1272	1443	0	902	632
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				20.4		100.0		71.6	100.0		71.6	100.0
Effective Green, g (s)				20.4		100.0		71.6	100.0		71.6	100.0
Actuated g/C Ratio				0.20		1.00		0.72	1.00		0.72	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				674		1555		2534	1536		2534	1536
v/s Ratio Prot								0.36			0.25	
v/s Ratio Perm				0.17		0.21			c0.94			0.41
v/c Ratio				0.84		0.21		0.50	0.94		0.36	0.41
Uniform Delay, d1				38.2		0.0		6.3	0.0		5.4	0.0
Progression Factor				1.00		1.00		0.93	1.00		1.00	1.00
Incremental Delay, d2				8.9		0.3		0.2	4.5		0.4	0.8
Delay (s)				47.1		0.3		6.1	4.5		5.8	0.8
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			29.8			5.2			3.7	
Approach LOS		A			C			A			A	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/22/2009

2: I-8EB Ramp & College Ave
Ex + CP + CSR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	674	0	1218	0	0	0	0	1796	558	0	1065	452
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)	733	0	1324	0	0	0	0	1952	607	0	1158	491
RTOR Reduction (vph)	0	0	38	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	733	0	1286	0	0	0	0	1952	607	0	1158	491
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.5		44.5					47.5	100.0		47.5	100.0
Effective Green, g (s)	44.5		44.5					47.5	100.0		47.5	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1470		1528					1681	1536		1681	1536
v/s Ratio Prot								c0.55			0.33	
v/s Ratio Perm	0.22		c0.37						0.40			0.32
v/c Ratio	0.50		0.84					1.16	0.40		0.69	0.32
Uniform Delay, d1	19.8		24.6					26.2	0.0		20.5	0.0
Progression Factor	1.00		1.00					0.81	1.00		0.80	1.00
Incremental Delay, d2	0.3		4.4					73.2	0.1		2.1	0.5
Delay (s)	20.1		29.0					94.6	0.1		18.4	0.5
Level of Service	C		C					F	A		B	A
Approach Delay (s)		25.8			0.0			72.2			13.1	
Approach LOS		C			A			E			B	

Intersection Summary

HCM Average Control Delay	41.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.5%	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		↰	↱		↰	↱	↰	↑↑	↱	↰↰	↑↑↑	↱↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1783	1506		1783	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1783	1506		1783	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	502	56	88	108	13	281	66	1725	153	284	1447	115
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)	546	61	96	117	14	305	72	1875	166	309	1573	125
RTOR Reduction (vph)	0	0	62	0	0	260	0	0	59	0	0	86
Lane Group Flow (vph)	0	607	34	0	131	45	72	1875	107	309	1573	39
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		12.2	14.7	8.2	33.1	33.1	14.7	39.6	24.0
Effective Green, g (s)		24.0	24.0		12.2	14.7	8.2	33.1	33.1	14.7	39.6	24.0
Actuated g/C Ratio		0.24	0.24		0.12	0.15	0.08	0.33	0.33	0.15	0.40	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		428	361		218	233	145	1171	498	505	2014	669
v/s Ratio Prot		c0.34			c0.07	0.03	0.04	c0.53		c0.09	c0.31	0.01
v/s Ratio Perm			0.02						0.07			
v/c Ratio		1.42	0.09		0.60	0.19	0.50	1.60	0.22	0.61	0.78	0.06
Uniform Delay, d1		38.0	29.5		41.6	37.4	43.9	33.5	24.1	40.0	26.4	29.3
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.02	0.84	1.36
Incremental Delay, d2		201.5	0.1		4.6	0.4	2.7	274.6	1.0	1.3	1.9	0.0
Delay (s)		239.5	29.7		46.2	37.8	46.6	308.0	25.1	42.0	24.0	39.9
Level of Service		F	C		D	D	D	F	C	D	C	D
Approach Delay (s)		210.9			40.4			276.9			27.8	
Approach LOS		F			D			F			C	

Intersection Summary			
HCM Average Control Delay	153.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱	↰	↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	444	1623	138	188	1463
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	483	1764	150	204	1590
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.81	0.64			0.64	
vC, conflicting volume	2988	922			1934	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1936	309			1897	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			0	
cM capacity (veh/h)	0	423			195	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	483	882	882	150	204	795	795
Volume Left	0	0	0	0	204	0	0
Volume Right	483	0	0	150	0	0	0
cSH	423	1700	1700	1700	195	1700	1700
Volume to Capacity	1.14	0.52	0.52	0.09	1.05	0.47	0.47
Queue Length 95th (ft)	441	0	0	0	234	0	0
Control Delay (s)	118.2	0.0	0.0	0.0	128.8	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	118.2	0.0			14.7		
Approach LOS	F						

Intersection Summary			
Average Delay	19.9		
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

5: Lindo Paseo & College Ave
Ex + CP+CSR+SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.92		1.00	0.99		1.00	0.98	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1690		1770	3521		1770	3467	
Flt Permitted		0.68			0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1208			1482		1770	3521		1770	3467	
Volume (vph)	155	29	104	38	23	92	92	1319	47	113	1253	198
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)	168	32	113	41	25	100	100	1434	51	123	1362	215
RTOR Reduction (vph)	0	17	0	0	44	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	296	0	0	122	0	100	1483	0	123	1568	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		30.0			30.0		10.0	54.9		12.8	57.7	
Effective Green, g (s)		30.0			30.0		10.0	54.9		12.8	57.7	
Actuated g/C Ratio		0.27			0.27		0.09	0.50		0.12	0.53	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		330			405		161	1762		207	1824	
v/s Ratio Prot							0.06	0.42		c0.07	c0.45	
v/s Ratio Perm		c0.25			0.08							
v/c Ratio		0.90			0.30		0.62	0.84		0.59	0.86	
Uniform Delay, d1		38.4			31.5		48.0	23.6		46.0	22.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		25.4			0.4		7.2	5.1		4.5	5.6	
Delay (s)		63.8			32.0		55.3	28.7		50.5	28.1	
Level of Service		E			C		E	C		D	C	
Approach Delay (s)		63.8			32.0			30.4			29.7	
Approach LOS		E			C			C			C	

Intersection Summary

HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

6: Montezuma Rd & College Ave
Ex + CP+CSR+SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3438		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3438		1770	3539	1457
Volume (vph)	778	1010	572	276	788	395	525	709	101	397	932	209
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)	846	1098	622	300	857	429	571	771	110	432	1013	227
RTOR Reduction (vph)	0	0	231	0	0	171	0	11	0	0	0	169
Lane Group Flow (vph)	846	1098	391	300	857	258	571	870	0	432	1013	58
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	825		212	849	350
v/s Ratio Prot	c0.48	0.31		0.17	c0.24		0.17	0.25		c0.24	c0.29	
v/s Ratio Perm			0.27			0.18						0.04
v/c Ratio	1.99	1.29	1.12	0.71	1.01	0.74	1.39	1.05		2.04	1.19	0.17
Uniform Delay, d1	38.0	38.0	38.0	34.8	38.0	35.1	44.0	38.0		44.0	38.0	30.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	454.1	140.7	83.6	5.3	33.2	7.9	188.1	46.6		483.1	98.5	1.0
Delay (s)	492.1	178.7	121.6	40.0	71.2	43.0	232.1	84.6		527.1	136.5	31.1
Level of Service	F	F	F	D	E	D	F	F		F	F	C
Approach Delay (s)		268.2			57.7			142.6			223.1	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	186.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	123.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3428		3433	3351		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3428		3433	3351		1770	3539	1583	1770	3539	1583
Volume (vph)	252	694	183	331	543	298	237	785	174	436	1065	233
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)	274	754	199	360	590	324	258	853	189	474	1158	253
RTOR Reduction (vph)	0	20	0	0	62	0	0	0	139	0	0	137
Lane Group Flow (vph)	274	933	0	360	852	0	258	853	50	474	1158	116
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	10.0	32.0		13.0	35.0		18.0	28.0	28.0	31.0	41.0	41.0
Effective Green, g (s)	10.0	32.0		13.0	35.0		18.0	28.0	28.0	31.0	41.0	41.0
Actuated g/C Ratio	0.08	0.27		0.11	0.29		0.15	0.23	0.23	0.26	0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	286	914		372	977		266	826	369	457	1209	541
v/s Ratio Prot	0.08	c0.27		c0.10	c0.25		0.15	0.24		c0.27	c0.33	
v/s Ratio Perm									0.03			0.07
v/c Ratio	0.96	1.02		0.97	0.87		0.97	1.03	0.14	1.04	0.96	0.21
Uniform Delay, d1	54.8	44.0		53.3	40.4		50.7	46.0	36.4	44.5	38.7	28.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	41.4	35.2		37.7	8.7		46.2	40.0	0.8	52.1	17.6	0.9
Delay (s)	96.2	79.2		91.0	49.0		97.0	86.0	37.2	96.6	56.2	29.0
Level of Service	F	E		F	D		F	F	D	F	E	C
Approach Delay (s)		83.0			60.9			81.1			62.7	
Approach LOS		F			E			F			E	

Intersection Summary

HCM Average Control Delay	70.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1722	343	75	1044	309	52
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1872	373	82	1135	336	57
RTOR Reduction (vph)	0	0	0	0	0	2
Lane Group Flow (vph)	1872	373	82	1135	336	55
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	c0.53	c0.11		0.32	0.10	
v/s Ratio Perm		0.13	0.52			0.03
v/c Ratio	1.13	0.24	1.09	0.68	0.22	0.08
Uniform Delay, d1	26.5	0.4	26.5	20.7	16.8	15.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	65.0	0.1	131.7	1.2	0.3	0.2
Delay (s)	91.5	0.5	158.2	21.9	17.1	15.9
Level of Service	F	A	F	C	B	B
Approach Delay (s)	76.4			31.0	16.9	
Approach LOS	E			C	B	

Intersection Summary

HCM Average Control Delay	56.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

9: Montezuma Rd & 55th St
Ex + CP+CSR+SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Configurations	↰↰	↑↱		↰	↑↑	↱		✥		↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.93		0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3456		1770	3539	1467		1745		1681	1695	1463
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3456		1770	3539	1467		1745		1681	1695	1463
Volume (vph)	486	1158	111	30	705	238	34	19	12	524	33	509
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)	528	1259	121	33	766	259	37	21	13	570	36	553
RTOR Reduction (vph)	0	7	0	0	0	188	0	8	0	0	0	399
Lane Group Flow (vph)	528	1373	0	33	766	71	0	63	0	295	311	154
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	17.3	42.2		2.3	27.2	27.2		17.0		21.1	21.1	21.1
Effective Green, g (s)	17.3	42.2		2.3	27.2	27.2		17.0		21.1	21.1	21.1
Actuated g/C Ratio	0.18	0.43		0.02	0.28	0.28		0.17		0.21	0.21	0.21
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	602	1479		41	976	405		301		360	363	313
v/s Ratio Prot	c0.15	c0.40		0.02	0.22			c0.04		0.18	c0.18	
v/s Ratio Perm						0.05						0.11
v/c Ratio	0.88	0.93		0.80	0.78	0.18		0.21		0.82	0.86	0.49
Uniform Delay, d1	39.6	26.8		47.9	33.0	27.2		35.0		36.9	37.3	34.1
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	13.6	10.4		69.0	4.2	0.2		1.6		18.5	22.1	5.5
Delay (s)	53.2	37.2		116.9	37.2	27.4		36.6		55.4	59.4	39.5
Level of Service	D	D		F	D	C		D		E	E	D
Approach Delay (s)		41.6			37.3			36.6			48.9	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	42.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	98.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

10: Montezuma Rd & Campanile Dr
Ex + CP+CSR+SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Configurations	↰	↑↱		↰	↑↱			✥		↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			0.94		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (prot)	1770	3521		1770	3340			1581		1681	1700	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.96	1.00
Satd. Flow (perm)	1770	3521		1770	3340			1581		1681	1700	1583
Volume (vph)	182	1384	28	196	880	236	25	39	155	370	38	170
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)	198	1504	30	213	957	257	27	42	168	402	41	185
RTOR Reduction (vph)	0	2	0	0	24	0	0	87	0	0	0	170
Lane Group Flow (vph)	198	1532	0	213	1190	0	0	150	0	216	227	15
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	45.5		6.0	43.5			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	45.5		6.0	43.5			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.46		0.06	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	1610		107	1460			254		270	273	127
v/s Ratio Prot	0.11	c0.44		c0.12	0.36			c0.09		0.13	c0.13	0.01
v/s Ratio Perm												
v/c Ratio	1.39	0.95		1.99	0.81			0.59		0.80	0.83	0.12
Uniform Delay, d1	45.8	25.9		46.8	24.5			38.7		40.2	40.4	42.5
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	214.5	12.8		477.4	3.6			9.7		21.5	24.6	0.4
Delay (s)	260.3	38.7		524.1	28.1			48.4		61.7	65.0	42.9
Level of Service	F	D		F	C			D		E	E	D
Approach Delay (s)		64.1			102.1			48.4			57.4	
Approach LOS		E			F			D			E	

Intersection Summary

HCM Average Control Delay	75.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

11: Montezuma Rd & Catoctin Drive

Ex + CP+CSR+SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3529		1770	3522			1670			1714	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.87	
Satd. Flow (perm)	1770	3529		1770	3522			1616			1524	
Volume (vph)	29	973	19	61	590	20	24	20	112	26	7	27
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)	32	1058	21	66	641	22	26	22	122	28	8	29
RTOR Reduction (vph)	0	1	0	0	2	0	0	74	0	0	18	0
Lane Group Flow (vph)	32	1078	0	66	661	0	0	96	0	0	47	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	2.9	29.1		5.2	31.4			30.4			30.4	
Effective Green, g (s)	2.9	29.1		5.2	31.4			30.4			30.4	
Actuated g/C Ratio	0.04	0.38		0.07	0.41			0.40			0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	67	1339		120	1442			641			604	
v/s Ratio Prot	0.02	c0.31		c0.04	0.19							
v/s Ratio Perm								c0.06			0.03	
v/c Ratio	0.48	0.80		0.55	0.46			0.15			0.08	
Uniform Delay, d1	36.2	21.3		34.6	16.5			14.9			14.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.3	3.6		5.4	0.2			0.5			0.3	
Delay (s)	41.4	24.9		40.0	16.7			15.4			14.7	
Level of Service	D	C		D	B			B			B	
Approach Delay (s)		25.4			18.8			15.4			14.7	
Approach LOS		C			B			B			B	

Intersection Summary

HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

12: El Cajon Blvd & Montezuma Road

Ex + CP+CSR+SH PM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	87	330	610	412	656	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	359	663	448	713	76
RTOR Reduction (vph)	0	0	0	323	0	39
Lane Group Flow (vph)	95	359	663	125	713	37
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	8.3	36.0	23.7	23.7	41.2	41.2
Effective Green, g (s)	8.3	36.0	23.7	23.7	41.2	41.2
Actuated g/C Ratio	0.10	0.42	0.28	0.28	0.48	0.48
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	172	1495	943	401	1660	765
v/s Ratio Prot	c0.05	0.10	c0.20	0.09	c0.21	0.02
v/s Ratio Perm						
v/c Ratio	0.55	0.24	0.70	0.31	0.43	0.05
Uniform Delay, d1	36.7	15.8	27.6	24.3	14.3	11.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.8	0.1	2.4	0.4	0.8	0.1
Delay (s)	40.5	15.9	30.0	24.7	15.2	11.8
Level of Service	D	B	C	C	B	B
Approach Delay (s)		21.0	27.8		14.8	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

ILV Operations

Ex+CP+CSR+SH-AM

INTERSECTION

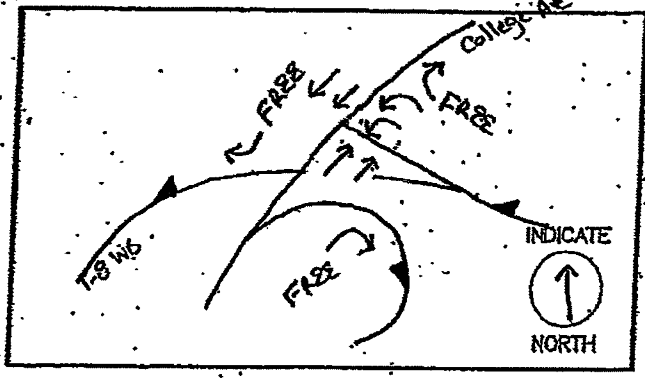
Signalized Intersection
CAPACITY ANALYSIS

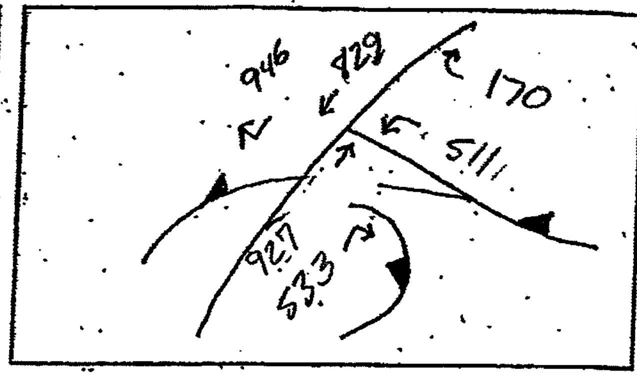
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

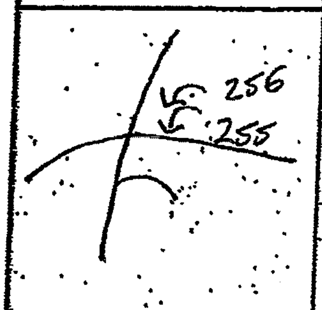
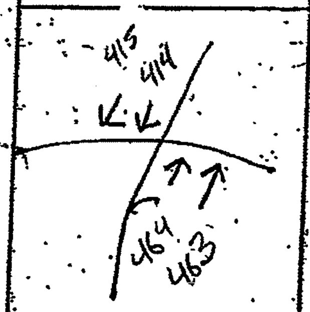
TIME ____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
256	464		

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
720

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Ex+CP+CSR+SH - PM

INTERSECTION

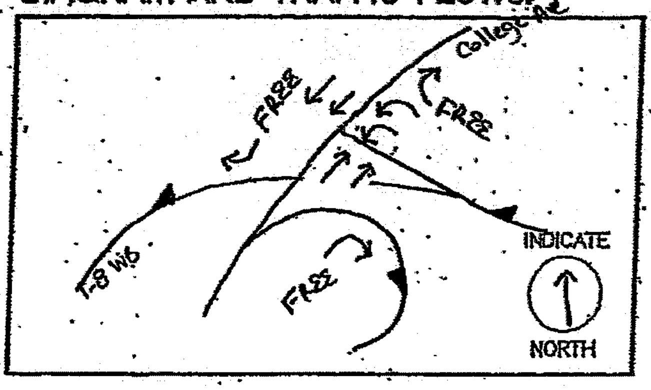
Signalized Intersection
CAPACITY ANALYSIS

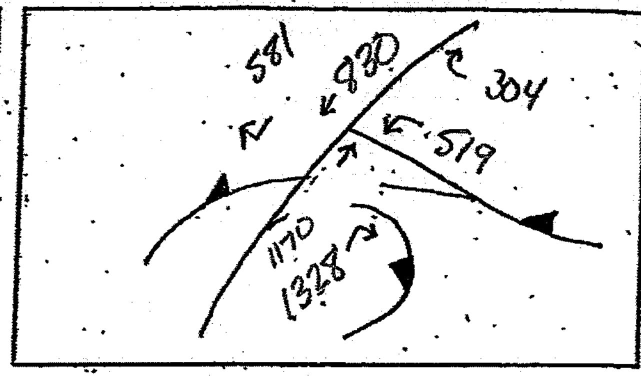
INTERSECTION College Ave/I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

TIME " AM PM

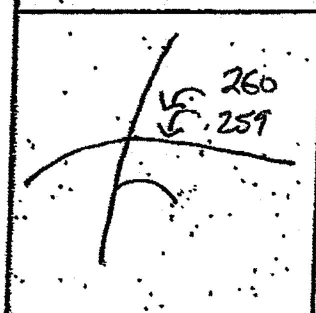
DIAGRAM AND TRAFFIC FLOWS:

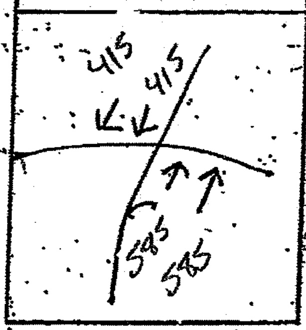




LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4





CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
260	585		

TOTAL OPERATING LEVEL (ILV/HR)

Σ
845

IS

☒ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Ex+CP+CSR+SH - AM

INTERSECTION

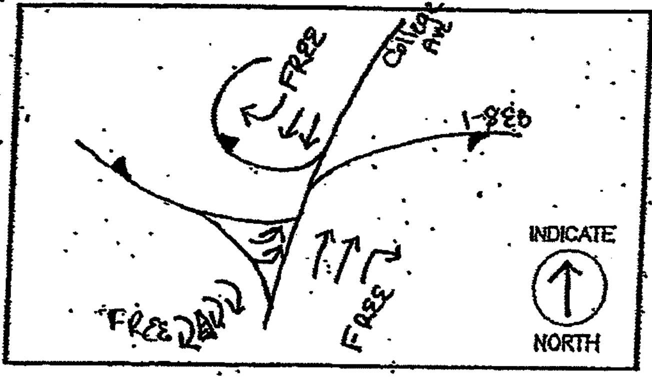
Signalized Intersection
CAPACITY ANALYSIS

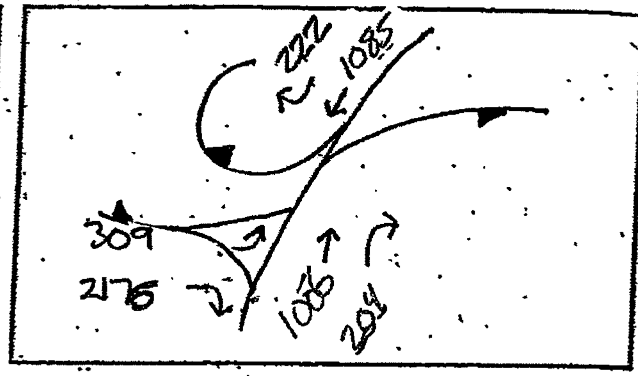
INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

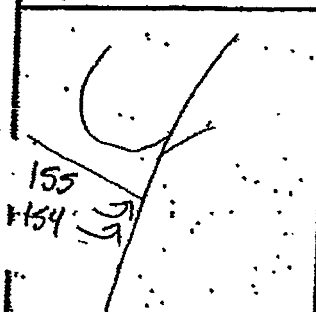
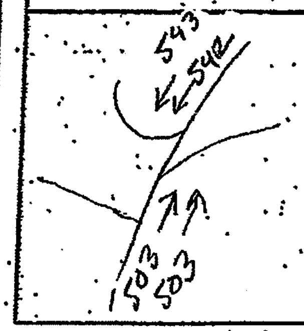
TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
155		543	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
698

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Ex+CP+CSR+SH - PM

INTERSECTION

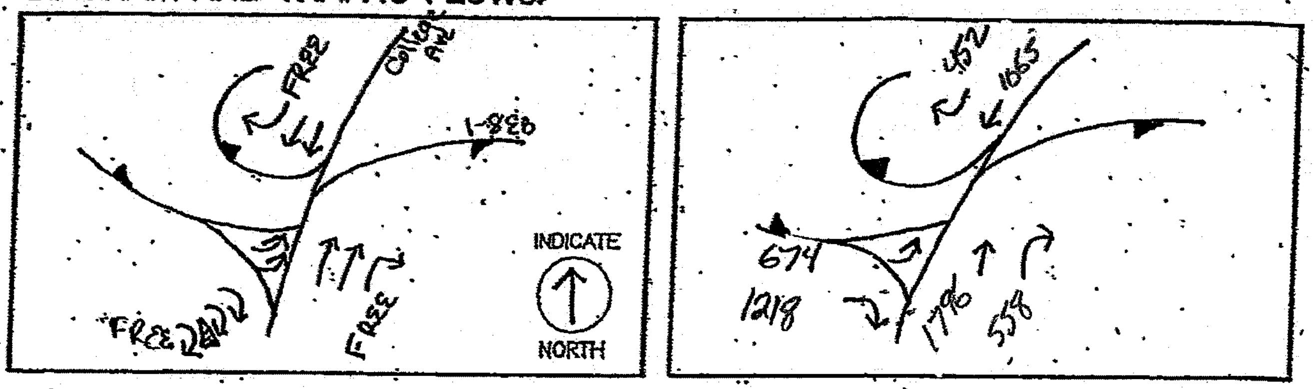
Signalized Intersection
CAPACITY ANALYSIS

INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

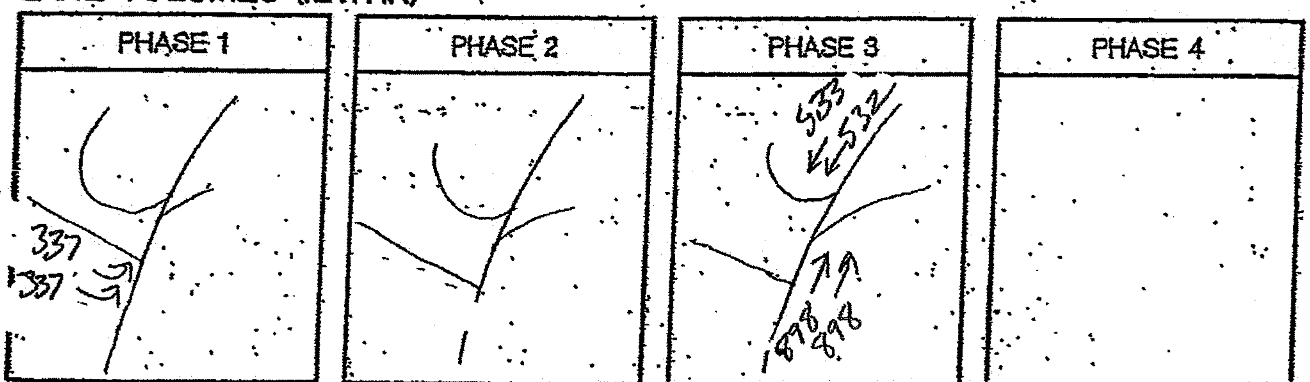
BY CL DATE 5/27/09

TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:



LANE VOLUMES (ILV/HR)



CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
337		898	

TOTAL OPERATING LEVEL (ILV/HR)

Σ
1235

IS . . .

- ☐ < 1200 ILV/HR.
- ☒ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

APPENDIX H

YEAR 2030 INTERSECTION ANALYSIS AND ILV OPERATIONS SHEETS

LONG-TERM (2030) WITHOUT PROJECT OPERATIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	646	0	141	0	1158	691	0	973	1103
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	702	0	153	0	1259	751	0	1058	1199
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	702	0	153	0	1259	751	0	1058	1199
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				24.9		100.0		67.1	100.0		67.1	100.0
Effective Green, g (s)				24.9		100.0		67.1	100.0		67.1	100.0
Actuated g/C Ratio				0.25		1.00		0.67	1.00		0.67	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				823		1555		2375	1536		2375	1536
v/s Ratio Prot								0.36			0.30	
v/s Ratio Perm				0.21		0.10			0.49			c0.78
v/c Ratio				0.85		0.10		0.53	0.49		0.45	0.78
Uniform Delay, d1				35.8		0.0		8.4	0.0		7.7	0.0
Progression Factor				1.00		1.00		1.05	1.00		1.00	1.00
Incremental Delay, d2				8.5		0.1		0.6	0.8		0.6	4.0
Delay (s)				44.3		0.1		9.4	0.8		8.3	4.0
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			36.4			6.2			6.0	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	593	0	2572	0	0	0	0	1256	322	0	1315	304
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)	645	0	2796	0	0	0	0	1365	350	0	1429	330
RTOR Reduction (vph)	0	0	15	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	645	0	2781	0	0	0	0	1365	350	0	1429	330
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1553		1614					1593	1536		1593	1536
v/s Ratio Prot								0.39			c0.40	
v/s Ratio Perm	0.20		c0.81						0.23			0.21
v/c Ratio	0.42		1.72					0.86	0.23		0.90	0.21
Uniform Delay, d1	17.5		26.5					24.6	0.0		25.4	0.0
Progression Factor	1.00		1.00					1.18	1.00		0.76	1.00
Incremental Delay, d2	0.2		328.1					0.8	0.0		6.8	0.3
Delay (s)	17.6		354.6					29.8	0.0		26.1	0.3
Level of Service	B		F					C	A		C	A
Approach Delay (s)		291.4			0.0			23.5			21.2	
Approach LOS		F			A			C			C	

Intersection Summary

HCM Average Control Delay	156.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

3: Canyon Crest Dr & College Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1799	1506		1821	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1799	1506		1821	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	103	41	70	129	149	220	228	1255	180	747	1843	1297
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)	112	45	76	140	162	239	248	1364	196	812	2003	1410
RTOR Reduction (vph)	0	0	58	0	0	201	0	0	108	0	0	761
Lane Group Flow (vph)	0	157	18	0	302	38	248	1364	88	812	2003	649
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		20.3	15.7	15.7	24.0	24.0	15.7	24.0	24.0
Effective Green, g (s)		24.0	24.0		20.3	15.7	15.7	24.0	24.0	15.7	24.0	24.0
Actuated g/C Ratio		0.24	0.24		0.20	0.16	0.16	0.24	0.24	0.16	0.24	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		432	361		370	249	278	849	361	539	1220	669
v/s Ratio Prot		0.09			c0.17	0.02	0.14	0.39		c0.24	c0.39	c0.23
v/s Ratio Perm			0.01						0.06			
v/c Ratio		0.36	0.05		0.82	0.15	0.89	1.61	0.24	1.51	1.64	0.97
Uniform Delay, d1		31.6	29.2		38.1	36.4	41.3	38.0	30.7	42.1	38.0	37.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.90	0.98	1.75
Incremental Delay, d2		0.5	0.1		13.0	0.3	28.0	278.5	1.6	228.8	289.2	5.4
Delay (s)		32.2	29.3		51.1	36.7	69.3	316.5	32.3	266.6	326.2	71.4
Level of Service		C	C		D	D	E	F	C	F	F	E
Approach Delay (s)		31.2			44.7			251.8			229.7	
Approach LOS		C			D			F			F	

Intersection Summary

HCM Average Control Delay	214.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

4: Zura Way & College Ave

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	128	1530	200	578	1462
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	139	1663	217	628	1589
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.84	0.77			0.77	
vC, conflicting volume	3734	872			1900	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3241	537			1871	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	62			0	
cM capacity (veh/h)	0	364			241	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	139	832	832	217	628	795	795
Volume Left	0	0	0	0	628	0	0
Volume Right	139	0	0	217	0	0	0
cSH	364	1700	1700	1700	241	1700	1700
Volume to Capacity	0.38	0.49	0.49	0.13	2.61	0.47	0.47
Queue Length 95th (ft)	44	0	0	0	1321	0	0
Control Delay (s)	20.9	0.0	0.0	0.0	765.8	0.0	0.0
Lane LOS	C				F		
Approach Delay (s)	20.9	0.0			217.0		
Approach LOS	C						

Intersection Summary

Average Delay	114.2		
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.96		1.00	1.00		1.00	0.97	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1734			1752		1770	3526		1770	3420	
Flt Permitted		0.81			0.86		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1445			1534		1770	3526		1770	3420	
Volume (vph)	46	13	29	23	21	20	101	1366	36	63	908	263
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)	50	14	32	25	23	22	110	1485	39	68	985	286
RTOR Reduction (vph)	0	18	0	0	16	0	0	1	0	0	13	0
Lane Group Flow (vph)	0	78	0	0	54	0	110	1523	0	68	1258	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		9.4			9.4		10.0	65.0		8.2	63.2	
Effective Green, g (s)		9.4			9.4		10.0	65.0		8.2	63.2	
Actuated g/C Ratio		0.10			0.10		0.11	0.69		0.09	0.67	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		144			152		187	2423		153	2285	
v/s Ratio Prot							c0.06	c0.43		0.04	0.37	
v/s Ratio Perm		c0.05			0.04							
v/c Ratio		0.54			0.35		0.59	0.63		0.44	0.55	
Uniform Delay, d1		40.5			39.8		40.3	8.2		41.0	8.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.1			1.4		4.7	1.2		2.1	1.0	
Delay (s)		44.7			41.2		45.0	9.4		43.1	9.2	
Level of Service		D			D		D	A		D	A	
Approach Delay (s)		44.7			41.2			11.8			10.9	
Approach LOS		D			D			B			B	

Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3430		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3430		1770	3539	1457
Volume (vph)	440	406	158	58	740	305	679	1093	170	229	536	252
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)	478	441	172	63	804	332	738	1188	185	249	583	274
RTOR Reduction (vph)	0	0	131	0	0	189	0	12	0	0	0	208
Lane Group Flow (vph)	478	441	41	63	804	143	738	1361	0	249	583	66
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	823		212	849	350
v/s Ratio Prot	c0.27	0.12		0.04	c0.23		c0.21	c0.40		0.14	0.16	
v/s Ratio Perm			0.03			0.10						0.05
v/c Ratio	1.12	0.52	0.12	0.15	0.95	0.41	1.79	1.65		1.17	0.69	0.19
Uniform Delay, d1	38.0	33.0	29.7	29.9	37.4	32.0	44.0	38.0		44.0	34.6	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	82.2	0.6	0.2	0.2	19.0	0.8	365.7	299.5		116.9	4.5	1.2
Delay (s)	120.2	33.6	29.9	30.1	56.4	32.8	409.7	337.5		160.9	39.1	31.4
Level of Service	F	C	C	C	E	C	F	F		F	D	C
Approach Delay (s)		70.9			48.5			362.7			64.6	
Approach LOS		E			D			F			E	

Intersection Summary

HCM Average Control Delay	176.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.96		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3387		3433	3412		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3387		3433	3412		1770	3539	1583	1770	3539	1583
Volume (vph)	280	450	180	60	950	300	680	1550	270	180	620	220
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)	304	489	196	65	1033	326	739	1685	293	196	674	239
RTOR Reduction (vph)	0	35	0	0	25	0	0	0	110	0	0	79
Lane Group Flow (vph)	304	650	0	65	1334	0	739	1685	183	196	674	160
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	8.0	41.8		4.0	37.8		37.0	48.0	48.0	11.0	22.0	22.0
Effective Green, g (s)	8.0	41.8		4.0	37.8		37.0	48.0	48.0	11.0	22.0	22.0
Actuated g/C Ratio	0.07	0.35		0.03	0.31		0.31	0.40	0.40	0.09	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	1172		114	1068		542	1406	629	161	645	288
v/s Ratio Prot	c0.09	c0.19		0.02	c0.39		c0.42	c0.48		0.11	0.19	
v/s Ratio Perm									0.12			0.10
v/c Ratio	1.34	0.55		0.57	1.25		1.36	1.20	0.29	1.22	1.04	0.55
Uniform Delay, d1	56.4	32.0		57.6	41.5		41.9	36.4	24.8	54.9	49.4	44.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	179.3	0.6		6.7	120.1		175.2	96.5	1.2	141.2	47.7	7.5
Delay (s)	235.7	32.5		64.3	161.6		217.1	132.9	26.0	196.1	97.1	52.4
Level of Service	F	C		E	F		F	F	C	F	F	D
Approach Delay (s)		95.0			157.1			144.2			105.0	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	132.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1644	320	70	1357	1150	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1787	348	76	1475	1250	120
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1787	348	76	1475	1250	117
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	c0.50	0.10		0.42	c0.36	
v/s Ratio Perm		0.12	0.48			0.07
v/c Ratio	1.07	0.22	1.01	0.89	0.81	0.16
Uniform Delay, d1	26.5	0.4	26.5	24.1	23.8	16.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	45.1	0.1	107.7	6.1	4.7	0.5
Delay (s)	71.6	0.5	134.2	30.2	28.5	16.8
Level of Service	E	A	F	C	C	B
Approach Delay (s)	60.0			35.3	27.4	
Approach LOS	E			D	C	

Intersection Summary

HCM Average Control Delay	43.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.1%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3501		1770	3348			1750		1681	1696	1455
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3501		1770	3348			1750		1681	1696	1455
Volume (vph)	1114	614	26	20	1175	375	50	15	10	143	10	202
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)	1211	667	28	22	1277	408	54	16	11	155	11	220
RTOR Reduction (vph)	0	3	0	0	30	0	0	6	0	0	0	186
Lane Group Flow (vph)	1211	692	0	22	1655	0	0	75	0	81	85	34
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	25.0	52.8		1.6	29.4			16.0		16.0	16.0	16.0
Effective Green, g (s)	25.0	52.8		1.6	29.4			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.24	0.52		0.02	0.29			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	838	1805		28	961			273		263	265	227
v/s Ratio Prot	c0.35	0.20		0.01	c0.49			c0.04		0.05	c0.05	
v/s Ratio Perm												0.02
v/c Ratio	1.45	0.38		0.79	1.72			0.28		0.31	0.32	0.15
Uniform Delay, d1	38.7	15.0		50.2	36.5			38.1		38.3	38.4	37.3
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	207.0	0.1		82.7	329.4			2.5		3.0	3.2	1.4
Delay (s)	245.7	15.1		133.0	365.9			40.6		41.3	41.5	38.7
Level of Service	F	B		F	F			D		D	D	D
Approach Delay (s)		161.6			362.9			40.6			39.9	
Approach LOS		F			F			D			D	

Intersection Summary

HCM Average Control Delay	231.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	102.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.95		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3495		1770	3375			1605		1681	1712	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3495		1770	3375			1605		1681	1712	1583
Volume (vph)	189	774	38	98	1302	271	34	29	104	126	26	194
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)	205	841	41	107	1415	295	37	32	113	137	28	211
RTOR Reduction (vph)	0	3	0	0	18	0	0	59	0	0	0	192
Lane Group Flow (vph)	205	879	0	107	1692	0	0	123	0	80	85	19
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	9.0	44.3		8.7	44.0			17.0		16.0	16.0	9.0
Effective Green, g (s)	9.0	44.3		8.7	44.0			17.0		16.0	16.0	9.0
Actuated g/C Ratio	0.09	0.43		0.09	0.43			0.17		0.16	0.16	0.09
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	156	1518		151	1456			268		264	269	140
v/s Ratio Prot	c0.12	0.25		0.06	c0.50			c0.08		0.05	c0.05	0.01
v/s Ratio Perm												
v/c Ratio	1.31	0.58		0.71	1.16			0.46		0.30	0.32	0.13
Uniform Delay, d1	46.5	21.8		45.4	29.0			38.3		38.1	38.1	42.9
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	179.4	0.5		14.1	81.0			5.6		2.9	3.1	0.4
Delay (s)	225.9	22.3		59.5	110.0			43.9		41.0	41.2	43.3
Level of Service	F	C		E	F			D		D	D	D
Approach Delay (s)		60.7			107.1			43.9			42.4	
Approach LOS		E			F			D			D	

Intersection Summary

HCM Average Control Delay	82.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.94			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3522		1770	3509			1713			1700	
Flt Permitted	0.95	1.00		0.95	1.00			0.84			0.88	
Satd. Flow (perm)	1770	3522		1770	3509			1472			1529	
Volume (vph)	30	614	20	80	1330	80	40	10	40	50	20	80
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)	33	667	22	87	1446	87	43	11	43	54	22	87
RTOR Reduction (vph)	0	2	0	0	4	0	0	27	0	0	39	0
Lane Group Flow (vph)	33	687	0	87	1529	0	0	70	0	0	124	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	4.6	38.6		8.2	42.2			29.1			29.1	
Effective Green, g (s)	4.6	38.6		8.2	42.2			29.1			29.1	
Actuated g/C Ratio	0.05	0.44		0.09	0.48			0.33			0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	93	1547		165	1685			487			506	
v/s Ratio Prot	0.02	0.19		c0.05	c0.44							
v/s Ratio Perm								0.05			c0.08	
v/c Ratio	0.35	0.44		0.53	0.91			0.14			0.25	
Uniform Delay, d1	40.2	17.2		38.0	21.0			20.7			21.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.3	0.2		3.0	7.5			0.6			1.2	
Delay (s)	42.5	17.4		41.0	28.5			21.3			22.6	
Level of Service	D	B		D	C			C			C	
Approach Delay (s)		18.5			29.2			21.3			22.6	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	87.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	200	1060	1390	700	180	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1152	1511	761	196	87
RTOR Reduction (vph)	0	0	0	290	0	56
Lane Group Flow (vph)	217	1152	1511	471	196	31
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	18.6	62.7	40.1	40.1	40.1	40.1
Effective Green, g (s)	18.6	62.7	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.17	0.57	0.36	0.36	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	297	2003	1227	522	1242	573
v/s Ratio Prot	c0.12	0.33	c0.45	0.33	c0.06	0.02
v/s Ratio Perm						
v/c Ratio	0.73	0.58	1.23	0.90	0.16	0.05
Uniform Delay, d1	43.7	15.5	35.3	33.5	23.9	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.9	0.4	111.5	18.8	0.3	0.2
Delay (s)	52.6	15.9	146.8	52.3	24.2	23.2
Level of Service	D	B	F	D	C	C
Approach Delay (s)		21.7	115.2		23.9	
Approach LOS		C	F		C	

Intersection Summary

HCM Average Control Delay	76.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.1%	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				↰↰		↱		↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	772	0	405	0	1451	1815	0	884	586
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	839	0	440	0	1577	1973	0	961	637
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	839	0	440	0	1577	1973	0	961	637
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				29.8		100.0		62.2	100.0		62.2	100.0
Effective Green, g (s)				29.8		100.0		62.2	100.0		62.2	100.0
Actuated g/C Ratio				0.30		1.00		0.62	1.00		0.62	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				985		1555		2201	1536		2201	1536
v/s Ratio Prot								0.45			0.27	
v/s Ratio Perm				0.25		0.28			c1.28			0.41
v/c Ratio				0.85		0.28		0.72	1.28		0.44	0.41
Uniform Delay, d1				33.0		0.0		12.9	50.0		9.8	0.0
Progression Factor				1.00		1.00		0.68	1.00		1.00	1.00
Incremental Delay, d2				7.2		0.5		0.2	128.5		0.6	0.8
Delay (s)				40.2		0.5		9.0	178.5		10.4	0.8
Level of Service				D		A		A	F		B	A
Approach Delay (s)		0.0			26.5			103.2			6.6	
Approach LOS		A			C			F			A	

Intersection Summary

HCM Average Control Delay	63.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	68.8%	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	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	834	0	1145	0	0	0	0	2432	1079	0	1181	475
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)	907	0	1245	0	0	0	0	2643	1173	0	1284	516
RTOR Reduction (vph)	0	0	25	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	907	0	1220	0	0	0	0	2643	1173	0	1284	516
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.3		44.3					47.7	100.0		47.7	100.0
Effective Green, g (s)	44.3		44.3					47.7	100.0		47.7	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1464		1521					1688	1536		1688	1536
v/s Ratio Prot								c0.75			0.36	
v/s Ratio Perm	0.27		0.36						c0.76			0.34
v/c Ratio	0.62		0.80					1.57	0.76		0.76	0.34
Uniform Delay, d1	21.4		24.1					26.1	0.0		21.5	0.0
Progression Factor	1.00		1.00					1.22	1.00		0.70	1.00
Incremental Delay, d2	0.8		3.1					254.9	0.3		2.6	0.5
Delay (s)	22.2		27.2					286.9	0.3		17.5	0.5
Level of Service	C		C					F	A		B	A
Approach Delay (s)		25.1			0.0			198.8			12.6	
Approach LOS		C			A			F			B	

Intersection Summary

HCM Average Control Delay	107.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	97.7%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1782	1506		1783	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1782	1506		1783	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	642	70	121	198	24	543	106	2326	184	373	1764	189
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)	698	76	132	215	26	590	115	2528	200	405	1917	205
RTOR Reduction (vph)	0	0	68	0	0	304	0	0	59	0	0	116
Lane Group Flow (vph)	0	774	64	0	241	286	115	2528	141	405	1917	89
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		18.0	18.0	10.9	24.0	24.0	18.0	31.1	24.0
Effective Green, g (s)		24.0	24.0		18.0	18.0	10.9	24.0	24.0	18.0	31.1	24.0
Actuated g/C Ratio		0.24	0.24		0.18	0.18	0.11	0.24	0.24	0.18	0.31	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		428	361		321	285	193	849	361	618	1581	669
v/s Ratio Prot		c0.43			c0.14	c0.18	0.06	c0.71		0.12	0.38	0.03
v/s Ratio Perm			0.04						0.09			
v/c Ratio		1.81	0.18		0.75	1.00	0.60	2.98	0.39	0.66	1.21	0.13
Uniform Delay, d1		38.0	30.2		38.9	41.0	42.5	38.0	31.9	38.1	34.5	29.8
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.12	0.88	1.17
Incremental Delay, d2		373.0	0.2		9.5	54.0	4.9	893.1	3.1	1.5	99.4	0.1
Delay (s)		411.0	30.4		48.4	95.0	47.3	931.1	35.0	44.0	129.8	35.0
Level of Service		F	C		D	F	D	F	D	D	F	C
Approach Delay (s)		355.5			81.5			832.3			108.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	426.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	149.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	664	1952	204	315	1768
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	722	2122	222	342	1922
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.76	0.59			0.59	
vC, conflicting volume	3787	1101			2363	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2999	474			2617	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			0	
cM capacity (veh/h)	0	306			93	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	722	1061	1061	222	342	961	961
Volume Left	0	0	0	0	342	0	0
Volume Right	722	0	0	222	0	0	0
cSH	306	1700	1700	1700	93	1700	1700
Volume to Capacity	2.36	0.62	0.62	0.13	3.67	0.57	0.57
Queue Length 95th (ft)	1419	0	0	0	Err	0	0
Control Delay (s)	648.7	0.0	0.0	0.0	1294.2	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	648.7	0.0			195.7		
Approach LOS	F						

Intersection Summary

Average Delay	171.0		
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.98		1.00	1.00		1.00	0.98	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1719			1781		1770	3527		1770	3475	
Flt Permitted		0.80			0.82		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1413			1497		1770	3527		1770	3475	
Volume (vph)	175	22	122	28	29	13	64	1478	35	58	1316	182
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)	190	24	133	30	32	14	70	1607	38	63	1430	198
RTOR Reduction (vph)	0	18	0	0	7	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	329	0	0	69	0	70	1644	0	63	1621	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		28.1			28.1		8.0	55.0		7.7	54.7	
Effective Green, g (s)		28.1			28.1		8.0	55.0		7.7	54.7	
Actuated g/C Ratio		0.27			0.27		0.08	0.54		0.07	0.53	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		386			409		138	1887		133	1849	
v/s Ratio Prot							c0.04	0.47		0.04	c0.47	
v/s Ratio Perm		c0.23			0.05							
v/c Ratio		0.85			0.17		0.51	0.87		0.47	0.88	
Uniform Delay, d1		35.4			28.5		45.6	20.8		45.6	21.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		16.4			0.2		2.9	5.9		2.7	6.2	
Delay (s)		51.7			28.7		48.4	26.7		48.3	27.3	
Level of Service		D			C		D	C		D	C	
Approach Delay (s)		51.7			28.7			27.6			28.1	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	30.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	102.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.7%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3477		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3477		1770	3539	1457
Volume (vph)	1254	967	657	290	776	369	707	752	63	431	1074	288
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)	1363	1051	714	315	843	401	768	817	68	468	1167	313
RTOR Reduction (vph)	0	0	226	0	0	168	0	6	0	0	0	202
Lane Group Flow (vph)	1363	1051	488	315	843	233	768	879	0	468	1167	111
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	834		212	849	350
v/s Ratio Prot	c0.77	0.30		0.18	c0.24		0.22	0.25		c0.26	c0.33	
v/s Ratio Perm			0.34			0.16						0.08
v/c Ratio	3.21	1.24	1.40	0.74	0.99	0.67	1.86	1.05		2.21	1.37	0.32
Uniform Delay, d1	38.0	38.0	38.0	35.1	37.9	34.4	44.0	38.0		44.0	38.0	31.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	999.3	117.1	194.4	6.8	29.0	4.7	398.0	46.3		558.5	176.0	2.4
Delay (s)	1037.3	155.1	232.4	42.0	66.9	39.1	442.0	84.3		602.5	214.0	33.6
Level of Service	F	F	F	D	E	D	F	F		F	F	C
Approach Delay (s)		557.2			54.7			250.5			278.4	
Approach LOS		F			D			F			F	

Intersection Summary

HCM Average Control Delay	336.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	154.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑↱		↰↰	↑↑↱		↰	↑↑	↱	↰	↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.94		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3326		3433	3402		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3326		3433	3402		1770	3539	1583	1770	3539	1583
Volume (vph)	370	1120	750	300	690	240	400	1070	90	350	1233	120
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)	402	1217	815	326	750	261	435	1163	98	380	1340	130
RTOR Reduction (vph)	0	96	0	0	29	0	0	0	53	0	0	61
Lane Group Flow (vph)	402	1936	0	326	982	0	435	1163	45	380	1340	69
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	15.0	45.0		8.0	38.0		18.0	35.0	35.0	16.0	33.0	33.0
Effective Green, g (s)	15.0	45.0		8.0	38.0		18.0	35.0	35.0	16.0	33.0	33.0
Actuated g/C Ratio	0.12	0.38		0.07	0.32		0.15	0.29	0.29	0.13	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	429	1247		229	1077		266	1032	462	236	973	435
v/s Ratio Prot	0.12	c0.58		c0.09	0.29		c0.25	0.33		0.21	c0.38	
v/s Ratio Perm									0.03			0.04
v/c Ratio	0.94	1.55		1.42	0.91		1.64	1.13	0.10	1.61	1.38	0.16
Uniform Delay, d1	52.0	37.5		56.0	39.4		51.0	42.5	31.0	52.0	43.5	33.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.9	252.5		214.1	11.5		302.4	69.8	0.4	293.4	176.2	0.8
Delay (s)	80.0	290.0		270.1	50.9		353.4	112.3	31.4	345.4	219.7	33.8
Level of Service	E	F		F	D		F	F	C	F	F	C
Approach Delay (s)		255.3			104.3			169.5			232.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	202.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	133.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱	↰	↑↑	↰↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1973	410	90	2127	380	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2145	446	98	2312	413	65
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	2145	446	98	2312	413	64
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	0.61	c0.13		c0.65	0.12	
v/s Ratio Perm		0.15	0.62			0.04
v/c Ratio	1.29	0.28	1.31	1.39	0.27	0.09
Uniform Delay, d1	26.5	0.4	26.5	26.5	17.2	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	135.1	0.1	206.4	179.4	0.4	0.2
Delay (s)	161.6	0.5	232.9	205.9	17.6	16.0
Level of Service	F	A	F	F	B	B
Approach Delay (s)	133.9			207.0	17.4	
Approach LOS	F			F	B	

Intersection Summary

HCM Average Control Delay	155.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	80.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.98		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98			0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3464		1770	3445			1724		1681	1691	1458
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3464		1770	3445			1724		1681	1691	1458
Volume (vph)	571	1345	117	30	1594	217	60	15	20	575	20	563
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)	621	1462	127	33	1733	236	65	16	22	625	22	612
RTOR Reduction (vph)	0	6	0	0	11	0	0	10	0	0	0	436
Lane Group Flow (vph)	621	1583	0	33	1958	0	0	93	0	315	332	176
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	21.9	48.5		2.3	28.9			16.0		16.0	16.0	16.0
Effective Green, g (s)	21.9	48.5		2.3	28.9			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.22	0.49		0.02	0.29			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	761	1700		41	1008			279		272	274	236
v/s Ratio Prot	c0.18	c0.46		0.02	c0.57			c0.05		0.19	c0.20	
v/s Ratio Perm												0.12
v/c Ratio	0.82	0.93		0.80	1.94			0.33		1.16	1.21	0.75
Uniform Delay, d1	36.5	23.6		48.0	35.0			36.7		41.4	41.4	39.5
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	6.8	9.7		69.0	427.9			3.2		104.2	124.1	19.2
Delay (s)	43.3	33.3		117.0	462.9			39.9		145.6	165.5	58.7
Level of Service	D	C		F	F			D		F	F	E
Approach Delay (s)		36.1			457.2			39.9			108.6	
Approach LOS		D			F			D			F	

Intersection Summary

HCM Average Control Delay	203.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			0.95		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1752	3520		1770	3331			1588		1681	1712	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1752	3520		1770	3331			1588		1681	1712	1583
Volume (vph)	257	1700	35	248	1186	337	32	39	152	378	75	623
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)	279	1848	38	270	1289	366	35	42	165	411	82	677
RTOR Reduction (vph)	0	2	0	0	26	0	0	77	0	0	0	380
Lane Group Flow (vph)	279	1884	0	270	1629	0	0	165	0	240	253	297
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.46		0.06	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	140	1619		106	1466			254		269	274	127
v/s Ratio Prot	0.16	c0.54		0.15	0.49			c0.10		0.14	c0.15	c0.19
v/s Ratio Perm												
v/c Ratio	1.99	1.16		2.55	1.11			0.65		0.89	0.92	2.34
Uniform Delay, d1	46.0	27.0		47.0	28.0			39.4		41.2	41.4	46.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	471.3	81.0		723.1	60.1			12.1		33.0	37.8	626.3
Delay (s)	517.3	108.0		770.1	88.1			51.5		74.1	79.2	672.3
Level of Service	F	F		F	F			D		E	E	F
Approach Delay (s)		160.7			183.8			51.5			421.4	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	219.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

11: Montezuma Rd & Catoctin Drive

2030 PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3524		1770	3469			1673			1718	
Flt Permitted	0.95	1.00		0.95	1.00			0.94			0.75	
Satd. Flow (perm)	1770	3524		1770	3469			1583			1318	
Volume (vph)	60	1330	40	110	590	90	40	40	190	60	20	60
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)	65	1446	43	120	641	98	43	43	207	65	22	65
RTOR Reduction (vph)	0	2	0	0	11	0	0	83	0	0	26	0
Lane Group Flow (vph)	65	1487	0	120	728	0	0	210	0	0	126	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.4	39.3		9.8	41.7			29.2			29.2	
Effective Green, g (s)	7.4	39.3		9.8	41.7			29.2			29.2	
Actuated g/C Ratio	0.08	0.44		0.11	0.46			0.32			0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	145	1534		192	1602			512			426	
v/s Ratio Prot	0.04	c0.42		c0.07	0.21							
v/s Ratio Perm								c0.13			0.10	
v/c Ratio	0.45	0.97		0.62	0.45			0.41			0.30	
Uniform Delay, d1	39.5	24.9		38.5	16.6			23.8			22.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.2	16.1		6.2	0.2			2.4			1.8	
Delay (s)	41.7	41.0		44.7	16.8			26.3			24.6	
Level of Service	D	D		D	B			C			C	
Approach Delay (s)		41.0			20.7			26.3			24.6	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	32.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

12: El Cajon Blvd & Montezuma Road

2030 PM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	140	780	1470	300	540	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	848	1598	326	587	120
RTOR Reduction (vph)	0	0	0	115	0	75
Lane Group Flow (vph)	152	848	1598	211	587	45
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	14.3	58.4	40.1	40.1	40.1	40.1
Effective Green, g (s)	14.3	58.4	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.13	0.55	0.38	0.38	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	238	1941	1276	543	1293	596
v/s Ratio Prot	c0.09	0.24	c0.47	0.15	c0.17	0.03
v/s Ratio Perm						
v/c Ratio	0.64	0.44	1.25	0.39	0.45	0.08
Uniform Delay, d1	43.7	14.3	33.2	24.3	25.0	21.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.2	120.2	0.5	1.2	0.2
Delay (s)	49.2	14.4	153.4	24.7	26.1	21.6
Level of Service	D	B	F	C	C	C
Approach Delay (s)		19.7	131.6		25.3	
Approach LOS		B	F		C	

Intersection Summary

HCM Average Control Delay	80.1	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	106.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

ILV OPERATIONS

Year 2030 - AM

INTERSECTION

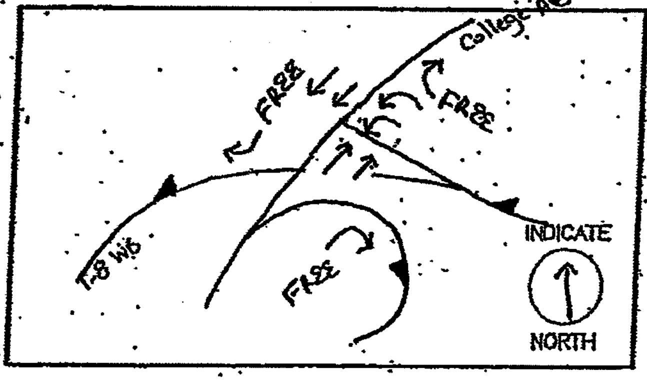
Signalized Intersection
CAPACITY ANALYSIS

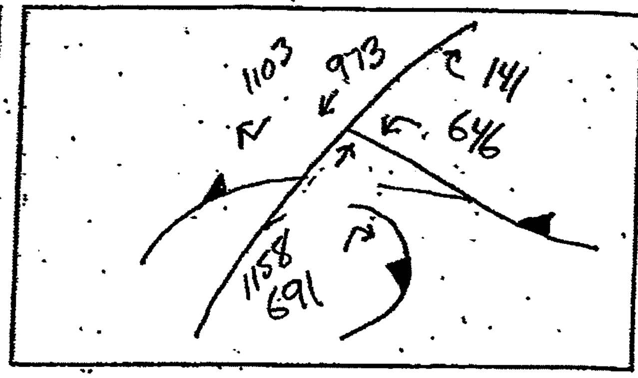
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ____________

BY CL DATE 5/21/09

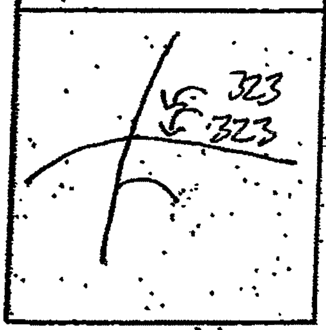
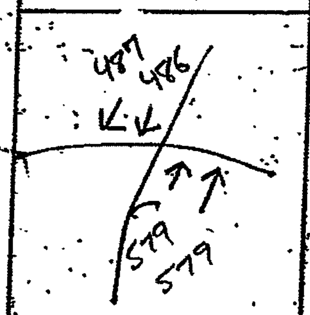
TIME ____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
323	579		

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
902

☒ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Year 2030 - PM

INTERSECTION

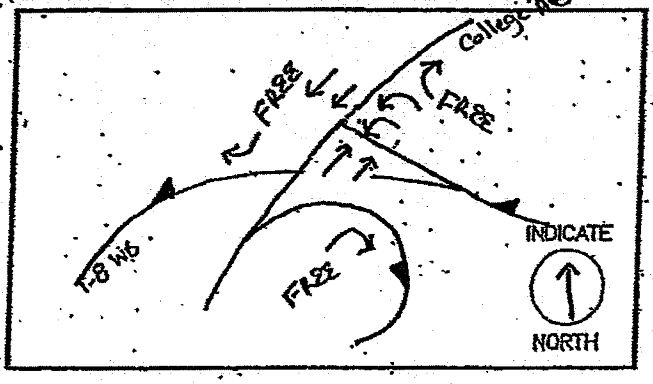
Signalized Intersection
CAPACITY ANALYSIS

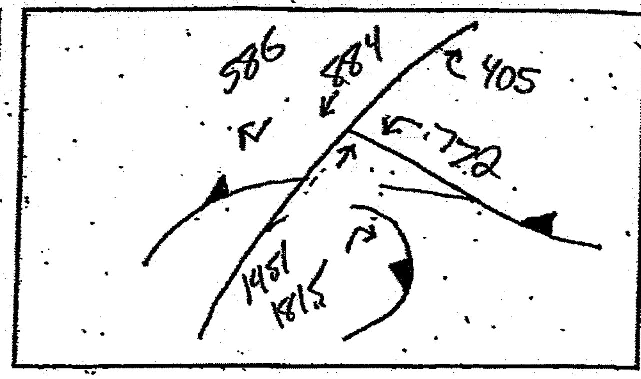
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ____

BY CL DATE 5/21/09

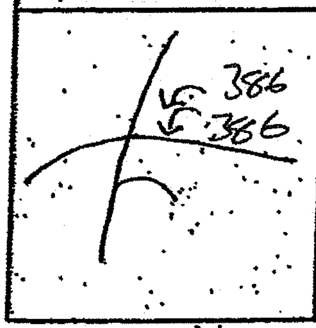
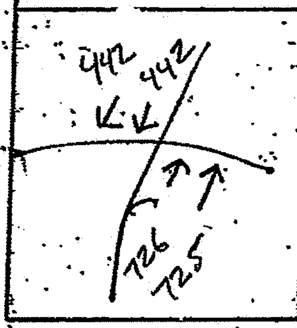
TIME ____ AM PM (circled)

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
386	726		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1112

☒ < 1200 ILV/HR.
☐ > 1200 BUT < 1500 ILV/HR.
☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Year 2030 - AM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

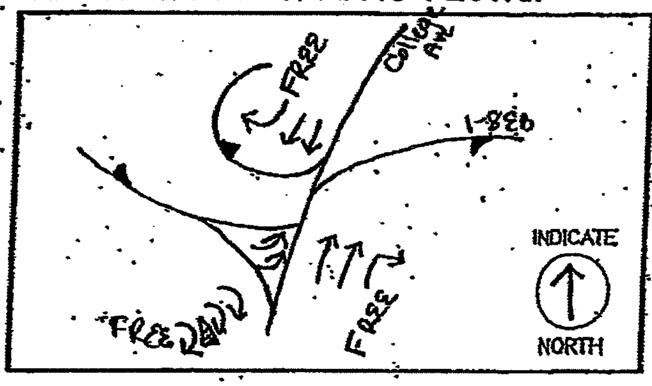
INTERSECTION College Ave / I-8 EB Ramps

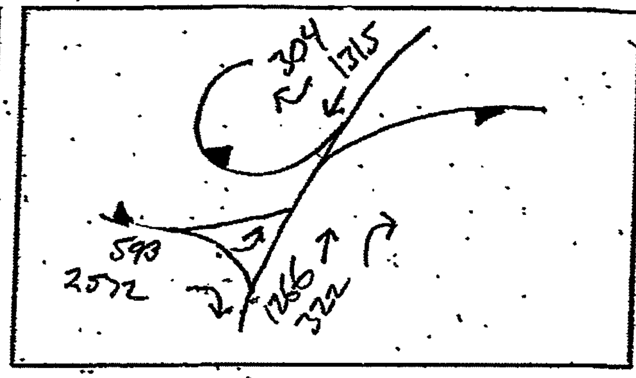
DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

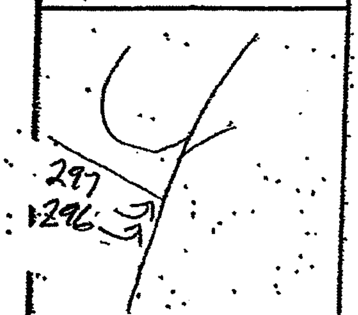
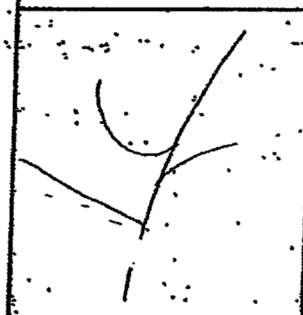
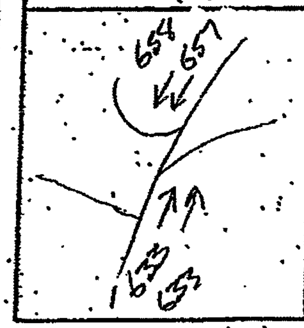
TIME AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
297		658	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
955

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY).

REMARKS:

Year 2030-PM

INTERSECTION

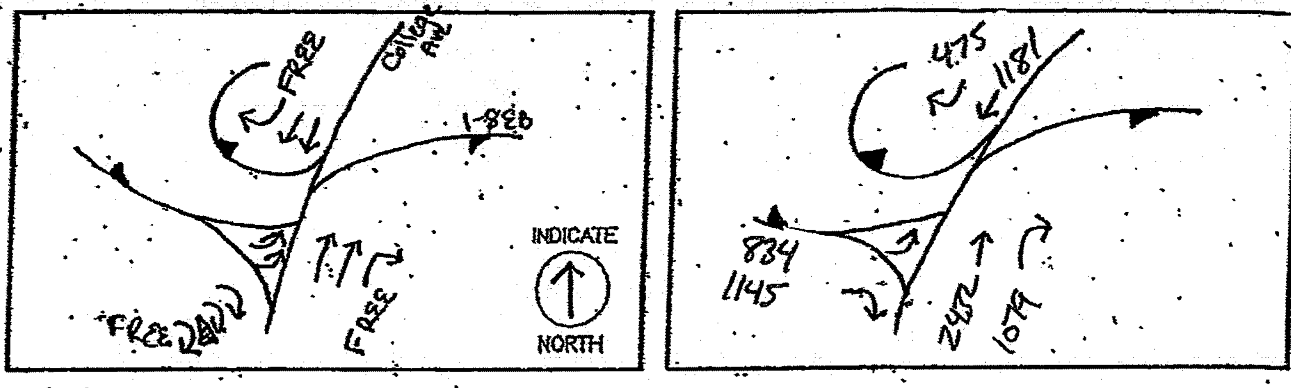
Signalized Intersection
CAPACITY ANALYSIS

INTERSECTION College Ave / I-8 EB Ramps   DIST. CO. RTE. P.M. ________

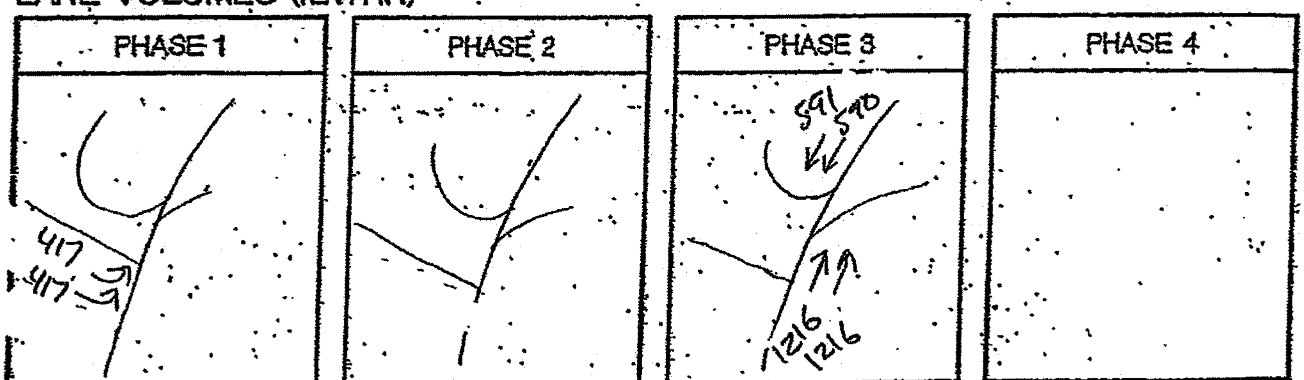
BY CL DATE 5/27/09

TIME ______ AM / PM (PM circled)

DIAGRAM AND TRAFFIC FLOWS:



LANE VOLUMES (ILV/HR)



CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
417		1216	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1633

☐ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☒ > 1500 ILV/HR (CAPACITY).

REMARKS:

LONG-TERM (2030) + UNIVERSITY SERVING RETAIL OPERATIONS

1: I-8WB Ramp & College Ave

2030 + USR AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	646	0	141	0	1165	691	0	973	1103
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	702	0	153	0	1266	751	0	1058	1199
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	702	0	153	0	1266	751	0	1058	1199
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				24.9		100.0		67.1	100.0		67.1	100.0
Effective Green, g (s)				24.9		100.0		67.1	100.0		67.1	100.0
Actuated g/C Ratio				0.25		1.00		0.67	1.00		0.67	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				823		1555		2375	1536		2375	1536
v/s Ratio Prot								0.36			0.30	
v/s Ratio Perm				0.21		0.10			0.49			c0.78
v/c Ratio				0.85		0.10		0.53	0.49		0.45	0.78
Uniform Delay, d1				35.8		0.0		8.4	0.0		7.7	0.0
Progression Factor				1.00		1.00		1.04	1.00		1.00	1.00
Incremental Delay, d2				8.5		0.1		0.6	0.8		0.6	4.0
Delay (s)				44.3		0.1		9.3	0.8		8.3	4.0
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			36.4			6.1			6.0	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2: I-8EB Ramp & College Ave

2030 + USR AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	593	0	2573	0	0	0	0	1263	323	0	1315	304
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)	645	0	2797	0	0	0	0	1373	351	0	1429	330
RTOR Reduction (vph)	0	0	15	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	645	0	2782	0	0	0	0	1373	351	0	1429	330
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1553		1614					1593	1536		1593	1536
v/s Ratio Prot								0.39			c0.40	
v/s Ratio Perm	0.20		c0.81						0.23			0.21
v/c Ratio	0.42		1.72					0.86	0.23		0.90	0.21
Uniform Delay, d1	17.5		26.5					24.7	0.0		25.4	0.0
Progression Factor	1.00		1.00					1.18	1.00		0.76	1.00
Incremental Delay, d2	0.2		328.3					0.6	0.0		6.8	0.3
Delay (s)	17.6		354.8					29.9	0.0		26.1	0.3
Level of Service	B		F					C	A		C	A
Approach Delay (s)		291.6			0.0			23.8			21.2	
Approach LOS		F			A			C			C	

Intersection Summary

HCM Average Control Delay	156.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1799	1506		1821	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1799	1506		1821	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	103	41	70	129	149	220	228	1263	181	747	1843	1297
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)	112	45	76	140	162	239	248	1373	197	812	2003	1410
RTOR Reduction (vph)	0	0	58	0	0	201	0	0	108	0	0	761
Lane Group Flow (vph)	0	157	18	0	302	38	248	1373	89	812	2003	649
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		20.3	15.7	15.7	24.0	24.0	15.7	24.0	24.0
Effective Green, g (s)		24.0	24.0		20.3	15.7	15.7	24.0	24.0	15.7	24.0	24.0
Actuated g/C Ratio		0.24	0.24		0.20	0.16	0.16	0.24	0.24	0.16	0.24	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		432	361		370	249	278	849	361	539	1220	669
v/s Ratio Prot		0.09			c0.17	0.02	0.14	0.39		c0.24	c0.39	c0.23
v/s Ratio Perm			0.01						0.06			
v/c Ratio		0.36	0.05		0.82	0.15	0.89	1.62	0.25	1.51	1.64	0.97
Uniform Delay, d1		31.6	29.2		38.1	36.4	41.3	38.0	30.7	42.1	38.0	37.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.90	0.97	1.75
Incremental Delay, d2		0.5	0.1		13.0	0.3	28.0	283.2	1.6	228.8	289.2	5.4
Delay (s)		32.2	29.3		51.1	36.7	69.3	321.2	32.3	266.6	326.2	71.4
Level of Service		C	C		D	D	E	F	C	F	F	E
Approach Delay (s)		31.2			44.7			255.5			229.7	
Approach LOS		C			D			F			F	

Intersection Summary

HCM Average Control Delay	215.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	128	1547	200	582	1462
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	139	1682	217	633	1589
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.84	0.79			0.79	
vC, conflicting volume	3761	881			1919	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3357	585			1887	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	60			0	
cM capacity (veh/h)	0	348			241	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	139	841	841	217	633	795	795
Volume Left	0	0	0	0	633	0	0
Volume Right	139	0	0	217	0	0	0
cSH	348	1700	1700	1700	241	1700	1700
Volume to Capacity	0.40	0.49	0.49	0.13	2.62	0.47	0.47
Queue Length 95th (ft)	47	0	0	0	1334	0	0
Control Delay (s)	22.1	0.0	0.0	0.0	773.0	0.0	0.0
Lane LOS	C				F		
Approach Delay (s)	22.1	0.0			220.1		
Approach LOS	C						

Intersection Summary

Average Delay	115.5		
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.88		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1694		1770	1642		1770	3533		1770	3420	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1694		1770	1642		1770	3533		1770	3420	
Volume (vph)	47	19	29	14	9	35	101	1366	16	38	906	263
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)	51	21	32	15	10	38	110	1485	17	41	985	286
RTOR Reduction (vph)	0	30	0	0	36	0	0	0	0	0	15	0
Lane Group Flow (vph)	51	23	0	15	12	0	110	1502	0	41	1256	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.6	8.2		2.6	5.2		11.8	77.7		4.9	70.8	
Effective Green, g (s)	5.6	8.2		2.6	5.2		11.8	77.7		4.9	70.8	
Actuated g/C Ratio	0.05	0.07		0.02	0.05		0.11	0.71		0.04	0.65	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	91	127		42	78		191	2509		79	2213	
v/s Ratio Prot	c0.03	c0.01		0.01	0.01		c0.06	c0.43		0.02	0.37	
v/s Ratio Perm												
v/c Ratio	0.56	0.18		0.36	0.15		0.58	0.60		0.52	0.57	
Uniform Delay, d1	50.7	47.5		52.6	50.0		46.4	8.0		51.1	10.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.7	0.7		5.1	0.9		4.2	1.1		5.7	1.1	
Delay (s)	58.4	48.2		57.7	50.9		50.6	9.1		56.8	11.8	
Level of Service	E	D		E	D		D	A		E	B	
Approach Delay (s)		53.2			52.5			11.9			13.2	
Approach LOS		D			D			B			B	

Intersection Summary

HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	109.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3430		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3430		1770	3539	1457
Volume (vph)	440	406	158	58	740	305	679	1093	170	233	540	260
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)	478	441	172	63	804	332	738	1188	185	253	587	283
RTOR Reduction (vph)	0	0	131	0	0	189	0	12	0	0	0	215
Lane Group Flow (vph)	478	441	41	63	804	143	738	1361	0	253	587	68
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	823		212	849	350
v/s Ratio Prot	c0.27	0.12		0.04	c0.23		c0.21	c0.40		0.14	0.17	
v/s Ratio Perm			0.03			0.10						0.05
v/c Ratio	1.12	0.52	0.12	0.15	0.95	0.41	1.79	1.65		1.19	0.69	0.19
Uniform Delay, d1	38.0	33.0	29.7	29.9	37.4	32.0	44.0	38.0		44.0	34.6	30.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	82.2	0.5	0.2	0.2	19.0	0.8	365.7	299.5		123.8	4.6	1.2
Delay (s)	120.2	33.5	29.9	30.1	56.4	32.8	409.7	337.5		167.8	39.2	31.5
Level of Service	F	C	C	C	E	C	F	F		F	D	C
Approach Delay (s)		70.9			48.5			362.7			66.3	
Approach LOS		E			D			F			E	

Intersection Summary

HCM Average Control Delay	176.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.96		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3387		3433	3412		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3387		3433	3412		1770	3539	1583	1770	3539	1583
Volume (vph)	280	450	180	60	950	300	680	1550	270	180	621	221
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)	304	489	196	65	1033	326	739	1685	293	196	675	240
RTOR Reduction (vph)	0	35	0	0	25	0	0	0	110	0	0	79
Lane Group Flow (vph)	304	650	0	65	1334	0	739	1685	183	196	675	161
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	8.0	41.8		4.0	37.8		37.0	48.0	48.0	11.0	22.0	22.0
Effective Green, g (s)	8.0	41.8		4.0	37.8		37.0	48.0	48.0	11.0	22.0	22.0
Actuated g/C Ratio	0.07	0.35		0.03	0.31		0.31	0.40	0.40	0.09	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	1172		114	1068		542	1406	629	161	645	288
v/s Ratio Prot	c0.09	c0.19		0.02	c0.39		c0.42	c0.48		0.11	0.19	
v/s Ratio Perm									0.12			0.10
v/c Ratio	1.34	0.55		0.57	1.25		1.36	1.20	0.29	1.22	1.05	0.56
Uniform Delay, d1	56.4	32.0		57.6	41.5		41.9	36.4	24.8	54.9	49.4	45.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	179.3	0.6		6.7	120.1		175.2	96.5	1.2	141.2	48.2	7.6
Delay (s)	235.7	32.5		64.3	161.6		217.1	132.9	26.0	196.1	97.6	52.6
Level of Service	F	C		E	F		F	F	C	F	F	D
Approach Delay (s)		95.0			157.1			144.2			105.2	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	132.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1644	320	71	1364	1150	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1787	348	77	1483	1250	120
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1787	348	77	1483	1250	117
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	c0.50	0.10		0.42	c0.36	
v/s Ratio Perm		0.12	0.49			0.07
v/c Ratio	1.07	0.22	1.03	0.89	0.81	0.16
Uniform Delay, d1	26.5	0.4	26.5	24.2	23.8	16.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	45.1	0.1	111.5	6.5	4.7	0.5
Delay (s)	71.6	0.5	138.0	30.7	28.5	16.8
Level of Service	E	A	F	C	C	B
Approach Delay (s)	60.0			36.0	27.4	
Approach LOS	E			D	C	

Intersection Summary

HCM Average Control Delay	43.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3467		1752	3341			1750		1681	1696	1454
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3467		1752	3341			1750		1681	1696	1454
Volume (vph)	1114	614	26	20	1183	375	50	15	10	143	10	202
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)	1211	667	28	22	1286	408	54	16	11	155	11	220
RTOR Reduction (vph)	0	3	0	0	30	0	0	6	0	0	0	186
Lane Group Flow (vph)	1211	692	0	22	1664	0	0	75	0	81	85	34
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Heavy Vehicles (%)	2%	3%	3%	3%	2%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	26.0	53.8		1.6	29.4			16.0		16.0	16.0	16.0
Effective Green, g (s)	26.0	53.8		1.6	29.4			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.25	0.52		0.02	0.28			0.15		0.15	0.15	0.15
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	863	1804		27	950			271		260	262	225
v/s Ratio Prot	c0.35	0.20		0.01	c0.50			c0.04		0.05	c0.05	
v/s Ratio Perm												0.02
v/c Ratio	1.40	0.38		0.81	1.75			0.28		0.31	0.32	0.15
Uniform Delay, d1	38.7	14.9		50.8	37.0			38.6		38.8	38.9	37.8
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	188.4	0.1		95.3	342.5			2.5		3.1	3.3	1.4
Delay (s)	227.1	15.0		146.0	379.5			41.1		41.9	42.2	39.2
Level of Service	F	B		F	F			D		D	D	D
Approach Delay (s)		149.8			376.5			41.1			40.4	
Approach LOS		F			F			D			D	

Intersection Summary

HCM Average Control Delay	232.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	103.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.95		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3495		1770	3377			1606		1681	1713	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3495		1770	3377			1606		1681	1713	1583
Volume (vph)	189	774	38	99	1309	271	34	29	104	126	27	195
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)	205	841	41	108	1423	295	37	32	113	137	29	212
RTOR Reduction (vph)	0	3	0	0	17	0	0	59	0	0	0	195
Lane Group Flow (vph)	205	879	0	108	1701	0	0	123	0	81	85	17
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.46		0.06	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	1608		106	1486			257		269	274	127
v/s Ratio Prot	c0.12	0.25		0.06	c0.50			c0.08		0.05	c0.05	0.01
v/s Ratio Perm												
v/c Ratio	1.44	0.55		1.02	1.14			0.48		0.30	0.31	0.13
Uniform Delay, d1	46.0	19.5		47.0	28.0			38.2		37.1	37.1	42.8
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	234.7	0.4		92.6	73.5			6.3		2.9	2.9	0.5
Delay (s)	280.7	19.9		139.6	101.5			44.5		39.9	40.0	43.3
Level of Service	F	B		F	F			D		D	D	D
Approach Delay (s)		69.1			103.7			44.5			41.8	
Approach LOS		E			F			D			D	

Intersection Summary

HCM Average Control Delay	83.0	HCM Level of Service	F
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.94			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3522		1770	3509			1713			1700	
Flt Permitted	0.95	1.00		0.95	1.00			0.84			0.88	
Satd. Flow (perm)	1770	3522		1770	3509			1472			1529	
Volume (vph)	30	618	20	80	1330	80	40	10	40	50	20	80
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)	33	672	22	87	1446	87	43	11	43	54	22	87
RTOR Reduction (vph)	0	2	0	0	4	0	0	27	0	0	39	0
Lane Group Flow (vph)	33	692	0	87	1529	0	0	70	0	0	124	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	4.6	38.6		8.2	42.2			29.1			29.1	
Effective Green, g (s)	4.6	38.6		8.2	42.2			29.1			29.1	
Actuated g/C Ratio	0.05	0.44		0.09	0.48			0.33			0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	93	1547		165	1685			487			506	
v/s Ratio Prot	0.02	0.20		c0.05	c0.44							
v/s Ratio Perm								0.05			c0.08	
v/c Ratio	0.35	0.45		0.53	0.91			0.14			0.25	
Uniform Delay, d1	40.2	17.2		38.0	21.0			20.7			21.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.3	0.2		3.0	7.5			0.6			1.2	
Delay (s)	42.5	17.4		41.0	28.5			21.3			22.6	
Level of Service	D	B		D	C			C			C	
Approach Delay (s)		18.6			29.2			21.3			22.6	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	87.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	200	1060	1390	701	183	81
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1152	1511	762	199	88
RTOR Reduction (vph)	0	0	0	290	0	56
Lane Group Flow (vph)	217	1152	1511	472	199	32
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	18.6	62.7	40.1	40.1	40.1	40.1
Effective Green, g (s)	18.6	62.7	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.17	0.57	0.36	0.36	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	297	2003	1227	522	1242	573
v/s Ratio Prot	c0.12	0.33	c0.45	0.33	c0.06	0.02
v/s Ratio Perm						
v/c Ratio	0.73	0.58	1.23	0.90	0.16	0.06
Uniform Delay, d1	43.7	15.5	35.3	33.5	23.9	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.9	0.4	111.5	19.1	0.3	0.2
Delay (s)	52.6	15.9	146.8	52.6	24.2	23.2
Level of Service	D	B	F	D	C	C
Approach Delay (s)		21.7	115.2		23.9	
Approach LOS		C	F		C	

Intersection Summary

HCM Average Control Delay	76.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.2%	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				↰↰		↱		↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3272		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3272		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	773	0	405	0	1452	1815	0	895	586
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	840	0	440	0	1578	1973	0	973	637
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	840	0	440	0	1578	1973	0	973	637
Confl. Peds. (#/hr)				20		20			20			20
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				30.0		100.0		62.0	100.0		62.0	100.0
Effective Green, g (s)				30.0		100.0		62.0	100.0		62.0	100.0
Actuated g/C Ratio				0.30		1.00		0.62	1.00		0.62	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				982		1555		2194	1536		2194	1536
v/s Ratio Prot								0.45			0.27	
v/s Ratio Perm				0.26		0.28			c1.28			0.41
v/c Ratio				0.86		0.28		0.72	1.28		0.44	0.41
Uniform Delay, d1				33.0		0.0		13.0	50.0		10.0	0.0
Progression Factor				1.00		1.00		0.68	1.00		1.00	1.00
Incremental Delay, d2				7.4		0.5		0.2	128.5		0.7	0.8
Delay (s)				40.4		0.5		9.1	178.5		10.6	0.8
Level of Service				D		A		A	F		B	A
Approach Delay (s)		0.0			26.6			103.2			6.7	
Approach LOS		A			C			F			A	

Intersection Summary

HCM Average Control Delay	63.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	68.9%	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	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1551		3505	1521
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1551		3505	1521
Volume (vph)	834	0	1148	0	0	0	0	2433	1079	0	1193	475
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)	907	0	1248	0	0	0	0	2645	1173	0	1297	516
RTOR Reduction (vph)	0	0	24	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	907	0	1224	0	0	0	0	2645	1173	0	1297	516
Confl. Peds. (#/hr)	20		20						20			20
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%	3%	3%
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.4		44.4					47.6	100.0		47.6	100.0
Effective Green, g (s)	44.4		44.4					47.6	100.0		47.6	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1467		1525					1685	1551		1668	1521
v/s Ratio Prot								c0.75			0.37	
v/s Ratio Perm	0.27		0.36						c0.76			0.34
v/c Ratio	0.62		0.80					1.57	0.76		0.78	0.34
Uniform Delay, d1	21.3		24.0					26.2	0.0		21.8	0.0
Progression Factor	1.00		1.00					1.19	1.00		0.70	1.00
Incremental Delay, d2	0.8		3.2					256.6	0.3		2.8	0.6
Delay (s)	22.1		27.2					287.9	0.3		18.1	0.6
Level of Service	C		C					F	A		B	A
Approach Delay (s)		25.0			0.0			199.6			13.1	
Approach LOS		C			A			F			B	

Intersection Summary

HCM Average Control Delay	107.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	97.7%	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		↰	↱		↰	↱	↰	↑↑	↱	↰↰	↑↑↑	↱↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1784	1521		1768	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1784	1521		1768	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	642	70	121	200	24	543	106	2328	184	373	1777	189
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)	698	76	132	217	26	590	115	2530	200	405	1932	205
RTOR Reduction (vph)	0	0	68	0	0	325	0	0	59	0	0	115
Lane Group Flow (vph)	0	774	64	0	243	265	115	2530	141	405	1932	90
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Heavy Vehicles (%)	2%	1%	1%	3%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		23.0	23.0		18.4	18.6	11.1	24.0	24.0	18.6	31.5	23.0
Effective Green, g (s)		23.0	23.0		18.4	18.6	11.1	24.0	24.0	18.6	31.5	23.0
Actuated g/C Ratio		0.23	0.23		0.18	0.19	0.11	0.24	0.24	0.19	0.32	0.23
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		410	350		325	294	196	849	361	639	1602	641
v/s Ratio Prot		c0.43			c0.14	c0.17	0.06	c0.71		0.12	c0.38	0.03
v/s Ratio Perm			0.04						0.09			
v/c Ratio		1.89	0.18		0.75	0.90	0.59	2.98	0.39	0.63	1.21	0.14
Uniform Delay, d1		38.5	31.0		38.6	39.8	42.3	38.0	31.9	37.6	34.2	30.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.13	0.89	1.17
Incremental Delay, d2		408.6	0.3		9.1	28.7	4.4	894.2	3.1	1.2	96.4	0.1
Delay (s)		447.1	31.2		47.7	68.5	46.7	932.2	35.0	43.5	126.8	35.8
Level of Service		F	C		D	E	D	F	D	D	F	D
Approach Delay (s)		386.5			62.4			833.3			106.2	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	427.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	149.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱	↰	↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	664	1954	204	316	1783
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	722	2124	222	343	1938
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.82	0.66			0.66	
vC, conflicting volume	3800	1102			2366	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2945	638			2554	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			0	
cM capacity (veh/h)	0	267			111	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	722	1062	1062	222	343	969	969
Volume Left	0	0	0	0	343	0	0
Volume Right	722	0	0	222	0	0	0
cSH	267	1700	1700	1700	111	1700	1700
Volume to Capacity	2.70	0.62	0.62	0.13	3.10	0.57	0.57
Queue Length 95th (ft)	1531	0	0	0	Err	0	0
Control Delay (s)	804.3	0.0	0.0	0.0	1029.8	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	804.3	0.0			155.0		
Approach LOS	F						

Intersection Summary

Average Delay	174.7		
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

Plaza Linda Verde Mixed-Use
6/22/2009

5: Lindo Paseo & College Ave
2030 + USR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.88		1.00	0.88		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1647		1770	1641		1770	3531		1770	3475	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1647		1770	1641		1770	3531		1770	3475	
Volume (vph)	175	36	122	19	12	46	64	1478	24	57	1316	182
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)	190	39	133	21	13	50	70	1607	26	62	1430	198
RTOR Reduction (vph)	0	108	0	0	47	0	0	1	0	0	8	0
Lane Group Flow (vph)	190	64	0	21	16	0	70	1632	0	62	1620	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	15.0	20.4		1.9	7.3		5.4	67.3		4.6	66.5	
Effective Green, g (s)	15.0	20.4		1.9	7.3		5.4	67.3		4.6	66.5	
Actuated g/C Ratio	0.14	0.19		0.02	0.07		0.05	0.61		0.04	0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	241	305		31	109		87	2156		74	2097	
v/s Ratio Prot	c0.11	c0.04		0.01	0.01		c0.04	0.46		0.04	c0.47	
v/s Ratio Perm												
v/c Ratio	0.79	0.21		0.68	0.15		0.80	0.76		0.84	0.77	
Uniform Delay, d1	46.1	38.1		53.8	48.5		51.9	15.5		52.4	16.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.6	0.3		45.6	0.6		39.9	2.5		53.0	2.8	
Delay (s)	61.7	38.4		99.5	49.2		91.7	18.1		105.4	19.1	
Level of Service	E	D		F	D		F	B		F	B	
Approach Delay (s)		50.6			61.7			21.1			22.2	
Approach LOS		D			E			C			C	

Intersection Summary

HCM Average Control Delay	25.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/22/2009

6: Montezuma Rd & College Ave
2030 + USR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1800	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3478		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3478		1770	3539	1457
Volume (vph)	1266	967	657	290	776	375	707	759	63	432	1075	289
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)	1376	1051	714	315	843	408	768	825	68	470	1168	314
RTOR Reduction (vph)	0	0	226	0	0	168	0	6	0	0	0	202
Lane Group Flow (vph)	1376	1051	488	315	843	240	768	887	0	470	1168	112
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	835		212	849	350
v/s Ratio Prot	c0.78	0.30		0.18	c0.24		0.22	0.26		c0.27	c0.33	
v/s Ratio Perm			0.34			0.16						0.08
v/c Ratio	3.24	1.24	1.40	0.74	0.99	0.69	1.86	1.06		2.22	1.38	0.32
Uniform Delay, d1	38.0	38.0	38.0	35.1	37.9	34.6	44.0	38.0		44.0	38.0	31.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1013.0	117.1	194.4	6.8	29.0	5.6	398.0	49.0		562.7	176.5	2.4
Delay (s)	1051.0	155.1	232.4	42.0	66.9	40.1	442.0	87.0		606.7	214.6	33.7
Level of Service	F	F	F	D	E	D	F	F		F	F	C
Approach Delay (s)		565.2			54.9			251.2			279.9	
Approach LOS		F			D			F			F	

Intersection Summary

HCM Average Control Delay	339.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	154.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.94		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3326		3433	3402		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3326		3433	3402		1770	3539	1583	1770	3539	1583
Volume (vph)	372	1120	750	300	690	240	400	1072	90	350	1233	120
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)	404	1217	815	326	750	261	435	1165	98	380	1340	130
RTOR Reduction (vph)	0	96	0	0	29	0	0	0	52	0	0	61
Lane Group Flow (vph)	404	1936	0	326	982	0	435	1165	46	380	1340	69
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	15.0	45.0		8.0	38.0		18.0	35.0	35.0	16.0	33.0	33.0
Effective Green, g (s)	15.0	45.0		8.0	38.0		18.0	35.0	35.0	16.0	33.0	33.0
Actuated g/C Ratio	0.12	0.38		0.07	0.32		0.15	0.29	0.29	0.13	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	429	1247		229	1077		266	1032	462	236	973	435
v/s Ratio Prot	0.12	c0.58		c0.09	0.29		c0.25	0.33		0.21	c0.38	
v/s Ratio Perm									0.03			0.04
v/c Ratio	0.94	1.55		1.42	0.91		1.64	1.13	0.10	1.61	1.38	0.16
Uniform Delay, d1	52.1	37.5		56.0	39.4		51.0	42.5	31.0	52.0	43.5	33.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.1	252.5		214.1	11.5		302.4	70.6	0.4	293.4	176.2	0.8
Delay (s)	81.1	290.0		270.1	50.9		353.4	113.1	31.4	345.4	219.7	33.8
Level of Service	F	F		F	D		F	F	C	F	F	C
Approach Delay (s)		255.4			104.3			169.9			232.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	202.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	133.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1982	410	90	2124	380	62
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2154	446	98	2309	413	67
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	2154	446	98	2309	413	66
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	0.61	c0.13		c0.65	0.12	
v/s Ratio Perm		0.15	0.62			0.04
v/c Ratio	1.30	0.28	1.31	1.39	0.27	0.09
Uniform Delay, d1	26.5	0.4	26.5	26.5	17.2	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	137.5	0.1	206.4	178.6	0.4	0.3
Delay (s)	164.0	0.5	232.9	205.1	17.6	16.0
Level of Service	F	A	F	F	B	B
Approach Delay (s)	136.9			206.2	17.4	
Approach LOS	F			F	B	

Intersection Summary

HCM Average Control Delay	156.4	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

9: Montezuma Rd & 55th St

2030 + USR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.98		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98			0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3465		1770	3445			1724		1681	1691	1458
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3465		1770	3445			1724		1681	1691	1458
Volume (vph)	571	1358	117	30	1596	217	60	15	20	575	20	563
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)	621	1476	127	33	1735	236	65	16	22	625	22	612
RTOR Reduction (vph)	0	6	0	0	11	0	0	10	0	0	0	436
Lane Group Flow (vph)	621	1597	0	33	1960	0	0	93	0	315	332	176
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	21.9	48.5		2.3	28.9			16.0		16.0	16.0	16.0
Effective Green, g (s)	21.9	48.5		2.3	28.9			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.22	0.49		0.02	0.29			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	761	1701		41	1008			279		272	274	236
v/s Ratio Prot	c0.18	c0.46		0.02	c0.57			c0.05		0.19	c0.20	
v/s Ratio Perm												0.12
v/c Ratio	0.82	0.94		0.80	1.94			0.33		1.16	1.21	0.75
Uniform Delay, d1	36.5	23.7		48.0	35.0			36.7		41.4	41.4	39.5
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	6.8	10.4		69.0	428.8			3.2		104.2	124.1	19.2
Delay (s)	43.3	34.2		117.0	463.8			39.9		145.6	165.5	58.7
Level of Service	D	C		F	F			D		F	F	E
Approach Delay (s)		36.7			458.1			39.9			108.6	
Approach LOS		D			F			D			F	

Intersection Summary

HCM Average Control Delay	204.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	112.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

10: Montezuma Rd & Campanile Dr

2030 + USR PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			0.95		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3520		1770	3332			1589		1681	1712	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3520		1770	3332			1589		1681	1712	1583
Volume (vph)	259	1711	35	248	1187	337	32	40	153	378	75	623
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	282	1860	38	270	1290	366	35	43	166	411	82	677
RTOR Reduction (vph)	0	2	0	0	26	0	0	76	0	0	0	380
Lane Group Flow (vph)	282	1896	0	270	1630	0	0	168	0	240	253	297
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.46		0.06	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	1619		106	1466			254		269	274	127
v/s Ratio Prot	0.16	c0.54		0.15	0.49			c0.11		0.14	c0.15	c0.19
v/s Ratio Perm												
v/c Ratio	1.99	1.17		2.55	1.11			0.66		0.89	0.92	2.34
Uniform Delay, d1	46.0	27.0		47.0	28.0			39.4		41.2	41.4	46.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	467.9	84.1		723.1	60.6			12.7		33.0	37.8	626.3
Delay (s)	513.9	111.1		770.1	88.6			52.1		74.1	79.2	672.3
Level of Service	F	F		F	F			D		E	E	F
Approach Delay (s)		163.2			184.1			52.1			421.4	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	220.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3524		1770	3469			1673			1718	
Flt Permitted	0.95	.1.00		0.95	1.00			0.94			0.75	
Satd. Flow (perm)	1770	3524		1770	3469			1583			1318	
Volume (vph)	60	1331	40	110	596	90	40	40	190	60	20	60
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)	65	1447	43	120	648	98	43	43	207	65	22	65
RTOR Reduction (vph)	0	2	0	0	11	0	0	83	0	0	26	0
Lane Group Flow (vph)	65	1488	0	120	735	0	0	210	0	0	126	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.4	39.3		9.8	41.7			29.2			29.2	
Effective Green, g (s)	7.4	39.3		9.8	41.7			29.2			29.2	
Actuated g/C Ratio	0.08	0.44		0.11	0.46			0.32			0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	145	1534		192	1602			512			426	
v/s Ratio Prot	0.04	c0.42		c0.07	0.21							
v/s Ratio Perm								c0.13			0.10	
v/c Ratio	0.45	0.97		0.62	0.46			0.41			0.30	
Uniform Delay, d1	39.5	24.9		38.5	16.6			23.8			22.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.2	16.4		6.2	0.2			2.4			1.8	
Delay (s)	41.7	41.3		44.7	16.8			26.3			24.6	
Level of Service	D	D		D	B			C			C	
Approach Delay (s)		41.3			20.7			26.3			24.6	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1752	3574	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1752	3574	3390	1441	3433	1583
Volume (vph)	141	780	1470	304	541	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	153	848	1598	330	588	120
RTOR Reduction (vph)	0	0	0	116	0	75
Lane Group Flow (vph)	153	848	1598	214	588	45
Heavy Vehicles (%)	3%	1%	2%	2%	2%	2%
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	14.4	58.5	40.1	40.1	40.1	40.1
Effective Green, g (s)	14.4	58.5	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.14	0.55	0.38	0.38	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	237	1961	1275	542	1291	595
v/s Ratio Prot	c0.09	0.24	c0.47	0.15	c0.17	0.03
v/s Ratio Perm						
v/c Ratio	0.65	0.43	1.25	0.39	0.46	0.08
Uniform Delay, d1	43.7	14.2	33.2	24.4	25.0	21.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.9	0.2	120.6	0.5	1.2	0.2
Delay (s)	49.6	14.4	153.9	24.8	26.2	21.6
Level of Service	D	B	F	C	C	C
Approach Delay (s)		19.8	131.8		25.4	
Approach LOS		B	F		C	

Intersection Summary

HCM Average Control Delay	80.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	106.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

ILV OPERATIONS

Year 2030+USR - AM

INTERSECTION

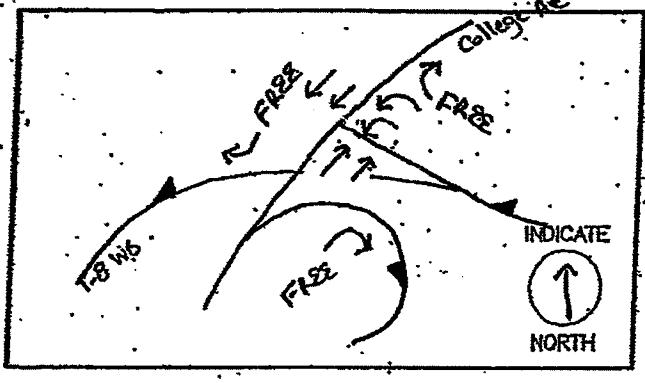
Signalized Intersection
CAPACITY ANALYSIS

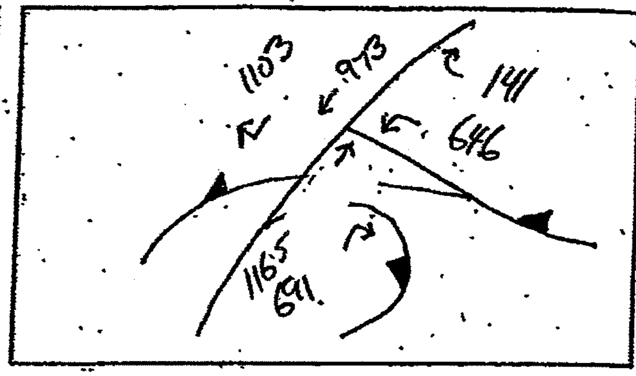
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

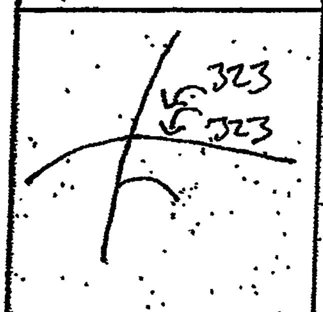
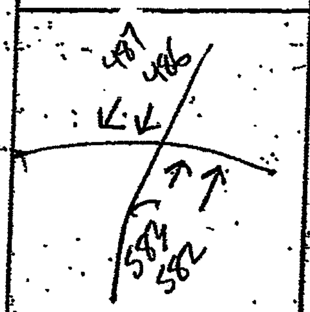
TIME ____ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
323	583		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
906

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY).

REMARKS:

Year 2030+USR- PM

INTERSECTION

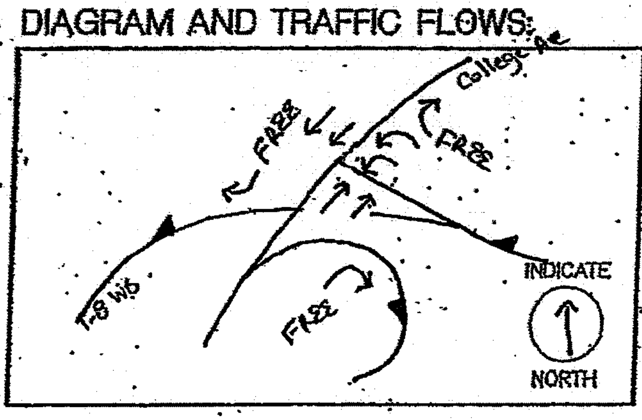
Signalized Intersection
CAPACITY ANALYSIS

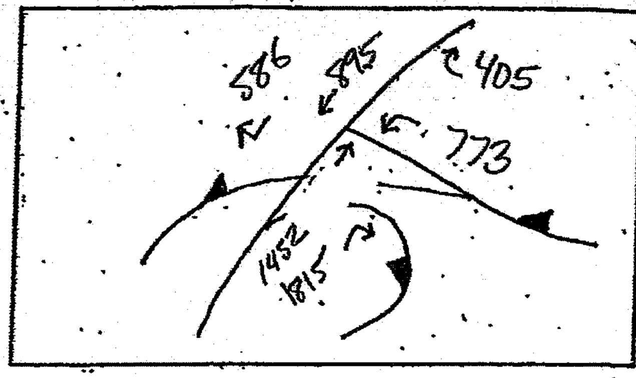
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

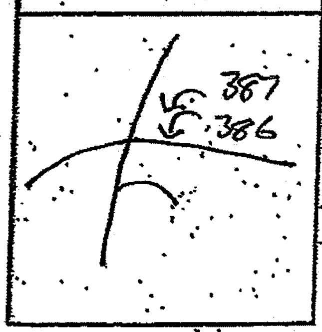
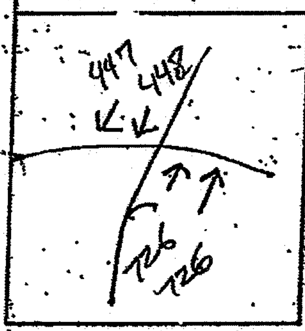
TIME ______ AM (PM)

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
387	726		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1113

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Year 2030 + USR - AM

INTERSECTION

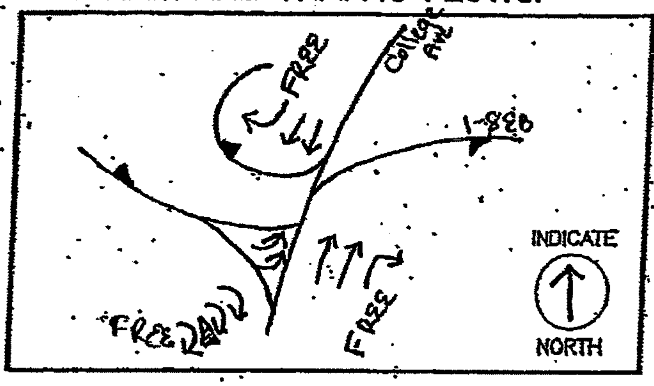
Signalized Intersection
CAPACITY ANALYSIS

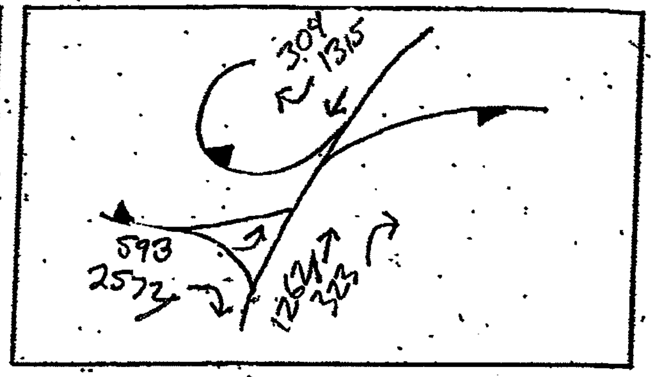
INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

TIME ______ AM PM

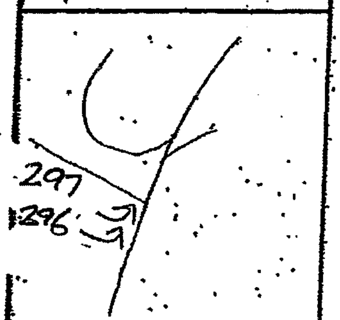
DIAGRAM AND TRAFFIC FLOWS:

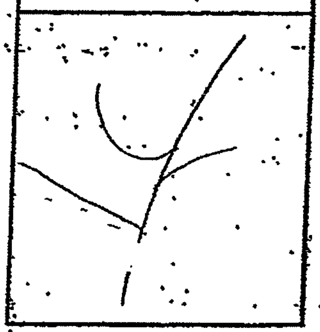


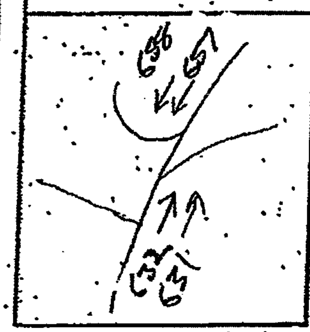


LANE VOLUMES (ILV/HR)

PHASE 1 | PHASE 2 | PHASE 3 | PHASE 4







CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
297		658	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
955

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Year 2030+USR - PM

INTERSECTION

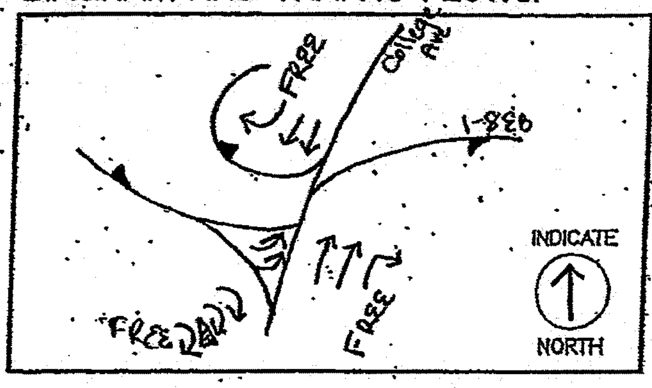
Signalized Intersection
CAPACITY ANALYSIS

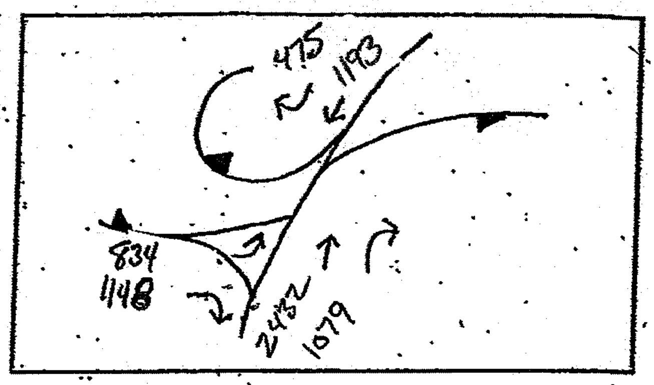
INTERSECTION College Ave / I-8 EB Ramps   DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

TIME ______ AM PM

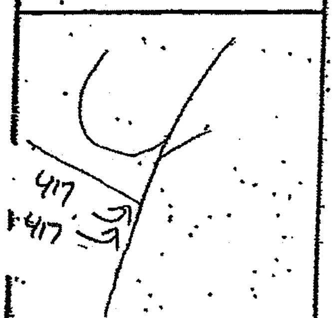
DIAGRAM AND TRAFFIC FLOWS:

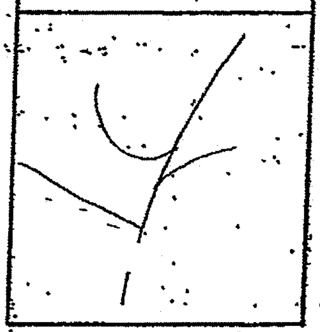


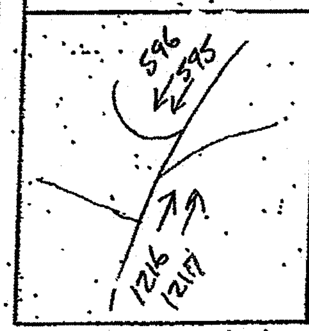


LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4







CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
417		1217	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1634

☐ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☒ > 1500 ILV/HR (CAPACITY)

REMARKS:

LONG-TERM (2030) + COMMUNITY SERVING RETAIL OPERATIONS

1: I-8WB Ramp & College Ave
2030 + CSR AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↓↓	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	647	0	141	0	1163	691	0	983	1103
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	703	0	153	0	1264	751	0	1068	1199
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	703	0	153	0	1264	751	0	1068	1199
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				25.0		100.0		67.0	100.0		67.0	100.0
Effective Green, g (s)				25.0		100.0		67.0	100.0		67.0	100.0
Actuated g/C Ratio				0.25		1.00		0.67	1.00		0.67	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				826		1555		2371	1536		2371	1536
v/s Ratio Prot								0.36			0.30	
v/s Ratio Perm				0.21		0.10			0.49			c0.78
v/c Ratio				0.85		0.10		0.53	0.49		0.45	0.78
Uniform Delay, d1				35.7		0.0		8.5	0.0		7.8	0.0
Progression Factor				1.00		1.00		1.04	1.00		1.00	1.00
Incremental Delay, d2				8.4		0.1		0.6	0.8		0.6	4.0
Delay (s)				44.1		0.1		9.4	0.8		8.4	4.0
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			36.3			6.2			6.1	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2: I-8EB Ramp & College Ave
2030 + CSR AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↓↓	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	593	0	2573	0	0	0	0	1261	322	0	1325	304
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)	645	0	2797	0	0	0	0	1371	350	0	1440	330
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	645	0	2783	0	0	0	0	1371	350	0	1440	330
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1553		1614					1593	1536		1593	1536
v/s Ratio Prot								0.39			c0.41	
v/s Ratio Perm	0.20		c0.81						0.23			0.21
v/c Ratio	0.42		1.72					0.86	0.23		0.90	0.21
Uniform Delay, d1	17.5		26.5					24.7	0.0		25.5	0.0
Progression Factor	1.00		1.00					1.18	1.00		0.76	1.00
Incremental Delay, d2	0.2		328.5					0.6	0.0		7.2	0.3
Delay (s)	17.6		355.0					29.8	0.0		26.7	0.3
Level of Service	B		F					C	A		C	A
Approach Delay (s)		291.8			0.0			23.7			21.7	
Approach LOS		F			A			C			C	

Intersection Summary

HCM Average Control Delay	156.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1799	1506		1820	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1799	1506		1820	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	103	41	70	131	149	220	228	1261	181	747	1854	1297
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)	112	45	76	142	162	239	248	1371	197	812	2015	1410
RTOR Reduction (vph)	0	0	58	0	0	201	0	0	108	0	0	757
Lane Group Flow (vph)	0	157	18	0	304	38	248	1371	89	812	2015	653
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		20.3	15.7	15.7	24.0	24.0	15.7	24.0	24.0
Effective Green, g (s)		24.0	24.0		20.3	15.7	15.7	24.0	24.0	15.7	24.0	24.0
Actuated g/C Ratio		0.24	0.24		0.20	0.16	0.16	0.24	0.24	0.16	0.24	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		432	361		369	249	278	849	361	539	1220	669
v/s Ratio Prot		0.09			c0.17	0.02	0.14	0.39		c0.24	c0.40	c0.23
v/s Ratio Perm			0.01						0.06			
v/c Ratio		0.36	0.05		0.82	0.15	0.89	1.61	0.25	1.51	1.65	0.98
Uniform Delay, d1		31.6	29.2		38.1	36.4	41.3	38.0	30.7	42.1	38.0	37.7
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.90	0.98	1.74
Incremental Delay, d2		0.5	0.1		13.8	0.3	28.0	282.1	1.6	228.8	293.6	6.0
Delay (s)		32.2	29.3		52.0	36.7	69.3	320.1	32.3	266.6	330.7	71.5
Level of Service		C	C		D	D	E	F	C	F	F	E
Approach Delay (s)		31.2			45.2			254.7			232.2	
Approach LOS		C			D			F			F	

Intersection Summary

HCM Average Control Delay	216.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	128	1542	200	580	1475
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	139	1676	217	630	1603
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.86	0.75			0.75	
vC, conflicting volume	3759	878			1913	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3170	500			1884	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	63			0	
cM capacity (veh/h)	0	373			231	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	139	838	838	217	630	802	802
Volume Left	0	0	0	0	630	0	0
Volume Right	139	0	0	217	0	0	0
cSH	373	1700	1700	1700	231	1700	1700
Volume to Capacity	0.37	0.49	0.49	0.13	2.73	0.47	0.47
Queue Length 95th (ft)	42	0	0	0	1357	0	0
Control Delay (s)	20.3	0.0	0.0	0.0	822.7	0.0	0.0
Lane LOS	C				F		
Approach Delay (s)	20.3	0.0			232.2		
Approach LOS	C						

Intersection Summary

Average Delay	122.2		
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.93		1.00	0.88		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1723		1770	1637		1770	3527		1770	3420	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1723		1770	1637		1770	3527		1770	3420	
Volume (vph)	47	29	29	29	17	69	101	1366	32	77	906	263
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)	51	32	32	32	18	75	110	1485	35	84	985	286
RTOR Reduction (vph)	0	29	0	0	70	0	0	1	0	0	18	0
Lane Group Flow (vph)	51	35	0	32	23	0	110	1519	0	84	1253	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.6	10.4		3.5	7.3		11.5	73.9		8.5	70.9	
Effective Green, g (s)	6.6	10.4		3.5	7.3		11.5	73.9		8.5	70.9	
Actuated g/C Ratio	0.06	0.09		0.03	0.07		0.10	0.66		0.08	0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	104	160		55	106		181	2321		134	2159	
v/s Ratio Prot	c0.03	c0.02		0.02	0.01		c0.06	c0.43		0.05	0.37	
v/s Ratio Perm												
v/c Ratio	0.49	0.22		0.58	0.22		0.61	0.65		0.63	0.58	
Uniform Delay, d1	51.2	47.2		53.7	49.8		48.2	11.5		50.4	12.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.6	0.7		14.7	1.0		5.7	1.5		8.8	1.1	
Delay (s)	54.8	47.9		68.4	50.8		53.9	13.0		59.2	13.2	
Level of Service	D	D		E	D		D	B		E	B	
Approach Delay (s)		51.0			55.3			15.7			16.0	
Approach LOS		D			E			B			B	

Intersection Summary

HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	112.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3431		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3431		1770	3539	1457
Volume (vph)	451	406	158	58	740	310	679	1099	170	232	539	258
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)	490	441	172	63	804	337	738	1195	185	252	586	280
RTOR Reduction (vph)	0	0	131	0	0	188	0	12	0	0	0	213
Lane Group Flow (vph)	490	441	41	63	804	149	738	1368	0	252	586	67
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	823		212	849	350
v/s Ratio Prot	c0.28	0.12		0.04	c0.23		c0.21	c0.40		0.14	0.17	
v/s Ratio Perm			0.03			0.10						0.05
v/c Ratio	1.15	0.52	0.12	0.15	0.95	0.43	1.79	1.66		1.19	0.69	0.19
Uniform Delay, d1	38.0	33.0	29.7	29.9	37.4	32.2	44.0	38.0		44.0	34.6	30.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	92.6	0.5	0.2	0.2	19.0	0.8	365.7	303.3		122.1	4.6	1.2
Delay (s)	130.6	33.5	29.9	30.1	56.4	33.0	409.7	341.3		166.1	39.2	31.5
Level of Service	F	C	C	C	E	C	F	F		F	D	C
Approach Delay (s)		76.1			48.5			365.1			65.9	
Approach LOS		E			D			F			E	

Intersection Summary

HCM Average Control Delay	178.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.96		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3387		3433	3412		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3387		3433	3412		1770	3539	1583	1770	3539	1583
Volume (vph)	282	450	180	60	950	300	680	1552	270	180	621	221
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)	307	489	196	65	1033	326	739	1687	293	196	675	240
RTOR Reduction (vph)	0	35	0	0	25	0	0	0	109	0	0	79
Lane Group Flow (vph)	307	650	0	65	1334	0	739	1687	184	196	675	161
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	8.0	41.8		4.0	37.8		37.0	48.0	48.0	11.0	22.0	22.0
Effective Green, g (s)	8.0	41.8		4.0	37.8		37.0	48.0	48.0	11.0	22.0	22.0
Actuated g/C Ratio	0.07	0.35		0.03	0.31		0.31	0.40	0.40	0.09	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	1172		114	1068		542	1406	629	161	645	288
v/s Ratio Prot	c0.09	c0.19		0.02	c0.39		c0.42	c0.48		0.11	0.19	
v/s Ratio Perm									0.12			0.10
v/c Ratio	1.35	0.55		0.57	1.25		1.36	1.20	0.29	1.22	1.05	0.56
Uniform Delay, d1	56.4	32.0		57.6	41.5		41.9	36.4	24.8	54.9	49.4	45.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	184.7	0.6		6.7	120.1		175.2	97.1	1.2	141.2	48.2	7.6
Delay (s)	241.1	32.5		64.3	161.6		217.1	133.5	26.0	196.1	97.6	52.6
Level of Service	F	C		E	F		F	F	C	F	F	D
Approach Delay (s)		97.1			157.1			144.6			105.2	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	132.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1654	320	71	1362	1150	112
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1798	348	77	1480	1250	122
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1798	348	77	1480	1250	119
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	c0.51	0.10		0.42	c0.36	
v/s Ratio Perm		0.12	0.49			0.08
v/c Ratio	1.08	0.22	1.03	0.89	0.81	0.17
Uniform Delay, d1	26.5	0.4	26.5	24.1	23.8	16.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	47.6	0.1	111.5	6.3	4.7	0.5
Delay (s)	74.1	0.5	138.0	30.4	28.5	16.9
Level of Service	E	A	F	C	C	B
Approach Delay (s)	62.2			35.7	27.4	
Approach LOS	E			D	C	

Intersection Summary

HCM Average Control Delay	44.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3501		1770	3349			1750		1681	1696	1455
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3501		1770	3349			1750		1681	1696	1455
Volume (vph)	1114	625	26	20	1181	375	50	15	10	143	10	202
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)	1211	679	28	22	1284	408	54	16	11	155	11	220
RTOR Reduction (vph)	0	3	0	0	30	0	0	6	0	0	0	186
Lane Group Flow (vph)	1211	704	0	22	1662	0	0	75	0	81	85	34
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	25.0	52.8		1.6	29.4			16.0		16.0	16.0	16.0
Effective Green, g (s)	25.0	52.8		1.6	29.4			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.24	0.52		0.02	0.29			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	838	1805		28	982			273		263	265	227
v/s Ratio Prot	c0.35	0.20		0.01	c0.50			c0.04		0.05	c0.05	
v/s Ratio Perm												0.02
v/c Ratio	1.45	0.39		0.79	1.73			0.28		0.31	0.32	0.15
Uniform Delay, d1	38.7	15.0		50.2	36.5			38.1		38.3	38.4	37.3
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	207.0	0.1		82.7	331.9			2.5		3.0	3.2	1.4
Delay (s)	245.7	15.2		133.0	368.4			40.6		41.3	41.5	38.7
Level of Service	F	B		F	F			D		D	D	D
Approach Delay (s)		160.8			365.3			40.6			39.9	
Approach LOS		F			F			D			D	

Intersection Summary

HCM Average Control Delay	232.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	102.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.95		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3496		1770	3377			1606		1681	1712	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3496		1770	3377			1606		1681	1712	1583
Volume (vph)	191	784	38	99	1307	271	34	30	105	126	26	195
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)	208	852	41	108	1421	295	37	33	114	137	28	212
RTOR Reduction (vph)	0	3	0	0	17	0	0	59	0	0	0	195
Lane Group Flow (vph)	208	890	0	108	1699	0	0	125	0	80	85	17
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.46		0.06	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	1608		106	1486			257		268	274	127
v/s Ratio Prot	c0.12	0.25		0.06	c0.50			c0.08		0.05	c0.05	0.01
v/s Ratio Perm												
v/c Ratio	1.46	0.55		1.02	1.14			0.49		0.30	0.31	0.13
Uniform Delay, d1	46.0	19.6		47.0	28.0			38.3		37.0	37.1	42.8
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	243.5	0.4		92.6	72.9			6.5		2.8	2.9	0.5
Delay (s)	289.5	20.0		139.6	100.9			44.7		39.9	40.0	43.3
Level of Service	F	B		F	F			D		D	D	D
Approach Delay (s)		70.9			103.2			44.7			41.8	
Approach LOS		E			F			D			D	

Intersection Summary

HCM Average Control Delay	83.3	HCM Level of Service	F
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

11: Montezuma Rd & Catoctin Drive

2030 + CSR AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✣			✣	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.94			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3522		1770	3509			1713			1700	
Flt Permitted	0.95	1.00		0.95	1.00			0.84			0.88	
Satd. Flow (perm)	1770	3522		1770	3509			1472			1529	
Volume (vph)	30	617	20	80	1335	80	40	10	40	50	20	80
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)	33	671	22	87	1451	87	43	11	43	54	22	87
RTOR Reduction (vph)	0	2	0	0	4	0	0	27	0	0	39	0
Lane Group Flow (vph)	33	691	0	87	1534	0	0	70	0	0	124	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	4.6	38.6		8.2	42.2			29.1			29.1	
Effective Green, g (s)	4.6	38.6		8.2	42.2			29.1			29.1	
Actuated g/C Ratio	0.05	0.44		0.09	0.48			0.33			0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	93	1547		165	1685			487			506	
v/s Ratio Prot	0.02	0.20		c0.05	c0.44							
v/s Ratio Perm								0.05			c0.08	
v/c Ratio	0.35	0.45		0.53	0.91			0.14			0.25	
Uniform Delay, d1	40.2	17.2		38.0	21.1			20.7			21.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.3	0.2		3.0	7.8			0.6			1.2	
Delay (s)	42.5	17.4		41.0	28.9			21.3			22.6	
Level of Service	D	B		D	C			C			C	
Approach Delay (s)		18.5			29.6			21.3			22.6	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	25.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	87.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

12: El Cajon Blvd & Montezuma Road

2030 + CSR AM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↱	↱	↰↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	201	1060	1390	704	182	81
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	218	1152	1511	765	198	88
RTOR Reduction (vph)	0	0	0	291	0	56
Lane Group Flow (vph)	218	1152	1511	474	198	32
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	18.7	62.8	40.1	40.1	40.1	40.1
Effective Green, g (s)	18.7	62.8	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.17	0.57	0.36	0.36	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	298	2004	1226	521	1241	572
v/s Ratio Prot	c0.12	0.33	c0.45	0.33	c0.06	0.02
v/s Ratio Perm						
v/c Ratio	0.73	0.57	1.23	0.91	0.16	0.06
Uniform Delay, d1	43.7	15.5	35.4	33.7	24.0	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.9	0.4	111.9	19.7	0.3	0.2
Delay (s)	52.6	15.9	147.3	53.4	24.3	23.2
Level of Service	D	B	F	D	C	C
Approach Delay (s)		21.7	115.7		23.9	
Approach LOS		C	F		C	

Intersection Summary

HCM Average Control Delay	76.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	774	0	405	0	1466	1818	0	912	586
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	841	0	440	0	1593	1976	0	991	637
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	841	0	440	0	1593	1976	0	991	637
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				29.8		100.0		62.2	100.0		62.2	100.0
Effective Green, g (s)				29.8		100.0		62.2	100.0		62.2	100.0
Actuated g/C Ratio				0.30		1.00		0.62	1.00		0.62	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				985		1555		2201	1536		2201	1536
v/s Ratio Prot								0.45			0.28	
v/s Ratio Perm				0.25		0.28			c1.29			0.41
v/c Ratio				0.85		0.28		0.72	1.29		0.45	0.41
Uniform Delay, d1				33.0		0.0		13.0	50.0		9.9	0.0
Progression Factor				1.00		1.00		0.68	1.00		1.00	1.00
Incremental Delay, d2				7.3		0.5		0.2	129.4		0.7	0.8
Delay (s)				40.3		0.5		9.0	179.4		10.6	0.8
Level of Service				D		A		A	F		B	A
Approach Delay (s)		0.0			26.6			103.3			6.8	
Approach LOS		A			C			F			A	

Intersection Summary

HCM Average Control Delay	63.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	69.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	834	0	1148	0	0	0	0	2447	1080	0	1212	475
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)	907	0	1248	0	0	0	0	2660	1174	0	1317	516
RTOR Reduction (vph)	0	0	23	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	907	0	1225	0	0	0	0	2660	1174	0	1317	516
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.4		44.4					47.6	100.0		47.6	100.0
Effective Green, g (s)	44.4		44.4					47.6	100.0		47.6	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1467		1525					1685	1536		1685	1536
v/s Ratio Prot								c0.75			0.37	
v/s Ratio Perm	0.27		0.36						c0.76			0.34
v/c Ratio	0.62		0.80					1.58	0.76		0.78	0.34
Uniform Delay, d1	21.3		24.0					26.2	0.0		21.8	0.0
Progression Factor	1.00		1.00					1.23	1.00		0.71	1.00
Incremental Delay, d2	0.8		3.2					260.6	0.3		2.9	0.5
Delay (s)	22.1		27.2					292.6	0.3		18.3	0.5
Level of Service	C		C					F	A		B	A
Approach Delay (s)		25.0			0.0			203.2			13.3	
Approach LOS		C			A			F			B	

Intersection Summary

HCM Average Control Delay	109.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	98.1%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1782	1506		1783	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1782	1506		1783	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	642	70	121	204	24	543	106	2344	187	373	1798	189
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)	698	76	132	222	26	590	115	2548	203	405	1954	205
RTOR Reduction (vph)	0	0	68	0	0	305	0	0	60	0	0	113
Lane Group Flow (vph)	0	774	64	0	248	285	115	2548	143	405	1954	92
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		18.3	17.7	10.9	24.0	24.0	17.7	30.8	24.0
Effective Green, g (s)		24.0	24.0		18.3	17.7	10.9	24.0	24.0	17.7	30.8	24.0
Actuated g/C Ratio		0.24	0.24		0.18	0.18	0.11	0.24	0.24	0.18	0.31	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		428	361		326	280	193	849	361	608	1566	669
v/s Ratio Prot		c0.43			c0.14	c0.18	0.06	c0.72		0.12	0.38	0.03
v/s Ratio Perm			0.04						0.09			
v/c Ratio		1.81	0.18		0.76	1.02	0.60	3.00	0.40	0.67	1.25	0.14
Uniform Delay, d1		38.0	30.2		38.8	41.1	42.5	38.0	31.9	38.4	34.6	29.9
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.12	0.89	1.13
Incremental Delay, d2		373.0	0.2		10.0	58.1	4.9	903.7	3.2	1.6	114.8	0.1
Delay (s)		411.0	30.4		48.8	99.3	47.3	941.7	35.1	44.6	145.5	33.8
Level of Service		F	C		D	F	D	F	D	D	F	C
Approach Delay (s)		355.5			84.3			841.6			120.6	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	434.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	149.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	664	1973	204	315	1808
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	722	2145	222	342	1965
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.78	0.61			0.61	
vC, conflicting volume	3832	1112			2386	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3044	544			2634	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			0	
cM capacity (veh/h)	0	285			95	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	722	1072	1072	222	342	983	983
Volume Left	0	0	0	0	342	0	0
Volume Right	722	0	0	222	0	0	0
cSH	285	1700	1700	1700	95	1700	1700
Volume to Capacity	2.53	0.63	0.63	0.13	3.60	0.58	0.58
Queue Length 95th (ft)	1480	0	0	0	Err	0	0
Control Delay (s)	728.2	0.0	0.0	0.0	1262.2	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	728.2	0.0			187.3		
Approach LOS	F						

Intersection Summary

Average Delay	177.5		
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.88		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1665		1770	1639		1770	3523		1770	3475	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1665		1770	1639		1770	3523		1770	3475	
Volume (vph)	146	51	122	38	23	92	64	1476	47	113	1316	182
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)	159	55	133	41	25	100	70	1607	51	123	1430	198
RTOR Reduction (vph)	0	75	0	0	91	0	0	2	0	0	8	0
Lane Group Flow (vph)	159	113	0	41	34	0	70	1656	0	123	1620	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.0	18.7		4.1	9.8		5.5	63.9		10.5	68.9	
Effective Green, g (s)	13.0	18.7		4.1	9.8		5.5	63.9		10.5	68.9	
Actuated g/C Ratio	0.11	0.17		0.04	0.09		0.05	0.56		0.09	0.61	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203	275		64	142		86	1989		164	2115	
v/s Ratio Prot	c0.09	c0.07		0.02	0.02		0.04	c0.47		c0.07	0.47	
v/s Ratio Perm												
v/c Ratio	0.78	0.41		0.64	0.24		0.81	0.83		0.75	0.77	
Uniform Delay, d1	48.7	42.3		53.8	48.2		53.3	20.3		50.1	16.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.7	1.0		19.8	0.9		42.3	4.3		17.4	2.7	
Delay (s)	66.4	43.3		73.7	49.1		95.7	24.5		67.5	19.0	
Level of Service	E	D		E	D		F	C		E	B	
Approach Delay (s)		53.9			55.1			27.4			22.4	
Approach LOS		D			E			C			C	

Intersection Summary

HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	113.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.9%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3478		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3478		1770	3539	1457
Volume (vph)	1286	967	657	290	776	384	707	769	63	439	1083	305
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)	1398	1051	714	315	843	417	768	836	68	477	1177	332
RTOR Reduction (vph)	0	0	226	0	0	168	0	6	0	0	0	212
Lane Group Flow (vph)	1398	1051	488	315	843	249	768	898	0	477	1177	120
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	835		212	849	350
v/s Ratio Prot	c0.79	0.30		0.18	c0.24		0.22	0.26		c0.27	c0.33	
v/s Ratio Perm			0.34			0.17						0.08
v/c Ratio	3.29	1.24	1.40	0.74	0.99	0.71	1.86	1.08		2.25	1.39	0.34
Uniform Delay, d1	38.0	38.0	38.0	35.1	37.9	34.8	44.0	38.0		44.0	38.0	31.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1036.3	117.1	194.4	6.8	29.0	6.7	398.0	53.4		577.4	181.2	2.7
Delay (s)	1074.3	155.1	232.4	42.0	66.9	41.5	442.0	91.4		621.4	219.2	34.1
Level of Service	F	F	F	D	E	D	F	F		F	F	C
Approach Delay (s)		578.8			55.2			252.6			284.8	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	346.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	156.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.94		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3326		3433	3402		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3326		3433	3402		1770	3539	1583	1770	3539	1583
Volume (vph)	376	1120	750	300	690	240	400	1076	90	350	1236	123
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)	409	1217	815	326	750	261	435	1170	98	380	1343	134
RTOR Reduction (vph)	0	96	0	0	29	0	0	0	53	0	0	62
Lane Group Flow (vph)	409	1936	0	326	982	0	435	1170	46	380	1343	72
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	15.0	43.0		9.0	37.0		18.0	36.0	36.0	16.0	34.0	34.0
Effective Green, g (s)	15.0	43.0		9.0	37.0		18.0	38.0	36.0	16.0	34.0	34.0
Actuated g/C Ratio	0.12	0.36		0.08	0.31		0.15	0.30	0.30	0.13	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	429	1192		257	1049		266	1062	475	236	1003	449
v/s Ratio Prot	0.12	c0.58		c0.09	0.29		c0.25	0.33		0.21	c0.38	
v/s Ratio Perm									0.03			0.05
v/c Ratio	0.95	1.62		1.27	0.94		1.64	1.10	0.10	1.61	1.34	0.16
Uniform Delay, d1	52.2	38.5		55.5	40.4		51.0	42.0	30.3	52.0	43.0	32.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	31.5	284.7		147.9	14.8		302.4	59.8	0.4	293.4	159.3	0.8
Delay (s)	83.7	323.2		203.4	55.1		353.4	101.8	30.7	345.4	202.3	33.0
Level of Service	F	F		F	E		F	F	C	F	F	C
Approach Delay (s)		283.0			91.2			162.0			219.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	203.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	133.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	2001	410	93	2106	380	66
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2175	446	101	2289	413	72
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	2175	446	101	2289	413	71
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	0.61	c0.13		c0.65	0.12	
v/s Ratio Perm		0.15	0.64			0.04
v/c Ratio	1.31	0.28	1.35	1.38	0.27	0.10
Uniform Delay, d1	26.5	0.4	26.5	26.5	17.2	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	143.0	0.1	221.6	173.3	0.4	0.3
Delay (s)	169.5	0.5	248.1	199.8	17.6	16.1
Level of Service	F	A	F	F	B	B
Approach Delay (s)	140.7			201.8	17.4	
Approach LOS	F			F	B	

Intersection Summary

HCM Average Control Delay	156.4	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	81.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.98		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98			0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3466		1770	3446			1724		1681	1691	1458
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3466		1770	3446			1724		1681	1691	1458
Volume (vph)	571	1379	117	30	1612	217	60	15	20	575	20	563
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)	621	1499	127	33	1752	236	65	16	22	625	22	612
RTOR Reduction (vph)	0	6	0	0	10	0	0	10	0	0	0	436
Lane Group Flow (vph)	621	1620	0	33	1978	0	0	93	0	315	332	176
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	21.9	48.5		2.3	28.9			16.0		16.0	16.0	16.0
Effective Green, g (s)	21.9	48.5		2.3	28.9			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.22	0.49		0.02	0.29			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	761	1701		41	1008			279		272	274	236
v/s Ratio Prot	c0.18	c0.47		0.02	c0.57			c0.05		0.19	c0.20	
v/s Ratio Perm												0.12
v/c Ratio	0.82	0.95		0.80	1.96			0.33		1.16	1.21	0.75
Uniform Delay, d1	36.5	24.0		48.0	35.0			36.7		41.4	41.4	39.5
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	6.8	12.3		69.0	436.7			3.2		104.2	124.1	19.2
Delay (s)	43.3	36.4		117.0	471.6			39.9		145.6	165.5	58.7
Level of Service	D	D		F	F			D		F	F	E
Approach Delay (s)		38.3			465.8			39.9			108.6	
Approach LOS		D			F			D			F	

Intersection Summary

HCM Average Control Delay	207.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			0.95		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3520		1770	3333			1590		1681	1712	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3520		1770	3333			1590		1681	1712	1583
Volume (vph)	263	1728	35	250	1201	337	32	41	155	378	76	626
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)	286	1878	38	272	1305	366	35	45	168	411	83	680
RTOR Reduction (vph)	0	2	0	0	26	0	0	76	0	0	0	380
Lane Group Flow (vph)	286	1914	0	272	1645	0	0	172	0	241	253	300
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.46		0.06	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	1619		106	1467			254		269	274	127
v/s Ratio Prot	0.16	c0.54		0.15	0.49			c0.11		0.14	c0.15	c0.19
v/s Ratio Perm												
v/c Ratio	2.01	1.18		2.57	1.12			0.68		0.90	0.92	2.36
Uniform Delay, d1	46.0	27.0		47.0	28.0			39.6		41.2	41.4	46.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	480.3	88.8		731.5	64.3			13.7		33.6	37.8	636.8
Delay (s)	526.3	115.8		778.5	92.3			53.3		74.7	79.2	682.8
Level of Service	F	F		F	F			D		E	E	F
Approach Delay (s)		169.1			188.4			53.3			427.9	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	225.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✣			✣	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3524		1770	3470			1673			1718	
Flt Permitted	0.95	1.00		0.95	1.00			0.94			0.75	
Satd. Flow (perm)	1770	3524		1770	3470			1583			1318	
Volume (vph)	60	1338	40	110	605	90	40	40	190	60	20	60
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)	65	1454	43	120	658	98	43	43	207	65	22	65
RTOR Reduction (vph)	0	2	0	0	11	0	0	83	0	0	26	0
Lane Group Flow (vph)	65	1495	0	120	745	0	0	210	0	0	126	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.4	39.3		9.8	41.7			29.2			29.2	
Effective Green, g (s)	7.4	39.3		9.8	41.7			29.2			29.2	
Actuated g/C Ratio	0.08	0.44		0.11	0.46			0.32			0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	145	1534		192	1602			512			426	
v/s Ratio Prot	0.04	c0.42		c0.07	0.21							
v/s Ratio Perm								c0.13			0.10	
v/c Ratio	0.45	0.97		0.62	0.47			0.41			0.30	
Uniform Delay, d1	39.5	25.0		38.5	16.7			23.8			22.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.2	17.2		6.2	0.2			2.4			1.8	
Delay (s)	41.7	42.2		44.7	16.9			26.3			24.6	
Level of Service	D	D		D	B			C			C	
Approach Delay (s)		42.2			20.7			26.3			24.6	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↑↱	↱	↰↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	143	780	1470	311	546	112
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	155	848	1598	338	593	122
RTOR Reduction (vph)	0	0	0	119	0	76
Lane Group Flow (vph)	155	848	1598	219	593	46
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	14.5	58.6	40.1	40.1	40.1	40.1
Effective Green, g (s)	14.5	58.6	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.14	0.55	0.38	0.38	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	241	1944	1274	542	1290	595
v/s Ratio Prot	c0.09	0.24	c0.47	0.15	c0.17	0.03
v/s Ratio Perm						
v/c Ratio	0.64	0.44	1.25	0.40	0.46	0.08
Uniform Delay, d1	43.7	14.3	33.3	24.5	25.1	21.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.2	121.0	0.5	1.2	0.3
Delay (s)	49.4	14.4	154.3	25.0	26.3	21.7
Level of Service	D	B	F	C	C	C
Approach Delay (s)		19.8	131.8		25.5	
Approach LOS		B	F		C	

Intersection Summary

HCM Average Control Delay	80.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Year 2030+CSR-AM

INTERSECTION

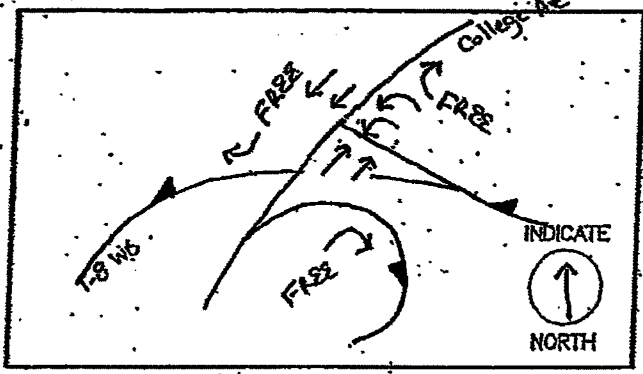
Signalized Intersection
CAPACITY ANALYSIS

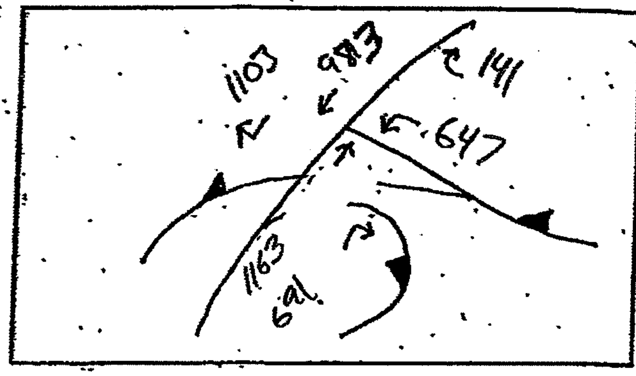
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

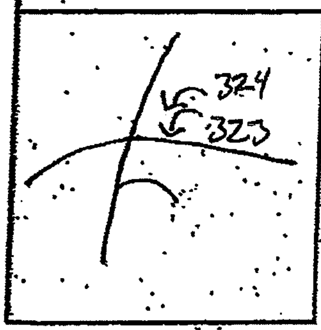
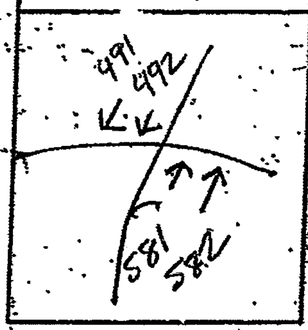
TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
324	582		

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
906

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

2030+ CSR- PM

INTERSECTION

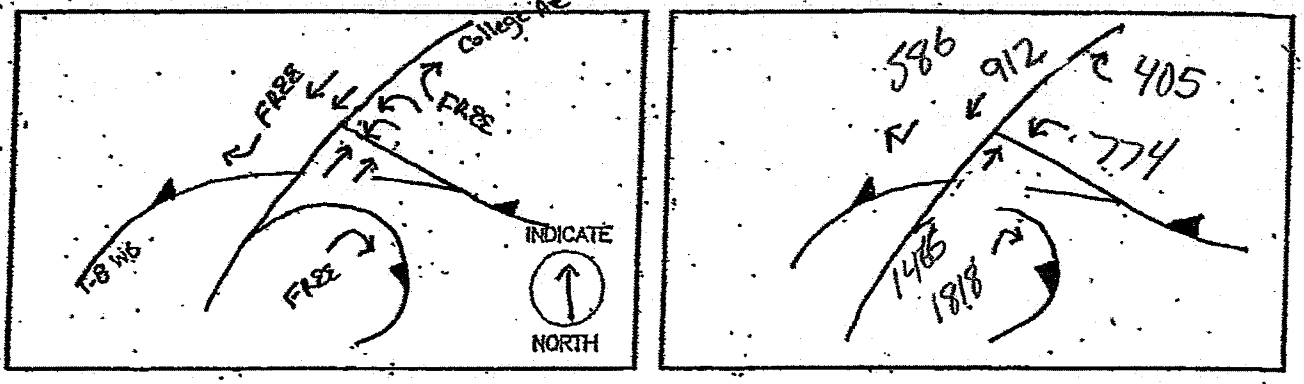
Signalized Intersection
CAPACITY ANALYSIS

INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

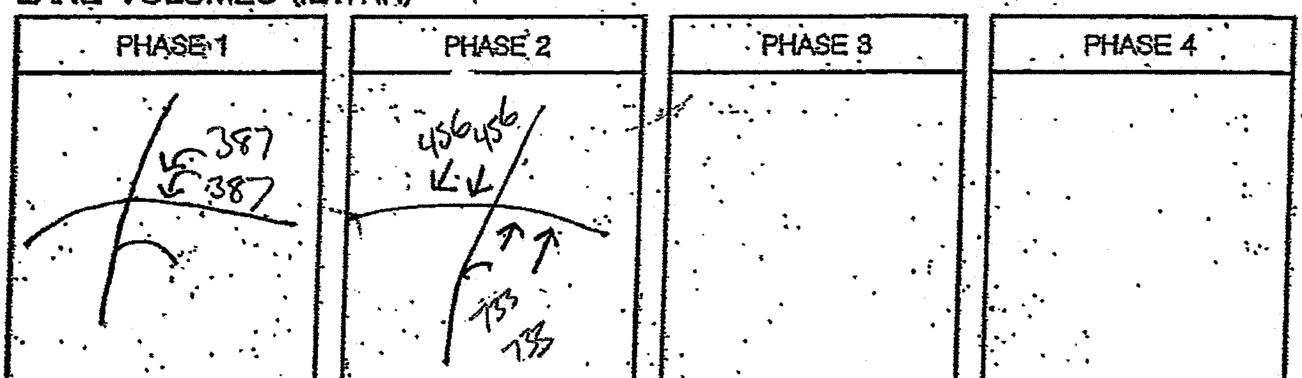
BY CL DATE 5/27/09

TIME ______ AM / PM

DIAGRAM AND TRAFFIC FLOWS:



LANE VOLUMES (ILV/HR)



CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
387	733		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1120

- [x] < 1200 ILV/HR.
- [ ] > 1200 BUT < 1500 ILV/HR.
- [ ] > 1500 ILV/HR (CAPACITY)

REMARKS:

Year 2030+CSR-AM

INTERSECTION

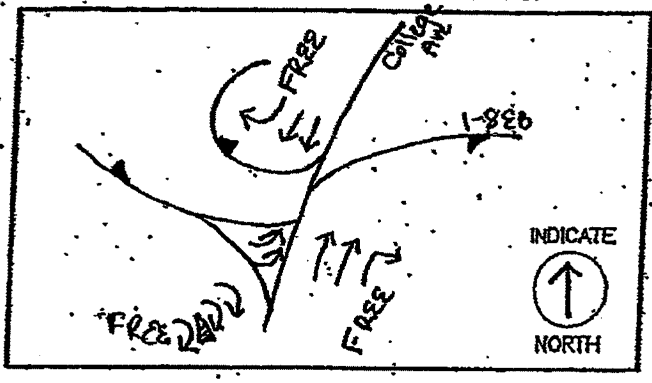
Signalized Intersection
CAPACITY ANALYSIS

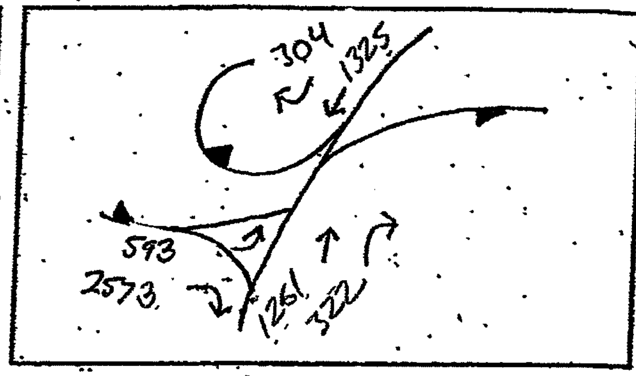
INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/21/09

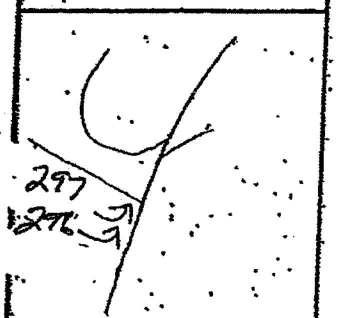
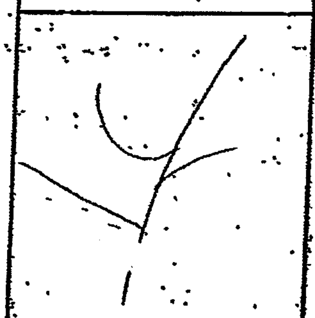
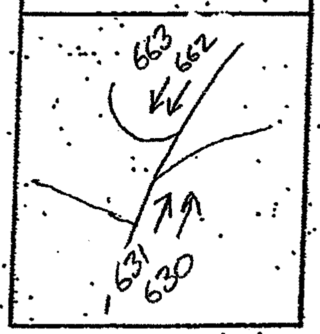
TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
297		662	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
959

- [x] < 1200 ILV/HR.
- [ ] > 1200 BUT < 1500 ILV/HR.
- [ ] > 1500 ILV/HR (CAPACITY)

REMARKS:

2030+CSR-PM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

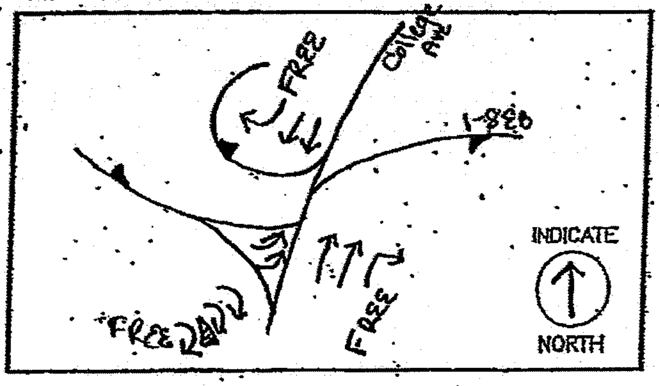
INTERSECTION College Ave / I-8 EB Ramps

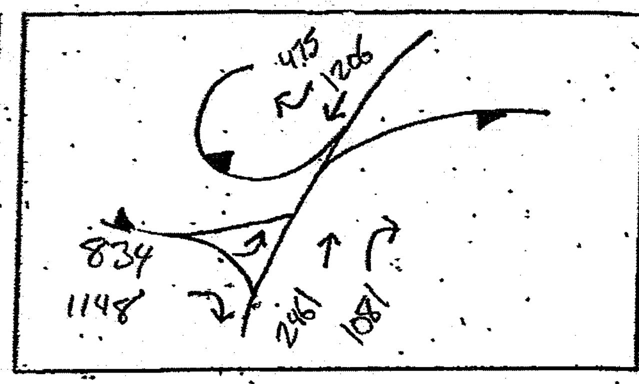
DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

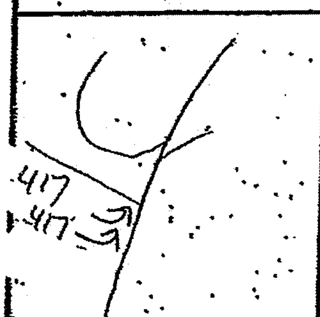
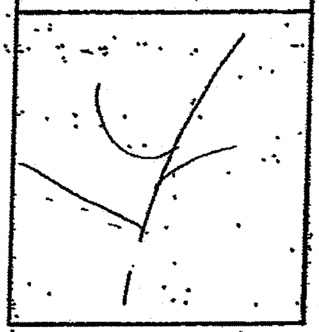
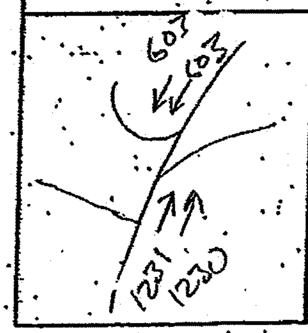
TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
417		1231	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1648

☐ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☒ > 1500 ILV/HR (CAPACITY).

REMARKS:

LONG-TERM (2030) + UNIVERSITY SERVING RETAIL + STUDENT HOUSING OPERATIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	646	0	141	0	1170	699	0	973	1103
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	702	0	153	0	1272	760	0	1058	1199
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	702	0	153	0	1272	760	0	1058	1199
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				24.9		100.0		67.1	100.0		67.1	100.0
Effective Green, g (s)				24.9		100.0		67.1	100.0		67.1	100.0
Actuated g/C Ratio				0.25		1.00		0.67	1.00		0.67	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				823		1555		2375	1536		2375	1536
v/s Ratio Prot								0.36			0.30	
v/s Ratio Perm				0.21		0.10			0.49			c0.78
v/c Ratio				0.85		0.10		0.54	0.49		0.45	0.78
Uniform Delay, d1				35.8		0.0		8.4	0.0		7.7	0.0
Progression Factor				1.00		1.00		1.03	1.00		1.00	1.00
Incremental Delay, d2				8.5		0.1		0.6	0.8		0.6	4.0
Delay (s)				44.3		0.1		9.2	0.8		8.3	4.0
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			36.4			6.1			6.0	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3505	1536		3505	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3505	1536		3505	1536
Volume (vph)	593	0	2574	0	0	0	0	1277	328	0	1315	304
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)	645	0	2798	0	0	0	0	1388	357	0	1429	330
RTOR Reduction (vph)	0	0	15	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	645	0	2783	0	0	0	0	1388	357	0	1429	330
Confl. Peds. (#/hr)	20		20						20			20
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	3%	2%
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1553		1614					1577	1536		1577	1536
v/s Ratio Prot								0.40			c0.41	
v/s Ratio Perm	0.20		c0.81						0.23			0.21
v/c Ratio	0.42		1.72					0.88	0.23		0.91	0.21
Uniform Delay, d1	17.5		26.5					25.0	0.0		25.5	0.0
Progression Factor	1.00		1.00					1.20	1.00		0.76	1.00
Incremental Delay, d2	0.2		328.6					0.7	0.0		7.5	0.3
Delay (s)	17.6		355.1					30.9	0.0		26.9	0.3
Level of Service	B		F					C	A		C	A
Approach Delay (s)		291.9			0.0			24.6			21.9	
Approach LOS		F			A			C			C	

Intersection Summary

HCM Average Control Delay	156.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1799	1506		1821	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1799	1506		1821	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	103	41	70	129	149	220	228	1282	184	747	1843	1297
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)	112	45	76	140	162	239	248	1393	200	812	2003	1410
RTOR Reduction (vph)	0	0	58	0	0	201	0	0	108	0	0	761
Lane Group Flow (vph)	0	157	18	0	302	38	248	1393	92	812	2003	649
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		20.3	15.7	15.7	24.0	24.0	15.7	24.0	24.0
Effective Green, g (s)		24.0	24.0		20.3	15.7	15.7	24.0	24.0	15.7	24.0	24.0
Actuated g/C Ratio		0.24	0.24		0.20	0.16	0.16	0.24	0.24	0.16	0.24	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		432	361		370	249	278	849	361	539	1220	669
v/s Ratio Prot		0.09			c0.17	0.02	0.14	0.39		c0.24	c0.39	c0.23
v/s Ratio Perm			0.01						0.06			
v/c Ratio		0.36	0.05		0.82	0.15	0.89	1.64	0.26	1.51	1.64	0.97
Uniform Delay, d1		31.6	29.2		38.1	36.4	41.3	38.0	30.8	42.1	38.0	37.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.89	0.98	1.75
Incremental Delay, d2		0.5	0.1		13.0	0.3	28.0	293.7	1.7	228.8	289.2	5.4
Delay (s)		32.2	29.3		51.1	36.7	69.3	331.7	32.5	266.5	326.4	71.2
Level of Service		C	C		D	D	E	F	C	F	F	E
Approach Delay (s)		31.2			44.7			263.8			229.7	
Approach LOS		C			D			F			F	

Intersection Summary

HCM Average Control Delay	217.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	128	1567	200	580	1462
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	139	1703	217	630	1589
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.85	0.77			0.77	
vC, conflicting volume	3779	892			1941	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3286	560			1923	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	60			0	
cM capacity (veh/h)	0	351			230	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	139	852	852	217	630	795	795
Volume Left	0	0	0	0	630	0	0
Volume Right	139	0	0	217	0	0	0
cSH	351	1700	1700	1700	230	1700	1700
Volume to Capacity	0.40	0.50	0.50	0.13	2.75	0.47	0.47
Queue Length 95th (ft)	46	0	0	0	1361	0	0
Control Delay (s)	21.8	0.0	0.0	0.0	830.6	0.0	0.0
Lane LOS	C				F		
Approach Delay (s)	21.8	0.0			235.9		
Approach LOS	C						

Intersection Summary

Average Delay	123.1		
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

Plaza Linda Verde Mixed-Use
6/22/2009

5: Lindo Paseo & College Ave
2030 + USR SH AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.88		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1650		1770	1642		1770	3533		1770	3420	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1650		1770	1642		1770	3533		1770	3420	
Volume (vph)	69	19	62	14	9	35	101	1366	16	38	906	263
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)	75	21	67	15	10	38	110	1485	17	41	985	286
RTOR Reduction (vph)	0	60	0	0	36	0	0	0	0	0	15	0
Lane Group Flow (vph)	75	28	0	15	12	0	110	1502	0	41	1256	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	8.5	11.1		2.7	5.3		10.4	74.8		5.0	69.4	
Effective Green, g (s)	8.5	11.1		2.7	5.3		10.4	74.8		5.0	69.4	
Actuated g/C Ratio	0.08	0.10		0.02	0.05		0.09	0.68		0.05	0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	137	167		44	79		168	2411		81	2166	
v/s Ratio Prot	c0.04	c0.02		0.01	0.01		c0.06	c0.43		0.02	0.37	
v/s Ratio Perm												
v/c Ratio	0.55	0.17		0.34	0.15		0.65	0.62		0.51	0.58	
Uniform Delay, d1	48.7	45.0		52.6	50.0		47.9	9.6		51.1	11.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.4	0.5		4.6	0.9		8.8	1.2		4.9	1.1	
Delay (s)	53.1	45.5		57.2	50.9		56.7	10.8		56.0	12.8	
Level of Service	D	D		E	D		E	B		E	B	
Approach Delay (s)		49.0			52.4			14.0			14.1	
Approach LOS		D			D			B			B	

Intersection Summary

HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	109.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/22/2009

6: Montezuma Rd & College Ave
2030 + USR SH AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3430		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3430		1770	3539	1457
Volume (vph)	440	406	158	58	740	305	679	1093	170	241	551	274
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)	478	441	172	63	804	332	738	1188	185	262	599	298
RTOR Reduction (vph)	0	0	131	0	0	189	0	12	0	0	0	226
Lane Group Flow (vph)	478	441	41	63	804	143	738	1361	0	262	599	72
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	823		212	849	350
v/s Ratio Prot	c0.27	0.12		0.04	c0.23		c0.21	c0.40		0.15	0.17	
v/s Ratio Perm			0.03			0.10						0.05
v/c Ratio	1.12	0.52	0.12	0.15	0.95	0.41	1.79	1.65		1.24	0.71	0.20
Uniform Delay, d1	38.0	33.0	29.7	29.9	37.4	32.0	44.0	38.0		44.0	34.8	30.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	82.2	0.5	0.2	0.2	19.0	0.8	365.7	299.5		139.9	4.9	1.3
Delay (s)	120.2	33.5	29.9	30.1	56.4	32.8	409.7	337.5		183.9	39.7	31.7
Level of Service	F	C	C	C	E	C	F	F		F	D	C
Approach Delay (s)		70.9			48.5			362.7			70.2	
Approach LOS		E			D			F			E	

Intersection Summary

HCM Average Control Delay	178.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.96		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3387		3433	3412		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3387		3433	3412		1770	3539	1583	1770	3539	1583
Volume (vph)	280	450	180	60	950	300	680	1550	270	180	626	224
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)	304	489	196	65	1033	326	739	1685	293	196	680	243
RTOR Reduction (vph)	0	35	0	0	25	0	0	0	110	0	0	79
Lane Group Flow (vph)	304	650	0	65	1334	0	739	1685	183	196	680	164
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	8.0	41.8		4.0	37.8		37.0	48.0	48.0	11.0	22.0	22.0
Effective Green, g (s)	8.0	41.8		4.0	37.8		37.0	48.0	48.0	11.0	22.0	22.0
Actuated g/C Ratio	0.07	0.35		0.03	0.31		0.31	0.40	0.40	0.09	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	1172		114	1068		542	1406	629	161	645	288
v/s Ratio Prot	c0.09	c0.19		0.02	c0.39		c0.42	c0.48		0.11	0.19	
v/s Ratio Perm									0.12			0.10
v/c Ratio	1.34	0.55		0.57	1.25		1.36	1.20	0.29	1.22	1.05	0.57
Uniform Delay, d1	56.4	32.0		57.6	41.5		41.9	36.4	24.8	54.9	49.4	45.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	179.3	0.6		6.7	120.1		175.2	96.5	1.2	141.2	50.6	7.9
Delay (s)	235.7	32.5		64.3	161.6		217.1	132.9	26.0	196.1	100.0	53.0
Level of Service	F	C		E	F		F	F	C	F	F	D
Approach Delay (s)		95.0			157.1			144.2			106.6	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	132.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1644	320	71	1377	1150	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1787	348	77	1497	1250	120
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1787	348	77	1497	1250	117
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	c0.50	0.10		0.42	c0.36	
v/s Ratio Perm		0.12	0.49			0.07
v/c Ratio	1.07	0.22	1.03	0.90	0.81	0.16
Uniform Delay, d1	26.5	0.4	26.5	24.3	23.8	16.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	45.1	0.1	111.5	7.1	4.7	0.5
Delay (s)	71.6	0.5	138.0	31.4	28.5	16.8
Level of Service	E	A	F	C	C	B
Approach Delay (s)	60.0			36.6	27.4	
Approach LOS	E			D	C	

Intersection Summary

HCM Average Control Delay	44.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.2%	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	↰↰	↑↑↱		↰	↑↑↱			✢		↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3501		1770	3351			1750		1681	1696	1455
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3501		1770	3351			1750		1681	1696	1455
Volume (vph)	1114	614	26	20	1196	375	50	15	10	143	10	202
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)	1211	667	28	22	1300	408	54	16	11	155	11	220
RTOR Reduction (vph)	0	3	0	0	29	0	0	6	0	0	0	186
Lane Group Flow (vph)	1211	692	0	22	1679	0	0	75	0	81	85	34
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	25.0	52.8		1.6	29.4			16.0		16.0	16.0	16.0
Effective Green, g (s)	25.0	52.8		1.6	29.4			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.24	0.52		0.02	0.29			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	838	1805		28	962			273		263	265	227
v/s Ratio Prot	c0.35	0.20		0.01	c0.50			c0.04		0.05	c0.05	
v/s Ratio Perm												0.02
v/c Ratio	1.45	0.38		0.79	1.75			0.28		0.31	0.32	0.15
Uniform Delay, d1	38.7	15.0		50.2	36.5			38.1		38.3	38.4	37.3
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	207.0	0.1		82.7	339.6			2.5		3.0	3.2	1.4
Delay (s)	245.7	15.1		133.0	376.1			40.6		41.3	41.5	38.7
Level of Service	F	B		F	F			D		D	D	D
Approach Delay (s)		161.6			373.0			40.6			39.9	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM Average Control Delay	236.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	102.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✢		↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.95		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3495		1770	3379			1606		1681	1713	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3495		1770	3379			1606		1681	1713	1583
Volume (vph)	189	774	38	99	1323	271	34	29	104	126	27	195
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)	205	841	41	108	1438	295	37	32	113	137	29	212
RTOR Reduction (vph)	0	3	0	0	17	0	0	59	0	0	0	195
Lane Group Flow (vph)	205	879	0	108	1716	0	0	123	0	81	85	17
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.46		0.06	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	1608		106	1487			257		269	274	127
v/s Ratio Prot	c0.12	0.25		0.06	c0.51			c0.08		0.05	c0.05	0.01
v/s Ratio Perm												
v/c Ratio	1.44	0.55		1.02	1.15			0.48		0.30	0.31	0.13
Uniform Delay, d1	46.0	19.5		47.0	28.0			38.2		37.1	37.1	42.8
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	234.7	0.4		92.6	77.3			6.3		2.8	2.9	0.5
Delay (s)	280.7	19.9		139.6	105.3			44.6		39.9	40.0	43.3
Level of Service	F	B		F	F			D		D	D	D
Approach Delay (s)		69.1			107.3			44.5			41.8	
Approach LOS		E			F			D			D	

Intersection Summary			
HCM Average Control Delay	85.0	HCM Level of Service	F
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/22/2009

11: Montezuma Rd & Catoctin Drive
2030 + USR SH AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.94			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3523		1770	3509			1713			1700	
Flt Permitted	0.95	1.00		0.95	1.00			0.84			0.88	
Satd. Flow (perm)	1770	3523		1770	3509			1472			1529	
Volume (vph)	30	623	20	80	1330	80	40	10	40	50	20	80
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)	33	677	22	87	1446	87	43	11	43	54	22	87
RTOR Reduction (vph)	0	2	0	0	4	0	0	27	0	0	39	0
Lane Group Flow (vph)	33	697	0	87	1529	0	0	70	0	0	124	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	4.6	38.6		8.2	42.2			29.1			29.1	
Effective Green, g (s)	4.6	38.6		8.2	42.2			29.1			29.1	
Actuated g/C Ratio	0.05	0.44		0.09	0.48			0.33			0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	93	1547		165	1685			487			506	
v/s Ratio Prot	0.02	0.20		c0.05	c0.44							
v/s Ratio Perm								0.05			c0.08	
v/c Ratio	0.35	0.45		0.53	0.91			0.14			0.25	
Uniform Delay, d1	40.2	17.2		38.0	21.0			20.7			21.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.3	0.2		3.0	7.5			0.6			1.2	
Delay (s)	42.5	17.4		41.0	28.5			21.3			22.6	
Level of Service	D	B		D	C			C			C	
Approach Delay (s)		18.6			29.2			21.3			22.6	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	87.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/22/2009

12: El Cajon Blvd & Montezuma Road
2030 + USR SH AM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	200	1060	1390	700	186	84
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1152	1511	761	202	91
RTOR Reduction (vph)	0	0	0	290	0	58
Lane Group Flow (vph)	217	1152	1511	471	202	33
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	18.6	62.7	40.1	40.1	40.1	40.1
Effective Green, g (s)	18.6	62.7	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.17	0.57	0.36	0.36	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	297	2003	1227	522	1242	573
v/s Ratio Prot	c0.12	0.33	c0.45	0.33	c0.06	0.02
v/s Ratio Perm						
v/c Ratio	0.73	0.58	1.23	0.90	0.16	0.06
Uniform Delay, d1	43.7	15.5	35.3	33.5	24.0	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.9	0.4	111.5	18.8	0.3	0.2
Delay (s)	52.6	15.9	146.8	52.3	24.2	23.2
Level of Service	D	B	F	D	C	C
Approach Delay (s)		21.7	115.2		23.9	
Approach LOS		C	F		C	

Intersection Summary

HCM Average Control Delay	75.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/22/2009

1: I-8WB Ramp & College Ave
2030 + USR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	780	0	405	0	1452	1815	0	902	586
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	848	0	440	0	1578	1973	0	980	637
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	848	0	440	0	1578	1973	0	980	637
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				30.0		100.0		62.0	100.0		62.0	100.0
Effective Green, g (s)				30.0		100.0		62.0	100.0		62.0	100.0
Actuated g/C Ratio				0.30		1.00		0.62	1.00		0.62	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				991		1555		2194	1536		2194	1536
v/s Ratio Prot								0.45			0.28	
v/s Ratio Perm				0.26		0.28			c1.28			0.41
v/c Ratio				0.86		0.28		0.72	1.28		0.45	0.41
Uniform Delay, d1				33.0		0.0		13.0	50.0		10.0	0.0
Progression Factor				1.00		1.00		0.68	1.00		1.00	1.00
Incremental Delay, d2				7.4		0.5		0.2	128.5		0.7	0.8
Delay (s)				40.3		0.5		9.1	178.5		10.6	0.8
Level of Service				D		A		A	F		B	A
Approach Delay (s)		0.0			26.7			103.2			6.8	
Approach LOS		A			C			F			A	

Intersection Summary

HCM Average Control Delay	63.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Plaza Linda Verde Mixed-Use
6/22/2009

2: I-8EB Ramp & College Ave
2030 + USR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1521		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1521		3539	1536
Volume (vph)	834	0	1156	0	0	0	0	2434	1079	0	1206	475
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)	907	0	1257	0	0	0	0	2646	1173	0	1311	516
RTOR Reduction (vph)	0	0	23	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	907	0	1234	0	0	0	0	2646	1173	0	1311	516
Confl. Peds. (#/hr)	20		20						20			20
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.5		44.5					47.5	100.0		47.5	100.0
Effective Green, g (s)	44.5		44.5					47.5	100.0		47.5	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1470		1528					1681	1521		1681	1536
v/s Ratio Prot								c0.75			0.37	
v/s Ratio Perm	0.27		0.36						c0.77			0.34
v/c Ratio	0.62		0.81					1.57	0.77		0.78	0.34
Uniform Delay, d1	21.2		24.0					26.2	0.0		21.9	0.0
Progression Factor	1.00		1.00					1.22	1.00		0.71	1.00
Incremental Delay, d2	0.8		3.2					258.6	0.4		2.8	0.5
Delay (s)	22.0		27.3					290.6	0.4		18.3	0.5
Level of Service	C		C					F	A		B	A
Approach Delay (s)		25.1			0.0			201.5			13.2	
Approach LOS		C			A			F			B	

Intersection Summary

HCM Average Control Delay	108.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	97.7%	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		↰↑	↱		↰↑	↱	↰	↑↑	↱	↰↰	↑↑↑	↱↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1782	1506		1783	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1782	1506		1783	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	642	70	121	203	24	543	106	2329	184	373	1800	189
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)	698	76	132	221	26	590	115	2532	200	405	1957	205
RTOR Reduction (vph)	0	0	68	0	0	305	0	0	59	0	0	113
Lane Group Flow (vph)	0	774	64	0	247	285	115	2532	141	405	1957	92
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		18.3	17.7	10.9	24.0	24.0	17.7	30.8	24.0
Effective Green, g (s)		24.0	24.0		18.3	17.7	10.9	24.0	24.0	17.7	30.8	24.0
Actuated g/C Ratio		0.24	0.24		0.18	0.18	0.11	0.24	0.24	0.18	0.31	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		428	361		326	280	193	849	361	608	1566	669
v/s Ratio Prot		c0.43			c0.14	c0.18	0.06	c0.72		0.12	0.38	0.03
v/s Ratio Perm			0.04						0.09			
v/c Ratio		1.81	0.18		0.76	1.02	0.60	2.98	0.39	0.67	1.25	0.14
Uniform Delay, d1		38.0	30.2		38.7	41.1	42.5	38.0	31.9	38.4	34.6	29.9
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.12	0.89	1.14
Incremental Delay, d2		373.0	0.2		9.7	58.1	4.9	895.2	3.1	1.6	115.6	0.1
Delay (s)		411.0	30.4		48.4	99.3	47.3	933.2	35.0	44.5	146.3	34.0
Level of Service		F	C		D	F	D	F	D	D	F	C
Approach Delay (s)		355.5			84.3			834.3			121.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	430.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	149.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱	↰	↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	664	1955	204	315	1809
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	722	2125	222	342	1966
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.83	0.67			0.67	
vC, conflicting volume	3813	1102			2367	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2987	656			2549	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			0	
cM capacity (veh/h)	0	263			109	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	722	1062	1062	222	342	983	983
Volume Left	0	0	0	0	342	0	0
Volume Right	722	0	0	222	0	0	0
cSH	263	1700	1700	1700	109	1700	1700
Volume to Capacity	2.74	0.63	0.63	0.13	3.14	0.58	0.58
Queue Length 95th (ft)	1542	0	0	0	Err	0	0
Control Delay (s)	822.2	0.0	0.0	0.0	1046.9	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	822.2	0.0			155.3		
Approach LOS	F						

Intersection Summary

Average Delay	177.0		
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		

5: Lindo Paseo & College Ave

2030 + USR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↑↱		↰	↑↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.88		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1664		1770	1641		1770	3531		1770	3467	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1664		1770	1641		1770	3531		1770	3467	
Volume (vph)	176	51	124	19	12	46	103	1478	24	57	1316	208
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)	191	55	135	21	13	50	112	1607	26	62	1430	226
RTOR Reduction (vph)	0	77	0	0	47	0	0	1	0	0	9	0
Lane Group Flow (vph)	191	113	0	21	16	0	112	1632	0	62	1647	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	14.2	19.7		1.9	7.4		9.5	69.1		4.7	64.3	
Effective Green, g (s)	14.2	19.7		1.9	7.4		9.5	69.1		4.7	64.3	
Actuated g/C Ratio	0.13	0.18		0.02	0.07		0.09	0.62		0.04	0.58	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	226	294		30	109		151	2190		75	2001	
v/s Ratio Prot	c0.11	c0.07		0.01	0.01		c0.06	0.46		0.04	c0.47	
v/s Ratio Perm												
v/c Ratio	0.85	0.38		0.70	0.15		0.74	0.75		0.83	0.82	
Uniform Delay, d1	47.5	40.5		54.5	49.0		49.8	14.9		52.9	19.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.0	0.8		52.7	0.6		17.7	2.4		49.8	4.0	
Delay (s)	71.6	41.3		107.2	49.7		67.5	17.3		102.7	22.9	
Level of Service	E	D		F	D		E	B		F	C	
Approach Delay (s)		56.5			64.1			20.5			25.8	
Approach LOS		E			E			C			C	

Intersection Summary

HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	111.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

6: Montezuma Rd & College Ave

2030 + USR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰↰	↑↑↱		↰	↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3479		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3479		1770	3539	1457
Volume (vph)	1282	967	657	290	776	385	707	772	63	432	1076	290
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)	1393	1051	714	315	843	418	768	839	68	470	1170	315
RTOR Reduction (vph)	0	0	226	0	0	168	0	6	0	0	0	202
Lane Group Flow (vph)	1393	1051	488	315	843	250	768	901	0	470	1170	113
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	835		212	849	350
v/s Ratio Prot	c0.79	0.30		0.18	c0.24		0.22	0.26		c0.27	c0.33	
v/s Ratio Perm			0.34			0.17						0.08
v/c Ratio	3.28	1.24	1.40	0.74	0.99	0.71	1.86	1.08		2.22	1.38	0.32
Uniform Delay, d1	38.0	38.0	38.0	35.1	37.9	34.9	44.0	38.0		44.0	38.0	31.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1031.0	117.1	194.4	6.8	29.0	6.8	398.0	54.7		562.7	177.5	2.4
Delay (s)	1069.0	155.1	232.4	42.0	66.9	41.6	442.0	92.7		606.7	215.5	33.7
Level of Service	F	F	F	D	E	D	F	F		F	F	C
Approach Delay (s)		575.7			56.2			252.9			280.3	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	343.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	155.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.94		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3326		3433	3402		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3326		3433	3402		1770	3539	1583	1770	3539	1583
Volume (vph)	375	1120	750	300	690	240	400	1079	90	350	1233	120
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)	408	1217	815	326	750	261	435	1173	98	380	1340	130
RTOR Reduction (vph)	0	96	0	0	29	0	0	0	52	0	0	61
Lane Group Flow (vph)	408	1936	0	326	982	0	435	1173	46	380	1340	69
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	15.0	45.0		8.0	38.0		18.0	35.0	35.0	16.0	33.0	33.0
Effective Green, g (s)	15.0	45.0		8.0	38.0		18.0	35.0	35.0	16.0	33.0	33.0
Actuated g/C Ratio	0.12	0.38		0.07	0.32		0.15	0.29	0.29	0.13	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	429	1247		229	1077		266	1032	462	236	973	435
v/s Ratio Prot	0.12	c0.58		c0.09	0.29		c0.25	0.33		0.21	c0.38	
v/s Ratio Perm									0.03			0.04
v/c Ratio	0.95	1.55		1.42	0.91		1.64	1.14	0.10	1.61	1.38	0.16
Uniform Delay, d1	52.1	37.5		56.0	39.4		51.0	42.5	31.0	52.0	43.5	33.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	31.1	252.5		214.1	11.5		302.4	73.6	0.4	293.4	176.2	0.8
Delay (s)	83.2	290.0		270.1	50.9		353.4	116.1	31.4	345.4	219.7	33.8
Level of Service	F	F		F	D		F	F	C	F	F	C
Approach Delay (s)		255.5			104.3			171.7			232.5	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	202.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	133.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	2000	410	90	2109	380	62
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2174	446	98	2292	413	67
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	2174	446	98	2292	413	66
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	0.61	c0.13		c0.65	0.12	
v/s Ratio Perm		0.15	0.62			0.04
v/c Ratio	1.31	0.28	1.31	1.38	0.27	0.09
Uniform Delay, d1	26.5	0.4	26.5	26.5	17.2	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	142.7	0.1	206.4	174.1	0.4	0.3
Delay (s)	169.2	0.5	232.9	200.6	17.6	16.0
Level of Service	F	A	F	F	B	B
Approach Delay (s)	140.6			201.9	17.4	
Approach LOS	F			F	B	

Intersection Summary

HCM Average Control Delay	156.5	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

9: Montezuma Rd & 55th St
2030 + USR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.98		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98			0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3465		1770	3445			1724		1681	1691	1458
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3465		1770	3445			1724		1681	1691	1458
Volume (vph)	571	1374	117	30	1597	217	60	15	20	575	20	563
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)	621	1493	127	33	1736	236	65	16	22	625	22	612
RTOR Reduction (vph)	0	6	0	0	11	0	0	10	0	0	0	436
Lane Group Flow (vph)	621	1614	0	33	1961	0	0	93	0	315	332	176
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	21.9	48.5		2.3	28.9			16.0		16.0	16.0	16.0
Effective Green, g (s)	21.9	48.5		2.3	28.9			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.22	0.49		0.02	0.29			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	761	1701		41	1008			279		272	274	236
v/s Ratio Prot	c0.18	c0.47		0.02	c0.57			c0.05		0.19	c0.20	
v/s Ratio Perm												0.12
v/c Ratio	0.82	0.95		0.80	1.95			0.33		1.16	1.21	0.75
Uniform Delay, d1	36.5	24.0		48.0	35.0			36.7		41.4	41.4	39.5
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	6.8	11.7		69.0	429.3			3.2		104.2	124.1	19.2
Delay (s)	43.3	35.7		117.0	464.2			39.9		145.6	165.5	58.7
Level of Service	D	D		F	F			D		F	F	E
Approach Delay (s)		37.8			458.5			39.9			108.6	
Approach LOS		D			F			D			F	

Intersection Summary

HCM Average Control Delay	204.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	112.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

10: Montezuma Rd & Campanile Dr
2030 + USR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			0.98		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3520		1770	3332			1589		1681	1712	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3520		1770	3332			1589		1681	1712	1583
Volume (vph)	259	1727	35	248	1188	337	32	40	153	378	75	623
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	282	1877	38	270	1291	366	35	43	166	411	82	677
RTOR Reduction (vph)	0	2	0	0	26	0	0	76	0	0	0	380
Lane Group Flow (vph)	282	1913	0	270	1631	0	0	168	0	240	253	297
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.46		0.06	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	1619		106	1466			254		269	274	127
v/s Ratio Prot	0.16	c0.54		0.15	0.49			c0.11		0.14	c0.15	c0.19
v/s Ratio Perm												
v/c Ratio	1.99	1.18		2.55	1.11			0.66		0.89	0.92	2.34
Uniform Delay, d1	46.0	27.0		47.0	28.0			39.4		41.2	41.4	46.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	467.9	88.5		723.1	60.8			12.7		33.0	37.8	626.3
Delay (s)	513.9	115.5		770.1	88.8			52.1		74.1	79.2	672.3
Level of Service	F	F		F	F			D		E	E	F
Approach Delay (s)		166.6			184.3			52.1			421.4	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	221.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

11: Montezuma Rd & Catoctin Drive

2030 + USR + SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3524		1770	3470			1673			1718	
Flt Permitted	0.95	1.00		0.95	1.00			0.94			0.75	
Satd. Flow (perm)	1770	3524		1770	3470			1583			1318	
Volume (vph)	60	1331	40	110	603	90	40	40	190	60	20	60
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)	65	1447	43	120	655	98	43	43	207	65	22	65
RTOR Reduction (vph)	0	2	0	0	11	0	0	83	0	0	26	0
Lane Group Flow (vph)	65	1488	0	120	742	0	0	210	0	0	126	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.4	39.3		9.8	41.7			29.2			29.2	
Effective Green, g (s)	7.4	39.3		9.8	41.7			29.2			29.2	
Actuated g/C Ratio	0.08	0.44		0.11	0.46			0.32			0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	145	1534		192	1602			512			426	
v/s Ratio Prot	0.04	c0.42		c0.07	0.21							
v/s Ratio Perm								c0.13			0.10	
v/c Ratio	0.45	0.97		0.62	0.46			0.41			0.30	
Uniform Delay, d1	39.5	24.9		38.5	16.6			23.8			22.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.2	16.4		6.2	0.2			2.4			1.8	
Delay (s)	41.7	41.3		44.7	16.9			26.3			24.6	
Level of Service	D	D		D	B			C			C	
Approach Delay (s)		41.3			20.7			26.3			24.6	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

12: El Cajon Blvd & Montezuma Road

2030 + USR + SH PM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	144	780	1470	307	541	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	848	1598	334	588	120
RTOR Reduction (vph)	0	0	0	117	0	75
Lane Group Flow (vph)	157	848	1598	217	588	45
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	14.6	58.7	40.1	40.1	40.1	40.1
Effective Green, g (s)	14.6	58.7	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.14	0.55	0.38	0.38	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	242	1945	1273	541	1289	594
v/s Ratio Prot	c0.09	0.24	c0.47	0.15	c0.17	0.03
v/s Ratio Perm						
v/c Ratio	0.65	0.44	1.26	0.40	0.46	0.08
Uniform Delay, d1	43.7	14.2	33.4	24.5	25.1	21.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.9	0.2	121.5	0.5	1.2	0.2
Delay (s)	49.6	14.4	154.8	25.0	26.3	21.7
Level of Service	D	B	F	C	C	C
Approach Delay (s)		19.9	132.4		25.5	
Approach LOS		B	F		C	

Intersection Summary

HCM Average Control Delay	80.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	106.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Year 2030 + USR+SH - AM

INTERSECTION

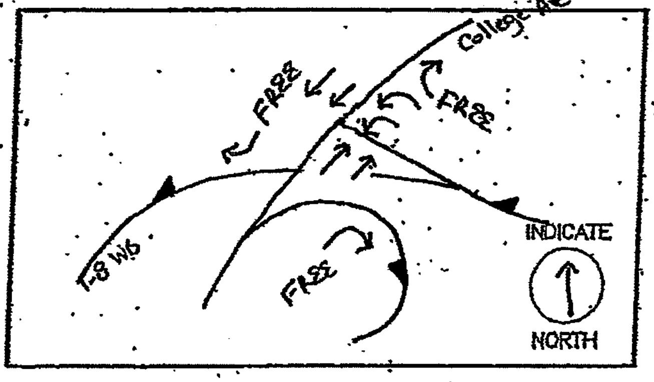
Signalized Intersection
CAPACITY ANALYSIS

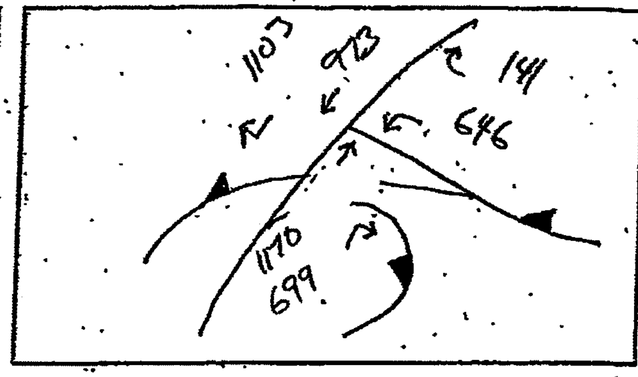
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

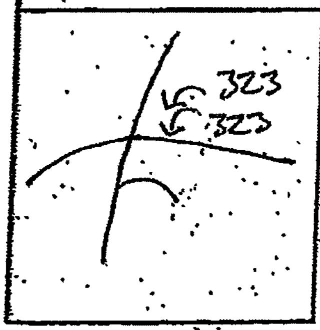
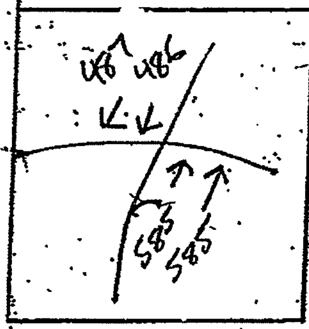
TIME " AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
323	585		

TOTAL OPERATING LEVEL (ILV/HR) IS . . .

Σ
908

- [x] < 1200 ILV/HR.
- [ ] > 1200 BUT < 1500 ILV/HR.
- [ ] > 1500 ILV/HR (CAPACITY)

REMARKS:

2030+USR+SH-PM

INTERSECTION

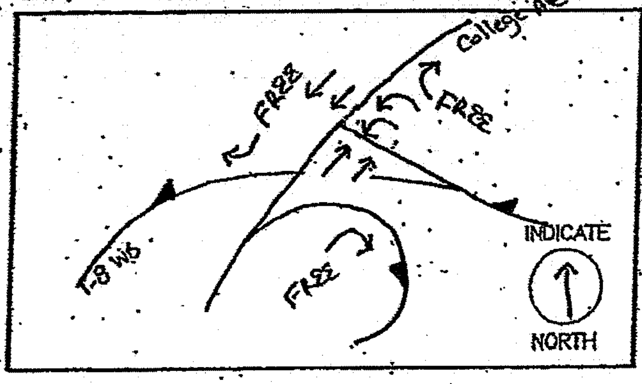
Signalized Intersection
CAPACITY ANALYSIS

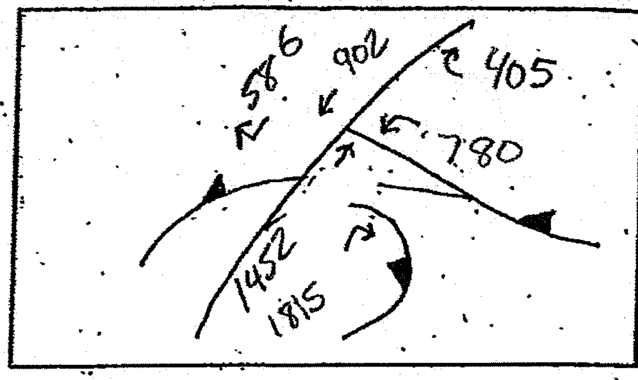
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

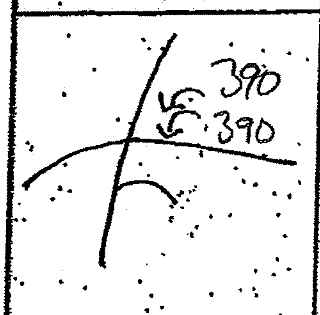
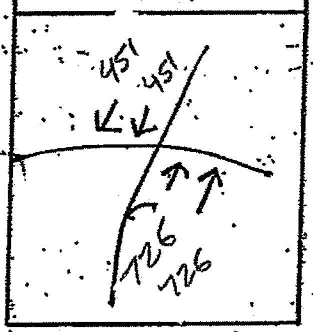
TIME ______ AM/PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
390	726		

TOTAL OPERATING LEVEL (ILV/HR)

Σ
1116

IS

- ☐ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY).

REMARKS:

Year 2030+USR+SH- AM

INTERSECTION

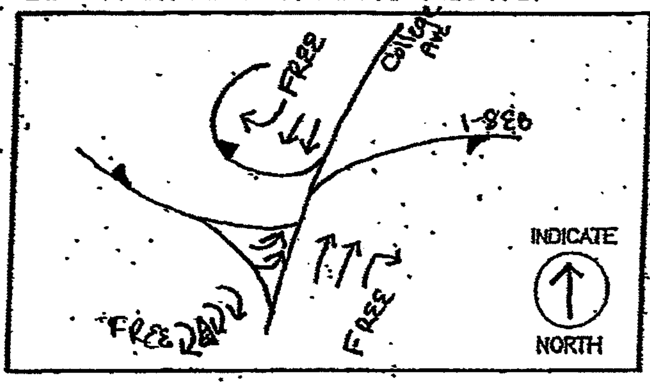
Signalized Intersection
CAPACITY ANALYSIS

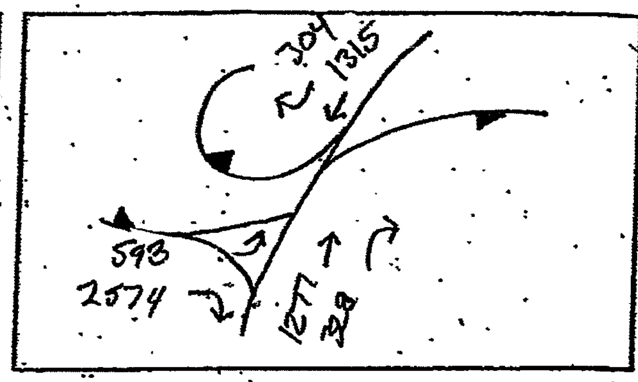
INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

TIME ______ AM PM

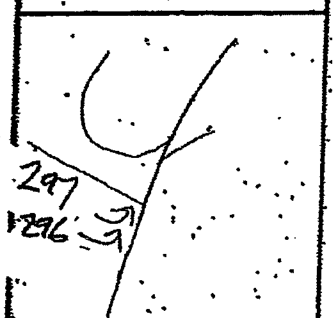
DIAGRAM AND TRAFFIC FLOWS:



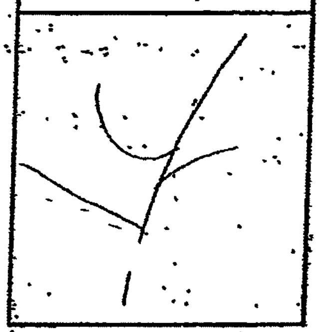


LANE VOLUMES (ILV/HR)

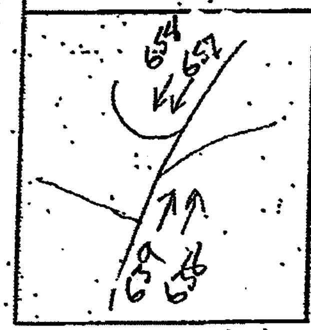
PHASE 1



PHASE 2



PHASE 3



PHASE 4

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
297		658	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
955

- [X] < 1200 ILV/HR.
- [ ] > 1200 BUT < 1500 ILV/HR.
- [ ] > 1500 ILV/HR (CAPACITY)

REMARKS:

Year 2030+U5R+5H - PM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

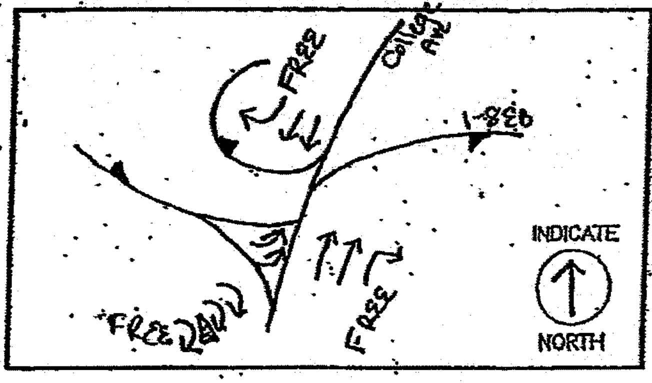
INTERSECTION College Ave / I-8 EB Ramps

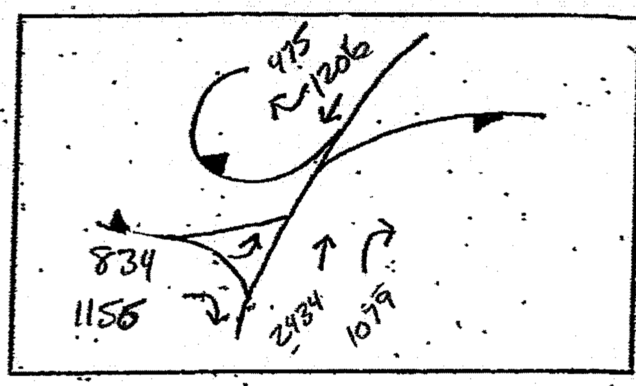
DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

TIME ______ AM PM

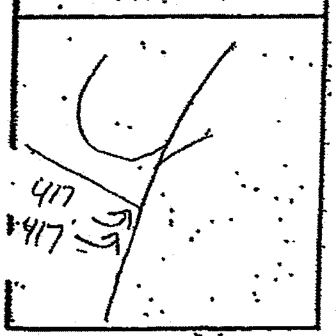
DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1



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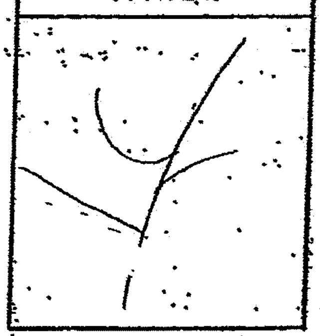

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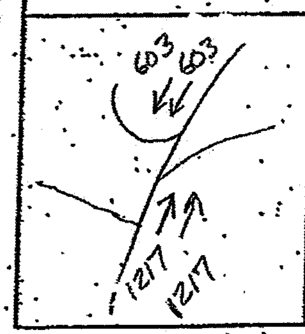


PHASE 4

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
417		1217	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1634

☐ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☒ > 1500 ILV/HR (CAPACITY)

REMARKS:

LONG-TERM (2030) + COMMUNITY SERVING RETAIL + STUDENT HOUSING OPERATIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↓↓	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3304		1555		3539	1536		3539	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3304		1555		3539	1536		3539	1536
Volume (vph)	0	0	0	647	0	141	0	1168	699	0	983	1103
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	703	0	153	0	1270	760	0	1068	1199
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	703	0	153	0	1270	760	0	1068	1199
Confl. Peds. (#/hr)				20		20			20			20
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				25.0		100.0		67.0	100.0		67.0	100.0
Effective Green, g (s)				25.0		100.0		67.0	100.0		67.0	100.0
Actuated g/C Ratio				0.25		1.00		0.67	1.00		0.67	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				826		1555		2371	1536		2371	1536
v/s Ratio Prot								0.36			0.30	
v/s Ratio Perm				0.21		0.10			0.49			c0.78
v/c Ratio				0.85		0.10		0.54	0.49		0.45	0.78
Uniform Delay, d1				35.7		0.0		8.5	0.0		7.8	0.0
Progression Factor				1.00		1.00		1.03	1.00		1.00	1.00
Incremental Delay, d2				8.4		0.1		0.6	0.8		0.6	4.0
Delay (s)				44.1		0.1		9.3	0.8		8.4	4.0
Level of Service				D		A		A	A		A	A
Approach Delay (s)		0.0			36.3			6.1			6.1	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↓↓	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.98		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	593	0	2573	0	0	0	0	1275	327	0	1325	304
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)	645	0	2797	0	0	0	0	1386	355	0	1440	330
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	645	0	2783	0	0	0	0	1386	355	0	1440	330
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	47.0		47.0					45.0	100.0		45.0	100.0
Effective Green, g (s)	47.0		47.0					45.0	100.0		45.0	100.0
Actuated g/C Ratio	0.47		0.47					0.45	1.00		0.45	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1553		1614					1593	1536		1593	1536
v/s Ratio Prot								0.39			c0.41	
v/s Ratio Perm	0.20		c0.81						0.23			0.21
v/c Ratio	0.42		1.72					0.87	0.23		0.90	0.21
Uniform Delay, d1	17.5		26.5					24.9	0.0		25.6	0.0
Progression Factor	1.00		1.00					1.19	1.00		0.78	1.00
Incremental Delay, d2	0.2		328.5					0.7	0.0		7.2	0.3
Delay (s)	17.6		355.0					30.3	0.0		26.7	0.3
Level of Service	B		F					C	A		C	A
Approach Delay (s)		291.8			0.0			24.2			21.7	
Approach LOS		F			A			C			C	

Intersection Summary

HCM Average Control Delay	156.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↰↑	↱	↰	↑↑	↱	↰↰	↑↑↑	↱↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1799	1506		1820	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1799	1506		1820	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	103	41	70	131	149	220	228	1280	184	747	1854	1297
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)	112	45	76	142	162	239	248	1391	200	812	2015	1410
RTOR Reduction (vph)	0	0	58	0	0	201	0	0	108	0	0	757
Lane Group Flow (vph)	0	157	18	0	304	38	248	1391	92	812	2015	653
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		20.3	15.7	15.7	24.0	24.0	15.7	24.0	24.0
Effective Green, g (s)		24.0	24.0		20.3	15.7	15.7	24.0	24.0	15.7	24.0	24.0
Actuated g/C Ratio		0.24	0.24		0.20	0.16	0.16	0.24	0.24	0.16	0.24	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		432	361		369	249	278	849	361	539	1220	669
v/s Ratio Prot		0.09			c0.17	0.02	0.14	0.39		c0.24	c0.40	c0.23
v/s Ratio Perm			0.01						0.06			
v/c Ratio		0.36	0.05		0.82	0.15	0.89	1.64	0.26	1.51	1.65	0.98
Uniform Delay, d1		31.6	29.2		38.1	36.4	41.3	38.0	30.8	42.1	38.0	37.7
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.90	0.98	1.74
Incremental Delay, d2		0.5	0.1		13.8	0.3	28.0	292.6	1.7	228.8	293.6	6.0
Delay (s)		32.2	29.3		52.0	36.7	69.3	330.6	32.5	266.6	330.7	71.5
Level of Service		C	C		D	D	E	F	C	F	F	E
Approach Delay (s)		31.2			45.2			263.0			232.2	
Approach LOS		C			D			F			F	

Intersection Summary

HCM Average Control Delay	218.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱	↰	↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	128	1564	200	580	1475
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	139	1700	217	630	1603
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.84	0.78			0.78	
vC, conflicting volume	3782	890			1937	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3331	575			1920	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	60			0	
cM capacity (veh/h)	0	347			233	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	139	850	850	217	630	802	802
Volume Left	0	0	0	0	630	0	0
Volume Right	139	0	0	217	0	0	0
cSH	347	1700	1700	1700	233	1700	1700
Volume to Capacity	0.40	0.50	0.50	0.13	2.71	0.47	0.47
Queue Length 95th (ft)	47	0	0	0	1351	0	0
Control Delay (s)	22.1	0.0	0.0	0.0	811.6	0.0	0.0
Lane LOS	C				F		
Approach Delay (s)	22.1	0.0			229.1		
Approach LOS	C						

Intersection Summary

Average Delay	120.0		
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

5: Lindo Paseo & College Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑↱		↰	↑↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.92		1.00	1.00		1.00	0.97	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1729			1690		1770	3527		1770	3420	
Flt Permitted		0.66			0.81		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1162			1385		1770	3527		1770	3420	
Volume (vph)	69	29	62	29	17	69	101	1366	32	77	906	263
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)	75	32	67	32	18	75	110	1485	35	84	985	286
RTOR Reduction (vph)	0	18	0	0	45	0	0	1	0	0	18	0
Lane Group Flow (vph)	0	156	0	0	80	0	110	1519	0	84	1253	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		14.0			14.0		12.1	81.3		8.9	78.1	
Effective Green, g (s)		14.0			14.0		12.1	81.3		8.9	78.1	
Actuated g/C Ratio		0.12			0.12		0.10	0.70		0.08	0.67	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		140			167		184	2468		136	2299	
v/s Ratio Prot							c0.06	c0.43		0.05	0.37	
v/s Ratio Perm		c0.13			0.06							
v/c Ratio		1.11			0.48		0.60	0.62		0.62	0.55	
Uniform Delay, d1		51.1			47.7		49.7	9.2		52.0	9.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		108.9			2.2		5.1	1.2		8.1	0.9	
Delay (s)		160.0			49.9		54.9	10.4		60.1	10.8	
Level of Service		F			D		D	B		E	B	
Approach Delay (s)		160.0			49.9			13.4			13.8	
Approach LOS		F			D			B			B	

Intersection Summary

HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	116.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

6: Montezuma Rd & College Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰↰	↑↑↱		↰	↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3431		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3431		1770	3539	1457
Volume (vph)	451	406	158	58	740	310	679	1099	170	240	550	272
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)	490	441	172	63	804	337	738	1195	185	261	598	296
RTOR Reduction (vph)	0	0	131	0	0	188	0	12	0	0	0	225
Lane Group Flow (vph)	490	441	41	63	804	149	738	1368	0	261	598	71
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	823		212	849	350
v/s Ratio Prot	c0.28	0.12		0.04	c0.23		c0.21	c0.40		0.15	0.17	
v/s Ratio Perm			0.03			0.10						0.05
v/c Ratio	1.15	0.52	0.12	0.15	0.95	0.43	1.79	1.66		1.23	0.70	0.20
Uniform Delay, d1	38.0	33.0	29.7	29.9	37.4	32.2	44.0	38.0		44.0	34.8	30.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	92.6	0.5	0.2	0.2	19.0	0.8	365.7	303.3		138.1	4.9	1.3
Delay (s)	130.6	33.5	29.9	30.1	56.4	33.0	409.7	341.3		182.1	39.6	31.7
Level of Service	F	C	C	C	E	C	F	F		F	D	C
Approach Delay (s)		76.1			48.6			365.1			69.8	
Approach LOS		E			D			F			E	

Intersection Summary

HCM Average Control Delay	178.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.96		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3387		3433	3412		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3387		3433	3412		1770	3539	1583	1770	3539	1583
Volume (vph)	282	450	180	60	950	300	680	1552	270	180	626	224
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)	307	489	196	65	1033	326	739	1687	293	196	680	243
RTOR Reduction (vph)	0	35	0	0	25	0	0	0	109	0	0	79
Lane Group Flow (vph)	307	650	0	65	1334	0	739	1687	184	196	680	164
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	8.0	41.8		4.0	37.8		37.0	48.0	48.0	11.0	22.0	22.0
Effective Green, g (s)	8.0	41.8		4.0	37.8		37.0	48.0	48.0	11.0	22.0	22.0
Actuated g/C Ratio	0.07	0.35		0.03	0.31		0.31	0.40	0.40	0.09	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	1172		114	1068		542	1406	629	161	645	288
v/s Ratio Prot	c0.09	c0.19		0.02	c0.39		c0.42	c0.48		0.11	0.19	
v/s Ratio Perm									0.12			0.10
v/c Ratio	1.35	0.55		0.57	1.25		1.36	1.20	0.29	1.22	1.05	0.57
Uniform Delay, d1	56.4	32.0		57.6	41.5		41.9	36.4	24.8	54.9	49.4	45.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	184.7	0.6		6.7	120.1		175.2	97.1	1.2	141.2	50.6	7.9
Delay (s)	241.1	32.5		64.3	161.6		217.1	133.5	26.0	196.1	100.0	53.0
Level of Service	F	C		E	F		F	F	C	F	F	D
Approach Delay (s)		97.1			157.1			144.6			106.6	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	133.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	159	3539	3433	1583
Volume (vph)	1654	320	71	1375	1150	112
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1798	348	77	1495	1250	122
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1798	348	77	1495	1250	119
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	47.0	92.0	47.0	47.0	45.0	45.0
Effective Green, g (s)	47.0	92.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio	0.47	0.92	0.47	0.47	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1663	1583	75	1663	1545	712
v/s Ratio Prot	c0.51	0.10		0.42	c0.36	
v/s Ratio Perm		0.12	0.49			0.08
v/c Ratio	1.08	0.22	1.03	0.90	0.81	0.17
Uniform Delay, d1	26.5	0.4	26.5	24.3	23.8	16.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	47.6	0.1	111.5	6.9	4.7	0.5
Delay (s)	74.1	0.6	138.0	31.2	28.5	16.9
Level of Service	E	A	F	C	C	B
Approach Delay (s)	62.2			36.4	27.4	
Approach LOS	E			D	C	

Intersection Summary

HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3501		1770	3351			1750		1681	1696	1455
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3501		1770	3351			1750		1681	1696	1455
Volume (vph)	1114	625	26	20	1194	375	50	15	10	143	10	202
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)	1211	679	28	22	1298	408	54	16	11	155	11	220
RTOR Reduction (vph)	0	3	0	0	29	0	0	6	0	0	0	186
Lane Group Flow (vph)	1211	704	0	22	1677	0	0	75	0	81	85	34
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	25.0	52.8		1.6	29.4			16.0		16.0	16.0	16.0
Effective Green, g (s)	25.0	52.8		1.6	29.4			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.24	0.52		0.02	0.29			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	838	1805		28	962			273		263	265	227
v/s Ratio Prot	c0.35	0.20		0.01	c0.50			c0.04		0.05	c0.05	
v/s Ratio Perm												0.02
v/c Ratio	1.45	0.39		0.79	1.74			0.28		0.31	0.32	0.15
Uniform Delay, d1	38.7	15.0		50.2	36.5			38.1		38.3	38.4	37.3
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	207.0	0.1		82.7	338.7			2.5		3.0	3.2	1.4
Delay (s)	245.7	15.2		133.0	375.2			40.6		41.3	41.5	38.7
Level of Service	F	B		F	F			D		D	D	D
Approach Delay (s)		160.8			372.1			40.6			39.9	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM Average Control Delay	235.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	102.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.95		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3496		1770	3379			1606		1681	1712	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3496		1770	3379			1606		1681	1712	1583
Volume (vph)	191	784	38	99	1321	271	34	30	105	126	26	195
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)	208	852	41	108	1436	295	37	33	114	137	28	212
RTOR Reduction (vph)	0	3	0	0	17	0	0	59	0	0	0	195
Lane Group Flow (vph)	208	890	0	108	1714	0	0	125	0	80	85	17
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.46		0.06	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	1608		106	1487			257		269	274	127
v/s Ratio Prot	c0.12	0.25		0.06	c0.51			c0.08		0.05	c0.05	0.01
v/s Ratio Perm												
v/c Ratio	1.46	0.55		1.02	1.15			0.49		0.30	0.31	0.13
Uniform Delay, d1	46.0	19.6		47.0	28.0			38.3		37.0	37.1	42.8
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	243.5	0.4		92.6	76.8			6.5		2.8	2.9	0.5
Delay (s)	289.5	20.0		139.6	104.8			44.7		39.9	40.0	43.3
Level of Service	F	B		F	F			D		D	D	D
Approach Delay (s)		70.9			106.8			44.7			41.8	
Approach LOS		E			F			D			D	

Intersection Summary			
HCM Average Control Delay	85.3	HCM Level of Service	F
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.94			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3522		1770	3509			1713			1700	
Flt Permitted	0.95	1.00		0.95	1.00			0.84			0.88	
Satd. Flow (perm)	1770	3522		1770	3509			1472			1529	
Volume (vph)	30	622	20	80	1335	80	40	10	40	50	20	80
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)	33	676	22	87	1451	87	43	11	43	54	22	87
RTOR Reduction (vph)	0	2	0	0	4	0	0	27	0	0	39	0
Lane Group Flow (vph)	33	696	0	87	1534	0	0	70	0	0	124	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	4.6	38.6		8.2	42.2			29.1			29.1	
Effective Green, g (s)	4.6	38.6		8.2	42.2			29.1			29.1	
Actuated g/C Ratio	0.05	0.44		0.09	0.48			0.33			0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	93	1547		165	1685			487			506	
v/s Ratio Prot	0.02	0.20		c0.05	c0.44							
v/s Ratio Perm								0.05			c0.08	
v/c Ratio	0.35	0.45		0.53	0.91			0.14			0.25	
Uniform Delay, d1	40.2	17.2		38.0	21.1			20.7			21.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.3	0.2		3.0	7.8			0.6			1.2	
Delay (s)	42.5	17.4		41.0	28.9			21.3			22.6	
Level of Service	D	B		D	C			C			C	
Approach Delay (s)		18.6			29.6			21.3			22.6	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	87.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	201	1060	1390	704	185	84
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	218	1152	1511	765	201	91
RTOR Reduction (vph)	0	0	0	291	0	58
Lane Group Flow (vph)	218	1152	1511	474	201	33
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	18.7	62.8	40.1	40.1	40.1	40.1
Effective Green, g (s)	18.7	62.8	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.17	0.57	0.36	0.36	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	298	2004	1226	521	1241	572
v/s Ratio Prot	c0.12	0.33	c0.45	0.33	c0.06	0.02
v/s Ratio Perm						
v/c Ratio	0.73	0.57	1.23	0.91	0.16	0.06
Uniform Delay, d1	43.7	15.6	35.4	33.7	24.0	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.9	0.4	111.9	19.7	0.3	0.2
Delay (s)	52.6	15.9	147.3	53.4	24.3	23.3
Level of Service	D	B	F	D	C	C
Approach Delay (s)		21.7	115.7		24.0	
Approach LOS		C	F		C	

Intersection Summary

HCM Average Control Delay	76.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

1: I-8WB Ramp & College Ave
2030 + CSR SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰↰		↱		↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.97		1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes				1.00		0.98		1.00	0.97		1.00	0.97
Flpb, ped/bikes				0.96		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)				3272		1555		3539	1536		3505	1536
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3272		1555		3539	1536		3505	1536
Volume (vph)	0	0	0	781	0	405	0	1466	1815	0	919	586
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	849	0	440	0	1593	1973	0	999	637
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	849	0	440	0	1593	1973	0	999	637
Confl. Peds. (#/hr)				20		20			20			20
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type				custom		Free			Free			Free
Protected Phases								2			6	
Permitted Phases				8		Free			Free			Free
Actuated Green, G (s)				30.1		100.0		61.9	100.0		61.9	100.0
Effective Green, g (s)				30.1		100.0		61.9	100.0		61.9	100.0
Actuated g/C Ratio				0.30		1.00		0.62	1.00		0.62	1.00
Clearance Time (s)				4.0				4.0			4.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				985		1555		2191	1536		2170	1536
v/s Ratio Prot								0.45			0.29	
v/s Ratio Perm				0.26		0.28			c1.28			0.41
v/c Ratio				0.86		0.28		0.73	1.28		0.46	0.41
Uniform Delay, d1				33.0		0.0		13.2	50.0		10.2	0.0
Progression Factor				1.00		1.00		0.75	1.00		1.00	1.00
Incremental Delay, d2				7.9		0.5		0.2	128.5		0.7	0.8
Delay (s)				40.8		0.5		10.1	178.5		10.9	0.8
Level of Service				D		A		B	F		B	A
Approach Delay (s)		0.0			27.1			103.3			7.0	
Approach LOS		A			C			F			A	

Intersection Summary

HCM Average Control Delay	63.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

2: I-8EB Ramp & College Ave
2030 + CSR SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰		↱↱↱					↑↑	↱		↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.98					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					3539	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					3539	1536		3539	1536
Volume (vph)	834	0	1158	0	0	0	0	2448	1080	0	1225	475
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)	907	0	1259	0	0	0	0	2661	1174	0	1332	516
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	907	0	1237	0	0	0	0	2661	1174	0	1332	516
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.5		44.6					47.5	100.0		47.5	100.0
Effective Green, g (s)	44.5		44.6					47.5	100.0		47.5	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1470		1528					1681	1536		1681	1536
v/s Ratio Prot								c0.75			0.38	
v/s Ratio Perm	0.27		0.36						c0.76			0.34
v/c Ratio	0.62		0.81					1.58	0.76		0.79	0.34
Uniform Delay, d1	21.2		24.1					26.2	0.0		22.1	0.0
Progression Factor	1.00		1.00					1.22	1.00		0.72	1.00
Incremental Delay, d2	0.8		3.3					262.6	0.3		3.0	0.5
Delay (s)	22.0		27.4					294.6	0.3		19.0	0.5
Level of Service	C		C					F	A		B	A
Approach Delay (s)		25.1			0.0			204.5			13.8	
Approach LOS		C			A			F			B	

Intersection Summary

HCM Average Control Delay	110.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	98.1%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1782	1506		1783	1583	1770	3539	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1782	1506		1783	1583	1770	3539	1506	3433	5085	2787
Volume (vph)	642	70	121	207	24	543	106	2345	187	373	1821	189
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)	698	76	132	225	26	590	115	2549	203	405	1979	205
RTOR Reduction (vph)	0	0	68	0	0	306	0	0	60	0	0	112
Lane Group Flow (vph)	0	774	64	0	251	284	115	2549	143	405	1979	93
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		18.5	17.5	10.9	24.0	24.0	17.5	30.6	24.0
Effective Green, g (s)		24.0	24.0		18.5	17.5	10.9	24.0	24.0	17.5	30.6	24.0
Actuated g/C Ratio		0.24	0.24		0.18	0.18	0.11	0.24	0.24	0.18	0.31	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		428	361		330	277	193	849	361	601	1556	669
v/s Ratio Prot		c0.43			c0.14	c0.18	0.06	c0.72		0.12	0.39	0.03
v/s Ratio Perm			0.04						0.09			
v/c Ratio		1.81	0.18		0.76	1.03	0.60	3.00	0.40	0.67	1.27	0.14
Uniform Delay, d1		38.0	30.2		38.6	41.2	42.5	38.0	31.9	38.6	34.7	29.9
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.12	0.89	1.12
Incremental Delay, d2		373.0	0.2		9.9	60.7	4.9	904.2	3.2	1.7	125.3	0.1
Delay (s)		411.0	30.4		48.6	101.9	47.3	942.2	35.1	44.9	166.1	33.5
Level of Service		F	C		D	F	D	F	D	D	F	C
Approach Delay (s)		355.5			86.0			842.1			129.0	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	436.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	149.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	664	1974	204	315	1834
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	722	2146	222	342	1993
Pedestrians	20					20
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	2					2
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			733			1086
pX, platoon unblocked	0.79	0.62			0.62	
vC, conflicting volume	3847	1113			2387	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3062	564			2627	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			0	
cM capacity (veh/h)	0	280			97	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	722	1073	1073	222	342	997	997
Volume Left	0	0	0	0	342	0	0
Volume Right	722	0	0	222	0	0	0
cSH	280	1700	1700	1700	97	1700	1700
Volume to Capacity	2.58	0.63	0.63	0.13	3.53	0.59	0.59
Queue Length 95th (ft)	1493	0	0	0	Err	0	0
Control Delay (s)	747.7	0.0	0.0	0.0	1230.6	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	747.7	0.0			180.4		
Approach LOS	F						

Intersection Summary

Average Delay	177.1		
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.88		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1664		1770	1639		1770	3523		1770	3444	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1664		1770	1639		1770	3523		1770	3444	
Volume (vph)	176	51	124	38	23	92	278	1478	47	113	1316	289
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)	191	55	135	41	25	100	302	1607	51	123	1430	314
RTOR Reduction (vph)	0	75	0	0	91	0	0	2	0	0	15	0
Lane Group Flow (vph)	191	115	0	41	34	0	302	1656	0	123	1729	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.0	18.2		4.1	10.3		19.0	65.6		10.5	57.1	
Effective Green, g (s)	12.0	18.2		4.1	10.3		19.0	65.6		10.5	57.1	
Actuated g/C Ratio	0.10	0.16		0.04	0.09		0.17	0.57		0.09	0.50	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	186	265		63	148		294	2020		162	1719	
v/s Ratio Prot	c0.11	c0.07		0.02	0.02		c0.17	0.47		0.07	c0.50	
v/s Ratio Perm												
v/c Ratio	1.03	0.43		0.65	0.23		1.03	0.82		0.76	1.01	
Uniform Delay, d1	51.2	43.5		54.4	48.4		47.7	19.6		50.7	28.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	73.2	1.1		21.5	0.8		59.7	3.9		18.3	23.1	
Delay (s)	124.4	44.6		76.0	49.2		107.4	23.5		69.0	51.8	
Level of Service	F	D		E	D		F	C		E	D	
Approach Delay (s)		84.6			55.8			36.4			52.9	
Approach LOS		F			E			D			D	

Intersection Summary

HCM Average Control Delay	48.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	114.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1457	1770	3539	1457	3433	3479		1770	3539	1457
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1457	1770	3539	1457	3433	3479		1770	3539	1457
Volume (vph)	1302	967	657	290	776	394	707	782	63	439	1084	306
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)	1415	1051	714	315	843	428	768	850	68	477	1178	333
RTOR Reduction (vph)	0	0	226	0	0	168	0	6	0	0	0	213
Lane Group Flow (vph)	1415	1051	488	315	843	260	768	912	0	477	1178	120
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	24.0		12.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.12	0.24		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	425	849	350	425	849	350	412	835		212	849	350
v/s Ratio Prot	c0.80	0.30		0.18	c0.24		0.22	0.26		c0.27	c0.33	
v/s Ratio Perm			0.34			0.18						0.08
v/c Ratio	3.33	1.24	1.40	0.74	0.99	0.74	1.86	1.09		2.25	1.39	0.34
Uniform Delay, d1	38.0	38.0	38.0	35.1	37.9	35.1	44.0	38.0		44.0	38.0	31.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1054.3	117.1	194.4	6.8	29.0	8.3	398.0	59.3		577.4	181.7	2.7
Delay (s)	1092.3	155.1	232.4	42.0	66.9	43.4	442.0	97.3		621.4	219.7	34.1
Level of Service	F	F	F	D	E	D	F	F		F	F	C
Approach Delay (s)		589.5			55.6			264.3			285.0	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	350.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	157.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑↱		↰↰	↑↑↱		↰	↑↑	↱	↰	↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.94		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3326		3433	3402		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3326		3433	3402		1770	3539	1583	1770	3539	1583
Volume (vph)	379	1120	750	300	690	240	400	1083	90	350	1236	123
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)	412	1217	815	326	750	261	435	1177	98	380	1343	134
RTOR Reduction (vph)	0	96	0	0	29	0	0	0	53	0	0	62
Lane Group Flow (vph)	412	1936	0	326	982	0	435	1177	46	380	1343	72
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	15.0	44.0		8.0	37.0		18.0	36.0	36.0	16.0	34.0	34.0
Effective Green, g (s)	15.0	44.0		8.0	37.0		18.0	36.0	36.0	16.0	34.0	34.0
Actuated g/C Ratio	0.12	0.37		0.07	0.31		0.15	0.30	0.30	0.13	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	429	1220		229	1049		266	1062	475	236	1003	449
v/s Ratio Prot	0.12	c0.58		c0.09	0.29		c0.25	0.33		0.21	c0.38	
v/s Ratio Perm									0.03			0.05
v/c Ratio	0.96	1.59		1.42	0.94		1.64	1.11	0.10	1.61	1.34	0.16
Uniform Delay, d1	52.2	38.0		56.0	40.4		51.0	42.0	30.3	52.0	43.0	32.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.2	267.9		214.1	14.8		302.4	62.3	0.4	293.4	159.3	0.8
Delay (s)	85.4	305.9		270.1	55.1		353.4	104.3	30.7	345.4	202.3	33.0
Level of Service	F	F		F	E		F	F	C	F	F	C
Approach Delay (s)		268.8			107.5			163.4			219.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	202.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	133.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱	↰	↑↑	↰↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3505	1615	1805	3539	3502	1615
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	3505	1615	158	3539	3502	1615
Volume (vph)	2011	410	96	2165	380	65
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2186	446	104	2353	413	71
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	2186	446	104	2353	413	70
Heavy Vehicles (%)	3%	0%	0%	2%	0%	0%
Turn Type		pm+ov	Perm			Perm
Protected Phases	4	2		8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	48.0	92.0	48.0	48.0	44.0	44.0
Effective Green, g (s)	48.0	92.0	48.0	48.0	44.0	44.0
Actuated g/C Ratio	0.48	0.92	0.48	0.48	0.44	0.44
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1682	1615	76	1699	1541	711
v/s Ratio Prot	0.62	c0.12		c0.66	0.12	
v/s Ratio Perm		0.15	0.66			0.04
v/c Ratio	1.30	0.28	1.37	1.38	0.27	0.10
Uniform Delay, d1	26.0	0.4	26.0	26.0	17.8	16.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	139.3	0.1	229.4	177.0	0.4	0.3
Delay (s)	165.3	0.5	255.4	203.0	18.2	16.7
Level of Service	F	A	F	F	B	B
Approach Delay (s)	137.4			205.2	18.0	
Approach LOS	F			F	B	

Intersection Summary

HCM Average Control Delay	156.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

9: Montezuma Rd & 55th St

2030 + CSR SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.98		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98			0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3466		1770	3446			1724		1681	1691	1458
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3466		1770	3446			1724		1681	1691	1458
Volume (vph)	571	1395	117	30	1613	217	60	15	20	575	20	563
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)	621	1516	127	33	1753	236	65	16	22	625	22	612
RTOR Reduction (vph)	0	6	0	0	10	0	0	10	0	0	0	436
Lane Group Flow (vph)	621	1637	0	33	1979	0	0	93	0	315	332	176
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	21.9	48.5		2.3	28.9			16.0		16.0	16.0	16.0
Effective Green, g (s)	21.9	48.5		2.3	28.9			16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.22	0.49		0.02	0.29			0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	761	1701		41	1008			279		272	274	236
v/s Ratio Prot	c0.18	c0.47		0.02	c0.57			c0.05		0.19	c0.20	
v/s Ratio Perm												0.12
v/c Ratio	0.82	0.96		0.80	1.96			0.33		1.16	1.21	0.75
Uniform Delay, d1	36.5	24.3		48.0	35.0			36.7		41.4	41.4	39.5
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	6.8	13.9		69.0	437.1			3.2		104.2	124.1	19.2
Delay (s)	43.3	38.2		117.0	472.1			39.9		145.6	165.5	58.7
Level of Service	D	D		F	F			D		F	F	E
Approach Delay (s)		39.6			466.3			39.9			108.6	
Approach LOS		D			F			D			F	

Intersection Summary

HCM Average Control Delay	207.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

10: Montezuma Rd & Campanile Dr

2030 + CSR SH PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			0.95		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (prot)	1770	3521		1770	3334			1590		1681	1712	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.97	1.00
Satd. Flow (perm)	1770	3521		1770	3334			1590		1681	1712	1583
Volume (vph)	263	1744	35	250	1202	337	32	41	155	378	76	626
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)	286	1896	38	272	1307	366	35	45	168	411	83	680
RTOR Reduction (vph)	0	2	0	0	26	0	0	76	0	0	0	380
Lane Group Flow (vph)	286	1932	0	272	1647	0	0	172	0	241	253	300
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Effective Green, g (s)	8.0	46.0		6.0	44.0			16.0		16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.46		0.06	0.44			0.16		0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	1620		106	1467			254		269	274	127
v/s Ratio Prot	0.16	c0.55		0.15	0.49			c0.11		0.14	c0.15	c0.19
v/s Ratio Perm												
v/c Ratio	2.01	1.19		2.57	1.12			0.68		0.90	0.92	2.36
Uniform Delay, d1	46.0	27.0		47.0	28.0			39.6		41.2	41.4	46.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	480.3	93.2		731.5	64.8			13.7		33.6	37.8	636.8
Delay (s)	526.3	120.2		778.5	92.8			53.3		74.7	79.2	682.8
Level of Service	F	F		F	F			D		E	E	F
Approach Delay (s)		172.5			188.7			53.3			427.9	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	226.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✣			✣	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.90			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3524		1770	3471			1673			1718	
Flt Permitted	0.95	1.00		0.95	1.00			0.94			0.75	
Satd. Flow (perm)	1770	3524		1770	3471			1583			1318	
Volume (vph)	60	1338	40	110	612	90	40	40	190	60	20	60
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)	65	1454	43	120	665	98	43	43	207	65	22	65
RTOR Reduction (vph)	0	2	0	0	11	0	0	83	0	0	26	0
Lane Group Flow (vph)	65	1495	0	120	752	0	0	210	0	0	126	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.4	39.3		9.8	41.7			29.2			29.2	
Effective Green, g (s)	7.4	39.3		9.8	41.7			29.2			29.2	
Actuated g/C Ratio	0.08	0.44		0.11	0.46			0.32			0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	145	1534		192	1603			512			426	
v/s Ratio Prot	0.04	c0.42		c0.07	0.22							
v/s Ratio Perm								c0.13			0.10	
v/c Ratio	0.45	0.97		0.62	0.47			0.41			0.30	
Uniform Delay, d1	39.5	25.0		38.5	16.7			23.8			22.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.2	17.2		6.2	0.2			2.4			1.8	
Delay (s)	41.7	42.2		44.7	16.9			26.3			24.6	
Level of Service	D	D		D	B			C			C	
Approach Delay (s)		42.2			20.7			26.3			24.6	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↑↱	↱	↰↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3390	1441	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3390	1441	3433	1583
Volume (vph)	146	780	1470	314	546	112
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	159	848	1598	341	593	122
RTOR Reduction (vph)	0	0	0	120	0	76
Lane Group Flow (vph)	159	848	1598	221	593	46
Turn Type	Prot			Prot		Prot
Protected Phases	7	4	8	8	6	6
Permitted Phases						
Actuated Green, G (s)	14.7	58.8	40.1	40.1	40.1	40.1
Effective Green, g (s)	14.7	58.8	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.14	0.55	0.38	0.38	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	243	1947	1272	541	1288	594
v/s Ratio Prot	c0.09	0.24	c0.47	0.15	c0.17	0.03
v/s Ratio Perm						
v/c Ratio	0.65	0.44	1.26	0.41	0.46	0.08
Uniform Delay, d1	43.7	14.2	33.4	24.6	25.2	21.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.2	0.2	121.9	0.5	1.2	0.3
Delay (s)	49.9	14.4	155.3	25.2	26.4	21.7
Level of Service	D	B	F	C	C	C
Approach Delay (s)		20.0	132.4		25.6	
Approach LOS		B	F		C	

Intersection Summary

HCM Average Control Delay	80.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	106.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Year 2030 +CSR+5H - AM

INTERSECTION

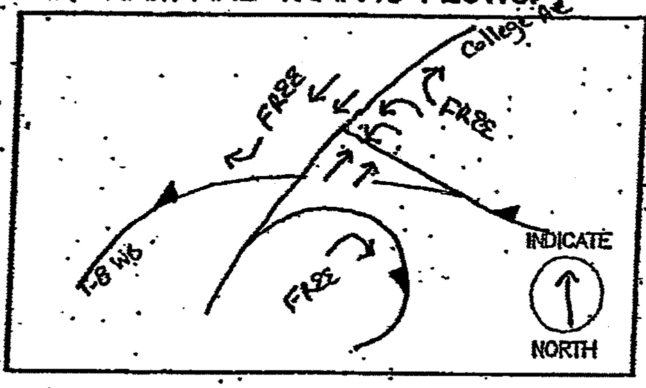
Signalized Intersection
CAPACITY ANALYSIS

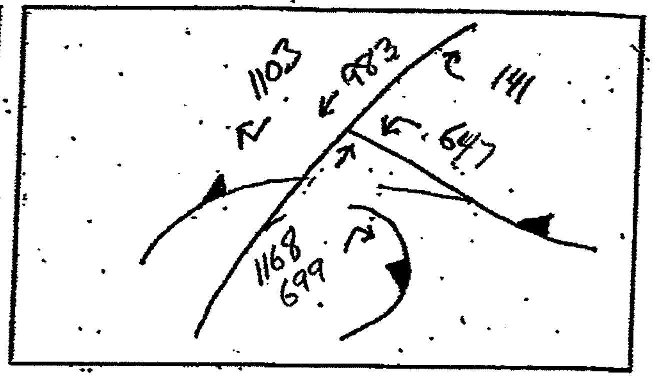
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/07

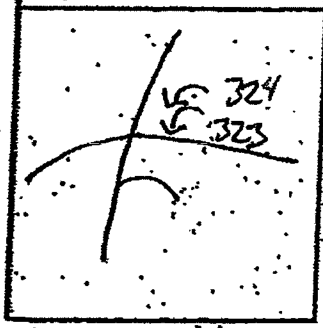
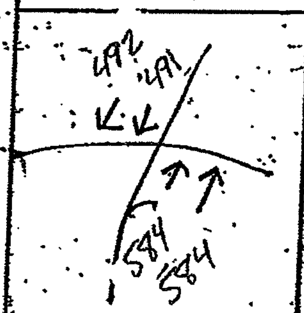
TIME ______ (AM) PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
323	584		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
907

- ☒ < 1200 ILV/HR.
- ☐ > 1200 BUT < 1500 ILV/HR.
- ☐ > 1500 ILV/HR (CAPACITY)

REMARKS:

Year 2030+CSR+SA- PM

INTERSECTION

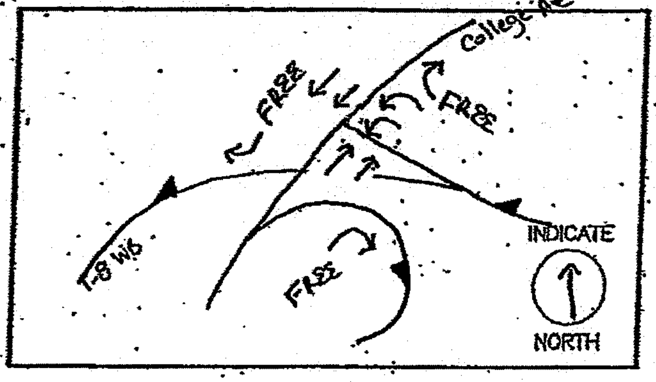
Signalized Intersection
CAPACITY ANALYSIS

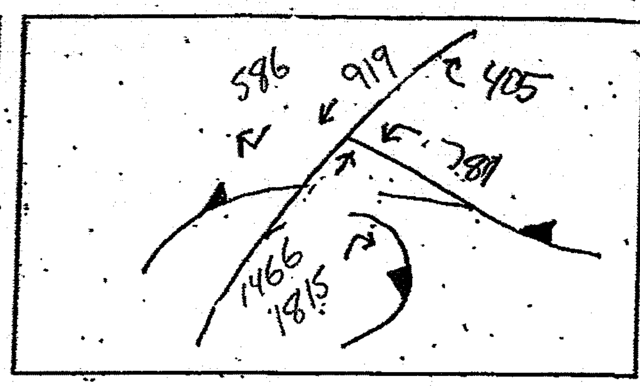
INTERSECTION College Ave / I-8 WB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

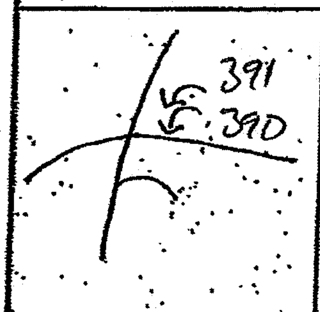
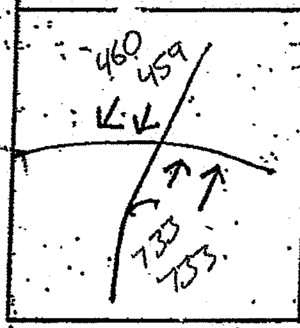
TIME ______ AM PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
391	733		

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1124

☒ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☐ > 1500 ILV/HR (CAPACITY).

REMARKS:

Year 2030 + CSR + SH - AM

INTERSECTION

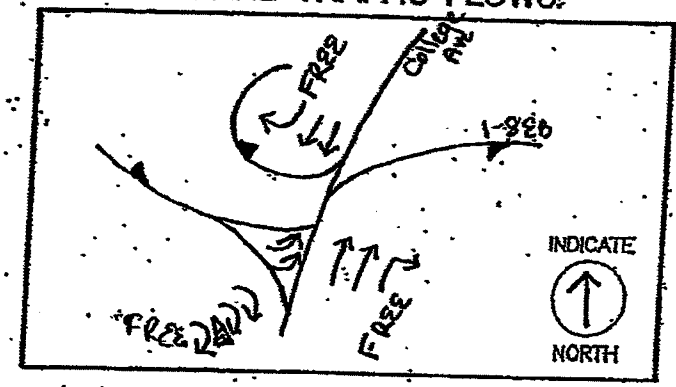
Signalized Intersection
CAPACITY ANALYSIS

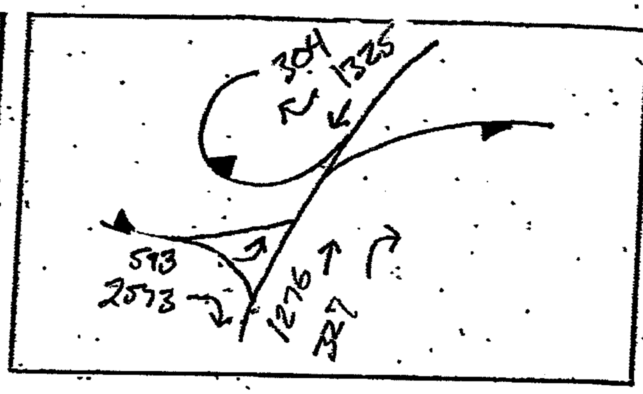
INTERSECTION College Ave / I-8 EB Ramps DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

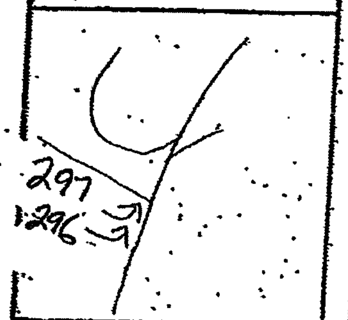
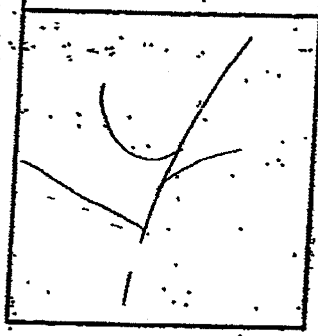
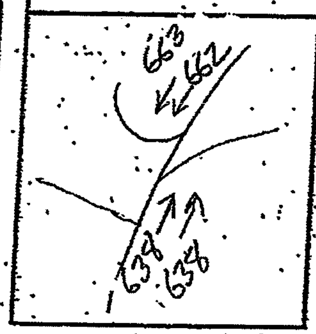
TIME ______ (AM) PM

DIAGRAM AND TRAFFIC FLOWS:





LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
			

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
297		663	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
960

- [x] < 1200 ILV/HR.
- [ ] > 1200 BUT < 1500 ILV/HR.
- [ ] > 1500 ILV/HR (CAPACITY)

REMARKS:

Year 2030+CSR+SH-PM

INTERSECTION

Signalized Intersection
CAPACITY ANALYSIS

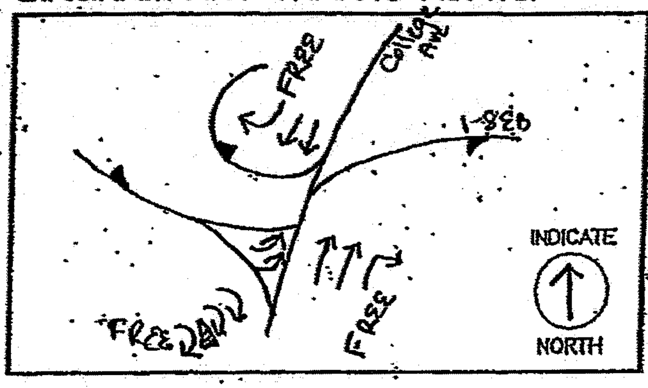
INTERSECTION College Ave / I-8 EB Ramps

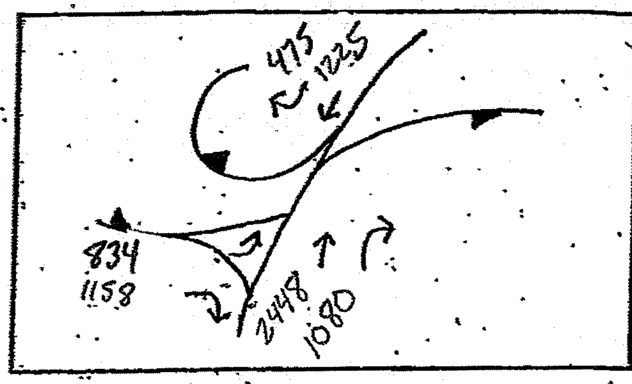
DIST. CO. RTE. P.M. ______

BY CL DATE 5/27/09

TIME ____ AM (PM)

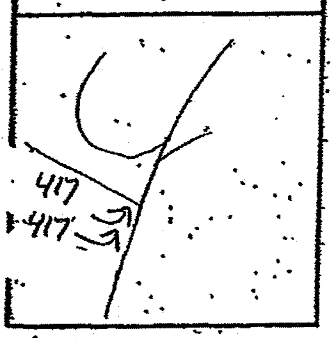
DIAGRAM AND TRAFFIC FLOWS:



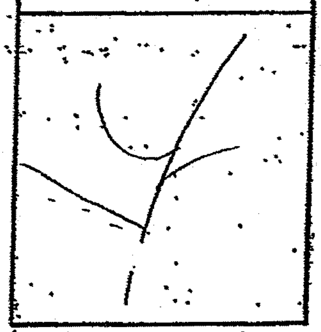


LANE VOLUMES (ILV/HR)

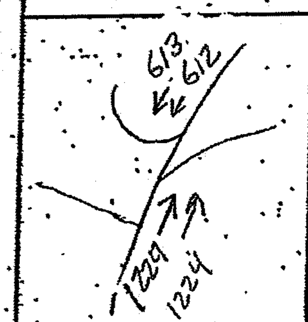
PHASE 1



PHASE 2



PHASE 3



PHASE 4

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
417		1224	

TOTAL OPERATING LEVEL (ILV/HR) IS

Σ
1641

☐ < 1200 ILV/HR.

☐ > 1200 BUT < 1500 ILV/HR.

☒ > 1500 ILV/HR (CAPACITY).

REMARKS:

APPENDIX J

PARKING DATA – *"SDSU CAMPUS MASTER PLAN EIR"*

LINSCOTT LAW & GREENSPAN engineers

TRAFFIC IMPACT ANALYSIS

SDSU 2007 CAMPUS MASTER PLAN REVISION

San Diego, California
June 1, 2007

Prepared for:

Gatzke Dillon & Ballance LLP
1525 Faraday Avenue, Suite 150
Carlsbad, California 92008

LLG Ref. 3-06-1691

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858.300.8810 F
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13.0 PARKING ANALYSIS

13.1 Parking Supply and Demand

LLG commissioned parking counts in October 2006, while school was in session, in order to determine the parking supply and demand on campus. The supply of parking when the counts were undertaken in October was 13,924 spaces campus-wide.

Table 13–1 lists by hour and category (students, faculty / staff, and special permit) the supply and demand for each parking lot and structure on the SDSU Campus counted. From this table it is possible to determine the peak parking time and the peak parking occupancy for each parking lot and structure. In general, parking lots and structures closer to Main Campus buildings have a higher occupancy level for greater portions of the day than those lots and structures that are more distant.

Table 13–2 provides a summary of the data parking supply and demand contained in *Table 13–1.* The average peak hour demand for parking based on the summary presented is between 10:00am and 11:00am when 65% (9,030 out of 13,924 spaces) of the parking lots and structures are full.

13.2 Future Parking Requirements

Using the above parking count data and the current student headcount enrollment of 33,441 students, the existing average peak parking demand is 0.27 parking spaces per student.

(9,030 existing parking demand ÷ 33,441 students) = 0.27 parking spaces per student

Using this parking rate, the future demand for student, faculty and staff, and visitor parking can be determined. Assuming 44,826 students will be enrolled in the future, the parking demand is 12,103 parking spaces.

(44,826 students * 0.27 parking spaces per student) = 12,103 parking spaces

There are 15,591 parking spaces planned for the horizon year, which is 3,488 parking spaces more than the calculated demand of 12,103 parking spaces. The table detailing the parking spaces to be provided over the next ten years, and a map of the existing parking lots/structures can be found in *Appendix O.*

Based on the above calculations, no significant parking impact is identified.

APPENDIX K

HCM EXCERPTS – TROLLEY ANALYSIS

$$h_{min} = max \begin{Bmatrix} h_{os} \\ h_{bs} \\ h_{st} \end{Bmatrix} \quad (27\text{-}22)$$

where

h_{min} = minimum train headway (s),
h_{os} = minimum on-street section train headway (s),
h_{bs} = minimum block-signaled section train headway (s), and
h_{st} = minimum single-track section train headway (s).

On-Street Operation

It is difficult to encompass all the variables that affect on-street light rail and streetcar operation in a single formula. However, the capacity of on-street light rail may be greater in certain circumstances than on grade-separated, signalized rights-of-way, where higher speeds force the separation between trains to be increased. Variability due to traffic congestion has been reduced as a factor, since almost all recently built on-street light rail lines operate on reserved lanes. A number of older streetcar systems still operate extensively in mixed traffic and are subjected to the variability in train throughput caused by traffic queuing, left turns, and parallel parking (*24*).

The minimum headway between trains operating on street, h_{os}, can be determined from Equation 27-23. For typical streetcar operations, where more than one streetcar can be present in a city block, or for light rail operations where the dwell time at the critical stop is long in comparison with the cycle length, dwell times and the effective green time control the minimum headway. For light rail operation where the length of two trains exceeds one city block, the closest sustainable headway should be at least twice the longest traffic signal cycle on the on-street portions of the line. This headway minimizes the chance that two adjacent trains can block an intersection (*25*).

The closest possible headway for multiple-car light rail trains in on-street operation is often taken to be twice the longest traffic signal cycle

$$h_{os} = max \begin{Bmatrix} \dfrac{t_c + \left(\dfrac{g}{C}\right)t_d + Z_a c_v t_d}{\left(\dfrac{g}{C}\right)} \\ 2C_{max} \end{Bmatrix} \quad (27\text{-}23)$$

where

h_{os} = minimum on-street section train headway (s),
g = effective green time, reflecting reductive effects of on-street parking and pedestrian movements (mixed-traffic operation only) as well as any impacts of traffic signal preemption (s),
C = cycle length at stop with highest dwell time (s),
C_{max} = maximum cycle length in line's on-street section (s),
t_d = dwell time at critical stop (s),
t_c = clearance time between successive trains, defined as sum of minimum clear spacing between trains (typically 15 to 20 s or signal cycle time) and time for cars of a train to clear a station (typically 5 s per car) (s);
Z_a = one-tail normal variate corresponding to probability that queues of trains will form, from Exhibit 27-11; and
c_v = coefficient of variation of dwell times (typically 40 percent for light rail operation in an exclusive lane and 60 percent for streetcar operation in mixed traffic).

Some transit agencies use the signal cycle time (C) as the minimum clearance time

Light Rail and Streetcar Capacity

Vehicle Capacity

The maximum capacity of a light rail or streetcar line, in terms of the number of trains, T, is determined from the minimum headway by Equation 27-26.

$$T = \frac{3,600}{h_{min}} \tag{27-26}$$

where

T = maximum number of trains per hour.

Person Capacity

The maximum person capacity, P, of light rail and streetcar lines is the number of trains multiplied by their length, the number of passengers per foot of length set by policy, and a peak-hour factor. Alternatively, maximum person capacity can be determined by Equations 27-27 and 27-28 using the number of trains multiplied by the number of cars per train, the maximum allowed passenger load per car, and a peak-hour factor.

Trains operating on street should be no more than one block long to avoid blocking intersections when trains stop. Consequently, this length constrains maximum person capacity.

A light rail loading level of 1.5 passengers per foot of train length is recommended for calculating maximum person capacity of new systems. It provides 4.3 ft² per standing passenger.

$$P = TLP_m(PHF) = \frac{3,600LP_m(PHF)}{h_{min}} \tag{27-27}$$

where

P = maximum single-track capacity in passengers per peak-hour direction (p),
L = train length (ft),
P_m = loading level (p/ft), and
PHF = peak-hour factor.

$$P = TN_cP_c(PHF) = \frac{3,600N_cP_c(PHF)}{h_{min}} \tag{27-28}$$

where

N_c = number of cars per train, and
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Speed

Light rail and streetcar travel time is influenced by the following factors.

- Running time required to travel the analysis section if no stops are made. For off-street sections, the maximum operating speed should be used. For on-street streetcar operations (where streetcars share a lane with other traffic), the procedures in Chapter 15, "Urban Streets," should be used. For on-street rail operations in an exclusive lane, either the posted speed for the street or the speed dictated by signal progression should be used, whichever is lower. If rail vehicles do not benefit from either traffic signal progression or traffic signal priority, traffic signal delays should be accounted for when running times are calculated.
- Dwell time at stops.
- Acceleration and deceleration time at stops for boarding and alighting passengers.

For existing light rail and streetcar operations, travel time can be determined either through a series of travel time measurements or by using the scheduled time between points. For the purposes of planning future transit service, travel time can be estimated by the procedures defined in Equations 27-29 through 27-32.

Running time, t_r, is related to distance traveled and the average free-flow speed (FFS) for the section being analyzed. FFS is taken to be the posted speed limit for on-

APPENDIX J

PARKING DATA – *"SDSU CAMPUS MASTER PLAN EIR"*

LINSCOTT LAW & GREENSPAN

engineers

TRAFFIC IMPACT ANALYSIS

SDSU 2007 CAMPUS MASTER PLAN REVISION

San Diego, California
June 1, 2007

Prepared for:

Gatzke Dillon & Ballance LLP
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LLG Ref. 3-06-1691

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13.0 Parking Analysis

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where

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L = train length (ft),
P_m = loading level (p/ft), and
PHF = peak-hour factor.

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APPENDIX L

MTS CORRESPONDENCE

MEETING MINUTES

Subject:	Plaza Linda Verde project and the Transit Ridership the project would generate	Date:	September 23, 2009
Attendees:	John Boarman, (LLG) Laurie Cooper (SDSU) Dennis Desmond (MTS)	LLG Ref:	3-08-1857

1. Laurie gave an overview of the project description.
2. John explained that based on the project consisting of student housing and retail, only a small amount of ridership would be added to the transit system.
3. Dennis agreed with John's opinion of low additional ridership due to the project.
4. Dennis outlined some of the transit related operational issues that MTS faces in the area unrelated to the proposed Plaza Linda Verde project.

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APPENDIX M

FAIR SHARE CALCULATIONS

Plaza Linda Verde

FAIR SHARE CONTRIBUTION CALCULATIONS

DIRECT IMPACTS

Impacted Locations	Peak Hour	Near-Term Project Traffic			Existing + Cumulative + Project[3]	Existing Traffic	Total % Fair Share[4]		
		University-Serving Retail	Community-Serving Retail	Student Housing			University-Serving Retail	Community-Serving Retail	Student Housing
Intersections [1] (University-Serving Retail Scenario)									
A-1 College Ave / Canyon Crest Drive	AM & PM	26		49	9,010	6,714	1.13%		2.18%
A-2 College Ave / Zura Way	AM & PM	27		49	7,285	5,137	1.26%		2.33%
A-3 College Ave / Montezuma Road	PM	28		41	6,581	3,788	1.00%		1.47%
Intersections [1] (Community-Serving Retail Scenario)									
B-1 College Ave / Canyon Crest Drive	AM & PM		81	49	9,010	6,714		3.53%	2.18%
B-2 College Ave / Zura Way	AM & PM		81	49	7,285	5,137		3.77%	2.33%
B-3 College Ave / Montezuma Road	AM & PM		132	74	11,199	7,091		3.21%	1.80%
Segments [2]									
C-1 College Avenue: Canyon Crest Drive to Zura Way			570	105	45,933	44,000		29.49%	5.74%
C-2 Montezuma Road: 55th Street to College Avenue			490	65	33,336	26,100		6.77%	0.91%

Footnotes:

1. Intersection fair share contributions are calculated using entering respective AM and PM peak hour volumes.
2. Segment fair share contributions are calculated using ADT volumes.
3. Fair Share Percentage = Project Traffic / (Existing + Cumulative Projects + Total Project - Existing Traffic)
4. Fair Share Percentage = Project Traffic / (Existing + Cumulative Projects + Total Project - Existing Traffic)

N:/1691/Calcs/1691 Fair Share Calcs.xls

Plaza Linda Verde
FAIR SHARE CONTRIBUTION CALCULATIONS
CUMULATIVE IMPACTS

Impacted Locations	Peak Hour	Long-Term (2030) Project Traffic			Horizon Year + Project	Existing Traffic	Total % Fair Share[3]			
		University-Serving Retail	Community-Serving Retail	Student Housing			University-Serving Retail	Community-Serving Retail	Student Housing	Master Plan Impact %
Intersections* [1] *(University-Serving Retail Scenario)										
D-1 College Ave / I-8 EB Ramps	PM	14		24	7,160	5,389	0.79%		1.36%	
D-2 College Ave / Canyon Crest Drive	AM & PM	26		49	12,828	7,714	0.51%		0.95%	
D-3 College Ave / Zura Way	AM & PM	27		49	8,835	5,137	0.73%		1.32%	
D-4 College Ave / Montezuma Road	PM	28		41	7,656	3,788	0.72%		1.06%	
D-5 College Ave / 55th Street	AM	8		13	3,762	1,252	0.32%		0.52%	
D-6 College Ave / Campanile Drive	AM & PM	26		31	8,273	4,386	0.67%		0.80%	
Intersections* [1] *(Community-Serving Retail Scenario)										
F-1 College Ave / I-8 EB Ramps	PM		50	24	7,196	5389		2.77%	1.36%	
F-2 College Ave / Canyon Crest Drive	AM & PM		81	49	12,883	7714		1.67%	0.95%	
F-3 College Ave / Zura Way	AM & PM		81	49	8,889	5137		2.16%	1.32%	
F-4 College Ave / Montezuma Road	AM & PM		132	74	12,826	6,991		2.26%	1.27%	
F-5 College Ave / 55th Street	AM & PM		69	30	8,950	5,506		2.00%	0.88%	
F-6 College Ave / Campanile Drive	AM & PM		81	31	8,328	4,386		2.05%	0.80%	
***Segments* [2]**										
F-1 College Avenue: Canyon Crest Drive to Zura Way			570	105	76,710	44,000		1.74%	0.33%	
F-2 College Avenue: Zura Way to College Avenue			570	105	56,610	30,000		2.14%	0.40%	
F-3 Montezuma Road: 55th Street to College Avenue			490	65	35,500	26,100		5.21%	0.72%	

Footnotes:
1. Intersection fair share contributions are calculated using entering respective AM and PM peak hour volumes.
2. Segment fair share contributions are calculated using ADT volumes.
3. Fair Share Percentage = Near-Term Project Traffic / (Horizon Year + Project - Existing Traffic)

APPENDIX N

POST MITIGATION INTERSECTION ANALYSIS SHEETS

NEAR-TERM POST MITIGATION ANALYSIS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1798	1506		1828	1583	1770	5085	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1798	1506		1828	1583	1770	5085	1506	3433	5085	2787
Volume (vph)	49	19	46	89	144	152	152	935	93	522	1265	706
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)	53	21	50	97	157	165	165	1016	101	567	1375	767
RTOR Reduction (vph)	0	0	45	0	0	114	0	0	77	0	0	690
Lane Group Flow (vph)	0	74	5	0	254	51	165	1016	24	567	1375	77
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		10.0	10.0		18.7	31.2	14.9	24.1	24.1	31.2	40.4	10.0
Effective Green, g (s)		10.0	10.0		18.7	31.2	14.9	24.1	24.1	31.2	40.4	10.0
Actuated g/C Ratio		0.10	0.10		0.19	0.31	0.15	0.24	0.24	0.31	0.40	0.10
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		180	151		342	494	264	1225	363	1071	2054	279
v/s Ratio Prot		c0.04			c0.14	0.03	c0.09	c0.20		0.17	c0.27	0.03
v/s Ratio Perm			0.00						0.02			
v/c Ratio		0.41	0.03		0.74	0.10	0.62	0.83	0.07	0.53	0.67	0.27
Uniform Delay, d1		42.2	40.6		38.4	24.5	39.9	36.0	29.3	28.3	24.3	41.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.88	0.87	3.47
Incremental Delay, d2		1.6	0.1		8.4	0.1	4.6	6.6	0.4	0.0	0.2	0.0
Delay (s)		43.8	40.7		46.8	24.6	44.5	42.6	29.6	24.9	21.4	144.6
Level of Service		D	D		D	C	D	D	C	C	C	F
Approach Delay (s)		42.5			38.1			41.8			57.0	
Approach LOS		D			D			D			E	

Intersection Summary

HCM Average Control Delay	50.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes		0.96	1.00	0.93	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		0.86	1.00	0.85	1.00	1.00
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1540	3539	1466	1770	3539
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1540	3539	1466	1770	3539
Volume (vph)	0	100	1374	171	556	1228
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	109	1493	186	604	1335
RTOR Reduction (vph)	0	57	0	94	0	0
Lane Group Flow (vph)	0	52	1493	92	604	1335
Confl. Peds. (#/hr)		20		20	20	
Turn Type		custom		Perm	Prot	
Protected Phases			4		1	6
Permitted Phases		8		4		
Actuated Green, G (s)		42.2	42.2	42.2	38.2	38.2
Effective Green, g (s)		42.2	42.2	42.2	38.2	38.2
Actuated g/C Ratio		0.48	0.48	0.48	0.43	0.43
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		735	1689	700	765	1529
v/s Ratio Prot			c0.42		0.34	c0.38
v/s Ratio Perm		0.03		0.06		
v/c Ratio		0.07	0.88	0.13	0.79	0.87
Uniform Delay, d1		12.5	20.9	12.9	21.6	22.9
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.0	5.9	0.1	5.4	5.8
Delay (s)		12.5	26.8	13.0	27.1	28.7
Level of Service		B	C	B	C	C
Approach Delay (s)	12.5		25.2			28.2
Approach LOS	B		C			C

Intersection Summary

HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	88.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	1.00	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1459	1770	3539	1458	3433	5085	1583	1770	3539	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1459	1770	3539	1458	3433	5085	1583	1770	3539	1455
Volume (vph)	336	373	139	55	671	292	564	935	161	193	474	178
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)	365	405	151	60	729	317	613	1016	175	210	515	193
RTOR Reduction (vph)	0	0	115	0	0	160	0	0	175	0	0	155
Lane Group Flow (vph)	365	405	36	60	729	157	613	1016	0	210	515	38
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot		NA	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	22.9	22.9	22.9	22.3	22.3	22.3	17.1	29.1	0.0	7.0	19.0	19.0
Effective Green, g (s)	22.9	22.9	22.9	22.3	22.3	22.3	17.1	29.1	0.0	7.0	19.0	19.0
Actuated g/C Ratio	0.24	0.24	0.24	0.23	0.23	0.23	0.18	0.30	0.00	0.07	0.20	0.20
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	417	833	343	406	811	334	603	1521	0	127	691	284
v/s Ratio Prot	c0.21	0.11		0.03	c0.21		c0.18	0.20		c0.12	c0.15	
v/s Ratio Perm			0.02			0.11						0.03
v/c Ratio	0.88	0.49	0.10	0.15	0.90	0.47	1.02	0.67	0.00	1.65	0.75	0.13
Uniform Delay, d1	35.8	32.1	29.2	29.9	36.4	32.4	40.1	29.9	48.6	45.1	36.9	32.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.1	0.4	0.1	0.2	12.7	1.1	40.9	2.3	0.0	326.4	7.2	1.0
Delay (s)	54.0	32.6	29.3	30.1	49.1	33.5	81.0	32.2	48.6	371.6	44.0	33.3
Level of Service	D	C	C	C	D	C	F	C	D	F	D	C
Approach Delay (s)		40.5			43.6			50.4			116.7	
Approach LOS		D			D			D			F	

Intersection Summary

HCM Average Control Delay	59.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	97.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

3: Canyon Crest Dr & College Ave
Ex + CP + CSR + SH PM (Mitigated)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1783	1506		1783	1583	1770	5085	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1783	1506		1783	1583	1770	5085	1506	3433	5085	2787
Volume (vph)	502	56	88	108	13	281	66	1725	153	284	1447	115
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)	546	61	96	117	14	305	72	1875	166	309	1573	125
RTOR Reduction (vph)	0	0	62	0	0	260	0	0	84	0	0	86
Lane Group Flow (vph)	0	607	34	0	131	45	72	1875	82	309	1573	39
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		24.0	24.0		12.2	14.7	8.2	33.1	33.1	14.7	39.6	24.0
Effective Green, g (s)		24.0	24.0		12.2	14.7	8.2	33.1	33.1	14.7	39.6	24.0
Actuated g/C Ratio		0.24	0.24		0.12	0.15	0.08	0.33	0.33	0.15	0.40	0.24
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		428	361		218	233	145	1683	498	505	2014	669
v/s Ratio Prot		c0.34			c0.07	0.03	0.04	c0.37		c0.09	c0.31	0.01
v/s Ratio Perm			0.02						0.05			
v/c Ratio		1.42	0.09		0.60	0.19	0.50	1.11	0.16	0.61	0.78	0.06
Uniform Delay, d1		38.0	29.5		41.6	37.4	43.9	33.5	23.7	40.0	26.4	29.3
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.02	0.84	1.36
Incremental Delay, d2		201.5	0.1		4.6	0.4	2.7	60.2	0.7	1.3	1.9	0.0
Delay (s)		239.5	29.7		46.2	37.8	46.6	93.7	24.4	42.0	24.0	39.9
Level of Service		F	C		D	D	D	F	C	D	C	D
Approach Delay (s)		210.9			40.4			86.6			27.8	
Approach LOS		F			D			F			C	

Intersection Summary

HCM Average Control Delay	76.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

4: Zura Way & College Ave
Ex + CP + CSR + SH PM (Mitigated)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes		0.95	1.00	0.92	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		0.86	1.00	0.85	1.00	1.00
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1533	3539	1455	1770	3539
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1533	3539	1455	1770	3539
Volume (vph)	0	444	1623	138	188	1463
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	483	1764	150	204	1590
RTOR Reduction (vph)	0	251	0	64	0	0
Lane Group Flow (vph)	0	232	1764	86	204	1590
Confl. Peds. (#/hr)		20		20	20	
Turn Type		custom		Perm	Prot	
Protected Phases			4		1	6
Permitted Phases		8		4		
Actuated Green, G (s)		48.0	48.0	48.0	44.0	44.0
Effective Green, g (s)		48.0	48.0	48.0	44.0	44.0
Actuated g/C Ratio		0.48	0.48	0.48	0.44	0.44
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		736	1699	698	779	1557
v/s Ratio Prot			c0.50		0.12	c0.45
v/s Ratio Perm		0.15		0.06		
v/c Ratio		0.32	1.04	0.12	0.26	1.02
Uniform Delay, d1		15.9	26.0	14.4	17.7	28.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.2	32.5	0.1	0.2	28.3
Delay (s)		16.2	58.5	14.6	17.9	56.3
Level of Service		B	E	B	B	E
Approach Delay (s)	16.2		55.0			51.9
Approach LOS	B		E			D

Intersection Summary

HCM Average Control Delay	49.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.0%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	1.00	0.91	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1456	1770	3539	1455	3433	5085	1445	1770	3539	1456
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1456	1770	3539	1455	3433	5085	1445	1770	3539	1456
Volume (vph)	778	880	572	276	668	355	525	709	101	347	932	209
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)	846	957	622	300	726	386	571	771	110	377	1013	227
RTOR Reduction (vph)	0	0	249	0	0	272	0	0	93	0	0	170
Lane Group Flow (vph)	846	957	373	300	726	114	571	771	17	377	1013	57
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	24.0	24.0	24.0	23.5	23.5	23.5	14.0	16.0	16.0	22.0	24.0	24.0
Effective Green, g (s)	24.0	24.0	24.0	23.5	23.5	23.5	14.0	16.0	16.0	22.0	24.0	24.0
Actuated g/C Ratio	0.24	0.24	0.24	0.23	0.23	0.23	0.14	0.16	0.16	0.22	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	419	837	344	410	819	337	474	802	228	384	837	344
v/s Ratio Prot	c0.48	0.27		0.17	c0.21		c0.17	0.15		0.21	c0.29	
v/s Ratio Perm			0.26			0.08			0.01			0.04
v/c Ratio	2.02	1.14	1.08	0.73	0.89	0.34	1.20	0.96	0.08	0.98	1.21	0.17
Uniform Delay, d1	38.8	38.8	38.8	36.1	37.7	32.5	43.8	42.4	36.4	39.6	38.8	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	467.0	78.6	73.0	6.6	11.3	0.6	110.7	23.7	0.6	40.9	105.7	1.0
Delay (s)	505.7	117.3	111.8	42.7	49.1	33.1	154.4	66.1	37.1	80.4	144.5	31.9
Level of Service	F	F	F	D	D	C	F	E	D	F	F	C
Approach Delay (s)		251.4			43.3			98.6			113.7	
Approach LOS		F			D			F			F	

Intersection Summary

HCM Average Control Delay	144.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	101.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	115.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

LONG-TERM (2030) POST MITIGATION ANALYSIS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.91	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					5085	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					5085	1536		3539	1536
Volume (vph)	593	0	2573	0	0	0	0	1275	327	0	1325	304
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)	645	0	2797	0	0	0	0	1386	355	0	1440	330
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	645	0	2795	0	0	0	0	1386	355	0	1440	330
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	59.0		59.0					33.0	100.0		33.0	100.0
Effective Green, g (s)	59.0		59.0					33.0	100.0		33.0	100.0
Actuated g/C Ratio	0.59		0.59					0.33	1.00		0.33	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1949		2026					1678	1536		1168	1536
v/s Ratio Prot								0.27			c0.41	
v/s Ratio Perm	0.20		c0.81						0.23			0.21
v/c Ratio	0.33		1.38					0.83	0.23		1.23	0.21
Uniform Delay, d1	10.4		20.5					30.9	0.0		33.5	0.0
Progression Factor	1.00		1.00					1.56	1.00		0.78	1.00
Incremental Delay, d2	0.1		174.0					2.1	0.1		110.9	0.3
Delay (s)	10.5		194.5					50.1	0.1		137.2	0.3
Level of Service	B		F					D	A		F	A
Approach Delay (s)		160.0			0.0			39.9			111.7	
Approach LOS		F			A			D			F	

Intersection Summary

HCM Average Control Delay	117.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1799	1506		1820	1583	1770	5085	1506	3433	5085	2787
Flt Permitted		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1799	1506		1820	1583	1770	5085	1506	3433	5085	2787
Volume (vph)	103	41	70	131	149	220	228	1280	184	747	1854	1297
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)	112	45	76	142	162	239	248	1391	200	812	2015	1410
RTOR Reduction (vph)	0	0	62	0	0	186	0	0	146	0	0	757
Lane Group Flow (vph)	0	157	14	0	304	53	248	1391	54	812	2015	653
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		19.0	19.0		16.0	22.0	13.0	27.0	27.0	22.0	36.0	19.0
Effective Green, g (s)		19.0	19.0		16.0	22.0	13.0	27.0	27.0	22.0	36.0	19.0
Actuated g/C Ratio		0.19	0.19		0.16	0.22	0.13	0.27	0.27	0.22	0.36	0.19
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		342	286		291	348	230	1373	407	755	1831	530
v/s Ratio Prot		0.09			c0.17	0.03	0.14	0.27		c0.24	c0.40	c0.23
v/s Ratio Perm			0.01						0.04			
v/c Ratio		0.46	0.05		1.04	0.15	1.08	1.01	0.13	1.08	1.10	1.23
Uniform Delay, d1		35.9	33.1		42.0	31.5	43.5	36.5	27.6	39.0	32.0	40.5
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.01	0.98	1.14
Incremental Delay, d2		1.0	0.1		64.9	0.2	81.7	27.6	0.7	36.9	46.2	106.4
Delay (s)		36.9	33.2		106.9	31.7	125.2	64.1	28.3	76.3	77.6	152.4
Level of Service		D	C		F	C	F	E	C	E	E	F
Approach Delay (s)		35.7			73.8			68.4			102.2	
Approach LOS		D			E			E			F	

Intersection Summary

HCM Average Control Delay	88.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes		0.95	1.00	0.92	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		0.86	1.00	0.85	1.00	1.00
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1533	3539	1455	1770	3539
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1533	3539	1455	1770	3539
Volume (vph)	0	128	1564	200	580	1475
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	139	1700	217	630	1603
RTOR Reduction (vph)	0	74	0	92	0	0
Lane Group Flow (vph)	0	65	1700	125	630	1603
Confl. Peds. (#/hr)		20		20	20	
Turn Type		custom		Perm	Prot	
Protected Phases			4		1	6
Permitted Phases		8		4		
Actuated Green, G (s)		47.0	47.0	47.0	45.0	45.0
Effective Green, g (s)		47.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio		0.47	0.47	0.47	0.45	0.45
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		721	1663	684	797	1593
v/s Ratio Prot			c0.48		0.36	c0.45
v/s Ratio Perm		0.04		0.09		
v/c Ratio		0.09	1.02	0.18	0.79	1.01
Uniform Delay, d1		14.7	26.5	15.4	23.5	27.5
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.1	27.9	0.1	5.4	24.1
Delay (s)		14.7	54.4	15.5	28.8	51.6
Level of Service		B	D	B	C	D
Approach Delay (s)	14.7		50.0			45.2
Approach LOS	B		D			D

Intersection Summary

HCM Average Control Delay	46.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95		0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1459	1770	3539	1459	3433	3432		3433	3539	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1459	1770	3539	1459	3433	3432		3433	3539	1455
Volume (vph)	451	406	158	58	740	310	679	1099	170	240	550	272
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)	490	441	172	63	804	337	738	1195	185	261	598	296
RTOR Reduction (vph)	0	0	135	0	0	229	0	12	0	0	0	240
Lane Group Flow (vph)	490	441	37	63	804	108	738	1368	0	261	598	56
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	20.5	20.5	20.5	21.0	21.0	21.0	20.0	24.0		14.0	18.0	18.0
Effective Green, g (s)	20.5	20.5	20.5	21.0	21.0	21.0	20.0	24.0		14.0	18.0	18.0
Actuated g/C Ratio	0.21	0.21	0.21	0.22	0.22	0.22	0.21	0.25		0.15	0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	737	760	313	389	778	321	719	862		503	667	274
v/s Ratio Prot	c0.14	0.12		0.04	c0.23		c0.21	c0.40		0.08	0.17	
v/s Ratio Perm			0.03			0.07						0.04
v/c Ratio	0.66	0.58	0.12	0.16	1.03	0.34	1.03	1.59		0.52	0.90	0.20
Uniform Delay, d1	34.4	33.6	30.2	30.1	37.2	31.4	37.8	35.8		37.6	37.8	32.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	1.1	0.2	0.2	41.2	0.6	40.5	269.7		0.9	17.1	1.7
Delay (s)	36.6	34.8	30.4	30.3	78.4	32.0	78.2	305.4		38.5	54.9	34.4
Level of Service	D	C	C	C	E	C	E	F		D	D	C
Approach Delay (s)		34.9			62.9			226.3			46.0	
Approach LOS		C			E			F			D	

Intersection Summary

HCM Average Control Delay	115.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.95		0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3501		1770	3539	1506		1749		1681	1696	1450
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3501		1770	3539	1506		1749		1681	1696	1450
Volume (vph)	1114	625	26	20	1194	375	50	15	10	143	10	202
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)	1211	679	28	22	1298	408	54	16	11	155	11	220
RTOR Reduction (vph)	0	3	0	0	0	134	0	6	0	0	0	187
Lane Group Flow (vph)	1211	704	0	22	1298	274	0	75	0	81	85	33
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot		pm+ov	Split			Split		Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	29.0	55.3		3.1	29.4	45.4		16.0		16.0	16.0	16.0
Effective Green, g (s)	29.0	55.3		3.1	29.4	45.4		16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.27	0.52		0.03	0.28	0.43		0.15		0.15	0.15	0.15
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	936	1820		52	978	643		263		253	255	218
v/s Ratio Prot	c0.35	0.20		0.01	c0.37	c0.06		c0.04		0.05	0.05	
v/s Ratio Perm						0.12						0.02
v/c Ratio	1.29	0.39		0.42	1.33	0.43		0.29		0.32	0.33	0.15
Uniform Delay, d1	38.7	15.4		50.8	38.5	21.4		40.1		40.3	40.4	39.3
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	140.2	0.1		5.5	154.4	0.5		2.7		3.3	3.5	1.5
Delay (s)	178.9	15.5		56.2	192.9	21.8		42.8		43.7	43.9	40.8
Level of Service	F	B		E	F	C		D		D	D	D
Approach Delay (s)		118.7			150.7			42.8			42.1	
Approach LOS		F			F			D			D	

Intersection Summary

HCM Average Control Delay	123.5	HCM Level of Service	F
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	106.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97			1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	1.00
Satd. Flow (prot)	1770	3495		1770	3378			1815	1583	1681	1712	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	1.00
Satd. Flow (perm)	1770	3495		1770	3378			1815	1583	1681	1712	1583
Volume (vph)	191	784	38	99	1321	271	34	30	105	126	26	195
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)	208	852	41	108	1436	295	37	33	114	137	28	212
RTOR Reduction (vph)	0	3	0	0	18	0	0	0	114	0	0	195
Lane Group Flow (vph)	208	890	0	108	1713	0	0	70	0	80	85	17
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split		NA	Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	8.0	43.7		10.3	46.0			16.0	0.0	16.0	16.0	8.0
Effective Green, g (s)	8.0	43.7		10.3	46.0			16.0	0.0	16.0	16.0	8.0
Actuated g/C Ratio	0.08	0.43		0.10	0.45			0.16	0.00	0.16	0.16	0.08
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	139	1497		179	1523			285	0	264	269	124
v/s Ratio Prot	c0.12	0.25		0.06	c0.51			c0.04		0.05	c0.05	0.01
v/s Ratio Perm												
v/c Ratio	1.50	0.59		0.60	1.13			0.25	0.00	0.30	0.32	0.13
Uniform Delay, d1	47.0	22.4		43.9	28.0			37.7	51.0	38.1	38.1	43.8
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	257.3	0.6		5.6	65.4			2.0	0.0	2.9	3.1	0.5
Delay (s)	304.3	23.0		49.5	93.4			39.8	51.0	41.0	41.2	44.3
Level of Service	F	C		D	F			D	D	D	D	D
Approach Delay (s)		76.1			90.8			46.7			42.9	
Approach LOS		E			F			D			D	

Intersection Summary

HCM Average Control Delay	78.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	0.97		0.76					0.91	1.00		0.95	1.00
Frpb, ped/bikes	1.00		0.95					1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.96		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)	3304		3434					5085	1536		3539	1536
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3304		3434					5085	1536		3539	1536
Volume (vph)	834	0	1158	0	0	0	0	2448	1080	0	1225	475
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)	907	0	1259	0	0	0	0	2661	1174	0	1332	516
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	907	0	1237	0	0	0	0	2661	1174	0	1332	516
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	custom		custom						Free			Free
Protected Phases								2			6	
Permitted Phases	4		4						Free			Free
Actuated Green, G (s)	44.5		44.5					47.5	100.0		47.5	100.0
Effective Green, g (s)	44.5		44.5					47.5	100.0		47.5	100.0
Actuated g/C Ratio	0.44		0.44					0.48	1.00		0.48	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	1470		1528					2415	1536		1681	1536
v/s Ratio Prot								c0.52			0.38	
v/s Ratio Perm	0.27		0.36						c0.76			0.34
v/c Ratio	0.62		0.81					1.10	0.76		0.79	0.34
Uniform Delay, d1	21.2		24.1					26.2	0.0		22.1	0.0
Progression Factor	1.00		1.00					1.09	1.00		0.72	1.00
Incremental Delay, d2	0.8		3.3					46.6	0.3		3.0	0.5
Delay (s)	22.0		27.4					75.3	0.3		19.0	0.5
Level of Service	C		C					E	A		B	A
Approach Delay (s)		25.1			0.0			52.3			13.8	
Approach LOS		C			A			D			B	

Intersection Summary

HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	77.8%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91	1.00	0.97	0.91	0.88
Frpb, ped/bikes		1.00	0.95		1.00	1.00	1.00	1.00	0.96	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1782	1506		1783	1583	1770	5085	1506	3433	5085	2787
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1782	1506		1783	1583	1770	5085	1506	3433	5085	2787
Volume (vph)	642	70	121	207	24	543	106	2345	187	373	1821	189
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)	698	76	132	225	26	590	115	2549	203	405	1979	205
RTOR Reduction (vph)	0	0	67	0	0	215	0	0	86	0	0	112
Lane Group Flow (vph)	0	774	65	0	251	375	115	2549	117	405	1979	93
Confl. Peds. (#/hr)	20		20	20		20	20		20	20		20
Turn Type	Split		Perm	Split		Over	Prot		Perm	Prot		Over
Protected Phases	4	4		8	8	1	5	2		1	6	4
Permitted Phases			4						2			
Actuated Green, G (s)		20.0	20.0		15.7	12.3	7.3	36.0	36.0	12.3	41.0	20.0
Effective Green, g (s)		20.0	20.0		15.7	12.3	7.3	36.0	36.0	12.3	41.0	20.0
Actuated g/C Ratio		0.20	0.20		0.16	0.12	0.07	0.36	0.36	0.12	0.41	0.20
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		356	301		280	195	129	1831	542	422	2085	557
v/s Ratio Prot		c0.43			c0.14	c0.24	0.06	c0.50		0.12	0.39	0.03
v/s Ratio Perm			0.04						0.08			
v/c Ratio		2.17	0.22		0.90	1.92	0.89	1.39	0.22	0.96	0.95	0.17
Uniform Delay, d1		40.0	33.4		41.4	43.9	46.0	32.0	22.2	43.8	28.5	33.1
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.11	0.97	1.02
Incremental Delay, d2		537.6	0.4		28.5	434.1	47.8	179.9	0.9	23.3	7.0	0.1
Delay (s)		577.6	33.8		69.8	478.0	93.7	211.9	23.1	71.6	34.6	34.0
Level of Service		F	C		E	F	F	F	C	E	C	C
Approach Delay (s)		498.3			358.1			193.8			40.4	
Approach LOS		F			F			F			D	

Intersection Summary

HCM Average Control Delay	195.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	130.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

4: Zura Way & College Ave
2030 + CSR SH PM (Mitigated)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes		0.95	1.00	0.92	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		0.86	1.00	0.85	1.00	1.00
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1533	3539	1455	1770	3539
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1533	3539	1455	1770	3539
Volume (vph)	0	664	1974	204	315	1834
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	722	2146	222	342	1993
RTOR Reduction (vph)	0	383	0	78	0	0
Lane Group Flow (vph)	0	339	2146	144	342	1993
Confl. Peds. (#/hr)		20		20	20	
Turn Type		custom		Perm	Prot	
Protected Phases			4		1	6
Permitted Phases		8		4		
Actuated Green, G (s)		47.0	47.0	47.0	45.0	45.0
Effective Green, g (s)		47.0	47.0	47.0	45.0	45.0
Actuated g/C Ratio		0.47	0.47	0.47	0.45	0.45
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		721	1663	684	797	1593
v/s Ratio Prot			c0.61		0.19	c0.56
v/s Ratio Perm		0.22		0.10		
v/c Ratio		0.47	1.29	0.21	0.43	1.25
Uniform Delay, d1		18.0	26.5	15.6	18.7	27.5
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.5	135.3	0.2	0.4	118.4
Delay (s)		18.5	161.8	15.7	19.1	145.9
Level of Service		B	F	B	B	F
Approach Delay (s)	18.5		148.1			127.3
Approach LOS	B		F			F

Intersection Summary

HCM Average Control Delay	121.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

6: Montezuma Rd & College Ave
2030 + CSR SH PM (Mitigated)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95		0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.91	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1462	1770	3539	1447	3433	3479		3433	3539	1454
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1462	1770	3539	1447	3433	3479		3433	3539	1454
Volume (vph)	1302	967	657	290	776	394	707	782	63	439	1084	306
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)	1415	1051	714	315	843	428	768	850	68	477	1178	333
RTOR Reduction (vph)	0	0	199	0	0	171	0	6	0	0	0	213
Lane Group Flow (vph)	1415	1051	515	315	843	257	768	912	0	477	1178	120
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			15			15			15			15
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	32.0	32.0	32.0	16.0	16.0	16.0	15.0	24.0		12.0	21.0	21.0
Effective Green, g (s)	32.0	32.0	32.0	16.0	16.0	16.0	15.0	24.0		12.0	21.0	21.0
Actuated g/C Ratio	0.32	0.32	0.32	0.16	0.16	0.16	0.15	0.24		0.12	0.21	0.21
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	1099	1132	468	283	566	232	515	835		412	743	305
v/s Ratio Prot	c0.41	0.30		0.18	c0.24		c0.22	0.26		0.14	c0.33	
v/s Ratio Perm			0.35			0.18						0.08
v/c Ratio	1.29	0.93	1.10	1.11	1.49	1.11	1.49	1.09		1.16	1.59	0.40
Uniform Delay, d1	34.0	32.9	34.0	42.0	42.0	42.0	42.5	38.0		44.0	39.5	34.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	136.4	12.9	71.6	87.4	229.5	90.5	231.2	59.3		95.0	269.9	3.8
Delay (s)	170.4	45.7	105.6	129.4	271.5	132.5	273.7	97.3		139.0	309.4	37.8
Level of Service	F	D	F	F	F	F	F	F		F	F	D
Approach Delay (s)		114.6			205.8			177.7			223.0	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	169.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	122.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.93		0.98		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (prot)	3433	3466		1770	3539	1467		1724		1681	1691	1458
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97		0.95	0.96	1.00
Satd. Flow (perm)	3433	3466		1770	3539	1467		1724		1681	1691	1458
Volume (vph)	571	1395	117	30	1613	217	60	15	20	575	20	563
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)	621	1516	127	33	1753	236	65	16	22	625	22	612
RTOR Reduction (vph)	0	6	0	0	0	100	0	10	0	0	0	281
Lane Group Flow (vph)	621	1637	0	33	1753	136	0	93	0	315	332	331
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	13.0	48.2		2.4	37.6	37.6		17.0		18.0	18.0	18.0
Effective Green, g (s)	13.0	48.2		2.4	37.6	37.6		17.0		18.0	18.0	18.0
Actuated g/C Ratio	0.13	0.47		0.02	0.37	0.37		0.17		0.18	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	439	1644		42	1310	543		288		298	300	258
v/s Ratio Prot	c0.18	0.47		0.02	c0.50			c0.05		0.19	0.20	
v/s Ratio Perm						0.09						c0.23
v/c Ratio	1.41	1.00		0.79	1.34	0.25		0.32		1.06	1.11	1.28
Uniform Delay, d1	44.3	26.6		49.3	32.0	22.2		37.2		41.8	41.8	41.8
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	199.6	21.1		62.3	157.4	0.2		3.0		68.0	83.7	152.9
Delay (s)	243.9	47.7		111.6	189.4	22.5		40.2		109.8	125.5	194.7
Level of Service	F	D		F	F	C		D		F	F	F
Approach Delay (s)		101.5			168.7			40.2			155.2	
Approach LOS		F			F			D			F	

Intersection Summary

HCM Average Control Delay	136.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			1.00	0.92	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00	0.95	0.97	1.00
Satd. Flow (prot)	1770	3520		1770	3333			1823	1458	1681	1712	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.98	1.00	0.95	0.97	1.00
Satd. Flow (perm)	1770	3520		1770	3333			1823	1458	1681	1712	1583
Volume (vph)	263	1744	35	250	1202	337	32	41	155	378	76	626
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)	286	1896	38	272	1307	366	35	45	168	411	83	680
RTOR Reduction (vph)	0	1	0	0	26	0	0	0	139	0	0	392
Lane Group Flow (vph)	286	1933	0	272	1647	0	0	80	29	241	253	288
Confl. Peds. (#/hr)	30		30	30		30	30		30	30		30
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot			Prot			Split		Perm	Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases									2			
Actuated Green, G (s)	12.0	40.0		11.0	39.0			17.0	17.0	16.0	16.0	12.0
Effective Green, g (s)	12.0	40.0		11.0	39.0			17.0	17.0	16.0	16.0	12.0
Actuated g/C Ratio	0.12	0.40		0.11	0.39			0.17	0.17	0.16	0.16	0.12
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	212	1408		195	1300			310	248	269	274	190
v/s Ratio Prot	0.16	c0.55		0.15	0.49			c0.04		0.14	c0.15	c0.18
v/s Ratio Perm									0.02			
v/c Ratio	1.35	1.37		1.39	1.27			0.26	0.12	0.90	0.92	1.52
Uniform Delay, d1	44.0	30.0		44.5	30.5			36.0	35.1	41.2	41.4	44.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	184.9	172.3		205.8	126.5			2.0	0.9	33.6	37.8	258.1
Delay (s)	228.9	202.3		250.3	157.0			38.0	36.1	74.7	79.2	302.1
Level of Service	F	F		F	F			D	D	E	E	F
Approach Delay (s)		205.7			170.0			36.7			207.4	
Approach LOS		F			F			D			F	

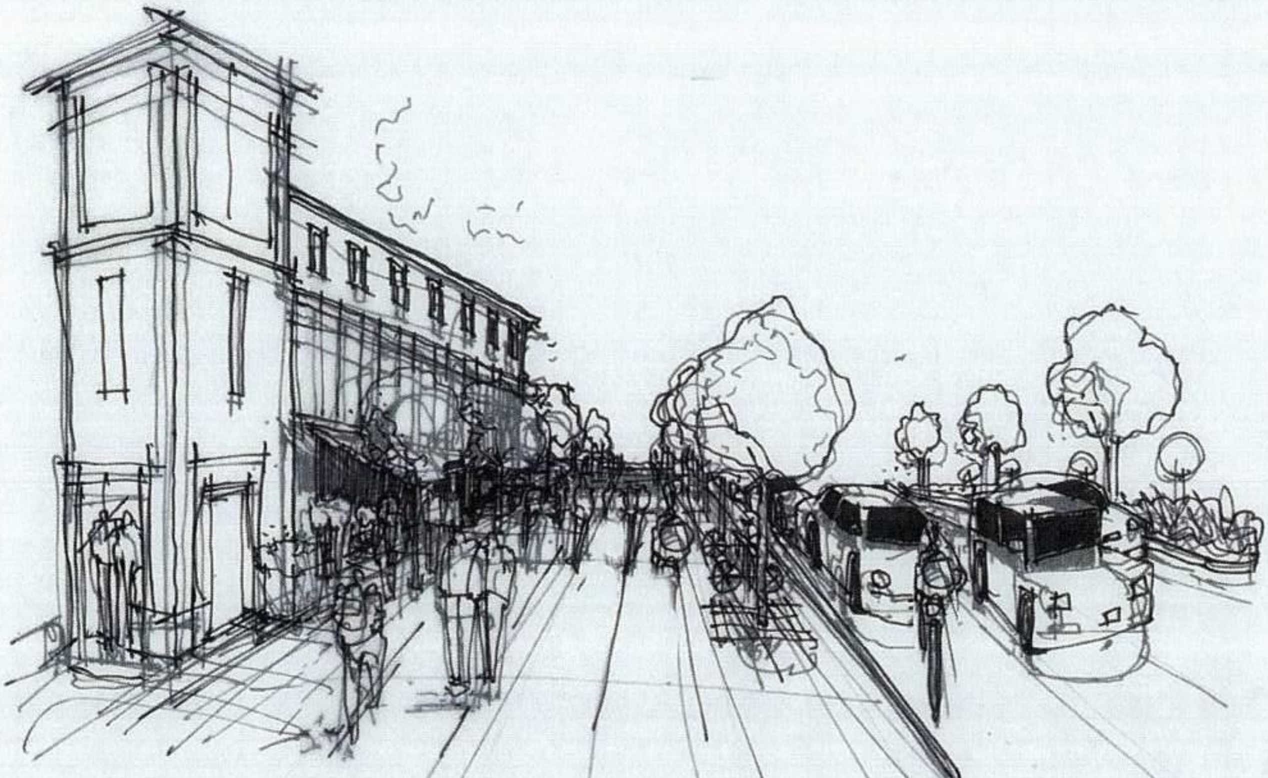
Intersection Summary

HCM Average Control Delay	186.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Alternative Approach to Address the Traffic Impacts of the Plaza Linda Verde Project on College Avenue and the General SDSU Campus Area,
Stepner Design Group (July 2010)

ALTERNATIVE APPROACH TO ADDRESS THE TRAFFIC IMPACTS OF THE PLAZA LINDA VERDE PROJECT ON COLLEGE AVENUE AND THE GENERAL SDSU CAMPUS AREA



July 2010

STEPNER DESIGN GROUP

ALTERNATIVE APPROACH
TO ADDRESS THE TRAFFIC IMPACTS OF THE PLAZA LINDA VERDE PROJECT ON COLLEGE AVENUE AND THE GENERAL SDSU CAMPUS AREA

Prepared For:

San Diego State University

San Diego, California

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San Diego, California

Michael Stepner

Michael Young

Matthew Engelhaupt

July 2010

STEPNER DESIGN GROUP

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EXECUTIVE SUMMARY

ALTERNATIVE APPROACH TO ADDRESS THE TRAFFIC IMPACTS OF THE PLAZA LINDA VERDE PROJECT ON COLLEGE AVENUE AND THE GENERAL SDSU CAMPUS AREA

San Diego State University is proposing the construction of the Plaza Linda Verde project to provide 400 units of housing and 90,000 square feet of related services. In support of the project, a traffic impact analysis was conducted. The traffic analysis concluded that the amount of projected traffic increase generated by the project constituted a "significant impact" at certain street and intersection locations within the project vicinity. Therefore the study recommends that the project contribute its "fair share" of the costs of a series of "mitigation measures.

▶ COUNTERPRODUCTIVE MITIGATION MEASURES

These measures, as depicted to the right, include a number of road widenings and restriping that would increase the vehicle capacity of these roadways and, therefore, might help traffic flow. While SDSU is willing to pay its fair-share towards construction of these improvements, the improvements would likely discourage, rather than encourage, pedestrian movement and, as such, they

are inconsistent with the goals of a series of adopted plans, including the City of San Diego General Plan.

▶ **QUESTIONING THE USE OF LEVEL OF SERVICE ALONE AS THE METRIC**

Those who crafted this report come from the ranks of the architecture, engineering, and planning professions who are not convinced of the wisdom of emphasizing "Level of Service" and allowing it to supercede the inherent benefits of contemporary 21st Century urban design. The use of Level of Service (LOS) to determine level of significance is inappropriate in a urbanized/university campus setting.

The following bullet points borrow heavily from insights and arguments made by a major California city that challenged the use of LOS to determine level of significance in a setting with a high pedestrian population:

▶ Travel by public transit, by bicycle and on foot must be an attractive alternative to travel by private automobile in general terms and in particular at university campus settings such as SDSU.

▶ The historic pattern of dense development and the limitations of SDSU's street network mean that there will always be competition between transportation modes for limited road space.

▶ The California Environmental Quality Act (CEQA) requires that potential significant adverse environmental impacts be analyzed and mitigated. CEQA grants broad authority to municipalities to implement its provisions. An Environmental Impact Report (EIR) is required when it is determined that a project may cause significant adverse environmental impacts as defined by California statute and guidelines. With regard to Plaza Linda Verde, San Diego's local guidelines were used as a metric to analyze traffic impacts called the Level of Service (LOS), which runs from level 'A,' or free flow of traffic, to level 'F,' or total congestion, to determine whether the proposed project causes any significant impacts. This would include an environmental impact of increasing air pollution due to low speed auto travel. These guidelines could require preparation of an EIR if a bicycle lane, the development of a mixed use high-density project, or other project might degrade the LOS at an intersection to levels 'E' or 'F'. Such a degradation would, according to the City of San Diego metric, be designated as adverse impacts to the environment. because in decades past, slow moving traffic theoretically led to 'hot spots' where pollutants accrue to levels that can cause harm to the environment and people. But it is notable that automotive emission control technology has advanced over the intervening decades such that slower traffic is unlikely to cause any 'hot spots,' thus obviating CEQA's concern over LOS as a measure of environmental impact.

- Invariably, mitigating LOS through increasing roadway capacity degrades environmental quality by increasing vehicle trips and vehicle volume and consequently increasing air pollution and greenhouse gas pollution, and increasing danger for bicyclists and pedestrians.

- LOS measures auto delay at intersections, not mid block, and ignores all transit, pedestrian and bicycle delay and safety.

- LOS analysis does not account for modal shift, where reduced motor vehicle capacity encourages auto trips to shift to other travel times, routes or travel modes.

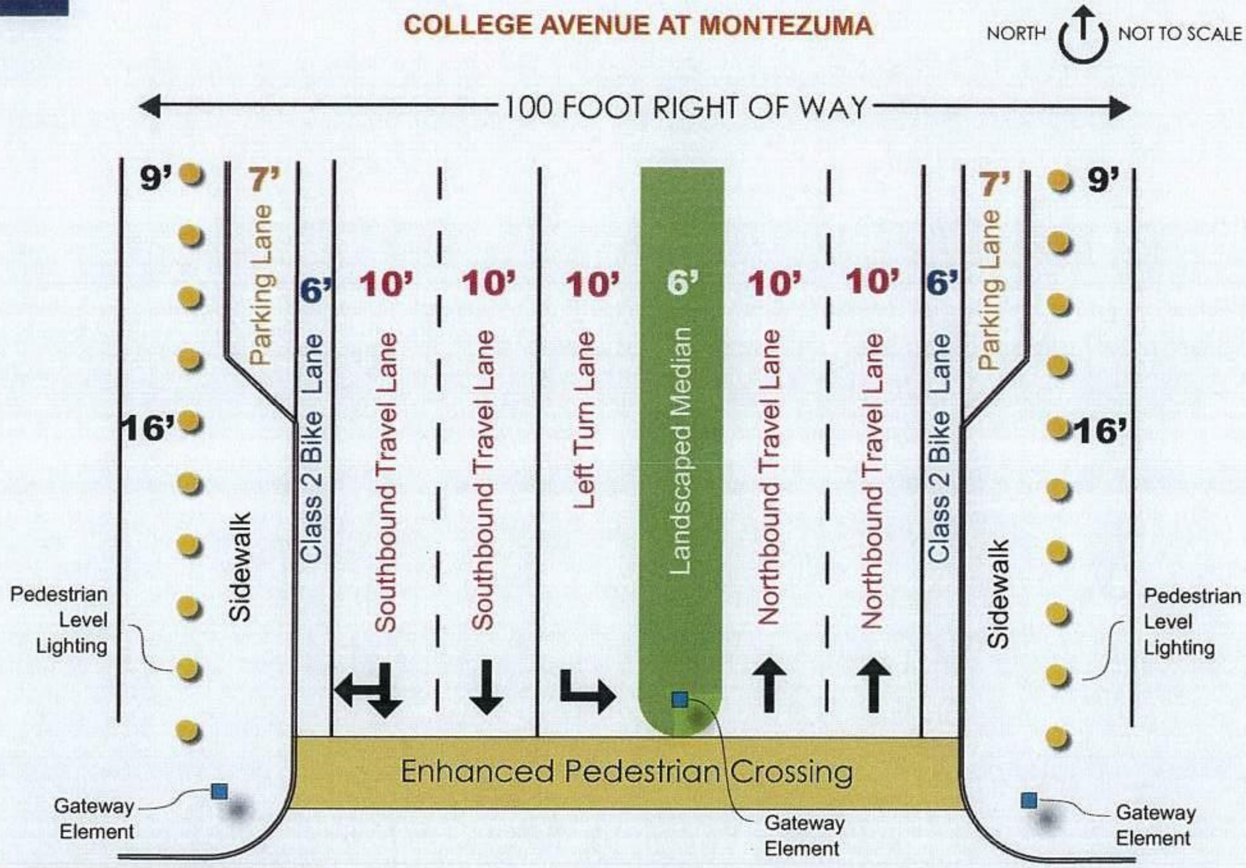
- LOS, as constructed, favors the incumbency of the automobile, an inefficient mode of transportation, at the expense of bicycles, pedestrians, and public transit.

- LOS as a metric does not recognize that projects such as on-campus student housing with services within walking distance, transit lanes, bicycle lanes, traffic calming, and sidewalk widening may reduce auto LOS but increase capacity for non-automobile modes, which can increase the total number of persons moving through a given corridor.

- LOS does not take into account relationships and conflicts among modes, such as the interplay between higher traffic speeds, higher flows, broader roadways, lateral separation and the negative, harmful consequences of those factors to pedestrian safety.

- LOS does not take into account the qualitative impacts on all users, including safety both real and perceived as well as trip quality.

Therefore, automobile LOS analysis alone is not an appropriate metric for assessing environmental impacts and for analyzing projects that may improve overall environmental quality and it is imperative to consider and implement significance criteria under CEQA that will more accurately analyze and predict traffic- and transportation-related environmental impacts.



PROPOSED ALTERNATIVE

In serving the state's higher education needs and, thereby, providing a substantial benefit to the region, SDSU must balance the demands of pedestrian, bicycle, and vehicular modes of transportation in the local community in order to serve its expanding enrollment and diverse population. Because the campus is bisected by College Avenue, a major arterial, it is desirable that the campus create a safe and efficient traffic flow along and across College Avenue for both vehicular and pedestrian traffic.

In furtherance of that goal, the authors suggest an alternative that places an emphasis on the pedestrian with wide sidewalks, narrower crossings, enhanced pavements, and pedestrian amenities such as outdoor dining, outdoor merchandise displays, public art, information kiosks, street furniture, special pedestrian lighting and ample shade and vegetation. Specifically, the design includes two 7-foot parallel parking lanes, two 6-foot Class 2 bike lanes, four travel lanes (two northbound, two southbound) a southbound left turn lane, and an 8-foot landscaped median. This alternative demonstrates how the various components (automobile, pedestrian, highways, sidewalks, trees and plazas) can be scaled, positioned, and balanced to create an alluring and landmark "public place" that serves as a transportation element and a destination. We urge the decision-makers to consider the opportunity that exists to take a justified departure from "business as usual" and instead create a signature gateway element where the vigor and dynamics of a major center of learning are placed at a key entry point.

INTRODUCTION 1

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SDSU Plaza Linda Verde EIR

SAN DIEGO STATE UNIVERSITY

Figure 1.0-11

Proposed Site Plan

SOURCE: San Diego State University (DRAFT Environmental Impact Report)

San Diego State University is proposing the construction of the Plaza Linda Verde project to provide 400 units of housing and 90,000 square feet of services. (A more complete project description is included in Appendix 1). In keeping with the California Environmental Quality Act (CEQA), as part of the development process, a traffic impact analysis was conducted, which will be a component of the Environmental Impact Report (EIR) prepared for the project. The traffic analysis assessed the potential impacts associated with the development. The study concluded that the amount of projected traffic increase generated by the project constituted a "significant impact" at certain street and intersection locations within the project vicinity. Therefore the study recommends that the project contribute its "fair share" of the costs of a series of "mitigation measures. These measures include a number of road widenings and restriping that add lanes to College Avenue and expand the size and vehicular traffic intensity of the College Avenue / Montezuma Road intersection.

These proposed "improvements", if implemented, would increase the vehicle capacity of these roadways and, therefore, might help traffic flow, but they would likely discourage, rather than encourage, pedestrian movement and, as such, they are inconsistent with the goal of a pedestrian-oriented college community. This emphasis on driver comfort at the expense of the student/pedestrian directly countermands the goals of the Plaza Linda Verde Plan, the SDSU Campus Master Plan, the College Area Community Plan, and the City of San Diego General Plan.

The authors of this report share a concern that the mitigation measures derived from the traffic analysis will compromise the promise and potential of the Plaza Linda Verde project. This report maintains that the proposed mitigation measures are a product of the emphasis on LOS, a commonly applied mid-20th Century impact criteria that places a higher priority on traffic flow and driver comfort

INTRODUCTION

at the expense of community building. Twenty-first Century planning now focuses on the enhancing of the pedestrian and transit-oriented experience, sustainable design practices that focus on community-building, place-making, pedestrian safety, street life, alternative transportation, and the reduction in the need for, and use of, the automobile. Those who crafted this report come from the ranks of the architecture, engineering, and planning professions who are not convinced of the wisdom of emphasizing "Level of Service" and allowing it to supercede the inherent benefits of contemporary 21st Century urban design.

This report presents an examination of the emphasis on "Level of Service" (LOS) that drives contemporary traffic analysis, and the mitigation measures that result from this emphasis. This report also proposes an alternative approach to the matter of traffic congestion in the vicinity of the Plaza Linda Verde project. The report proposes that the mitigation emphasis be shifted from the vehicle to a shared emphasis with the vehicle and pedestrian. It recommends realigning design emphasis from providing additional vehicle capacity to providing narrower vehicle travel lanes to slow traffic and providing wider sidewalks with enhanced pavements and pedestrian amenities.

This report voices this challenge to the LOS status quo in a general narrative argument.

PROPOSED MITIGATION MEASURES

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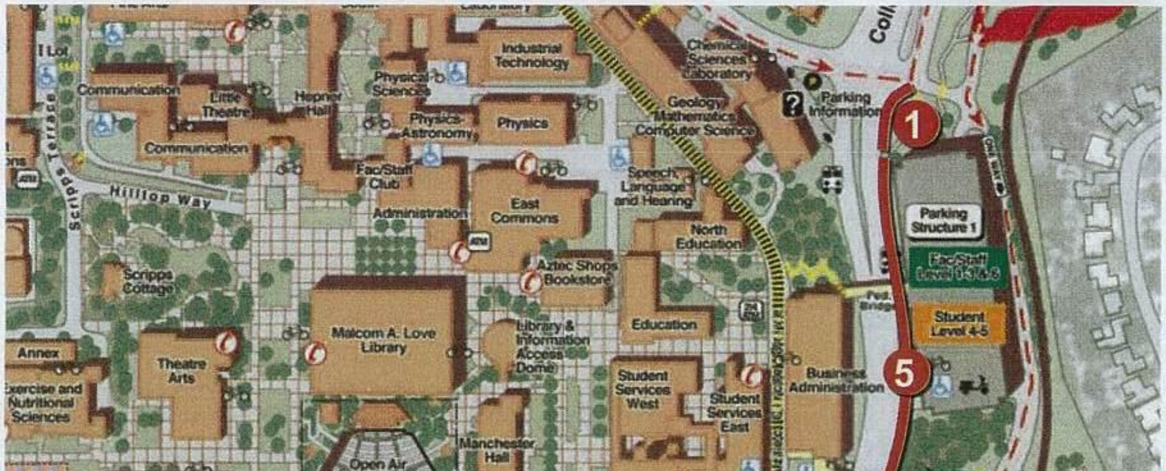
EXHIBIT 2 - **MITIGATION MEASURES MAP**



If the determination of significance is adopted, and if the mitigation measures proposed to address the significant impacts of the project are enacted and not overridden, SDSU will be required to contribute their "fair share" to fund certain roadway improvements. Specifically, the Traffic Analysis proposes a number of mitigation measures ranging from restriping, to additional turn lanes, and additional through lanes. The following is a list of the primary roadway improvements recommended by the traffic study under the Near-Term (2015) and Long-Term (2030) scenarios to mitigate the significant impacts identified by the study. They are listed below and depicted on the facing page (Exhibit 2).

Near-term (University/Community, serving retail scenario) intersections and street segments

1 AN ADDITIONAL NORTHBOUND LANE ON COLLEGE AVENUE NEAR CANYON CREST:

Mitigation Measure B-1: College Avenue/Canyon Crest Drive. "Contribute a fair-share towards restriping College Avenue to provide an additional (third) northbound through-lane from 500 feet south of the Canyon Crest Drive intersection to the I-8 eastbound ramps."

2 TRAFFIC SIGNAL AT COLLEGE AVENUE/ZURA WAY INTERSECTION; ALTERNATIVELY, AN ADDITIONAL SOUTHBOUND LEFT TURN LANE ON COLLEGE AVENUE AT MONTEZUMA ROAD:

Mitigation Measure B-2: College Avenue/Zura Way. "Contribute a fair-share towards the provision of a traffic signal at the intersection." As an alternate mitigation to providing a traffic signal at this intersection, prohibit southbound left-turns, which would require "an additional southbound left-turn lane at the College Avenue/Montezuma Road intersection."

PROPOSED MITIGATION MEASURES

3 ADDITIONAL WESTBOUND AND SOUTHBOUND LEFT TURN LANES ON COLLEGE AVENUE AT MONTEZUMA ROAD:

Mitigation Measure B-3: College Avenue/Montezuma Road. "Contribute a fair-share towards the widening of the College Avenue/Montezuma Road intersection to provide an additional (second) left-turn lane at the southbound and westbound approaches."

4 AN ADDITIONAL NORTHBOUND THROUGH LANE ON COLLEGE AVENUE BETWEEN I-8 AND ZURA WAY:

Mitigation Measure C-1: College Avenue: Canyon Crest Drive to Zura Way. "Contribute a fair share towards restriping College Avenue to provide an additional (third) northbound through lane on College Avenue between I-8 and Zura Way."

Long-Term (University/Community-Serving Retail Scenario) intersections and street segments

5 A RIGHT TURN LANE ON MONTEZUMA ROAD AT CAMPANILE:

Mitigation Measure E-6: Montezuma Road/Campanile Drive. "Contribute a fair share towards widening Campanile Drive to provide a 75-foot-long dedicated right-turn lane on the northbound approach."

6 AN ADDITIONAL NORTHBOUND LANE ON COLLEGE AVENUE BETWEEN MONTEZUMA ROAD AND ZURA ROAD:

Mitigation Measure F-2: College Avenue; Zura Way to Montezuma Road. "Contribute a fair share towards widening the southbound approach of College Avenue at Montezuma Road to provide a second left turn lane; this extra lane would result in a 7-lane cross section on College Avenue between Montezuma Road and Lindo Paseo. Also, provide a third northbound through-lane on College Avenue between Lindo Paseo and Zura Way."


MITIGATION MEASURE IMPACTS

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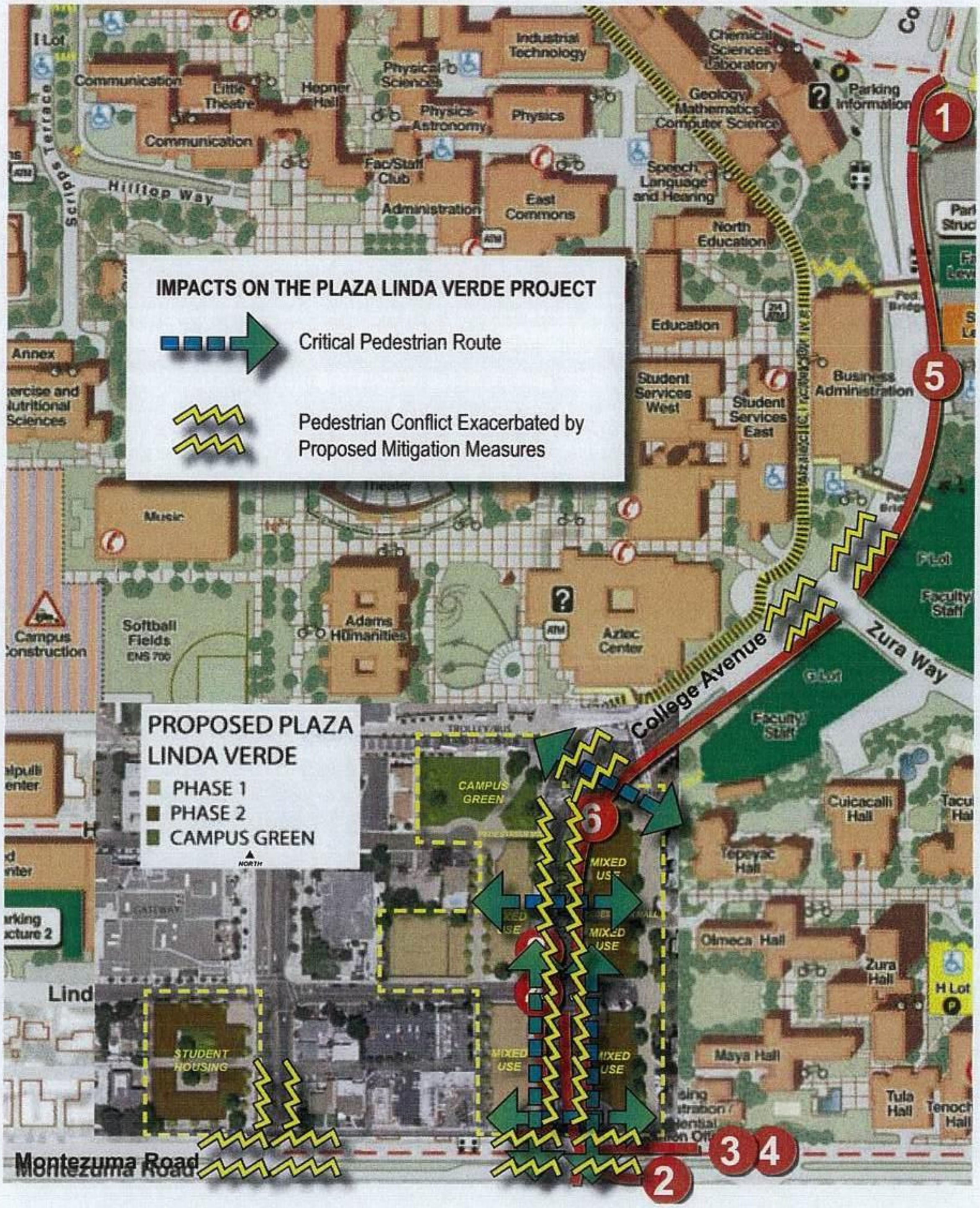
EXHIBIT 3 - **MITIGATION MEASURE IMPACTS MAP**



▶ DIVIDE THE PROJECT

The proposed mitigation measures, which are based on traditional traffic engineering principles that utilize level of service as a metric to measure traffic flow, would widen College Avenue by several feet in the northbound and southbound directions and increase the amount of vehicle traffic, and, potentially, the velocity of vehicle traffic, along College Avenue and at the intersection of College Avenue and Montezuma Road. College Avenue bisects the proposed Plaza Linda Verde project, which proposes student residences on both sides of College Avenue. This could make it more difficult for residents on the west side of the project to avail themselves of the Plaza Linda Verde retail and commercial enterprises on the east side of College Avenue, if they do not utilize the available pedestrian crosswalks. Similarly, the proposed mitigation measures could make it more difficult for Plaza Linda Verde residents on the east side of the project to access the SDSU campus on the west side of College Avenue.

▶ REDUCE THE ALLURE OF THE PUBLIC REALM

The proposed mitigation measures increase the amount of vehicle traffic, and the velocity of vehicle traffic along College Avenue and at the intersection of College Avenue and Montezuma Road. Plaza Linda Verde would facilitate physical improvements to the streetscape and general public realm along College Avenue. These improvements include wider sidewalks, abundant landscaping, street furnishings, iconic art accents, gateway elements, plazas, and outdoor dining opportunities on both sides of College Avenue. These public realm enhancements are designed to encourage social interaction, casual conversation, community networking, and a general re-orientation of College Avenue from a simple vehicle conveyance into an attractive and socially interactive neighborhood central place. Unfortunately, the noise, dust, commotion and disorder that would result from providing additional vehicle capacity would reduce the appeal of

these new public spaces, and discourage their use. Thus providing additional vehicle capacity would diminish the chances that the public realm aspects of Plaza Linda Verde along College Avenue will realize its enormous potential.

▶ STIFLE THE ADVANCE OF THE STATE OF SDSU CAMPUS DESIGN

The proposed mitigation measures represent a continuation of the type of mis-guided city design philosophy that has divided communities, discouraged the use of alternative modes of transportation, and endangered pedestrians and cyclists. The philosophy behind the proposed traditional mitigation measures is especially damaging to districts with high pedestrian concentrations such as college campuses. With reference to SDSU, Plaza Linda Verde represents a tonal shift, a reimagining of the the SDSU property from a "commuter-campus" indebted to the automobile to a pedestrian-oriented setting that serves as a place of inspiration, learning, contemplation, and thought where students and faculty can relate, debate, and pontificate in a safe environment without the commotion and distraction of additional traffic lanes. Providing additional vehicle capacity would stifle this reprogramming, and dampen the pedestrian-oriented intent of Plaza Linda Verde.

▶ CONCLUSIONS

▶ 1. The traffic impact in the analysis is overstated. The amount of net traffic increase as a result of the project is a nominal increase over the current and projected peak hour traffic in the study area. It is worthy to note that traffic modeling is an inexact science and the suggested increase would seem to be within any logical "margin of error", thus it is not a certainty that any traffic increase will result;

▶ 2. It is counterintuitive to demand that SDSU contribute to the cost of vast and expensive road improvements that annul the desired benefits of the Plaza Linda Verde project;

▶ 3. Increasing vehicle capacity would prompt drivers to maintain or increase speed, adding to the noise and velocity of traffic within a highly pedestrian-dominated setting. This would discourage, rather than encourage, increased pedestrian movement and, therefore, is inconsistent with the pedestrian-oriented nature of the proposed project.

▶ 4. The use of LOS as a metric is not required under CEQA, it is one suggested method in the absence of more contemporary approaches. As we are now beyond the first decade of the 21st Century, we propose a more forward-thinking and appropriate way of assessing impact that is not so entirely devoted to the automobile.

▶ 5. The traditional mitigation measures propose to modify College Avenue to provide increased traffic capacity as an "improvement," however, the widenings, restriping, etc. would further serve a vehicular thoroughfare through what is an increasingly pedestrian environment.

▶ 6. Ideally, right-of-way improvements that carry forth the meritorious and contemporary ideals of the Plaza Linda Verde project would, instead, slow vehicular traffic, add bike lanes, Improve walkability, provide on-street parking, and mend the tear in the community fabric that College Avenue and Montezuma Drive currently create.

▶ 7. The proposed mitigation measures may reduce the projects "impacts" to acceptable limits under CEQA and the City's traffic engineering standards, but they would offer little improvement to the state of human occupation of this site, especially the day-to-day living experience of pedestrians, motorists and cyclists. The mitigation measures might increase traffic capacity but they would be inconsistent with the goals of creating a pedestrian-oriented, university community.


PROJECT SITE TRAFFIC CONDITIONS

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EXHIBIT 4 - **LLG TRAFFIC ANALYSIS TABLE 6-1**

TABLE 6–1
EXISTING PEAK HOUR INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay[a]	LOS[b]
1. College Avenue / I–8 Westbound Ramps	Signal	AM PM	9.3 8.3	A A
2. College Avenue / I–8 Eastbound Ramps	Signal	AM PM	77.0 15.2	E B
3. College Avenue / Canyon Crest Drive	Signal	AM PM	48.6 57.5	D E
4. College Avenue / Zura Way	TWSC[c]	AM PM	67.0 16.2	F C
5. College Avenue / Lindo Paseo	Signal	AM PM	11.9 20.1	B C
6. College Avenue / Montezuma Road	Signal	AM PM	36.6 45.7	D D
7. College Avenue / El Cajon Boulevard	Signal	AM PM	36.6 56.4	D E
8. Montezuma Road / Collwood Boulevard	Signal	AM PM	21.2 24.7	C C
9. Montezuma Road / 55th Street	Signal	AM PM	41.2 34.1	D C
10. Montezuma Road / Campanile Drive	Signal	AM PM	28.0 34.2	C C
11. Montezuma Road / Catoctin Drive	Signal	AM PM	20.0 20.4	B C
12. Montezuma Road / El Cajon Boulevard	Signal	AM PM	24.6 20.7	C C

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

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

The project consists of two possible development scenarios, that differ only as to the type of retail that ultimately occupies the floor space assigned to retail uses in the project:

- Option 1: "UNIVERSITY/COMMUNITY - SERVING RETAIL" (This is the proposed project and the "most conservative" traffic scenario in that it would generate the most vehicle trips.)

This option anticipates retail tenants that generate the greatest Average Daily Trips (ADT) because they are marketed and designed to serve both the university and the community at large; those who have a predisposition to drive to the retailer.

The "University/Community-Serving Retail" design generates

- 2,396 net ADT (5,509 - 3,113 existing trips).
- 185 (46 inbound, 139 outbound) Peak Hour AM trips
- 279 (195 inbound, 84 outbound) Peak Hour PM trips

- Option 2: "UNIVERSITY-SERVING RETAIL"

This option anticipates retail tenants that generate far less ADT because they are marketed and designed to serve the college students and campus occupants; those who have a predisposition to walk or bike to the retailer.

The "University-Serving Retail" design generates

- 529 net ADT (3,642 - 3,113 existing trips)
- 63 (19 FEWER inbound, 82 outbound) Peak Hour AM trips
- 109 (101 inbound, 8 outbound) Peak Hour PM trips

Maximum number of trips, from the traffic analysis:

The total net project trips, according to the traffic analysis, and under the most conservative estimates (assuming the most intense output) for the project are 2,396 ADT. These trips would be distributed throughout the study area. However, in order to further substantiate this report, the following table illustrates that even if one assumes all project trips would go through any of the key intersections in the traffic analysis (a situation that cannot occur) the amount of trips generated by the project would still not constitute any more than 8% of any intersections capacity (2396/30,000), or 16% of any current ADT (2396/14,800). Of course, their actual impact would be substantially less since the trips would be spread out among several intersections. Therefore, even if one accepts the methodology and the calculations in the traffic analysis, the net impact is nominal and would seem to suggest the scope and scale of the proposed mitigation measures is out of proportion to the actual impact.

EXHIBIT 5 - **LLG TRAFFIC ANALYSIS TABLE 6-2**

TABLE 6–2
EXISTING DAILY STREET SEGMENT OPERATIONS

Street Segment	Capacity (LOS E)[a]	ADT[b]	LOS[c]	V/C[d]
College Avenue				
Canyon Crest Drive to Zura Way	40,000	44,000	F	1.100
Zura Way to Montezuma Road	40,000	30,000	C	0.750
Montezuma Road to El Cajon Boulevard	40,000	29,100	C	0.728
Montezuma Road				
Collwood Boulevard to 55th Street	40,000	30,600	C	0.765
55th Street to College Avenue	30,000	26,100	E	0.870
College Avenue to Catoctin Drive	30,000	14,800	C	0.493

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

EXHIBIT 6 - **LLG TRAFFIC ANALYSIS TABLE 6-3**

TABLE 6–3
EXISTING ILV OPERATIONS

Intersection	Peak Hour	Existing	
		Total Operating Level (ILV / Hour)	Capacity[a]
College Ave / I-8 WB Ramps	AM PM	596 682	Under Under
College Ave / I-8 EB Ramps	AM PM	615 1124	Under Under

Footnote:

a. CAPACITY is shown as *UNDER* capacity, *NEAR* capacity or *OVER* capacity;
Under Capacity = <1200 ILV/Hour
Near Capacity = >1200 but < 1500 ILV/Hour
Over Capacity = >1500 ILV/Hour

General Notes:

1. See *Appendix E* for ILV calculation sheets.

DETERMINING LEVEL OF SIGNIFICANCE

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The EIR traffic analysis concluded that the project's traffic increases, in combination with existing and future traffic, would result in a "significant" impact, even though they represent a nominal increase. As a result, SDSU must contribute to a fund for a number of physical changes to the road network necessary to mitigate these "impacts". The proposed changes include additional lanes (by street widening and restriping) and more sweeping corner radii – designed to maintain traffic flow and reduce waiting time at traffic signals for drivers.

This "Determination of Significance" occurred because the analysts employed the City of San Diego planning directive – "City of San Diego Significance Criteria" which is preoccupied with maintaining or improving traffic flow. According to the City of San Diego's Significance Determination Thresholds report dated January 2007, a project is considered to have a significant impact if the new project traffic has decreased the operations of surrounding roadways by a City defined threshold. For projects deemed complete on or after January 1, 2007, the City defined threshold by roadway type or intersection is shown in Table 5-1 (Exhibit 7, next page).

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

"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 build out (long-term cumulative)."

DETERMINING LEVEL OF SIGNIFICANCE

"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."

EXHIBIT 7 - **LLG TRAFFIC ANALYSIS TABLE 5-1**

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
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E	0.010	1.0	0.02	1.0	2.0	1.0[c]
F	0.005	0.5	0.01	0.5	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 impact is only considered significant if the total delay exceeds 15 minutes.

General Notes:

- Delay = Average control delay per vehicle measured in seconds for intersections, or minutes for ramp meters.
- LOS = Level of Service
- V/C = Volume to Capacity Ratio (capacity at LOS E should be used)
- Speed = Arterial speed measured in miles per hour for Congestion Management Program (CMP) analyses

EXHIBIT 8 - **LLG TRAFFIC ANALYSIS TABLE 5-2**

TABLE 5–2
CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)
TRAFFIC IMPACT SIGNIFICANT THRESHOLDS

	CEQA Question	Corresponding Traffic Study Section
a)	Would the project 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?	Section 9.0 – *Analysis of Near-term Traffic Volumes;* Section 15.0 – *Transit;* and Section 16.0 – *Pedestrian/Bicycle Circulation*
b)	Would the project 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 or designated roads or highways?	Section 9.0 – *Analysis of Near-term Traffic Volumes* , and Section 11.0 – *Congestion Management Program Compliance*
c)	Would the project 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?	*(This is not applicable to this traffic impact study)*
d)	Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?	Section 13.0 – *College Avenue/ Lindo Paseo Driveway Access*
e)	Would the project result in inadequate emergency access?	Section 18.0 – *Emergency Vehicle Access*
f)	Would the project result in inadequate parking capacity? (Note: While this criteria has been removed from the CEQA Guidelines, an analysis of available parking capacity nevertheless was conducted.)	Section 14.0 – *Parking*
g)	Would the project conflict with adopted policies, plan or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	Section 15.0 – *Transit;* and Section 16.0 – *Pedestrian/Bicycle Circulation*

***Source:** 2010 California Environmental Quality Act – Statute & Guidelines*

DETERMINING LEVEL OF SIGNIFICANCE

If the project exceeds the thresholds in Table 5-1, then the project may be 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.

Though keeping in mind that traffic modeling is inexact, it is still worthy to point out that the traffic analysis came to a notable conclusion. Specifically, in the traffic analysis (Sect. 8.3):

" ...the traffic analysis acknowledges the unique situation that is a university campus, and it even expects a net decrease in commuter trips on Interstate 8 and other regional roadways in the area. The project is not increasing the number of students or faculty so no new 'to/from SDSU' school trips would occur. To the contrary, the project is eliminating those trips that, otherwise, would have occurred."

Yet, because of a fidelity to LOS, the EIR traffic report nevertheless proposes a number of street widenings and restripings to add lanes in direct contradiction to the purpose, intent, and goals of the Plaza Linda Verde project.

STATEMENT 1

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The proposed mitigation measures conflict with adopted plans, policies and accepted practices of planning and urban design.

1A. THE PROPOSED MITIGATION MEASURES CONFLICT WITH LONG RANGE SDSU CAMPUS PLANNING

The Plaza Linda Verde project continues the implementation of a master plan that is designed to perform the conversion of the campus of San Diego State University (SDSU) from a "commuter campus" designed to accommodate students who drive to school, to a full functioning pedestrian-oriented university campus with a large on-campus resident student population and related resident-serving enterprises. Over the past 15 years San Diego State University has consistently enacted programs and physical changes that implement this master planning by:

- Removing roadways that fragment the campus,
- Working with MTS to construct a bus transit center,
- Working with MTS to construct a subterranean light-rail transit station,
- Providing increased options for on-campus student housing; and,
- Promoting the development of basic services such as laundry, grocery, pharmacy, household goods, decorating, and health stores, offices and services on campus, or within walking distance of the campus.

This master planning effort has resulted in a reduction of average daily trips (ADT) per student by making some automobile trips (to and from campus and shopping trips) unnecessary. Under this planning and design philosophy more students now live on campus, or walk or bike to school rather than drive a car. The benefits are evident:

- A student presence 24 hours a day creates more campus life,
- On campus living builds community and forges friendships and future business relationships,

STATEMENT 1

- Fewer vehicles results in a reduction in the use of precious land devoted to vehicle circulation and storage,
- Fewer drivers reduces pollution from vehicular traffic,
- Fewer drivers create fewer potential vehicle/pedestrian conflict points – a significant safety benefit
- A reduction in vehicless with a pedestrian emphasis can serve to create more pedestrian amenities, including a quieter and calmer academic setting better suited to study, research, and casual outdoor conversation.

The Plaza Linda Verde project is a university initiative designed to further carry out the campus'master-planning program because it includes on-campus housing and related services.

- 1B. THE PROPOSED MITIGATION MEASURES CONFLICT WITH THE PRACTICE OF 21ST CENTURY PLANNING

Two recent books by former San Francisco planning director, Allan Jacobs (The Boulevard Book and Great Streets) provide some insight and a look at this relationship. Several quotes from the books indicate how we might look at College Avenue and the Plaza Linda Verde project:

- "Streets are places of social and commercial encounter and exchange. They are where you meet people--which is the basic reason to have cities in any case."
- "Great streets have 9- to 10-foot lanes and 7- to 8-foot parking maximums if they have parking. Though present more than not, parking in great amounts is not a characteristic of great streets. At great intersections, we've found that every movement is often possible."

- "The reason great intersections work is because of the creation of a pedestrian realm where the cars know this. When streets become unsafe, it is almost always when the pedestrian realm does not exist."
- "Streets moderate the form and structure and comfort of urban communities."

The following is the policy introduction in the City of San Diego Street Design Manual and was used as the overriding theme for the preparation of the manual:

- "If we can develop and design streets so that they are wonderful fulfilling places to be--community-building places, attractive for all people--then we will have successfully designed about one-third of the city directly and will have had an immense impact on the rest."

\- Allan B. Jacobs, Great Streets.

- 1C. THE PROPOSED MITIGATION MEASURES CONFLICT WITH THE INTENT, PURPOSE AND POLICIES OF ADOPTED MUNICIPAL PLANS

Policy Recommendations

In 1988, the City Council, as part of its ongoing discussions of rapid growth and its management, received a report from one of its consultants, Allan Jacobs. Jacobs advised the city to " . . . never widen another street." While only informally adopting this as policy, similar policy recommendations have been made in subsequent plans and policy documents.

STATEMENT 1

► COLLEGE AREA COMMUNITY PLAN

The College Area Community Plan, adopted in 1989 (SDSU Element adopted 1993), is the planning framework for the College Community Redevelopment Project Area and the Plaza Linda Verde project. The plan sets forth several goals, policies, and recommendations that guide the city's approach to the area.

Recommendations:

► The University should develop a program to provide additional housing and parking facilities adjacent to the campus to meet existing needs and to reduce the number of commuter students.

► The multipurpose or core subarea should redevelop with University-oriented housing and commercial facilities. Redevelopment will be guided by the community plan and a Master Project Plan to be prepared for the redevelopment project area.

Overall Objectives: (P.39 of the College Area CP)

► Encourage creation of a community campus rather than a commuter campus at San Diego State University.

u Promote reduction of vehicular trips associated with the University, thereby helping to reduce local traffic congestion and improve air quality.

► Increase the availability of student residences and vehicular parking spaces in close (sic) proximity to the campus.

► Provide cohesive, unified development adjacent to the campus that is physically and functionally linked to the University; and

► Develop a strong pedestrian orientation between new residential and commercial development adjacent to the campus and the campus itself.

Altering the commuter campus character of San Diego State University and transforming it into a community campus is a major effort requiring achievement in a number of areas. Three closely related actions are especially important: provide housing for students near the campus to enhance the community quality of the campus; create a mixed-use activity center along College Avenue that becomes a focal point for student life; and develop a strong pedestrian character within the housing/mixed-use development areas so that walking, biking, and use of transit is encouraged.

General Conditions, (P.41 of the College Area CP)

▶ Throughout the redevelopment project areas, the pedestrian environment is to be upgraded through landscaping, building facade enhancement, provision of street furniture, and a high level of maintenance of both private property and adjacent sidewalk areas.

▶ The current configuration of College Avenue splits the campus core area and is an obstacle to the implementation of the community plan's objectives. The mitigation measures proposed in the EIR Traffic Study will only exacerbate this situation by widenings that will discourage pedestrian movement. The recently adopted City of San Diego General Plan takes a "Smart Growth" land use/transportation balance approach.

STATEMENT 1

▶ CITY OF SAN DIEGO GENERAL PLAN

The City of San Diego General Plan, adopted in March of 2008, set forth ten Guiding Principles " . . . that reflect the core values that guide its (the City's) development." Several are particularly relevant to the SDSU campus and to the improvement of College Avenue.

▶ #3. Compact and walkable mixed-use villages of different scales within communities.

▶ #5. An integrated regional transportation network of walkways, bikeways, transit, roadways, and freeways that efficiently link communities and villages to each other and to employment centers.

▶ #9. A clean and sustainable environment, and

▶ #10.A high aesthetic standard.

These Guiding Principles and their application to the SDSU redevelopment and to College Avenue are supplemented by a number of specific policies in the General Plan Elements.

▶ The General Plan is based on the City of Villages strategy.

The " . . . strategy is to focus growth into mixed-use activity centers that are pedestrian-friendly centers of the community and linked to the regional transit system."

The plan states that "...each village will be unique to the community in which it is located. All villages will be pedestrian-friendly and characterized by inviting, accessible, and attractive streets and public spaces."

The SDSU campus is a neighborhood within the greater college community. The Plaza Linda Verde project is the neighborhood village center within that neighborhood. The current configuration of College Avenue and the proposed improvements will prevent SDSU from meeting its own goals, the goals of the College Area Community Plan, and the General Plan.

General Plan Policies

▶ City of San Diego General Plan - Land Use and Community Planning Element

Transportation.

▶ City of San Diego General Plan - Land Use Element

▶ LU-1.9

"Design transportation projects so that the resulting benefits and potential burdens are equitable. Some of the benefits of transportation programs include improved accessibility, faster trips, more mobility choices, and reduced congestion. Common negative consequences include health impacts of air pollution, noise, crash-related injuries and fatalities, dislocation of residents, and division of communities."

▶ City of San Diego General Plan - Mobility Element

Walkability.

▶ ME-A.7

"Improve walkability through the pedestrian-oriented design of public and private projects in areas where higher levels of pedestrian activity are present or desired".

STATEMENT 1

SDSU is among the few areas within a high level [urban level] of pedestrian activity in San Diego.

Project Review Considerations.

- ME-C.8

"Implement traffic impact study guidelines that address site and community-specific issues".

The Transportation Demand Management section states, "building additional street and freeway capacity to accommodate more vehicles will provide only partial relief to our traffic congestion problems."

- City of San Diego General Plan - Urban Design Element

Streets.

- UD-A.10

"Design or retrofit streets to improve walkability, bicycling, and transit integration to strengthen connectivity and to enhance community identity."

Streets are an important aspect of urban design as referenced in the Mobility Element.

Pedestrian-Oriented Design.

- UD-C.4

"Create pedestrian-friendly village centers."

Village Street Layout and Design.

- UD-C.6

"Design project circulation systems for walkability".

Streetscape.

- UD-C.7

"Enhance the public streetscape for greater walkability and neighborhood aesthetics."

Superblocks.

- UD-C.8

"Retrofit existing large-scale development patterns such as "superblocks" or "campus-style" developments to provide more and improved linkages among uses in the superblocks, neighboring developments, and the public street system."

The General Plan policies reinforce studies done over the last few years that recommend a better balance between the movement of traffic and the building of community. The most recent is Context-sensitive Solutions (CSS) in Designing Major Urban Thoroughfares for Walkable Communities, An ITE-Proposed Recommended Practice.

Context-sensitive Design (CSS) sets the following goals or tenets for the design of transportation projects:
Balance safety, mobility, community, and environmental goals in all projects.

- Involve the public and stakeholders early and continuously throughout the planning and project development process.
- Use an interdisciplinary team tailored to project need.
- Address all modes of travel.
- Apply flexibility inherent in design standards, and
- Incorporate aesthetics as an integral part of good design.

STATEMENT 1

"CSS principles applied to the planning and design of a transportation project can make the difference between a successful project valued by the community or an embattled project taking years or even decades to complete, if ever."

Some of the issues that are pointed out with the design of contentious mobility projects are:

- Real or perceived incompatibility with surroundings.
- Community impacts.
- Emphasis on mobility without consideration of other community values.

Several principles described in the CSS program that apply to both College Avenue and Montezuma Road are:

"Thoroughfare design should serve the activities generated by the adjacent context in terms of the mobility, safety, access, and place-making functions of the public right-of-way. Context sensitivity sometimes requires the design of the thoroughfare change as it passes through areas where a change of character is desired."

"System-wide transportation capacity should be achieved using a high level of network connectivity and appropriately spaced and properly sized thoroughfares along with capacity offered by multiple travel modes rather than by increasing the capacity of individual thoroughfares."

A major goal of the General Plan is to create walkable communities. The CSS guidelines offer the following:

"Building, landscape, and thoroughfare design that is pedestrian-scale. In other words, it provides architectural and urban design detail with size and design appreciated by persons who are traveling slowly and observing from the street level."

"Thoroughfares and other public spaces that contribute to 'place-making' the creation of unique locations that are compact, mixed-use and pedestrian, and transit-oriented and have a strong civic character with lasting economic value."

▶ CONCLUSION

The proposed mitigation measures outlined in the traffic analysis provide little improvement in traffic flow through the community, but they exacerbate the already negative impact that College Avenue has on the SDSU campus community. In addition, the mitigation measures would be contrary to the goals and policies of the College Area Community Plan, the SDSU Campus Master Plan, and the City of San Diego General Plan.

▶ The need to maintain traffic flow "Level of Service" (LOS) should not be allowed to supercede and override the innate benefits of contemporary 21st Century planning and design that places more emphasis on community-building, place-making, pedestrian safety, street life, and alternative transportation.

▶ The proposed mitigation measures will compromise the promise and potential of the Plaza Linda Verde project.

▶ The impact criteria used in the traffic analysis accentuate traffic flow and driver comfort and countermand 21st Century planning and urban design, which endeavors to initiate community building through enhancement of the public realm and the pedestrian experience, and sustainable design practices that reduce the need for, and use of, the automobile.

▶ A more positive approach for the Paseo Linda Verde project would be to incorporate direction from the chapter "Multimodal Streets" in Designing for Smart Growth: Creating Great Places in the San Diego Region, approved by the SANDAG Board in June 2009.

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Burden, Dan; Zykofsky, Paul. Emergency Response Traffic Calming and Traditional Neighborhood Streets. Local Government Commission, Center for Livable Communities, December 2000.

STATEMENT 2

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The use of Level of Service (LOS) to determine level of significance is inappropriate in a urbanized/university campus setting.

The following bullet points borrow heavily from insights and arguments made by a major California city that challenged the use of LOS to determine level of significance in a setting with a high pedestrian population:

▶ Travel by public transit, by bicycle and on foot must be an attractive alternative to travel by private automobile in general terms and in particular at university campus settings such as SDSU.

▶ The historic pattern of dense development and the limitations of SDSU's street network mean that there will always be competition between transportation modes for limited road space.

▶ The California Environmental Quality Act (CEQA) requires that potential significant adverse environmental impacts be analyzed and mitigated. CEQA grants broad authority to municipalities to implement its provisions. An Environmental Impact Report (EIR) is required when it is determined that a project may cause significant adverse environmental impacts as defined by California statute and guidelines. With regard to Plaza Linda Verde, San Diego's local guidelines were used as a metric to analyze traffic impacts called the Level of Service (LOS), which runs from level 'A,' or free flow of traffic, to level 'F,' or total congestion, to determine whether a street project causes any significant impacts. This would include an environmental impact of increasing air pollution due to low speed auto travel. These guidelines could require preparation of an EIR if a bicycle lane, the development of a mixed use high-density project, or other project might degrade the LOS at an intersection to levels 'E' or 'F'. Such a degradation would, according to the City of San Diego metric, be designated as adverse impacts to the environment.

because in decades past, slow moving traffic theoretically led to 'hot spots' where pollutants accrue to levels that can cause harm to the environment and people. But it is notable that automotive emission control technology has advanced over the intervening decades such that slower traffic is unlikely to cause any 'hot spots,' thus obviating CEQA's concern over LOS as a measure of environmental impact.

- Invariably, mitigating LOS through increasing roadway capacity degrades environmental quality by increasing vehicle trips and vehicle volume and consequently increasing air pollution and greenhouse gas pollution, and increasing danger for bicyclists and pedestrians.

- LOS measures auto delay at intersections, not mid block, and ignores all transit, pedestrian and bicycle delay and safety.

- LOS analysis does not account for modal shift, where reduced motor vehicle capacity encourages auto trips to shift to other travel times, routes or travel modes.

- LOS, as constructed, favors the incumbency of the automobile, an inefficient mode of transportation, at the expense of bicycles, pedestrians, and public transit.

- LOS as a metric does not recognize that projects such as on-campus student housing with services within walking distance, transit lanes, bicycle lanes, traffic calming, and sidewalk widening may reduce auto LOS but increase capacity for non-automobile modes, which can increase the total number of persons moving through a given corridor.

- LOS does not take into account relationships and conflicts among modes, such as the interplay between higher traffic speeds, higher flows, broader roadways, lateral separation and the negative, harmful consequences of those factors to pedestrian safety.

- LOS does not take into account the qualitative impacts on all users, including safety both real and perceived as well as trip quality.

Therefore, automobile LOS analysis alone is not an appropriate metric for assessing environmental impacts and for analyzing projects that may improve overall environmental quality and it is imperative to consider and implement significance criteria under CEQA that will more accurately analyze and predict traffic- and transportation-related environmental impacts.

Twenty-first Century planning and urban design require that the review agencies, traffic analysts, and decision-makers consider significance criteria other than the measurement of LOS, particularly where creation of, or improvement to, pedestrian, bicycle and transit facilities, including all projects that create dedicated right of-way or re-allot traffic signal timing to improve pedestrian, bicycle and transit safety and efficiency may improve overall transportation network and operations.


STATEMENT 3

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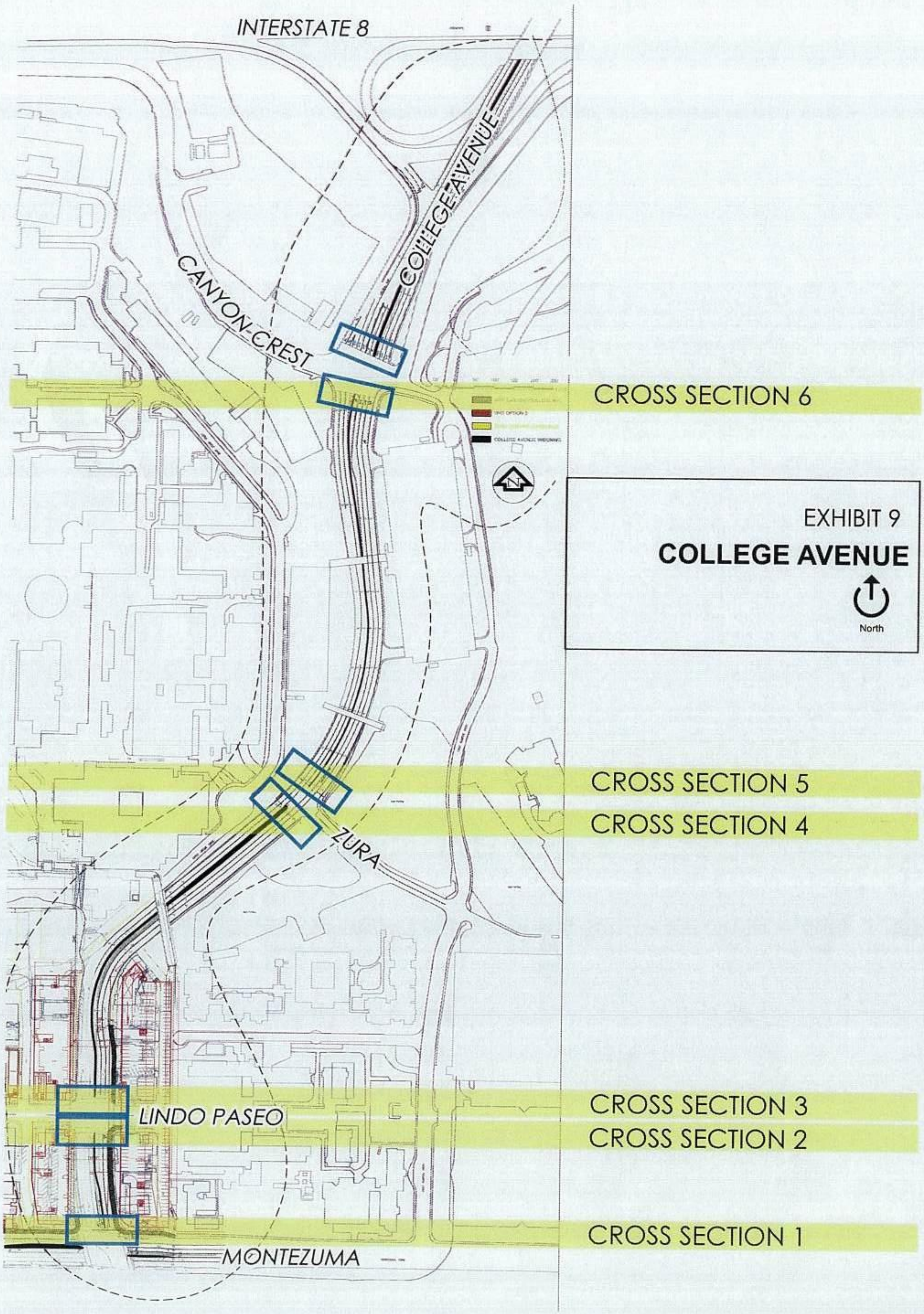
City of San Diego significance determination thresholds, which are based on the standard LOS metric, were used to determine level of impact significance. Preliminarily, SDSU, as part of the California State University system, is a state agency and, therefore, not subject to local planning directives such as the City's thresholds. Moreover, the City of San Diego's thresholds emphasize the attainment of a high-functioning (LOS A, B, C, D) traffic intersection. While the thresholds serve as a useful guide for a majority of the development projects in the City, there will be individual cases in which the thresholds serve to defeat the benefits of a project's objectives. The development of the Plaza Linda Verde project on the campus of SDSU is just such a case where application of the thresholds and implementation of standard traffic engineering improvements will be inconsistent with a pedestrian friendly environment and less likely to induce social interaction. It is concerning that the City of San Diego planning directives do not sufficiently account for the impact of this emphasis on Level of Service (LOS) on the safety and quality of life of pedestrians and cyclists in an urbanized high-pedestrian-populated setting, such as a university campus.

As an alternative to the approach taken in the EIR traffic analysis, this report proposes that the mitigation emphasis be shifted from the vehicle to the pedestrian, from providing additional vehicle capacity in the form of additional vehicle travel lanes to providing, in its place, narrower vehicle travel lanes to slow traffic, while at the same time providing wider sidewalks with enhanced pavements and pedestrian amenities.

PROPOSED ALTERNATIVE 9


INTERSTATE 8
COLLEGE AVENUE
CANYON-CREST
CROSS SECTION 6
EXHIBIT 9
COLLEGE AVENUE
North
CROSS SECTION 5
CROSS SECTION 4
ZURA
CROSS SECTION 3
LINDO PASEO
CROSS SECTION 2
CROSS SECTION 1
MONTEZUMA

College Avenue forms the spine of the Plaza Linda Verde project site. The street bisects the project and also divides SDSU property and facilities. Many SDSU students have to cross College Avenue to attend class, therefore the composition, treatment, and function of College Avenue is critical. As SDSU evolves, it proposes to add to its "campus community" with students living on, or near, the campus and walking or cycling to class. Therefore SDSU has placed a greater emphasis on pedestrian movement and pedestrian safety on campus and along routes that access the campus. College Avenue maintains a high-profile, presents daunting challenges, and plays a central role in campus planning and design.

▶ PROPOSED CROSS SECTIONS

This analysis postulates that some of the standard LOS-driven traffic mitigation measures which would add lanes and increase traffic velocity countermand the intent of contemporary pedestrian student-oriented SDSU campus design philosophy. This proposed alternative addresses six key College Avenue cross sections located between Montezuma Road and Canyon Crest,

This chapter includes alternatives that address traffic flow and capacity, while balancing safety and comfort for the pedestrians and cyclists who share the right-of-way,

This report proposes a plan to work within the existing College Avenue right-of-way. The authors contend that the College Avenue right-of-way is adequate and that these proposed cross sections can be located within the existing right-of-way as excessive lane width is reduced. If, in any instance the proposed cross section were to require unanticipated right-of-way, it is unintended and the cross section should be adjusted to fit the existing right-of-way.

PROPOSED ALTERNATIVE

The proposed cross sections feature the following components:

- The addition of a Class 2 bike lane on both the west and east sides of College Avenue.
- A central median, sometimes landscaped, providing a mid-crossing "refuge island" for pedestrians at intersections on the south corridor
- Minimization of lane width to allow more of the right-of-way to be devoted to bike lanes, sidewalks and a median.
- Maximization of sidewalk space to allow for separation from traffic, additional landscaping, and wider sidewalks and pedestrian lighting.

Pedestrian level lighting is recommended between Montezuma to a point north of Lindo Paseo. Pedestrian level lighting includes llights elevated on shorter poles, lights in bollards and the uplighting of trees.

▶ PEDESTRIAN LEVEL LIGHTING

Pedestrian level lighting is recommended on both sides of College Avenue between Montezuma to a point north of Lindo Paseo.

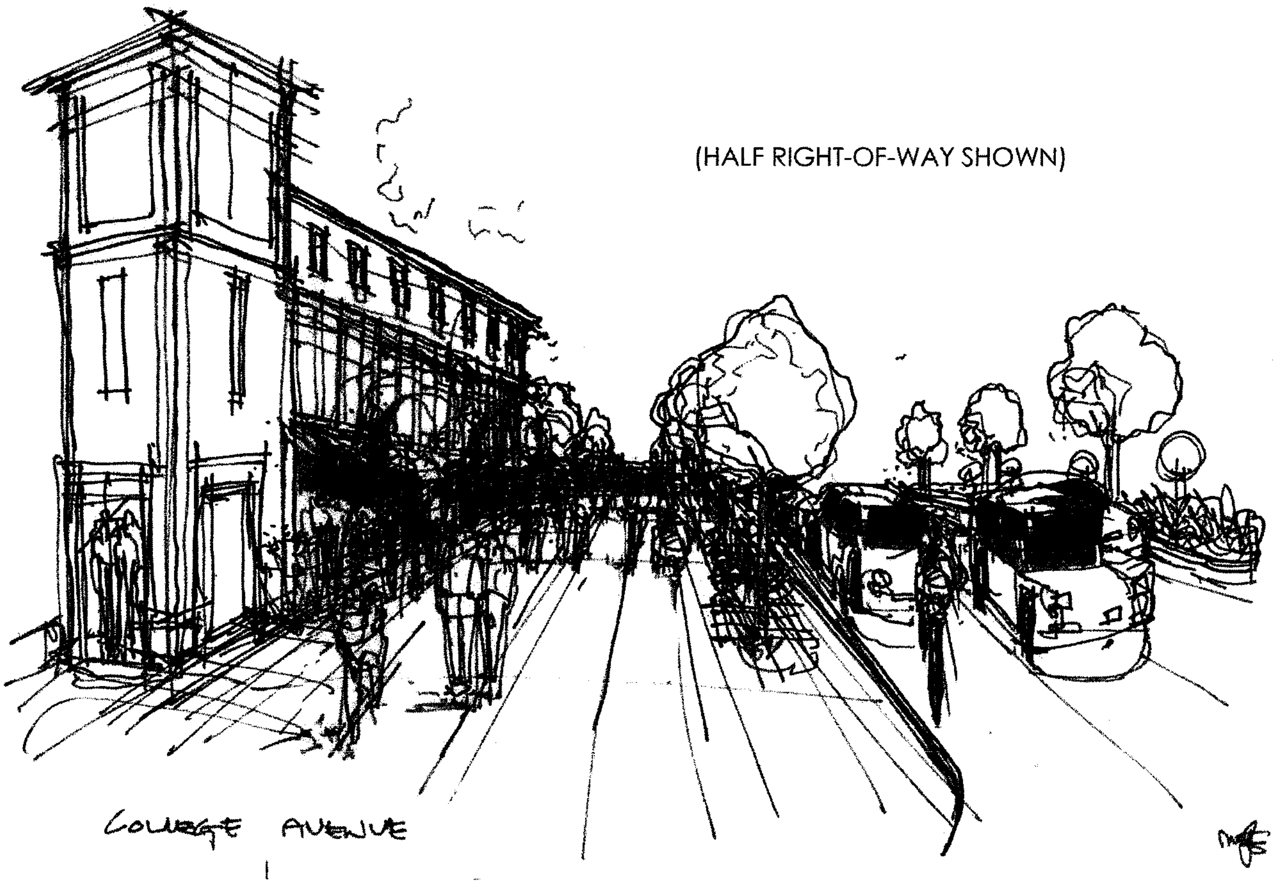
▶ CEQA MITIGATION

Based on the City of San Diego criteria. Mitigation in response to these cross section designs would be justified in the event the resulting environmental impacts reach or exceed the "significance" threshold. As is stated in Chapter 7 of this document, the significance criteria chosen to determine the level of impact is derived from City of San Diego traffic analysis criteria.

▶ ADOPT A FINDING OF OVERRIDING CONSIDERATIONS

It is the contention of the authors that this metric is inappropriate in a pedestrian-oriented setting, such as the college campus of SDSU. If this City of San Diego LOS-derived metric is maintained, and therefore the identified impacts remain "significant" with implementation of the improvements recommended by this report, the University could adopt a Finding of Overriding Considerations and proceed. This is justified because the overall impact of the alternatives contained in this chapter are superior environmentally, and they represent the state-of-the-art 21st Century planning and engineering approach to urban design and community building.

(HALF RIGHT-OF-WAY SHOWN)



(HALF RIGHT-OF-WAY SHOWN)

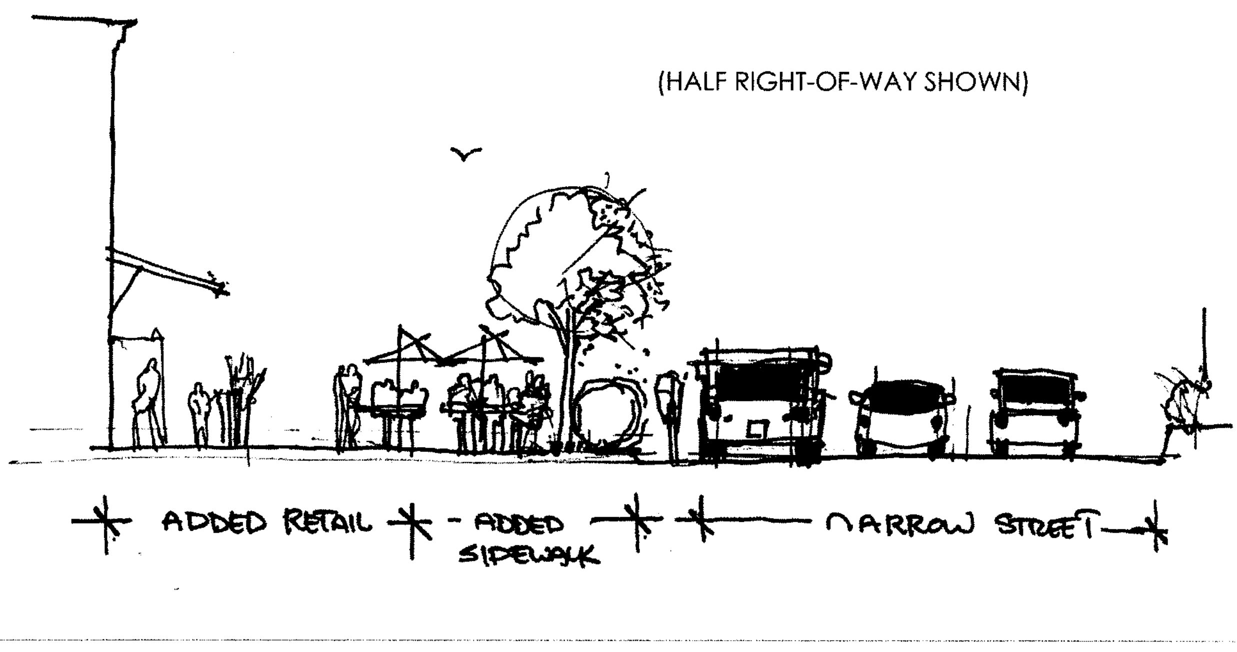
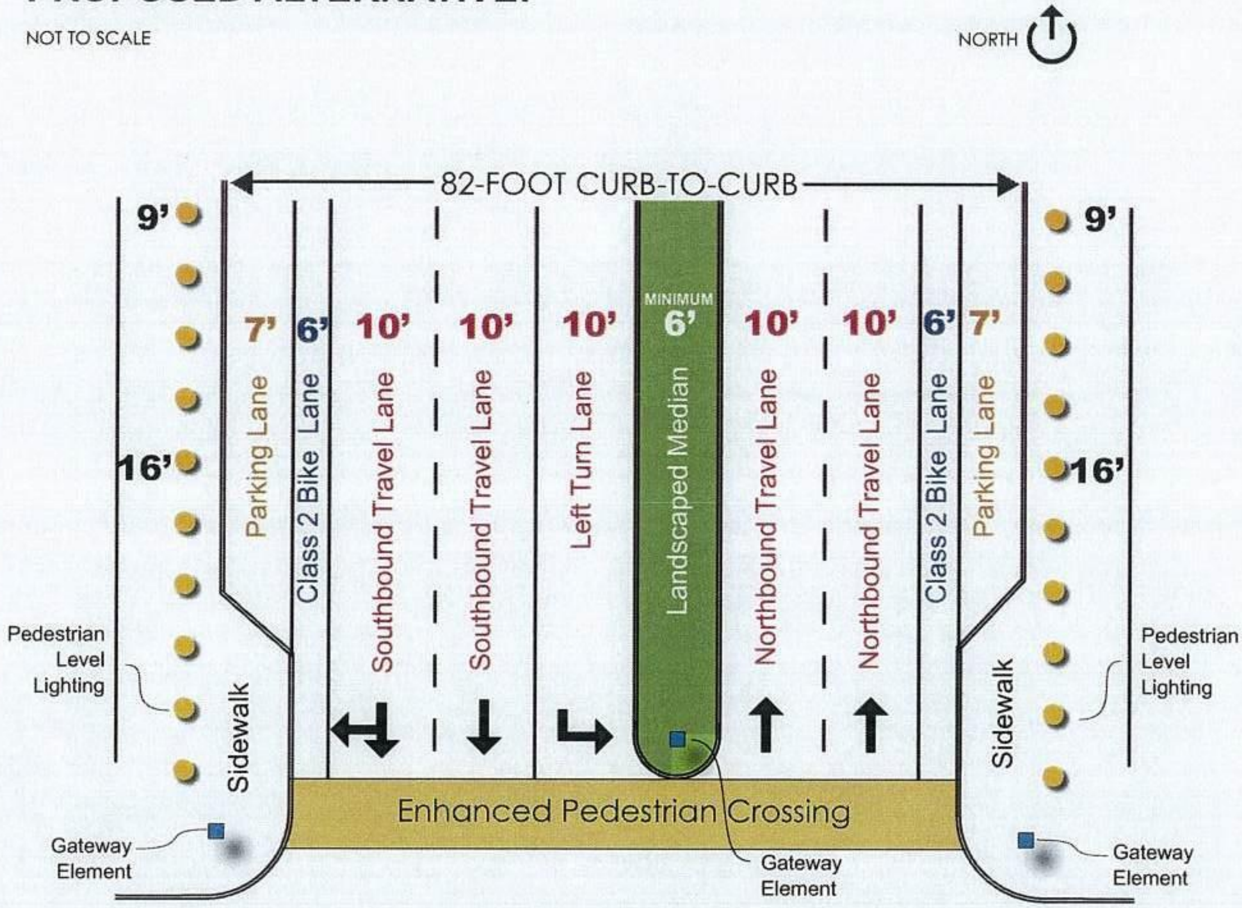


EXHIBIT 11 - **CROSS SECTION 1**

COLLEGE AVENUE AT MONTEZUMA

PROPOSED ALTERNATIVE:

NOT TO SCALE



This 82-foot curb-to-curb section is anticipated to be among the most busy pedestrian crossings along the College Avenue study corridor. The alternative includes the following features:

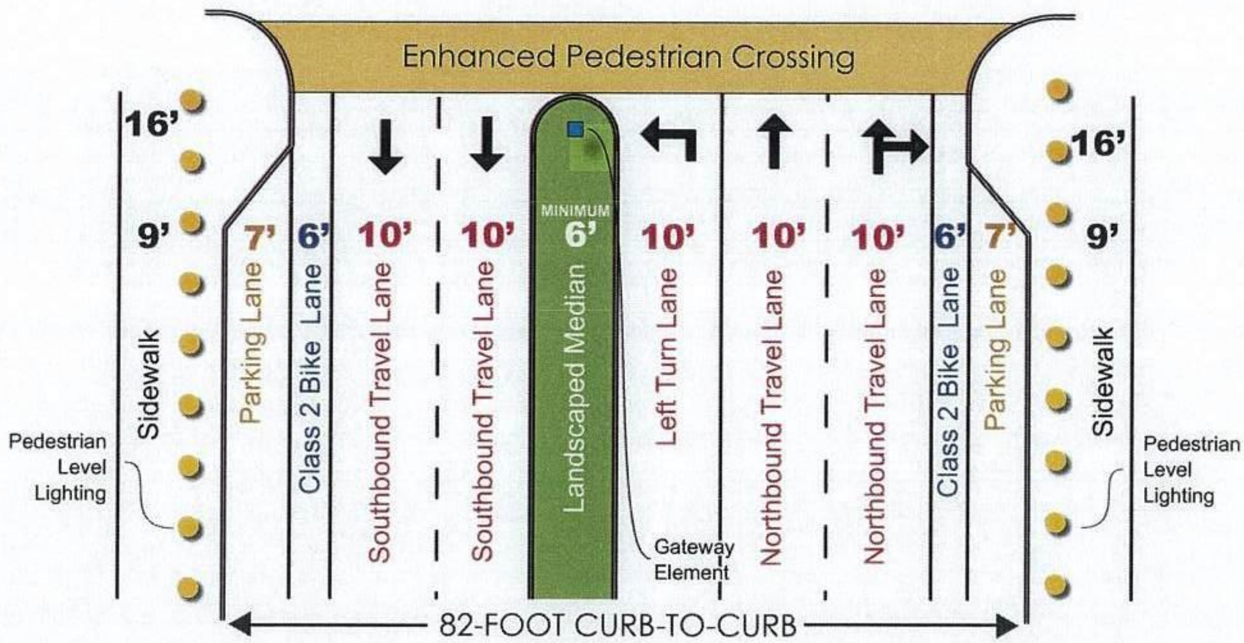
- Enhanced pedestrian crossing
- "Pop-outs" proposed at the intersection, replacing the parking lanes to reduce the time necessary for pedestrians to cross the intersection and to provide a gateway/plaza opportunity
- Gateway elements in pop-outs and in median
- 7-foot parallel parking lanes on both sides
- 6-foot Class 2 bike lanes in each direction
- 9-foot to 16-foot sidewalks on both sides
- Minimum 6-foot landscape median that also serves as a refuge island for pedestrians
- Shade trees placed in the sidewalks in tree grates, and in the median
- Travel and turn lanes no more than 10 feet in width, in order to reduce speed.
- Dedicated Left Turn Lane onto Montezuma
- Pedestrian level lighting

EXHIBIT 12 - **CROSS SECTION 2** - **COLLEGE AVENUE SOUTH OF LINDO PASEO**

PROPOSED ALTERNATIVE

NOT TO SCALE

NORTH



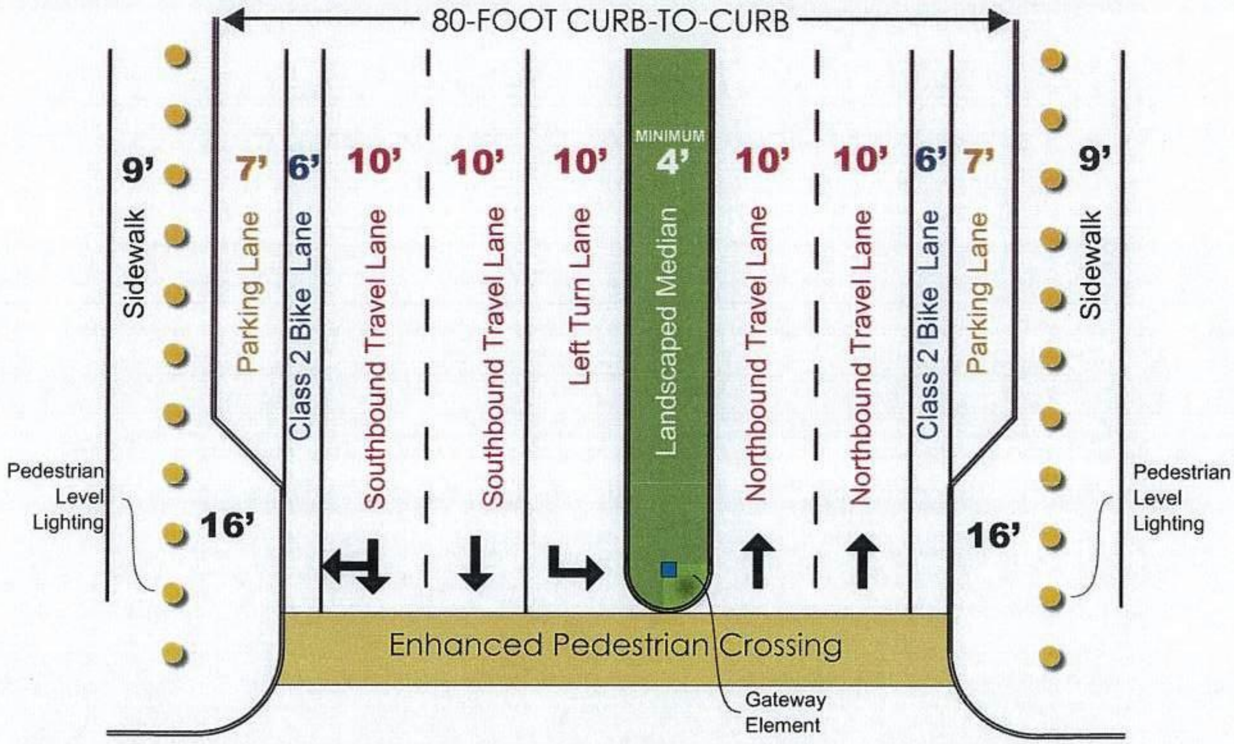
This 82-foot curb-to-curb section is anticipated to be among the most busy pedestrian crossings along the College Avenue study corridor. The alternative includes the following features:

- Enhanced pedestrian crossing
- 7-foot parallel parking lanes on both sides
- 6-foot Class 2 bike lanes in each direction
- 9-foot to 16-foot sidewalks on both sides
- Minimum 6-foot landscape median that also serves as a refuge island for pedestrians
- Shade trees placed in the sidewalks in tree grates, and in the median
- Travel and turn lanes no more than 10 feet in width, in order to reduce speed.
- "Pop-outs" proposed at the intersection, replacing the parking lanes to reduce the time necessary for pedestrians to cross the intersection
- Gateway element in the median
- Pedestrian level lighting

EXHIBIT 13 - **CROSS SECTION 3 - COLLEGE AVENUE NORTH OF LINDO PASEO**

PROPOSED ALTERNATIVE

NOT TO SCALE

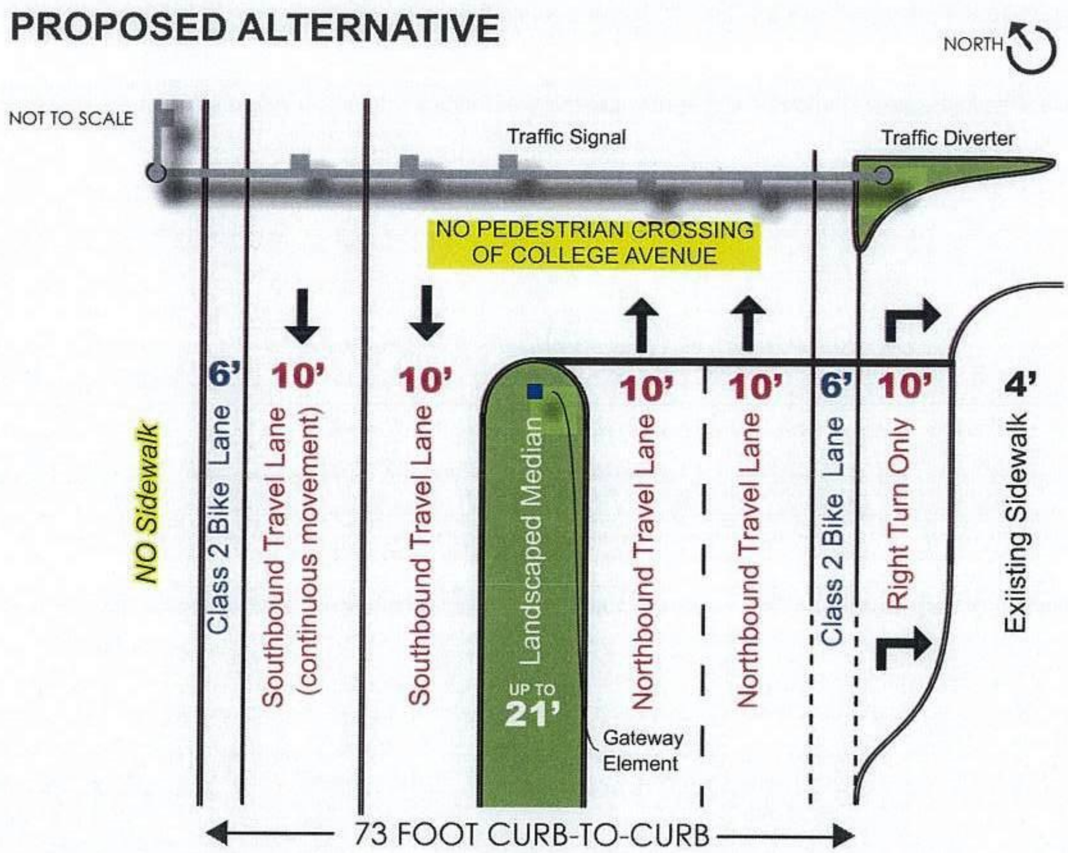


Sidewalks on the west side beyond this point south are impractical and unnecessary due to topography, and site constraints. The alternative includes the following features:

The proposed design features:

- Enhanced pedestrian crossing
- 7-foot parallel parking lanes on both sides
- 6-foot Class 2 bike lanes in each direction
- 9-foot to 16-foot sidewalks on both sides. Improvement not to extend north of the pedestrian bridge. (**SEE INSET DRAWING BELOW RIGHT**)
- Minimum 4-foot llandscaped median that also serves as a refuge island for pedestrians
- Shade trees placed in the sidewalks in tree grates, and in the median
- Travel and turn lanes no more than 10 feet in width, in order to reduce speed
- "Pop-outs" proposed at the intersection, replacing the parking lanes to reduce the time necessary for pedestrians to cross the intersection
- Gateway element in the median
- Pedestrian level lighting

EXHIBIT 14 - **CROSS SECTION 4** - **COLLEGE AVENUE SOUTH OF ZURA**



This 73-foot curb-to-curb section does not include a sidewalk on the west side of College. Pedestrians are allowed to cross College Avenue by an elevated pedestrian bridge. Sidewalks on the west side to the north beyond this point are unnecessary.

The proposed design features:

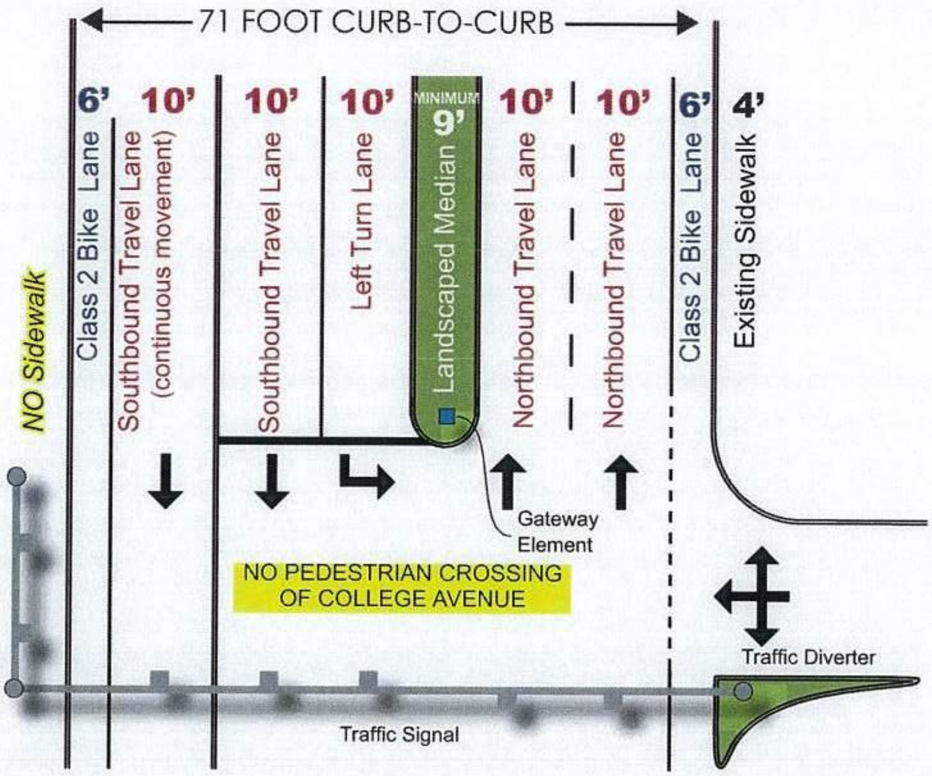
- No pedestrian crossing of College Avenue
- No parking lanes
- 6-foot Class 2 bike lane on the east side
- 4-foot Class 2 bike lane on the west side
- 4-foot existing sidewalk on the east side
- Up to a 21-foot wide landscaped median (tapering to incorporate a southbound left turn lane to the south
- Shade trees placed in the median
- Travel and turn lanes no more than 10 feet in width, in order to reduce speed
- Dedicated Right Turn Lane into Zura
- Potential continuous movement southbound (far west) lane to improve inbound traffic capacity
- Gateway element in the median

EXHIBIT 15 - **CROSS SECTION 5 - COLLEGE AVENUE NORTH OF ZURA**

PROPOSED ALTERNATIVE

NOT TO SCALE

NORTH



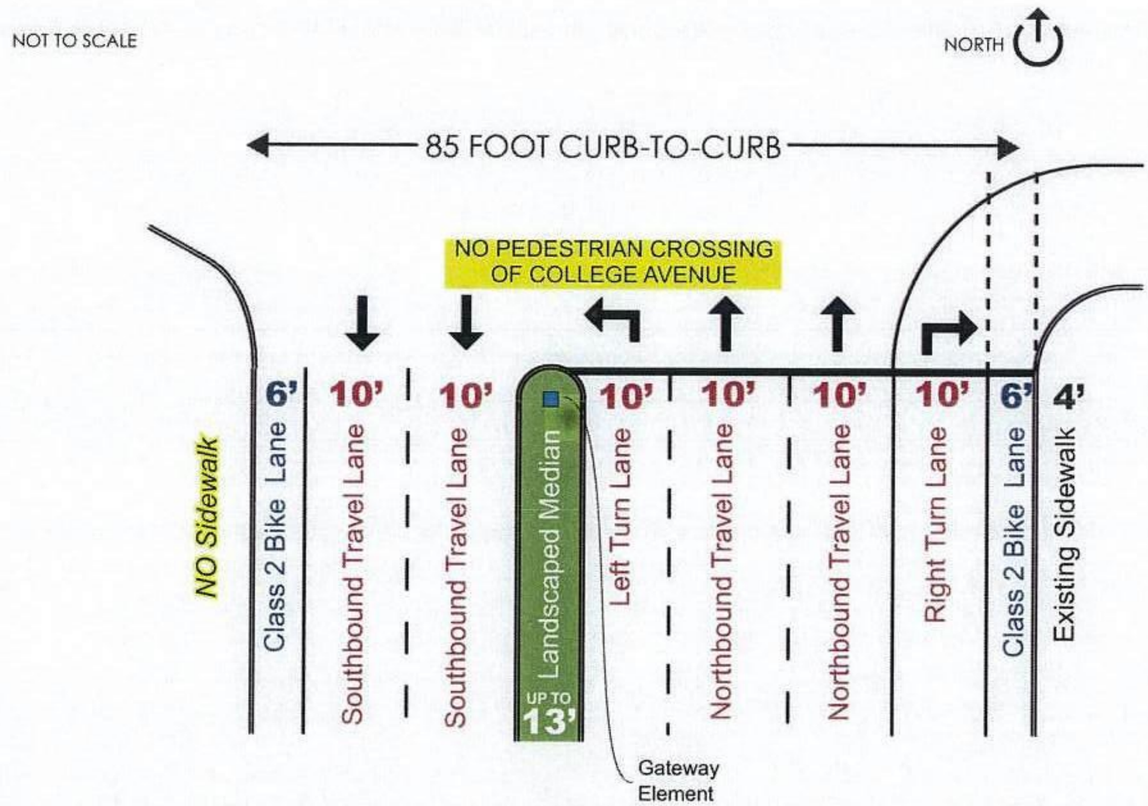
This 73-foot curb-to-curb section does not include a sidewalk on the west side of College. Sidewalks on the west side of College are unnecessary.

The proposed design features:

- A traffic signal
- No pedestrian crossing of College Avenue
- No parking lanes
- 6-foot Class 2 bike lane on the east side
- 6-foot Class 2 bike lane on the west side
- 4-foot existing sidewalk on the east side
- Minimum 9-foot landscaped median
- Shade trees placed in the sidewalks in tree grates, and in the median
- Travel and turn lanes no more than 10 feet in width, in order to reduce speed
- Dedicated Left Turn Lane into Zura
- Gateway element in median

EXHIBIT 16 - **CROSS SECTION 6 - COLLEGE AVENUE SO. OF CANYON CREST**

PROPOSED ALTERNATIVE



This 98-foot section does not include a sidewalk on the west side of College.

The proposed design features:

- No pedestrian crossing of College Avenue
- No parking lanes
- 6-foot Class 2 bike lane on the east side
- 6-foot Class 2 bike lane on the west side
- 4-foot existing sidewalk on the east side
- Up to 13-foot landscaped median
- Shade trees placed in the sidewalks in tree grates, and in the median
- Travel and turn lanes no more than 10 feet in width, in order to reduce speed

APPENDICES

APX

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PROJECT DESCRIPTION

APX1

▶ LAND USE, SCALE, AND SCOPE

The proposed San Diego State University Plaza Linda Verde project consists of the development of up to 400 units of on-campus student housing and up to 90,000 square feet of retail services to support SDSU and the Surrounding community. The Proposed Project is a mixed-use development featuring ground-floor commercial and upper-floor student housing, student apartments, additional parking facilities to accommodate increased parking demand within the area, a Campus Green featuring a public promenade, and pedestrian malls in place of existing streets/alleys linking the proposed mixed-use buildings to the main campus.

The Mixed-Use Retail/Student Housing buildings to be developed east of College Avenue would contain underground parking for an additional 160 to 220 vehicles, depending on the ultimate configuration.

A Campus Green is planned for development south of the existing SDSU Transit Center and would consist of active and passive recreational areas for public use.

The Proposed Project also would include two pedestrian malls, in place of existing streets/alleys, to be located along the western and eastern flanks of the main mixed-use building area. These corridors would facilitate non-motorized movement between the proposed buildings and main campus and would support meeting/resting space and outdoor eating facilities associated with the adjacent retail shops. This project component would be ancillary to the Mixed-Use Retail/Student Housing component and would not be essential to development of the overall project site.

APPENDIX 1 - PROJECT DESCRIPTION

▶ LOCATION

The Proposed Project would be located adjacent to the main SDSU campus, which is located approximately 8 miles east of downtown San Diego. The Proposed Project would be developed on property located south of the existing Campus Master Plan boundary, generally between Aztec Walk and Montezuma Road.

▶ SITE PREPARATION

The project would require the demolition of existing structures and parking lots and is on an approximately 18-acre site located immediately south of the SDSU main campus. The development of certain portions of the Proposed Project, primarily including the pedestrian malls, would be contingent upon the vacation of certain existing vehicular rights-of-way; if the subject vacations are not approved, the Proposed Project would proceed on a modified basis.

▶ AMENDING THE CAMPUS MASTER PLAN

In conjunction with the Proposed Project, SDSU also is proposing to amend the SDSU Campus Master Plan boundary.

LEVEL OF SERVICE CHALLENGE
APX2

▶ ARTICLE: Matthew Roth on January 26, 2009 of SF.STREETSBLOG.ORG

The following article recites a litany of challenges to the use of LOS, and includes some of the history of LOS and its use in CEQA documentation and analysis:

The Pseudo-Science of LOS

There's a dirty little secret you should know about San Francisco: It's engineered first and foremost for automobility and will never be able to shed this bias if the traffic engineers are in the driver's seat wielding their traffic analysis tools like bibles. As long as the city continues prioritizing the use of transportation analysis known as Level of Service (LOS), you might as well burn our Transit First policy for warmth.

On the one hand, LOS is a very simple and blunt metric for understanding the speed that vehicles can move about the city. LOS measures the amount of vehicular delay at an intersection, with A through F grades assigned to increased delay. This measurement is taken during the peak 15 minutes of evening rush hour and if an intersection slips from LOS D to LOS E, traffic managers will try to mitigate the impact, which usually means widening the road, shrinking the sidewalks, removing crosswalks, softening turning angles, and adjusting signal timing to speed the movement of vehicles.

LOS	Average delay in seconds per vehicle	Description of motorist perception
A	< 10	Free-flow traffic: "Good" LOS
B	10.1 – 20	Reasonable free-flow
C	20.1 – 35	Stable but unreasonable delay begins to occur
D	35.1 – 55	Borderline "bad" LOS
E	55.1 – 80	"Bad" LOS: long queues
F	> 80	Unacceptable: very high delay, congestion

LOS delay from Highway Capacity Manual

LOS analysis seems like science, free from political or ideological considerations, the perfect traffic-engineering tool to rationalize our cities, but the methodology behind it is far from precise. As Jason Henderson, professor of geography at San Francisco State University, said at a recent presentation, LOS is a very poor tool methodologically. In the early years of its development, the "science" was merely traffic engineers assuming what made motorists uncomfortable.

He cited the fact that LOS F used to represent a delay of more than 60 seconds, but that in the 2000 Highway Capacity Manual it was revised to 80 seconds. And motorist behavior studies since have shown that inconvenience with delay can depend on numerous factors and differ dramatically between drivers.

Yet the result of relying on this poor methodology to shape the growth of cities has a profound affect on the politics of human mobility, privileging the movement of vehicles before the movement of anything else. Quite simply, LOS analysis has given us Phoenix and Atlanta, congestion
and ever-longer commutes, and a whole host of ills that accompany reliance on the inefficient use of street space for our cars.

"I've been doing transit analyses in California for 20 years," said Jeffrey Tumlin, principal of Nelson Nygaard, a transportation and land use consulting firm. "In my practice the single greatest promoter of sprawl and the single greatest obstacle to transit oriented development (TOD) and infill development is the transportation analysis conventions under CEQA, the California Environmental Quality Act, LOS."

LOS has been used since the middle of the 20th century and has the weight of convention so thoroughly backing it up that it is one of the Traffic Ten Commandments, somewhere near the top. When the U.S. prioritized the expansion of roads everywhere and cities were seen merely as job centers to be driven to and from, LOS was the lubricant to facilitate the growth of suburban and exurban rings.

As San Franciscans began to see their city as a collection of neighborhoods, where livability and public space were more important that vehicle speeds on the streets, the political support for unfettered automobility declined and LOS became a target for reform.
"How can LOS have such a tremendous impact or power over shaping San Francisco and shaping cities when so much of LOS is anathema to cities?" asked Henderson.

The Clamor For Change

In the early 1990s, San Francisco bicycle advocates found out the hard way that any attempt to take space away from cars to give back to bikes (or transit and pedestrians) would be shut down by the engineers who asserted that such constriction of vehicular access violated the sacrosanct LOS rules, which, they were informed, were required under CEQA.

The advocates soon discovered that while CEQA requires that a project be analyzed for its significant environmental impacts the LOS "rule" was written after the fact by the state Office of Planning and Research (OPR). It was an administrative guideline and didn't carry the force of CEQA law.

"The words 'traffic' or 'congestion' or 'parking' appear nowhere in the CEQA legislation of the 1970s," said Tumlin. "The problem lies in the CEQA guidelines, issued administratively by the state OPR. There are three lines in Appendix G, the environmental checklist...[that] were later adopted administratively by the executive branch of government."

Further, CEQA specifically delegates planning decisions to the local level. The adherence to LOS was a convention adopted by San Francisco and most other municipalities around the state to evaluate transportation impacts under CEQA, and over the course of nearly three decades its use had been upheld numerous times in court, but just as it had been adopted as a convention, advocates believed, so could it be overturned.

Subsequently, advocates spent years lobbying the Board of Supervisors to make changes to the rule, though with mixed results. After the board finally called for a study of the impacts of LOS analysis, the San Francisco County Transportation Authority (TA) issued a significant report (PDF) at the end of 2003, which asserted that "existing LOS measures and standards ostensibly favor preserving auto level of service at the expense of improving transit, bicycle, and pedestrian conditions" and argued that new measures of analysis besides LOS should be developed.

Within a couple years the Board of Supervisors was convinced that LOS analysis contravened San Francisco's Transit First policy and issued a resolution (PDF) stating that "automobile analysis alone is not an appropriate metric for assessing environmental impacts and for analyzing projects that may improve overall environmental quality in conformance with [the Transit First policy]."

Not long after the resolution was adopted in early 2006, advocates saw firsthand how low the interpretation of LOS could stoop, when Rob Anderson and his Coalition for Adequate Review (CAR, a suitable acronym) sued the city to prevent the Bicycle Plan from being implemented without the full environmental review process, banking his argument on the possible negative LOS implications of removing vehicle lanes to add bicycle lanes.

Though it might have seemed ludicrous to the lay observer that adding bike lanes would have a negative environmental impact, the rules of LOS dictated that it was so and the onus was on the city and the bicycle community to show in excruciating - and expensive - detail that promoting non-polluting transportation might significantly effect the environment. But that's exactly what the injunction mandated and why San Francisco hasn't added even a brush stroke of paint to its roads to build out its bicycle plan for nearly three years.

▶ POSITION PAPER: Policy Capsule Smart Growth Technical Session I: LOS Methodologies: Barrier to Infill? The following position paper recites a litany of challenges to the use of LOS, and includes an oversight of its impact on planning and development in the contemporary context:

Introduction

The following is provided to help frame the discussion at the November 14, 2003 Smart Growth Technical Session. It is assumed that all session participants will have a basic knowledge of CEQA guidelines and LOS methodologies. The capsule is intended to begin a dialogue on LOS methodologies, what these mean for the viability of infill development and multi-modal transportation improvements, and the implications for CEQA reform if LOS practices are modified.

BACKGROUNDCalifornia Environmental Quality Act (CEQA) Guidelines offer criteria for determining whether a proposed project requires further environmental review. The most commonly used tool for measuring traffic impacts, such as intersection delay times, is the "Level of Service" (LOS) measure of transportation performance.

Crudely, if a proposed housing development has X number of units, current methods assume it will produce some corresponding level of auto trips. The estimated increase in the number of trips is used to calculate an increase in congestion or delay times, thus impacting the auto LOS. In most cases, an environmental review requirement is triggered if the LOS falls below a "tolerable" level of congestion. Under CEQA, the environmental impact must then be mitigated or exempted based on an "overriding consideration." Mitigation most often comes in the form of capacity expansions for autos, such as road and intersection widening, more parking, and signalization to relieve vehicular congestion. CEQA guidelines and typical LOS methodologies treat transportation improvement projects similarly. For example, if it is determined that the addition of a bike lane toa street will reduce auto LOS, it will most likely trigger an environmental review.

Under CEQA, jurisdictions have some flexibility in deciding what they "care about" or what levels of congestion are "significant." In some instances, a city can make a "negative declaration" or "mitigated negative declaration" for environmental clearance of an infill housing or transportation improvement project.

The recently passed SB1636 (Figueroa) "infill opportunity zones" law provides additional flexibility for jurisdictions in counties with populations over 400,000. Infill opportunity zones, areas zoned for new compact residential or mixed-use within 1/3 mile of a transit stop with frequent service, can be declared exempt from LOS traffic standards specified in the State Congestion Management Act (SB1636, however, does not exempt projects from CEQA). Under SB1636, cities can either employ alternative Congestion Management Program (CMP) LOS standards for facilities identified by the CMP, which would either account for the broader regional environmental benefits of qualifying projects, or approve a list of flexible LOS mitigation options that would enhance walkability and transit service. Notably, Marin, Napa and Solano counties are not eligible to declare any zones under SB1636.

THE ISSUES
Some view current CEQA project review requirements and LOS methodologies as barriers to infill (housing and mixed-use) development and transportation (multi-modal) improvements. The argument is that current impact analysis methods create a bias against such developments.

The most commonly cited issues with LOS methods include:

. Institute of Transportation Engineers (ITE) LOS method for trip calculations is based on suburban model (not appropriate for urban settings).
. LOS analysis at the project level traditionally does not consider policies that would change mode split, even though the models can usually consider them.
. Typical LOS analysis (capacity ratios) for transit, bicycles and pedestrians do not reflect factors most important to the quality of the transit, bicycle and pedestrian experience.
. LOS analysis looks at intersection delay times mainly based on volume of traffic coming into the
intersection, the capacity of travel lanes to carry traffic, and the ratios among the conflicting turning
movements of the traffic.
. LOS analysis does not consider sub-regional (county) or regional (Bay Area) environmental benefits of infill development, especially for projects that reduce car use.

Commonly cited CEQA issues include:

. Cities are reluctant to exercise exemption options under CEQA.
. CEQA project impact analysis does not account for urban form/function context.
. Traditional LOS analysis has thresholds for congestion triggering environmental reviews when, in a smart growth context, those thresholds may be too low. Furthermore, the significance thresholds too readily force environmental reviews that are costly, cause delays, and impede project implementation.
. Motor vehicle LOS analysis, as an input to CEQA analyses, does not account for the air quality benefits of transit and non-motorized modes.

Proponents of Smart Growth claim that, together, CEQA guidelines and LOS methodologies do not address the trip reduction benefits of infill and multi-modal transportation projects. Others suggest that to produce infill development, cities need only exercise the flexibility available under current CEQA guidelines.

KEY QUESTIONS
. How can LOS methodologies be restructured to account for and reflect the environmental benefits of infill development and transit (and other non-auto) transportation improvements?
. What flexibility do cities have in setting LOS tolerance thresholds under current CEQA Guidelines to facilitate smart growth infill?
. Are measures such as SB1636 "transit opportunity zones" having an impact and should such measures be broadly applied, or should greater focus be placed on changing CEQA to better account for the environmental benefits of infill? (Note: SB1636 applies to CMP facilities and does not exempt projects from CEQA).

NEXT STEPS, STRATEGIES TO CONSIDER
. Identify a series of analytical tools (a multi-modal LOS or "Smart Growth LOS") that accounts for systemwide marginal impacts; create LOS method that captures cross-mode tradeoffs and benefits.

. Create best practices guidelines to help Bay Area jurisdictions exercise flexibility available under current CEQA Guidelines.
. Propose legislation to extend the application of SB1636 to counties with populations under 400,000, so long as sufficient criteria for infill developments are met.

Sources:
- Rachel Hiatt, Tilly Chang, Jose Luis Moscovich, SFCTA Draft SAR 02-2 on "Transportation System Level of Service (LOS)Methodologies."

Credits:
- Author: Patrick Duffy, Regional Planner, ABAG
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