# TABLE OF CONTENTS

## EXECUTIVE SUMMARY

- Project Description .................................................................................................................. i
- Analysis of Project Impacts ....................................................................................................... ii

## CHAPTER 1. Introduction

- Project Description .................................................................................................................. 1
- Study Area ............................................................................................................................... 1
- Report Organization .................................................................................................................. 2

## CHAPTER 2. Regulatory Setting

- Analysis Methodology ................................................................................................................. 4
  - Intersection Level of Service Methodology ............................................................................. 4
  - Freeway Segment Level of Service Methodology ................................................................. 5
- Local Regulations ....................................................................................................................... 6
  - City of Davis General Plan ...................................................................................................... 6
  - Caltrans 8
- Impacts and Mitigation Measures ............................................................................................... 8
  - Standards of Significance ......................................................................................................... 8
  - Transit, Bicycle, and Pedestrian Impacts ................................................................................ 10
  - Additional Impacts .................................................................................................................. 10

## CHAPTER 3. Environmental Setting

- Existing Roadway Network ......................................................................................................... 11
  - Existing Conditions Levels of Service .................................................................................... 11
- Existing Pedestrian and Bicycle Facilities .................................................................................. 15
- Existing Transit System .............................................................................................................. 15

## CHAPTER 4. Existing Plus Hotel/Conference Center Conditions

- Project Description ..................................................................................................................... 17
- Trip Generation .......................................................................................................................... 17
  - Existing Trip Generation ........................................................................................................ 17
  - Proposed Project Trip Generation .......................................................................................... 18
- Trip Distribution ......................................................................................................................... 20
- Existing Plus Hotel/Conference Center Transportation Network ............................................. 23
  - Existing Plus Hotel/Conference Center Conditions Levels of Service ................................. 23
  - Parking Supply Evaluation ..................................................................................................... 26
  - Impacts and Mitigation Measures ........................................................................................... 28

## CHAPTER 5. Cumulative Conditions

- Cumulative Roadway Network .................................................................................................. 30
- Cumulative Forecasts ................................................................................................................ 30
- Cumulative Conditions Levels of Service .................................................................................. 32
- Cumulative Pedestrian and Bicycle Facilities ........................................................................ 33
- Cumulative Transit System ........................................................................................................ 33

## CHAPTER 6. Cumulative Plus Hotel/Conference Center Conditions

- Cumulative Plus Hotel/Conference Center Transportation Network ......................................... 34
LIST OF FIGURES

Figure 1: Project Site Location ................................................................. 3
Figure 2: Peak Hour Traffic Volumes and Lane Configurations – Existing Conditions .................. 14
Figure 3: Project Trip Distribution and Assignment ................................................. 22
Figure 4: Peak Hour Traffic Volumes and Lane Configurations – Existing Plus Hotel/Conference Center Conditions .......................................................... 27
Figure 5: Peak Hour Traffic Volumes and Lane Configurations – Cumulative Conditions .................. 31
Figure 6: Peak Hour Traffic Volumes and Lane Configurations – Cumulative Plus Hotel/Conference Center Conditions .......................................................... 35
Figure 7: Peak Hour Traffic Volumes and Lane Configurations – Cumulative Plus Measure R Projects Conditions .......................................................... 42
Figure 8: Peak Hour Traffic Volumes and Lane Configurations – Cumulative Plus Measure R Projects Plus Hotel/Conference Center Conditions .......................................................... 46
### LIST OF TABLES

Table 2-1 Intersection Level of Service Definitions ........................................................................................ 5
Table 2-2 Freeway Mainline Level of Service Criteria .................................................................................... 6
Table 3-1 Existing Peak Hour Intersection Operations .................................................................................... 12
Table 3-2 Existing Midweek Peak Hour Freeway Operations ........................................................................ 13
Table 4-1 University Inn & Suites Hotel and Caffé Italia Trip Generation ................................................... 18
Table 4-2 Proposed Project Trip Generation .................................................................................................. 20
Table 4-3 Proposed Project Trip Distribution ................................................................................................ 21
Table 4-4 Existing Plus Project Peak Hour Intersection Operations ........................................................... 24
Table 4-5 Existing Plus Project Queuing Analysis at Richards Boulevard/Olive Drive ................................ 25
Table 4-6 Existing Plus Project Midweek Peak Hour Freeway Operations .................................................. 26
Table 5-1 Cumulative Peak Hour Intersection Operations ........................................................................... 32
Table 5-2 Cumulative Peak Hour Freeway Operations .................................................................................. 33
Table 6-1 Cumulative Plus Hotel/Conference Center Peak Hour Intersection Operations ...................... 36
Table 6-2 Cumulative Plus Hotel/Conference Center Peak Hour Freeway Operations ............................ 38
Table 7-1 Cumulative Plus Measure R Projects Peak Hour Intersection Operations .............................. 43
Table 7-2 Cumulative Plus Measure R Projects Peak Hour Freeway Operations ....................................... 44
Table 8-1 Cumulative Plus Measure R Projects Plus Hotel/Conference Center Peak Hour Intersection Operations ............................................................................................................................... 47
Table 8-2 Cumulative Plus Measure R Projects Plus Hotel/Conference Center Peak Hour Freeway Operations ........................................................................................................................................ 49
EXECUTIVE SUMMARY

This study summarizes the results of traffic analyses prepared for the hotel/conference center project in the City of Davis, California. The proposed project would replace the existing University Inn & Suites Hotel and Caffé Italia restaurant, located on Richards Boulevard just south of Olive Drive, with a new Embassy Suites hotel containing conference facilities. This analysis examines the traffic impacts expected to result from the additional traffic generated by the proposed project to existing and future roadway conditions.

PROJECT DESCRIPTION

The proposed project would replace the existing University Inn & Suites Hotel and Caffé Italia restaurant in Davis, California with a new Embassy Suites hotel with conference facilities. The hotel site is located at the southeast corner of the Richards Boulevard/Olive Drive intersection. An on-site restaurant in the new hotel will serve hotel guests and conference attendees. As proposed, access to the project site will be provided on both Richards Boulevard and Olive Drive. The project includes access control improvements on Richards Boulevard that will prevent outbound left-turn movements from the project site onto Richards Boulevard (inbound left-turn movements will still be permitted).

The existing University Inn & Suites Hotel and Caffé Italia restaurant includes the following uses:

- Hotel (43 rooms)
- Restaurant (4,000 square feet)

The proposed project will include the following uses:

- Embassy Suites hotel (132 rooms)
- Restaurant for hotel guests and conference attendees
- Conference center (14,900 square feet)

It is estimated that the proposed project will generate an additional 819 daily trips over the existing University Inn & Suites Hotel and Caffé Italia; 172 and 175 trips will be generated in the AM and PM peak hours, respectively. Traffic operations of study intersections and freeway segments were evaluated for the following scenarios:

- Existing Conditions
- Existing Plus Project Conditions
- Cumulative Conditions
- Cumulative Plus Hotel/Conference Center Conditions
- Cumulative Conditions Plus Measure R Projects
- Cumulative Conditions Plus Measure R Projects Plus Hotel/Conference Center Conditions
ANALYSIS OF PROJECT IMPACTS

Analysis of existing plus project conditions, cumulative plus project conditions, and cumulative plus Measure R projects plus project conditions shows that the proposed project would not result in any significant impacts to study intersections, freeway segments, bicycle and pedestrian facilities, or transit facilities.
CHAPTER 1. INTRODUCTION

This study summarizes the results of traffic analyses prepared for the Hotel/Conference Center project in the City of Davis, California. The proposed project would replace the existing University Inn & Suites Hotel and Caffé Italia restaurant, located on Richards Boulevard just east of Olive Drive, with a new Embassy Suites hotel with conference facilities. This analysis examines the traffic impacts expected to result from the addition of traffic generated by the proposed project to existing and future roadway conditions.

PROJECT DESCRIPTION

The proposed project would replace the existing University Inn & Suites Hotel and Caffé Italia restaurant in Davis, California with a new Embassy Suites hotel with conference facilities. The hotel site is located at the southeast corner of the Richards Boulevard/Olive Drive intersection. An on-site restaurant in the new hotel will serve hotel guests and conference attendees. As proposed, access to the project site will be provided on both Richards Boulevard and Olive Drive. The project includes access control improvements on Richards Boulevard that will prevent outbound left-turn movements from the project site onto Richards Boulevard (inbound left-turn movements will still be permitted). The project site plan is included in Appendix A. The proposed access control improvements are included in Appendix B.

The existing University Inn & Suites Hotel and Caffé Italia restaurant includes the following uses:

- Hotel (43 rooms)
- Restaurant (4,000 square feet)

The proposed project will include the following uses:

- Embassy Suites hotel (132 rooms)
- Restaurant for hotel guests and conference attendees
- Conference center (14,900 square feet)

Study Area

Due to their proximity to the proposed project, the following locations were analyzed as part of this study. The project site location is shown on Figure 1.

Intersections

- 1st Street/D Street
- 1st Street/E Street-Richards Boulevard
- 1st Street/F Street
- Richards Boulevard/Olive Drive
- Richards Boulevard/Project Driveway
• Richards Boulevard/I-80 Westbound (WB) Ramps
• Richards Boulevard/I-80 Eastbound (EB) Ramps
• Richards Boulevard-Cowell Boulevard/Research Park Drive
• Cowell Boulevard/Pole Line Road-Lillard Drive

Freeway Mainline Segments
• I-80 between Richards Boulevard and Mace Boulevard/Chiles Road
• I-80 between Richards Boulevard and Old Davis Road

REPORT ORGANIZATION
The remainder of this traffic report will be organized into the following chapters:
• Chapter 2 – Regulatory Setting
• Chapter 3 – Environmental (Existing) Setting
• Chapter 4 – Existing Plus Hotel/Conference Center Conditions
• Chapter 5 – Cumulative Conditions
• Chapter 6 – Cumulative Plus Hotel/Conference Center Conditions
• Chapter 7 – Cumulative Plus Measure R Projects Conditions
• Chapter 8 – Cumulative Plus Measure R Projects Plus Hotel/Conference Center Conditions
PROJECT SITE LOCATION

Figure 1
CHAPTER 2. REGULATORY SETTING

Existing transportation analysis methodologies, policies, laws, and regulations that would apply to the proposed project are summarized below. This information provides a context for the impact discussion related to the project’s consistency with applicable regulatory conditions.

ANALYSIS METHODOLOGY

The following discussion summarizes the methods used to analyze the operating conditions of the study intersections and freeway segments.

Intersection Level of Service Methodology

The operations of roadway facilities are described using the level of service concept. Level of service (LOS) is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, or conditions with minimal vehicular congestion, to LOS F, or conditions with substantial vehicular congestion. LOS E represents “at capacity” operations. When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F.

Signalized Intersections

The peak hour operations of the signalized study intersections were evaluated using the methodology in the Highway Capacity Manual (HCM) (Transportation Research Board). This methodology determines the LOS by comparing the average control delay for all vehicles approaching the intersection to the delay thresholds in Table 2-1. Control delay, reported in seconds per vehicle, includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration.

Unsignalized Intersections

For unsignalized (all-way stop-controlled and side-street stop-controlled) intersections, the level of service calculations were conducted using the methodology in the Highway Capacity Manual. The LOS rating is based on the average control delay expressed in seconds per vehicle. At all-way stop-controlled intersections, LOS is based on the average delay experienced on all approaches. At side-street stop-controlled intersections, level of service is calculated for the stopped movements and the left-turn movement from the major street. Typically, the movement (or lane if more than one movement occurs in a lane) with the worst LOS rating is reported. Table 2-1 shows the LOS thresholds for unsignalized intersections.
## TABLE 2-1
INTERSECTION LEVEL OF SERVICE DEFINITIONS

<table>
<thead>
<tr>
<th>LOS</th>
<th>Description</th>
<th>Signalized Intersections Average Control Delay (Seconds per Vehicle)</th>
<th>Unsignalized Intersections Average Control Delay (Seconds per Vehicle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Represents free flow. Individual users are virtually unaffected by others in the traffic stream.</td>
<td>≤ 10.0</td>
<td>≤ 10.0</td>
</tr>
<tr>
<td>B</td>
<td>Stable flow, but the presence of other users in the traffic stream begins to be noticeable.</td>
<td>10.1 to 20.0</td>
<td>&gt; 10.0 to 15.0</td>
</tr>
<tr>
<td>C</td>
<td>Stable flow, but the operation of individual users becomes significantly affected by interactions with others in the traffic stream.</td>
<td>20.1 to 35.0</td>
<td>&gt; 15.0 to 25.0</td>
</tr>
<tr>
<td>D</td>
<td>Represents high-density, but stable flow.</td>
<td>35.1 to 55.0</td>
<td>&gt; 25.0 to 35.0</td>
</tr>
<tr>
<td>E</td>
<td>Represents operating conditions at or near the capacity level.</td>
<td>55.1 to 80.0</td>
<td>&gt; 35.0 to 50.0</td>
</tr>
<tr>
<td>F</td>
<td>Represents forced or breakdown flow.</td>
<td>&gt; 80.0</td>
<td>&gt; 50.0</td>
</tr>
</tbody>
</table>

Sources: *Highway Capacity Manual*, Transportation Research Board, 2010

**Freeway Segment Level of Service Methodology**

For the freeway mainline analysis, LOS is calculated using HCM methodology. This method considers peak hour traffic volumes, free-flow speeds, percentage of heavy vehicles, and number of travel lanes. These factors are used to determine the vehicle density, measured in passenger cars per mile per lane (pcpmp). Table 2-2 summarizes the relationship between vehicle density and LOS for mainline freeway segments.
### TABLE 2-2
FREEWAY MAINLINE LEVEL OF SERVICE CRITERIA

<table>
<thead>
<tr>
<th>LOS</th>
<th>Description</th>
<th>Density¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.</td>
<td>≤ 11</td>
</tr>
<tr>
<td>B</td>
<td>Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.</td>
<td>&gt; 11 to 18</td>
</tr>
<tr>
<td>C</td>
<td>Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.</td>
<td>&gt; 18 to 26</td>
</tr>
<tr>
<td>D</td>
<td>Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.</td>
<td>&gt; 26 to 35</td>
</tr>
<tr>
<td>E</td>
<td>Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.</td>
<td>&gt; 35 to 45</td>
</tr>
<tr>
<td>F</td>
<td>Represents a breakdown in flow.</td>
<td>*</td>
</tr>
</tbody>
</table>

Note: ¹ Measured in passenger cars per mile per lane (pcpmpm).

### LOCAL REGULATIONS

**City of Davis General Plan**

The following are applicable goals and policies from Chapter 2 of the City of Davis General Plan related to transportation and circulation:

**Goal 1**
Davis will provide a comprehensive, integrated, connected transportation system that provides choices between different modes of transportation.

**Goal 3**
Davis will provide a safe and convenient Complete Streets network that meets the needs of all users, including children, families, older adults, and people with disabilities.

**Goal 4**
Davis will strengthen its status as a premier bicycling community in the nation by continuing to encourage bicycling as a healthy, affordable, efficient, and low-impact mode of transportation accessible to riders of all abilities, and by continuously improving the bicycling infrastructure.

**Policy TRANS 1.2**
Transportation access, accommodations, and circulation should contribute to creating a supportive environment for economic development in the downtown for both residents and visitors.

**Policy TRANS 1.3**
Encourage higher intensity residential, commercial, and mixed-use development near existing activity centers and along corridors well served by non-motorized transportation infrastructure and public transportation.
Policy TRANS 1.8  Develop and maintain a work trip-reduction program designed to reduce carbon emissions, criteria pollutants, and local traffic congestion.

Policy TRANS 2.1  Provide Complete Streets to meet the needs of drivers, public transportation vehicles and riders, bicyclists, and pedestrians of all ages and abilities in all transportation planning, programming, design, construction, reconstruction, retrofit, operations, and maintenance activities and products. The City shall view all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in Davis, and recognizes bicycle, pedestrian, fixed-route transit, and demand-response para transit modes as integral elements of the transportation system along with motor vehicles.

Standards for Policy TRANS 2.1

d. The following Levels of Service (LOS) are acceptable for automobiles for major intersections (see Glossary for definition of “Major Intersections”):

- ‘D’ during non-peak traffic hours.
- ‘E’ during peak traffic hours.
- ‘F’ during peak traffic hours in the Core Area and Richards Boulevard/Olive Drive area.
- ‘F’ during peak traffic hours in other areas if approved by City Council.

e. In each direction, Davis streets shall have no more than two through automobile lanes plus a single left-hand turning lane, even if this requirement reduces level of service. Additional turning lanes may be added for safety or design considerations.

f. Existing bike lanes shall not be removed to add through traffic lanes.

g. Class I bike paths and II bicycle lanes shall be provided along all collector and arterial streets except where physically infeasible.

Policy TRANS 2.2  Implement state-of-the-art street design solutions to improve bicycle/pedestrian access, comfort, and safety that may include:

- Bicycle boxes at intersections
- Cycletracks
- Shared lane markings (sharrows)
- Contraflow bicycle lanes
- Improved bicycle detection at intersections
- Two-stage turn queue boxes
- Colored bicycle lanes
- Bicycle route wayfinding

Policy TRANS 2.3  Apply best practices in sustainability to new streets and redesigns of existing streets/corridors.
Policy TRANS 2.4 As part of the initial project review for any new project, a project specific traffic study may be required. Studies shall identify impacted transportation modes and recommend mitigation measures designed to reduce these impacts to acceptable levels.

Policy TRANS 2.5 Create a network of street and bicycle facilities that provides for multiple routes between various origins and destinations.

Policy TRANS 2.7 Minimize impacts of vehicle traffic on local streets to maintain or enhance livability of the neighborhoods. Consider traffic calming measures along collector and minor arterial streets, where appropriate and feasible, to slow speeds.

Policy TRANS 2.9 Enhance access to downtown, including from south Davis and I-80 by improving circulation and connectivity for all modes through and across the Richards Boulevard/First Street corridor.

*Caltrans*

The California Department of Transportation (Caltrans) is responsible for operating and maintaining the state highway system. In the project vicinity, Interstate 80 (I-80) falls under Caltrans jurisdiction. Caltrans has published a *Guide for the Preparation of Traffic Impact Studies* that lays out the types of development projects that warrant a traffic study of Caltrans facilities, the general scope of such studies, and methodologies to be used.

Caltrans establishes a "concept LOS" as the minimum acceptable LOS for its highway facilities. The concept LOS is presented in a Transportation Corridor Concept Report (TCCR) or Corridor System Management Plan (CSMP). The *Interstate 80 and Capital City Freeway Corridor System Management Plan* (CSMP) establishes LOS F as the concept LOS for I-80 from the Solano-Yolo County Line to US-50.

This study analyzes midweek AM and PM peak hour freeway mainline operations on I-80 from the Old Davis Road interchange to the Mace Boulevard/Chiles Road interchange.

**IMPACTS AND MITIGATION MEASURES**

The standards of significance, methods of analysis, and traffic impacts and mitigation measures are summarized below for the proposed project alternatives.

*Standards of Significance*

According to CEQA Guidelines, a project results in a significant impact if it conflicts with applicable plans, ordinances, or policies establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation and relative components of the circulation system. In order to evaluate a broad range of travel characteristics, the following standards of significance apply to the transportation impacts discussed in this traffic study.
Traffic Impacts

According to the City of Davis General Plan, automobile intersection and roadway operations at LOS E or better are acceptable during the AM and PM peak traffic hours; and LOS D or better is acceptable during non-peak traffic hours. The City of Davis General Plan also allows LOS F conditions during the AM and PM peak traffic hours in both the Core Area (generally bound by Fifth Street to the north, First Street to the south, A Street to the west, and the California Northern Railroad to the east) and the Richards Boulevard/Olive Drive Area. In this study, the following intersections are within the Core Area or the Richards Boulevard/Olive Drive Area.

- 1st Street/D Street
- 1st Street/E Street/Richards Boulevard
- 1st Street/F Street
- Richards Boulevard/Olive Drive
- Richards Boulevard/Project Driveway

Intersections

For the purposes of this traffic study analysis, significant traffic impacts at all intersections are defined when the addition of project traffic causes any of the following:

- The overall operations of a signalized intersection to deteriorate from an acceptable level (LOS E or better in the AM or PM peak hour) to an unacceptable level (LOS F in the AM or PM peak hour);
- The worst-case movement (or average of all movements for all-way stop-controlled intersections) of an unsignalized intersection to deteriorate from an acceptable level (LOS E or better in the AM or PM peak hour) to an unacceptable level (LOS F in the AM or PM peak hour) and meet MUTCD peak hour signal warrant;
- For signalized intersections, exacerbate unacceptable (LOS F in the AM or PM peak hour) operations by increasing an intersection’s average delay by five seconds or more;
- For Core Area or Richards Boulevard/Olive Drive Area intersections that operate at congested conditions (LOS F), exacerbate operations by increasing an intersection’s average delay by five seconds or more;
- For unsignalized intersections that operate unacceptably (LOS F in the AM or PM peak hour) and meet MUTCD’s peak hour signal warrant without the project, exacerbate operations by increasing the overall intersection’s volume by more than one percent;
- For unsignalized intersections that operate unacceptably, but do not meet MUTCD’s peak hour signal warrant without the project, add sufficient volume to meet the peak hour signal warrant.

These significance criteria for City of Davis intersections are consistent with those applied in the Cannery Project EIR (SCH#. 2012032022), Second Street Crossing (Target Store) Project Draft EIR (SCH#
2005062142), the Covell Village Project Draft Program Level EIR (SCH# 2004062089), and the UC Davis Hyatt Place Hotel Expansion and Old Davis Road Extension Draft EIR (SCH# 2011032051).

Freeways

For Caltrans facilities (I-80), freeway operations are evaluated based on their mainline volume density. Freeway segments with peak hour volumes that do not exceed capacity (LOS E) are generally considered acceptable. For the purposes of this study analysis, significant traffic impacts on freeway segments are defined when the addition of project traffic causes either of the following:

• The operating level of a freeway segment to deteriorate from LOS E (or better) to LOS F; or
• The traffic volume on a freeway segment already operating at LOS F without the project to increase by more than five percent.

Transit, Bicycle, and Pedestrian Impacts

The proposed project is considered to result in a significant transit, bicycle, and/or pedestrian impact if:

• The project conflicts with existing, planned, or possible future transit, bicycle, and/or pedestrian facilities and services;
• The project conflicts with public transit services or creates demand for public transit services above that which is provided, or planned;
• The path of travel between the project site and transit stops would not meet current California Title 24 handicap accessibility standards; or
• The project does not provide connections to bicycle and pedestrian circulation systems of the surrounding area.

Additional Impacts

The proposed project is considered to result in a significant impact if any of the following conditions occur:

• The project does not provide for adequate emergency vehicle access and on-site circulation; or
• Construction-related traffic causes significant intersection impacts as defined by the traffic system criteria described above.
CHAPTER 3. ENVIRONMENTAL SETTING

This chapter discusses the existing transportation system in the study area and presents the level of service results for the study intersections and freeway segments.

EXISTING ROADWAY NETWORK

The primary access routes to the proposed project site are Interstate 80 (I-80), Richards Boulevard, and Olive Drive. Descriptions of these roads are provided.

I-80 is an east-west interstate freeway with three lanes in each direction near the proposed project. The Richards Boulevard interchange provides the most direct access to the project site.

Richards Boulevard is a two-lane major arterial that provides access from and across I-80 into the Davis Downtown core. Adjacent to the project site, Richards Boulevard has a two-way left-turn lane, Class II bicycle lanes and intermittent sidewalks. East of Research Park Drive, Richards Boulevard becomes Cowell Boulevard.

Olive Drive is a minor arterial that begins at the I-80 westbound Olive Drive off ramp (just west of the Pole Line Drive overpass) and terminates just west of the project site. East of Richards Boulevard, Olive Drive serves residential land uses and some businesses. West of Richards Boulevard, Olive Drive serves businesses.

Existing Conditions Levels of Service

AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak period turning movement counts were collected in October 2014, while local schools and UC Davis were in session. The morning (7:45 to 8:45 AM) and evening (4:30 to 5:30 PM) peak hours were determined from the two-hour traffic counts. System-wide peak hour factors of 0.95 and 0.94 were measured and used for the AM and PM peak hour analyses, respectively. Heavy vehicles were assumed to be two percent of the vehicular traffic. Figure 2 displays the existing peak hour intersection traffic volumes; detailed traffic data is included in Appendix C.

Intersections

VISSIM microsimulation software, which utilizes HCM methodology, was used to analyze peak hour intersection level of service. Microsimulation is a valuable tool for closely spaced, congested intersections because it takes into account the effects of adjacent intersections on the operations of other intersections. The intersection level of service results for existing conditions are shown in Table 3-1. Detailed calculation sheets are provided in Appendix D.
As shown in Table 3-1, the study intersections currently operate at LOS D or better during the AM and PM peak hours.

Freeways

Midweek AM and PM peak hour freeway segment volumes were obtained from the Caltrans Freeway Performance Measurement System (PeMS) data. PeMS is real-time archive data management system (rt-ADMS). Weekday data from May 2011 was used to correspond with the intersection turning movement counts at the study intersections. Freeway segment level of service analysis was performed using HCM methodology. Table 3-2 shows the LOS results for the study segments.
<table>
<thead>
<tr>
<th>Direction</th>
<th>Segment</th>
<th>AM Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Density</td>
<td>LOS</td>
</tr>
<tr>
<td>Eastbound</td>
<td>Old Davis Road to Richards Boulevard</td>
<td>16.5</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>Richards Boulevard to Mace Boulevard</td>
<td>20.3</td>
<td>C</td>
</tr>
<tr>
<td>Westbound</td>
<td>Mace Boulevard to Richards Boulevard</td>
<td>25.1</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Richards Boulevard to Old Davis Road</td>
<td>17.4</td>
<td>B</td>
</tr>
</tbody>
</table>

Notes: Delay and LOS is based on HCM methodology.
Source: Fehr & Peers, 2015

As shown in Table 3-2, the study freeway segments currently operate at LOS C or better.
Figure 2
Peak Hour Traffic Volumes and Lane Configurations - Existing Conditions
EXISTING PEDESTRIAN AND BICYCLE FACILITIES

Bicycle facilities include bike paths (Class I), bike lanes (Class II), and bike routes (Class III). Bike paths are paved trails that are separated from the roadway. Bike lanes are lanes on the roadway designated for use by bicycles with striping, pavement legends, and signs. Bike routes are roadways that are designated for bicycle use with signs but do not necessarily include any additional pavement width. Davis has an extensive bicycle network of Class I and Class II facilities throughout the City.

Adjacent to the project site, Richards Boulevard has Class II bike lanes and intermittent sidewalks. Olive Drive is a Class III bike route south of Richards Boulevard. North of Richards Boulevard, the street has Class II bike lanes. Olive Drive connects the Putah Creek Bicycle undercrossing to the Old Highway 40 Bike Path. Sidewalks are present on a large portion of the street.

EXISTING TRANSIT SYSTEM

Transit services to the project area are provided by Yolobus, a local and inter-city bus system that serves Yolo County and neighboring areas; and Unitrans, a student-run organization offering local bus service throughout the City of Davis. Unitrans is jointly funded by the City of Davis and UC Davis. Davis Community Transit also provides service for registered riders (senior citizens and persons with disabilities) using a reservation system.

Yolobus

Yolobus is operated by the Yolo County Transportation District, which provides local and inter-city bus service 365 days a year in Yolo County and neighboring areas. Yolobus serves Davis, West Sacramento, Winters, Woodland, downtown Sacramento, Sacramento International Airport, Cache Creek Casino, Esparto, Madison, Dunnigan, and Knights Landing. Fares are $2.00 ($1.00 student/senior) for regular routes and $3.00 ($1.50 student/senior) for express routes. Three Yolobus routes (43R, 44, and 231) serve the general project area:

- **Route 43R** is an express route from UC Davis to downtown Sacramento. It provides one weekday morning trip from Sacramento to Davis and one weekday evening trip from Davis to Sacramento. The nearest stop to the project site is at 1st Street and D Street.

- **Route 44** is a South Davis express route providing three weekday morning eastbound trips from Davis to Sacramento and three weekday evening westbound trips from Sacramento to Davis. The nearest stop to the project site is at 1st Street and D Street.

- **Route 231** is the last evening westbound express route from Sacramento to Davis. The route begins picking up passengers in Sacramento around 6:00 PM and finishes dropping off passengers in Davis around 7:15 PM, Monday to Friday only. The nearest stops to the project site are at 1st Street and D Street, and Cowell Boulevard and Research Park Drive.
Unitrans

Unitrans is a student-run public bus system that serves UC Davis and the City of Davis. Buses run more frequently during the UC Davis academic year when ridership is higher, and less frequently during the summer and other academic breaks. Fares are $1.00, and many types of prepaid discounted tickets and passes are available. One special fare category is for UC Davis undergraduate students, who can show a valid ID instead of a cash fare, because they pay a portion of their quarterly ASUCD fee to Unitrans. Seniors (60+) and City employees may also ride free with an ID card.

Two Unitrans routes (M and W) serve the general project area:

- **Route M** runs along 5th Street/Russell Boulevard, B Street, 1st Street, Richards Boulevard/Cowell Boulevard, Research Park Drive, and Drew Avenue on a 25-minute loop route connecting UC Davis, downtown Davis, and Cowell Boulevard. Buses run from approximately 7:00 AM to 10:30 PM on weekdays only. The nearest stop to the project site is at the Richards Boulevard/Olive Drive intersection.

- **Route W** runs along Hutchison Drive, 1st Street, Richards Boulevard/Cowell Boulevard, Lillard Drive, and Drummond Avenue on a 30-minute loop route connecting UC Davis, downtown Davis, and Cowell Boulevard. Buses run from approximately 7:00 AM to 7:30 PM on weekdays. Buses run from approximately 9:00 AM to 5:30 PM on weekends. The nearest stop to the project site is at the Richards Boulevard/Olive Drive intersection.
CHAPTER 4. EXISTING PLUS HOTEL/CONFERENCE CENTER CONDITIONS

This chapter discusses the proposed project and existing plus project conditions analysis results at the study locations. It also presents the project impacts and associated mitigation measures for existing plus project conditions.

PROJECT DESCRIPTION

The proposed project would replace the existing University Inn & Suites Hotel and Caffé Italia restaurant in Davis, California with a new Embassy Suites hotel with conference facilities. The hotel site is located at the southeast corner of Richards Boulevard and Olive Drive. An on-site restaurant in the new hotel will serve hotel guests and conference attendees. As proposed, access to the project site will be provided on both Richards Boulevard and Olive Drive. The project includes access control improvements on Richards Boulevard that will prevent outbound left-turn movements from the project site onto Richards Boulevard (inbound left-turn movements will still be permitted). These access control improvements are included in Appendix B.

The existing University Inn & Suites Hotel and Caffé Italia restaurant includes the following uses:

- Hotel (43 rooms)
- Restaurant (4,000 square feet)

The proposed project will include the following uses:

- Embassy Suites hotel (132 rooms)
- Restaurant for hotel guests and conference attendees
- Conference center (14,900 square feet)

TRIP GENERATION

Existing Trip Generation

To determine the peak hour trip generation of the existing project site, trip generation counts were conducted at the project driveways on Richards Boulevard and Olive Drive on May 10, 2011. The counts were taken during the peak hours of the adjacent street traffic. The AM peak hour counts were collected from 7:45-8:45 AM and the PM peak hour counts were collected from 4:30-5:30 PM.

Although the existing land uses and proposed land uses are similar, the characteristics of the existing site and the proposed project are expected to be quite different. The majority of existing trips are generated by the restaurant (Caffé Italia) rather than the hotel (University Inn & Suites Hotel). The trip generation of the proposed project will be dominated by the hotel, with an in-house restaurant that is intended primarily for guests and conference attendees. Therefore, existing count data was used to determine the trip generation of the existing site, while trip generation rates from the Institute of Transportation...
Engineers’ (ITE) *Trip Generation, 9th Edition* were used to develop trip generation estimates for the proposed project.

Table 4-1 shows the daily, AM, and PM peak hour automobile trips generated by the existing site. Since daily trips were not counted at the project driveways, ITE trip generation rates were used to determine daily trips generated by the site. ITE Land Use 310 (Hotel) accounts for hotel occupancy; the hotel had 13 rooms occupied on the night of May 9, 2011 and 14 rooms occupied on the night of May 10, 2011.

During the AM and PM peak hour count periods, cut-through trips were recorded (i.e. trips that entered one driveway and immediately exited another driveway, perhaps to avoid the Richards Boulevard/Olive Drive intersection). These trips were removed from the existing site driveway counts since they are not trips produced by the existing land uses.

<table>
<thead>
<tr>
<th>TABLE 4-1</th>
<th>UNIVERSITY INN &amp; SUITES HOTEL AND CAFFÉ ITALIA TRIP GENERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trip Generation</strong></td>
<td><strong>AM Peak Hour</strong></td>
</tr>
<tr>
<td>Daily</td>
<td>In</td>
</tr>
<tr>
<td><strong>Trip Generation Counts</strong></td>
<td></td>
</tr>
<tr>
<td>Automobiles</td>
<td>39</td>
</tr>
<tr>
<td>Cut-through automobiles</td>
<td>-3</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
</tr>
<tr>
<td><strong>ITE Trip Generation Rates</strong></td>
<td></td>
</tr>
<tr>
<td>Hotel (13/43 AM rooms occupied; 14/43 PM rooms occupied)</td>
<td>120</td>
</tr>
<tr>
<td>Restaurant (4,000 square feet)</td>
<td>509</td>
</tr>
<tr>
<td>Total</td>
<td>629</td>
</tr>
<tr>
<td><strong>Existing Site Trip Generation</strong></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>629</td>
</tr>
</tbody>
</table>

Notes:  
1. AM and PM peak hour trip generation estimates are based on count data collected at the existing site.  
2. Based on ITE trip generation rates for Land Use 310 (Hotel)  
3. Based on ITE trip generation rates for Land Use 932 (High-Turnover [Sit-Down] Restaurant)  
Source: Fehr & Peers, 2015

As shown in Table 4-1, the trip generation counts show that the existing site generates 48 AM peak hour trips and 49 PM peak hour trips. Based on ITE trip generation rates the existing site generates approximately 630 daily trips.

**Proposed Project Trip Generation**

Because the proposed project will replace the existing University Inn & Suites Hotel and Caffé Italia restaurant, the new trips due to the proposed project must be determined as an increment above the
existing hotel and restaurant trip generation. Table 4-2 shows the estimated trip generation of the proposed project.

The hotel and restaurant trips were determined based on ITE trip generation rates. ITE does not have trip generation rates for a conference center; therefore trips were estimated based on 175 conference attendees coming from outside of the hotel, a 10 percent drop-off rate, and a vehicle occupancy rate of 1.5 attendees per vehicle. It was also assumed that the conference center would generate 80 daily trips for employees/service vehicles (40 employees/service vehicles times two trips each), with 10 trips occurring during the AM peak hour, 10 trips occurring during the PM peak hour, and 60 trips occurring during off-peak hours.

A bicycle/pedestrian reduction of 10 percent was applied to the overall trip generation. The count data collected at the existing site included bicycle and pedestrian counts. The mode split included 19 percent and 29 percent bicycle/pedestrian trips during the AM and PM peak hours, respectively. The characteristics of the proposed project will be different than the existing uses (i.e. a hotel driven trip generation) and therefore are likely to generate fewer bicycle/pedestrian trips. A 10 percent reduction provides a conservative estimate of the vehicle trip generation for the proposed project.
As shown in Table 4-2, it is estimated that the proposed project will generate an additional 819 daily trips compared to the existing hotel and restaurant; 172 and 175 trips will be generated in the AM and PM peak hours, respectively. The estimated trip generation accounts for restaurant patrons that are guests of the hotel or conference center, and patrons arriving via walking or bicycling.

**TRIP DISTRIBUTION**

The distribution of project trips was determined based on knowledge of the project area and analysis of the project site using the City of Davis Travel Demand Model. Table 4-3 shows the general trip distribution pattern of project trips. Figure 3 presents a more detailed view of the project trip distribution.
### TABLE 4-3
PROPOSED PROJECT TRIP DISTRIBUTION

<table>
<thead>
<tr>
<th>Origin/Destination</th>
<th>Percent of Project Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown Davis (via Richards Boulevard)</td>
<td>25%</td>
</tr>
<tr>
<td>I-80 Eastbound</td>
<td>30%</td>
</tr>
<tr>
<td>I-80 Westbound</td>
<td>33%</td>
</tr>
<tr>
<td>South Davis (via Richards Boulevard / Cowell Boulevard)</td>
<td>10%</td>
</tr>
<tr>
<td>Olive Drive</td>
<td>2%</td>
</tr>
</tbody>
</table>

Source: Fehr & Peers, 2015
Figure 3
Project Trip Distribution and Assignment
EXISTING PLUS HOTEL/CONFERENCE CENTER TRANSPORTATION NETWORK

Existing plus hotel/conference center conditions traffic volumes were developed by adding project generated traffic volumes to the existing traffic volumes at the study intersections and freeway segments. In addition, the new median on Richards Boulevard will prevent left turns out of both the hotel exit and the Shell gas station north of Richards Boulevard, adding trips to Olive Drive. This rerouting was taken into consideration in the addition of project trips to the existing conditions. No changes to the existing transportation network were assumed for the existing plus project conditions intersection and freeway segment level of service analyses.

Existing Plus Hotel/Conference Center Conditions Levels of Service

The existing plus project volumes were analyzed using the methodologies discussed in Chapter 2.

Intersections

The intersection level of service results are shown in Table 4-4. Detailed calculation sheets are provided in Appendix D.
### TABLE 4-4
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION OPERATIONS

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>Existing</th>
<th></th>
<th>Existing Plus Project</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM Peak</td>
<td>PM Peak</td>
<td>AM Peak</td>
<td>PM Peak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delay(^1)</td>
<td>LOS</td>
<td>Delay(^1)</td>
<td>LOS</td>
</tr>
<tr>
<td>1st Street/D Street</td>
<td>Signal</td>
<td>6.0</td>
<td>A</td>
<td>21.4</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Street/E Street/Richards Boulevard</td>
<td>Signal</td>
<td>16.6</td>
<td>B</td>
<td>22.9</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Street/F Street</td>
<td>Multi-Way Stop</td>
<td>8.2 WBT</td>
<td>A</td>
<td>11.6 SBR</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richards Boulevard/Olive Drive</td>
<td>Signal</td>
<td>15.4</td>
<td>B</td>
<td>19.8</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richards Boulevard/Project Driveway</td>
<td>Side-Street Stop</td>
<td>15.5 SBL</td>
<td>C</td>
<td>33.9 SBL</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richards Boulevard/I-80 WB Ramps</td>
<td>Uncontrolled</td>
<td>0.9 SBR</td>
<td>A</td>
<td>1.0 SBR</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richards Boulevard/I-80 EB Ramps</td>
<td>Signal</td>
<td>29.3</td>
<td>C</td>
<td>29.2</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richards Boulevard/Research Park Drive/Cowell Boulevard</td>
<td>Signal</td>
<td>22.3</td>
<td>C</td>
<td>26.9</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cowell Boulevard/Pole Line Road/Lillard Drive</td>
<td>Signal</td>
<td>28.4</td>
<td>C</td>
<td>7.5</td>
<td>A</td>
</tr>
</tbody>
</table>

Notes: \(^1\) Delay is reported in seconds per vehicle for the overall intersection for signalized intersections. Delay is reported in seconds per vehicle for the worst movement for unsignalized/uncontrolled intersections.

Source: Fehr & Peers, 2015

As shown in Table 4-4, all study intersections operate at LOS D or better during the AM and PM peak hours with the addition of project traffic. In general, the addition of project traffic increases delay at study intersections. However, the additional delay due to the project is less than five seconds at each intersection and each intersection continues to operate acceptably with the addition of project traffic. At the Richards Boulevard/Project Driveway intersection, side-street delay reduces due to the prohibition of southbound and northbound left-turns.

In the PM peak hour at the 1st Street/D Street and Richards Boulevard/Research Park Drive/Cowell Boulevard intersections, delay slightly decreases. This decrease is due to the use of microsimulation, a stochastic model with random variation in vehicle arrival. Although the existing plus project microsimulation accounts for additional traffic due to the project, random variation in vehicle arrival can cause variation between multiple runs. This decrease in delay can be interpreted to suggest that no measurable increase in congestion will occur at these study intersections due to project traffic.

Further analysis of the Richards Boulevard/Olive Drive and Richards Boulevard/Project Driveway intersections was completed to ensure that westbound left-turn queues would not interfere with westbound through traffic on Richards Boulevard. Specifically, access control improvements on Richards Boulevard that will prevent outbound left-turn movements from the project site onto Richards Boulevard...
will also reduce the length of the westbound left-turn pocket at the Richards Boulevard/Olive Drive intersection. Table 4-5 shows the results of this queuing analysis.

### TABLE 4-5
EXISTING PLUS PROJECT QUEUING ANALYSIS AT RICHARDS BOULEVARD/OLIVE DRIVE

<table>
<thead>
<tr>
<th>Movement</th>
<th>Maximum Storage</th>
<th>Existing Plus Project Maximum Queue (AM Peak Hour)</th>
<th>Existing Plus Project Maximum Queue (PM Peak Hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richards Boulevard/Olive Drive Westbound Left-Turn</td>
<td>125 feet</td>
<td>290 feet</td>
<td>212 feet</td>
</tr>
<tr>
<td>Richards Boulevard/Olive Drive Westbound Through</td>
<td>N/A (blocks Richards Boulevard/Olive Drive at 150 feet and Richards Boulevard/Project Driveway at 330 feet)</td>
<td>330 feet</td>
<td>333 feet</td>
</tr>
<tr>
<td>Richards Boulevard/Project Driveway Westbound Left-Turn</td>
<td>125 feet</td>
<td>72 feet</td>
<td>60 feet</td>
</tr>
</tbody>
</table>

Source: Fehr & Peers, 2015

At the Richards Boulevard/Olive Drive intersection, the maximum westbound left-turn queue during the peak hours (AM – 290 feet, PM – 212 feet) will exceed the available storage at least once per hour. This is potentially problematic as queues spilling out of this turn pocket may block the westbound through movement.

Also at the Richards Boulevard/Olive Drive intersection, the maximum westbound through queue will extend beyond the westbound left-turn pocket, limiting access to the westbound left-turn pocket. This will happen multiple times during both the AM and PM peak hours. It comes close to blocking the Richards Boulevard/Project Driveway westbound left-turn.

At the Richards Boulevard/Project Driveway intersection, the maximum westbound left-turn queue does not exceed available storage.
Freeways

Table 4-6 shows the freeway segment level of service results. Detailed calculation sheets are provided in Appendix E.

<table>
<thead>
<tr>
<th>Direction</th>
<th>Segment</th>
<th>Existing</th>
<th>Existing Plus Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM Peak</td>
<td>LOS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Density</td>
<td>LOS</td>
</tr>
<tr>
<td>Eastbound</td>
<td>Old Davis Road to Richards Blvd</td>
<td>16.5</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>Richards Blvd to Mace Blvd</td>
<td>20.3</td>
<td>C</td>
</tr>
<tr>
<td>Westbound</td>
<td>Mace Blvd to Richards Blvd</td>
<td>25.1</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Richards Blvd to Old Davis Rd</td>
<td>17.4</td>
<td>B</td>
</tr>
</tbody>
</table>

Notes: Delay and LOS is based on HCM methodology.
Source: Fehr & Peers, 2012

As shown in Table 4-6, most of the study freeway segments will operate at LOS C with and without the project. In the AM peak hour, the westbound segment between Mace Boulevard and Richards Boulevard changes from LOS C to LOS D with the addition of the project.

Parking Supply Evaluation

A parking supply and demand analysis was conducted for the project. The project site will provide 172 parking spaces. Assuming 85 percent occupancy of the 132 hotel rooms (112 rooms) and that 10 percent of guests arrive by non-auto modes, 102 vehicles will be parked on-site for the hotel. At 85 percent hotel occupancy, 70 parking spaces will remain for off-site conference attendees or employees. Assuming that employees park off-site or arrive by non-auto modes, a 10 percent drop-off rate, and vehicle occupancy of 1.5 persons per vehicle, 70 spaces can accommodate approximately 115 off-site attendees. Events that will generate more than 115 off-site attendees will likely require valet parking to an off-site lot unless further parking is constructed (in addition to requiring employees to park off-site or arrive by non-auto modes).
Figure 4
Peak Hour Traffic Volumes
and Lane Configurations -
Existing Plus Project Conditions
Impacts and Mitigation Measures

Intersections

The project would increase the amount of traffic on the study intersections over existing conditions. However, none of the study intersections would degrade to an unacceptable LOS. Additionally queuing analysis at the Richards Boulevard/Olive Drive intersection and the Richards Boulevard/Project Driveway intersections showed that access control improvements on Richards Boulevard to prevent outbound left-turn movements from the project site onto Richards Boulevard may cause queuing issues for westbound left-turn and westbound through traffic on Richards Boulevard. Implementation of the following mitigation measure will reduce this impact to less than significant.

Mitigation

Modify the proposed access control improvements on Richards Boulevard to prevent westbound left-turns at the Richards Boulevard/Project Driveway intersection (the intersection would operate as right-in, right-out). These access control improvements would maximize westbound left-turn storage at the Richards Boulevard/Olive Drive intersection, reducing the likelihood of westbound left-turn queues blocking westbound through traffic and vice versa. With implementation of this mitigation measure, the Richards Boulevard/Olive Drive intersection will operate at LOS B in the AM peak hour and LOS C in the PM peak hour; the Richards Boulevard/Project Driveway intersection will operate at LOS A in the AM peak hour and LOS B in the PM Peak hour. Implementing access control to prevent westbound left-turns at the Richards/Boulevard/Project Driveway intersection would likely increase the number of westbound u-turns at the Richards Boulevard/Olive Driveway intersection. Sufficient space on the south side of Richards Boulevard should be provided for these u-turns. However, given the expected level of service with the mitigation measure implemented, the increment of delay caused by increased u-turns will not cause unacceptable operations at the Richards Boulevard/Olive Driveway intersection. To minimize the amount of westbound u-turn traffic, the project should implement wayfinding signage near the Richards Boulevard/Olive Drive intersection that directs hotel/conference center traffic to the rear entrance on Olive Drive.

Freeway Segments

The project would increase the amount of traffic on the study segments over existing conditions. However, none of the study segments would degrade to an unacceptable LOS. Therefore this impact is considered less than significant.

Mitigation

None
Bicycle Facilities

The project would increase the amount of traffic in the study area over existing conditions and potentially increase bicycle ridership. However, the project would not interfere with any existing or proposed bicycle facilities. Therefore this impact is considered less than significant.

Mitigation

None

Transit

The project would increase the amount of traffic in the study area over existing conditions and potentially increase transit ridership. However, the project would not interfere with or exacerbate the demand for existing transit operations. Therefore this impact is considered less than significant.

Mitigation

None
CHAPTER 5. CUMULATIVE CONDITIONS

This chapter discusses the cumulative transportation system in the study area and presents the levels of service at the study locations.

CUMULATIVE ROADWAY NETWORK

Due to increased traffic levels on Richards Boulevard, access control on Richards Boulevard between Olive Drive and the I-80 westbound ramps will eventually be necessary to maximize corridor safety and operations. The cumulative conditions transportation system assumes that access control on Richards Boulevard will be implemented between Olive Drive and the I-80 westbound ramps. Specifically, left-turns into and out of the driveways on Richards Boulevard (at the hotel and the Shell gas station/In-and-Out) will be prohibited and these driveways will be converted to right-in, right-out.

Cumulative Forecasts

Cumulative forecasts were developed using the City of Davis Travel Demand Forecasting Model. Versions of the City of Davis Travel Demand Forecasting Model were developed to reflect a base year of 2008 and a future year of 2035. The difference method, which adds the growth between the base and future year models to existing counts, was used to produce forecasts. The land use for these scenarios were developed using land use inventories and projections from the Sacramento Area Council of Governments (SACOG) consistent with the Metropolitan Transportation Plan/Sustainable Community Strategy (MTP/SCS). MTP/SCS land use does not assume the development of any Davis Measure R ballot proposition projects, projects that require voter approval to be annexed into the City. Three Measure R projects are currently under environmental review: development of the Nishi property, Mace Ranch, and the Davis Innovation Center. Figure 5 shows the cumulative conditions peak hour intersection traffic volumes.
### Peak Hour Traffic Volumes and Lane Configurations - Cumulative Conditions

**Figure 5**

<table>
<thead>
<tr>
<th>Location</th>
<th>Traffic Volumes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. D St/1st St</td>
<td>20 (30) 80 (100) 10 (10)</td>
</tr>
<tr>
<td>2. E St/Richards Blvd/1st St</td>
<td>40 (50) 10 (10) 5 (20)</td>
</tr>
<tr>
<td>3. F St/1st St</td>
<td>10 (20) 80 (275) 10 (20)</td>
</tr>
<tr>
<td>4. Olive Dr/Richards Blvd</td>
<td>50 (90) 625 (730) 100 (140)</td>
</tr>
<tr>
<td>5. In-N-Out/Caffe Italia/Richards Blvd</td>
<td>90 (10) 20 (60) 40 (25)</td>
</tr>
<tr>
<td>6. I-80 WB Ramps/Richards Blvd</td>
<td>730 (1,200) 700 (810) 580 (850)</td>
</tr>
<tr>
<td>7. I-80 EB Ramps/Richards Blvd/Cowell Blvd</td>
<td>105 (180) 1,000 (1,170) 335 (470)</td>
</tr>
<tr>
<td>8. Research Park Dr/Cowell Blvd</td>
<td>110 (50) 765 (830) 310 (175)</td>
</tr>
<tr>
<td>9. Cowell Blvd/Lillard Dr</td>
<td>170 (220) 120 (30) 170 (280)</td>
</tr>
</tbody>
</table>

---

**Legend**

- **Red Circle**: Peak hour traffic volume
- **Green Arrow**: Lane configuration
- **Blue Arrow**: Traffic flow direction

---

**Map**

- **D St**: First Street
- **E St**: Second Street
- **F St**: Third Street
- **Richards Blvd**: Richards Boulevard
- **Olive Dr**: Olive Drive
- **In-N-Out**: In-N-Out
- **Caffe Italia**: Caffe Italia
- **I-80 WB Ramps**: I-80 Westbound Ramps
- **I-80 EB Ramps**: I-80 Eastbound Ramps
- **Research Park Dr**: Research Park Drive
- **Cowell Blvd**: Cowell Boulevard
- **Lillard Dr**: Lillard Drive
Cumulative Conditions Levels of Service

The cumulative forecasts were analyzed using the methodologies discussed in Chapter 2. The intersection technical calculations sheets are provided in Appendix D and the freeway technical calculations sheets are provided in Appendix E.

Intersections

The intersection level of service results for cumulative conditions are shown in Table 5-1.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>AM Peak</th>
<th></th>
<th>PM Peak</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Delay¹</td>
<td>LOS</td>
<td>Delay¹</td>
<td>LOS</td>
</tr>
<tr>
<td>1st Street/D Street</td>
<td>Signal</td>
<td>15.8</td>
<td>B</td>
<td>83.8</td>
<td>F</td>
</tr>
<tr>
<td>1st Street/E Street/Richards Boulevard</td>
<td>Signal</td>
<td>27.6</td>
<td>C</td>
<td>46.2</td>
<td>D</td>
</tr>
<tr>
<td>1st Street/F Street</td>
<td>Multi-Way Stop</td>
<td>16.7 WBT</td>
<td>C</td>
<td>109.7 SBR</td>
<td>F</td>
</tr>
<tr>
<td>Richards Boulevard/Olive Drive</td>
<td>Signal</td>
<td>52.9</td>
<td>D</td>
<td>64.4</td>
<td>E</td>
</tr>
<tr>
<td>Richards Boulevard/Project Driveway</td>
<td>Side-Street Stop</td>
<td>10.3 SBR</td>
<td>B</td>
<td>14.4 SBR</td>
<td>B</td>
</tr>
<tr>
<td>Richards Boulevard/I-80 WB Ramps</td>
<td>Uncontrolled</td>
<td>1.6 SBR</td>
<td>A</td>
<td>6.0 SBR</td>
<td>A</td>
</tr>
<tr>
<td>Richards Boulevard/I-80 EB Ramps</td>
<td>Signal</td>
<td>73.1</td>
<td>E</td>
<td>77.7</td>
<td>E</td>
</tr>
<tr>
<td>Richards Boulevard/Research Park Drive/Cowell Boulevard</td>
<td>Signal</td>
<td>50.9</td>
<td>D</td>
<td>99.8 F</td>
<td></td>
</tr>
<tr>
<td>Cowell Boulevard/Pole Line Road/Lillard Drive</td>
<td>Signal</td>
<td>11.3</td>
<td>B</td>
<td>10.1</td>
<td>B</td>
</tr>
</tbody>
</table>

Notes: ¹Delay is reported in seconds per vehicle for the overall intersection for signalized intersections. Delay is reported in seconds per vehicle for the worst movement for unsignalized/uncontrolled intersections.

Source: Fehr & Peers, 2015

As shown in Table 5-1, all of the study intersections operate at LOS E or better during the AM peak hour. During the PM peak hour, three intersections operate at LOS F: 1st Street/D Street, 1st Street/F Street, and Richards Boulevard/Research Park Drive/Cowell Boulevard. LOS F is acceptable in the Core Area; therefore, the only intersection that operates unacceptably is Richards Boulevard/Research Park Drive/Cowell Boulevard.
Freeways

The freeway segment level of service results for cumulative conditions are shown in Table 5-2.

<table>
<thead>
<tr>
<th>Direction</th>
<th>Segment</th>
<th>AM Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Density</td>
<td>LOS</td>
</tr>
<tr>
<td>Eastbound</td>
<td>Old Davis Road to Richards Boulevard</td>
<td>21.6</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Richards Boulevard to Mace Boulevard</td>
<td>25.4</td>
<td>C</td>
</tr>
<tr>
<td>Westbound</td>
<td>Mace Boulevard to Richards Boulevard</td>
<td>31.6</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>Richards Boulevard to Old Davis Road</td>
<td>20.5</td>
<td>C</td>
</tr>
</tbody>
</table>

Notes: Delay and LOS is based on HCM methodology.
Source: Fehr & Peers, 2015

As shown in Table 5-2 the study freeway segments will operate at LOS D or better under cumulative conditions.

**CUMULATIVE PEDESTRIAN AND BICYCLE FACILITIES**

No improvements to the bicycle and pedestrian network were assumed under cumulative conditions.

**CUMULATIVE TRANSIT SYSTEM**

No improvements to the transit network were assumed under cumulative conditions.
CHAPTER 6. CUMULATIVE PLUS HOTEL/CONFERENCE CENTER CONDITIONS

This chapter discusses the cumulative plus hotel/conference center conditions analysis results at the study locations. It also presents the project impacts and associated mitigation measures for cumulative hotel/conference center project conditions.

CUMULATIVE PLUS HOTEL/CONFERENCE CENTER TRANSPORTATION NETWORK

No changes to the cumulative transportation network are assumed under the cumulative plus hotel/conference center conditions. The analysis results for the study locations with the addition of the project is shown below.

Cumulative Plus Hotel/Conference Center Forecasts

The cumulative plus hotel/conference center traffic volumes were developed by adding the net new trips shown in Table 4-2 to the cumulative forecasts using the distribution in Table 4-3. Figure 6 shows the cumulative plus hotel/conference center peak hour intersection traffic volumes.
Figure 6
Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Project Conditions
**Cumulative Plus Hotel/Conference Center Levels of Service**

The cumulative forecasts were analyzed using the methodologies discussed in Chapter 2. The intersection technical calculations sheets are provided in Appendix D and the freeway technical calculations sheets are provided in Appendix E.

**Intersections**

The intersection level of service results for cumulative plus hotel/conference center conditions are shown in Table 6-1.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>Cumulative</th>
<th>Cumulative Plus Hotel/Conference Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM Peak</td>
<td>PM Peak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delay&lt;sup&gt;1&lt;/sup&gt;</td>
<td>LOS</td>
</tr>
<tr>
<td>1st Street/D Street</td>
<td>Signal</td>
<td>15.8</td>
<td>B</td>
</tr>
<tr>
<td>1st Street/E Street/Richards Boulevard</td>
<td>Signal</td>
<td>27.6</td>
<td>C</td>
</tr>
<tr>
<td>1st Street/F Street</td>
<td>Multi-Way Stop</td>
<td>16.7</td>
<td>WBT</td>
</tr>
<tr>
<td>Richards Boulevard/Olive Drive</td>
<td>Signal</td>
<td>52.9</td>
<td>D</td>
</tr>
<tr>
<td>Richards Boulevard/Project Driveway</td>
<td>Side-Street Stop</td>
<td>10.3</td>
<td>SBR</td>
</tr>
<tr>
<td>Richards Boulevard/I-80 WB Ramps</td>
<td>Uncontrolled</td>
<td>1.6</td>
<td>SBR</td>
</tr>
<tr>
<td>Richards Boulevard/I-80 EB Ramps</td>
<td>Signal</td>
<td>73.1</td>
<td>E</td>
</tr>
<tr>
<td>Richards Boulevard/Research Park Drive/Cowell Boulevard</td>
<td>Signal</td>
<td>50.9</td>
<td>D</td>
</tr>
<tr>
<td>Cowell Boulevard/Pole Line Road/Lillard Drive</td>
<td>Signal</td>
<td>11.3</td>
<td>B</td>
</tr>
</tbody>
</table>

Notes: 1 Delay is reported in seconds per vehicle for the overall intersection for signalized intersections. Delay is reported in seconds per vehicle for the worst movement for unsignalized/uncontrolled intersections.

Source: Fehr & Peers, 2015

As shown in Table 6-1, the addition of project traffic generally increases delay at study intersections. However, at some intersections delay slightly decreases. This decrease is due to the use of microsimulation, a stochastic model with random variation in vehicle arrival. Although the existing plus project microsimulation accounts for additional traffic due to the project, random variation in vehicle arrival can cause variation between multiple runs. These decreases in delay can be interpreted to suggest that no measurable increase in congestion will occur at these study intersections due to project traffic.
During the AM peak hour all intersections will operate at LOS E or better with the addition of project traffic. The addition of project traffic does not cause any intersections operating at an acceptable LOS to operate at an unacceptable LOS.

During the PM peak hour, several intersections will continue to operate at LOS F with the addition of project traffic, including 1st Street/D Street, 1st Street/F Street, and Richards Boulevard/Research Park Drive/Cowell Boulevard. Criteria related to significant impacts at these intersections are outlined below.

- 1st Street/D Street is a signalized intersection in the Core Area. For the project’s impact to be significant, the project must exacerbate a “congested condition” by adding five seconds or more to the intersection’s average delay. Analysis shows a decrease in delay due to random variation in vehicle arrival between multiple runs, suggesting that no measurable increase in congestion will occur at this intersection due to the project (i.e. the project adds less than five seconds to the intersection’s average delay).

- 1st Street/F Street is a multi-way stop intersection in the Core Area. For the project’s impact to be significant, the intersection would need to meet the peak hour signal warrant and the project would need to increase the intersection’s overall volume by more than one percent. The intersection does not meet the MUTCD’s peak hour signal warrant (Appendix F includes signal warrant calculations); however, the project increases the intersection’s overall volume by six percent.

- Richards Boulevard/Research Park Drive/Cowell Boulevard is a signalized intersection outside of the Core Area. LOS E is the minimum acceptable LOS, therefore the intersection operates unacceptably both without and with the project. For the project’s impact to be significant, the project must add five seconds or more to the intersection’s average delay. The project adds less than five seconds to the intersection’s average delay.
Freeways

The freeway segment level of service results for cumulative plus hotel/conference center conditions are shown in Table 6-2.

<table>
<thead>
<tr>
<th>Direction</th>
<th>Segment</th>
<th>Cumulative</th>
<th>Cumulative Plus Hotel/Conference Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM Peak</td>
<td>PM Peak</td>
</tr>
<tr>
<td>Eastbound</td>
<td>Old Davis Road to Richards Boulevard</td>
<td>21.6</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Richards Boulevard to Mace Boulevard</td>
<td>25.4</td>
<td>C</td>
</tr>
<tr>
<td>Westbound</td>
<td>Mace Boulevard to Richards Boulevard</td>
<td>31.6</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>Richards Boulevard to Old Davis Road</td>
<td>20.5</td>
<td>C</td>
</tr>
</tbody>
</table>

Notes: Delay and LOS is based on HCM methodology.
Source: Fehr & Peers, 2012

As shown in Table 6-2, the study freeway segments will operate at LOS C or LOS D with and without the project under cumulative conditions. Project traffic does not cause any freeway segments operating acceptably without the project to operate unacceptably.

**Impacts and Mitigation Measures**

**Intersections**

The project would increase the amount of traffic on the study intersections over cumulative conditions, including intersections that operate at an unacceptable LOS without the project. However, the analysis of pertinent significance criteria including delay added, volume added, and the MUTCD’s peak hour signal warrant show that none of the impacts are significant. Therefore this impact is considered *less than significant*.

**Mitigation**

None
Freeway Segments

The project would increase the amount of traffic on the study segments over cumulative conditions. However, none of the study segments would degrade to an unacceptable LOS. Therefore this impact is considered less than significant.

Mitigation
None

Bicycle Facilities

The project would increase the amount of traffic in the study area over cumulative conditions and potentially increase bicycle ridership. However, the project would not interfere with any existing or proposed bicycle facilities. Therefore this impact is considered less than significant.

Mitigation
None

Transit

The project would increase the amount of traffic in the study area over cumulative conditions and potentially increase transit ridership. However, the project would not interfere with or exacerbate the demand for existing transit operations. Therefore this impact is considered less than significant.

Mitigation
None
CHAPTER 7. CUMULATIVE PLUS MEASURE R PROJECTS CONDITIONS

This chapter discusses the cumulative plus Measure R projects’ transportation system in the study area and presents the levels of service at the study locations. Three Measure R projects are currently under environmental review: development of the Nishi property, Mace Ranch, and the Davis Innovation Center.

CUMULATIVE PLUS MEASURE R PROJECTS’ ROADWAY NETWORK

Buildout of the three Measure R projects will likely require mitigation measures on roadways within the study area of the hotel/conference center. Without such mitigation measures it is not reasonably foreseeable that these projects will be approved and constructed. Therefore, in measuring the hotel/conference center project’s impact with the Measure R projects, it is reasonable to assume that these mitigation measures are in place. Preliminary analysis from the Nishi Environmental Impact Report was used to develop assumed roadway improvements under cumulative plus Measure R projects conditions:

- **1st Street/F Street** – install a traffic signal. In addition to a traffic signal, two alternative mitigation measures are being considered: constructing an eastbound left-turn lane or prohibiting eastbound left-turns. Constructing an eastbound left-turn lane requires that the City acquire additional right-of-way. Prohibiting eastbound left-turns does not require additional right-of-way. For the purposes of assessing the impact of the hotel/conference center, prohibiting eastbound left-turns was assumed.

- **Richards Boulevard/Olive Drive** – construct a short, eastbound right-turn lane on Richards Boulevard; construct a second westbound left-turn lane on Richards Boulevard; widen the northbound approach on Olive Drive to feature a left-turn lane, a shared through/right-turn lane, and a right-turn lane.

- **Richards Boulevard/Project Driveway** – consistent with the cumulative scenarios (without Measure R projects), prohibit westbound left-turns into the project driveway (the driveway will be right-in, right-out).

- **Richards Boulevard/I-80 Westbound (WB) Ramps** – reconstruct the Richards Boulevard interchange to move the I-80 westbound ramps further east; remove the free right-turn movements and install a traffic signal; modify the approaches to feature one southbound left-turn lane and two southbound right-turn lanes, two eastbound through lanes and one eastbound right-turn lane, and two westbound left-turn lanes and one westbound through lane.

- **Richards Boulevard/I-80 Eastbound (EB) Ramps** – construct a second southbound left-turn lane.

- **Richards Boulevard-Cowell Boulevard/Research Park Drive** – construct a second eastbound through lane on Richards Boulevard.
Cumulative Plus Measure R Projects Forecasts

Cumulative plus Measure R projects forecasts were developed using the City of Davis Travel Demand Forecasting Model. Versions of the City of Davis Travel Demand Forecasting Model were developed to reflect a base year of 2008 and a future year of 2035. The difference method, which adds the growth between the base and future year models to existing counts, was used to produce forecasts. The land use for these scenarios were developed using land use inventories and projections from the Sacramento Area Council of Governments (SACOG) consistent with the Metropolitan Transportation Plan/Sustainable Community Strategy (MTP/SCS). Land use from three Davis Measure R ballot proposition projects (development of the Nishi property, Mace Ranch, and the Davis Innovation Center) was added in addition to growth identified by the MTP/SCS. Figure 7 shows the cumulative plus Measure R projects conditions peak hour intersection traffic volumes.
### Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Measure R Projects Conditions

#### Figure 7

<table>
<thead>
<tr>
<th>1. D St/1st St</th>
<th>2. E St/Richards Blvd/1st St</th>
<th>3. F St/1st St</th>
<th>4. Olive Dr/Richards Blvd</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 (30)</td>
<td>60 (80)</td>
<td>20 (10)</td>
<td>10 (10)</td>
</tr>
<tr>
<td>20 (20)</td>
<td>735 (505)</td>
<td>160 (210)</td>
<td>190 (190)</td>
</tr>
<tr>
<td>10 (20)</td>
<td>30 (40)</td>
<td>205 (290)</td>
<td></td>
</tr>
<tr>
<td>275 (695)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>460 (515)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>725 (1,640)</td>
<td>445 (520)</td>
<td>260 (280)</td>
<td>10 (10)</td>
</tr>
<tr>
<td>15 (25)</td>
<td>1,360 (995)</td>
<td>880 (860)</td>
<td>50 (100)</td>
</tr>
<tr>
<td></td>
<td>575 (1,165)</td>
<td></td>
<td>445 (1,085)</td>
</tr>
<tr>
<td></td>
<td>200 (515)</td>
<td></td>
<td>155 (120)</td>
</tr>
<tr>
<td></td>
<td>90 (10)</td>
<td></td>
<td>70 (120)</td>
</tr>
<tr>
<td></td>
<td>290 (190)</td>
<td></td>
<td>165 (190)</td>
</tr>
<tr>
<td></td>
<td>290 (210)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>290 (210)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>200 (190)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>190 (190)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>220 (440)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>250 (310)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>230 (160)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 9. Cowell Blvd/Lillard Dr               |                               |                                             |                                 |
|                                        | 170 (220)                     |                                             |                                |
|                                        | 500 (200)                     |                                             |                                |
|                                        | 90 (10)                       |                                             |                                |
|                                        | 290 (190)                     |                                             |                                |
|                                        | 290 (210)                     |                                             |                                |
|                                        | 90 (10)                       |                                             |                                |
|                                        | 200 (190)                     |                                             |                                |
|                                        | 220 (440)                     |                                             |                                |
|                                        | 250 (310)                     |                                             |                                |
|                                        | 230 (160)                     |                                             |                                |
Cumulative Plus Measure R Projects Conditions Levels of Service

The cumulative plus Measure R projects forecasts were analyzed using the methodologies discussed in Chapter 2. The intersection technical calculations sheets are provided in Appendix D and the freeway technical calculations sheets are provided in Appendix E.

Intersections

The intersection level of service results for cumulative plus Measure R projects conditions are shown in Table 7-1.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>AM Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Delay¹</td>
<td>LOS</td>
</tr>
<tr>
<td>1st Street/D Street</td>
<td>Signal</td>
<td>18.9</td>
<td>B</td>
</tr>
<tr>
<td>1st Street/E Street/Richards Boulevard</td>
<td>Signal</td>
<td>34.7</td>
<td>C</td>
</tr>
<tr>
<td>1st Street/F Street</td>
<td>Signal</td>
<td>10.7</td>
<td>B</td>
</tr>
<tr>
<td>Richards Boulevard/Olive Drive</td>
<td>Signal</td>
<td>52.4</td>
<td>D</td>
</tr>
<tr>
<td>Richards Boulevard/Project Driveway</td>
<td>Side-Street Stop</td>
<td>31.6</td>
<td>E</td>
</tr>
<tr>
<td>Richards Boulevard/I-80 WB Ramps</td>
<td>Signal</td>
<td>70.2</td>
<td>E</td>
</tr>
<tr>
<td>Richards Boulevard/I-80 EB Ramps</td>
<td>Signal</td>
<td>30.5</td>
<td>B</td>
</tr>
<tr>
<td>Richards Boulevard/Research Park Drive/Cowell Boulevard</td>
<td>Signal</td>
<td>31.8</td>
<td>C</td>
</tr>
<tr>
<td>Cowell Boulevard/Pole Line Road/Lillard Drive</td>
<td>Signal</td>
<td>16.2</td>
<td>B</td>
</tr>
</tbody>
</table>

Notes: ¹Delay is reported in seconds per vehicle for the overall intersection for signalized intersections. Delay is reported in seconds per vehicle for the worst movement for unsignalized/uncontrolled intersections.

Source: Fehr & Peers, 2015

As shown in Table 7-1, all of the study intersections operate acceptably during both peak hours. During the AM peak hour, all intersections operate at LOS E or better. During the PM peak hour, the 1st Street/D Street operates at LOS F; however, LOS F is acceptable in the Core Area.
Freeways

The freeway segment level of service results for cumulative plus Measure R projects conditions are shown in Table 7-2.

<table>
<thead>
<tr>
<th>Direction</th>
<th>Segment</th>
<th>AM Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Density</td>
<td>LOS</td>
</tr>
<tr>
<td>Eastbound</td>
<td>Old Davis Road to Richards Boulevard</td>
<td>22.1</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Richards Boulevard to Mace Boulevard</td>
<td>25.9</td>
<td>C</td>
</tr>
<tr>
<td>Westbound</td>
<td>Mace Boulevard to Richards Boulevard</td>
<td>43.0</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td>Richards Boulevard to Old Davis Road</td>
<td>28.0</td>
<td>D</td>
</tr>
</tbody>
</table>

Notes: Delay and LOS is based on HCM methodology.
Source: Fehr & Peers, 2015

As shown in Table 7-2 the study freeway segments will operate at LOS E or better under cumulative plus Measure R projects conditions.

CUMULATIVE PLUS MEASURE R PROJECTS PEDESTRIAN AND BICYCLE FACILITIES

Existing sidewalks, crosswalks, and bike lanes will be reconfigured as a part of the mitigation measures for the Nishi project. No existing sidewalks, crosswalks, or bike lanes will be removed as a part of the mitigation measures for the Nishi project.

CUMULATIVE PLUS MEASURE R PROJECTS TRANSIT SYSTEM

No improvements to the transit network were assumed under cumulative plus Measure R projects conditions.
CHAPTER 8. CUMULATIVE PLUS MEASURE R PROJECTS PLUS HOTEL/CONFERENCE CENTER CONDITIONS

This chapter discusses the cumulative plus Measure R projects plus hotel/conference center conditions analysis results at the study locations. It also presents the project impacts and associated mitigation measures for cumulative plus Measure R projects plus hotel/conference center project conditions.

CUMULATIVE PLUS MEASURE R PROJECTS PLUS HOTEL/CONFERENCE CENTER TRANSPORTATION NETWORK

No additional changes to the cumulative plus Measure R projects’ transportation network (which assumes mitigation measures for the Nishi project) are assumed under the cumulative plus Measure R projects plus hotel/conference center conditions. The analysis results for the study locations with the addition of the project is shown below.

Cumulative Plus Measure R Projects Plus Hotel/Conference Center Forecasts

The cumulative plus Measure R projects plus hotel/conference center traffic volumes were developed by adding the net new trips shown in Table 4-2 to the cumulative forecasts using the distribution in Table 4-3. Figure 8 shows the cumulative plus Measure R projects plus hotel/conference center peak hour intersection traffic volumes.
Figure 8
Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Measure R Projects Plus Hotel/Conference Center Conditions
### Cumulative Plus Measure R Projects Plus Hotel/Conference Center Levels of Service

The cumulative plus Measure R projects plus hotel/conference center forecasts were analyzed using the methodologies discussed in Chapter 2. The intersection technical calculations sheets are provided in Appendix D and the freeway technical calculations sheets are provided in Appendix E.

### Intersections

The intersection level of service results for cumulative plus Measure R projects plus hotel/conference center conditions are shown in Table 8-1.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>Cumulative Plus Measure R Projects</th>
<th>Cumulative Plus Measure R Projects Plus Hotel/Conference Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM Peak Delay1</td>
<td>LOS</td>
</tr>
<tr>
<td>1st Street/D Street</td>
<td>Signal</td>
<td>18.9</td>
<td>B</td>
</tr>
<tr>
<td>1st Street/E Street/Richards Boulevard</td>
<td>Signal</td>
<td>34.7</td>
<td>C</td>
</tr>
<tr>
<td>1st Street/F Street</td>
<td>Signal</td>
<td>10.7</td>
<td>B</td>
</tr>
<tr>
<td>Richards Boulevard/Olive Drive</td>
<td>Signal</td>
<td>52.4</td>
<td>D</td>
</tr>
<tr>
<td>Richards Boulevard/Project Driveway</td>
<td>Side-Street Stop</td>
<td>31.6 SBR</td>
<td>E</td>
</tr>
<tr>
<td>Richards Boulevard/I-80 WB Ramps</td>
<td>Signal</td>
<td>70.2</td>
<td>E</td>
</tr>
<tr>
<td>Richards Boulevard/I-80 EB Ramps</td>
<td>Signal</td>
<td>30.5</td>
<td>C</td>
</tr>
<tr>
<td>Richards Boulevard/Research Park Drive/Cowell Boulevard</td>
<td>Signal</td>
<td>31.8</td>
<td>C</td>
</tr>
<tr>
<td>Cowell Boulevard/Pole Line Road/Lillard Drive</td>
<td>Signal</td>
<td>16.2</td>
<td>B</td>
</tr>
</tbody>
</table>

Notes: Delay is reported in seconds per vehicle for the overall intersection for signalized intersections. Delay is reported in seconds per vehicle for the worst movement for unsignalized/uncontrolled intersections.

Source: Fehr & Peers, 2015

As shown in Table 8-1, the addition of project traffic generally increases delay at study intersections. However, at some intersections delay slightly decreases. This decrease is due to the use of microsimulation, a stochastic model with random variation in vehicle arrival. Although the existing plus project microsimulation accounts for additional traffic due to the project, random variation in vehicle arrival can cause variation between multiple runs. These decreases in delay can be interpreted to suggest that no measurable increase in congestion will occur at these study intersections due to project traffic.
During the AM peak hour all intersections will operate at LOS E or better with the addition of project traffic. The addition of project traffic does not cause any intersections operating at an acceptable LOS to operate at an unacceptable LOS.

During the PM peak hour, all intersections will operate at LOS E or better with the addition of project traffic with the exception of the 1st Street/D Street intersection. The 1st Street/D Street intersection will operate at LOS F; LOS F is considered a "congested condition" in the Core Area. For the project’s impact to be significant, the project must exacerbate a "congested condition" by adding five seconds or more to the intersection’s average delay. The project adds less than five seconds to the average delay at 1st Street/D Street.
Freeways

The freeway segment level of service results for cumulative plus Measure R projects plus hotel/conference center conditions are shown in Table 8-2.

<table>
<thead>
<tr>
<th>Direction</th>
<th>Segment</th>
<th>Cumulative Plus Measure R Projects</th>
<th>Cumulative Plus Measure R Projects Plus Hotel/Conference Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM Peak Density</td>
<td>LOS</td>
</tr>
<tr>
<td>Eastbound</td>
<td>Old Davis Road to Richards Boulevard</td>
<td>22.1 C</td>
<td>26.4 D</td>
</tr>
<tr>
<td></td>
<td>Richards Boulevard</td>
<td>25.9 C</td>
<td>39.6 E</td>
</tr>
<tr>
<td>Westbound</td>
<td>Mace Boulevard to Richards Boulevard</td>
<td>43.0 E</td>
<td>29.0 D</td>
</tr>
<tr>
<td></td>
<td>Richards Boulevard to Old Davis Road</td>
<td>28.0 D</td>
<td>41.0 E</td>
</tr>
</tbody>
</table>

Notes: Delay and LOS is based on HCM methodology.
Source: Fehr & Peers, 2012

As shown in Table 8-2, the study freeway segments will operate at LOS E or better with and without the project under cumulative conditions. Project traffic does not cause any freeway segments operating acceptably without the project to operate unacceptably.

**Impacts and Mitigation Measures**

**Intersections**

The project would increase the amount of traffic on the study intersections over cumulative plus Measure R projects conditions, including the 1st Street/D Street intersection that operates at a “congested condition”. However, the analysis of delay added for the 1st Street/D Street intersection shows that this impact is not significant. Therefore this impact is considered less than significant.

**Mitigation**

None
Freeway Segments

The project would increase the amount of traffic on the study segments over cumulative plus Measure R projects conditions. However, none of the study segments would degrade to an unacceptable LOS. Therefore this impact is considered less than significant.

Mitigation

None

Bicycle Facilities

The project would increase the amount of traffic in the study area over cumulative plus Measure R projects conditions and potentially increase bicycle ridership. However, the project would not interfere with any existing or proposed bicycle facilities. Therefore this impact is considered less than significant.

Mitigation

None

Transit

The project would increase the amount of traffic in the study area over cumulative plus Measure R projects conditions and potentially increase transit ridership. However, the project would not interfere with or exacerbate the demand for existing transit operations. Therefore this impact is considered less than significant.

Mitigation

None
APPENDIX A
PROJECT SITE PLAN
APPENDIX B
PROPOSED ACCESS CONTROL
APPENDIX C
TRAFFIC DATA
APPENDIX D
INTERSECTION LEVEL OF SERVICE TECHNICAL CALCULATIONS
APPENDIX E
FREEWAY SEGMENT LEVEL OF SERVICE TECHNICAL CALCULATIONS
APPENDIX F
SIGNAL WARRANT ANALYSES