

Introduction and Overview

This technical report summarizes the data, methodology, and conclusions of studies conducted by DKS Associates for the University of California at Davis regarding the traffic implications of the proposed UC Davis Conference Center, Hotel, and Graduate School of Management Building (the project). These traffic studies address existing and cumulative conditions.

Existing Conditions

This report summarizes an analysis of “existing plus project” conditions conducted specifically for the project. This analysis includes the utilization of new traffic volume data (collected in March 2001), the estimation of the traffic characteristics associated with the project for both “event” and “non-event” conditions, calculation of existing plus project traffic volumes, analysis of roadway operating conditions, comparison to standards of significance, and development of mitigation measures (as appropriate). “Event” conditions include major events at the proposed conference center alone, or combined with events at the Center for the Arts Performance Hall. “Non-event” conditions refer to the typical daily operation of the proposed project.

Cumulative Conditions

1994 Long Range Development Plan (1994 LRDP)

This report also addresses cumulative traffic conditions. Cumulative conditions are primarily based upon campus growth through the year 2005-06, including the project. Similar to the analysis of existing conditions, the analysis of cumulative conditions includes estimation of traffic characteristics associated with the project for both “event” and “non-event” conditions, calculation of cumulative plus project traffic volumes for “event” conditions, analysis of roadway operating conditions, comparison to standards of significance, and development of mitigation measures (as appropriate).

The campus, as part of its 1994 LRDP and associated environmental review, has conducted a series of transportation studies to address potential impacts associated with campus growth. These studies are updated when changes in land use and transportation associated with 1994 LRDP amendments result in the potential for additional transportation impacts. The following summarizes the pertinent previous studies of cumulative transportation conditions:

- 1994 LRDP Draft Environmental Impact Report (EIR) (Section 4.3)
- 1997-98 Major Capital Improvement Projects Draft Supplemental EIR (SEIR) (Chapter 8)

- Veterinary Medicine Laboratory and Equine Athletic Performance Laboratory Facilities Focused Tiered Final EIR (Chapter 3)

The 1994 LRDP EIR and each subsequent study have included campus growth in the area of the proposed project that includes the campus population increase (275 new staff members) associated with a new academic building. In addition, a conference center, hotel, and academic building on the proposed site were included in the 1997-98 Major Capital Improvement Projects Draft EIR and subsequent analyses of cumulative conditions. The currently proposed Conference Center, Hotel, and Graduate School of Management Building project differs from the conference center, hotel, and academic building that were previously included in the cumulative analysis. Specifically, the prior cumulative analysis included a hotel of 150 rooms, while the project includes a hotel of 75 rooms. The campus population projections used in the cumulative transportation analyses exceed the campuswide totals associated with the 1994 LRDP. In this manner, the transportation analyses are conservative as they over-estimate the traffic volumes associated with campus growth through year 2005-06, and provide flexibility in campus planning. The over-estimation of traffic volumes results in the calculation of traffic operating conditions that is worse than those that would be otherwise expected.

Campus Growth Beyond the 1994 LRDP

The horizon of the 1994 LRDP is 2005-06. UC Davis is currently considering how it should plan to accommodate approximately 6,000 new students by the year 2014-15. The campus expects to adopt a new LRDP before population and facility growth projections assumed in the 1994 LRDP, as amended, are exceeded. The potential cumulative effects of this Campus growth are discussed in a separate document.

Freeway Operations

In accordance with the request of Caltrans, analyses of the I-80 interchange with Old Davis Road have been conducted for a twenty-year time horizon. Because the campus has not developed specific land use and transportation plans for this horizon, regional traffic forecasts for the year 2022 developed by the Sacramento Area Council of Governments (SACOG) were utilized for the purposes of the freeway operations analysis.

Campus Circulation System

Regional roadway access to the campus and the City of Davis is provided primarily by I-80 and SR 113. Access to the campus from the City of Davis is primarily from A Street, B Street, First Street, and Russell Boulevard. On campus, the major element of the central campus roadway system is the Loop Road System that encircles the concentrated area of academic and administrative uses, and consists of Russell Boulevard, A Street, Old Davis Road, California Avenue and La Rue Road. Inside the loop, general motor vehicle access is either prohibited or limited to specific destinations, with through traffic eliminated. Access to and from the central campus and the west campus is provided primarily by Hutchison Drive and Russell Boulevard. Access to and from the central campus and the south campus is provided primarily by Old Davis Road. Russell Boulevard provides access to and from Russell Ranch.

Parking, bicycle paths and transit service are provided throughout the campus. Parking and bicycle paths are concentrated on the core of the central campus.

Standards of Significance

The environmental analysis in the 1994 LRDP EIR developed the following standards of significance that are utilized in campus transportation planning and analysis. A transportation / circulation impact is considered significant if campus or regional growth would:

Circulation

- Result in levels of service (LOS) for roadways within the city of Davis and the Central campus of LOS “D” for existing roadways and LOS “C” for new roadways;
- Result in LOS for County roadways of LOS “C”;
- Result in LOS for I-80 of LOS “E”;
- Result in LOS for SR 113 of LOS “D”;
- Result in disruption to existing patterns of pedestrian and bicycle circulation, including the effects of congestion and unsafe conditions, and/or result in new uses which would create demand for bicycle and pedestrian travel without appropriate facilities;
- Result in disruption to the provision of transit services, including making transit safe, and / or result in demands for transit services which are not satisfied as part of the project or a known plan;

Parking

- Result in an increase in winter parking utilization over 90 percent on the Central campus, Medical Sciences Complex, and/or major facilities of the West and South campuses;
- Result in the elimination of existing parking and increases in the projected utilization rate over 85 percent without permitting adequate time (usually 24 months) to implement a parking solution (to campus construction standards); or
- Require additional parking and result in an increase in the utilization rate over 90 percent, unless decreases in projected campus parking demand are expected to substantially counteract this trend.

DKS Associates

The level of service standards are based, in part, on the standards of the City of Davis that were current in 1994. In the General Plan adopted in May 2001, the City has included new level of service standards:

- Unless preempted by the County Congestion Management Plan, LOS “E” for automobiles is sufficient for arterials and collectors during peak traffic hours.
- LOS “F” is acceptable in the Core Area (generally downtown area of the City).

Although the new City standards are less stringent than the 1994 LRDP standards, the 1994 LRDP standards are utilized in this analysis.

The 1994 LRDP EIR did not include standards of significance to address traffic generated by events held at major campus venues such as the Recreation Hall, Toomey Field, and Freeborn Hall. The following standards of significance would apply to the proposed project.

A transportation / circulation impact is considered significant if an event at a major campus venue would:

- Result in LOS "F" on campus roads for no more than one hour with mandatory manual traffic control;
- Exceed LOS "E" for roadways in the City of Davis outside the downtown core, or result in LOS "F" in the downtown core for more than one hour before or after an event;
- Exceed LOS “E” for County roadways;
- Exceed LOS "E" for 1-80; or
- Exceed LOS "E" for SR 113.

Existing Roadway Operating Conditions

Study Area

For traffic analysis purposes, a set of potentially affected intersections was selected based upon the anticipated volume of project traffic, the distributional patterns of project traffic, and known locations of operational difficulty. This selection also includes the major intersections that were evaluated in the 1994 LRDP EIR. The following 31 existing and one future intersections are included in the study area:

- County Road 98 and Russell Boulevard
- SR 113 Southbound Ramps and Russell Boulevard
- SR 113 Northbound Ramps and Russell Boulevard
- County Road 98 and Hutchison Drive
- Hopkins Road and Hutchison Drive
- SR 113 Southbound Ramps and Hutchison Drive
- SR 113 Northbound Ramps and Hutchison Drive
- Hutchison Drive and Health Sciences Drive
- La Rue Road and Hutchison Drive
- La Rue Road and Russell Boulevard
- La Rue Road and Orchard Park Drive
- La Rue Road and Garrod Drive
- California Avenue and Russell Boulevard
- California Avenue and Old Davis Road
- California Avenue and Realigned Old Davis Road
- Old Davis Road and I-80 Westbound Ramps
- Old Davis Road and I-80 Eastbound Ramps
- Mrak Hall Drive and Realigned Old Davis Road (future, under construction)
- Oak Avenue and Russell Boulevard
- Howard Way and Russell Boulevard
- A Street and Russell Boulevard
- B Street and Russell Boulevard
- B Street and Third Street
- A Street and First Street
- A Street and Old Davis Road
- Mrak Hall Drive and Old Davis Road
- B Street and First Street
- D Street and First Street
- Richards Boulevard / E Street and First Street
- Richards Boulevard and Olive Drive
- I-80 Eastbound Ramps and Richards Boulevard
- Research Park Drive and Richards Boulevard

Traffic Conditions

Existing Peak-Hour Traffic Volumes

As part of the 1994 LRDP EIR Mitigation Monitoring Program, traffic volume data was collected at selected existing intersections in the study area during the a.m. and p.m. peak commuter hours during the week of March 5, 2001.

Existing Peak-Hour Operating Conditions

Determination of roadway operating conditions is based upon comparison of known or projected traffic volumes during peak hours to roadway capacity. In an urban setting, roadway capacity is generally governed by intersection characteristics. "Levels of service" describe roadway operating conditions. Level of service is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs. Levels of service are designated "A" through "F" from best to worst, which cover the entire range of traffic operations that might occur. Level of Service (LOS) "A" through "E" generally represent traffic volumes at or less than roadway capacity, while LOS "F" represents over capacity and or forced flow conditions. Table 1 presents general level of service definitions.

Intersection capacity analysis (both signalized and unsignalized) in this study was conducted utilizing methodology from the 2000 Highway Capacity Manual (HCM). The 2000 HCM was selected because it is the latest available nationally recognized methodology, and includes the results of research that provide improved analytical techniques compared to earlier editions of the HCM. The 2000 HCM methods are updated from the methodology utilized in the 1994 LRDP EIR (the then current 1985 HCM method); therefore, direct comparisons of the results of this study to the 1994 analysis may result in seemingly contradictory results.

The signalized intersection analysis methodology is known as "operational analysis." This procedure calculates an average control delay per vehicle at a signalized intersection, and assigns a level of service designation based upon the delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The method also provides a calculation of the volume-to-capacity (v/c) ratio of the critical movements at the intersection. Table 2 presents the level of service criteria for signalized intersections.

Table 3 presents the level of service criteria for unsignalized intersections. For all-way stop-controlled intersections, the level of service is based upon the average intersection control delay. For two-way stop-controlled intersections, level of service is computed for each controlled movement / lane group based upon the average control delay for the movement. For consistency with earlier environmental analyses associated with the 1994 LRDP, an intersection average LOS has also been calculated based upon overall intersection delay. The intersection average LOS is utilized in the determination of impacts.

TABLE 1

LEVEL OF SERVICE DEFINITIONS

Level of Service A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.

Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.

Level of Service B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.

Level of Service C is in the range of stable flow, but marks the beginning of the range of flow in which the operations of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.

Level of Service D represents high-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.

Level of Service E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.

Level of Service F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves, and they are extremely unstable. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion. Level of service "F" is used to describe the operating conditions within the queue, as well as the point of the breakdown.

Source: Highway Capacity Manual, Transportation Research Board, Special Report No. 209, Washington, D.C., 1985.

TABLE 2		
LEVEL OF SERVICE CRITERIA SIGNALIZED INTERSECTIONS		
LEVEL OF SERVICE (LOS)	CONTROL DELAY PER VEHICLE (seconds)	DESCRIPTION
A	≤ 10.0	Very low control delay. Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10.0 and ≤ 20.0	Generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS "A," causing higher levels of average delay.
C	> 20.0 and ≤ 35.0	These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	> 35.0 and ≤ 55.0	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55.0 and ≤ 80.0	These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
F	> 80.0	This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: Highway Capacity Manual, Transportation Research Board, Special Report No. 209, Washington, D.C., 2000.

TABLE 3	
LEVEL OF SERVICE CRITERIA UNSIGNALIZED INTERSECTIONS	
LEVEL OF SERVICE (LOS)	TOTAL DELAY PER VEHICLE (seconds)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Source: Highway Capacity Manual, Transportation Research Board, Special Report No. 209, Washington, D.C., 2000.

The results of the intersection capacity analyses at the study area existing intersections are presented in Table 4. (Detailed level of service calculations for these analyses and all capacity analyses in this report are included in the Technical Appendix.)

Field observations during peak commuter hours have indicated extensive queuing and delay in the vicinity of the Richards Boulevard underpass. The traffic volumes collected at the Richards Boulevard intersections with First / E Streets and with Olive Drive are constrained by the available capacity at the underpass; therefore, the delay and level of service at these locations are based upon field observations rather than the results of the 2000 HCM calculations. Both of these intersections operate at a level of service (LOS "F") worse than the standards of significance.

The City of Davis has recently installed a northbound right turn lane on Richards Boulevard at its intersection with First / E Streets. This improvement provides additional capacity in the corridor, but does not eliminate the extensive queuing and LOS "F" conditions, based upon field observations.

Roadway Improvements Under Construction

The campus is currently constructing the Center for the Arts Performance Hall and South Entry Roadway and Parking Improvements project in the vicinity of the proposed project. This construction project includes the following elements:

- Construction of the South Entry Parking Structure (currently occupied).
- Construction of new surface parking lots (currently occupied).

**TABLE 4
EXISTING PEAK HOUR INTERSECTION OPERATING CONDITIONS**

Intersecting Roadways		A.M. Peak Hour		P.M. Peak Hour	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	9.7	A	9.8	A
SR 113 SB Ramp	Russell Blvd.	9.2	A	5.4	A
SR 113 NB Ramp	Russell Blvd.	17.8	B	24.8	C
County Road 98	Hutchison Dr.	3.5	A	4.9	A
Hopkins Road	Hutchison Dr.	2.5	A	3.0	A
SR 113 SB Ramp	Hutchison Dr.	9.6	A	1.9	A
SR 113 NB Ramp	Hutchison Dr.	0.8	A	0.4	A
Health Sci. Drive	Hutchison Dr.	1.2	A	5.1	A
La Rue Road	Hutchison Dr.	9.1	A	14.9	B
La Rue Road	Russell Blvd.	22.8	C	30.5	C
La Rue Road	Orchard Park Dr.	13.6	B	17.3	B
La Rue Road	Garrod Dr.	1.8	A	2.6	A
California Ave.	Russell Blvd.	1.2	A	2.2	A
California Ave.	Old Davis Road	13.9	B	13.8	B
California Ave.	Realigned Old Davis Road	9.3	A	8.4	A
Old Davis Road	I-80 WB Ramps	5.1	A	1.7	A
Old Davis Road	I-80 EB Ramps	9.0	A	6.6	A
Mrak Hall Dr.	Realigned Old Davis Road	-- ²	-- ²	-- ²	-- ²
Oak Avenue	Russell Blvd.	5.1	A	5.8	A
Howard Way	Russell Blvd.	18.0	B	23.3	C
A Street	Russell Blvd.	13.4	B	11.2	B
B Street	Russell Blvd.	25.3	C	27.4	C
B Street	Third Street	5.5	A	8.7	A
A Street	First Street	7.8	A	8.3	A
A Street	Old Davis Road	10.4	B	10.0	A
Mrak Hall Drive	Old Davis Road	4.2	A	5.5	A
B Street	First Street	13.2	B	18.8	C
D Street	First Street	8.3	A	16.1	B
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	30.8	C	44.4	D
Research Park Dr.	Richards Blvd.	23.4	C	42.9	D

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

2. Future Intersection; under construction

Sources: Analysis by DKS Associates, 2001.

Traffic Counts by Fehr and Peers Associates, March 2001.

- Construction of the Center for the Arts Performance Hall (under construction).
- Realignment of Old Davis Road from the kiosk to east of Mrak Hall Drive (under construction).
- Conversion of Old Davis Road from California Avenue to Mrak Hall Drive from general use to bicycle / pedestrian / service vehicle use (to be implemented when Realigned Old Davis Road is established).
- Installation of a traffic signal at the new intersection of Realigned Old Davis Road and Mrak Hall Drive (to be implemented when Realigned Old Davis Road is established).
- Removal of the existing traffic signal at the intersection of Old Davis Road and Mrak Hall Drive, and replacement with an all-way stop (to be implemented when Realigned Old Davis Road is established). The west leg of this intersection will be limited to bicycle / pedestrian / service vehicle use.

The completion of this project will result in a traffic shift from Old Davis Road to Realigned Old Davis Road. The effects of these changes were estimated, and the results of the capacity analyses at the adjacent intersections are summarized in Table 5. All of the adjacent intersections are anticipated to operate at an acceptable level of service.

TABLE 5					
BASELINE PEAK HOUR INTERSECTION OPERATING CONDITIONS (UPON COMPLETION OF CENTER FOR THE ARTS PERFORMANCE HALL AND SOUTH ENTRY ROADWAY AND PARKING IMPROVEMENTS)					
Intersecting Roadways		A.M. Peak Hour		P.M. Peak Hour	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
California Ave.	Old Davis Road	10.5	B	10.5	B
California Ave.	Realigned Old Davis Road	15.9	C	7.1	A
Mrak Hall Dr.	Realigned Old Davis Road	13.8	B	14.8	B
Mrak Hall Drive	Old Davis Road	11.1	B	10.8	B

1. Level of Service.
Source: Analysis by DKS Associates, 2001.

Project Characteristics

The proposed project includes construction of a conference center facility, a hotel, and a building for the Graduate School of Management on approximately five acres in the south entry area of the central campus. The conference facility would comprise 75,000 gross square feet (gsf) (55,000 assignable square feet [asf]) and would accommodate conference center operations and office space for the Office of University Relations. The hotel would comprise 40,000 gsf (28,000 asf) and would include 75 guest rooms. The Graduate School of Management Building would comprise 45,000 gsf (27,000 asf) and would accommodate space for the Graduate School of Management and the Office of University Relations.

The proposed project would add approximately 375 employees to the campus population. Approximately 100 new employees would be associated with the currently proposed conference center facility and hotel. Approximately 275 new employees would be associated with accommodating the Graduate School of Management and Office of University Relations units. The 275 employees are not new to the Campus, but are employees who are relocating to this area of the Campus. The space currently utilized by these 275 employees is assumed to be backfilled by other new employees. This provides a conservative analysis.

The currently proposed conference center would accommodate functions with up to approximately 500 attendees. In addition, the facility would include an approximately 75 person capacity restaurant and an approximately 75 person capacity pub.

Analysis Conditions

To evaluate the potential transportation impacts of the project, three conditions have been evaluated:

- A. Non-Event Conditions, which reflect typical weekday a.m. and p.m. peak commuter hour conditions without a major conference center event, and without a major daytime event at the adjacent Center for the Arts Performance Hall.

For non-event conditions, the analysis is based upon typical weekday conditions during the a.m. and p.m. peak hours. For this condition, the project has been evaluated without a major event at either the conference center or the Center for the Arts. The revised circulation system and parking areas currently under construction are included in the analysis.

Under such non-event conditions, it is anticipated that activities at the conference center would be primarily associated with other campus activities, such as academic conferences and meetings that primarily involve attendance by participants already on campus. Non-event conditions could also include meetings that are oriented to off-campus participants would be much smaller than the facility capacity.

Under this and all project analysis conditions, full occupancy of the hotel facility is assumed.

- B. Event 1 Conditions, which reflect operations during the a.m. and p.m. peak commuter hours with a major conference center event.

The analysis of event conditions is intended to provide disclosure of roadway operating conditions that could result from an intensive, specialized use of the conference center. Such intense events are anticipated to occur rarely (e.g., a few times per year). This analysis provides a conservative review of potential conditions associated with the project.

The planning parameters for Event conditions at the conference center are as follows:

- Classes are in session.
- Full occupancy of the hotel facility.
- Full occupancy of the conference center (500 persons), with the following conference characteristics:
 - Single-day conference, with a full day schedule (approximately 9:00 a.m. to 4:00 p.m., coinciding with campus employment schedules).
 - No conference attendees staying at the hotel.
 - A non-campus conference, such that the attendees would not have already been on campus.
 - Conference attendees are from the Greater Sacramento and Bay Area regions, and generally arrive by automobile.

Typical events at the conference center are expected to be campus-oriented. As such, the number of new trips would be less than those associated with Event 1 conditions, since campus participants would already be on campus. Also, Event 1 conditions assume that the event beginning and ending times coincide with the peak commuter periods. Different beginning and ending times would result in fewer new trips generated during the critical commuter a.m. and p.m. peak hours. Therefore, the Event 1 analysis overestimates the traffic impacts that would be created by a more typical academic conference.

- C. Event 2 Conditions, which reflect operations during the a.m. and p.m. peak commuter hours with a major conference center event concurrent with a major Center for the Arts weekday event.

The analysis of event conditions is intended to provide disclosure of roadway operating conditions that could result from concurrent intensive, specialized use of the conference center and the Center for the Arts. Such concurrent intense events are anticipated to occur rarely, if at all. This analysis considers extreme conditions associated with the project in conjunction with the adjacent Center for the Arts, with traffic volumes that would rarely, if ever, be exceeded.

The planning parameters for Event 2 conditions are as follows:

- All parameters associated with Event 1 conditions.
- Full occupancy of the Center for the Arts Performance Hall auditorium (1,800 persons), with the following characteristics:
 - Full day schedule (approximately 9:00 a.m. to 4:00 p.m., coinciding with campus employment schedules).
 - A non-campus event, such that the attendees would not have already been on campus.
 - Conference attendees are from the Greater Sacramento and Bay Area regions, and generally arrive by automobile and bus.

Typical daytime events at the conference center are expected to be campus-oriented. As such, the number of new trips would be less than those associated with Event 2 conditions, since campus participants would already be on campus. The most likely non-campus midday event that could fully utilize the 1,800-seat auditorium would involve a program for school students. Also, Event 2 conditions assume that the event beginning and ending times coincide with the peak commuter periods. Different beginning and ending times would result in fewer new trips generated during the critical commuter a.m. and p.m. peak hours. Therefore, the Event 2 analysis overestimates the traffic impacts that would be created by more typical event conditions.

Trip Generation

Trip generation of the proposed project, for both non-event and event conditions, is based upon a number of sources, including the Institute of Transportation Engineers' *Trip Generation, Sixth Edition*, and trip generation and mode choice information collected at the campus. Table 6 presents the motorized vehicle trip generation.

TABLE 6		
MOTORIZED VEHICLE TRIP GENERATION		
Time Period	Entering the campus	Exiting the campus
Graduate School of Management and Office of University Relations		
A.M. Peak Hour ¹	75	4
P.M. Peak Hour ¹	28	70
Remainder of Average Weekday	433	462
Average Weekday ²	536	536
Conference Center and Hotel – Non-Event		
A.M. Peak Hour ¹	29	21
P.M. Peak Hour ¹	26	27
Remainder of Average Weekday	279	286
Average Weekday ²	335	335
Conference Center – Event		
A.M. Peak Hour ¹	313	31
P.M. Peak Hour ¹	31	313
Remainder of Average Weekday	281	281
Average Weekday ²	625	625
Center for the Arts - Event		
A.M. Peak Hour ¹	252	25
P.M. Peak Hour ¹	25	252
Remainder of Average Weekday	123	123
Average Weekday ²	400	400
<ol style="list-style-type: none"> 1. Time period of peak hour varies by location on campus. For analysis purposes, the peak volume at each location has been considered. 2. Based upon Tuesday through Thursday conditions. 		
<p><i>Source: DKS Associates, 2001, based upon Institute of Transportation Engineers' Trip Generation, Sixth Edition, and traffic volume and mode choice information collected on the campus during the 1994 LRDP process, and documented in Section 4.3 of the 1994 LRDP EIR.</i></p>		

Graduate School of Management and Office of University Relations

The 75 new employees associated with the Graduate School of Management in the proposed Graduate School of Management Building and the 200 employees associated with the Office of University Relations in the Graduate School of Management Building and the conference center facility are estimated to generate about 1,072 daily motorized vehicle trips. During the a.m. and p.m. peak hours, 79 and 98 trips are anticipated, respectively. The estimation of trips associated with the Graduate School of Management Building is based upon traffic volume and mode choice information collected on the campus during the 1994 LRDP process, and documented in Section 4.3 of the 1994 LRDP EIR.

Hotel and Conference Center – Non-Event

The 75-room hotel is estimated to generate about 670 daily motorized vehicle trips. During the a.m. and p.m. peak hours, 50 and 53 trips are anticipated, respectively. The estimation of trips associated with the Hotel is based upon data from the Institute of Transportation Engineers' (ITE) *Trip Generation, Sixth Edition*, and assumes full hotel room occupancy. These trips include all trips associated with hotel and conference center activity, including employee and service vehicle trips. The ITE data also assumes typical utilization of conference and meeting rooms, restaurants, and other typical hotel amenities.

Conference Center - Event

Additional trips associated with full occupancy of the conference center were estimated and added to the trip generation of the non-event condition. The event condition in the conference center is anticipated to generate about 344 additional vehicular trips during each of the a.m. and p.m. peak hours. This number of trips is based upon all 500 attendees arriving by automobile, 1.2 persons per vehicle, and 75 percent peak direction arrival / departure in the peak commuter hours. During the remainder of the day, about 562 additional trips are anticipated, resulting in a total of about 1,250 daily motorized vehicle trips.

Center for the Arts - Event

Additional trips associated with full occupancy of the 1,800-seat auditorium were estimated and added to the trip generation of the non-event condition and conference center event. The following parameters were utilized:

- Ninety percent peak direction arrival / departure in the peak commuter hours.
- One-third arrival by private automobile / small vans, with an average occupancy of 2.5 persons per vehicle.
- Two-thirds arrival by bus, with an average occupancy of 30 persons per vehicle.

This event condition is expected to generate about 277 additional vehicle trips during each of the a.m. and p.m. peak hours. During the remainder of the day, about 246 additional trips are anticipated, resulting in a total of about 800 daily motorized vehicle trips.

Trip Distribution

The distribution of trips to the project is based upon the following factors:

- Anticipated origins and destinations of project traffic.
- Observed travel patterns and traffic volumes in the vicinity of the project.
- Travel times on the roadway system.

Different distributions were developed for event and non-event conditions, since the event conditions are based upon attendance by non-campus and local oriented visitors. Table 7 summarizes the trip distributions in the immediate vicinity of the project.

TABLE 7		
MOTORIZED VEHICLE TRIP DISTRIBUTION		
Route	Percentage of Project Traffic	
	Non-Event	Event 1 / 2
Via First Street campus Entrance and Old Davis Road	44	23
Via California Avenue and Realigned Old Davis Road	8	2
Via I-80 / Old Davis Road Interchange	48	75
• <i>To / from the east</i>	16	26
• <i>To / from the west</i>	32	49
Total	100	100
<i>Source: DKS Associates, 2001.</i>		

Baseline Plus Project Roadway Operating Conditions

Non-Event Condition

The trips anticipated to be generated by the project (non-event) were added to baseline traffic volumes in accordance with the trip distribution patterns. Existing traffic in the vicinity of the site (through-traffic and traffic associated with the parking areas) was reassigned to the new roadway system and parking areas currently under construction. Tables 8 and 9 summarize a.m. and p.m. peak hour intersection operating conditions with the project, respectively. The project (non-event) does not result in any additional intersections violating the level of service standards than previously reported in the analysis of baseline conditions. The project continues to contribute traffic to intersections already reported to be violating the level of service standards (Richards Boulevard and First Street / E Street and Richards Boulevard and Olive Drive).

Event 1 Condition

The trips anticipated to be generated by the conference center event were added to the non-event traffic in accordance with the trip distribution patterns. Tables 10 and 11 summarize a.m. and p.m. peak hour intersection operating conditions with the project, respectively. The project (Event 1) does not result in any additional violations of the level of service standards.

Event 2 Condition

The trips anticipated to be generated by the Center for the Arts event were added to the Event 1 traffic in accordance with the trip distribution patterns. Tables 12 and 13 summarize a.m. and p.m. peak hour intersection operating conditions with the project, respectively. The project (Event 2) results in an additional violation of the level of service standard at the intersection of California Avenue and Realigned Old Davis Road.

Freeway Analysis

Analysis of the I-80 interchange with Old Davis Road was conducted in accordance with 2000 HCM methods. Level of service is based upon traffic density. Table 14 applies the level of service definitions to ramp-freeway junction areas.

Tables 15 and 16 summarize A.M. and P.M. peak hour operating conditions at the subject interchange. (Detailed level of service calculations for these analyses and all capacity analyses in this report are included in the Technical Appendix.) All of the freeway ramp junction areas operate at an acceptable level of service A or B.

TABLE 8

BASELINE PLUS PROJECT (NON-EVENT) A.M. PEAK HOUR ANALYSIS

Intersecting Roadways		Without Project		With Project	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	9.7	A	9.7	A
SR 113 SB Ramp	Russell Blvd.	9.2	A	9.3	A
SR 113 NB Ramp	Russell Blvd.	17.8	B	17.9	B
County Road 98	Hutchison Dr.	3.5	A	3.5	A
Hopkins Road	Hutchison Dr.	2.5	A	2.5	A
SR 113 SB Ramp	Hutchison Dr.	9.6	A	9.6	A
SR 113 NB Ramp	Hutchison Dr.	0.8	A	0.8	A
Health Sci. Drive	Hutchison Dr.	1.2	A	1.2	A
La Rue Road	Hutchison Dr.	9.1	A	9.1	A
La Rue Road	Russell Blvd.	22.8	C	22.9	C
La Rue Road	Orchard Park Dr.	13.6	B	13.6	B
La Rue Road	Garrod Dr.	1.8	A	1.8	A
California Ave.	Russell Blvd.	1.2	A	1.2	A
California Ave.	Old Davis Road	10.5	B	10.6	B
California Ave.	Realigned Old Davis Road	15.9	C	21.1	C
Old Davis Road	I-80 WB Ramps	5.1	A	5.1	A
Old Davis Road	I-80 EB Ramps	9.0	A	9.7	A
Mrak Hall Dr.	Realigned Old Davis Road	13.8	B	15.8	B
Oak Avenue	Russell Blvd.	5.1	A	5.1	A
Howard Way	Russell Blvd.	18.0	B	18.0	B
A Street	Russell Blvd.	13.4	B	13.4	B
B Street	Russell Blvd.	25.3	C	26.0	C
B Street	Third Street	5.5	A	5.7	A
A Street	First Street	7.8	A	8.0	A
A Street	Old Davis Road	10.4	B	10.8	B
Mrak Hall Drive	Old Davis Road	11.1	B	12.0	B
B Street	First Street	13.2	B	13.9	B
D Street	First Street	8.3	A	8.4	A
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	30.8	C	31.4	C
Research Park Dr.	Richards Blvd.	23.4	C	23.4	C

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

TABLE 9

BASELINE PLUS PROJECT (NON-EVENT) P.M. PEAK HOUR ANALYSIS

Intersecting Roadways		Without Project		With Project	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	9.8	A	9.8	A
SR 113 SB Ramp	Russell Blvd.	5.4	A	5.7	A
SR 113 NB Ramp	Russell Blvd.	24.8	C	25.5	C
County Road 98	Hutchison Dr.	4.9	A	4.9	A
Hopkins Road	Hutchison Dr.	3.0	A	3.0	A
SR 113 SB Ramp	Hutchison Dr.	1.9	A	1.9	A
SR 113 NB Ramp	Hutchison Dr.	0.4	A	0.4	A
Health Sci. Drive	Hutchison Dr.	5.1	A	5.1	A
La Rue Road	Hutchison Dr.	14.9	B	14.9	B
La Rue Road	Russell Blvd.	30.5	C	30.5	C
La Rue Road	Orchard Park Dr.	17.3	B	17.3	B
La Rue Road	Garrod Dr.	2.6	A	2.6	A
California Ave.	Russell Blvd.	2.2	A	2.2	A
California Ave.	Old Davis Road	10.5	B	10.5	B
California Ave.	Realigned Old Davis Road	7.1	A	7.4	A
Old Davis Road	I-80 WB Ramps	1.7	A	1.7	A
Old Davis Road	I-80 EB Ramps	6.6	A	7.1	A
Mrak Hall Dr.	Realigned Old Davis Road	14.8	B	17.0	B
Oak Avenue	Russell Blvd.	5.8	A	5.8	A
Howard Way	Russell Blvd.	23.3	C	23.3	C
A Street	Russell Blvd.	11.2	B	11.3	B
B Street	Russell Blvd.	27.4	C	27.8	C
B Street	Third Street	8.7	A	8.8	A
A Street	First Street	8.3	A	8.6	A
A Street	Old Davis Road	10.0	A	10.7	B
Mrak Hall Drive	Old Davis Road	10.8	B	11.8	B
B Street	First Street	18.8	C	19.5	C
D Street	First Street	16.1	B	16.4	B
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	44.4	D	45.9	D
Research Park Dr.	Richards Blvd.	42.9	D	43.6	D

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

TABLE 10					
BASELINE PLUS PROJECT (EVENT 1) A.M. PEAK HOUR ANALYSIS					
Intersecting Roadways		Without Project		With Project	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	9.7	A	9.7	A
SR 113 SB Ramp	Russell Blvd.	9.2	A	9.4	A
SR 113 NB Ramp	Russell Blvd.	17.8	B	17.9	B
County Road 98	Hutchison Dr.	3.5	A	3.5	A
Hopkins Road	Hutchison Dr.	2.5	A	2.5	A
SR 113 SB Ramp	Hutchison Dr.	9.6	A	9.6	A
SR 113 NB Ramp	Hutchison Dr.	0.8	A	0.8	A
Health Sci. Drive	Hutchison Dr.	1.2	A	1.2	A
La Rue Road	Hutchison Dr.	9.1	A	9.1	A
La Rue Road	Russell Blvd.	22.8	C	22.9	C
La Rue Road	Orchard Park Dr.	13.6	B	13.6	B
La Rue Road	Garrod Dr.	1.8	A	1.8	A
California Ave.	Russell Blvd.	1.2	A	1.2	A
California Ave.	Old Davis Road	10.5	B	10.6	B
California Ave.	Realigned Old Davis Road	15.9	C	43.9	E
Old Davis Road	I-80 WB Ramps	5.1	A	6.3	A
Old Davis Road	I-80 EB Ramps	9.0	A	14.9	B
Mrak Hall Dr.	Realigned Old Davis Road	13.8	B	17.8	B
Oak Avenue	Russell Blvd.	5.1	A	5.1	A
Howard Way	Russell Blvd.	18.0	B	18.0	B
A Street	Russell Blvd.	13.4	B	13.4	B
B Street	Russell Blvd.	25.3	C	26.5	C
B Street	Third Street	5.5	A	5.9	A
A Street	First Street	7.8	A	8.3	A
A Street	Old Davis Road	10.4	B	11.3	B
Mrak Hall Drive	Old Davis Road	11.1	B	13.5	B
B Street	First Street	13.2	B	15.1	C
D Street	First Street	8.3	A	8.8	A
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	30.8	C	31.8	C
Research Park Dr.	Richards Blvd.	23.4	C	23.5	C

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

TABLE 11					
BASELINE PLUS PROJECT (EVENT 1) P.M. PEAK HOUR ANALYSIS					
Intersecting Roadways		Without Project		With Project	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	9.8	A	9.8	A
SR 113 SB Ramp	Russell Blvd.	5.4	A	5.7	A
SR 113 NB Ramp	Russell Blvd.	24.8	C	26.0	C
County Road 98	Hutchison Dr.	4.9	A	4.9	A
Hopkins Road	Hutchison Dr.	3.0	A	3.0	A
SR 113 SB Ramp	Hutchison Dr.	1.9	A	1.9	A
SR 113 NB Ramp	Hutchison Dr.	0.4	A	0.4	A
Health Sci. Drive	Hutchison Dr.	5.1	A	5.1	A
La Rue Road	Hutchison Dr.	14.9	B	14.9	B
La Rue Road	Russell Blvd.	30.5	C	30.5	C
La Rue Road	Orchard Park Dr.	17.3	B	17.3	B
La Rue Road	Garrod Dr.	2.6	A	2.5	A
California Ave.	Russell Blvd.	2.2	A	2.2	A
California Ave.	Old Davis Road	10.5	B	10.6	B
California Ave.	Realigned Old Davis Road	7.1	A	10.4	B
Old Davis Road	I-80 WB Ramps	1.7	A	1.4	A
Old Davis Road	I-80 EB Ramps	6.6	A	8.6	A
Mrak Hall Dr.	Realigned Old Davis Road	14.8	B	20.2	C
Oak Avenue	Russell Blvd.	5.8	A	5.8	A
Howard Way	Russell Blvd.	23.3	C	23.3	C
A Street	Russell Blvd.	11.2	B	11.3	B
B Street	Russell Blvd.	27.4	C	28.0	C
B Street	Third Street	8.7	A	8.9	A
A Street	First Street	8.3	A	9.2	A
A Street	Old Davis Road	10.0	A	12.3	B
Mrak Hall Drive	Old Davis Road	10.8	B	13.7	B
B Street	First Street	18.8	C	21.4	C
D Street	First Street	16.1	B	17.6	B
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	44.4	D	50.9	D
Research Park Dr.	Richards Blvd.	42.9	D	44.1	D

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

TABLE 12					
BASELINE PLUS PROJECT (EVENT 2) A.M. PEAK HOUR ANALYSIS					
Intersecting Roadways		Without Project		With Project	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	9.7	A	9.7	A
SR 113 SB Ramp	Russell Blvd.	9.2	A	9.4	A
SR 113 NB Ramp	Russell Blvd.	17.8	B	17.9	B
County Road 98	Hutchison Dr.	3.5	A	3.5	A
Hopkins Road	Hutchison Dr.	2.5	A	2.5	A
SR 113 SB Ramp	Hutchison Dr.	9.6	A	9.6	A
SR 113 NB Ramp	Hutchison Dr.	0.8	A	0.8	A
Health Sci. Drive	Hutchison Dr.	1.2	A	1.2	A
La Rue Road	Hutchison Dr.	9.1	A	9.4	A
La Rue Road	Russell Blvd.	22.8	C	22.9	C
La Rue Road	Orchard Park Dr.	13.6	B	13.6	B
La Rue Road	Garrod Dr.	1.8	A	1.8	A
California Ave.	Russell Blvd.	1.2	A	1.2	A
California Ave.	Old Davis Road	10.5	B	10.6	B
California Ave.	Realigned Old Davis Road	15.9	C	69.9	F
Old Davis Road	I-80 WB Ramps	5.1	A	8.6	A
Old Davis Road	I-80 EB Ramps	9.0	A	26.6	D
Mrak Hall Dr.	Realigned Old Davis Road	13.8	B	19.7	B
Oak Avenue	Russell Blvd.	5.1	A	5.1	A
Howard Way	Russell Blvd.	18.0	B	18.0	B
A Street	Russell Blvd.	13.4	B	13.5	B
B Street	Russell Blvd.	25.3	C	26.8	C
B Street	Third Street	5.5	A	6.0	A
A Street	First Street	7.8	A	8.6	A
A Street	Old Davis Road	10.4	B	12.0	B
Mrak Hall Drive	Old Davis Road	11.1	B	15.3	C
B Street	First Street	13.2	B	16.5	C
D Street	First Street	8.3	A	9.1	A
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	30.8	C	32.2	C
Research Park Dr.	Richards Blvd.	23.4	C	23.5	C

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

TABLE 13					
BASELINE PLUS PROJECT (EVENT 2) P.M. PEAK HOUR ANALYSIS					
Intersecting Roadways		Without Project		With Project	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	9.8	A	9.8	A
SR 113 SB Ramp	Russell Blvd.	5.4	A	5.6	A
SR 113 NB Ramp	Russell Blvd.	24.8	C	26.4	C
County Road 98	Hutchison Dr.	4.9	A	4.9	A
Hopkins Road	Hutchison Dr.	3.0	A	3.0	A
SR 113 SB Ramp	Hutchison Dr.	1.9	A	1.9	A
SR 113 NB Ramp	Hutchison Dr.	0.4	A	0.4	A
Health Sci. Drive	Hutchison Dr.	5.1	A	5.1	A
La Rue Road	Hutchison Dr.	14.9	B	14.9	B
La Rue Road	Russell Blvd.	30.5	C	30.5	C
La Rue Road	Orchard Park Dr.	17.3	B	17.3	B
La Rue Road	Garrod Dr.	2.6	A	2.5	A
California Ave.	Russell Blvd.	2.2	A	2.2	A
California Ave.	Old Davis Road	10.5	B	10.6	B
California Ave.	Realigned Old Davis Road	7.1	A	17.7	C
Old Davis Road	I-80 WB Ramps	1.7	A	1.3	A
Old Davis Road	I-80 EB Ramps	6.6	A	10.3	B
Mrak Hall Dr.	Realigned Old Davis Road	14.8	B	23.4	C
Oak Avenue	Russell Blvd.	5.8	A	5.8	A
Howard Way	Russell Blvd.	23.3	C	23.3	C
A Street	Russell Blvd.	11.2	B	11.3	B
B Street	Russell Blvd.	27.4	C	28.0	C
B Street	Third Street	8.7	A	8.9	A
A Street	First Street	8.3	A	9.7	A
A Street	Old Davis Road	10.0	A	14.5	B
Mrak Hall Drive	Old Davis Road	10.8	B	16.1	C
B Street	First Street	18.8	C	23.8	C
D Street	First Street	16.1	B	18.7	B
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	44.4	D	54.0	D
Research Park Dr.	Richards Blvd.	42.9	D	44.4	D

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

TABLE 14		
LEVEL OF SERVICE CRITERIA FREEWAY RAMP JUNCTIONS		
Level of Service (LOS)	Maximum Density (Primary Measure) (Passenger Cars Per Mile Per Lane)	Minimum Speed (Secondary Measure) (Miles Per Hour)
A	10	58
B	20	56
C	28	52
D	35	46
E	>35	42
F	Demand flows exceed capacity.	

Source: Highway Capacity Manual, Transportation Research Board, Special Report No. 209, Washington, D.C., 2000.

TABLE 15					
PEAK HOUR U.S. 50 FREEWAY RAMP JUNCTION OPERATING CONDITIONS BASELINE CONDITIONS – A.M. PEAK HOUR					
Mainline	Ramp	Without Project		With Project Non-Event	
		Density¹	LOS	Density¹	LOS
I-80 Eastbound	Exit to Old Davis Road	8.37	A	8.67	A
	Entrance from Old Davis Road	2.78	A	2.82	A
I-80 Westbound	Exit to Old Davis Road	6.90	A	7.07	A
	Entrance from Old Davis Road	11.58	B	11.61	B
Ramp to SR 113 Northbound	Entrance from Old Davis Road	1.56	A	1.56	A
Ramp from SR 113 Southbound	Exit to Old Davis Road	4.37	A	4.37	A

1. Passenger cars per mile per lane.

Source: Analysis by DKS Associates, 2001.

TABLE 16					
PEAK HOUR U.S. 50 FREEWAY RAMP JUNCTION OPERATING CONDITIONS BASELINE CONDITIONS – P.M. PEAK HOUR					
Mainline	Ramp	Without Project		With Project Non-Event	
		Density¹	LOS	Density¹	LOS
I-80 Eastbound	Exit to Old Davis Road	4.65	A	4.80	A
	Entrance from Old Davis Road	4.18	A	4.30	A
I-80 Westbound	Exit to Old Davis Road	7.38	A	7.46	A
	Entrance from Old Davis Road	14.10	B	14.22	B
Ramp to SR 113 Northbound	Entrance from Old Davis Road	5.34	A	5.35	A
Ramp from SR 113 Southbound	Exit to Old Davis Road	0.71	A	0.71	A

1. Passenger cars per mile per lane.
 Source: Analysis by DKS Associates, 2001.

Cumulative Plus Project Roadway Operating Conditions

Cumulative impacts of campus growth through 2005-06 on transportation and circulation issues are addressed in Section 4.3 of the 1994 LRDP Draft EIR; in Section 4.9 of the 1997 WWTP Replacement Project Draft EIR; in Chapter 8 of the 1997-98 Major Capital Improvement Projects Draft SEIR; and Chapter 3 of the Veterinary Medicine Laboratory and Equine Athletic Performance Laboratory Facilities Focused Tiered Final EIR.

Beginning with the 1994 LRDP EIR, the cumulative transportation analysis has included an increase in campus population that includes the growth in campus population associated with an academic building at the proposed project location. Beginning with the 1997-98 Major Capital Improvement Projects SEIR, a UC Davis conference center and hotel in addition to the academic building has been specifically included in the transportation analyses at the proposed location.

The currently proposed Conference Center, Hotel, and Graduate School of Management Building project differs from the conference center, hotel, and academic building that were previously included in the cumulative analysis. Specifically, the prior cumulative analysis included a hotel of 150 rooms, while the project includes a hotel of 75 rooms. It is also noted that the campus population projections employed in the cumulative transportation analyses exceed the campuswide totals associated with the 1994 LRDP. In this manner, the transportation analyses are conservative as they over-estimate the traffic volumes associated with campus growth through year 2005-06. The over-estimation of traffic volumes results in the calculation of traffic operating conditions that are worse than those that would be otherwise expected.

Non-Event Condition

Table 17 summarizes cumulative a.m. and p.m. peak hour intersection operating conditions. These conditions include traffic associated with the project in a non-event scenario. The following five intersections violate the standards of significance:

- California Avenue and Realigned Old Davis Road
- Richards Boulevard and First Street / E Street
- Richards Boulevard and Olive Drive
- Richards Boulevard and I-80 Eastbound Ramps
- Richards Boulevard and Research Park Drive

TABLE 17

CUMULATIVE WITH PROJECT (NON-EVENT) PEAK HOUR ANALYSIS

Intersecting Roadways		A.M. Peak Hour		P.M. Peak Hour	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	9.9	A	11.6	B
SR 113 SB Ramp	Russell Blvd.	22.9	C	12.6	B
SR 113 NB Ramp	Russell Blvd.	31.1	C	49.4	D
County Road 98	Hutchison Dr.	4.7	A	6.6	A
Hopkins Road	Hutchison Dr.	2.7	A	4.6	A
SR 113 SB Ramp	Hutchison Dr.	16.0	C	1.9	A
SR 113 NB Ramp	Hutchison Dr.	1.3	A	1.2	A
Health Sci. Drive	Hutchison Dr.	1.6	A	26.8	D
La Rue Road	Hutchison Dr.	8.3	A	14.7	B
La Rue Road	Russell Blvd.	23.8	C	34.1	C
La Rue Road	Orchard Park Dr.	16.0	B	18.3	B
La Rue Road	Garrod Dr.	1.5	A	2.8	A
California Ave.	Russell Blvd.	0.7	A	1.2	A
California Ave.	Old Davis Road	10.7	B	11.8	B
California Ave.	Realigned Old Davis Road	36.8	E	21.3	C
Old Davis Road	I-80 WB Ramps	8.4	A	3.3	A
Old Davis Road	I-80 EB Ramps	29.8	D	16.9	C
Mrak Hall Dr.	Realigned Old Davis Road	20.3	C	29.3	C
Oak Avenue	Russell Blvd.	3.8	A	4.3	A
Howard Way	Russell Blvd.	19.7	B	23.4	C
A Street	Russell Blvd.	8.6	A	11.9	B
B Street	Russell Blvd.	25.5	C	27.6	C
B Street	Third Street	4.7	A	8.2	A
A Street	First Street	8.1	A	10.0	A
A Street	Old Davis Road	13.4	B	16.6	C
Mrak Hall Drive	Old Davis Road	16.3	C	21.6	C
B Street	First Street	22.0	C	21.8	C
D Street	First Street	10.0	B	13.2	B
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	87.1	F	>180	F
Research Park Dr.	Richards Blvd.	51.9	D	173.6	F

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

Event 1 Condition

The trips anticipated to be generated by the conference center event were added to the non-event traffic in accordance with the trip distribution patterns. Tables 18 and 19 summarize a.m. and p.m. peak hour intersection operating conditions with the project, respectively. The project (Event 1) results in one additional intersection violating the standards of significance than previously reported in the analysis of cumulative with project (non-event) conditions.

- Old Davis Road and I-80 Eastbound Ramps

The project continues to contribute traffic to the five intersections already reported to be violating the level of service standards under cumulative with project (non-event) conditions.

Event 2 Condition

The trips anticipated to be generated by the Center for the Arts event were added to the Event 1 traffic in accordance with the trip distribution patterns. Tables 20 and 21 summarize a.m. and p.m. peak hour intersection operating conditions with the project, respectively. The project (Event 2) results in one additional intersection violating the standards of significance than previously reported in the analysis of cumulative with project (non-event) conditions.

- Old Davis Road and I-80 Eastbound Ramps

The project continues to contribute traffic to the five intersections already reported to be violating the level of service standards under cumulative with project (non-event) conditions.

Freeway Analysis

Analysis of the I-80 interchange with Old Davis Road was conducted in accordance with 2000 HCM methods. Year 2022 traffic volumes were developed from SACOG's SACMET travel model. Tables 22 and 23 summarize A.M. and P.M. peak hour operating conditions at the subject interchange. (Detailed level of service calculations for these analyses and all capacity analyses in this report are included in the Technical Appendix.) All of the freeway ramp junction areas operate at an acceptable level of service A, B, or C.

TABLE 18

CUMULATIVE WITH PROJECT (EVENT 1) A.M. PEAK HOUR ANALYSIS

Intersecting Roadways		With Project (Non-Event)		With Project (Event 1)	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	9.9	A	9.9	A
SR 113 SB Ramp	Russell Blvd.	22.9	C	23.0	C
SR 113 NB Ramp	Russell Blvd.	31.1	C	31.1	C
County Road 98	Hutchison Dr.	4.7	A	4.7	A
Hopkins Road	Hutchison Dr.	2.7	A	2.7	A
SR 113 SB Ramp	Hutchison Dr.	16.0	C	16.0	C
SR 113 NB Ramp	Hutchison Dr.	1.3	A	1.3	A
Health Sci. Drive	Hutchison Dr.	1.6	A	1.6	A
La Rue Road	Hutchison Dr.	8.3	A	8.3	A
La Rue Road	Russell Blvd.	23.8	C	23.8	C
La Rue Road	Orchard Park Dr.	16.0	B	16.0	B
La Rue Road	Garrod Dr.	1.5	A	1.5	A
California Ave.	Russell Blvd.	0.7	A	0.7	A
California Ave.	Old Davis Road	10.7	B	10.8	B
California Ave.	Realigned Old Davis Road	36.8	E	65.7	F
Old Davis Road	I-80 WB Ramps	8.4	A	15.5	C
Old Davis Road	I-80 EB Ramps	29.8	D	83.7	F
Mrak Hall Dr.	Realigned Old Davis Road	20.3	C	23.2	C
Oak Avenue	Russell Blvd.	3.8	A	3.8	A
Howard Way	Russell Blvd.	19.7	B	19.7	B
A Street	Russell Blvd.	8.6	A	8.6	A
B Street	Russell Blvd.	25.5	C	26.1	C
B Street	Third Street	4.7	A	4.8	A
A Street	First Street	8.1	A	8.4	A
A Street	Old Davis Road	13.4	B	14.5	B
Mrak Hall Drive	Old Davis Road	16.3	C	19.4	C
B Street	First Street	22.0	C	25.2	D
D Street	First Street	10.0	B	10.4	B
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	87.1	F	88.3	F
Research Park Dr.	Richards Blvd.	51.9	D	52.4	D

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

TABLE 19

CUMULATIVE WITH PROJECT (EVENT 1) P.M. PEAK HOUR ANALYSIS

Intersecting Roadways		With Project (Non-Event)		With Project (Event 1)	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	11.6	B	11.6	B
SR 113 SB Ramp	Russell Blvd.	12.6	B	12.6	B
SR 113 NB Ramp	Russell Blvd.	49.4	D	50.6	D
County Road 98	Hutchison Dr.	6.6	A	6.6	A
Hopkins Road	Hutchison Dr.	4.6	A	4.6	A
SR 113 SB Ramp	Hutchison Dr.	1.9	A	1.9	A
SR 113 NB Ramp	Hutchison Dr.	1.2	A	1.2	A
Health Sci. Drive	Hutchison Dr.	26.8	D	26.8	D
La Rue Road	Hutchison Dr.	14.7	B	14.7	B
La Rue Road	Russell Blvd.	34.1	C	34.2	C
La Rue Road	Orchard Park Dr.	18.3	B	18.3	B
La Rue Road	Garrod Dr.	2.8	A	2.8	A
California Ave.	Russell Blvd.	1.2	A	1.2	A
California Ave.	Old Davis Road	11.8	B	11.8	B
California Ave.	Realigned Old Davis Road	21.3	C	47.2	E
Old Davis Road	I-80 WB Ramps	3.3	A	3.2	A
Old Davis Road	I-80 EB Ramps	16.9	C	38.4	E
Mrak Hall Dr.	Realigned Old Davis Road	29.3	C	37.3	D
Oak Avenue	Russell Blvd.	4.3	A	4.3	A
Howard Way	Russell Blvd.	23.4	C	23.4	C
A Street	Russell Blvd.	11.9	B	11.9	B
B Street	Russell Blvd.	27.6	C	27.8	C
B Street	Third Street	8.2	A	8.2	A
A Street	First Street	10.0	A	10.6	B
A Street	Old Davis Road	16.6	C	23.2	C
Mrak Hall Drive	Old Davis Road	21.6	C	29.7	D
B Street	First Street	21.8	C	24.6	C
D Street	First Street	13.2	B	14.0	B
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	>180	F	>180	F
Research Park Dr.	Richards Blvd.	173.6	F	174.4	F

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

TABLE 20

CUMULATIVE WITH PROJECT (EVENT 2) A.M. PEAK HOUR ANALYSIS

Intersecting Roadways		With Project (Non-Event)		With Project (Event 2)	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	9.9	A	9.9	A
SR 113 SB Ramp	Russell Blvd.	22.9	C	23.1	C
SR 113 NB Ramp	Russell Blvd.	31.1	C	31.1	C
County Road 98	Hutchison Dr.	4.7	A	4.7	A
Hopkins Road	Hutchison Dr.	2.7	A	2.7	A
SR 113 SB Ramp	Hutchison Dr.	16.0	C	16.0	C
SR 113 NB Ramp	Hutchison Dr.	1.3	A	1.3	A
Health Sci. Drive	Hutchison Dr.	1.6	A	1.6	A
La Rue Road	Hutchison Dr.	8.3	A	8.3	A
La Rue Road	Russell Blvd.	23.8	C	23.9	C
La Rue Road	Orchard Park Dr.	16.0	B	16.0	B
La Rue Road	Garrod Dr.	1.5	A	1.5	A
California Ave.	Russell Blvd.	0.7	A	0.7	A
California Ave.	Old Davis Road	10.7	B	10.8	B
California Ave.	Realigned Old Davis Road	36.8	E	97.1	F
Old Davis Road	I-80 WB Ramps	8.4	A	34.0	D
Old Davis Road	I-80 EB Ramps	29.8	D	147.6	F
Mrak Hall Dr.	Realigned Old Davis Road	20.3	C	26.1	C
Oak Avenue	Russell Blvd.	3.8	A	3.8	A
Howard Way	Russell Blvd.	19.7	B	19.7	B
A Street	Russell Blvd.	8.6	A	8.7	A
B Street	Russell Blvd.	25.5	C	26.6	C
B Street	Third Street	4.7	A	5.0	A
A Street	First Street	8.1	A	8.6	A
A Street	Old Davis Road	13.4	B	15.8	C
Mrak Hall Drive	Old Davis Road	16.3	C	23.3	C
B Street	First Street	22.0	C	29.1	D
D Street	First Street	10.0	B	10.6	B
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	87.1	F	89.5	F
Research Park Dr.	Richards Blvd.	51.9	D	52.8	D

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

**TABLE 21
CUMULATIVE WITH PROJECT (EVENT 2) P.M. PEAK HOUR ANALYSIS**

Intersecting Roadways		With Project (Non-Event)		With Project (Event 2)	
		Delay (seconds)	LOS ¹	Delay (seconds)	LOS ¹
County Road 98	Russell Blvd.	11.6	B	11.6	B
SR 113 SB Ramp	Russell Blvd.	12.6	B	12.7	B
SR 113 NB Ramp	Russell Blvd.	49.4	D	51.7	D
County Road 98	Hutchison Dr.	6.6	A	6.6	A
Hopkins Road	Hutchison Dr.	4.6	A	4.6	A
SR 113 SB Ramp	Hutchison Dr.	1.9	A	1.9	A
SR 113 NB Ramp	Hutchison Dr.	1.2	A	1.2	A
Health Sci. Drive	Hutchison Dr.	26.8	D	26.8	D
La Rue Road	Hutchison Dr.	14.7	B	14.7	B
La Rue Road	Russell Blvd.	34.1	C	34.2	C
La Rue Road	Orchard Park Dr.	18.3	B	18.4	B
La Rue Road	Garrod Dr.	2.8	A	2.8	A
California Ave.	Russell Blvd.	1.2	A	1.2	A
California Ave.	Old Davis Road	11.8	B	11.8	B
California Ave.	Realigned Old Davis Road	21.3	C	82.2	F
Old Davis Road	I-80 WB Ramps	3.3	A	3.3	A
Old Davis Road	I-80 EB Ramps	16.9	C	69.3	F
Mrak Hall Dr.	Realigned Old Davis Road	29.3	C	45.8	D
Oak Avenue	Russell Blvd.	4.3	A	4.3	A
Howard Way	Russell Blvd.	23.4	C	23.4	C
A Street	Russell Blvd.	11.9	B	11.9	B
B Street	Russell Blvd.	27.6	C	27.9	C
B Street	Third Street	8.2	A	8.4	A
A Street	First Street	10.0	A	11.4	B
A Street	Old Davis Road	16.6	C	34.3	D
Mrak Hall Drive	Old Davis Road	21.6	C	42.4	E
B Street	First Street	21.8	C	28.3	D
D Street	First Street	13.2	B	14.7	B
Richards Blvd.	First Street / E Street	>80	F	>80	F
Richards Blvd.	Olive Dr.	>80	F	>80	F
I-80 EB Ramps	Richards Blvd.	>180	F	>180	F
Research Park Dr.	Richards Blvd.	173.6	F	175.1	F

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.

Source: Analysis by DKS Associates, 2001.

TABLE 22					
PEAK HOUR U.S. 50 FREEWAY RAMP JUNCTION OPERATING CONDITIONS YEAR 2022 CONDITIONS – A.M. PEAK HOUR					
Mainline	Ramp	Without Project		With Project Non-Event	
		Density¹	LOS	Density¹	LOS
I-80 Eastbound	Exit to Old Davis Road	14.87	B	15.16	B
	Entrance from Old Davis Road	4.75	A	4.79	A
I-80 Westbound	Exit to Old Davis Road	10.72	B	10.88	B
	Entrance from Old Davis Road	14.54	B	14.57	B
Ramp to SR 113 Northbound	Entrance from Old Davis Road	2.11	A	2.11	A
Ramp from SR 113 Southbound	Exit to Old Davis Road	5.30	A	5.30	A
1. Passenger cars per mile per lane. Source: Analysis by DKS Associates, 2001.					

TABLE 23					
PEAK HOUR U.S. 50 FREEWAY RAMP JUNCTION OPERATING CONDITIONS YEAR 2022 CONDITIONS – P.M. PEAK HOUR					
Mainline	Ramp	Without Project		With Project Non-Event	
		Density¹	LOS	Density¹	LOS
I-80 Eastbound	Exit to Old Davis Road	8.27	A	8.43	A
	Entrance from Old Davis Road	5.51	A	5.64	A
I-80 Westbound	Exit to Old Davis Road	12.05	B	12.13	B
	Entrance from Old Davis Road	19.97	B	20.04	C
Ramp to SR 113 Northbound	Entrance from Old Davis Road	6.63	A	6.64	A
Ramp from SR 113 Southbound	Exit to Old Davis Road	1.70	A	1.70	A
1. Passenger cars per mile per lane. Source: Analysis by DKS Associates, 2001.					

Intersection Improvements

Additional analyses were undertaken to develop intersection improvements, where feasible, to address operating deficiencies identified in the review of project traffic.

It should be noted that typical practice by transportation planners and engineers does not intend that the level of service standard be met for all extreme conditions. According to "A Policy on Geometric Design of Highways and Streets" (American Association of State Highway and Transportation Officials, 1994), "(I)t would be wasteful to predicate the design on the (maximum) peak-hour traffic of the year..." Accordingly, transportation officials typically use the thirtieth highest hourly volume of the year for design purposes, not the maximum peak associated with "major event" conditions, because they would occur less frequently. In such infrequent cases, traffic officers can be employed at both signalized and unsignalized intersections to accommodate the traffic volumes associated with the events. This manual traffic control may or may not be able to improve intersection operating conditions to an extent that meets the level of service goals.

California Avenue and Realigned Old Davis Road

Under the cumulative with project – non-event scenario, this campus intersection exhibits level of service "E" conditions during the a.m. peak hour. The southbound, stop sign controlled California Avenue left turn approach to the intersection will experience long delays due to a lack of suitable gaps on the uncontrolled eastbound Realigned Old Davis Road approach to the intersection. A traffic signal is necessary at this location to achieve an acceptable level of service. Table 24 summarizes intersection operating conditions with the traffic signal.

TABLE 24				
CALIFORNIA AVENUE AND REALIGNED OLD DAVIS ROAD INTERSECTION IMPROVEMENTS				
Scenario	Peak Hour	Improvement	Delay (seconds)	LOS ¹
Cumulative With Project – Non-Event	A.M.	None	36.8	E
		Traffic Signal	15.0	B
1. Level of Service. Bold indicates conditions exceeding the standards of significance.				
Source: Analysis by DKS Associates, 2001.				

Old Davis Road and I-80 Eastbound Ramps

In the two cumulative event scenarios, this unsignalized intersection exhibits level of service “E” or “F” conditions on the eastbound stop sign controlled approach to the intersection during the a.m. peak hour. During these infrequent scenarios, manual traffic control during to provide gaps for the eastbound traffic would alleviate the operating difficulties. This manual traffic control would also assure that traffic does not queue onto the freeway mainline. For analysis purposes, manual traffic control was analyzed as a multi-phase traffic signal, simulating the typical actions of traffic control officers.

Installation of a traffic signal at this location would improve the level of service to “B” or “C,” which meets the standard of significance. Alternately, all-way stop control with left turns permitted from both lanes would also achieve acceptable conditions under the cumulative with project – Event 1 scenario. Table 25 summarizes intersection operating conditions with the improvements.

TABLE 25				
OLD DAVIS ROAD AND I-80 EASTBOUND RAMPS INTERSECTION IMPROVEMENTS				
Scenario	Peak Hour	Improvement	Delay (seconds)	LOS ¹
Cumulative With Project – Event 1	A.M.	None	83.7	F
		Manual Traffic Control	24.6	C
Cumulative With Project – Event 2	A.M.	None	147.6	F
		Manual Traffic Control	36.3	D

1. Level of Service. **Bold** indicates conditions exceeding the standards of significance.
 Source: Analysis by DKS Associates, 2001.

Richards Boulevard / E Street and First Street

This location exhibits less than acceptable peak hour operating conditions under existing conditions and all scenarios based upon the standards of significance. It should be noted that LOS “F” is acceptable at this location based upon the City of Davis General Plan policies. The City of Davis has recently installed a northbound right turn lane on Richards Boulevard at its intersection with First / E Streets. This improvement provides additional capacity in the corridor, but does not eliminate the extensive queuing and LOS “F” conditions. No further

feasible improvements have been identified for this intersection. The City of Davis has decided to maintain the Richards Boulevard underpass, immediately south of this intersection, at its current restricted two-lane configuration. Consequently, since traffic into and out of downtown Davis is metered by the underpass, queuing will extend into the subject intersection.

Richards Boulevard and East Olive Drive

Based upon the standards of significance, this location exhibits less than acceptable peak hour operating conditions under existing conditions and all scenarios. Similar to the intersection of Richards Boulevard / E Street and First Street, no feasible improvements have been identified due to the decision of the City of Davis to maintain Richards Boulevard as a two-lane facility entering the downtown. This location violates the City of Davis General Plan standard of LOS "E" for this location during peak hours.

Richards Boulevard and I-80 Eastbound Ramps

This intersection is expected to operate at LOS "F" in all cumulative scenarios. As identified in previous analysis of cumulative conditions (e.g., 1994 LRDP EIR [Section 4.3] and 1997-98 Major Capital Improvement Projects SEIR [Chapter 8]), no feasible improvement has been identified at this location. To reach an acceptable level of service, substantial roadway widening and / or interchange modification is required. This location is under the jurisdiction of Caltrans and the City of Davis. This location violates the standards of significance and the City of Davis General Plan standard of LOS "E" for this location during peak hours.

Richards Boulevard and Research Park Drive

This intersection is expected to operate at LOS "F" in all cumulative scenarios. The addition of a right turn lane on the southbound Research Park Drive would improve the level of service to "D," which meets the level of service goals (1994 LRDP EIR and City of Davis General Plan). Table 26 summarizes intersection operating conditions with the improvements.

TABLE 26				
RICHARDS BOULEVARD AND RESEARCH PARK DRIVE INTERSECTION IMPROVEMENTS				
Scenario	Peak Hour	Improvement	Delay (seconds)	LOS ¹
Cumulative With Project – Non-Event	P.M.	None	173.6	F
		Add Southbound Right Turn Lane	53.0	D
Cumulative With Project – Event 1	P.M.	None	174.4	F
		Add Southbound Right Turn Lane	53.1	D
Cumulative With Project – Event 2	P.M.	None	175.1	F
		Add Southbound Right Turn Lane	53.1	D
1. Level of Service. Bold indicates conditions exceeding the standards of significance. Source: Analysis by DKS Associates, 2001.				