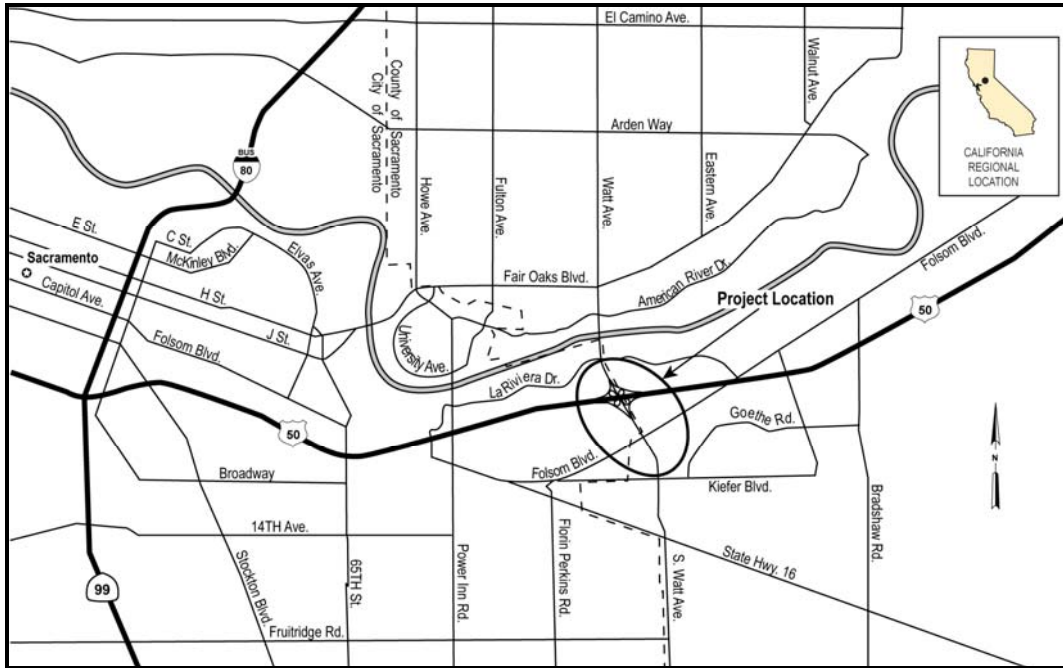




PROJECT REPORT



On US Route 50 at Watt Avenue, in the County of Sacramento and the City of Sacramento,
between La Riviera Drive and Kiefer Boulevard (KP R8.05 to KP R9.09)

I have reviewed the right of way information contained in this Project Report and the R/W Data Sheet attached hereto
and find the data to be complete, current, and accurate.

LINDY K. LEE _____
DATE
NORTH REGION DIVISION CHIEF-RIGHT OF WAY

APPROVAL RECOMMENDED: _____
STEVEN HETLAND
PROJECT MANAGER

APPROVED: _____ _____
DATE
JODY JONES
DISTRICT DIRECTOR

This Project Report has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.



JUDITH MATSUI-DRURY
REGISTERED CIVIL ENGINEER
CH2M HILL

2/23/2010

DATE



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1. INTRODUCTION

The County of Sacramento Department of Transportation proposes to modify the interchange on US Route 50 (US-50) at Watt Avenue to improve traffic operations and provide enhancements for transit riders, bicyclists, and pedestrians as part of the South Watt Avenue Transportation Study improvements. The cost was estimated at \$47.0 million in July 2007, which includes \$1.7 million for right-of-way and utility relocation and \$45.3 million for construction. The project is proposed for funding from the State Transportation Improvement Program (STIP), Regional Surface Transportation Program (RSTP), Traffic Congestion Relief Program (TCRP), Federal Demonstration Funds, State and Local Partnership Program (SLPP) and Sacramento County Measure A sales tax and local matching funds. This project is a Category 4A project because the project does not involve a revised freeway agreement or substantial new right of way.

2. RECOMMENDATION

It is recommended that Alternative B: Partial Cloverleaf (Type L-9) Interchange Modification with Bicycle Structure Undercrossings be approved as the Preferred Alternative and that the project proceed to the design phase (PS&E). PS&E documents will be prepared in English units. Approval of this Project Report (PR) will authorize execution of the PS&E, RW and Construction Cooperative Agreement. The County of Sacramento is the project sponsor and has been consulted with respect to the recommended plan. Their views have been incorporated and they are in accord with the plan as presented.

3. BACKGROUND

A. *Project History*

The US-50 Interchange at Watt Avenue borders Sacramento County to the east and the City of Sacramento to the west. US-50 was originally built in three segments beginning with the first segment in 1962 from the Sacramento County line to Sunrise Boulevard; the second in 1972, from 34th Street to near Watt Avenue; and the third and final stage in 1975.

On December 18, 1997, the Sacramento Area Council of Governments (SACOG) Board adopted the strategies identified in the Investment Strategy for the US-50 Corridor Major Investment Study. The Study evaluated long-term investment strategies including light-rail extensions, alternative phasing strategies for bus/carpool lanes and transportation management strategies along the US-50 Corridor from Downtown Sacramento to El Dorado Hills. At that time, the Study identified Watt Avenue/US-50 Interchange as a candidate project.

The original funding application for the Traffic Congestion Relief Program (TCRP) was approved on June 6, 2001 for widening of the Watt Avenue overcrossing of US-50 and modifications to the interchange. The interchange project was listed in Sacramento County's 2000 Transportation Improvement Plan and was funded by State Transportation Improvement Program (STIP) and Measure A Sales Tax as well as TCRP. A TCRP Application was prepared for the modification of the existing interchange as part of the *South Watt Area Transportation Study* (SWATS), dated November 1, 2002, which developed a

study for improvements in the South Watt Avenue corridor between the American River and State Route 16. However, a Project Study Report was not prepared since the interchange was funded by TCRP which allows the funding application to serve as the PSR or scoping document. Therefore, Sacramento County moved to the next development phase: Project Approval and Environmental Documentation. The Watt Avenue/US-50 Interchange project is included in the County's 2005-2012 Seven Year Transportation Improvement Program as a Multi-Purpose Corridor Improvement project.

The 2007/10 Metropolitan Transportation Improvement Program (MTIP) identifies project revenue sources including Demonstration-SAFETEA-LU, TCRP, Local Agency Funds, STIP, RSTP, and the Sacramento Transportation Authority (STA) Measure A Sales Tax. Reimbursement of these funds will be authorized by the Sacramento County Department of Transportation through cooperative agreements with Caltrans.

SWATS identified several traffic operational deficiencies with the existing full cloverleaf interchange (Type L-10), which is congested during peak travel hours. In addition, the uncontrolled vehicular freeway ramp movements and fragmented sidewalks at the interchange are challenges for pedestrians and bicyclists traveling along Watt Avenue. SWATS proposed modifying the existing interchange to a partial cloverleaf (Type L-9) with bicycle and pedestrian improvements; integration of transit through the interchange area (with near term bus transit priority and with consideration of a dedicated transit way in the median); and consideration of bus/carpool or High Occupancy Vehicle (HOV) drop ramps in the median of US-50 for incorporation into the proposed US-50 bus/carpool lane widening from Watt Avenue to Sunrise Boulevard project by Caltrans.

In addition to the interchange improvements, SWATS developed other improvement projects in the South Watt Avenue corridor. SWATS recommendations were approved by the Sacramento County Board of Supervisors on November 26, 2002. Improvements included:

- (1) Signal Improvements – the existing signals at the Watt Avenue/Folsom Boulevard intersection do not operate well in conjunction with the Sacramento Regional Transit Light Rail (LRT) at-grade crossing which causes traffic queues in this area. Sacramento County plans to review immediate reprogramming of the controller that would sense incoming trains and clear signal phases appropriately.
- (2) LRT elevated above Watt Avenue – a light rail overcrossing will be constructed at Watt Avenue. Grade separation of the traffic movement would avoid delays due to light rail traffic.
- (3) Watt Avenue/Folsom Boulevard At-Grade Improvements – the at-grade improvements at Watt Avenue/Folsom Boulevard will be "maximized" within available right of way. These improvements would include three through lanes in each direction on Watt Avenue and two through lanes in each direction on Folsom Boulevard, and dedicated right turn lanes in each direction.

The aforementioned improvements named in SWATS are under construction at the writing of this document.

B. Community Interaction

SWATS introduced various improvement projects in the South Watt area. The SWATS recommendations were approved by a Technical Advisory Committee (TAC) which was formed with members from Sacramento County, Caltrans, Sacramento Regional Transit District, City of Sacramento and the designers. A general public workshop was held on June 28, 2001 to identify community concerns. A Community Advisory Committee (CAC) was developed which included neighborhood organizations, bicycle, pedestrian and transit advocacy groups, and other members of the local public. The CAC held meetings on August 14, 2001 and October 22, 2001 to discuss alternatives for SWATS. Thereafter, a Peer Review Panel consisting of technical specialists was developed to filter the alternatives. The Peer Review meeting was held on January 22, 2002. Preliminary findings from the Peer Review were reviewed by the CAC and the TAC on September 25, 2002. The refined alternatives were presented at a public workshop on October 9, 2002. As a result of the SWATS public outreach effort, the following improvements were determined:

- LRT grade separation with minor intersection improvements
- Interchange improvements at US-50
- Bus transit priority from Fair Oaks Boulevard through Folsom Boulevard
- Enhanced bicycle and pedestrian circulation
- At-grade improvements at Watt Avenue/Folsom Boulevard
- Improve bus transit or provide priority lane and/or queue jumps
- Bus Rapid Transit on Watt Avenue corridor
- Grade separation of Watt Avenue and Folsom Boulevard

The Sacramento City-County Bicycle Advisory Committee (SacBAC) wrote a letter to the Sacramento County Board of Supervisors on November 19, 2002 which endorsed the Watt Avenue/US-50 Interchange project and the proposed bicycle/pedestrian enhancements. SacBAC also wrote another letter on September 20, 2006 to Caltrans endorsing the partial cloverleaf (Type L-9) interchange with bicycle/pedestrian pathways alternative. A response to the September 20, 2006 letter was received from Caltrans on October 13, 2006 with endorsement of the bicycle/pedestrian pathway concept.

In addition to the public outreach conducted for SWATS, since April 2004, regular project development team (PDT) meetings have been held with representatives from Sacramento County Department of Transportation, Sacramento County Department of Environmental Review and Assessment (DERA), Caltrans, City of Sacramento, FHWA, and Sacramento Regional Transit District.

The Sacramento County Department of Transportation held public information open house meetings on November 12, 2008 and on March 31, 2009.

C. Existing Facility

US-50 is a major regional highway extending from Interstate 80 (I-80) in West Sacramento through the Sacramento metropolitan area into the Sierra Nevada Mountains and the State of Nevada. In the project area, US-50 is an eight-lane freeway with adjacent interchanges at Howe Avenue to the west and Bradshaw Road to the east. Partial auxiliary lanes exist in advance of the Watt Avenue off-ramps from US-50. A full auxiliary lane on US-50 from the

southbound Watt Avenue on-ramp to Howe Avenue is provided in the westbound direction. The US-50 interchange at Watt Avenue is a full cloverleaf interchange (Type L-10) with eastbound and westbound collector-distributor roads adjacent and parallel to US-50. The Left and Right Watt Avenue Overcrossing over US-50 is 16.15-m (53'-0") wide per bridge with a 10.36-m (34'-0") opening between bridges. There are no continuous sidewalks or bicycle lanes on the overcrossing. The westbound interchange on-ramps are metered during the AM and PM peak periods.

Watt Avenue is a major arterial that extends north-south through Sacramento County from Placer County to the north to Elk Grove-Florin Road at Florin Road to the south. Watt Avenue is an important regional roadway that provides the shortest and most direct route between US-50 and I-80 in Sacramento County. In addition, Watt Avenue has one of only three bridges over the American River between the Cities of Sacramento and Folsom. The Sacramento County General Plan designates Watt Avenue between Fair Oaks Boulevard and Kiefer Boulevard as an arterial (six-lane roadway).

Immediately south of the Folsom Boulevard intersection are dual light rail tracks, operated by Sacramento Regional Transit District; the Watt-Manlove LRT station (including park-and-ride lot) is accessed via South Watt Avenue. South of and parallel to the LRT tracks are heavy rail tracks owned by the Sac-Placerville Transportation Corridor Joint Powers Authority (JPA), with operating rights granted to Union Pacific.

North of the interchange, Watt Avenue consists of three through lanes plus auxiliary lanes in each direction between La Riviera Drive and Fair Oaks Boulevard.

D. Other Related Projects

Watt Avenue/Light Rail Transit (LRT) Grade Separation Project and Watt Avenue/Folsom Boulevard At-Grade Improvements Project

The Watt Avenue/LRT Grade Separation Project is a project that was recommended in SWATS and approved by the Sacramento County Board of Supervisors. The project will construct an elevated crossing for LRT at the Watt Avenue and Folsom Boulevard intersection which will alleviate the traffic congestion in the area caused by light rail traffic. The light rail tracks would be constructed in a structure crossing over Watt Avenue while the heavy rail UPRR tracks would remain at grade. The project began construction in summer of 2006 and was completed in May 2009.

The Watt Avenue/Folsom Boulevard At-Grade intersection improvements were included in the Watt Avenue LRT Grade Separation project. In SWATS, the CAC preferred this alternative as an interim improvement until the construction of the ultimate grade separation of Watt Avenue and Folsom Boulevard. The at-grade improvements at Watt Avenue/Folsom Boulevard would be "maximized" with available right of way. These improvements would include: three through lanes each way on Watt Avenue, two through lanes each way on Folsom Boulevard, and dedicated right turn lanes in each direction. Bicycles and pedestrians would be accommodated via Class II bike lanes and widened, contiguous sidewalks, respectively. Widening would include consideration of signal improvements. The traffic signal could include separate push buttons accessible to bicyclists. With a wide median provided on Watt Avenue, transit could be incorporated into this alternative in several ways

(near term bus transit enhancements as well as future bus rapid transit (BRT) implementation), including the possibility of queue jumps through the intersection. Also, a separate priority movement for southbound Watt Avenue to eastbound Folsom Boulevard transit left turns can be accommodated, which allows an immediate right turn into the Watt-Manlove LRT Station. This transit pathway takes advantage of the grade separation by eliminating crossing of the light rail tracks and allows better connectivity between transit modes.

South Watt Avenue Widening Project (SAC19170)

The project widened South Watt Avenue between Kiefer Boulevard and State Route 16 from 2 to 5 lanes with landscaped medians and left turn lanes. The project also installed a new traffic signal at Canberra Drive and traffic signal modifications at Jackson Road and Kiefer Boulevard. Construction was completed in September 2009.

US-50 Bus/Carpool Lanes (both directions) from Watt Avenue to Sunrise Boulevard (03-Sac-50-MR5.3/M12.8), EA 03-44161 (PS&E)

The project proposes to construct Bus/Carpool Lanes from Watt Avenue to Sunrise Boulevard; widen some structures; construct sound walls and retaining walls; construct Traffic Operation System (TOS) elements at selected locations; provide community enhancements; and replace the White Rock and Manlove pedestrian over-crossings (POC). Construction is scheduled for winter/spring 2010. This project will contribute \$2,178,000 in Community Enhancement funding from STA to construct Class 1 pedestrian/bicycle facilities with the interchange reconstruction project. Both project teams are coordinating their efforts through design and construction.

US-50 Median Concrete Barrier Yolo/Sac-80/50-Various Locations In and Near Sacramento from the Yolo Causeway to east of Watt Avenue, EA 03-1E040 (PS&E)

The project proposes to upgrade metal beam guard rail at various locations in and near Sacramento from the Yolo Causeway to east of Watt Avenue. The project proposes to upgrade metal beam guardrail and pave in the median with full structural section in three locations: 1) Interstate 80 in Yolo County (PM 9.07/9.50); 2) US 50 in Yolo County (PM 0.00/3.17); and 3) US 50 in Sacramento County (PM L0.00/L2.48, PM 0.00/R5.37). The total project length excluding the bridges is 8.7 miles. The project construction is complete at Watt Avenue.

4. NEED AND PURPOSE

A. *Problem, Deficiencies, Justification*

Purpose: The purpose of the project is to reduce congestion; improve safety of all modes of travel; improve access for bicycles, pedestrians, and those with disabilities; and accommodate all modes of travel by addressing the operational deficiencies of the Watt Avenue/US-50 interchange that is currently operating beyond its designed capacity, which compromises the safety and mobility of pedestrians, bicyclists, emergency vehicles, public transit, and other motor vehicles.

Need: The interchange project and roadway widening is needed because the existing and projected peak traffic volumes exceed the capacity of the interchange, resulting in excessive traffic queues, disruptive traffic operations, and delays on Watt Avenue and US-50. In addition, the project area has fragmented sidewalks and bike lanes with neither pathways nor dedicated transit facilities, which discourages the use of alternative travel modes.

Construction of the project improves safety of the interchange by separating bicycle and pedestrian circulation from vehicular traffic. The modification to a partial cloverleaf (Type L-9) design eliminates the short weaving sections between successive ramps, which have a high potential for sideswipe accidents particularly during congested traffic conditions.

B. *Regional and System Planning*

On December 18, 1997, the SACOG Board adopted the strategies identified in the Investment Strategy for the US-50 Corridor Major Investment Study. The Study evaluated long-term investment strategies including light rail extensions, alternative phasing strategies for bus/carpool lanes and transportation management strategies with the US-50 Corridor from Downtown Sacramento to El Dorado Hills. At that time, the Study identified Watt Avenue/US-50 Interchange as a Tier 2 strategy project which is listed in the State Route 50 Transportation Concept Report (April 1998). The Transportation Concept Report for US-50 is in the process of being updated and was not available for inclusion in this document. The 1998 Transportation Concept Report (TCR) indicated that this segment (SR 50/51/99 junction to Sunrise Boulevard) of US 50 has reached the concept facility configuration as an eight lane freeway. At the time of preparation of the 1998 TCR, the AADT was 188,000 and slightly over capacity at LOS F. This TCR further indicated that by the year 2017, the demand for the facility would reach an AADT 270,720 and the traffic demand would exceed capacity by 25%. This interchange revision project will not widen or add lanes to US 50. It is expected to improve the LOS at the ramps and Watt Avenue itself.

The Watt Avenue/US-50 Interchange project is included in the County's 2005-2012 Seven Year Transportation Improvement Program as a Multi-Purpose Corridor Improvement project. In the project area, Watt Avenue is designated a Class II Bike Facility in Sacramento's 2010 City/County Bikeway Master Plan (adopted by the County in November 23, 1995).

The project BRT improvements are consistent with Sacramento Regional Transit District's (RT) TransitAction Plan approved by the RT Board of Directors on August 10, 2009 and Sacramento County's General Plan.

C. Traffic

A traffic study was prepared by Fehr & Peers on December 5, 2005 and approved by Caltrans. This section provides a summary of the traffic analysis including the methodologies used, analyses of ramp and arterial operations, intersection levels of service (LOS), and ramp queuing analyses. The improvements from the preferred alternative would fulfill the project's need and purpose by reducing congestion and delays; decreasing peak hour spreading; improving public transit with dedicated BRT lanes and transit signal priority; and better serving pedestrians and bicyclists.

The traffic forecasts for the study area were developed using the latest version of the SACMET regional travel demand forecasting model. Intersection and freeway operations were analyzed using traffic simulation analysis software (VISSIM) so that the complex interaction of the freeway mainline, ramps, and arterial roadways under congested conditions could be measured. The following scenarios were analyzed:

- Scenario 1 - Existing Conditions
- Scenario 2 - 2010 No Project Conditions
- Scenario 3 - 2010 With Project Conditions – Partial Cloverleaf Interchange
- Scenario 4 - 2030 No Project Conditions
- Scenario 5 - 2030 With Project Conditions – Partial Cloverleaf Interchange

All future scenarios assume that the light rail crossing at Watt Avenue is grade-separated and that BRT service (an express bus with a high service frequency and some dedicated travelway) is established. The 2030 scenarios also assume median bus/carpool lanes for the US-50 mainline, and ramp meters for all US-50 ramps, South Watt Avenue widened to six lanes, and signals at the American River Drive intersections.

Existing Conditions

A summary of the existing conditions intersection operations analysis is provided in Table 1.

TABLE 1 – INTERSECTION OPERATIONS FOR EXISTING CONDITIONS				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS ¹	Delay ²	LOS ¹	Delay ²
1. Watt Ave / Fair Oaks Bl	F	109	F	107
2. SB Watt Ave Ramps / American River Dr	A	9	B	12
3. NB Watt Ave Ramps / American River Dr ³	D	27	F	121
4. SB Watt Ave Ramps / La Riviera Dr	B	10	B	11
5. NB Watt Ave Ramps / La Riviera Dr	B	13	B	18
6. La Riviera Dr / Salmon Falls Dr	A	10	A	8
7. Watt Ave / Westbound US-50 Ramps	F	- ⁴	F	- ⁴
8. Watt Ave / Eastbound US-50 Ramps	F	- ⁴	F	- ⁴
9. Watt Ave / Folsom Bl	F	86	F	82
10. S Watt Ave / Manlove Rd	B	12	B	13
11. S Watt Ave / Kiefer Bl	D	35	D	48
12. Folsom Bl / Manlove Rd	C	23	B	15
Notes: 1. LOS – Level of service 2. Control delay is measured in seconds per vehicle. 3. For this minor-street stop-controlled intersection, the LOS for the worst approach (northbound) is reported. 4. At the full cloverleaf interchange, the ramp intersections are uncontrolled; therefore, the HCM intersection analysis methodology does not apply. However, LOS F conditions are observed for the weaving sections on both the collector-distributor roads and the overcrossing due to queues from the eastbound on-ramp merge and high volumes of weaving traffic.				
Source: Fehr & Peers, 2005				

The Watt Avenue/US-50 interchange has congested conditions during both the AM and PM peak periods. During both peak hours, the Watt Avenue intersections at Fair Oaks Boulevard and Folsom Boulevard operate at LOS F. During the AM peak hour, the southbound to eastbound on-ramp backs up from the merge point with US-50 to the La Riviera Drive overcrossing on Watt Avenue. During the PM peak hour, the northbound approach at the Fair Oaks Boulevard intersection operates at LOS F, resulting in vehicle queues that occasionally reach the US-50 interchange (about a mile to the south). The westbound US-50 off- and on-ramps have higher than average accident rates, and a majority of the accidents are rear-end collisions.

The Watt Avenue/Folsom Boulevard intersection is complicated by the light rail crossing on the south leg of the intersection. During peak periods, the crossing gates are closed eight

times per hour, which results in a pre-emption of the regular signal cycle. With the gates closed, the high demand volumes for the northbound and southbound through movements are not served resulting in long queues that extend as far north as La Riviera Drive and as far south as Kiefer Boulevard during the AM peak hour. Similar to the Fair Oaks Boulevard intersection, demand volumes are high to and from Watt Avenue north of Folsom Boulevard due to the American River Bridge and the US-50 interchange. Queues often exceed the pocket lengths for the southbound left-turn, the westbound right-turn, and the eastbound left-turn movements at the Watt Avenue/Folsom Boulevard intersection.

LOS F conditions occur on the weaving sections on both the collector-distributor roads and the Watt Avenue overcrossing. For the eastbound collector-distributor road and southbound to eastbound US-50 loop ramp weaving sections, congestion is caused by queues from the eastbound on-ramp merge that extend onto southbound Watt Avenue. For the northbound Watt Avenue weaving section, queues for the loop ramp meter on the northbound to westbound on-ramp occasionally extend onto northbound Watt Avenue during the peak hours. Additionally, the weaving volume during both peak hours is high compared to the capacity provided by the weaving sections.

Existing traffic operations results for the freeway mainline are summarized in Table 2. The results presented only consider volume and capacity on US-50 between Howe Avenue and Bradshaw Road. Bottlenecks on US-50 east and/or west of the study area constrain the volume entering the study area or cause queues that extend back into the study area.

Section	AM Peak Hour		PM Peak Hour	
	LOS ¹	Density ²	LOS	Density
Eastbound – Howe Ave to Watt Ave	E	39	F	58
Eastbound – Watt Ave to Bradshaw Rd	E	39	F	49
Westbound – Bradshaw Rd to Watt Ave	D	33	F	49
Westbound – Watt Ave to Howe Ave	F	59	E	37
Notes: 1. LOS – Level of service 2. Density is measured in passenger cars per mile per lane. Source: Fehr & Peers, 2005				

During the AM peak hour, the westbound mainline from Watt Avenue to Howe Avenue operates at LOS F. The demand volume for trips destined for downtown Sacramento exceeds the available capacity during the AM peak hour. During the PM peak hour, LOS F conditions occur on the eastbound mainline (both east and west of Watt Avenue) which is the peak direction for the evening commute. The westbound mainline approaching Watt Avenue also operates at LOS F; however, this congestion is caused by queues from northbound Watt Avenue that back up onto the freeway.

Existing traffic operations results for the ramp merge and diverge sections are summarized in Table 3.

TABLE 3 – FREEWAY MERGE/DIVERGE OPERATIONS FOR EXISTING CONDITIONS				
Ramp Junction	AM Peak Hour		PM Peak Hour	
	LOS¹	Density²	LOS	Density
Eastbound On-ramp from NB Howe Ave	E	37	F	50
Eastbound Off-ramp to Watt Ave	F	54	F	64
Eastbound On-ramp from Watt Ave	F	66	F	64
Eastbound Off-ramp to Bradshaw Rd	F	52	F	55
Westbound On-ramp from SB Bradshaw Rd	D	34	E	41
Westbound Off-ramp to Watt Ave	E	40	F	72
Westbound On-ramp from NB Watt Ave	F	45	C	26
Westbound On-ramp from SB Watt Ave	F	46	C	26
Westbound Off-ramp to Howe Ave	F	80	F	52
Notes: 1. LOS – Level of service 2. Density is measured in passenger cars per mile per lane. Source: Fehr & Peers, 2005				

For existing conditions, the majority of the on-ramps and off-ramps in the study area operate at LOS F during both peak hours. During the AM peak hour, the high entering volume from Watt Avenue leads to LOS F conditions at both the eastbound and westbound merge sections and the downstream diverge sections at Bradshaw Road and Howe Avenue. During the PM peak hour, all ramps in the eastbound direction have LOS F conditions, but only the off-ramps operate with LOS F in the westbound direction. At the Watt Avenue off-ramp, the LOS F conditions are caused by queuing on Watt Avenue that backs up onto the freeway.

2010 Conditions

Under construction-year conditions (2010), the proposed partial cloverleaf interchange would result in the following traffic operations improvements:

- The reconstructed interchange would eliminate oversaturated LOS F conditions at the ramps. The new signalized ramp terminal intersections would operate at LOS B/C during the AM peak hour and LOS D/E during the PM peak hour.
- Average travel times for Watt Avenue would decrease in the southbound direction during the AM peak hour. Northbound PM peak hour travel time would increase since more traffic would be distributed from the freeway to the Watt Avenue / Fair Oaks Boulevard intersection.
- The reconfigured interchange would improve operations on the US-50 mainline sections approaching the interchange from LOS F to LOS E conditions during the PM peak hour. The westbound US-50 on-ramp from northbound Watt Avenue would improve from LOS

F to LOS D during the AM peak hour, and the westbound US-50 off-ramp diverge would improve from LOS F to LOS D during the PM peak hour.

Table 4 is a summary of the level of service and delay for the study intersections under No Project and Project conditions.

During the 2010-No Project condition, the Watt Avenue intersections at the US-50 ramps and Fair Oaks Boulevard would continue to operate with LOS F conditions during both peak hours. The American River Drive/Northbound Watt Avenue arterial ramps intersection would have LOS F conditions during the AM peak hour caused by backups from the southbound Watt Avenue on-ramp to eastbound US-50 and during the PM peak hour caused by a high volume on the northbound off-ramp from Watt Avenue. Compared to existing conditions, operations at the Watt Avenue/Folsom Boulevard intersection would improve to LOS D/E conditions with the construction of the light rail grade separation and associated intersection improvements.

During the 2010-With Project Condition, the new ramp terminal intersections at US-50 would operate acceptably with LOS B/C conditions during the AM peak hour and LOS C/D conditions during the PM peak hour. The partial cloverleaf interchange alternative also would reduce delays for the Watt Avenue/Folsom Boulevard intersection and the Watt Avenue ramp intersections at American River Drive by eliminating the oversaturated LOS F conditions and the associated queues at the US-50/Watt Avenue interchange. The reduction in congestion at the ramp terminal intersections would likely result in reduced accident rates for the US-50 ramps and Watt Avenue.

The queues on northbound Watt Avenue at Fair Oaks Boulevard would extend to the American River Drive overcrossing during the AM peak hour and to the La Riviera Drive overcrossing during the PM peak hour. At the interchange, the off-ramp queues would be less than the available storage length. Although the queue for northbound Watt Avenue at the westbound off-ramp (on the overcrossing) would exceed the available storage, sufficient capacity is provided upstream on the eastbound off-ramp such that the off-ramp queue would not extend to the mainline.

TABLE 4 – INTERSECTION OPERATIONS FOR 2010 CONDITIONS				
Intersection	No Project		With Project	
	AM	PM	AM	PM
1. Watt Ave / Fair Oaks Bl	F / 108	F / >120	F / 86	F / >120
2. SB Watt Ave Ramps / American River Dr	D / 31	B / 12	E / 41	B / 14
3. NB Watt Ave Ramps / American River Dr ¹	F / >120	F / >120	F / 61	F / 58
4. SB Watt Ave Ramps / La Riviera Dr	C / 21	B / 18	B / 12	B / 14
5. NB Watt Ave Ramps / La Riviera Dr	B / 14	C / 27	C / 29	C / 20
6. La Riviera Dr / Salmon Falls Dr	B / 11	B / 10	B / 19	A / 9
7. Watt Ave / Westbound US-50 Ramps	F / - ²	F / - ²	C / 27	D / 45

TABLE 4 – INTERSECTION OPERATIONS FOR 2010 CONDITIONS				
Intersection	No Project		With Project	
	AM	PM	AM	PM
8. Watt Ave / Eastbound US-50 Ramps	F / - ²	F / - ²	B / 16	E / 56
9. Watt Ave / Folsom BI	E / 72	D / 49	E / 58	D / 45
10. S Watt Ave / Manlove Rd	C / 30	B / 14	B / 17	C / 20
11. S Watt Ave / Kiefer BI	D / 38	D / 51	C / 34	E / 65
12. Folsom BI / Manlove Rd	C / 33	B / 17	C / 26	B / 17
Notes: Level of service (LOS) and control delay (in seconds per vehicle) are reported. Average delays greater than two minutes per vehicle are not reported due to model insensitivity under extremely congested conditions. 1. For this minor-street stop-controlled intersection, the LOS for the worst approach (northbound) is reported. 2. At the full cloverleaf interchange, the ramp intersections are uncontrolled; therefore, the HCM intersection methodology does not apply. The observed existing LOS F conditions would likely continue. Source: Fehr & Peers, 2005				

With the proposed partial cloverleaf alternative, the average travel time for the southbound BRT line through the Watt Avenue/US-50 interchange would improve by 50 seconds during the AM peak hour. For the northbound direction during the AM peak hour and both directions during the PM peak hour, BRT travel time would increase because the reversible bus-only lane is assumed to have a lower operating speed due to the signal preemption at the ramp terminal intersections. Although average travel times would increase, the average travel time between the stations would be two and a half minutes or less during both peak hours with the proposed partial cloverleaf alternative

Table 5 shows the level of service and average density for the freeway mainline sections east and west of Watt Avenue.

TABLE 5 – FREEWAY MAINLINE OPERATIONS FOR 2010 CONDITIONS				
Section	No Project		With Project	
	AM	PM	AM	PM
Eastbound – Howe Ave to Watt Ave	E / 36	F / 46	E / 36	E / 40
Eastbound – Watt Ave to Bradshaw Rd	E / 35	E / 38	E / 37	E / 41
Westbound – Bradshaw Rd to Watt Ave	D / 34	F / >60	D / 34	E / 36
Westbound – Watt Ave to Howe Ave	D / 34	D / 28	D / 35	D / 27
Notes: Level of service (LOS) and density (in vehicles per lane per mile) are reported. Average densities greater than 60 vehicles per lane per mile seconds are not reported due to model insensitivity under extremely congested conditions. Source: Fehr & Peers, 2005				

During the AM peak hour, freeway mainline operations are similar with and without the proposed project. During the PM peak hour, the eastbound and westbound mainline sections approaching the Watt Avenue interchange would improve from LOS F to E. With the construction of a partial cloverleaf interchange, the queues on the off-ramps would be reduced, which would result in improved freeway operations.

Table 6 shows the LOS and density for the ramp merge and diverge sections in the study area.

TABLE 6 – FREEWAY MERGE/DIVERGE OPERATIONS FOR 2010 CONDITIONS				
Ramp Junction	No Project		With Project	
	AM	PM	AM	PM
Eastbound On-ramp from NB Howe Ave	F / 44	F / >60	F / 49	F / >60
Eastbound Off-ramp to Watt Ave	D / 31	E / 43	D / 31	E / 36
Eastbound On-ramp from SB Watt Ave ¹	F / >60	F / >60	E / 42	E / 42
Eastbound On-ramp from NB Watt Ave ¹			F / 52	F / >60
Eastbound Off-ramp to Bradshaw Rd	D / 31	D / 33	D / 30	D / 34
Westbound On-ramp from SB Bradshaw Rd	E / 41	F / >60	E / 39	F / 43
Westbound Off-ramp to Watt Ave	D / 31	F / >60	D / 31	D / 34
Westbound On-ramp from NB Watt Ave	F / 51	C / 27	D / 33	C / 27
Westbound On-ramp from SB Watt Ave	D / 29	C / 23	D / 30	C / 25
Westbound Off-ramp to Howe Ave	E / 35	C / 28	D / 37	D / 33
Notes: Level of service (LOS) and density (in vehicles per lane per mile) are reported. Average densities greater than 60 vehicles per lane per mile seconds are not reported due to model insensitivity under extremely congested conditions. 1. For the No Project Alternative (Scenario 2), the southbound and northbound on-ramps combine before merging with eastbound US-50. Source: Fehr & Peers, 2005				

During the AM peak hour, the proposed project would result in improvements in operations to the westbound on-ramp from northbound Watt Avenue (from LOS F to LOS D). During the PM peak hour, the westbound off-ramp to Watt Avenue would improve from LOS F to D with a reduction in off-ramp queues. For both scenarios, the eastbound on-ramps from northbound Howe Avenue and from Watt Avenue would operate at LOS F during both peak hours.

2030 Conditions

Similar to 2010 conditions, the reconstructed interchange would improve conditions at the existing full cloverleaf interchange by allowing more traffic from Watt Avenue onto the freeway and vice versa. Under design-year conditions (2030), the proposed partial cloverleaf interchange would result in the following traffic operations improvements:

- During the AM peak hour, operations at the US-50 ramp terminal intersections would improve from LOS F to LOS D.
- During the PM peak hour, the queues onto US-50 would be reduced, as would vehicle and person hours of delay.
- Average travel times for the US-50 ramps will decrease.

Figures 13 through 17 from the Summary of Traffic Volumes (see Attachment G) show the traffic volume forecasts, lane configuration and traffic control.

Table 7 is a summary of the intersection operations under 2030 conditions. During both peak hours, the Watt Avenue/Fair Oaks Boulevard and the Watt Avenue/Folsom Boulevard intersections will operate at LOS F with or without the proposed project. These two intersections would constrain (i.e. meter) traffic flow to the US-50 interchange and would cause long queues that extend into the US-50 interchange. Because of these queues, both of the ramp terminal intersections at US-50 will operate at LOS F during the PM peak hour.

In the AM peak hour, the US-50 ramp terminal intersections would improve from LOS F to D with the proposed project. The partial cloverleaf interchange configuration would increase capacity at the US-50 ramps so that queues and the associated delays at the Watt Avenue intersections would be reduced. During the PM peak hour, the increased US-50 interchange capacity leads to an improvement from LOS F to LOS D/E on American River Drive at the Watt Avenue ramps.

Although the partial cloverleaf interchange would improve the US-50 ramp intersections to LOS D during the AM peak hour, LOS F conditions would continue for the PM peak hour including long queues on both freeway off-ramps. At the westbound off-ramp, the capacity could be improved by extending the third right turn lane from 100 feet to 400 feet long which has been incorporated into the design. The longer three-lane section delivers more traffic through the intersection during the green signal indication. With this additional improvement, intersection operations would improve to LOS D conditions. However, the eastbound off-ramp intersection would remain at LOS F.

TABLE 7 – INTERSECTION OPERATIONS FOR 2030 CONDITIONS				
Intersection	No Project		With Project	
	AM	PM	AM	PM
1. Watt Ave / Fair Oaks Bl	F / >120	F / >120	F / >120	F / >120
2. SB Watt Ave Ramps / American River Dr	B / 12	F / 103	B / 15	D / 35
3. NB Watt Ave Ramps / American River Dr	C / 22	F / 100	C / 26	E / 66
4. SB Watt Ave Ramps / La Riviera Dr	D / 43	C / 31	C / 27	B / 23
5. NB Watt Ave Ramps / La Riviera Dr	C / 24	D / 47	B / 19	E / 57
6. La Riviera Dr / Salmon Falls Dr	C / 22	E / 59	B / 16	D / 44
7. Watt Ave / Westbound US-50 Ramps	F / ⁻¹	F / ⁻¹	D / 50	F / 118
8. Watt Ave / Eastbound US-50 Ramps	F / ⁻¹	F / ⁻¹	D / 41	F / 115
9. Watt Ave / Folsom Bl	F / 107	F / 87	F / 92	F / >120
10. S Watt Ave / Manlove Rd	F / 107	F / 114	F / 101	F / >120
11. S Watt Ave / Kiefer Bl	F / >120	F / >120	F / >120	F / >120
12. Folsom Bl / Manlove Rd	F / >120	C / 23	F / >120	D / 41
13. Watt Ave / US-50 HOV Ramps	n/a ²	n/a	n/a	n/a
<p>Notes: Level of service (LOS) and control delay (in seconds per vehicle) are reported. Average delays greater than two minutes per vehicle are not reported due to model insensitivity under extremely congested conditions.</p> <p>1. At the full cloverleaf interchange, the ramp intersections are uncontrolled; therefore, the HCM intersection methodology does not apply. The observed existing LOS F conditions would likely continue.</p> <p>2. n/a – not applicable: the intersection does not exist when the (HOV) bus/carpool drop ramps are not present.</p> <p>Source: Fehr & Peers, 2005</p>				

At the US-50 interchange, the off-ramp queues would not exceed the available storage during the AM peak hour with the proposed project. During the PM peak hour, queues on the off-ramps are expected to extend onto the mainline due to the capacity constraint on northbound Watt Avenue at Fair Oaks Boulevard. However, these queues would be shorter in time and length than those that would occur for No Project conditions.

Table 8 is a summary of LOS for the freeway mainline sections east and west of Watt Avenue. The improvements to the Watt Avenue interchange will allow more vehicles to reach the freeway, which results in higher density on the freeway mainline segments than without the project. However, the higher densities do not cause a change in LOS E to F for any mainline section. The sections with LOS F conditions are the same for both scenarios.

Table 9 is a summary of the ramp merge and diverge LOS. Overall, the merge and diverge operations are similar with or without the proposed project. One exception is during the AM peak hour, where the proposed project would improve operations because of the acceleration lane.

TABLE 8 – FREEWAY MAINLINE OPERATIONS FOR 2030 CONDITIONS				
Section	No Project		With Project	
	AM	PM	AM	PM
Eastbound – Howe Ave to Watt Ave	E / 39	F / >60	E / 37	F / >60
Eastbound – Watt Ave to Bradshaw Rd	E / 36	F / 56	E / 40	F / >60
Westbound – Bradshaw Rd to Watt Ave	F / 46	F / >60	F / 52	F / >60
Westbound – Watt Ave to Howe Ave	F / >60	C / 26	F / >60	D / 27

Notes: Level of service (LOS) and density (in vehicles per lane per mile) are reported. Average densities greater than 60 vehicles per lane per mile are not reported due to model insensitivity under extremely congested conditions.
Source: Fehr & Peers, 2005

TABLE 9 – FREEWAY MERGE/DIVERGE OPERATIONS FOR 2030 CONDITIONS				
Ramp Junction	No Project		With Project	
	AM	PM	AM	PM
Eastbound On-ramp from NB Howe Ave	F / 50	F / >60	F / 50	F / >60
Eastbound Off-ramp to Watt Ave	D / 33	F / >60	D / 33	F / >60
Eastbound On-ramp from SB Watt Ave ¹	F / >60	F / >60	E / 41	F / >60
Eastbound On-ramp from NB Watt Ave ¹			F / 58	F / >60
Eastbound Off-ramp to Bradshaw Rd	D / 31	F / 59	D / 31	F / >60
Westbound On-ramp from Bradshaw Rd	F / >60	F / >60	F / >60	F / >60
Westbound Off-ramp to Watt Ave	F / 50	F / >60	F / 55	F / >60
Westbound On-ramp from NB Watt Ave	F / >60	C / 21	F / >60	C / 23
Westbound On-ramp from SB Watt Ave	F / >60	B / 20	F / >60	C / 22
Westbound Off-ramp to Howe Ave	E / 42	C / 26	E / 42	D / 29

Notes: Level of service (LOS) and density (in vehicles per lane per mile) are reported. Average densities greater than 60 vehicles per lane per mile are not reported due to model insensitivity under extremely congested conditions.
1. For the No Project Alternative (Scenario 4), the southbound and northbound on-ramps combine before merging with eastbound US-50.
Source: Fehr & Peers, 2005

Accident Rates

Table 10 is a summary of the traffic accident data compiled for US-50 in the project vicinity.

TABLE 10 – ACCIDENT RATES									
Location	Number of Accidents			Actual Accident Rate			Average Accident Rate		
	Total	Fatal	Injury	Fatal	Fatal + Injury	Total	Fatal	Fatal + Injury	Total
Mainline									
EB US-50 - Howe Ave to Bradshaw Rd	262	1	97	0.002	0.22	0.63	0.005	0.30	0.92
WB US-50 - Bradshaw Rd to Howe Ave	306	1	100	0.002	0.24	0.74	0.005	0.30	0.92
Ramps									
EB Off-ramp	0	0	0	0.000	0.00	0.00	0.002	0.08	0.25
EB Off-ramp to SB	3	0	1	0.000	0.09	0.28	0.006	0.33	0.90
EB Off-ramp to NB	40	0	8	0.000	0.69	3.45	0.003	0.42	1.25
EB On-ramp from SB	24	0	9	0.000	0.58	1.57	0.001	0.24	0.70
EB On-ramp from NB	3	0	0	0.000	0.00	0.45	0.003	0.22	0.60
EB On-ramp	2	0	1	0.000	0.05	0.09	0.002	0.08	0.25
WB Off-ramp	6	1	3	0.050	0.20	0.30	0.002	0.08	0.25
WB Off-ramp to NB	14	0	5	0.000	0.32	0.91	0.006	0.33	0.90
WB Off-ramp to SB	6	0	2	0.000	0.34	1.02	0.003	0.42	1.25
WB On-ramp from NB	12	1	4	0.098	0.49	1.17	0.001	0.24	0.70
WB On-ramp from SB	34	0	6	0.000	0.44	2.48	0.003	0.22	0.60
Notes: 1. For mainline sections, the rate is accidents per million vehicle-miles. For the ramps, the rate is accidents per million vehicles.									
Source: Caltrans TASAS Table B District 3, January 1, 2005 to December 31, 2007.									

With the study area, there were 568 accidents (including two fatalities) on the US-50 mainline. The accident rate on eastbound and westbound US-50 between Howe Avenue and Bradshaw Road was lower than the average accident rate for similar freeway facilities. The ramps at the US-50/Watt Avenue interchange had 144 accidents (including two fatalities). The six of the eleven ramp segments at Watt Avenue had higher accident rates than the average accident rate for similar facilities.

The accident rate on the westbound on-ramp from southbound Watt Avenue was more than four times the statewide average. The westbound on-ramp from northbound Watt Avenue had an accident rate one-and-a-half times the statewide average. Both westbound on-ramps have ramp metering during the peak periods. The accident rate on the eastbound off-ramp to northbound Watt Avenue is 275 percent higher than the statewide average, and the eastbound on-ramp from southbound Watt Avenue is more than twice the statewide average.

Table 11 is a summary of the accidents within the three-year period by type of accident. The majority of the accidents on the mainline were rear-end (56%) and hit-object (21%) collisions. Rear-end collisions on the mainline are likely caused by traffic congestion near

the off-ramps. The majority of the accidents on the on- and off-ramps at the Watt Avenue/US-50 interchange were also rear-end collisions (38%). The high percentage of rear-end accidents on the off-ramps are likely caused by queuing downstream from southbound Watt Avenue at Folsom Boulevard and northbound Watt Avenue at Fair Oaks Boulevard.

Location	Accident Type					Total
	Rear End	Broad-side	Side-swipe	Hit Object	Other ¹	
Mainline						
EB US-50 – Howe Ave to Bradshaw Rd	148	8	38	60	8	262
WB US-50 – Bradshaw Rd to Howe Ave	171	8	47	59	21	306
Ramps						
EB US-50 Off-ramp to Watt Ave	0	0	0	0	0	0
EB US-50 Off-ramp to SB Watt Ave	0	0	1	1	1	3
EB US-50 Off-ramp to NB Watt Ave	11	2	5	18	4	40
EB US-50 On-ramp from SB Watt Ave	16	1	4	0	3	24
EB US-50 On-ramp from NB Watt Ave	1	0	1	1	0	3
EB US-50 On-ramp from Watt Ave	2	0	0	0	0	2
WB US-50 Off-ramp to Watt Ave	4	0	0	2	0	6
WB US-50 Off-ramp to NB Watt Ave	2	2	0	8	2	14
WB US-50 Off-ramp to SB Watt Ave	2	0	0	4	0	6
WB US-50 On-ramp from NB Watt Ave	5	0	1	3	3	12
WB US-50 On-ramp from SB Watt Ave	11	0	4	16	3	34
Note: 1. The "Other" category includes head-on, overturn, and other accident types.						
Source: Caltrans TASAS Table B District 3, January 1, 2005 to December 31, 2007..						

Accident data for Watt Avenue intersections are summarized in Table 12.

Intersection	Accident Type				Total
	Rear End	Broad-side	Side-swipe	Other	
Watt Ave / La Riviera Dr Ramps	52	5	11	11	79
Watt Ave / Folsom Blvd	97	14	16	6	133
Source: SWITRS Database for Jan 2001 through Dec 2003, California Highway Patrol.; Fehr & Peers Transportation Consultants, US 50/Watt Avenue Interchange Project Traffic Report, December 2, 2005.					

The majority of accidents at the Watt Avenue/La Riviera Drive ramps were rear-end collisions (65%), with most occurring on southbound Watt Avenue. The high percentage of rear end collisions at this location is likely due to the queuing from the southbound to

eastbound US-50 on-ramp and the weaving that occurs of the existing full cloverleaf collector-distributor. At the Watt Avenue/Folsom Boulevard intersection, the majority of accidents were rear end (73%) collisions, and most were on the Watt Avenue approaches.

In general, L-9 Partial Cloverleaf interchanges have lower average statewide accident rates than the L-10 Full Cloverleaf interchange.

5. ALTERNATIVES

A. *Viable Alternatives*

Alternative B) – Partial Cloverleaf (Type L-9) Interchange Modification with Bicycle Structure Undercrossings

Under the Preferred Alternative, the interchange improvements would include reconstruction of the existing full cloverleaf interchange (Type L-10) to a partial cloverleaf (Type L-9); widening of Watt Avenue between La Riviera Drive and Kiefer Boulevard; construction of bicycle/ pedestrian facilities and construction of public transit facilities. Specific improvements include the following:

- Widen the existing Watt Avenue Overcrossing to accommodate six through lanes, two auxiliary lanes, two separated Class I bicycle/pedestrian paths and a dedicated BRT lane
- Eliminate the eastbound and westbound loop off-ramps
- Eliminate the collector-distributor roads on the eastbound and westbound directions of US-50 at Watt Avenue
- Realign and widen the eastbound and westbound loop on-ramps for two metered lanes
- Realign and widen the eastbound and westbound diagonal off-ramps and install traffic signals at the intersection with Watt Avenue
- Realign and widen the eastbound diagonal on-ramp for one metered lane and one bus/carpool (HOV) bypass lane
- Realign and widen the westbound diagonal on-ramp for two metered lanes and one bus/carpool (HOV) bypass lane
- Provide a third southbound through lane on Watt Avenue on the north leg of the intersection with Folsom Boulevard
- Provide a northbound and southbound auxiliary lane on Watt Avenue between the interchange and Folsom Boulevard
- Construct two bicycle/pedestrian paths along the east and west sides of Watt Avenue between La Riviera Drive and Folsom Boulevard, including undercrossings at each of the six proposed interchange ramps. The undercrossings are expected to be single-span concrete slab bridges, each with a span length of approximately 40-ft to accommodate the 8-ft wide path and 1:2 (V:H) slopes. The abutments will be concrete diaphragms supported on piling. Wing walls at the abutment ends will retain the slope. The deck and abutments will be cast-in-place concrete.
- Widen the loop ramps to accommodate truck turning radii and realign the slip off-ramps for both, westbound and eastbound US-50 at Watt Avenue
- Provide several maintenance vehicle pullouts to improve safety for maintenance workers.

- Providing CHP enforcement areas adjacent to all metered on-ramps.
- Soundwalls will be constructed in the northeast and southwest quadrants of the interchange
- Retaining walls will be constructed along the westbound off-ramp and along portions of the bicycle/pedestrian paths within the interchange.

Supplemental lighting for the pathways and the undercrossing structures are proposed with enhanced police or security patrols, emergency phones and geometric design that will give the undercrossings more visibility, especially for night use. The undercrossings are designed to be bright and open with long clear sight distances without places for loitering.

The bridge structure option for the bicycle/pedestrian pathways was preferred over the concrete box culvert option (Alternative 'A') because it provides better visibility and enhanced security for users of the pathways. Both Caltrans and the local agencies agree that Alternative 'B' was the preferred option. The Sacramento County Board of Supervisors also approved the EIR and the preferred alternative on October 6, 2009.

Nonstandard Mandatory and Advisory Design Features

The design exceptions are needed for this project in order to minimize right of way impacts to local residences and businesses.

The Mandatory Design Exception Fact Sheet was approved on September 11, 2007 and the Advisory Design Exception Fact Sheet was approved on September 9, 2007. See Attachment D for approvals.

<i>HDM Section</i>	<i>Description of Standard</i>	<i>Minimum Standard</i>
203.2	Horizontal Curve Radius	The horizontal curve radius defined in the HDM table 203.2 shall be the minimum radius of curve for specific design speeds. For a 80 km/h design speed, the minimum curve radius is 260-m.
301.1	Lane Width	The basic lane width for new construction on two-lane and multilane highways, ramps, collector roads, and other appurtenant roadways shall be 3.6 m.
309.2	Vertical Clearance for Major Structures	5.1 m shall be the minimum vertical clearance over the roadbed of the State facility (e.g., main lanes, shoulders, ramps, collector-distributor roads, speed change lanes, etc.).
1003.1 and Table 1003.1	Bicycle Path	The minimum design speed for bike paths shall be 40 km/h except as noted in Table 1003.1. Per Figure 1003.1C, the minimum radius is 47-m (155-ft) for 40 km/h (25-mph) at 2% cross slope.

<i>HDM Section</i>	<i>Description of Standard</i>	<i>Minimum Standard</i>
202.5 (2)	Superelevation Runoff	Two-thirds of the superelevation runoff should be on the tangent and one-third within the curve.
304.1	Side Slopes	For new construction, widening, or where slopes are otherwise being modified, embankment (fill) slopes should be 1:4 or flatter.
504.3(1)(a)	Freeway On-Ramp Design Speed	When ramps terminate at an intersection at which all traffic is expected to make a turning movement, the minimum design speed along the ramp should be 40 km/h. When a “through” movement is provided at the ramp terminus, the minimum ramp design speed should meet or exceed the design speed of the highway facility for which the through movement is provided.

High Occupancy Vehicle (HOV) (Bus and Carpool) Lanes

A Fact Sheet Exception to Ramp Metering Policy was prepared for the HOV bypass lane policy and approved eliminating the lane for the eastbound and westbound US-50 loop on-ramps from Watt Avenue in order to minimize impacts to adjacent residential right-of-way.

Bus/carpool (HOV) lanes will be constructed at the following locations:

- One existing bus/carpool (HOV) bypass lane on the southbound Watt Avenue to westbound US-50 diagonal on-ramp. (The bus/carpool (HOV) bypass lane will be re-constructed with the new ramp re-alignment.)
- One new bus/carpool (HOV) bypass lane on the northbound Watt Avenue to eastbound US-50 diagonal on-ramp

Transit Features

Sacramento Regional Transit District (RT) plans to establish a BRT line on Watt Avenue. Two separate projects are listed in the 2025 MTP for the Watt Avenue corridor. With input from RT staff, the following assumptions were made regarding components of the BRT system.

With the proposed project, the BRT vehicles would operate on a dedicated, reversible median lane from Folsom Boulevard to the westbound US-50 off-ramp intersection. Then, the BRT vehicles would transition to mixed-flow lanes. South of Folsom Boulevard, a northbound bus-only lane is assumed to be constructed from Manlove Road. This median lane would serve as a queue jump for the northbound BRT vehicles. BRT stations are assumed to be constructed at the La Riviera Drive interchange. The stations (one in each direction) would be located between the on- and off-ramps. Transit signal priority will be operating on Watt Avenue at each intersection from Folsom Boulevard to Fair Oaks Boulevard including the US-50 ramp terminals.

Non-Motorized Bicycle and Pedestrian Facilities

The 2010 Sacramento City/County Bikeway Master Plan (County adopted November 23, 1993) identified Watt Avenue between Folsom Boulevard and American River Drive as a Class II bikeway. Currently, there are no bike lanes on Watt Avenue between Folsom Boulevard and La Riviera Drive. There are no sidewalks on the US-50 overcrossing. The uncontrolled US-50 vehicular ramp movements and fragmented sidewalks at the interchange provide discontinuous accessibility for pedestrians and cyclists traveling along Watt Avenue.

SWATS proposed the modification of the existing interchange to a partial cloverleaf (Type L-9) with bicycle and pedestrian improvements.

The Watt Avenue/US-50 Interchange project provides two Class I multi-use bicycle paths, one path on each side of Watt Avenue from Folsom Boulevard to La Riviera Drive. The paths will have grade separated structures at the US-50 freeway ramps and will be barrier-separated from vehicular traffic on the Watt Avenue Separation at US-50. The ramp structures will have lighting and aesthetic treatment for graffiti control. There will be stairs for alternative pedestrian access as well as path profile grades to meet American Disabilities Acts (ADA) requirements. The paths are aligned to improve sight distance for bicyclists.

The multi-use bicycle paths connect to proposed Class II bicycle lanes and sidewalks south of Folsom Boulevard and connect to La Riviera Drive with access to the American River Bike Trail, north of the project limits.

Supplemental lighting for the pathways and the bicycle/pedestrian undercrossing structures are proposed with enhanced police or security patrols, emergency phones and open ended design that will give the undercrossings more visibility especially for night use. The undercrossings are designed to be very bright and open with long clear sight distances without places for loitering and provide access for emergency service vehicles.

Ramp Metering

The westbound Watt Avenue/US-50 interchange on-ramps are currently metered. Ramp meters would be installed at the following locations:

- Two metered lanes on the eastbound US-50 loop on-ramp from southbound Watt Avenue
- One metered lane on the eastbound US-50 diagonal on-ramp from northbound Watt Avenue
- Two metered lanes on the westbound US-50 loop on-ramp from northbound Watt Avenue
- Two metered lanes on the westbound US-50 diagonal on-ramp from southbound Watt Avenue

A Fact Sheet Exception to Ramp Metering Policy was prepared for the HOV bypass lane policy and approved for the eastbound and westbound US-50 loop on-ramps from Watt Avenue in order to minimize impacts to adjacent residential right-of-way.

CHP Enforcement Areas and Maintenance Vehicle Pullouts

The proposed project also includes construction of five new CHP enforcement areas and five maintenance vehicle pullout areas. CHP enforcement areas are proposed at the following locations:

- Eastbound US-50 diagonal on-ramp from northbound Watt Avenue
- Eastbound US-50 loop on-ramp from southbound Watt Avenue
- Westbound US-50 off-ramp to Watt Avenue
- Westbound US-50 loop on-ramp from northbound Watt Avenue
- Westbound US-50 diagonal on-ramp from southbound Watt Avenue

Maintenance vehicle pullouts are proposed at the following locations:

- Eastbound US-50 off-ramp to Watt Avenue
- Eastbound US-50 diagonal on-ramp from northbound Watt Avenue
- Eastbound US-50 loop on-ramp from southbound Watt Avenue
- Westbound US-50 loop on-ramp from northbound Watt Avenue
- Westbound US-50 diagonal on-ramp from southbound Watt Avenue

Enhanced police or security patrols with emergency phones and CCTV installations are proposed for the bicycle/pedestrian pathways.

Park and Ride Facilities

The Manlove LRT Station and park-and-ride lot is located in the southeast quadrant of the Watt Avenue/Folsom Boulevard intersection with current access via South Watt Avenue. It is proposed that future access will be provided for BRT vehicles to enter the LRT station and park-and-ride lot from a proposed driveway on Folsom Boulevard just east of Watt Avenue.

Highway Lighting

Highway lighting is proposed along each of the interchange ramps, the Watt Avenue overcrossing at US-50 and along the bicycle/pedestrian pathways.

Supplemental lighting for the pathways and the undercrossing structures are proposed with a geometric design that will give the undercrossings more visibility especially for night use. The undercrossings are designed to be bright and open through the consideration of long clear sight distances and soffit lighting at the Watt Avenue Overcrossing and at the bicycle/pedestrian pathway undercrossings.

Utility and Other Owner Involvement

A Right of Way Data Sheet was prepared for this project. See Attachment F.

Based on a site review on August 23, 2006 and preliminary aerial mapping of the project area, it appears that the existing overhead SMUD power poles (with joint pole, overhead fiber optic) and the light rail overhead catenary system (OCS) are either outside of the proposed roadway improvement areas or will be relocated/protected with the intersection improvements for the Sacramento County Watt Avenue LRT Grade Separation project.

Most of the intersection improvements will be contained within the Grade Separation project which is currently under construction.

City of Sacramento and County of Sacramento storm drain systems will be modified with the proposed Watt Avenue roadway improvements. The interchange drainage systems affected by the interchange improvements would be constructed as part of this project. The interchange storm drain system within the state right-of-way will be designed for the new interchange configuration in accordance with Caltrans design standards. Storm drain systems within the Sacramento County and City local road system will be designed within the respective local standards.

Watt Avenue and the US-50 interchange street lighting will be modified with the proposed project. Additional lighting will be added and upgraded on the Watt Avenue Overcrossing widening at US-50 and along the bicycle/pedestrian pathways in accordance with state highway lighting design standards and County of Sacramento standards along the local roads and County jurisdictions.

Fiber optic communications lines near the intersection of Watt Avenue/Folsom Boulevard are either outside of the areas of roadway/grading work or will be relocated as part of the Watt Avenue LRT Grade Separation project.

There is currently a Caltrans CCTV camera between the Watt Avenue Overcrossing structures at US-50. The camera will need to be relocated for the Watt Avenue median widening to occur.

There is an existing 250-mm (10-in) water line crossing Watt Avenue at Manlove road that should be protected in place during the Watt Avenue widening construction. There is an existing 250-mm (10-in) water line crossing US-50, just west of the Manlove Pedestrian Overcrossing (POC). Soundwall construction along the northeast quadrant of the interchange should protect the existing water line in place.

There are existing SMUD underground conduits crossing Watt Avenue, just north and south of the interchange, that should be protected in place during the roadway construction. There is an existing SMUD underground 12 KV conduit parallel and behind the property line in the southwest quadrant of the interchange. This line should be protected in place during soundwall construction in this area. There is an existing street lighting feeder line crossing Watt Avenue at the La Riviera Drive interchange. Most roadway work in this area will be surface roadway improvements. This feeder line should be protected in place.

Railroad Involvement

Roadway improvements adjacent to the UPRR (owned by Sac-Placerville Transportation Corridor JPA) and at the Watt Avenue/Folsom Boulevard intersection will be done with the construction of Sacramento County's Watt Avenue LRT Grade Separation project. The grade separation began construction in the summer of 2006 and is anticipated for completion in May 2009.

The interchange project may require communication with UPRR for traffic control that may occur on Watt Avenue near the railroad tracks during construction.

Highway Planting

Per discussion at an April 19, 2006 PDT meeting, landscaping improvements at the interchange would lag as a project separate from the interchange modification construction. Preliminary cost estimates for the landscaping are included in the 6-Page Preliminary Project Cost Estimate Summary (Attachment E). A construction cooperative agreement between Sacramento County and Caltrans will be required.

Clearing and grubbing, tree mitigation, and best management practice measures will be implemented as part of this interchange project.

Tree Mitigation costs are included in the project cost estimate but tree relocation costs are not assumed for this project. Per discussions with Sacramento County Department of Environmental Review & Assessment (DERA) on October 12, 2006, trees can be transplanted to reduce the number of inches diameter breast height (dbh) that are estimated for removal. That number can be adjusted to reflect the actual amount of tree removal. Onsite mitigation is the first option; however, there may not be adequate space to mitigate for all trees onsite, so off-site planting or payment to the Tree Foundation or County Fund would be allowed for trees that can not be mitigated onsite. The steps required for staging transplants (i.e., the removal, storage, and relocation of existing trees while keeping the trees alive) would be evaluated but may be challenging in an urban environment constrained by right-of-way. Therefore, the project assumes off site planting or payment to the County Fund for tree mitigation costs. DERA is the lead CEQA agency preparing the Draft EIR in which tree mitigation is further discussed.

Construction activities such as construction staging, grading of cut and fill slopes, and contour grading for roadway improvements would disturb existing soils. New slopes in the project area would be a maximum of 1:2 (V:H). The total area of soil disturbance is estimated to be approximately 17.5 hectares (HA). This disturbed area includes the new paved areas and all cut and fill slopes with offsets for construction activities. Since the project proposes 1:2 (V:H) graded side slopes, a Slope Approval Form was prepared and approved on April 26, 2007.

Hardscape aesthetics along the bicycle path undercrossings and retaining wall fascia within the interchange and gore paving at the freeway ramps are included in the interchange project.

A 3-year plant establishment period is assumed for the highway planting improvements project.

The Landscape Architecture Assessment Sheet was approved on April 26, 2007.

Erosion Control

A Storm Water Data Report was prepared for this project. See Attachment I.

Proposed design stormwater pollution prevention best management practices (BMPs) to be used on the project will include downstream effects, slope surface protection, concentrated flow conveyance systems, and preservation of existing vegetation. Erosion control measures such as rock slope protection will be used to minimize erosion.

The new cut and fill slopes to widen the intersection and reconfigure the interchange are proposed to be a maximum of 1:2 (V:H). Slope surface protection using either vegetated surfaces or hard-surfaces (e.g. rock blankets, and paving) will be provided for the new cut/fill slopes. Concentrated flow conveyance systems will include asphalt concrete dike, toe of fill ditches, and downdrains / overside drains. A Slope Approval Form and Design Exception Fact Sheet for Advisory Standards was developed for the 1:2 side slope exception. The Slope Approval Form was approved on April 26, 2007.

The project would preserve existing vegetation wherever possible. Areas of clearing and grubbing would include the reconfigured interchange, especially the areas of the loop off-ramps which will be eliminated. Widening of the on-ramps and Watt Avenue will result in the reduction of some existing vegetated areas.

The proposed strategy for permanent treatment BMPs to be used on the project will include vegetated strips/swales with detention devices. This strategy was selected based on existing site constraints and the feasibility of each of the approved treatment BMPs. These BMPs would treat approximately 75% of the water quality volume (WQC). However, treatment of all onsite runoff would not be possible due to site constraints. Vegetated swales will be designed in accordance with Caltrans design criteria. They will be trapezoidal channels with a base width of 1.2 m (4-ft) and have 1:4 (V:H) side slopes.

The feasibility criteria for infiltration basins require a design WQV that exceeds 123 cubic meters [m^3] (0.1-acre-foot), sufficient soil permeability (both vertical and horizontal), sufficiently low water table, and no threat to local groundwater quality. However, infiltration basins are not proposed. Areas of consideration were rejected due to potential safety risk of maintaining standing water for an extended period of time close to high volume, high speed traffic or for concern of causing objectionable backwater in the upstream drainage systems.

As referenced in the SWDR, the project includes provisions for Construction Site Best Management Practices (BMPs) for slope protection during construction including: bonded fiber matrix, fiber rolls, gravel check dams, inlet barriers, and temporary mulch.

Design Pollution Prevention and Treatment BMPs are quantified in the SWDR and included in the 6-Page Preliminary Cost Estimate but are not included in this LAAS Form. The Final Storm Water Data Report (PA/ED) was approved on February 14, 2007.

Noise Barriers

The results from the noise study conducted for this project indicate that existing levels and predicted future noise levels with the proposed project are, in some areas, above the noise abatement criteria specified by FHWA/Caltrans and Sacramento County. Existing noise barriers are present in the northwest, northeast, and portions of the southwest quadrants of

the interchange. Noise barriers were constructed as part of the Watt Avenue Bridge project along the northern portion of the interchange and along Watt Avenue to La Riviera Drive.

Using the FHWA Traffic Noise Model, future traffic noise levels were predicted to exceed the applicable FHWA/Caltrans noise level criteria at some receiver locations. As a result, mitigation measures for this project were considered. Barriers along portions of the northeast and southwest quadrants of the interchange were found to be both feasible and reasonable based upon the FHWA/Caltrans criteria.

After the implementation of mitigation measures recommended in the Environmental Noise Analysis for this project addressing the FHWA and Caltrans criteria, future traffic noise levels are predicted to still exceed the Sacramento County's 65 dB Len standard of nine (9) of the representative receiver locations. In order to achieve compliance with the County's standard, noise barriers consistent with the heights contained in the table below would need to be constructed in place of the existing noise barriers at these locations. Such construction may not be feasible due to engineering, aesthetic, R/W, safety or cost factors.

These noise studies were performed assuming rubberized asphalt concrete (RAC) would be applied to paved roadways including the interchange ramps. The Sacramento County considers the noise-reducing properties of RAC whereas Caltrans and the FHWA currently do not. The degree of attenuation credited by the County to RAC is 4 dB. As a result, noise levels at many of the receiver locations, assessed in terms of the County's Ldn standards will be approximately 1-2 dB lower than predicted highest hourly average levels which Caltrans and FHWA use.

Caltrans currently has plans to widen US 50 to add HOV lanes in both directions from Watt Avenue to Sunrise Boulevard Interchange. Included in Caltrans work are noise barriers construction that may overlap with noise barrier proposals for the Watt Avenue Interchange project. Coordination with Caltrans will be necessary to establish limits and in some cases confer with the design of the noise barriers for this project. Where feasible, the Watt Avenue project will build noise barriers following the minimum standards for Sacramento County, a standard considered to be higher than both Caltrans and FHWA standards.

See Environmental Noise Assessment report including report addendum prepared by Bollard Acoustical Consultants, Inc for additional information. This report will be made available upon request.

LOCATION: QUADRANT OF INTERCHANGE	EXISTING BARRIER HEIGHT	PROPOSED BARRIER HEIGHT
Northeast	3.2-m (10.5-ft)	No new barrier required.
Northeast	2.1-m (7.0-ft)	New 4.1-m (13.5-ft) barrier considered feasible and reasonable.
Northeast	3.4-m (11.0-ft)	New 5.4-m (17.5-ft) barrier not feasible.
Northwest	3.5-m (11.5-ft)	New >5.5-m (18-ft) barrier not feasible.
Northwest	2.4-m (8.0-ft) to 3.4-m (11.0-ft)	No new barrier required.
Southwest	3.4-m (11.0-ft)	New > 5.4-m (>17.5-ft) barrier not feasible.
Southwest	2.7-m (9.0-ft)	New >4.7-m (>15.5-ft) barrier not feasible.
Southwest	Currently no barrier location.	New 2.8-m (9.0-ft) new barrier considered feasible and reasonable.
Southwest	1.7-m (5.5-ft)	No new barrier required.
Southeast	3.4-m (11.0-ft)	New 5.4-m (17.5-ft) barrier not feasible.

Needed Roadway Rehabilitation and Upgrading

The project involves new pavement sections, pavement reconstruction and overlay of existing pavement on Watt Avenue. For the PA/ED phase, it is assumed that design pavement sections are similar to recent interchanges constructed in nearby areas of Sacramento County. For preliminary design and estimating purposes of this proposed project, similar pavement sections were assumed from the Caltrans US-50 Bus/Carpool Lane and US-50 at Sunrise Boulevard Interchange project (EA 03-4416U1).

For the final design (PS&E) phase, existing pavement testing and recommendations for pavement structural sections should be prepared by a materials or geotechnical engineer.

Needed Structure Rehabilitation and Upgrading

Bridge replacement is not recommended. Methacrylate will be placed on the existing bridge deck. During the PS&E phase, the existing structures will be analyzed for any necessary seismic upgrades.

Cost Estimates

See Table 15 below for the estimated project costs for the interchange. See Attachment E.

Item	Base Cost (FY 2009/10)
Roadway Costs	\$36,723,000
Structure Costs	\$8,630,000
<i>Subtotal</i>	<i>\$45,353,000</i>
Right-of-Way Costs	\$1,709,000
<i>Total</i>	<i>\$47,062,000</i>

The aforementioned estimated project cost includes items identified in the 6-page Preliminary Project Cost Estimate Summary. The highway planting and landscaping improvements at the interchange would lag as a project separate from the interchange modification construction. The preliminary cost estimate for highway planting and landscaping are also included in the 6-Page Preliminary Project Cost Estimate Summary (Attachment E). Of the total estimated construction cost, highway planting is estimated at \$2,180,000 with an additional \$300,000 for a 3-year plant establishment period.

Right of Way Data

A Right of Way Data Sheet was prepared for this project. See Attachment F.

Additional right-of-way would be required to construct the project. Temporary and permanent easements would be required for work in industrial and commercial properties. Property was acquired on Watt Avenue near Folsom Boulevard as part of the Watt Avenue LRT Grade Separation project. Right of way acquisition would be the responsibility of the County of Sacramento.

Effect of Special Funded Proposal on State Highway

2010 Conditions

Under construction-year conditions (2010), the proposed partial cloverleaf interchange would have the following improvements for traffic operations on US-50.

- The modified interchange would eliminate oversaturated LOS F conditions at the ramps such that the new signalized ramp terminal intersections would operate with LOS B/C conditions during the AM peak hour and LOS D/E conditions during the PM peak hour
- Average travel times for Watt Avenue would improve in the southbound direction during the AM peak hour, but the northbound PM peak hour travel time would worsen since more traffic would be delivered from the freeway to the oversaturated Watt Avenue / Fair Oaks Boulevard intersection
- The reconfigured interchange would improve operations on the US-50 mainline sections approaching the interchange from LOS F to LOS E conditions during the PM peak hour. The westbound US-50 on-ramp from northbound Watt Avenue would improve from LOS F to LOS D during the AM peak hour, and the westbound US-50 off-ramp diverge would improve from LOS F to LOS D during the PM peak hour

2030 Conditions

Under design-year conditions (2030), the Watt Avenue intersections at Fair Oaks Boulevard and Folsom Boulevard (for Scenario 4-No Project and Scenario 5-With Project) would operate with oversaturated conditions during both peak hours such that these intersections would constrain the volume delivered to and leaving from the Watt Avenue/US-50 interchange. Similar to 2010 conditions, the reconstructed interchange would improve conditions at the existing full cloverleaf interchange by allowing more traffic from Watt Avenue onto the freeway and vice versa. The following conclusions were determined from the analysis of the 2030 scenarios.

- During the AM peak hour, the reconstructed interchange would eliminate oversaturated LOS F conditions and the US-50 ramp terminal intersections would operate with LOS D conditions for Scenario 5 (With Project)
- During the PM peak hour, the construction of the partial cloverleaf interchange (Type L-9) would reduce backups onto US-50 and reduce vehicles and person hours of delay when compared to Scenario 4 (No Project Conditions)
- Average travel times for the US-50 ramps would be significantly improved for year 2030 With Project Conditions. For the PM peak hour, the southbound to eastbound on-ramp and the westbound to northbound off-ramp would show a reduction in travel time by more than eight and one-and-a-half minutes, respectively, compared to 2030 No Project Conditions

See “Section 7 Other Considerations” of this report for a discussion of the Cooperative Agreement for this project.

B. Rejected Alternatives

No Build Alternative

Under the 'No Build' alternative, no project would be constructed. The Watt Avenue at US-50 interchange would maintain the existing full cloverleaf (Type L-10) configuration. Without the interchange reconstruction, BRT vehicles would operate in the existing mixed flow lanes and transit signal priority would not be implemented through the Watt Avenue interchange. The circulation of bicyclists and pedestrians would be limited due to the lack of contiguous bike lanes and sidewalks through the existing interchange. Without improvements to the interchange, traffic congestion would significantly increase as measured in person-hours of delay (400%) when compared with existing conditions. This would result in significant delays, traffic congestion and peak hour spreading.

Alternative A: Partial Cloverleaf (Type L-9) Interchange Modification with Concrete Box Culvert Bicycle Undercrossings

Alternative A is the same as Alternative B except for the bicycle/pedestrian pathway undercrossings are constructed as box culvert tunnels at the ramps rather than bridge structures. See Attachment J for *Watt Avenue/US-50 Interchange Bicycle/Pedestrian Path Ramp Undercrossing Alternative* exhibit.

This alternative was not selected because both Caltrans and the local agencies favored the open ended bridge structure over the box culvert tunnels for the six bicycle/pedestrian pathway undercrossings for better visibility and enhanced safety.

Alternative C: Partial Cloverleaf (Type L-9) Interchange Modification with Bus/Carpool (HOV) Drop Ramps.

This alternative (Attachment J) consists of modifying the existing full cloverleaf (Type L-10) interchange to a partial cloverleaf (Type L-9) interchange, similar to Alternative A, with the addition of bus/carpool (HOV) drop ramps at Watt Avenue. The bus/carpool (HOV) drop ramps would be direct ramp connections to and from the US-50 mainline future median bus/carpool lanes. The US-50 bus/carpool lanes would be built as a separate project by Caltrans. Construction of the bus/carpool (HOV) drop ramps would be constructed with mechanically stabilized earth (MSE) or retaining wall structures or, alternatively, separate ramp bridge structures to grade separate the ramps from the mainline. For the drop ramps to meet the existing Watt Avenue overcrossing, US-50 would be widened to accommodate the additional ramp lanes and related merge tapers.

Alternative C was considered and rejected because the bus/carpool (HOV) drop ramp structure overhang would encroach upon the minimum vertical clearance of the US-50 mainline vehicle traffic. The existing Watt Avenue overcrossing structure does not meet the minimum vertical clearance as required in the HDM and a design exception has been approved as part of this project. The widening of mainline US-50 needed to maintain the lower overhead ramp structure outside of the traveled way would require complete replacement of the existing Watt Avenue separation at US-50 due to the widening encroachment into the existing abutment substructure. The widening needed to

accommodate the bus/carpool (HOV) drop ramps would require removal and/or replacement of the Manlove Pedestrian Overcrossing. Results from the Traffic Study indicated that the additional traffic signal at the bus/carpool (HOV) ramp at Watt Avenue would have adverse impacts to single occupancy vehicles and transit vehicles traveling on Watt Avenue as well as increased queues backed up on the US-50 mainline.

6. CONSIDERATIONS REQUIRING DISCUSSION

A. Hazardous Waste

Kleinfelder, Inc. performed an aerially deposited lead (ADL) assessment for the project area. Based on maps depicting areas of potential soil disturbance provided by Sacramento County, samples to assess ADL were collected from both sides of the roadway along Watt Avenue between US-50 and Folsom Boulevard, an approximately 700-m (2,300-ft) section, and within the ramp areas, both north and south of US-50. No sampling at La Riviera interchange was recommended because the area was recently disturbed for the Watt Avenue Bridge Widening project. Three tasks were performed with the sampling: 1) Hand auger soil sampling; 2) Laboratory analysis; and 3) Preparation of report findings. ADL was found in low concentrations, but can be mitigated to less than significant levels through the preparation of a Lead Compliance Plan for construction and any material export (none anticipated at this time) will be handled in accordance with EPA, CAL-OSHA, SMAQMD and Caltrans standards.

See US-50/Watt Avenue Aerially Deposited Lead Assessment Report produced by Kleinfelder Inc. for recommendations and additional information.

B. Value Analysis

The Value Analysis (VA) study for this project will be completed in the next phase (PS&E phase) of the project. A VA study is mandated by FHWA for projects in the Federal Aid System on the National Highway System (NHS) with an estimated cost (including R/W and support costs) equal to or greater than \$25 Million. The proposed VA study will focus but will not be limited to design of stage construction, noise barriers and pedestrian/bike pathways.

By requiring the application of VA, this project could improve project quality, reduce project costs, foster innovation, eliminate unnecessary and costly design elements, and ensure efficient investments.

The cost of value analysis is project related and is, therefore, eligible for reimbursement with Federal-aid highway funds at the appropriate pro-rata share for the project.

The County of Sacramento Department of Transportation, the lead agency for this project, did not require a VA for this project, nor is one recommended. Neither Caltrans nor the County of Sacramento has identified any items that appear to be excessively costly or any unusual features that would benefit from a VA.

VA principles have been used throughout the development of this project in scoping documents. A VA process may be applied to study approaches to construction staging during the final design (PS&E) phase of the project.

C. Resource Conservation

The following measures were taken to conserve energy and non-renewable resources: bus/carpool lanes, BRT lanes, and signal prioritization at intersections for BRT lanes. Measures minimizing resource consumption include the use of rubberized asphalt concrete and native tree transplants for environmental mitigation.

D. Right of Way Issues

Right of way acquisition will not occur in the residential properties around the interchange area. Design and construction measures will be taken to avoid property acquisition of the adjacent residential properties. Design Exception Fact Sheets were approved for this project in order to avoid impacts to adjacent residential properties. Partial right of way acquisition and temporary construction easements will occur in the commercial and industrial properties along Watt Avenue near Folsom Boulevard to accommodate the roadway widening for the Alternatives A and B projects.

E. Environmental Issues

The County of Sacramento is the Lead Agency for CEQA and Caltrans is the Lead Agency for NEPA and a CEQA Responsible Agency.

Some of the environmental impacts are summarized below:

Flood Plain Encroachment

In 2001, during the initial stage of the PA/ED phase of this project, the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) of July 1998 indicated that the project site is within the American River 100-year base floodplain. However, if the American River levee improvements, which were then in progress, were to be completed, the project site would be removed from the base floodplain.

The project site is approximately 760-m (2,500-ft) south of the American River, within the former American River Floodplain and located on the border between the County of Sacramento and the City of Sacramento. The American River flows from east to west from the Folsom Dam upstream. General drainage in the project vicinity is from south to north toward the American River. Surrounding land uses near the project site are mostly residential and commercial, with some open space on the south end of the project site.

The project site is located on the FEMA FIRM Panel Numbers 060262 0195 F, and 060233 0010 F. The project site was located within Zone AR on the FEMA maps of July, 1998. Zone AR is designated as an “area of special flood hazard” which results from the decertification of a previously accredited flood protection system which is in the process of being restored to provide a 100-year or greater level of flood protection.

After the completion and certification in 2002 of the Sacramento Urban Levee Reconstruction Project and the Common Features Project, along with other improvements upstream, the City and County of Sacramento applied for a letter of map revision (LOMR) to the FEMA. In February 2005, the LOMR was approved that excluded the areas in and near the project site from the designation of AR, and re-designated these areas as Zone X. Zone X includes areas of the 500-year flood; areas of the 100-year flood with average depths of less than 0.3-m (1-ft) or with drainage areas less than 2.6-Km² (1-mile²); and areas protected by levees from 100-year flood. As a result of this designation, the project site is not located within any Special Flood Hazard Area, or area that would be inundated by the base flood for the American River.

This project would not increase hazard risk to property or people because the project site is no longer in the floodplain. The proposed roadway embankment would not affect water surface elevations in the American River, and there is no risk of overtopping. Additionally, there is no reduction in the floodplain area, and subsequently no reduction in floodplain values. Therefore, no floodplain impacts are anticipated.

Based on the current FEMA FIRM, the project is no longer within the floodplain. Therefore, there would be no floodplain impacts. A Location Hydraulic Study is not warranted.

See Attachment H for a more detailed discussion of the above environmental issues.

F. Air Quality Conformity

The proposed project is fully funded and is in the SACOG MTP for 2035 which was approved by the SACOG Board March 20, 2008 and found to conform and approved by FHWA and FTA on May 16, 2008. The project is also included in SACOG's financially constrained federal 2007/10 Metropolitan Transportation Improvement Program (MTIP), Amendment #15, page 263. Amendment #15 to the 2007/10 MTIP relies on the previous May 16, 2008 emissions analysis and was approved and found to conform by the SACOG Board May 29, 2008. The approval and conformity finding by FHWA and FTA was determined on July 14, 2008. The design concept and scope of the proposed project is consistent with the project description in the MTP for 2035, the 2007/10 MTIP, and the assumptions in SACOG's regional emissions analysis.

G. Title VI Considerations

The proposed project makes provisions for low mobility groups. The project area currently has fragmented sidewalks and discontinuous bicycle and pedestrian access. The proposed project provides contiguous bicycle and pedestrian access within the project boundaries. The proposed improvements include the addition of Class I multi-use bicycle/pedestrian paths with accessibility design that considers ADA standards. Where Class I paths are not built, provisions for Class II bike lanes are made on Watt Avenue. To the north, the proposed bike paths connect to La Riviera Drive and the American River Bike Trail. ADA curb ramps are placed at intersection curb returns. A dedicated BRT lane and transit signal priority are included in the project and connect to the Manlove LRT station on Folsom Boulevard.

7. OTHER CONSIDERATIONS

A. Public Hearing Process

A Notice of Preparation (NOP) for the project was previously released by Department of Environmental Review and Assessment on February 25, 2003. Subsequently, the NOP was revised and released on December 19, 2005 to reflect revisions to the project which include: the limits of work on Watt Avenue were extended slightly to the north and south; additional narrow land strips along the east and west sides of Watt Avenue, south of Folsom Boulevard would be acquired to accommodate the roadway widening; and the bicycle path alignments were re-designed and stairs were added as alternative pedestrian routes.

Sacramento County Department of Transportation held public information open house meetings on November 12, 2008 and March 31, 2009. A Sacramento County Planning Commission meeting was held on May 11, 2009 to officially close the public circulation of the Draft Environmental Document. A public hearing was held with the Sacramento County Board of Supervisors on September 22, 2009, with general support for the project. Detailed comments from the public are included in the environmental document. The Sacramento County Board of Supervisors adopted the Findings of Fact and Statement of Overriding Considerations and Approval of the project and certified the Final Environmental Impact Report as adequate and complete and adopted the Mitigation Monitoring and Reporting Program on October 20, 2009.

B. Route Matters

No new freeway agreements or revised freeway agreement will be required. The project will be constructed at the location of an existing interchange. No change in access control is proposed.

C. Permits

No permits are required for this project.

D. Cooperative Agreements

The State and Sacramento County executed a cooperative agreement on July 16, 2002 for PA/ED that also delegated Sacramento County as the Lead Agency for CEQA. [03-SAC-50 (PM 5.3) Watt Ave/US-50 Interchange Improvement, EA 37120K District Agreement Number 03-0201]. A cooperative agreement will be required between Sacramento County and Caltrans regarding the PS&E design, construction, maintenance, and operations of the interchange and related project features.

Separate cooperative agreements will be required for the subsequent landscaping project at the interchange and for the maintenance and operations of the bicycle/pedestrians facilities at the interchange which will be constructed, operated and maintained by Sacramento County. The scope and timing of the follow-up landscape project will be determined in the construction cooperative agreement.

A cooperative agreement will be required between the County of Sacramento and Sacramento Regional Transit District regarding the design, construction, maintenance and operations of the dedicated BRT lane and transit signal priority operations on Watt Avenue.

E. Other Agreements

Not applicable.

F. Involvement with a Navigable Waterway

Not applicable.

G. Transportation Management Plan for Use during Construction

The Transportation Management Plan (TMP) for this project will provide maximum safety to the public from construction activities and protect workers from traffic. The alternative considered in this study cannot be constructed without some impact to traffic during construction, primarily due to driver curiosity, and temporary lane or freeway closures/transitions for falsework erection and removal, and ramp conform work. However, traffic impacts can be reduced with a well-planned stage construction/traffic handling plan and aggressive public awareness during construction. Temporary railing (Type K) will be used to separate construction zones from traffic. Some work-period lane closures will be required (i.e. for removing delineation, setting K-rail, pavement conforms, etc.) and would be performed during non-peak traffic hours.

In the event that the interchange project is constrained by project funding limitations, project phasing will be considered for construction items of work during the final design stage. The conceptual stage construction and traffic handling as discussed in this draft project report assumes the entire interchange will be constructed.

H. Staged Construction

A Transportation Management Plan Data Sheet was approved for this project date. See Attachment K.

The proposed project includes weekday construction during off-peak hours. Weekends and night work will be required for the bridge widening over US-50, the ramp realignment construction, and during conditions where traffic capacity is reduced or detoured from US-50.

I. Accommodation of Oversize Loads

The proposed structure improvements will not reduce the existing permanent vertical clearances along this corridor. Based on structure maintenance reports and as-built drawings, an Advance Planning Study (APS) was prepared by MGE for the Watt Avenue Overcrossing which provides the minimum vertical clearance for falsework during construction staging of the bridge widening. A mandatory design exception for minimum structure vertical clearance was approved. See Table 13 in Section 5.A. and see Attachment C.

J. Graffiti Control

For potential graffiti-prone areas along bicycle/pedestrian walkways or access areas, aesthetic or fractured texturing with graffiti coat may be considered to discourage vandals from “tagging” bridges, signs, and walls. Texturing or planting vines may be employed on walls to avoid providing a canvas for graffiti vandals.

K. Environmental Summary and Conclusions

Sacramento County’s DERA prepared the Draft Environmental Impact Report/Environmental Assessment (DEIR/EA) for this project. The DEIR/EA provided an analysis of the following topics: Land Use and Community Impacts, Public Services (utilities and emergency service), Traffic and Circulation, Air Quality, Visual/Aesthetics, Noise, Cultural Resources, Biological Resources, Drainage and Water Quality, and Hazardous Materials. Technical studies were prepared for the following: Air Quality, Noise, and Traffic. The DEIR/EA identifies potential impacts that can be reduced to less than significant levels with mitigation for the following:

- Air Quality
- Noise
- Native Trees

Impacts related to climate change are considered (pursuant to CEQA) significant and unavoidable after mitigation. No other unavoidable impacts were identified in the environmental analysis.

A detailed discussion of each of the identified impacts and mitigation measures, including pertinent support data, can be found in the specific topic sections in the DEIR/EA. The environmental findings are summarized as follows:

Land Use: The impacts to land use are less than significant. No mitigation measures recommended.

Public Services: The impacts to public services are less than significant. No mitigation measures recommended.

Drainage and Water Quality: The impacts to drainage and water quality are less than significant. No mitigation measures recommended.

Traffic and Circulation: The impacts to traffic and circulation are less than significant. No mitigation measures recommended.

Air Quality: Construction of the proposed project will result in NO_x construction emissions that exceed the thresholds of the Sacramento Metropolitan Air Quality Management District. However, mitigation measures will be employed to control visible emissions from off-road diesel powered equipment; reduce fugitive dust to ensure that construction-related PM₁₀ is reduced to less than significant levels; and reduce the impact of NO_x emissions to less than significant levels.

Global Climate Change: The project does not in itself generate trips that would contribute to an increase in global warming. The inclusion of accommodations for alternate modes of travel and reduction in delays for drivers will contribute to the overall goal of reducing GHG emissions. However, out of an abundance of caution, the County has identified mitigation measures that ensure this project's incremental contribution to cumulative climate change impacts are reduced to the extent possible.

The mitigation measures are taken from the California Attorney General's February 14, 2008 letter entitled, "Addressing Global Warming Impacts at the Local Agency Level" (updated May 21, 2008), the Sacramento Area Council of Governments' Metropolitan Transportation Plan and the Sacramento Metropolitan Air Quality Management District.

The impacts remain potentially significant.

Noise: A noise study was prepared to evaluate the change in traffic noise levels and noise levels due to construction associated with the project. Mitigation measures for traffic noise would reduce levels to less than significant. Noise generated during construction would be regulated by sound control requirements in accordance with Caltrans standard specifications.

Biological Resources: A tree survey and evaluation identified impacts to trees within the proposed project footprint. Mitigation measures for native tree removal and impacts to nesting migratory birds during construction will be employed to reduce the impact to less than significant.

Hazardous Materials: Project construction has the potential to encounter contamination during construction activities. A Phase I Site Assessment concluded that it is unlikely that the project will encounter contamination of soil or groundwater based on review of historic data and reconnaissance of the project area and surrounding vicinity. Mitigation measures to ensure responsible handling of hazardous materials if encountered as well as minimizing worker exposure to aerially deposited lead would reduce the impact to less than significant.

Visual Aesthetics: The project is considered compatible with the surrounding suburban environment. There are mature native and non-native trees that will be impacted; however, this impact will be lessened as the replacement landscaping becomes established and measures to mitigate for the visual impacts of vegetation removal are employed. The Sacramento County Department of Transportation will initiate a future project to landscape the interchange to reduce the impact to less than significant.

Cultural Resources: The impact to cultural resources are a less than significant. No mitigation measures recommended.

8. FUNDING AND PROGRAMMING

The County of Sacramento is funding the project planning activities through construction using RSTP, Federal Demonstration Funds, Sacramento County Measure A Sales Tax, Caltrans State-Local Partnership Program (SLPP) funding, and local funds. The SLPP funding is provided from the SAC 50 Bus/Carpool Lane project between Watt Avenue and Sunrise Boulevard. The Class I bicycle/pedestrian facilities are estimated to cost \$9,051,000.

Funding Plan:

The County of Sacramento Department of Transportation will fund a majority of this project with Measure A Sales Tax, Federal, and State funds.

Sources	Prior Years	FY09/10	FY10/11	FY11/12	FY12/13	Totals
Sales Tax Measure A	\$304,000	\$474,000	\$1,610,320	\$312,000	\$8,054,680	\$10,755,000
SLPP (Caltrans)				\$2,178,000		\$2,178,000
STIP					\$10,000,000	\$10,000,000
Federal Funds (DEMO)		\$1,349,000	\$1,530,680			\$2,879,680
TEA-21 (RSTP)	\$441,000	\$1,059,000				\$1,500,000
SAFETEA-LU (RSTP or CMAQ)				\$8,158,000		\$8,158,000
TCRP	\$648,000			\$6,352,000		\$7,000,000
Other					\$15,445,320	\$15,445,320
Total	\$1,393,000	\$2,882,000	\$3,141,000	\$17,000,000	\$33,500,000	\$57,916,000

RSTP = Regional Surface Transportation Program

TCRP = Traffic Congestion Relief Program

Expenditure Plan:

Elements	Prior Years	FY09/10	FY10/11	FY11/12	FY12/13	Totals
Preliminary Engineering/ Environmental (PA&ED)	\$1,157,000					\$1,157,000
Design (PS&E)	\$236,000	\$2,866,000	\$1,046,000			\$4,148,000
Land/ROW Acquisition (RW)		\$16,000	\$2,095,000			\$2,111,000
Construction (CON)				\$17,000,000	\$33,500,000	\$50,500,000
Other CIP Costs						
Total	\$1,393,000	\$2,882,000	\$3,141,000	\$17,000,000	\$33,500,000	\$57,916,000

The interchange project estimated construction cost is identified in the 6-page Preliminary Project Cost Estimate Summary (Attachment E). The highway planting and landscaping improvements at the interchange would lag as a project separate from the interchange modification construction. The preliminary cost estimate for highway planting and landscaping are also included in the 6-Page Preliminary Project Cost Estimate Summary. Of the total estimated construction cost, highway planting is estimated at \$2,180,000 with an additional \$300,000 for a 3-year plant establishment period. Phasing of the design and construction could be considered if the availability of funding for construction is limited.

Cooperative Agreement - Estimate of Cost				
	PS&E	R/W	Construction (capital and support)	Total by Type
STATE (a)				
TCRP			\$ 6,352,000	\$ 6,352,000
STIP-RIP			\$ 10,000,000	\$ 10,000,000
SLPP (Caltrans)			\$ 2,178,000	\$ 2,178,000
SLPP (STA)			\$ 8,158,000	\$ 8,158,000
Sub-total:				\$ 26,688,000
LOCAL-FEDERAL (b)				
RSTP	\$ 935,000			\$ 935,000
Federal DEMO	\$ 2,879,680			\$ 2,879,680
Sub-total:				\$ 3,814,680
LOCAL (c)				
Sales Tax Measure A Funds	\$ 333,320	\$ 1,243,680	\$ 8,158,000	\$ 9,735,000
Other Local/Regional Funds		\$ 867,320	\$ 15,654,000	\$ 16,521,320
Sub-total:				\$ 26,256,320
Total PROJECT COST	\$ 4,148,000	\$ 2,111,000	\$ 50,500,000	\$ 56,759,000
Estimated cost of IQA	\$ 40,000	\$ 20,000	\$ 680,000	\$ 740,000
<p>(a) "Any changes to STATE's funding shall require an amendment to this Agreement or will need to be authorized in a superseding cooperative agreement and identified in the appropriate PROJECT approval document(s) (PSR, PSR/PR, DPR, PR, etc.)."</p> <p>(b) "The level of LOCAL FEDERAL funding and any required matching funds identified in this Agreement's Exhibit A-1 is subject to change(s) pursuant to the applicable Master Agreement, PROJECT specific Program Supplemental Agreement(s), and Finance Letter(s) between the STATE and CITY. Said change(s) will not require an amendment to this Agreement, but will be identified in changes to the appropriate PROJECT approval document(s) (PSR, PSR/PR, DPR, PR, etc.)."</p> <p>(c) "The level of LOCAL funding identified in this Agreement's Exhibit A-1 is subject to change(s) pursuant to Local budgeting authority. Said changes will not require an amendment to this Agreement, but will be identified in changes to the appropriate PROJECT approval document(s) (PSR, PSR/PR, DPR, PR, etc.)."</p>				

Begin Project Report/Environmental Document	4/2004
Draft Environmental Document Circulation	4/2009
Project Approval and Environmental Document	12/2009
Complete PS&E	6/2011
Right of Way Certification	8/2011
Advertise for Bid	10/2011
Award Contract	12/2011
Begin Construction	3/2012
Open to Traffic	11/2013

9. REVIEWS

The project has been reviewed by the Caltrans Headquarters Project Development Coordinator and the Headquarters Design Reviewer. All comments have been incorporated in this draft project report or otherwise addressed.

Federal Highway Administration (FHWA) and NEPA-delegated staff have participated in the project development process, including attendance at PDT meeting and specific focused technical meetings.

Sacramento County will advertise, award, and administer the project for construction.

10. PROJECT PERSONNEL

John Jaeger, Senior Civil Engineer County of Sacramento, Department of Transportation	(916) 874-7507
Marianne Biner, Environmental Analyst County of Sacramento Department of Environmental Review and Assessment	(916) 874-7520
Steve Hetland Caltrans, Special Funded Projects	(916) 274-0549
Larry Chiea Caltrans, Environmental	(916) 274-0584
Christine Zdunkiewicz Caltrans, Traffic	(916) 274-0433
Eric Fredrickson Caltrans, Structures	(916) 227-8916
Ken Murray Caltrans, Landscape Architecture	(916) 274-0652
Melani Millard	(530) 740-4844

Caltrans, Right of Way

Joe Horton (916) 274-0550
Caltrans, Transportation Management Plan

John C. Steele (916) 653-4931
Caltrans, Project Development Coordinator

Barbara Reenan (916) 274-6013
Caltrans, North Region Design, Office of Design West

Heidi Sykes (916) 825-2600
Caltrans, North Region Design Reviewer

Tim Mar, Supervising Civil Engineer (916) 808-7531
City of Sacramento

Don Smith, Senior Administrative Analyst (916) 321-2957
Sacramento Regional Transit District

Cesar Perez (916) 498-5065
FHWA

Judy Matsui Drury (916) 920-0300
CH2M HILL, Engineering

David Stanek (916) 773-1900
Fehr & Peers, Traffic

Robert Sennett (916) 421-1000
MGE Engineering, Structures

11. REFERENCES

Metropolitan Transportation Improvement Plan 2007/10 (SACOG)

2035 Metropolitan Transportation Plan (SACOG)

The 2010 Sacramento City/County Bikeway Master Plan Volume 1 of 2 (Adopted by Sacramento County on November 23, 1993; City of Sacramento on April 11, 1995)

Sacramento County Seven Year Plan 2005-2012

South Watt Area Transportation Study (SWATS) Project Master Plan, November 1, 2002, prepared by Mark Thomas & Company.

US 50/Watt Avenue Interchange Traffic Report, December 2, 2005, prepared by Fehr & Peers.

12. LIST OF ATTACHMENTS

- A. Location Map
- B. Project Geometrics
- C. Advanced Planning Studies
- D. Design Exception Fact Sheets
- E. Project Cost Estimates
- F. Right of Way Data Sheets
- G. Summary of Traffic Volumes
- H. Final Environmental Impact Report (under a separate cover)
- I. Storm Water Data Report
- J. Project Alternatives
- K. TMP Data Sheet