

**Meeting of the Central Valley Flood Protection Board  
March 25, 2011**

**Staff Report – Encroachment Permit**

**California Department of Transportation, District 10  
San Joaquin River Bridge Replacement on State Route 165 in Merced County**

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**1.0 – ITEM**

Consider approval of Permit No. 18579-2

**2.0 – APPLICANT**

California Department of Transportation, District 10

**3.0 – LOCATION**

The limits of the bridge project extend from STA 597+93 to STA 602+05 (412 feet long) along State Route 165 in Merced County (See Attachment A for Location Map).

**4.0 – DESCRIPTION**

The California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) propose to rehabilitate the roadway of State Route 165 in Merced County (Wolfsen Road Rehabilitation Project). The proposed project begins at Henry Miller Road and ends at State Route 140. The total length of the project is 15.2 miles. The proposed project consists of overlaying the roadway with new asphalt concrete, replacing the San Joaquin River Bridge, widening the San Joaquin River Overflow and Salt Slough Bridges, and realigning the Santa Fe Grade Road and Wolfsen Road where they intersect State Route 165. The work is limited to the right-of-way except where Santa Fe Grade Road and Wolfsen Road are proposed to be realigned. The project has been found to be an encroachment on the State Adopted Plan of Flood Control in the vicinity of the San Joaquin River Bridge and San Joaquin River Overflow Bridge.

This report focuses on the San Joaquin River Bridge (39-0211) project. The San Joaquin River Bridge is proposed to be replaced with a 43 feet-wide, 412 foot long 5-

span bridge supported by 3'-0" diameter Cast-in-Steel-Shell (CISS) piles, with 4 piles per bent. The 5-span structure will utilize 42" deep PC/PS Bulb-T girders founded on 3'-0" diameter CISS piles. Bent caps will be 5'-0" wide and 3'-6" tall and the structural depth will be 4'-3". The abutments and bents will have a 20 degree right skew so as to minimize the hydraulic skew and associated scour by aligning the bents with the flow. Span 1 is 71' long. Span 2 is 87' long, Span 3 is 81' long, Span 4 is 85' long and Span 5 is 88' long. The proposed span lengths are adequate to convey anticipated drift. The longer spans require fewer bents. Fewer bents and precast girders will reduce the construction time required, which is important since the route will be closed during the replacement. The proposed end land use for the project site will be a two-lane highway bridge with standard 8-foot shoulder widths.

This project is located in between the north and south project levees which are maintained by the Lower San Joaquin Levee District. The toe of the project levee, located north of the San Joaquin River Bridge is at STA 607+40 (about 600 feet north of the bridge). The toe of the project levee at the south is about 1050 feet south of the bridge.

Excavation in the native soil (approximately 300 cubic yards) around the old abutments will be required so they can be removed and replaced to support the new wider bridge. All native soils excavated from the bridge abutment area will be stockpiled on-site for 3 months maximum and then used as backfill within the same area. No processing of the stockpiles will be necessary. Standard excavation and hauling equipment will be used, primarily backhoes and dump trucks, to excavate and haul the materials. Standard Construction - Best Management Practices (specific details will be determined by the bridge subcontractor when they submit their Storm Water Pollution Prevention Plan to the Resident Engineer for approval) will be used. Measures will be implemented to ensure that no construction debris will enter the stream.

## **5.0 – PROJECT ANALYSIS**

Based on the review of the proposed bridge project, the following analyses were made.

### **5.1 – Hydraulic Analysis**

The revised channel hydraulics was modeled using the Army Corps of Engineers HEC-RAS program, version 4.0. The survey data used in the model was provided by the Department of Water Resources with the assistance from the Central Valley Flood Protection Board. HEC-RAS was used to determine the water surface elevations (WSE) and velocities throughout the project reach. Manning's coefficients ranged from 0.029 to

0.0345 in the main channel and 0.033 in the floodplain areas. For the San Joaquin River, the channel bottom is very flat with average slope of approximately 0.02 % or less in the reach at the project site.

For flows in the San Joaquin River, USGS Gage # 11261500 was used to estimate the 50 year and 100-year flood events. Based on USGS Stream Gage, the 50-year and 100-year flows for San Joaquin River at the project site were estimated to be 16,800 cfs and 21,700 cfs, respectively. The design flow for the San Joaquin River at the project site was 26,000 cfs. Based on the Title 23, CVFPB requires that the new soffit elevation of the replaced bridge structure shall be at least 3 feet above the water surface elevation of the design flow (26,000 cfs).

Two different scenarios were evaluated, namely 1) the existing structure including the supplemental steel bents installed in 2008, and 2) the pre-cast Bulb-T structure with an overall structural depth of 4'-3".

Based on the HEC-RAS models, the WSE corresponding to the design flow of 26,000 cfs decreased for proposed structure, when compared with the existing configuration. Therefore, no hydraulic impact is anticipated. The 5-span structure has a modeled WSE of 73.7 feet, NGVD 29 (76.2 feet, NAVD 88). The calculated lowest soffit elevation for this structure is 77.5 feet, NGVD 29 (80.0 feet, NAVD 88), which provides about 3'-10" of clearance from the WSE corresponding to the design discharge of 26,000 cfs.

Based on the geotechnical report, the channel bed material at the San Joaquin River Bridge site consists of medium dense silty fine to medium sand, poorly graded sand, and clayey sand. These materials are considered to be scourable.

Scour was estimated utilizing the methods outlined in the FHWA HEC-18, "Evaluating Scour at Bridges." All scour elevations are based on the 100-year flow. For the San Joaquin River Bridge, based on the HEC-RAS model using the 100-year flow, there is no overbank flow returning to the main channel immediately upstream of the structure. Therefore, abutment and contraction scours are considered to be negligible for this site. Based on the comparison of historical records, no long term degradation is anticipated but channel migration within the main channel beneath the structure is anticipated. The San Joaquin River is considered to be an active, meandering channel. Since the abutments will be placed within the floodplain and within both north and south levees, the abutments will be subject to potential channel migration and scour. Therefore, all piles including the abutment piles are potentially subject to the same scour depth and elevation.

For the San Joaquin River Bridge, Local Pier Scour for the 3-foot diameter columns is anticipated to be 6.5 feet, to an elevation of 54.2 Feet, NGVD 29. Based on the consultation with Caltrans, the above scour has been addressed in the pile design.

## 5.2 – Geotechnical Analysis

The project site is situated within the approximate central portion of the Great Valley geomorphic province of California. Surficial Holocene alluvium (active stream and river deposits) and Pleistocene older alluvium of the Modesto Formation (riverbank deposits) underlie the bridge site according to the Geologic Map of the San Francisco-San Jose Quadrangle, scale 1:250,000, compiled by D.L. Wagner, E.J. Bortugno, and R.D. McJunkin, 1990, second printing 2005, California Geological Survey. Field investigation at the site indicated that the distribution of the alluvial and fill soils underlying the bridge site is relatively consistent. These soils are predominately fine to medium grained sand with some coarse sand and gravel, and lesser amounts of silts and mixtures of silt, clay and sand. Specifically, the soils encountered during investigation can be divided into three relatively distinct zones.

The upper zone confined to the abutment approaches from the ground surface to a depth of about 10 feet (Elevation 72 ft) consists of embankment Fill. These materials, encountered at both recent soil test borings consisted of medium dense to loose silty sand and silt with clay. The middle zone composed of alluvium that also underlie the abutment approaches as well as the river channel extends from Elevation 72 ft to elevation 57 feet at the bents and extends to Elevation 32 at Abutment 1 and elevation 34 at Abutment 5. These deposits consist predominately of loose to medium dense fine to medium grained, poorly graded sand, silty sand and scattered thin sandy silt layers. The lower zone composed of alluvium extends from the bottom of the middle zone noted above to at least to the maximum depth explored (230 feet). These deposits are composed of predominately medium dense to dense sand, clayey and silty sand, silt, and very stiff clay. Very dense sand was encountered below elevation approximately - 38 feet in the boring B-206.

Based on the 1957 field investigation, groundwater was measured at elevation 64.4 feet in boring B-1 and 65.3 feet at boring B-2. Running water was observed in the River during the fall of 2006 foundation investigation. The above groundwater elevations is expected to fluctuate with seasonal precipitation.

Based on the California Seismic Hazard Map 1996, the controlling fault is the Midway-San Joaquin fault. This fault is located approximately 11 miles west of the site, and is capable of producing a maximum credible earthquake of 6.75 Mw. The Peak Bedrock

Acceleration, based on the above map was estimated to be 0.3g at the site. Based on the analysis, the liquefaction potential at the site is considered high at all support locations. Caltrans' protocol used in determining the axial pile load capacity for potentially liquefiable soil layers are as follows. Soil layers below the pile cut off tip elevation that are deemed liquefiable contribute zero soil / pile resistance to the applied axial load on the pile, and therefore, are discounted in the pile load calculations. When the soil layers above the lowest liquefiable layer do not liquefy, the soil resistances (skin friction) of these layers are discounted as above and a negative soil resistance component (down-drag load) is applied to the pile. The down-drag load affect is caused by the settlement of the non-liquefied soil layers above.

There is no known active fault crossing the bridge site, Therefore, the potential for surface rupture at the site is considered insignificant.

Based on the results of the corrosion testing, the site soils are not considered to be corrosive.

Based on the geotechnical evaluation, 36-inch diameter Cast-in-Steel-Shell (CISS) driven piles were recommended as foundation support at the proposed bridge bents. A 16-inch diameter Class 200 Alternative "W" Standard Open-ended driven steel pipe piles were recommended to support the abutments.

As it was mentioned earlier, the toes of the project levees, located north and south of the San Joaquin River Bridge are approximately 600 feet north, and 1050 feet south of the bridge, respectively. Based on the above setback distance and soft/saturated soil condition, it appears that the pile driving for the San Joaquin River Bridge replacement will not have any significant impact on the existing project levees and riverbanks.

The use of Spread footings was not considered a suitable foundation type based on the subsurface liquefiable soil conditions. Cast-in-Drilled-Hole (CIDH) piles were not specifically recommended for this project due to the liquefiable soils, loose to medium dense sandy soils, and high ground water level. High ground water level, liquefiable soils, and even dense to very dense soil may cause serious soil caving and high potential pile anomaly. If CIDH piles are selected, temporary and/or permanent steel casing should be used to prevent soil caving. Wet Specification Method, shall be used for pile installation. Driven steel "H" piles may not be the suitable pile type for this project since "H" piles may not provide required lateral capacity.

## **6.0 – AGENCY COMMENTS AND ENDORSEMENTS**

The comments and endorsements associated with this project, from all pertinent agencies are shown below:

- The U. S. Army Corps of Engineers endorsement letter has not been received but is expected to be received prior to the March 25, 2011 Board meeting which then will become Permit Exhibit A.
- The Lower San Joaquin Levee District has endorsed this application without any conditions.

## **7.0 –CEQA ANALYSIS**

Board staff has prepared the following CEQA findings:

The Board, as a responsible agency under CEQA, has reviewed Initial Study/Mitigated Negative Declaration (SCH Number: 2007011106, March 2007) and Mitigation Measures for the Wolfsen Road Rehabilitation Project prepared by the lead agency, Caltrans. These documents, including project design, may be viewed or downloaded from the Central Valley Flood Protection Board website at <http://www.cvpfb.ca.gov/meetings/2011/03-25-2011.cfm> under a link for this agenda item. These documents are also available for review in hard copy at the Board and Caltrans Office.

Caltrans has determined that the project would not have a significant effect on the environment and approved the project on March 5, 2007 and filed a Notice of Determination on June 23, 2010 with the State Clearinghouse. Board staff finds that although the proposed project could have a potentially significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. The project proponent has incorporated mandatory mitigation measures into the project plans to avoid identified impacts or to mitigate such impacts to a point where no significant impacts will occur. These mitigation measures address impacts to biological resources.

## **8.0 – SECTION 8610.5 CONSIDERATIONS**

1. Evidence that the Board admits into its record from any party, State or local public agency, or nongovernmental organization with expertise in flood or flood plain management:

The Board will make its decision based on the evidence in the permit application and attachments, this staff report, and any other evidence presented by any individual or group.

2. The best available science that related to the scientific issues presented by the executive officer, legal counsel, the Department or other parties that raise credible scientific issues.

The accepted industry standards for the work proposed under this permit as regulated by Title 23 have been applied to the review of this permit.

3. Effects of the decision on the entire State Plan of Flood Control:

This project does not have significant impacts on the State Plan of Flood Control, as the project does not impair the structural or hydraulic functions of the system.

4. Effects of reasonable projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed:

Climate change issues have not been taken into account; however, it is assumed to be inland past the point tidal influence raises WSE. There are no other foreseeable projected future events that would impact this project.

## **9.0 – STAFF RECOMMENDATION**

Staff recommends that the Board adopt the CEQA Findings, approve Permit No. 18579-2 conditioned upon receipt of a USACE 208.10 letter of determination confirming that the Corps has no objection to the project, and direct the Executive Officer to take necessary actions to execute the permit and to file a Notice of Determination with the State Clearinghouse.

## **10.0 – LIST OF ATTACHMENTS**

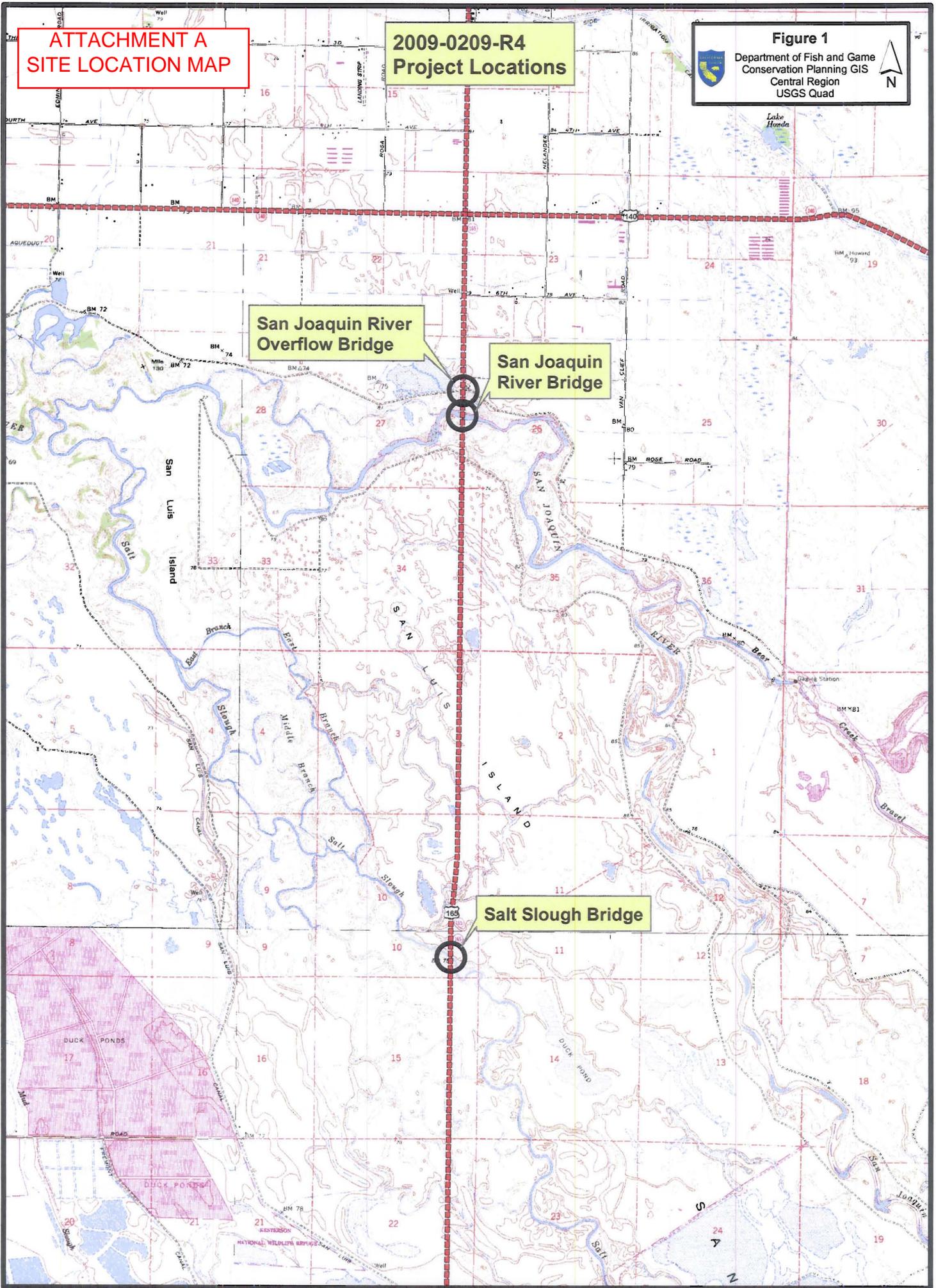
- A. Location Map
- B. Draft Permit No. 18579-2
- C. Bridge Plans and Sections

Reviewed by: Deb Biswas, Ph.D., P.E.  
Environmental Reviewed by: James Herota, MPP  
Final Reviewed by: Dan Fua, P.E.  
Len Marino, P.E.

**ATTACHMENT A  
SITE LOCATION MAP**

**2009-0209-R4  
Project Locations**

**Figure 1**  
Department of Fish and Game  
Conservation Planning GIS  
Central Region  
USGS Quad



**DRAFT**

STATE OF CALIFORNIA  
THE RESOURCES AGENCY  
**THE CENTRAL VALLEY FLOOD PROTECTION BOARD**

**PERMIT NO. 18579-2 BD**

**This Permit is issued to:**

California Department of Transportation  
1976 E. Dr.Martin Luther King Jr. Blvd.  
Stockton, California 95205

To replace the existing San Joaquin River Bridge with a 43-foot-wide, 412-foot-long, 5-span bridge supported by 3-foot-diameter Cast-In-Steel Shell (CISS) piles, with 4 piles per bent across the channel of the San Joaquin River. The project is located north of Los Banos Along Highway 165 (Section 26&27, T7S, R10E, MDB&M, Lower San Joaquin Levee District, San Joaquin River, Merced County).

**NOTE:** Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

**(SEAL)**

Dated: \_\_\_\_\_

\_\_\_\_\_  
Executive Officer

**GENERAL CONDITIONS:**

**ONE:** This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

**TWO:** Only work described in the subject application is authorized hereby.

**THREE:** This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

**FOUR:** The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

**FIVE:** Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

**SIX:** This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

**SEVEN:** It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

**EIGHT:** This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

**NINE:** The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

**TEN:** The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

**ELEVEN:** The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

**TWELVE:** Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

**SPECIAL CONDITIONS FOR PERMIT NO. 18579-2 BD**

**THIRTEEN:** This permit is not valid and no construction shall occur until the the Central Valley Flood Protection Board receives written confirmation from the Army Corps of Engineers pursuant to 33 CFR Section 208.10 that the Corps has no objection to the project. The letter shall be incorporated into this permit as Exhibit A and all conditions shall be incorporated into this permit as if fully set forth herein.

**FOURTEEN:** All work approved by this permit shall be in accordance with the submitted drawings and specifications except as modified by special permit conditions herein. No further work, other than that approved by this permit, shall be done in the area without prior approval of the Central Valley Flood Protection Board.

**FIFTEEN:** The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

**SIXTEEN:** The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

**SEVENTEEN:** The mitigation measures approved by the CEQA lead agency and the permittee are

found in the Final Initial Study/Mitigated Negative Declaration adopted by the CEQA lead agency. The permittee shall implement all such mitigation measures.

EIGHTEEN: The Central Valley Flood Protection Board and Department of Water Resources shall not be held liable for damages to the permitted encroachment(s) resulting from releases of water from reservoirs, flood fight, operation, maintenance, inspection, or emergency repair.

NINETEEN: No construction work of any kind shall be done during the flood season from November 1 to July 15 without prior approval of the Central Valley Flood Protection Board.

TWENTY: The permittee shall maintain the permitted encroachment(s) and the project works within the utilized area in the manner required and as requested by the authorized representative of the Department of Water Resources or any other agency responsible for maintenance.

TWENTY-ONE: The permittee shall contact the Department of Water Resources by telephone, (916) 574-1206, and submit the enclosed postcard to schedule a preconstruction conference. Failure to do so at least 10 working days prior to start of work may result in delay of the project.

TWENTY-TWO: Temporary staging, formwork, stockpiled material, equipment, and temporary buildings shall not remain in the floodway during the flood season from November 1 to July 15.

TWENTY-THREE: Prior to start of any demolition and/or construction activities within the floodway, the applicant shall provide the Central Valley Flood Protection Board with two sets of layout plans for any and all temporary, in channel cofferdam(s), gravel work pad(s), work trestle(s), scaffolding, piles, and/or other appurtenances that are to remain in the floodway during the flood season from November 1 through July 15.

TWENTY-FOUR: Debris that may accumulate on the permitted encroachment(s) and related facilities shall be cleared off and disposed of outside the floodway after each period of high water.

TWENTY-FIVE: All debris generated by this project shall be disposed of outside the floodway.

TWENTY-SIX: Cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1 to July 15.

TWENTY-SEVEN: Fill material shall be placed only within the area indicated on the approved plans.

TWENTY-EIGHT: Backfill material for excavations shall be placed in 4- to 6-inch layers and compacted to at least the density of the adjacent, firm, undisturbed material.

TWENTY-NINE: Density tests by a certified materials laboratory will be required to verify compaction of backfill within the regulated channel.

THIRTY: Except with respect to activities expressly allowed under this permit, the work area shall be restored to the condition that existed prior to start of work.

THIRTY-ONE: The bottom member of the soffit of the bridge shall be at least three (3) feet above the

designed flood plane.

THIRTY-TWO: The permittee shall provide supervision and inspection services acceptable to the Central Valley Flood Protection Board.

THIRTY-THREE: The permittee shall submit as-built drawings to the Department of Water Resources' Flood Project Inspection Section upon completion of the project.

THIRTY-FOUR: In the event that levee or bank erosion injurious to the adopted plan of flood control occurs at or adjacent to the permitted encroachment(s), the permittee shall repair the eroded area and propose measures, to be approved by the Central Valley Flood Protection Board, to prevent further erosion.

THIRTY-FIVE: The permitted encroachment(s) shall not interfere with operation and maintenance of the present or future flood control project. If the permitted encroachment(s) are determined by any agency responsible for operation or maintenance of the flood control project to interfere, the permittee shall be required, at permittee's cost and expense, to modify or remove the permitted encroachment(s) under direction of the Central Valley Flood Protection Board or Department of Water Resources. If the permittee does not comply, the Central Valley Flood Protection Board may modify or remove the encroachment(s) at the permittee's expense.

THIRTY-SIX: If the project, or any portion thereof, is to be abandoned in the future, the permittee or successor shall abandon the project under direction of the Central Valley Flood Protection Board and Department of Water Resources, at the permittee's or successor's cost and expense.

THIRTY-SEVEN: The permittee shall be responsible for securing any necessary permits incidental to habitat manipulation and restoration work completed in the flood control project, and will provide any biological surveying, monitoring, and reporting needed to satisfy those permits.

THIRTY-EIGHT: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

THIRTY-NINE: The abandoned or dismantled bridge shall be completely removed and disposed of outside the limits of the levee section and floodway.

FORTY: Piers, bents, and abutments being dismantled shall be removed to at least 1 foot below the natural ground line and at least 3 feet below the bottom of the low-water channel.

FORTY-ONE: The bridge piers and bents shall be constructed parallel to the direction of streamflow.

FORTY-TWO: Drainage from the bridge shall not be discharged into the streambank.

FORTY-THREE: Plans showing all construction facilities such as temporary staging, coffer dams, and falsework which shall remain in a floodway during November 1 to July 15, must be submitted to the board for approval prior to installation of these facilities.

FORTY-FOUR: All construction facilities such as temporary staging, coffer dams, and falsework must be designed to prevent bank erosion during normal streamflows and maintain maximum channel capacity during November 1 to July 15.



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	MER	165			

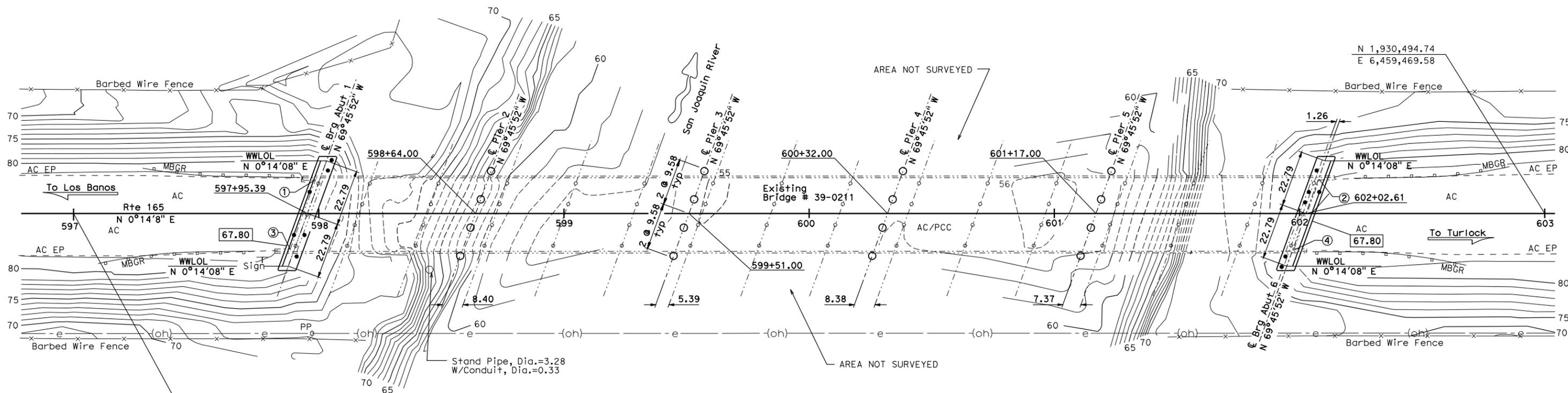
  

REGISTERED CIVIL ENGINEER	DATE
RODNEY SIMMONS	
No. C 51174	
Exp. 09-30-09	
CIVIL	
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.	
To get to the Caltrans web site, go to: <a href="http://www.dot.ca.gov">http://www.dot.ca.gov</a>	

**LEGEND**

-  Denotes bottom of footing elevation
-  Denotes existing piles and pile extensions (to be removed)
-  Denotes Class 200 Steel Pipe Pile, Alt "W"  
Not all piles are shown
-  Denotes 36"  $\phi$  CISS Piles
-  Denotes existing structure (to be removed)

**Note:**  
Existing supplemental steel bents in spans 4-12 not shown (to be removed)



**SURVEY CONTROL**

PM25.60 (Not Shown On Plan)  
Fnd 1" IP with Red Plug  
20.48 FT Rt.  $\phi$  "A1" Line Rte 165  
Sta. 596+60.50  
N 1,929,835.16  
E 6,459,487.44  
Elev. = 80.13

PM 25.75 (Not Shown On Plan)  
Fnd 1" IP With Red Plug  
25.11 FT Lt.  $\phi$  "A1" Line Rte 165  
Sta. 604+27.91  
N 1,930,622.75  
E 6,459,445.00  
Elev. = 80.90

**Bridge Location**

- ① - 13.81 Lt  $\phi$  "A1" Line Rte 165, Sta.597+98.83, Elev.=81.02  $\pm$
- ② - 13.99 Lt  $\phi$  "A1" Line Rte 165, Sta.602+07.94, Elev.=81.29  $\pm$
- ③ - 14.82 Rt  $\phi$  "A1" Line Rte 165, Sta.597+88.50, Elev.=81.07  $\pm$
- ④ - 14.97 Rt  $\phi$  "A1" Line Rte 165, Sta.601+97.38, Elev.=81.26  $\pm$

**HYDROLOGIC / HYDRAULIC DATA SUMMARY**  
DRAINAGE AREA: 7,500 SQUARE MILES

	DESIGN FLOOD	BASE FLOOD	CVFPD
FREQUENCY (YEARS)	50	100	N/A
DISCHARGE (CUBIC FEET PER SECOND)	16,800	21,655	26,000
WATER SURFACE ELEV. (FEET)	72.1	73.1	73.8

FLOOD PLAIN DATA ARE BASED UPON INFORMATION AVAILABLE WHEN THE PLANS WERE PREPARED AND ARE SHOWN TO MEET FEDERAL REQUIREMENTS. THE ACCURACY OF SAID INFORMATION IS NOT WARRANTED BY THE STATE AND INTERESTED OR AFFECTED PARTIES SHOULD MAKE THEIR OWN INVESTIGATIONS.

**PRELIMINARY INVESTIGATION SECTION**

SCALE	VERT. DATUM	NGVD29	PHOTOGRAMMETRY AS OF: X
1"=20'	HORZ. DATUM	NAD83 (1991.35)	SURVEYED BY District/T.Gillett
ALIGNMENT TIES	Dist. Traverse Sheet	DRAFTED BY T.Zolnikova	CHECKED BY J.Pallares

DESIGN	By Zihan Yan	CHECKED	Rod Simmons
DETAILS	By Susan Ng/Lily Wang	CHECKED	Rod Simmons
QUANTITIES	By Rick MacCia	CHECKED	Rod Simmons

**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

**DIVISION OF ENGINEERING SERVICES**  
STRUCTURE DESIGN  
**DESIGN BRANCH 17**

BRIDGE NO.	39-0246
POST MILE	25.61

**SAN JOAQUIN RIVER BR. (REPLACE)**  
**FOUNDATION PLAN**

STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 10/25/05)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

CU 06241  
EA 279801

FILE => a39-0246-e-fpi-alt-a.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	
05-08-08	07-24-11
07-31-11	02-07-11
04-07-09	06-10-09
06-12-09	07-24-11

SHEET 2 OF 2

USERNAME = 95020 DATE PLOTTED => 07-FEB-2011 TIME PLOTTED => 13:48