Meeting of the Central Valley Flood Protection Board
October 23, 2015

Staff Report

Stanislaus County
Santa Fe Avenue Bridge Replacement, Stanislaus County

1.0 – REQUESTED ITEM

Consider Central Valley Flood Protection Board (Board) approval to replace the existing Santa Fe Avenue Bridge with a wider, three span, cast-in-place pre-stressed concrete box girder bridge over Tuolumne River (Attachment A) by Draft Permit No. 19041 (Attachment B).

2.0 – APPLICANT

Stanislaus County

3.0 – PROJECT LOCATION

The project is located on the Santa Fe Avenue Bridge crossing the Tuolumne River east of Modesto which connects the rural communities of Empire and Hughson in Stanislaus County (Attachment A). The Burlington Northern Santa Fe Railroad is located immediately west and parallel to Santa Fe Avenue.

4.0 – PROJECT DESCRIPTION

Stanislaus County proposes to replace the Santa Fe Avenue Bridge due to seismic safety issues with a structure which can withstand seismically induced soil liquefaction and associated lateral spreading. The new wider bridge will include standard lanes, shoulders and bridge railing.

5.0 – AUTHORITY OF THE BOARD

California Water Code § 8534, 8590 – 8610.5, and 8700 – 8710

California Code of Regulations Title 23 (Title 23)

- § 6, Need for a Permit

- § 108, Existing Encroachments
- § 112, Streams Regulated and Nonpermissible Work Periods
- § 116, Borrow and Excavation Activities – Land and Channel
- § 128, Bridges

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with the project are as follows:

- The U.S. Army Corps of Engineers (USACE) Sacramento District non-fed letter was received on September 16, 2015, and indicated that the USACE District Engineer has no comments or recommendations regarding flood control because the proposed work does not affect a federally constructed project. The letter has been incorporated into the permit as Exhibit A.
- Stanislaus County endorsed the project without conditions on August 25, 2015 (Attachment C).

7.0 – PROJECT ANALYSIS

7.1 – Project Summary

The existing bridge, constructed in 1947, is an eight-span, reinforced concrete T-girder structure with concrete piers that is both structurally deficient and functionally obsolete. Previous County engineering and structural studies have demonstrated that bridge replacement is a feasible option to retrofitting the existing structure. The proposed bridge replacement is a three span, 520-foot long by 55-foot wide, cast-in-place pre-stressed concrete box girder bridge supported by a total of four (4) seven (7)-foot diameter columns (Attachment D).

7.2 – Hydraulic Summary

According to the Board's Designated Floodway (DF) Program, the design flow for Tuolumne River is 44,000 cubic feet per second (cfs).

A USGS gage station 11290000, located approximately five (5) miles downstream of the project site, has recorded continuous annual flows from 1940 to 2012. The 100-year and 200-year flows have been developed for the project site based on records from this gage. The estimated 100- and 200-year flows are 49,600 and 64,500 cfs respectively. Table 1 shows the computed freeboard for the DF design flow, as well as the 100- and 200-year discharges.

Table 1- Freeboard Computed using HEC-RAS at Design Flows

Design Level	Design Flow (cfs)	Freeboard (feet)
Designated Floodway	44,000	8.0
100-year	49,600	6.6
200-year	64,500	4.2

The bridge freeboard, with a proposed low chord elevation of 84.5 feet, is greater than three (3) feet for all flows. The HEC-RAS analysis showed all computed water surface elevation changes due to bridge replacement are negligible, with a slight decrease of 0.01 feet at the bridge and in the upstream direction (Attachment E).

Based on Board staff's review of this analysis, the proposed project is expected to result in no significant adverse hydraulic impacts to the Tuolumne River channel or floodway.

7.3 – Geotechnical Summary

The proposed bridge is supported by two (2) abutments and two (2) piers. The proposed pier foundations consist of ten (10)-foot diameter Cast-in-Drilled-Hole (CIDH) Concrete piles that will be constructed to depths greater than the estimated maximum scour depth to prevent anticipated scour. The bridge abutments are outside the influence area of the 100-year flow and not subject to significant scour.

Board staff has reviewed geotechnical information provided by Stanislaus County and has determined that the proposed project is expected to cause no adverse geotechnical impacts to the Tuolumne River channel or floodway due to the proposed pier foundations and abutments design.

All fill, excavation, and temporary structures will be completed in compliance with Draft Permit No. 19041 and all Title 23 standards.

8.0 – CEQA ANALYSIS

Board staff has prepared the following California Environmental Quality Act (CEQA) analysis:

The Board, as a responsible agency under CEQA, has reviewed Initial

Study/Mitigated Negative Declaration (IS/MND) (SCH Number: 2003042066, April, 2003), Addendum (November 2014) and Mitigation Measures for the Santa Fe Avenue Bridge Project prepared by the lead agency, Stanislaus County.

These documents including project design may be viewed or downloaded from the Board website at http://www.cvfpb.ca.gov/meetings/2015/10-23-2015.cfm under a link for this agenda item. The documents are also available for review in hard copy at both Board and County offices.

Stanislaus County determined that the project would not have a significant effect on the environment and filed a Notice of Determination on January 21, 2004 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 are included in the project proponent's IS/MND and address impacts to biological resources, hydrology, water quality, and noise. The description of the mitigation measures are further described in the adopted IS/MND.

The documents and other materials which constitute the record of the Board's proceedings in this matter are in the custody of Leslie Gallagher, Executive Officer, Central Valley Flood Protection Board, 3310 El Camino Ave., Rm. 151, Sacramento, California 95821.

9.0 – CALIFORNIA WATER CODE § 8610.5 CONSIDERATIONS

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

  The Board has considered all the evidence presented in this matter, including the application for Permit No. 19041, and all supporting hydraulic, geotechnical, and other technical documentation provided by Stanislaus County.

- The best available science that related to the scientific issues presented by the Executive Officer, legal counsel, the Department of Water Resources 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. On the issue of hydraulic impacts Stanislaus County developed and applied a HEC-RAS hydraulic model. This model is considered one of the best available scientific tools for the purpose of evaluating water surface elevation changes developed by the proposed project.

- Effects of the decision on the facilities of the State Plan of Flood Control (SPFC), and consistency of the proposed project with the Central Valley Flood Protection Plan as adopted by Board Resolution 2012-25 on June 29, 2012:

  This project is well upstream of any State Plan of Flood Control facilities, and is therefore expected to result in no adverse impacts on those facilities. The project is consistent with the adopted 2012 Central Valley Flood Protection Plan and current Title 23 standards because it is predicted to result in no adverse impacts to water surface elevations, channel velocities, or geotechnical impacts to SPFC facilities.

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

  Stanislaus County does not anticipate any future projects that would impact the bridge structure and channel based on research of plans and other projects in the area.

10.0 – STAFF RECOMMENDATION

Board staff recommends that the Board:

- adopt the CEQA findings;
- approve Encroachment Permit No. 19041 (in substantially the form provided); and,
- direct the Executive Officer to take the necessary actions to execute the permit and file a Notice of Determination pursuant to CEQA with the State Clearinghouse.

11.0 – LIST OF ATTACHMENTS

A – Project Vicinity and Location Maps

B – Draft Permit No. 19041

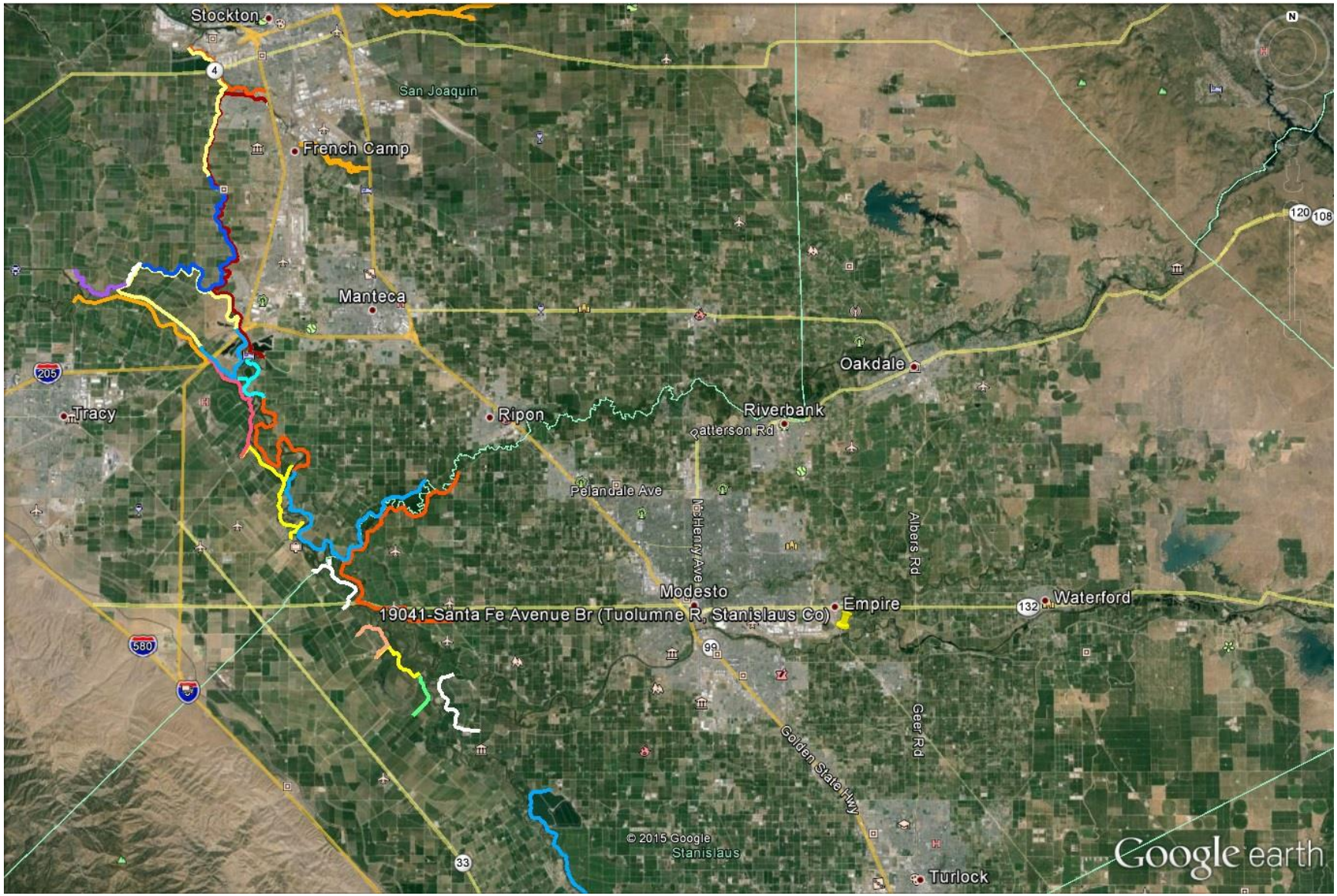
Exhibit A – USACE Non-Fed Letter

C – Stanislaus County Endorsement

D – Project Drawings

E – Hydraulic Profile Information

Prepared by:	Sungho Lee, Engineer, Water Resources, Projects Section
Document Review:	Ilene Wellman-Barbree, Senior Engineer, Projects Section
	James Herota, Senior Environmental Scientist (Specialist)
	Eric Butler, PE, Projects and Environmental Branch Chief
	Len Marino, PE, Chief Engineer
Legal Review	Nicole Rinke, Attorney General


Stockton
San Joaquin
French Camp
Manteca
Tracy
Ripon
Riverbank
Oakdale
Patterson Rd
Pelandale Ave
McHenry Ave
Albers Rd
Modesto
Empire
Waterford
19041-Santa Fe Avenue Br (Tuolumne R, Stanislaus Co)
Geer Rd
Golden State Hwy
Turlock
© 2015 Google
Stanislaus
Google earth


19041-Santa Fe Avenue Br (Tuolumne R, Stanislaus Co)
Santa Fe Ave
© 2015 Google
Google earth

DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 19041 BD

This Permit is issued to:

Stanislaus County
1716 Morgan Road
Modesto, California 95358

Stanislaus County proposes to replace the existing Santa Fe Avenue Bridge on the Tuolumne River with a three span 520-ft long by 55-foot wide, cast-in-place pre-stressed concrete box girder bridge. Construction of the piers will occur outside of the ordinary high water mark (OHWM) wetted channel. Construction will also include roadway north and south of the bridge. The bridge is designed to allow for a 200-year flood event.

The project is located on the Santa Fe Avenue Bridge crossing the Tuolumne River east of Modesto which connects the rural communities of Empire and Hughson in Stanislaus. The Burlington Northern Santa Fe Railroad is located immediately west and parallel to Santa Fe Avenue.
(Section 5/32, T3S,4S, R10E, MDB&M, Tuolumne River, Stanislaus 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. 19041 BD

THIRTEEN: All work completed under this permit, as directed by the general and special conditions herein, shall be accomplished to ensure that the work is not injurious to adopted plans of flood control, regulated streams, and designated floodways under the Central Valley Flood Protection Board (Board) jurisdiction, as defined in California Code of Regulations, Title 23. This permit only applies to the completion of work in the project description located within, or adjacent to and having bearing on the Board jurisdiction, and which directly or indirectly affects the Board's jurisdiction. This special condition shall apply to all subsequent conditions herein.

LIABILITY AND INDEMNIFICATION

FOURTEEN: 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 Board, the Department of Water Resources (DWR), the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, arising out of failure on the permittee's part to perform the obligations under this permit, the permittee shall defend and shall hold each of them harmless from each claim. This condition shall supersede condition TEN.

FIFTEEN: The permittee shall defend, indemnify, and hold the Board, DWR, and their respective officers, agents, employees, successors and assigns, safe and harmless, of and from all claims and

damages related to the Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The Board and DWR expressly reserve the right to supplement or take over their defense, in their sole discretion.

SIXTEEN: The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Board, DWR, and their respective officers, agents, employees, successors and assigns, 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 Board and DWR expressly reserve the right to supplement or take over their defense, in their sole discretion.

SEVENTEEN: The Board and DWR 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.

EIGHTEEN: If the permittee does not comply with the conditions of the permit and enforcement by the Board is required, the permittee shall be responsible for bearing all costs associated with the enforcement action, including reasonable attorney's fees. Permittee acknowledges that State law allows the imposition of fines in enforcement matters.

PERMITTING AND AGENCY CONDITIONS

NINETEEN: Board staff received a letter, dated September 16, 2015, from the U.S. Army Corps of Engineers (USACE) District Engineer stating that the District Engineer has comments or recommendations regarding flood control. This letter is attached to this permit as Exhibit A and is incorporated by reference.

TWENTY: The permittee agrees to incur all costs for compliance with local, State, and Federal permitting. If any conditions issued by other agencies conflict with any of the conditions of this permit, then the permittee shall resolve conflicts between any of the terms and conditions that agencies might impose under the laws and regulations it administers and enforces.

PRE-CONSTRUCTION

TWENTY-ONE: The permittee shall contact the Board by telephone at (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction conference. Failure to do so at least 20 working days prior to start of work may result in delay of the project.

TWENTY-TWO: Prior to commencement of work, the permittee shall create a photo record, including associated descriptions of project conditions. The photo record shall be submitted to the Board within thirty (30) calendar days of beginning the project.

TWENTY-THREE: The permittee shall provide construction supervision and inspection services acceptable to the Board.

TWENTY-FOUR: Thirty (30) calendar days prior to the start of any demolition and / or construction

activities within the floodway or within the existing levee prism, the permittee shall submit two sets of detailed plans and specifications and supporting geotechnical and / or hydraulic impact analyses to the Board's Chief Engineer, for any and all temporary, in channel, or levee prism work that may have an impact during the flood season from November 1 through July 15. The Board may request additional information as needed and will seek comment from the USACE and / or the local maintaining agency when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) working days.

CONSTRUCTION

TWENTY-FIVE: 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 work, other than that approved by this permit, shall be done in the project area without prior approval of the Board.

TWENTY-SIX: All addenda and contract change orders made to the approved plans and / or specifications by the permittee after the Board approval of this permit shall be submitted to the Board's Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include all supplemental plans, specifications, and necessary supporting geotechnical, hydrology and hydraulics, or other technical analyses. The Board shall acknowledge receipt of the addendum or change submittal in writing within ten (10) working days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Board may request additional information as needed and will seek comment from the USACE and / or local maintaining agencies when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed forty five (45) calendar days. Upon approval of submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

TWENTY-SEVEN: No construction work of any kind shall be done during the flood season from November 1st to July 15th without prior approval of the Board.

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

TWENTY-NINE: No material stockpiles, temporary buildings, or equipment shall remain in the floodway during the flood season from November 1 to July 15.

THIRTY: The existing bridge to be replaced shall be completely removed and disposed of outside the limits of the floodway.

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

THIRTY-TWO: Density tests by a certified materials laboratory will be required to verify compaction of backfill within the Tuolumne River floodway.

THIRTY-THREE: Backfill material for excavations within the bank section and within 10 feet of bridge supports within the floodway shall be placed in 4- to 6-inch layers and compacted to a minimum of 90

percent relative compaction per ASTM Method D1557-91, or 97 percent per ASTM D 698-91, and above optimum moisture content.

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

THIRTY-FIVE: The permittee shall be responsible for all damages due to settlement, consolidation, or heave from any construction-induced activities.

VEGETATION / ENVIRONMENTAL MITIGATION

THIRTY-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.

THIRTY-SEVEN: In the event that scour of channel bed injurious to the Tuolumne River floodway occurs as a result of the project, the permittee shall repair the eroded area and propose measures, to be approved by the Board, to prevent further erosion.

POST-CONSTRUCTION

THIRTY-EIGHT: The permittee shall be responsible for repair of any damages to the Tuolumne River floodway due to construction, operation, or maintenance of the proposed project.

THIRTY-NINE: Within 120 days of completion of the project, the permittee shall submit to the Board as-built drawings and a certification report, stamped and signed by a professional engineer registered in the State of California, certifying the work was performed and inspected in accordance with Board permit conditions and submitted drawings and specifications.

OPERATIONS AND MAINTENANCE

FORTY: The permittee shall be responsible for repair of any damages to the levee, channel, banks, floodway, or any other flood control facilities due to construction, operation, or maintenance of the proposed project.

FORTY-ONE: The permittee shall maintain the permitted encroachment(s) within the utilized area in the manner required and as requested by the authorized representative of the Board, DWR, or any other agency responsible for maintenance.

FORTY-TWO: If the bridge is damaged to the extent that it may impair the channel or floodway capacity, it shall be repaired or removed prior to the next flood season.

FORTY-THREE: Drainage from the bridge or highway shall not be discharged directly into Tuolumne River without proper erosion control measures in-place.

FORTY-FOUR: If the permitted structure results in any adverse hydraulic impact or scouring the permittee shall provide appropriate mitigation measures subject to review and approval of the Board.

FORTY-FIVE: All debris that may accumulate around the bridge piers and abutments within Tuolumne River shall be completely removed from the floodway following each flood season.

FORTY-SIX: The permitted encroachment(s) shall not interfere with the flood conveyance capability of the Tuolumne River floodway. If the permitted encroachment(s) are determined by any agency responsible for operation or maintenance of the Tuolumne River floodway to interfere, the permittee shall be required, at the permittee's cost and expense, to modify or remove the permitted encroachment(s) under direction of the Board. If the permittee does not comply, the Board may modify or remove the encroachment(s) at the permittee's expense.

FORTY-SEVEN: At the request of either the permittee or the Board the permittee and the Board shall conduct joint inspections of the project and the Tuolumne River floodway after significant flood events or flood seasons to assess the integrity and operation of the project, and to assess and respond to any adverse impacts on the floodway or adjacent properties.

PROJECT ABANDONMENT, CHANGE IN PLAN OF FLOOD CONTROL

FORTY-EIGHT: If the project works, or any portion thereof, is to be abandoned in the future, the permittee shall abandon the project under direction of the Board at the permittee's cost and expense.

FORTY-NINE: The permittee may be required, at the permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted project works if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with implementation of the Central Valley Flood Protection Plan or other future flood control plan or project, or if damaged by any cause. If the permittee does not comply, the Board may perform this work at the permittee's expense.

END OF CONDITIONS

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

Flood Protection and Navigation Section (19041)

SEP 16 2015

Ms. Leslie M. Gallagher, Acting Executive Officer
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821

Dear Ms. Gallagher:

We have reviewed permit application number 19041 by Stanislaus County. This project includes replacing the Santa Fe Avenue Bridge with a three span, 520 foot long by 55 foot wide, cast-in-place pre-stressed concrete box girder bridge over the Tuolumne River. The project is located on Santa Fe Avenue east of Modesto, at 37.623039°N 120.899322°W NAD83, Stanislaus County, CA.

The District Engineer has no comments or recommendations regarding flood control because the proposed work does not affect a federally constructed project.

A Section 10 and/or Section 404 permit application (SPK-2015-00497) is in process for this work.

A copy of this letter is being furnished to Mr. Don Rasmussen, Chief, Flood Project Integrity and Inspection Branch, 3310 El Camino Avenue, Suite 200, Sacramento, CA 95821.

Sincerely,

Ryan Larson, P.E.
Chief, Flood Protection and Navigation Section

State of California | DEPARTMENT OF WATER RESOURCES
CENTRAL VALLEY FLOOD PROTECTION BOARD | California Natural Resources Agency

APPLICATION FOR A CENTRAL VALLEY FLOOD PROTECTION BOARD ENCROACHMENT PERMIT

Application No. 19041
(For Office Use Only)

1. Description of proposed work being specific to include all items that will be covered under the issued permit.

The project replaces the Santa Fe Avenue Bridge with a three span 520-ft long by 55-foot wide, cast-in-place pre-stressed concrete box girder bridge. Construction of the piers will occur outside of the ordinary high water mark (OHWM) wetted channel. Construction will also include roadway north and south of the bridge. The bridge is designed to allow for a 200-year flood event.

2. Project Location: Stanislaus County, in Section 5S/32
Township: 4S/3S (N) (S), Range: 10E (E) (W), M. D. B. & M.
Latitude: 37°37'22.94"N Longitude: 120°53'57.56"W
Stream : Tuolumne River , Levee : Designated Floodway: Tuolumne River
APN:

3. Stanislaus County (Sambath Chrun, P.E.) of 1716 Morgan Road
Name of Applicant / Land *Owner* | Address

Modesto | CA | 95358 | (209) 525-4133
City | State | Zip Code | Telephone Number

chruns@stancounty.com
E-mail

4. Pamela Dalcin-Walling of Dokken Engineering
Name of Applicant's Representative | Company

Folsom | CA | 95630 | (916) 858-0642
City | State | Zip Code | Telephone Number

pdwalling@dokkenengineerin.
E-mail

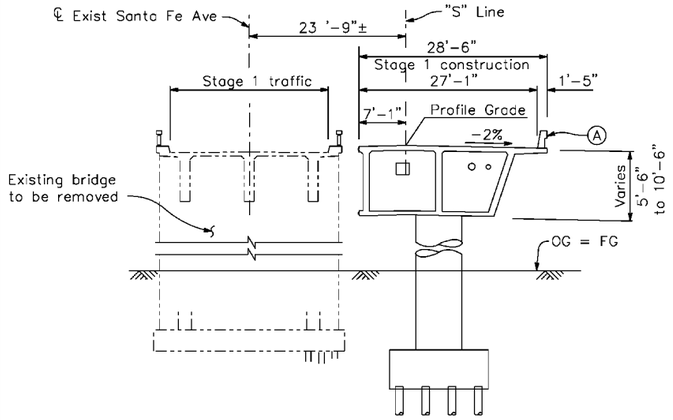
5. Endorsement of the proposed project from the Local Maintaining Agency (LMA):

We, the Trustees of Stanislaus County approve this plan, subject to the following conditions:
Name of LMA

☐ Conditions listed on back of this form ☐ Conditions Attached ☑ No Conditions

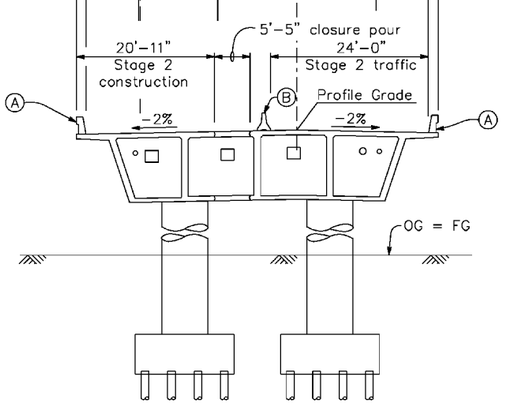
Trustee 8/25/15 Date | Trustee 8/25/15 Date

Trustee Date | Trustee Date



TYPICAL SECTION - STAGE 1

1"=10'

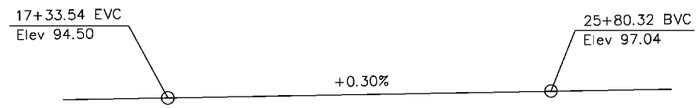


TYPICAL SECTION

1"=10'

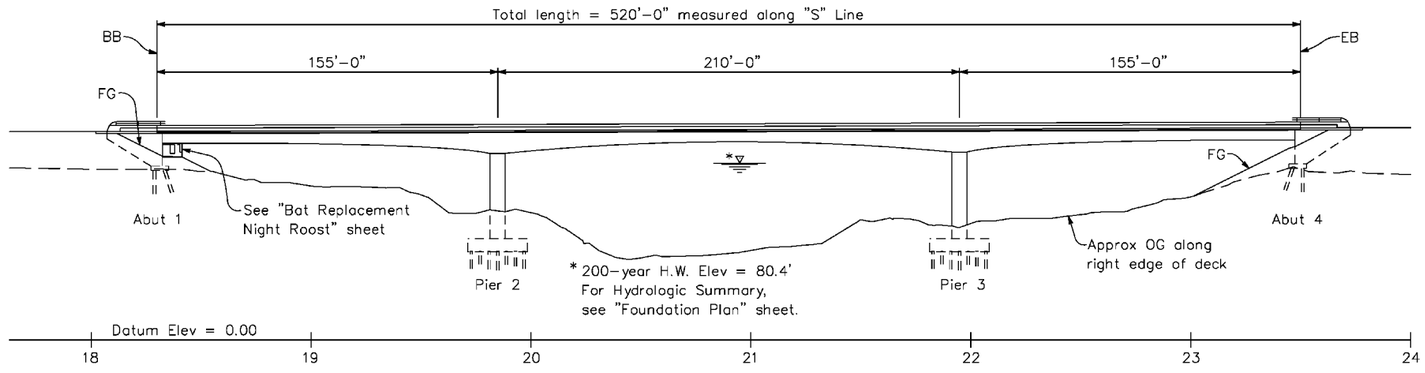
LEGEND

- Denotes existing structure
- (A) Concrete Barrier Type 732
- (B) Temporary Railing Type K
- (C) Paint "Santa Fe Avenue Bridge At Tuolumne River"
- (D) Paint "Br. No. 38C-0003" and date completed



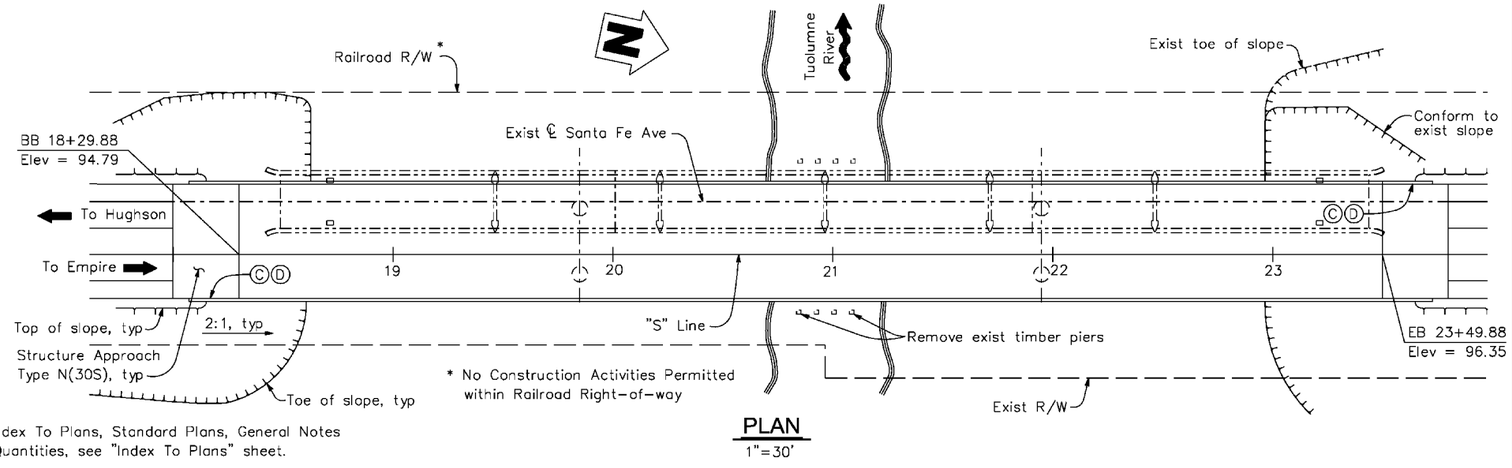
PROFLE GRADE

No Scale



ELEVATION

1"=30'



PLAN

1"=30'

Note:
For Index To Plans, Standard Plans, General Notes and Quantities, see "Index To Plans" sheet.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Sta	CR			

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

R.E. BURNS No. 79091 Exp. 3-31-16 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

DOKKEN ENGINEERING
110 BLUE RAVINE ROAD, SUITE 200
FOLSOM, CA 95630

DESIGN	BY R. BURNS	CHECKED	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE	PREPARED FOR THE STANISLAUS COUNTY	M. MAECHLER PROJECT ENGINEER	BRIDGE NO. 38C-3
DETAILS	BY K. DANG	CHECKED	LAYOUT	BY R. BURNS CHECKED			POST MILES
QUANTITIES	BY	CHECKED	SPECIFICATIONS	BY PLANS AND SPECS COMPARED			

SANTA FE AVE BRIDGE AT TUOLUMNE RIVER
GENERAL PLAN

DESIGN GENERAL PLAN SHEET (ENGLISH) (REV. 03/14/12)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: PROJECT NUMBER & PHASE: CONTRACT NO.:

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES				SHEET	OF
				1	25

FILE => \\CIANTS\Projects\1986_Santa_Fe_Ave_Tuolumne_Rv_BR\500_Final Design\517\1986GP01.dgn

USERNAME => Untitled DATE PLOTTED => 2/6/2015 TIME PLOTTED => 7:19:16 AM

FIGURE 3
Cross Section with Elevations

Santa Fe Avenue Over Tuolumne River Bridge Replacement Project
Stanislaus County, California

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	STA				

REGISTERED GEOTECHNICAL ENGINEER

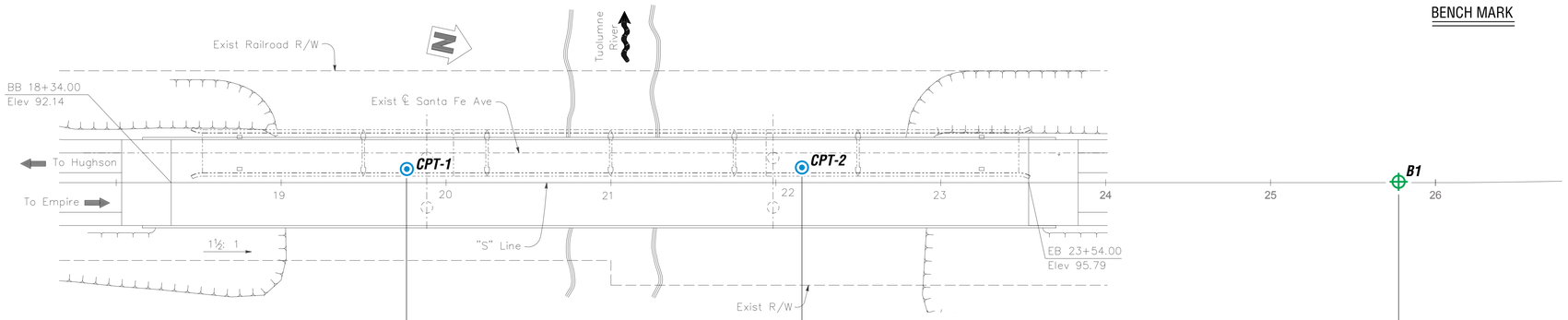
PLANS APPROVAL DATE

JEREMY JACOB ZORNE No. GE2636 REGISTERED PROFESSIONAL ENGINEER GEOTECHNICAL STATE OF CALIFORNIA

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.

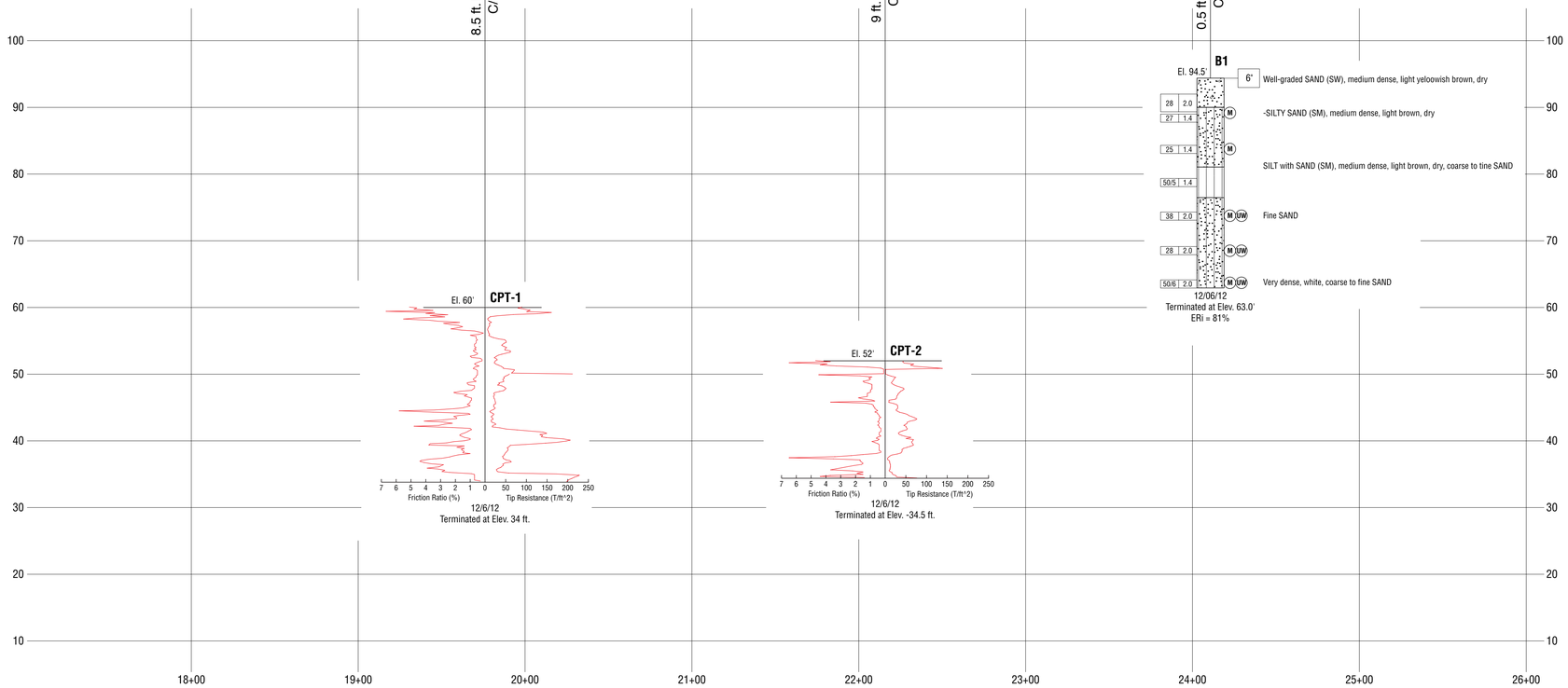
GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010).



PLAN VIEW

SCALE: 1" = 40'



PROFILE VIEW

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 10'

NOTES:

1. The consistency/apparent density descriptions are from Figures 2-9 and 2-10 of the Caltrans "Soil and Rock Logging, Classification, and Presentation Manual". These descriptors are based upon the Standard Penetration Test (ASTM D 1586) and the Modified California sampling method (ASTM D 3550). The descriptors based on the Mod Cal method have been modified by the utilization of the Burmister's (1948) input energy correction equation and NAVFAC DM 7.1.

2. Relatively undisturbed soil samples were obtained by driving a 3-inch outside diameter, with a 2.5-inch inside diameter (California Modified) split-spoon sampler for Modified California Sampling Methods and a 2-inch outside diameter split-spoon sampler for Standard Penetration Test Sampling Methods.

3. The boring logs and related information represent the opinion of the professional engineer as to the character of the material at the locations shown. Soil and groundwater conditions between adjacent test holes and at other locations may differ from those shown. Groundwater conditions may change with passage of time.

4. Test boring elevations are approximate based on topographic base sheet mapping prepared for this project.

5. Test boring locations were determined in the field based on staking and pacing from mapped site features. The locations of the explorations should be considered accurate only to the degree implied by the measuring methods used.

6. A 140-pound automatic hammer falling 30 inches was used to drive samplers.

7. Visual classification of earth materials was based on field inspection and was confirmed or revised with laboratory test results.

8. The Cone Penetration Testing (CPT) equipment used for this project had a push capacity of 25-tons. The CPT equipment measured tip resistance (qc), sleeve friction (fs), and dynamic pore pressure (U) at approximately 2-inch intervals as the cone advanced. The CPT software uses a correlation developed by Robertson and Campanella (1988) to determine the Soil Behavior Type.

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN	BRIDGE NO. 38C-3	SANTA FE AVENUE BRIDGE
FUNCTIONAL SUPERVISOR	DRAWN BY: D. HANSEN	FIELD INVESTIGATION BY: J. LEWIS	DESIGN BRANCH	POST MILES	LOG OF TEST BORINGS
NAME:	CHECKED BY: J. ZORNE				
OGS CIVIL LOG OF TEST BORINGS SHEET	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	CU EA	DISREGARD PRINTS BEARING EARLIER REVISION DATES →	REVISION DATES	SHEET OF

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	Sta				

REGISTERED GEOTECHNICAL ENGINEER

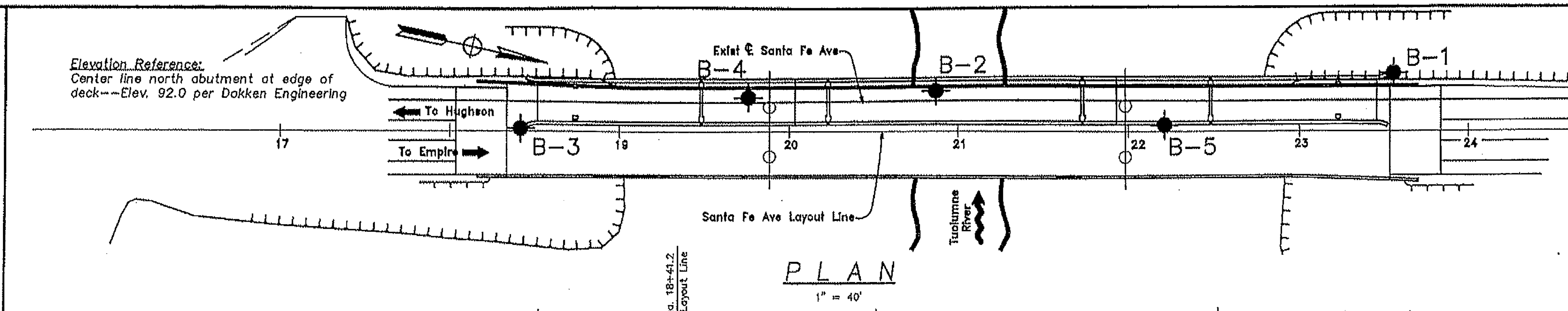
PLANS APPROVAL DATE

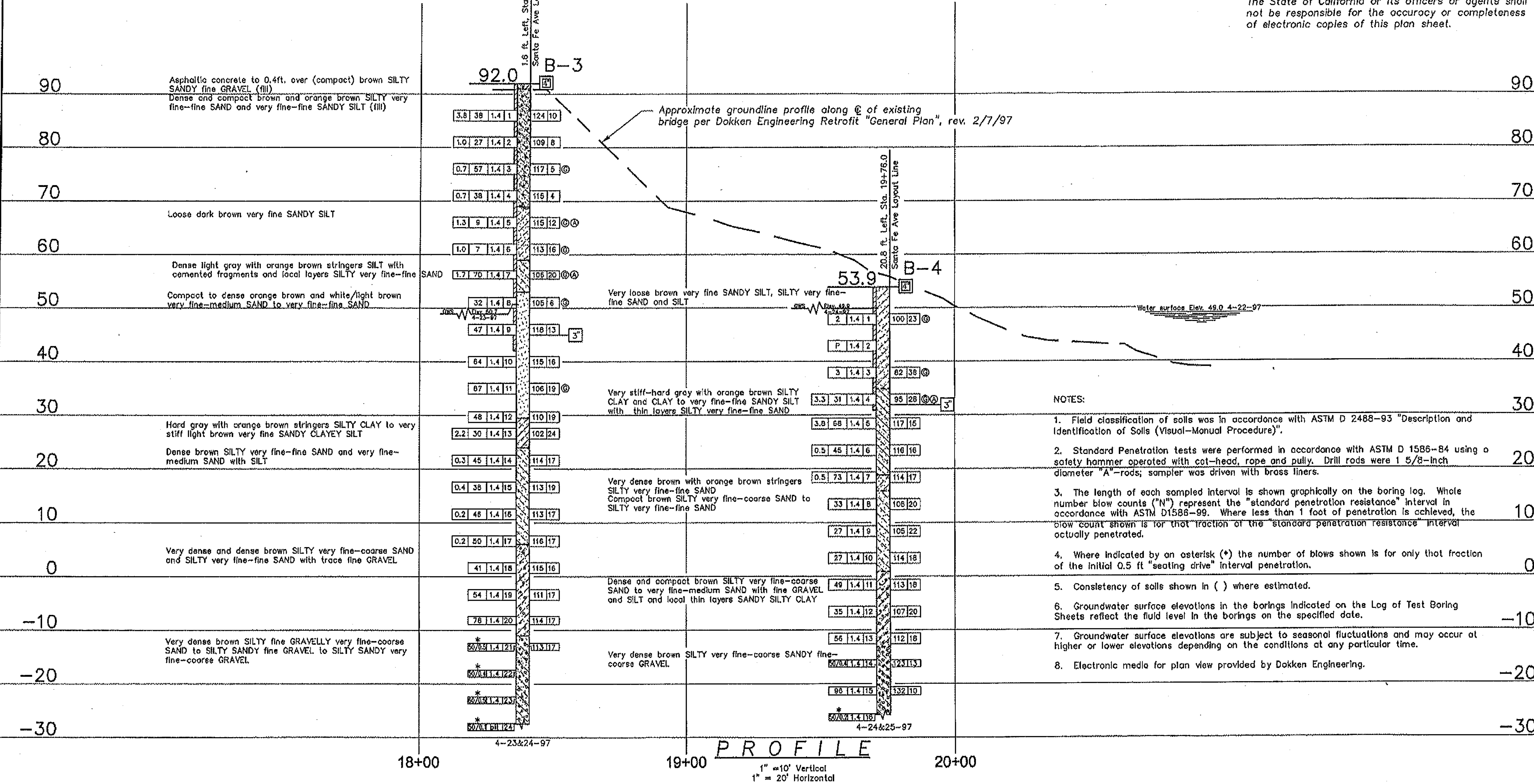
REGISTERED PROFESSIONAL ENGINEER FRANKLIN P. TABER No. 816 EXP. 3-31-04 GEOTECHNICAL STATE OF CALIFORNIA

TABER CONSULTANTS
3911 West Capitol Avenue
West Sacramento, CA 95691-2116
JOB No. 1P2/300/75 LOCATION: 37120-E8:449N:06BW

Dokken Engineering
11171 Sun Center Drive, Suite 250
Rancho Cordova, CA 95670

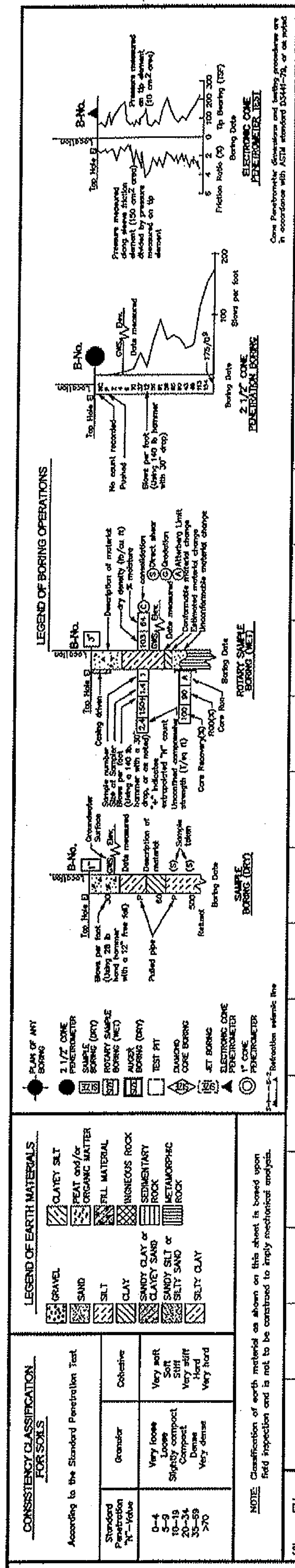
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.





NOTES:

1. Field classification of soils was in accordance with ASTM D 2488-93 "Description and Identification of Soils (Visual-Manual Procedure)".
2. Standard Penetration tests were performed in accordance with ASTM D 1586-84 using a safety hammer operated with cat-head, rope and pully. Drill rods were 1 5/8-inch diameter "A"-rods; sampler was driven with brass liners.
3. The length of each sampled interval is shown graphically on the boring log. Whole number blow counts ("N") represent the "standard penetration resistance" interval in accordance with ASTM D1586-99. Where less than 1 foot of penetration is achieved, the blow count shown is for that fraction of the "standard penetration resistance" interval actually penetrated.
4. Where indicated by an asterisk (*) the number of blows shown is for only that fraction of the initial 0.5 ft "seating drive" interval penetration.
5. Consistency of soils shown in ( ) where estimated.
6. Groundwater surface elevations in the borings indicated on the Log of Test Boring Sheets reflect the fluid level in the borings on the specified date.
7. Groundwater surface elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on the conditions at any particular time.
8. Electronic media for plan view provided by Dokken Engineering.



NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

DESIGN OVERSIGHT	DRAWN BY	M. D. Robertson	T. A. Krause FIELD INVESTIGATOR
SIGN OFF DATE	CHECKED BY	H. C. Valencia	DATE April 1997

PREPARED FOR STANISLAUS COUNTY

M. Maechler
PROJECT ENGINEER

BRIDGE NO. 38C-0003
POST MILE

SANTA FE AVE. BRIDGE AT TUOLUMNE RIVER

LOG OF TEST BORINGS No. 1

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU
EA

DISREGARD PRINTS BEARING EARLIER REVISION DATES 05/24/03
REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

06/30/03 1P230075a.dwg

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	Sto				

REGISTERED GEOTECHNICAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER FRANKLIN P. TABER No. 816 EXP. 3-31-04 GEOTECHNICAL STATE OF CALIFORNIA

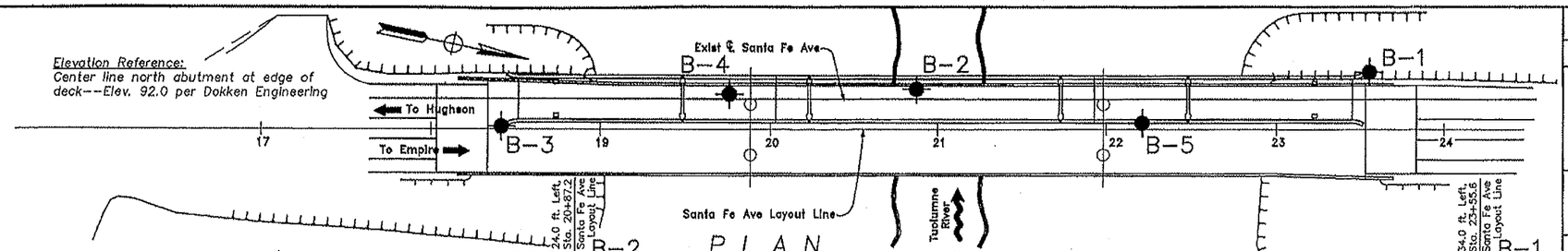
PLANS APPROVAL DATE

TABER CONSULTANTS
3911 West Capitol Avenue
West Sacramento, CA 95691-2116

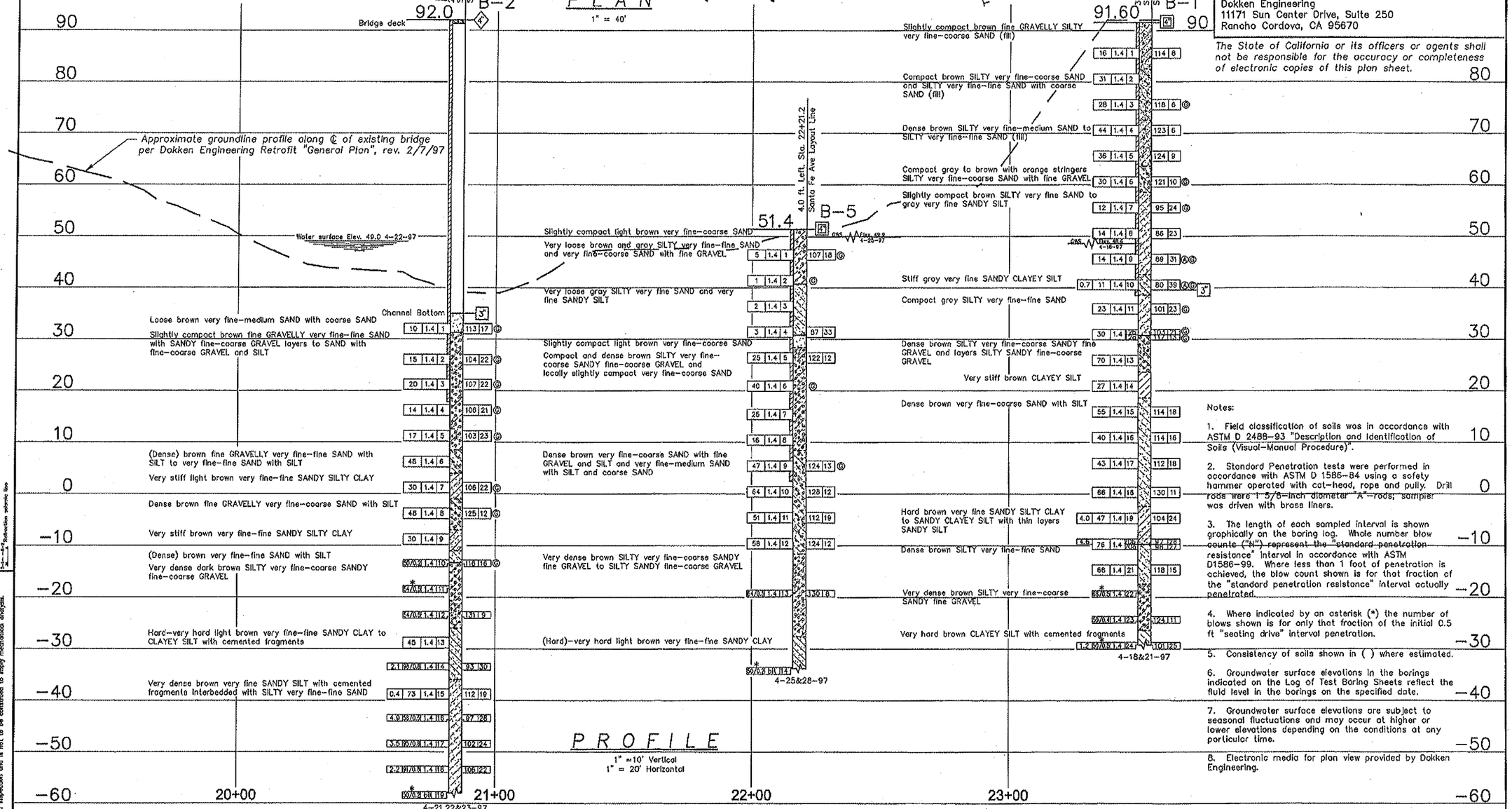
JOB No. 1P2/300/75 LOCATION: 37120-E8: 449N: 068W

Dokken Engineering
11171 Sun Center Drive, Suite 250
Rancho Cordova, CA 95670

Elevation Reference:
Center line north abutment at edge of deck--Elev. 92.0 per Dokken Engineering

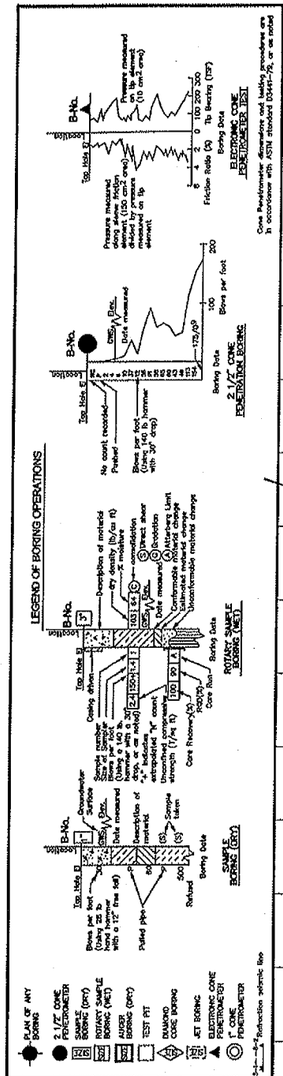


PLAN
1" = 40'



PROFILE
1" =10' Vertical
1" = 20' Horizontal

LEGEND OF BORING OPERATIONS



LEGEND OF EARTH MATERIALS

GRAVEL | SAND | SILT | CLAY | SANDY CLAY or CLAYEY SAND | SANDY SILT or SILTY SAND | SILTY CLAY | CLAYEY SILT | PEAT and/or ORGANIC MATTER | FILL MATERIAL | IGNEOUS ROCK | SEDIMENTARY ROCK | METAMORPHIC ROCK

CONSISTENCY CLASSIFICATION FOR SOILS
According to the Standard Penetration Test

	Cohesive	Granular
Standard Penetration "N"-Value	Very soft, Soft, Very stiff, Hard, Very hard	Very loose, Slightly compact, Compact, Very dense
0-4		
5-9		
10-19		
20-34		
35-69		
70+		

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

Notes:

1. Field classification of soils was in accordance with ASTM D 2488-93 "Description and Identification of Soils (Visual-Manual Procedure)".
2. Standard Penetration tests were performed in accordance with ASTM D 1586-84 using a safety hammer operated with cat-head, rope and pully. Drill rods were 1 5/8-inch diameter "A"-rods; sampler was driven with brass liners.
3. The length of each sampled interval is shown graphically on the boring log. Whole number blow counts ("N") represent the "standard penetration resistance" interval in accordance with ASTM D1586-99. Where less than 1 foot of penetration is achieved, the blow count shown is for that fraction of the "standard penetration resistance" interval actually penetrated.
4. Where indicated by an asterisk (*) the number of blows shown is for only that fraction of the initial 0.5 ft "seating drive" interval penetration.
5. Consistency of soils shown in ( ) where estimated.
6. Groundwater surface elevations in the borings indicated on the Log of Test Boring Sheets reflect the fluid level in the borings on the specified date.
7. Groundwater surface elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on the conditions at any particular time.
8. Electronic media for plan view provided by Dokken Engineering.

DESIGN OVERSIGHT	DRAWN BY	M. D. Robertson	T. A. Krause FIELD INVESTIGATOR
SIGN OFF DATE	CHECKED BY	H. C. Valencia	DATE April 1997

PREPARED FOR STANISLAUS COUNTY

M. Maechler PROJECT ENGINEER

BRIDGE NO.	SANTA FE AVE. BRIDGE AT TUOLUMNE RIVER
38C-0003	LOG OF TEST BORINGS No. 2
POST MILE	

06/30/03 1P230075b.dwg

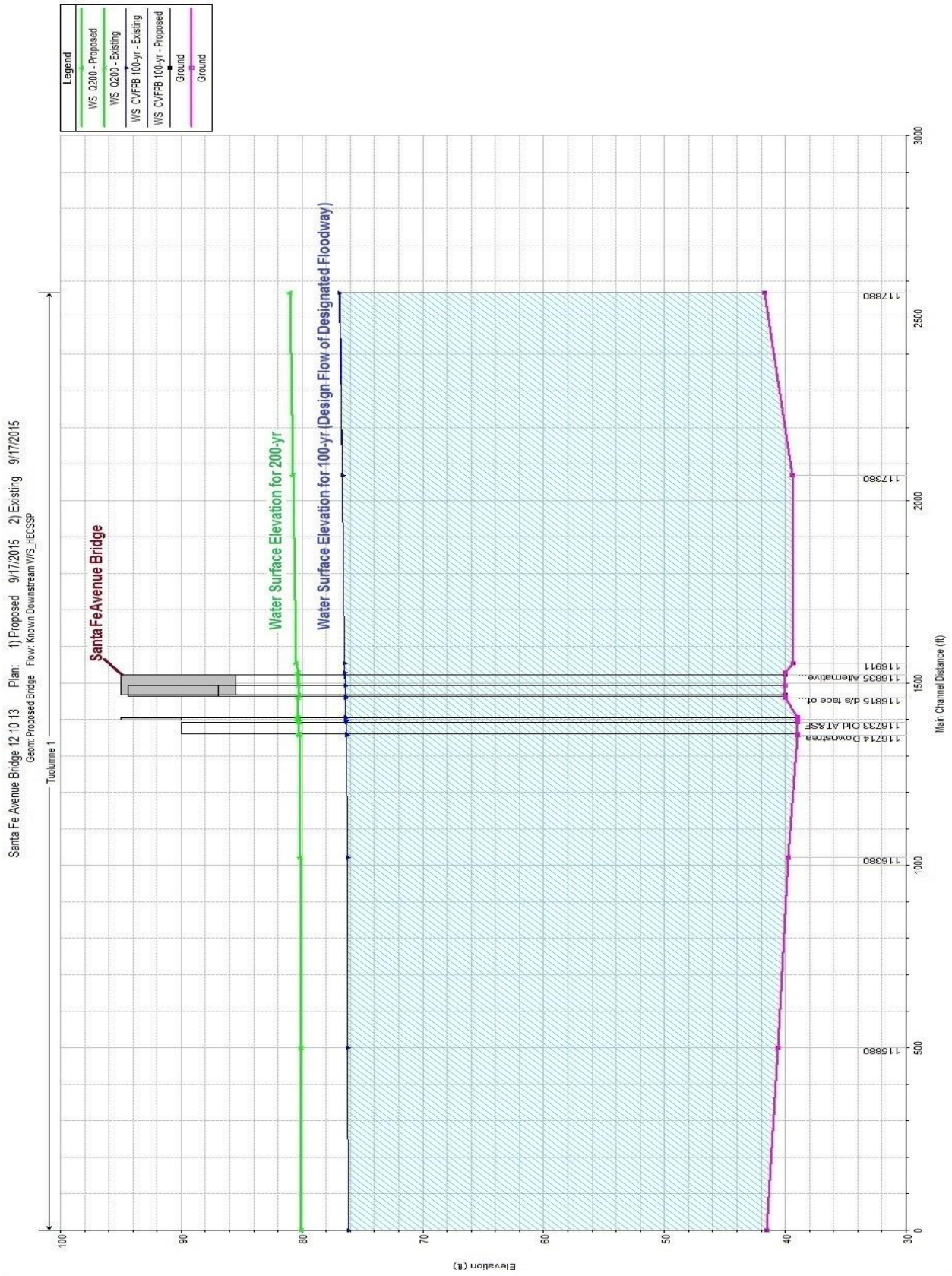
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

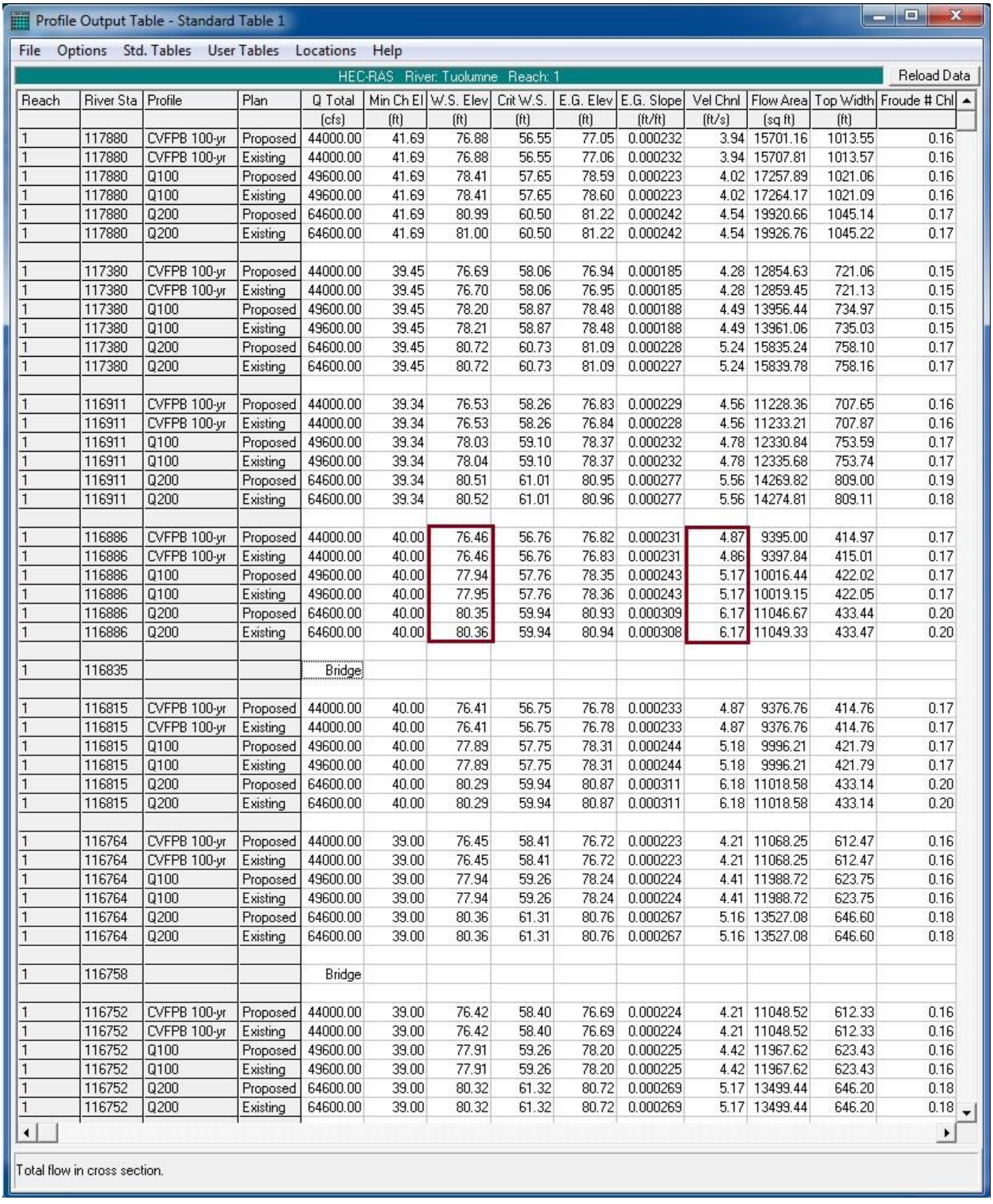
CU EA

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY) 06/24/03

SHEET OF


Legend
WS Q200 - Proposed
WS Q200 - Existing
WS CVFPB 100-yr - Existing
WS CVFPB 100-yr - Proposed
Ground
Ground
Santa Fe Avenue Bridge 12 10 13 Plan: 1) Proposed 9/17/2015 2) Existing 9/17/2015
Geom: Proposed Bridge Flow: Known Downstream WS_HECSSP
Tuolumne 1
Santa Fe Avenue Bridge
Water Surface Elevation for 200-yr
Water Surface Elevation for 100-yr (Design Flow of Designated Floodway)
Elevation (ft)
Main Channel Distance (ft)
100
90
80
70
60
50
40
30
3000
2500
2000
1500
1000
500
0
117880
117380
116911
116835 Alternative...
116815 d/s face of...
116733 Old ATSF
116714 Downstrea...
116380
115880



Profile Output Table - Standard Table 1

File Options Std. Tables User Tables Locations Help

HEC-RAS River: Tuolumne Reach: 1 Reload Data

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	117880	CVFPB 100-yr	Proposed	44000.00	41.69	76.88	56.55	77.05	0.000232	3.94	15701.16	1013.55	0.16
1	117880	CVFPB 100-yr	Existing	44000.00	41.69	76.88	56.55	77.06	0.000232	3.94	15707.81	1013.57	0.16
1	117880	Q100	Proposed	49600.00	41.69	78.41	57.65	78.59	0.000223	4.02	17257.89	1021.06	0.16
1	117880	Q100	Existing	49600.00	41.69	78.41	57.65	78.60	0.000223	4.02	17264.17	1021.09	0.16
1	117880	Q200	Proposed	64600.00	41.69	80.99	60.50	81.22	0.000242	4.54	19920.66	1045.14	0.17
1	117880	Q200	Existing	64600.00	41.69	81.00	60.50	81.22	0.000242	4.54	19926.76	1045.22	0.17
1	117380	CVFPB 100-yr	Proposed	44000.00	39.45	76.69	58.06	76.94	0.000185	4.28	12854.63	721.06	0.15
1	117380	CVFPB 100-yr	Existing	44000.00	39.45	76.70	58.06	76.95	0.000185	4.28	12859.45	721.13	0.15
1	117380	Q100	Proposed	49600.00	39.45	78.20	58.87	78.48	0.000188	4.49	13956.44	734.97	0.15
1	117380	Q100	Existing	49600.00	39.45	78.21	58.87	78.48	0.000188	4.49	13961.06	735.03	0.15
1	117380	Q200	Proposed	64600.00	39.45	80.72	60.73	81.09	0.000228	5.24	15835.24	758.10	0.17
1	117380	Q200	Existing	64600.00	39.45	80.72	60.73	81.09	0.000227	5.24	15839.78	758.16	0.17
1	116911	CVFPB 100-yr	Proposed	44000.00	39.34	76.53	58.26	76.83	0.000229	4.56	11228.36	707.65	0.16
1	116911	CVFPB 100-yr	Existing	44000.00	39.34	76.53	58.26	76.84	0.000228	4.56	11233.21	707.87	0.16
1	116911	Q100	Proposed	49600.00	39.34	78.03	59.10	78.37	0.000232	4.78	12330.84	753.59	0.17
1	116911	Q100	Existing	49600.00	39.34	78.04	59.10	78.37	0.000232	4.78	12335.68	753.74	0.17
1	116911	Q200	Proposed	64600.00	39.34	80.51	61.01	80.95	0.000277	5.56	14269.82	809.00	0.19
1	116911	Q200	Existing	64600.00	39.34	80.52	61.01	80.96	0.000277	5.56	14274.81	809.11	0.18
1	116886	CVFPB 100-yr	Proposed	44000.00	40.00	76.46	56.76	76.82	0.000231	4.87	9395.00	414.97	0.17
1	116886	CVFPB 100-yr	Existing	44000.00	40.00	76.46	56.76	76.83	0.000231	4.86	9397.84	415.01	0.17
1	116886	Q100	Proposed	49600.00	40.00	77.94	57.76	78.35	0.000243	5.17	10016.44	422.02	0.17
1	116886	Q100	Existing	49600.00	40.00	77.95	57.76	78.36	0.000243	5.17	10019.15	422.05	0.17
1	116886	Q200	Proposed	64600.00	40.00	80.35	59.94	80.93	0.000309	6.17	11046.67	433.44	0.20
1	116886	Q200	Existing	64600.00	40.00	80.36	59.94	80.94	0.000308	6.17	11049.33	433.47	0.20
1	116835			Bridge									
1	116815	CVFPB 100-yr	Proposed	44000.00	40.00	76.41	56.75	76.78	0.000233	4.87	9376.76	414.76	0.17
1	116815	CVFPB 100-yr	Existing	44000.00	40.00	76.41	56.75	76.78	0.000233	4.87	9376.76	414.76	0.17
1	116815	Q100	Proposed	49600.00	40.00	77.89	57.75	78.31	0.000244	5.18	9996.21	421.79	0.17
1	116815	Q100	Existing	49600.00	40.00	77.89	57.75	78.31	0.000244	5.18	9996.21	421.79	0.17
1	116815	Q200	Proposed	64600.00	40.00	80.29	59.94	80.87	0.000311	6.18	11018.58	433.14	0.20
1	116815	Q200	Existing	64600.00	40.00	80.29	59.94	80.87	0.000311	6.18	11018.58	433.14	0.20
1	116764	CVFPB 100-yr	Proposed	44000.00	39.00	76.45	58.41	76.72	0.000223	4.21	11068.25	612.47	0.16
1	116764	CVFPB 100-yr	Existing	44000.00	39.00	76.45	58.41	76.72	0.000223	4.21	11068.25	612.47	0.16
1	116764	Q100	Proposed	49600.00	39.00	77.94	59.26	78.24	0.000224	4.41	11988.72	623.75	0.16
1	116764	Q100	Existing	49600.00	39.00	77.94	59.26	78.24	0.000224	4.41	11988.72	623.75	0.16
1	116764	Q200	Proposed	64600.00	39.00	80.36	61.31	80.76	0.000267	5.16	13527.08	646.60	0.18
1	116764	Q200	Existing	64600.00	39.00	80.36	61.31	80.76	0.000267	5.16	13527.08	646.60	0.18
1	116758			Bridge									
1	116752	CVFPB 100-yr	Proposed	44000.00	39.00	76.42	58.40	76.69	0.000224	4.21	11048.52	612.33	0.16
1	116752	CVFPB 100-yr	Existing	44000.00	39.00	76.42	58.40	76.69	0.000224	4.21	11048.52	612.33	0.16
1	116752	Q100	Proposed	49600.00	39.00	77.91	59.26	78.20	0.000225	4.42	11967.62	623.43	0.16
1	116752	Q100	Existing	49600.00	39.00	77.91	59.26	78.20	0.000225	4.42	11967.62	623.43	0.16
1	116752	Q200	Proposed	64600.00	39.00	80.32	61.32	80.72	0.000269	5.17	13499.44	646.20	0.18
1	116752	Q200	Existing	64600.00	39.00	80.32	61.32	80.72	0.000269	5.17	13499.44	646.20	0.18

Total flow in cross section.