Meeting of the Central Valley Flood Protection Board
July 26, 2013
Staff Report
County of Stanislaus
Seismic Retrofit of Geer Road Bridge (No. 38C-0048) over Tuolumne River, Stanislaus County

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1.0 – ITEM

Consider approval of Permit No. 18832.

2.0 – APPLICANT

County of Stanislaus.

3.0 – LOCATION

The proposed bridge retrofit project is located at the Geer Road crossing of the Tuolumne River just north of the intersection of Geer Road and Hatch Road in Stanislaus County. Geer Road provides north-south access between unincorporated portions of Stanislaus County over the Tuolumne River. The project site is within a Board-adopted designated floodway (See Attachment A for project Vicinity and Location Maps).

4.0 – DESCRIPTION

The existing bridge is approximately 656 feet long by 33 feet wide and consists of seven spans of reinforced concrete box girder with asphalt concrete overlay. It is supported on reinforced concrete abutments and piers and is founded on driven piles. The bridge has been rated “structurally deficient" by the California Department of Transportation (Caltrans) under Federal Highway Administration prescribed inspection criteria. A seismic retrofit of this bridge is expected to adequately improve the structural stability of the bridge to meet current design standards. The bridge is included in the State Mandatory Retrofit Program since Caltrans has identified the bridge as being subject to collapse in a large seismic event. .

The project includes the retrofit of the hinges, piers, and abutments of the existing bridge to withstand potential seismic stresses during an earthquake. Specifically, the project will consist of seismic retrofit of Abutments 1 and 8, Piers 3 and 6, and both bridge girder hinges that are located at the thermal expansion joints in spans 2 and 6, closest to Piers 2 and 7. Abutments 1 and 8 will be upgraded, including construction of larger pedestals and partial wing-wall replacement. The upstream and downstream ends of Piers 3 and 6 will be extended, so that they exceed the edges of the bridge deck by approximately 8 feet in each direction. This will involve construction of piles on each side of the Piers 3 and 6, and connecting these piles to the existing piers with added pier wall, grade beam, and cap beam. Finally, the hinge retrofit will involve adding three seismic restrainer pipes at each hinge joint. This work will be accomplished by accessing the interior of the bridge via the soffit openings on the underside of the existing concrete box girder bridge deck. No utility relocations are anticipated. There will be no work on the bridge deck or change in the bridge right-of-way. Most of the improvements will occur to two of the bridge piers and the bridge abutments, underneath the bridge deck. However, additional work occurring outside the 100-year floodplain includes installing shear keys at the abutments, seat extenders and concrete bolsters.

Staging areas are proposed to be located near the bridge on both sides of the river as well as in the Fox Grove Park parking lot. Existing roadway will be used to access the bridge piers on both sides of the river to complete the necessary improvements (See Attachment B for Project Design Documents).

5.0 – PROJECT ANALYSIS

The following project analyses were performed by the Board staff:

5.1 – Authority of the Board

California Code of Regulations, Title 23 (CCR 23), §6 - Need for a Permit, and §128 - Bridges.

5.2 – Hydrology and Hydraulic Analysis

The floodplain at the project site is primarily undeveloped open space, with some areas of agricultural land, including cultivated areas of hay, corn and other crops. Nearby developed facilities within the floodplain include the Stanislaus Wildlife Care Center northeast of the bridge and Fox Grove Park east of the bridge. The Tuolumne River

drains the area from east of Geer Road all the way to the crest of the Sierra Nevada Mountains. Runoff is controlled by New Don Pedro Reservoir approximately 25 miles upstream of the project site.

A hydraulic analysis has been performed for both the existing bridge and the proposed retrofitted bridge using the US Army Corps of Engineers' Hydraulic Software HEC-RAS, Version 4.1.0.

The bridge is located within Flood Zone A as per the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map No. 06099C0600E. Zone A is defined by FEMA as an area with a one (1) percent chance of flooding in any given year for which no base flood elevations have been determined. The 100-year flow for the Stanislaus River in the project vicinity has been assumed to be 44,000 cubic feet per second (cfs) which is consistent with the flood volume used by the Central Valley Flood Protection Board's (Board) designated floodway discharge for the 100-year event.

The approximate floodplain width at the existing bridge is 1,700 feet. The proposed retrofit widening of piers 3 and 6 reduces that available floodplain width by 3.5 feet. This represents a total floodway width reduction of only 0.2 percent which is not expected to increase the potential risk of flooding in the surrounding areas.

Based on the hydraulic analysis the water surface elevations (WSEs) at the upstream face of the bridge for both the existing and proposed conditions are 78.40 feet and 78.41 feet respectively, or a 0.01 foot increase in the WSE as a result of the proposed improvements (See Attachment B for Project Design Documents). This increase in WSE is not anticipated to create an increased risk of potential damage to the surrounding areas or create flooding that would result in loss of life or property.

The Title 23 requirement for minimum soffit clearance does not apply for this project since it is a retrofit project, and not construction of a new bridge. The HEC-RAS model results indicate that the minimum soffit clearance at the upstream face of the bridge (River Station 1635) is 4.88 feet above the 100-year WSE.

Based on review of the submitted hydrology and hydraulic analysis, Board staff has concluded that the proposed project is hydraulically compliant with CCR 23, and would result in no significant adverse hydraulic impacts to the Tuolumne River Designated Floodway or to public safety.

5.3 – Geotechnical and Seismic Analyses

The Geer Road Bridge is located in an area of relatively low seismicity. Currently, twenty eight (28) active or potentially active faults have been identified as seismic sources within an approximately 63 mile (100 km) radius of the project site. Of these faults, the controlling fault is the Great Valley Fault 7. Both deterministic and probabilistic seismic hazard analyses were performed for this project in order to develop seismic design parameters and identify potential seismic hazards such as liquefaction.

In the deterministic analysis, the two potentially controlling faults nearest to the project site are the Great Valley Fault 7, (Caltrans Fault I.D. No. 25), and the San Andreas Fault Zone (SAFZ), Santa Cruz Mountains Section, (Caltrans Fault I.D. No. 310). The Great Valley Fault 7 has a designated Maximum Moment Magnitude (Mw) of 6.7, and the San Andreas Fault Zone has a designated Mw of 6.7.

A probabilistic analysis was performed concurrently with the deterministic analysis to develop a probabilistic response spectrum based on data from the 2008 USGS National Seismic Hazard Map for the 5% in 50 years probability of exceedence (975 year return period). Based on the analysis, the probabilistic "Design Response Spectrum" has an estimated horizontal Peak Ground Acceleration (PGA) of 0.24g. The Design Response Spectrum, also referred to as the Acceleration Response Spectrum Curve (ARS Curve), is generally designed using the upper envelope spectral accelerations. In this case, the spectral accelerations from the probabilistic data govern.

The project site does not lie within or adjacent to an Alquist-Priolo Earthquake Fault Zone (Hart and Bryant, 1997). Active faulting has not been mapped as occurring across or adjacent to the project site. Quaternary age (active or potentially active) faults have not been mapped as crossing or occurring adjacent to the proposed project site. Therefore, surface rupture due to fault movement within the project site is considered low.

The liquefaction evaluation was performed using the program Liquefy Pro by CivilTech Software. Based on the evaluation, the site is highly susceptible to liquefaction, up to an estimated depth of approximately 25 feet below the ground surface. The highest liquefiable layers are concentrated in the areas of borings B-1 (Pier 7, Station 91+00±) and B-6 (Pier 2, Station 86+00±). The depth/thickness of liquefiable soil decreases significantly towards the center of the river flood plain, near location boring B-4 (Pier 5, Station 89+00±). Additionally, based upon the seismic settlement analyses, an upper bound seismic settlement is predicted to occur up to ±7 inches in the regions of Stations 86+00± and 91+00±.

No recent scour studies have been conducted for the proposed seismic retrofit of the Geer Road Bridge project. Based on a Caltrans bridge maintenance report dated January 3, 1996 (referenced in the application's geotechnical report) Caltrans reported an observed scour of 3 to 6± feet) around Pier 5, (elevation was not indicated). Based on the geotechnical report, it appears that this scour is mitigated during normal operations and maintenance activities for the bridge.

Although the corrosion evaluation data was not available, it appears that the corrosion protection has been sufficiently addressed in the pier design.

As mentioned in Section 4.0, the project will involve the retrofit of piers 3 and 6 which will be extended so that they exceed the outer edges of the bridge deck by approximately 8 feet in each direction. This will involve the construction of piles on each side of the existing piers and connecting these piles to the existing piers with an added pier wall, grade beam, and cap beam. The new piles to be installed (4 total) are Cast-in-Steel-Shell (CISS) large diameter single piles, 5 feet in diameter. The CISS piles will be installed using an oscillator to minimize noise and vibration. Once installed the steel shell will be filled with reinforced concrete and connected with the pier wall, grade beam and cap beam.

Based on the review of the submitted geotechnical and seismic) analyses, Board staff has concluded that the proposed project is geotechnically compliant with CCR 23, and would result in no significant adverse geotechnical impacts to the Tuolumne River Designated Floodway or to public safety.

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with this project from all pertinent agencies are as follows:

- The U.S. Army Corps of Engineers Non-Fed comment letter has been received for this application. The Non-Fed comment letter has been incorporated into the permit by reference as Exhibit A.

- Since Stanislaus County is both the Applicant and local maintaining agency for this project, no endorsement is needed.

7.0 – CEQA ANALYSIS

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

The Board determined that the project is categorically exempt from CEQA under a Class 2 Categorical Exemption (CEQA Guidelines Section 15302) covering replacement or reconstruction of existing structures.

8.0 – SECTION 8610.5 CONSIDERATIONS

- 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.

- The best available science related to the scientific issues presented by the Executive Officer, legal counsel, the Department or other parties that raise credible scientific issues.

  In making its findings, the Board has used the best available science relating to the issues presented by all parties and the design is in compliance with these standards.

- Effects of the decision on facilities of the State Plan of Flood Control, 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 has negligible adverse effects on facilities of the State Plan of Flood Control and is consistent with the Central Valley Flood Protection Plan.

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

  There are no other foreseeable projected future events that would impact this project.

9.0 – LAND and RIGHT-OF-WAY CONCERNS

Since the project is a seismic retrofit, with no significant change in the overall project footprint, there are no land or right-of-way issues.

10.0 – STAFF RECOMMENDATION

Staff recommends that the Board:

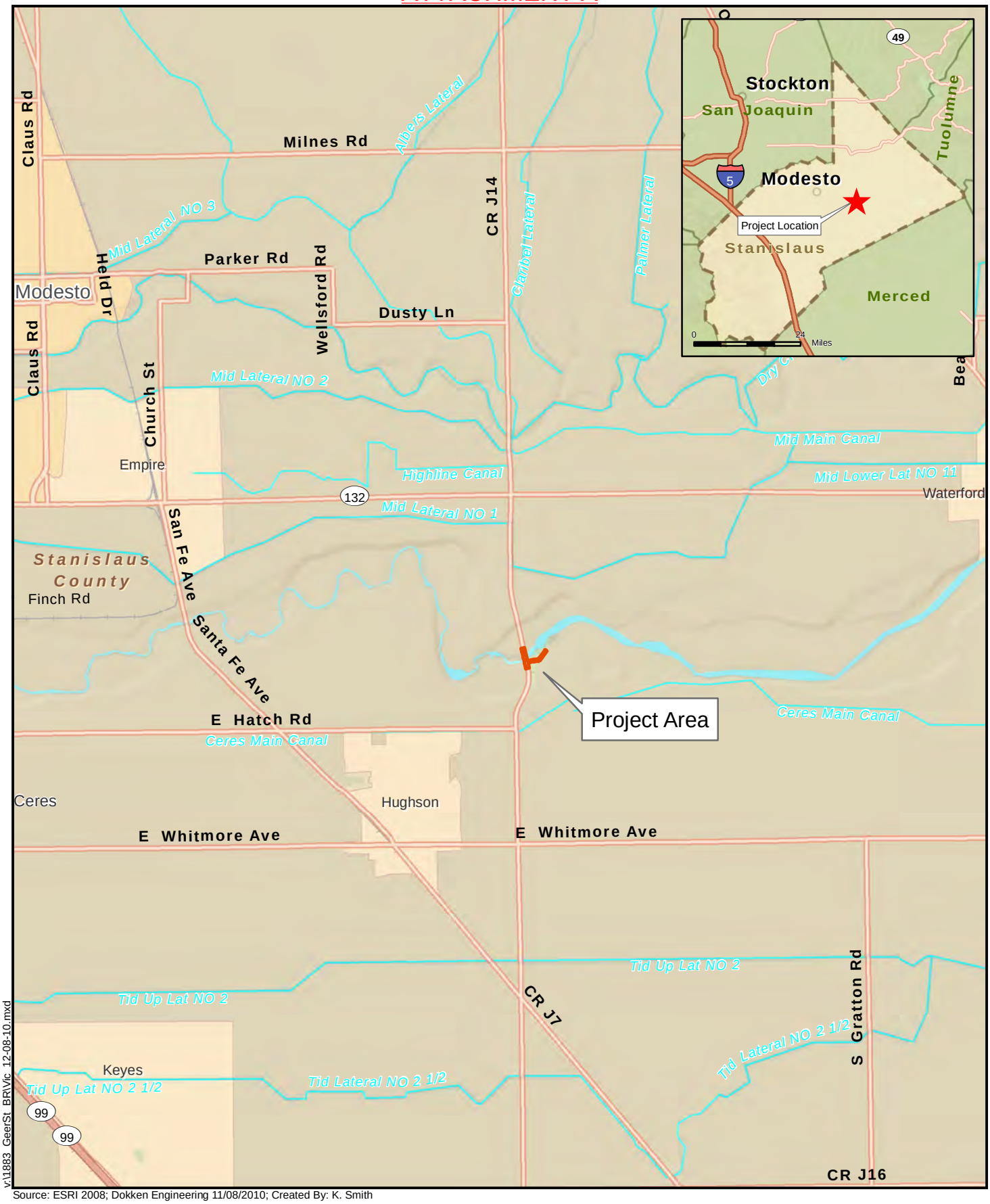
- find the project exempt from CEQA,
- approve the permit in substantially the form provided, and
- direct the Executive Officer to take the necessary actions to execute the permit, and file a Notice of Exemption with the State Clearinghouse.

11.0 – LIST OF ATTACHMENTS

A. Vicinity and Location Maps
B. Project Design Documents
C. Draft Permit No. 18832
   Exhibit A – USACE Non-Fed Comment Letter (dated April 18, 2013)

Technical Review:	Deb Biswas, PhD, PE, Engineer
Environmental Review:	Andrea Mauro, Environmental Scientist
Document Review:	Eric R. Butler, PE – Projects and Environmental Branch Chief
	Len Marino, PE – Chief Engineer

ATTACHMENT A



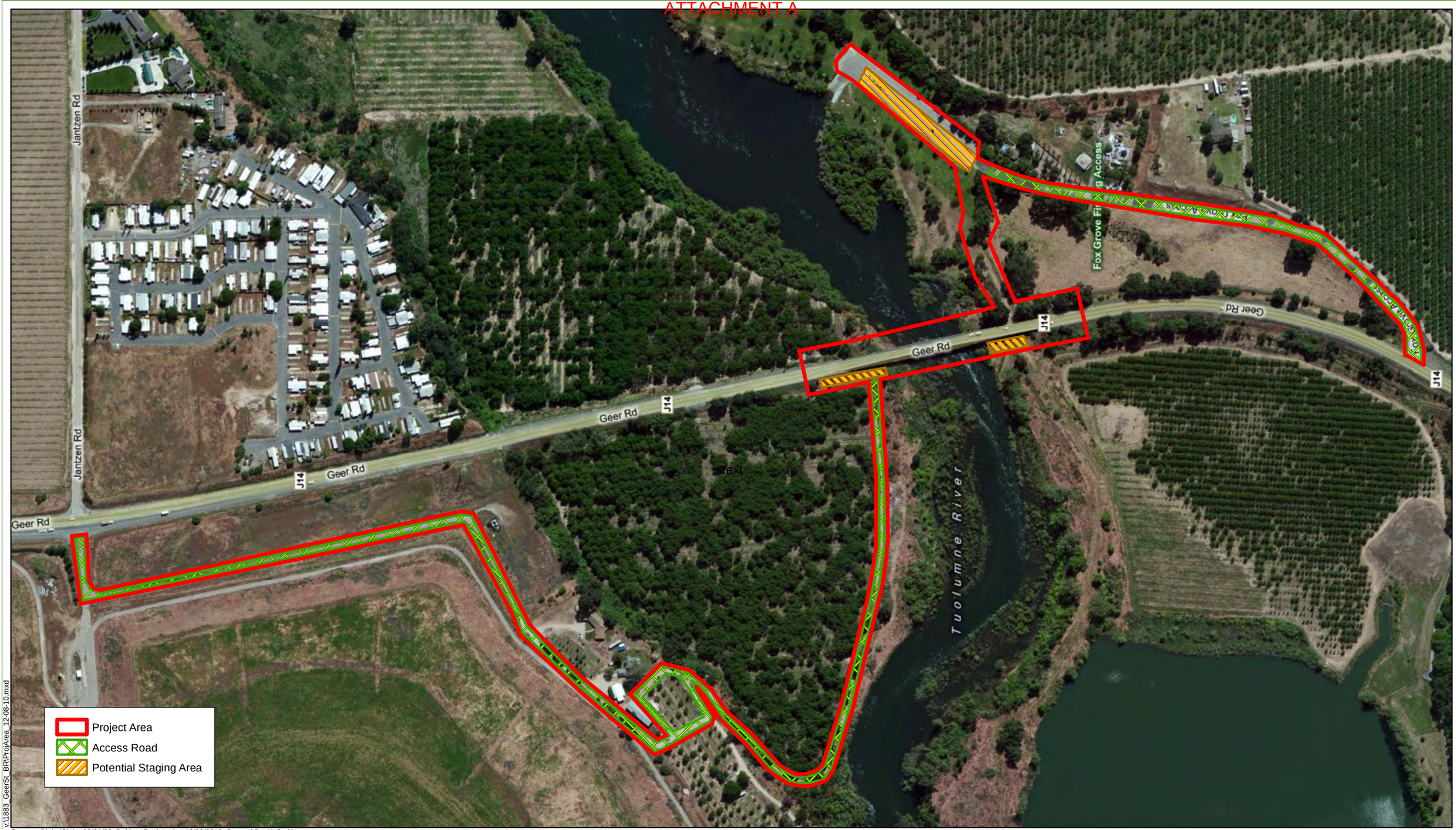
v:\1883 GeerSt BRLVic 12-08-10.mxd

Source: ESRI 2008; Dokken Engineering 11/08/2010; Created By: K. Smith

0 2 Miles

FIGURE 1
PROJECT VICINITY
10-STA-Modesto
Federal Project No. BRLSZ - 5938(154)
Geer Road Bridge Seismic Retrofit
Stanislaus County, California

ATTACHMENT A



v:\1883_GeerSt_BR\Proj\Area_12-08-10.mxd

Source: DigitalGlobe 02/01/08; Dokken Engineering 12/08/2010; Created By: K. Smith

FIGURE 2
PROJECT AREA

10-STA-Modesto
Federal Project No. BRLSZ - 5938(154)
Geer Road Bridge Seismic Retrofit
Stanislaus County, California

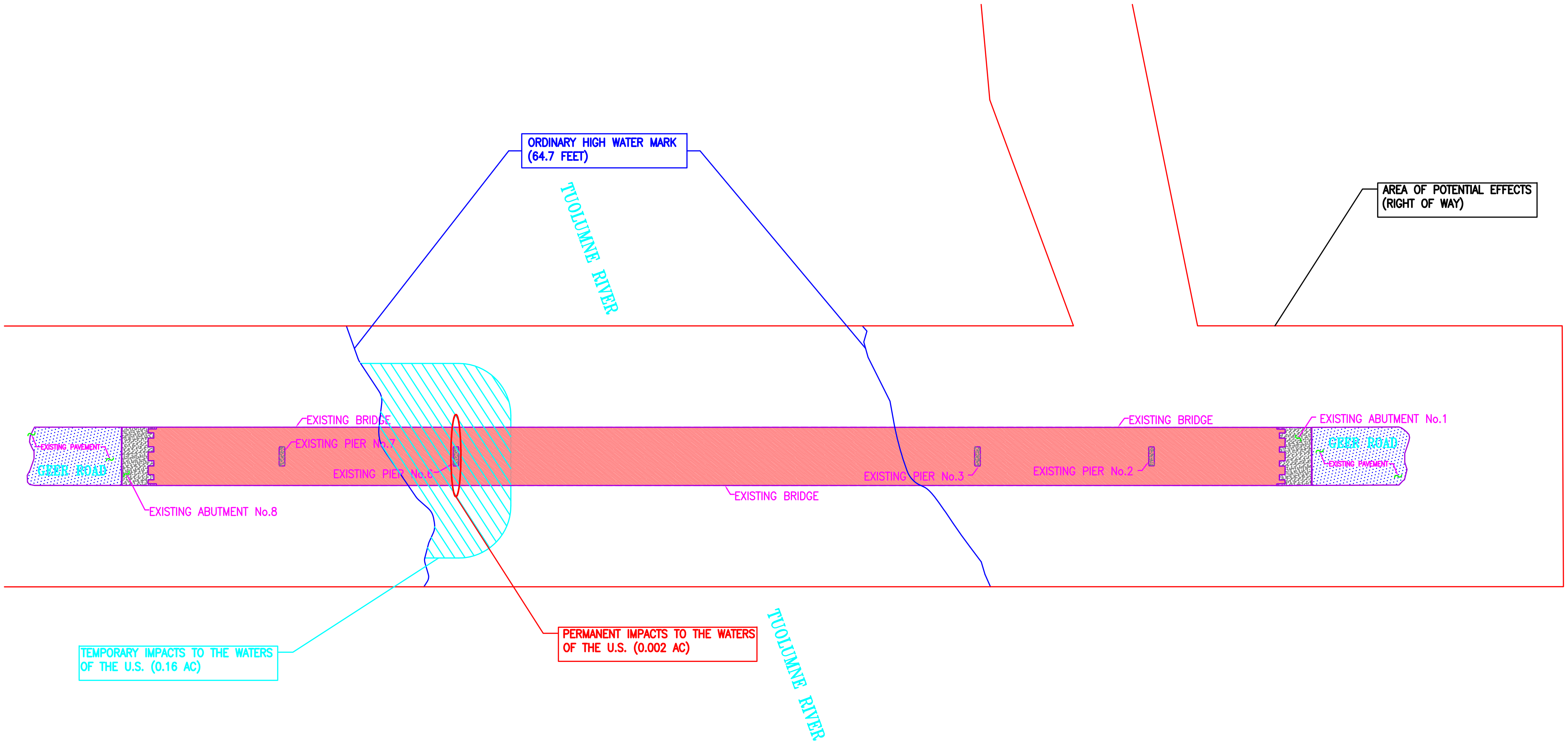
TOPOGRAPHIC SURVEY FOR

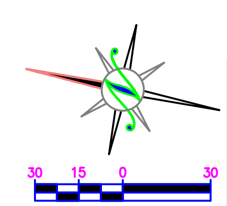
GEER ROAD OVER TUOLUMNE RIVER BRIDGE PROJECT

FEDERAL AID No. BRLSZ - 5938 (154)

STANISLAUS COUNTY, CALIFORNIA

ATTACHMENT B





ABBREVIATIONS

@	AT
AB	ABUTMENT
BB	BRIDGE BOTTOM
BDB	BRIDGE DECK BOTTOM
EP	EDGE OF PAVEMENT
GB	GRADE BREAK
GS	GROUND SHOT
H2O	WATER LINE
TC	TOP OF CONCRETE
TCB	TOP OF CONCRETE BRIDGE
TCP	TOP OF CONCRETE PAD

BENCHMARKS

NGS MONUMENT "U 1414" (PID HS4500) ELEVATION 91.20 FEET (NAVD88) AS SHOWN ON NGS DATASHEETS RETRIEVED 3/8/2011

NGS MONUMENT "G 717" (PID HS2148) ELEVATION 132.40 FEET (NAVD88) AS SHOWN ON NGS DATASHEETS RETRIEVED 3/8/2011

BASIS OF BEARINGS

COORDINATES, BEARINGS AND DISTANCES ARE BASED ON ZONE 3 OF THE CALIFORNIA COORDINATE SYSTEM NAD83, EPOCH 2007.00. A LINE BETWEEN NGS MONUMENT "U 1414" (PID HS4500) AND NGS MONUMENT "HPGN D CA 10 GK" (PID AA4251) BEARS NORTH 76°27'11" EAST AS CALCULATED FROM COORDINATES SHOWN ON NGS DATASHEETS RETRIEVED 3/8/2011. ALL DISTANCES SHOWN ARE GRID DISTANCES. TO CONVERT GRID DISTANCES TO GROUND DISTANCES DIVIDE GRID DISTANCE BY 0.9999309. (AVERAGE OF COMBINED SCALE FACTORS)

NO.	DESCRIPTIONS	DATE	APPROVED

REVISIONS

WATERS OF THE US

GEER ROAD OVER TUOLUMNE RIVER BRIDGE PROJECT

STANISLAUS COUNTY, CALIFORNIA

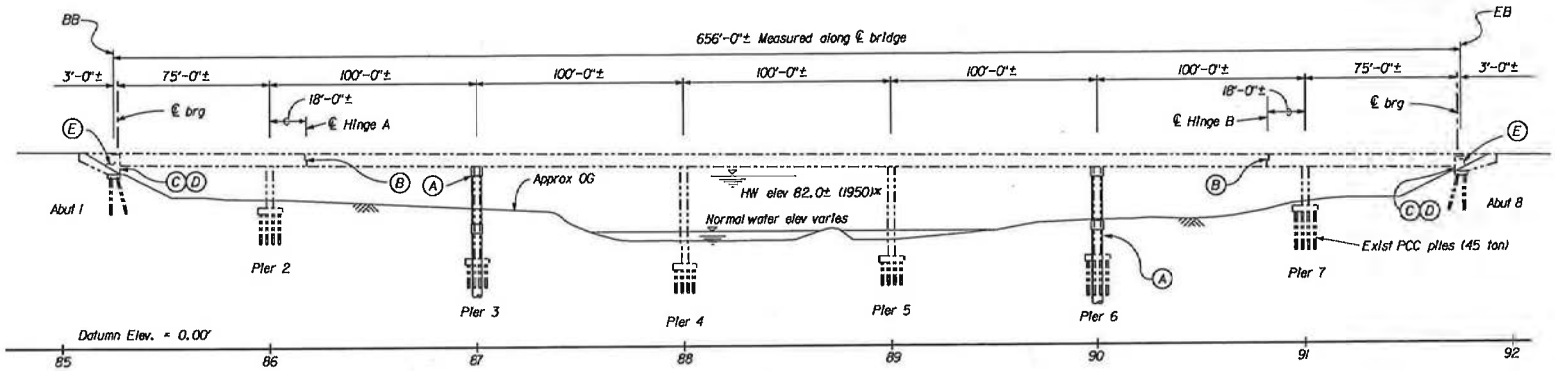
JOB #:	1883_G
DATE:	03/24/2011
SCALE:	AS SHOWN
DRAWN:	JPE
DESIGN:	N/A
CHK'D:	KH

SHEET NUMBER

01

OF 01

ATTACHMENT B



*From As-Built Plans Dated Sept 14, 1959

ELEVATION
1"=30'

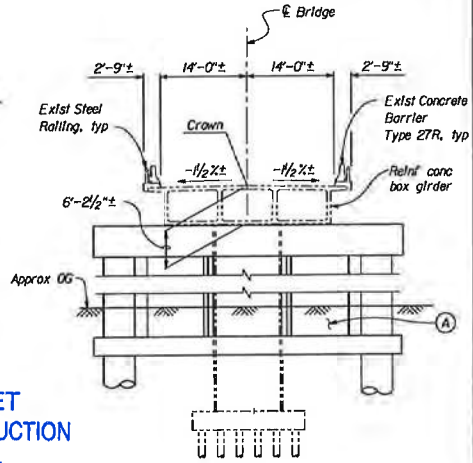
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	Sta				

REGISTERED CIVIL ENGINEER

J. MANISCALCO No. 40911 Exp. 3-31-99 CIVIL

PLANS APPROVAL DATE

Dokken Engineering
3054 Gold Canal Drive
Rancho Cordova, CA 95670



TYPICAL SECTION
1"=10'

INDEX TO PLANS

Sheet No.	Title
1	General Plan
2	Foundation Plan
3	Abutment Retrofit Layout
4	Abutment Retrofit Details
5	Piers 3 & 6 Retrofit Details No. 1
6	Piers 3 & 6 Retrofit Details No. 2
7	Piers 3 & 6 Retrofit Details No. 3
8	Hinge Retrofit Details No. 1
9	Hinge Retrofit Details No. 2
10	Pile Details
11	Structure Excavation and Backfill
12	Soffit Opening Details
13	Log of Test Borings

STANDARD PLANS DATED JULY, 1992

Sheet No.	Title
A10A	Abbreviations
A10B	Symbols
B0-13	Bridge Details

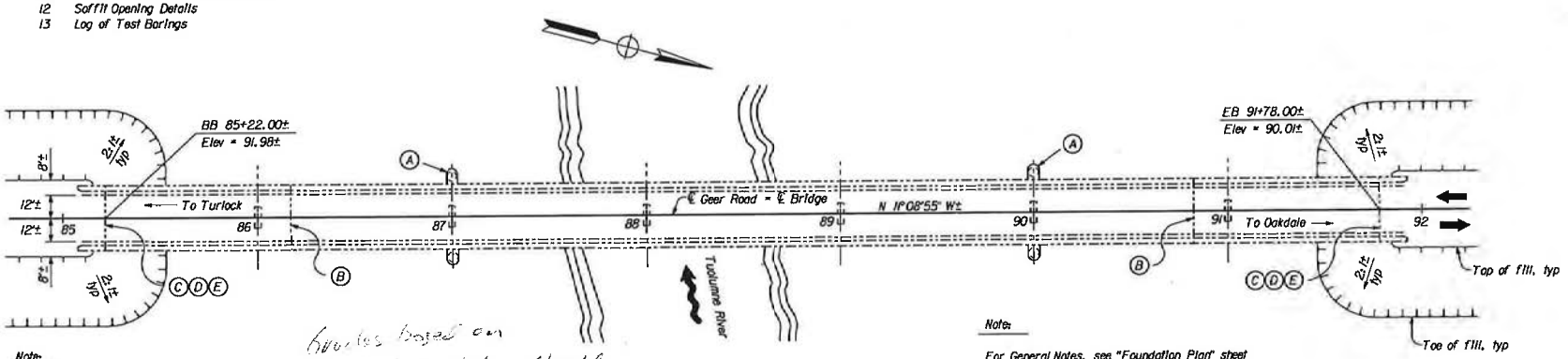
Standard plan sheet no.
Detail no.

PILE DATA - CAST-IN-STEEL-SHELL CONCRETE PILES

Location	Type	Design Loading (Service Load)	Nominal Resistance		Design Tip Elevation	Specified Tip Elevation
			Compression	Tension		
Pier 3	PP60x1.0	175 tons	630 kips	50 kips	0.0 (1), 25 (2), 00 (3)	0.0
Pier 6	PP60x1.0	175 tons	600 kips	30 kips	0.0 (1), 25 (2), 00 (3)	0.0

Pile tip elevation is controlled by the following demands:
(1) Compression, (2) Tension, (3) Lateral Loads

REVIEW SET
NOT FOR CONSTRUCTION
APR 20 2011



Note:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

Bridges based on NAVD '29 datum should be revised to NAVD '88 datum (1.4')

PLAN
1"=30'

Note:
For General Notes, see "Foundation Plan" sheet

RETROFIT LEGEND

- (A) Pier retrofit
- (B) Restrainer pipe
- (C) Shear key
- (D) Concrete pedestals
- (E) Abutment blocking
- Denotes new construction
- Denotes existing structure
- Denotes direction of traffic
- Denotes direction of flow

Carl Huang, DESIGN OVERSIGHT	DESIGN	J. Shen/H. Fang	S.Chai	LOAD FACTOR DESIGN			
	DETAILS	W. Simonsma	S.Chai	LAYOUT	J.Shen	S.Chai	
SIGNOFF DATE	QUANTITIES	H.Fang	C.Shenoy	SPECIFICATIONS	T.Jensen	PLANS AND SPECS COMPARED	J.Maniscalco

PREPARED FOR STANISLAUS COUNTY

John Maniscalco, PROJECT ENGINEER

CU 10-152
EA 10-121709
Contract No. 59121

BRIDGE NO. 38C-0048
POST MILE

EARTHQUAKE RETROFIT
GEER ROAD BRIDGE AT TUOLUMNE RIVER
GENERAL PLAN

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

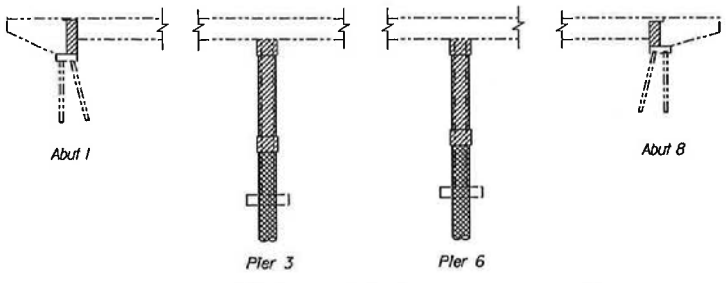
DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)
5-29-97 | 6-30-97 | 5-1-98 | 8-14-98

SHEET 1 OF 13

976EGP02.DGN REV. 17 CH 8-12-98

ATTACHMENT B



CONCRETE STRENGTH AND TYPE LIMITS

No Scale

GENERAL NOTES
LOAD FACTOR DESIGN

Design: Bridge design specifications (1983 AASHTO with Interims and Revisions by CALTRANS)

Seismic Loading: Peak Rock Acceleration = 0.2g
Soil Profile Type D
ATC-32 Fig R3-7 ARS Curve

Reinforced concrete:
Existing: fy = 44,000 psi, f'c = 5,000 psi
New construction: fy = 60,000 psi, f'c = 3,250 psi
CISS Conc Pile: f'c = 3,500 psi

Structural steel: A36 fy = 36,000 psi
New construction:
Steel pipe: A53 fy = 35,000 psi
CISS Conc Pile (Steel Shell A252) fy = 45,000 psi

CORED AND DRILLED HOLES

Location of cored and drilled holes shown in the plans are approximate. Prior to placing holes in concrete the contractor shall locate all reinf steel and adjust the location of the holes to clear all reinf bars (except as noted). Final hole locations are subjected to approval of the engineer.

DATUM

Datum and elevations shown are based on As-Built drawings and field review.

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

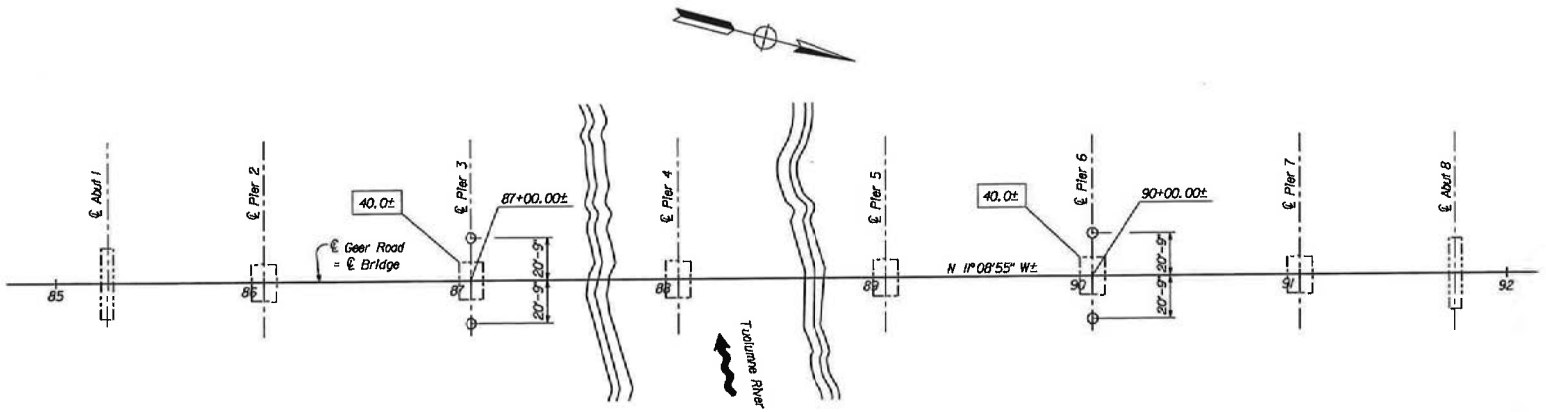
REGISTERED CIVIL ENGINEER

J. MANISCALCO No. 40911 Exp. 3-31-99 CIVIL

PLANS APPROVAL DATE

Dokken Engineering
3054 Gold Canal Drive
Rancho Cordova, CA 95670

REVIEW SET
NOT FOR CONSTRUCTION
APR 20 2011



PLAN
1"=30'

RETROFIT LEGEND

- ○ Denotes location of CISS Concrete Pile
- ——— Denotes new construction
- - - - - - - Denotes existing structure
- XX.X Denotes bottom of exist footing elev

Note:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

GEOTECHNICAL PROFESSIONAL APPROVAL DATE

Carl Huang
DESIGN OVERSIGHT
SIGNOFF DATE

DESIGN	BY J.Shen/H.Fang	CHECKED S.Chai	
DETAILS	BY W.Simonsma	CHECKED S.Chai	
QUANTITIES	BY H.Fang	CHECKED C.Shenoy	

PREPARED FOR
STANISLAUS COUNTY

John Maniscalco
PROJECT ENGINEER

CU 10-152
EA 10-127109

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

976EFP01.DGN REV.2 CH 8-12-98

BRIDGE NO.	EARTHQUAKE RETROFIT
38C-0048	GEER ROAD BRIDGE AT TUOLUMNE RIVER
POST MILE	FOUNDATION PLAN

DISREGARD PRINTS BEARING EARLIER REVISION DATES → REVISION DATES (PRELIMINARY STAGE ONLY): 5-29-98 | 6-30-98 | 5-1-98 | 8-14-98

SHEET 2 OF 13

ATTACHMENT B

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

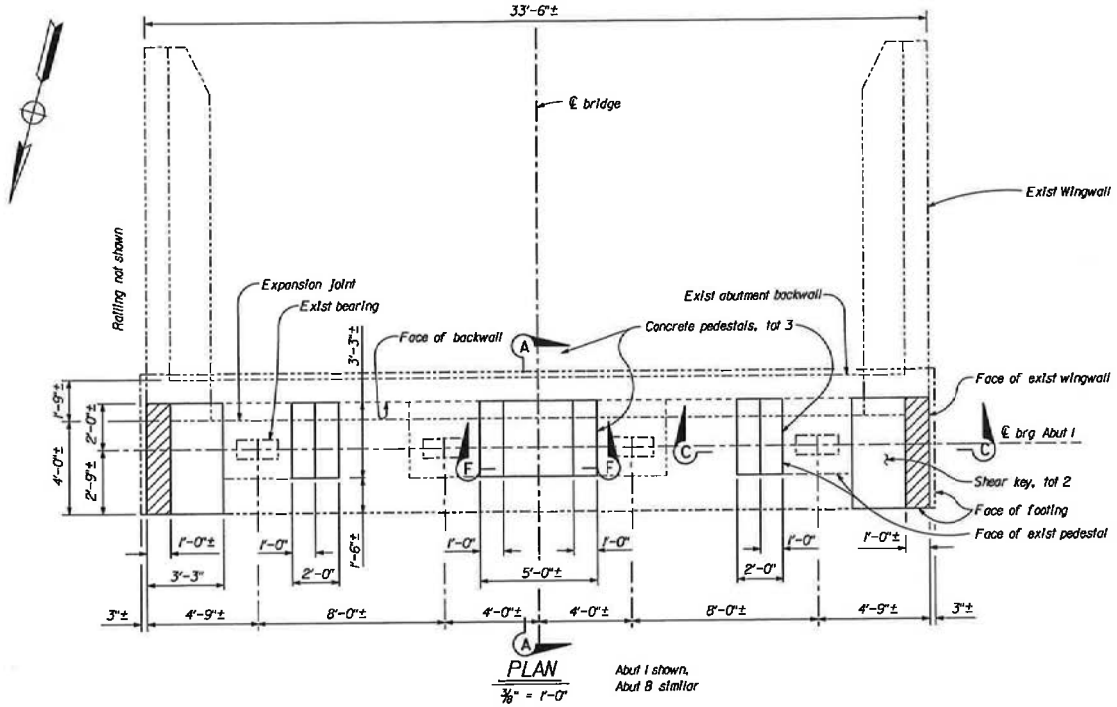
John Maniscalco
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

J. MANISCALCO No. 40911 Exp. 3-31-99 CIVIL

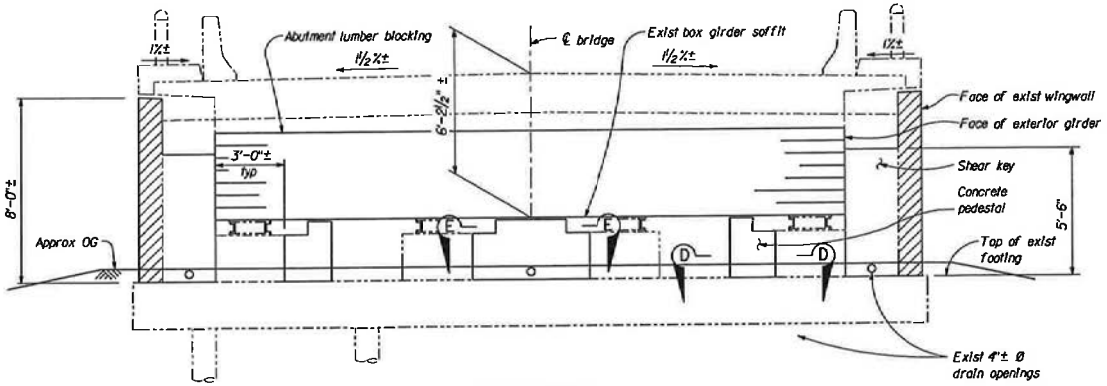
Dokken Engineering
3054 Gold Canal Drive
Rancho Cordova, CA 95670

REVIEW SET
NOT FOR CONSTRUCTION
APR 20 2011



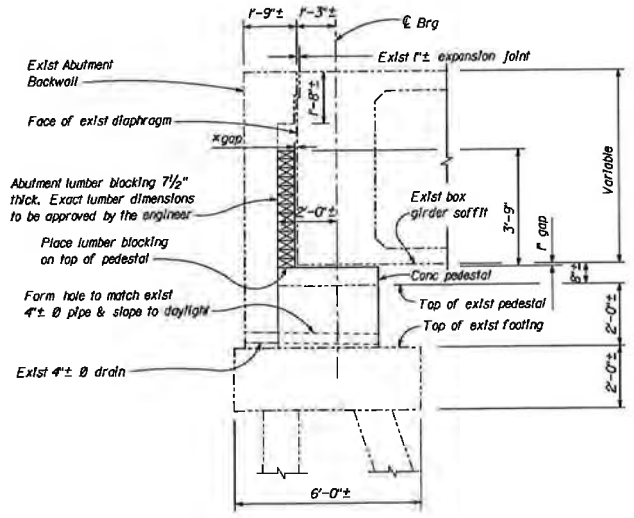
PLAN
3/8" = 1'-0"

Abut 1 shown,
Abut B similar



ELEVATION
3/8" = 1'-0"

For Sections C-C, D-D, E-E and F-F see "Abutment Retrofit Details" sheet



SECTION A-A
½" = 1'-0"

*Gap width to match exist expansion joint opening above plus ½"

LEGEND
- Denotes new construction
- Denotes existing structure
- Denotes concrete removal

Note:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

Carl Huang, DESIGN OVERSIGHT		DESIGN BY Z. Wu	CHECKED S.Chai	PREPARED FOR STANISLAUS COUNTY	John Maniscalco, PROJECT ENGINEER
SIGNOFF DATE		DETAILS BY C. Fletcher	CHECKED S.Chai		
		QUANTITIES BY H.Fang	CHECKED C.Shenoy		

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 10-152
EA 10-L2170J

BRIDGE NO. 38C-0048
POST MILE

EARTHQUAKE RETROFIT
GEER ROAD BRIDGE AT TUOLUMNE RIVER
ABUTMENT RETROFIT LAYOUT

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 5-25-97 6-30-97 5-1-98 9-1-98

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 3 OF 13

976EALO1.DGN REV.10 CH 8-12-98

ATTACHMENT B

HEC-RAS River: Tuolumne River Reach: Tuolumne Profile: PF 1

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Tuolumne	2240	PF 1	Plan 01	44000.00	41.43	78.88	56.22	79.05	0.000127	3.39	13219.07	1361.62	0.12
Tuolumne	2240	PF 1	Plan 02	44000.00	41.43	78.88	56.22	79.06	0.000127	3.39	13220.82	1361.64	0.12
Tuolumne	1870	PF 1	Plan 01	44000.00	51.66	78.61	63.60	78.96	0.000361	4.74	9277.28	1041.47	0.20
Tuolumne	1870	PF 1	Plan 02	44000.00	51.66	78.62	63.60	78.97	0.000361	4.74	9278.87	1041.51	0.20
Tuolumne	1653	PF 1	Plan 01	44000.00	53.47	78.40	66.88	78.86	0.000510	5.46	8501.85	612.07	0.24
Tuolumne	1653	PF 1	Plan 02	44000.00	53.47	78.41	66.88	78.86	0.000510	5.45	8503.78	612.09	0.24
Tuolumne	1635			Bridge									
Tuolumne	1617	PF 1	Plan 01	44000.00	48.99	78.38		78.81	0.000449	5.32	8804.72	610.64	0.22
Tuolumne	1617	PF 1	Plan 02	44000.00	48.99	78.38		78.81	0.000449	5.32	8804.72	610.64	0.22
Tuolumne	1402	PF 1	Plan 01	44000.00	53.89	78.21	66.91	78.70	0.000560	5.62	8083.31	2648.57	0.25
Tuolumne	1402	PF 1	Plan 02	44000.00	53.89	78.21	66.91	78.70	0.000560	5.62	8083.31	2648.57	0.25
Tuolumne	1000	PF 1	Plan 01	44000.00	47.67	78.30	63.11	78.48	0.000200	3.44	13691.04	2888.67	0.15
Tuolumne	1000	PF 1	Plan 02	44000.00	47.67	78.30	63.11	78.48	0.000200	3.44	13691.04	2888.67	0.15

PLAN 01 – EXISTING CONDITION

PLAN 02 – PROPOSED CONDITION

~~ATTACHMENT B~~

HEC-RAS River: Tuolumne River Reach: Tuolumne Profile: PF 1

Reach	River Sta	Profile	Plan	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
				(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Tuolumne	2240	PF 1	Plan 01	79.05	78.88	0.18	0.07	0.02	241.72	43758.28		1361.62
Tuolumne	2240	PF 1	Plan 02	79.06	78.88	0.18	0.07	0.02	241.86	43758.14		1361.64
Tuolumne	1870	PF 1	Plan 01	78.96	78.61	0.35	0.09	0.01		44000.00		1041.47
Tuolumne	1870	PF 1	Plan 02	78.97	78.62	0.35	0.09	0.01		44000.00		1041.51
Tuolumne	1653	PF 1	Plan 01	78.86	78.40	0.46	0.00	0.00	430.92	43308.69	260.40	612.07
Tuolumne	1653	PF 1	Plan 02	78.86	78.41	0.46	0.00	0.00	431.33	43308.10	260.57	612.09
Tuolumne	1635			Bridge								
Tuolumne	1617	PF 1	Plan 01	78.81	78.38	0.43	0.11	0.01	603.50	43147.23	249.27	610.64
Tuolumne	1617	PF 1	Plan 02	78.81	78.38	0.43	0.11	0.01	603.50	43147.23	249.27	610.64
Tuolumne	1402	PF 1	Plan 01	78.70	78.21	0.49	0.13	0.09	112.86	43557.23	329.91	2648.57
Tuolumne	1402	PF 1	Plan 02	78.70	78.21	0.49	0.13	0.09	112.86	43557.23	329.91	2648.57
Tuolumne	1000	PF 1	Plan 01	78.48	78.30	0.18			65.50	42845.69	1088.81	2888.67
Tuolumne	1000	PF 1	Plan 02	78.48	78.30	0.18			65.50	42845.69	1088.81	2888.67

PLAN 01 - EXISTING CONDITION

PLAN 02 - PROPOSED CONDITION

DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18832 BD

This Permit is issued to:

County of Stanislaus
1716 Morgan Road
Modesto, California 95358

To improve seismic stability of the existing Geer Road Bridge in Stanislaus County by seismically retrofitting the Bridge (No. 38C-0048) over the Tuolumne River. The project includes the retrofit of the hinges, piers, and abutments of the existing bridge to withstand potential seismic stresses during an earthquake.

The project is located just north of the intersection of Geer Road and Hatch Road, with the Geer Road Bridge traveling over the Tuolumne River. The existing bridge is located approximately 1.5 miles northeast of the town of Hughson within Section 2, T4S, R10E of the USGS 7.5-minute Denair topographic quadrangle (Section 2 AND 3, T4S, 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. 18832 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 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 Board jurisdiction, and which directly or indirectly affects the Board's jurisdiction. This special condition shall apply to all subsequent conditions herein.

LIABILITIES / INDEMNIFICATION

FOURTEEN: 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.

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 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.

EASEMENT, LICENSE OR TEMPORARY ENTRY PERMIT

SEVENTEEN: If the construction project extends onto land owned in fee and/or easement by the Sacramento and San Joaquin Drainage District acting by and through the Central Valley Flood Protection Board, the permittee should secure an easement, license, or temporary entry permit from the Board prior to commencement of work. Contact Angelica Aguilar with the Department of Water Resources, Real Estate Branch at (916) 653-5782.

PERMITTING AND AGENCY CONDITIONS

EIGHTEEN: The letter from the U.S. Army Corps of Engineers, Sacramento District dated April 18, 2013 is attached to this permit as Exhibit A and is incorporated by reference.

NINETEEN: The permittee shall 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.

TWENTY: 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.

TWENTY-ONE: The permittee agrees to incur all costs for compliance with local, State, and Federal permitting and 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-TWO: The permittee shall contact the Central Valley Flood Protection Board by telephone at (916) 574-0609, and submit the enclosed postcard to the Department of Water Resources 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-THREE: Thirty (30) calendar days prior to start of any demolition and/or construction activities within the floodway, the permittee shall submit to the Chief Engineer two sets of plans, specifications and supporting geotechnical and / or hydraulic impact analyses, 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. The Central Valley Flood Protection Board shall acknowledge receipt of this 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 Central Valley Flood Protection Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or local maintaining agency when necessary. The Central Valley Flood Protection Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) calendar days.

TWENTY-FOUR: Prior to commencement of work the permittee shall create a photo record including associated descriptions of the existing bridge site conditions. The photo record shall be certified (signed and stamped) by a licensed land surveyor or licensed civil engineer registered in the State of California and submitted to the Central Valley Flood Protection Board within 30 days of beginning the project.

TWENTY-FIVE: The permittee shall provide supervision and inspection services acceptable to the Central Valley Flood Protection Board. A licensed civil engineer registered in the State of California shall certify that all work was inspected and performed in accordance with submitted drawings, specifications, and permit conditions.

TWENTY-SIX: All addenda or other changes made to the submitted documents by the permittee after issuance of this permit shall be submitted to the Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include supplemental plans, specifications, and supporting geotechnical, hydrology and hydraulics, or other technical analyses. The Central Valley Flood Protection 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 Central Valley Flood Protection Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or the local maintaining agency when necessary. The Central Valley Flood Protection Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) calendar days. Upon approval of the submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

TWENTY-SEVEN: A copy of any geotechnical studies and tests that may be performed during or prior to construction that are in addition to studies that were submitted in support of the permittee's application for an encroachment permit shall be provided to and approved by the Central Valley Flood Protection Board prior to project completion.

CONSTRUCTION

TWENTY-EIGHT: 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.

TWENTY-NINE: 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.

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

THIRTY-ONE: 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-TWO: All debris generated by this project shall be disposed of outside the Tuolumne River floodway.

CONSTRUCTION MATERIALS

THIRTY-THREE: 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.

THIRTY-FOUR: All fill material shall be imported impervious material with 20 percent or more passing the No. 200 sieve, a plasticity index of 8 or more, and a liquid limit of less than 50 and free of lumps or stones exceeding 3 inches in greatest dimension, vegetative matter, or other unsatisfactory material. Fill material shall be compacted in 4- to 6-inch layers to a minimum of 90 percent relative compaction as measured by ASTM Method D1557-91, or appropriate Board approved equal.

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: Fill placed at slopes greater than 2 horizontal to 1 vertical shall be seeded with a native grass mix to reduce the risk of erosion.

THIRTY-SEVEN: Trees, brush, sediment, and other debris shall be kept cleared from the bridge site and disposed of outside the floodway to maintain the design flow capacity and flowage area.

THIRTY-EIGHT: No further tree planting or work, other than that covered by this application, shall be performed in the area without prior approval of the Central Valley Flood Protection Board.

POST-CONSTRUCTION

THIRTY-NINE: The work area shall be restored to the condition that existed prior to start of work.

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

OPERATIONS AND MAINTENANCE

FORTY-ONE: 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 Central Valley Flood Protection Board, Department of Water Resources, 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 shall not be discharged onto the streambank so as to cause erosion of the bank.

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

FORTY-FIVE: If the permitted encroachment(s) result in any adverse hydraulic impact or if the flows being conveyed in an overland release result in scouring, the permittee shall provide appropriate mitigation acceptable to the Central Valley Flood Protection Board.

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

FORTY-SEVEN: If erosion occurs adjacent to the permitted encroachment(s), the permittee shall repair the eroded areas and place adequate revetment on the affected areas to prevent further erosion.

FORTY-EIGHT: The permitted encroachment(s) shall not interfere with operation and maintenance of the 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.

FORTY-NINE: At the request of either the permittee or Central Valley Flood Protection Board, the permittee and Board shall conduct joint inspections of the project and 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

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

FIFTY-ONE: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted encroachment(s) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if damaged by any cause. If the permittee does not comply, the Central Valley Flood Protection Board may remove the encroachment(s) at the permittee's expense.

END OF CONDITIONS

ATTACHMENT C, EXHIBIT A

DEPARTMENT OF THE ARMY
U.S. Army Engineer District, Sacramento
Corps of Engineers
1325 J Street
Sacramento, California 95814-2922

REPLY TO
ATTENTION OF

Flood Protection and Navigation Section (18832)

APR 18 2013

Mr. Jay Punia, Executive Officer
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, California 95821

Dear Mr. Punia:

We have reviewed a permit application by the County of Stanislaus (application number 18832). This project includes improving the seismic stability of the existing Geer Road Bridge in Stanislaus County by seismically retrofitting the hinges, piers, and abutments of the existing Bridge (No. 38C-0048) over the Tuolumne River. The project is located just north of the intersection of Geer Road and Hatch Road, located approximately 1.5 miles northeast of the town of Hughson, at 37.6179°N 120.8457°W NAD83, Stanislaus County, California.

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

A file (2013-00298) has been opened because a Section 10 and/or Section 404 permit may be required. Please advise the applicant to contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Division, 1325 J Street, Room 1350, Sacramento, California 95814, telephone (916) 557-5250.

A copy of this letter is being furnished to Mr. Don Rasmussen, Chief, Flood Project Integrity and Inspection Branch, 3310 El Camino Avenue, Suite LL30, Sacramento, CA 95821.

Sincerely,

for

Meegan G. Nagy, P.E.
Chief, Flood Protection and Navigation Section