Meeting of the Central Valley Flood Protection Board
June 26, 2015

Staff Report

San Joaquin County
Stanislaus River Bridge Improvement, San Joaquin and Stanislaus County

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1.0 – ITEM

Consider Central Valley Flood Protection Board (Board) approval to widen and replace a Bridge (No. 38C-032) across the Stanislaus River (Attachment A) by Draft Permit No. 19015 (Attachment B).

2.0 – APPLICANT

San Joaquin County

3.0 – PROJECT LOCATION

The project is located in the southeast portion of San Joaquin County and the northern portion of Stanislaus County, south of the city of Escalon (approximate population 7,100 per the 2010 Census (Attachment A). The bridge crosses the Stanislaus River directly south of the intersection at East River Road on McHenry Avenue.

4.0 – PROJECT DESCRIPTION

San Joaquin County (County), in cooperation with Stanislaus County and the California Department of Transportation (Caltrans), propose to replace the existing bridge built in 1959 with a new wider bridge under their Highway Bridge Program.

The proposed 25-span bridge is approximately 1,150 feet long and will be widened to accommodate a five lane configuration for McHenry Avenue consisting of: four (4) 12-foot-wide travel lanes, a 12-foot wide median/left turn lane, and two five (5)-foot wide shoulders.

5.0 – AUTHORITY OF THE BOARD

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

Title 23:

- § 6 – Need for a Permit
- § 108 – Existing Encroachments
- § 112 – Streams Regulated and Nonpermissible Work Periods
- § 116 – Borrow and Excavation Activities
- § 121 – Erosion Control
- § 128 – Bridges
- § 131 – Vegetation

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

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

- The U.S. Army Corps of Engineers (USACE) decision letter was received on June XX, 2015 and indicated that the USACE District Engineer has no objection to the project, subject to conditions. This letter has been incorporated into the permit as Exhibit A.

7.0 – PROJECT ANALYSIS

7.1 – Project Construction Details

The proposed project is estimated to take three (3) construction seasons to complete. During the first construction season, one-half of the proposed bridge would be built upstream of and immediately adjacent to the existing bridge. During the second construction season, all traffic would be diverted to the new half of the bridge, and the existing bridge would be demolished. During the third construction season, the new bridge and roadwork would be completed.

Diversion of the Stanislaus River at the construction site will be required to remove the existing bridge superstructure and piers, place temporary falsework, and construct the new bridge. Temporary diversion of the low flows in the river will be installed to allow construction within the waterway area. Temporary embankment/work pad(s) will be constructed of clean, local cobble and gravel substrate material approved by the U.S. Army Corps of Engineers and National Marine Fisheries Service. The flows would be diverted into temporary culvert pipes that pass through the embankment/work pad. The

work pad would also be used to support drilling equipment for the cast-in-drilled-hole (CIDH) piles.

The proposed 25-span, precast and pre-stressed concrete bridge will be constructed on the same alignment and widened upstream of the existing bridge and will be approximately 1,150 feet in length (Attachment C). The proposed bridge will be supported by octagonal concrete piles and CIDH piles. Caltrans Standard Class 140 concrete piles will be used to support the abutments. Bent Nos. 2-21 will be 24-inch octagonal PC/PS concrete piles driven into the ground by use of a diesel powered pile hammer, Bent Nos. 22 and 25 will be 54-inch CIDH, and Bent Nos. 23 and 24 will be 72-inch CIDH and are located within the Stanislaus River bed.

7.2 – Hydraulic Summary

Hydraulic characteristics of the proposed bridge are described in the Hydraulic Summary (Attachment D). The bridge was analyzed using HEC-RAS version 3.1.3 to model the water surface elevation (WSE) for the existing and proposed bridge. Comparisons were made for the 100-year discharge (8,000 cubic feet per second), flood of record (9,019 cfs), and 200-year discharge (13,100 cfs). The WSE remained unchanged for all three discharges for the final design. Analysis was conducted for the interim construction conditions and the increase in WSE is 0.04 feet, providing 21.9 feet of freeboard.

The proposed soffit elevation of 103.3 feet will provide 21.9- feet of freeboard above the 100-year WSE.

Average velocities range from 1.7 to 2 feet per second. Roughness coefficients of 0.07 (bank) and 0.05 (channel) were used. It was determined that no bank protection is needed at the project location due to the low velocities.

The cumulative scour for this project is approximately nine (9) feet, but no scour mitigation measures are required as the proposed CIDH piles will be designed for the estimated scour depth.

Board staff has determined that the proposed project is expected to result in no adverse hydraulic impacts to the Stanislaus River floodway, and the proposed bridge has over 20 feet of freeboard above the design discharge. The bridge is in compliance with Title 23 and is consistent with the adopted 2012 Central Valley Flood Protection Plan.

7.3 – Geotechnical Summary

Board staff has reviewed the geotechnical design information and has determined that the proposed project is expected to result in no adverse geotechnical impacts to the

Stanislaus River floodway. All fill, excavation, and temporary structures will be completed in compliance with Draft Permit No. 19015 and Title 23 standards.

8.0 – CEQA ANALYSIS

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

The Board, as a responsible agency under CEQA, has reviewed the Initial Study and Mitigated Negative Declaration (IS/MND) (SCH No. 2013032028, March 2013), and Mitigation Monitoring and Reporting Plan for the Replacement of the Stanislaus River Bridge (Bridge No. 38C-0032) on McHenry Avenue Project, prepared by lead agency San Joaquin County. These documents, including project design, may be viewed or downloaded from the Central Valley Flood Protection Board website at http://www.cvfpb.ca.gov/meetings/2015/06-26-2015.cfm under a link for this agenda item. These documents are available for review in hard copy at the Board and San Joaquin County offices.

San Joaquin County determined that the project would not have a significant effect on the environment on February 25, 2014 and adopted Resolution No. B-14-90. A Notice of Determination was filed on March 3, 2014 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 biological resources. The description of the mitigation measures are further described in the adopted IS/MND.

9.0 – CALIFORNIA WATER CODE SECTION 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 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 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.

- 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 (CVFPP) as adopted by Board Resolution 2012-25 on June 29, 2012:

  This project has no adverse effect on facilities of the SPFC and is consistent with the CVFPP and current Title 23 standards because the proposed project is expected to cause no increase in WSE, no substantial increase in channel velocities, and no adverse geotechnical impacts to Stanislaus River or any SPFC facilities.

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

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

10.0 – STAFF RECOMMENDATION

Staff recommends that the Board:

Adopt:

- the CEQA findings;

Approve:

- draft Encroachment Permit No. 19015 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 Map and Photos

B – Draft Permit No. 19015

Exhibit A: USACE 408 Decision Letter

C – Project Drawings

D – Hydraulic Summary Information

Prepared By:	Ilene Wellman-Barbree, PE, Senior Engineer, Projects and Environmental Branch
Environmental Review:	Andrea Buckley, Senior Environmental Scientist (Specialist)
Staff Report Review:	Nancy Moricz, PE, Senior Engineer, Projects and Environmental Branch
	Eric Butler, PE, Supervising Engineer, Projects and Environmental Branch Chief
	Len Marino, PE, Chief Engineer
	Nicole Rinke, Deputy Attorney General
	Leslie Gallagher, Acting Executive Officer

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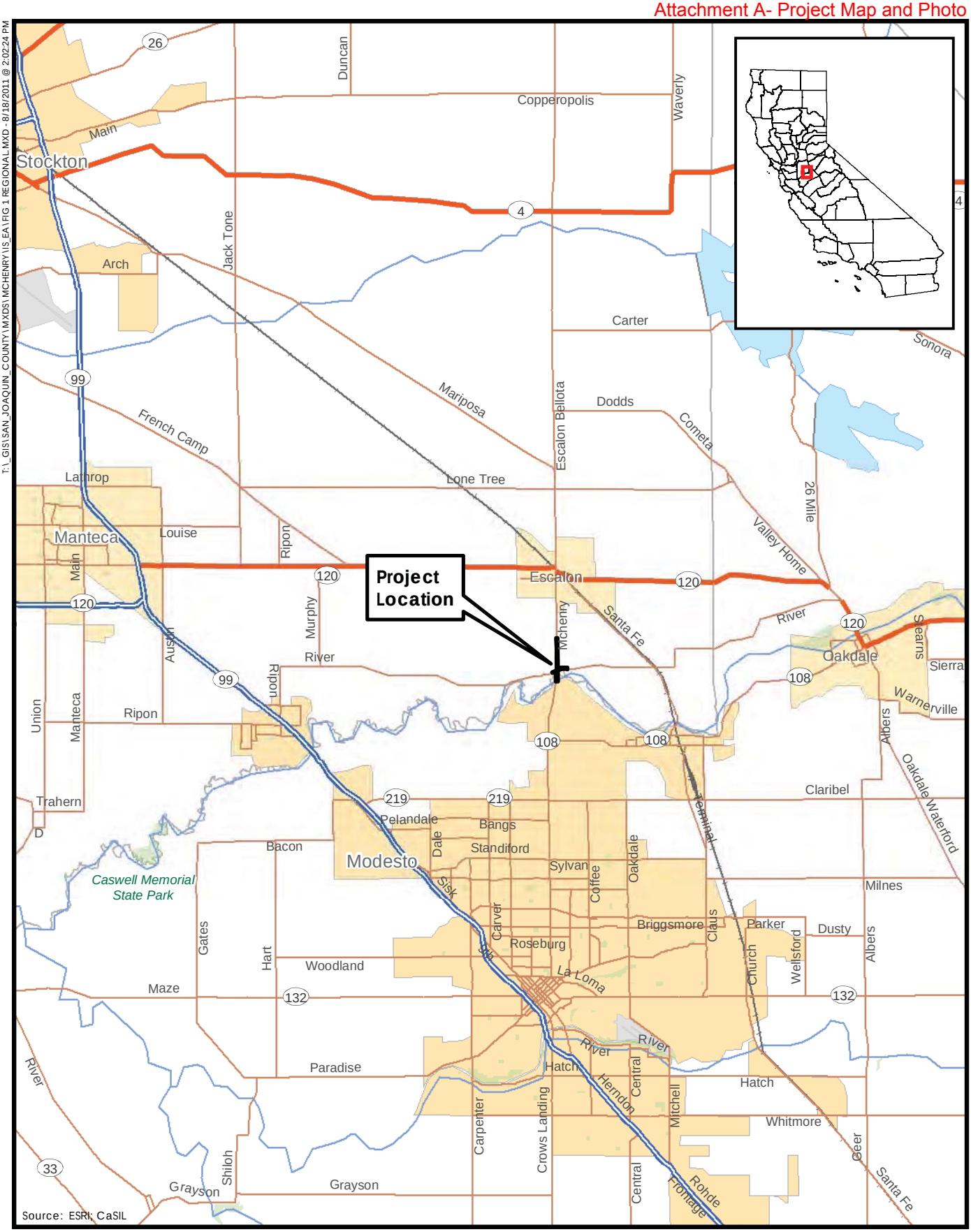


1.5 0 1.5 N
MILES

McHenry Avenue Widening
RPSTPLE-5929(196)
Replacement of Stanislaus River Bridge (Bridge No. 38C-0032) on McHenry Avenue
BRLS-5929(166)
Replacement of SSJID Bridge (Bridge No. 29C-0166) on McHenry Avenue
BRLS-5929(167)

Figure 1-1
Regional Vicinity Map


McHenry Ave.
SSJID Canal
McHenry Ave. Bridge
River Road
Stanialus River

DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 19015 BD

This Permit is issued to:

San Joaquin County / Stanislaus County
1810 E Hazelton Avenue
Stockton, California 95201

To widen and replace the McHenry Avenue bridge to accommodate a five lane configuration. The 25-span bridge will be constructed of precast and pre-streest octagonal concrete piles and cast-in-drilled-hole piles.

The project is located on McHenry Avenue crossing the Stanislaus River south of East River Road and the city of Escalon. (Section 16, T2S, R9E, MDB&M, Stanislaus River, San Joaquin 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. 19015 BD

THIRTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board (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 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.

FOURTEEN: 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 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.

FIFTEEN: The 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.

AGENCY CONDITIONS

SIXTEEN: The permittee shall comply with all conditions set forth in the letter from the U.S. Army Corps of Engineers District Engineer dated June XX, 2015, which is attached to this permit as Exhibit A and is incorporated by reference.

SEVENTEEN: 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.

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.

REAL ESTATE

NINETEEN: 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 Board, the permittee should secure an easement, license, or temporary entry permit from the Board prior to commencement of work. Contact Tom O'Neil at (916) 653-7654.

PRE-CONSTRUCTION

TWENTY: 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-ONE: 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 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 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 Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) calendar days.

TWENTY-TWO: 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 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.

CONSTRUCTION

TWENTY-FOUR: 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 Board.

TWENTY-FIVE: 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 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 U.S. Army Corps of Engineers 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) calendar days. Upon approval of the submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

TWENTY-SIX: No construction work of any kind shall be done during the flood season from November 1 to July 15 without prior approval of the Board, and shall be removed after completion of the project.

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

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

TWENTY-NINE: Piers, bents, and abutments being dismantled shall be removed to at least one (1) foot below the natural ground.

THIRTY: Backfill material for excavations shall be placed in four (4) to six (6) inch layers and compacted to at least the density of the adjacent, firm, undisturbed material.

THIRTY-ONE: All fill materials shall be placed in four (4) to six (6) inch layers and compacted to a relative compaction of not less than 90 percent per ASTM D 1557-91 or 97 percent per ASTM D 698-91 above optimum moisture content. Fill material within two feet of the bridge shall be compacted by appropriate hand operated compaction equipment. Field density tests shall be taken by a certified soils laboratory to verify compaction of the fill placed.

THIRTY-TWO: Revetment shall be uniformly placed and properly transitioned into the bank, levee slope, or adjacent revetment and in a manner which avoids segregation.

THIRTY-THREE: The revetment shall not contain any reinforcing steel, floatable, or objectionable material. Asphalt or other petroleum-based products may not be used as fill or erosion protection on the levee section or within the floodway.

THIRTY-FOUR: Temporary access ramps shall be removed from the floodway during flood season

from November 1 through July 15, and after completion of the project.

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

POST-CONSTRUCTION

THIRTY-SIX: 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-SEVEN: Within 120 days of completion of the project, the permittee shall submit to the Board and DWR a mylar copy of as-built drawings, 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 Board permit conditions and submitted drawings and specifications.

OPERATIONS AND MAINTENANCE

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

THIRTY-NINE: 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, Department of Water Resources, or any other agency responsible for maintenance.

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

FORTY-TWO: If the permitted encroachment(s) result in any adverse hydraulic impact or scouring the permittee shall provide appropriate mitigation acceptable to the Board.

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

FORTY-FOUR: The permitted encroachment(s) shall not interfere with the flood conveyance capacity of the Stanislaus River. If the permitted encroachment(s) are determined by any agency responsible for operation and 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 Board. If the permittee does not comply, the Board may modify or remove the encroachment(s) at the permittee's expense.

FORTY-FIVE: At the request of either the permittee or the Board, the permittee and the Board shall conduct joint inspections of the project site 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-SIX: If the project, 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-SEVEN: 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 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

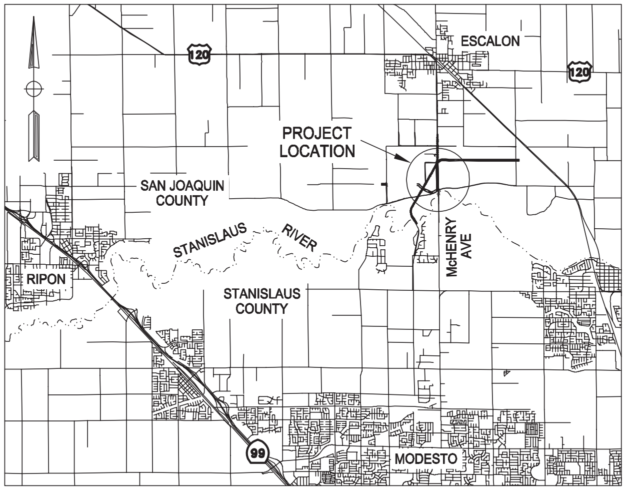
Attachment C- Project Drawings

RPSTPLE-5929(196)
BRLS-5929(166)
BRLS-5929(167)

COUNTY OF SAN JOAQUIN
DEPARTMENT OF PUBLIC WORKS
STOCKTON, CALIFORNIA

PROJECT PLANS FOR IMPROVEMENTS ON McHENRY AVE CORRIDOR
FROM
THE STANISLAUS RIVER BRIDGE
IN THE COUNTY OF STANISLAUS, CALIFORNIA
TO
JONES AVENUE
IN THE COUNTY OF SAN JOAQUIN, CALIFORNIA

TO BE SUPPLEMENTED BY CALTRANS STANDARD PLANS AND SPECIFICATIONS DATED 2010, IMPROVEMENTS STANDARDS AND SPECIFICATIONS FOR SAN JOAQUIN COUNTY MAY 1997, DEPARTMENT OF PUBLIC WORKS STANISLAUS COUNTY STANDARDS & SPECIFICATIONS 2007 EDITION



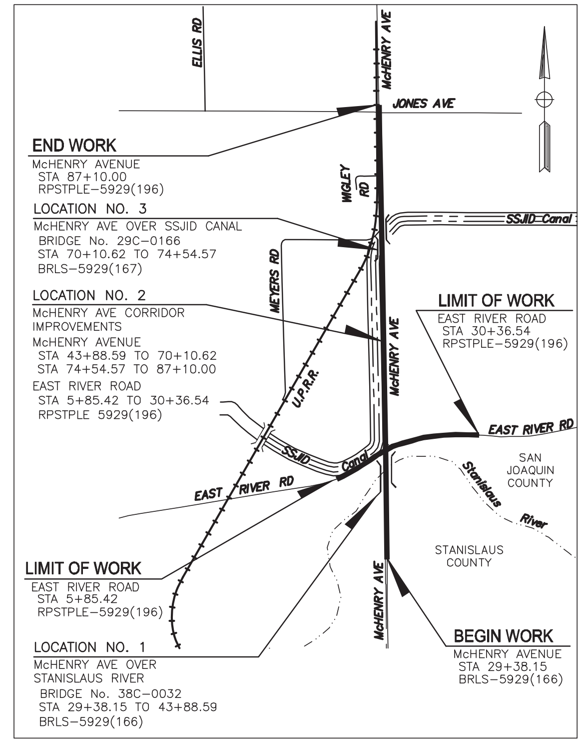
VICINITY MAP
NO SCALE

UTILITY	CONTACT	PHONE NO.
AT&T	DON GOLVIN	209.578.7044
PG&E (ELECTRIC)	ANNIE McKINNON	209.576.6608
PG&E (GAS)	ROBERT MALDONADO	209.942.1410
MODESTO IRRIGATION DISTRICT	DESI MORENO	209.526.7421
CVIN FIBER OPTIC	FREDRIC RITTER	559.554.9120
SSJID	SAM BOLOGNA	209.823.3101 x4617
CHARTER COMMUNICATIONS	GLEN CASTRO	209.649.0937

LIST OF PLAN SHEETS

SHEET NO.	DRAWING	SHEET TITLE
1	T-1	TITLE SHEET
2	T-2	GENERAL NOTES
3-7	X-1 TO X-5	TYPICAL SECTIONS
8	K-1	KEY MAP AND LINE INDEX
9-17	PP-1 TO PP-9	PLAN AND PROFILE
18-22	CD-1 TO CD-5	CONSTRUCTION DETAILS
23-25	TR-1 TO TR-3	TREE REMOVAL PLAN
26-34	DU-1 TO DU-9	DRAINAGE/UTILITY PLAN AND PROFILE
35	DP-1	DRAINAGE PROFILES
36, 37	DD-1, DD-2	DRAINAGE DETAILS
38	UD-1	UTILITY DETAILS
39-43	EC-1 TO EC-5	EROSION CONTROL PLAN
44	ECD-1	EROSION CONTROL DETAILS
45	CAS-1	CONSTRUCTION AREA SIGNS
46-57	SC-1 TO SC-12	STAGE CONSTRUCTION
58	SCD-1	STAGE CONSTRUCTION DETAILS
59-70	WPC-1 TO WPC-12	TEMPORARY WATER POLLUTION CONTROL PLAN
71-75	SS-1 TO SS-5	SIGNING AND STRIPING PLAN
76-77	E-1, E-2	TRAFFIC SIGNAL PLAN
STRUCTURE PLANS		
78-126	S-101 TO S-149	McHENRY AVE BRIDGE OVER STANISLAUS RIVER (REPLACE)
127-131	S-201 TO S-205	E. RIVER RD CULVERT EXTENSION AT SSJID ESCALON SPILLWAY
132-141	S-301 TO S-310	McHENRY AVE BRIDGE OVER SSJID MAIN CANAL (REPLACE)

NOTE: THIS CONTRACT REQUIRES A CLASS A LICENSE



LOCATION MAP
NO SCALE

T-1

BEFORE EXCAVATING
CALL U.S.A.
UNDERGROUND SERVICE ALERT
800-227-2600
TOLL FREE
2 WORKING DAYS BEFORE ALL PLANNED WORK OPERATIONS

90% SUBMITTAL - DRAFT

Revision No.	Description	Date	By	Approved By

AECOM
TECHNICAL SERVICES, INC.
2020 L STREET, SUITE 300
SACRAMENTO, CA 95811
T 916.414.5800 F 916.414.1557

REGISTERED PROFESSIONAL ENGINEER
THOMAS R. BARNARD
No. C46384
Exp. 03-31-14
CIVIL
STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
STANISLAUS COUNTY, CALIFORNIA
APPROVED BY:
NAME
POSITION
STANISLAUS COUNTY, CALIFORNIA
DATE

DEPARTMENT OF PUBLIC WORKS
SAN JOAQUIN COUNTY, CALIFORNIA
APPROVED BY:
THOMAS M. GAU
DIRECTOR OF PUBLIC WORKS
SAN JOAQUIN COUNTY, CALIFORNIA
DATE

DRAWN BY	DATE	PROJECT ENGINEER	DATE	CHECKED	DATE	APPROVAL RECOMENDED	DATE
T. WALTZ	2/10						

FILE NAME	DRAWER	SHEET NO.	ACAD	REVISIONS	DATE

COUNTY OF SAN JOAQUIN | SCALE: NO SCALE | TITLE SHEET | McHENRY AVE CORRIDOR IMPROVEMENTS | SHEET NO. 1 | TOTAL SHEETS 141

Attachment C- Project Drawings

NOTES

1. FOR ACCURATE RIGHT OF WAY, SEE RIGHT OF WAY RECORD MAPS AT COUNTY OFFICES.
2. ALL STATIONS OFFSET TO BARRIER ARE TO THE EDGE OF PAVEMENT AS SHOWN ON THE CONSTRUCTION DETAIL SHEETS.
3. ALL EXISTING TREES, SHRUBS, FENCES, WALKWAYS AND OTHER FRONTAGE IMPROVEMENTS SHALL REMAIN IN PLACE UNLESS OTHERWISE SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
4. ALL INLET LOCATIONS ARE REFERENCED AT THE FLOWLINE UNLESS OTHERWISE SHOWN.
5. EXISTING DRAINAGE LOCATIONS ARE APPROXIMATE ONLY.
6. ALL CURB AND GUTTER PROFILES ARE TO THE TOP OF CURB, UNLESS OTHERWISE SHOWN.
7. WHEN CONFORMING TO EXISTING DRIVEWAYS WITH DIFFERENT SHAPES OR WIDTHS, TRANSITION THE NEW SIDEWALK OR CURB UNIFORMLY OVER A LENGTH OF FOUR (4) FEET, UNLESS OTHERWISE NOTED.
8. ALL DRIVEWAYS SHALL BE STAKED AND FORMED AND THEN VERIFIED IN THE FIELD BY THE ENGINEER PRIOR TO PLACING CONCRETE.
9. PROFILE ELEVATIONS AT INLETS DO NOT INCLUDE INLET DEPRESSIONS.
10. STANISLAUS COUNTY OR SAN JOAQUIN COUNTY STANDARDS SHALL GOVERN IN THE RESPECTIVE PORTIONS OF THIS PROJECT.
11. SAN JOAQUIN COUNTY STANDARDS SHALL BE USED AT ALL OTHER LOCATIONS UNLESS OTHERWISE SPECIFIED.
12. EXISTING DRAINAGE FACILITIES SHALL REMAIN IN PLACE UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL CONDUCT EARTHWORK OPERATIONS SO AS NOT TO MODIFY OR OBSTRUCT THE EXISTING DRAINAGE.
13. ASPHALT CONCRETE USED FOR PAVEMENT REPAIR SHALL NOT BE PLACED IN LAYERS WHICH EXCEED 0.50' IN COMPACTED THICKNESS.
14. PLACEMENT OF ASPHALT CONCRETE SURFACING SHALL NOT BEGIN UNTIL THE ASPHALT CONCRETE USED IN PAVEMENT REPAIR HAS BEEN IN PLACE FOR 24 HOURS.
15. SEE CALTRANS STANDARD PLANS A10A AND A10B FOR ABBREVIATIONS NOT LISTED HERE IN.
16. ALL NOTES, LEGEND, ABBREVIATIONS SHOWN ON INDIVIDUAL SHEETS SHALL APPLY TO THOSE SHEETS ONLY.
17. SURVEY MONUMENT FRAME AND COVERS SHALL BE ADJUSTED TO FINISH GRADE. EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SCHEDULING INSPECTION AND TESTING OF ALL FACILITIES CONSTRUCTED UNDER THIS CONTRACT. ALL TESTING SHALL CONFORM TO THE STANDARD SPECIFICATIONS. ALL COSTS FOR INSPECTION AND TESTING SHALL BE CONSIDERED AS INCLUDED IN THE RESPECTIVE CONTRACT ITEMS OF WORK AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. ALL RE–TESTING SHALL BE PAID BY THE CONTRACTOR.
19. SEE SPECIAL PROVISIONS FOR CALTRANS STANDARD PLANS LIST DATED 2010 REQUIRED FOR THIS CONTRACT.
20. BEFORE EXCAVATING, CALL UNDERGROUND SERVICE ALERT (U.S.A.), 1–800–642–2444, 48 HOURS BEFORE WORK ID TO BEGIN.

LEGEND

- COLD PLANE AC PAVEMENT
- REMOVE BASE AND SURFACING
- PLACE HOT MIX ASPHALT (MISC. AREAS)

DESCRIPTION	EXISTING	PROPOSED
CABLE TV (OVERHEAD)	CATV-OH	CATV-OH
ELECTRIC (OVERHEAD)	E-OH	E-OH
ELECTRIC (UNDERGROUND)	E-UG	E-UG
FIBER OPTIC LINE	F/O	F/O
STORM DRAIN	18"SD	18"SD
TELEPHONE (OVERHEAD)	T-OH	T-OH
TELEPHONE (UNDERGROUND)	T-UG	T-UG
RIGHT OF WAY		
EASEMENT		
FLOW LINE		
GUARDRAIL		
UTILITY POLE		
DROP INLET (DI)		

ABBREVIATIONS

AT&T	AMERICAN TELEPHONE & TELEGRAPH COMPANY
CVIN	CENTRAL VALLEY INDEPENDENT NETWORK
DFS	DITCH FORESLOPE
DBS	DITCH BACKSLOPE
FO, F/O	FIBER OPTIC
HMAOD	HOT MIX ASPHALT OVERDRAIN
INV	INVERT
LF	LINEAR FOOT
LT	LEFT
N/A	NOT APPLICABLE
NIC	NOT IN THIS CONTRACT (BY OTHERS)
PG&E	PACIFIC GAS & ELECTRIC COMPANY
PVT	POINT OF VERTICAL TANGENT
RT	RIGHT
SSJID	SOUTH SAN JOAQUIN IRRIGATION DISTRICT
STA	STATION
SW	SOUND WALL
TCE	TEMPORARY CONSTRUCTION EASEMENT
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UPRR	UNION PACIFIC RAILROAD
W/	WITH
W/O	WITHOUT

SAN JOAQUIN COUNTY STANDARD PLANS 1997

DRAWING NO.	DESCRIPTION
R–17	DRIVEWAYS
R–25	STREET SIGN DETAILS
R–26	TRAFFIC SIGNS
CW–M1	SURVEY MONUMENT FRAME AND COVER
R–29	TYPICAL TRENCH BACKFILL
CW–R36	ADJUSTING STREET FACILITIES TO GRADE
R–32	STREET LIGHTNING POLES AND SYMBOLS
CW–S7	TYPE 1 MAINTENANCE HOLE
CW–M3	MAINTENANCE HOLE FRAME & COVER

STANISLAUS COUNTY STANDARD PLANS

DRAWING NO.	DESCRIPTION
4–F1	TYPE 1 MANHOLE
4–F2	STORM DRAIN MANHOLE BASE – 48"
4–F3	MANHOLE FRAME & COVER
4–G1	GRATE WITH CUB OPENING (G.O.) CATCH BASIN
4–G2	GRATE WITH CUB OPENING (G.O.) CATCH BASIN GRATE
4–G3	GRATE WITH CUB OPENING (G.O.) CATCH BASIN FRAME
4–G4	G.O. CATCH BASIN IN A.C. DIKE

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SURVEY	REVISION	DESCRIPTION	BY	DATE	SCALE	PREPARED BY	DATE
DATUM:					HORIZONTAL: N/A	DRAWN: F. DeMARCO	
					VERTICAL: N/A	DESIGNED: R. GIBSON	
					0 1 2 INCHES	CHECKED: J. VILLAFRANCA	
FILE No.:					0 10 20 30 40 50 MILLIMETERS	APPROVED: T. BARNARD	

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McHENRY AVE CORRIDOR IMPROVEMENTS

GENERAL NOTES AND LEGEND

REGISTERED PROFESSIONAL ENGINEER · RASHOD J. GIBSON · No. C70999 · Exp. 06–30–15 · CIVIL · STATE OF CALIFORNIA

DRAWING T–2 OF T–2

SHEET OF

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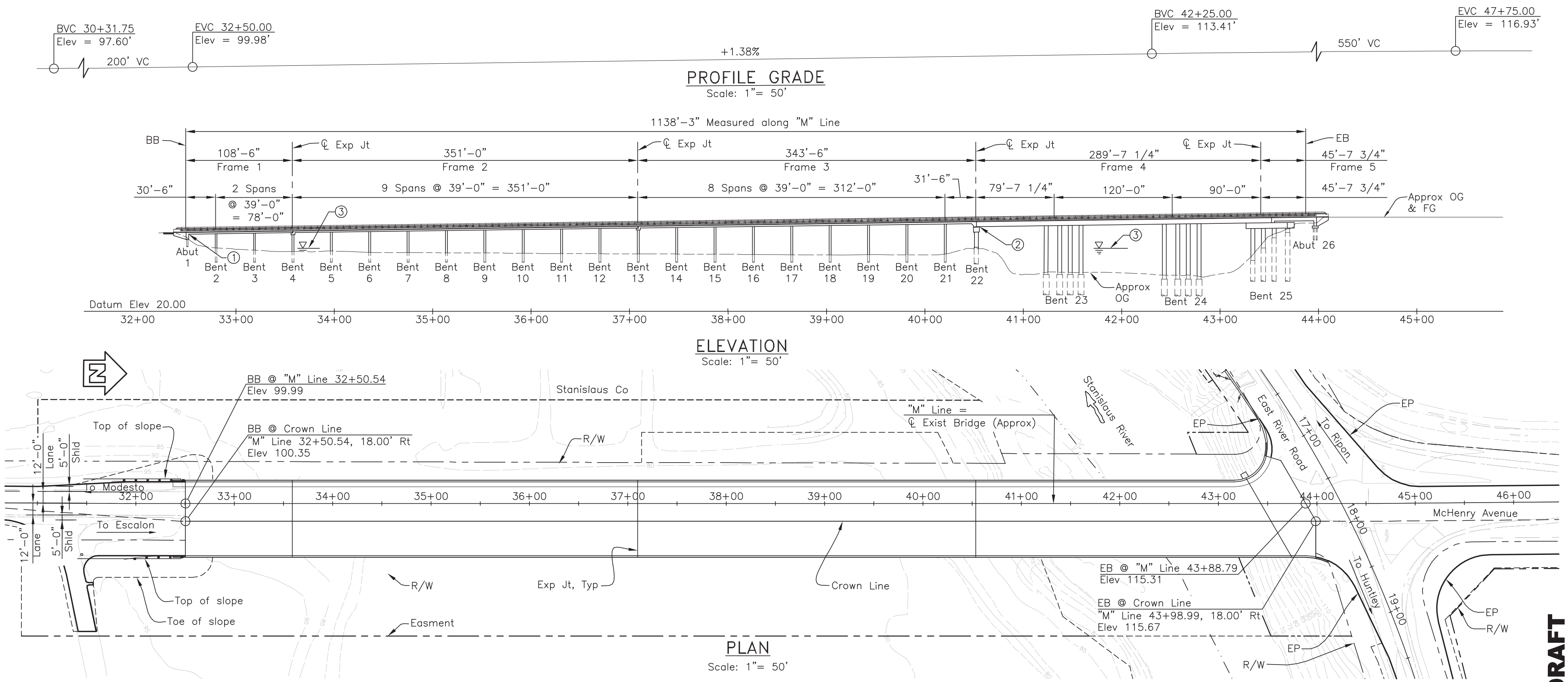

INDEX TO PLANS

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

LEGEND:

① Indicates Low Structure Elevation 97.95 Feet

② Indicates Low Structure Elevation 105.76 Feet

③ Indicates 200 Yr Event Flood Water Elevation 83.8 Feet

SURVEY	REVISION	DESCRIPTION	BY	DATE	SCALE	PREPARED BY	DATE
DATUM:		NOT FOR CONSTRUCTION	–	–	HORIZONTAL: VERTICAL: INCHES MILLIMETERS	DRAWN: H. SULLIVAN	02-05-13
						DESIGNED: J. FREKING	02-04-13
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McHENRY AVE CORRIDOR IMPROVEMENTS

McHENRY AVE BRIDGE OVER STANISLAUS RIVER (REPLACE)

GENERAL PLAN

REGISTERED PROFESSIONAL ENGINEER — ORIN A. BROWN — No. C48859 — Exp. 09-30-14 — CIVIL — STATE OF CALIFORNIA

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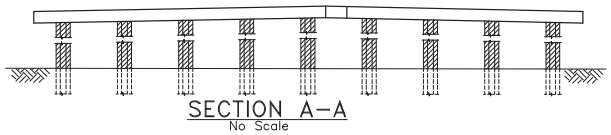

SECTION A–A
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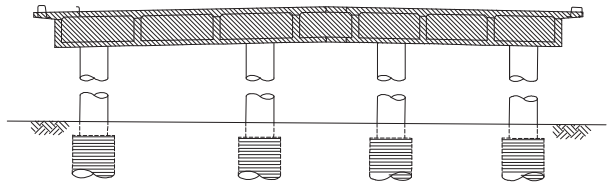

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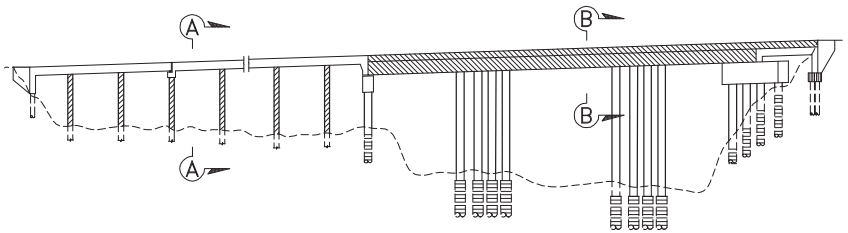


- Structural Concrete, Bridge
- Structural Concrete, Bridge (f'c = 4.0 ksi @ 28 days)
- Structural Concrete, Bridge Footing
- Cast–in–Drilled–Hole Concrete Pile
- PC/PS Octagonal Piles (f'c = 7.0 ksi @ 28 days)

CONCRETE STRENGTH AND TYPE LIMITS
No Scale

PLAN SYMBOLS

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

STANDARD PLANS, DATED MAY 2010

A10A	Abbreviations
A10B	Abbreviations
A10C	Lines and Symbols
A10D	Lines and Symbols
A10E	Lines and Symbols
A62C	Limits of Payment for Excavation and Backfill–Bridge
A77J1	MBGR Connections to Bridge Railings without Sidewalks Details No. 1
A77J2	MBGR Connections to Bridge Railings with out Sidewalks Details No. 2
A77K1	MBGR Connections to Bridge Railings with Sidewalks Details No. 1
A77K2	MBGR Connections to Bridge Railings with Sidewalks Details No. 2
D99B	Edge Drain Outlet and Vent Details
B0–1	Bridge Details
B0–3	Bridge Details
B0–5	Bridge Details
B0–13	Bridge Details
B2–5	Pile Details Class 90 and Class 140
B3–1A	Retaining Wall Type 1
B7–1	Box Girder Details
B7–6	Deck Drains Types D–1 and D–2
B7–10	Utility Opening Box Girder
B7–11	Utility Details
B8–5	Cast–in–place Prestressed Girder Details
B11–60	Concrete Barrier Type 80
B11–62	Concrete Barrier Type 80SW

GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

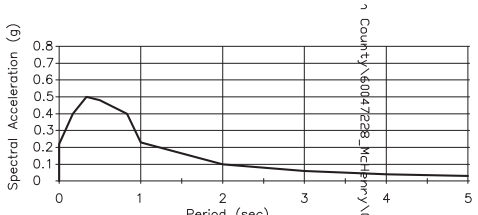
DESIGN: AASHTO LRFD Bridge Design Specifications 4th Edition and the Caltrans Amendments, preface dated November 2011; except that bridge details (including barrier and railing details) taken from Standard Plans 2010 and Standard Bridge Details XS sheets and Bridge Abutments are designed using Bridge Design Specifications (1996 AASHTO with Revisions by Caltrans).

SEISMIC DESIGN: Caltrans Seismic Design Criteria (SDC), Version 1.6, November 2010

DEAD LOAD: Includes 35 psf for future wearing surface.

LIVE LOADING: HL–93 with Low–Boy and Permit Design Vehicle.

SEISMIC LOADING: Soil Profile: V_{S30} = 886 ft/sec
Moment Magnitude: 6.7g
Peak Ground Acceleration: 0.27g



Site Specific Acceleration Response Spectra Curve

Period (sec)	Spectral Acceleration (g) Deterministic
0	0.226
0.1	0.400
0.2	0.505
0.3	0.486
0.5	0.400
1	0.230
2	0.107
3	0.064
4	0.043
5	0.032

REINFORCED CONCRETE: fy = 60 ksi

f'c = 3.6 ksi @ 28 days, except as shown on "Concrete Strength and Type Limits"

PRESTRESSED CONCRETE: See "Prestressing Notes" on "Girder Details" sheet.

PILES: See "Pile Data Table" on "Foundation Plan" sheet.

STRUCTURAL STEEL: Steel Casing: fy = 36 ksi

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McHENRY AVE CORRIDOR IMPROVEMENTS

McHENRY AVE BRIDGE OVER STANISLAUS RIVER (REPLACE)

INDEX TO PLANS AND GENERAL NOTES

REGISTERED PROFESSIONAL ENGINEER — ORIN A. BROWN — No. C48859 — Exp. 09–30–14 — CIVIL — STATE OF CALIFORNIA

DRAWING S–1
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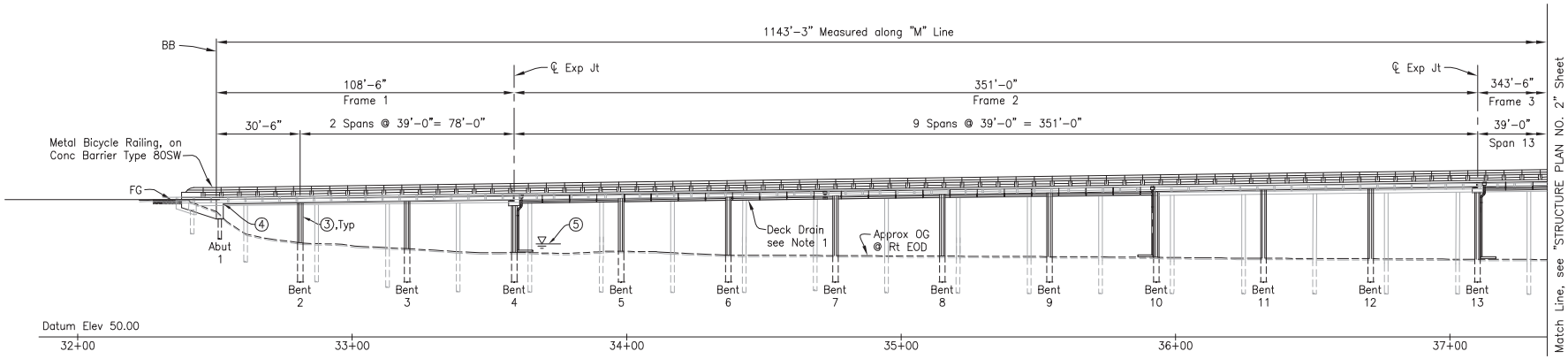
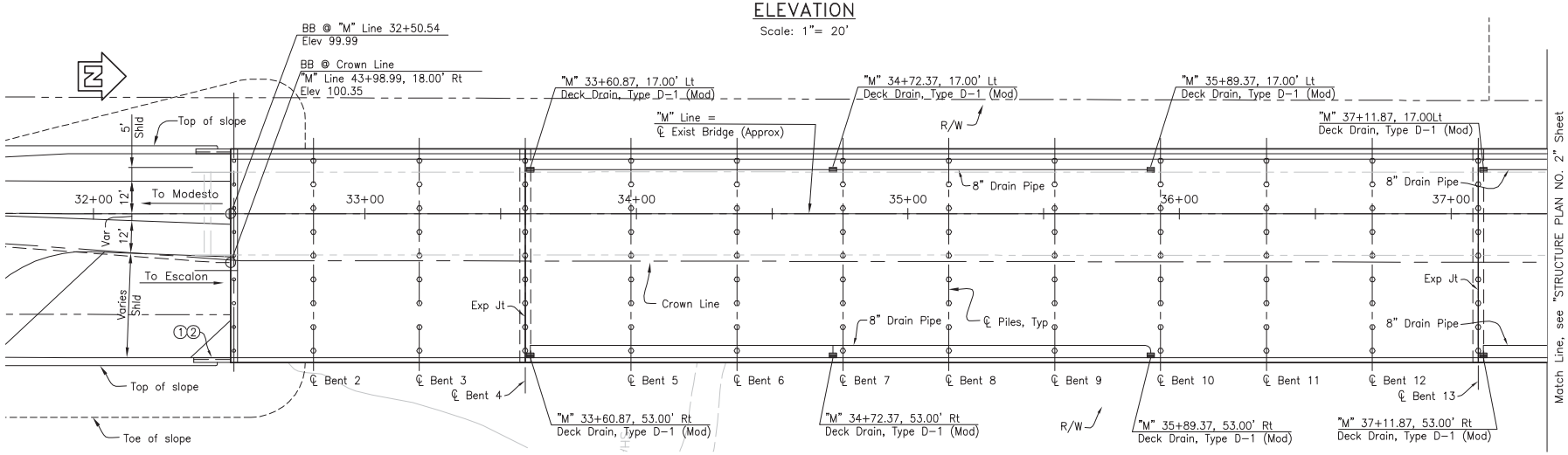


ELEVATION

Scale: 1"= 20'



PLAN

Scale: 1"= 20'

NOTES:

1. For deck drain details and drainage pipe details, see "DECK DRAINAGE DETAILS – SPANS 1–21" sheet.
2. For Typical Section, see "STRUCTURE PLAN NO. 2" sheet.

LEGEND:

① Paint "Bridge No. 38C–0032"
② Paint "McHenry Ave Bridge over Stanislaus River"
③ Paint "Bent No. XX" on column at each bent location at 5' above FG
④ Indicates Low Structure Elevation 97.95 Feet
⑤ Indicates 200 Yr Event Flood Water Elevation 83.8 Feet
Existing Structure

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

SURVEY	REVISION	DESCRIPTION	BY	DATE	SCALE	PREPARED BY	DATE
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McHENRY AVE CORRIDOR IMPROVEMENTS

McHENRY AVE BRIDGE OVER STANISLAUS RIVER (REPLACE)

STRUCTURE PLAN NO. 1

ORIN A. BROWN
No. C48859
Exp. 09-30-14
CIVIL
STATE OF CALIFORNIA

DRAWING NO. S-103
SHEET NO. OF

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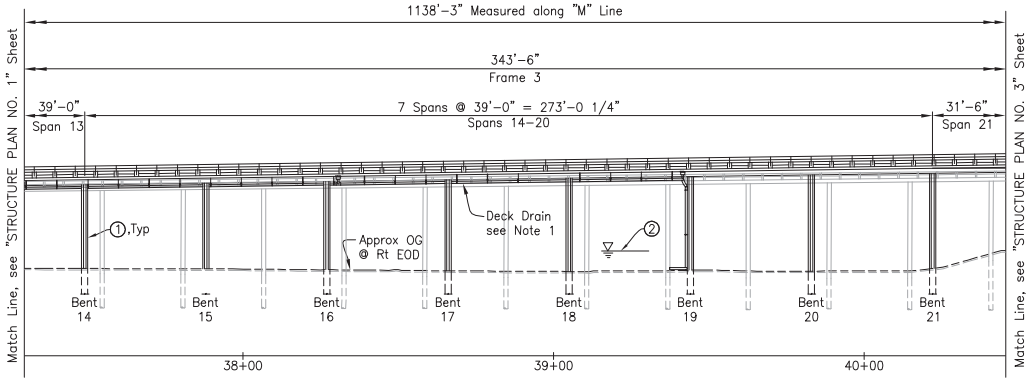
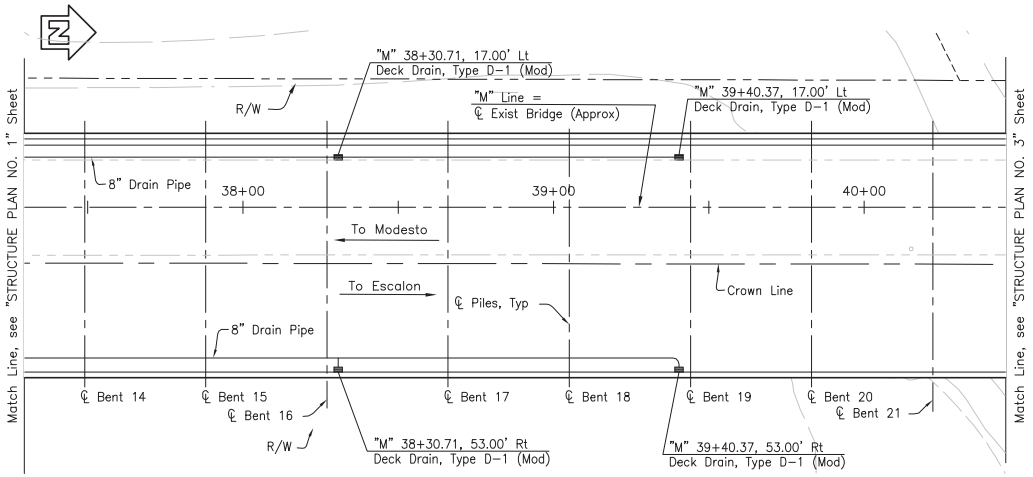
Attachment 6 Project Drawings



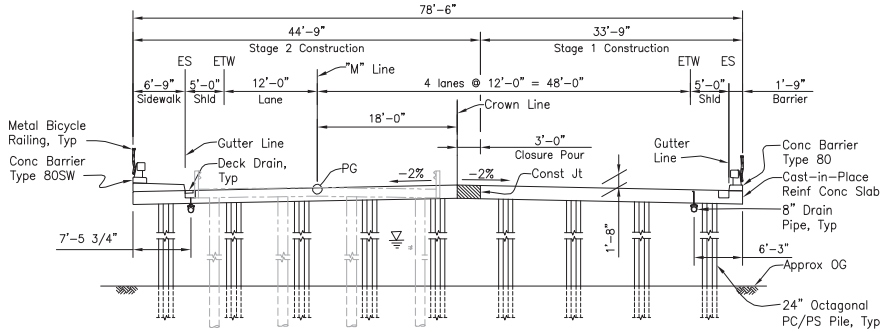
ELEVATION

Scale: 1"= 20'



PLAN

Scale: 1"= 20'



TYPICAL SECTION (FRAMES 1 – 3)

Scale: 1/8"= 1'-0"

NOTES:

1. For deck drain details and drain pipe details, see "DECK DRAINAGE DETAILS – SPANS 1–21" sheet.

LEGEND:

① Paint "Bent No. XX" on column at each bent location at 5' above FG.

② Indicates 200 Yr Event Flood Water Elevation 83.8 Feet

Existing Structure

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

SURVEY	REVISION	DESCRIPTION	BY	DATE	SCALE	PREPARED BY	DATE
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SAN JOAQUIN COUNTY PUBLIC WORKS
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McHENRY AVE CORRIDOR IMPROVEMENTS

McHENRY AVE BRIDGE OVER STANISLAUS RIVER (REPLACE)

STRUCTURE PLAN NO. 2

ERIK A. BROWN No. C48859 Exp. 09-30-14 CIVIL STATE OF CALIFORNIA

DRAWING S-104
SHEET OF
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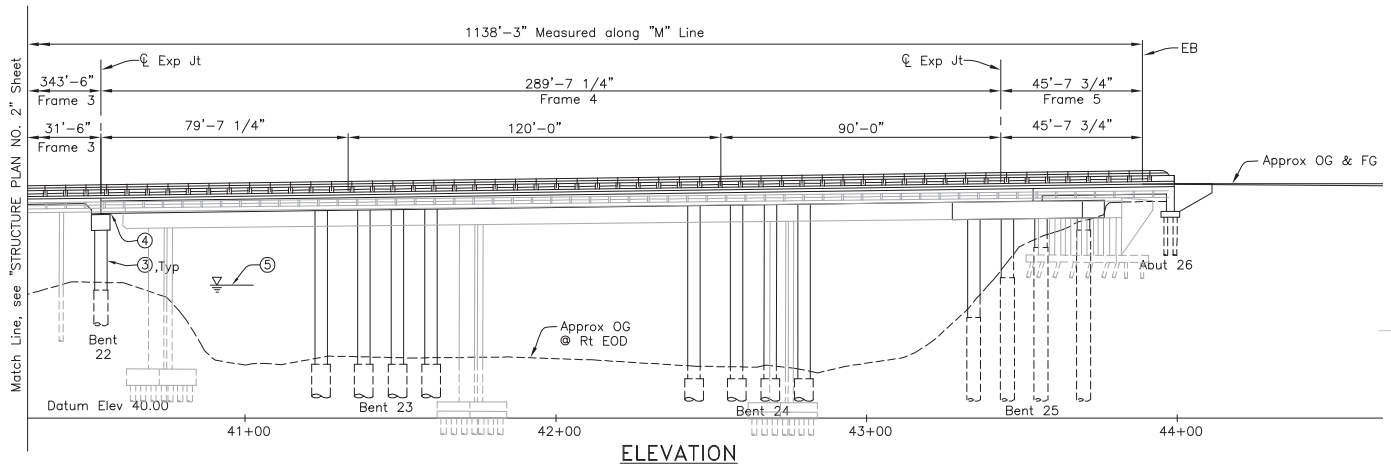
Attachment 6 Project Drawings



ELEVATION

Scale: 1"= 20'

NOTES:

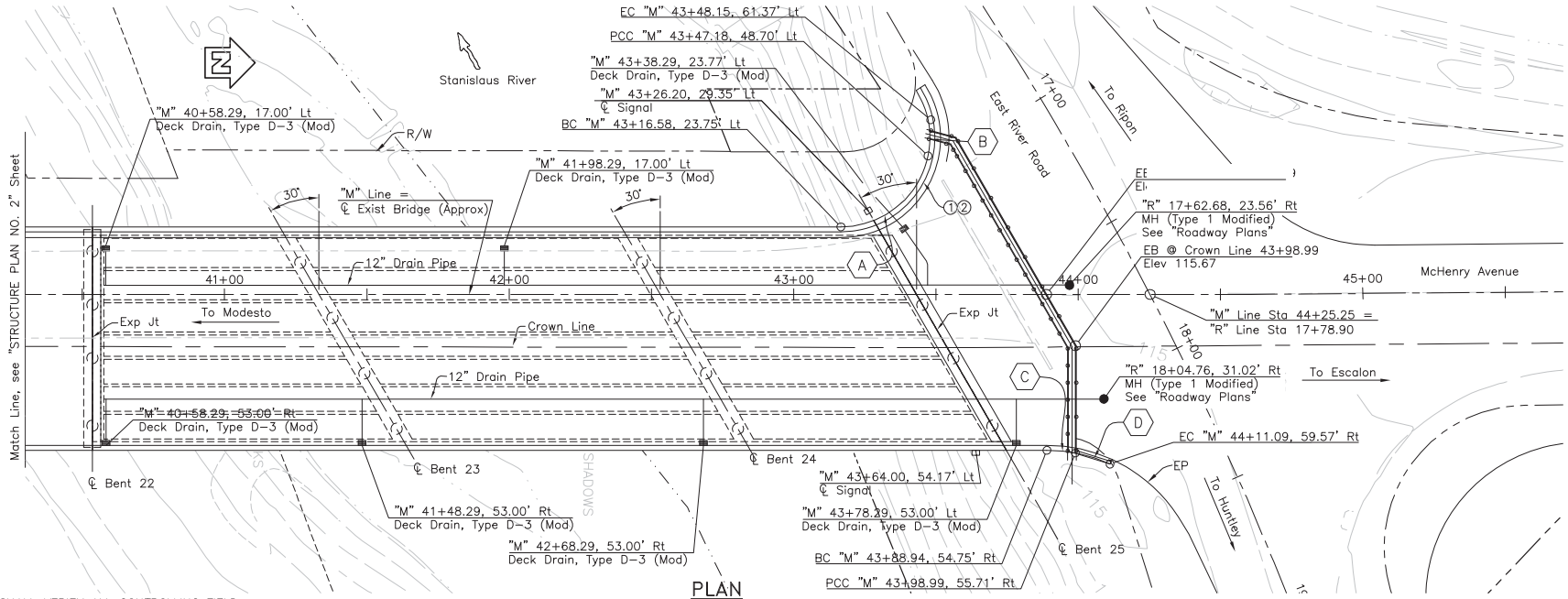
1. For deck drain details and drain pipe details, see "DECK DRAINAGE DETAILS – SPANS 22–25" sheet.
2. For Typical Sections, see "STRUCTURE PLAN NO. 4" sheet.

LEGEND:

① Paint "Bridge No. 38C–0032"
② Paint "McHenry Ave Bridge over Stanislaus River"
③ Paint "Bent No. XX" on column at each bent location at 5' above FG.
④ Indicates Low Structure Elevation 105.76 Feet
⑤ Indicates 200 Yr Event Flood Water Elevation 83.8 Feet
● Manhole
Existing Structure

CURVE DATA TABLE (EOD)

ID	R	Δ	T	L
A	31.25'	78°20'52"	25.47'	42.74'
B	48.25'	15°08'25"	6.41'	12.75'
C	53.25'	10°52'32"	5.07'	10.11'
D	53.25'	13°41'50"	6.40'	12.73'



PLAN

Scale: 1"= 20'

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

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McHENRY AVE CORRIDOR IMPROVEMENTS

McHENRY AVE BRIDGE OVER STANISLAUS RIVER (REPLACE)

STRUCTURE PLAN NO. 3

ORIN A. BROWN No. C48859 Exp. 09-30-14 CIVIL STATE OF CALIFORNIA

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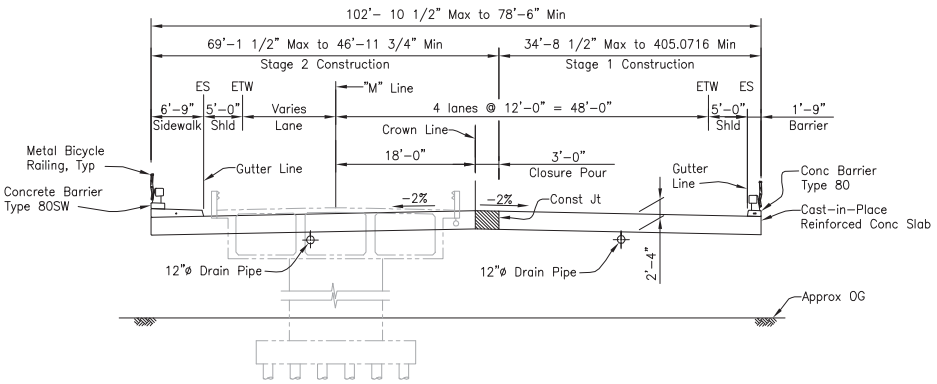
Attachment 6 Project Drawings

NOTES:

1. For deck drain details and drainage pipe details, see "DECK DRAINAGE DETAILS – SPANS 22–25" sheet.
2. For Plan and Elevation, see "STRUCTURE PLAN NO. 3" sheet.

LEGEND:

Existing Structure



TYPICAL SECTION (FRAME 5)

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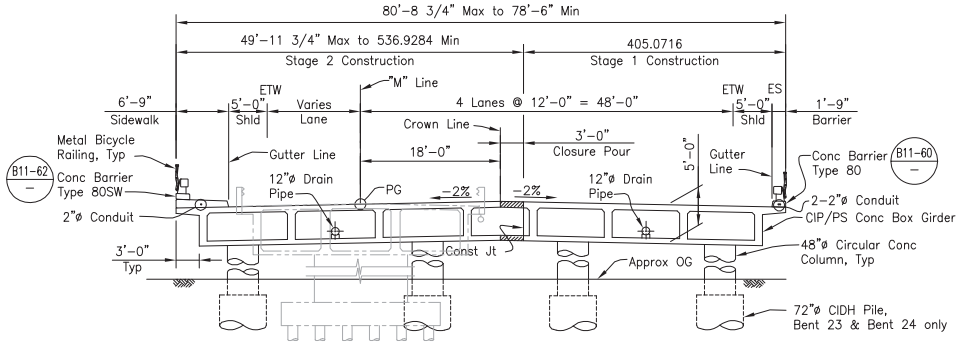

TYPICAL SECTION (FRAME 4)

Scale: 1/8"= 1'–0"

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

SURVEY	REVISION	DESCRIPTION	BY	DATE	SCALE	PREPARED BY	DATE
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SAN JOAQUIN COUNTY PUBLIC WORKS
TRANSPORTATION DIVISION

McHENRY AVE CORRIDOR IMPROVEMENTS

McHENRY AVE BRIDGE OVER STANISLAUS RIVER (REPLACE)

STRUCTURE PLAN NO. 4

REGISTERED PROFESSIONAL ENGINEER — ORIN A. BROWN — No. C48859 — Exp. 09–30–14 — CIVIL — STATE OF CALIFORNIA

DRAWING S–10
SHEET OF
OF

FILE NO. XXXX

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Attachment 6 Project Drawings

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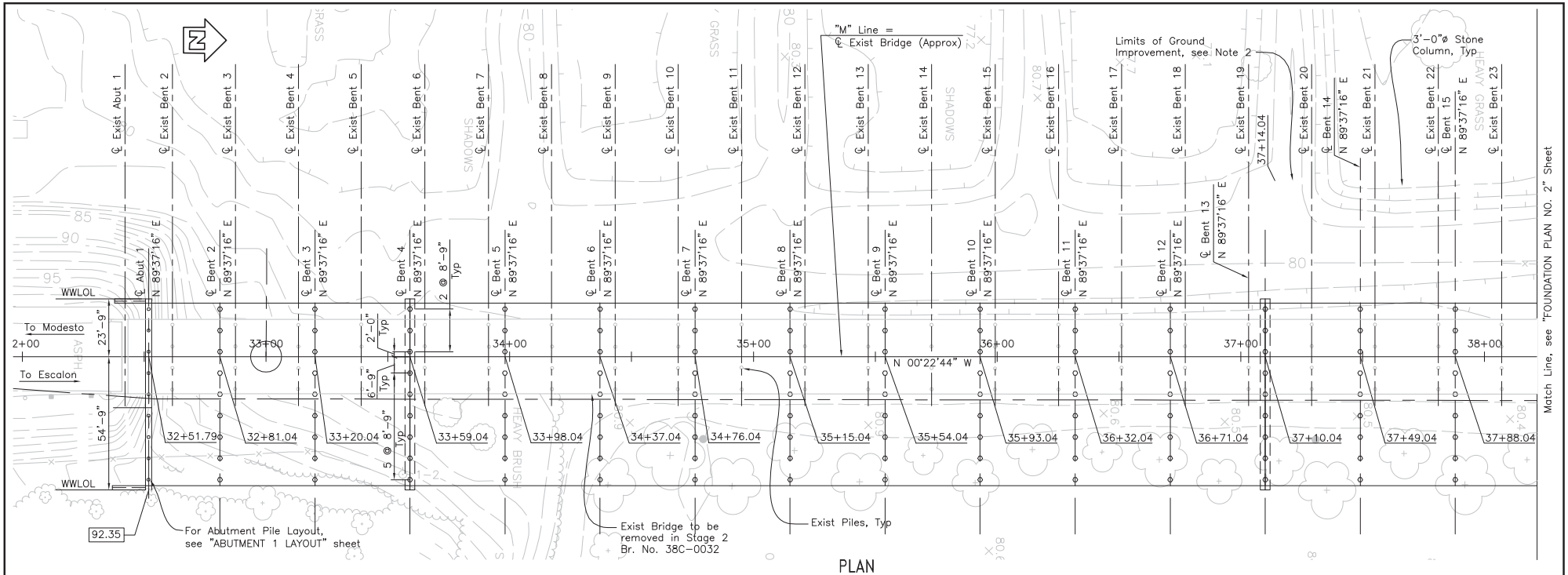

PLAN
1" = 20'

PILE DATA TABLE

Location	Pile Type	Design Loading (kips)	Nominal Resistance (kips)		Specified Cut-off Elev. (ft)	Design Tip Elev. (ft)	Specified Tip Elev. (ft)	Steel Casing Tip elev (ft)
			Compression	Tension				
Abut 1	Class 140	140	280	N/A	92.6	47.6 (1)	47.6 (1)	NA
Bents 2–20	24" PC/PS Octagonal	–	550	–	98.3–108.9	15 (4)	15 (4)	NA
Bent 21	24" PC/PS Octagonal	–	550	–	108.5–109.4	30 (1)	30 (1)	NA
Bent 22	54" CIDH	–	1210	–	81	10 (1)	10 (1)	40
Bent 23	72" CIDH	–	3030	–	60	–50 (4)	–50 (4)	35
Bent 24	72" CIDH	–	3020	–	58	–50 (4)	–50 (4)	35
Bent 25	54" CIDH	–	1290	–	88	20 (1)	20 (1)	NA
Abut 26	Class 140	140	280	N/A	105.2	60.2 (1)	60.2 (1)	NA

Design tip elevation is controlled by the following demands:
(1) Compression, (2) Tension, (3) Lateral. (4) Liquefaction

HYDROLOGIC SUMMARY

Drainage Area: 1,050 square miles					
	Design Flood	Base Flood	Flood of Record	USACOE	Overtopping Flood
Frequency	50–yr	100–yr	>100–yr	200–yr	>>500–yr
Discharge	8,000 ft^3/s	8,000 ft^3/s	9,019 ft^3/s	13,100 ft^3/s	41,300 ft^3/s
Water Surface Elevation at Bridge	81.4 ft	81.4 ft	82.2 ft	83.8 ft	89.8 ft

Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. The accuracy of said information is not warranted by the Counties and interested or affected parties should make their own investigation.

BENCHMARK DATA

To be completed at 95%

LEGEND

- ▭ – Bottom of footing
- ○ – 24" Octagonal PC/PS Concrete Piles
- ◌ – Class 140 Piles
- ⊗ – 3'ø Stone Column (Stage 1 Const)
- ◦ – Exist Piles
- ⊙ – 3'ø Stone Column (Stage 2 Const)

NOTES:

1. For pile layout see "ABUTMENT 1 LAYOUT" sheet.
2. For ground improvement details, see "GROUND IMPROVEMENT DETAILS" sheet.

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

SURVEY	REVISION	DESCRIPTION	BY	DATE	SCALE	PREPARED BY	DATE
DATUM:		NOT FOR CONSTRUCTION			HORIZONTAL:	DRAWN: H. SULLIVAN	02-05-13
					VERTICAL:	DESIGNED: J. FREKING	02-04-13
FILE No. :		–	–	–	INCHES / MILLIMETERS	CHECKED:	
						APPROVED:	

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SAN JOAQUIN COUNTY PUBLIC WORKS
TRANSPORTATION DIVISION

McHENRY AVE CORRIDOR IMPROVEMENTS

McHENRY AVE BRIDGE OVER STANISLAUS RIVER (REPLACE)

FOUNDATION PLAN NO. 1

REGISTERED PROFESSIONAL ENGINEER — ORIN A. BROWN — No. C48859 — Exp. 09-30-14 — CIVIL — STATE OF CALIFORNIA

DRAWING S-112
SHEET OF
OF

FILE NO. XXXX

99% SUBMITTAL - DRAFT

Attachment 6 Project Drawings

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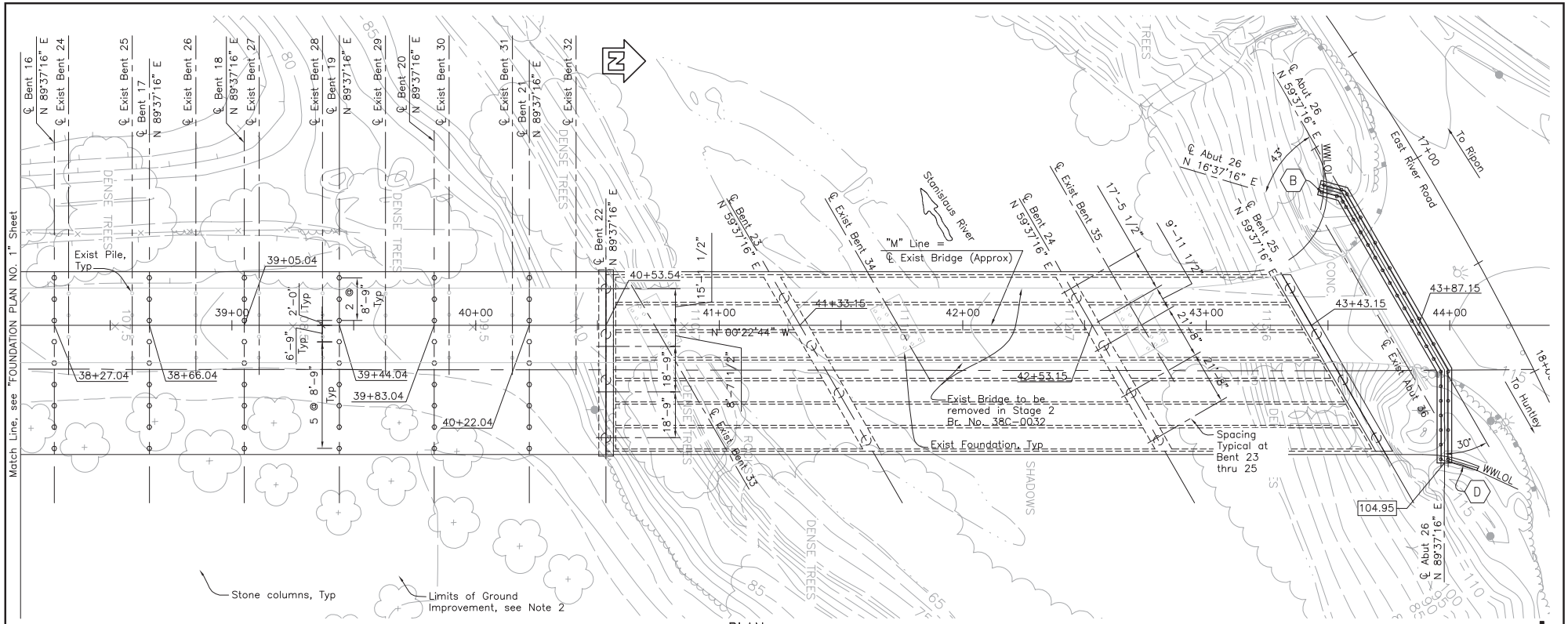


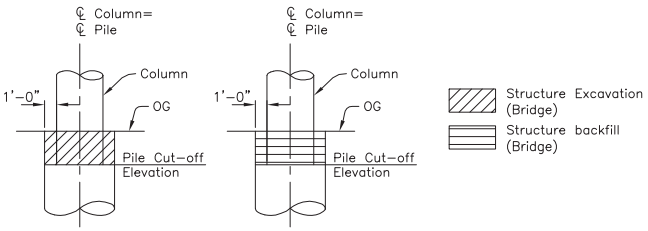
PLAN
1" = 20'

CURVE DATA TABLE (EOD)

ID	R	Δ	T	L
B	48.25'	15°08'25"	6.41'	12.75'
D	53.25'	13°41'50"	6.40'	12.73'

BENCHMARK DATA

To be completed at 95%



PAY LIMITS FOR STRUCTURE ELEVATION AND BACKFILL
No Scale

LEGEND

- ▭ – Bottom of footing
- ◯ – 72"ø CIDH Piles
- ○ – 54"ø CIDH Piles
- ○ – 24" Octagonal PC/PS Concrete Piles
- ◌ – Class 140 Piles
- ⊗ – 3'ø Stone Column (Stage 1 Const)
- ◦ – Exist Piles
- O – 3'ø Stone Column (Stage 2 Const)

Note:

1. For pile layout see "ABUTMENT 26 LAYOUT" and "ABUTMENT 26 FOOTING LAYOUT" sheets.
2. For Ground Improvement details, see "GROUND IMPROVEMENT DETAILS" sheet.

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

SURVEY	REVISION	DESCRIPTION	BY	DATE	SCALE	PREPARED BY	DATE
DATUM:		NOT FOR CONSTRUCTION			HORIZONTAL:	DRAWN: H. SULLIVAN	02-05-13
					VERTICAL:	DESIGNED: J. FREKING	02-04-13
FILE No. :		–	–	–	INCHES / MILLIMETERS	CHECKED:	
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SAN JOAQUIN COUNTY PUBLIC WORKS
TRANSPORTATION DIVISION

McHENRY AVE CORRIDOR IMPROVEMENTS

McHENRY AVE BRIDGE OVER STANISLAUS RIVER (REPLACE)

FOUNDATION PLAN NO. 2

REGISTERED PROFESSIONAL ENGINEER ORIN A. BROWN No. C48859 Exp. 09-30-14 CIVIL STATE OF CALIFORNIA

DRAWING S-113
SHEET 1 OF 1

FILE NO. XXXX

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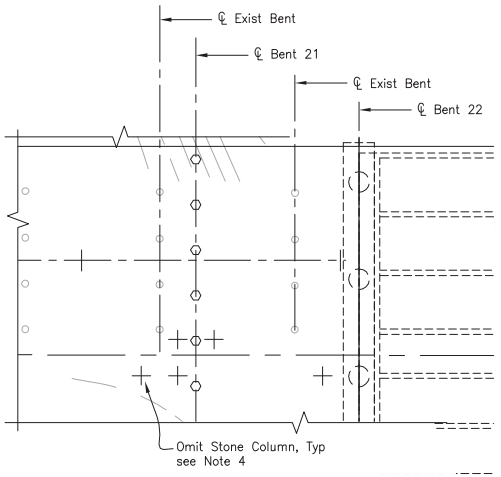
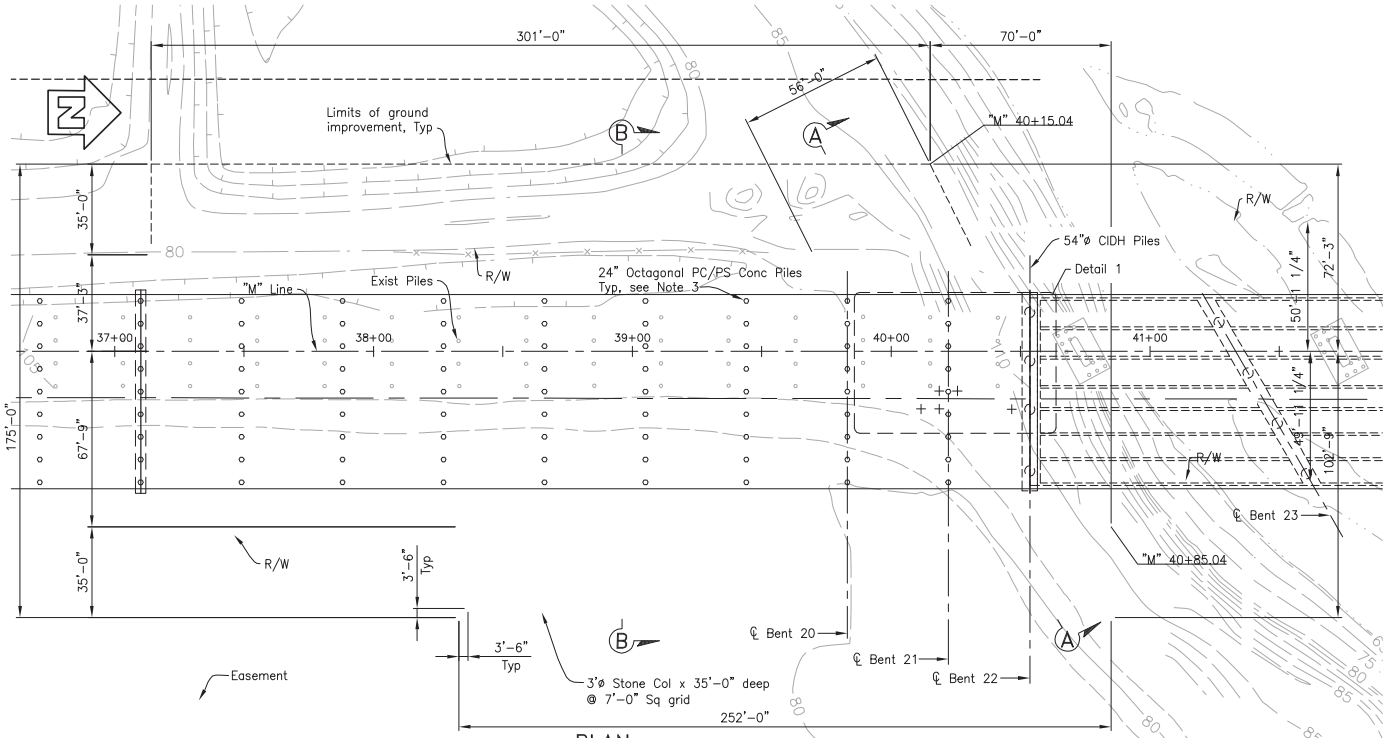


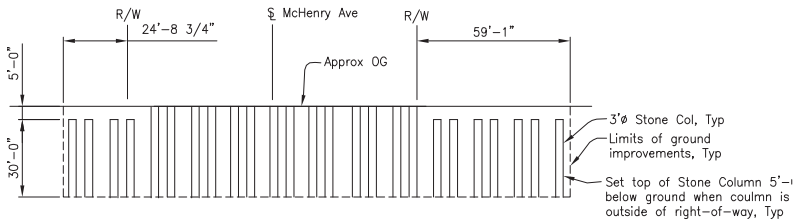
DETAIL 1

No Sclae



PLAN

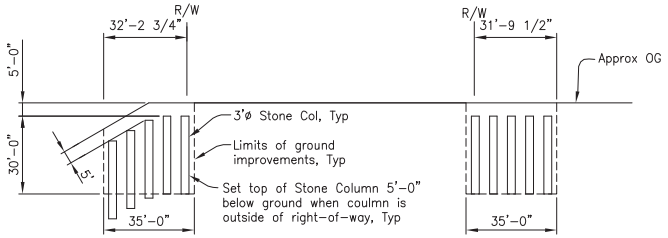
Scale: 1/2" = 1'-0"



SECTION A-A

Scale: 1/2" = 1'-0"

Note: Existing and new piles not shown



SECTION B-B

Scale: 1/2" = 1'-0"

LEGEND

- ◯ – 72"ø CIDH Piles
- ◯ – 54"ø CIDH Piles
- ∘ – 24" Octagonal PC/PS Concrete Piles
- ⊗ – 3'ø Stone Column (Stage 1 Const)
- ◦ – Exist Piles
- ⊙ – 3'ø Stone Column (Stage 2 Const)
- \+ – Omitted Stone Column

NOTES:

1. Ground will be improved by using vibratory techniques to incorporate granular material into the ground to construct stone columns.
2. Construct stone columns using a bottom feed vibro replacement process.
3. For 24" Octagonal PC/PS concrete piles locations, see "FOUNDATION PLAN NO. 2" sheet.
4. Omit stone columns where the 7'-0" Sq grid pattern would be less than 10 feet from existing load carrying piles.

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

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DATUM:		NOT FOR CONSTRUCTION			HORIZONTAL:	DRAWN: H. SULLIVAN	02-05-13
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SAN JOAQUIN COUNTY PUBLIC WORKS
TRANSPORTATION DIVISION

McHENRY AVE CORRIDOR IMPROVEMENTS

McHENRY AVE BRIDGE OVER STANISLAUS RIVER (REPLACE)

GROUND IMPROVEMENT DETAILS

REGISTERED PROFESSIONAL ENGINEER — ORIN A. BROWN — No. C48859 — Exp. 09-30-14 — CIVIL — STATE OF CALIFORNIA

DRAWING NO. S-11
SHEET NO. OF

FILE NO. XXXX

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Attachment 6 Project Drawings

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EXECUTIVE SUMMARY

The McHenry Avenue Bridge No. 38C-032, Federal Aid No. BRLS-5929(166) (project) over Stanislaus River in San Joaquin County is proposed for construction by San Joaquin County in 2013-15. Four bridge alternatives were examined in the Type Selection Report (1). The proposed bridge will be approximately the same length as the existing bridge (1,148-ft long) and will be either a cast in place box girder bridge with a 5-ft structure depth or a precast concrete bulb-tee with a 6.5-ft structure depth. Because there is more than 20-ft of vertical freeboard, the bridges are hydraulically identical and treated as the same alternative which is shown in Figure 1 below. General Plans for the two alternatives are shown in Appendix A.

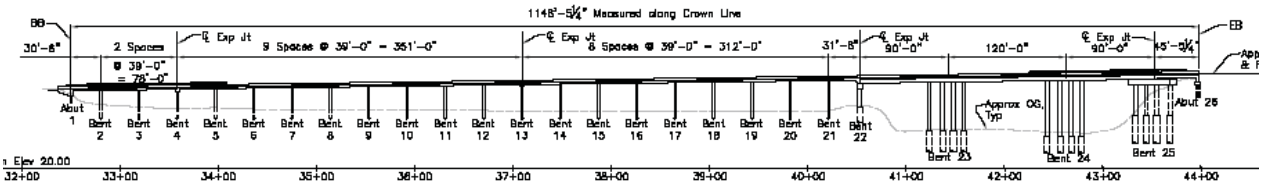

Figure 1: Alternative A: 1148'-5-1/4" long Bridge

The Stanislaus River flows in a westward direction. The river forms the County line between San Joaquin County in the north and Stanislaus County in the south. The basin is approximate 1,050-square miles at the bridge. The discharges used for the bridge hydraulic analysis are taken from the recent Federal Emergency Management Agency (9) study and are shown on Table 1 below:

Table 1: Estimated discharges and water surface elevations for bridge design

	Design	Base	Flood of Record	USACOE	Overtopping Flood
Frequency (Years)	50	100	> 100	200	>> 500
Discharge (cfs)	8,000	8,000	9,019	13,100	>> 41,300
Water Surface (Elev. @ u/s face of Br.)	81.4	81.4	82.2	83.8	>> 89.8

Avila and Associates, Inc. used the HEC-RAS[1] 3.1.3 model to estimate the water surface elevation (WSE) for the existing and proposed bridge (Alternative A and B). The modeling acquired from FEMA shows that the water surface elevation is unchanged by the proposed bridge. A summary of the comparison between existing and proposed conditions for the 100-year, Flood of Record and 200-year water surface elevations are shown in Table 2 through Table 4 below. River stationing is shown in Figure 9 below:

Table 2: Water surface elevation for the existing and proposed bridge for the 50-year and 100-year discharge 8,000 cfs

River Station	Existing	Proposed	Difference
158633.8	80.97	80.97	0.00
159708.8	81.35	81.35	0.00
159916.8	81.38	81.38	0.00
Downstream face of bridge 159917.4	81.37	81.37	0.00
Upstream face of bridge 159948	81.38	81.38	0.00
159948.8	81.38	81.38	0.00
160214.8	81.34	81.34	0.00
161560.8	81.87	81.87	0.00

[1] US Army Corps of Engineers Hydraulic Engineering Center River Analysis System which backwater hydraulic model designed to perform one-dimensional hydraulic calculations for a full network of natural and constructed channels.

Table 3: Water surface elevation for the existing and proposed bridge for the Flood of Record 9,019 cfs

River Station	Existing	Proposed	Difference
158633.8	81.78	81.78	0.00
159708.8	82.19	82.19	0.00
159916.8	82.22	82.22	0.00
Downstream face of bridge 159917.4	82.22	82.22	0.00
Upstream face of bridge 159948	82.22	82.22	0.00
159948.8	82.23	82.23	0.00
160214.8	82.18	82.18	0.00
161560.8	82.75	82.75	0.00

Table 4: Water surface elevation for the existing and proposed bridge for the 200-year discharge 13,100 cfs

River Station	Existing	Proposed	Difference
158633.8	83.12	83.12	0.00
159708.8	83.78	83.78	0.00
159916.8	83.83	83.83	0.00
Downstream face of bridge 159917.4	83.82	83.83	0.00
Upstream face of bridge 159948	83.83	83.83	0.00
159948.8	83.84	83.84	0.00
160214.8	83.76	83.76	0.00
161560.8	84.64	84.64	0.00

The proposed bridge will be a new bridge crossing at Stanislaus River constructed on the same alignment and widened upstream of the existing bridge. In addition, the proposed soffit elevation of 103.3 at Abutment 1 will provide 22.9-feet of freeboard above the 100-year water surface elevation. Pier widths between 4 and 6 feet were examined (Alternative 1 through 3) and scour depths are shown in Table 5 below.

Table 5: Pier scour depths and total scour elevations for proposed Stanislaus River Bridge

	Alternative 1	**Alternative 2**	**Alternative 3**
Pier Width (ft)	4	5	6
Equivalent Pier Size	6.8	8.5	10.2
Velocity (Q_{100}) (ft/s)	1.7	1.7	1.7
Existing Thalweg Elevation (ft)	57	57	57
Pier Scour (ft)	8	8	9
Contraction Scour (ft)	--	--	--
Degradation	--	--	--
Total Scour	7	8	9
Scour Elevation	50	49	48

The large diameter shafts shed debris much better than small pile extensions and/or pier walls. Potential debris capture has been accounted for in the scour analysis. No scour mitigation measures are required as the proposed CIDH piles will be designed for the estimated scour depth.

According to the Geotechnical Report (12), the main channel is composed of very-loose sand, silt and gravel to a depth of about 15-feet underlain by medium-dense, medium-grained sand, silt and gravel while the embankment and floodplain are composed of alternative layers of loose to medium dense silty sand, poorly graded sand and silt interbedded with soft to firm silt and sandy silt to a depth of about 35 feet below existing grade. The estimated scour is consistent with the geotechnical observations.