Meeting of the Central Valley Flood Protection Board
September 28, 2012
Staff Report
California Department of Transportation, District 3
Butte Creek Bridge (No. 12-0126R) Replacement
State Route 99, Butte County

1.0 – ITEM

Consider approval of Permit No. 18767 (Attachment B)

2.0 – APPLICANT

California Department of Transportation (Caltrans), District 3

3.0 – LOCATION

The proposed project is located on State Route (SR) 99 between Estates Drive and Southgate Avenue in Butte County (see Attachment A for Location Map).

4.0 – PROJECT DESCRIPTION

The applicant proposes to replace the Butte Creek Bridge (No. 12-0126R) on SR 99 in Butte County with a new bridge constructed on the existing northbound alignment. The new bridge would replace the existing bridge with a reinforced concrete box girder bridge (RCBGB). The two-span structure would be supported by two abutments and one pier all on pile. Rock slope protection (RSP) will be placed on site in addition to the bridge replacement.

Mitigation for the proposed project will consist of both salmonid habitat streambed enhancement gravel as well as riparian mitigation. The riparian mitigation will consist of planting 100 trees and 100 shrubs at the three upstream mitigation sites, approximated based on a 3:1 replacement ratio for species removed during construction activities. Construction of temporary falsework, cofferdams, and two temporary creek diversions will be required. (see Attachment C for Project Plan).

5.0 – PROJECT ANALYSIS

The project proposes to replace the northbound Butte Creek Bridge because the existing bridge is experiencing substructure scour and continued deck deterioration. The purpose of the project is to preserve the integrity of SR 99 by replacing the northbound bridge.

The new two-span RCBGB is proposed to have a 6-foot, 4-inch depth, and the pier wall will be 2-foot, 6-inches thick and supported by a spread footing and piles. The abutments would be founded on steel piles. The substructure elements will have no roadway skew (angle between the roadway and the channel). Span lengths are 162-feet from the ends of the structure to the centerline of Pier 2 resulting in an overall structure length of 324 feet.

The southbound roadway and bridge will be utilized for detouring traffic, and will require some reconstruction to strengthen the shoulders and bridge rail replacement to allow for adequate storm water deck drainage to be drained away from the levee road and Butte Creek.

Mitigation will consist of both salmonid habitat streambed enhancement gravel and riparian mitigation. The riparian mitigation will consist of planting 100 trees and 100 shrubs at the three upstream mitigation sites, approximated based on a 3:1 replacement ratio for species removed during construction activities (for details see Attachment B, Exhibit A for Onsite Mitigation and Monitoring Proposal and Attachment D for a detailed Planting Plan).

The project is expected to require three construction seasons with construction beginning in April 2013 and tentatively ending in November 2016. During this time construction of temporary falsework, cofferdams, and two temporary creek diversions will be required. Special Condition TWENTY-SIX requires the applicant to submit two sets of plans for Central Valley Flood Protection Board (Board) staff to approve for all temporary structures prior to construction.

The following additional project analyses have been made during review of the submitted technical information.

5.1 – Authority of the Board

- Title 23, §6 - Need for a Permit; §121 – Erosion Control; §128 – Bridges; §131 – Vegetation

- The proposed project encroaches upon a Regulated Stream per Table 8.1 of Title 23 which has Sacramento River Flood Control Project levees maintained by the Department of Water Resources (DWR) Maintenance Area 5.

5.2 – Project Background

The existing northbound bridge was originally constructed in 1952 and later widened in 1989. The existing structure is 323-feet long and 43.5-feet wide with 12-foot lanes and 8-foot shoulders. As stated in Section 5.0 above, the existing bridge is experiencing structural issues such as continuous spalling and minor punching failures as well as critical scour due to channel degradation and thalweg migration.

5.3 – Hydraulic Analysis

Based upon FEMA flows of 25,000 cubic feet per second (cfs) for Butte Creek and 3,900 cfs for the Little Chico-Butte Creek Diversion Channel (a tributary to Butte Creek) a corresponding 100-year combined flow at this crossing is calculated to be 28,900 cfs. Current Board standards based on the Operations and Maintenance Manual for the Upper Butte Creek – Part No. 2, specify a design flow of 27,000 cfs. This is less than the 100-year combined flow, however the applicant has chosen to use the more conservative 28,900 cfs 100-year combined flow to model and design this project.

HEC-RAS version 4.1.0 was used to model the channel hydraulics for this project. Manning's Roughness Coefficients of 0.031 for the main channel and 0.034 to 0.100 in the floodplain were used in the model. The mitigation for the project described in Section 5.0 above was accounted for in the modeling of the proposed hydraulics. The U.S. Army Corps of Engineers (USACE) also requested the applicant perform a sensitivity analysis (Attachment E) by varying the roughness coefficients for more conservative values to determine if there are any significant impacts by varying this factor. The results of the sensitivity analysis indicate that there are only negligible hydraulic impacts during a 100-year flood event using the USACE suggested values. The USACE has given their concurrence with the applicant's hydraulic conclusions.

The proposed modeling scenario (with the mitigation described in Section 5.0 above) produces a water surface elevation (WSE) of 218.45 feet at the bridge. The proposed soffit of the new structure is at elevation 221.64 feet resulting in 3.19 feet of freeboard above the 100-year WSE. This is consistent and compliant with Title 23 standards which require a minimum of three feet of freeboard above the design WSE. Calculated velocities upstream of the proposed bridge are 7.6 feet per second (fps) and will vary from 7.6 fps to 10.0 fps downstream. The proposed project without mitigation lowers

the modeled WSE by approximately one-half inch from pre-project conditions. When the proposed mitigation (gravel placement and vegetation) is included in the model the resulting WSE is raised approximately one-inch (0.08 feet) from pre-project conditions. Staff agrees with the applicant's determination that the modeled impact of mitigation gravel and vegetation on the resulting channel WSE is negligible.

5.3.1 – Pier Scour

HEC-18 was used to evaluate scour at the proposed bridge. Pier scour was calculated to be 4.8 feet in depth. Butte Creek is an active meandering channel and therefore, migration within the main channel is still anticipated. The addition of the proposed mitigation salmonid gravel is not expected to provide any structural protection from degradation at the site. The calculated scour for the site should not affect the structural integrity of the bridge or the channel.

5.3.2 – Contraction and Abutment Scour

Contraction and abutment scour were calculated using the hydraulic design function within HEC-RAS. Both contraction and abutment scour were determined by Caltrans to be negligible for Butte Creek at this location.

5.3.3 – Bridge Drainage

Special Condition TWENTY-SEVEN of Draft Permit No. 18767 states that drainage from the bridge or highway shall not be directly discharged into Butte Creek or on the adjacent levees. Bridge drainage must comply with this condition to preserve the integrity of the levees and stream.

Staff agrees with the applicant's assessment and conclusions from the Final Hydraulic Report and finds the project to be in compliance with Title 23 and have no significant adverse affects on the Butte Creek channel or levees.

5.4 – Geotechnical Analysis

The proposed project has no significant geotechnical impacts to the existing channel or the floodway, and the geotechnical foundation report supports the design. Excavation within the floodway occurs at locations that are not critical to the integrity of the natural stream bank or channel. All fill, rock placement, excavation, and temporary structures will be completed in compliance with Permit No. 18767 (see Attachment B) and Title 23.

5.4.1 – Rock Slope Protection (RSP)

RSP will be keyed into the levee with two-layers on top of filter fabric. The extents of the RSP are from approximately 27 feet upstream and downstream of the respective northbound bridge faces. The short-term excavation impacts will be offset by the long-term benefits of bank and channel protection. This area has scour issues and relatively fast natural velocities and staff agrees that this RSP mitigation is needed to protect the channel, structure, and levees in this reach of Butte Creek.

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 comment letter has not been received for this application. Staff anticipates receipt of a letter indicating that the USACE District Engineer has no objection to the project, subject to conditions. Upon receipt of the letter, staff will review to ensure conformity with the permit language and incorporate it into the permit as Exhibit B (see Attachment B, Exhibit B).

- DWR Maintenance Area 5 has endorsed the project as proposed by the applicant with no conditions.

7.0 –CEQA ANALYSIS

Board staff has prepared the following CEQA Findings:

The Board, as a Responsible Agency under CEQA, has reviewed the Initial Study/Mitigated Negative Declaration (IS/MND, SCH No. 2010032105, October 2010), and the Mitigation and Monitoring Plan for the Butte Creek Bridge Project, prepared by the lead agency, Caltrans. These documents, including project design, may be viewed or downloaded from the Central Valley Flood Protection Board website at http://www.cvfpb.ca.gov/meetings/2012/9-28-2012.cfm under a link for this agenda item. The documents are also available for review in hard copy at the Board and Caltrans offices.

Caltrans has determined that the project would not have a significant effect on the environment and filed a Notice of Determination on October 26. 2010. On April 2, 2012, Caltrans approved an addendum to the Initial Study/Mitigated Negative Declaration, indicating no new significant environmental effects from the change in environmental commitments.

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 Mitigation and Monitoring Plan and address impacts to biological resources. The description of the mitigation measures are further described in the adopted Mitigation and Monitoring Plan.

8.0 – SECTION 8610.5 CONSIDERATIONS

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

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

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

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

3. Effects of the decision on the 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 no adverse effect on facilities of the State Plan of Flood Control and is consistent with the Central Valley Flood Protection Plan.

4. 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.

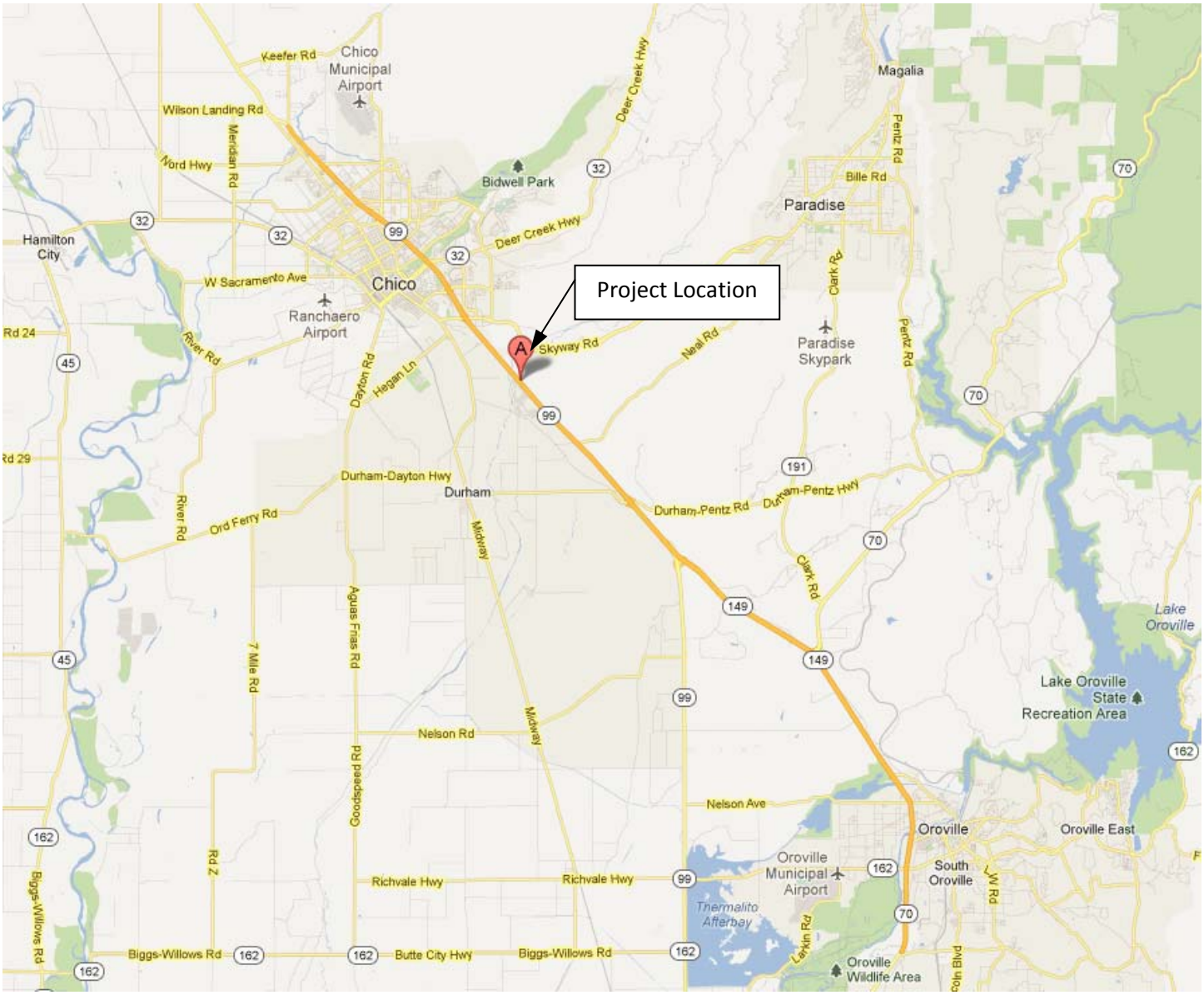
9.0 – STAFF RECOMMENDATION

Staff recommends that the Board adopt the CEQA findings, approve the permit, conditioned upon receipt of a U.S. Army Corps of Engineers comment letter indicating that the District Engineer has no objection to the project, subject to conditions and receipt of an acceptable Long-term Management Plan, and direct the Executive Officer to take the necessary actions to execute the permit and to file a Notice of Determination with the State Clearinghouse.

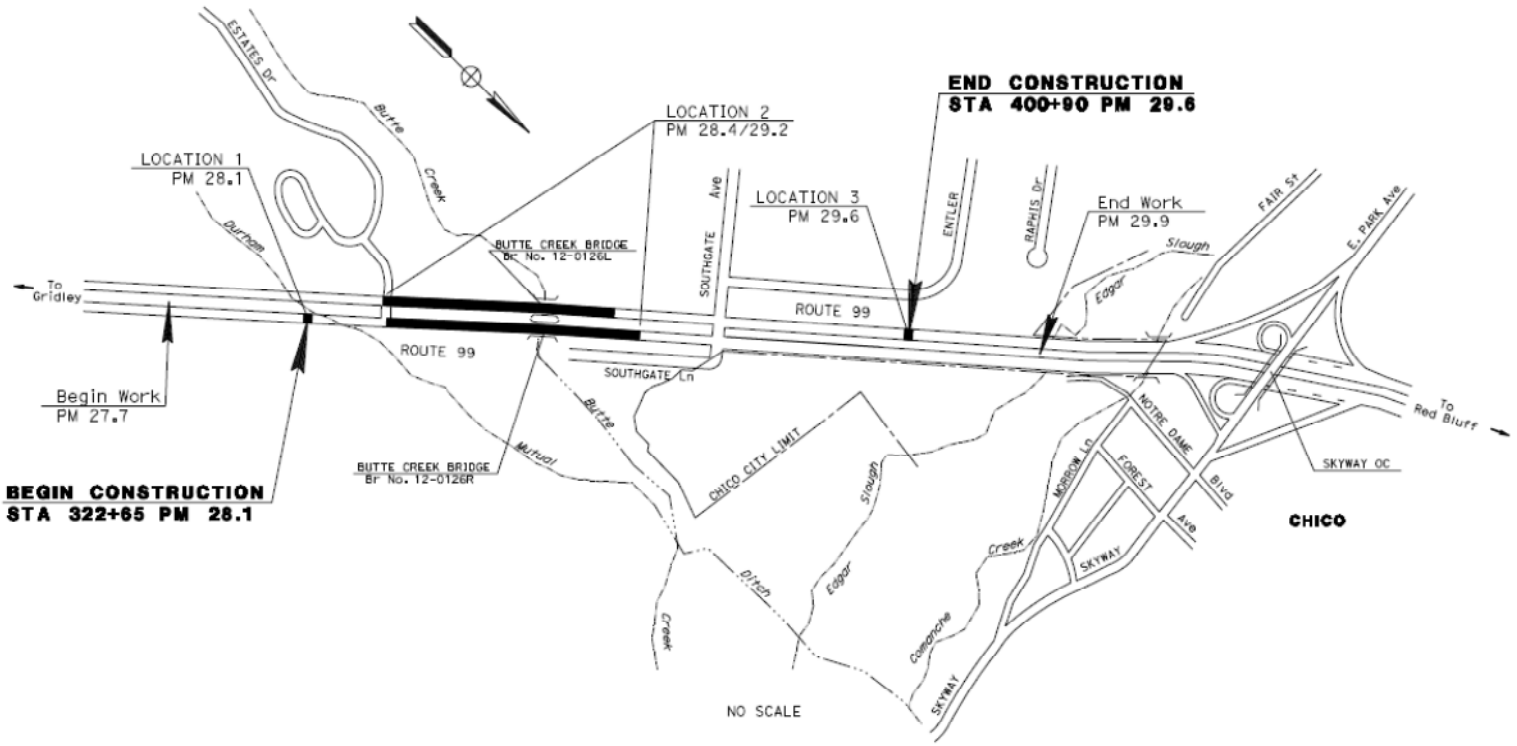
10.0 – LIST OF ATTACHMENTS

A. Location Maps
B. Draft Permit No. 18767
   - Exhibit A: Onsite Mitigation and Monitoring Proposal
   - Exhibit B: USACE Comment Letter (expected by 9/28/12)
C. Project Design Plans (General Plan, Index to Plans, C-23 to C-27, X-1, X-2, L-1 to L-3, Foundation Plan, Pier Layout, Typical Section, and Exhibits 1 to 3)
D. Planting Plans
E. Sensitivity Analysis

Reviewed by:	Nancy Moricz, PE
Environmental Review:	James Herota, Environmental Scientist
Document Review:	David R. Williams, PE – Senior Engineer, Eric R. Butler, PE – Supervising Engineer, Len Marino, PE – Principal Engineer


Project Location
A
Keefer Rd
Chico Municipal Airport
Wilson Landing Rd
Meridian Rd
Ord Hwy
Bidwell Park
Deer Creek Hwy
Magalia
Pentz Rd
Bille Rd
Paradise
Hamilton City
W Sacramento Ave
Chico
Ranchaero Airport
Clark Rd
Paradise Skypark
Rd 24
River Rd
Skyway Rd
Neal Rd
Dayton Rd
Hegan Ln
Rd 29
Durham-Dayton Hwy
Durham
Durham-Pentz Rd
Ord Ferry Rd
Midway
Aguas Frias Rd
7 Mile Rd
Lake Oroville
Lake Oroville State Recreation Area
Nelson Rd
Goodspeed Rd
Nelson Ave
Oroville
Oroville East
Oroville Municipal Airport
South Oroville
Rd Z
Richvale Hwy
Thermalito Afterbay
Larkin Rd
Biggs-Willows Rd
Butte City Hwy
Oroville Wildlife Area

ATTACHMENT A - Location Map



DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18767 BD

This Permit is issued to:

California Department of Transportation
703 B Street
Marysville, California 95901

To replace the Butte Creek Bridge (No. 12-0126R) on State Route (SR) 99 in Butte County with a new bridge constructed on the existing northbound alignment. The new bridge would replace the existing bridge with a reinforced concrete box girder bridge (RCBGB). The two-span structure would be supported by two abutments and one pier all on pile. Rock slope protection will be placed on site in addition to bridge replacement. Mitigation for the proposed project will consist of both salmonid habitat streambed enhancement gravel as well as riparian mitigation. The riparian mitigation will consist of planting 100 trees and 100 shrubs at the three upstream mitigation sites, approximated based on a 3:1 replacement ratio for species removed during construction activities. Construction of temporary falsework, cofferdams, and two temporary creek diversions will be required. The project is located on State Route 99 between Estates Drive and Southgate Avenue in Butte County (Section 8, T21N, R2E, MDB&M, Maintenance Area 5, Butte Creek, Butte 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. 18767 BD

THIRTEEN: 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.

FOURTEEN: All addendums or other changes made to the submitted documents by the permittee after issuance of this permit are subject to submittal and review for approval by the Central Valley Flood Protection Board prior to incorporation into the permitted project. Upon review and approval of any new submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes. The Central Valley Flood Protection Board shall have up to 90 days after receipt of any documents, plans, drawings, and specifications for the review process. The Central Valley Flood Protection Board and/or the Department of Water Resources may extend this review period by written notification.

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

SIXTEEN: No further plantings or work, other than that covered by this application, shall be performed in the project area without prior approval of the Central Valley Flood Protection Board. All project mitigation shall comply with the Onsite Mitigation and Monitoring Proposal, which is attached to this permit as Exhibit A and is incorporated by reference. A Long-term Management Plan must be submitted and satisfactory to Board staff prior to permit issuance. The Long-term Management Plan will be attached to Exhibit A which is incorporated by reference to this permit.

SEVENTEEN: 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

EIGHTEEN: 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.

NINETEEN: The mitigation measures approved by the CEQA lead agency and the permittee are found in its Mitigation and Monitoring Reporting Program (MMRP) adopted by the CEQA lead agency. The permittee shall implement all such mitigation measures.

TWENTY: 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.

TWENTY-ONE: The Central Valley Flood Protection Board and the 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.

TWENTY-TWO: The permittee shall be responsible for repair of any damages to the Butte Creek levees, channel, and other flood control facilities due to construction, operation, or maintenance of the proposed project.

TWENTY-THREE: No construction work of any kind shall be done during the flood season from November 1st to April 15th without prior approval of the Central Valley Flood Protection Board.

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

TWENTY-FIVE: The permittee shall contact the Department of Water Resources, Inspection Branch by telephone, (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction

conference. The permittee shall also contact the Central Valley Flood Protection Board's Construction Supervisor at (916) 574-2646 for quality assurance inspection. Failure to do so at least 10 working days prior to start of work may result in delay of the project.

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

TWENTY-SEVEN: Drainage from the bridge or highway shall not be discharged directly into Butte Creek or the adjacent levees.

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

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

THIRTY: 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 April 15.

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

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

THIRTY-FOUR: The soffit of the new bridge shall be no lower than that of the existing bridges.

THIRTY-FIVE: In the event existing revetment on the channel bank or levee slope is disturbed or displaced, it shall be restored to its original condition upon completion of the proposed installation.

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

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

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

FORTY-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.

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

FORTY-THREE: 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.

FORTY-FOUR: The permittee shall provide supervision and inspection services acceptable to the Central Valley Flood Protection Board. A professional 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.

FORTY-FIVE: Upon completion of the project, the permittee shall submit a final completion letter to: Central Valley Flood Protection Board, 3310 El Camino Avenue, Suite 162, Sacramento, California 95821 and the Department of Water Resources, Flood Project Inspection Section, 3310 El Camino Avenue, Suite 256, Sacramento, California 95821.

FORTY-SIX: The permittee shall submit as-built drawings to the Department of Water Resources' Flood Project Inspection Section, located at 3310 El Camino Ave, Room 256, Sacramento, California, 95821, upon completion of the project.

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

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

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

FIFTY: The permittee shall comply with all conditions set forth in the comment letter from the Department of the Army (U.S. Army Corps of Engineers, Sacramento District) dated _____, which is attached to this permit as Exhibit B and is incorporated by reference.

Onsite Mitigation and Monitoring Proposal for the California Department of Transportation's

Butte Creek Bridge Replacement Project on State Route 99 in Butte County

03-BUT-99
PM 28.1/29.6
EA: 03-3E6201/EFIS: 03-0000-0509-1

Prepared by:

Kelley Nelson
Associate Environmental Planner/Natural Sciences
(530) 741-4583

Monica Finn
Mitigation/Revegetation Specialist
(530) 740-4850

Caltrans District 3 Stewardship Branch

May 2012

Approved By:

S Melim Date: 5/8/12
Suzanne Melim
Environmental Branch Chief
Office of Environmental Management
Caltrans District 3 North Region

Sharon Stacey Date: 5/8/12
Sharon Stacey
U.S. Army Corps of Engineers Liaison
Office of Environmental Management
Caltrans District 3 North Region

INTRODUCTION

The California Department of Transportation (Caltrans), in conjunction with the Federal Highway Administration (FHWA), is proposing a northbound bridge replacement project on State Route (SR) 99 in Butte County from highway post miles (PM) 28.4 to 29.4 (Figures 1 and 2). The project area can be located on the Chico USGS 7.5-minute quadrangle (Section 8 of Township 21N Range 2E). The Environmental Study Limit (ESL) encompasses an area of approximately 11 acres.

This Mitigation Monitoring Proposal (MMP) serves to satisfy the revegetation and water quality requirements of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Game (CDFG), the National Marine Fisheries Service (NMFS), and the Central Valley Regional Water Quality Board (CVRWQB). The MMP is also being prepared to satisfy General Condition 13 of the USACE's Nationwide Permit 23 (Approved Categorical Exclusions), which states that a pre-construction notification (PCN) must include a compensatory mitigation proposal with reasonable measures to avoid and minimize adverse effects to aquatic resources.

This plan proposes measures to replace woody riparian trees, removed by construction activities, on a 3:1 ratio. Planting is proposed at three locations upstream of the bridge (Exhibit A) on property owned by the California Department of Fish and Game. The three locations were identified during an interagency field meeting on April 24, 2012, between representatives from California Department of Transportation, California Dept. of Fish and Game and California Department of Water Resources. Previously proposed planting locations caused flooding and increased maintenance concerns for the California Department of Water Resources who is responsible for maintaining the floodplain. Maintenance activities currently include clearing, or reducing vegetation and limbing of trees, except within the 15 feet adjacent to the water's edge, which in agreement with the California Department of Fish and Game, the Department of Waters Resources leaves as a vegetated buffer and does not do any maintenance in. The Department of Water Resources requested Caltrans identify planting locations at least 50 feet upstream or downstream of the bridge and within this 15 foot buffer zone.

PROJECT DESCRIPTION

The existing northbound (NB) bridge structure over Butte Creek is experiencing substructure scour and continued deck deterioration and is in need of a replacement. This bridge has a history of severe deck issues as a result of being constructed with poor materials and is experiencing continual spalling, or chipping away of material. The purpose of the project is to maintain the integrity of the transportation facility by replacing the existing bridge structure.

Within the limits of the project, SR 99 is a 4-lane expressway with two lanes traveling southbound (SB) and two lanes traveling NB. The NB roadway consists of two 12-foot lanes and 8-foot shoulders, while the southbound roadway consists of two 12-foot lanes and 5 to 10-foot shoulders.

The existing bridge structure is a 5 span continuous reinforced concrete structure with 4 pier walls that is approximately 323 feet long and 43.5 feet wide. The new bridge would be a 324 feet long reinforced concrete box girder bridge with two 12-foot-wide lanes and a 5-foot wide shoulder on the west side and 10-foot wide shoulder on the east side. Two abutments on piles and 1 pier wall on spread footings would support the 2 span structure. Temporary false work,

cofferdams, and a creek diversion/gravel pad crossing will be required for the demolition and construction of the new bridge.

Roadwork will involve removing and replacing failed pavement areas, reconstructing existing shoulders, placing new Asphalt Concrete (AC) pavement, grinding Portland Cement Concrete (PCC), constructing a temporary crossover median detour, temporary culverts, extending existing culverts, replacing drains, placing Rock Slope Protection (RSP), removing and replacing flashing beacons and traffic sensors, installing temporary highway lighting, and constructing new bridge approach metal beam guard railing (MBGR). The southbound roadway will be utilized for detouring traffic and will require some reconstruction to strengthen the shoulders. The roadways (NB and SB) within the project limits will be paved with an Open Graded Friction Course-OGFC, formally known as Open Graded Asphalt Concrete overlay.

Both the NB and SB lanes will remain open through the construction zone. The SB bridge (#12-0126L) will accommodate three lanes of traffic separated by a temporary concrete barrier (two SB lanes and one NB lane), requiring a one-lane crossover median detour. While the bridge is under construction, it will accommodate one lane of traffic at a time while the other half is in being constructed. Once one half of the bridge is built, traffic will switch to the newly constructed half, and the other half of the bridge will be built.

Vegetation in Butte Creek, adjacent to the bridge varies by channel landform and current maintenance activities. On the upstream side of the bridge there is a 20-foot wide strip of riparian vegetation that borders Butte Creek on the south bank. This vegetation is dominated by large alders (*Alnus rhombifolia.*), along with some sycamore (*Platanus racemosa*) and Oregon ash (*Fraxinus latifolia*), all of which are adjacent to the bridge area and form a dense vegetation band along the bank. The northeast side of the creek is dominated by willows including sandbar willow (*Salix exigua*), arroyo willow (*S. lasiolepsis*), and red willow (*S. laevigata*). This is more of an ephemeral side channel area. The willows here are young and are likely either regularly removed by high flows, or with flood maintenance activities. There are also Fremont cottonwoods (*Populus fremontii*) present immediately north of the willow area, further from the water channel. Sycamore and ash are interspersed here as well, along with an understory of annual grasses and forbs. The riparian vegetation here consists of groupings of trees or individuals scattered over the floodplain, with most of these appearing to be limbed by flood control activities. The southwest and northwest banks of the creek on the downstream side of the bridge, do not currently have riparian trees present near the creek, likely due to vegetation clearing.

The understory in the floodplain adjacent to the bridge consists mainly of yellow star thistle (*Centaures solstitialis*), tree-of-heaven (*Ailanthus altissima*), scotch broom (*Cytisus scoparius*), wild grape (*Vitis californica*), Himalayan blackberry (*Rubus discolor*), mugwort (*Artemesia douglasiana*), sedge (*Cyperus* sp), mint (*Mentha* sp.), plantain (*Plantago major*), and poison oak (*Toxicodendron diversilobum*).

No wetlands will be impacted by the project as there are none within project limits, however; there will be approximately 0.11 acres of permanent impacts, and 0.48 acres of temporary impacts to other waters of the U.S. in Army Corps of Engineers and California Department of Fish and Game jurisdictional areas.

Work windows will be utilized, and construction activities will be conducted during the dry season. Where possible, equipment will be used outside of the active stream channel. Staging areas will be on existing disturbed areas; vegetation will be trimmed rather than removed where feasible; environmentally sensitive areas (ESA's) will be established around elderberry shrubs that will not be impacted by project activities; riparian and stream habitat disturbed by the project will be restored; and Caltrans Best Management Practices (BMPs) for containment measures and erosion control will be utilized as well. Elderberry shrubs permanently lost by project activities will be mitigated for at an approved conservation bank.

NMFS has requested that Caltrans mitigate at a 3:1 ratio for loss of riparian species adjacent to the creek that provide shading. Restoration of the habitat will potentially benefit overall water quality as well as provide shaded riverine habitat for aquatic species, including salmon and trout that utilize Butte Creek as a migration corridor. Having only one pier in the creek along with RSP on the southeast bank, partially in the water, will potentially benefit overall water quality and improve the existing functions and values of surface water systems within and downstream from the ESL.

PROJECT IMPACTS
There are no wetlands within project limits, therefore no compensation for these waters of the U.S. will be necessary.

A total of 0.082 acre of USACE jurisdictional (below the ordinary high water mark) other waters of the U.S., including Butte Creek and the one culvert drainage exhibiting a defined channel, will be permanently impacted by the placement of 461.27 yds^3 of fill. Approximately 460 yds^3 of this fill will come from the construction of a new concrete pier and footing for the new northbound bridge, and placement of Rock Slope Protection (RSP) in the creek.

A total of 0.47 acre of soil and vegetation will be temporarily impacted above the ordinary high water mark in the bridge area. This includes the approximately 16 riparian trees that will be removed due to the construction of temporary access roads, and other project construction related activities. The trees consist mainly of cottonwoods, alders, and sycamores.

There are also five culverts within project limits that will be extended during construction activities. None of these are jurisdictional due to having no connectivity to other waters. These culverts serve only to convey stormwater or roadside runoff after rain events. They are not included under biological impacts or mitigation measures, and will be revegetated as part of Caltrans permanent erosion control measures.

GOAL
A 3:1 replacement ratio of riparian trees removed by construction activities.

OBJECTIVE
The proposed mitigation intends to successfully establish 50 riparian trees at the end of the five year responsibility period.

IMPLEMENTATION AND SCHEDULE
Project construction activities are scheduled to begin in the year 2012 and will most likely extend over three construction seasons. Temporary on-site erosion control will be in place at the end of

each work season, and permanent erosion control will be provided by the close of the final work season. Planting will begin in the fall following completion of construction (approximately fall of 2015). Planting is proposed over the period between October 15 and November 15. This window will allow for plants to establish before the onset of cold temperatures and high flows. If supplemental planting is needed, it will be implemented the following winter/spring, between February 15 and March 15. Caltrans will contract with the California Conservation Corps to implement planting, watering and maintenance. Planning and oversight of all work will be done by the Caltrans Revegetation Specialist.

PLANTING PLAN

Three locations were selected for planting as part of an interagency field review on Tuesday April 24, 2012. These locations were chosen because of their distance from the bridge structure to reduce flood concerns (greater than 50 feet), but also by their current lack of woody vegetation and appropriate conditions for planting (close enough to water). In general, the 15 foot buffer zone along Butte Creek water channel is densely vegetated, but there are areas along the water channel that lack woody riparian vegetation (Exhibit A). There was not one area large enough to ensure adequate room for Caltrans planting needs, so three areas were selected, each with varying site characteristics, and believed acceptable for planting and achieving our mitigation goal (Exhibit A). The limits of these planting areas are provided in Exhibit A. Due to variability in soil and habitat conditions, the specific placement of plants will be determined in the field prior to planting, not on project plans. In general, the lower limit of the 15 foot planting zone will be identified in the field based on the typical water line or lower limit of vegetation establishment.

PLANTING STRATEGY

This plan proposes to plant many small container plants and cuttings, many more than is needed to allow for natural mortality, site conditions and plant variability. Past mitigation results has shown Caltrans that better overall long term plant survival and establishment is achieved when:

- Plant using many small plants, planted over a larger area,
- Use of plants with a natural root to shoot ratios, that have not been in the nursery for long periods of time,
- planted in fall (Oct-Nov) when temperatures are still warm enough for root growth
- planted in fall to take advantage of the full precipitation season
- and require less summer watering or maintenance

This strategy increases our chances of putting the right plant, in the right place, under the right conditions for long term success, rather than using a strategy based on planting just the number needed to be successful and then watering and performing maintenance for several years to ensure success of those specific individual plants.

Site A - Cut Slope: This location is on the south side of the creek, approximately 700-900 feet upstream of the bridge (Exhibit A). This is a cut bank that currently has little vegetation and appears unstable (actively eroding). On close inspection, some areas are stabilizing and vegetation is establishing. Caltrans is proposing to plant a narrow band of alder, mulefat and sandbar willow along the edge of the water channel. Alder will be from container materials and will be planted approximately 20 feet apart. Sandbar willow and mulefat will be from cuttings, both of which are shrub sized plants rather than trees. Cuttings will be 24 inches in length, and

will be planted 18 inches into the soil, approximately 3-5 feet apart. Cuttings have variable success, so many more than is needed will be planted. All planting at this location will be within 1-2 feet of the water line. Planting will only occur at the base of the slope, the upper portions of the slope are too steep for planting.

Site B – Terrace: The second location is a grassy terrace just upstream of Site A, on the south side of the creek, approximately 900-1100 feet upstream of the bridge (Exhibit A). The terrace is a few feet above the water's edge, with just a few widely spaced trees present. Caltrans is proposing to plant on the terrace, over the 15 foot buffer zone from the water's edge. Plantings here will focus on cottonwood, Oregon ash and sycamore, with a few willow and mulefat. Cottonwood and sycamore from containers, will be planted approximately 15 feet apart, with mulefat and willow planted from cuttings, between them approximately 5 feet apart.

Site C – Bedrock Area: The third location is on the north side of the creek approximately 1100-1250 feet upstream of the bridge. This location has a large bare area that extends out into the water channel that corresponds to hardpan or bedrock exposed at the surface (Exhibit 1). Planting areas appear to be present on the west and north sides of the bedrock outcrop. Caltrans is proposing to plant a mix of sycamore, Oregon ash and cottonwood approximately 15 feet apart, with willow and mulefat planted between them approximately 5 feet apart. Planting will only occur within the buffer zone, within the 15 feet of the water's edge, outside of the bedrock.

SPECIES TO BE PLANTED

white alder (*Alnus rhombifoli)*
Oregon ash (*Fraxinus latifolia)*
arroyo willow (*Salix lasiolepsis*)
red willow (*Sali. laevigata)*
California sycamore (*Platanus racemosa*)
sandbar willow (*Salix exigua*)
Fremont cottonwoods (*Populus fremontii*)

PLANT MATERIALS

All cuttings and container plants will be from sources generated from the vicinity of the project. Cuttings will be taken from sources upstream and downstream of the work area, with no more than 50% of willows in the area affected and no more than 30% of individual plants removed. Container plants will be purchased from a commercial nursery and will be from source material from the vicinity of the project and similar elevation and habitat characteristics.

MULCH

No mulching will occur because all planting will be performed in the active channel and any mulch placed will be carried away by water flows.

IRRIGATION

Container plants and cuttings will be watered at planting and will receive supplemental watering by hand, using water from Butte Creek. Watering will be done by the CCC at the direction of the Revegetation Specialist. The watering schedule will be based on natural precipitation, temperature, and site monitoring to determine actual needs. The goal will be to provide water necessary to successfully establish deep-rooted plants that are quickly able to survive on their own, rather than shallow surface-rooted plants that rely on regular watering. To accomplish this goal, the proposed schedule will be to water plants after planting once a week for four weeks, and then once every other week until the onset of rains in fall. Watering will be performed over the first summer, if determined necessary, based on site reviews. Watering will be performed over

the fall and summer of the second year only if additional planting is implemented and watering is determined needed. Irrigation does not need to be long term because planted material will be within reach of water table within the first season.

MAINTENANCE PLAN
Caltrans will maintain the plantings for five years. The plantings are expected to successfully establish within the first season. However, maintenance will be available over the 5 year responsibility period. Maintenance funding will be built into the five year CCC contract to address needed remedial measures. Potential maintenance will include such activities as replacement plantings, removing dead plants or weeding plant basins. All maintenance actions will be under the direction of the Caltrans Revegetation Specialist.

Site inspections are proposed after planting, and then over the following five growing seasons. These site inspections will help identify the need for specific maintenance actions. The mitigation areas will be inspected at least twice the first fall after planting and four times over the first summer to verify plant establishment, growth, watering and maintenance needs, and to check whether any problems have occurred. If no problems have occurred, two inspections per year will be performed during years two through five. If problems are identified, additional inspections may be necessary to verify that adequate remedial action has taken place.

PROTECTIVE SIGNS
Caltrans will mark plantings and work with Water Resources and California Department of Fish and Game to place signs to identify mitigation.

WEEDS
Weeds will be hand removed from planting basins and planting areas to reduce competition. The only weeds we will address will be ones that threaten the survival of the plantings, example giant reed grass, broom, tamarisk, or yellow star thistle that occur immediately adjacent to plantings. Caltrans does not propose to remove invasive weeds from larger areas around the bridge or mitigation planting areas.

LONG TERM MAINTENANCE
No long term maintenance actions are proposed after successfully achieving our mitigation goals and the five year responsibility period is complete. Planting will be completely within the 15 foot buffer along the water channel where routine maintenance is not implemented.

MONITORING
Monitoring will be performed once each year, for 5 years, between April 1 and June 1 of each year. Riparian sites with primarily deciduous plants should be monitored before dry conditions occur and plants loose leaves, leading to possible incorrect conclusions regarding survival. Monitoring for this project will involve a census of plants to determine survival rate of planting and cuttings. Results will be documented on aerials or project plans. Permanent photo points will be set up to document the revegetation effort and show yearly increases in cover

MONITORING REPORT
Results from monitoring will be documented and forwarded to regulatory agencies annually for 5 years. The report would be submitted no later than December 31st of each year. The first monitoring report would be submitted by December 31st of the second year post-construction. If

the mitigation activities have met the criteria described below, then the mitigation will be considered successful, a final annual report will be submitted, and no further monitoring or maintenance activities will be conducted beyond the 5 year monitoring period

SUCCESS CRITERIA

First –Second year success criteria will be met if:

- A minimum of 75 riparian trees have survived from the initial planting.

Third-Fifth year success criteria will be met if:

- A minimum of 50 riparian trees have survived from the initial planting
- Continual increases in plant cover are documented through photos.

ADAPTIVE MANAGEMENT/REMEDIAL MEASURES

If success criteria are not met for all or any portion of the mitigation project in any year, additional effort will be made to meet the requirements. The reason for not meeting the success criteria will be evaluated and corrected. If significant measures are needed, the planting strategy will be re-evaluated, including looking at soil conditions, hydrology, site preparation, planting techniques, and plant materials. Caltrans will coordinate with the regulating agencies to determine appropriate remedial actions, which could include in lieu fees or other off-site measures. If significant remediation measures are needed, the maintenance, monitoring, and reporting obligations will continue for 5 years after implementation of such measures or until the success criteria have been met, whichever occurs first.

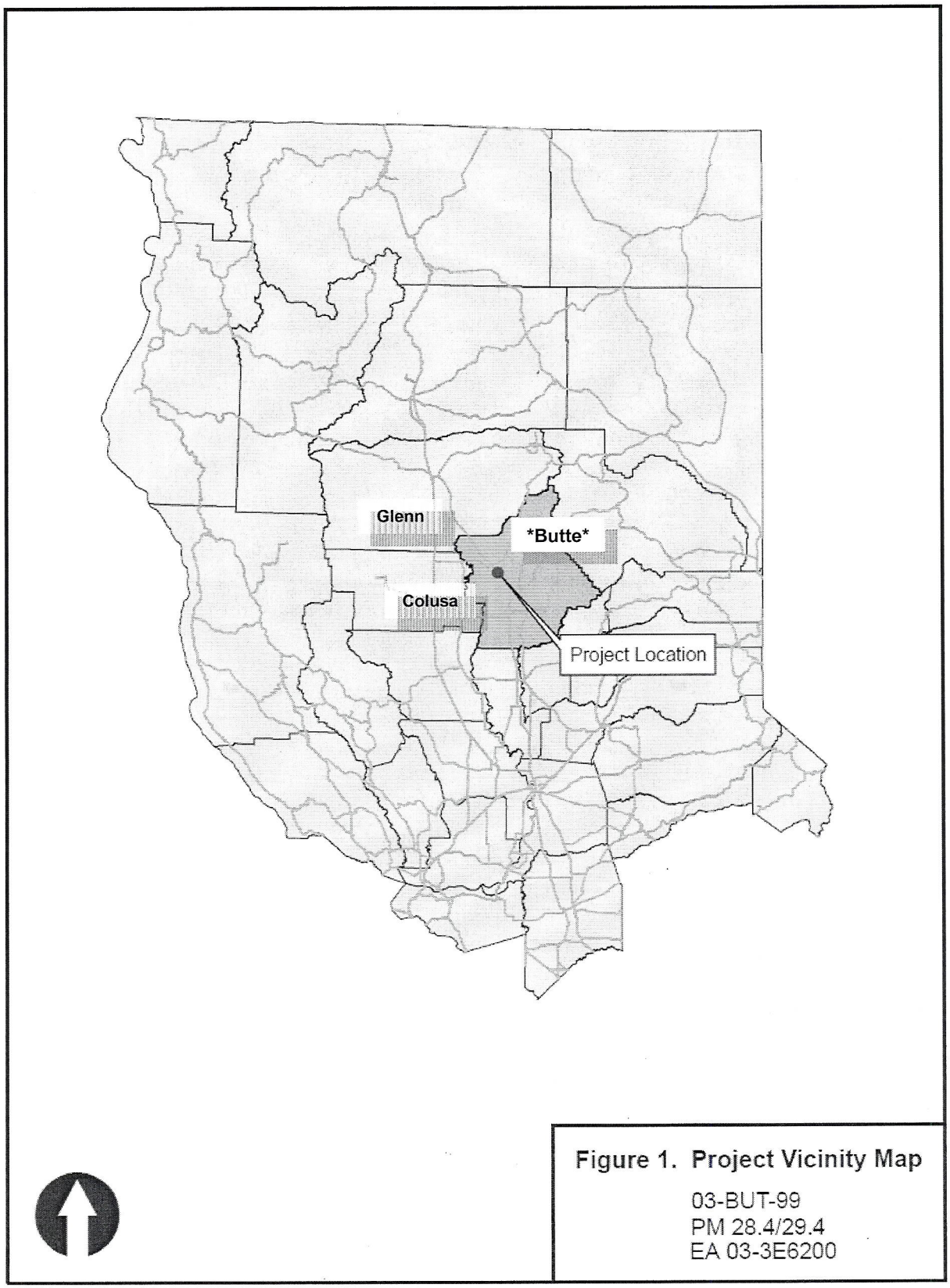


Figure 1. Project Vicinity Map

03-BUT-99
PM 28.4/29.4
EA 03-3E6200

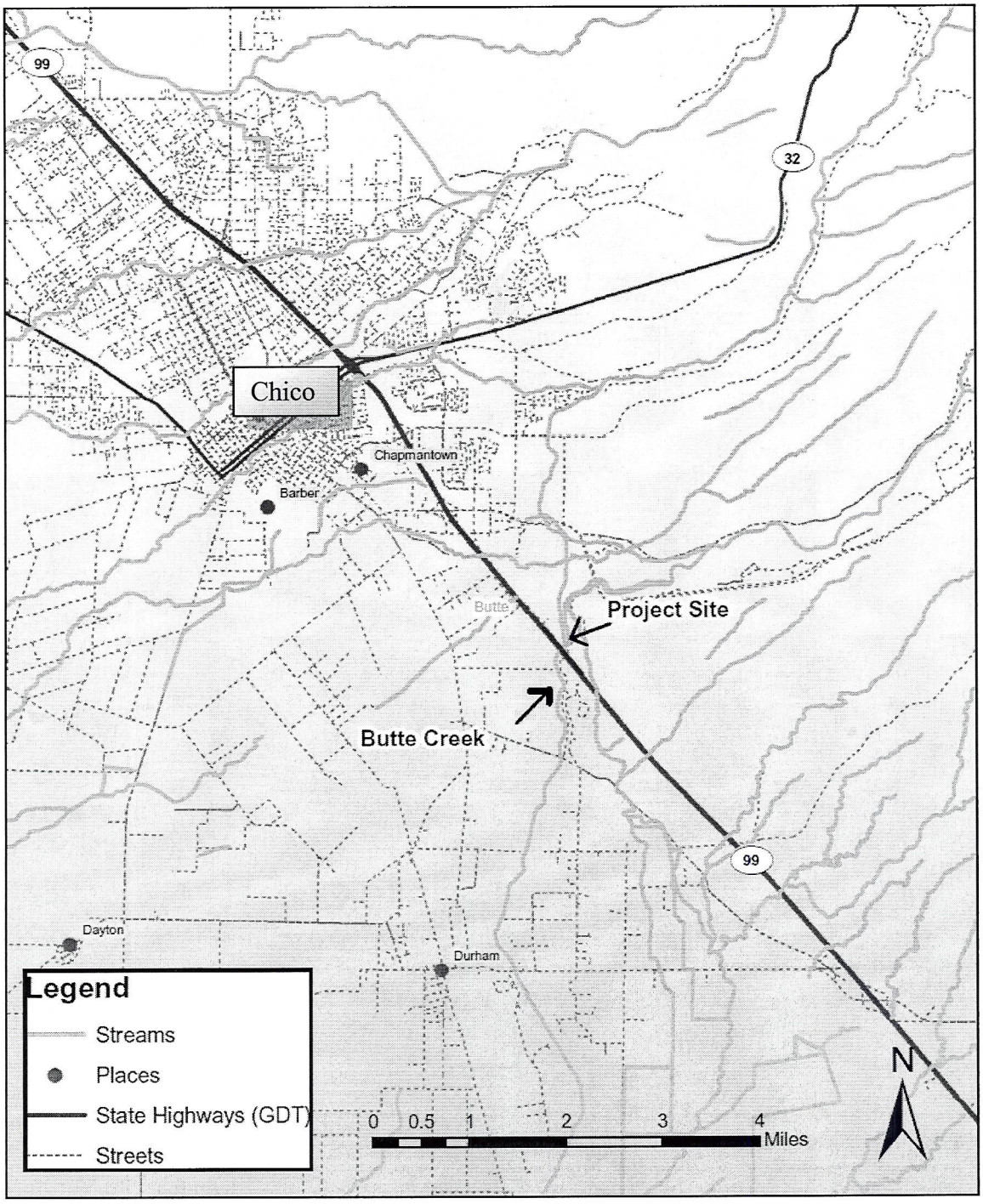
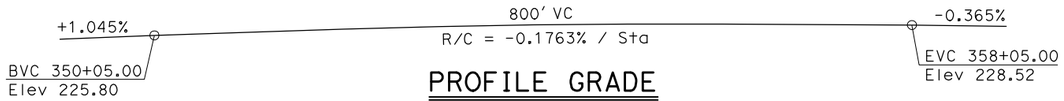


Figure 2. Project Location Map

ATTACHMENT B: Exhibit A - Onsite Mitigation and Monitoring Proposal

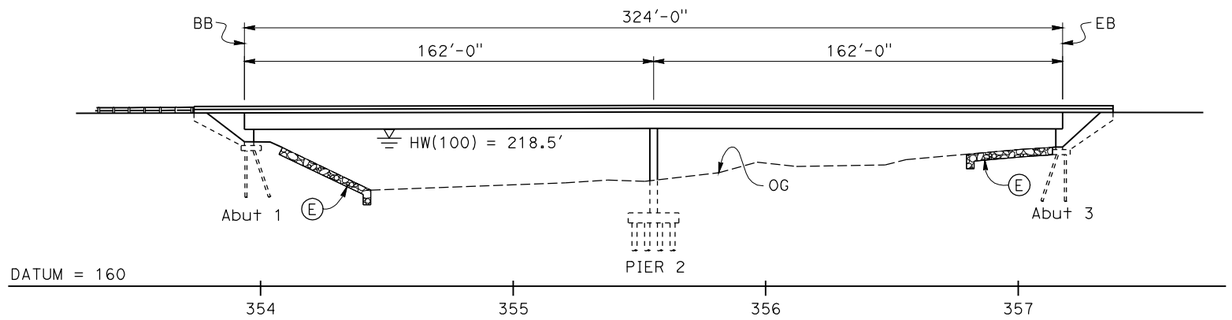
ATTACHMENT B – Exhibit B: Corps Comment Letter

This letter has not been received by Board staff; however, it is expected to arrive prior to the Board Meeting on September 28, 2012



PROFILE GRADE

No Scale



ELEVATION

1" = 30'

NOTES:

(A) Paint "Butte Creek Bridge Right"

(B) Paint "Bridge No. 12-0126R"

(C) Approach Slab Type N(30S)

(D) Existing deck drains, Type "B"

(E) RSP at abutments, see "Road Plans"

(F) Concrete Barrier Type 732 (B11-55)

(G) Temporary Railing Type K, see "Road Plans" (T3)

(H) MBGR, see "Road Plans"

(I) Temporary Scupper space every 10'-0". Fill scupper with grout after completion of stage 2.

(J) Prior to Stage 1, Remove existing Type 25 Concrete Barrier and place Temporary Railing Type K, anchored to bridge deck.

(K) After Stage 2, place Concrete Barrier Type 732(Mod)

(L) 3" Electrical Conduit, see "Road Plans"

(M) Deck Drain, Type "B", Total 15. Place near Sta 353+99, 354+10, 354+25, 354+40, 355+30, 355+50, 355+70, 356+15, 356+30, 356+44, 356+58, 356+72, 356+86, 357+00, 357+12. (B7-5)

(N) For General Notes, Index To Plans, Hydrologic Summary and Pile Data, see "INDEX TO PLANS" sheet.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99			

REGISTERED CIVIL ENGINEER — DATE 4-3-12

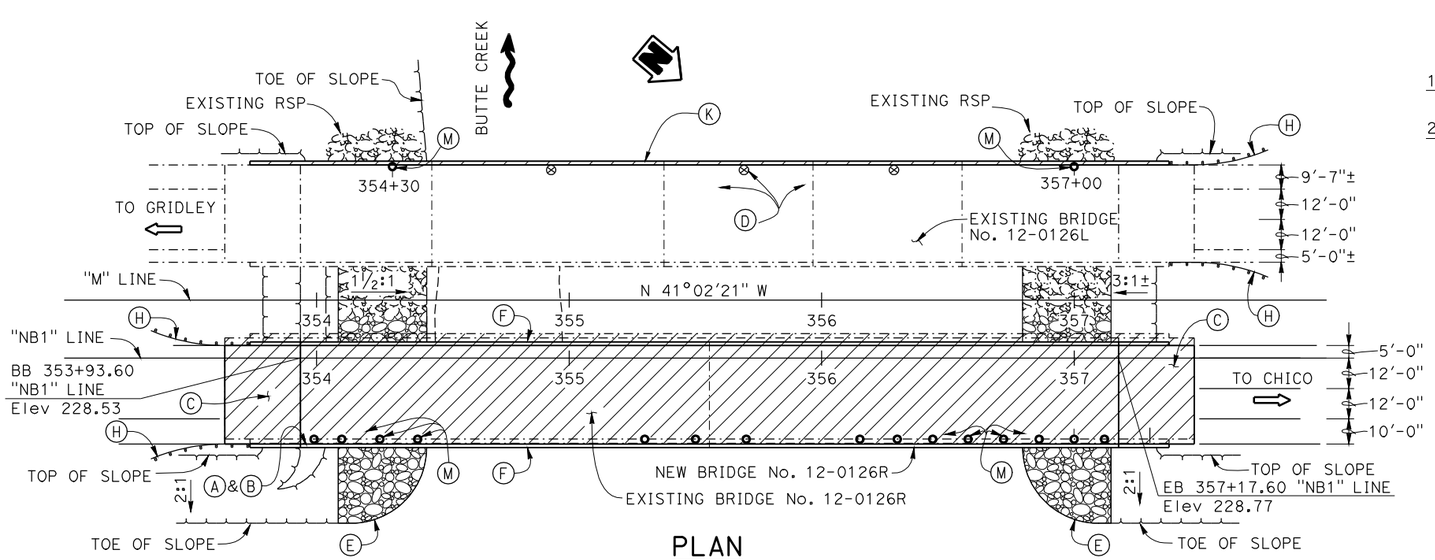
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Keith Stillmunkes — No. 68878 — Exp. 9/30/13 — CIVIL — STATE OF CALIFORNIA

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

QUANTITIES

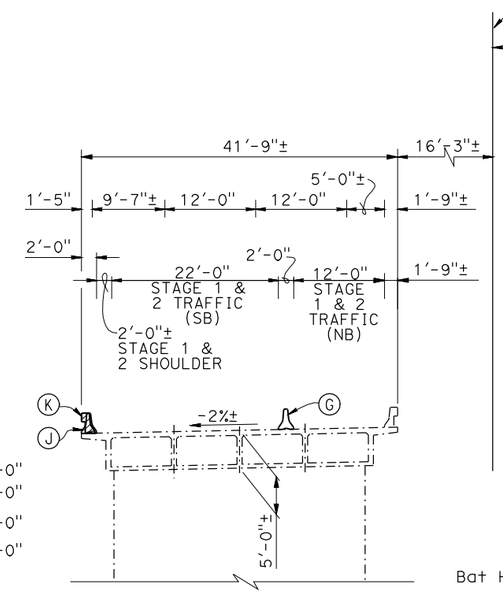
ACCESS OPENING, SOFFIT	2	EA
BRIDGE REMOVAL	LUMP	SUM
STRUCTURE EXCAVATION (BRIDGE)	450	CY
STRUCTURE EXCAVATION (TYPE A)	765	CY
STRUCTURE BACKFILL (BRIDGE)	945	CY
FURNISH STEEL PILING (HP 14 X 117)	4,910	LF
DRIVE STEEL PILE (HP 14 X 117)	100	EA
PRESTRESSING CAST-IN-PLACE CONCRETE	LUMP	SUM
BAT HABITAT	4	EA
STRUCTURAL CONCRETE, BRIDGE FOOTING	207	CY
STRUCTURAL CONCRETE, BRIDGE	1,830	CY
STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	98	CY
JOINT SEAL ASSEMBLY (MR 4")	79	LF
BAR REINFORCING STEEL (BRIDGE)	297,610	LB
MISCELLANEOUS METAL (BRIDGE)	4,760	LB
BRIDGE DECK DRAINAGE SYSTEM	10,800	LB
CONCRETE BARRIER (TYPE 732 MODIFIED)	384	LF
CONCRETE BARRIER (TYPE 732)	768	LF

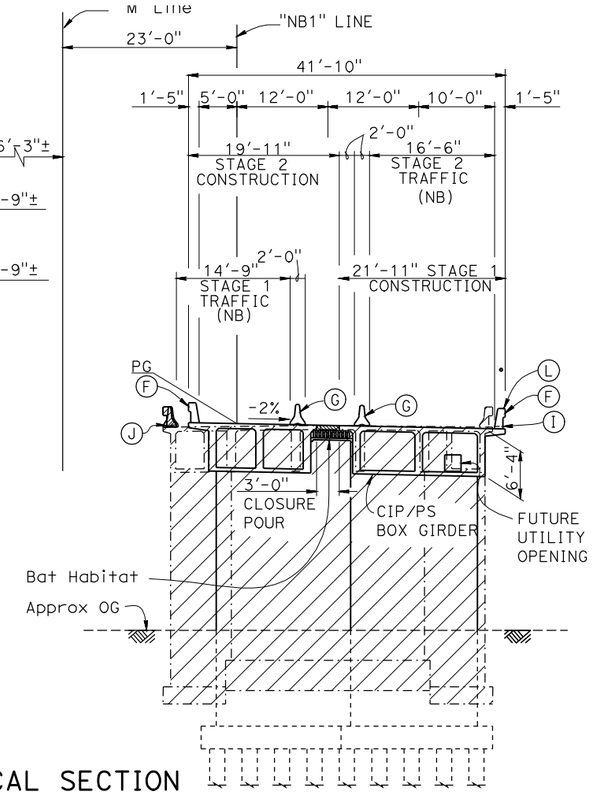


PLAN

1" = 30'

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





LEGEND:

Indicates existing

Indicates bridge removal

Indicates closure pour

TYPICAL SECTION

1" = 10'

DESIGN	BY Keith Stillmunkes	CHECKED Mario Guadamuz	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE			
DETAILS	BY G. Dickerson / Y. Feng	CHECKED Mario Guadamuz	LAYOUT	BY Keith Stillmunkes	CHECKED Mario Guadamuz		
QUANTITIES	BY Gerald Dickerson	CHECKED Yingjiue Feng	SPECIFICATIONS	BY Jennifer Ramirez	PLANS AND SPECS COMPARED Jennifer Ramirez		

X
DESIGN ENGINEER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 7

BRIDGE NO. 12-0126R
POST MILE 28.7

BUTTE CREEK BRIDGE, RIGHT (REPLACE)
GENERAL PLAN

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3592
PROJECT NUMBER & PHASE: 0300000509 1
CONTRACT NO.: 03-3E6201

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
4-26-11	4-2-12	2-28-12	2-1-12	1	27

STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REV.09-01-10)

FILE => 12-0126r-a-gp.dgn

ATTACHMENT C - Project Design Plans

USERNAME => s115764 DATE PLOTTED => 03-APR-2012 TIME PLOTTED => 13:36

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99			

REGISTERED CIVIL ENGINEER — 4-3-12 DATE

PLANS APPROVAL DATE

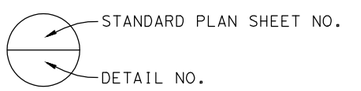
REGISTERED PROFESSIONAL ENGINEER — Keith Stillmunkes — No. 68878 — Exp. 9/30/13 — CIVIL — STATE OF CALIFORNIA

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

INDEX TO PLANS

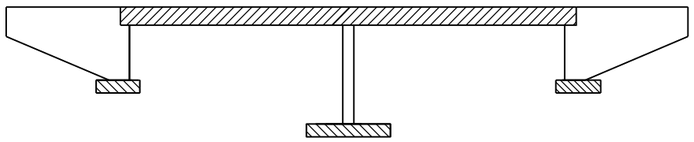
STANDARD PLANS DATED MAY 2006

A10A	ACRONYMS AND ABBREVIATIONS (SHEET 1 OF 2)
A10B	ACRONYMS AND ABBREVIATIONS (SHEET 2 OF 2)
A10C	SYMBOLS (SHEET 1 OF 2)
A10D	SYMBOLS (SHEET 2 OF 2)
A62C	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL - BRIDGE
T3	TEMPORARY RAILING (TYPE K)
B0-1	BRIDGE DETAILS
B0-3	BRIDGE DETAILS
B0-5	BRIDGE DETAILS
B0-13	BRIDGE DETAILS
RSP B6-21	JOINT SEALS (MAXIMUM MOVEMENT RATING = 2")
B7-1	BOX GIRDER DETAILS
B7-5	DECK DRAINS
B7-8	DECK DRAINAGE DETAILS
B7-10	UTILITY OPENING - BOX GIRDER
B8-5	CAST-IN-PLACE PRESTRESSED GIRDER DETAILS
B11-55	CONCRETE BARRIER TYPE 732
B14-3	COMMUNICATION AND SPRINKLER CONTROL CONDUITS (CONDUIT LESS THAN 4")
B14-5	WATER SUPPLY LINE (DETAILS) (PIPE SIZES LESS THAN 4")



GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

DESIGN:	AASHTO LRFD Bridge Design Specifications, 4th edition and the Caltrans Amendments, preface dated December 2008.
SEISMIC DESIGN :	Caltrans Seismic Design Criteria (SDC), Version 1.6 dated November 2010.
DEAD LOAD:	Includes 35 psf for future wearing surface.
LIVE LOADING:	HL93 and P-15 permit design vehicle.
SEISMIC LOADING :	Soil profile: V_{530} =1200 ft/sec Moment Magnitude: 6.7 Peak Ground Acceleration 0.22g Site Specific Acceleration Response Spectrum as shown.
REINFORCED CONCRETE:	f_y = 60 ksi f'_c = 3.625 ksi n = 8
PRESTRESSED CONCRETE:	See "Prestressing Notes" on "GIRDER DETAILS" sheet.



Structural Concrete, Bridge

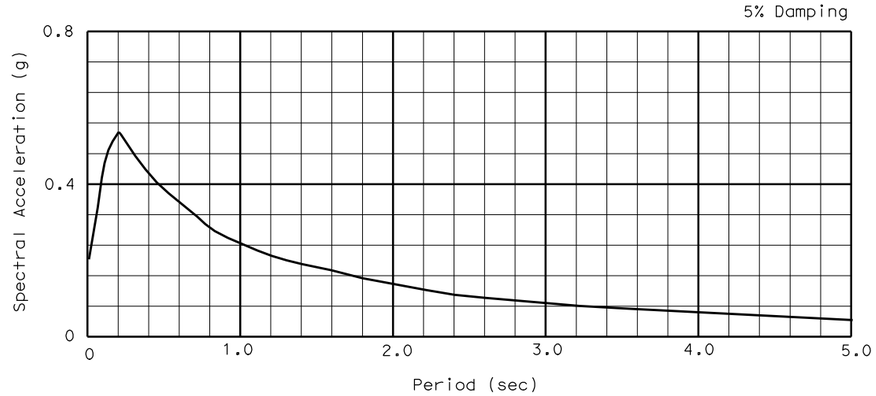
Structural Concrete, Bridge (6 Ksi at 28 days)

Structural Concrete, Bridge Footing

CONCRETE STRENGTH AND TYPE LIMITS

No Scale

SIZE SPECIFIC ACCELERATION RESPONSE SPECTRUM



HYDROLOGIC SUMMARY FOR BUTTE CREEK BRIDGE, 12-0126R

Drainage Area: 152 mi^2

	Design Flood	Base Flood	CVFPB
Frequency	50-year	100-year	N/A
Discharge	24,300 cfs	28,900 cfs	27,000 cfs
Water Surface Elevation at Bridge	216.6 ft NGVD 29 218.9 ft NAVD 88	218.50 ft NGVD 29 220.8 ft NAVD 88	217.8 ft NGVD 29 220.1 ft NAVD 88

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

Minimum Soffit Elevation*	221.5 ft NGVD 29 (223.8 ft NAVD 88)
Local Scour Depth	4.8 ft
Local Scour Elevation	191.4 ft NGVD 29

* The Central Valley Flood Protection Board requires 3 feet of Freeboard over the 100-year Flow for new structures at this location.

PILE DATA TABLE

Support Location	Pile Type	Cut-Off Elevation (ft)	Nominal Resistance (kips)		Design Tip Elevation (ft)	Specified Tip Elevation (ft)	Nominal Driving Resistance Required (kips)
			Compression	Tension			
Abut 1	HP 14X117	213.00	240	0	160.0(a)	160.0	300
Pier 2	HP 14X117	185.50	250	0	140.0(a)	140.0	300
Abut 3	HP 14X117	213.50	230	0	160.0(a)	160.0	300

NOTES :

1. Design tip elevations are controlled by: (a) Compression, (strength limit).
2. The Specified Tip Elevation shall not be raised above the Design Tip Elevation.

DESIGN	BY Keith Stillmunkes	CHECKED Mario Guadamuz	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 7	BRIDGE NO. 12-0126R
DETAILS	BY Yingjue Feng	CHECKED Mario Guadamuz			POST MILE 28.7
QUANTITIES	BY Gerald Dickerson	CHECKED Yingjue Feng			

BUTTE CREEK BRIDGE, RIGHT (REPLACE)

INDEX TO PLANS

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3592
PROJECT NUMBER & PHASE: 0300000509 1 CONTRACT NO.: 03-3E6201

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
8-15-11	2-23-12	4-2-12	12-14-11	2	27

FILE => 12-0126r-a-itp.dgn

ATTACHMENT C - Project Design Plans
USERNAME => s115764 DATE PLOTTED => 03-APR-2012 TIME PLOTTED => 13:36

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99	28.1/29.6		

M.A. Panchesson 4-14-12
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
M.A. PANCHESSON
No. 44125
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

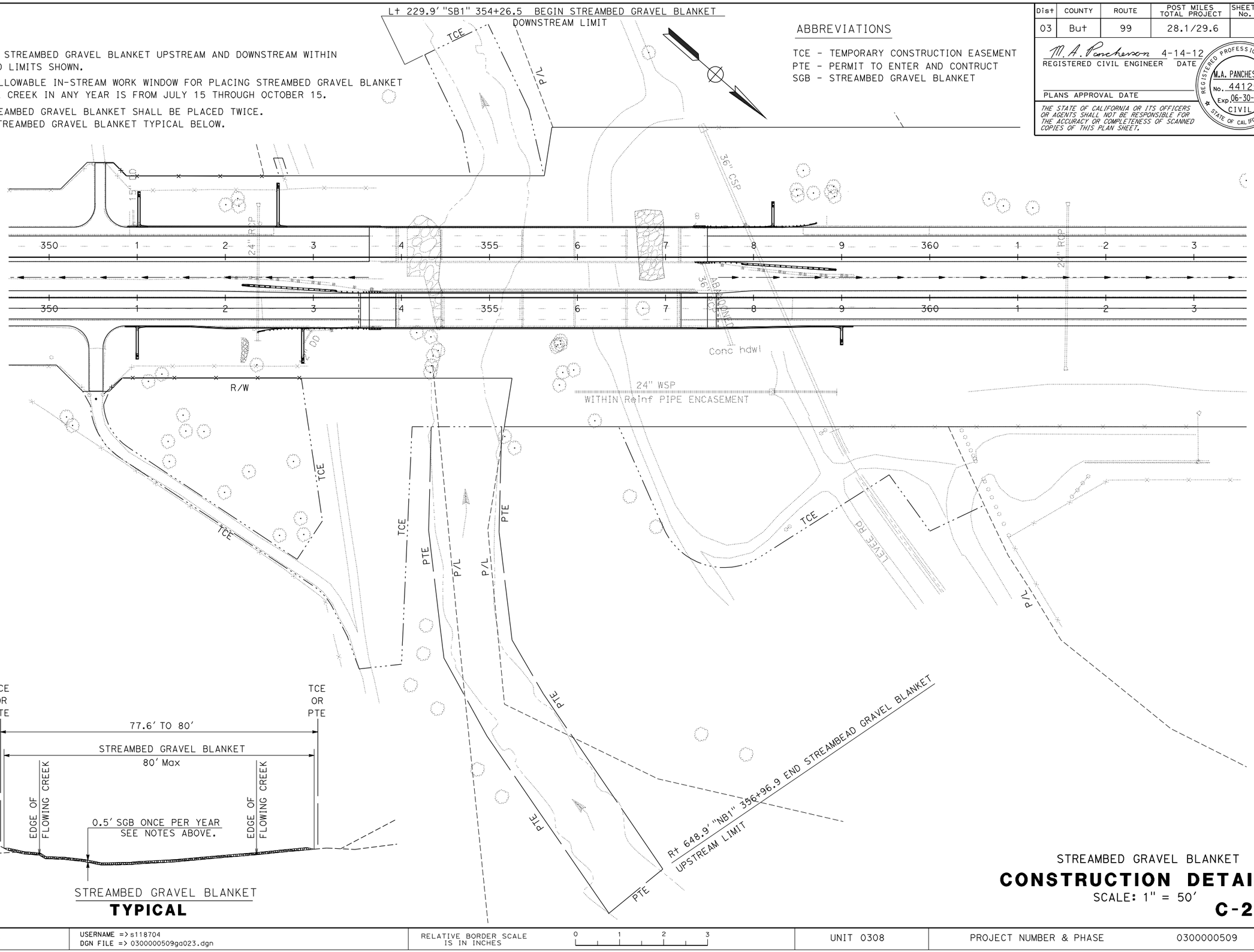
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

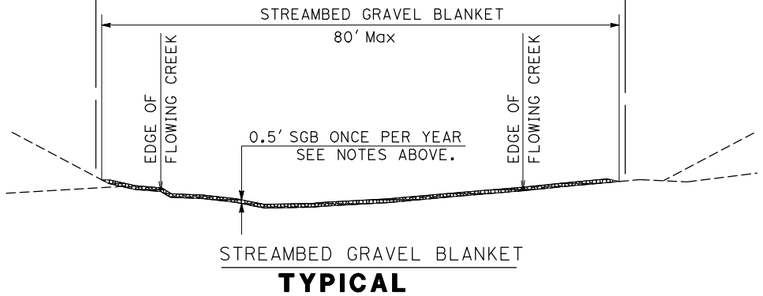
NOTES:

1. PLACE STREAMBED GRAVEL BLANKET UPSTREAM AND DOWNSTREAM WITHIN SPREAD LIMITS SHOWN.
2. THE ALLOWABLE IN-STREAM WORK WINDOW FOR PLACING STREAMBED GRAVEL BLANKET IN THE CREEK IN ANY YEAR IS FROM JULY 15 THROUGH OCTOBER 15.
3. A STREAMBED GRAVEL BLANKET SHALL BE PLACED TWICE. SEE STREAMBED GRAVEL BLANKET TYPICAL BELOW.

ABBREVIATIONS

TCE - TEMPORARY CONSTRUCTION EASEMENT
PTE - PERMIT TO ENTER AND CONTRUCT
SGB - STREAMBED GRAVEL BLANKET





STREAMBED GRAVEL BLANKET
TYPICAL

STREAMBED GRAVEL BLANKET
CONSTRUCTION DETAILS
SCALE: 1" = 50'

C-23

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

REVISED BY	DATE REVISED
MIKE PANCHESSON	DON WEHERLY
CALCULATED-DESIGNED BY	CHECKED BY
FUNCTIONAL SUPERVISOR	
ALI KIANI	

LAST REVISION 00-00-00
DATE PLOTTED => 17-APR-2012
TIME PLOTTED => 13:43

BORDER LAST REVISED 7/2/2010
USERNAME => s118704
DGN FILE => 0300000509ga023.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0308
PROJECT NUMBER & PHASE 0300000509

ATTACHMENT C - Project Design Plans

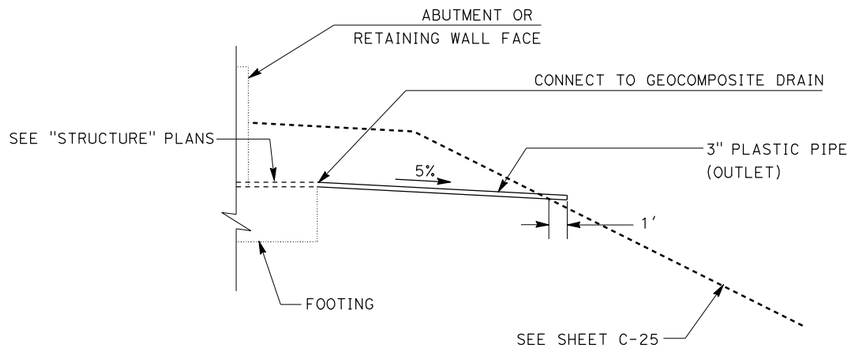
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99	28.1/29.6		

M.A. Panchesson 4-14-12
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
M.A. PANCHESSON
No. 44125
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

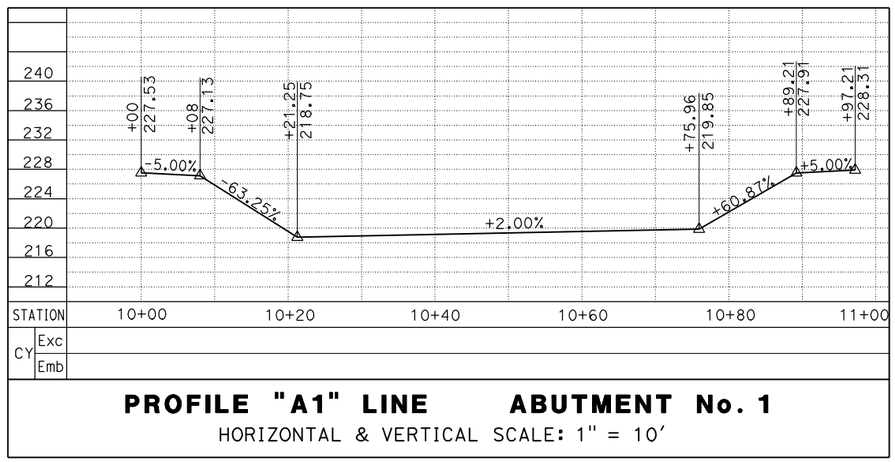


OUTLET DETAIL
NO SCALE

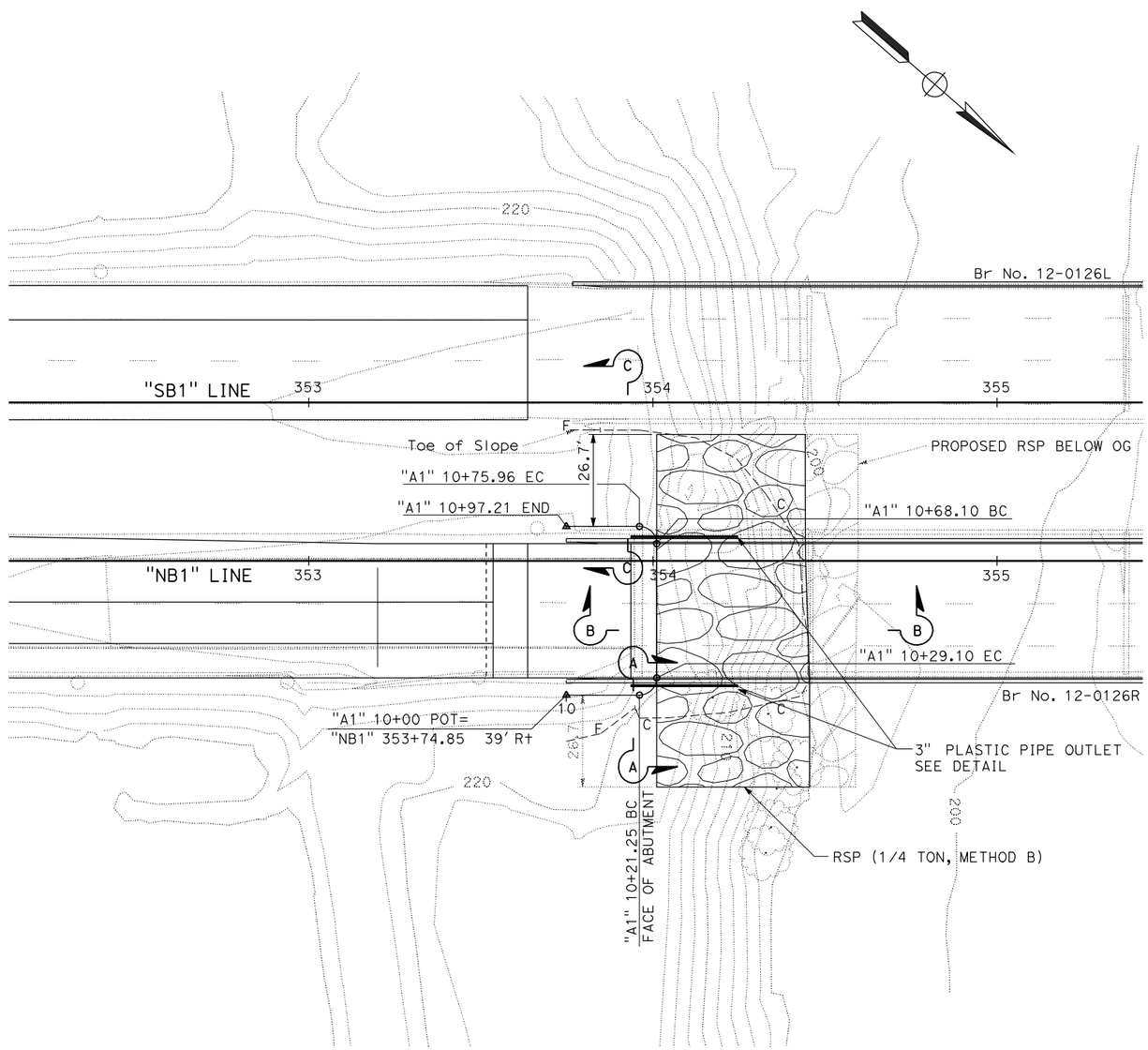
NOTES:

1. IF 3" PLASTIC PIPE (OUTLET) IS ROUTED THRU RSP TO BE PLACED, PROTECT FROM BEING CRUSHED.
2. SEE "CONSTRUCTION DETAILS" PLAN C-25 FOR SECTIONS.

"A1" LINE ALIGNMENT & CURVE DATA					
STATION	R	△	T	L	BEARING
"A1" 10+00.00 PI					
					N 41°02'21.69" W
"A1" 10+21.25 BC					
	5.00'	90°00'00"	5.00'	7.85'	
"A1" 10+29.10 EC					
					S 48°57'38.71" W
"A1" 10+68.10 BC					
	5.00'	90°00'00"	5.00'	7.85'	
"A1" 10+75.96 EC					
					S 41°02'21.36" E
"A1" 10+97.21 PI					



PROFILE "A1" LINE ABUTMENT No. 1
HORIZONTAL & VERTICAL SCALE: 1" = 10'



ROCK SLOPE PROTECTION

CONSTRUCTION DETAILS
SCALE: 1" = 20' C-24

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DIVISION OF ENGINEERING

CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
DAVID HOPPER	MIKE PANCHESSON		

FUNCTIONAL SUPERVISOR: ALI KIANI

LAST REVISION
DATE PLOTTED => 17-APR-2012
TIME PLOTTED => 13:43

ATTACHMENT C - Project Design Plans

BORDER LAST REVISED 7/2/2010 | USERNAME => s118704 | DGN FILE => 0300000509ga024.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0308 | PROJECT NUMBER & PHASE 0300005091

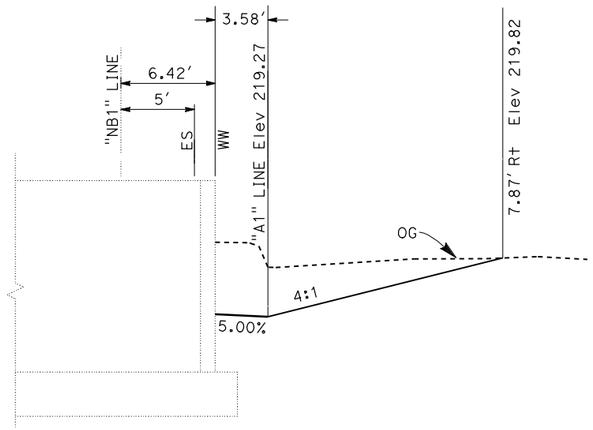
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99	28.1/29.6		

M. A. Panchesson 4-14-12
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
M.A. PANCHESSON
No. 44125
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

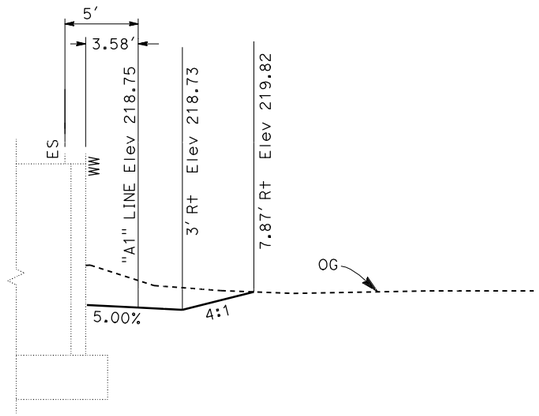
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



SECTION C-C

ABUTMENT No. 1

"A1" 10+75.960



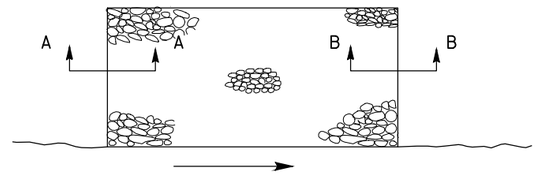
SECTION A-A

ABUTMENT No. 1

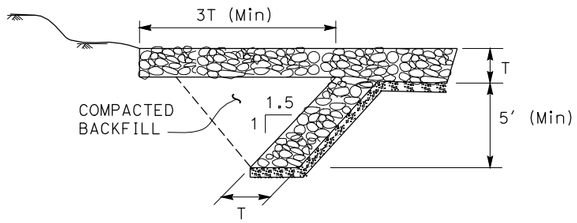
"A1" 10+21.250

ABREVIATIONS

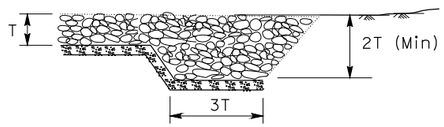
OWM - ORDINARY WATER MARK



DIRECTION OF FLOW



SECTION A-A

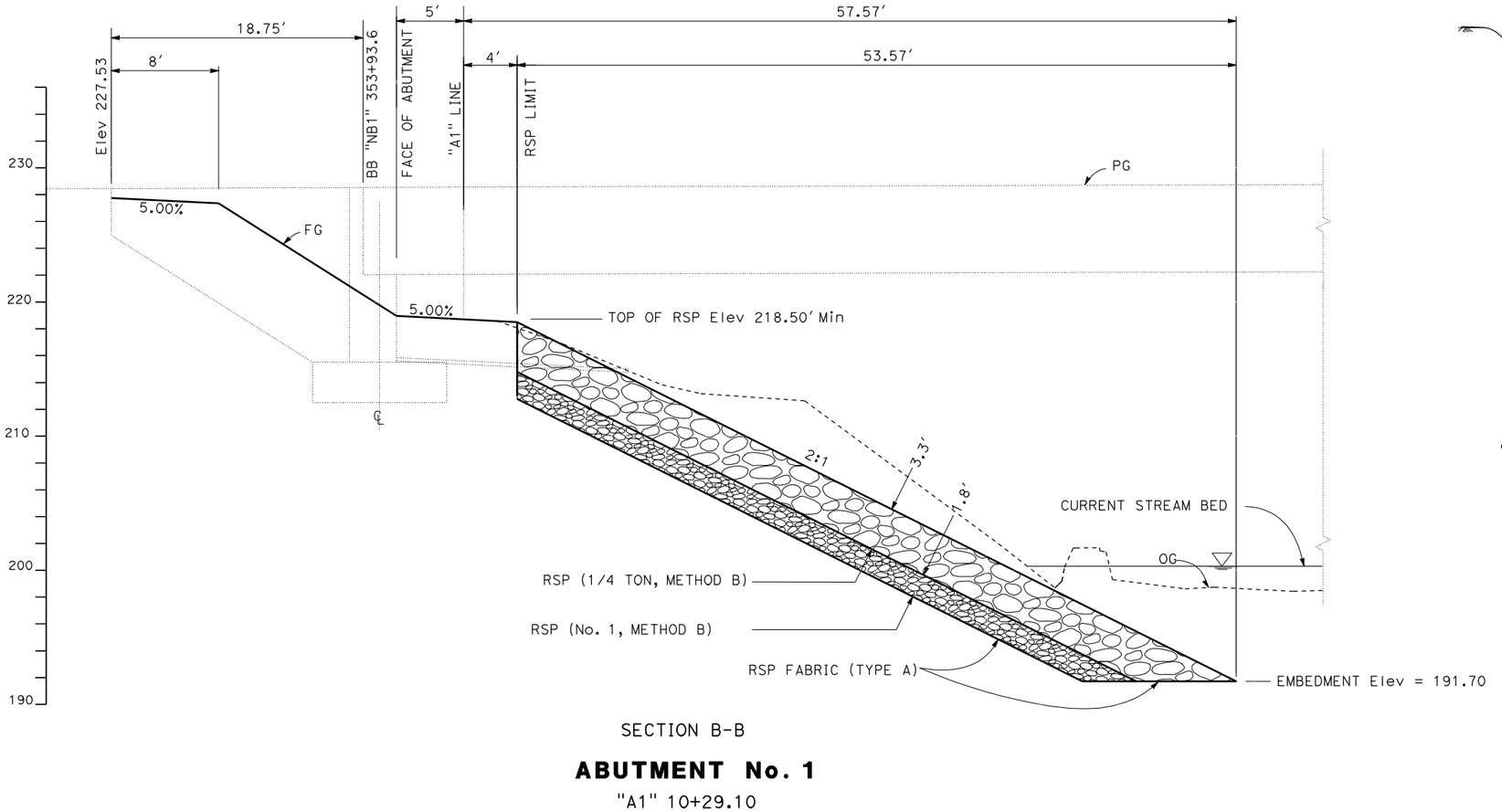


SECTION B-B

TYPICAL PLAN AND FLANK DETAILS

LEGEND:

T = TOTAL THICKNESS OF RSP (5.1 Ft)



SECTION B-B

ABUTMENT No. 1

"A1" 10+29.10

ROCK SLOPE PROTECTION

CONSTRUCTION DETAILS

SCALE: 1" = 5'

C-25

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DIVISION OF ENGINEERING

	REVISED BY	DATE REVISED
CALCULATED-DESIGNED BY	DAVID HOPPER	
CHECKED BY	MIKE PANCHESSON	
FUNCTIONAL SUPERVISOR	ALI KIANI	

LAST REVISION
DATE PLOTTED => 17-APR-2012
TIME PLOTTED => 13:43

BORDER LAST REVISED 7/2/2010 | USERNAME => s118704 | DGN FILE => 0300000509ga025.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0308 | PROJECT NUMBER & PHASE 0300005091

ATTACHMENT C - Project Design Plans

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99	28.1/29.6		

M.A. Panchesson 4-14-12
REGISTERED CIVIL ENGINEER DATE

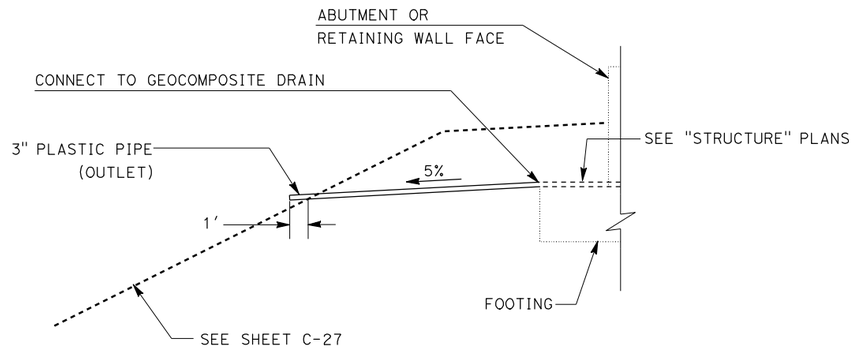
REGISTERED PROFESSIONAL ENGINEER
M.A. PANCHESSON
No. 44125
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE:

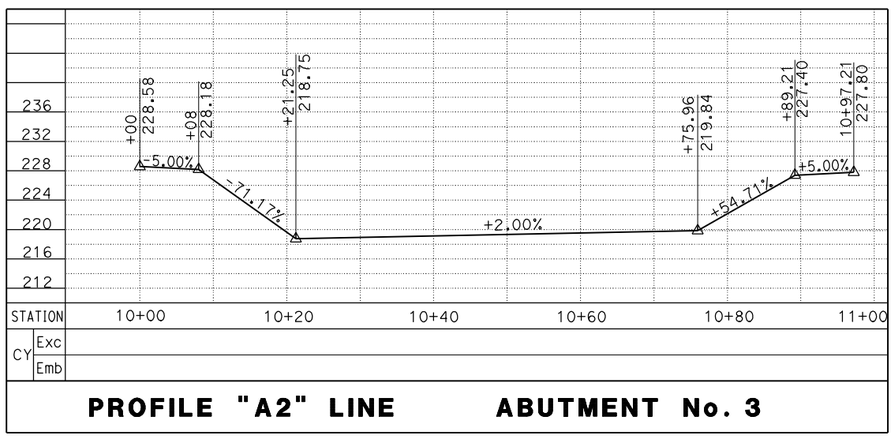
1. IF 3" PLASTIC PIPE (OUTLET) IS ROUTED THRU RSP TO BE PLACED, PROTECT FROM BEING CRUSHED.
2. SEE "CONSTRUCTION DETAILS" PLAN C-27 FOR SECTIONS.



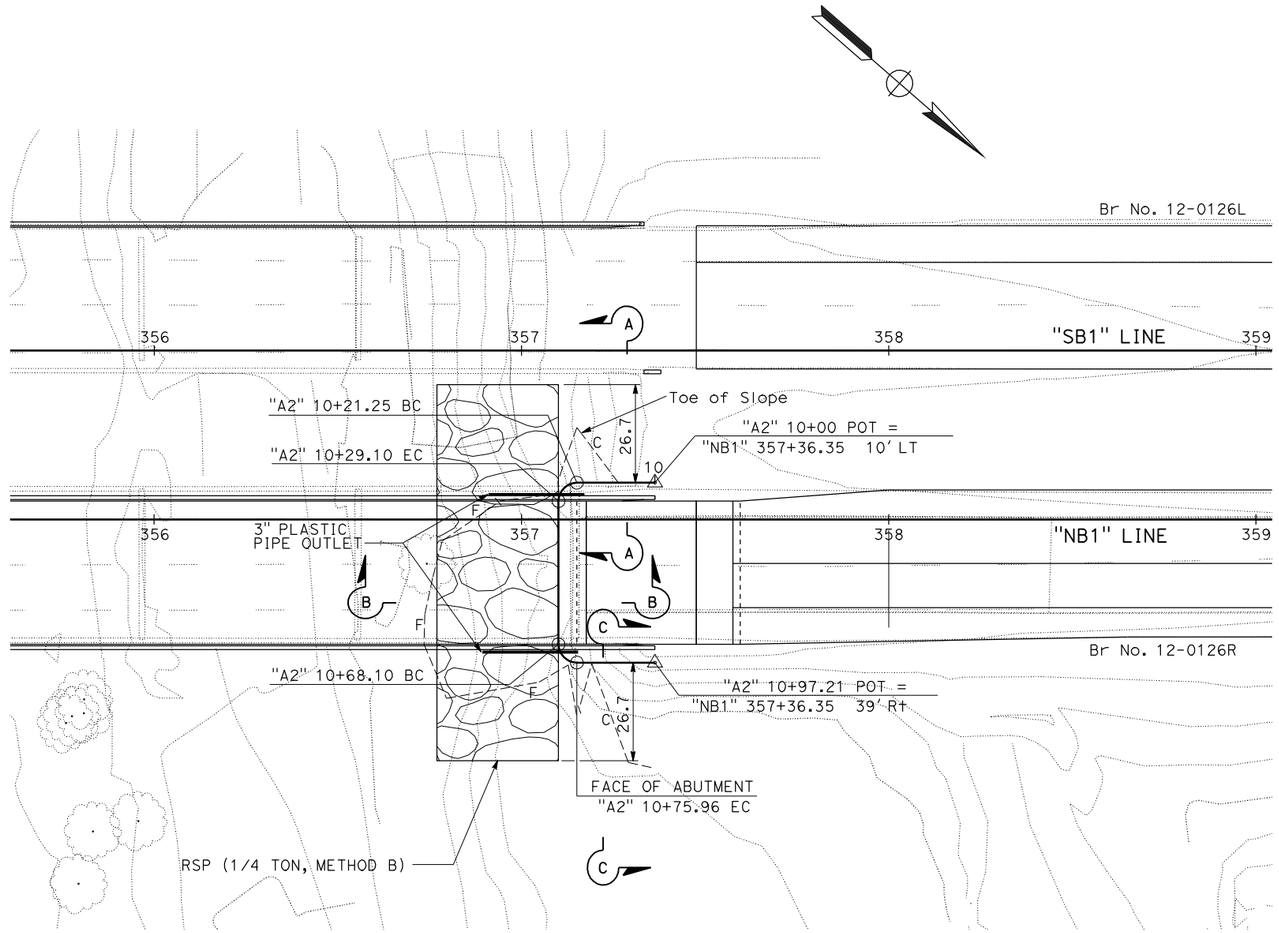
OUTLET DETAIL
NO SCALE

"A2" LINE ALIGNMENT DATA

STATION	R	△	T	L	BEARING
"A2" 10+00.00 PI					
					N 41°02'22.74" W
"A2" 10+21.25 BC					
	5.00'	90°00'00"	5.00'	7.85'	
"A2" 10+29.10 EC					
					S 86°02'21.29" E
"A2" 10+68.10 BC					
	5.00'	90°00'00"	5.00'	7.85'	
"A2" 10+75.96 EC					
					N 41°02'22.22" W
"A2" 10+97.21 PI					



PROFILE "A2" LINE ABUTMENT No. 3



ROCK SLOPE PROTECTION

CONSTRUCTION DETAILS

SCALE: 1" = 20'

C-26

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DIVISION OF ENGINEERING

FUNCTIONAL SUPERVISOR: ALI KIANI

CALCULATED-DESIGNED BY: DAVID HOPPER
CHECKED BY: MIKE PANCHESSON

REVISED BY	DATE REVISED

LAST REVISION
DATE PLOTTED => 17-APR-2012
TIME PLOTTED => 13:43

BORDER LAST REVISED 7/2/2010

USERNAME => s118704
DGN FILE => 0300000509ga026.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0308

PROJECT NUMBER & PHASE 0300005091

ATTACHMENT C - Project Design Plans

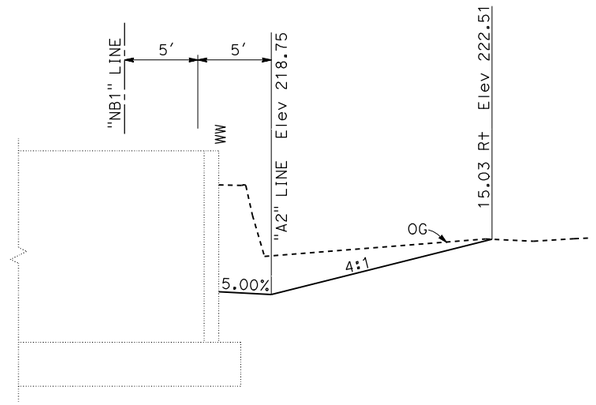
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99	28.1/29.6		

M. A. Panchesson 4-14-12
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
M.A. PANCHESSON
No. 44125
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

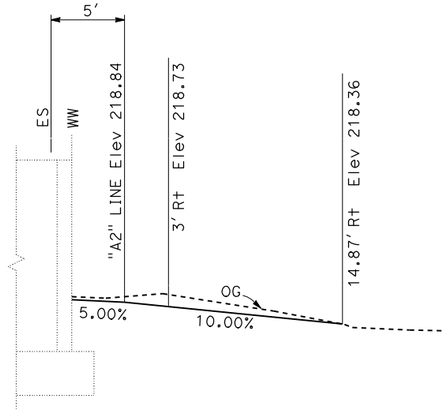
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



SECTION A-A

ABUTMENT No. 3

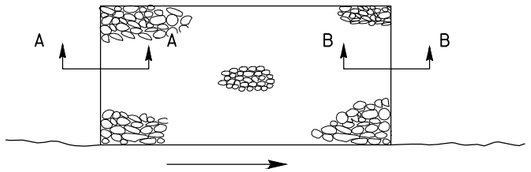
"A2" 10+21.250

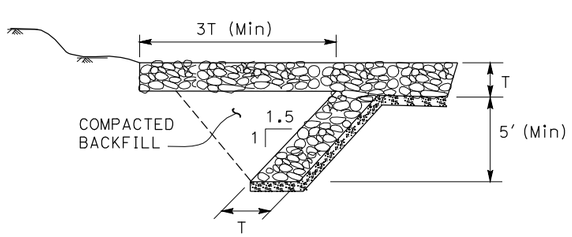


SECTION C-C

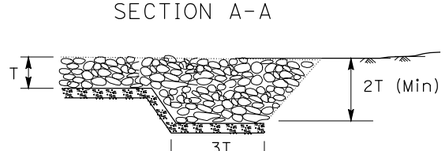
ABUTMENT No. 3

"A2" 10+75.96





SECTION A-A

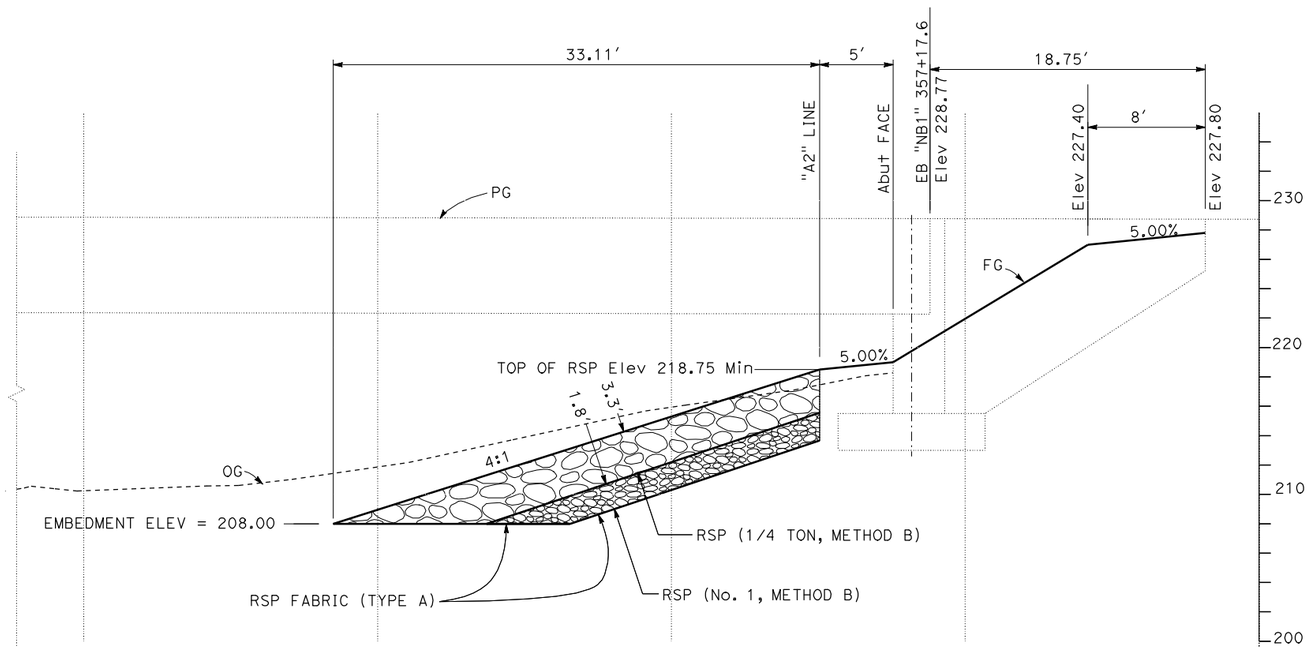


SECTION B-B

TYPICAL PLAN AND FLANK DETAILS

LEGEND:

T = TOTAL THICKNESS OF RSP (5.1 Ft)



SECTION B-B

ABUTMENT No. 3

"A2" 10+68.10

ROCK SLOPE PROTECTION

CONSTRUCTION DETAILS

SCALE: 1" = 5'

C-27

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DIVISION OF ENGINEERING

FUNCTIONAL SUPERVISOR: ALI KIANI

CALCULATED-DESIGNED BY

CHECKED BY: MIKE PANCHESSON

DAVID HOPPER

REVISED BY | DATE REVISED

LAST REVISION | DATE PLOTTED => 17-APR-2012 | TIME PLOTTED => 13:43

ATTACHMENT C - Project Design Plans

BORDER LAST REVISED 7/2/2010 | USERNAME => s118704 | DGN FILE => 0300000509ga027.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0308 | PROJECT NUMBER & PHASE 0300005091

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99	28.1/29.6	2	

M.A. Panchesson 4-14-12
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
M.A. PANCHESSON
No. 44125
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

NOTES:

1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATIONS ARE SHOWN ON THE SUPERELEVATION DIAGRAMS.
3. SEE "CONSTRUCTION DETAILS" PLANS FOR LIMITS OF COLD PLACE AC PAVEMENT, HMA (TYPE A) AND RHMA-O.
4. PROFILE GRADE ON TOP OF HMA (TYPE A) SURFACE.
5. EMBANKMENT SIDE SLOPES AS SHOWN EXCEPT AROUND BRIDGE ABUTMENTS, SLOPES WILL BE 2:1 OR FLATTER.

STRUCTURAL SECTIONS

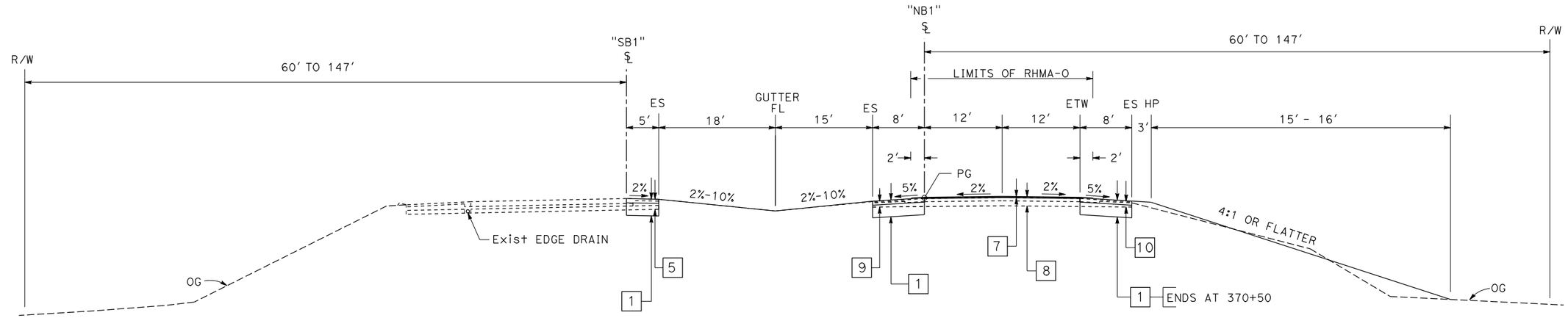
1. 0.65′ HMA (TYPE A)
   1.95′ CLASS 2 AB
2. 0.10′ RHMA-O
   0.65′ HMA (TYPE A)
   1.95′ CLASS 2 AB
3. GRIND Exist Conc Pvmt
   0.05′ Max
4. Exist
   0.75′ Conc Pvmt
   0.40′ ATPB
   0.60′ AS
5. Exist
   0.30′ AC
   0.55′ - 0.82′ AB
   0.60′ AS
6. 0.65′ HMA (TYPE A)
   0.50 ATPB
   1.45′ CLASS 2 AB
7. 0.10′ RHMA-O
   0.10′ HMA (TYPE A) (STAGE 2) (SEE NOTE 4)
   0.10′ COLD PLANE AC Pvmt, Exist OGAC
8. Exist
   0.08′ - 0.10′ OGAC
   0.49′ - 0.54′ AC
   0.75′ AB
9. Exist
   0.39′ - 0.48′ AC
   0.64′ - 0.84′ AB
10. Exist
    0.18′ - 0.27′ AC
    0.64′ - 0.84′ AS

DESIGN DESIGNATION (ROUTE 99)

ADT (2016) = 42,900	D = 54 %
ADT (2036) = 68,900	T = 7.0 %
DHV (2036) = 6,780	TI_{20} = 12.5
ESAL (2036) = 15,473,700	V = 70 MPH

ABBREVIATIONS:

RHMA-O - RUBBERIZED HOT MIX ASPHALT (OPEN GRADED)
S - MATCH EXISTING SLOPE

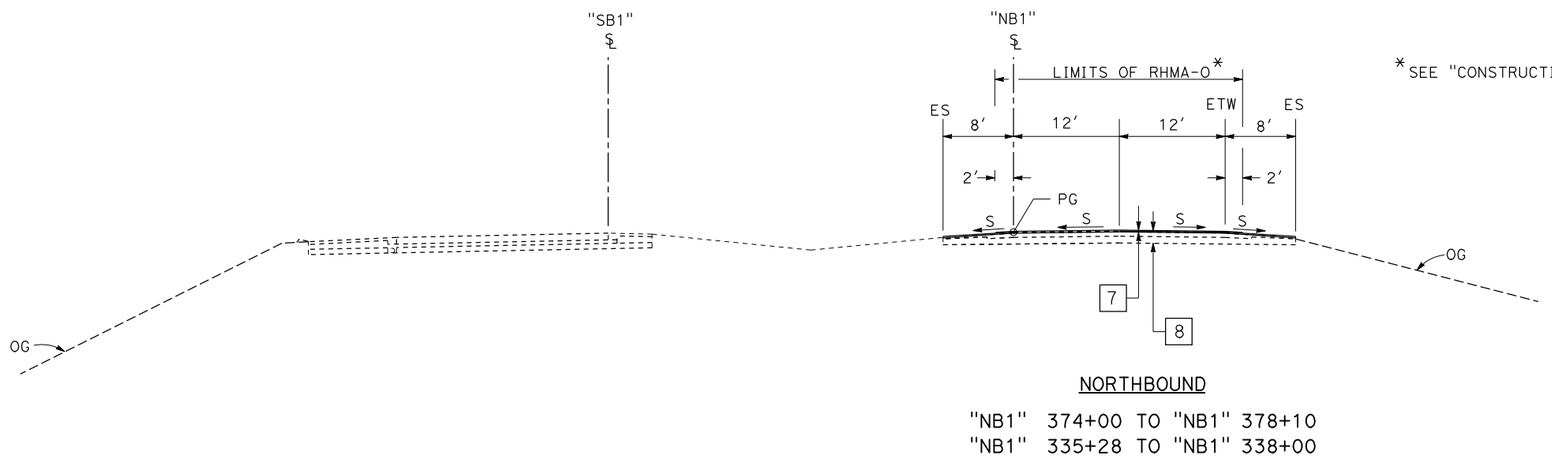


SOUTHBOUND

"SB1" 370+50 TO "SB1" 373+40
"SB1" 339+70 TO "SB1" 341+15

NORTHBOUND

"NB1" 363+55 TO "NB1" 374+00
"NB1" 338+00 TO "NB1" 344+75



*SEE "CONSTRUCTION DETAILS" PLANS FOR EXCEPTION.

NORTHBOUND

"NB1" 374+00 TO "NB1" 378+10
"NB1" 335+28 TO "NB1" 338+00

ROUTE 99

TYPICAL CROSS SECTIONS

NO SCALE

X-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DIVISION OF ENGINEERING

FUNCTIONAL SUPERVISOR: ALI KIANI
CALCULATED-DESIGNED BY: DON WEHRLY
CHECKED BY: LAN NGUYEN
REVISED BY | DATE REVISED

LAST REVISION 00-00-00
DATE PLOTTED => 17-APR-2012
TIME PLOTTED => 13:42

BORDER LAST REVISED 7/2/2010
USERNAME => s118704
DGN FILE => 0300000509ca001.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0308
PROJECT NUMBER & PHASE 0300000509

ATTACHMENT C - Project Design Plans

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99	28.1/29.6		

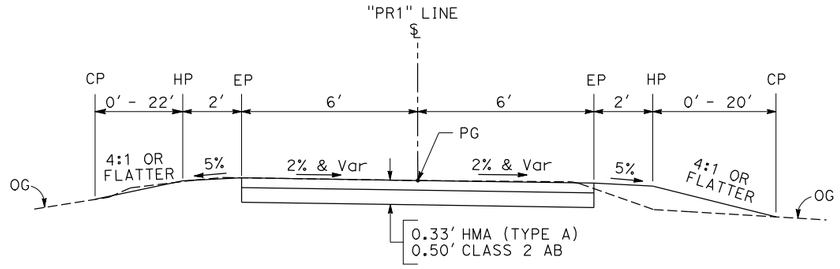
M. A. Panchesson 4-14-12
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
M.A. PANCHESSON
No. 44125
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

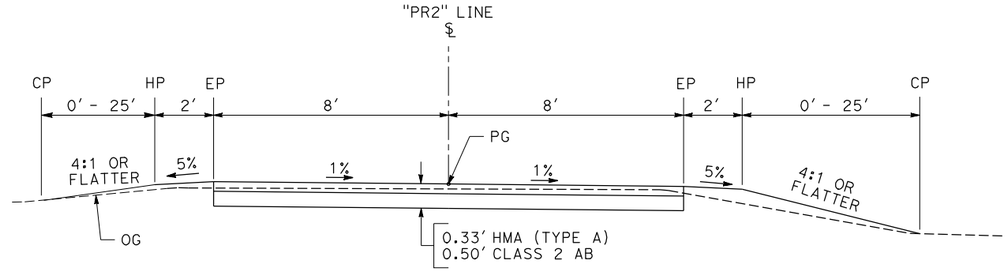
NOTES:

1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. FOR DIKE LOCATIONS, SEE "LAYOUTS" PLANS.
3. REMOVAL OF EDGE DRAINS INCLUDED IN ROADWAY EXCAVATION, STA L+ "SB1"341+15 TO L+ "SB1" 370+50.
4. SEE "CONSTRUCTION DETAILS" PLANS FOR OTHER GRIND Pvm+ DETAIL.
5. PLACE ATPB FROM "SB1" 341+15 TO "SB1" 353+63.61 AND "SB1" 357+47.61 TO "SB1" 370+50.



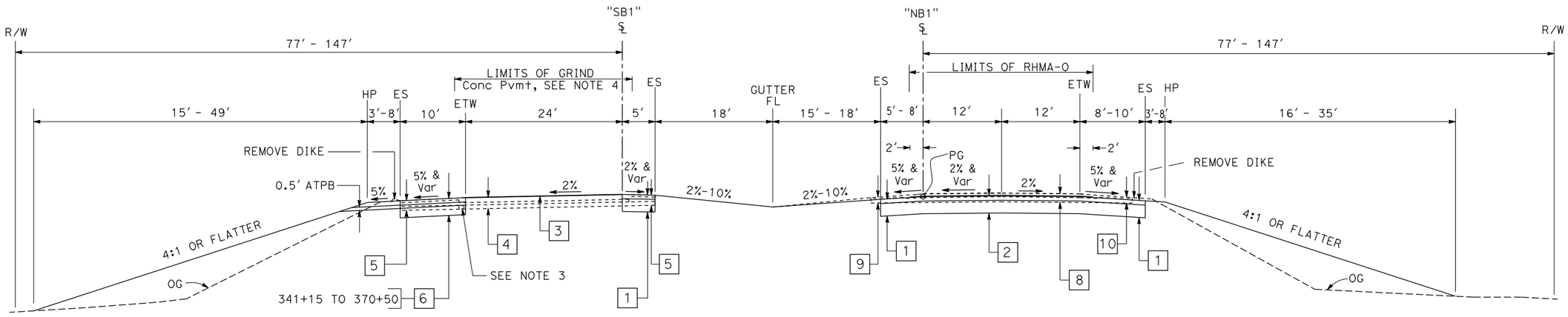
"PR1" 0+59.00 TO "PR1" 1+07.00

PRIVATE ROAD CONNECTION



"PR2" 0+57.00 TO "PR2" 1+06.00

PRIVATE ROAD CONNECTION



SOUTHBOUND

"SB1" 357+47.6 TO "SB1" 373+40
"SB1" 341+10 TO "SB1" 353+63.6

NORTHBOUND

"NB1" 357+59.6 TO "NB1" 363+55
"NB1" 344+75 TO "NB1" 353+51.6

ROUTE 99

TYPICAL CROSS SECTIONS

NO SCALE

X-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DIVISION OF ENGINEERING

CALCULATED-DESIGNED BY	DW,LN, DB
CHECKED BY	DAL BAINS
FUNCTIONAL SUPERVISOR	ALI KIANI

REVISED BY	DATE REVISED

LAST REVISION 00-00-00
DATE PLOTTED => 17-APR-2012
TIME PLOTTED => 13:42

BORDER LAST REVISED 7/2/2010
USERNAME => s118704
DGN FILE => 0300000509ca002.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0308
PROJECT NUMBER & PHASE 03000005091

ATTACHMENT C - Project Design Plans

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99	28.1/29.6		

M.A. Panchesson 4-14-12
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
M.A. PANCHESSON
No. 44125
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

NOTES:

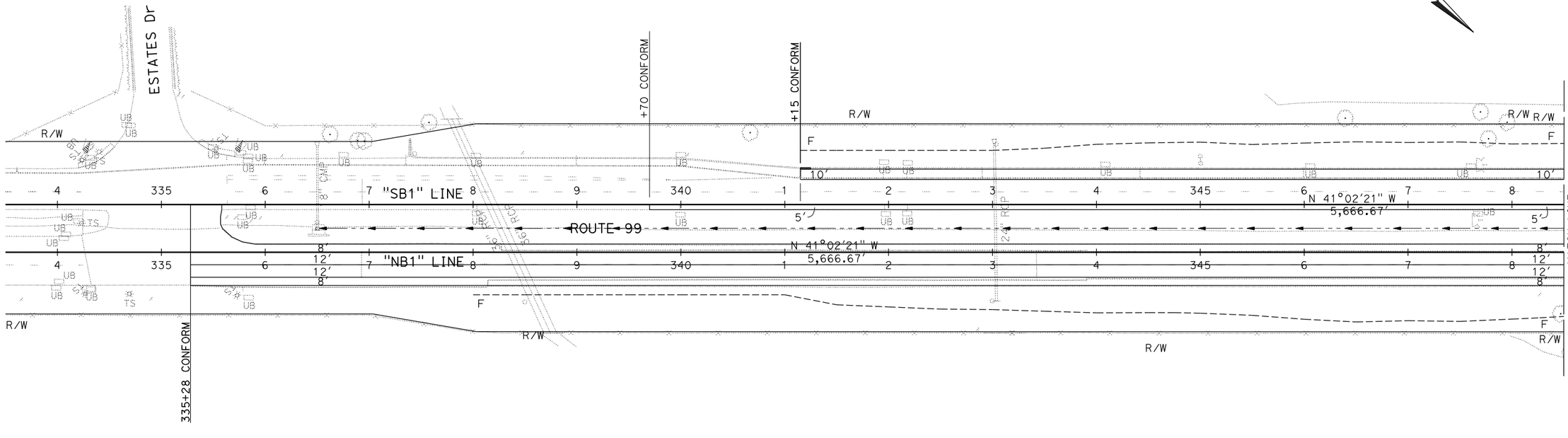
1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
2. HORIZONTAL CONTROL FOR THIS PROJECT IS CALIFORNIA COORDINATE SYSTEM ZONE. GRID DISTANCES AND GRID BEARINGS SHOWN. TO OBTAIN GROUND DISTANCES, DIVIDE BY THE AVERAGE COMBINED GRID FACTOR OF 0.99996448. THE HORIZONTAL DATUM IS: NAD 83.
3. ELEVATIONS BASED ON THE 1929 NATIONAL GEODETIC VERTICAL DATUM.
4. SEE "SUMMARY OF QUANTITIES" PLANS FOR MBGR AND DIKE LOCATIONS.
5. SB EXISTING LANES ARE OF Conc Pvmt.
6. UTILITY FACILITIES NOT SHOWN. SEE " UTILITY" PLANS.
7. Temp FENCE (TYPE ESA) LOCATIONS WILL BE FIELD LOCATED BY THE ENGINEER.

ABBREVIATIONS:

PTE - PERMIT TO ENTER AND CONTRUCT
TCE - TEMPORARY CONSTRUCTION EASEMENT
SUHV - SUPPLEMENTAL Horiz/Vert CONTROL POINT
Kv - KILO-VOLT
Ct - CALTRANS

LEGEND:

ESA FENCE LOCATIONS



LAYOUT

SCALE: 1" = 50' **L-1**

LAST REVISION	DATE PLOTTED => 17-APR-2012
00-00-00	TIME PLOTTED => 13:42

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DIVISION OF ENGINEERING

CALCULATED-DESIGNED BY	MIKE PANCHESSON	REVISED BY	
CHECKED BY	DON WEHRLY	DATE REVISED	
FUNCTIONAL SUPERVISOR	ALI KIANI		

BORDER LAST REVISED 7/2/2010 | USERNAME => s118704 | DGN FILE => 0300000509ea001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0308 | PROJECT NUMBER & PHASE 0300000509

ATTACHMENT C - Project Design Plans

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99	28.1/29.6		

M. A. Panchesson 4-14-12
REGISTERED CIVIL ENGINEER DATE

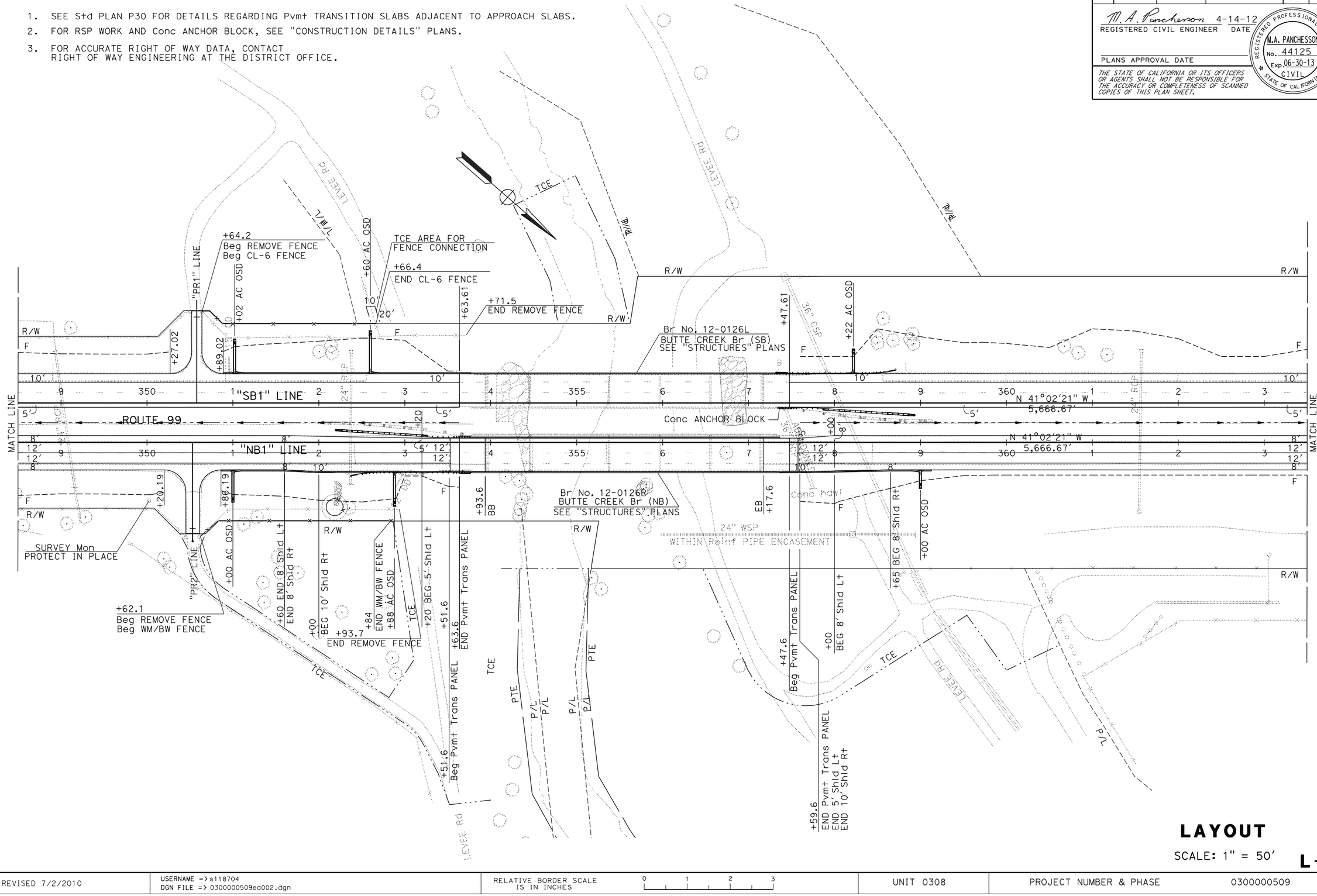
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
M.A. PANCHESSON
No. 44125
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

1. SEE Std PLAN P30 FOR DETAILS REGARDING Pvmt TRANSITION SLABS ADJACENT TO APPROACH SLABS.
2. FOR RSP WORK AND Conc ANCHOR BLOCK, SEE "CONSTRUCTION DETAILS" PLANS.
3. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



LAYOUT

SCALE: 1" = 50'

L-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DIVISION OF ENGINEERING

CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
MIKE PANCHESSON	DON WEHRLY		

FUNCTIONAL SUPERVISOR: ALI KIANI

LAST REVISION 00-00-00
DATE PLOTTED => 17-APR-2012
TIME PLOTTED => 13:42

BORDER LAST REVISED 7/2/2010

USERNAME => s118704
DGN FILE => 0300000509ea002.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0308

PROJECT NUMBER & PHASE 0300000509

ATTACHMENT C - Project Design Plans

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99	28.1/29.6		

M.A. Panchesson 4-14-12
REGISTERED CIVIL ENGINEER DATE

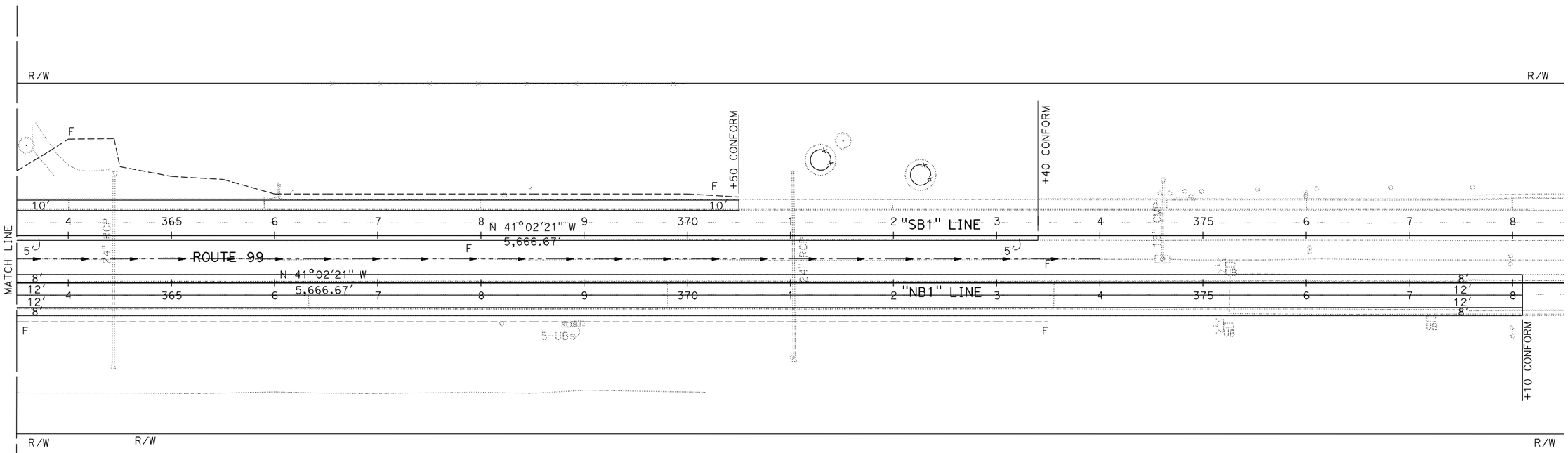
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
M.A. PANCHESSON
No. 44125
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE:

FOR ACCURATE RIGHT OF WAY ADJACENT TO CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
MIKE PANCHESSON	DON WEHRLY		

FUNCTIONAL SUPERVISOR: ALI KIANI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DIVISION OF ENGINEERING

LAYOUT
SCALE: 1" = 50'

L-3

LAST REVISION 00-00-00
DATE PLOTTED => 17-APR-2012
TIME PLOTTED => 13:42

BORDER LAST REVISED 7/2/2010 | USERNAME => s118704 DGN FILE => 0300000509eq003.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0308 | PROJECT NUMBER & PHASE 0300000509

ATTACHMENT C - Project Design Plans

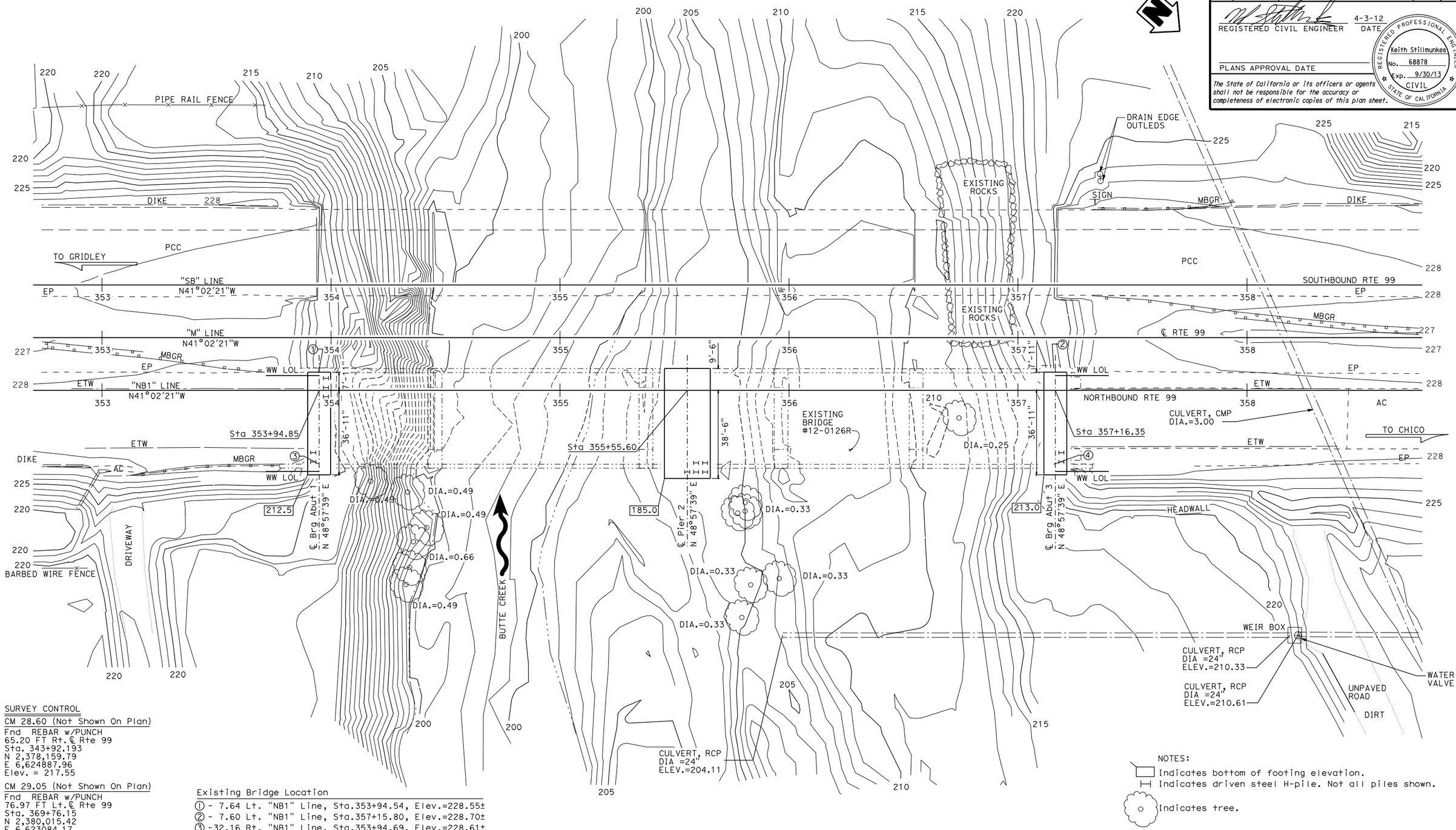
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99			

REGISTERED CIVIL ENGINEER — 4-3-12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Keith Stillmunkes — No. 68878 — Exp. 9/30/13 — CIVIL — STATE OF CALIFORNIA

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



SURVEY CONTROL

CM 28.60 (Not Shown On Plan)
Fnd REBAR w/PUNCH
65.20 FT Rt. ℄ Rte 99
Sta. 343+92.193
N 2,378,159.79
E 6,624887.96
Elev. = 217.55

CM 29.05 (Not Shown On Plan)
Fnd REBAR w/PUNCH
76.97 FT Lt. ℄ Rte 99
Sta. 369+76.15
N 2,380,015.42
E 6,623084.17
Elev. = 220.22

Existing Bridge Location

① - 7.64 Lt. "NB1" Line, Sta.353+94.54, Elev.=228.55±
② - 7.60 Lt. "NB1" Line, Sta.357+15.80, Elev.=228.70±
③ -32.16 Rt. "NB1" Line, Sta.353+94.69, Elev.=228.61±
④ -32.31 Rt. "NB1" Line, Sta.357+15.61, Elev.=228.70±

NOTES:
- Indicates bottom of footing elevation.
- Indicates driven steel H-pile. Not all piles shown.
- Indicates tree.

PRELIMINARY INVESTIGATION SECTION						DESIGN	BY Keith Stillmunkes	CHECKED Mario Guadamuz
SCALE 1"=20'	VERT.DATUM NGVD29	PHOTOGRAMMETRY AS OF: X				DETAILS	BY Anthony Valdez	CHECKED Mario Guadamuz
	HORZ.DATUM NAD83 (1991.35)	SURVEYED	BY District/J. Borden	CHECKED	BY J.Borden 03/2011	QUANTITIES	BY Gerald Dickerson	CHECKED Yingjue Feng
	ALIGNMENT TIES Dist. Traverse Sheet	DRAFTED	BY T.Zolnikov 03/2011	CHECKED	BY T.Schmalz 03/2011			

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 07

BRIDGE NO. 12-0126R
POST MILE 28.72

BUTTE CREEK BRIDGE, RIGHT (REPLACE)
FOUNDATION PLAN

STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3646
PROJECT NUMBER & PHASE: 0300000509 1
CONTRACT NO.: X

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES			SHEET	OF
~~10-14-11~~		2-23-12 ~~12-6-11~~	5	27

FILE => 12-0126r-e-fp101.dgn

ATTACHMENT C - Project Design Plans

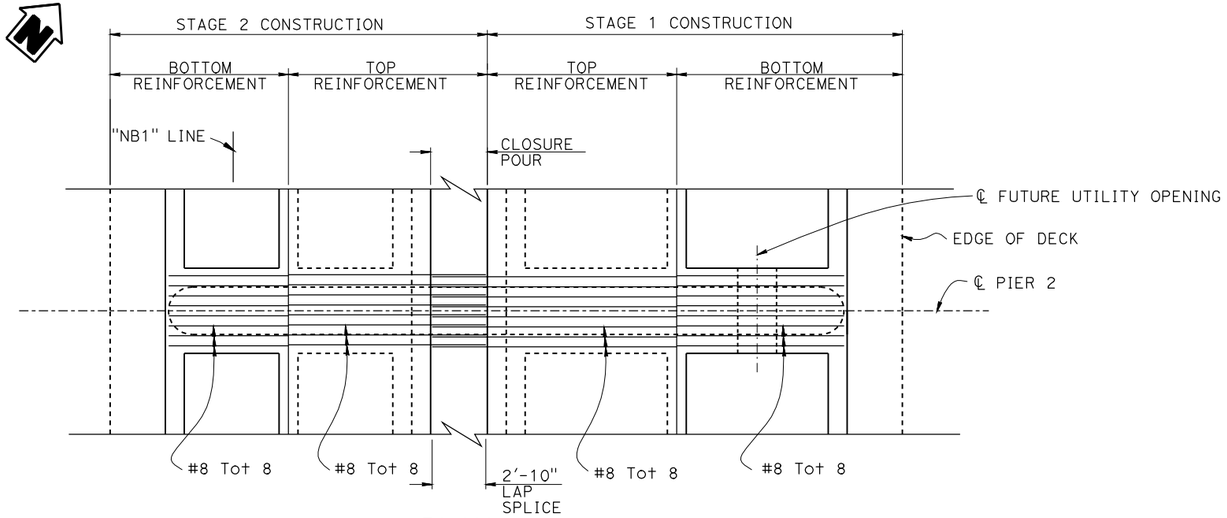
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99			

REGISTERED CIVIL ENGINEER — DATE 4-3-12

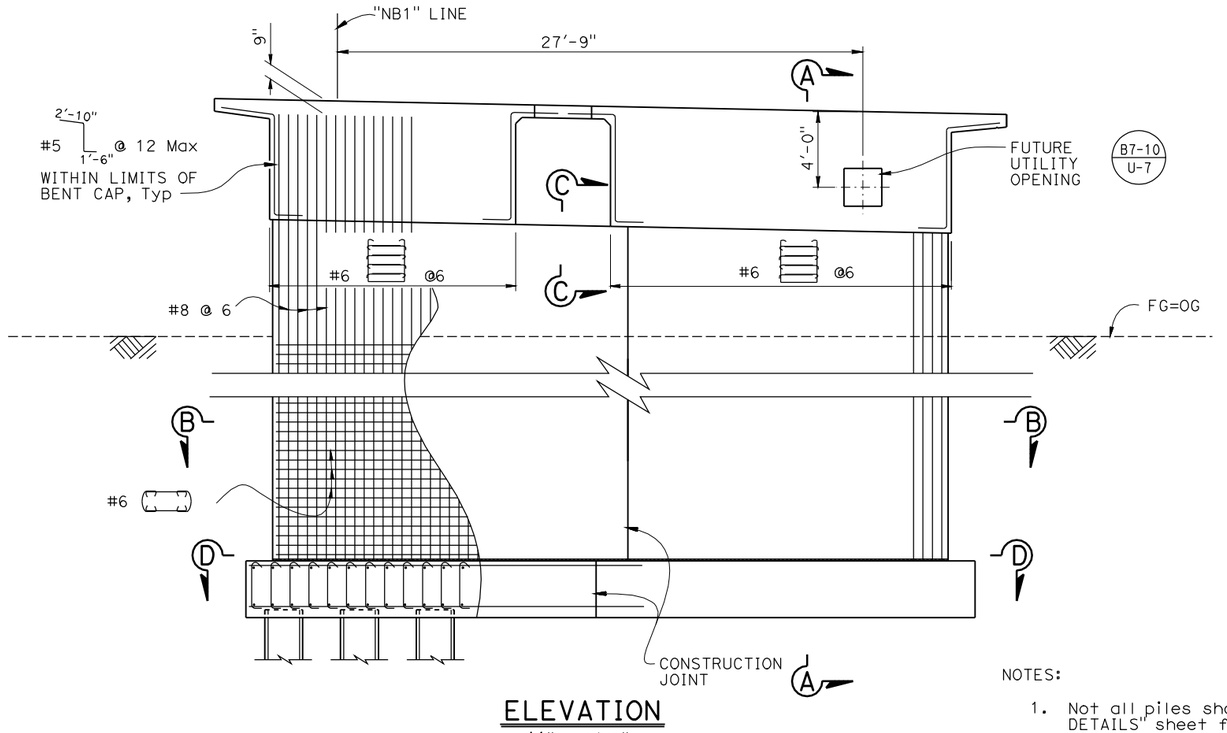
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Keith Stillmunkers — No. 68878 — Exp. 9/30/13 — CIVIL — STATE OF CALIFORNIA

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



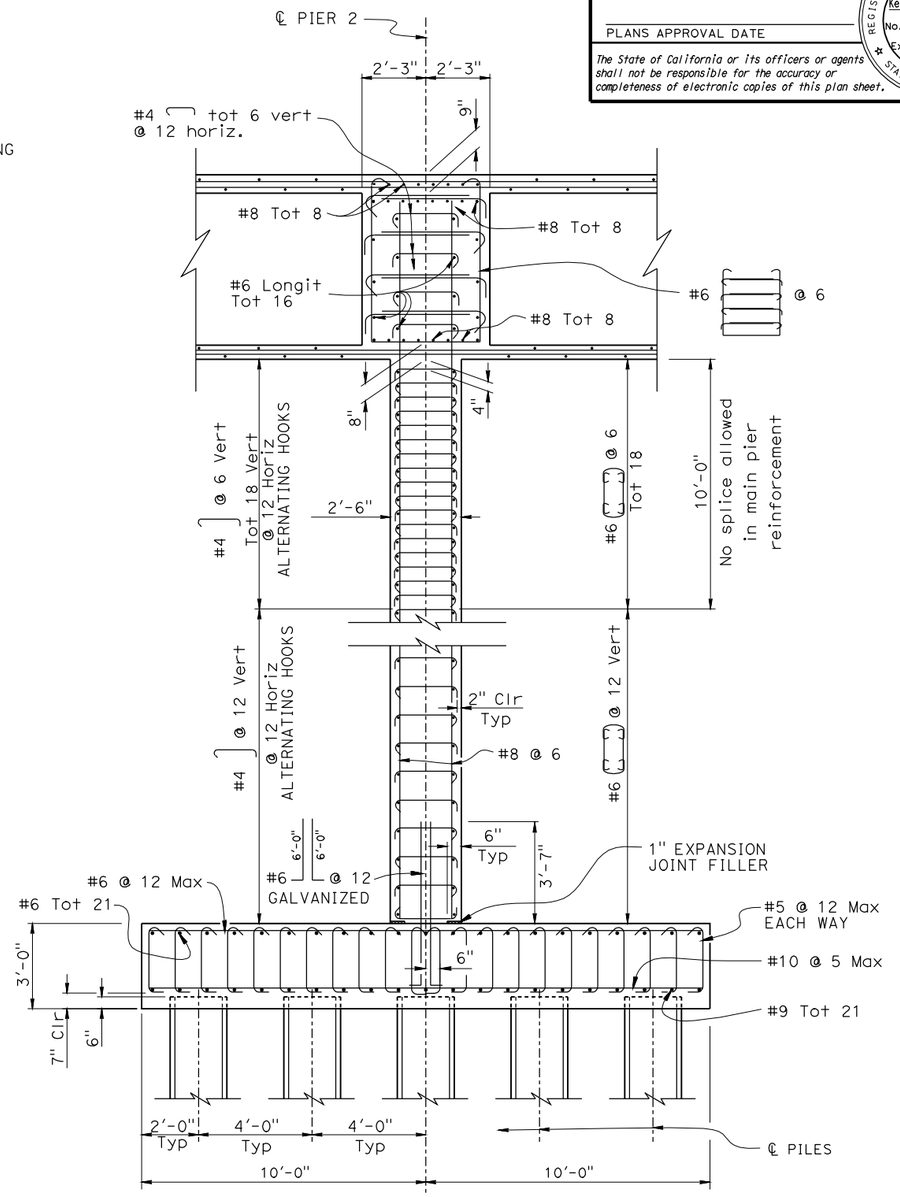
PLAN
1/4" = 1'-0"



ELEVATION
1/4" = 1'-0"

NOTES:

1. Not all piles shown, see "PIER DETAILS" sheet for pile placement.
2. For "SECTIONS B-B", "C-C" and "D-D" see "PIER DETAILS" sheet.



SECTION A-A
3/8" = 1'-0"

DESIGN	BY Keith Stillmunkes	CHECKED Mario Guadamuz	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 7	BRIDGE NO. 12-0126R	BUTTE CREEK BRIDGE, RIGHT (REPLACE)
DETAILS	BY Yingjue Feng	CHECKED Mario Guadamuz			POST MILE 28.7	PIER LAYOUT
QUANTITIES	BY Gerald Dickerson	CHECKED Yingjue Feng				

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3592
PROJECT NUMBER & PHASE: 0300000509 1 CONTRACT NO.: 03-3E6201

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
9-1-11	4-3-12	2-28-11	11-17-11	10	27

FILE => 12-0126r-1-p01_10.dgn

USERNAME => s115764 DATE PLOTTED => 03-APR-2012 TIME PLOTTED => 13:38

ATTACHMENT C - Project Design Plans

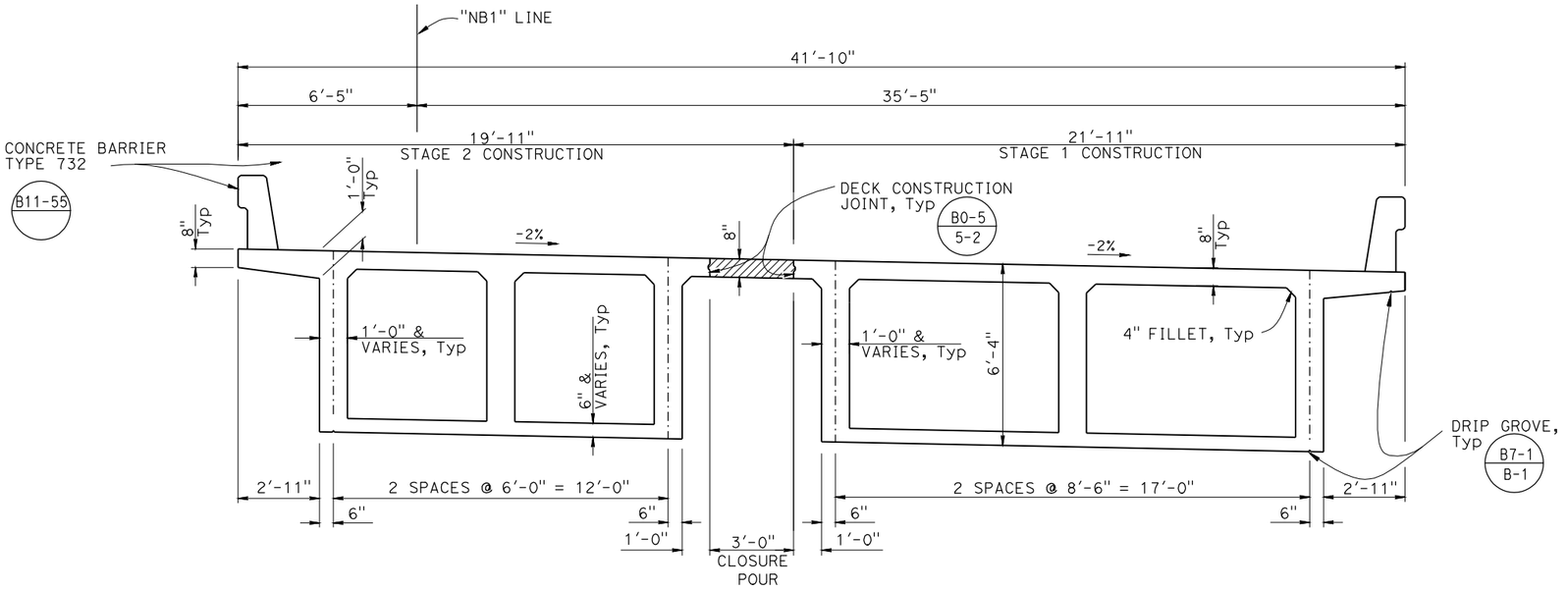
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	But	99			

REGISTERED CIVIL ENGINEER — DATE 4-3-12

PLANS APPROVAL DATE

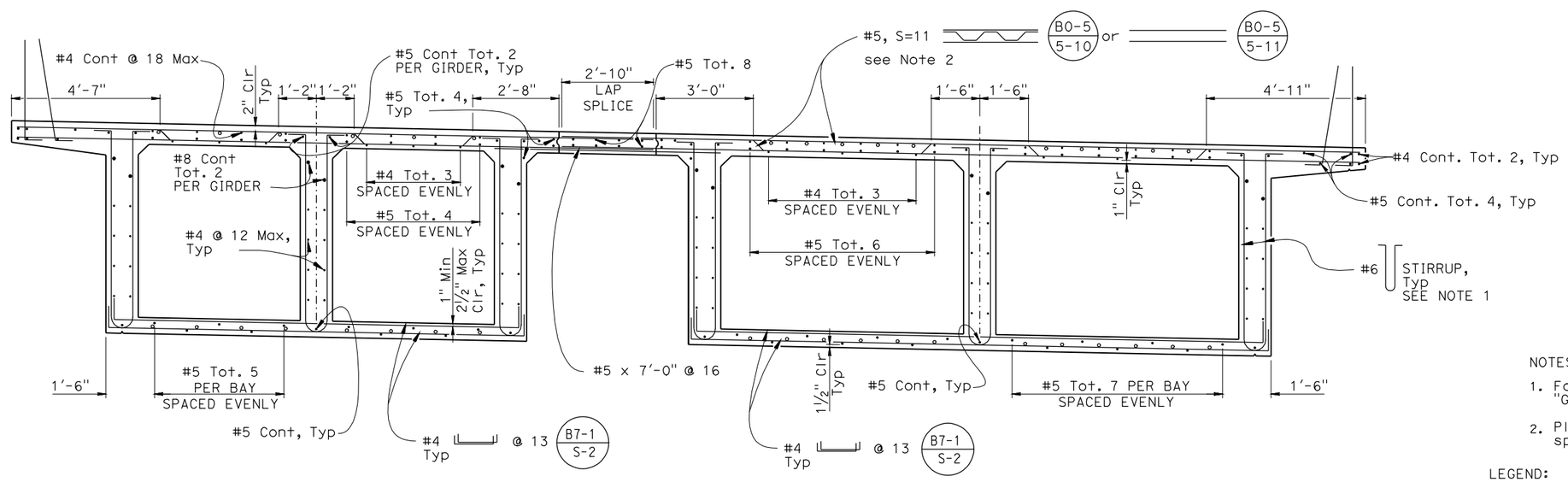
REGISTERED PROFESSIONAL ENGINEER — Keith Stillmunkers — No. 68878 — Exp. 9/30/13 — CIVIL — STATE OF CALIFORNIA

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



TYPICAL SECTION

3/8" = 1'-0"



PART TYPICAL SECTION

1/2" = 1'-0"

NOTES:

1. For spacing, see "GIRDER LAYOUT" sheet.
2. Place parallel to ℄ bent, space along ℄ bridge.

LEGEND:

- Indicates closure pour
- ∘ Indicates additional reinforcement, see "ADDITIONAL SLAB REINFORCEMENT" sheet.

DESIGN	BY Keith Stillmunkes	CHECKED Mario Guadamuz	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 7	BRIDGE NO. 12-0126R; POST MILE 28.7
DETAILS	BY Yingjue Feng	CHECKED Mario Guadamuz			
QUANTITIES	BY Gerald Dickerson	CHECKED Yingjue Feng			

BUTTE CREEK BRIDGE, RIGHT (REPLACE)

TYPICAL SECTION

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3592 PROJECT NUMBER & PHASE: 0300000509 1 CONTRACT NO.: 03-3E6201

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES: 7-29-11; 12-6-11; 12-16-11; 2-24-12

SHEET 12 OF 27

FILE => 12-0126r-k-ts.dgn

ATTACHMENT C - Project Design Plans

USERNAME => s11576d DATE PLOTTED => 03-APR-2012 TIME PLOTTED => 13:39

NOTES:
1. SEE EXHIBIT 2 FOR PROFILE VIEW OF RSP.
2. SEE RAOD PLAN SWHEET C-24 THROUGH C-27 FOR RSP DETAILS.

LEGEND

PROPOSED RSP

CONTOUR LINE - 100 YEAR HIGH WATER ELEVATION - 218.5 FEET

ABREVIATIONS

RSP - ROCK SLOPE PROTECTION
R/W - RIGHT OF WAY
P/L - PROPERTY LINE
TCE - TEMPORARY CONSTRUCTION EASEMENT

VILLAS AT BUTTE CRK OWNER'S ASSOCIATION, LLC
040-350-099

WESTERN RESOURCES INC
040-020-049

BUTTE CREEK PARK LLC
040-002-075

BUTTE CREEK PARK LLC
040-020-157

CHICO RESEARCH PARK
040-600-049
50.00 AC

State Fish & GAme
040-400-040
4.00 AC

State Fish & GAme
040-400-999
AC

R/W
P/L
TOP OF LEVEE
TCE
BUTTE CREEK
ROUTE 99
Br No. 12-0126L
Br No. 12-0126R
PROPOSED RSP BELOW OG
355
+93.6 BB
+17.6 EB

0 20 40 60
FEET
SCALE

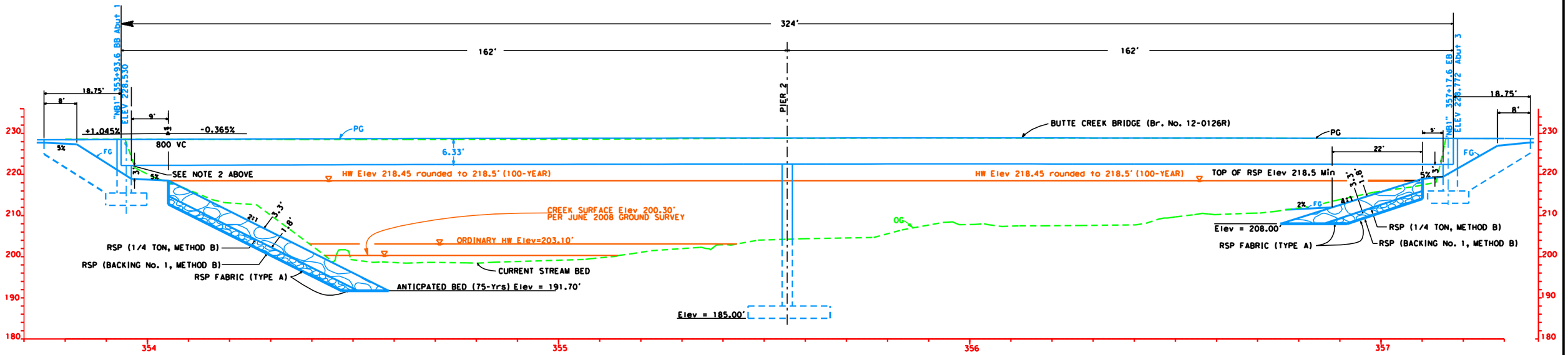
LAYOUT - NB BRIDGE
REPLACE BR NO. 12-0126R
BUTTE CREEK BRIDGE
03-3E6201 Apr 2012

EXHIBIT 1

ATTACHMENT C - Project Design Plans

NOTES:

1. PILES UNDER ABUTMENT AND BRIDGE FOOTINGS NOT SHOWN. SEE STRUCTURE PLAN SHEETS FOR PILE INFO.
2. LOWEST POINT ALONG Br SOFFIT 32.5' Rt, "NB1" 353+96.1, is Elev 221.56' less HWSEL of 218.45'= 3.11' > 3' req'd clearance ok.
3. THE HORIZANOTAL DATUM USED IS NAD 1983.
4. THE VERTICAL DATUM USED IS NGVD 1929.
5. THE VERTICAL DATUM TRANSFORMATION BETWEEN NGVD 1929 AND NAVD 1988 WAS DETERMINED USING VERTCON ORTHOMETRIC HEIGHT CONVERSION PROVIDED BY NGS-NOAA WEBSITE. ACCORDING TO NGS INFORMATION, VALUES OF NAVD 1988 DATUM ARE 2.326-FEET HIGHER THAN FOR NGVD 1929 DATUM AT THE PROJECT SITE.



TOTAL RSP AT ABUTMENT 1 = 1,129 CY
TOTAL RSP AT ABUTMENT 3 = 558 CY

0 10 20 30 40
FEET
Horiz SCALE

VERTICAL SCALE: 1 H : 1 V

PROFILE NB BRIDGE
REPLACE BR NO. 12-0126R
BUTTE CREEK BRIDGE
03-3E6201

Apr 2012

EXHIBIT 2

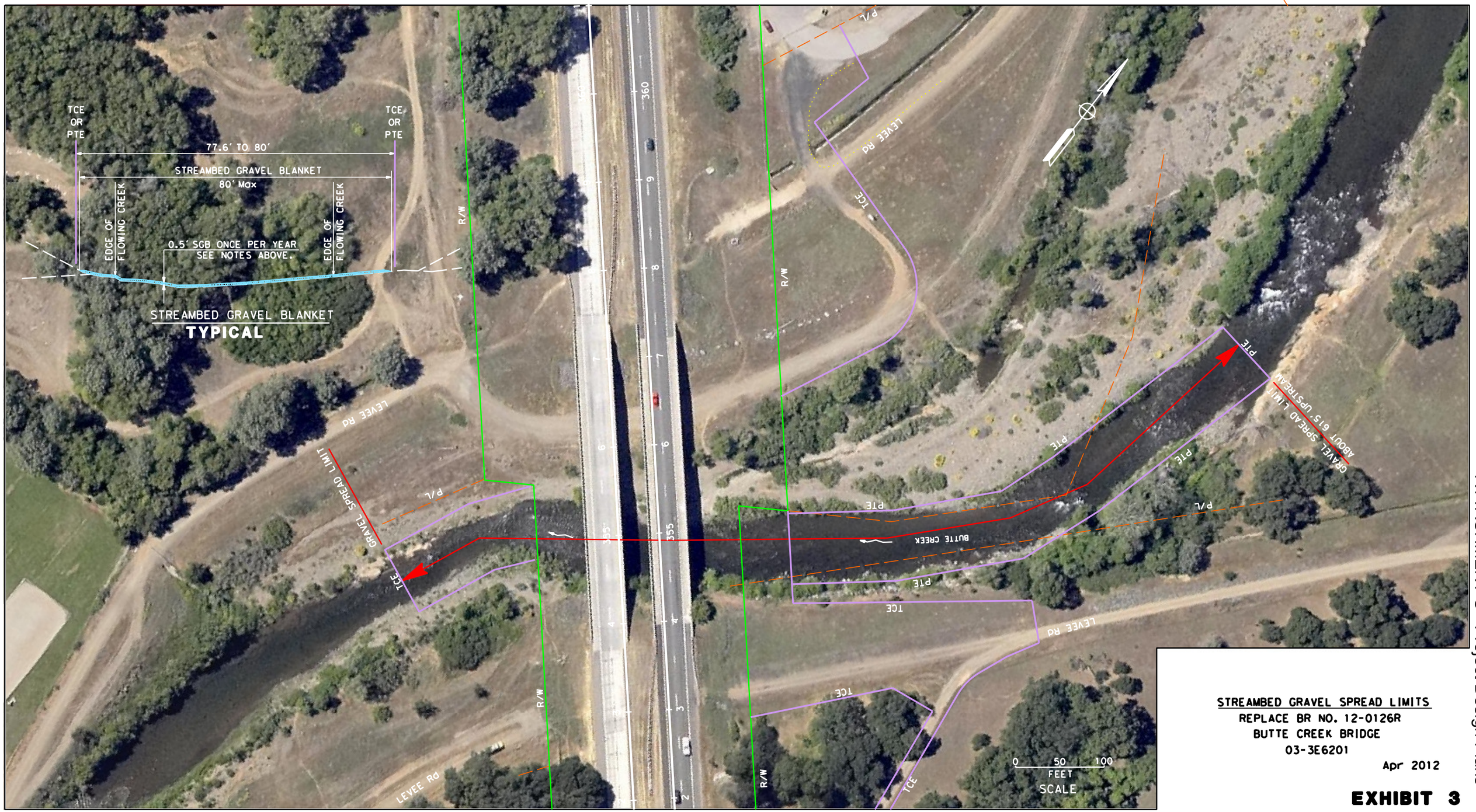
ATTACHMENT C - Project Design Plans

NOTES:

1. PLACE STREAMBED GRAVEL BLANKET UPSTREAM AND DOWNSTREAM WITHIN SPREAD LIMITS SHOWN.
2. THE ALLOWABLE IN-STREAM WORK WINDOW FOR PLACING STREAMBED GRAVEL BLANKET IN THE CREEK IN ANY YEAR IS FROM JULY 15 THROUGH OCTOBER 15.
3. A STREAMBED GRAVEL BLANKET SHALL BE PLACED TWICE. SEE STREAMBED GRAVEL BLANKET TYPICAL BELOW.

ABBREVIATIONS

TCE - TEMPORARY CONSTRUCTION EASEMENT
PTE - PERMIT TO ENTER AND CONTRUCT
SGB - STREAMBED GRAVEL BLANKET



STREAMBED GRAVEL SPREAD LIMITS
REPLACE BR NO. 12-0126R
BUTTE CREEK BRIDGE
03-3E6201

Apr 2012

EXHIBIT 3

ATTACHMENT C - Project Design Plans

ROUTE 99

SOUTHGATE LANE

MITIG PLANTING
AREAS, SEE "OMMP" DOCUMENT
DATED MAY 2012

0 50 100
FEET
SCALE

MITIGATION PLANTING AREAS
REPLACE BR NO. 12-0126R
BUTTE CREEK BRIDGE
03-3E6201
Sep 2012
ACOE SUPPL EXHIBIT

ATTACHMENT D - Planting Plan

aerial.dgn 9/5/2012 10:16:14 AM

Butte Creek, HEC-RAS Sensitivity Analysis September 6, 2012

Based on the teleconference with the Army Corps of Engineers (ACE) on the morning of September 6, 2012, the HEC-RAS model was modified to determine how several variables will affect the water surface elevation at the site. The Channel Capacity for Butte Creek of 27,000 cfs (per the State Plan of Flood Control) was used for this analysis.

The tables compare values for 1) the Existing channel configuration, 2) the proposed channel including gravel mitigation, the proposed structure and the three vegetation mitigation Sites using a Manning's n-value of 0.049, 3) the proposed channel using a manning's n-value of 0.060 in the vegetation mitigation Sites, and 4) the proposed channel using the Manning's n-value of 0.049 and adding obstructions to the channel to account for the trees within the mitigation sites.

For scenario 2, the Manning's n-value was estimated using a composite n-value as discussed in Chow as well as USGS and FHWA publications. The value estimated, 0.049, was also compared to Chows Table 5-6, which noted a "Normal" value of 0.050 for "light brush and trees, in winter."

For scenario 3, the Manning's n-value of 0.060 was suggested by Saba (sp?) of the ACE. This value was listed in Chow's Table 5-6 as the maximum n-value for "light brush and trees, in winter," as discussed.

For scenario 4, The Manning's n-value was again set at 0.049, but obstructions were added to the mitigation areas. The width of the obstructions corresponded to the mature diameter of the trees within that specific mitigation Site, while the height was set well above the water surface elevation. For Site A, the largest trees will be White Alders, with a mature diameter of 20"; for Site B and Site C, Fremont Cottonwoods and California Sycamores are proposed, both with mature diameters of 24". Therefore the obstructions at Site A were 20" wide at both RS22 and RS23, while the obstructions were 2 foot wide at RS24, RS25 and RS26. It should also be noted that at RS25, there are obstructions modeled on both banks.

Table 1 shows the water surface elevation for the four scenarios, listed for each cross-section from RS21 to RS27. The values highlight in red are the water surface elevations directly from the HEC-RAS output. The values highlighted in orange are the differences in water surface compared to the existing configuration at the site.

From Table 1, it can be seen that the proposed configuration would have a maximum water surface increase of 0.08 feet (approximately 1") at RS23. Increasing the n-value to 0.060 at the mitigation sites would cause an increase of 0.09 feet, also at RS23. Scenario 4 with the obstructions causes a water surface elevation increase of 0.11 at RS23 and also an increase of 0.12 at RS27. While this is slightly about the typical allowable water surface increase of 0.10 feet, it is also overly conservative, since it still uses the 0.049 n-value. Since the trees are already modeled as "obstructions", it is redundant to also use the 0.049 n-value for the "brush and trees". It should be noted that the water surface elevation is

more than 4.5 ft below the top of the lowest levee at each cross-section in the areas of the vegetation mitigation.

Butte Cre	27	State Plar	Butte Existing	27000	206.21	221.82	6.12	4411.57	0.41	
Butte Cre	27	State Plar	Butte 6 DFG tree	27000	206.21	221.84	6.1	4428.11	0.41	0.02
Butte Cre	27	State Plar	Butte n060	27000	206.21	221.85	6.09	4433.92	0.41	0.03
Butte Cre	27	State Plar	Butte Obstruc	27000	206.21	221.94	6.02	4488.03	0.4	0.12
Butte Cre	26	State Plar	Butte Existing	27000	205.37	221.54	6.18	4371.96	0.36	
Butte Cre	26	State Plar	Butte 6 DFG tree	27000	205.37	221.53	6.18	4369.21	0.36	-0.01
Butte Cre	26	State Plar	Butte n060	27000	205.37	221.54	6.18	4371.82	0.36	0
Butte Cre	26	State Plar	Butte Obstruc	27000	205.37	221.6	6.17	4378.48	0.36	0.06
Butte Cre	25	State Plar	Butte Existing	27000	205.84	221.39	6.62	4076.67	0.39	
Butte Cre	25	State Plar	Butte 6 DFG tree	27000	205.84	221.37	6.66	4069.18	0.38	-0.02
Butte Cre	25	State Plar	Butte n060	27000	205.84	221.37	6.66	4071.15	0.38	-0.02
Butte Cre	25	State Plar	Butte Obstruc	27000	205.84	221.43	6.68	4060.56	0.38	0.04
Butte Cre	24	State Plar	Butte Existing	27000	205.63	218.94	13.23	2040.32	1	
Butte Cre	24	State Plar	Butte 6 DFG tree	27000	205.63	218.94	13.23	2040.45	1	0
Butte Cre	24	State Plar	Butte n060	27000	205.63	218.94	13.23	2040.45	1	0
Butte Cre	24	State Plar	Butte Obstruc	27000	205.63	219	13.23	2040.8	1	0.06
Butte Cre	23	State Plar	Butte Existing	27000	203.62	218.95	7.28	3707.76	0.43	
Butte Cre	23	State Plar	Butte 6 DFG tree	27000	203.62	219.03	7.21	3742.4	0.43	0.08
Butte Cre	23	State Plar	Butte n060	27000	203.62	219.04	7.21	3746.27	0.43	0.09
Butte Cre	23	State Plar	Butte Obstruc	27000	203.62	219.06	7.22	3737.91	0.43	0.11
Butte Cre	22	State Plar	Butte Existing	27000	202.03	218.88	6.06	4455.94	0.33	
Butte Cre	22	State Plar	Butte 6 DFG tree	27000	202.53	218.91	6.22	4338.57	0.35	0.03
Butte Cre	22	State Plar	Butte n060	27000	202.53	218.91	6.22	4339.21	0.35	0.03
Butte Cre	22	State Plar	Butte Obstruc	27000	202.53	218.92	6.25	4321.19	0.35	0.04
Butte Cre	21	State Plar	Butte Existing	27000	200.42	218.78	6.08	4439.14	0.33	
Butte Cre	21	State Plar	Butte 6 DFG tree	27000	200.92	218.82	6.14	4399.17	0.33	0.04
Butte Cre	21	State Plar	Butte n060	27000	200.92	218.82	6.14	4399.16	0.33	0.04
Butte Cre	21	State Plar	Butte Obstruc	27000	200.92	218.82	6.14	4399.15	0.33	0.04

Table 1

Table 2 on the follow page, is the output from the HEC-RAS program showing much of the same data as in Table 1. The HEC-RAS files should be available and distributed as soon as we receive concurrence that this analysis is suitable.

Profile Output Table - Standard Table 1

File Options Std. Tables Locations Help

HEC-RAS River: Butte Creek Reach: Butte Creek Profile: State

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Froude # Chl
				(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	
Butte Creek	27.0	State Plan	Butte Existing	27000.00	206.21	221.82	6.12	4411.57	0.41
Butte Creek	27.0	State Plan	Butte 6 DFG tree	27000.00	206.21	221.84	6.10	4428.11	0.41
Butte Creek	27.0	State Plan	Butte n060	27000.00	206.21	221.85	6.09	4433.92	0.41
Butte Creek	27.0	State Plan	Butte Obstruc	27000.00	206.21	221.94	6.02	4488.03	0.40
Butte Creek	26.0	State Plan	Butte Existing	27000.00	205.37	221.54	6.18	4371.96	0.36
Butte Creek	26.0	State Plan	Butte 6 DFG tree	27000.00	205.37	221.53	6.18	4369.21	0.36
Butte Creek	26.0	State Plan	Butte n060	27000.00	205.37	221.54	6.18	4371.82	0.36
Butte Creek	26.0	State Plan	Butte Obstruc	27000.00	205.37	221.60	6.17	4378.48	0.36
Butte Creek	25.0	State Plan	Butte Existing	27000.00	205.84	221.39	6.62	4076.67	0.39
Butte Creek	25.0	State Plan	Butte 6 DFG tree	27000.00	205.84	221.37	6.66	4069.18	0.38
Butte Creek	25.0	State Plan	Butte n060	27000.00	205.84	221.37	6.66	4071.15	0.38
Butte Creek	25.0	State Plan	Butte Obstruc	27000.00	205.84	221.43	6.68	4060.56	0.38
Butte Creek	24.00	State Plan	Butte Existing	27000.00	205.63	218.94	13.23	2040.32	1.00
Butte Creek	24.00	State Plan	Butte 6 DFG tree	27000.00	205.63	218.94	13.23	2040.45	1.00
Butte Creek	24.00	State Plan	Butte n060	27000.00	205.63	218.94	13.23	2040.45	1.00
Butte Creek	24.00	State Plan	Butte Obstruc	27000.00	205.63	219.00	13.23	2040.80	1.00
Butte Creek	23.00	State Plan	Butte Existing	27000.00	203.62	218.95	7.28	3707.76	0.43
Butte Creek	23.00	State Plan	Butte 6 DFG tree	27000.00	203.62	219.03	7.21	3742.40	0.43
Butte Creek	23.00	State Plan	Butte n060	27000.00	203.62	219.04	7.21	3746.27	0.43
Butte Creek	23.00	State Plan	Butte Obstruc	27000.00	203.62	219.06	7.22	3737.91	0.43
Butte Creek	22.0	State Plan	Butte Existing	27000.00	202.03	218.88	6.06	4455.94	0.33
Butte Creek	22.0	State Plan	Butte 6 DFG tree	27000.00	202.53	218.91	6.22	4338.57	0.35
Butte Creek	22.0	State Plan	Butte n060	27000.00	202.53	218.91	6.22	4339.21	0.35
Butte Creek	22.0	State Plan	Butte Obstruc	27000.00	202.53	218.92	6.25	4321.19	0.35
Butte Creek	21	State Plan	Butte Existing	27000.00	200.42	218.78	6.08	4439.14	0.33
Butte Creek	21	State Plan	Butte 6 DFG tree	27000.00	200.92	218.82	6.14	4399.17	0.33
Butte Creek	21	State Plan	Butte n060	27000.00	200.92	218.82	6.14	4399.16	0.33
Butte Creek	21	State Plan	Butte Obstruc	27000.00	200.92	218.82	6.14	4399.15	0.33

Table 2