Meeting of the Central Valley Flood Protection Board
April 27, 2012

Staff Report

California Department of Transportation, District 10
State Highway Route 99 at Duck Creek Bridge Crossing, San Joaquin County

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1.0 – ITEM

Consider approval of Permit No. 18715 (Attachment B).

2.0 – APPLICANT

California Department of Transportation (Caltrans), District 10.

3.0 – LOCATION

The project is located in San Joaquin County, south of Stockton at the downstream end of the State Highway Route 99 crossing at Duck Creek near Mariposa Road (see Attachment A).

4.0 – DESCRIPTION

The applicant proposes to widen the State Highway Route 99 culvert bridge at Duck Creek (Caltrans bridge number 29-0012). The proposed work will consist of widening the existing triple 12-foot by 7-foot reinforce concrete box culvert by 28.3 feet to the west, the downstream side of the bridge. The project's objective is to accommodate more traffic at the new on-ramp of the Mariposa Road and State Highway Route 99 interchange. The box culvert extension will also have wing walls and a four-foot cutoff wall. This project is part of Caltrans plan to widen Interstate Highway 99.

5.0 – PROJECT ANALYSIS

The overall design of the proposed project, described in Section 4.0, is found to be in compliance with Title 23 standards as described in Sections 5.1 and 5.2 below. The

widened structure will allow for increased traffic flow through this reach of Highway 99. See Attachments D and F for proposed Plans.

5.1 – Hydraulic Analysis

For the proposed bridge widening to be incompliance with Title 23, the bridge's soffit must not be lower than the existing soffits, as outlined in Section 128(a)(10)(B) of Title 23:

> *"When an existing bridge being widened does not meet the clearance requirement above the design flood plane, the bottom structural members of the added section may be no lower than the bottom structural members of the existing bridge, except as may be caused by the extension of existing sloped structural members."*

As designed, the project meets these requirements because it consists of extending a box culvert and therefore the elevation of the soffit of the modified structure will not change.

The model used for the one-dimensional hydraulic analysis was the Hydrologic Engineering Center's River Analysis System (HEC-RAS). The roughness coefficient of 0.034 was used for both existing and proposed conditions. The analysis included a scenario for a 100-yr event with a design flow of 1,137-cfs based on the Design Flood flows as per CVFPB guidelines.

According to the modeling results, the Water Surface Elevation (WSE) remains the same at 24.9 ft for pre- and post-project conditions; water velocity also remains the same at 3.6 fps; available freeboard inside the culvert is 1.1 feet (see Attachment C).

Widening the existing structures will not reduce the current level of protection and although it will not provide a hydraulic improvement, the design is compliant with Title 23 standards (as stated above) and the project is a substantial improvement for local infrastructure and public safety. Staff has concluded that the project has negligible adverse incremental hydraulic effects on the floodway.

5.2 – Geotechnical Analysis

Staff reviewed the design plans and agreed with the applicant's conclusion that this project does not bear any significant geotechnical impacts on the floodway. All work to

be completed will be done in a manner that does not pose a threat to the structural integrity of the channel, structures, or floodway.

It is important to note that the geotechnical report recommends at least 2:1 slopes but the plans show 1.5:1 slopes at exit of the culvert.

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

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

- San Joaquin Flood Control and Water Conservation District endorsed this project on October 19, 2011 with conditions. The conditions will be incorporated into the permit as Exhibit A.

- The U.S. Army Corps of Engineers 208.10 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.

7.0 – CEQA ANALYSIS

Board staff has prepared the following CEQA findings:

The Board, as a responsible agency under CEQA, has reviewed Draft Environmental Impact Report/Environmental Assessment (DEIR) (SCH Number: 2002022027, March 2008) and the Final Environmental Impact Report/Environmental Assessment with Finding of No Significant Impact (FEIR) (September 2008) and Mitigation Measures for the South Stockton Six-Lane 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/2012/04-27-2012.cfm under a link for this agenda item. These documents are also available for review in hard copy at the Board and the Caltrans District offices.

Caltrans has determined that the project would not have a significant effect on the environment and certified the project on October 28, 2008 and subsequently filed a Notice of Determination on November 3, 2008 with the State Clearinghouse. Board staff finds that although the proposed project could have a potentially significant effect on the environment, there will not be a significant effect in this case because revisions

in the project have been made by or agreed to by the project proponent. The project proponent has incorporated mandatory mitigation measures into the project plans to avoid identified impacts or to mitigate such impacts to a point where no significant impacts will occur. These mitigation measures are included in the project proponent's FEIR and address impacts to aesthetics, biological resources, paleontological resources, hazards and hazardous materials, emergency services, water quality and storm water runoff, traffic and transportation. The description of the mitigation measures are further described in the adopted FEIR.

8.0 – SECTION 8610.5 CONSIDERATIONS

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

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

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

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

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

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

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

   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 and 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 direct staff to file a Notice of Determination with the State Clearinghouse.

10.0 – LIST OF ATTACHMENTS

A. Location Map
B. Draft Permit No. 18715
C. Drawings
D. Hydraulic Summary Table and Profile

Technical Review:	Sergio Guillen, P.E., Atkins
Staff Recommendations:	Nancy C. Moricz, P.E.
Environmental Review:	James Herota, E.S.
Document Review:	David R. Williams, P.E. – Senior Engineer, WR
	Eric Butler, P.E. – Supervising Engineer, WR

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Attachment A

INDEX OF PLANS

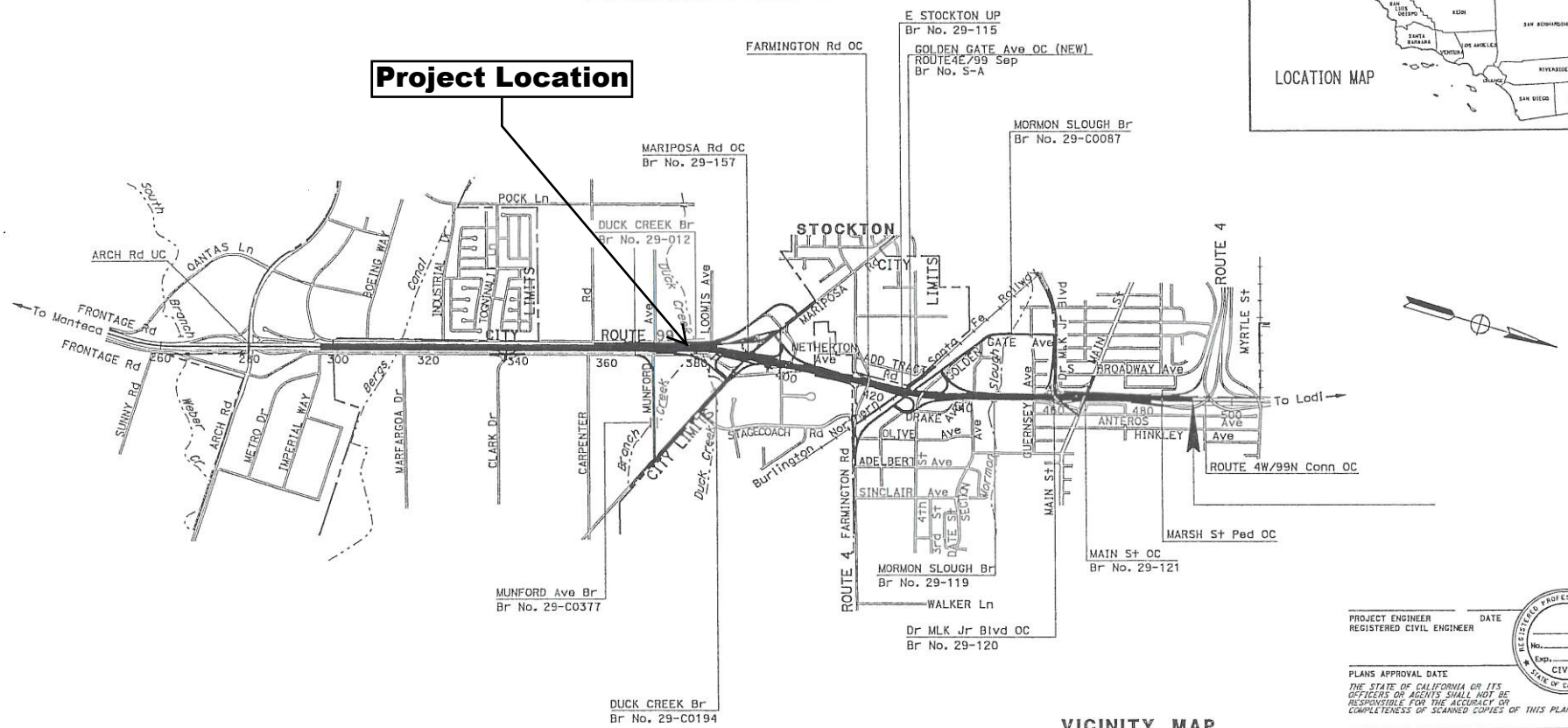
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON STATE HIGHWAY

IN SAN JOAQUIN COUNTY
IN STOCKTON
FROM 0.4 MILE NORTH OF ARCH ROAD UNDERCROSSING
TO 0.1 MILE SOUTH OF ROUTE 4 WEST/99 NORTH
CONNECTOR OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	SJ	99	15.0/18.6		



VICINITY MAP
NO SCALE

PROJECT MANAGER: JOY PINNE
DESIGN ENGINEER: SEAN PLEDGER

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER
No. Exp. CIVIL
REGISTERED PROFESSIONAL ENGINEER 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.

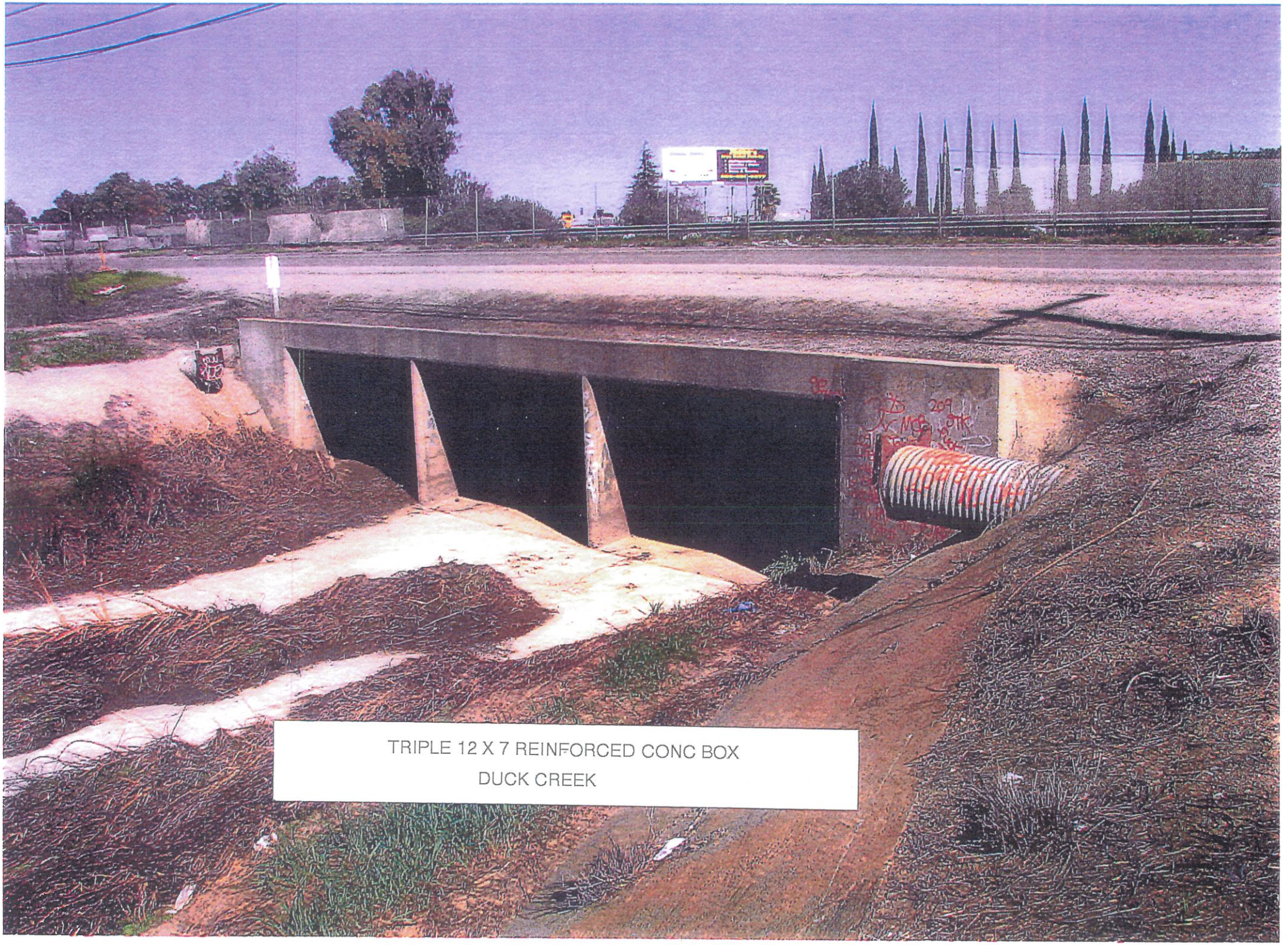
THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

CONTRACT No.	10-3A1004
PROJECT ID	1000000409

BORDER LAST REVISED 7/2/2010 | CALTRANS WEB SITE IS: HTTP//WWW.DOT.CA.GOV/ | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => a112619 DGN FILE => a3a100aa001.dgn | UNIT 1446 | PROJECT NUMBER & PHASE 1000000409

Attachment A

Attachment A



LOOKING DOWNSTREAM FROM ROUTE 99/FRONTAGE ROAD
DUCK CREEK

DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18715 BD

This Permit is issued to:

Caltrans
2015 E. Shields Avenue
Suite 100
Fresno, California 93726

Authorize the extension of the existing triple 12'x7' box culvert by approximately 28.3 feet west to accommodate the new on-ramp and due to the realignment of Frontage Road at the SR 99 Mariposa Road interchange (Br. No. 29-0012). The extension will have wing walls and a 4' cut-off wall. The project is located at the downstream end of State Route 99 bridge crossing Duck Creek, west of the southbound Frontage Road. This portion of Duck Creek is located in portions of Section 58 and 68 of the C.M. Weber grant. (Section , T , R , MDB&M, Duck Creek, San Joaquin County).

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

(SEAL)

Dated: _____

_____
Executive Officer

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

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

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

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

SPECIAL CONDITIONS FOR PERMIT NO. 18715 BD

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

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

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

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

defense, in its sole discretion.

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

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

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

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

TWENTY-ONE: The permittee shall contact the Department of Water Resources, Inspection Branch by telephone at (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction conference. The permitee shall also contact the Central Valley Flood Protection Board?s Construction Supervisor by telephone at (916) 574-2646 for quality assurance inspection. Failure to do so at least ten (10) working days prior to start of work may result in delay of the project.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

THIRTY-NINE: Drainage from the bridge shall not be discharged into the streambank.

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

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

FORTY-TWO: The soffit of the bridge shall be no lower than that of the widened bridge.

FORTY-THREE: Bridge piers and bents placed within the floodway to support a widened portion of the existing bridge shall be constructed in line with the existing bents and piers.

FORTY-FOUR: The permittee shall comply with all conditions set forth in the letter from the San Joaquin County Flood Control & Water Conservation District dated October 19, 2011, which is attached to this permit as Exhibit B and is incorporated by reference.

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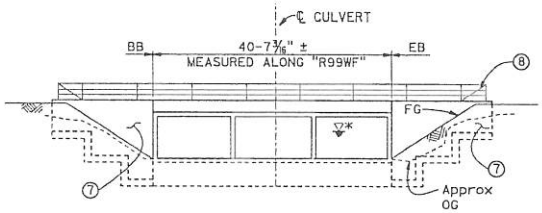
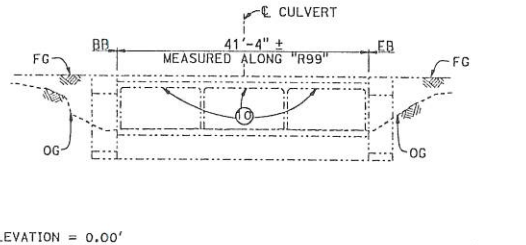
Attachment C



MIRROR ELEVATION
1" = 10'

* 100 YR HW ELEV = 25.0 ft.
FOR HYDROLOGIC SUMMARY,
SEE "FOUNDATION PLAN" SHEET



EXISTING ELEVATION
1" = 10'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
10	SJ	99			

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

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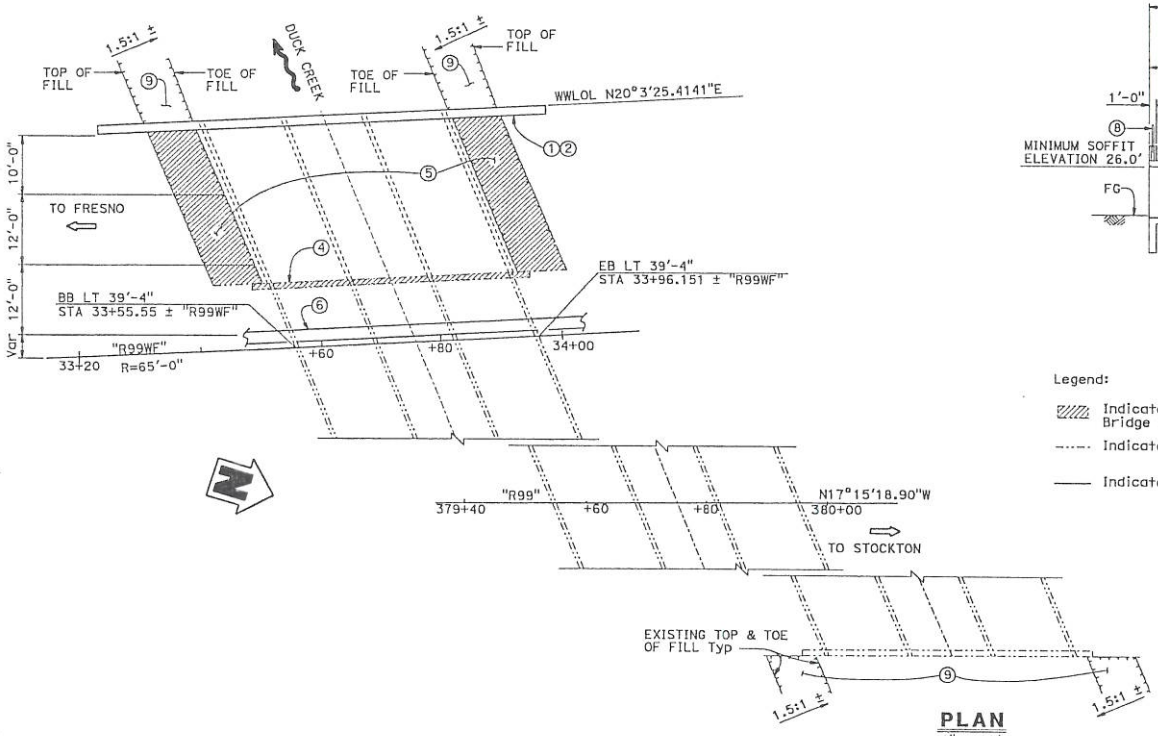
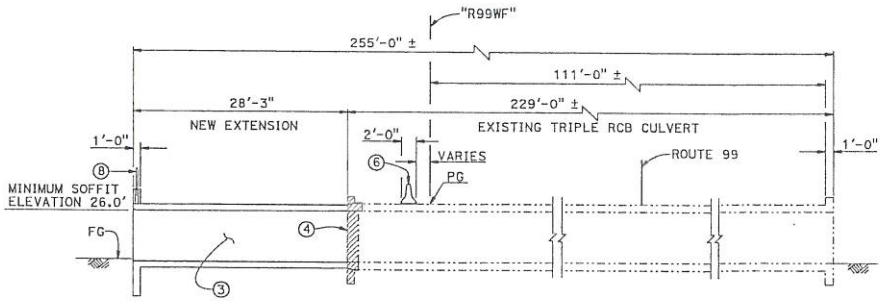
REGISTERED PROFESSIONAL ENGINEER — CHRIS UDARBE — No. C67985 — Exp. 06-30-12 — CIVIL — STATE OF CALIFORNIA

DRAFT SPS&E



PLAN
1" = 10'



TYPICAL SECTION
1/8" = 1'-0"

Legend:

- Indicates limits of bridge removal Bridge removal (Portion), LOCATION N.
- Indicates existing structure
- Indicates new structure

Notes:

1. Paint "DUCK CREEK BRIDGE"
2. Paint "BR. NO. 29-0012"
3. Triple 12'-0" x 7'-0" RCB Culvert
4. Remove existing parapet, wingwalls and cut off wall
5. Remove existing slope paving
6. Temporary "K" railing, see "ROAD PLANS"
7. Box culvert wing wall (Type B)
8. Cable railing
9. Existing slope paving
10. Repair existing RCB culvert soffit.

X DESIGN ENGINEER	DESIGN	BY T. Win	CHECKED C. Udarbe	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY" PERMIT DESIGN VEHICLE	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17
	DETAILS	BY L. Wang	CHECKED C. Udarbe	LAYOUT	BY C. Udarbe / CHECKED T. Win		
	QUANTITIES	BY S. Nam	CHECKED T. Win	SPECIFICATIONS	BY V. Renganathan / PLANS AND SPECS COMPARED X		

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 10 PROJECT NUMBER & PHASE: 10000004091 CONTRACT NO.: X

FILE => 29-0012-a-gp.dgn

BRIDGE NO. 29-0012 — POST MILE 16.47

SOUTH STOCKTON WIDENING
DUCK CREEK BRIDGE
GENERAL PLAN

DISREGARD PRINTS BEARING EARLIER REVISION DATES → REVISION DATES 8-27-11 9-2-11 1-1-11

SHEET 1 OF 9

STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REV.08-01-10)

USERNAME => 211259 DATE PLOTTED => 08-SEP-2011 TIME PLOTTED => 14:46

Attachment C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
10	SJ	99			

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — CHRIS UDARBE — No. C62985 — EXP. 06-30-12 — CIVIL — STATE OF CALIFORNIA

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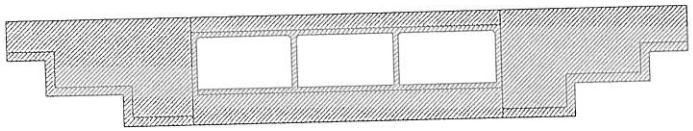
INDEX TO PLANS

SHEET NO.	TITLE
1.	GENERAL PLAN
2.	INDEX TO PLANS
3.	FOUNDATION PLAN
4.	WINGWALL LAYOUT
5.	SPALL REPAIR DETAILS NO. 1
6.	CULVERT EXTENSION DETAIL
7.	LOG OF TEST BORINGS 1 OF 3
8.	LOG OF TEST BORINGS 2 OF 3
9.	LOG OF TEST BORINGS 3 OF 3



STRUCTURAL CONCRETE, BOX CULVERT

CONCRETE STRENGTH AND TYPE LIMITS

NO SCALE

GENERAL NOTES

For Culvert General Notes, Design Notes, and Construction Notes see 2006 Standard Plan D82 "Cast-in-Place Reinforced Concrete Box Culvert Miscellaneous Details"

For Culvert details not shown see 2006 Standard Plan D81 "Cast-in-Place Reinforced Concrete Double Box Culvert"

For Wingwall notes and details not shown see 2006 Standard Plan D84 "Box Culvert Wingwalls Types A, B and C"

REINFORCED CONCRETE:

f_y = 60 ksi

f'_c = 3.6 ksi

n = 8

CONSTRUCTION NOTES

Expansion Joint:
Retaining Walls - Place 0.5 inches expansion joint filler at the end of special portion of RW as specified on plan view

Construction Joint:
Temporary joints may be permitted as shown. Transverse construction joint shall be normal radial to the ℄ of structure and shall be the same plane for ones of slab and wall. Also, it shall not be placed within 30.0 inches of Manhole or Junction structure opening

Soil:
If loose fine sand or cobbles or boulders are encountered at the bottom of the footing elevation, soil in this area should be over-excavated for 5'-0" and replaced with the compacted fill that have less than 50% of material passing a 200 sieve size and have a Sand Equivalent value of 20 as determined by California Test Method 217. The compacted fill beneath the retaining wall footing should be placed in horizontal loose layers of approximately 8 inches thick, and compacted to at least 95% relative compaction.

STANDARD PLANS DATED MAY 2006

A10A	ACRONYMS AND ABBREVIATIONS (A-L)
A10B	ACRONYMS AND ABBREVIATIONS (M-Z)
A10C	SYMBOLS (SHEET 1 OF 2)
A10D	SYMBOLS (SHEET 2 OF 2)
A62A	EXCAVATION AND BACKFILL MISCELLANEOUS DETAILS
A62B	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL - BRIDGE SURCHARGE AND WALL
A62E	EXCAVATION AND BACKFILL CAST-IN-PLACE REINFORCED CONCRETE BOX AND ARCH CULVERTS
B0-3	BRIDGE DETAILS
B3-8	RETAINING WALL DETAILS No. 1
B11-47	CABLE RAILING
D81	CAST-IN-PLACE REINFORCED CONCRETE DOUBLE BOX CULVERT
D82	CAST-IN-PLACE REINFORCED CONCRETE BOX CULVERT MISCELLANEOUS DETAILS
D84	BOX CULVERT WINGWALLS TYPES A, B AND C
D88	CONSTRUCTION LOADS ON CULVERTS

STANDARD PLAN SHEET NO.

DETAIL NO.

DESIGN	T. Win	C. Udarbe
DETAILS	L. Wang	C. Udarbe
QUANTITIES	S. Nam	T. Win

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 17

BRIDGE NO. 29-0012
POST MILE 16.47

UNIT: 10
PROJECT NUMBER & PHASE: 1000000409
CONTRACT NO.: X

FILE => 29-0012-b-itp.dgn

SOUTH STOCKTON WIDENING
DUCK CREEK BRIDGE
INDEX TO PLAN

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 03-31-11

SHEET 2 OF X

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

Attachment C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	SJ	99			

REGISTERED CIVIL ENGINEER X DATE

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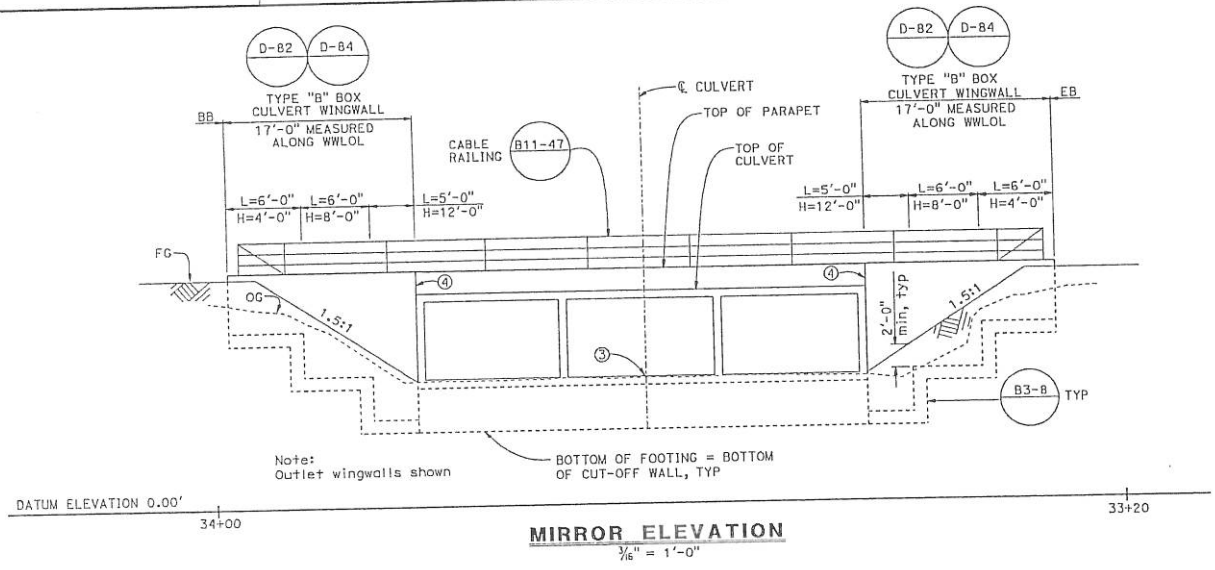
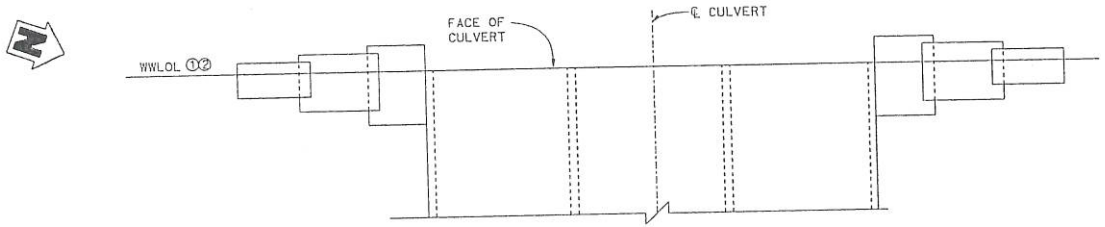
REGISTERED PROFESSIONAL ENGINEER — CHRIS UDARBE — No. C62985 — Exp. 06-30-12 — CIVIL — STATE OF CALIFORNIA



MIRROR ELEVATION

3/16" = 1'-0"



Notes:

① For wingwall layout line, see "General Plan" sheet

② Outlet wingwall parallel to WWLOL

③ Invert elevation = 18.70 Ft.

④ Place ½" expansion joint filler

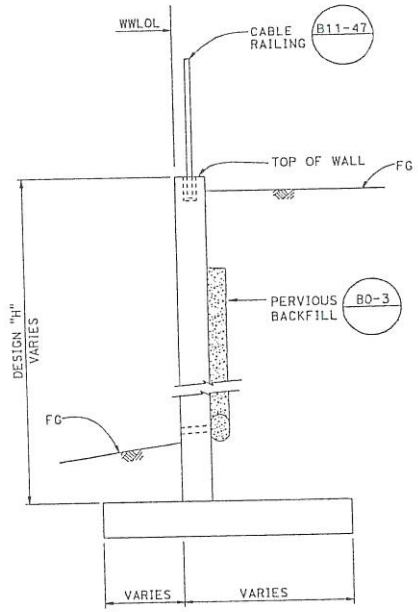
⑤ For culvert dimensions, see "CULVERT EXTENSION DETAILS" sheet

Note:

Outlet wingwalls shown

PLAN

3/16" = 1'-0"



Note:

For reinforcement and dimensions not shown, see "STANDARD PLANS MAY 2006"

TYPICAL SECTION

½" = 1'-0"

D-84

DESIGN	BY T. Win	CHECKED C. Udarbe	
DETAILS	BY L. Wang	CHECKED C. Udarbe	
QUANTITIES	BY C. Udarbe	CHECKED T. Win	

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 17

BRIDGE NO. 29-0012
POST MILE 16.47

UNIT: 10
PROJECT NUMBER & PHASE: 10000004091
CONTRACT NO.: X

FILE => 29-0012-g-ww10.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES: 10-3-11

SHEET 4 OF 9

SOUTH STOCKTON WIDENING
DUCK CREEK BRIDGE
WINGWALL LAYOUT

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

Attachment C

SPALLS REPAIR TABLE							
LOCATION		SIZE OF REPAIR AREA L (FT) X W (FT)	AREA OF SPALL REPAIR (SQFT)	DEPTH OF CONCRETE REMOVAL (INCHES)	DEPTH OF SHOTCRETE (INCHES)	GALVANIC ANODES (EA)	SPALL DISTANCE FROM INLET OPENING (FEET)
Cell # 1	Soffit	1-4 X 4	16	4	6	12	66'-0"±
Cell # 2	Soffit	2-4 X 4	16	4	6	24	70'-0"± , 80'-0"±
Cell # 3	Soffit	1-10 X 7	70	4	6	24	66'-0"±

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
10	SJ	99			

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

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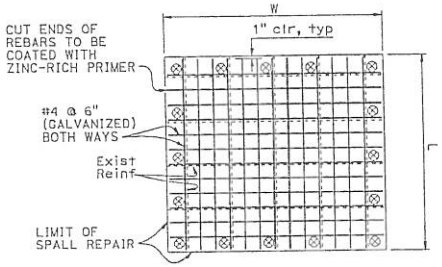
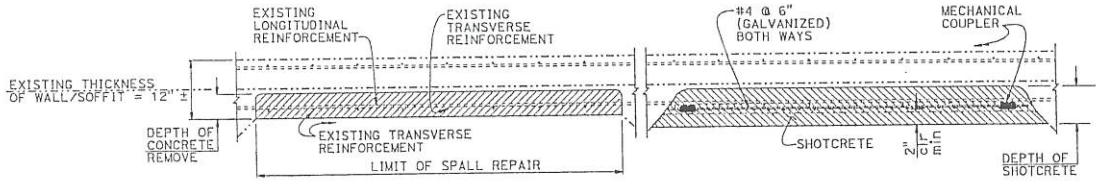
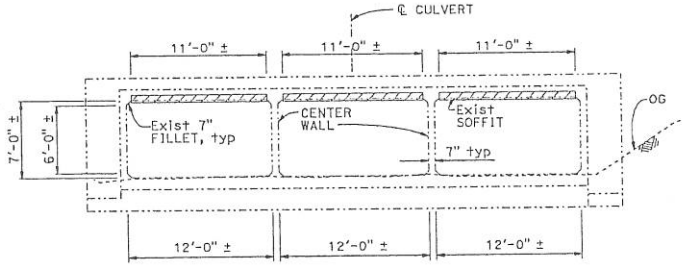
REGISTERED PROFESSIONAL ENGINEER — CHRIS UDARBE — No. C62985 — Exp. 06-30-12 — CIVIL — STATE OF CALIFORNIA



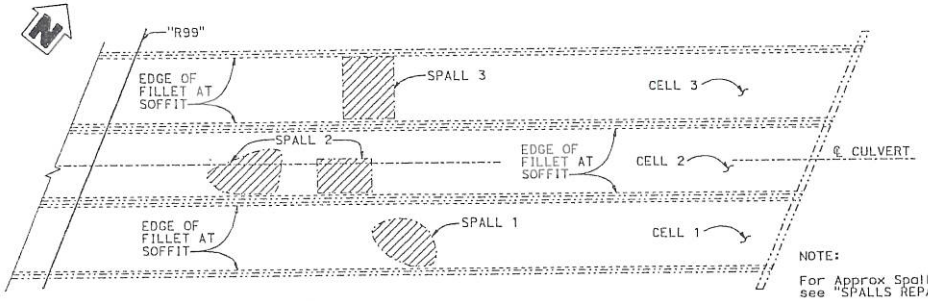
VIEW D-D
NO SCALE



TYPICAL SPALL REPAIR SECTION
NO SCALE



TYPICAL CROSS SECTION
NO SCALE



NOTE:
For Approx Spall Repair Locations, see "SPALLS REPAIR TABLE".

MIRRORED PLAN, SOFFIT SPALLS REPAIR
NO SCALE

NOTES:

1. Sawcut ½" deep along perimeter of concrete removal limit.
2. Remove existing concrete to specified depth.
3. Remove all rusted and corroded rebars and loose concrete as determined by the Engineer.
4. Install reinforcements
5. Install anodes per manufacturer's instructions. Place anodes around perimeter of repair area, spacing not to exceed 30" on center.
6. Apply shotcrete and trowel smooth.

LEGEND

- Indicates limits of removal of existing concrete.
- Indicates limits of shotcrete (f'c = 3600 psi @ 28 days)
- Indicates Exist structure
- Indicates new structure
- ⊗ Indicates anti-corrosion galvanic anodes.

DESIGN	BY T. Win	CHECKED C. Udarbe	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO. 29-0012 POST MILE 16.47
DETAILS	BY L. Wang	CHECKED C. Udarbe			
QUANTITIES	BY S. Mam	CHECKED T. Win			

SOUTH STOCKTON WIDENING
DUCK CREEK BRIDGE
SPALL REPAIR DETAILS

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

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

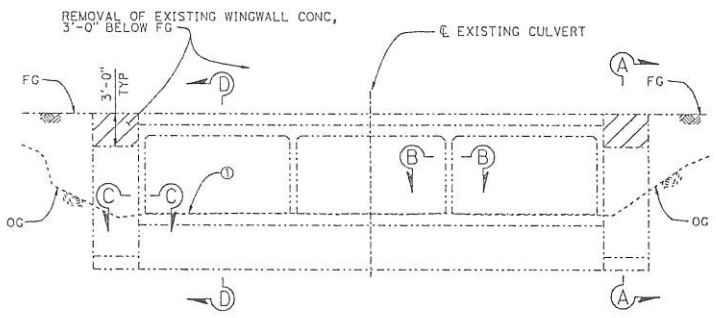
UNIT: 10 PROJECT NUMBER & PHASE: 10000004091 CONTRACT NO.: X

FILE => 29-0012-u-spall-dt.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES

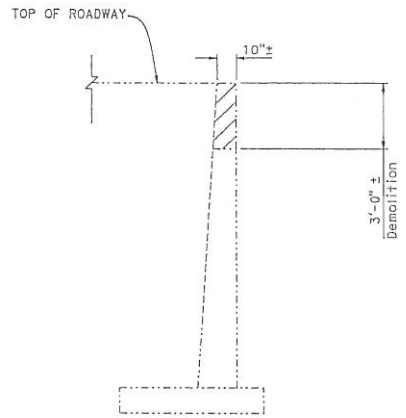
REVISION DATES			SHEET	OF
05-20-11	06-27-11	08-02-11	5	X

Attachment C

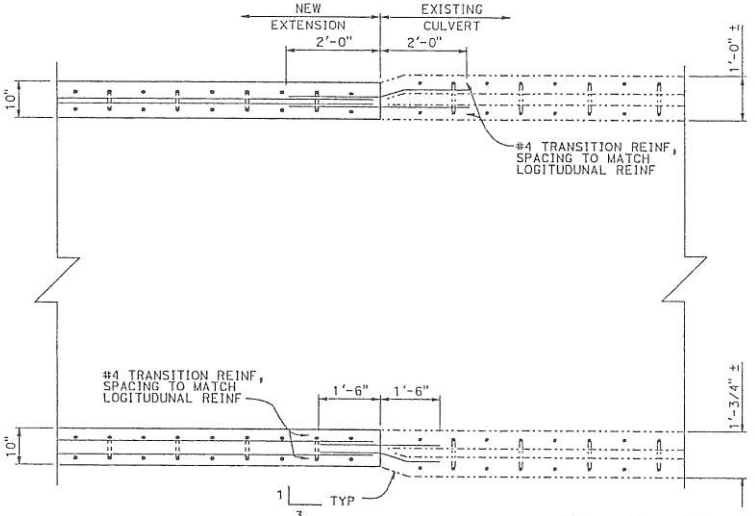


Note:
① Existing invert elevation = 20'-0" ±

EXISTING SECTION @ INLET
3/16" = 1'-0"

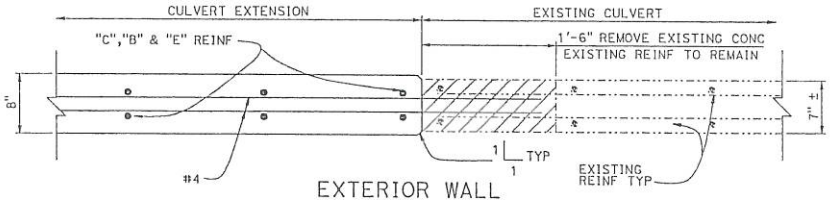


SECTION A-A
3/8" = 1'-0"

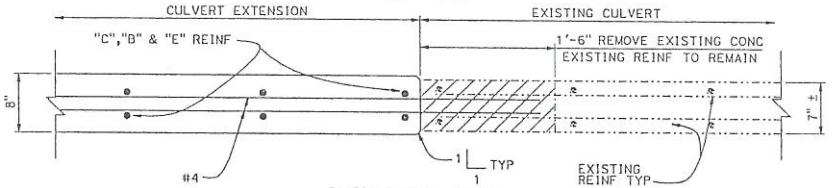


REINFORCEMENT DETAIL
3/4" = 1'-0"

DB1 DB2 DB84

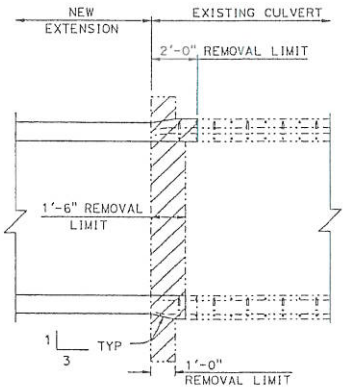


EXTERIOR WALL
SECTION C-C
1½" = 1'-0"



INTERIOR WALL
SECTION B-B
1½" = 1'-0"

DB1 DB2 DB84



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

Legend

Indicates limits of removal

Indicates existing structure

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	SJ	99			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — CHRIS UDARBE — No. C62985 — Exp. 06-30-12 — CIVIL — STATE OF CALIFORNIA

	BY	CHECKED
DESIGN	C. Udarbe	C. Udarbe
DETAILS	G. Zweier	C. Udarbe
QUANTITIES	S. Mam	T. Win

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 17

BRIDGE NO. 29-0012
POST MILE 16.47

UNIT: 10
PROJECT NUMBER & PHASE: 1000000409 1
CONTRACT NO.: X

SOUTH STOCKTON WIDENING
DUCK CREEK BRIDGE
CULVERT EXTENSION DETAIL

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

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES 05-27-11 06-29-11 8-2-11

SHEET 6 OF 9

FILE => 29-0012-w-misdet.dgn

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Duck Creek, State Route 99 existing culvert widening, Br. No. 29-0012

	WSEL	Average Velocity	Available Freeboard
100-year Design Flood 1137 cfs	24.9 ft	3.6 fps	**1.1 ft**

The minimum soffit elevation for the existing structure is 26.0 feet. The structure will have a waterway area of 321.0 square feet, which is adequate for the 100-year discharge.

Attachment D