

**Meeting of the Central Valley Flood Protection Board  
May 20, 2016**

**Staff Report – Encroachment Permit  
California Department of Transportation  
Centennial Corridor Project, Kern County**

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**1.0 – ITEM**

Consider approval of Permit No. 19077 (Attachment B).

**2.0 – APPLICANT**

California Department of Transportation

**3.0 – LOCATION**

The project is located above the existing westbound (WB) Westside Parkway Bridge in the City of Bakersfield (Attachment A).

**4.0 – PROJECT DESCRIPTION**

To construct a new Kern River Bridge (approximately 1064-feet long and 39-feet wide) over the existing WB Westside Parkway Bridge within the Kern River Designated Floodway (DF) in the City of Bakersfield.

**5.0 – AUTHORITY OF THE BOARD**

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

California Code of Regulations (CCR), Title 23 (Title 23):

- § 6, Need for a Permit
- § 13, Evidentiary Hearings

- § 107, Permitted Uses in Designated Floodways
- § 112, Streams Regulated and Nonpermissible Work Periods
- § 128, Bridges

## **6.0 – PROJECT ANALYSIS**

The proposed new Kern River Bridge (Bridge No. 50C-0357J) construction is part of the Centennial Corridor Project. The purpose of the Centennial Corridor project is to provide route continuity and associated traffic congestion relief along State Route 58 from Cottonwood Road to Interstate 5 within the City of Bakersfield and Kern County.

The Centennial Corridor Project includes three features that will encroach into the Kern River DF: a new petroleum oil pipeline, a new Kern River Bridge, and the widening of the existing EB Westside Parkway Bridge (Bridge No. 50C-0357S). The features have been divided into three separate permit applications to simplify the review process and to better track future modifications to these features. The oil pipeline has been assigned 19074, the new Kern River Bridge has been assigned 19077, and the widening of EB Westside Parkway Bridge has been assigned 18571-1.

The City of Bakersfield, in cooperation with the California Department of Transportation, is proposing to construct the new Kern River Bridge (Permit No. 19077) to provide traffic access from the WB Westside Parkway Bridge to Mohawk Street. The proposed Kern River Bridge crosses over the Kern River and the existing WB Westside Parkway Bridge; there will be a minimum vertical clearance of 18-feet between the existing Westside Parkway Bridge and the proposed Kern River Bridge. The Kern River Bridge will be a Cast-In-Place Pre-stressed Concrete Box Girder with vertical exterior girders, and will be supported by single column bents. The new Kern River Bridge will be a seven span bridge approximately 1064-feet long (Attachment C). The project area includes the Kern River, which is a regulated stream per Title 23, and the Kern River DF. There are no Federal flood risk reduction project levees or channels involved. The proposed work complies with all applicable Title 23 standards.

### **6.1 – Hydraulic Analysis**

A one dimensional hydraulic model was done for the 100-year (15,000 cfs) event using the USACE Hydrologic Engineering Center's River Analysis System (HEC-RAS) in order to analyze the existing and post project conditions. The HEC-RAS analysis

showed all computed water surface elevation (WSE) changes due to the placement of the bridge are negligible with a slight increase of 0.09-feet with a slight decrease in velocity of 0.05 feet per second. The proposed bridge will have a minimum freeboard of 30-feet above the FEMA100-year water surface elevation.

Falsework will be required for the bridge construction which will remain in place during the flood season. The falsework will result in an increase of 0.56-feet in water surface elevation; however, with this increase, the flood water will still be confined within the Kern River DF boundaries (Attachment D).

Based on Board staff's review, the proposed project is expected to result in no significant adverse hydraulic impacts to the Kern River DF.

## **6.2 – Geotechnical Analysis**

The proposed project is not associated with any project levees; therefore, a geotechnical analysis was not required.

## **7.0 – AGENCY COMMENTS AND ENDORSEMENTS**

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

- City of Bakersfield Water Resources Department has endorsed the project on September 23, 2015 without conditions.
- The U.S. Army Corps of Engineers 33 USC 408 decision letter has been received for this application. The Sacramento District of the USACE has determined that the proposed work does not affect a Federally constructed project, however, the USACE recommended that the City of Bakersfield ensure that channel can pass flows of 8,000 cubic feet per second as listed in operation and maintenance manual for the Kern River Intertie Project which is a Federally constructed project downstream of Bakersfield. The letter is incorporated into the permit as Exhibit A.

## **8.0 – CEQA ANALYSIS**

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

The Board, acting as a responsible agency under CEQA, has independently reviewed the Centennial Corridor Project Draft Environmental Impact Report (DEIR) (SCH No. 2008091102, May 2014) and Final Environmental Impact Report (FEIR) (SCH No. 2008091102, December 2015) and Mitigation Monitoring and Reporting Plan (MMRP) submitted by the lead agency Department of Transportation (Caltrans (incorporated herein by reference) . These documents, including project design and the MMRP, may be viewed or downloaded from the Central Valley Flood Protection Board website at <http://www.cvfpb.ca.gov/meetings/2016/05-20-2016.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, as the lead agency, determined that the project described in the FEIR would have a significant effect on the environment on December 9, 2015 (including Findings, Impacts and Mitigation Measures, Statement of Overriding Considerations) and filed a Notice of Determination with the State Clearinghouse on December 10, 2015. Based on its independent review of the FEIR, the Board finds that although the proposed project could have a potentially significant effect on the environment, revisions have been made to the project and/or agreed to by the project proponent that reduce the environmental impacts to less than significant. The Board finds that there are no direct or indirect environmental effects of the bridge work which have not been previously addressed by the DEIR or the FEIR. Caltrans found that significant and unavoidable impacts may occur from aesthetics, land use and planning, and noise, however these impacts are not related to the proposed bridge described above. Pursuant to CEQA, the Board as a responsible agency is responsible for mitigating and avoiding only the direct and indirect environmental effects of those parts of the project which it decides to carry out, finance, or approve [CEQA Guidelines Section 15096(g); Public Resources Code § 21002.1(d)].

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. Moreover, such changes or alterations are within the responsibility and jurisdictions of another public agency, Caltrans, and such changes have been adopted by that agency. These mitigation measures are included in the project proponent's FEIR and address impacts to biological resources, hazards, cultural resources, and public services. The description of the mitigation measures are further described in the certified FEIR.

The documents and other materials which constitute the record of the Board's proceedings in this matter are in the custody of Leslie Gallagher, Executive Officer,

Central Valley Flood Protection Board, 3310 El Camino Ave., Rm. 151, Sacramento, California 95821.

### **9.0 – 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. On the issue of hydraulic impacts, the California Department of Transportation used HEC-RAS one-dimension flow models. These models are considered by experts as the best available scientific tools for the purpose of modeling river hydraulics in the region.

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

The proposed bridge is expected to result in no adverse hydraulic effects on the facilities of the SPFC since the Kern River is not connected to the SPFC and the bridge is located outside of the CVFPP study area.

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

The proposed bridge will be constructed with an approximate freeboard of 30-feet between the FEMA 100-year WSE and the bottom of the bridge; therefore, there are no expected adverse effects to the proposed project from reasonable projected future events.

## **10.0 – STAFF RECOMMENDATION**

Staff recommends that the Board:

### **Adopt:**

- The CEQA findings;

### **Approve:**

- Draft Encroachment Permit No. 19077, in substantially the form provided and;

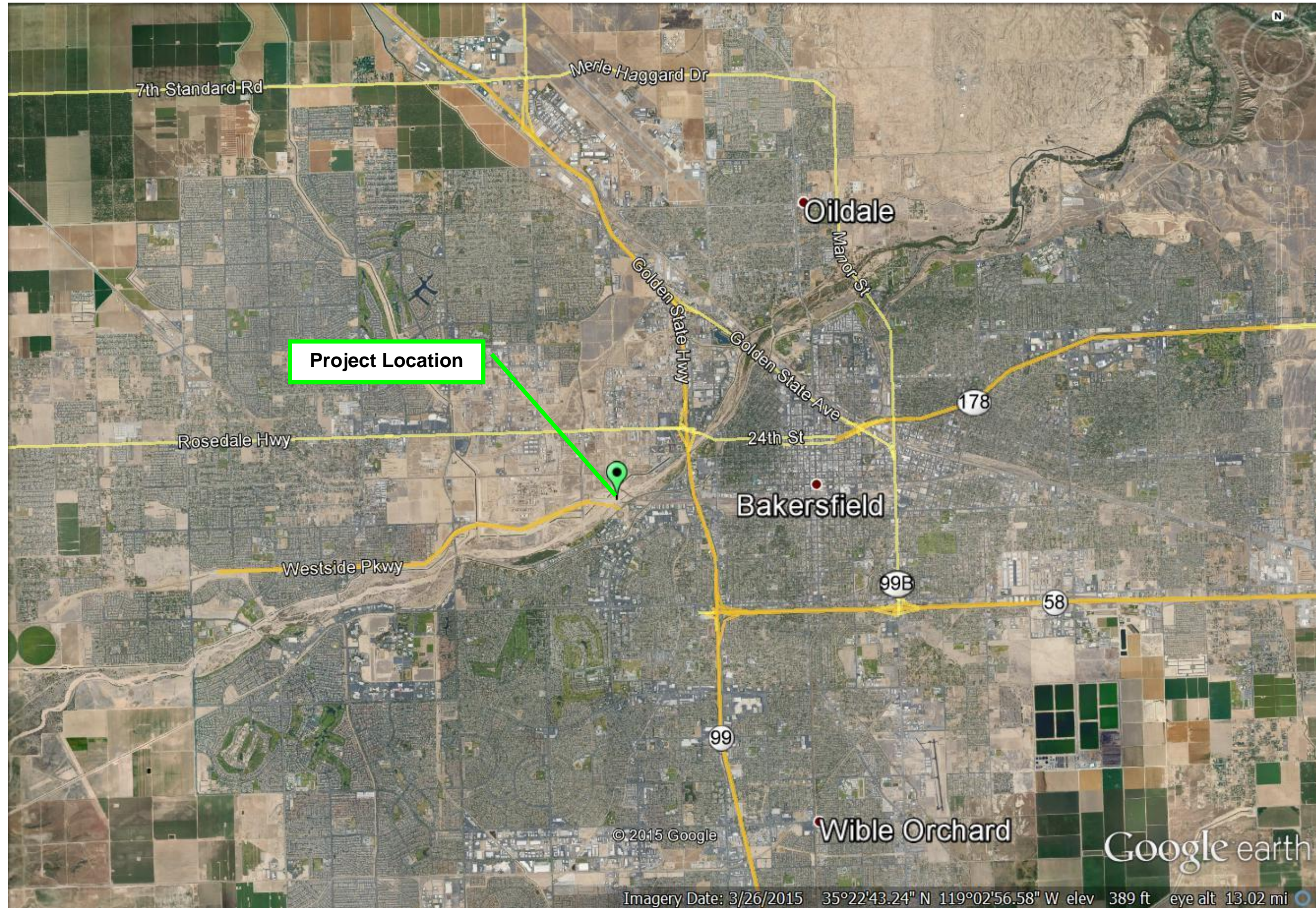
### **Direct:**

- The Executive Officer to take the necessary actions to execute the permit and file a Notice of Determination pursuant to CEQA with the State Clearinghouse.

## **11.0 – LIST OF ATTACHMENTS**

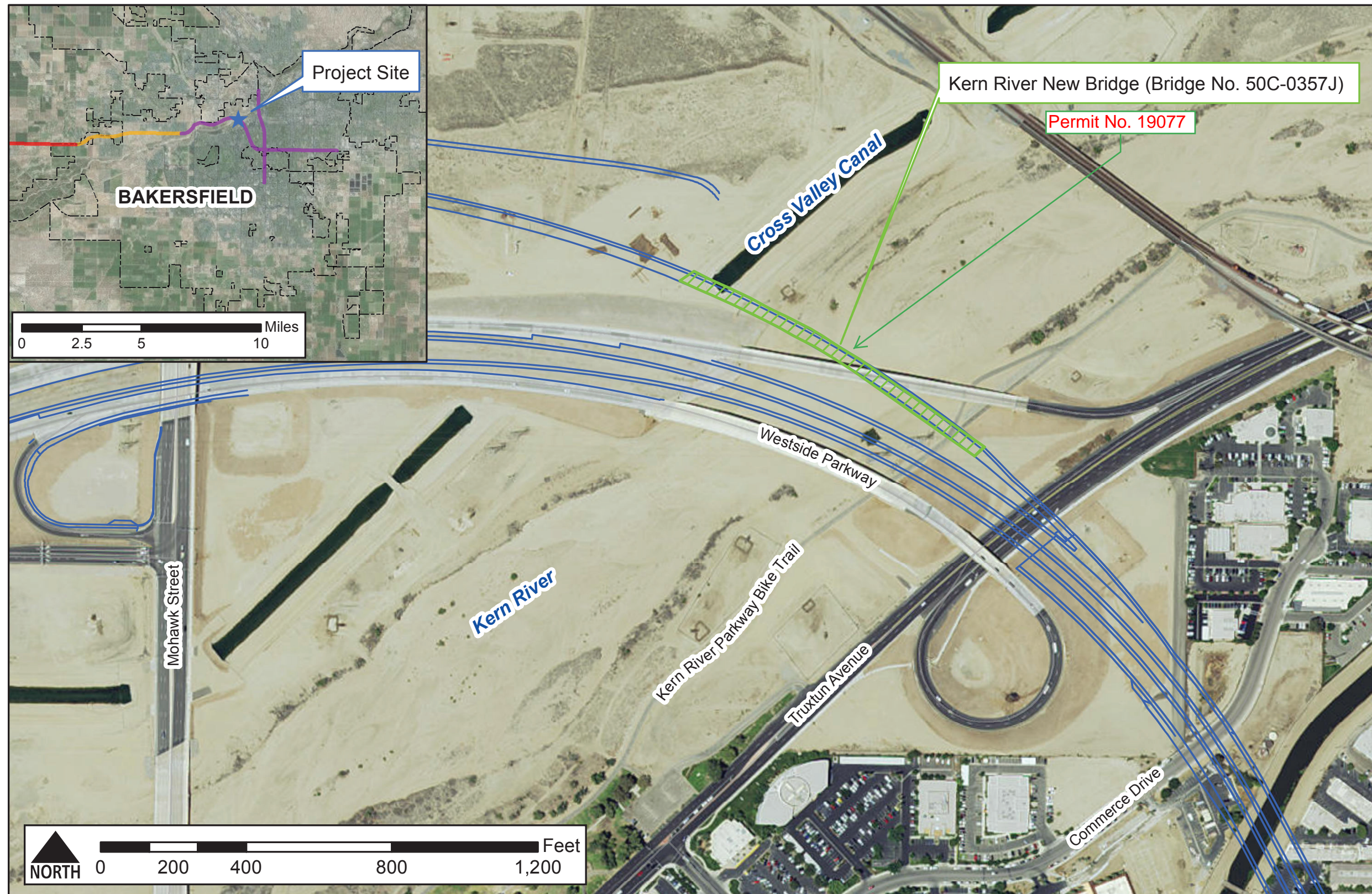
- A. Location Maps and Photos
- B. Draft Permit No. 19077
- C. Construction Plans
- D. Hydraulic Report

Design Review:	Mike Thao, Permitting Staff
Environmental Review:	James Herota, Senior Environmental Scientist (Specialist)
Document Review:	Gary W. Lemon, P.E. Permitting Section Chief Mitra Emami, P.E. Operations Branch Chief
Legal Review:	Kanwarjit Dua, Board Counsel









Data Source: Parsons 2015 Created On: 10/22/2015

### Legend

- ★ Project Location
- Segment 1
- Segment 2
- Segment 3
- Project Alignment
- Bakersfield City Limits

## Kern River New Bridge

Centennial Corridor Project  
Site Location and Vicinity

**CENTENNIAL CORRIDOR PROJECT  
Kern River Site Photos**



**Photo #1 Facing northeast toward Kern River and Westside Parkway (June 30, 2015)**

**CENTENNIAL CORRIDOR PROJECT  
Kern River Site Photos**



**Photo #2 Facing southwest toward Kern River, Westside Parkway, and Truxtun Avenue (June 30, 2015)**

**CENTENNIAL CORRIDOR PROJECT  
Kern River Site Photos**



**Photo #3 Facing north toward Kern River between Westside Parkway bridges (July 17, 2015)**

**CENTENNIAL CORRIDOR PROJECT  
Kern River Site Photos**



**Photo #4 Facing northwest toward Kern River, east of Westside Parkway bridge (July 17, 2015)**

**CENTENNIAL CORRIDOR PROJECT  
Kern River Site Photos**



**Photo #5 Facing northwest toward Kern River, east of Westside Parkway bridge (July 17, 2015)**

**CENTENNIAL CORRIDOR PROJECT  
Kern River Site Photos**



**Photo #6 Facing south toward Kern River, east of Westside Parkway bridge (July 17, 2015)**

STATE OF CALIFORNIA  
THE RESOURCES AGENCY  
**THE CENTRAL VALLEY FLOOD PROTECTION BOARD**

**PERMIT NO. 19077 BD**

**This Permit is issued to:**

California Department of Transportation (Caltrans)  
2015 East Shields Avenue, Suite 100  
Fresno, California 93726

To construct a bridge (approximately 1064-feet long and 39-feet wide) crossing over the existing Westside Parkway Bridge (westbound) on the Kern River.

The project is located slightly north east of the intersection of Westside Parkway and Truxtun Avenue in the City of Bakersfield (Section 27, T29S, R27E, MDB&M, City of Bakersfield Water Resources Dept., Kern River, Kern 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.



## **Attachment B**

**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. 19077 BD**

#### **LIABILITY AND INDEMNIFICATION**

**THIRTEEN:** The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board, the Department of Water Resources, and their respective officers, agents, employees, successors and assigns, 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 Central Valley Flood Control Board and the Department of Water Resources expressly reserve the right to supplement or take over their defense, in their sole discretion.

**FOURTEEN:** The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the "State," safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

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

#### **AGENCY CONDITIONS**

**SIXTEEN:** 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.

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

EIGHTEEN: The permittee shall comply with all conditions set forth in the letter from the Department of the Army (U.S. Army Corps of Engineers, Sacramento District) dated April 13, 2016, which is attached to this permit as Exhibit A and is incorporated by reference.

NINETEEN: Permittee shall pay to the CVFPB, an inspection fee to cover inspection cost(s), including staff and/or consultant time and expenses, for any inspections before, during, post-construction, and regularly thereafter as deemed necessary by the CVFPB.

### PRE-CONSTRUCTION

TWENTY: Upon receipt of a signed copy of the issued permit the permittee shall contact the Central Valley Flood Protection Board by telephone at (916) 574-0609, and submit the enclosed postcard, to schedule a preconstruction conference with the inspector that is assigned to your project. Failure to do so at least 10 working days prior to start of work may result in a delay of the project.

### CONSTRUCTION

TWENTY-ONE: The bridge piers and bents within the floodway shall be constructed parallel to the direction of flow.

TWENTY-TWO: Temporary staging, stockpiled material, and equipment shall not remain in the floodway during the flood season from November 1st to July 15th.

TWENTY-THREE: Drainage from the bridge or highway shall not be discharged onto the banks of the Kern River.

TWENTY-FOUR: 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.

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

TWENTY-SIX: 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.

### POST-CONSTRUCTION

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

TWENTY-EIGHT: The work area shall be restored to at least the condition that existed prior to

commencement of work.

### **OPERATIONS AND MAINTENANCE**

TWENTY-NINE: After each period of high water, debris that accumulates at the site shall be completely removed from the floodway.

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

### **PROJECT ABANDONMENT / CHANGE IN PLAN OF FLOOD CONTROL**

THIRTY-ONE: 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 at the permittee's or successor's cost and expense.

THIRTY-TWO: 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 in the discretion of the Central Valley Flood Protection Board the 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 the Project is not maintained or is damaged by any cause. If the permittee does not comply, or in the event of an emergency, the Central Valley Flood Protection Board may remove the encroachment(s) at the permittee's expense.

### **END OF CONDITIONS**

## Attachment B - Exhibit A



REPLY TO  
ATTENTION OF

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

Flood Protection and Navigation Section (19077)

APR 13 2016

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

Dear Ms. Gallagher:

We have reviewed a permit application by California Department of Transportation (application number 19077). This project includes constructing a bridge (approximately 1064-feet long and 39-feet wide) crossing over the existing Westside Parkway Bridge (westbound) on the Kern River. The project is located northeast of the intersection of Westside Parkway and Truxtun Avenue, in Bakersfield, at 35.371809°N 119.059342°W NAD83, Kern County, California.

The proposed work does not affect a Federally constructed project, however, according to the Kern River Intertie Operation and Maintenance Manual, page 15, section 2, the capacity of the channels that existed prior to the construction of the Intertie Project is required for the Intertie project to function effectively. The channel capacity of the Kern River through Bakersfield was estimated at 8,000 cfs as shown in Table 1, Estimated Channel Capacities. This proposed project shall not affect the ability of the channel to pass the 8,000 cfs.

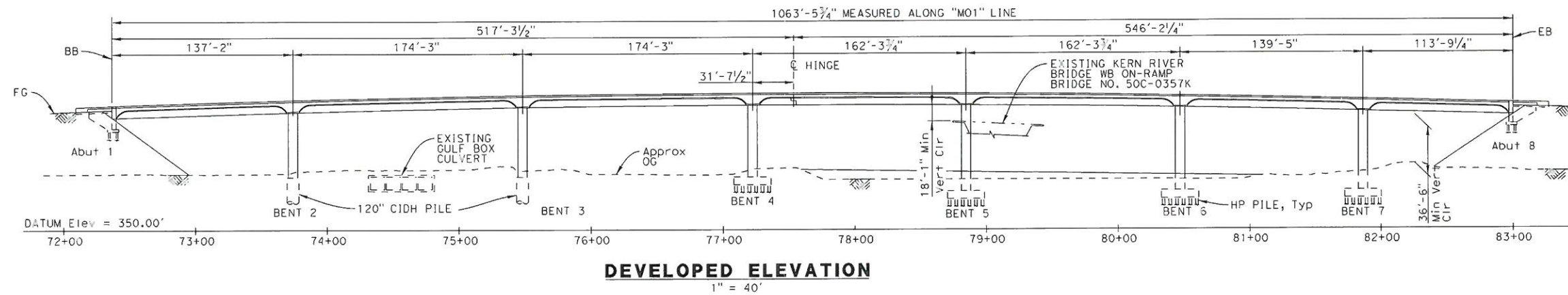
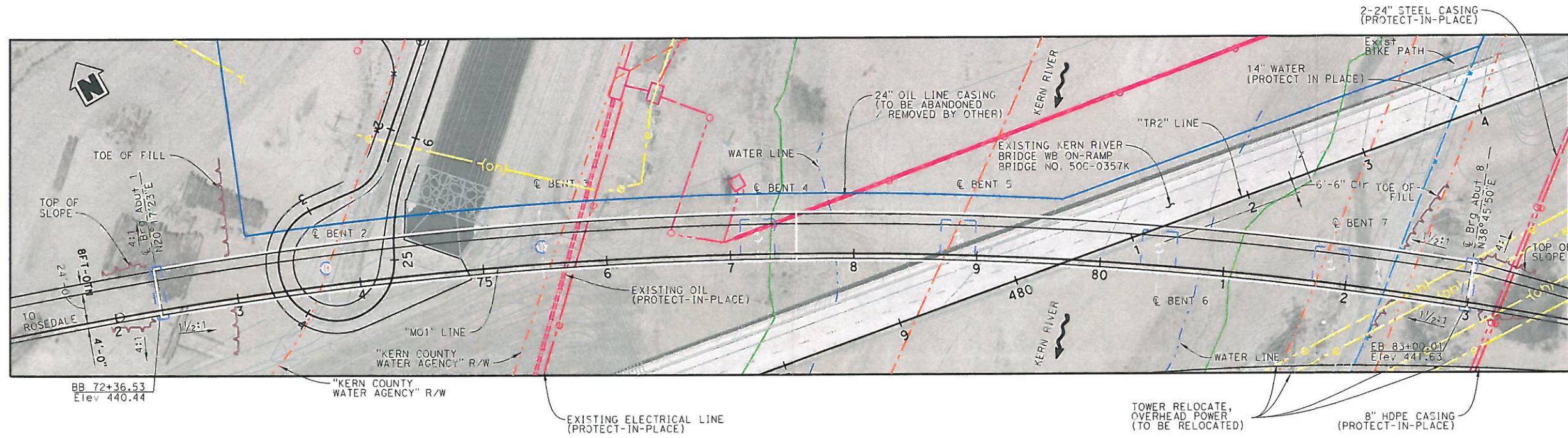
A Section 10 and/or Section 404 permit (2009-00824) has been issued for this work.

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

Sincerely,

A handwritten signature in black ink that reads "Ryan Larson". The signature is fluid and cursive, with a long horizontal stroke at the end.

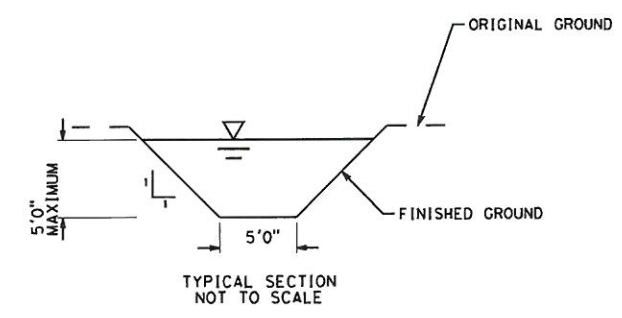
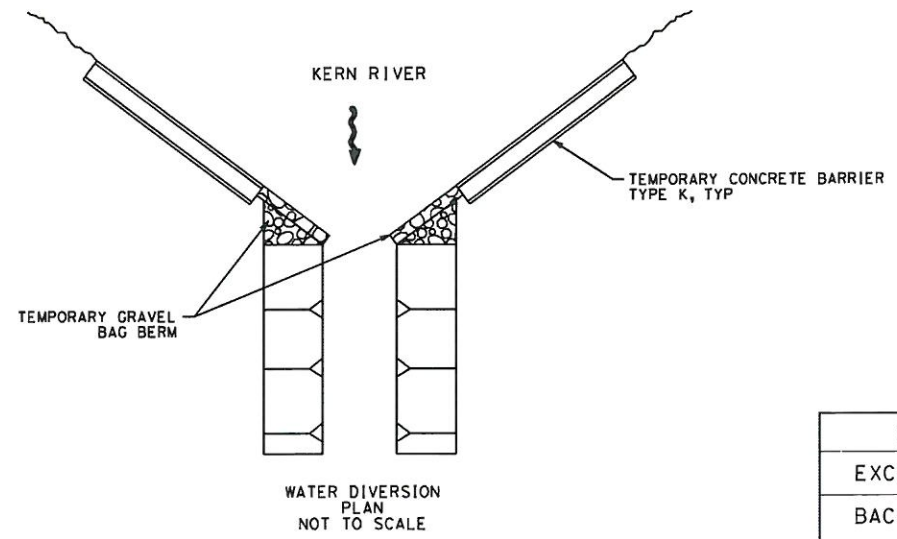
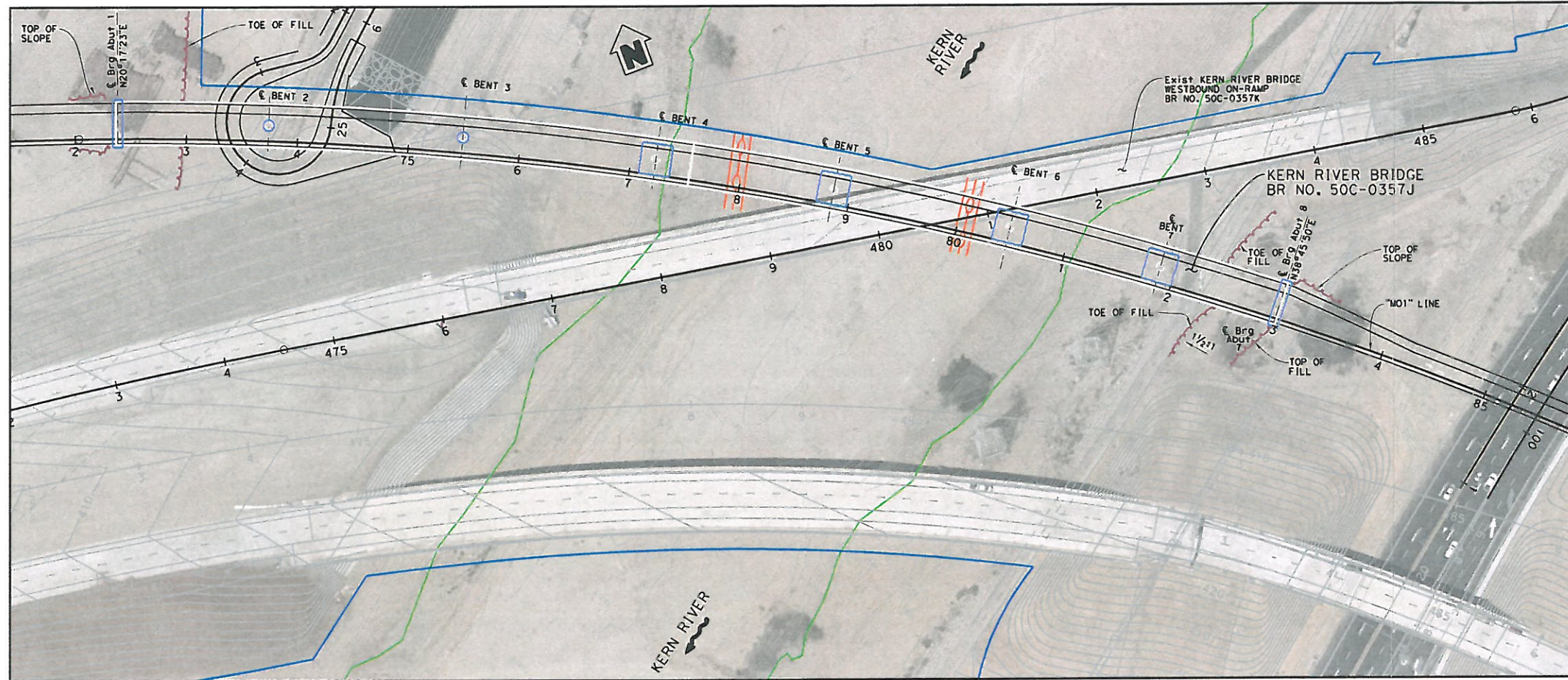
Ryan Larson, P.E.  
Chief, Flood Protection and Navigation Section



**LEGEND**

- DIRECTION OF FLOW
- CDFW JURISDICTION
- ABUTMENT & COLUMN FOUNDATION
- EXISTING OVERHEAD ELECTRICAL LINE
- EXISTING ELECTRICAL LINE
- EXISTING OIL LINE
- EXISTING WATER LINE
- EXISTING RIGHT OF WAY
- RIGHT OF WAY
- CUT/FILL LINE

**Coltrans**  
**CENTENNIAL CORRIDOR**  
**KERN RIVER BRIDGE**  
**Form 1602 Exhibit**  
**River Mile 121**  
 DATE: August 7, 2015  
 SCALE: 1" = 80'  
 SHEET 1 OF 8



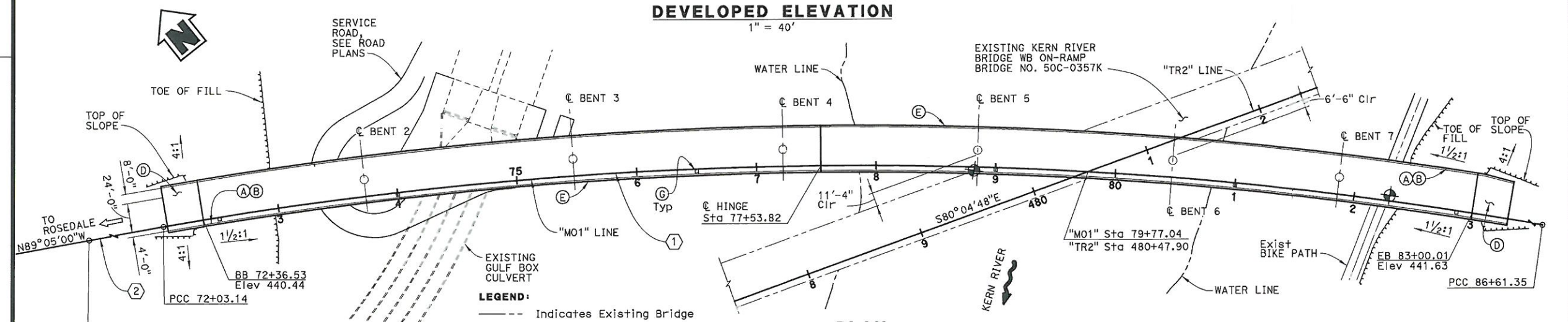
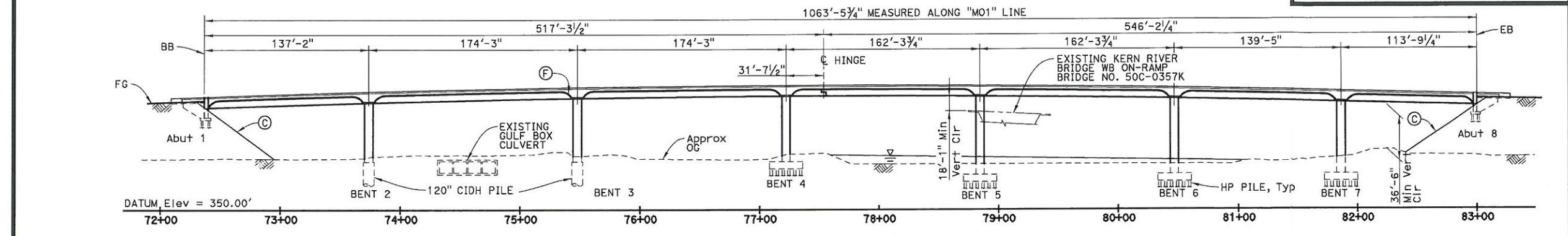
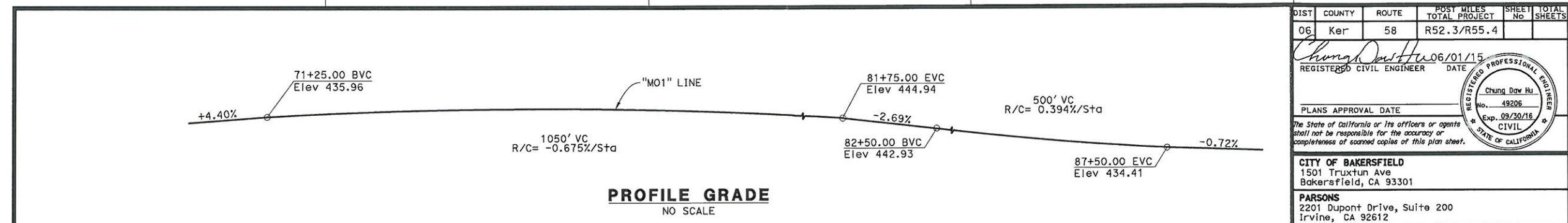
- LEGEND**
- DIRECTION OF FLOW
  - CDFW JURISDICTION
  - BRIDGE LIMITS
  - ABUTMENT & COLUMN FOUNDATION
  - WATER DIVERSION
  - RIGHT OF WAY

EARTHWORK QUANTITIES	
EXCAVATION (CY)	255
BACKFILL (CY)	255

**Caltrans**  
**CENTENNIAL CORRIDOR**  
**KERN RIVER**  
**DIVERSION PLAN & DETAIL**  
**RIVER MILE 121**  
 DATE: August 7, 2015  
 SCALE: 1" = 100'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
06	Ker	58	R52.3/R55.4		

Chung Daw Hu 06/01/15  
 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.  
 CITY OF BAKERSFIELD  
 1501 Truxtun Ave  
 Bakersfield, CA 93301  
 PARSONS  
 2201 Dupont Drive, Suite 200  
 Irvine, CA 92612



- LEGEND:**
- Indicates Existing Bridge
  - Indicates Direction of Traffic
  - ⊕ Indicates Point of Minimum Vertical Clearance
  - ~ Indicates Direction of Flow
  - ▽ Water Surface Elevation (WSE) at Bridge For 100 Year Design Flood = 393.94 Average Mean Sea Level

**CURVE DATA (1)**

R = 3289.00'  
 Δ = 25°24'09"  
 T = 741.29'  
 L = 1458.21'

**CURVE DATA (2)**

R = 3590.00'  
 Δ = 18°45'55"  
 T = 593.21'  
 L = 1175.79'

- NOTES:**
- (A) Paint "KERN RIVER BRIDGE"
  - (B) Paint "Bridge No. 50C-0357J"
  - (C) Slope Paving - Full Slope
  - (D) Structure Approach, Type N(30S)
  - (E) Concrete Barrier Type 732 (Mod)
  - (F) Architectural Treatment
  - (G) Type D-1 Deck Drain

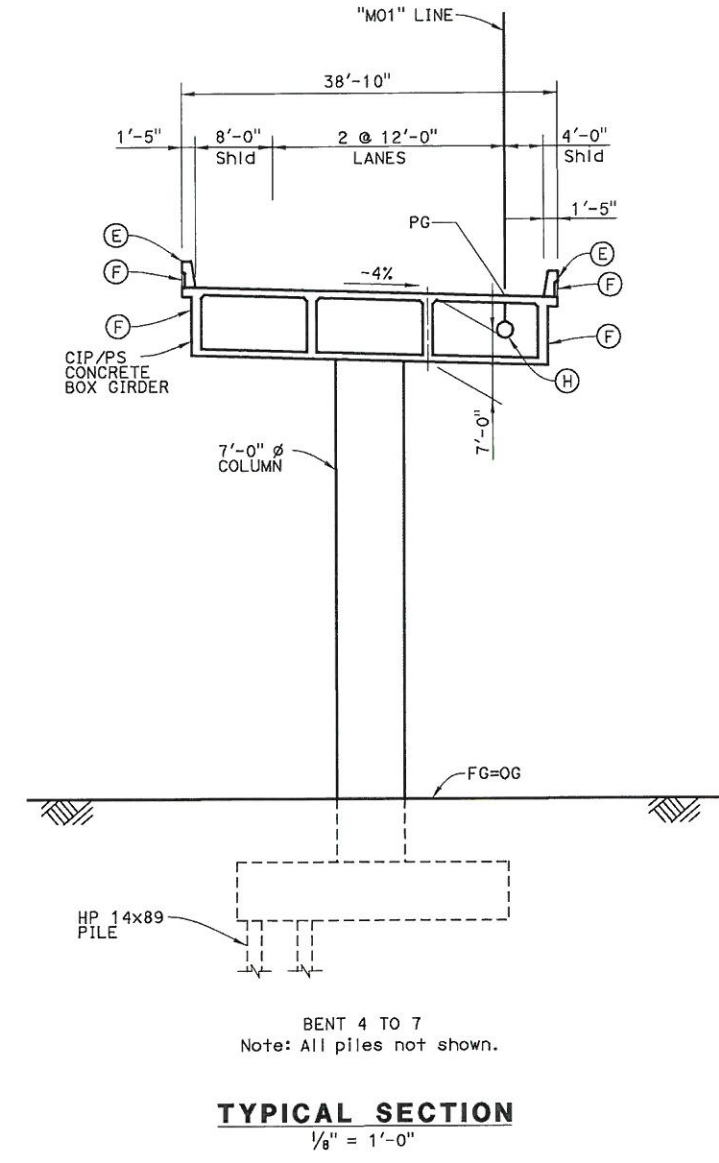
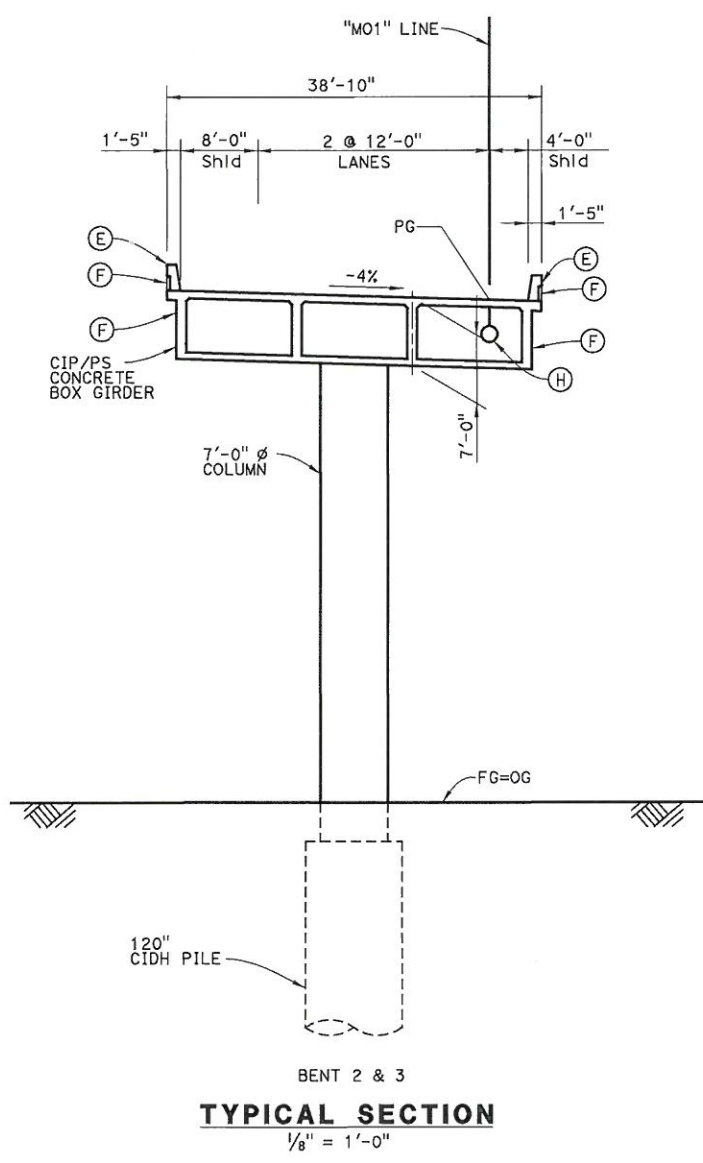
NOTE:  
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DESIGN OVERSIGHT	DESIGN BY C. HU	CHECKED E. MOBO	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	BRIDGE NO. 50C-0357J	<b>KERN RIVER BRIDGE GENERAL PLAN NO. 1</b>
DETAILS	BY S. WEIGHT	CHECKED E. MOBO	LAYOUT	BY D. OVADIA	MOHSEN MOHSENI PROJECT ENGINEER	POST MILES 750.44	
SIGN OFF DATE	QUANTITIES BY K. HADLEY	CHECKED M. KARLEN	SPECIFICATIONS	BY J. RUDOLPH	PLANS AND SPECS COMPARED	A. NOWAK G. MATEJIC	

UNIT: 06-484601 PROJECT NUMBER & PHASE: 0600000484-1 CONTRACT NO.: 484601-CP1  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 REVISION DATES: 05/06/13, 05/20/13, 06/07/13, 06/07/13  
 SHEET 1 OF 36  
 FILE => 50C-0357J-a-gp01.dgn

TIME PLOTTED => 9:51:38 AM  
 USE NAME => PCC-8016 DATE PLOTTED => 5/28/2015

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
06	Ker	58	R52.3/R55.4		
Chung Daw Hu REGISTERED CIVIL ENGINEER			06/01/15	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.					
CITY OF BAKERSFIELD 1501 Truxtun Ave Bakersfield, CA 93301					
PARSONS 2201 Dupont Drive, Suite 200 Irvine, CA 92612					



QUANTITIES

STRUCTURE EXCAVATION (BRIDGE)	2326 CY
STRUCTURE BACKFILL (BRIDGE)	1465 CY
FURNISH STEEL PILING (HP 14 x 89)	8886 LF
DRIVE STEEL PILE (HP 14 X 89)	160 EA
120" CAST-IN-PLACE CONCRETE PILING	260 LF
PRESTRESSING CAST-IN-PLACE CONCRETE	1 LS
STRUCTURAL CONCRETE, BRIDGE FOOTING	769 CY
STRUCTURAL CONCRETE, BRIDGE	4285 CY
STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	91 CY
DRY STACK FIELDSTONE TEXTURE	1492 SF
BRICK TEXTURE	2343 SF
SANDBLAST TEXTURE	11626 SF
PTFE SPHERICAL BEARING	6 EA
JOINT SEAL ASSEMBLY (MR 3 1/2")	39 LF
JOINT SEAL ASSEMBLY (MR 4")	39 LF
JOINT SEAL ASSEMBLY (MR 7 1/2")	39 LF
BAR REINFORCING STEEL (BRIDGE)	1443385 LB
WELDED STEEL PIPE CASING (BRIDGE)	80 LF
SLOPE PAVING (CONCRETE)	56 CY
MISCELLANEOUS METAL (BRIDGE)	211 LB
BRIDGE DECK DRAINAGE SYSTEM	19031 LB
CONCRETE BARRIER (TYPE 732 MODIFIED)	2256 LF

- NOTES:
- (E) Concrete Barrier Type 732 (Mod)
  - (F) Architectural Treatment
  - (H) Drain Pipe

DESIGN OVERSIGHT	DESIGN BY C. HU	CHECKED E. MOBO	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADS: HL93 W/ "LOW-BOY" PERMIT DESIGN VEHICLE	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	BRIDGE NO. 50C-0357J	KERN RIVER BRIDGE GENERAL PLAN NO. 2
DETAILS	BY S. WEIGHT	CHECKED E. MOBO	LAYOUT BY D. OVADIA	CHECKED A. NOWAK	MOHSEN MOHSENI PROJECT ENGINEER	POST MILES 750.44	
SIGN OFF DATE	BY K. HADLEY	CHECKED M. KARLEN	SPECIFICATIONS BY J. RUDDOLPH	PLANS AND SPECS COMPARED G. MATEJIC	UNIT: PROJECT NUMBER & PHASE: 060000484-1 CONTRACT NO.: 484601-CP1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES: 05/20/15, 06/05/15, 06/20/15, 06/11/15
DESIGN GENERAL PLAN SHEET (ENGLISH) (REV. 03/14/12)					ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3	SHEET 2 OF 36

USERNAME => P0038016 DATE PLOTTED => 6/23/2015 TIME PLOTTED => 4:39:34 PM



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
06	Ker	58	R49.1/R50.7		

07/01/15  
 REGISTERED CIVIL ENGINEER DATE  
 Chung Daw Hu  
 No. 49206  
 Exp. 09/30/16  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE

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**PILE DATA TABLE**

LOCATION	PILE TYPE	NOMINAL RESISTANCE (Kips)		DESIGN TIP ELEVATION (ft)	SPECIFIED TIP ELEVATION (ft)	NOMINAL DRIVING RESISTANCE (Kips)
		COMPRESSION	TENSION			
Abut 1	HP 14x89	280	0	368(a); 404(c); 399(d)	368	280
BENT 2	120" CIDH	7020	0	261(a); 315(c); 303(d)	261	NA
BENT 3	120" CIDH	7400	0	256(a); 315(c); 303(d)	256	NA
BENT 4	HP 14x89	370	85	328(a); 347(b); 357(c); 359(d)	328	390
BENT 5	HP 14x89	350	85	316(a); 336(b); 330(c); 347(d)	316	355
BENT 6	HP 14x89	345	85	317(a); 336(b); 330(c); 347(d)	317	345
BENT 7	HP 14x89	360	70	318(a); 342(b); 338(c); 347(d)	318	360
Abut 8	HP 14x89	260	0	370(a); 405(c); 399(d)	370	260

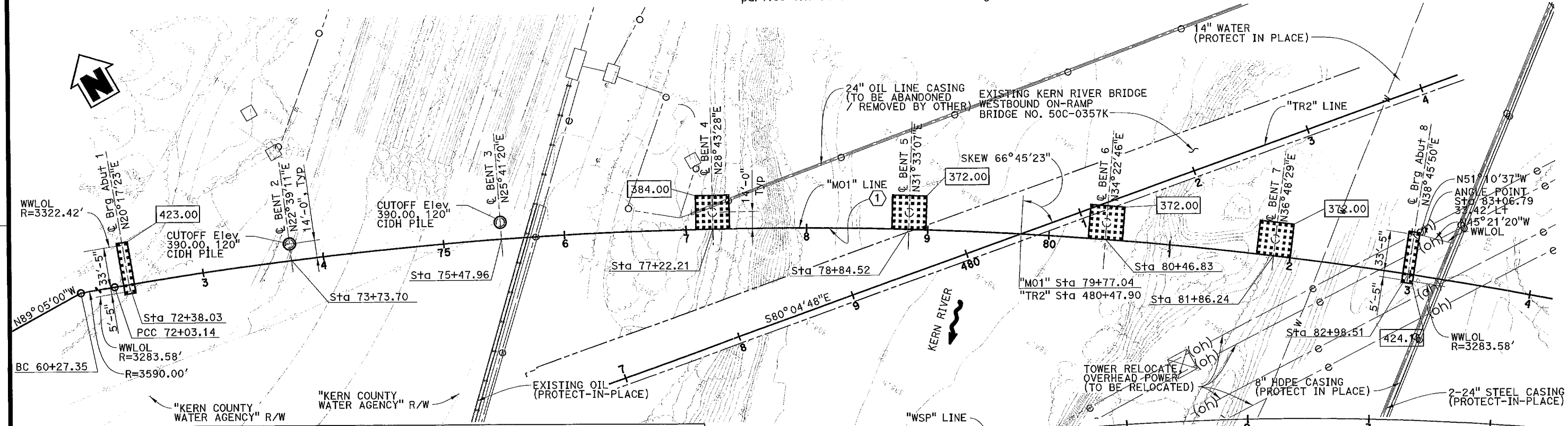
**PILE NOTES:**

- Design tip elevations are controlled by: (a) Compression, (b) Tension, (c) Settlement, and (d) Lateral Load.
- The specified tip elevations shall not be raised above the design tip elevations for settlement and lateral load.
- The nominal driving resistance required is equal to the nominal resistance needed to support the factored load plus driving resistance from the unsuitable penetrated soil layers (very soft, liquefiable, scourable, etc.), if any, which do not contribute to the design resistance. Scourable soil layers extend to elevations of +372.7, +372.2 and +381.3 feet for Bents 5, 6 and 7, respectively. Liquefiable soil layers are located between El. +368 and +373 feet for Bents 4 and 5.

**HYDROLOGIC SUMMARY**

Drainage area: 2500 square miles	DESIGN FLOOD	BASE FLOOD	OVERTOPPING FLOOD
FREQUENCY (YEARS)	50 YR	100 YR	500 YR
DISCHARGE (cubic feet per second)	7,000	15,000	29,000
WATER SURFACE (Elevation at bridge)	390.89	393.68	397.38

Flood plain data are based upon information available when the plans are prepared and are shown to meet Federal Requirements. The accuracy of said information is not warranted by the State, County, City, or Consultants and interested or affected parties should make their own investigations.



**BENCHMARK**

NAME	NORTHING (ft)	EASTING (ft)	Elev (ft)	DESCRIPTION
B_55_RESET	2,321,720.09	6,262,589.82	402.25	3 3/4" USCGS brass disk "B55 RESET 1946" at the back of sidewalk on the west side of Union Ave, approximately 180 feet south of California Ave.
U364	2,308,049.10	6,262,531.15	378.88	3 3/4" B.D. "U_364_RESET 1972"

**SURVEY CONTROL:**  
 Horizontal control for this survey is based on the California Coordinate System (CCS83), Zone 5, 2004.00 Epoch relative to the North American Datum of 1983 (NAD83).  
 Vertical control is based on the North American Vertical Datum of 1988 (NAVD88).

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

**PLAN**  
 1" = 40'

**CURVE DATA**

- R = 3289.00'
- Δ = 25°24'09"
- T = 741.29'
- L = 1458.21'

**LEGEND:**

- XXX.XX Indicates Bottom of Footing Elevation
- H Indicates Vertical Pile
- Indicates Exist Structure

**NOTES:**

- See project "CONTOUR GRADING" plans.
- See project "UTILITY" plans.
- Utilities shown are for information only. Contractor shall verify all existing utilities and notify utility agencies prior to any relevant construction work.

07/01/15 APPROVAL DATE  
 GEOTECHNICAL PROFESSIONAL

SCALE: 1"=40'	VERT. DATUM NAVD88	HORZ. DATUM NAD83	DESIGN BY C. HU	CHECKED E. MOBO	BRIDGE NO. 50C-0357J
PHOTOGRAMMETRY AS OF:	ALIGNMENT TIES	DETAILS BY S. WEIGHT	CHECKED E. MOBO	PROJECT ENGINEER MOHSEN MOHSENI	POST MILES R50.35
SURVEYED BY PSCMAS	DRAFTED BY PSCMAS	QUANTITIES BY K. HADLEY	CHECKED M. KARLEN	UNIT: 1477	<b>KERN RIVER BRIDGE FOUNDATION PLAN</b>
FIELD CHECKED BY PSCMAS	CHECKED BY PSCMAS	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	PROJECT NUMBER & PHASE: 0615000261-4 CONTRACT NO.: 48463.	DISREGARD PRINTS BEARING EARLIER REVISION DATES	

FOUNDATION PLAN SHEET (ENGLISH) (REV. 03/14/12) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3 UNIT: 1477 PROJECT NUMBER & PHASE: 0615000261-4 CONTRACT NO.: 48463. FILE => 50C-0357J-e-fdp101.dgn

REVISION DATES	SHEET	OF
05/08/13 05/20/13 10/28/13 07/01/15	5	36

**Attachment C**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
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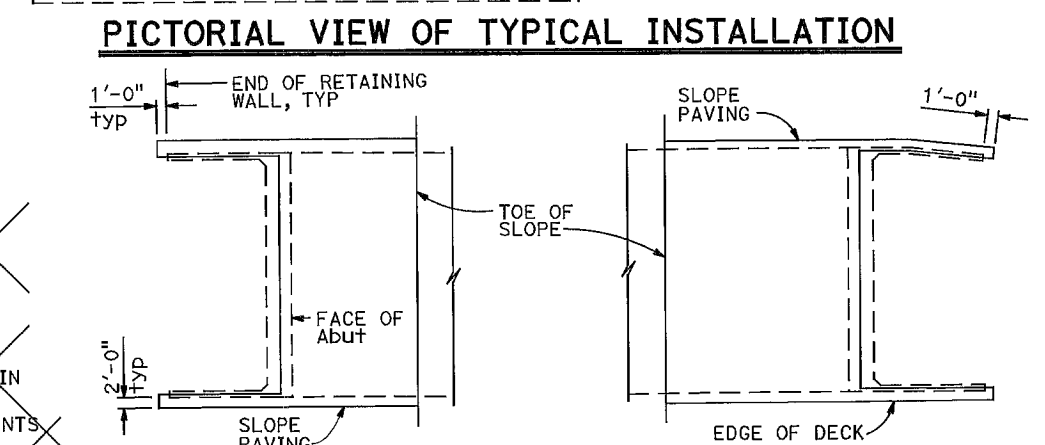
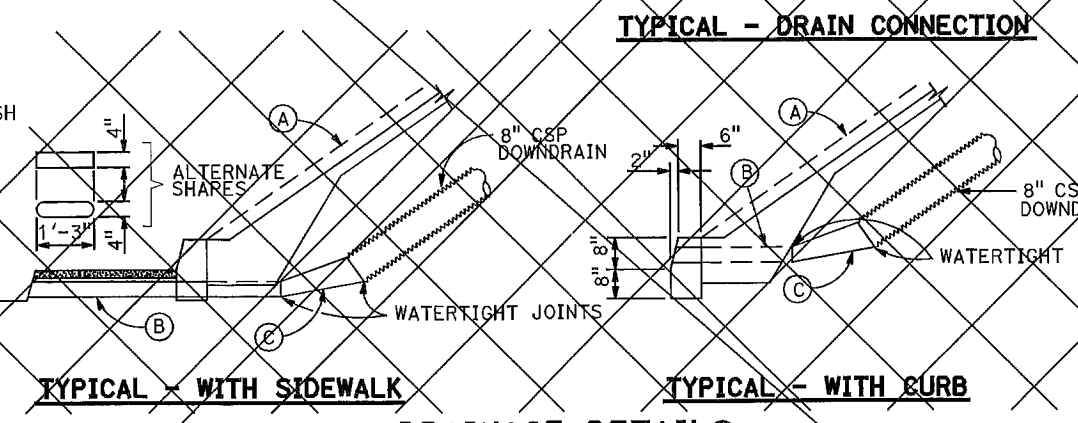
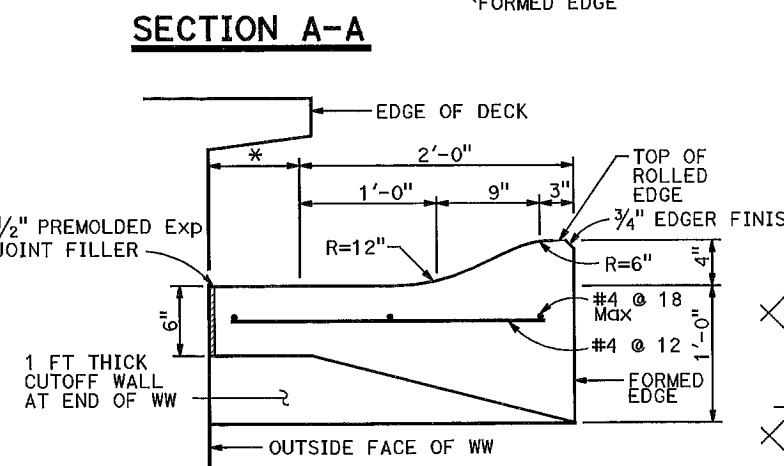
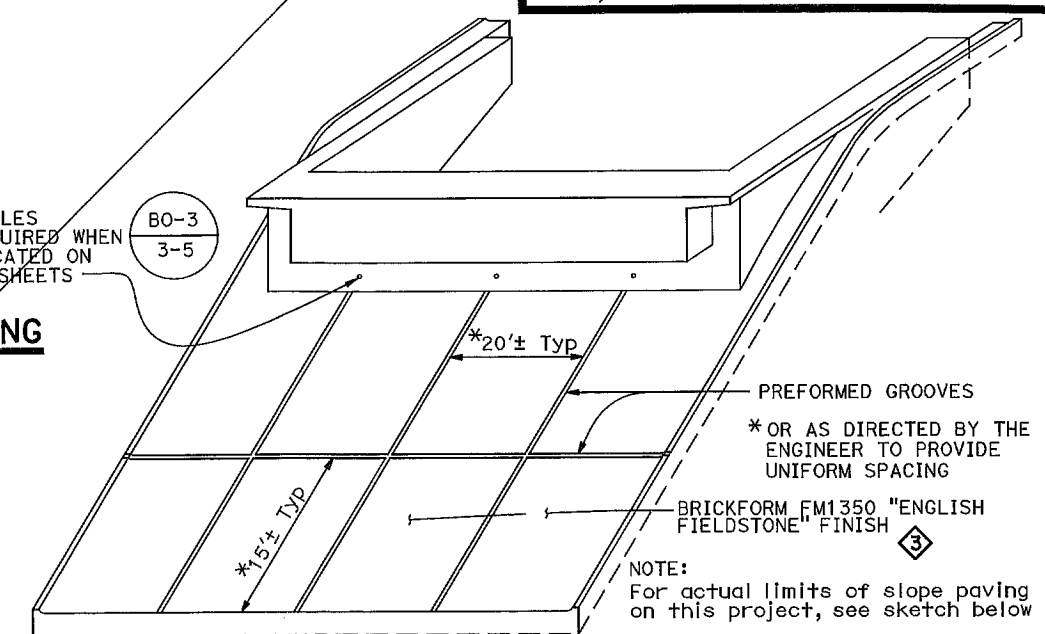
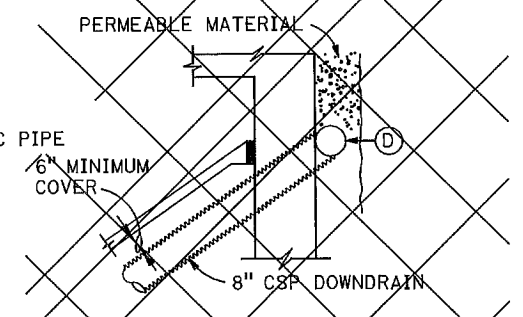
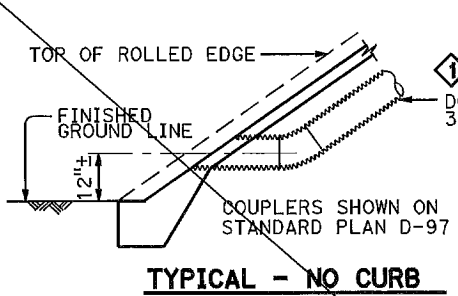
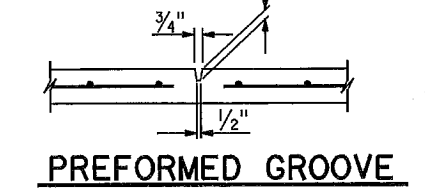
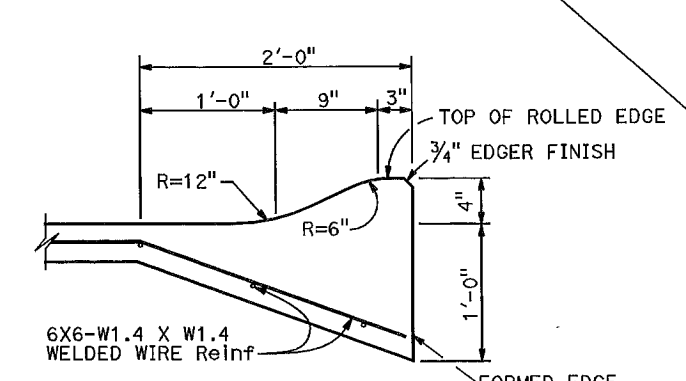
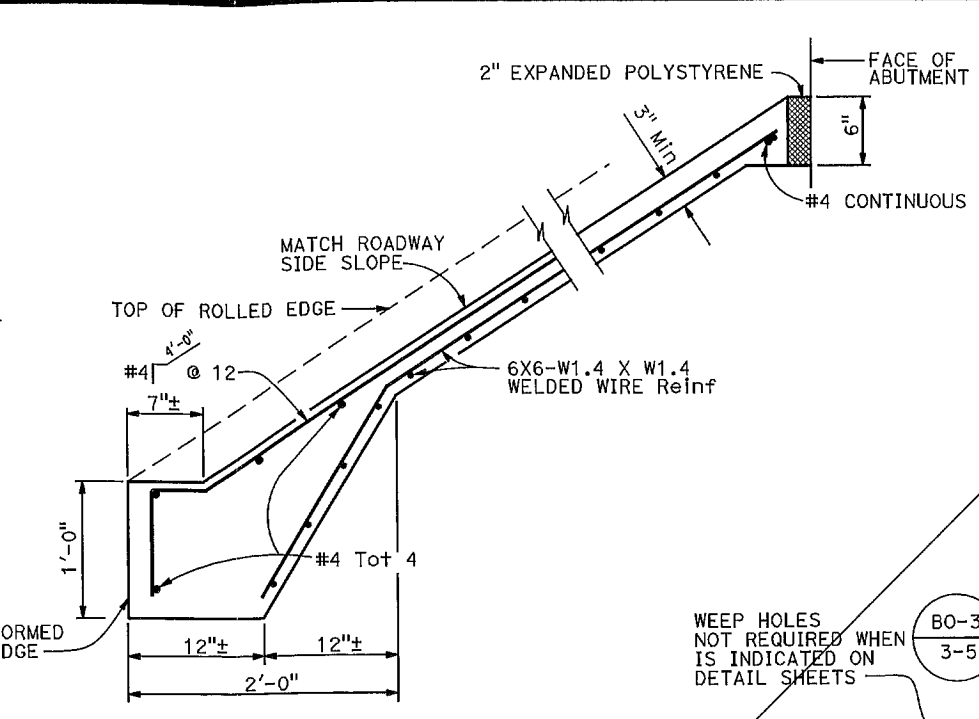
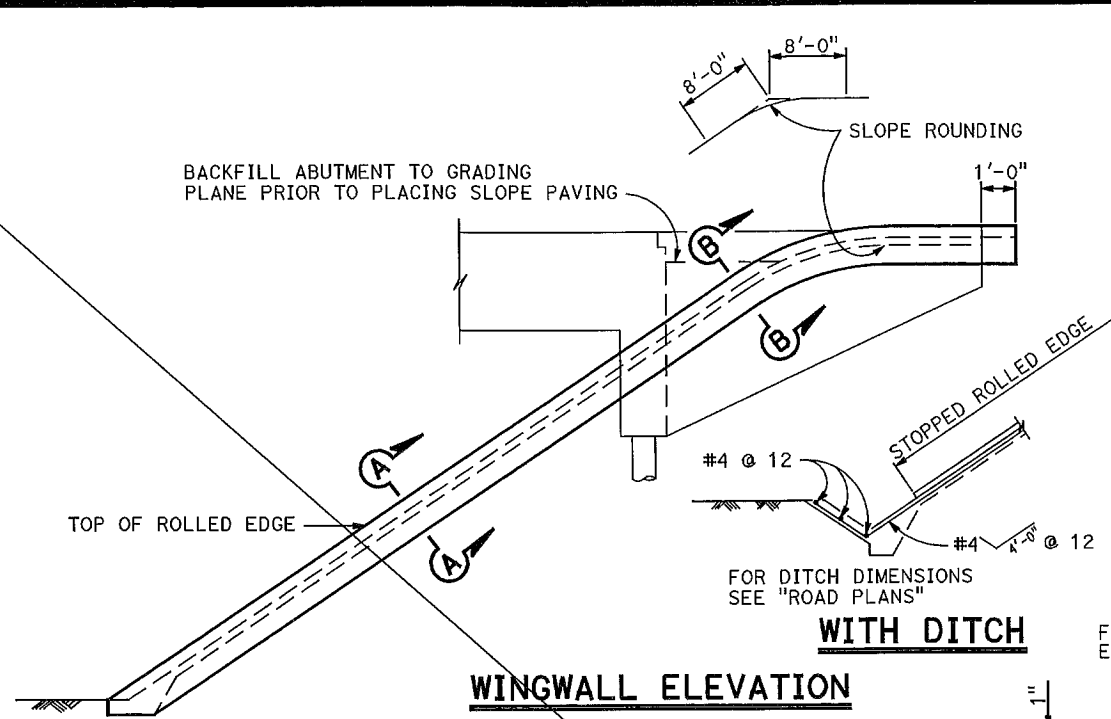
REGISTERED CIVIL ENGINEER DATE 06/01/15  
 Chung Daw Hui  
 No. 49206  
 Exp. 09/30/16  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

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- LIMITS OF SLOPE PAVING & DRAINAGE LAYOUT**
- (A) Top of rolled edge
  - (B) Conduit: 0.064" galv corrugated steel or 0.109" smooth galv steel
  - (C) Taper: { 0.064" galv corrugated steel or 0.109" smooth galv steel
  - (D) 8" perforated steel pipe (0.064" thick) underdrain behind abutment. Connect to downdrain as shown on limits of Slope Paving & Drainage layout.
- NO SCALE

<b>REVISED STANDARD DRAWING</b>	1 MODIFIED PER PROJECT	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	BRIDGE NO. 50C-0357J	KERN RIVER BRIDGE			
FILE NO. <b>xs4-210</b>	2 DOES NOT APPLY				DIVISION OF ENGINEERING SERVICES	POST MILE T50.44	SLOPE PAVING-FULL SLOPE
APPROVAL DATE July 2011	3 MODIFIED FINISH						
US OSD 2147A (ENGLISH STANDARD DRAWING "XS" BORDER REV. (02-02-11))		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	UNIT: 06-484601 PROJECT NUMBER & PHASE: 0600000484-1	CONTRACT NO.: 484601-CP1	DISREGARD PRINTS BEARING EARLIER REVISION DATES		

REVISION DATES: 05/30/13, 06/01/15

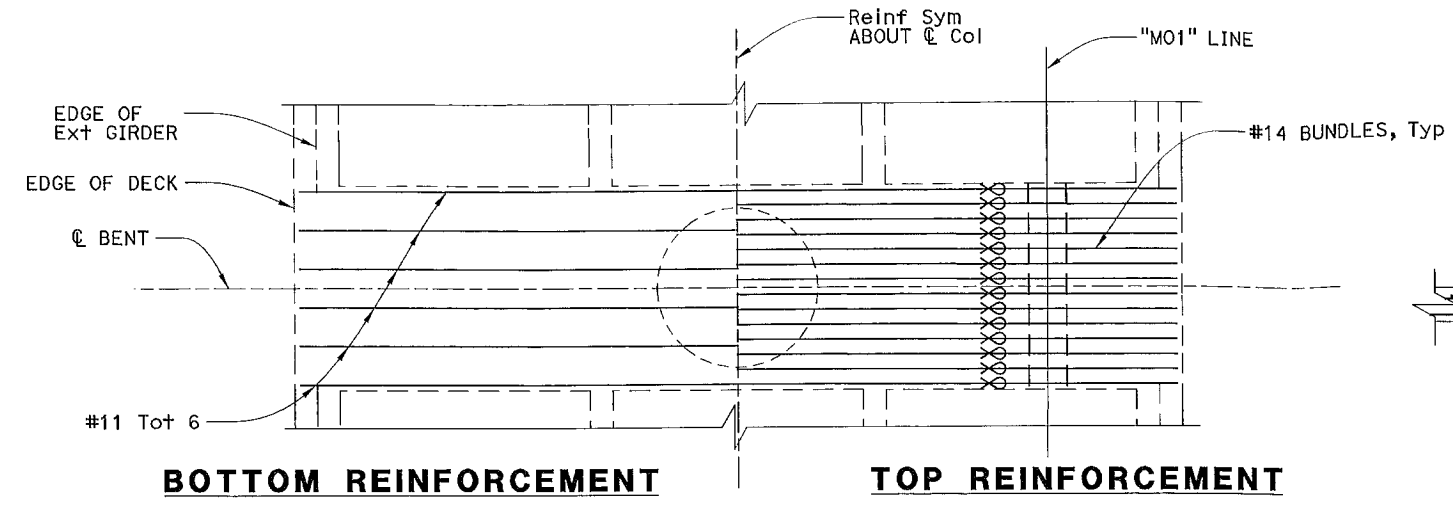
SHEET 25 OF 36

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
06	KER	58	R49.1/R50.7		

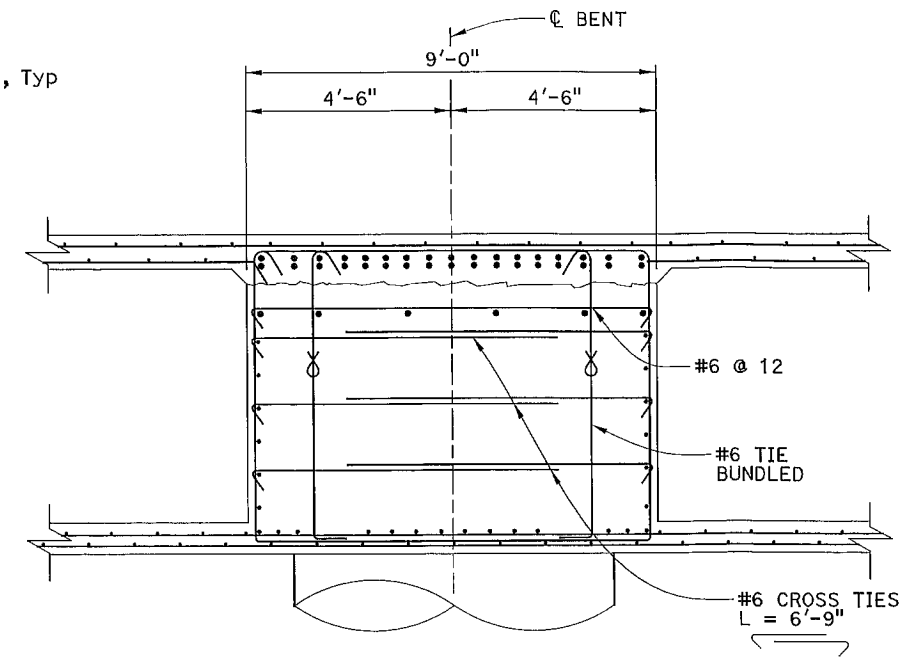
*Chung Daw Hu* 07/01/15  
 REGISTERED CIVIL ENGINEER DATE  
 PLANS APPROVAL DATE  
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REGISTERED PROFESSIONAL ENGINEER  
 Chung Daw Hu  
 No. 49205  
 Exp. 09/30/16  
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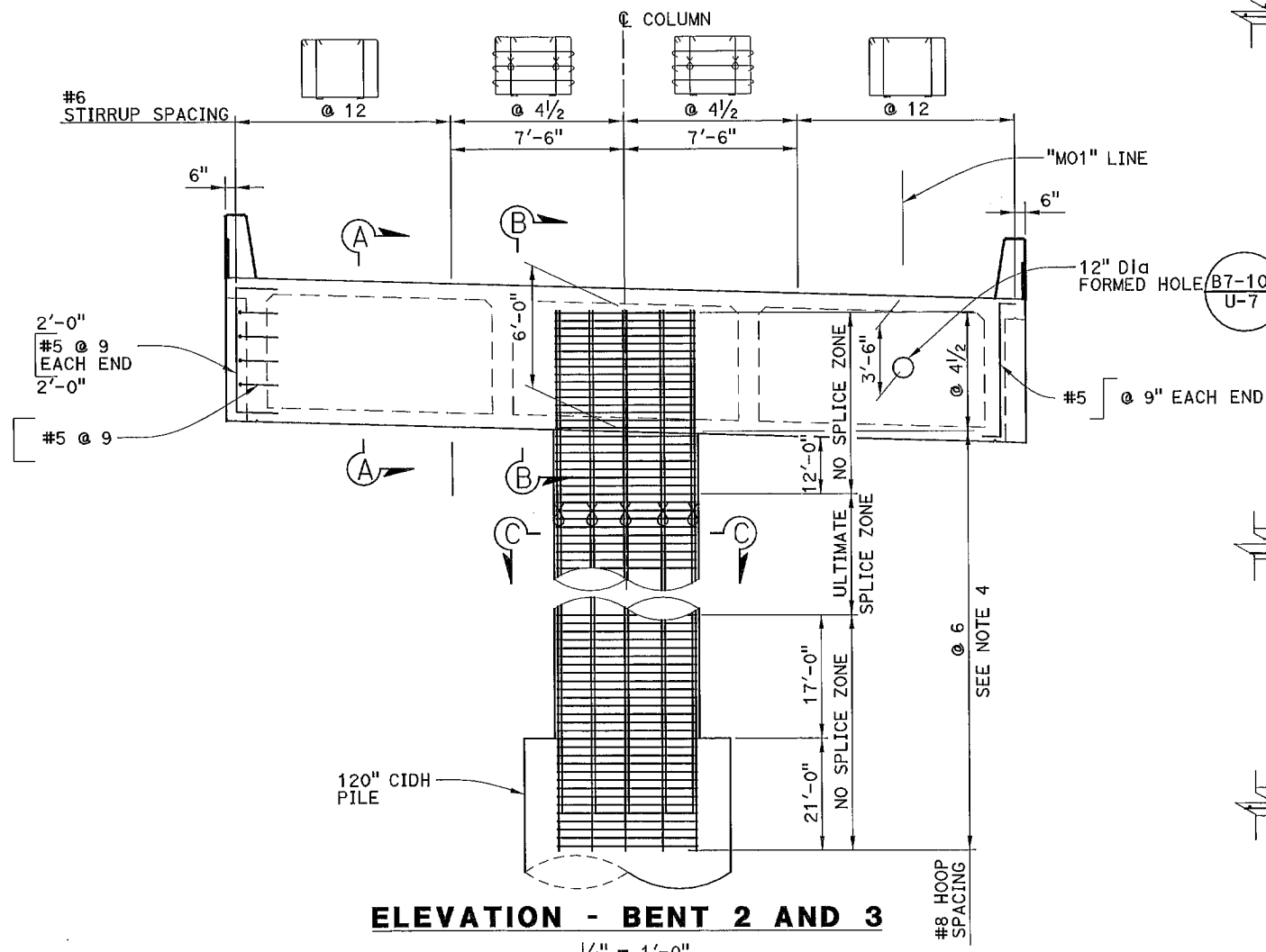


**PLAN**  
1/4" = 1'-0"

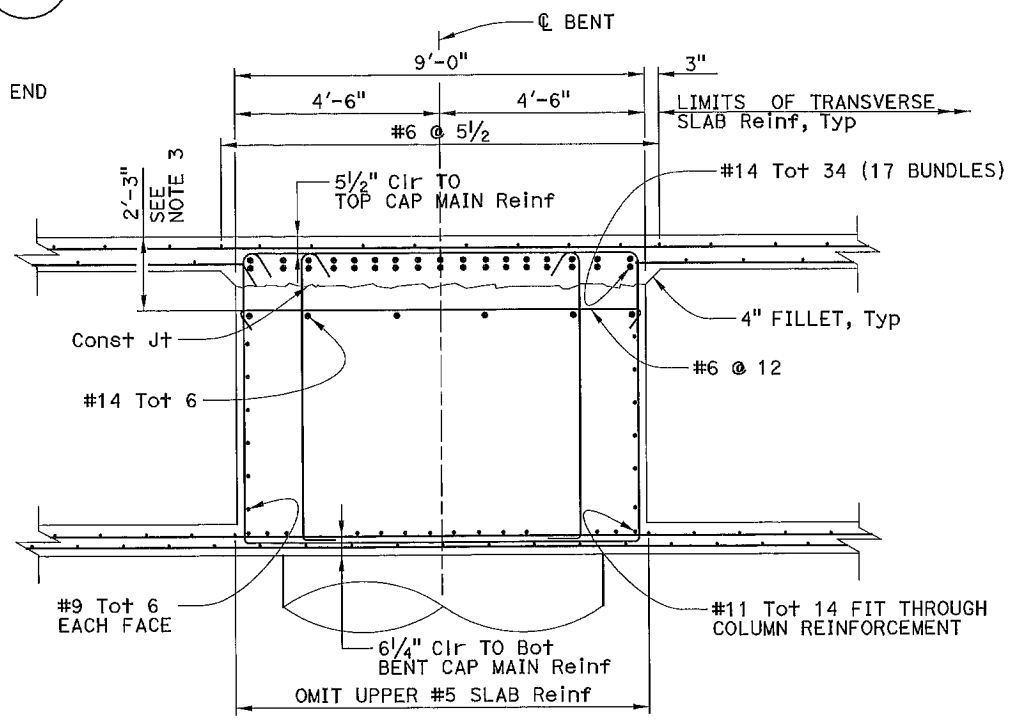


NOTES: For information not shown see "SECTION A-A"

**SECTION B-B**  
1/2" = 1'-0"



**ELEVATION - BENT 2 AND 3**  
1/4" = 1'-0"



**SECTION A-A**  
1/2" = 1'-0"

- NOTES:**
- See "BENT DETAILS NO. 2" sheet for more information on 120" CIDH pile
  - See "SECTION C-C" on "BENT DETAIL NO. 3" sheet for column size and Reinf
  - Verified in field to clear PS ducts
  - All hoops are "Ultimate" Butt Splice
- LEGEND:**
- ∞ - Indicates Bundled Bars (2 Bar Bundles)

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

DESIGN OVERSIGHT	DESIGN BY C. HU	CHECKED E. MOBO	PREPARED FOR THE STATE OF CALIFORNIA	BRIDGE NO. 50C-0357J	<b>KERN RIVER BRIDGE</b> <b>BENT DETAILS NO. 1</b>
SIGN OFF DATE	DETAILS BY S. WEIGHT	CHECKED E. MOBO	MOHSEN MOHSENI PROJECT ENGINEER	POST MILES R50.35	
DESIGN DETAIL SHEET (ENGLISH) (REV. 03/14/12)	QUANTITIES BY K. HADLEY	CHECKED M. KARLEN	DEPARTMENT OF TRANSPORTATION	UNIT: 1477 PROJECT NUMBER & PHASE: 0615000261-4 CONTRACT NO.: 48463_	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			0 1 2 3	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES: 05/07/13, 10/27/13, 07/01/15
FILE => 50C-0357J-h-b01d401.dgn				SHEET 10	OF 36

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
06	KER	58	R49.1/R50.7		

*Chung Daw Hu* 07/01/15  
 REGISTERED CIVIL ENGINEER DATE

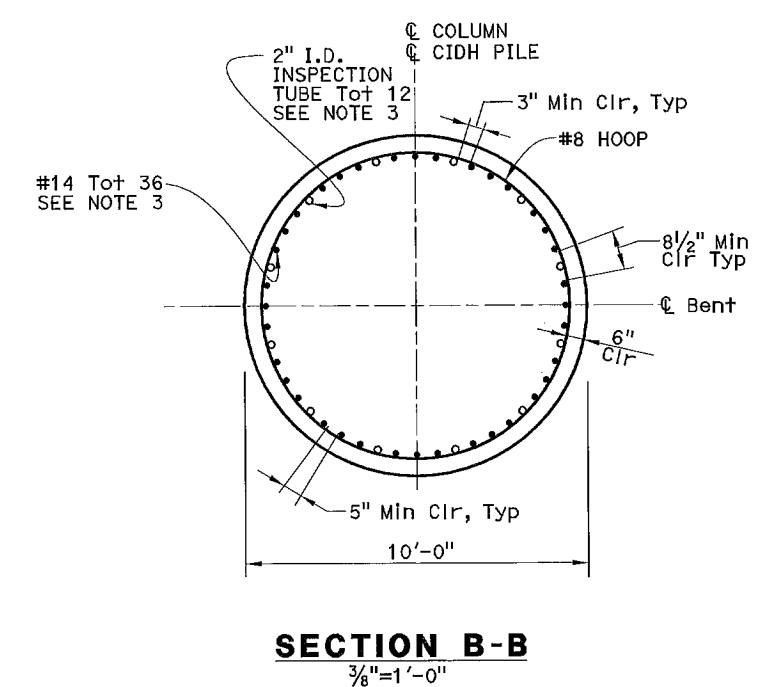
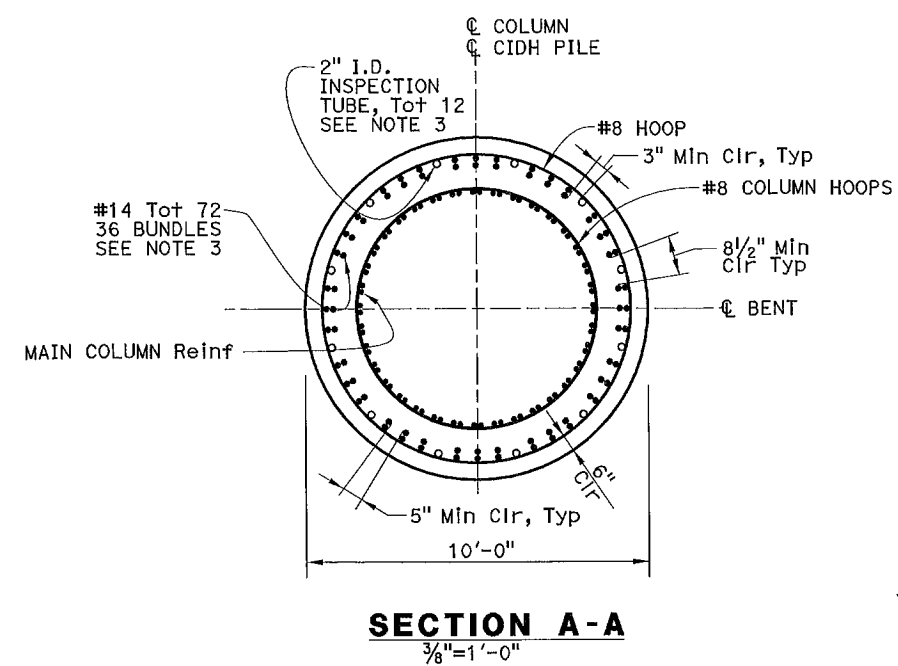
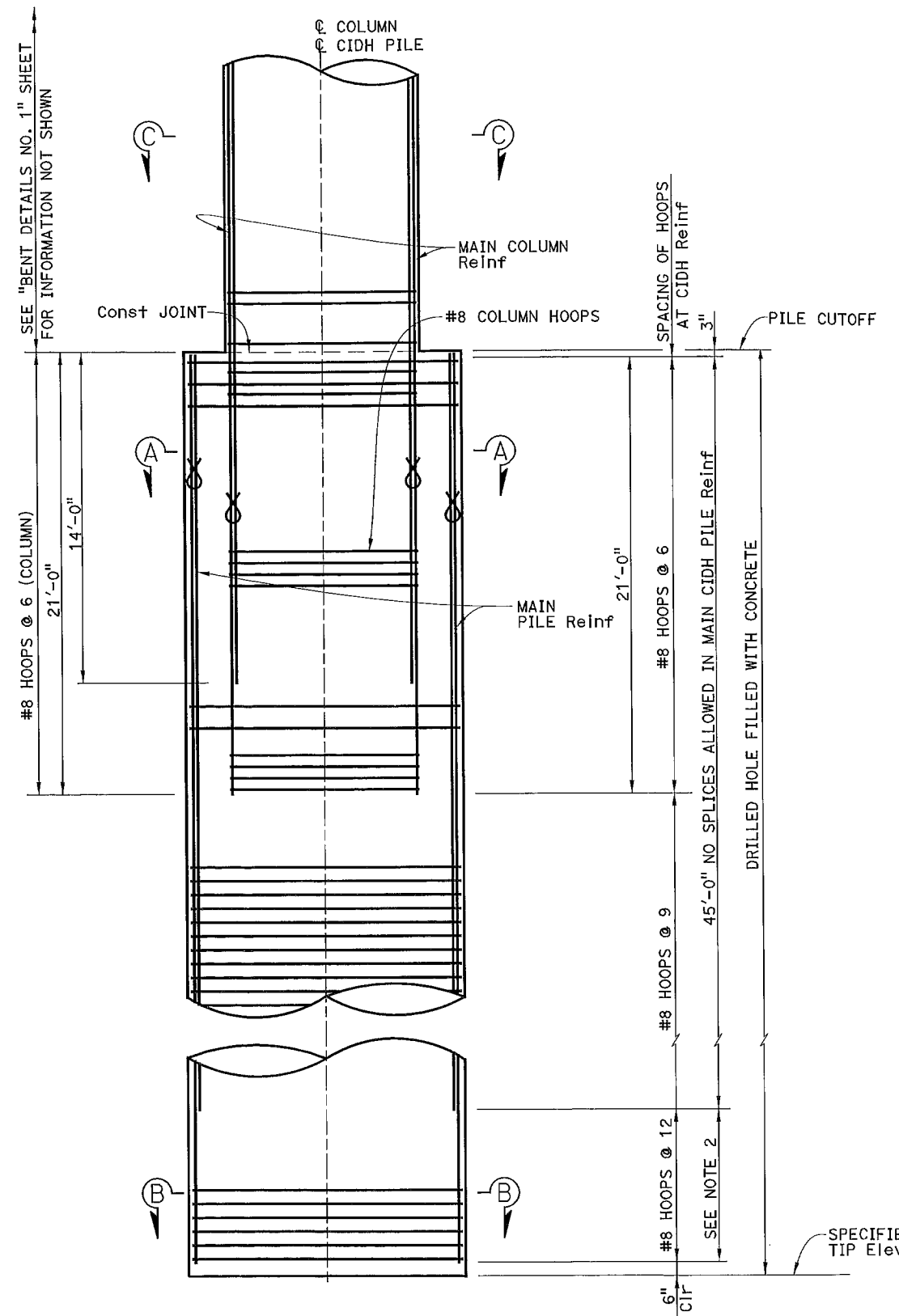
REGISTERED PROFESSIONAL ENGINEER  
 Chung Daw Hu  
 No. 49206  
 Exp. 09/30/16  
 CIVIL  
 STATE OF CALIFORNIA

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- NOTES:**
- All hoops are "Ultimate" Butt Splice
  - Use "Ultimate" Splices on main CIDH pile reinforcement in this zone, with 6' stagger and 6' below cut off of inner ring of main pile reinforcing
  - Inspection tubes shall be spaced equally. Main pile reinforcement shall be equally spaced in between inspection tubes and shall satisfy minimum clearances shown
  - See "SECTION C-C" on "BENT DETAILS NO. 3" sheet

**LEGEND:**

Denotes Bundled Bars (2 Bar Bundle)

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

**120" CIDH PILE ELEVATION**  
 3/8" = 1'-0"  
 BENTS 2 AND 3

DESIGN OVERSIGHT	DESIGN BY C. HU	CHECKED E. MOBO	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	BRIDGE NO. 50C-0357J	<b>KERN RIVER BRIDGE</b> <b>BENT DETAILS NO. 2</b>	
SIGN OFF DATE	DETAILS BY S. WEIGHT	CHECKED E. MOBO		PROJECT ENGINEER MOHSEN MOHSENI		POST MILES R50.35
DESIGN DETAIL SHEET (ENGLISH) (REV. 03/14/12)	QUANTITIES BY K. HADLEY	CHECKED M. KARLEN		UNIT: 1477 PROJECT NUMBER & PHASE: 0615000261-4 CONTRACT NO.: 48463_		REVISION DATES 05/20/13 10/28/13 07/01/15

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 SHEET 11 OF 36  
 FILE => 50C-0357J-h-b02d+02.dgn

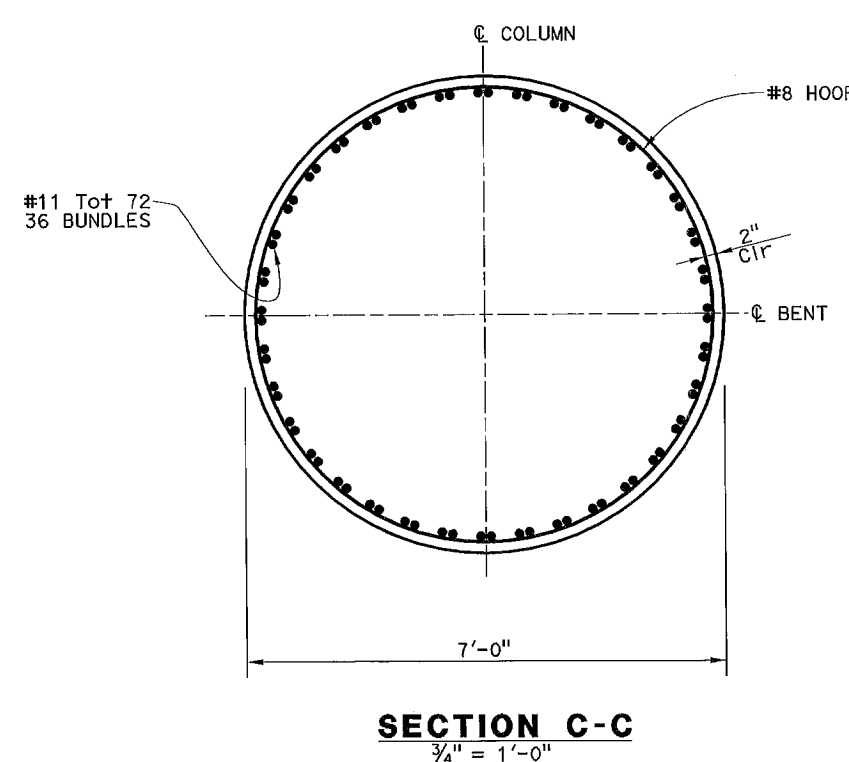
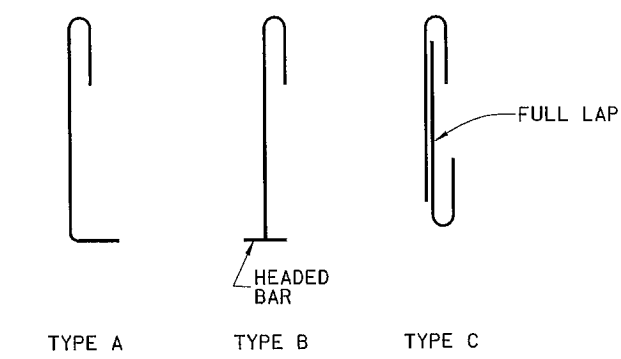
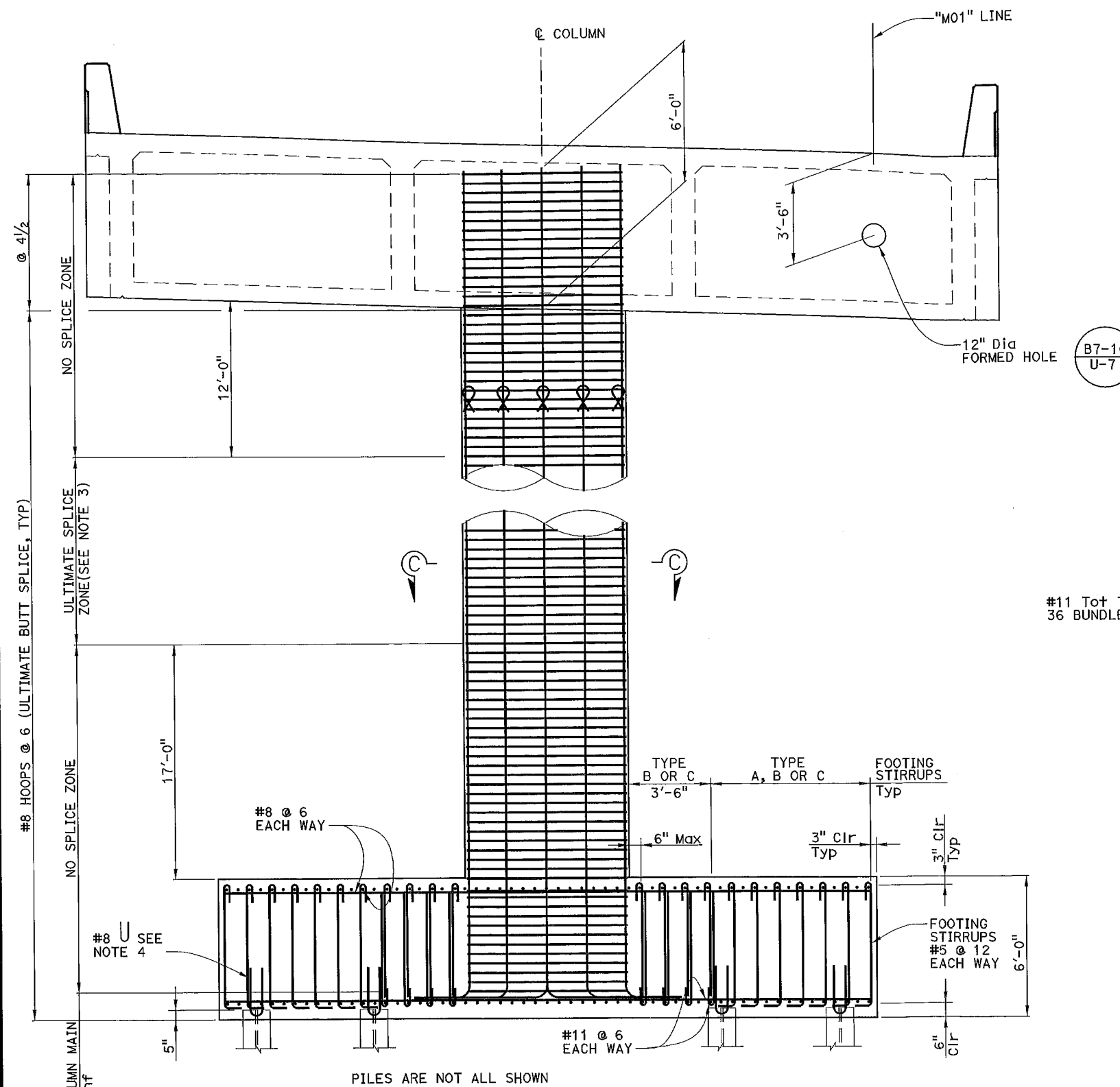
### Attachment C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
06	KER	58	R49.1/R50.7		

07/01/15  
 REGISTERED CIVIL ENGINEER DATE  
 Chung Daw Hu  
 No. 49206  
 Exp. 09/30/16  
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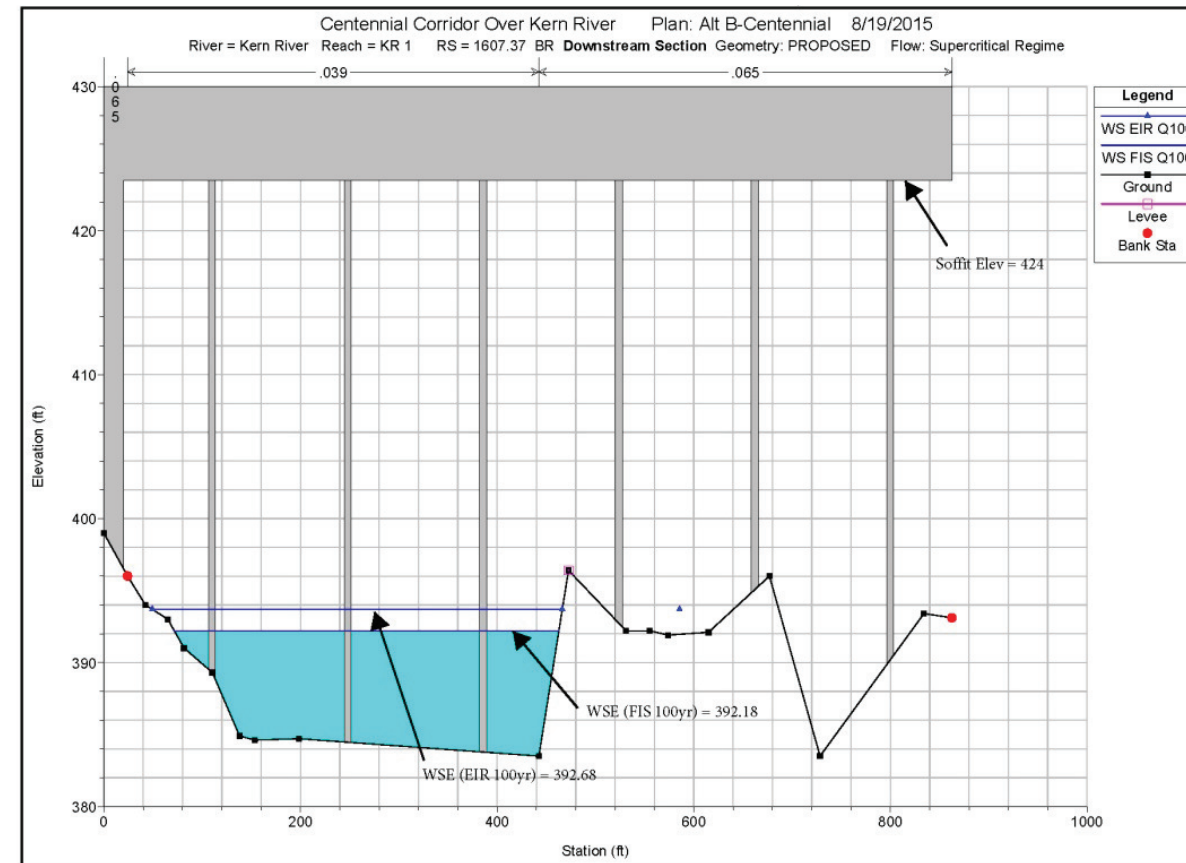
- NOTES:**
1. See "BENT DETAILS NO. 1" sheet for bent cap reinforcement
  2. See "BENT DETAILS NO. 4" sheet for more information
  3. Use ultimate butt splice with min 2' stagger between any neighboring splice
  4. See "HP PILE ANCHOR DETAIL" on "BENT DETAIL NO. 4" sheet
- LEGEND:**
- Denotes Bundled Bars (2 Bar Bundle)

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

DESIGN OVERSIGHT	DESIGN BY C. HU	CHECKED E. MOBO	PREPARED FOR THE STATE OF CALIFORNIA	BRIDGE NO. 50C-0357J	<b>KERN RIVER BRIDGE</b>
SIGN OFF DATE	DETAILS BY S. WEIGHT	CHECKED E. MOBO	DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER MOHSEN MOHSENI	<b>BENT DETAILS NO. 3</b>
DESIGN DETAIL SHEET (ENGLISH) (REV. 03/14/12)	QUANTITIES BY K. HADLEY	CHECKED M. KARLEN	UNIT: 1477	POST MILES R50.35	REVISION DATES
			PROJECT NUMBER & PHASE: 0615000261-4	CONTRACT NO.: 48463	SHEET 12 OF 36
			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	DISREGARD PRINTS BEARING EARLIER REVISION DATES	FILE => 50C-0357J-h-b03d403.dgn

USERNAME => D002421C DATE PLOTTED => 8/28/2015 TIME PLOTTED => 10:09:05 AM

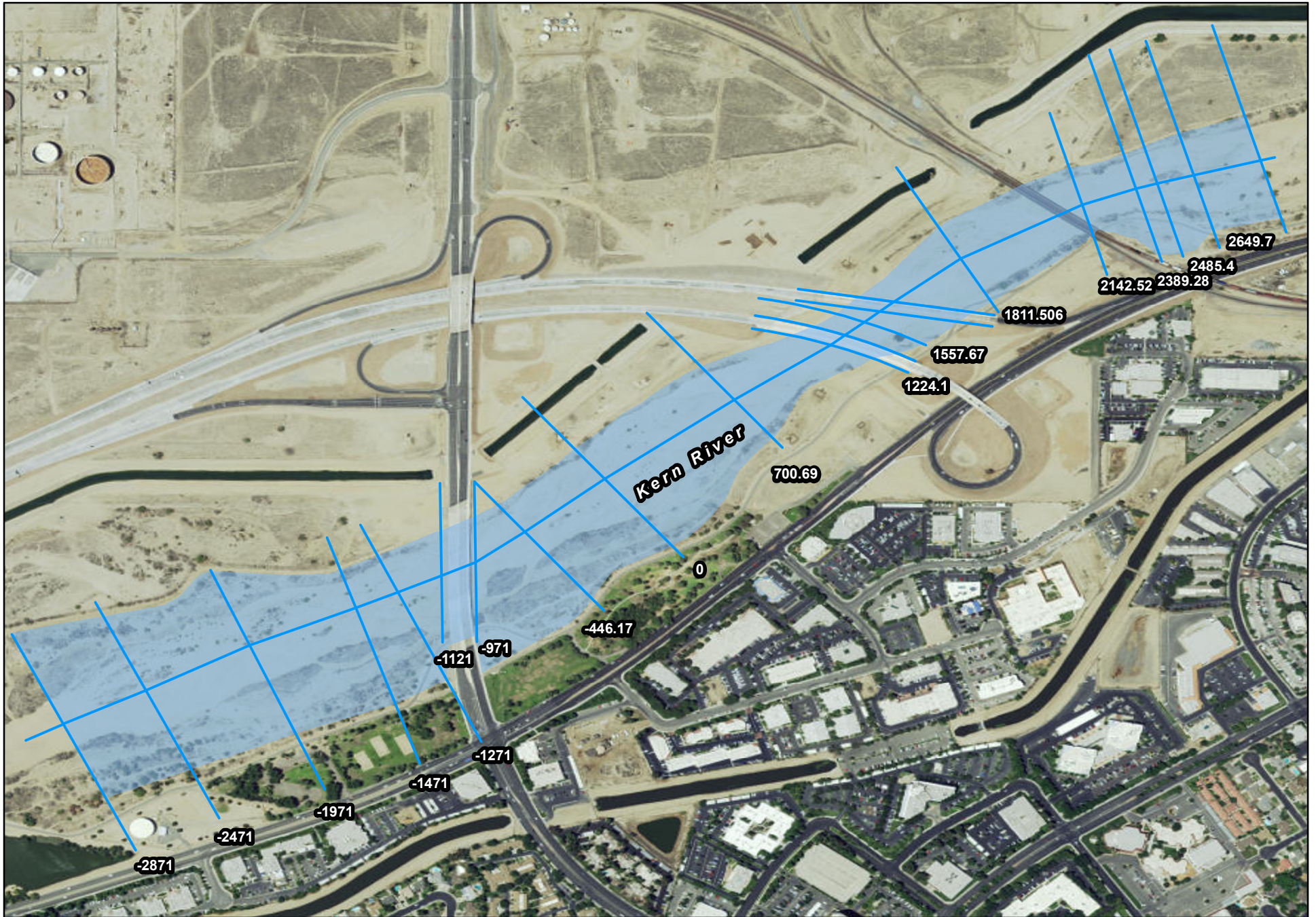
Figure 1 - WB SR-58 OFF-RAMP BRIDGE NO. 50C-0357J



Design Information	100-yr Design Flow (cfs)	Existing (Pre-Construction) at RS 1557.67				Future (Post-Construction) at RS 1557.67				Δ Existing to Future	
		Appr. Soffit Elev (ft)	100-yr WSE (ft)	100-yr Velocity (fps)	Freeboard 100-yr (ft)	Appr. Soffit Elev (ft)	100-yr WSE (ft)	100-yr Velocity (fps)	Freeboard 100-yr (ft)	Δ WSE (ft)	Δ Velocity (ft)
Bridge No. 50C-0357J (WB SR-58 Off-Ramp)											
FIS Flow	10,200	n/a	392.12	3.79	n/a	424	392.18	3.76	31	0.06	-0.03
EIR Flow	15,000	n/a	393.59	4.57	n/a	424	393.68	4.52	30	0.09	-0.05

FIS: FEMA Flood Insurance Rate Study (2008)

EIR: provided by Central Valley Flood Protection Board (CVFPB)



# Attachment D

## KERN RIVER WATER SURFACE ELEVATION SUMMARY

Station	Q <sub>100</sub> (cfs)	W.S. Elev 100-year (ft)			ΔElev (ft)	
		Pre-Proj	With Falsework	Post-Proj	Pre-Proj vs With Falsework	Pre- vs Post
2950	15,000	395.10	395.51	395.16	0.41	0.06
2649.7	15,000	394.67	395.15	394.74	0.48	0.07
2485.4	15,000	394.63	395.12	394.70	0.49	0.07
2389.28	15,000	394.62	395.11	394.68	0.49	0.06
2142.52	15,000	394.46	394.97	394.53	0.51	0.07
1811.506	15,000	393.84	394.51	393.98	0.67	0.14
1607.37	Bridge					
1557.67	15,000	393.59	394.15	393.67	0.56	0.08
1527.865	WB Off-Ramp Bridge					
1498.17	15,000	393.48	394.05	393.55	0.57	0.07
1388.25	15,000	393.41	-	-	-	-
1293.24	15,000	392.87	-	-	-	-
1254.2	Kern River (Widened) Bridge					
1224.1	15,000	392.47	392.46	392.46	-0.01	-0.01
700.69	15,000	391.91	391.91	391.91	0	0
0	15,000	391.43	391.43	391.43	0	0
-446.17	15,000	391.12	391.12	391.12	0	0
-971	15,000	390.75	390.75	390.75	0	0
-1046	Mohawk Bridge					
-1121	15,000	390.32	390.32	390.32	0	0
-1271	15,000	390.17	390.17	390.17	0	0
-1471	15,000	390.00	390.00	390.00	0	0
-1971	15,000	389.68	389.68	389.68	0	0
-2471	15,000	389.38	389.38	389.38	0	0
-2871	15,000	389.17	389.17	389.17	0	0