Meeting of the Central Valley Flood Protection Board March 25, 2016

Staff Report – Encroachment Permit

Union Pacific Railroad Bear River Bridge, Placer County

1.0 - ITEM

Consider approval of Permit No. 18278-1. (Attachment B)

2.0 - APPLICANT

Union Pacific Railroad (UPRR)

3.0 - LOCATION

The project is located at MP 126.77 on the Valley Subdivision of UPRR, and crosses the Bear River (regulated stream) approximately 1.3 miles southeast of the City of Wheatland, Placer County, and runs parallel to State Highway 65. (Attachment A)

4.0 - PROJECT DESCRIPTION

UPRR proposes to replace segments B and C of the existing 1-span, 12 foot long and pre-stressed concrete box bridge (Segment B) and 10-span, 352 foot long and deck plate girder (Segment C) over the Bear River. Segment A of the existing bridge is structurally adequate and will remain in place. The proposed replacement of segment's B and C consists of a 9-span, 398 foot long bridge. The new segments will be 6 spans and 190 feet in length for Segment B and 3 spans and 208 feet in length for Segment C, each consisting of steel beam span, precast concrete riser block, bent cap and bents.

5.0 – AUTHORITY OF THE BOARD

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

California Code of Regulations Title 23 (Title 23)

§ 6, Need for a Permit

- § 112, Streams Regulated and Nonpermissible Work Periods
- § 121 Erosion Control
- § 128, Bridges

6.0 - PROJECT ANALYSIS

The existing bridge provides service for both passenger and freight trains just south of the City of Wheatland. UPRR proposes to remove and replace segments B and C of the existing bridge that crosses the Bear River due to deteriorated concrete piers and steel spans. Segment B will be 190 feet in length with 6-spans and Segment C will be 208 feet in length with 3-spans. Both segments will be constructed with steel beam spans, precast concrete riser blocks, bents, and bent caps. The proposed replacement segments will be supported by the bents. (Attachment C)

Construction vehicles and equipment will gain access to the project site from two access roads off Levee Road, immediately southeast and southwest of the existing bridge. There will be three temporary construction staging areas for replacing Segments B and C. One staging area will be located on the west side of the bridge and the other two will be located on the east side. The staging areas are located in UPRR's right-of-way (ROW).

Riprap will be placed along the north sloping abutment for the bridge. The Bear River is a component of the State Plan of Flood Control (SPFC) and is bounded by Federal Flood Control Project levees (Project Levees).

6.1 - Hydraulic Analysis

The U.S. Army Corps of Engineers' (USACE) design flow for the Bear River is 30,000 cubic feet per second. A HEC-RAS model was created in order to analyze the existing and post project conditions. (Attachment D)

The bridge freeboard, with a proposed low chord elevation of 101.44 feet, is 6.29 feet and 1.02 feet increase when compared to the existing condition at the upstream of the proposed bridge. The HEC-RAS analysis showed all computed water surface elevation changes due to the replacement of the bridge segments are negligible, with a slight decrease of 0.10 feet at the upstream of the proposed bridge. The velocity at the upstream of the proposed bridge is 5.38 feet per second which remains constant for both the existing and proposed conditions (Attachment D).

Based on Board staff's review, the proposed project is expected to result in no Sungho Lee, PE

significant adverse hydraulic impacts to the Bear River channel or floodway and that the proposed project complies with all applicable Title 23 standards.

6.2 - Geotechnical Analysis

UPRR did not conduct a detailed geotechnical study for this project. They based their design on geotechnical information gathered from several other nearby bridge projects along UPRR's Valley Subdivision line. The proposed bridge is supported by nine (9) H pile bents. The proposed bents consist of 80 foot long H piles that will be driven to the point of refusal. The estimated maximum scour depth is 3.4 feet.

Board staff has reviewed the geotechnical information provided by UPRR and has determined that the proposed project is expected to cause no adverse geotechnical impacts to the Bear River channel or floodway due to the proposed bents design.

7.0 - AGENCY COMMENTS AND ENDORSEMENTS

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

- The USACE 33 USC 408 decision letter has not yet 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, board staff will review to ensure its conformity with the
 permit language and incorporate it into the permit as Exhibit A.
- RD 1001 endorsed the project with conditions on September 30, 2015. The conditions have been incorporated into the permit.
- RD 2103 endorsed the project without conditions on September 17, 2015.

8.0 - CEQA ANALYSIS

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

The Board has determined that the proposed action is statutorily exempt under the provisions of CEQA and the State CEQA Guidelines. The overall activities involve issuing a permit for replacement of an existing railroad bridge under a Statutory Exemption (Public Resources Code § 21080(b)(10); CEQA Guidelines Section 15275 (a)) covering the institution or increase of passenger or commuter service

on rail lines, including modernization of existing stations and parking facilities.

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 - CALIFORNIA WATER CODE § 8610.5 CONSIDERATIONS

- 1. Evidence that the Board admits into its record from any party, federal, State or local public agency, or nongovernmental organization with expertise in flood or flood plain management:
 - The Board will make its decision based on the evidence in the permit application and attachments, this staff report, and any other evidence presented by any individual or group.
- 2. The best available science related to the scientific issues presented by the Executive Officer, legal counsel, the Department of Water Resources, or other parties that raise credible scientific issues:
 - The accepted industry standards for the work proposed under this permit as regulated by Title 23 have been applied to the review of this permit. On the issue of hydraulic impacts, UPRR used an existing USACE HEC-RAS hydraulic model to create a hydraulic model for this project. This model is considered by experts as one of the best available scientific tools for the purpose of evaluating water surface elevation changes anticipated to occur as a result of the proposed project.
- 3. Effects of the decision on the facilities of the 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 project crosses the Bear River, which is a component of the SPFC and is bounded by Project Levees. The proposed UPRR bridge segment replacements are expected to result in a decrease in water surface elevation, no increase in channel velocities, and no adverse geotechnical impacts to the Bear River or any SPFC facilities. Therefore, the proposed project is expected to result in no adverse effects on any SPFC facility(ies) and is consistent with the CVFPP and current Title 23 standards.
- 4. Effects of reasonable projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed:

UPRR has analyzed 100 and 200 year flood events and has designed the proposed replacement of the bridge segments such that it results in the low chord elevation being 0.92 feet higher than the existing low chord elevation. 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:

Find:

The project to be statutorily exempt from CEQA;

Approve:

• Encroachment Permit No. 18278-1, in substantially the form provided, and;

Direct:

• The Executive officer to take the necessary actions to execute the permit and file a Notice of Exemption pursuant to CEQA with the State Clearinghouse.

11.0 – LIST OF ATTACHMENTS

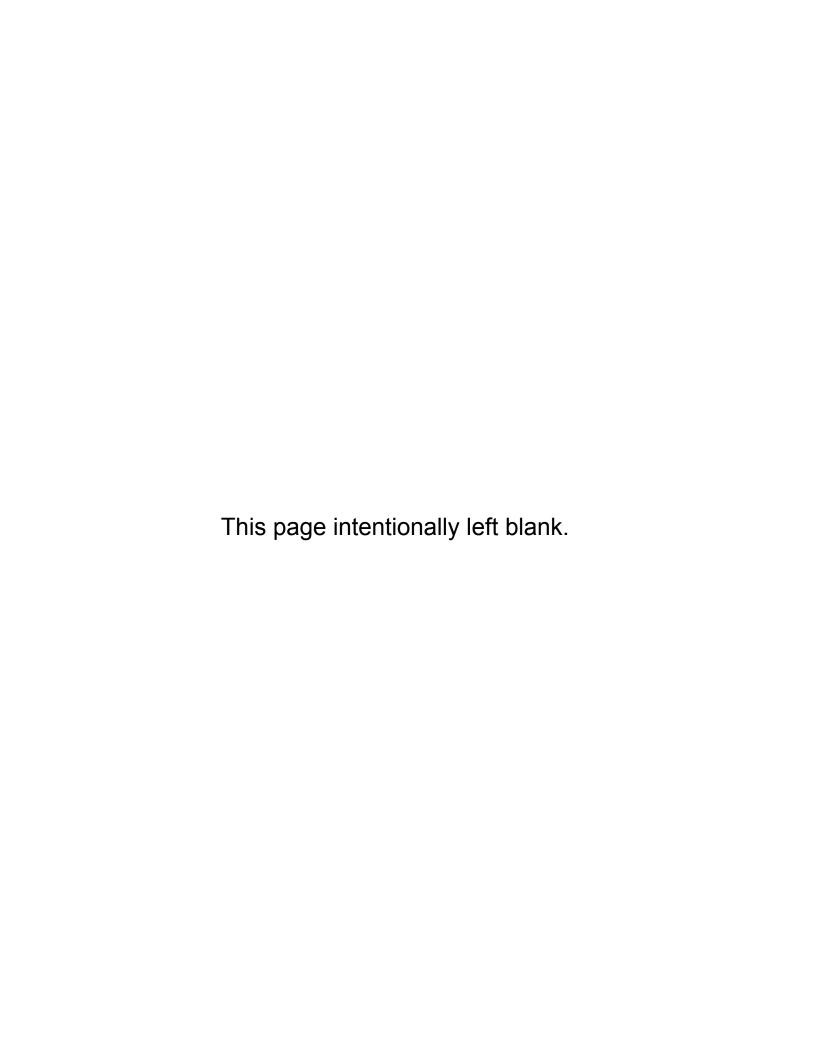
- A. Project Vicinity and Location Maps
- B. Draft Permit No. 18278-1
- C. Project Drawings
- D. Hydraulic Profile Information

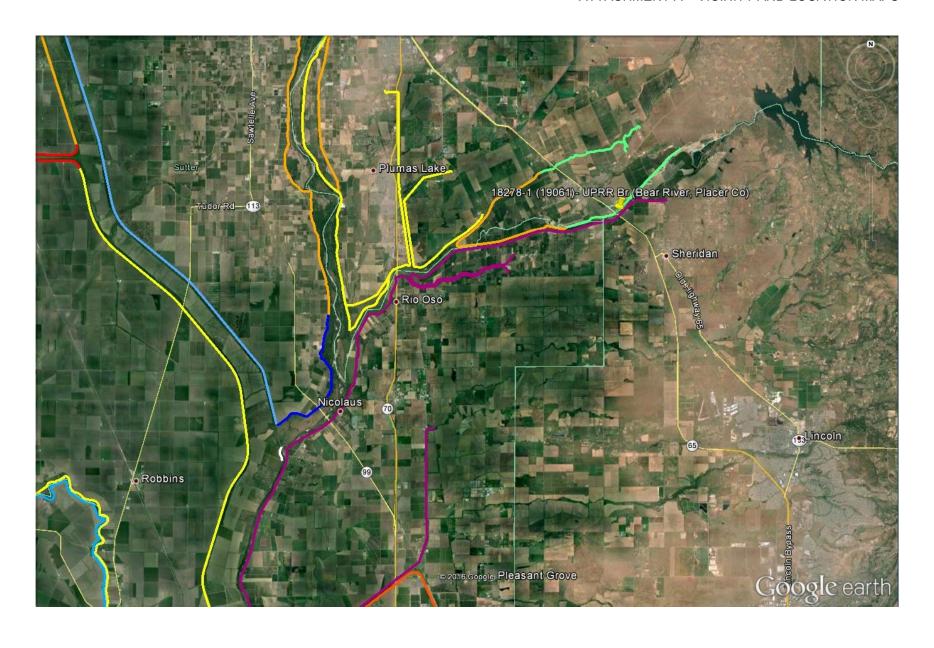
Prepared by: Sungho Lee, PE, Water Resources Engineer, Permitting Section

Document Review: James Herota, Senior Environmental Scientist (Specialist)

Gary Lemon, PE, Permitting Section Chief

Legal Review: Kanwarjit Dua, Board Counsel







DRAFT

STATE OF CALIFORNIA THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18278-1 BD

This Permit is issued to:

Union Pacific Railroad (UPRR) 1400 Douglas St., Stop 0910 Omaha, Nebraska 68179-0910

To replace segment's B and C of existing Union Pacific Railroad Bridge (UPRR) over the Bear River. The segment A of the existing bridge is structurally adequate and will remain in place. The proposed replacement of segment's B and C consists of a 9-span and 398 foot long bridge.

The project is located at MP 126.77 on the Valley Subdivision of Union Pacific Railroad (UPRR) approximately 1.3 miles southeast of Wheatland and parallel to State Highway 65. (Section 3, T13N, R5E, MDB&M, Reclamation District 2103, Bear River, Placer 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. 18278-1 BD

LIABILITY AND INDEMNIFICATION

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

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

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

AGENCY CONDITIONS

SIXTEEN: Board staff received a letter, dated xxxx, 2016, from the U.S. Army Corps of Engineers (USACE) District Engineer stating that the District Engineer has no comments or recommendations regarding flood control because the proposed work does not affect a federally constructed project. This letter is attached to this permit as Exhibit A and is incorporated by reference.

PRE-CONSTRUCTION

SEVENTEEN: The permittee shall contact the Board by telephone at (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction conference. Failure to do so at least 10 working days prior to start of work may result in delay of the project.

CONSTRUCTION

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

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 Board, and shall be removed after completion of the project.

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

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

TWENTY-TWO: Piers, bents, and abutments being dismantled shall be removed to at least one (1) foot below the natural ground line and at least three (3) feet below the bottom of the low water channel.

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

TWENTY-FOUR: Backfill material for excavations within the bank section and within 10 feet of bridge supports within the floodway shall be placed in 4- to 6-inch layers and compacted to a minimum of 90 percent relative compaction per ASTM Method D1557-91, or 97 percent per ASTM D 698-91, and above optimum moisture content.

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

POST-CONSTRUCTION

TWENTY-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.

TWENTY-SEVEN: Within 120 days of completion of the project, the permittee shall submit to the Board and DWR a copy of as-built drawings, stamped and signed by a licensed civil engineer registered in the State of California, certifying the work was performed and inspected in accordance with the Board permit conditions and submitted drawings and specifications.

OPERATIONS AND MAINTENANCE

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

TWENTY-NINE: The permittee shall maintain the permitted encroachment(s) within the utilized area in the manner required and as requested by the authorized representative of the Board, DWR, or any other agency responsible for maintenance.

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

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

THIRTY-TWO: The permitted encroachment(s) shall not interfere with the flood conveyance capacity of the Bear River Channel. 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 Board. If the permittee does not comply, the Board may modify or remove the encroachment(s) at the permittee's expense.

PROJECT ABANDONMENT / CHANGE IN PLAN OF FLOOD CONTROL

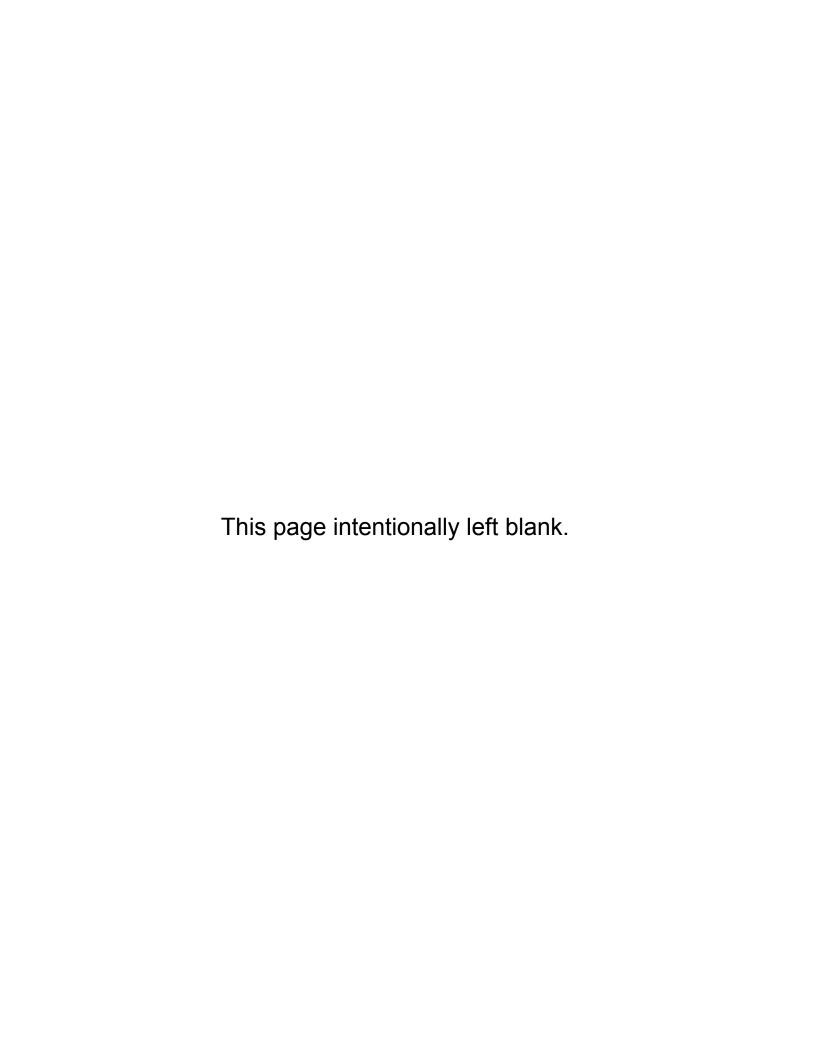
THIRTY-THREE: If the project, or any portion thereof, is to be abandoned in the future, the permittee shall abandon the project under direction of the Board, at the permittee's cost and expense.

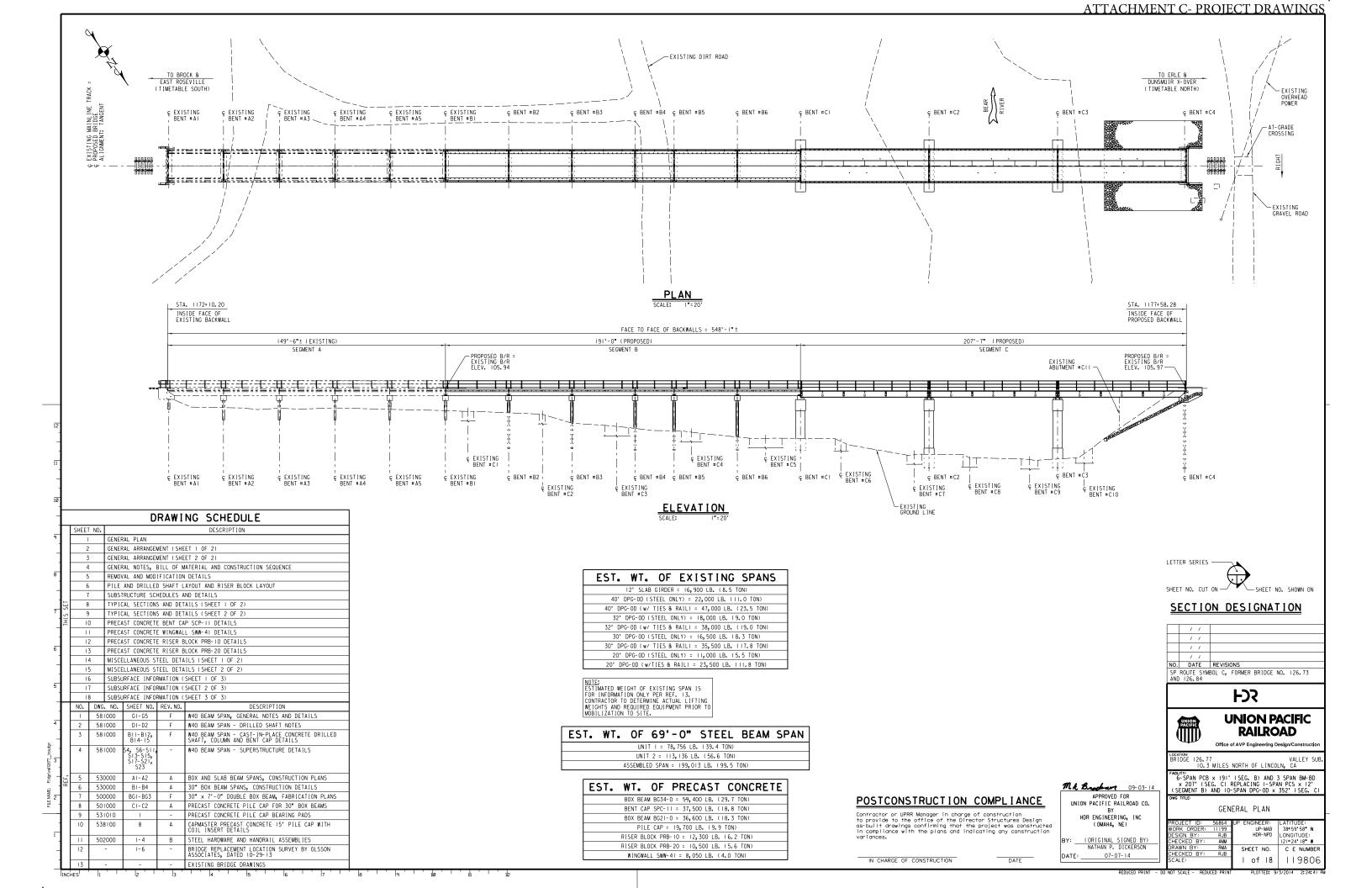
THIRTY-FOUR: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted encroachment(s) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control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

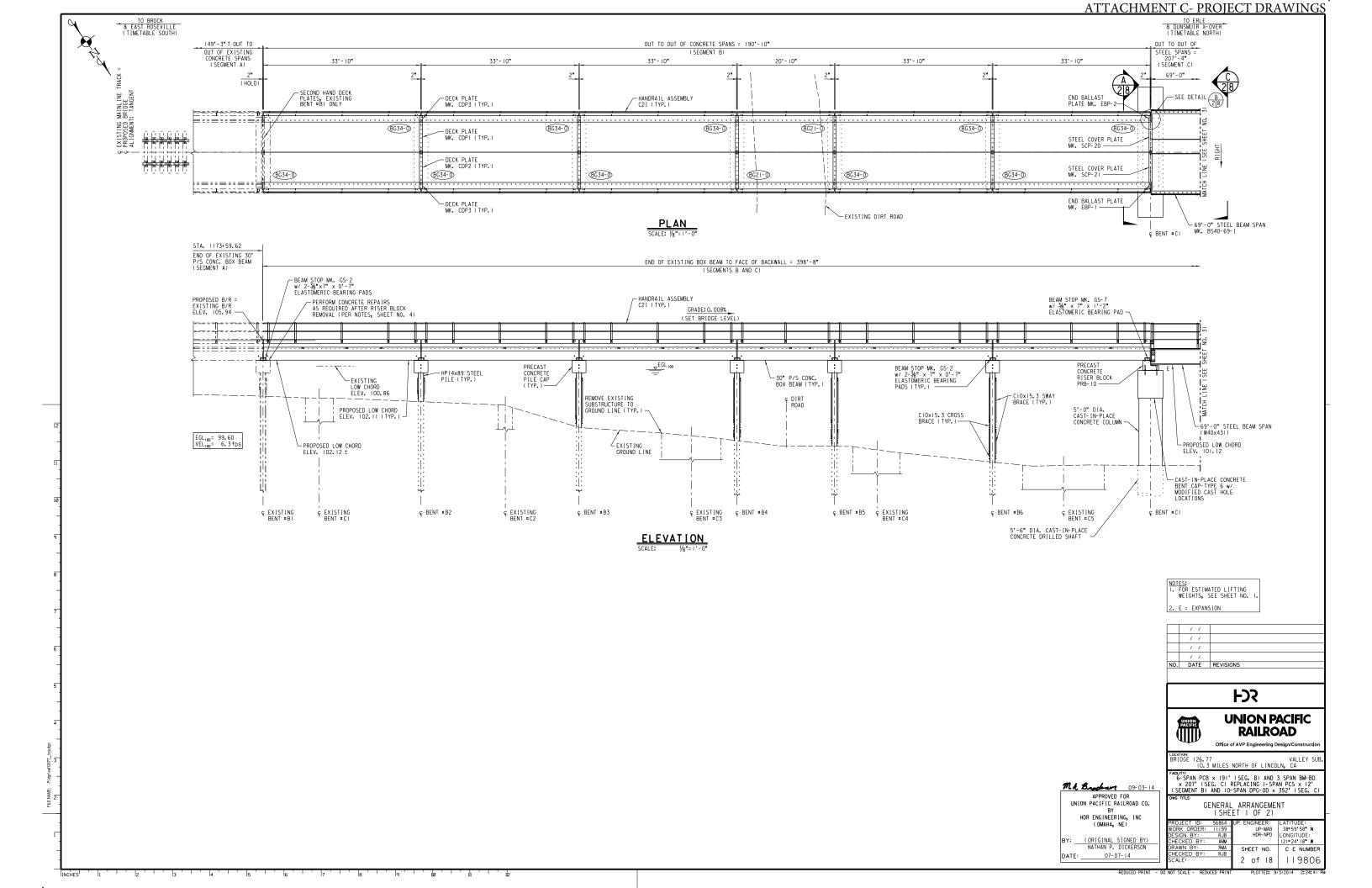
END OF CONDITIONS

ATTACHMENT B – Exhibit A: USACE Comment Letter

This letter has not yet been received by Board staff; however, it is expected to arrive prior to the Board Meeting on March 25, 2016





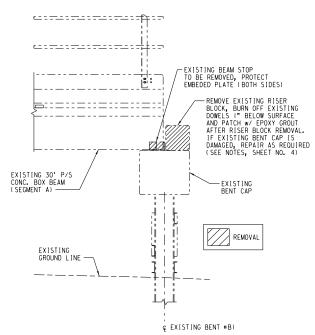


ATTACHMENT C- PROJECT DRAWINGS TO BROCK 8 EAST ROSEVILLE (TIMETABLE SOUTH) TO ERLE 8 DUNSMUIR X-OVER (TIMETABLE NORTH) OUT TO OUT OF STEEL SPANS = 207'-4" (SEGMENT C) 69'-0" - INSIDE FACE OF PROPOSED BACKWALL - EXISTING OVERHEAD POWER (PROTECT IN PLACE) - 69'-0" STEEL BEAM SPAN MK. BS40-69-I (TYP.) - RISER BLOCK PRB-20 (TYP.) - EXISTING GRAVEL ROAD COVER PLATE MK. SCP-IIR AND CLOSURE PLATE MK. SCP-I2 — UNITI UNIT -WT4x17.5 x 8'-31/4" - PRECAST CONCRETE BENT CAP SPC-II - EXISTING GRADE CROSSING COVER PLATE MK. SCP-IIL AND CLOSURE PLATE MK. SCP-I2-UNIT 2 UNIT 2 UNIT 2 - PRECAST CONCRETE
WINGWALL SWW-41
(TYP.) EXISTING SHED (PRO
OR RELOCATION TO B
RALI POND TE
RALI P -STEEL COVER PLATE MK. SCP-I (TYP.) LIMITS OF RIPRAP (TYP.) -— EXISTING SHED (PROTECTION OR RELOCATION TO BE COORDINATED WITH THE RAILROAD / PLAN
SCALE: 1/8"=1'-0" - EXISTING POWER POLE (PROTECT IN PLACE) STA. 1177+58.28 INSIDE FACE OF PROPOSED BACKWALL END OF EXISTING BOX BEAM TO FACE OF BACKWALL = 398'-8" PROPOSED B/R = EXISTING B/R ELEV. 105.97— - END HANDRAIL ASSEMBLY MK. SEH-10 GRADE: 0. 008% (SET BRIDGE LEVEL) PRECAST CONCRETE WINGWALL SWW-41 EGL 100 RISER BLOCK PRB-20 BOTTOM OF EXISTING DPG SPAN ELEV. 100.92 RISER BLOCK PRB-20 - CAST-IN-PLACE
CONCRETE BENT CAP
-TYPE 6 w/ MODIFIED
CAST HOLE LOCATIONS
(TYP.) └ 69'-0" STEEL BEAM SPAN (W40x431) (TYP.) NOTES:
1. FOR ESTIMATED LIFTING WEIGHTS,
SEE SHEET NO. 1. -5'-0" DIA. CAST-IN-PLACE CONCRETE COLUMN (TYP.) WATER LEVEL ELEV. 71.68 (OBSERVED 2-12-14)-2. E = EXPANSION F = FIXED -5'-6" DIA. CAST-IN-PLACE CONCRETE DRILLED SHAFT (TYP.) REMOVE EXISTING SUBSTRUCTURE TO GROUND LINE (TYP.) -/ / NO. DATE REVISIONS - EXISTING GROUND LINE ¢ EXISTING BENT #C8 ¢ EXISTING ¢ BENT #C2 BENT #C7 EXISTING BENT #C9 ç BENT #C3 ç BENT #C4 **FDS** - EXISTING FLOWLINE ELEV. 67.23 ELEVATION
SCALE: 1/8"=1'-0" **UNION PACIFIC** EGL₁₀₀= 99.60 VEL₁₀₀= 6.3 fps RAILROAD Office of AVP Engineering Design/Cons OCATION:
BRIDGE 126.77

10.3 MILES NORTH OF LINCOLN, CA FACLITY: 6-SPAN PCB × 191' (SEG, B) AND 3 SPAN BM-BD × 207' (SEG, C) REPLACING 1-SPAN PCS × 12' (SEGMENT B) AND 10-SPAN DPG-OD × 352' (SEG, C Mk Brocher 09-03-14 APPROVED FOR UNION PACIFIC RAILROAD CO. GENERAL ARRANGEMENT (SHEET 2 OF 2) HDR ENGINEERING, INC (OMAHA, NE) IGINEER: LATITUDE:
UP-MAB 38°59'58" N
HDR-NPD LONGITUDE:
121°24'18" W SHEET NO. C E NUMBER DATE: 07-07-14 3 of 18 | 119806

EXISTING MAINLINE TRACK PROPOSED BRIDGE ALIGNMENT: TANGENT -REMOVE EXISTING RISER BLOCK |--=-======<u></u>

PLAN_

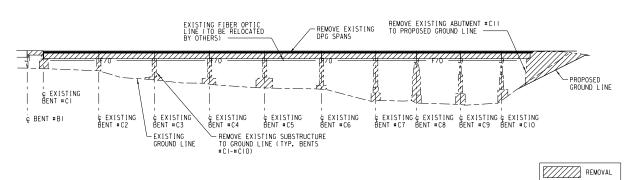


ELEVATION

BENT #BI RISER BLOCK REMOVAL
SCALE: 3/6"=1"-0"

e EXISTING MAINLINE TRACK = e PROPOSED BRIDGE | ALIGNMENT: TANGENT TO BROCK
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(TIMETABLE SOUTH) TO ERLE
8 DUNSMUIR X-OVER
(TIMETABLE NORTH) EXISTING PETROLEUM PIPELINE (PROTECT IN PLACE) - SALVAGE, PROTECT AND STORE DECK PLATES FOR RE-USE - EXISTING FIBER OPTIC LINE (TO BE RELOCATED BY OTHERS)

PLAN



ELEVATION

EXISTING BRIDGE REMOVAL

NO. DATE REVISIONS

FD3



UNION PACIFIC RAILROAD Office of AVP Engineering Design/Constru

BRIDGE 126.77 VALLEY SU

10.3 MILES NORTH OF LINCOLN, CA

FACLITY:
6-SPAN PCB × 191' (SEG, B) AND 3 SPAN BM-BD × 207' (SEG, C) REPLACING 1-SPAN PCS × 12' (SEGMENT B) AND 10-SPAN DCG-OD × 352' (SEG. C

REMOVAL AND MODIFICATION DETAILS

P ENGINEER: LATITUDE: UP-MAB HDR-NPD LONGITUDE: 121°24'18" W

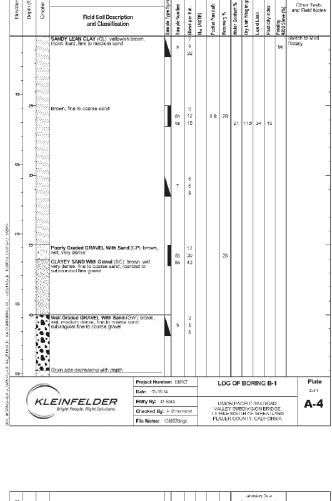
SHEET NO. C E NUMBER 5 of 18 | 119806

DATE: 07-07-14

Mk Brocher 09-03-14 APPROVED FOR UNION PACIFIC RAILROAD CO.

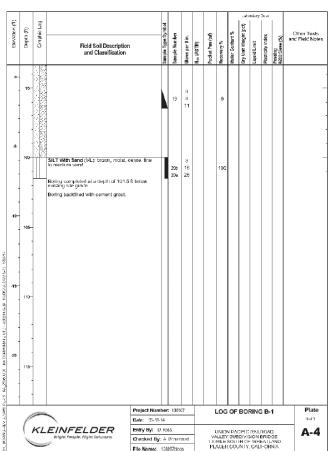
BY
HDR ENGINEERING, INC
(OMAHA, NE)

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Veath	er: Su	nny		Datum/Coordinat	e System:						Drill	ng Co	mpan	y: Añ	ΙA		
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	(KL	EINFELDER	Entry By: D	_	18		+		JNIO	N PA	cific	RAIL	RON	D	A-4
	-		Bright People. Right Solutions.	Checked By:	A I	Venan	rnad		1.11	HILE)	SOU	DIVIS TH OF JN TY	SION WH	BRID EATL	GE AND	

Elevation (ft)	Depth (ft)	Craphic Log	Field Soil Description and Classification	ı	Sample Type Symbol	Sample Number	Blows per 6 in.	No. (ASTR)	Pooket Pen (tsf)	Redovery %	Water Content %	Dry Unit Weight (pcf)	ridard Limit		Passing #200 Sieve (%)	Other Tests and Field Notes
25	70-				Sar	14	8 14 18	N.	Por	22	W	ě.	97	配	36	-
20-	79-		Reddleh brown			15	7 8 12									-
15-	80-		SANDY LEAN CLAY (CL): reddish bro gray, molet, very derde	own with		16b 16a	14 31 43		>4.5	100			37	18		-
10-	86-		Reddish brown, međium čense			17	6 6 12			100						
5	90-		Well Graded SAND With Clay (SW-S moist, dense, fine to course sand	C): brown.		16b 18a	36 50/81			100						
	(KI	EINFELDER	Project Num Date: 05-16-	14		G7			LOG						Plate
	-	<u></u>	Bright People. Right Solutions.	Checked By:	Α.	Menan			1.11	VOE!	SOU	DIVIS H OF	NON I	BRID. EATL	AND	A-4



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ENGINEERING DESIGN.

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NO.	DATE	REVISIONS

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UNION PACIFIC RAILROAD Office of AVP Engineering Design/Construct

BRIDGE 126.77

10.3 MILES NORTH OF LINCOLN, CA

FACULTY:
6-SPAN PCB x 191' (SEG. B) AND 3 SPAN BM-BD
x 207' (SEG. C) REPLACING 1-SPAN PCS x 12'
(SEGMENT B) AND 10-SPAN DPG-OD x 352' (SEG. C)

SUBSURFACE INFORMATION (SHEET | OF 3)

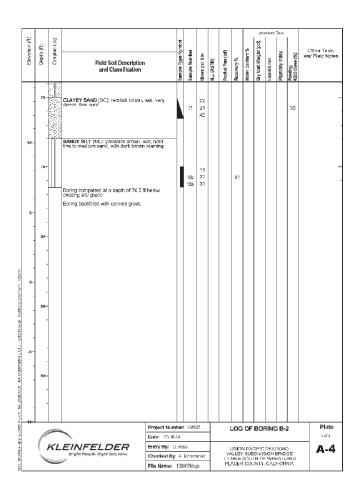
	() [LI I 01 37	
PROJECT ID:	56864	UP ENGINEER:	LATITUDE:
WORK ORDER:	11199	UP-MAB	38°59"58" N
		HDR- NPD	LONGITUDE:
CHECKED BY:			121°24"18" W
DRAWN BY:		SHEET NO.	C E NUMBER
SCALE:		16 of 18	119806
	WORK ORDER: DESIGN BY: CHECKED BY:	PROJECT ID: 56864 WORK ORDER: 11199 DESIGN BY: CHECKED BY: DRAWN BY: CHECKED BY:	WORK ORDER: 11199 UP-MAB DESIGN BY: HDR-NPD CHECKED BY: SHEET NO. CHECKED BY:

ATTACHMENT C- PROJECT DRAWINGS

		ber: B-2		Boring Location:									thod:			ctary	
3orin	g Total	Depth:	76.5 ft	Coordinates (XV)	', Lat/Long): fil/ fi						Drilli	ng Eq	uipme	ent: O	ME 75		
	ner: Su			Datum/Coordinat	te System:						Drill	ng Co	mpan	y: AY	ľΑ		
Darte E	Gegin f	End: 05	-C2-14 / C5-D2-14	Top of Boring El	evation: 63 3 ff						Bit 5	ize/Ty	pa: 6°	Halle	w-Ster	n Auge	rl4" Mind Rotary
Surfa	ce Cor	ditions	: Grass	Coordinate Data	Source:						Hami	mar T	ype/N	ethod	l: Auto	matic	
ogge	d By:	A. Mohe	smmed	Depth to Ground	hvater initial: Not n	neas.	red				Hami	mer D	rop/V	eight	: 310 in.	7140	os.
ield	Log Re	wiewer	S. Wiesner	Depth to Ground	lwater Final: Not n	ORNS.	ned				Samp	pler T	ype(a)	: SPT	(2.0	D)/CAL	(3° O.D.)
cu (ft)	æ	c Log	The report and log key or logs. An aste and interpre to those stated explanation	e an integral part of the stations in this ing one o are and luminities.	ese Miljeor	Info						z ^e	1	instery	Sinon		Other Took
Eevation	Depth (Graphic Log		d Soil Description d Classification		Sample Type Symbol	Sample Number	Blows per 6 in.	No. (ASTII)	Pocket Pen (tsl)	Recovery% .	Vater Content 9	Dry Unit Weight	iquid Limit	Plasticity Index	Passing #230 Sieve (%)	Other Tests and Field Not
_			SILTY SAND (SM); fine to coarse send	brown, moist, m , traca gravel	edium dense.	Ž	1	7 9 5	_								
- 00	5-		LEAN GLAY With S fine sand	and (CL): brown	n, moist firm.	X	3b 3a	4 6 9		2.75	28					29	
76-						1	4	5 9 16								77	
	10-		SANDY LEAN CLA' very hard	Y (GL): reddish b	orown. moist,		5b 5a	11 27 40		≻4 .5	100			41	18		
70-						L	6	4 E 8								55	
	15-						7b 75	5 9 12			28	22	103				
65-		1	Poorly Graded GR/ (GP-GM): brown, m	AVEL With Silt A nist, dense	and Sand	I	н	14 22 18								12	
	20				Project Num	ber:	1389	27	Т	-	LOG	OF	BOI	SING	3 B-	2	Plate
	1				Date: 05-16				1			٠.				-	1 of 4
	1	KI	EINFEL	DEB	Entry By:	_			+							_	_
		~ L	Bright People, Righ		Checked By	; A I	Venan			1.11	MILE MILE	SOU		NON WH	BRID EATL	GE AND	A-4
					File Name:	_			1		MILE SOUTH OF WHEATLAND AGER COUNTY, CALIFORNIA						

		l _									Lieby	orakury	Dona	. \Box		
Elevation (ft)	(ij) ijidəq	Craphic Log	Field Soil Descripti and Classification	ion S	Sample Number	Blows per 6 in.	No. (ASTR)	Pocket Pen (tsf)	Redovery % .	Water Content %	Dry Unit Weight (pct)	Liquid Limit	Plasticify Index	Possing #200 Sieve (%)	Ot and	her Tests Field Not
-			Medium dense		96	9 18 11			22							
60-			Poorty Graded SAND With Sitt And (SF-SM): graylsh brown, wet, very gravel	d Gravel dense, coarse	9a 10	16 35 50								11		
-	25				11b 11a	15 5 0/5										
- 65			Brown, fine gravel		12	7 22 36										
-	30-				13	16 50										
50-	35-		Fins to coarse gravel, trace cobble Poorly Graded GRAVEL With Cob		14	32 44 37								14		
45	40-														Auger switch Rotary	refusal, to Mud
40-			Poorly Graded GRAVEL (GP): bro	Project Numbe	15 r. 138	HG7			LOG	OF	ВОІ	RING	3 B-	2		Plate
		KL	EINFELDER Bright People. Right Solutions.	Date: 65-19-14 Entry By: D. R Checked By: A File Name: 13	Mena		+	1.11	MILE	SOU	CIFIC SDIVIS IH OI JN IY	SION F WH	BRID EATL	GE AND		A-4

ë		9										xalury 	Data		
Elevation (ft)	Depth (ft)	Craphic Log	Field Soil Description	our significant of the state of	Sample Number	Blows per 6 in.	N., (ASTR)	Pooket Pen itsf)	Recovery %	Water Content %	Dry Unit Weight (pcf)	Liquid Limit	Plasticity Index	Presaling #200 Sieve (%)	Other Tests and Field Not
-	45-		Poorly Graded GRAVEL With Clay (CP-CC) reddish brown, wet, loose fine to charse gravel				_		-			_	_		
35-	50		ilis to ozasa glavei			40									
30-					16b 16a	12 22 12			50						
-	99-		Scattered cobbles												hola caving
25	63-														
25															
- 15-															
	/			Project Number	1389	07	T	-	OG	OF	BOI	RING	3 B-	2	Plate
	(KL	EINFELDER Bright People. Right Solutions.	Date: 65-48-44 Entry By: D. Ro Checked By: A			t	Va	JNIO	N PA	CIFIC SDIVIS	RAIL	ROA	D IGE	A-4



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NO.	DATE	REVISIONS

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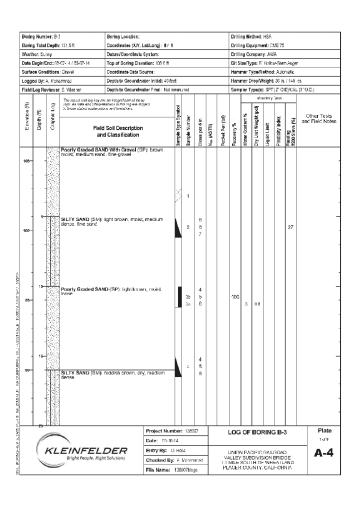
UNION PACIFIC RAILROAD Office of AVP Engineering Design/Construct

BRIDGE 126.77 VALLEY SUB

FACULTY:
6-SPAN PCB × 191' (SEG, B) AND 3 SPAN BM-BD × 207' (SEG, C) REPLACING 1-SPAN PCS × 12' (SEGMENT B) AND 10-SPAN DPG-OD × 352' (SEG, C)

SUBSURFACE INFORMATION (SHEET 2 OF 3)

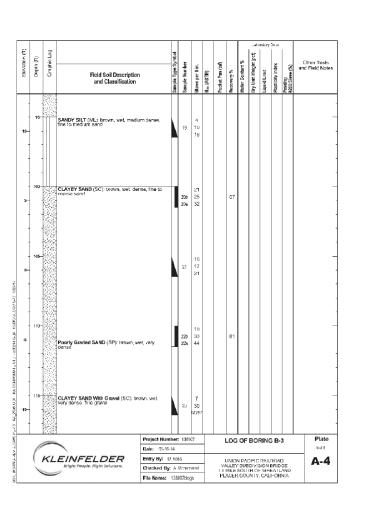
PROJECT ID:	56864	UP ENGINEER:	LATITUDE:
WORK ORDER:	11199	UP-MAB	38°59'58" N
DESIGN BY:		HDR-NPD	LONGITUDE:
CHECKED BY:		1	121°24'18" W
DRAWN BY:		SHEET NO.	C E NUMBER
CHECKED BY:		1	
SCALE:		17 of 18	1 119806

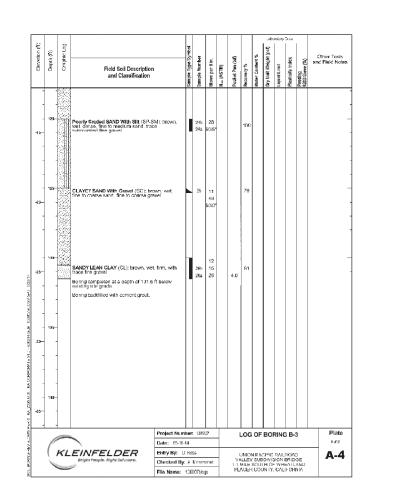


ے		p.					_							1 _	orakury	Dura		
Elevation (ft)	(μ) undeng	Graphic Log		and 0	oil Descripti Classification	n	Sample Type Symbol	Sample Number	Blows per 6 in.	N _{ex} (ASTR)	Packet Pen (tsf)	Redovery %	Water Content %	Dry Unit Weight (pcf)	Liquid Limit	Plasticity Index	Possing #200 Sieve (%)	Other Tests and Field No
89					nt brown, mo (SP): light br medium sai	ist, fine sand rown, molist, ad	ı	bb 5a	10 17			44						
80	25-		fine sand	ID (SM): bro	wn. maist. n	nedium dense	· \	6	8 10 8								29	
75-	30		d	Sand (ML): and	reddish brov	vn. molist, very	' 	76 7a	7 12 18			61	25	96				
70	35	-					l	å	5- 7 9						30	4		
65	40-		SILTY SAN densa, fine	ID (SM): rec sand, frace	idish brown. a cobbles, tra	wet medium ace clay		5h 95	19 16 14			28						
	(KL	EINF Bright Pe	FELD ople. Right S		Project N Date: 05 Entry By: Checked File Name	-16-14 D. Ros By: A	is Venan	mad		VA	UNIO ALLEY MILE	N PAG	CIFIC SDIVIC	RING RAIL SION F WH , CAL	ROAI BRID	D GE AND	Plat 2 of 9

22		6											andury I	Dua		
Elevation (ft)	Depth (ft)	Craphic Log	Field Soil Descriptio and Classification	n	Sample Type Symbol	Sample Number	Blows per 6 in.	N., (ASTRI)	Packet Penitsh	Recovery %	Maler Content %	Dry Unit Weight (pcf)	iquid Limit	Plasticify Index	Possing #200 Sieve (%)	Other Test and Field No
60-	45					10	11 18 24		_	-		-	-		31	
hb-	50					11b 11a	9 15 19			28	23	103				
5D	59-		Poorly Graded SAND With Clay An (SE-SC) protein, wart dense, no plan cranse sand, powise gravel	d Gravel sticity, fine to		12	30 50									
45	e o -				•		60/3°			0						
40-	85		Poorly Graded GRAVEL (GP): brow denne, subway dar firm gravet	n, wet, very	•	13	50/31			33						
				Project Nur Date: 65-16		: 1389	G7	<u> </u>		_OG	OF	BOI	RING	3 B-	3	Plate
	(KL	EINFELDER Bright People. Right Solutions.	Entry By: Checked By	D. Ho		nrad		1.11	ALLEY MILE	SOU	CIFIC SDIVIS	NOIS	BRID	GE AND	A-4

ايد	Depth (ft)												estory Duta			
Elevation (fl.)		Craphic Log	Field Soil Description and Classification	n	nomice additional	Sample Number	Blows per 6 in.	Na (ASTR)	Pooket Pan (tst)	Redovery %	Water Content %	Dry Unit Weight (pct)	Liquid Limit	Plasticity Index	Paseing #200 Sieve (%)	Other Tests and Field Not
15	70-		LEAN CLAY (CL); brown, well, firm			14b 14a	58 30 25			44					81	
30-			Fine to medium sand, with trace fine	gravel		15	19 18 29		4.25	17	38		40	24		
25-	60-		Reddish brown			18b 16a	10 12 15		2.25	67						
20-	ε ς		SILTY SAND (Slef) reddish brown, w dense, fine sand	vet. medium	\	17	6 10 12									
15-	90-		Poorty Graded SAND (SP): reddish i dense, fire to medium serid	brown, wet,		186 18a	8 16 27			61						
	-			Project Number		13890	7	Τ		.oc	OF	вог	RINC	B-	3	Plate
	1		EINIEEL DEC	Date: 05-16-14 Entry By: D.F				+								248
	1.	^ _	EINFELDER Bright People. Right Solutions.	Checked By: /			rad	1	V/	LLEY		OFIC DIVIS	HONE	BRID	GE	A-4





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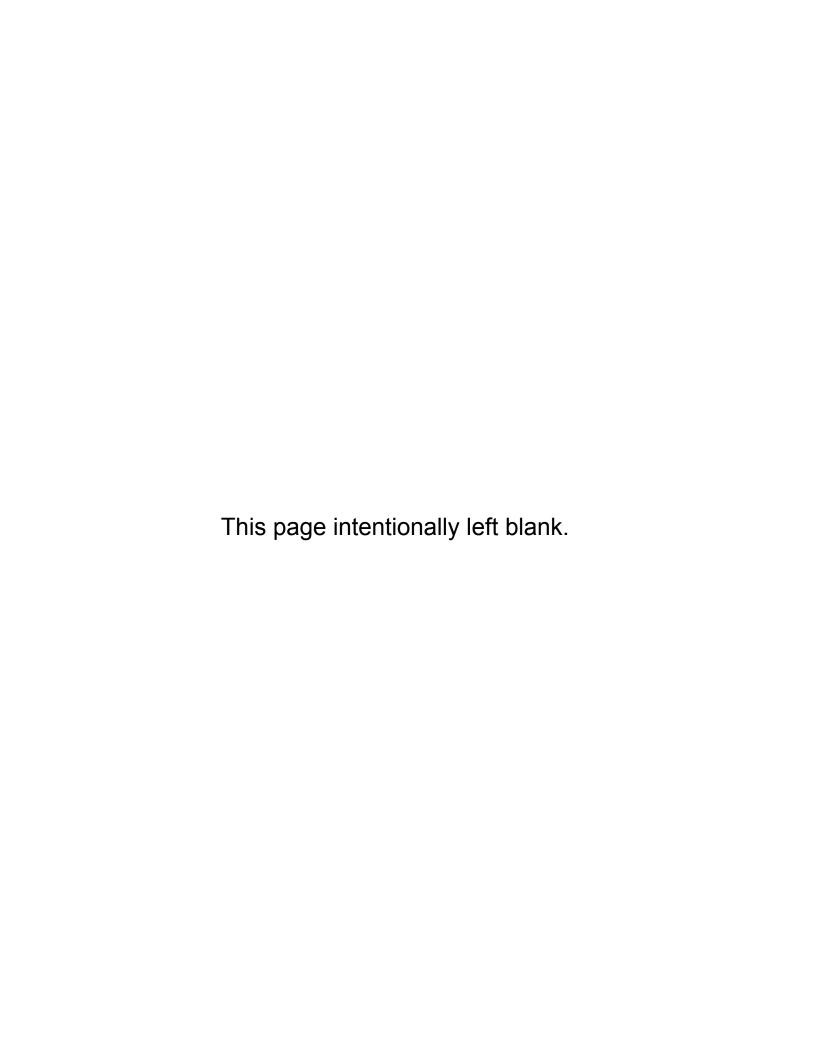
UNION PACIFIC RAILROAD Office of AVP Engineering Design/Construct

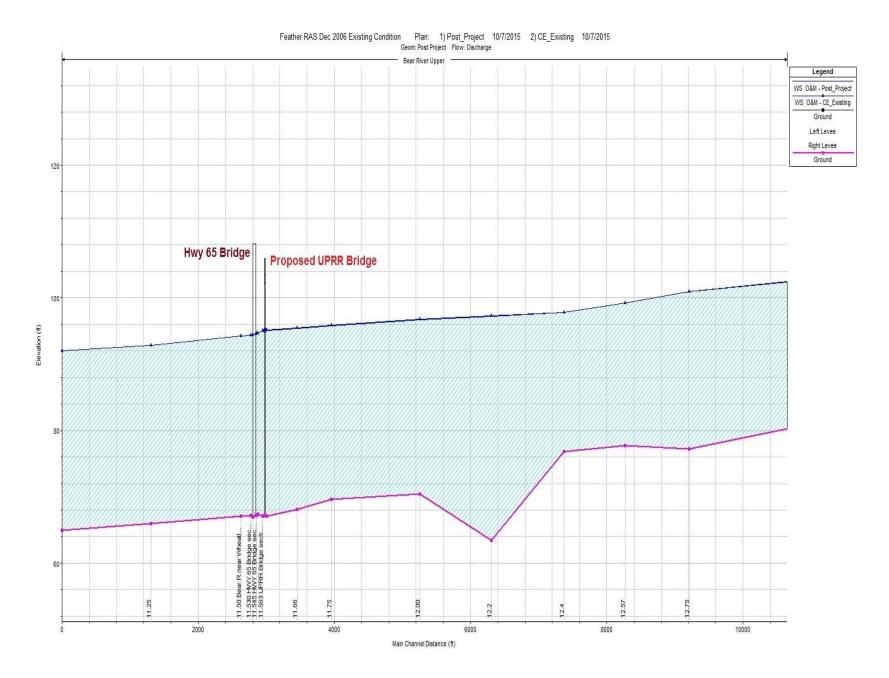
BRIDGE 126.77 VALLEY SUI

FACLITY 6-SPAN PCB x 191' (SEG. B) AND 3 SPAN BM-BD x 207' (SEG. C) REPLACING 1-SPAN PCS x 12' (SEGMENT B) AND 10-SPAN DPG-OD x 352' (SEG. C)

SUBSURFACE INFORMATION (SHEET 3 OF 3)

PROJECT ID:		UP ENGINEER:	LATITUDE:
WORK ORDER:	11199	UP-MAB	38°59'58" N
DESIGN BY:		HDR-NPD	LONGITUDE:
CHECKED BY:			121°24'18" W
ORAWN BY:		SHEET NO.	C E NUMBE
CHECKED BY:			
SCALE:		18 of 18	119806





ATTACHMENT D – HYDRAULIC PROFILE INFORMATION

ile Op	otions St	d. Tables	User Tables	Location	ns Help								
			Н	EC-RAS F	River: Bear	River Rea	ch: Upper	Profile: 0N	4				Reload Da
Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Jpper	12.57	O&M	Post_Project	30000.00	77.70	99.19	90.87	100.40	0.001860	9.02	3943.76	534.38	0.42
Jpper	12.57	O&M	CE_Existing	30000.00	77.70	99.22	90.87	100.42		8.99	3962.47	538.40	0.42
Jpper	12.4 12.4	0&M 0&M	Post_Project CE_Existing	30000.00	76.83 76.83	97.77 97.82	90.20 90.20	98.80 98.85	0.001599 0.001574	8.26 8.22	4095.65 4131.75	639.32 642.99	0.40 0.40
Jpper	12.4	UKIM	CE_EXISTING	30000.00	70.03	37.02	30.20	30.00	0.001374	0.22	4131.73	642.33	0.40
Jpper	12.2	0&M	Post_Project	30000.00	63.42	97.19	83.29	97.75	0.000534	6.25	5699.29	442.72	0.24
Jpper	12.2	O&M	CE_Existing	30000.00	63.42	97.25	83.29	97.80	0.000528	6.22	5727.42	450.79	0.24
Jpper	12.00	O&M	Post_Project	30000.00	70.48	96.68	87.18	97.14	0.000564	5.77	6754.05	657.83	0.25
Jpper Jpper	12.00	O&M	CE_Existing	30000.00	70.48	96.76	87.18	97.20	0.000554	5.74	6801.74	659.33	0.23
					-							-	
Jpper	11.75	O&M	Post_Project	30000.00	69.61	95.74	86.84	96.28	0.000752	6.33	5753.16	567.61	0.28
Jpper	11.75	O&M	CE_Existing	30000.00	69.61	95.83	86.84	96.37	0.000734	6.28	5806.61	572.09	0.28
Jpper	11.66	O&M	Post_Project	30000.00	68.11	95.40	85.31	95.94	0.000625	5.90	5527.16	651.20	0.26
Jpper	11.66	0&M	CE_Existing	30000.00	68.11	95.51	85.31	96.03	0.000610	5.86	5593.31	652.66	0.25
Upper	11.574 11.574	0&M 0&M	Post_Project CE_Existing	30000.00	67.06 67.06	95.07 95.18	84.57 84.57	95.64 95.74	0.000686	6.13 6.08	5318.43 5383.58	589.40 591.25	0.27 0.28
Upper	11.574	UKIM	CE_Existing	30000.00	67.06	33.10	04.37	33.74	0.000003	6.00	0303.00	331.23	0.20
Upper	11.569	O&M	Post_Project	30000.00	67.23	95.15	82.47	95.59	0.000459	5.38	5811.96	462.93	0.22
Upper	11.569	O&M	CE_Existing	30000.00	67.23	95.25	82.47	95.69	0.000455	5.38	5732.24	468.67	0.22
Upper	11.568	IIDDD	Bridge	Bridge									
oppei	11.300	OFKK	Diluge	blidge	7			7 1		1		7	
Upper	11.567	O&M	Post_Project	30000.00	67.23	95.06	82.47	95.51	0.000732	5.41	5771.28	452.34	0.23
Upper	11.567	O&M	CE_Existing	30000.00	67.23	95.05	82.47	95.51	0.000740	5.44	5646.43	445.60	0.23
Upper	11.563	O&M	Post_Project	30000.00	67.06	95.05	82.58	95.49	0.000745	5.36	5810.46	496.42	0.23
Upper	11.563	O&M	CE_Existing	30000.00	67.06	95.05	82.58	95.49	0.000745	5.36	5810.46	496.42	0.23
Upper	11.549	O&M	Post_Project	30000.00	67.36	94.63	84.12	95.39	0.001242	7.03	4572.23	430.92	0.29
Jpper	11.549	O&M	CE_Existing	30000.00	67.36	94.63	84.12	95.39	0.001242	7.03	4572.23	430.92	0.29
Upper	11.545	O&M	Post Project	30000.00	67.21	94.63	84.02	95.35	0.001312	6.81	4610.03	449.88	0.30
Upper	11.545	0&M	CE_Existing	30000.00	67.21	94.63	84.02	95.35		6.81	4610.03	449.88	0.30
Upper	11.540			Bridge									
Jpper	11.535	O&M	Post_Project	30000.00	67.00	94.50	83.96	95.22	0.001231	6.85	4693.90	471.09	0.29
Upper	11.535	O&M	CE_Existing	30000.00	67.00	94.50	83.96	95.22		6.85	4693.90		0.29
								7					
Jpper Jpper	11.530 11.530	0&M 0&M	Post_Project CE Existing	30000.00	67.21 67.21	94.36 94.36	84.73 84.73		0.001423 0.001423	7.31 7.31	4560.37 4560.37	556.50 556.50	0.31 0.31
oppei	11.550	UKIM	CE_Existing	30000.00	67.21	34.30	04.73	33.16	0.001423	7.31	4360.37	336.30	0.31
Jpper	11.50	O&M	Post_Project	30000.00	67.06	94.22	82.88	94.94	0.001437	6.83	4578.59	351.83	0.31
Jpper	11.50	O&M	CE_Existing	30000.00	67.06	94.22	82.88	94.94	0.001437	6.83	4578.59	351.83	0.31
	11.25	OSM.	Post_Project	20000.00	CE 00	02.01	92.52	00 DE	n nnnaon	0.00	6060 JU	809.29	0.26
Innor	11.20	0&M		30000.00	65.98	92.81 92.81	83.62 83.62	93.35	0.000980	6.88 6.88	6869.29 6869.29		0.26
Jpper Jpper	11.25	0&M	CE Existing	30000.00	65.98	37.80	0.3 07	(3.5.50)			P2 E404	809.29	11.75