

**Meeting of the Central Valley Flood Protection Board
October 28, 2016**

Permit Staff Report

**Tulare County
Road D129 Bridge Replacement, Tulare County**

1.0 – ITEM

Consider approval of Permit No. 19122. (Attachment B)

2.0 – APPLICANT

Tulare County. (County)

3.0 – PROJECT LOCATION

The project is located where Road D129 (Roller Drive) crosses Sand Creek in Orange Cove, 9.3 miles east of the City of Reedley.
(Sand Creek, Tulare County, see Attachment A)

4.0 – PROJECT DESCRIPTION

The County proposes to remove and replace the existing one lane bridge crossing on Road D129 over Sand Creek (Bridge No. 46C-0187) with a two lane concrete slab bridge. The project includes grading to restore natural channel contours by adding approximately 488 cubic yards of rock slope protection (RSP) and 225 cubic yards of native soil backfill (see Attachment C).

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
- § 11(d), Waiver of Standards
- § 112, Streams Regulated and Nonpermissible Work Periods

- § 121 Erosion Control
- § 128, Bridges

6.0 – PROJECT ANALYSIS

Sand Creek is listed as a regulated stream in CCR, Title 23, Division 1, Article 8, Section 112, Table 8.1. There are no levees along Sand Creek in the project area. The proposed one span bridge will be 70 feet long and 34.8 feet wide. The RSP will be placed approximately 10 feet upstream and downstream from the bridge abutments for erosion protection.

6.1 – Hydraulic Analysis

The design flow discharge for Sand Creek was determined to be 4,553 cubic feet per second (cfs). HEC-RAS, a one dimensional hydraulic model developed by the USACE, was used to analyze the potential hydraulic impacts due to the project. The hydraulic analysis shows that the lowest point of the existing bridge is submerged approximately 0.56 feet below the design water surface elevation (DWSE). The lowest point of the new bridge will be approximately 0.19 feet below the DWSE, a decrease of more than 0.37 feet. Furthermore the hydraulic analysis shows a slight increase of 0.05 feet in the DWSE and 1.58 feet per second decrease in stream velocity, an overall improvement to the hydraulic conditions of Sand Creek (see Attachment D).

6.2 – Geotechnical Analysis

There are no levees associated with this project; therefore, a geotechnical analysis was not required. However, a geotechnical analysis was conducted to test the soils at this location. The geotechnical analysis is to provide earth materials criteria for use in design of the proposed bridge foundation and approach road. Based on boring and laboratory test data, the top of clay and silty sand layers are not scour proof. Accordingly, RSP and native soil backfill were added to protect the bridge abutments and channel slope.

6.3 – Waiver of Title 23, Section 11(d) Standard

Sand Creek is located within an Adopted Plan of Flood Control (regulated stream). Title 23, Section 128 (a)(10)(A) requires the bottom members of a new bridge to be at least two (2) feet above the DWSE (minor stream).

The hydraulic analysis indicates that the flood inundation area upstream of the bridge is approximately 320 feet to 730 feet in width and 1.7 feet to 4.2 feet in depth. This inundation area floods the approach road to the bridge (Roller Drive) and adjacent agricultural orchards making the bridge inaccessible. Requiring the lowest part of the bridge to be two (2) feet above the DWSE will require additional road embankment that will increase hydraulic blockage resulting in larger inundation area and longer inundation period.

Based upon the above, Board staff, in consultation with legal counsel, has recommended, and the Executive Officer has agreed, that there is no legitimate reason for the application of the standard (Section 128 (a)(10)(A)) that requires the lowest members of the proposed bridge to be at least two feet above DWSE and thus, has waived the standard in this particular instance pursuant to Title 23, Section 11(d). The approved waiver will only apply to the project as shown in the approved plans and specifications and would not apply to any future addenda or requested construction variances without further consultation, review, and concurrence by Board staff, the Board's legal counsel, and the Executive Officer.

7.0 – AGENCY COMMENTS AND ENDORSEMENTS

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

- There is no Local Maintaining Agency in the area for the proposed bridge replacement project.
- The U.S. Army Corps of Engineers 33 U.S.C. 408 decision letter has been received for this application. The USACE Sacramento District Engineer has no comments or recommendations regarding flood control because the proposed work does not affect a federally constructed project. 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) determination:

The Board acting as the CEQA lead agency, has determined the project is exempt from CEQA under a Class 2 Categorical Exemption (CEQA Guidelines Section 15302) covering replacement of existing structures.

The documents and other materials which constitute the record of the Board's proceedings in this matter are in the custody of the Executive Officer, Central Valley Flood Protection Board, 3310 El Camino Ave., Suite 170, Sacramento, California 95821.

9.0 – CALIFORNIA WATER CODE SECTION 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 has considered all the evidence presented in this matter, including the application for Permit No. 19122, and all supporting hydraulic and other technical documentation provided by the County.

2. The best available science that 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 applicable CCR Title 23 standards have been applied to the review of this permit. On the issue of hydraulic impacts, the County developed and applied a HEC-RAS hydraulic model. This model is considered one of the best available scientific tools for the purpose of evaluating WSE changes due to the proposed project.

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

The proposed bridge will have no effects to the SPFC as the project is located in Tulare County where there are no SPFC facilities. The closest SPFC facility is the Bifurcation Structure on the San Joaquin River which is more than 50 miles to the northwest.

Based upon the above, Board staff, in consultation with legal counsel, has recommended, and the Executive Officer has agreed that there is no legitimate reason for the application of Title 23, Section 128 (a)(10)(A) that requires the lowest members of the proposed bridge to be at least two feet above DWSE and

thus, has waived the standard in this particular instance pursuant to Title 23, Section 11(d).

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 has a similar configuration as the existing bridge and does not change the current hydraulic conditions significantly. Replacing the existing bridge with a new structure will improve the hydraulic conditions of Sand Creek. There is no future development planned in this rural agricultural area. Therefore, there are no expected adverse effects to the proposed project from reasonable projected future events.

10.0 – STAFF RECOMMENDATION

Board staff recommends that the Board:

Find:

- The project be categorically exempt from CEQA; and

Approve:

- Encroachment Permit No. 19122 in substantially the form provided; and

Direct:

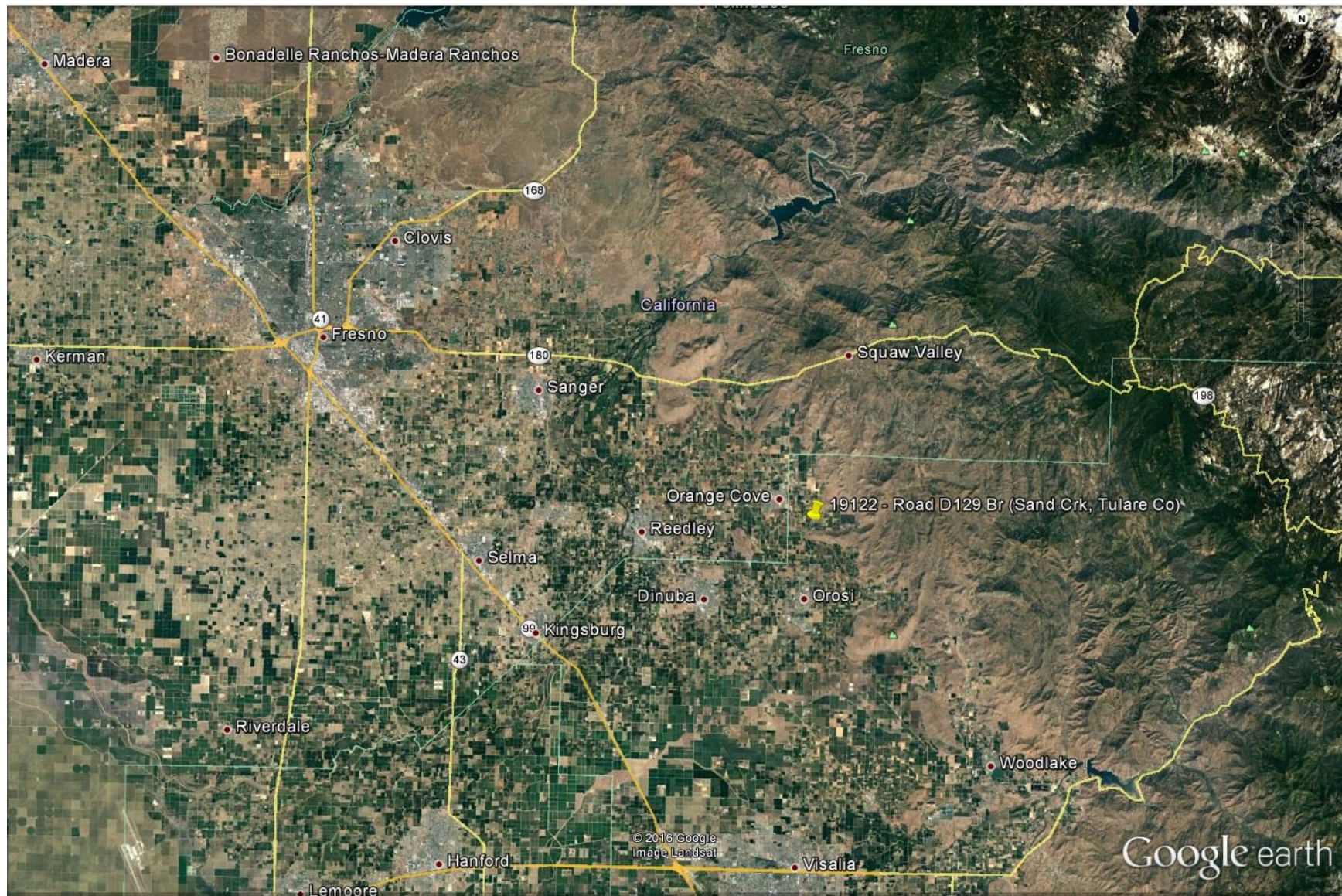
- The Executive Officer to take the necessary actions to execute the permit and file a Notice of Exemption pursuant to CEQA with the State Clearinghouse.

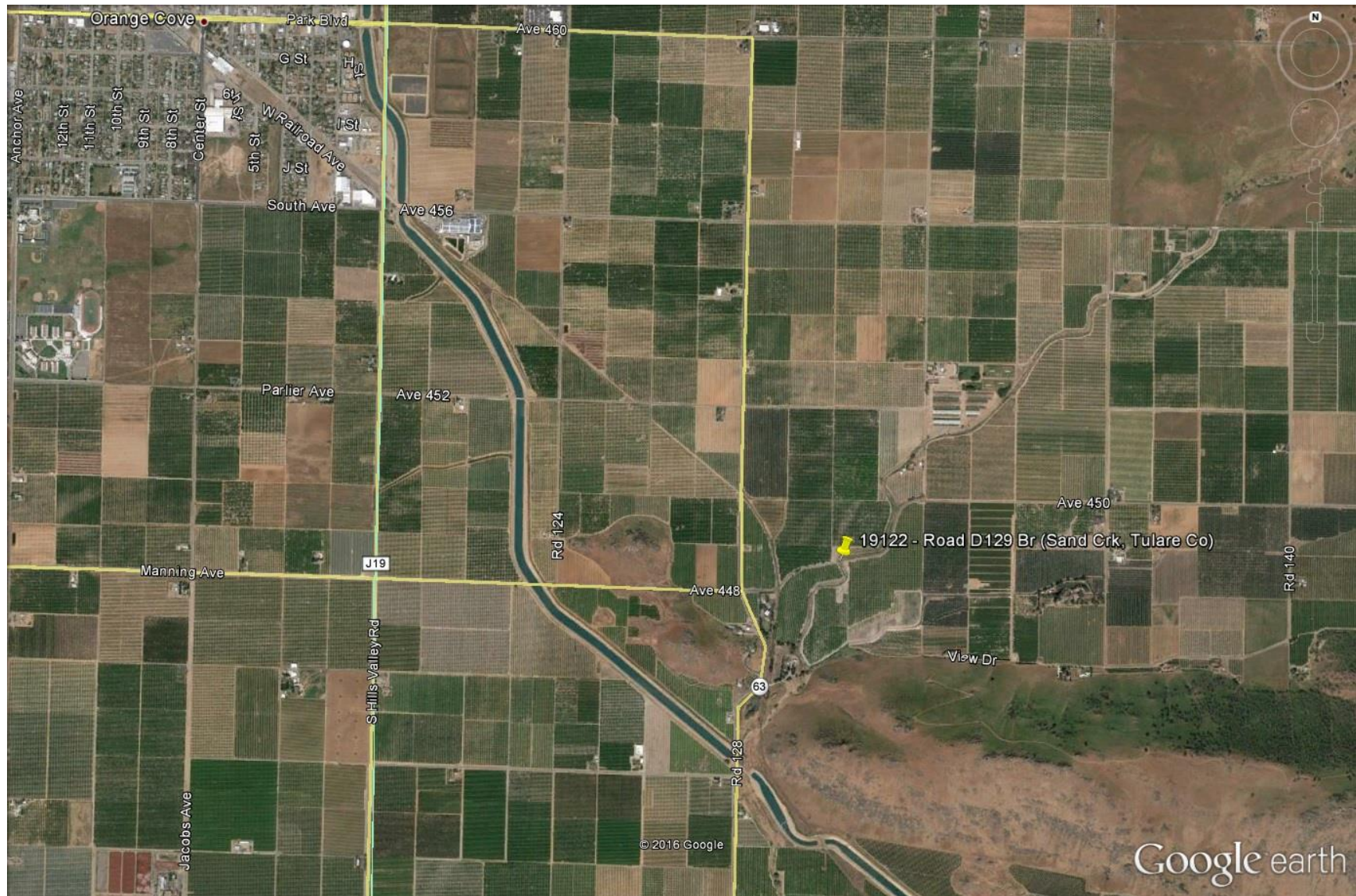
11.0 – LIST OF ATTACHMENTS

- A. Project Vicinity and Location Maps
- B. Draft Permit No. 19122
- C. Project Drawings
- D. Hydraulic Profile Information

Prepared by:	Sungho Lee, PE, Engineer, Water Resources, Permitting Section
Document Review:	James Herota, Senior Environmental Scientist Gary Lemon, PE, Senior Engineer, Permitting Section Mitra Emami, PE, Acting Chief Engineer
Legal Review:	Kanwarjit Dua, General Counsel

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DRAFT

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

PERMIT NO. 19122 BD

This Permit is issued to:

County of Tulare
5961 South Mooney Boulevard
Visalia, California 93277

To remove and replace the existing one lane bridge crossing on Road D129 (Roller Drive) over Sand Creek (Bridge No. 46C-0187) with a two lane concrete slab bridge. The project includes grading to restore natural channel contours by adding approximately 488 cubic yards of rock slope protection and 225 cubic yards of native soil backfill.

The project is located where Road D129 (Roller Drive) crosses Sand Creek in Orange Cove, 9.3 miles east of the City of Reedley, at 36.60370°N 119.28210°W, Sand Creek, Tulare County, CA.

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. 19122 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, 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 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 October 4, 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.

SEVENTEEN: Permittee shall pay to the Board, an inspection fee(s) 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 Board.

EIGHTEEN: The Board reserves the right to add additional, or modify existing, conditions to any subsequent permit issued when a change in ownership and/or maintenance responsibility of the work authorized under this permit.

NINETEEN: The permittee shall be responsible for repair of any damages to the channel, banks, floodway, or any other flood control facilities due to construction, operation, or maintenance of the proposed project.

PRE-CONSTRUCTION

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

CONSTRUCTION

TWENTY-ONE: All work approved by this permit shall be in accordance with the submitted drawings dated October 27, 2015 and specifications except as modified by special permit conditions herein. No work, other than that approved by this permit, shall be done in the project area without prior approval of the Board.

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

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

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

TWENTY-FIVE: Piers 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-SIX: Rock slope revetment shall be uniformly placed and properly transitioned into the bank, levee slope in a manner which avoids segregation.

TWENTY-SEVEN: The recommended minimum thickness of revetment, measured perpendicular to

the bank is 18 inches below the usual water surface and 12 inches above the usual water surface.

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

TWENTY-NINE: Backfill material for excavations 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 and above optimum moisture content.

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

THIRTY-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.

THIRTY-TWO: In the event that scour of channel bed injurious to the Sand Creek floodway occurs as a result of the project, the permittee shall repair the eroded area and propose measures, to be approved by the Board, to prevent further erosion.

OPERATIONS AND MAINTENANCE

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

THIRTY-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.

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

PROJECT ABANDONMENT, CHANGE IN PLAN OF FLOOD CONTROL

THIRTY-SIX: If the project works, 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-SEVEN: The permittee may be required, at the permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted project works if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with implementation of the Central Valley Flood Protection Plan or other future flood control plan or project, or if damaged by any cause. If the permittee does not comply, the Board may perform this work at the permittee's expense.

END OF CONDITIONS



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

Flood Protection and Navigation Section (19122)

OCT 04 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 permit application number 19122 submitted by Tulare County. This project includes removing and replacing an existing one lane bridge crossing over Sand Creek (Bridge No. 46C-0187) with a new two lane concrete slab bridge. The project includes grading to restore natural channel contours by adding approximately 290 cubic yards of rock slope protection and 305 cubic yards of native soil backfill. The project is located where Roller Drive crosses Sand Creek in Orange Cove, 9.3 miles east of the City of Reedley, at 36.60370°N 119.28210°W NAD83, Tulare County, CA.

The District Engineer has no comments or recommendations regarding flood control because the proposed work does not affect a federally constructed project.

A Section 10 and/or Section 404 permit is required. Please advise the applicant to contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Division, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250.

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,

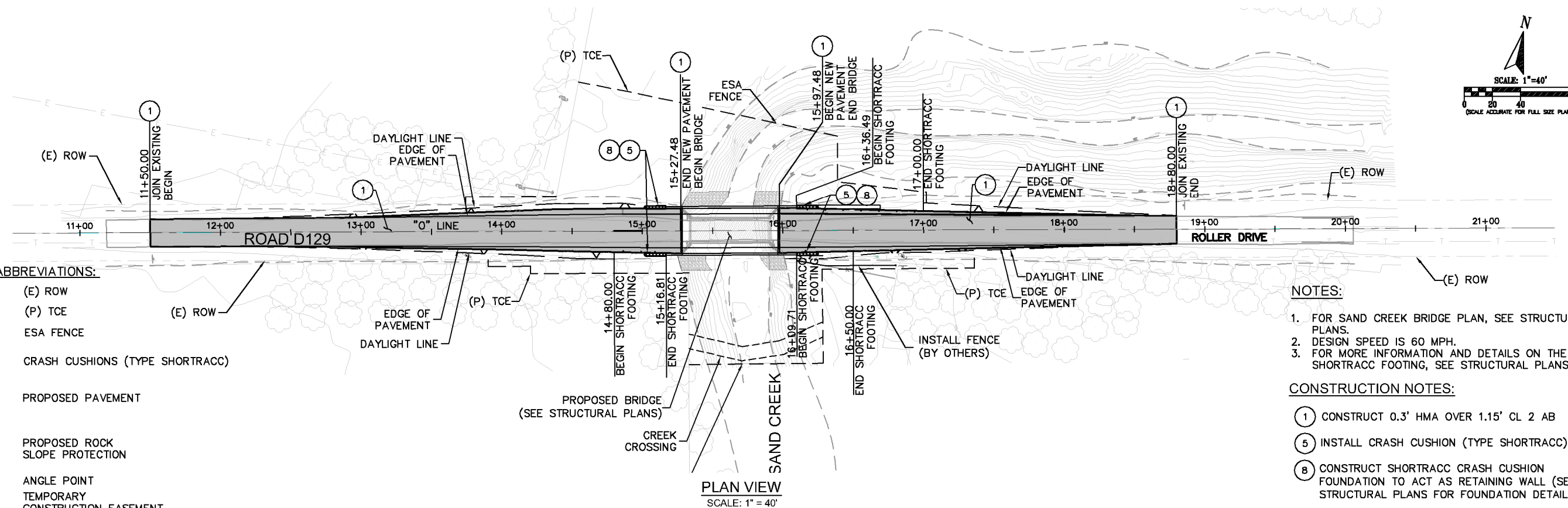
Juan M. Gonzalez
for Ryan Larson, P.E.

Chief, Flood Protection and Navigation Section

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LEGEND & ABBREVIATIONS:

- (E) ROW
- (P) TCE
- ESA FENCE
- CRASH CUSHIONS (TYPE SHORTRACC)
- PROPOSED PAVEMENT
- PROPOSED ROCK SLOPE PROTECTION
- AP
- TCE
- ANGLE POINT
- TEMPORARY CONSTRUCTION EASEMENT



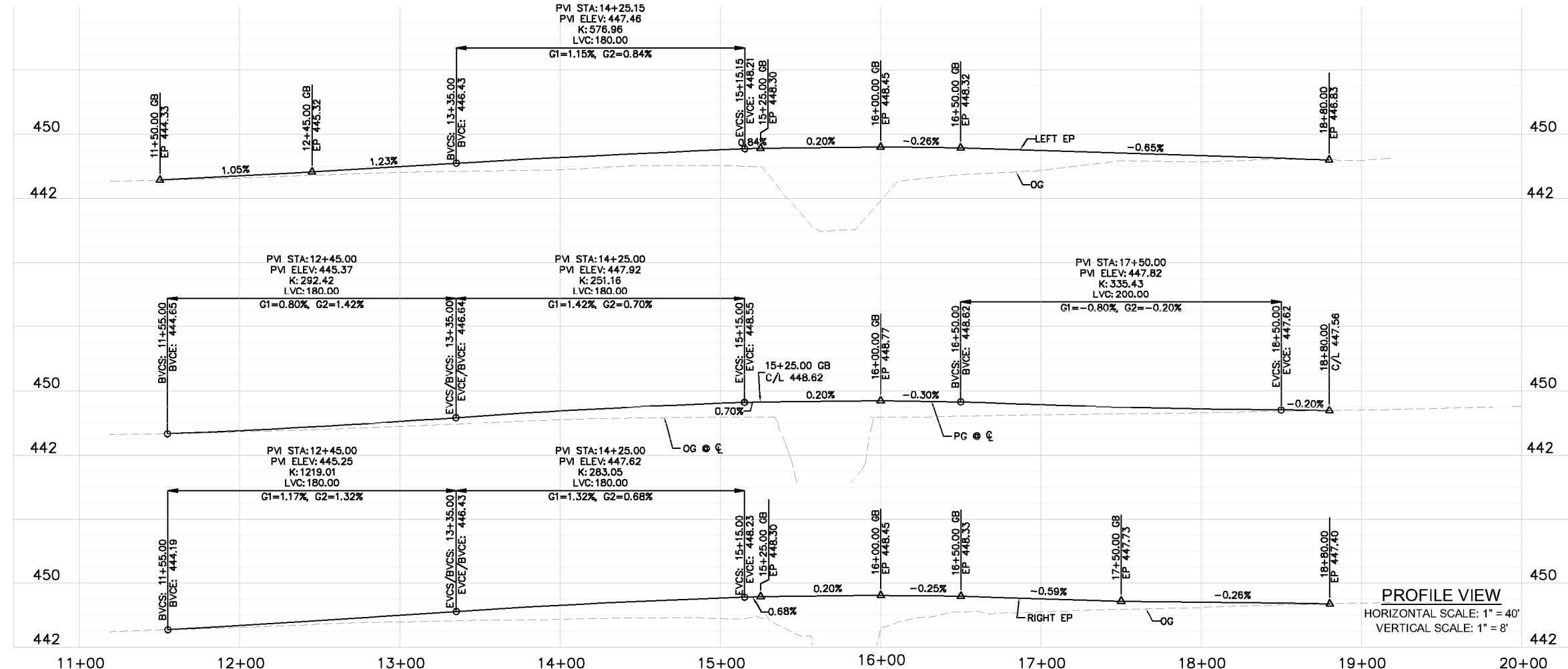
PLAN VIEW
SCALE: 1" = 40'

NOTES:

- FOR SAND CREEK BRIDGE PLAN, SEE STRUCTURAL PLANS.
- DESIGN SPEED IS 60 MPH.
- FOR MORE INFORMATION AND DETAILS ON THE SHORTRACC FOOTING, SEE STRUCTURAL PLANS.

CONSTRUCTION NOTES:

- CONSTRUCT 0.3' HMA OVER 1.15' CL 2 AB
- INSTALL CRASH CUSHION (TYPE SHORTRACC)
- CONSTRUCT SHORTRACC CRASH CUSHION FOUNDATION TO ACT AS RETAINING WALL (SEE STRUCTURAL PLANS FOR FOUNDATION DETAIL)



PROFILE VIEW
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 8'



REVISIONS	
NO.	DESCRIPTION

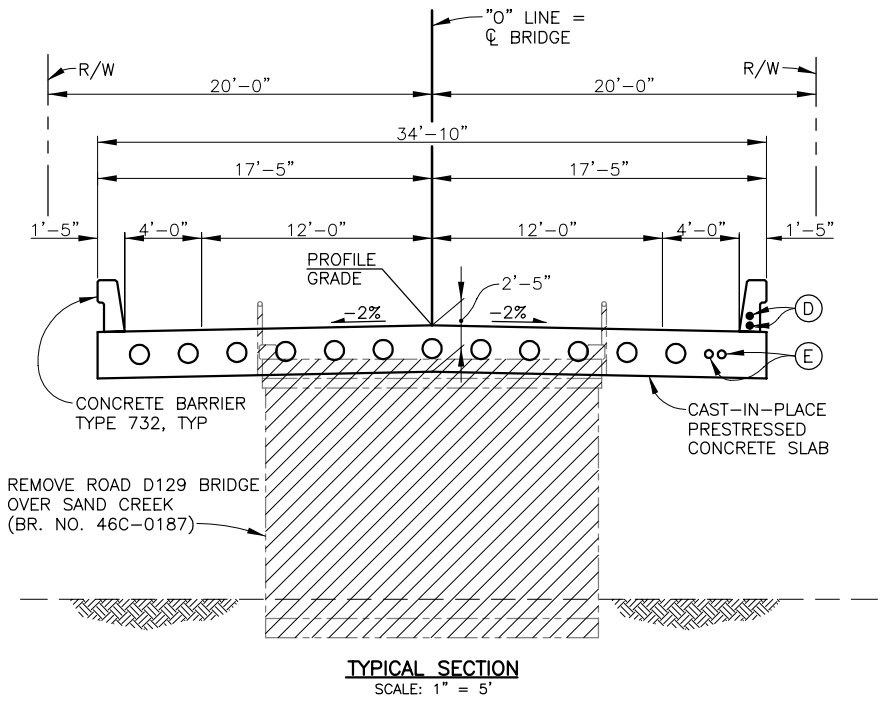
TULARE COUNTY
RESOURCE MANAGEMENT
AGENCY
5961 SOUTH MOONEY BLVD.
VISALIA, CA 93277
(559) 624-7000
WWW.TULARECOUNTY.CA.GOV/RMA



PLANS PREPARED BY:
BKF
BKF ENGINEERS
1720 WILLOW RD. SUITE 250
PLEASANTON, CA 94588

PLAN AND PROFILE
**ROAD D129 BRIDGE (REPLACE)
OVER SAND CREEK**
TULARE COUNTY





SCALE	1"=40'
DIVISION	-
JOB NO.	20141004-20
DESIGNED	SA
DRAWN	MS
CHECKED	CR
FILE	L-1.DWG
DATE	2/17/16
SHEET No.	L-1

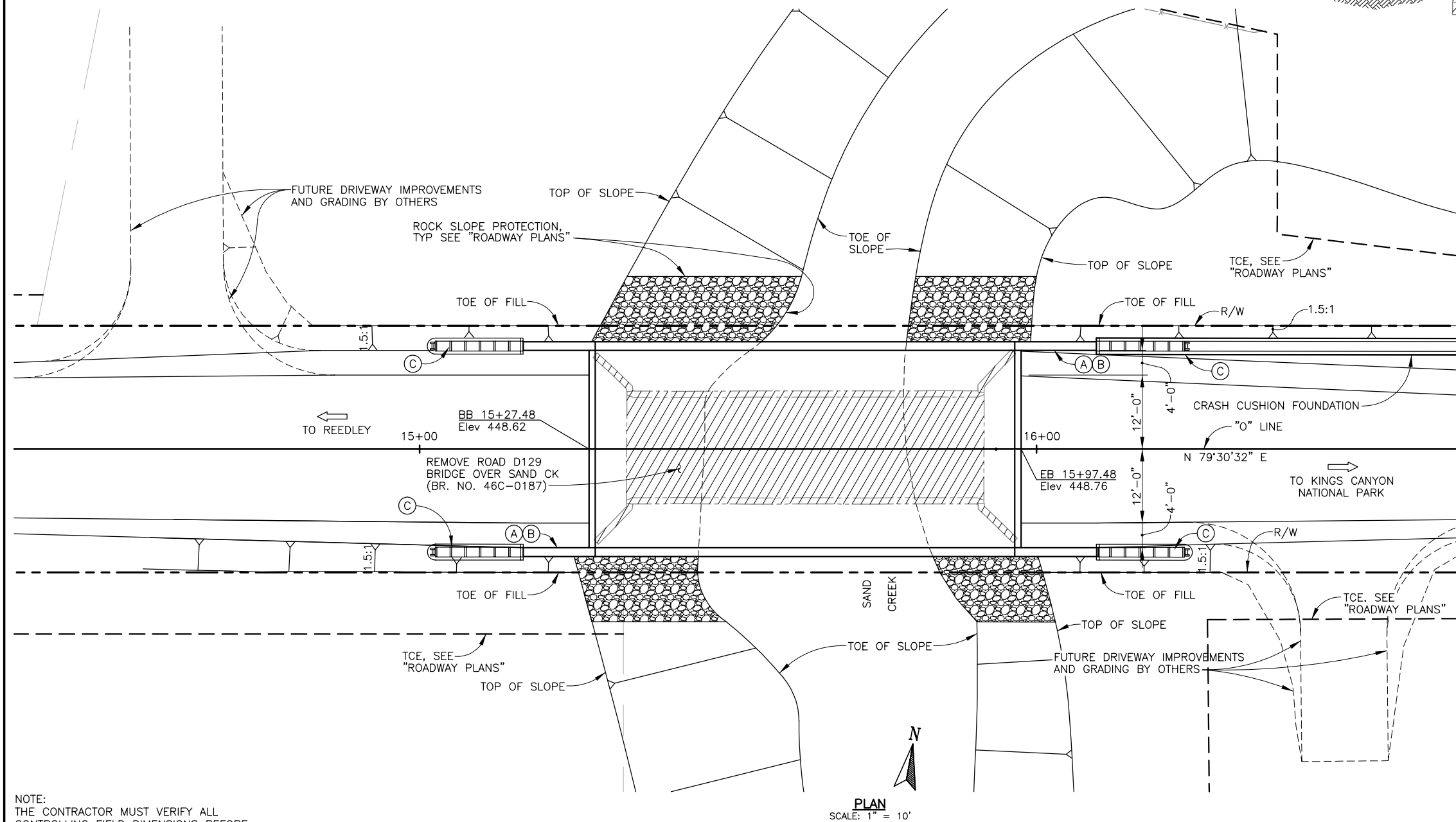


NOTES:

- (A) YEAR OF COMPLETION DATE PLATE
(FURNISHED BY TULARE COUNTY)
 - (B) PAINT "BRIDGE No. XXC-XXXX"
 - (C) CRASH CUSHION (TYPE SHORTRACC), SEE "ROADWAY PLANS"
AND "CRASH CUSHION FOUNDATION DETAILS" SHEET
 - (D) 2" DIA TELEPHONE CONDUIT, TOTAL 2
 - (E) 5" DIA FUTURE UTILITY CASING, TOTAL 2
1. FOR INDEX TO PLANS, QUANTITIES, AND GENERAL NOTES,
SEE "DECK CONTOURS" SHEET.
 2. FOR PILE DATA TABLE, SEE "FOUNDATION PLAN" SHEET.
 3. FOR BENCH MARK & DATUM, SEE "FOUNDATION PLAN"
SHEET.
 4. FOR SCOUR DATA TABLE, SEE "FOUNDATION PLAN" SHEET.
 5. REMOVE ALL EXISTING BRIDGE STRUCTURE TO
ELEVATION 433 OR BELOW, (1 FOOT BELOW THALWEG)

LEGEND:

-  INDICATES BRIDGE REMOVAL
 INDICATES EXISTING STRUCTURE
 INDICATES TRAFFIC DIRECTION
 INDICATES ROCK SLOPE PROTECTION,
 SEE "ROADWAY PLANS"



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

NOT FOR CONSTRUCTION 5/31/16

[illegible]

**TULARE COUNTY
RESOURCE MANAGEMENT
AGENCY**
5961 SOUTH MOONEY BLVD.
VISALIA, CA 93277
(559) 624-7000
WWW.TULARECOUNTY.CA.GOV/RMA



**BIGGS CAMDUSA
ASSOCIATES INC**
STRUCTURAL ENGINEERS

5250 N. Palm Avenue, Suite 211
Fresno, California 93704
559-449-8686

BER

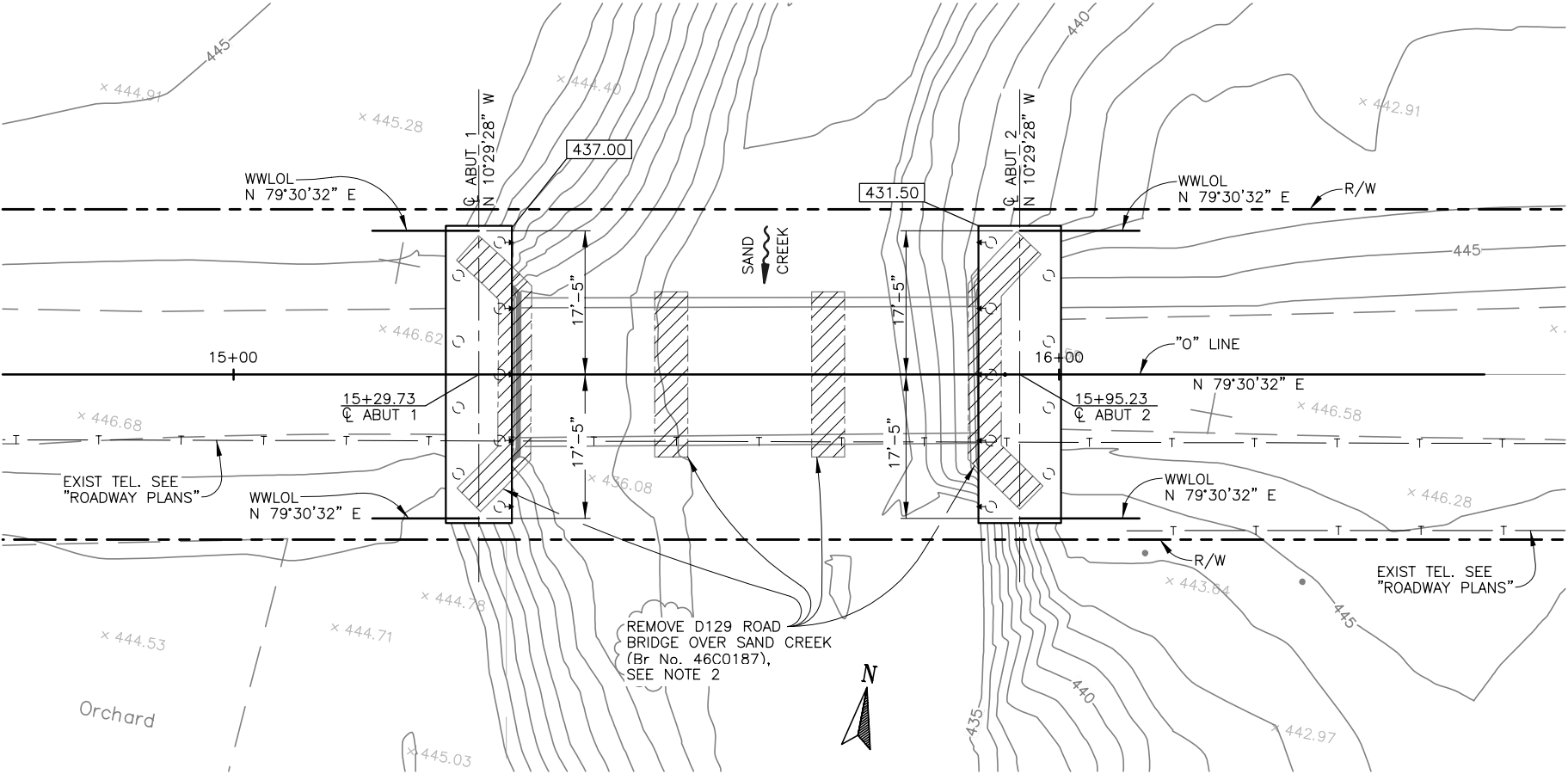
GENERAL PLAN
ROAD D129 BRIDGE (REPLACE)
OVER SAND CREEK
TULARE COUNTY

SCALE	AS SHOWN
DIVISION	—
JOB NO.	2014290B
DESIGNED	FRA
DRAWN	SMH
CHECKED	—
FILE	14014—1S001.DWG
DATE	03/09/16
SHEET No.	

S-1

11 OF 23

FOR ACCURATE RIGHT-OF-WAY DATA,
CONTACT THE TULARE COUNTY
SURVEYOR'S OFFICE



FOUNDATION PLAN
SCALE: 1" = 10'

LEGEND:

- INDICATES BRIDGE REMOVAL
- INDICATES BOTTOM OF ABUTMENT FOOTING ELEVATION
- INDICATES SPOT ELEVATION
- INDICATES BATTERED PILE

NOTES:

- UTILITIES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY, VERIFY WITH "ROADWAY PLANS"
- REMOVE ALL EXISTING BRIDGE STRUCTURE TO ELEVATION 433 OR BELOW, (1 FOOT BELOW THALWEG)

HYDROLOGIC SUMMARY
(PROVIDED BY AVILA AND ASSOCIATES - 02/10/2016)

	DESIGN FLOOD	BASE FLOOD	OVERTOPPING FLOOD
DRAINAGE AREA: 34.2 SQUARE MILES			
FREQUENCY (YEARS)	50	100	<50
DISCHARGE (CUBIC FEET PER SECOND)	3780	4550	3000
WATER SURFACE (ELEVATION AT UPSTREAM FACE OF BRIDGE)	445.4	445.9	444.7

FLOOD PLAIN DATA ARE BASED UPON INFORMATION AVAILABLE WHEN THE PLANS WERE PREPARED AND ARE SHOWN TO MEET FEDERAL REQUIREMENTS. THE ACCURACY OF SAID INFORMATION IS NOT WARRANTED BY BIGGS CARDOSA ASSOCIATES AND INTERESTED OR AFFECTED PARTIES SHOULD MAKE THEIR OWN INVESTIGATION.

BENCH MARK AND DATUM				
MONUMENT	COORDINATES		ELEV	DESCRIPTION/LOCATION
	NORTHING	EASTING		
100	2,102,907.83	6,478,375.78	444.44	PK NAIL SET IN ASPHALT ON ROLLER DRIVE APPROXIMATELY 448 FT. SOUTHWESTERLY OF THE SOUTHWESTERLY CURB FOR THE ROLLER DRIVE BRIDGE CROSSING SAND CREEK
101	2,103,081.44	6,479,319.21	449.43	PK NAIL SET IN ASPHALT ON ROLLER DRIVE APPROXIMATELY 454 FT. NORTHEASTERLY OF THE NORTHEASTERLY CURB FOR THE BRIDGE CROSSING SAND CREEK
102	2,102,996.14	6,478,792.06	446.22	60D NAIL SET 2" NORTHERLY OF THE EDGE OF PAVEMENT OF ROLLER DRIVE APPROXIMATELY 22 FT. FROM THE END OF THE NORTHWESTERLY CURB ON THE ROLLER DRIVE BRIDGE CROSSING SAND CREEK
1418	2,102,981.16	6,478,818.20	447.17	"BENCHMARK NO. 2" ON IMPROVEMENT PLANS PROVIDED BY TULARE COUNTY, BEING A CUT CROSS ON THE TOP OF CURB AT THE SOUTHWESTERLY CORNER OF THE ROLLER DRIVE BRIDGE CROSSING SAND CREEK

- NOTES:
- A. HORIZ DATUM: NAD83, ZONE IV , EPOCH 2011 (GPS DERIVED)
- B. VERT DATUM: CALIBRATED TO "BENCHMARK NO. 2"; ELEV = 447.17
- C. SURVEY TOPOGRAPHY & UTILITY DATA SHOWN ON FOUNDATION PLAN ARE PROVIDED BY BKF ENGINEERS.

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

PILE DATA TABLE						
LOCATION/TYPE	PILE TYPE	NOMINAL RESISTANCE		DESIGN TIP Elev (ft)	SPECIFIED TIP Elev (ft)	NOMINAL DRIVING RESISTANCE (kips)
		COMPRESSION	TENSION			
ABUTMENT 1	CLASS 200 ALT W	310 kips	0.0	395.0(a-1); 390.0(a-2); 412.0(d)	390.0	310
ABUTMENT 2	CLASS 200 ALT W	390 kips	0.0	385.0(a-1); 385.0(a-2); 406.5(d)	385.0	390

- NOTES:
- DESIGN TIP ELEVATIONS ARE CONTROLLED BY: (a-1) COMPRESSION, (b) TENSION, (c) SETTLEMENT, (d) LATERAL LOADS
 - THE SPECIFIED PILE TIP ELEVATION SHALL NOT BE RAISED ABOVE THE DESIGN TIP ELEVATIONS FOR LATERAL LOAD
 - SEE "ABUTMENT 1 LAYOUT" AND "ABUTMENT 2 LAYOUT" SHEET FOR LOCATION OF PILES

SCOUR DATA TABLE		
SUPPORT No.	LONG TERM (DEGRADATION AND CONTRACTION SCOUR DEPTH (ft)	SHORT TERM (LOCAL) SCOUR ELEVATION (ft)
ABUTMENT 1	3	438.0 *
ABUTMENT 2	3	431.5

* SCOUR RESISTANT LAYER PER NOVEMBER 10, 2015 FOUNDATION REPORT
BY TABER CONSULTANTS

NOT FOR CONSTRUCTION

5/31/16



REVISIONS		DATE	BY
No.	DESCRIPTION		

TULARE COUNTY
RESOURCE MANAGEMENT
AGENCY

5961 SOUTH MOONEY BLVD.
VISALIA, CA 93277
(559)624-7000
WWW.TULARECOUNTY.CA.GOV/RMA

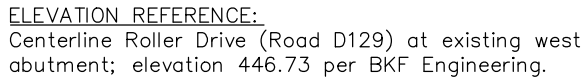
BIGGS CARDOSA
ASSOCIATES INC
STRUCTURAL ENGINEERS

2250 N. Palm Avenue, Suite 211
Visalia, California 93277
559-749-8888

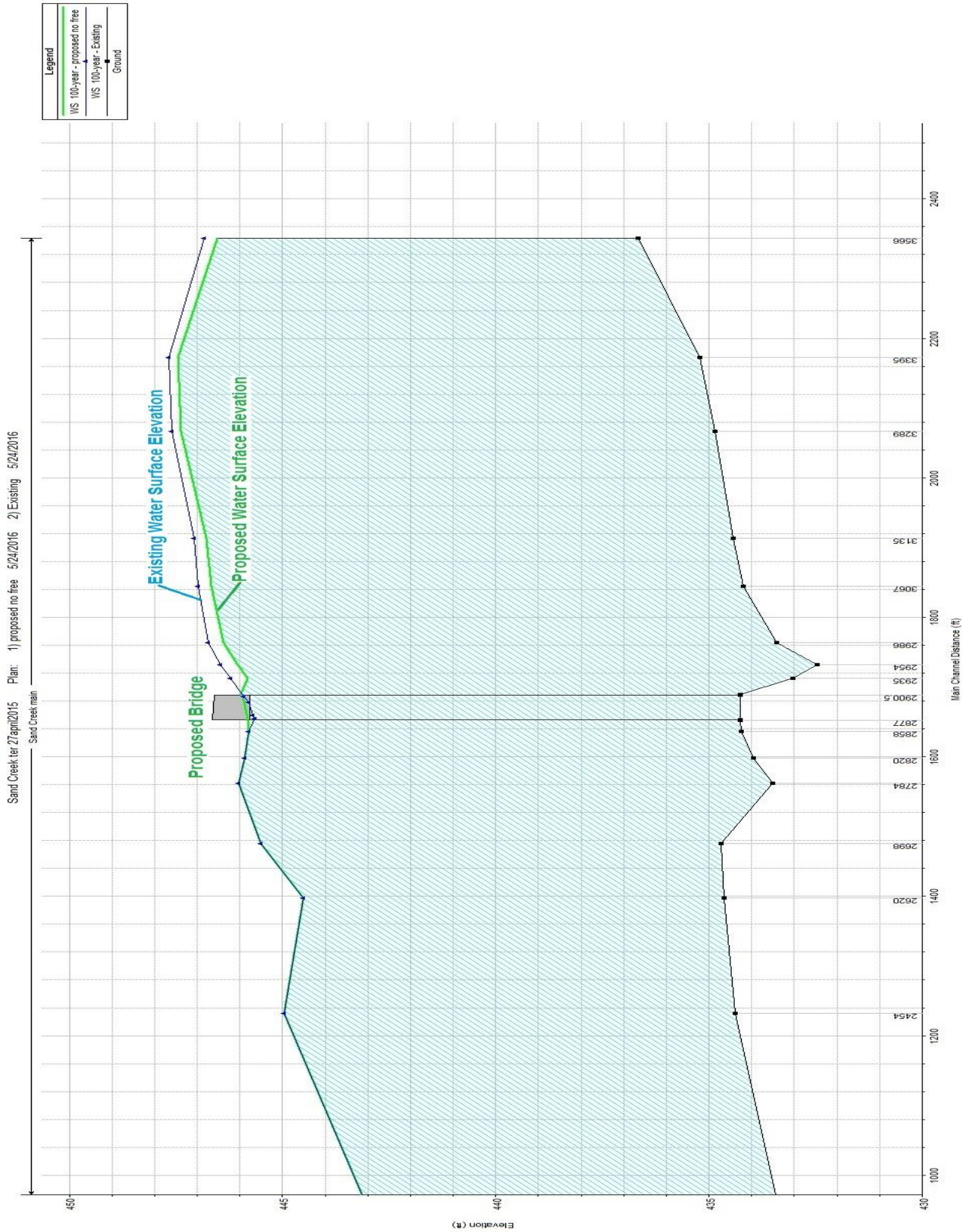
FOUNDATION PLAN

ROAD D129 BRIDGE (REPLACE)
OVER SAND CREEK
TULARE COUNTY

SCALE	AS SHOWN
DIVISION	-
JOB NO.	2014290B
DESIGNED	FRA
DRAWN	SMH
CHECKED	-
FILE	14014-1SD03.DWG
DATE	03/09/16
SHEET No.	S-3



1. Field classification of soils was in accordance with ASTM D 2488-09a "Description and Identification of Soils (Visual-Manual Procedure)".
2. Standard Penetration tests (SPTs) were performed in accordance with ASTM D 1586-11 using hammer operated with an automated drop system. Drill rods were 1 5/8-inch diameter "A"-rods; sampler was driven with brass and stainless steel liners. SPT hammer energy ratio (ETR) measurements indicate an ETR=104% as of 11/18/2014.
3. The length of each sampled interval is shown graphically on the boring log. Whole number blow counts ("N") represent the "standard penetration resistance" interval in accordance with ASTM D1586-11. Where less than 1 foot of penetration is achieved, the blow count shown is for that fraction of the "standard penetration resistance" interval actually penetrated. Where indicated by an asterisk (*) the number of blows shown is for only that fraction of the initial 0.5 ft "seating drive" interval penetration. Material characteristics shown in () where estimated.
4. The blow count values shown on the graphical boring logs are the field recorded (uncorrected) "N" values.
5. The Apparent Density of cohesionless soil shown on the graphical boring logs is based on N_{60} values.
6. Groundwater surface elevations in the borings indicated on the "Log of Test Borings" sheets reflect the fluid level in the borings on the specified date. Groundwater surface elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on the conditions at any particular time.
7. Approximate boring elevations were surveyed by Taber Consultants in the field at the time of subsurface exploration and correlated to project datum provided by BKF Engineers.
8. Electronic media for plan view provided by Biggs Cordosa Associates Inc.
9. Ground line profile is estimated from Taber Consultants field survey on 1/6/2015.



HEC-RAS River: Sand Creek Reach: main Profile: 100-year													Reload Data	
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)		
main	3566	100-year	proposed no free	4553.00	436.66	446.53	445.80	448.34	0.009008	10.80	421.64	543.07	0.83	
main	3566	100-year	Existing	4553.00	436.66	446.84	445.80	448.45	0.007623	10.18	447.37	592.55	0.77	
main	3395	100-year	proposed no free	4553.00	435.21	447.45	443.45	447.58	0.000581	3.68	2068.11	735.14	0.23	
main	3395	100-year	Existing	4553.00	435.21	447.67	443.45	447.78	0.000490	3.44	2235.71	770.72	0.21	
main	3394			Lat Struct										
main	3289	100-year	proposed no free	4553.00	434.85	447.38	443.28	447.52	0.000627	3.74	1913.58	629.92	0.23	
main	3289	100-year	Existing	4553.00	434.85	447.61	443.28	447.73	0.000531	3.51	2064.28	664.00	0.22	
main	3135	100-year	proposed no free	4553.00	434.44	446.78	442.83	447.32	0.001768	6.07	831.58	461.76	0.39	
main	3135	100-year	Existing	4553.00	434.44	447.08	442.83	447.56	0.001504	5.74	886.17	479.44	0.36	
main	3067	100-year	proposed no free	4553.00	434.20	446.67	442.49	447.21	0.001495	6.04	833.14	394.71	0.37	
main	3067	100-year	Existing	4553.00	434.20	446.99	442.49	447.47	0.001287	5.74	880.96	414.59	0.35	
main	2986	100-year	proposed no free	4553.00	433.41	446.38	442.33	447.07	0.001725	6.83	738.12	323.09	0.40	
main	2986	100-year	Existing	4553.00	433.41	446.73	442.33	447.34	0.001479	6.48	780.95	346.46	0.37	
main	2954	100-year	proposed no free	4553.00	432.46	446.05	442.36	446.98	0.002230	7.94	636.40	332.98	0.45	
main	2954	100-year	Existing	4553.00	432.46	446.45	442.36	447.27	0.001884	7.50	678.98	355.83	0.42	
main	2935	100-year	proposed no free	4553.00	433.03	445.81	442.45	446.91	0.002662	8.52	554.94	409.08	0.50	
main	2935	100-year	Existing	4553.00	433.03	446.22	442.45	447.21	0.002276	8.11	585.41	430.99	0.46	
main	2909	100-year	proposed no free	4553.00	434.28	445.97	441.26	446.79	0.001107	7.25	628.34	150.99	0.40	
main	2909	100-year	Existing	4553.00	434.24	445.92	442.58	447.13	0.002607	8.83	515.83	153.70	0.51	
main	2900.5			Bridge										
main	2877	100-year	proposed no free	4553.00	434.28	445.83	441.26	446.67	0.001163	7.35	619.08	142.92	0.41	
main	2877	100-year	Existing	4553.00	434.28	445.66	442.27	446.85	0.002318	8.77	519.38	144.94	0.51	
main	2858	100-year	proposed no free	4553.00	434.25	445.79	442.05	446.64	0.002092	7.43	623.39	273.02	0.45	
main	2858	100-year	Existing	4553.00	434.25	445.79	442.05	446.64	0.002092	7.43	623.39	273.02	0.45	
main	2820	100-year	proposed no free	4553.00	433.95	445.89	441.98	446.50	0.001499	6.58	794.60	318.53	0.39	
main	2820	100-year	Existing	4553.00	433.95	445.89	441.98	446.50	0.001499	6.58	794.60	318.53	0.39	
main	2784	100-year	proposed no free	4553.00	433.50	446.03	440.91	446.38	0.000918	5.01	1035.69	369.12	0.30	
main	2784	100-year	Existing	4553.00	433.50	446.03	440.91	446.38	0.000918	5.01	1035.69	369.12	0.30	
main	2698	100-year	proposed no free	4553.00	434.73	445.50	443.33	446.23	0.002151	7.48	786.72	390.04	0.46	
main	2698	100-year	Existing	4553.00	434.73	445.50	443.33	446.23	0.002151	7.48	786.72	390.04	0.46	
main	2620	100-year	proposed no free	4553.00	434.66	444.52	443.48	445.94	0.004214	9.97	546.86	381.73	0.65	
main	2620	100-year	Existing	4553.00	434.66	444.52	443.48	445.94	0.004214	9.97	546.86	381.73	0.65	
main	2454	100-year	proposed no free	4553.00	434.39	444.97		445.23	0.001298	4.73	1286.94	406.00	0.33	
main	2454	100-year	Existing	4553.00	434.39	444.97		445.23	0.001298	4.73	1286.94	406.00	0.33	
main	2170	100-year	proposed no free	4553.00	433.36	442.98	442.98	444.43	0.006026	10.05	587.07	330.05	0.71	
main	2170	100-year	Existing	4553.00	433.36	442.98	442.98	444.43	0.006026	10.05	587.07	330.05	0.71	