

**Meeting of the Central Valley Flood Protection Board
June 28, 2013
Staff Report**

Union Pacific Railroad Bridge 104.18 (Segment A), San Joaquin County

1.0 – ITEM

Consider approval of Permit No. 18841.

2.0 – APPLICANT

Union Pacific Railroad Company (UPRR)

3.0 – LOCATION

UPRR owns and operates a commuter rail bridge at UPRR milepost (MP) 104.18 on the Fresno Subdivision in San Joaquin County near Ripon, California. The bridge spans the Stanislaus River and is located west of, and parallel to, State Route 99 (See Attachment A for project Vicinity and Location Maps).

4.0 – DESCRIPTION

The purpose of the proposed project is to replace and stabilize Segment A of the existing north approach timber span bridge to meet UPRR safety standards. The timber piles and spans of Segment A have deteriorated and have reached the end of their useful life. As a result of the weakened piles and bent caps the bridge sways under train traffic. Segment A has been repaired in the past by replacing stringers and deck boards.

The existing bridge consists of: 1) Segment A: a 16-foot-span, 917-foot-long, timber stringer trestle – ballast deck bridge; and 2) Segment B: a 3-span, 201-foot-long, deck plate girder - ballast deck bridge that crosses over the main channel of the Stanislaus River, for a total bridge length of 1,118 feet. No work is proposed for Segment B at this time, and there are no federal levees associated with or adjacent to this project. The channel however is federally regulated by the U.S. Army Corps of Engineers (USACE).

UPRR has proposed to support 427 feet of Segment A from the northwest abutment at existing bent A1 to the middle of the existing bents A29 and A30 with fill materials (See Attachment B for project plans and profile). The fill would support the ballast and tracks and would be compacted in lifts with a 1.5h:1v finished slope on the east and west side of Segment A. All fill materials would be placed within the UPRR right of way (ROW). UPRR has proposed to replace the remainder of Segment A with a new, 16-span, 490-foot-long bridge deck supported by new, precast concrete caps and girders and 17 new bent rows, totaling 67 pile driving locations. The existing timber spans would be removed and disposed of offsite.

A temporary 920-foot by 50-foot staging area extending the length of Segment A would be utilized within the 50-foot UPRR ROW and adjacent California Department of Transportation (Caltrans) property along the east side of the tracks. UPRR will obtain a temporary 10-foot easement from Caltrans for access between State Route 99 and Segment A to provide adequate room for off-railroad track equipment. Smaller equipment will be temporarily stored within the 920-foot by 40-foot staging area along the west side of Segment A, and within the UPRR ROW, next to the non-federal private levee which is along the edge of the adjacent field. Vegetation removal and grading are anticipated within the staging areas.

5.0 – PROJECT ANALYSIS

The following project analyses were performed by the Board staff.

5.1 – Authority of the Board

California Code of Regulations, Title 23 (CCR 23), §6 - Need for a Permit, and §128 - Bridges.

5.2 – Hydrology and Hydraulic Analysis

The following hydrology and hydraulic analyses were performed by the applicant and reviewed by Board staff:

5.2.1 – Water Surface Elevation and Velocity Analysis

A hydrologic and hydraulic investigation was conducted using the HEC-RAS model to determine if the proposed bridge will meet local, State, and federal

environmental and floodplain regulations, as well as UPRR's standards for passing the 100-year flood event. Since Bridge 104.18 is located within Zone AE of a FEMA Floodplain care was given to not increase the 100-year flood elevations.

Based on the hydrologic and hydraulic evaluation the computed 100-year water surface elevation (WSE) at the upstream face of the existing bridge for pre-project (existing) conditions was computed to be 56.49 feet (NAVD 1988). It is noted that the lowest soffit elevation along Segment A of the existing bridge is 71.86 feet, and the lowest base-of-rail elevation is 75.32 feet. The computed velocity for the 100-year runoff event is 2.84 feet per second (fps) at existing conditions. The computed 100-year WSE associated with the post-project (proposed) conditions is 56.49 feet with a corresponding velocity of 2.94 fps. Therefore it can be seen that there is no change in 100-year WSE from pre- to post-project condition, with only a 0.10 fps increase in velocity.

5.2.2 – Scour Analysis

A scour analysis for both existing and proposed conditions has been performed utilizing the HEC-18 procedures using HEC-RAS software. The D50 grain size utilized for the scour analysis was estimated based on the soil properties observed on site and from information obtained from the NRCS Web Soil Survey for San Joaquin County. For existing conditions, the estimated contraction scour is negligible and the estimated local pier scour is approximately 8.0 feet for each pier within the channel and 1.0 feet for each bent along Segment A. For proposed conditions, the estimated contraction and local pier scours are same as that of the existing condition.

It should be noted that the proposed H-pile bents will be driven to refusal (anticipated depth of about 120 feet for this project) or with a minimum pile capacity of 112 ton as determined by the Modified Engineering News Record (ENR) formula, with a factor of safety of 5 as per the UPRR Engineering Instructions. Based on the design, it is expected that the proposed driven H-pile bents will meet the minimum pile capacity of 112 ton, and therefore, the scour should not be an issue.

5.2.3 – Debris Analysis

Due to the risk of trash, trees and other debris accumulating along the upstream face of the bridge, the existing and proposed bridge was modeled in HEC RAS

with floating pier debris. The debris load is moderately high and was modeled such that the interior pier widths were doubled. Under existing conditions the interior pier diameters are 5.5 feet. Assuming a moderately high debris load the piers were modeled with a diameter of 11 feet. Based on the hydrologic and hydraulic evaluation, the 100-year WSE with debris load at the upstream face of the existing bridge was computed to be 56.51 feet. The corresponding computed 100-year WSE associated with the proposed bridge is 56.51 feet. Based on the debris loading analysis, the 100-year WSE is equal to the existing condition.

5.2.4 – Freeboard Analysis

Proposed bridge freeboard based upon the low chord elevation and the higher debris load elevation is 16.25 feet surpassing the requirements of CCR 23. As per CCR 23, §128 (a) (16) replacement railroad bridges must have soffit members not lower than those of the replaced bridge, but are not required to have a specified amount of clearance above the design floodplain. This also addresses the concerns of San Joaquin County discussed later and described in Attachment C.

Based on review of the submitted hydrology and hydraulic analysis Board staff has concluded that the proposed project is hydraulically compliant with CCR 23, and would result in no significant adverse hydraulic impacts to the Stanislaus River at the project location.

5.3 – Geotechnical Analysis

It should be noted that the proposed H-pile bents will be driven to refusal (anticipated depth of about 120 feet for this project) or with a minimum pile capacity of 112 ton as determined by the Modified Engineering News Record (ENR) formula, with a factor of safety of 5 as per the UPRR Engineering Instructions.

Segment A is a 61-Span, 917 feet long, timber stringer trestle - ballast deck (TST-BD) bridge spanning the overbank of the Stanislaus River. The proposed bridge replacement for Segment A consists of 17-span, 490 feet long, prestressed concrete box (PCB) girder bridge, shortening Segment A by 427 feet. A portion of segment A, spanning from the north abutment to bent A29 will be supported by fill that will reach to the bottom of the deck to support the ballast and tracks. The fill will be compacted in lifts and will be finished to a 1.5h:1v side slope along a portion of Segment A. The track embankment will require approximately 20,800 cubic yards of good clean earth material.

In addition, approximately 125 cubic yards of riprap will be placed along the bridge sloping abutment. All fill material will be placed at elevations above the 100-year floodplain. Attachment D provides a plan view of the proposed fill material (blue) with respect to the 100-year floodplain (two nearly vertical red lines) (Attachment D).

Based on review of the submitted geotechnical analysis Board staff has concluded that the proposed project is geotechnically compliant with CCR 23, and would result in no significant adverse hydraulic impacts to the Stanislaus River at the project location.

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

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

- The U.S. Army Corps of Engineers comment letter has not been received for this application. Board staff anticipates a Federal letter for the channel. When received it will be reviewed and incorporated into the permit by reference as Exhibit A.
- The San Joaquin County Flood Control and Water Conservation District has declined to endorse this project prior to Board approval. The applicant's consultant Olsson Associates has provided an explanation as to why the County will not endorse this project (See Appendix C). The Board staff has determined that this explanation meets the intent of CCR 23, §7- Endorsement by Maintaining Agency to provide a satisfactory explanation for lack of an endorsement.
- San Joaquin County had two concerns with the proposed project:
 - 1) Placement of fill within the Board's Designated Floodway. Board staff believes this concern is adequately addressed in Sections 5.2 and 5.3 above.
 - 2) CCR 23, § 128 (a)(16) requirement for the bridge soffit being no lower than the existing soffit. Board staff believes this concern is adequately addressed in Section 5.2 above.

7.0 – CEQA ANALYSIS

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

The Board determined that the project is categorically exempt from CEQA under a Class 2 Categorical Exemption (CEQA Guidelines Section 15302) covering replacement or reconstruction of existing structures.

8.0 – SECTION 8610.5 CONSIDERATIONS

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

The Board has considered all the evidence presented in this matter by UPRR and San Joaquin County for Permit No. 18841.

The custodian of the file is Executive Officer Jay Punia at the offices of the Central Valley Flood Protection Board, 3310 El Camino Avenue, Room 151, Sacramento, California 95821.

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.

In making its findings, the Board has used the best available science relating to the issues presented by all parties and the design is in compliance with these standards.

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

This project has no adverse effects on facilities of the State Plan of Flood Control and is consistent with the Central Valley Flood Protection Plan.

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

There are no other foreseeable projected future events that would impact this project.

9.0 – LAND RIGHT-OF-WAY CONCERNS

The proposed Segment A replacement results in a “no adverse impacts” condition. Properties upstream and downstream of the UPRR ROW will not be adversely impacted during the 100-year event due to the proposed Segment A replacement. All work will be performed within the UPRR ROW.

10.0 – STAFF RECOMMENDATION

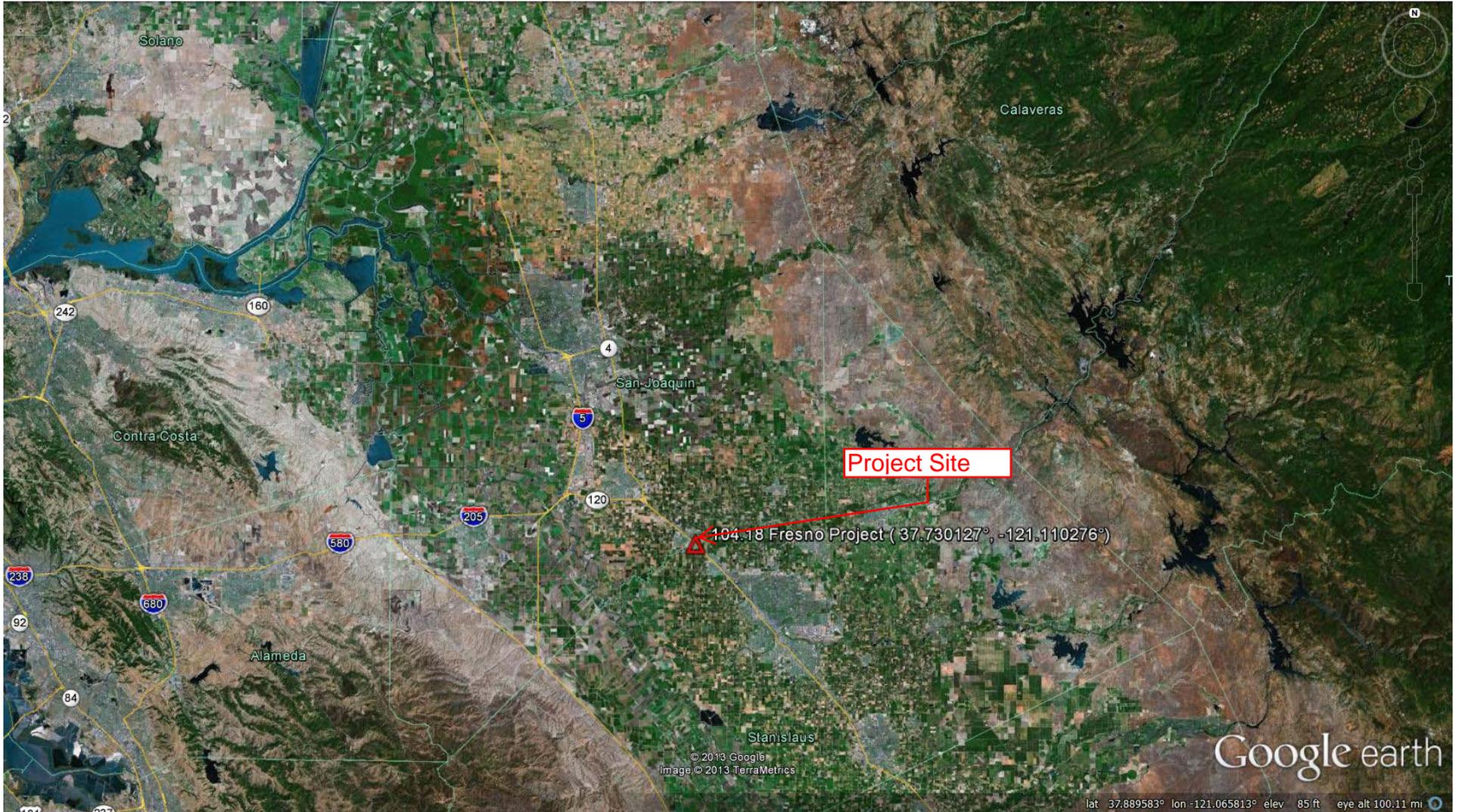
Staff recommends the Board adopt the CEQA Findings, approve Permit No. 18841 (Attachment E) in substantially the form provided, conditioned upon receipt and review of the U. S. Army Corps of Engineers comment letter, and direct staff to file a Notice of Exemption with the State Clearinghouse.

11.0 – LIST OF ATTACHMENTS

- A. Vicinity and Location Maps
- B. Project Design Documents
- C. Olsson Associates Letter of April 23, 2013 re: San Joaquin County Endorsement
- D. Fill placement Relative to 100-year Floodplain
- E. Draft Permit No. 18841
 - Exhibit A – USACE Fed comment letter (not yet received)

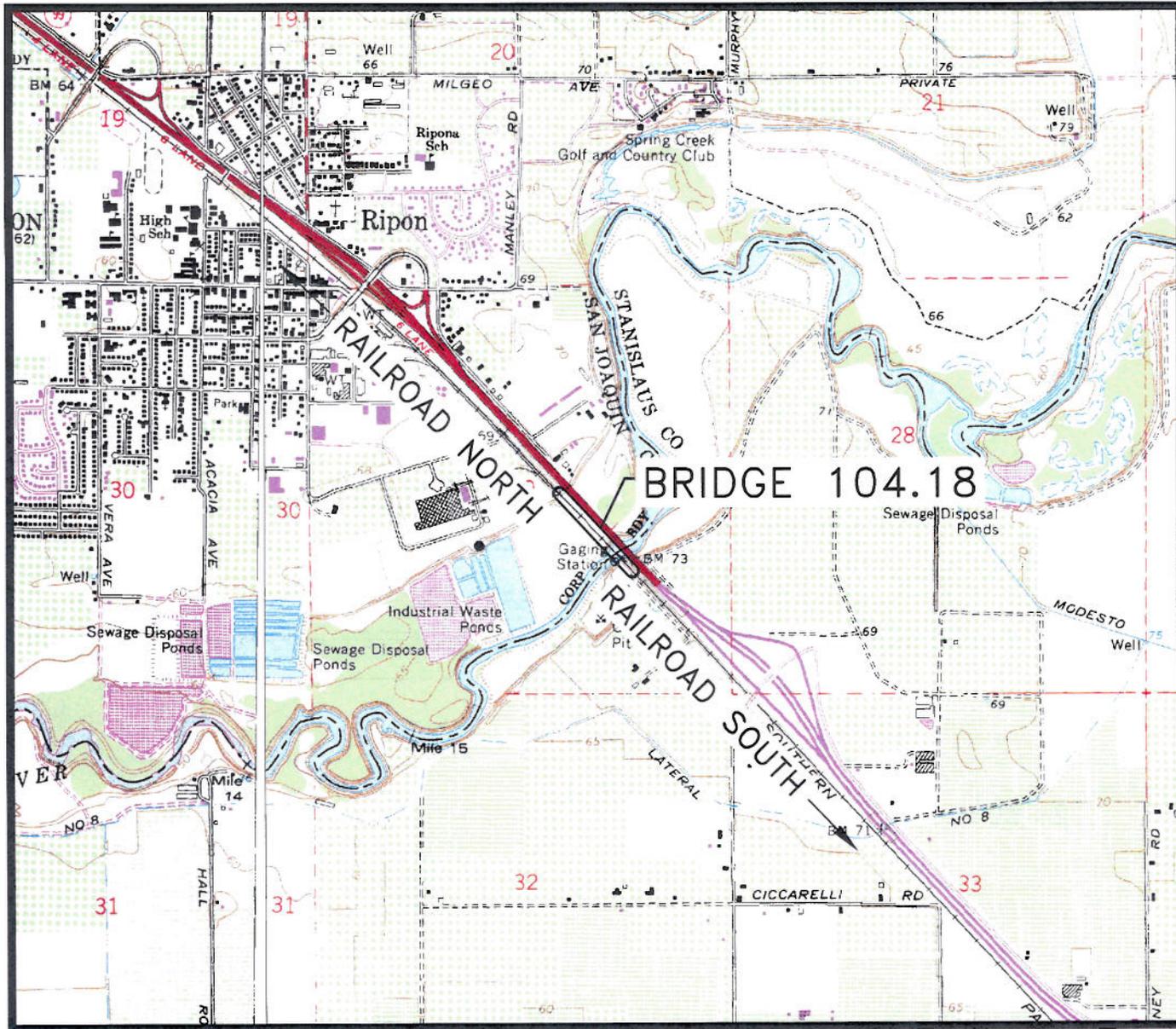
| | |
|-----------------------|--|
| Technical Review: | Deb Biswas, PhD, PE, Engineer |
| Environmental Review: | James Herota, Staff Environmental Scientist |
| Document Review: | David R. Williams, PE – Projects Section Chief |
| | Eric R. Butler, PE – Projects and Environmental Branch Chief |
| | Len Marino, PE – Chief Engineer |

ATTACHMENT A



VICINITY MAP

ATTACHMENT A



SOURCE:
 USGS TOPOGRAPHIC MAP:
 SALIDA (1987), CALIFORNIA
 CONTOUR INTERVAL: 5'

BRIDGE LOCATION:
 SECTION 29
 TOWNSHIP 2 SOUTH
 RANGE 8 EAST

LAT: 37° 43' 56"
 LONG: 121° 06' 46"

SAN JOAQUIN COUNTY, CA
 STANISLAUS COUNTY, CA

PROJECT: 011-1996
 DRAWN BY: NJB
 DATE: 12/17/12

LOCATION MAP

MOLSSON
 ASSOCIATES
1111 Lumbus Rd Suite 111
 P.O. Box 16628
 Raleigh, NC 27616-0628
 TEL: 402.474.0111
 FAX: 402.474.3165
 www.molssonllp.com

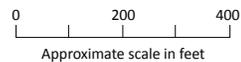
FIGURE
F-1

ATTACHMENT A



LEGEND

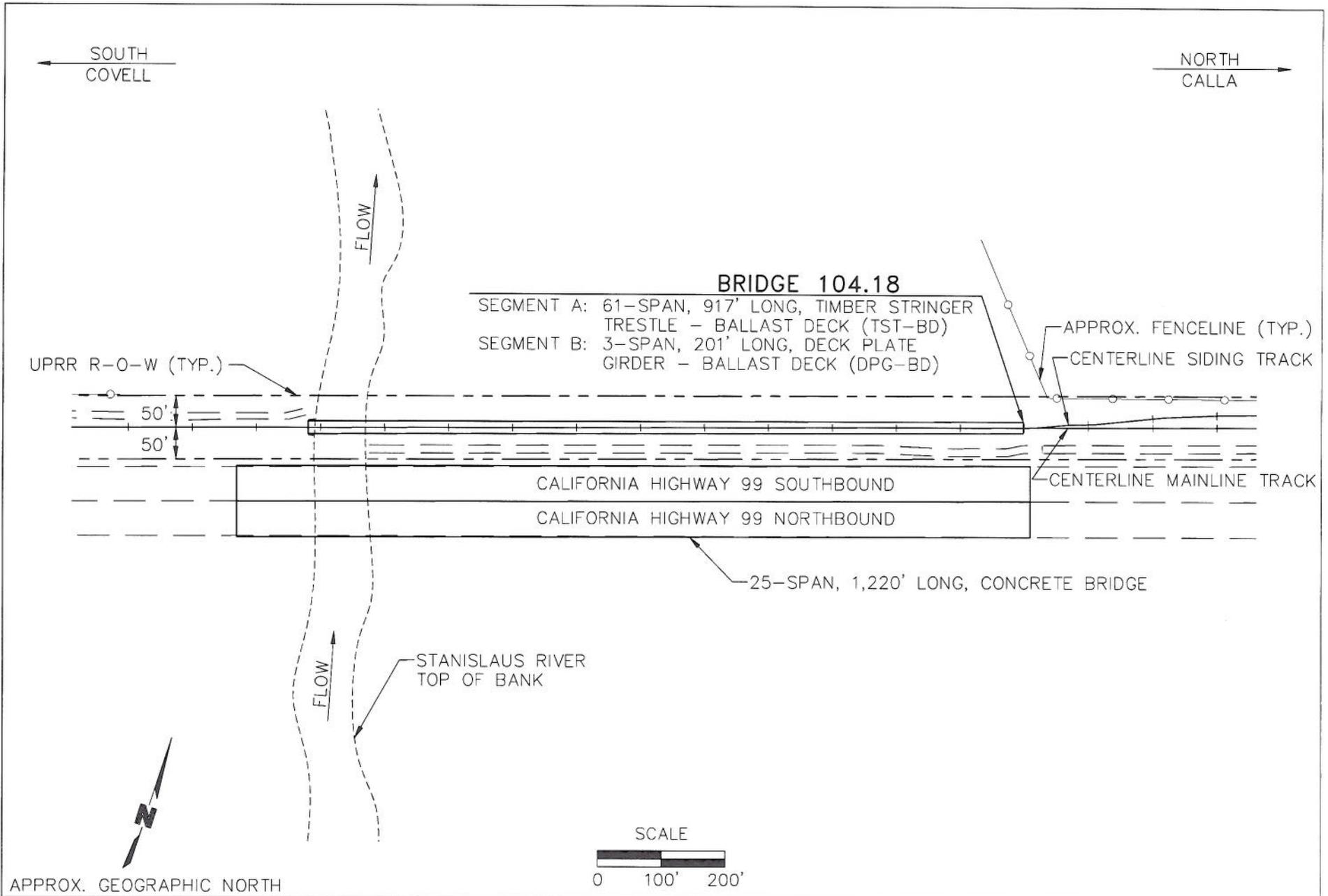
- Segment A
- 50' UPRR ROW from centerline, 100' total



Existing Conditions
UPRR Fresno Sub 104.18
Segment A Bridge Replacement
San Joaquin County



ATTACHMENT B



PROJECT: 011-1996
DRAWN BY: NJB
DATE: 12/17/12

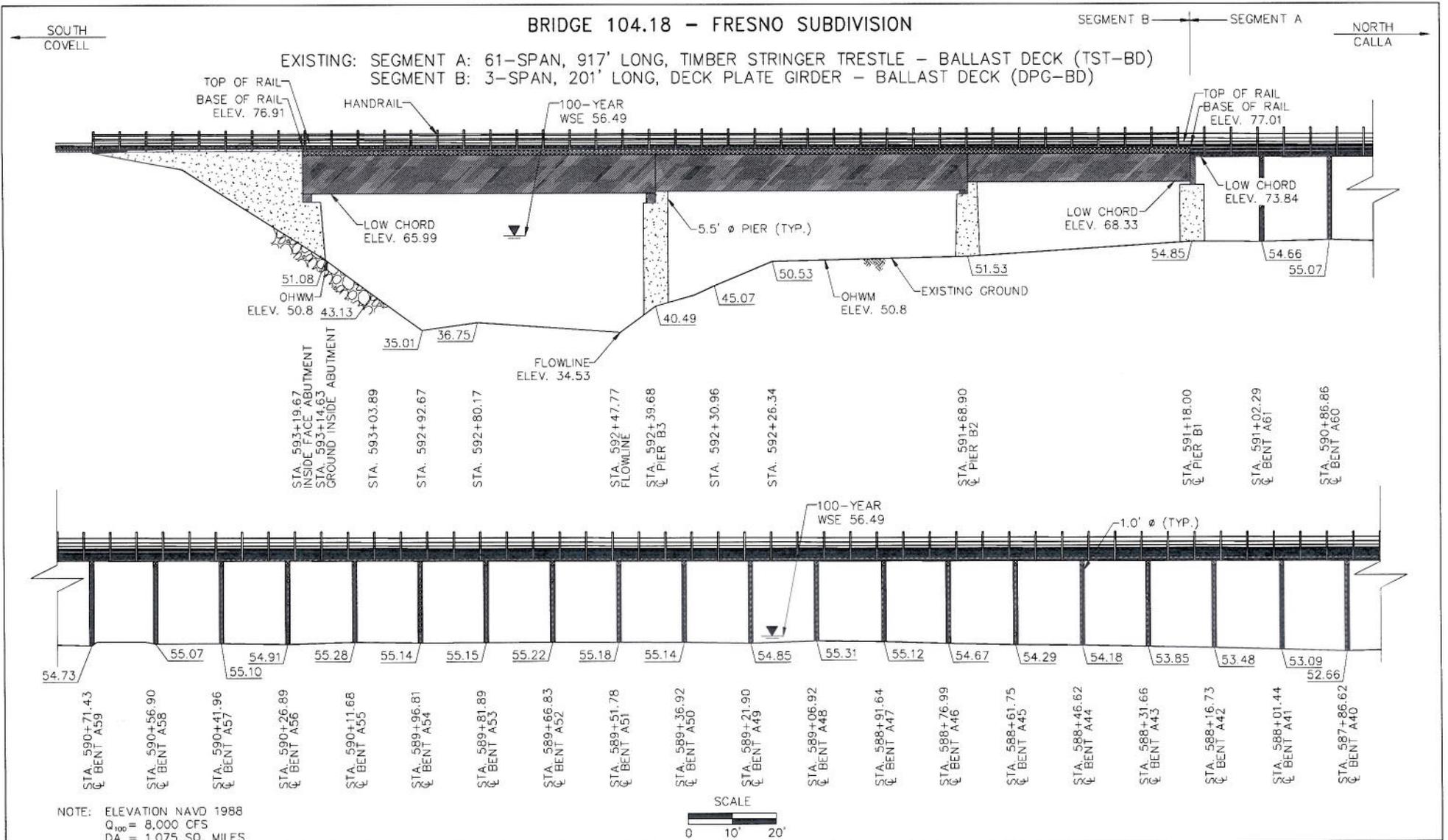
SCHEMATIC VIEW OF SITE

MOLSSON ASSOCIATES

1111 LEXINGTON BLVD, SUITE 1117
FIDELITY SQUARE
FLOOR 12, 6050-16003
TEL: 402-474-5211
FAX: 402-474-5195
www.molsson.com

FIGURE
F-2

ATTACHMENT B



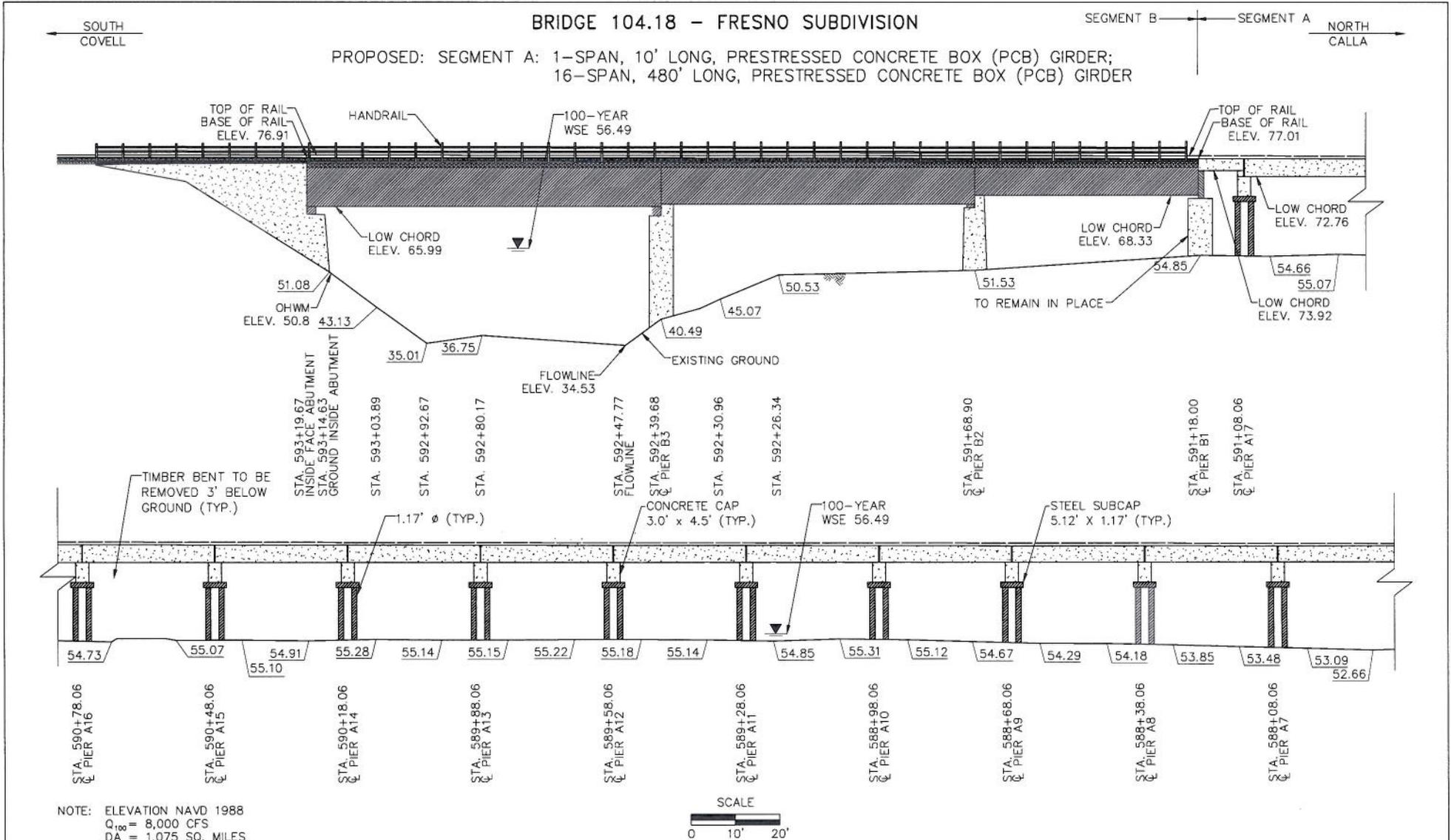
PROJECT: Q11-1996
 DRAWN BY: NJB
 DATE: 12/17/12

EXISTING BRIDGE - UPSTREAM FACE PROFILE



FIGURE
F-3A

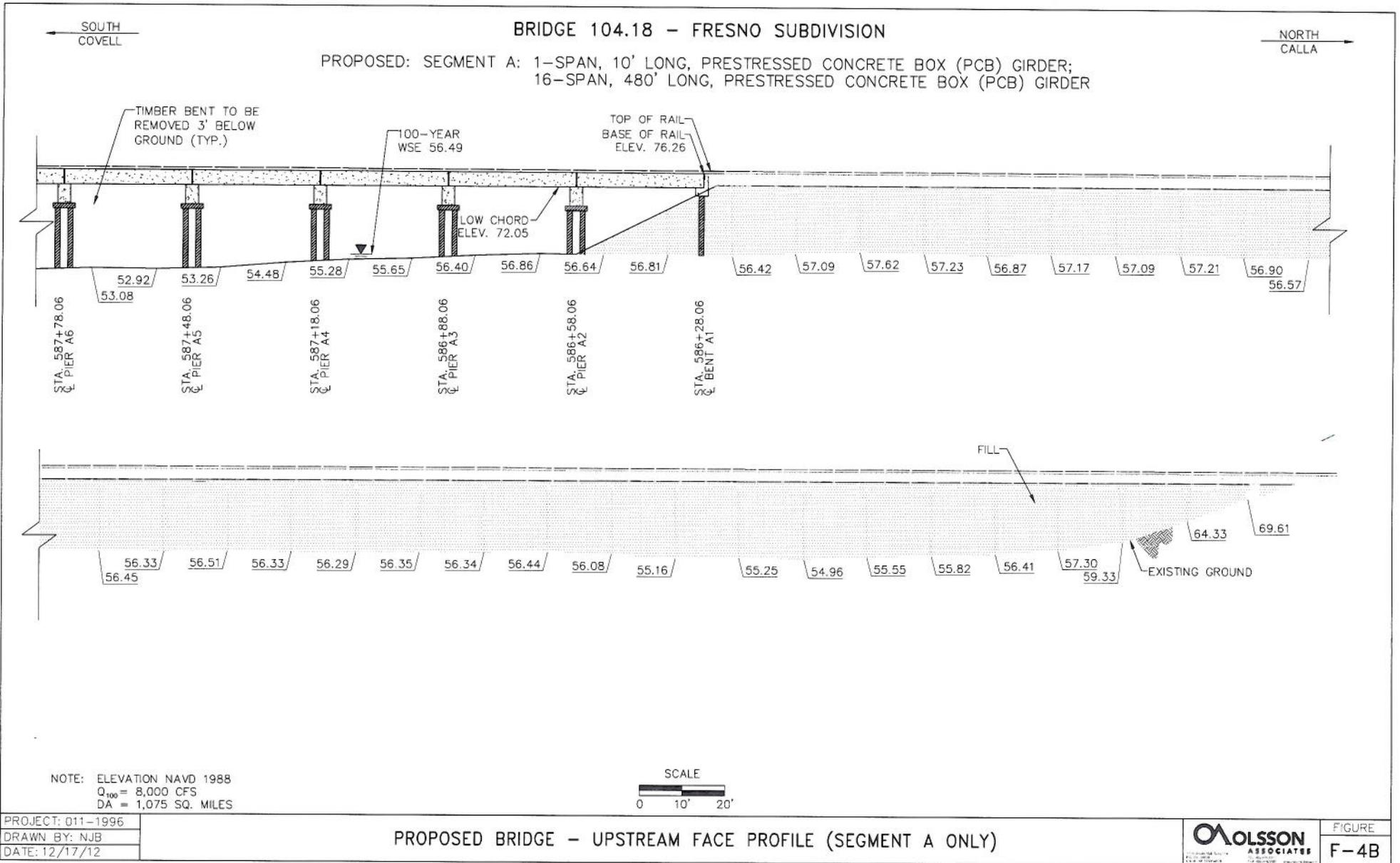
ATTACHMENT B



PROJECT: 011-1996
DRAWN BY: NJB
DATE: 12/17/12

PROPOSED BRIDGE - UPSTREAM FACE PROFILE (SEGMENT A ONLY)

ATTACHMENT B

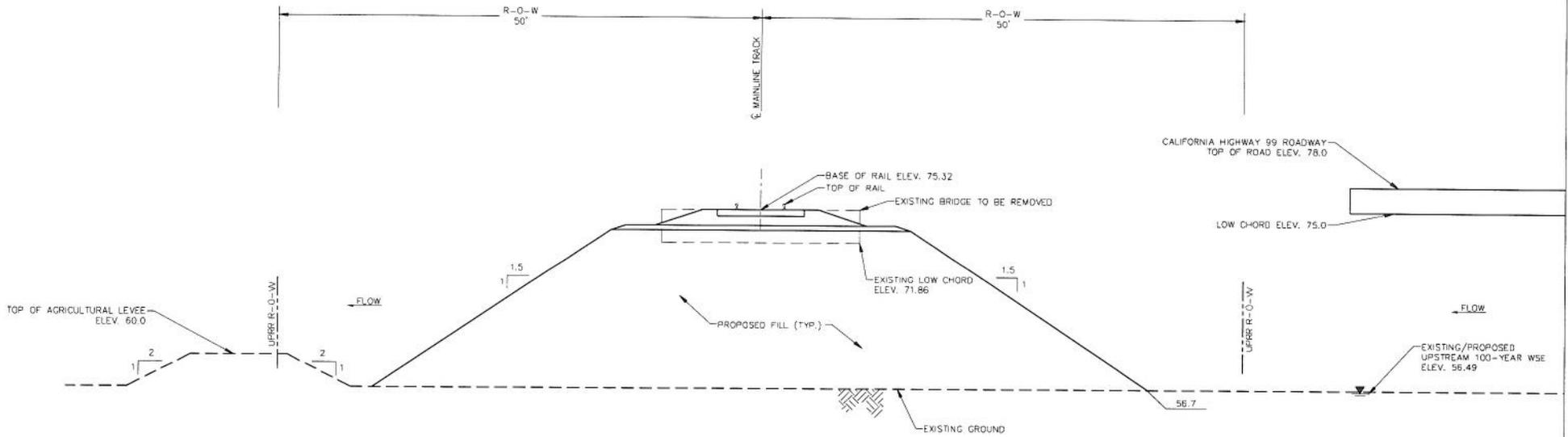


ATTACHMENT B



| | | |
|--|---------------|--------------|
| NO. | DATE | REVISIONS |
| | | |
| 1110 Exchange Ave. #111 Fresno, CA 93720 (509) 255-2222 | | |
| Division of APN Engineering Design/Construction | | |
| LOCATION: BRIDGE 104.18 - FRESNO SUBDIVISION | | |
| PROJECT: 16 SPAN PCB AND 1 SPAN PCS X 490' REPLACING 61 SPAN TST-BD X 918' (SEGMENT A) | | |
| SHEET NO.: AERIAL LOCATION MAP | | |
| DESIGN ENGINEER | DATE | SURVEY |
| DESIGNED BY | 12-17-12 | 11-7-11 |
| CONSTRUCTED BY | | |
| DRAWN BY: NJO | DWG. SEQUENCE | D. E. NUMBER |
| CHECKED BY: BE | F-5 | |
| SCALE: AS SHOWN | | |

ATTACHMENT B



| | | | | | | | | | |
|---|----------------------|--------------------|--|--|--|--|--|--|--|
| | | | | | | | | | |
| NO. | DATE | REVISIONS | | | | | | | |
| MOLSSON ASSOCIATES <small>1111 UNIVERSITY BLVD. SUITE 1100, FRESNO, CA 93721-1100</small> <small>TEL: 559-233-1100 FAX: 559-233-1101 WWW.MOLSSONASSOCIATES.COM</small> | | | | | | | | | |
| UNION PACIFIC RAILROAD <small>Office of AEP Engineering Design/Construction</small> | | | | | | | | | |
| LOCATION BRIDGE 104.18 - FRESNO SUBDIVISION | | | | | | | | | |
| FAHRY 18 SPAN PCB AND 1 SPAN PCS X 480' REPLACING 61 SPAN TST-BD X 918' (SEGMENT A) | | | | | | | | | |
| DRAW TITLE PROPOSED EMBANKMENT FILL SECTION - SEGMENT A | | | | | | | | | |
| DESIGNED BY: | DATE: | SURVEY: | | | | | | | |
| DESIGN BY: | 12-17-12 | 11-7-11 | | | | | | | |
| CHECKED BY: | | | | | | | | | |
| DRAWN BY: | OWC SEQUENCE: | C E NUMBER: | | | | | | | |
| CHECKED BY: | F-6 | | | | | | | | |
| SCALE: | AS SHOWN | | | | | | | | |

ATTACHMENT B

UPRR Bridge 104.18 – Fresno Subdivision
Roseville Division

7 November 2011
Ripon, California

UPRR BRIDGE SURVEY - PHOTOLOG



PHOTO 1: Top of rail profile from near UPRR Bridge, looking RR North.



PHOTO 2: Top of rail profile from near UPRR Bridge, looking RR South.

ATTACHMENT B

UPRR Bridge 104.18 – Fresno Subdivision
Roseville Division

7 November 2011
Ripon, California

UPRR BRIDGE SURVEY – PHOTOLOG



PHOTO 11: Upstream face of UPRR Bridge, looking RR West.



PHOTO 12: Upstream face of UPRR Bridge, looking RR West.

ATTACHMENT B

UPRR Bridge 104.18 – Fresno Subdivision
Roseville Division

7 November 2011
Ripon, California

UPRR BRIDGE SURVEY – PHOTOLOG



PHOTO 27: View of Pier B1, looking RR East.



PHOTO 28: View of Pier B1, looking RR East.

ATTACHMENT B

UPRR Bridge 104.18 – Fresno Subdivision
Roseville Division

7 November 2011
Ripon, California

UPRR BRIDGE SURVEY – PHOTOLOG



PHOTO 29: View of Pier B2, looking RR West.



PHOTO 30: View of Pier B2, looking RR West.

ATTACHMENT B

Table 1: WSE Summary Bridge 104.18: Fresno Subdivision - Stanislaus River

Ripon, California - San Joaquin County

Stanislaus River - NAVD 1988

Olsson Project No.: 2011-1996

| Cross Section | Frequency | WSE _{Corr Eff} | V _{EXISTING} (ft/s) | WSE _{PROPOSED} | V _{PROPOSED} (ft/s) | Δ WSE Corr Eff - PROPOSED | Δ V Corr Eff - PROPOSED |
|---------------|---|-------------------------|------------------------------|-------------------------|------------------------------|---------------------------------|-------------------------------|
| 116219.4 X | 100-year | 67.63 | 3.77 | 67.63 | 3.77 | 0.00 | 0.00 |
| 115779 | 100-year | 67.51 | 2.94 | 67.51 | 2.94 | 0.00 | 0.00 |
| 115339 | 100-year | 67.31 | 3.27 | 67.31 | 3.27 | 0.00 | 0.00 |
| 114899 | 100-year | 67.12 | 3.40 | 67.12 | 3.40 | 0.00 | 0.00 |
| 114459 | 100-year | 66.95 | 3.29 | 66.95 | 3.29 | 0.00 | 0.00 |
| 114019 | 100-year | 66.80 | 3.12 | 66.80 | 3.12 | 0.00 | 0.00 |
| 113579.4 W | 100-year | 66.22 | 5.09 | 66.22 | 5.09 | 0.00 | 0.00 |
| 113130 | 100-year | 65.88 | 4.39 | 65.88 | 4.39 | 0.00 | 0.00 |
| 112682 | 100-year | 65.63 | 3.82 | 65.63 | 3.82 | 0.00 | 0.00 |
| 112233 | 100-year | 65.40 | 3.52 | 65.40 | 3.52 | 0.00 | 0.00 |
| 111784 | 100-year | 65.21 | 3.20 | 65.21 | 3.20 | 0.00 | 0.00 |
| 111335 | 100-year | 65.07 | 2.81 | 65.07 | 2.81 | 0.00 | 0.00 |
| 110887.1 V | 100-year | 64.58 | 4.53 | 64.58 | 4.53 | 0.00 | 0.00 |
| 108458.3 U | 100-year | 63.23 | 2.55 | 63.23 | 2.55 | 0.00 | 0.00 |
| 106084.5 T | 100-year | 62.31 | 2.84 | 62.31 | 2.84 | 0.00 | 0.00 |
| 103884.4 S | 100-year | 61.38 | 2.64 | 61.38 | 2.64 | 0.00 | 0.00 |
| 99443.19 R | 100-year | 60.05 | 2.45 | 60.05 | 2.45 | 0.00 | 0.00 |
| 97095.00 Q | 100-year | 59.50 | 3.11 | 59.50 | 3.11 | 0.00 | 0.00 |
| 95724.67 P | 100-year | 59.16 | 2.84 | 59.16 | 2.84 | 0.00 | 0.00 |
| 92789.99 O | 100-year | 57.85 | 4.28 | 57.85 | 4.28 | 0.00 | 0.00 |
| 91323.98 N | 100-year | 57.10 | 3.53 | 57.10 | 3.53 | 0.00 | 0.00 |
| 90333.46 M | 100-year | 57.05 | 1.66 | 57.05 | 1.66 | 0.00 | 0.00 |
| 89357.09 | 100-year | 56.72 | 3.48 | 56.72 | 3.48 | 0.00 | 0.00 |
| 89288.95 L | 100-year | 56.66 | 3.64 | 56.66 | 3.64 | 0.00 | 0.00 |
| 89285 | Bridge over Highway 99 | | | | | | |
| 89168.69 | 100-year | 56.52 | 3.75 | 56.52 | 3.75 | 0.00 | 0.00 |
| 89151.69 | 100-year | 56.47 | 3.96 | 56.47 | 3.96 | 0.00 | 0.00 |
| 89140.73 K | 100-year | 56.47 | 3.96 | 56.47 | 3.96 | 0.00 | 0.00 |
| 89118.73 | 100-year | 56.49 | 3.60 | 56.49 | 3.60 | 0.00 | 0.00 |
| 89118 | UPRR Bridge 104.18: Fresno Subdivision | | | | | | |
| 89100 | 100-year | 56.46 | 3.61 | 56.46 | 3.61 | 0.00 | 0.00 |
| 89010.28 | 100-year | 56.46 | 2.98 | 56.46 | 2.98 | 0.00 | 0.00 |
| 88630.94 J | 100-year | 56.37 | 3.07 | 56.37 | 3.07 | 0.00 | 0.00 |
| 85791.16 I | 100-year | 55.31 | 4.59 | 55.31 | 4.59 | 0.00 | 0.00 |
| 82531.91 H | 100-year | 54.31 | 2.91 | 54.31 | 2.91 | 0.00 | 0.00 |
| 77546.55 G | 100-year | 52.91 | 2.88 | 52.91 | 2.88 | 0.00 | 0.00 |
| 75231.28 F | 100-year | 51.88 | 4.28 | 51.88 | 4.28 | 0.00 | 0.00 |
| 70164.69 E | 100-year | 49.72 | 3.71 | 49.72 | 3.71 | 0.00 | 0.00 |
| 68577.35 D | 100-year | 49.15 | 3.64 | 49.15 | 3.64 | 0.00 | 0.00 |
| 66432.83 C | 100-year | 48.57 | 2.96 | 48.57 | 2.96 | 0.00 | 0.00 |
| 65058.33 B | 100-year | 48.22 | 3.17 | 48.22 | 3.17 | 0.00 | 0.00 |
| 63360.00 A | 100-year | 47.53 | 4.46 | 47.53 | 4.46 | 0.00 | 0.00 |



April 23, 2013

David R. Williams
Central Valley Flood Protection Board
Chief of the Projects Section
3310 El Camino Ave., Room 162
Sacramento, CA 95821

Re: Bridge 104.18 – Fresno Subdivision (Segment A)
Stanislaus River – San Joaquin County
CVFPB Application No.: 18841
Ripon, California
OA Project No. 2011-1996

Dear David:

Per California Code of Regulations Title 23, Article 3, Section 7, prior to submitting an encroachment permit application to the board, the application must be endorsed by the local maintaining agency. The maintaining agency in the vicinity of UPRR Bridge 104.18 Fresno Subdivision over the Stanislaus River is San Joaquin County. Based on conversations with San Joaquin County they will not endorse the project until approval by Central Valley Flood Protection Board (CVFPB). San Joaquin County has two concerns:

The first concern is placing fill in the CVFPB designated floodway, which is different than the FEMA effective floodway. The CVFPB's floodway is based on historic data, which is consistent with the 1975 FIRM for the City of Ripon, CA (attached). The current effective FEMA 100-year floodplain, dated 2009, is based on the best available data, which includes the construction of New Melones Lake in 1978 and the USGS stream gage located at UPRR Bridge 104.18 along the Stanislaus River. The stream gage has been active since 1938. I've attached a plan view showing both the CVFPB's designated floodway and the current regulatory 100-year floodway.

The second concern is lowering the low chord elevation of the proposed bridge. The county is referring to the low chord elevations at Pier B1, where the existing Segment A low chord elevation is 73.84 and the proposed low chord is 72.76. The proposed low chord elevation is lower due to the longer concrete replacement spans. It should be noted that the lowest low chord of the existing bridge along Segment A is at elevation 71.86 (TT North Abutment) and the lowest proposed low chord is at 72.05 (TT North Abutment), which is approximately 0.2' higher than existing. The HEC RAS model uses the lowest low chord elevation (most conservative) along Segment A. The 100-year WSE is at elevation 56.49, which is 15 feet below the proposed Segment A low chord elevation. I've attached an elevation view for your reference (Figures F-3A/B and F-4A/B).

ATTACHMENT C

Central Valley Flood Protection Board
April 23, 2013
Page 2 of 2

In addition, I've attached email correspondence from San Joaquin County to aid in your review. If you have any questions concerning this project, or need additional information, please contact me at 402.458.5015 or bstrahm@olssonassociates.com, at your earliest convenience. Please refer your future correspondence to **Bridge 104.18 Fresno Subdivision**.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. Strahm', with a long horizontal flourish extending to the right.

Branden Strahm, PE, CFM.

Encls.

cc: Mr. Mark McCune, UPRR

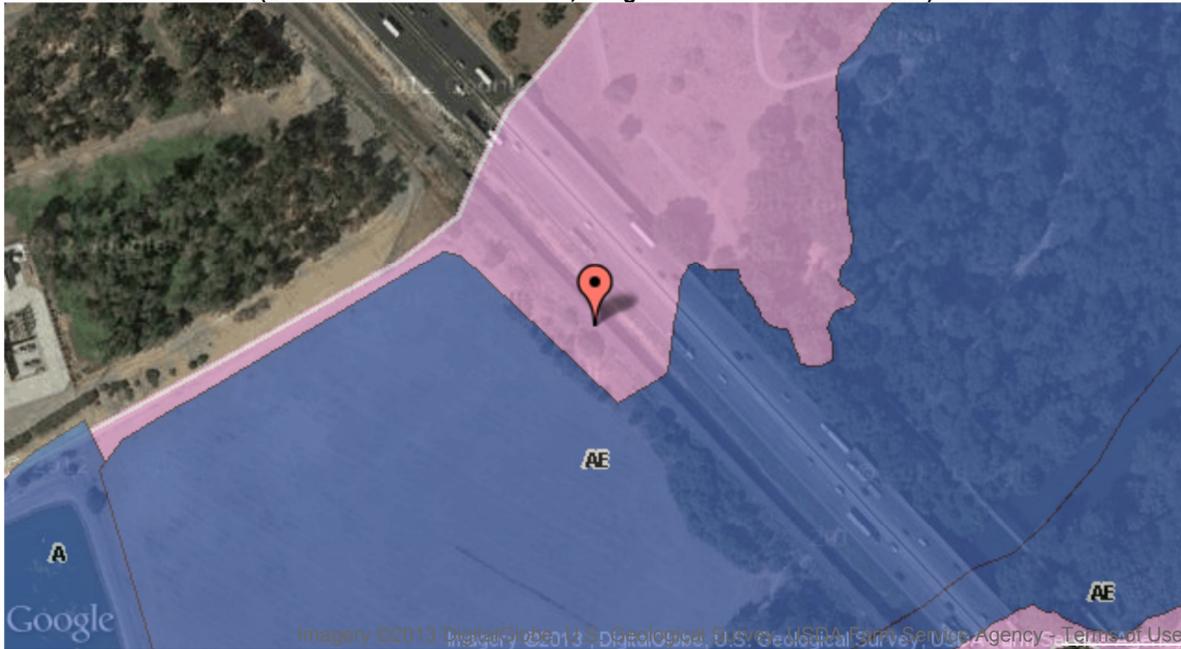
F:\Projects\011-1996\Doc\104_18_Fresno_CVFPB.endorsement.docx

ATTACHMENT C



Floodplain Information

(Latitude: 37.73154001727538, Longitude: -121.11199378967285)



Designated Floodway Information (Definition)

| | | | |
|--------------|--|-----------------|------------------------------------|
| Stream | Stanislaus River (San Joaquin, Stanislaus, Calaveras, and Tuolumne Counties) | Reach | From Project levees to Goodwin Dam |
| Design Flow | 3600 cfs to 8,000 cfs | Length | 48.3 |
| Avg. Freq. | 100 year | Date Adopted | 06/19/1981 |
| Study Method | B | Surface Profile | No |
| Sections | No | Adequacy | 6 |

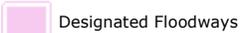
Floodplains are displayed using semi transparent colors. When viewing overlapping floodplains, the combination of multiple semi transparent colors will not match the legend colors. For accurate color representation, view floodplains individually.

Legend:

100-Year Floodplains



Floodways

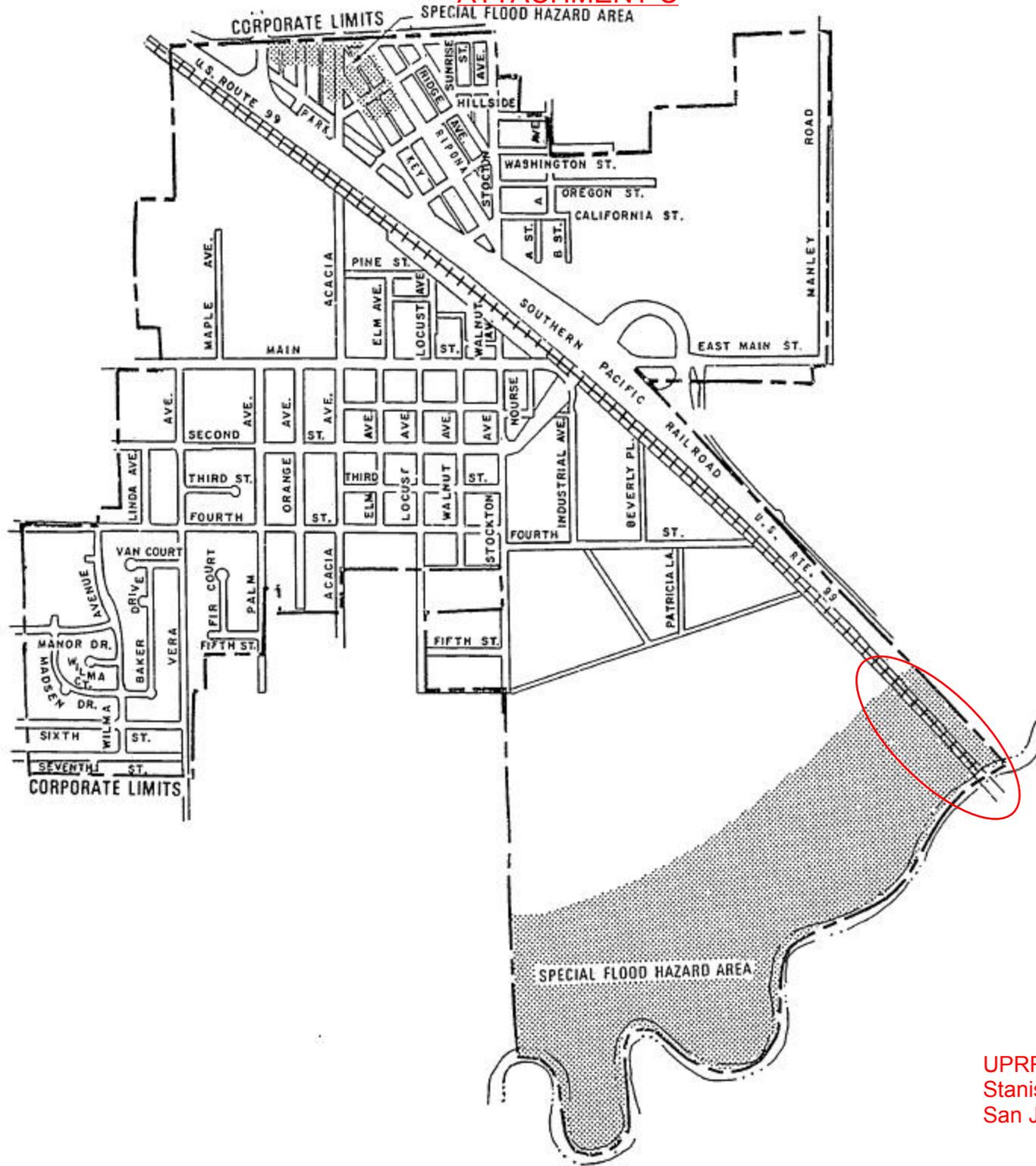


Disclaimer:

If your project is inside or 300 feet from the Designated Floodway or regulated streams you will need an encroachment permit from the Central Valley flood Protection Board.

The floodplain map is best viewed and printed in color

ATTACHMENT C



UPRR Bridge 104.18: Fresno Stanislaus River San Joaquin County, CA

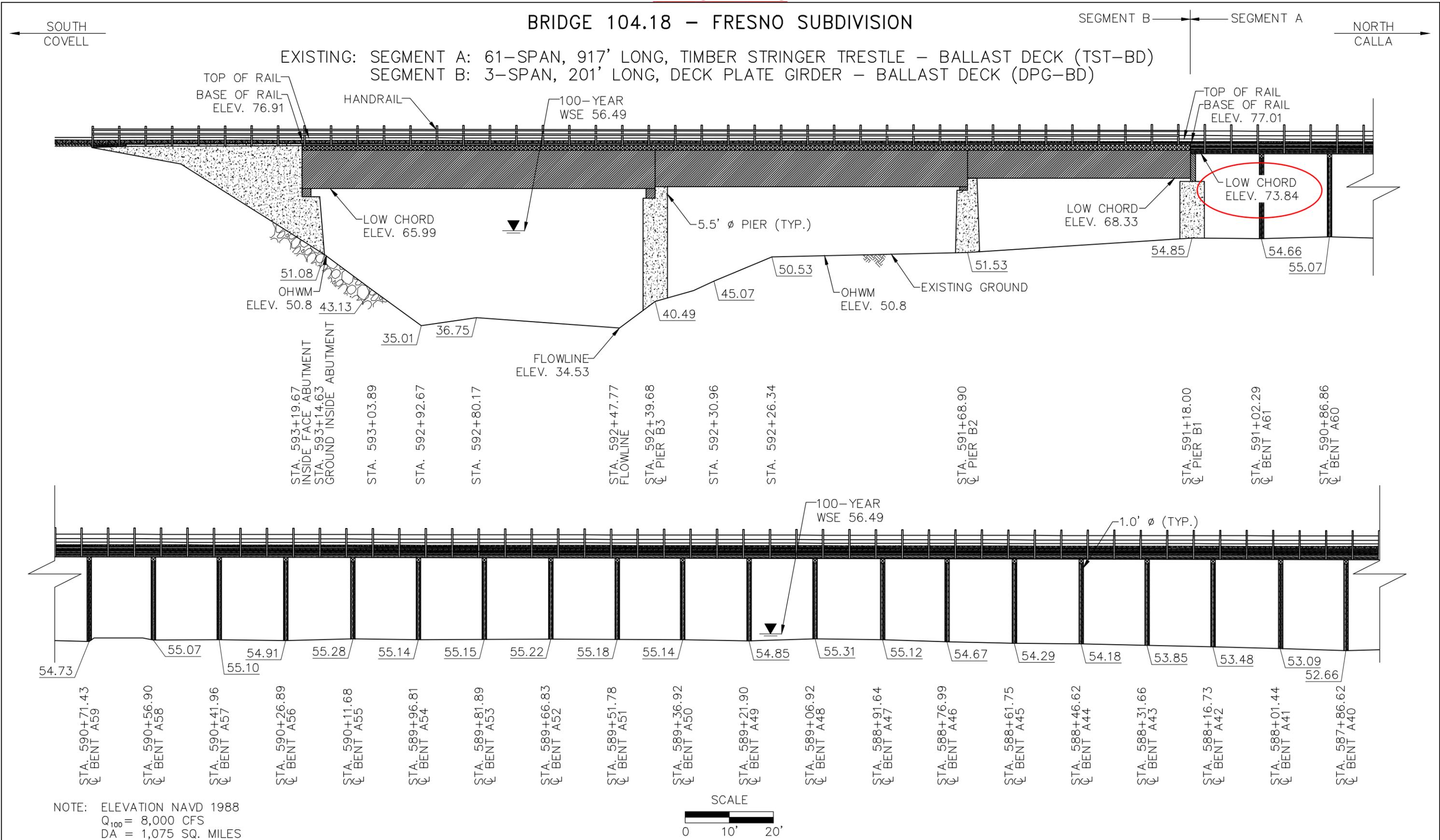
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 CITY OF RIPON, CA
 (SAN JOAQUIN CO.)

APPROXIMATE SCALE
 500 0 1000 2000 3000 FEET

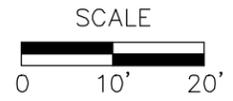
FIA FLOOD HAZARD BOUNDARY MAP
 No H 01

Effective Date
 JANUARY 3, 1975

BRIDGE 104.18 - FRESNO SUBDIVISION



NOTE: ELEVATION NAVD 1988
 Q₁₀₀ = 8,000 CFS
 DA = 1,075 SQ. MILES



PROJECT: 011-1996
 DRAWN BY: NJB
 DATE: 12/17/12

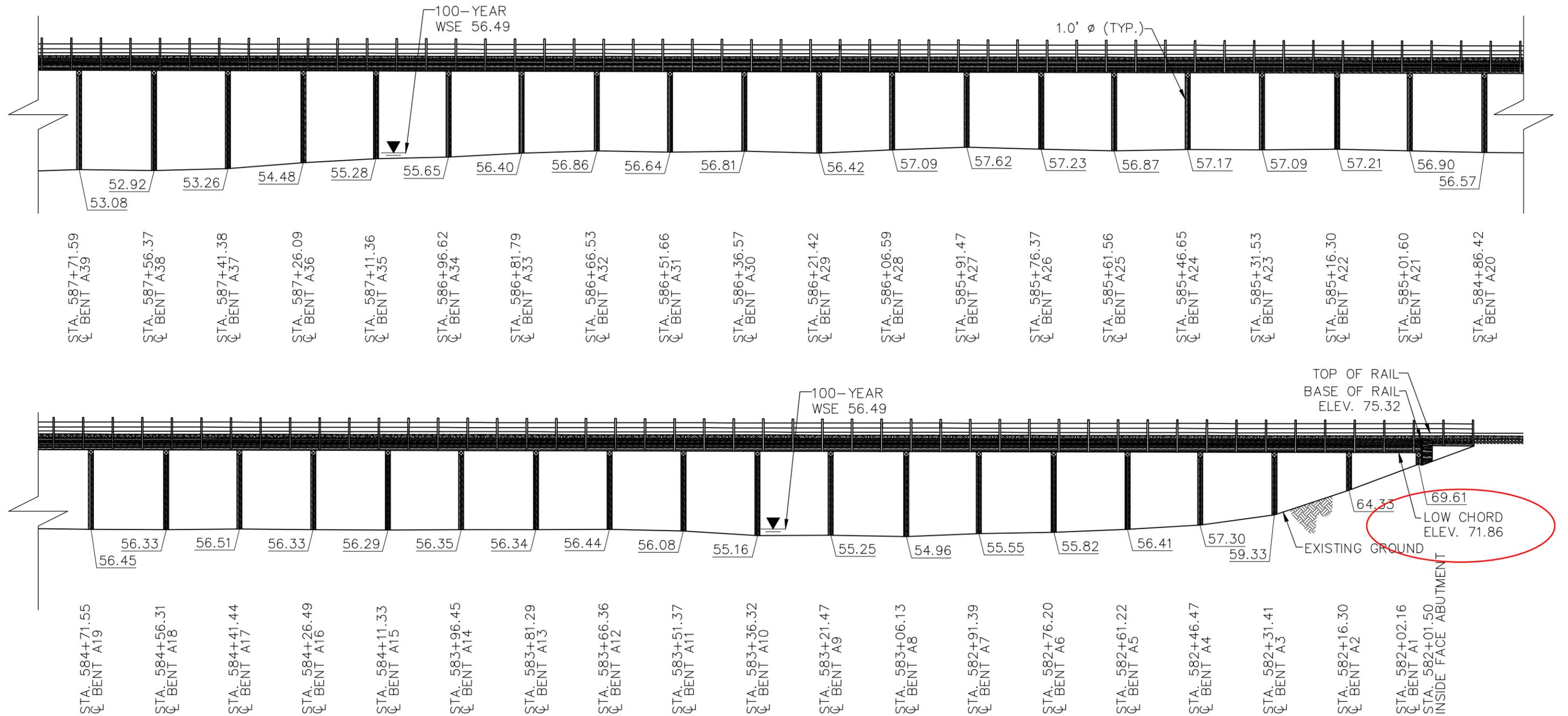
EXISTING BRIDGE - UPSTREAM FACE PROFILE

BRIDGE 104.18 – FRESNO SUBDIVISION

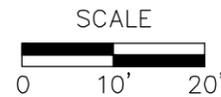
SOUTH
COVELL

NORTH
CALLA

EXISTING: SEGMENT A: 61-SPAN, 917' LONG, TIMBER STRINGER TRESTLE – BALLAST DECK (TST-BD)
SEGMENT B: 3-SPAN, 201' LONG, DECK PLATE GIRDER – BALLAST DECK (DPG-BD)



NOTE: ELEVATION NAVD 1988
Q₁₀₀ = 8,000 CFS
DA = 1,075 SQ. MILES



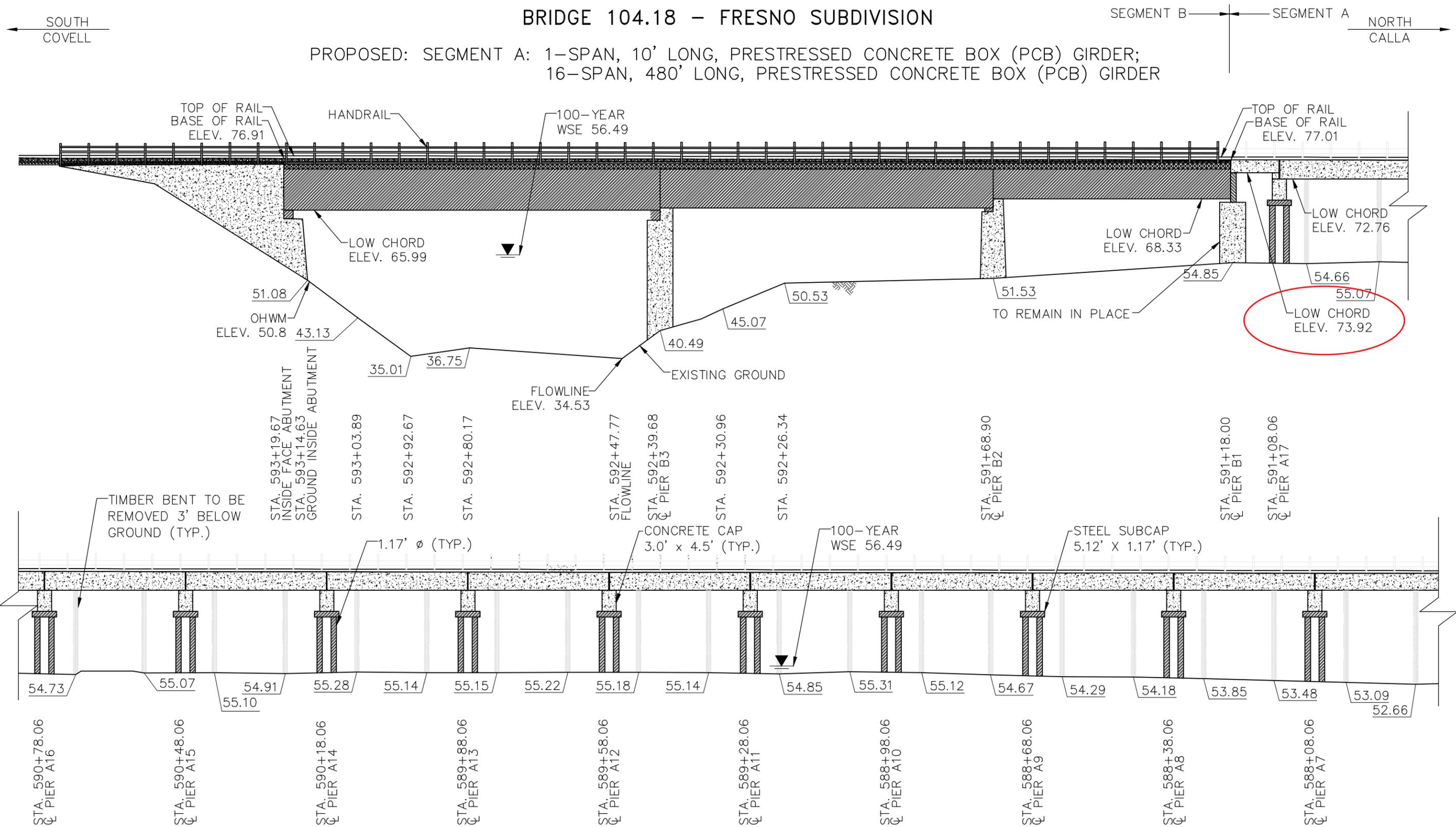
PROJECT: 011-1996
DRAWN BY: NJB
DATE: 12/17/12

EXISTING BRIDGE – UPSTREAM FACE PROFILE

ATTACHMENT C

BRIDGE 104.18 - FRESNO SUBDIVISION

PROPOSED: SEGMENT A: 1-SPAN, 10' LONG, PRESTRESSED CONCRETE BOX (PCB) GIRDER;
16-SPAN, 480' LONG, PRESTRESSED CONCRETE BOX (PCB) GIRDER



NOTE: ELEVATION NAVD 1988
Q₁₀₀ = 8,000 CFS
DA = 1,075 SQ. MILES



PROJECT: 011-1996
DRAWN BY: NJB
DATE: 12/17/12

PROPOSED BRIDGE - UPSTREAM FACE PROFILE (SEGMENT A ONLY)

MOLSSON ASSOCIATES
1111 Lincoln Road, Suite 111
P.O. Box 8888
Lynch, NH 08071-8888
TEL: 603-476-0111
FAX: 603-476-9180
www.molssoneng.com

FIGURE
F-4A

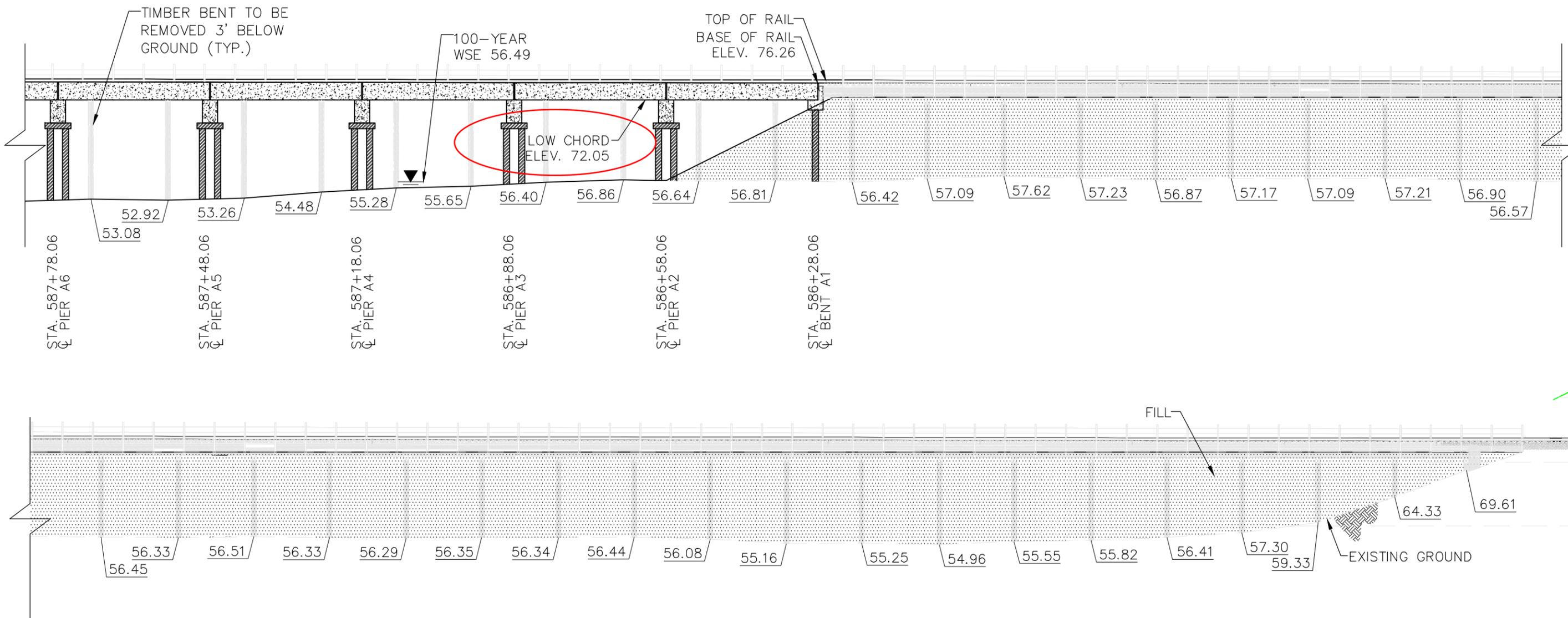
ATTACHMENT C

BRIDGE 104.18 – FRESNO SUBDIVISION

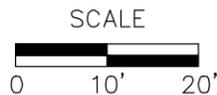
SOUTH
COVELL

NORTH
CALLA

PROPOSED: SEGMENT A: 1-SPAN, 10' LONG, PRESTRESSED CONCRETE BOX (PCB) GIRDER;
16-SPAN, 480' LONG, PRESTRESSED CONCRETE BOX (PCB) GIRDER



NOTE: ELEVATION NAVD 1988
Q₁₀₀ = 8,000 CFS
DA = 1,075 SQ. MILES



PROJECT: 011-1996
DRAWN BY: NJB
DATE: 12/17/12

PROPOSED BRIDGE – UPSTREAM FACE PROFILE (SEGMENT A ONLY)



FIGURE
F-4B

ATTACHMENT C

Branden Strahm

From: Sameer Sharideh <ssharideh@sjgov.org>
Sent: Thursday, February 14, 2013 1:08 PM
To: Branden Strahm
Cc: John Maguire
Subject: RE: UPRR Bridge 104.18 - Stanislaus River

Brandon,

I want to clarify that the First FIRMS for San Joaquin County were published on May 15, 1980. My concern is placing fill in the State Central Valley Flood Protection Board's (CVFPB) Designated Floodway as shown on the plans. I recommended that you contact the CVFPB's Permitting Section by emailing them a set of the plans with a description of your project including the quantity of fill proposed. I would like to see some written confirmation from them indicating that they approve the fill proposed for this project. Additionally, we would want to see the plans revised to show the replacement bridge design in compliance with Title 23- Waters, Section 128 – Bridges (a)(16) requirements (i.e. the soffit no lower than the existing soffit) prior to issuing the Endorsement Letter.

Please call or email me if you have any questions.

Regards,
Sam

From: Branden Strahm [<mailto:bstrahm@olssonassociates.com>]
Sent: Tuesday, February 12, 2013 12:22 PM
To: Sameer Sharideh
Subject: RE: UPRR Bridge 104.18 - Stanislaus River

Sam,

I spoke to David Williams at the Central Valley Flood Protection Board regarding the difference between the Board's Designated Floodway and FEMA's 100 year floodplain. The board's floodway is based on historic data, which is consistent with the 1975 FIRM for San Joaquin County. The current effective FEMA floodplain, dated 2009, is based on the best available data, which includes the construction of New Melones Lake in 1978 and the USGS stream gage located at Bridge 104.18 along the Stanislaus River.

The Ca. Water Code, Title-23 indicates that the best available science should be used for the design storm, which includes the construction of New Melones Dam and stream flow data from the USGS stream gage. The CVFPB will need a review of the entire application (report, HEC RAS models, etc) before making a decision. As you know, CVFPB will not proceed with the review until we have the local endorsement. We've had a few endorsements that includes conditions that the CVFPB reviews it and ensures compliance with Ca. Water Code, Title-23. I've attached a similar endorsement for your use.

Regarding your second question, the lowest low chord of the existing bridge along Segment A is at Elev 71.86 and the proposed low chord is at 72.05, approximately 0.2' higher. The HEC RAS model uses the lowest low chord elevation (most conservative). We always use the lowest, most conservative low chord elevation in our hydraulic analysis.

As info, the proposed bridge meets the no-rise condition for both the 100-year and 200-year event.

If you have any additional questions, please let me know. Thanks.

ATTACHMENT C

Branden

From: Branden Strahm
Sent: Monday, February 11, 2013 9:13 AM
To: 'Sameer Sharideh'
Subject: RE: UPRR Bridge 104.18 - Stanislaus River

Sam,

Sorry I missed your call, I was out of the office last week. I'm available this morning if you want to give me a call to discuss the above project.

Thanks.

Branden Strahm, PE, CFM | Water Resources | Olsson Associates
1111 Lincoln Mall, Suite 111 | Lincoln, NE 68508 | bstrahm@olssonassociates.com
TEL 402.474.6311 | DIR 402.458.5015 | CELL 402.580.8327 | FAX 402.474.5160



 Please consider the environment before printing this e-mail.

From: Sameer Sharideh [<mailto:ssharideh@sjgov.org>]
Sent: Friday, January 25, 2013 5:11 PM
To: Branden Strahm
Subject: RE: UPRR Bridge 104.18 - Stanislaus River

Branden,

Yes, I just started reviewing it, and I will contact you next week with some questions.

Best Regards,
Sam

From: Branden Strahm [<mailto:bstrahm@olssonassociates.com>]
Sent: Thursday, January 24, 2013 1:32 PM
To: Sameer Sharideh
Subject: RE: UPRR Bridge 104.18 - Stanislaus River

Sameer – Have you had a chance to review the above? Thanks.

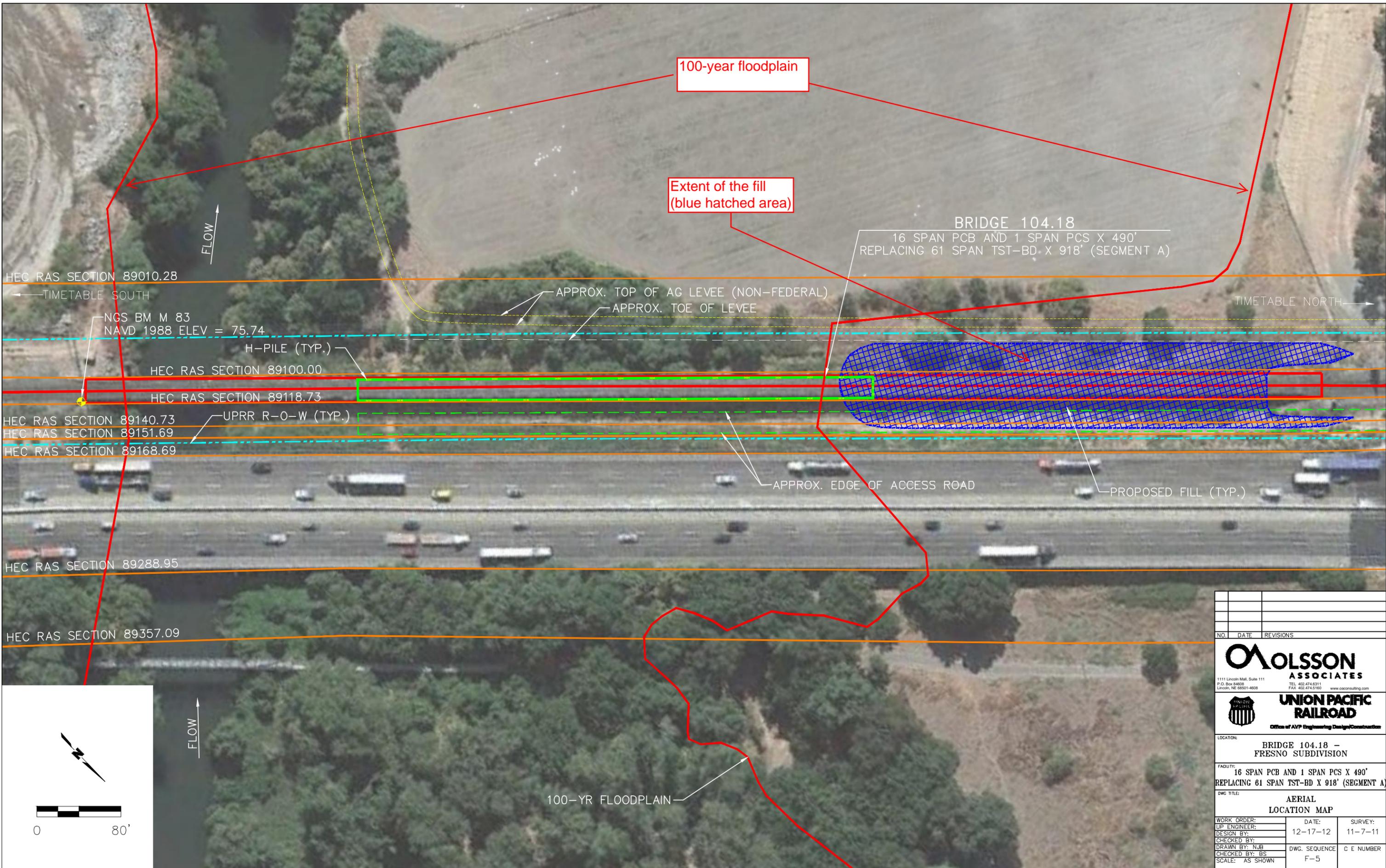
Branden

From: Branden Strahm
Sent: Friday, January 18, 2013 8:39 AM
To: 'Sameer Sharideh'
Subject: UPRR Bridge 104.18 - Stanislaus River

Sameer,

Have you had a chance to review the endorsement application mailed to you attention on 12/27/2012? If you have any questions, please let me know. Thanks!

Branden Strahm, PE, CFM | Water Resources | Olsson Associates



100-year floodplain

Extent of the fill
(blue hatched area)

BRIDGE 104.18
16 SPAN PCB AND 1 SPAN PCS X 490'
REPLACING 61 SPAN TST-BD X 918' (SEGMENT A)

HEC RAS SECTION 89010.28

← TIMETABLE SOUTH

FLOW ↑

TIMETABLE NORTH →

NGS BM M 83
NAVD 1988 ELEV = 75.74

H-PILE (TYP.)

HEC RAS SECTION 89100.00

HEC RAS SECTION 89118.73

HEC RAS SECTION 89140.73

HEC RAS SECTION 89151.69

HEC RAS SECTION 89168.69

UPRR R-O-W (TYP.)

APPROX. TOP OF AG LEVEE (NON-FEDERAL)

APPROX. TOE OF LEVEE

APPROX. EDGE OF ACCESS ROAD

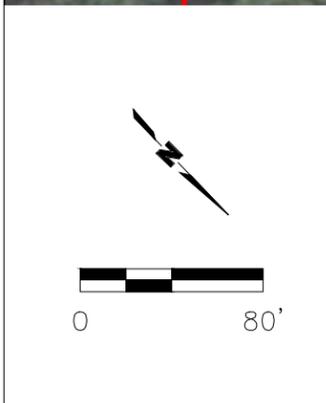
PROPOSED FILL (TYP.)

HEC RAS SECTION 89288.95

HEC RAS SECTION 89357.09

100-YR FLOODPLAIN

FLOW ↑



| NO. | DATE | REVISIONS |
|-----|------|-----------|
| | | |
| | | |

1111 Lincoln Mall, Suite 111
 P.O. Box 84608
 Lincoln, NE 68501-4608
 TEL: 402-474-6311
 FAX: 402-474-5160
 www.ccsconsulting.com

Office of AVP Engineering Design/Construction

LOCATION: BRIDGE 104.18 - FRESNO SUBDIVISION

FACILITY: 16 SPAN PCB AND 1 SPAN PCS X 490'
 REPLACING 61 SPAN TST-BD X 918' (SEGMENT A)

DWG TITLE: AERIAL LOCATION MAP

| | | |
|-----------------|----------------|-------------|
| WORK ORDER: | DATE: | SURVEY: |
| UP ENGINEER: | 12-17-12 | 11-7-11 |
| DESIGN BY: | | |
| CHECKED BY: | | |
| DRAWN BY: NJB | DWG. SEQUENCE: | C E NUMBER: |
| CHECKED BY: BS | F-5 | |
| SCALE: AS SHOWN | | |

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

PERMIT NO. 18841 BD

This Permit is issued to:

Union Pacific Railroad
1400 Douglas St. Stop 0910
Omaha, Nebraska 68179`

The Union Pacific Railroad is proposing to stabilize and replace a portion (Segment A) of an existing timber string trestle of Bridge 104.18 in the Fresno Subdivision. The proposed stabilization consists of compacted fill of 427 feet of the bridge and the replacement consists of a new bridge deck comprised of pre-cast concrete caps and girders supported by steel H-piles.

Bridge 104.18 is a commuter rail bridge located in San Joaquin County near Ripon, California. The bridge spans the Stanislaus River and is located west of, and parallel to, State Route 99 (Section 29, T2S, R8E, MDB&M, San Joaquin County Flood Control and Water Conservation District, Stanislaus River, San Joaquin County).

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

(SEAL)

Dated: _____

Executive Officer

GENERAL CONDITIONS:

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

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

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

ATTACHMENT E

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. 18841 BD

THIRTEEN: All work completed under this permit, as directed by the general and special conditions herein, shall be accomplished to ensure that the work is not injurious to adopted plans of flood control, regulated streams, and designated floodways under Board jurisdiction, as defined in California Code of Regulations, Title 23. This permit only applies to the completion of work in the project description located within, or adjacent to and having bearing on Board jurisdiction, and which directly or indirectly affects the Board's jurisdiction. This special condition shall apply to all subsequent conditions herein.

LIABILITIES / IMDEMNIFICATION

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

FIFTEEN: The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively,

ATTACHMENT E

the "State"), safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

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

EASEMENT, LICENSE OR TEMPORARY ENTRY PERMIT

SEVENTEEN: If the construction project extends onto land owned in fee and/or easement by the Sacramento and San Joaquin Drainage District acting by and through the Central Valley Flood Protection Board (hereafter Board), the permittee should secure an easement, license, or temporary entry permit from the Board prior to commencement of work. Contact Angelica Aguilar at (916) 653-5782.

PERMITTING AND AGENCY CONDITIONS

EIGHTEEN: The letter from the U.S. Army Corps of Engineers, Sacramento District dated _____, 2013 is attached to this permit as Exhibit A and is incorporated by reference.

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

TWENTY: This permit may be modified to incorporate additional conditions pursuant to potential future endorsement of the proposed project by San Joaquin County.

TWENTY-ONE: If the permittee does not comply with the conditions of the permit and enforcement by the Board is required, the permittee shall be responsible for bearing all costs associated with the enforcement action, including reasonable attorney's fees.

TWENTY-TWO: The permittee agrees to incur all costs for compliance with local, State, and Federal permitting and resolve conflicts between any of the terms and conditions that agencies might impose under the laws and regulations it administers and enforces.

PRE-CONSTRUCTION

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

TWENTY-FOUR: Thirty (30) calendar days prior to start of any demolition and/or construction activities within the floodway, the permittee shall submit to the Chief Engineer two sets of plans, specifications and supporting geotechnical and/ or hydraulic impact analyses, for any and all temporary, in channel cofferdam(s), gravel work pad(s), work trestle(s), scaffolding, piles, and/or

ATTACHMENT E

other appurtenances that are to remain in the floodway during the flood season from November 1 through July 15. The Central Valley Flood Protection Board shall acknowledge receipt of this submittal in writing within ten (10) working days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Central Valley Flood Protection Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or local maintaining agency when necessary. The Central Valley Flood Protection Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) calendar days.

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

TWENTY-SIX: The permittee shall provide supervision and inspection services acceptable to the Central Valley Flood Protection Board. A licensed civil engineer registered in the State of California shall certify that all work was inspected and performed in accordance with submitted drawings, specifications, and permit conditions.

TWENTY-SEVEN: All addenda or other changes made to the submitted documents by the permittee after issuance of this permit shall be submitted to the Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include supplemental plans, specifications, and supporting geotechnical, hydrology and hydraulics, or other technical analyses. The Central Valley Flood Protection Board shall acknowledge receipt of the addendum or change submittal in writing within ten (10) workin days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Central Valley Flood Protection Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or the local maintaining agency when necessary. The Central Valley Flood Protection Board will provide written notification to the permittee if the review period is likely to exceed thrity (30) calendar days. Upon approval of the submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

TWENTY-EIGHT: A copy of any geotechnical studies and tests that may be performed during or prior to construction that are in addition to studies that were submitted in support of the permittee's application for an encroachment permit shall be provided to and approved by the Central Valley Flood Protection Board prior to project completion.

CONSTRUCTION

TWENTY-NINE: 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.

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

ATTACHMENT E

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

THIRTY-TWO: 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 July 15.

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

CONSTRUCTION MATERIALS

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

THIRTY-FIVE: All fill material shall be imported impervious material with 20 percent or more passing the No. 200 sieve, a plasticity index of 8 or more, and a liquid limit of less than 50 and free of lumps or stones exceeding 3 inches in greatest dimension, vegetative matter, or other unsatisfactory material. Fill material shall be compacted in 4- to 6-inch layers to a minimum of 90 percent relative compaction as measured by ASTM Method D1557-91, or appropriate Board approved equal.

THIRTY-SIX: The permittee shall be responsible for all damages due to settlement, consolidation, or heave from any construction-induced activities.

VEGETATION / ENVIRONMENTAL MITIGATION

THIRTY-SEVEN: Fill placed at slopes greater than 2 horizontal to 1 vertical shall be seeded with a native grass mix to reduce the risk of erosion.

THIRTY-EIGHT: 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.

THIRTY-NINE: No further tree planting or work, other than that covered by this application, shall be performed in the area without prior approval of the Central Valley Flood Protection Board.

POST-CONSTRUCTION

FORTY: The work area shall be restored to the condition that existed prior to start of work.

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

FORTY-TWO: Within 120 days of completion of the project, the permittee shall submit to the Central Valley Flood Protection Board and Department of Water Resources (addresses above) as-built drawings and a certification report, stamped and signed by a civil engineer registered in the State of California, certifying the work was performed and inspected in accordance with the Central Valley Flood Protection Board permit conditions and submitted drawings and specifications.

ATTACHMENT E

OPERATIONS AND MAINTENANCE

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

FORTY-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.

FORTY-FIVE: Drainage from the bridge or railroad bed shall not be discharged onto the streambank so as to cause erosion of the bank.

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

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

FORTY-EIGHT: 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.

FORTY-NINE: If erosion occurs adjacent to the permitted encroachment(s), the permittee shall repair the eroded areas and place adequate revetment on the affected areas to prevent further erosion.

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

FIFTY-ONE: At the request of either the permittee or Central Valley Flood Protection Board the permittee and Board shall conduct joint inspections of the project and floodway after significant flood events or flood seasons to assess the integrity and operation of the project, and to assess and respond to any adverse impacts on the floodway or adjacent properties.

PROJECT ABANDONMENT, CHANGE IN PLAN OF FLOOD CONTROL

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

FIFTY-THREE: The permittee may be required, at permittee's cost and expense, to remove, alter,

ATTACHMENT E

relocate, or reconstruct all or any part of the permitted encroachment(s) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if damaged by any cause. If the permittee does not comply, the Central Valley Flood Protection Board may remove the encroachment(s) at the permittee's expense.

END OF CONDITIONS