



HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT



P.O. BOX 1030
Eureka, California 95502
phone (707) 443-0801
fax (707) 443-0800

PERMIT APPLICATION

Date Filed _____

General Information	For District Use
1.) Name, Address, phone # and email of Developer, Project Sponsor and Legal Owner	A. Application No. _____ Application Type: Franchise <input type="checkbox"/> Permit <input type="checkbox"/> Lease <input type="checkbox"/>
2.) Address of Project and Assessor's block, lot and Parcel Number	B. Date Received by Harbor District C. Date Accepted for filing by Commission
3.) Contact person Name, Address, phone #	D. Date of Public Notice E. Date of Environmental Compliance F. Date of Public Notice G. Date of Public Hearings
4.) Attach list of names and addresses of all adjoining property owners	H. Date of Commission Action Approval: _____ Conditional _____ Disapproval _____
5.) List and describe any other related Project Permits & Other Public Approvals required, including those required by City, Regional, State & Federal Agencies.	I. Expiration Date
6.) Existing City/County Zoning	Comments
7.) Proposed Site Use (Project Title)	

Describe proposed project

PRE-PROJECT EELGRASS CHECKLIST

Please complete the Eelgrass Pre-project Checklist below. Note that the checklist questions relate to the Area of Potential Effect (APE) associated with your project, which incorporates a surrounding buffer inclusive of the limits of potential construction and/or maintenance-related activities that could affect eelgrass habitat. Provide a copy of the completed questionnaire along with your permit application and a map depicting the proposed project location, potential eelgrass depth range -10 to +4 feet, and benchmark eelgrass distribution in the vicinity of the proposed project. Maps should be of an appropriate scale to clearly depict the preliminary/proposed APE boundary in relation to both existing and potential eelgrass resources as provided in the Humboldt Bay Eelgrass Comprehensive Management Plan and associated webpage (humboltdbay.org/eelgrass-management-plan). Here you'll find information and links including [eelgrass information for permit applicants](#), a [baseline eelgrass distribution map](#), and the [Humboldt Bay Eelgrass Comprehensive Management Plan](#). Contact the Harbor District office with questions (443-0801).

For New Projects:

		YES	NO
a)	Is the project located within 100 feet of previously mapped (known) eelgrass habitat?		
b)	Will any construction or new operational traffic occur within the vicinity of existing eelgrass?		
c)	Is any portion of the project located in an area with depths ranging from -10 to +4 feet?		
d)	Does the project result in new cover, shading or other form of light reduction of open water areas ranging in depth from -10 to +4 feet?		
e)	Is the project anticipated to affect wind or tidal circulation patterns within the bay?		
f)	Could the project affect ambient water temperature or clarity or result in new effluent (including stormwater) discharge point?		
g)	Does the project result in any placement of fill, including shoreline armor?		
h)	Is the project anticipated to lead to an increase in boat traffic that could affect nearby eelgrass habitat through grounding, prop scarring, wake, or shading impacts?		

For Maintenance/Repair Projects and Construction Activities:

		YES	NO
i)	Is project construction likely to increase turbidity? To what extent and for what duration?		
j)	Will construction require the use of a barge or other vessel that may temporarily impact the bay floor (e.g. spud poles, anchoring, prop scarring, etc.) within known eelgrass habitat or within depths ranging from -10 to +4 feet?		
k)	Will construction require the use of turbidity curtains in proximity to eelgrass habitat?		
l)	Will project construction result in temporary shading from moored/anchored working vessel(s)?		

If you responded yes to any of the questions above, your project may have the potential to affect eelgrass habitat and you'll need to conduct a preliminary eelgrass survey. Please refer to the District's [Eelgrass Management Plan webpage](#) for further guidance and a list of local agency contacts should you have additional questions.

Answer all questions completely on a separate page. If the question does not apply to your project, so indicate by marking N.A. Contact Harbor District Office with questions.

PROJECT DESCRIPTION

8. Site Size
9. Square Footage
10. Number of floors of construction
11. Amount of off-street parking provided
12. Attach plans
13. Proposed scheduling
14. Associated projects
15. Anticipated incremental development
16. If residential, include the number of units, schedule of unit sizes, range of sale prices or rents, and type of household size expected.
17. If commercial, indicate the type, whether neighborhood, city or regionally oriented, square footage of sales area, and loading facilities
18. If industrial, indicate type, estimated per shift employment & loading facilities.
19. If institutional, indicate the major function, estimated per shift employment, occupancy, loading facilities, and community benefits derived from the project.
20. If the project involves a variance, conditional use or recognizing application, state this and indicate clearly why the application is required.

Are the following items applicable to the project or its effects? Answer yes or no.
Discuss all items answered yes.

21. Change in existing features of any bays, tidelands, beaches, lakes or hills, or substantial alteration of ground contours.
22. Change in scenic views or vistas from existing residential areas or public lands or roads.
23. Change in pattern, scale or character of general area of project.
24. Significant amounts of solid waste or litter.
25. Change in dust, ash, smoke, fumes or odors in vicinity.
26. Change in ocean, bay, lake, stream or ground water quality or quantity, or alteration of existing drainage patterns.
27. Substantial change in existing noise or vibration levels in the vicinity.
 - A. During Construction
 - B. During Project Utilization
28. Site on filled land or on slope of 10% or more.

29. Use of disposal or potentially hazardous materials, such as toxic substances, flammable or explosives.
30. Substantial change in municipal services demand (police, fire, water, sewage, etc.)
31. Substantially increase fossil fuel consumption (electricity, oil, natural gas, etc.).
32. Relationship to larger project or series of projects

ENVIRONMENTAL SETTING:

33. Describe the project site as it exists before the project including information on topography, soil stability, plants and animals, and any cultural, historical, or scenic aspects. Describe any existing structures on the site and the use of the structures. Attach photographs of the site. Photos will be accepted.
34. Describe the surrounding properties, including information on plants and animals and any cultural, historical, or scenic aspects. Indicate the type of land use (residential, commercial, etc.) intensity of land use (one-family, apartment houses, shops, department stores, etc.) and the scale of development (height, frontage, set-back, rear yard, etc.) Attach photographs of the vicinity. Photos accepted.

----- Questions 35; and 36 MUST BE ANSWERED! -----

35. How will the proposed use or activity promote the public health, safety, comfort, and convenience?
36. How is the requested grant, permit, franchise, lease, right, or privilege required by the public convenience and necessity?

37. Financial statement:
 - A. Estimated project cost.
 - B. How will the project be financed?
38. Describe fully directions necessary to arrive at project site.
39. The Applicant agrees to as a condition of the permit being issued, to indemnify and hold harmless the Humboldt Bay, Harbor Recreation and Conservation District from any and all claims, demands, or liabilities for attorneys' fees obtained from or against demands for attorney's fees, costs of suit, and costs of administrative records made against District by any and all third parties as a result of third party environmental actions against District arising out of the subject matter of this application and permit, including, but not limited to, attorney's fees, costs of suit, and costs of administrative records obtained by or awarded to third parties pursuant to the California Code of Civil Procedure Section 1021.5 or any other applicable local, state, or federal laws, whether such attorneys' fees, costs of suit, and costs of administrative records are direct or indirect, or incurred in the compromise, attempted compromise, trial, appeal, or arbitration of claims for attorneys' fees and costs of administrative records in connection with the subject matter of this application and permit

NOTE

The District hereby advises the Applicant that, under California Public Resources Code (PRC) Section 21089, the District when a lead agency under the California Environmental Quality Act (CEQA) of 1970, as amended, pertaining to an Environmental Impact Report (EIR) or a Negative Declaration (MND/ND) may charge and collect from the Applicant a reasonable fee in order to recover the estimated costs incurred by the District in preparing an EIR or MND/ND for the project and the procedures necessary for PRC compliance on the Applicants project.

In the event your project contains an analysis of issues pertaining to CEQA, for which District staff is not competent to independently review, or District requires the same in preparation of an EIR or MND/ND for the project, the District may retain a reviewing consultant to evaluate the content of the Administrative-Draft EIR and Final EIR or MND/ND with respect to these issues. The cost of such reviewing consultant services shall be borne by the Applicant.

CERTIFICATION: I hereby certify that the statements furnished above and in the attached exhibits present the information required for this initial evaluation to the best of my ability, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. And I agree to indemnify the District as described in part 39 of this application.

Dated: _____

For _____



COUNTY OF HUMBOLDT

DEPARTMENT OF PUBLIC WORKS
ENVIRONMENTAL SERVICES DIVISION

1106 SECOND STREET
EUREKA, CA 95501-0579
707.445.7741 / FAX 445.7409

Answers to Questions for Harbor District Permit

Project Name: Pine Hill Road at Swain Slough Bridge Replacement Project
Applicant: Humboldt County Department of Public Works
Date: January 2, 2020

Question No.

1. Humboldt County Public Works
1106 2nd Street
Eureka, CA 95501
(707) 445-7741
2. The bridge project on Pine Hill Road runs through APN # 302-181-008
3. Andrew Bundschuh
Environmental Permitting and Compliance Manager
1106 2nd Street
Eureka, CA 95501
707-445-7741
abundschuh@co.humboldt.ca.us
4. List of names and addresses of all adjoining property owners:
APN 302-181-008; Robert Prior (TR), PO Box 23, Eureka, CA 95502
APN 302-151-019; Andrew Chamberlain, 1701 Obispo Ave, Long Beach, CA 90804
APN 302-151-020; Lou and Elizabeth Jacobson, 979 Pine Hill Road, Eureka, CA 95503
APN 302-161-003; Northcoast Regional Land Trust, PO Box 398, Bayside, CA 95524
5. Other Permits:
NMFS/USFWS - Biological Opinions
CDFW - 1602 Permit
RWQCB - 401 Certification
Army Corps - 404 Nationwide Permit
6. Bridge project is on existing county/public roadway. County right-of-way.

7. Pine Hill Road Bridge over Swain Slough - Bridge Replacement Project

8. Site Size: The area of impact includes the roadway, the bridge and a small portion of the adjoining property for wetland/seasonal ditch re/creation. The county plans to improve 400 feet of roadway on each side of the bridge as well as replace the bridge. Dimensions would be roughly 1000 feet long by 50 feet wide. Please see attached maps depicting the total area of the project including right-of-way and temporary construction easement needs. Estimated area of project is 50,000 sq. ft.
9. As explained above, the estimated size is roughly 1000 feet long by 50 feet wide for a total area of ~50,000 sf. However, much of the work will occur in the roadway and not extend out into Swain Slough or Martin Slough. Therefore, the above area is over-exaggerated.
10. N/A
11. N/A
12. Attached
13. A construction schedule will not be known until the contract is awarded. However, the plan is to have HCSD replace the water line in April/May of 2020 and then construction activities related to the bridge replacement will occur in May/June and be completed by November 2020.
14. Replacement of the bridge will require HCSD to relocate a water line that is currently attached to the bridge. HCSD is planning on directional drilling the new water line underneath the slough channel with the entrance and exit points along the roadway. See attached plans.
15. N/A
16. N/A
17. N/A
18. N/A
19. N/A
20. N/A

Yes/No Questions

21. No
22. No; the bridge replacement project will not have a change in scenic views from existing properties, lands or roads. The bridge will be slightly wider and longer than the existing bridge, but this is being done to bring it to standards.
23. No
24. No; There will be wastes/debris disposal from the project, but all wastes will be disposed of in an approved upland facility.
25. No
26. Yes; the longer bridge will have a benefit to Swain Slough by widening the channel and thus reducing tidal flooding. The project will also remove existing concrete bridge columns and debris from the channel. The project will also replace two storm drain culverts that will help in existing drainage of stormwater runoff.
27.
 - a. During construction there will a period of time with changes in noise levels. During the demolition of the old bridge, use of heavy equipment, and pile driving activities associated with the new piles for the abutments.

- b. Once the new bridge is in place, there will be no increases in use or noise.
- 28. No
- 29. No
- 30. No; as stated earlier, HCSD will be replacing the existing water line with a larger water line using directional drilling. There will be a short period of lapse of service, but the end result will be a larger water line with better service.
- 31. No
- 32. No


Environmental Setting

- 33. This bridge replacement project is being funded through FHWA Highway Bridge Program and administered through Caltrans Local Assistance. Complete compliance with NEPA and CEQA were done, including studies and reports relating to cultural resources, sensitive plants and animals, etc. The project was determined to have no significant impact on resources and/or the environment. There will be no significant change in the project site from pre- to post-construction. Pine Hill Road bisects agricultural lands and Due to the need to widen the approaches and new bridge, the county has acquired a small strip of property on each side (north/south) of the project in order to recreate roadside ditches. The new ditches will be wider and will help with the overall drainage of the area.
- 34. As mentioned above, the surrounding land is mostly agricultural/grazing lands. There are a few residential properties on the east side of the bridge. The best way to get an idea of this rural area is via Google Earth and/or County WebGIS. Lat: 40.752553°, -124.182592°.
- 35. The existing bridge is structurally deficient and does not meet current standards. Replacing the bridge with one that is wider and to current standards will promote public safety as well as provide pedestrians a safe route across the bridge.
- 36. The requested permit is required as State Lands has deferred jurisdiction to the Harbor District.
- 37.
 - a. The estimated construction costs of the bridge replacement project is 2.4 million dollars.
 - b. The bridge is 100% funded through federal highway's (FHWA) Highway Bridge Program (HBP). This bridge has been programmed for replacement since 2012.
- 38. The bridge site is located on Pine Hill Road at Post Mile 0.20. It is accessed off of Elk River Road just south of Herrick Ave.
- 39. Agreed.
 - a. The County of Humboldt is the lead agency for CEQA and a Notice of Exemption was posted with the county clerk's office in 2016.



BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY


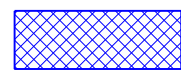
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CONTRACT NO.:	594020
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EA NO.:	
PPNO.:	
REVISION DATE:	5-21-2015

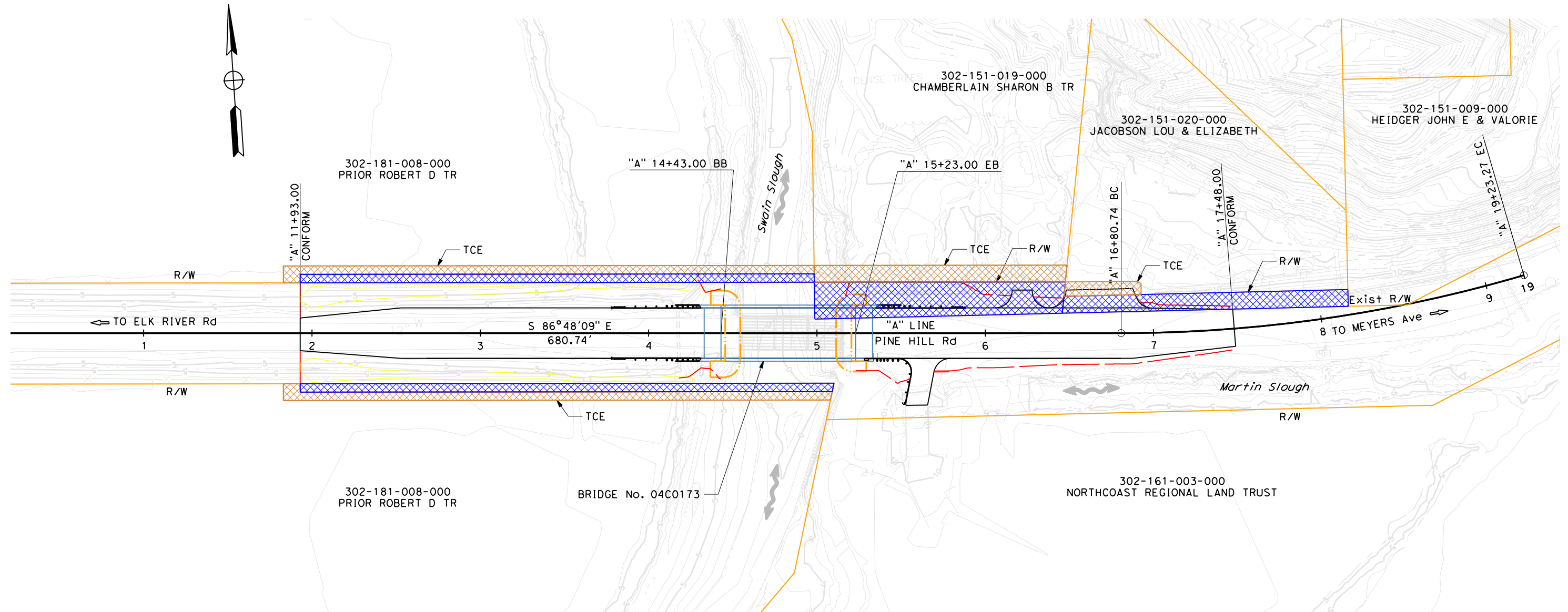
 QUINCY ENGINEERING	
DESIGNED BY:	KP
DRAWN BY:	KP
REVIEWED BY:	JJ
APPROVED BY:	

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH
RIGHT OF WAY NEEDS

SHEET
1
OF
11

LEGEND:

-  TEMPORARY CONSTRUCTION EASEMENT
-  PERMANENT ROADWAY EASEMENT



APN	OWNER	TOTAL PARCEL	PERMANENT ROADWAY EASEMENT	TEMPORARY CONSTRUCTION EASEMENT	REMAINDER
		SF	SF	SF	SF
302-181-008-000	PRIOR ROBERT D TR	914,760	3,110	3,310	911,650
302-151-019-000	CHAMBERLAIN SHARON B TR	110,642	2,995	1,500	107,647
302-151-020-000	JACOBSON LOU & ELIZABETH	20,909	1,695	370	19,214

RIGHT OF WAY NEEDS
SCALE: 1"=30'
RW-1

Project Report

Swain Slough Bridge on Pine Hill Road

Federal Project No. BRLO-5904 (112)

Existing Bridge No. 04C0173

New Bridge No. 04C0260



Prepared For:

County of Humboldt
Department of Public Works



Prepared By:



October 2019

developing YOUR vision | delivering YOUR project

Prepared by:



Jason P. Jurrens, P.E.
Project Engineer
Quincy Engineering, Inc.

Submitted by

(916) 368-9181

James Foster, P.E.
Project Manager
Quincy Engineering, Inc.

Date

Telephone

Approved by

Tony Seghetti, P.E.
County of Humboldt
Department of Public Works

Date

Telephone

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VICINITY MAP

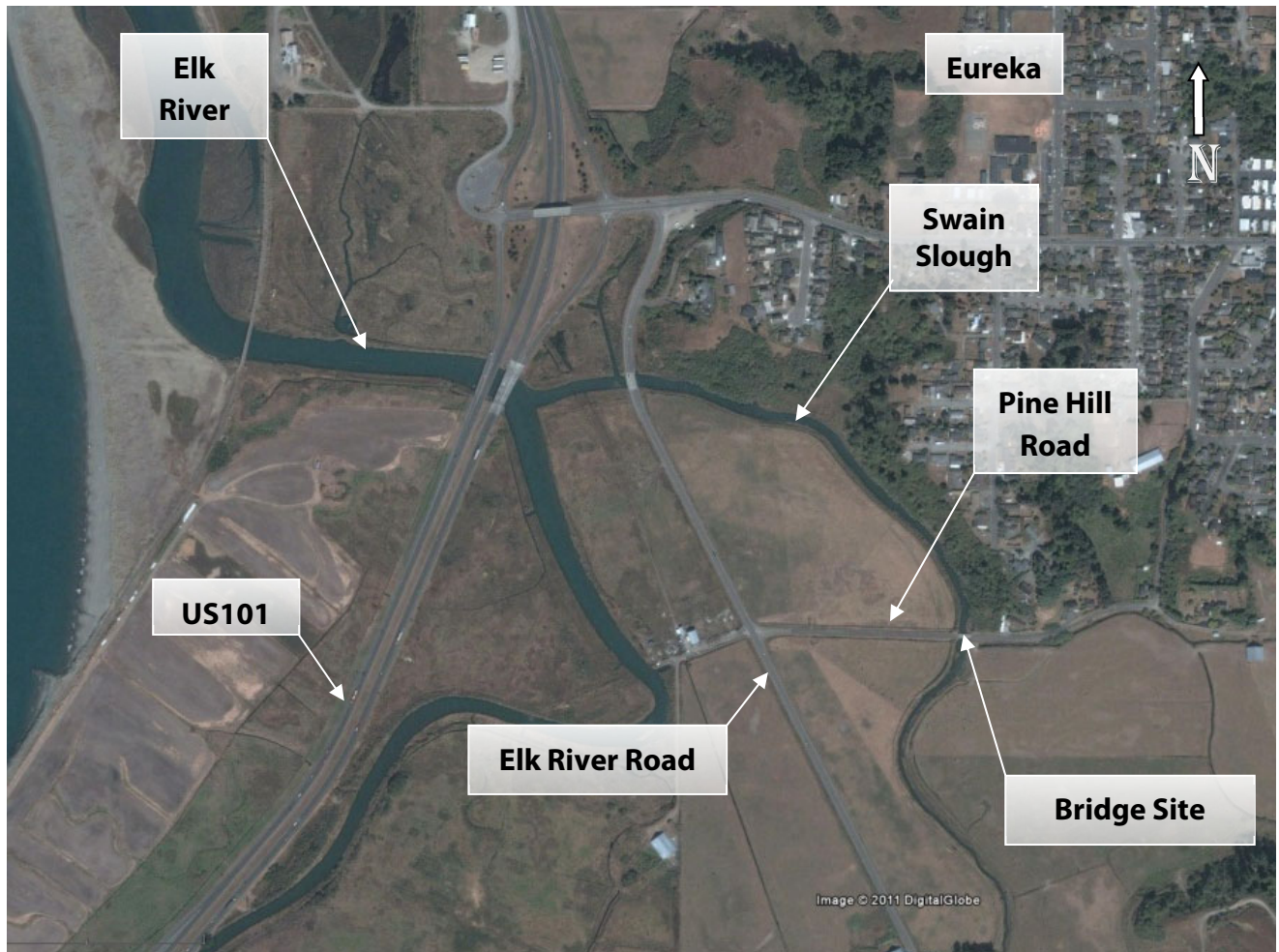


Photo 1 – Aerial View of Project Site (From Google Earth)



EXECUTIVE SUMMARY

Humboldt County Department of Public Works is proposing to replace the Swain Slough Bridge (Bridge No. 04C-0173) at Pine Hill Road. The existing bridge is located just south of Eureka on Pine Hill Road (a local rural two-lane road) approximately 0.2 miles east of Elk River Road. Pine Hill Road provides the access across Swain Slough for local residences to Elk River Road.

The purpose of this project is to improve public safety by providing a safe and permanent solution for traffic to cross Swain Slough. This will be accomplished by replacing the existing structurally deficient, three-span timber-stringer bridge with a new single-span concrete structure. The existing bridge has been in service since 1955 and is currently classified as structurally deficient. Due to poor sufficiency rating, the existing bridge qualifies for Federal funding.

Pine Hill Road is classified as a Local Road which qualifies for 100% reimbursement of the bridge replacement cost from federal aid. Other costs of the rehabilitation project such as preliminary engineering, right-of-way, and others are funded by the Federal Highway Bridge Program (HBP) which will provide approximately 100% of the total project cost.

This project is currently scheduled to begin construction of the new bridge in spring of 2020. Traffic will be detoured 1.6 miles during construction while the new bridge is constructed on the existing roadway alignment. Full closure of Pine Hill Road at the location of the bridge is anticipated for construction, which allows the use of the paved approach roadways to be used as construction staging area. This allows minimal construction footprints reducing environmental impacts to Swain Slough. Traffic will then be permanently shifted onto the new structure once construction is completed.

The existing facility consists of a three-span simply supported timber-stringer structure, with concrete deck and curbs. According to the latest Bridge Inspection Report (BIR), the bridge length is approximately 63' long with three equal length spans of approximately 21' and the bridge width is approximately 20'. The substructure consists of reinforced concrete abutments and reinforced concrete bent cap on pile extensions. The BIR also notes the deteriorating condition of the bridge; with 11 out of the 20 timber bridge railing posts as well as the top 1" of the north exterior girder showing signs of rot and moderate to severe vertical cracking on concrete piles extensions. The existing facility has been designated as structurally deficient with a 2017 sufficiency rating of 42.6 and a superstructure rating of 4.

This project will improve public safety by replacing this structurally deficient bridge. It will also improve traffic operations by widening the bridge to provide 10' lanes and 5' shoulders in each direction and replace all traffic safety features to meet current standards. Rehabilitation and widening of the existing bridge is cost prohibitive and not considered feasible.

Replacing the bridge on the existing alignment was chosen due to the lowest construction cost, least environmental impacts, speed of construction, and least new right-of-way needs. With the detour only being approximately 1.6 miles, the most practical and cost-effective roadway alignment was to close Pine Hill Road for one construction season and replace the bridge on its existing alignment.



There were two bridge types considered for this project location:

- The Single-Span Precast Wide-Flange Concrete Girder bridge is recommended as it will not require falsework to construct and will eliminate the need for any piers within the limits of the Slough. This alternative will reduce construction time due to wide flange girders precast off project location and available for erection immediately. Precast manufacturer has confirmed the viability of shipping this length of girders to project site. In addition, this alternative lends to a structure depth that will conform to the proposed roadway profile and will not encroach on the channel hydraulic highwater surface elevation. Furthermore, this alternative will decrease the environmental impacts on an environmentally sensitive area. Based on constructability, functionality, economic considerations and local boundary conditions, a single span precast- prestressed concrete girder is a viable structure alternative for this project.
- A Single-Span Cast in Place Post-Tensioned Box Girder bridge was also considered for this project because it can provide the same minimum structure depth to adhere to the hydraulic requirements without raising the proposed profile. Similar to the preferred precast alternative, this option is also single span and would preclude the need for piers within the slough. However, the cast in place construction would require falsework which will most likely require driven piles during construction which will further disturb the environmentally sensitive slough. A bridge General Plan for this option is included in Appendix G for further reference.

Based on the information contained in this project report, the project development team recommends replacing the bridge on existing alignment utilizing a Single-Span Precast Prestressed Reinforced Concrete Wide Flange Girder bridge. This alternative meets the project goals, reduces construction schedule duration, is cost competitive, and minimizes temporary and permanent environmental and right-of-way impacts from the project.

The project costs for constructing the recommended structure type/alignment is summarized as follows:

Project Construction Cost	
Structure Construction	\$1,206,000
Bridge Removal	\$50,4000
Slope Protection	\$25,000
Channel Work	\$40,000
Detour	\$10,000
Approach Roadway	\$499,000
Mobilization	\$183,000
Total	\$2,013,000



Project Costs	
PE	\$500,000
CON	\$2,000,000
CE	\$300,000
CONT	\$500,000
RW	\$50,000
TOTAL	\$3,350,000

The project development schedule is summarized as follows:

Project Milestone	Proposed Delivery Date
Environmental Document Approval	July 2016
Plans, Specifications & Estimate	January 2020
Project Permits Secured	December 2019
Utility Coordination and Right-of-Way	December 2019
Advertise Project	March 2020
Award Contract	May 2020
Project Construction	June 2020 – October 2020

The project team recommends approval of the project report and continuing the project to develop the final PS&E package leading to construction of a replacement bridge.

INTRODUCTION

Humboldt County Department of Public Works is proposing to replace the Swain Slough Bridge (Bridge No. 04C-0173) at Pine Hill Road. The existing bridge is located just south of Eureka on Pine Hill Road (a local rural two-lane road) approximately 0.2 miles east of Elk River Road. Pine Hill Road provides the access across Swain Slough for local residences to Elk River Road.

The purpose of this project is to improve public safety by providing a safe and permanent solution for traffic to cross Swain Slough. This will be accomplished by replacing the existing structurally deficient, three-span timber-stringer bridge with a new single span concrete structure. The existing bridge has been in service since 1955 and is currently classified as structurally deficient. Due to poor sufficiency rating, the existing bridge qualifies for Federal funding.

Pine Hill Road is classified as a Local Road which qualifies for 100% reimbursement of the bridge replacement cost from federal aid. Other cost of the rehabilitation project such as preliminary engineering, right-of-way, and others are funded by the Federal Highway Bridge Program (HBP) which will provide approximately 100% of the total project cost.

This project is currently scheduled to begin construction of the new bridge in spring of 2020. Traffic will be detoured 1.6 miles during construction while the new bridge is constructed on



the existing roadway alignment. Full closure of Pine Hill Road at the location of the bridge is anticipated for construction, which allows the use of the paved approach roadways to be used as construction staging area. This allows minimal construction footprints reducing environmental impacts to Swain Slough. Traffic will then be permanently shifted onto the new structure once construction is completed.

EXISTING FACILITY

The existing facility consists of a three-span simply-supported timber-stringer structure, with concrete deck and curbs. According to the latest Bridge Inspection Report (BIR), the bridge length is approximately 63' long with three equal length spans of approximately 21' and the bridge width is approximately 20'. The substructure consists of reinforced concrete abutments and reinforced concrete bent cap on pile extensions. The BIR also notes the deteriorating condition of the bridge; with 11 out of the 20 timber bridge railing posts as well as the top 1" of the north exterior girder showing signs of rot and moderate to severe vertical cracking on concrete piles extensions, as shown in Figure 1. The existing facility has been designated as structurally deficient with a 2017 sufficiency rating of 42.6 and a superstructure rating of 4.



Figure 1: Vertical Cracking on Piles

DESIGN CRITERIA

All alternatives must meet the following criteria:

- **Roadway Design**
Roadway design will be based on *"AASHTO Policy on Geometric Design of Highways and Streets 2011, 6th Edition Green Book"* along with County standards where appropriate.
- **Bridge Design**
Final bridge design will be performed in accordance with *"AASHTO LRFD Bridge Design Specifications, Sixth Edition, and the Caltrans Amendments preface dated November 2011"*. The latest updated versions of Caltrans bridge design manuals will also be utilized when applicable.
- **Seismic Design**
Seismic design will be performed in accordance with the Caltrans *"Seismic Design Criteria Version 1.6 November 2010"* and the latest information available from Caltrans Earthquake Research.
- **Hydraulic Analysis**
The *Caltrans "Local Assistance Procedures Manual"* requires that the bridge soffit be 2' above the 50-year flood elevation and that the bridge be capable of conveying the 100-year flood or the flood of record.



ROADWAY ALTERNATIVES

Replacing the bridge on the existing alignment was chosen due to the lowest construction cost, least environmental impacts, speed of construction, and least new right-of-way needs. With the detour only being approximately 1.6 miles, the most practical and cost-effective roadway alignment was to close Pine Hill Road for one construction season and replace the bridge on its existing alignment. Building the

new bridge either upstream or downstream of the existing bridge, or staging the new bridge construction to keep the existing bridge open during construction would result in significantly more impacts to the channel, wetlands, and farmlands.



Figure 2: Looking East & West on Pine Hill Road

The existing roadway has 10' traffic lanes with minimal shoulders. The 2009 traffic counts recorded an Average Daily Traffic (ADT) of 341 vehicles per day, which increases to 582 vehicles per day in 2036 at a 2% per year increase. The proposed road and bridge cross section will consist of 10' lanes, 5' shoulders, 2' choker, and 2' for barrier railing for a total width of 34'. This is 14' wider than the existing 20' wide structure. 1.5:1 side slopes will be utilized to further reduce impacts to the adjacent wetlands and farmlands. This configuration is in conformance with AASHTO's *Guidelines for Geometric Design of Highways and Streets* and the 2012 *Humboldt County General Plan*. This 30' clear width meets the minimum design standard when considering functional classification, design speed, and terrain for the project location.

The roadway classification for Pine Hill Road is a local rural road in flat terrain. Given the context of the existing roadway within the project limits and the need to raise the vertical profile for hydraulic concerns, a 35-mph proposed design speed is appropriate. This speed satisfies AASHTO standards Exhibit 5-1 for local roads and satisfies AASHTO's *Policy on Geometric Design of Highways and Streets* guidelines.

The general alignment of Pine Hill Road through the project site is an east-west direction. There are no significant obstacles or small radius curves to reduce the stopping sight distance. This allows for the bridge to be constructed on the existing alignment with no skew.

The existing profile along the bridge deck must be raised approximately 3' vertically to meet the slough hydraulic and tidal change requirements. The minimum soffit elevation is required to be at or above the King Tide elevation of 8.5', per WRECO's hydraulics evaluations. In order to accomplish vertical change and stay within the AASHTO guidance for profile grade and vertical curves that meet the 35-mph design speed, the proposed roadway profile uses a 120' long sag curve leading into a 180' long crest curve and ending with a 160' long sag curve.



Levees are located at the southeast, northwest, and southwest corners of the existing bridge. These levees are maintained by the property owners and the project will not be making improvements to the levees. A minimal amount of conforming at the levees to accommodate the raising of the bridge grade is anticipated.

Approach Guardrail

The existing bridge has no approach guard railings or attached end treatments. This bridge replacement project will significantly improve the roadway approach features by protecting each corner of the new bridge with a conventional end treatment system.

STRUCTURE ALTERNATIVES

Single-Span Precast Prestressed Reinforced Concrete Wide-Flange Girder

The single-span precast wide-flange concrete girder bridge is recommended as it will not require falsework to construct and will eliminate the need for any piers within the limits of the slough. This alternative will reduce construction time due to wide flange girders precast off-project location and available for erection immediately. The precast manufacturer has confirmed the viability of shipping this length of girders to project site. In addition, this alternative lends to a structure depth that will conform to the proposed roadway profile and will not encroach on the channel hydraulic highwater surface elevation. Furthermore, this alternative will decrease the environmental impacts on an environmentally sensitive area. Based on constructability, functionality, economic considerations and local boundary conditions, a single-span precast prestressed concrete girder is a viable structure alternative for this project.

Rejected Structure Alternative

A single-span cast in place post-tensioned concrete box girder bridge was also considered for this project because it can provide the same minimum structure depth to adhere to the hydraulic requirements without raising the proposed profile. Similar to the preferred precast alternative, this option is also single-span and would preclude the need for piers within the slough. However, the cast in place construction would require falsework which will most likely require driven piles during construction which will further disturb the environmentally sensitive slough. A bridge General Plan for this option is included in Appendix G for further reference.

Based on the information contained in this project report, the project development team recommends replacing the bridge on existing alignment utilizing a single-span precast prestressed reinforced concrete wide flange girder bridge. This alternative meets the project goals, reduces construction schedule duration, is cost competitive, and minimizes temporary and permanent environmental, and right-of-way impacts from the project.

A permanent sheet piling system will be constructed around the new bridge footing which will eliminate the need for Rock Slope Protection (RSP) to protect the abutment. The width between the abutments of the existing bridge is approximately 58.5'. The width between the sheet piling is 65.5' for an overall channel widening of 7.0'. The channel will be widened 1.7' on the easterly bank and 5.3' on the westerly bank. All existing RSP will be removed from the channel.



Bridge Railing

With the proposed 35 mph design speed along Pine Hill Road, metal bridge railing is proposed instead of conventional concrete barriers which are more commonly associated with higher speed conditions. Concrete Bridge Railing (Type 85 Modification) will be mounted on top of the bridge edge of deck. To accommodate the thickness of the metal rail elements and still maintain a 30' clear width, the overall proposed structure width will be 34' – 0".

DESIGN EXCEPTIONS

A single design exception for hydraulic freeboard will be required. The basic rule for hydraulic design of bridges is that they should be designed to pass the two percent (2%) probability flood or tide (Q50) or the flood-of-record, whichever is greater without causing objectionable backwater, excessive flow velocities, or encroaching on through traffic lanes. Sufficient freeboard, the vertical clearance between the lowest structural member, and the water surface elevation of the design flood should be provided. A minimum freeboard of 2' is often assumed for preliminary bridge design. An evaluation should be performed to determine, if horizontal and vertical driftway requirements warrant a modified freeboard. The freeboard for controlled flow waterways, such as irrigation canals, shall be required by the regulatory agency having jurisdiction.

- The final design should be able to convey the base flood, Q100.
- The base flood (Q100) or overtopping flood, whichever is greater shall be used to evaluate the costs, risks and impacts associated with encroachments on the 100-year base flood plain.
- Construction projects in areas vulnerable to Sea Level Rise to begin planning for potential impacts by considering a range of SLR scenarios for the years 2050 and 2100

The non-standard design element is hydraulic clearance. The bridge deck has been designed to remain dry during the 100-year flow. Swain Slough, Martin Slough, and Elk River all become one large backwater during high flow events. This backwater is made worse during a high flow coupled with a Humboldt Bay high tide. Conveyance under the bridge is not a factor as each of these waterways go out of bank during the high flows. The bridge as designed does not cause objectionable backwater and does not provide freeboard due to drift.

The approach roadways leading to the bridge become inundated during the high flows. The bridge is not accessible from the adjacent County roads during flood events and the County has no plans to improve the approach roadways to meet standard flood elevation.

The bridge has been designed to accommodate a future raise if Sea Level Rise becomes an issue in the future. The footing has been sized for a taller bridge and jacking points have been detailed to facilitate raising this single span bridge.

DRAINAGE

Existing drainage patterns will generally be preserved. Drainage along the northeastern side of Pine Hill Road generally flows to the northeast corner of the bridge and into Swain Slough. An existing ditch will be re-graded with a new pipe and energy dissipating device added to enhance this system. The drainage patterns at the southeast corner of the bridge will not change as it



currently sheet flows off the roadway and into Martin Slough. The existing pipe beneath the westerly approach will be replaced with a new 18" pipe which will maintain the existing drainage patterns. Water flows into the southwest field through a breach in the levee and flows towards the bridge. A portion of the flow crosses into the northwest field via the existing pipe, and a portion overtops the road at the midpoint between the Swain Slough Bridge and Elk River Road. The water then flows to a depressed area along the northwest levee before re-entering Swain Slough midway between the Swain Slough Bridge and the Elk River Road Bridge. The construction of the Swain Slough Bridge will not alter these preexisting drainage patterns.

TRAFFIC CONTROL/DETOUR

The County has indicated that it will be acceptable to close the existing roadway and detour traffic during construction of the replacement bridge and the approach roadway. Detour to Meyers Avenue, just northeast of the facility, may be used by local residence living near the existing facility during construction.

CONSTRUCTION METHODS AND CONTRACTOR ACCESS

It is anticipated that excavators, dozers, cranes, dump trucks, concrete trucks, concrete pumps, pile driving hammers, and pile drilling equipment may be required to remove the existing bridge and construct the new bridge. Construction is anticipated to be completely within one construction season. With a full road closure in place, contractor will have access to the project site from both embankments. The Contractor will use the approach roadways as the staging area which will reduce the environmental impacts to the project area. No staging of equipment will occur in the wetland or agricultural areas.

Some dewatering of the sheetpile cofferdam will be required. The contractor will utilize temporary tanks that will be staged on the existing asphalt roadway approaches. The water that is collected will be disposed of offsite.

Settlement due to embankment construction is anticipated. The contractor will add approximately 1' of additional fill to the each of the approaches along with a settlement monitoring system to determine the quantity and duration of settlement. Once the settlement has occurred, the additional fill will be removed.

Removal of the concrete bridge piers will be accomplished at a very low tide by excavating around each pier, pulling each pier over with an excavator, breaking it off below the mud line, and removing them from the slough channel. No concussive hammering of the existing concrete piers during demolition is required. The excavated pier pits will be backfilled with the sediment removed or with clean gravel after demolition. Installing sheet piling around the piers to contain sediment was investigated but was discarded as this will cause more disturbance to the channel than the described method.

In-channel work is limited and will consist of removal of the existing columns, removal of trash and debris from the channel, and the removal of sediment from in front of the sheet piling. All in-channel work will be performed at low tide with minimal flow in Swain Slough. There is no work and/or impacts to Martin Slough.

Work is anticipated to occur during daylight hours.



RIGHT-OF-WAY

The project site is located adjacent to four parcels that have several owners. Right-of-way will be required from three of the four parcels and will include Temporary Construction Easements (TCEs) and Permanent Roadway Easements (PREs). The following table details the APN, Owners, and needed R/W types:

APN	OWNER	R/W Type
302-181-008-000	PRIOR ROBERT D TR	PRE, TCE
302-151-019-000	CHAMBERLAIN ANDREW SUCTR	PRE, TCE
302-151-020-000	JACOBSON LOU & ELIZABETH	TCE

UTILITIES

The Humboldt Community Services District (HCSD) owns and operates a 12" water line that is connected to the north side of the existing Swain Slough Bridge. This water line serves the Humboldt Hill area. HCSD requires this water line remain in service due to the lack of a redundant loop facility within their system.

HCSD will be relocating this waterline using Horizontal Directional Drilling (HDD) that will occur before the construction of the new bridge. The alignment of the new water line has been coordinated with the design of the new bridge and will not be in conflict once it has been relocated. HCSD will include BMPs in the project and will provide details of the process to address the Coastal Commission concerns including "frac-out".



Figure 3: Existing Water Line

ENVIRONMENTAL/PERMITS

The replacement of the Swain Slough Bridge will require both CEQA and NEPA clearances. As the delegated Federal Highway Administration lead agency due to the use of federal funds, Caltrans has determined that the project is a NEPA Categorical Exclusion under 23 CFR 771.117(d): activity (d)(13). Humboldt County as the CEQA lead agency has determined that this project fits the definition of a Class 2 Categorical Exemption (CEQA Guidelines, Section 15302) as it involves the replacement of an existing public facility on the same site with the same purpose and capacity as the structure being replaced. Furthermore, this project has been analyzed under both CEQA and NEPA and it has been determined that the project, as designed, will not adversely impact air quality, water quality, historical or cultural resource, or any other environmental area. The project will improve vehicular/pedestrian/bicyclist safety and reduce the potential of accidents and injuries. This project fits within the definition of the Class 2 Categorical Exemption as set forth in CEQA Guidelines, Section 15302. Additionally, Humboldt County has determined that none of the exceptions to the Categorical Exemptions set forth in CEQA Guidelines, Section 15300.2, apply. As such, Humboldt County has concluded that this Categorical Exemption applies to this project.



The technical studies to support these determinations include:

Cultural Resources

An Archaeological Study Report (ASR) and Historic Property Study Report (HPSR) were prepared in January of 2013 and it was determined that there are no cultural or historical resources within the project area, therefore there will be No Historic Properties Affected by the project.

Biological Resources

A Biological Assessment/Essential Fish Habitat Assessment (BA/EFHA) was submitted to the National Marine Fisheries Service (NMFS) to address potential impacts to federally listed fish species. NMFS completed the Section 7 consultation and issued a Biological Opinion on September 25, 2015 which concluded that the project is likely to adversely affect Northern California DPS steelhead, SON CC ESU coho salmon, and California Coastal ESU Chinook salmon, but is not likely to jeopardize the species. NMFS also concluded the project is likely to result in an adverse effect to critical habitat for the Coastal SON CC ESU coho salmon, California ESU Chinook salmon ESU, and the Northern California DPS steelhead. The project is not likely to destroy or adversely modify critical habitat. In the Biological Opinion (BO), the National Marine Fisheries Service determined that incidental take would occur to all three salmonid species in the form of capture during fish relocation and by exposure to lethal noise levels resulting from pile driving. NMFS expects no more than one juvenile of each species to be injured and no more than two juveniles of each species will be killed as a result of constructing the project. NMFS also concluded that the project would adversely affect Essential Fish Habitat for Pacific salmon species. While the proposed action contains measures to minimize adverse effects to EFH, NMFS provided additional conservation measures to further offset the adverse effects.

The BA/EFHA was also submitted to the U.S. Fish and Wildlife Service (USFWS) to address potential impacts to the federally listed tidewater goby. The USFWS completed the Section 7 consultation and issued a Biological Opinion on September 24, 2015 which concluded that the project is likely to adversely affect the species but is not likely to jeopardize the species. They also concluded the project action area is not located within designated critical habitat for the species. In the BO, USFWS determined that incidental take would occur to tidewater goby in the form of capture during fish relocation and/or during dewatering activities. The USFWS expects no more than five adult gobies to be injured or killed as a result of constructing the Project. Conservation measures to reduce impacts to salmonids and gobies will be followed and are included in the attached Environmental Commitment Record (ECR).

A Natural Environment Study was prepared in October 2014 and included a wetland delineation. The delineation found that U.S. jurisdictional waters and three-parameter wetlands occupy 0.989 acres of the BSA. State jurisdictional waters and two- and one-parameter coastal wetlands occupy 1.165 acres of the BSA. The project design minimized impacts on wetlands to the extent practicable. All other design considerations would have a greater impact on wetlands. Since the project design with the least impact on wetlands was selected, the project is in compliance with the Wetlands Only Practicable Finding Alternative. Minimization measures to reduce impacts on wetlands and waters are included in the ECR. A Wetlands Mitigation and Monitoring Plan shall be prepared and provided to the U.S. Army Corps of Engineers, North Coast RWQCB, California Coastal Commission, and the CDFW for review and approval.



Farmlands

The project will have no permanent impact on prime or unique farmland. Temporary impacts on non-prime agricultural land will be less than significant.

Floodplain

The project will not result in any longitudinal or significant encroachment on the 100-year flood plain.

Other Environmental Considerations

Review of the project site and project plans indicate that the project would not result in substantial adverse impacts to the visual environment. Other than a temporary increase in ambient noise from heavy equipment working during construction hours there are no long-term sound impacts associated with the project. Upon project completion, noise levels will return to pre-construction ambient levels. There are no known hazardous waste issues in the project area.

Permits

- 404 Permit from the U.S. Army Corps of Engineers
- 401 from the Regional Water Quality Control Board
- 1602 from the Department of Fish and Wildlife
- Coastal Development Permit from the California Coastal Commission

GEOTECHNICAL/FOUNDATIONS

SHN Consulting Engineers & Geologist submitted a preliminary foundation memorandum for the proposed bridge on September of 2012 shown in Appendix I. Foundations for the abutments will most likely consist of Caltrans Class-45 standard driven pile foundations. A Preliminary Foundation Report will be provided prior to the design phase of the project.

SEISMIC

The project site is located within one of the most seismically active areas of the State. Caltrans Seismic Design Criteria version 1.6 (November 2010) will be utilized for the bridge design. Quincy will perform an equivalent static seismic analysis of the proposed bridge. The recommended ARS curve for seismic design will be provided by the geotechnical engineer and included in the foundation report.

FALSEWORK

Falsework will not be required within the limits of the slough for the preferred precast concrete girder alternative. This will be a great advantage to minimize impact to the project site compared to other cast in place alternatives. This will also benefit the construction schedule by reducing the overall time needed to construct the bridge.



DECK PROTECTION

This project is located within a marine environment, therefore additional corrosion mitigation techniques is required. Special protection measures such as thicker concrete cover and epoxy coated reinforcement are required to provide proper protection.

HYDRAULICS

The clear span of the proposed bridge is longer than the current structure and will improve the existing hydraulic condition. Furthermore, the vertical profile of the proposed bridge is being raised such that the entire superstructure will clear the anticipated King Tide elevation. A draft design hydraulic and location hydraulic study report has been prepared and is included in Appendix J.

The Pine Hill Road over Swain Slough Bridge Replacement Project (Project) site crosses over Swain Slough immediately downstream of its confluence with Martin Slough. The mouth of Martin Slough is separated from Swain Slough by a levee and tide gates. The confluence of Swain Slough with Elk River is 0.5 mi downstream of the Project site. Elk River eventually drains into Humboldt Bay approximately 1.5 mi further downstream. Because of its close proximity to Humboldt Bay, the project is tidally influenced.

The peak discharges for Swain/Martin sloughs were estimated using a rainfall/runoff model. The 100-year and 50-year peak discharge values for Swain/Martin sloughs were estimated to be 2,490 cubic feet per second (cfs) and 2,200 cfs, respectively. The hydraulic characteristics at the Project site were evaluated using the Hydrologic Engineering Centers River Analysis System (HEC-RAS) modeling software, Version 4.1.0 developed by the U.S. Army Corps of Engineers (USACE).



Figure 4: Profile view looking north

100-Year Water Surface Elevations and Freeboard at Upstream Face of Bridges

Alternative	Lowest Bridge Soffit Elevation (ft*)	Water Surface Elevation (ft*)	Available Freeboard (ft)
Existing	9.3	12.1	-2.8
Proposed	8.9	12.1	-3.2

Note: * The elevations reference the North American Vertical Datum of 1988 (NAVD 88)



50-Year Water Surface Elevations and Freeboard at Upstream Face of Bridges

Alternative	Lowest Bridge Soffit Elevation (ft*)	Water Surface Elevation (ft*)	Available Freeboard (ft)
Existing	9.3	11.5	-2.2
Proposed	8.9	11.5	-2.6

Note: * The elevations reference the North American Vertical Datum of 1988 (NAVD 88)

The proposed bridge is designed based on the tidal elevations at Humboldt Bay and there are provisions to raise the bridge in the future to address sea level rise, but the currently proposed bridge is not designed to account for sea level rise. The bridge foundations are designed for the superstructure to be able to be raised in the future to accommodate sea level rise. Sea level rise estimates for the Project site were estimated using information from the following three studies:

- The Probability of Sea Level Rise (Environmental Protection Agency [EPA]1995)
- Climate Change Scenarios and Sea Level Rise Estimates for the California 2009
- Climate Change Scenarios Assessment (Cayan 2009), and
- The Proceedings of National Academy of Science (PNAS) (Vermeer and Rahmstorf 2009)

Sea Level Rise Estimates for the Year 2100 near Humboldt Bay, California

Method/Source	Sea Level Rise (ft)	
	High	Low
EPA	3.0	-0.8
CAYAN	4.6	3.3
PNAS	4.9	1.3

CHANNEL SCOUR/SLOPE PROTECTION

Based on field reviews and the maintenance report history, scour is a concern that needs to be addressed at this site. Appropriate protective countermeasures include placement of rock slope protection along each embankment slope in order to provide a more stable slough and reduce erosion along the abutment slopes. Vibrated permanent sheet piling will be installed to a depth that is below the anticipated scour which will protect the abutments in the future. The new abutments will be placed further apart to improve flow characteristics in the stream channel.

CONSTRUCTION COSTS

The bridge construction cost for the preferred alternative is based on the 30% level design which is estimated to be \$1,206,000. A 10% mobilization and 25% contingency was assumed when computing the total cost from the current level of design. Construction cost estimates for the preferred alternative is detailed and shown on Table 1. The construction costs analysis estimates have been presented based on Caltrans Comparative Bridge Cost and preliminary roadway quantities with unit prices from similar projects. Table 2 includes cost estimates



associated with utility coordination/relocation, right-of-way, environmental mitigation, or construction engineering that are eligible for federal aid.

Table 1: Structure Construction Cost

Alternative	Bridge Square Footage	Total Construction Cost
Preferred Alt. – PC/PS W-Flange Girder	2,720 sq. ft.	\$1,206,000

Table 2: Construction Cost Analysis

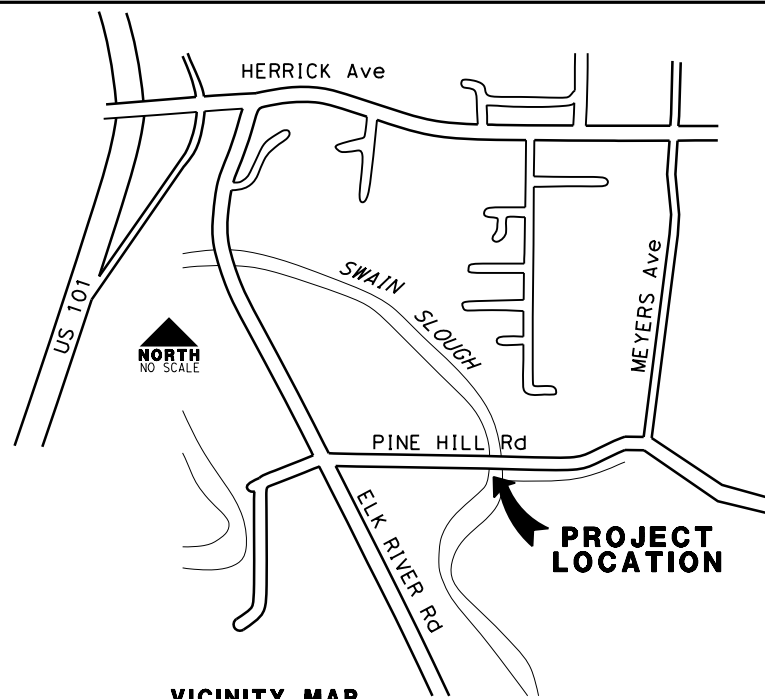
Construct Bridge	Bridge Removal	Slope Protection	Channel Work	Detour	Approach Roadway	Utility Relocation	Mobilization	Total Construction
\$1,206,000	\$50,400	\$25,000	\$40,000	\$10,000	\$499,000	\$0	\$183,000	\$2,013,000

CONCLUSIONS

An 80' single-span precast-prestressed concrete wide flange girder built on the existing horizontal alignment is the preferred structure type. With many bridge type comparison issues such as cost, foundations, and constructability being considered, precast-prestressed concrete wide flange girder is the most ideal replacement type at this site.

ATTACHMENTS

- A. Preliminary Environmental Study
- B. Type Selection Memo
- C. NEPA Determination
- D. CEQA Determination
- E. Natural Environment Study
- F. Archaeological Study Report (ASR)
- G. Historic Property Study Report (HPSR)
- H. Preferred Alternative
- I. Preliminary Project Cost Estimates
- J. Preliminary Foundation Report
- K. Hydraulics Information
- L. Bridge Inspection Records Information System Report



VICINITY MAP
NOT TO SCALE

APPLICABLE STANDARD PLANS

CALTRANS STANDARD PLANS DATED 2018.
(SEE SPECIAL PROVISIONS STANDARD PLAN LIST)

NOTES

THE CONTRACTOR SHALL HAVE A CLASS "A" LICENSE
FOR THIS PROJECT.

INDEX OF SHEETS

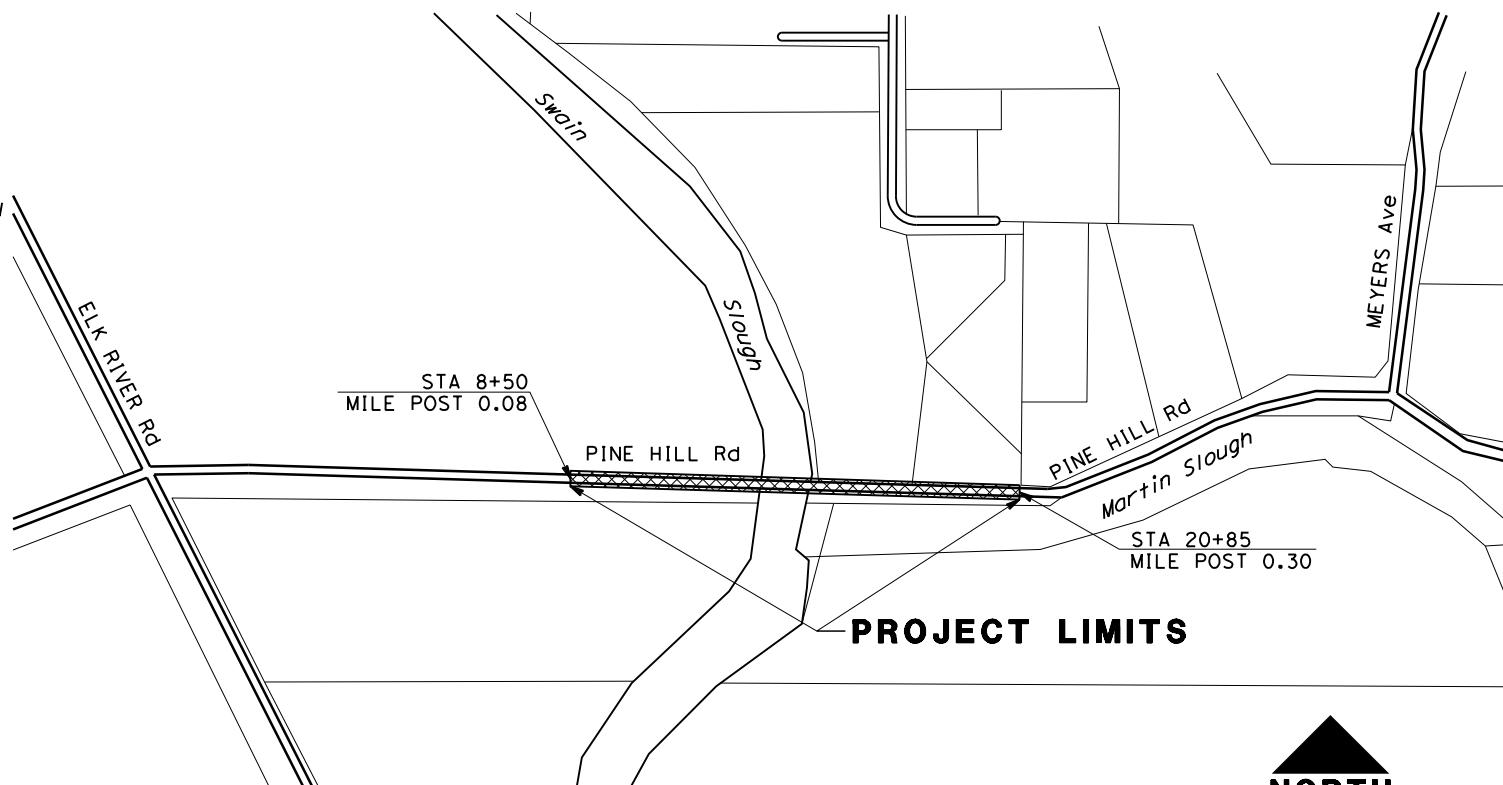
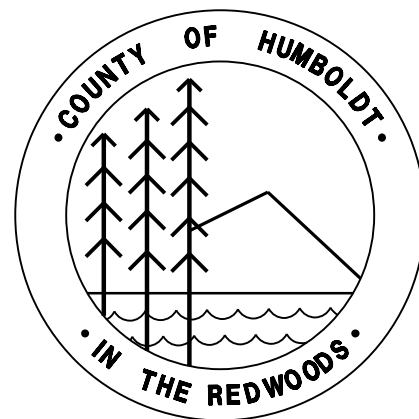
ROADWAY PLANS

- 1 COVER SHEET
- 2 TYPICAL CROSS SECTIONS
- 3 LAYOUT
- 4 PROFILE
- 5 CONSTRUCTION DETAILS
- 6 EROSION CONTROL PLAN
- 7 CONTOUR GRADING AND ROCK SLOPE PROTECTION
- 8 DRAINAGE PLAN
- 9 DRAINAGE PROFILES
- 10 DRAINAGE DETAILS
- 11 UTILITY PLAN
- 12 DETOUR PLAN
- 13 SUMMARY OF QUANTITIES

STRUCTURE PLANS

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- 15 DECK CONTOURS
- 16 FOUNDATION PLAN
- 17 ABUTMENT LAYOUT
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- 23 WIDE FLANGE GIRDER DETAILS No.2
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- 26-28 LOG OF TEST BORINGS

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS
PROJECT PLANS FOR CONSTRUCTION OF
PINE HILL ROAD
OVER SWAIN SLOUGH BRIDGE No. 04C0260
FEDERAL PROJECT NO. BRLO-5904[112]




VICINITY MAP



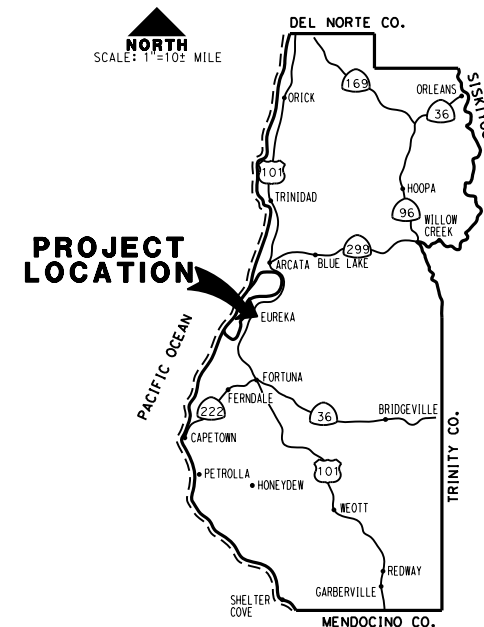
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CONTRACT NO.:	594020
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PLOT DATE:	12-3-2019
REVISION DATE:	11-19-2019

 QUINCY ENGINEERING	
DESIGNED BY:	KP
DRAWN BY:	KP
REVIEWED BY:	JJ
APPROVED BY:	

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH
COVER SHEET, SHEET INDEX AND DETAILS

SHEET
1
OF
28



LOCATION MAP
SCALE: 1"=10± MILE

BASIS OF BEARINGS

CC83 EPOCH 2007.00 BASED ON CONTROL BY BRIAN SOUSA. PLS
FOR LIDAR SURVEY (PT NOS. 1510 & 1512)

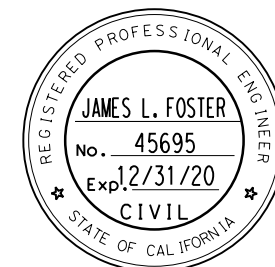
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COMBINATION FACTOR 0.999900144

BASIS OF ELEVATION

NAVD88 BASED ON SAME SOUSA SURVEY
(WHICH WAS VIA STATIC GPS TIES TO NGS CONTROL AT MURRAY FIELD)

RECOMMENDED

 12/3/2019
DATE



APPROVED

HUMBOLDT COUNTY DATE



ORIGINAL LOW BID PRICE	CONSTRUCTED BY	RESIDENT ENGINEER
	PROJECT COMPLETED / /	CONSTRUCTION COST \$

NOTES:


1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. CLASS 2 AGGREGATE BASE EXTENDED AT SAME DEPTH UNDER APPROACH SLAB.
3. FOR DITCH FLOW ELEVATIONS, SEE DRAINAGE DETAILS



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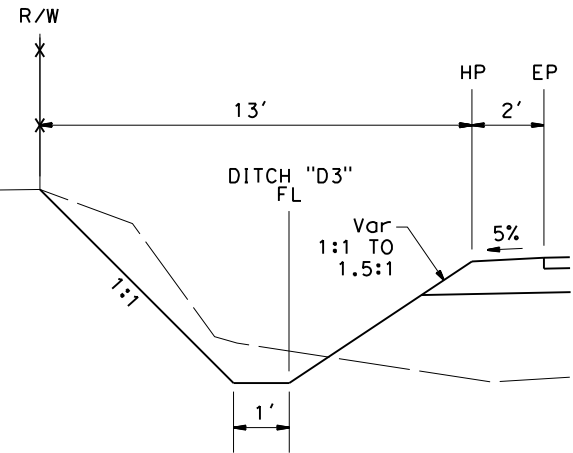
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DESIGNED BY:	KP
DRAWN BY:	KP
REVIEWED BY:	JJ
APPROVED BY:	

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH
TYPICAL CROSS SECTIONS

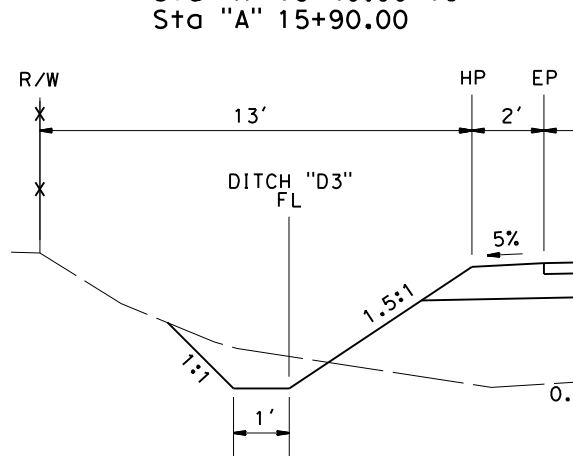
SHEET
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OF
28

DESIGN DESIGNATION (COUNTY ROAD)

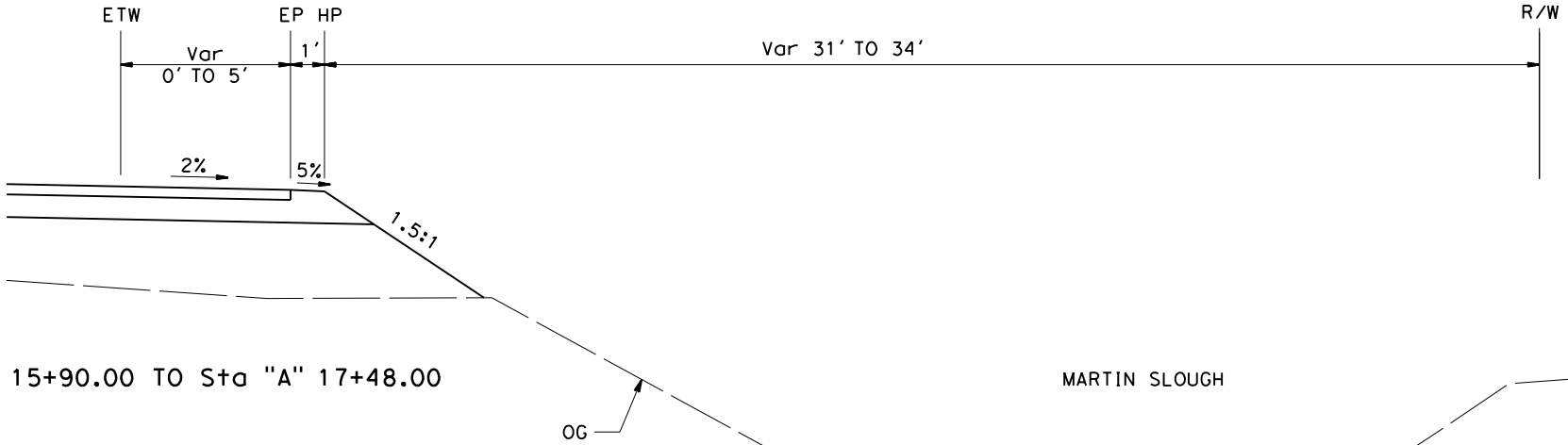
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2036 ADT = 582
TRUCKS= 3% V = 35 MPH
LOCAL RURAL ROAD



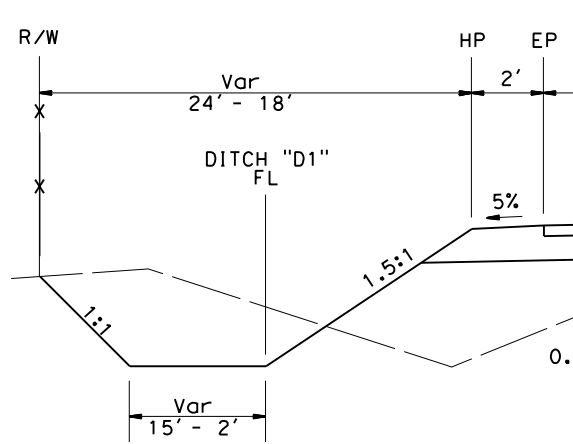
Sta "A" 15+40.00 TO
Sta "A" 15+90.00



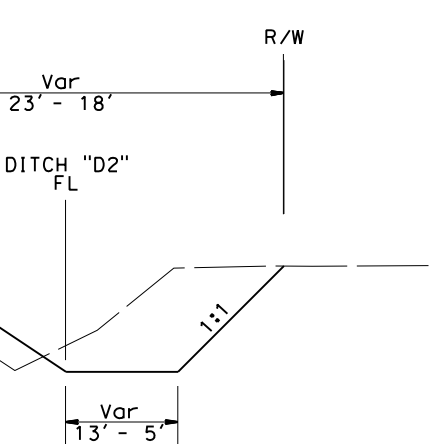
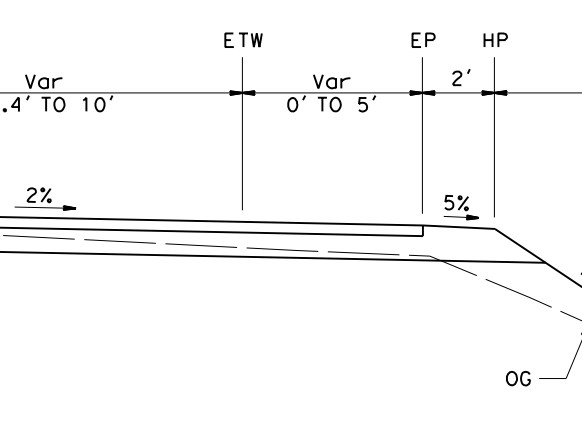
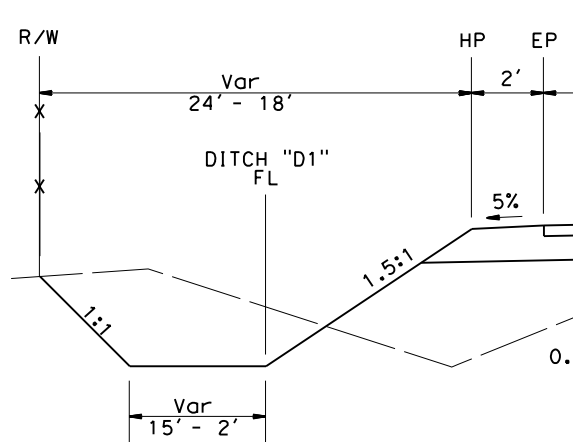
Sta "A" 15+90.00 TO Sta "A" 17+48.00



PINE HILL ROAD
Sta "A" 15+23.00 EB TO Sta "A" 17+48.00



PINE HILL ROAD
Sta "A" 11+93.00 TO Sta "A" 14+43.00 BB



NO SCALE

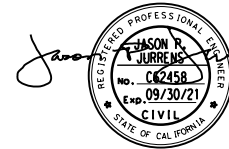
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NOTES:

1. FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, SEE RIGHT OF WAY RECORD MAPS AT THE COUNTY OFFICE.
2. PINE HILL ROAD TO MYERS (MEYERS) AVE - 60' WIDE PER 62 DEEDS 372 UNABLE TO LOCATE POINT OF BEGINNING-HELD EXISTING ROAD AS BEST EVIDENCE OF DEEDED R/W.
3. ALSO 60' WIDE PER BOOK 6 OF MAPS PAGE 40 (PT NOS. 417, 418, 421 & 422) NOTE THIS DOES NOT FIT EXISTING ROAD VERY WELL.
4. IMPLIED COMMON LAW DEDICATION FOR OTHER AREAS FALLING WITHIN MAINTAINED ROAD VIA LONG TERM PUBLIC USE AND MAINTENANCE BY THE COUNTY.
5. TRAFFIC STRIPES SHALL BE 4" WIDE, MODIFIED FROM CALTRANS STANDARD PLANS A20A AND A20B.


LEGEND:

- ➡ DIRECTION OF TRAFFIC
- ⊗ CURVE DATA NUMBER
- ⊗⊗⊗ PAVEMENT DELINEATION DETAIL
- ➡ DIRECTION OF DITCH FLOW
- ⊙ SURVEY CONTROL POINT

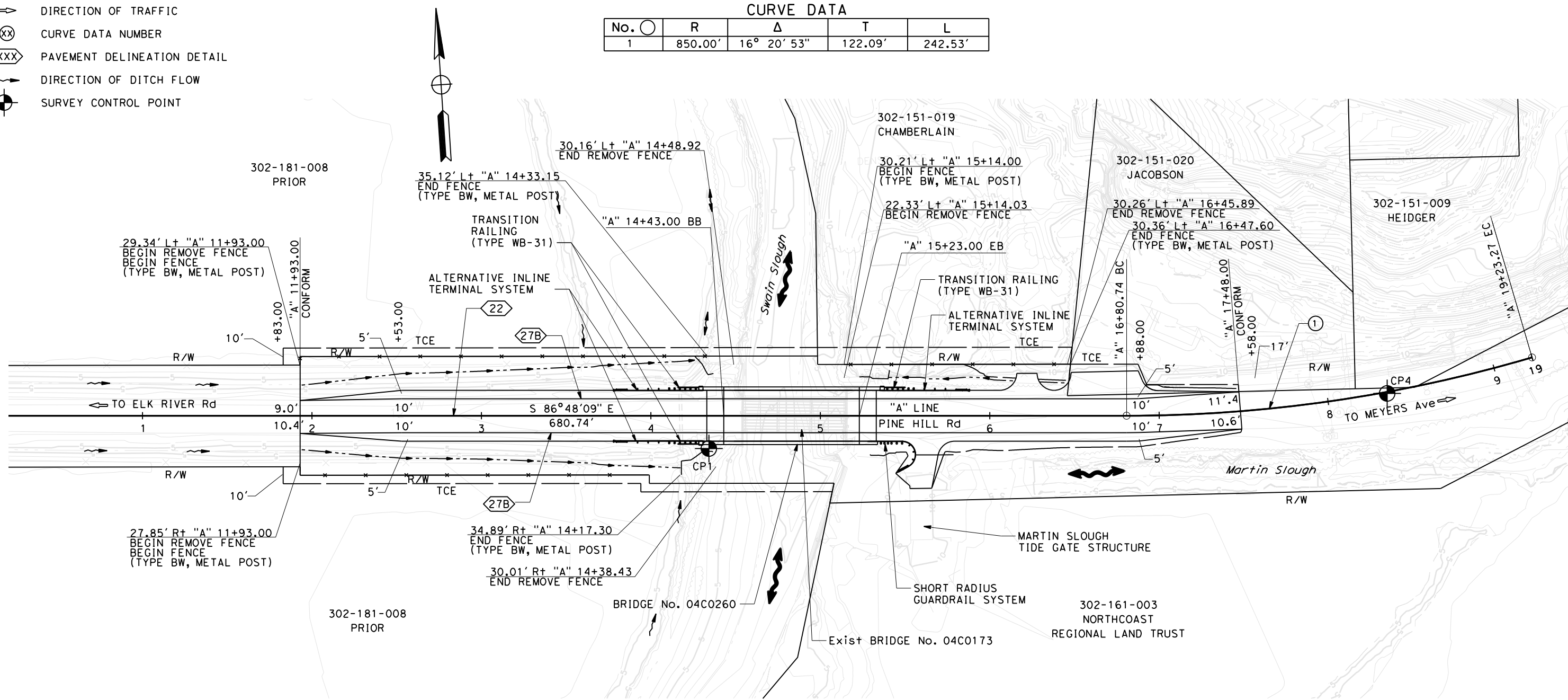


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PROJECT NO.: BRLO-5904(112)	EA NO.:	DESIGNED BY: KP
CONTRACT NO.: 594020	PPNO.:	DRAWN BY: KP
DRAWING FILE NAME: S:\Client\Humboldt\007-300 Pine Hill\CAD\Roadway\007300red001.dgn		
PLOT DATE: 12-3-2019	REVISION DATE: 11-19-2019	REVIEWED BY: JJ
		APPROVED BY:

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 3 OF 28
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH	
LAYOUT	



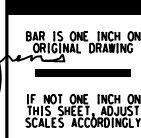
SURVEY CONTROL DATA

No.	NORTHING	EASTING	ELEV	LINE	STATION	OFFSET	DESCRIPTION
CP1	2164937.002	5957031.194	10.172	"A"	14+34.23	19.36' Rt	SET80DSPIKE
CP2	2165008.312	5956085.236	9.142	"A"			BRASSCAPHUMCORE19203
CP4	2164947.122	5957432.660	9.366	"A"	18+35.19	0.88' Rt	SETMAGNAIL&DPWTAG
CP5	2165073.438	5957926.179	8.956	"A"			FD1510

SCALE: 1"=30'

L-1

1. HWE IS Q100.




QUINCY
ENGINEERING

SHEET
4
OF
28



1. FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA,
SEE RIGHT OF WAY RECORD MAPS AT THE COUNTY OFFICE.



BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	ROAD NAME: PINE HILL ROAD		 QUINCY ENGINEERING
	ROAD NO.: J3430	MILE POST: 0.19	
	PROJECT NO.: BRLO-5904(112)	EA NO.:	DESIGNED BY: KP
	CONTRACT NO.: 594020	PPNO.:	DRAWN BY: KP
	DRAWING FILE NAME: S:\Client\Umboldt\4707-300 Pine Hill\EA\Roadway\4707300r.ppt01.dgn		REVIEWED BY: J
PLOT DATE: 12-3-2019		REVISION DATE: 11-19-2019	APPROVED BY:

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS		SHEET 5 OF 28
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH		
CONSTRUCTION DETAILS		



No. ○	R	Δ	T	L
2	8.00'	100° 54' 40"	9.69'	14.09'
3	10.00'	79° 05' 20"	8.26'	13.80'
4	10.00'	82° 13' 54"	8.73'	14.35'
5	10.00'	65° 59' 24"	6.49'	11.52'
6	10.00'	90° 00' 00"	10.00'	15.71'
7	10.00'	90° 00' 00"	10.00'	15.71'


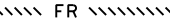
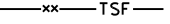


SCALE: 1"=10'

NOTES:

1. FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, SEE RIGHT OF WAY RECORD MAPS AT THE COUNTY OFFICE.
2. LOCATION OF FIBER ROLLS ARE SCHEMATIC. ACTUAL PLACEMENT LOCATIONS OF FIBER ROLLS SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

LEGEND:

-  EROSION CONTROL
-  FIBER ROLL
-  TSF — TEMPORARY HIGH-VISIBILITY FENCE



BAR IS ONE INCH ON ORIGINAL DRAWING

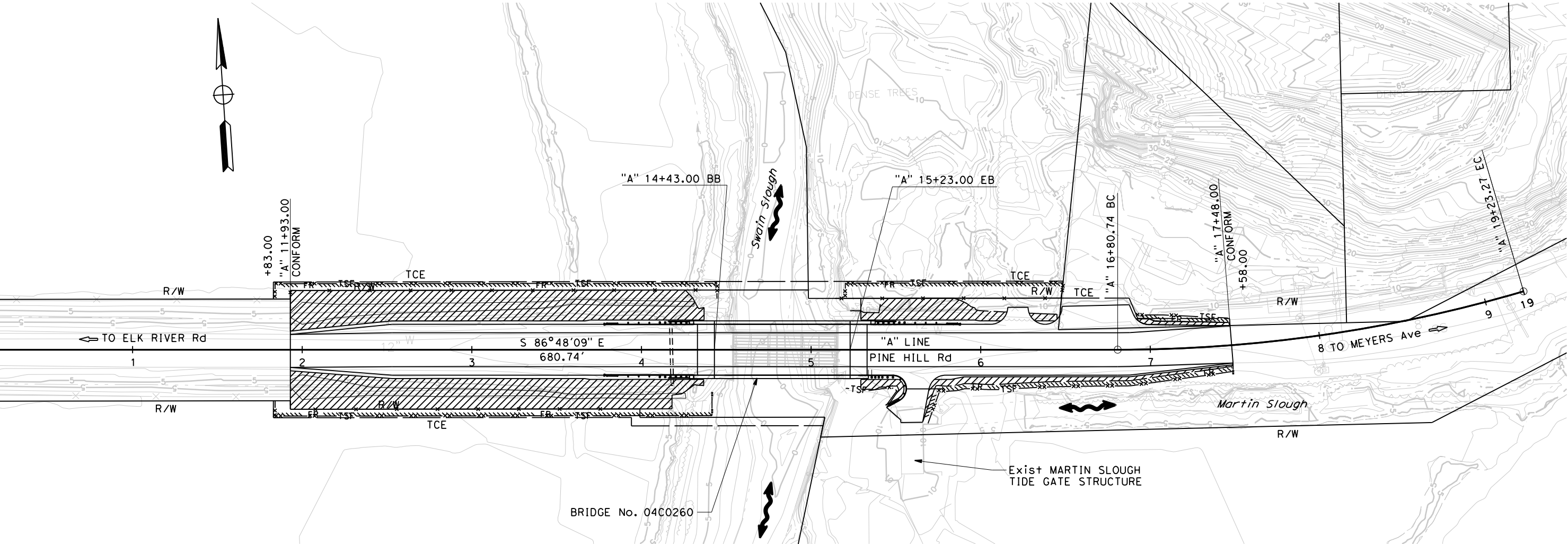
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ROAD NAME:	PINE HILL ROAD	
ROAD NO.:	3J430	MILE POST: 0.19
PROJECT NO.:	BRLO-5904(112)	EA NO.:
CONTRACT NO.:	594020	PPNO.:
DRAWING FILE NAME:	S:\Client\Humboldt\007-300 Pine Hill\CAD\Roadway\007300rge001.dgn	
PLOT DATE:	12-3-2019	REVISION DATE: 11-19-2019

QUINCY ENGINEERING
DESIGNED BY: KP
DRAWN BY: KP
REVIEWED BY: JJ
APPROVED BY:

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH
EROSION CONTROL PLAN

SHEET 6 OF 28



EROSION CONTROL

SEQUENCE	ITEM	MATERIAL		APPLICATION RATE	REMARKS
		DESCRIPTION	TYPE		
STEP 1	HYDROSEED	SEED	MIX	28 LB/ACRE	
		FIBER	WOOD	1000 LB/ACRE	
STEP 2	ROLLED EROSION CONTROL PRODUCT (BLANKET)	BLANKET	TYPE A		
STEP 3	FIBER ROLLS	FIBER ROLL	8 TO 10 INCHES IN Dia		TYPE 2 INSTALATION

SEED MIX

BOTANICAL NAME (COMMON NAME)	POUNDS PURE LIVE SEED PER ACRE (SLOPE MEASUREMENT)
WESTERN YARROW (ACHILLEA MILLEFOLIUM)	1
SAN DIEGO BENTGRASS (AGROSTIS PALLENS)	1
CLUSTERED FIELD SEDGE (CAREX PRAEGRACILIS)	5
SLENDER HAIRGRASS (DESCHAMPSIA ELONGATA)	1
BARLEY (HORDEUM BRACHYANTHERUM)	20
TOAD RUSH (JUNCUS BUFONIUS)	0

SCALE: 1"=30'

EC-1

NOTES:

- 1. FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, SEE RIGHT OF WAY RECORD MAPS AT THE COUNTY OFFICE.
- 2. FOR STEEL SHEET PILING, SEE BRIDGE PLANS.

LEGEND:

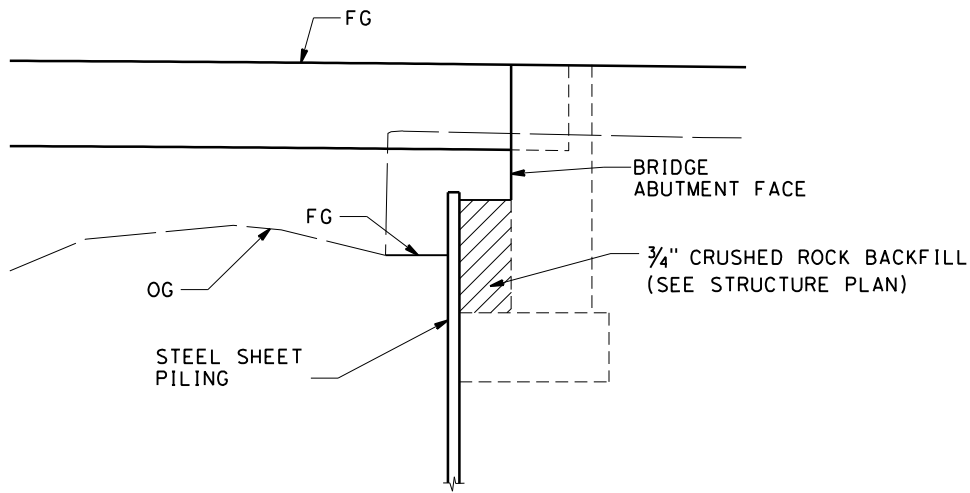
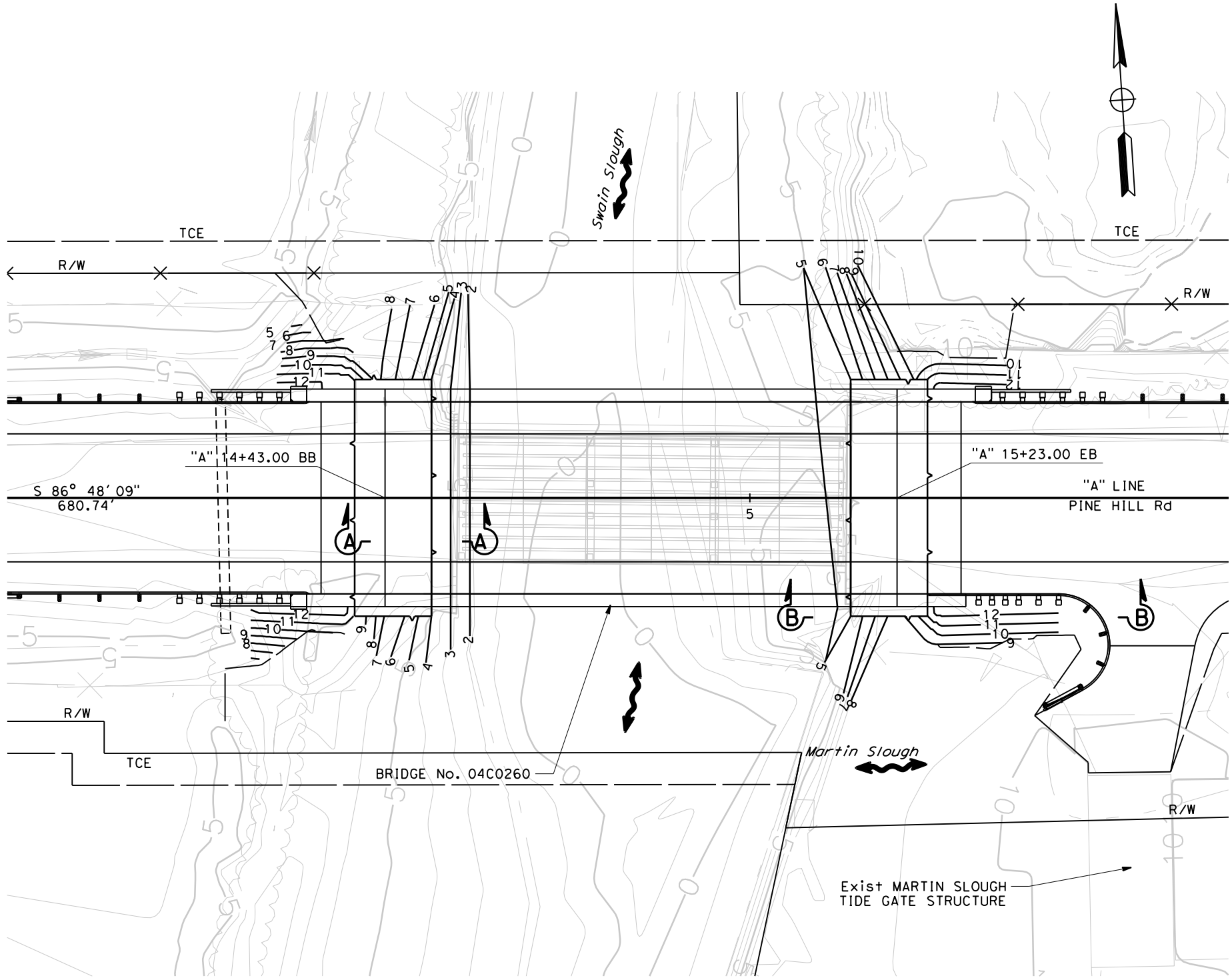
LIMITS OF STEEL SHEET PILING



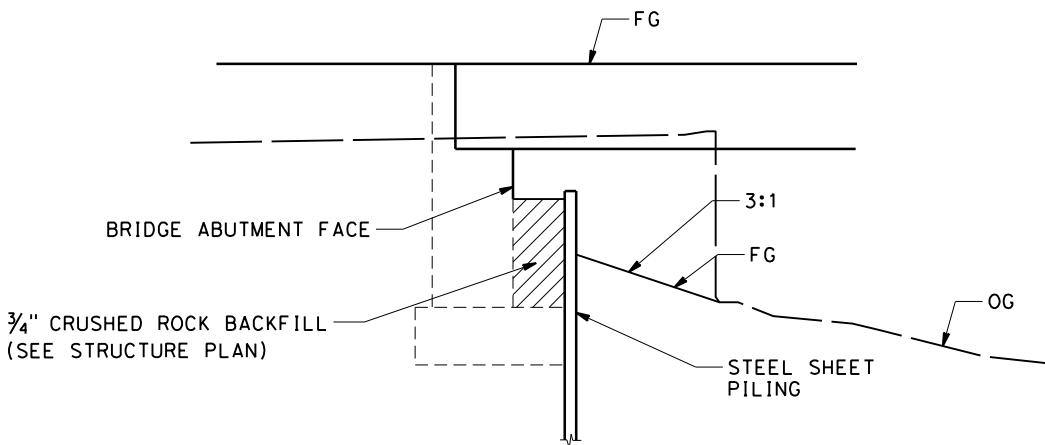
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ROAD NAME:	PINE HILL ROAD	DESIGNED BY:	KP
ROAD NO.:	3J430	EA NO.:	
PROJECT NO.:	BRLO-5904(112)	PPNO.:	
CONTRACT NO.:	594020	DRAWN BY:	KP
DRAWING FILE NAME:	S:\Client\Humboldt\007-300 Pine Hill\CAD\Roadway\007300rhd001.dgn	REVIEWED BY:	JJ
PLOT DATE:	12-3-2019	APPROVED BY:	
REVISION DATE:	11-19-2019		

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 7 OF 28
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH	
CONTOUR GRADING AND ROCK SLOPE PROTECTION	



B-B
NO SCALE



A-A
NO SCALE

THIS PLAN ACCURATE FOR CONTOUR GRADING WORK ONLY.

SCALE: 1"=10'

NOTES:

1. FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, SEE RIGHT OF WAY RECORD MAPS AT THE COUNTY OFFICE.
2. CONTRACTOR SHALL POSITIVELY DETERMINE ALL HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES PRIOR TO CONSTRUCTION OF ANY COMPONENT OF ANY DRAINAGE SYSTEM IN ORDER TO VERIFY CONSTRUCTIBILITY OF THE DRAINAGE SYSTEM AS SHOWN ON PLANS.

LEGEND:

- XXX DRAINAGE SYSTEM NUMBER
- XX DRAINAGE UNIT NUMBER
- DIRECTION OF DITCH FLOW
- W— WATER LINE (BY OTHERS)

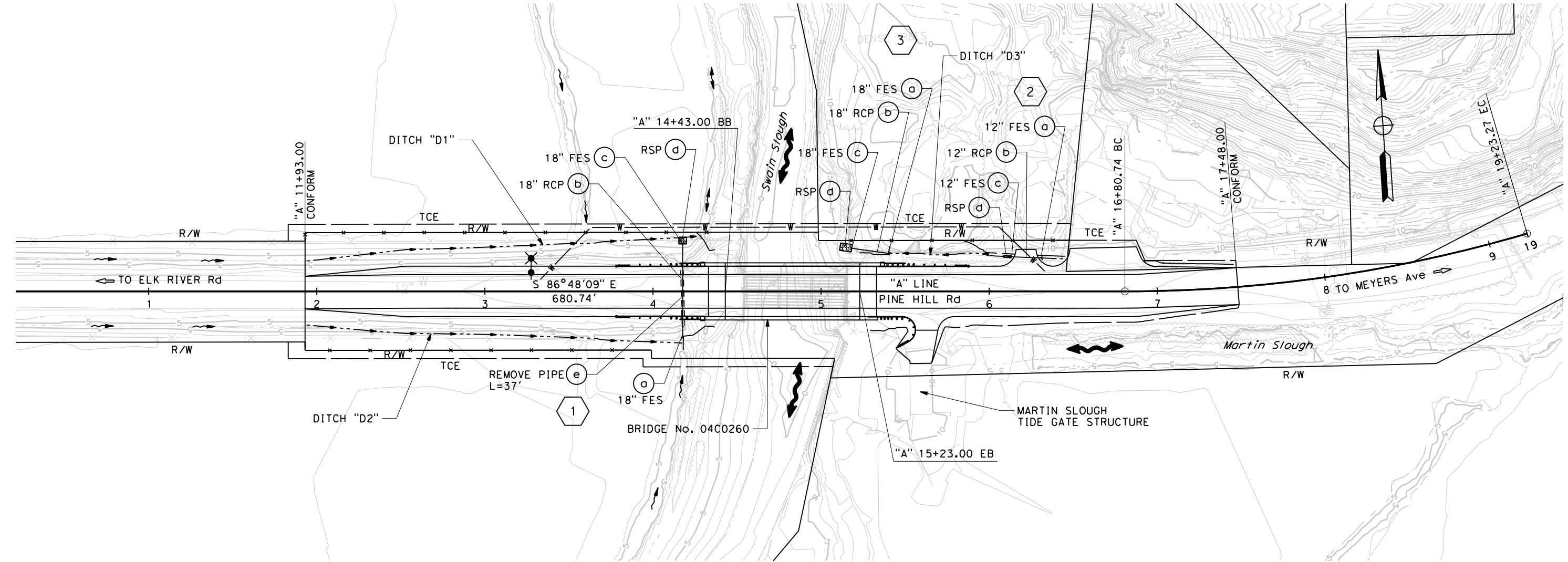


BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

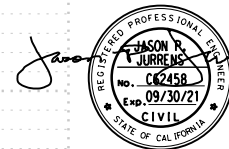
ROAD NAME:	PINE HILL ROAD	DESIGNED BY:	KP
ROAD NO.:	3J430	EA NO.:	
PROJECT NO.:	BRLO-5904(112)	PPNO.:	
CONTRACT NO.:	594020	DRAWN BY:	KP
DRAWING FILE NAME:	S:\Client\Humboldt\007-300 Pine Hill\CAD\Roadway\007300r\rd001.dgn	REVIEWED BY:	JJ
PLOT DATE:	12-3-2019	APPROVED BY:	
REVISION DATE:	11-19-2019		

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 8 OF 28
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH	
DRAINAGE PLAN	



LEGEND:

MINOR CONCRETE (PIPE ENCASEMENT)

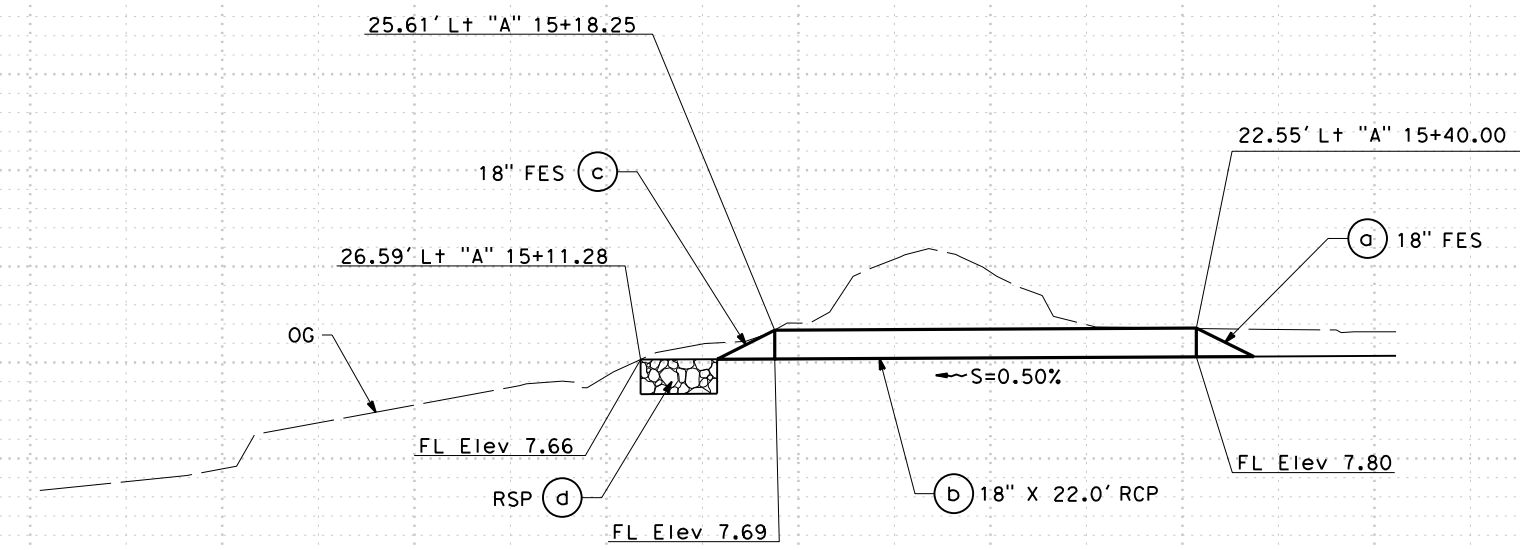


BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

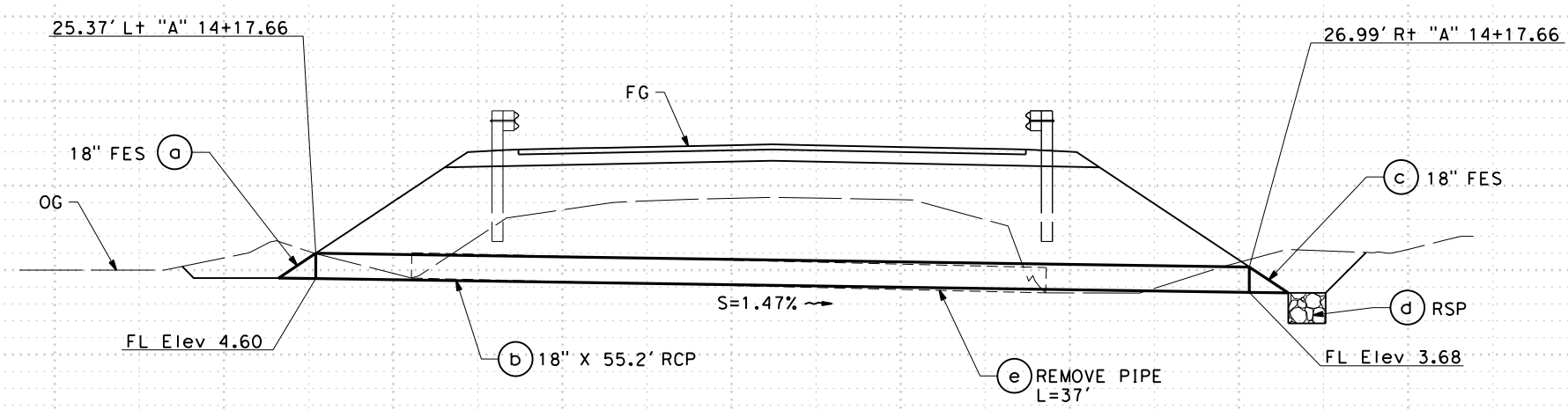
ROAD NAME:	PINE HILL ROAD
ROAD NO.:	3J430
PROJECT NO.:	BRLO-5904(112)
CONTRACT NO.:	594020
DRAWING FILE NAME:	S:\Client\Humboldt\H07-300 Pine Hill\CAD\Roadway\H07300r\h001.dgn
PLOT DATE:	12-3-2019
MILE POST:	0.19
EA NO.:	
PPNO.:	
REVISION DATE:	11-19-2019
DESIGNED BY:	KP
DRAWN BY:	KP
REVIEWED BY:	JJ
APPROVED BY:	

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH
DRAINAGE PROFILES

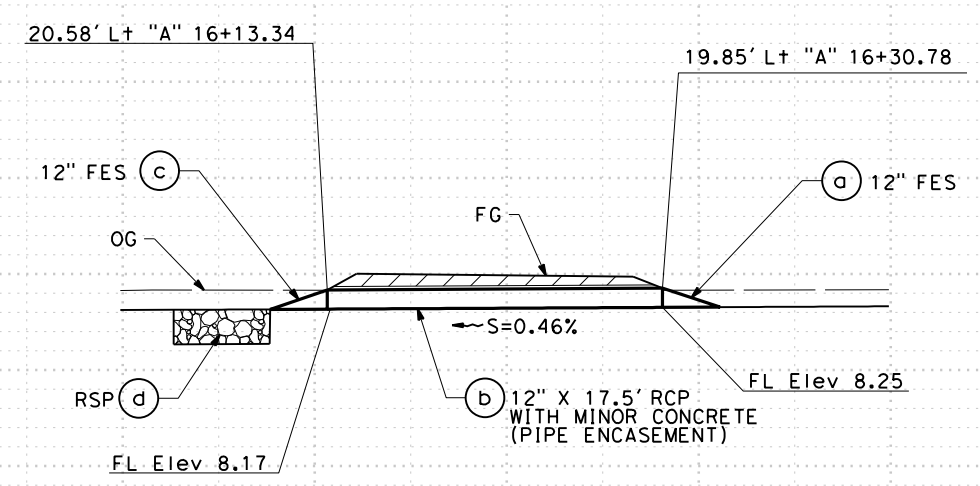
SHEET 9 OF 28



DRAINAGE SYSTEM No. 3
"A" 15+18.25 TO "A" 15+40.00



DRAINAGE SYSTEM No. 1
"A" 14+17.66



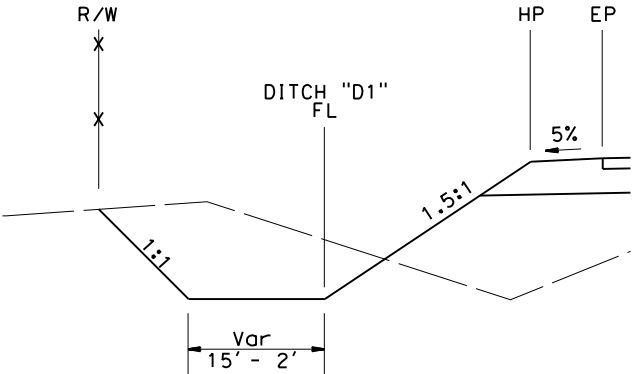
DRAINAGE SYSTEM No. 2
"A" 16+13.34 TO "A" 16+30.78

THIS PLAN ACCURATE FOR DRAINAGE WORK ONLY.

Horiz 1"=5'
Vert 1"=5' **DP-1**

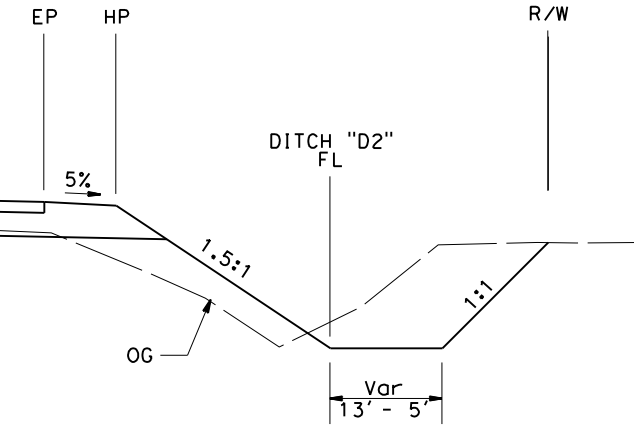
NOTES:

1. FOR RSP CLASS AND DIMENSIONS, SEE TABLE 1.
2. FOR FLARED END SECTION DETAILS NOT SHOWN, SEE STANDARD PLAN D94B.
3. CUTOFF WALL ONLY PRESENT WITH CONCRETE FES, SEE STANDARD PLAN D94B.



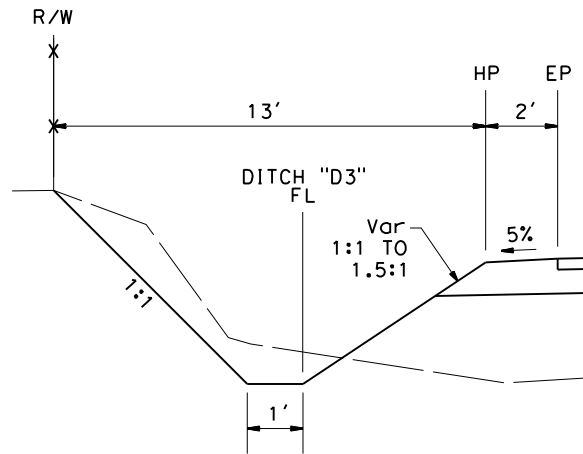
DITCH "D1"

Sta "A" 11+93.00 TO Sta "A" 14+29.00



DITCH "D2"

Sta "A" 11+93.00 TO Sta "A" 14+18.00



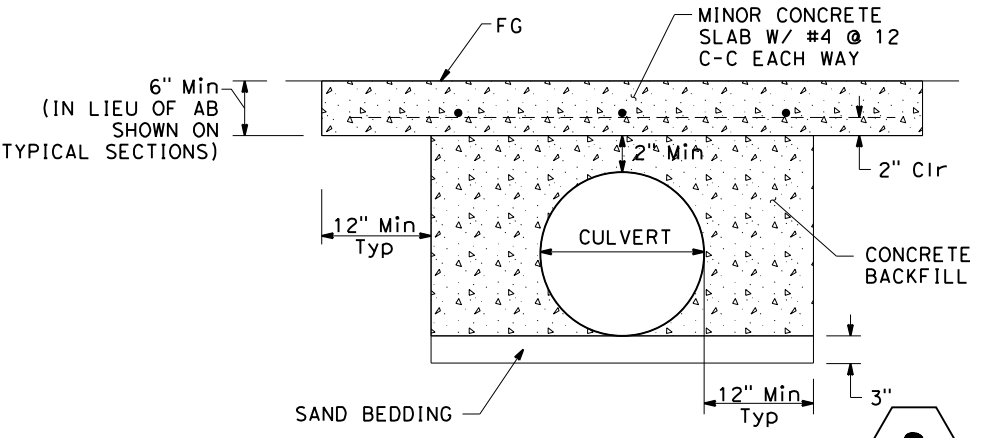
DITCH "D2"

Sta "A" 15+40.00 TO Sta "A" 15+90.00

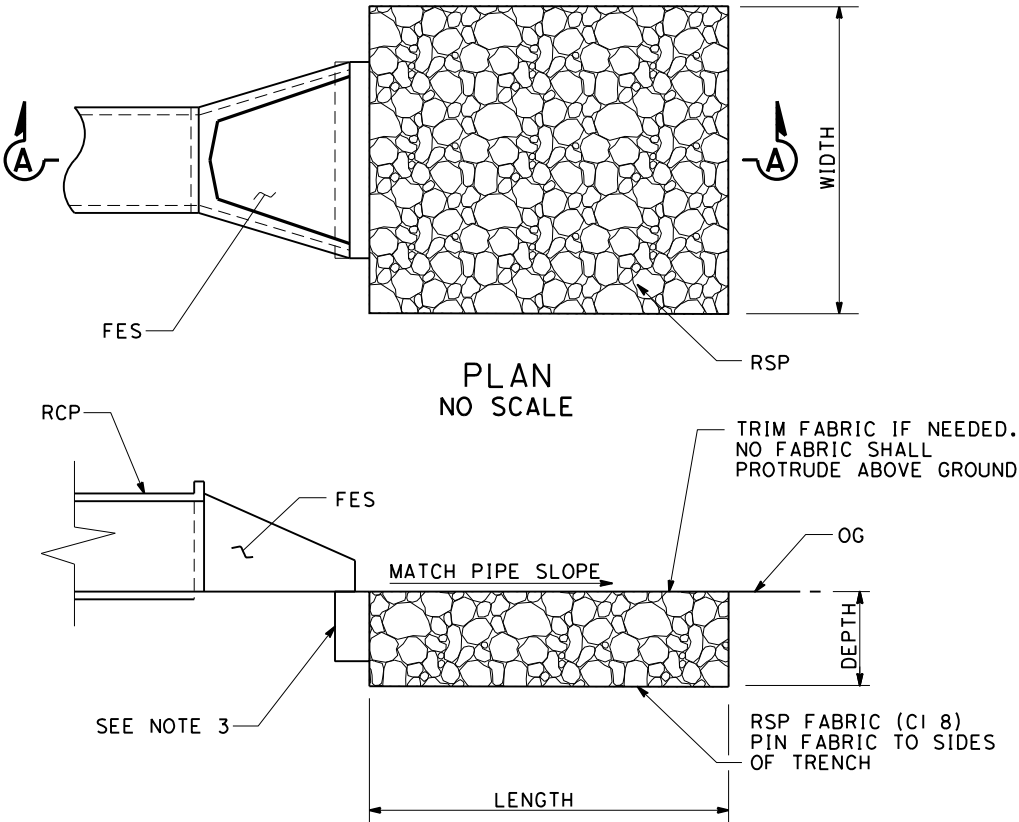
DITCH "D1"						
STATION	LINE	OFFSET	L+ / R+	WIDTH	FL Elev	SLOPE (%)
11+93.00	"A"	15.91	L+	15.91	4.07	
12+00.00	"A"	16.67	L+	15.25	4.05	-0.29
12+20.00	"A"	18.93	L+	12.95	4.00	-0.25
12+40.00	"A"	21.30	L+	10.47	3.95	-0.25
12+60.00	"A"	23.00	L+	8.78	3.96	0.05
12+80.00	"A"	23.57	L+	7.55	3.97	0.05
13+00.00	"A"	24.27	L+	6.73	3.98	0.05
13+20.00	"A"	25.11	L+	6.25	3.97	-0.05
13+40.00	"A"	25.97	L+	5.62	3.95	-0.10
13+60.00	"A"	26.50	L+	6.71	4.17	1.10
13+80.00	"A"	28.04	L+	5.17	4.01	-0.80
14+00.00	"A"	29.13	L+	2.81	3.85	-0.80
14+20.00	"A"	30.22	L+	2.44	3.58	-1.35
14+29.00	"A"	30.96	L+	2.42	3.26	-3.56

DITCH "D2"						
STATION	LINE	OFFSET	L+ / R+	WIDTH	FL Elev	SLOPE (%)
11+93.00	"A"	17.97	R+	13.80	3.62	
12+00.00	"A"	18.57	R+	13.16	3.60	-0.29
12+20.00	"A"	20.39	R+	11.25	3.52	-0.40
12+40.00	"A"	22.09	R+	9.62	3.61	0.45
12+60.00	"A"	23.12	R+	8.83	3.88	1.35
12+80.00	"A"	23.31	R+	8.94	4.14	1.30
13+00.00	"A"	23.62	R+	8053	4.41	1.35
13+20.00	"A"	24.30	R+	7.52	4.51	0.50
13+40.00	"A"	25.04	R+	6052	4.58	0.35
13+60.00	"A"	25.75	R+	7.79	4.67	0.45
13+80.00	"A"	27.42	R+	5015	4.43	-1.20
14+00.00	"A"	28.01	R+	4.50	4.59	0.80
14+18.00	"A"	28.74	R+	5.45	4.53	-0.33

DITCH "D3"					
STATION	LINE	OFFSET	L+ / R+	FL Elev	SLOPE (%)
15+40.00	"A"	22.05	L+	7.80	
15+60.00	"A"	21.96	L+	7.90	0.50
15+80.00	"A"	21.63	L+	8.00	0.50
15+90.00	"A"	21.66	L+	8.05	0.50
16+00.00	"A"	20.70	L+	8.10	0.50
16+13.34	"A"	20.08	L+	8.17	0.52
16+30.79	"A"	19.36	L+	8.25	0.46
16+40.00	"A"	19.01	L+	8.30	0.54
16+44.96	"A"	18.83	L+	8.33	0.60



MINOR CONCRETE (PIPE ENCASEMENT)



ROCK SLOPE PROTECTION (RSP)
NO SCALE

TABLE 1				
DRAINAGE UNIT	RSP CLASS	LENGTH	DEPTH	WIDTH
		FT	FT	FT
1d	150 LB, CLASS III, METHOD B	3.0	1.8	4.5
2d	150 LB, CLASS III, METHOD B	5.0	1.8	1.0
3d	150 LB, CLASS III, METHOD B	7.0	1.8	4.5



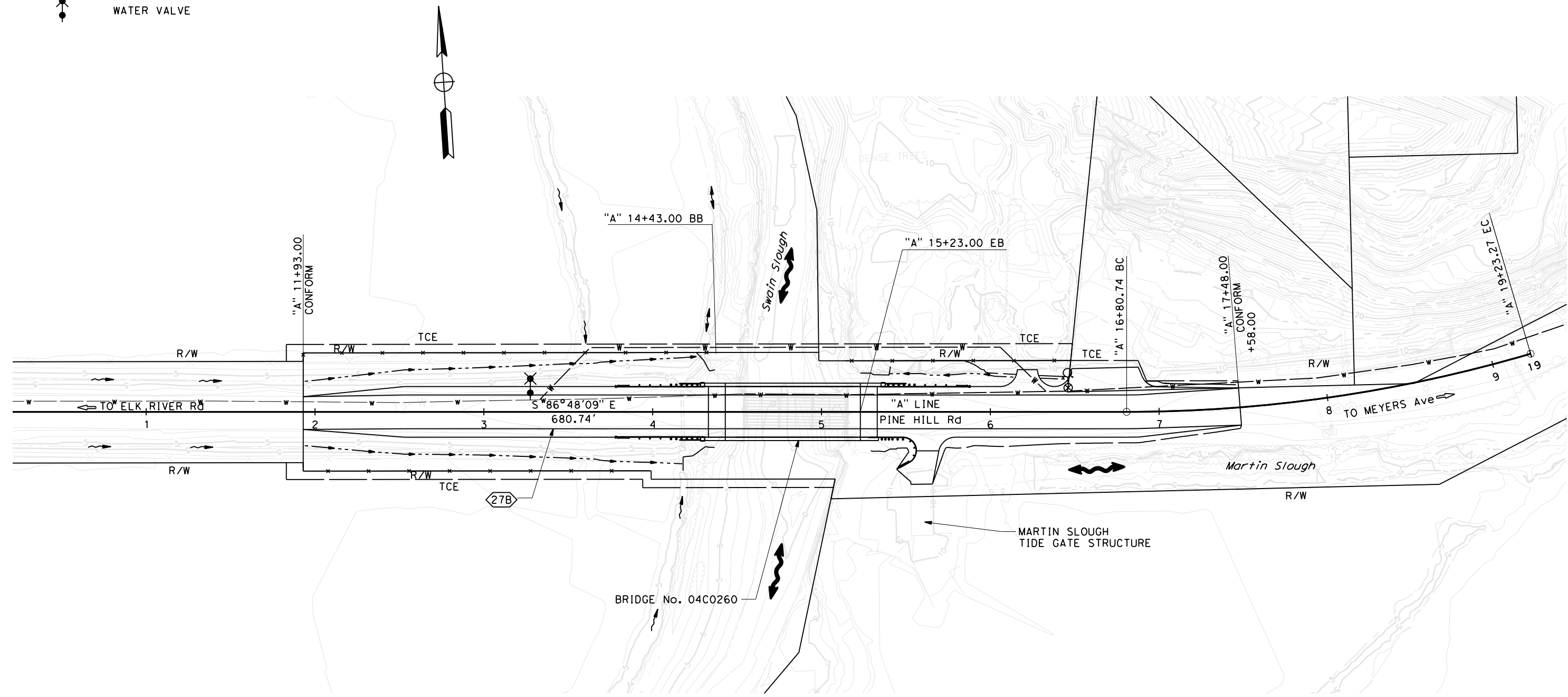
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ROAD NAME:	PINE HILL ROAD
ROAD NO.:	3J430
PROJECT NO.:	BRLO-5904(112)
CONTRACT NO.:	594020
PLOT DATE:	12-3-2019
MILE POST:	0.19
EA NO.:	
PPNO.:	
DRAWING FILE NAME:	S:\Client\Humboldt\007-300 Pine Hill\CAD\Roadway\007300rko001.dgn
REVISION DATE:	11-19-2019
DESIGNED BY:	KP
DRAWN BY:	KP
REVIEWED BY:	JJ
APPROVED BY:	

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 11 OF 28
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH	
UTILITY PLAN	

LEGEND:

- DIRECTION OF TRAFFIC
- EXISTING WATER LINE
- RELOCATED WATER LINE (BY OTHERS)
- EXISTING WATER VALVE
- WATER VALVE



THIS PLAN ACCURATE FOR UTILITY INFORMATION ONLY.

SCALE: 1"=30'

U-1

- NOTES:
1. THIS PLAN ACCURATE FOR DETOUR WORK ONLY.
 2. SIGN LOCATIONS SHOWN ARE APPROXIMATE. EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER.
 3. R11-2 SIGNS MOUNTED ON BARRICADE.

- LEGEND:
- CONSTRUCTION AREA
 - CONSTRUCTION AREA SIGN
 - TYPE III BARRICADE
 - USE WITH FLASHERS AT NIGHT

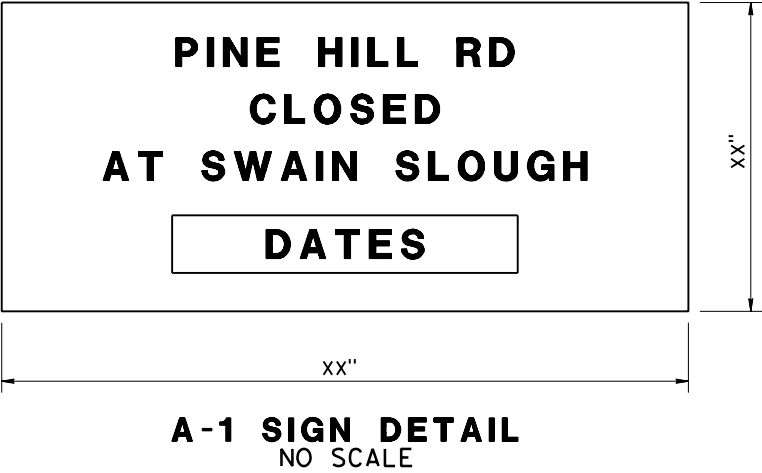


ROAD NAME: PINE HILL ROAD		QUINCY ENGINEERING	
ROAD NO.: 3J430	MILE POST: 0.19	DESIGNED BY: KP	
PROJECT NO.: BRLO-5904(112)	EA NO.:	DRAWN BY: KP	
CONTRACT NO.: 594020	PPNO.:	REVIEWED BY: JJ	
DRAWING FILE NAME: S:\Client\Humboldt\007-300 Pine Hill\CAD\Roadway\007300rmp001.dgn		APPROVED BY:	
PLOT DATE: 12-3-2019	REVISION DATE: 11-19-2019		

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 12 OF 28
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH	
DETOUR PLAN	

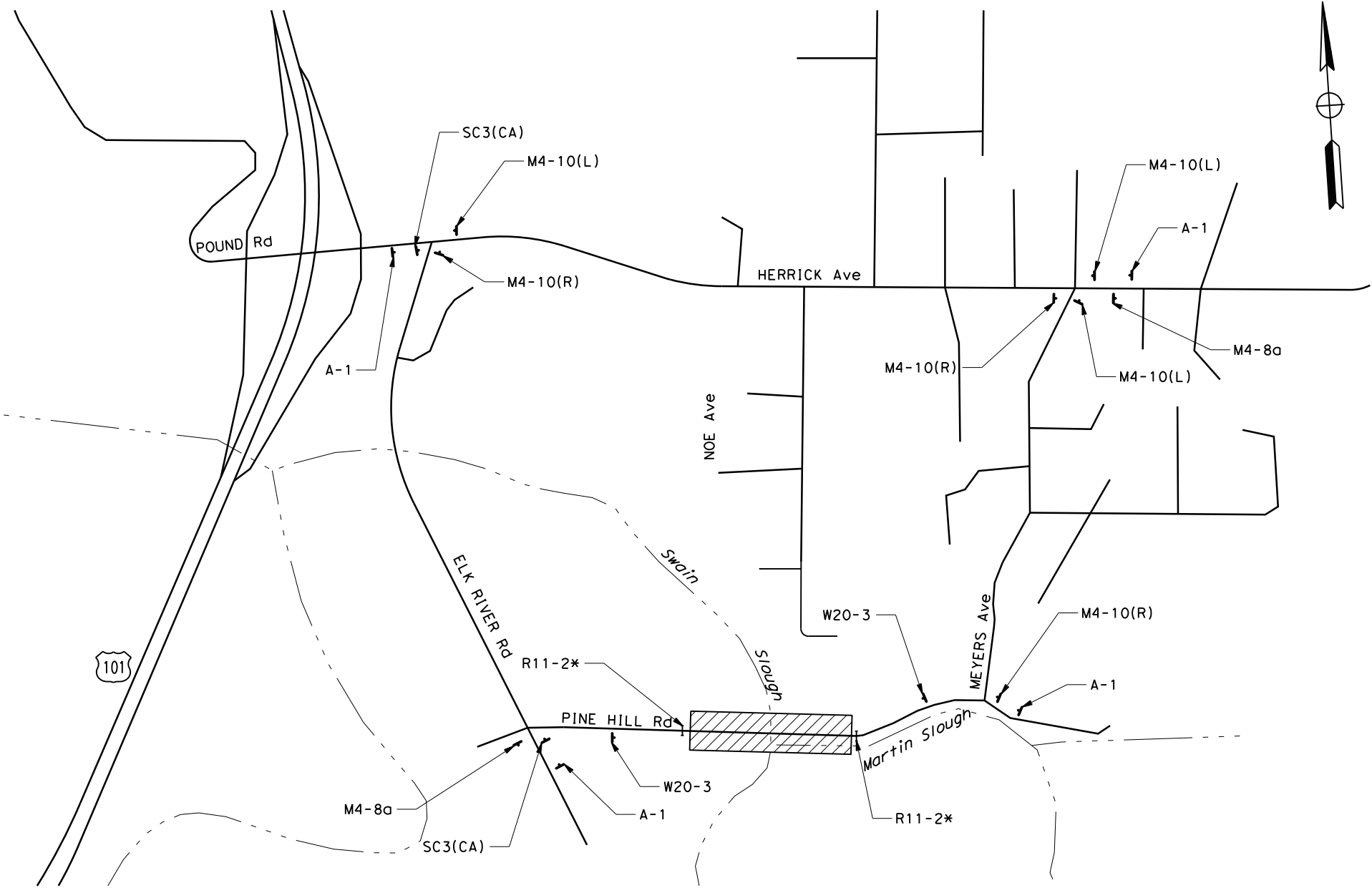
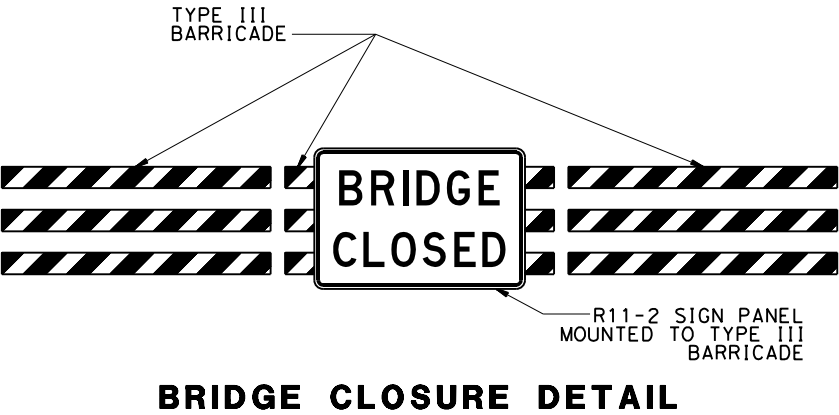
CONSTRUCTION AREA SIGNS

SIGN CODE	PANEL SIZE	SIGN MESSAGE	NUMBER OF POSTS AND SIZE	NUMBER OF SIGNS
R11-2	48" x 30"	ROAD CLOSED	1 - 4" x 6"	2
W20-3	36" x 36"	ROAD CLOSED AHEAD	1 - 4" x 6"	2
M4-8a	24" x 18"	END DETOUR	1 - 4" x 6"	2
M4-10(R)	48" x 18"	DETOUR ARROW SIGN	1 - 4" x 6"	3
M4-10(L)	48" x 18"	DETOUR ARROW SIGN	1 - 4" x 6"	3
SC3(CA)	36" x 12"	DETOUR WITH ARROW	1 - 4" x 6"	2
A-1	XX" x XX"	PINE HILL ROAD CLOSED AT SWAIN SLOUGH	2 - 4" x 6"	4



TYPE III BARRICADE

LINE	STATION	EA
"A"	8+50	3
"A"	20+85	3
TOTAL		6





BAR IS ONE INCH ON ORIGINAL DRAWING
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ROAD NAME: PINE HILL ROAD		QUINCY ENGINEERING	
ROAD NO.: 3J430	MILE POST: 0.19	DESIGNED BY: KP	
PROJECT NO.: BRLO-5904(112)	EA NO.:	DRAWN BY: KP	
CONTRACT NO.: 594020	PPNO.:	REVIEWED BY: JJ	
DRAWING FILE NAME: S:\Client\Humboldt\007-300 Pine Hill\CAD\Roadway\007300rpd001.dgn		APPROVED BY:	
PLOT DATE: 12-3-2019	REVISION DATE: 11-19-2019		

COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
PINE HILL ROAD BRIDGE OVER SWAIN SLOUGH
SUMMARY OF QUANTITIES

SHEET
13
OF
28

ROADWAY ITEMS

FROM		TO		ROADWAY EXCAVATION	EMBANKMENT (N)	IMPORTED BORROW	CLASS 2 AGGREGATE BASE	HOT MIX ASPHALT (TYPE A)	REMOVE FENCE	REMOVE MARKER	FENCE (TYPE BW, METAL POST)	COMMENTS
LINE	STATION	LINE	STATION	CY	CY	CY	CY	TON	LF	EA	LF	
"A"	11+93.00	"A"	14+43.00 BB	420	686	266	232	156				
"A"	15+23.00 EB	"A"	17+48.00	102	271	169	219	159				
"A"	15+67.59			2	21	19						DWY AT TIDAL GATE STRUCTURE
"A"	ABUTMENT 1			36	1	-35						CONTOUR GRADING
"A"	ABUTMENT 2			23	2	-21						CONTOUR GRADING
"A"	11+93.00 LT	"A"	14+48.92 LT						256			
"A"	19+93.00 RT	"A"	14+38.43 RT						246			
"A"	15+14.03 LT	"A"	16+45.89 LT						136			
"A"	11+93.00 LT	"A"	14+33.15 LT							246		
"A"	11+93.00 RT	"A"	14+17.30 RT							232		
"A"	15+14.00 LT	"A"	16+47.60 LT							134		
	EXIST BRIDGE BB L+									1		EXIST BRIDGE
	EXIST BRIDGE BB R+									1		EXIST BRIDGE
	EXIST BRIDGE EB L+									1		EXIST BRIDGE
	EXIST BRIDGE EB R+									1		EXIST BRIDGE
				583	981	398	451	315	638	4	612	

(N) NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.

DRAINAGE ITEMS

DRAINAGE SYSTEM	DRAINAGE UNIT No.	STATION	12" CONCRETE FLARED END SECTION	18" CONCRETE FLARED END SECTION	12" REINFORCED CONCRETE PIPE	18" REINFORCED CONCRETE PIPE	ROCK SLOPE PROTECTION (150 LB, CLASS III, METHOD B)	RSP FABRIC (CLASS 8)	REMOVE PIPE	DESCRIPTION
			EA	EA	LF	LF	CY	SQYD	LF	
1	a	"A" 14+17.66		1						18" CONCRETE FLARED END SECTION
	b					55.2				18" X 55.2' RCP
	c	"A" 14+17.66		1						18" CONCRETE FLARED END SECTION
	d						0.9	5.9		RSP (150 LB, CLASS III, METHOD B)
	e								37	REMOVE PIPE 18"
2	a	"A" 16+30.78	1							12" CONCRETE FLARED END SECTION
	b				17.5					12" X 17.5' RCP WITH MINOR CONCRETE (PIPE ENCASEMENT)
	c	"A" 16+13.34	1							12" CONCRETE FLARED END SECTION
	d						0.3	4.4		RSP (150 LB, CLASS III, METHOD B)
3	a	"A" 15+40.00		1						18" CONCRETE FLARED END SECTION
	b					22.0				18" X 22.0' RCP
	c	"A" 15+18.25		1						18" CONCRETE FLARED END SECTION
	d						2.1	9.5		RSP (150 LB, CLASS III, METHOD B)
		TOTAL	2	4	17.5	77.2	3.3	19.8	37	

GUARD RAILING

FROM			TO			TRANSITION RAILING (TYPE WB-31)	ALTERNATIVE IN LINE TERMINAL SYSTEM	SHORT RADIUS GUARDRAIL SYSTEM	OBJECT MARKER (TYPE P)
LINE	FROM	OFFSET	LINE	TO	OFFSET				
						EA	EA	EA	EA
"A"	13+78.25	15.00' L+	"A"	14+28.25	15.00' L+	1	1		1
"A"	13+78.25	15.00' R+	"A"	14+28.25	15.00' R+	1	1		1
"A"	15+37.75	15.00' L+	"A"	15+87.75	15.00' L+	1	1		1
"A"	15+33.75	15.00' R+	"A"	15+44.51	34.03' R+			1	1
TOTAL						3	3	1	4

EROSION CONTROL

LINE	FROM	TO	LT/RT	ROLLED EROSION CONTROL PRODUCT (BLANKET)	HYDROSEED	TEMPORARY HIGH-VISIBILITY FENCE	FIBER ROLLS
				SQFT			
"A"	11+93.00	14+43.00 BB	LT	4463	4463	271	262
"A"	11+93.00	14+43.00 BB	RT	4282	4282	273	259
"A"	14+43.00 BB	17+48.00	LT	1015	1015	196	184
"A"	14+43.00 BB	17+48.00	RT	681	681	244	221
TOTAL				10441	10441	984	926

PAVEMENT DELINEATION

FROM			TO			THERMOPLASTIC TRAFFIC STRIPE			PAVEMENT MARKER (RETRO-REFLECTIVE)
LINE	STATION	OFFSET	LINE	STATION	OFFSET	DETAIL No.	4" WHITE	4" YELLOW	TYPE D
							FT	FT	
"A"	11+93.00		"A"	17+48.00		22		1110	48
"A"	11+93.00	RT	"A"	17+48.00	RT	27B	555		
"A"	11+93.00	LT	"A"	17+48.00	LT	27B	555		
SUBTOTAL							1110	1110	
TOTAL							2220		48

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	Hum	CR	0.19	14	28

12-3-19
REGISTERED CIVIL ENGINEER
DATE

SCOTT
A. MCCAULEY
No. 71495
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

PLANS APPROVAL DATE

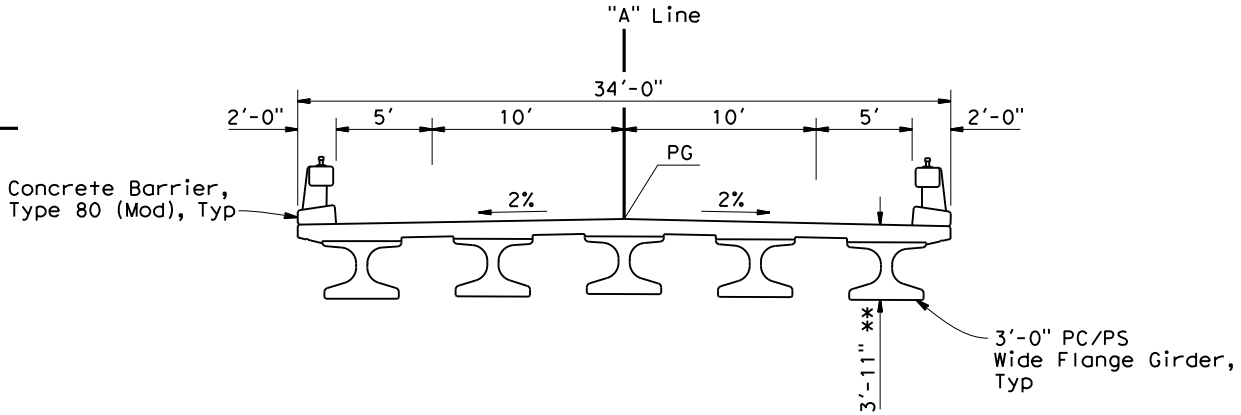
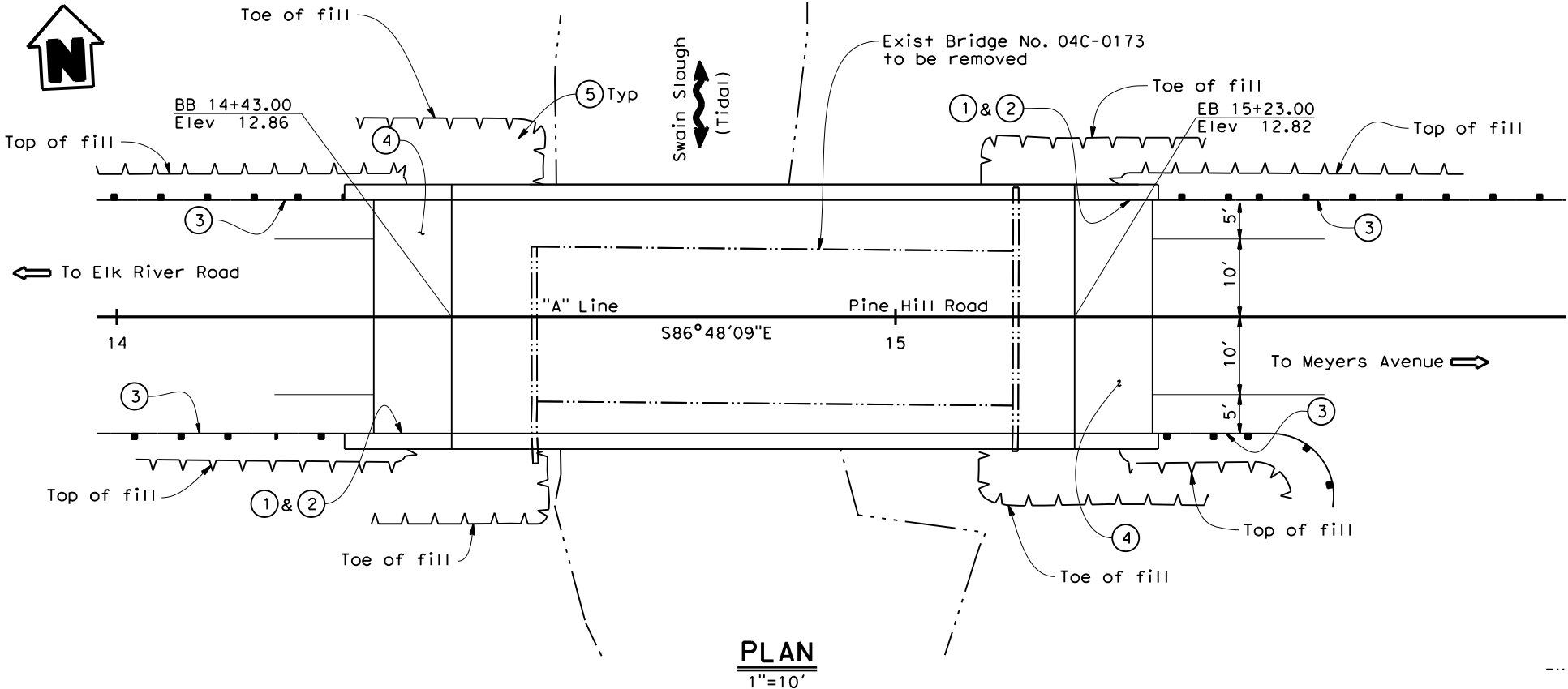
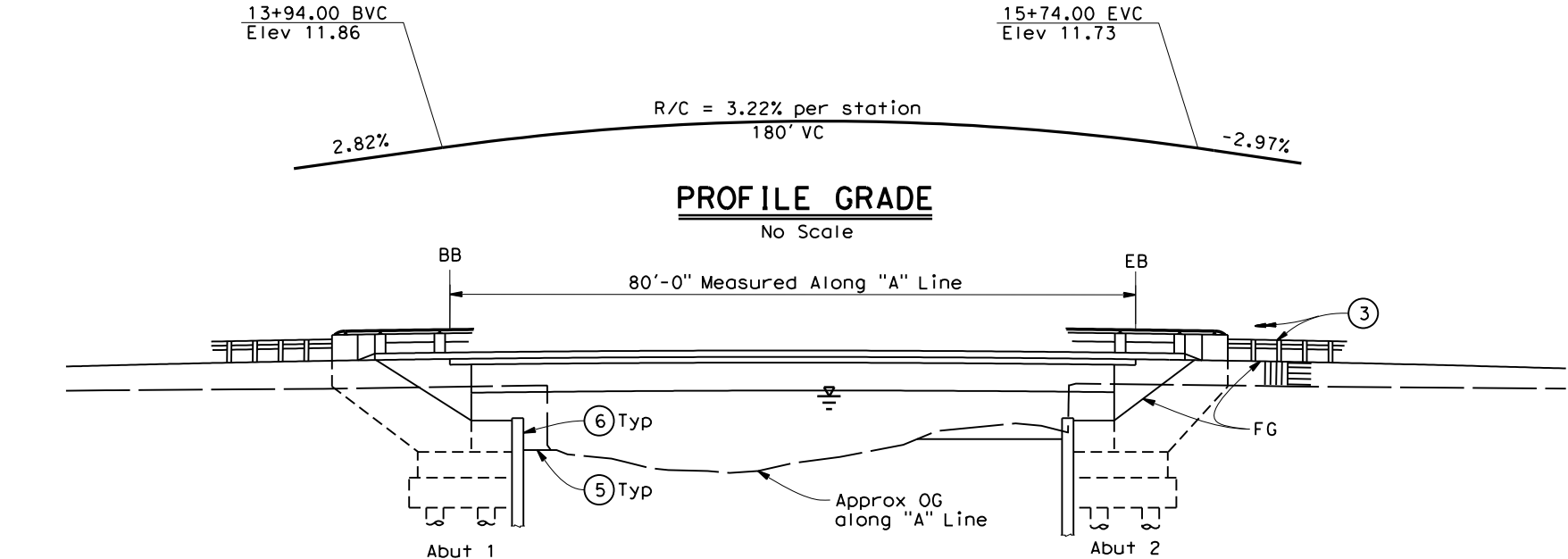
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11017 Cobblestone Drive, Suite 100
Rancho Cordova, CA 95670

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS
1106 2nd Street
Eureka, CA 95501

INDEX TO PLANS

Sheet No.	Title
1	General Plan
2	Deck Contours
3	Foundation Plan
4	Abutment Layout
5	Abutment Details No. 1
6	Abutment Details No. 2
7	Typical Section
8	Girder Layout
9	Wide Flange Girder Details No. 1
10	Wide Flange Girder Details No. 2
11	Construction Sequence
12	Miscellaneous Details
13	Log of Test Borings No. 1
14	Log of Test Borings No. 2
15	Log of Test Borings No. 3



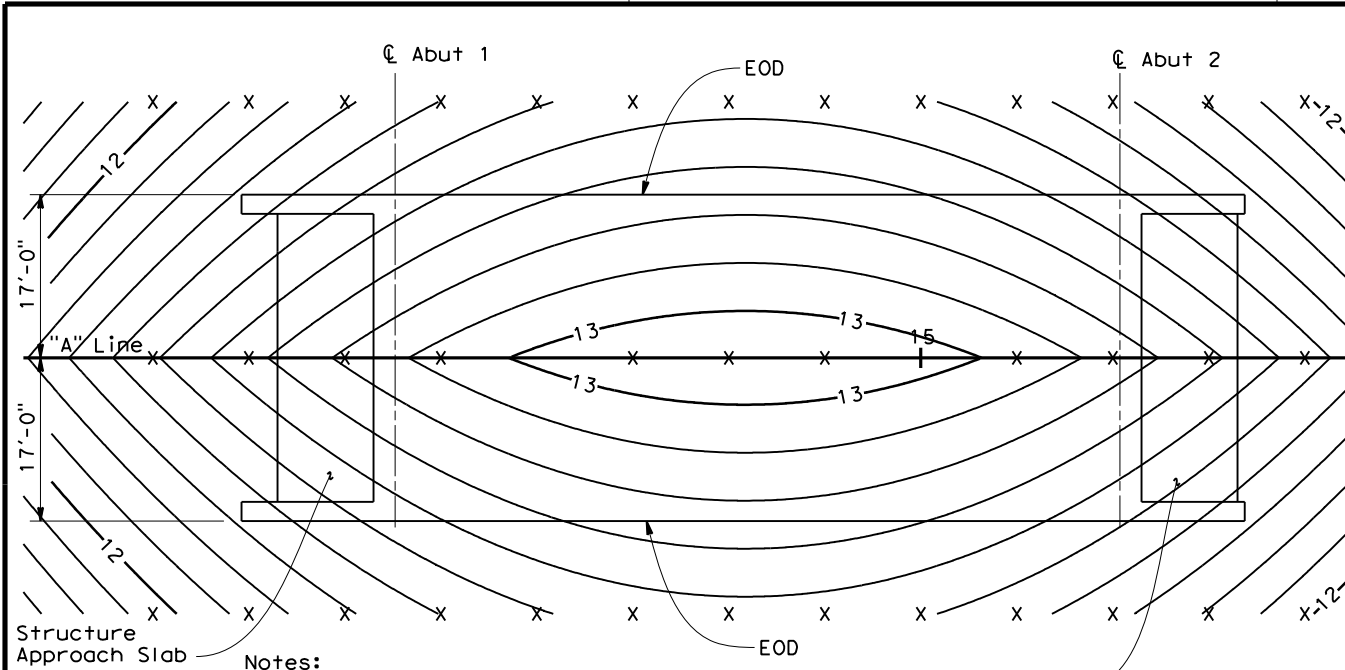
** Structure Depth at centerline girder at midspan

TYPICAL SECTION

1"=5'

- Notes:
- 1 Paint Bridge Number "Bridge No. 04C0260"
 - 2 Paint "Swain Slough Bridge"
 - 3 MGS, see Road Plans
 - 4 Structure Approach Type E0(10)
 - 5 Contour Grading, see Road Plans
 - 6 Steel Sheet Piling, see "Miscellaneous Details" sheet
 - King Tide water surface elevation = 8.5' NAVD
 - Existing structure, Br. No. 04C0173, to be removed

	DESIGN	BY L. Smith	CHECKED J. Chou	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 AND PERMIT DESIGN VEHICLE		PREPARED FOR THE COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	Scott McCauley PROJECT ENGINEER		BRIDGE NO. 04C0260	SWAIN SLOUGH BRIDGE							
DESIGN OVERSIGHT	DETAILS	BY B. Maechler	CHECKED J. Chou	LAYOUT	BY L. Smith	CHECKED J. Chou		POST MILES 0.19	GENERAL PLAN									
SIGN OFF DATE	QUANTITIES	BY J. Cruz	CHECKED H. Chou	SPECIFICATIONS	BY S. McCauley	PLANS AND SPECS COMPARED												
DESIGN GENERAL PLAN SHEET (ENGLISH) (REV.7/16/10)									UNIT: PROJECT NUMBER & PHASE:	CONTRACT NO.:	DISREGARD PRINTS BEARING EARLIER REVISION DATES		5/22/15				SHEET 1	OF 15
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS							0	1	2	3								



Notes:
X = 10' intervals along station line
Contours Intervals = 0.10'
Contours do not include camber

PLAN
1"=10'

QUANTITIES

Bridge Removal	LUMP	SUM
Structure Excavation (Type A)	370	CY
Structure Backfill (Bridge)	117	CY
Crushed Rock Backfill	51	CY
Temporary Shoring	LUMP	SUM
Furnish Sheet Pile Shoring	5002	SOFT
Drive Steel Sheet Pile	5002	SOFT
Furnish 24" Cast-In-Steel-Shell Concrete Piling	2446	LF
Drive 24" Cast-In-Steel-Shell Concrete Piling	24	EA
Seal Course Concrete	116	CY
Structural Concrete, Bridge Footing	91	CY
Structural Concrete, Bridge	86	CY
Structural Concrete, Bridge (Polymer Fiber)	99	CY
Structure Concrete, Approach Slab (Type E0)	23	CY
Furnish Precast Prestressed Concrete Girder (70'-80')	5	EA
Erect Precast Prestressed Concrete Girder	5	EA
Joint Seal (MR = 1/2")	68	LF
Bar Reinforcing Steel (Epoxy Coated) (Bridge)	121209	LB
Miscellaneous Metal	1430	LB
Concrete Barrier, Type 80 (Mod)	209	LF



- Structural Concrete, Bridge
- Prestressed Concrete PC/PS Wide Flange Girder
- Structural Concrete, Bridge (Polymer Fiber) (f'c = 4.0 ksi @ 28 days)
- Structural Concrete, Bridge Footing
- Structural Concrete, Approach Slab
- Seal Course Concrete
- Structural Concrete, Bridge (Piles) (f'c = 4.0 ksi @ 28 days)

CONCRETE STRENGTH AND TYPE LIMITS

No Scale

GENERAL NOTES LOAD AND RESISTANCE FACTOR DESIGN

DESIGN: AASHTO LRFD Bridge Design Specifications, 6th Edition with California Amendments

SEISMIC DESIGN: Caltrans Seismic Design Criteria (SDC) Version 1.7 dated April 2013

DEAD LOAD: Includes 35 psf for future wearing surface. The dead load between girders has been increased by 10% to allow for the use of steel deck forms.

LIVE LOADING: HL93 and Permit Design Vehicle.

SEISMIC LOADING: Peak Ground Acceleration = 0.3 g
Soil Profile: Vs30 = 140m/s
Movement Magnitude: Mmax = 7.25

TSUNAMI LOADING: Tsunami design based on Caltrans "Tsunami Forces on Selected California Coastal Bridges" (Report No. CAB-1983) dated June 2013
Assumed Tsunami WSE = 20.0'
Initial impact velocity = 15.0 ft/s
Max Mass Movement flux
Velocity = 10.6 ft/s

REINFORCED CONCRETE: fy = 60 ksi
f'c = 3.6 ksi, unless otherwise specified
n = 8

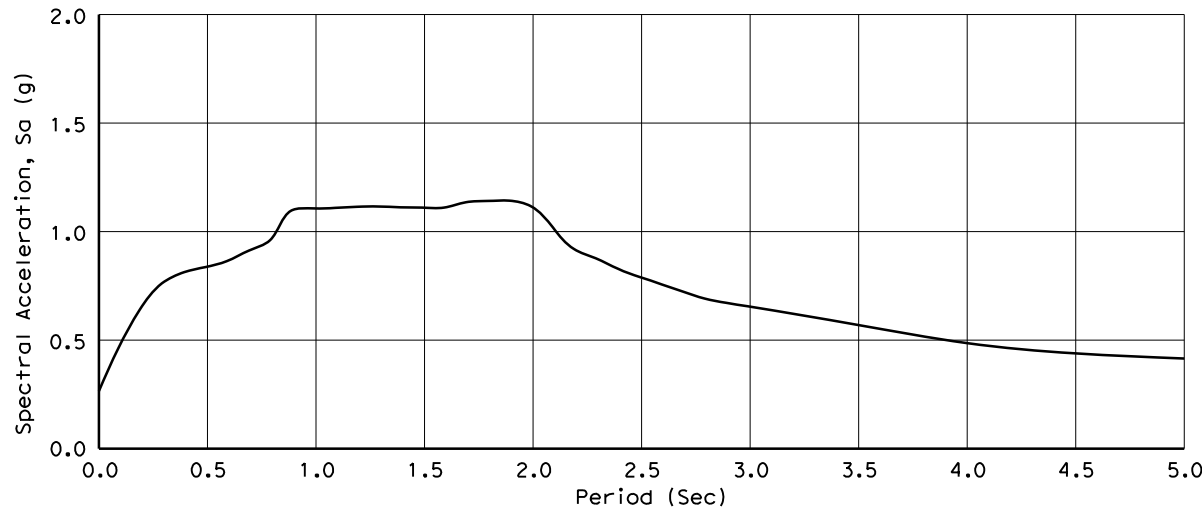
PRECAST PRESTRESSED CONCRETE: See "Prestressing Notes" in "Wide Flange Girder Details No.1" sheet.

PILES: ASTM A252, Grade 3
Fy = 45 ksi Fu = 66 ksi

SEA LEVEL RISE: Abutments have been designed to accommodate a future 4'-6" grade raise due to sea level rise. See "Abutment Details No. 1" for limits of wing wall design.

PERMANENT STEEL SHEET PILES: Type: Z-Section
ASTM A572 Grade 60
Fy = 60 ksi

ANCHOR TIE DOWNS: Threaded rods shall conform to ASTM F1554 Grade 105 and shall be hot-dipped galvanized. Nuts shall conform to ASTM A563 Grade DH and shall be hot-dipped galvanized hardened washers shall conform to ASTM F436 and shall be hot-dipped galvanized. Bearing Plates shall conform to ASTM A572 Grade 50 and shall be hot-dipped galvanized.

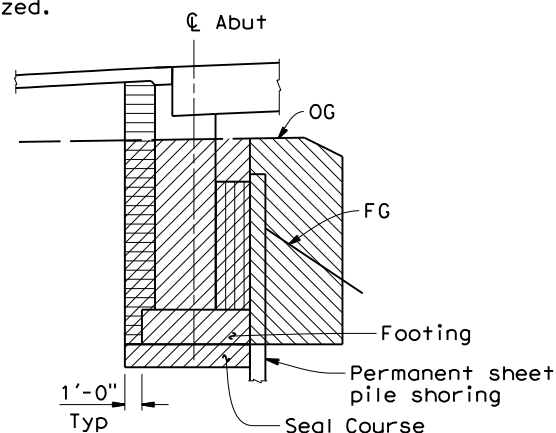
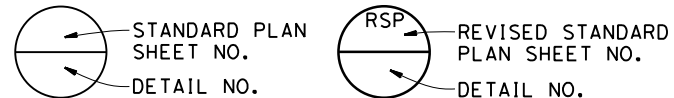


ACCELERATION RESPONSE SPECTRA CURVE (SITE SPECIFIC)

No Scale

STANDARD PLANS DATED 2018

A3A	Abbreviations (sheet 1 of 3)
A3B	Abbreviations (sheet 2 of 3)
A3C	Abbreviations (sheet 3 of 3)
A10A	Legend - Lines and Symbols (sheet 1 of 5)
A10B	Legend - Lines and Symbols (sheet 2 of 5)
A10C	Legend - Lines and Symbols (sheet 3 of 5)
A10D	Legend - Lines and Symbols (sheet 4 of 5)
A10E	Legend - Lines and Symbols (sheet 5 of 5)
A10F	Legend - Soil (Sheet 1 of 2)
A10G	Legend - Soil (Sheet 2 of 2)
A62B	Limits of Payment for Excavation and Backfill
RSP B0-1	Bridge Details
B0-3	Bridge Details
B0-5	Bridge Details
B0-13	Bridge Details
B6-21	Joint Seals (Maximum Movement Rating = 2")
B9-4	Structure Approach Type E0 (10)
B9-5	Structure Approach Slab Details
B11-51	Tubular Handrailing
B11-60	Concrete Barrier Type 80 (Sheet 1 of 2)
B11-61	Concrete Barrier Type 80 (Sheet 2 of 2)



- Indicates Structure Excavation (Type A)
- Indicates Structure Backfill
- Indicates Roadway Excavation
- Indicates 3/4" Crushed Rock Backfill

LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL

No Scale

X DESIGN OVERSIGHT X SIGN OFF DATE	DESIGN BY L. Smith DETAILS BY B. Maechler QUANTITIES BY J. Cruz	CHECKED J. Chou CHECKED J. Chou CHECKED H. Chou	PREPARED FOR THE COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	Scott McCauley PROJECT ENGINEER	BRIDGE NO.	SWAIN SLOUGH BRIDGE					
					04C0260						
					POST MILE						
					0.19						
						DECK CONTOURS					
DESIGN DETAIL SHEET (ENGLISH) (REV.03/14/12)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		0 1 2 3	UNIT: X PROJECT NUMBER & PHASE: X	CONTRACT NO.: X	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET	OF
								5/22/15		2	15

LOAD AND RESISTANCE FACTOR DESIGN PILE DATA TABLE

LOCATION	PILE TYPE	NOMINAL RESISTANCE (kips)		DESIGN TIP ELEVATION	SPECIFIED TIP ELEVATION	NOMINAL DRIVING RESISTANCE kips
		COMPRESSION	TENSION			
Abut 1	CISS 24x0.75	360	N/A	-120.0(a); -35.0(b); -55(c)	-120.0	460
Abut 2	CISS 24x0.75	360	N/A	-85.0(a); -35.0(b); -55(c)	-85.0	410

(1) Design Tip Elevation is controlled by the following demands:

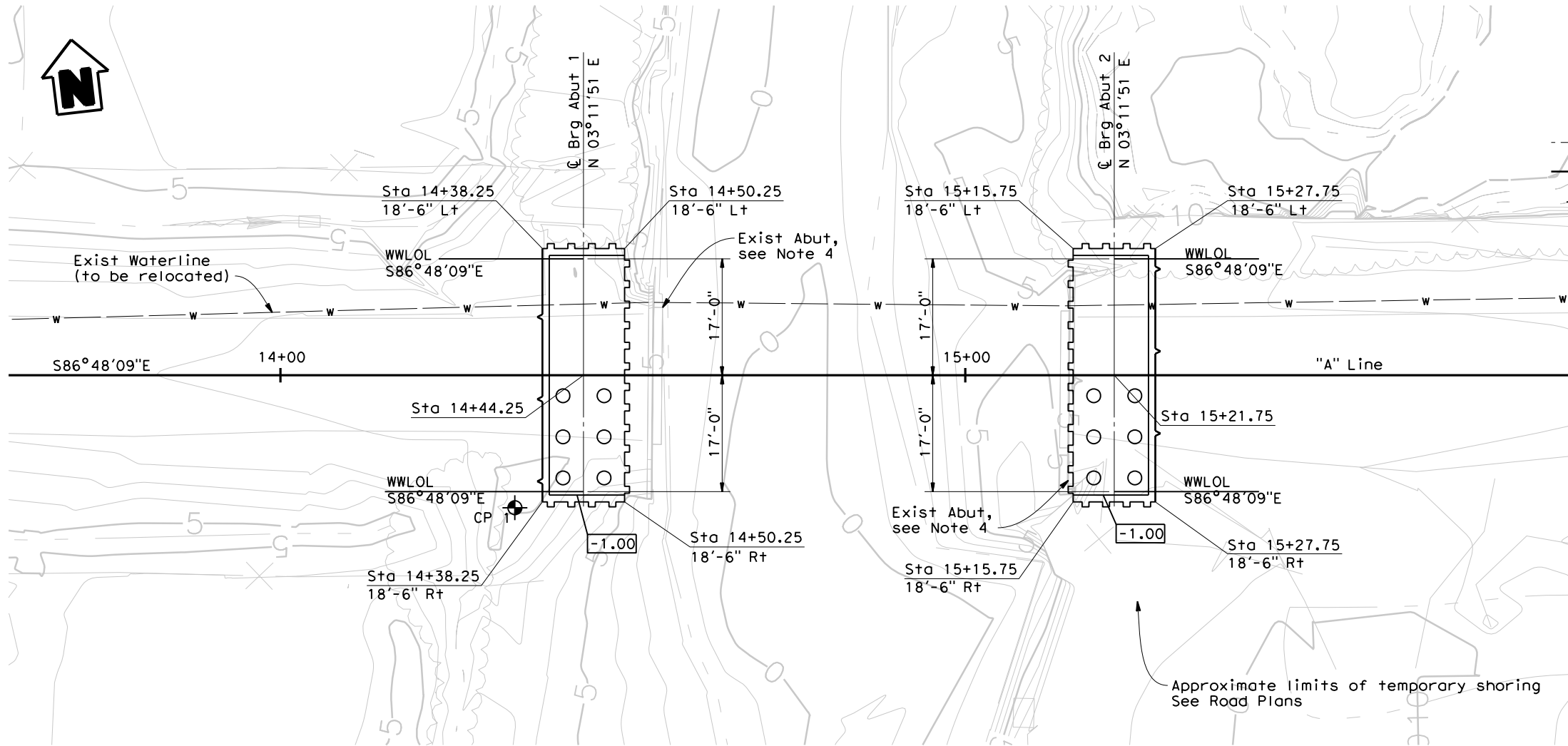
(a) Compression, (b) Tension, (c) Lateral Load

(2) Do not raise the tip elevation

SCOUR DATA TABLE

SUPPORT No.	LONG TERM (DEGRADATION AND CONTRACTION) SCOUR ELEVATION (ft)	SHORT TERM (LOCAL) SCOUR DEPTH (ft)
Abut 1	-1.1	8.2
Abut 2	-1.1	8.6

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	Hum	CR	0.19	16	28
REGISTERED CIVIL ENGINEER			12-3-19	DATE	
PLANS APPROVAL DATE			REGISTERED PROFESSIONAL ENGINEER		
The County or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.			SCOTT A. MCCAULEY No. 71495 Exp. 12-31-19 CIVIL STATE OF CALIFORNIA		
QUINCY ENGINEERING, INC 11017 Cobblestone Drive, Suite 100 Rancho Cordova, CA 95670			COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS 1106 2nd Street Eureka, CA 95501		



SURVEY CONTROL DATA

No.	NORTHING	EASTING	ELEV	LINE	STATION	OFFSET	DESCRIPTION
CP1	2164937.002	5957031.194	10.172	"A"	14+34.23	19.36' Rt	SET80DSPIKE
CP2	2165008.312	5956085.236	9.142	"A"			BRASSCAPHUMCORE19203
CP4	2164947.122	5957432.660	9.366	"A"	18+35.19	0.88' Rt	SETMAGNAIL&DPWTAG
CP5	2165073.438	5957926.179	8.956	"A"			FD1510

Note:
The Contractor shall verify all
controlling field dimensions before
ordering or fabricating any material.

HYDROLOGIC SUMMARY

Drainage area: 5.5 Square Miles

	Design Flood	Base Flood
Frequency (years)	50	100
Discharge (cubic feet per second)	2200	2490
Water Surface Elev at Bridge (ft)	11.5	12.1

Flood plain data 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 the County and interested or affected parties should make their own investigations.

GEOTECHNICAL PROFESSIONAL APPROVAL DATE

DESIGN OVERSIGHT
SIGN OFF DATE

SCALE: As shown
VERT. DATUM NAVD 1988
HORIZ. DATUM CCS 83 Zone 1
PHOTOGRAMMETRY AS OF: 08/2012
ALIGNMENT TIES See Survey County Data
SURVEYED BY County
DRAFTED BY County
FIELD CHECKED BY County
CHECKED BY County

DESIGN BY L. Smith
CHECKED J. Chou
DETAILS BY L. Smith
CHECKED J. Chou
QUANTITIES BY J. Cruz
CHECKED H. Chou

PREPARED FOR THE
COUNTY OF HUMBOLDT
PUBLIC WORKS DEPARTMENT

Scott McCauley
PROJECT ENGINEER

BRIDGE NO.
04C0260
POST MILE
0.19

SWAIN SLOUGH BRIDGE
FOUNDATION PLAN

FOUNDATION PLAN SHEET (ENGLISH) (REV.03/14/12)

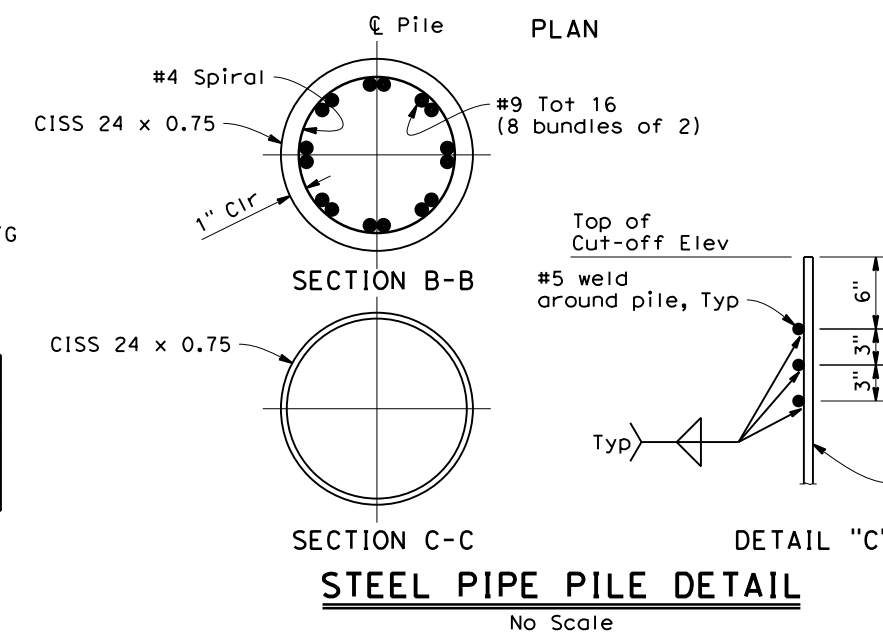
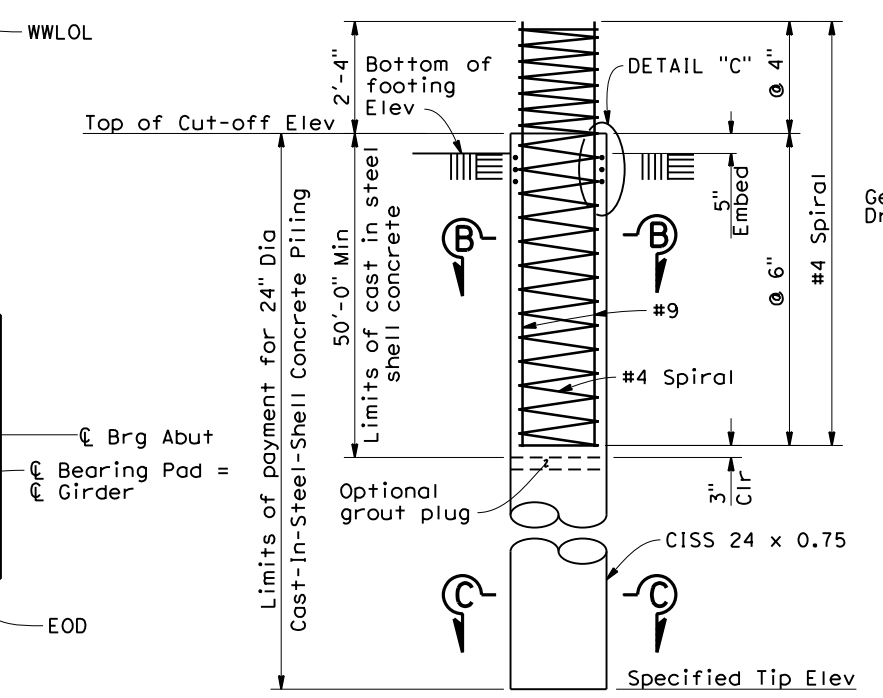
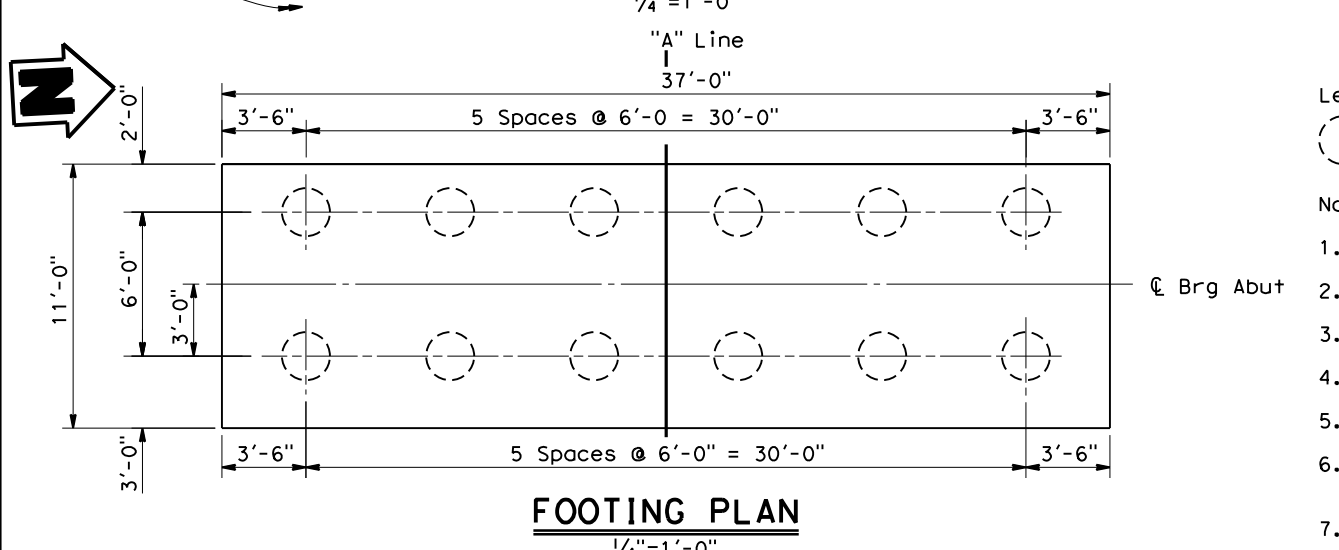
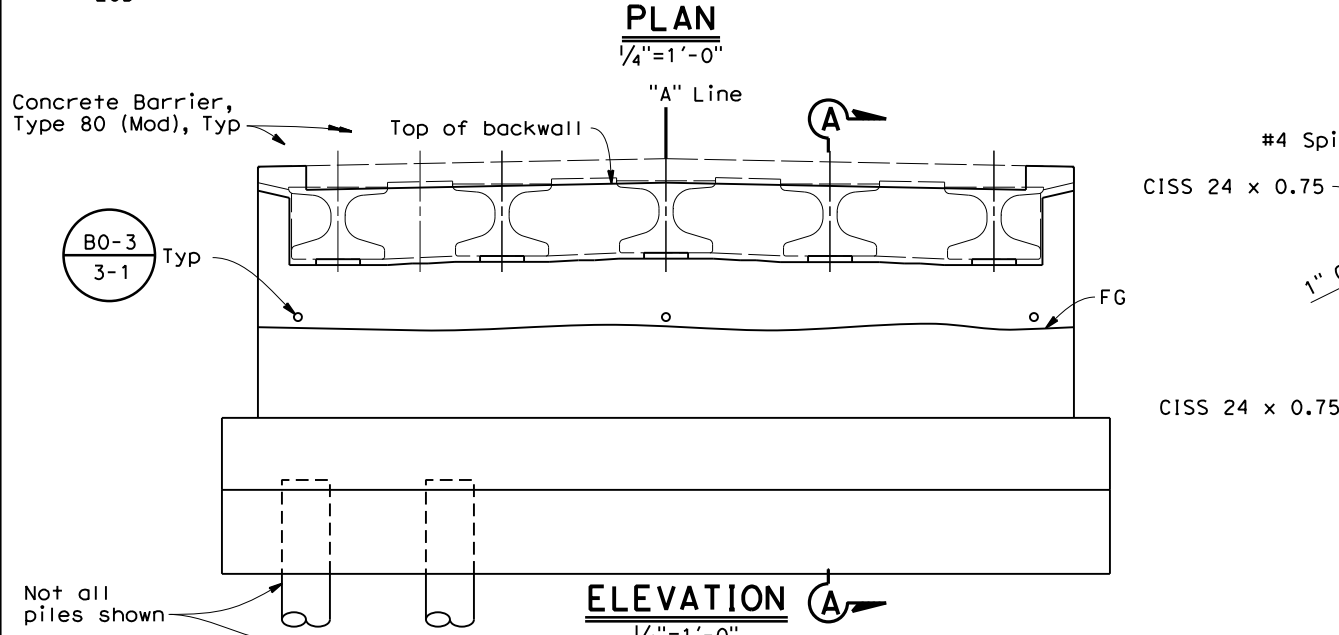
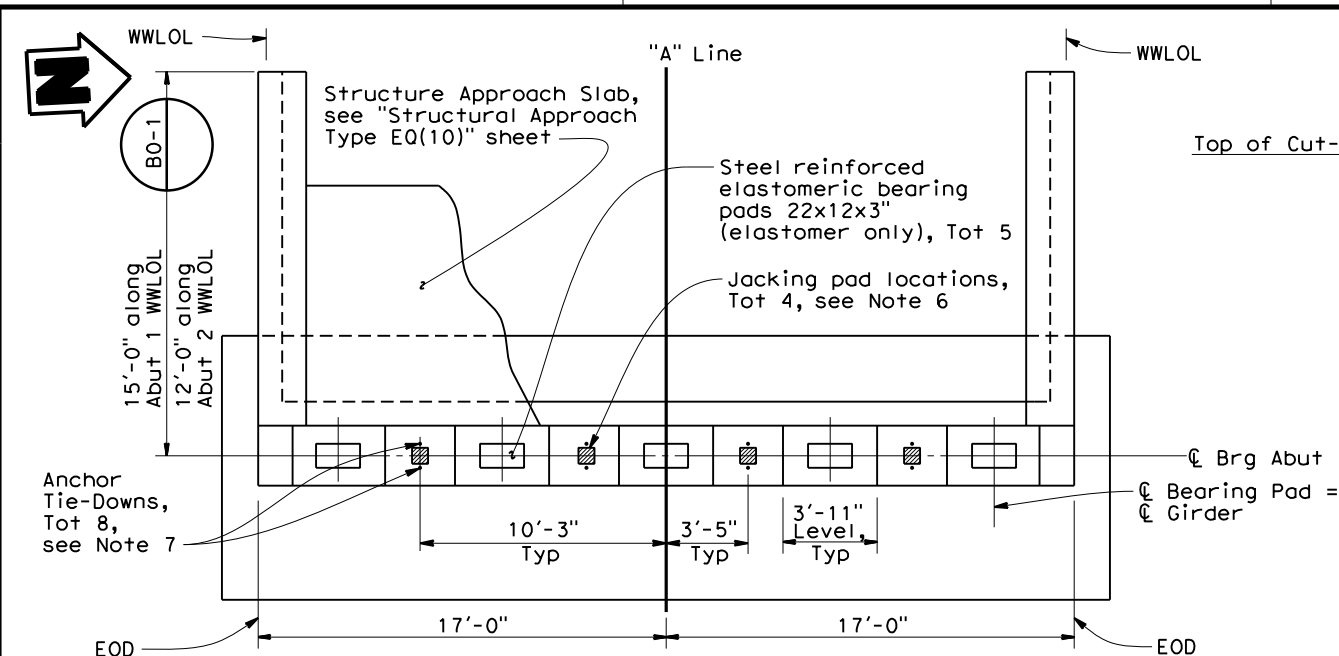
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FOR REDUCED PLANSUNIT: X
PROJECT NUMBER & PHASE: X

CONTRACT NO.: X

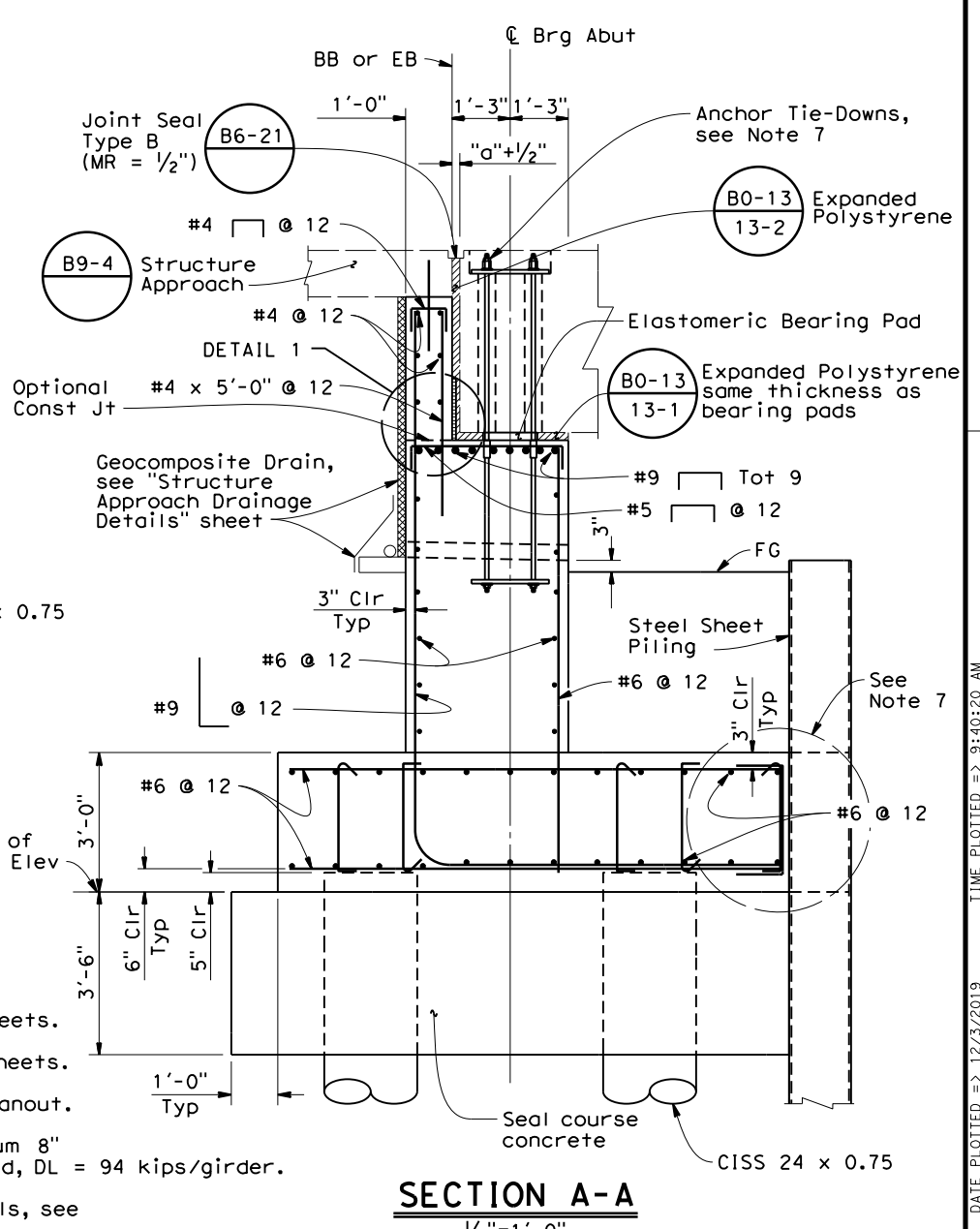
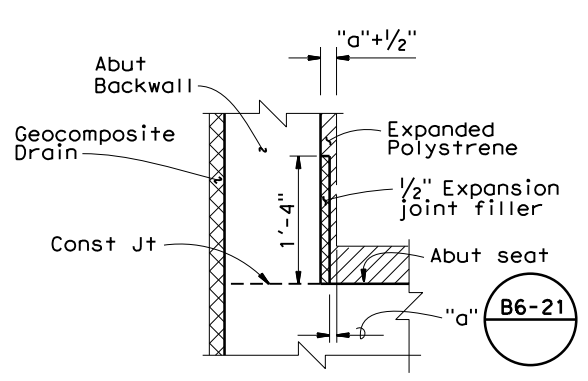
DISREGARD PRINTS BEARING
EARLIER REVISION DATESREVISION DATES
5/22/15
SHEET 3 OF 15

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DATE PLOTTED => 12/3/2019
USERNAME => scottm



- Legend:**
- Indicates vertical CLISS 24 x 0.75
- Notes:**
- Abutment 1 shown, Abutment 2 similar.
 - All reinforcement shall be pre-fabricated epoxy coated.
 - For sections and details not shown, see Abutment Detail sheets.
 - For Elastomeric Bearing Pad Details, see Abutment Detail sheets.
 - Retain 15 feet of undisturbed soil plug in piles during cleanout.
 - Jacking pads are for future grade rise only. Provide minimum 8" square level surface for jacking pads. Unfactored dead load, DL = 94 kips/girder.
 - For Anchor Tie-Down and Permanent Sheet Pile shoring details, see "Miscellaneous Details" sheet.



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	Hum	CR	0.19	17	28

12-3-19 DATE

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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11017 Cobblerack Drive, Suite 100
Rancho Cordova, CA 95670

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS
1106 2nd Street
Eureka, CA 95501

X DESIGN OVERSIGHT X SIGN OFF DATE		DESIGN BY L. Smith	CHECKED J. Chou	PREPARED FOR THE COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	Scott McCauley PROJECT ENGINEER	BRIDGE NO. 04C0260	SWAIN SLOUGH BRIDGE ABUTMENT LAYOUT		
		DETAILS BY B. Maechler	CHECKED J. Chou			POST MILE 0.19			
		QUANTITIES BY J. Cruz	CHECKED H. Chou						
DESIGN DETAIL SHEET (ENGLISH) (REV.03/14/12)					UNIT: PROJECT NUMBER & PHASE: X	CONTRACT NO.: X	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 4 OF 15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	Hum	CR	0.19	18	28


Seth McCully 12-3-19
REGISTERED CIVIL ENGINEER DATE PROFESSIONAL

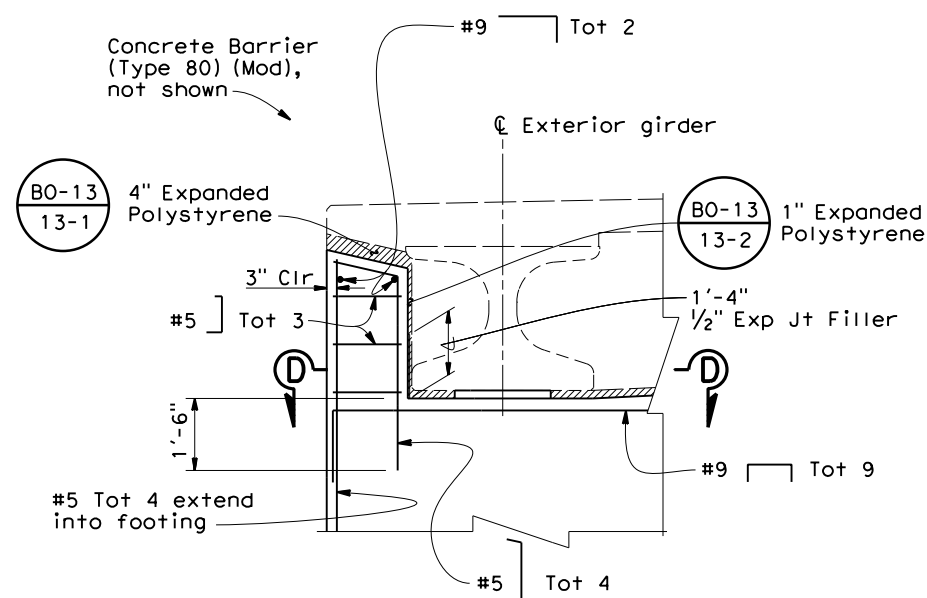
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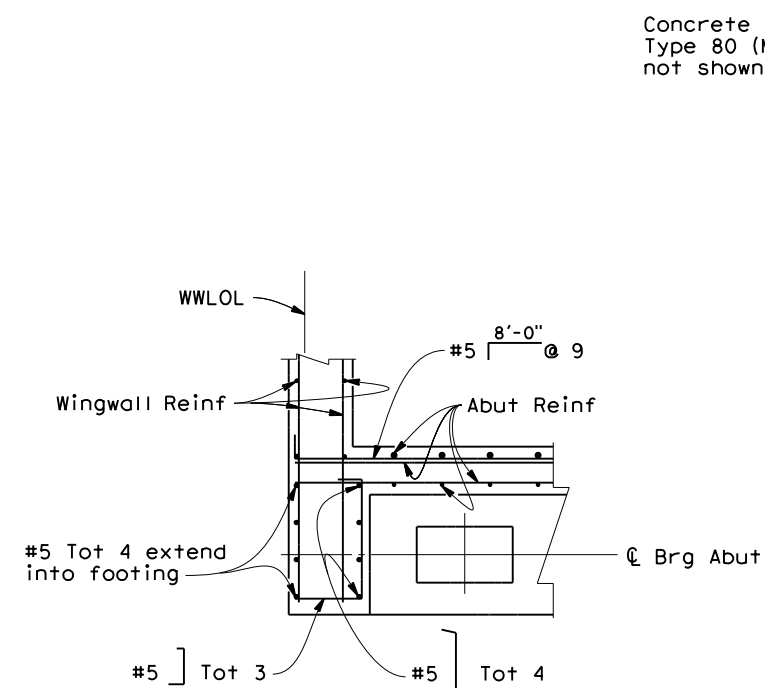
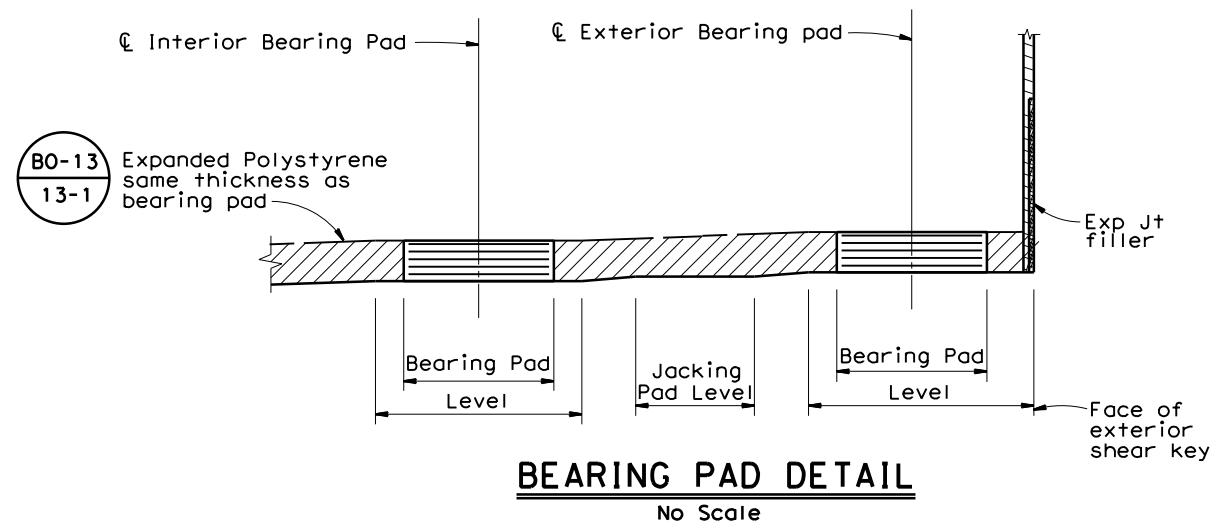


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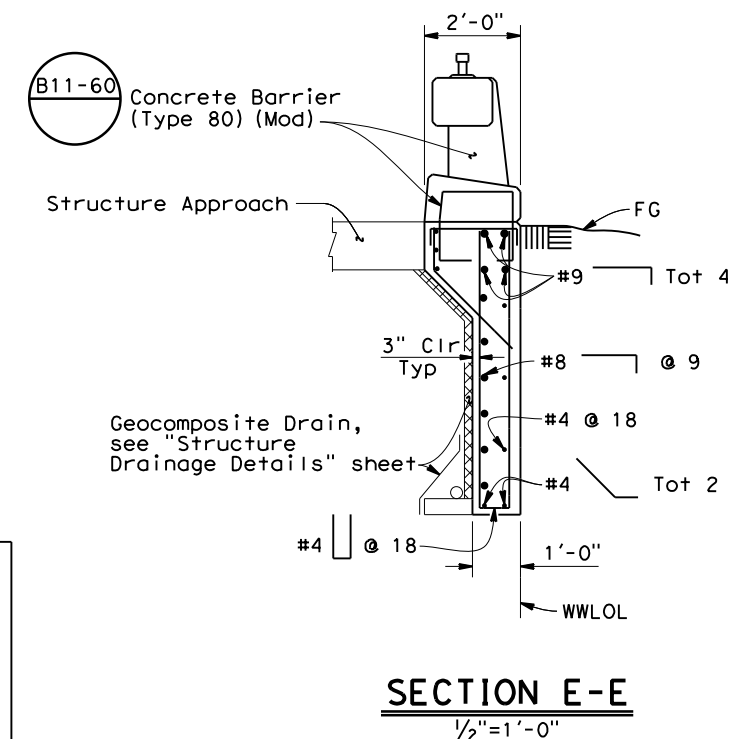
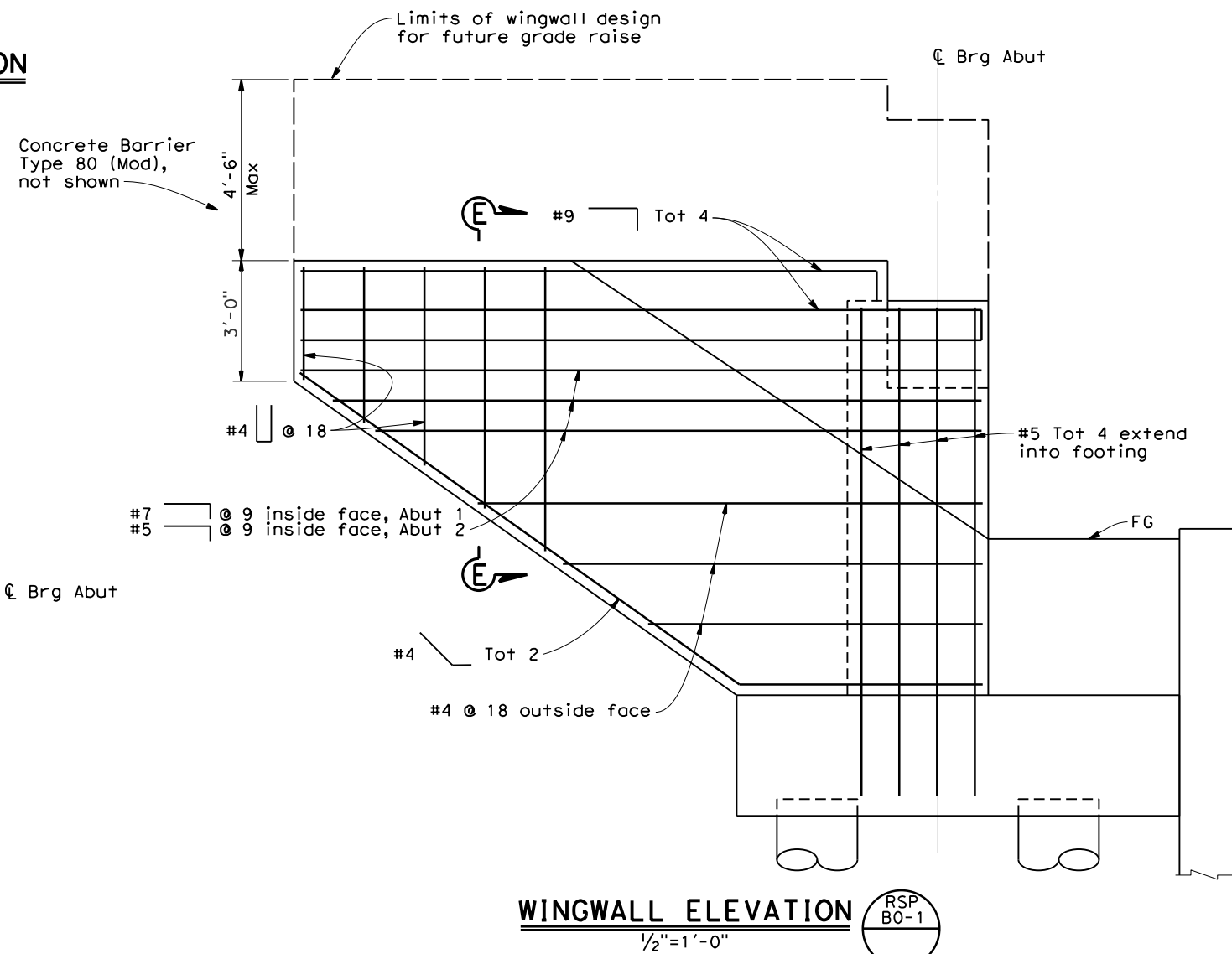
 COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS
1106 2nd Street
Eureka, CA 95501



SHEAR KEY ELEVATION
1/2"=1'-0"



SECTION D-D
1/2"=1'-0"



Notes:

X	DESIGN OVERSIGHT
X	SIGN OFF DATE

DESIGN	BY L. Smith	CHECKED J. Chou
DETAILS	BY B. Maechler	CHECKED J. Chou
QUANTITIES	BY J. Cruz	CHECKED H. Chou

**PREPARED FOR THE
COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS**

Scott McCauley
PROJECT ENGINEER

BRIDGE NO.
04C0260
POST MILE
0.19

SWAIN SLOUGH BRIDGE ABUTMENT DETAILS No.1

UNIT:	X
PROJECT NUMBER & PHASE:	X

CONTRACT NO.: X

DISREGARD PRINTS BEARING
EARLIER REVISION DATES -



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5/22/15				5	15

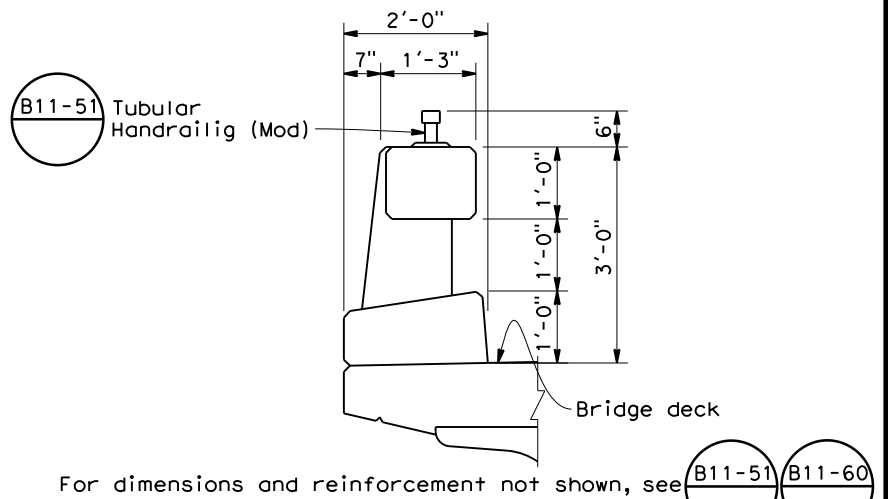
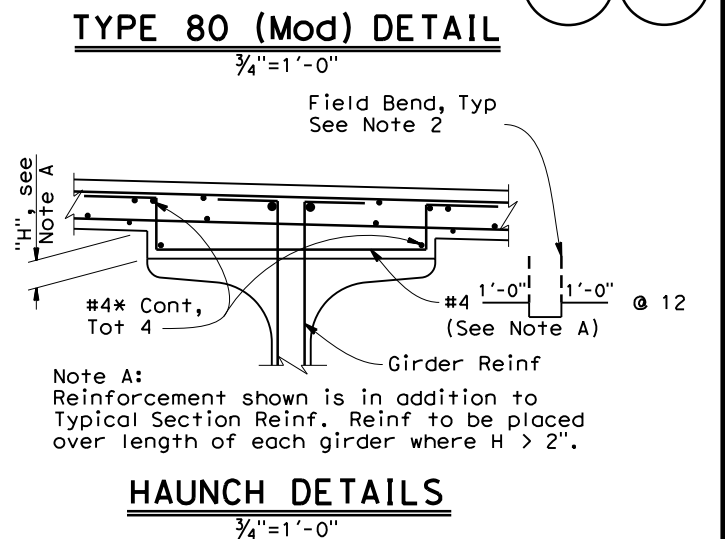
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FOR REDUCED PLANS

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<u>Scott McCauley</u>		12-31-19
REGISTERED CIVIL ENGINEER		DATE
PLANS APPROVAL DATE		
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	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS 1106 2nd Street Eureka, CA 95501	


$$\frac{3}{8}'' = 1' - 0''$$

$$\frac{3}{4}'' = 1' - 0''$$

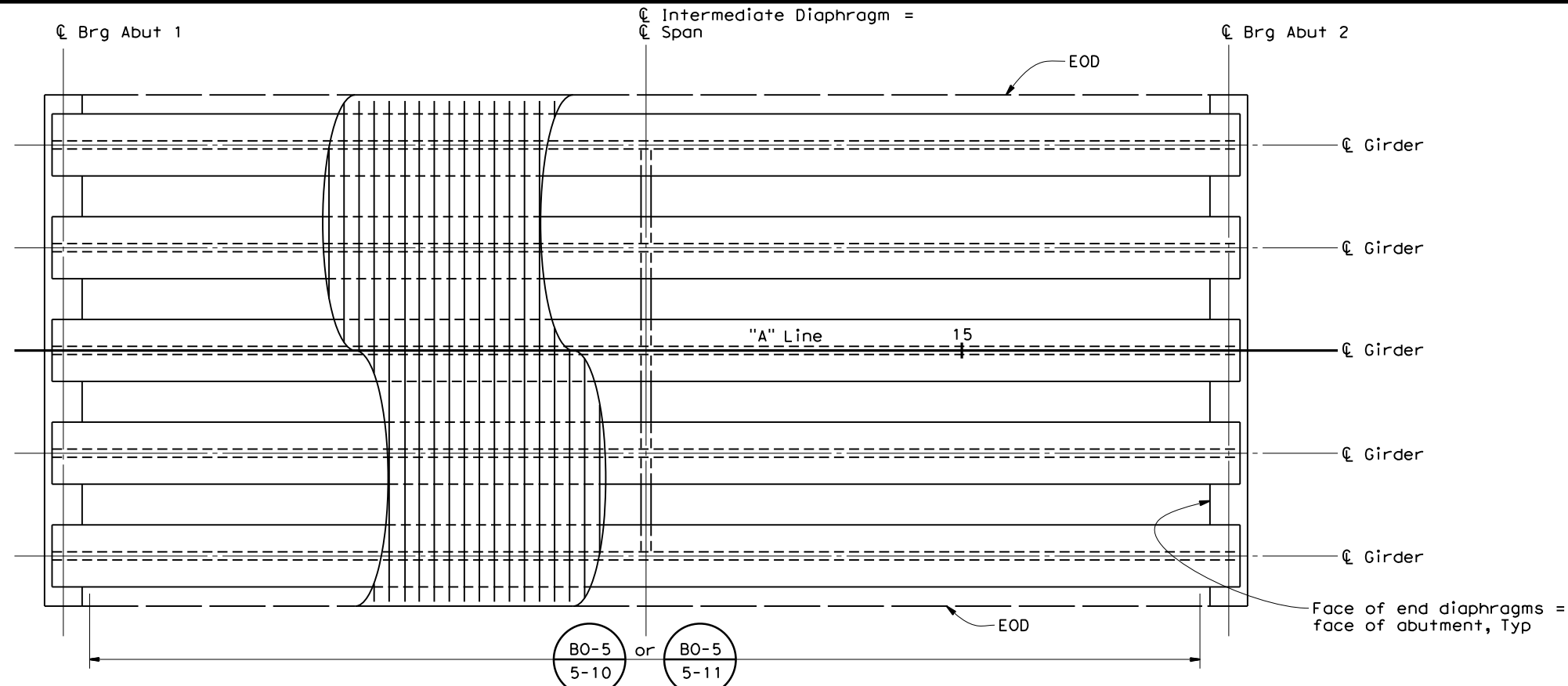
Notes:

1. Provide additional top transverse deck reinforcement for a distance of 5 feet at the ends of barrier rail at expansion joint. Bundle with top transverse reinforcement on bridge and extend 16" beyond \bar{C} exterior girder.
2. All reinforcement shall be pre-fabricated epoxy coated.
3. For limits of distribution reinforcement into end diaphragm, see "Girder Layout" sheet.

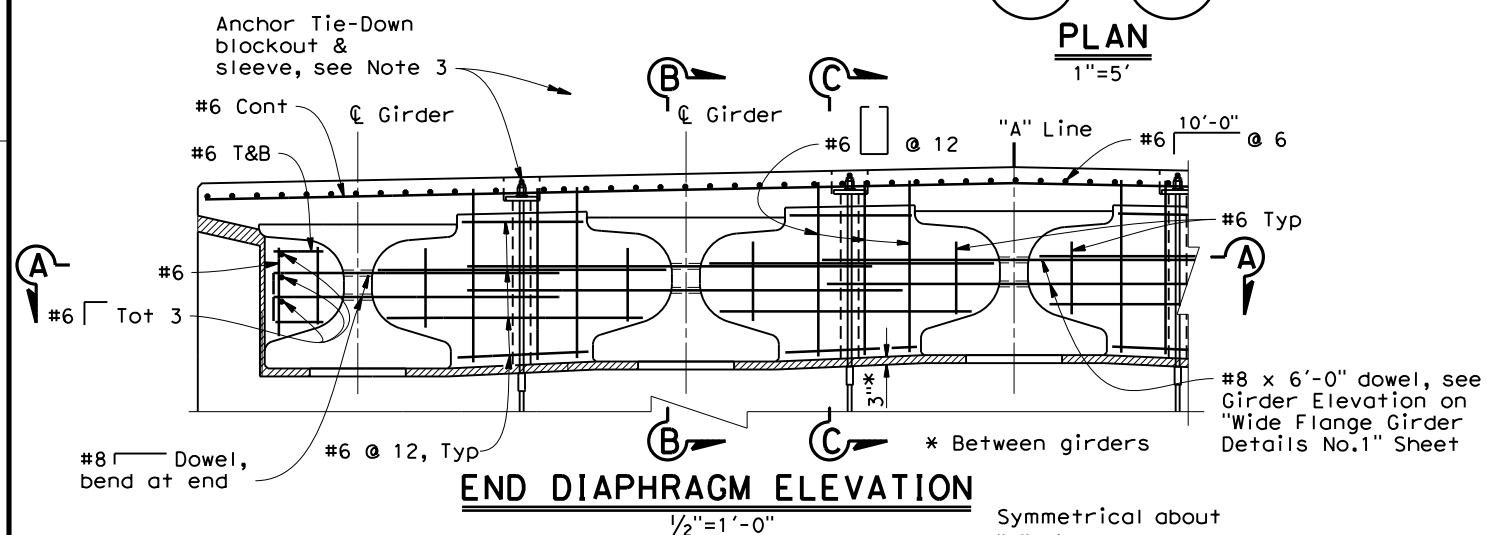
X _____ DESIGN OVERSIGHT X _____ SIGN OFF DATE		DESIGN BY L. Smith DETAILS BY B. Maechler QUANTITIES BY J. Cruz		CHECKED J. Chou CHECKED J. Chou CHECKED H. Chou		PREPARED FOR THE COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS		Scott McCauley PROJECT ENGINEER		BRIDGE NO. 04C0260 POST MILE 0.19		SWAIN SLOUGH BRIDGE TYPICAL SECTION															
DESIGN DETAIL SHEET (ENGLISH) (REV.03/14/12)										ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		0 1 2 3				UNIT: X PROJECT NUMBER & PHASE: X		CONTRACT NO.: X		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES 5/22/15		SHEET 7		OF 15	

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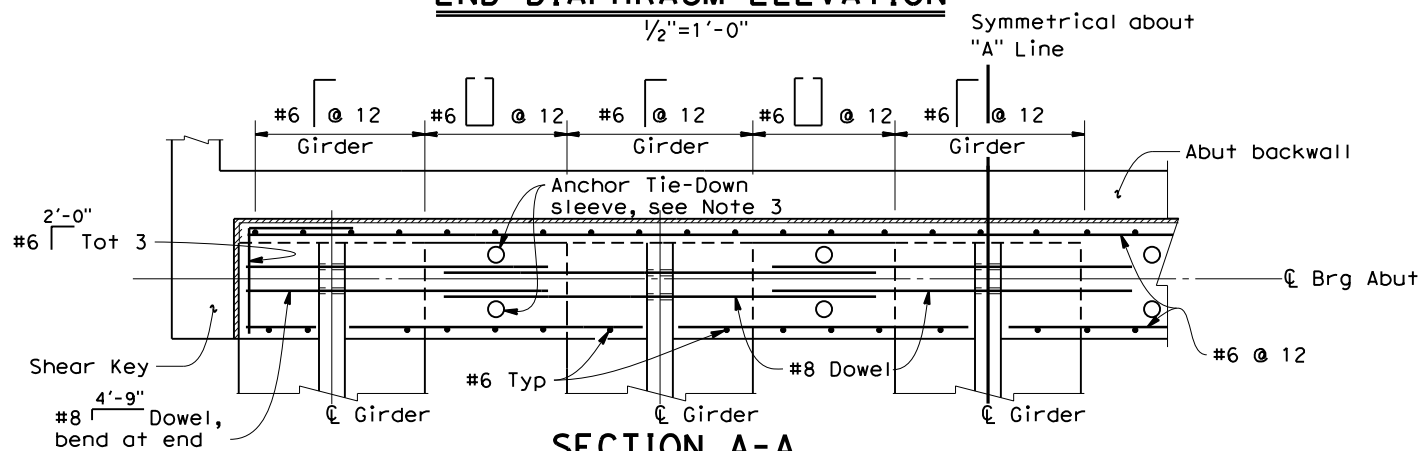
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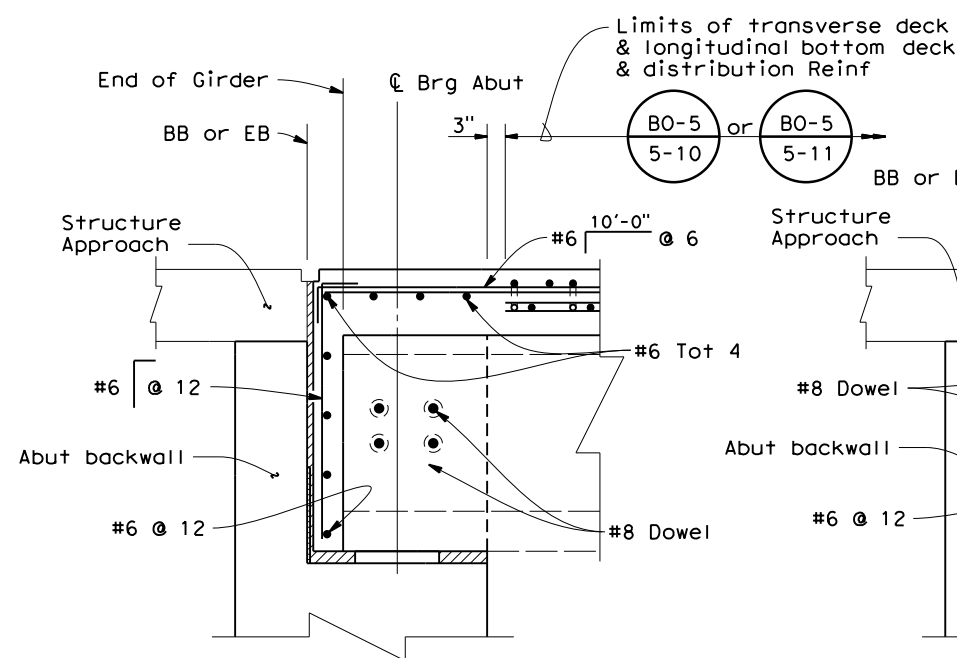
PLAN
1"=5'



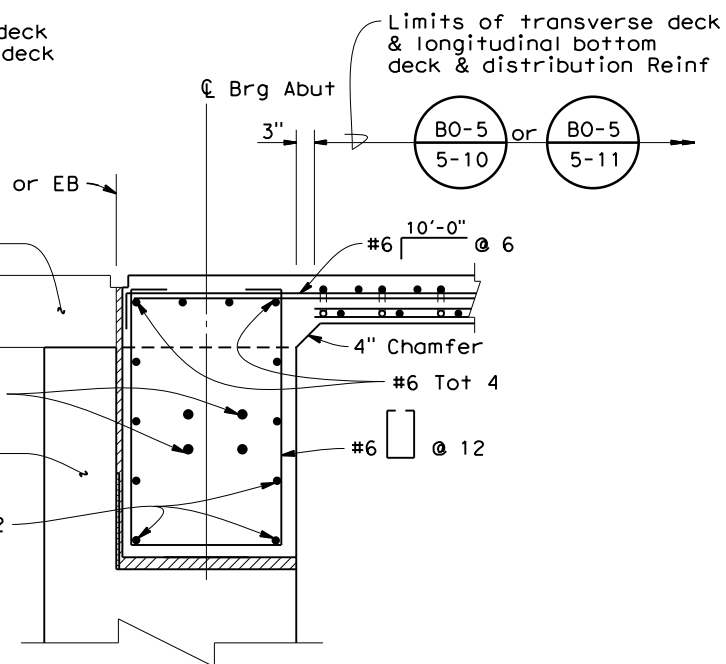
END DIAPHRAGM ELEVATION
1/2"=1'-0"



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



SECTION B-B
3/4"=1'-0"



SECTION C-C
3/4"=1'-0"

Notes:

1. For Intermediate Diaphragm, see "Wide Flange Girder Details No. 2" sheet.
2. All reinforcement shall be pre-fabricated epoxy coated.
3. Adjust reinforcement to clear sleeve. For Anchor Tie-Down details, see "Miscellaneous Details" sheet.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	Hum	CR	0.19	21	28

Scott McCauley 12-3-19
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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QUINCY ENGINEERING, INC
11017 Cobblers Drive, Suite 100
Rancho Cordova, CA 95670

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS
1106 2nd Street
Eureka, CA 95501

REGISTERED PROFESSIONAL ENGINEER
SCOTT A. MCCAULEY
No. 71495
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

X	DESIGN OVERSIGHT
X	SIGN OFF DATE

DESIGN	BY L. Smith	CHECKED J. Chou
DETAILS	BY B. Maechler	CHECKED J. Chou
QUANTITIES	BY J. Cruz	CHECKED H. Chou

**PREPARED FOR THE
COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS**

BRIDGE NO.	04C0260
POST MILE	0.19

Scott McCauley
PROJECT ENGINEER

**SWAIN SLOUGH BRIDGE
GIRDER LAYOUT**

DESIGN DETAIL SHEET (ENGLISH) (REV.03/14/12)

ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

0 1 2 3

UNIT: PROJECT NUMBER & PHASE: X

CONTRACT NO.: X

DISREGARD PRINTS BEARING
EARLIER REVISION DATES

REVISION DATES	SHEET	OF
5/22/15	8	15

FILE => S:\Client\Humboldt\H07-300 Pine Hill\CAD\Bridges\H07300a-1-g_1001.dgn

DATE PLOTTED => 12/3/2019 9:40:25 AM USERNAME => scottm

DISTCOUNTYROUTEPOST MILESTOTAL PROJECTSHEET NoTOTAL SHEETS

01HumCRCR0.192228

Scott McCauley12-3-19REGISTERED CIVIL ENGINEERDATE

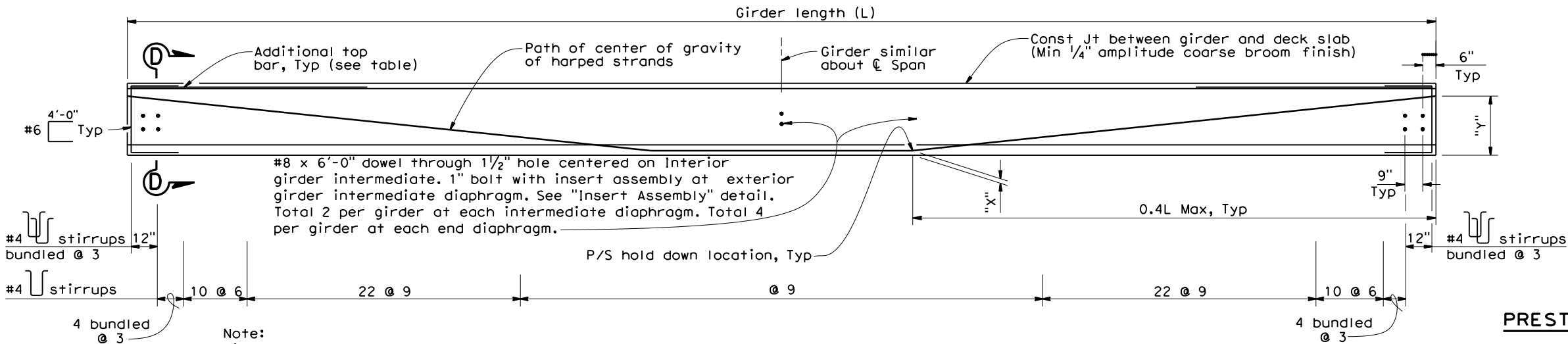
REGISTERED PROFESSIONAL ENGINEER
SCOTT A. MCCAULEY
No. 71495
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

PLANS APPROVAL DATE

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Rancho Cordova, CA 95670

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS
1106 2nd Street
Eureka, CA 95501

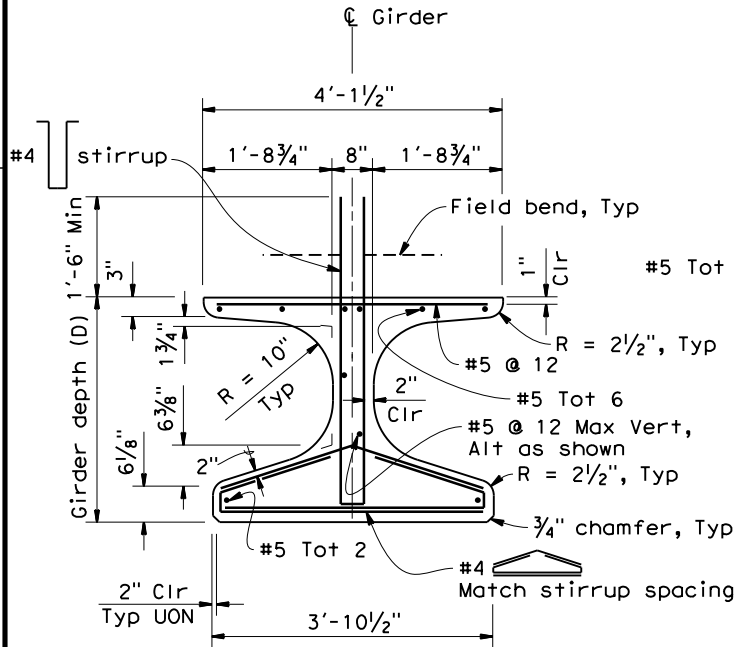


Note:
Girder ends to be cast such that a level surface is provided at bearing pads

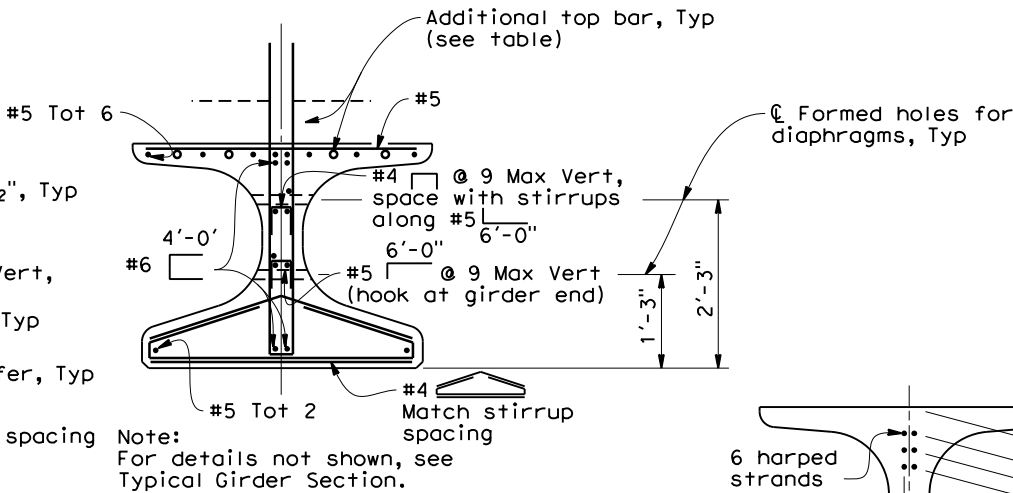
GIRDER ELEVATION
No Scale

LOCATION	GIRDER LENGTH (L)	GIRDER DEPTH (D)	"X" (in)		"Y" (in)	JACKING FORCE (P)	As, Min (in²)	CONCRETE STRENGTH (ksi)		MIDSPAN DEAD LOAD DEFLECTION (in)		ADDITIONAL TOP BAR (EACH END)
								f'ci	f'c	DECK	RAIL	
ALL GIRDERS	79'-0"	36"	Straight Strands	3.75	31.5	1300 kips	6.4	5.5	6.5	0.9	0.10	#8 x 8' Tot 4
			Harped Strands	4.75								

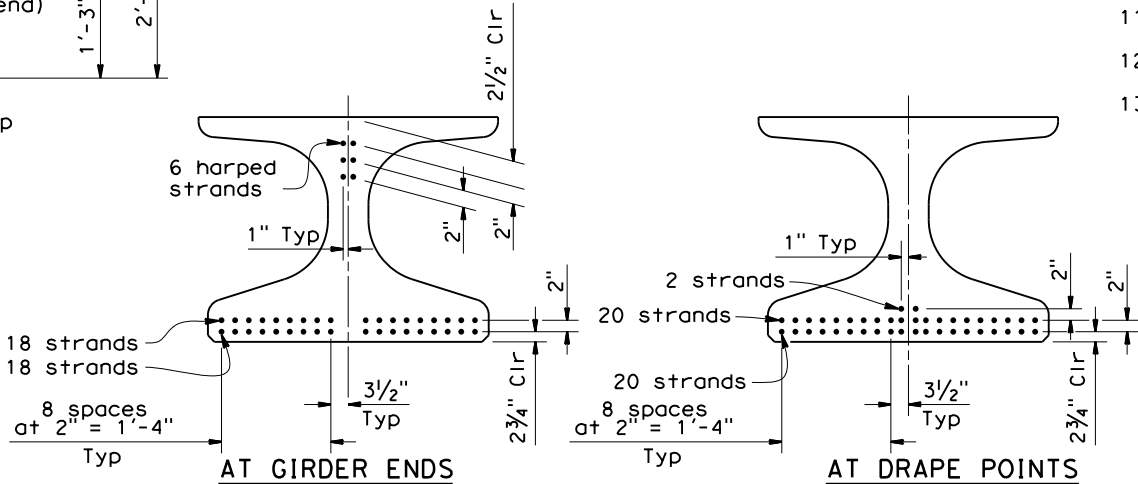
* Prestressing steel c.g. dimension is for harped strands only. See Strand Template detail.



TYPICAL GIRDER SECTION
No Scale



SECTION D-D
No Scale



STRAND TEMPLATE

Note: Template shown is for 0.5" diameter strand

PRESTRESSING NOTES

- The Jacking Force (P) is the jacking force required at the point of control along the span. The jacking force does not include any fabrication specific losses.
- The maximum tensile stress in the prestressing steel upon release shall not exceed 75% of the specified minimum ultimate tensile strength of the prestressing steel.
- The maximum temporary tensile stress (jacking stress) in the prestressing steel shall not exceed 80% of the specified minimum ultimate tensile strength of the prestressing steel.
- Concrete strength:
f'ci is at time of initial stressing
f'c is at 28 days
- Deflection components are informational and will be used to set screed line elevations.
- Screed line elevations for deck concrete will be determined by the Engineer.
- Prestressing strand shall be 270 ksi low relaxation.
- Strands shall be placed as low as possible in the strand template and symmetrical about center girder.
- Strands may be bundled in groups consisting of 3 vertically, 2 horizontally, and separated at the ends.
- The minimum distance "S" between groups or individual strands is 1 3/4" for 0.5" diameter strand.
- "S" is measured between centers of adjacent strands.
- Approval by the Engineer is required for deviation.
- The prestressing stand and all reinforcement shall be pre-fabricated epoxy coated.

Note: For Welded Wire Reinforcement (WWR), see "Wide Flange Girder Details No. 2" sheet.

X
DESIGN OVERSIGHT

X
SIGN OFF DATE

DESIGN DETAIL SHEET (ENGLISH) (REV.03/14/12)

DESIGNBYCHECKED

L. SmithJ. Chou

DETAILSBYCHECKED

B. MaechlerJ. Chou

QUANTITIESBYCHECKED

J. CruzH. Chou

PREPARED FOR THE
COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS

Scott McCauley
PROJECT ENGINEER

BRIDGE NO.
04C0260

POST MILE
0.19

SWAIN SLOUGH BRIDGE
WIDE FLANGE GIRDER DETAILS No. 1

REVISION DATES
5/22/15

SHEET
9

OF
15

UNIT:
PROJECT NUMBER & PHASE: X

CONTRACT NO.: X

DISREGARD PRINTS BEARING
EARLIER REVISION DATES

FILE => S:\Client\Humboldt\H07-300 Pine Hill\CAD\Bridge\H07300a-1-gd101.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	Hum	CR	0.19	23	28

12-3-19
DATE

REGISTERED CIVIL ENGINEER

12-31-19
DATE

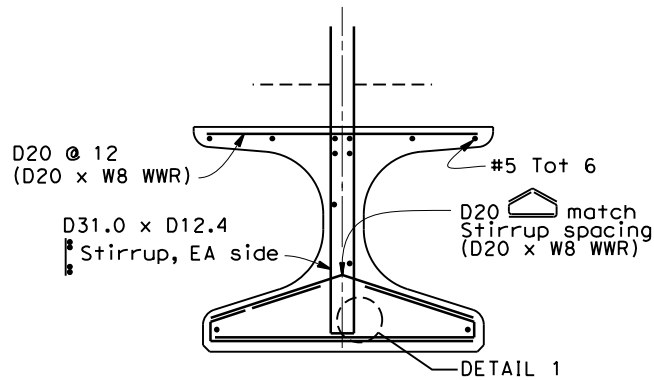
PLANS APPROVAL

SCOTT
A. MCCAULEY
No. 71495
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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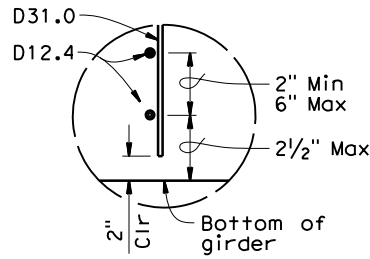
QUINCY ENGINEERING, INC
11017 Cobblestone Drive, Suite 100
Rancho Cordova, CA 95670

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS
1106 2nd Street
Eureka, CA 95501



- Notes:
- For details shown but not noted, see "Typical Girder Section" detail.
 - W8 WWR not shown.

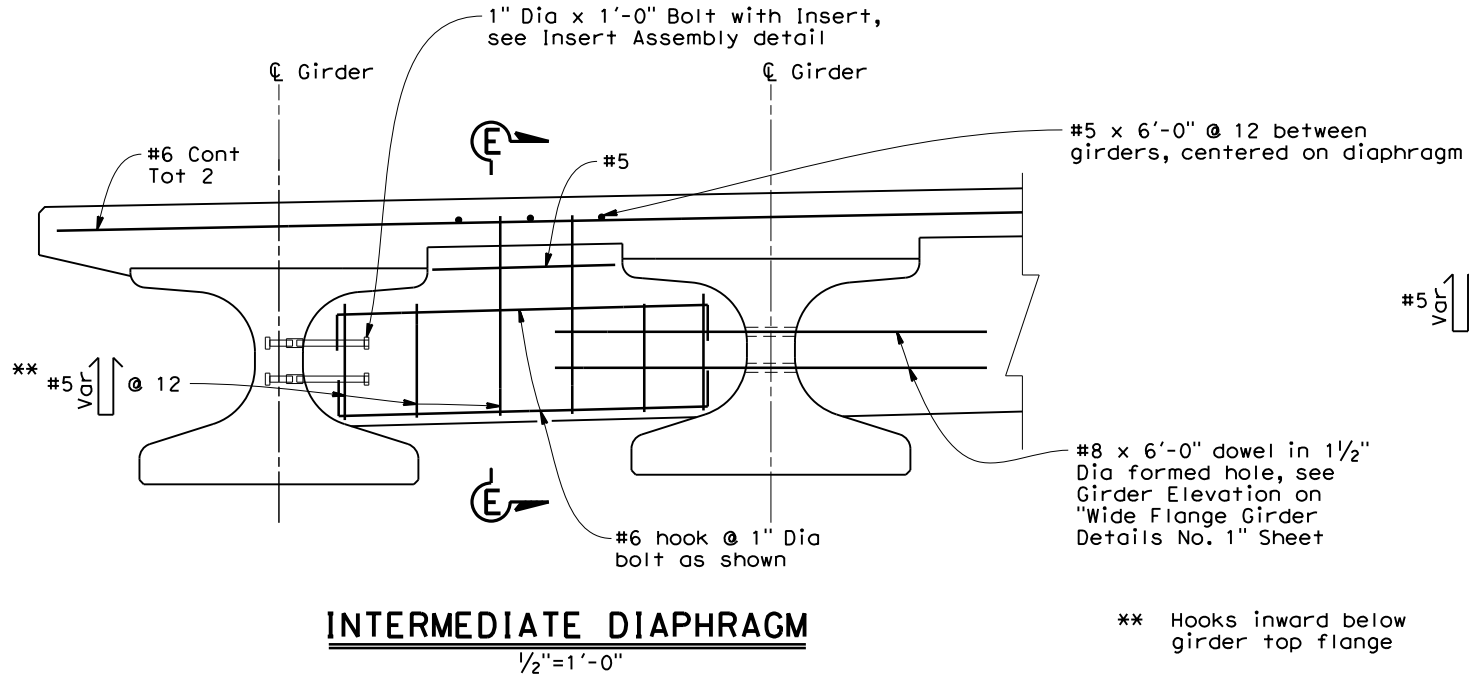
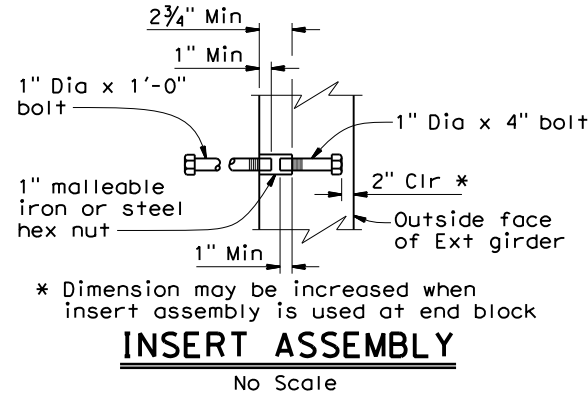
WELDED WIRE REINFORCEMENT (WWR) ALTERNATIVE
No Scale



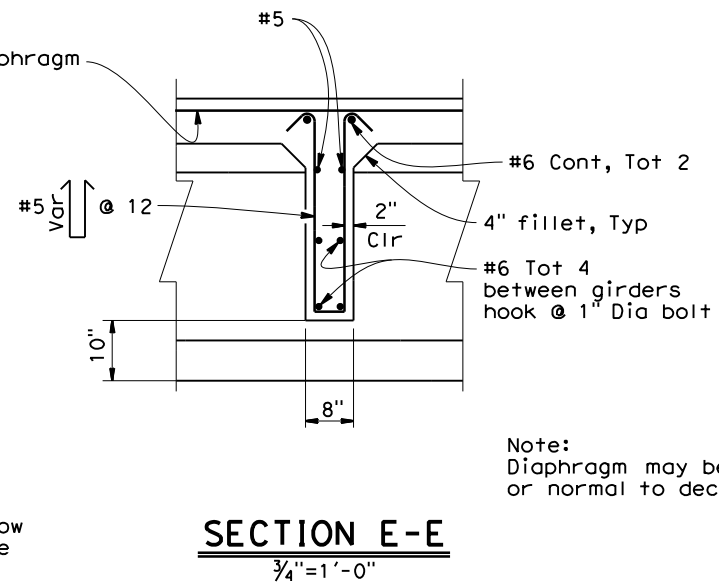
- Notes:
- Bottom of stirrup WWR detail shown, top similar.
 - Longitudinal wire area shall be 40% or greater of vertical deformed wire's area.

DETAIL 1
No Scale

- Note:
- All reinforcement shall be pre-fabricated epoxy coated.



- ** Hooks inward below girder top flange



- Note:
- Diaphragm may be vertical or normal to deck grade

X DESIGN OVERSIGHT X SIGN OFF DATE	DESIGN BY L. Smith DETAILS BY B. Maechler QUANTITIES BY J. Cruz	CHECKED J. Chou CHECKED J. Chou CHECKED H. Chou	PREPARED FOR THE COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	Scott McCauley PROJECT ENGINEER	BRIDGE NO. 04C0260	SWAIN SLOUGH BRIDGE WIDE FLANGE GIRDER DETAILS No. 2		
					POST MILE 0.19			
DESIGN DETAIL SHEET (ENGLISH) (REV.03/14/12)	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3	UNIT: PROJECT NUMBER & PHASE: X	CONTRACT NO.: X	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES 5/22/15	SHEET 10	OF 15

FILE => S:\Client\Humboldt\H07-300 Pine Hill\CAD\Bridge\H07300a-1-gd\02.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	Hum	CR	0.19	24	28

12-3-19
REGISTERED CIVIL ENGINEER
DATE

SCOTT A. MCCAULEY
No. 71495
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

PLANS APPROVAL DATE

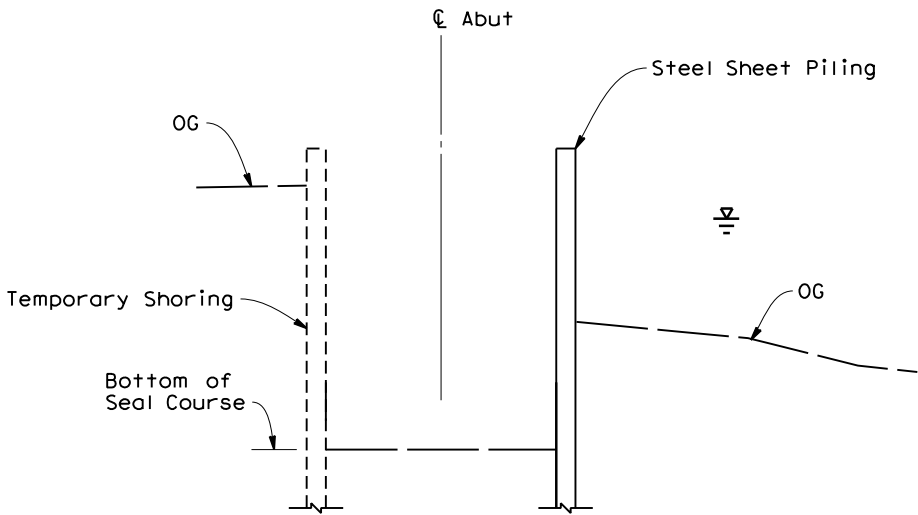
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Rancho Cordova, CA 95670

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS
1106 2nd Street
Eureka, CA 95501

Notes:

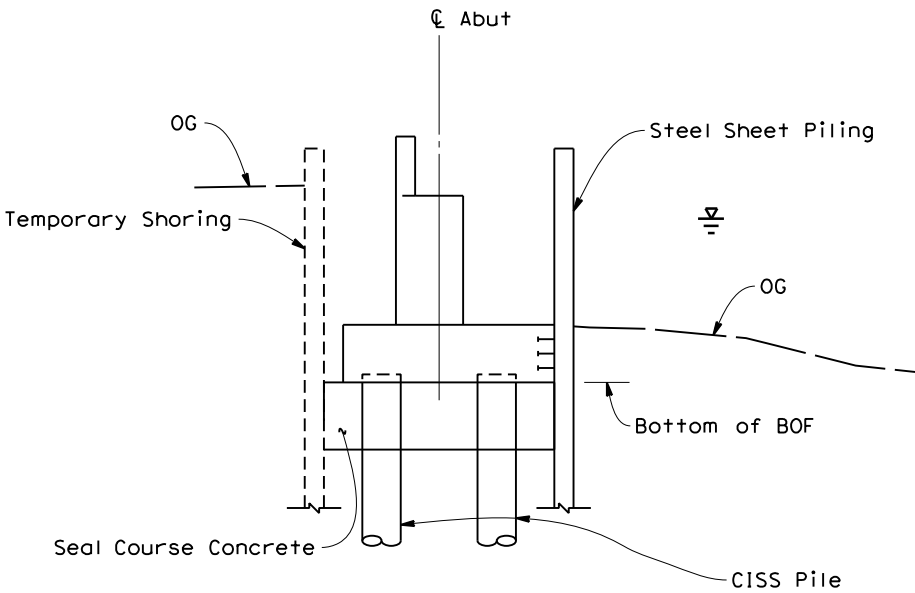
1. Temporary Shoring and Steel Sheet Piling shall prevent seepage with Abut footing construction area, contamination of slough from removal of sediments, & leeching of seal course and footing concrete.



Step 1
No Scale

Step 1:

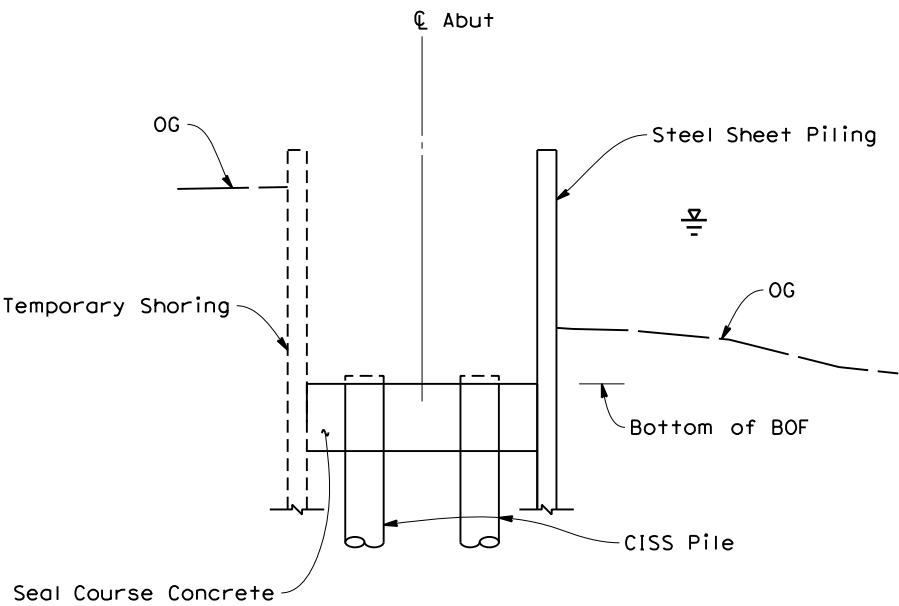
- 1) Install Temporary Shoring and Steel Sheet Piling
- 2) Excavate to bottom of seal course



Step 3
No Scale

Step 3:

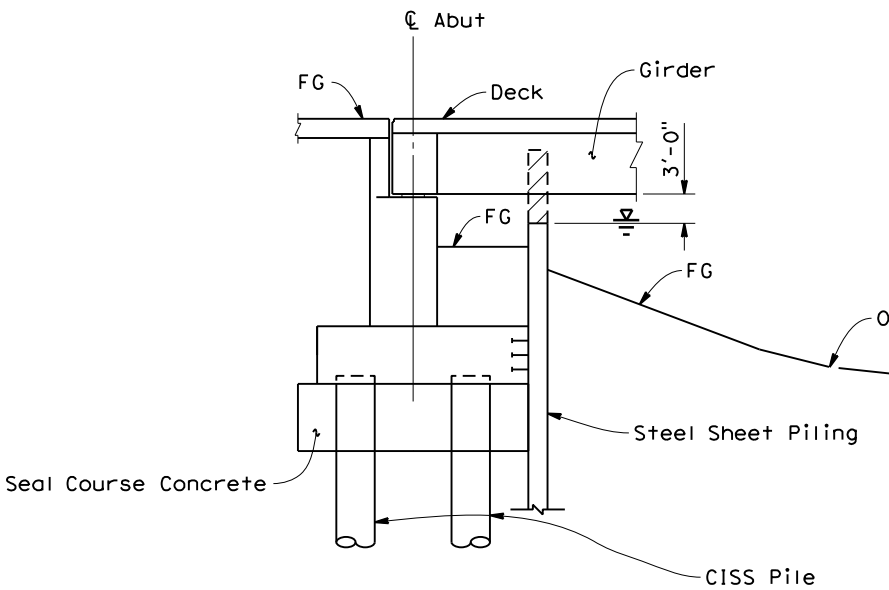
- 1) Install studs on sheet pile. Form and pour abutment footing. Pour abutment footing concrete neat along permanent sheet pile shoring.
- 2) Construct abutment, stem, and backwall



Step 2
No Scale

Step 2:

- 1) Drive CISS Piles
- 2) Install Seal Course Concrete



Step 4
No Scale

Step 4:

- 1) Remove Temporary Shoring
- 2) Backfill in front of and behind Abutment
- 3) Cut-off top of permanent sheet pile to maintain 3'-0" vertical clearance to soffit
- 4) Place girders and construct superstructure

Legend:



Approx ordinary high-tide water surface elevation (WSE)

X
DESIGN OVERSIGHT

X
SIGN OFF DATE

DESIGN	BY L. Smith	CHECKED J. Chou
DETAILS	BY B. Maechler	CHECKED J. Chou
QUANTITIES	BY J. Cruz	CHECKED H. Chou

PREPARED FOR THE
COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS

Scott McCauley
PROJECT ENGINEER

BRIDGE NO.
04C0260
POST MILE
0.19

SWAIN SLOUGH BRIDGE CONSTRUCTION SEQUENCE

DESIGN DETAIL SHEET (ENGLISH) (REV.03/14/12)

ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

0 1 2 3

UNIT:
PROJECT NUMBER & PHASE: X

CONTRACT NO.: X

DISREGARD PRINTS BEARING
EARLIER REVISION DATES

REVISION DATES

SHEET 11 OF 15

FILE => S:\Client\Humboldt\H07-300 Pine Hill\CAD\Bridges\H07300a-u-misc\dt01.dgn

DATE PLOTTED => 12/3/2019 9:40:28 AM USERNAME => scottm

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	Hum	CR	0.19	25	28

12-3-19
REGISTERED CIVIL ENGINEER
DATE

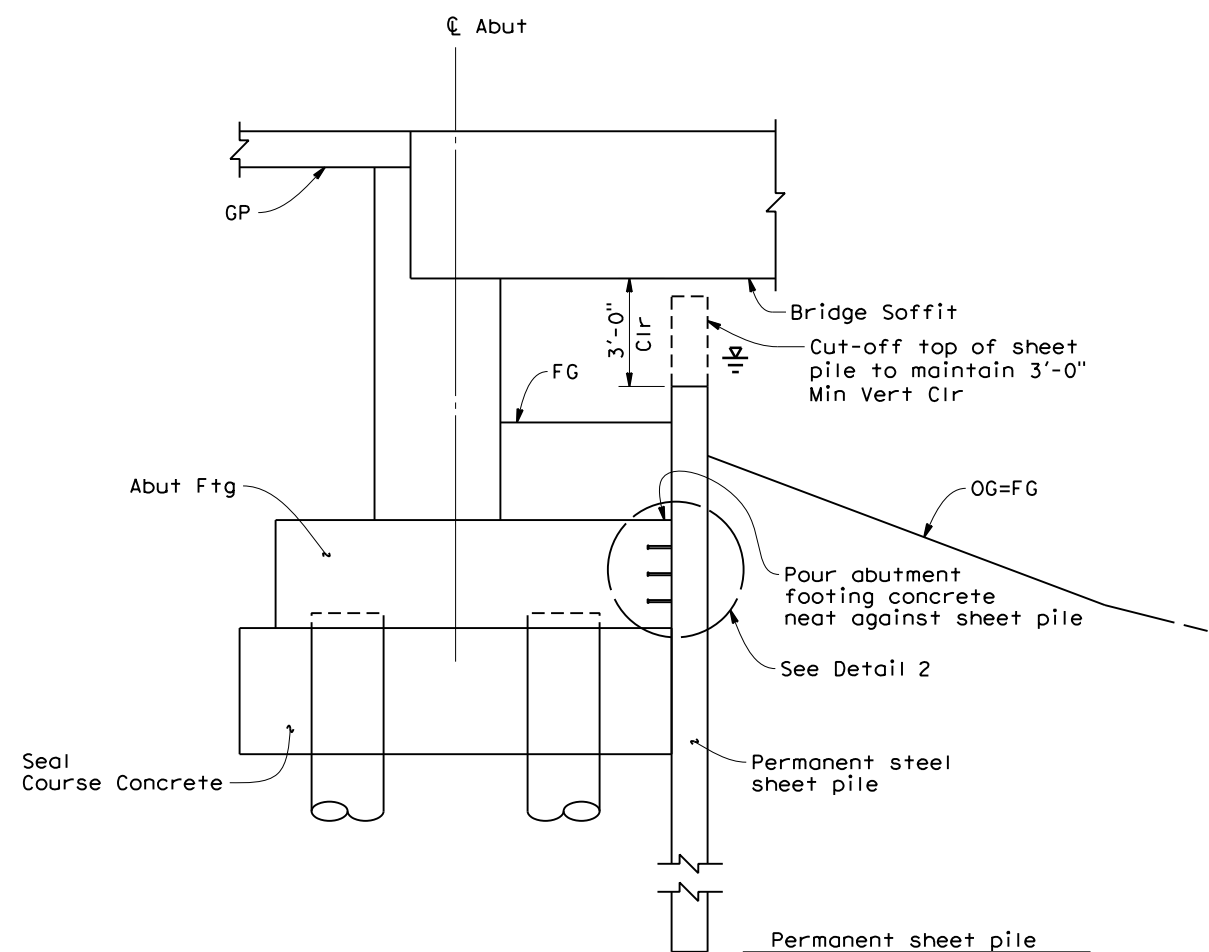
SCOTT A. MCCAULEY
No. 71495
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

PLANS APPROVAL DATE

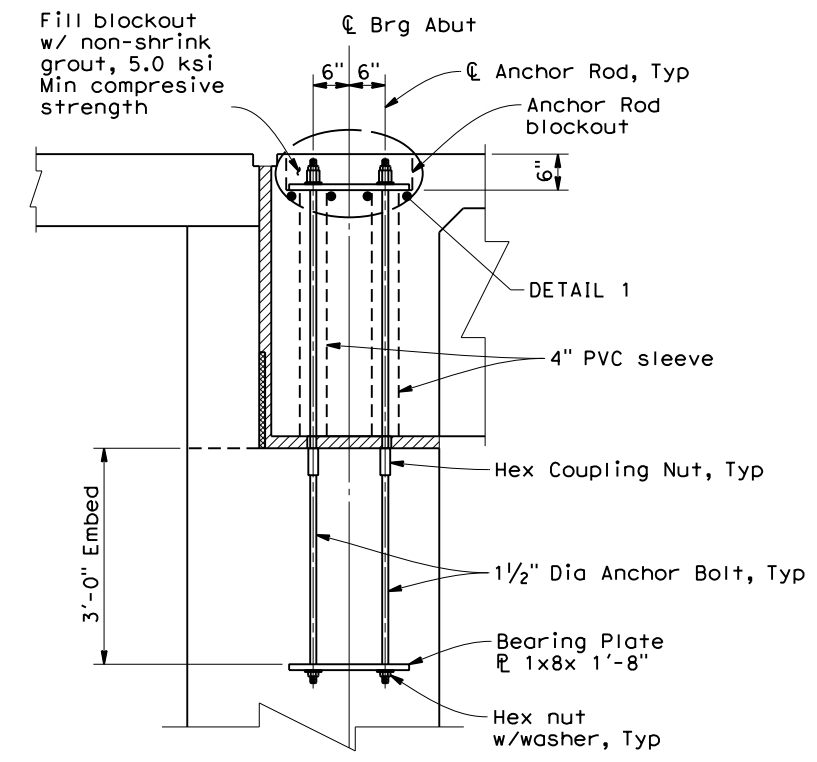
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11017 Cobblestone Drive, Suite 100
Rancho Cordova, CA 95670

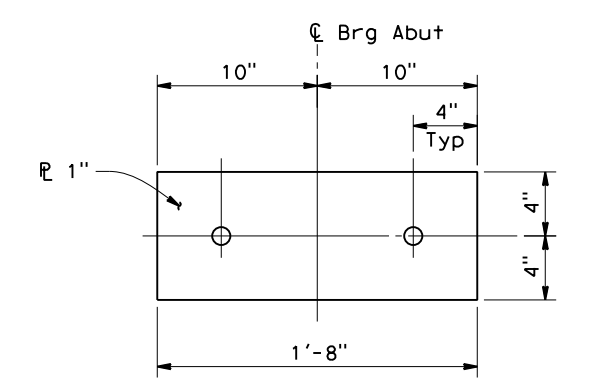
COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS
1106 2nd Street
Eureka, CA 95501



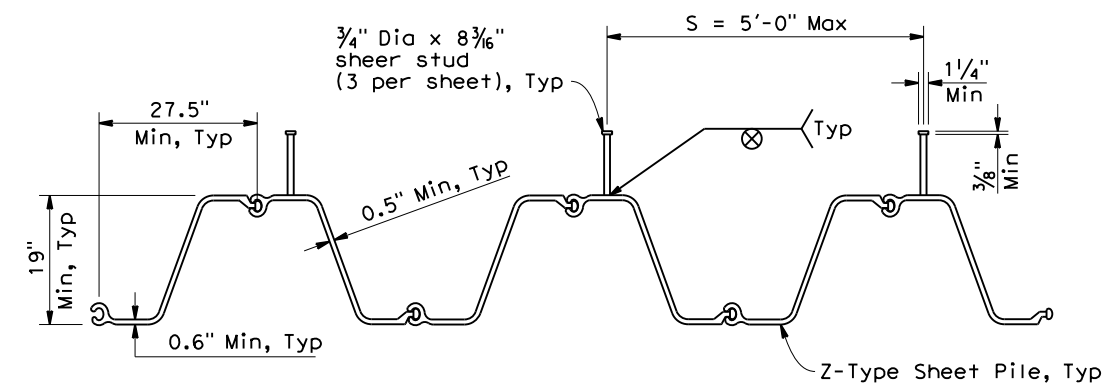
ELEVATION
3/8"=1'-0"



ANCHOR TIE-DOWN DETAIL
3/4"=1'-0"

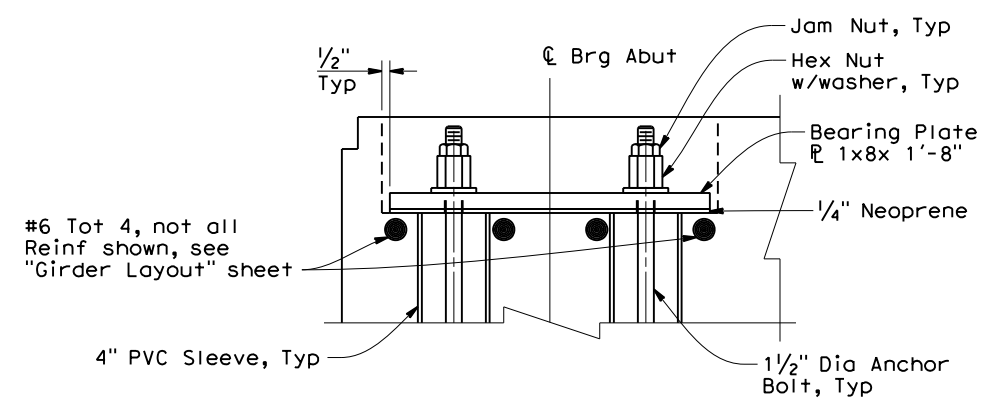


BEARING PLATE DETAIL
3/4"=1'-0"

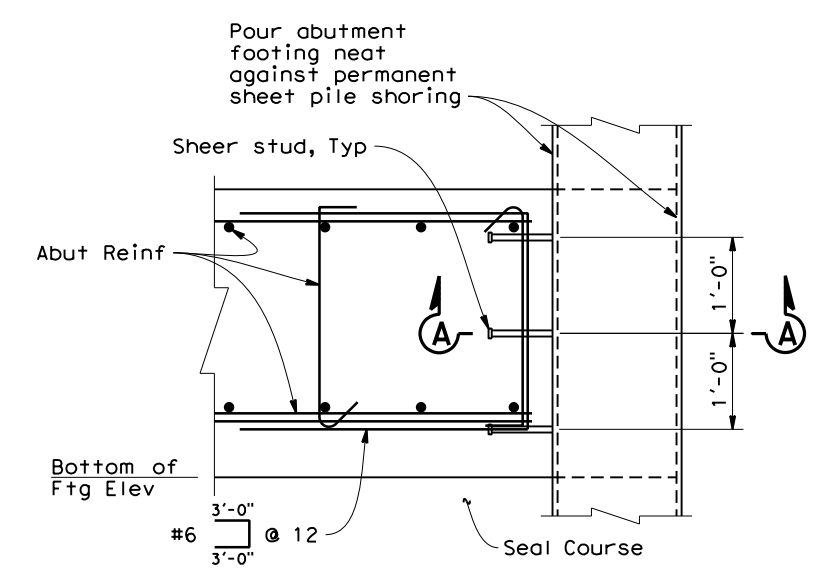


Note: Minimum Elastic Section Modulus = 70 in³/ft

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



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



DETAIL 2
3/4"=1'-0"

Legend:
= Approx ordinary high-tide water surface elevation (WSE)

X DESIGN OVERSIGHT X SIGN OFF DATE	DESIGN BY L. Smith DETAILS BY B. Maechler QUANTITIES BY J. Cruz	CHECKED J. Chou CHECKED J. Chou CHECKED H. Chou	PREPARED FOR THE COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	Scott McCauley PROJECT ENGINEER	BRIDGE NO. 04C0260	SWAIN SLOUGH BRIDGE MISCELLANEOUS DETAILS		
					POST MILE 0.19			
DESIGN DETAIL SHEET (ENGLISH) (REV.03/14/12)	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3	UNIT: PROJECT NUMBER & PHASE: X	CONTRACT NO.: X	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES 5/22/15	SHEET 12	OF 15

FILE => S:\Client\Humboldt\H07-300 Pine Hill\CAD\Bridge\H07300a-u-miscd\02.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
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CERTIFIED ENGINEERING GEOLOGIST DATE

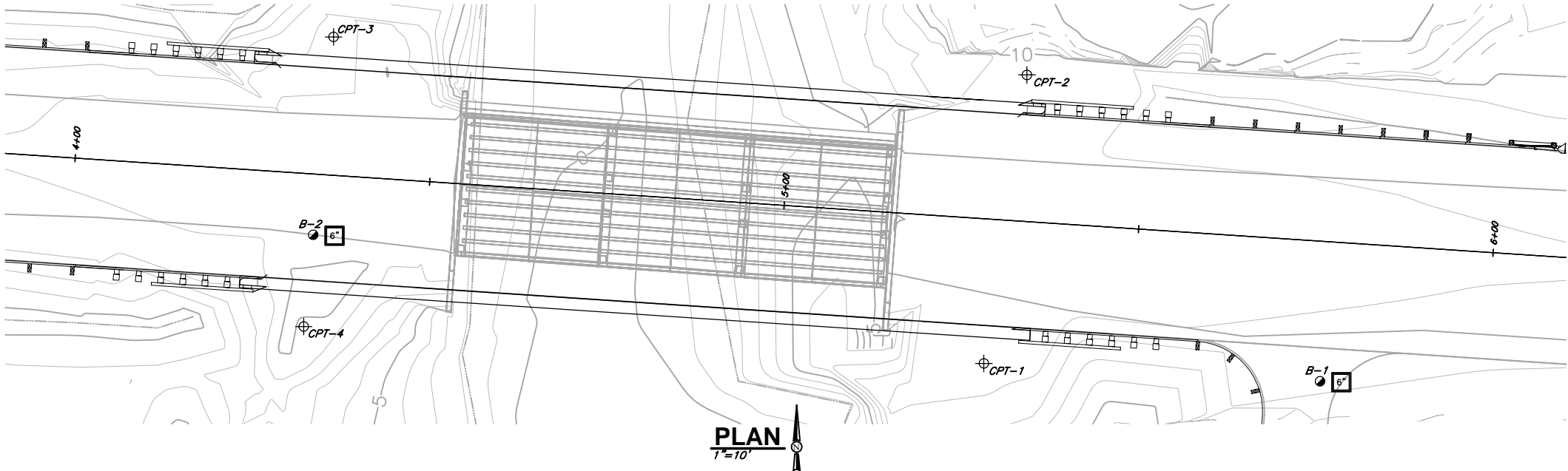


PLANS APPROVAL DATE

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812 W WABASH
EUREKA, CA 95501
FILE No. 012163

QUINCY ENGINEERING, INC.
3247 RAMOS CIRCLE
SACRAMENTO, CA 95827-2501



NOTES:

1. THIS LOTB SHEET WAS PREPARED IN ACCORDANCE WITH THE "CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL" (2010).
2. FIELD CLASSIFICATION OF SOILS WAS IN ACCORDANCE WITH ASTM D2488-06 "DESCRIPTION AND IDENTIFICATION OF SOILS (VISUAL-MANUAL PROCEDURE).
3. STANDARD PENETRATION TESTS WERE COMPLETED IN ACCORDANCE WITH ASTM D 1586-11 USING A HAMMER WITH AN AUTOMATED DROP SYSTEM. DRILL RODS WERE 1 5/8-INCH DIAMETER "A" RODS; 1.4-INCH INSIDE DIAMETER SPLIT SPOON SAMPLER WAS DRIVEN WITHOUT BRASS LINERS.
4. 2.5-INCH INSIDE DIAMETER MODIFIED CALIFORNIA SAMPLER WAS DRIVEN IN THE SAME MANNER AS SPT, BUT WITH BRASS LINERS.
5. 3.0-INCH SHELBY TUBE WAS PUSHED INTO SOFT SOILS.
6. THE LENGTH OF EACH SAMPLES 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 INTERVAL ACTUALLY PENETRATED AND THE AMOUNT OF PENETRATION IS SHOWN IN INCHES.
7. SPT HAMMER ENERGY MEASUREMENTS WERE NOT TAKEN DURING FIELD EXPLORATION.
8. GROUNDWATER SURFACE (GWS) ELEVATIONS IN THE BORINGS INDICATED ON THE LOG OF TEST BORINGS SHEETS REFLECT THE FLUID LEVEL IN THE BORING ON THE SPECIFIED DATE.
9. SEISMIC CONE PENETRATION TESTING LOGS SHOW SHEAR WAVE VELOCITY IN FEET PER SECOND.
10. ELECTRONIC MEDIA FOR PLAN VIEW PROVIDED BY QUINCY ENGINEERING.
11. BORING AND CPT ELEVATIONS ESTIMATED FROM TOPOGRAPHY PROVIDED BY QUINCY ENGINEERING.

DESIGN OVERSIGHT	DRAWN BY	C. NEWELL	John Dailey, G.E.	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	Jason P. Jurens PROJECT ENGINEER	BRIDGE NO.	PINE HILL BRIDGE														
	CHECKED BY	G.D. SIMPSON	DATE: <u>October 2012</u>			04C-0173	LOG OF TEST BORINGS														
						POST MILES															
SIGN OFF DATE																					
GS GEOLOGIST LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 03/14/12)				ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		0 1 2 3		UNIT: PROJECT NUMBER & PHASE:		X X	CONTRACT NO.: X		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES		SHEET	OF			
														X						13	15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	HUM	CR		27	28

CERTIFIED ENGINEERING GEOLOGIST DATE

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812 W WABASH
EUREKA, CA 95501
FILE No. 012163

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3247 RAMOS CIRCLE
SACRAMENTO, CA 95827-2501

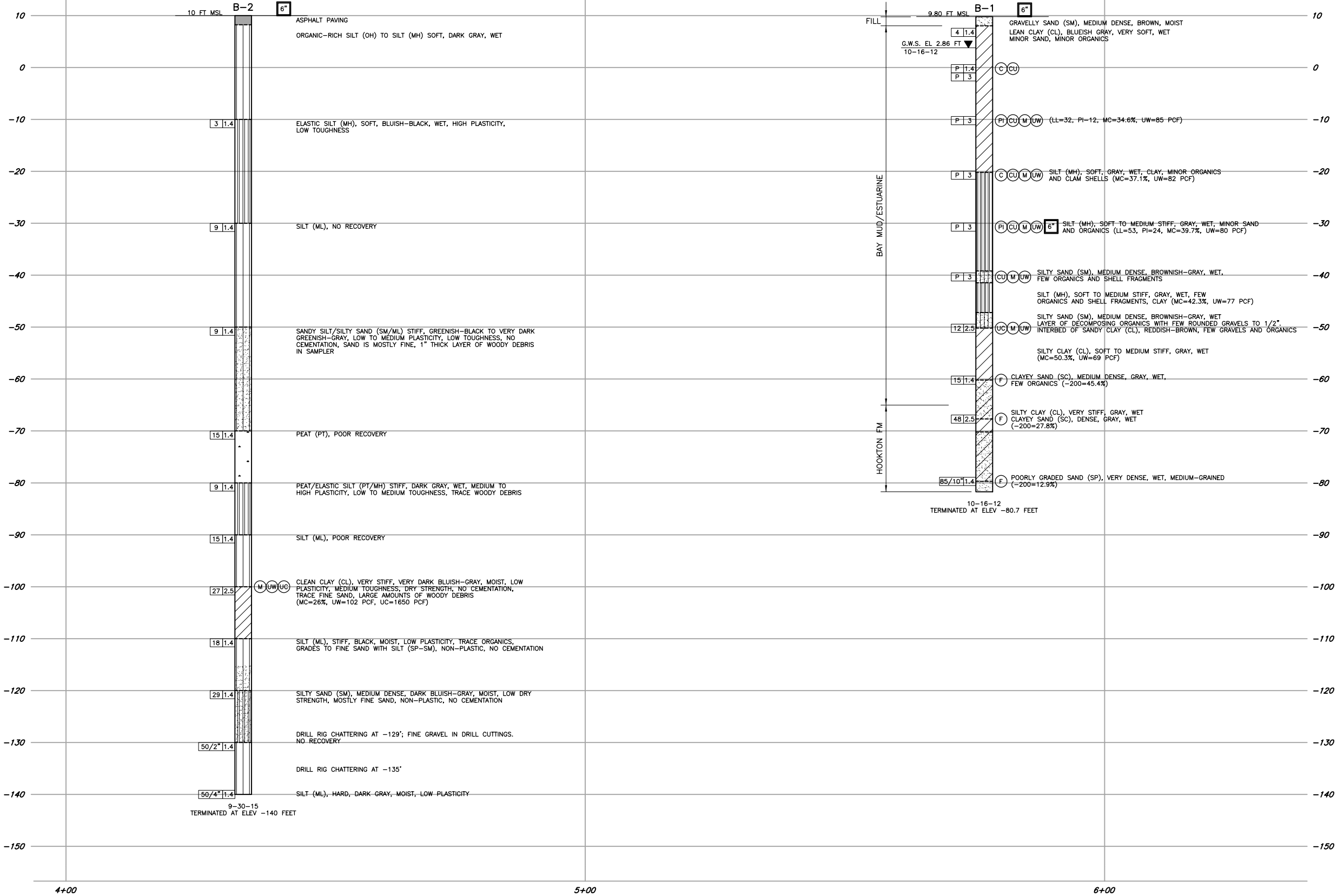
PROFESSIONAL GEOLOGIST

Gary Simpson

No. 2107

CERTIFIED ENGINEERING GEOLOGIST

STATE OF CALIFORNIA



PROFILE
NTS

DESIGN OVERSIGHT	DRAWN BY	C. NEWELL	John Dailey, G.E.	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	Jason P. Jurens	BRIDGE NO.	PINE HILL BRIDGE					
	CHECKED BY	G.D. SIMPSON	FIELD INVESTIGATION BY:		PROJECT ENGINEER	04C-0173	LOG OF TEST BORINGS					
SIGN OFF DATE	DATE: October 2012		UNIT: PROJECT NUMBER & PHASE: X		CONTRACT NO.: X		DISREGARD PRINTS BEARING EARLIER REVISION DATES					
GS GEOLOGIST LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 03/14/12)							ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		REVISION DATES		SHEET	OF
									X		14	15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	HUM	CR		28	28

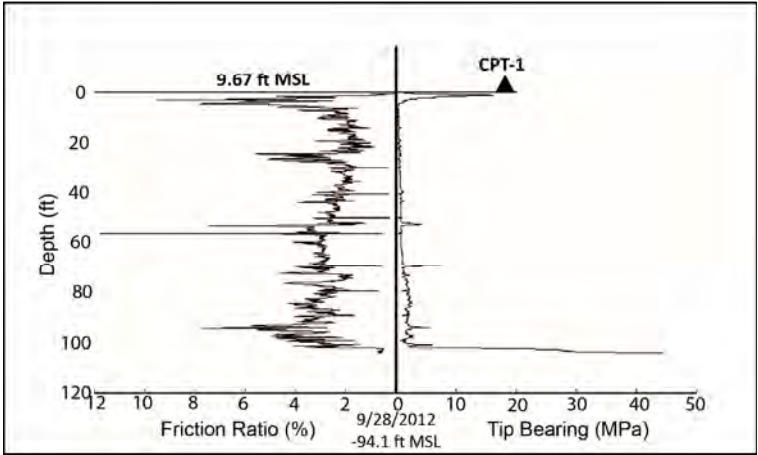
CERTIFIED ENGINEERING GEOLOGIST DATE

PLANS APPROVAL DATE

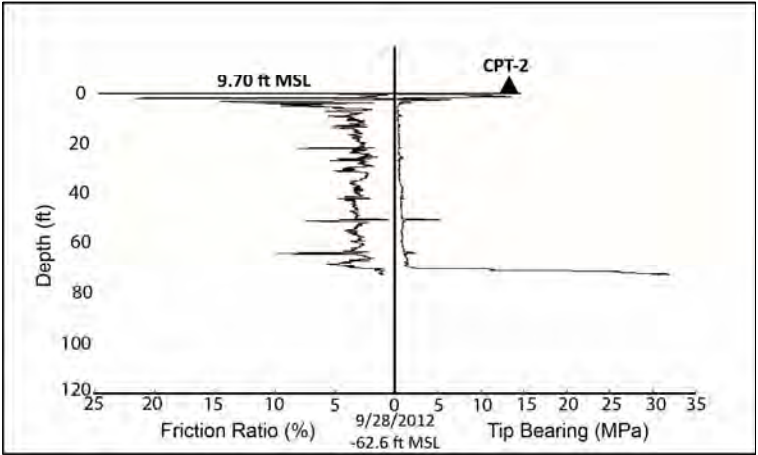
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EUREKA, CA 95501
FILE No. 012163

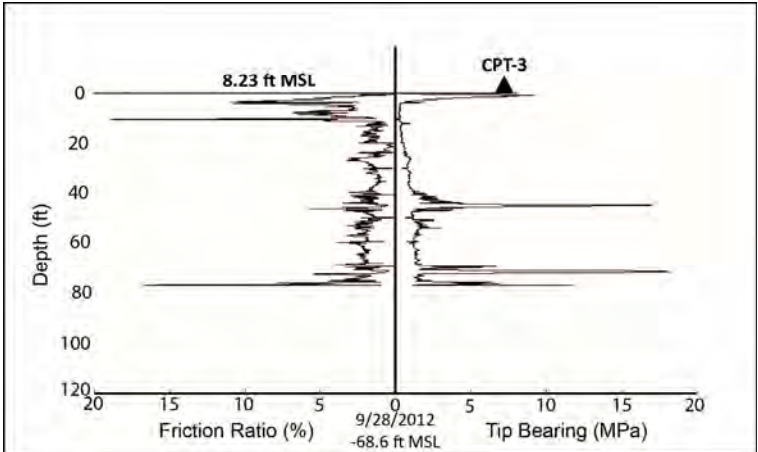
QUINCY ENGINEERING, INC.
3247 RAMOS CIRCLE
SACRAMENTO, CA 95827-2501



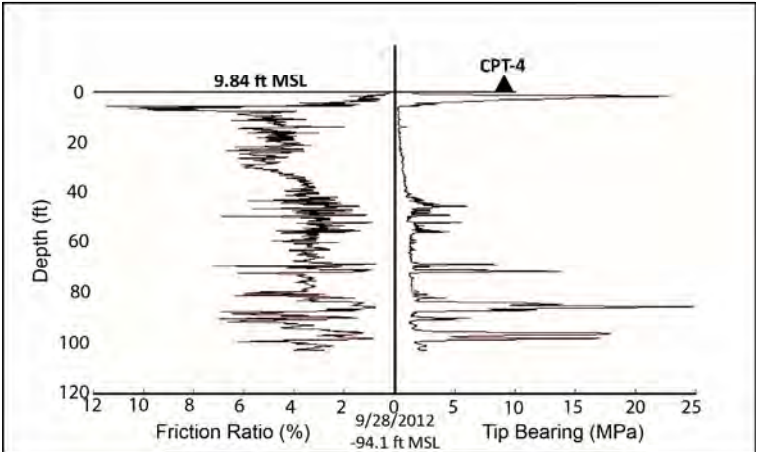
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CPT-2

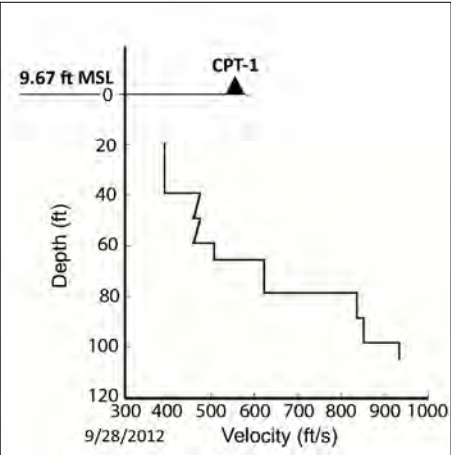


CPT-3

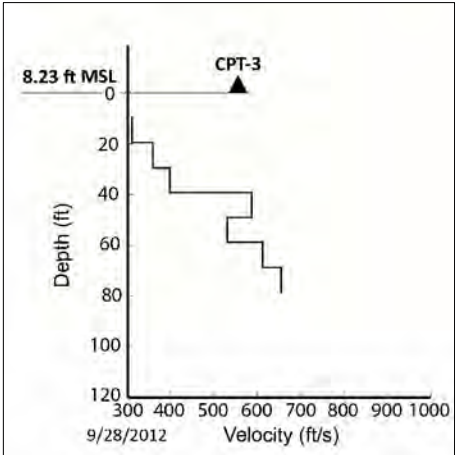


CPT-4

CONE PENETRATION TEST (CPT) BORINGS



CPT-1



CPT-3

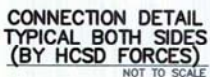
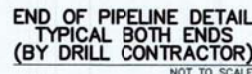
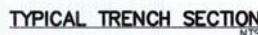
SEISMIC CONE PENETRATION BORINGS

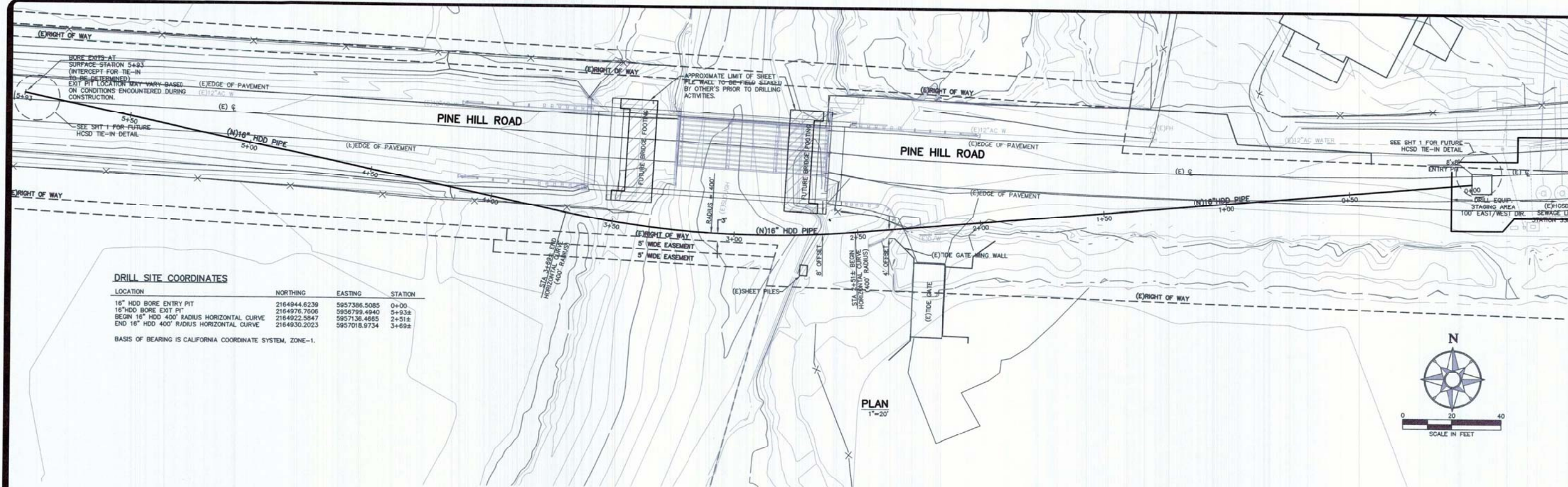
DESIGN OVERSIGHT	DRAWN BY	C. NEWELL	John Dailey, G.E.	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	Jason P. Jurens PROJECT ENGINEER	BRIDGE NO.	PINE HILL BRIDGE									
	CHECKED BY	G.D. SIMPSON	DATE: October 2012			04C-0173	LOG OF TEST BORINGS									
SIGN OFF DATE					UNIT: PROJECT NUMBER & PHASE:	X X	CONTRACT NO.: X	DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES		SHEET	OF			
GS GEOLOGIST LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 03/14/12)										ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		0 1 2 3		X	15	15

- THE WORKING DRAWINGS ARE GENERALLY DIAGRAMMATIC. THEY DO NOT SHOW EVERY OFFSET, BEND, OR ELBOW REQUIRED FOR INSTALLATION IN THE SPACE PROVIDED. THEY DO NOT SHOW EVERY DIMENSION, COMPONENT PIECE, SECTION, JOINT OR FITTING REQUIRED TO COMPLETE THE PROJECT. ALL LOCATIONS FOR WORK SHALL BE CHECKED AND COORDINATED WITH EXISTING CONDITIONS IN THE FIELD BEFORE BEGINNING CONSTRUCTION. EXISTING UNDERGROUND UTILITIES WITHIN THE LIMITS OF EXCAVATION FOR ENTRY/EXIT PITS SHALL BE VERIFIED AS TO CONDITION, SIZE, AND LOCATION BY UNCOVERING, PROVIDED SUCH IS PERMITTED BY LOCAL PUBLIC AUTHORITIES WITH JURISDICTION, BEFORE BEGINNING CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES, BEFORE PRECEEDING.
2. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS NOT PROVIDED BY OWNER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. THE CONTRACTOR SHALL PROVIDE TO THE OWNER A COPY OF THE TRENCH PERMIT FROM THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO THE EXCAVATION OF ANY TRENCH OVER 5 FEET IN DEPTH.
4. CONTRACTOR SHALL PERFORM TRENCH WORK IN CONFORMANCE WITH THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY REQUIREMENTS AND SHALL CONFORM TO ALL APPLICABLE OCCUPATIONAL SAFETY AND HEALTH STATUTES, RULES, REGULATIONS, AND ORDERS ESTABLISHED BY THE STATE OF CALIFORNIA AND OTHER APPLICABLE AGENCIES.
5. CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, GENERAL CONTRACTOR WILL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. ALL WORK AND EQUIPMENT SHALL COMPLY WITH THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY REQUIREMENTS. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY, AND NOT BE LIMITED TO NORMAL WORKING HOURS. CONTRACTOR FURTHER AGREES TO HOLD HARMLESS, INDEMNIFY, AND DEFEND THE OWNER, THE ENGINEER AND HIS/HER CONSULTANTS.
6. THE CONTRACTOR SHALL INDEPENDENTLY REVIEW GROUND, TOPOGRAPHY, AND TREE CONDITIONS THROUGHOUT THE SITE, AND ASSUME THE RISK OF COMPLETING THE WORK SET OUT ON THESE PLANS, REGARDLESS OF ROCK, WATER TABLE, OR OTHER CONDITIONS THAT MAY BE ENCOUNTERED IN THE COURSE OF THE WORK.
7. ANY DISCREPANCY DISCOVERED BY THE CONTRACTOR IN THESE PLANS, OR ANY FIELD CONDITIONS DISCOVERED BY THE CONTRACTOR THAT MAY DELAY OR OBSTRUCT THE PROPER COMPLETION OF THE WORK SHOWN HEREIN, SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND THE ENGINEER IMMEDIATELY UPON DISCOVERY. SAID NOTIFICATION SHALL BE IN WRITING.
8. ALL UNDERGROUND IMPROVEMENTS SHALL BE INSTALLED TESTED AND APPROVED PRIOR TO PAVING.
9. THE CONTRACTOR SHALL NOT BEGIN EXCAVATING UNTIL ALL EXISTING UTILITIES HAVE BEEN MARKED IN THE FIELD. THE CONTRACTOR SHALL NOTIFY EACH APPLICABLE ENTITY AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. CALL UNDERGROUND SERVICE ALERT (USA) TWO WORKING DAYS BEFORE DIGGING AT (800) 226-6870 FOR RATES.
10. GRADING AND CONSTRUCTION CONTRACTORS SHALL STOP WORK AND NOTIFY THE OWNER AND THE ENGINEER IF CULTURAL RESOURCES ARE DISCOVERED DURING CONSTRUCTION.
11. THE CONTRACTOR SHALL GIVE THE INSPECTOR 48 HOURS ADVANCE NOTICE OF ANY CONSTRUCTION OR REQUIRED TESTING.
12. SHOULD THE CONTRACTOR OR ANY OF HIS AGENTS OR EMPLOYEES ENCOUNTER OR DISCOVER MATERIALS THAT APPEAR TO BE HAZARDOUS DURING THE PERFORMANCE OF THE WORK, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY AND SUSPEND WORK IN THE AFFECTED AREA UNTIL THE ENGINEER HAS INSPECTED THE LOCATION AND MATERIALS IN QUESTION. SHOULD IT BE NECESSARY TO UNDERTAKE REMEDIATION, THE ENGINEER WILL GIVE WRITTEN NOTICE TO SUSPEND WORK IN THE AFFECTED AREA UNTIL THE PROPER COURSE OF ACTION HAS BEEN DETERMINED. OPERATIONS IN THE AFFECTED AREA SHALL BE RESUMED ONLY UPON WRITTEN NOTICE BY THE ENGINEER.
13. ALL SITE GRADING WILL BE INSPECTED BY THE ENGINEER. COMPACTION TESTING WILL BE CONDUCTED ON EACH LIFT AFTER SUFFICIENT DENSITIES HAVE BEEN ACHIEVED IN THE CONTRACTOR'S OPINION. ANY SOILS THAT FAIL TO MEET THE REQUIRED COMPACTION LEVEL(S) SHALL BE REMOVED AND RECOMPACTED. ALL COSTS ASSOCIATED WITH ACHIEVING COMPACTION STANDARDS SHALL BE INCLUDED IN THE CONTRACTOR'S ORIGINAL BID.
14. ALL BACKFILL MATERIAL WITHIN THE ROAD RIGHT OF WAY SHALL BE CL 2 AGGREGATE BASE, ¾ INCH MAX. CRATER REPAIR SPECIFICATION SECTION 20.30N RELATIVE COMPACTION.
15. NO CHANGES OR MODIFICATIONS SHALL BE MADE TO THESE PLANS WITHOUT WRITTEN APPROVAL BY THE ENGINEER.
16. CONSTRUCTION TO COMPLY WITH TECHNICAL REPORTS COMPLETED FOR THE PROJECT.

1. THE CONTRACTORS ENCOURAGED TO FAMILIARIZE THEMSELVES WITH THE PERMITS AND AGREEMENTS BY OVERSIGHT AGENCIES, THE SPECIAL CONDITIONS OF APPROVAL AND REQUIREMENTS FOR EXECUTION OF THE WORK AS DESCRIBED IN THESE DOCUMENTS:
 - A. HUMBOLDT COUNTY ENCROACHMENT PERMIT
 - B. HDD FRAC-OUT CONTINGENCY PLAN
2. THESE NOTES DO NOT ATTEMPT TO REITERATE ALL REQUIREMENTS OF THE DOCUMENTS MENTIONED ABOVE. THE CONTRACTOR SELECTED TO PERFORM THE WORK OF THIS HORIZONTAL DIRECTIONAL DRILL PROJECT SHALL BE RESPONSIBLE FOR CONFORMING TO THE REQUIREMENTS AND SPECIAL CONDITIONS OF THE DOCUMENTS MENTIONED ABOVE, AND FOR PERFORMING THE WORK AS SHOWN ON THE PLANS, AS SPECIFIED IN THE CONTRACT DOCUMENTS AND SPECIFICATIONS, AND AS DIRECTED BY THE ENGINEER. IN THE CASE OF A CONFLICT OR CONTRADICTION, ADVISE THE ENGINEER AND OWNER BEFORE PROCEEDING.
3. THE CONTRACTOR SELECTED TO PERFORM THE HDD PROJECT SHALL HAVE A CALIFORNIA CSJB C-34 PIPELINE OR A-GENERAL ENGINEERING CLASSIFICATION, AND SHALL PROVIDE A COPY OF THE LICENSE TO THE OWNER BEFORE COMMENCEMENT OF DRILLING ACTIVITIES.
4. THE CONTRACTOR SHALL HAVE COPIES OF AGREEMENTS AND PERMITS FROM ALL OVERSIGHT AGENCIES ONSITE THROUGHOUT CONSTRUCTION AND SHALL MAKE SAID DOCUMENTS AVAILABLE TO AGENCY PERSONNEL UPON REQUEST.
5. TEMPORARY FENCING SHALL BE PLACED AROUND THE CONSTRUCTION AREA PERIMETER AS NEEDED.
6. EXCAVATED SOIL SHALL NOT BE PLACED OR STORED WHERE IT MAY BE SUBJECT TO ENTERING DRAINAGE FACILITIES. ALL ONSITE STOCKPILES OF SOIL AND CONSTRUCTION MATERIALS SHALL BE CONTAINED AT ALL TIMES TO MINIMIZE THE DISCHARGE OF SEDIMENT OR OTHER POLLUTANTS.
7. THE CONTRACTOR SHALL IMPLEMENT CONSTRUCTION BEST MANAGEMENT PRACTICES (BMP'S) AND AVOIDANCE AND MINIMIZATION MEASURES DURING CONSTRUCTION AS DESCRIBED IN THE HUMBOLDT COUNTY ENCROACHMENT PERMIT. BMP'S SHALL BE IMMEDIATELY AVAILABLE FOR DEPLOYMENT AT ALL TIMES TO PREVENT DISCHARGES TO WATERS OF THE STATE.
8. DURING ALL DRILLING, REAMING, AND PULL-BACK OPERATIONS, A QUALIFIED OBSERVER (SOIL ENGINEER OR BIOLOGICAL MONITOR EXPERIENCED IN MONITORING FOR FRAC-OUTS) SHALL MONITOR THE BORE PATH.
9. THE CONTRACTOR SHALL IMMEDIATELY STOP CONSTRUCTION OPERATIONS AND IMPLEMENT THE FRAC-OUT CONTINGENCY PLAN IN THE EVENT OF ANY DRILLING FLUID RELEASE. IMMEDIATELY NOTIFY THE OWNER AND ENGINEER OF THE RELEASE. DIRECTIONAL DRILLING OPERATIONS SHALL NOT RESUME UNTIL THE FRAC-OUT IS LOCATED, CONTAINED, CLEANED UP, AND APPROVED BY THE ENGINEER. THE HDD MEANS AND METHODS EMPLOYED BY THE CONTRACTOR SHALL BE COMPATIBLE WITH PERTINENT SECTIONS OF THE HORIZONTAL DIRECTIONAL DRILLING- FRAC-OUT CONTINGENCY.
10. THE CONTRACTOR SHALL HAVE AVAILABLE ONSITE, AT ALL TIMES, MATERIALS NECESSARY FOR CLEANUP OF DRILLING FLUIDS RELEASE AND PETROCHEMICAL SPILLS, AS DESCRIBED IN THE CONTRACT DOCUMENTS.
11. ALL EQUIPMENT USED DURING CONSTRUCTION SHALL BE FREE OF OIL AND FUEL LEAKS. STATIONARY EQUIPMENT SHALL USE DRIP PANS AND OTHER DEVICES TO PREVENT SOIL AND WATER CONTAMINATION BY OIL OR OTHER PETROCHEMICAL PRODUCTS. CONTRACTOR SHALL HAVE "SPILL-KITS" AVAILABLE FOR ALL EQUIPMENT.
12. DRILLING CONTRACTOR IS RESPONSIBLE FOR PROPER DISPOSAL OF ALL SPOILS.

1. ALL ASPHALT CONCRETE SHALL BE IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATIONS SECTION 39.
2. ASPHALT MATERIAL SHALL BE HMA TYPE A WITH 1/2" INCH AGGREGATE GRADATION. ASPHALT BINDER SHALL BE PG64-16.
3. ASPHALT CONCRETE SHALL BE INSTALLED AND TESTED ACCORDING TO THE "STANDARD PROCESS" SPECIFIED IN SECTION 39, ACCEPTANCE CRITERIA PER CALTRANS TEST 309.
4. WHERE NEW PAVING MEETS EXISTING PAVEMENT, EXISTING PAVEMENT SHALL BE SAWCUT.
5. APPLY TACK COAT TO CONTACT SURFACES OF CURBS, GUTTERS, AND EXISTING PAVEMENT. PLACE ASPHALT CONCRETE WITHIN 24 HOURS OF APPLYING PRIMER OR TACK COAT. TACK COAT SHALL BE TYPE SS-1.
6. MAXIMUM COMPACTED LIFT THICKNESS IS 3 INCHES.
7. COMPACT PAVEMENT BY ROLLING TO A MINIMUM OF 95% OF MAXIMUM DENSITY. DO NOT DISPLACE OR EXTRUDE PAVEMENT FROM POSITION. HAND COMPACT IN AREAS INACCESSIBLE TO MECHANICAL ROLLING EQUIPMENT. PERFORM ROLLING WITH CONSECUTIVE PASSES TO ACHIEVE SMOOTH FINISH WITHOUT ROLLER MARKS.
8. AGGREGATE BASE SHALL MEET THE REQUIREMENTS DESCRIBED IN THE GENERAL COMPACTION SECTION OF THESE SPECIFICATIONS, COMPACTED TO 95% RELATIVE COMPACTION PER ASTM D1557/D6938.
9. UNLESS OTHERWISE SHOWN ON THESE PLANS, NEW ASPHALT CONCRETE SURFACES AND NEW FINISH GRADE SURFACES SHALL BE INSTALLED, SLOAS, TO MAINTAIN EXISTING SURFACE DRAINAGE PATTERNS.

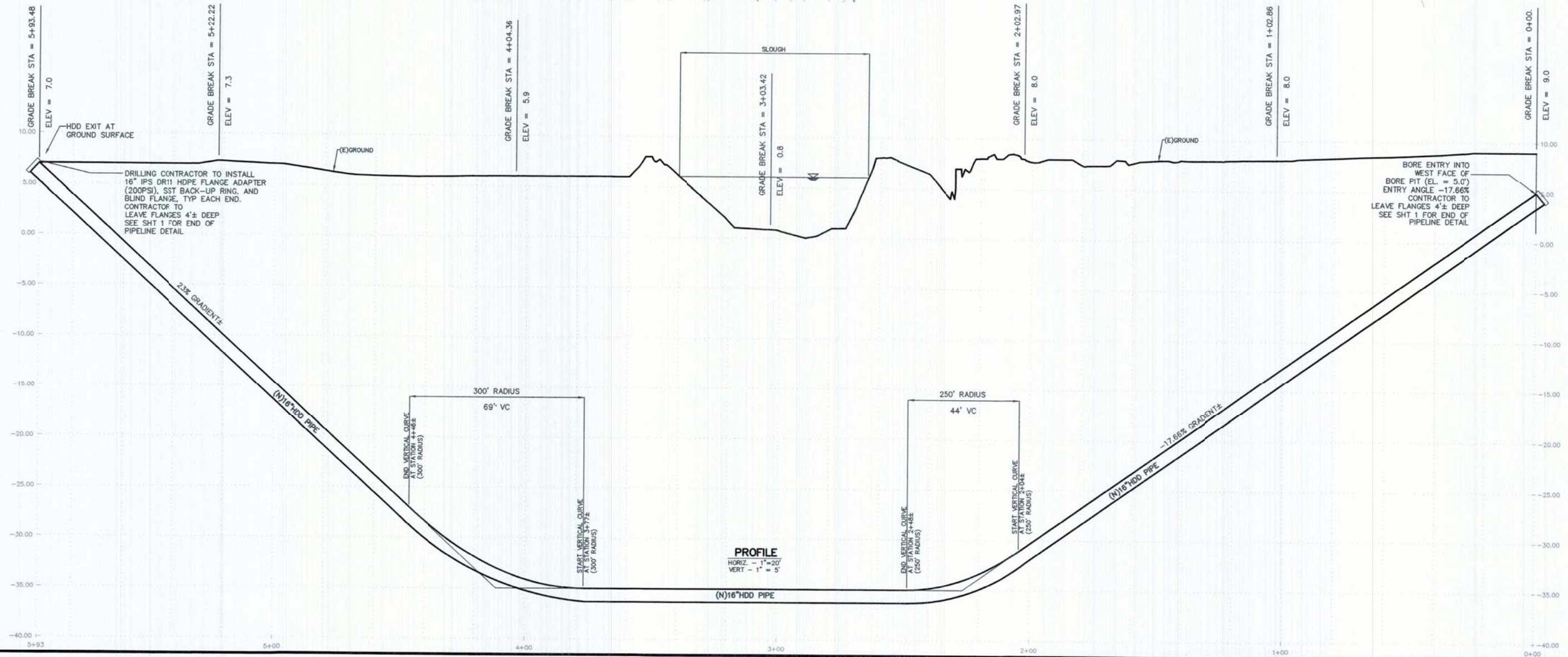




DRILL SITE COORDINATES

LOCATION	NORTHING	EASTING	STATION
16" HDD BORE ENTRY PIT	2164944.6239	5957386.5085	0+00
16" HDD BORE EXIT PIT	2164976.7606	5956799.4940	5+93±
BEGIN 16" HDD 400' RADIUS HORIZONTAL CURVE	2164922.5847	5957136.4665	2+51±
END 16" HDD 400' RADIUS HORIZONTAL CURVE	2164930.2023	5957016.9734	3+69±

BASIS OF BEARING IS CALIFORNIA COORDINATE SYSTEM, ZONE-1.



Humboldt Community Services District
5055 WALNUT DRIVE, EUREKA, CA 95503
(707) 443-4558 FAX: (707) 443-0818
Water Distribution Sewage Collection Street Lighting

PINE HILL BRIDGE 16" HDPE WATER MAIN BYPASS
HUMBOLDT COUNTY, CALIFORNIA

PLAN & PROFILE
PINE HILL ROAD
0+00 TO 5+93±

DATE	NOVEMBER 2019
SCALE	AS SHOWN
DRAWN	BB
CHECKED	
JOB NO.	011707
DRAWING NUMBER	