

**DEPARTMENT OF TRANSPORTATION**

DISTRICT 4  
111 GRAND AVENUE  
P.O. BOX 23660  
OAKLAND, CA 94623-0660  
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*Making Conservation  
a California Way of Life.*

February 23, 2018

EA 04-01358  
04-SF,Ala-80-8.65R/8.85R,0.0/0.8R  
Pier Retention Proposal  
Oakland Touchdown  
Piers E21, E22, and E23

Mr. Bruce H. Wolfe  
Executive Officer  
San Francisco Bay Regional Water Quality Control Board  
1515 Clay Street, Suite 1400  
Oakland, California 94612

RE: Board Order No. R2-2002-0011

Dear Mr. Wolfe,

The California Department of Transportation (Department) is in the process of developing a project that would provide public access and a shoreline observation area as part of the pier retention effort from the former San Francisco Oakland Bay Bridge (SFOBB) East Span Seismic Safety Project (SFOBB Project). Pier E21, Pier E22, and Pier E23 from the marine foundation of the former SFOBB will be retained and utilized as part of the structural support for the new project. A separate proposal for retention of Pier E2 was provided on January 25, 2018.

The Department is hereby requesting that the San Francisco Bay Regional Water Quality Control Board (Water Board) issues a modification to the SFOBB Project's Waste Discharge Requirements (WDR) (Board Order No. R3-2002-0011) to cover this new project. This project will not only benefit the public by providing new public access to the San Francisco Bay (Bay) shoreline, but it will be consistent with the beneficial uses established for the Bay; specifically non-contact water recreation.

**SFOBB Project Status and Pier E21/E22/E23 Retention**

The Water Board issued its WDR on January 30, 2002, to the Department for the SFOBB Project. The WDR covered construction of the new SFOBB East Span, which is complete, and demolition of the original East Span, which is nearing completion. Pier E2, Pier E19, Pier E20, Pier E21, Pier E22, and Pier E23 of the SFOBB original east span currently remain, all other SFOBB original east span marine foundations (Pier E3 to Pier E18) were removed by the Department between 2015 and 2017 following the removal of the superstructure. Piers E19 and E20 would be removed using similar methods to the removal of Piers E3 to E18 and the work will be conducted under a project-

specific storm water pollution prevention plan (SWPPP). Pier E23 is located on the Oakland shoreline while the other five remaining piers are located within the waters of the Bay.

This letter describes a proposal to beneficially reuse portions of Piers E21, E22, and E23 as a publicly accessible observation area at the Bay shoreline.

### **Piers E21, E22, and E23 Retention: Site and Structure Description**

Piers E21, E22, and E23, located in the City of Oakland (Figure 1) would be repurposed by constructing a new observation area that would use the existing Piers E21, E22, and E23 marine foundations as anchors for a public access facility (Figure 2 and Figure 3).

Piers E21 to E23 were constructed originally to support the steel superstructure of the SFOBB original east span. The piers are cellular concrete structures, none of which reach bedrock. Each pier is supported by untreated Douglas fir timber piles that were driven below bay mud. For each pier, a concrete seal was poured on top of each set of piles. The concrete seals were poured well below the surrounding mudline elevation and extended from the mudline elevation to a depth of between 10 to 20 feet below mudline. A flat, unreinforced concrete slab was poured on top of each concrete seal; this concrete slab was poured to support the cellular concrete piers that were cast in place.

### **Proposed Project: Pier E21, E22, and E23 Observation Area**

#### Overview

The Department would construct an over-water observation area utilizing the existing Piers E21, E22, and E23 marine foundations as an anchor for the proposed public access facility. In addition, construction of access walkways and roads to the new structure on the Oakland Touchdown (OTD) would be provided. All new structures would be designed to meet current state guidance for sea level rise to end-of-century projections. The construction of these facilities would require mechanical removal of some or all of the pedestals and pier slabs to elevations required by the design.

#### Observation Area

The total footprint in the Bay for the proposed observation area structure, including existing Piers E21 and E22, would be approximately 19,830 square feet (sq. ft.; 0.45 acre). New shading caused by construction of two 290-foot span bridge decks placed between the piers (E23 to E22 and E21 to E20) would be approximately 16,550 sq. ft. (0.38 acre).

In addition to the pedestrian bridges, modifications to the tops of the marine foundations and pedestals would be required to support girders and create bearing seats above anticipated sea-level rise elevations. Two bridge deck spans would connect Pier E23 to Pier E22 and Pier E22 to Pier E21. Between the spans and directly above Piers E21 and E22 the deck would bulb out with reinforced concrete slabs to approximately 40 feet by 90 feet to serve as observation platforms.

Lighting could be incorporated in the railing or could be provided through luminaires on the bridge approaches and observation platform.

Appendix A provides plan sheets for the Piers E21, E22, and E23 retention proposal in addition to draft structure plans.

#### OTD Upland Features

Minor contour grading would be required to create embankments and ramps at the OTD to access the observation at Pier E23. New pathways and lighting would be installed on land to connect the proposed observation area to the Bay Trail at the landing of the SFOBB new east span bike path.

Proposed new pathways would create impervious and pervious surfaces on-land at the OTD. The area of new impervious surfaces would be approximately 38,768 square feet (0.89 acre). Approximately 27,000 square feet of new pervious surfaces would also be created.

#### Construction and Water Pollution Control Measures

For marine-based work, support barges would be used to move hydraulic excavators equipped with hoe rams, shearing attachments, drills, and other equipment, including cutting lances and torches to the site. This equipment would be used during operations on the piers. A barge-mounted crane would be used to move equipment between the piers and barge. For land-based work, cranes, excavators, graders and trucks for hauling debris or soil would be required. The construction operations would also require land- or barge-based concrete trucks and concrete pumps.

The Department would construct a temporary trestle to access Piers E21 to E23 to allow for demolition and construction operations. In 2012, the SFOBB Project was authorized by State and federal environmental agencies to construct temporary access trestles on YBI and at OTD. These permits and authorizations covered the construction and temporary placement of 2,540 temporary piles to build an approximately 96,000-square-foot, pile-supported trestle, extending from the Oakland shoreline to Pier E9, and a 7,000 square foot, pile-supported trestle at YBI to Pier E2.

To access Piers E21 to E23, the Department would construct and install a substantially smaller temporary access trestle within the existing authorized methods and parameters, and would remove the trestle after completion of the proposed Pier E21/E22/E23 retention project. This trestle would support equipment which will also be used on barges (as described previously) as well as additional equipment including trucks, light vehicles, and pile-driving equipment.

Water pollution control measures implemented during construction activities will be described in a project-specific storm water pollution prevention plan (SWPPP) that will be submitted to the Water Board for acceptance.

#### Schedule

The Department plans to begin operations on newly proposed construction in June 2018. The construction of these facilities would be completed by December 31, 2019. In water impact-pile

driving would be restricted to the period from June 1 to November 30, to avoid peak salmonid migration periods. Additional land-based construction activities may extend into 2019.

### Impacts to Surface Area of Waters of the State

As indicated in the original WDR application for the SFOBB Project, the marine foundations would be removed as a result of dismantling the old east span. However, this proposal would retain Piers E21, E22, and E23, and create an observation area spanning from Pier E23 to Pier E21. This would change the impacts to surface waters of the State from the originally proposed project and would result in an increase of approximately 0.27 acres. The surface area impacts of these activities are described in the following table.

*Table 1 Impacts to Surface Area of Waters of the State Summary*

Alternative	Project Element	Area Impact to Surface Waters of the State (acres)
Originally Proposed Project	New East Span Piers and Fenders	2.43
	Original East Span Piers Removal (E2 to E22)	-1.98
	<i>Net from Original Proposed Project</i>	<b>0.45</b>
Pier Retention Proposal	New East Span Piers and Fenders	2.43
	Removal of Piers E3 to E18	-1.71
	Retention of Pier E2	0.19
	Retention of Piers E21 and E23	0.08
	New Piles	<0.01
	<i>Net for Pier Retention Proposal</i>	<b>0.72</b>
Δ	<i>Change from Originally Proposed Project as Compared with Pier Retention Proposal</i>	<b>+0.27</b>

Additionally, the proposed retention of these piers would add new high suspended fill shadowing over Waters of the State. The new shadow fill would occupy approximately 0.38 acres over the water. However, since the proposed suspended fill would not interact with surface waters or wetlands, no net loss to wetlands or Waters of the State would be realized by the proposed shadow area.

### Impacts to Special Aquatic Sites - Eelgrass Beds

An area of approximately 7,300 square feet (0.17 acre) eelgrass habitat with 20% to 40% estimated coverage was observed between Piers E22 and Pier E23 in 2014 (NMFS 2014). Because of this, the 290-foot span between Piers E22 and Pier E23 may permanently shade up to 0.02 acres of new eelgrass habitat. However, it should be noted that the observed eelgrass bed was recorded while the SFOBB original east span was still in place and the proposed observation area would occupy

Mr. Bruce H. Wolfe  
February 23, 2018. Page 5

a reduced area in comparison. The Department believes that the recently observed eelgrass bed may have potential to succeed even after installation of the new observation area

In order to access Piers E21 and E22, the Department would construct a temporary access trestle directly to the south of those piers, as described above. At the time the original trestle was considered and approved, there was no eelgrass observed in the proposed trestle area. The trestle as proposed would temporarily impact approximately 0.07 acres of existing eelgrass beds.

In the original project description for the SFOBB Project, the Department anticipated and completed mitigation for permanent and temporary impacts to 3.6 acres of eelgrass beds in the project area. These impacts included 1.5 acres of permanent shade impacts from the SFOBB new east span; 1.7 acres of temporary impacts for a temporary barge access channel near the Oakland shore, and 0.4 acres to be shaded by temporary construction trestle within Clipper Cove. The 2.1 acres of impacts from the temporary barge access channel and the temporary trestle at Clipper Cove were not realized, as those temporary features were never constructed. The Department asserts that the original eelgrass mitigation completed for the SFOBB Project more than mitigates for the new estimated 0.05 acres of permanent and 0.12 acres of temporary impacts to the recently observed eelgrass beds within the project area. Therefore, the Department is not proposing new mitigation for these impacts.

#### **Storm Water Treatment Strategy**

Low impact development (LID) measures will be implemented for the land-based portions of the project. To promote LID, impervious surfaces will be minimized by installing pervious surfaces where applicable. For impervious surfaces, stormwater treatment will be implemented to the maximum extent practicable, and shall be achieved via either biofiltration or bioretention measures.

If you have any questions or feedback on this submittal, please contact me at (510) 867-6007.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Dragomir Boganic', with a stylized flourish at the end.

DRAGOMIR BOGANIC, MS., PE.  
District Branch Chief  
Division of Environmental Planning & Engineering  
California Department of Transportation, District 4

Mr. Bruce H. Wolfe  
February 23, 2018. Page 6

Enclosures

1. References
2. Figures
3. Appendix

cc:

Mr. Dale Bowyer, San Francisco Bay Regional Water Quality Control Board  
Mr. Derek Beauduy, San Francisco Bay Regional Water Quality Control Board  
Mr. Dragomir Bogdanić, District 4, California Department of Transportation  
Mr. Stefan Galvez-Abadia, District 4, California Department of Transportation

## References

## References

California Department of Transportation (Caltrans). 2001 (September). *Application for Water Quality Certification for the San Francisco-Oakland Bay Bridge East Span Seismic Safety Project*.

California Regional Water Quality Control Board, San Francisco Bay Region. 2002 (January), *Waste Discharge Requirements for California Department of Transportation, San Francisco-Oakland Bay Bridge East Span Seismic Safety Project*. Adopted Board Order No. R2-2002-0011,

National Marine Fisheries Service (NMFS).

- 2012. *Supplemental Biological Opinion and Conference Opinion. Bridge Demolition and Dredging Activities for the San Francisco–Oakland Bay Bridge East Span Seismic Safety Project*. Tracking Number 2011/05965.
- 2015. *San Francisco Bay Eelgrass Inventory*. Prepared by Merkel and Associates.

United States Coast Guard (USCG). 2001. *SFOBB Project Bridge Permit No. 3a 01 11*.

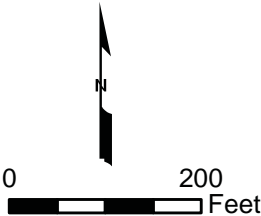


## Figures

Appendix A  
Plan Sheets  
Piers E21, E22, and E23



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



SITE LOCATION  
SFOBB Pier Retention Project  
Piers E19-E23  
Oakland, CA

Date: 02/15/2018

Figure  
1



FACING NORTH  
PIER E23  
SFOBB Pier Retention Project  
Piers E19-E23  
Oakland, CA

Date: 02/15/2018

Figure  
**2**





FACING NORTHWEST  
PIERS E22, E21, E20, AND E19  
SFOBB Pier Retention Project  
Piers E19-E23  
Oakland, CA

Date: 02/15/2018

Figure  
3

Dist

COUNTY

ROUTE

POST MILES  
TOTAL PROJECT

SHEET  
NO.

TOTAL  
SHEETS

04

SF

80

PPPP

????

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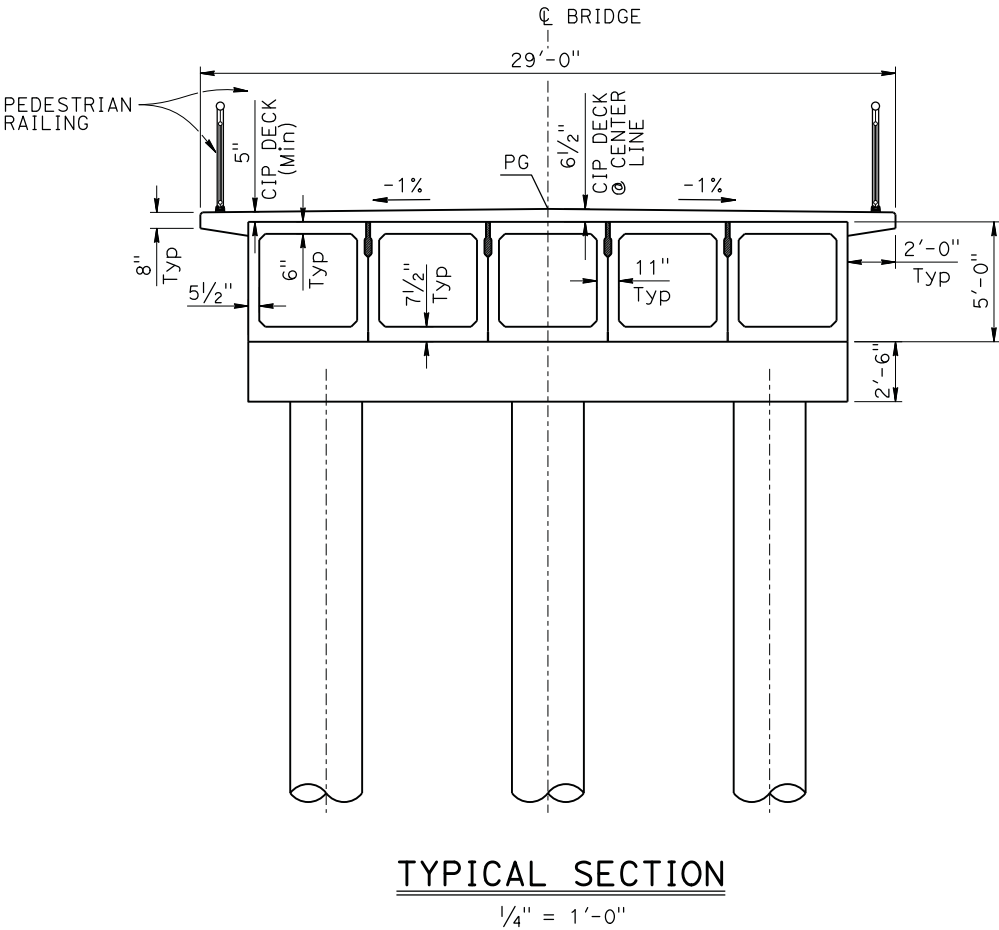
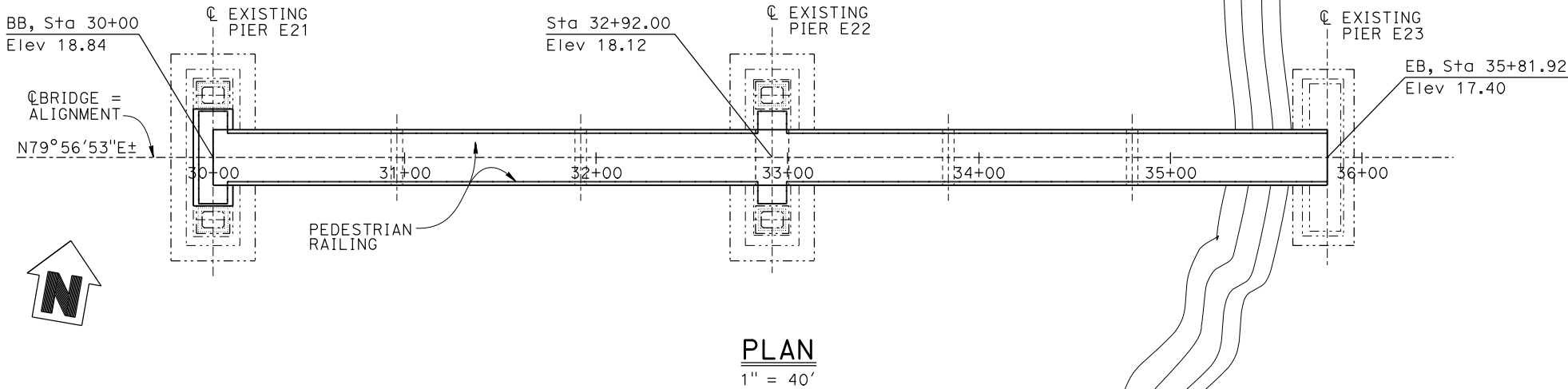
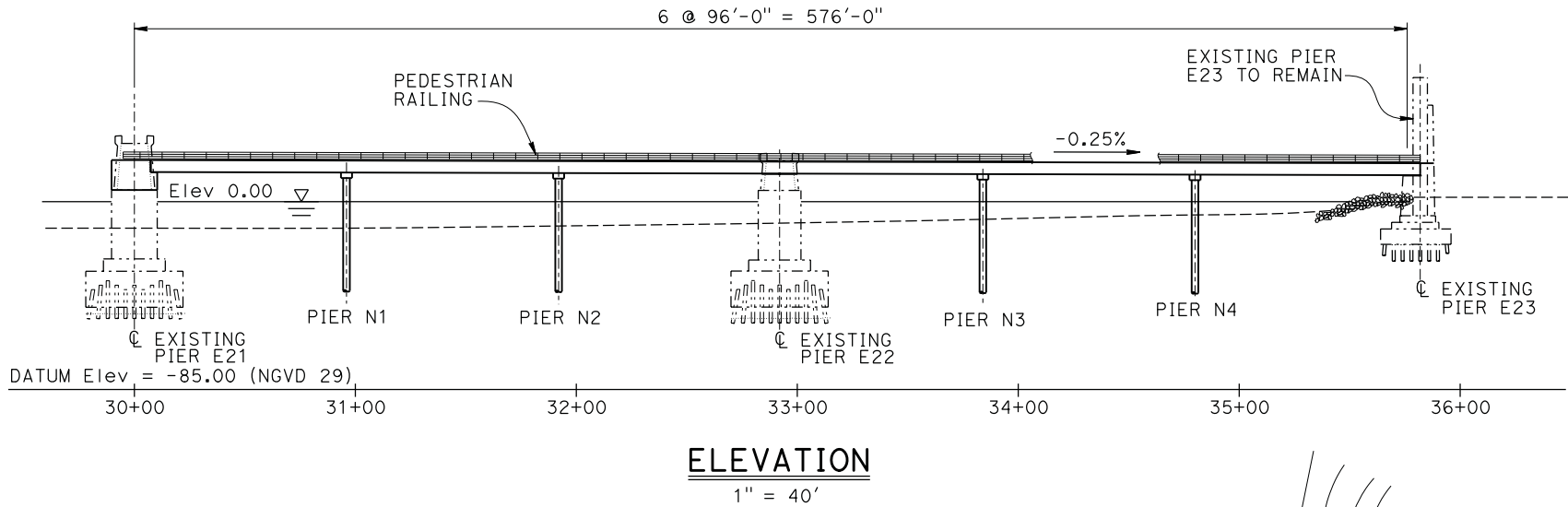
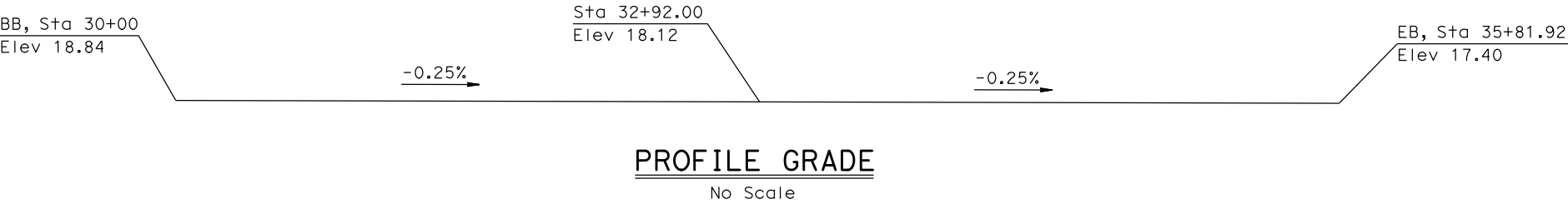
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LEGEND:  
----- Indicates existing



SAN FRANCISCO BAY

OAKLAND SHORE

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DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

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	QUANTITIES	BY X	CHECKED X	SPECIFICATIONS	BY X	PLANS AND SPECS COMPARED X	X																								
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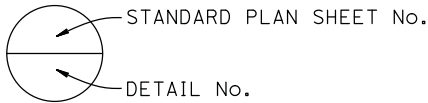
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INDEX TO PLANS

SHEET No.	TITLE
1	GENERAL PLAN
2	INDEX TO PLANS
3	DECK CONTOURS
4	FOUNDATION PLAN
5	EXISTING PIER E21 DETAILS
6	EXISTING PIER E22 DETAILS
7	EXISTING PIER E23 DETAILS
8	PIER N1 LAYOUT
9	PIER N1 DETAILS No. 1
10	PIER N1 DETAILS No. 2
11	TYPICAL SECTION
12	GIRDER LAYOUT
13	PRECAST BOX BEAM DETAILS No. 1
14	PRECAST BOX BEAM DETAILS No. 2
15	PEDESTRIAN RAILING
16	LOG OF TEST BORINGS

STANDARD PLANS 2015

PLAN No.	PLAN TITLE
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)
RSP 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)



GENERAL NOTES

DESIGN:  
AASHTO LRFD Bridge Design Specifications, 6th edition and the California Amendments, preface dated January 2014.

SEISMIC DESIGN:  
Caltrans Seismic Design Criteria (SDC), Version: 1.7 Dated: April 2013.

DEAD LOAD:  
Includes 35 psf for future wearing surface.

LIVE LOADING:  
H10 and 100 psf PEDESTRIAN LOADING

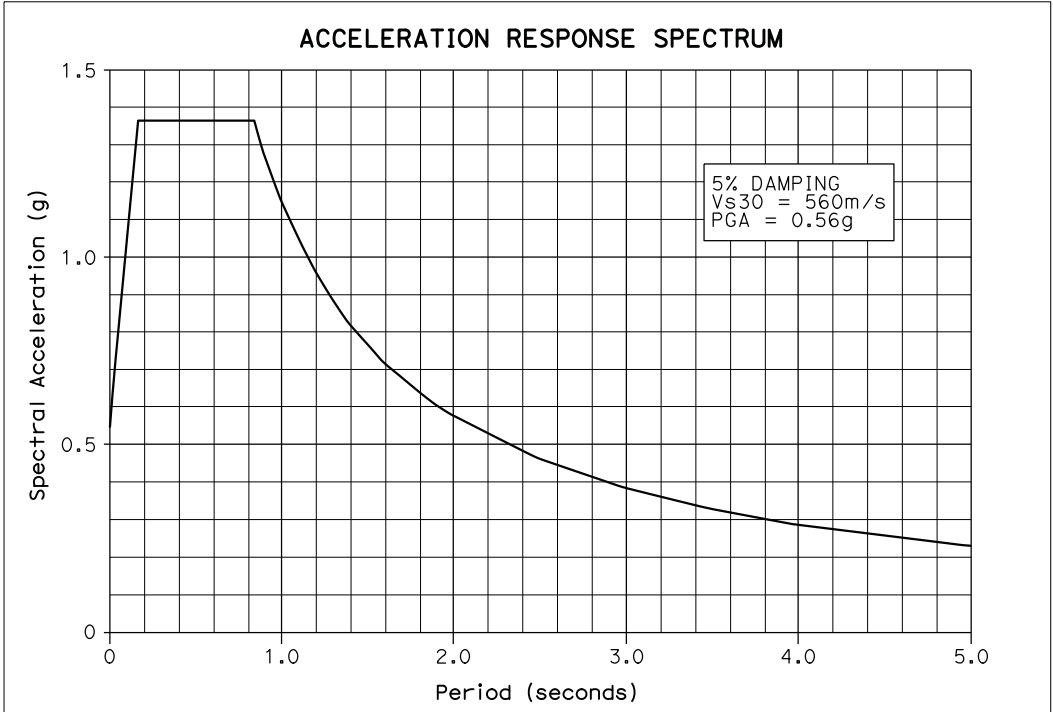
SEISMIC LOADING:  
See Design "SITE SPECIFIC ARS CURVE"

CONCRETE:  
fy = 60 ksi  
fc = 4.0 ksi @ 28 days  
n = 8  
see "PRESTRESSING NOTES"

NON-SHRINK GROUT:  
5.0 Ksi compressive strength @ 1 day  
3.0 Ksi compressive strength @ transverse stressing

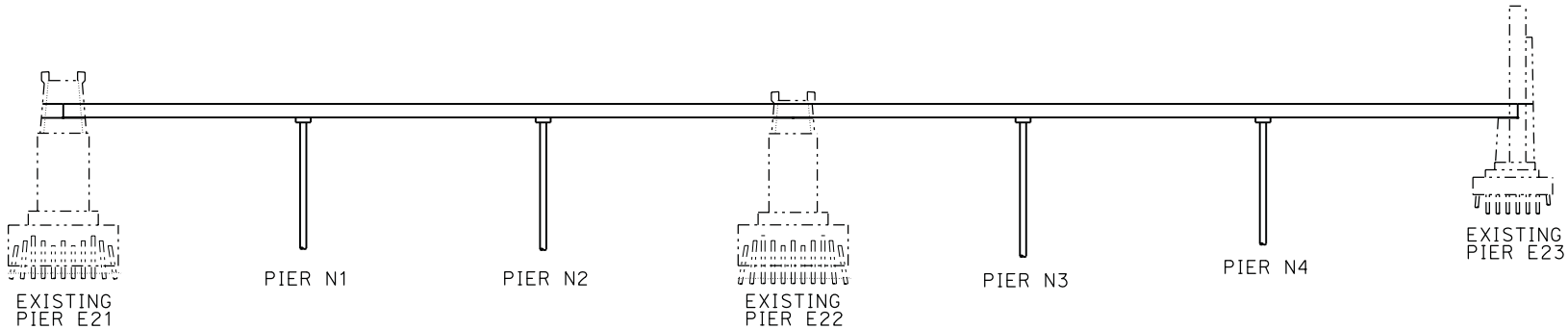
See "PRESTRESSING NOTES" on "PRESTRESSED BOX BEAM" and "PRESTRESSED CONCRETE SLAB" sheets.

REINFORCEMENT:  
All reinforcement shall be epoxy coated - ASTM A934/A934-M unless otherwise noted.  
Barrier reinforcement shall be epoxy-coated - ASTM A775/A775-M



SITE SPECIFIC ARS CURVE

No Scale



CONCRETE STRENGTH AND TYPE LIMITS

No Scale

LEGEND:

- Structural Concrete, Bridge (f'c = 4000 psi @ 28 days)
- Precast Box Beam / Slab (See "PC/PRETENSIONED BOX BEAM" and "PC/PRETENSION SLAB" sheets)
- Structure Concrete, Bridge Footing
- Structure Concrete, Bridge (Polymer Fiber) (f'c = 5000 psi @ 28 days)

PILE DATA TABLE						
LOCATION	PILE TYPE	NOMINAL RESISTANCE (kips)		DESIGN TIP ELEVATION (ft)	SPECIFIED TIP ELEVATION (ft)	NOMINAL DRIVING RESISTANCE REQUIRED (kips)
		COMPRESSION	TENSION			
PIER N1 & PIER N2	36" P/S	1,220	NA	-127 (a) -65 (c,d)	-127	410
PIER N3 & PIER N4	36" P/S	1,220	NA	-124 (a) -68 (c,d)	-124	410

NOTES:

- Design Tip Elevations are controlled by the following demands: (a) Compression, (b) Tension, (c) Settlement and (d) Lateral Load.
  - The Specified Tip Elevations shall not be raised above the Design Tip Elevations for Settlement and Lateral Load.
- No vibratory hammer or jetting allowed for pile installation.

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/17/2017)	DESIGN	BY Randip Bains	CHECKED X	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 8	BRIDGE No.	OAKLAND SHORE OBSERVATION DECK							
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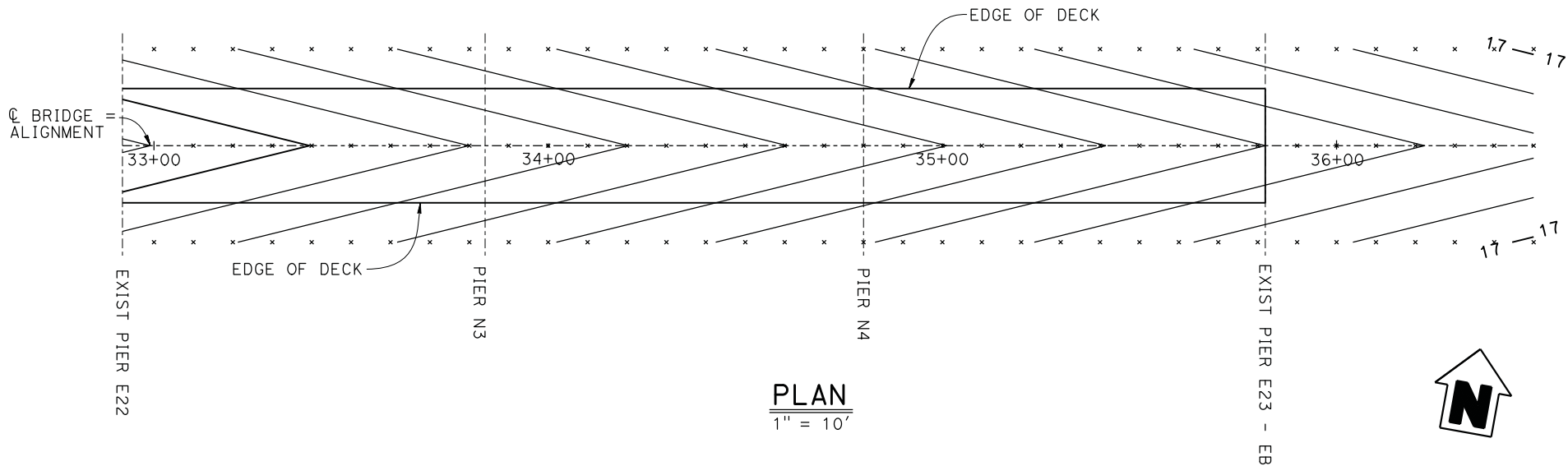
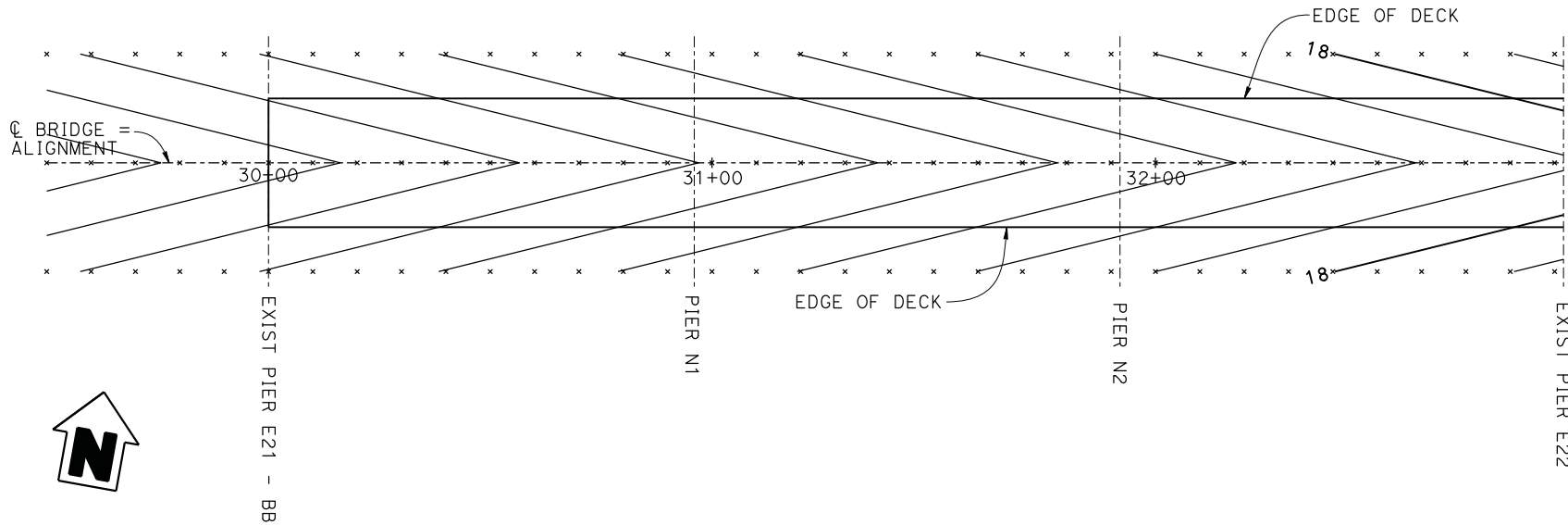
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PLAN  
1" = 10'

LEGEND:

x Indicates 10' intervals  
along station line

NOTES:

- 0.1' contour intervals shown.
- Contours do not include camber.
- Top of concrete deck shown.

DESIGN	BY Randip Bains	CHECKED X
DETAILS	BY Carlo Cancino	CHECKED X
QUANTITIES	BY X	CHECKED X

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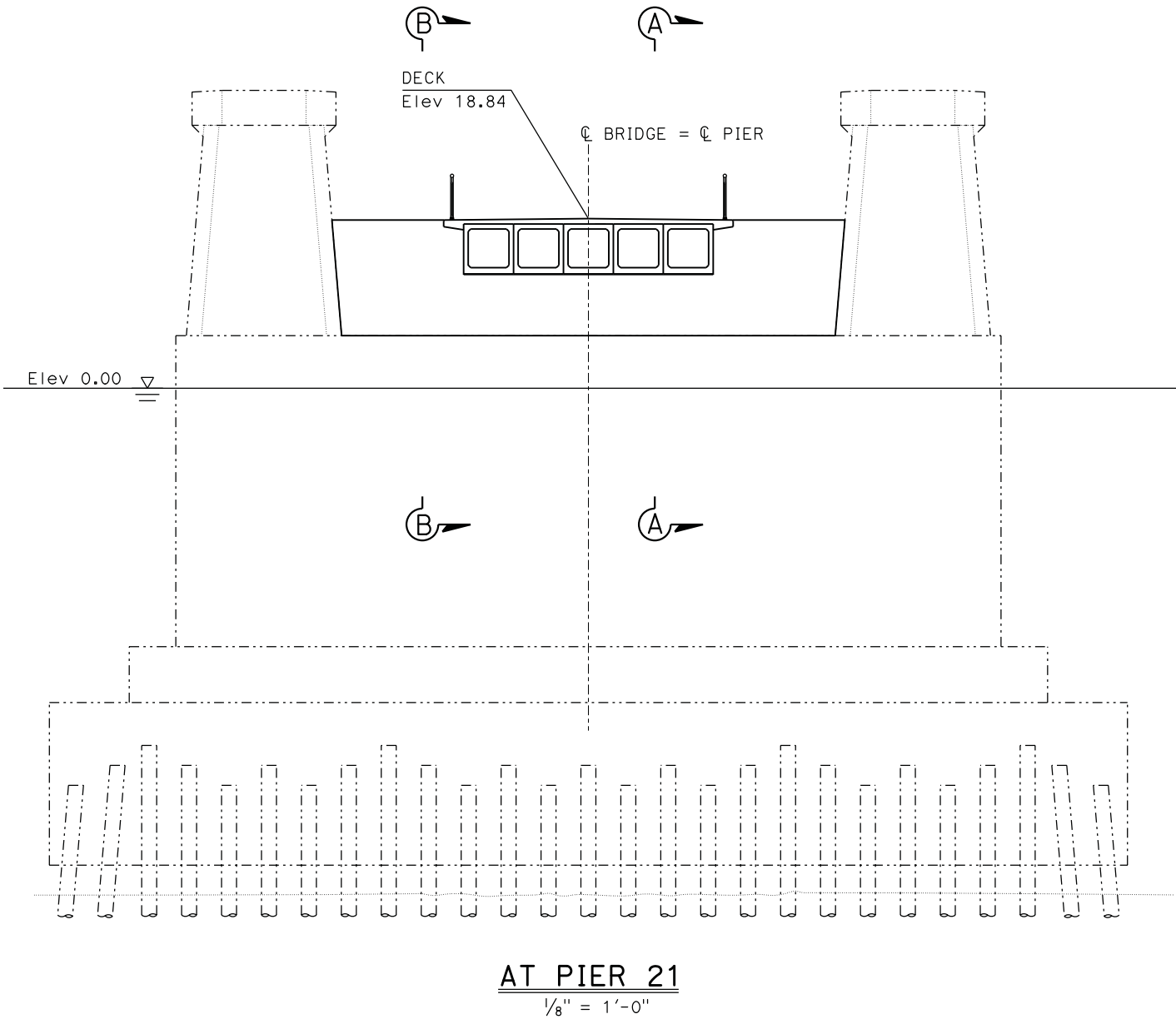
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OAKLAND SHORE OBSERVATION DECK  
DECK CONTOURS

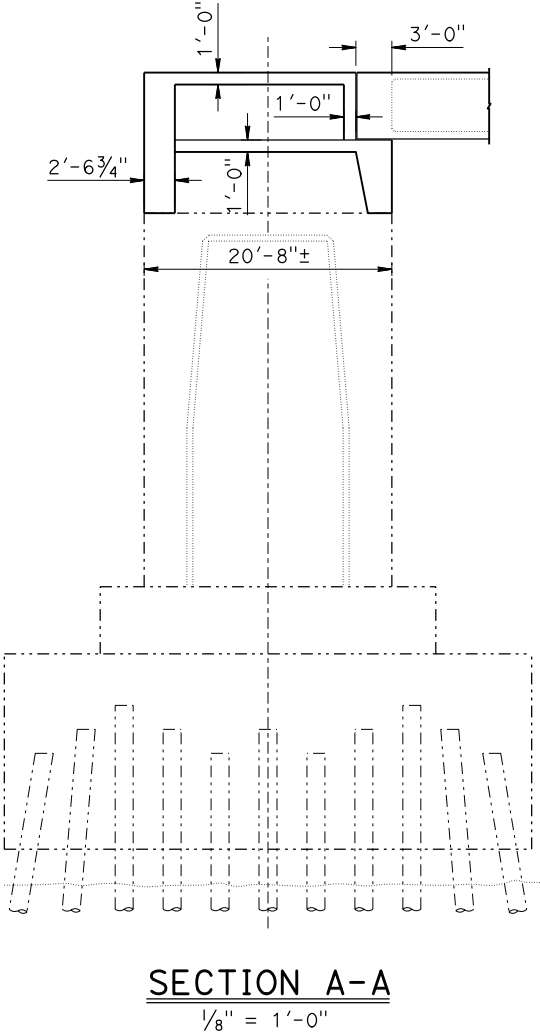
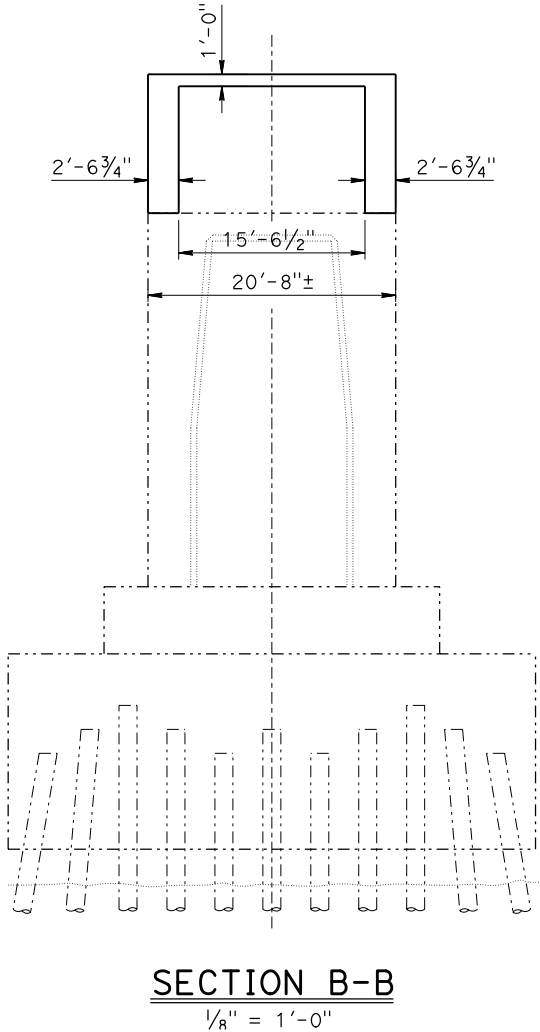


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QUANTITIES	BY X	CHECKED X

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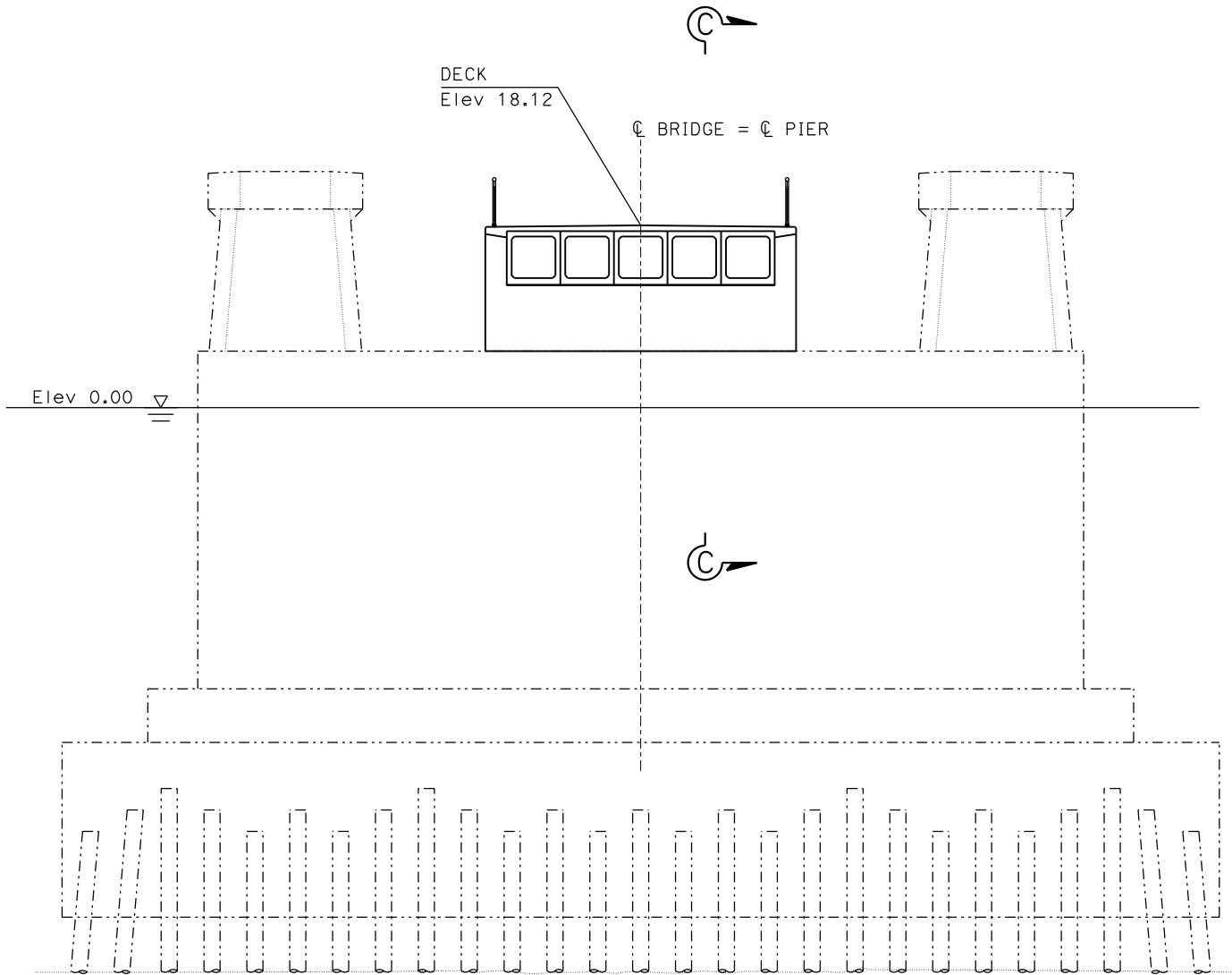
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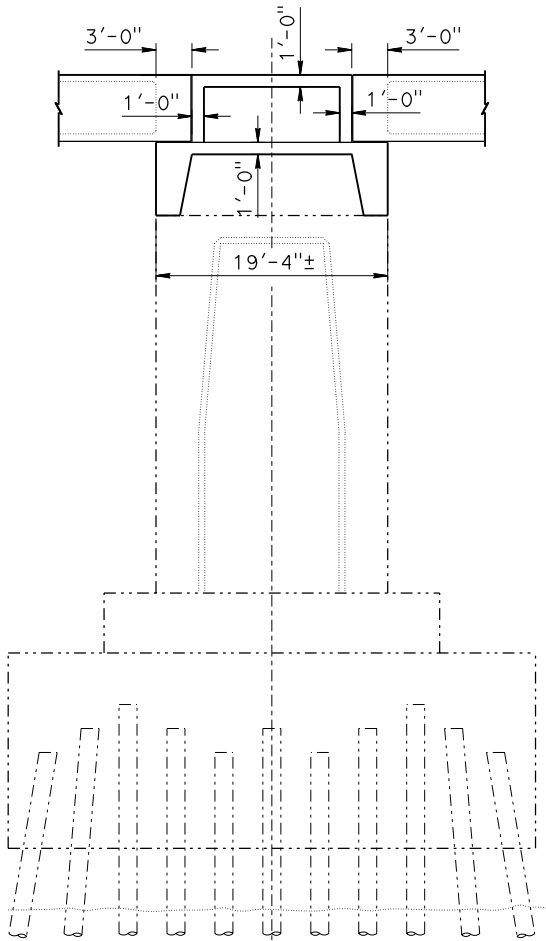
OAKLAND SHORE OBSERVATION DECK  
EXISTING PIER 21 DETAILS No. ?

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AT PIER 22  
1/8" = 1'-0"



SECTION C-C  
1/8" = 1'-0"

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DESIGN	BY Randip Bain	CHECKED X
DETAILS	BY Carlo Cancino	CHECKED X
QUANTITIES	BY X	CHECKED X

STATE OF  
CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
STRUCTURE DESIGN  
DESIGN BRANCH 8

BRIDGE No.
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POST MILE
X

OAKLAND SHORE OBSERVATION DECK  
EXISTING PIER 22 DETAILS No. ?

DATE PLOTTED => 14-NOV-2017 TIME PLOTTED => 14:34  
FILE => 04-01358\_a-oak\_gp\_a11b.dgn USERNAME => s134003

ORIGINAL SCALE  
IN INCHES FOR  
REDUCED PLANS

0 1 2 3

UNIT: 3593  
PROJECT NUMBER & PHASE: 0416000289, 1 CONTRACT No.: 04-013584

DISREGARD PRINTS BEARING  
EARLIER REVISION DATES

REVISION DATES	SHEET	OF
	X	X

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
DDDD	CCCC	RRRR	PPPP	????	####
REGISTERED CIVIL ENGINEER			X DATE		
MM/DD/YYYY					
PLANS APPROVAL DATE					
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REGISTERED PROFESSIONAL ENGINEER

X

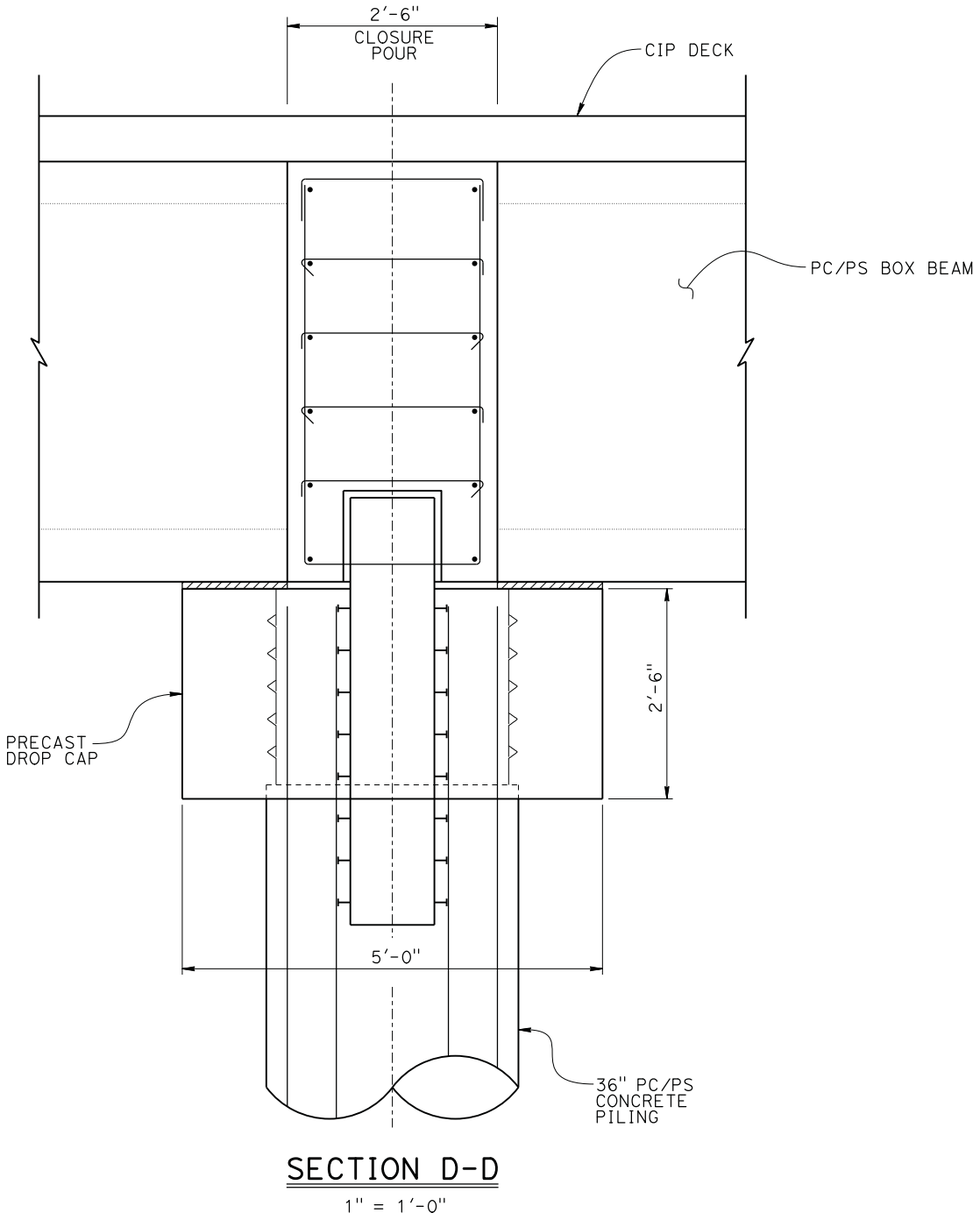
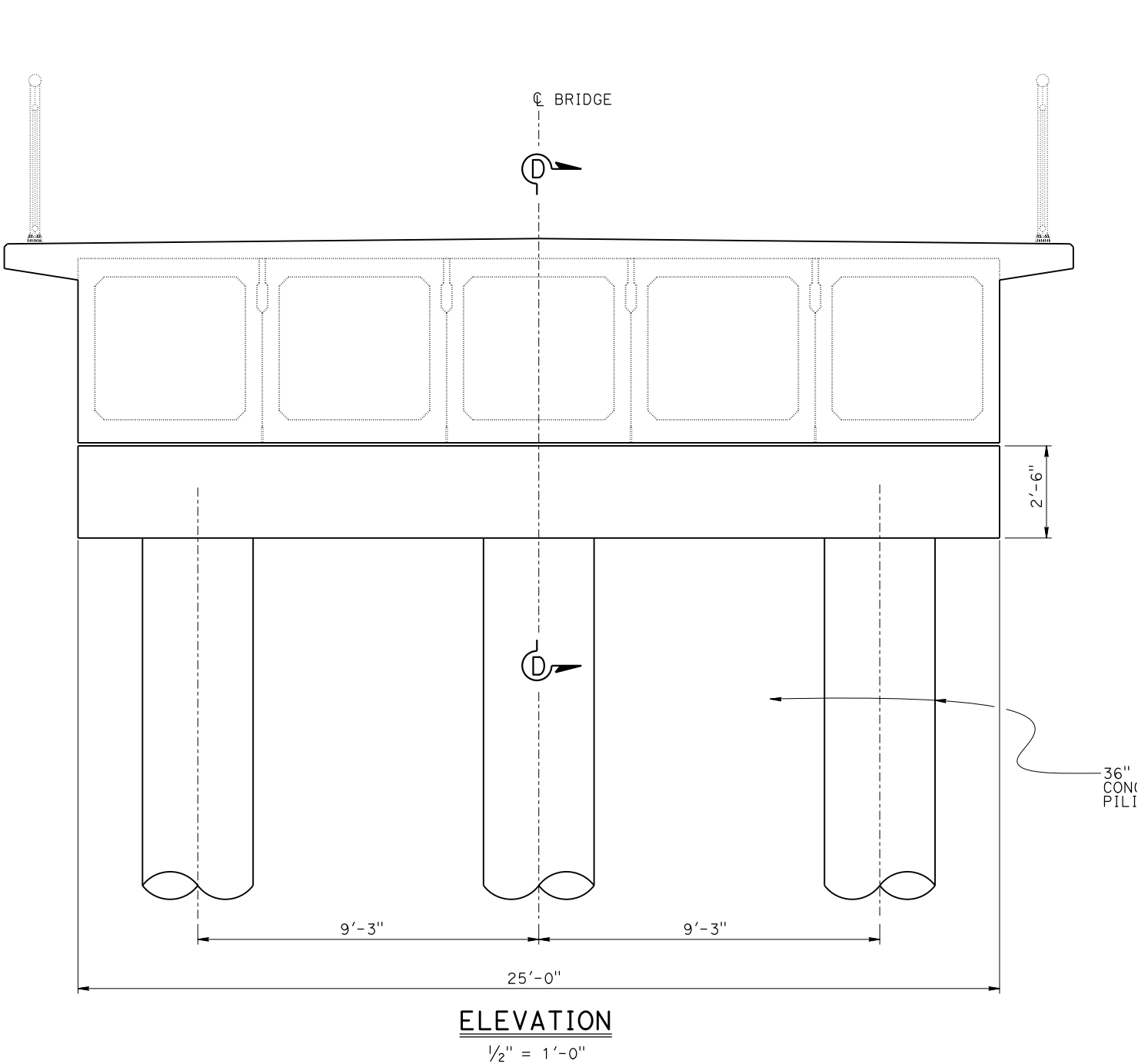
No. X

Exp. X

CIVIL

STATE OF CALIFORNIA

DRAFT  
COPY



DESIGN	BY Randip Bain	CHECKED X
DETAILS	BY Carlo Cancino	CHECKED X
QUANTITIES	BY X	CHECKED X

STATE OF  
CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
STRUCTURE DESIGN  
DESIGN BRANCH 8

BRIDGE No.
X
POST MILE
X

OAKLAND SHORE OBSERVATION DECK  
INTERMEDIATE PIER N1, N2, N3 & N4

DistCOUNTYROUTEPOST MILESTOTAL PROJECTSHEET No.TOTAL SHEETS

DDDDCCCCRRRRPPPP????####

REGISTERED CIVIL ENGINEERDATEX

MM/DD/YYYY

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEERNo. XExp. XSTATE OF CALIFORNIA

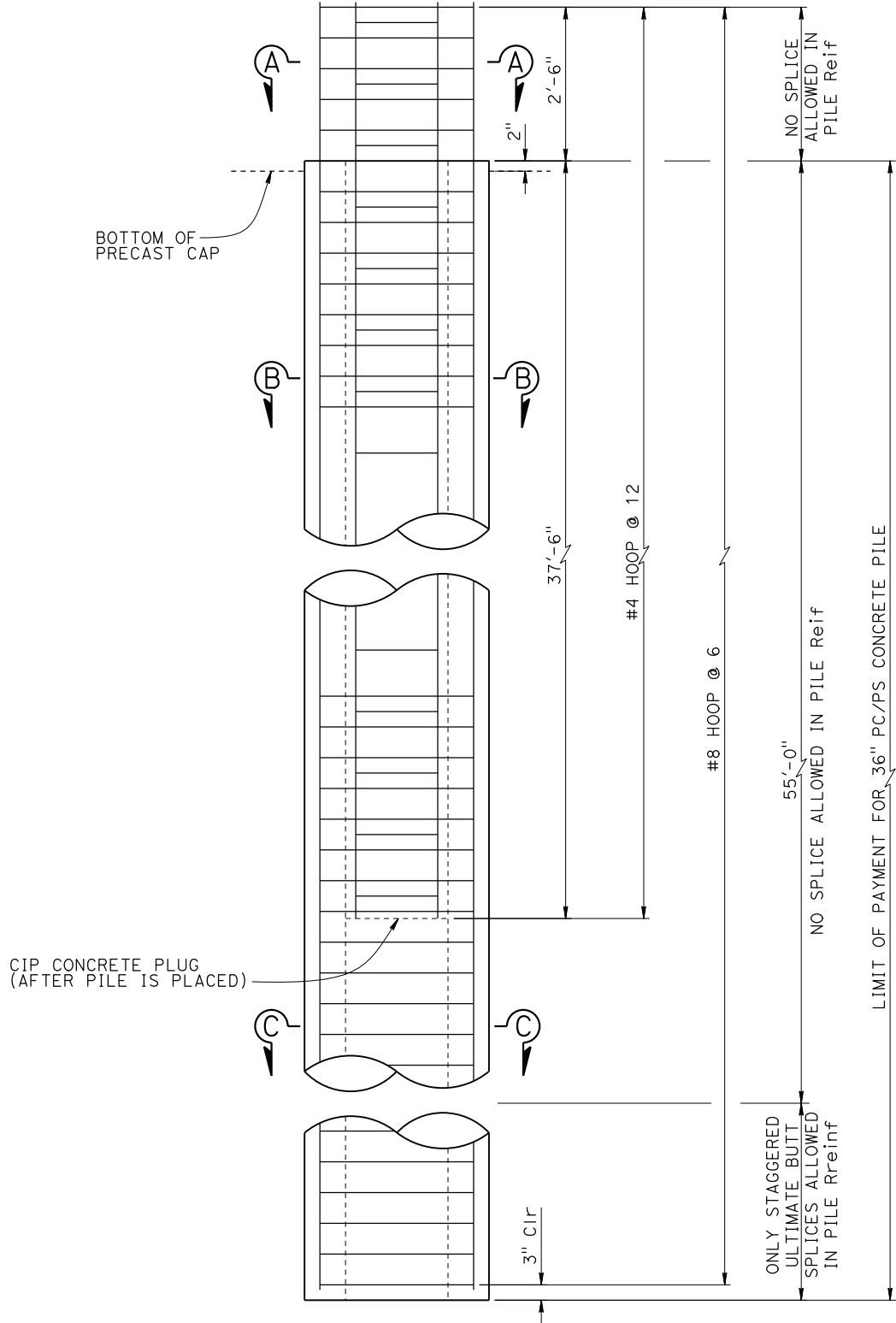
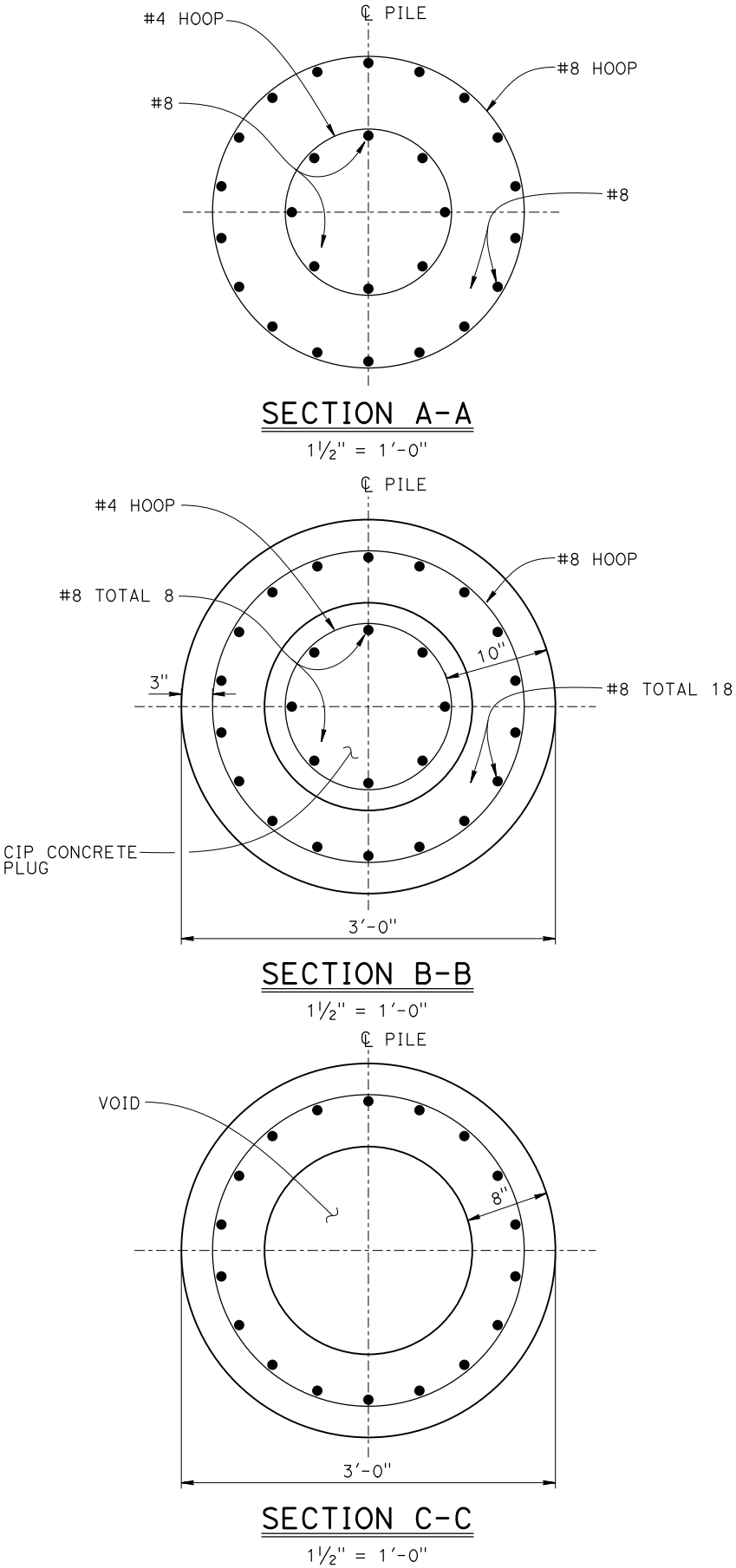
PRESTRESSING NOTES

Pf = 750 kip  
f'c at 28 days = 6 ksi  
f'ci at stressing = 4 ksi

For Design Loading, see "PILE DATA TABLE" on "INDEX TO PLANS" sheet

DRAFT COPY

NOTE:  
All hoops are ultimate butt splice continuous.



36" PC/PS CONCRETE PILE  
3/4" = 1'-0"

DESIGN	BY Randip Bain	CHECKED X
DETAILS	BY Carlo Cancino	CHECKED X
QUANTITIES	BY X	CHECKED X

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
STRUCTURE DESIGN  
DESIGN BRANCH 8

BRIDGE No.
X
POST MILE
X

OAKLAND SHORE OBSERVATION DECK

36" PC/PS CONCRETE PILE DETAILS

DATE PLOTTED => 14-NOV-2017 TIME PLOTTED => 14:34  
FILE => 04-01358\_a-oak\_gp\_a11b.dgn USERNAME => s134003

ORIGINAL SCALE  
IN INCHES FOR  
REDUCED PLANS

0 1 2 3

UNIT: 3593  
PROJECT NUMBER & PHASE: 0416000289, 1 CONTRACT No.: 04-013584

DISREGARD PRINTS BEARING  
EARLIER REVISION DATES

REVISION DATES	SHEET	OF
	X	X

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	80	PPPP	????	####

REGISTERED CIVIL ENGINEER

DATE

X

MM/DD/YYYY

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER

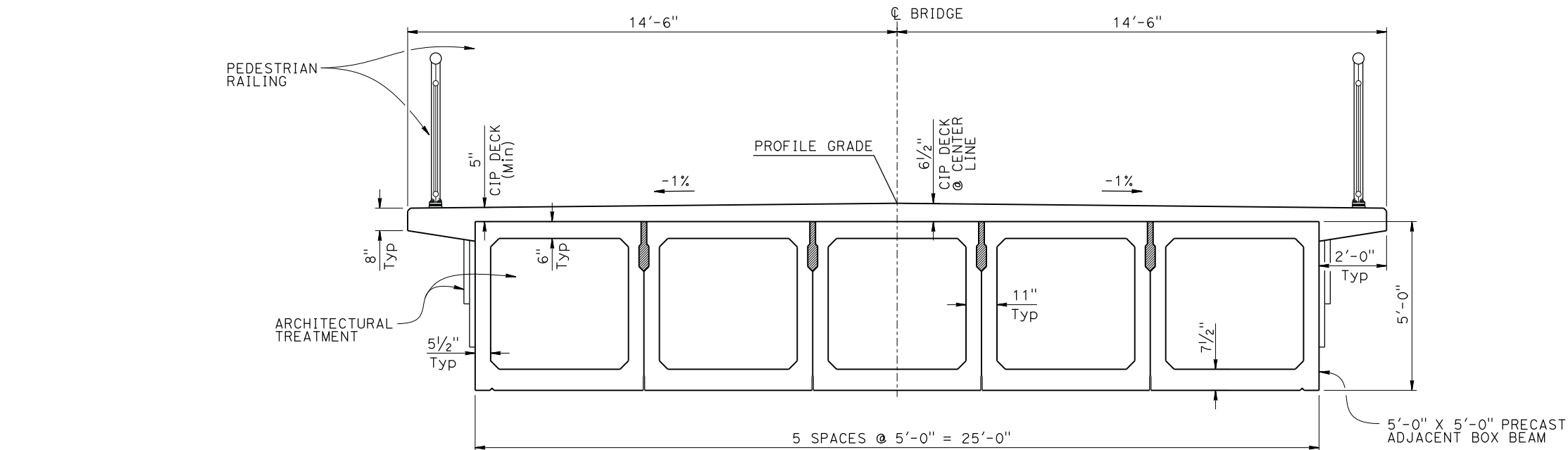
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Exp. X

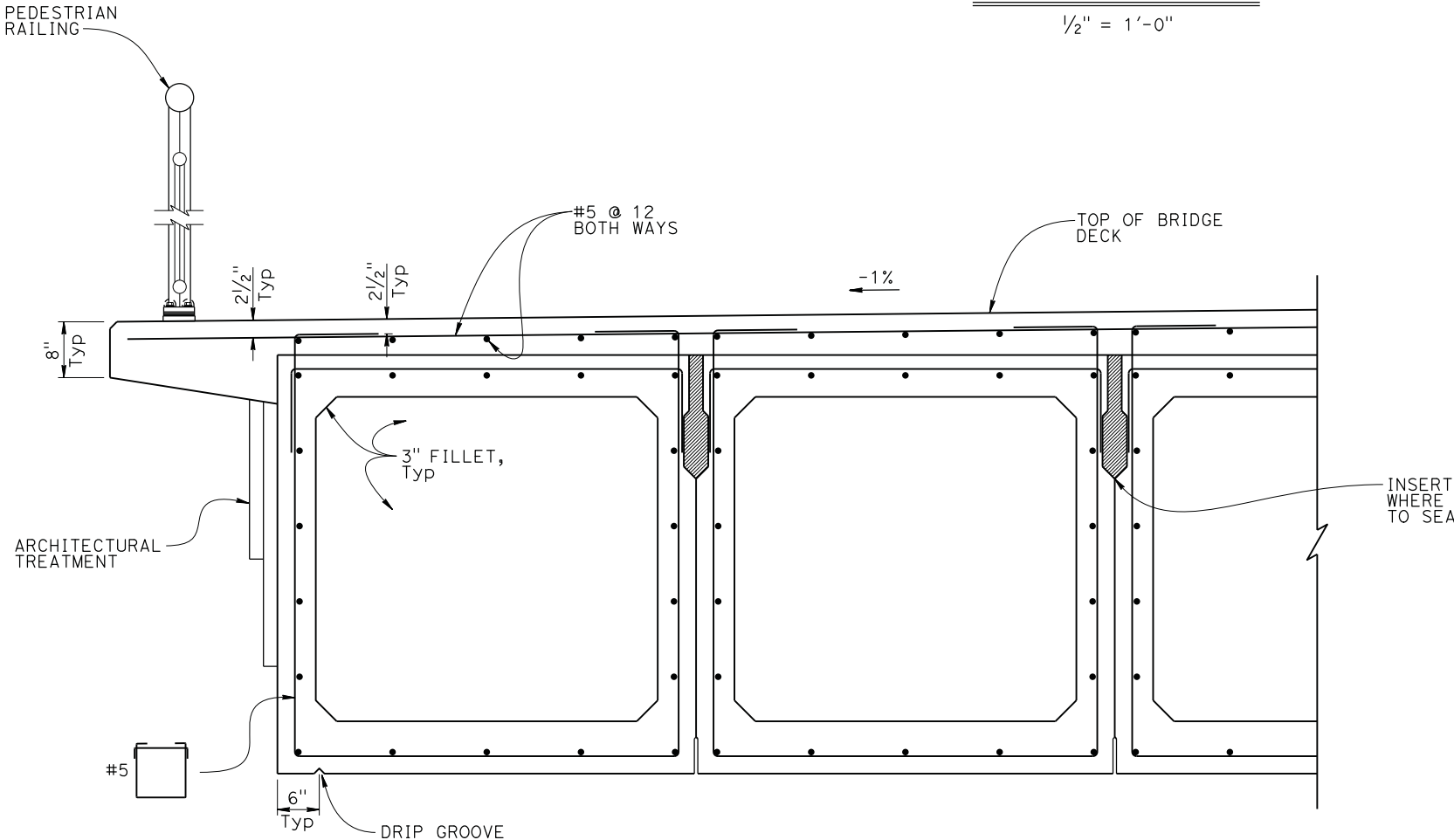
CIVIL

STATE OF CALIFORNIA

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COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



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



PART TYPICAL SECTION  
1" = 1'-0"

NOTES:  
1.

DRAFT  
COPY

DESIGN	BY Randip Bains	CHECKED X
DETAILS	BY Carlo Cancino	CHECKED X
QUANTITIES	BY X	CHECKED X

STATE OF  
CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
STRUCTURE DESIGN  
DESIGN BRANCH 8

BRIDGE No.
X
POST MILE
X

OAKLAND SHORE OBSERVATION DECK  
TYPICAL SECTION

PRESTRESSING NOTES

JACKING FORCE (P):  
The manufacturer jacking force required at point of control along the span. The jacking force does not include any fabrication specific losses.

CONCRETE STRENGTH:  
f'ci (ksi) is at time of initial stressing  
f'c (ksi) is at 28 days

DEFLECTION COMPONENT:  
Informational - to be used in setting screed line elevation.

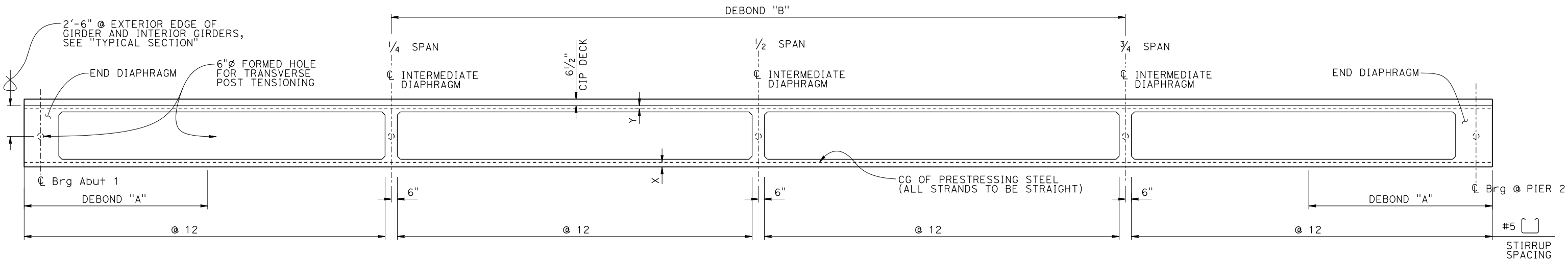
Screed line elevations for deck concrete will be determined by the Engineer.

BOTTOM PRESTRESSING:

GIRDER LOCATION OR DESIGNATION AND LENGTH	JACKING FORCE (P) (kips)		CONCRETE STRENGTH (ksi)		DEFLECTION COMPONENTS (inches)		DEBOND "A"	
	"X"		f'ci	f'c	① Deck DL	② Railing DL	Amount (kip)	Length (ft-inch)
A thru E Length = 96'	4 1/2"	1143	4	6	1 1/2"	1/2"	351	15'-0"

TOP PRESTRESSING:

GIRDER LOCATION OR DESIGNATION AND LENGTH	JACKING FORCE (P) (kips)		DEBOND "B"	
	"Y"		Amount (kip)	Length (Ft-inch)
A thru E Length = 96'	3"	615	615	8 Strands - 40'-0" 6 Strands - 60'-0"



LONGITUDINAL SECTION

1/4" = 1'-0"

DRAFT  
COPY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
DDDD	CCCC	RRRR	PPPP	????	####
REGISTERED CIVIL ENGINEER			X DATE		
MM/DD/YYYY					
PLANS APPROVAL DATE					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					

REGISTERED PROFESSIONAL ENGINEER

X

No. X

Exp. X

CIVIL

STATE OF CALIFORNIA

DESIGN	BY Randip Bain	CHECKED X
DETAILS	BY Carlo Cancino	CHECKED X
QUANTITIES	BY X	CHECKED X

STATE OF  
CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
STRUCTURE DESIGN  
DESIGN BRANCH 8

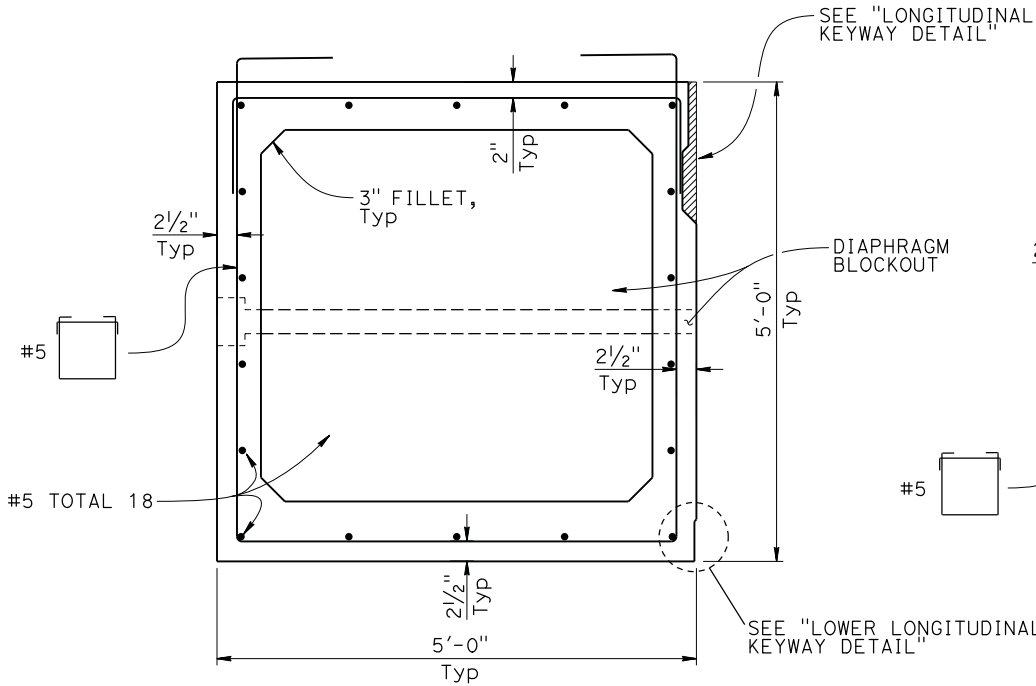
BRIDGE No.
X
POST MILE
X

OAKLAND SHORE OBSERVATION DECK

LONGITUDINAL SECTION

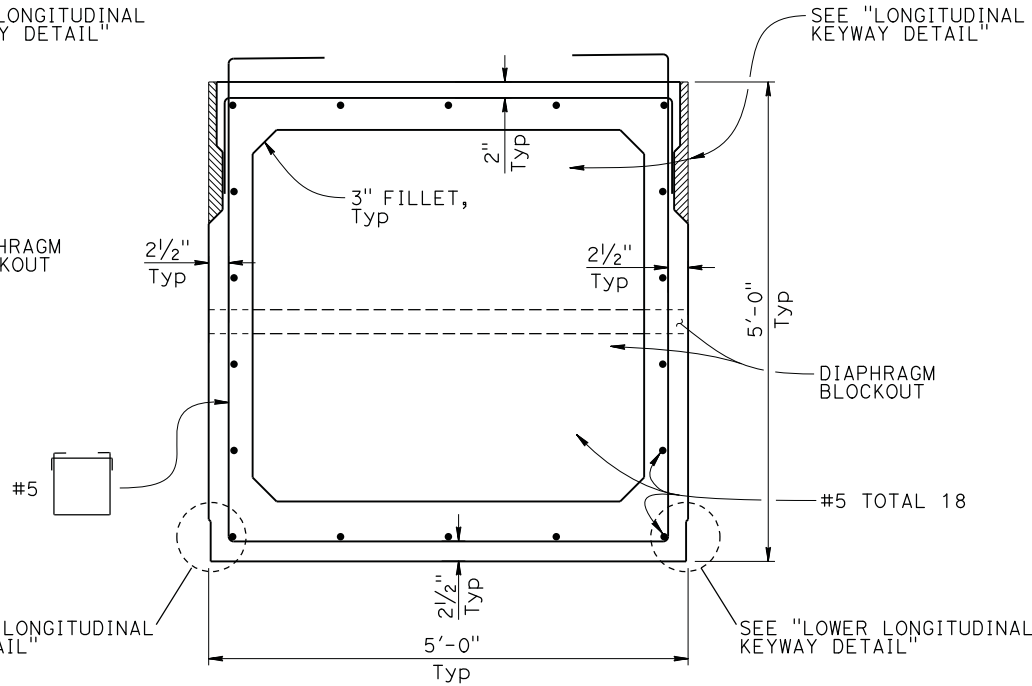
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
DDDD	CCCC	RRRR	PPPP	????	####
REGISTERED CIVIL ENGINEER			X DATE	<div>REGISTERED PROFESSIONAL ENGINEER No. X Exp. X CIVIL STATE OF CALIFORNIA</div>	
MM/DD/YYYY					
PLANS APPROVAL DATE					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					

DRAFT  
COPY



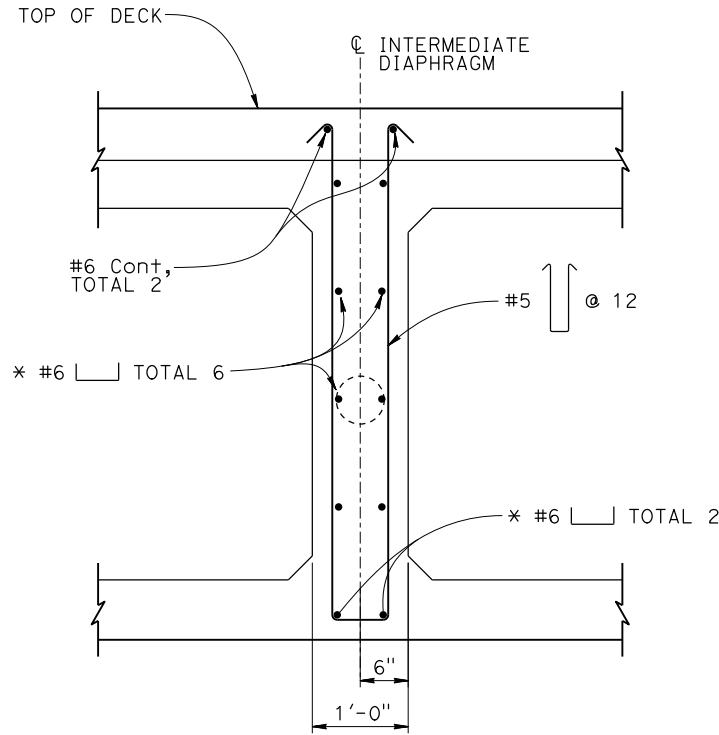
EXTERIOR P/C P/S BOX BEAM

1" = 1'-0"



INTERIOR P/C P/S BOX BEAM

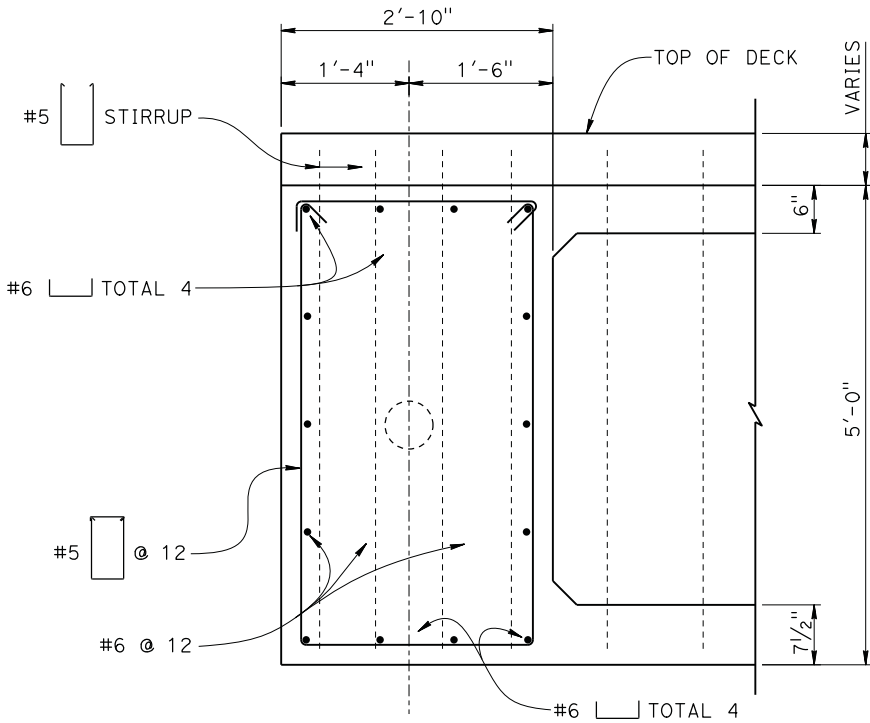
1" = 1'-0"



INTERMEDIATE DIAPHRAGM

1" = 1'-0"

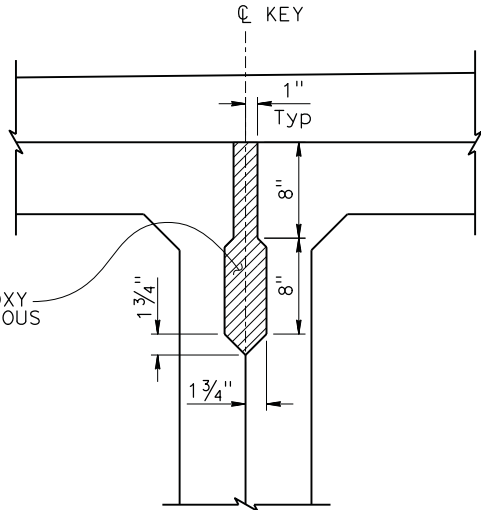
NOTE:  
\* ADJUST MILD STEEL SPACING TO  
AVOID CONFLICT WITH P/S STRANDS



SECTION A-A  
END DIAPHRAGM AT ABUTMENT

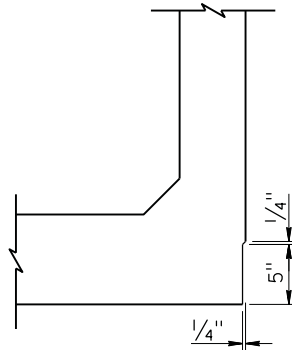
1" = 1'-0"

KEYWAY FILLER WITH EPOXY  
OR NON-SHRINK CEMENTITIOUS  
FLOWABLE GROUT



LONGITUDINAL KEYWAY DETAIL

1 1/2" = 1'-0"



LOWER LONGITUDINAL KEYWAY DETAIL

1 1/2" = 1'-0"

DESIGN	BY Randip Bain	CHECKED X
DETAILS	BY Carlo Cancino	CHECKED X
QUANTITIES	BY X	CHECKED X

STATE OF  
CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
STRUCTURE DESIGN  
DESIGN BRANCH 8

BRIDGE No.
X
POST MILE
X

OAKLAND SHORE OBSERVATION DECK  
PRECAST BOX BEAMS DETAILS No. 1

DATE PLOTTED => 14-NOV-2017 TIME PLOTTED => 14:35  
FILE => 04-01358\_a-00k\_gp\_a11b.dgn USERNAME => s134003

ORIGINAL SCALE  
IN INCHES FOR  
REDUCED PLANS

UNIT: 3593  
PROJECT NUMBER & PHASE: 0416000289, 1 CONTRACT No.: 04-013584

DISREGARD PRINTS BEARING  
EARLIER REVISION DATES

REVISION DATES	SHEET	OF
	X	X



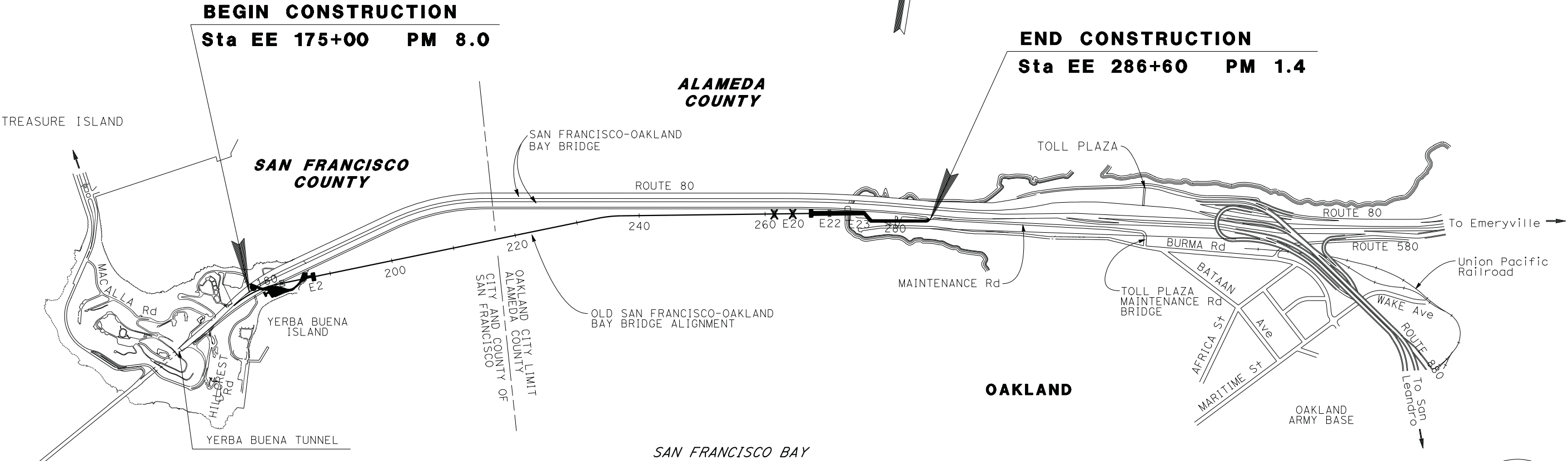
INDEX OF PLANS

SHEET No.	DESCRIPTION
1	TITLE SHEET AND LOCATION MAP
2 - 4	TYPICAL X-SECTIONS
5 - 7	LAYOUT
8 - 10	PROFILES AND SUPERELEVATION DIAGRAMS
11-17	CONSTRUCTION DETAILS
-	TEMPORARY WATER POLLUTION CONTROL
-	EROSION CONTROL
18 - 19	DRAINAGE PLANS
20 - 25	UTILITY PLANS
-	PAVEMENT DELINEATION
26 - 30	SIGN
-	SUMMARY OF QUANTITIES
31 - 33	ELECTRICAL
34 - 37	RETAINING WALLS
STRUCTURE PLANS	
X - X	YBI OBSERVATION DECK
X - X	OAKLAND OBSERVATION DECK
ARCHITECTURAL PLANS	
X - X	YBI OBSERVATION DECK
X - X	OAKLAND OBSERVATION DECK

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ADJACENT TO  
STATE HIGHWAY  
IN THE COUNTIES OF SAN FRANCISCO AND ALAMEDA  
ON YERBA BUENA ISLAND AND  
0.4 MILES WEST OF TOLL PLAZA

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2015



PROJECT ENGINEER  
REGISTERED CIVIL ENGINEER

DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER  
Trinh T. Lai  
No. 63630  
Exp. 9-30-18  
CIVIL  
STATE OF CALIFORNIA


PROJECT MANAGER	BRIAN MARONEY
DESIGN MANAGER	CHRIS TRAINA

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

NO SCALE



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION



DESIGN

FUNCTIONAL SUPERVISOR

HANNA KHOURY

TRINH LAI

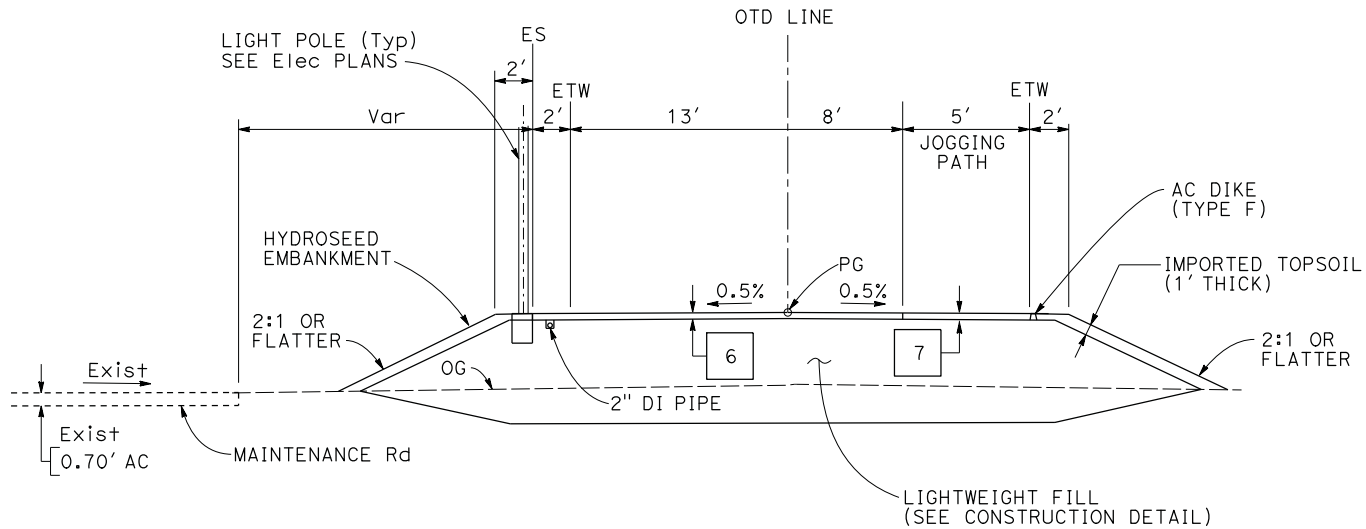
BRIAN WOOD

TL

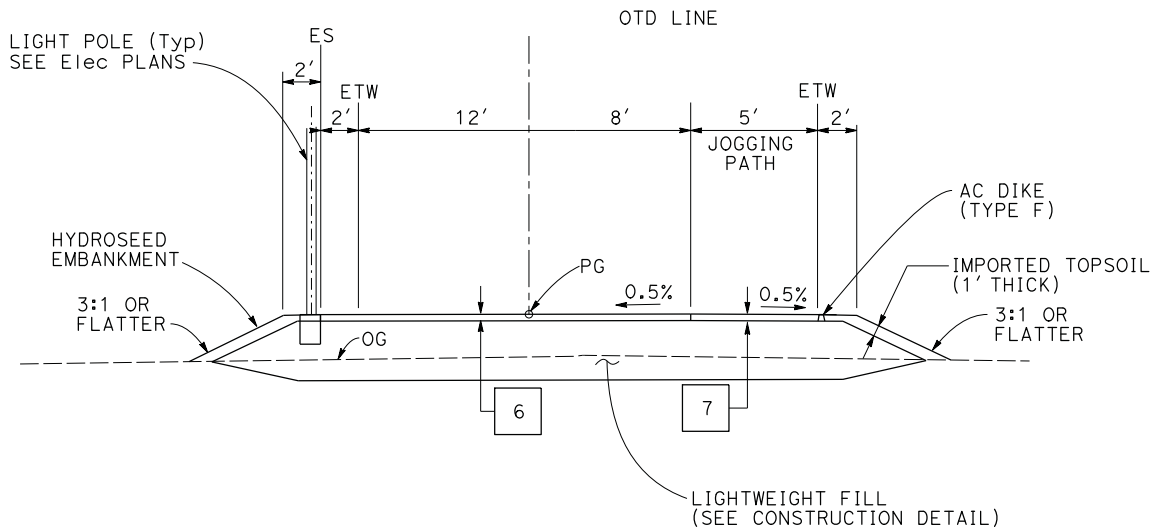
2-15-18

REVISED BY

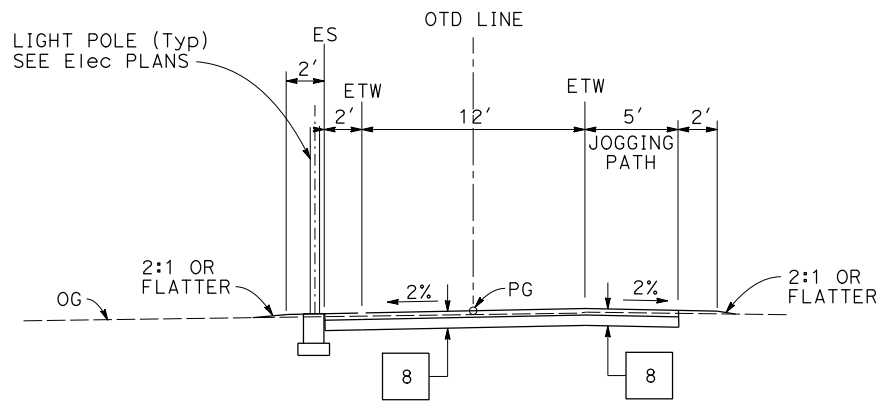
DATE REVISED



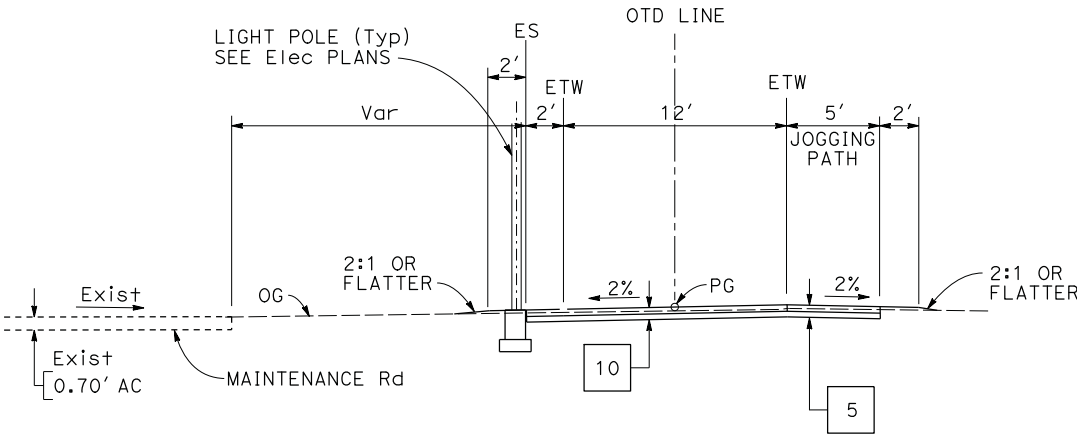
**PEDESTRIAN PATH**  
OTD 273+16 TO 276+00



**PEDESTRIAN PATH**  
OTD 276+00 TO 277+00



**MULTI-PURPOSE PATH**  
OTD 277+00 TO 282+00



**PEDESTRIAN PATH**  
OTD 282+00 TO 286+60

**TYPICAL CROSS SECTIONS**  
NO SCALE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF,Ala	80	8.0/8.3, 0.9/1.4	3	-

REGISTERED CIVIL ENGINEER

DATE

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER

Trinh T. Lai

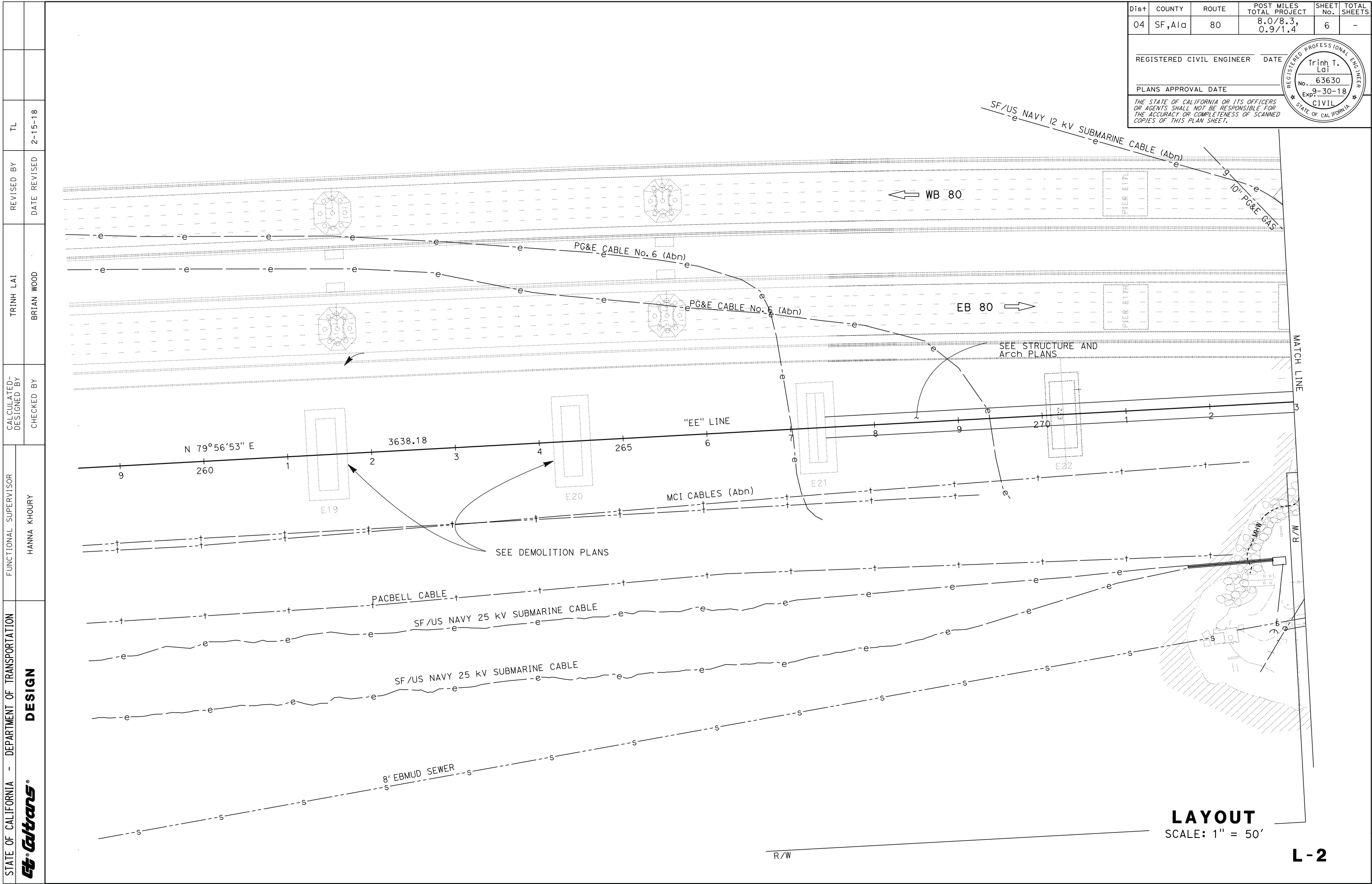
No. 63630

Exp. 9-30-18

CIVIL

STATE OF CALIFORNIA

DATE PLOTTED => 15-FEB-2018  
TIME PLOTTED => 13:42  
LAST REVISION  
2-15-18



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF,Ala	80	8.0/8.3, 0.9/1.4	7	-

REGISTERED CIVIL ENGINEER

DATE

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER

Trinh T. Lai

No. 63630

Exp. 9-30-18

CIVIL

STATE OF CALIFORNIA

The plan shows a section of the San Francisco Bay waterfront in Oakland. Key features include:

- San Francisco Bay** at the top, with a north arrow pointing towards the top right.
- Oakland** at the bottom, with various landmarks like **Historical Key Building**, **Historical Mill Substation**, **ASPH TANKS**, and **URBANS**.
- Engineering Features:** **CL FENCE (TYPE 6) w/ EXTENSION ARMS, STAINED**, **AC BIKEPATH**, **BCDC**, **24' SLIDING GATE**, **DECOMPOSED GRANITE**, **HYDROSEED EMBANKMENT**, **R/W**, **CONFORM TO EXIST**, **ROCKS**, **BURMA Rd**, **ASPH**, **CONC**.
- Curves:** Two curves are identified with callouts 1 and 2. Curve 1 has a bearing of  $S55^{\circ}03'06.95''E$  and a length of 177.58'. Curve 2 has a bearing of  $N79^{\circ}03'01.44''E$  and a length of 815.82'.
- Stationing:** Various stationing points are marked, including **"OTD" 275+98.95 POT**, **"OTD" 277+76.53 BC**, **"OTD" 278+16.58 EC**, **"OTD" 286+32.40 BC**, **"OTD" 286+54.87 EC**, and **"OTD" 286+59.75 POT**.
- Match Line:** Indicated on the left side of the plan.

CURVE DATA				
No.	⊕	R	Δ	L
1		50	45°53'52"	21.17
2		40	32°11'25"	11.54

LAYOUT  
SCALE: 1" = 50'

L-3

BORDER LAST REVISED 7/2/2010

USERNAME => s133768  
DGN FILE => 0416000289 L-3.dgn

RELATIVE BORDER SCALE  
IS IN INCHES

0 1 2 3

UNIT 0730

PROJECT NUMBER & PHASE


04160002891

DATE PLOTTED => 15-FEB-2018  
TIME PLOTTED => 14:01  
LAST REVISION  
2-15-18

[illegible]



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

 **DESIGN**

FUNCTIONAL SUPERVISOR

HANNA KHOURY

DESIGNED BY

CHECKED BY

TRINH LAI

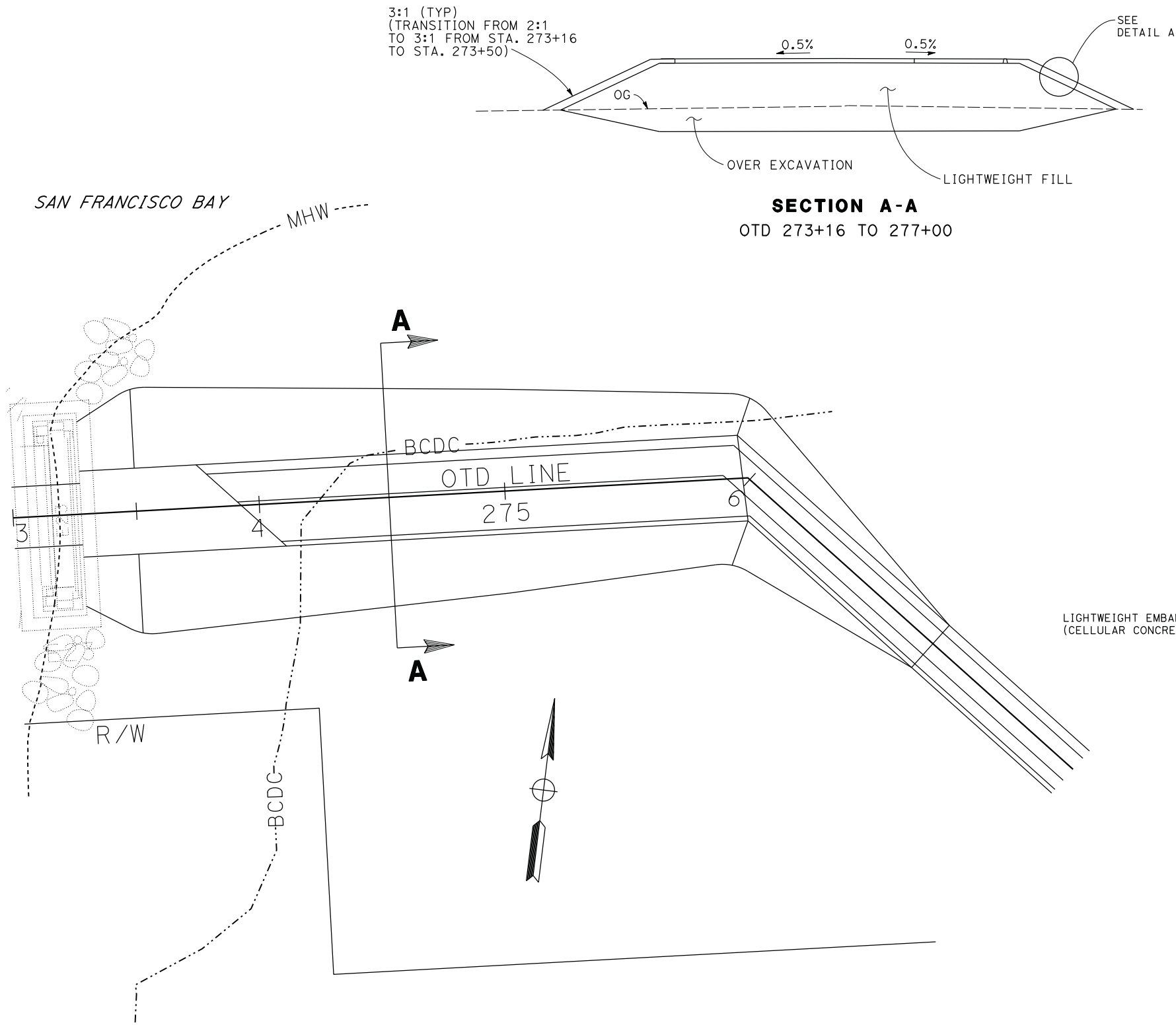
BRIAN WOOD


REVISED BY

DATE

TL

2-15-18



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF,Ala	80	8.0/8.3, 0.9/1.4	11	-
REGISTERED CIVIL ENGINEER			DATE		
PLANS APPROVAL DATE					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					

**CONSTRUCTION DETAIL**  
**LIGHTWEIGHT FILL**  
NO SCALE  
**C-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

DESIGN

FUNCTIONAL SUPERVISOR

HANNA KHOURY

CALCULATED-DESIGNED BY

CHECKED BY

TRINH LAI

BRIAN WOOD

REVISED BY

DATE REVISED

TL

2-15-18

Station

Exc

Emb

10

18

17

16

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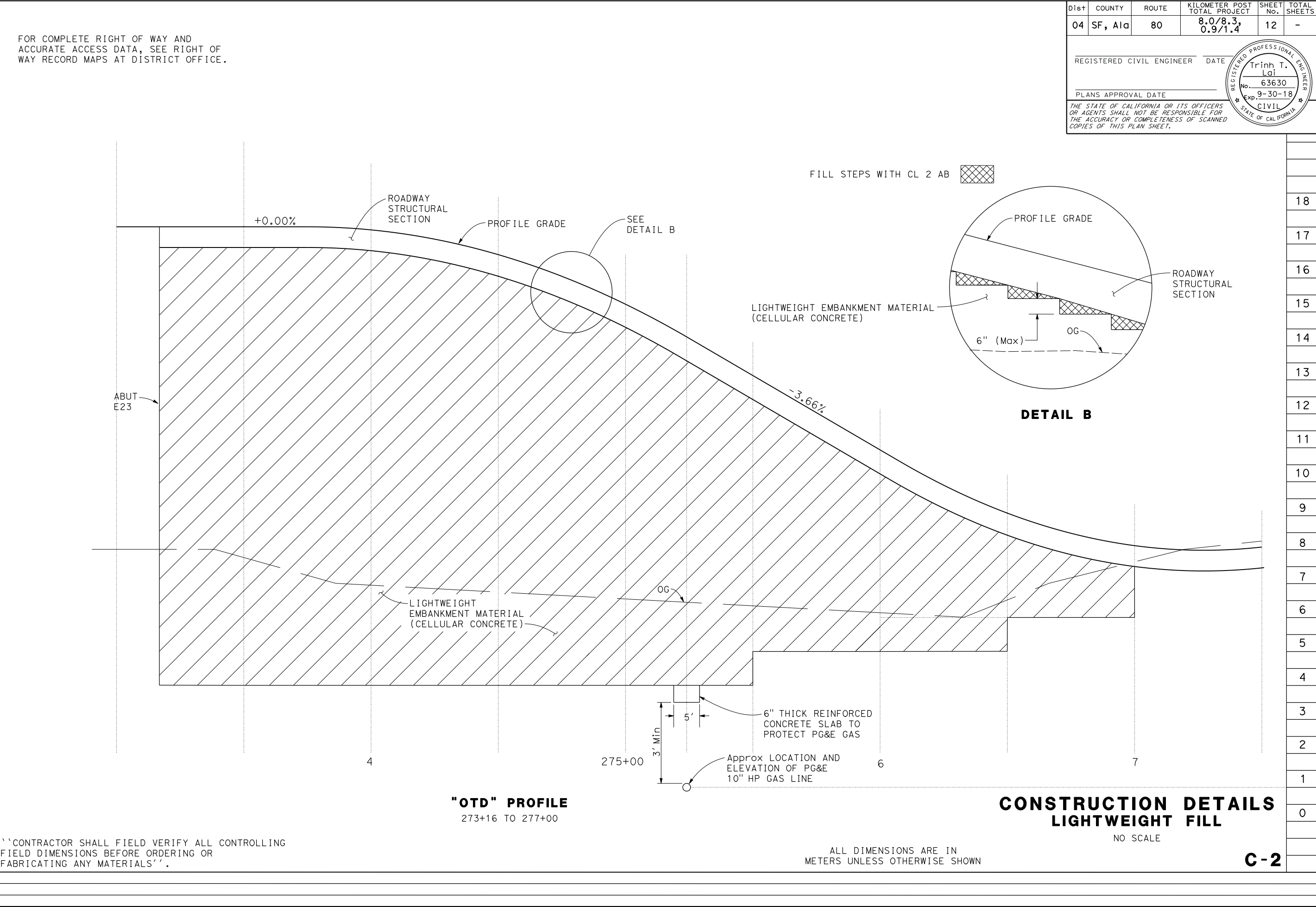
4

3

2

1

0




Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF, Alameda	80	8.0/8.3, 0.9/1.4	15	-

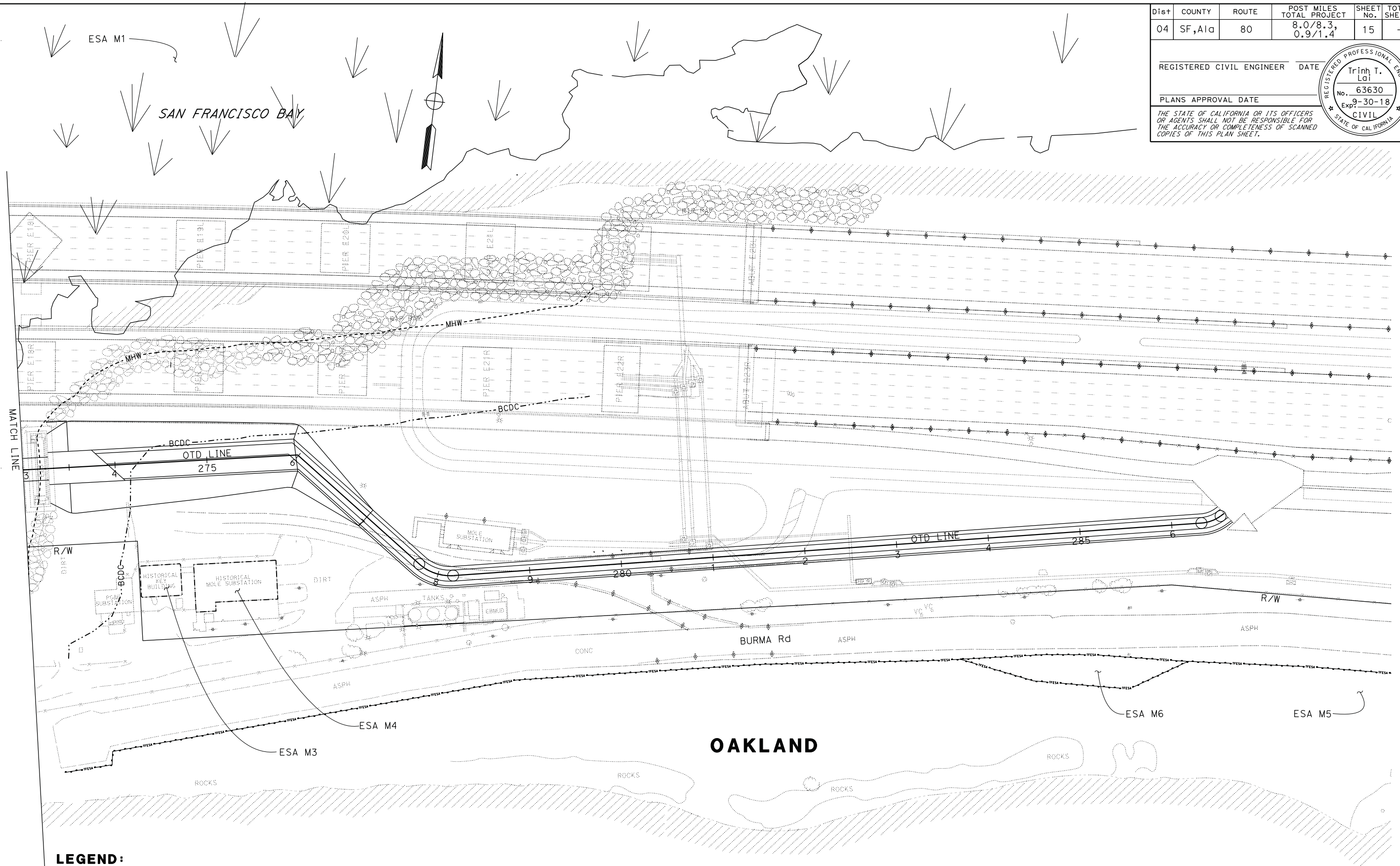
REGISTERED CIVIL ENGINEER

DATE



PLANS APPROVAL DATE



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COPIES OF THIS PLAN SHEET.*



**LEGEND:**

- |         |                                    |        |   |   |                    |
|---------|------------------------------------|--------|---|---|--------------------|
| —●—●—●— | ESA ENVIRONMENTALLY SENSITIVE AREA | ▲ ▲ ▲  | Exist "KEEP OUT" SIGNS (ESA) MAINTAINED BY OTHERS |  | EELGRASS COLONIES  |
| —●—●—●— | TEMPORARY FENCE (TYPE ESA)         | ---TCE | TEMPORARY CONSTRUCTION EASEMENT                   |  | NON-TIDAL WETLANDS |
| —●—●—●— | ESA BOUNDARY (SEE ESA LIMIT)       |        |   |   |                    |

*SAN FRANCISCO BAY*

## CONSTRUCTION DETAIL ENVIRONMENTALLY SENSITIVE AREAS

SCALE: 1" = 50'

**C - 5**

