

Interim Seismic Retrofit-East Bay 288' Trusses Span E17 to Span E22 (Contract No. 04-043004)

The as-built drawings, which are contained in these CDs, are scanned from drawings of the existing structure for the convenience of the contractor and as a means to convey to the contractor the available information regarding the existing structure. It is to be understood that no claim is being made as to the accuracy or completeness of the said information and that the State of California or its officers or agents shall not be responsible for the manner in which the contractor interprets and uses this information or for the accuracy, currency or completeness of these scanned as-built drawings. The contractor shall be responsible to obtain, at the contractor's expense, any additional information that the contractor deems necessary for completely and accurately assessing the existing conditions of the structure. The contractor shall not be entitled to any compensation for any claim arising from inaccuracy or insufficiency of these as-built drawings or in anyway related to these drawings.

[190.General Plan](#)

[191.Index to Plans](#)

[192.Vertical Member Retrofit Miscellaneous Notes](#)

[193.Pier E23 Retrofit Details No. 1](#)

[194.Pier E23 Retrofit Details No. 2](#)

[195.Pier E23 Retrofit Details No. 3](#)

[196.Span E17-E22 Verticals L0-U0 \(North\)](#)

[197.Span E17-E22 Verticals L0-U0 \(South\)](#)

[198.Span E17-E21 Verticals L8-U8 \(North\)](#)

[199.Span E17-E21 Verticals L8-U8 \(South\)](#)

[200.Span E22 Verticals L8-U8 \(North\)](#)

[201.Span E22 Verticals L8-U8 \(South\)](#)

[202.Vertical Member Retrofit Misc. Details No. 1](#)

[203.Vertical Member Retrofit Misc. Details No. 2](#)

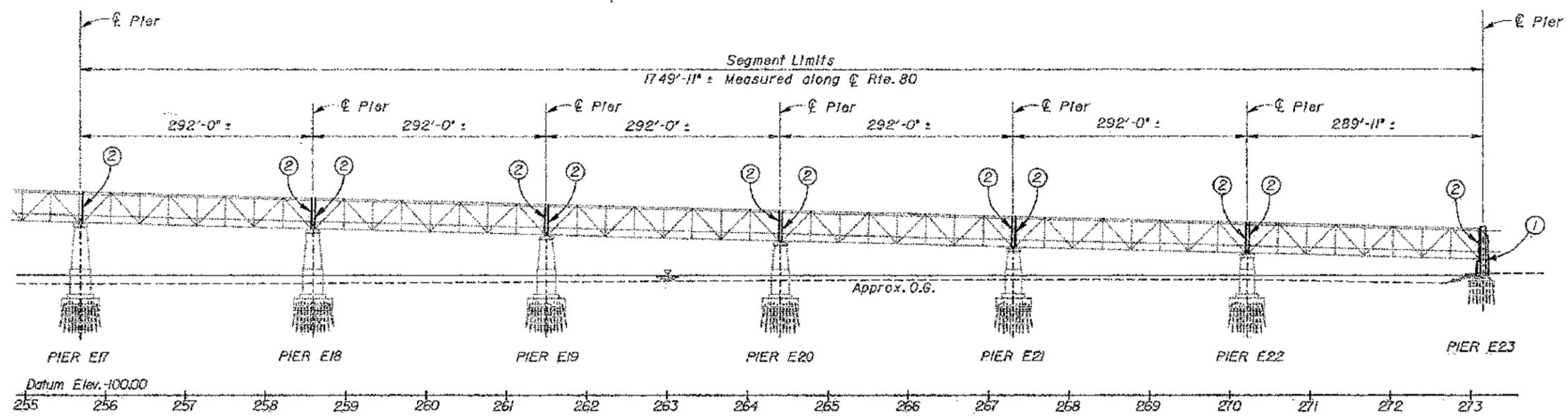
[204.Railing Modification \(North\)](#)

[205.Railing Modification \(South\)](#)

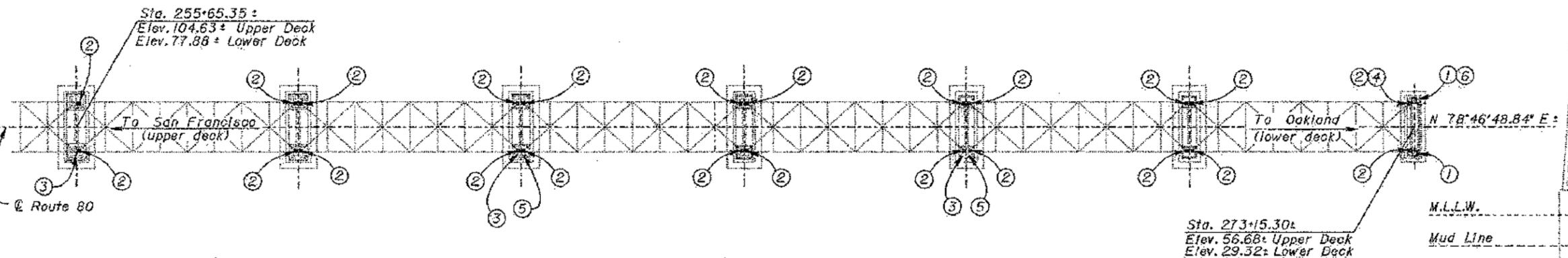
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	190	205

12-8-97
 PLANS APPROVAL DATE

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ELEVATION
1-87

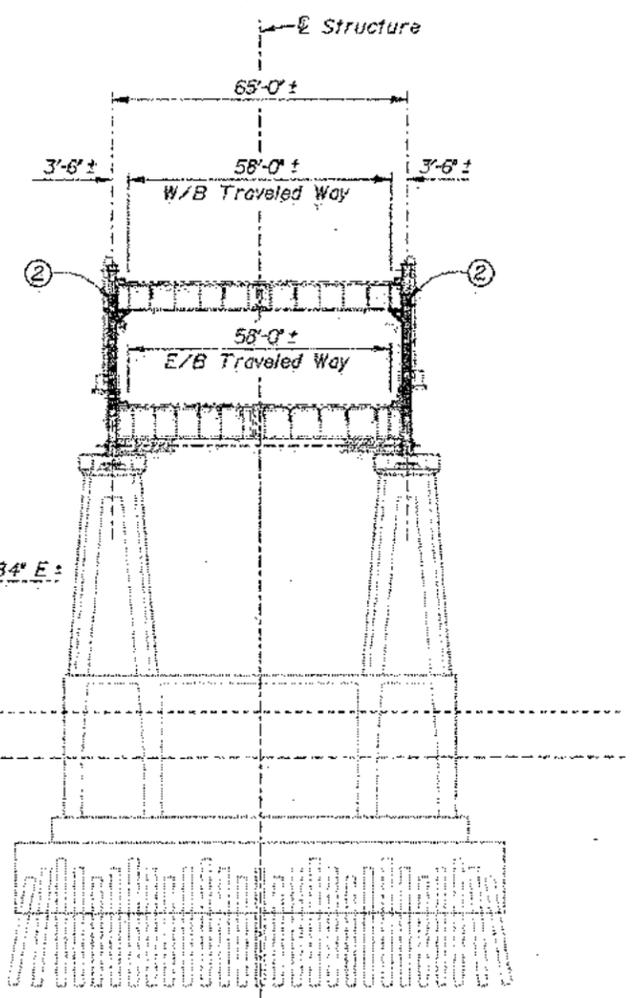


PLAN
1-80

LOCATION F-PIER E-17 TO E-23
QUANTITIES

WORK AREA MONITORING	LUMP SUM
BRIDGE REMOVAL (PORTION), LOCATION F	LUMP SUM
STRUCTURAL CONCRETE, BRIDGE	83 CY
DRILL AND BOND DOWEL	665 LF
CORE AND PRESSURE GROUT DOWELS	126 LF
BAR REINFORCING STEEL (BRIDGE)	19,450 LB
FURNISH STRUCTURAL STEEL (BRIDGE)	180,800 LB
ERECT STRUCTURAL STEEL (BRIDGE)	180,800 LB
CLEAN AND PAINT STRUCTURAL STEEL	LUMP SUM
SPOT BLAST CLEAN AND PAINT UNDERCOAT	3,500 SQ.FT.

- LEGEND**
- Indicates Existing Structures
 - Indicates New Construction
 - ① Concrete Pier Retrofit
 - ② Vertical Member Retrofit
 - ③ Remove and Replace Ladder
 - ④ 12" Ø Pipe Relocation
 - ⑤ Modify Platform
 - ⑥ Relocate Ladder



Note: Pier E18 shown, Pier E17, Pier E19 thru Pier E22 similar. For E23 see "Pier E23 Retrofit Details No.1"

TYPICAL SECTION
1-20

SAN FRANCISCO BAY

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

Note: For "General Notes" see "Index to Plans" sheet.

DESIGN ENGINEER
Ray Zechlin

DESIGN	BY ET Zechlin	4-97	CHECKED Pate Solh	5-97		
DETAILS	BY ML Graves	4-97	CHECKED ET Zechlin	5-97	LAYOUT	BY
QUANTITIES	BY Pate Solh	5-97	CHECKED Stephen Hess	5-97	SPECIFICATIONS	BY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN

BRIDGE NO. 33-0025
POST MILE 1.2
SAN FRANCISCO - OAKLAND BAY BRIDGE
GENERAL PLAN

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alq	80	7.8/8.9, 0.0/1.1	191	205

INDEX TO PLANS

SHEET NO.	TITLE
1.	GENERAL PLAN
2.	INDEX TO PLANS
3.	VERTICAL MEMBER RETROFIT MISC. NOTES
4.	PIER E23 RETROFIT DETAILS NO. 1
5.	PIER E23 RETROFIT DETAILS NO. 2
6.	PIER E23 RETROFIT DETAILS NO. 3
7.	SPAN E17 TO E22 VERTICALS L0-U0 NORTH
8.	SPAN E17 TO E22 VERTICALS L0-U0 SOUTH
9.	SPAN E17 TO E21 VERTICALS L8-U8 NORTH
10.	SPAN E17 TO E21 VERTICALS L8-U8 SOUTH
11.	SPAN E22 VERTICALS L8-U8 NORTH
12.	SPAN E22 VERTICALS L8-U8 SOUTH
13.	VERTICAL MEMBER RETROFIT MISC. DETAILS NO. 1
14.	VERTICAL MEMBER RETROFIT MISC. DETAILS NO. 2
15.	RAILING MODIFICATION (NORTH)
16.	RAILING MODIFICATION (SOUTH)

GENERAL NOTES

- All new connection bolts shall be high strength bolts and shall conform to ASTM A325 bearing type unless otherwise noted in the plans. All high strength bolts in standard size holes shall be furnished with one washer beneath the turning element. All high strength bolts in oversized holes shall be furnished with two hardened washers (conforming to ASTM F436), with one washer beneath the bolt and with one washer beneath the nut. Heads of all bolts shall be on the outside face of the member as practical, unless otherwise noted. Bolt threads shall be excluded from the shear planes.
- Maintenance platform & ladders, interfering with the new construction not shown in Road Plans shall be temporarily removed as required and reinstalled as approved by the Engineer.
- Drain pipes to be removed as required for retrofit and reinstalled as approved by Engineer.
- For utilities and highway facilities, such as air, water and electrical utility relocation, see Road Plans.
- For traffic controls, see Road Plans.
- The following symbols appear on Plan Detail sheets. They relate to various rivet replacement, drilled hole requirements, bolt/rod/stud sizes etc., which are specified. The same symbol (i.e., Δ) may indicate a different requirement on a different sheet. Each sheet shall be a stand-alone sheet relative to symbols given in the legend and work specified.



Eck T. Zechlin
REGISTERED ENGINEER - CIVIL
10-31-97

REGISTERED PROFESSIONAL ENGINEER
 E.T. Zechlin
 No. 52958
 Exp. 12-31-98
 CIVIL
 STATE OF CALIFORNIA

12-8-97
PLANS APPROVAL DATE

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STANDARD PLANS DATED JULY 1992

A10A ABBREVIATIONS

GENERAL NOTES

LOAD AND RESISTANCE FACTOR DESIGN

DESIGN:	1994 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND SAN FRANCISCO-OAKLAND BAY BRIDGE WEST SPANS SEISMIC RETROFIT DESIGN CRITERIA
REINFORCED CONCRETE (NEW)	GRADE 60, ASTM A706 $f_y = 60,000$ psi $f'_c = 3,250$ psi
REINFORCED CONCRETE (EXISTING)	$f_y = 33,000$ psi $f'_c = 5,000$ psi
STRUCTURAL STEEL (EXISTING)	Carbon Steel $f_y = 37,000$ psi $f_u = 62,000$ psi
STRUCTURAL STEEL (NEW)	ASTM A36 Unless otherwise noted $f_y = 36,000$ psi
HIGH STRENGTH BOLTS	ASTM A325 unless otherwise noted
WELDS	E70XX unless otherwise noted

MISCELLANEOUS RETROFIT ABBREVIATIONS

- F.G. = Fastener Group
- VCP = Vertical Cover Plate
- VFP = Vertical Filler Plate
- VA = Vertical Angle
- VSP = Vertical Splice Plate
- VPCP = Vertical Perforated Cover Plate
- FBBP = Floor Beam Bracket Plate
- FBBA = Floor Beam Bracket Angle

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

INTERIM SEISMIC RETROFIT PROJECT

EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22

SAN FRANCISCO-OAKLAND BAY BRIDGE

INDEX TO PLANS

	DESIGN BY ETZechlin 4-97	CHECKED Pete Soln 5-97	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN TOLL BRIDGE SPECIAL ANALYSIS	BRIDGE NO. 33-0025
	DETAILS BY MCraves 4-97	CHECKED ETZechlin 5-97			POST MILE 1.2
	QUANTITIES BY Pete Soln 5-97	CHECKED Stephen Haas 5-97			

DIST.	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alq	80	7.8/8.9, 0.0/1.1	192	205
<i>Earl J. Zeltos</i> REGISTERED ENGINEER - CIVIL 10-31-97					
12-8-97					
PLANS APPROVAL DATE					

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LOCAL SEQUENCE FOR RETROFIT OF VERTICAL MEMBERS

1. Removal and support details shall be shown in working drawings and approved by the Engineer prior to disturbing existing facilities.
2. Remove ladders, brackets, railings, platforms and other items attached to the vertical if they interfere with the retrofit work. Provide temporary supports for utilities where necessary.
3. Drill all new 1/4" dia. holes on the inside flanges of the vertical.
4. Remove all rivets in Fastener Group "A" and the upper six rivets in Fastener Group "C", and replace with 1.0" dia. A325 H.S. bolts.
5. Remove all rivets in Fastener Group "B" and the upper six rivets in Fastener Group "D", and replace with 1.0" dia. A325 H.S. bolts.
6. Remove the lower six rivets in Fastener Group "C" and the lower six rivets in Fastener Group "D", and replace with 1.0" dia. A325 H.S. bolts.
7. Remove all rivets in Fastener Groups "E1", "E2" and "E3". Remove existing floor beam bracket.
8. Remove all rivets in Fastener Group "F".
9. Remove all rivets in Fastener Groups "H1" and "H2". Remove 3/4" plate between vertical and lower floor beam.
10. Place inside cover plate VCP-1, filler plate VFP-1, angle VA-1 W. Insert and tighten 1" dia. A325 H.S. bolt Fastener Groups "F", "H1" and "K1W".
11. Remove all rivets in Fastener Group "G".
12. Place angle VA-1 E. Insert and tighten 1" dia. A325 H.S. bolt Fastener Groups "G", "H2" and "K1E".
13. Place bracket assembly. Insert and tighten 1" dia. A325 H.S. bolt Fastener Groups "E1", "E2" and "E3".
14. Drill all new 1/4" dia. holes on the outside flanges of the vertical.
15. Remove all rivets in Fastener Groups.
16. Place splice plates VSP-1 W and VSP-2 W. Insert and tighten 1" dia. A325 H.S. bolt Fastener Group "I".
17. Remove all rivets in Fastener Groups.
18. Place splice plates VSP-1 E and VSP-2 E. Insert and tighten 1" dia. A325 H.S. bolt Fastener Group "J".
19. Place outside cover plate VCP-2, filler plate VFP-2, angle VA-2 W and VA-2 E. Insert and tighten 1" dia. A325 H.S. bolt Fastener Groups J2, J2, K2E and K2W.
20. Weld end stiffener plates to top and bottom of angles pairs VA-1 W / VA-1 E and VA-2 W / VA-2 E with 1/4" fillet weld.
21. Place perforated plates VPCP W and VPCP E. Insert and tighten 1" dia. A325 H.S. bolts along entire length of both plates.

GLOBAL SEQUENCE FOR VERTICAL MEMBER RETROFIT

1. Work may be performed on both vertical members simultaneously on one side of each 288 ft. truss. Work may be performed on all trusses simultaneously.
2. Work may not proceed on the North and South sides simultaneously. Before work activities begin on the second side, all work on the first side must be completed. For the work to be considered complete, the 21-step sequence must be completed on both vertical members on the same side of the truss.
3. Before a construction recess, longer than 6 hours, all existing rivets that have been removed must be replaced with new bolts, and all new holes must be plugged with new bolts.

NOTE:

If conflicts arise in the local sequence stated above, the Contractor shall submit an explanation and a proposed alternative to the Engineer, in writing, for approval prior to altering the sequence.

NOTE:
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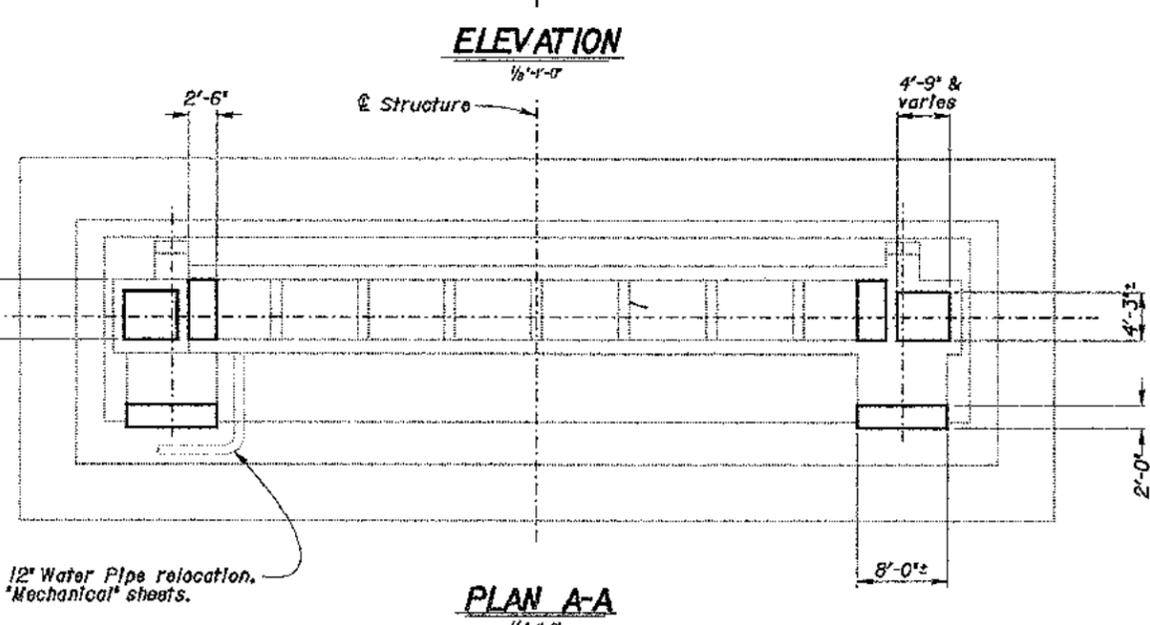
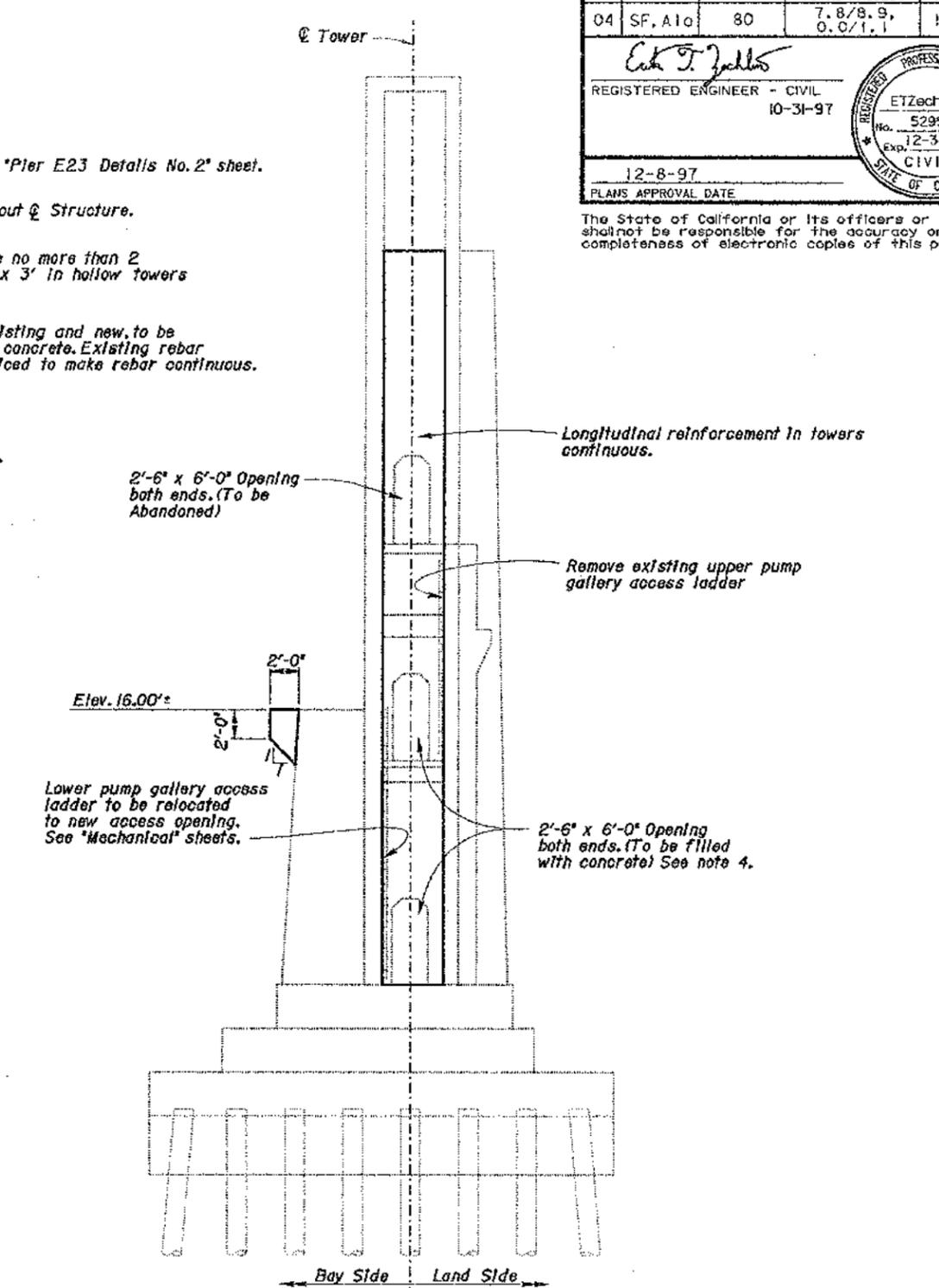
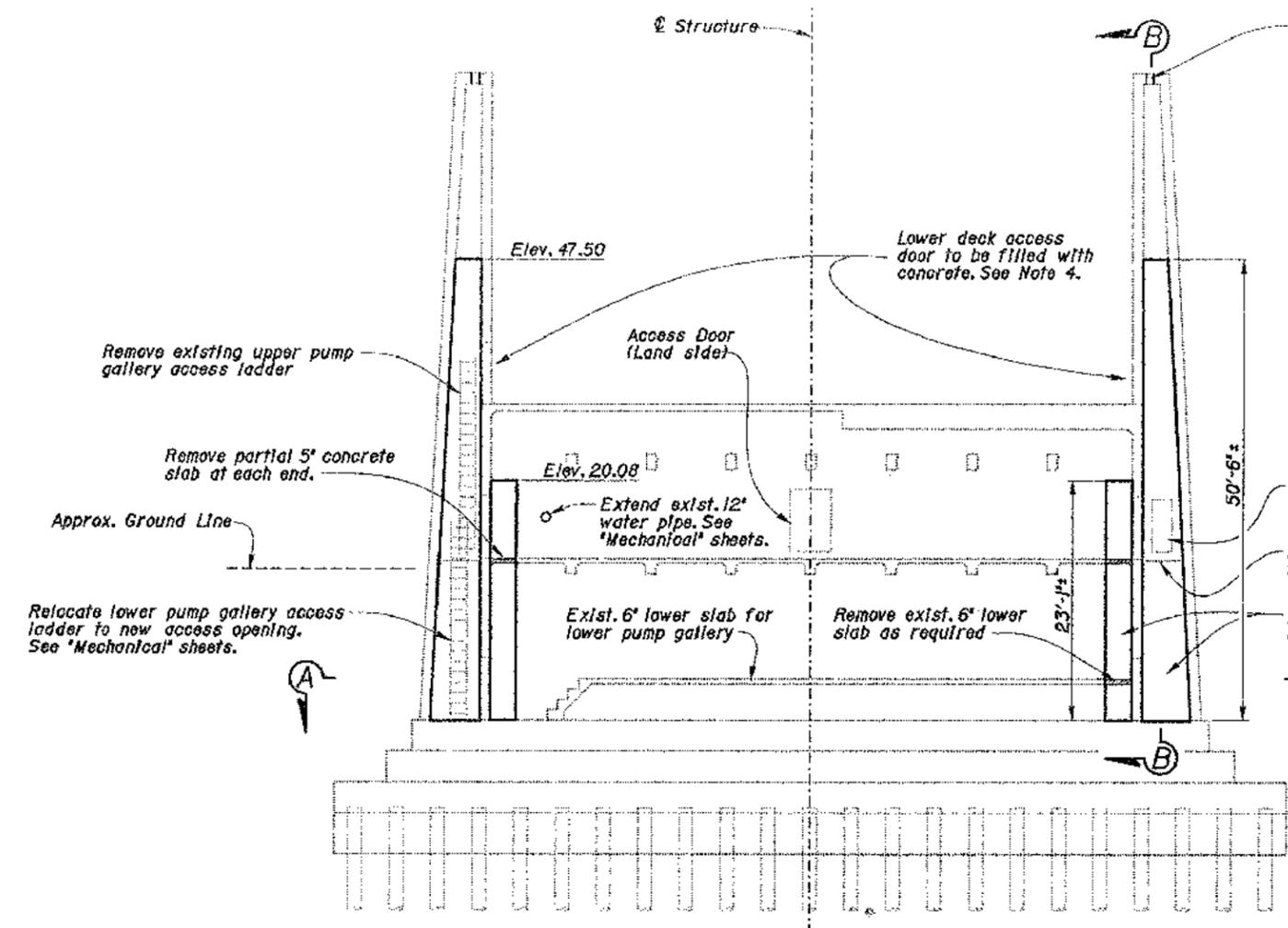
INTERIM SEISMIC RETROFIT PROJECT	
EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22	
SAN FRANCISCO - OAKLAND BAY BRIDGE	
VERTICAL MEMBER RETROFIT MISCELLANEOUS NOTES	

DESIGN BY: Gerrard Hight 10-96	CHECKED BY: Stephen Haas 3-97	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES	PROJ. NO. 33-0025
DETAILS BY: M. Graves 3-97	CHECKED BY: Stephen Haas 3-97		STRUCTURE DESIGN	POST MILE 1.2
QUANTITIES BY: Stephen Haas 3-97	CHECKED BY: Patrick Watz 3-97		TOLL BRIDGE SPECIAL ANALYSIS	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			CU 04 EA 043001	REVISIONS

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF. A10	80	7.8/8.9, 0.0/1.1	193	205

E.T. Zechlin
 REGISTERED ENGINEER - CIVIL
 10-31-97
 No. 52958
 Exp. 12-31-98
 CIVIL
 STATE OF CALIFORNIA
 12-8-97
 PLANS APPROVAL DATE

- NOTES:
1. For 'Section B-B' see 'Pier E23 Details No. 2' sheet.
 2. Dimensions similar about \odot Structure.
 3. Contractor may provide no more than 2 access openings 2'-6" x 3' in hollow towers for construction.
 4. All access openings, existing and new, to be filled with reinforced concrete. Existing rebar to be exposed and spliced to make rebar continuous.



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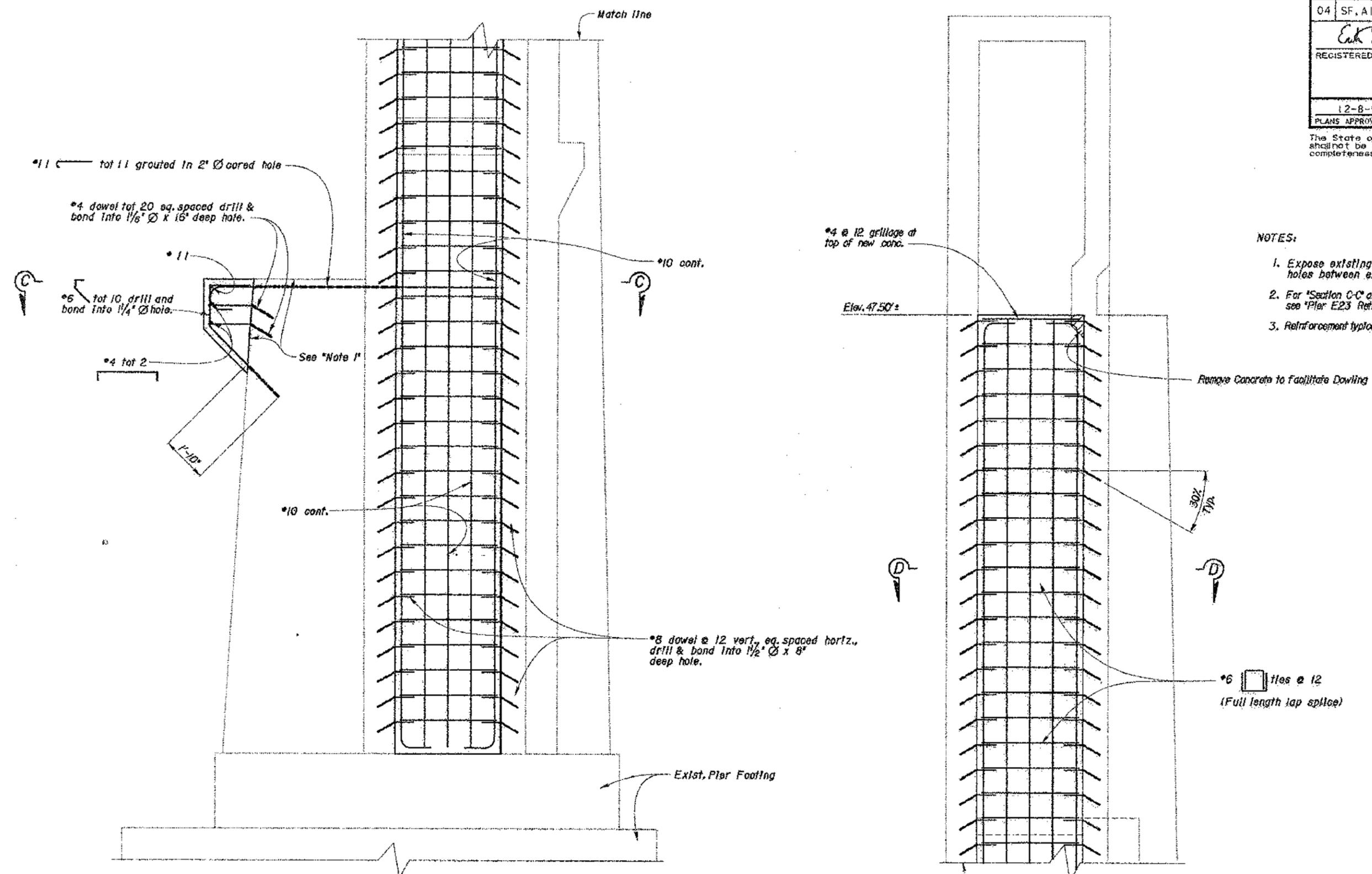
INTERIM SEISMIC RETROFIT PROJECT
 EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22
 SAN FRANCISCO-OAKLAND BAY BRIDGE
 PIER E23 RETROFIT DETAILS NO. 1

DESIGN	BY Pete Soin	3-97	CHECKED Stephen Haas	3-97	STATE OF CALIFORNIA DIVISION OF STRUCTURES STRUCTURE DESIGN DEPARTMENT OF TRANSPORTATION TOLL BRIDGE SPECIAL ANALYSIS	BRIDGE NO.	33-0025
DETAILS	BY M.Graves	3-97	CHECKED Pete Soin	5-97		POST MILE	1.2
QUANTITIES	BY Pete Soin	5-97	CHECKED Stephen Haas	3-97			

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF. Alameda	80	7.8/8.9, 0.0/1.1	194	205

Earl J. Zechlin
REGISTERED ENGINEER - CIVIL
10-31-97
12-8-97
PLANS APPROVAL DATE

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- NOTES:
1. Expose existing reinforcement to locate cored holes between existing reinforcement.
 2. For Section C-C and Section D-D see Plan E23 Retrofit Detail No. 3 sheet.
 3. Reinforcement typical about C Structure

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

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

DESIGN				CHECKED				BRIDGE NO.				INTERIM SEISMIC RETROFIT PROJECT			
BY Pete Soln 5-97				BY Stephen Hoas 5-97				33-0028				EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22			
DETAILS				CHECKED				POST MILE				SAN FRANCISCO-OAKLAND BAY BRIDGE			
BY McGroves 4-97				BY Pete Soln 5-97				1.2				PIER E23 RETROFIT DETAILS NO. 2			
QUANTITIES				CHECKED				DISREGARD PRINTS BEARING EARLIER REVISION DATES							
BY Pete Soln 5-97				BY Stephen Hoas 5-97				CU 04 EA 043001							

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF STRUCTURES
STRUCTURE DESIGN
TOLL BRIDGE SPECIAL ANALYSIS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

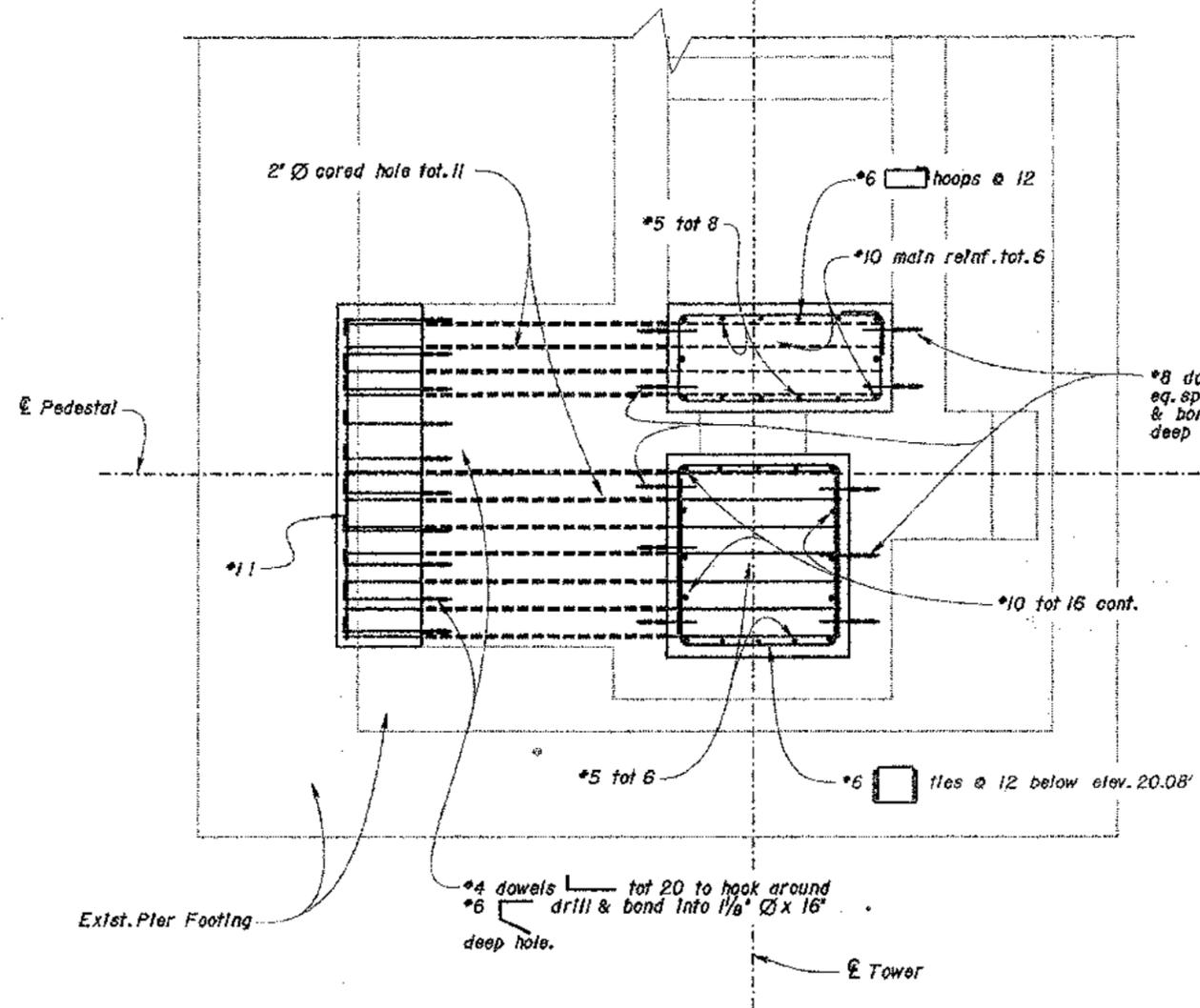
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TIME PLOTTED: 10:08

DISI.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF. A10	80	7.8/8.9, 0.0/1.1	195	205

E. J. Zalkin
 REGISTERED ENGINEER - CIVIL
 10-31-97
 12-8-97
 PLANS APPROVAL DATE

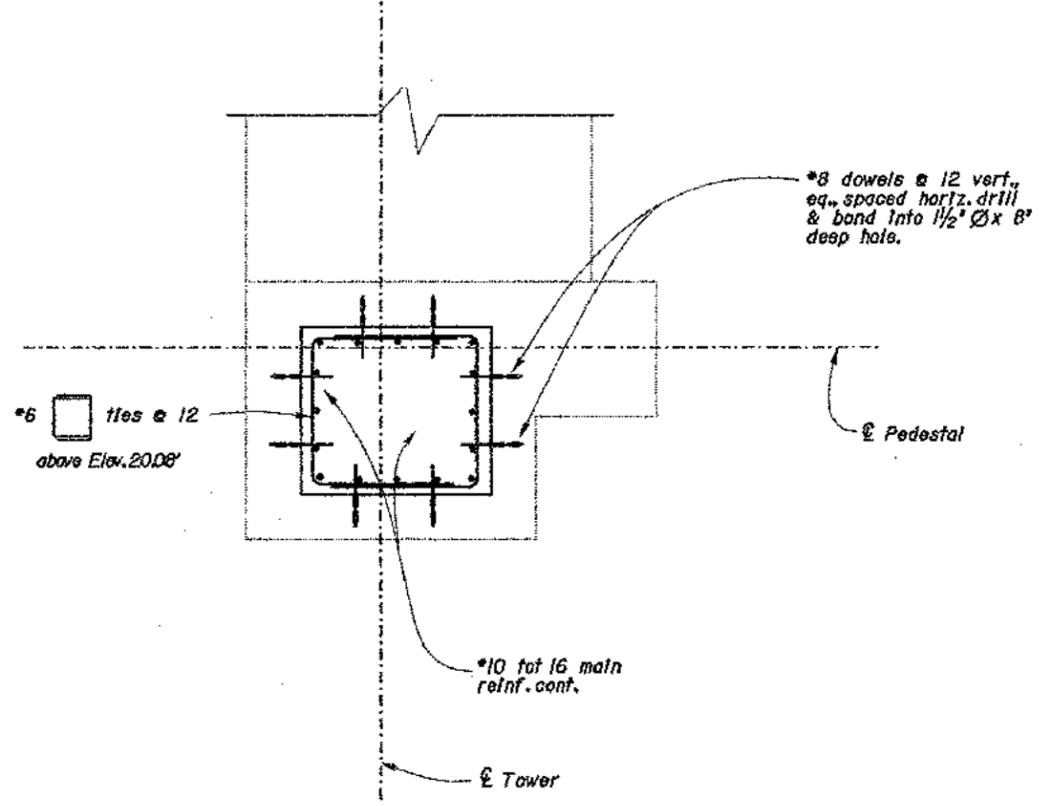
ETZechlin
 No. 52958
 Exp. 12-31-98
 CIVIL
 STATE OF CALIFORNIA

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

Notes
 1. Pier Reinforcement typical about \bar{C} Structure.



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

NOTE:
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DESIGN	BY Pete Soln	5-97	CHECKED Stephen Haas	5-97
DETAILS	BY MGraves	4-97	CHECKED Pete Soln	5-97
QUANTITIES	BY Pete Soln	5-97	CHECKED Stephen Haas	5-97

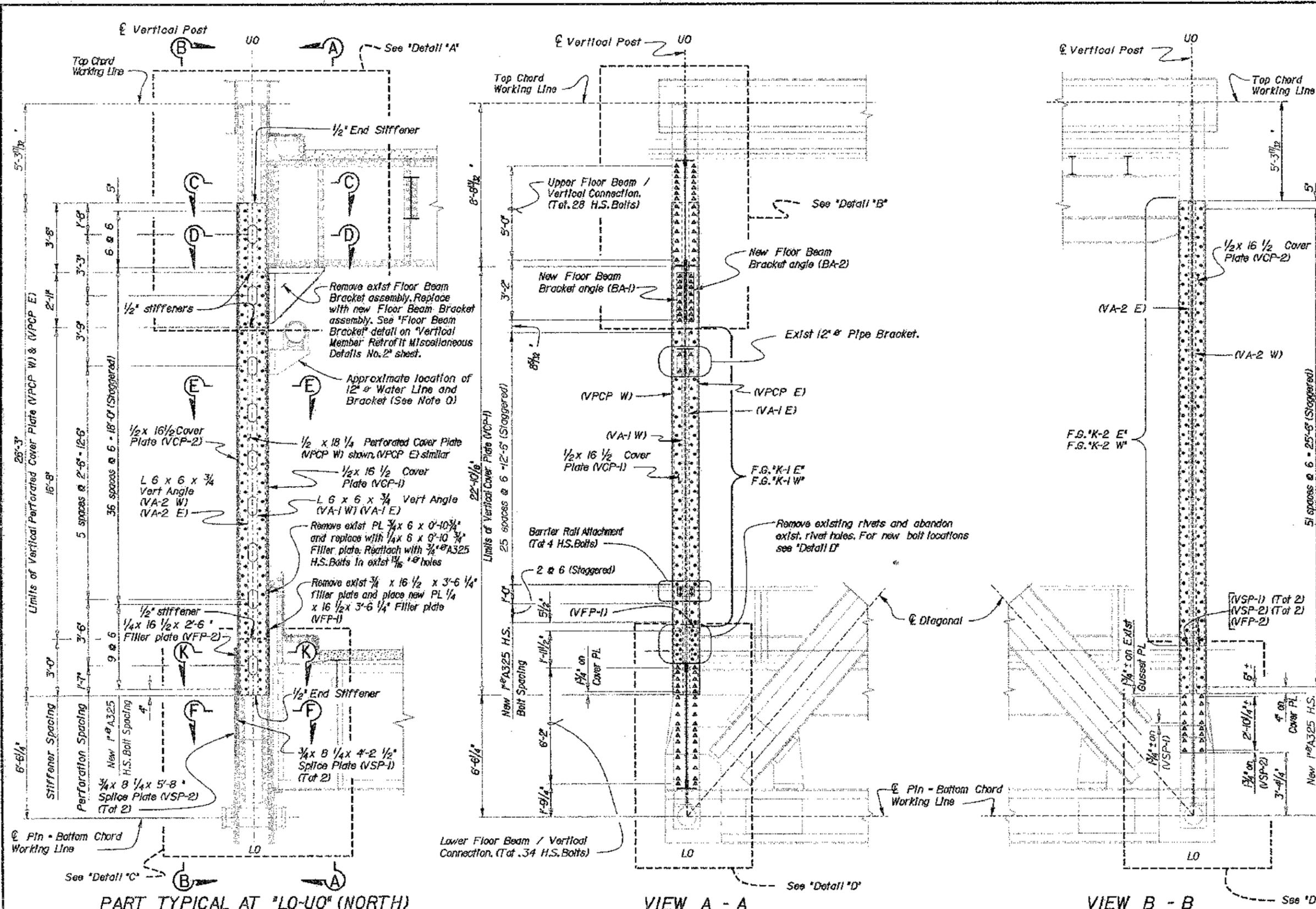
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF STRUCTURES
 STRUCTURE DESIGN
 TOLL BRIDGE SPECIAL ANALYSIS

BRIDGE NO.	33-0025
POST MILE	1.2

INTERIM SEISMIC RETROFIT PROJECT
 EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22
 SAN FRANCISCO-OAKLAND BAY BRIDGE
 PIER E23 RETROFIT DETAILS NO. 3

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF. A10	80	7.8/8.9, 0.0/1.1	196	205

E. J. Zechlin
 REGISTERED ENGINEER - CIVIL
 10-31-97
 12-8-97
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- Notes**
- For "Detail A", "B", "C", "D", "E" and Fastener Group details & dimensions not shown, see "Vertical Member Retrofit Miscellaneous Details No. 1" sheet.
 - For "Section C-C", "D-D", "E-E", "F-F" & "K-K" see "Vertical Member Retrofit Miscellaneous Details No. 2" sheet.
 - F.G. = Fastener Group.
- Note O**
- The detachment and reattachment of exist 12" Water Line and bracket and temporary support structure is subject to approval by the Engineer.

- LEGEND**
- Indicates Existing Structure.
 - Indicates New Construction.
 - Indicates Existing 1" Rivet.
 - △ Indicates existing 1" rivet to be replaced with new 1" H.S. Bolt in exist hole.
 - Indicates New 1" H.S. Bolt in new 1/4" hole unless otherwise noted.
 - ⊙ Indicates existing 3/4" rivet to be replaced with new 3/4" H.S. Bolt in exist hole unless otherwise noted.

NOTE:
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DESIGN		BY Gerrard Hight	4-97	CHECKED Phil Lutz	5-97	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN TOLL BRIDGE SPECIAL ANALYSIS	BRIDGE NO. 33-0025 POST MILE I.2	INTERIM SEISMIC RETROFIT PROJECT	
DETAILS		BY J. Thorne	5-97	CHECKED Steve Heas	5-97				EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22	
QUANTITIES		BY Steve Heas	5-97	CHECKED Phil Lutz	5-97				SAN FRANCISCO-OAKLAND BAY BRIDGE	
						SAN FRANCISCO-OAKLAND BAY BRIDGE		SPAN E17 TO E22 VERTICALS LO-UO NORTH		
DISBURSED PRINTS (GLARING EARLIER REVISION DATED)						CU 04 EA 043001		SHEET 7 OF 16		

DATE PLOTTED: 03/09/97
 TIME PLOTTED: 10:09

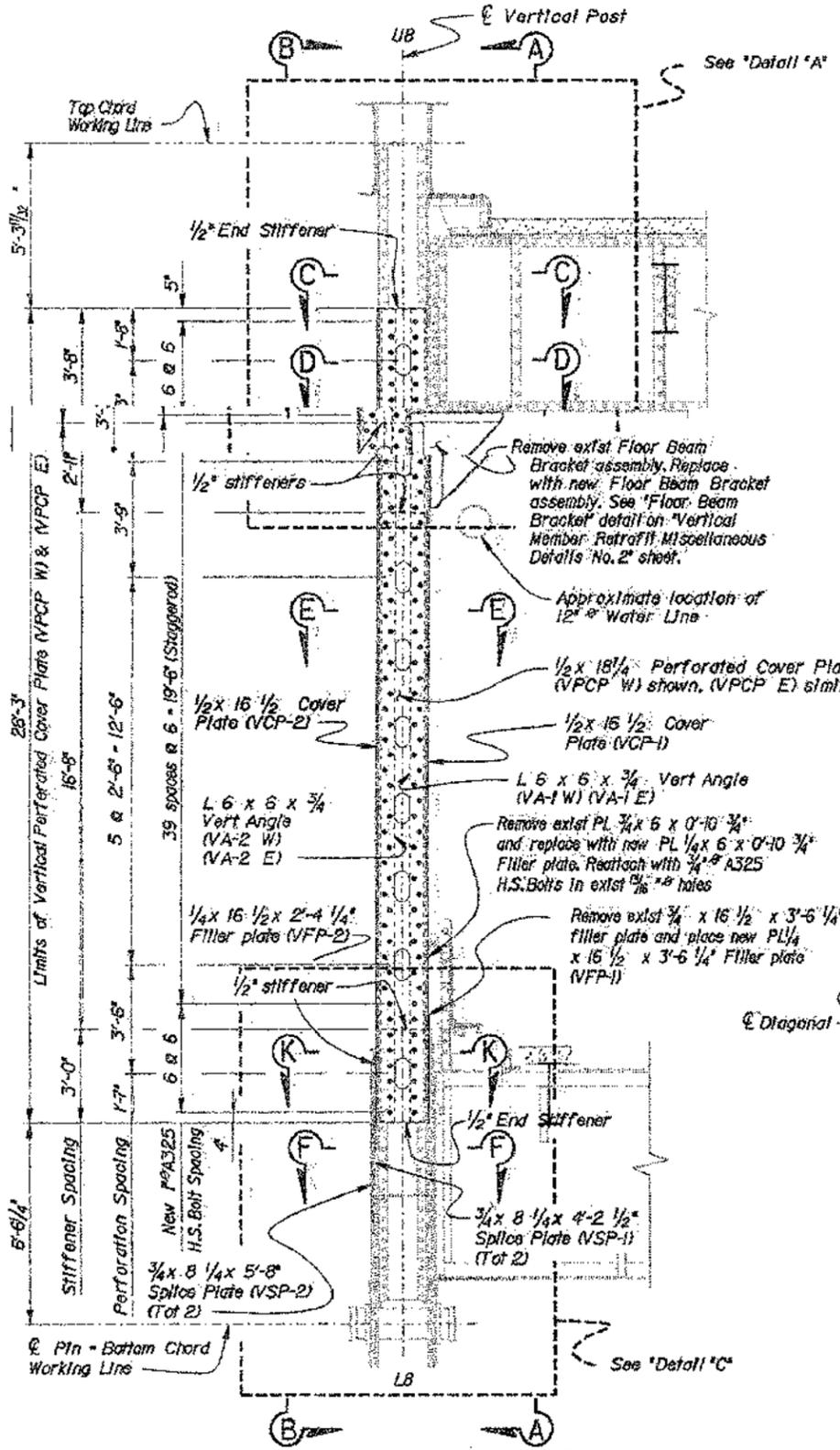
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF. A10	80	7.8/8.9/0.0/1.1	198	205

E. J. Zedler
 REGISTERED ENGINEER - CIVIL
 10-31-97
 12-8-97
 PLANS APPROVAL DATE

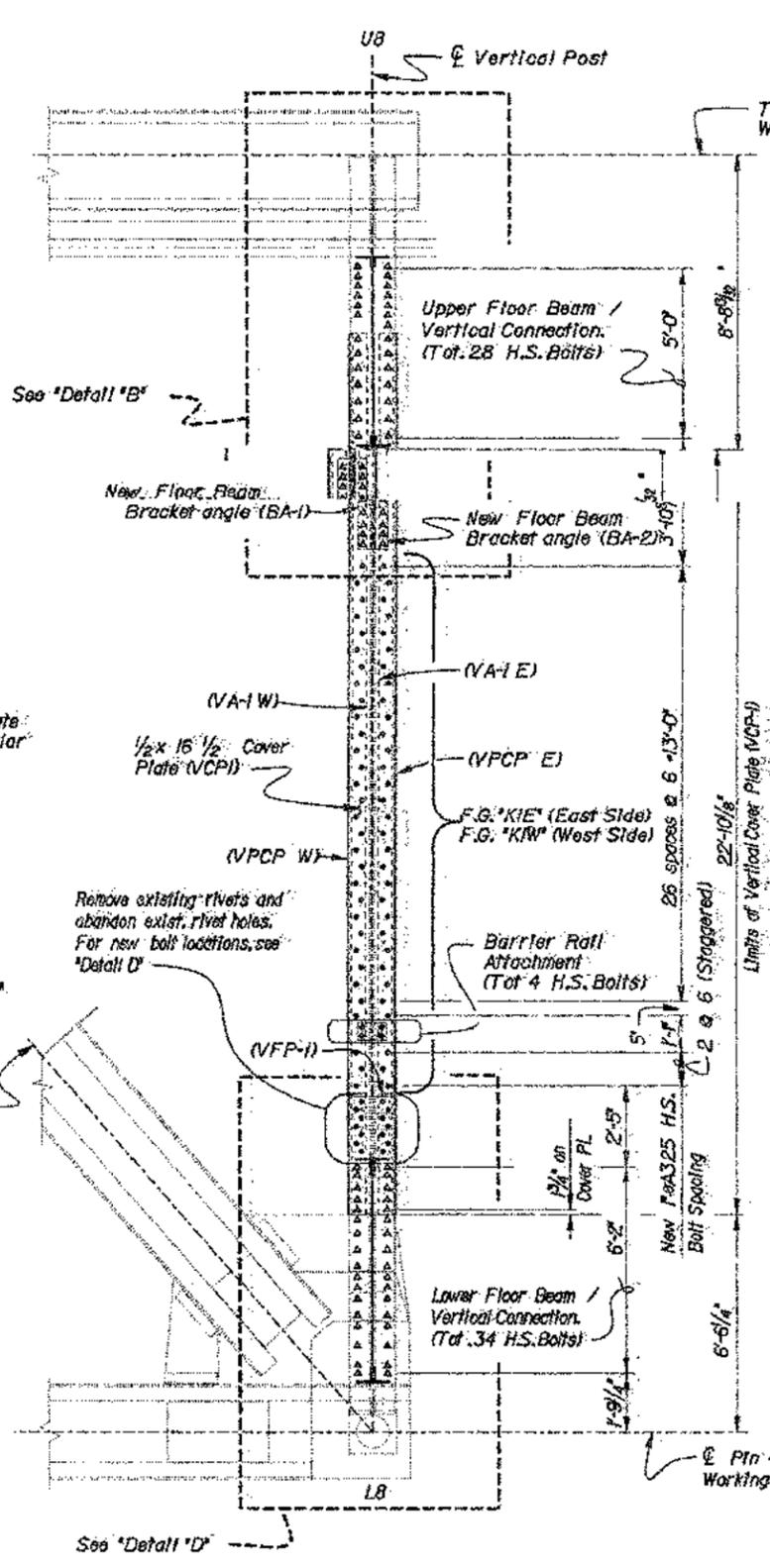
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- Notes**
- For 'Detail' 'A', 'B', 'C', 'D', 'E' and Fastener Group details & dimensions not shown, see 'Vertical Member Retrofit Miscellaneous Details' No. 2 sheet.
 - For 'Section' 'C-C', 'D-D', 'E-E', 'F-F' & 'K-K' see 'Vertical Member Retrofit Miscellaneous Details' No. 2 sheet.
 - F.G. = Fastener Group.

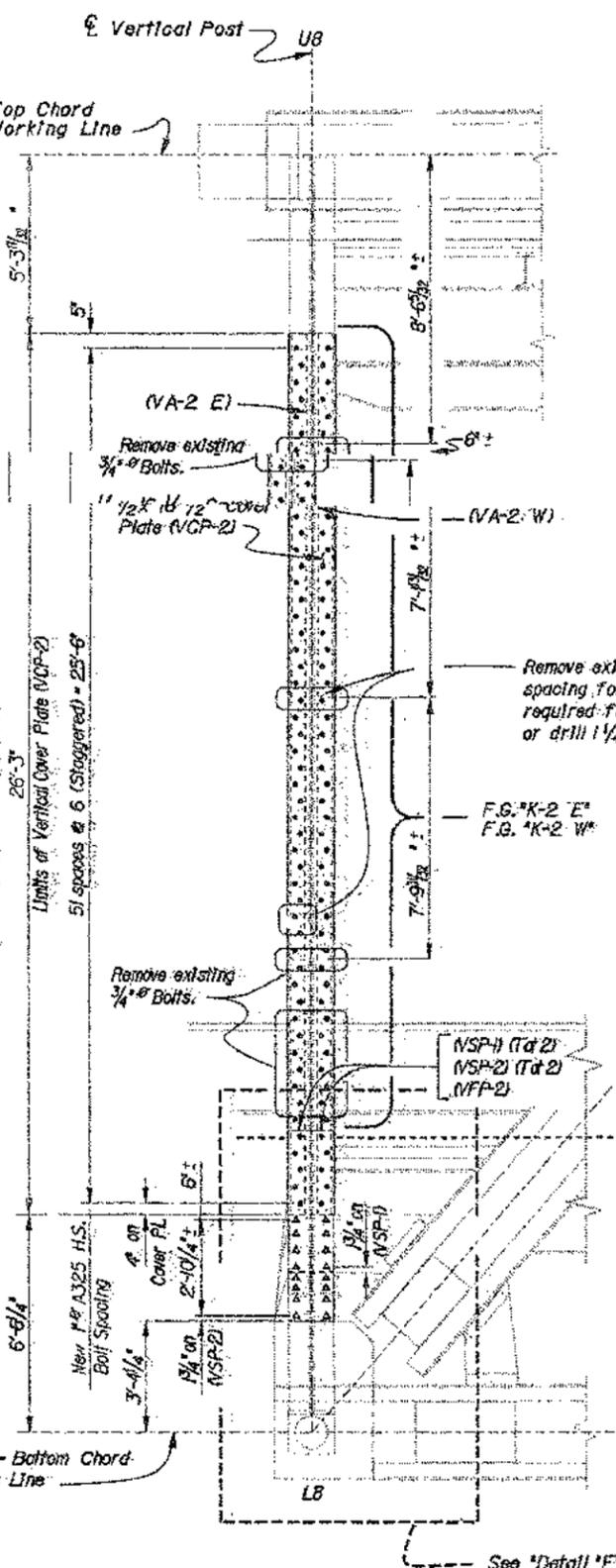
- LEGEND**
- Indicates Existing Structure.
 - Indicates New Construction.
 - Indicates Existing 1" Rivet.
 - △ Indicates existing 1" rivet to be replaced with new 1" H.S. Bolt in exist hole.
 - Indicates New 1" H.S. Bolt in new 1 1/4" hole unless otherwise noted.
 - ⊙ Indicates existing 3/4" rivet to be replaced with new 3/4" H.S. Bolt in exist hole unless otherwise noted.



PART TYPICAL AT 'L8-U8' (NORTH)
1/8" = 1'-0"



VIEW A - A
1/8" = 1'-0"



VIEW B - B
1/8" = 1'-0"

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

DESIGN	BY: Gerard Night	4-97	CHECKED: Phil Lutz	5-97
DETAILS	BY: Jithorn	5-97	CHECKED: Phil Lutz	5-97
QUANTITIES	BY: Stephen Hoos	5-97	CHECKED: Pat Watz	5-97

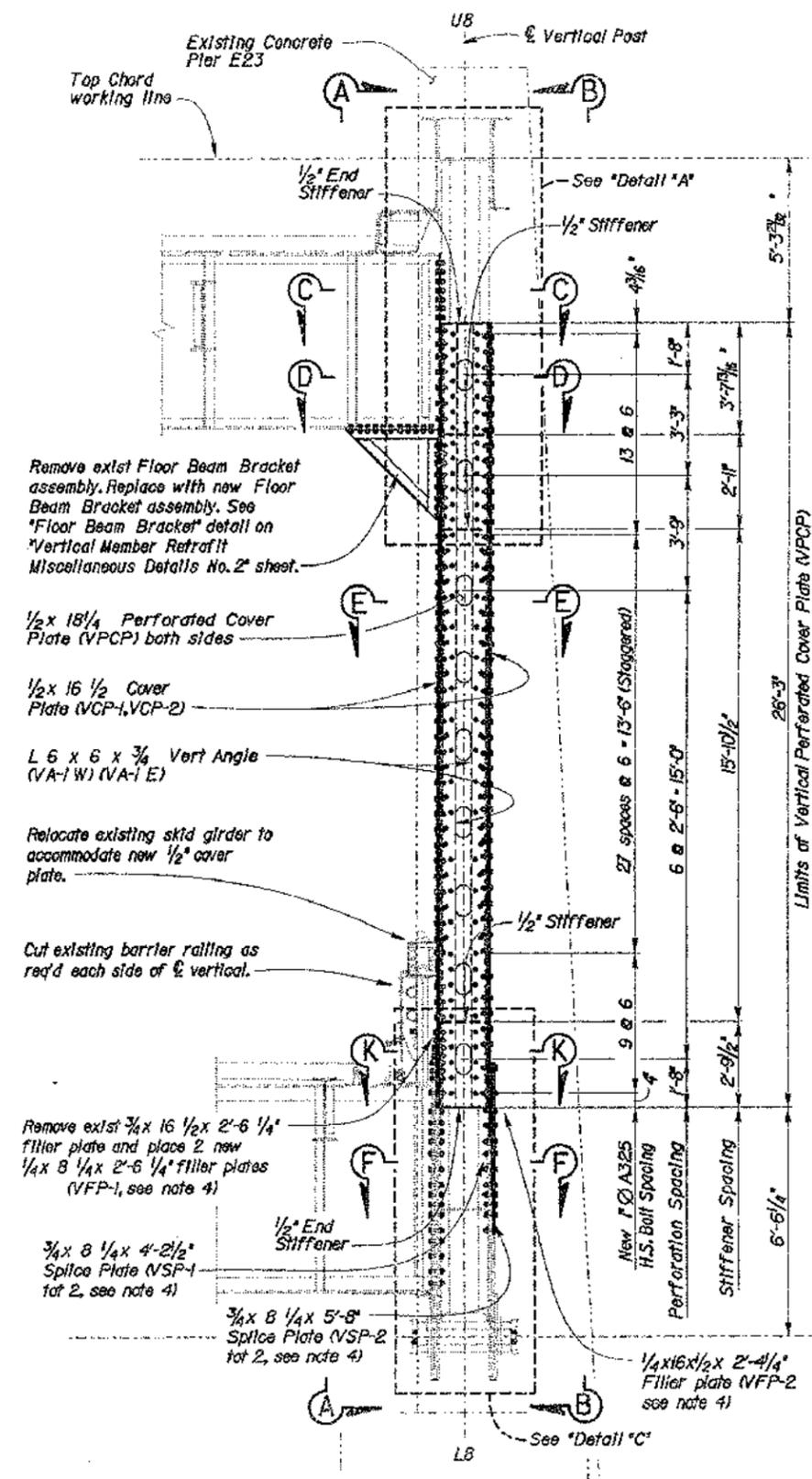
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INTERIM SEISMIC RETROFIT PROJECT
 EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22
 SAN FRANCISCO-OAKLAND BAY BRIDGE
 SPAN E17 TO E22 VERTICALS L8-U8 NORTH

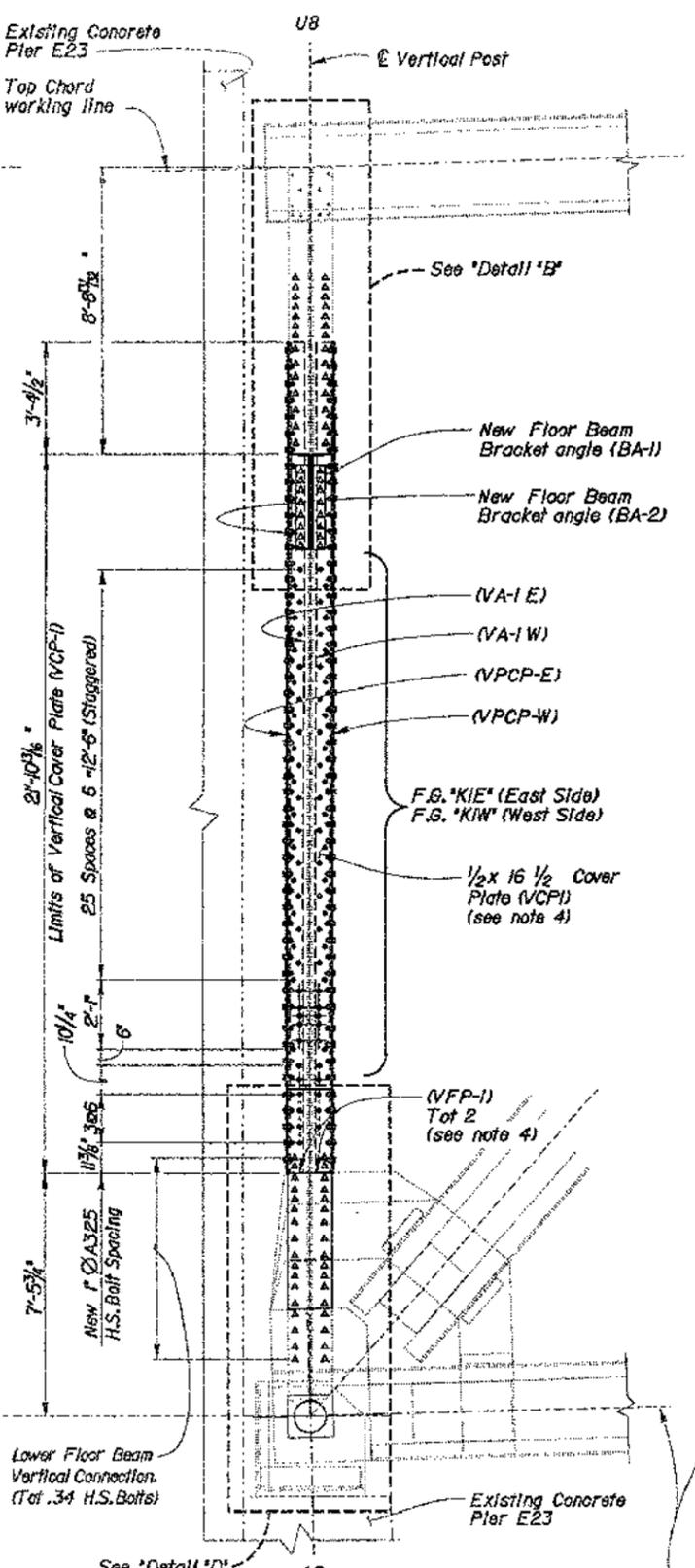
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- Notes**
- For "Detail" A, B, C, D, E and Fastener Group details and dimensions not shown, see "Vertical Member Retrofit Miscellaneous Details No. 1" sheet.
 - For "Section C-C", "D-D", "E-E" & "F-F" & "K-K" see "Vertical Member Retrofit Miscellaneous Details No. 2" sheet.
 - F.G. - Fastener Group.
 - Bottom Plate to be parallel with existing slope of 21/768. All dimensions are referenced to \mathcal{C} of Vertical post.

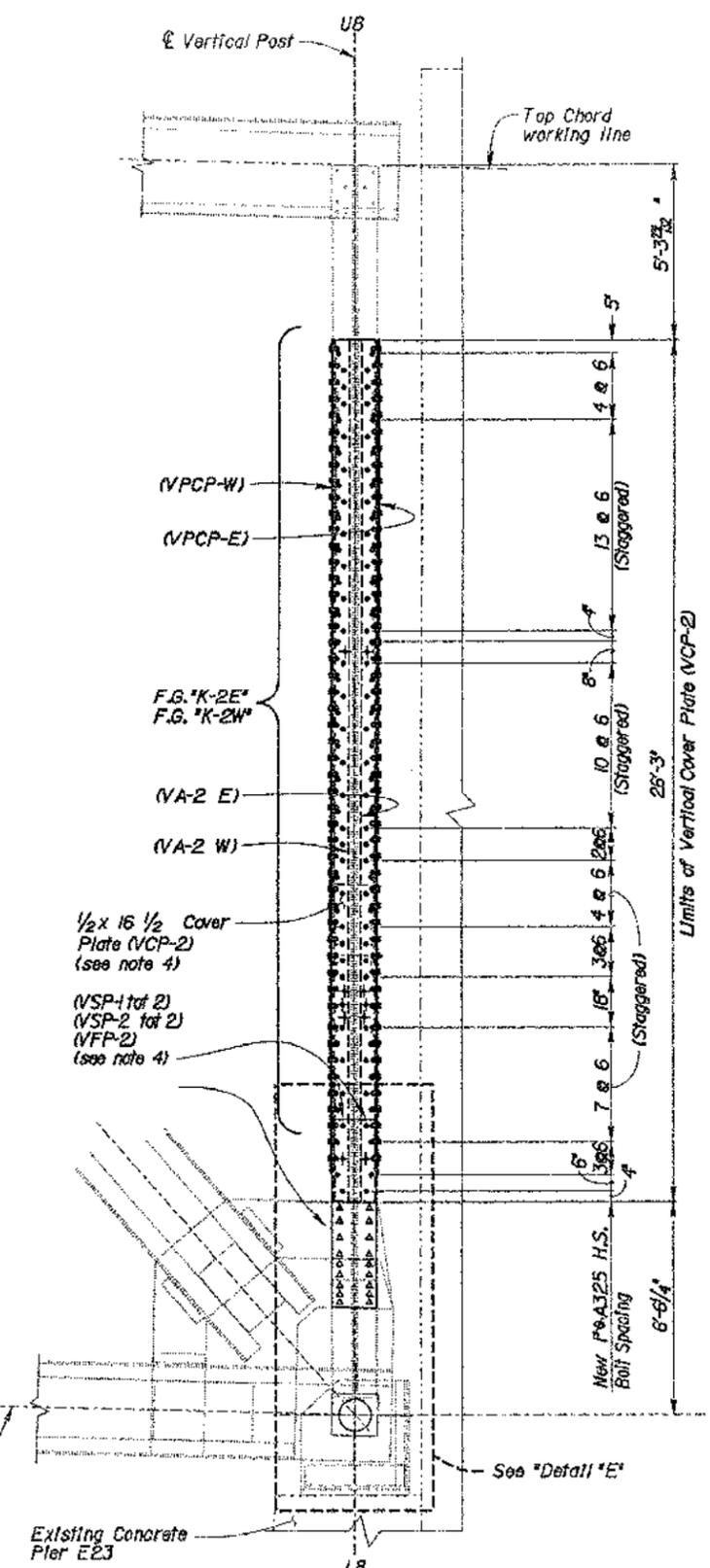
- LEGEND**
- Indicates Existing Structure.
 - Indicates New Construction.
 - Indicates Existing 1" Rivet.
 - △ Indicates existing 1" rivet to be replaced with new 1" H.S. Bolt in exist hole.
 - Indicates New 1" H.S. Bolt in new 1" hole unless otherwise noted.
 - ⊙ Indicates existing 3/4" rivet to be replaced with new 3/4" H.S. Bolt in exist hole unless otherwise noted.
 - ⊕ Indicates new 3/4" H.S. Bolt in new hole.



PART TYPICAL AT L8-U8 (SOUTH)
3/8" = 1'-0"



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



VIEW B-B
3/8" = 1'-0"

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

INTERIM SEISMIC RETROFIT PROJECT
 EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22
 SAN FRANCISCO-OAKLAND BAY BRIDGE
 SPAN E22 VERTICALS L8-U8 SOUTH

DESIGN	BY Gerrard Hight 4-97	CHECKED Pete Soln 5-97
DETAILS	BY M. Groves 4-97	CHECKED Peter Soln 5-97
QUANTITIES	BY Pete Soln 5-97	CHECKED Stephen Haas 5-97

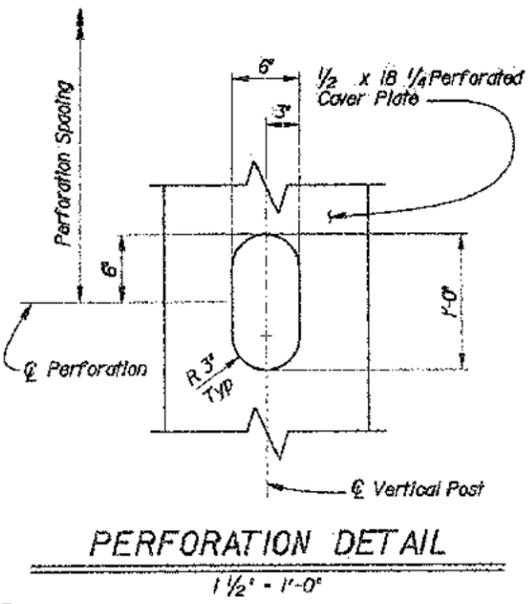
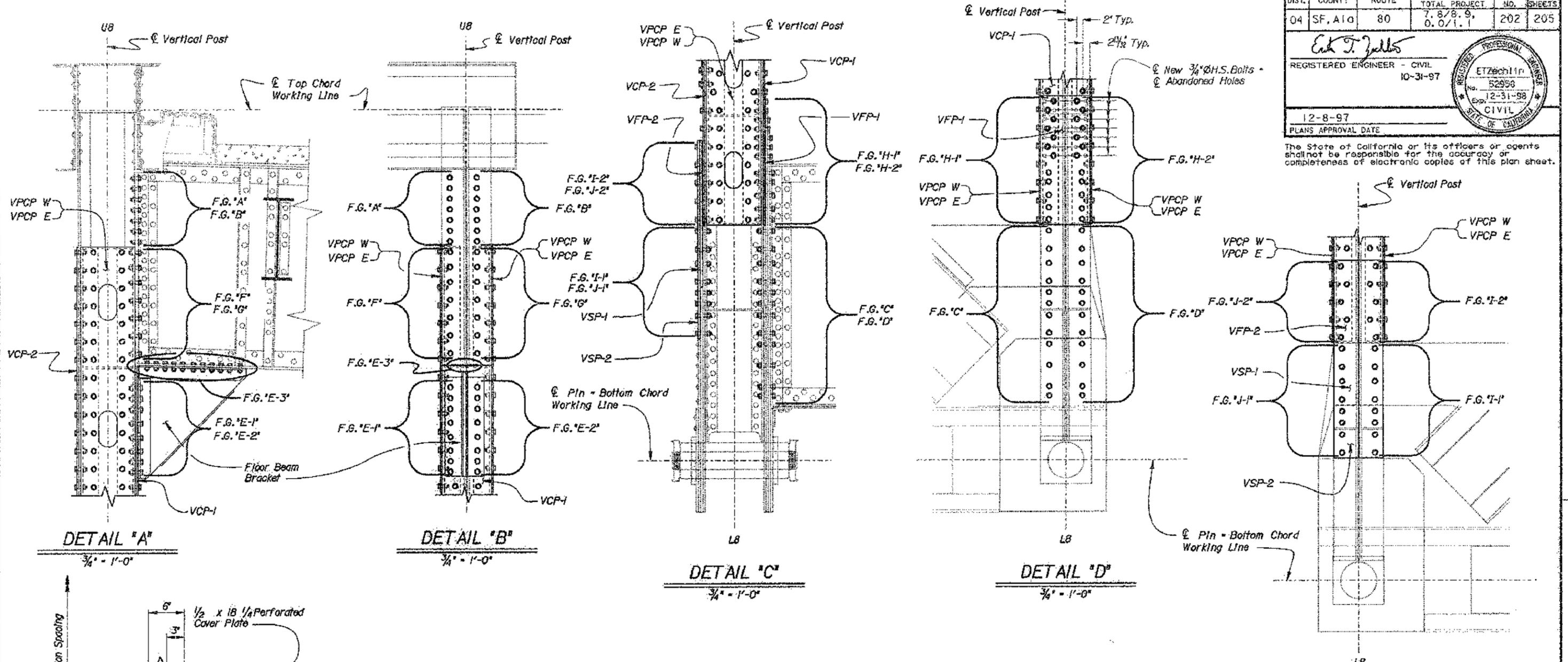
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF STRUCTURES
 STRUCTURE DESIGN
 TOLL BRIDGE SPECIAL ANALYSIS

BRIDGE NO.	33-0025
POST MILE	1.2

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
	12	16

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF. A10	80	7.8/8.9, 0.0/1.1	202	205
<i>Earl J. Zeller</i> REGISTERED ENGINEER - CIVIL No. 52956 Exp. 12-31-98 CIVIL STATE OF CALIFORNIA					
12-8-97					
PLANS APPROVAL DATE					

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Notes:
 1. Rail Removal Alternative 1: This alternative is to be used when the retrofit of the verticals requires the removal of the existing vertical C 10 X 15.3 ±, the existing horizontal C 9 X 15 ±, and the existing PL 5/16 X 30 ±. For relocation of utilities see Road Plans. Saw cut existing vertical C 10 X 15.3 ±, the existing horizontal C 9 X 15 ±, and the existing PL 5/16 X 30 ±. Remove rivets and/or bolts of Fastener Groups N and O. Remove existing vertical C 10 X 15.3 ±, the existing horizontal C 9 X 15 ±, and the existing PL 5/16 X 30 ± as a complete unit. Retrofit verticals. Reattach barrier rail, install Fastener Groups N, O, R, S, and T and reattach the existing horizontal C 9 X 15 ± to the verticals as shown in "RAILING MODIFICATION (NORTH)" sheet. All barrier railing to be reattached according to plans at the end of each work shift.

Note:
 2. Rail Removal Alternative 2: This alternative is to be used when the retrofit of the verticals requires the removal of the existing vertical C 10 X 15.3 ± and the existing horizontal C 9 X 15 ±. For utilities relocation see Road Plans. Saw cut existing vertical C 10 X 15.3 ± and the existing horizontal C 9 X 15 ±. Remove rivets and/or bolts of Fastener Group P. Remove existing vertical C 10 X 15.3 ± and the existing horizontal C 9 X 15 ±. Retrofit verticals. Reattach barrier rail, install Fastener Groups P, S, and T and reattach the existing horizontal C 9 X 15 ± to the verticals as shown in "RAILING MODIFICATION (NORTH)" sheet. All barrier railing to be reattached according to plans at the end of each work shift.

Notes:
 1. For details and dimensions not shown, see applicable Vertical Member Retrofit detail sheets for spans E-7 to E-22.
 2. Vertical angles not labeled.
 3. Details (A) thru (E) shown for LB-UB (North) other verticals similar.

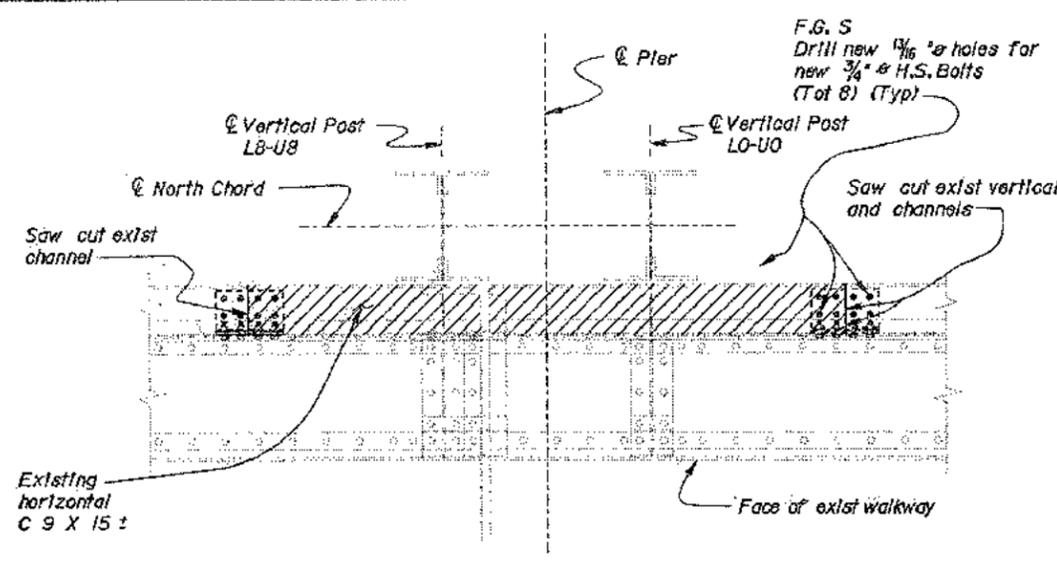
RAILING MODIFICATION ALTERNATIVE NOTES

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

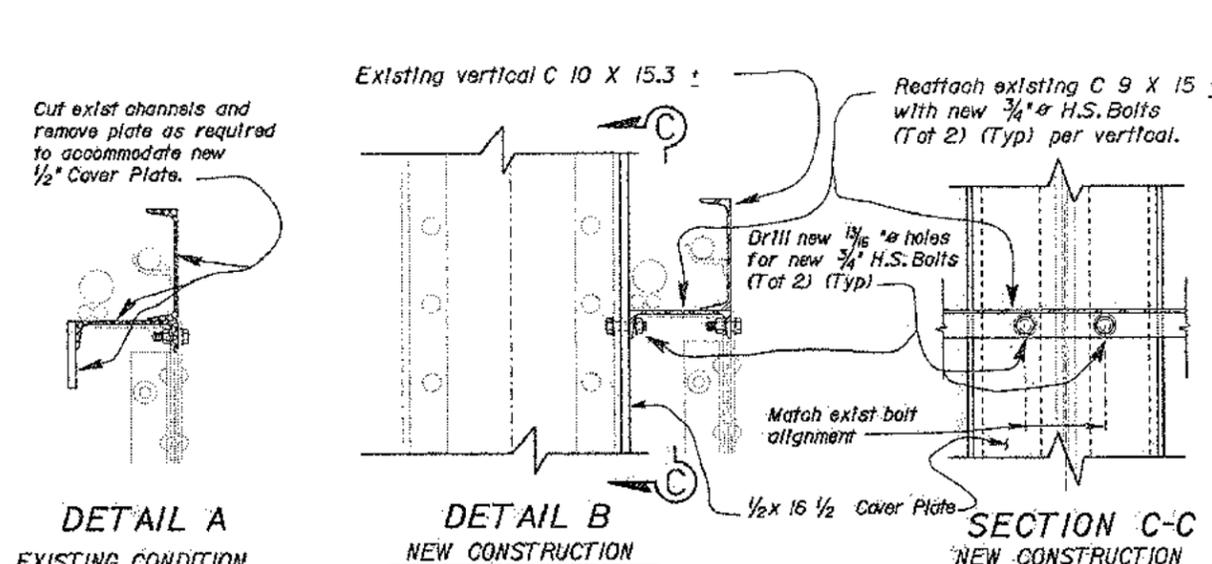
**INTERIM SEISMIC RETROFIT PROJECT
 EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22**

DESIGN	BY: Gerrard Hight 4-97	CHECKED: Peter Solin 5-97	STATE OF CALIFORNIA	DIVISION OF STRUCTURES	BRIDGE NO. 33-0025	SAN FRANCISCO-OAKLAND BAY BRIDGE
DETAILS	BY: J. Thorne 5-97	CHECKED: Stephen Raas 5-97	DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN	POST MILE 1.2	VERTICAL MEMBER RETROFIT MISC. DETAILS NO. 1
QUANTITIES	BY: Stephen Raas 5-97	CHECKED: Pat Wetz 5-97		TOLL BRIDGE SPECIAL ANALYSIS		

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9 0.0/1.1	204	205
E. J. J. J. J. REGISTERED ENGINEER - CIVIL 10-31-97 12-8-97 PLANS-APPROVAL DATE					
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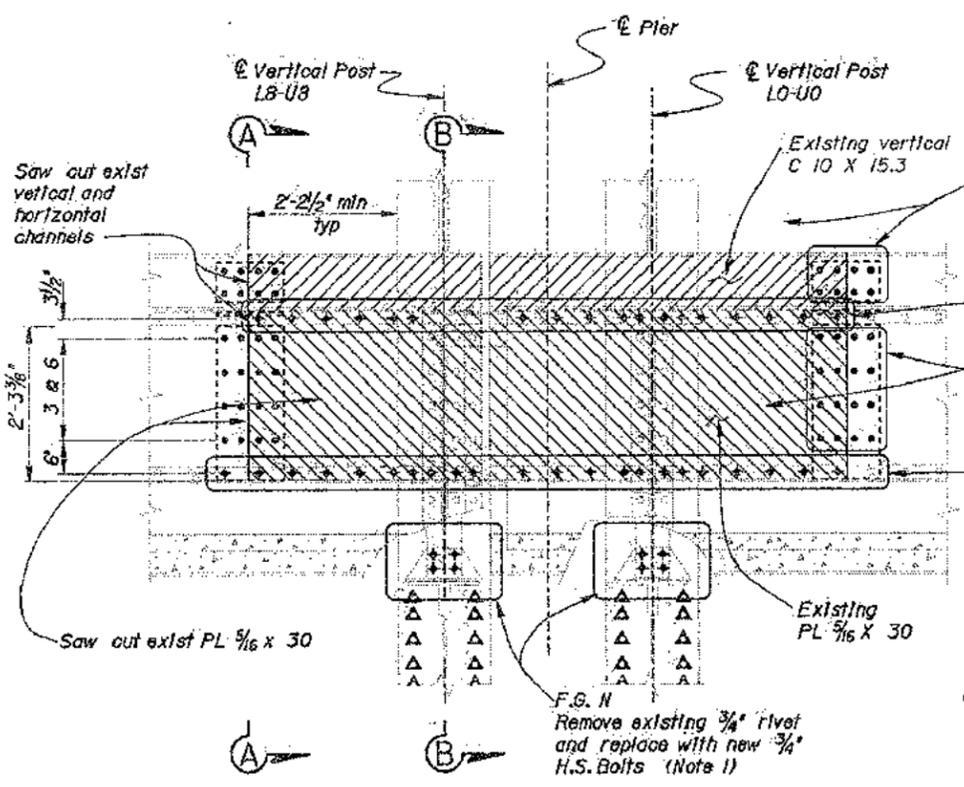


BARRIER RAIL PLAN AT PIERS
3/4" - 1'-0"



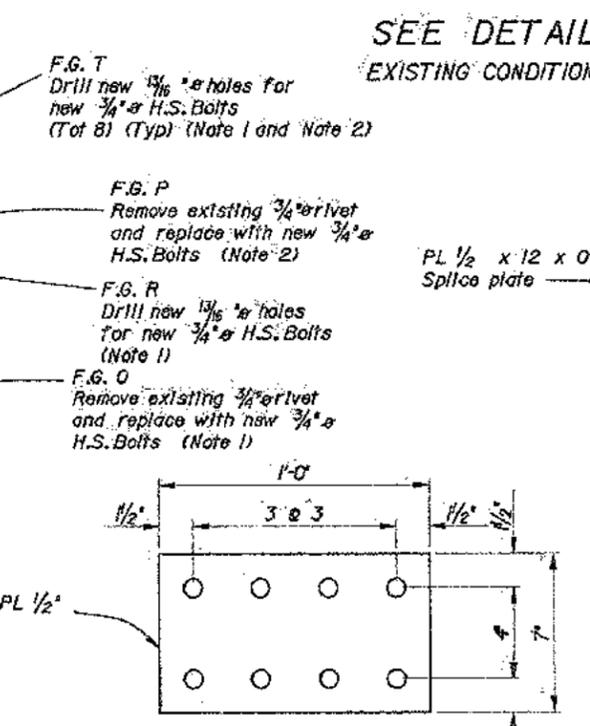
LOWER RAIL BRACKET MODIFICATION DETAIL NORTH
1 1/2" - 1'-0"

- LEGEND**
- Indicates Existing Structure.
 - Indicates New Construction.
 - Indicates Existing 3/4" Rivet.
 - △ Indicates existing 1" rivet to be replaced with new 1" H.S. Bolt in exist hole.
 - Indicates New 3/4" H.S. Bolt in new 1/16" hole unless otherwise noted.
 - ⊕ Indicates existing 3/4" rivet to be replaced with new 3/4" H.S. Bolt in exist hole.
 - ▨ Indicates limits of barrier rail removal for Alternative 1 and Alternative 2.
 - ▩ Indicates limits of optional rail removal for Alternative 1.



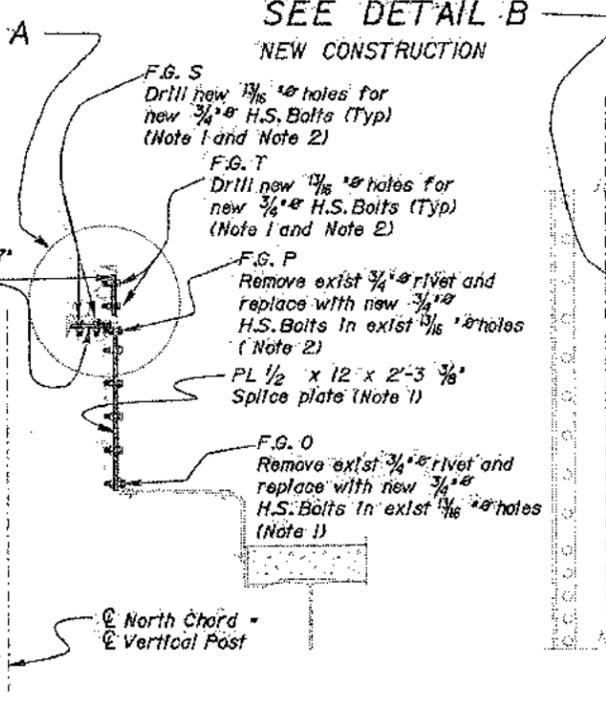
BARRIER RAIL ELEVATION AT PIERS
(Looking North)
3/4" - 1'-0"

Note
North Barrier Rail at Piers E18-E22 shown, Pier E17 Barrier similar and to be modified in conjunction with adjacent segment. Pier E23 only requires half of what's shown.



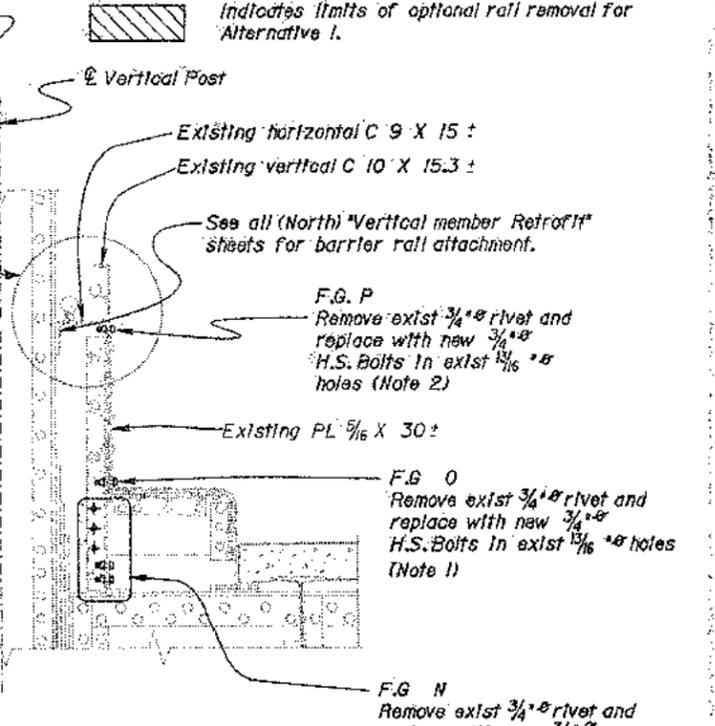
TYPICAL SPLICE PLATE
3' - 1'-0"

Note
Both horizontal spacing typical for all splice plates. Vertical spacing as shown on 'TYPICAL SPLICE PLATE' detail and 'BARRIER RAIL ELEVATION' detail.



SECTION A-A
3/4" - 1'-0"

Note
Rail removal notes for both alternatives shown on 'VERTICAL MEMBER RETROFIT MISC. DETAILS NO. 1' sheet.



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

NOTE:
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DESIGN	BY Phil Lutz	5-97	CHECKED David Soon	5-97
DETAILS	BY J. Thorne	5-97	CHECKED Phil Lutz	5-97
QUANTITIES	BY Stephen Hagg	5-97	CHECKED David Soon	5-97

STATE OF CALIFORNIA	DIVISION OF STRUCTURES	BRIDGE NO. 33-0025
DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN	POST MILE 1.2
CU 04	EA 043001	

INTERIM SEISMIC RETROFIT PROJECT	
EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22	
SAN FRANCISCO-OAKLAND BAY BRIDGE	
RAILING MODIFICATION (NORTH)	

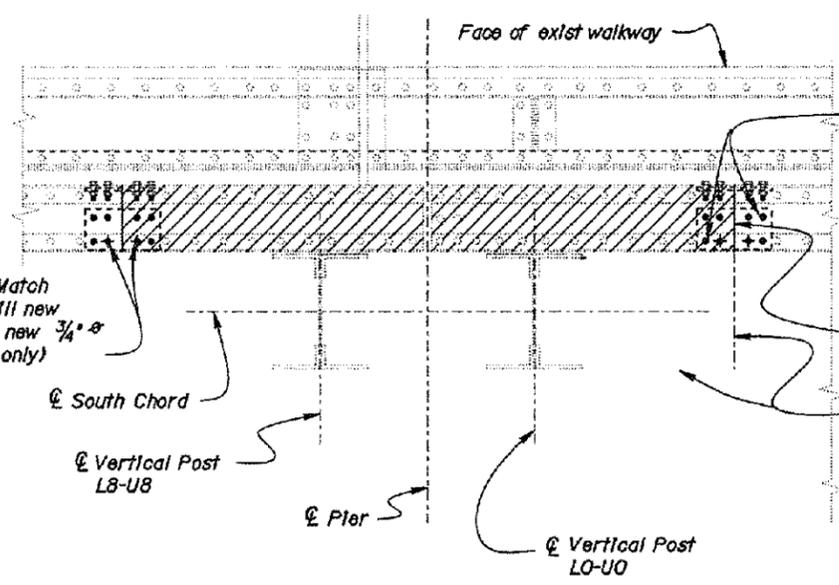
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	205	205

Ed T. Zeller
 REGISTERED ENGINEER - CIVIL
 10-31-97
 12-8-97
 PLANS APPROVAL DATE

ETZechl In
 No. 52958
 Exp. 12-31-98
 CIVIL
 STATE OF CALIFORNIA

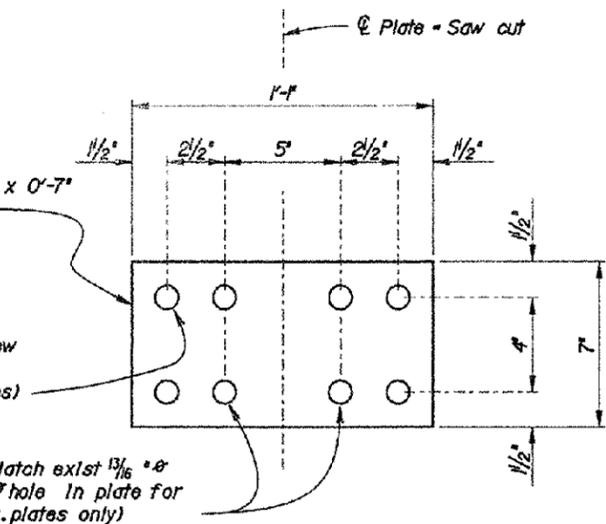
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

- LEGEND**
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 - Indicates New Construction.
 - Indicates Existing 3/4" Rivet.
 - Indicates New 3/4" H.S. Bolt in new 13/16" hole unless otherwise noted.
 - ⊙ Indicates existing 3/4" rivet to be replaced with new 3/4" H.S. Bolt in exist hole.
 - ▨ Indicates limits of required skid girder removal.



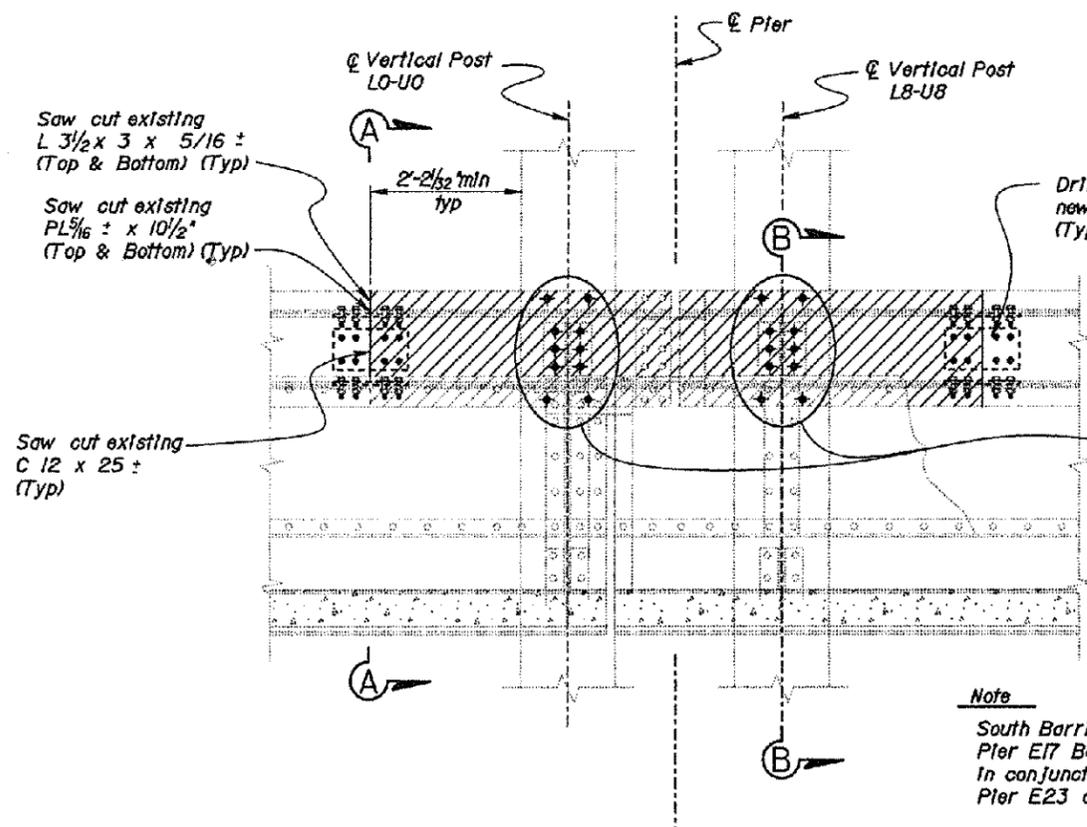
BARRIER RAIL PLAN AT PIERS

3/4" = 1'-0"



TYPICAL SPLICE PLATE

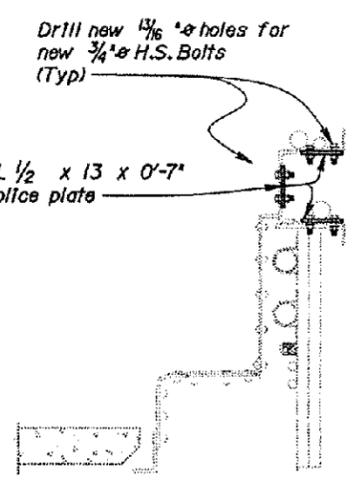
3" = 1'-0"



BARRIER RAIL (MIRRORED) ELEVATION AT PIERS

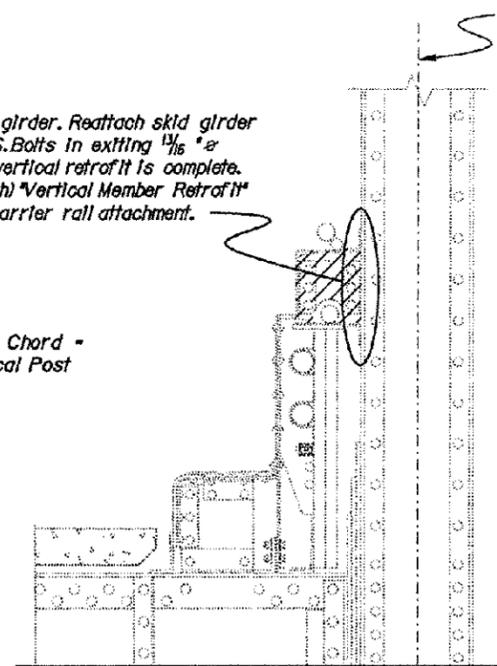
(Looking South)
 3/4" = 1'-0"

Note
 South Barrier Rail at Piers E18-E22 shown. Pier E17 Barrier similar and to be modified in conjunction with adjacent segment. Pier E23 only requires half of what's shown.



SECTION A-A

3/4" = 1'-0"



SECTION B-B

3/4" = 1'-0"

NOTE:
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DESIGN BY Phil Lutz 5-97 CHECKED David Soon 5-97 DETAILS BY JThorne 5-97 CHECKED Phil Lutz 5-97 QUANTITIES BY Phil Lutz 5-97 CHECKED David Soon 5-97				STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		DIVISION OF STRUCTURES STRUCTURE DESIGN TOLL BRIDGE SPECIAL ANALYSIS		BRIDGE NO. 33-0025 POST MILE 1.2		INTERIM SEISMIC RETROFIT PROJECT EAST BAY 288 TRUSSES SPAN E17 TO SPAN E22 SAN FRANCISCO-OAKLAND BAY BRIDGE RAILING MODIFICATION (SOUTH)					
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3						CU 04 EA 043001		DISREGARD PRINTS BEARING EARLIER REVISION DATES				REVISION DATES (PRELIMINARY STAGE ONLY) 0-21-97 0-3-97		SHEET 16 OF 16	

