

# **INFORMATION HANDOUT**

**For Contract No. 04-3G4841  
At 04-CC,Mrn-580-6.3/7.7,0.0/2.5**

**Identified by  
Project ID 0412000084**

## **PERMITS**

United States Coast Guard

## **MATERIALS INFORMATION**

Bridge As-Builts

U.S. Department of  
Homeland Security

United States  
Coast Guard



Commander  
Eleventh District

U.S. Coast Guard Island  
Building 50-2  
Alameda, CA 94501-5100  
Staff Symbol: (dpw)  
Phone: (510) 437-3514  
Fax: (510) 437-5836

16590  
San Francisco Bay (13.0)  
August 15, 2013

California Department of Transportation  
Attn: Mr. Mo Pazooki  
P. O. Box 23660  
Oakland, CA 94612

Dear Mr. Pazooki:

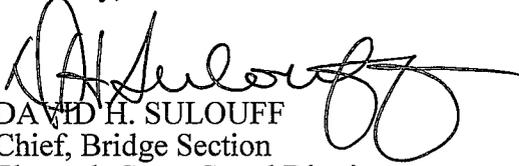
We have reviewed Caltrans's letter, dated June 17, 2013, concerning the proposed repainting of the lower deck of the Richmond-San Rafael Bridge over San Francisco Bay, mile 13.0.

Additional information is required before we can provide formal approval. However, it appears the project will have little or no negative impact on navigation.

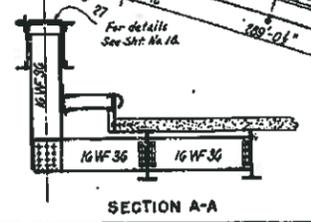
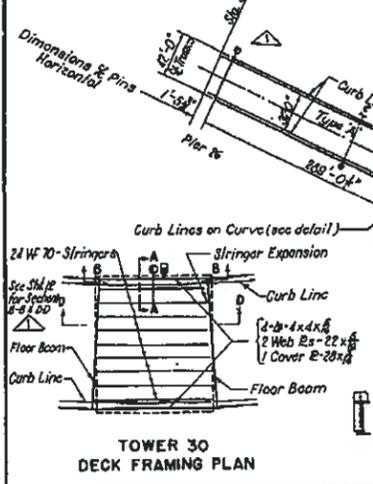
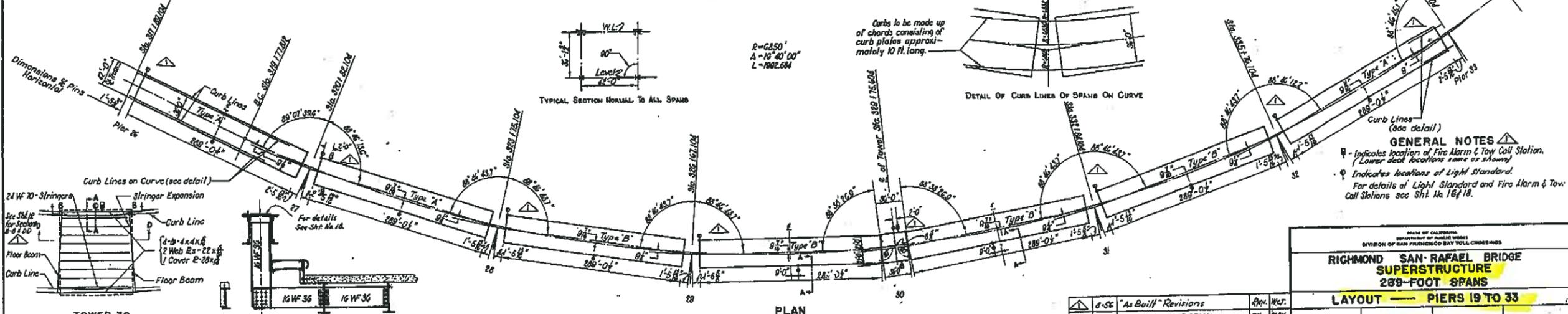
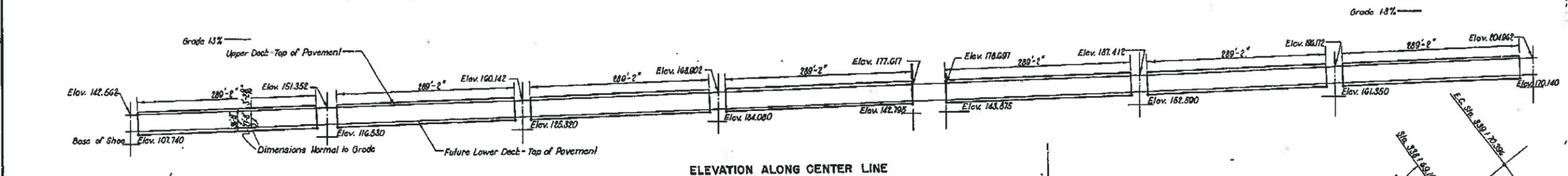
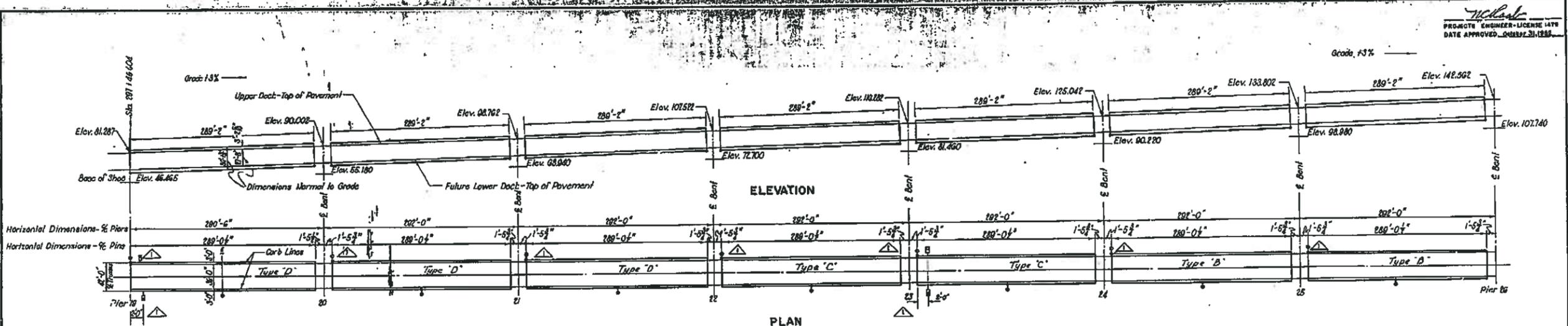
Please provide the written proposal of the project at least 30 days prior to start date, and include text and drawings showing dimensions and location of scaffolding to be used.

You may contact Mr. Chris Cerles, Project Manager, by telephone at (510) 437-3461, to discuss this project.

Sincerely,

  
DAVID H. SULOUFF  
Chief, Bridge Section  
Eleventh Coast Guard District  
By direction of the District Commander

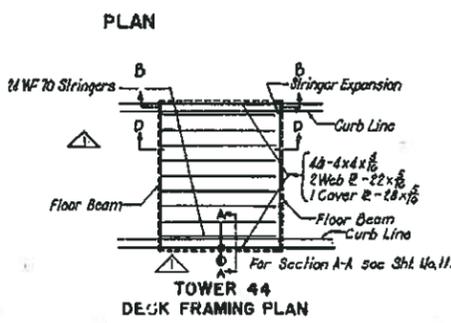
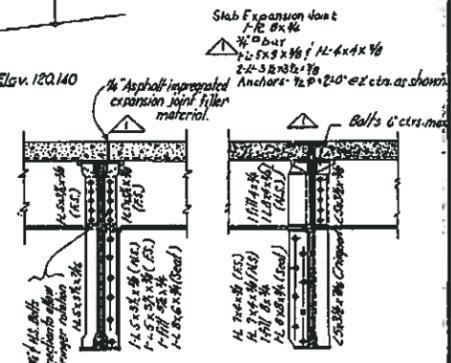
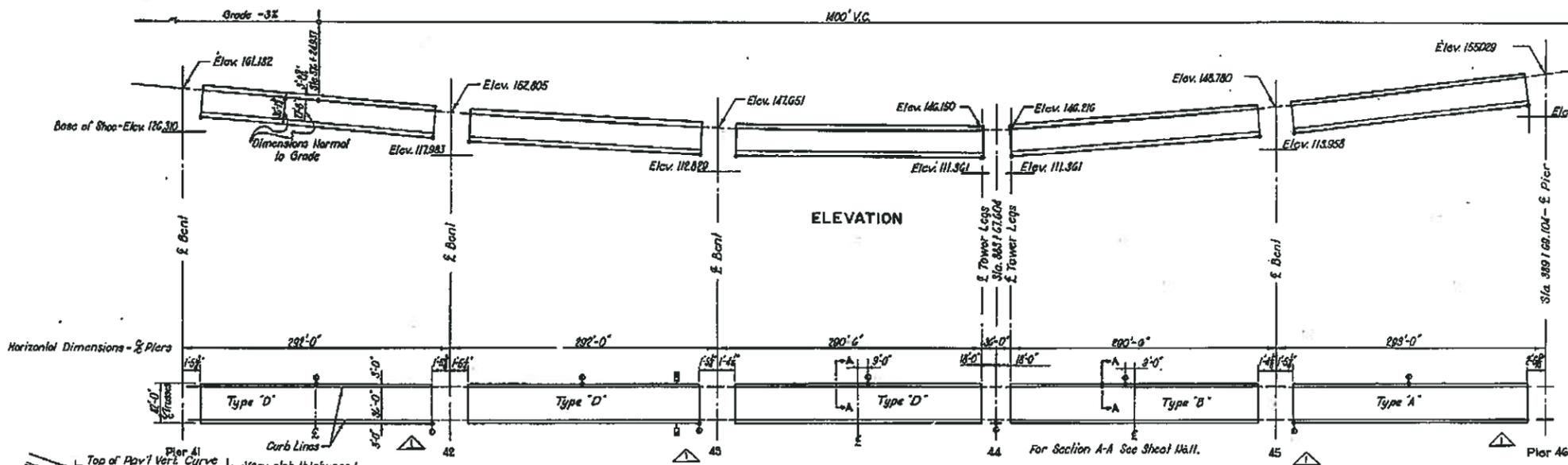
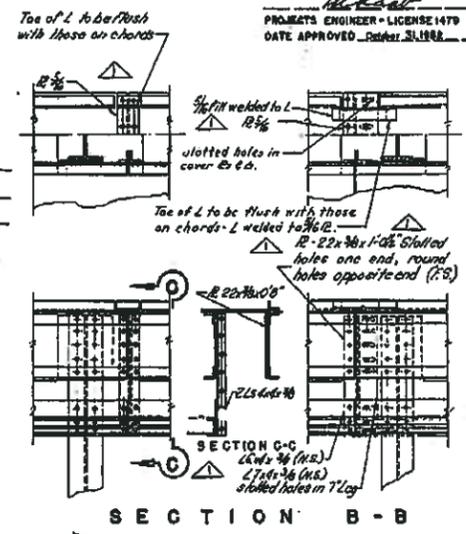
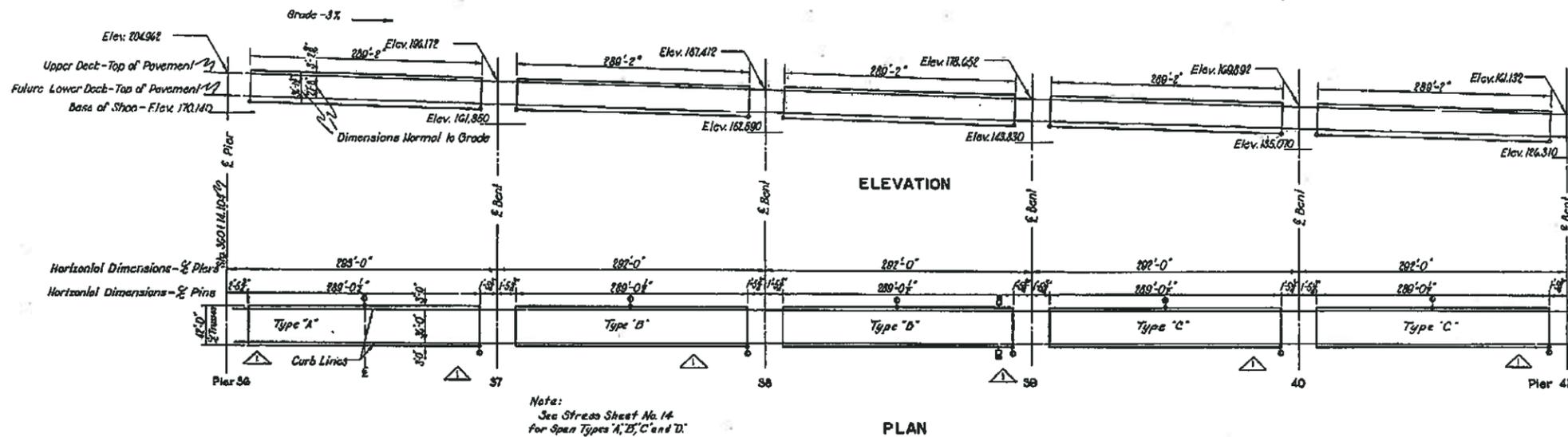
PROJECT ENGINEER-LICENSE 1478  
DATE APPROVED 04/21/31/1937



STATE OF CALIFORNIA		DIVISION OF SAN FRANCISCO BAY TIAL CROSSINGS	
<b>RICHMOND SAN RAFAEL BRIDGE</b>			
<b>SUPERSTRUCTURE</b>			
<b>288-FOOT SPANS</b>			
<b>LAYOUT</b>		<b>PIERS 19 TO 33</b>	
SCALE NOT TO SCALE	BRIDGE 28-100	SHEET NO. 11	DR/WING C-1004-11R

DATE	DESCRIPTION	BY	CHK
6-26	As Built - Revisions	ENR	WKT

PROJECTS ENGINEER - LICENSE 1479  
DATE APPROVED October 31, 1982



**GENERAL NOTES**

- Indicates location of Fire Alarm & Tow Call Station (Lower deck locations same as shown)
- Indicates location of Light Standard.
- For details of Light Standard and Fire Alarm & Tow Call Stations see Sht. No. 16 & 18

STATE OF CALIFORNIA  
DIVISION OF PUBLIC WORKS  
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

**RICHMOND - SAN RAFAEL BRIDGE  
SUPERSTRUCTURE  
289-FOOT SPANS**

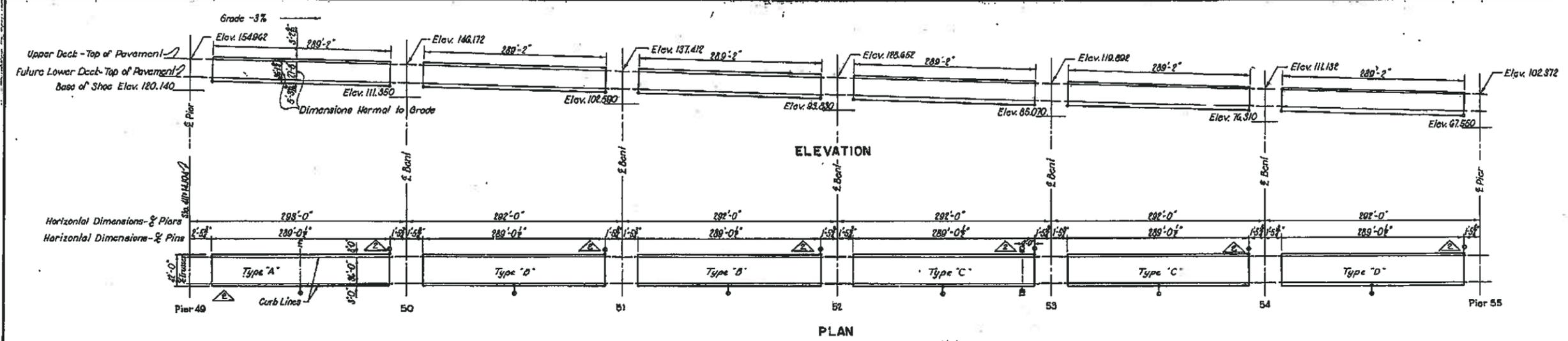
MARK	DATE	DESCRIPTION	BY	CHKD.
0-56		"As-Built" Revisions		

**LAYOUT - PIERS 36 TO 46**

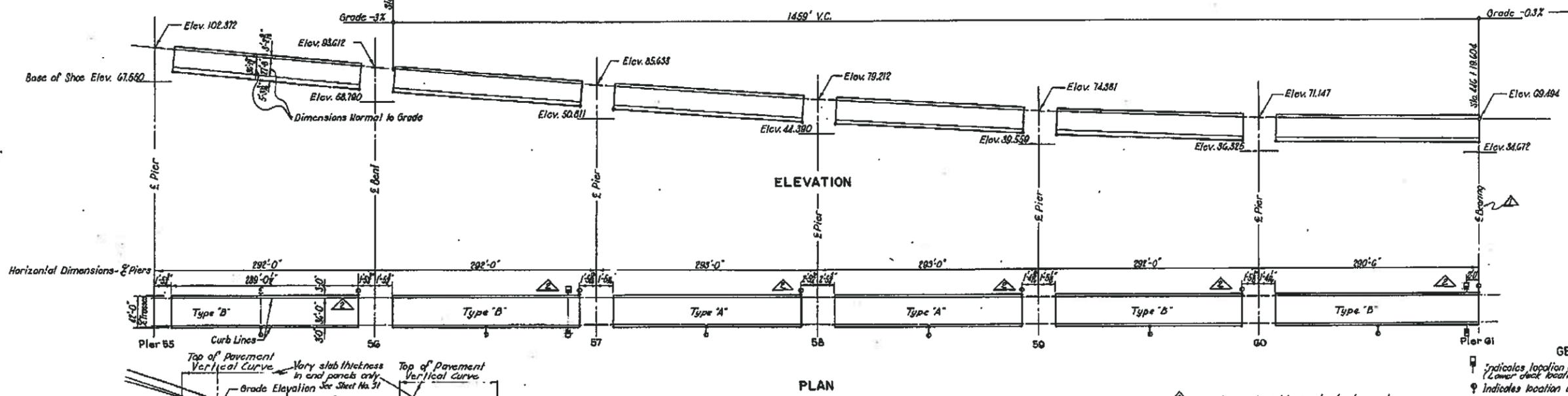
SCALE: NOT TO SCALE BRIDGE 28-100 SHEET No. 12 DRAWING C-1004-125

APPROVAL, RECOMMENDED BY: [Signature]  
 SUPERVISOR, BRIDGE DIVISION

*M. J. ...*  
 PROJECT ENGINEER - LICENSE 1479  
 DATE APPROVED October 21, 1932



Note:  
 See Stress Sheet No. 14  
 for Span Types 'A', 'B', 'C' and 'D'.



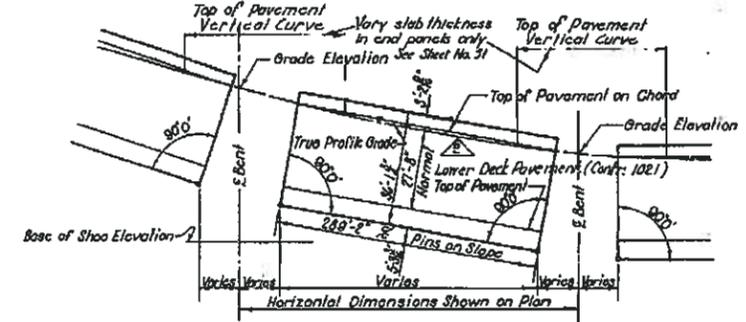
**GENERAL NOTES**

△ Indicates location of Fire Alarm & Tow Call Station.  
 (Lower deck location carries up above)

⊙ Indicates location of Light standard.

For details of Light Standard and Fire Alarm & Tow Call Stations see Sht. No. 16 of B.

△ Locations of Light standards shown above.



**SUPPLEMENTAL CONTRACT DRAWING**

STATE OF CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

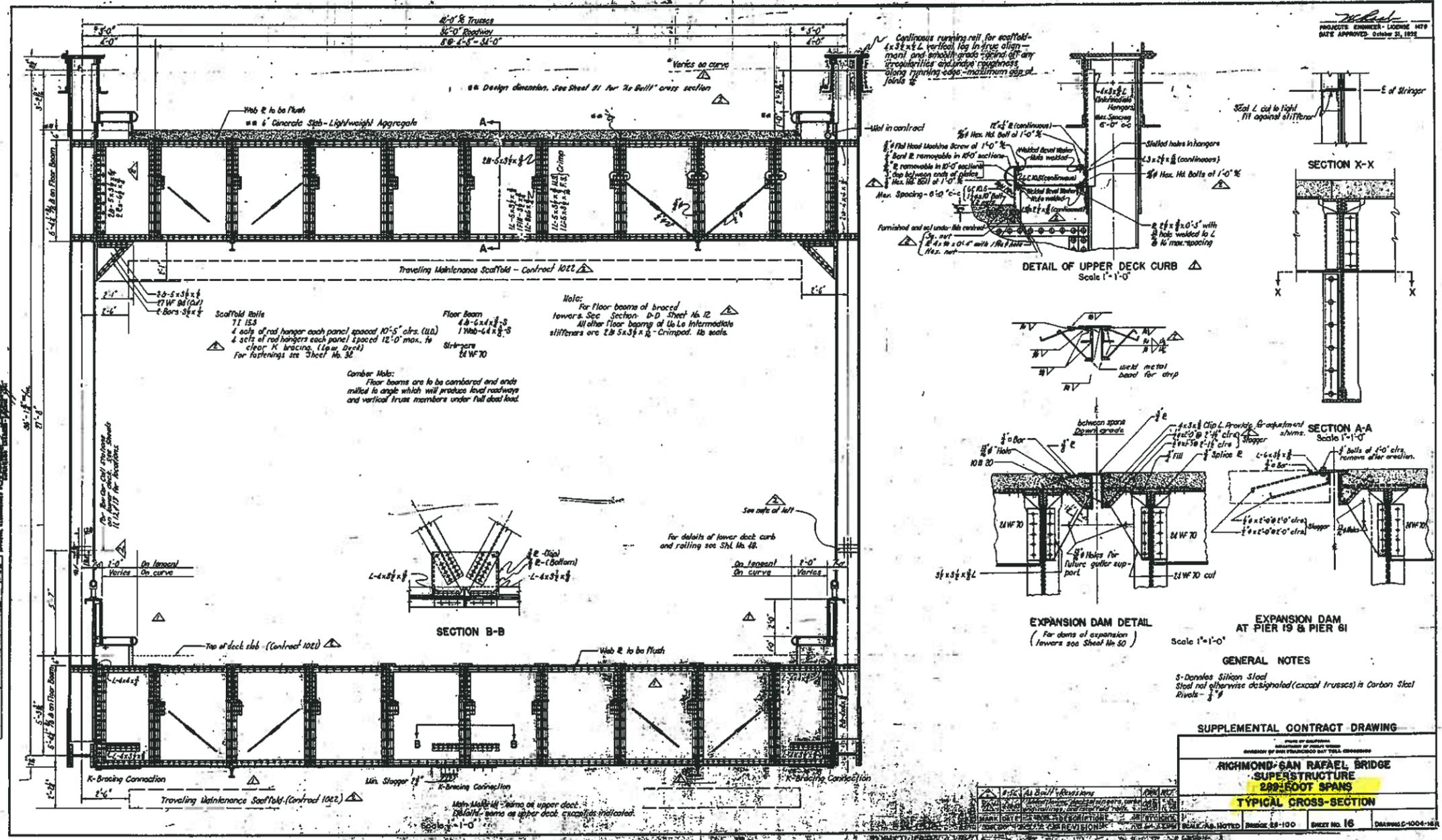
**RICHMOND-SAN RAFAEL BRIDGE  
 SUPERSTRUCTURE  
 289-FOOT SPANS**

**LAYOUT - PIERS 49 TO 61**

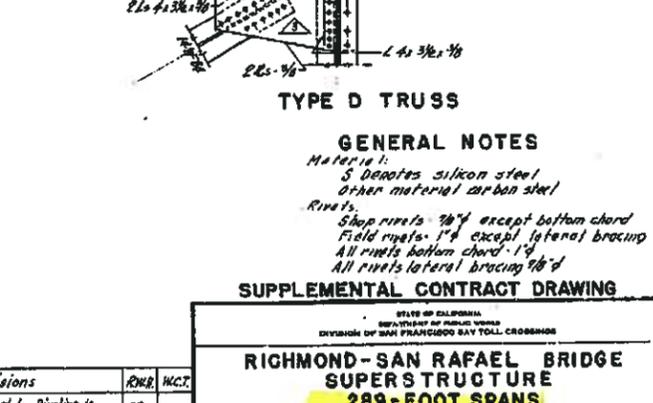
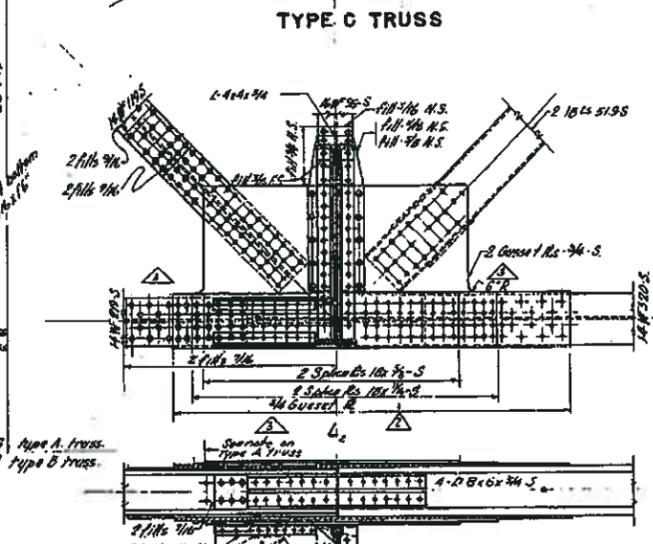
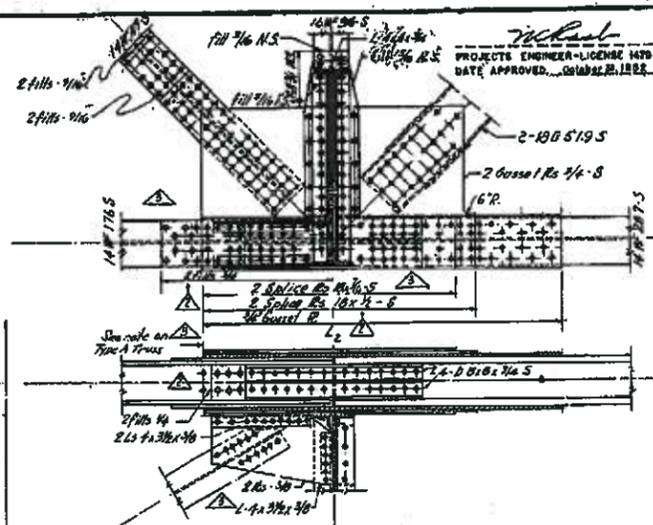
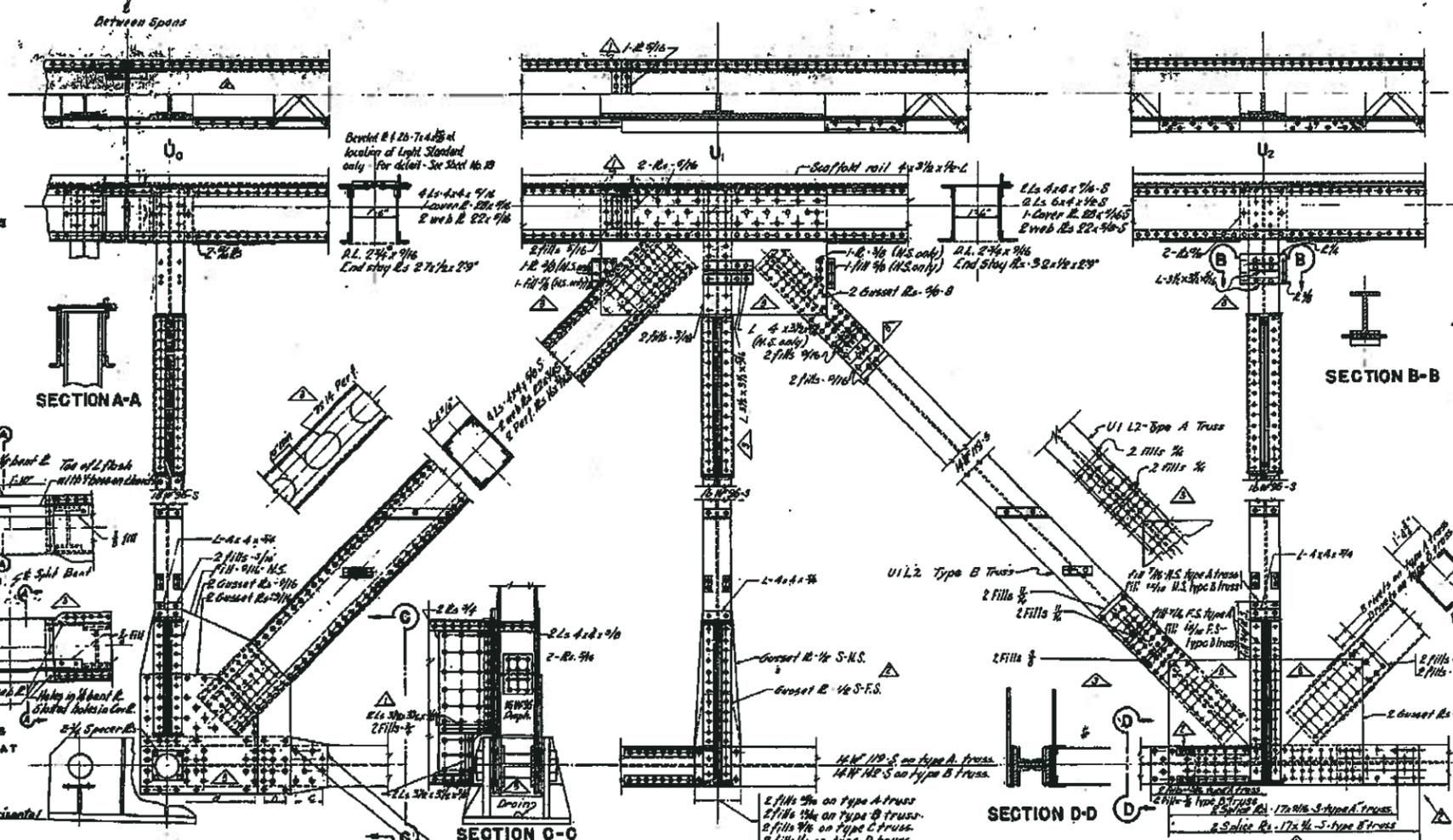
10-56	As Built Revisions	R/MH	MCT
2-11-53	E. Pier to E. Bearing of G1	R/TJ	JMM
MARK	DATE	DESCRIPTION	BY
		REVISION	

SCALE NOT TO SCALE BRIDGE 28-100 SHEET No. 13 DRAWING C-1004-13R

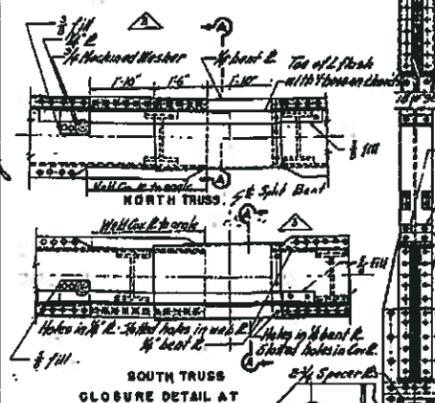
APPROVAL	REVISION
DATE	BY
DESCRIPTION	



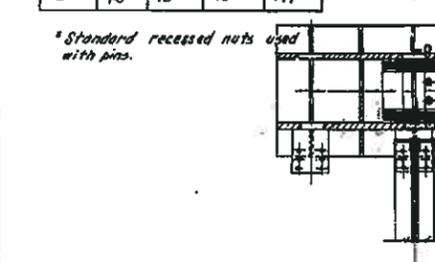
W. H. ...  
PROJECTS ENGINEER-LICENSE 1470  
DATE APPROVED: ...



For top chord detail adjoining cantilever structure see sheet no. 33



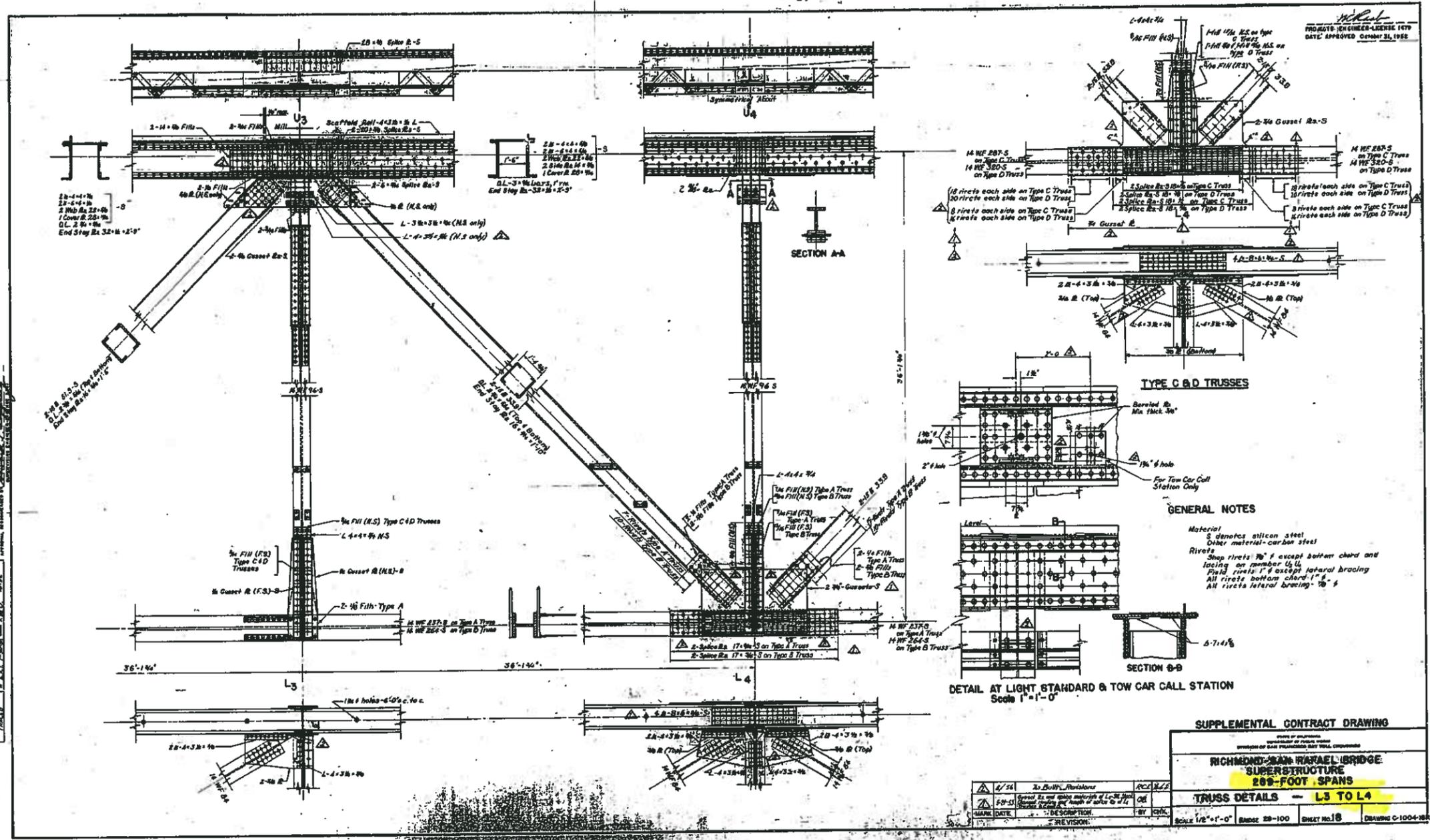
TRUSS Type	Number of rivets in L <sub>2</sub> connections (each side)	Pin dia (carbon steel)
A	36	8 1/2"
B	42	10"
C	42	10"
D	46	10"



**GENERAL NOTES**  
Material:  
S Denotes silicon steel  
Other material carbon steel  
Rivets:  
Shop rivets 7/8" except bottom chord  
Field rivets 1" except lateral bracing  
All rivets bottom chord 1 1/2"  
All rivets lateral bracing 7/8"

**SUPPLEMENTAL CONTRACT DRAWING**  
STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS  
**RICHMOND-SAN RAFAEL BRIDGE**  
**SUPERSTRUCTURE**  
**289-FOOT SPANS**  
**TRUSS DETAILS-L<sub>0</sub> to L<sub>2</sub>**  
SCALE 1/2"=1'-0" BRIDGE 28-100 SHEET NO. 17 DRAWING C-1004-17-R

MARK	DATE	DESCRIPTION	BY	CHK
△	5-56	As Built Revisions	RMB	MCC
△	5-76-51	Silicon steel rivets in chord sections of L <sub>2</sub> all trusses	CR	
△	3-2-53	Fills in Section C-C, Details at U <sub>1</sub>	SCB	HW



NO AS BUILT CORRECTIONS

Contract No: 04-0438U4

Date Transfer: 05/09/06  
Field Corrections Date: N/A

Corrections Transferred by: V. N. POWELL  
Structure Rep: B. POWELL

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.1/7.8 0.0/2.6	806R1	1142

*David H. Korpi*  
REGISTERED CIVIL ENGINEER

7-19-99  
PLANS APPROVAL DATE

GERWICK/SVERDRUP/DMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
1340 TREAT BLVD. SUITE 208  
WALNUT CREEK, CA 94596

REGISTERED PROFESSIONAL ENGINEER  
D. W. Korpi  
No. 55035  
Exp. 6-30-00  
CIVIL  
STATE OF CALIFORNIA

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**Truss Strengthening Retrofit Schedule:  
Lower Chord Retrofits ⑦**

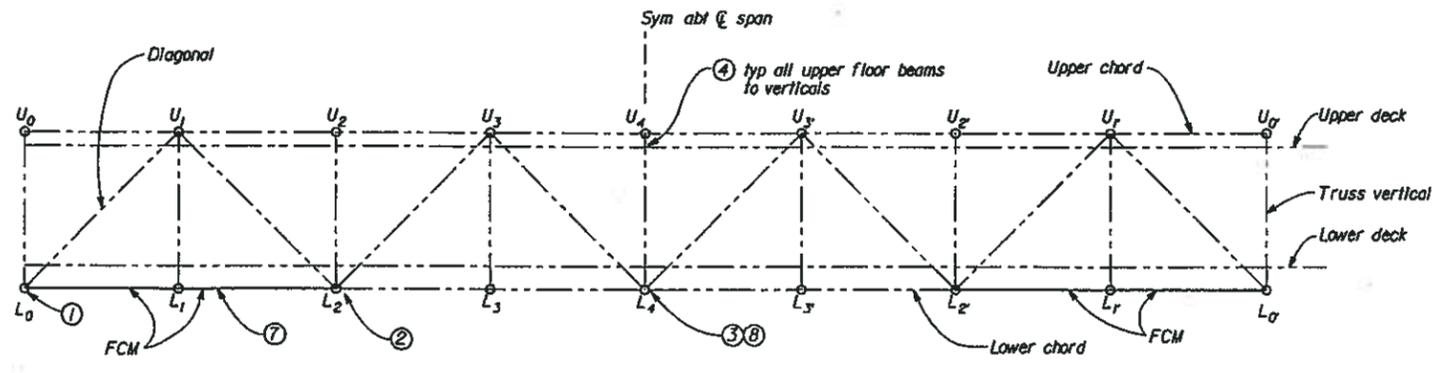
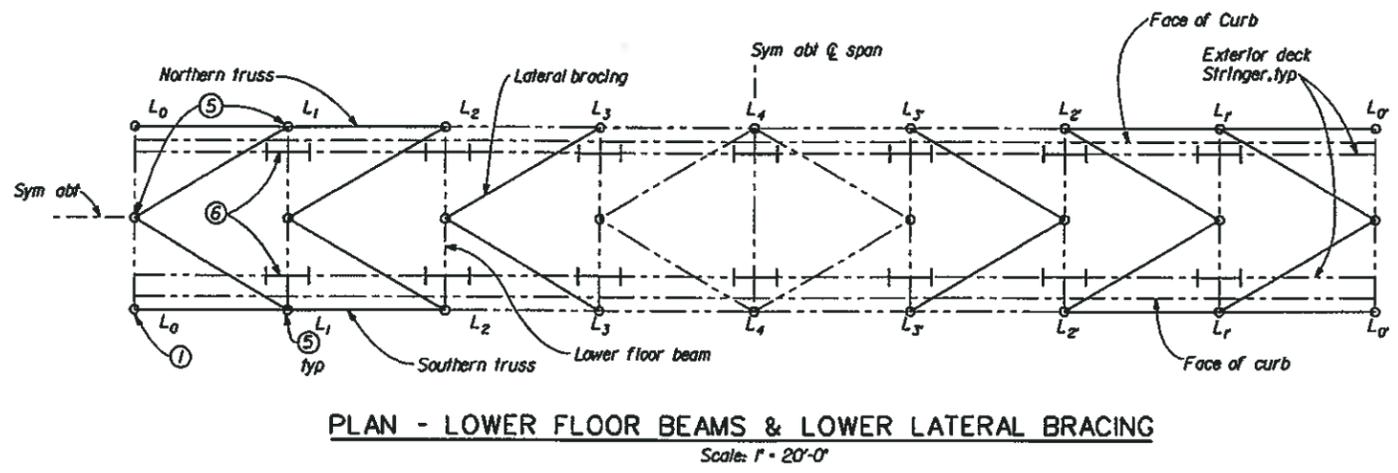
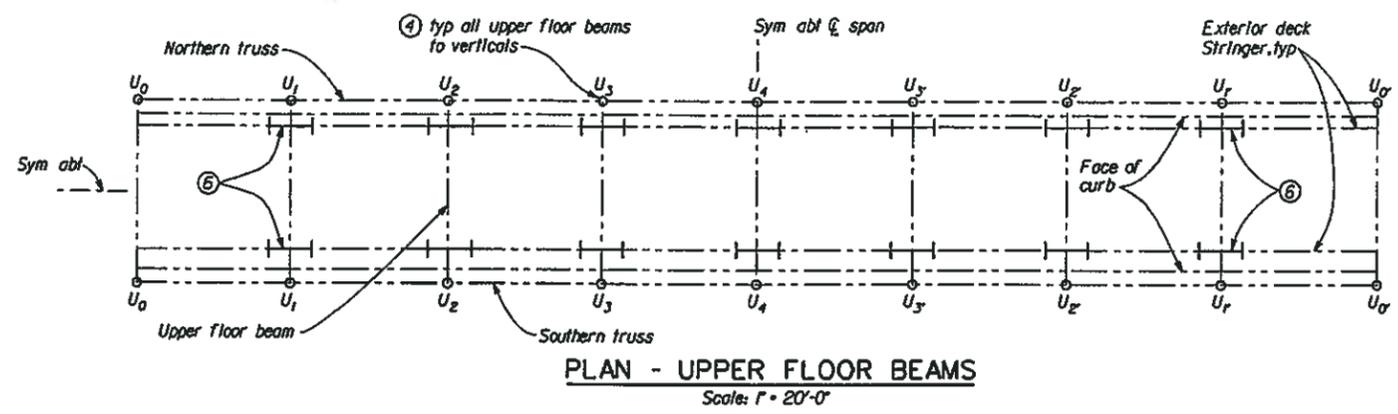
Span	LO-L2A LO'-L2A'	LO-L2B LO'-L2B'	LO-L2C LO'-L2C'	LO-L2D LO'-L2D'
19-20				R*
20-21				R
21-22				R
22-23			R	
23-24			R	
24-25		R		
25-26		R		
26-27	R			
27-28	R			
28-29		R		
29-30		R		
30-31		R		
31-32		R		
32-33	R			
36-37	R			
37-38		R		
38-39		R		
39-40			R	
40-41			R	
41-42				R
42-43				R
43-44				R
44-45		R		
45-46	R			
49-50	R			
50-51		R		
51-52		R		
52-53			R	
53-54			R	
54-55				R
55-56		R		
56-57		R		
57-58	R			
58-59	R			
59-60		R		
60-61		R		

R - Seismic retrofit required  
R\* - Seismic retrofit at LO-L2D in Span 19-20 is not required

Note: See corresponding detail sheets for retrofit schedules of ①, ②, ③, ④, ⑤, ⑥

**RETROFIT LEGEND**

- ① Strengthen lower floor beam connection to truss vertical at L<sub>0</sub> and L<sub>0'</sub>. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 2" sheet.
- ② Strengthen lower floor beam connection to truss vertical at L<sub>2</sub> and L<sub>2'</sub>. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 3" sheet.
- ③ Strengthen lower floor beam connection to truss verticals at L<sub>4</sub>, L<sub>3</sub>, L<sub>4</sub>, L<sub>3'</sub> & L<sub>1</sub>. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 4" sheet.
- ④ Strengthen all upper floor beam connection to truss verticals. See "289 Ft Spans - Upper Floor Beam Connection Retrofit Details" sheet.
- ⑤ Strengthen lateral bracing connection & member. See "289 Ft Spans - Lower Lateral Bracing Retrofit Details 1, 2, & 3" sheets.
- ⑥ Add restrainers to exterior deck stringers. See "Exterior Deck Stringer Restraint Retrofit Details 1 & 2" sheets.
- ⑦ Strengthen lower chord L<sub>0</sub>-L<sub>2</sub> & L<sub>0'</sub>-L<sub>2'</sub>. See "289 Ft Spans - Lower Chord L<sub>0</sub>-L<sub>2</sub> Retrofit Type A Truss Details 1 & 2, Type B Truss Details 1 & 2, Type C Truss Details 1 & 2 and Type D Truss Details 1 & 2" sheets. For spans 26-27, 36-37 & 38-39, see "289 Ft Spans - Spans 26-27, 36-37 and 38-39 Lower Chord L<sub>0</sub>-L<sub>2</sub> Retrofit Details 1, 2 & 3" sheets.
- ⑧ Strengthen connection at L<sub>4</sub>, see "289 Ft Spans - Lower Chord Connection Retrofit Details".



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

**ELEVATION - TYPICAL 289 FT SPANS**  
(Southern Truss Shown, Northern Truss similar)  
Scale: 1" = 20'-0"

Note:  
FCM indicates fracture critical members

REVISION	DATE	DESCRIPTIONS	BY	CHKD
△	5/22/01	REVISE SEISMIC RETROFIT AT LO - L2D IN SPAN 19-20	CC	CJC
REVISIONS				

CONTRACT CHANGE ORDER NO. 40  
SHEET 3 OF 4 SUPPL. 0

CONTRACT No. 04-0438U4  
DATE ACCEPTED 10/28/05

**NO AS BUILT CHANGES**

STRUCTURE REPRESENTATIVE B. POWELL  
REVISIONS BY N/A DATE N/A

**SEISMIC RETROFIT PROJECT NO. 612**

Ade Akinsanya/Shawn Sun DESIGN OVERSEER	NO AS BUILT CORRECTIONS Contract No: 04-0438U4 Corrections Transferred by: V. N. POWELL Structure Rep: B. POWELL Date Transfer: 05/09/06 Field Corrections Date: N/A	DESIGN BY K. Ferguson	CHECKED K. Lim	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	P. Bott PROJECT ENGINEER	BRIDGE NO. 28-0100	RICHMOND-SAN RAFAEL BRIDGE
		DETAILS BY G.W. Stimach	CHECKED K. Lim			POST MILE 6.22	
QUANTITIES BY K. Ferguson	CHECKED K. Lim	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU 04271 EA 04-0438U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 221 OF 503

7/8

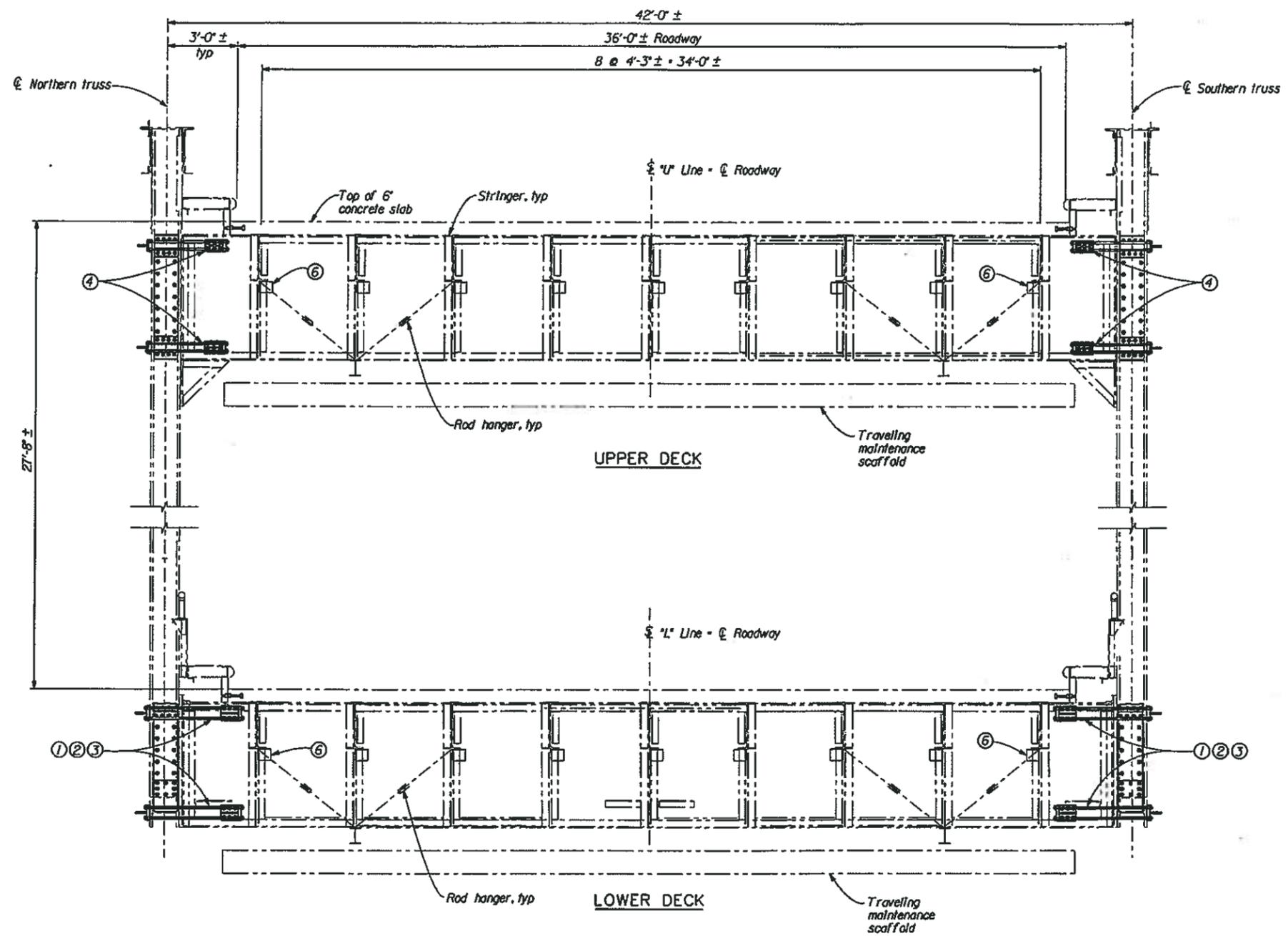
NO AS BUILT CORRECTIONS  
 Corrections Transferred by: V.N. Date Transfer: 04/13/06  
 Structure Rep: B. POWELL Field Corrections Date: N/A  
 Contract No: 04-0438U4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrrn	580	6.1/7.8 0.0/2.6	618	1142

David H. Korpi  
 REGISTERED CIVIL ENGINEER  
 No. 55035  
 Exp. 6-30-00  
 CIVIL  
 STATE OF CALIFORNIA  
 REGISTERED PROFESSIONAL ENGINEER

7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DMM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD. SUITE 208  
 WALNUT CREEK, CA 94596

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**TYPICAL SECTION - 289 FT SPANS**  
 Scale: 3/8" = 1'-0"

- RETROFIT LEGEND**
- Strengthen lower floor beam connection to truss vertical at L<sub>0</sub> and L<sub>0</sub>'. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 2" sheet.
  - Strengthen lower floor beam connection to truss vertical at L<sub>2</sub> and L<sub>2</sub>'. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 3" sheet.
  - Strengthen lower floor beam connection to truss verticals at L<sub>1</sub>, L<sub>3</sub>, L<sub>4</sub>, L<sub>3</sub>' & L<sub>1</sub>'. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 1" sheet.
  - Strengthen all upper floor beam connection to truss verticals. See "289 Ft Spans - Upper Floor Beam Connection Retrofit Details" sheet.
  - Add restrainers to exterior deck stringers. See "Exterior Deck Stringer Restrainer Retrofit Details 1 & 2" sheets.

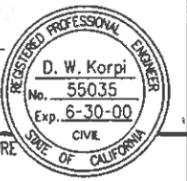
CONTRACT No. 04-0438U4  
 DATE ACCEPTED 10/28/05  
**NO AS BUILT CHANGES**  
 STRUCTURE REPRESENTATIVE B. POWELL  
 REVISIONS BY N/A DATE N/A

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

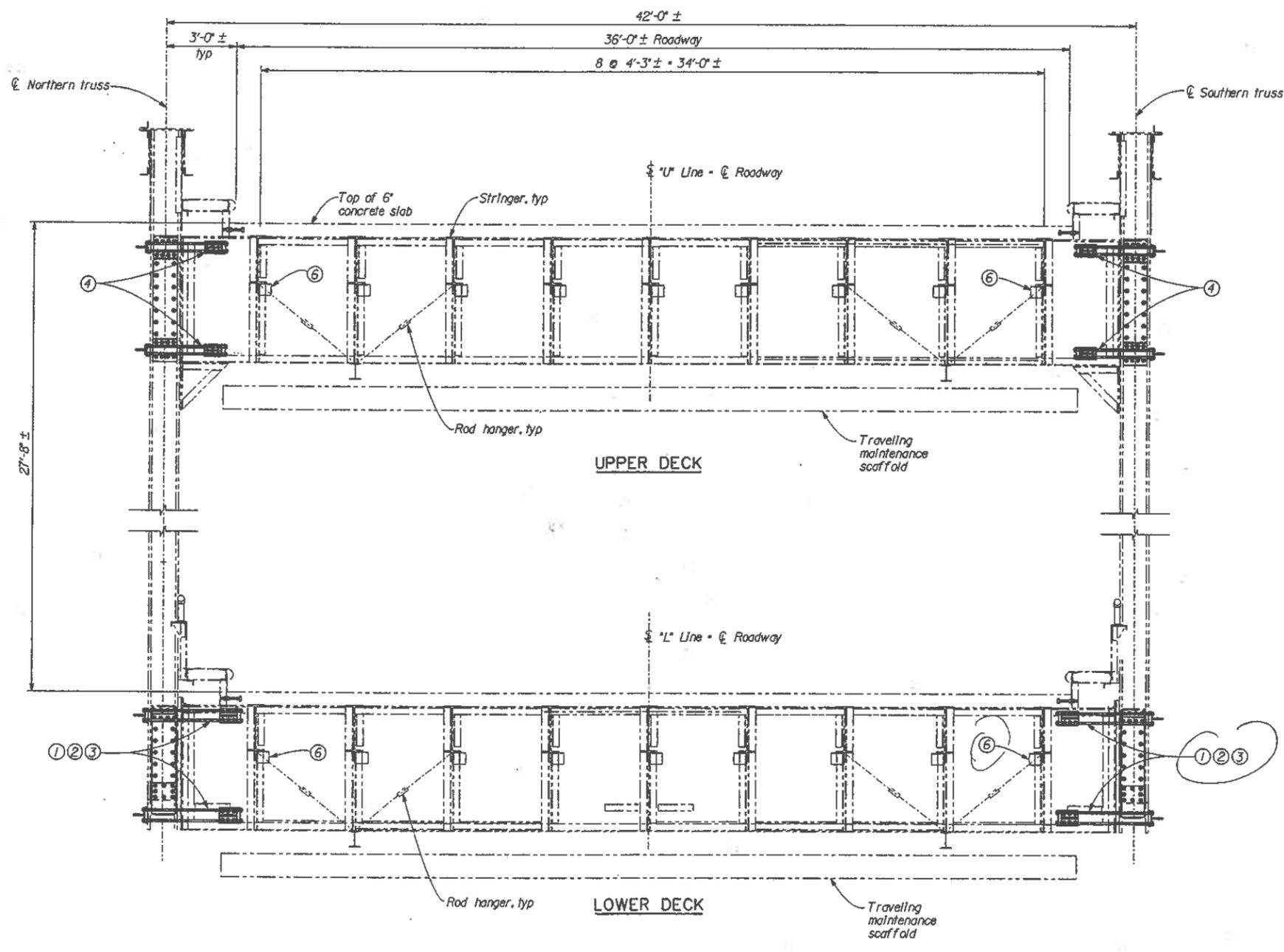
Ade Akinsanya/Shawn Sun <small>DESIGN DIVISION</small> SIGN-OFF DATE: _____	<b>NO AS BUILT CORRECTIONS</b> Contract No: 04-0438U4 Corrections Transferred by: V.N. Date Transfer: 04/13/06 Structure Rep: B. POWELL Field Corrections Date: N/A	DESIGN BY D. Kirkpatrick CHECKED BY J. Lavinder	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER P. Bolt	BRIDGE NO. 28-0100	<b>SEISMIC RETROFIT PROJECT NO. 612</b>	
		DETAILS BY J. Johnson CHECKED BY J. Lavinder		QUANTITIES BY J. Lavinder CHECKED BY E. Sugiyama	POST MILE 6.22	<b>RICHMOND-SAN RAFAEL BRIDGE</b>	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3						DEPARTMENT OF TRANSPORTATION	
CU 04271 EA 04-0438U1				DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES (PRELIMINARY STAGE ONLY) 7/25/05 8/12/05 10/28/05 11/15/05 12/15/05 1/15/06 2/15/06 3/15/06 4/15/06 5/15/06 6/15/06 7/15/06 8/15/06 9/15/06 10/15/06 11/15/06 12/15/06	
						SHEET 33 OF 503	8/8

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.117.8,0.012.6	618	1142

*David W. Korpi*  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596



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- RETROFIT LEGEND**
- ① Strengthen lower floor beam connection to truss vertical at L<sub>0</sub> and L<sub>0</sub>'. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 2" sheet.
  - ② Strengthen lower floor beam connection to truss vertical at L<sub>2</sub> and L<sub>2</sub>'. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 3" sheet.
  - ③ Strengthen lower floor beam connection to truss verticals at L<sub>4</sub>, L<sub>3</sub>, L<sub>4</sub>, L<sub>3</sub>' & L<sub>1</sub>'. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 1" sheet.
  - ④ Strengthen all upper floor beam connection to truss verticals. See "289 Ft Spans - Upper Floor Beam Connection Retrofit Details" sheet.
  - ⑥ Add restrainers to exterior deck stringers. See "Exterior Deck Stringer Restrainer Retrofit Details 1 & 2" sheets.

**TYPICAL SECTION - 289 FT SPANS**  
Scale: 3/8" = 1'-0"

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

DESIGN BY: D. Kirkpatrick CHECKED: J. Lavinder DETAILS BY: J. Johnson CHECKED: J. Lavinder QUANTITIES BY: J. Lavinder CHECKED: E. Sugiyama	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER P. Bott	BRIDGE NO. 28-0100	SEISMIC RETROFIT PROJECT NO. 612	
			POST MILE 6.22	RICHMOND-SAN RAFAEL BRIDGE	
SIGN-OFF DATE: 1/20/99 ADE AKINSANYA/SHAWN SUN DESIGN OVERSIGHT			STRUCTURE PLAN NO. 27		SHEET 33 OF 503
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3			REVISION DATES (PRELIMINARY STAGE ONLY) DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES: 8/25, 8/12, 1/17/95, 8/25, 1/17/95, 1/21/96

1346A203.DGN



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.177,8 0.012,6	862	1142

*David W. Korpi*  
REGISTERED CIVIL ENGINEER

7-19-99  
PLANS APPROVAL DATE

GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

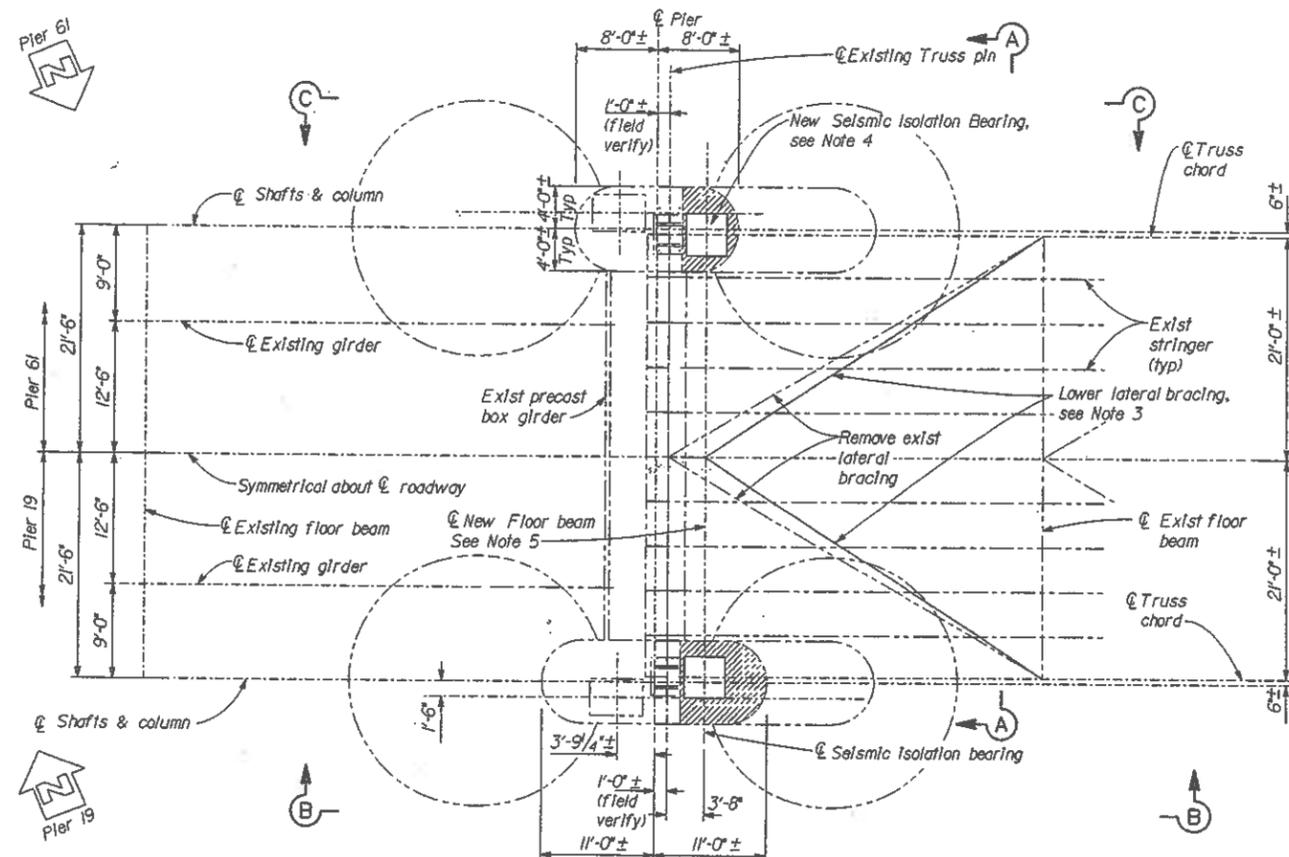
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

REGISTERED PROFESSIONAL ENGINEER  
D. W. Korpi  
No. 55035  
Exp. 6-30-00  
CIVIL  
STATE OF CALIFORNIA

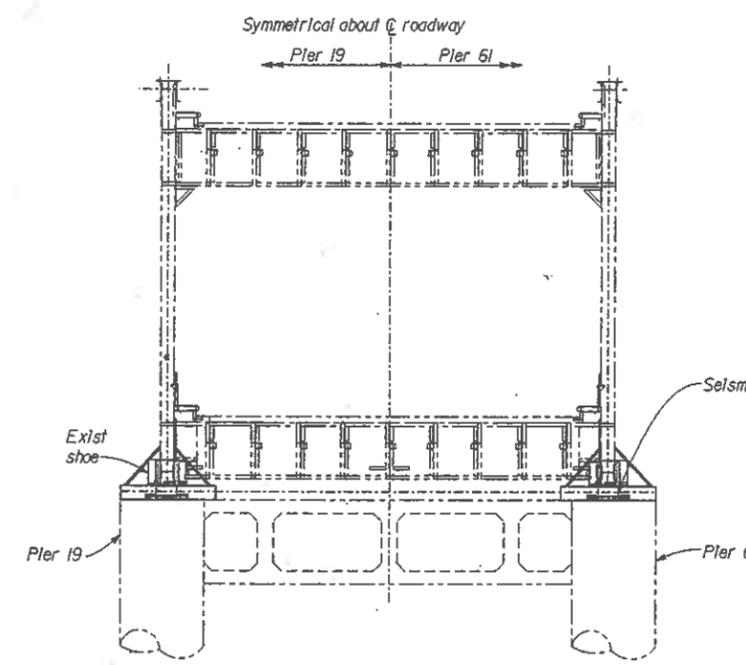
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

**Notes:**

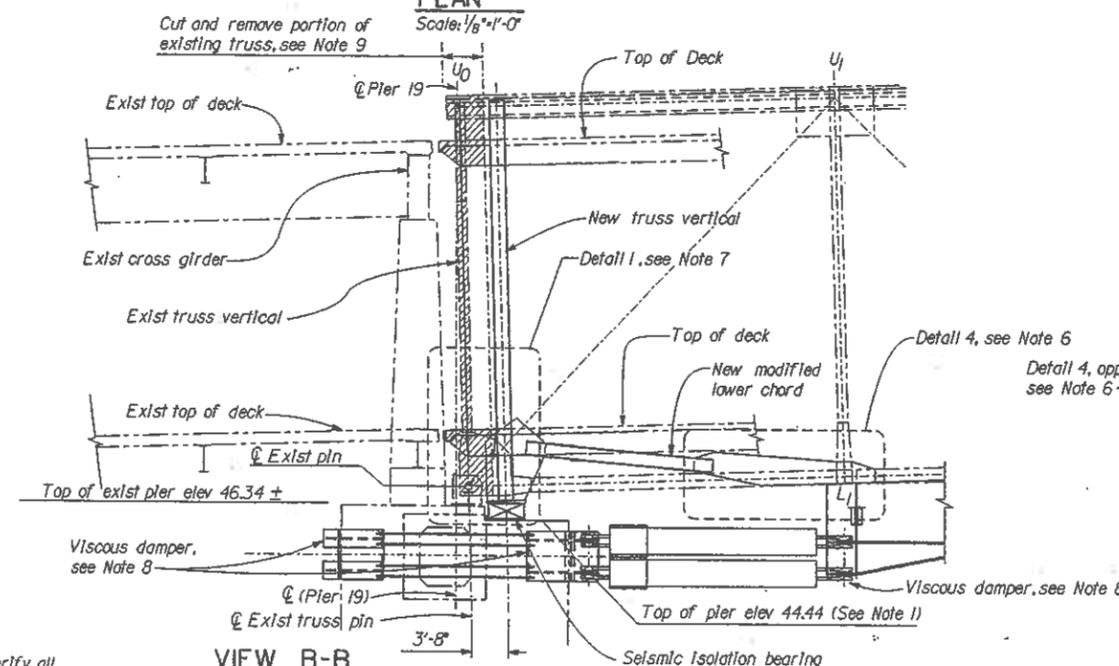
1. All dimensions and elevations which are dependent on the Isolation Bearings shall be verified with the supplier of the Isolation Bearings.
2. The construction work described on this drawing is detailed on several drawings. The following notes indicate where these details can be found:
3. See \*289 Ft Spans - Pier 19 & 61 Lower Lateral Bracing Modification sheet.
4. See \*289 Ft Spans - Pier 19 & 61 Isolation Bearing Details sheet.
5. For floorbeam details see \*289 Ft Spans - Pier 19 & 61 Floor Beam Details 1, 2 and 3 sheets.
6. See \*289 Ft Spans - Pier 19 & 61 Truss Modification Details 6 sheet.
7. See \*289 Ft Spans - Pier 19 & 61 Truss Modification Details 1 sheet.
8. See \*289 Ft Spans - Pier 19 Viscous Damper Details 1, 2 & 3 sheet.
9. See \*289 Ft Spans - Pier 19 & 61 Truss Modification Details 1, 2, 3, 4, 5 & 6 sheets.



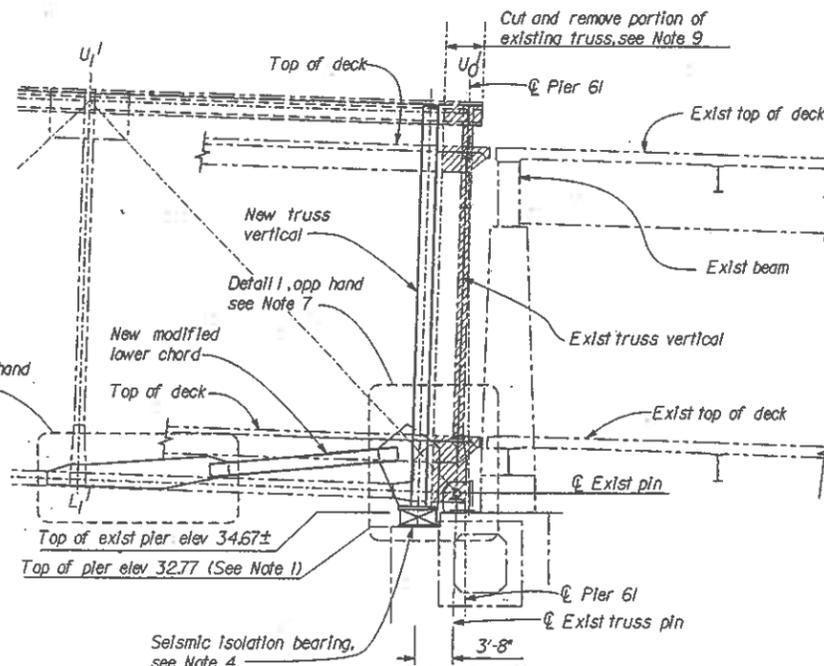
**PLAN**  
Scale: 1/8" = 1'-0"



**SECTION A-A**  
Scale: 1/8" = 1'-0"



**VIEW B-B**  
Scale: 1/8" = 1'-0"  
(PIER 19)



**VIEW C-C**  
Scale: 1/8" = 1'-0"  
PIER 61

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

RECEIVED  
Ade Akinsanyu / Shawn Sun  
JAN 27 1999  
OFFICE OF STRUCTURE  
ENTERING BRIDGE PROJECT

DESIGN	BY E. Sugiyama	CHECKED D. Kirkpatrick
DETAILS	BY G.W. Stimach	CHECKED G. Castleton
QUANTITIES	BY E. Sugiyama	CHECKED J. Lavinder

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

**SEISMIC RETROFIT PROJECT NO. 612**  
**RICHMOND-SAN RAFAEL BRIDGE**  
**289 FT SPANS**  
**PIER 19 & 61 EXISTING & FINAL LAYOUT**

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
0 1 2 3

CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
	7/24/99 10/17/99 12/14/99	277	503

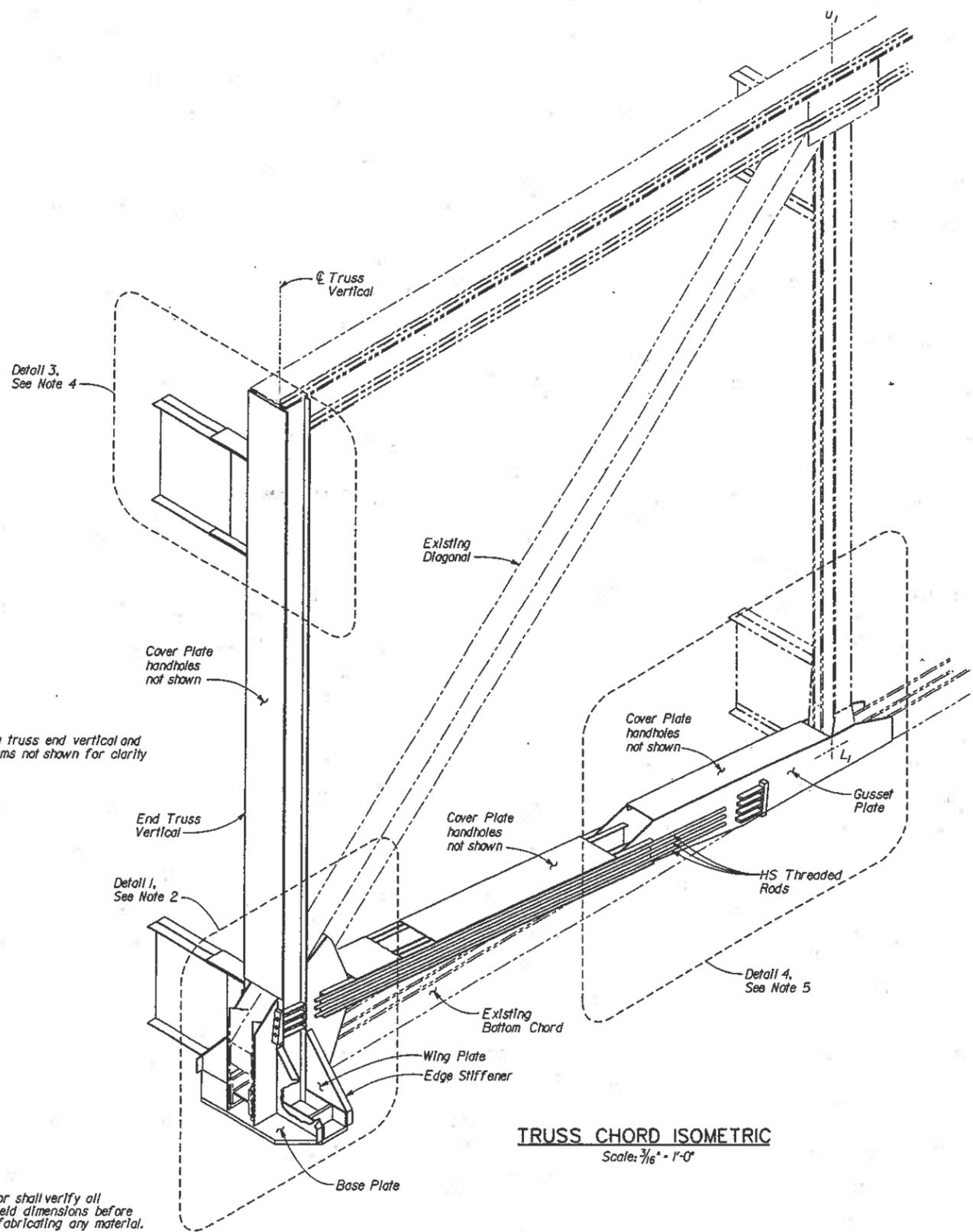
13-16-264.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.1/7.8, 0.0/2.6	863	1142

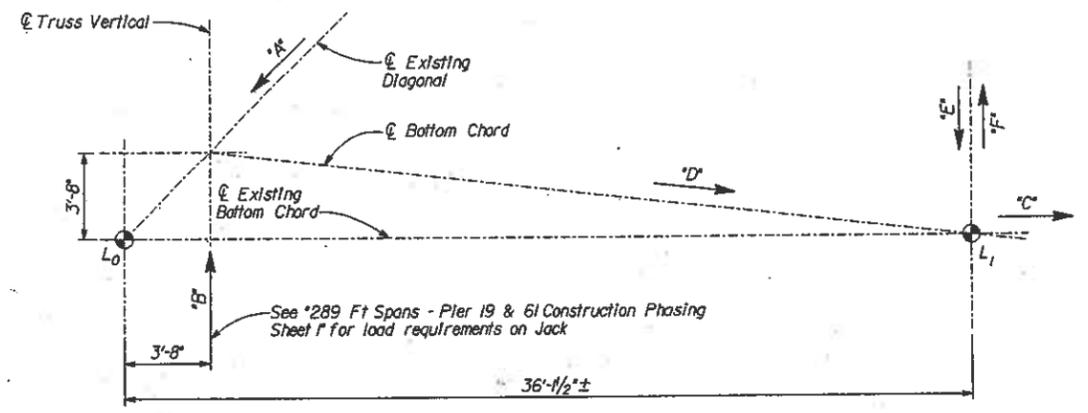
David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DMJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596



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**TRUSS CHORD ISOMETRIC**  
Scale: 3/16" = 1'-0"



**LAYOUT OF LOADS**

	*A	*B	*C	*D	*E	*F
Dead Load	800(c)	665	570(t)	573.7(t)	64.4(c)	77(t)
Live Load	323(c)	282	229(t)	230.4(t)	26.0(c)	67(t)
Impact	39(c)	34	28(t)	28.2(t)	3.2(c)	17(t)
Total	1162	981	827	832	94	161

(t) - denotes tension  
(c) - denotes compression

- Notes:**
1. Isometric shown for Pier 19, Piers 61 and 55 - 60 similar.
  2. For Detail 1, see '289 Ft. Spans - Pier 19 & 61 Truss Modifications - Details 1' or '289 Ft. Spans - Piers 55 - 60 Truss Modification Details 1' sheet.
  3. Detail 2 not shown on this sheet. For Detail 2, see '289 FT Spans - Pier 19 & 61 Truss Modification Details 3' sheet.
  4. For Detail 3, see '289 Ft. Spans - Pier 19 & 61 Truss Modifications - Details 5' sheet.
  5. For Detail 4, see '289 Ft. Spans - Pier 19 & 61 Truss Modifications - Details 6' or '289 Ft. Spans - Piers 55 - 60 Truss Modification Details 4' sheet.

**Note 1:**  
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

**SEISMIC RETROFIT PROJECT NO. 612**

**RICHMOND-SAN RAFAEL BRIDGE**  
289 FT. SPANS  
PIER 19 AND 61 TRUSS MODIFICATION - ISOMETRIC

DESIGN OVERSIGHT  
Ade Akinsanya/Shawn Sun  
SIGN-OFF DATE 1/20/99

DESIGN BY	T.F. Mahoney	CHECKED BY	D. Kirkpatrick
DETAILS BY	J.M. Johnson	CHECKED BY	G. Castleton
QUANTITIES BY	E. Sugiyama	CHECKED BY	J. Lavinder

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.  
28-0100  
POST MILE  
6.22

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 278 OF 503

13464307.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.177.8, 0.012.6	864	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
No. 55035  
Exp. 6-30-00  
CIVIL  
STATE OF CALIFORNIA

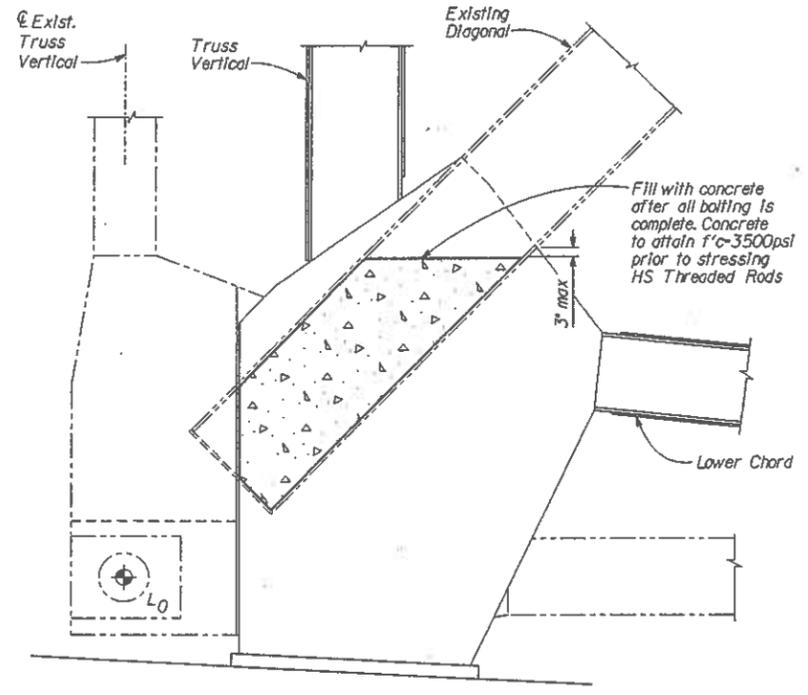
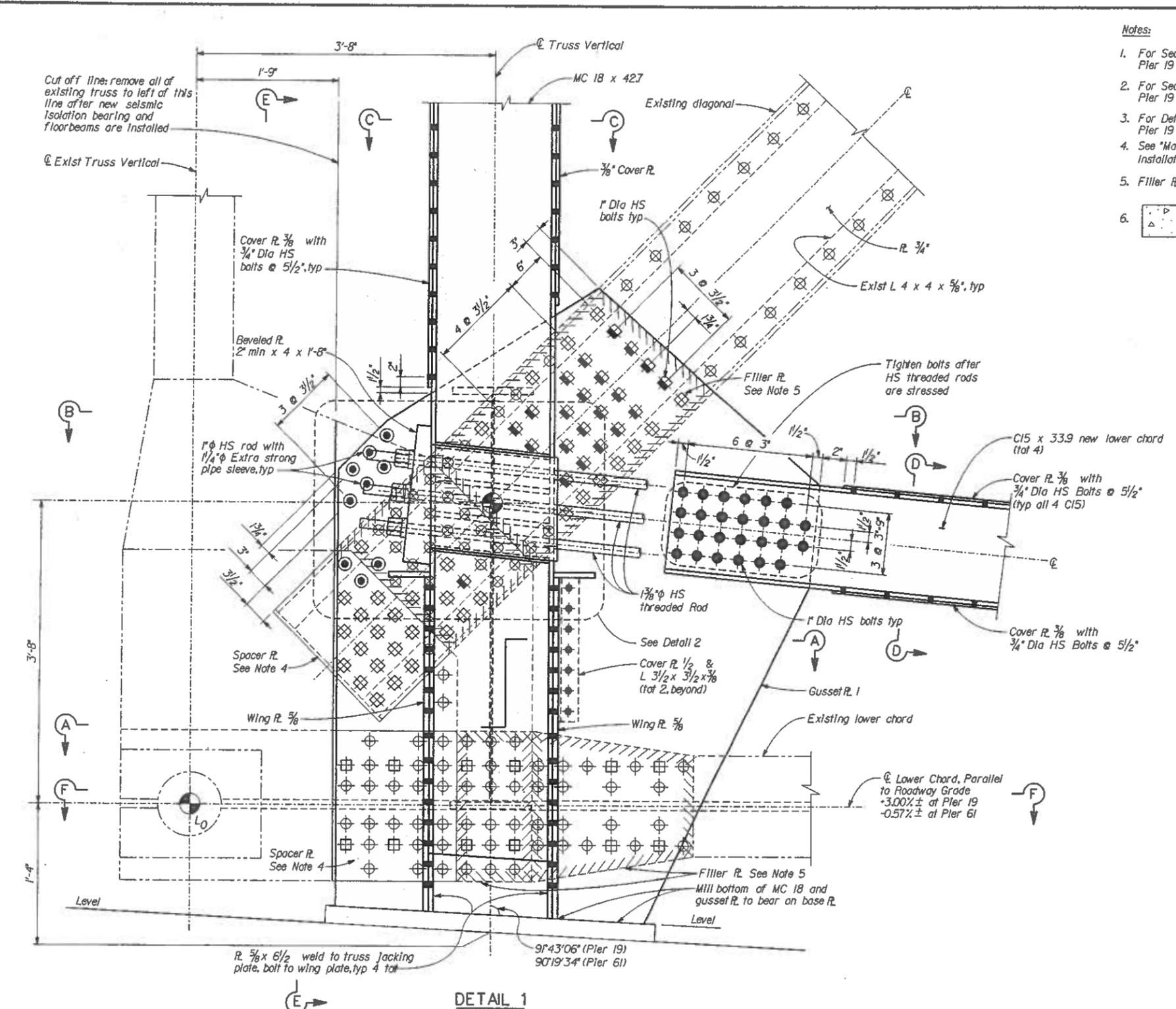
7-19-99  
PLANS APPROVAL DATE

GERWICK/SVERDRUP/DWJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
1340 TREAT BLVD. SUITE 208  
WALNUT CREEK, CA 94596

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- Notes:
- For Sections A-A, B-B, C-C and D-D, see "289 FT Spans - Pier 19 & 61 Truss Modification Details 2" sheet.
  - For Sections E-E and F-F, see "289 FT Spans - Pier 19 & 61 Truss Modification Details 4" sheet.
  - For Detail 2, see "289 FT Spans - Pier 19 & 61 Truss Modification Details 3" sheet.
  - See "Main Spans - Typical New Over Exist Gusset Plate Installation" sheet for similar details.
  - Filler R thickness as required to match exist gusset R.
  -  Indicates Infill concrete. Legend applies to this sheet only.



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

**DETAIL 1**  
Scale: 1/2" = 1'-0"  
Pier 19 shown,  
Pier 61 opposite hand

SEISMIC RETROFIT PROJECT NO. 612

RICHMOND-SAN RAFAEL BRIDGE

289 FT SPANS

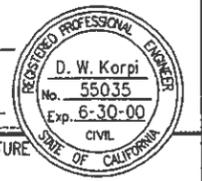
PIER 19 & 61 TRUSS MODIFICATION DETAILS 1

DESIGN BY T. Mahoney	CHECKED D. Kirkpatrick	BRIDGE NO. 28-0100	PROJECT ENGINEER P. Bott		
DETAILS BY J.M. Johnson	CHECKED G. Castleton	POST MILE 6.22			
QUANTITIES BY E. Sugiyama	CHECKED D. Kirkpatrick				
PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		DISREGARD PRINTS BEARING EARLIER REVISION DATES			
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU 04271	REVISION DATES (PRELIMINARY STAGE ONLY)		
0 1 2 3		EA 04-0438U1	7/26/99 7/27/99 7/28/99 7/29/99 7/30/99 8/1/99 8/2/99 8/3/99 8/4/99 8/5/99 8/6/99 8/7/99 8/8/99 8/9/99 8/10/99 8/11/99 8/12/99 8/13/99 8/14/99 8/15/99 8/16/99 8/17/99 8/18/99 8/19/99 8/20/99 8/21/99 8/22/99 8/23/99 8/24/99 8/25/99 8/26/99 8/27/99 8/28/99 8/29/99 8/30/99 8/31/99 9/1/99 9/2/99 9/3/99 9/4/99 9/5/99 9/6/99 9/7/99 9/8/99 9/9/99 9/10/99 9/11/99 9/12/99 9/13/99 9/14/99 9/15/99 9/16/99 9/17/99 9/18/99 9/19/99 9/20/99 9/21/99 9/22/99 9/23/99 9/24/99 9/25/99 9/26/99 9/27/99 9/28/99 9/29/99 9/30/99 10/1/99 10/2/99 10/3/99 10/4/99 10/5/99 10/6/99 10/7/99 10/8/99 10/9/99 10/10/99 10/11/99 10/12/99 10/13/99 10/14/99 10/15/99 10/16/99 10/17/99 10/18/99 10/19/99 10/20/99 10/21/99 10/22/99 10/23/99 10/24/99 10/25/99 10/26/99 10/27/99 10/28/99 10/29/99 10/30/99 10/31/99 11/1/99 11/2/99 11/3/99 11/4/99 11/5/99 11/6/99 11/7/99 11/8/99 11/9/99 11/10/99 11/11/99 11/12/99 11/13/99 11/14/99 11/15/99 11/16/99 11/17/99 11/18/99 11/19/99 11/20/99 11/21/99 11/22/99 11/23/99 11/24/99 11/25/99 11/26/99 11/27/99 11/28/99 11/29/99 11/30/99 12/1/99 12/2/99 12/3/99 12/4/99 12/5/99 12/6/99 12/7/99 12/8/99 12/9/99 12/10/99 12/11/99 12/12/99 12/13/99 12/14/99 12/15/99 12/16/99 12/17/99 12/18/99 12/19/99 12/20/99 12/21/99 12/22/99 12/23/99 12/24/99 12/25/99 12/26/99 12/27/99 12/28/99 12/29/99 12/30/99 12/31/99	SHEET 279	OF 503

1346A303.DGN

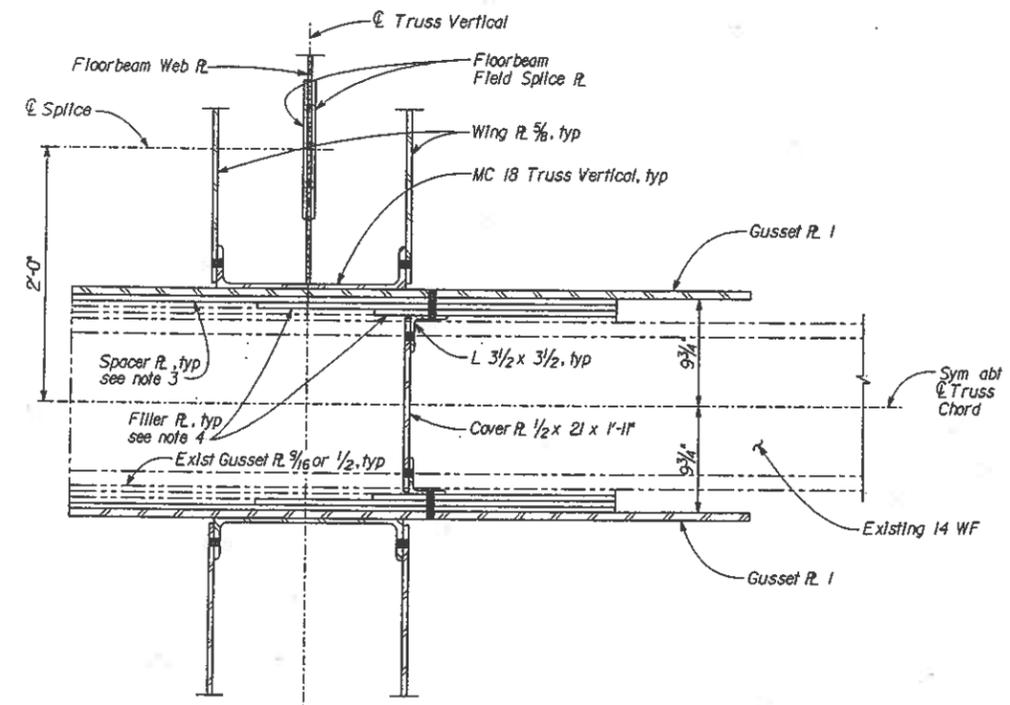
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.117.8,0.012.6	865	1142

David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DJMJ JOINT VENTURE  
 601 MONTGOMERY ST. SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD. SUITE 208  
 WALNUT CREEK, CA 94596

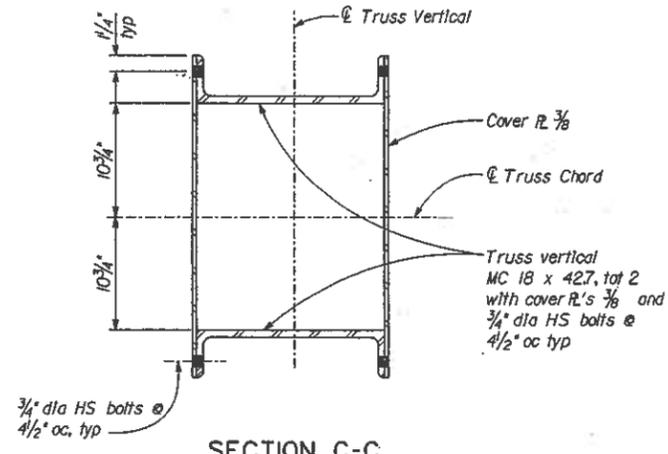


The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

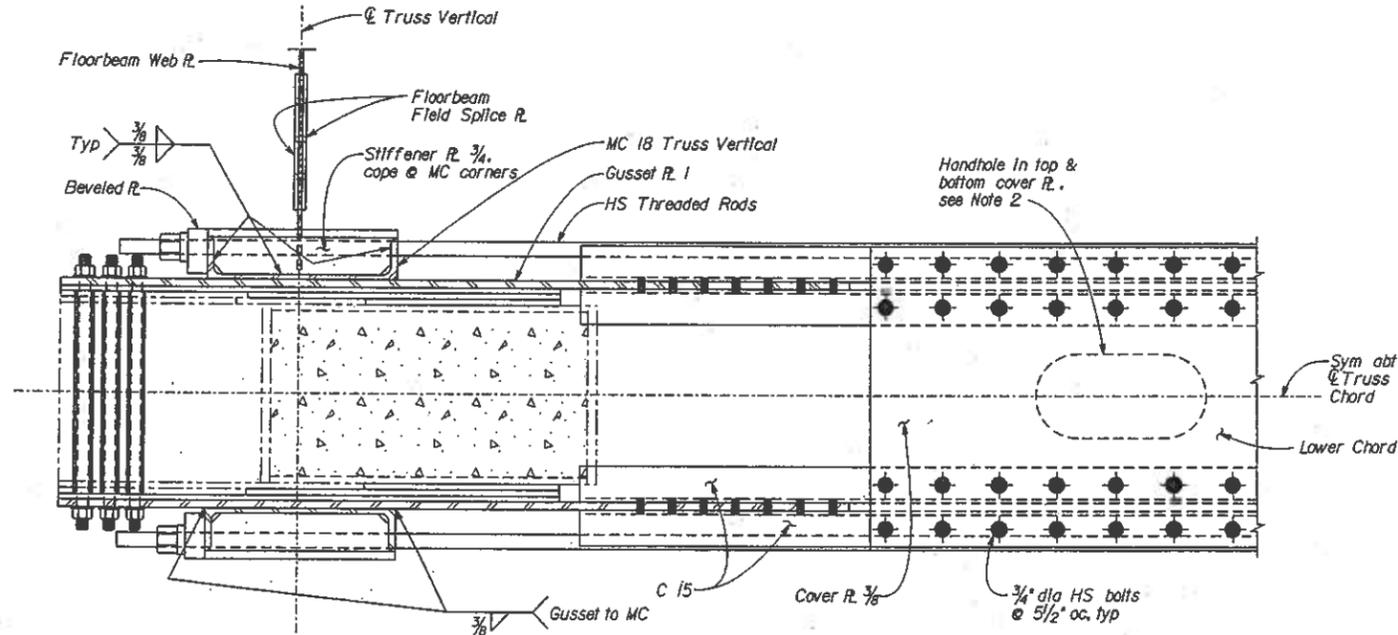
- Notes:
- For location of where sections are taken, see "289 Ft Spans - Pier 19 & 61 Truss Modification Details I" sheet.
  - For Handhole details, see "Main Spans - Typical Lacing Replacement Sequence I" sheet.
  - See "Main Spans - Typical New Over Exlst Gusset Plate Installation" sheet for similar details.
  - Filler Plate thickness as required to match exlst gusset plate.
  - Indicates infill concrete. Legend applies to this sheet only.



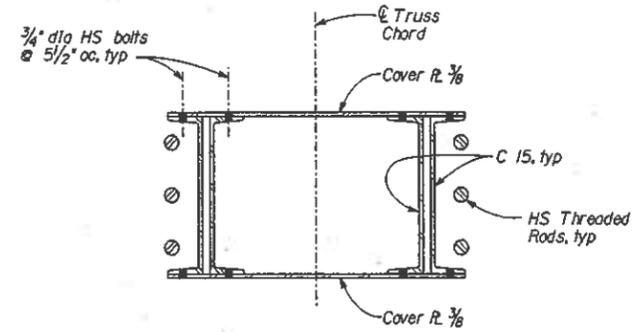
**SECTION A-A**  
Scale: 1/2" = 1'-0"



**SECTION C-C**  
Scale: 1/2" = 1'-0"  
New Truss Vertical



**SECTION B-B**  
Scale: 1/2" = 1'-0"



**SECTION D-D**  
Scale: 1/2" = 1'-0"  
New Truss Lower Chord C 15 x 339, tot 4

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

Ade Akinsanya/Shawn Sun  
 DESIGN OVERSIGHT  
 1/20/99

DESIGN	BY T.F. Mahoney	CHECKED D. Kirkpatrick
DETAILS	BY J.M. Johnson	CHECKED G. Castleton
QUANTITIES	BY E. Sugiyama	CHECKED D. Kirkpatrick

PREPARED FOR THE  
 STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612

RICHMOND-SAN RAFAEL BRIDGE

289 FT SPANS  
PIER 19 & 61 TRUSS MODIFICATION DETAILS 2

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0	1	2	3
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CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	7/26/99	7/27/99	7/28/99	7/29/99	7/30/99	7/31/99	8/1/99	8/2/99	8/3/99
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SHEET	280	OF	503
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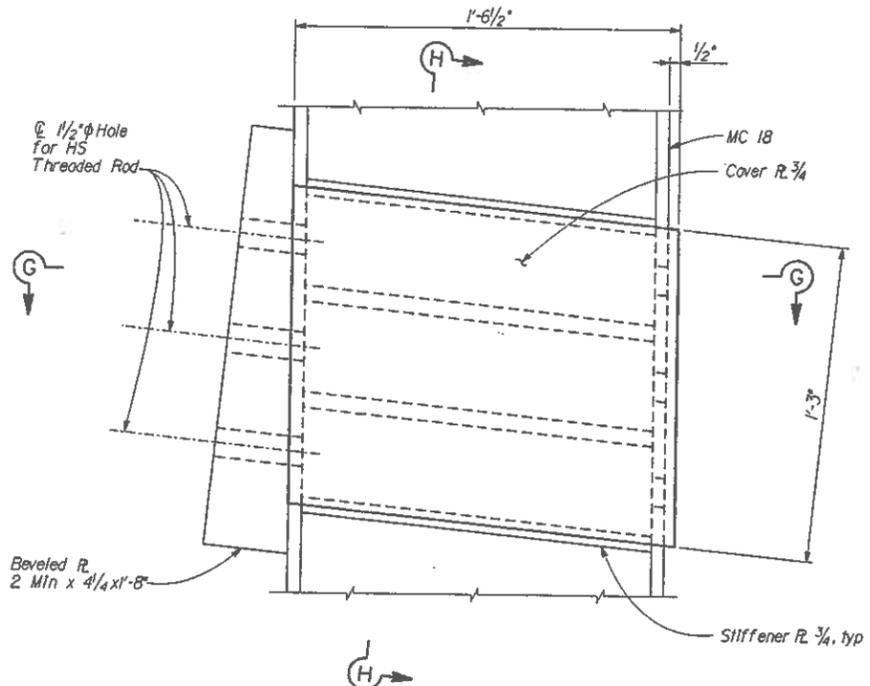
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.117.8.0.0/2.6	866	1142

David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DWJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD. SUITE 208  
 WALNUT CREEK, CA 94596

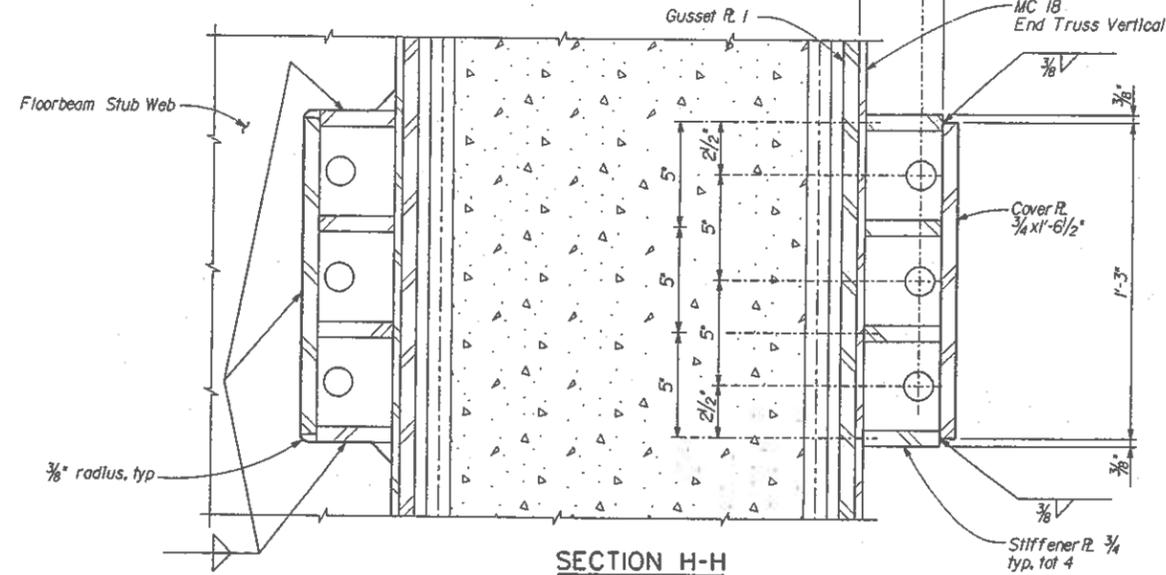


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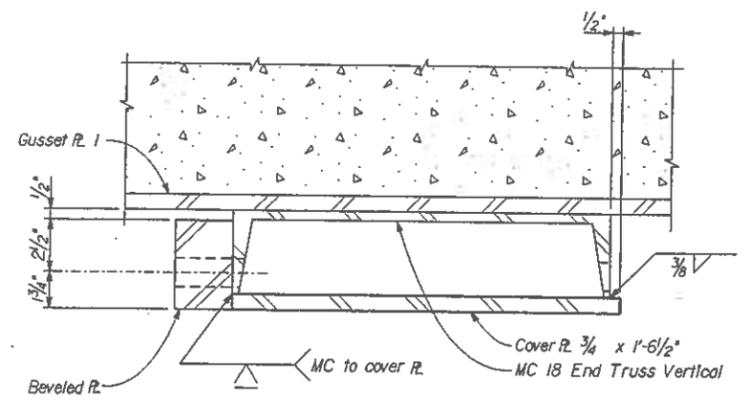
**DETAIL 2**

Scale: 3" = 1'-0"  
 Note: HS Threaded Rods not shown for clarity.



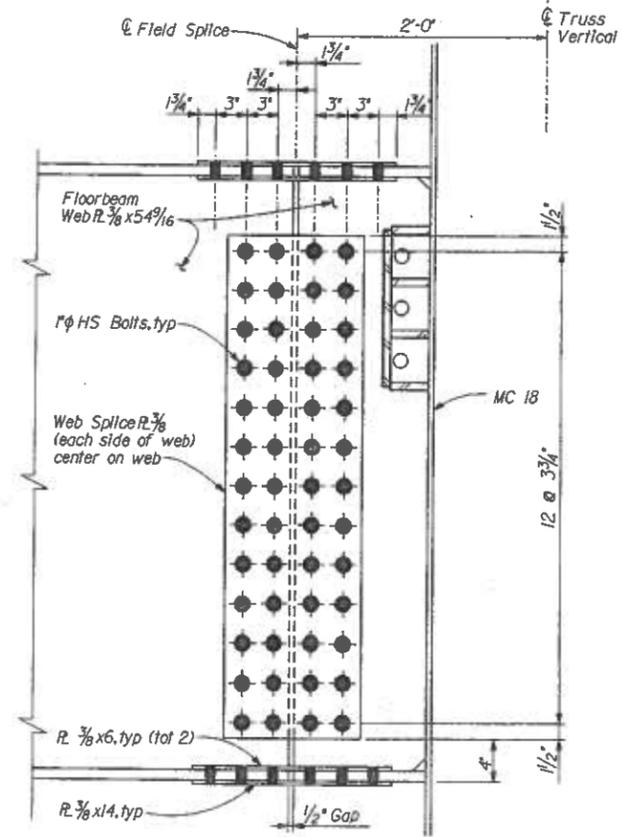
**SECTION H-H**

Scale: 3" = 1'-0"



**SECTION G-G**

Scale: 3" = 1'-0"



**LOWER CHORD CONNECTION DETAIL**

Scale: 1/2" = 1'-0"

**Notes:**

1. For location of where Detail 2 is taken, see \*289 Ft Spans - Pier 19 & 61 Truss Modification Details F sheet.
2. For details of welding the floorbeam stub to the MC see Section A-A, B-B and C-C on \*289 Ft. Spans - Pier 19 & 61 Truss Modification Details 5 sheet.
3. Indicates infill concrete. Legend applies to this sheet only.

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

Design Oversight:  
 Ade Akinsanya/Shawn Sun  
 Date: 1/20/99

DESIGN	BY T.F. Mahoney	CHECKED D. Kirkpatrick
DETAILS	BY J.M. Johnson	CHECKED G. Castleton
QUANTITIES	BY E. Sugiyama	CHECKED D. Kirkpatrick

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION  
 P. Bott  
 PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

**SEISMIC RETROFIT PROJECT NO. 612**  
**RICHMOND-SAN RAFAEL BRIDGE**  
 289 FT SPANS  
**PIER 19 & 61 TRUSS MODIFICATION DETAILS 3**

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1	2	3
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DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY) 3/98 1/99 3/99 3/99 3/99 1/00 1/00
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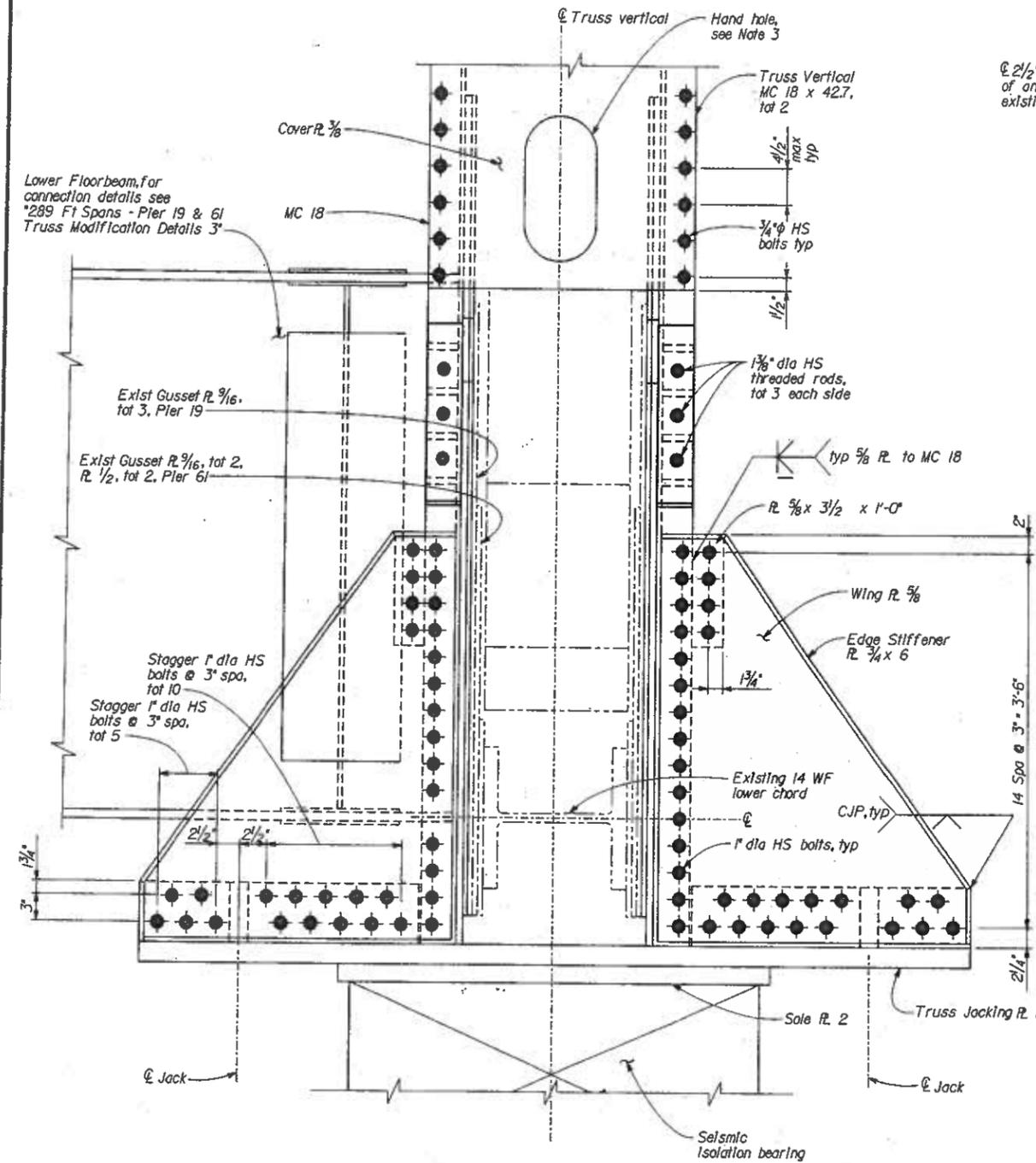
SHEET	281	OF	503
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1346315.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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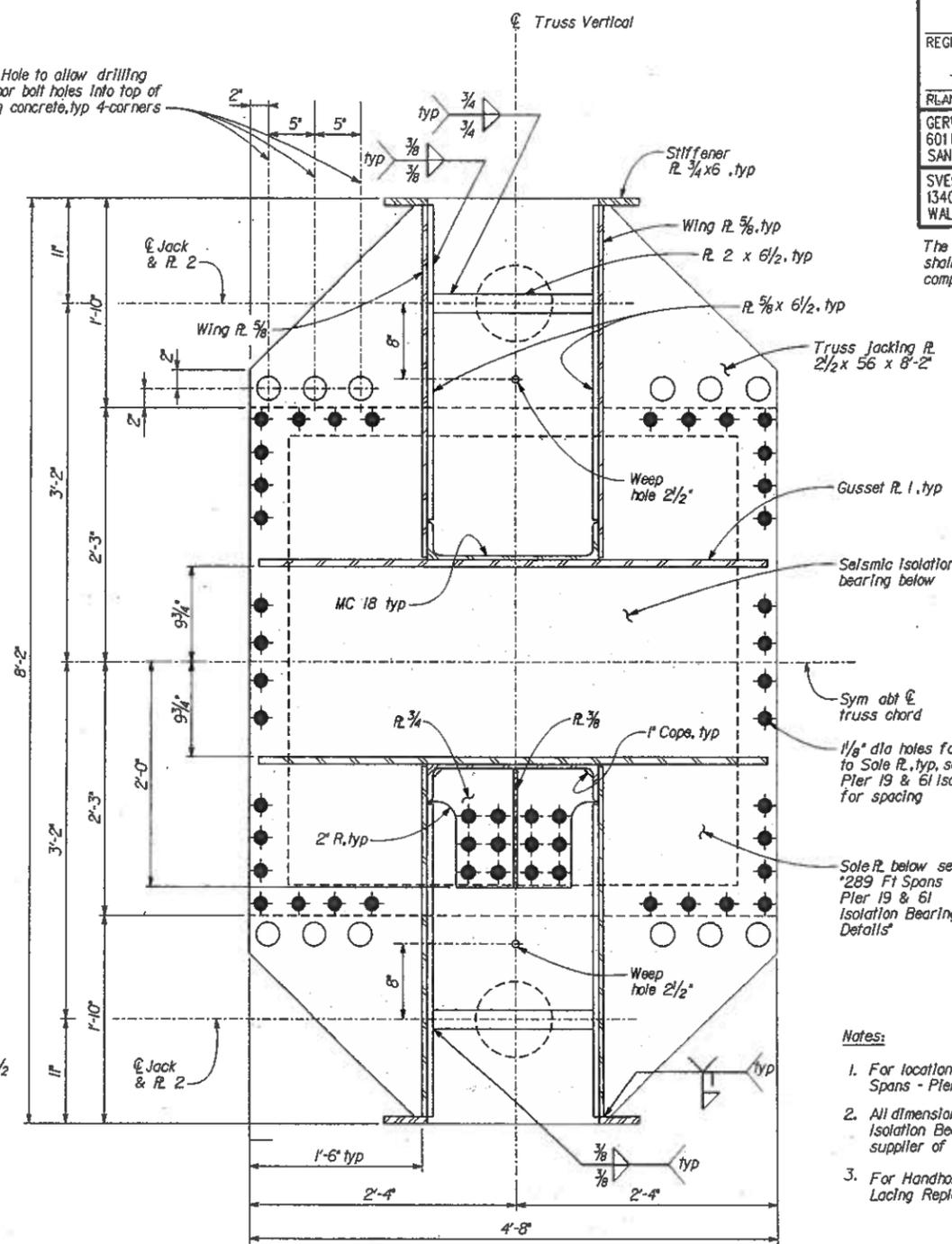
**David W. Korpi**  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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**SECTION E-E**  
Scale: 1/2" = 1'-0"

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



**SECTION F-F**  
Scale: 1/2" = 1'-0"

Note: Existing bottom chord not shown for clarity.

- Notes:
1. For location of where sections are taken, see '289 Ft Spans - Pier 19 & 61 Truss Modification Details 1' sheet.
  2. All dimensions which are dependent on the Seismic Isolation Bearings shall be verified with the supplier of the isolation bearing.
  3. For Handhole details, see 'Main Spans - Typical Lacing Replacement Sequence 1' sheet.

**SEISMIC RETROFIT PROJECT NO. 612**

RICHMOND-SAN RAFAEL BRIDGE	
289 FT SPANS	
PIER 19 & 61 TRUSS MODIFICATION DETAILS 4	
BRIDGE NO.	28-0100
POST MILE	6.22

DESIGN OVERSIGHT  
Ade Akinsanya/Shawn Sun  
DATE: 11/20/99

DESIGN BY	T. Mahoney	CHECKED BY	D. Kirkpatrick
DETAILS BY	J.M. Johnson	CHECKED BY	G. Castleton
QUANTITIES BY	E. Sugiyama	CHECKED BY	D. Kirkpatrick

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

CU	04271	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
EA	04-0438U1	7/28/99, 8/25/99, 9/8/99, 10/17/99, 12/14/99	282	503

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

DISREGARD PRINTS BEARING EARLIER REVISION DATES

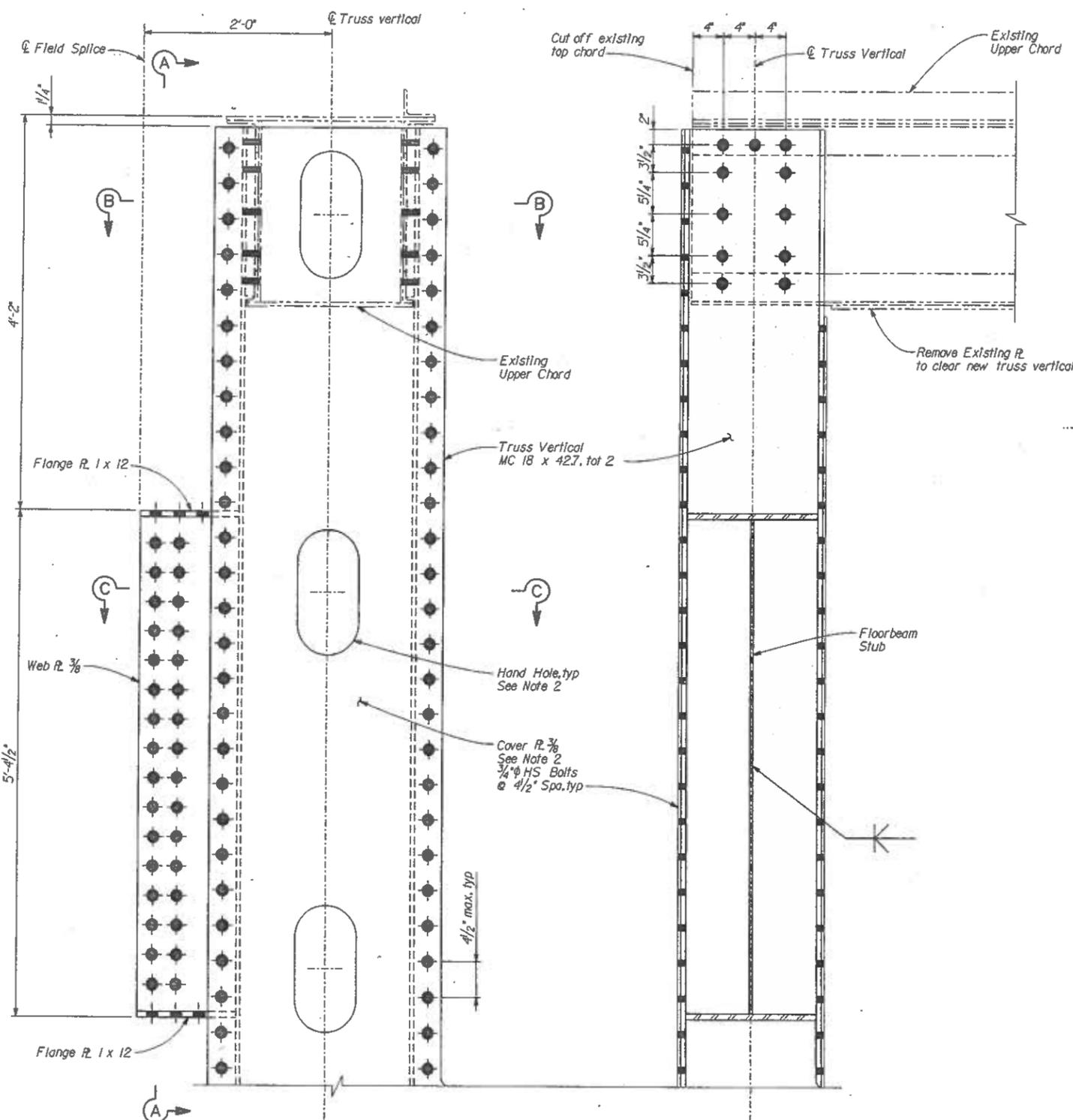
1346A304.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.117.8,0.0/2.6	868	1142

David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DMM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD. SUITE 208  
 WALNUT CREEK, CA 94596

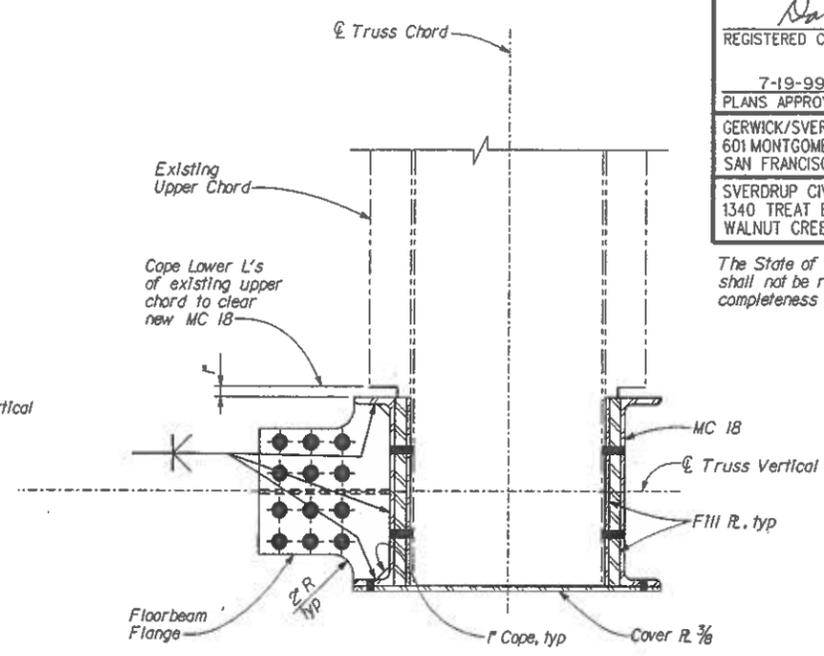


The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

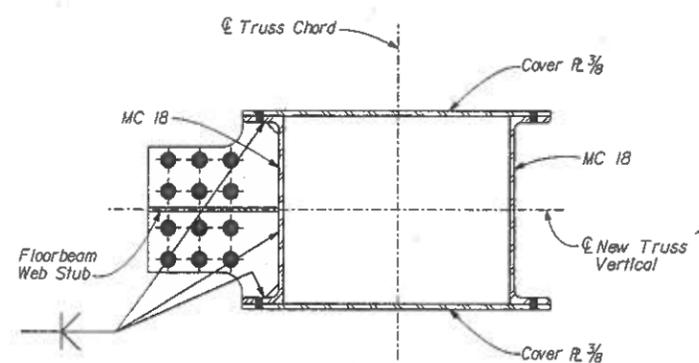


**DETAIL 3**  
Scale: 1/2" = 1'-0"

**SECTION A-A**  
Scale: 1/2" = 1'-0"



**SECTION B-B**  
Scale: 1/2" = 1'-0"



**SECTION C-C**  
Scale: 1/2" = 1'-0"

- Notes:**
1. For location of where Detail 3 is taken, see '289 FT. Spans - Piers 19 & 61 Truss Modification Isometric' sheet.
  2. For Handhole and Cover Plate details, see 'Main Spans - Typical Lacing Replacement Sequence 1' sheet.
  3. For Floorbeam Field Splice Details, see '289 Ft Spans - Pier 19 & 61 Truss Modification Details 3' and '289 FT Spans - Pier 19 & 61 Floor Beam Details 3' sheets.

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

Ade Akinsanya/Shawn Sun  
 DESIGN OVERSIGHT  
 DATE: 1/20/99

DESIGN BY	T. Mahoney	CHECKED BY	D. Kirkpatrick
DETAILS BY	J.M. Johnson	CHECKED BY	G. Castleton
QUANTITIES BY	E. Sugiyama	CHECKED BY	D. Kirkpatrick

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION

P. Bott  
 PROJECT ENGINEER

BRIDGE NO.  
 28-0100  
 POST MILE  
 6.22

**SEISMIC RETROFIT PROJECT NO. 612**  
**RICHMOND-SAN RAFAEL BRIDGE**  
 289 FT SPANS  
**PIER 19 & 61 TRUSS MODIFICATION DETAILS 5**

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 04271  
 EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 283 OF 503

1346A305.DGN



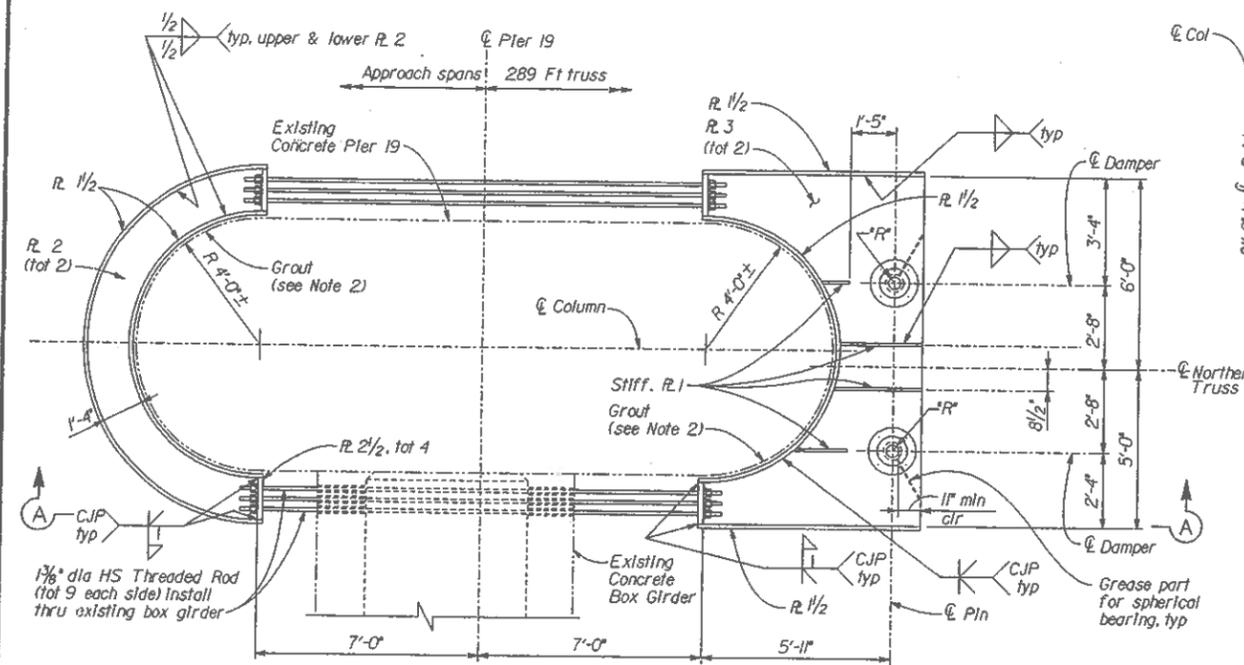
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.117.8,0.012.6	870	1142

**David W. Korpi**  
 REGISTERED CIVIL ENGINEER  
 No. 55035  
 Exp. 6-30-00  
 CIVIL  
 STATE OF CALIFORNIA

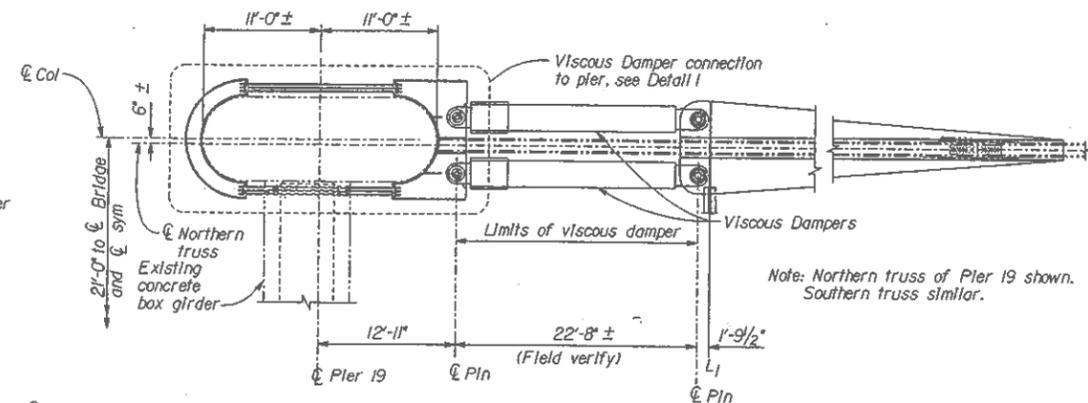
7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DJMJ JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596

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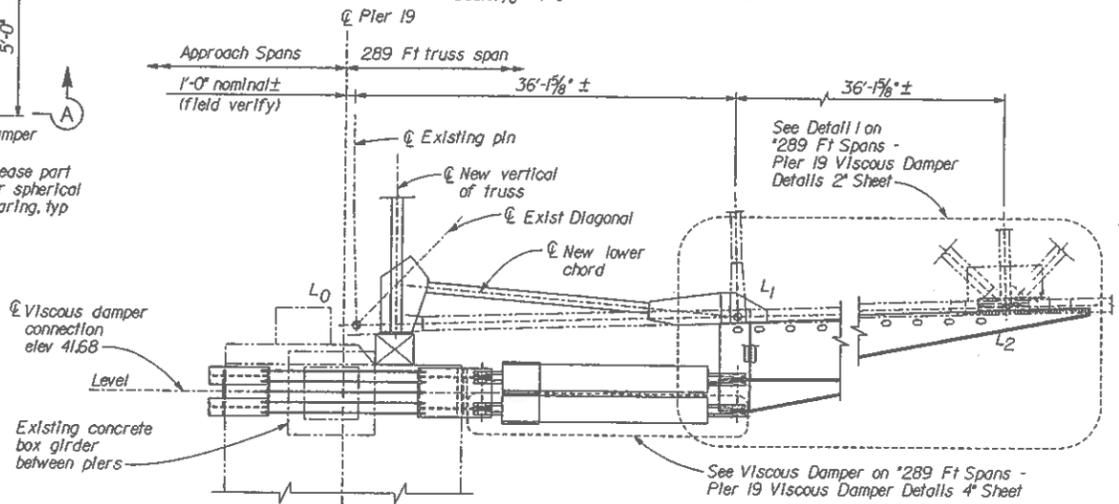
- Notes:**
- Dimension "R" to be determined by the Contractor. Contractor shall provide necessary plate finishes, keeper bars, retaining rings and grease fittings required for proper installation of viscous damper, spherical bearing and associated hardware.
  - Fit up steel plate against face of concrete pier with 1/2" non-shrink grout. Grout shall have strength of 4000 psi.
  - Prestress notes:
    - Jack - 166 kips/bar
    - ⊙ denotes jacking sequence
    - Stressing shall be done simultaneously on both sides
  - Locate and determine spacing or pattern of existing #5 reinforcement in existing concrete box girder prior to coring holes.
  - For existing Pier 19 Modification see "Top of Pier 19 Modification" sheet.
  - For construction phasing see "289 Ft Spans - Pier 19 and 6I Construction Phasing Sheet 1 & 2" sheets.
  - All components of the Viscous Damper bracket are FCM.



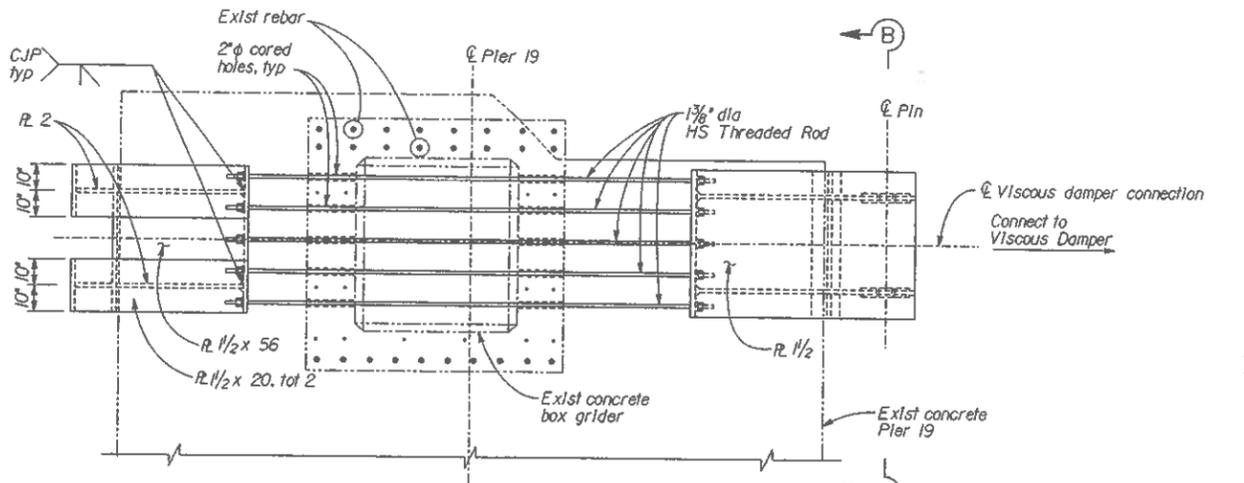
**DETAIL 1**  
Scale: 3/8" = 1'-0"



**VISCIOUS DAMPER PLAN**  
Scale: 1/8" = 1'-0"

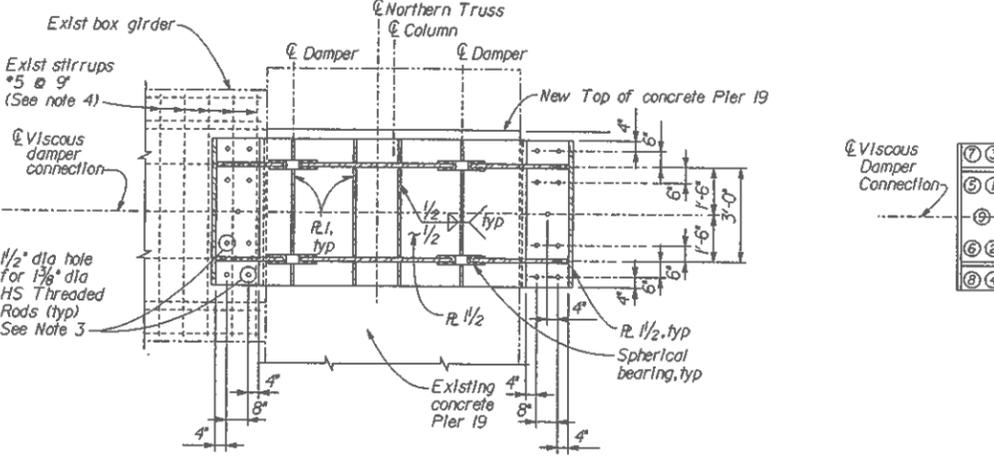


**VISCIOUS DAMPER ELEVATION**  
Scale: 1/8" = 1'-0"

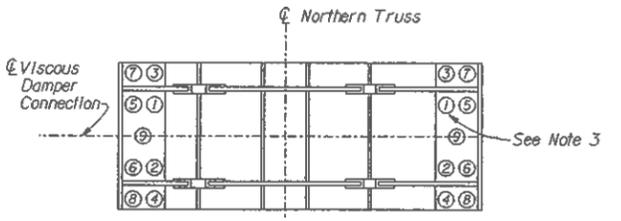


**SECTION A-A**  
Scale: 3/8" = 1'-0"

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



**SECTION B-B**  
Scale: 3/8" = 1'-0"



**HS THREADED ROD JACKING SEQUENCE**  
Scale: 3/8" = 1'-0"

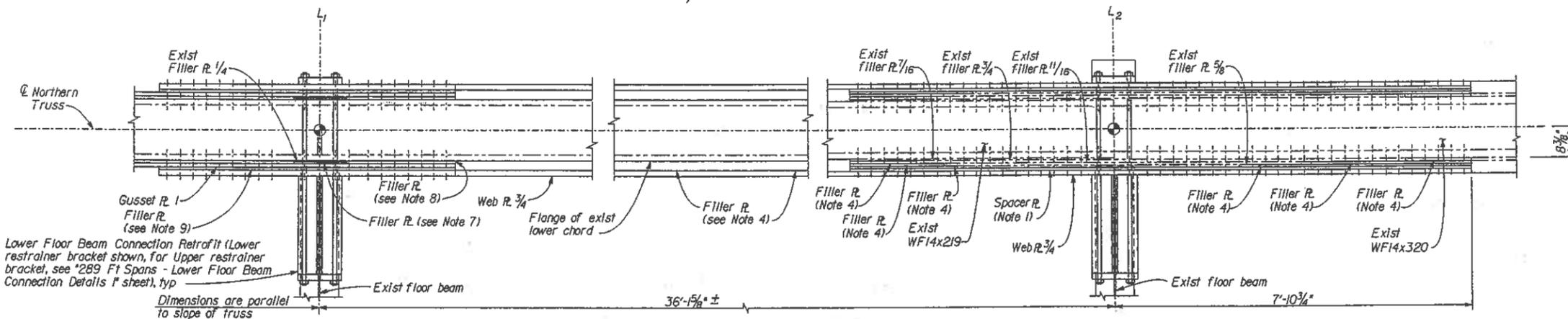
DESIGN BY E. Sugiyama DETAILS BY G.W. Stimach QUANTITIES BY E. Sugiyama		CHECKED BY O. Li CHECKED BY O. Li CHECKED BY D. Kirkpatrick		PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION		BRIDGE NO. 28-0100 POST MILE 6.22		<b>SEISMIC RETROFIT PROJECT NO. 612</b> <b>RICHMOND-SAN RAFAEL BRIDGE</b> <b>289 FT SPANS</b> <b>PIER 19 VISCIOUS DAMPER DETAILS 1</b>	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3		CU 04271 EA 04-0438U1		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES (PRELIMINARY STAGE ONLY) 7/25/99 7/26/99 7/27/99 7/28/99 7/29/99 7/30/99 7/31/99 8/1/99 8/2/99 8/3/99 8/4/99 8/5/99 8/6/99 8/7/99 8/8/99 8/9/99 8/10/99 8/11/99 8/12/99 8/13/99 8/14/99 8/15/99 8/16/99 8/17/99 8/18/99 8/19/99 8/20/99 8/21/99 8/22/99 8/23/99 8/24/99 8/25/99 8/26/99 8/27/99 8/28/99 8/29/99 8/30/99 8/31/99 9/1/99 9/2/99 9/3/99 9/4/99 9/5/99 9/6/99 9/7/99 9/8/99 9/9/99 9/10/99 9/11/99 9/12/99 9/13/99 9/14/99 9/15/99 9/16/99 9/17/99 9/18/99 9/19/99 9/20/99 9/21/99 9/22/99 9/23/99 9/24/99 9/25/99 9/26/99 9/27/99 9/28/99 9/29/99 9/30/99 10/1/99 10/2/99 10/3/99 10/4/99 10/5/99 10/6/99 10/7/99 10/8/99 10/9/99 10/10/99 10/11/99 10/12/99 10/13/99 10/14/99 10/15/99 10/16/99 10/17/99 10/18/99 10/19/99 10/20/99 10/21/99 10/22/99 10/23/99 10/24/99 10/25/99 10/26/99 10/27/99 10/28/99 10/29/99 10/30/99 10/31/99 11/1/99 11/2/99 11/3/99 11/4/99 11/5/99 11/6/99 11/7/99 11/8/99 11/9/99 11/10/99 11/11/99 11/12/99 11/13/99 11/14/99 11/15/99 11/16/99 11/17/99 11/18/99 11/19/99 11/20/99 11/21/99 11/22/99 11/23/99 11/24/99 11/25/99 11/26/99 11/27/99 11/28/99 11/29/99 11/30/99 12/1/99 12/2/99 12/3/99 12/4/99 12/5/99 12/6/99 12/7/99 12/8/99 12/9/99 12/10/99 12/11/99 12/12/99 12/13/99 12/14/99 12/15/99 12/16/99 12/17/99 12/18/99 12/19/99 12/20/99 12/21/99 12/22/99 12/23/99 12/24/99 12/25/99 12/26/99 12/27/99 12/28/99 12/29/99 12/30/99 12/31/99		SHEET 285 OF 503	

1346A273.DGN

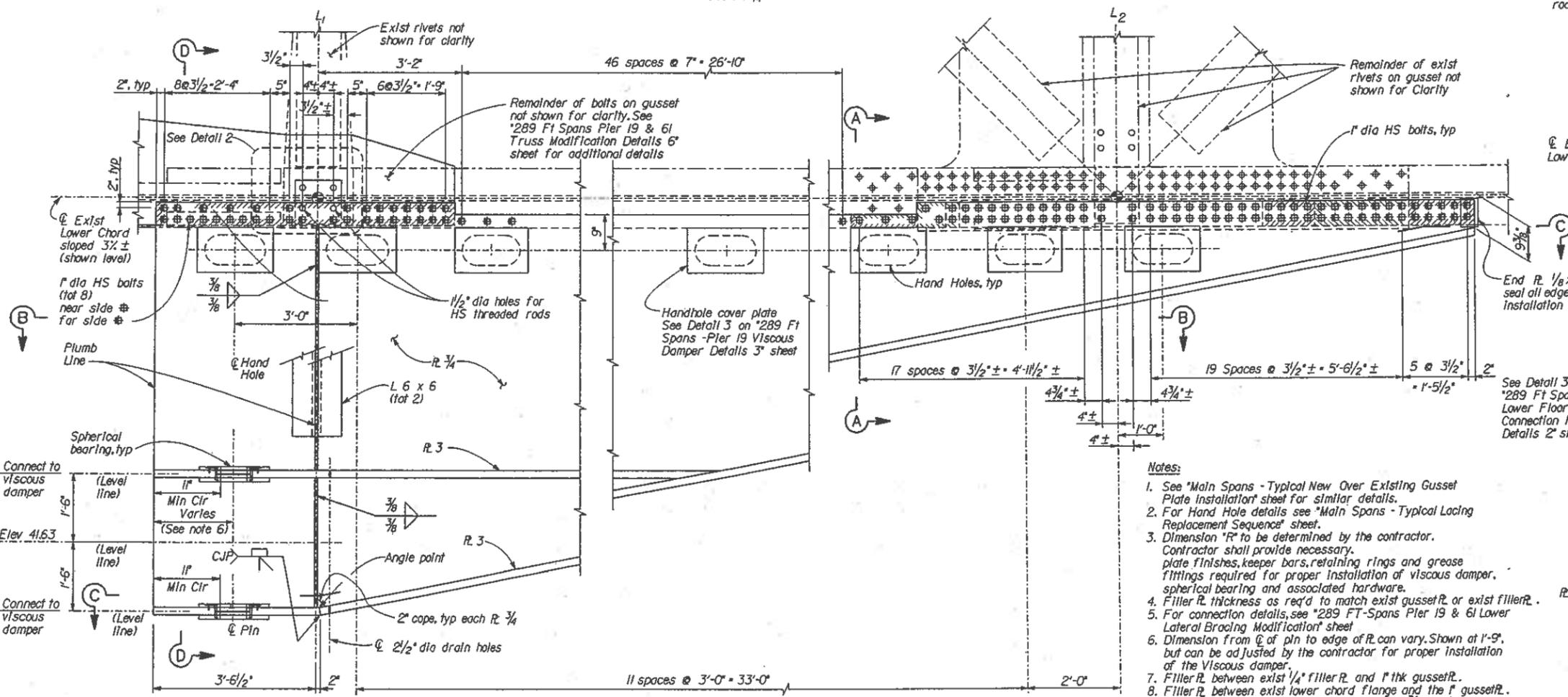
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.1/7.8,0.0/2.6	871	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

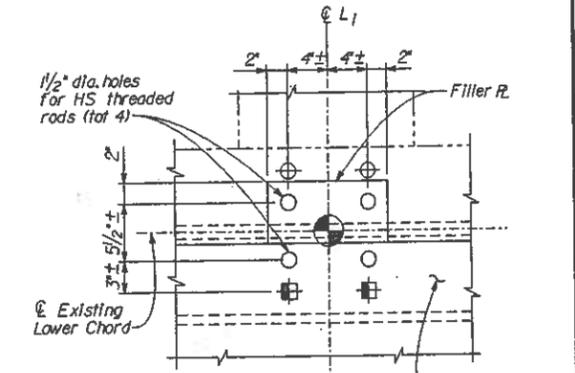
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



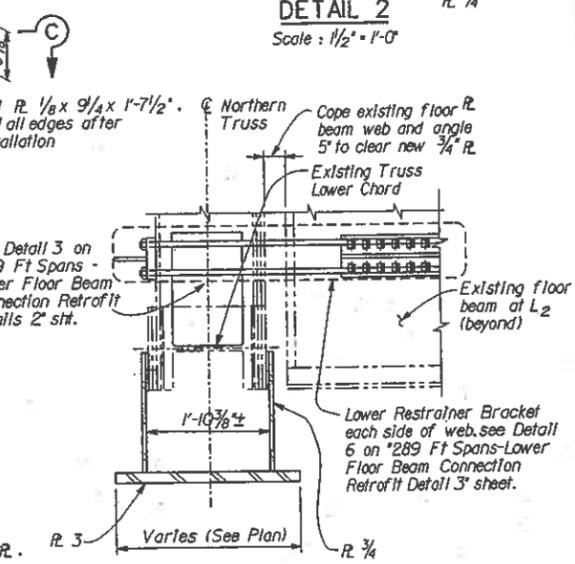
PLAN  
Scale: 3/4" = 1'-0"



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



DETAIL 2  
Scale: 1/2" = 1'-0"



SECTION A-A  
Scale: 3/4" = 1'-0"

- Notes:
- See 'Main Spans - Typical New Over Existing Gusset Plate Installation' sheet for similar details.
  - For Hand Hole details see 'Main Spans - Typical Lacing Replacement Sequence' sheet.
  - Dimension 'R' to be determined by the contractor. Contractor shall provide necessary plate finishes, keeper bars, retaining rings and grease fittings required for proper installation of viscous damper, spherical bearing and associated hardware.
  - Filler R. thickness as req'd to match exist gusset R. or exist filler R.
  - For connection details, see '289 FT-Spans Pier 19 & 61 Lower Lateral Bracing Modification' sheet.
  - Dimension from C of pin to edge of R. can vary. Shown at 1'-9", but can be adjusted by the contractor for proper installation of the viscous damper.
  - Filler R. between exist 1/4" filler R. and 1" thk gusset R.
  - Filler R. between exist lower chord flange and the 1" gusset R.
  - Filler R. between the 1" thk gusset R. and the 3/4" web R.
  - For Section B and C, see '289 Ft Spans - Pier 19 Viscous Damper Details 3' sheet.
  - For Section D, see '289 Ft Spans - Pier 19 Viscous Damper Details 4' sheet.
  - Galvanize Bracket assembly.

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

SEISMIC RETROFIT PROJECT NO. 612

DESIGN: Ade Akinsanya/Shawn Sun  
DATE: 2/2/99

DESIGN	BY E. Sugiyama	CHECKED D. Kirkpatrick
DETAILS	BY G. W. Stimach	CHECKED D. Kirkpatrick
QUANTITIES	BY E. Sugiyama	CHECKED D. Kirkpatrick

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER  
CU 04271  
EA 04-0438U1

BRIDGE NO.	28-0100
POST MILE	6.22

RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS  
PIER 19 VISCOUS DAMPER DETAILS 2

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 286	OF 503
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1346268.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.1/7.8,0.0/2.6	872	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
No. 55035  
Exp. 6-30-00  
CIVIL  
STATE OF CALIFORNIA

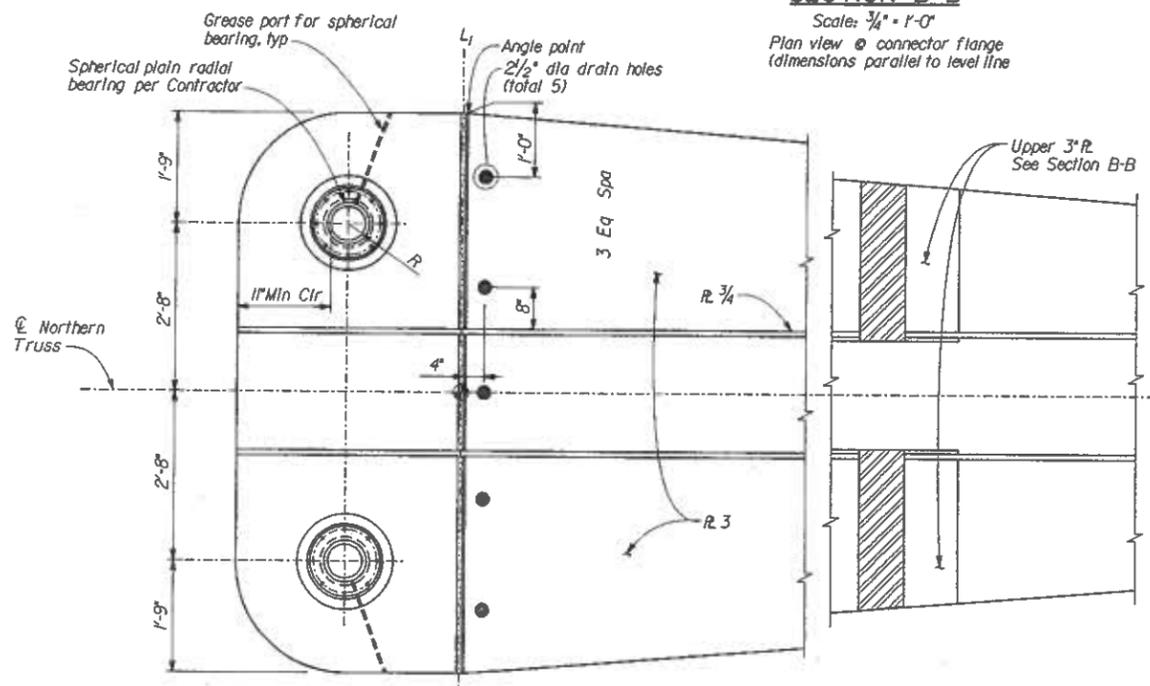
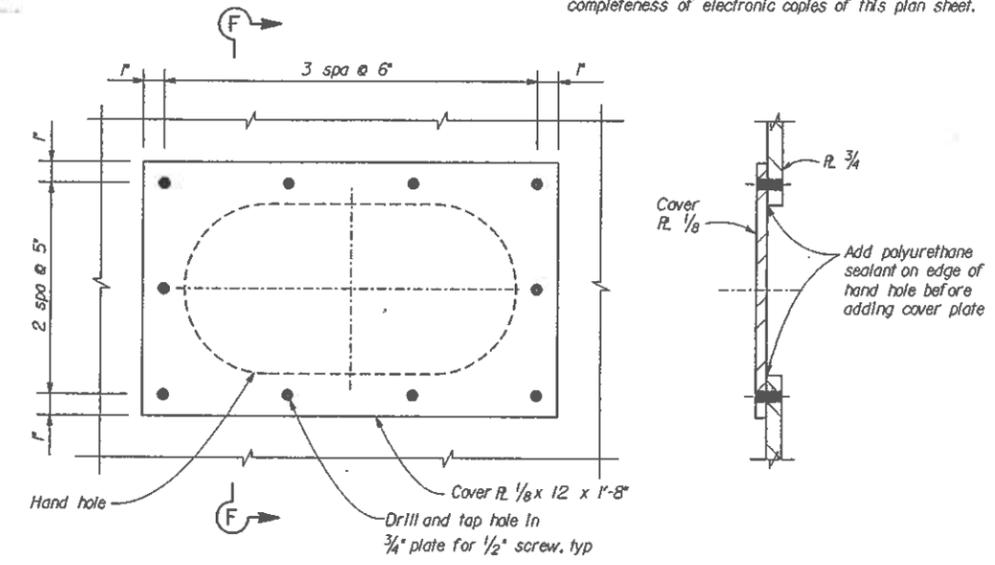
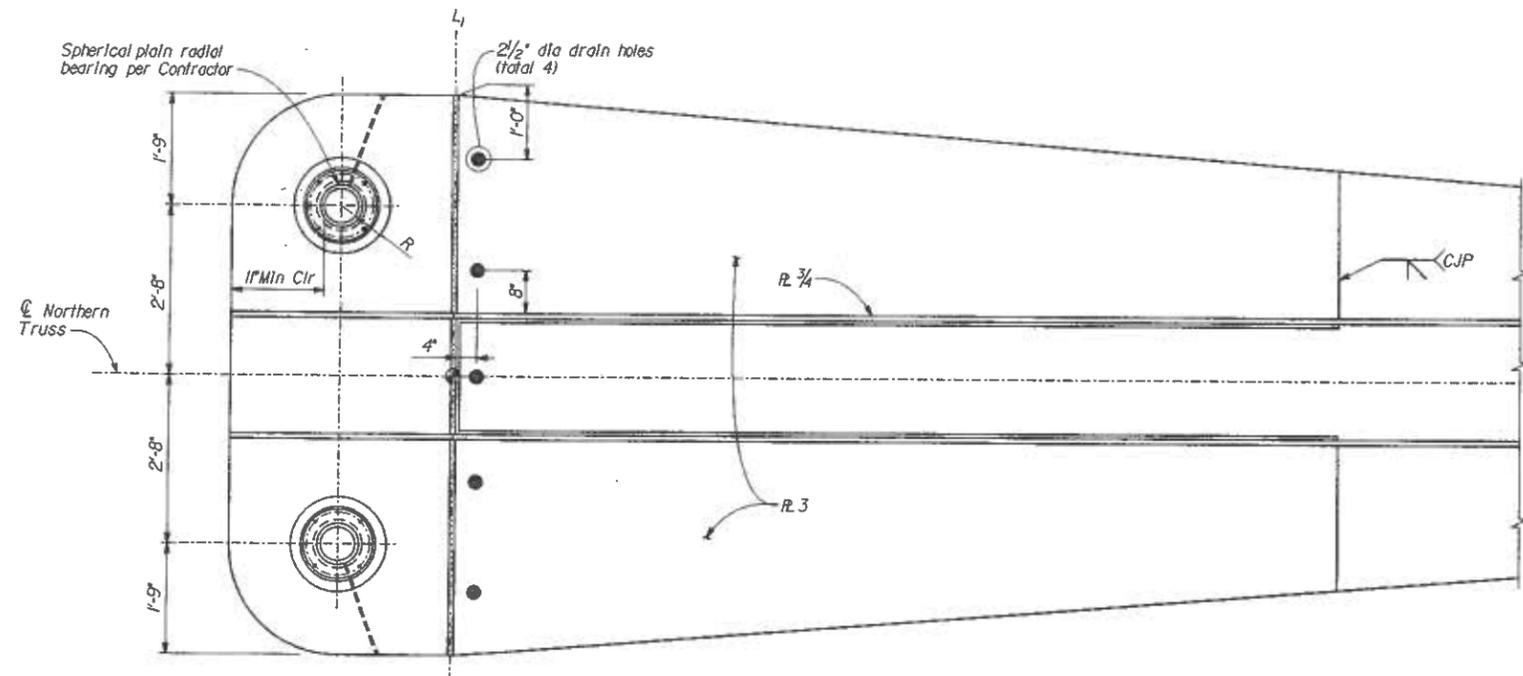
7-19-99  
PLANS APPROVAL DATE

GERWICK/SVERDRUP/DMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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- Note:
- For location of where sections are taken, see "289 Ft Spans - Pier 19 Viscous Damper Details 2" sheet.
  - For handhole details, see "Main Spans - Typical Lacing Replacement Sequence 1" sheet.



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

Shawn Sun  
Ade Akinsanya/Shawn Sun  
DESIGN OVERSIGHT  
SIGN-OFF DATE 1/28/99

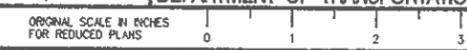
DESIGN	BY E. Sugiyama	CHECKED O. Li
DETAILS	BY G. W. Stimach	CHECKED O. Li
QUANTITIES	BY E. Sugiyama	CHECKED D. Kirkpatrick

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612  
RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS  
PIER 19 VISCOUS DAMPER DETAILS 3



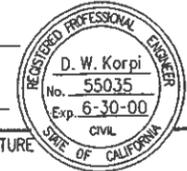
CU 04271  
EA 04-04.38U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 287	OF 503
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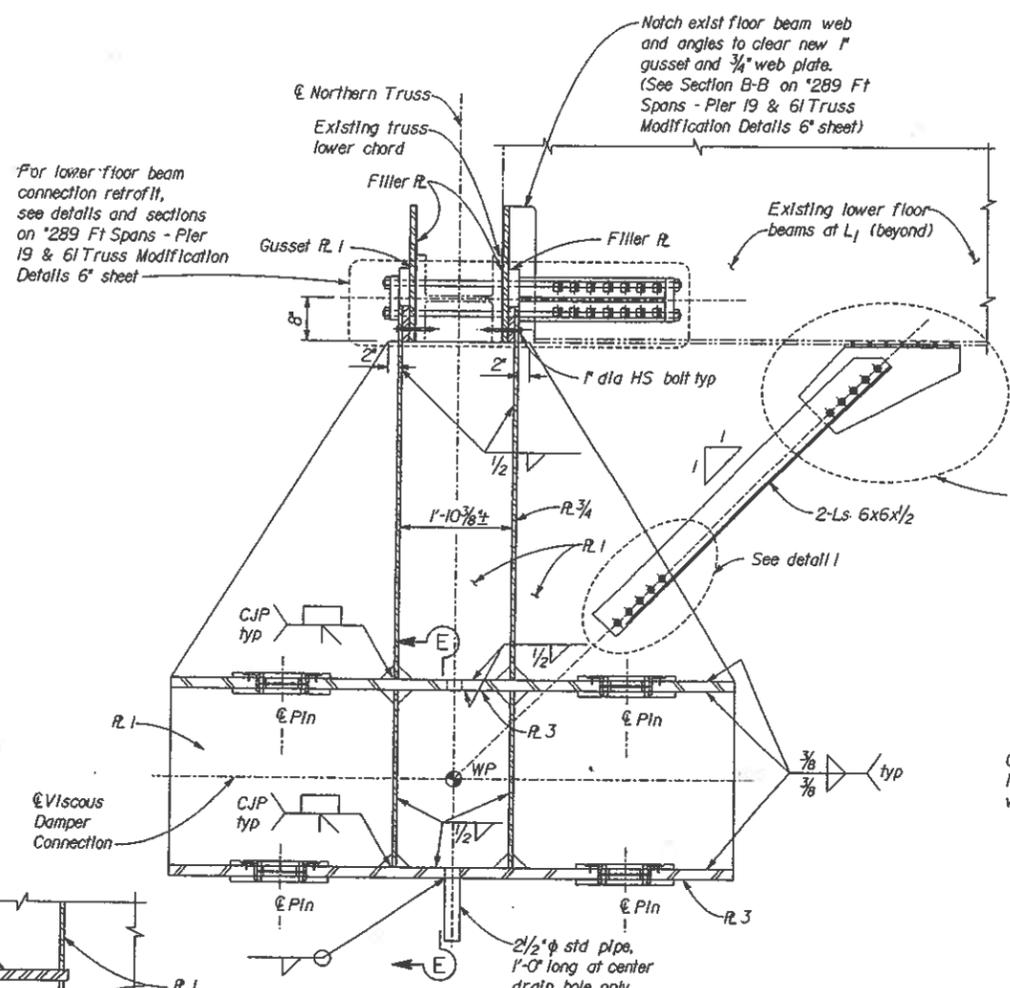
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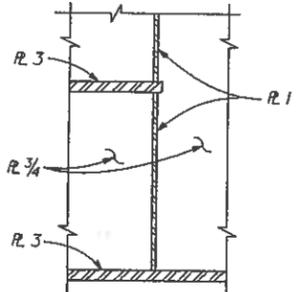
David M. Korpi  
 REGISTERED CIVIL ENGINEER  
 7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DMJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596



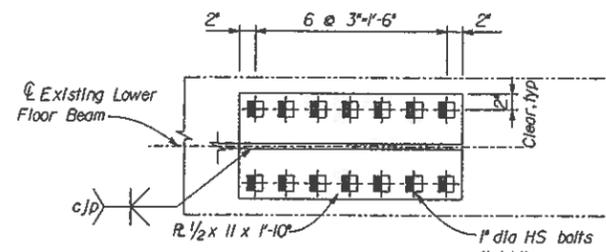
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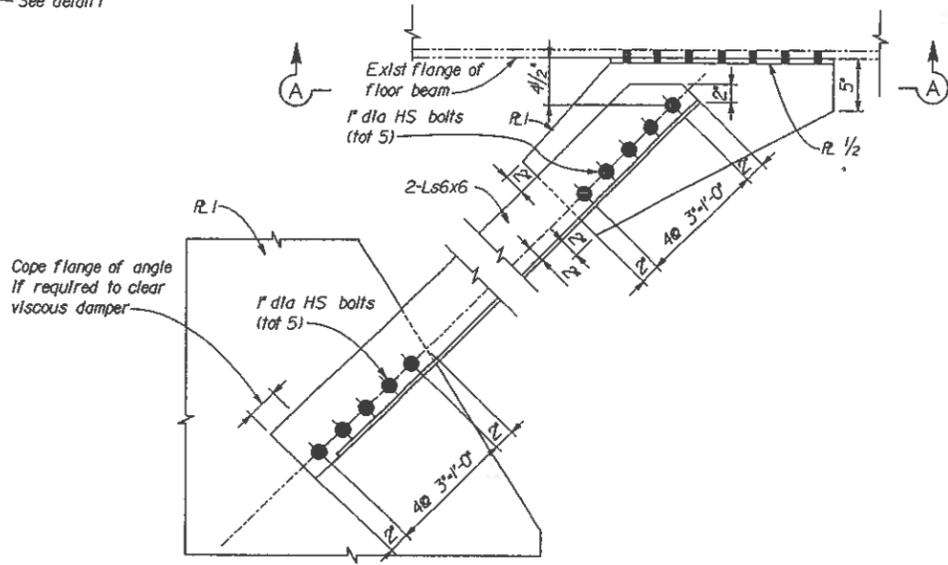
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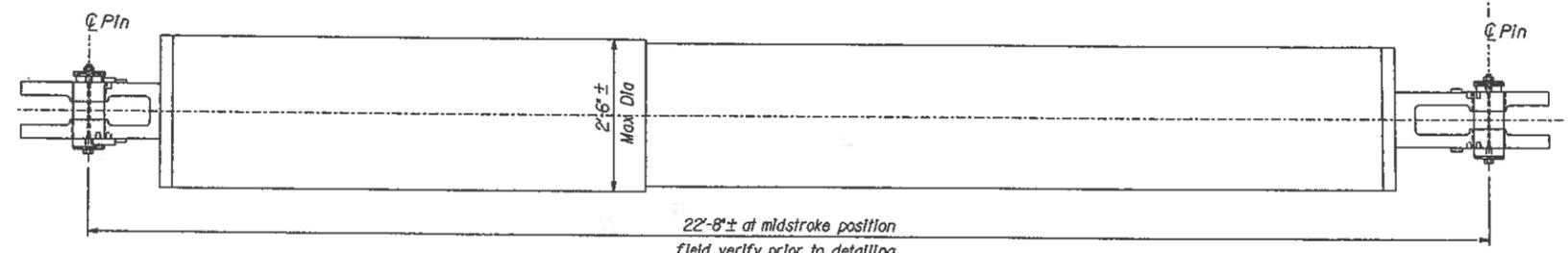
SECTION E-E  
 Scale: 3/4" = 1'-0"



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



DETAIL 1  
 Scale: 1/2" = 1'-0"



VISCIOUS DAMPER  
 Not to scale

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

DESIGN CRITERIA (Alternative No. 1)

- $F = CV^n$
1. F is designated force = 500 Kips
  2. C is the damping coefficient = 340 K-sec/ft
  3. V is the design rated velocity = 3.6 ft/sec
  4. n is the velocity exponent = 0.5
  5. Total stroke = 38 Inches (±19 Inches)
  6. EDC min = 2400 kips - ft
  7. F fuse = 1100 kips per truss chord
  8. Allowable fuse displacement, D fuse = 0.25 Inch

DESIGN CRITERIA (Alternative No. 2)

- $F = CV^n$
1. F is designated force = 400 Kips
  2. C is the damping coefficient = 358 K-sec/ft
  3. V is the design rated velocity = 3.0 ft/sec
  4. n is the velocity exponent = 0.1
  5. Total stroke = 38 Inches (±19 Inches)
  6. EDC min = 1200 kips - ft
  7. F fuse = 1100 kips per truss chord
  8. Allowable fuse displacement, D fuse = 0.25 Inch

SEISMIC RETROFIT PROJECT NO. 612

RICHMOND-SAN RAFAEL BRIDGE

289 FT SPANS  
 PIER 19 VISCIOUS DAMPER DETAILS 4

DESIGNER: Ade Akinsanya/Shawn Sun  
 DATE: 7/20/99

DESIGN	BY E. Sugiyama	CHECKED O. Li
DETAILS	BY G. W. Stimach	CHECKED O. Li
QUANTITIES	BY E. Sugiyama	CHECKED D. Kirkpatrick

PREPARED FOR THE  
 STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

P. Bott  
 PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 0 1 2 3  
 CU 04271  
 EA 04-0438U1

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
7/20/99	288	503

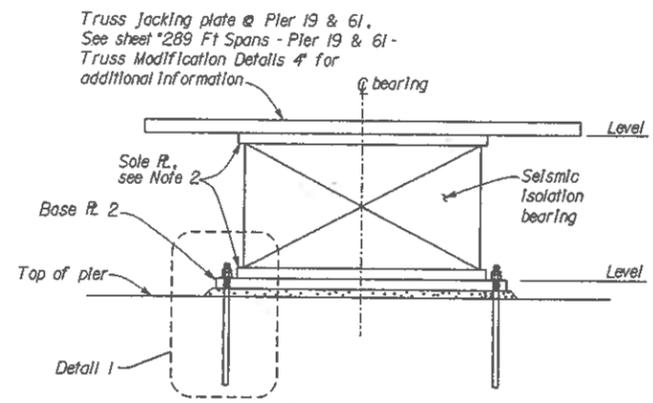
1346AZ75.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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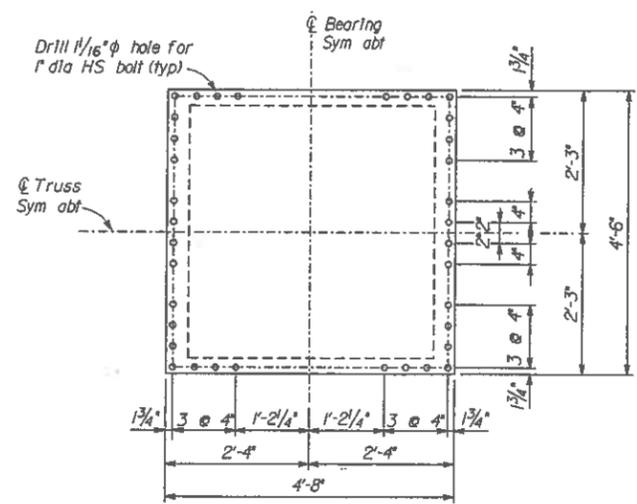
David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 No. 55035  
 Exp. 6-30-00  
 CIVIL  
 STATE OF CALIFORNIA

7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DMJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596

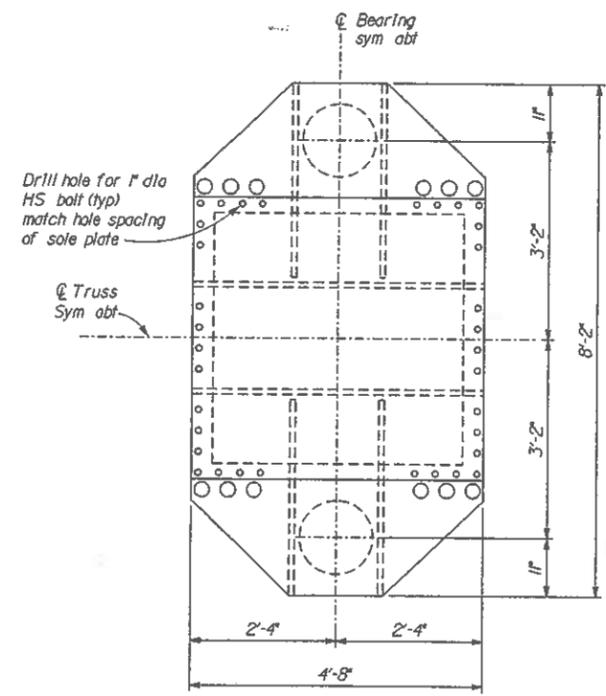
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



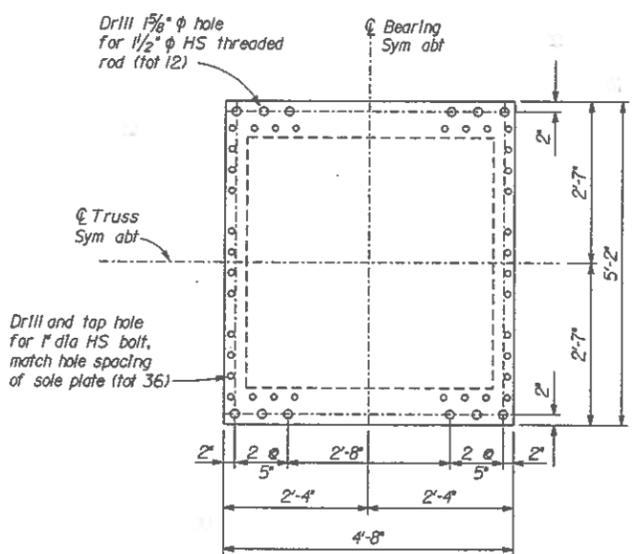
**ELEVATION**  
Scale: 3/4" = 1'-0"



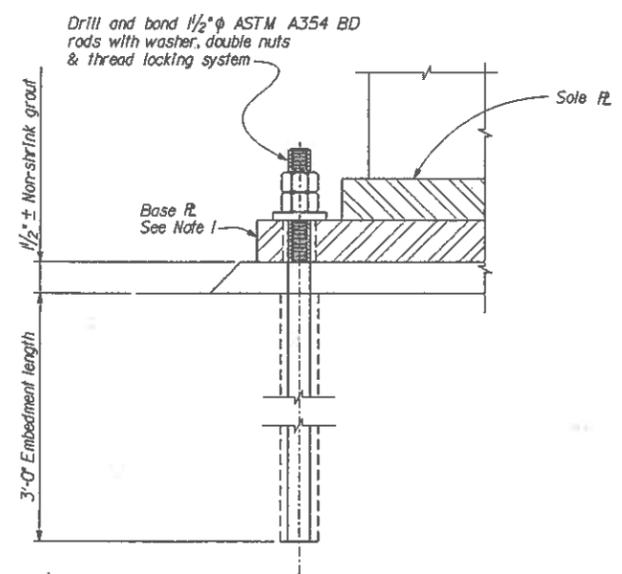
**SOLE PLATE**  
Scale: 3/4" = 1'-0"



**TRUSS JACKING PLATE**  
Scale: 3/4" = 1'-0"



**BASE PLATE**  
Scale: 3/4" = 1'-0"



**DETAIL 1**  
Scale: 3" = 1'-0"

- Note:
1. Shim base plate as required for leveling.
  2. Bevel top sole plate of Isolator bearing as required to adjust for leveling requirement.

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

DESIGN BY: Ade Akinsanya/Shawn Sun  
 CHECKED BY: [Signature]  
 DATE: 1/20/99

DESIGN	BY E. Sugiyama	CHECKED O. Li
DETAILS	BY B. Prather	CHECKED O. Li
QUANTITIES	BY E. Sugiyama	CHECKED J. Lavinder

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION

PROJECT ENGINEER  
 P. Bott

BRIDGE NO.	28-0100
POST MILE	6.22

**SEISMIC RETROFIT PROJECT NO. 612**  
**RICHMOND-SAN RAFAEL BRIDGE**  
**289 FT SPANS**  
**PIER 19 & 61 ISOLATION BEARING DETAILS**

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3

CU 04271  
 EA 04-043BU1

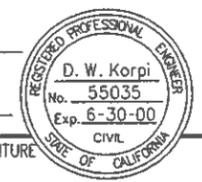
DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY) 1/26/99 1/23/99 8/28/99 1/6/99 1/14/99 2/12/99
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SHEET 289 OF 503

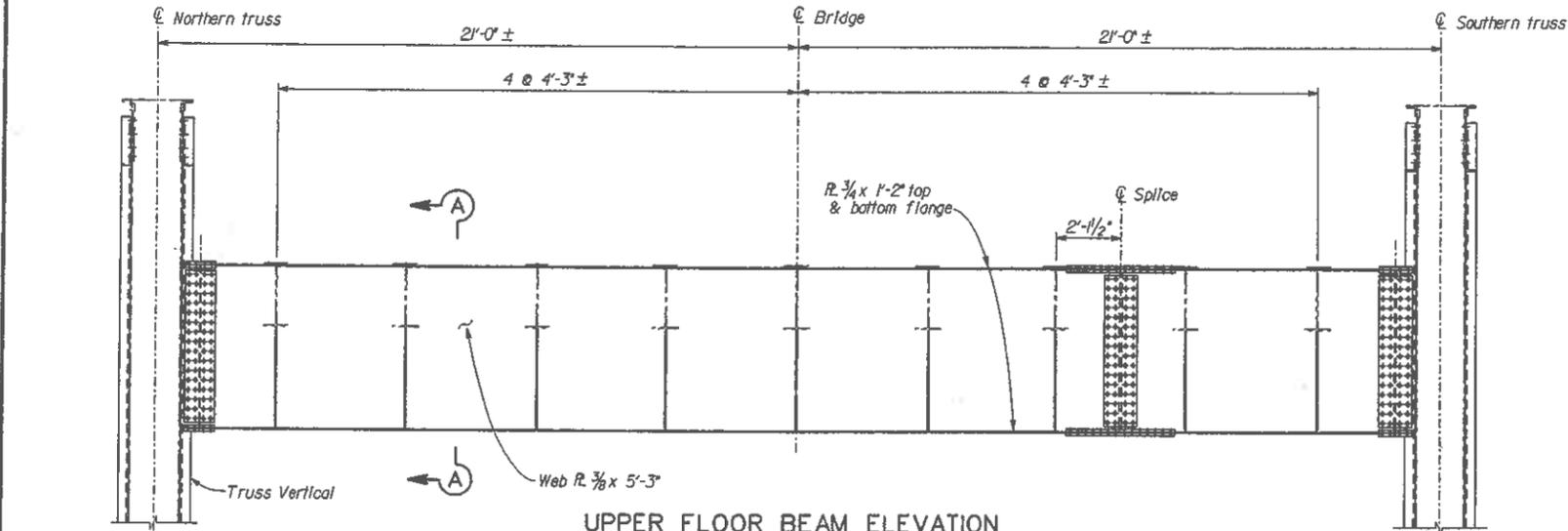


DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mtn	580	6.1/7.8 0.0/2.6	876	1142

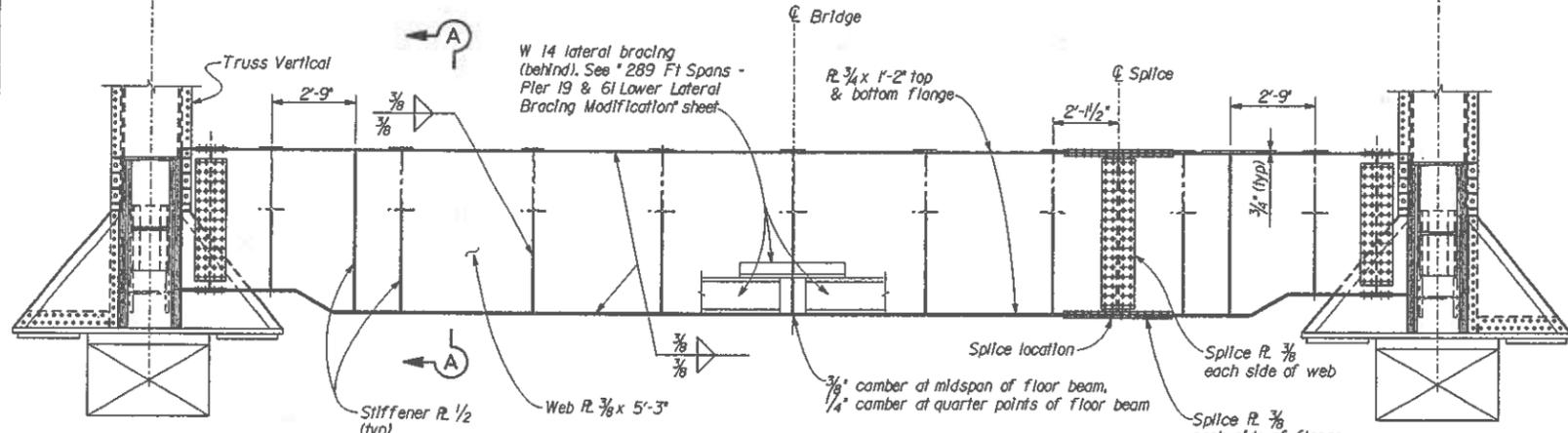
David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596



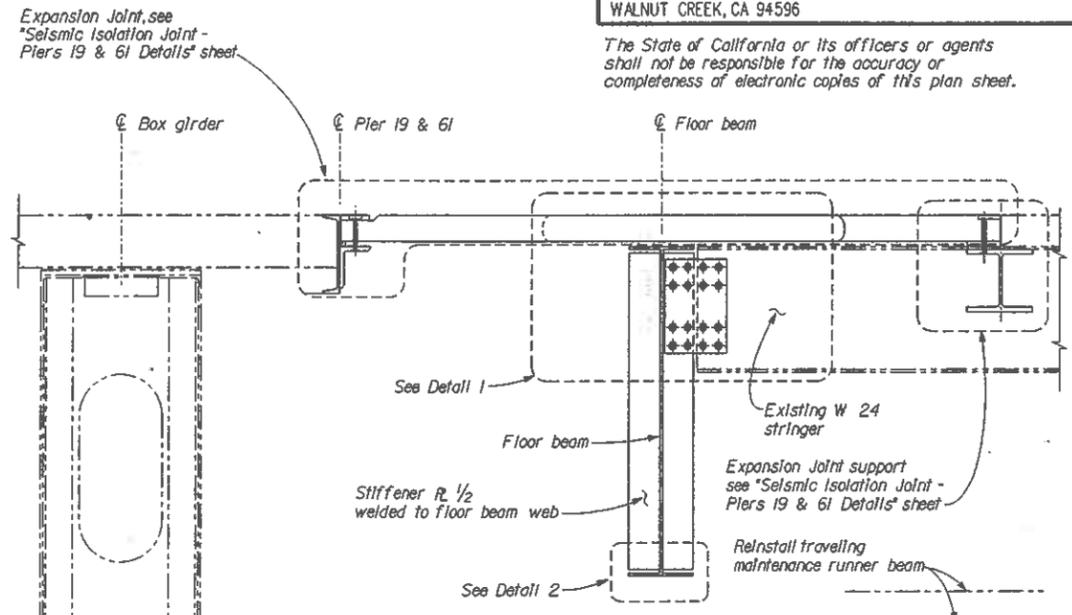
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



**UPPER FLOOR BEAM ELEVATION**  
Scale: 3/8" = 1'-0"

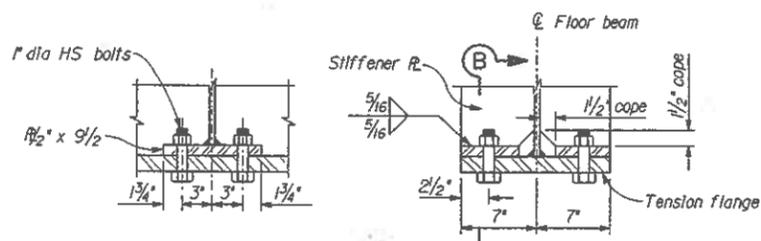


**LOWER FLOOR BEAM ELEVATION**  
Scale: 3/8" = 1'-0"



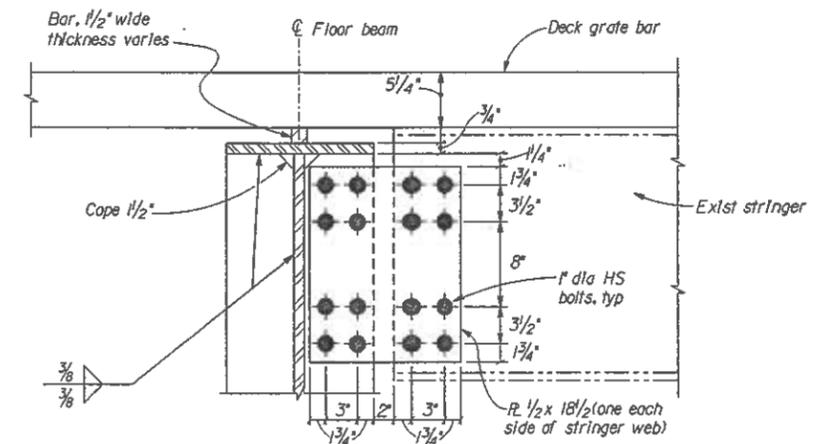
(CONSTRUCTION PHASE E4, E5, E6, F1 SHOWN)

**SECTION A-A**  
Scale: 3/4" = 1'-0"



**SECTION B-B**  
Scale: 1/2" = 1'-0"

**DETAIL 2**  
Scale: 1/2" = 1'-0"



**DETAIL 1**  
Scale: 1/2" = 1'-0"

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

DESIGN BY: Ade Akinsanya/Shawn Sun  
DESIGN DATE: 1/20/99

DESIGN	BY E. Sugiyama	CHECKED G. Castleton
DETAILS	BY B. Prother / GWS	CHECKED G. Castleton
QUANTITIES	BY E. Sugiyama	CHECKED J. Lavinder

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER  
BRIDGE NO. 28-0100  
POST MILE 6.22

**SEISMIC RETROFIT PROJECT NO. 612**  
**RICHMOND-SAN RAFAEL BRIDGE**  
289 FT SPANS  
**PIER 19 & 61 FLOOR BEAM DETAILS 2**

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
0 1 2 3

CU 04271  
EA 04-0438U1  
DISREGARD PRINTS BEARING EARLIER REVISION DATES  
REVISION DATES (PRELIMINARY STAGE ONLY)  
2/26/99 7/26/99 10/20/99 1/14/00 2/28/00 3/20/00 7/15/00 7/29/00 12/14/00  
SHEET 291 OF 503

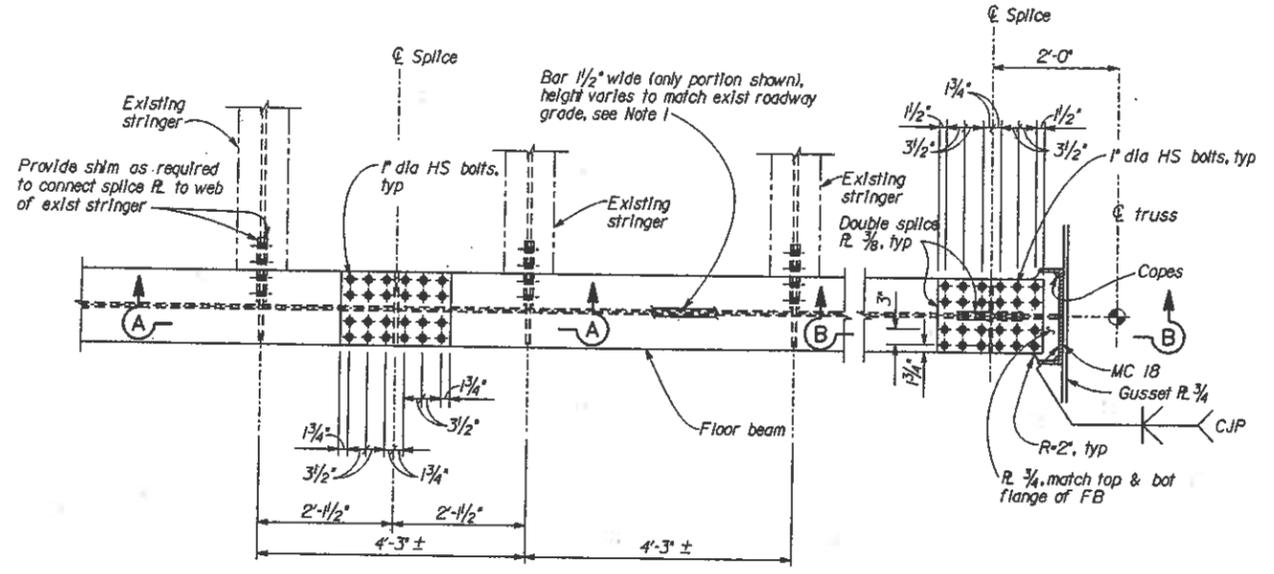
1346A288.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mtn	580.	6.1/2 to 8.0/2.6	877	1142

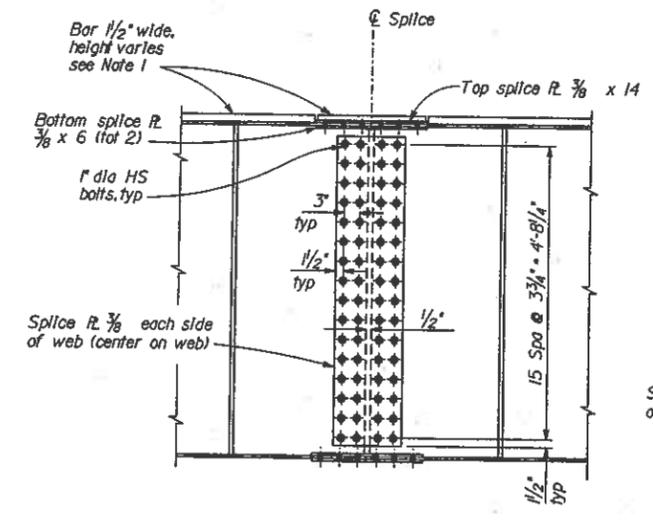
David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DWJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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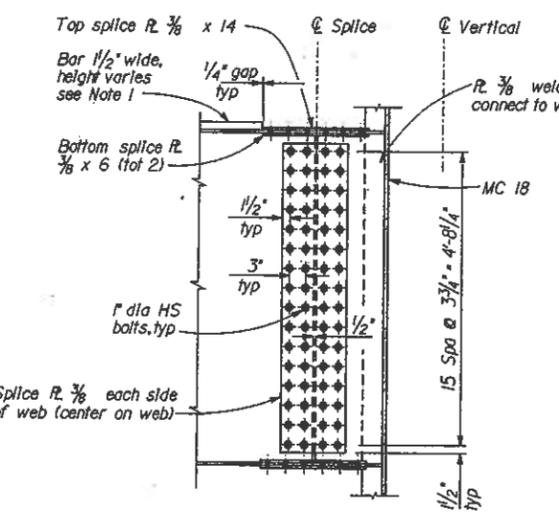
- Note:  
1. For details not shown, see "Seismic Isolation Joint Piers 19 & 61 Details 1" sheet.



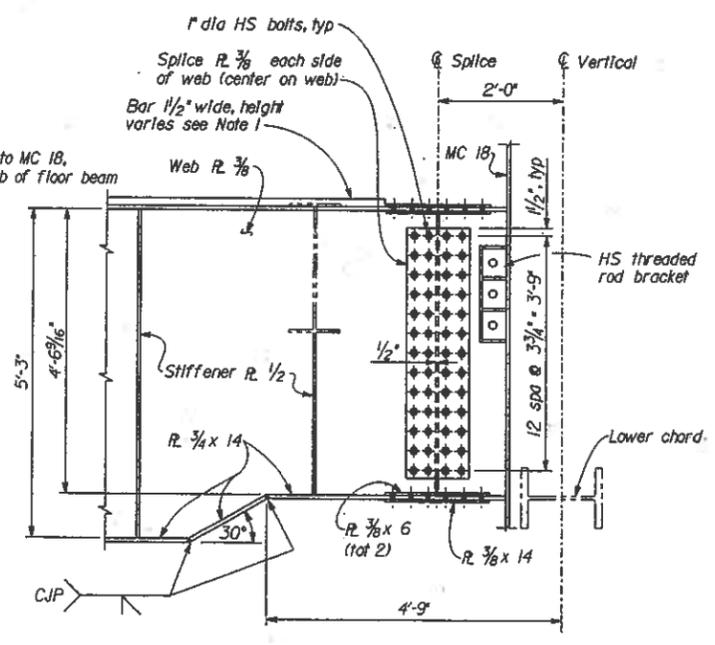
PLAN  
Scale: 3/4" = 1'-0"



UPPER & LOWER FLOOR BEAM SPLICE  
SECTION A-A  
Scale: 3/4" = 1'-0"



UPPER FLOOR BEAM CONNECTION  
SECTION B-B  
Scale: 3/4" = 1'-0"



LOWER FLOOR BEAM CONNECTION  
SECTION B-B  
Scale: 3/4" = 1'-0"

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

DESIGN BY E. Sugiyama CHECKED G. Castleton DETAILS BY B. Prother CHECKED G. Castleton QUANTITIES BY E. Sugiyama CHECKED J. Lavinder	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	P. Bott PROJECT ENGINEER	BRIDGE NO. 28-0100	<b>SEISMIC RETROFIT PROJECT NO. 612</b> <b>RICHMOND-SAN RAFAEL BRIDGE</b> 289 FT SPANS <b>PIER 19 &amp; 61 FLOOR BEAM DETAILS 3</b>
			POST MILE 6.22	
			DISREGARD PRINTS BEARING EARLIER REVISION DATES	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	CU 04271 EA 04-0438U1	REVISION DATES (PRELIMINARY STAGE ONLY) 1/20/99 1/22/99 1/23/99 1/24/99 1/25/99 1/26/99 1/27/99 1/28/99 1/29/99 1/30/99 1/31/99 2/1/99 2/2/99 2/3/99 2/4/99 2/5/99 2/6/99 2/7/99 2/8/99 2/9/99 2/10/99 2/11/99 2/12/99 2/13/99 2/14/99 2/15/99 2/16/99 2/17/99 2/18/99 2/19/99 2/20/99 2/21/99 2/22/99 2/23/99 2/24/99 2/25/99 2/26/99 2/27/99 2/28/99 2/29/99 2/30/99 3/1/99 3/2/99 3/3/99 3/4/99 3/5/99 3/6/99 3/7/99 3/8/99 3/9/99 3/10/99 3/11/99 3/12/99 3/13/99 3/14/99 3/15/99 3/16/99 3/17/99 3/18/99 3/19/99 3/20/99 3/21/99 3/22/99 3/23/99 3/24/99 3/25/99 3/26/99 3/27/99 3/28/99 3/29/99 3/30/99 3/31/99 4/1/99 4/2/99 4/3/99 4/4/99 4/5/99 4/6/99 4/7/99 4/8/99 4/9/99 4/10/99 4/11/99 4/12/99 4/13/99 4/14/99 4/15/99 4/16/99 4/17/99 4/18/99 4/19/99 4/20/99 4/21/99 4/22/99 4/23/99 4/24/99 4/25/99 4/26/99 4/27/99 4/28/99 4/29/99 4/30/99 5/1/99 5/2/99 5/3/99 5/4/99 5/5/99 5/6/99 5/7/99 5/8/99 5/9/99 5/10/99 5/11/99 5/12/99 5/13/99 5/14/99 5/15/99 5/16/99 5/17/99 5/18/99 5/19/99 5/20/99 5/21/99 5/22/99 5/23/99 5/24/99 5/25/99 5/26/99 5/27/99 5/28/99 5/29/99 5/30/99 5/31/99 6/1/99 6/2/99 6/3/99 6/4/99 6/5/99 6/6/99 6/7/99 6/8/99 6/9/99 6/10/99 6/11/99 6/12/99 6/13/99 6/14/99 6/15/99 6/16/99 6/17/99 6/18/99 6/19/99 6/20/99 6/21/99 6/22/99 6/23/99 6/24/99 6/25/99 6/26/99 6/27/99 6/28/99 6/29/99 6/30/99 7/1/99 7/2/99 7/3/99 7/4/99 7/5/99 7/6/99 7/7/99 7/8/99 7/9/99 7/10/99 7/11/99 7/12/99 7/13/99 7/14/99 7/15/99 7/16/99 7/17/99 7/18/99 7/19/99 7/20/99 7/21/99 7/22/99 7/23/99 7/24/99 7/25/99 7/26/99 7/27/99 7/28/99 7/29/99 7/30/99 7/31/99 8/1/99 8/2/99 8/3/99 8/4/99 8/5/99 8/6/99 8/7/99 8/8/99 8/9/99 8/10/99 8/11/99 8/12/99 8/13/99 8/14/99 8/15/99 8/16/99 8/17/99 8/18/99 8/19/99 8/20/99 8/21/99 8/22/99 8/23/99 8/24/99 8/25/99 8/26/99 8/27/99 8/28/99 8/29/99 8/30/99 8/31/99 9/1/99 9/2/99 9/3/99 9/4/99 9/5/99 9/6/99 9/7/99 9/8/99 9/9/99 9/10/99 9/11/99 9/12/99 9/13/99 9/14/99 9/15/99 9/16/99 9/17/99 9/18/99 9/19/99 9/20/99 9/21/99 9/22/99 9/23/99 9/24/99 9/25/99 9/26/99 9/27/99 9/28/99 9/29/99 9/30/99 10/1/99 10/2/99 10/3/99 10/4/99 10/5/99 10/6/99 10/7/99 10/8/99 10/9/99 10/10/99 10/11/99 10/12/99 10/13/99 10/14/99 10/15/99 10/16/99 10/17/99 10/18/99 10/19/99 10/20/99 10/21/99 10/22/99 10/23/99 10/24/99 10/25/99 10/26/99 10/27/99 10/28/99 10/29/99 10/30/99 10/31/99 11/1/99 11/2/99 11/3/99 11/4/99 11/5/99 11/6/99 11/7/99 11/8/99 11/9/99 11/10/99 11/11/99 11/12/99 11/13/99 11/14/99 11/15/99 11/16/99 11/17/99 11/18/99 11/19/99 11/20/99 11/21/99 11/22/99 11/23/99 11/24/99 11/25/99 11/26/99 11/27/99 11/28/99 11/29/99 11/30/99 12/1/99 12/2/99 12/3/99 12/4/99 12/5/99 12/6/99 12/7/99 12/8/99 12/9/99 12/10/99 12/11/99 12/12/99 12/13/99 12/14/99 12/15/99 12/16/99 12/17/99 12/18/99 12/19/99 12/20/99 12/21/99 12/22/99 12/23/99 12/24/99 12/25/99 12/26/99 12/27/99 12/28/99 12/29/99 12/30/99 12/31/99	SHEET 292	OF 503

1346A321.DGN



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mtn	580	6.1/7.8, 0.0/2.6	879	1142

*David W. Korpi*  
REGISTERED CIVIL ENGINEER

7-19-99  
PLANS APPROVAL DATE

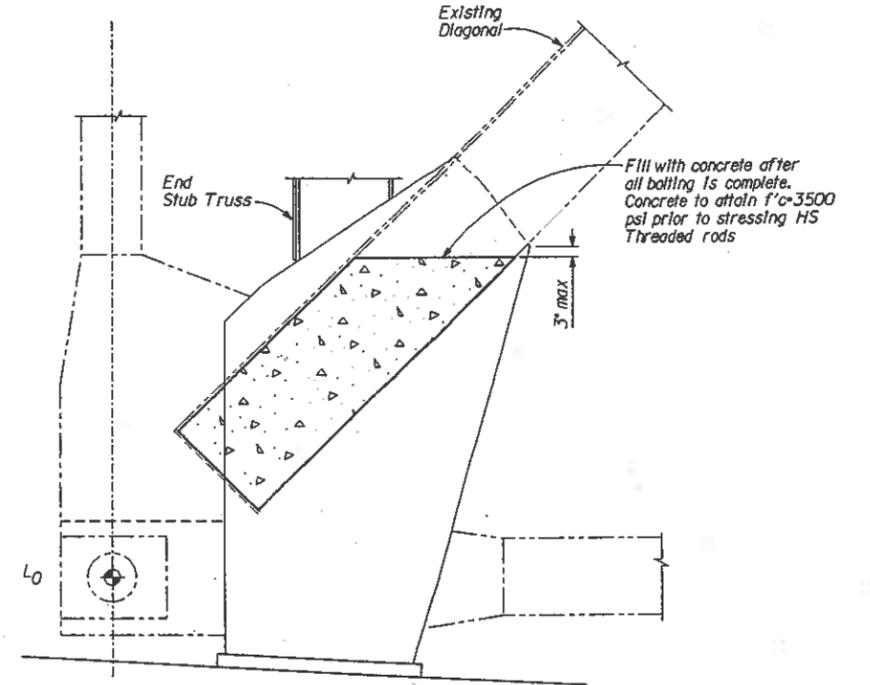
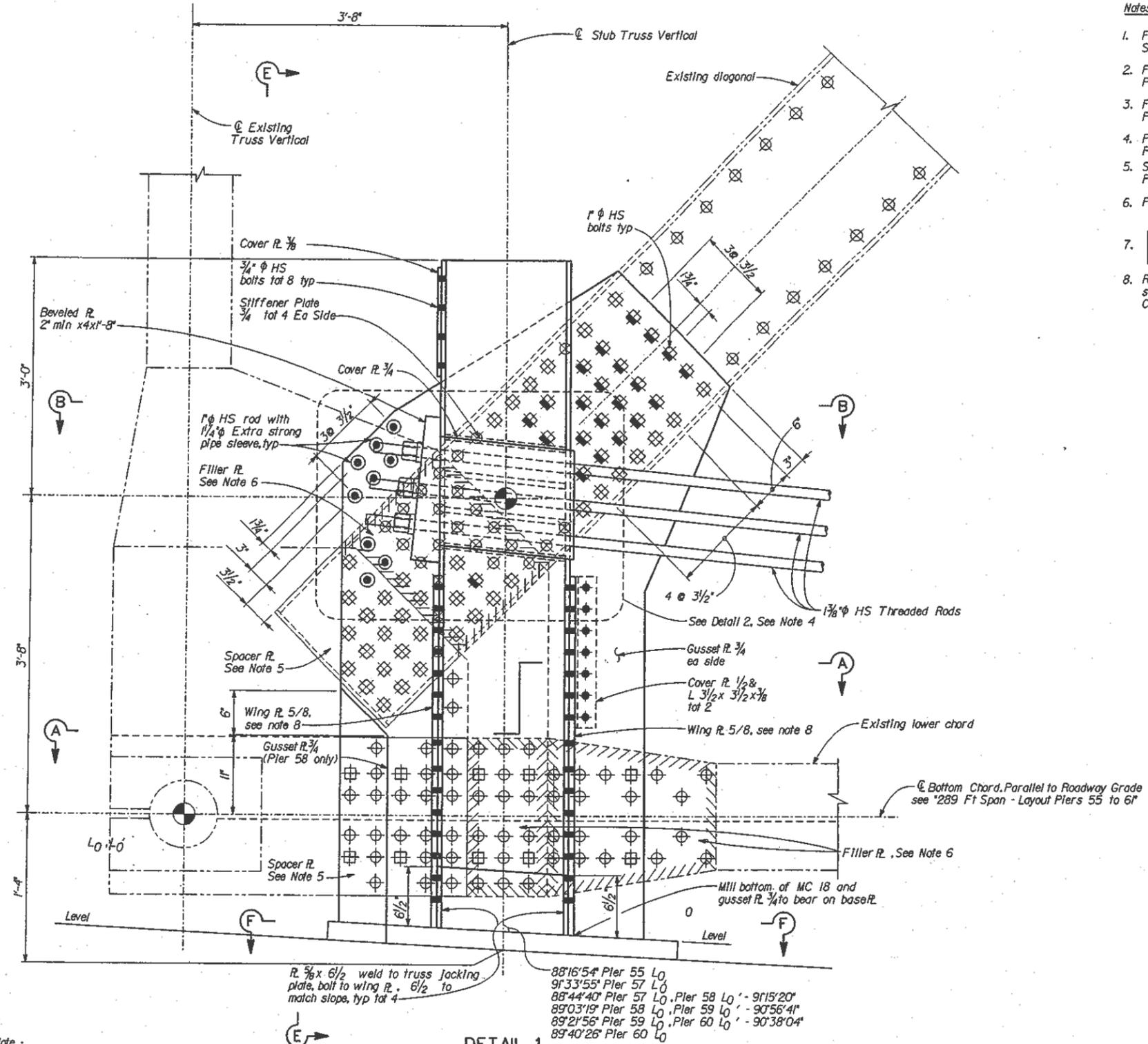
GERWICK/SVERDRUP/DILIM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
1340 TREAT BLVD. SUITE 208  
WALNUT CREEK, CA 94596

REGISTERED PROFESSIONAL ENGINEER  
D. W. Korpi  
No. 55035  
Exp. 6-30-00  
CIVIL  
STATE OF CALIFORNIA

**Notes:**

1. For similar overall details and table of loads, see "289 Ft Spans - Pier 19 & 61 Truss Modification Isometric" sheet.
2. For Sections A-A, B-B, C-C and D-D, see "289 Ft Spans - Pier 55 to 60 Truss Modification Details 2" sheet.
3. For Sections E-E and F-F, see "289 FT Spans - Pier 55 to 60 Truss Modification Details 3" sheet.
4. For Detail 2, see similar detail on "289 FT Spans - Pier 19 & 61 Truss Modification Details 3" sheet.
5. See "Main Spans - Typical New Over Exist Gusset Plate Installation" sheet for similar details.
6. Filler Plate to match exist gusset R.
7. Indicates Infill concrete. Legend applies to this sheet only.
8. Remove exterior side wing R. 5/8, for construction phasing see "289 FT Spans - Piers 55, and 57 to 60" Construction Phasing" sheet.



**CONCRETE FILL DETAIL**  
Scale: 3/4" = 1'-0"

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

**DETAIL 1**  
Scale: 1/2" = 1'-0"  
L<sub>0</sub> shown, L<sub>0</sub>' opposite hand

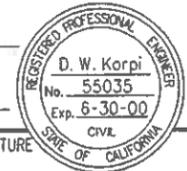
- 88'16"54" Pier 55 L<sub>0</sub>
- 91'33"55" Pier 57 L<sub>0</sub>
- 88'44"40" Pier 57 L<sub>0</sub> .Pier 58 L<sub>0</sub> - 91'15"20"
- 89'03"19" Pier 58 L<sub>0</sub> .Pier 59 L<sub>0</sub> - 90'56"41"
- 89'21"56" Pier 59 L<sub>0</sub> .Pier 60 L<sub>0</sub> - 90'38"04"
- 89'40"26" Pier 60 L<sub>0</sub>

SEISMIC RETROFIT PROJECT NO. 612		RICHMOND-SAN RAFAEL BRIDGE		289 FT SPANS PIER 55 AND 57 TO 60 TRUSS MODIFICATION DETAILS 1	
DESIGN	BY T. Mahoney	CHECKED	D. Kirkpatrick	BRIDGE NO.	28-0100
DETAILS	BY J. M. Johnson	CHECKED	G. Castleton	POST MILE	6.22
QUANTITIES	BY E. Sugiyama	CHECKED	D. Kirkpatrick	REVISION DATES (PRELIMINARY STAGE ONLY)	
PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION				PROJECT ENGINEER P. Bott	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS				SHEET 294 OF 503	
0 1 2 3				CU 04271 EA 04-0438U1	

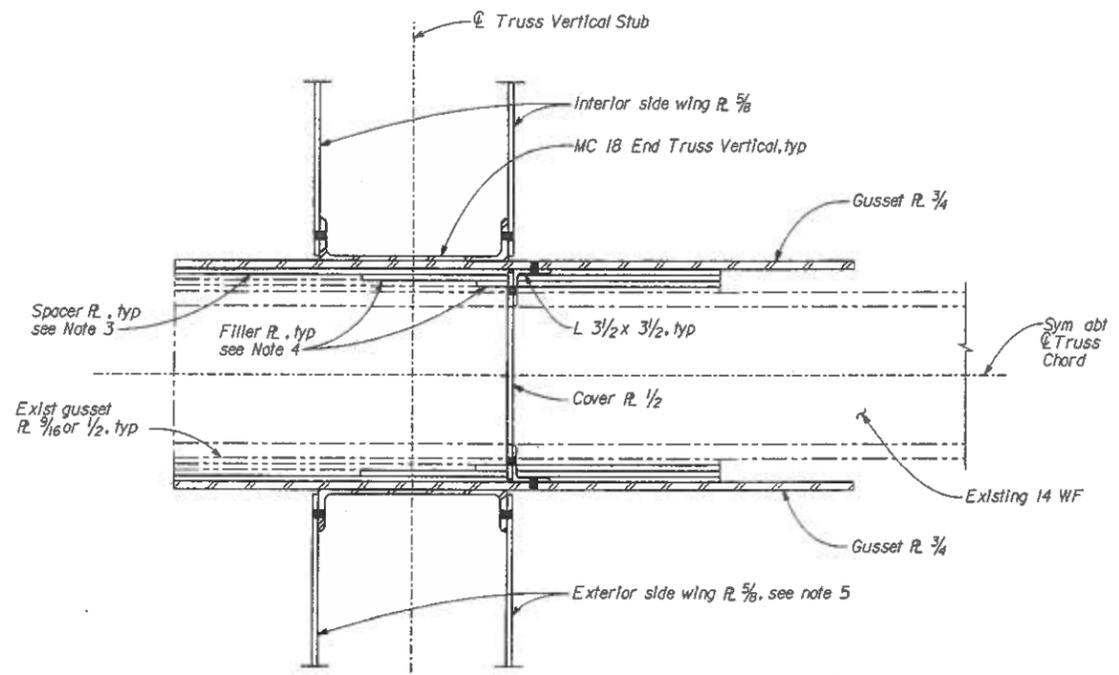
1346A309.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mer	580	6.1/7.8, 0.0/2.6	880	1142

*David W. Korpi*  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

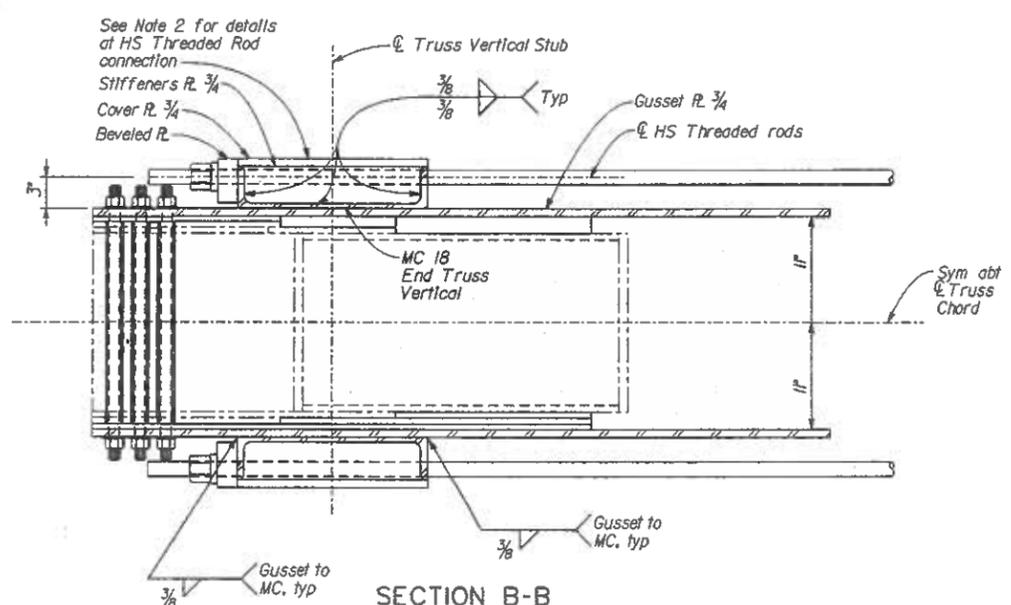


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**SECTION A-A**  
Scale: 1/2" = 1'-0"

- Notes:
- For location of where sections are taken, see "289 Ft Spans - Pier 55 to 60 Truss Modification Details 1" sheet.
  - See "289 Ft Spans - Pier 19 & 61 Truss Modification Details 3" sheet.
  - See "Main Spans - Typical New Over Exst Gusset Plate Installation" sheet for similar details.
  - Filler plate thickness to match existing gusset plate.
  - Remove exterior side wing R 5/8, for construction phasing see "289 FT Spans - Piers 55, and 57 to 60 Construction Phasing" sheet.



**SECTION B-B**  
Scale: 1/2" = 1'-0"

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

DESIGN OVERSIGHT  
*Shawn Sun*  
Ade Akinsanya/Shawn Sun  
DATE: 11/20/99

DESIGN	BY T.F. Mahoney	CHECKED D. Kirkpatrick
DETAILS	BY J.M. Johnson	CHECKED G. Castleton
QUANTITIES	BY E. Sugiyama	CHECKED D. Kirkpatrick

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION  
P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612  
**RICHMOND-SAN RAFAEL BRIDGE**  
289 FT SPANS  
**PIER 55 AND 57 TO 60 TRUSS MODIFICATION DETAILS 2**

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
0 1 2 3  
CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 295 OF 503
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13-04314.DGN



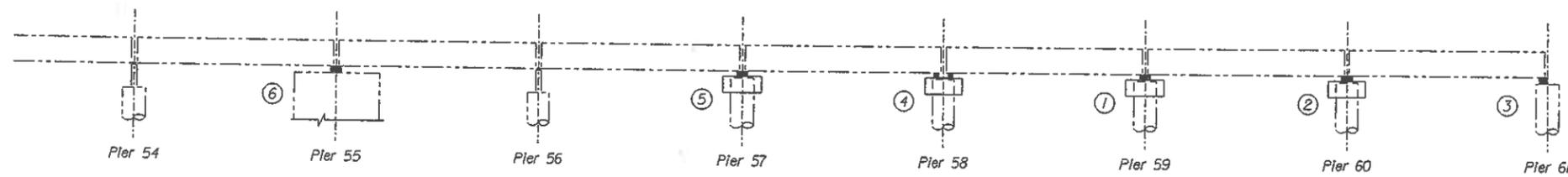


DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mtn	580	0.177.8 0.0/2.6	883	1142

*David W. Korpi*  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DJMJ JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596



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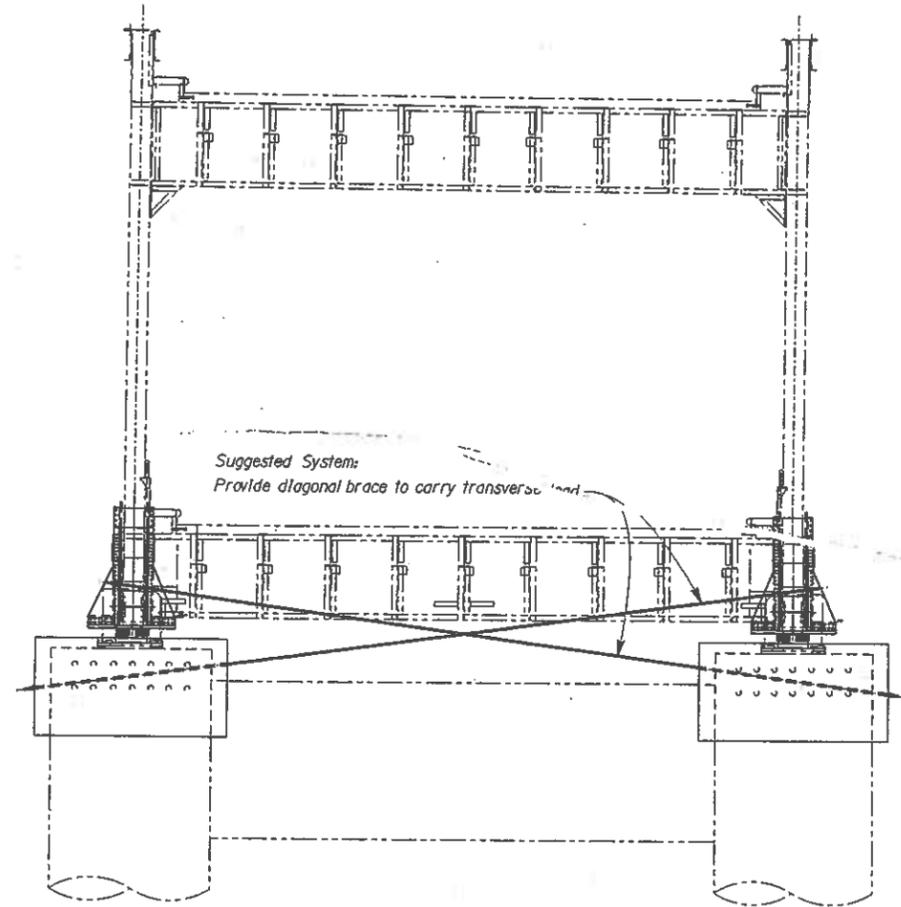


**REQUIRED CONSTRUCTION SEQUENCE**

① - Denotes order of construction which must be followed to provide longitudinal stability during construction. Work at one pier must be complete, including bolting and grouting of the base Isolator, prior to the start of jacking of the next pier in the sequence.

**Step ③ note:**

Provide blocking between adjoining trusses at Pier 58 prior to Phase C Step 8 operation as shown on '289 Ft Spans - Pier 19 & 61 Construction Phasing Sheet 1' sheet.



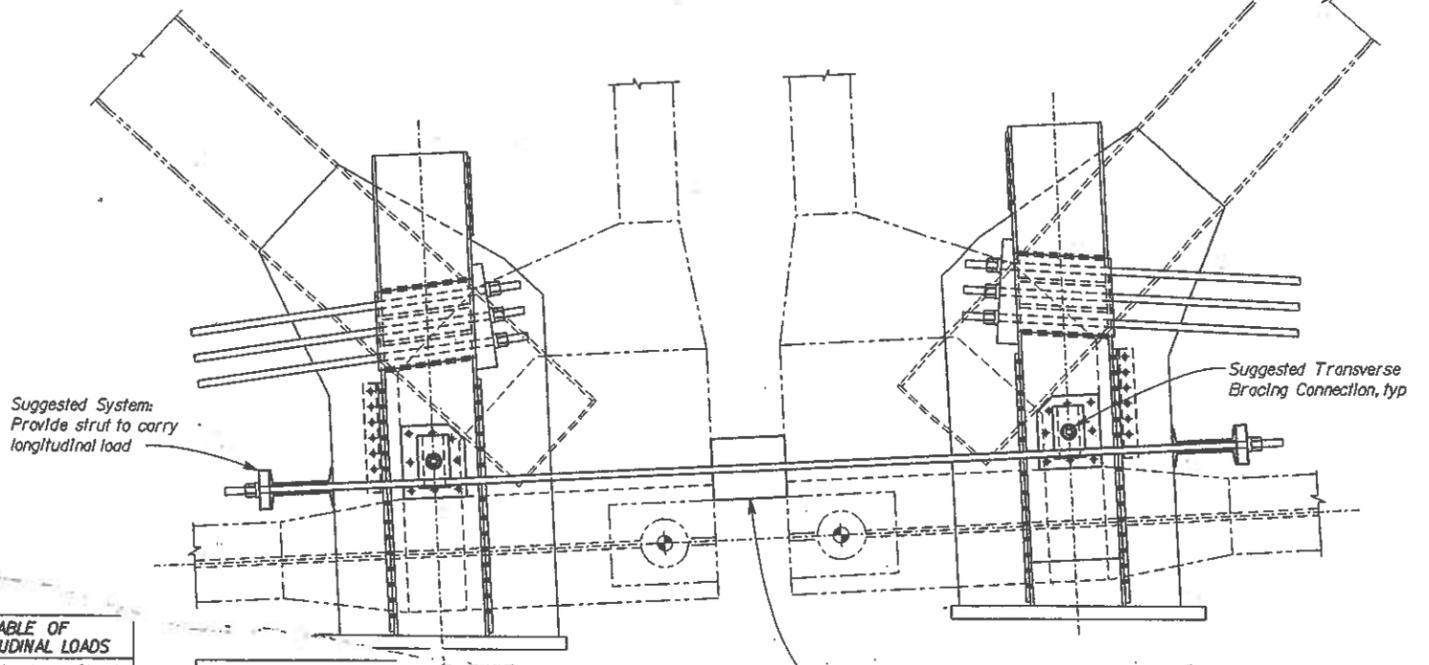
**TEMPORARY TRANSVERSE BRACING AT PIERS 19, 55 AND 57-61**  
(Shown for Piers 57-60, Pier 19, 55 and 61 similar)

**Requirement:**  
Provide a transverse bracing system to resist 170 kips of transverse lateral load on each end of each span while trusses are resting on jacks or shims. The maximum transverse displacement of the temporary bracing system shall not be larger than 1/4". Contractor to submit details for approval.

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

**TABLE OF LONGITUDINAL LOADS**

Pier	Load per Chord
55	720 kip
57	480 kip
58	360 kip
59	120 kip
60	240 kip
61	360 kip



**TEMPORARY LONGITUDINAL STRUT**

**Requirement:**  
Provide a temporary tension and compression member between adjoining trusses to carry longitudinal wind loads (per table) to anchor towers while trusses have bearing pins removed. The maximum longitudinal displacement of the temporary strut shall not be larger than 1/4". Contractor to submit details for approval.

**Note:**  
1. Temporary Transverse and longitudinal loads are based on 100 MPH winds.

**SEISMIC RETROFIT PROJECT NO. 612**  
**RICHMOND-SAN RAFAEL BRIDGE**  
289 FT SPANS  
**PIER 55 AND 57 TO 60 - CONSTRUCTION PHASE BRACING**

DESIGN OVERSIGHT  
Ade Akinsanya/Shawn Sun  
SIGN-OFF DATE: 2/2/99

DESIGN	BY T. Mahoney	CHECKED D. Kirkpatrick
DETAILS	BY J. M. Johnson	CHECKED G. Castleton
QUANTITIES	BY E. Sugiyama	CHECKED J. Lavinder

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER  
BRIDGE NO. 28-0100  
POST MILE 6.22

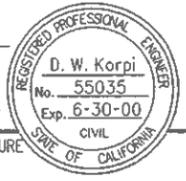
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
0 1 2 3

CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES  
REVISION DATES (PRELIMINARY STAGE ONLY)  
2/25/99 2/28/99 3/4/99 3/11/99 3/18/99 3/25/99 4/1/99 4/8/99 4/15/99 4/22/99 4/29/99 5/6/99 5/13/99 5/20/99 5/27/99 6/3/99 6/10/99 6/17/99 6/24/99 7/1/99 7/8/99 7/15/99 7/22/99 7/29/99 8/5/99 8/12/99 8/19/99 8/26/99 9/2/99 9/9/99 9/16/99 9/23/99 9/30/99 10/7/99 10/14/99 10/21/99 10/28/99 11/4/99 11/11/99 11/18/99 11/25/99 12/2/99 12/9/99 12/16/99 12/23/99 12/30/99 1/6/00 1/13/00 1/20/00 1/27/00 2/3/00 2/10/00 2/17/00 2/24/00 3/2/00 3/9/00 3/16/00 3/23/00 3/30/00 4/6/00 4/13/00 4/20/00 4/27/00 5/4/00 5/11/00 5/18/00 5/25/00 6/1/00 6/8/00 6/15/00 6/22/00 6/29/00 7/6/00 7/13/00 7/20/00 7/27/00 8/3/00 8/10/00 8/17/00 8/24/00 8/31/00 9/7/00 9/14/00 9/21/00 9/28/00 10/5/00 10/12/00 10/19/00 10/26/00 11/2/00 11/9/00 11/16/00 11/23/00 11/30/00 12/7/00 12/14/00 12/21/00 12/28/00 1/4/01 1/11/01 1/18/01 1/25/01 2/1/01 2/8/01 2/15/01 2/22/01 2/29/01 3/6/01 3/13/01 3/20/01 3/27/01 4/3/01 4/10/01 4/17/01 4/24/01 4/30/01 5/7/01 5/14/01 5/21/01 5/28/01 6/4/01 6/11/01 6/18/01 6/25/01 7/2/01 7/9/01 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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mm	580	6.1/7.8 0.0/2.6	884	1142

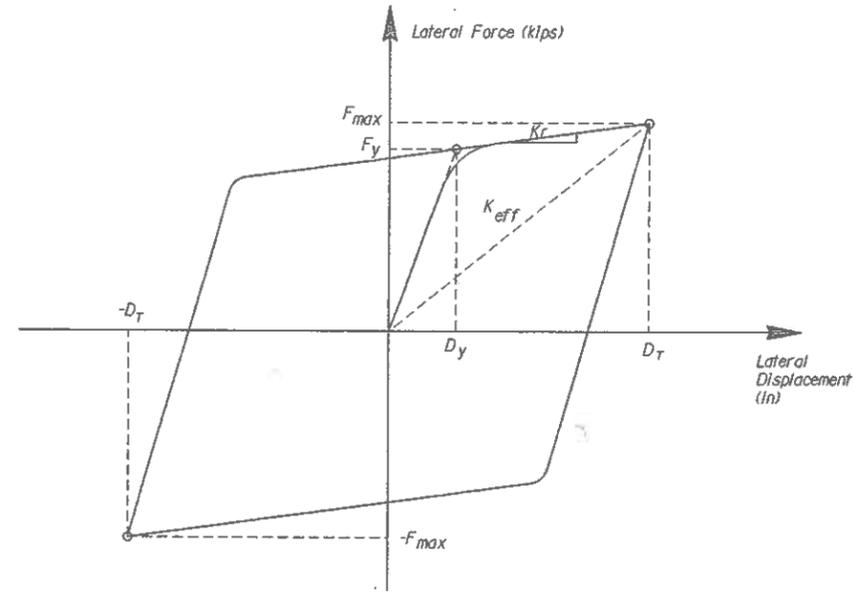
David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DJM/JM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596



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BEARING TYPE	TYPE 1	TYPE 2	TYPE 3
Maximum Dead Load	665 klps	1330 klps	665 klps
Maximum Live Load	316 klps	632 klps	316 klps
Maximum Seismic Live Load	100 klps	200 klps	100 klps
Maximum Seismic Overturning Force	333 klps	665 klps	333 klps
Minimum Rotation Capacity Under All Loadings	0.0085 rad	0.0055 rad	0.0085 rad
Minimum Vertical Compression Stiffness	10,000 k/in	20,000 k/in	10,000 k/in
Maximum Lateral Thermal Displacement	3.0 in	3.0 in	3.0 in
Maximum Non-Seismic Lateral Force (F)	150 klps	300 klps	150 klps
Maximum Non-Seismic Displacement Due to F	175 in	175 in	2.00 in
Maximum Seismic Lateral Displacement (D <sub>T</sub> )	26 in	18 in	14 in
Maximum Seismic Lateral Force (F <sub>max</sub> )	425 klps	543 klps	256 klps
Idealized Yield Force (F <sub>y</sub> )	170 klps	317 klps	164 klps
Idealized Yield Displacement (D <sub>y</sub> )	1.4 in	1.3 in	1.6 in
Post-Elastic Stiffness (K <sub>r</sub> )	10.45 klps/in	13.50 klps/in	7.4 klps/in
Effective Stiffness (K <sub>eff</sub> ) at D <sub>T</sub>	16.3 klps/in	30.2 klps/in	18.3 klps/in
Bearing Size (W) See Note 2	48.5 in	50.5 in	40.0 in
Bearing Height (H) See Note 2	26 in	24 in	26 in
Minimum Energy Dissipated per Cycle (EDC <sub>min</sub> ) at D <sub>T</sub>	14,000 kip-in	18,500 kip-in	7,000 kip-in
Design Period of Superstructure above Bearing	2.20 sec	2.28 sec	2.07 sec

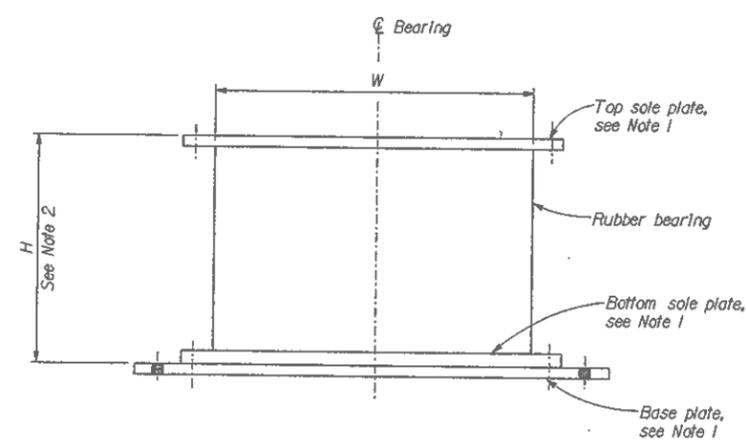
SEISMIC ISOLATION BEARING PERFORMANCE CRITERIA TABLE



LATERAL FORCE-DISPLACEMENT CHARACTERISTICS FOR SEISMIC ISOLATION BEARING  
No Scale

Notes:

- For sole plate and base plate details see sheets '289 Ft Spans - Pier 55, 57, 59 & 60 Base Plate and Shoe Details', '289 Ft Spans - Pier 58 Base Plate and Shoe Details', and '289 Ft Spans - Pier 19 and 61 Isolation Bearing Details'.
- Height and size are for detailing purposes only. Contractor shall adjust height and size as required to suit bearing manufacturer's design.
- Seismic Isolation bearing as shown is for illustration only. Seismic Isolation bearing shall be designed based on the seismic Isolation bearing performance criteria table.



ELEVATION - SEISMIC ISOLATION BEARING  
No Scale

PIER	BEARING TYPE	TOTAL NUMBER
19	1	2
55	2	2
57	2	2
58	3	4
59	2	2
60	2	2
61	1	2

SEISMIC ISOLATION BEARING LOCATION TABLE

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

Shawn Sun  
 Ade Akinsanya/Shawn Sun  
 DESIGN OVERSIGHT  
 DATE: 1/28/99

DESIGN	BY: D. Kirkpatrick	CHECKED: O. Li
DETAILS	BY: V. Nguyen	CHECKED: O. Li
QUANTITIES	BY: D. Kirkpatrick	CHECKED: J. Lavinder

PREPARED FOR THE  
 STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
 P. Bott  
 PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612  
 RICHMOND-SAN RAFAEL BRIDGE  
 289 FT SPANS  
 ISOLATION BEARING DETAILS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU	04271
EA	04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

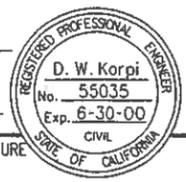
REVISION DATES (PRELIMINARY STAGE ONLY)	1/28/99
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SHEET	299	OF	503
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12/46/307.DGN

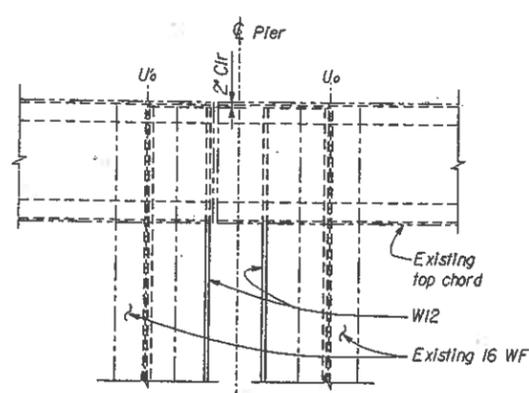
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.1/7.8, 0.0/2.6	885	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

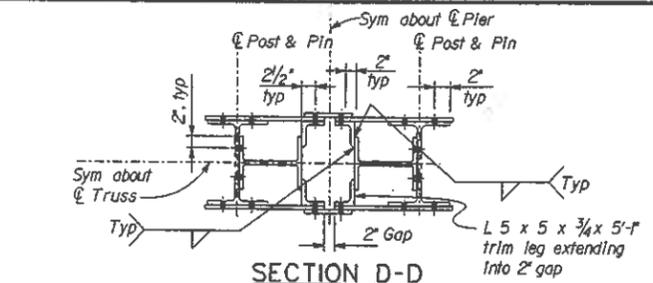


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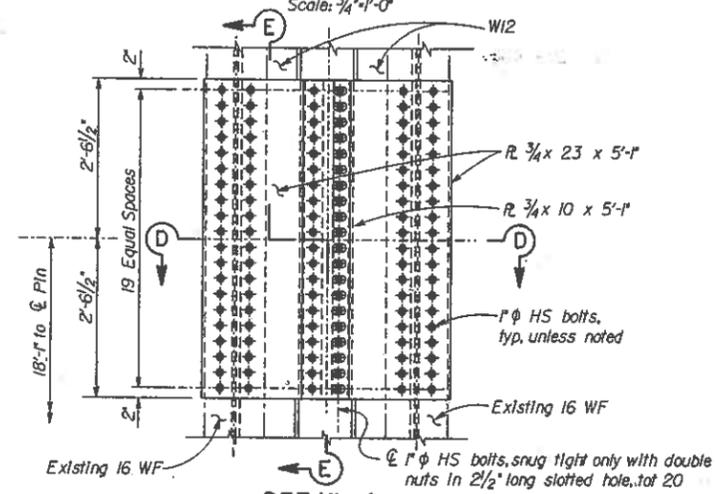
- Notes:
1. Truss modifications for jacking not shown, see '289 Ft Spans - Pier 55 & 57 to 60 Truss Modification Details' sheet for details.
  2. For Seismic Isolation Bearing, see '289 Ft Spans - Isolation Bearing Details' sheet.
  3. For pin details, see '289 Ft Spans - Truss Shoe Pin Replacement Details' sheet.
  4. For Section A-A, B-B & C-C see '289 Ft Spans - Pier 55, 57, 59 & 60 Base Plate & Shoe Details' sheet.



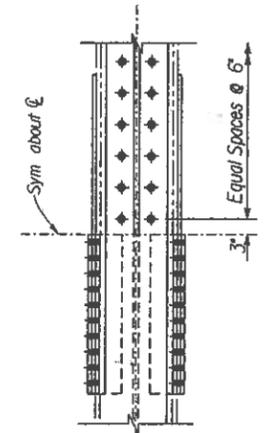
DETAIL 3  
Scale: 3/4"=1'-0"



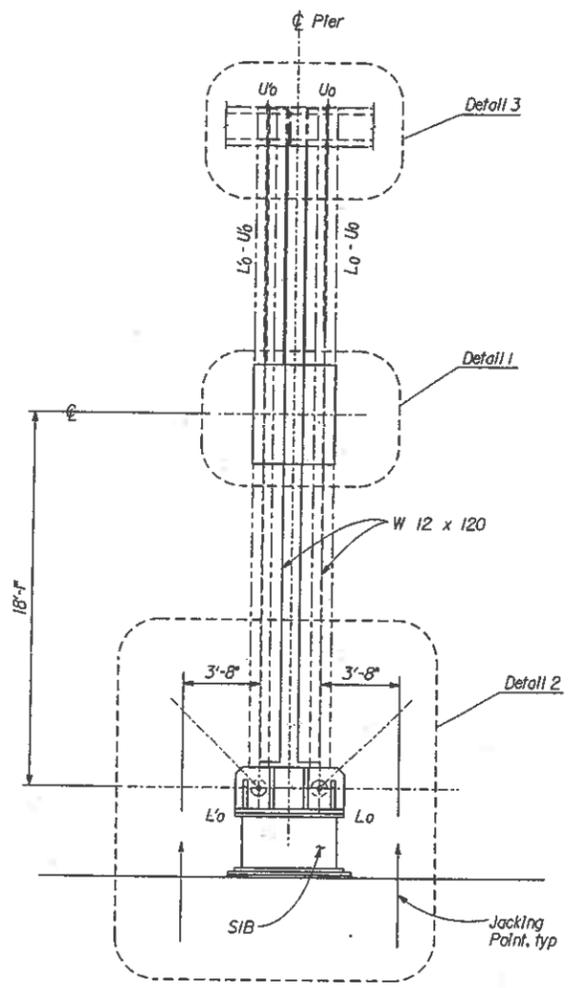
SECTION D-D  
Scale: 3/4"=1'-0"



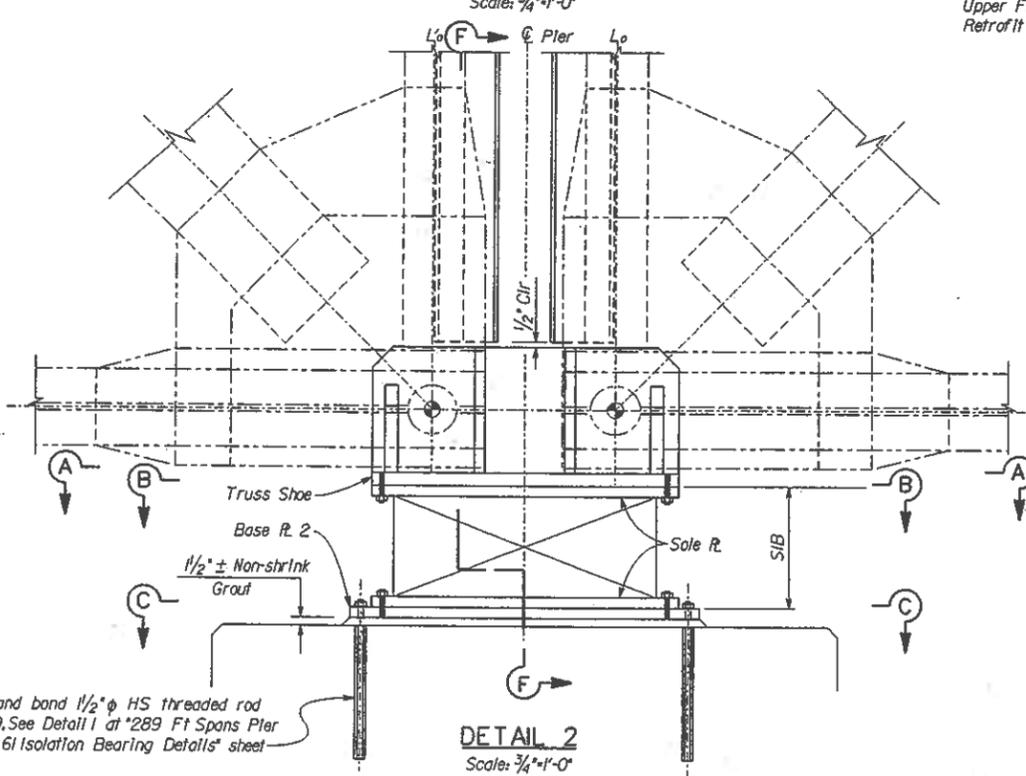
DETAIL 1  
Scale: 3/4"=1'-0"



SECTION E-E  
Scale: 3/4"=1'-0"

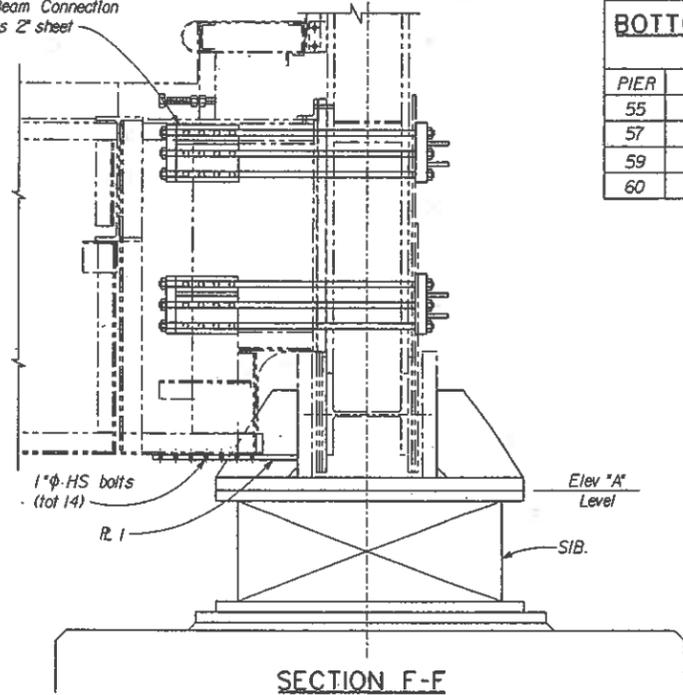


ELEVATION  
Scale: 1/4"=1'-0"



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

For floor beam retrofit details, see 'Main Spans - Upper Floor Beam Connection Retrofit Details 2' sheet



SECTION F-F  
Scale: 3/4"=1'-0"

BOTTOM OF TRUSS SHOE ELEVATIONS	
PIER	ELEV 'A'
55	68.16
57	51.45
59	40.24
60	37.02

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

Drill and band 1/2" phi HS threaded rod tot 20. See Detail 1 at '289 Ft Spans Pier 19 & 61 Isolation Bearing Details' sheet

DESIGN BY Ade Akinsanya/Shawn Sun  
DESIGN OVERSIGHT  
DATE 1/20/99

DESIGN BY	D. Kirkpatrick	CHECKED	O. Li
DETAILS BY	B. Prather	CHECKED	O. Li
QUANTITIES BY	D. Kirkpatrick	CHECKED	J. Lavinder

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.  
28-0100  
POST MILE  
6.22

SEISMIC RETROFIT PROJECT NO. 612  
RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS  
PIER 55, 57, 59 & 60 ISOLATION BEARING DETAILS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0	1	2	3
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CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
7/28/98, 10/2/98, 12/14/98, 2/10/99, 3/6/99, 4/17/99, 5/12/99, 6/15/99	300	503

13464243.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC. Mtn	580	6.1/7.8, 0.0/2.6	886	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
No. 55035  
Exp. 6-30-00  
STATE OF CALIFORNIA  
CIVIL

7-19-99  
PLANS APPROVAL DATE

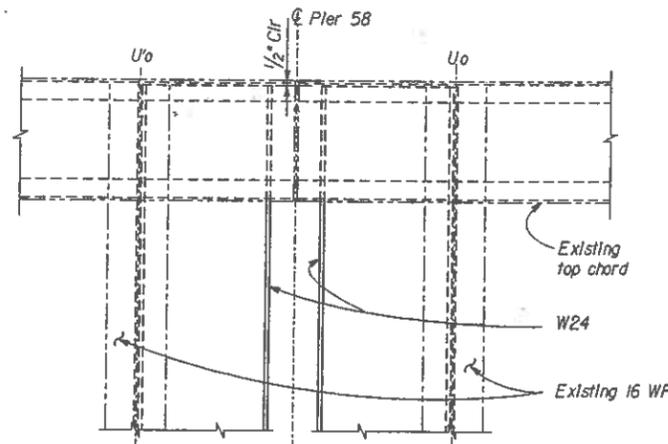
GERWICK/SVERDRUP/DJMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
1340 TREAT BLVD. SUITE 208  
WALNUT CREEK, CA 94596

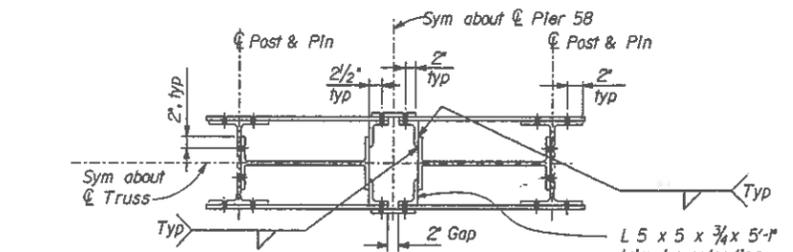
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

**Notes:**

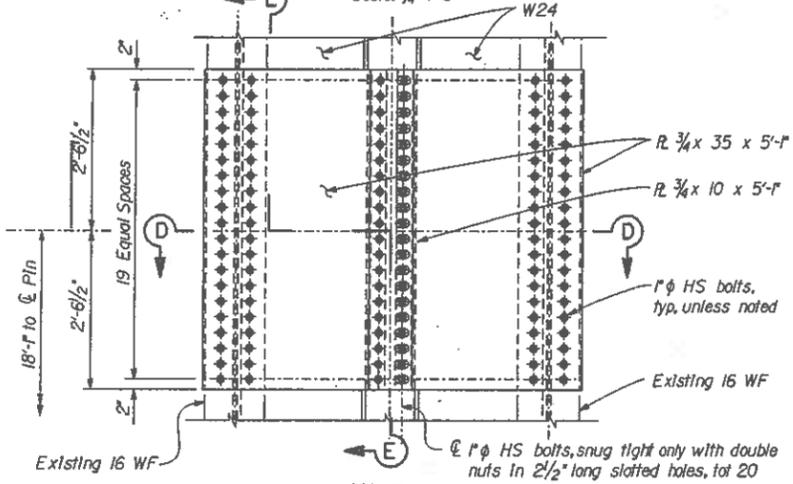
1. Truss modifications for jacking not shown, see "289 Ft Spans - Pier 55 & 57 to 60 Truss Modification Details" sheet for details.
2. For Seismic Isolation Bearing, see "289 Ft Spans - Isolation Bearing Details" sheet.
3. For pin details, see "289 Ft Spans - Truss Shoe Pin Retrofit Details" sheet.
4. For Section A-A, B-B & C-C see "289 Ft Spans - Pier 58 Base Plate & Shoe Details" sheet.



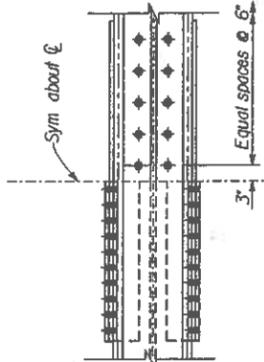
**DETAIL 3**  
Scale: 3/4"=1'-0"



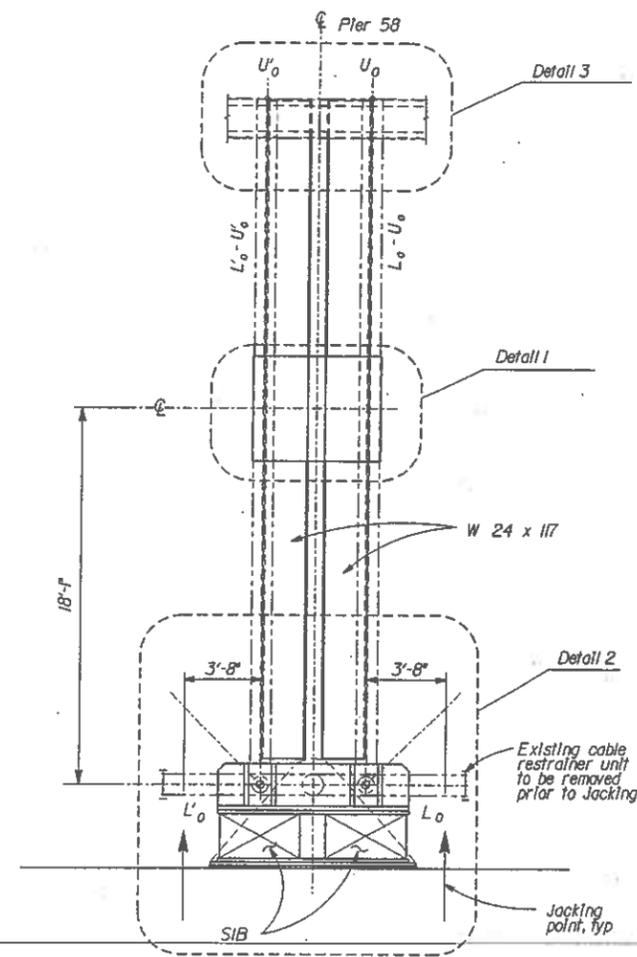
**SECTION D-D**  
Scale: 3/4"=1'-0"



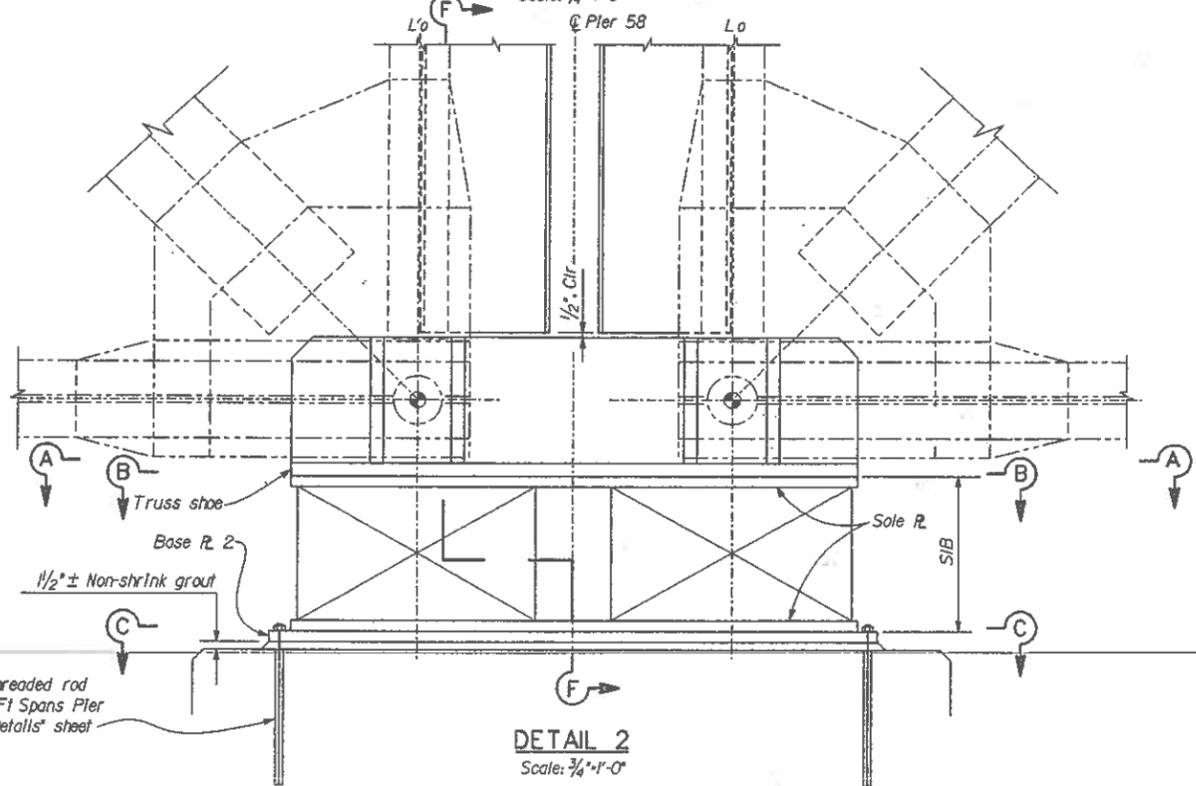
**DETAIL 1**  
Scale: 3/4"=1'-0"



**SECTION E-E**  
Scale: 3/4"=1'-0"

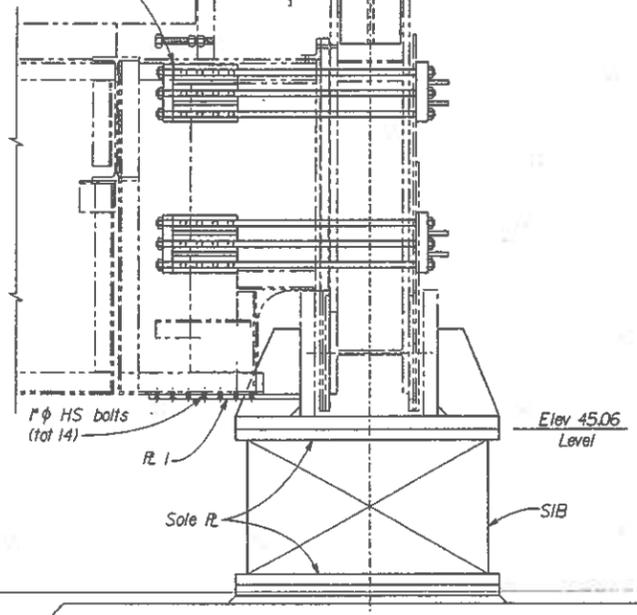


**ELEVATION**  
Scale: 1/4"=1'-0"



**DETAIL 2**  
Scale: 3/4"=1'-0"

For floorbeam retrofit details, see "Main Spans - Upper Floor Beam Connection Retrofit Details" sheet.



**SECTION F-F**  
Scale: 3/4"=1'-0"

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

Drill and bond 1/2 inch diameter high strength threaded rod total 20. See Detail 1 at "289 Ft Spans Pier 19 & 61 Isolation Bearing Details" sheet.

Ade Akinsanya/Shawn Sun  
DESIGN BY  
DATE: 11/20/99

DESIGN BY	D. Kirkpatrick	CHECKED BY	O. Li
DETAILS BY	B. Prother	CHECKED BY	O. Li
QUANTITIES BY	D. Kirkpatrick	CHECKED BY	J. Lavinder

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

**SEISMIC RETROFIT PROJECT NO. 612**  
**RICHMOND-SAN RAFAEL BRIDGE**  
**289 FT SPANS**  
**PIER 58 ISOLATION BEARING DETAILS**

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU	04271
EA	04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
7/28/99, 8/11/99, 8/17/99, 8/23/99, 8/29/99, 9/4/99, 9/10/99, 9/16/99, 9/22/99	301	503

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.1/7.8 0.0/2.6	887	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE

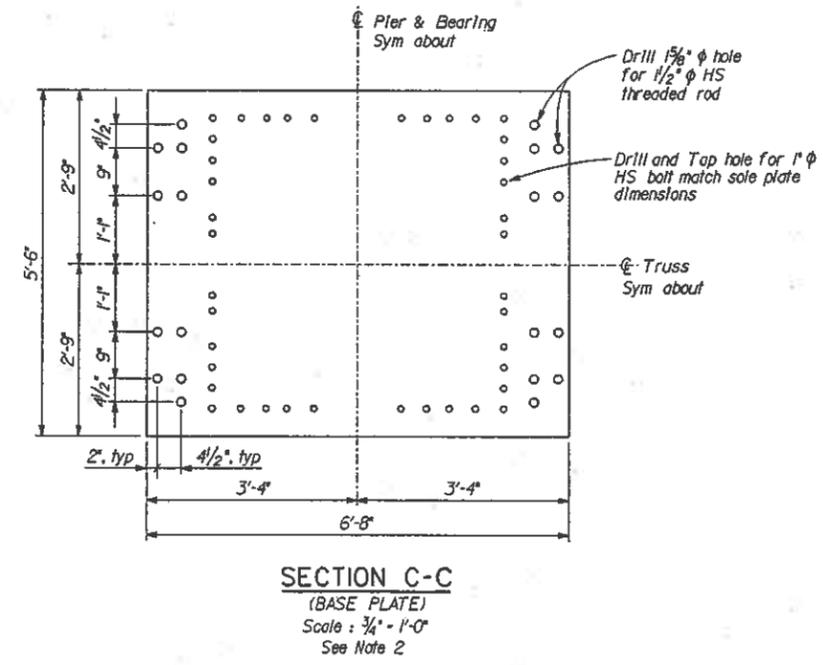
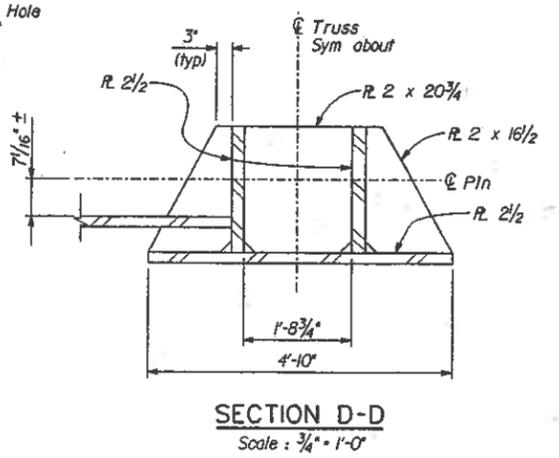
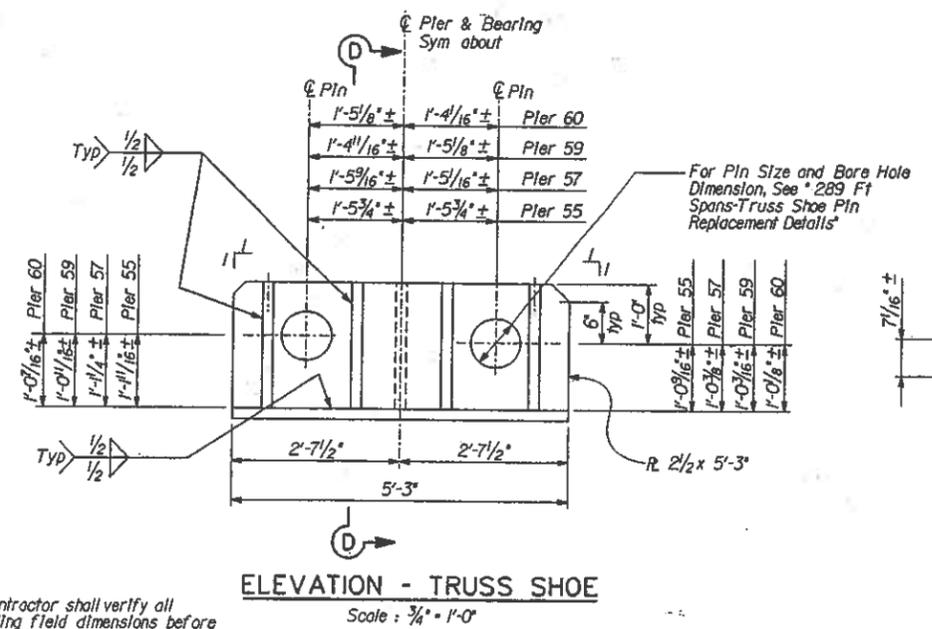
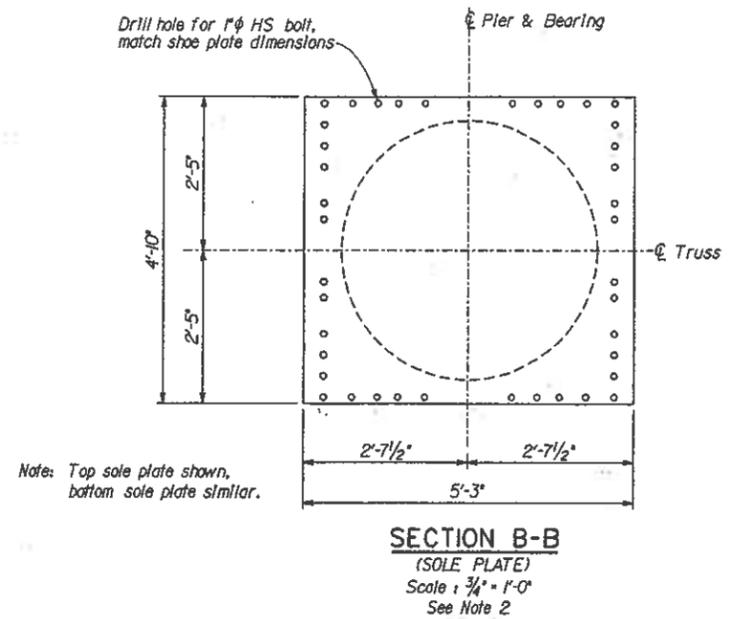
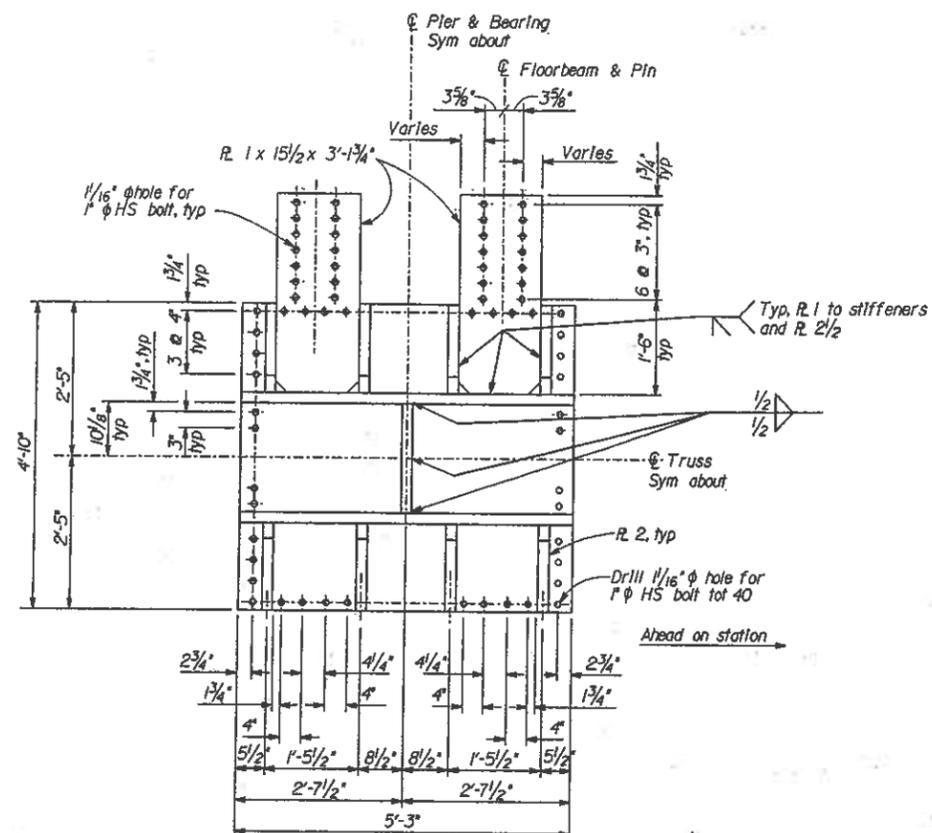
GERWICK/SVERDRUP/DMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

REGISTERED PROFESSIONAL ENGINEER  
D. W. Korpi  
No. 55035  
Exp. 6-30-00  
CIVIL  
STATE OF CALIFORNIA

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- Notes:
- Seismic Isolation bearing shall include sole plates base plates, and drill and bond HS threaded rod.
  - All shoe dimensions are based on the original shoe plans with a minimum 1" gap between the lower chord gusset and shoe base plate. Field verify all horizontal and vertical pin dimensions.
  - Section A-A, B-B and C-C take from sheet '289 FT Spans Pler 55, 57, 59, and 60 Isolation Bearing Details'.



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

Ade Akinsanya/Shawn Sun DESIGN OVERSIGHT		DESIGN BY D. Kirkpatrick	CHECKED O. Li	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. Bott PROJECT ENGINEER	BRIDGE NO. 28-0100	SEISMIC RETROFIT PROJECT NO. 612	
SIGN-OFF DATE 11/20/99		DETAILS BY B. Prather	CHECKED O. Li			POST MILE 6.22	RICHMOND-SAN RAFAEL BRIDGE	
		QUANTITIES BY D. Kirkpatrick	CHECKED J. Lavinder			289 FT SPANS PIER 55, 57, 59 & 60 BASE PLATE AND SHOE DETAILS		
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS				CU 04271 EA 04-0438U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 302 OF 503

1346A2893.DGN

04-0438U1\*0887.r1f

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC. Mrn	580	6.1/7.8, 0.0/2.6	888	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER

7-19-99  
PLANS APPROVAL DATE

GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

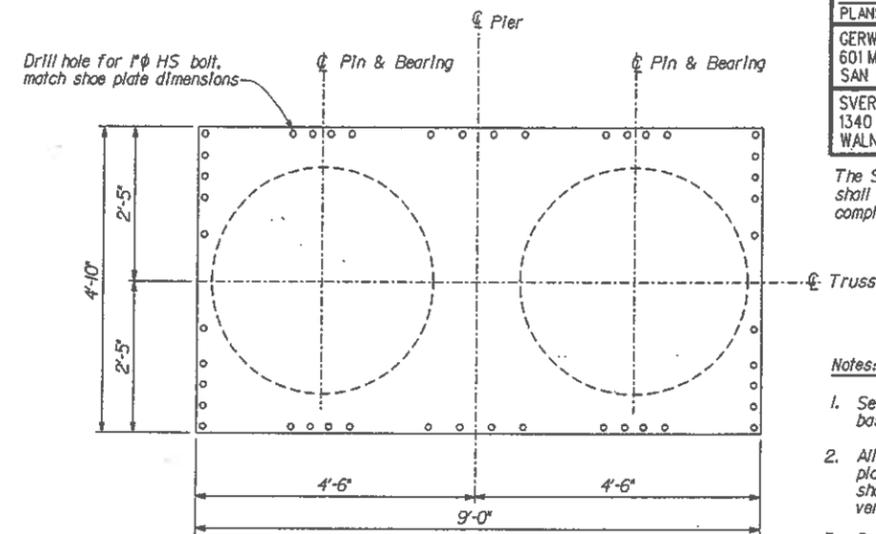
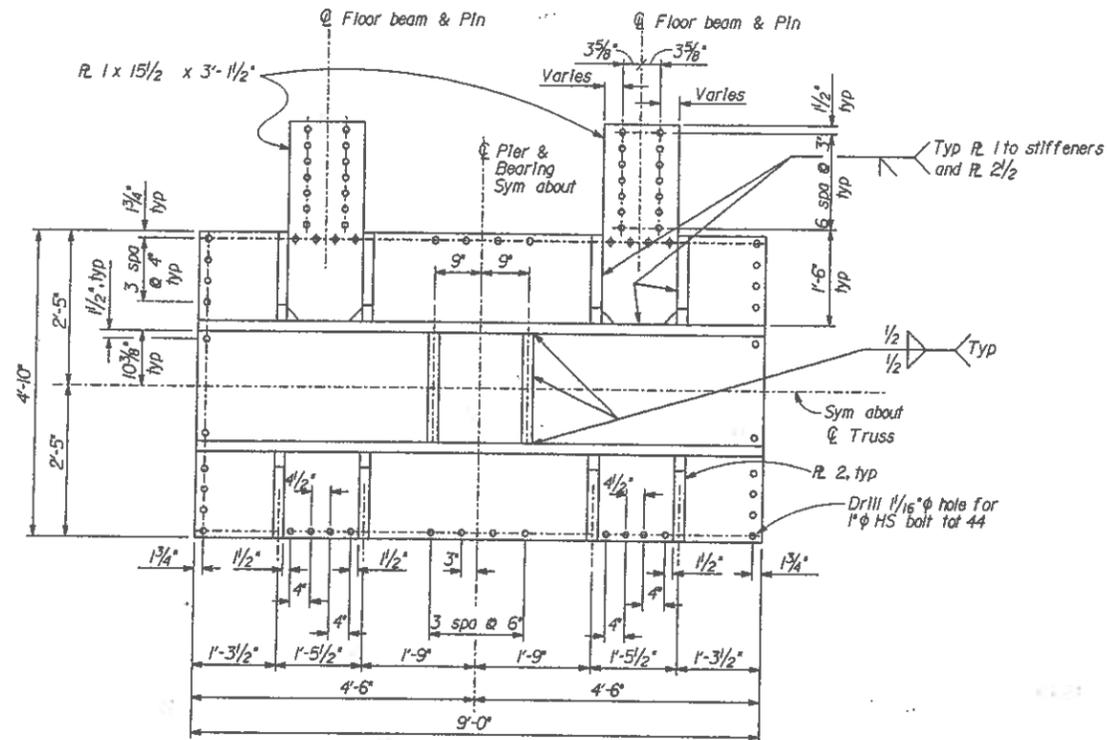
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

REGISTERED PROFESSIONAL ENGINEER  
D. W. Korpi  
No. 55035  
Exp. 6-30-00  
CIVIL  
STATE OF CALIFORNIA

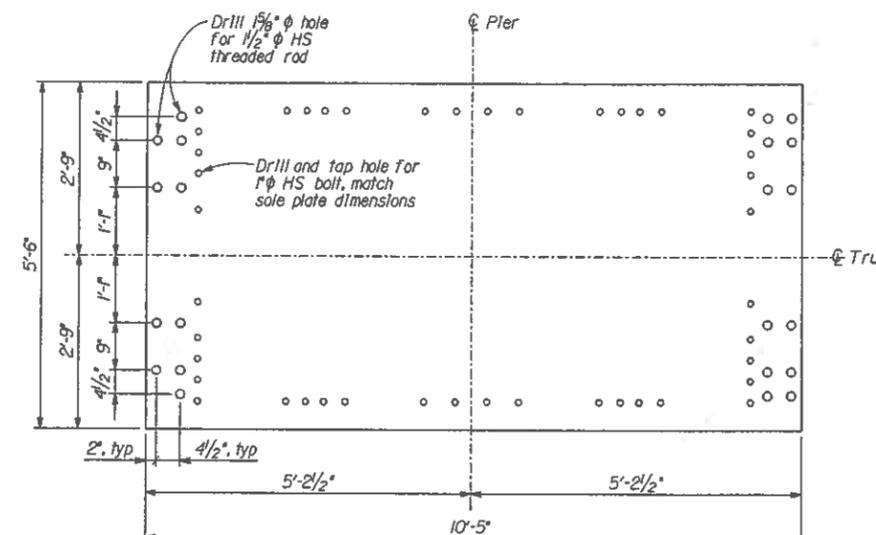
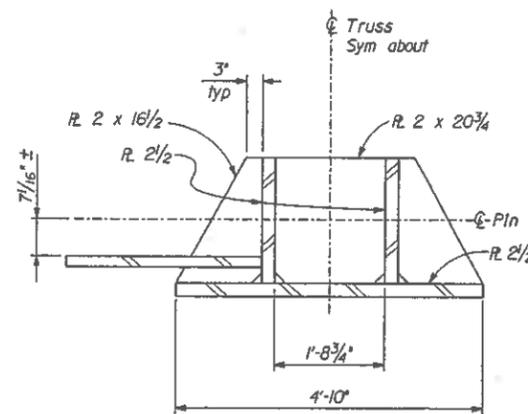
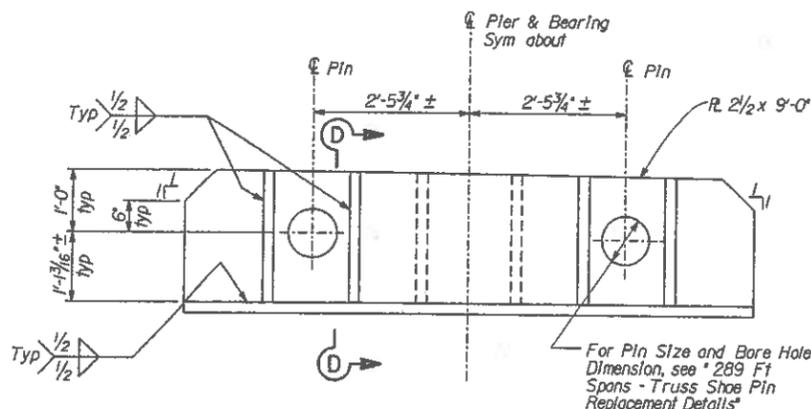
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

Notes:

1. Seismic Isolation bearing shall include sole plates base plate, and drill and bond HS threaded rod.
2. All shoe dimensions are based on the original shoe plans with a minimum 1" gap between the gusset and shoe base plate. Field verify all horizontal and vertical pin dimensions.
3. Section B-B and C-C taken from sheet "289 Ft Spans - Pier 58 Isolation Bearing Details".



Note: Top sole plate shown, bottom sole plate similar.



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

DESIGN BY: Ade Akinsanya/Shawn Sun  
DATE: 1/20/99

DESIGN BY	D. Kirkpatrick	CHECKED	O. Li
DETAILS BY	B. Prather	CHECKED	O. Li
QUANTITIES BY	D. Kirkpatrick	CHECKED	J. Lavinder

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612  
RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS  
PIER 58 BASE PLATE AND SHOE DETAILS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1	2	3
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CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
7/25/99, 7/26/99, 8/22/99, 9/12/99	303	503

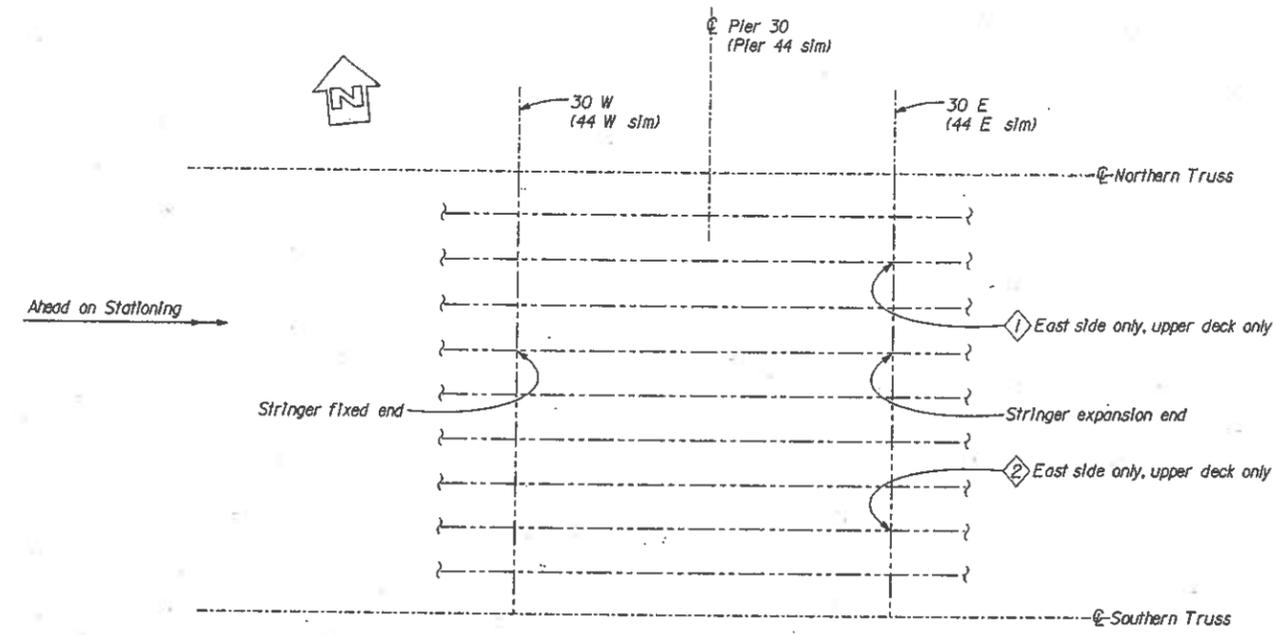
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.177.8 0.0/2.6	889	1142

David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 No. 55035  
 Exp. 6-30-00  
 CIVIL  
 STATE OF CALIFORNIA

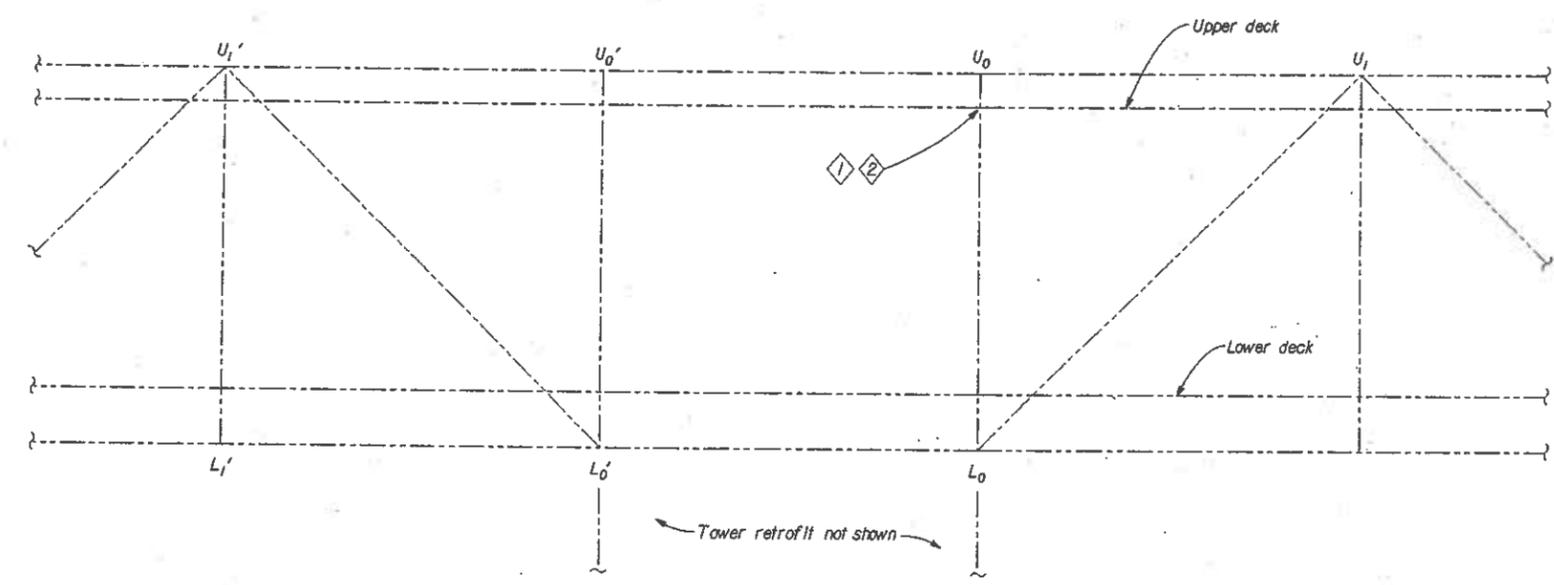
7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DMJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596

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.

- RETROFIT NOTES:**
- 1 Retrofit stringer expansion seat connection at upper floor beam only. See "289 Ft Spans - Piers 30 & 44 Upper Deck Stringer Retrofit Details" sheet.
  - 2 Add stringer restrainer at all stringers (tot 9) at upper floor beam only. See "Exterior Deck Stringer Restrainer Retrofit Details 1 & 2" sheets.



**PARTIAL PLAN**  
 Scale: 1/8" = 1'-0"



**PARTIAL ELEVATION**  
 Scale: 1/8" = 1'-0"

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

DESIGN OVERSIGHT  
 Ade Akinsanya/Shawn Sun  
 SIGN-OFF DATE 1/20/99

DESIGN	BY D. Korpi	CHECKED K. Lim
DETAILS	BY V. Nguyen	CHECKED D. Korpi
QUANTITIES	BY K. Ferguson	CHECKED E. Sugiyama

PREPARED FOR THE  
 STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

P. Bott  
 PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612

RICHMOND-SAN RAFAEL BRIDGE

289 FT SPANS  
 PIERS 30 & 44 UPPER DECK STRINGER RETROFIT LAYOUT

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1	2	3	CU 04271
					EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
	7/23/99, 10/24/99, 11/14/99, 12/15/99	304	503

1346A404.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.1/7, 8, 0.0/2, 6	890	1142

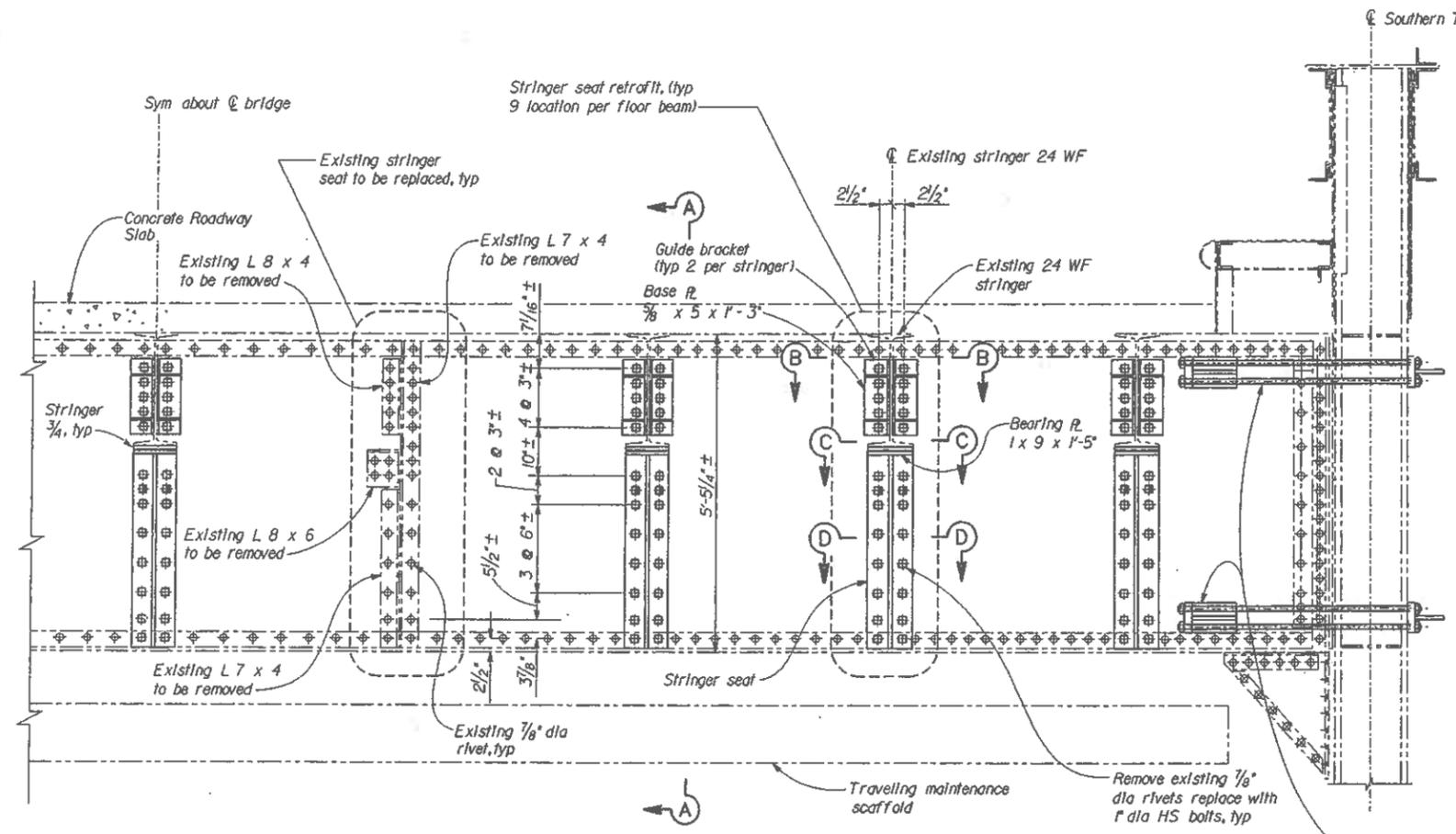
David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DWM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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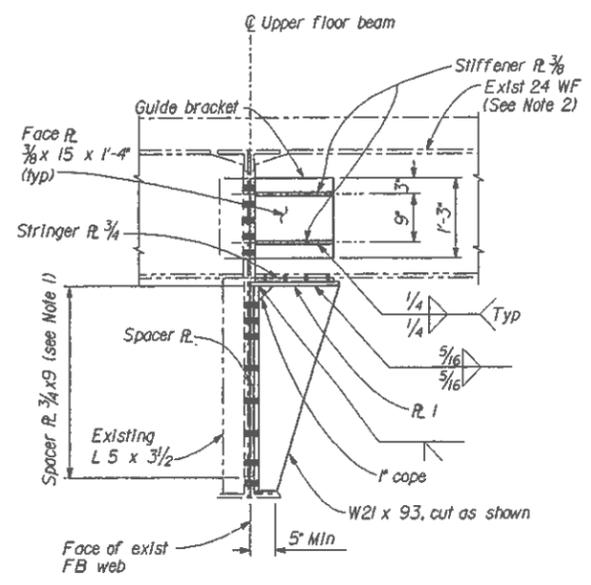
- Notes:
- See "Main Spans - Typical New over Existing Gusset Plate Installation" sheet for similar detail.
  - Temporary support prior to removal of existing L 8 x 6. See Table I.

Table I: Temporary Support Design Loads

Minimum Vertical Temporary Support Load (Klps)	Minimum Lateral Temporary Support Load (Klps)
34	4

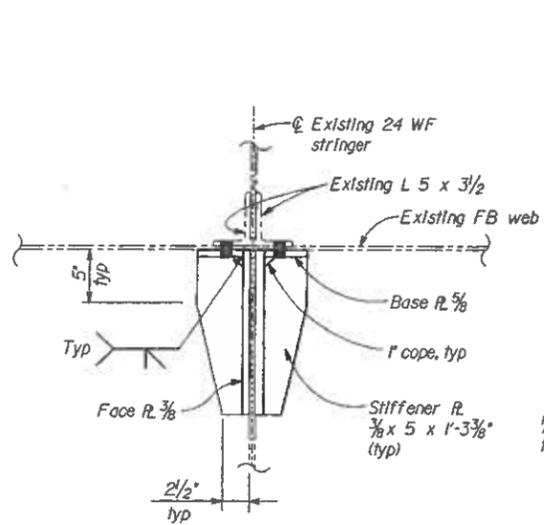


**ELEVATION - PIER 30 & 44 EAST TOWER FLOOR BEAM**  
Scale: 3/4" = 1'-0"  
Looking ahead on station

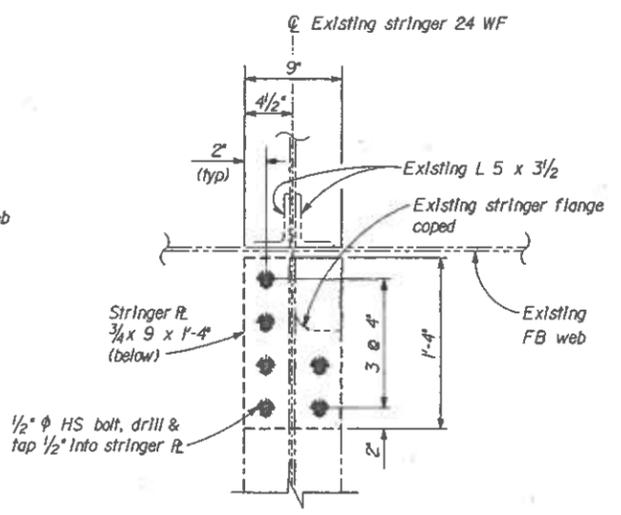


**SECTION A-A**  
Scale: 3/4" = 1'-0"

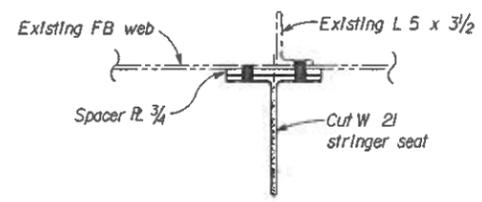
For Upper Floor Beam retrofit details, see "289 Ft Spans - Upper Floor Beam Connection Retrofit Details" sheet



**SECTION B-B**  
Scale: 1/2" = 1'-0"

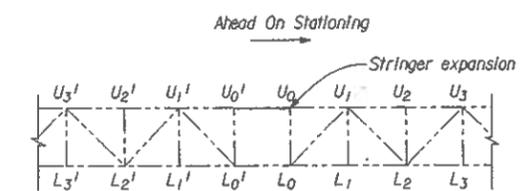


**SECTION C-C**  
Scale: 1/2" = 1'-0"



**SECTION D-D**  
Scale: 1/2" = 1'-0"

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



**PIER 30 & 44 KEY DIAGRAM**

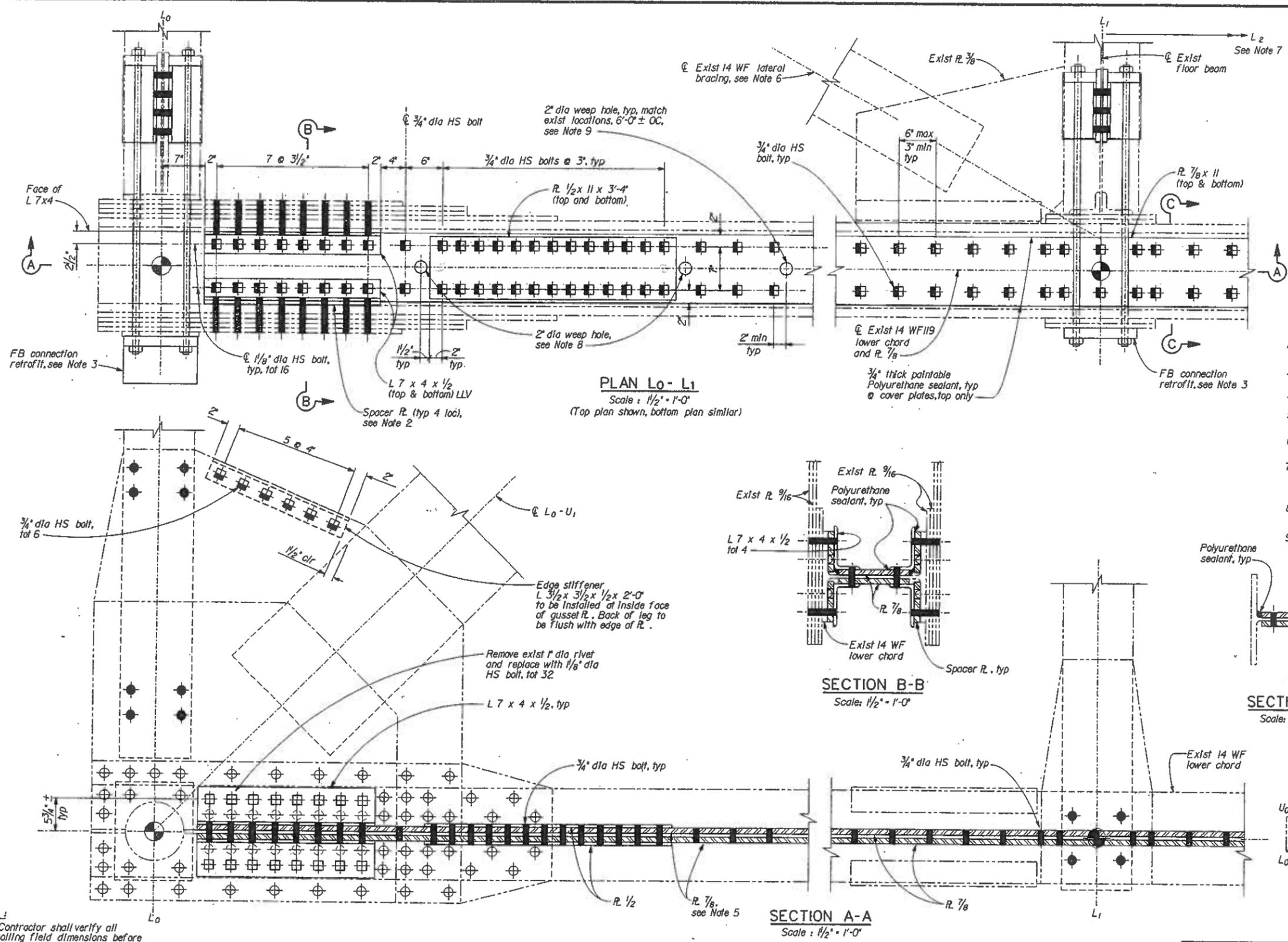
DESIGN BY K. Ferguson CHECKED F. Yuan	DETAILS BY G. W. Stimach CHECKED F. Yuan	QUANTITIES BY K. Ferguson CHECKED E. Sugiyama	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	P. Bott PROJECT ENGINEER	BRIDGE NO. 28-0100	<b>SEISMIC RETROFIT PROJECT NO. 612</b>	<b>RICHMOND-SAN RAFAEL BRIDGE</b>
					POST MILE 6.22		
DESIGN OVERSIGHT Ade Akinsanya/Shawn Sun	DATE 1/28/99	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	CU 04271 EA 04-0438U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY) 7/25/99 12/7/99 1/14/00 1/17/00 1/25/00	SHEET 305	OF 503

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC. Mtn	580	6.1/7.8, 0.0/2.6	891	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DWJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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.

- Notes:
- For Retrofit Schedule, see "289 Ft Spans - Plan & Elevation" sheet.
  - See "Main Spans - Typical New Over Exist Gusset Plate Installation" sheet for similar details.
  - See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 1 & 2" sheets.
  - L<sub>0</sub>-L<sub>2</sub> shown, L<sub>2</sub>-L<sub>4</sub> opposite hand.
  - See "289 Ft Spans - Lower Chord L<sub>0</sub>-L<sub>2</sub> Retrofit Type A Truss Details 2" sheet for optional splice detail.
  - For lower lateral bracing retrofit, see "289 Ft Spans - Lower Lateral Bracing Retrofit Details 1, 2 & 3" sheets.
  - For continuation of L<sub>1</sub>-L<sub>2</sub> retrofit details, see "289 Ft Spans - Lower Chord L<sub>0</sub>-L<sub>2</sub> Retrofit Type A Truss Details 2" sheet.
  - Drill 2" dia hole through new steel plates and existing web, locate weep hole at uphill side of slope only.
  - Ream existing hole to 2" dia.



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

Shawn Sun  
Ade Akinsanya/Shawn Sun  
DESIGN OVERSIGHT  
SIGN DATE 1/20/99

DESIGN	BY K. Ferguson	CHECKED R. Block
DETAILS	BY B. Prather	CHECKED R. Block
QUANTITIES	BY K. Ferguson	CHECKED P. Bott

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612  
RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS  
LOWER CHORD L0-L2 RETROFIT TYPE A TRUSS DETAILS 1

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
0 1 2 3

CU 04271	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 306	OF 503
EA 04-0438U1		7/25/99, 8/25/99, 9/25/99, 10/25/99, 11/25/99, 12/25/99, 1/25/00, 2/25/00, 3/25/00, 4/25/00, 5/25/00, 6/25/00, 7/25/00, 8/25/00, 9/25/00, 10/25/00, 11/25/00, 12/25/00, 1/25/01, 2/25/01, 3/25/01, 4/25/01, 5/25/01, 6/25/01, 7/25/01, 8/25/01, 9/25/01, 10/25/01, 11/25/01, 12/25/01, 1/25/02, 2/25/02, 3/25/02, 4/25/02, 5/25/02, 6/25/02, 7/25/02, 8/25/02, 9/25/02, 10/25/02, 11/25/02, 12/25/02, 1/25/03, 2/25/03, 3/25/03, 4/25/03, 5/25/03, 6/25/03, 7/25/03, 8/25/03, 9/25/03, 10/25/03, 11/25/03, 12/25/03, 1/25/04, 2/25/04, 3/25/04, 4/25/04, 5/25/04, 6/25/04, 7/25/04, 8/25/04, 9/25/04, 10/25/04, 11/25/04, 12/25/04, 1/25/05, 2/25/05, 3/25/05, 4/25/05, 5/25/05, 6/25/05, 7/25/05, 8/25/05, 9/25/05, 10/25/05, 11/25/05, 12/25/05, 1/25/06, 2/25/06, 3/25/06, 4/25/06, 5/25/06, 6/25/06, 7/25/06, 8/25/06, 9/25/06, 10/25/06, 11/25/06, 12/25/06, 1/25/07, 2/25/07, 3/25/07, 4/25/07, 5/25/07, 6/25/07, 7/25/07, 8/25/07, 9/25/07, 10/25/07, 11/25/07, 12/25/07, 1/25/08, 2/25/08, 3/25/08, 4/25/08, 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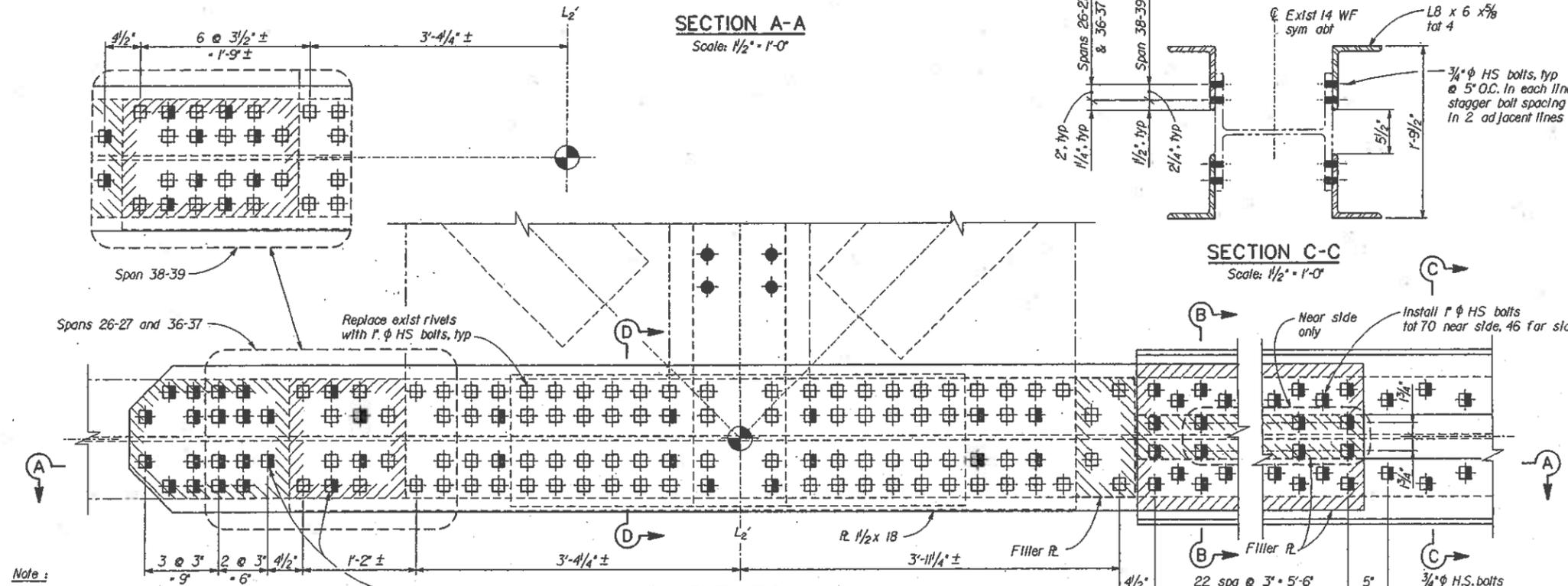
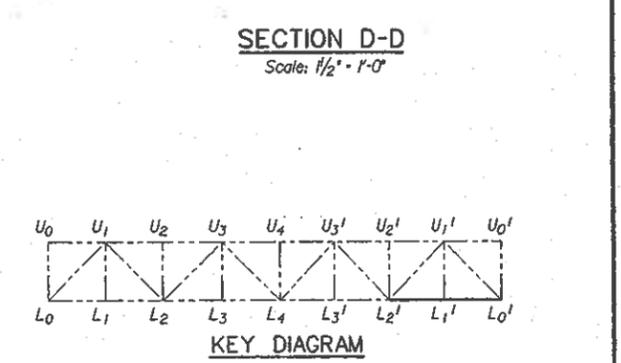
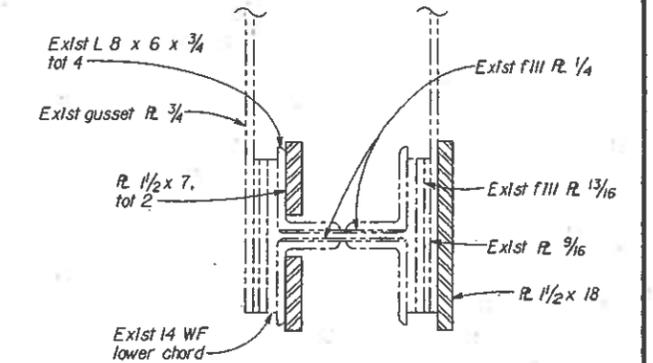
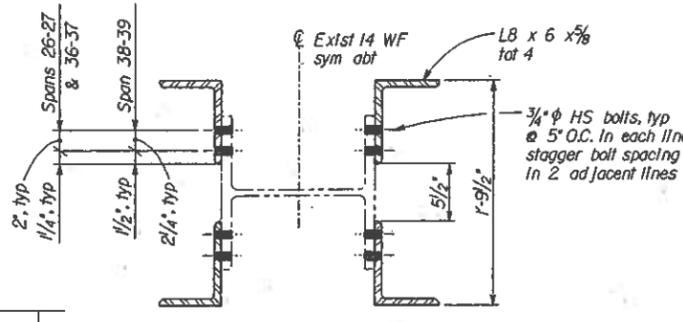
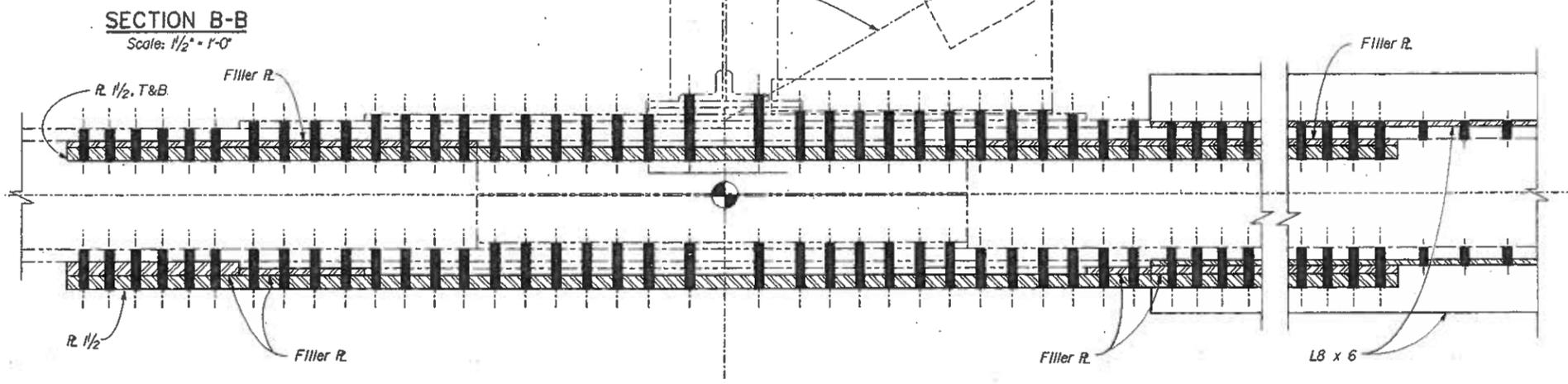
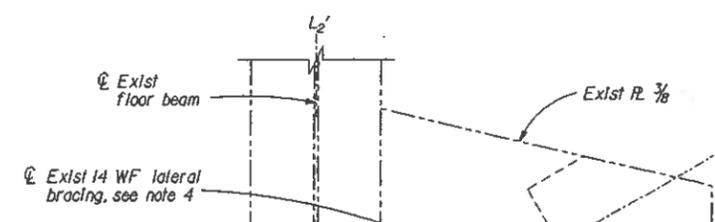
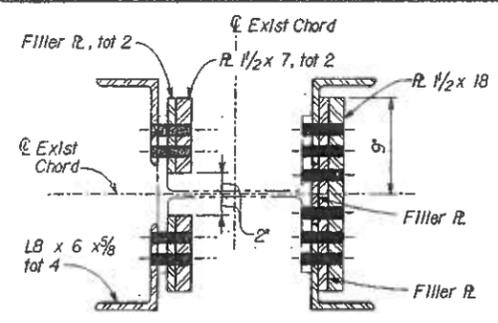


DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mtn	580	6.1/7.8 0.0/2.6	893	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DJMJ JOINT VENTURE  
601 MONTGOMERY ST. SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD. SUITE 208  
WALNUT CREEK, CA 94596

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.

- Notes:**
- For Retrofit Schedule, see "289 Ft Spans - Plan & Elevation" sheet.
  - See "Main Spans - Typical New Over Exist Gusset Plate Installation" sheet for similar details.
  - For L<sub>0</sub> - L<sub>2</sub> retrofit for spans 26-27, 36-37, see "289 Ft Spans - Lower Chord L<sub>0</sub> - L<sub>2</sub> Retrofit Type A Truss Details" sheets; for spans 38-39, see "289 Ft Spans - Lower Chord L<sub>0</sub> - L<sub>2</sub> Retrofit Type B Truss Details" sheets.
  - For lower lateral bracing retrofit, see "289 Ft Spans - Lower Lateral Bracing Retrofit Details 1, 2 & 3" sheets.
  - Viscous damper bracket details at lower chord L<sub>0</sub> - L<sub>2</sub> not shown. For details see "289 Ft Spans - Viscous Damper Details 3, 4 & 5" sheets.
  - Plates and shapes shall be dimensioned so that edge distance of bolts shall be 2" minimum.



DESIGN: R. Block CHECKED: K. Lim DETAILS: V. Nguyen CHECKED: R. Block QUANTITIES: G. Castleton CHECKED: O. Li		PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION		BRIDGE NO. 28-0100 POST MILE 6.22 PROJECT ENGINEER: P. Bott	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3				DISREGARD PRINTS BEARING EARLIER REVISION DATES	
CU 04271 EA 04-0438U1				SHEET 308 OF 503	

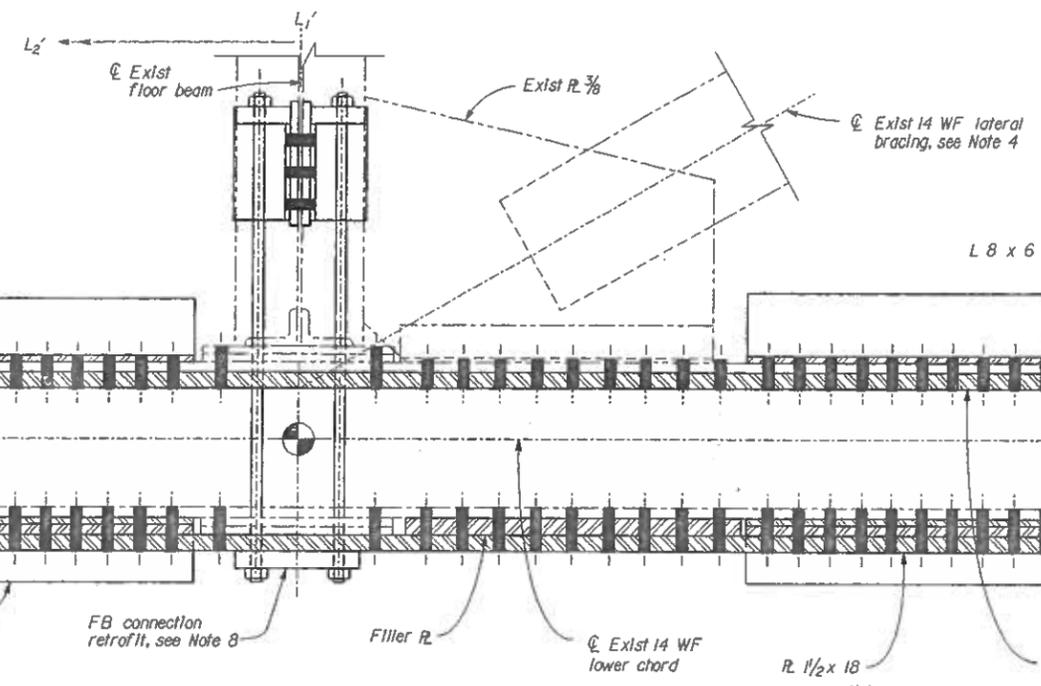
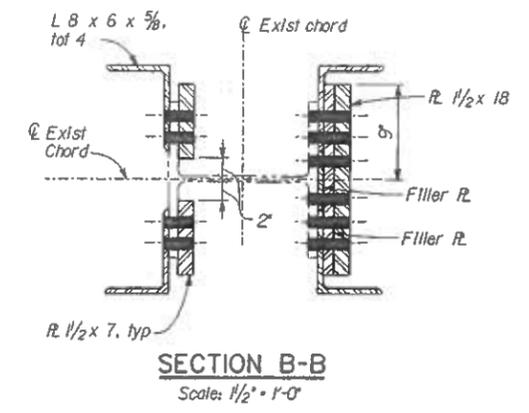
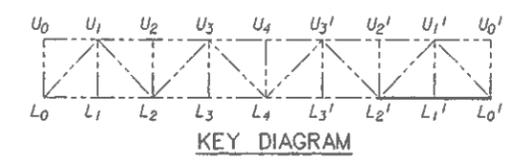
SEISMIC RETROFIT PROJECT NO. 612  
 RICHMOND-SAN RAFAEL BRIDGE  
 289 FT SPANS - SPANS 26-27, 36-37 AND 38-39  
 LOWER CHORD L<sub>0</sub>-L<sub>2</sub> RETROFIT DETAILS 1

1346A531.DGN

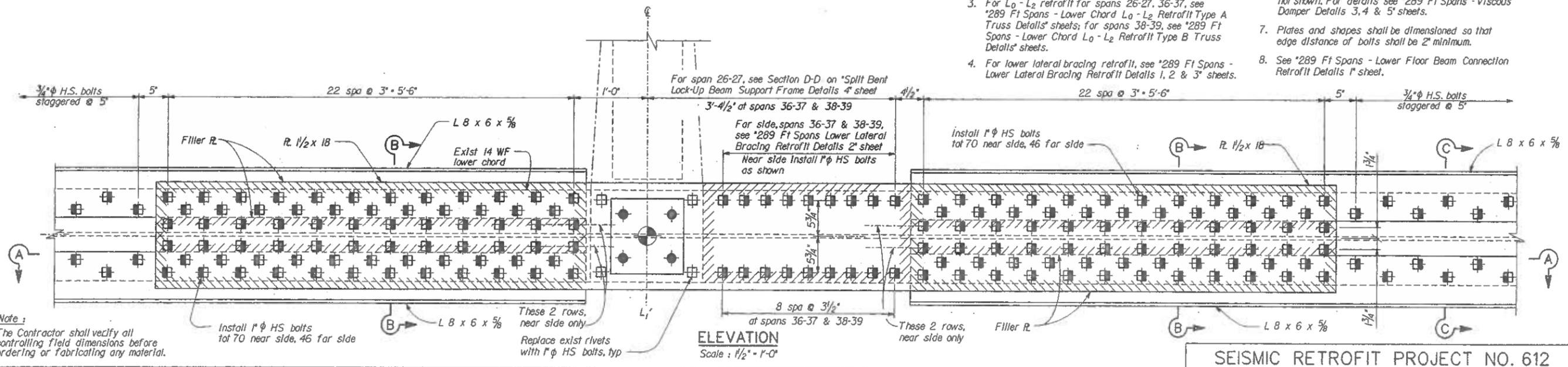
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.1/7.8, 0.0/2.6	894	1142

David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 No. 55035  
 Exp. 6-30-00  
 CIVIL  
 STATE OF CALIFORNIA

7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DWJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596



- Notes:
- For Retrofit Schedule, see "289 Ft Spans - Plan & Elevation" sheet.
  - See "Main Spans - Typical New Over Exist Gusset Plate Installation" sheet for similar details.
  - For L<sub>0</sub> - L<sub>2</sub> retrofit for spans 26-27, 36-37, see "289 Ft Spans - Lower Chord L<sub>0</sub> - L<sub>2</sub> Retrofit Type A Truss Details" sheets; for spans 38-39, see "289 Ft Spans - Lower Chord L<sub>0</sub> - L<sub>2</sub> Retrofit Type B Truss Details" sheets.
  - For lower lateral bracing retrofit, see "289 Ft Spans - Lower Lateral Bracing Retrofit Details 1, 2 & 3" sheets.
  - For Section C-C, see Section C-C on "289 Ft Spans - Spans 26-27, 36-37 and 38-39 Lower Chord L<sub>0</sub>' - L<sub>2</sub>' Retrofit Details 1" sheet.
  - Viscous damper bracket details at lower chord L<sub>0</sub>' - L<sub>2</sub>' not shown. For details see "289 Ft Spans - Viscous Damper Details 3, 4 & 5" sheets.
  - Plates and shapes shall be dimensioned so that edge distance of bolts shall be 2" minimum.
  - See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 1" sheet.



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

Shawn Sun  
Ade Akinsanya/Shawn Sun  
DESIGN OVERSIGHT  
SIGN-OFF DATE 1/28/99

DESIGN	BY R. Block	CHECKED K. Lim
DETAILS	BY M. Baskerville	CHECKED R. Block
QUANTITIES	BY G. Castleton	CHECKED O. Li

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612  
RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS - SPANS 26-27, 36-37 AND 38-39  
LOWER CHORD L<sub>0</sub>'-L<sub>2</sub>' RETROFIT DETAILS 2

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
0 1 2 3

CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 309	OF 503
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1346A534.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.1/1.8, 0.0/2.6	895	1142

*David W. Korpi*  
 REGISTERED CIVIL ENGINEER  
 No. 55035  
 Exp. 6-30-00  
 CIVIL  
 STATE OF CALIFORNIA

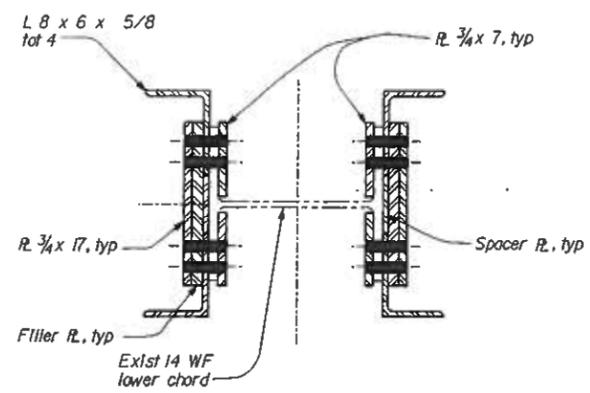
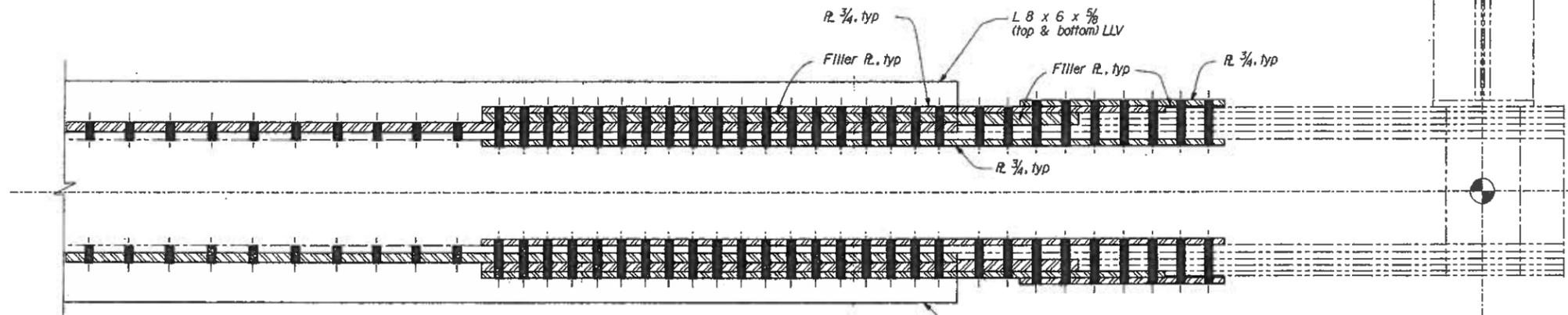
7-19-99  
 PLANS APPROVAL DATE

GERWICK/SVERDRUP/DMJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD. SUITE 208  
 WALNUT CREEK, CA 94596

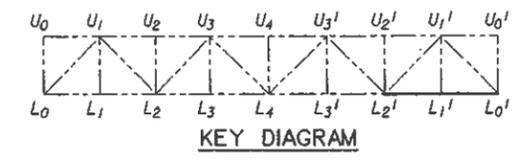
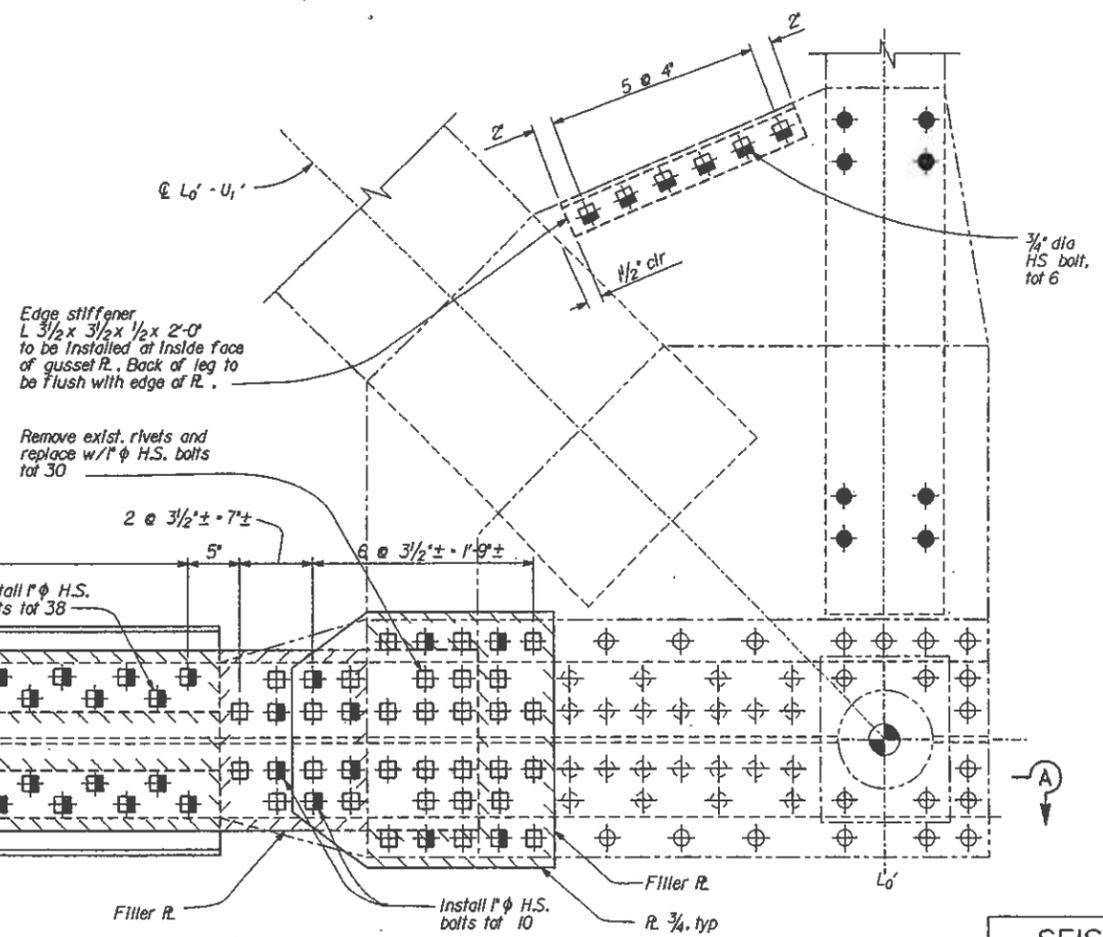
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

- Notes:
- For Retrofit Schedule, see "289 Ft Spans - Plan & Elevation" sheet.
  - See "Main Spans - Typical New Over Exist Gusset Plate Installation" sheet for similar details.
  - For L<sub>0</sub> - L<sub>2</sub> retrofit for spans 26-27, 36-37, see "289 Ft Spans - Lower Chord L<sub>0</sub> - L<sub>2</sub> Retrofit Type A Truss Details" sheets; for spans 38-39, see "289 Ft Spans - Lower Chord L<sub>0</sub> - L<sub>2</sub> Retrofit Type B Truss Details" sheets.
  - For Section C-C, see Section C-C on "289 Ft Spans - Spans 26-27, 36-37 and 38-39 Lower Chord L<sub>0</sub> - L<sub>2</sub> Retrofit Details I" sheet.
  - Viscous damper bracket details at lower chord L<sub>0</sub> - L<sub>2</sub> not shown. For details see "289 Ft Spans - Viscous Damper Details 3, 4 & 5" sheets.
  - Plates and shapes shall be dimensioned so that edge distance of bolts shall be 2" minimum.



**SECTION A-A**  
 Scale: 1/2" = 1'-0"

**SECTION B-B**  
 Scale: 1/2" = 1'-0"



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

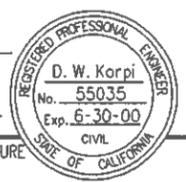
**ELEVATION**  
 Scale: 1/2" = 1'-0"

SEISMIC RETROFIT PROJECT NO. 612

Ade Akinsanya/Shawn Sun DESIGN OVERSIGHT SIGN-OFF DATE: 1/28/99	DESIGN BY: R. Block	CHECKED: K. Lim	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	BRIDGE NO.: 28-0100	<b>RICHMOND-SAN RAFAEL BRIDGE</b> 289 FT SPANS - SPANS 26-27, 36-37 AND 38-39 LOWER CHORD L <sub>0</sub> -L <sub>2</sub> RETROFIT DETAILS 3	
	DETAILS BY: M. Baskerville	CHECKED: R. Block		PROJECT ENGINEER: P. Bott		POST MILE: 6.22
	QUANTITIES BY: G. Castleton	CHECKED: O. Li				
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3			CU 04271 EA 04-0438U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES REVISION DATES (PRELIMINARY STAGE ONLY): 12/11/99, 1/16/00, 1/25/00		

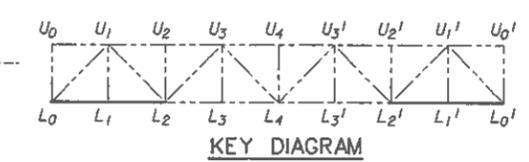
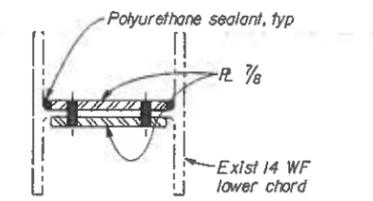
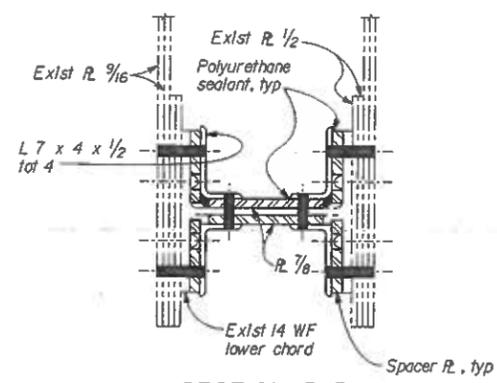
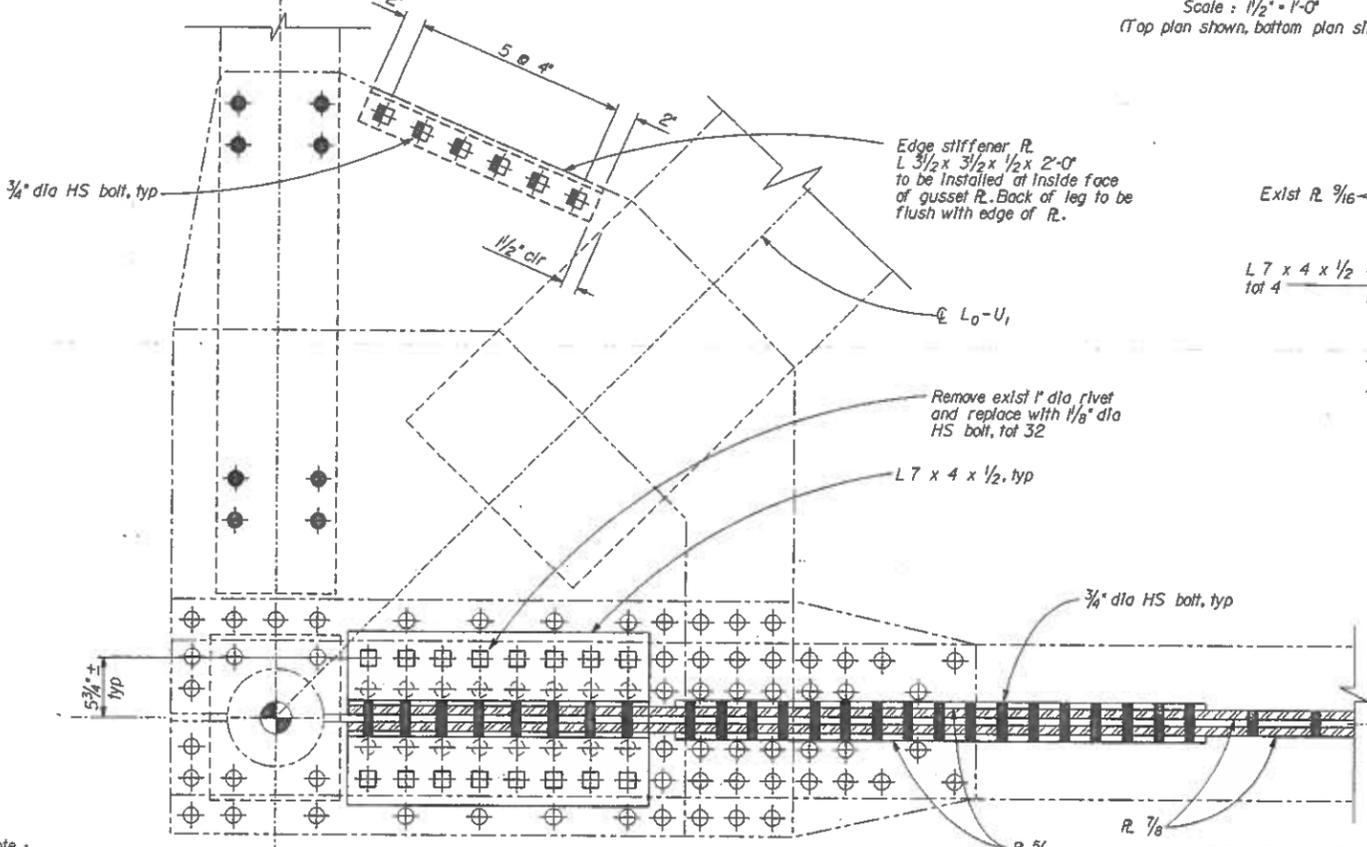
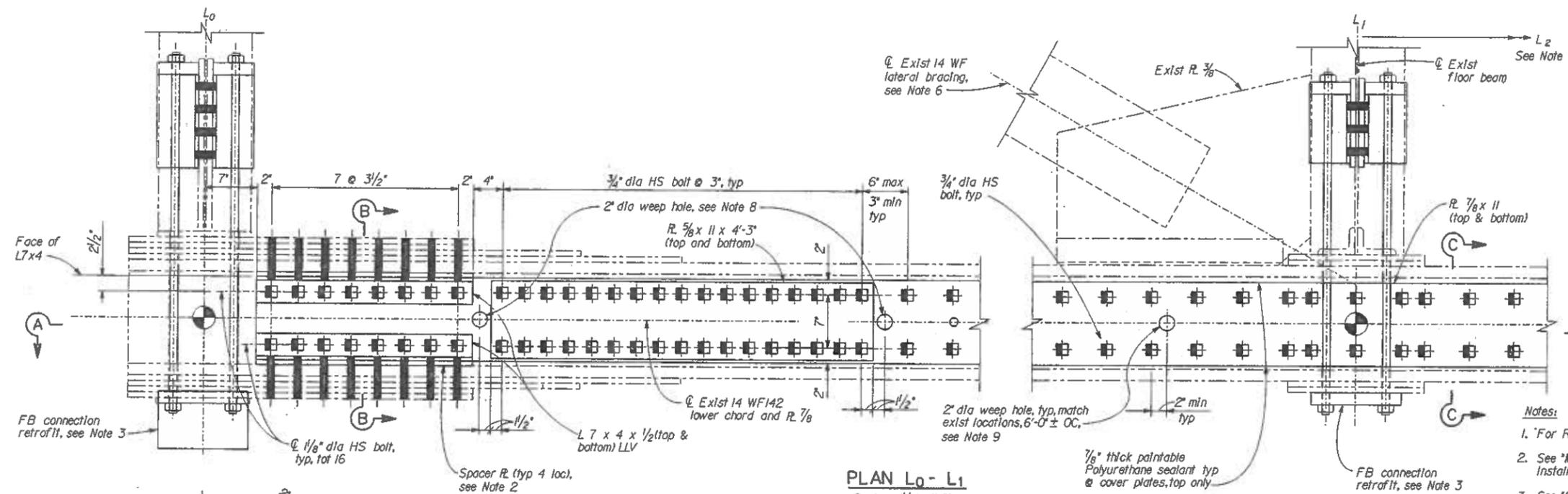
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.177.8, 0.012.6	896	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111



SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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.



- Notes:
- For Retrofit Schedule, see "289 Ft Spans - Plan & Elevation" sheet.
  - See "Main Spans - Typical New Over Exist Gusset Plate Installation" sheet for similar details.
  - See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 1 & 2" sheets.
  - L<sub>0</sub>-L<sub>2</sub> shown, L<sub>2</sub>-L<sub>0</sub>' opposite hand.
  - See "289 Ft Spans - Lower Chord L<sub>0</sub>-L<sub>2</sub> Retrofit Type B Truss Details 2" sheet for optional Splice Detail.
  - For lower lateral bracing retrofit, see "289 Ft Spans - Lower Lateral Bracing Retrofit Details 1, 2 & 3" sheets.
  - For continuation of L<sub>1</sub>-L<sub>2</sub> retrofit details, see "289 Ft Spans - Lower Chord L<sub>0</sub>-L<sub>2</sub> Retrofit Type B Truss Details 2" sheet.
  - Drill 2" dia hole through new steel plates and existing web, locate weep hole at uphill side of slope only.
  - Ream existing hole to 2" dia.

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

Shawn Sun  
Ade Akinsanya/Shawn Sun  
DESIGN OVERSIGHT  
DATE: 1/20/99

DESIGN	BY K. Ferguson	CHECKED R. Block
DETAILS	BY B. Prather	CHECKED R. Block
QUANTITIES	BY K. Ferguson	CHECKED P. Bott

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612  
RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS  
LOWER CHORD L<sub>0</sub> - L<sub>2</sub> RETROFIT TYPE B TRUSS DETAILS 1

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
0 1 2 3

CU 04271  
EA 04-0438U1

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
7/26/99, 8/26/99, 11/20/99, 1/20/00, 1/20/00, 1/20/00	311	503

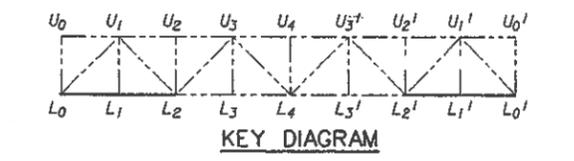
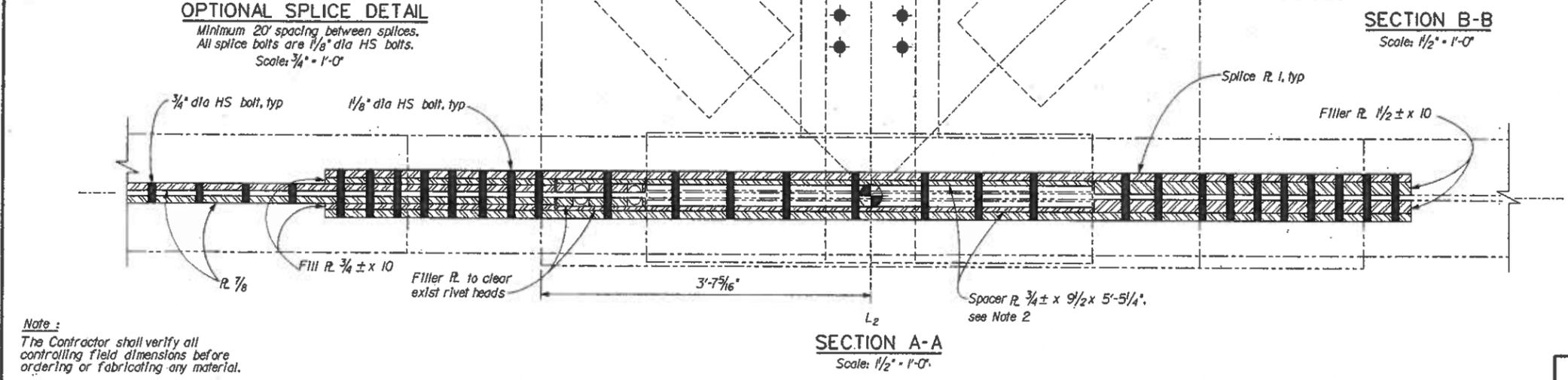
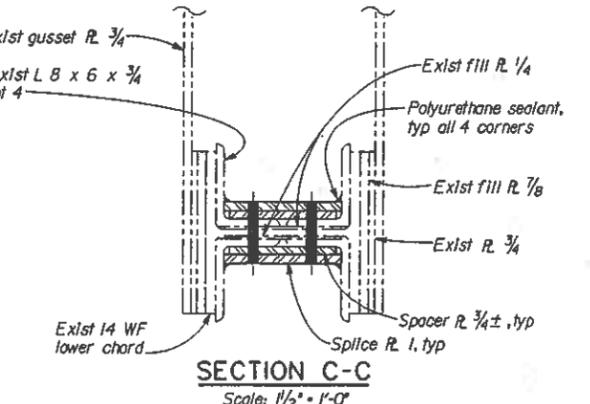
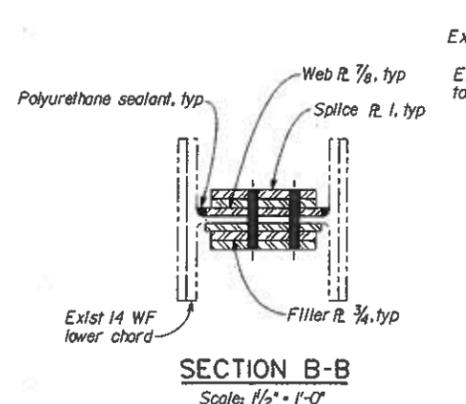
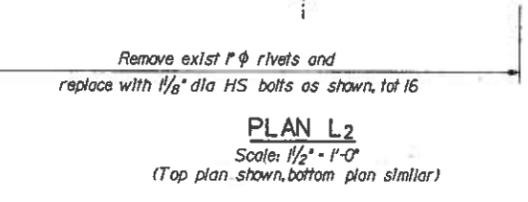
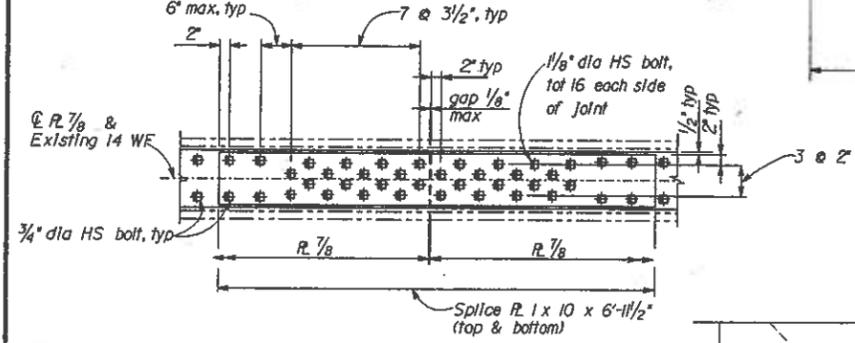
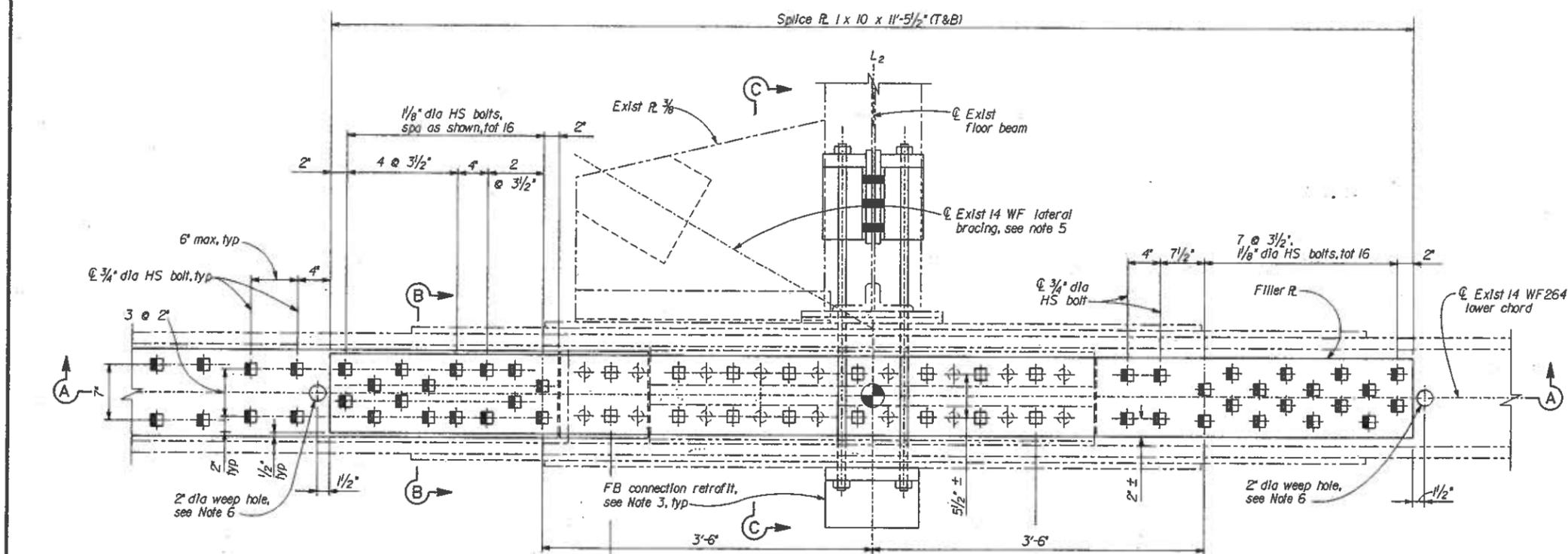
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mtn	580	6.177.8, 0.012.6	897	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DJMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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.

- Notes:
1. For Retrofit Schedule, see "289 Ft Spans - Plan & Elevation" sheet.
  2. See "Main Spans - Typical New Over Exist Gusset Plate Installation" sheet for similar details.
  3. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details" 3" sheet.
  4. L<sub>0</sub>-L<sub>2</sub> shown, L<sub>2</sub>'-L<sub>0</sub>' opposite hand.
  5. For lower lateral bracing retrofit, see "289 Ft Spans - Lower Lateral Bracing Retrofit Details 1, 2 & 3" sheets.
  6. Drill 2" dia hole through new steel plates (where applicable) and existing web, locate weep hole at uphill side of slope only.



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

DESIGN BY K. Ferguson DETAILS BY B. Prather QUANTITIES BY K. Ferguson	DESIGNED BY R. Block CHECKED BY R. Block DESIGNED BY P. Bott	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER P. Bott	BRIDGE NO.	28-0100	<b>SEISMIC RETROFIT PROJECT NO. 612</b> <b>RICHMOND-SAN RAFAEL BRIDGE</b> <b>289 FT SPANS</b> <b>LOWER CHORD L0-L2 RETROFIT TYPE B TRUSS DETAILS 2</b>
				POST MILE	6.22	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3		CU 04271 EA 04-0438U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY) 07/25/99 08/04/99 08/26/99 09/23/99 10/02/99 10/27/99 11/05/99 11/14/99		

1346A217.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.17.8, 0.0/2.6	898	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER

7-19-99  
PLANS APPROVAL DATE

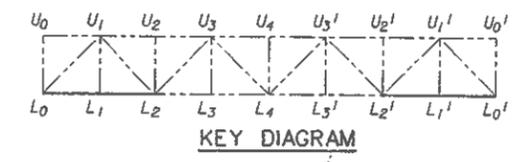
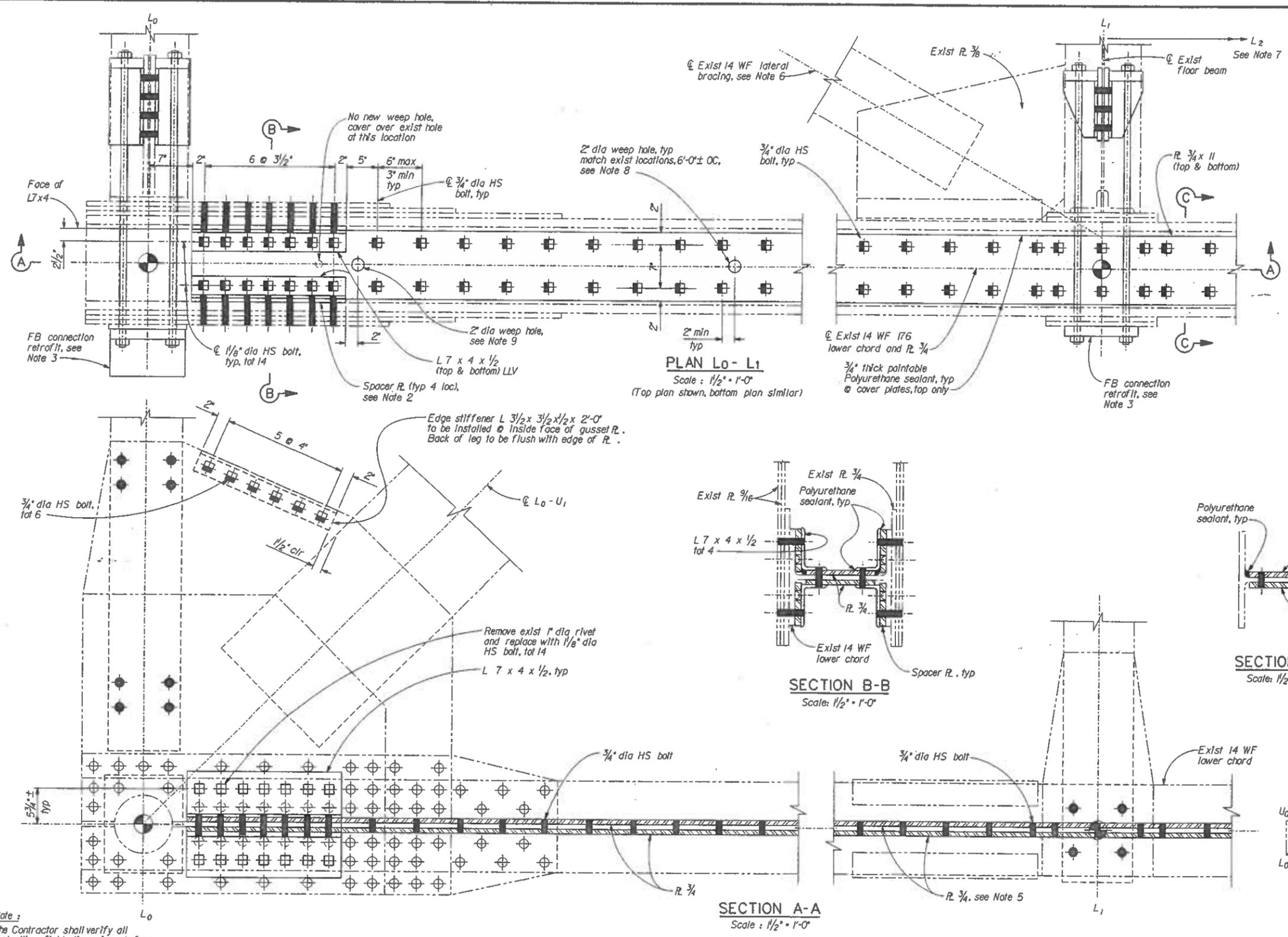
GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
1340 TREAT BLVD. SUITE 208  
WALNUT CREEK, CA 94596

REGISTERED PROFESSIONAL ENGINEER  
D. W. Korpi  
No. 55035  
Exp. 6-30-00  
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.

- Notes:
1. For Retrofit Schedule, see "289 Ft Spans - Plan & Elevation" sheet.
  2. See "Main Spans - Typical New Over Exist Gusset Plate Installation" sheet for similar details.
  3. See "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 1 & 2" sheets.
  4. L<sub>0</sub>-L<sub>2</sub> shown, L<sub>2</sub>'-L<sub>0</sub>' opposite hand.
  5. See "289 Ft Spans - Lower Chord L<sub>0</sub>-L<sub>2</sub> Retrofit Type C Truss Details 2" sheet for optional splice detail.
  6. For lower lateral bracing retrofit, see "289 Ft Spans - Lower Lateral Bracing Retrofit Details 1, 2 & 3" sheets.
  7. For continuation of L<sub>1</sub>-L<sub>2</sub> retrofit details, see "289 Ft Spans - Lower Chord L<sub>0</sub>-L<sub>2</sub> Retrofit Type C Truss Details 2" sheet.
  8. Ream existing hole to 2" dia.
  9. Drill 2" dia hole through new steel plates & existing web.



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

Shawn Sun  
Ade Akinsanya/Shawn Sun  
DESIGN DIVISION  
SIGN OFF DATE: 11/20/99

DESIGN	BY K. Ferguson	CHECKED R. Block
DETAILS	BY B. Prather	CHECKED R. Block
QUANTITIES	BY K. Ferguson	CHECKED P. Bott

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612  
RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS  
LOWER CHORD L<sub>0</sub>-L<sub>2</sub> RETROFIT TYPE C TRUSS DETAILS 1

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3

CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
1/23/99, 2/26/99, 3/2/99, 3/16/99, 4/13/99, 5/10/99, 6/7/99, 7/4/99, 8/1/99, 8/29/99, 9/26/99, 10/24/99, 11/21/99	313	503

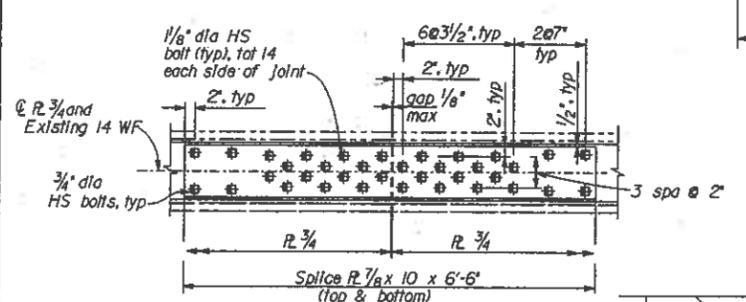
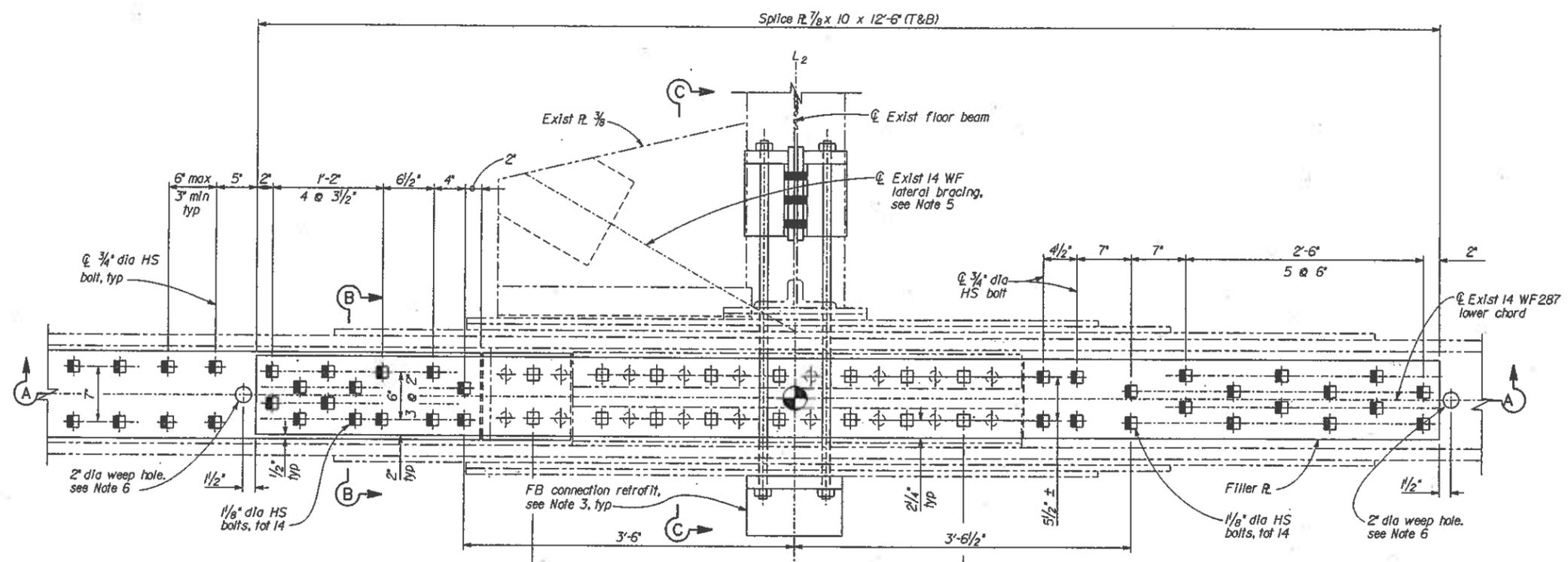
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.117.8, 0.012.6	899	1142

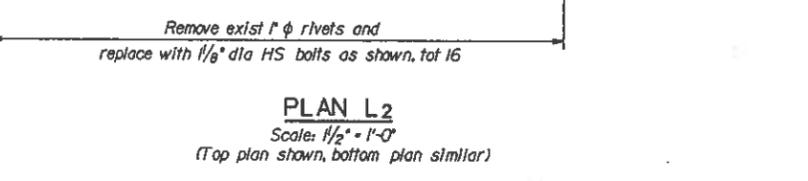
David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DWJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596

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.

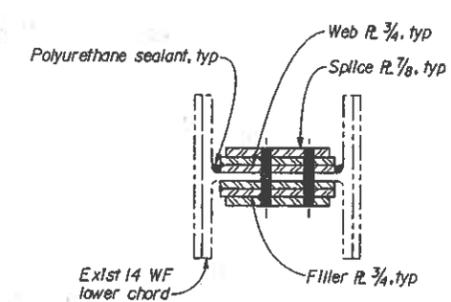
Notes:  
 1. For Retrofit Schedule, see \*289 Ft Spans - Plan & Elevation sheet.  
 2. See \*Main Spans - Typical New Over Exlst Gusset Plate Installation sheet for similar details.  
 3. See \*289 Ft Spans - Lower Floor Beam Connection Retrofit Details 3 sheet.  
 4. L<sub>0</sub> - L<sub>2</sub> shown, L<sub>2</sub> - L<sub>0</sub> opposite hand.  
 5. For lower lateral bracing retrofit, see \*289 Ft Spans - Lower Lateral Bracing Retrofit Details 1, 2 & 3 sheets.  
 6. Drill 2" dia hole through new steel plates (where applicable) and existing web, locate weep hole at uphill side of slope only.



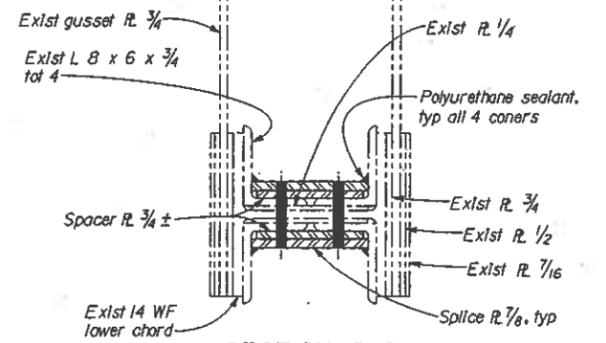
**OPTIONAL SPLICE DETAIL**  
 Scale: 3/4" = 1'-0"  
 Minimum 20' spacing between splices.  
 All splice bolts are 1/8" dia HS bolts.



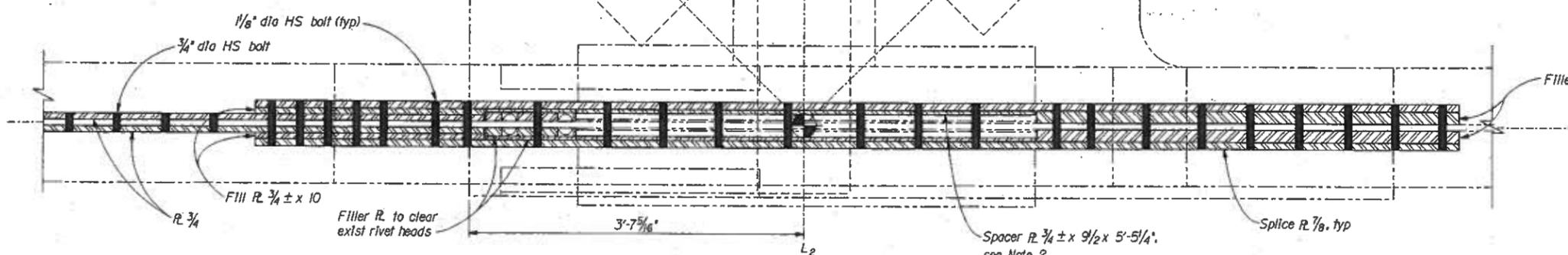
**PLAN L2**  
 Scale: 1/2" = 1'-0"  
 (Top plan shown, bottom plan similar)



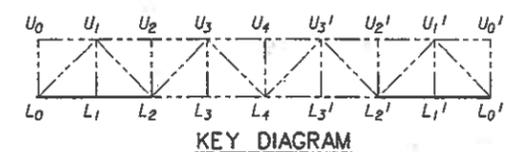
**SECTION B-B**  
 Scale: 1/2" = 1'-0"



**SECTION C-C**  
 Scale: 1/2" = 1'-0"



**SECTION A-A**  
 Scale: 1/2" = 1'-0"



**KEY DIAGRAM**

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

DESIGN BY K. Ferguson CHECKED R. Block DETAILS BY B. Prother CHECKED R. Block QUANTITIES BY K. Ferguson CHECKED P. Bott		PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION		P. Bott PROJECT ENGINEER		BRIDGE NO. 28-0100 POST MILE 6.22		<b>SEISMIC RETROFIT PROJECT NO. 612</b> <b>RICHMOND-SAN RAFAEL BRIDGE</b> 289 FT SPANS <b>LOWER CHORD L0 - L2 RETROFIT TYPE C TRUSS DETAILS 2</b>	
ADE AKINSANYA/SHAWN SUN DESIGN OVERSIGHT 1/20/99		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3		CU 04-271 EA 04-0438U1		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES (PRELIMINARY STAGE ONLY) 1/20/99 2/20/99 3/20/99 4/20/99 5/20/99 6/20/99 7/20/99 8/20/99 9/20/99 10/20/99 11/20/99 12/20/99 SHEET 314 OF 503	

13-46/219.DGN



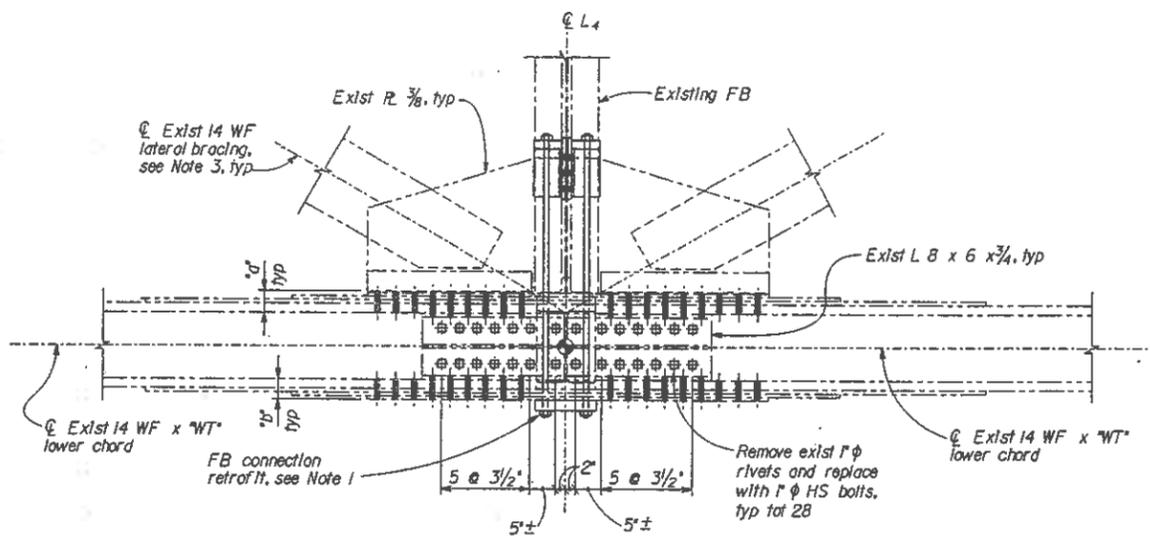


DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	980	6.177.8, 0.012.6	902	1142

David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DMJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596

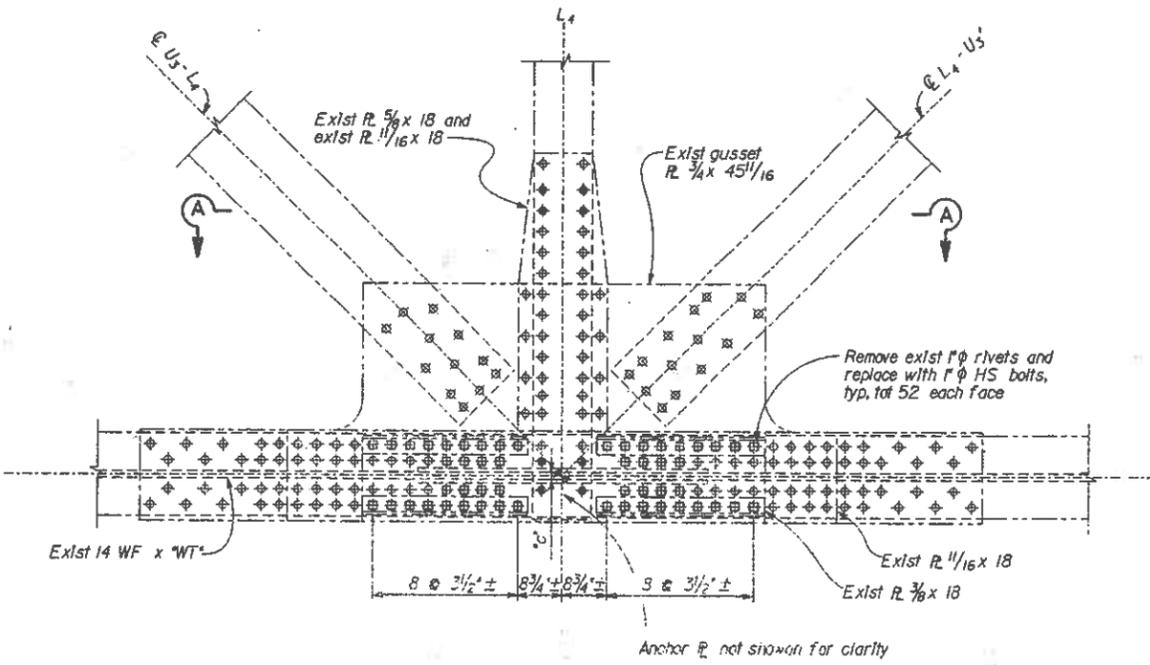
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- Notes:
- For Floor Beam Retrofit, see '289 Ft Spans - Lower Floor Beam Connection Retrofit Details 1' sheet.
  - Existing rivet patterns vary.
  - For lower lateral bracing retrofit, see '289 Ft Spans - Lower Lateral Bracing Retrofit Details 1, 2 & 3' sheets.



Notes:  
Bottom chord type 'D' span at L4 as shown. Span types 'A', 'B', & 'C' similar.

SECTION A-A  
Scale: 3/4" = 1'-0"



ELEVATION - L4 CONNECTION  
Scale: 3/4" = 1'-0"

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

Connection Retrofit Schedule

Span Type	Span	L4
D	19-20	
D	20-21	
D	21-22	
C	22-23	
C	23-24	
B	24-25	
B	25-26	
A	26-27	
A	27-28	
B	28-29	
B	29-30	R
B	30-31	
B	31-32	
A	32-33	R
A	36-37	R
B	37-38	
B	38-39	R
C	39-40	
C	40-41	R
D	41-42	
D	42-43	R
D	43-44	R
B	44-45	R
A	45-46	
A	49-50	
B	50-51	
B	51-52	
C	52-53	
C	53-54	
D	54-55	
B	55-56	
B	56-57	
A	57-58	R
A	58-59	
B	59-60	
B	60-61	

R = Seismic retrofit required

TRUSS TYPE	DIMENSIONS			
	WT	"d"	"b"	"c"
'A'	237	4 1/4" ±	3 3/8" ±	2 5/8" ±
'B'	264	4 5/8" ±	4 1/4" ±	2 3/4" ±
'C'	287	4 1/8" ±	4 1/2" ±	2 1/8" ±
'D'	320	5" ±	4 5/8" ±	3 3/8" ±

SEISMIC RETROFIT PROJECT NO. 612

RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS  
LOWER CHORD CONNECTION RETROFIT DETAILS

DESIGN OVERSIGHT  
Ade Akinsanya/Shawn Sun  
DESIGN DATE: 1/20/99

DESIGN BY	J. Lavinder	CHECKED BY	R. Block
DETAILS BY	B. Prather	CHECKED BY	R. Block
QUANTITIES BY	J. Lavinder	CHECKED BY	E. Sugiyama

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
P. Bott  
PROJECT ENGINEER

BRIDGE NO.  
28-0100  
POST MILE  
6.22

CU 04271	EA 04-0438U1	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 317 OF 503
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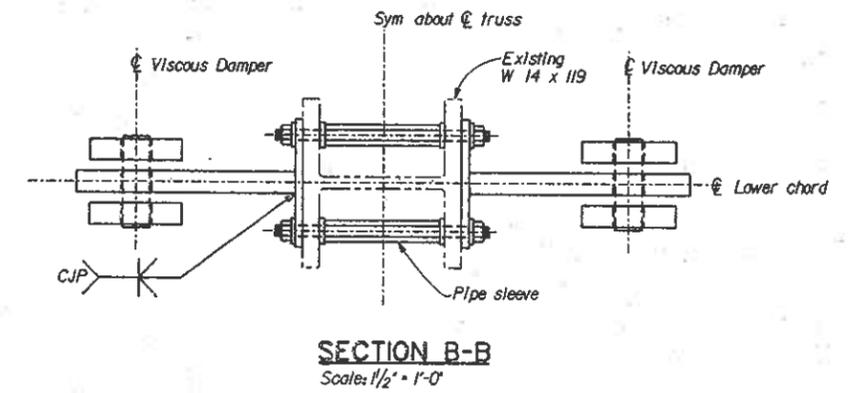
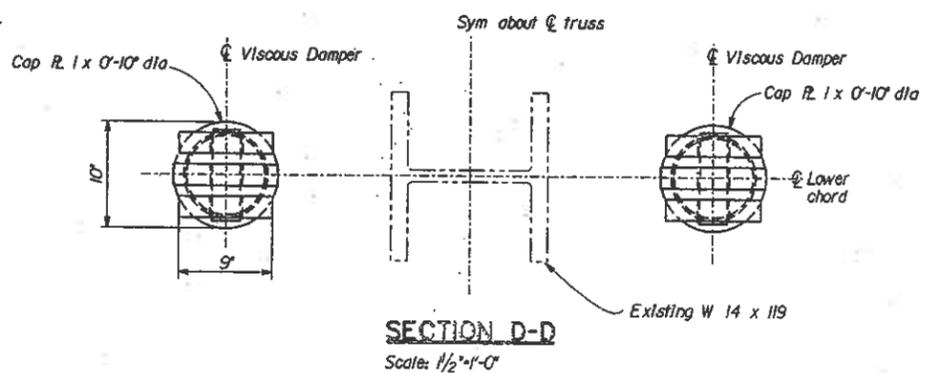
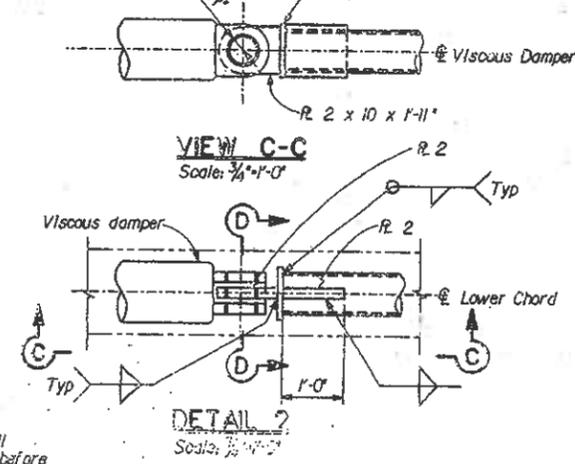
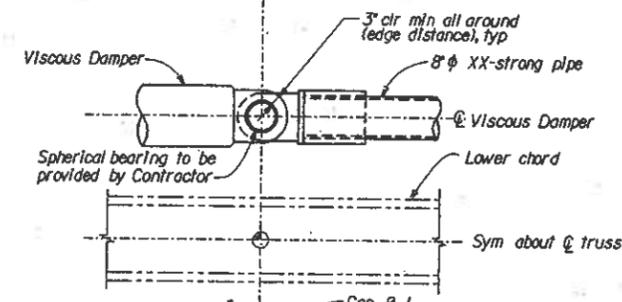
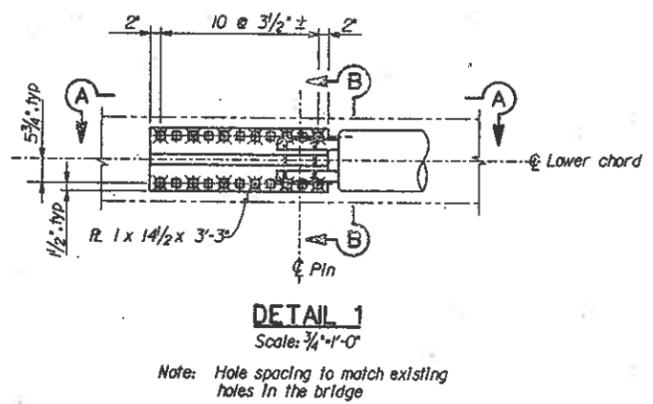
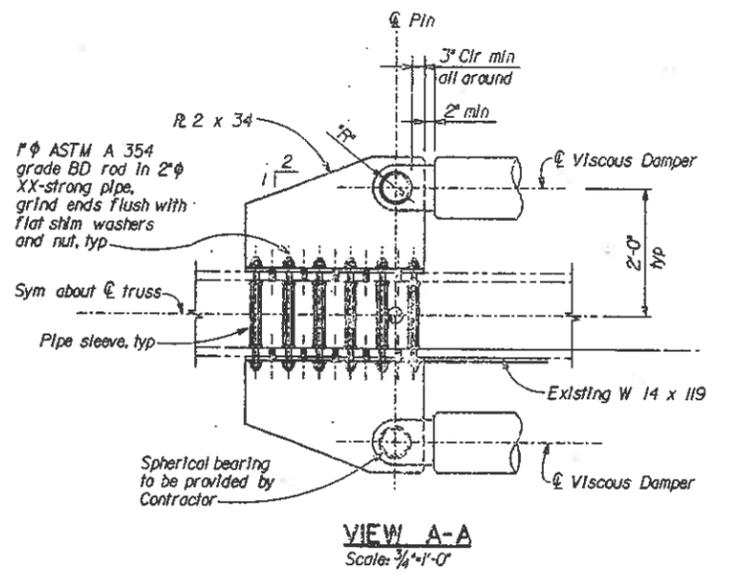
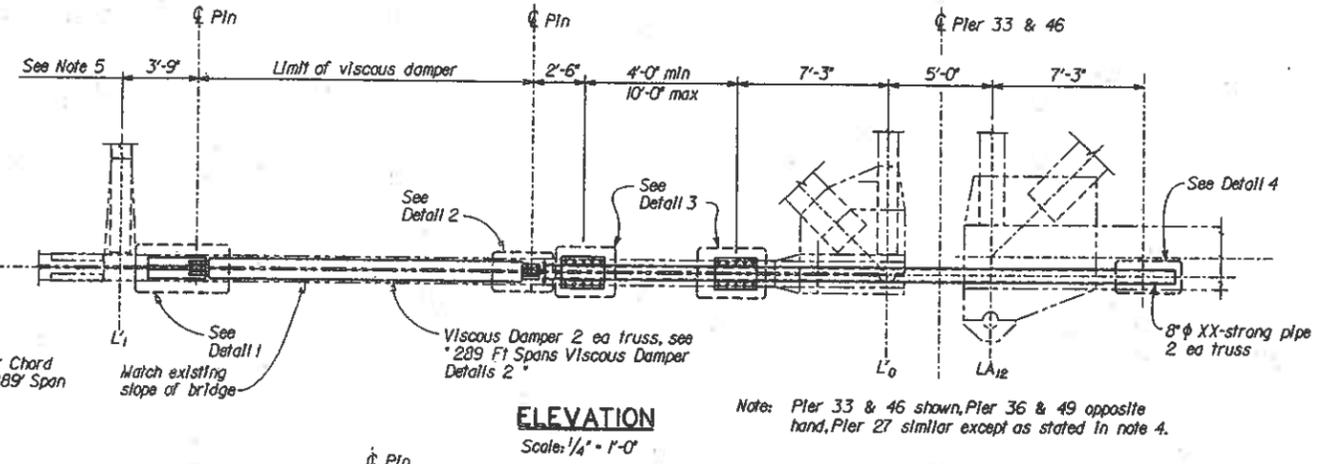
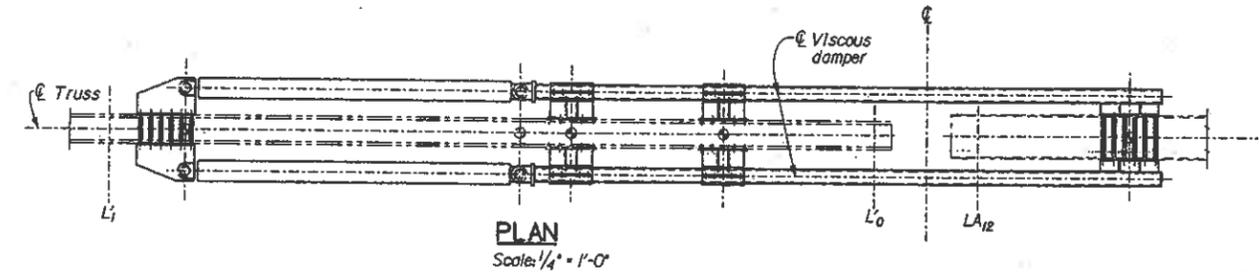
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.17.8.0.0/2.6	905	1142

*David W. Korpi*  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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- Notes:
- Dimension "R" to be determined by the damper Contractor. The Contractor shall provide necessary plate finishes, keeper bars, retaining ring and grease fittings required for proper installation of viscous damper, spherical bearing & associated hardware.
  - For Details 3 & 4 see "289 Ft Spans Viscous Dampers Details 2" sheet.
  - For details of floor beam cut outs, see "289 Ft Spans - Lower Floor Beam Connection Retrofit Details 2" and "Main Spans - Lower Floor Beam Retrofit Details 4" sheets.
  - For maintenance scaffold bottom roller guard roll details at Pier 27, see "289 FT Spans - Viscous Damper Details 3, 4 & 5" sheets.
  - Contractor shall adjust connection locations to fit viscous damper subject to the Engineer's approval.
  - For member retrofit not shown, see appropriate sheets for details.

- Design Criteria
- $$F = CV^n$$
- F is designated force = 225 kips
  - C is damping coefficient = 75 K-sec/ft
  - V is design rated velocity = 9 ft/sec
  - n is velocity exponent = 0.5
  - Total stroke = 74 Inches (±37 Inches)
  - EDC min = 1900 Kips-ft



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

DESIGN BY: *Shawn Sun*  
Ade Akinsanya/Shawn Sun  
DATE: 1/28/99

DESIGN BY	D. Kirkpatrick	CHECKED BY	O. Li
DETAILS BY	G.W. Stimach	CHECKED BY	D. Kirkpatrick
QUANTITIES BY	D. Kirkpatrick	CHECKED BY	E. Sugiyama

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.  
28-0100  
POST MILE  
6.22

SEISMIC RETROFIT PROJECT NO. 612  
RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS  
VISCIOUS DAMPER DETAILS 1

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU	04271
EA	04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
7/15/98 7/22/98 7/29/98 8/5/98 8/12/98 8/19/98 8/26/98 9/2/98 9/9/98 9/16/98 9/23/98 9/30/98 10/7/98 10/14/98 10/21/98 10/28/98 11/4/98 11/11/98 11/18/98 11/25/98 12/2/98 12/9/98 12/16/98 12/23/98 12/30/98 1/6/99 1/13/99 1/20/99 1/27/99 2/3/99 2/10/99 2/17/99 2/24/99 3/2/99 3/9/99 3/16/99 3/23/99 3/30/99 4/6/99 4/13/99 4/20/99 4/27/99 5/4/99 5/11/99 5/18/99 5/25/99 6/1/99 6/8/99 6/15/99 6/22/99 6/29/99 7/6/99 7/13/99 7/20/99 7/27/99 8/3/99 8/10/99 8/17/99 8/24/99 8/31/99 9/7/99 9/14/99 9/21/99 9/28/99 10/5/99 10/12/99 10/19/99 10/26/99 11/2/99 11/9/99 11/16/99 11/23/99 11/30/99 12/7/99 12/14/99 12/21/99 12/28/99 1/4/00 1/11/00 1/18/00 1/25/00 2/1/00 2/8/00 2/15/00 2/22/00 2/29/00 3/6/00 3/13/00 3/20/00 3/27/00 4/3/00 4/10/00 4/17/00 4/24/00 4/30/00 5/7/00 5/14/00 5/21/00 5/28/00 6/4/00 6/11/00 6/18/00 6/25/00 7/2/00 7/9/00 7/16/00 7/23/00 7/30/00 8/6/00 8/13/00 8/20/00 8/27/00 9/3/00 9/10/00 9/17/00 9/24/00 10/1/00 10/8/00 10/15/00 10/22/00 10/29/00 11/5/00 11/12/00 11/19/00 11/26/00 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5/25/22 6/1/22 6/8/22 6/15/22 6/22/22 6/29/22 7/6/22 7/13/22 7/20/22 7/27/22 8/3/22 8/1		

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.17.8, 0.012.6	906	1142

*David W. Korpi*  
REGISTERED CIVIL ENGINEER

7-19-99  
PLANS APPROVAL DATE

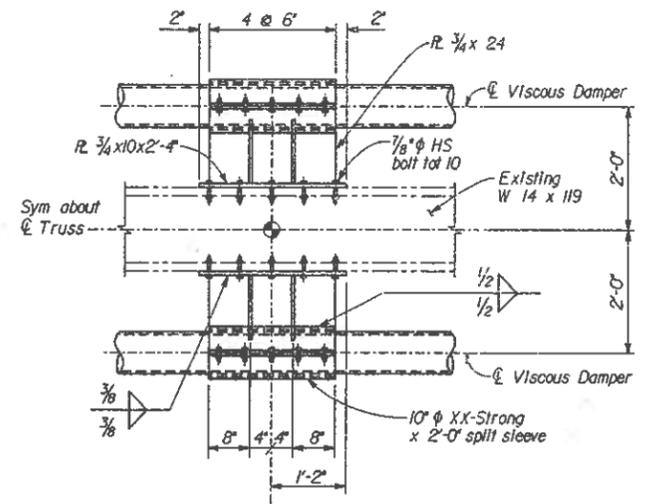
GERWICK/SVERDRUP/DJM JOINT VENTURE  
601 MONTGOMERY ST. SUITE 400  
SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
1340 TREAT BLVD. SUITE 208  
WALNUT CREEK, CA 94596

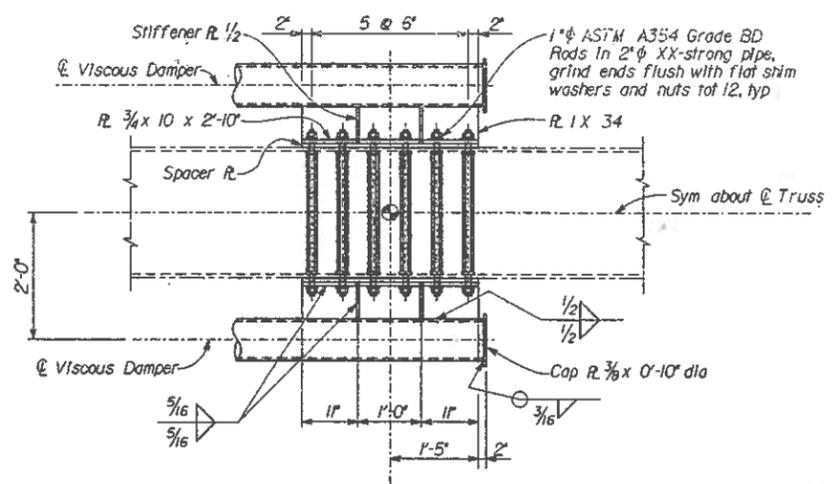
REGISTERED PROFESSIONAL ENGINEER  
D. W. Korpi  
No. 55035  
Exp. 6-30-00  
CIVIL  
STATE OF CALIFORNIA

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.

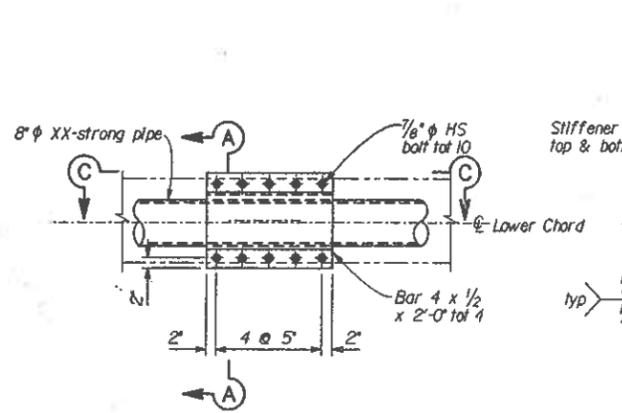
- Notes:**
1. Plate height shown for connection to Main span lower chord, connection at pier 27 to W14x119.
  2. Set location to match  $\phi$  289 Truss lower chord slope of Damper and 8"  $\phi$  XX-strong pipe to match existing bridge slope.
  3. For spacer plate, see "Main Spans-Typical New Over Existing Gusset Plate Installation" sheet for similar details.
  4. For member retrofit not shown, see appropriate sheets for details.



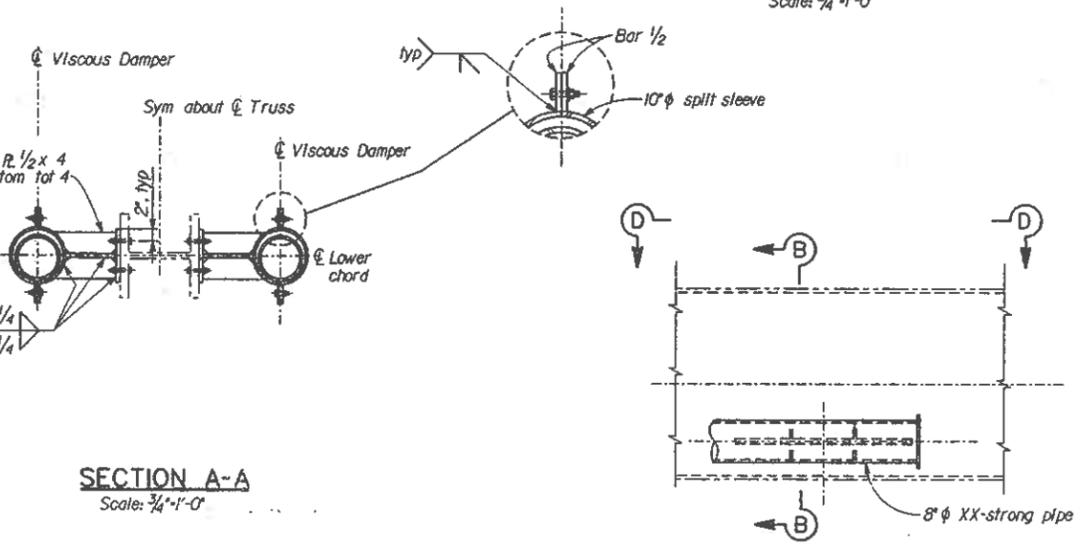
**VIEW C-C**  
Scale: 3/4"=1'-0"



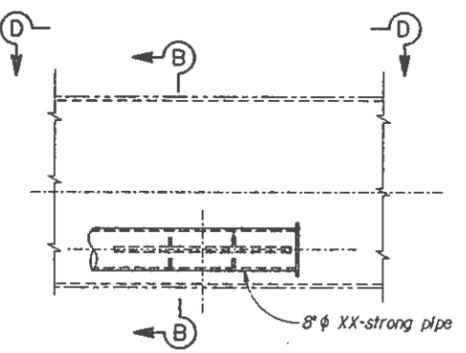
**VIEW D-D**  
Scale: 3/4"=1'-0"



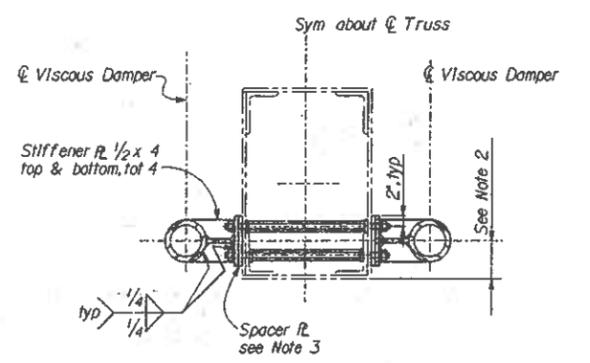
**DETAIL 3**  
Scale: 3/4"=1'-0"



**SECTION A-A**  
Scale: 3/4"=1'-0"



**DETAIL 4**  
Scale: 3/4"=1'-0"



**SECTION B-B**  
Scale: 3/4"=1'-0"



**VISCOUS DAMPER**  
Scale: 1/4"=1'-0"

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

Shawn Sun  
Ade Akinsanya/Shawn Sun  
CHECK OVERSIGHT  
DATE: 1/28/99

DESIGN BY	D. Kirkpatrick	CHECKED BY	O. Li
DETAILS BY	B. Prother	CHECKED BY	D. Kirkpatrick
QUANTITIES BY	D. Kirkpatrick	CHECKED BY	E. Sugiyama

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER  
CU 04271  
EA 04-047501

BRIDGE NO.  
28-0100  
POST MILE  
6.22

**SEISMIC RETROFIT PROJECT NO. 612**

**RICHMOND-SAN RAFAEL BRIDGE**

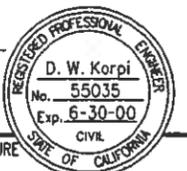
**289 FT SPANS**  
**VISCOUS DAMPER DETAILS 2**

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
04/28/99 05/12/99 06/12/99 07/12/99 08/12/99 09/12/99 10/12/99 11/12/99 12/12/99	321	503

1346A294.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.117.8, 0.0/2.6	907	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER

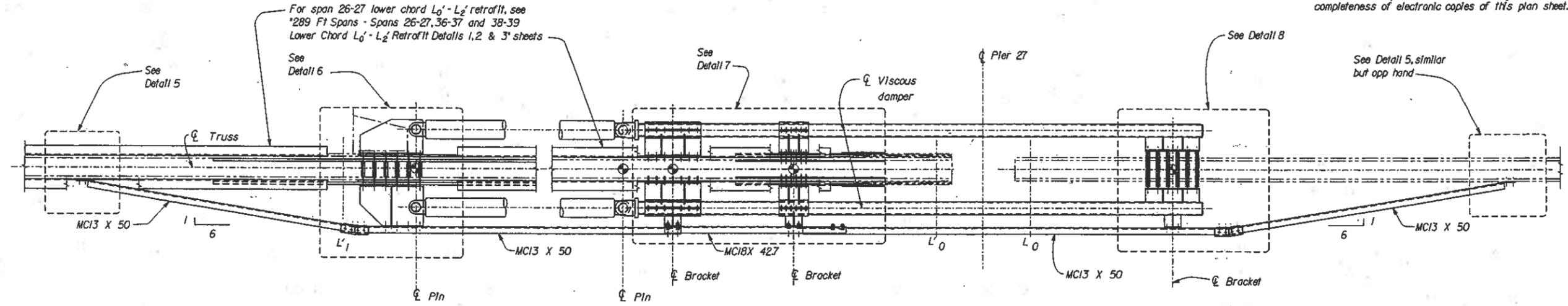


7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DJMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

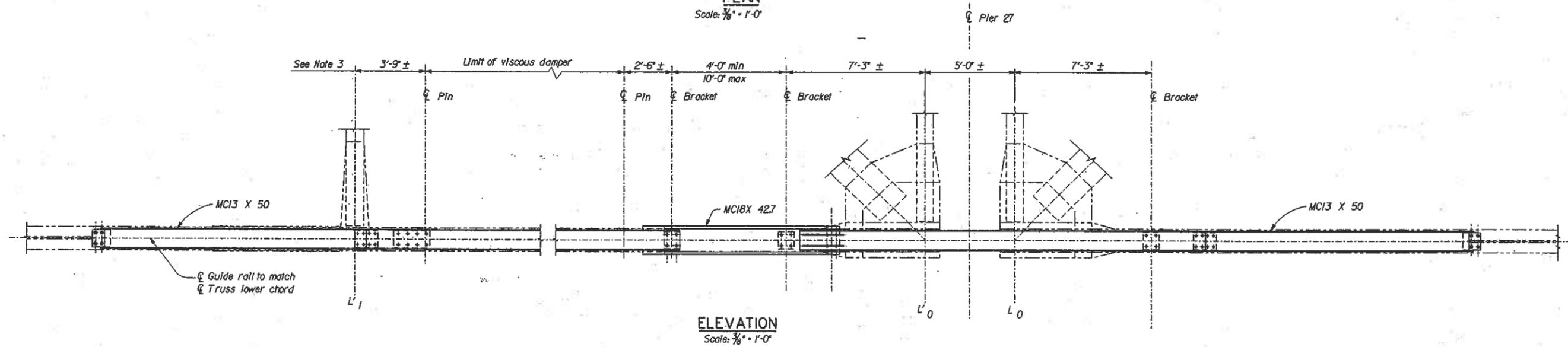
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Notes

- For Details 5 & 6, see "289 FT Spans - Viscous Damper Details 4" sheet.
- For Details 7 & 8, see "289 FT Spans - Viscous Damper Details 5" sheet.
- Contractor shall adjust connection locations to fit viscous damper subject to the Engineer's approval.



PLAN  
Scale: 3/8" = 1'-0"



ELEVATION  
Scale: 3/8" = 1'-0"

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

Ade Akinsanya/Shawn Sun DESIGN OVERSIGHT		DESIGN BY K. Lim	DRAWN BY E. Sugiyoym	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		BRIDGE NO. 28-0100	SEISMIC RETROFIT PROJECT NO. 612	
DATE OF BAIL 1/20/99		DETAILS BY M. Baskerville	DRAWN BY K. Lim	K. Lim PROJECT ENGINEER		POST MILE 6.22	RICHMOND-SAN RAFAEL BRIDGE	
		QUANTITIES BY K. Lim	DRAWN BY E. Sugiyama	CU 04271 EA 04-0438U1		289 FT SPANS VISCIOUS DAMPER DETAILS 3		
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS						DISREGARD PRINTS BEARING EARLIER REVISION DATES		SHEET 322 OF 503

1346A502.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.17.8, 0.012.6	908	1142

David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 No. 55035  
 Exp. 6-30-00  
 CIVIL  
 STATE OF CALIFORNIA

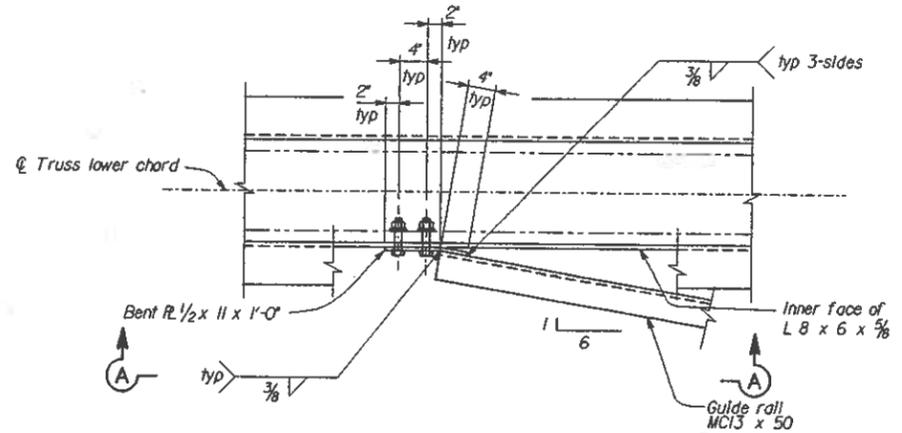
7-19-99  
 PLANS APPROVAL DATE

GERWICK/SVERDRUP/DMJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111

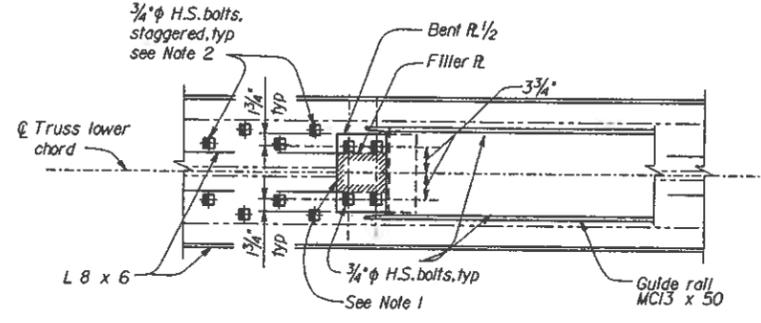
SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596

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.

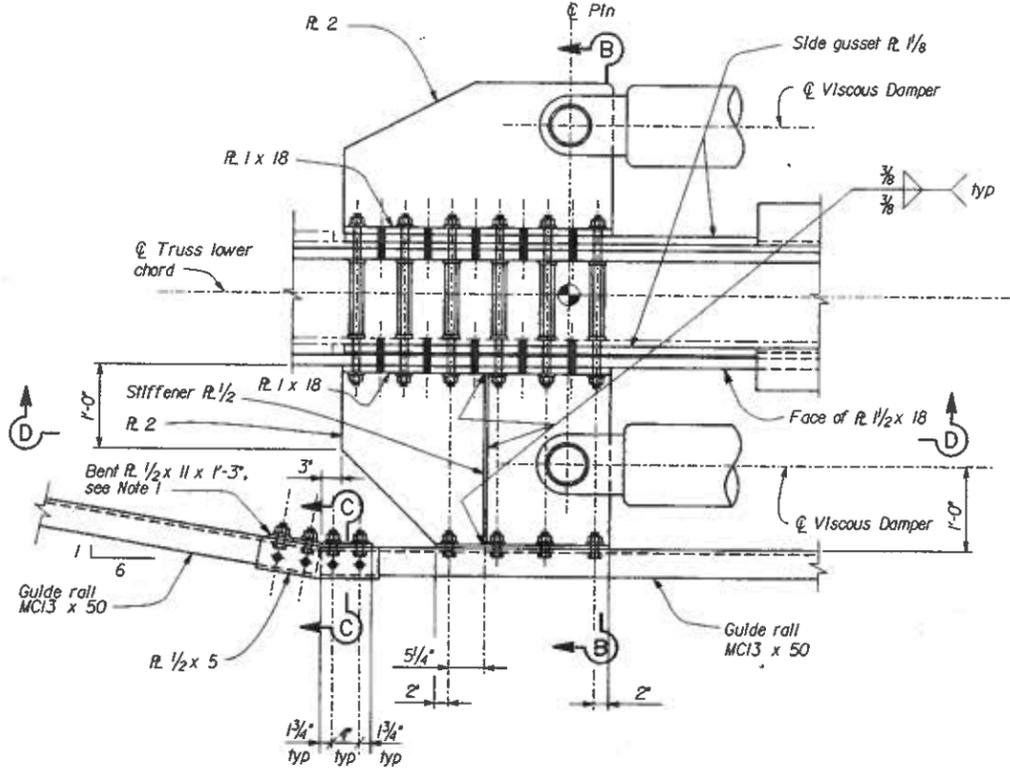
- Notes:**
- Caulk with 1/4" thick paintable polyurethane sealant all around, typ.
  - Contractor shall adjust bolt pattern to match lower chord L<sub>0</sub>' - L<sub>2</sub>' retrofit, see "289 Ft Spans - Spans 26-27, 36-37 and 38-39 Lower Chord L<sub>0</sub>' - L<sub>2</sub>' Retrofit Details 1, 2 & 3" sheets.
  - For details, see Section A-A (Span 26-27) on "Split Bent Lock-Up Support Frame Details 3" sheet.
  - For details, see Section A-A on "289 Ft Spans - Spans 26-27, 36-37 and 38-39 Lower Chord L<sub>0</sub>' - L<sub>2</sub>' Retrofit Details 2" sheet.
  - For details not shown see "Viscous Damper Details 1" sheet.



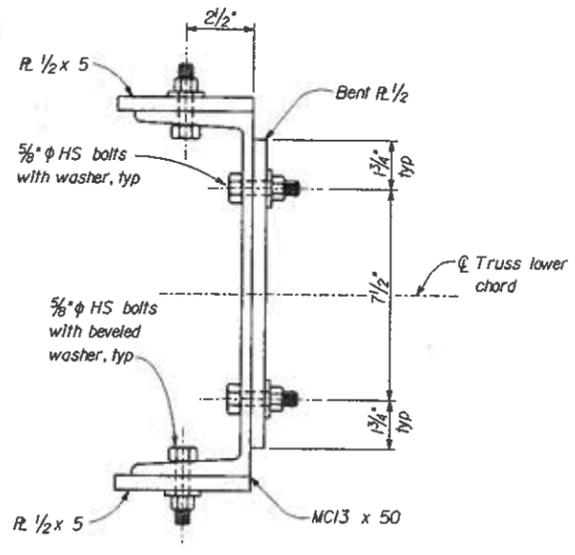
**DETAIL 5**  
Scale: 1"=1'-0"



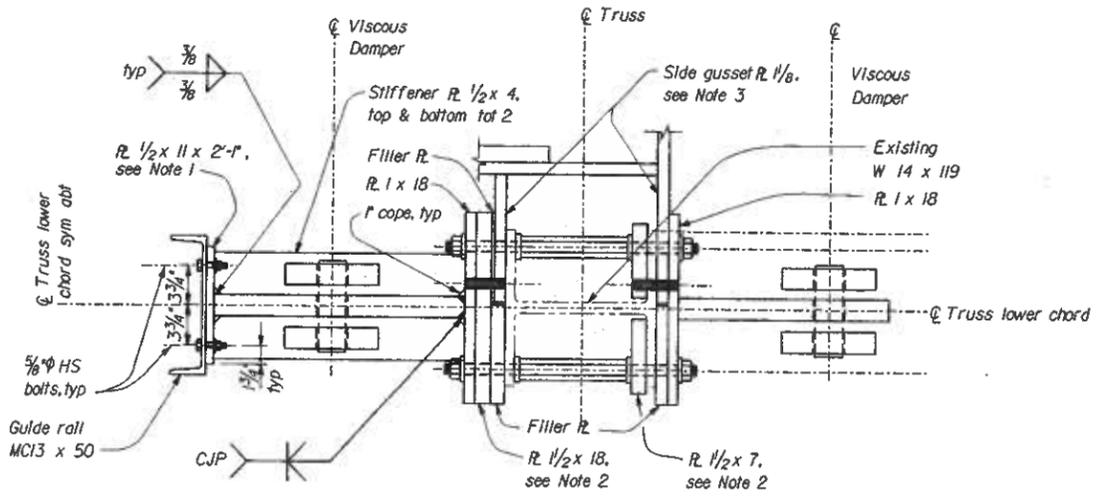
**VIEW A-A**  
Scale: 1"=1'-0"



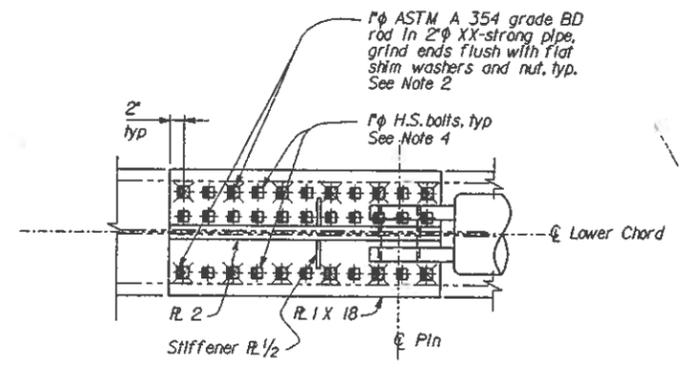
**DETAIL 6**  
Scale: 1"=1'-0"



**SECTION C-C**  
NTS



**SECTION B-B**  
Scale: 1/2"=1'-0"



**SECTION D-D**  
Scale: 1"=1'-0"

**Note:** Contractor shall adjust bolt pattern to match lower chord L<sub>0</sub>' - L<sub>2</sub>' retrofit, see "289 Ft Spans - Spans 26-27, 36-37 and 38-39 Lower Chord L<sub>0</sub>' - L<sub>2</sub>' Retrofit Details 1, 2 & 3" sheets.

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

SHAUN SUN  
 Ade Akinsanya/Shawn Sun  
 DESIGN OVERSIGHT  
 1/28/99

DESIGN	BY K. Lim	CHECKED E. Sugiyama
DETAILS	BY M. Baskerville	CHECKED K. Lim
QUANTITIES	BY K. Lim	CHECKED E. Sugiyama

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION

K. Lim  
 PROJECT ENGINEER

BRIDGE NO.  
 28-0100  
 POST MILE  
 6.22

**SEISMIC RETROFIT PROJECT NO. 612**  
**RICHMOND-SAN RAFAEL BRIDGE**  
**289 FT SPANS**  
**VISCIOUS DAMPER DETAILS 4**

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 04271  
 EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
1/28/99 1/15/99	323	503

1346A503.DGN

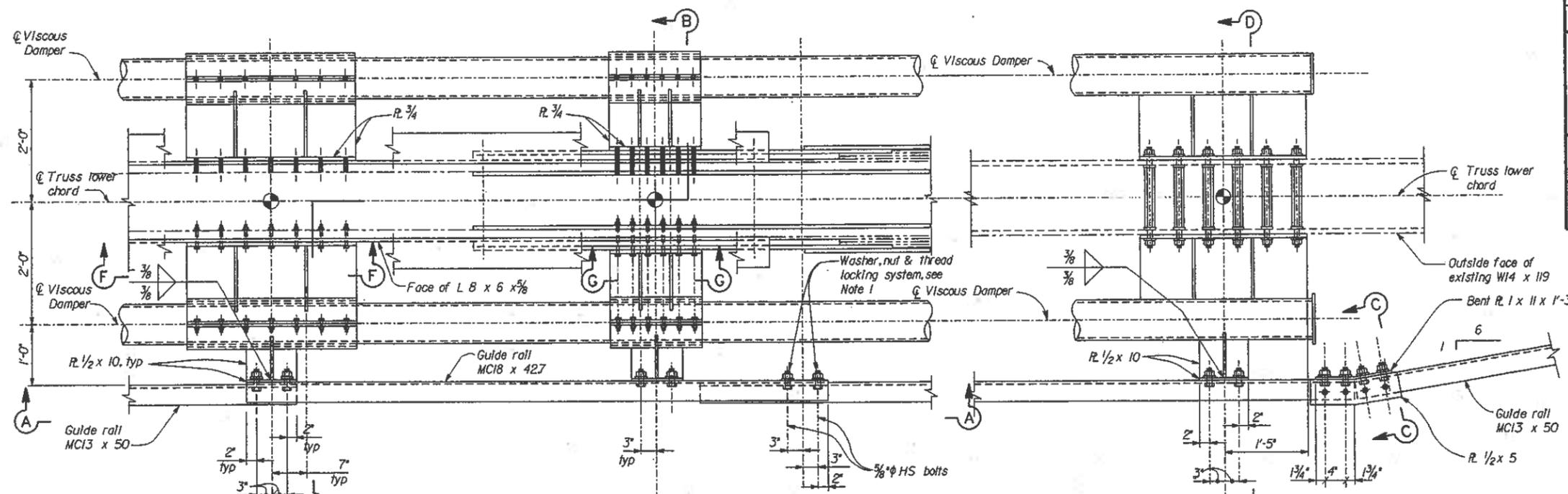
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.117.8, 0.0/2.6	909	1142

David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 No. 55035  
 Exp. 6-30-00  
 CIVIL  
 STATE OF CALIFORNIA

7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DMJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596

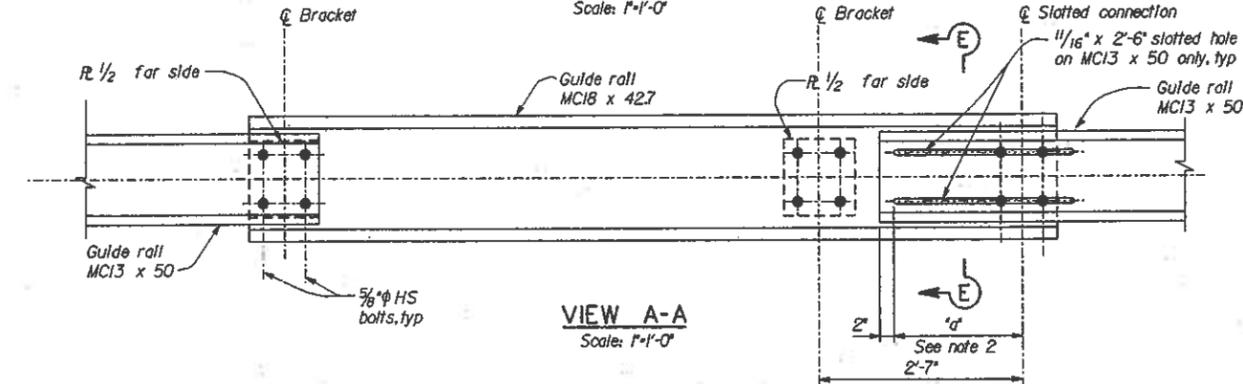
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

- Notes:
- Tighten bolt and back off nut  $\frac{1}{4}$  turn prior to placing thread locking system.
  - Dimensions "d" for:  
 Winter (25° F) = 0'-7 $\frac{1}{2}$ "  
 Spring & Fall (65° F) = 1'-3 $\frac{1}{2}$ "  
 Summer (105° F) = 1'-11 $\frac{1}{2}$ "
  - Caulk with  $\frac{1}{4}$ " thick paintable polyurethane sealant all around, typ.
  - Contractor shall adjust bolt pattern to match lower chord L $_1$  - L $_2$  retrofit, see '289 Ft Spans - Spans 26-27, 36-37 and 38-39 Lower Chord L $_1$  - L $_2$  Retrofit Details 1, 2 & 3' sheets.
  - For Section C - C, see '289 Ft Span Viscous Damper Details 4' sheet.

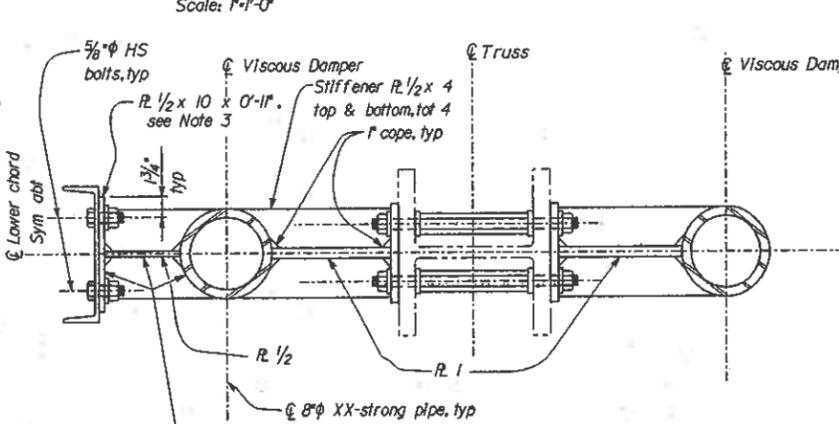


**DETAIL 7**  
Scale: 1"=1'-0"

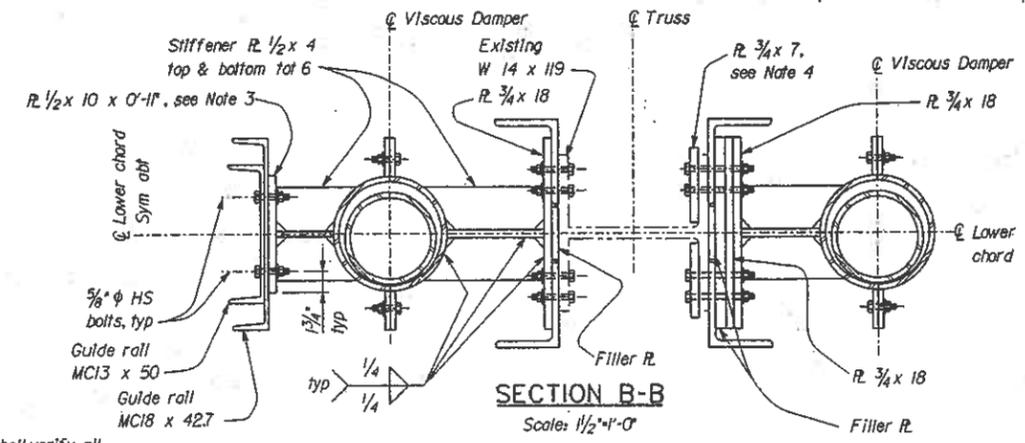
**DETAIL 8**  
Scale: 1"=1'-0"



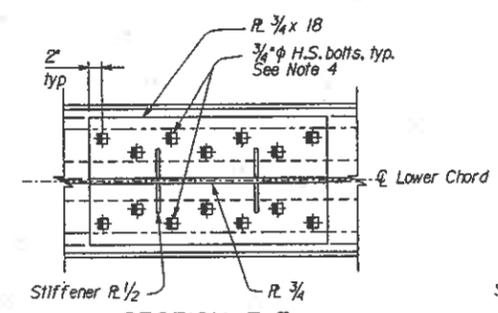
**VIEW A-A**  
Scale: 1"=1'-0"



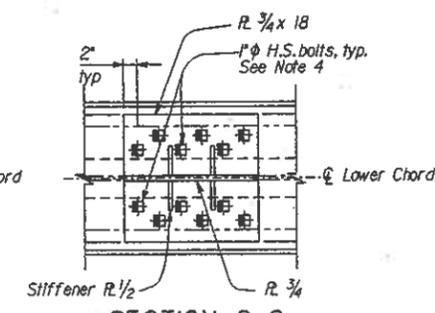
**SECTION D-D**  
Scale: 1/2"=1'-0"



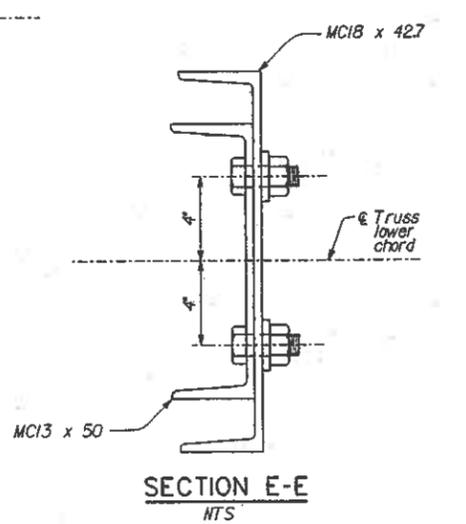
**SECTION B-B**  
Scale: 1/2"=1'-0"



**SECTION F-F**  
Scale: 1"=1'-0"



**SECTION G-G**  
Scale: 1"=1'-0"



**SECTION E-E**  
NTS

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

**SEISMIC RETROFIT PROJECT NO. 612**

**RICHMOND-SAN RAFAEL BRIDGE**  
289 FT SPANS  
VISCIOUS DAMPER DETAILS 5

Ade Akinsanya/Shawn Sun  
 DESIGN OVERSIGHT  
 2/2/99

DESIGN	BY K. Lim	CHECKED E. Sugiyama
DETAILS	BY M. Baskerville	CHECKED K. Lim
QUANTITIES	BY K. Lim	CHECKED E. Sugiyama

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION

BRIDGE NO.	28-0100
POST MILE	6.22
PROJECT ENGINEER	K. Lim

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
12/4/98 1/15/99 2/2/99 2/1/99	324	503

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 0 1 2 3  
 CU 04271  
 EA 04-0438U1

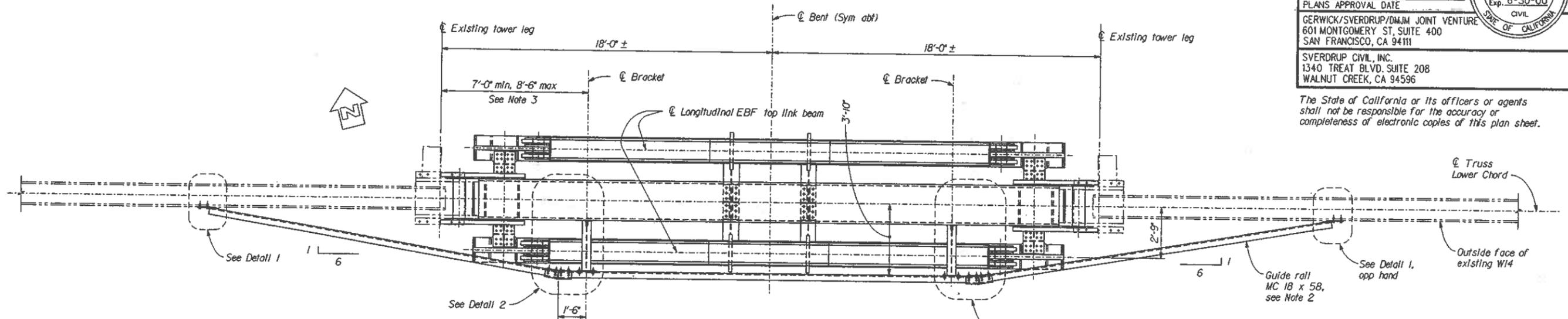
1346504.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.177.8, 0.0/2.6	910	1142

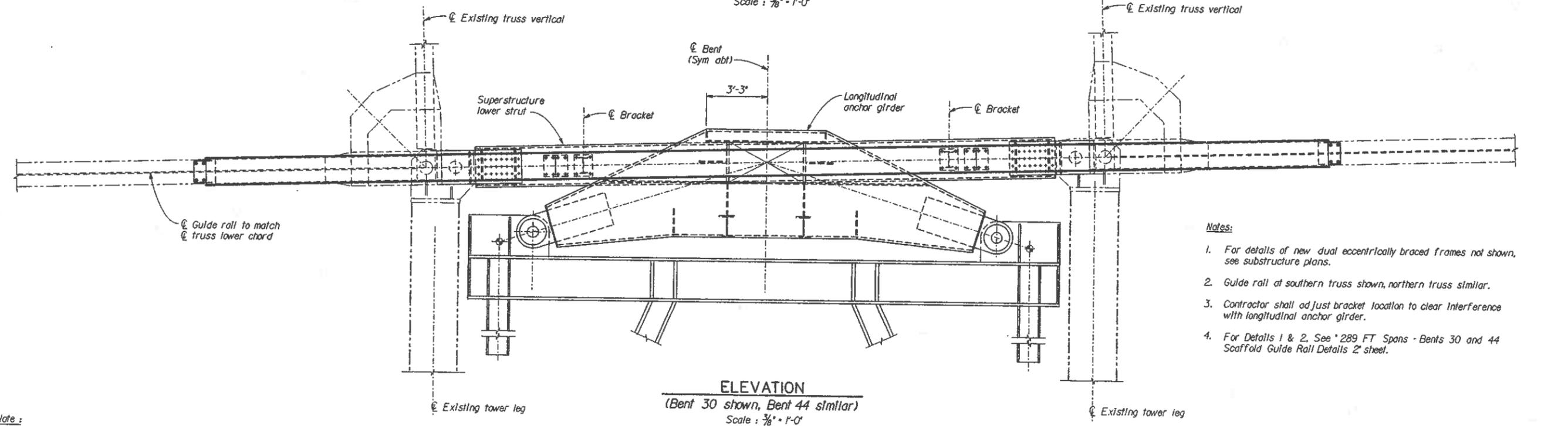
David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 No. 55035  
 Exp. 6-30-00  
 CIVIL  
 STATE OF CALIFORNIA

7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DWJM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD, SUITE 208  
 WALNUT CREEK, CA 94596

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**PLAN**  
 (Bent 30 shown, Bent 44 similar)  
 Scale: 3/8" = 1'-0"



**ELEVATION**  
 (Bent 30 shown, Bent 44 similar)  
 Scale: 3/8" = 1'-0"

- Notes:
- For details of new dual eccentrically braced frames not shown, see substructure plans.
  - Guide rail at southern truss shown, northern truss similar.
  - Contractor shall adjust bracket location to clear interference with longitudinal anchor girder.
  - For Details 1 & 2, See "289 FT Spans - Bents 30 and 44 Scaffold Guide Rail Details 2" sheet.

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

Ade Akinsanya/Shawn Sun  
 DESIGN OVERSIGHT  
 SIGN-OFF DATE: 1/28/99

DESIGN	BY K. Lim	CHECKED S. Chandramouli
DETAILS	BY V. Nguyen	CHECKED K. Lim
QUANTITIES	BY K. Lim	CHECKED S. Chandramouli

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION  
 PROJECT ENGINEER  
 K. Lim

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612  
 RICHMOND-SAN RAFAEL BRIDGE  
 289 FT SPANS  
 BENTS 30 AND 44 SCAFFOLD GUIDE RAIL DETAILS 1

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 0 1 2 3  
 CU 04271  
 EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 325 OF 503
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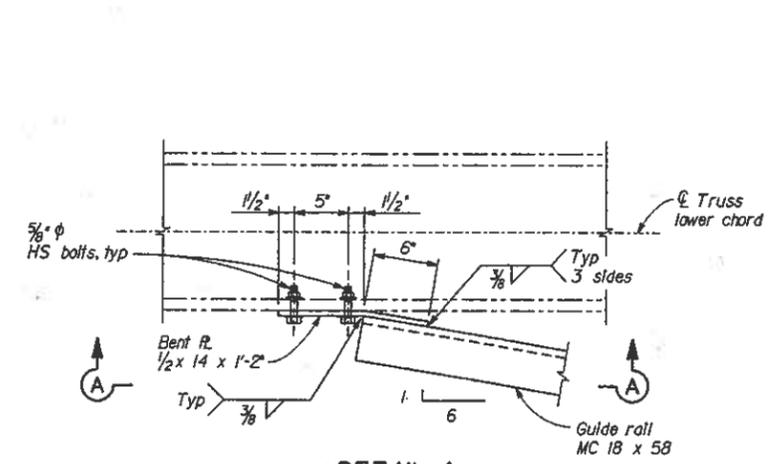
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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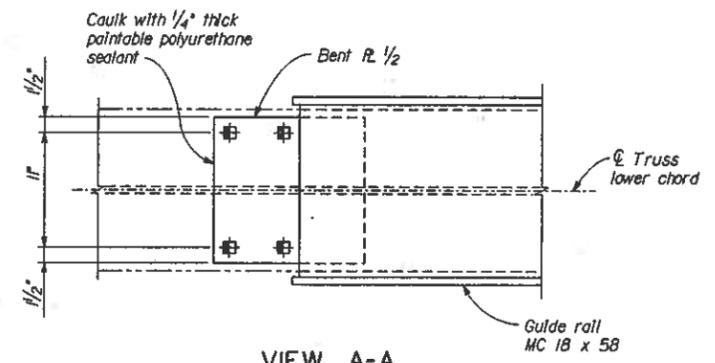
David W. Korpi  
 REGISTERED CIVIL ENGINEER  
 No. 55035  
 Exp. 6-30-00  
 CIVIL  
 STATE OF CALIFORNIA

7-19-99  
 PLANS APPROVAL DATE  
 GERWICK/SVERDRUP/DMM JOINT VENTURE  
 601 MONTGOMERY ST, SUITE 400  
 SAN FRANCISCO, CA 94111  
 SVERDRUP CIVIL, INC.  
 1340 TREAT BLVD. SUITE 208  
 WALNUT CREEK, CA 94596

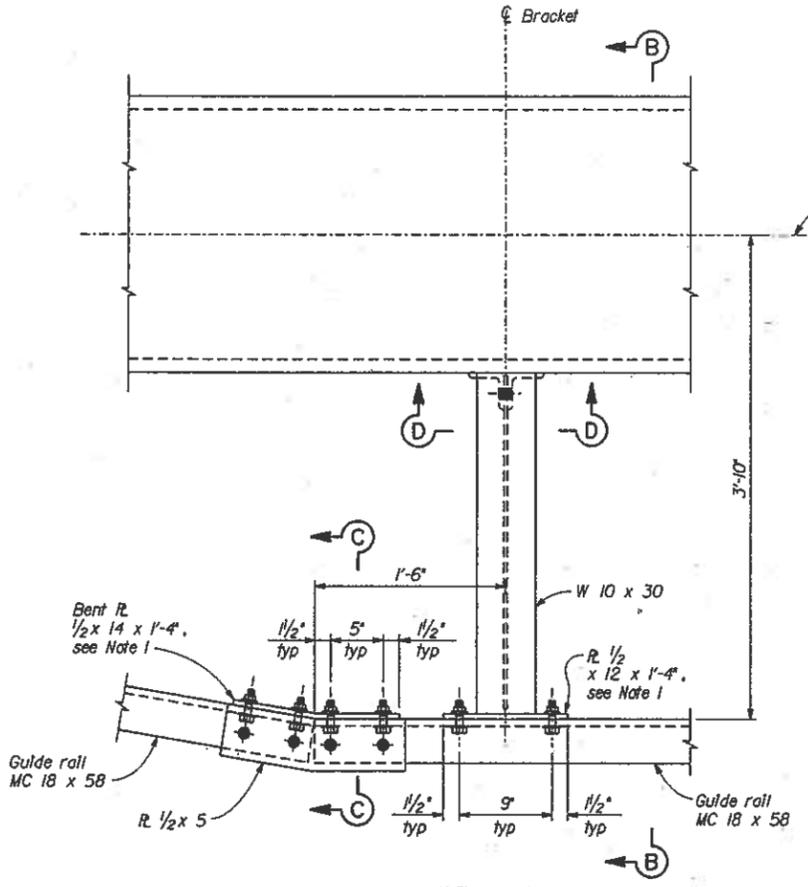
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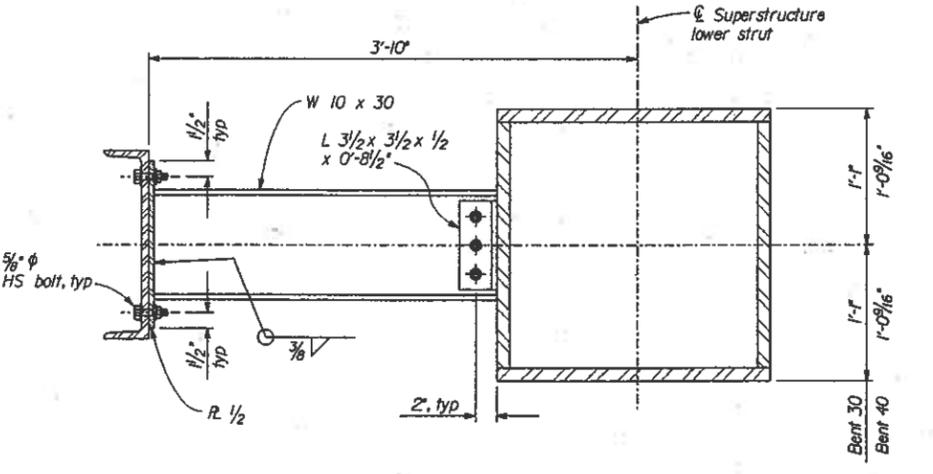
**DETAIL 1**  
Scale: 1/2" = 1'-0"



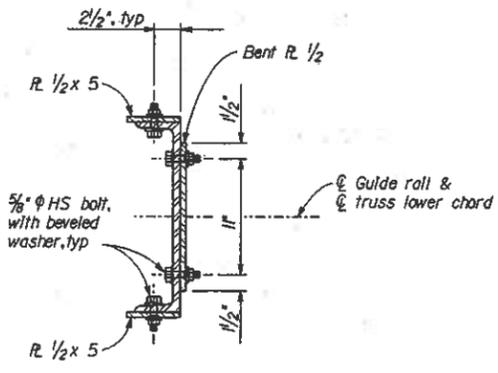
**VIEW A-A**  
Scale: 1/2" = 1'-0"



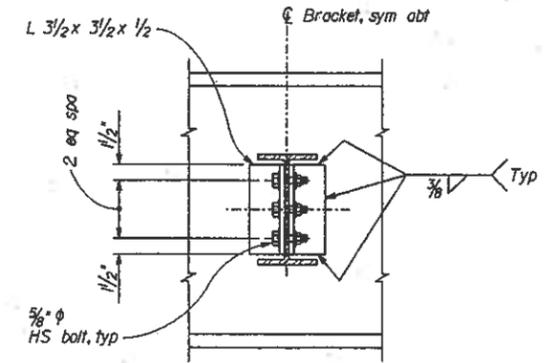
**DETAIL 2**  
Scale: 1/2" = 1'-0"



**SECTION B-B**  
Scale: 1/2" = 1'-0"



**SECTION C-C**  
Scale: 1/2" = 1'-0"



**SECTION D-D**  
Scale: 1/2" = 1'-0"

**Note:**  
1. Caulk with 1/4" thick paintable polyurethane sealant all around, typ.

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

SEISMIC RETROFIT PROJECT NO. 612	
RICHMOND-SAN RAFAEL BRIDGE	
289 FT SPANS	
BENTS 30 AND 44 SCAFFOLD GUIDE RAIL DETAILS 2	
BRIDGE NO. 28-0100	SHEET OF 326 503
POST MILE 6.22	REVISION DATES (PRELIMINARY STAGE ONLY)
1/9/99	

Ade Akinsanya/Shawn Sun  
 DESIGN OVERSIGHT  
 SIGN-OFF DATE 11/24/99

DESIGN BY	K. Lim	DRAWN BY	S. Chandramouli
DETAILS BY	V. Nguyen	CHECKED BY	K. Lim
QUANTITIES BY	K. Lim	DESIGNED BY	S. Chandramouli

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION

K. Lim  
 PROJECT ENGINEER

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 0 1 2 3  
 CU 04271  
 EA 04-0438U1

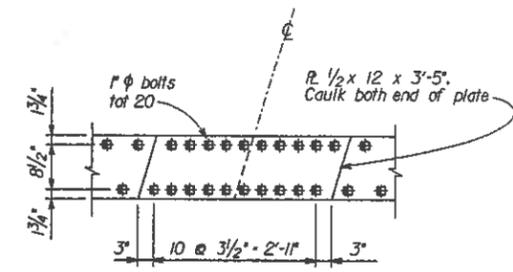
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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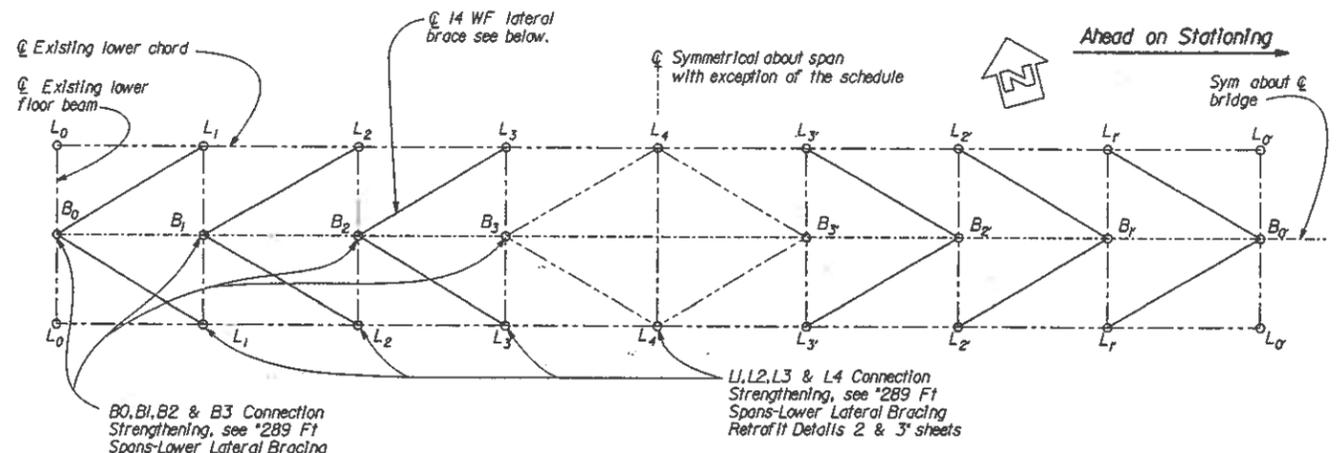
*David W. Korpi*  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DJMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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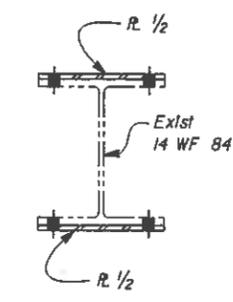
- Note:
- For temporary support, see \*289 Ft Spans - Pier 19 & 61 Construction Phasing Sheet 2' sheet.
  - For similar details at existing gusset plate interface, see Detail 1 on \*Main Spans - Lower Lateral Bracing Retrofit Details 1' sheet.



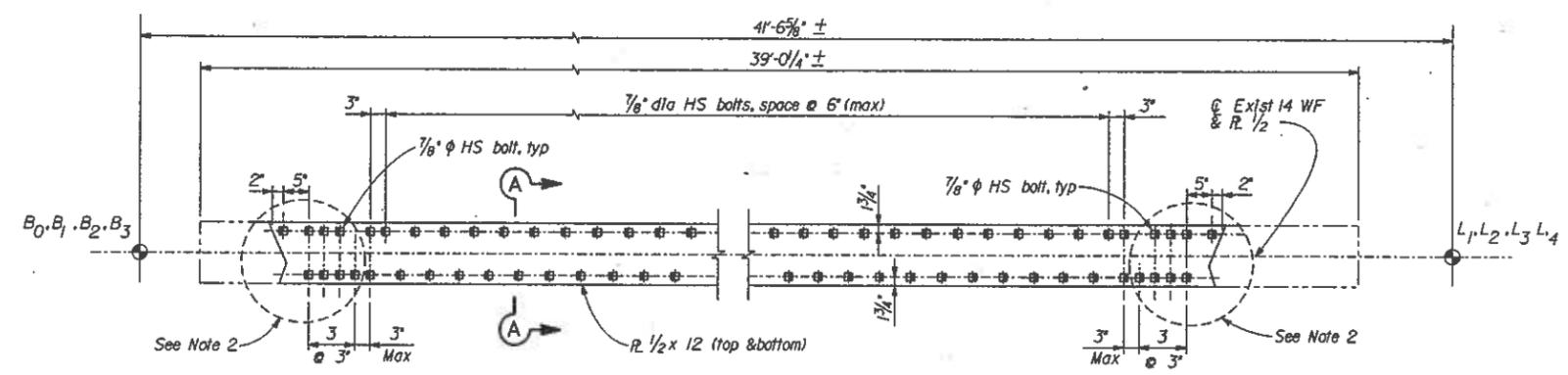
**OPTIONAL SPLICE DETAIL**  
Scale: 3/4" = 1'-0"



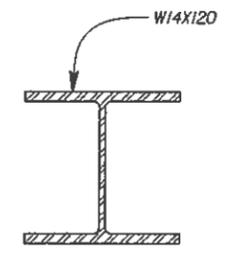
**PLAN - LOWER LATERAL BRACING**  
No Scale



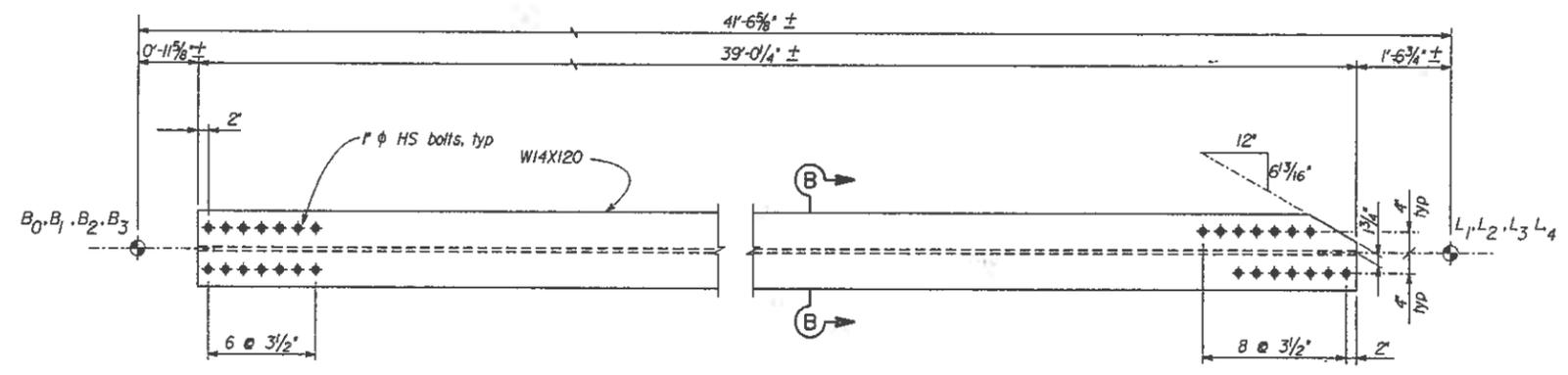
**SECTION A-A**  
Scale: 1/2" = 1'-0"



**PLAN - LATERAL BRACING RETROFIT 1**  
Scale: 3/4" = 1'-0"



**SECTION B-B**  
Scale: 1/2" = 1'-0"



**PLAN - LATERAL BRACING RETROFIT 2**  
Scale: 3/4" = 1'-0"

Span	Type of Member Retrofit								
	L1-B0	L2-B1	L3-B2	L4-B3	L4-B3'	L3-B2'	L2-B1'	L1-B0'	
19-20									
20-21									
21-22									
22-23									
23-24									
24-25									
25-26									
26-27									
27-28									
28-29									
29-30									
30-31									
31-32									
32-33		2					2		
36-37		2					2		
37-38									
38-39									
39-40									
40-41									
41-42									
42-43									
43-44									
44-45									
45-46		2					2		
49-50		2					2		
50-51									
51-52									
52-53									
53-54									
54-55									
55-56									
56-57									
57-58									
58-59									
59-60									
60-61									

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

DESIGN BY: J. Lavinder CHECKED: F. Yuan DETAILS BY: B. Prather CHECKED: F. Yuan QUANTITIES BY: J. Lavinder CHECKED: E. Sugiyama	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	P. Bott PROJECT ENGINEER	BRIDGE NO. 28-0100	<b>SEISMIC RETROFIT PROJECT NO. 612</b> RICHMOND-SAN RAFAEL BRIDGE 289 FT SPANS LOWER LATERAL BRACING RETROFIT DETAILS 1
			POST MILE 6.22	
DESIGN DATE: 1/20/99 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3 CU 04271 EA 04-0438U1	REVISION DATES (PRELIMINARY STAGE ONLY) 12/92 1/93 2/93 3/93 4/93 5/93 6/93 7/93 8/93 9/93 10/93 11/93 12/93 1/94 2/94 3/94 4/94 5/94 6/94 7/94 8/94 9/94 10/94 11/94 12/94 1/95 2/95 3/95 4/95 5/95 6/95 7/95 8/95 9/95 10/95 11/95 12/95 1/96 2/96 3/96 4/96 5/96 6/96 7/96 8/96 9/96 10/96 11/96 12/96 1/97 2/97 3/97 4/97 5/97 6/97 7/97 8/97 9/97 10/97 11/97 12/97 1/98 2/98 3/98 4/98 5/98 6/98 7/98 8/98 9/98 10/98 11/98 12/98 1/99 2/99 3/99 4/99 5/99 6/99 7/99 8/99 9/99 10/99 11/99 12/99 1/00 2/00 3/00 4/00 5/00 6/00 7/00 8/00 9/00 10/00 11/00 12/00 1/01 2/01 3/01 4/01 5/01 6/01 7/01 8/01 9/01 10/01 11/01 12/01 1/02 2/02 3/02 4/02 5/02 6/02 7/02 8/02 9/02 10/02 11/02 12/02 1/03 2/03 3/03 4/03 5/03 6/03 7/03 8/03 9/03 10/03 11/03 12/03 1/04 2/04 3/04 4/04 5/04 6/04 7/04 8/04 9/04 10/04 11/04 12/04 1/05 2/05 3/05 4/05 5/05 6/05 7/05 8/05 9/05 10/05 11/05 12/05 1/06 2/06 3/06 4/06 5/06 6/06 7/06 8/06 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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.117.8,0.0/2.6	913	1142

*David W. Korpi*  
REGISTERED CIVIL ENGINEER

7-19-99  
PLANS APPROVAL DATE

GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
1340 TREAT BLVD. SUITE 208  
WALNUT CREEK, CA 94596

REGISTERED PROFESSIONAL ENGINEER  
D. W. Korpi  
No. 55035  
Exp. 6-30-00  
CIVIL  
STATE OF CALIFORNIA

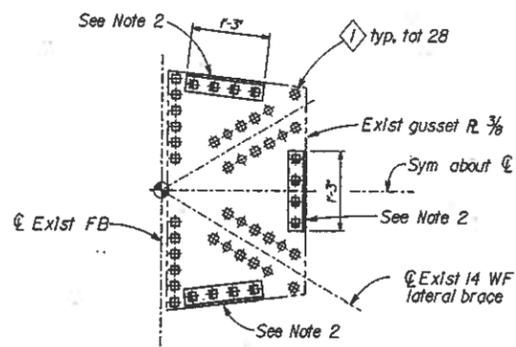
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

**RETROFIT NOTE:**

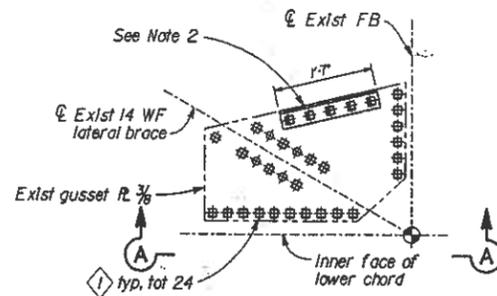
- ① Remove exist  $\frac{7}{8}$ "  $\phi$  rivets & replace with 1" HS bolts, UON. Room holes as required.

**Notes:**

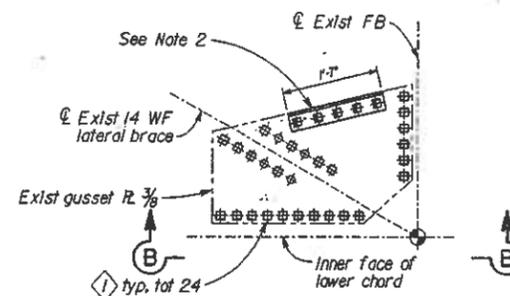
1. Existing floor beam, lower lateral and lower chord not shown for clarity.
2. New edge stiffener L  $3\frac{1}{2}$  x  $3\frac{1}{2}$  x  $\frac{1}{2}$  with  $\frac{3}{4}$ "  $\phi$  HS bolts @ 4" max spacing &  $\frac{1}{2}$ " edge distance. Locate to clear existing member. Back of angle leg to be flush with edge of gusset R, typ.
3. See \*289 Ft. Spans - Lower Lateral Bracing Retrofit Details 3" sheet for Schedule of Retrofits.
4. Replace existing L 4 x  $3\frac{1}{2}$  x  $\frac{7}{8}$  clip angles with L 4 x  $3\frac{1}{2}$  x  $\frac{1}{2}$  at all R to FB connection retrofit locations.



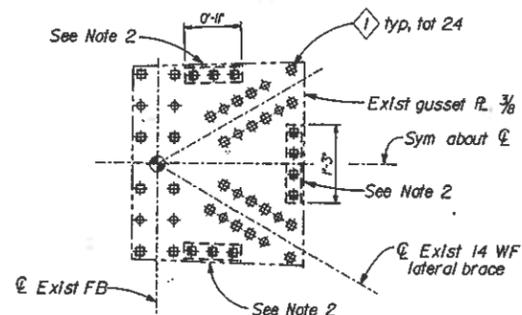
**TOP PLATE - B0, B1, B2 & B3**  
Typical 1 Location/Bay



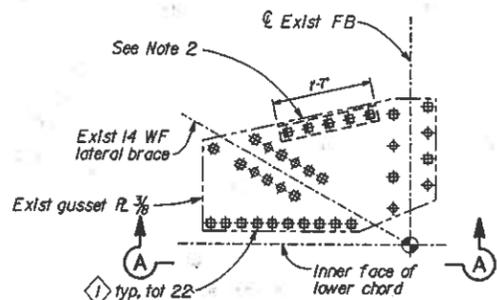
**TOP PLATE - L1, L3**  
(TYPE 1) (See schedule)  
Typical 2 Locations/Bay



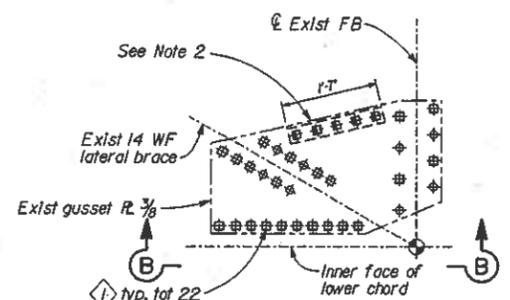
**TOP PLATE - L2, L4**  
(TYPE 1) (See schedule)  
Typical 2 Locations/Bay



**BOTTOM PLATE - B0, B1, B2 & B3**  
Typical 1 Location/Bay



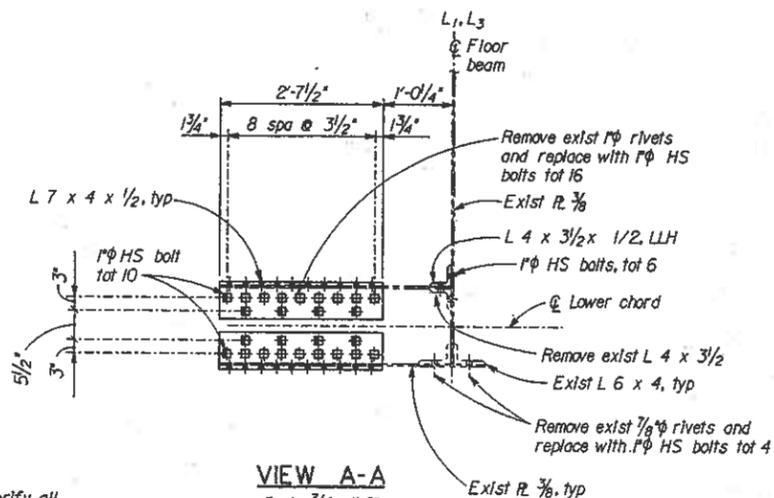
**BOTTOM PLATE - L1, L3**  
(TYPE 1) (See schedule)  
Typical 2 Locations/Bay



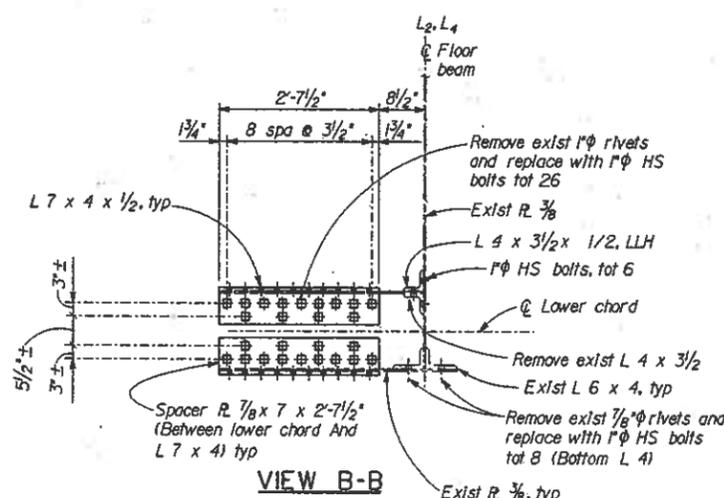
**BOTTOM PLATE - L2**  
(TYPE 1) (See schedule)  
Typical 2 Locations/Bay

**CONNECTION STRENGTHENING**

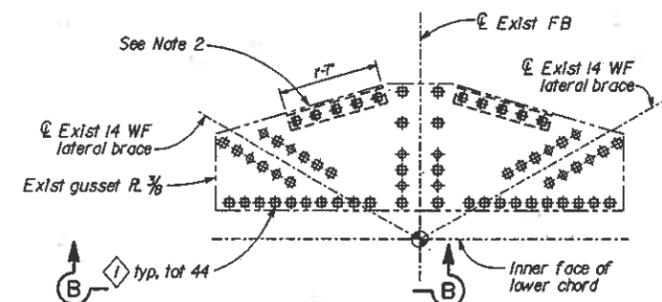
Scale:  $\frac{3}{4}$ " = 1'-0"



**VIEW A-A**  
Scale:  $\frac{3}{4}$ " = 1'-0"



**VIEW B-B**  
Scale:  $\frac{3}{4}$ " = 1'-0"



**BOTTOM PLATE - L4**  
(TYPE 1) (See schedule)  
Typical 2 Locations/Bay

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

Ade Akinsanya/Shawn Sun  
DESIGN OVERSIGHT

DESIGN BY J. Lavinder CHECKED F. Yuan  
DETAILS BY B. Prather CHECKED F. Yuan  
QUANTITIES BY J. Lavinder CHECKED E. Sugiyama

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.  
28-0100  
POST MILE  
6.22

**SEISMIC RETROFIT PROJECT NO. 612**

**RICHMOND-SAN RAFAEL BRIDGE**

**289 FT SPANS  
LOWER LATERAL BRACING RETROFIT DETAILS 2**

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3  
CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES  
REVISION DATES (PRELIMINARY STAGE ONLY)  
SHEET 328 OF 503

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.117, 8.0, 0.1/2.6	914	1142

*David W. Korpi*  
REGISTERED CIVIL ENGINEER

7-19-99  
PLANS APPROVAL DATE

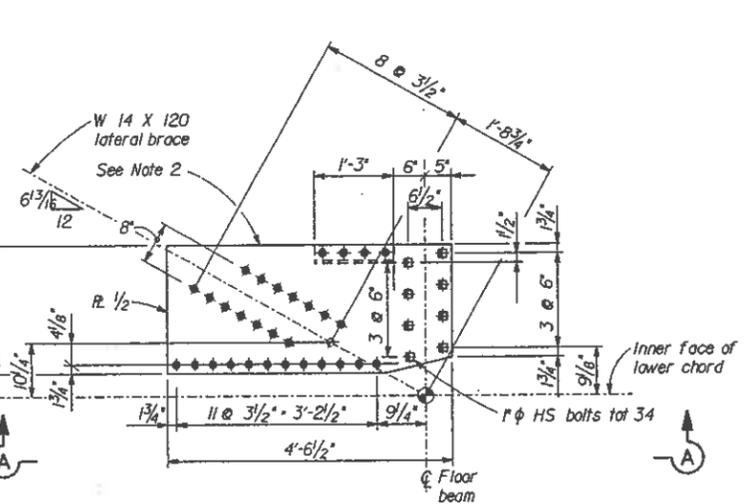
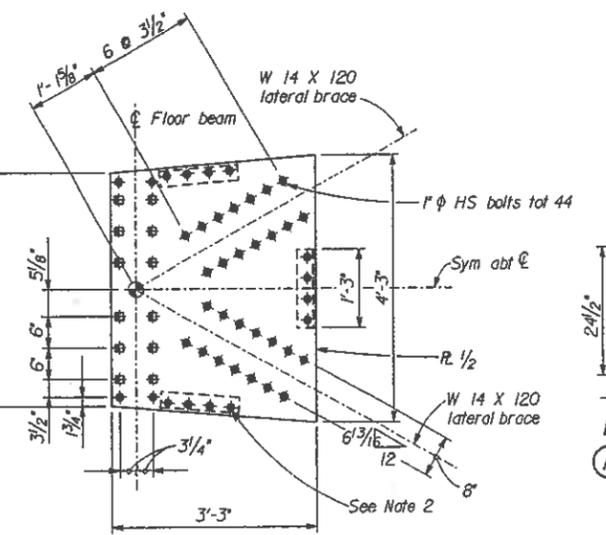
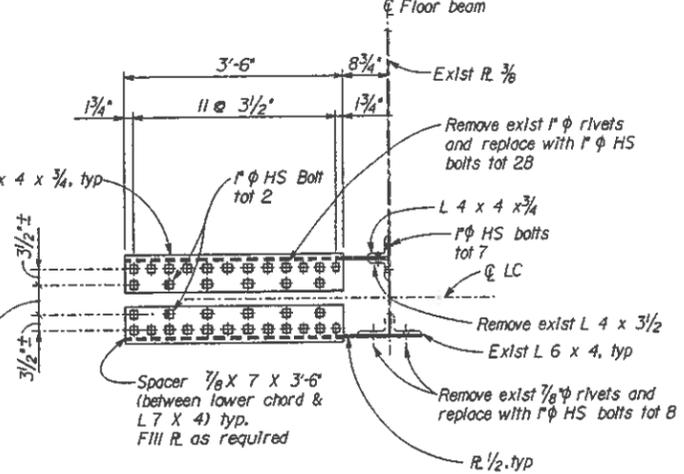
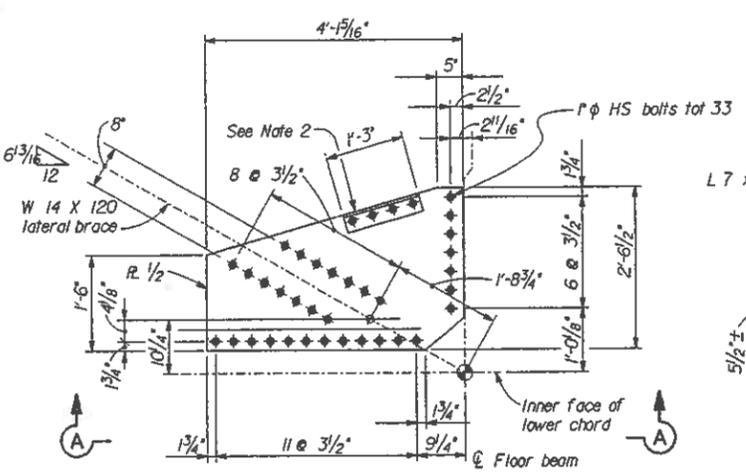
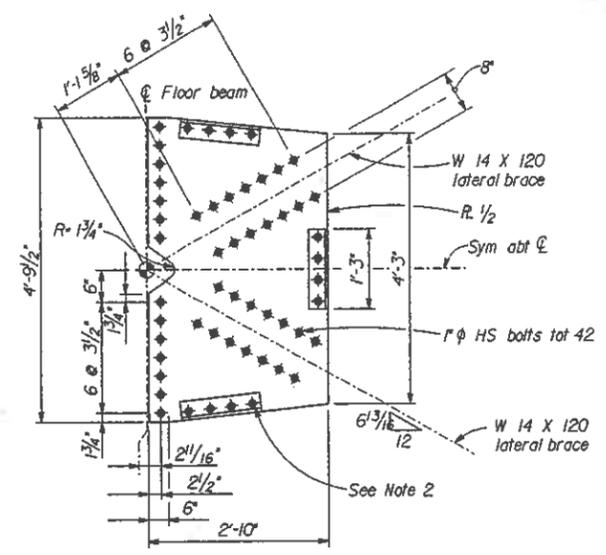
GERWICK/SVERDRUP/DN/JM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

REGISTERED PROFESSIONAL ENGINEER  
D. W. Korpi  
No. 55035  
Exp. 6-30-00  
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.

- Notes:**
- Existing Floor Beam, Lower Lateral and Lower Chord not shown for clarity.
  - Edge stiffener L 3/2 x 3/2 x 1/2 with 3/4" HS bolts @ 4" max spacing & 1/2" edge distance. Locate to clear existing member. Back of angle leg to be flush with edge of gusset R, typ.
  - Use L 4 x 4 x 3/4 for clip angle to attach gussets to Floorbeam and Lower Chord.
  - For L<sub>1</sub> retrofit at Piers 55, 57, 58, 59 & 60 see "289 Ft Spans - Pier 55 and 57-60 Truss Modification Details 4" sheet.
  - For Type 3 connector retrofit, see "289 Ft Spans Pier 19 & 61 Lower Lateral Bracing Modification sheet."
  - For Type 4 connector retrofit, see similar details on "289 Ft Spans Pier 19 & 61 Lower Lateral Bracing Modification sheet."
  - For Type 5 connector retrofit, see "Split Bent Lock-up Beam Support Frame Details 4" sheet.



**CONNECTION STRENGTHENING**  
Scale: 3/4" = 1'-0"

Span	Type of Connection Retrofit							
	L1, B0	L2, B1	L3, B2	L4, B3	L4, B3	L3, B2	L2, B1	L1, B0
19-20	3	3	1					
20-21								
21-22								
22-23								
23-24								
24-25								
25-26								
26-27								
27-28	5	1						
28-29								
29-30								
30-31								
31-32								
32-33		2	1				2	5
36-37	5	2	1				2	1
37-38								
38-39								
39-40								
40-41								
41-42								
42-43								
43-44								
44-45								
45-46		2	1				2	5
49-50	5	2						
50-51								
51-52								
52-53								
53-54								
54-55								4
55-56	4	1						
56-57								4
57-58	4	1						4
58-59	4	1						4
59-60	4	1						4
60-61	4							3

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

DESIGN OVERSIGHT  
Ade Akinsanya/Shawn Sun  
DATE: 2/1/99

DESIGN BY: J. Lavinder  
CHECKED BY: F. Yuan  
DETAILS BY: M. Baskerville  
CHECKED BY: F. Yuan  
QUANTITIES BY: J. Lavinder  
CHECKED BY: E. Sugiyama

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER  
CU 04271  
EA 04-0438U1

BRIDGE NO.  
28-0100  
POST MILE  
6.22

**SEISMIC RETROFIT PROJECT NO. 612**

**RICHMOND-SAN RAFAEL BRIDGE**

**289 FT SPANS**

**LOWER LATERAL BRACING RETROFIT DETAILS 3**

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
7/14/99, 7/15/99, 7/16/99, 7/17/99, 7/18/99, 7/19/99, 7/20/99, 7/21/99, 7/22/99, 7/23/99, 7/24/99, 7/25/99, 7/26/99, 7/27/99, 7/28/99, 7/29/99, 7/30/99, 7/31/99, 8/1/99, 8/2/99, 8/3/99, 8/4/99, 8/5/99, 8/6/99, 8/7/99, 8/8/99, 8/9/99, 8/10/99, 8/11/99, 8/12/99, 8/13/99, 8/14/99, 8/15/99, 8/16/99, 8/17/99, 8/18/99, 8/19/99, 8/20/99, 8/21/99, 8/22/99, 8/23/99, 8/24/99, 8/25/99, 8/26/99, 8/27/99, 8/28/99, 8/29/99, 8/30/99, 8/31/99, 9/1/99, 9/2/99, 9/3/99, 9/4/99, 9/5/99, 9/6/99, 9/7/99, 9/8/99, 9/9/99, 9/10/99, 9/11/99, 9/12/99, 9/13/99, 9/14/99, 9/15/99, 9/16/99, 9/17/99, 9/18/99, 9/19/99, 9/20/99, 9/21/99, 9/22/99, 9/23/99, 9/24/99, 9/25/99, 9/26/99, 9/27/99, 9/28/99, 9/29/99, 9/30/99, 10/1/99, 10/2/99, 10/3/99, 10/4/99, 10/5/99, 10/6/99, 10/7/99, 10/8/99, 10/9/99, 10/10/99, 10/11/99, 10/12/99, 10/13/99, 10/14/99, 10/15/99, 10/16/99, 10/17/99, 10/18/99, 10/19/99, 10/20/99, 10/21/99, 10/22/99, 10/23/99, 10/24/99, 10/25/99, 10/26/99, 10/27/99, 10/28/99, 10/29/99, 10/30/99, 10/31/99, 11/1/99, 11/2/99, 11/3/99, 11/4/99, 11/5/99, 11/6/99, 11/7/99, 11/8/99, 11/9/99, 11/10/99, 11/11/99, 11/12/99, 11/13/99, 11/14/99, 11/15/99, 11/16/99, 11/17/99, 11/18/99, 11/19/99, 11/20/99, 11/21/99, 11/22/99, 11/23/99, 11/24/99, 11/25/99, 11/26/99, 11/27/99, 11/28/99, 11/29/99, 11/30/99, 12/1/99, 12/2/99, 12/3/99, 12/4/99, 12/5/99, 12/6/99, 12/7/99, 12/8/99, 12/9/99, 12/10/99, 12/11/99, 12/12/99, 12/13/99, 12/14/99, 12/15/99, 12/16/99, 12/17/99, 12/18/99, 12/19/99, 12/20/99, 12/21/99, 12/22/99, 12/23/99, 12/24/99, 12/25/99, 12/26/99, 12/27/99, 12/28/99, 12/29/99, 12/30/99, 12/31/99	329	503

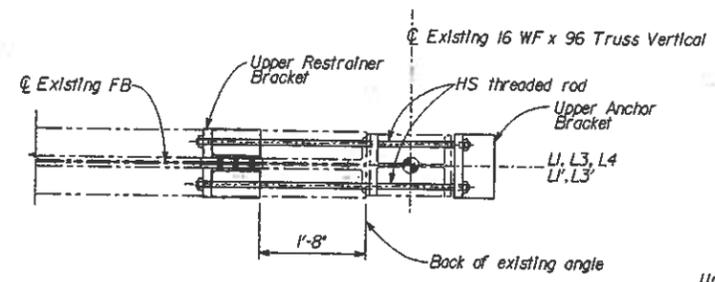
1346257.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.117.8, 0.0/2.6	915	1142

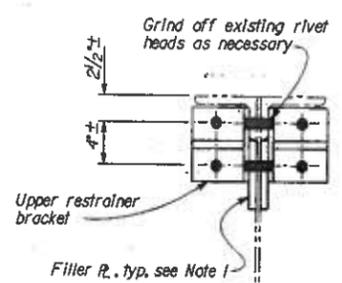
**David W. Korpi**  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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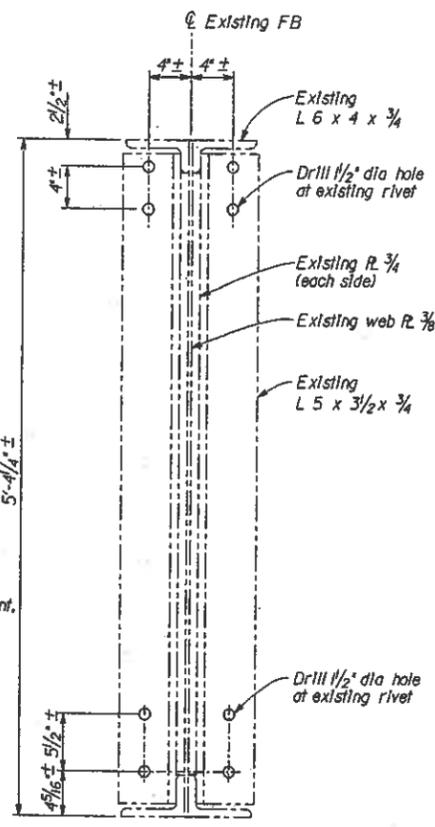
- Notes:**
1. Thickness of filler plate to match thickness of existing angle as required.
  2. Side edges of restrainer bracket to be saw cut or planed.
  3. For location of Detail 1, see Note 3 on "289 Ft Spans - Plan & Elevation" sheet.



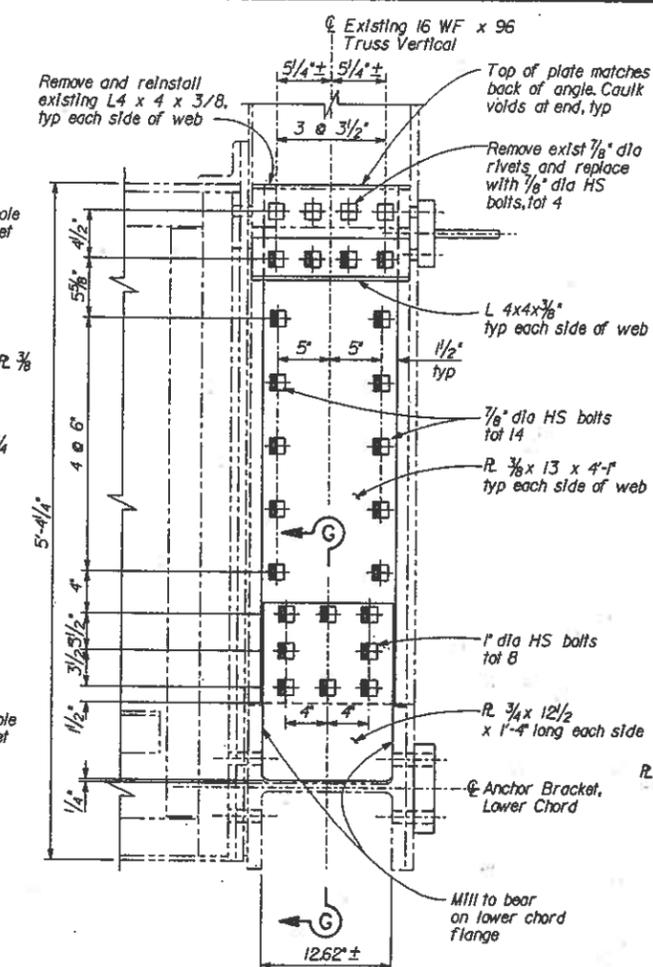
**SECTION A-A**  
Scale: 3/4" = 1'-0"



**SECTION B-B**  
Scale: 1/2" = 1'-0"

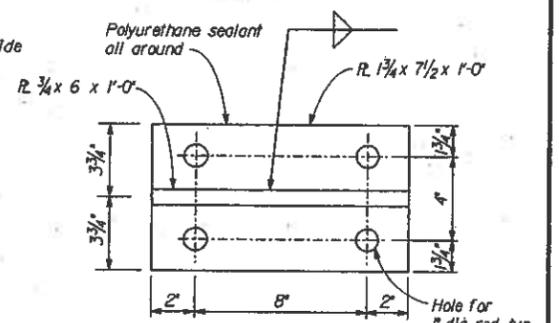


**SECTION C-C**  
Scale: 1/2" = 1'-0"

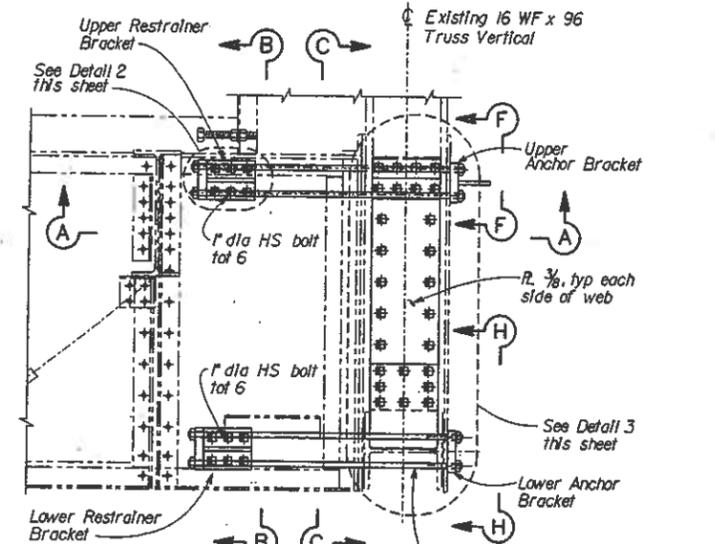


**DETAIL 3**  
Scale: 1/2" = 1'-0"

Note: Restrainer Rods not shown for clarity.

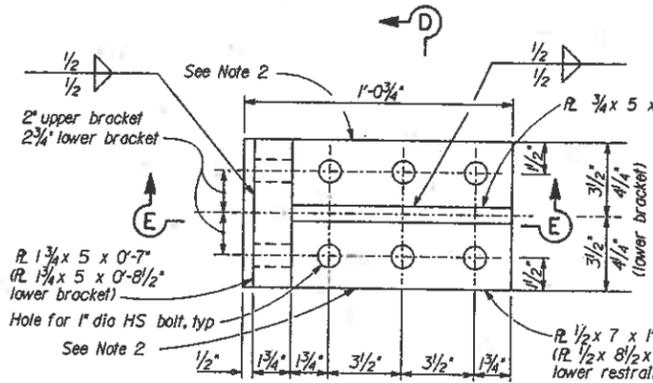
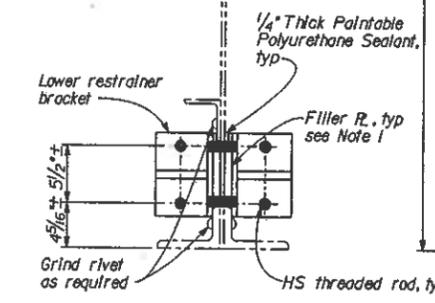


**VIEW F-F**  
Scale: 3" = 1'-0"



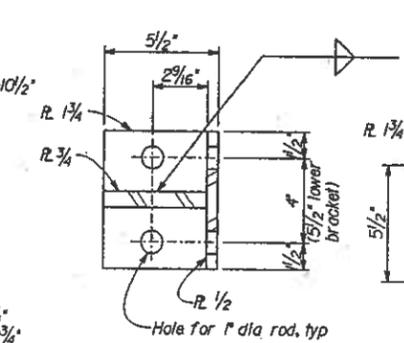
**DETAIL 1**  
Scale: 3/4" = 1'-0"

Note: South Truss shown, North Truss opposite hand.

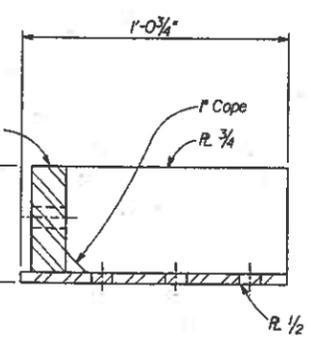


**DETAIL 2**  
Scale: 3" = 1'-0"

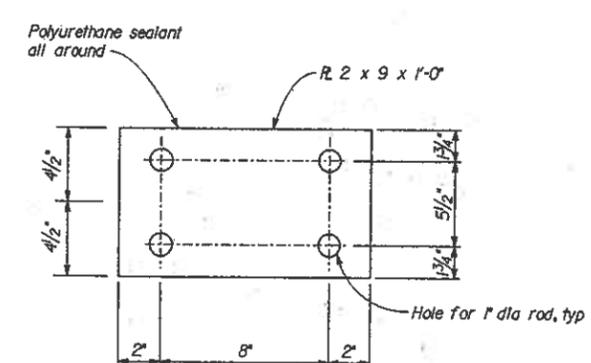
Note: Upper bracket shown, Lower Bracket similar, UON.



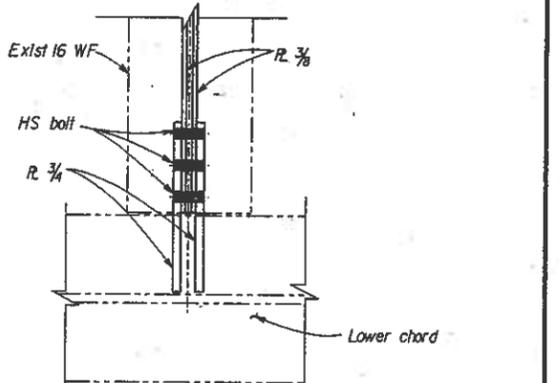
**SECTION D-D**  
Scale: 3" = 1'-0"



**SECTION E-E**  
Scale: 3" = 1'-0"



**VIEW H-H**  
Scale: 3" = 1'-0"



**SECTION G-G**  
Scale: 1/2" = 1'-0"

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

DESIGNER: Ade Akinsanya/Shawn Sun  
DATE: 11/20/11

DESIGN	D. Kirkpatrick	DRAWN	S. Chandramouli
DETAILS	B. Prother	DRAWN	J. Lovinder
QUANTITIES	D. Kirkpatrick	DRAWN	J. Lovinder

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

**SEISMIC RETROFIT PROJECT NO. 612**  
**RICHMOND-SAN RAFAEL BRIDGE**  
**289 FT SPANS**  
**LOWER FLOOR BEAM CONNECTION RETROFIT DETAILS 1**

CU	04271	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
EA	04-0438U1	1/20/11, 1/24/11, 1/27/11, 2/1/11, 2/15/11, 2/22/11, 3/1/11, 3/15/11, 3/22/11, 4/5/11, 4/12/11, 4/19/11, 4/26/11, 5/3/11, 5/10/11, 5/17/11, 5/24/11, 5/31/11, 6/7/11, 6/14/11, 6/21/11, 6/28/11, 7/5/11, 7/12/11, 7/19/11, 7/26/11, 8/2/11, 8/9/11, 8/16/11, 8/23/11, 8/30/11, 9/6/11, 9/13/11, 9/20/11, 9/27/11, 10/4/11, 10/11/11, 10/18/11, 10/25/11, 11/1/11, 11/8/11, 11/15/11	330	503

134EA252.DGN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Mrn	580	6.177.8, 0.012.6	916	1142

**David W. Korpi**  
REGISTERED CIVIL ENGINEER  
No. 55035  
Exp. 6-30-00  
CIVIL  
STATE OF CALIFORNIA

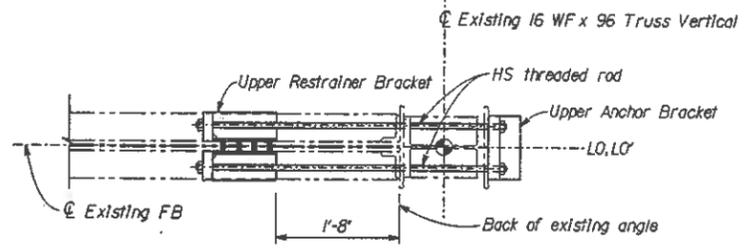
7-19-99  
PLANS APPROVAL DATE

GERWICK/SVERDRUP/DJMM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111

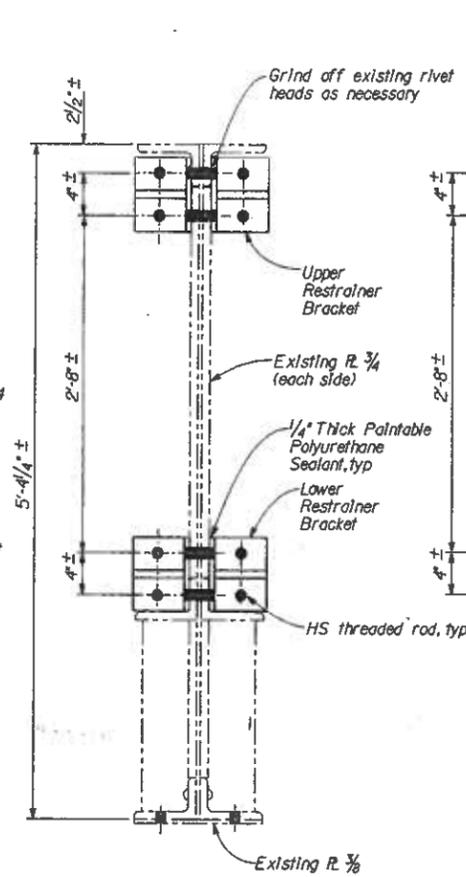
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

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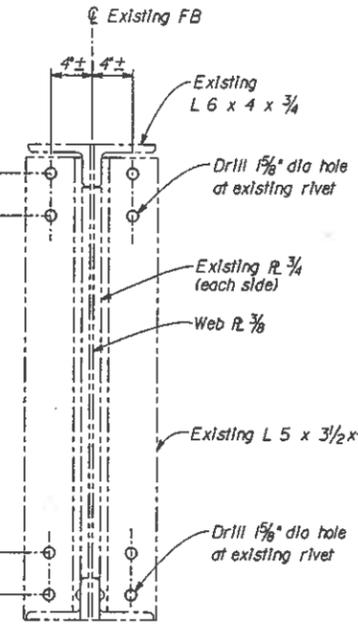
- Notes:**
1. Provide retrofit at all 289 Ft Spans except at Pier 19 L<sub>0</sub> and Pier 61 L<sub>0</sub>.
  2. Thickness of filler plate to match thickness of existing angle as required.
  3. Side edges of restrainer bracket to be saw cut or planed.
  4. For location of Detail 1, see Note 1 on "289 Ft Spans - Plan & Elevation" sheet.
  5. For location of Detail 5, see "289 Ft Spans - Viscous Damper Details 1 & 2" sheets.



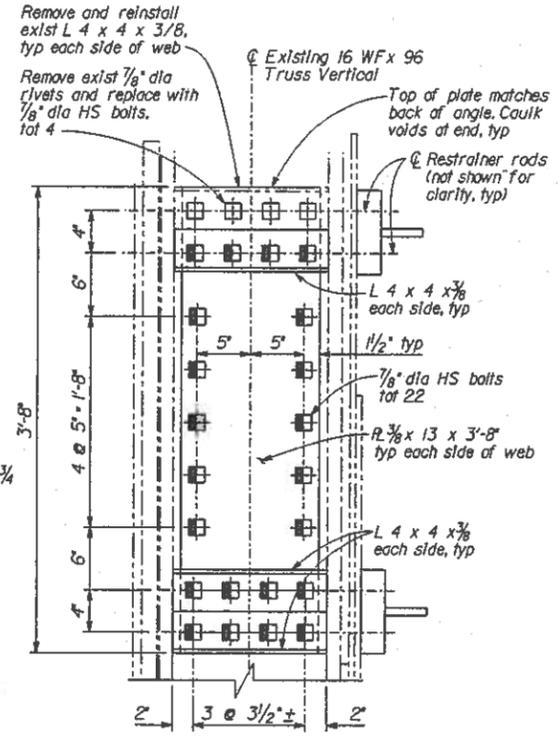
**SECTION A-A**  
Scale: 3/4" = 1'-0"



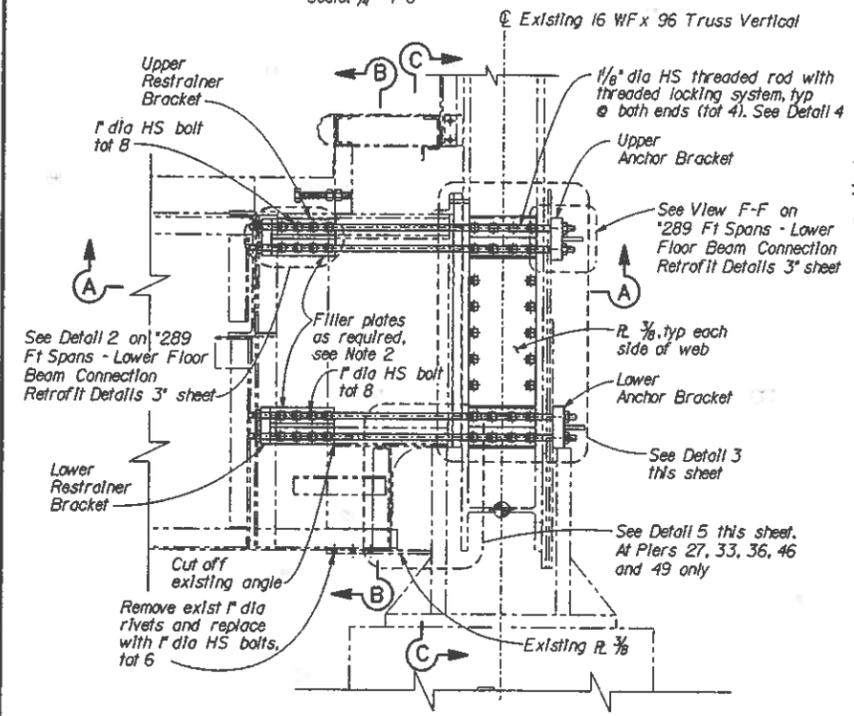
**SECTION B-B**  
Scale: 1/2" = 1'-0"



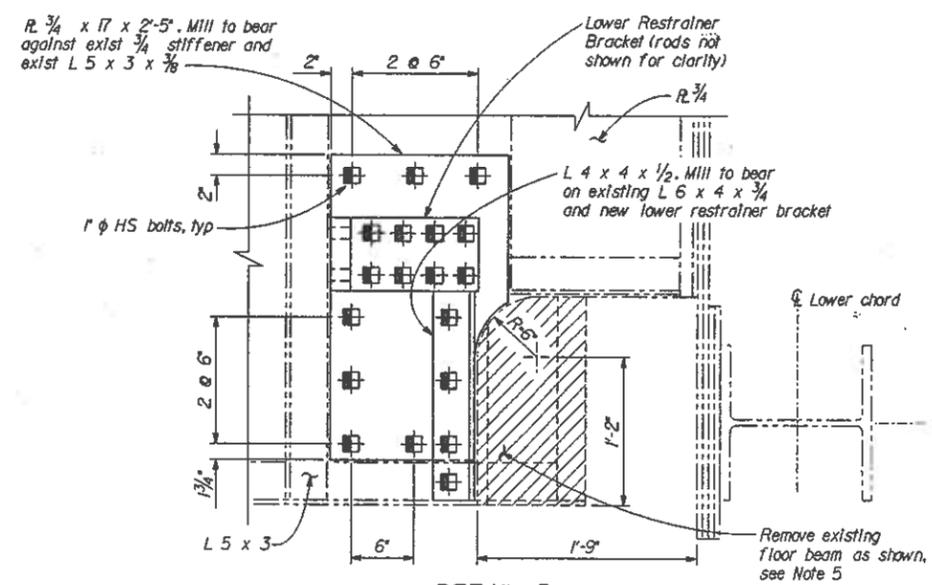
**SECTION C-C**  
Scale: 1/2" = 1'-0"



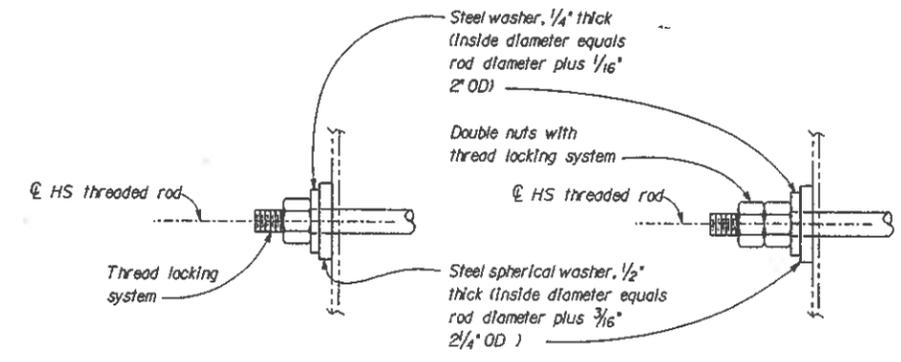
**DETAIL 3**  
Scale: 1/2" = 1'-0"



**DETAIL 1**  
Scale: 3/4" = 1'-0"



**DETAIL 5**  
Scale: 1/2" = 1'-0"



**DETAIL 4**  
No Scale

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

Ade Akinsanya/Shawn Sun  
DESIGN ENGINEER  
1/20/99

DESIGN	J. Lavinder	CHECKED	S. Chandramouli
DETAILS	B. Prather	CHECKED	S. Chandramouli
QUANTITIES	D. Kirkpatrick	CHECKED	J. Lavinder

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.  
28-0100  
POST MILE  
6.22

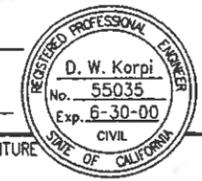
<b>SEISMIC RETROFIT PROJECT NO. 612</b>	
<b>RICHMOND-SAN RAFAEL BRIDGE</b>	
<b>289 FT SPANS</b>	
<b>LOWER FLOOR BEAM CONNECTION RETROFIT DETAILS 2</b>	
DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)
CU 04271 EA 04-0438U1	12/18/98 1/14/99 3/12/99 5/25/99 7/16/99 8/17/99 10/1/99 11/15/99
SHEET 331	OF 503

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

1346254.DGN

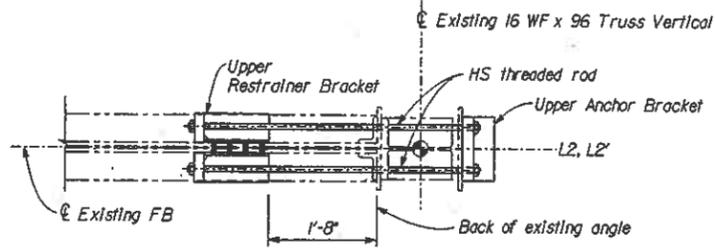
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.1/7.8,0.0/2.6	917	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DMJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD. SUITE 208  
WALNUT CREEK, CA 94596

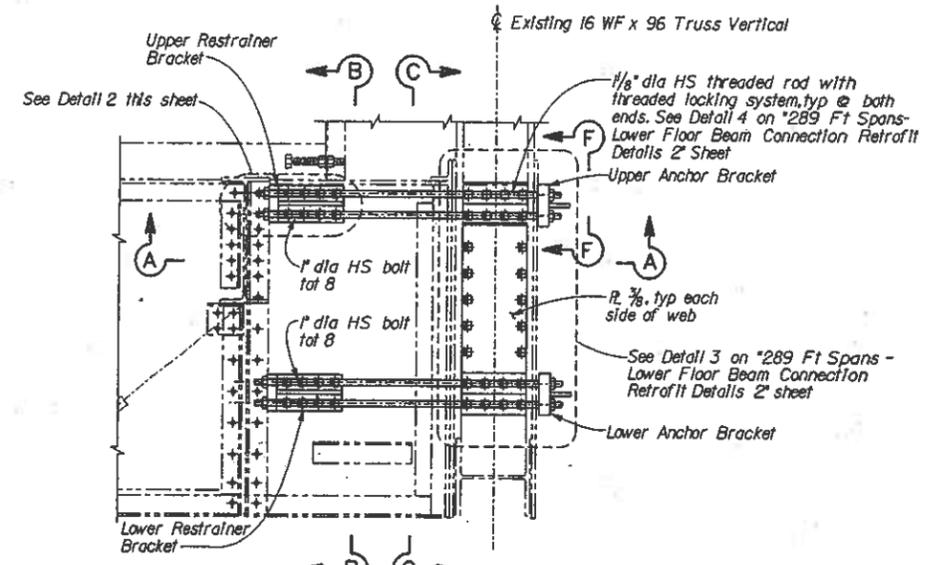


The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

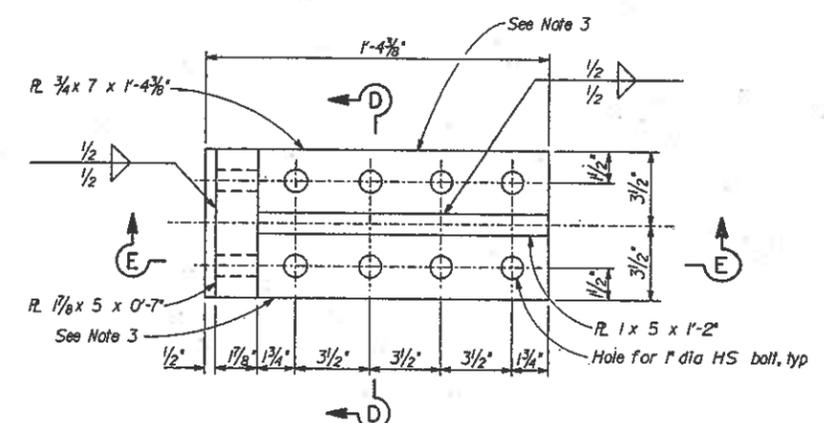
- Notes:
1. Thickness of filler plate to match thickness of existing angle as required.
  2. For location of Detail 1, see Note 2 on '289 Ft Spans - Plan & Elevation' sheet.



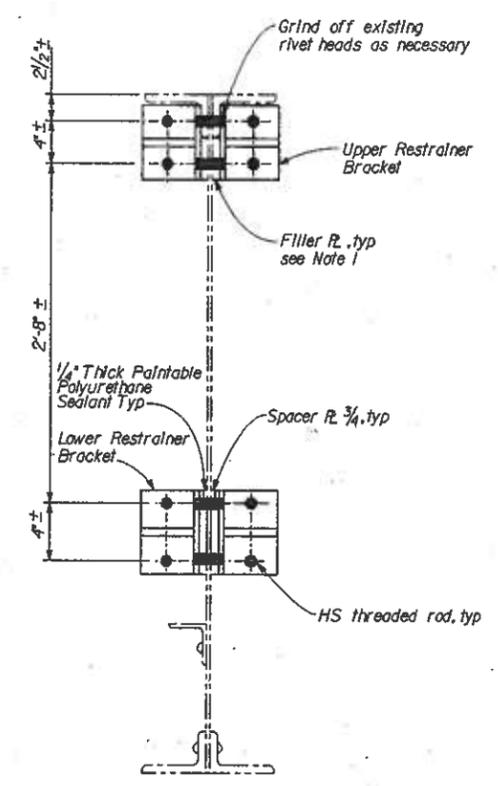
**SECTION A-A**  
Scale: 3/4" = 1'-0"



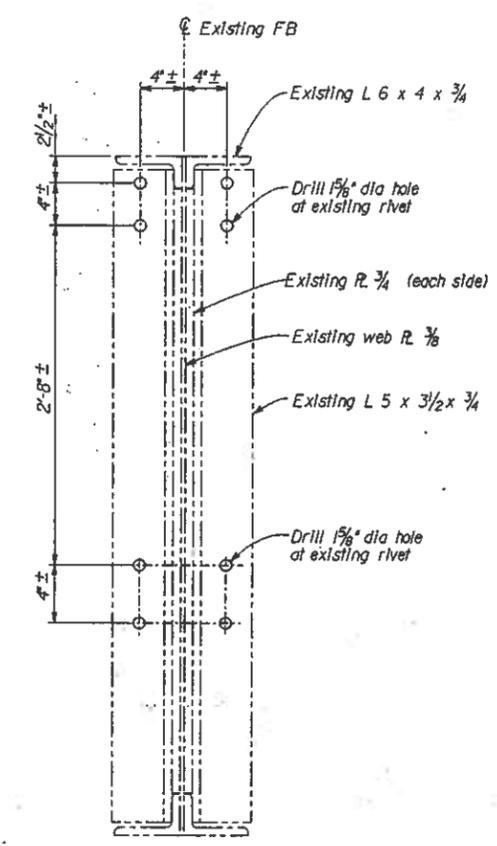
**DETAIL 1**  
Scale: 3/4" = 1'-0"  
Note: South Truss shown, North Truss opposite hand



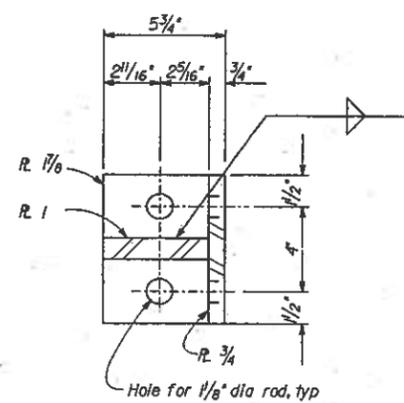
**DETAIL 2**  
Scale: 3"-1'-0"  
Note: South truss shown, North truss opposite hand.



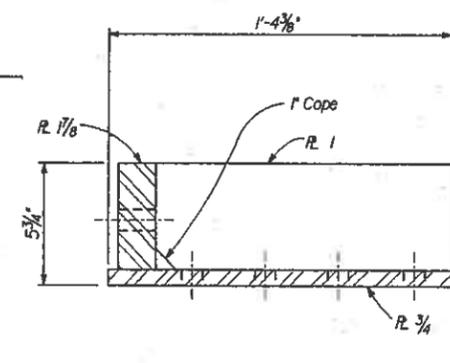
**SECTION B-B**  
Scale: 1/2" = 1'-0"



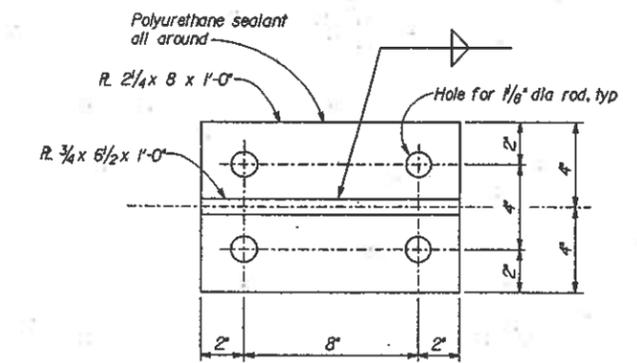
**SECTION C-C**  
Scale: 1/2" = 1'-0"



**SECTION D-D**  
Scale: 3"-1'-0"



**SECTION E-E**  
Scale: 3"-1'-0"



**VIEW F-F**  
Scale: 3"-1'-0"

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

Shawn Sun  
Ade Akinsanya/Shawn Sun  
DESIGN OVERSIGHT  
SIGN-OFF DATE 1/20/11

DESIGN	BY D. Kirkpatrick	CHECKED S. Chandramouli
DETAILS	BY B. Prother	CHECKED J. Lavinder
QUANTITIES	BY D. Kirkpatrick	CHECKED J. Lavinder

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION  
P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

**SEISMIC RETROFIT PROJECT NO. 612**  
**RICHMOND-SAN RAFAEL BRIDGE**  
**289 FT SPANS**  
**LOWER FLOOR BEAM CONNECTION RETROFIT DETAILS 3**

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 04271  
EA 04-0438U1

DISCARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
7/26/12, 7/24/14, 1/15/15, 1/15/15	332	503

13464400.DGN

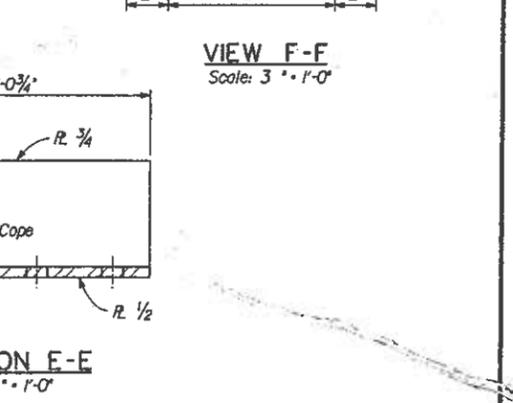
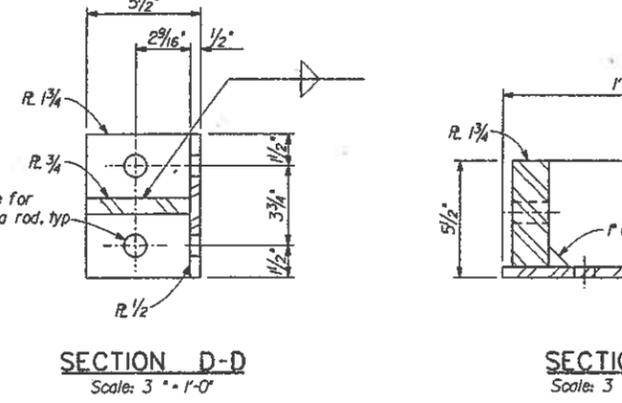
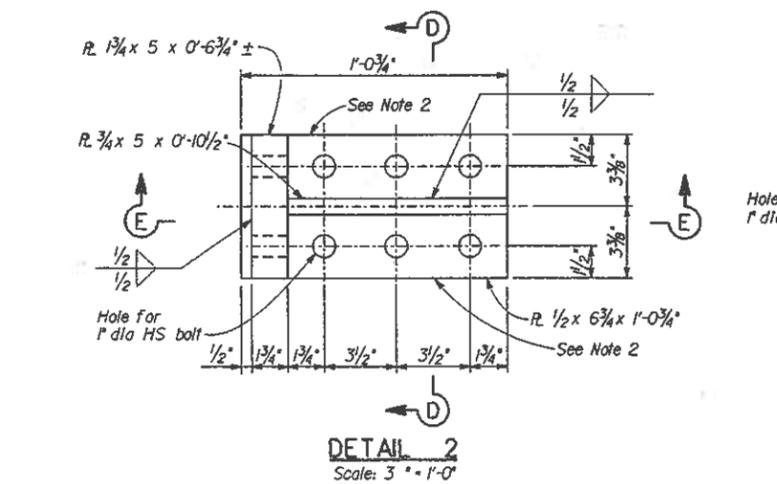
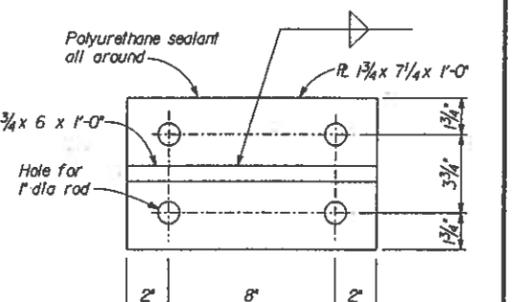
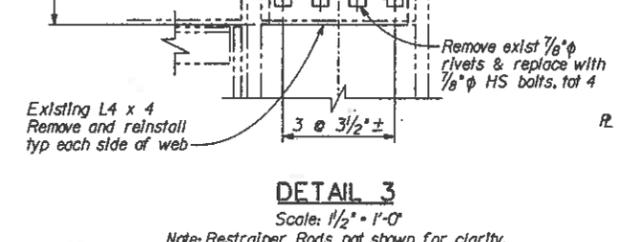
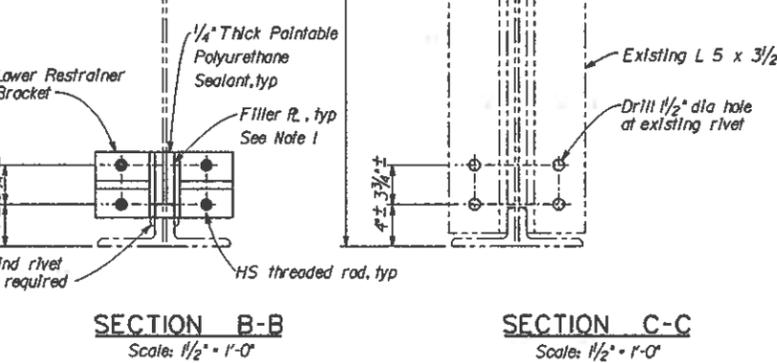
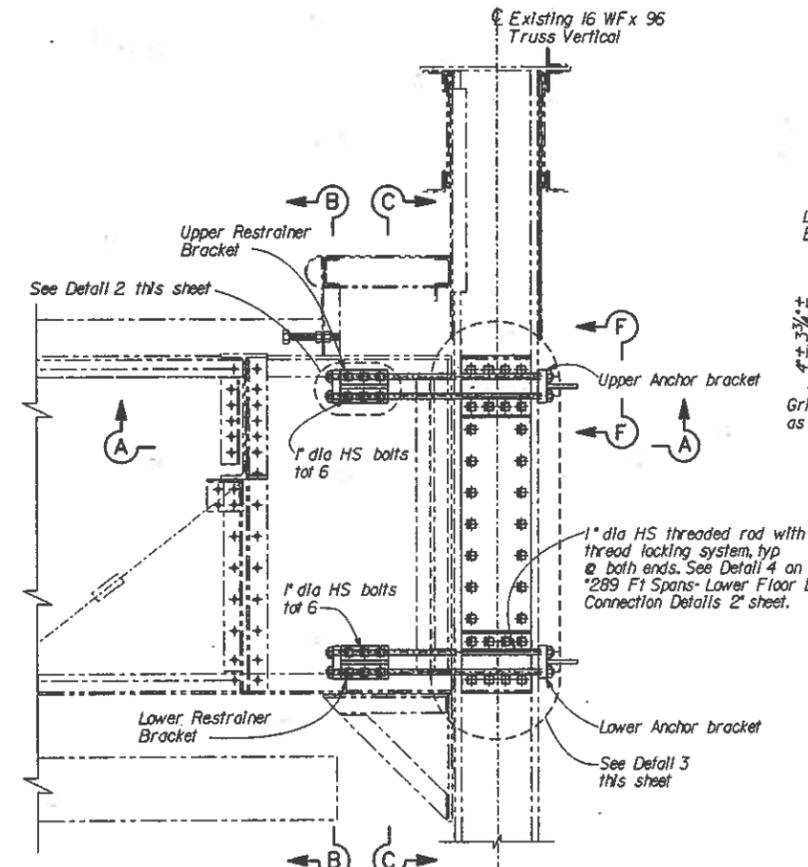
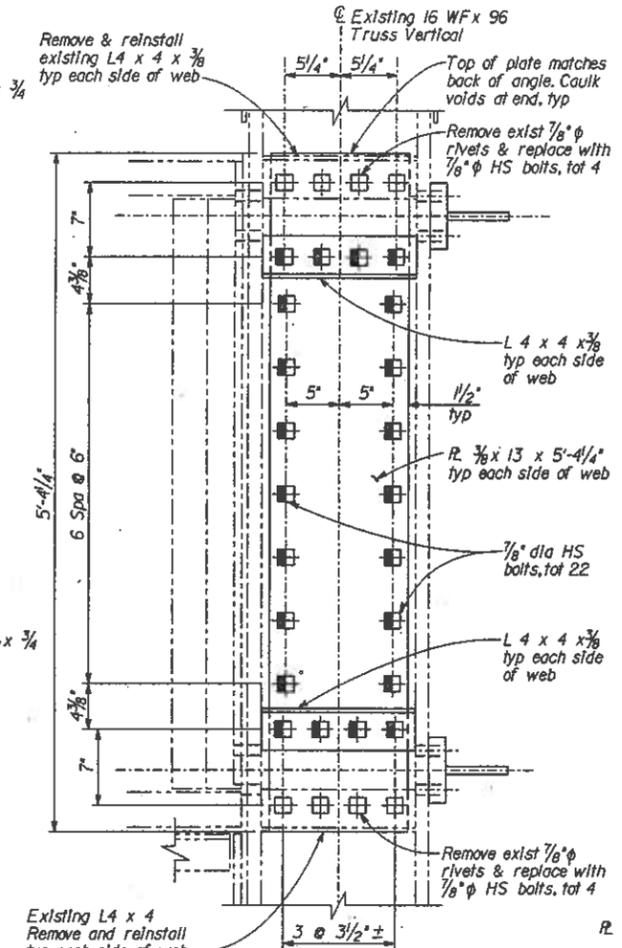
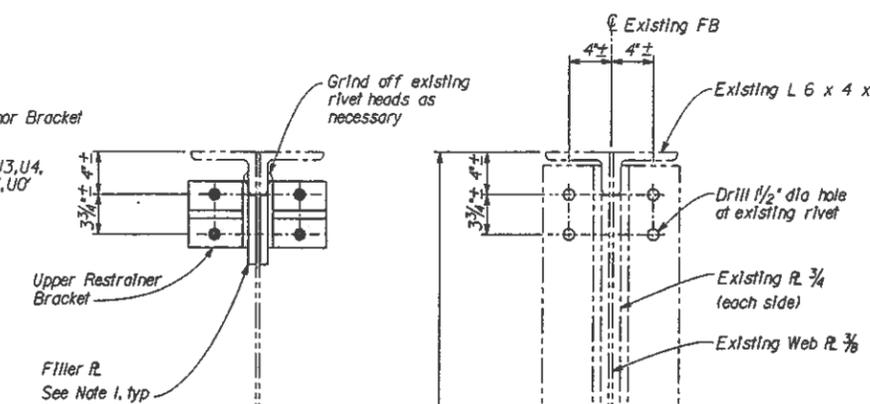
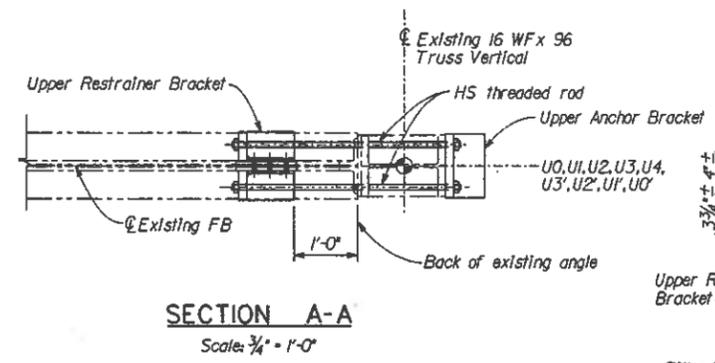
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Mrn	580	6.117.8,0.012.6	918	1142

David W. Korpi  
REGISTERED CIVIL ENGINEER  
7-19-99  
PLANS APPROVAL DATE  
GERWICK/SVERDRUP/DWJM JOINT VENTURE  
601 MONTGOMERY ST, SUITE 400  
SAN FRANCISCO, CA 94111  
SVERDRUP CIVIL, INC.  
1340 TREAT BLVD, SUITE 208  
WALNUT CREEK, CA 94596

REGISTERED PROFESSIONAL ENGINEER  
D. W. Korpi  
No. 55035  
Exp. 6-30-00  
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.

- Notes:
1. Thickness of filler plates to match thickness of existing angle as required.
  2. Side edges of restrainer bracket to be saw cut or planed.
  3. For location of Detail 1, see Note 4 on "289 Ft Spans - Plan & Elevation" sheet.



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

DESIGN OVERSIGHT  
Ade Akinsanya/Shawn Sun  
DATE: 1/24/99

DESIGN BY	D. Kirkpatrick	CHECKED BY	S. Chandramouli
DETAILS BY	B. Prather	CHECKED BY	J. Lavinder
QUANTITIES BY	D. Kirkpatrick	CHECKED BY	J. Lavinder

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. Bott  
PROJECT ENGINEER

BRIDGE NO.	28-0100
POST MILE	6.22

SEISMIC RETROFIT PROJECT NO. 612  
RICHMOND-SAN RAFAEL BRIDGE  
289 FT SPANS  
UPPER FLOOR BEAM CONNECTION RETROFIT DETAILS

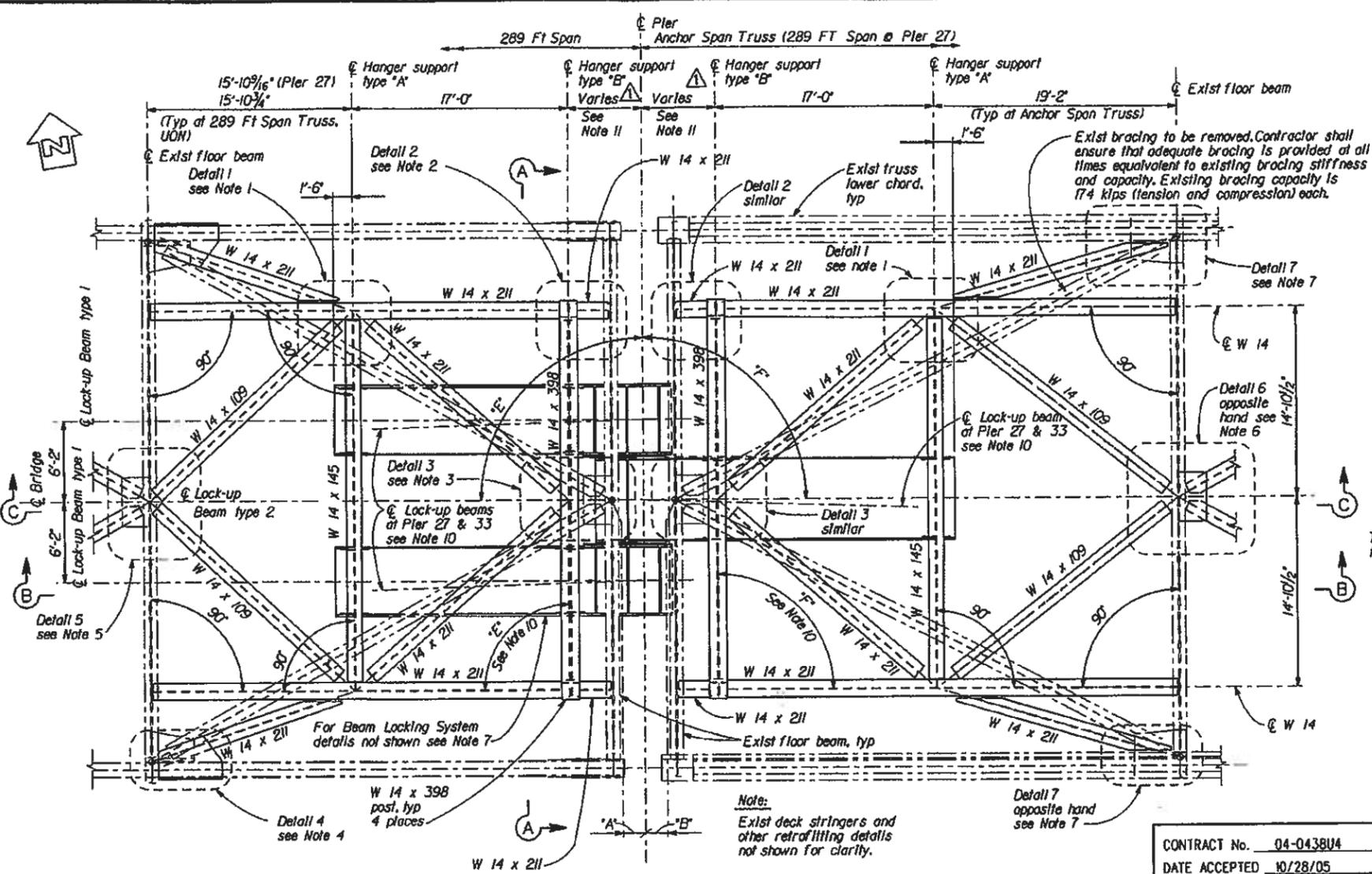
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
0 1 2 3

CU 04271  
EA 04-0438U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
	2/26/99, 3/12/99, 3/15/99, 3/17/99, 3/22/99, 4/1/99, 4/15/99	333	503

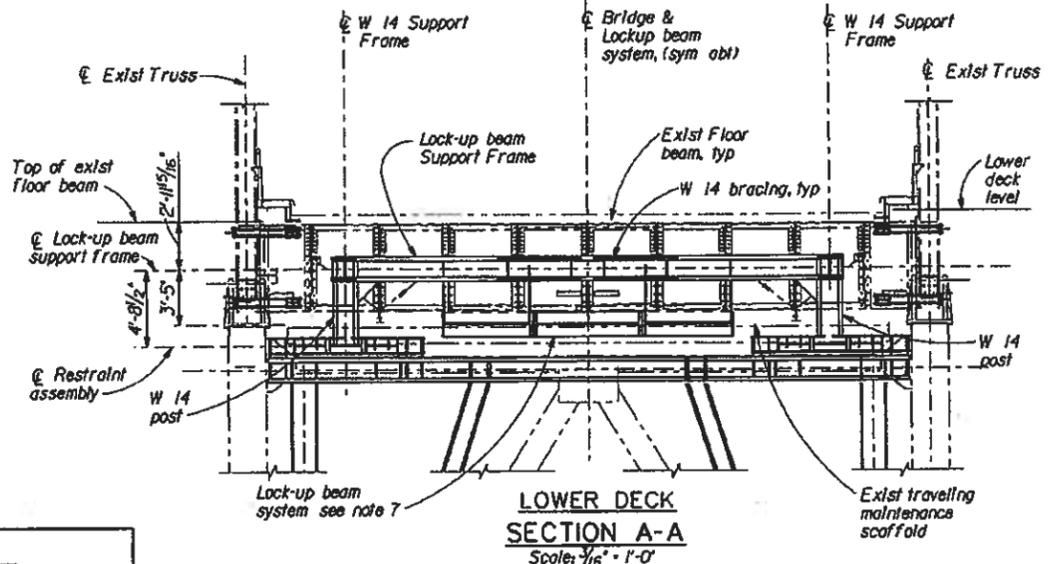
13464287.DGN

NO AS BUILT CORRECTIONS  
 Date Transfer: 05/26/06  
 Structure Rep: B. POWELL  
 Field Corrections Date: N/A  
 Contract No: 04-0438U4  
 Corrections Transferred by: V. N.  
 Date Transfer: 05/26/06  
 Structure Rep: B. POWELL  
 Field Corrections Date: N/A



**PLAN - BRACING AND HANGER SUPPORT ASSEMBLY (PIER 46 SHOWN)**  
 (Piers 27 and 33 similar, Piers 36 and 49 similar but opposite hand)  
 Scale: 3/16" = 1'-0"

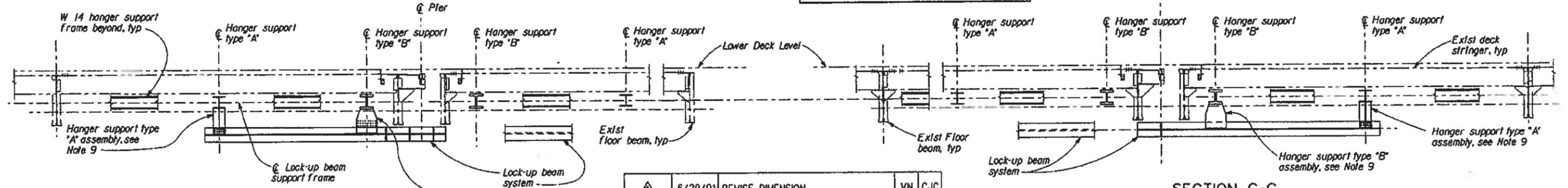
- Notes:**
- For Detail 1, see "Split Bent Lock-up Beam Support Frame Details 1" sheet.
  - For Detail 2, see "Split Bent Lock-up Beam Support Frame Details 2" sheet.
  - For Detail 3, see "Split Bent Lock-up Beam Support Frame Details 3" sheet.
  - For Detail 4, see "Split Bent Lock-up Beam Support Frame Details 4" sheet.
  - For Detail 5, see "Split Bent Lock-up Beam Support Frame Details 5" sheet.
  - For Detail 6, see "Split Bent Lock-up Beam Support Frame Details 6" sheet.
  - For Detail 7, see "Split Bent Lock-up Beam Support Frame Details 7" sheet.
  - For Lock-up beam details, see "Split Bent Lock-up Beam Assembly Details 1" & "Details 2" sheets.
  - For hanger support types "A" and "B" details see "Split Bent Lock-up Beam Assembly Details 1" sheet.
  - For dimensions "A", "B", "E" and "F", see "Table A" on "Deck Expansion Joint Sub-Framing" sheet.
  - This dimension is different @ each pier depending on the temperature.



**LOWER DECK SECTION A-A**  
 Scale: 3/16" = 1'-0"

CONTRACT No. 04-0438U4  
 DATE ACCEPTED 10/28/05  
**NO AS BUILT CHANGES**  
 STRUCTURE REPRESENTATIVE B. POWELL  
 REVISIONS BY N/A DATE N/A

CONTRACT CHANGE ORDER NO. \_\_\_\_\_  
 SHEET \_\_\_\_\_ OF \_\_\_\_\_  
 (NOT INDICATED ON RED-LINE)



**SECTION B-B**  
 Scale: 3/16" = 1'-0"

**SECTION C-C**  
 Scale: 3/16" = 1'-0"

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

REVISION	DATE	DESCRIPTIONS	BY	CHKD
1	6/29/01	REVISE DIMENSION	VN	CJC

**SEISMIC RETROFIT PROJECT NO. 612**

Fred Dibo <small>DESIGN ENGINEER</small> 13464700.DGN	<b>NO AS BUILT CORRECTIONS</b> Contract No: 04-0438U4 Corrections Transferred by: V. N. Date Transfer: 05/26/06 Structure Rep: B. POWELL Field Corrections Date: N/A	DESIGN BY P. Blackham CHECKED R. Block	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	BRIDGE NO. 28-0100 POST MILE 6.22	RICHMOND-SAN RAFAEL BRIDGE SPLIT BENT TYPICAL LOCK-UP BEAM LAYOUT
		DETAILS BY M. Boskerville CHECKED C. J. Chang		PROJECT ENGINEER K. Lim	
QUANTITIES BY P. Blackham CHECKED J. Fischer	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3	CU 04271 EA 04-0438U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY) 1/26/06 2/20/06 3/17/06 4/17/06 5/22/06	SHEET OF 454 503

