

# Interim Seismic Retrofit-East Bay 288' Trusses Span E9 to Span E16 (Contract No. 04-043004)

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

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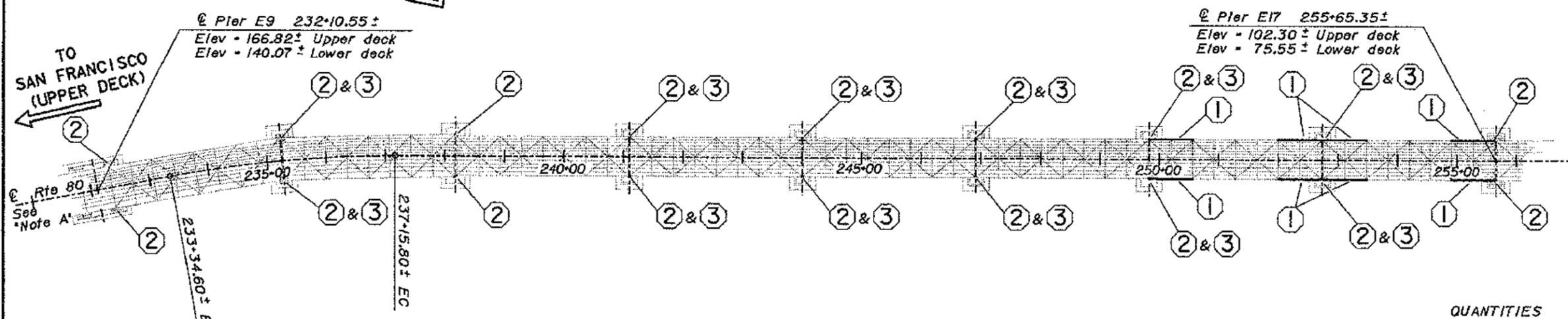
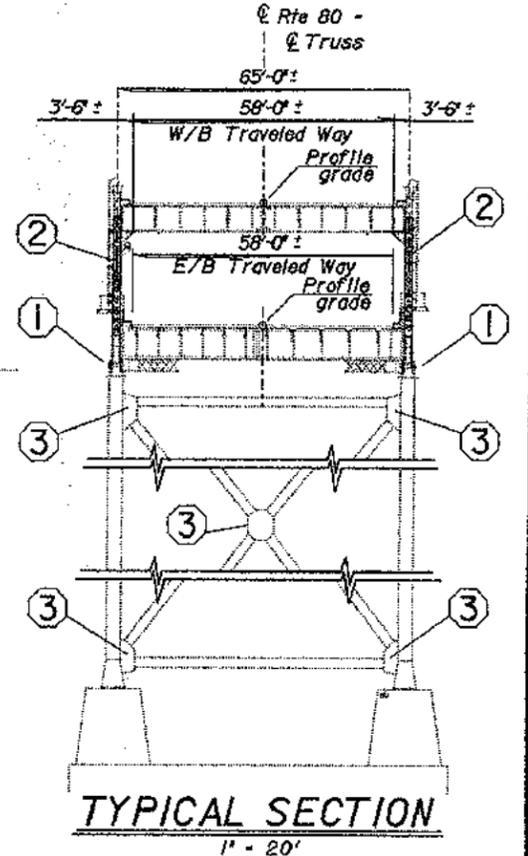
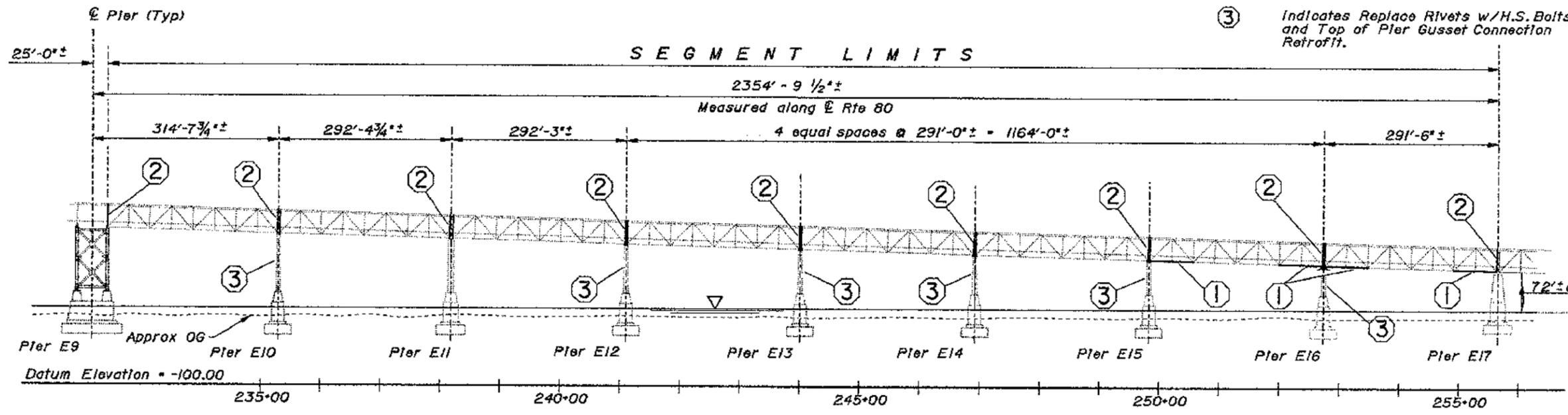
| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|-------------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alameda | 80    | 7.8/8.9<br>0.6/1.1       | 152       | 205          |

  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 No. 51862  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA



12-8-97  
 PLANS APPROVAL DATE  
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- LEGEND**
- Indicates Existing Structure.
  - Indicates New Construction.
  - ① Indicates Lower Chord Retrofit.
  - ② Indicates Vertical Member Retrofit.
  - ③ Indicates Replace Rivets w/H.S. Bolts and Top of Pier Gusset Connection Retrofit.



**QUANTITIES**

|                                      |            |
|--------------------------------------|------------|
| WORK AREA MONITORING                 | LUMP SUM   |
| BRIDGE REMOVAL (PORTION), LOCATION E | LUMP SUM   |
| FURNISH STRUCTURAL STEEL (BRIDGE)    | 376,100 LB |
| ERECT STRUCTURAL STEEL (BRIDGE)      | 376,100 LB |
| CLEAN AND PAINT STRUCTURAL STEEL     | LUMP SUM   |
| SPOT BLAST CLEAN AND PAINT UNDERCOAT | 7,510 SQFT |

**CURVE DATA**

|   |               |
|---|---------------|
| R | 2000'±        |
| Δ | 10°55'13.63"± |
| T | 191.77'±      |
| L | 381.20'±      |

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

**Note:**  
 For General Notes see 'Index to Plans' sheet.

|         |                       |                         |                |                       |                         |
|---------|-----------------------|-------------------------|----------------|-----------------------|-------------------------|
| DESIGN  | BY David Soon 4-97    | CHECKED Phil Lutz 4-97  | LAYOUT         | BY Ralph Nakaoka 4-97 | CHECKED David Soon 4-97 |
| DETAILS | BY Ralph Nakaoka 4-97 | CHECKED David Soon 4-97 | SPECIFICATIONS | BY                    | CHECKED                 |

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

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO-OAKLAND BAY BRIDGE**  
**GENERAL PLAN**

| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|-------------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alameda | 80    | 7.8/8.9, 0.0/1.1         | 153       | 205          |

*David Soon*  
REGISTERED ENGINEER - CIVIL  
October 21, 1997

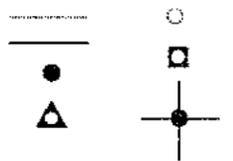
DAVID SOON  
No. 51862  
Exp. 6-30-98  
CIVIL  
STATE OF CALIFORNIA

12-8-97  
PLANS APPROVAL DATE

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### GENERAL NOTES

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



### INDEX TO PLANS

| SHEET NO. | TITLE                                       |
|-----------|---|
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| 6         | PIERS E10 AND E12 DETAILS NO. 2             |
| 7         | PIERS E13 THRU E16 DETAILS NO. 1            |
| 8         | PIERS E13 THRU E16 DETAILS NO. 2            |
| 9         | PIERS E10 THRU E16 DETAILS                  |
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| 11        | TOP OF PIER GUSSET CONNECTION DETAILS NO. 2 |
| 12        | TOP OF PIER GUSSET CONNECTION DETAILS NO. 3 |
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| 38        | VERTICAL MISCELLANEOUS NOTES                |

### GENERAL NOTES

#### LOAD AND RESISTANCE FACTOR DESIGN

DESIGN: 1994 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS  
AND SAN FRANCISCO-OAKLAND BAY BRIDGE WEST SPANS  
SEISMIC RETROFIT DESIGN CRITERIA

|                             |  |
|-----------------------------|--|
| STRUCTURAL STEEL (EXISTING) | Carbon Steel<br>$f_y = 37,000$ psi<br>$f_u = 62,000$ psi |
| STRUCTURAL STEEL (NEW)      | ASTM A36 unless otherwise noted                          |
| HIGH STRENGTH BOLTS         | ASTM A325 unless otherwise noted                         |
| THREADED RODS               | ASTM A449 unless otherwise noted                         |
| WELDS                       | E70XX unless otherwise noted                             |

#### STANDARD PLANS DATED JULY 1992

A10A ABBREVIATIONS

#### MISCELLANEOUS RETROFIT ABBREVIATIONS

|      |                                    |
|------|------------------------------------|
| F.G. | = Fastener Group.                  |
| VCP  | = Vertical Cover Plate.            |
| VFP  | = Vertical Filler plate.           |
| VA   | = Vertical Angle.                  |
| VSP  | = Vertical Splice Plate.           |
| VPCP | = Vertical Perforated Cover Plate. |

NOTE:  
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INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16

SAN FRANCISCO-OAKLAND BAY BRIDGE  
INDEX TO PLANS

|  |                         |   |  |                                       |  |
|--|-------------------------|---|--|---------------------------------------|--|
| DESIGN BY David Soon 4-97                  | CHECKED Phil Lutz 4-97  | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN<br>TOLL BRIDGE SPECIAL ANALYSIS | BRIDGE NO. 33-0025                    | SAN FRANCISCO-OAKLAND BAY BRIDGE<br>INDEX TO PLANS |
| DETAILS BY Ralph Nakagaki 4-97             | CHECKED David Soon 4-97 |   |  | POST MILE 1.15                        |  |
| QUANTITIES BY                              | CHECKED                 |   |  |                                       |  |
| ORIGINAL SCALE IN INCHES FOR REDUCED PLANS |                         | 0 1 2 3   | CU 04<br>EA 043001   | REVISION DATES PRELIMINARY STAGE ONLY | SHEET 2 OF 38                                      |

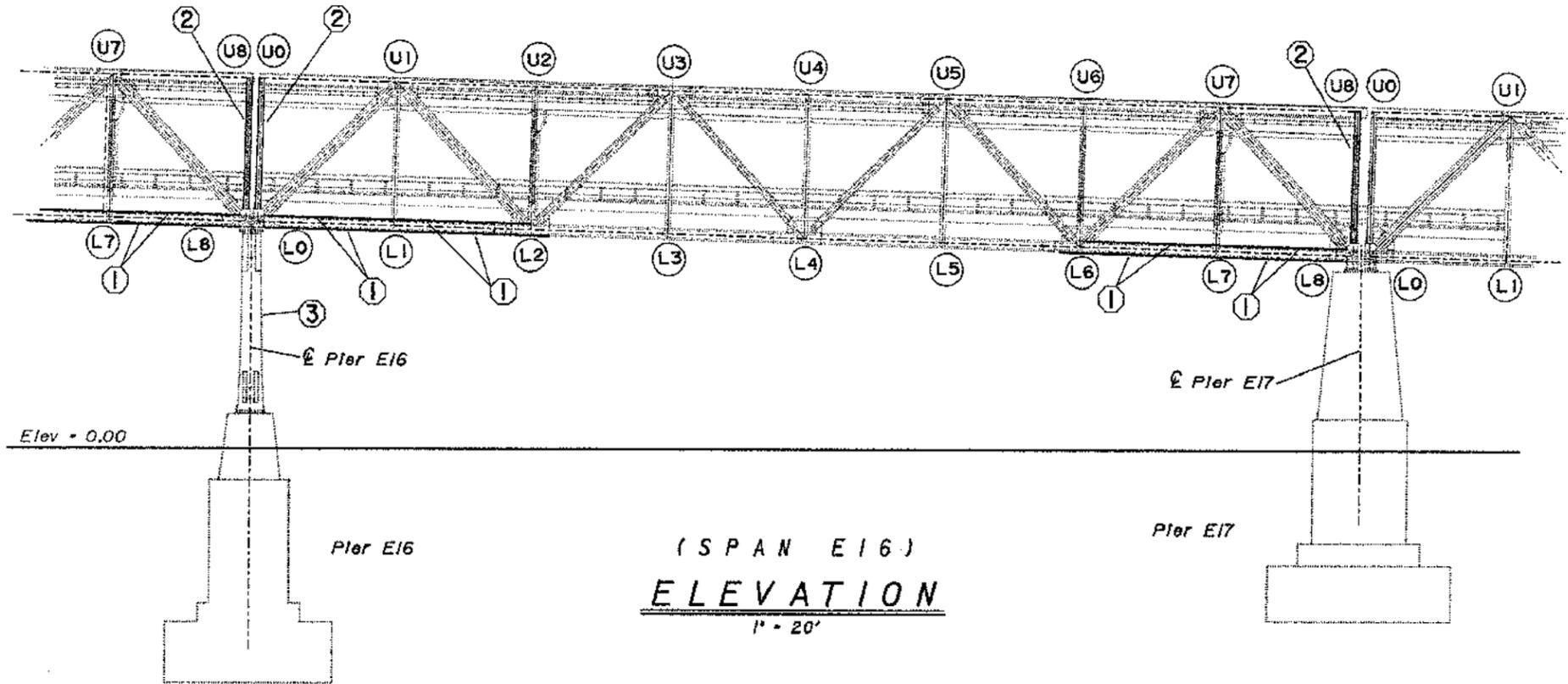
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TIME PLOTTED -> 10:30

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 October 21, 1997  
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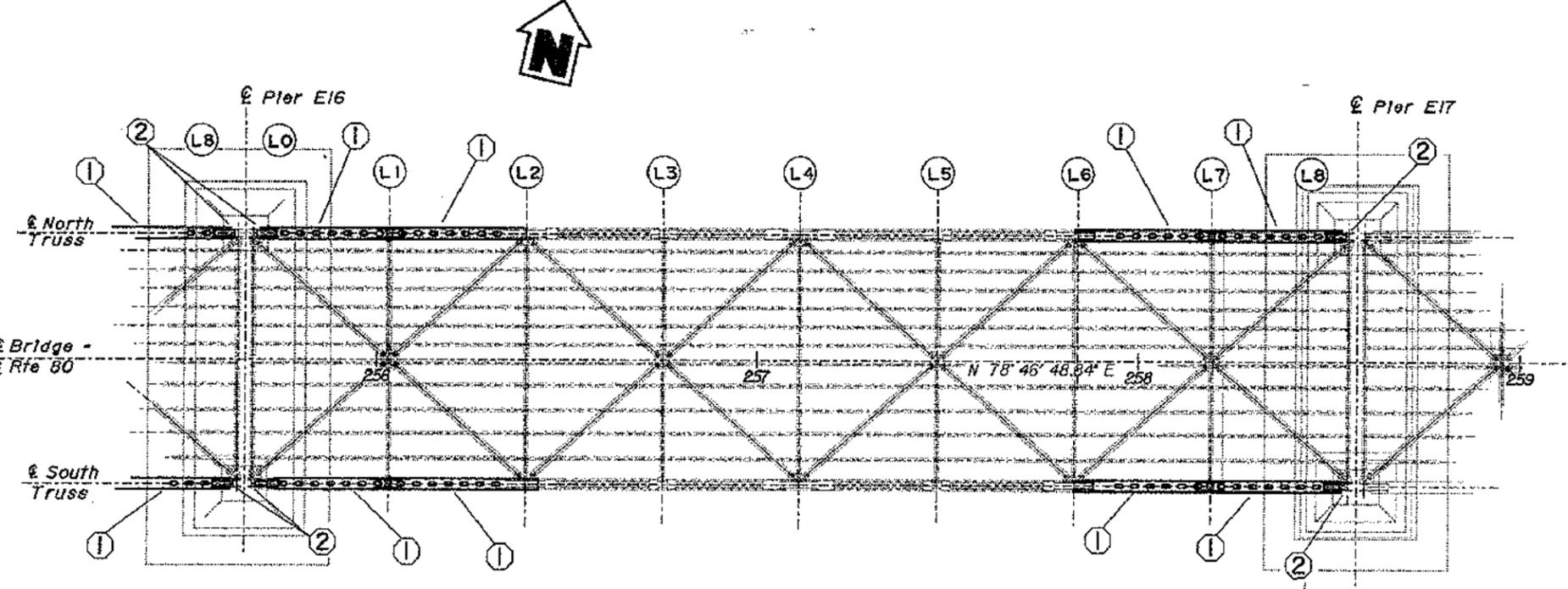
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| LOCATION | ① | ② | ③ |
|----------|---|---|---|
| SPAN E9  |   | X |   |
| SPAN E10 |   | X |   |
| SPAN E11 |   | X |   |
| SPAN E12 |   | X |   |
| SPAN E13 |   | X |   |
| SPAN E14 |   | X |   |
| SPAN E15 | X | X |   |
| SPAN E16 | X | X |   |
| PIER E10 |   |   | X |
| PIER E11 |   |   |   |
| PIER E12 |   |   | X |
| PIER E13 |   |   | X |
| PIER E14 |   |   | X |
| PIER E15 |   |   | X |
| PIER E16 |   |   | X |

- LEGEND**
- Indicates Existing Structure.
  - Indicates New Construction.
  - ① Indicates Lower Chord Retrofit.
  - ② Indicates Vertical Member Retrofit.
  - ③ Indicates Replace Rivets w/H.S. Bolt and Top of Pier Gusset Connection Retrofit.

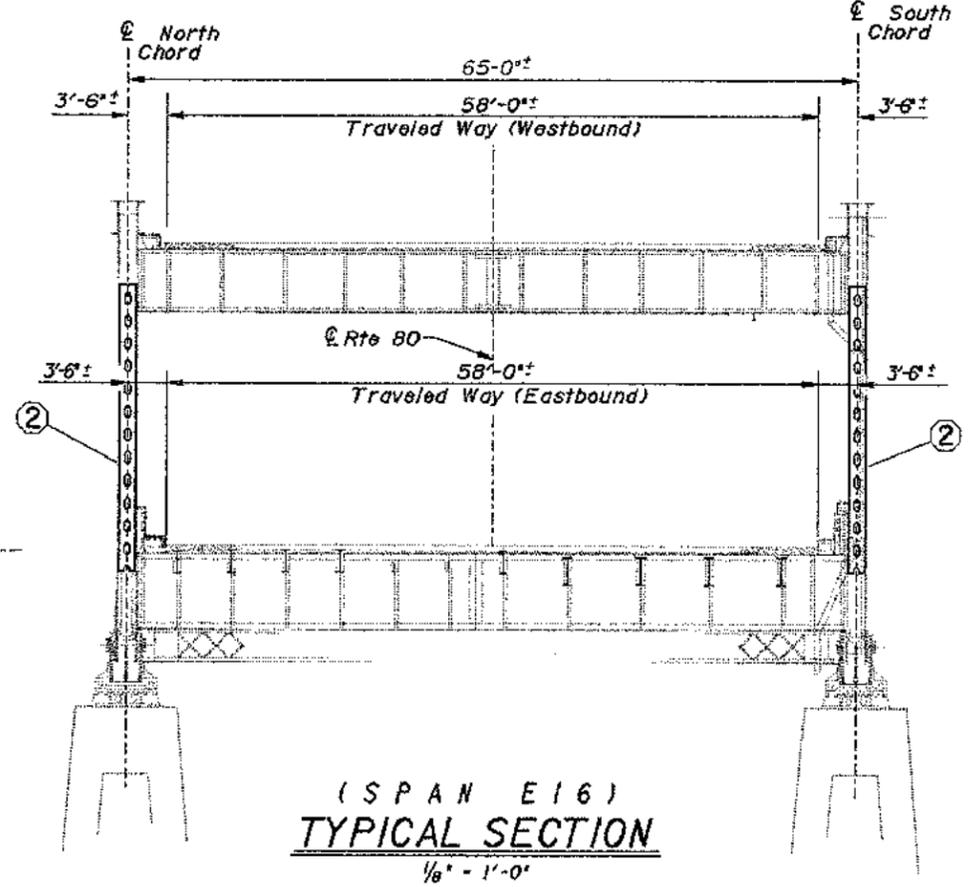


(SPAN E16)  
**ELEVATION**  
1" = 20'



(SPAN E16)  
**PLAN**  
1" = 20'

**Note:**  
Span E16 shown, see 'RETROFIT TABLE' for Spans E9 to E16 and Piers E10 to E16.



(SPAN E16)  
**TYPICAL SECTION**  
1/8" = 1'-0"

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|   |  |   |  |  |  |  |  |   |  |
|---|--|---|--|--|--|--|--|---|--|
| DESIGN BY David Soon 4-97<br>CHECKED Phil Lutz 4-97       |  | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION |  | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN<br>TOLL BRIDGE SPECIAL ANALYSIS |  | BRIDGE NO. 33-0025<br>POST MILE 1.5      |  | INTERIM SEISMIC RETROFIT PROJECT<br>EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16<br>SAN FRANCISCO-OAKLAND BY BRIDGE<br>TYPICAL STRUCTURE PLAN |  |
| DETAILS BY Ralph Nakagawa 4-97<br>CHECKED David Soon 4-97 |  | QUANTITIES BY<br>CHECKED                            |  | ORIGINAL SCALE IN INCHES FOR REDUCED PLANS                                 |  | USERNAME => r1onard<br>eep1r03a.09101759 |  | REVISION DATES (PRELIMINARY STAGE ONLY)<br>DISREGARD PRINTS BEARING EARLIER REVISION DATES  |  |

| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|-------------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alameda | 80    | 7.8/8.9, 0.0/1.1         | 155       | 205          |

David Soon  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 No. 51882  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA  
 12-8-97  
 PLANS APPROVAL DATE

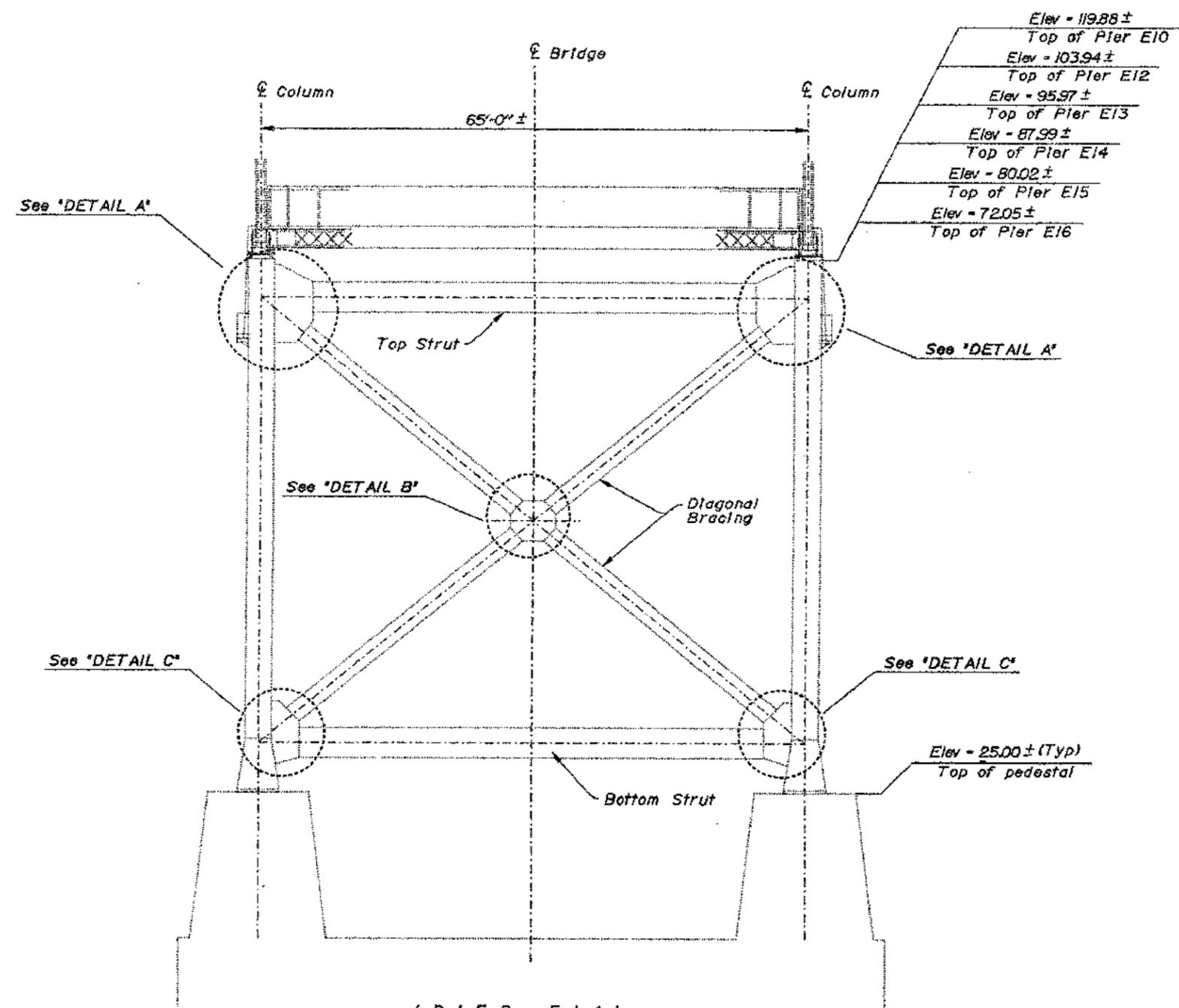
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**LEGEND**

|  |                               |
|--|-------------------------------|
|  | Indicates Existing Structure. |
|  | Indicates New Construction.   |
|  | Indicates Area of Work.       |

**INSTALLATION PROCEDURES**

1. Rivet replacement with HS bolts shall begin with the center-most rivets in any given member-end and continue outward in a concentric pattern. No more than 25% of the total rivets to be replaced in any single member-end may be worked on at one time.
2. Only one member-end per gusset shall be worked on at one time and must be completed before work commences on any additional member-ends within the same gusset.
3. Only one face of a gusset shall be worked on at any one time.
4. All HS bolts shall be fully tensioned prior to removing any additional rivets.
5. 7/8" dia rivets and 1" dia rivets shall be replaced with 1" dia H.S. bolts. Ream holes as needed. The exact location of rivets and bolts to be determined by the Contractor.
6. All holes to be 1 1/16" dia unless otherwise noted.
7. For clarity not all details and dimensions shown.



(PIER E14)  
**TYPICAL SECTION**  
1/8" = 1'-0"

- Notes:**
1. Details are symmetrical about  $\bar{C}$  Bridge.
  2. Tower E14 shown, Towers E10, E12 thru E16 similar.
  3. For "DETAIL A" and "DETAIL B" details, see "PIERS E10 AND E12 DETAILS NO. 1" and "PIERS E13 THRU E16 DETAILS NO. 1" sheets.
  4. For "DETAILS C" details, see "PIERS E10 AND E12 DETAILS NO. 2" and "PIERS E13 THRU E16 DETAILS NO. 2" sheets.
  5. For clarity not all details and dimensions shown.

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**INTERIM SEISMIC RETROFIT PROJECT**  
EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16  
**SAN FRANCISCO-OAKLAND BAY BRIDGE**  
PIERS E10 THRU E16

|                               |                         |                              |                              |                    |
|-------------------------------|-------------------------|------------------------------|------------------------------|--------------------|
| DESIGN BY David Soon 4-97     | CHECKED Pat Watz 4-97   | STATE OF CALIFORNIA          | DIVISION OF STRUCTURES       | BRIDGE NO. 33-0025 |
| DETAILS BY Ralph Nakooka 4-97 | CHECKED David Soon 4-97 | DEPARTMENT OF TRANSPORTATION | STRUCTURE DESIGN             | POST MILE 1.15     |
| QUANTITIES BY                 | CHECKED                 |                              | TOLL BRIDGE SPECIAL ANALYSIS |                    |

| TOP STRUT BRACING |               |                  |
|-------------------|---------------|------------------|
| LOCATION          | REMOVE RIVETS | NEW 1/16" Ø HOLE |
| PIER E10          | 256           | 32               |
| PIER E12          | 256           | 32               |

**LEGEND**

- Indicates existing structures.
- Indicates new structures.
- Indicates new 1" Ø high strength bolts.
- ▲ Indicates existing rivets to be removed and replaced with new 1" Ø high strength bolts in existing holes.
- Indicates approx. location of existing rivets.

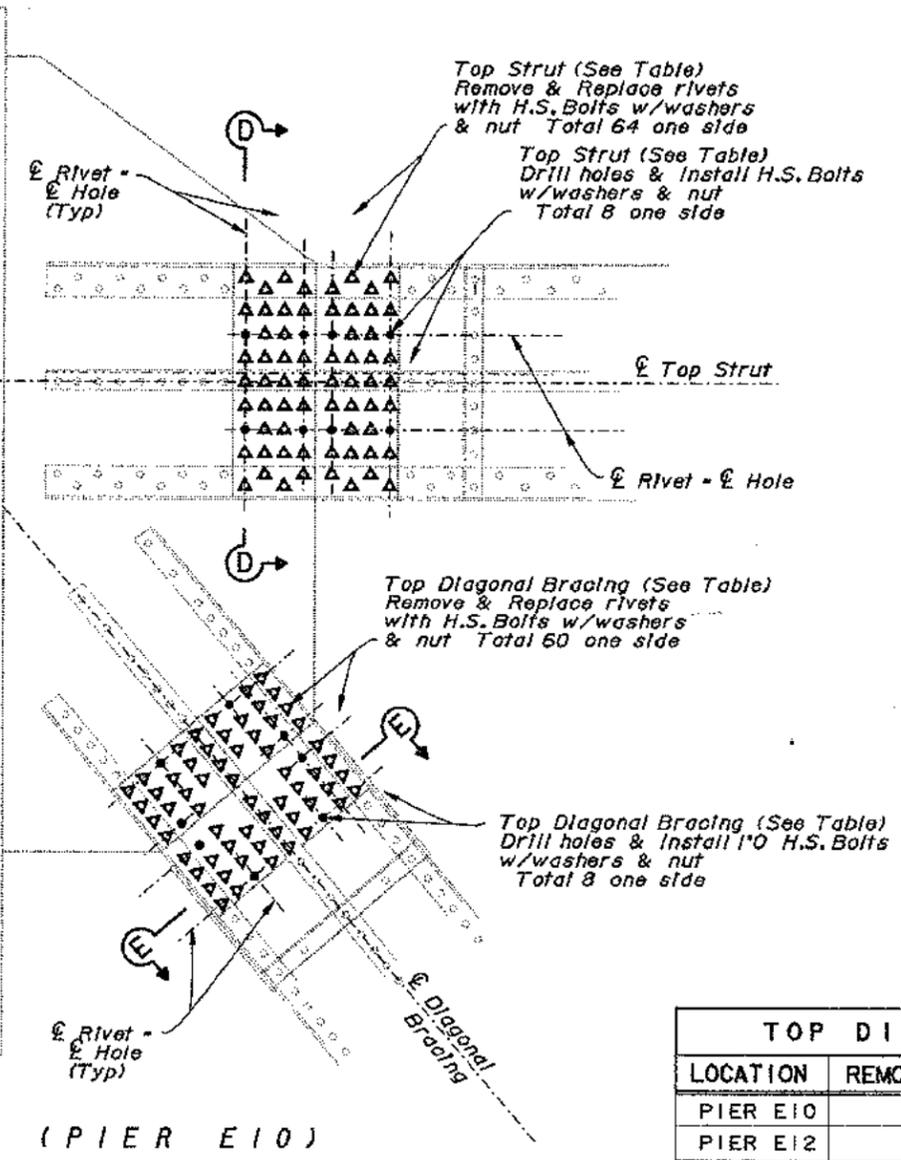
| DIST. | COUNTY  | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|---------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alq | 80    | 7.8/8.9<br>0.0/1.1       | 156       | 205          |

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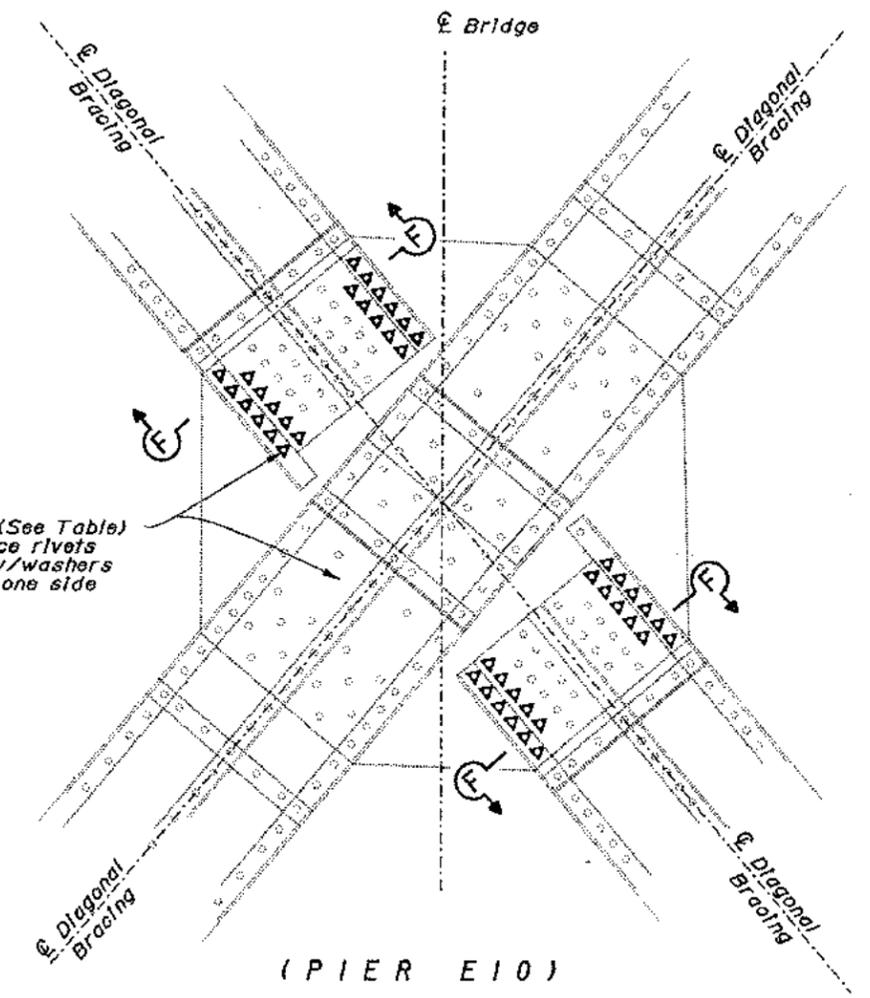


Column



| MIDDLE BRACING |               |
|----------------|---------------|
| LOCATION       | REMOVE RIVETS |
| PIER E10       | 88            |
| PIER E12       | 88            |

Middle Bracing (See Table)  
Remove & Replace rivets with H.S. Bolts w/washers & nut Total 44 one side



(PIER E10)  
**DETAIL B**  
3/4" = 1'-0"

- Notes:
1. Pier E10 shown, Pier E12 similar.
  2. For "SECTION F-F" detail, see "PIERS E10 THRU E16 DETAILS" sheet.
  3. For clarity not all details shown.

| TOP DIAGONAL BRACING |               |                   |
|----------------------|---------------|-------------------|
| LOCATION             | REMOVE RIVETS | NEW 1/16" Ø HOLES |
| PIER E10             | 240           | 32                |
| PIER E12             | 240           | 32                |

- Notes:
1. Top left joint shown, top right joint similar.
  2. Pier E10 shown, Pier E12 similar.
  3. For "SECTION D-D" & "SECTION E-E" details, see "PIERS E10 THRU E16 DETAILS" sheet.
  4. For clarity not all details shown.

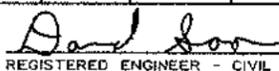
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|   |  |   |  |                    |   |
|---|--|---|--|--------------------|---|
| DESIGN BY Pat Watz 4-97 CHECKED David Soon 4-97     |  | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN<br>TOLL BRIDGE SPECIAL ANALYSIS | BRIDGE NO. 33-0025 | INTERIM SEISMIC RETROFIT PROJECT<br>EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16<br>SAN FRANCISCO-OAKLAND BAY BRIDGE<br>PIERS E10 AND E12 DETAILS NO. 1 |
| DETAILS BY Ralph Nakaoka 4-97 CHECKED Pat Watz 4-97 |  |   |  | POST MILE 1.15     |   |
| QUANTITIES BY Pat Watz 5-97 CHECKED David Soon 5-97 |  |   |  | CU 04<br>EA 043001 |   |

REVISION DATES (PRELIMINARY STAGE ONLY)

|         |        |        |        |         |
|---------|--------|--------|--------|---------|
| 4/27/97 | 5/2/97 | 5/2/97 | 5/2/97 | 5/17/97 |
|---------|--------|--------|--------|---------|

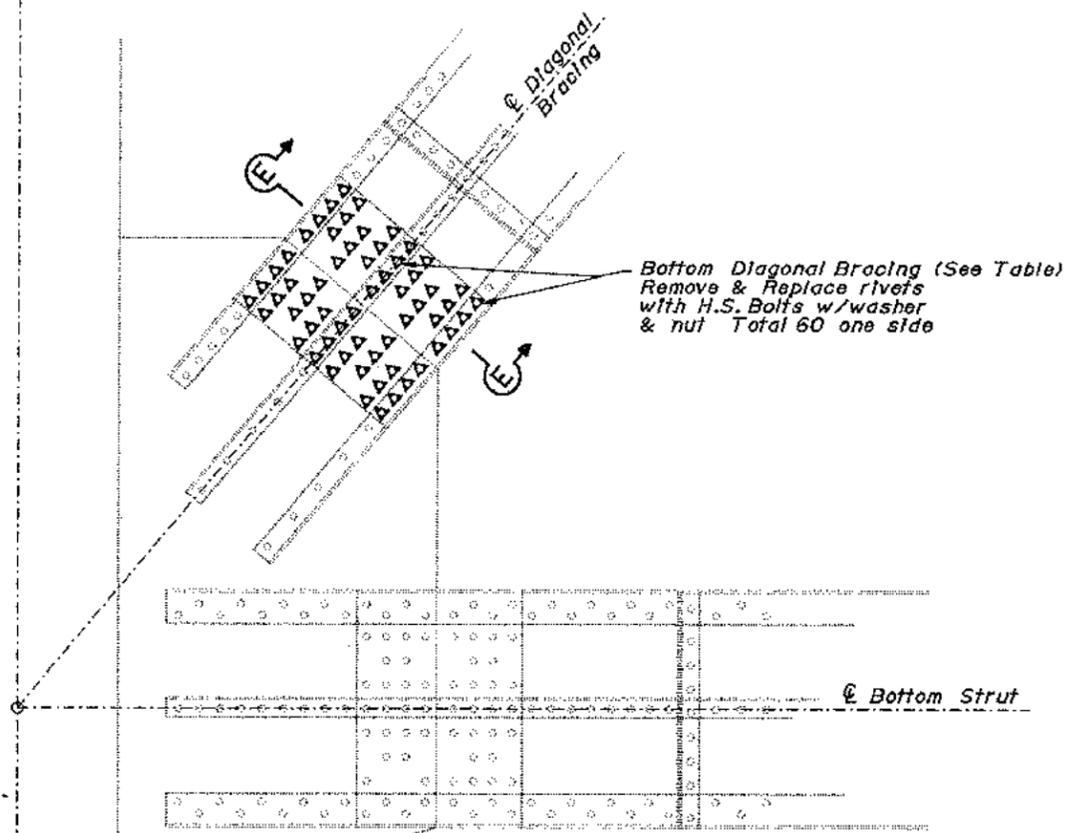
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TIME PLOTTED: 09:11

|  |          |       |   |              |                 |
|--|----------|-------|---|--------------|-----------------|
| DIST.  | COUNTY   | ROUTE | POST MILES<br>TOTAL PROJECT   | SHEET<br>NO. | TOTAL<br>SHEETS |
| 04   | SF. Alca | 80    | 7.8/8.9,<br>0.0/1.1   | 157          | 205             |
| <br>REGISTERED ENGINEER - CIVIL<br>October 21, 1997 |          |       |  |              |                 |
| 12-8-97<br>PLANS APPROVAL DATE   |          |       |   |              |                 |

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| BOTTOM DIAGONAL BRACING |               |
|-------------------------|---------------|
| LOCATION                | REMOVE RIVETS |
| PIER E10                | 240           |
| PIER E12                | 240           |

E Column



**LEGEND**

- Indicates existing structures.
- Indicates new structures.
- ▲ Indicates existing rivets to be removed and replaced with new 1"  $\phi$  high strength bolts, in existing holes.
- Indicates approx. location of existing rivets.

- Notes:
1. Bottom left joint shown, bottom right joint similar.
  2. Pier E10 shown, Pier E12 similar.
  - For 'SECTION E-E' details see 'PIERS E10 THRU E16 DETAILS' sheet
  4. For clarity not all details shown.

(PIER E10)  
**DETAIL C**  
3/4" = 1'-0"

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

|  |  |  |  |   |  |  |   |
|--|--|--|--|---|--|--|---|
| DESIGN BY Pat Watz 4-97 CHECKED David Soon 4-97<br>DETAILS BY Ralph Nakagawa 4-97 CHECKED Pat Watz 4-97<br>QUANTITIES BY Pat Watz 5-97 CHECKED David Soon 5-97 |  |  |  | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN<br>TOLL BRIDGE SPECIAL ANALYSIS   | BRIDGE NO.<br>33-0025<br>POST MILE<br>1.15 | INTERIM SEISMIC RETROFIT PROJECT<br>EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16<br>SAN FRANCISCO-OAKLAND BAY BRIDGE<br>PIERS E10 AND E12 DETAILS NO. 2 |
| ORIGINAL SCALE IN INCHES FOR REDUCED PLANS<br>0 2 3  |  |  |  | CU 04<br>EA 043001                                  | DISREGARD PRINTS BEARING EARLIER REVISION DATES<br>REVISION DATES (PRELIMINARY STAGE ONLY)<br>5-97 6-97 7-97 8-97 9-97 10-97 11-97 |  | SHEET 6 OF 38   |

DS 050 239 (CADD 10/95)

USERNAME => FRMIKES1  
eep1r06b2\_09083346

DATE PLOTTED 03 9-08-1997  
TIME PLOTTED 03 09:12

|       |          |       |                          |           |              |
|-------|----------|-------|--------------------------|-----------|--------------|
| DIST. | COUNTY   | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 04    | SF, Alca | 80    | 7.8/8.9<br>0.0/1.1       | 158       | 205          |

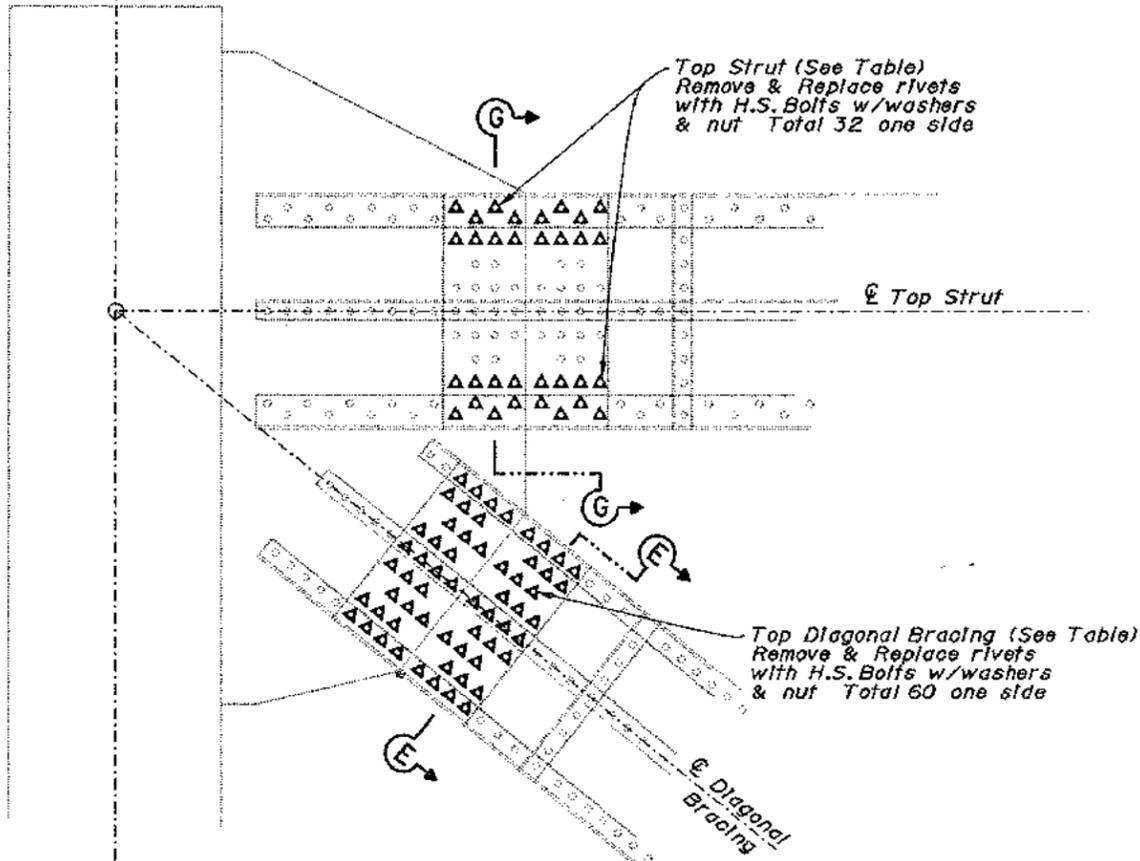
David Soon  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 No. 51862  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA  
 12-8-97  
 PLANS APPROVAL DATE

**LEGEND**

- Indicates existing structures.
- Indicates new structures.
- ▲ Indicates existing rivets to be removed and replaced with new 1" Ø high strength bolts, in existing holes.
- Indicates approx. location of existing rivets.

| TOP STRUT BRACING |               |
|-------------------|---------------|
| LOCATION          | REMOVE RIVETS |
| PIER E13          | 128           |
| PIER E14          | 128           |
| PIER E15          | 128           |
| PIER E16          | 128           |

Column



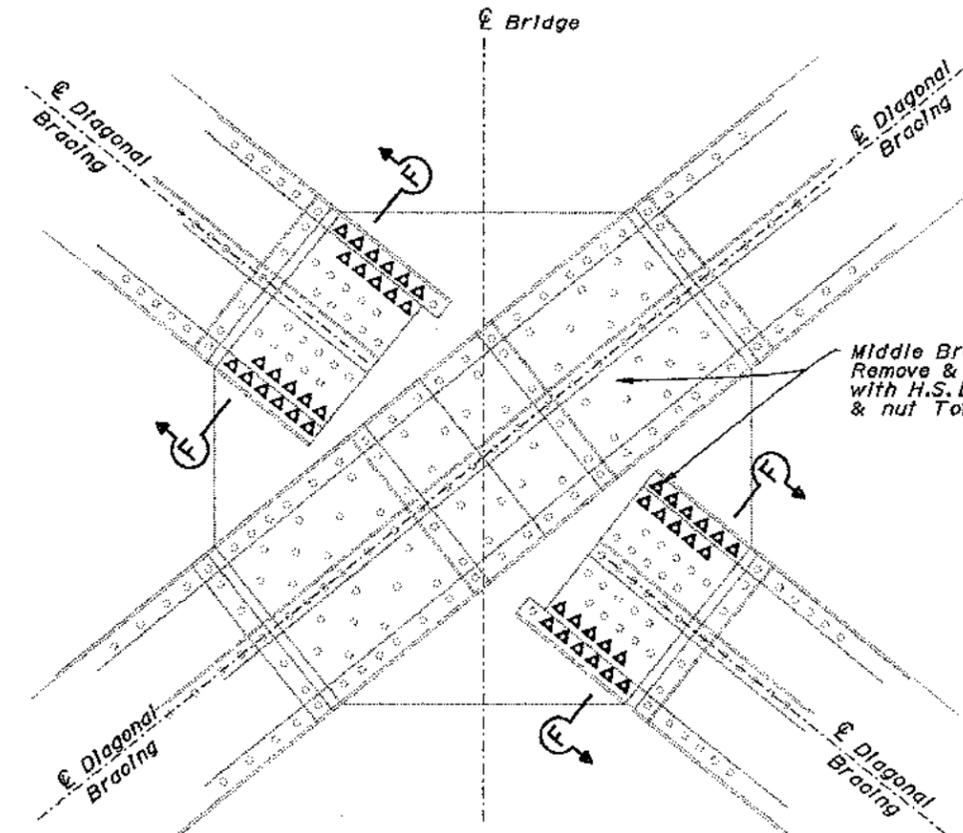
(PIER E14)

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

- Notes:
1. Top left joint shown, top right joint similar.
  2. Pier E14 shown, Piers E13 thru E16 similar.
  3. For "SECTION E-E" & "SECTION G-G" details, see "PIERS E10 THRU E16 DETAILS" sheet.
  4. For clarity not all details shown.

| TOP DIAGONAL BRACING |               |
|----------------------|---------------|
| LOCATION             | REMOVE RIVETS |
| PIER E13             | 240           |
| PIER E14             | 240           |
| PIER E15             | 240           |
| PIER E16             | 240           |

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



(PIER E14)

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

- Notes:
1. Pier E14 shown, Piers E13 thru E16 similar.
  2. For "SECTION F-F" detail, see "PIERS E10 THRU E16 DETAILS" sheet.
  3. For clarity not all details shown.

| MIDDLE BRACING |               |
|----------------|---------------|
| LOCATION       | REMOVE RIVETS |
| PIER E13       | 88            |
| PIER E14       | 88            |
| PIER E15       | 88            |
| PIER E16       | 88            |

INTERIM SEISMIC RETROFIT PROJECT  
 EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16  
 SAN FRANCISCO-OAKLAND BAY BRIDGE  
 PIERS E13 THRU E16 DETAILS NO. 1

|            |                       |                         |
|------------|-----------------------|-------------------------|
| DESIGN     | BY David Soon 4-97    | CHECKED Pat Watz 4-97   |
| DETAILS    | BY Ralph Mekaoka 4-97 | CHECKED David Soon 4-97 |
| QUANTITIES | BY David Soon 5-97    | CHECKED Phil Lutz 5-97  |

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

|            |         |
|------------|---------|
| BRIDGE NO. | 33-0025 |
| POST MILE  | 1.15    |

| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|-------------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alameda | 80    | 7.8/8.9, 0.0/1.1         | 159       | 205          |

**LEGEND**

- indicates existing structures.
- indicates new structures.
- △ indicates existing rivets to be removed and replaced with new 1"  $\phi$  high strength bolts in existing holes.
- indicates approx. location of existing rivets.

*David Soon*  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997

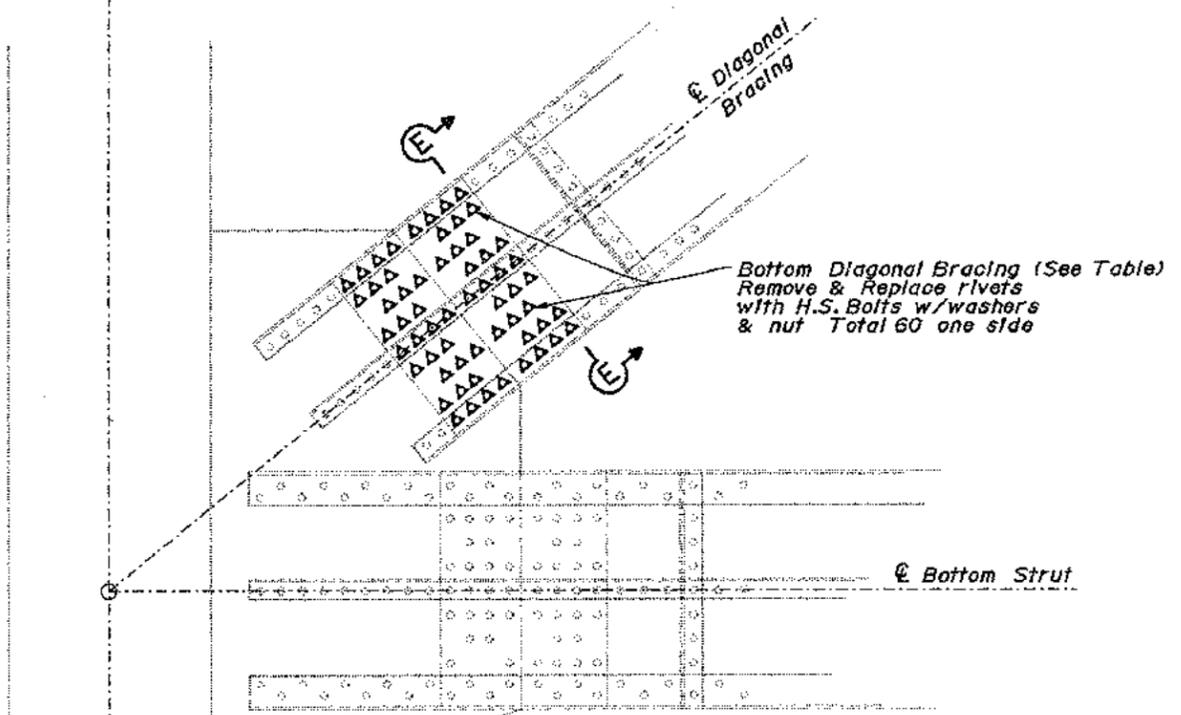
DAVID SOON  
 No. 51862  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA

12-8-97  
 PLANS APPROVAL DATE

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.

| BOTTOM DIAGONAL BRACING |               |
|-------------------------|---------------|
| LOCATION                | REMOVE RIVETS |
| PIER E13                | 240           |
| PIER E14                | 240           |
| PIER E15                | 240           |
| PIER E16                | 240           |

Column



- Notes:
1. Bottom left joint shown, bottom right joint similar.
  2. Pier E14 shown, Piers E13 thru E16 similar.
  3. For "SECTION E-E" detail, see "PIERS E10 THRU E16 DETAILS" sheet.
  4. For clarity not all details shown.

(PIER E14)  
**DETAIL C**  
 3/4" = 1'-0"

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

|            |                       |                         |
|------------|-----------------------|-------------------------|
| DESIGN     | BY David Soon 4-97    | CHECKED Pat Watz 4-97   |
| DETAILS    | BY Ralph Nakooka 4-97 | CHECKED David Soon 4-97 |
| QUANTITIES | BY David Soon 5-97    | CHECKED Phil Lutz 5-97  |

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
 STRUCTURE DESIGN  
 TOLL BRIDGE SPECIAL ANALYSIS

|            |         |
|------------|---------|
| BRIDGE NO. | 33-0025 |
| POST MILE  | 1.15    |

INTERIM SEISMIC RETROFIT PROJECT  
 EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16  
 SAN FRANCISCO-OAKLAND BAY BRIDGE  
 PIER E13 THRU E16 DETAILS NO. 2

DATE PLOTTED: 9-06-1997 TIME PLOTTED: 05:05:14

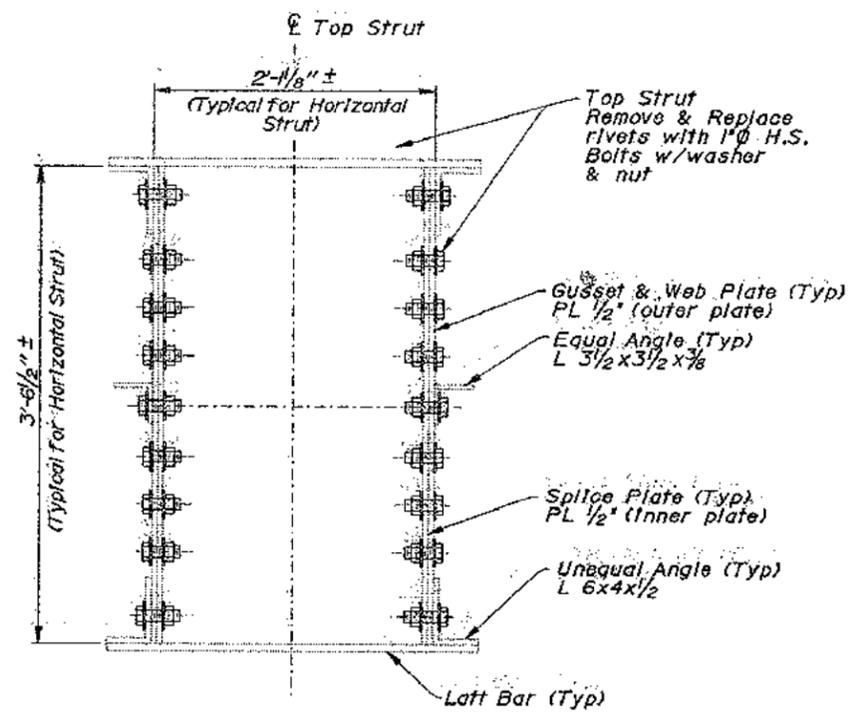
| DIST. | COUNTY  | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|---------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alq | 80    | 7.8/8.9<br>0.0/1.1       | 160       | 205          |

REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 12-8-97  
 PLANS APPROVAL DATE

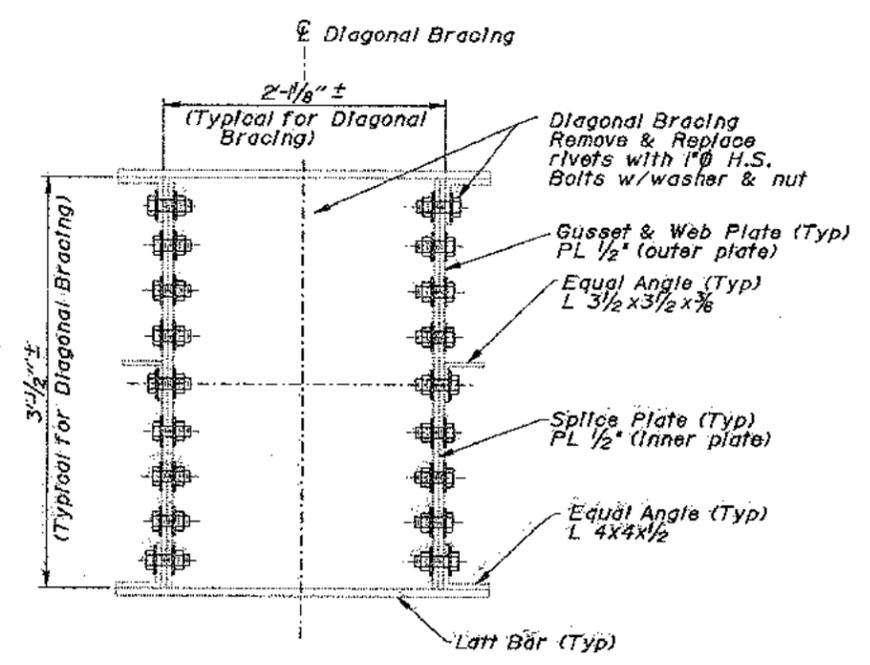
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

**LEGEND**

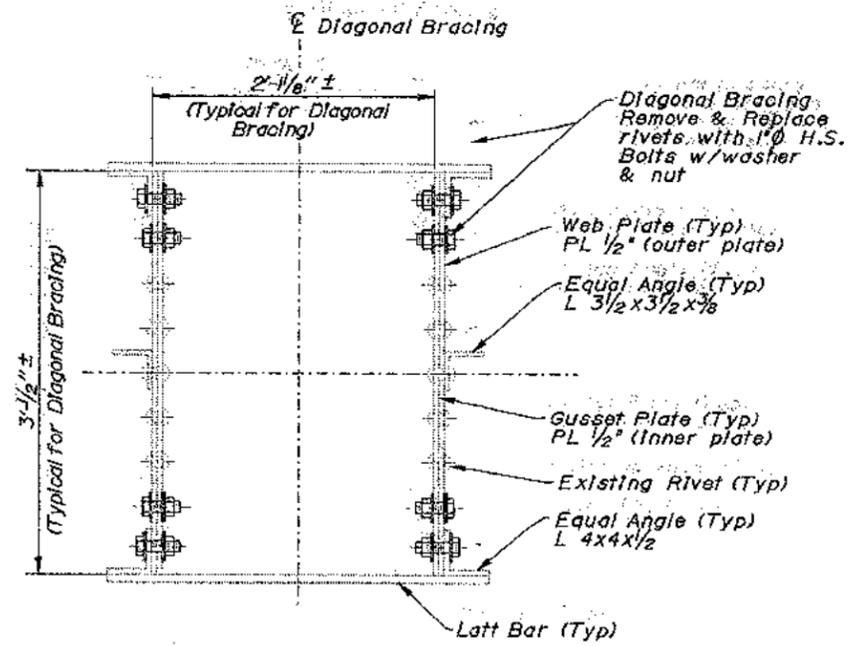
Indicates existing structures.  
 Indicates new structures.



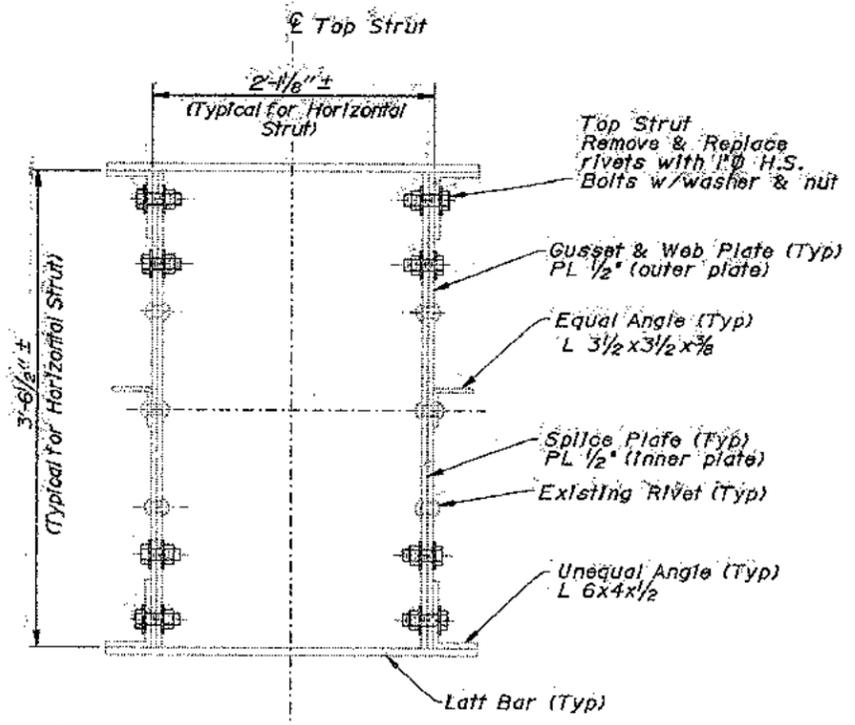
(HORIZONTAL STRUT)  
**SECTION D-D**  
1/2" - 1'-0"



(DIAGONAL BRACING)  
**SECTION E-E**  
1/2" - 1'-0"



(DIAGONAL BRACING)  
**SECTION F-F**  
1/2" - 1'-0"



(HORIZONTAL STRUT)  
**SECTION G-G**  
1/2" - 1'-0"

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

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO-OAKLAND BAY BRIDGE**  
**PIERS E10 THRU E16 DETAILS**

|            |                       |                         |
|------------|-----------------------|-------------------------|
| DESIGN     | BY David Soon 4-97    | CHECKED Pat Watz 4-97   |
| DETAILS    | BY Ralph Nakaoka 4-97 | CHECKED David Soon 4-97 |
| QUANTITIES | BY David Soon 5-97    | CHECKED Pat Watz 5-97   |

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

|            |         |
|------------|---------|
| BRIDGE NO. | 33-0025 |
| POST MILE  | 1.15    |

| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|-------------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alameda | 80    | 7.8/8.9, 0.0/1.1         | 161       | 205          |

David Soon  
REGISTERED ENGINEER - CIVIL  
October 21, 1997

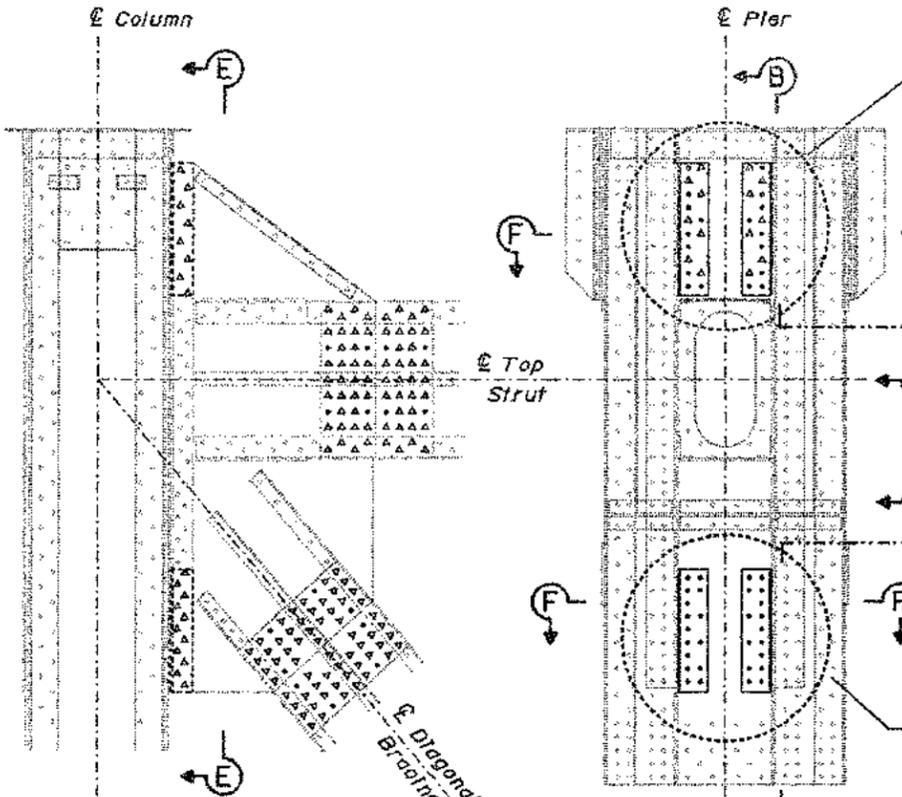
12-8-97  
PLANS APPROVAL DATE

DAVID SOON  
No. 51862  
Exp. 8-30-98  
CIVIL  
STATE OF CALIFORNIA

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

**LEGEND**

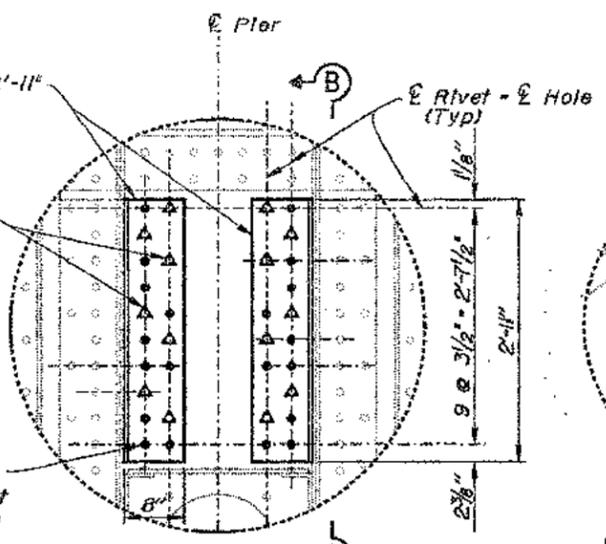
- Indicates existing structures.
- Indicates new structures.
- Indicates new 1"  $\phi$  high strength bolts.
- ▲ Indicates existing rivets to be removed and replaced with new 1"  $\phi$  high strength bolts, in existing holes.
- Indicates approx. location of existing rivets.



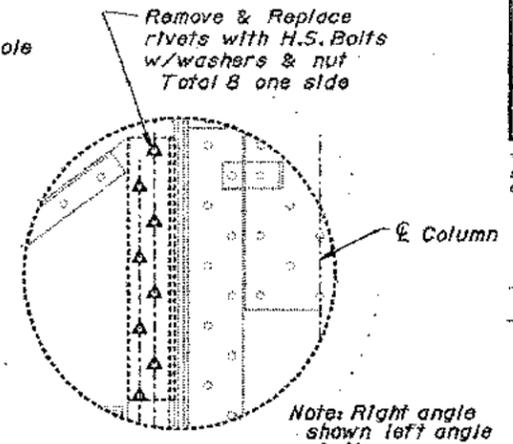
(PIER E10)  
**PART TYPICAL**  
 $\frac{1}{2}'' = 1'-0''$

(PIER E10)  
**VIEW E-E**  
 $\frac{1}{2}'' = 1'-0''$

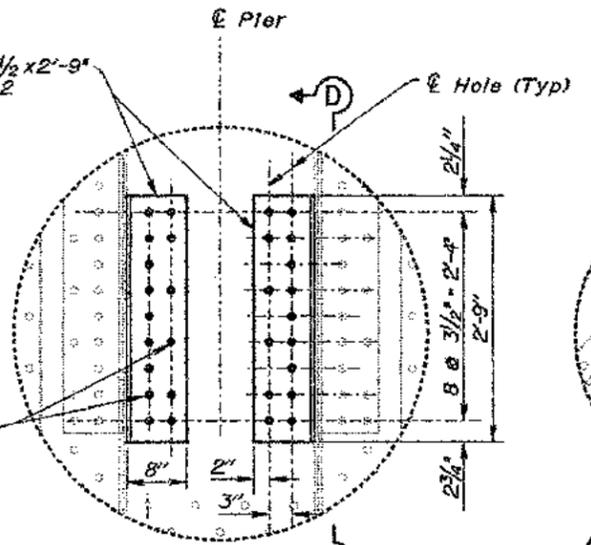
- Notes:
1. Detail are symmetrical about centerline of bridge.
  2. Pier E10 shown, Piers E12, E13, E14, E15 & E16 similar.
  3. Top left joint shown, top right joint similar.
  4. For clarity not all details shown.
  5. For VIEW F-F see TOP OF GUSSET CONNECTION DETAILS NO. 2 sheet.



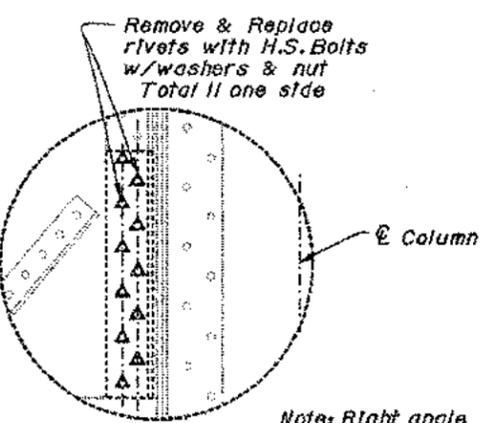
(PIER E10)  
**DETAIL A**  
 $1'' = 1'-0''$



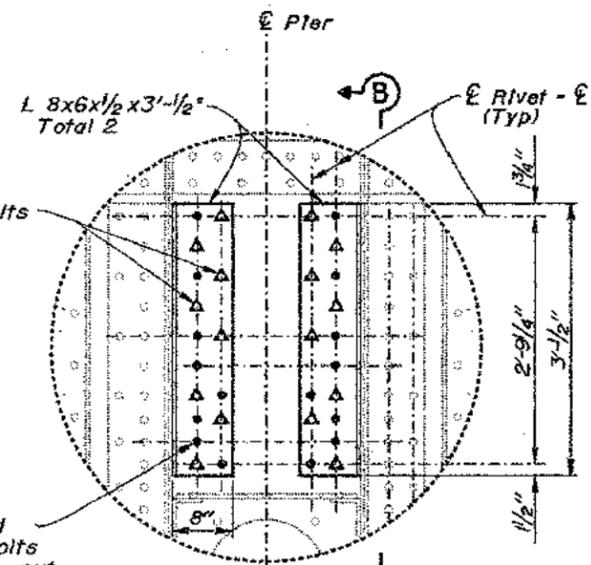
(PIER E10)  
**VIEW B-B**  
 $1'' = 1'-0''$



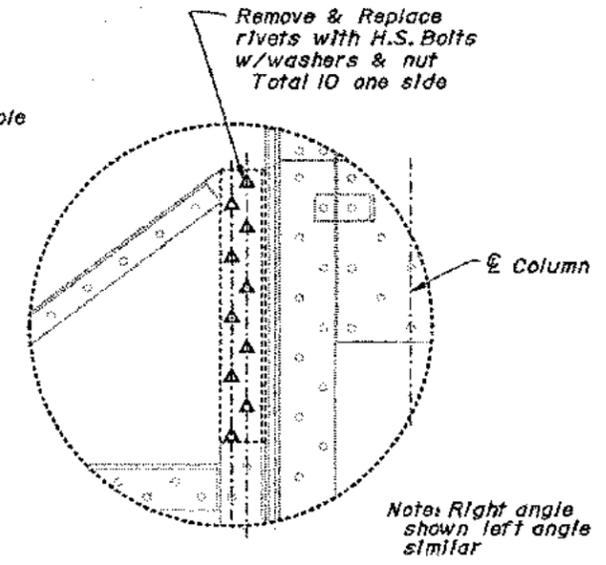
(PIER E10)  
**DETAIL C**  
 $1'' = 1'-0''$



(PIER E10)  
**VIEW D-D**  
 $1'' = 1'-0''$



(PIER E12)  
**DETAIL A**  
 $1'' = 1'-0''$



(PIER E12)  
**VIEW B-B**  
 $1'' = 1'-0''$

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

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO-OAKLAND BAY BRIDGE**  
**TOP OF PIER GUSSET CONNECTION DETAILS NO. 1**

|            |                       |                           |                    |
|------------|-----------------------|---------------------------|--------------------|
| DESIGN     | BY Pat Watz 4-97      | CHECKED David Soon 4-97   | BRIDGE NO. 33-0025 |
| DETAILS    | BY Ralph Nakaoka 4-97 | CHECKED David Soon 4-97   | POST MILE 1.15     |
| QUANTITIES | BY David Soon 5-97    | CHECKED E.T. Zachlin 5-97 |                    |

| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|-------------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alameda | 80    | 7.878, 9.0, 0.071, 1.1   | 162       | 205          |

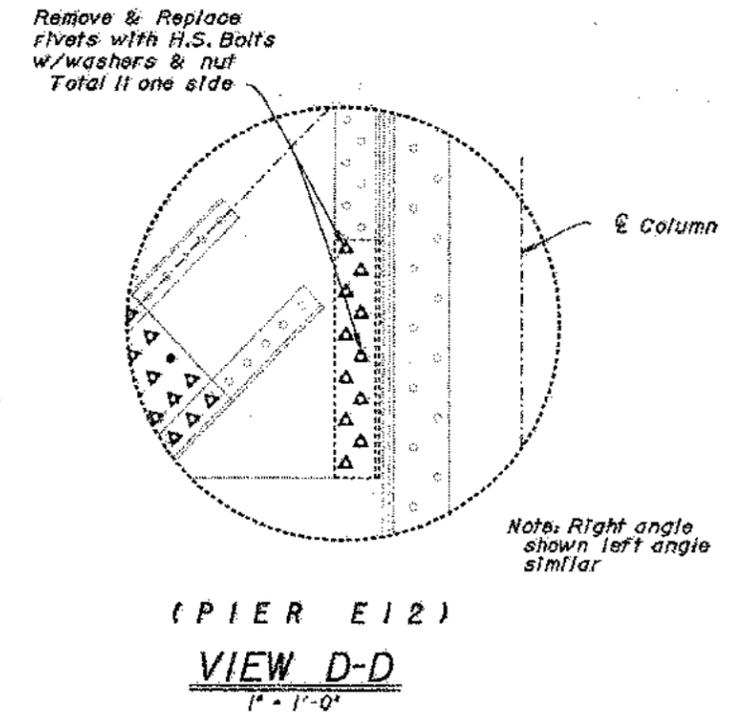
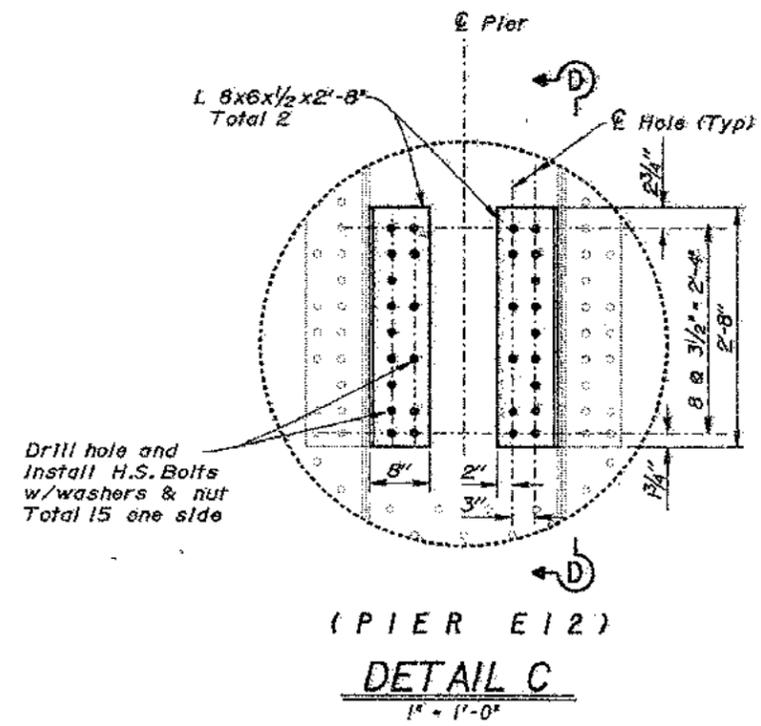
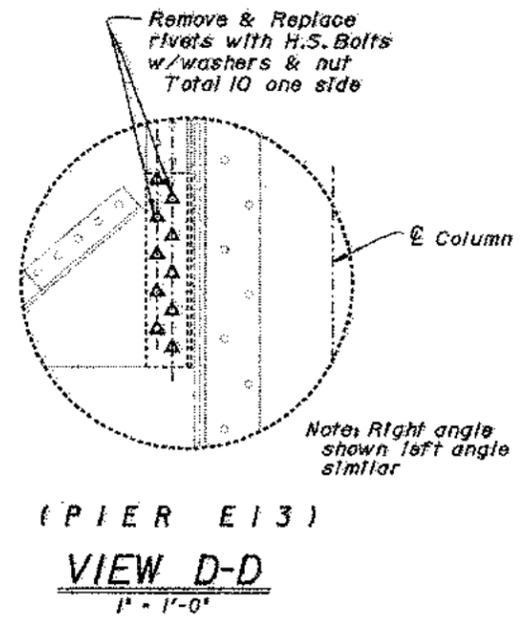
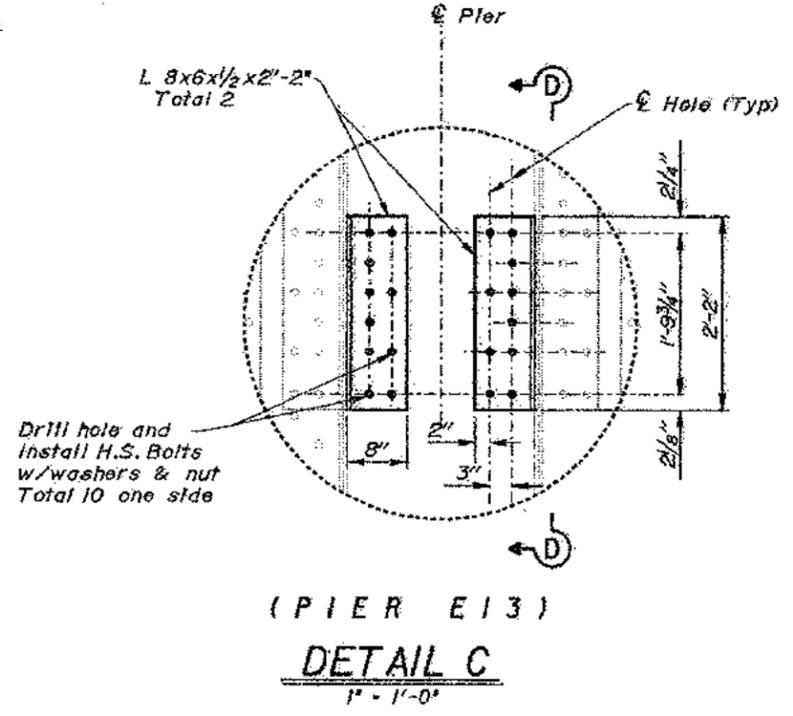
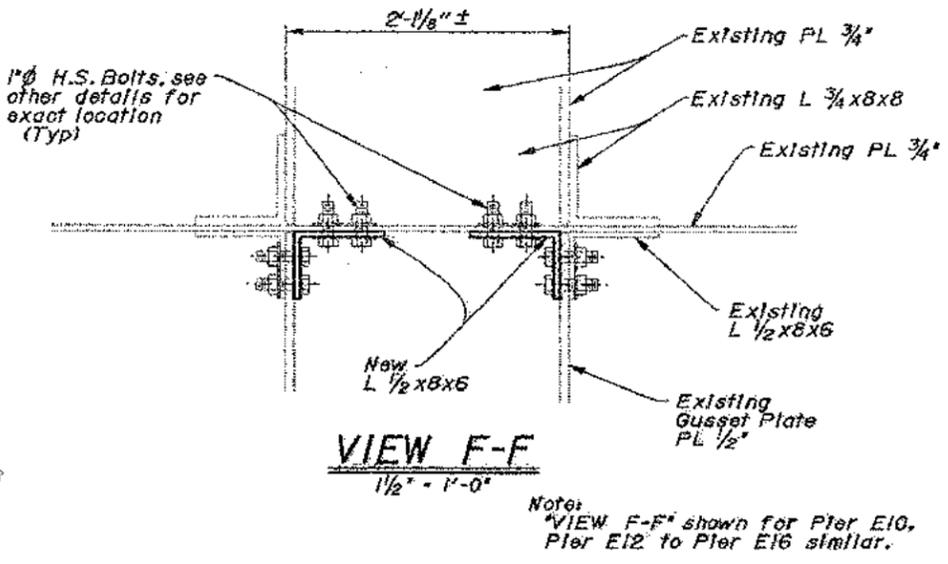
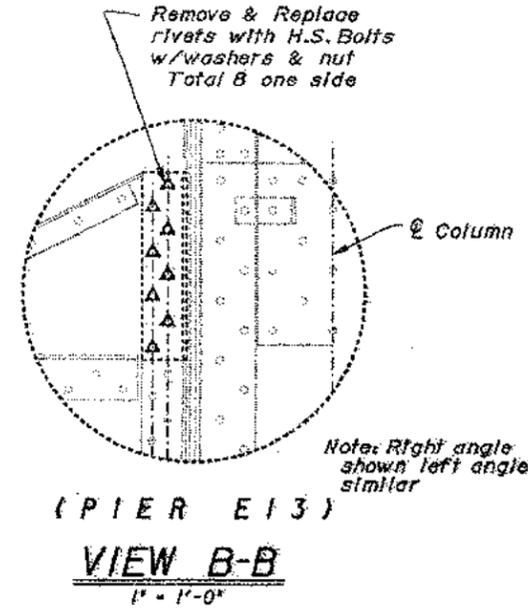
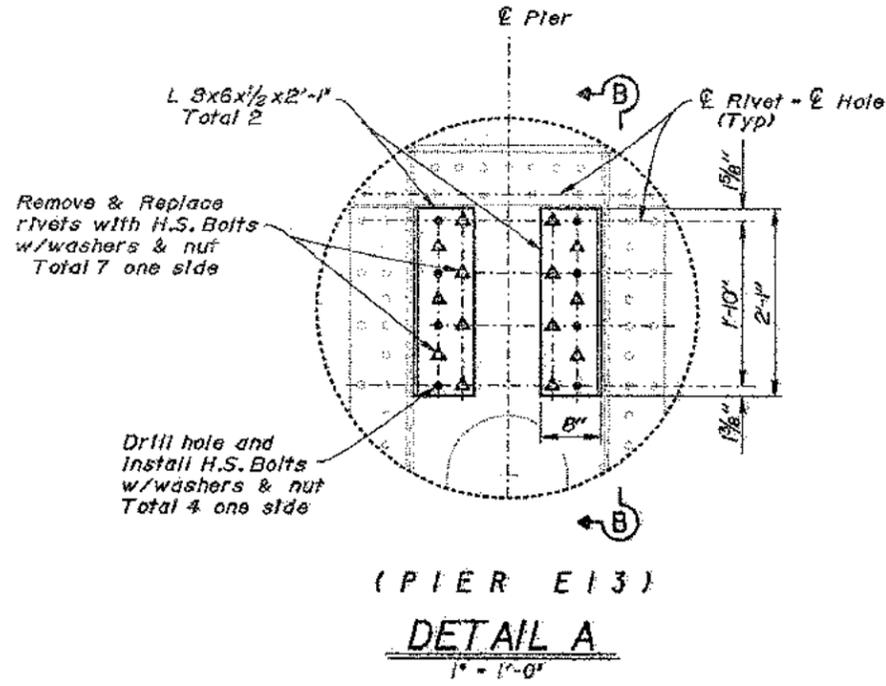
**David Soon**  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997

PROFESSIONAL ENGINEER  
 DAVID SOON  
 No. 51852  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA

12-8-97  
 PLANS APPROVAL DATE

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

- LEGEND**
- Indicates existing structures.
  - Indicates new structures.
  - Indicates new 1" high strength bolts.
  - ▲ Indicates existing rivets to be removed and replaced with new 1" high strength bolts, in existing holes.
  - Indicates approx. location of existing rivets.



Note: For "DETAIL A" & "DETAIL C" locations, see "TOP OF PIER GUSSET CONNECTION DETAILS NO. 1" sheet.

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

INTERIM SEISMIC RETROFIT PROJECT  
 EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16  
 SAN FRANCISCO-OAKLAND BAY BRIDGE  
 TOP OF PIER GUSSET CONNECTION DETAILS NO. 2

|            |                        |                            |   |
|------------|------------------------|----------------------------|---|
| DESIGN     | BY Pat Natz 4-97       | CHECKED David Soon 4-97    | BRIDGE NO. 33-0025                              |
| DETAILS    | BY Ralph Nakagawa 4-97 | CHECKED David Soon 4-97    | POST MILE 1.15                                  |
| QUANTITIES | BY David Soon 5-97     | CHECKED E. T. Zechlin 5-97 | DISBURSED PRINTS BEARING EARLIER REVISION DATES |

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
 STRUCTURE DESIGN  
 TOLL BRIDGE SPECIAL ANALYSIS

CU 04  
 EA 043001

REVISION DATES (PRELIMINARY STAGE ONLY)

DATE PLOTTED: 9-Dec-1997  
 TIME PLOTTED: 09:15

US 050 209 10/00 10/99

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

USERNAME: ym10051  
 001r1102\_05083441

| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|-------------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alameda | 80    | 7.8/8.9, 0.0/1.1         | 163       | 205          |

*David Soon*  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997

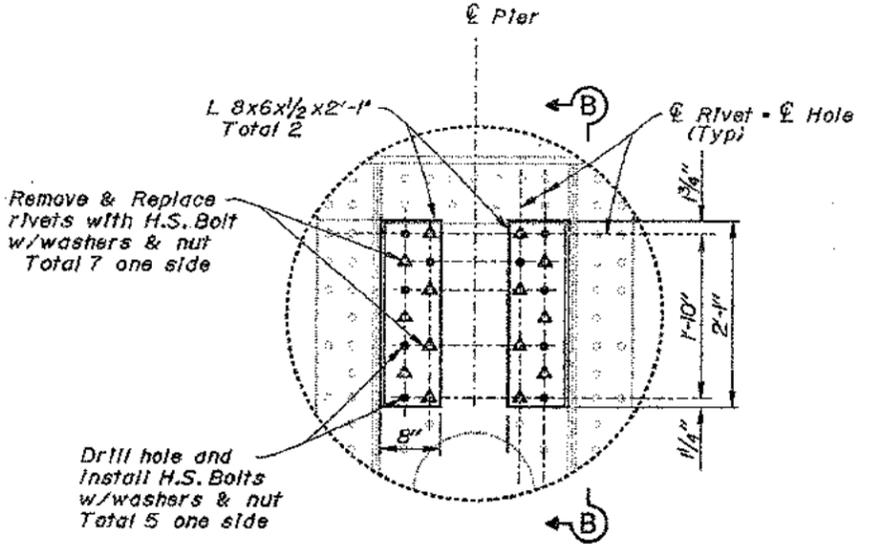
DAVID SOON  
 No. 51862  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE  
 12-8-97

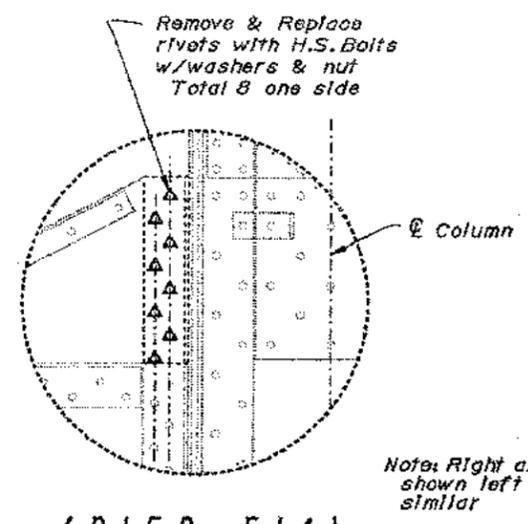
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

**LEGEND**

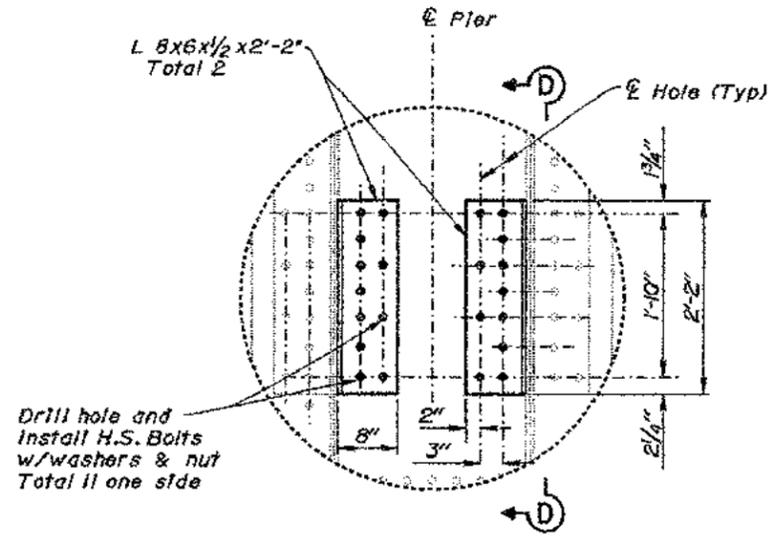
- Indicates existing structures.
- Indicates new structures.
- Indicates new 1" high strength bolts
- ▲ Indicates existing rivets to be removed and replaced with new 1" high strength bolts, in existing holes
- Indicates approx. location of existing rivets



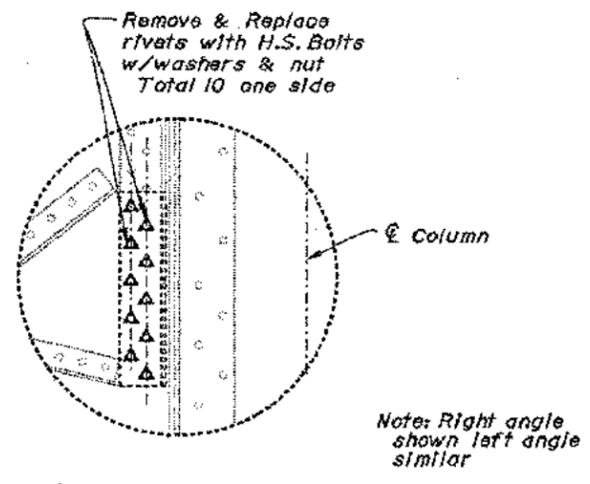
(PIER E14)  
**DETAIL A**  
 1" = 1'-0"



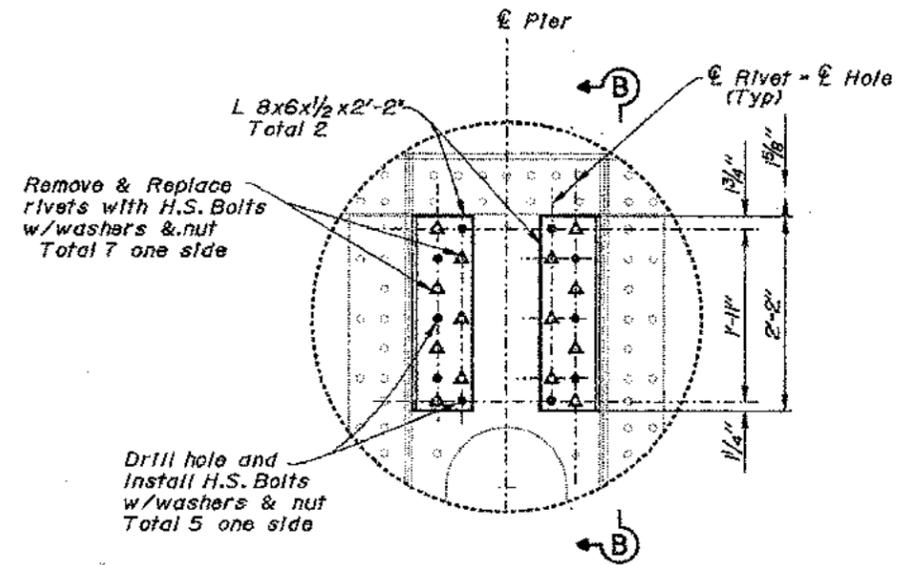
(PIER E14)  
**VIEW B-B**  
 1" = 1'-0"



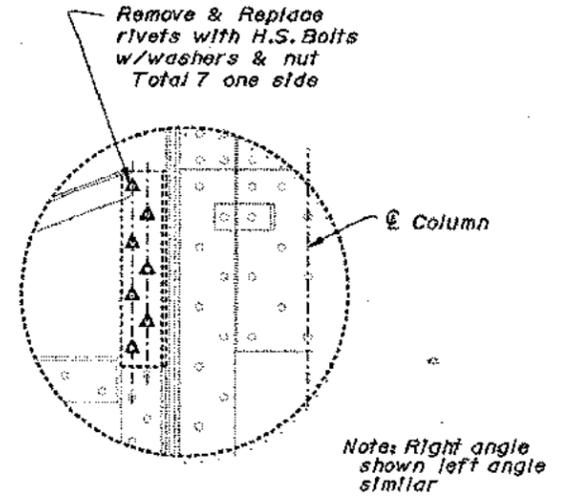
(PIER E14)  
**DETAIL C**  
 1" = 1'-0"



(PIER E14)  
**VIEW D-D**  
 1" = 1'-0"



(PIER E15)  
**DETAIL A**  
 1" = 1'-0"



(PIER E15)  
**VIEW B-B**  
 1" = 1'-0"

Note:  
 For "DETAIL A" & "DETAIL C" locations,  
 see "TOP OF PIER GUSSET CONNECTION  
 DETAILS NO. 1" sheet.

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

INTERIM SEISMIC RETROFIT PROJECT  
 EAST BAY 208 TRUSSES SPAN E9 TO SPAN E16  
 SAN FRANCISCO-OAKLAND BAY BRIDGE  
 TOP OF PIER GUSSET CONNECTION DETAILS NO. 3

|               |                |      |            |              |      |                              |                              |            |         |
|---------------|----------------|------|------------|--------------|------|------------------------------|------------------------------|------------|---------|
| DESIGN BY     | Pat Watz       | 4-97 | CHECKED BY | David Soon   | 4-97 | STATE OF CALIFORNIA          | DIVISION OF STRUCTURES       | BRIDGE NO. | 33-0025 |
| DETAILS BY    | Ralph Nakagawa | 4-97 | CHECKED BY | David Soon   | 4-97 | DEPARTMENT OF TRANSPORTATION | STRUCTURE DESIGN             | POST MILE  | 1.15    |
| QUANTITIES BY | David Soon     | 5-97 | CHECKED BY | E.T. Zechlin | 5-97 |                              | TOLL BRIDGE SPECIAL ANALYSIS |            |         |

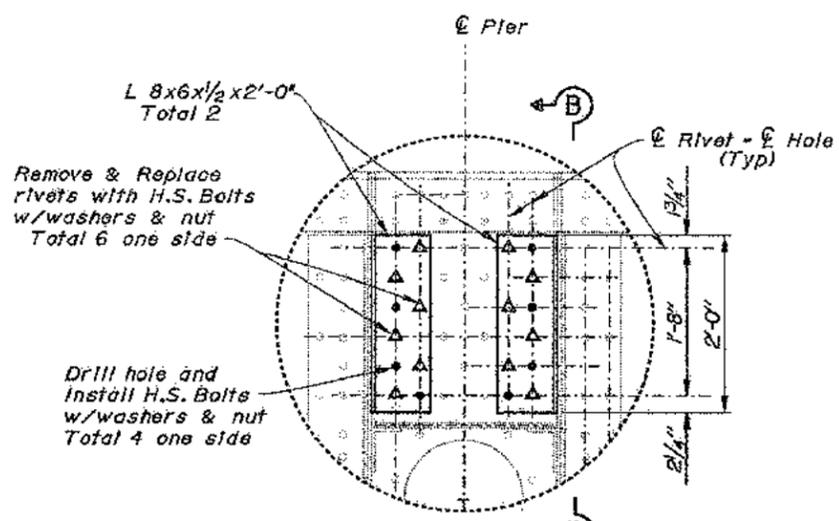
| DIST. | COUNTY  | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|---------|-------|--------------------------|-----------|--------------|
| 04    | SF, Ala | 80    | 7.8/8.9,<br>0.0/1.1      | 164       | 205          |

  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 12-8-97  
 PLANS APPROVAL DATE

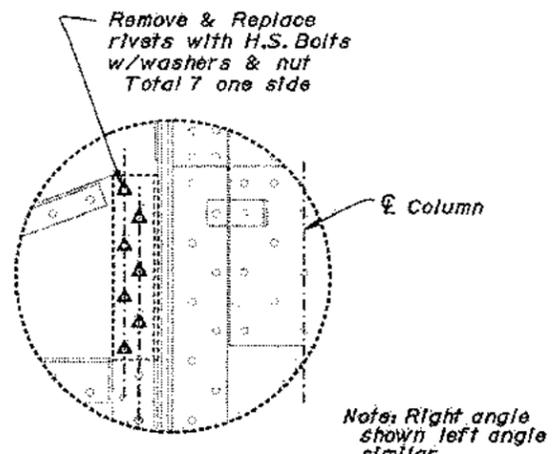


**LEGEND**

- Indicates existing structures.
- Indicates new structures.
- Indicates new 1" high strength bolts.
- ▲ Indicates existing rivets to be removed and replaced with new 1" high strength bolts, in existing holes.
- Indicates approx. location of existing rivets.



(PIER E16)  
**DETAIL A**  
1" = 1'-0"

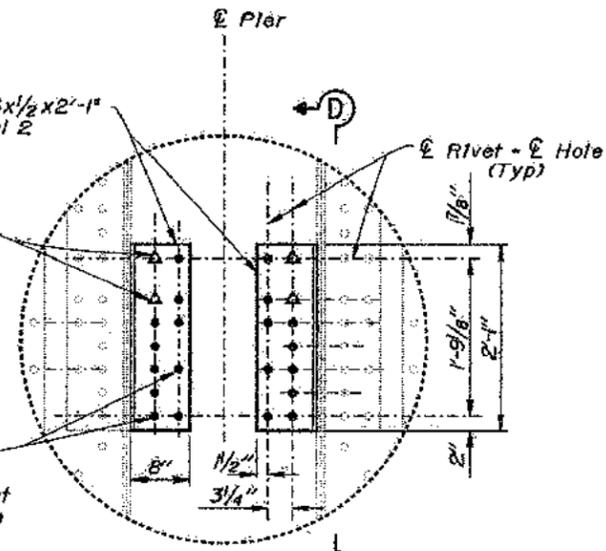


(PIER E16)  
**VIEW B-B**  
1" = 1'-0"

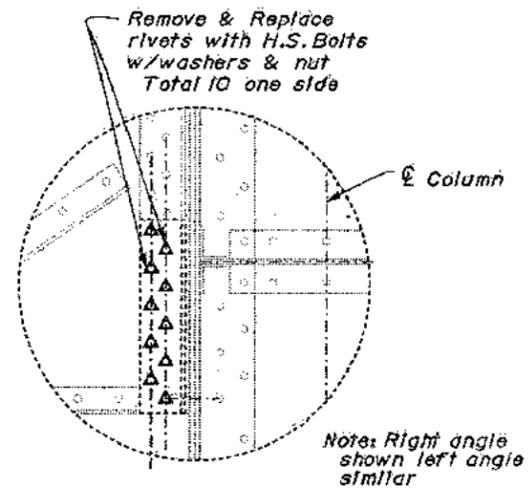
Note: Right angle shown left angle similar

Remove & Replace rivets with H.S. Bolts w/washers & nut Total 2 one side

Drill hole and Install H.S. Bolts w/washers & nut Total 10 one side



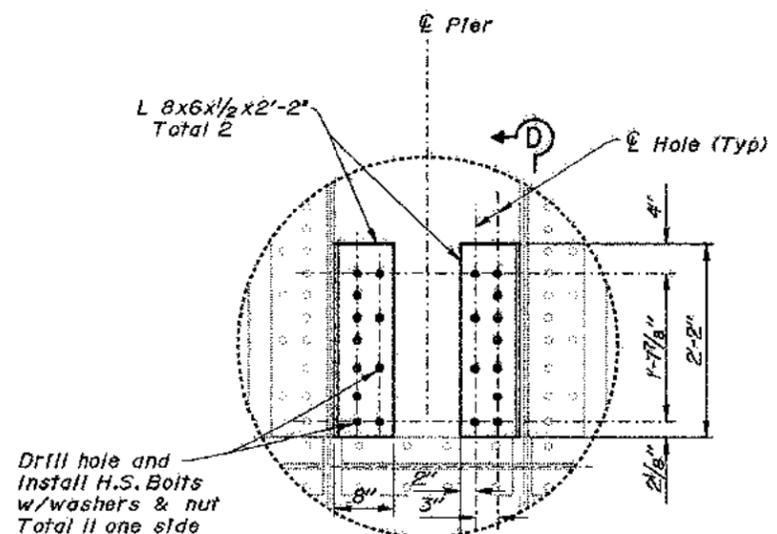
(PIER E15)  
**DETAIL C**  
1" = 1'-0"



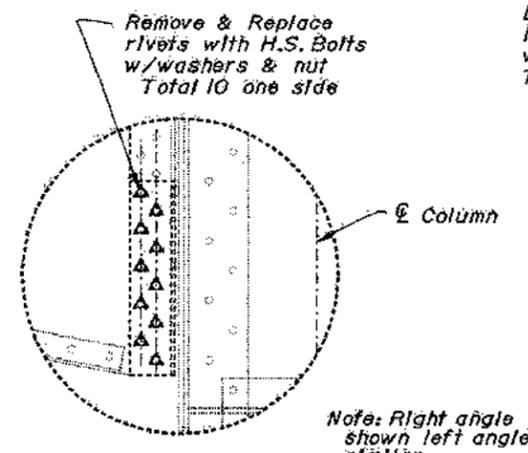
(PIER E15)  
**VIEW D-D**  
1" = 1'-0"

Note: Right angle shown left angle similar

Note: For "DETAIL A" & "DETAIL C" locations, see "TOP OF PIER GUSSET CONNECTION DETAILS NO. 1" sheet.



(PIER E16)  
**DETAIL C**  
1" = 1'-0"



(PIER E16)  
**VIEW D-D**  
1" = 1'-0"

Note: Right angle shown left angle similar

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

|            |                   |      |                      |      |
|------------|-------------------|------|----------------------|------|
| DESIGN     | BY Pat Watz       | 4-97 | CHECKED David Soon   | 4-97 |
| DETAILS    | BY Ralph Nakagawa | 4-97 | CHECKED David Soon   | 4-97 |
| QUANTITIES | BY David Soon     | 5-97 | CHECKED E.T. Zechlin | 5-97 |

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

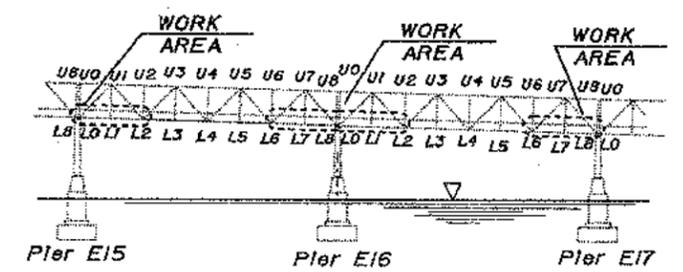
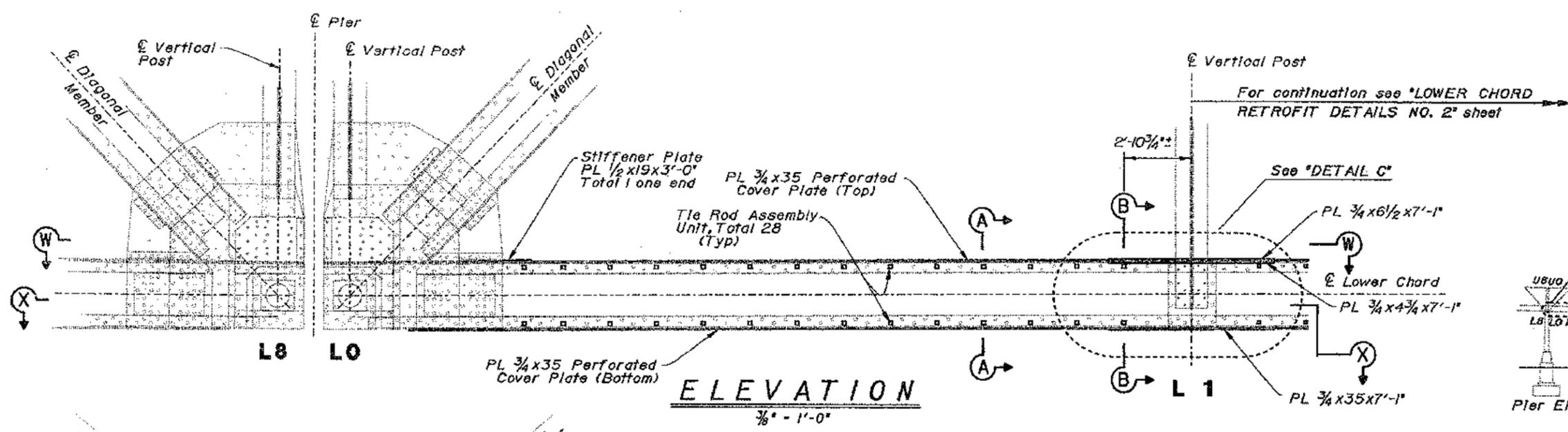
|            |         |
|------------|---------|
| BRIDGE NO. | 33-0025 |
| POST MILE  | 1.15    |

INTERIM SEISMIC RETROFIT PROJECT  
 EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16  
 SAN FRANCISCO-OAKLAND BAY BRIDGE  
 TOP OF PIER GUSSET CONNECTION DETAILS NO. 4

|       |             |       |                          |           |              |
|-------|-------------|-------|--------------------------|-----------|--------------|
| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 04    | SF, Alameda | 80    | 7.8/8.9, 0.0/1.1         | 165       | 205          |

David Soon  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 12-8-97  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA  
 REGISTERED PROFESSIONAL ENGINEER  
 DAVID SOON  
 No. 52364  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA



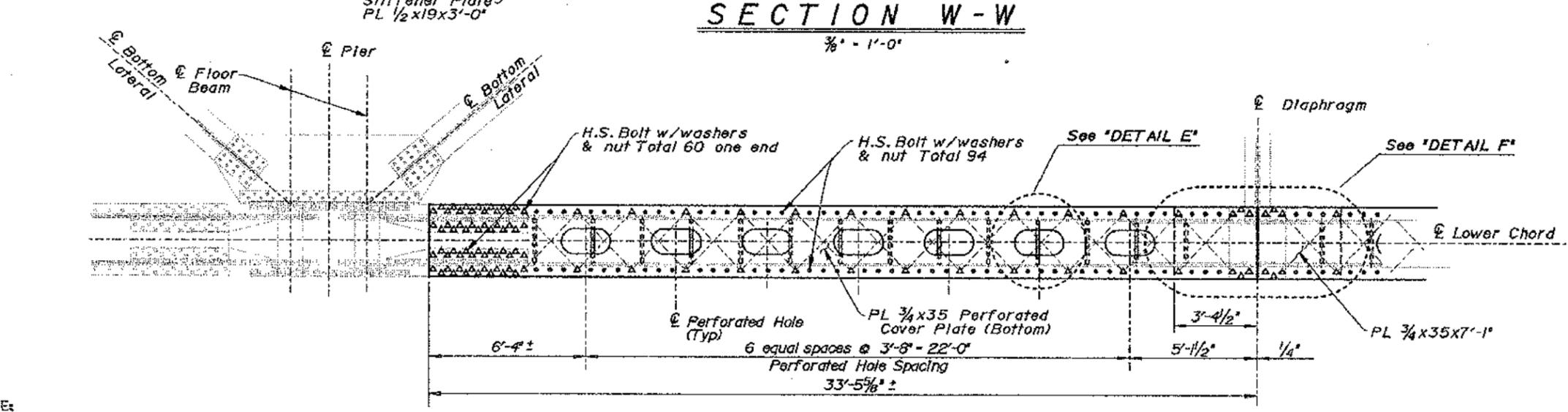
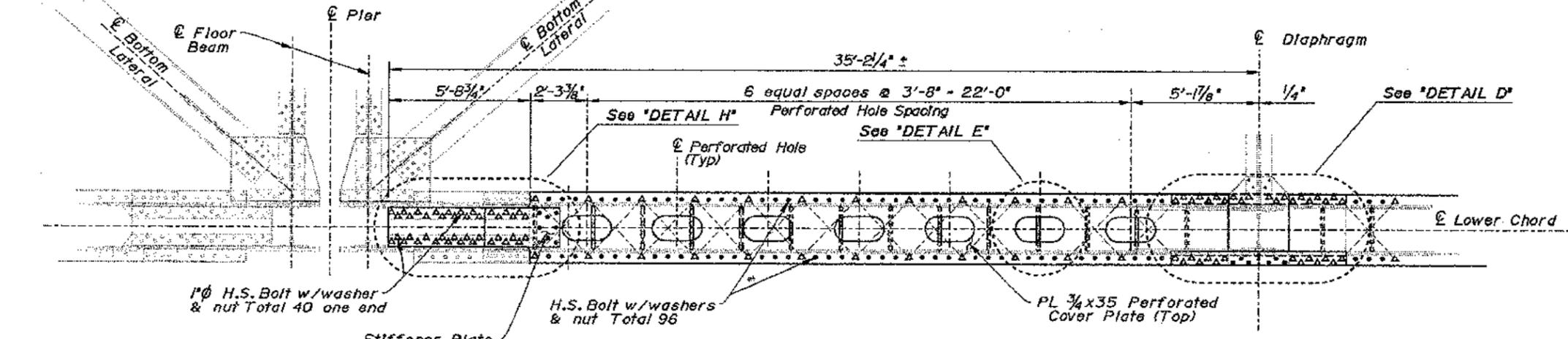
- LEGEND**
- Indicates existing structures.
  - - - Indicates new structures.
  - Indicates new 1" high strength bolts.
  - ▲ Indicates existing rivets to be removed and replaced with new 1" high strength bolts, in existing holes.
  - Indicates approx. location of existing rivets.
  - Indicates existing rivets to be removed and replaced with new tie rod assembly unit.

**Installation Procedure:**  
 All Tie Rod Assemblies to be installed before removal of rivets, lacing bars, or plates.

- Notes:**
- For SECTION A-A and SECTION B-B see "LOWER CHORD RETROFIT DETAILS NO. 3" sheet.
  - For DETAIL C, DETAIL D, DETAIL E and DETAIL F see "LOWER CHORD RETROFIT DETAILS NO. 3" sheet.
  - For DETAIL H, see "LOWER CHORD RETROFIT DETAILS NO. 4" sheet.
  - Lower chord retrofit for Span E15 "L7"-L8" and Span E16 "L7"-L8" are symmetric about centerline of span to lower chord retrofit for Span E15 "L0"-L1" and Span E16 "L0"-L1".
  - South truss shown, North truss symmetrical about centerline of bridge.
  - Paint traveler support bars and deck drains attached to lower chord not shown. Temporarily remove support bars for retrofit and reattach as approved by Engineer.

SPAN E15 "L0"-L1" - SPAN E16 "L0"-L1"  
 SPAN E15 "L7"-L8" - SPAN E16 "L7"-L8"  
 NORTH & SOUTH TRUSSES

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO-OAKLAND BAY BRIDGE**  
**LOWER CHORD RETROFIT DETAILS NO. 1**



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

|            |                         |                         |   |                              |                    |
|------------|-------------------------|-------------------------|---|------------------------------|--------------------|
| DESIGN     | BY: Gerrard Hight 3-97  | CHECKED: Phil Lutz 3-97 | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES       | BRIDGE NO. 33-0025 |
| DETAILS    | BY: Ralph Nakagawa 3-97 | CHECKED: Phil Lutz 3-97 |   | STRUCTURE DESIGN             | POST MILE 1.5      |
| QUANTITIES | BY: Phil Lutz 5-97      | CHECKED: Pat Lutz 5-97  |   | TOLL BRIDGE SPECIAL ANALYSIS | CU 04 EA 043001    |

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 DISCARD PRINTS BEARING EARLIER REVISION DATES  
 USERNAME -> trmikeal eggr14e1\_09083531

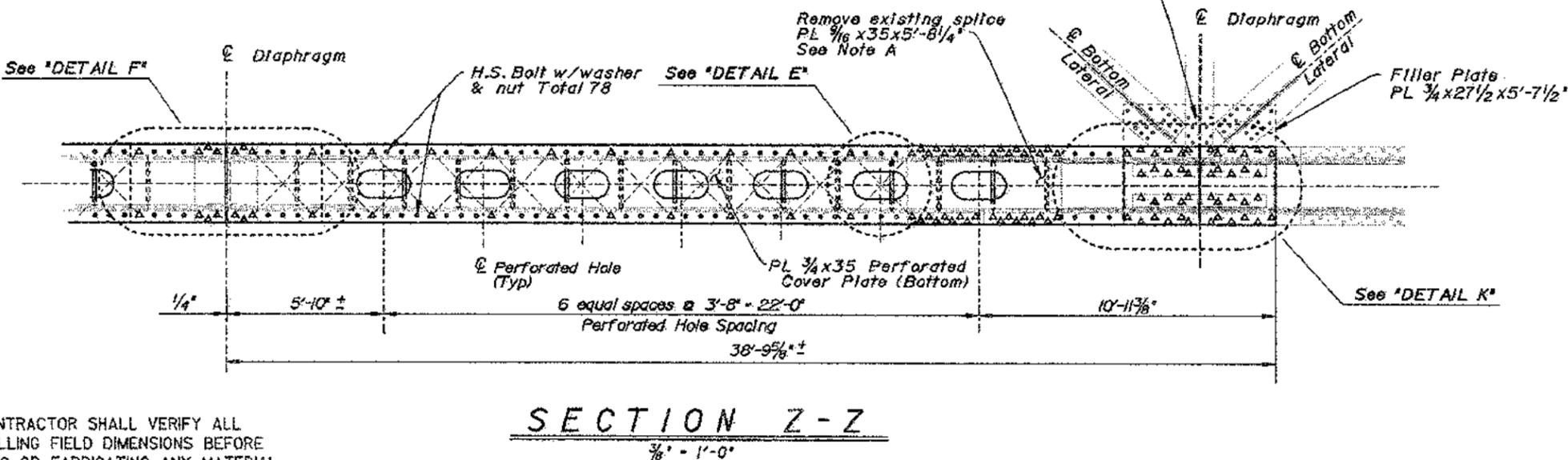
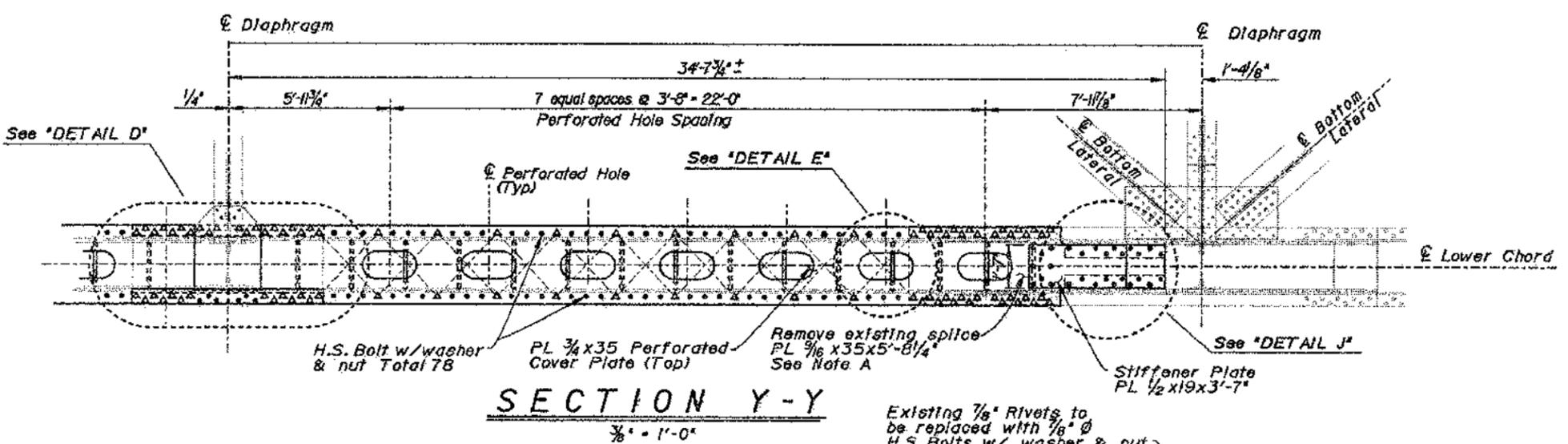
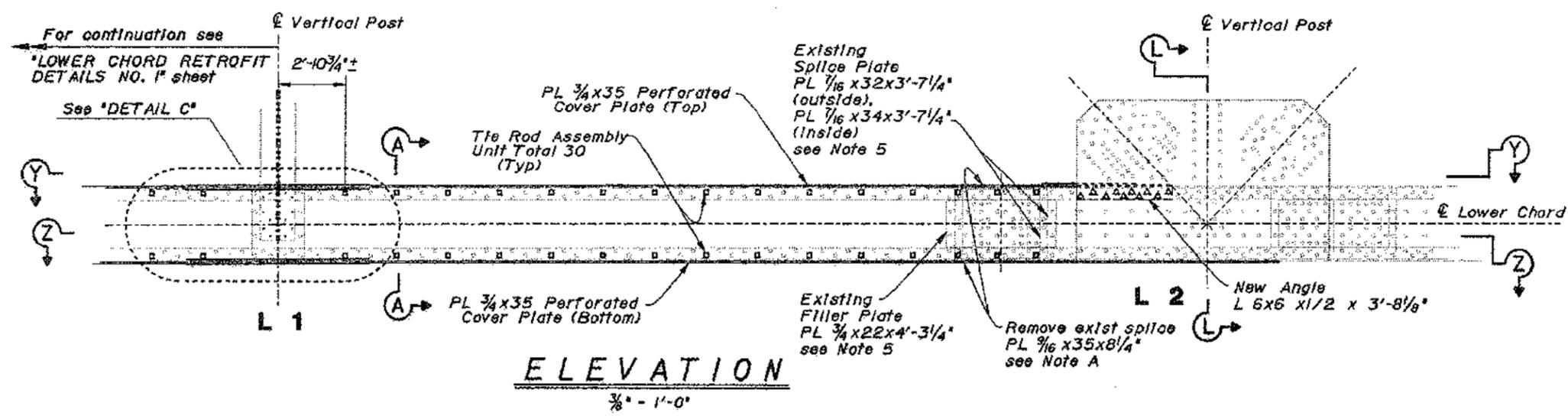
DATE PLOTTED -> 9-06-1997  
 TIME PLOTTED -> 09:18

| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|-------------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alameda | 80    | 7.8/8.9, 0.0/1.1         | 168       | 205          |

David Soon  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 No. 52364  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA

12-8-97  
PLANS APPROVAL DATE

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- LEGEND**
- indicates existing structures.
  - indicates new structures.
  - indicates new 1" Ø high strength bolts.
  - ▲ indicates existing rivets to be removed and replaced with new 1" Ø high strength bolts, in existing holes.
  - indicates approx. location of existing rivets.
  - indicates existing rivets to be removed and replaced with new tie rod assembly unit.

**Installation Procedure:**  
All Tie Rod Assemblies to be installed before removal of rivets, lacing bars, or plates.

- Notes:**
- For "SECTION A-A" and "SECTION B-B" see "LOWER CHORD RETROFIT DETAILS NO. 3" sheet.
  - For "DETAIL C", "DETAIL D", "DETAIL E" and "DETAIL F" see "LOWER CHORD RETROFIT DETAILS NO. 3" sheet.
  - For "DETAIL H" and "DETAIL J" see "LOWER CHORD RETROFIT DETAILS NO. 4" sheet.
  - For "DETAIL K" and "SECTION L-L" see "LOWER CHORD RETROFIT DETAILS NO. 5" sheet.
  - No filler plate and splice plates at Span E15 (L6-L7) and Span E16 (L6-L7).
  - Lower chord retrofit for Span E15 "L6"-L7 and Span E16 "L6"-L7 are symmetrical about centerline of span to lower chord retrofit for Span E15 "L1"-L2 and Span E16 "L1"-L2.
  - South truss shown, North truss symmetrical about the centerline of bridge.
  - Point traveler support bars and deck drains attached to lower chord not shown. Temporarily remove support bars for retrofit and reattach as approved by the Engineer.
  - For work locations see detail "LOCATION MAP" on sheet "LOWER CHORD RETROFIT DETAILS NO. 1"

**Note A:**  
Existing upper & lower PL 3/16 x 35 x 5'-8 1/4" at splice to be removed one at a time to allow continuation of the perforated cover plate.

SPAN E15 "L1"-L2" - SPAN E16, "L1"-L2"  
SPAN E15 "L6"-L7" - SPAN E16 "L6"-L7"  
NORTH & SOUTH TRUSSES

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

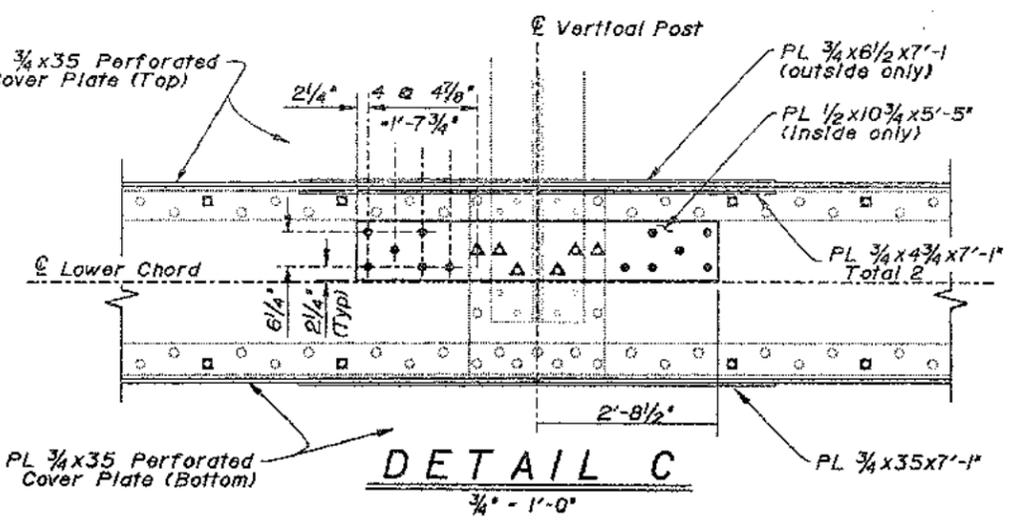
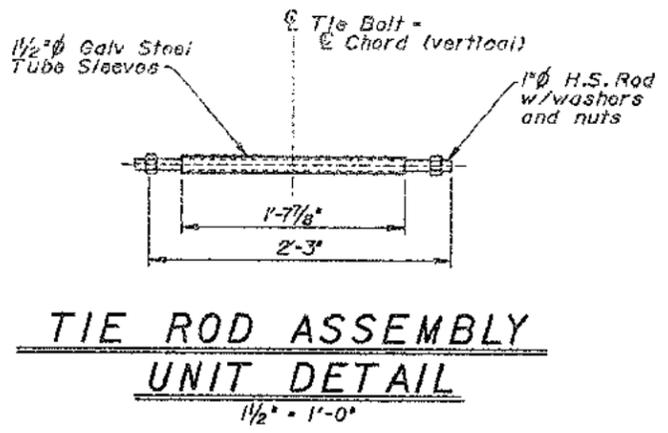
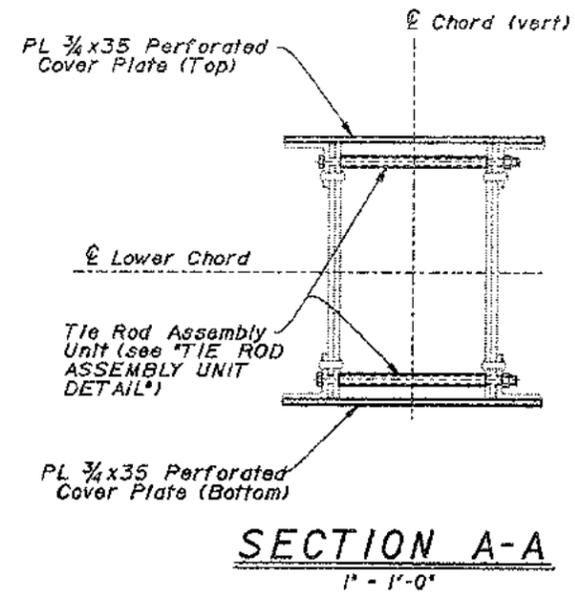
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|------------|--------------------|------|--------------------|------|
| DESIGN     | BY: Gerrard Hight  | 3-97 | CHECKED: Phil Lutz | 3-97 |
| DETAILS    | BY: Ralph Nakagawa | 3-97 | CHECKED: Phil Lutz | 3-97 |
| QUANTITIES | BY: Phil Lutz      | 5-97 | CHECKED: Pat Watz  | 5-97 |

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
STRUCTURE DESIGN  
TOLL BRIDGE SPECIAL ANALYSIS

|                                    |         |                                  |
|------------------------------------|---------|----------------------------------|
| BRIDGE NO.                         | 33-0025 | SAN FRANCISCO-OAKLAND BAY BRIDGE |
| POST MILE                          | 1.5     |                                  |
| LOWER CHORD RETROFIT DETAILS NO. 2 |         |                                  |

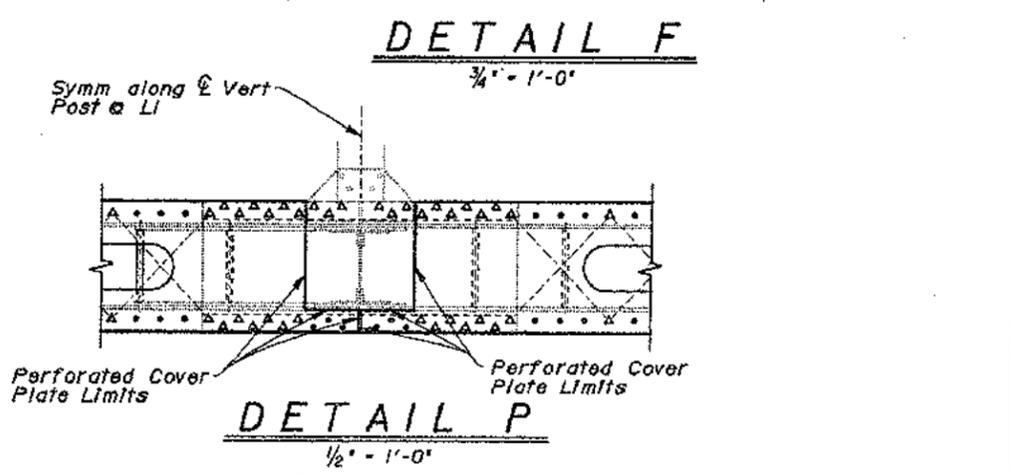
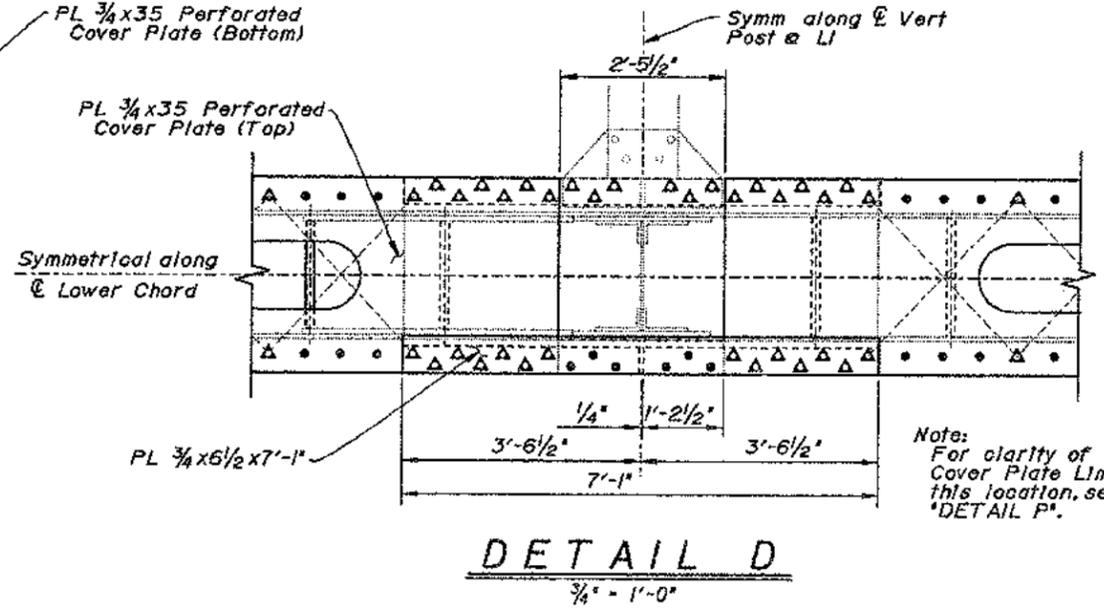
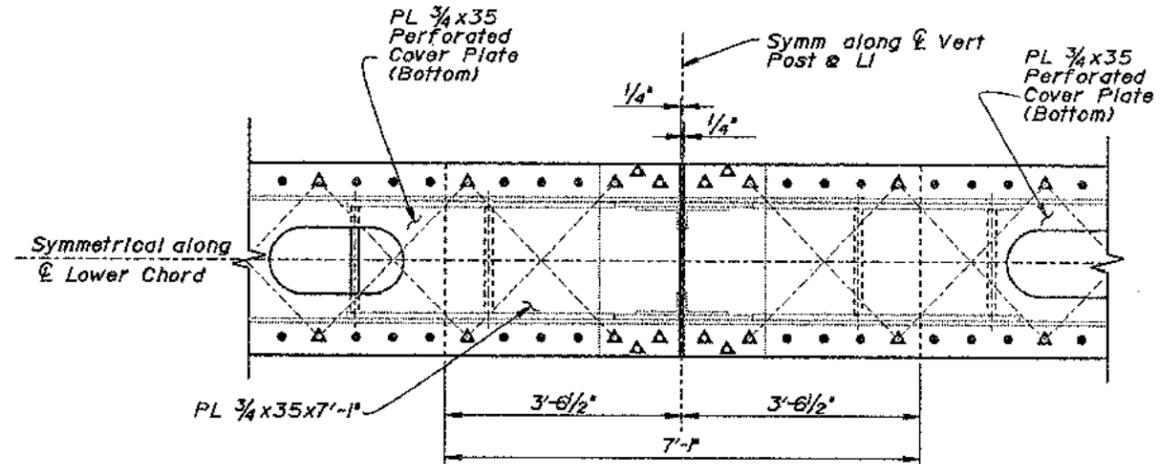
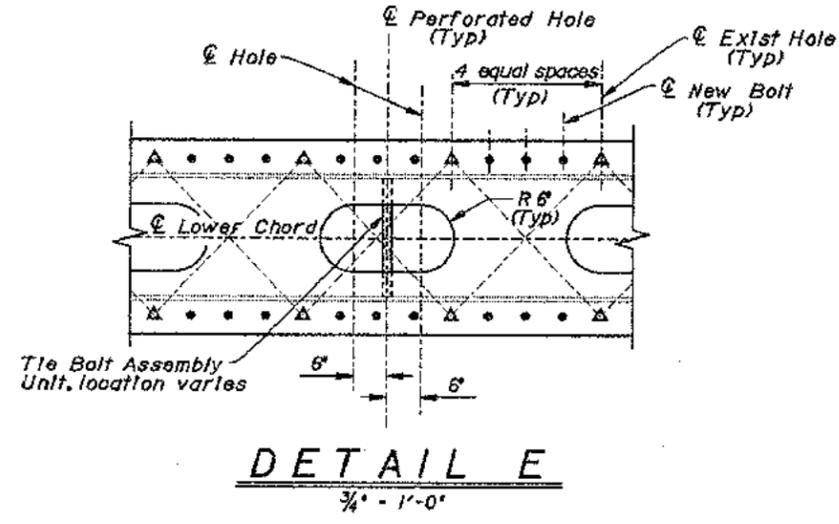
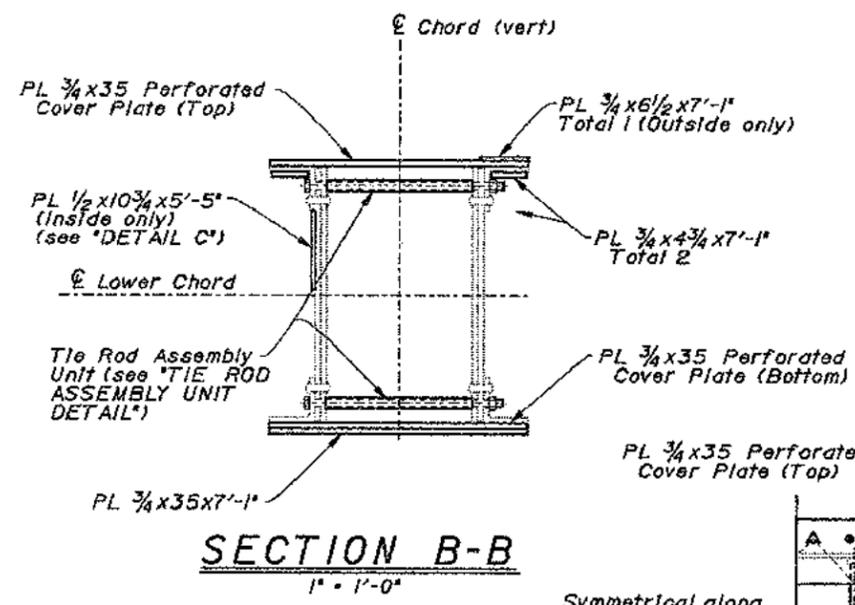
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|--------------------------------|-------------|-------|--------------------------|-----------|--------------|
| DIST.                          | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 04                             | SF, Alameda | 80    | 7.8/8.9, 0.0/1.1         | 167       | 205          |
|                                |             |       |                          |           |              |
| 12-8-97<br>PLANS APPROVAL DATE |             |       |                          |           |              |



- LEGEND**
- Indicates existing structures.
  - Indicates new structures.
  - Indicates new 1" high strength bolts.
  - ▲ Indicates existing rivets to be removed and replaced with new 1" high strength bolts, in existing holes.
  - Indicates approx. location of existing rivets.
  - Indicates existing rivets to be removed and replaced with new tie rod assembly unit.

**Notes:**

- For locations for "SECTION A-A" and "SECTION B-B" see "LOWER CHORD RETROFIT DETAILS NO. 1" sheet.
- For locations for "DETAIL D", "DETAIL E" and "DETAIL F" see "LOWER CHORD RETROFIT DETAILS NO. 1" and "LOWER CHORD RETROFIT DETAILS NO. 2" sheets.



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

|  |  |   |  |   |  |   |                  |  |  |
|--|--|---|--|---|--|---|------------------|--|--|
| DESIGN BY: Gerrard Hight 3-97              |  | CHECKED BY: Phil Lutz 3-97                    |  | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN | BRIDGE NO.<br>33-0025                   | POST MILE<br>1.5 | INTERIM SEISMIC RETROFIT PROJECT         |  |
| DETAILS BY: Ralph Nakaoka/PL 3-97          |  | CHECKED BY: Phil Lutz 3-97                    |  |   |  |   |                  | EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16 |  |
| QUANTITIES BY: Phil Lutz 9-97              |  | CHECKED BY: Pat Watz 9-97                     |  |   |  |   |                  | SAN FRANCISCO-OAKLAND BAY BRIDGE         |  |
| ORIGINAL SCALE IN INCHES FOR REDUCED PLANS |  | DISCARD PRINTS BEARING EARLIER REVISION DATES |  | TOLL BRIDGE SPECIAL ANALYSIS                        |  | REVISION DATES (PRELIMINARY STAGE ONLY) |                  | LOWER CHORD RETROFIT DETAILS NO. 3       |  |
| DS OSD 2539 (CADD 3/95)                    |  | USERNAME -> trlenard<br>egq1r16e3.09101843    |  | CUJ 04<br>EA 043001                                 |  | SHEET 16 OF 38                          |                  |  |  |

| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|-------------|-------|--------------------------|-----------|--------------|
| 04    | SF, Alameda | 80    | 7.8/8.9<br>0.6/1.1       | 168       | 205          |

*David Sison*  
REGISTERED ENGINEER - CIVIL  
October 21, 1997

DAVID SISON  
No. 5162  
Exp. 6-30-98  
CIVIL  
STATE OF CALIFORNIA

12-8-97  
PLANS APPROVAL DATE

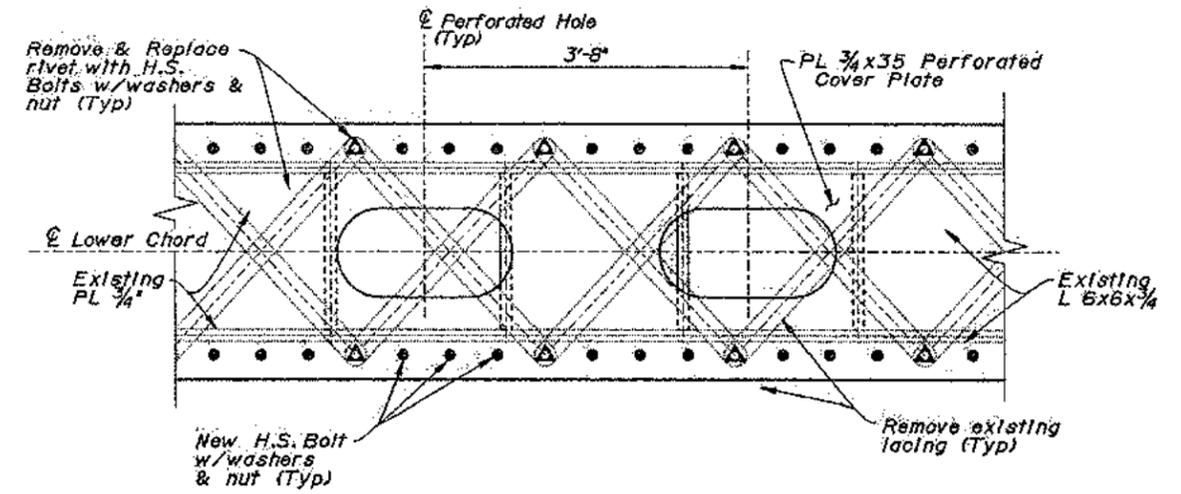
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

**LEGEND**

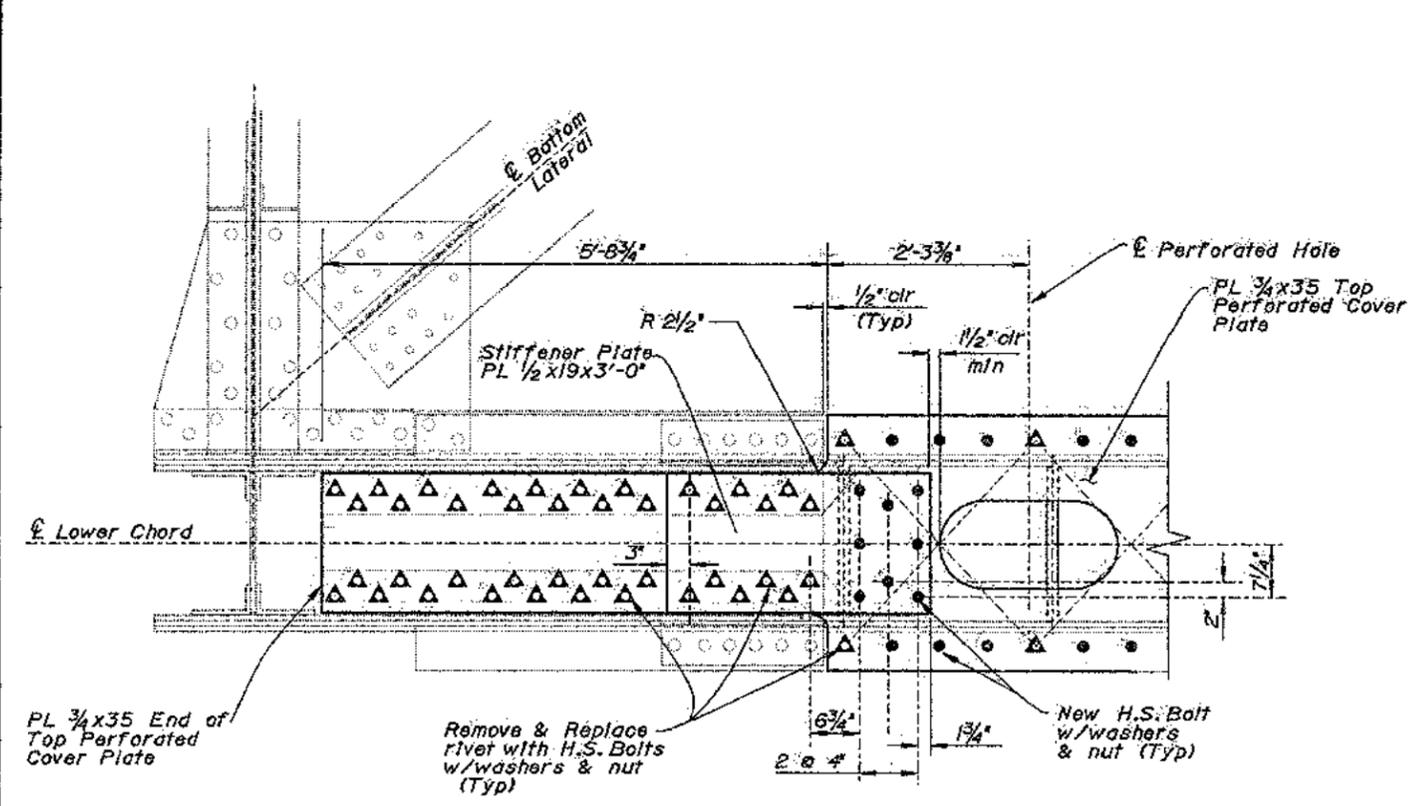
- Indicates existing structures.
- Indicates new structures.
- Indicates new 1" high strength bolts.
- ▲ Indicates existing rivets to be removed and replaced with new 1" high strength bolts, in existing holes.
- Indicates approx. location of existing rivets.

**Notes:**

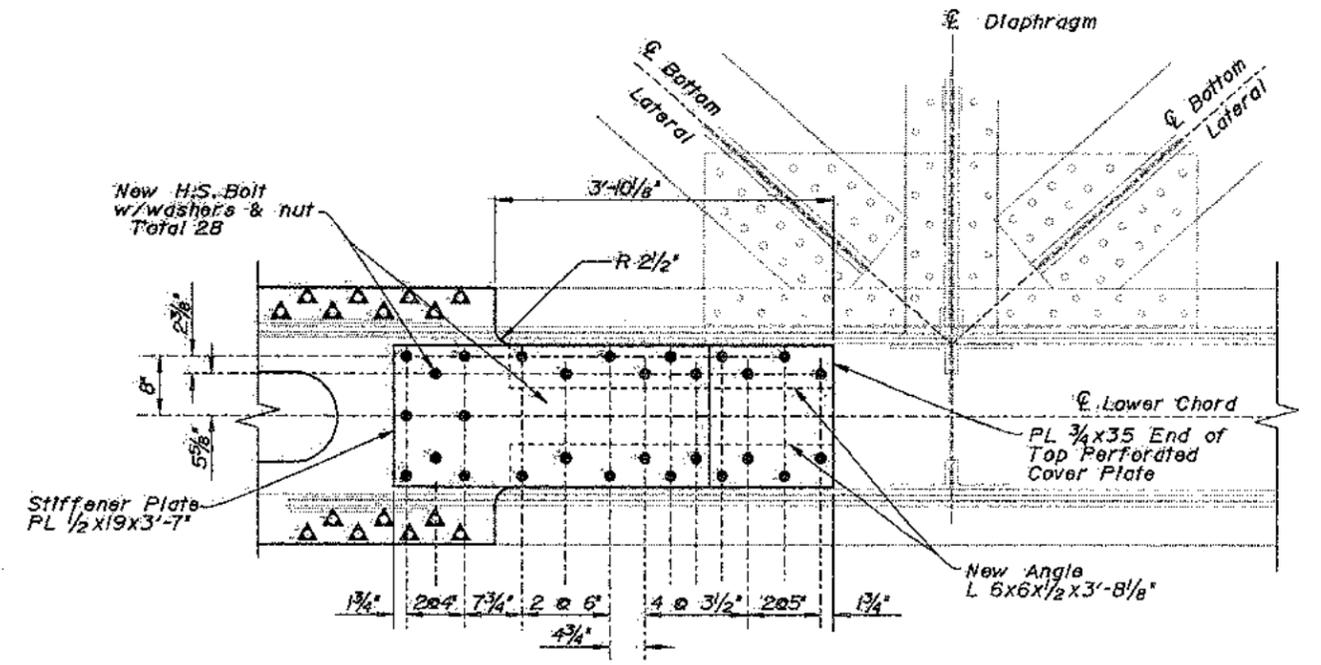
1. Existing upper & lower PL 3/4 x 35 x 5'-8 1/4" to be removed one at a time to allow continuation of the perforated cover plate.
2. For locations for "DETAIL H" and "DETAIL J" see "LOWER CHORD RETROFIT DETAILS NO. 1" & "LOWER CHORD RETROFIT DETAILS NO. 2" sheets.



**TYPICAL LACING DETAIL**  
1" = 1'-0"



**DETAIL H**  
1" = 1'-0"



**DETAIL J**  
1" = 1'-0"

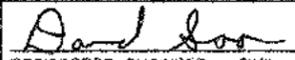
**NOTE:**  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO-OAKLAND BAY BRIDGE**  
**LOWER CHORD RETROFIT DETAILS NO. 4**

|                                   |                         |                              |                              |                    |
|-----------------------------------|-------------------------|------------------------------|------------------------------|--------------------|
| DESIGN BY: Gerrard Hight 3-97     | CHECKED: Phil Lutz 3-97 | STATE OF CALIFORNIA          | DIVISION OF STRUCTURES       | BRIDGE NO. 33-0025 |
| DETAILS BY: Ralph Rakaoka/PL 3-97 | CHECKED: Phil Lutz 3-97 | DEPARTMENT OF TRANSPORTATION | STRUCTURE DESIGN             | POST-MILE 1.5      |
| QUANTITIES BY: Phil Lutz 5-97     | CHECKED: Pat Watz 5-97  |                              | TOLL BRIDGE SPECIAL ANALYSIS |                    |

DATE PLOTTED: 9-Dec-1997 TIME PLOTTED: 10:36

| DIST. | COUNTY  | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|---------|-------|--------------------------|-----------|--------------|
| 04    | SF, A10 | 80    | 7.8/8.9<br>0.0/1.1       | 169       | 205          |

  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
  
 12-8-97  
 PLANS APPROVAL DATE

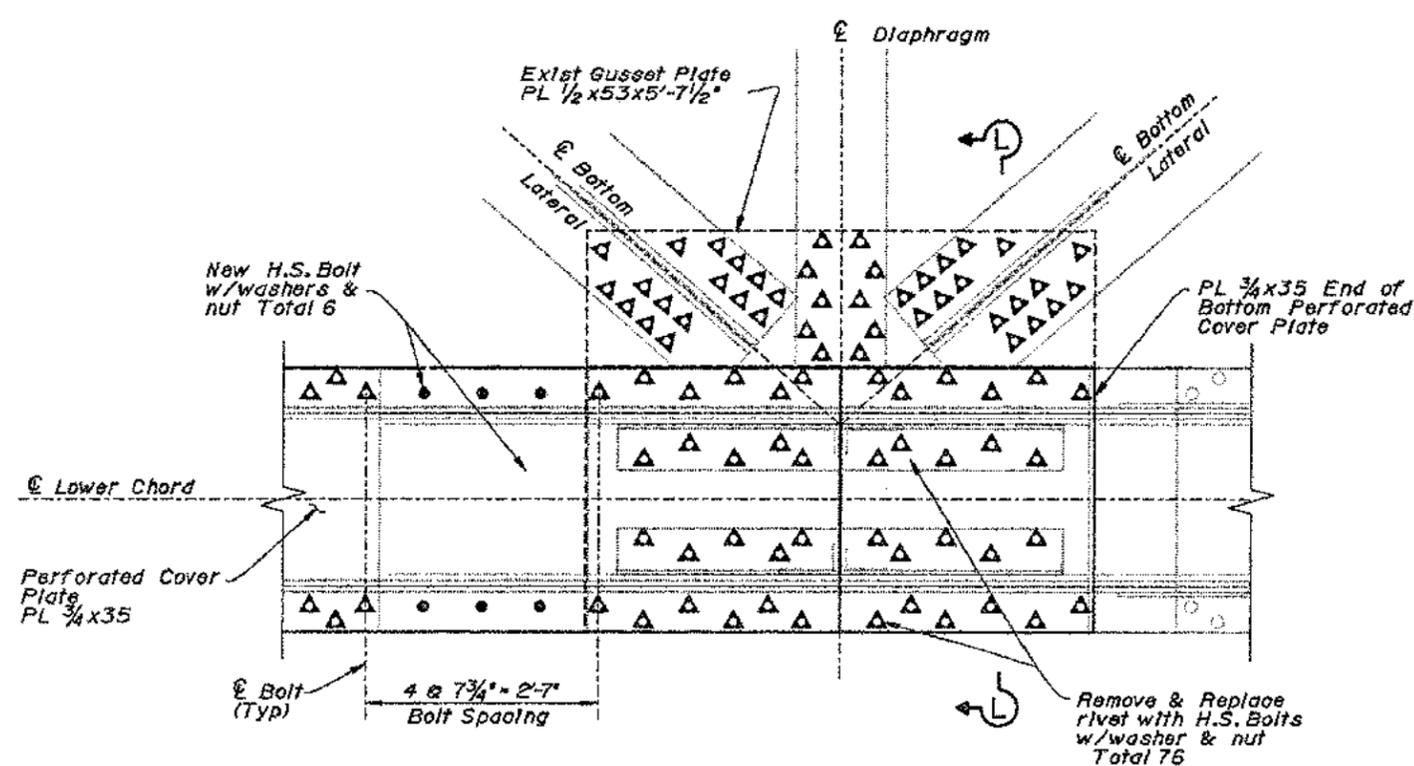
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

**LEGEND**

- Indicates existing structures.
- Indicates new structures.
- indicates new 1" high strength bolts.
- ▲ indicates existing rivets to be removed and replaced with new 1" high strength bolts, in existing holes.
- indicates approx. location of existing rivets.

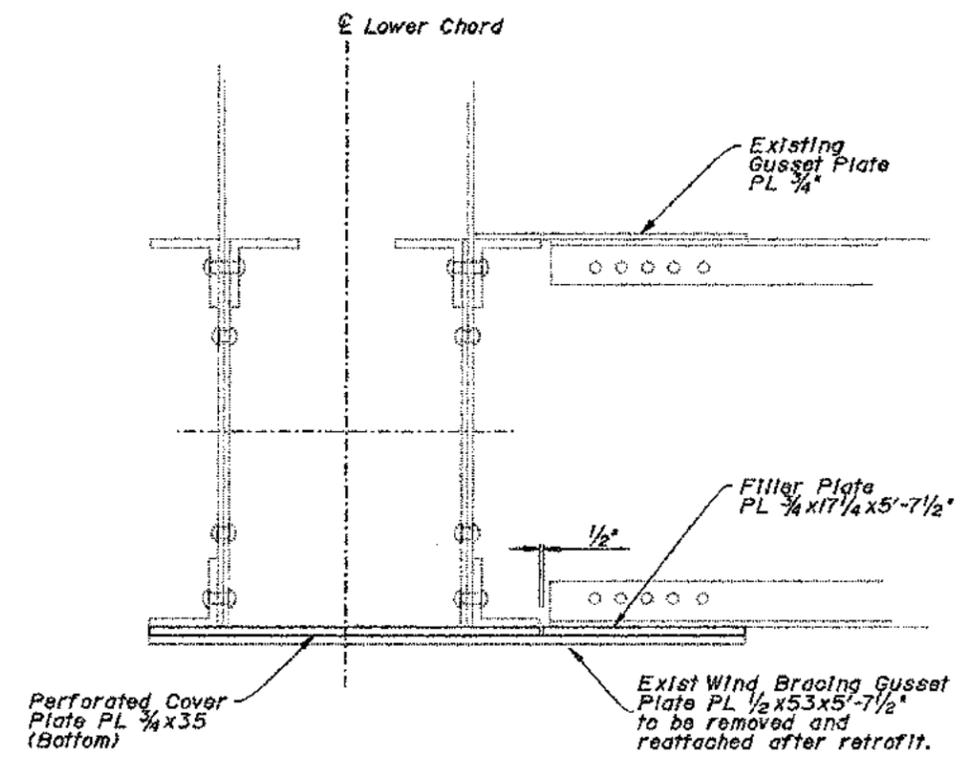
**Notes:**

1. Existing upper & lower splice PL  $\frac{3}{16}$  x 35 x 5'-8 $\frac{1}{4}$ " to be removed one at a time to allow continuation of the perforated cover plate.
2. For locations for "DETAIL K" and "SECTION L-L", see "LOWER CHORD RETROFIT DETAILS NO. 2" sheets.
3. At Joints "L2" and "L6", remove existing Lower Gusset Plate PL  $\frac{1}{2}$  x 53 x 5'-7 $\frac{1}{2}$ " to install  $\frac{3}{4}$  x 35 perforated cover plate (bottom). The existing Gusset Plate PL  $\frac{1}{2}$  x 53 x 5'-7 $\frac{1}{2}$ " is to be mounted below the  $\frac{3}{4}$  x 35 perforated cover plate. A Filler Plate PL  $\frac{3}{4}$  x 17 $\frac{1}{2}$  x 5'-7 $\frac{1}{2}$ " will be installed between the existing Gusset Plate PL  $\frac{1}{2}$  x 53 x 5'-7 $\frac{1}{2}$ " and the Bottom Lateral Bracing.



(Joint L2 & L6 only)

**DETAIL K**  
1" = 1'-0"



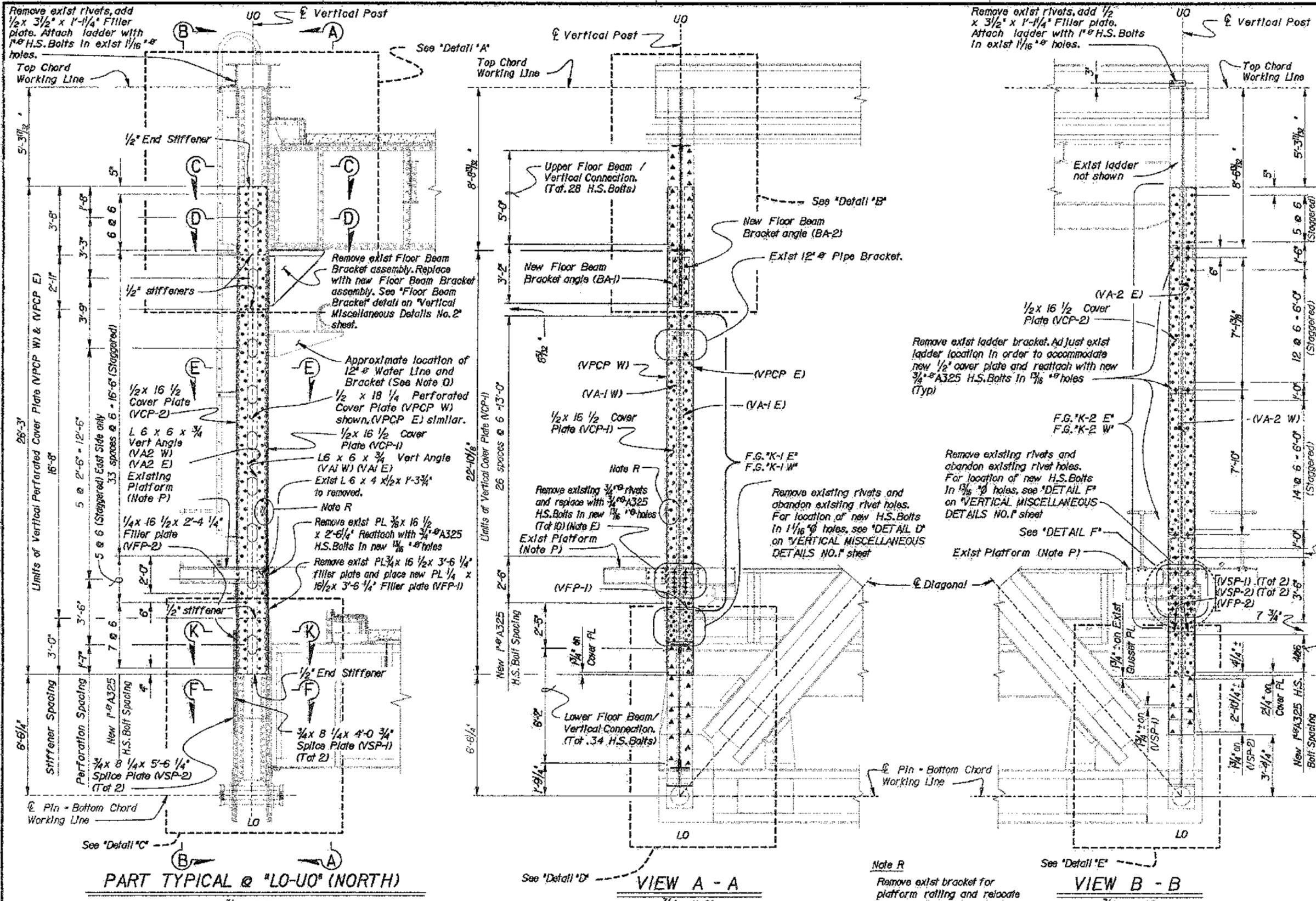
(Joint L2 & L6 only)

**SECTION L-L**  
1 $\frac{1}{2}$ " = 1'-0"

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

|   |  |  |  |   |  |                                     |  |   |  |
|---|--|--|--|---|--|-------------------------------------|--|---|--|
| DESIGN BY Gerrard Hight 3-97<br>CHECKED BY Phil Lutz 3-97     |  |  |  | DIVISION OF STRUCTURES<br><b>STRUCTURE DESIGN</b>   |  | BRIDGE NO. 33-0025<br>POST MILE 1.5 |  | INTERIM SEISMIC RETROFIT PROJECT<br>EAST BAY 200 TRUSSES SPAN E9 TO SPAN E16                  |  |
| DETAILS BY Ralph Nakaoka/PL 3-97<br>CHECKED BY Phil Lutz 3-97 |  |  |  | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION |  | TOLL BRIDGE SPECIAL ANALYSIS        |  | SAN FRANCISCO-OAKLAND BAY BRIDGE  |  |
| QUANTITIES BY Phil Lutz 5-97<br>CHECKED BY Pat Matz 5-97      |  |  |  | ORIGINAL SCALE IN INCHES FOR REDUCED PLANS          |  | CU 04<br>EA 043001                  |  | LOWER CHORD RETROFIT DETAILS NO. 5  |  |
| DISREGARD PRINTS BEARING EARLIER REVISION DATES               |  |  |  |   |  |                                     |  | REVISION DATES (PRELIMINARY STAGE ONLY)<br>12/97 1/98 2/98 3/98 4/98 5/98 6/98 7/98 8/98 9/98 |  |
| USERNAME: rtenora<br>eggtr18e5_09101903                       |  |  |  |   |  |                                     |  | SHEET 18 OF 38  |  |

DATE PLOTTED => 9-26-97 10:37



|       |         |       |            |               |           |              |
|-------|---------|-------|------------|---------------|-----------|--------------|
| DIST. | COUNTY  | ROUTE | POST MILES | TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 04    | SF. A10 | 80    | 7.8/8.9    | 0.0/1.1       | 170       | 205          |

REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 PLANS APPROVAL DATE  
 12-8-97



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 "Detail" A, B, C, D, E and Fastener Group details & dimensions not shown, see "Vertical Miscellaneous Details No. 1" sheet.
  - For "Section" C-C, D-D, E-E, F-F & "K-K" see "Vertical Miscellaneous Details No. 2" sheet.
  - F.G. = Fastener Group.
- Note P**
- Detach existing ladder and platform to accommodate new 1/2" plates for vertical retrofit. Cut as required and adjust bolt location as needed. Subject to approval of the Engineer.
- Note Q**
- The detachment and reattachment of existing 12" Water Line and bracket and temporary support structure is subject to approval by the Engineer.

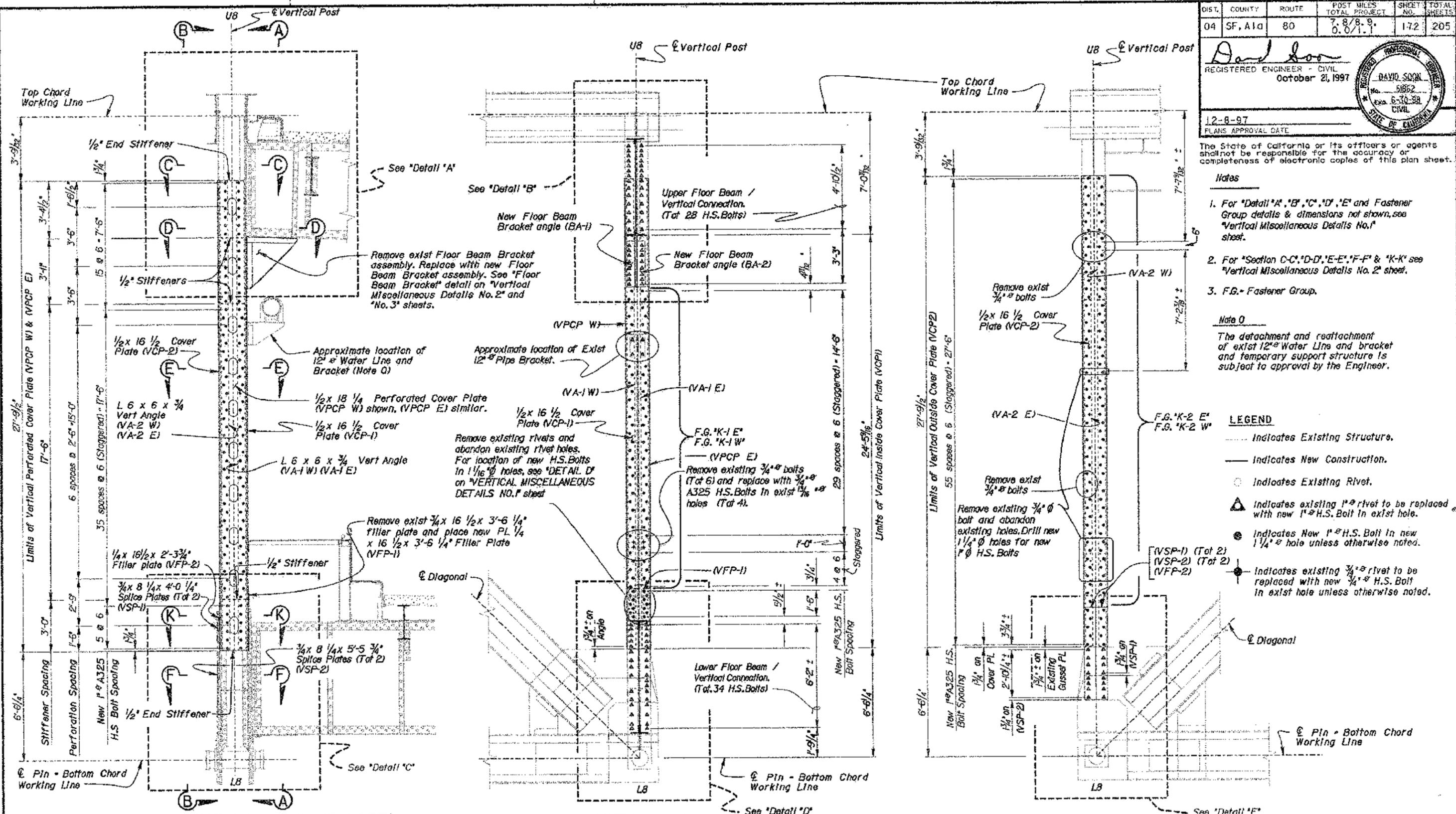
- LEGEND**
- Indicates Existing Structure.
  - Indicates New Construction.
  - Indicates Existing Rivet.
  - △ Indicates existing rivet to be replaced with new 1" H.S. Bolt in exist hole.
  - Indicates New 1" H.S. Bolt in new 1/4" hole drilled through existing material unless otherwise noted.
  - ⊙ Indicates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

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

|            |                       |                         |   |  |            |                                    |
|------------|-----------------------|-------------------------|---|--|------------|------------------------------------|
| DESIGN     | BY Gerrard High 10-96 | CHECKED Phil Lutz 3-97  | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN | BRIDGE NO. | SAN FRANCISCO - OAKLAND BAY BRIDGE |
| DETAILS    | BY Jeff Thorne 3-97   | CHECKED Phil Lutz 3-97  |   |  | 33-0025    |                                    |
| QUANTITIES | BY Phil Lutz 3-97     | CHECKED Steve Haas 3-97 |   |  | POST MILE  |                                    |
|            |                       |                         |   | TOLL BRIDGE SPECIAL ANALYSIS               | 1.5        | SPAN E9 VERTICAL "LO-UO" (NORTH)   |
|            |                       |                         |   | CU 04                                      |            |                                    |
|            |                       |                         |   | EA 043001                                  |            |                                    |

DATE PLOTTED: 9-9-97 9:56 AM (C:38)





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

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO - OAKLAND BAY BRIDGE**  
**SPAN E9 VERTICAL "L8-U8" (NORTH)**

|            |                        |                         |                              |                              |                    |
|------------|------------------------|-------------------------|------------------------------|------------------------------|--------------------|
| DESIGN     | BY Gerrard Hight 10-96 | CHECKED Phil Lutz 3-97  | STATE OF CALIFORNIA          | DIVISION OF STRUCTURES       | BRIDGE NO. 33-0025 |
| DETAILS    | BY Jeff Thorne 3-97    | CHECKED Phil Lutz 3-97  | DEPARTMENT OF TRANSPORTATION | STRUCTURE DESIGN             | POST MILE 1.5      |
| QUANTITIES | BY Phil Lutz 3-97      | CHECKED Steve Haas 3-97 |                              | TOLL BRIDGE SPECIAL ANALYSIS |                    |

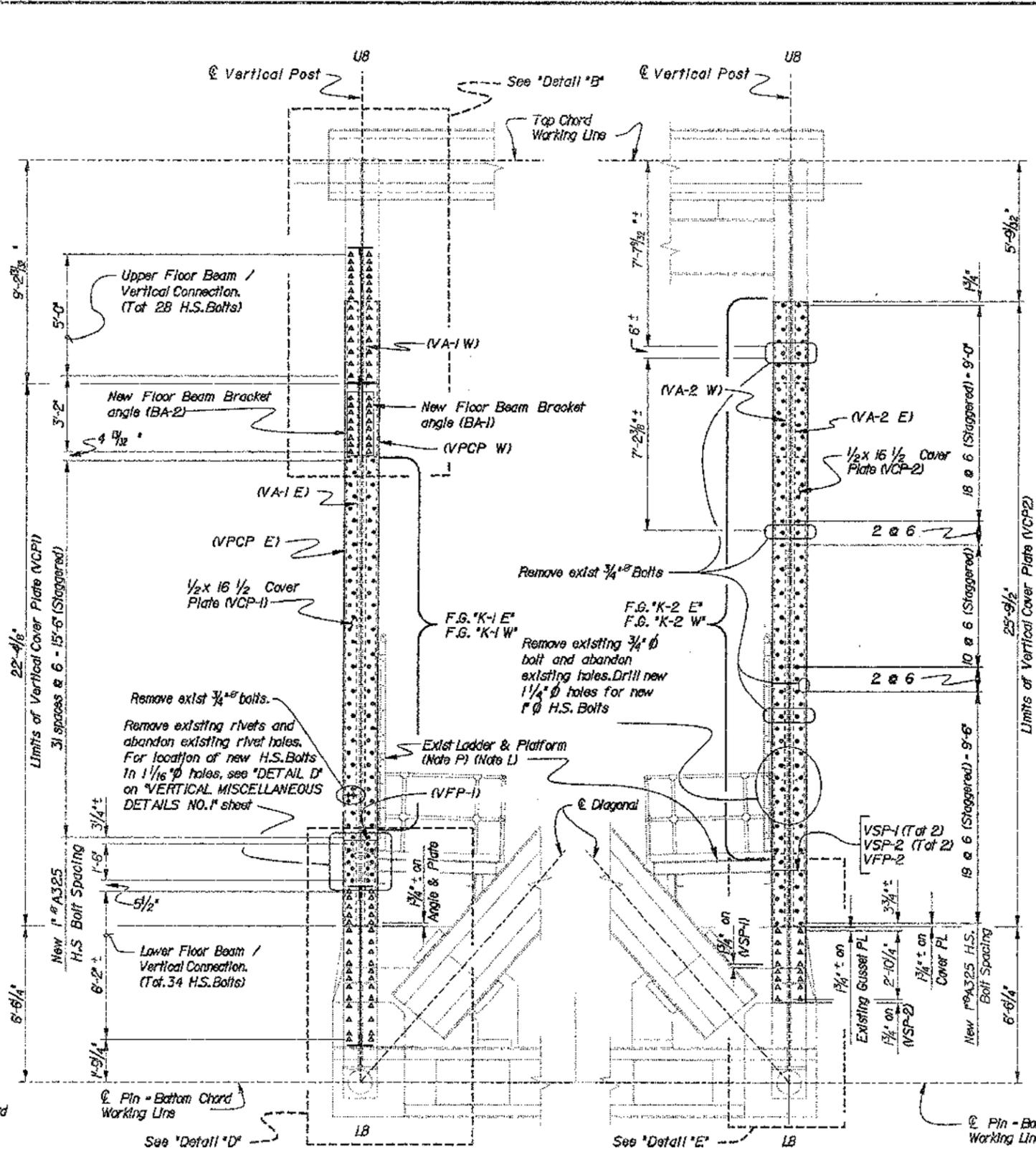
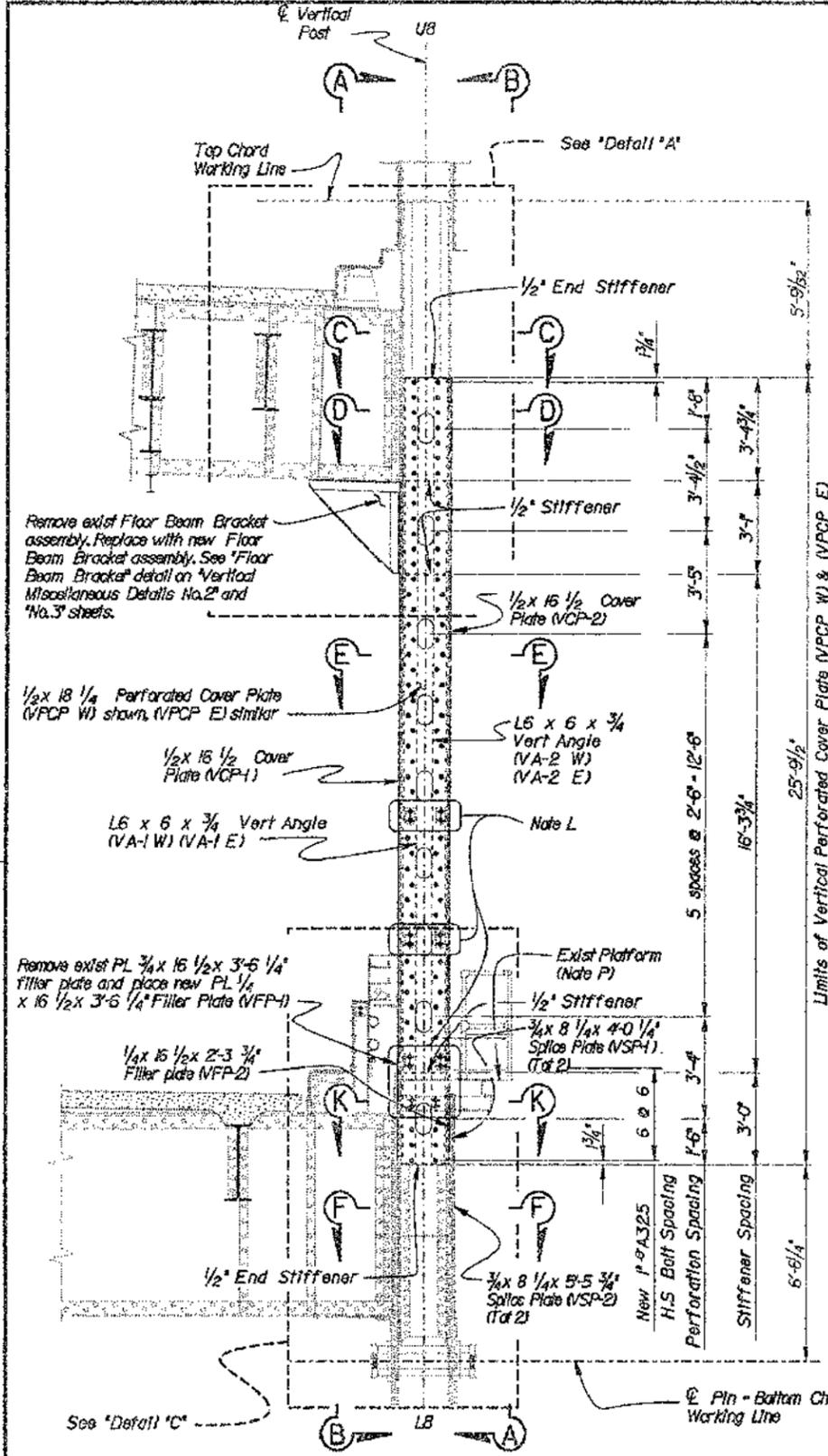
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 CU 04 EA 043001  
 DISCARD PRINTS DESIGN EARLIER REVISION DATES

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 'Detail' A, B, C, D, E and Fastener Group details & dimensions not shown, see 'Vertical Miscellaneous Details No. 1' sheet.
  - For 'Section' C-C, D-D, E-E, F-F & K-K see 'Vertical Miscellaneous Details No. 2' sheet.
  - F.G. - Fastener Group.

Note P  
Detach existing platform to accommodate new 1/2" plates for vertical retrofit. Cut as required and adjust bolt location as needed. Subject to approval by the Engineer.

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



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

Note L  
Approximate location of exist ladder brackets to be modified to accommodate retrofit on west side only. Omit 1" H.S. Bolts and reattach ladder in new 1 1/4" holes for 3/4" A325 H.S. Bolts (Note P) (Note E)

|            |                        |                         |   |  |   |  |
|------------|------------------------|-------------------------|---|--|---|--|
| DESIGN     | BY Gerrard Hight 10-96 | CHECKED Phil Lutz 3-97  | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN | BRIDGE NO.<br>33-0025                         | INTERIM SEISMIC RETROFIT PROJECT<br>EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16<br>SPAN E9 VERTICAL "L8-U8" (SOUTH) |
| DETAILS    | BY Jeff Thorne 3-97    | CHECKED Phil Lutz 3-97  |   | TOLL BRIDGE SPECIAL ANALYSIS               | POST MILE<br>1.5                              |  |
| QUANTITIES | BY Phil Lutz 3-97      | CHECKED Steve Haas 3-97 |   | CU 04<br>EA 043001                         | BUSCARD PRINTS BEARING EARLIER REVISION DATES |  |



|       |         |       |                          |           |              |
|-------|---------|-------|--------------------------|-----------|--------------|
| DIST. | COUNTY  | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 04    | SF. AIG | 80    | 7.8/8.9, 0.0/1.1         | 175       | 205          |

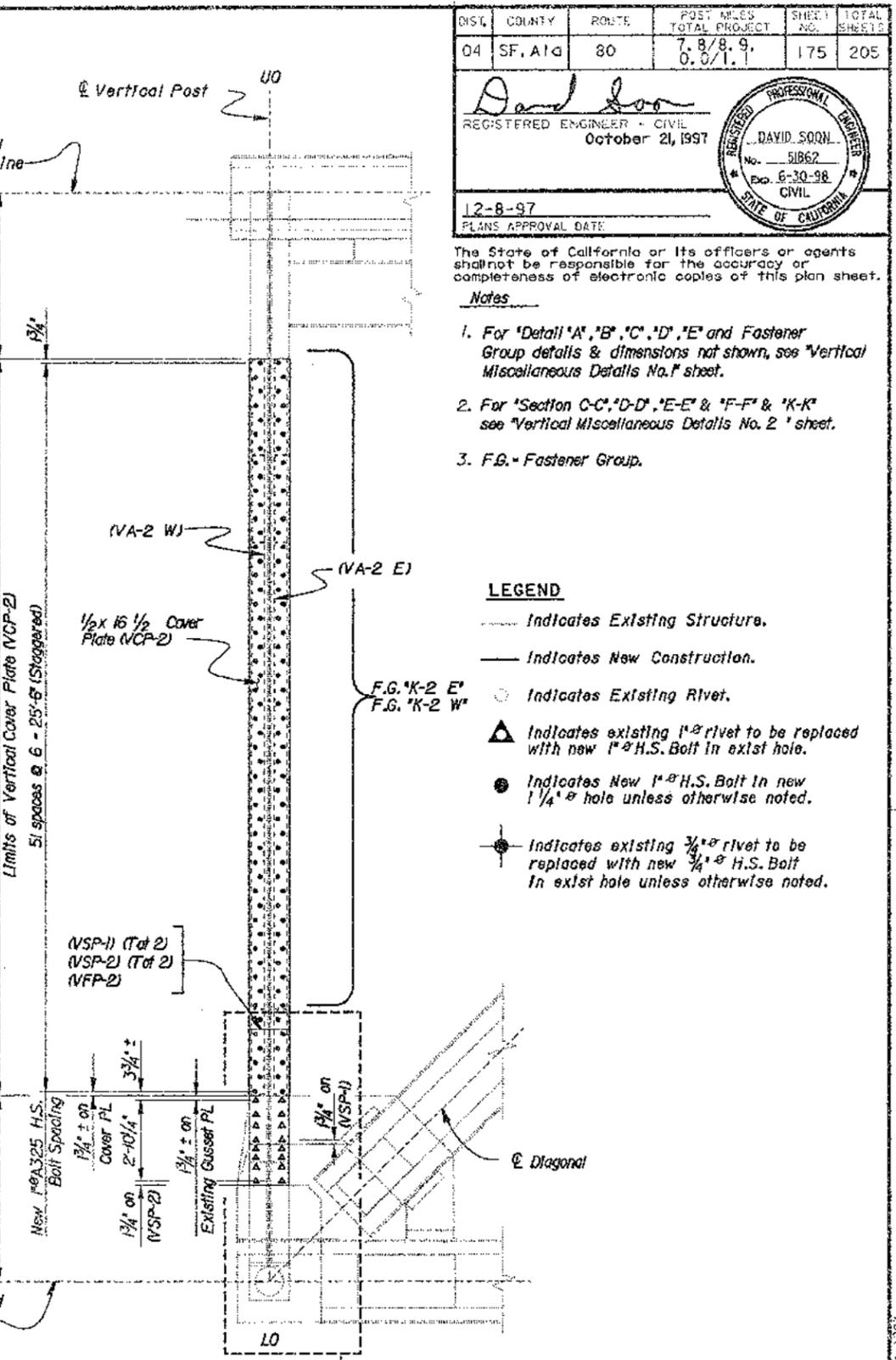
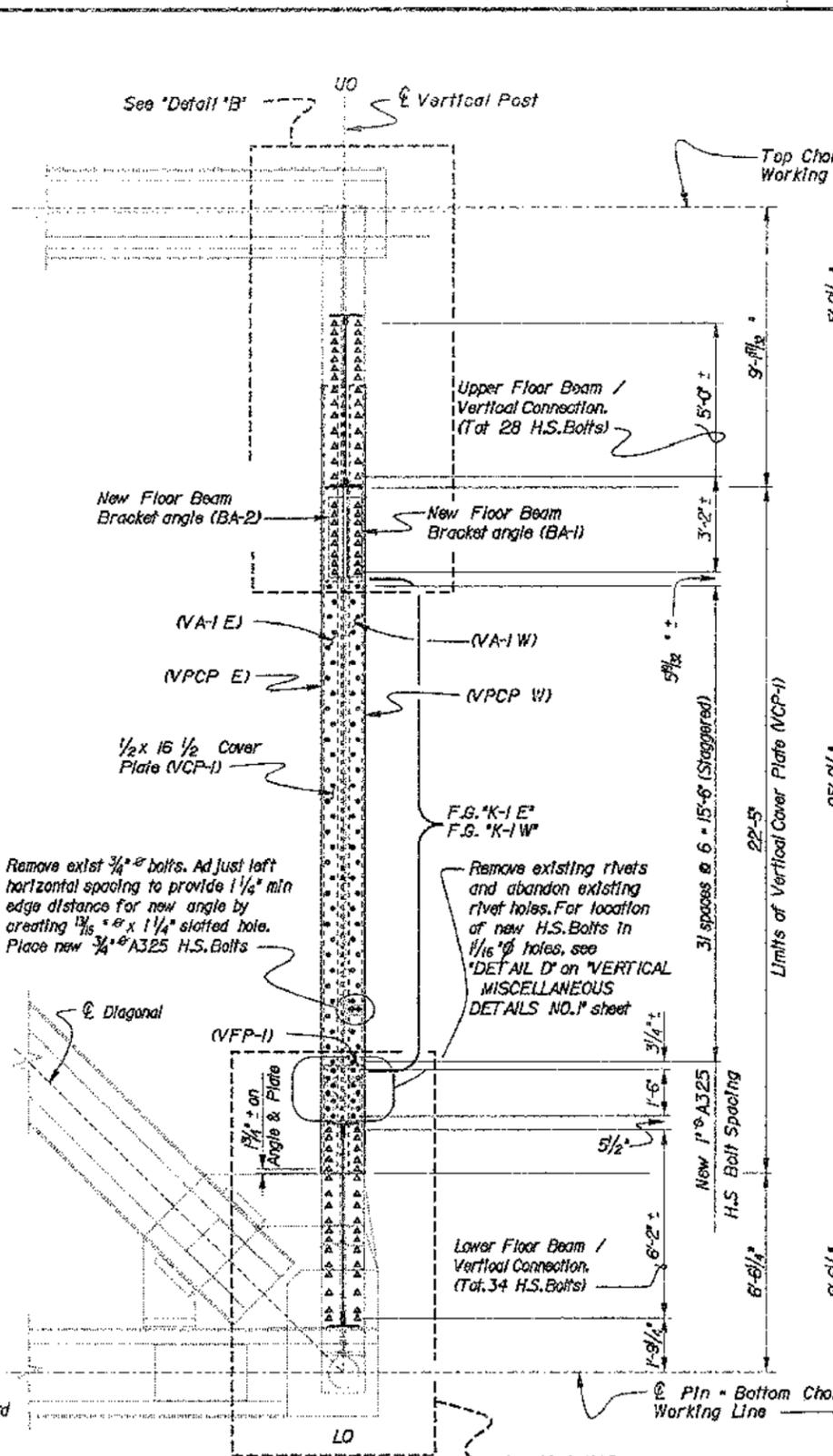
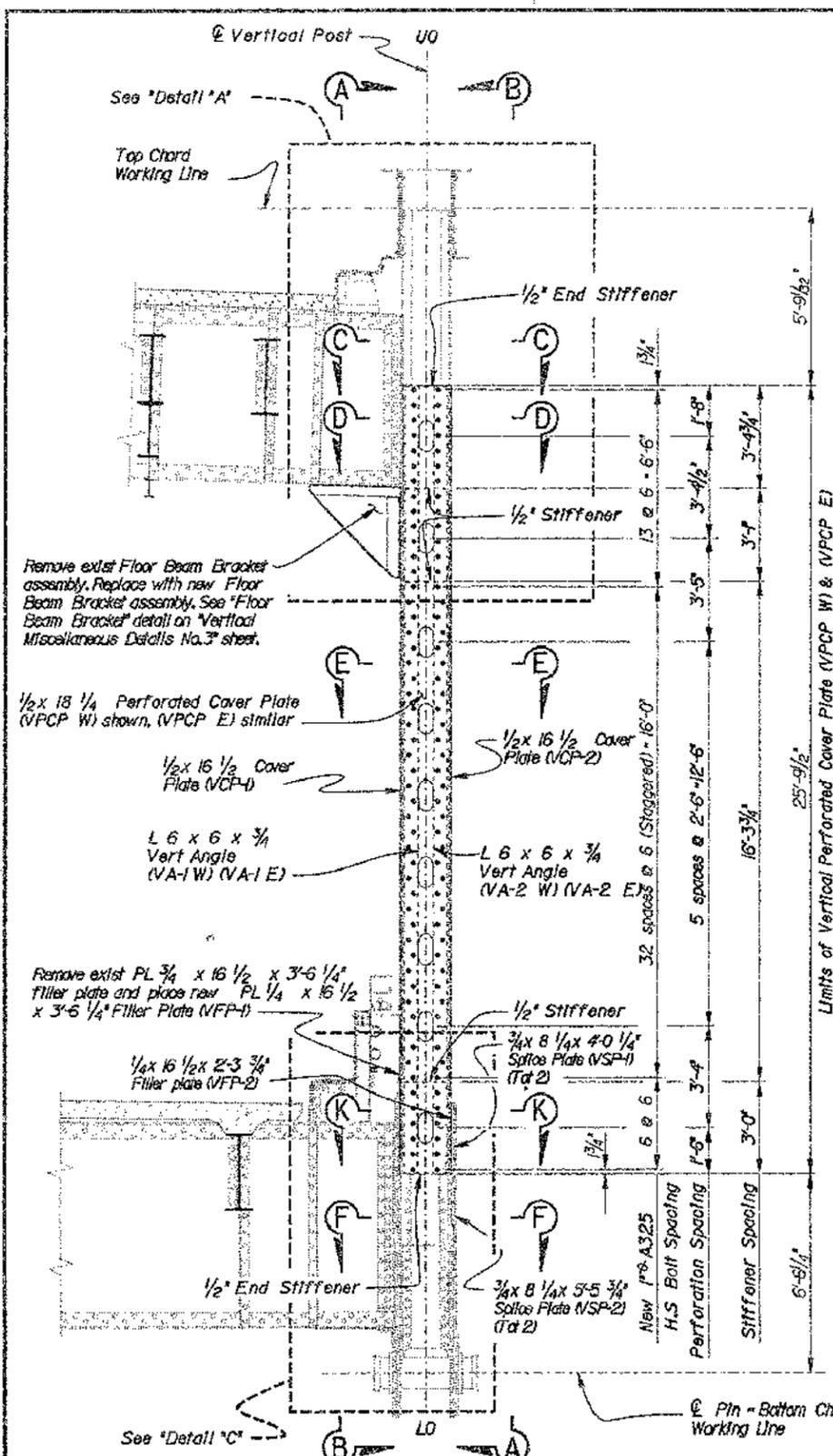
David Soqn  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 No. 51862  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA

12-8-97  
 PLANS APPROVAL DATE

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- Notes**
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  - For 'Section C-C', 'D-D', 'E-E' & 'F-F' & 'K-K' see 'Vertical Miscellaneous Details No. 2' sheet.
  - F.G. - Fastener Group.

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



**PART TYPICAL @ 'LO-UO' (SOUTH)**  
3/8" = 1'-0"

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

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

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

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO - OAKLAND BAY BRIDGE**  
**SPAN E10 VERTICAL "LO-UO" (SOUTH)**

|            |                        |                         |                              |                              |                    |                                    |
|------------|------------------------|-------------------------|------------------------------|------------------------------|--------------------|------------------------------------|
| DESIGN     | BY Gerrard Hight 10-96 | CHECKED Phil Lutz 3-97  | STATE OF CALIFORNIA          | DIVISION OF STRUCTURES       | BRIDGE NO. 33-0025 | SAN FRANCISCO - OAKLAND BAY BRIDGE |
| DETAILS    | BY Jeff Thorne 3-97    | CHECKED Phil Lutz 3-97  | DEPARTMENT OF TRANSPORTATION | STRUCTURE DESIGN             | POST MILE 1.5      | SPAN E10 VERTICAL "LO-UO" (SOUTH)  |
| QUANTITIES | BY Phil Lutz 3-97      | CHECKED Steve Hoad 3-97 |                              | TOLL BRIDGE SPECIAL ANALYSIS |                    |                                    |

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 CU 04 EA 043001  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 REVISION DATES (PRELIMINARY STAGE ONLY)  
 SHEET 24 OF 38

|       |         |       |                          |           |              |
|-------|---------|-------|--------------------------|-----------|--------------|
| DIST. | COUNTY  | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 04    | SF, Alq | 80    | 7.8/8.9<br>C.0/1.1       | 178       | 205          |

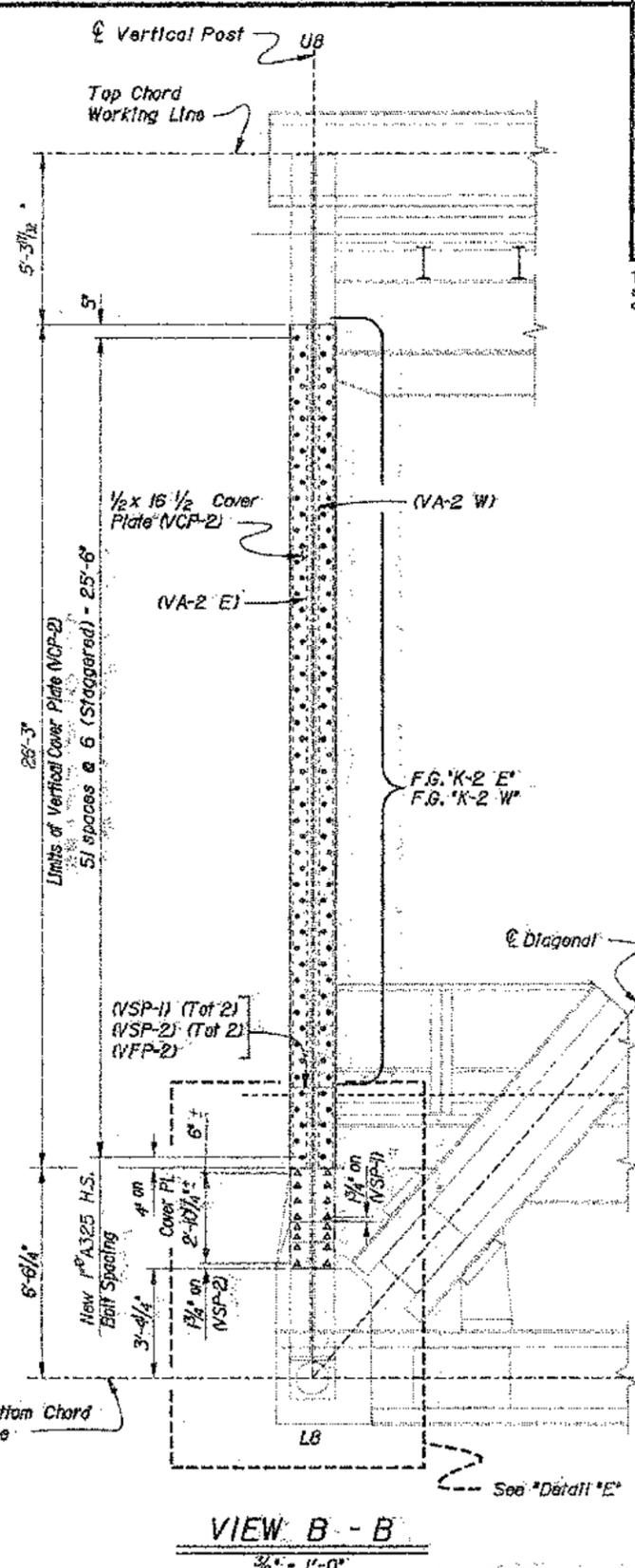
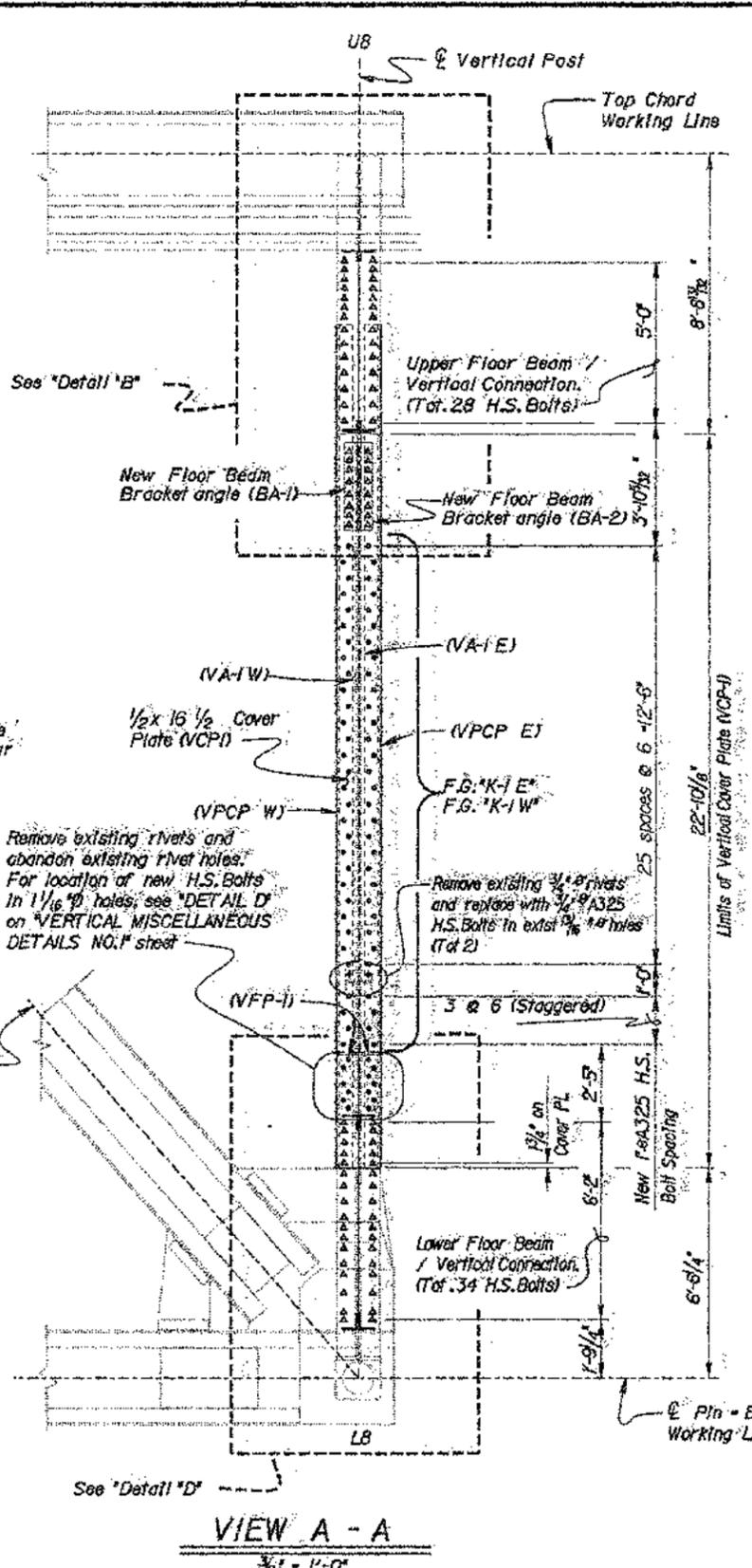
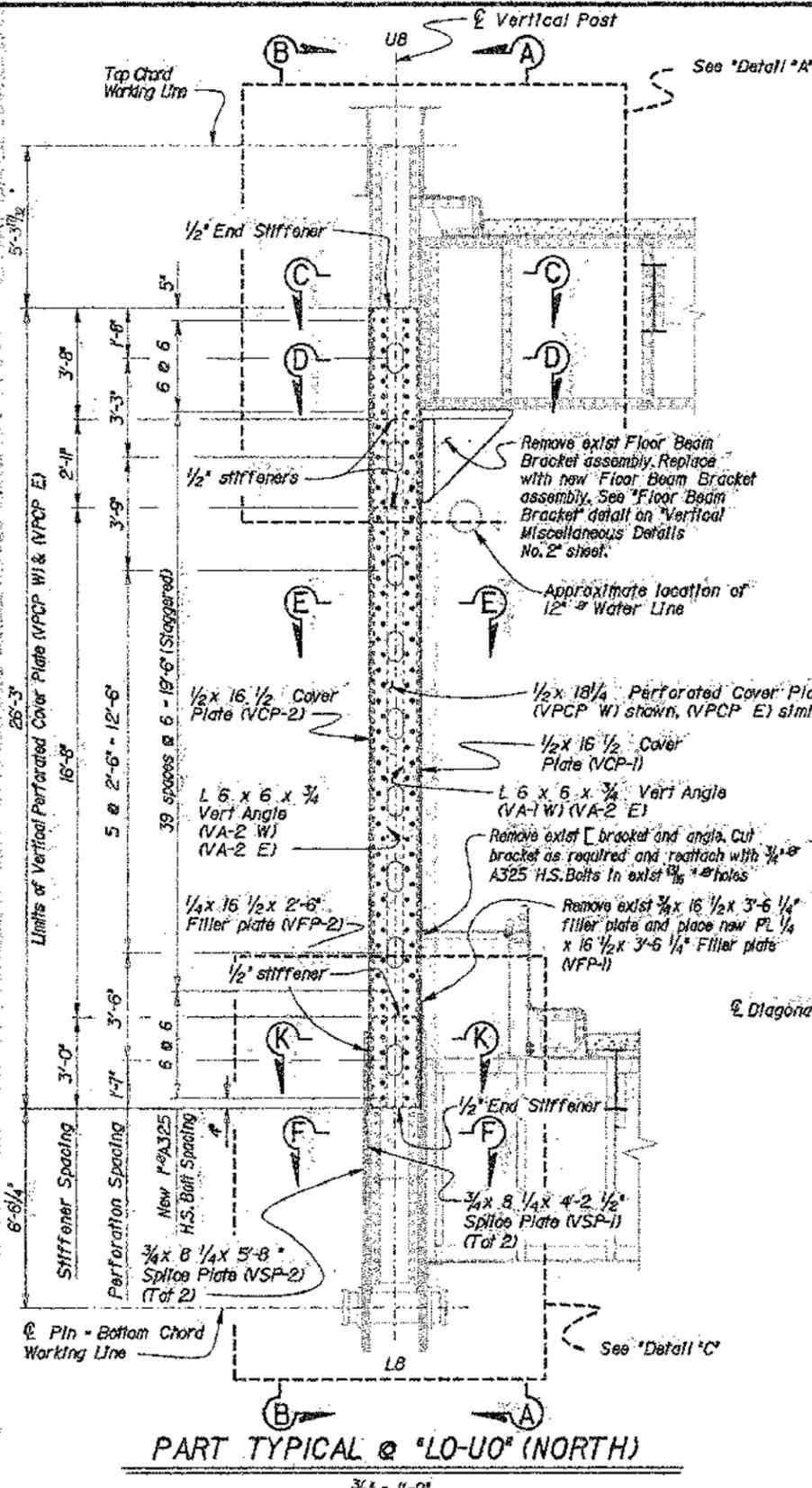
David Soom  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 No. 51862  
 Exp. 6-30-99  
 CIVIL  
 STATE OF CALIFORNIA

12-8-97  
PLANS APPROVAL DATE

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- Notes
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  - For "Section C-C", "D-D", "E-E" & "F-F", "K-K" see "Vertical Miscellaneous Details No. 2" sheet.
  - F.G. = Fastener Group.

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



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

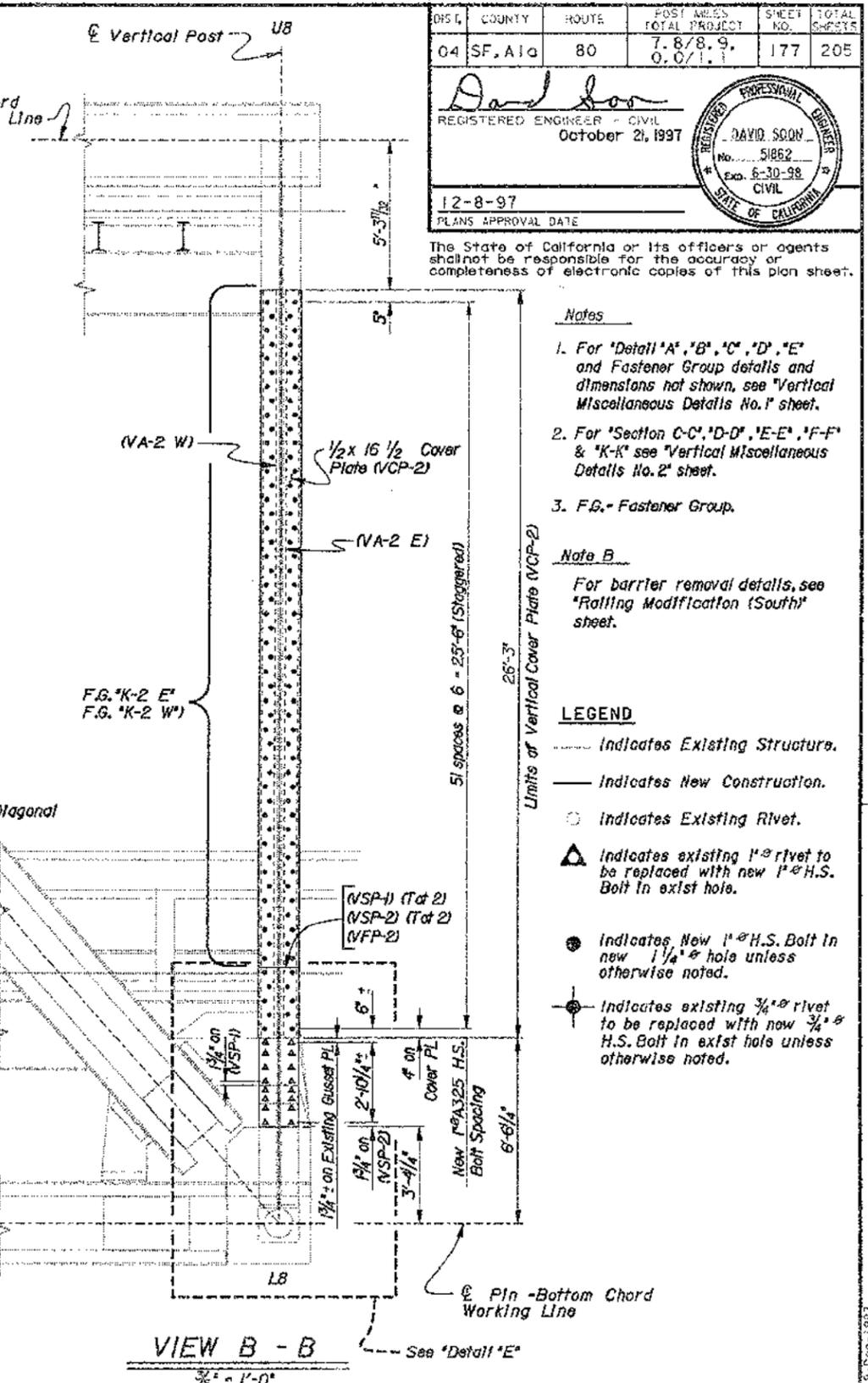
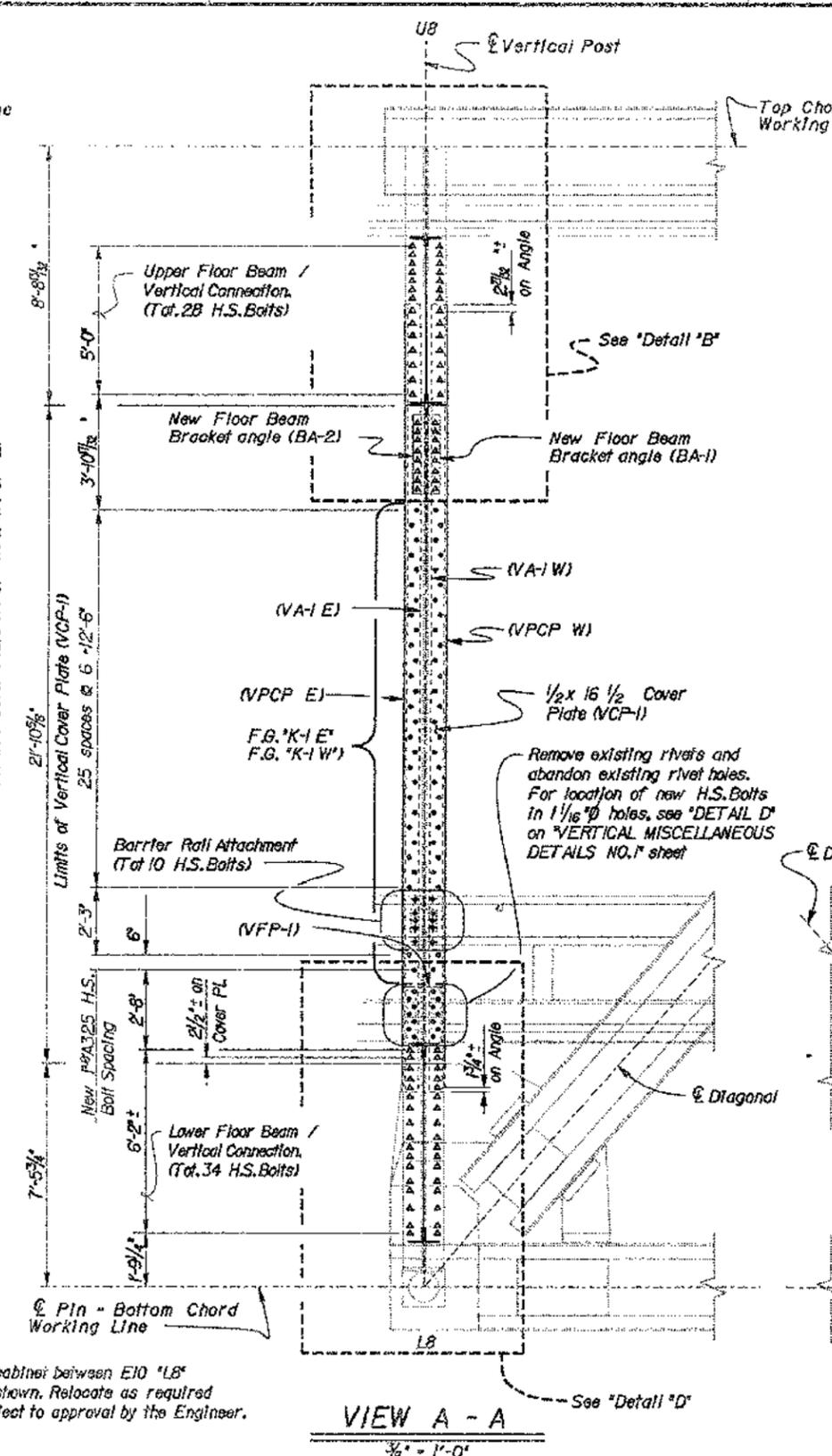
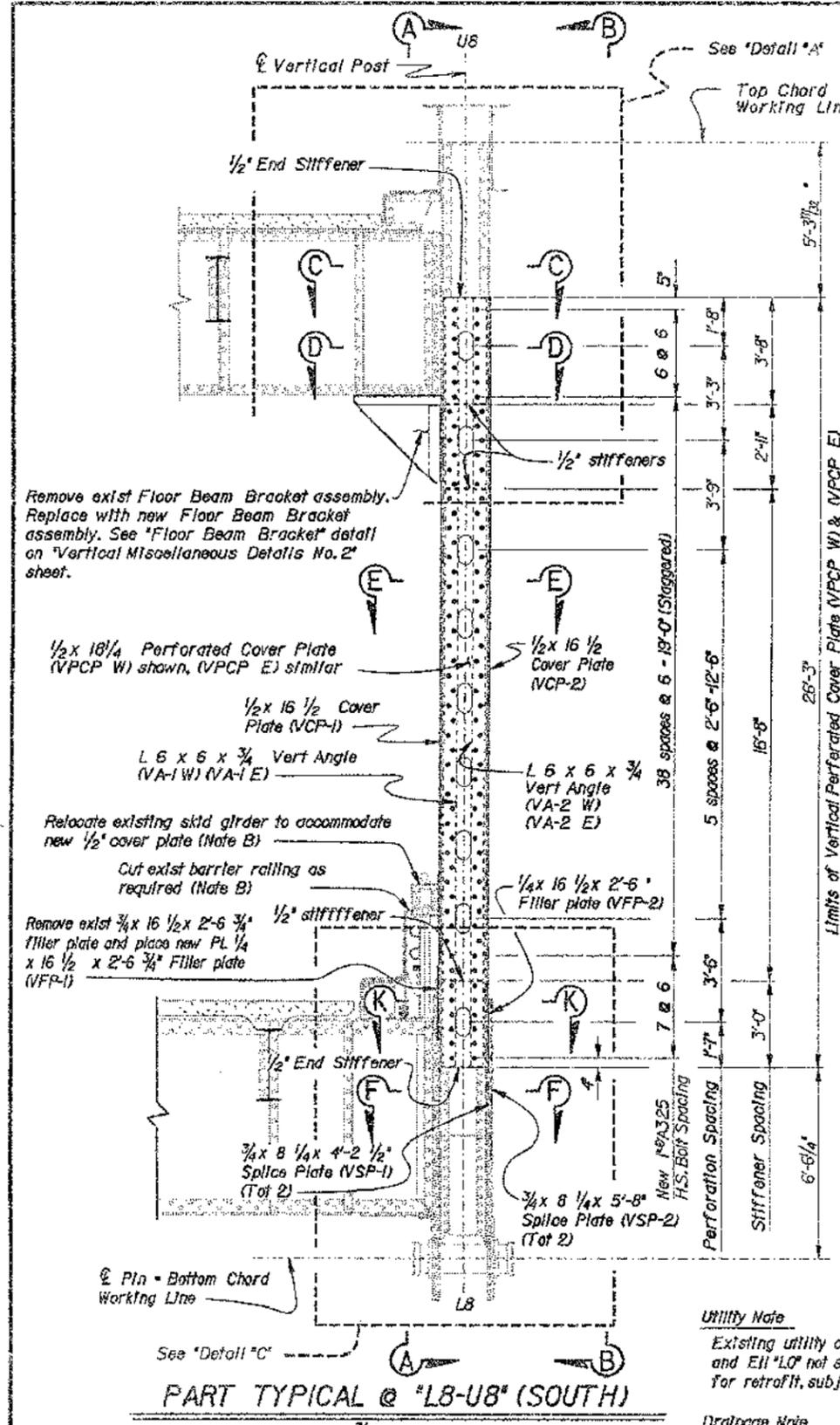
INTERIM SEISMIC RETROFIT PROJECT  
 EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16  
 SAN FRANCISCO - OAKLAND BAY BRIDGE  
 SPAN E10 VERTICAL "L8-U8" (NORTH)

|            |                        |                         |                              |                              |                     |
|------------|------------------------|-------------------------|------------------------------|------------------------------|---------------------|
| DESIGN     | BY Gerrard Right 10-96 | CHECKED Phil Lutz 3-97  | STATE OF CALIFORNIA          | DIVISION OF STRUCTURES       | PROJECT NO. 33-0025 |
| DETAILS    | BY Jeff Thorne 3-97    | CHECKED Phil Lutz 3-97  | DEPARTMENT OF TRANSPORTATION | STRUCTURE DESIGN             | POST TITLE 1.5      |
| QUANTITIES | BY Phil Lutz 3-97      | CHECKED Steve Haas 3-97 |                              | TOLL BRIDGE SPECIAL ANALYSIS |                     |

CU 04  
EA 043001

DISCARD PREVIOUS REVISIONS  
 EARLIER REVISION DATES

25 36



- Notes
- For "Detail A", "B", "C", "D", "E" and Fastener Group details and dimensions not shown, see "Vertical Miscellaneous Details No. 1" sheet.
  - For "Section C-C", "D-D", "E-E", "F-F" & "K-K" see "Vertical Miscellaneous Details No. 2" sheet.
  - F.G. - Fastener Group.
- Note B
- For barrier removal details, see "Rolling Modification (South)" sheet.
- LEGEND
- Indicates Existing Structure.
  - Indicates New Construction.
  - Indicates Existing Rivet.
  - Indicates existing 1" rivet to be replaced with new 1" H.S. Bolt in exist hole.
  - Indicates New 1" H.S. Bolt in new 1 1/16" hole unless otherwise noted.
  - Indicates existing 3/4" rivet to be replaced with new 3/4" H.S. Bolt in exist hole unless otherwise noted.

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

Utility Note  
Existing utility cabinet between E10 "LB" and E11 "LQ" not shown. Relocate as required for retrofit, subject to approval by the Engineer.

Drainage Note  
Existing drain pipe not shown. Relocate as required for retrofit and reattach as required after construction. Subject to approval by the Engineer.

|            |  |                        |  |                    |      |   |  |  |         |   |
|------------|--|------------------------|--|--------------------|------|---|--|--|---------|---|
| DESIGN     |  | BY Gerrard Hight 10-96 |  | CHECKED Phil Lutz  | 3-97 | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN | BRIDGE NO.                               | 33-0025 | INTERIM SEISMIC RETROFIT PROJECT<br>EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16<br>SAN FRANCISCO - OAKLAND BAY BRIDGE<br>SPAN E10 VERTICAL "L8-U8" (SOUTH) |
| DETAILS    |  | BY Jeff Thorne 3-97    |  | CHECKED Phil Lutz  | 3-97 |   |  | POST MILE                                | 1.5     |   |
| QUANTITIES |  | BY Phil Lutz 3-97      |  | CHECKED Steve Haas | 3-97 |   |  | REVISION DATES (PRELIMINARY STAGE 04/97) | 26      |   |

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 CU 04 EA 043001  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 USERNAME: trando ekw: 10.8526\_09095217



|       |             |       |                          |           |              |
|-------|-------------|-------|--------------------------|-----------|--------------|
| DIST. | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 04    | SF, Alameda | 80    | 7.8/8.9, 0.0/1.1         | 179       | 205          |

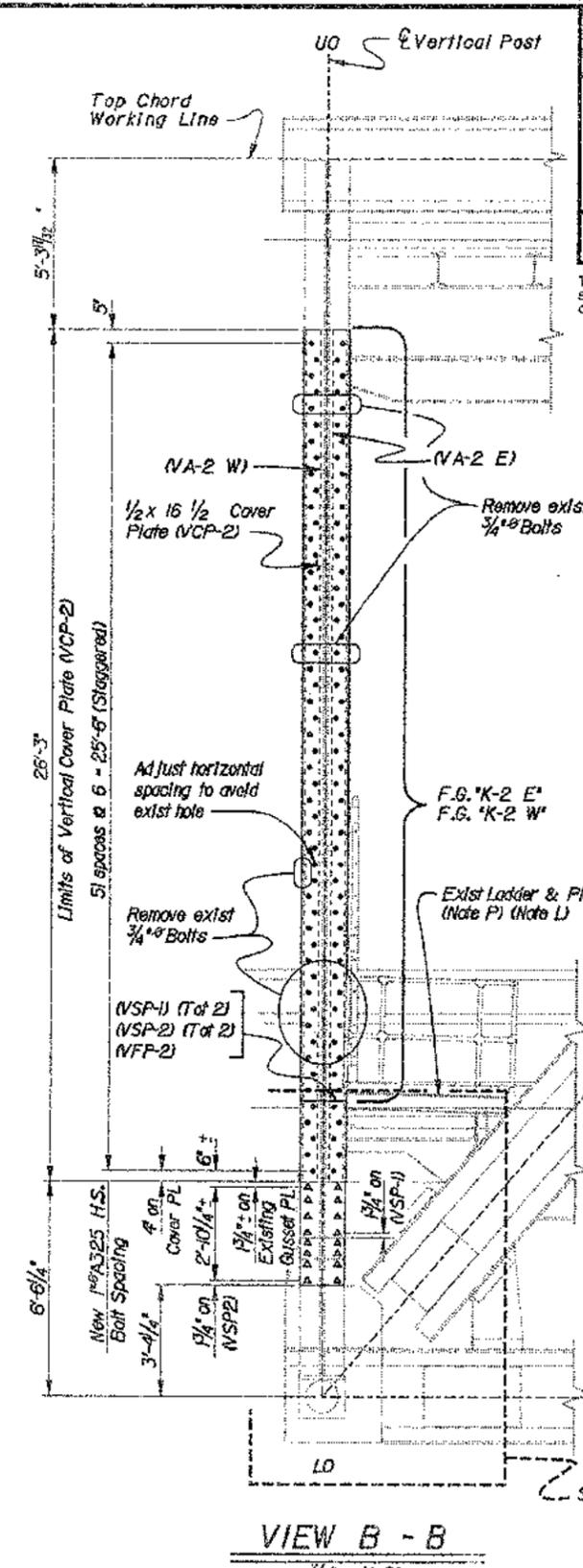
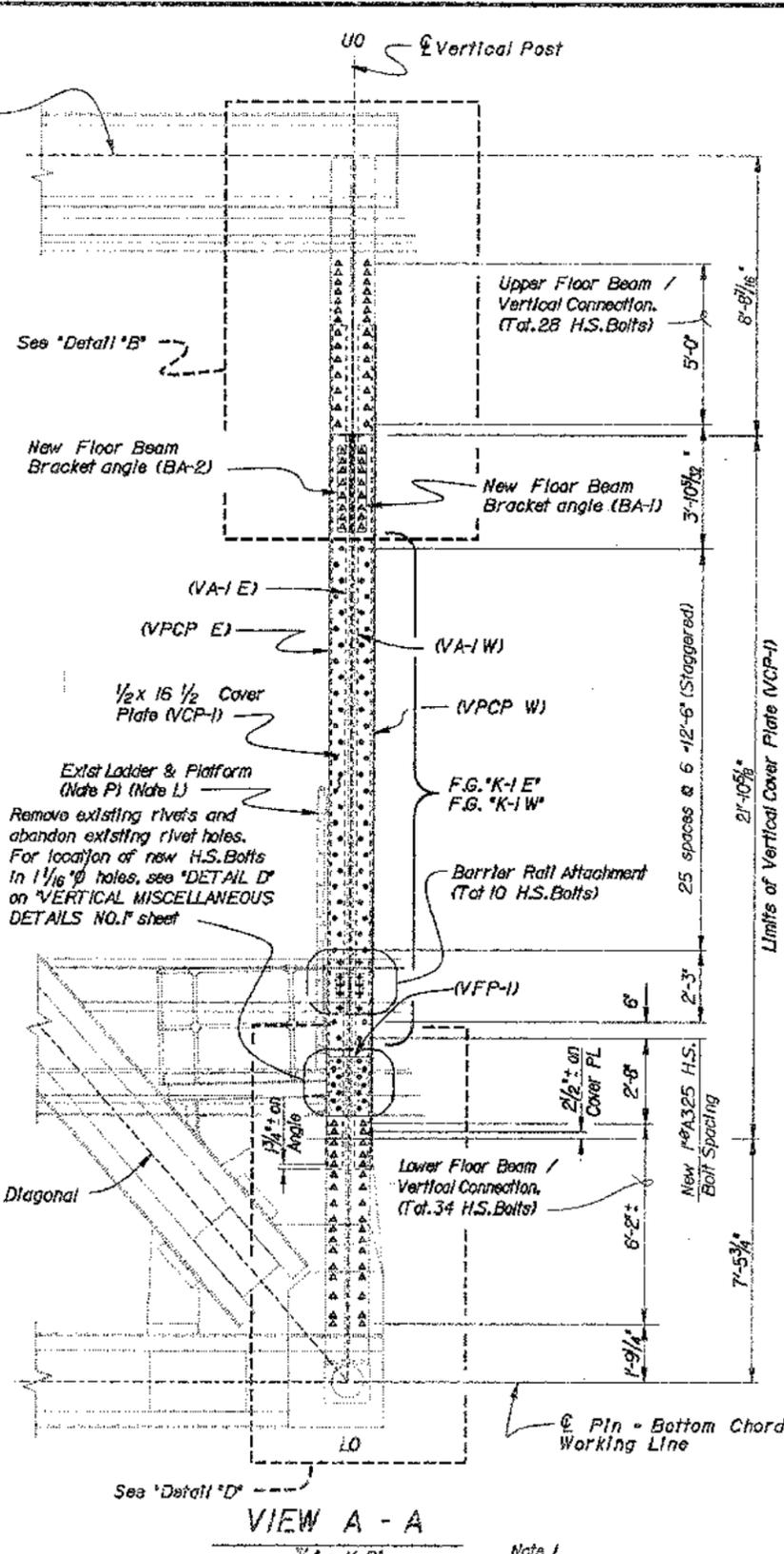
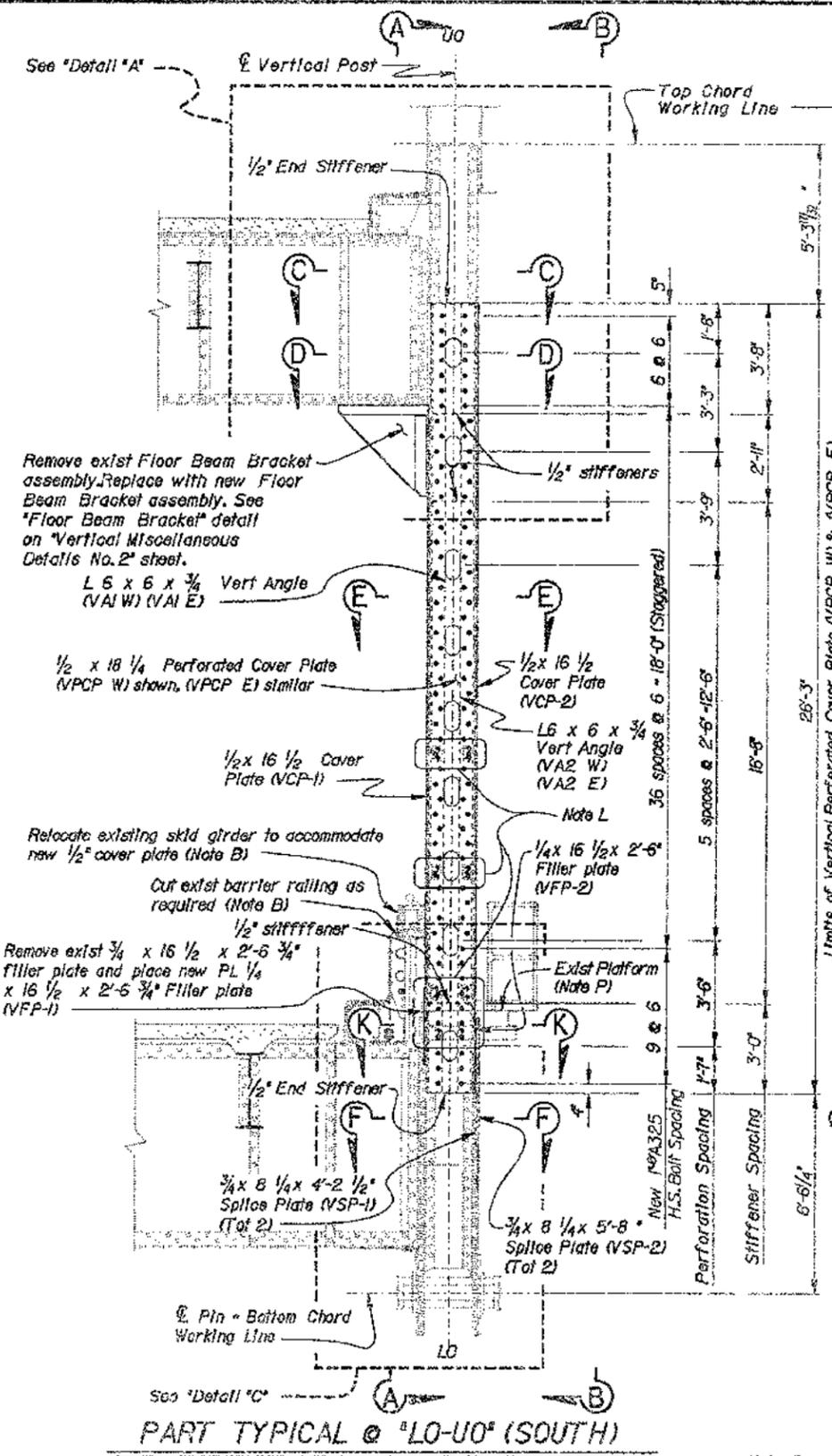
David Soon  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 12-8-97  
 PLANS APPROVAL DATE

DAVID SOON  
 No. 51862  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA

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- Notes**
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  - For "Section C-C", "D-D", "E-E", "F-F" & "K-K" see "Vertical Miscellaneous Details No. 2" sheet.
  - F.B. - Fastener Group.

- LEGEND**
- Indicates Existing Structure.
  - Indicates New Construction.
  - Indicates Existing Rivet.
  - △ Indicates existing 1" rivet to be replaced with new 1" H.S. Bolt in exist hole.
  - Indicates New 1" H.S. Bolt in new 1 1/4" hole unless otherwise noted.
  - ⊕ Indicates existing 3/4" rivet to be replaced with new 3/4" H.S. Bolt in exist hole unless otherwise noted.
- Note P**
- Detach existing platform to accommodate new 1/2" plates for vertical retrofit. Cut as required and adjust bolt locations as needed. Subject to approval by the Engineer.



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

**Note B**  
For barrier removal details, see "Railing Modification (South)" sheet.

**Note L**  
Approximate location of exist ladder brackets to be modified to accommodate retrofit on west side only. (Span E14 & Span E15 only) Drill 1" H.S. Bolts and reattach ladder in new 1 1/16" holes for 3/4" A325 H.S. Bolts (Note P) (Note E)

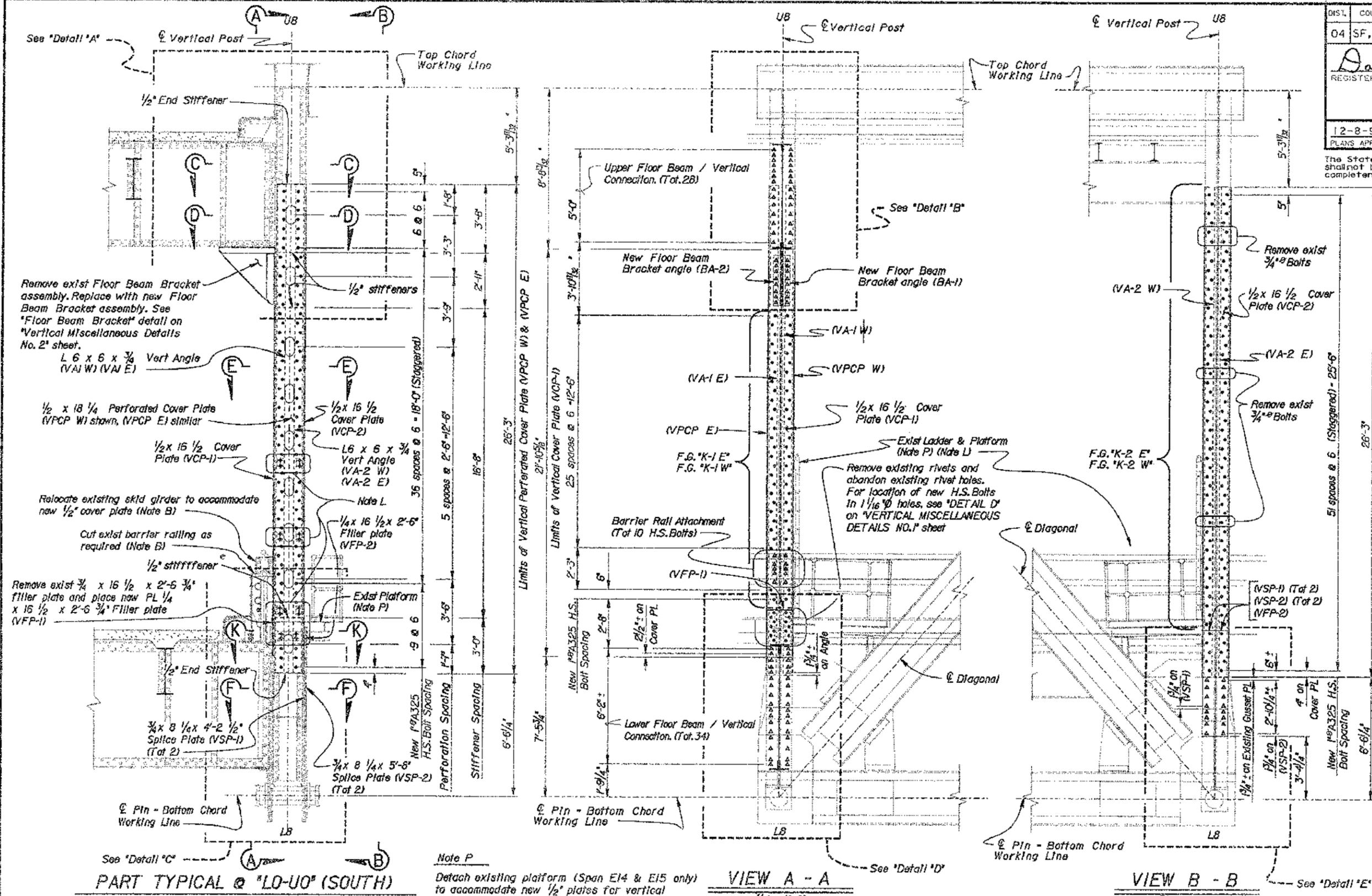
**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 289 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO - OAKLAND BAY BRIDGE**  
**SPAN E11 VERTICAL "LO-UO" (SOUTH)**

|            |                        |                         |
|------------|------------------------|-------------------------|
| DESIGN     | BY Gerrard Hight 10-96 | CHECKED Phil Lutz 3-97  |
| DETAILS    | BY Jeff Thorne 3-97    | CHECKED Phil Lutz 3-97  |
| QUANTITIES | BY Phil Lutz 3-97      | CHECKED Steve Haas 3-97 |

|                              |                              |                     |
|------------------------------|------------------------------|---------------------|
| STATE OF CALIFORNIA          | DIVISION OF STRUCTURES       | PROJECT NO. 33-0025 |
| DEPARTMENT OF TRANSPORTATION | STRUCTURE DESIGN             | POST MILE 1.5       |
|                              | TOLL BRIDGE SPECIAL ANALYSIS |                     |

|       |           |   |    |    |
|-------|-----------|---|----|----|
| CU 04 | EA 043001 | DISCARD PRINTS BEARING EARLIER REVISION DATES | 28 | 38 |
|-------|-----------|---|----|----|





- Notes**
- For "Detail" A, B, C, D, E and Fastener Group details and dimensions not shown, see "Vertical Miscellaneous Details No. 1" sheet.
  - For "Section C-C, D-D, E-E" & "F-F" & "K-K" see "Vertical Miscellaneous Details No. 2" sheet.
  - F.G. = Fastener Group.
- Note B**  
 For barrier removal details, see "Railing Modification (South)" sheet.

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

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

**Note P**  
 Detach existing platform (Span E14 & E15 only) to accommodate new 1/2" plates for vertical retrofit. Cut as required and adjust bolt locations as needed. Subject to approval by the Engineer.

**Note L**  
 Approximate location of exist ladder brackets to be modified to accommodate retrofit on west side only. (Span E14 & Span E15 only) Omit 1" H.S. Bolts and reattach ladder in new 1 1/8" holes for 3/4" A325 H.S. Bolts (Note P) (Note E)

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO - OAKLAND BAY BRIDGE**  
**SPANS E11-E16 VERTICAL "L8-U8" (SOUTH)**

|            |                        |                         |
|------------|------------------------|-------------------------|
| DESIGN     | BY Gerrard Hight 10-98 | CHECKED Phil Lutz 3-97  |
| DETAILS    | BY Jeff Thorne 3-97    | CHECKED Phil Lutz 3-97  |
| QUANTITIES | BY Phil Lutz 3-97      | CHECKED Steve Haas 3-97 |

|   |  |  |
|---|--|--|
| STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN<br>TOLL BRIDGE SPECIAL ANALYSIS | PROJECT NO.<br>33-0025<br>POST MILE<br>1.5 |
|---|--|--|

|                    |   |   |                |
|--------------------|---|---|----------------|
| CU 04<br>EA 043001 | DISREGARD PRINTS BEARING EARLIER REVISION DATES | REVISION DATES (PRELIMINARY STAGE ONLY) | SHEET 30 OF 38 |
|--------------------|---|---|----------------|

|       |         |       |                          |           |              |
|-------|---------|-------|--------------------------|-----------|--------------|
| DIST. | COUNTY  | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 04    | SF, Alq | 80    | 7.8/8.9, 0.0/1.1         | 182       | 205          |

David Spon  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 12-8-97  
 PLANS APPROVAL DATE

DAVID SPON  
 REGISTERED PROFESSIONAL ENGINEER  
 No. 5862  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA

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**Notes**

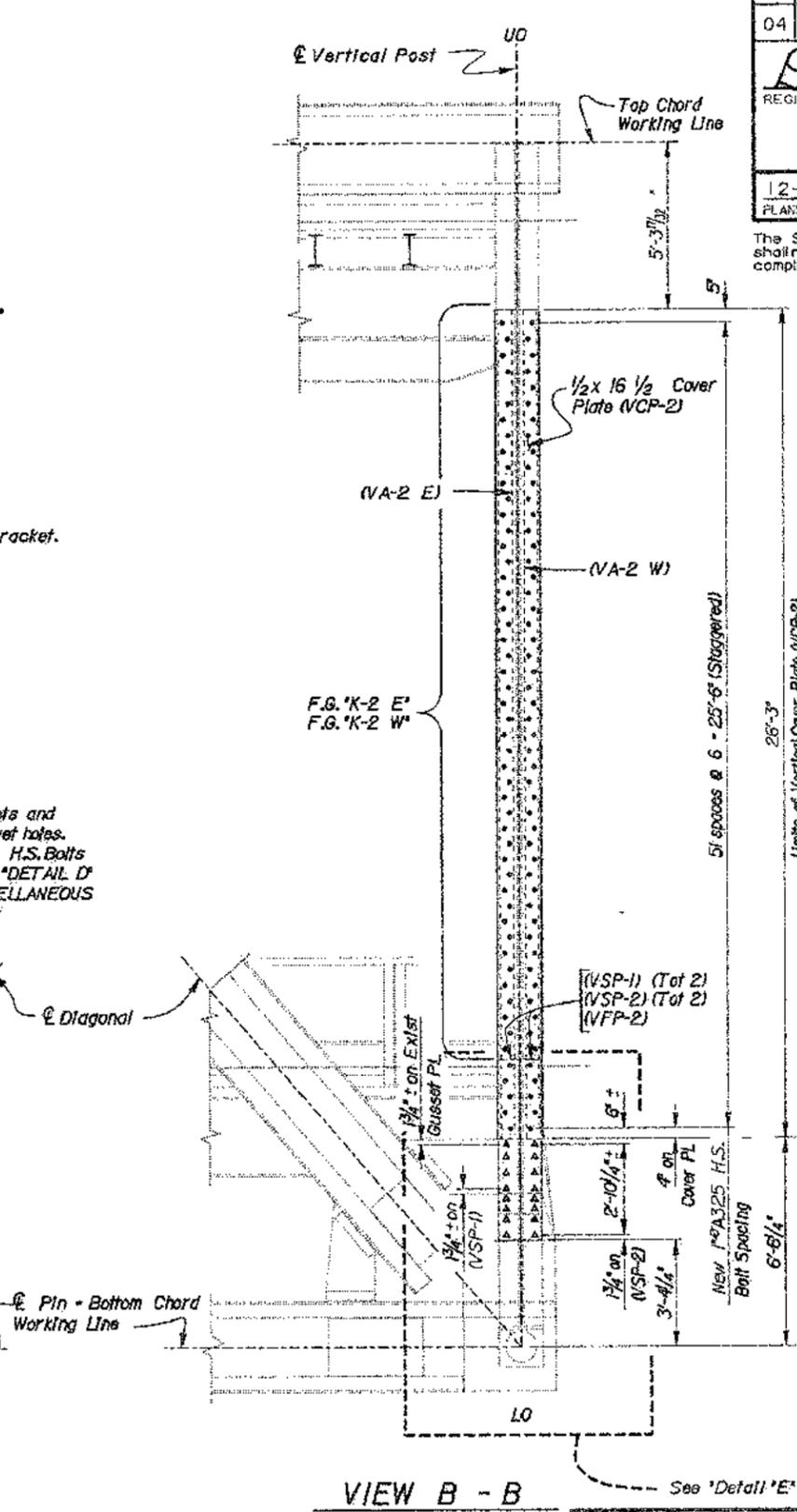
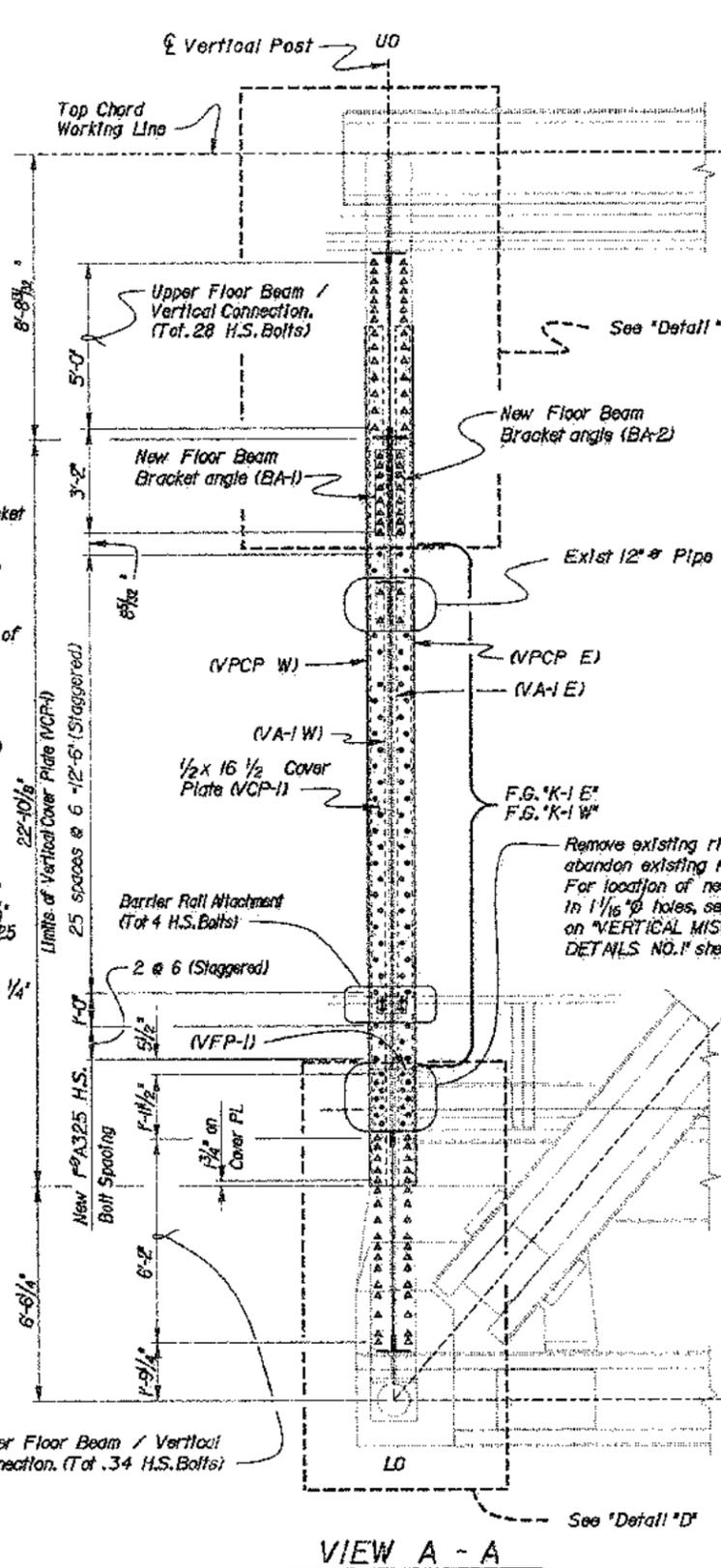
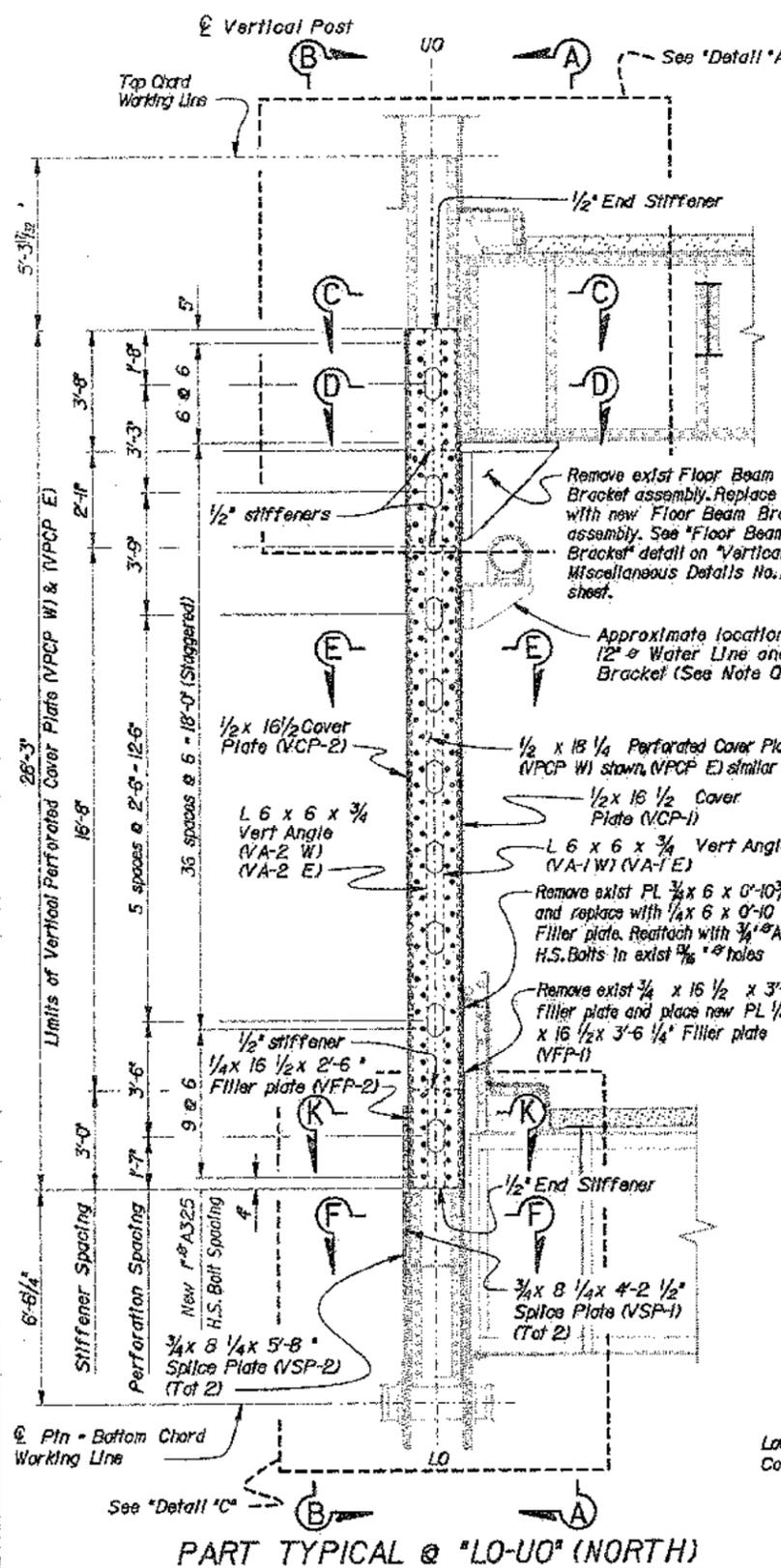
- For "Detail A", "B", "C", "D", "E" and Fastener Group details & dimensions not shown, see "Vertical Miscellaneous Details No. 1" sheet.
- For "Section C-C", "D-D", "E-E", "F-F" & "K-K" see "Vertical Miscellaneous Details No. 2" sheet.
- F.G. - Fastener Group.

**Note O**

The detachment and reattachment of exist 12" Water Line and bracket and temporary support structure is subject to approval by the Engineer.

**LEGEND**

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



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

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO - OAKLAND BAY BRIDGE**  
**SPANS E12 - E16 VERTICAL "LO-UO" (NORTH)**

|            |                        |                         |
|------------|------------------------|-------------------------|
| DESIGN     | BY Gerrard Hight 10-96 | CHECKED Phil Lutz 3-97  |
| DETAILS    | BY Jeff Thorne 3-97    | CHECKED Phil Lutz 3-97  |
| QUANTITIES | BY Phil Lutz 3-97      | CHECKED Steve Haas 3-97 |

|   |  |   |
|---|--|---|
| STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN<br>TOLL BRIDGE SPECIAL ANALYSIS | BRIDGE NO.<br>33-0025<br>POST MILE<br>1.5 |
|---|--|---|

|                    |                                |       |
|--------------------|--------------------------------|-------|
| CU 04<br>EA 043001 | DATE PLOTTED: 12-03-1997 09:54 | 31 38 |
|--------------------|--------------------------------|-------|

|                                |             |       |                          |           |              |
|--------------------------------|-------------|-------|--------------------------|-----------|--------------|
| DIS. NO.                       | COUNTY      | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 04                             | SF, Alameda | 80    | 7.8/8.9, 0.0/1.1         | 183       | 205          |
|                                |             |       |                          |           |              |
| 12-8-97<br>PLANS APPROVAL DATE |             |       |                          |           |              |

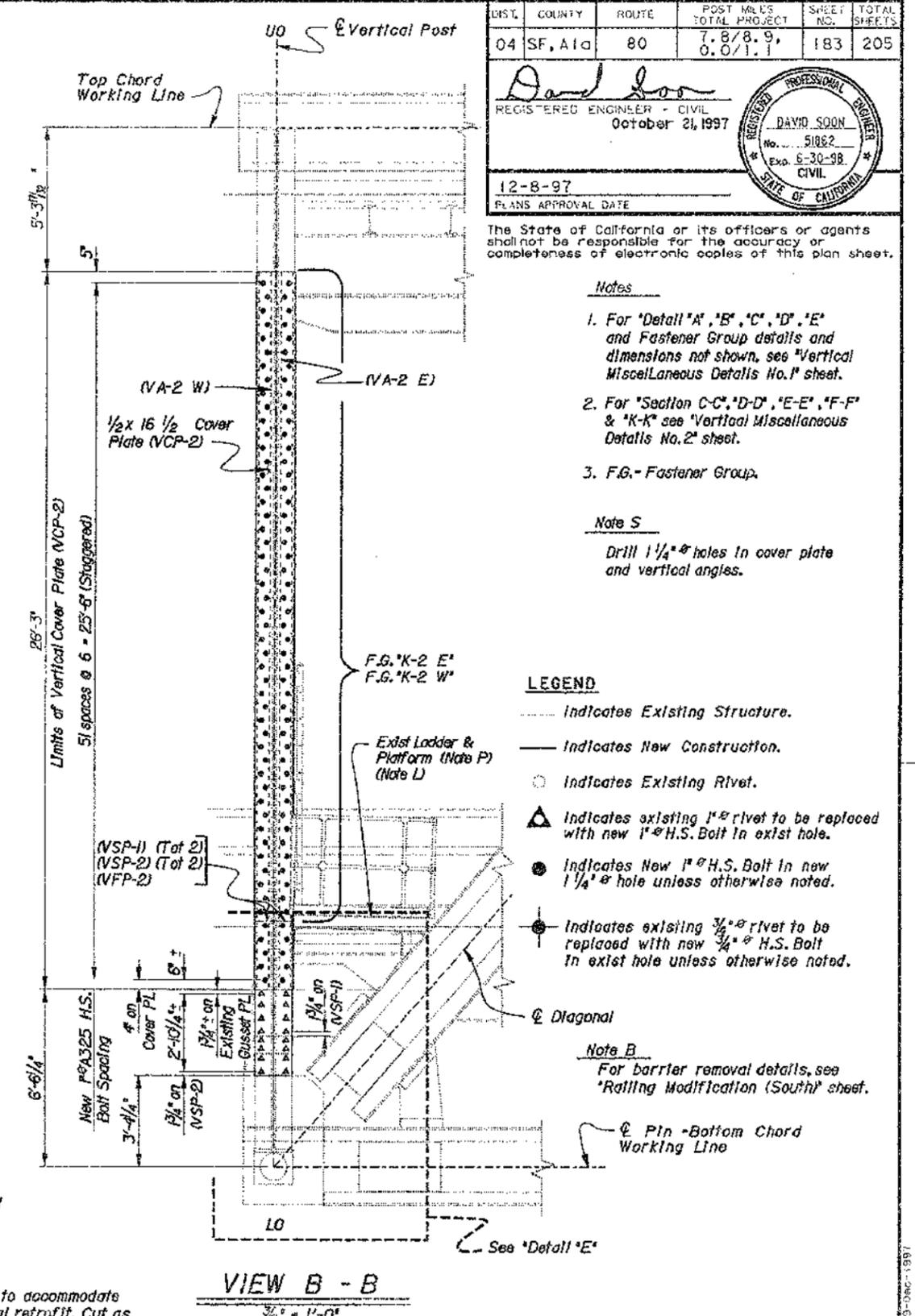
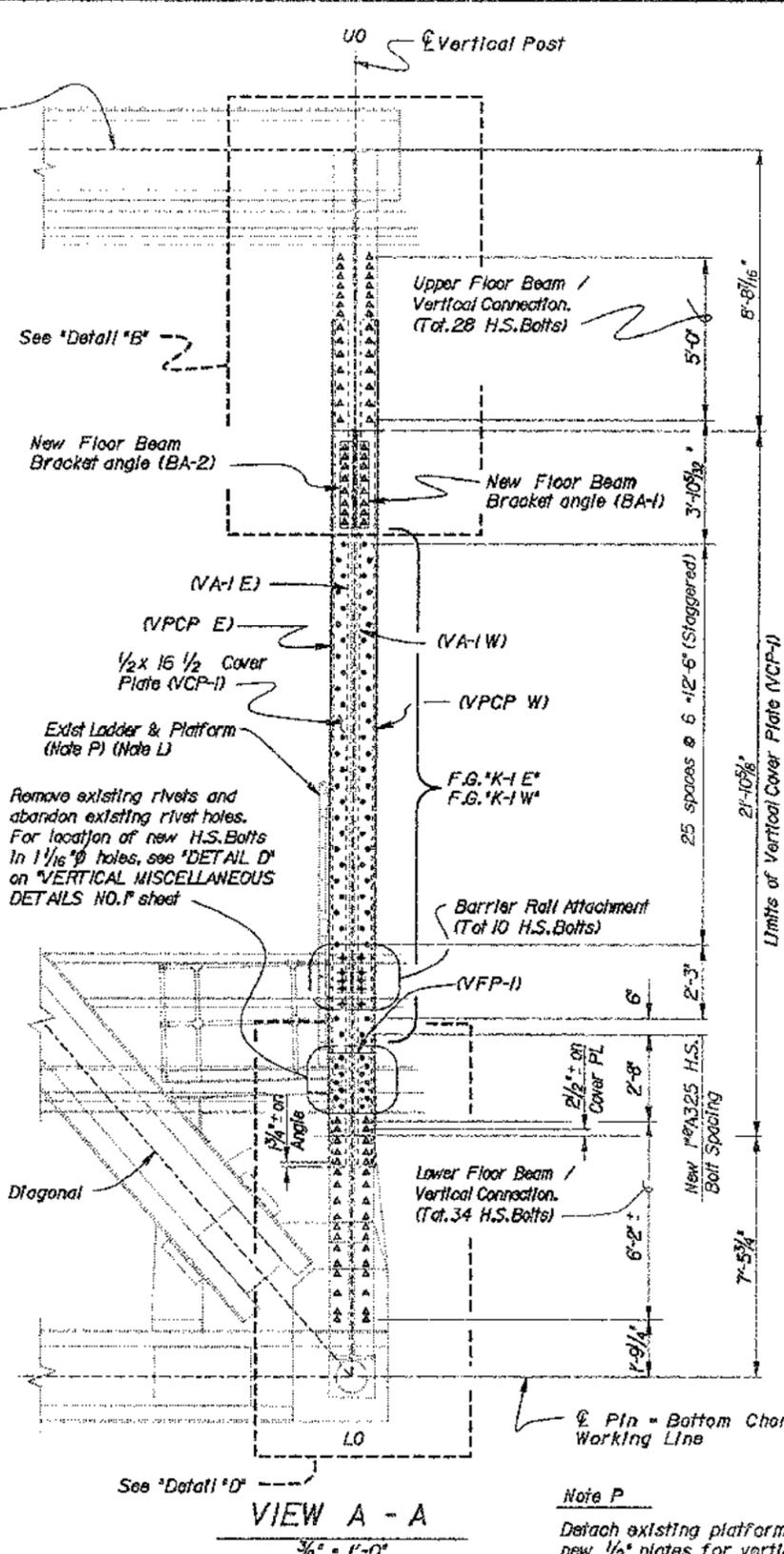
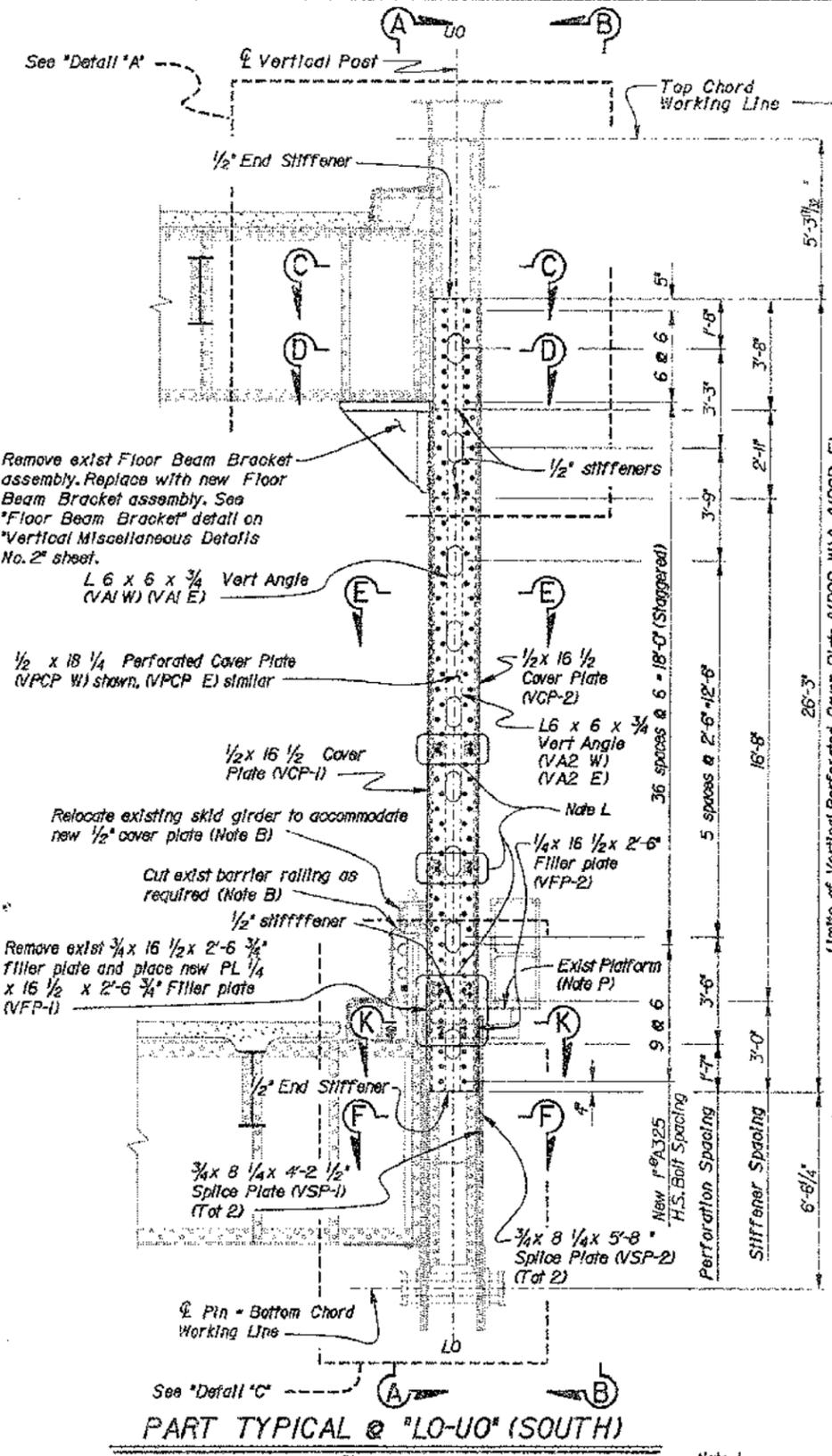
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

- Notes**
- For 'Detail A', 'B', 'C', 'D', 'E' and Fastener Group details and dimensions not shown, see 'Vertical Miscellaneous Details No. 1' sheet.
  - For 'Section C-C', 'D-D', 'E-E', 'F-F' & 'K-K' see 'Vertical Miscellaneous Details No. 2' sheet.
  - F.G. - Fastener Group.
- Note S**
- Drill 1/4" holes in cover plate and vertical angles.

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

**Note B**

For barrier removal details, see 'Railing Modification (South)' sheet.



**NOTE:**

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

**Note L**

Approximate location of exist ladder brackets to be modified to accommodate retrofit on west side only. (Span E14 & Span E15 only) Omit 1" H.S. Bolts and reattach ladder in new 1 1/4" holes for 3/4" A325 H.S. Bolts (Note P) (Note E)

**Note P**

Detach existing platform to accommodate new 1/2" plates for vertical retrofit. Cut as required and adjust bolt locations as needed. Subject to approval by the Engineer.

**INTERIM SEISMIC RETROFIT PROJECT**

**EAST BAY 208 TRUSSES SPAN E9 TO SPAN E16**

**SAN FRANCISCO - OAKLAND BAY BRIDGE**

**SPANS E12 -E16 VERTICAL "LO-UO" (SOUTH)**

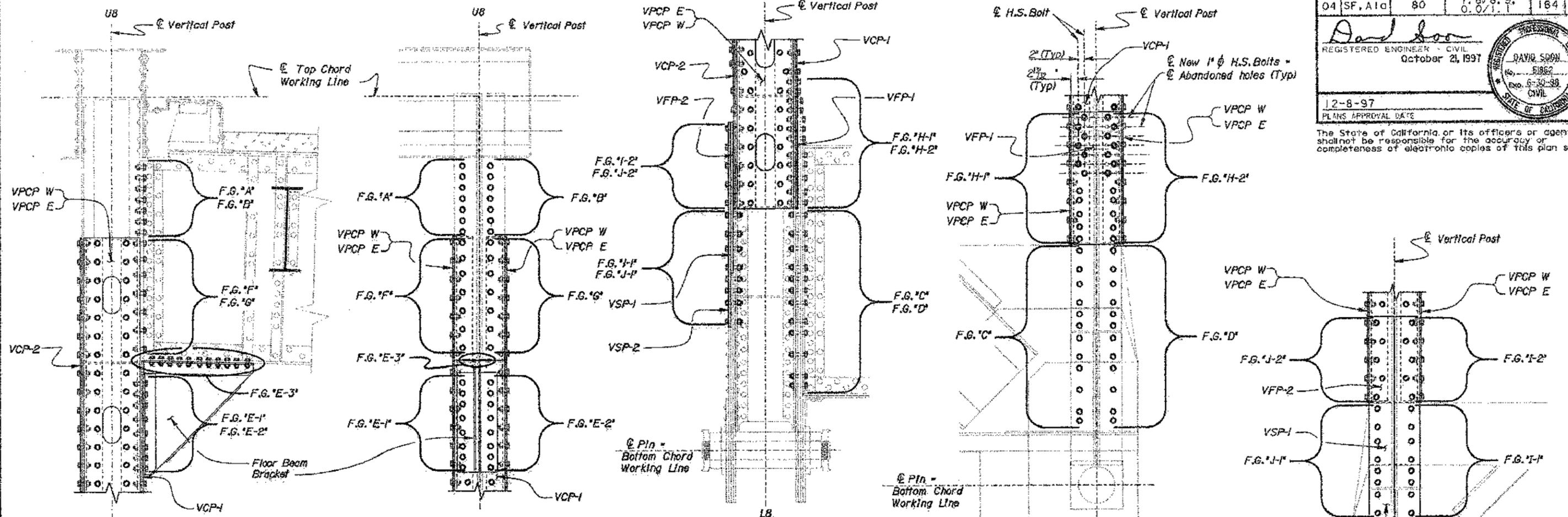
|            |                        |                         |
|------------|------------------------|-------------------------|
| DESIGN     | BY Gerrard Hight 10-86 | CHECKED Phil Lutz 3-97  |
| DETAILS    | BY Jeff Thorne 3-97    | CHECKED Phil Lutz 3-97  |
| QUANTITIES | BY Phil Lutz 3-97      | CHECKED Steve Hase 3-97 |

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
STRUCTURE DESIGN  
TOLL BRIDGE SPECIAL ANALYSIS

|            |         |
|------------|---------|
| BRIDGE NO. | 33-0025 |
| POST MILE  | 1.5     |
| SHEET      | 32      |
| OF         | 38      |

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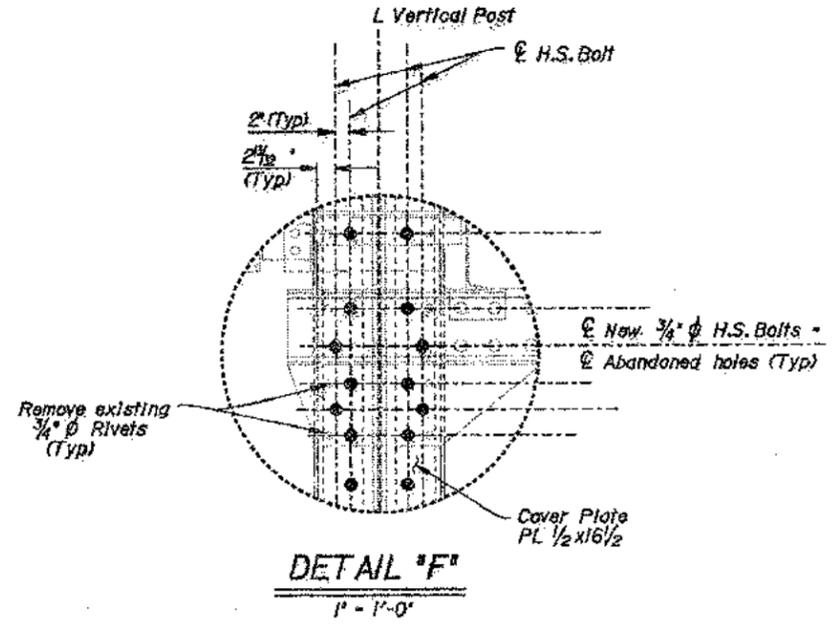
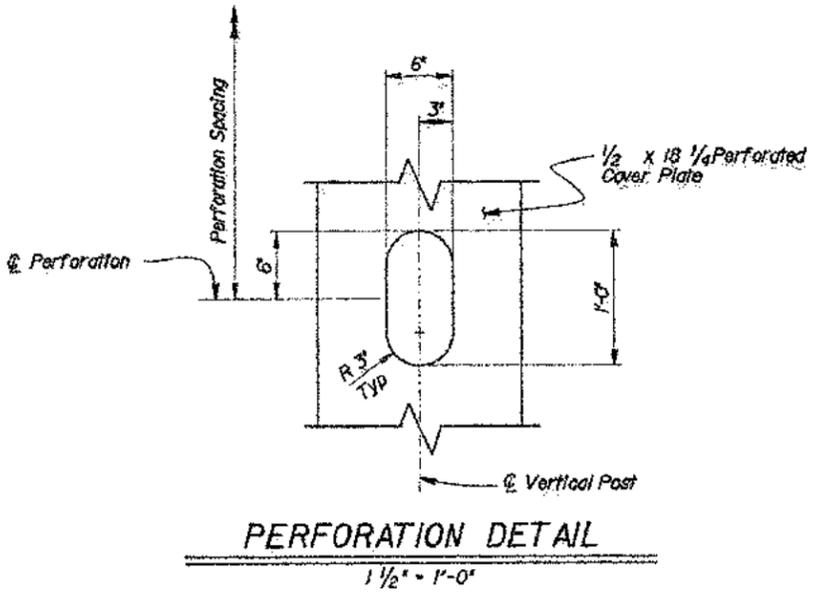
**DETAIL "A"**  
3/4" = 1'-0"

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

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

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

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

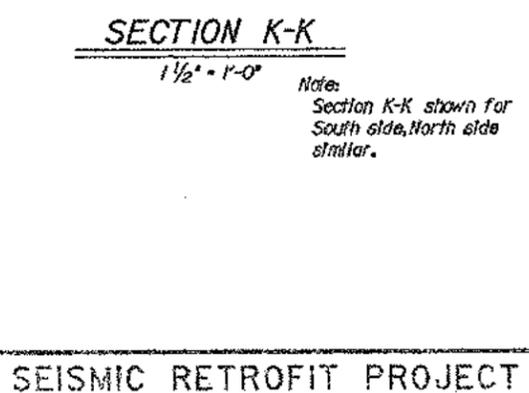
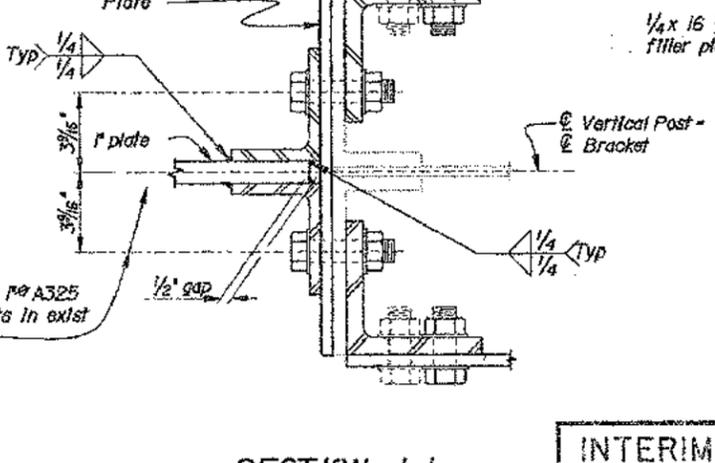
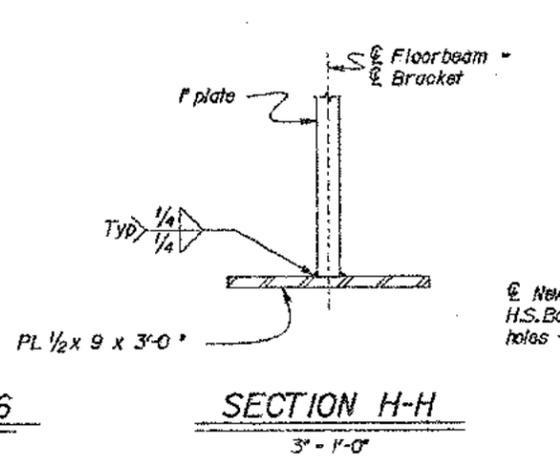
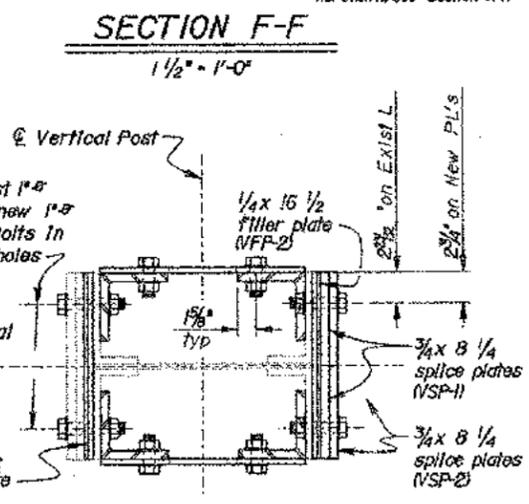
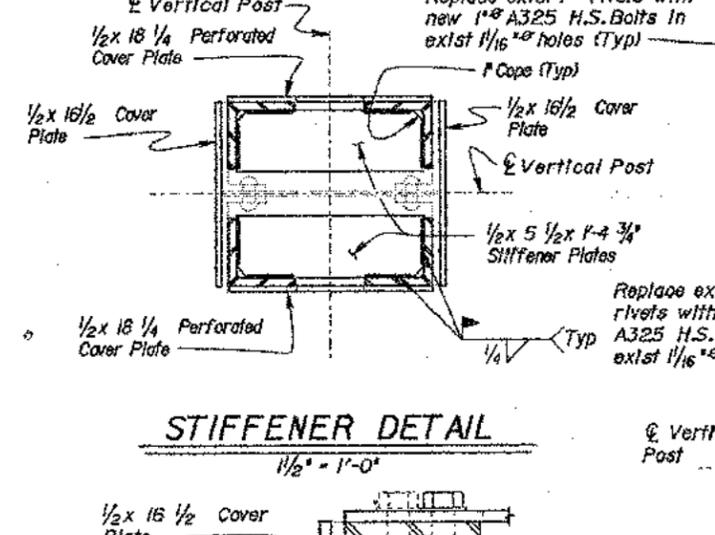
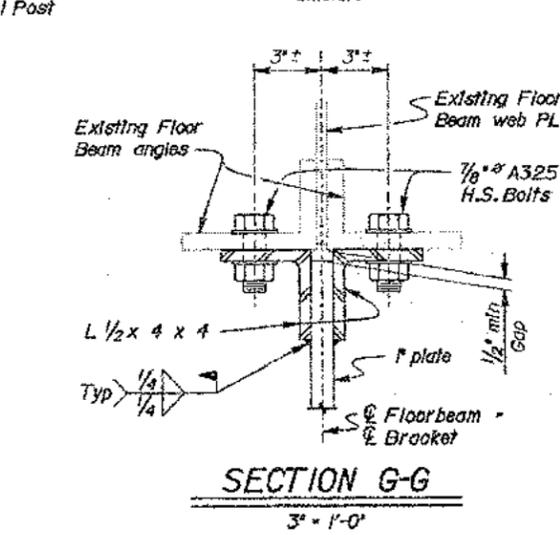
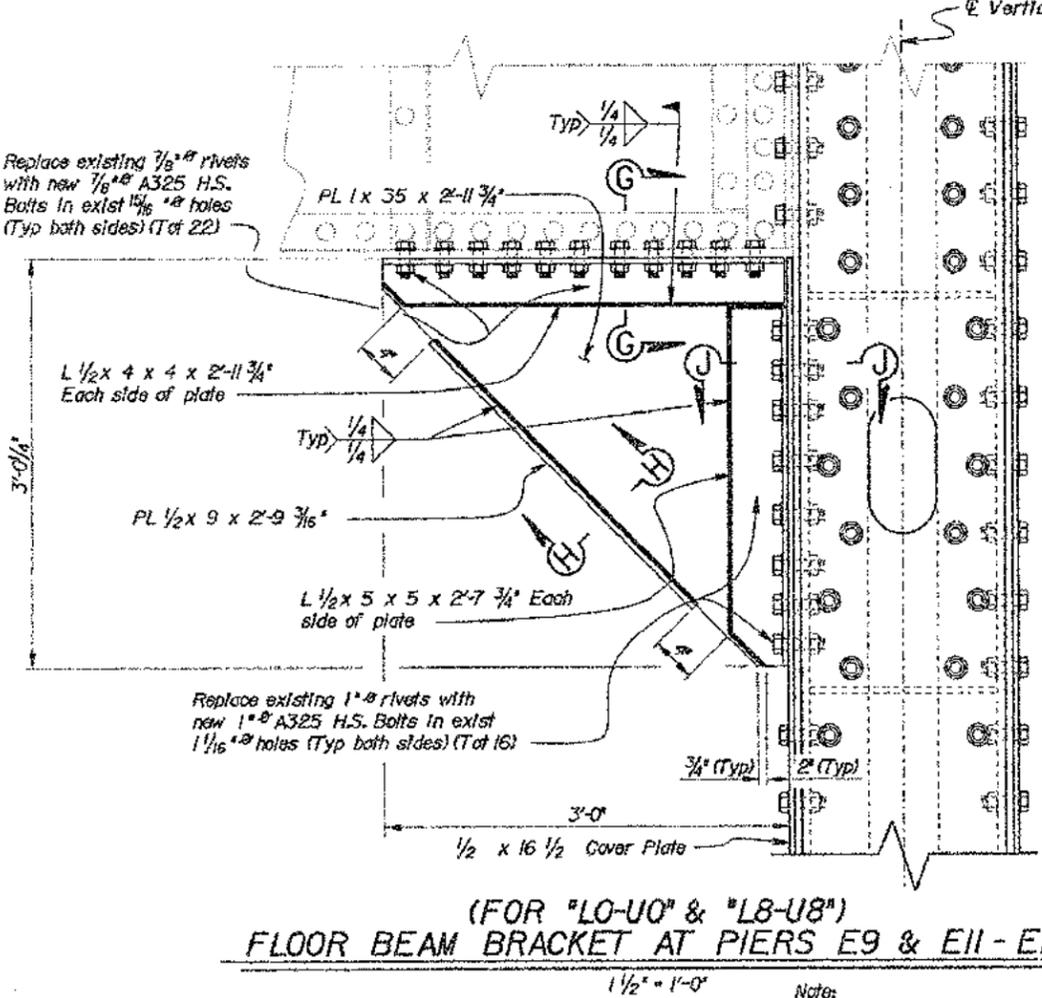
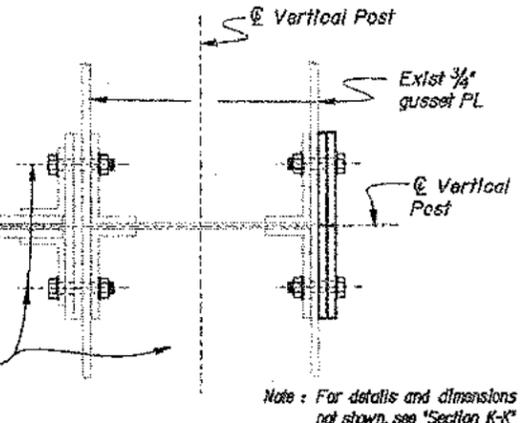
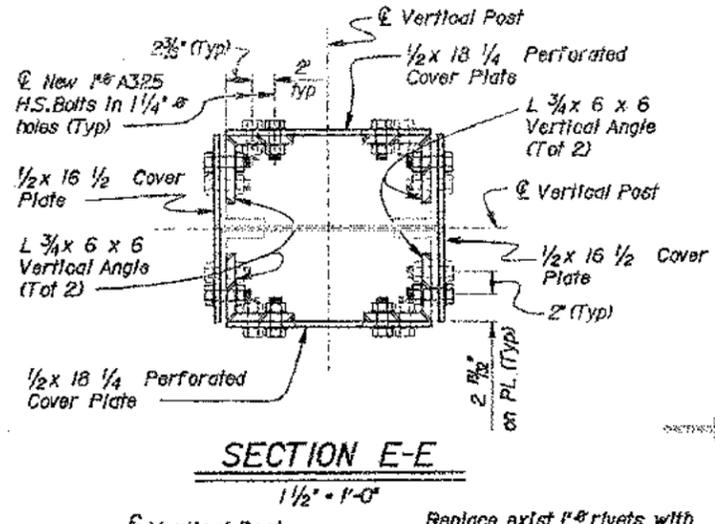
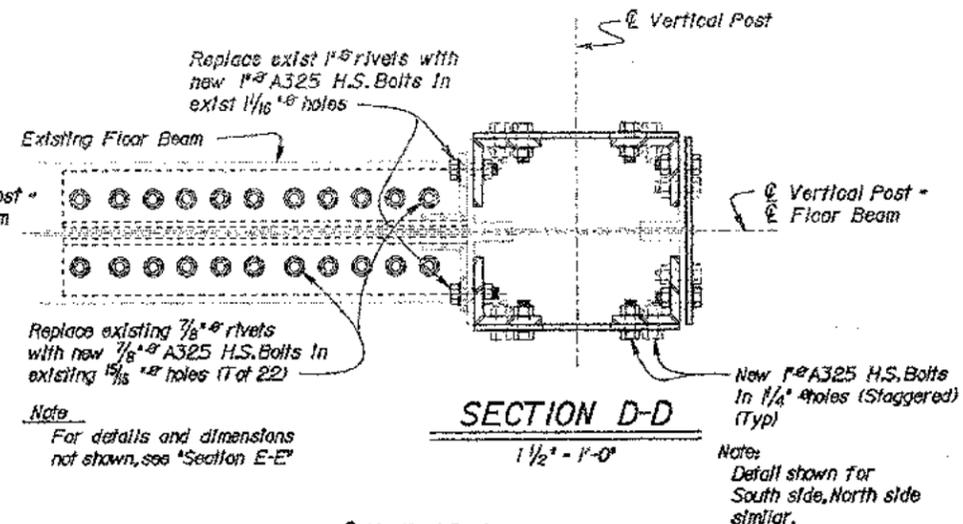
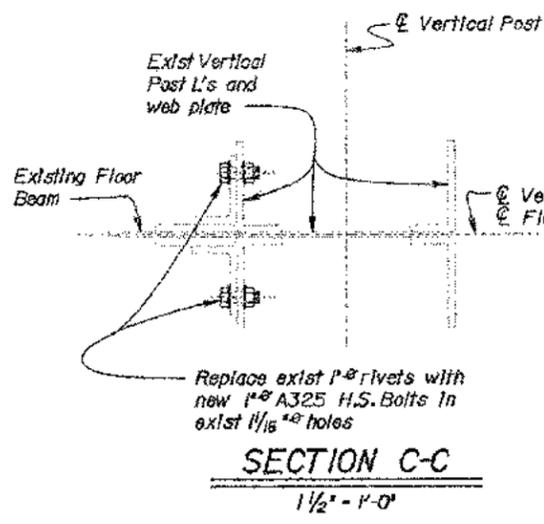


- Notes:**
1. For details and dimensions not shown, see "Vertical Member Retrofit" detail sheets.
  2. Vertical angles not labeled.
  3. Detail shown for LB-UB North side, other similar.
  4. "DETAIL F" accurate for location of new 3/4" H.S. Bolts only. "DETAIL F" for Span E9 "LD-UB" North shown, other location similar.

INTERIM SEISMIC RETROFIT PROJECT  
 EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16  
 SAN FRANCISCO - OAKLAND BAY BRIDGE  
 VERTICAL MISCELLANEOUS DETAILS NO. 1

|            |                         |                          |   |  |             |         |                                    |           |
|------------|-------------------------|--------------------------|---|--|-------------|---------|------------------------------------|-----------|
| DESIGN     | BY: Gerrard Hight 10-86 | CHECKED: Phil Lutz 3-97  | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES<br>STRUCTURE DESIGN<br>TOLL BRIDGE SPECIAL ANALYSIS | BRIDGE NO.  | 33-0025 | SAN FRANCISCO - OAKLAND BAY BRIDGE |           |
| DETAILS    | BY: Jeff Thorne 3-97    | CHECKED: Phil Lutz 3-97  |   |  | POST MILE   |         |                                    | 1.5       |
| QUANTITIES | BY: Phil Lutz 3-97      | CHECKED: Steve Haas 3-97 |   |  | PROJECT NO. |         |                                    | EA 043001 |

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|  |  |
|--|--|
| INTERIM SEISMIC RETROFIT PROJECT         |  |
| EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16 |  |
| SAN FRANCISCO - OAKLAND BAY BRIDGE       |  |
| VERTICAL MISCELLANEOUS DETAILS NO. 2     |  |

|            |                        |                         |           |
|------------|------------------------|-------------------------|-----------|
| DESIGN     | BY Gerrard Hight 10-96 | CHECKED Phil Lutz 3-97  | DATE 3-97 |
| DETAILS    | BY Jeff Thorne 3-97    | CHECKED Phil Lutz 3-97  | DATE 3-97 |
| QUANTITIES | BY Phil Lutz 3-97      | CHECKED Steve Hoag 3-97 | DATE 3-97 |

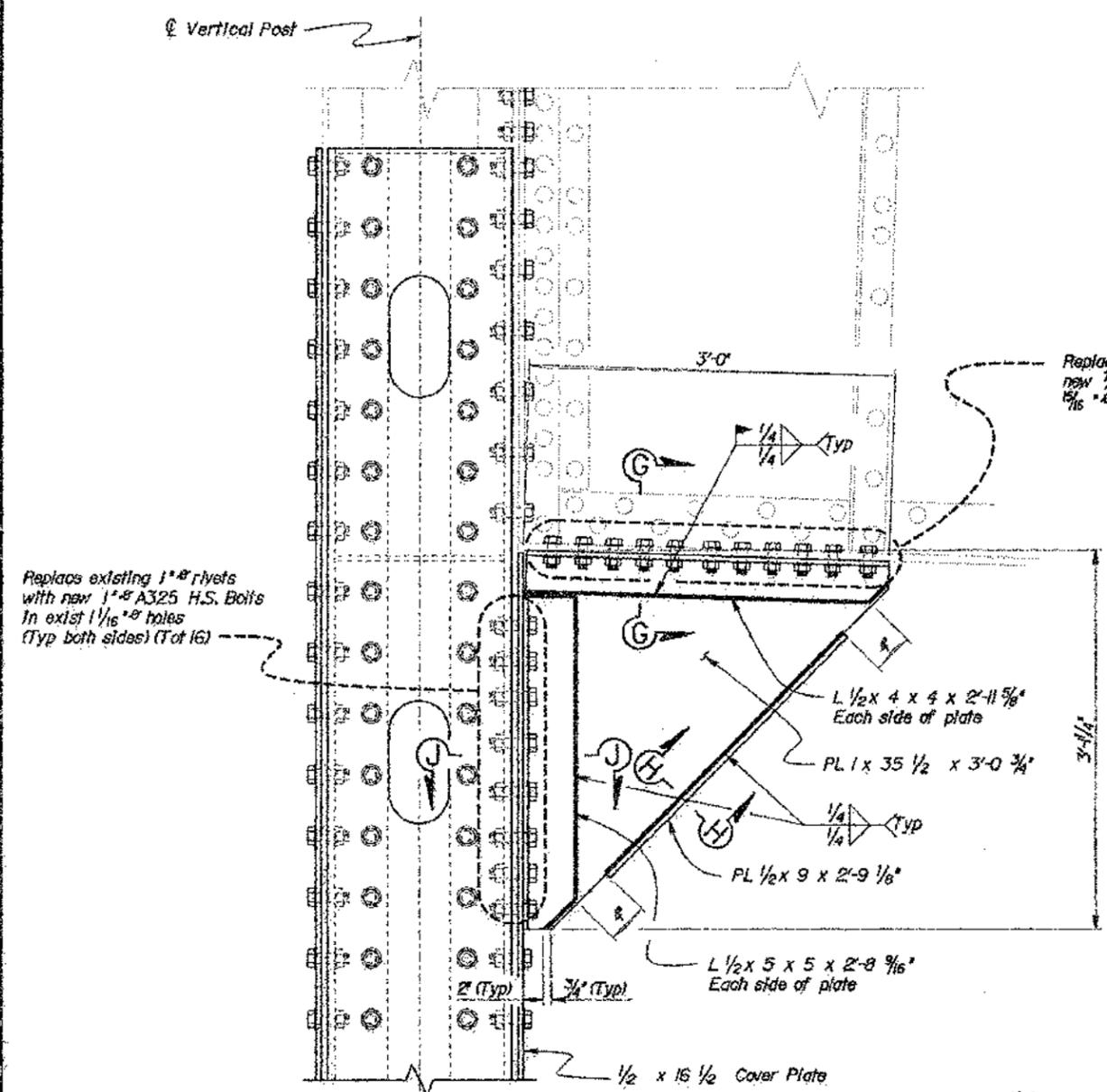
STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF STRUCTURES  
 STRUCTURE DESIGN  
 TOLL BRIDGE SPECIAL ANALYSIS  
 CU 04  
 EA 043001

| DIST. | COUNTY  | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|---------|-------|--------------------------|-----------|--------------|
| 04    | SF. A10 | 80    | 7.8/8.9, 0.0/1.1         | 186       | 205          |

David Soan  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997

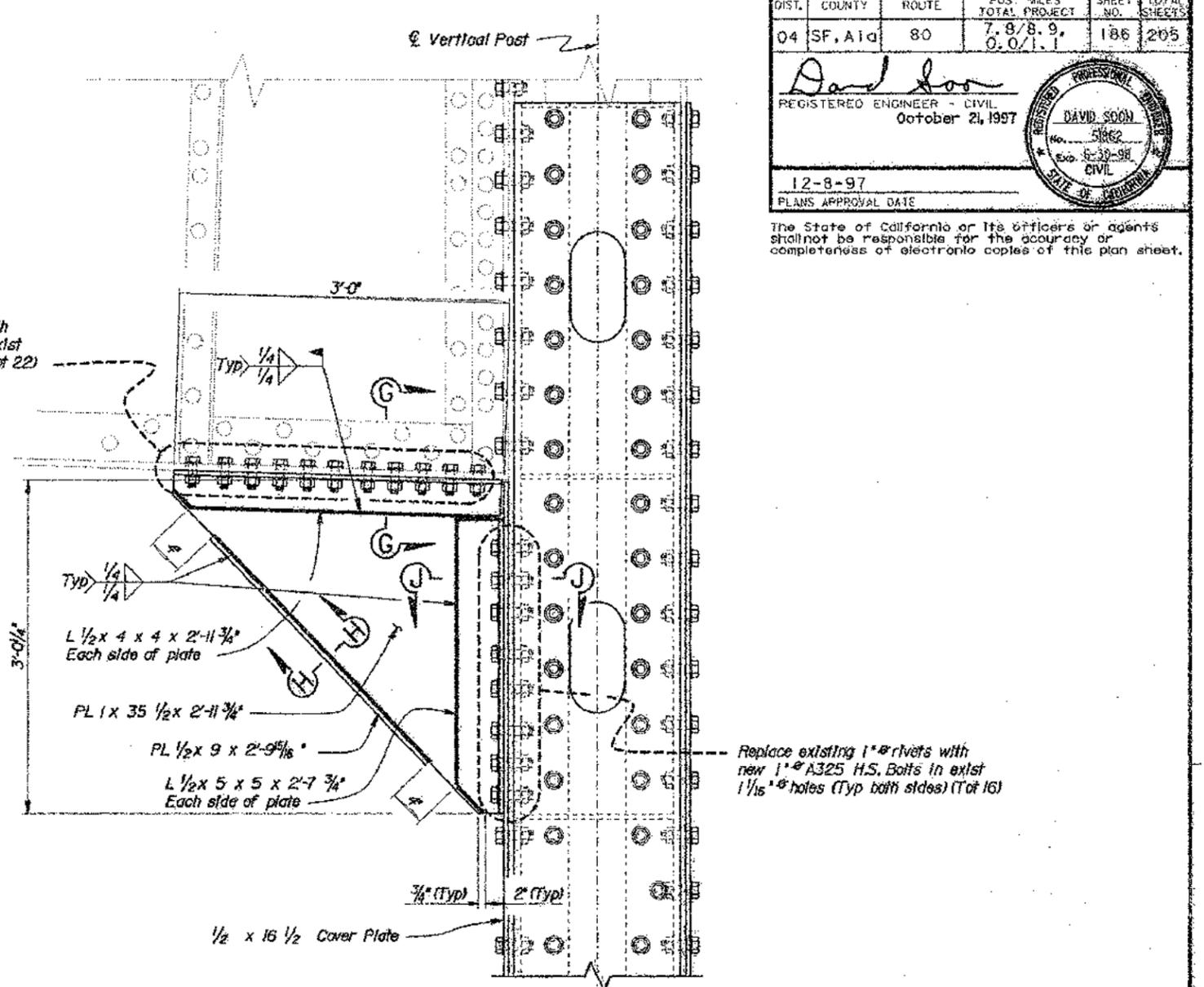
12-8-97  
 PLANS APPROVAL DATE

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Replace existing 1" rivets with new 1" A325 H.S. Bolts in exist 1 1/16" holes (Typ both sides) (Tot 16)

Replace existing 7/8" rivets with new 7/8" A325 H.S. Bolts in exist 1 1/16" holes (Typ both sides) (Tot 22)

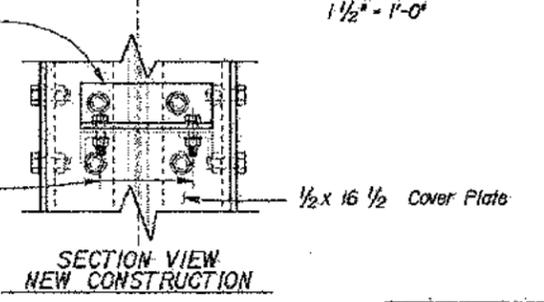
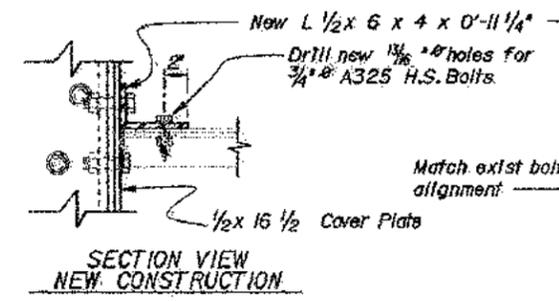
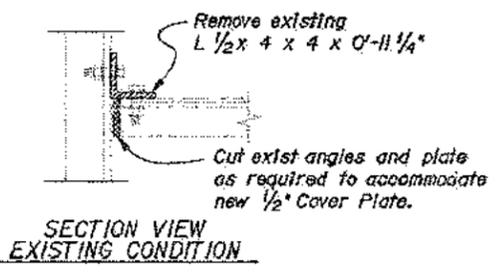


Replace existing 1" rivets with new 1" A325 H.S. Bolts in exist 1 1/16" holes (Typ both sides) (Tot 16)

(FOR "L8-U8" & "LO-U0" NORTH)  
 FLOOR BEAM BRACKET AT PIER E10

(FOR "L8-U8" & "LO-U0" SOUTH)  
 FLOOR BEAM BRACKET AT PIER E10

**Note**  
 For Section G-G, H-H & J-J and details and dimensions not shown, see "Vertical Miscellaneous Details No. 2" sheet.



LOWER RAIL BRACKET MODIFICATION DETAIL AT SPAN E10 "LO-U0" (NORTH)

Note: Span E10 "LO-U0" (North) shown, other North locations similar.

|  |  |
|--|--|
| INTERIM SEISMIC RETROFIT PROJECT         |  |
| EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16 |  |
| SAN FRANCISCO - OAKLAND BAY BRIDGE       |  |
| VERTICAL MISCELLANEOUS DETAILS NO. 3     |  |

|            |                        |                         |
|------------|------------------------|-------------------------|
| DESIGN     | BY Gerrard Hight 10-96 | CHECKED Phil Lutz 3-97  |
| DETAILS    | BY Jeff Thorne 3-97    | CHECKED Phil Lutz 3-97  |
| QUANTITIES | BY Phil Lutz 3-97      | CHECKED Steve Haas 3-97 |

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

|             |         |
|-------------|---------|
| PROJECT NO. | 33-0025 |
| POST MILE   | 1.5     |

| DIST. | COUNTY  | ROUTE | POST MILE TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|-------|---------|-------|-------------------------|-----------|--------------|
| 04    | SF, AIC | 80    | 7.8/8.9,<br>0.0/1.1     | 187       | 205          |

David Soon  
 REGISTERED ENGINEER - CIVIL  
 October 21, 1997  
 No. 5862  
 Exp. 6-30-98  
 CIVIL  
 STATE OF CALIFORNIA

12-8-97  
PLANS APPROVAL DATE

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- LEGEND**
- Indicates Existing Structure.
  - Indicates New Construction.
  - Indicates Existing Rivet.
  - △ Indicates existing 1" rivet to be replaced with new 1" H.S. Bolt in exist hole.
  - Indicates New 3/4" H.S. Bolt in new 1 1/8" hole.
  - ⊙ Indicates existing 3/4" rivet to be replaced with new 3/4" H.S. Bolt in exist hole.
  - ▨ Indicates limits of barrier rail removal for Alternative 1 and Alternative 2.
  - ▩ Indicates limits of optional rail removal for Alternative 1.

**Notes:**

1. **Rail Removal Alternative 1:** This alternative is to be used when the retrofit of the verticals requires the removal of the existing vertical C 10 X 15.3, the existing horizontal C 9 X 15, and the existing PL 5/16 X 30.

For relocation of utilities see Road Plans  
Saw out existing vertical C 10 X 15.3, the existing horizontal C 9 X 15, and the existing PL 5/16 X 30 and detach C 9 X 15 from vertical.

Remove rivets and/or bolts of Fastener Groups N and O.  
Remove existing vertical C 10 X 15.3, the existing horizontal C 9 X 15, and the existing PL 5/16 X 30 as a complete unit.  
Retrofit verticals.  
Reattach barrier rail, install Fastener Groups N, O, R, S, and T and reattach the existing horizontal C 9 X 15 to the verticals as shown in "LOWER RAIL BRACKET MODIFICATION DETAIL AT SPAN E10 'LO-UO'(NORTH)" detail on "VERTICAL MISCELLANEOUS DETAILS NO. 3" sheet.

All barrier railing to be reattached according to plans at the end of each work shift.

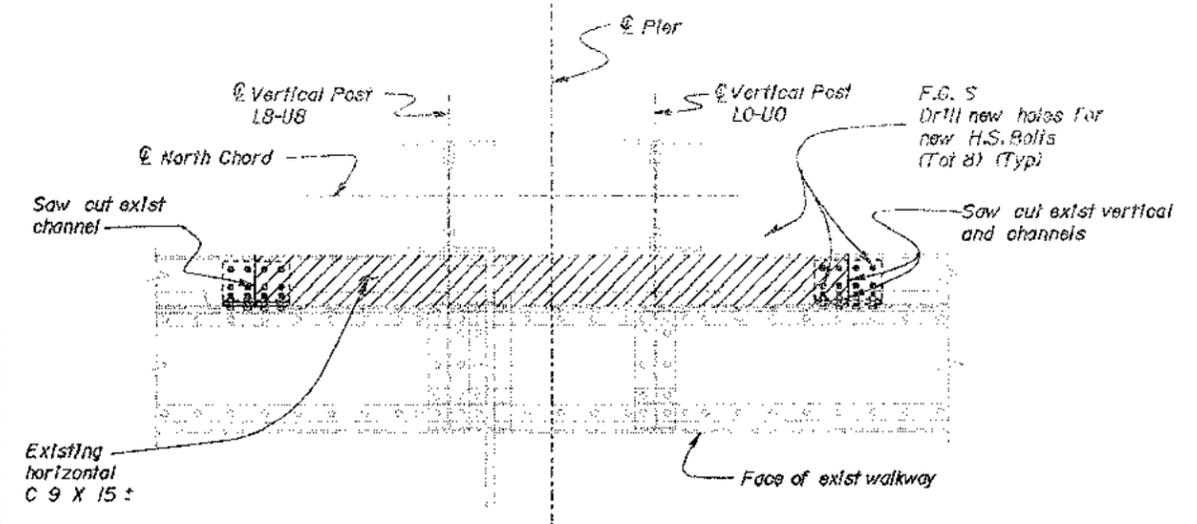
2. **Rail Removal Alternative 2:** This alternative is to be used when the retrofit of the verticals requires the removal of the existing vertical C 10 X 15.3 and the existing horizontal C 9 X 15.

For utilities relocation see Road Plans  
Saw out existing vertical C 10 X 15.3 and the existing horizontal C 9 X 15.

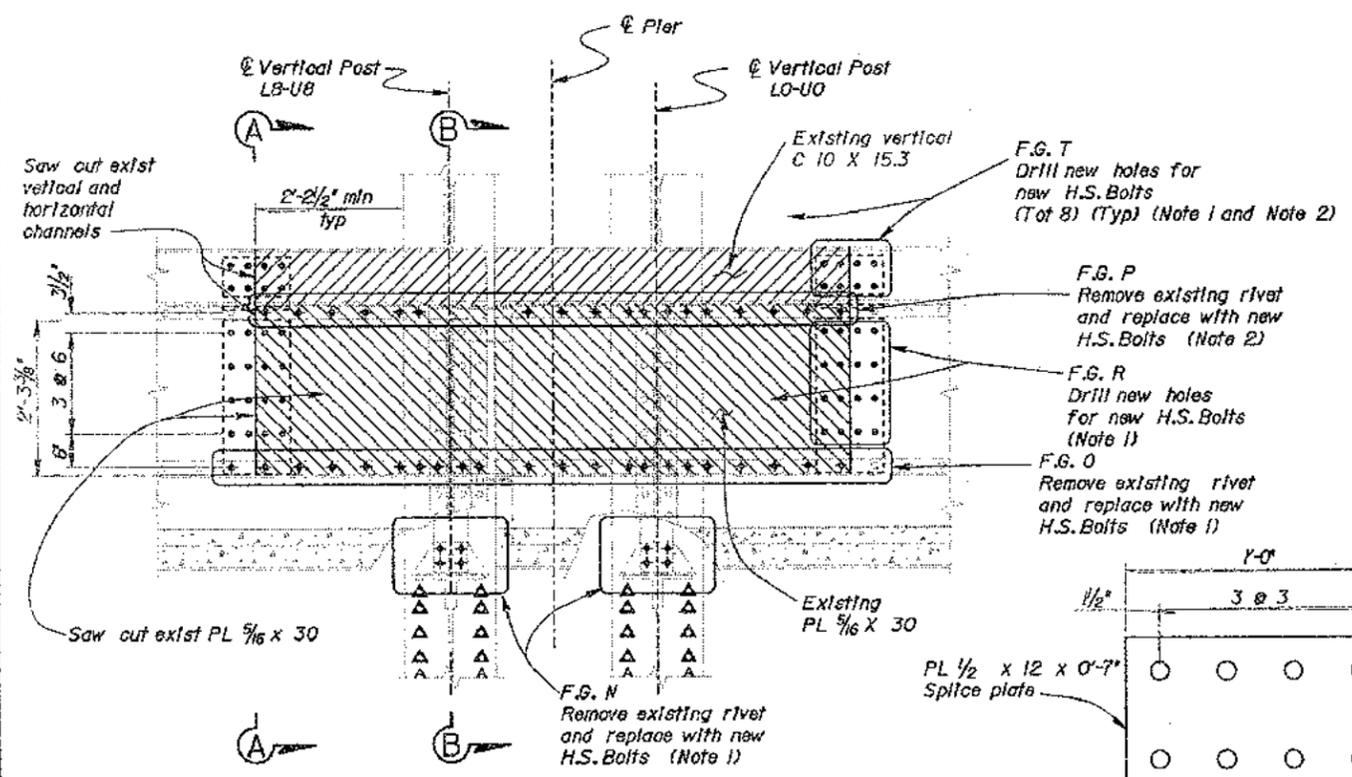
Remove rivets and/or bolts of Fastener Group P.  
Remove existing vertical C 10 X 15.3 and the existing horizontal C 9 X 15.

Retrofit verticals.  
Reattach barrier rail, install Fastener Groups P, S, and T and reattach the existing horizontal C 9 X 15 to the verticals as shown in "LOWER RAIL BRACKET MODIFICATION DETAIL AT SPAN E10 'LO-UO'(NORTH)" detail on "VERTICAL MISCELLANEOUS DETAILS NO. 3" sheet.

All barrier railing to be reattached according to plans at the end of each work shift.



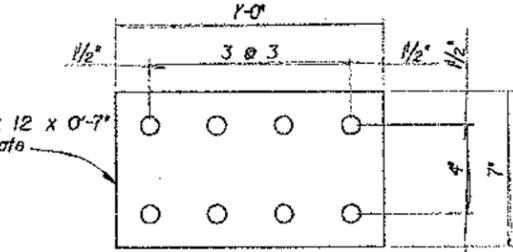
**BARRIER RAIL PLAN AT PIERS**  
3/4" = 1'-0"



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

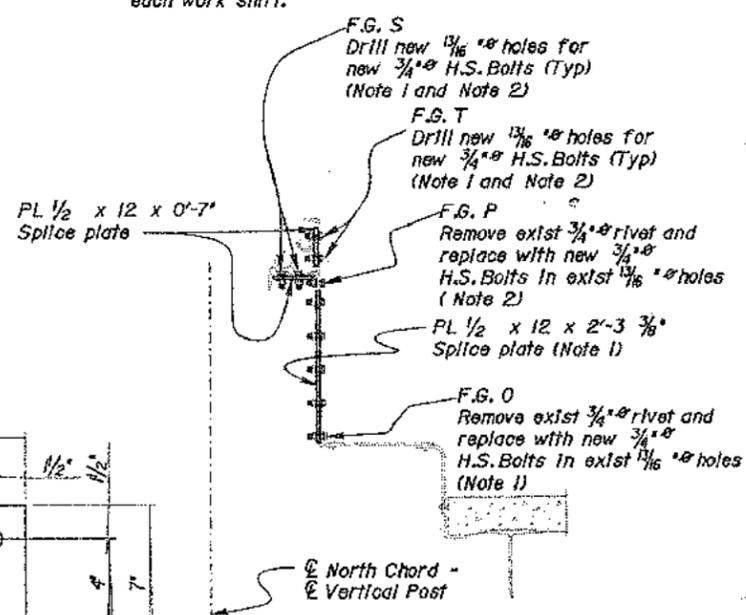
**Note**  
North Barrier Rail at Piers E12 -E16 shown, North Barrier Rail at Pier E11 'LO' is similar. No barrier rail removal required at Piers E9 E10 and E11 (Span E10 'LB').

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

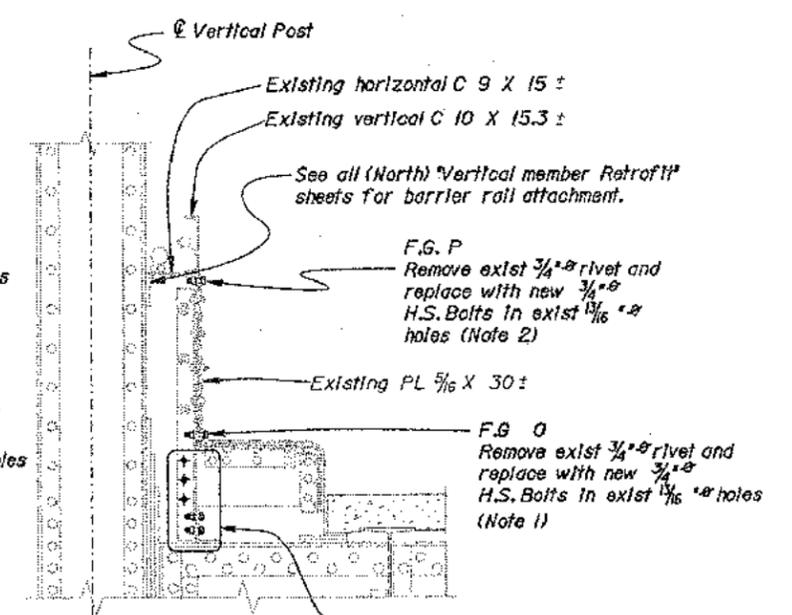


**TYPICAL SPLICE PLATE**  
3" = 1'-0"

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



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



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

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16**  
**SAN FRANCISCO - OAKLAND BAY BRIDGE**  
**RAILING MODIFICATION (NORTH)**

|            |                     |                         |   |                              |                    |  |
|------------|---------------------|-------------------------|---|------------------------------|--------------------|--|
| DESIGN     | BY Phil Lutz 6-97   | CHECKED David Soon 6-97 | STATE OF CALIFORNIA<br>DEPARTMENT OF TRANSPORTATION | DIVISION OF STRUCTURES       | BRIDGE NO. 33-0025 | SAN FRANCISCO - OAKLAND BAY BRIDGE<br>RAILING MODIFICATION (NORTH) |
| DETAILS    | BY Jeff Thorne 3-97 | CHECKED Phil Lutz 3-97  |   | STRUCTURE DESIGN             | POST MILE 1.5      |  |
| QUANTITIES | BY Phil Lutz 6-97   | CHECKED David Soon 6-97 |   | TOLL BRIDGE SPECIAL ANALYSIS |                    |  |

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3  
 CU 04 EA 043001  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 REVISION DATES (PRELIMINARY STAGE ONLY)  
 USERNAME -> fsping ekwrrmdLn36\_09095336



**LOCAL SEQUENCE FOR RETROFIT OF VERTICAL MEMBERS**

1. Remove ladders, brackets, railings, platforms and other items attached to the vertical if they will interfere with the retrofit work. Provide temporary supports for utilities where necessary.
2. Drill all new 1/4" dia. holes on the inside flanges of the vertical.
3. Remove all rivets in Fastener Group "A" and the upper six rivets in Fastener Group "C" and replace with 1.0" dia. A325 H.S. bolts.
4. Remove all rivets in Fastener Group "B" and the upper six rivets in Fastener Group "D" and replace with 1.0" dia. A325 H.S. bolts.
5. Remove the lower six rivets in Fastener Group "C" and the lower six rivets in Fastener Group "D" and replace with 1.0" dia. A325 H.S. bolts.
6. Remove all rivets in Fastener Groups "E-1", "E-2" and "E-3". Remove existing floor beam bracket assembly.
7. Remove all rivets in Fastener Group "F".
8. Remove all rivets in Fastener Groups "H-1" and "H-2". Remove 3/4" plate between vertical and lower floor beam.
9. Place inside cover plate VCP-1, filler plate VFP-1, angle VA-1 W. Insert and tighten 1" dia. A325 H.S. bolt Fastener Groups "F", "H-1" and "K-1 W".
10. Remove all rivets in Fastener Group "G".
11. Place angle VA-1 E. Insert and tighten 1" dia. A325 H.S. bolt Fastener Groups "G", "H-2" and "K-1 E".
12. Place Floor Beam bracket assembly. Insert and tighten 1" dia. A325 H.S. bolt Fastener Groups "E-1", "E-2" and "E-3".
13. Drill all new 1/4" dia. holes on the outside flanges of the vertical.
14. Remove all rivets in Fastener Groups "I-1".
15. Place splice plates VSP-1 W and VSP-2 W. Insert and tighten 1" dia. A325 H.S. bolt Fastener Group "I-1".
16. Remove all rivets in Fastener Groups "J-1".
17. Place splice plates VSP-1 E and VSP-2 E. Insert and tighten 1" dia. A325 H.S. bolt Fastener Group "J-1".
18. Place outside cover plate VCP-2, filler plate VFP-2, angle VA-2 W and VA-2 E. Insert and tighten 1" dia. A325 H.S. bolt Fastener Groups "I-2", "J-2", "K-2 E" and "K-2 W".
19. Weld all stiffener plates to angle pairs VA-1 W / VA-1 E and VA-2 W / VA-2 E with 1/4" fillet weld.
20. Place perforated plates VPCP W and VPCP E. Insert and tighten 1" dia. A325 H.S. bolts along entire length of both plates.
21. Replace all utilities on new cover plates by making adjustments as required and as approved by Engineer.

**Notes:**

1. Removal and support details shall be shown in working drawings and approved by the Engineer prior to disturbing existing facilities.
2. If conflicts arise in the Local and/or Global sequence stated above, the Contractor shall submit an explanation and proposed alternative to the Engineer, in writing, for approval prior to altering the sequence.

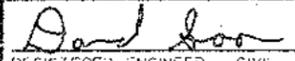
NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

**MISCELLANEOUS RETROFIT ABBREVIATIONS**

- F.G. - Fastener Group.
- VCP - Vertical Cover Plate.
- VFP - Vertical Filler Plate.
- VA - Vertical Angle.
- VSP - Vertical Splice Plate.
- VPCP - Vertical Perforated Cover Plate.

**Note**

For Fastener Group A to J location, see "Vertical Member Retrofit Miscellaneous Details No. 1" sheet. For Fastener Group K location, see "Vertical Member Retrofit" sheets.

|  |       |   |           |              |
|--|-------|---|-----------|--------------|
| DIS. COUNTY  | ROUTE | POST MILES TOTAL PROJECT  | SHEET NO. | TOTAL SHEETS |
| 04 SF, Alameda   | 80    | 7.8/8.9, 0.0/1.1  | 189       | 205          |
| <br>REGISTERED ENGINEER - CIVIL<br>October 21, 1997 |       |  |           |              |
| 12-8-97<br>PLANS APPROVAL DATE   |       |   |           |              |

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**GLOBAL SEQUENCE FOR RETROFIT OF VERTICAL MEMBERS**

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

|  |  |
|--|--|
| INTERIM SEISMIC RETROFIT PROJECT         |  |
| EAST BAY 288 TRUSSES SPAN E9 TO SPAN E16 |  |
| SAN FRANCISCO - OAKLAND BAY BRIDGE       |  |
| VERTICAL MISCELLANEOUS NOTES             |  |

|               |                     |         |                 |
|---------------|---------------------|---------|-----------------|
| DESIGN BY     | Gerrard Hight 10-96 | CHECKED | Phil Lutz 3-97  |
| DETAILS BY    | Jeff Thorne 3-97    | CHECKED | Phil Lutz 3-97  |
| QUANTITIES BY | Phil Lutz 3-97      | CHECKED | Steve Haas 3-97 |

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

BRIDGE NO.  
33-0025  
POST MILE  
1.5

CU 04  
EA 043001

|   |    |    |
|---|----|----|
| REVISION DATE (PRELIMINARY STAGE ONLY)          | 38 | 38 |
| DISREGARD PRINTS BEARING EARLIER REVISION DATES |    |    |