

| FED. ROAD DIST. NO. | STATE | PROJ. NO.            | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|----------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 240A-01-71<br>UNIT 2 | 1978        | 12        | 63           |

# BRIDGE GENERAL NOTES

## DESIGN SPECIFICATIONS:

STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, 11TH EDITION, 1973, WITH SUBSEQUENT ADDITIONS & MODIFICATIONS.

## CONSTRUCTION SPECIFICATIONS:

STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION, STATE OF HAWAII, DEPT. OF TRANSPORTATION, HIGHWAYS DIVISION.

## LIVE LOAD:

HS 20-44

## MATERIALS:

- CONCRETE, EXCEPT WHERE OTHERWISE SPECIFIED, SHALL BE CLASS 'A' & HAVE A 28-DAY STRENGTH OF 3000 P.S.I.
- PRESTRESSED CONCRETE GIRDERS:  
28-DAY STRENGTH = 5500 P.S.I.  
STRENGTH AT RELEASE OF TENDONS = 4500 P.S.I.
- REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A615, GRADE 40.
- PRESTRESSING STRANDS SHALL BE 1/2" DIAMETER 7-WIRE STRESS RELIEVED STRANDS, 270 GRADE, WORKING FORCE AFTER ALL LOSSES---22,000 lb. PER STRAND TOTAL LOSSES EXCLUDING FRICTION---45,000 P.S.I. PER STRAND
- BRIDGE BEARINGS SHALL BE ELASTOMERIC BEARINGS, PADS HAVING DUROMETER 60 HARDNESS. SHALL BE LAMINATED WITH TWO 1/2" THICK ELASTOMERIC LAMINATIONS.
- ALL ELASTOMERIC PREFORMED PADS & PREMOLDED FILLERS SHALL BE INCIDENTAL TO CONCRETE & SHALL NOT BE PAID FOR SEPARATELY.

## ALLOWABLE STRESSES:

CONCRETE, 3000 P.S.I. 28-DAY STRENGTH: 1200 P.S.I. COMPRESSION  
REINFORCING STEEL: 20,000 P.S.I. TENSION  
SOIL PRESSURE: 6,000 P.S.F.

## CONCRETE PROTECTION FOR REINFORCEMENT (UNLESS SHOWN OTHERWISE):

|                        |        |
|------------------------|--------|
| DECK SLAB, TOP BARS    | 1 1/2" |
| DECK SLAB, BOTTOM BARS | 1 1/4" |
| GIRDERS                | 1 1/2" |
| ABUTMENTS & WALLS      | 2"     |
| FOOTINGS               | 3"     |
| ALL OTHERS             | 1 1/2" |

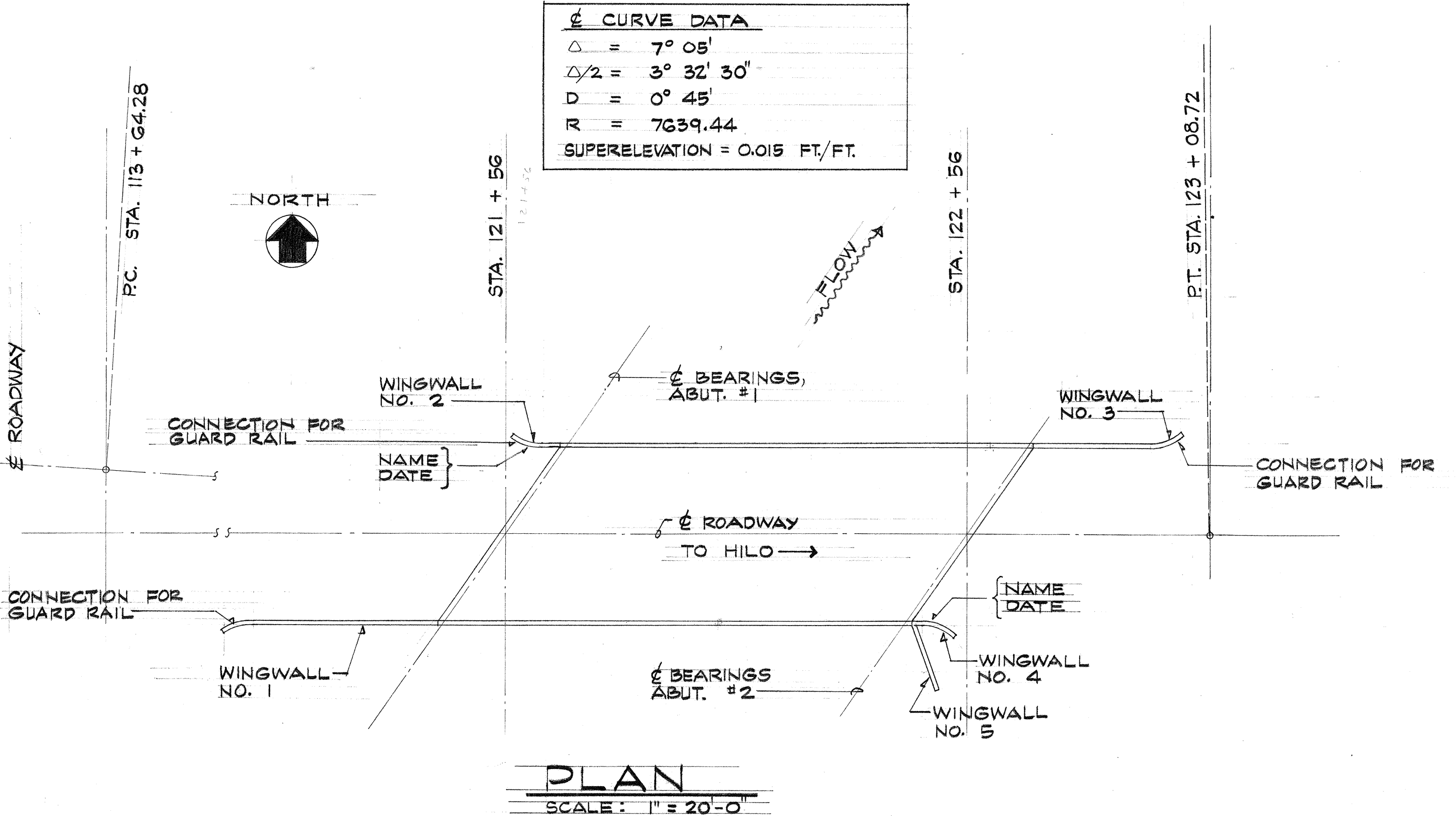
## CONSTRUCTION METHODS:

- PRESTRESSED GIRDERS SHALL BE SHORED AT ABUTMENTS ONLY (NO MIDSPAN SHORING)
- ALL BACKFILL FOR ABUTMENTS & WINGWALLS SHALL BE IN PLACE BEFORE PLACING GIRDERS.
- CONCRETE SEATS, CREEP BLOCKS & ANCHOR BLOCKS SHALL BE CAST MONOLITHICALLY WITH ABUTMENT. TOPS OF SEATS SHALL RECEIVE A HARD TROWEL FINISH.
- ELASTOMERIC BEARING PADS SHALL BE SECURED AGAINST MOVEMENT BY ADHESIVE WHICH SHALL BE APPROVED BY THE ENGINEER.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITY LINES. RELOCATION, IF NECESSARY, TO PERFORM WORK UNDER THIS CONTRACT SHALL BE AT HIS EXPENSE, CONTRACTOR SHALL COORDINATE WORK WITH OWNERS OF UTILITIES.
- FORMS FOR PRESTRESSED GIRDERS SHALL BE REMOVED & THE GIRDER INSPECTED BEFORE STRANDS ARE CUT.
- FOOTINGS SHALL BE POURED NEAT AGAINST UNDISTURBED BOTTOMS & SIDES OF EXCAVATIONS. UNAUTHORIZED EXCAVATION MADE BELOW THE REQUIRED FOOTING ELEVATION OR BEYOND THE LINES INDICATED SHALL BE BACKFILLED WITH CLASS "D" CONCRETE AT THE EXPENSE OF THE CONTRACTOR, AS DIRECTED BY THE ENGINEER.
- IN GENERAL, TOP OF CONCRETE DECK OF SUPERSTRUCTURE SHALL BE CONSTRUCTED TO FOLLOW THE FINISH ROADWAY HORIZONTAL CURVES & GRADE.
- EXCEPT AS OTHERWISE NOTED, CHAMFER ALL EXPOSED CORNERS OF CONCRETE 3/4" X 3/4".

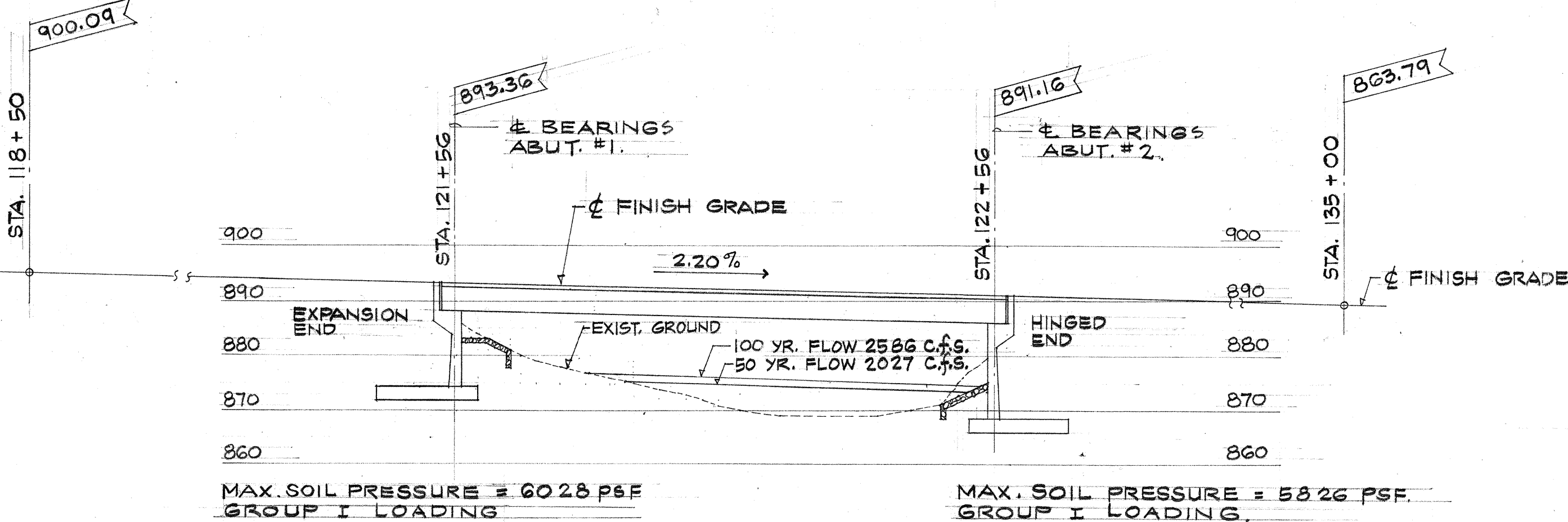
## APPROXIMATE QUANTITIES

| ITEM                                                 | QUANTITY      | UNIT |
|------------------------------------------------------|---------------|------|
| 206.6000 STRUCTURE EXCAVATION                        | 1384          | C.Y. |
| 206.7200 STRUCTURE BACKFILL                          | 970           | C.Y. |
| DRILLING & LOW PRESSURE GROUTING                     | FORCE ACCOUNT |      |
| 206.8200 FILTER MATERIAL FOR STRUCTURES              | 74            | C.Y. |
| 503.1090 CONCRETE IN BRIDGE, EXCEPT FOOTINGS         | (340 C.Y.)    | L.S. |
| 503.1091 CONCRETE IN BRIDGE, FOOTINGS                | (201 C.Y.)    | L.S. |
| 504.4100 TYPE IV PRESTRESSED CONCRETE GIRDERS        | (711 L.F.)    | L.S. |
| 507.1000 METAL BRIDGE RAILING-ONE RAIL ON PARAPET    | 267           | L.F. |
| 507.7000 CONCRETE BRIDGE PARAPET, INCLUDING END POST | 307           | L.F. |
| 602.0090 REINFORCING STEEL IN BRIDGES                | (82,000 lb.)  | L.S. |
| 612.0100 GROUTED RUBBLE PAVING                       | 103.0         | C.Y. |

| CURVE DATA                     |              |
|--------------------------------|--------------|
| $\Delta$                       | = 7° 05'     |
| $\Delta/2$                     | = 3° 32' 30" |
| D                              | = 0° 45'     |
| R                              | = 7639.44    |
| SUPERELEVATION = 0.015 FT./FT. |              |



PLAN  
SCALE: 1" = 20'-0"

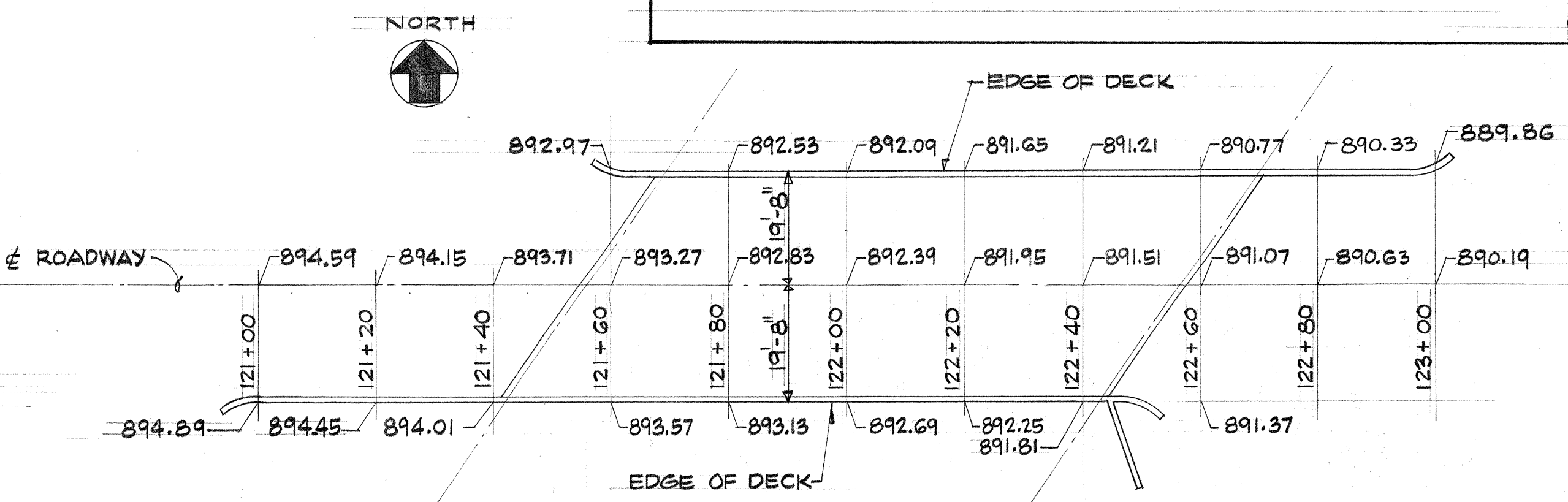


SECTION AT ROADWAY  
SCALE: 1" = 20'-0"

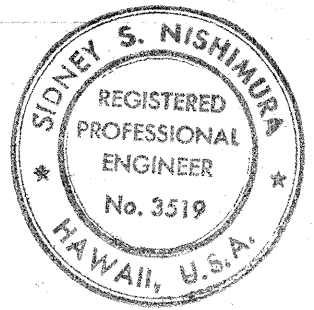
NAME DATE

NOTE:  
USE CORRECT NAME OF BRIDGE AND DATE OF YEAR BUILT  
EXACT DETAILS & SPACING OF LETTERS & FIGURES SHALL BE AS DIRECTED BY THE ENGINEER.

TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST  
NO SCALE



FINISH GRADE TOP OF DECK  
& WALL ELEVATION  
SCALE: 1" = 20'-0"



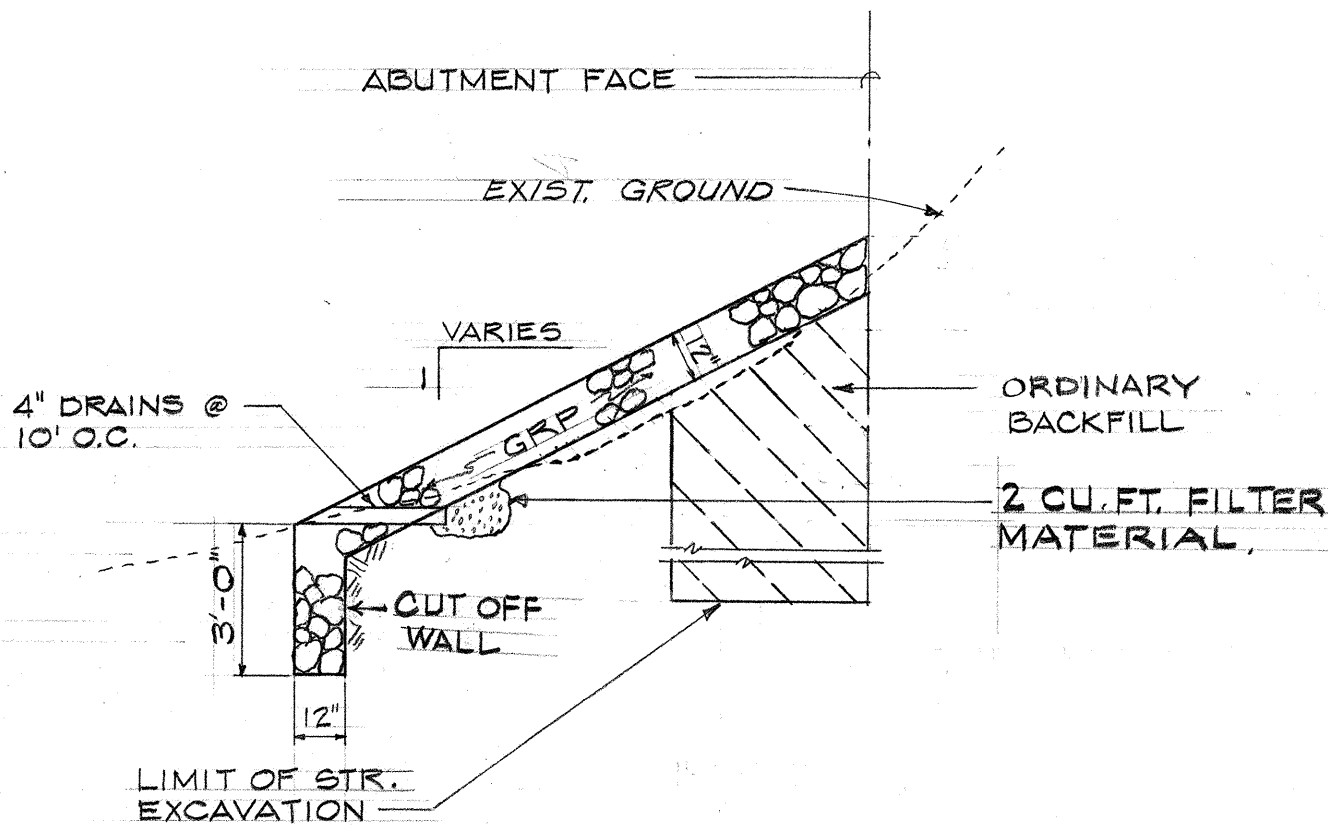
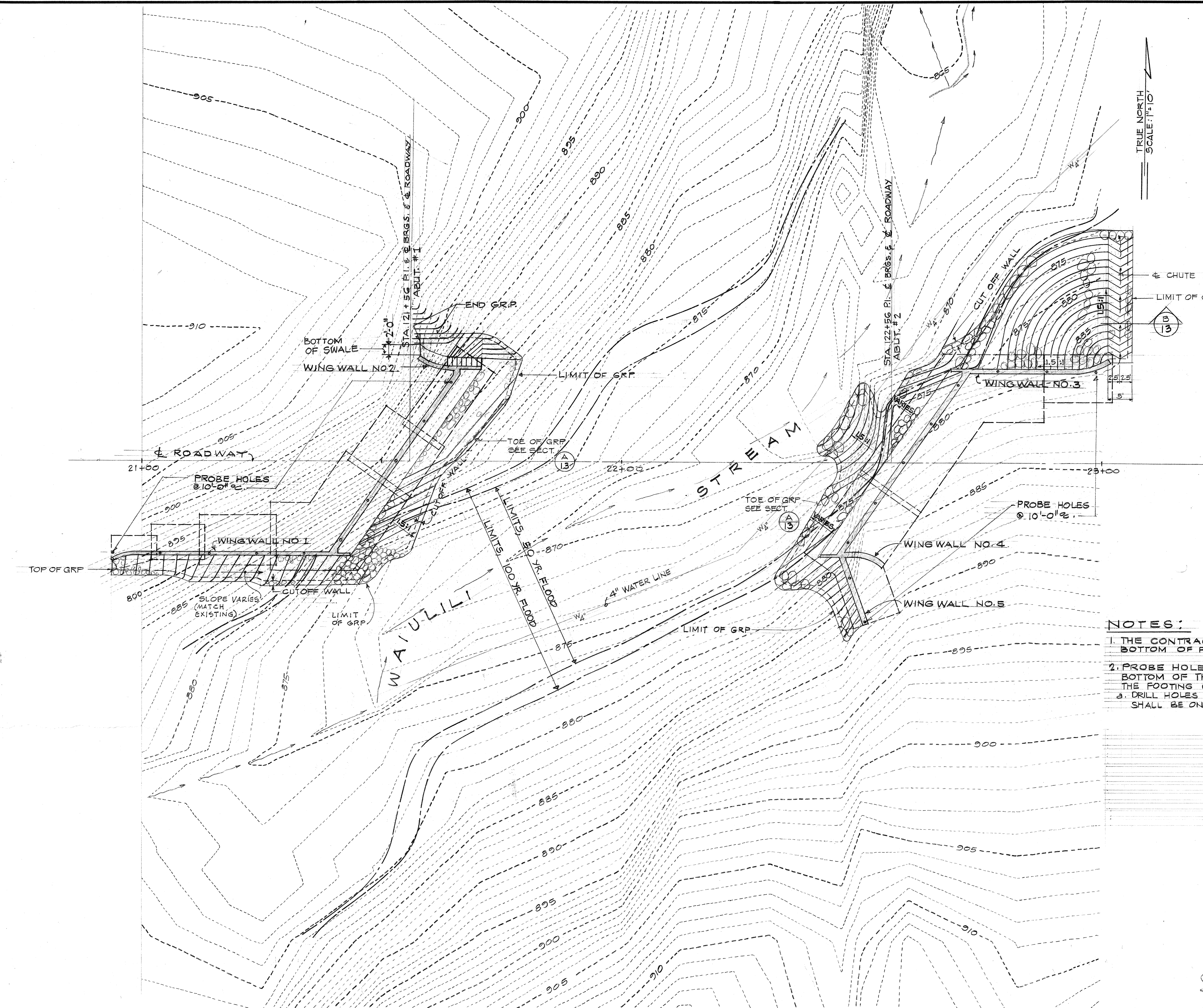
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION  
WAILULI STREAM BRIDGE  
GENERAL PLAN & ELEVATION  
HONOKAA-WAIPIO RD. PROJ. NO. 240A-01-71  
UNIT 2

SHEET NO. 1 OF 14 SHEETS

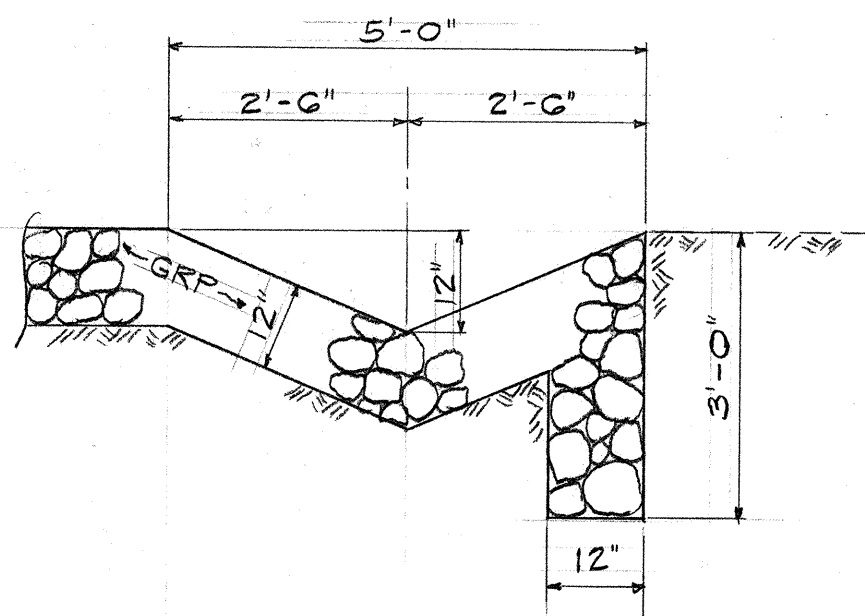
11 32  
C 221201



| FED. ROAD DIST. NO. | STATE | PROJ. NO.        | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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| HAWAII              | HAW.  | 240-01-71 UNIT 2 | 1978        | 13        | 63           |



SECTION A-13  
SCALE: 1/4" = 1'-0"



SECTION B-13  
SCALE: 1/2" = 1'-0"

- NOTES:
1. THE CONTRACTOR SHALL EXCAVATE FOOTINGS TO ELEVATIONS SHOWN. BOTTOM OF FOOTINGS SHALL REST ON ROCK FORMATION.
  2. PROBE HOLES: THE CONTRACTOR SHALL DRILL 3"Ø HOLES FROM THE BOTTOM OF THE FOOTING EXCAVATION TO A DEPTH EQUAL TO THE WIDTH OF THE FOOTING OR AS DIRECTED BY THE ENGINEER.
  3. DRILL HOLES SHALL BE GROUTED WITH LOW PRESSURE CEMENT GROUT. GROUT SHALL BE ONE PART PORTLAND CEMENT TO ONE PART SAND.

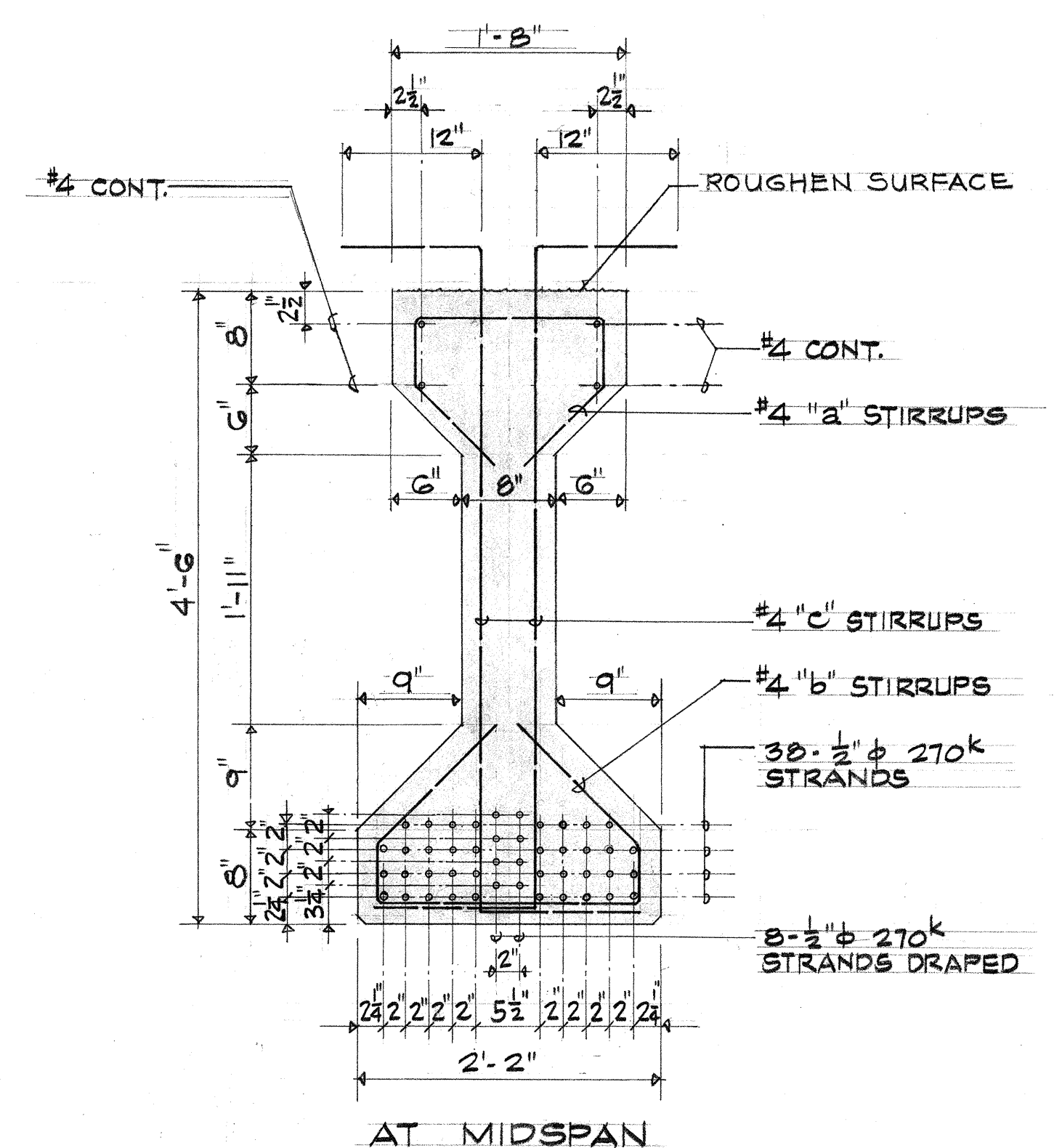
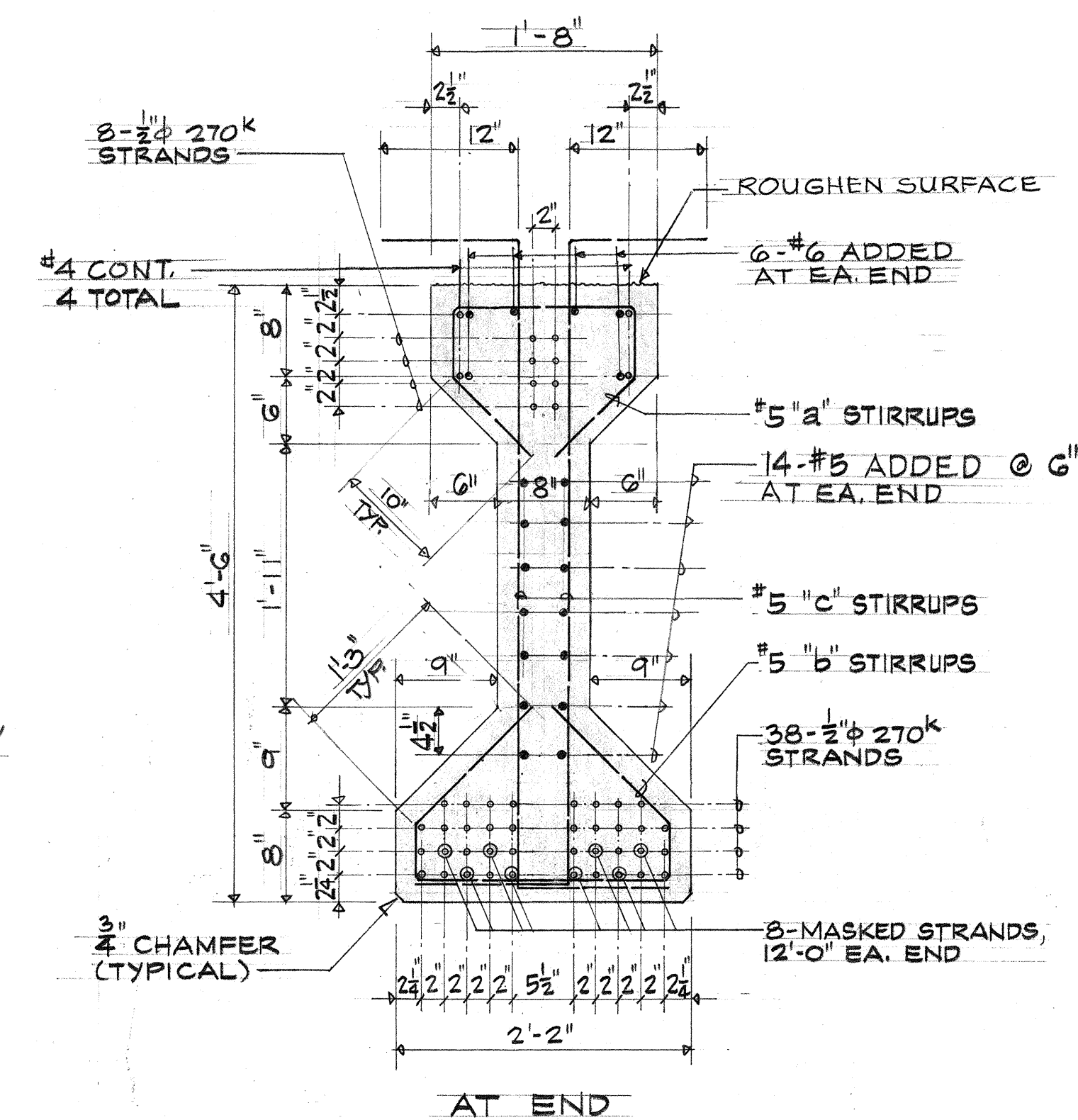
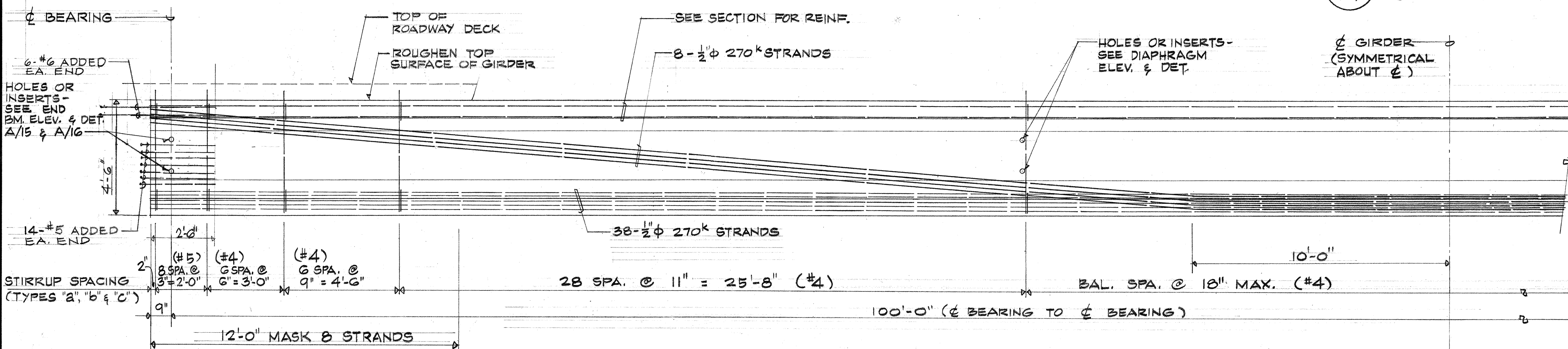
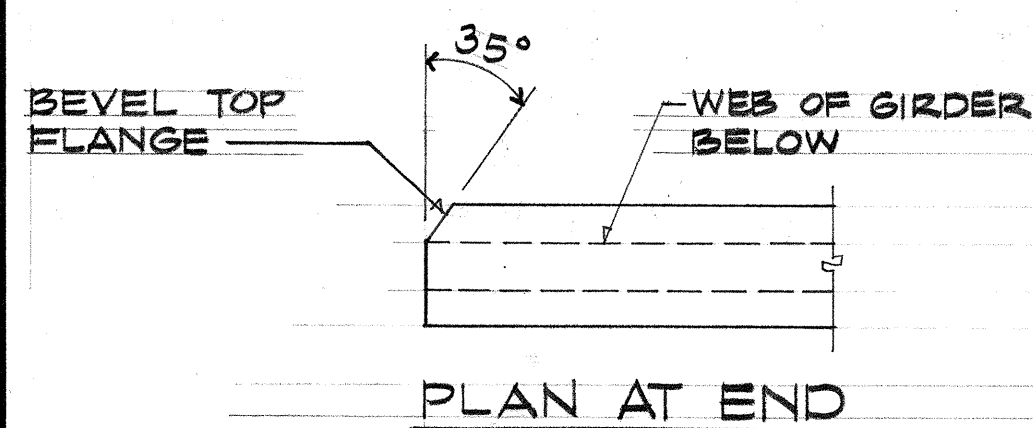
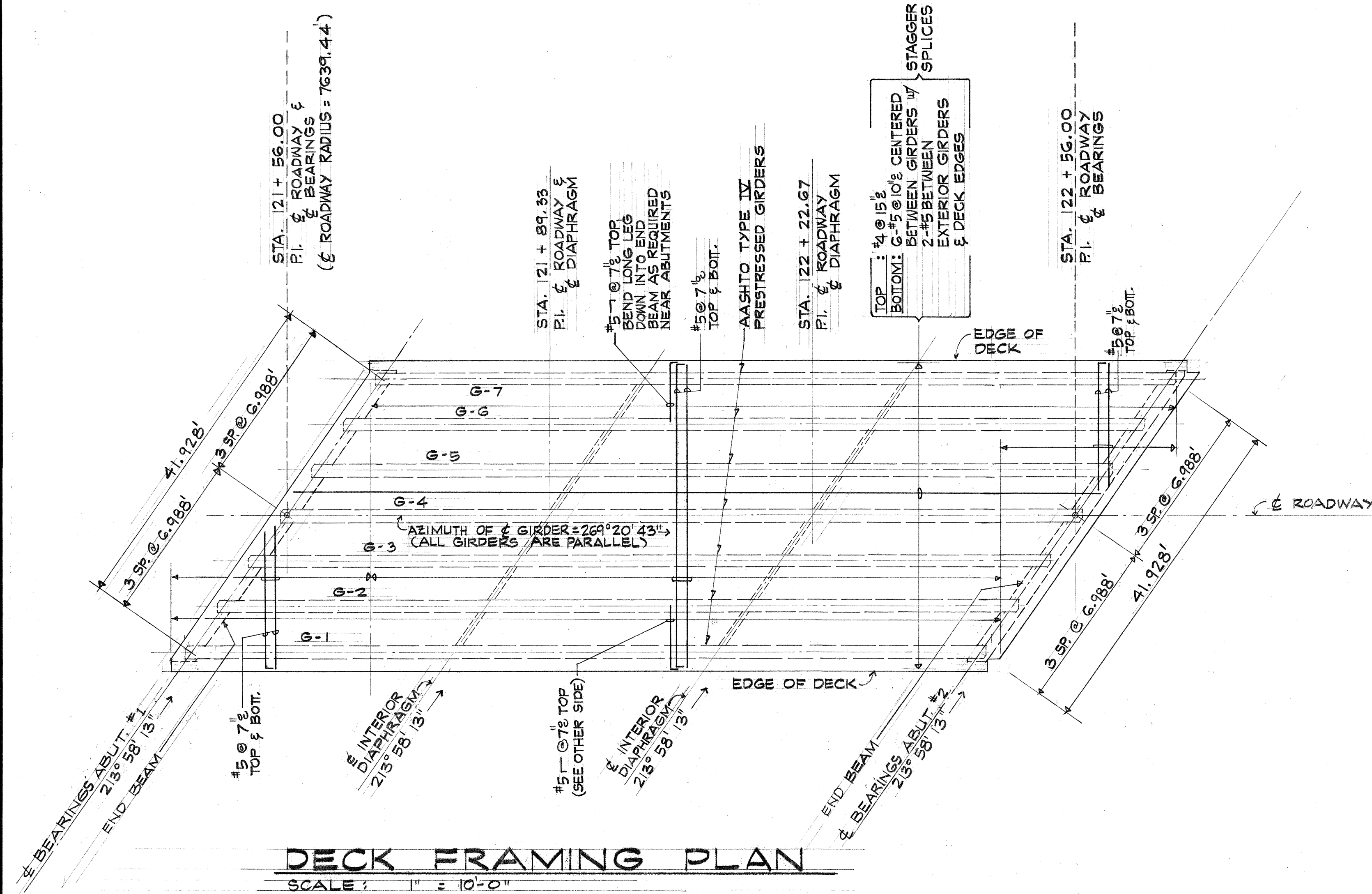
|                   |      |
|-------------------|------|
| ORIGINAL PLAN     | DATE |
| SURVEY PLOTTED BY |      |
| DRAWN BY          |      |
| TRACED BY         |      |
| DESIGNED BY       |      |
| CHECKED BY        |      |
| NO.               |      |



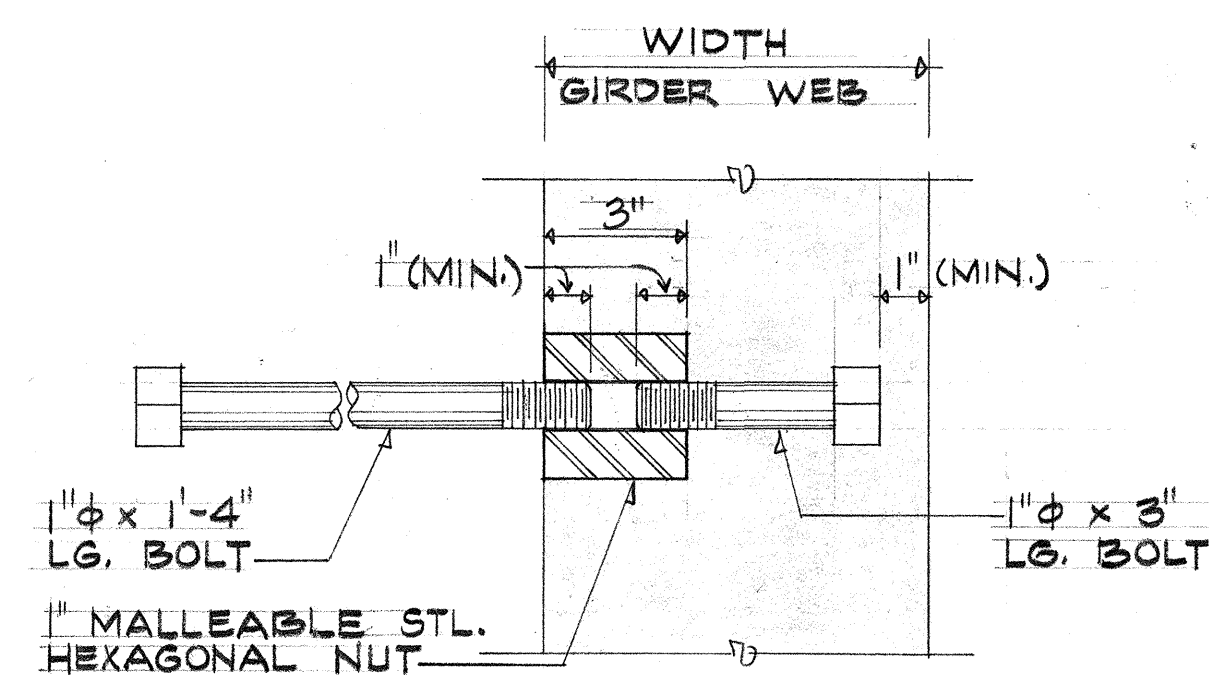
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION  
  
WAUKULILI STREAM BRIDGE  
  
GRADING PLAN  
  
HONOKAA-WAIPIO RD. PROJ. NO. 240A-01-71  
UNIT 2  
  
SHEET NO. 2 OF 14 SHEETS



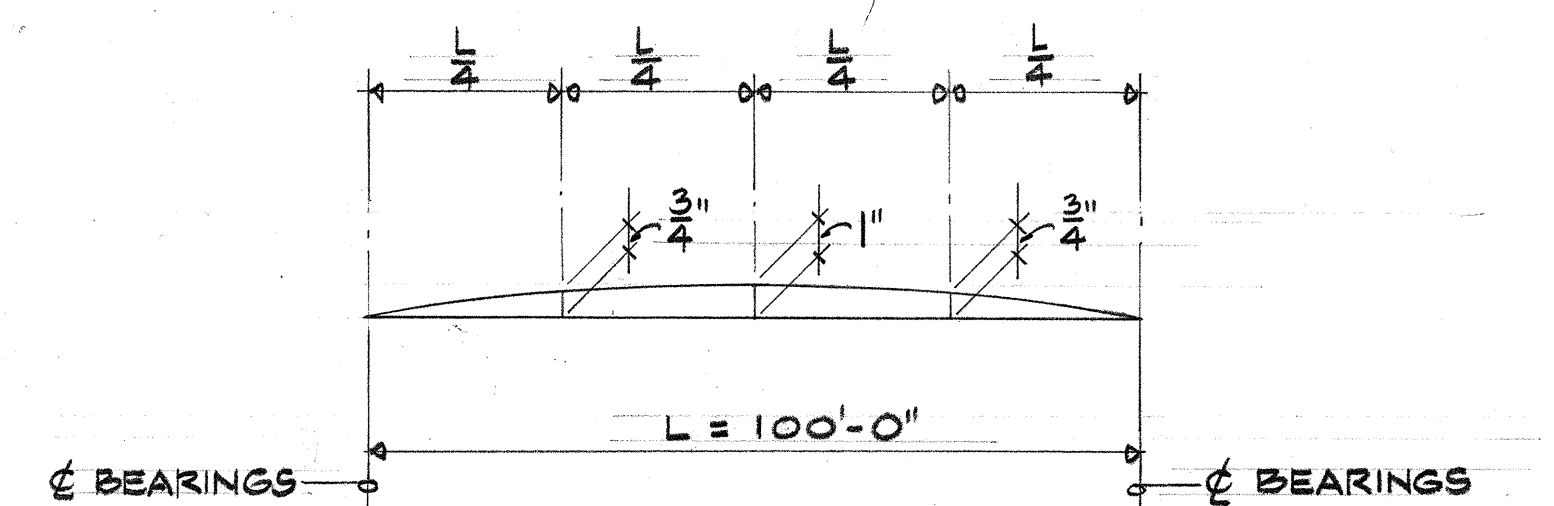
| FED. ROAD<br>DIST. NO. | STATE | PROJ. NO.             | FISCAL<br>YEAR | SHEET<br>NO. | TOTAL<br>SHEETS |
|------------------------|-------|-----------------------|----------------|--------------|-----------------|
| HAWAII                 | HAW.  | 24-0A-01-71<br>UNIT 2 | 1978           | 14           | 63              |



**3** TYPICAL AASHTO TYPE IV GIRDER SECTIONS



**C** INSERT DETAIL  
14 SCALE: 3" = 1'-0"



DECK SLAB CAMBER DIAGRAM  
NO SCALE

(A) TYPICAL PRESTRESSED GIRDER (G-1 - G-7) ELEVATION  
 14 SCALE: 3/8" = 1'-0"



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION

WAIULILI STREAM BRIDGE  
FRAMING PLAN AND  
GIRDER DETAILS

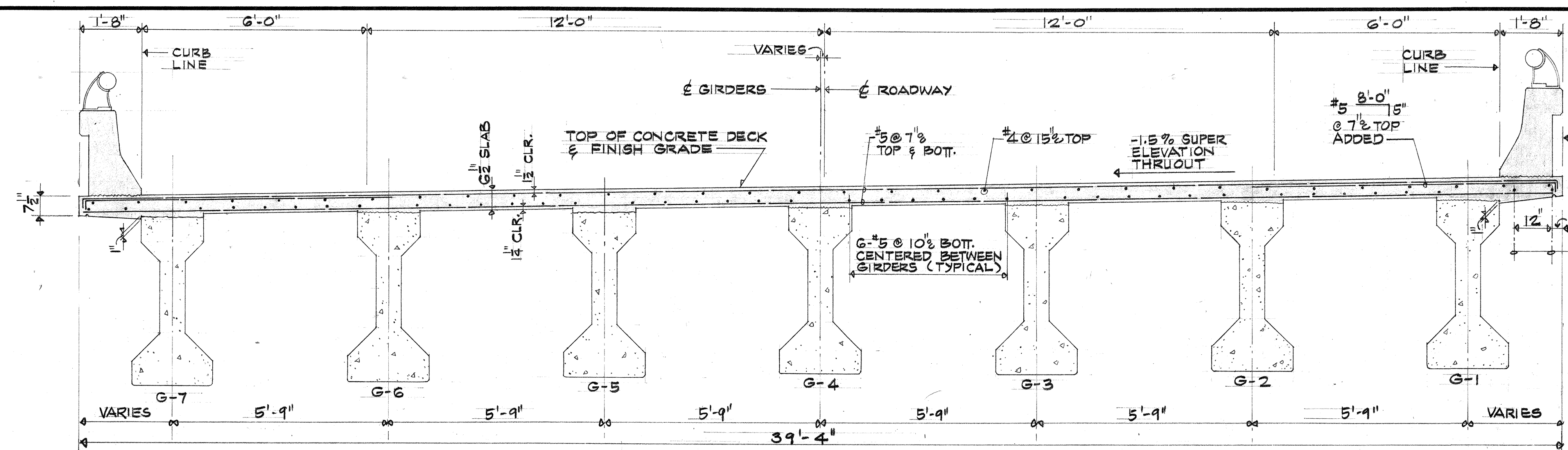
HONOKAA-WAIPIO RD. PROJ. NO. 240A~01~71  
UNIT 2

SHEET No. 3 OF 14 SHEETS

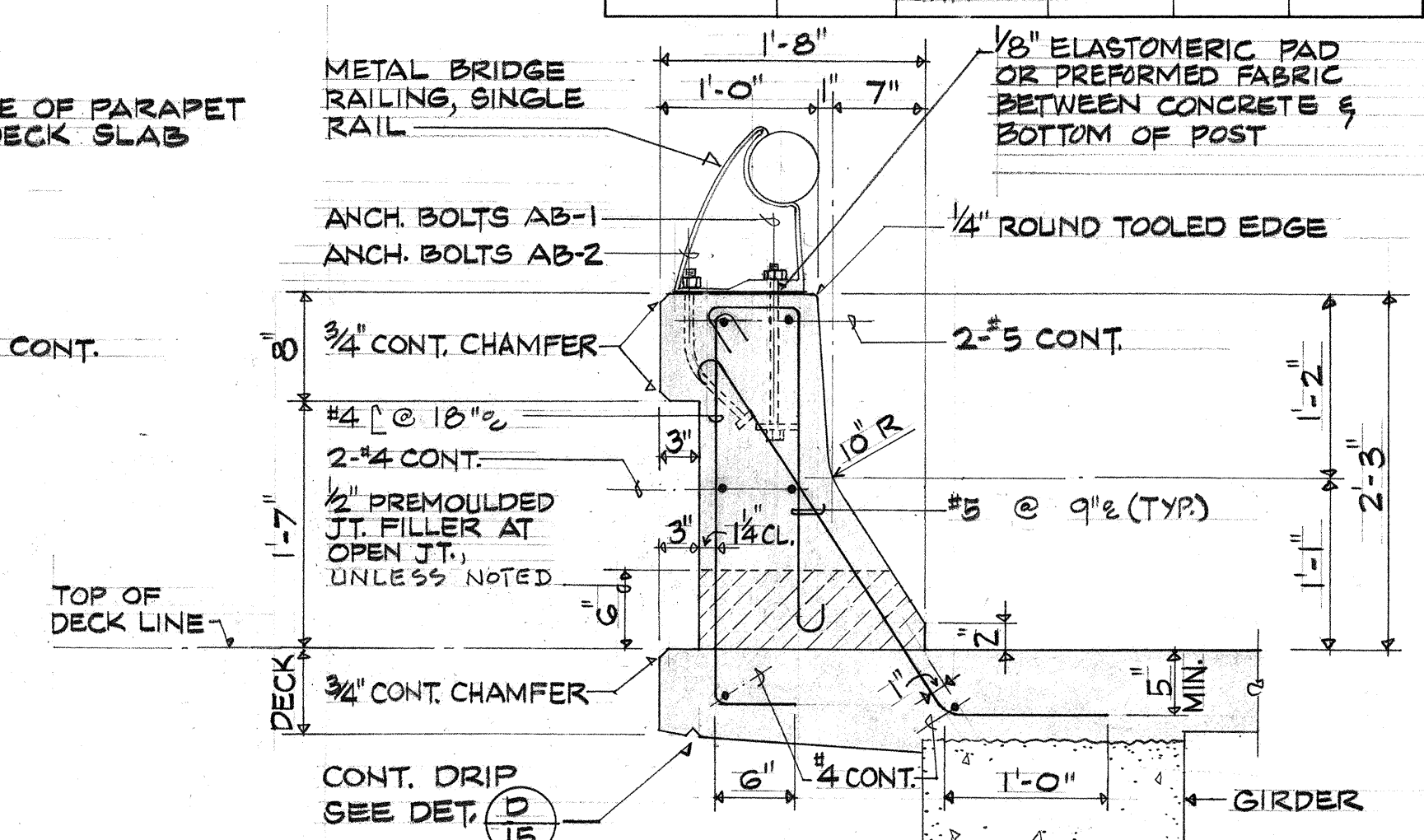
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| FED. ROAD DIST. NO. | STATE | PROJ. NO.         | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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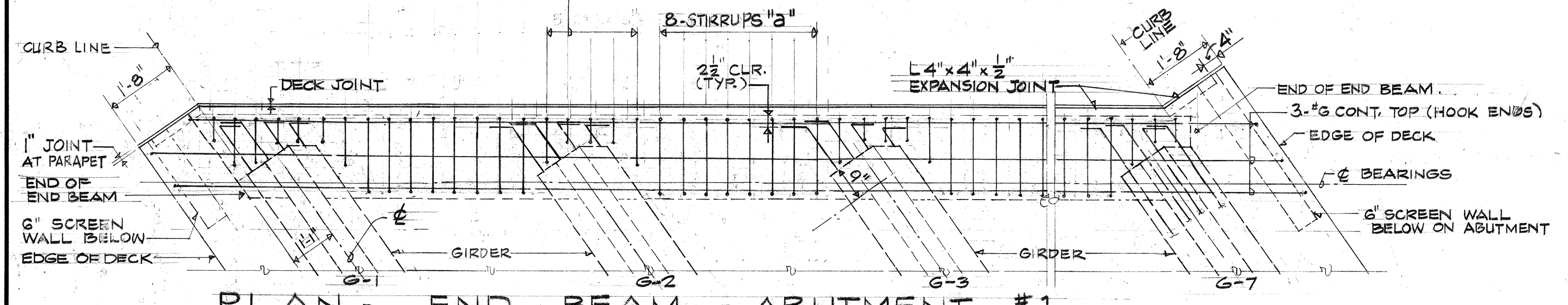


**NORMAL DECK SECTION**  
SCALE: 1/2" = 1'-0"

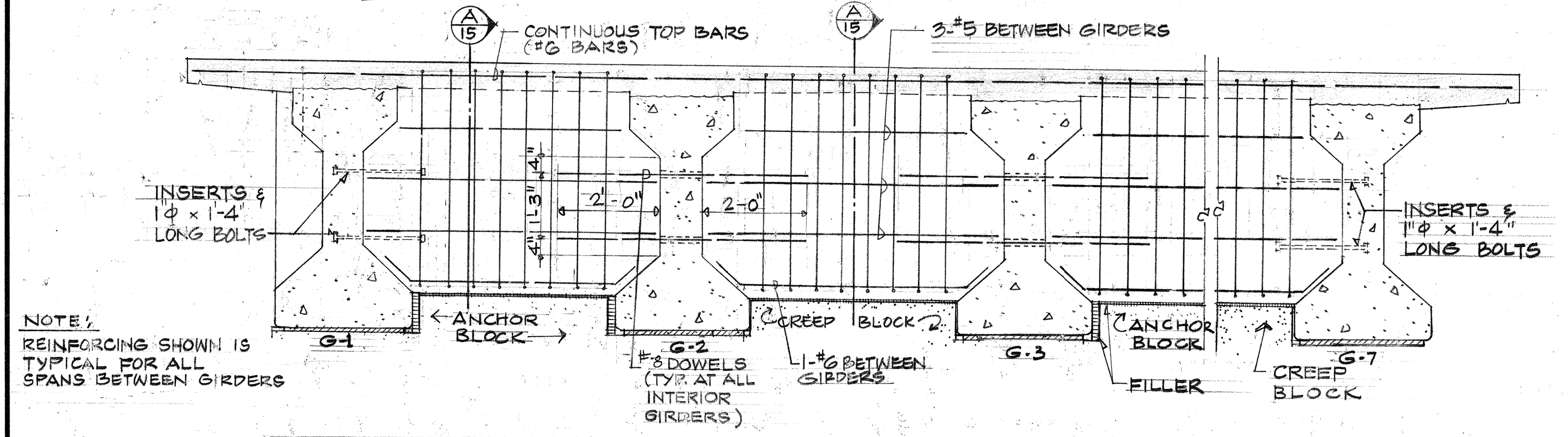


**C TYP. CONC. PARAPET SECTION**  
SCALE: 1" = 1'-0"

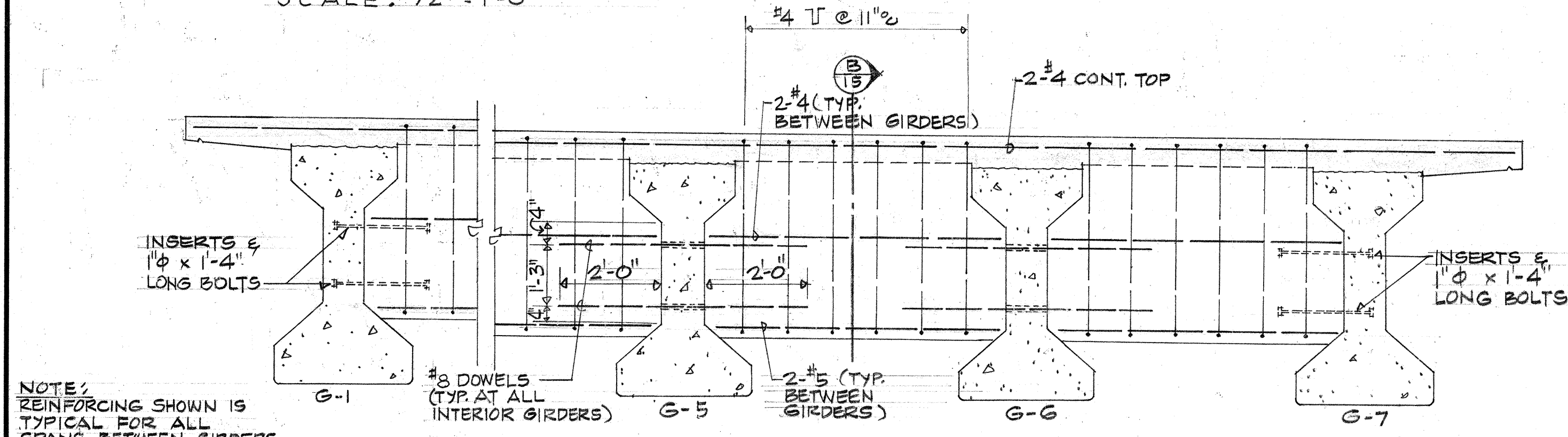
NOTE:  
TYPICAL DECK REINFORCING &  
PARAPET OMITTED FOR CLARITY



**PLAN - END BEAM - ABUTMENT #1**  
SCALE: 1/2" = 1'-0"



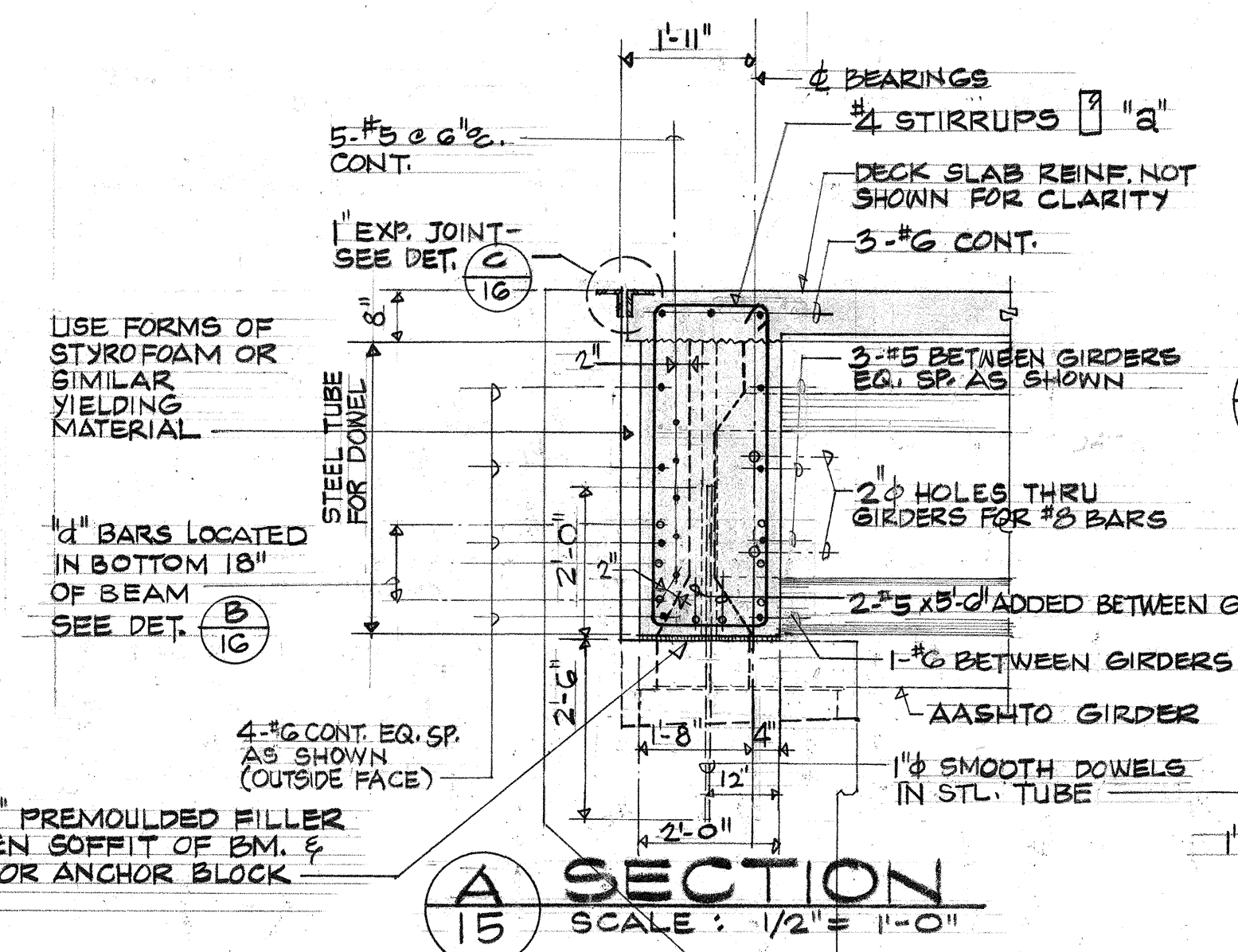
**ELEVATION - END BEAM - ABUTMENT #1**  
SCALE: 1/2" = 1'-0"



**ELEVATION - INTERIOR BEAM - ABUTMENT #1**  
SCALE: 1/2" = 1'-0"

NOTE:  
REINFORCING SHOWN IS  
TYPICAL FOR ALL  
SPANS BETWEEN GIRDERS

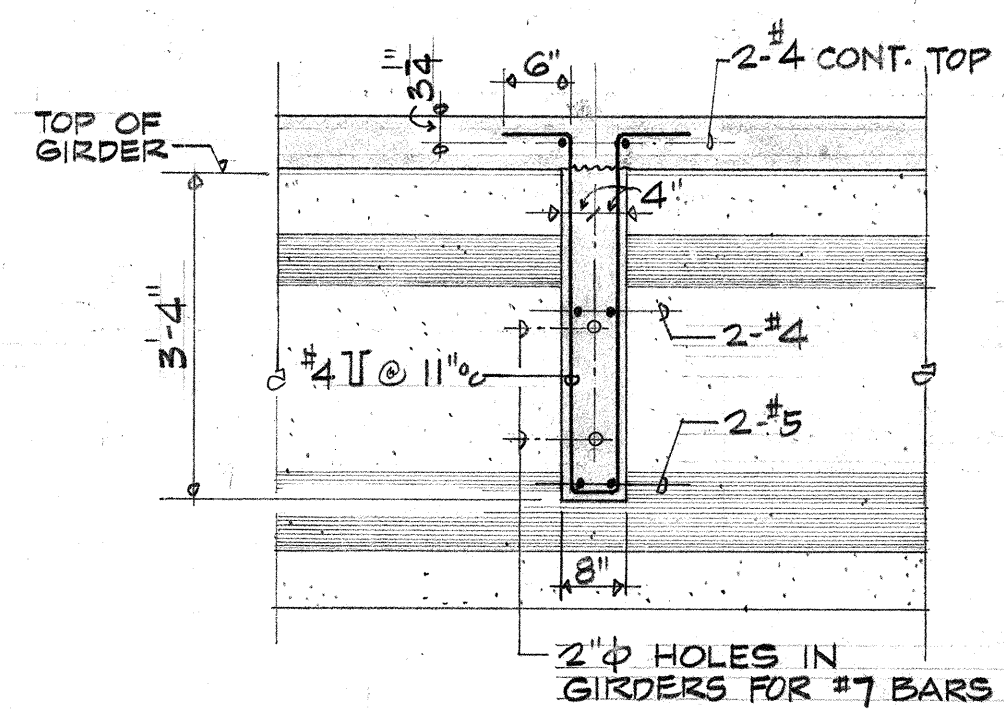
NOTE:  
REINFORCING SHOWN IS  
TYPICAL FOR ALL  
SPANS BETWEEN GIRDERS



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

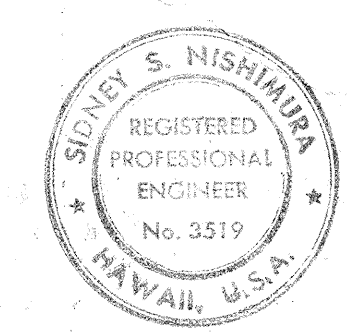
**D DRIP DETAIL**  
SCALE: 3" = 1'-0"

CONT. 1/2\"/>



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

- NOTES:**
1. 1/2" x 1" GALVANIZED DOWELS SHALL CONFORM TO ASTM A306, GRADE 70, & SHALL BE INCIDENTAL TO ITEM 503.17.
  2. TUBES SHALL BE CAPPED BY WELDING ON A STEEL PLATE AFTER INSPECTION FOLLOWING END BEAM POUR & PRIOR TO SLAB POUR. STEEL FOR TUBES & CAP SHALL CONFORM TO ASTM, A36.



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION

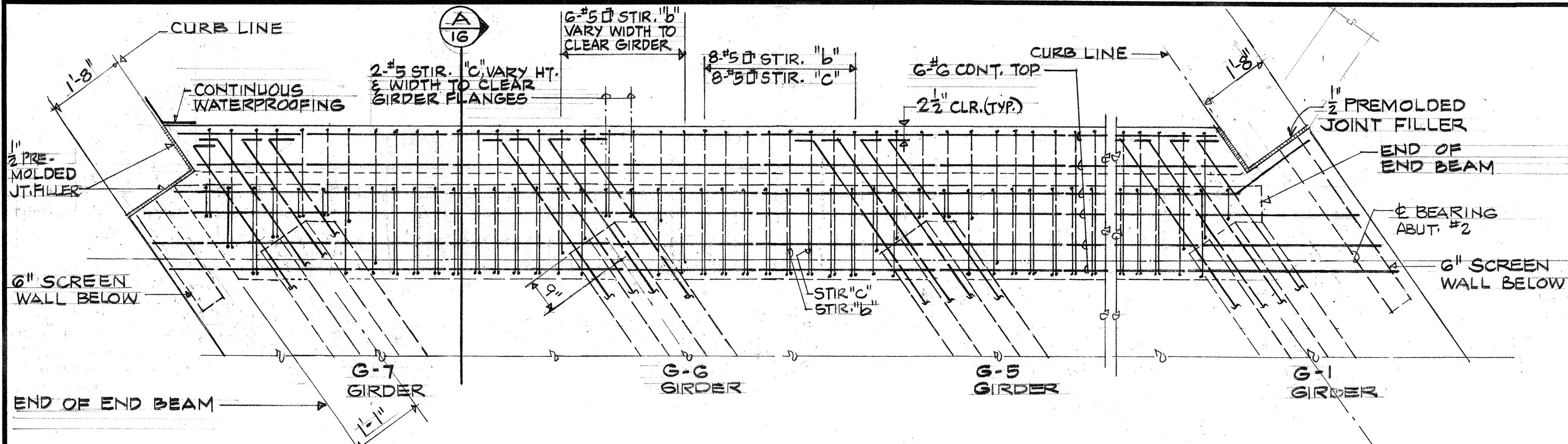
WAILILI STREAM BRIDGE

DECK DETAILS

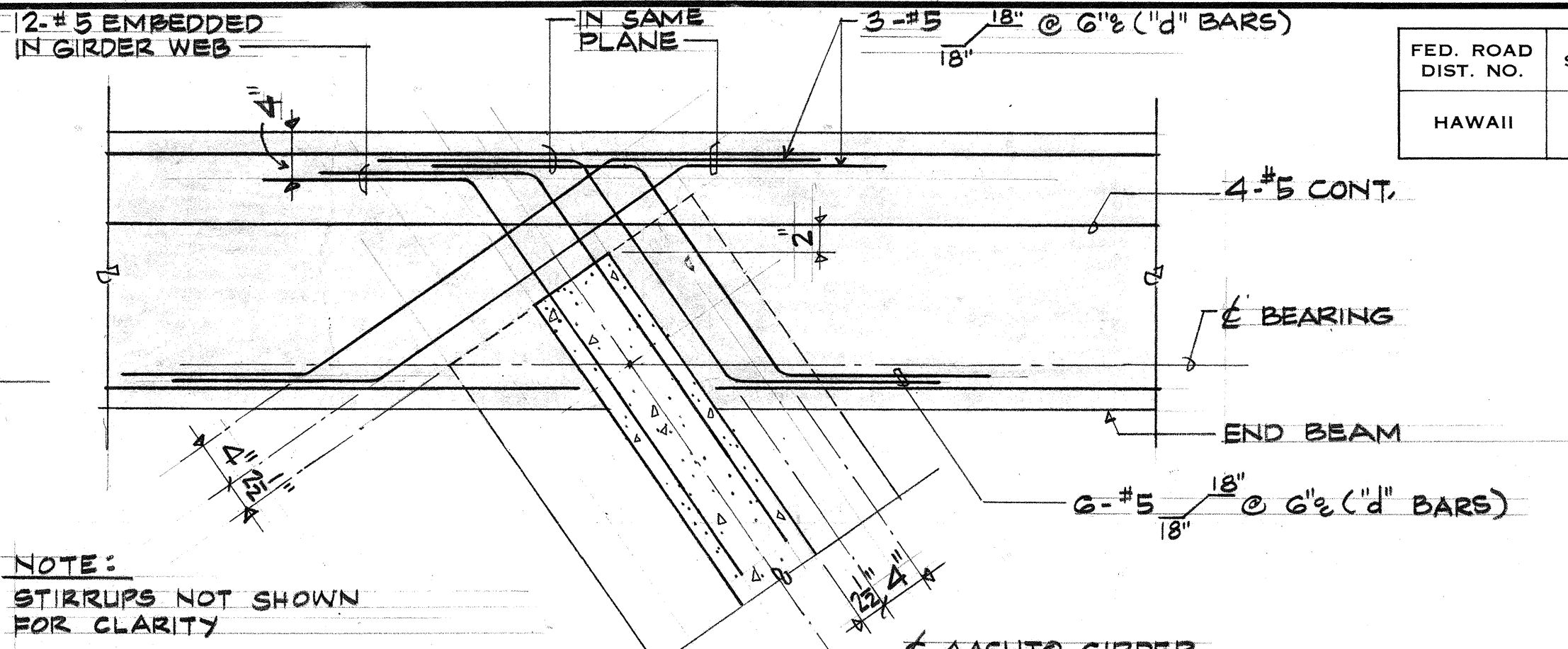
HONOKAA-WAIPIO RD. PROJ. NO. 240A-01-71  
UNIT 2



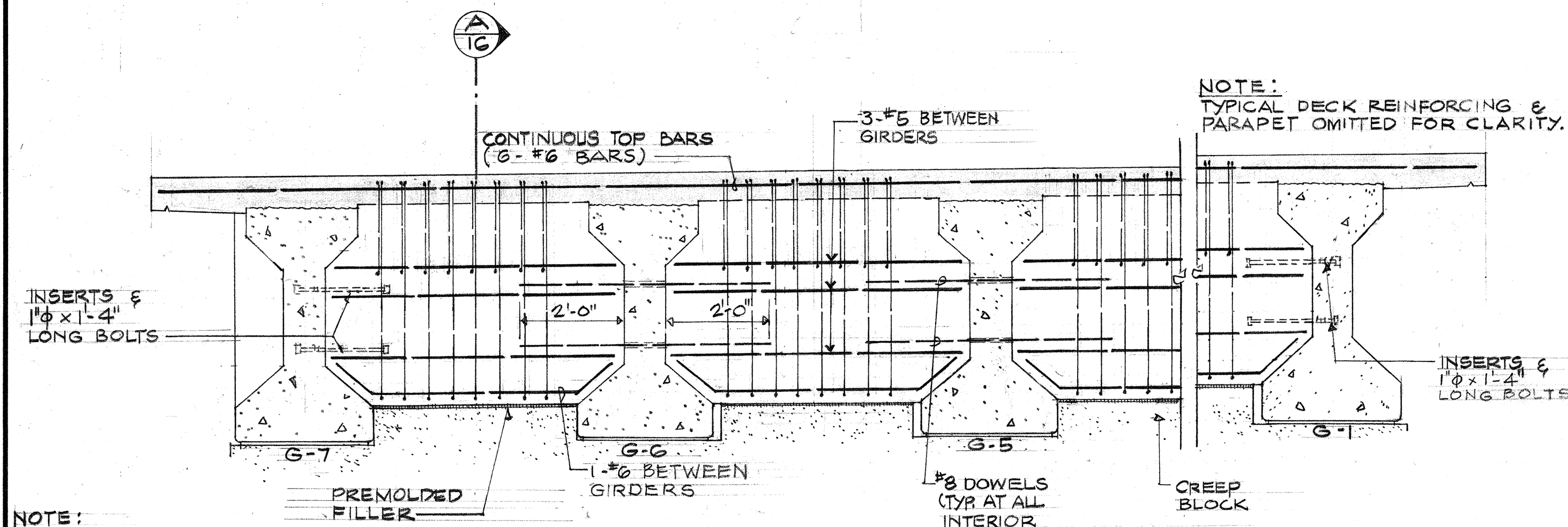
| FED. ROAD DIST. NO. | STATE | PROJ. NO.         | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 240A-01-71 UNIT 2 | 1978        | 16        | 63           |



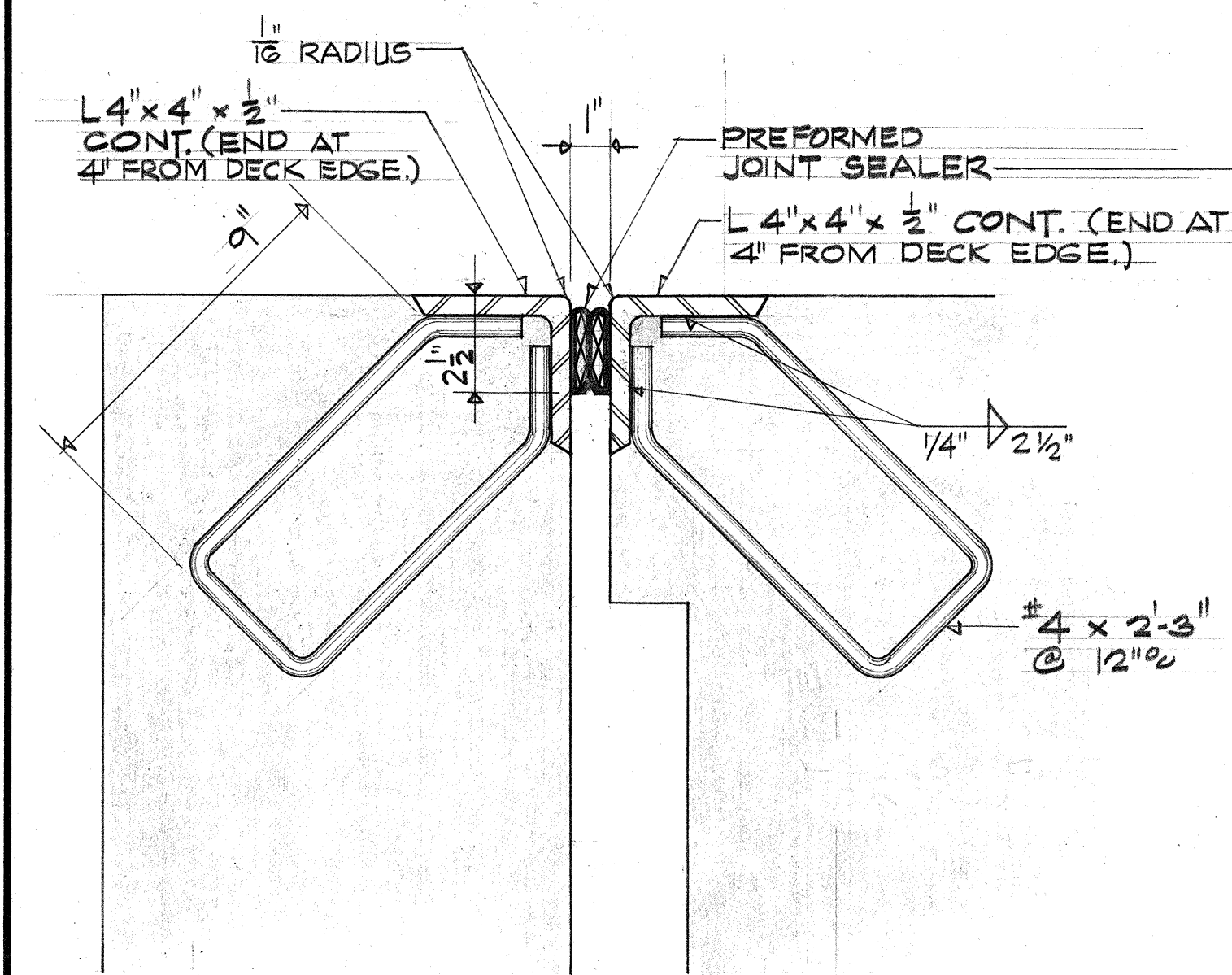
PLAN END BEAM - ABUTMENT #2  
SCALE: 1/2" = 1'-0"



PLAN - TYPICAL ADDED REINF. AT GIRDER ENDS  
ABUTMENTS #1 & #2  
SCALE: 1" = 1'-0"

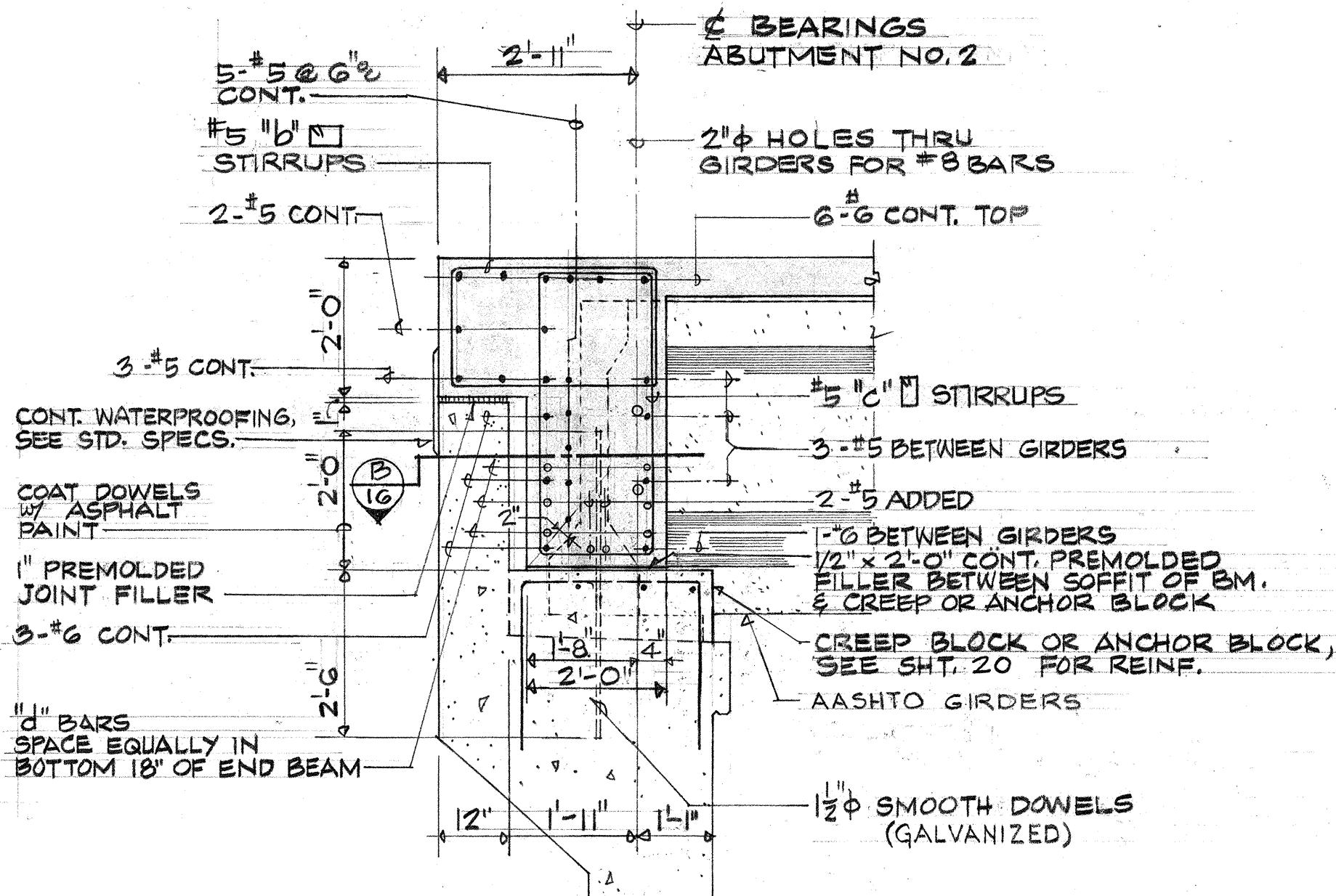


ELEVATION - END BEAM - ABUTMENT #2  
SCALE: 1/2" = 1'-0"

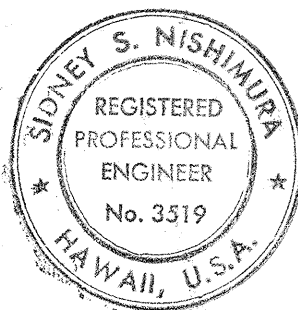


JOINT SEALER DETAIL  
NO SCALE

| EXPANSION JOINT SEALER<br>(DIMENSIONS & TOLERANCES) |              |                     |                      |  |
|-----------------------------------------------------|--------------|---------------------|----------------------|--|
| J                                                   | H            | THICKNESS           |                      |  |
| 2 +3/16<br>- 0                                      | 2 1/16 ± 1/8 | 1/8 +1/32<br>- 1/64 | 3/32 +1/32<br>- 1/64 |  |



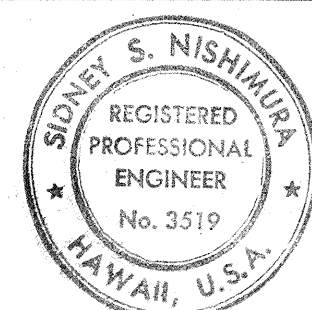
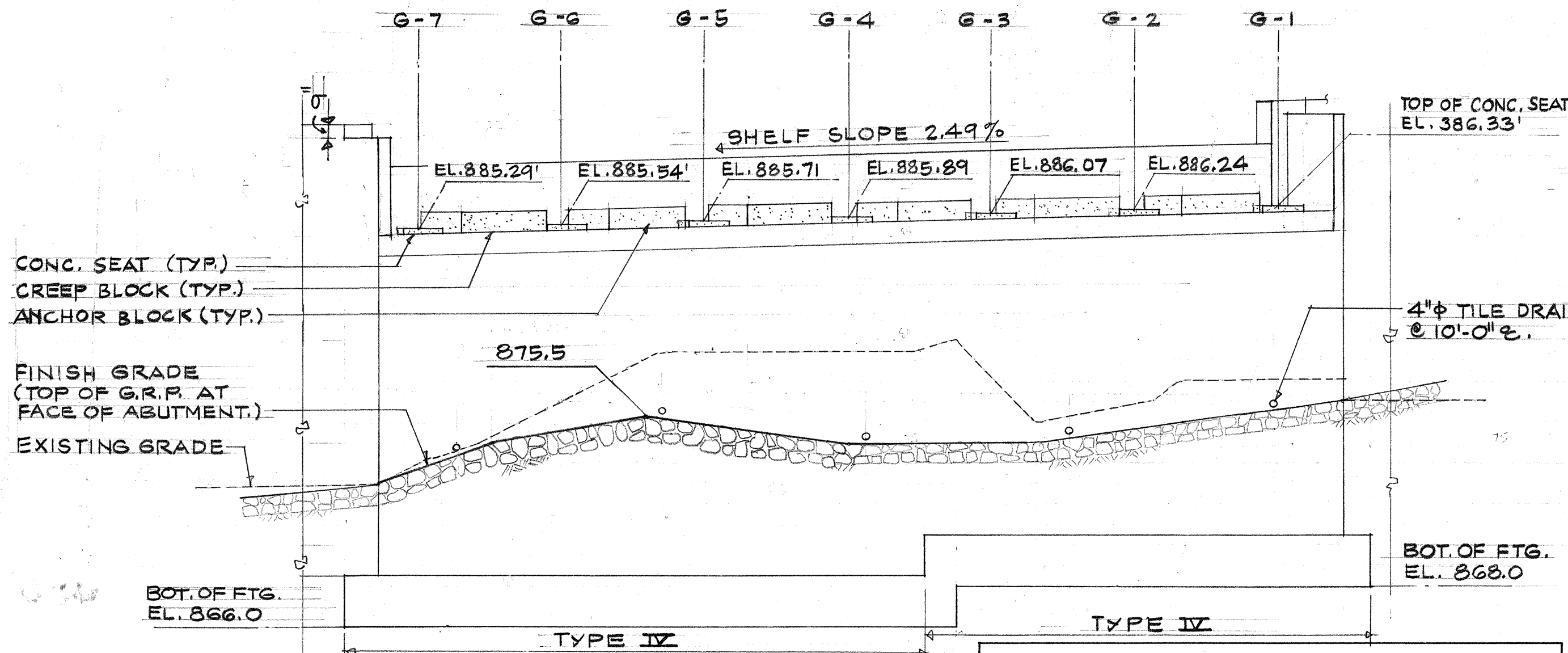
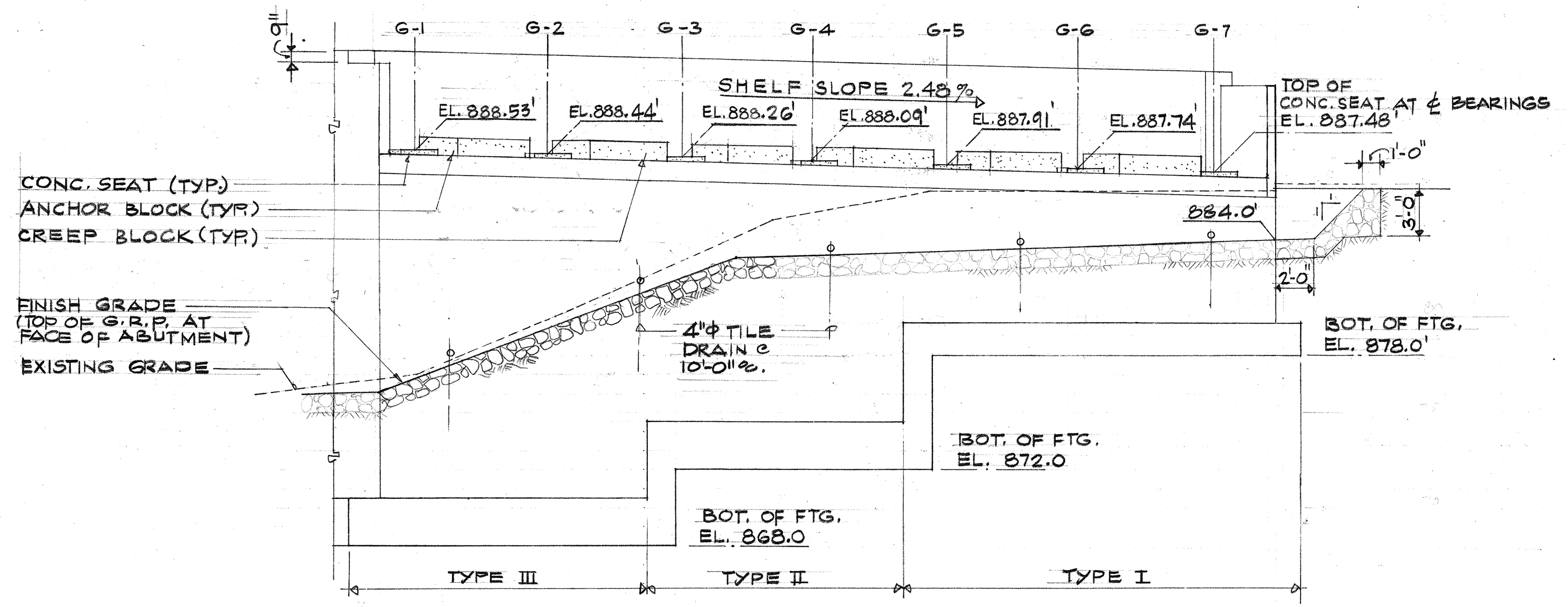
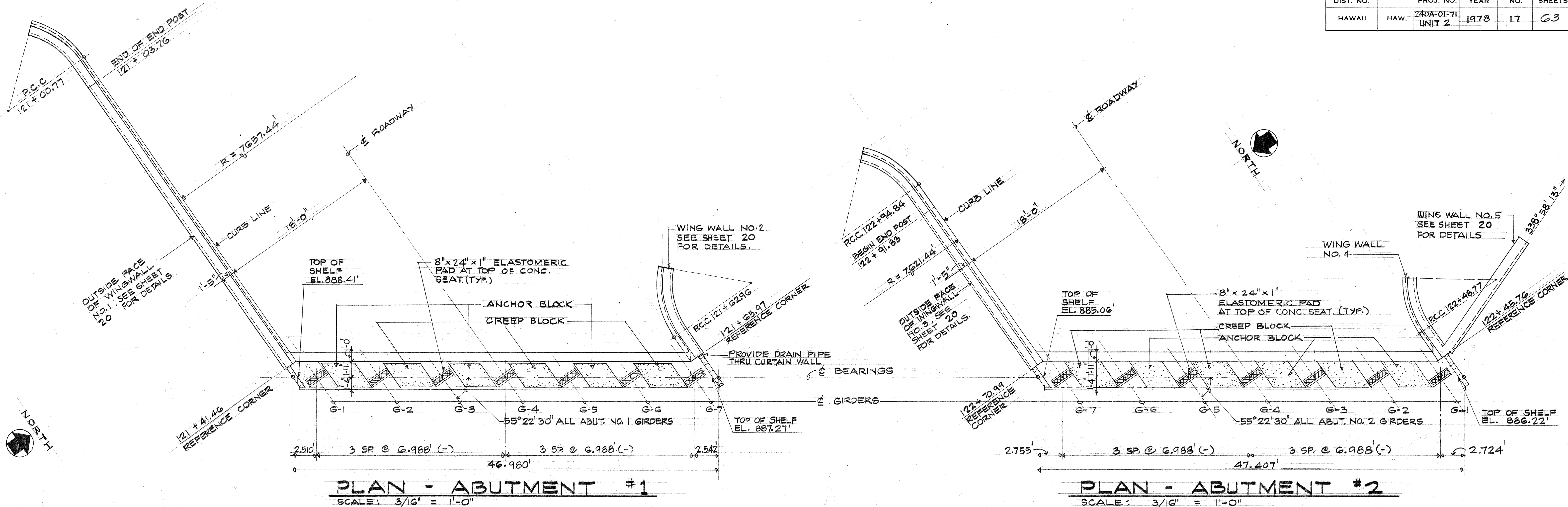
SECTION  
SCALE: 1/2" = 1'-0"



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION  
  
WAILILI STREAM BRIDGE  
  
ABUTMENT #2 END BEAM DETAILS  
& EXPANSION JOINT DETAILS  
  
HONOKAA-WAIPIO RD. PROJ. NO. 240A-01-71  
UNIT 2



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| HAWAII              | HAW.  | 240A-01-71 UNIT 2 | 1978        | 17        | 63           |



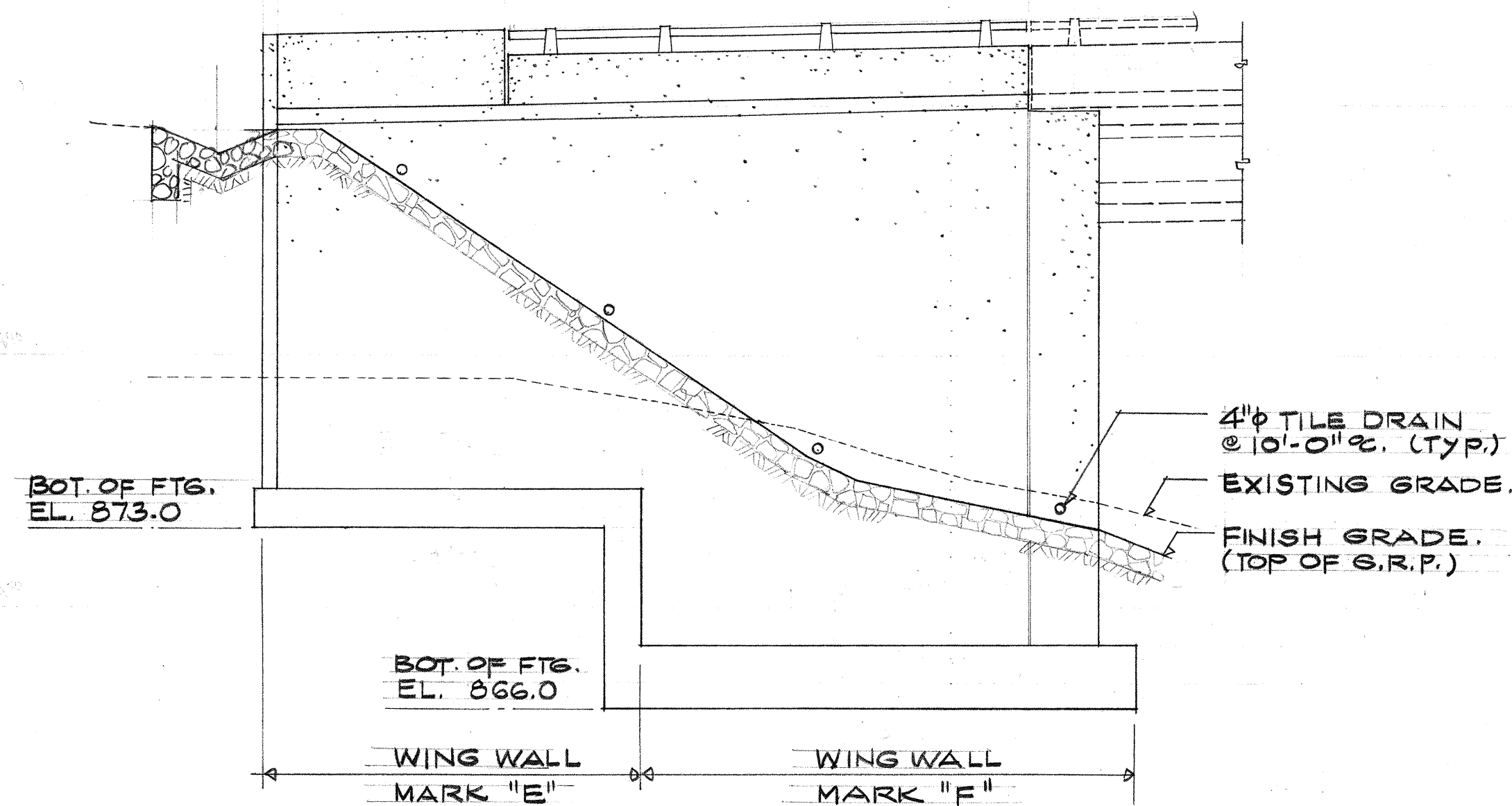
STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 LAND TRANSPORTATION FACILITIES DIVISION  
 WAILULI STREAM BRIDGE  
 ABUTMENT PLAN & ELEVATION  
 HONOKAA-WAIPIO RD. PROJ. NO. 240A-01-71  
 UNIT 2  
 SHEET NO. 6 OF 14 SHEETS

This work was prepared by me  
 or under my supervision.  
 Sidney S. Nishimura

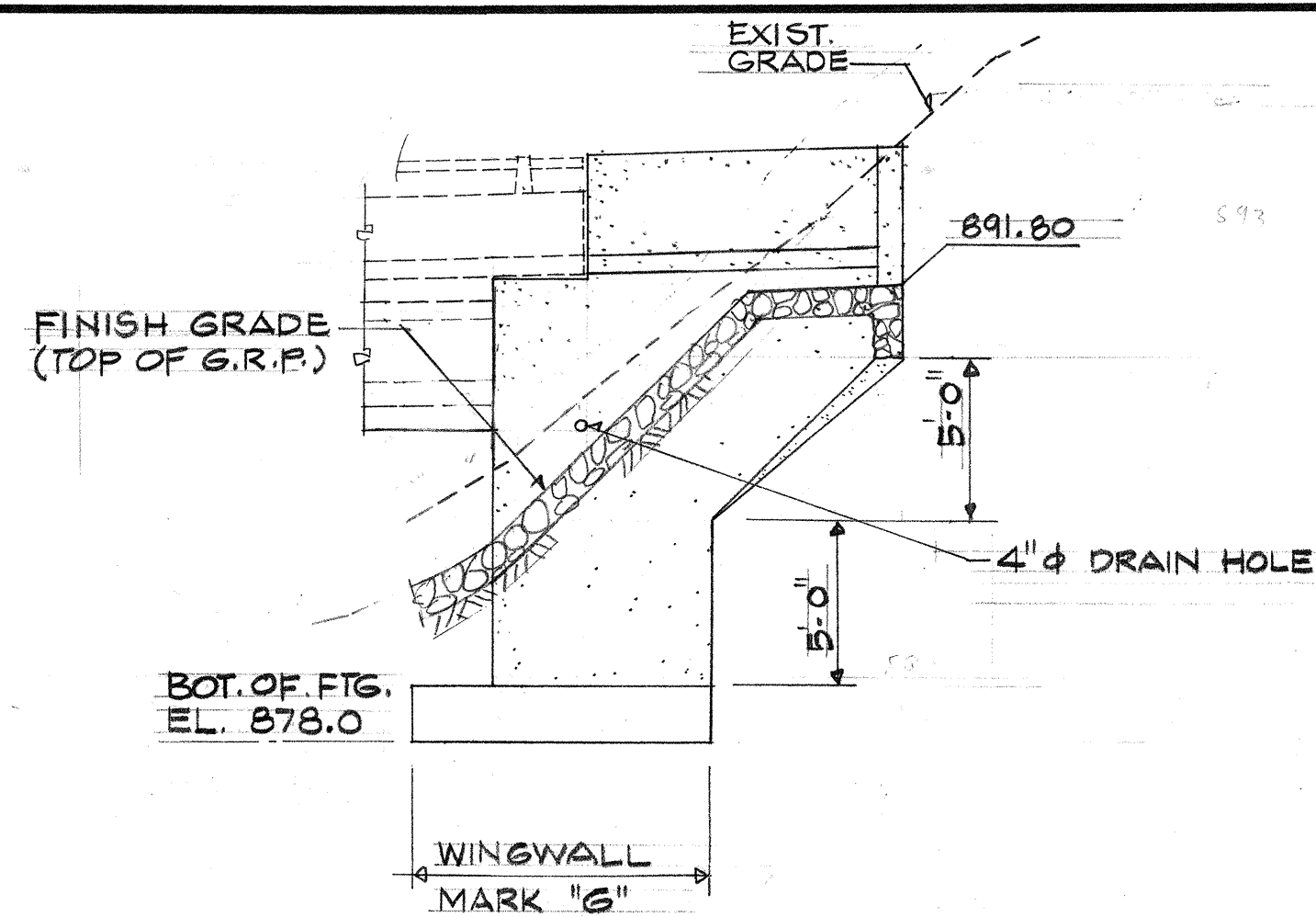
DATE  
 SURVEY PLOTTED BY  
 DRAWN BY  
 DESIGNED BY  
 QUANTITIES BY  
 CHECKED BY  
 ORIGINAL PLAN  
 NOTE BOOK  
 NO.



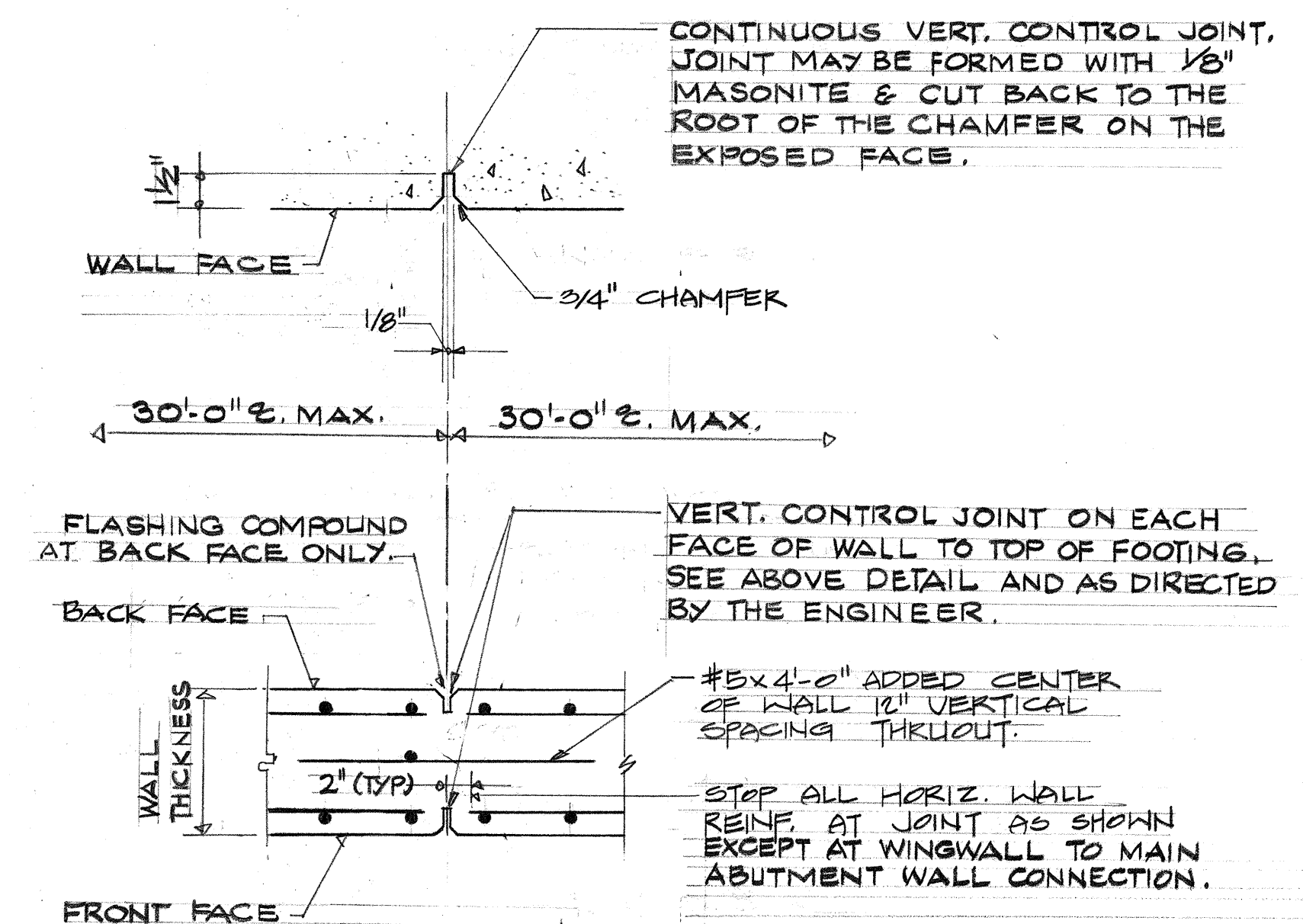
| FED. ROAD DIST. NO. | STATE | PROJ. NO.        | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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| HAWAII              | HAW.  | 240-01-71 UNIT 2 | 1978        | 18        | 63           |



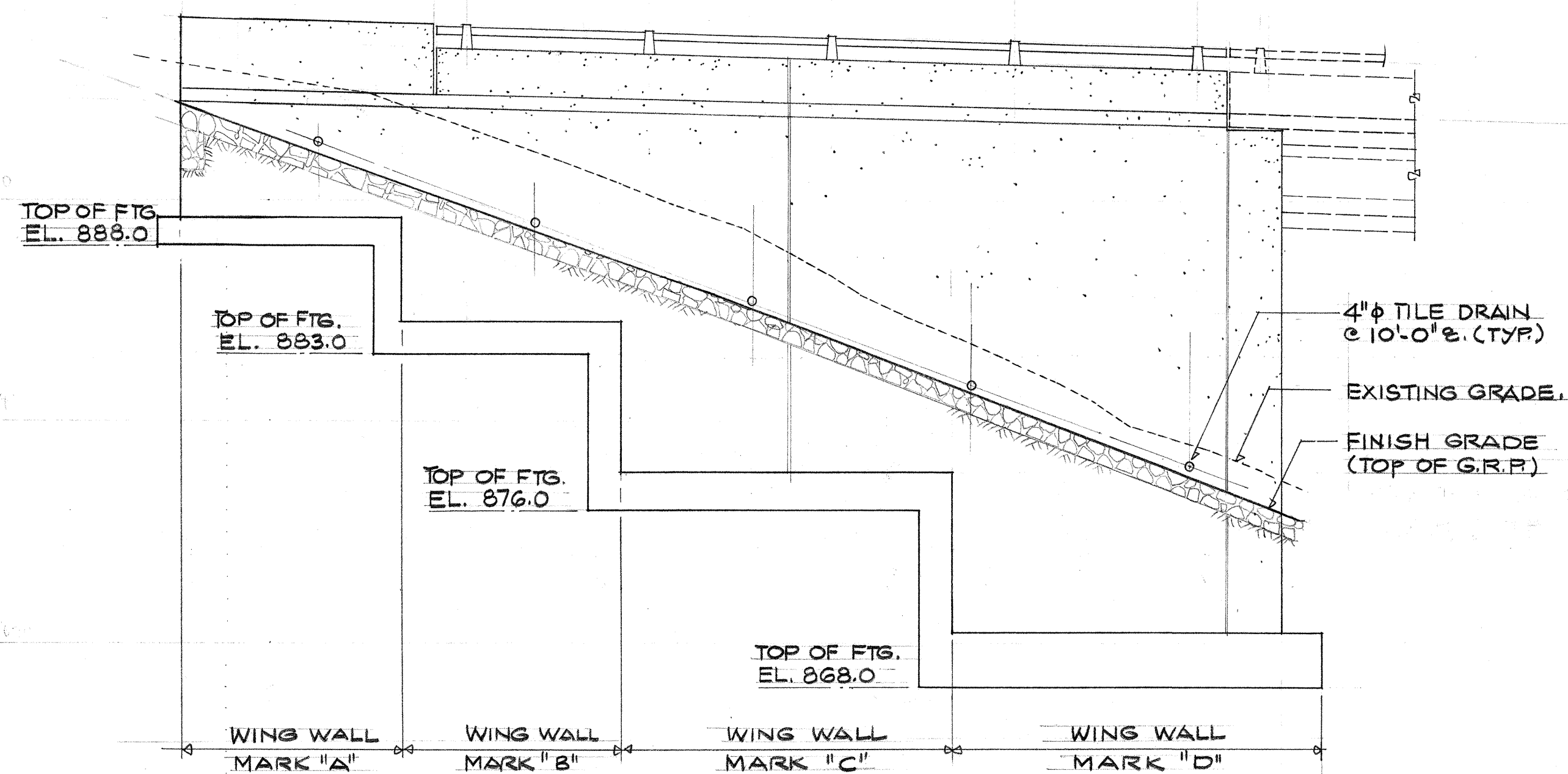
**ELEVATION - WINGWALL NO. 3**  
SCALE: 3/16" = 1'-0"



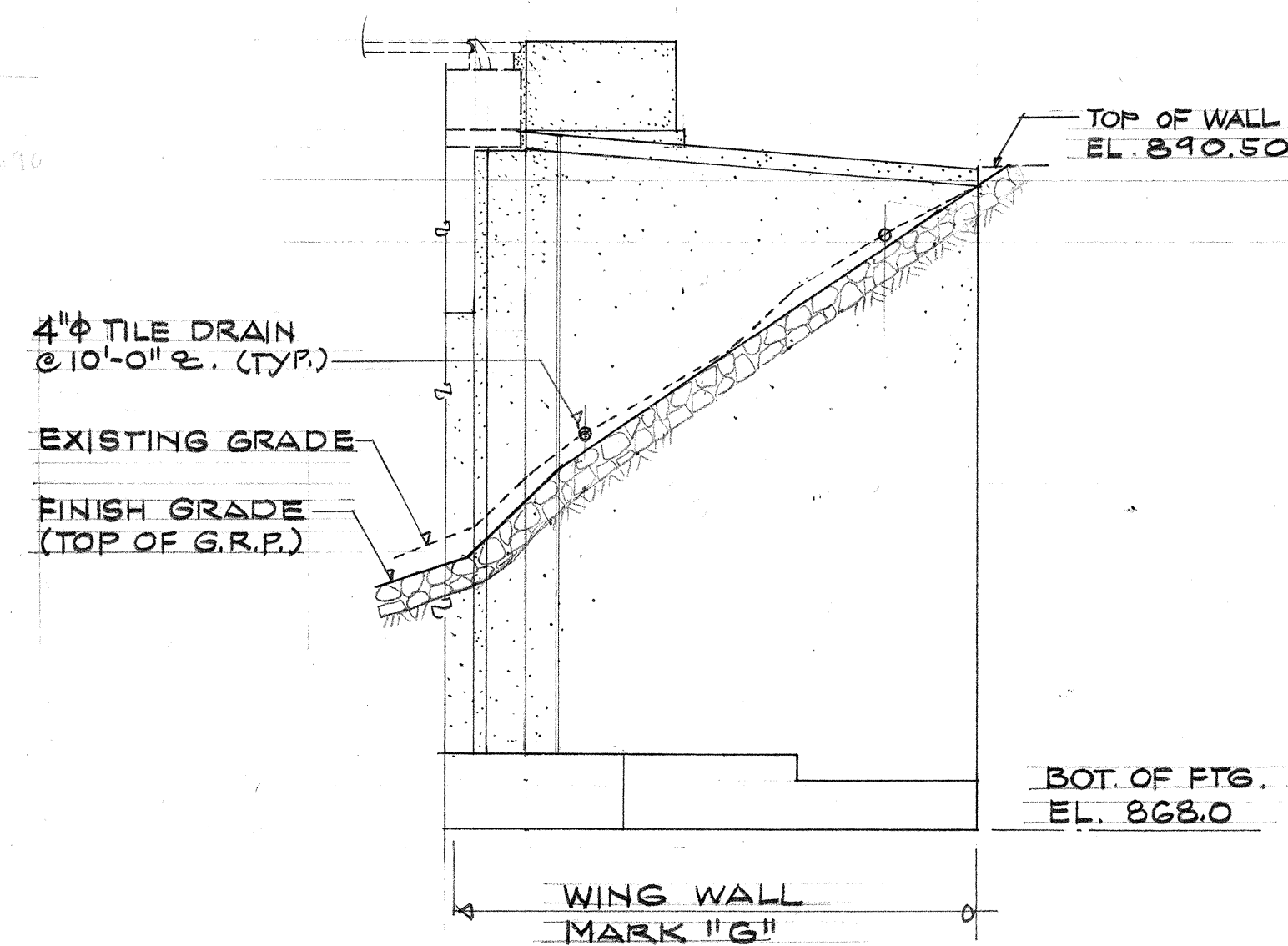
**ELEVATION - WINGWALL NO. 2**  
SCALE: 3/16" = 1'-0"



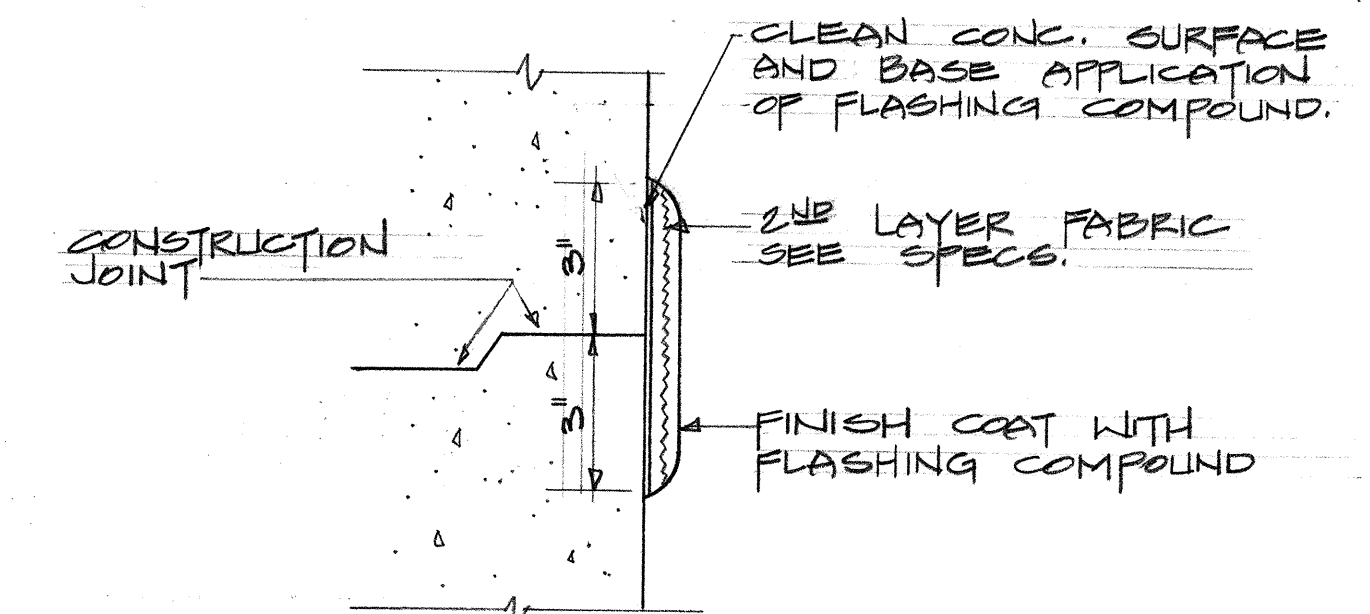
**CONTROL JOINT DETAILS**  
NO SCALE



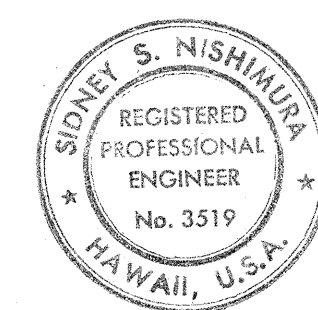
**ELEVATION - WINGWALL NO. 1**  
SCALE: 3/16" = 1'-0"



**ELEVATION - WINGWALL NO. 5**  
SCALE: 3/16" = 1'-0"



**TYP. FLASHING COMPOUND WATERPROOFING DETAIL**  
NO SCALE

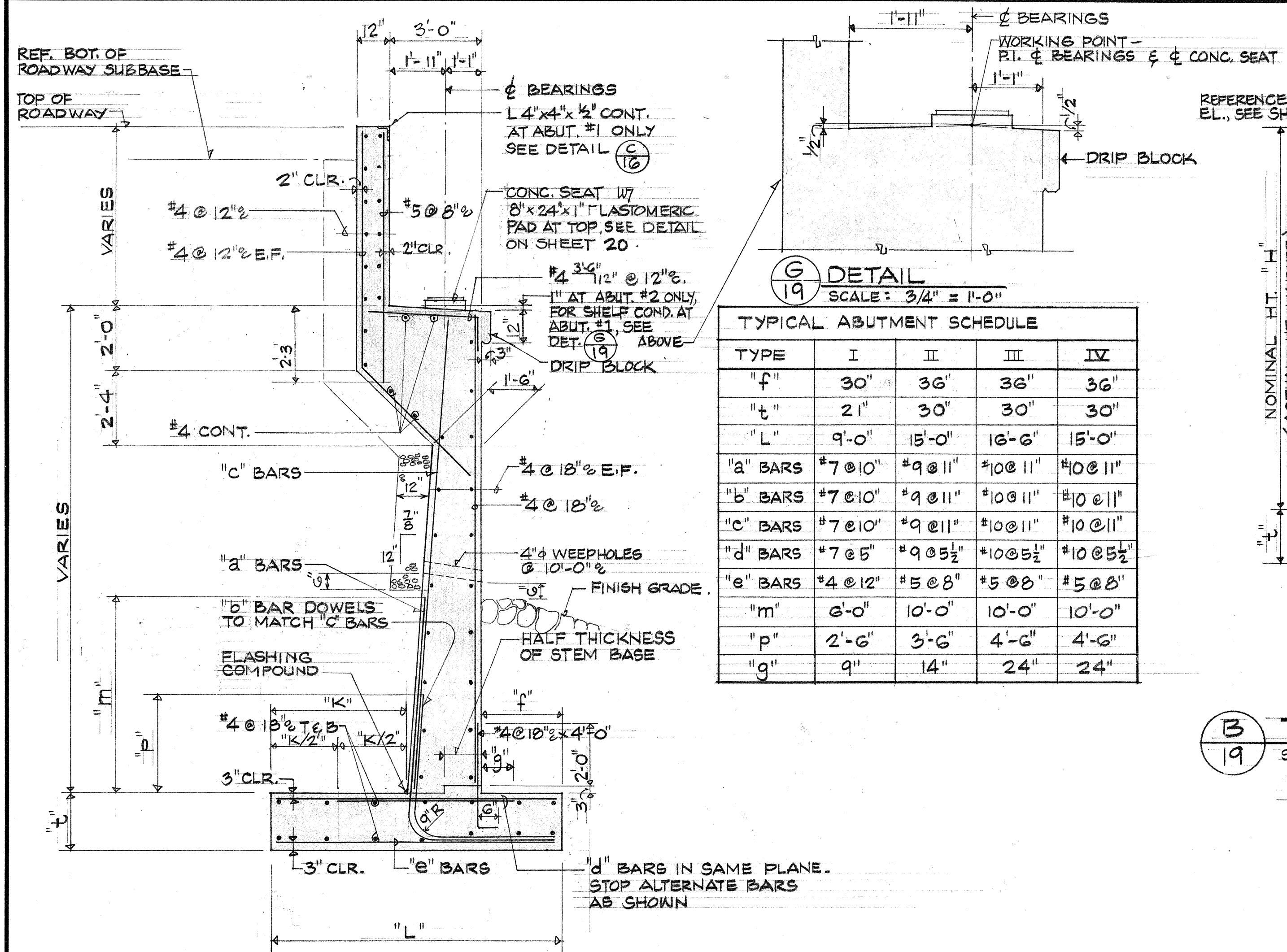


STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION  
  
WAILULI STREAM BRIDGE  
  
WINGWALL ELEVATIONS  
  
HONOKAA-WAIPIO RD. PROJ. NO. 240A-01-71  
UNIT 2

SHEET NO. 7 OF 14 SHEETS



| FED. ROAD DIST. NO. | STATE | PROJ. NO.        | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 240-01-71 UNIT 2 | 1978        | 19        | 63           |

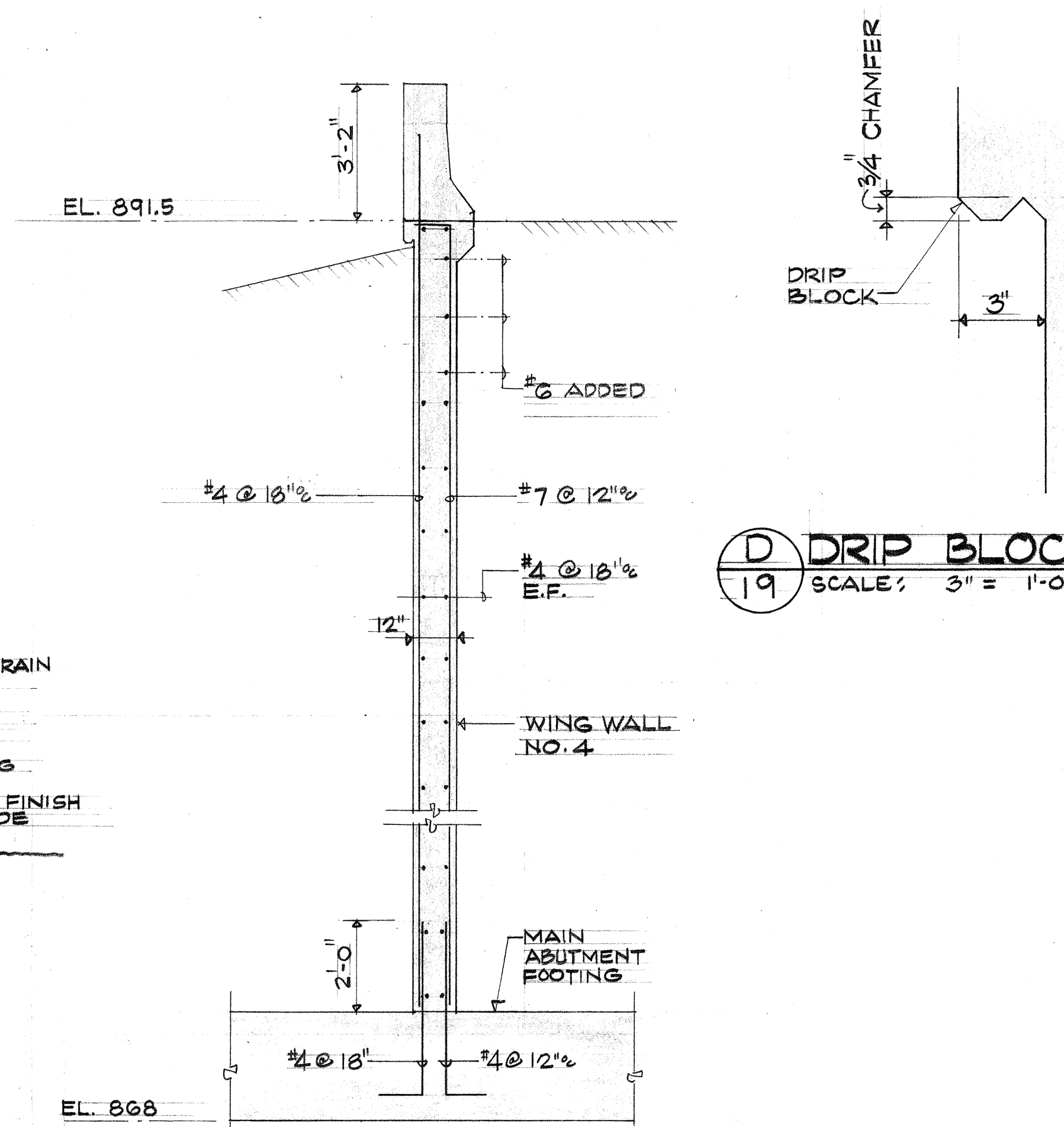


**DETAIL 19**  
SCALE: 3/4" = 1'-0"

**TYPICAL ABUTMENT SCHEDULE**

| TYPE     | I        | II          | III          | IV           |
|----------|----------|-------------|--------------|--------------|
| "f"      | 30"      | 36"         | 36"          | 36"          |
| "t"      | 21"      | 30"         | 30"          | 30"          |
| "L"      | 9'-0"    | 15'-0"      | 16'-6"       | 15'-0"       |
| "a" BARS | #7 @ 10" | #9 @ 11"    | #10 @ 11"    | #10 @ 11"    |
| "b" BARS | #7 @ 10" | #9 @ 11"    | #10 @ 11"    | #10 @ 11"    |
| "c" BARS | #7 @ 10" | #9 @ 11"    | #10 @ 11"    | #10 @ 11"    |
| "d" BARS | #7 @ 5"  | #9 @ 5 1/2" | #10 @ 5 1/2" | #10 @ 5 1/2" |
| "e" BARS | #4 @ 12" | #5 @ 8"     | #5 @ 8"      | #5 @ 8"      |
| "m"      | 6'-0"    | 10'-0"      | 10'-0"       | 10'-0"       |
| "p"      | 2'-6"    | 3'-6"       | 4'-6"        | 4'-6"        |
| "g"      | 9"       | 14"         | 24"          | 24"          |

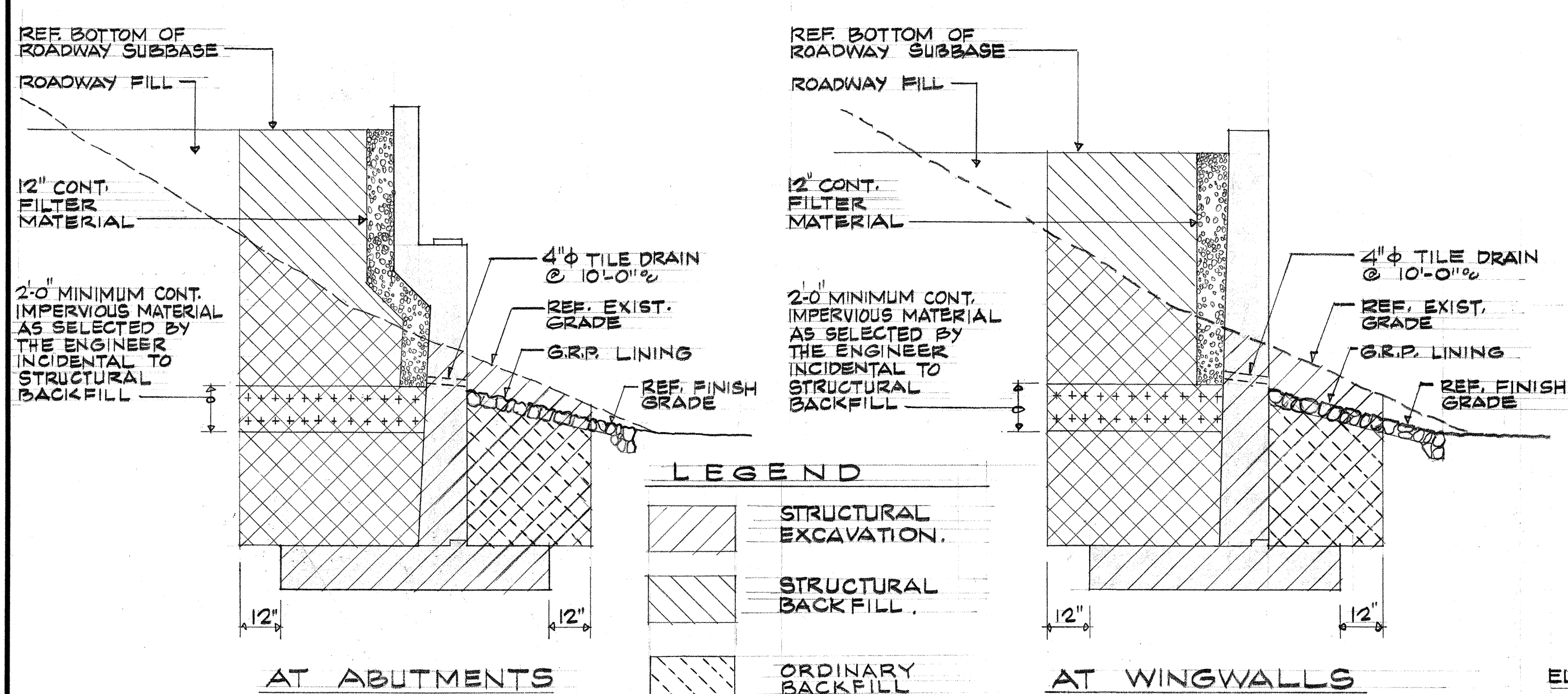
**B** **TYPICAL WING WALL SECTION**  
19 SCALE: 3/8" = 1'-0"  
USE REINF. ABOVE, EXCEPT WHERE DETAILS SHOW OTHERWISE.



**WING WALL SCHEDULE**

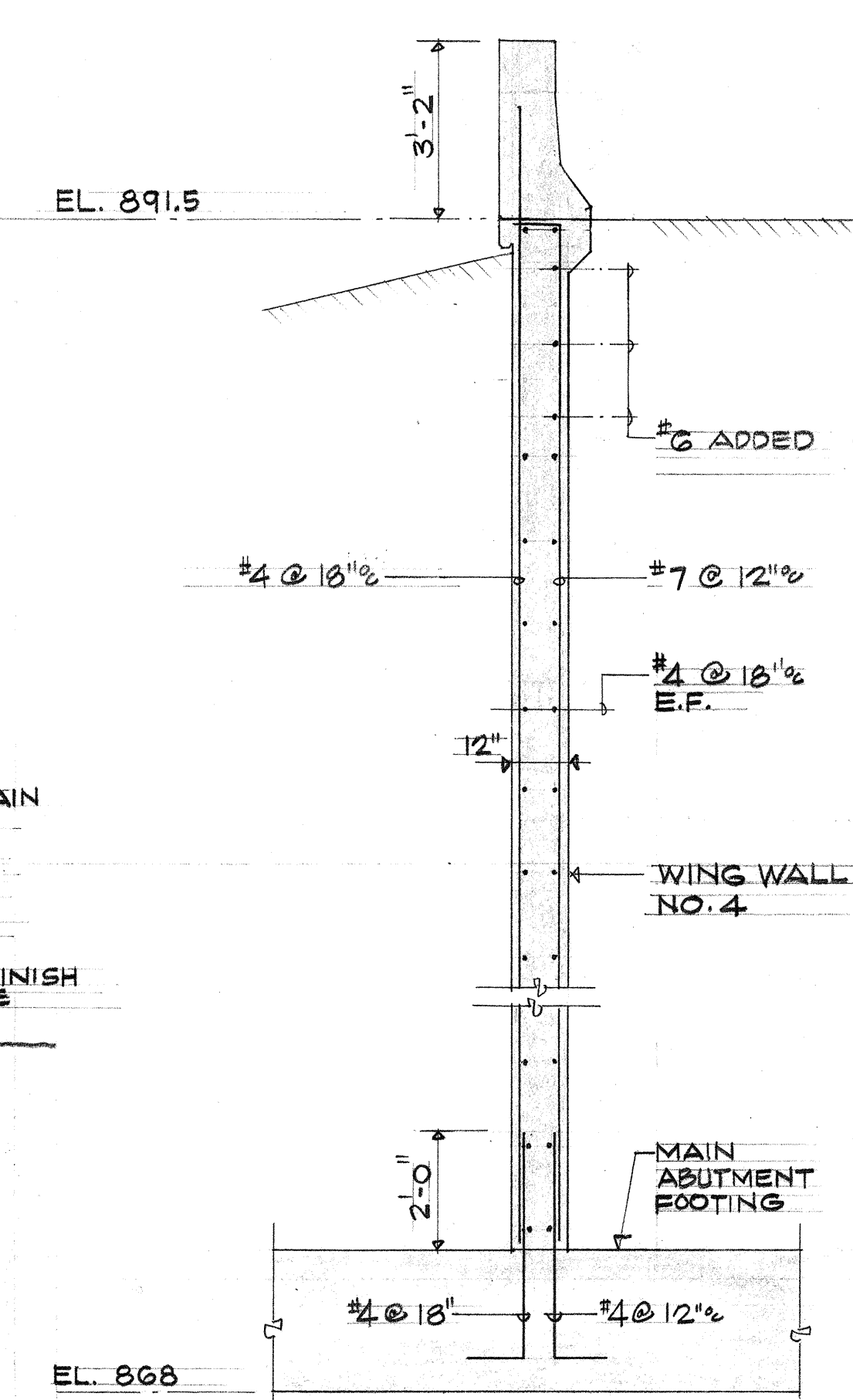
| MARK        | A             | B            | C            | D, F          | E            | G            |
|-------------|---------------|--------------|--------------|---------------|--------------|--------------|
| NOMINAL "H" | 6'-0"         | 10'-0"       | 16'-4"       | 23'-6"        | 15'-6"       | 20'-0"       |
| "f"         | 12"           | 12"          | 24"          | 39"           | 3'-0"        | 2'-0"        |
| "t"         | 15"           | 18"          | 20"          | 30"           | 20"          | 20"          |
| "L"         | 7'-0"         | 7'-3"        | 10'-6"       | 14'-6"        | 10'-0"       | 10'-0"       |
| "a" BARS    | #6 @ 7 1/2"   | #5 @ 12 1/2" | #8 @ 12 1/2" | #10 @ 12 1/2" | #9 @ 12 1/2" | #9 @ 12 1/2" |
| "b" BARS    | NONE          | #5 @ 12 1/2" | #8 @ 12 1/2" | #10 @ 12 1/2" | #9 @ 12 1/2" | #9 @ 12 1/2" |
| "c" BARS    | NONE          | #5 @ 12 1/2" | #8 @ 12 1/2" | #10 @ 12 1/2" | #6 @ 12 1/2" | #6 @ 12 1/2" |
| "d" BARS    | #6 @ 7 1/2"   | #5 @ 6 1/2"  | #8 @ 6 1/2"  | #10 @ 6 1/2"  | #9 @ 6 1/2"  | #9 @ 6 1/2"  |
| "e" BARS    | #4 @ 12 1/2"  | #4 @ 12 1/2" | #4 @ 12 1/2" | #5 @ 8 1/2"   | #4 @ 12 1/2" | #5 @ 10 1/2" |
| "m"         | FULL WALL HT. | 5'-0"        | 8'-0"        | 10'-0"        | 13'-0"       | 12'-0"       |
| "p"         | —             | 24"          | 3'-0"        | 5'-0"         | 5'-0"        | 5'-0"        |
| "r"         | —             | 0            | 0            | 0             | 2'-0"        | 2'-0"        |
| "g"         | 9"            | 9"           | 14"          | 24"           | 24"          | 20"          |

**A** **TYPES I, II, III & IV**  
19 **TYPICAL ABUTMENT SECTION**  
SCALE: 3/8" = 1'-0"

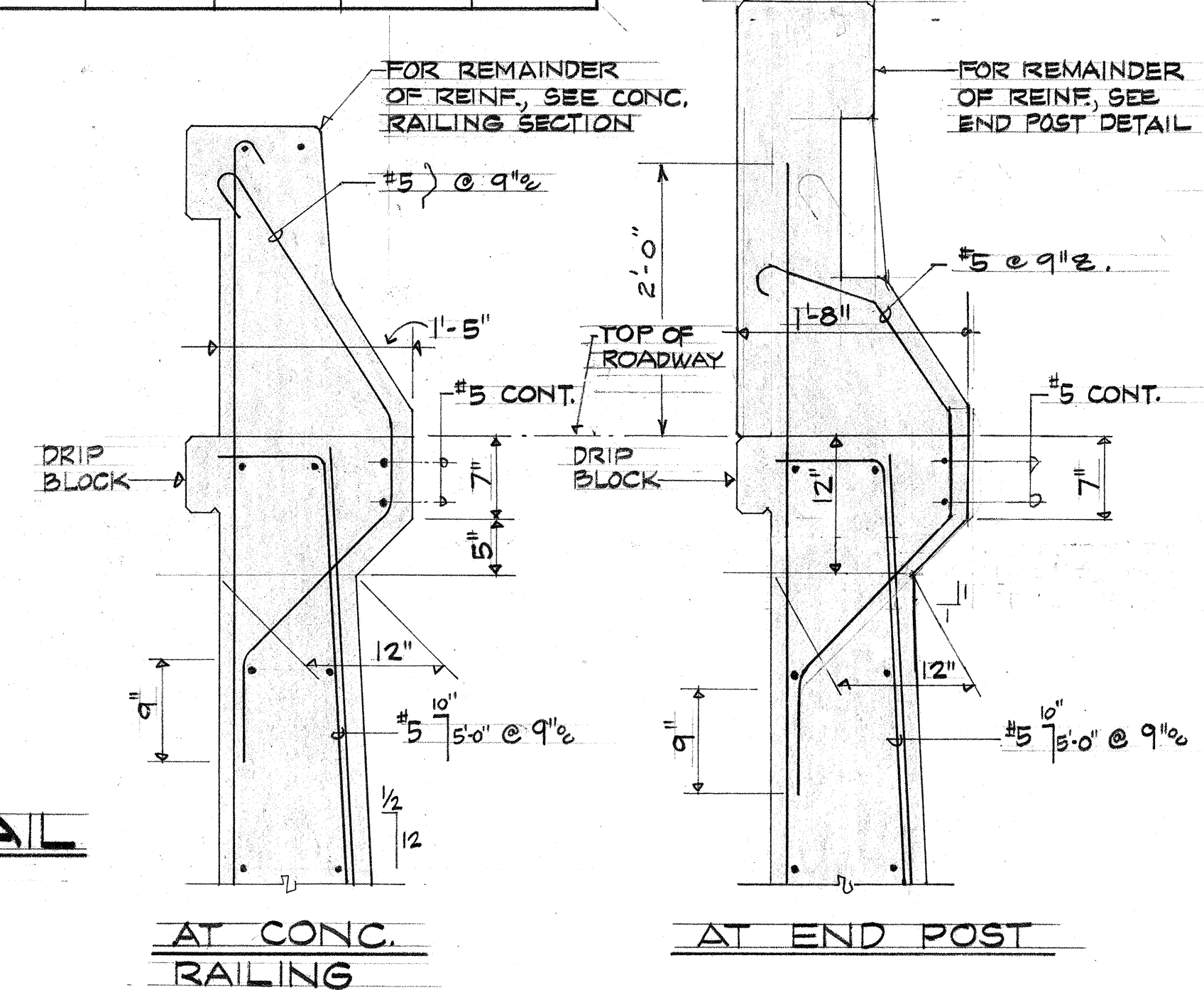


**F** **TYPICAL LIMITS OF STRUCTURAL**  
19 **EXCAVATION & BACKFILL PAYLINE**  
NO SCALE

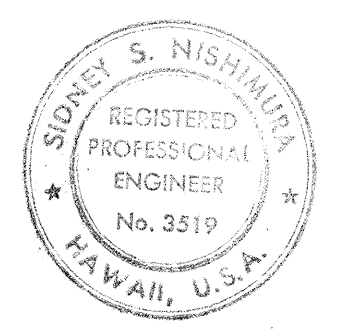
**C** **SECTION-WINGWALL NO. 4**  
19 SCALE: 3/8" = 1'-0"



**D** **DRIP BLOCK DETAIL**  
19 SCALE: 3" = 1'-0"



**E** **TOP OF WALL DETAILS**  
19 SCALE: 1" = 1'-0"



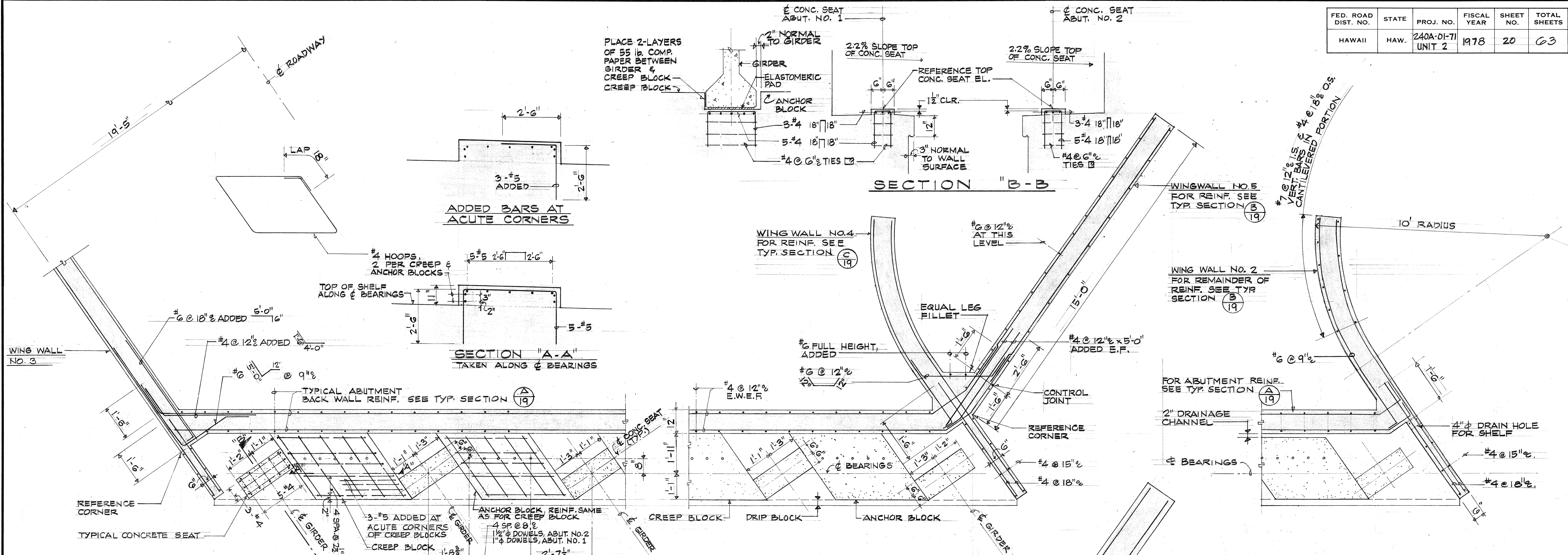
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION  
  
WAILULI STREAM BRIDGE  
WALL DETAILS  
  
HONOKAA-WAIPIO RD. PROJ. NO. 240A-01-71  
UNIT 2  
  
SHEET NO. 8 OF 14 SHEETS

This work was prepared by me  
or under my supervision.  
*Sidney S. Nishimura*

DATE: \_\_\_\_\_  
SURVEY PLOTTED BY: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
ORIGINAL PLAN: \_\_\_\_\_  
NOTE BOOK: \_\_\_\_\_

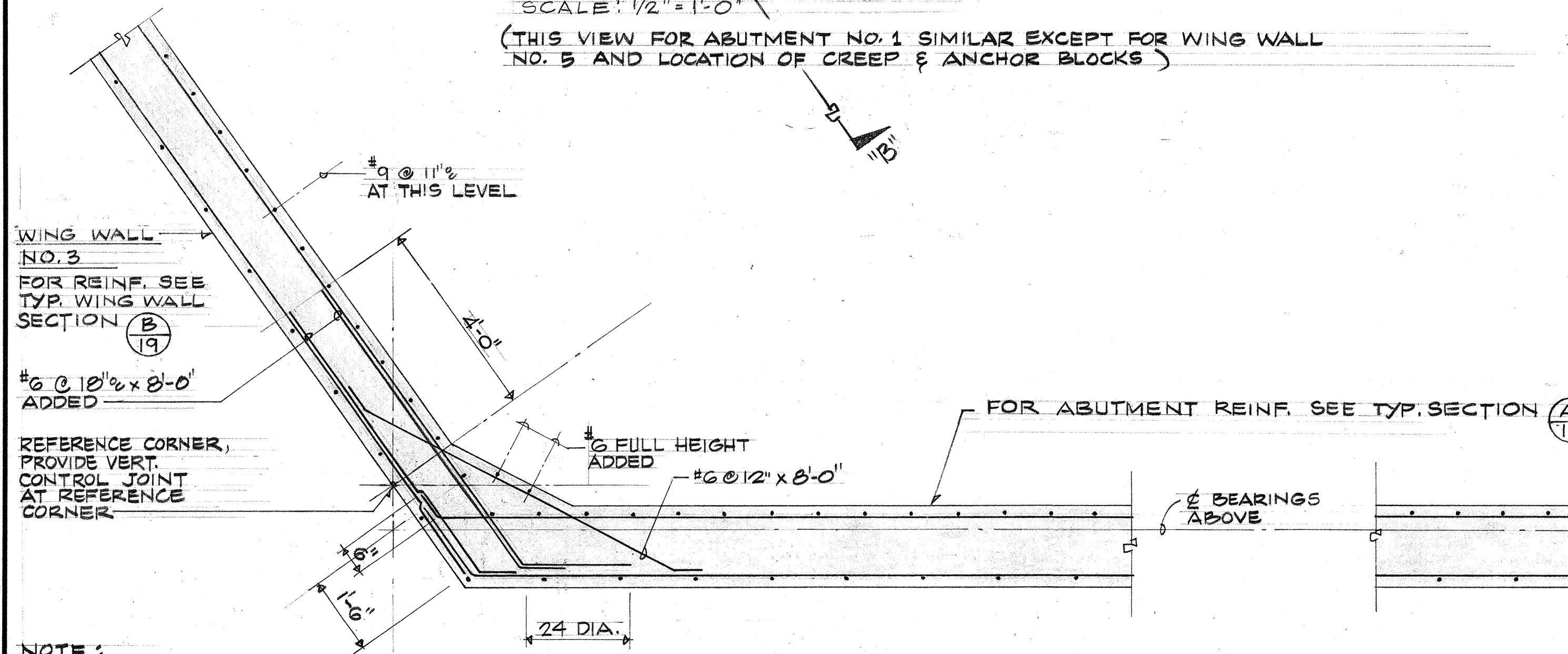


| FED. ROAD DIST. NO. | STATE | PROJ. NO.         | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 240A-01-71 UNIT 2 | 1978        | 20        | 63           |



**PLAN / SECTION AT ABUTMENT SHELF  
ABUTMENT NO. 2**  
SCALE: 1/2" = 1'-0"

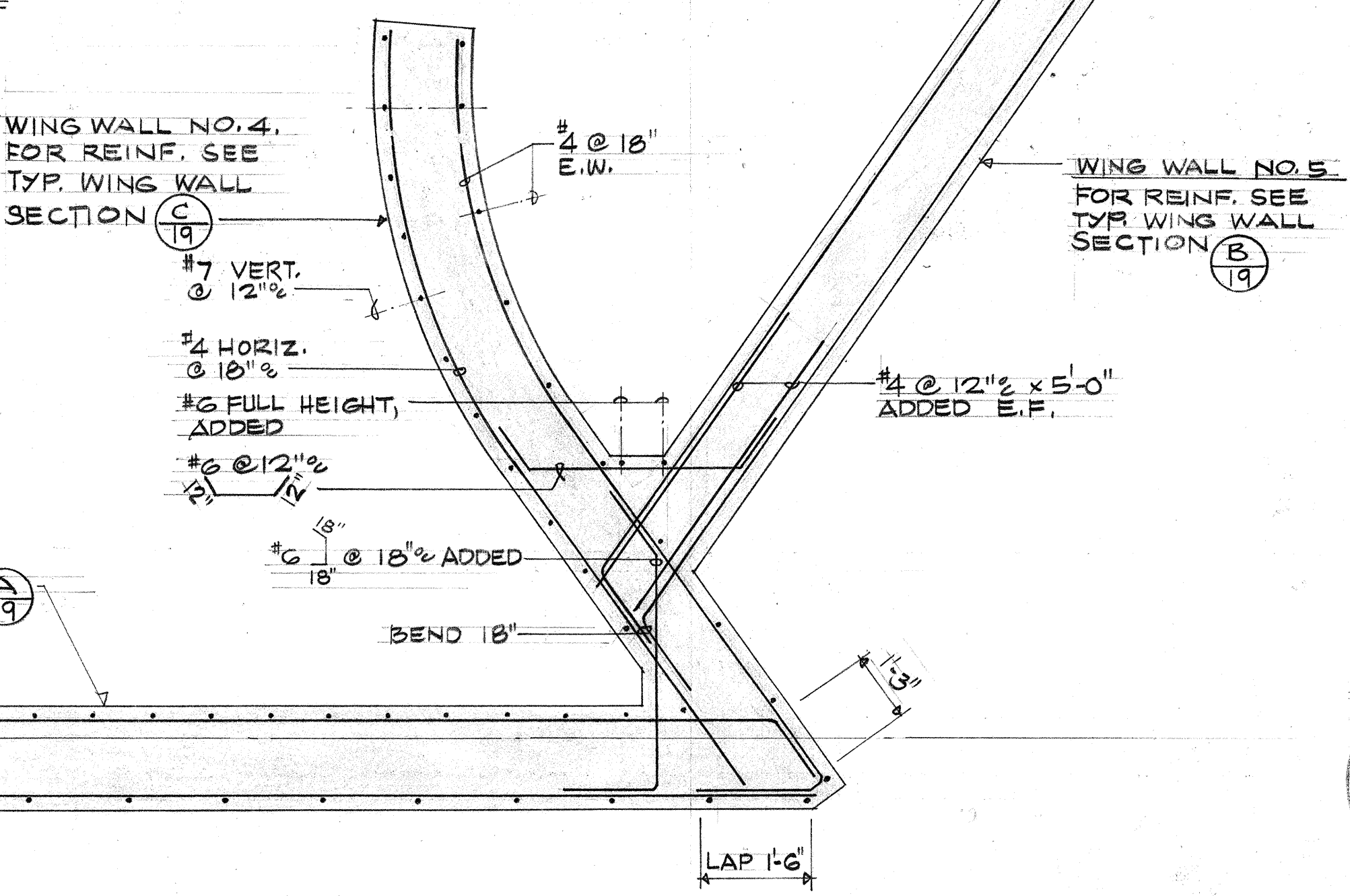
(THIS VIEW FOR ABUTMENT NO. 1 SIMILAR EXCEPT FOR WING WALL NO. 5 AND LOCATION OF CREEP & ANCHOR BLOCKS)



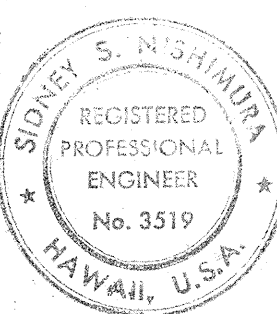
**PLAN / SECTION AT ABUTMENT WALL  
ABUTMENT NO. 2**  
SCALE: 1/2" = 1'-0"

(THIS VIEW SIMILAR FOR ABUTMENT NO. 1 EXCEPT FOR WING WALL NO. 5)

**NOTE:**  
CORNER REINF. SHOWN HERE APPLIES ALSO TO THICKENED PORTION BELOW ABUTMENT SHELF



**PLAN / SECTION AT ABUTMENT SHELF CORNER  
ABUTMENT NO. 1**  
SCALE: 1/2" = 1'-0"



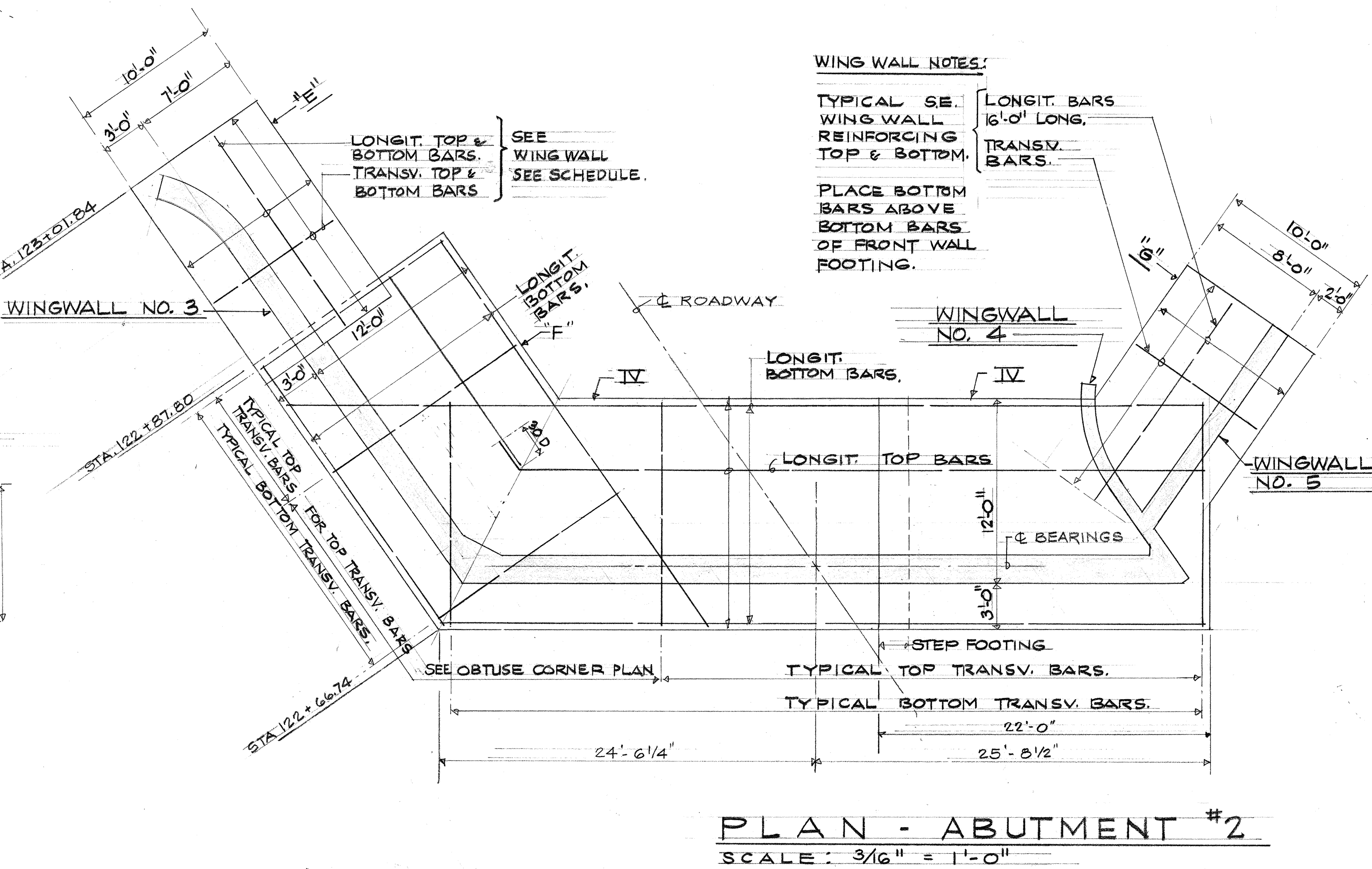
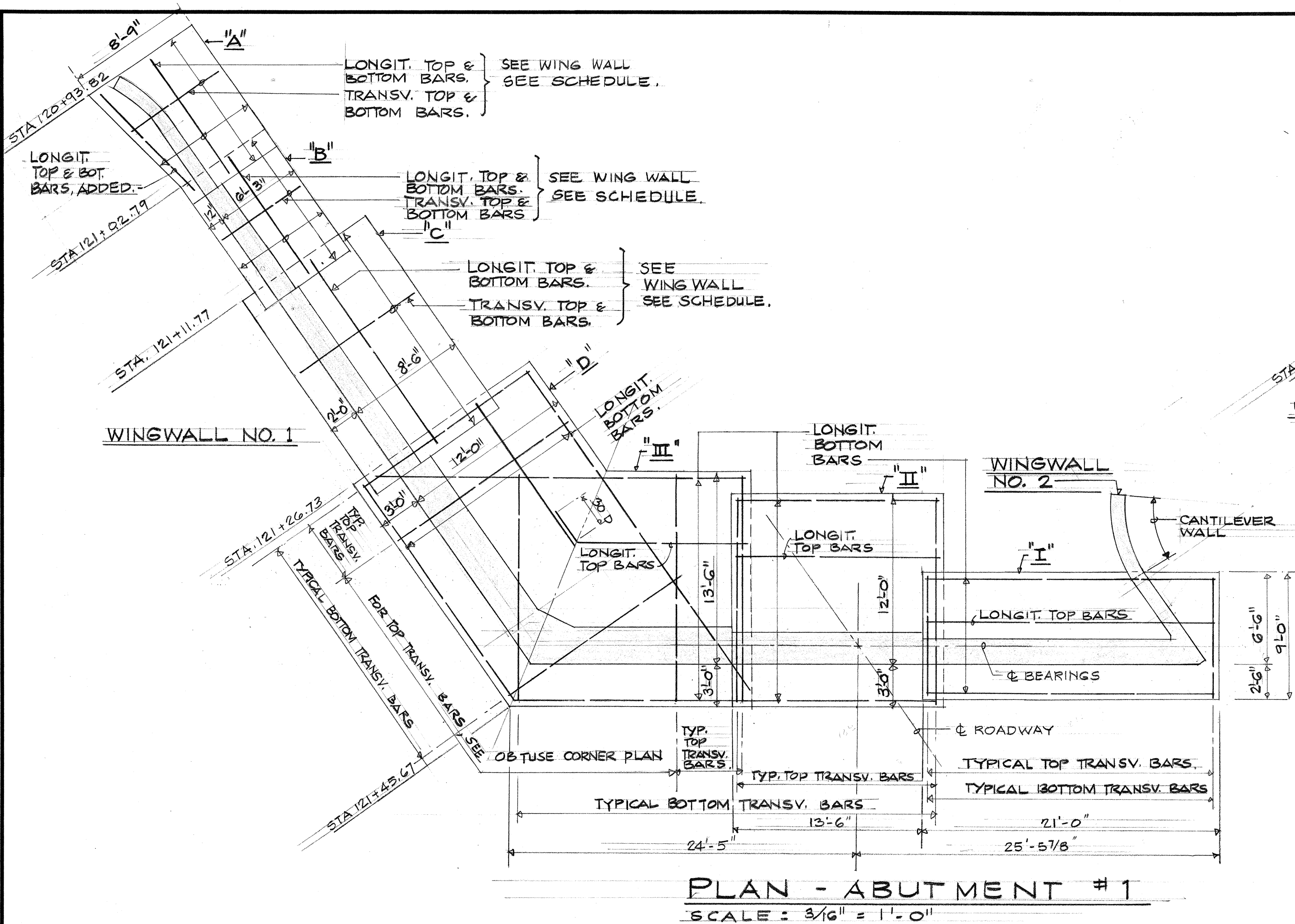
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION  
**WAILILI STREAM BRIDGE**  
ABUTMENT DETAILS  
HONOKAA-WAIPIO RD. PROJ. NO. 240A-01-71  
UNIT 2  
SHEET NO. 20 OF 14 SHEETS

*Sidney S. Nishimura*

SURVEY PLOTTED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
ORIGINAL PLAN NO. \_\_\_\_\_  
NOTE BOOK NO. \_\_\_\_\_



| FED. ROAD DIST. NO. | STATE | PROJ. NO.         | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 240A-01-71 UNIT 2 | 1978        | 21        | 03           |



NOTES:  
1. LEGS OF BENDS SHALL BE 18"

SAME SIZE & SPACING AS SMALLER OF LONGIT. TOP BAR.

TYPICAL LONGIT. BARS.

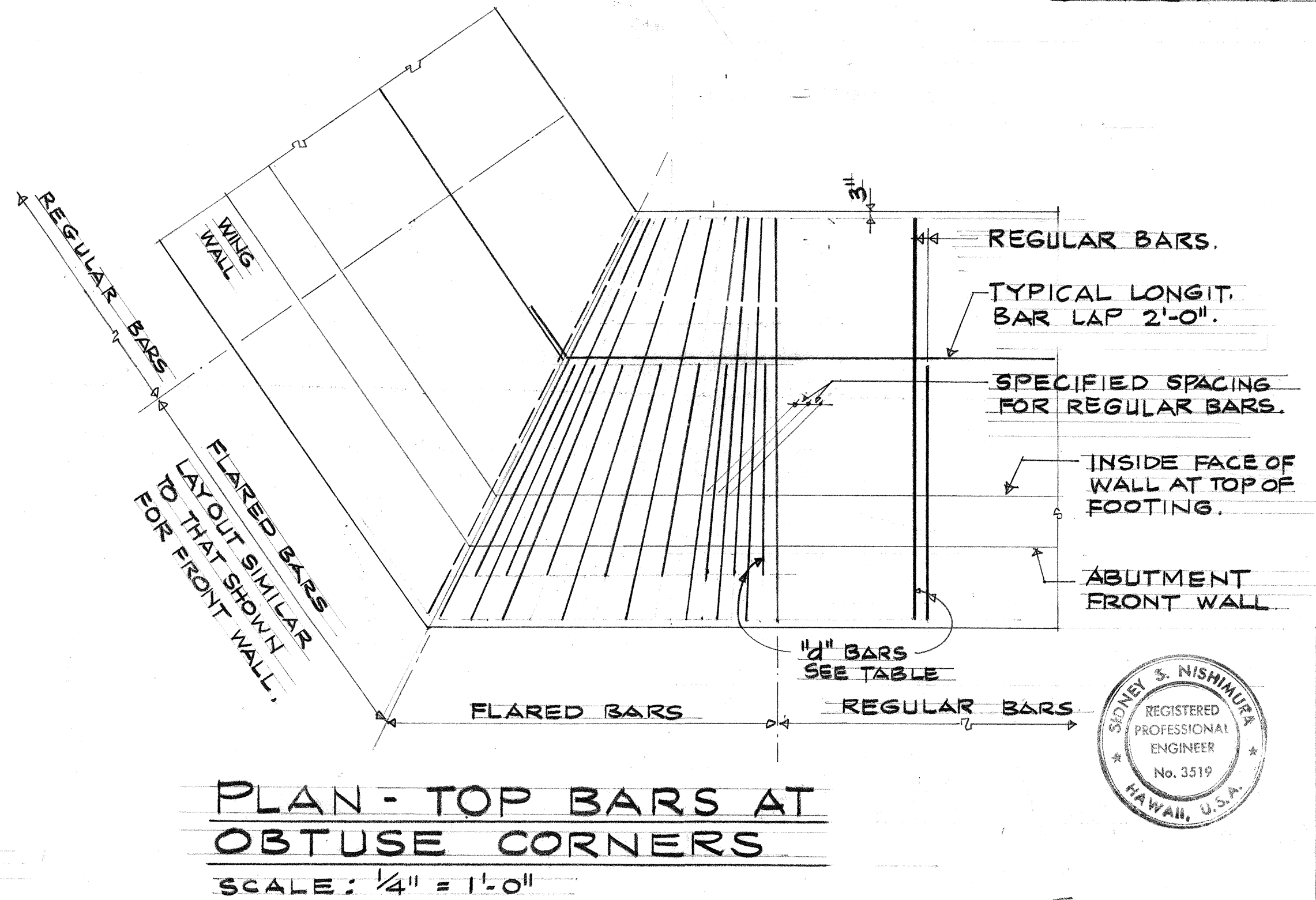
TYPICAL TRANSV. BARS.

SAME SIZE & SPACING AS SMALLER OF TYP. TRANSV. BARS. 2 PER FACE MINIMUM.

POUR NEAT AGAINST UNDISTURBED EXCAVATION. IN CASE OF OVER EXCAVATION, THE CONTRACTOR SHALL BACK FILL WITH MINIMUM CLASS "D" CONCRETE AT HIS OWN EXPENSE.

ELEVATION - TYPICAL FOOTING STEP

SCALE: 3/8" = 1'-0"



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION

WAILULI STREAM BRIDGE

FOUNDATION PLAN

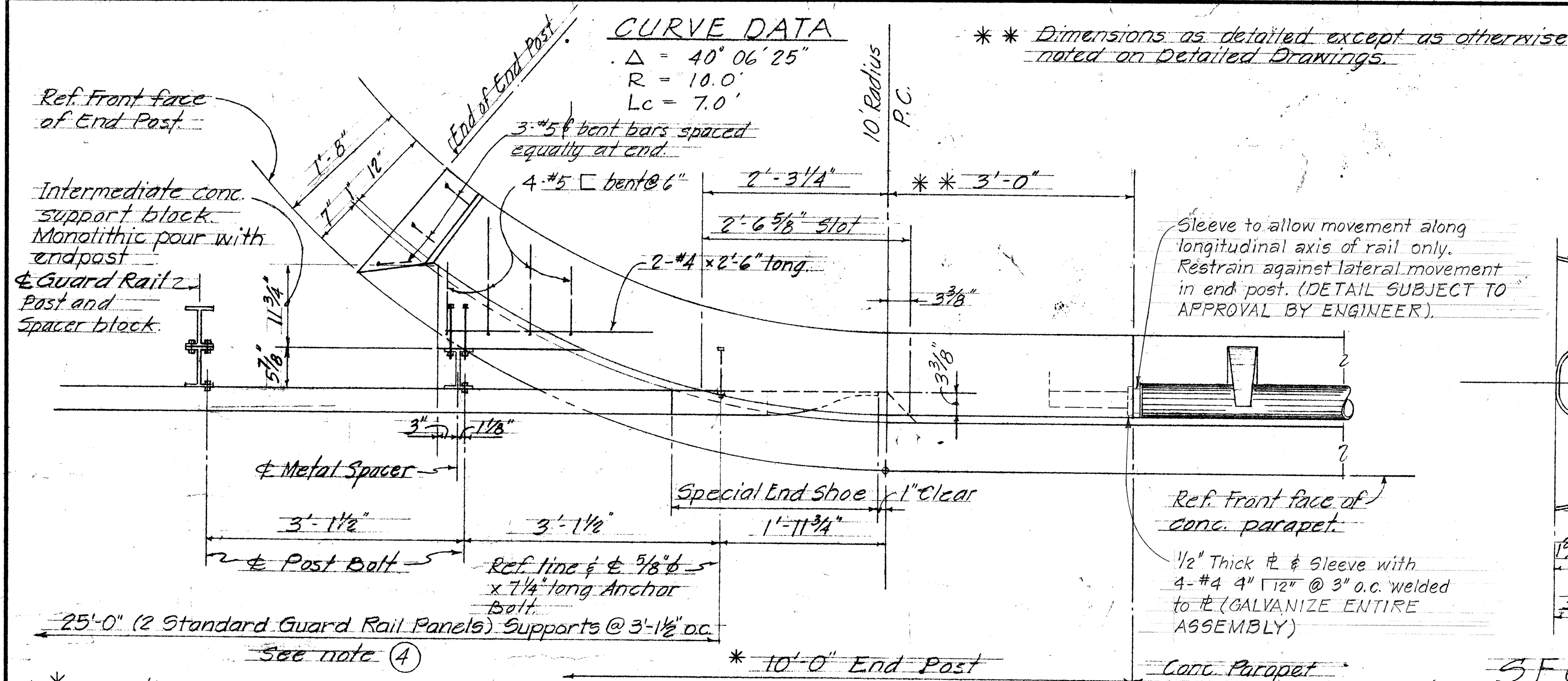
HONOKAA-WAIPIO RD. PROJ. NO. 240A-01-71  
UNIT 2

SHEET NO. 10 OF 14 SHEETS

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| DESIGNED BY       |      |
| QUANTITIES BY     |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     |      |
| NOTE BOOK         |      |
| NO.               |      |



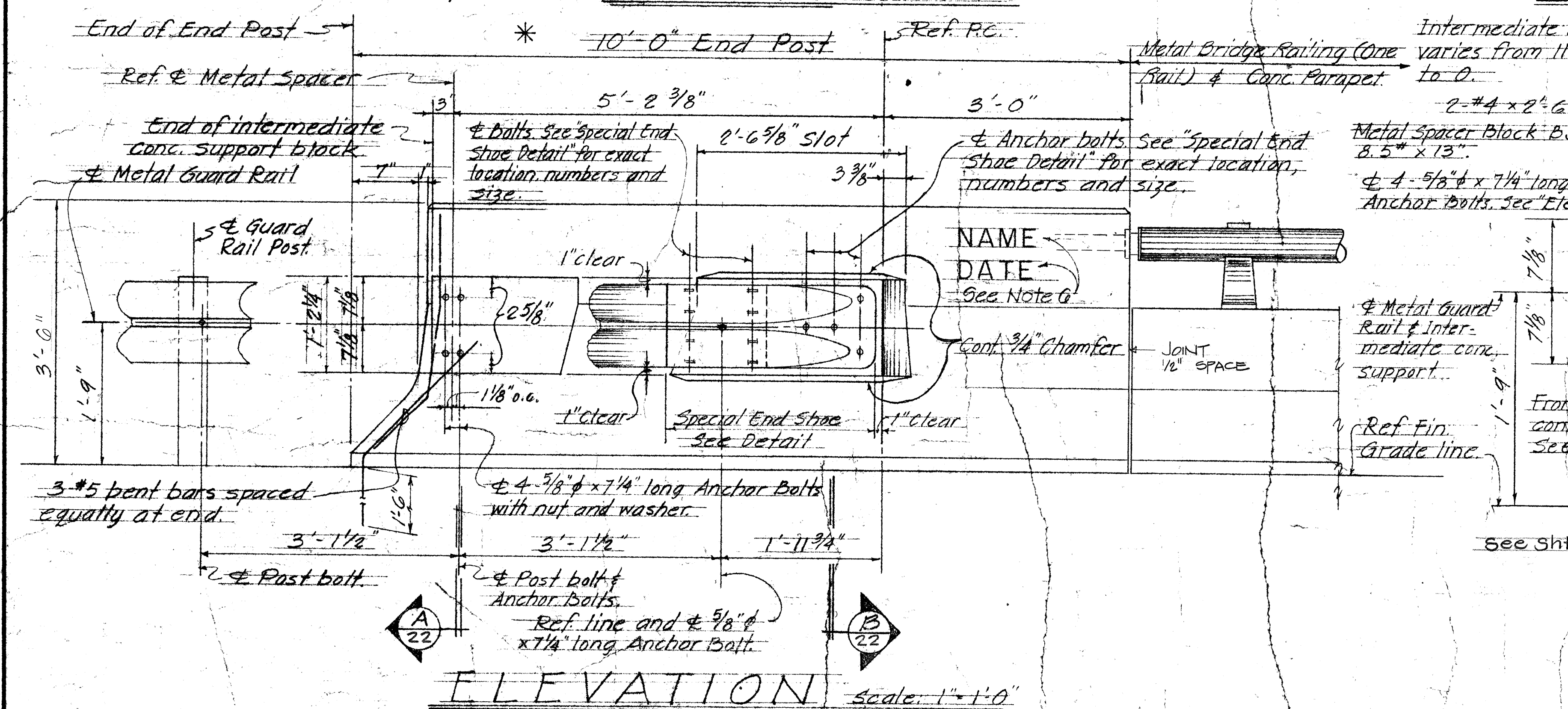
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 240A-01-71 UNIT 2  | 1978        | 22        | 03           |



### SECTION (C) 22

### SPECIAL END SHOE DETAILS

Scale: 3" = 1'-0"



### SECTION (A) 22

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

### SECTION (B) 22

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

### NOTES:

- All Anchor Bolts shall be High Strength bolts conforming to the requirements of ASTM A325.
- All Shoe assembly, including anchor bolts, nuts and washers, shall be galvanized.
- Special End Shoe shall be fabricated from 10 gage steel conforming to the requirements of AASHTO-180.
- First 25'-0" of guard rail adjoining "Special End Shoe" shall be galvanized steel.
- Anchor Bolt length given from under bolt head.
- Place name of structure as shown. For location, see sht. 12.
- Front face of End Post to match front face of typical conc. parapet.

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|-----|----------|-------------|------|
|     |          |             |      |



STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 LAND TRANSPORTATION FACILITIES DIVISION

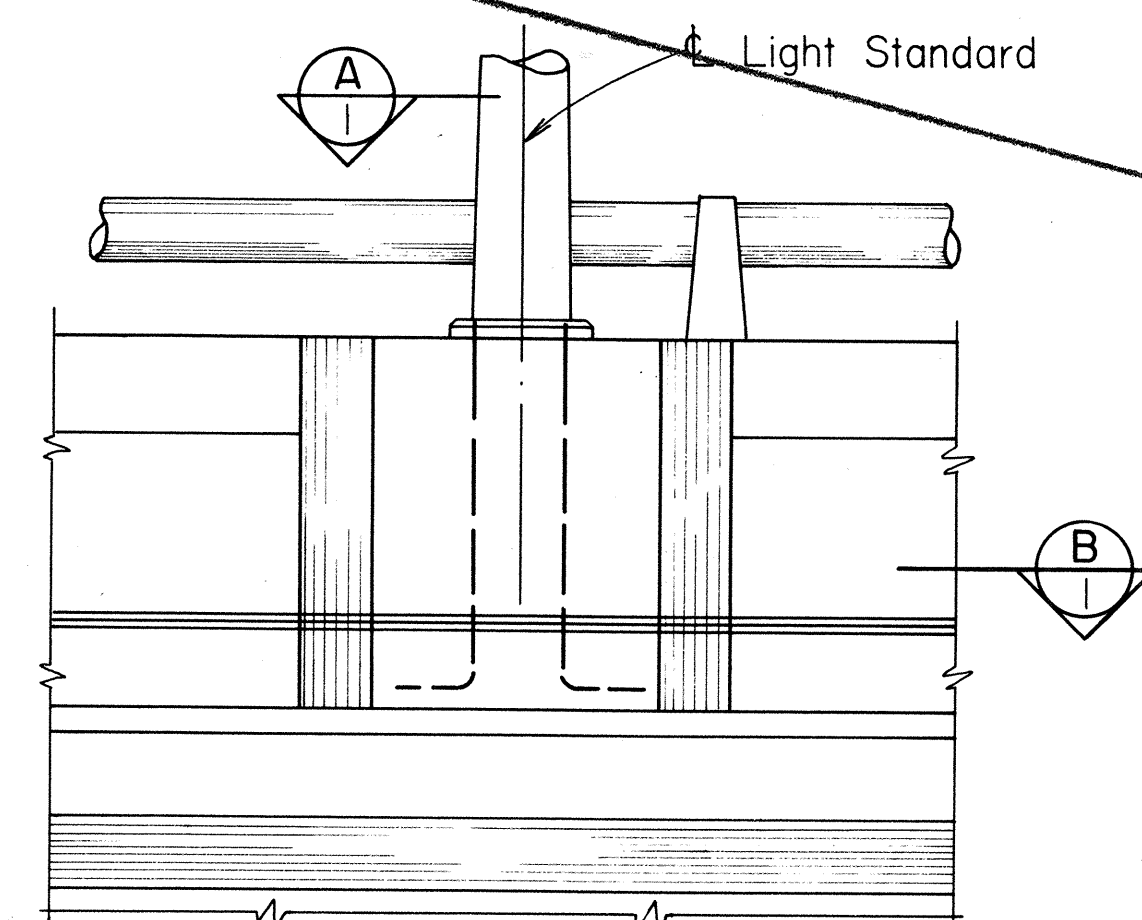
WAIULILI STREAM BRIDGE  
 END POST DETAILS

HONOLULU-WAIPIO RD. PROJ. NO. 240A-01-71  
 UNIT 2

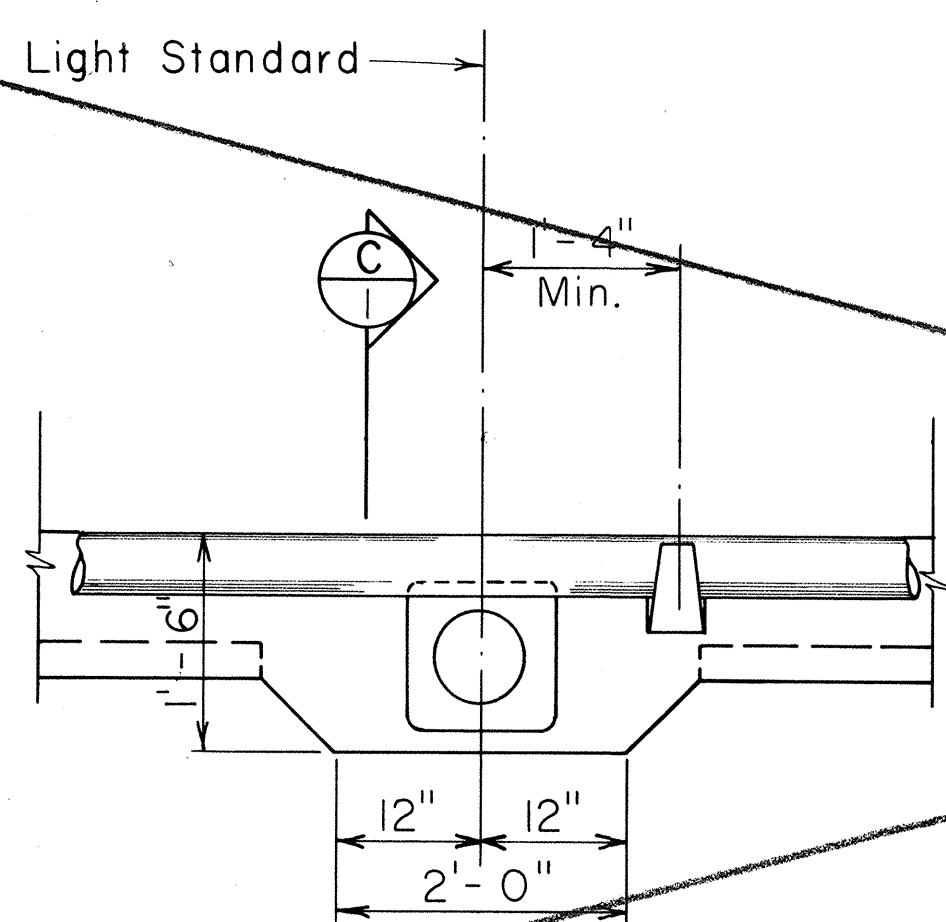
SHEET No. 11 OF 14 SHEETS DB-205



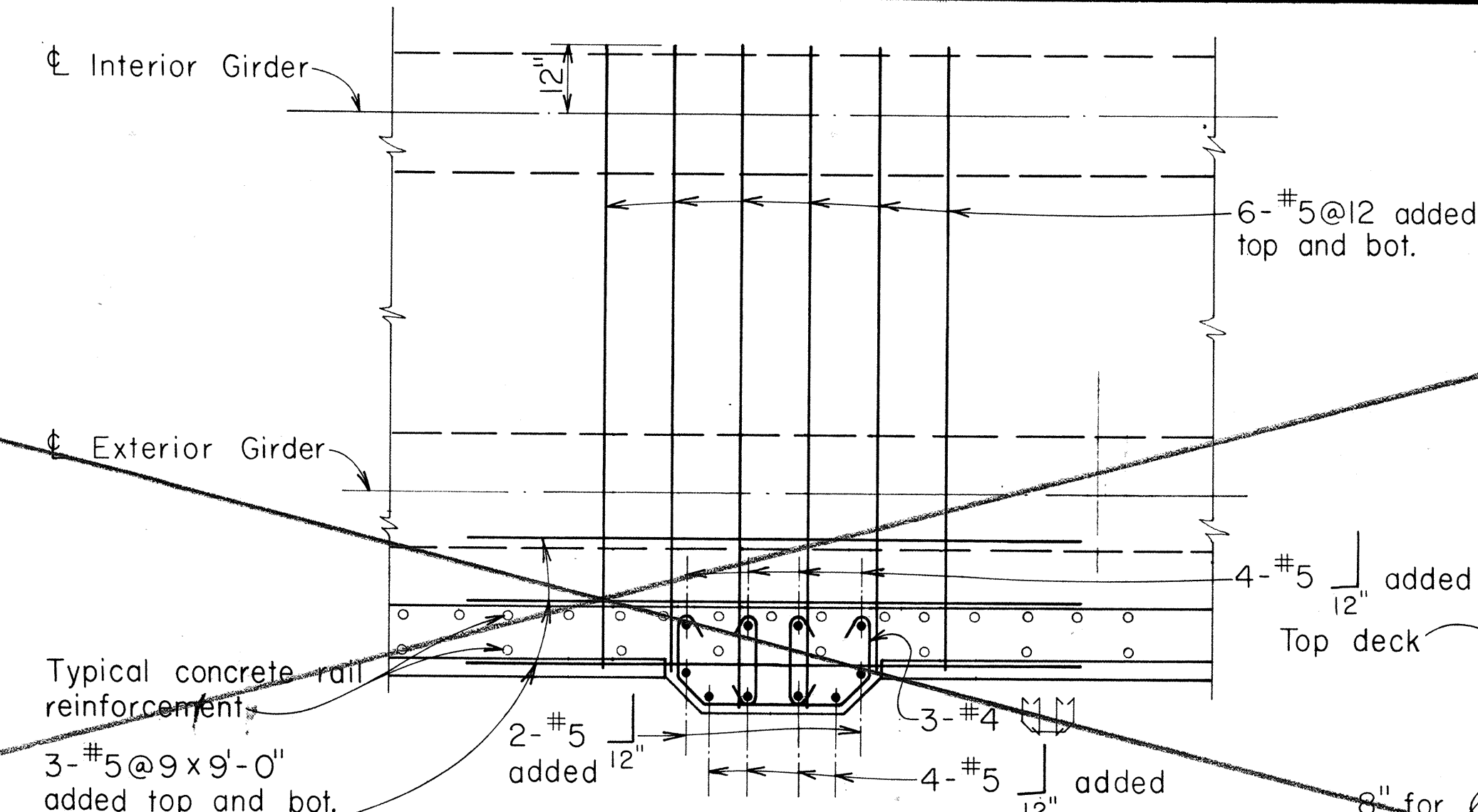
| FED. ROAD DIST. NO. | STATE | PROJ. NO.         | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 240A-01-71 UNIT 2 | 1978        | 23        | 63           |



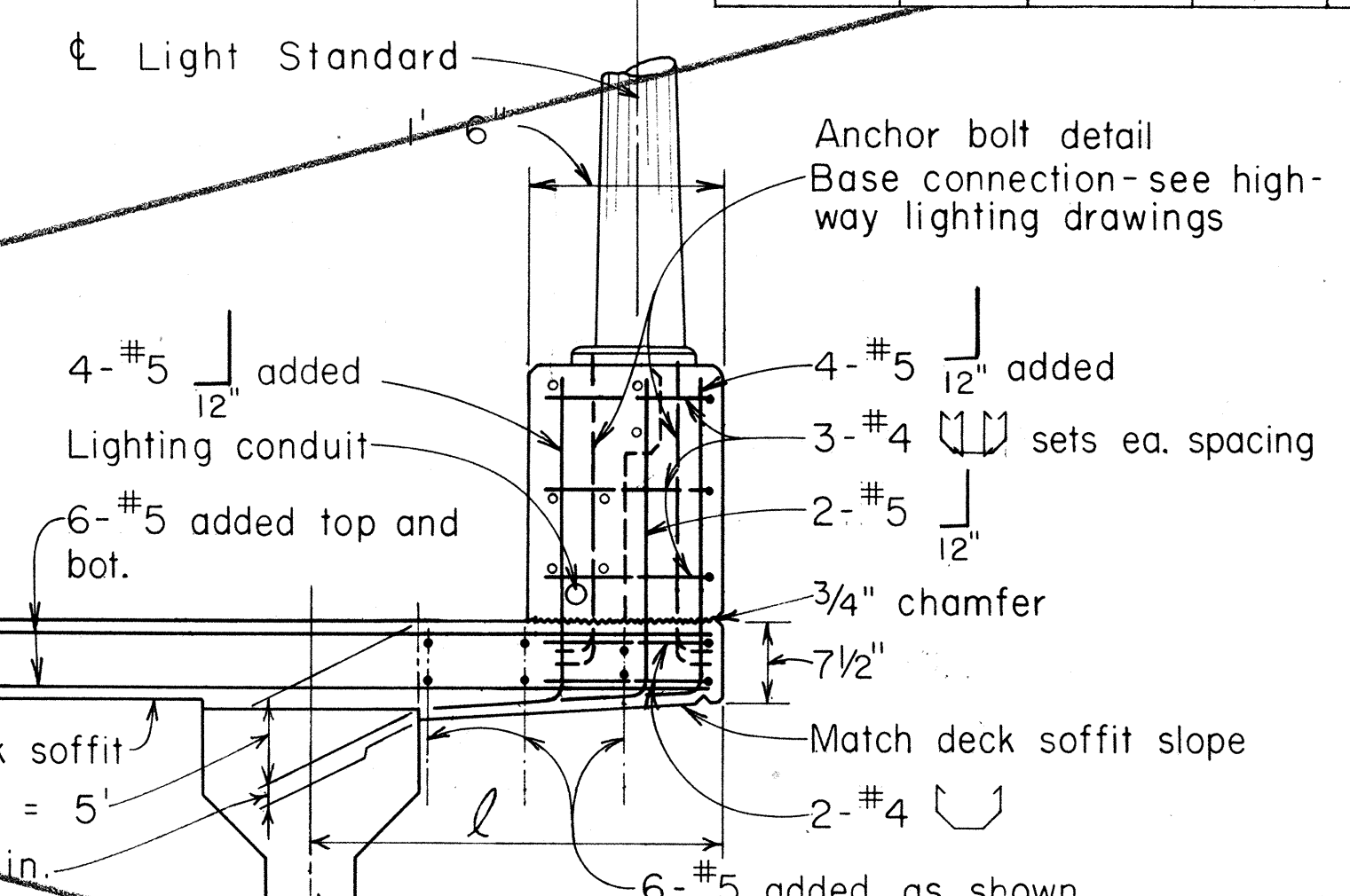
**EXTERIOR ELEVATION**  
Scale: 3/4" = 1' - 0"



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



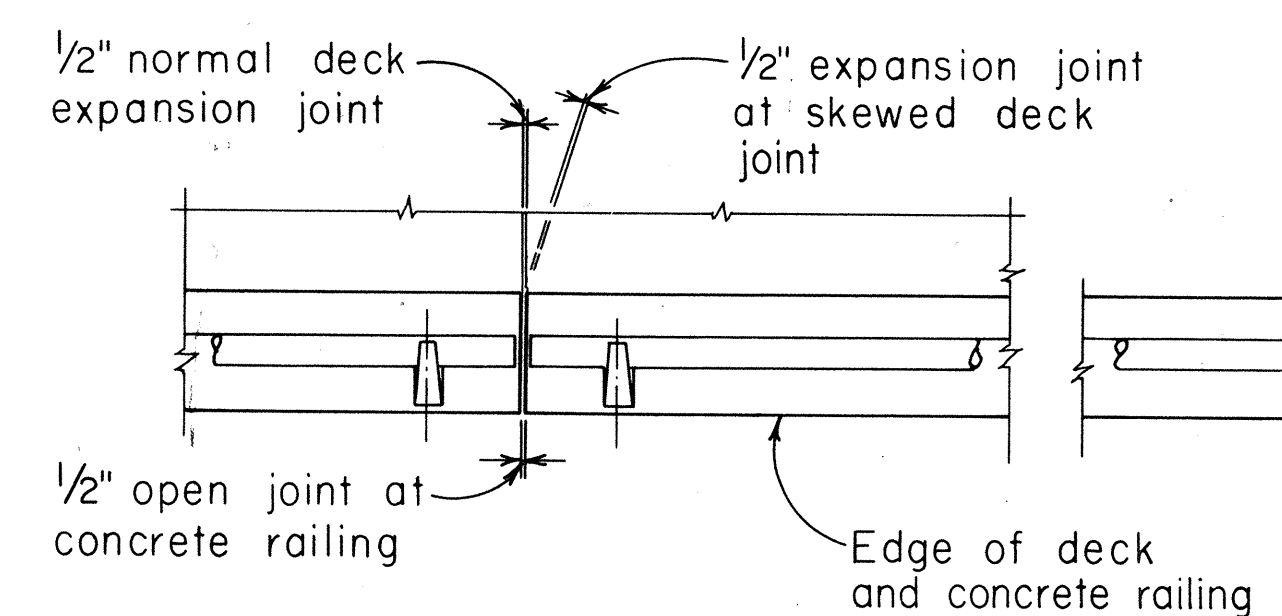
**SECTION**  
Scale: 1/2" = 1' - 0"



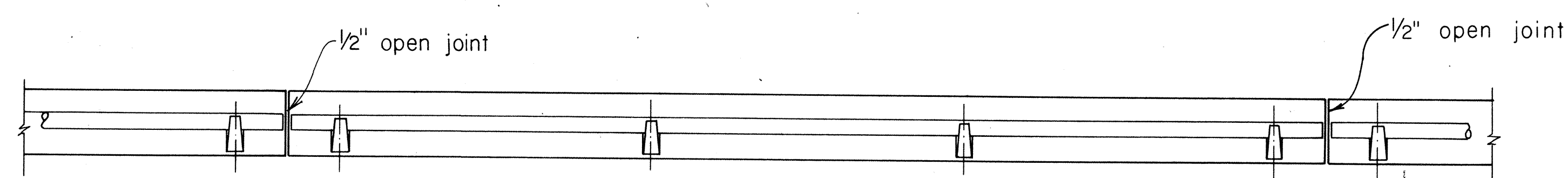
**SECTION**  
Scale: 3/4" = 1' - 0"

**NOT IN CONTRACT**

**DETAILS AT LIGHT STANDARD**

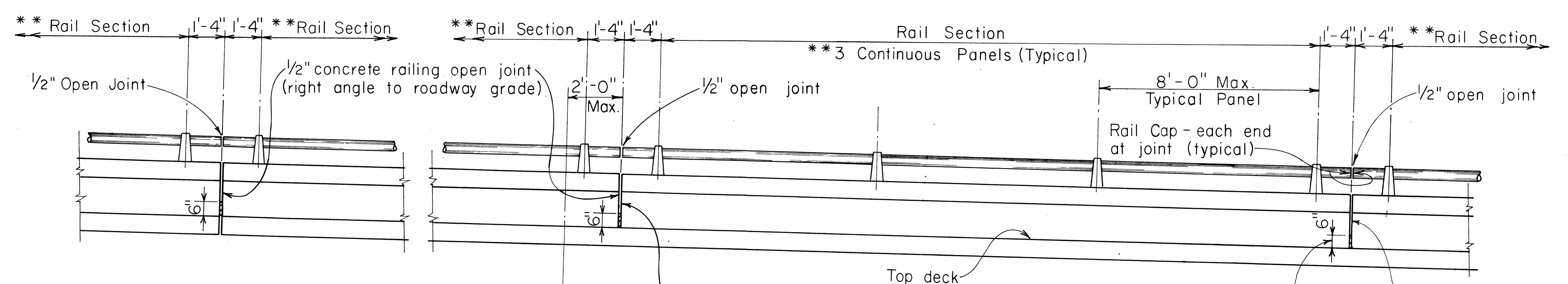


**AT DECK EXPANSION JOINT**



**INTERMEDIATE**

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



**AT DECK EXPANSION JOINT**

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

**INTERMEDIATE**

NOTE: Refer to Sht. No. DB-207 for additional aluminum bridge railing accessories and notes.



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|-----|----------|-------------|------|
|     |          |             |      |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION

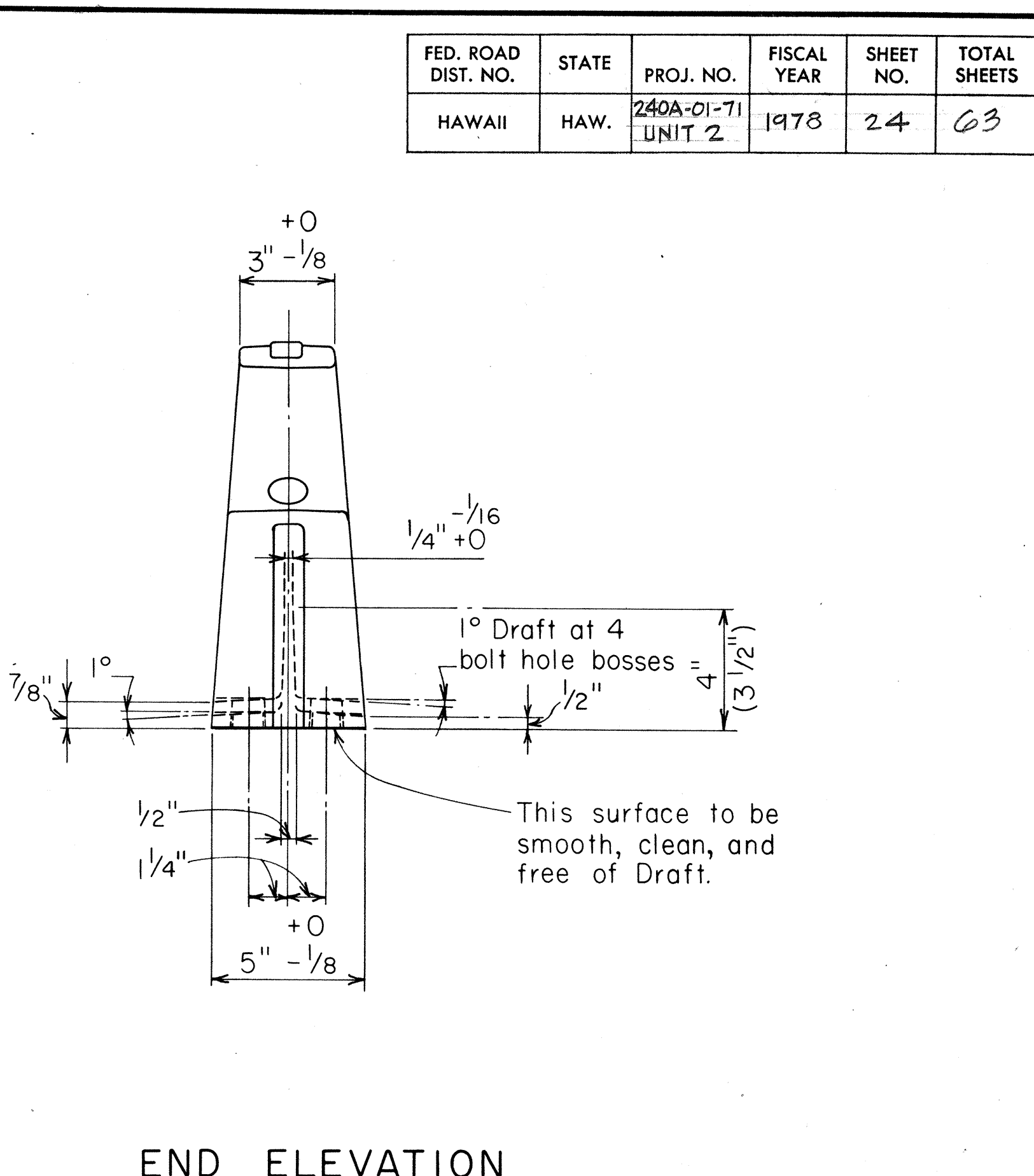
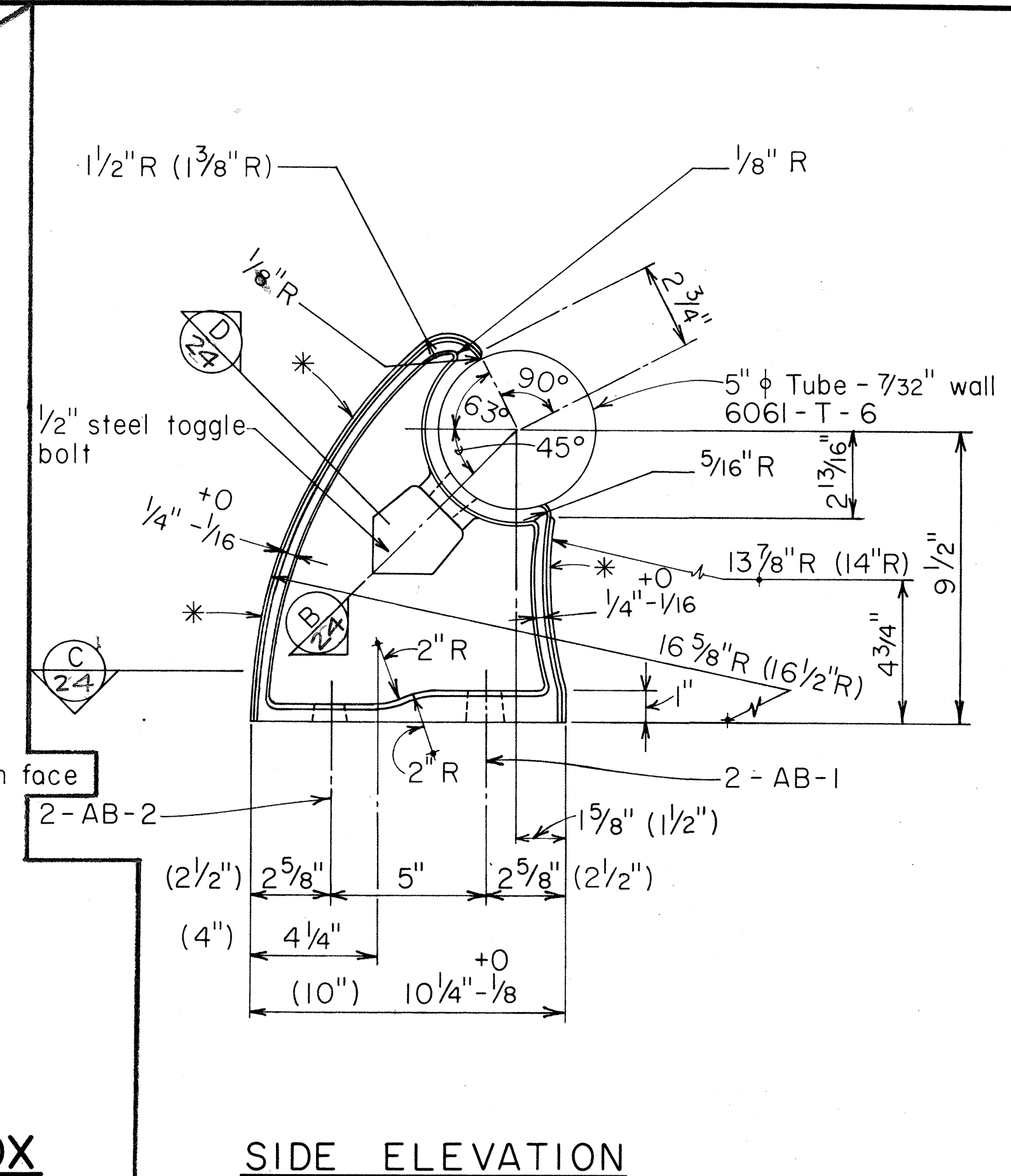
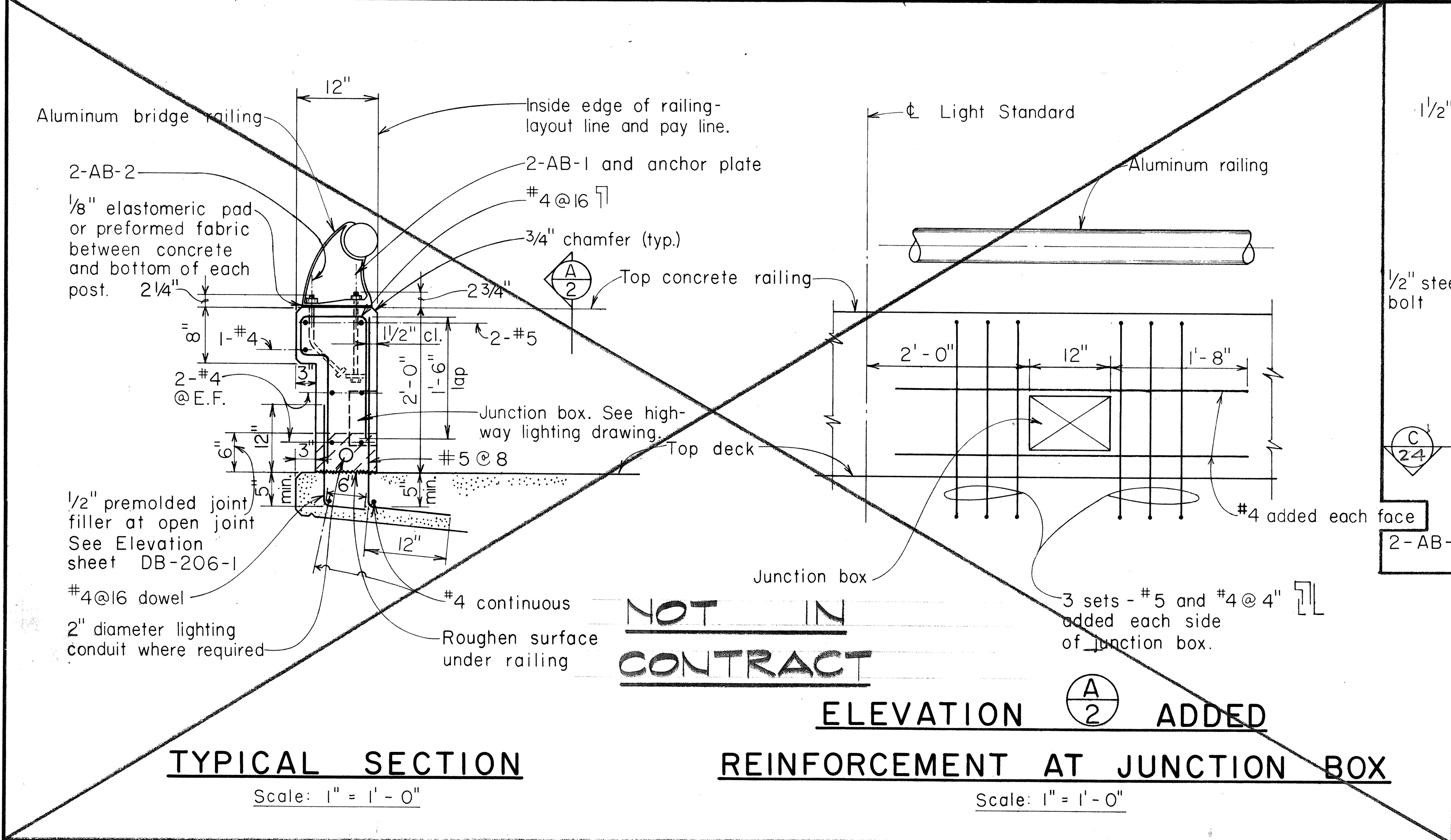
**ALUMINUM BRIDGE RAILING  
ONE RAIL COMBINATION TYPE  
ON PARAPET (TYPE 2)**

HONOKAA-WAIPIO RD. PROJ. NO. 240A-01-71  
UNIT 2

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| DESIGNED BY       |      |
| QUANTITIES BY     |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     |      |
| NOTE BOOK         |      |
| NO.               |      |



| FED. ROAD DIST. NO. | STATE | PROJ. NO.         | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 240A-01-71 UNIT 2 | 1978        | 24        | 63           |



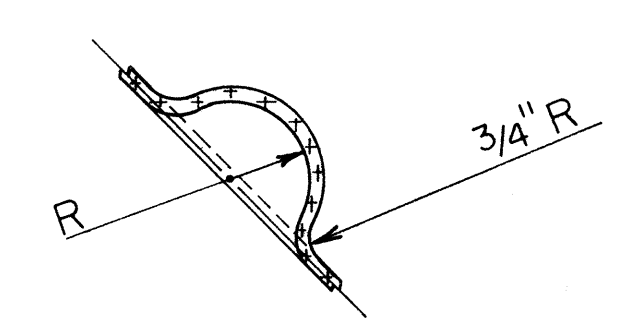
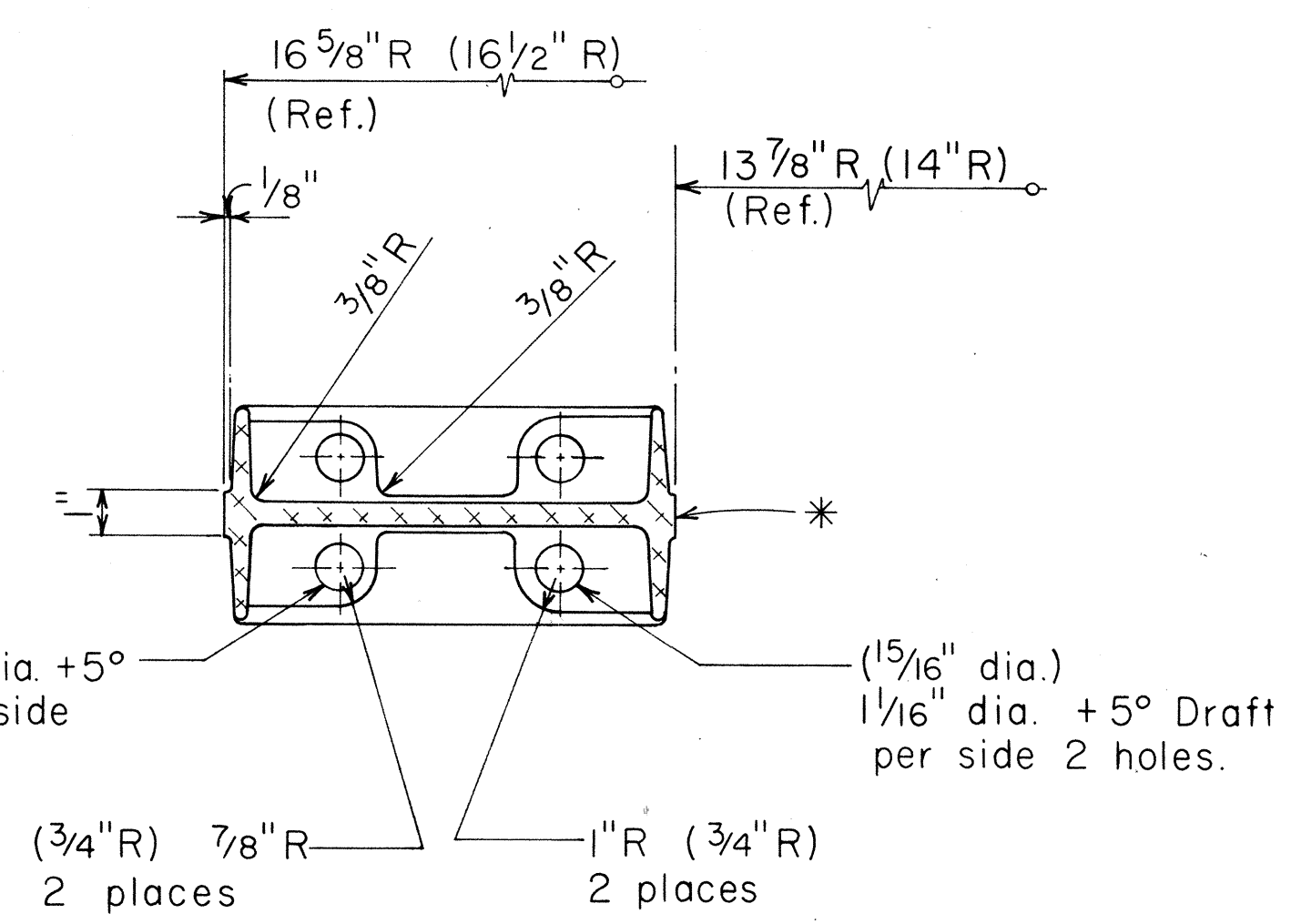
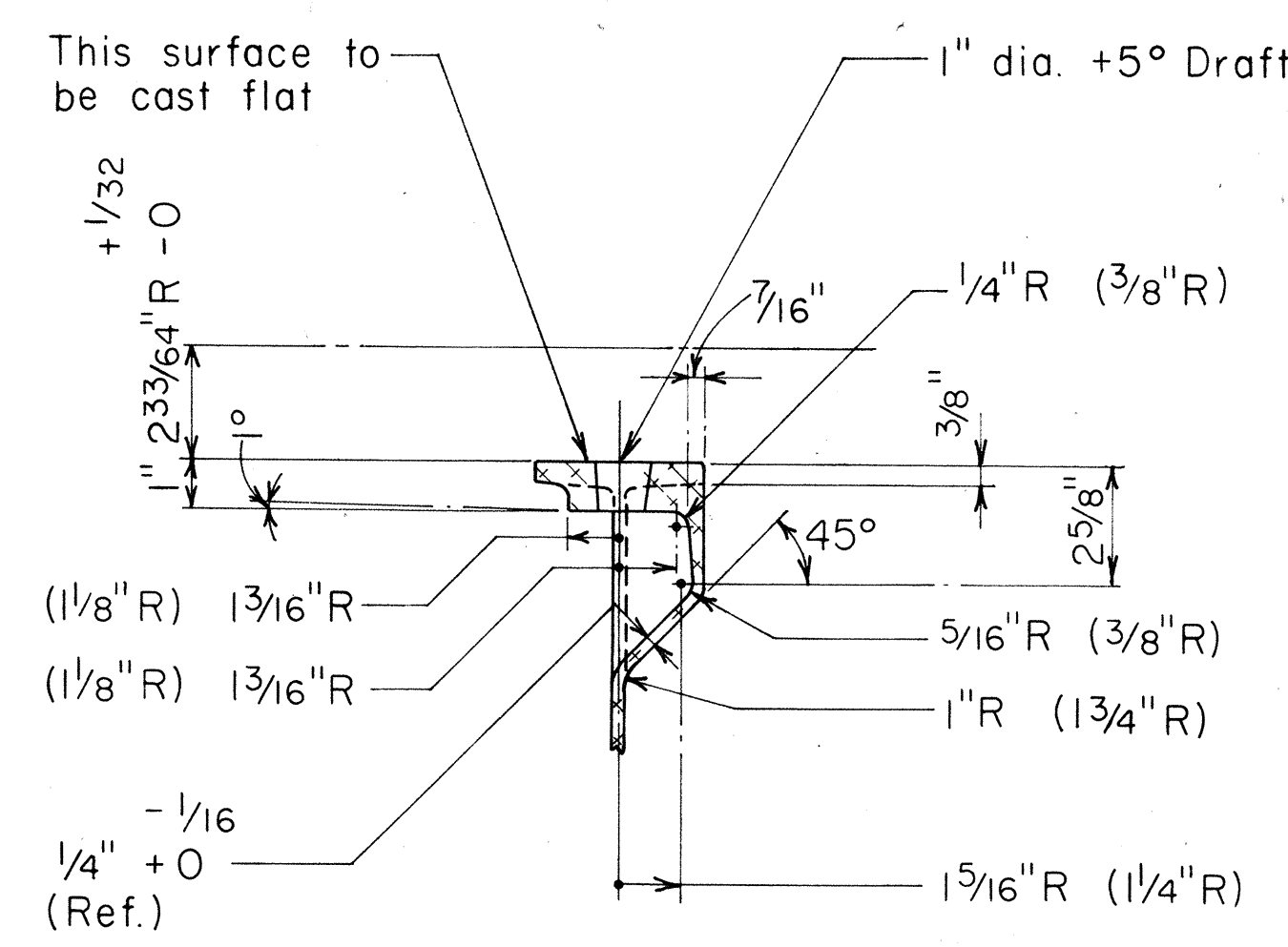
ELEVATION A-2

SIDE ELEVATION

END ELEVATION

ALUMINUM RAILING DETAILS

Scale: 3" = 1'-0"



SECTION B-24

SECTION C-24

SECTION D-24

NOTE: Refer to Sht. No. DB-207 for additional aluminum bridge railing accessories and notes.

| NO. | REVISION | APPROVED BY | DATE |
|-----|----------|-------------|------|
|     |          |             |      |

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

LAND TRANSPORTATION FACILITIES DIVISION

ALUMINUM BRIDGE RAILING

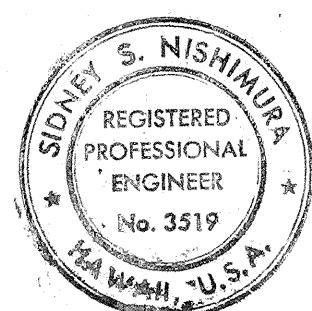
ONE RAIL COMBINATION TYPE

ON PARAPET (TYPE 2)

HONOLULU-WAIPIO RD. PROJ. NO. 240A-01-71

UNIT 2

SHEET No. 13 OF 14 SHEETS



This work was prepared by me or under my supervision.

*Sidney S. Nishimura*

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| DESIGNED BY       |      |
| QUANTITIES BY     |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     |      |
| NOTE BOOK         |      |
| No.               |      |



