

GENERAL NOTES

DESIGN SPECIFICATIONS: AASHO

STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (8TH EDITION)
WITH SUBSEQUENT ADDITIONS AND MODIFICATIONS.

DESIGN LOADS: HS-20-44

DESIGN STRESSES:

1. R.C. BEAMS & SLABS

SEE AASHO SPECIFICATIONS EXCEPT AS OTHERWISE NOTED AND SEE SPECIAL PROVISIONS.

$$f'_c = 3,000 \text{ psi}$$

$$f'_c = 1,200 \text{ psi}$$

$$n = 10$$

$$f_s = 20,000 \text{ psi TENSION}$$

2. PRESTRESSED MEMBERS

$$a. f'_c = 6,000 \text{ psi}$$

$$b. f'_{ci} = 4,000 \text{ psi}$$

c. 7 WIRE STRANDS

DIAMETER	TENSIONING LOAD PER STRAND	DESIGN LOAD PER STRAND
1/2" ϕ	25,200 LBS	20,160 LBS
7/16" ϕ	18,900 LBS	15,100 LBS

d. FORMS MUST BE REMOVED AND THE BEAM INSPECTED BEFORE THE STRANDS ARE CUT.

MATERIALS:

1. ALL CONCRETE SHALL BE CLASS A-1 EXCEPT AS OTHERWISE NOTED ON PLANS. CONCRETE FOR PRESTRESSED CONCRETE MEMBERS SEE SPECIAL PROVISIONS AND AS NOTED ABOVE. ALL CEMENT SHALL BE TYPE I.

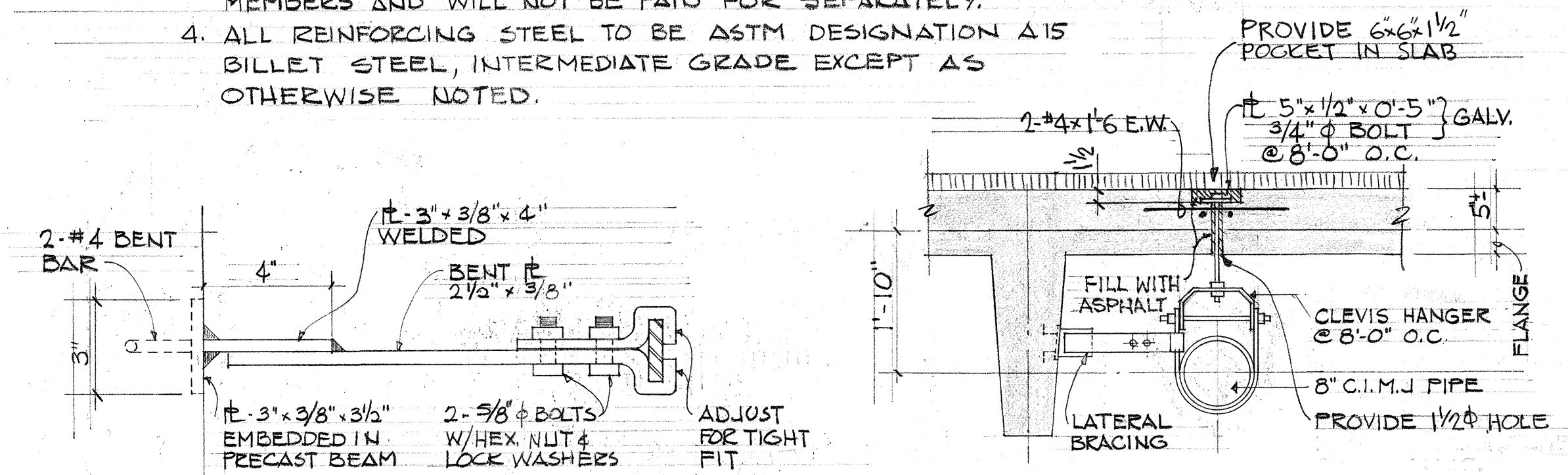
2. PREFORMED FABRIC BRIDGE BEARING PADS ARE INCIDENTAL TO CONCRETE AND WILL NOT BE PAID FOR SEPARATELY.

3. NEOPRENE PADS ARE INCIDENTAL TO PRESTRESSED CONCRETE MEMBERS AND WILL NOT BE PAID FOR SEPARATELY.

4. ALL REINFORCING STEEL TO BE ASTM DESIGNATION A15 BILLET STEEL, INTERMEDIATE GRADE EXCEPT AS OTHERWISE NOTED.

CONSTRUCTION METHODS:

- SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
- ALL FOOTINGS SHALL BE EXCAVATED AND POURED TO NEAT LINES. IN CASE OF OVER EXCAVATION, SPACE BETWEEN FOOTING AND GROUND SHALL BE FILLED WITH CONCRETE AT THE CONTRACTOR'S EXPENSE. THE FILL CONCRETE SHALL HAVE A MINIMUM QUALITY OF CLASS D-1.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITY LINES AND NOTIFY THE RESPECTIVE OWNERS BEFORE COMMENCING WORK OF EXCAVATION.
- EXCEPT AT FRAME ABUTMENT, ALL FILL BEHIND ABUTMENTS AND WINGWALLS SHALL BE COMPLETE IN PLACE BEFORE PLACING SUPERSTRUCTURE AND PRESTRESSED CONCRETE MEMBERS. BACKFILL BEHIND FRAME ABUTMENT SHALL BE PLACED ONLY AFTER THE DECK FRAME FALSEWORK HAVE BEEN REMOVED.
- IN GENERAL, TOP OF CONCRETE DECK OF STRUCTURE SHALL BE CONSTRUCTED TO FOLLOW THE FINISH ROADWAY VERTICAL AND HORIZONTAL CURVES AND GRADES.
- FOR CONCRETE FINISH SEE SPECIAL PROVISIONS. CONCRETE SEATS AND CREEP BLOCKS TO BE POURED MONOLITHICALLY WITH PIER OR ABUTMENT SECTIONS. SEATS SHALL RECEIVE A HARD TROWEL FINISH, LEVEL & TRUE ELEVATIONS.
- NEOPRENE PADS SHALL BE SECURED AGAINST DISPLACEMENT BY ADHESIVES, WHICH SHALL BE APPROVED BY THE ENGINEER.
- PROVIDE 1/2" x 1/2" CHAMFER AT ALL EXPOSED CONCRETE EDGES.

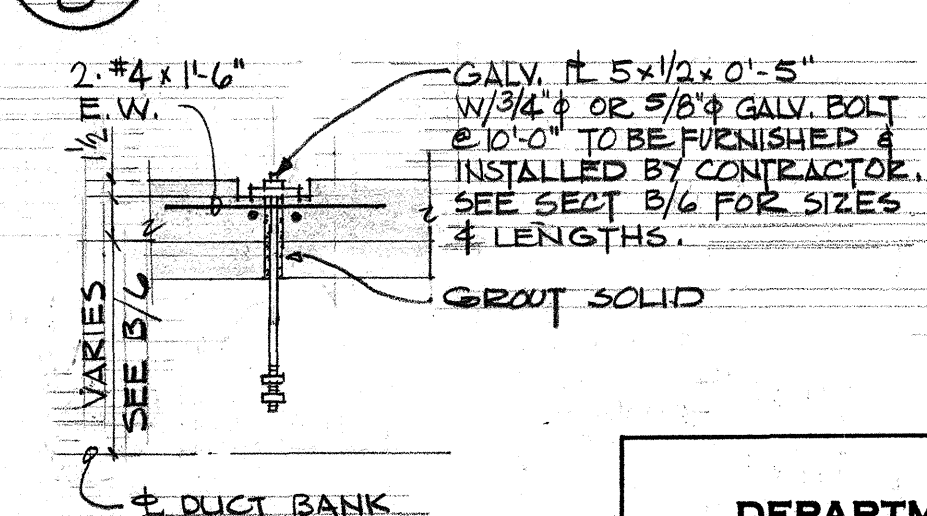
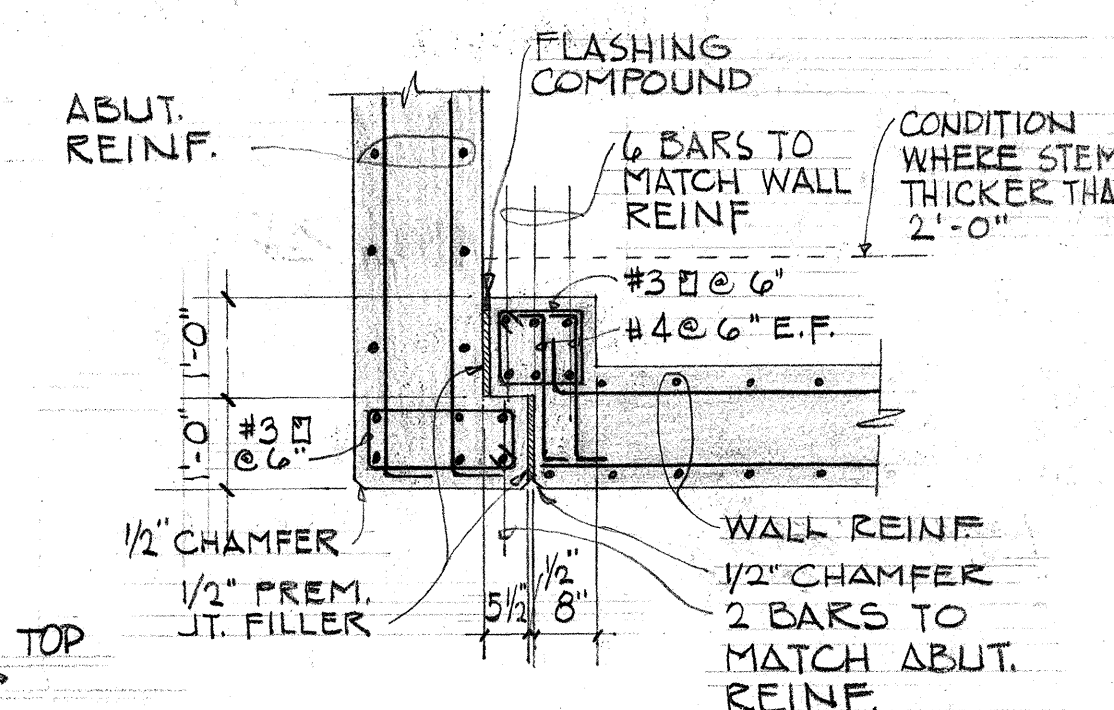


NOTE:
EXPOSED METAL OF PIPE HANGERS AND LATERAL BRACES SHALL HAVE ONE SHOP COAT OF APPROVED PRIMER COAT AND FINAL COAT OF RUST PREVENTATIVE (METAL GRAY) PAINT APPROVED BY THE ENGINEER.

LATERAL BRACING DET.

PIPE HANGER DET.

WATER MAIN DETAILS



DETAIL C

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

TELEPHONE DUCT HANGER E

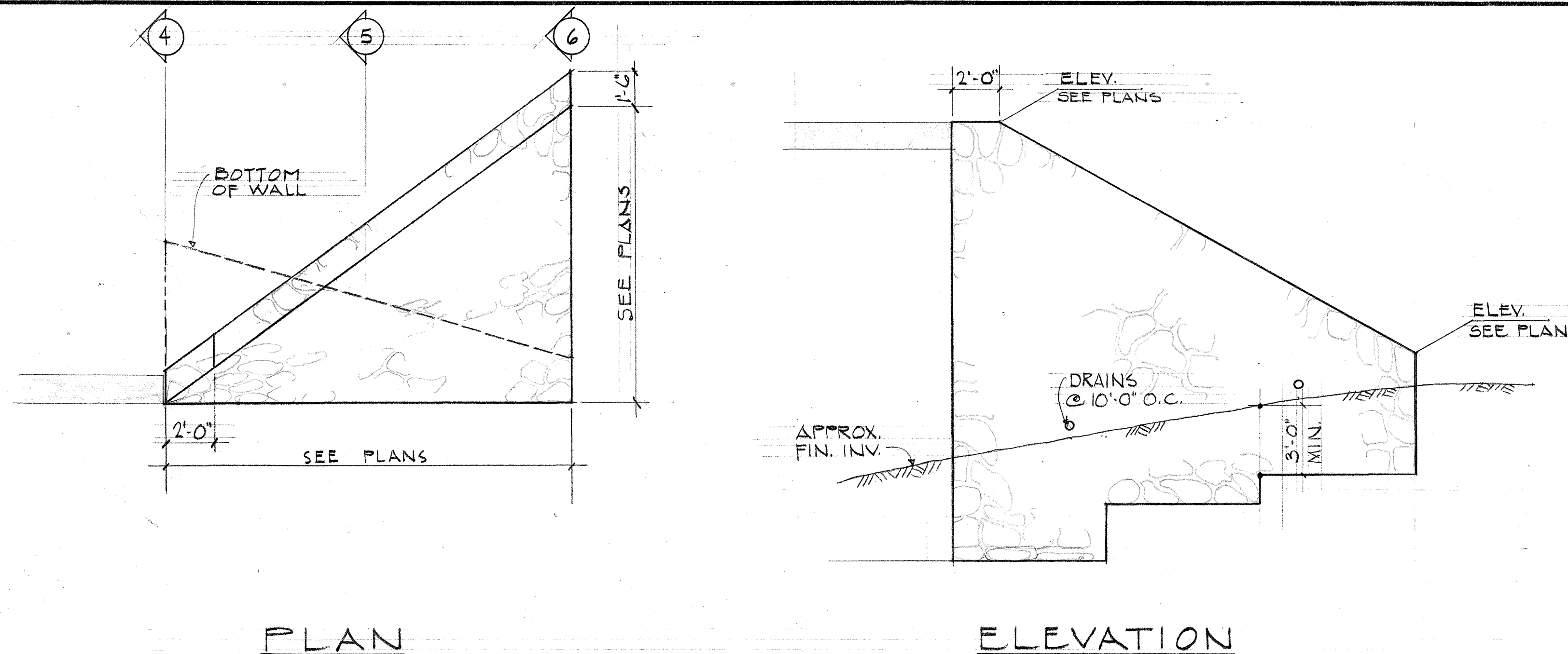
SCALE: 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS BRIDGE DETAILS

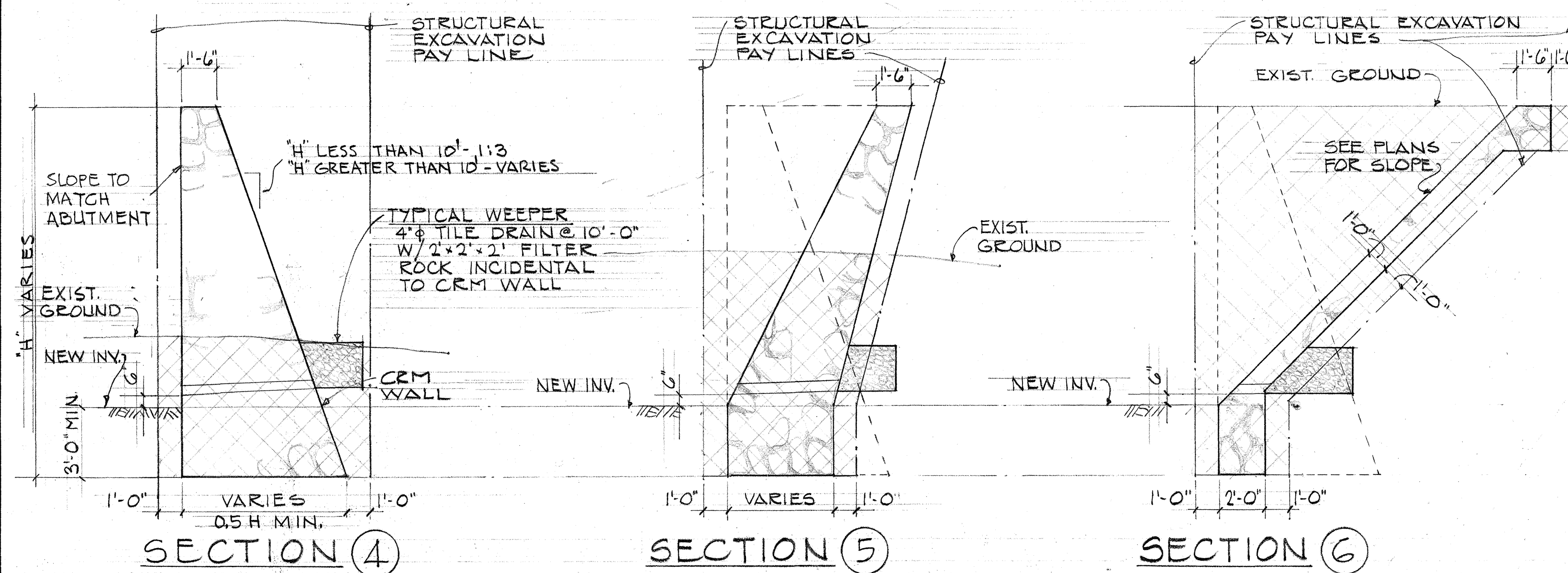
FARRINGTON HIGHWAY WIDENING
PROJECT B-900-01-64
UNIT II

SHEET No. 8 OF 13 SHEETS



PLAN

ELEVATION



SECTION 4

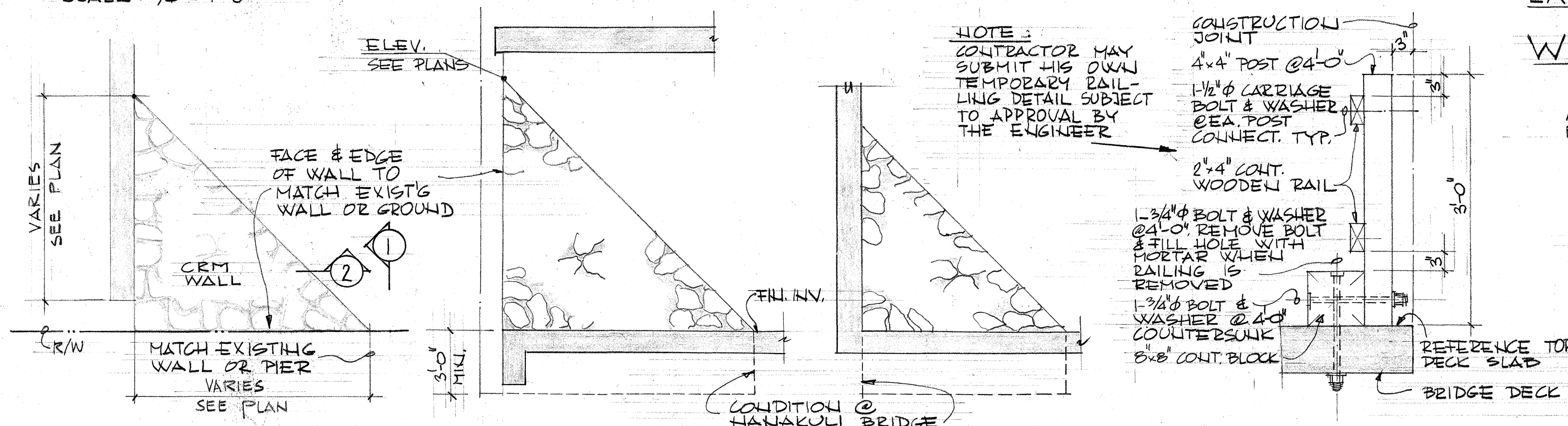
SECTION 5

SECTION 6

TYPE "B" TRANSITION DETAILS

SCALE: 1/4" = 1'-0"

B
8



PLAN

ELEVATION 1

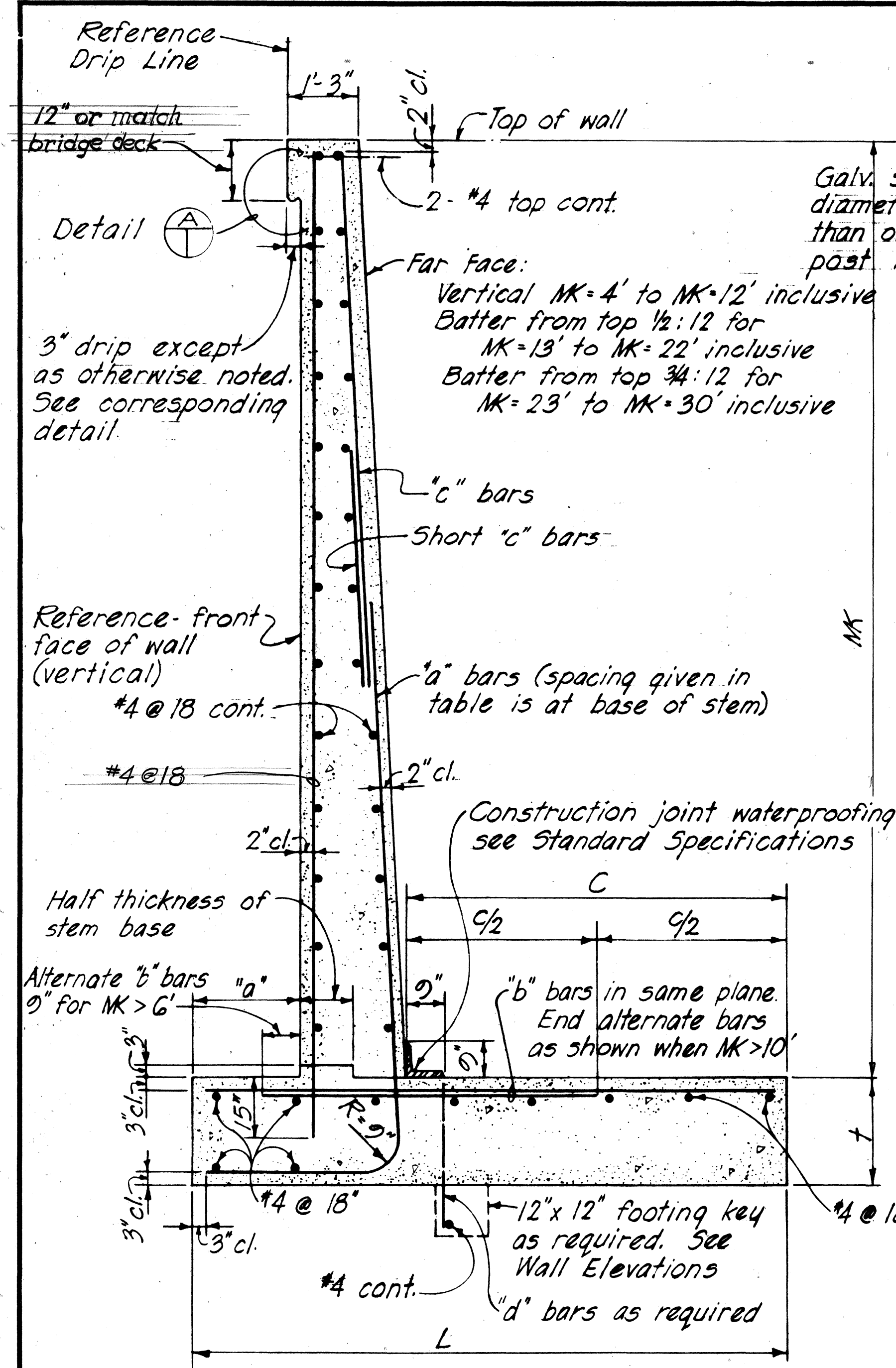
SECTION 2

TEMPORARY BRIDGE RAILING F

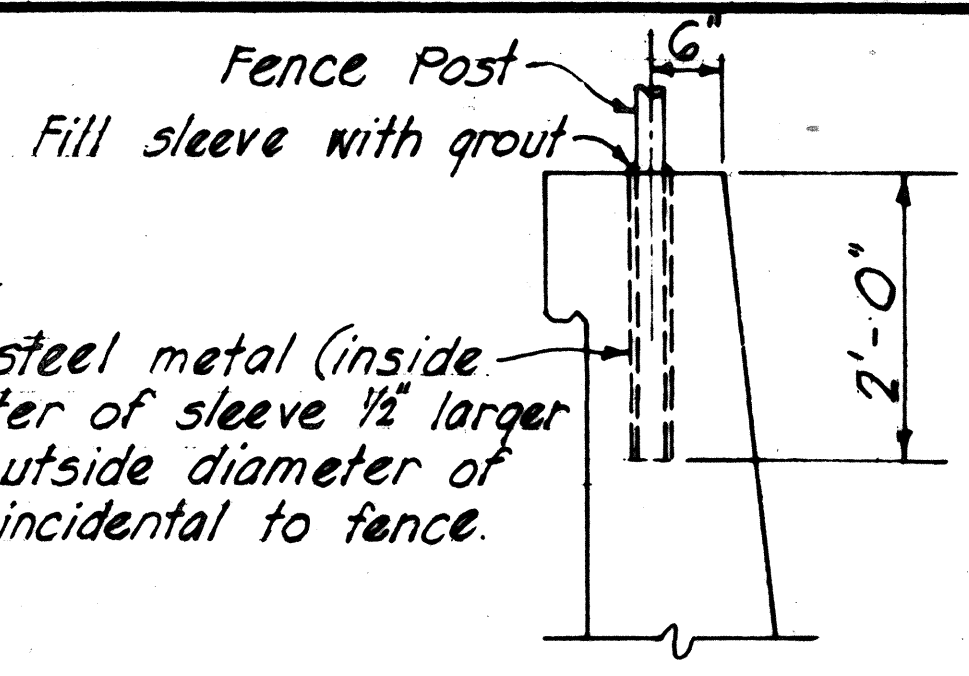
SCALE: 1" = 1'-0"

F
8

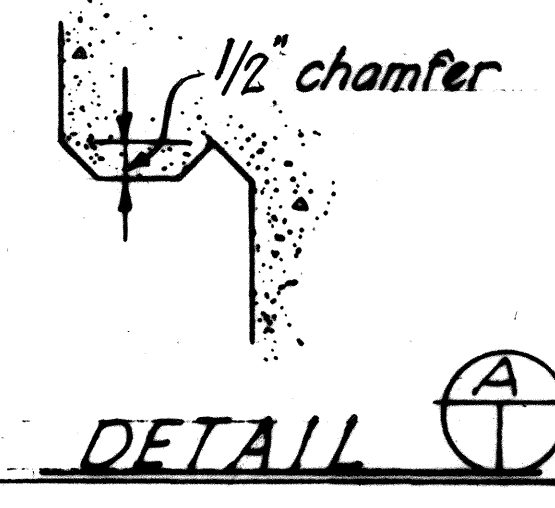
SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	



WALL SECTION



CHAIN LINK FENCE POST DETAIL

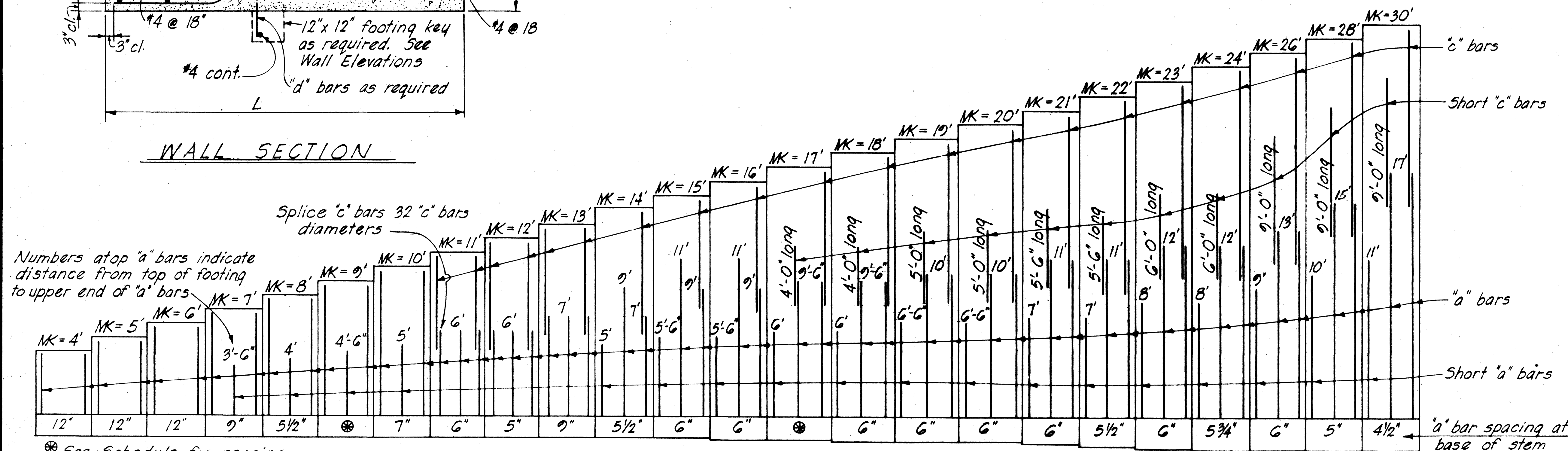


DETAIL

SCHEDULE OF DIMENSIONS AND REINFORCING STEEL

Maximum "MK"	4E	5E	6E	7E	8E	9E	10E	11E	12E	13E	14E	15E	16E	17E	18E	19E	20E	21E	22E	23E	24E	26E	28E	30E
a	6"	6"	6"	12"	12"	12"	12"	12"	12"	12"	15"	18"	21"	24"	24"	24"	27"	30"	33"	36"	39"	54"	60"	72"
t	14"	14"	14"	14"	14"	14"	14"	18"	18"	18"	18"	18"	21"	21"	24"	24"	24"	27"	30"	31"	33"	36"	39"	42"
L	2.5'	3.0'	3.5'	4.0'	4.5'	5.0'	5.5'	6.0'	6.5'	7.0'	7.75'	8.25'	9.0'	9.75'	10.5'	11.5'	12.5'	13.5'	14.5'	15.25'	16.0'	18.0'	20.0'	21.0'
"a" bars	*3@12"	*3@12"	*4@12"	*4@9"	*4@5 1/2"	*5@7"	*6@7"	*6@6"	*6@5"	*7@7"	*6@5 1/2"	*7@6"	*8@6"	*8@5 3/4"	*7@6"	*7@6"	*10@6"	*10@6"	*10@5 1/2"	*10@6"	*10@5 3/4"	*11@6"	*11@5"	*11@4 1/2"
"b" bars	*3@12"	*3@12"	*3@12"	*3@9"	*4@11"	*4@7"	*5@7"	*5@6"	*5@5"	*7@7"	*6@5 1/2"	*7@6"	*8@6"	*7@5 3/4"	*8@6"	*7@6"	*10@6"	*10@6"	*10@5 1/2"	*10@6"	*10@5 3/4"	*11@6"	*11@5"	*11@4 1/2"
"c" bars								*4	*4	*4	*4	*4	*5	*5	*5	*6	*6	*6	*7	*7	*7	*7	*7	*7
"d" bars	*3@12"	*3@12"	*3@12"	*3@12"	*4@18"	*4@15"	*4@15"	*4@12"	*4@11"	*4@9"	*5@12"	*5@12"	*5@10"	*5@9"	*5@9"	*5@8"	*6@10"	*6@9"	*7@12"	*7@11"	*7@10"	*7@	*7@	*7@6"

Maximum "MK"	4R	5R	6R	7R	8R	9R	10R	11R	12R	13R	14R	15R	16R	17R	18R	19R	20R	21R	22R	23R	24R	26R	28R	30R
a	6"	6"	6"	12"	12"	12"	12"	12"	12"	12"	15"	18"	21"	21"	21"	21"	24"	24"	27"	30"	33"	39"	39"	51"
t	14"	14"	14"	14"	14"	14"	14"	18"	18"	18"	18"	18"	18"	18"	18"	21"	21"	21"	21"	24"	24"	27"	30"	36"
L	2.5'	3.0'	3.5'	4.0'	4.5'	5.0'	5.5'	6.0'	6.5'	6.75'	7.25'	7.75'	8.25'	8.75'	9.25'	9.75'	10.25'	10.5'	11.0'	11.5'	12.0'	13.0'	14.0'	15.0'
"a" bars	*3@12"	*3@12"	*4@12"	*4@9"	*4@5 1/2"	*5@6"	*6@7"	*6@6"	*6@5"	*7@7"	*6@5 1/2"	*7@6"	*8@6"	*8@6"	*7@6"	*7@6"	*10@6"	*10@6"	*10@5 1/2"	*10@6"	*10@5 3/4"	*11@6"	*11@5"	*11@4 1/2"
"b" bars	*3@12"	*3@12"	*3@12"	*3@9"	*4@11"	*4@6"	*5@7"	*5@6"	*5@5"	*7@7"	*6@5 1/2"	*7@6"	*7@6"	*8@6"	*7@6"	*7@6"	*10@6"	*10@6"	*10@5 1/2"	*10@6"	*10@5 3/4"	*10@6"	*10@5"	*7@4 1/2"
"c" bars								*4	*4	*4	*4	*4	*5	*5	*5	*6	*6	*6	*7	*7	*7	*7	*7	*7
"d" bars	*3@12"	*3@12"	*3@12"	*3@12"	*4@18"	*4@15"	*4@15"	*4@12"	*4@11"	*4@9"	*5@12"	*5@12"	*5@10"	*5@9"	*5@9"	*5@8"	*6@10"	*6@9"	*7@12"	*7@11"	*7@10"	*7@	*7@	*7@6"



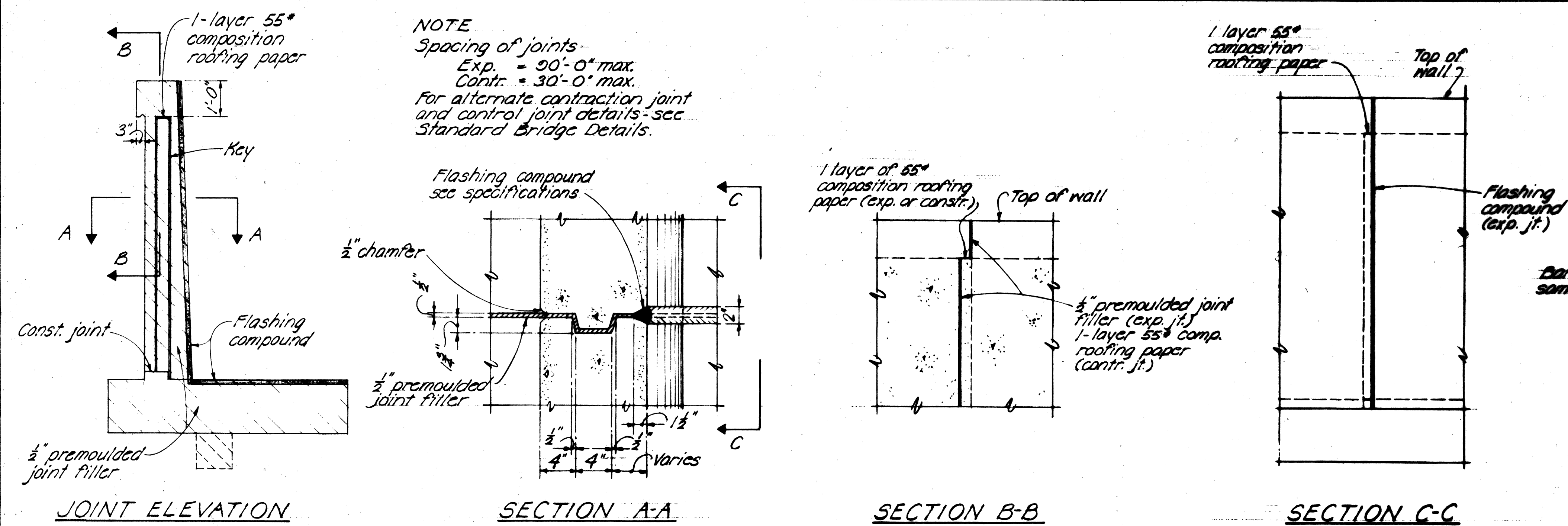
VERTICAL REINFORCING STEEL ARRANGEMENT

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

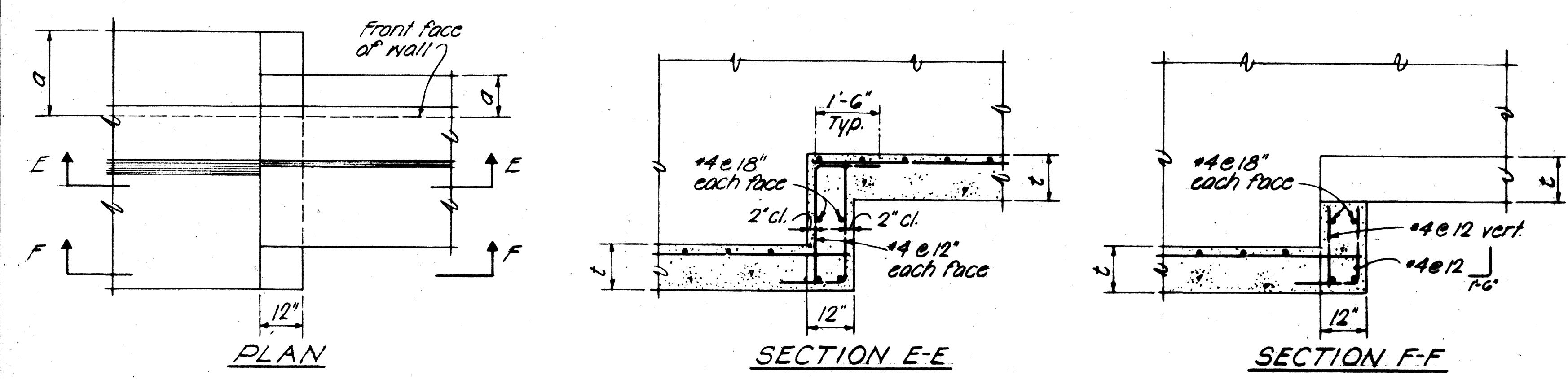
STANDARD DETAILS
RETAINING WALL TYPE T-1

SCALE As Noted DATE: _____
SHEET No. 9 OF 13 SHEETS

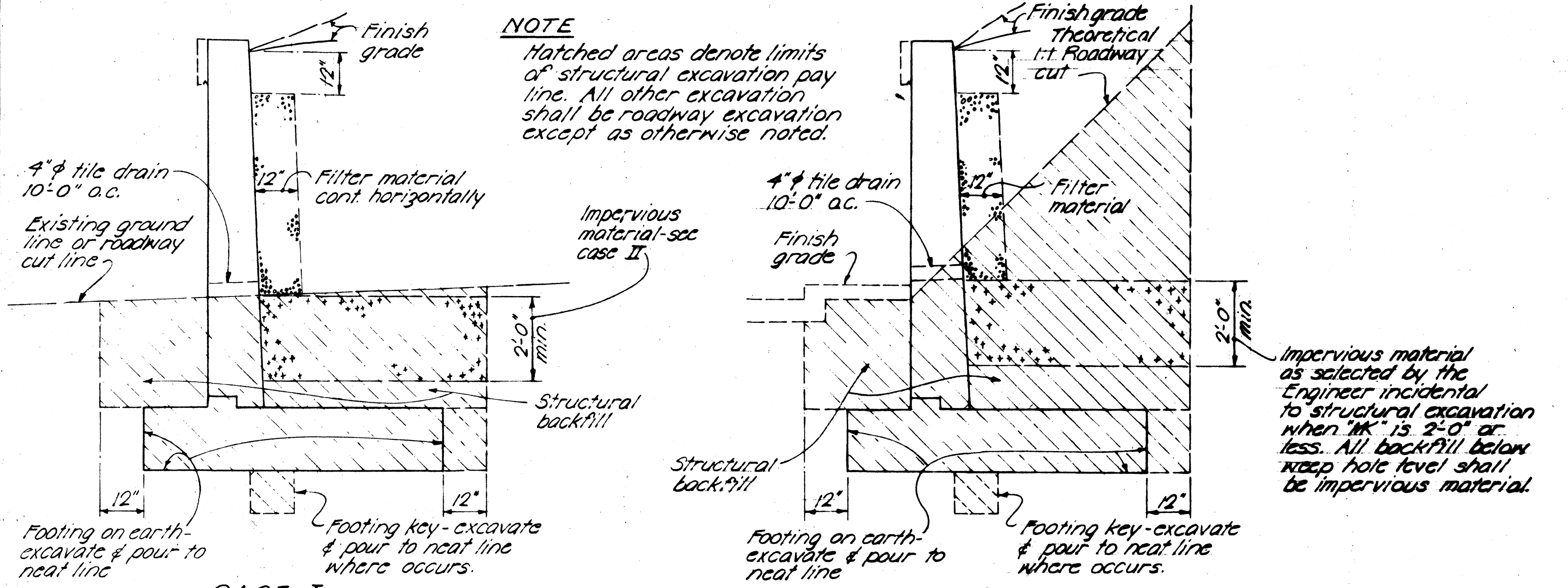
DATE: _____
DRAWN BY: _____
CHECKED BY: _____
NOTED BY: _____
ORIGINAL PLAN: _____
NOTE BOOK: _____



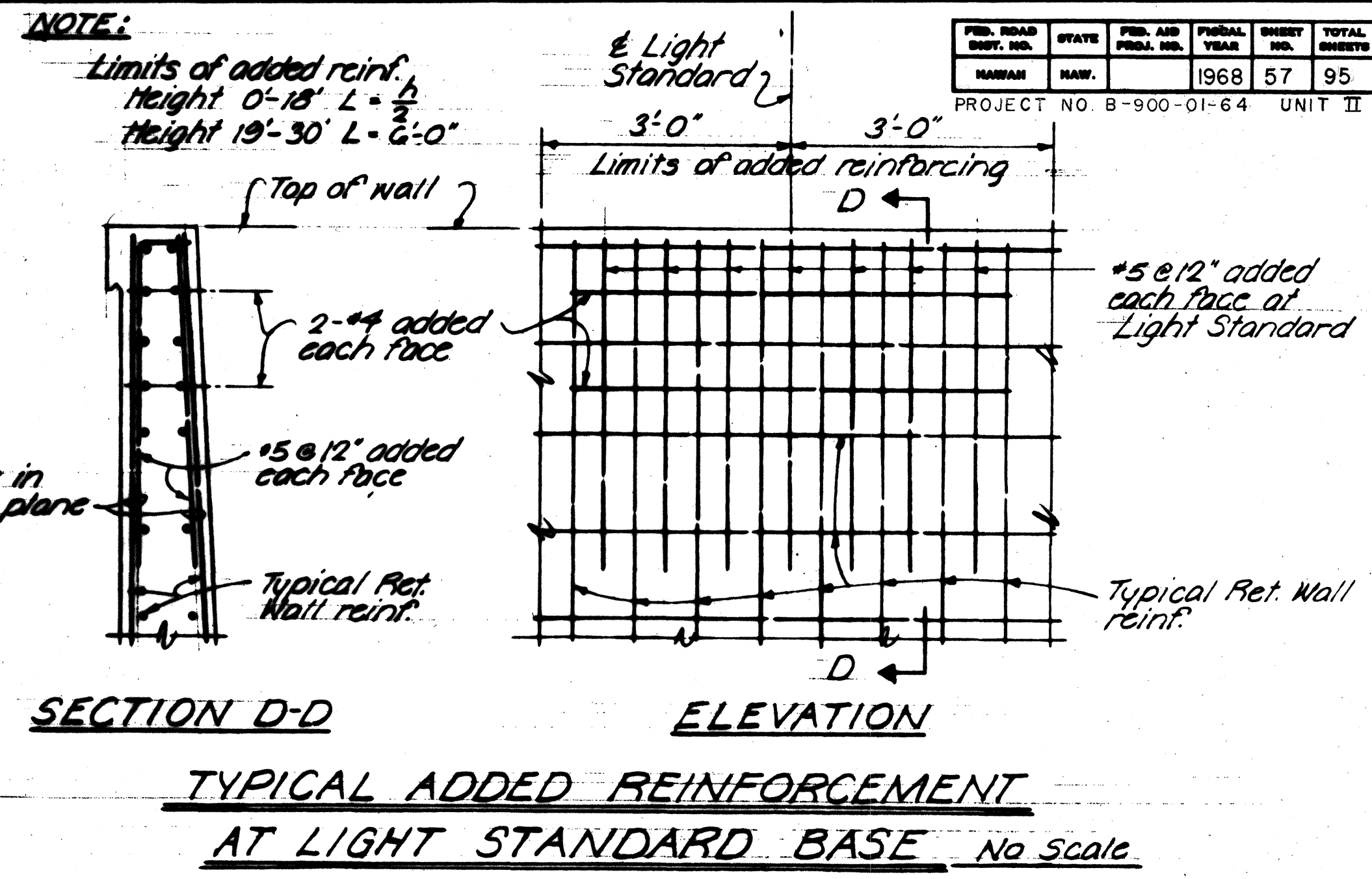
TYPICAL EXPANSION JOINT DETAILS No Scale



FOOTING STEP-UP DETAILS No Scale

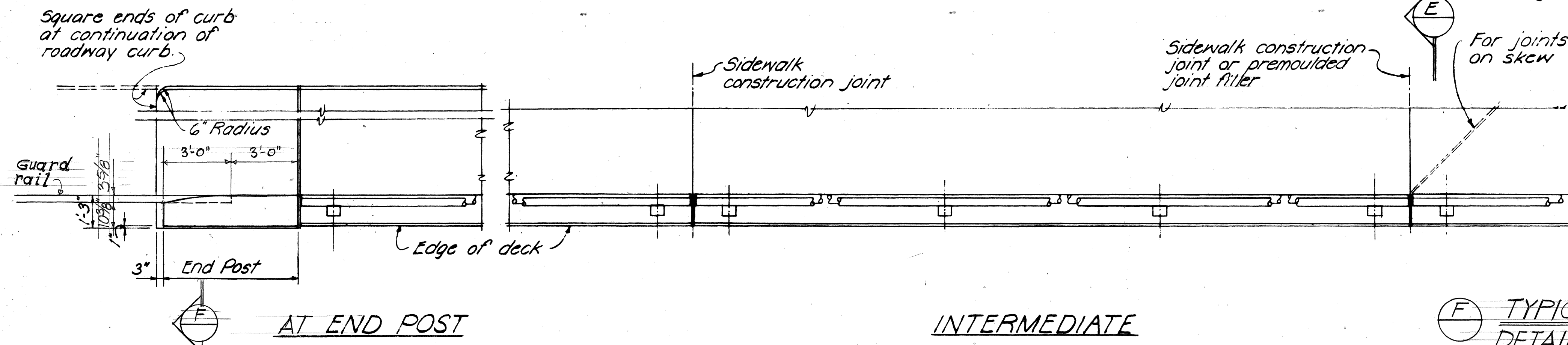


STRUCTURAL EXCAVATION & DRAINAGE DETAILS No Scale



TYPICAL ADDED REINFORCEMENT AT LIGHT STANDARD BASE No Scale

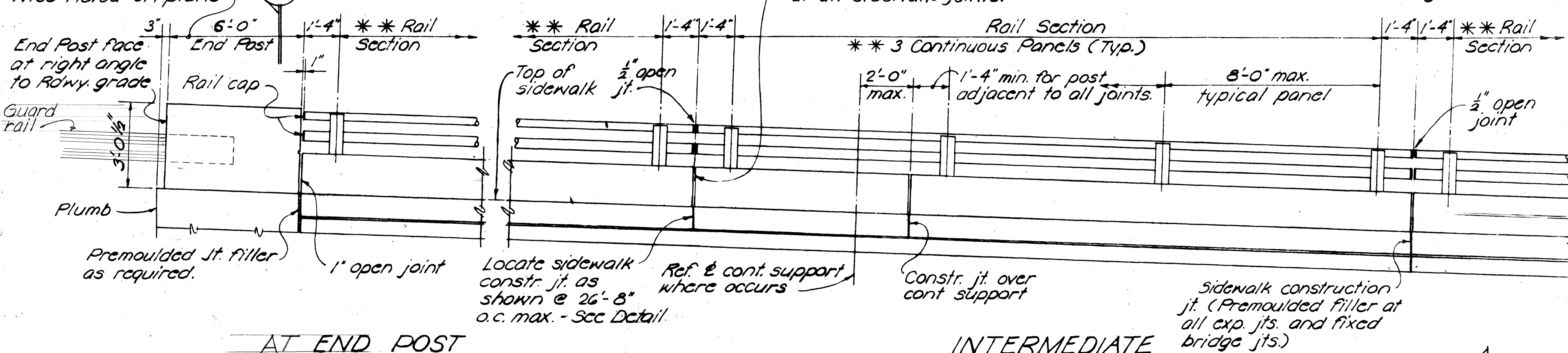
DATE: _____
SURVEY PLOTTED BY: _____
DRAWN BY: _____
DESIGNED BY: _____
CHECKED BY: _____
ORIGINAL PLAN: _____
NOTE BOOK: _____
NO. _____



**** NOTE !!**

The contractor shall layout the railing to provide 3 cont. panels whenever possible. 2 or 4 cont. panels will be permitted to complete the layout when 3 cont. panels cannot be made. Single panels will not be permitted.

5'-0" except as otherwise noted on plans

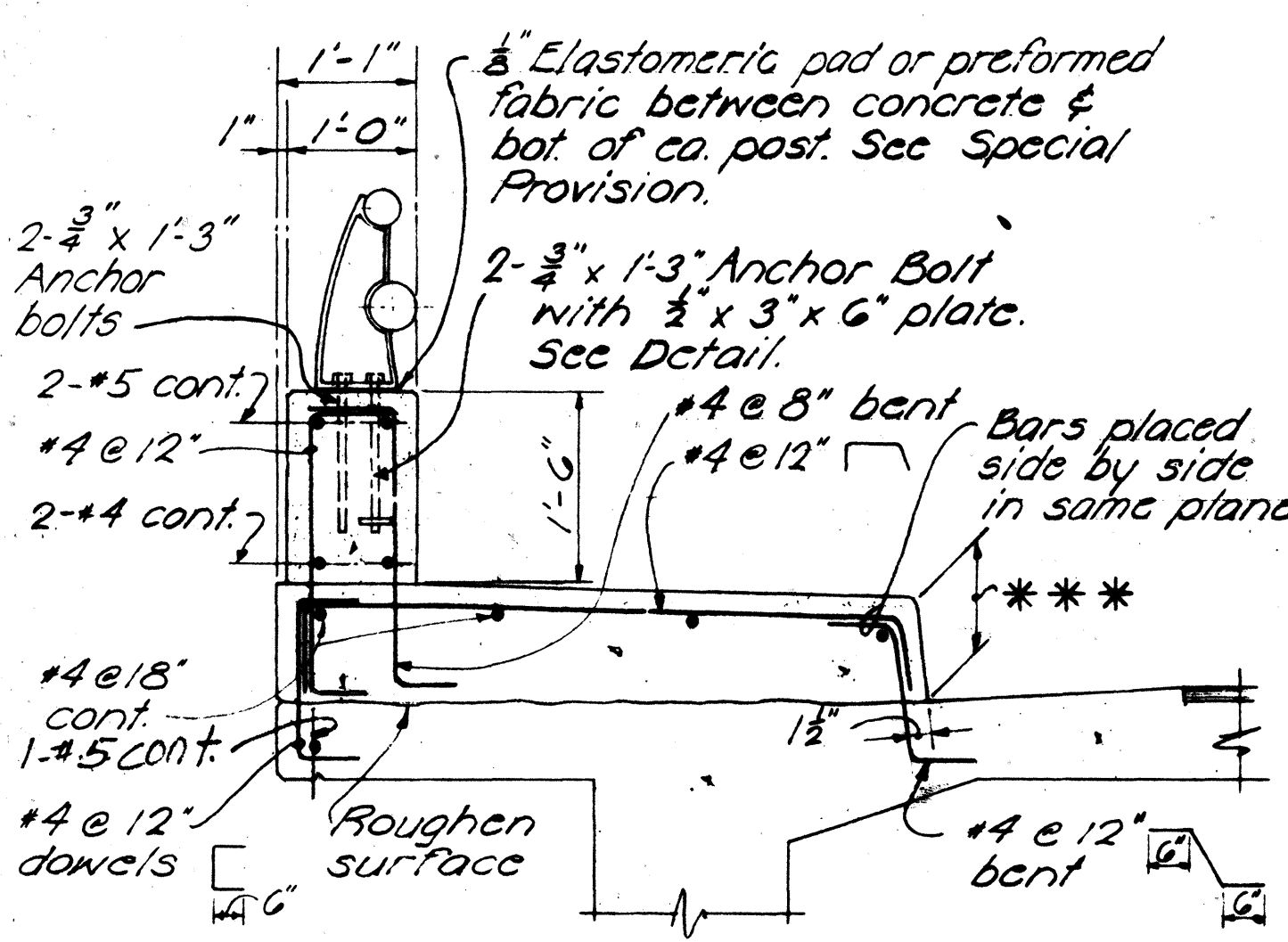


AT END POST

INTERMEDIATE

EXTERIOR RAILING ELEVATION

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



TYPICAL SECTION

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

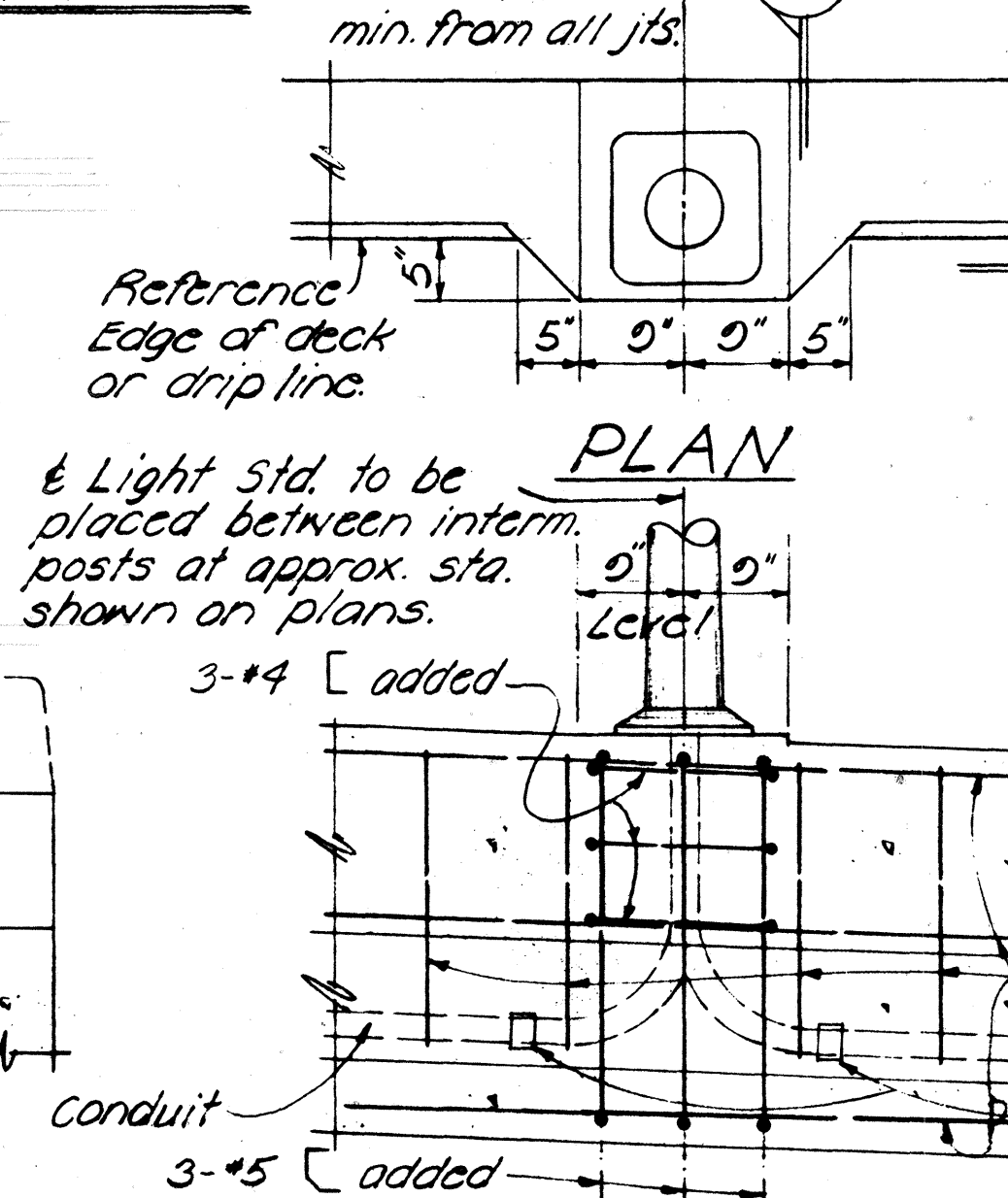
SECTION A

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

SECTION B

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

PLAN

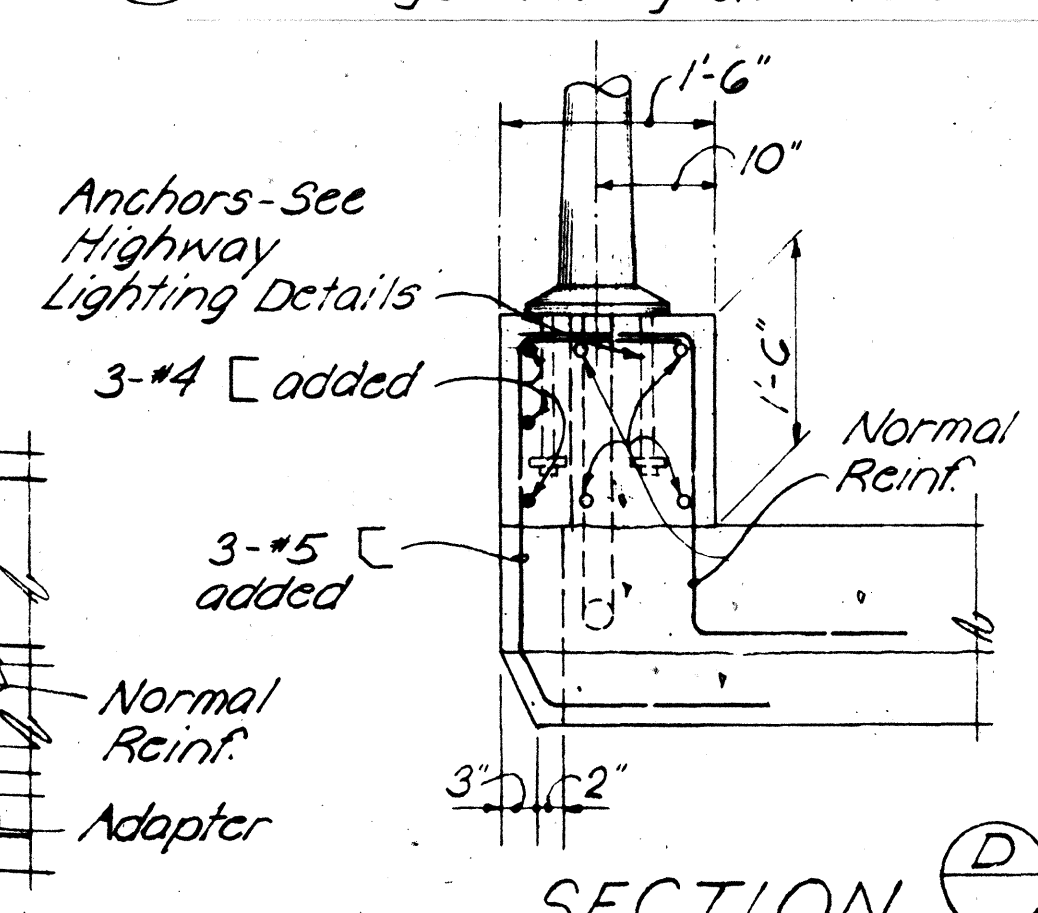


DETAILS OF RAILING AT LIGHT STANDARD

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

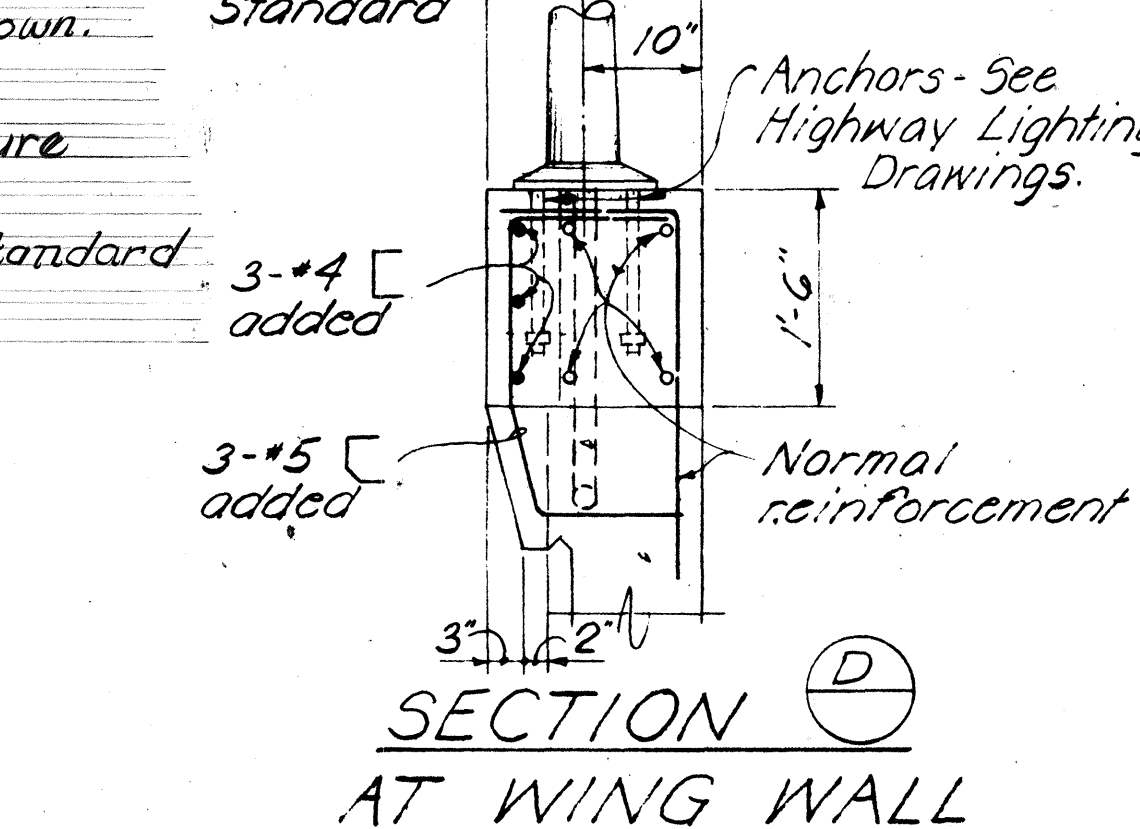
END POST

NOTE:
1. Place name of structure as shown. For location see layout plan.
2. Year shown, will be year structure is completed.
3. Letter size & detail - See Standard Bridge drawing set #13.



SECTION D AT BRIDGE

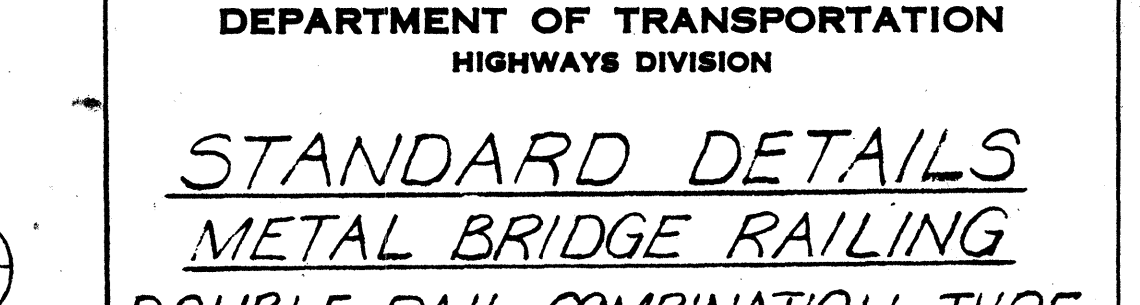
PLAN TREATMENT OF RAILING AT SKEWED ENDS



SECTION E AT SKEW

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

SECTION F AT WING WALL



SECTION F AT WING WALL

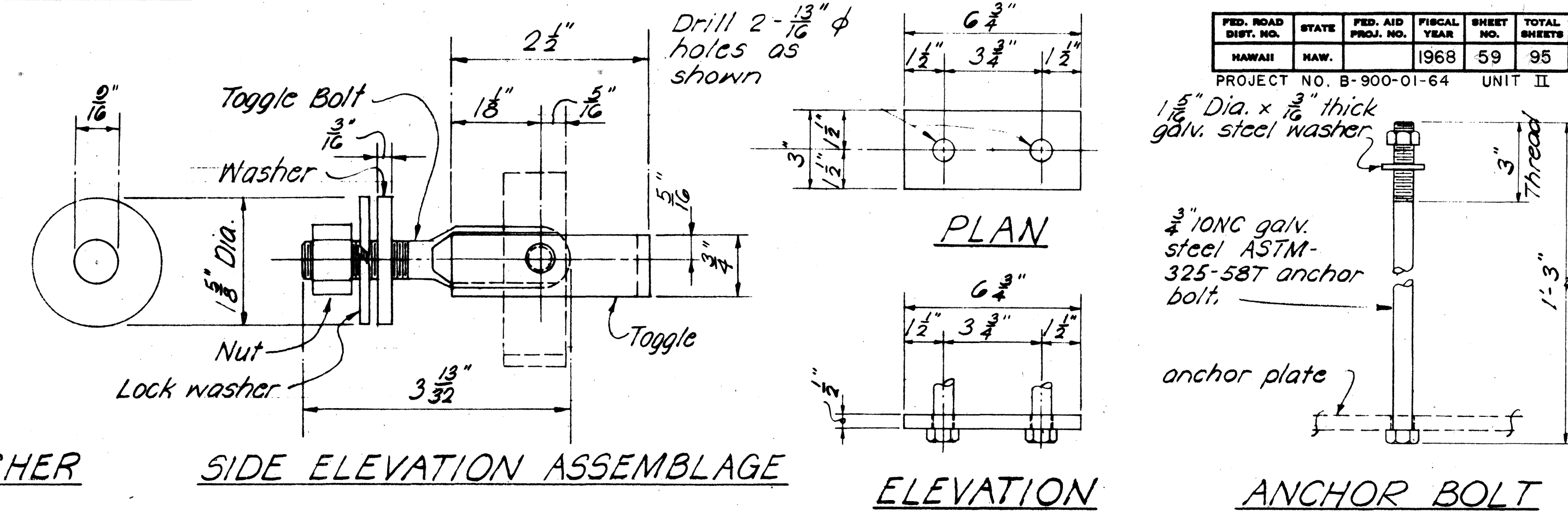
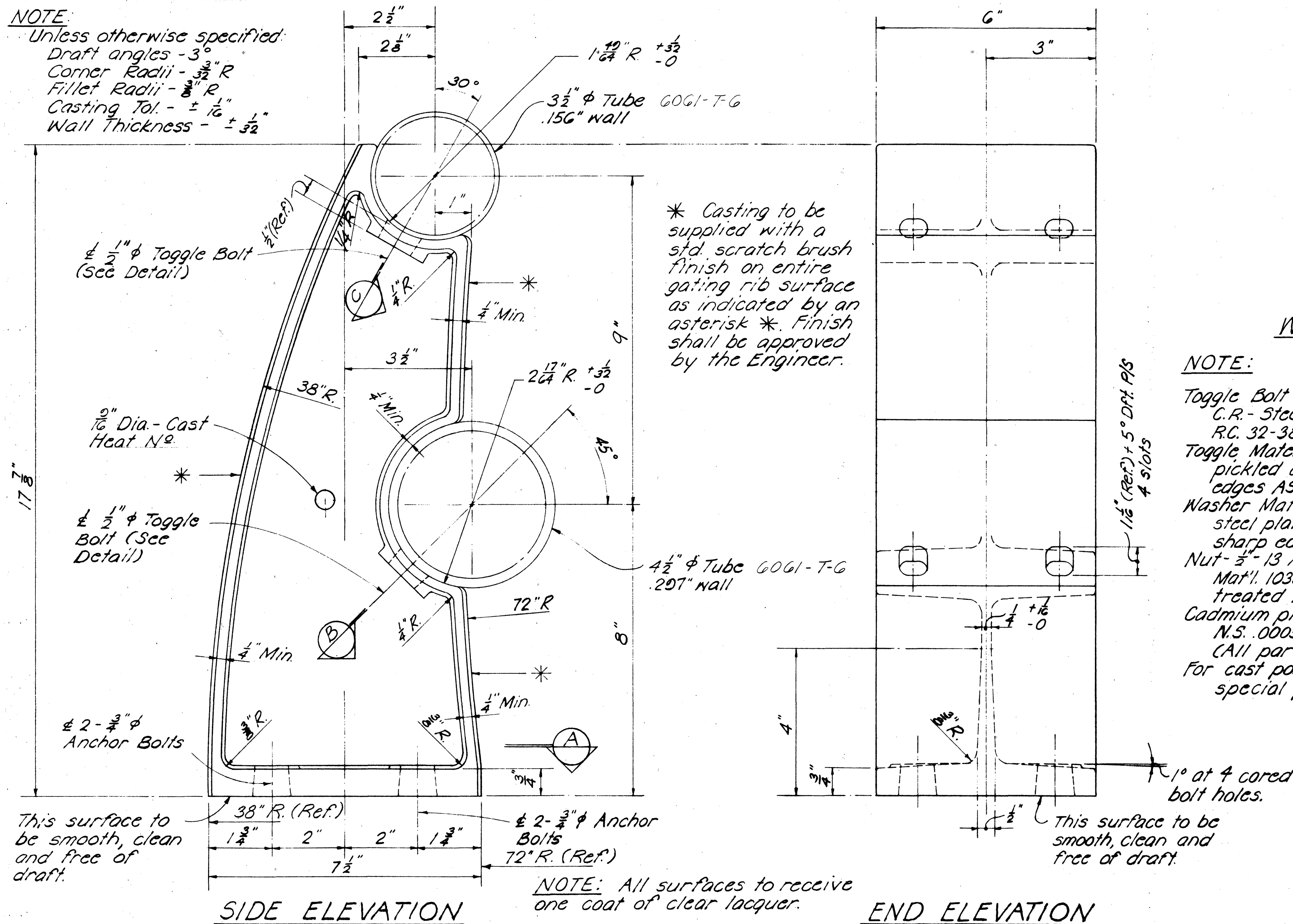
Scale: 3/8" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL BRIDGE RAILING
DOUBLE RAIL COMBINATION TYPE
ON PARAPET

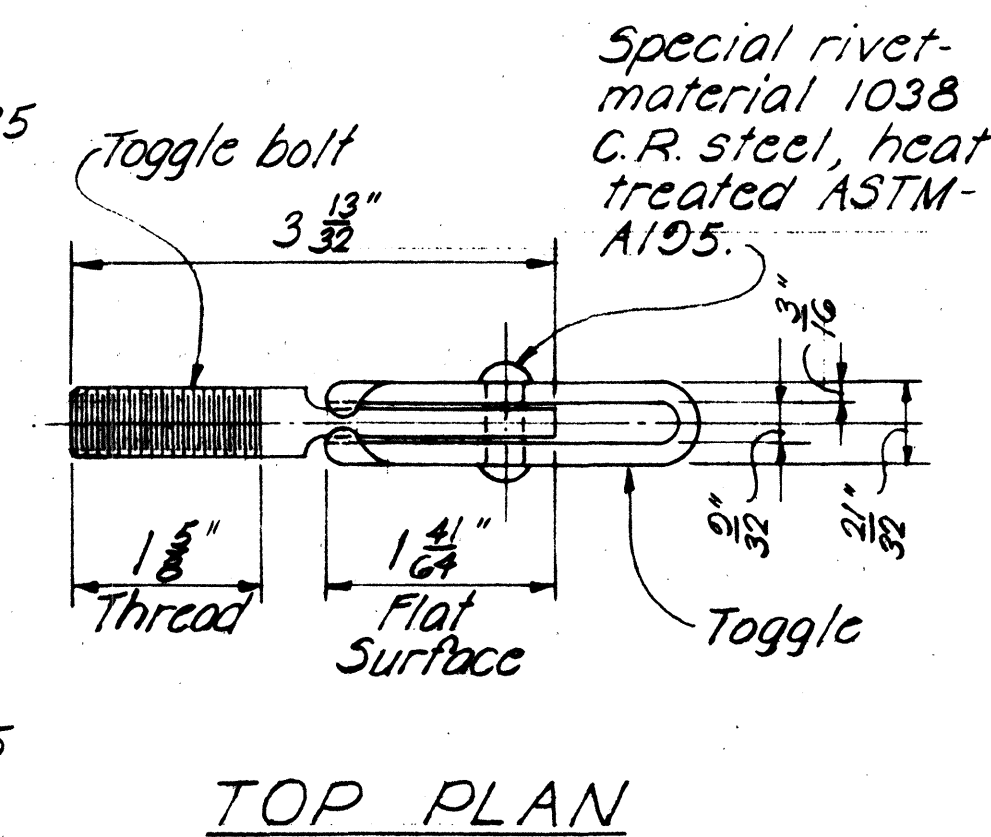
SHEET No. 11 OF 13 SHEETS

NOTE:
Unless otherwise specified:
Draft angles - 3°
Corner Radii - $\frac{3}{32}" R$
Fillet Radii - $\frac{3}{8}" R$
Casting Tol. - $\pm \frac{1}{16}"$
Wall Thickness - $\pm \frac{1}{32}"$

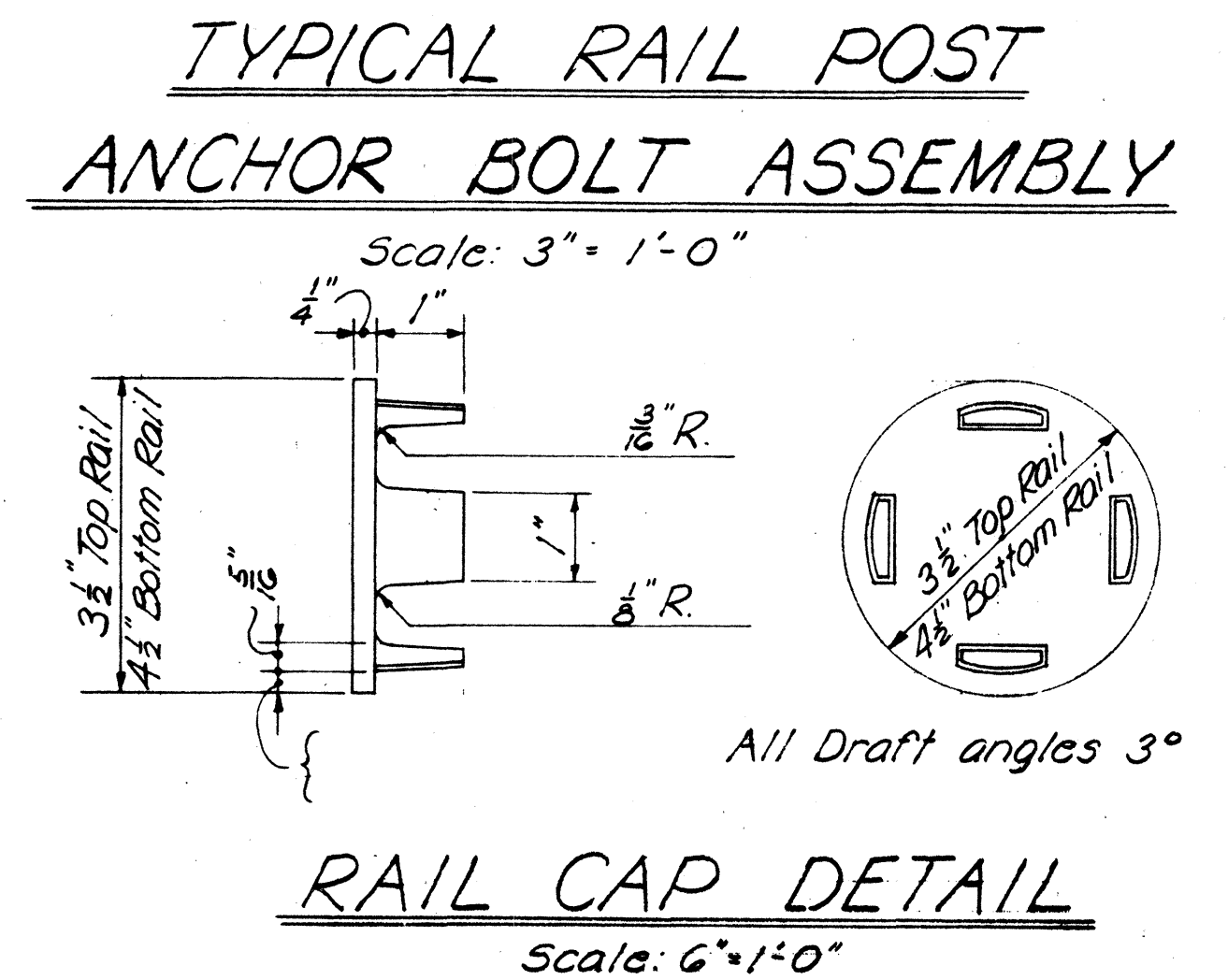


NOTE:

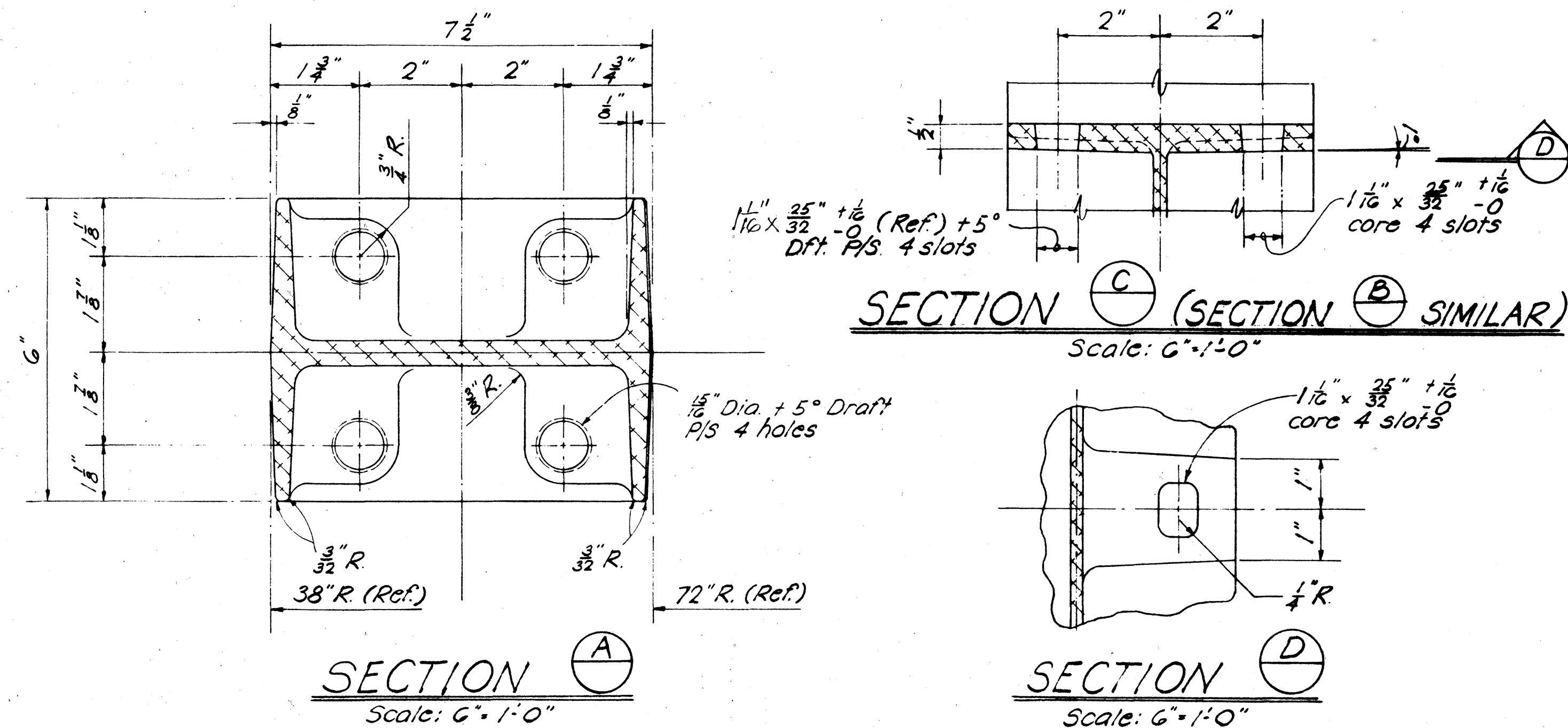
Toggle Bolt Material - $\frac{1}{2}$ " - 13 N.C. 1335
C.R. - Steel heat treated
R.C. 32-38 ASTM-A354
Toggle Material - 1015 H.R. steel
pickled and oiled, Round
edges ASTM-A303-58T
Washer Material - SAE 1020 H.R.
steel plates: A.S.T.M. - A-7 Break
sharp edges.
Nut - $\frac{3}{8}$ " - 13 Amer. hex. nut - Heavy
Mat'l. 1035 C.R. Stl. - Heat
treated ASTM A325
Cadmium plating on steel - Type
N.S. .0005 thick ASTM-A165-55
(All parts)
For cast part specifications, see
special provisions.



1/2" ϕ TOGGLE BOLT DETAIL
Scale: 3" = 1'-0"



TYPICAL RAIL POST DETAILS
Scale: 6" = 1'-0"



NOTE:
Metal Bridge Railing shown is
for Aluminum Bridge Railing. See
Special Provisions for alternate in
steel.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL BRIDGE RAILING
DOUBLE RAIL COMBINATION TYPE
ON PARAPET

SHEET No. 12 OF 13 SHEETS

Jan. '67
Feb. '67
Apr. '67

GENERAL NOTES

Elastometric Pads: Top & bottom of bridge bearing pads shall be secured against displacement with adhesives approved by the Engineer. Pads shall be incidental to concrete and will not be paid for separately.

1. The Contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation.

2. All concrete shall be Class A-1 unless otherwise noted.

3. Clearance for reinforcing bars shall be as follows, unless otherwise noted:

a. - 1" for stirrups of beams & pier caps.

b. - 2" for ties of columns.

c. - 2" for formed walls.

d. - 3" for footings.

4. Concrete seats receiving steel plates, lead plates or neoprene pads shall be poured monolithically with supporting structures & top surfaces of the concrete seats shall be finished with a steel trowel to a smooth level at the elevation shown on the plans.

5. Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.

6. Reinforcing bars shall be securely tied at all intersections & lap splices & shall be held in place during pouring to maintain their proper locations as shown on plans.

7. Splices of reinforcing - See Special Provisions.

8. Minimum spacing between parallel bars shall be $2\frac{1}{2}$ times the diameter of bars, but in no case shall the clear distance between the bars be $\frac{1}{4}$ times the maximum size of the coarse aggregate.

9. All dimensions relating to reinforcing are to centers of bars unless otherwise noted.

10. Forms for all exposed surfaces of separation structures and surfaces of retaining walls visible from a traveled way or from a populated area shall be plywood except that metal forms may be permitted provided a surface finish satisfactory to the Engineer can be obtained and the use of such forms is approved in writing by the Engineer. Forms for round columns shall be made of materials that will give a smooth finish and true dimensions as given in the plans. Forms for prestressed concrete members shall be either metal or plywood.

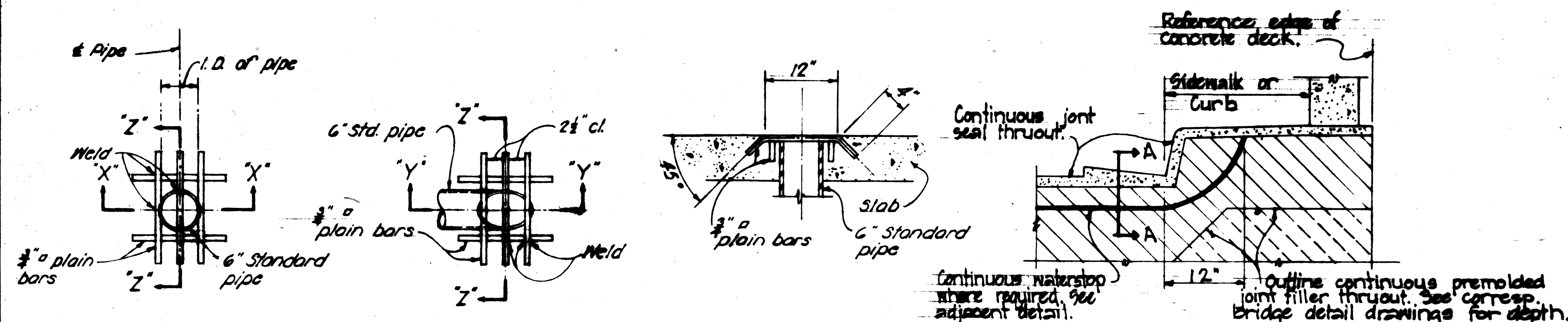
11. Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.

12. Except as otherwise noted on drawings, all exterior corners & re-entrant angles in concrete work shall be chamfered $\frac{3}{4} \times \frac{3}{4}$. See Standard Specifications.

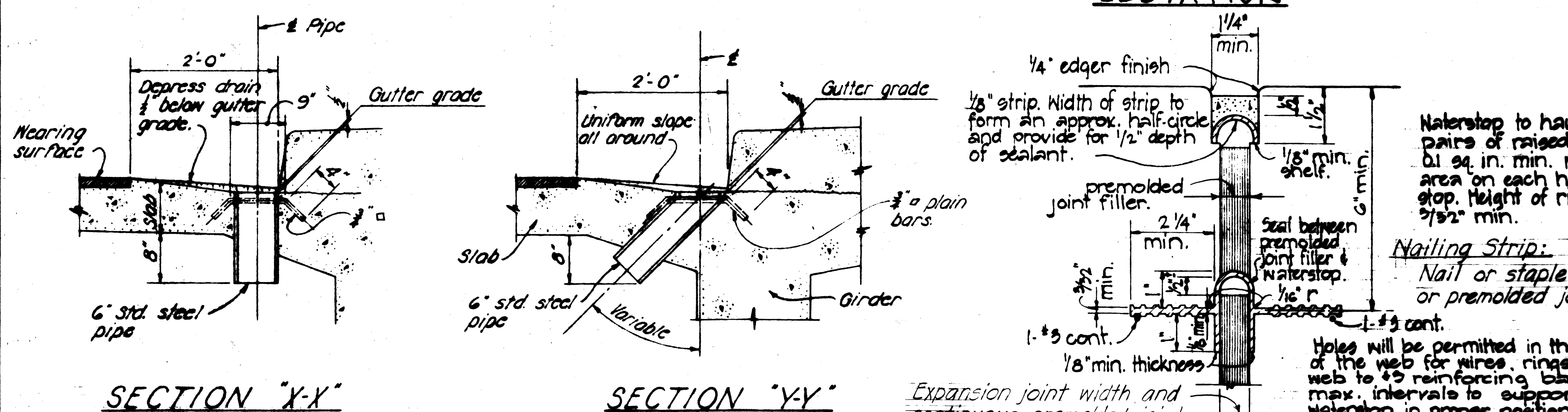
13. Concrete Finish - See Special Provisions.

14. All welders and welding procedures shall be qualified according to the requirements of the Special Provisions.

15. Gothic letters and figures approximating dimensions shown will be acceptable if approved by the Engineer.



PLAN PLAN SECTION 'Z-Z' ELEVATION

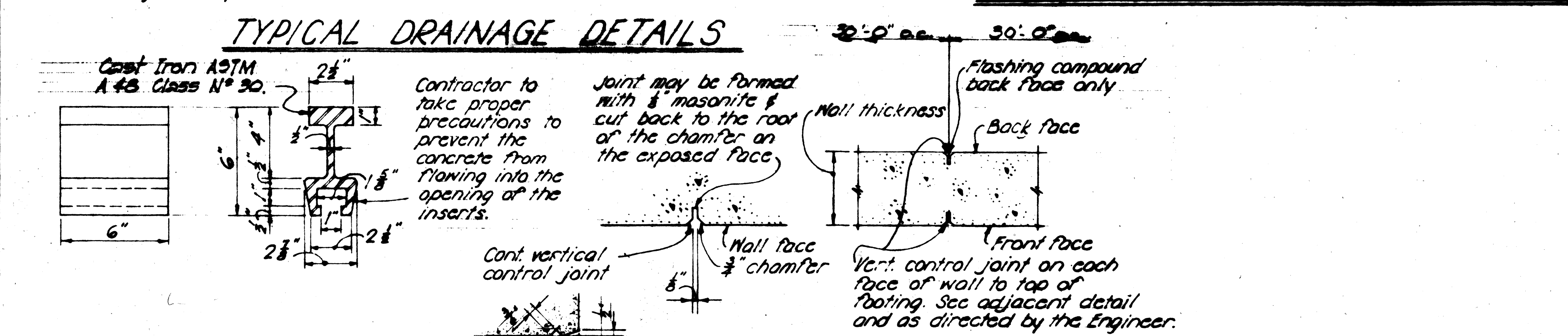


SECTION 'X-X' SECTION 'Y-Y'

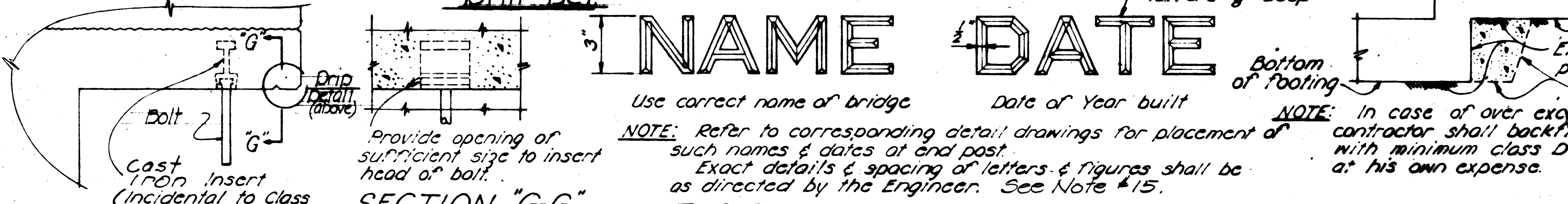
NOTE: Metal drains shall be considered incidental to Class A-1 Concrete in both concrete and steel bridges and will not be paid for separately. Assembly of grillage and pipe shall be hot-dip galvanized after all welding is completed.

SECTION 'A-A'

TYPICAL EXPANSION JOINT DETAIL



TYPICAL DRAINAGE DETAILS CONTROL JOINT DETAIL



INSERT DETAIL DRIP DET TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST

DETAIL OF PIPE HANGERS & INSERTS

TYPICAL EXCAVATION FOR CONTINUOUS FOOTING STEP-UP