

GENERAL NOTES

- All concrete shall be Class A unless otherwise noted.
- Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.
- Clearance for reinforcing bars shall be as follows, unless otherwise noted:
 - 1/2" For stirrups of beams & pier caps.
 - 2" For ties of columns.
 - 2" For formed walls.
 - 3" For footings.
- Minimum spacing between parallel bars shall be 2 1/2 times the diameter of bars, but in no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate.
- All dimensions relating to reinforcing are to centers of bars unless otherwise noted.
- 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.
- Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.
- Except as otherwise noted on drawings, all exterior corners & re-entrant angles in concrete work shall be chamfered 3/4" x 3/4".
- Concrete seats receiving steel plates, leadplates or neoprene pads shall be poured monolithically with supporting structures & top of concrete seats shall be finished with a steel trowel to a smooth level surface at the elevation shown on the plans.
- Elastomeric Pads: 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.
- 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.
- Gothic letters and figures approximating dimensions shown will be acceptable if approved by the Engineer.
- The contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation or driving of piles.
- Standard Detail Drawings refer to all structures in general, except for modifications as may be required for special conditions. For such modifications refer to the corresponding detailed drawings.

TYPICAL CONCRETE GROOVE DETAIL

D RIP DETAIL

PLAN

PLAN

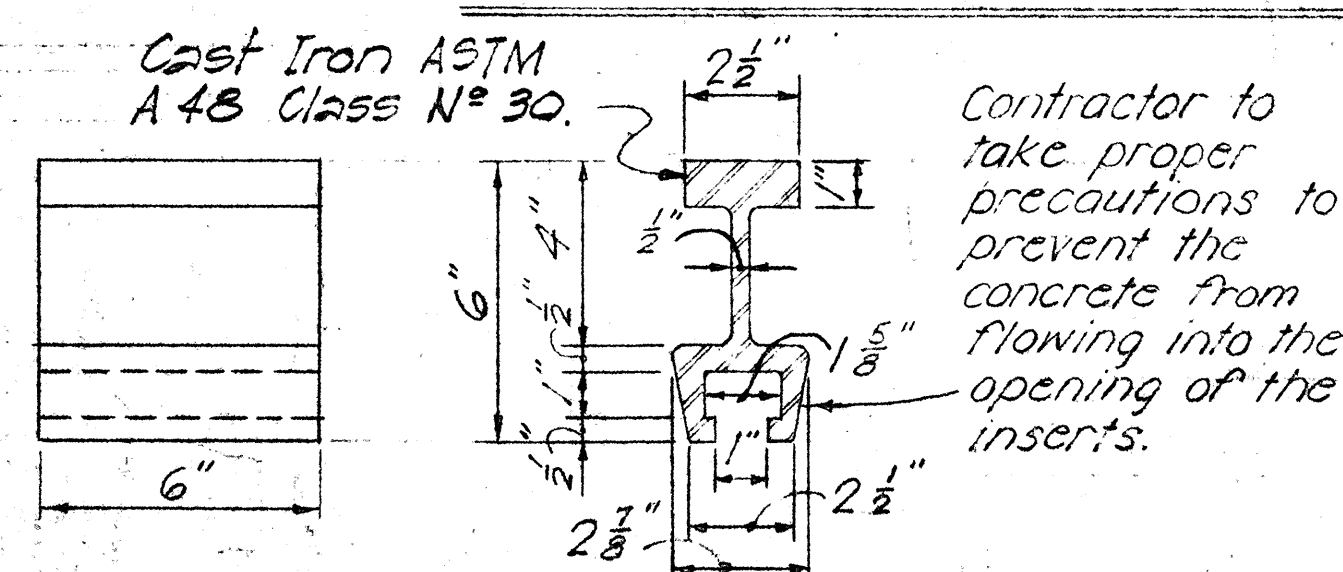
SECTION "Z-Z"

SECTION "X-X"

SECTION "Y-Y"

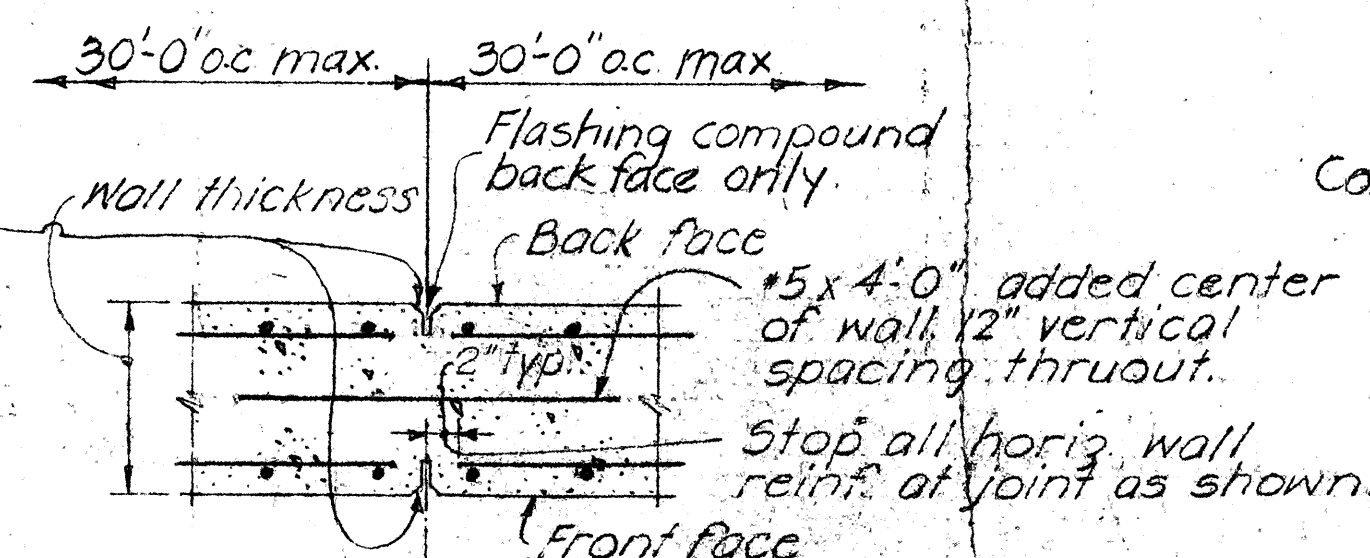
NOTE: Metal drains shall be considered incidental to Class A Concrete in both concrete and steel bridges and will not be paid for separately. Assembly of grillage and pipe shall be hot-dip galvanized after all welding is completed.

TYPICAL DRAINAGE DETAILS



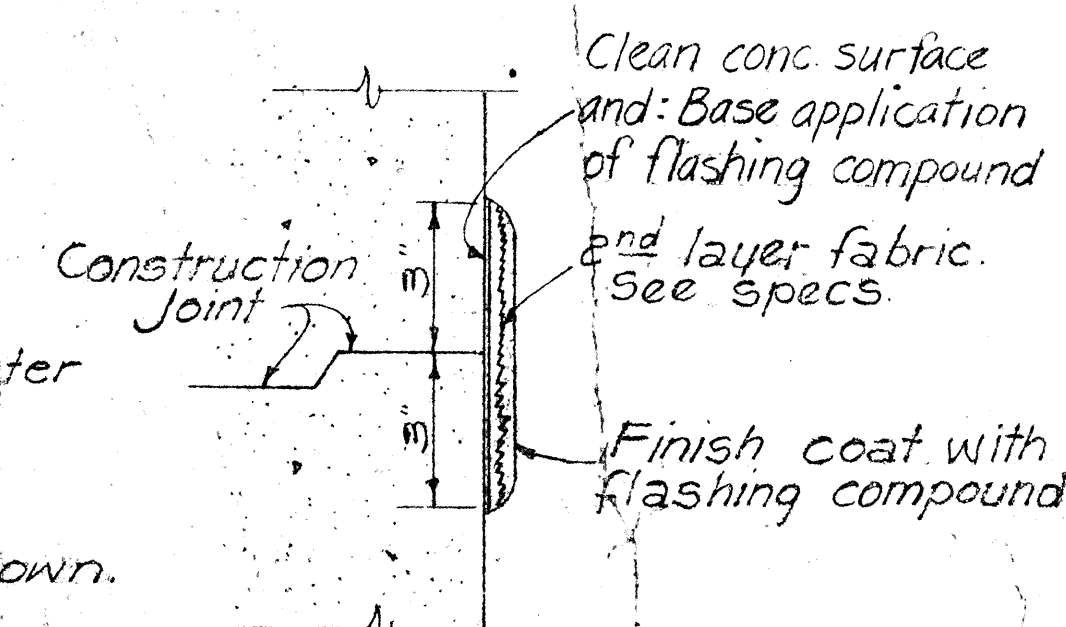
INSERT DETAIL

Contractor to take proper precautions to prevent the concrete from flowing into the opening of the inserts.



CONTROL JOINT DETAILS

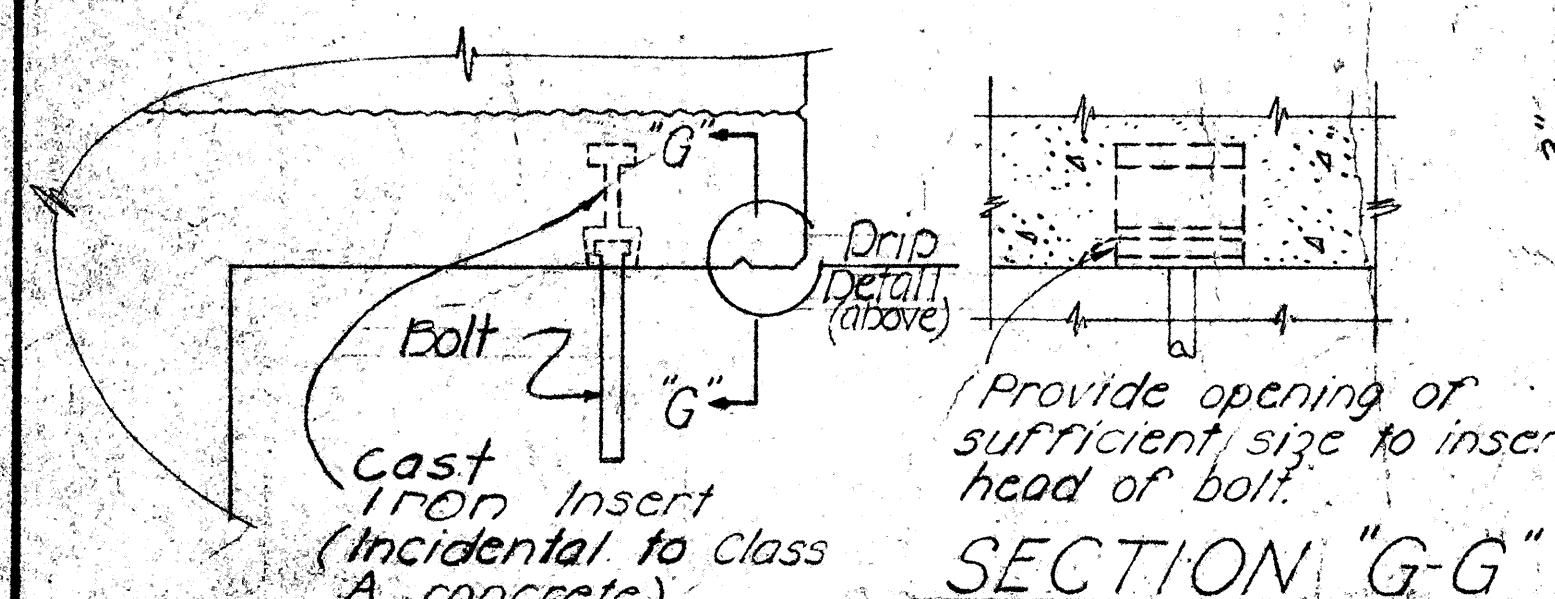
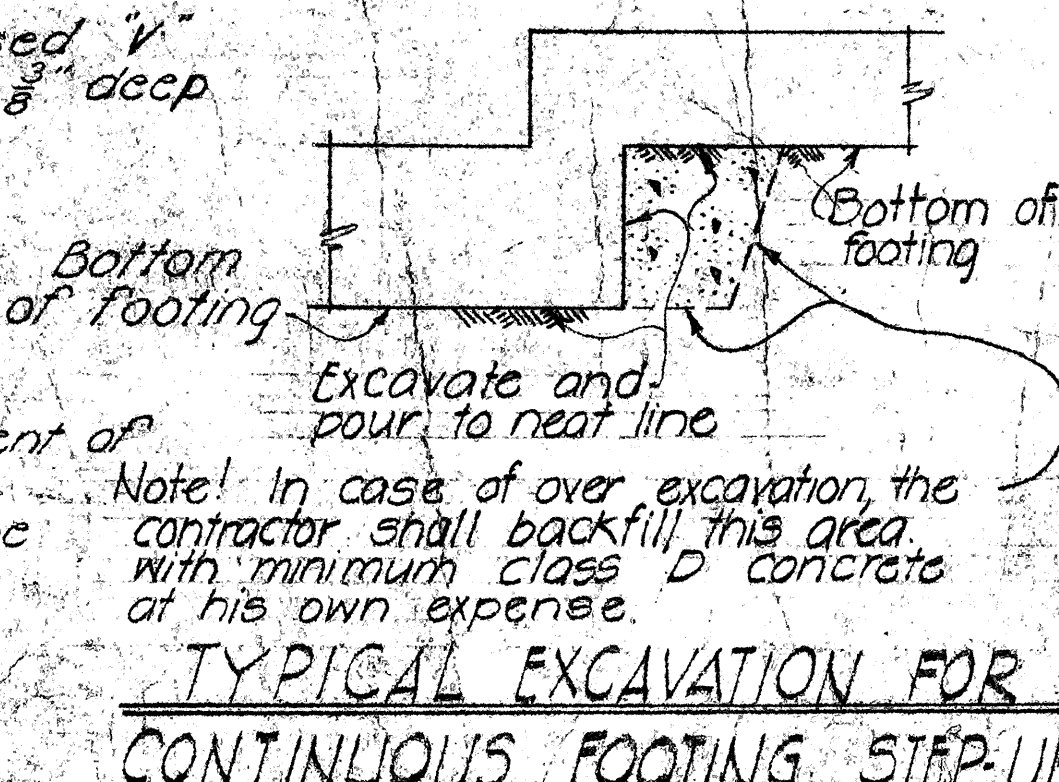
TYP FLASHING COMPOUND WATERPROOFING DETAIL



NAME DATE

Use correct name of bridge Date of Year built
NOTE: Refer to corresponding detail drawings for placement of such names & dates at end post. Exact details & spacing of letters & figures shall be as directed by the Engineer. See Note #12.

TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST



DETAIL OF PIPE HANGERS & INSERTS

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED:
 Paul T. Vamachita
 BRIDGE DESIGN ENGINEER
 1-23-70
 DATE

APPROVED
 Paul T. Vamachita
 ASSISTANT CHIEF, ENGINEERING
 1-28-70
 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
STANDARD DETAILS
 NOTES AND MISCELLANEOUS
 DETAILS
 Date: October 1969
 SHEET No. 51 OF 9 SHEETS DB-100

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11(90)13	1972	142	202

1/2" normal deck expansion joint

1/2" expansion jt. at skewed deck joint

Conc. railing 1/2" open joint

Conc. railing 1/2" open joint

1/2" open joint at conc. railing.

Edge of deck & concrete railing.

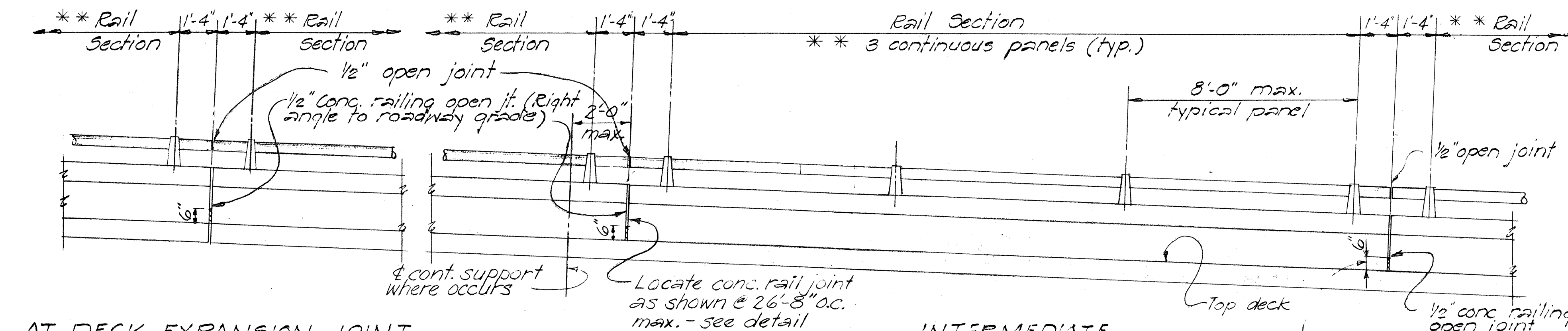
AT DECK EXPANSION JOINT

** Note!!

1. 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.

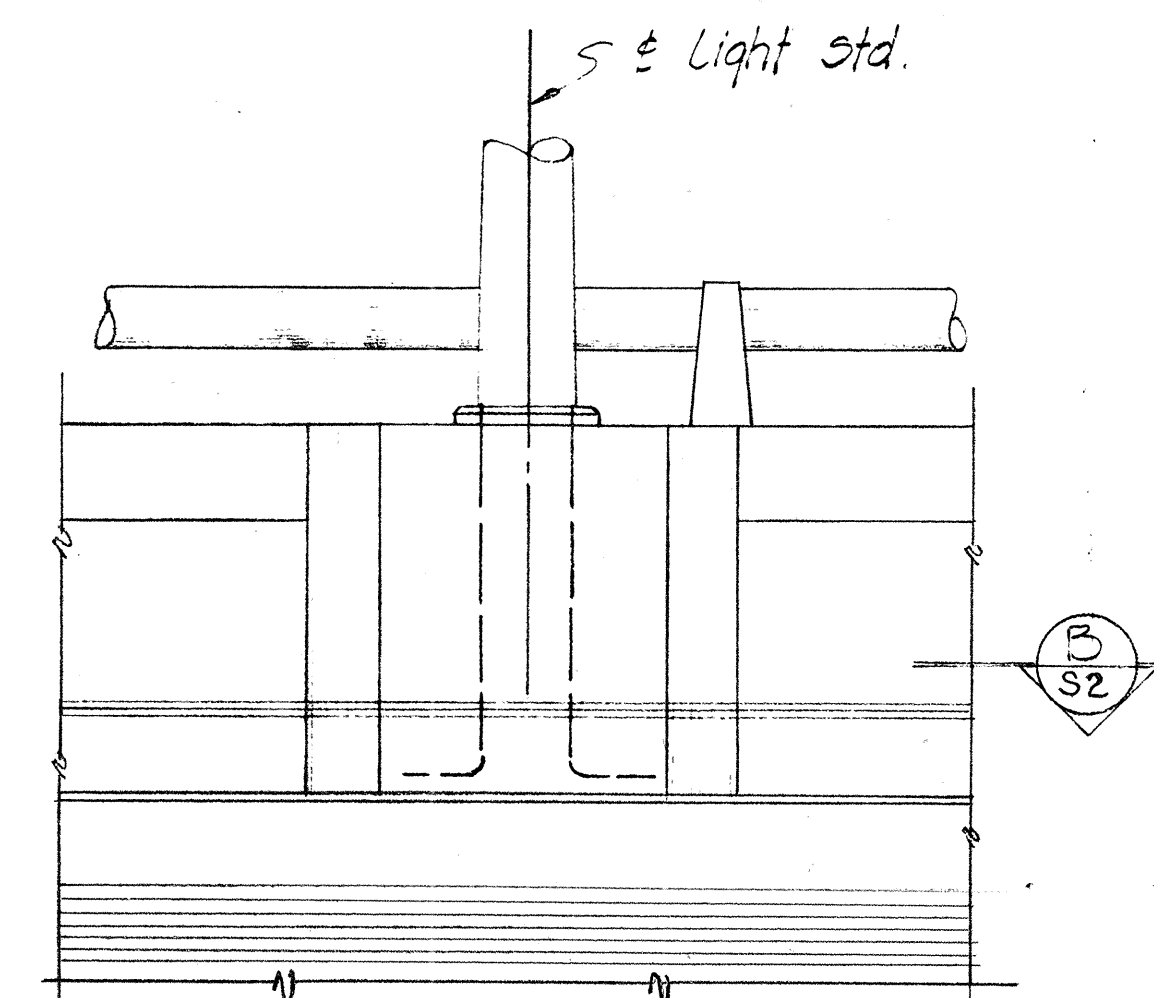
2. Rail Posts shall be normal to grade.
3. Provide double posts at each expansion jt., fixed bridge jt., continuous support, and as shown on detailed drawing.

RAILING PLAN SCALE 3/8" = 1'-0"

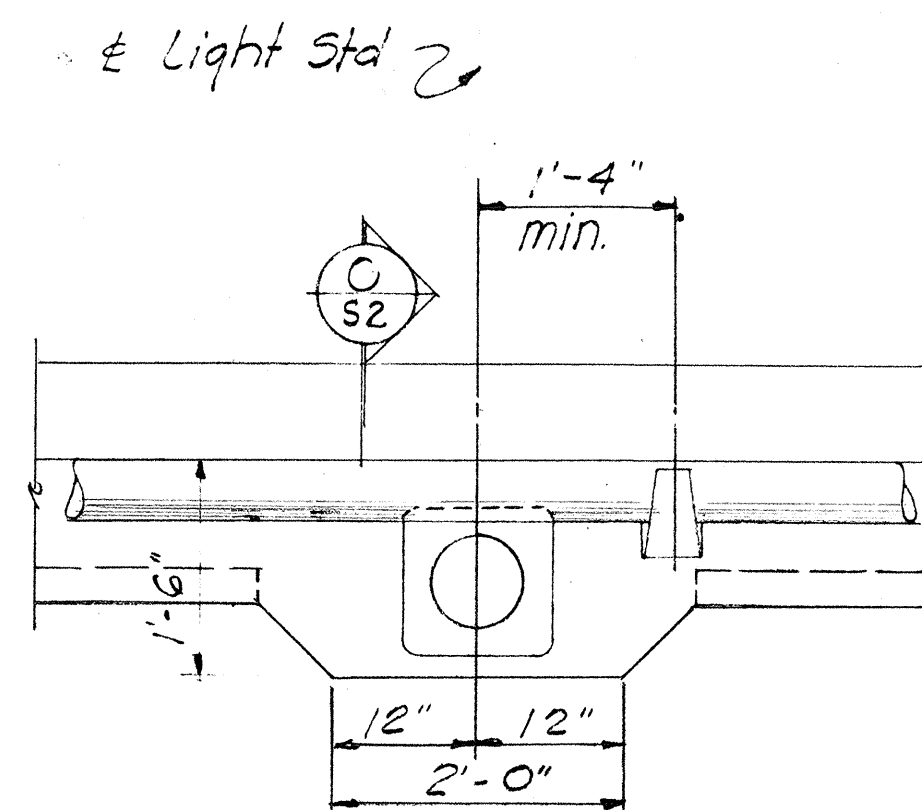


AT DECK EXPANSION JOINT

EXTERIOR RAILING ELEVATION SCALE: 3/8" = 1'-0"



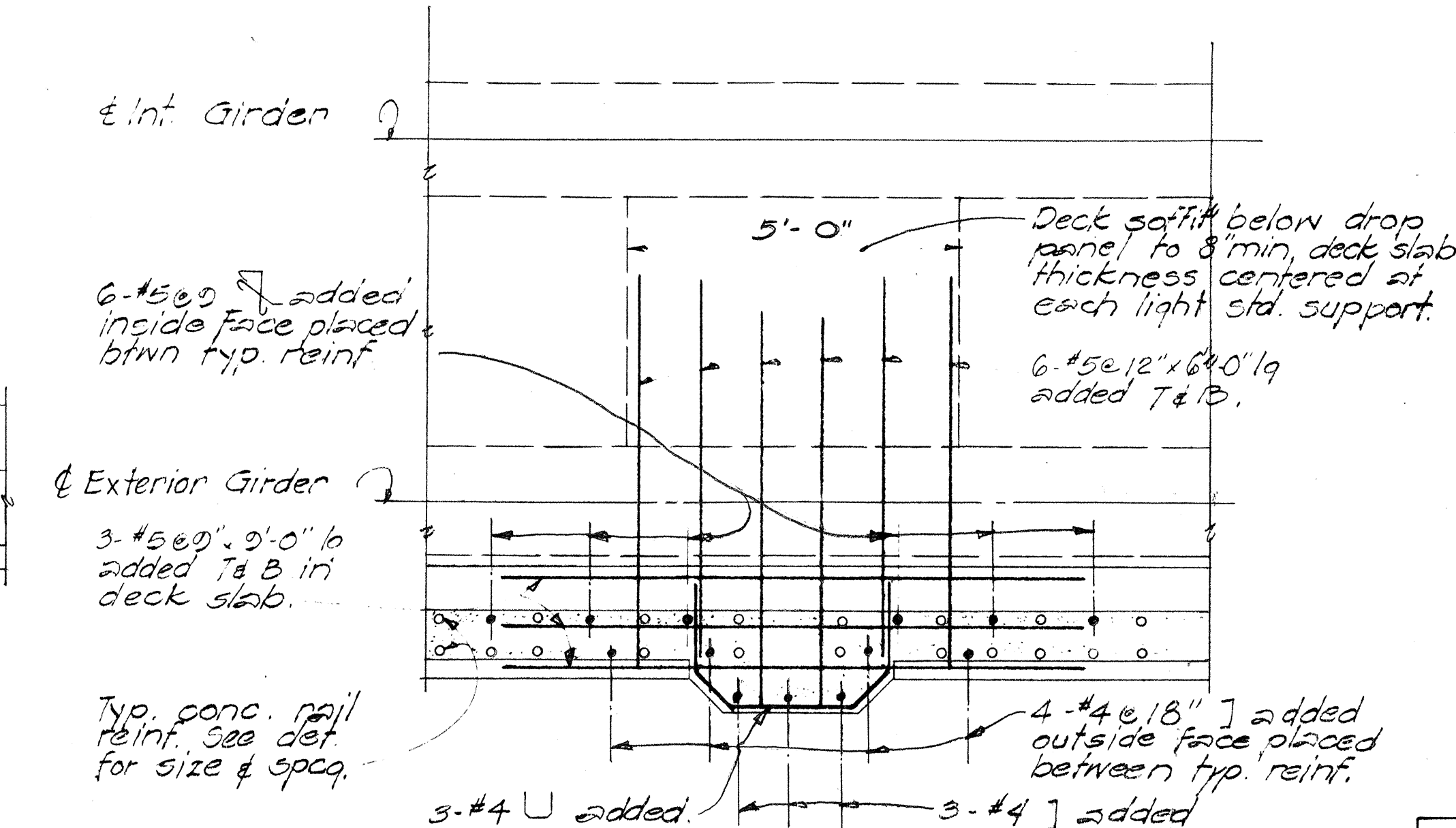
PART ELEVATION
SCALE: 3/4" = 1'-0"



PART PLAN
SCALE: 3/4" = 1'-0"

INTERMEDIATE

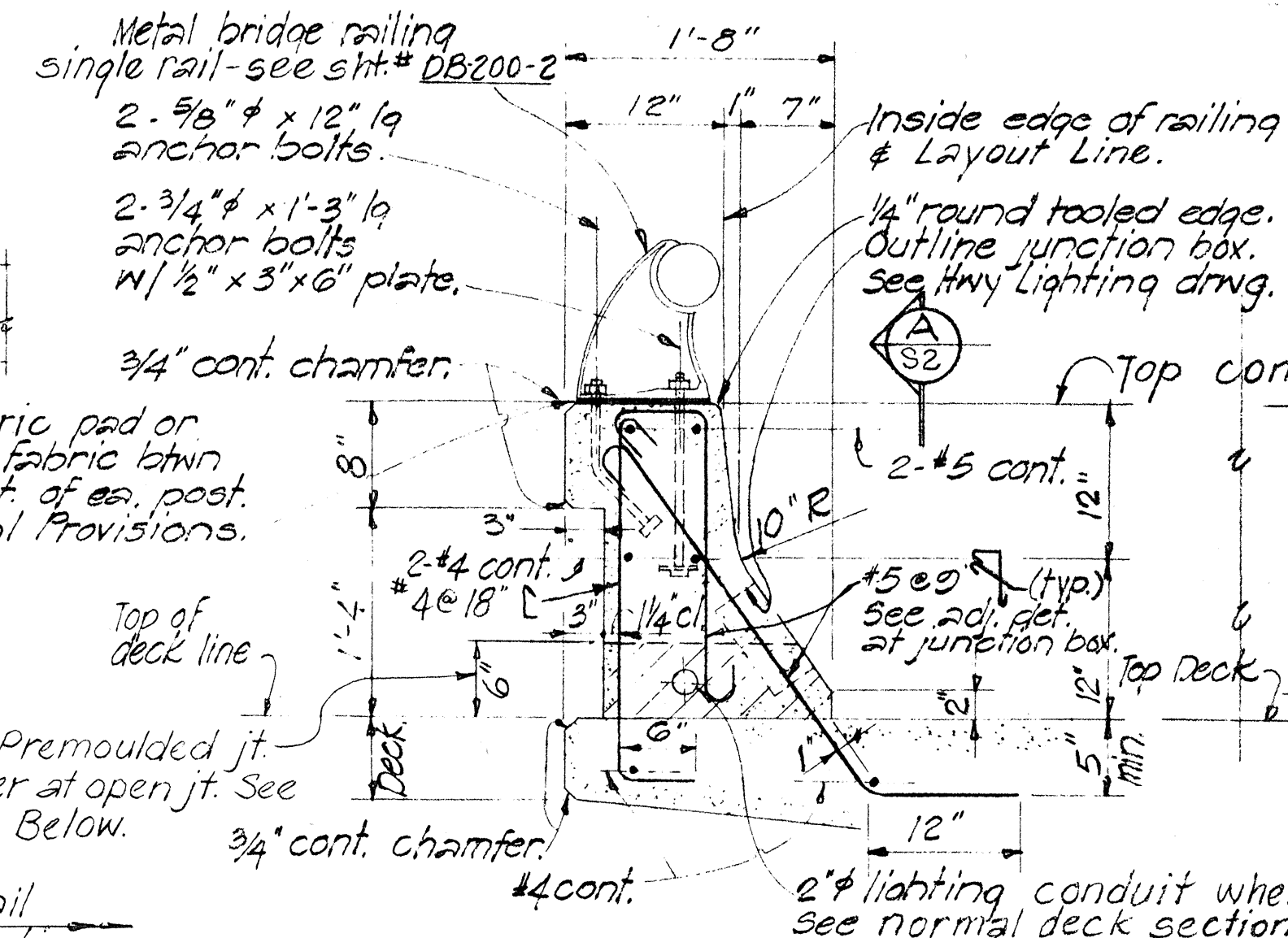
EXTERIOR RAILING ELEVATION SCALE: 3/8" = 1'-0"



SECTION (B) S2
SCALE: 1/2" = 1'-0"

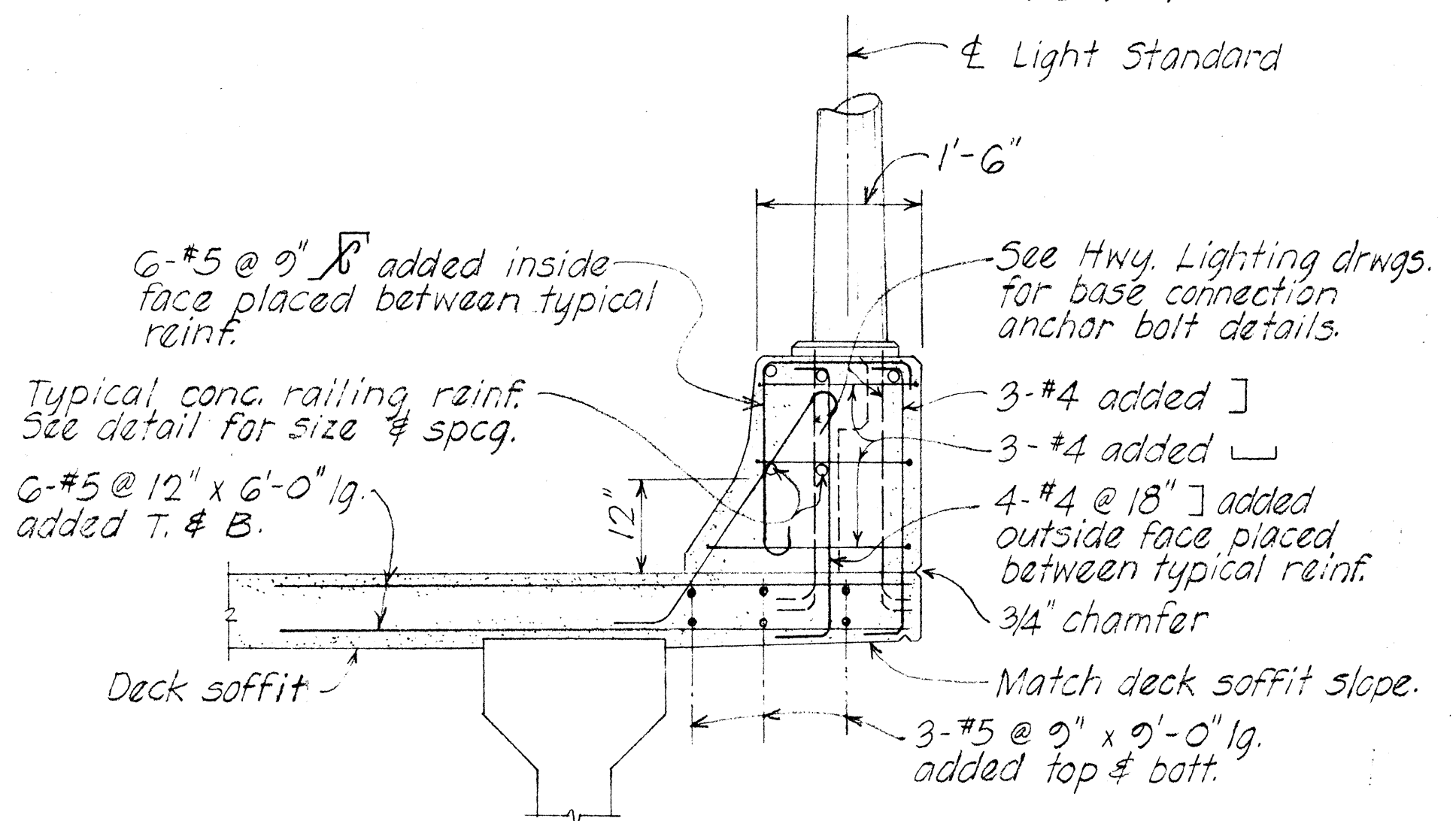
DETAILS OF RAILING AT LIGHT STANDARD

SCALE AS NOTED



TYPICAL CONCRETE RAILING SECTION SCALE: 1" = 1'-0"

ELEVATION (A) S2 SHOWING SPECIAL REINFORCEMENT AT JUNCTION BOX SCALE: 1" = 1'-0"



SECTION (C) S2
Scale: 3/4" = 1'-0"

APPROVAL RECOMMENDED:
Paul T. Yamashita
BRIDGE DESIGN ENGINEER
1-23-70
DATE

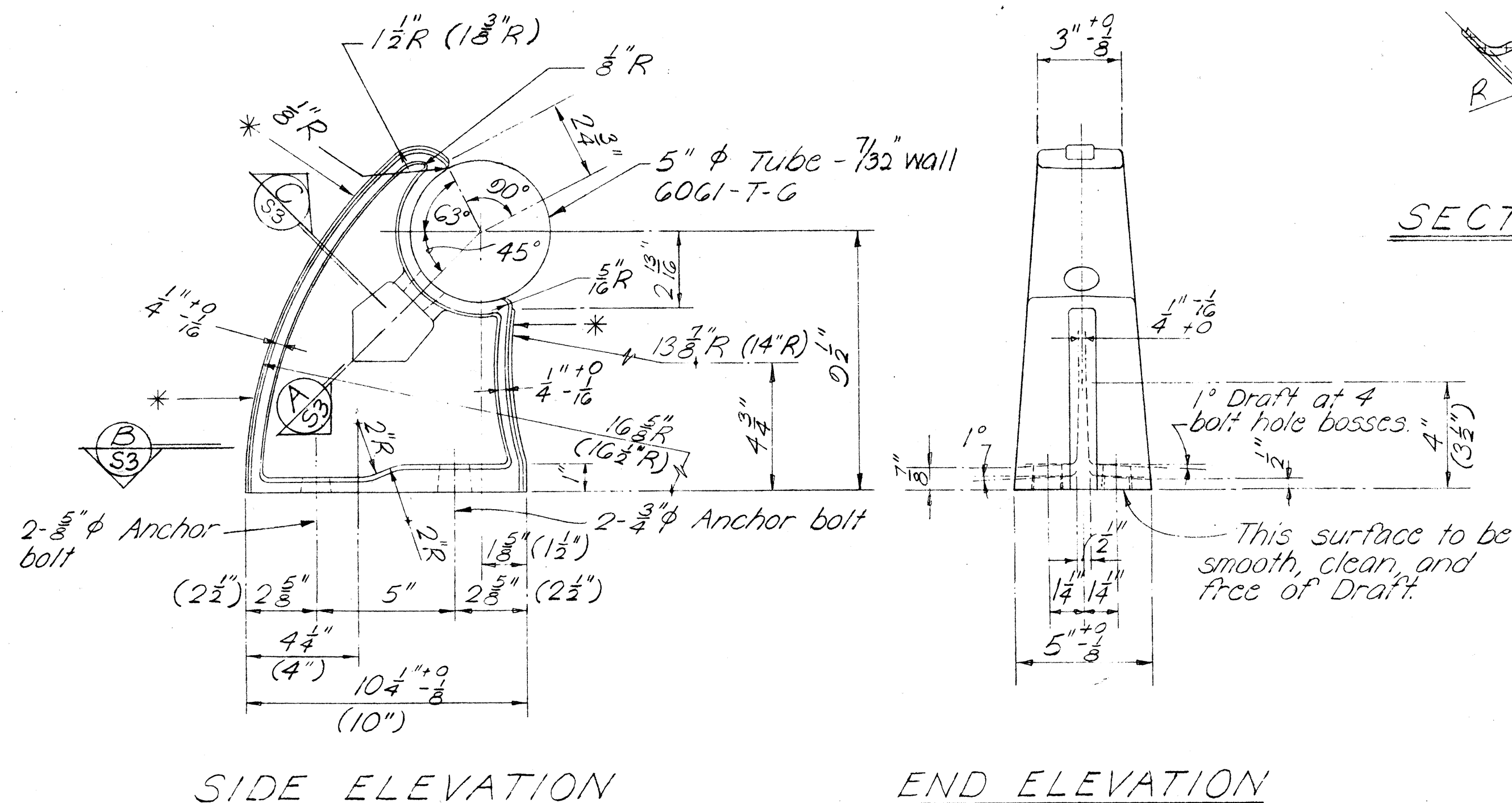
APPROVED
Paul T. Yamashita
1-28-70
DATE

For ASSISTANT CHIEF, ENGINEERING

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
METAL BRIDGE RAILING
ONE RAIL COMBINATION TYPE
ON PARAPET
Date: October 1969
SHEET No. 52 OF 9 SHEETS DB-200-1

NOTE:
TOGGLE BOLT
Cadmium plating on steel-Type NS 0.0005" thick ASTM- A 165.
(all parts).



NOTE:

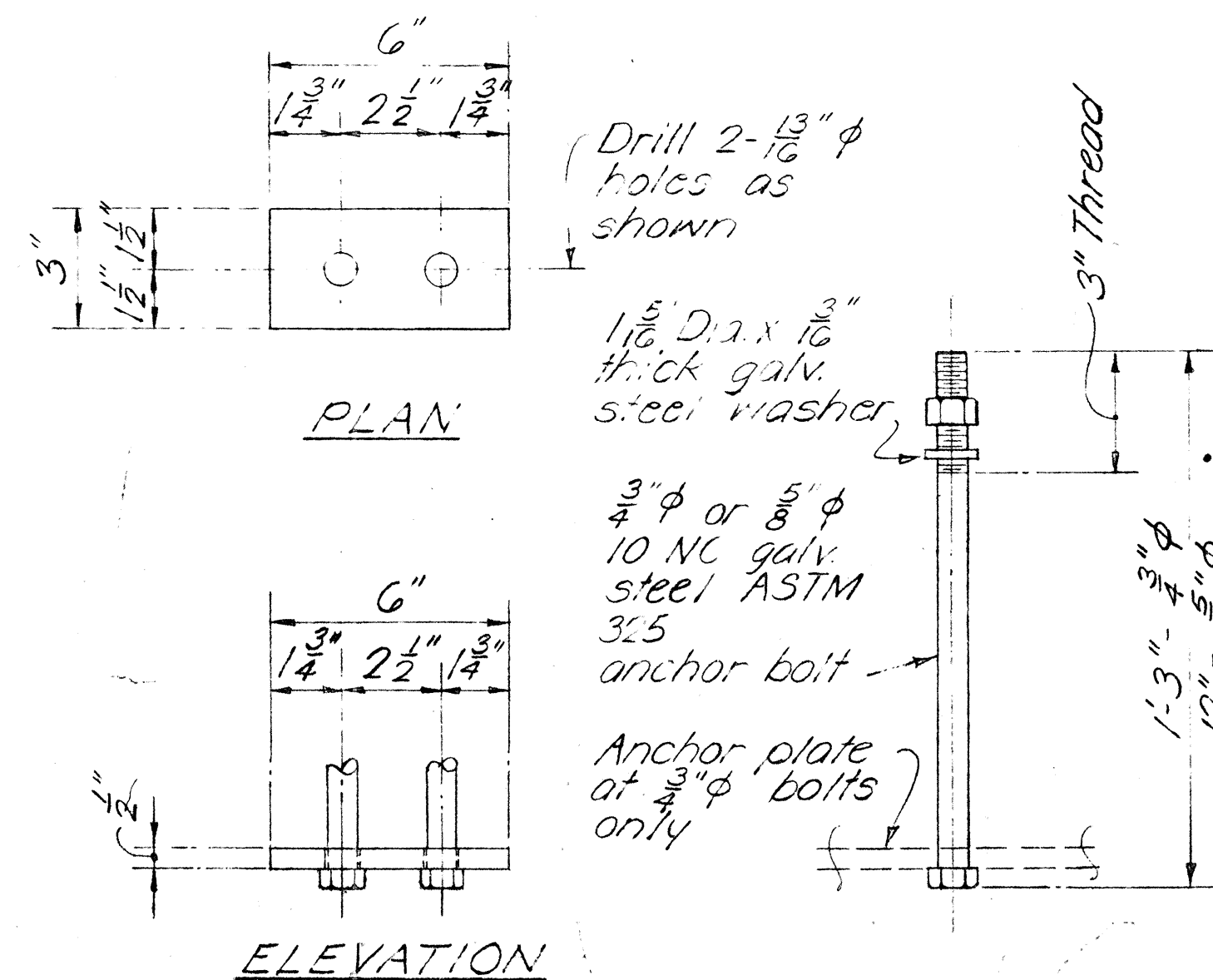
* Casting to be supplied with a standard scratch brush finish on entire gating rib surface and as indicated by an asterisk (*). Finish shall be approved by the Engineer.

Casting to be neatly trimmed and any protruding flash to be broken off. Unless otherwise specified, draft angles to be 3° , corner radii to be $\frac{3}{32}"R$, fillet radii to be $\frac{3}{8}"R$, casting tol. to be $\pm \frac{1}{16}"$, wall thickness to be $\pm \frac{1}{32}"$.

Dimensions may be as shown or as shown in parenthesis ().

TYPICAL RAIL POST DETAILS

Scale: 3" = 1'-0"

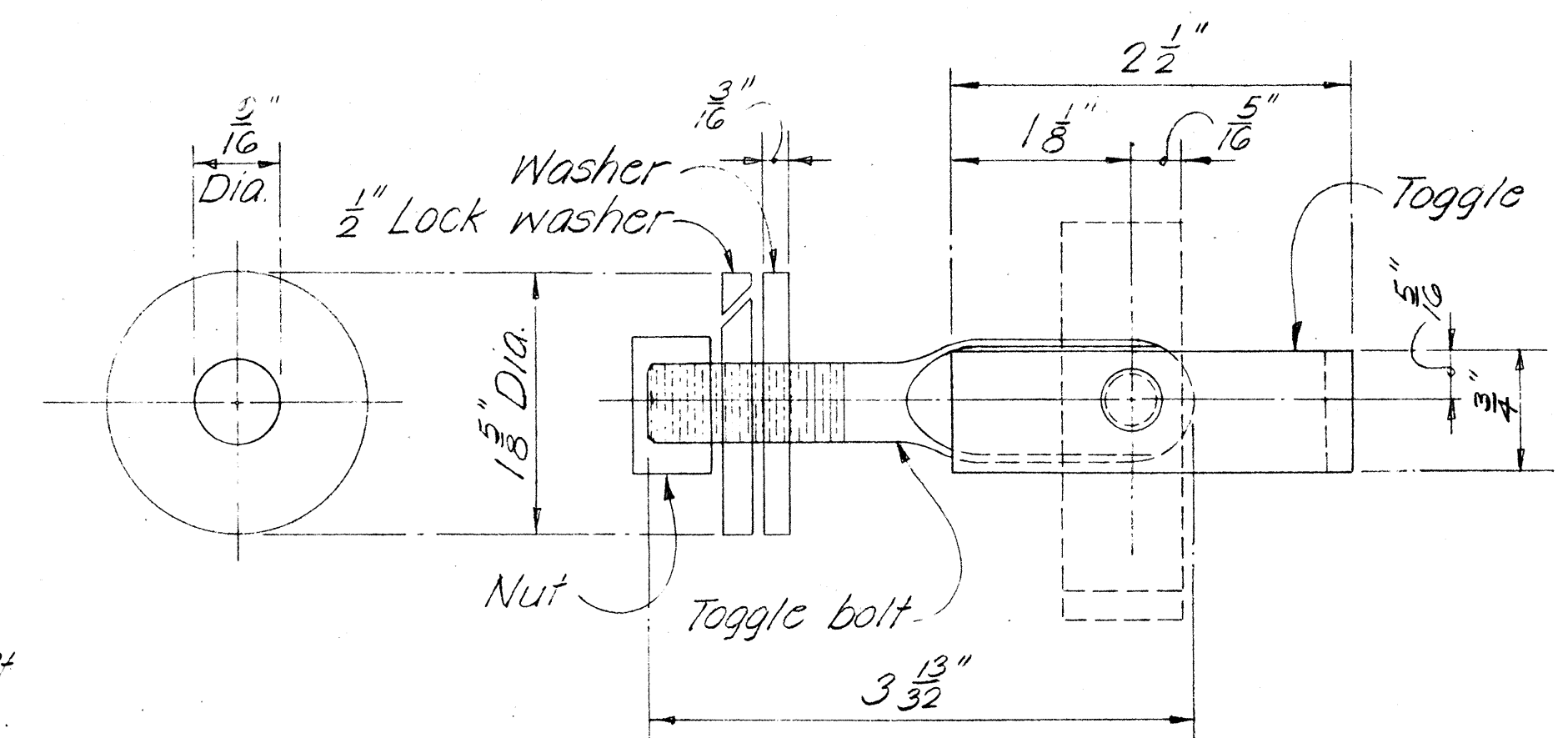
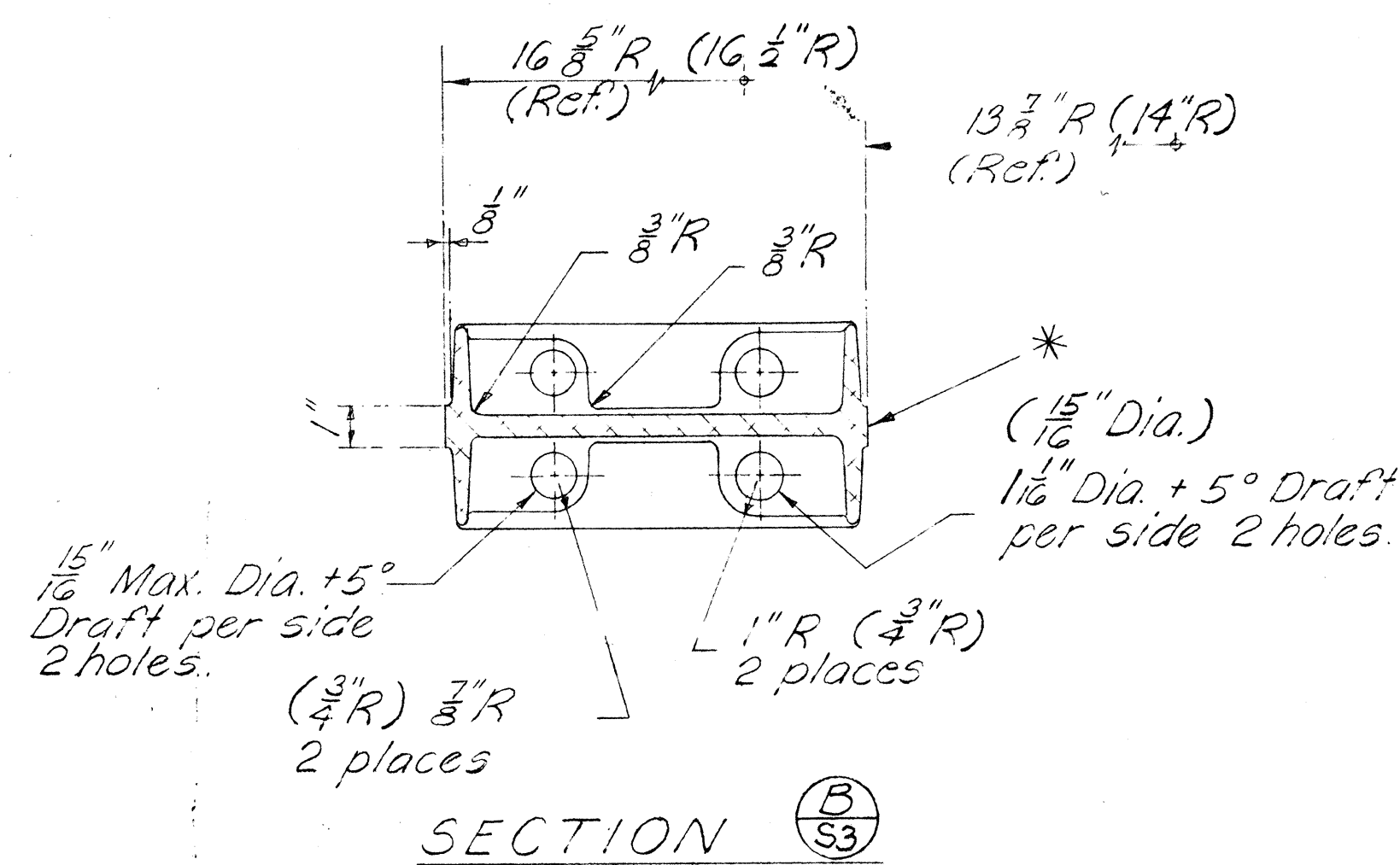
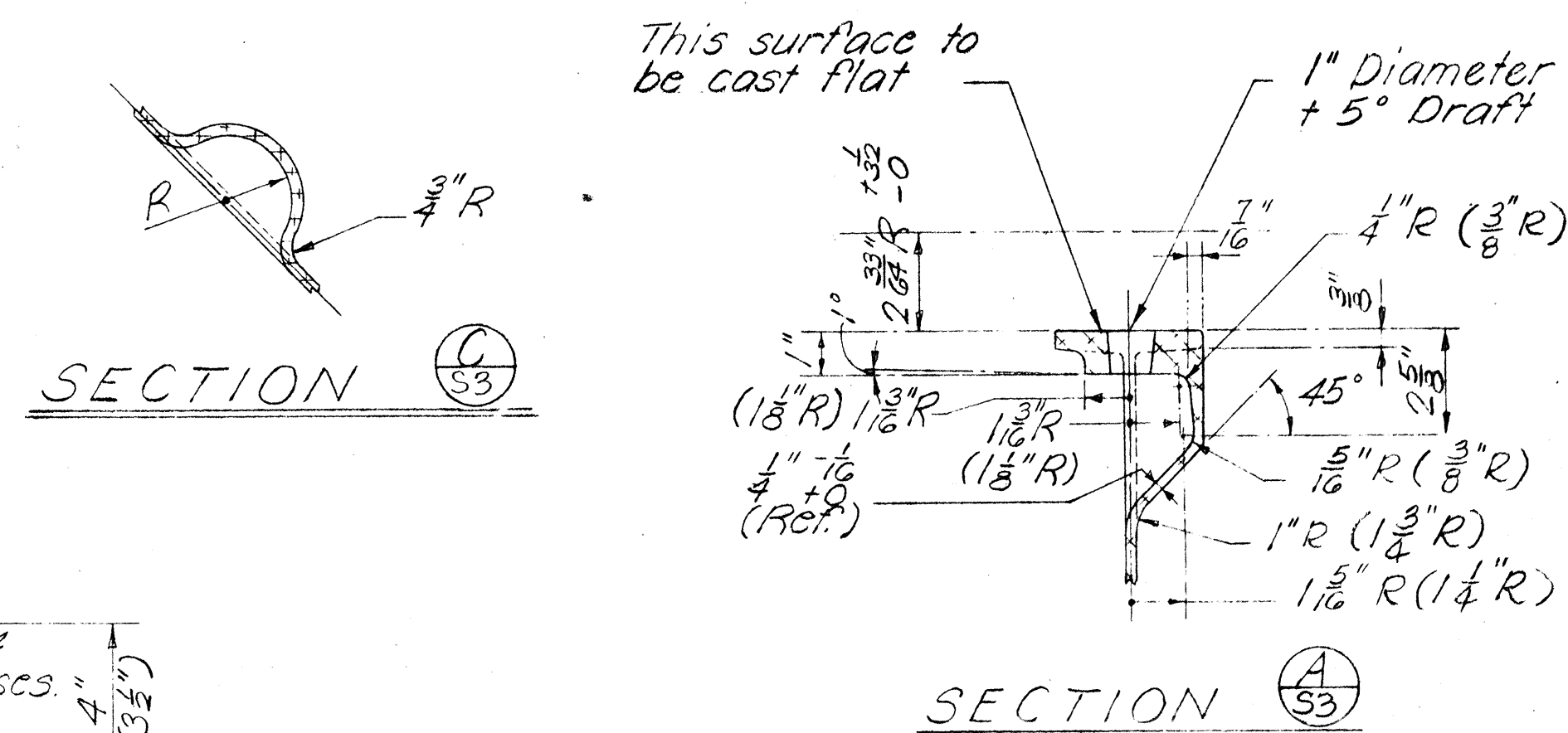


ANCHOR PLATE DETAIL, ANCHOR BOLT

TYPICAL RAIL POST

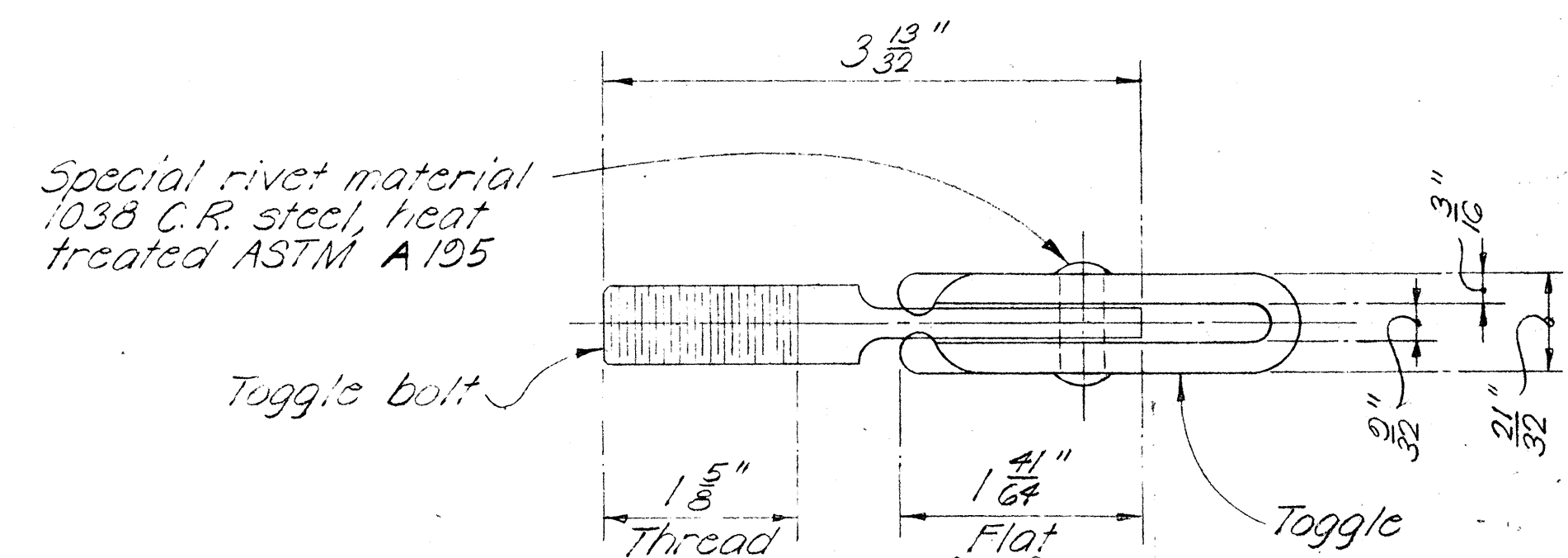
STEEL ANCHOR BOLT ASSEMBLY

Scale: 3" = 1'-0"



WASHER

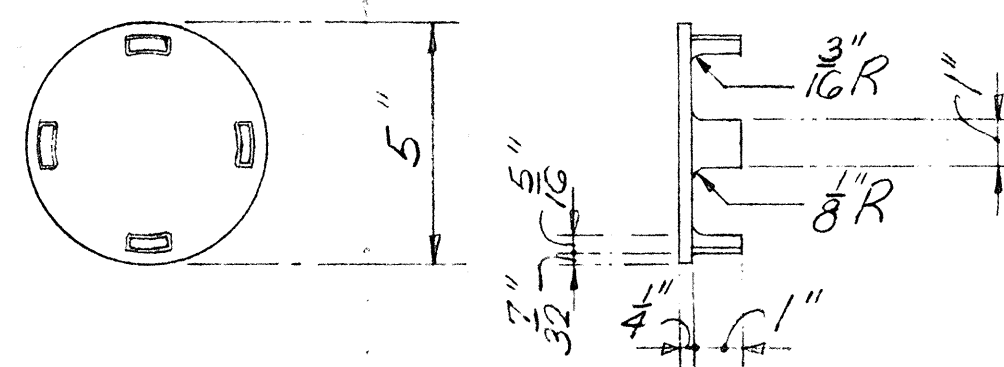
SIDE ELEVATION ASSEMBLAGE



TOP PLAN

$\frac{1}{2}$ " ϕ STEEL TOGGLE BOLT DETAILS

Full Scale



All draft angles = 3°

RAIL CAP DETAIL

Scale: $3'' = 1'-0''$

GENERAL NOTES:

Metal bridge railing shown is for Aluminum bridge railing. See Specifications for alternate railing in steel.

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED: Paul T. Yamashita 1-23-70
BRIDGE DESIGN ENGINEER DATE

APPROVED Paul T. Yamashita 1-28-70
For ASSISTANT CHIEF, ENGINEERING DATE

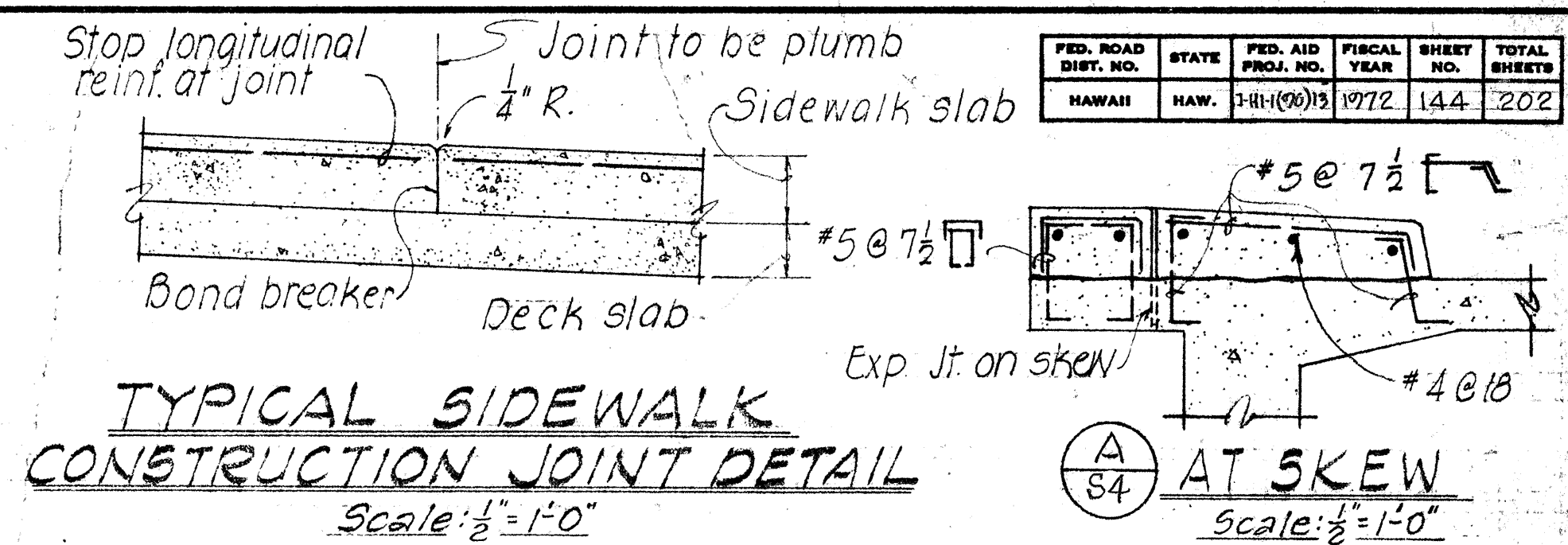
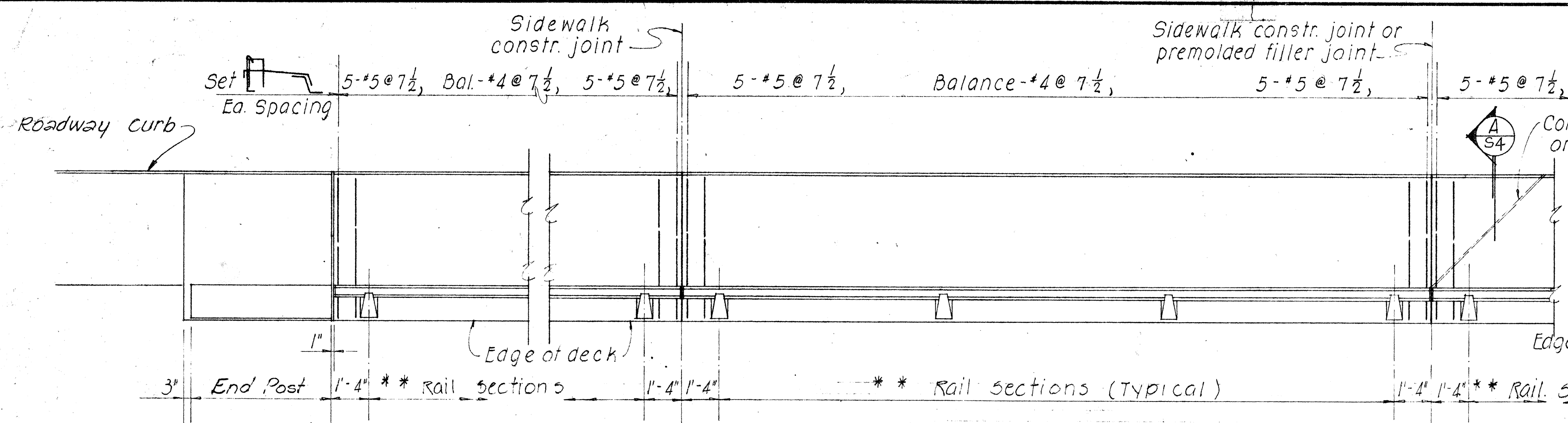
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL BRIDGE RAILINGS
ONE RAIL COMBINATION TYPE
ON PARAPET

Scale as noted Date:

SHEET No. 53 OF 9 SHEETS DB-200-2

1 4 3



AT BRIDGE END POST

INTERMEDIATE

AT RETAINING WALL END POST

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

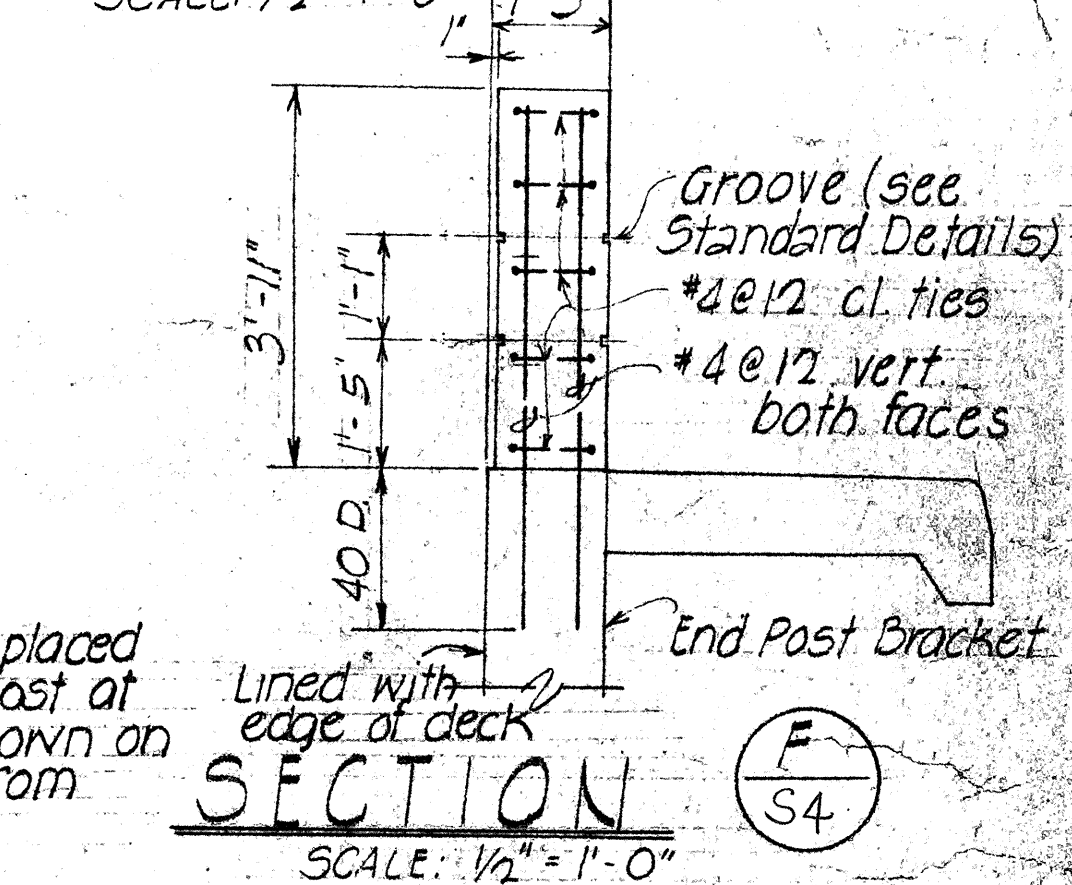
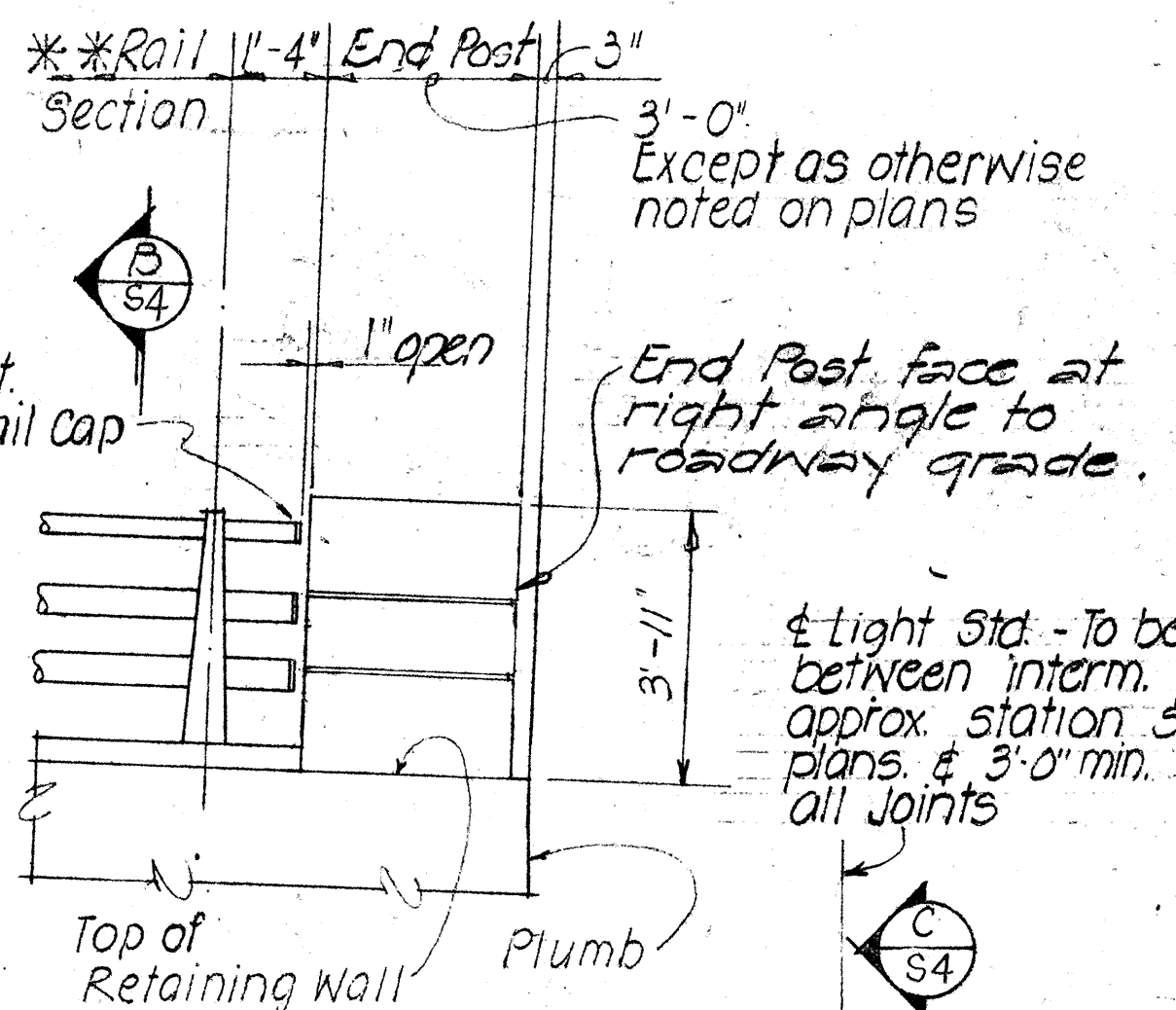
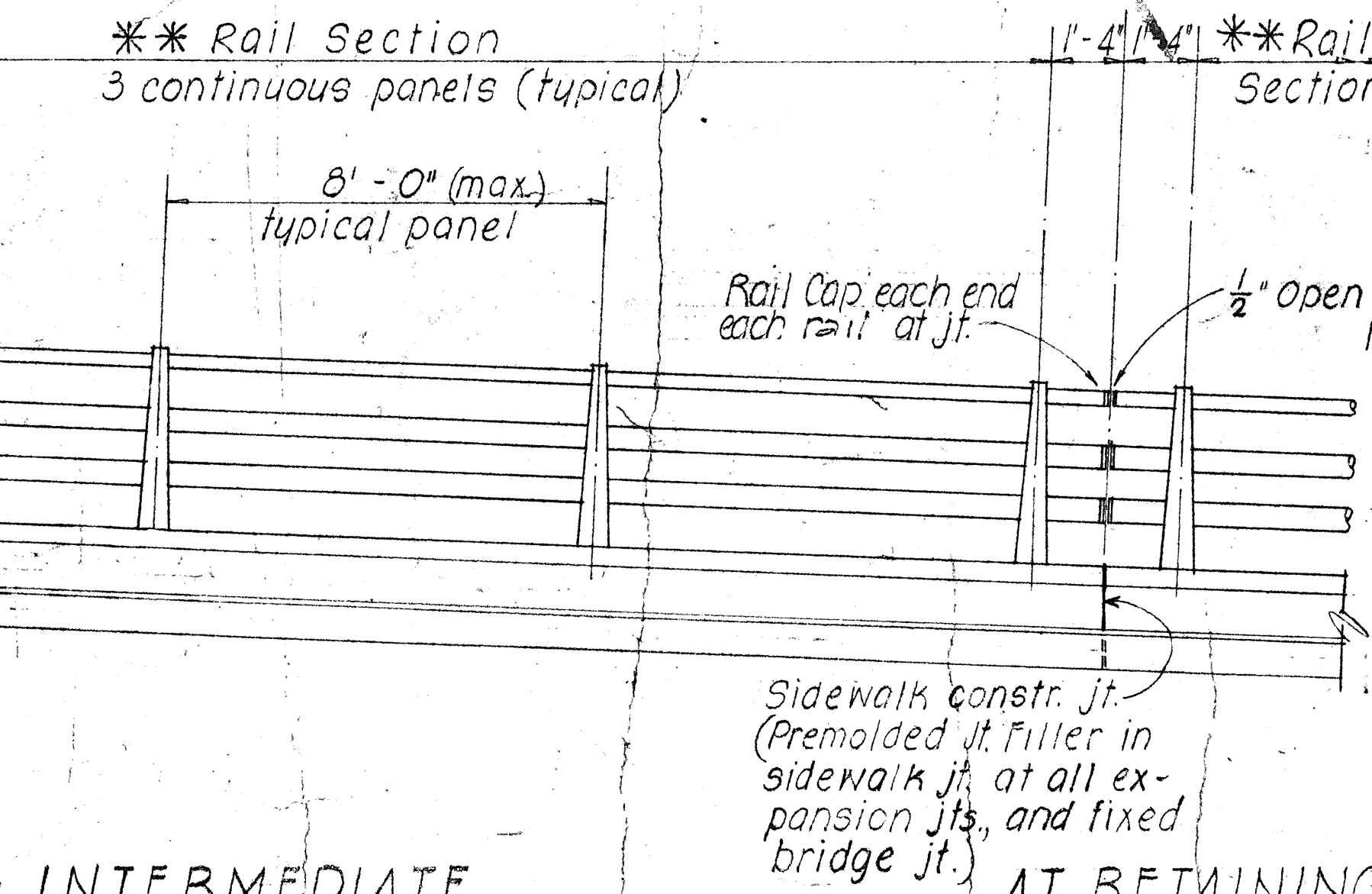
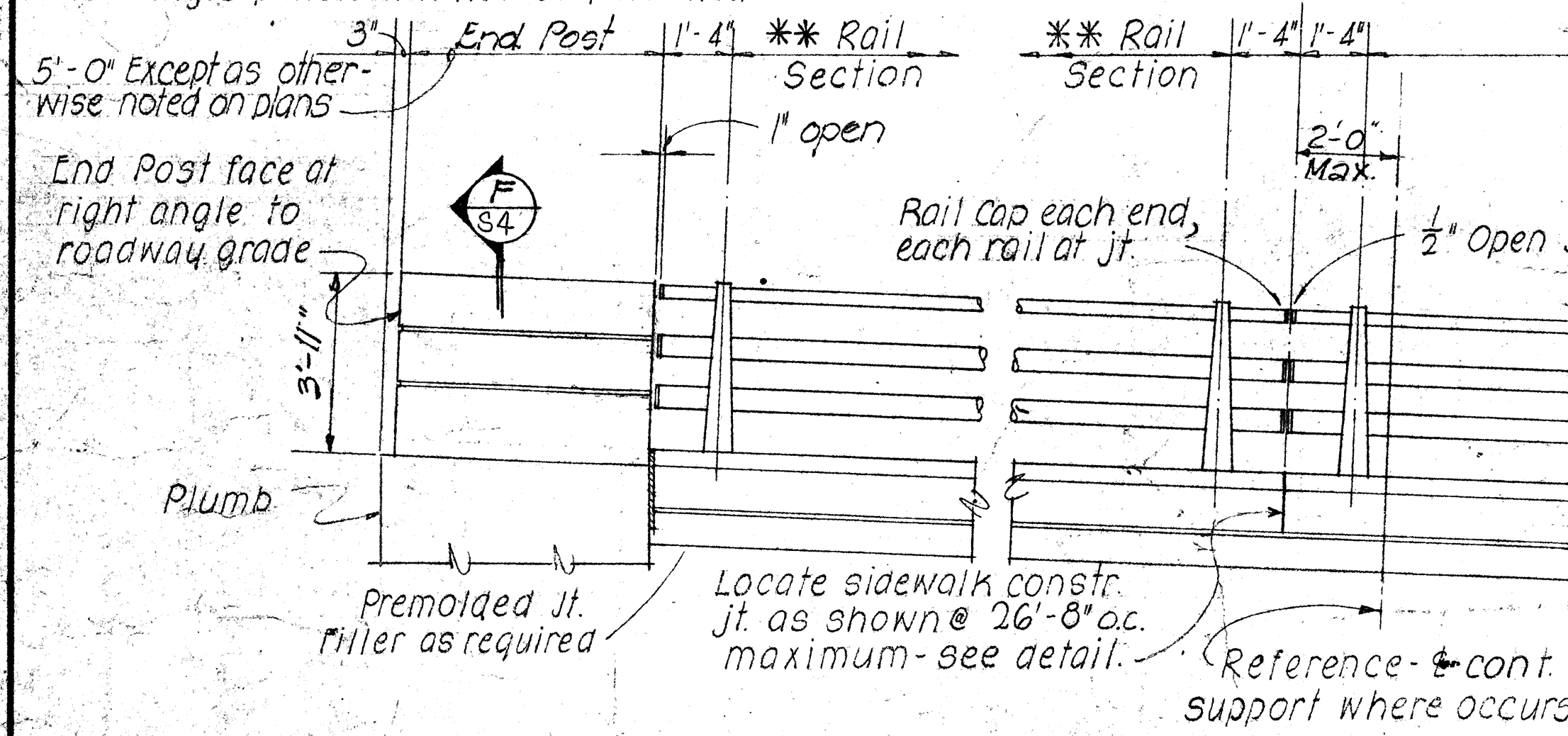
RAILING PLAN

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

NOTES!!
1. Rail Posts shall be normal to grade.
2. Provide double posts at each expansion jt., fixed bridge jt. & as shown on detailed drawings.

TREATMENT OF RAILING AT SKEWED ENDS

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



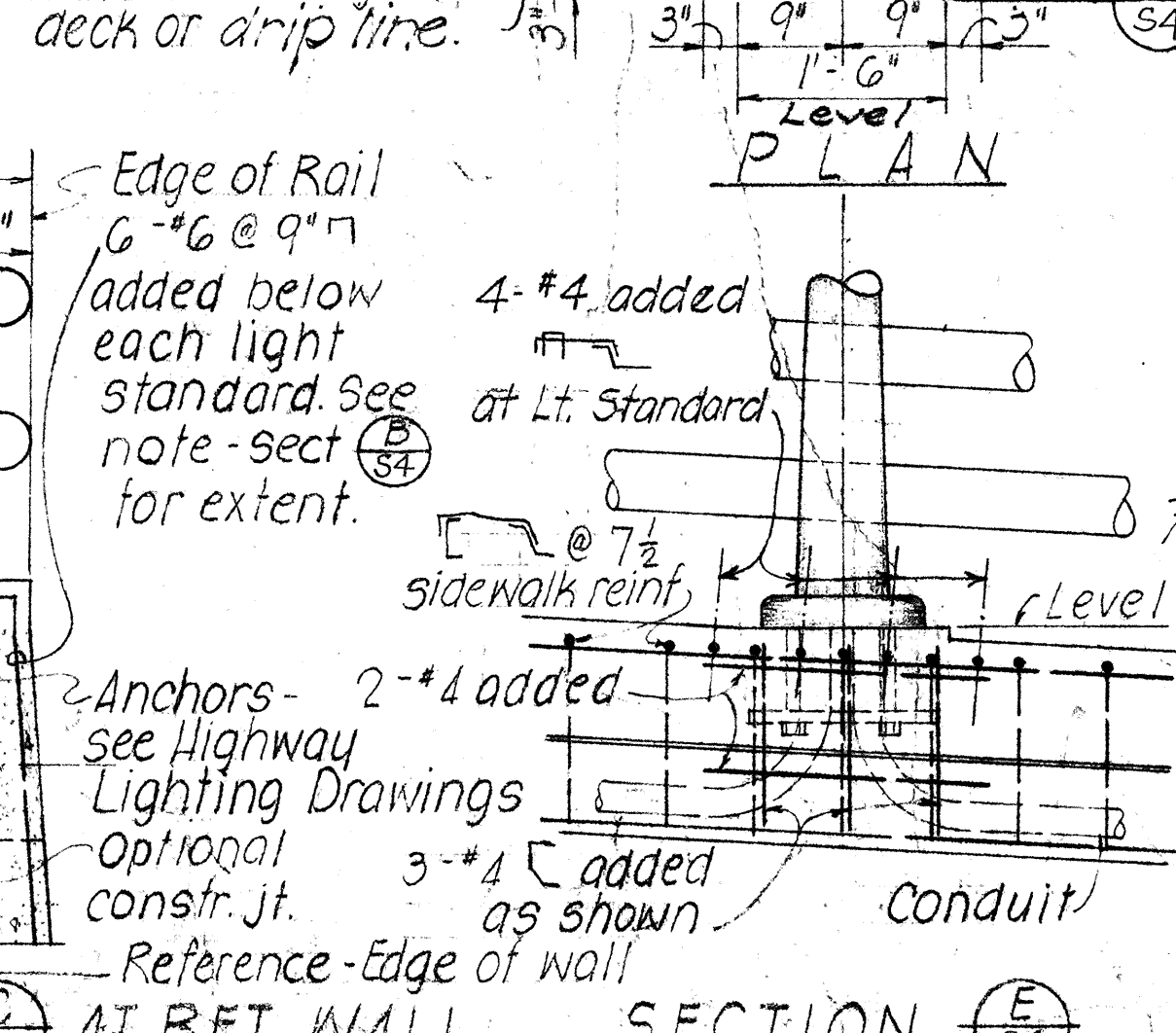
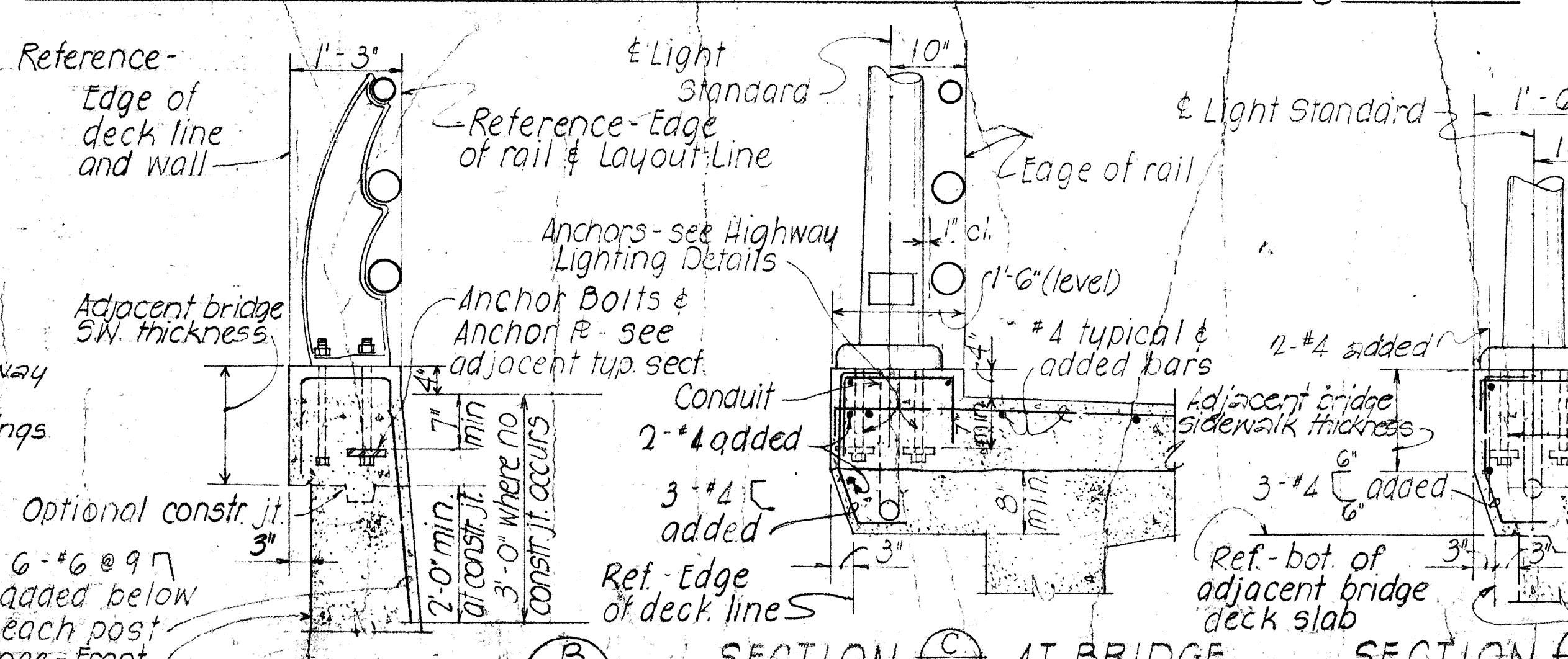
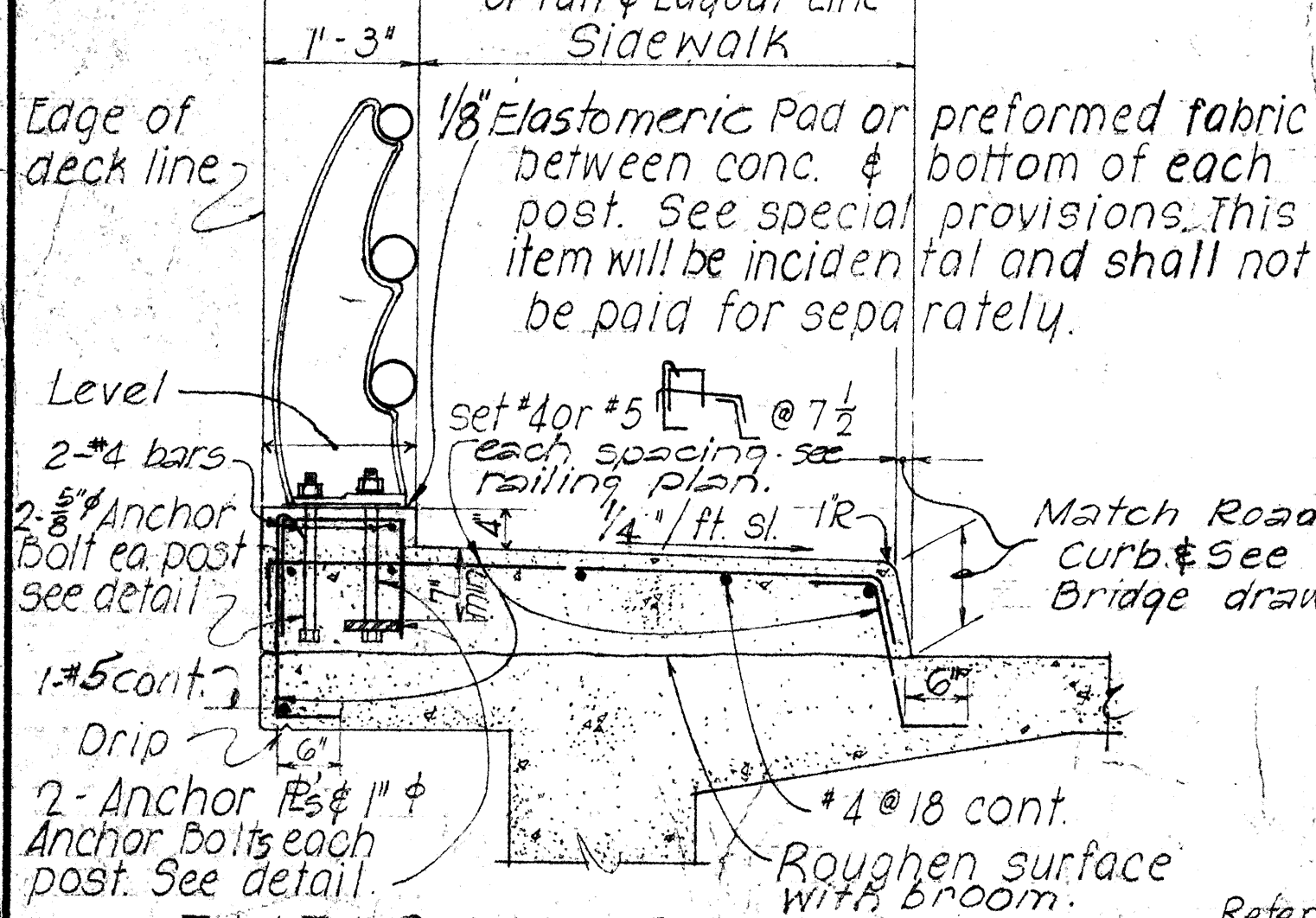
AT BRIDGE END POST

INTERMEDIATE

AT RETAINING WALL END POST

EXTERIOR RAILING ELEVATION

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



NO.	REVISION	APPROVED BY	DATE
1	Clarify sidewalk reinf	H.C.	10-13-10

APPROVAL RECOMMENDED:
Paul T. Yamashita
BRIDGE DESIGN ENGINEER
1-23-70
DATE

APPROVED:
Paul T. Yamashita
For ASSISTANT CHIEF, ENGINEERING
1-28-70
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

METAL BRIDGE RAILING

THREE RAIL COMBINATION TYPE

Date
SHEET No. 54 OF 9 SHEETS DB-203-1

TYPICAL SECTION

SCALE: 3/2" = 1'-0"

SECTION (B) AT BRIDGE

SCALE: 3/2" = 1'-0"

SECTION (C) AT RET. WALL

SCALE: 3/2" = 1'-0"

SECTION (D) AT BRIDGE

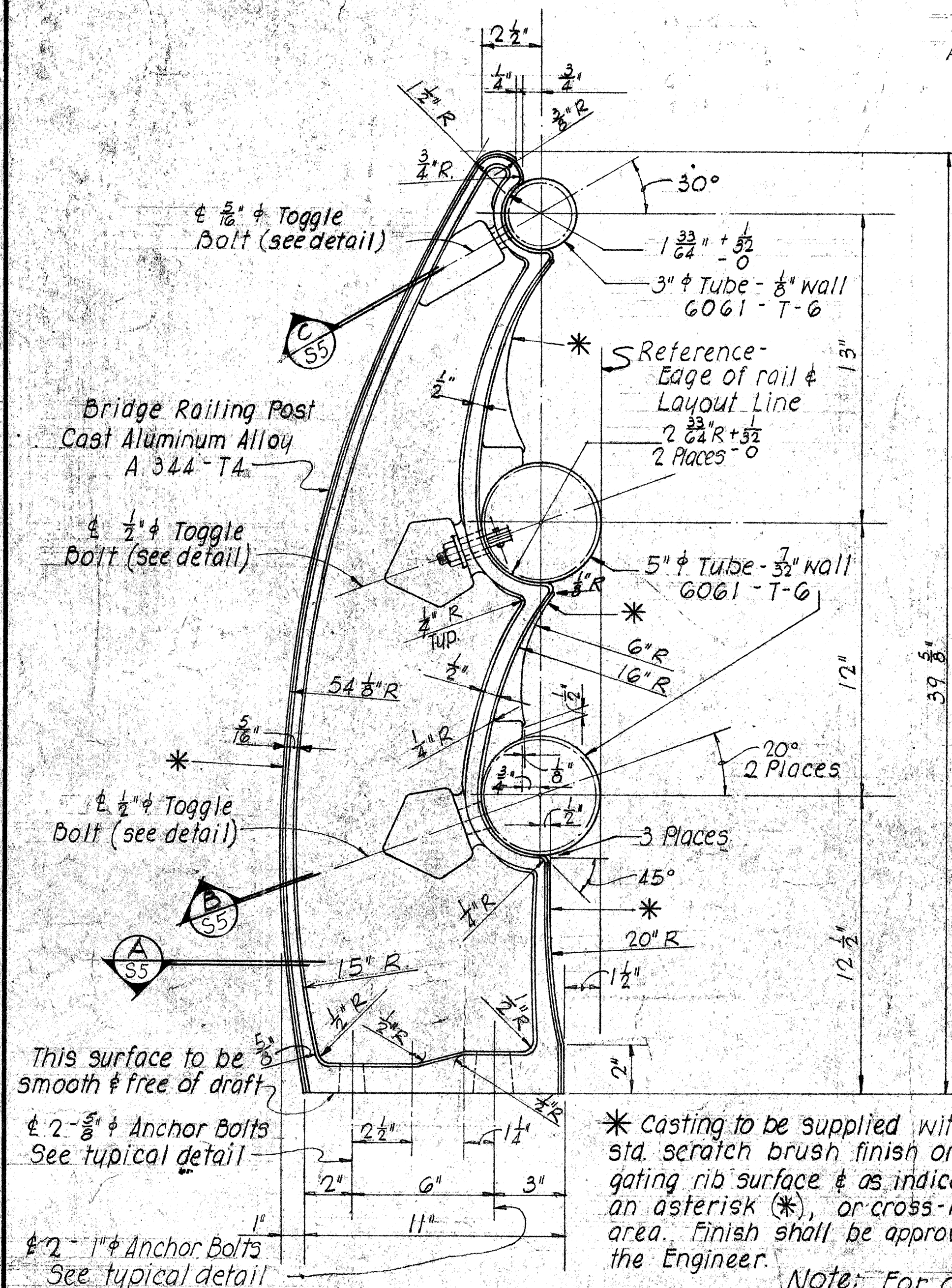
SCALE: 3/2" = 1'-0"

SECTION (E) AT RET. WALL

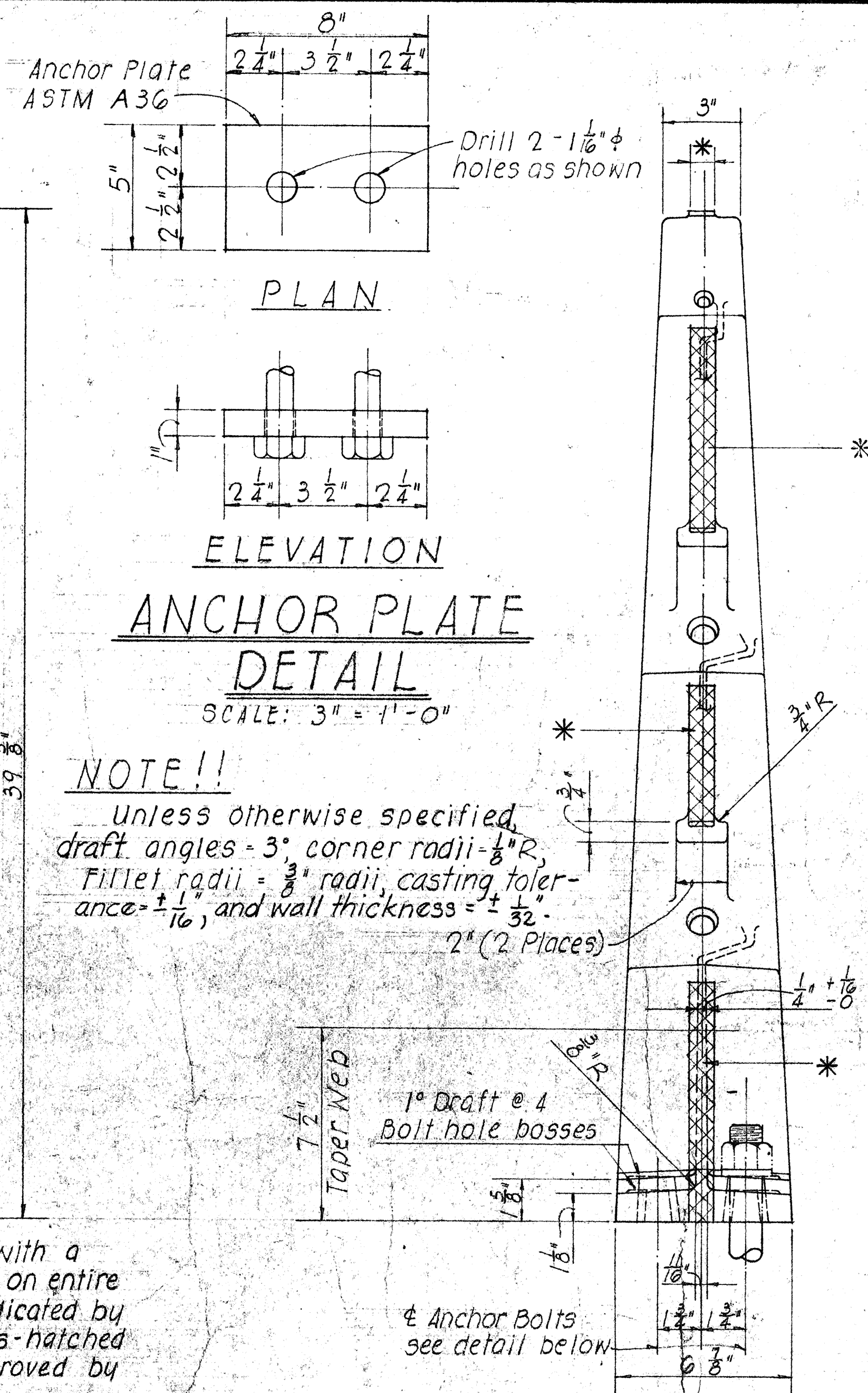
SCALE: 3/2" = 1'-0"

DETAILS OF RAILING AT LIGHT STANDARD

SCALE: 3/2" = 1'-0"



SIDE ELEVATION



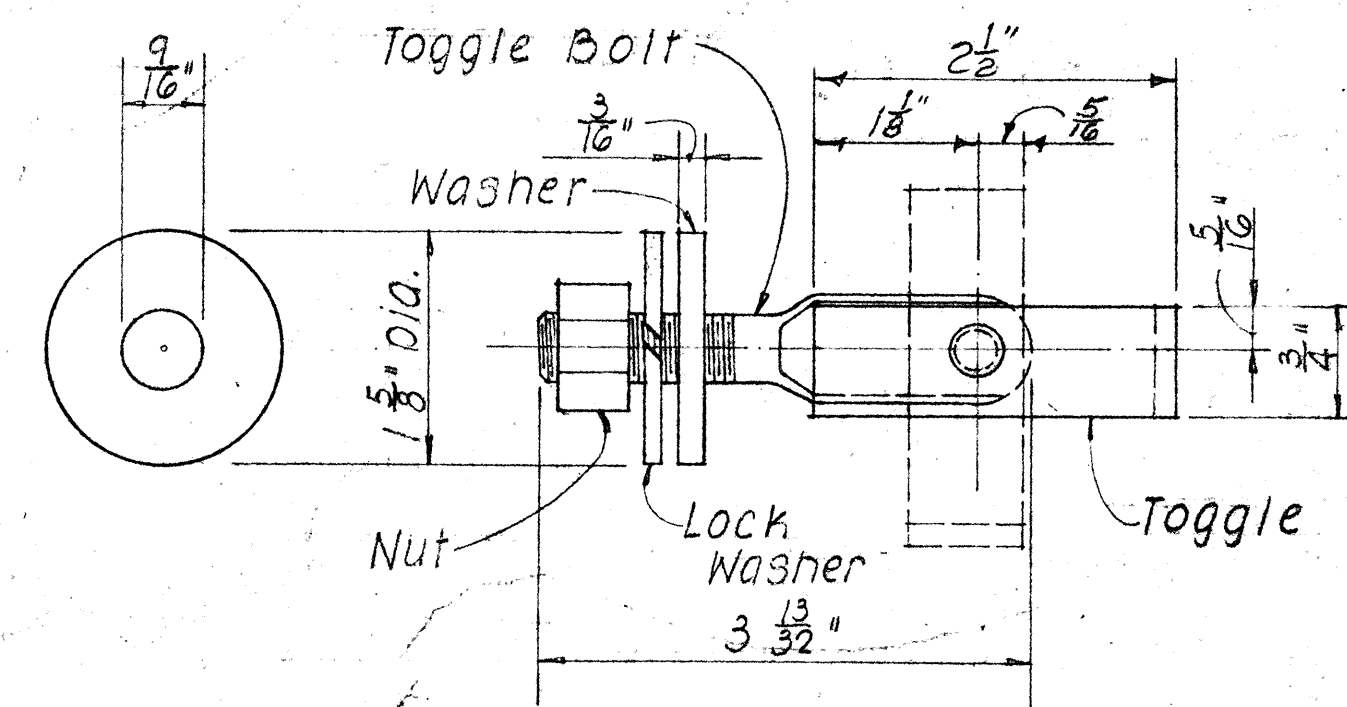
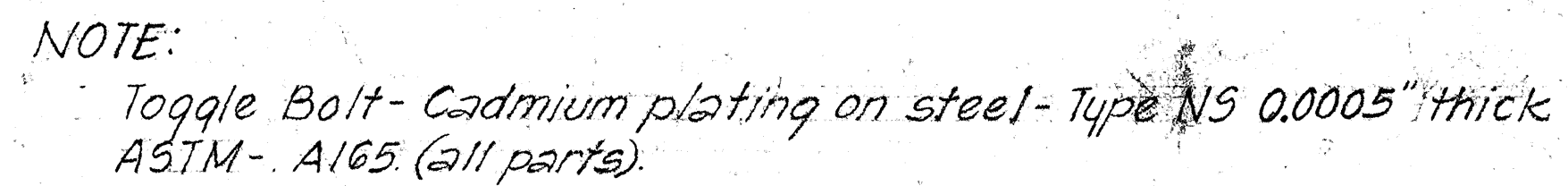
ANCHOR PLATE DETAIL

SCALE: 3" = 1' - 0"

NOTE!!

Unless otherwise specified,
draft angles - 3° ; corner radii - $\frac{1}{8}" R$;
Fillet radii - $\frac{3}{8}"$ radii, casting toler-
ance - $\pm \frac{1}{16}"$, and wall thickness = $\pm \frac{1}{32}"$.
2" (2 Places)

END ELEVATION

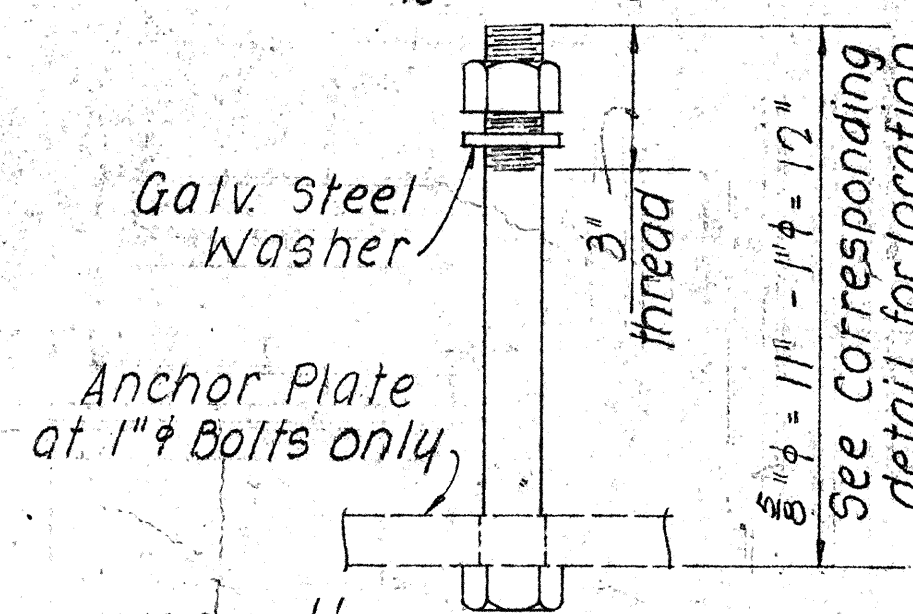


WASHER SIDE ELEVATION ASSEMBLAGE

Special rivet-material
1038 C.R. steel, heat
treated ASTM A195

NOTE!!

1" dia. bolt washer size $2\frac{1}{2}$ "
O.D. x $1\frac{1}{16}$ " I.D. x $\frac{11}{64}$ " thick.
3/4" dia. bolt washer size $1\frac{3}{4}$ "
O.D. x $\frac{11}{16}$ " I.D. x $\frac{7}{64}$ " thick



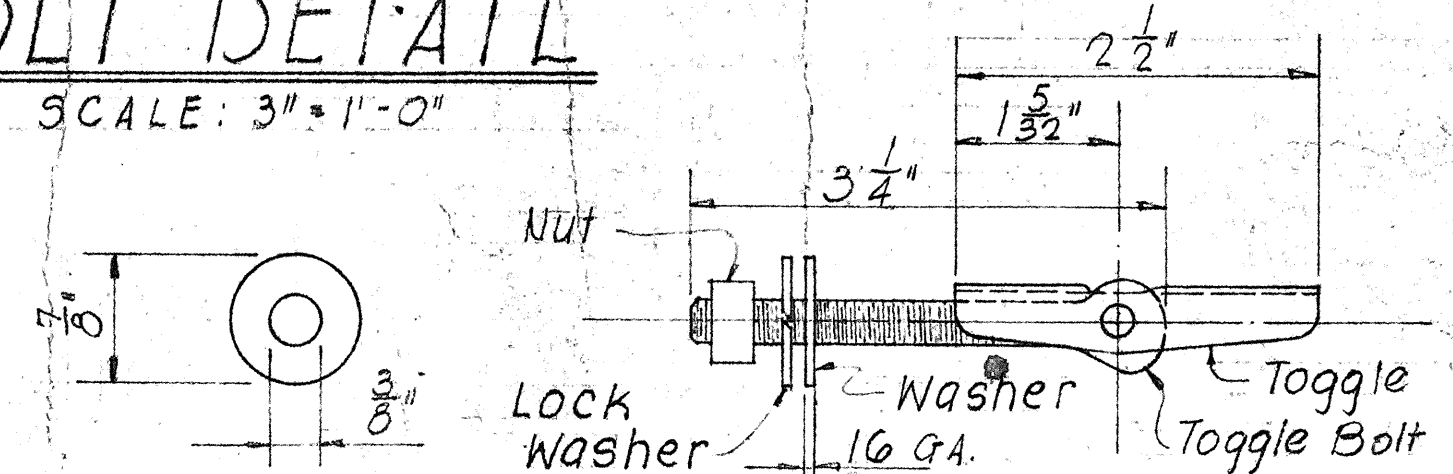
Anchor Plate
at 1" ϕ Bolts only.

NOTE!!

1" ϕ $\frac{5}{8}$ " ϕ Galvanized Steel
ASTM A 325 Anchor
Bolts

TYPICAL ANCHOR BOLT DETAIL

SCALE: 3" = 1'-0"



WASHER ELEVATION ASSEMBLAGE

$\frac{5}{16}" \phi$ STEEL TOGGLE BOLT DETAIL

APPROVAL RECOMMENDED:
Paul T. Yamashita 1-23-70
BRIDGE DESIGN ENGINEER DATE

APPROVED Paul T. Yamashita 1-28-70
For ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

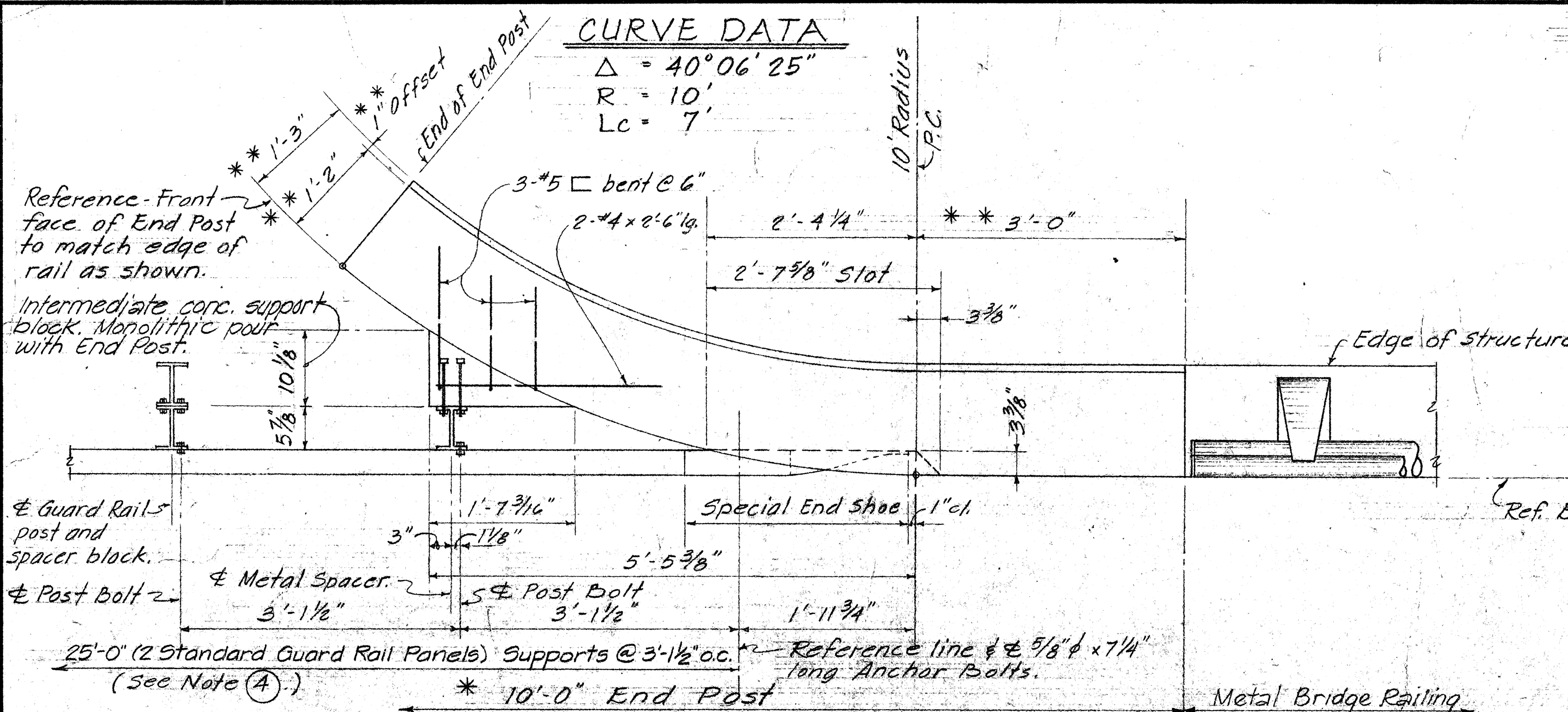
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
METAL BRIDGE RAILING
THREE RAIL COMBINATION TYPE

Date _____

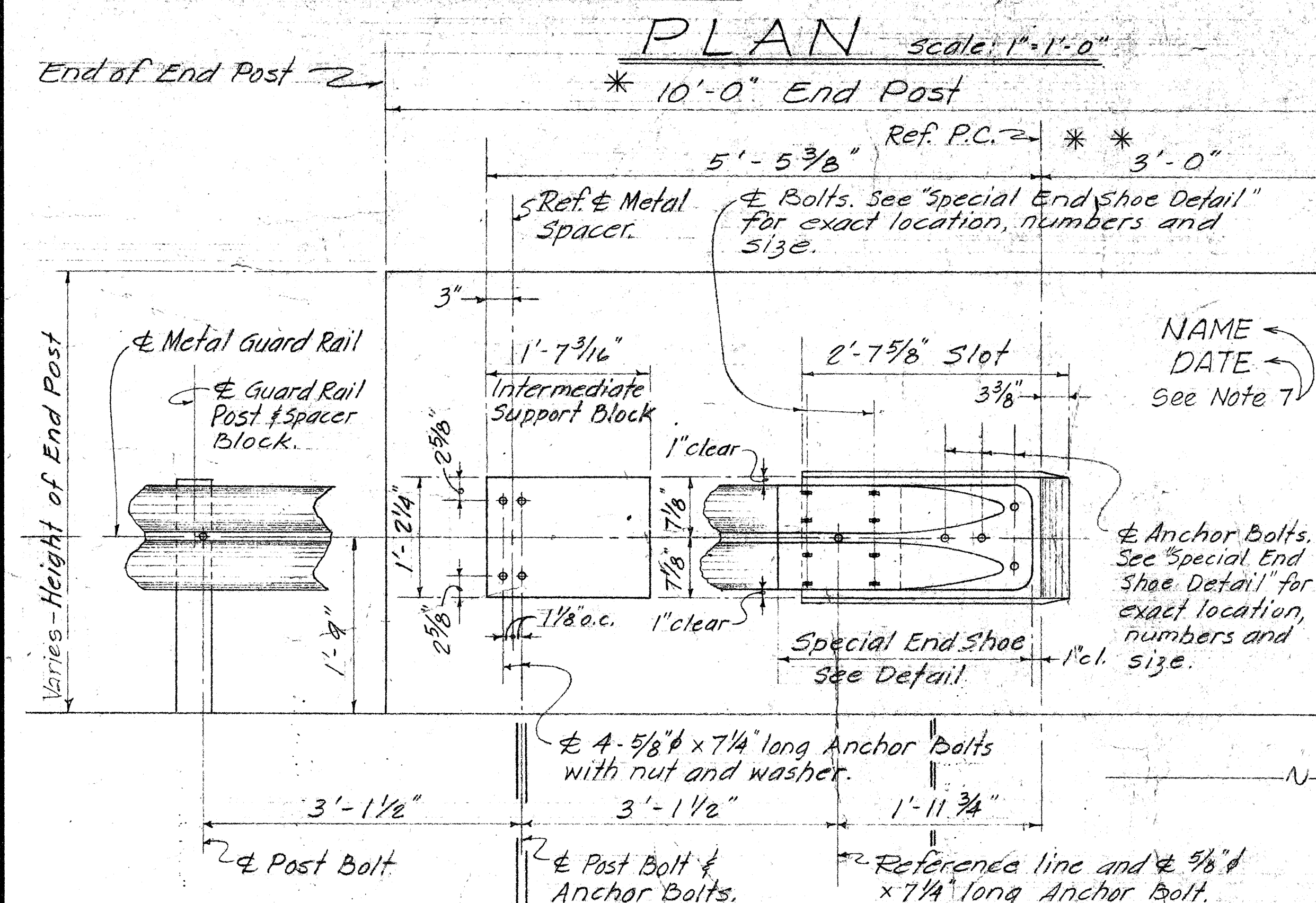
SHEET No. 55 OF 9 SHEETS DB-203-2

145

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-11-1(40)-13	1972	146	202



* Length given along front face of End Post.



ELEVATION
 Scale: 1" = 1'-0"

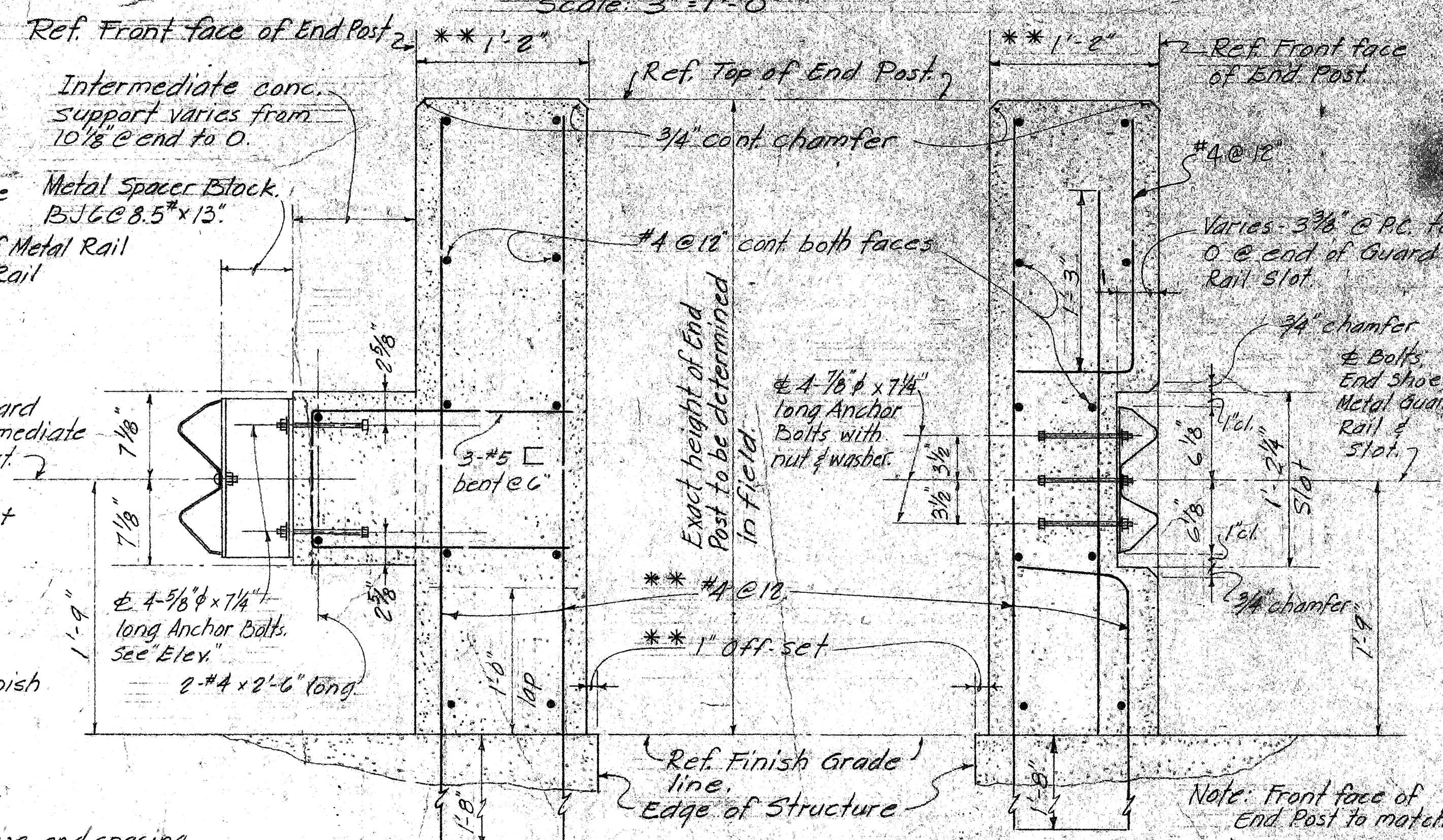
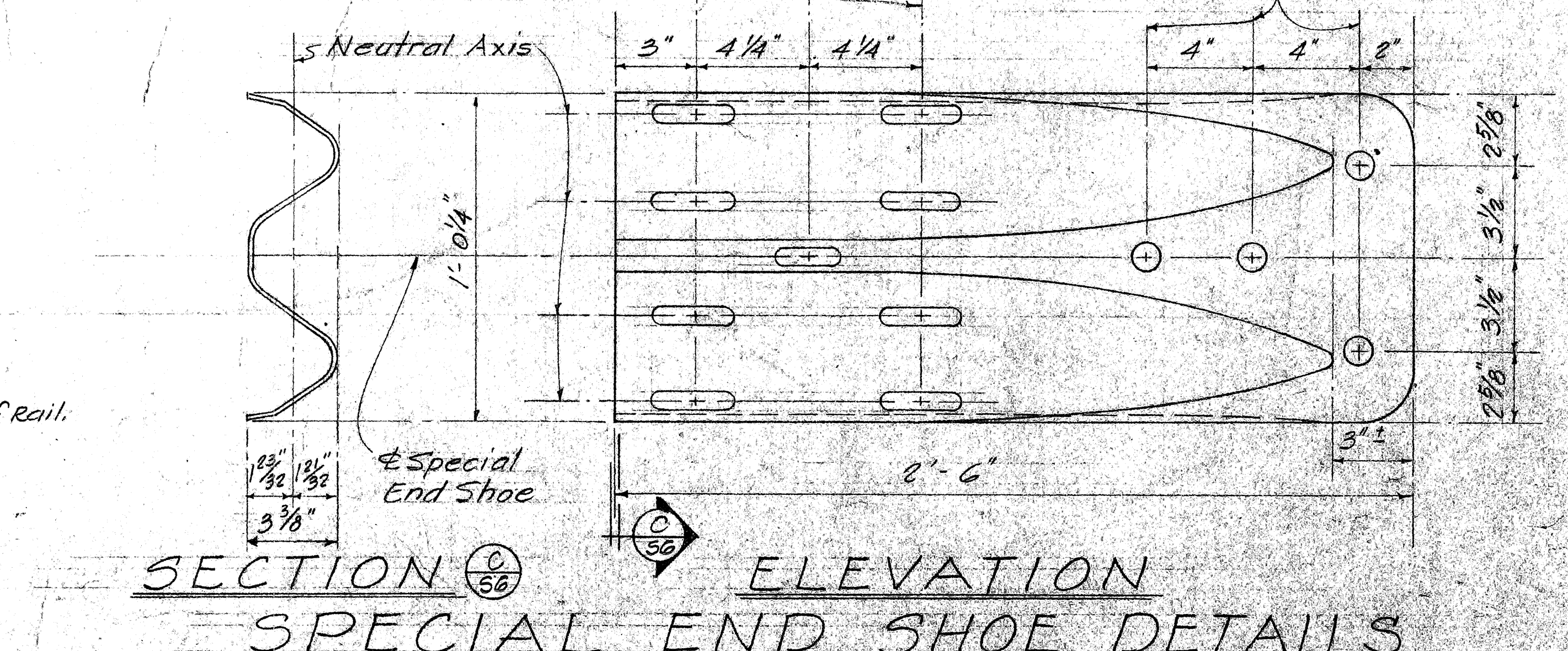
- NOTES:**
- All Anchor Bolts shall be high strength bolts conforming to the requirements of ASTM A-325.
 - All shoe assembly, including anchor bolts, nuts and washers, shall be galvanized.
 - Special End shoe shall be fabricated from 10 gage steel conforming to the requirements of AASHTO 180.

- First 25'-0" of guard rail adjoining "Special End Shoe" shall be galvanized steel.
- Anchor Bolt length given under bolt head.
- These details are applicable for Connections to Retaining walls also.
- Place name of structure as shown. For location, see "Plan" on Contract Drawing. Date shown will be year structure is completed. Letter size and detail see standard Drawing DB-100.

Reference line and 3/4" x 2 1/2" bolt slot for 5/8" x 7/4" long Anchor Bolt.

3/8" x 3" slots. See "Standard Details Metal Guard Rail" for bolt dimensions.

1" holes for 7/8" x 7/4" long Anchor Bolts.



NO.	REVISION	APPROVED BY	DATE
1	Note 4 revised, 3'-1 1/2" post spacing extended to 25'-0". Note Tadded	H.T.	12-29-72

APPROVAL RECOMMENDED:
 Paul T. Yamashita
 BRIDGE DESIGN ENGINEER

APPROVED
 Paul T. Yamashita
 for ASSISTANT CHIEF, ENGINEERING

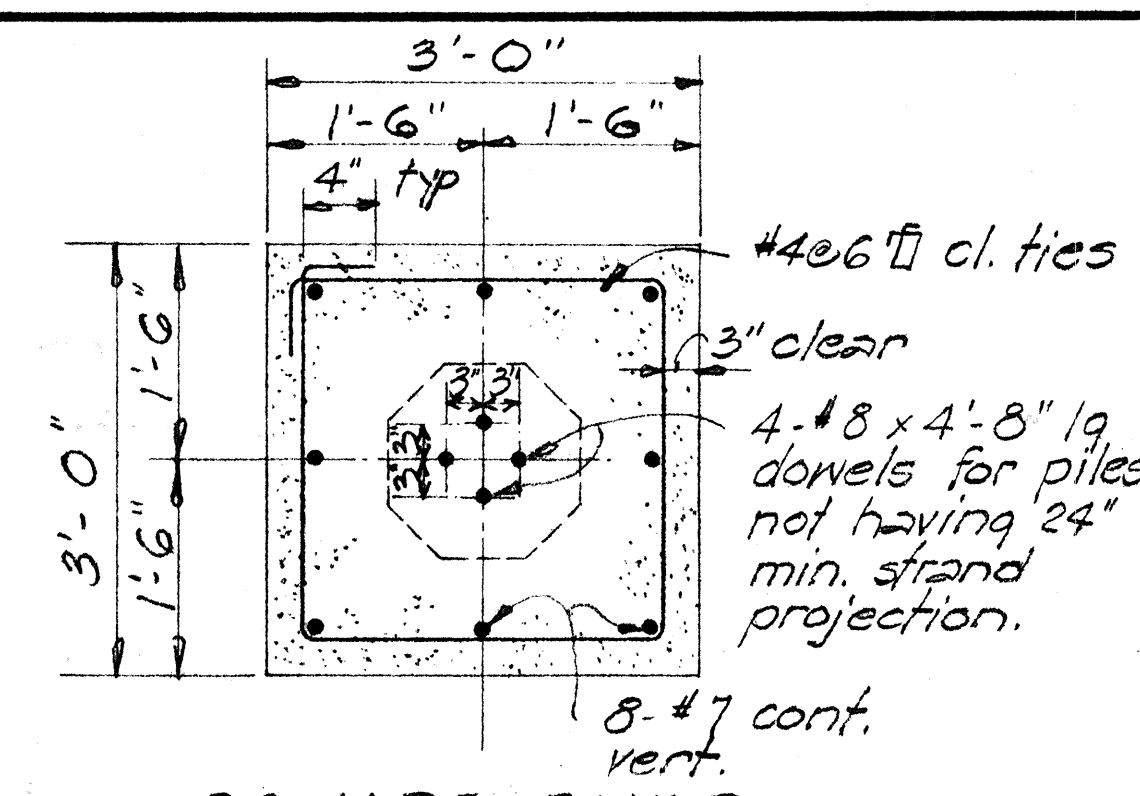
1-23-70
 DATE

1-24-70
 DATE

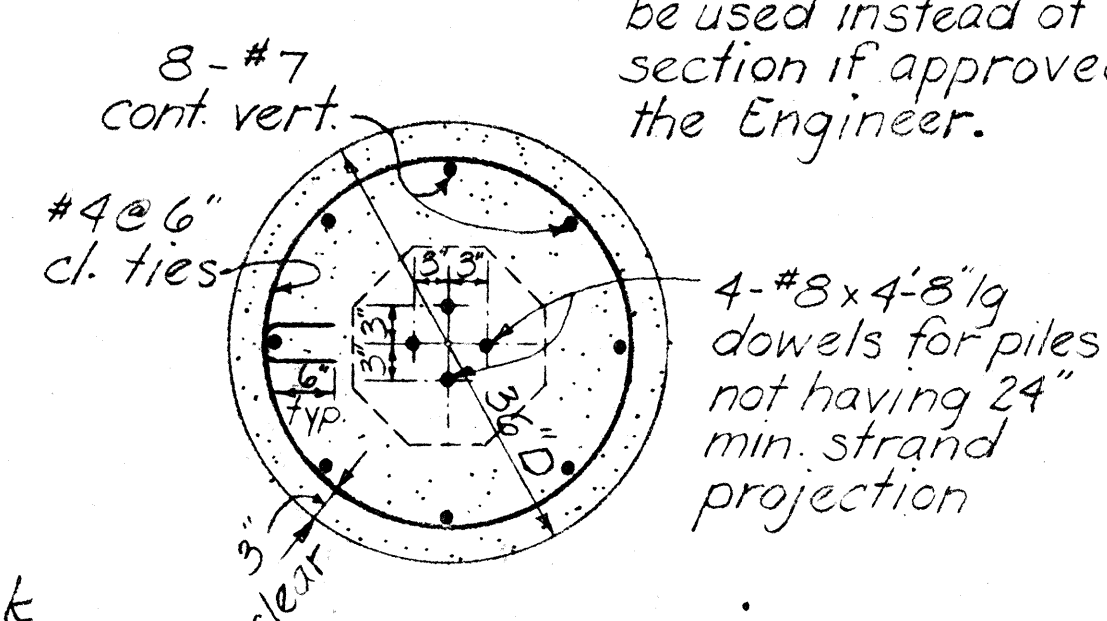
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
STANDARD DETAILS	
METAL GUARD RAIL CONNECTION	
AT VERTICAL FACE TYPE END POST	
Scale: As shown	Date
SHEET No. 56 OF 9 SHEETS DB-204	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H-1(70)13	1972	149	202

2'-6" min. unless otherwise directed by the Engineer.
Remove concrete after driving, leaving reinf. exposed.
Chamfer - See Typical Pile Detail.

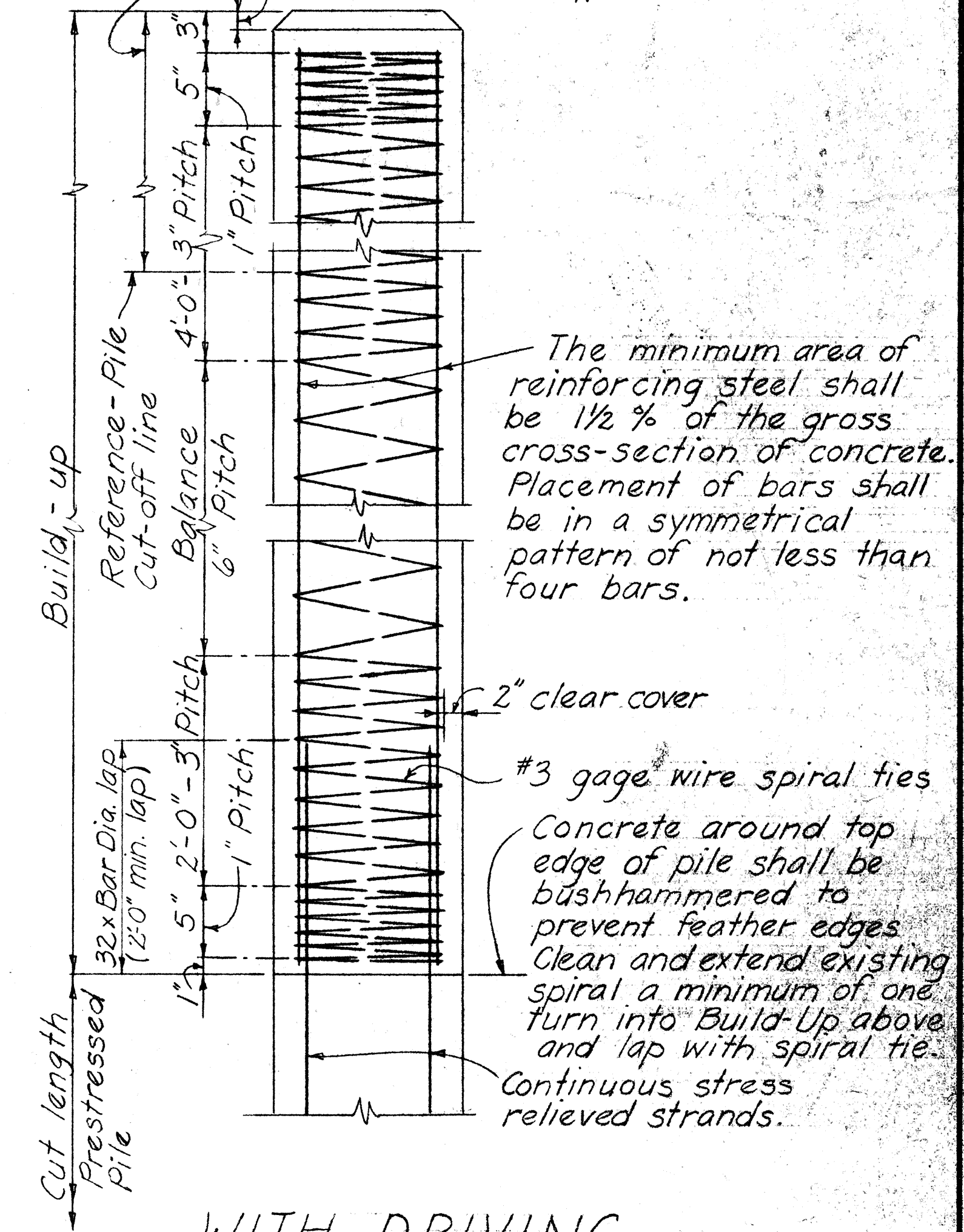


SQUARE BUILD-UP

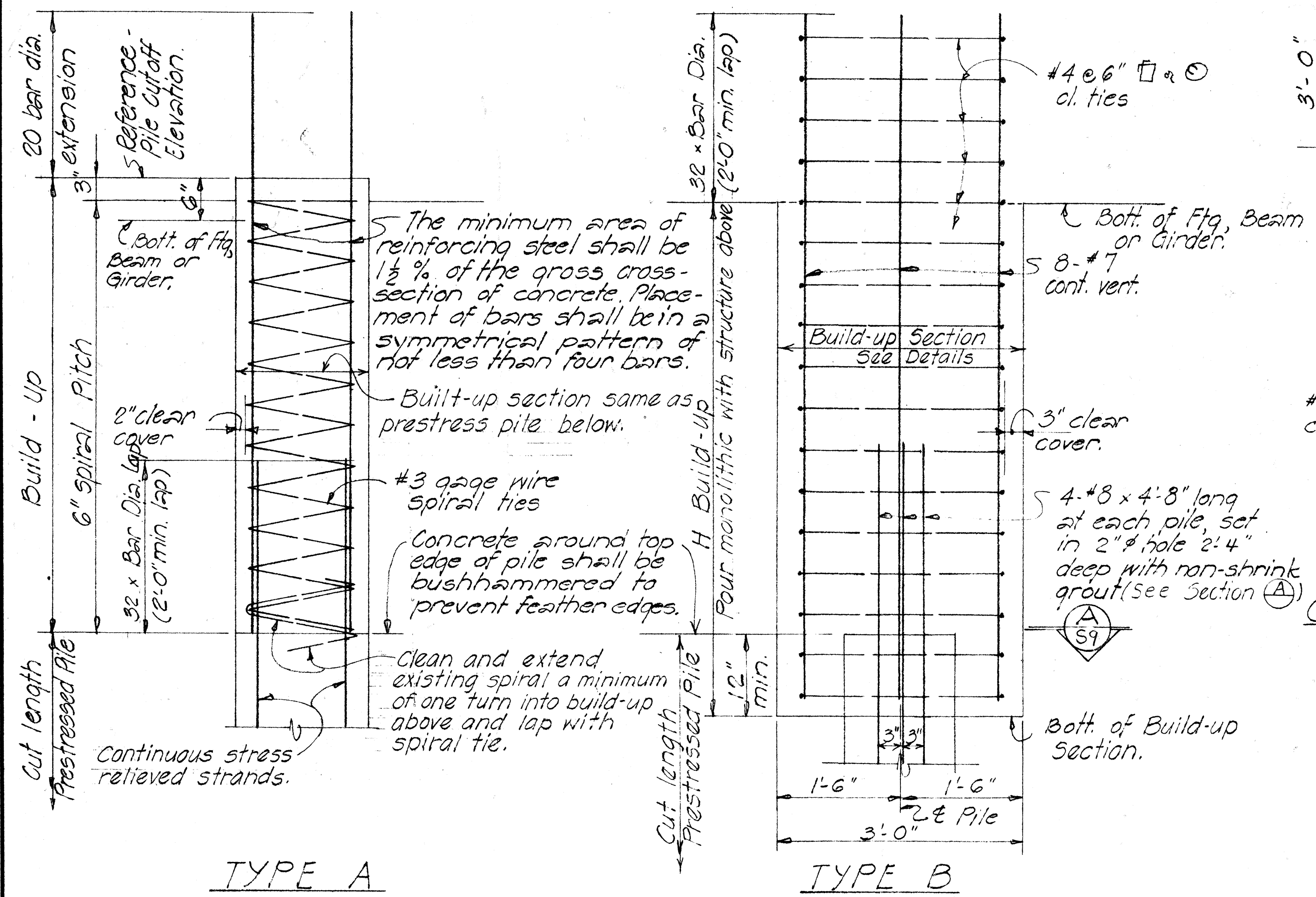


CIRCULAR BUILD-UP SECTION (A) 59

Note:
Circular section may be used instead of square section if approved by the Engineer.



WITH DRIVING
TYPICAL PILE BUILD-UP DETAIL



TYPE A

TYPE B

Notes:
Selection of pile build-up type without driving to be determined by the Engineer.
When height of depressed portion of footing (H) exceeds 4', the depressed section shall be poured separately from the main body of the footing.
Depressed portion of footing may be omitted for pile heads embedded at least 4" into footing provided at least 90% of the piles in each footing have the minimum embedment into footing as shown in contract plans.

WITHOUT DRIVING
TYPICAL PILE BUILD-UP DETAILS

GENERAL NOTES

1. Work of cutting off prestressed conc. piles or concrete build-ups shall be performed in such a manner as to avoid spalling or damaging the pile below cut-off. In case of such damage, the pile shall be replaced or repaired by the Contractor at his expense as directed by the Engineer.
2. Portion of pile embedded into footing shall be of sound concrete. Damaged portions shall be removed and pile cut-off elevation lowered as required by the Engineer.

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED:
Paul T. Yamashita
BRIDGE DESIGN ENGINEER 1-23-70
DATE

APPROVED
Paul T. Yamashita
ASSISTANT CHIEF, ENGINEERING 1-28-70
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
PRESTRESSED CONCRETE PILES
Date: Oct. 1968

DESIGNED BY	DATE
CHECKED BY	
NOTED BY	
ORIGINAL PLAN	
NO.	