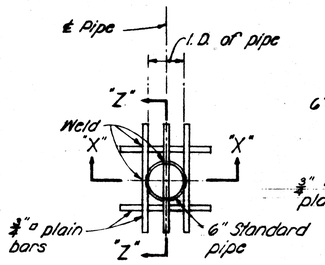
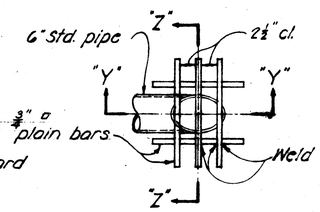
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	S-0330(2)	1967	34	47

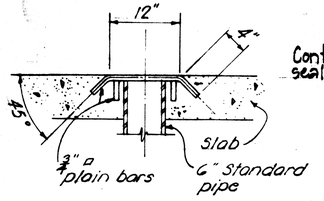
REVISION
Jan. '67
Feb. '67



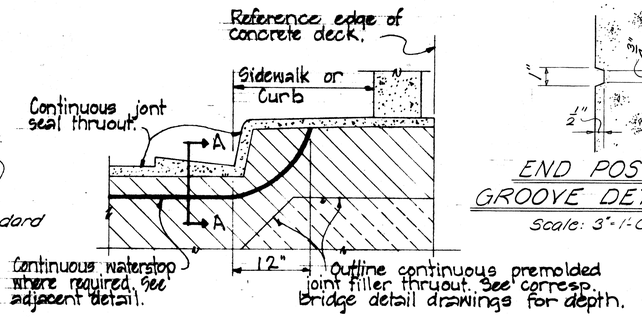
PLAN



PLAN

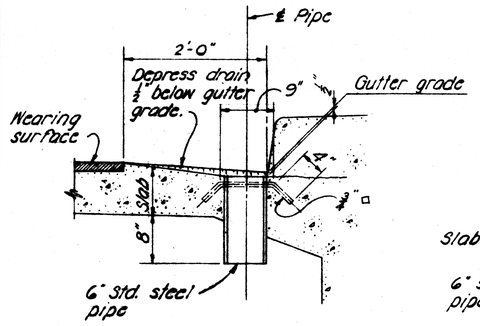


SECTION "Z-Z"



ELEVATION

END POST GROOVE DETAIL
Scale: 3"-1'-0"



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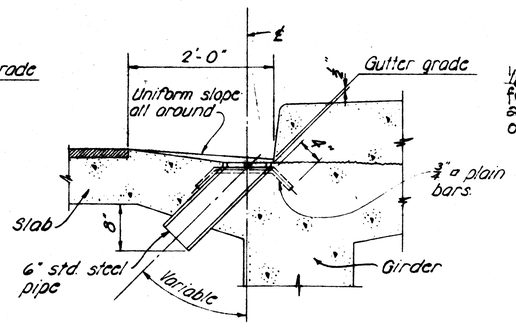

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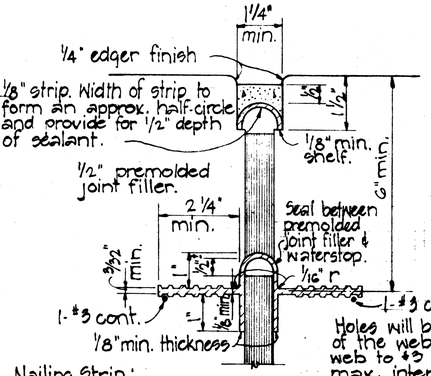


SECTION "A-A"

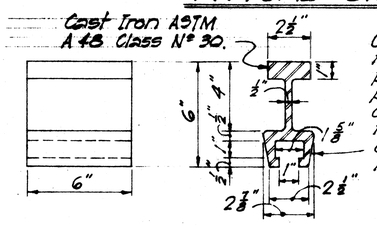
Waterstop to have 5 or more pairs of raised ribs to provide 0.1 sq. in. min. rib cross-section area on each half of the waterstop. Height of ribs to be 3/32" min.

Holes will be permitted in the outer ½" of the web for wires, rings, etc. Tie web to #3 reinforcing bars at 12" max. intervals to support the waterstop in proper position during concrete placement. Alternative detail may be submitted for approval of the Engineer.

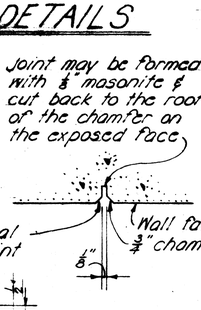
TYPICAL EXPANSION JOINT DETAIL

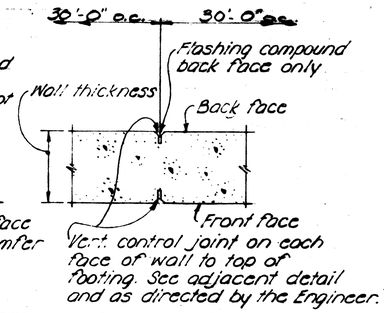
NOTE:
Metal drains shall be considered incidental to Class A-1 Concrete in both concrete and steel bridges and will not be paid for separately.
Assemblage of grillage and pipe shall be hot-dip galvanized after all welding is completed.

TYPICAL DRAINAGE DETAILS



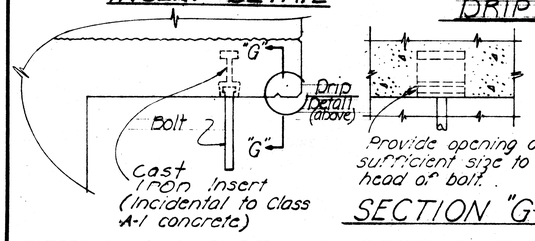
Contractor to take proper precautions to prevent the concrete from flowing into the opening of the inserts.





DRIP DET.

CONTROL JOINT DETAIL



INSERT DETAIL

Provide opening of sufficient size to insert head of bolt.

SECTION "G-G"

DETAIL of PIPE HANGERS & INSERTS

3"

NAME

Use correct name of bridge

½"

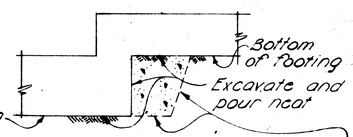
DATE

Date of Year built

Depressed "V" letters ¾" deep

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.

TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST



NOTE: In case of over excavation, the contractor shall backfill this area with minimum class D-1 concrete at his own expense.

TYPICAL EXCAVATION FOR CONTINUOUS FOOTING STEP-UP

GENERAL NOTES

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. - 1½" 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 2½ times the diameter of bars, but in no case shall the clear distance between the bars be 1½ 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 ¾" x ¾". 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. Neoprene Pads: The neoprene pads shall be secured against displacement by adhesives. The adhesive shall be approved by the Engineer.
16. Neoprene pads are incidental to concrete and will not be paid for separately.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD BRIDGE DETAILS

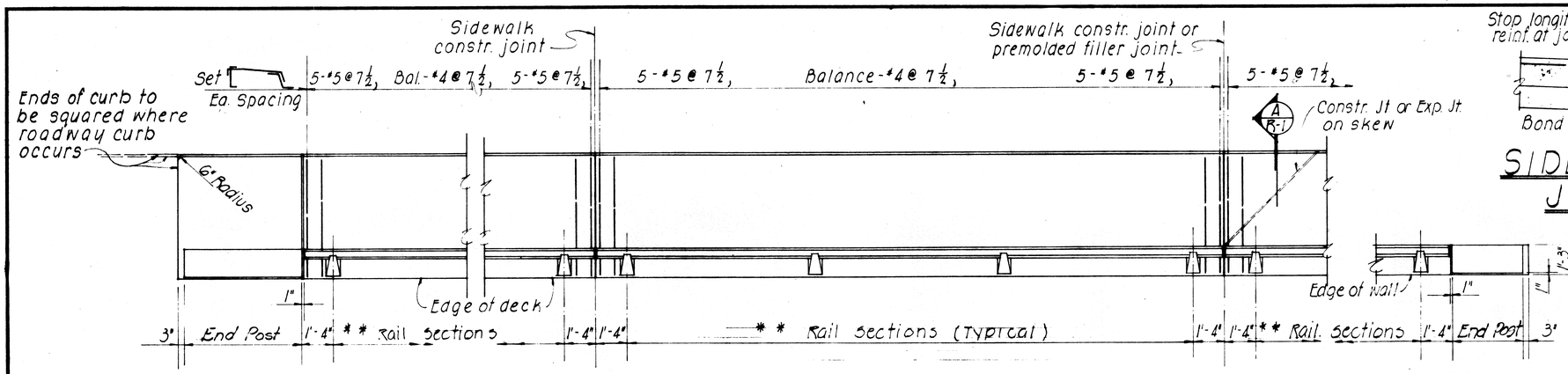
PROJ. NO. S-0330 (2)

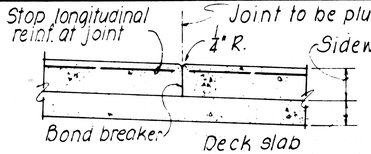
Scale as Noted Date: Nov., 1966

SHEET No. OF SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	S-0330(2)	1967	35	47



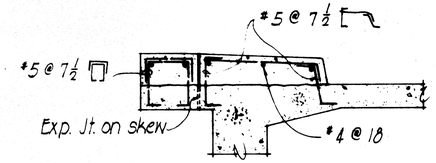


SIDEWALK CONSTR. JT. DETAIL

SCALE: ½" = 1'-0"

NOTE!
Details shown on this sheet are standard details except for modifications as may be required for special conditions. For such conditions, refer to corresponding details shown on the plans.

REVISION
28 Mar 67



SECTION A R-1 AT SKEW

SCALE: ½" = 1'-0"

AT BRIDGE 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

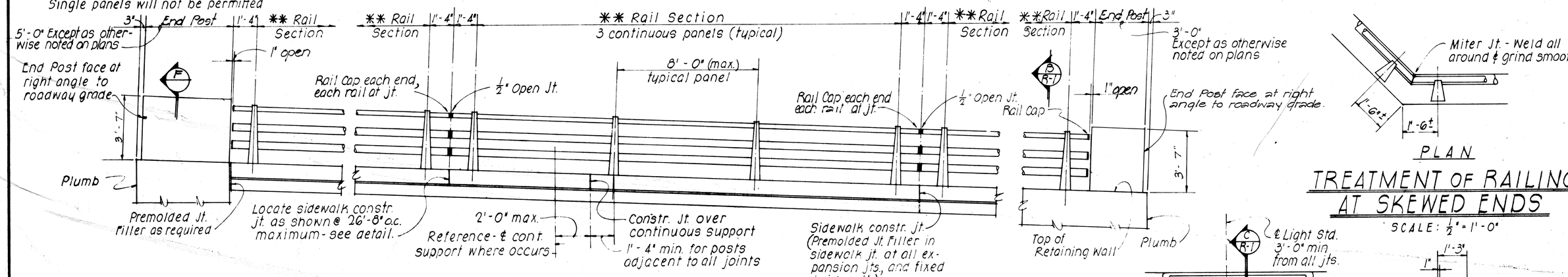
INTERMEDIATE

RAILING PLAN

SCALE: ⅜" = 1'-0"

AT RETAINING WALL END POST

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



PLAN

TREATMENT OF RAILING AT SKEWED ENDS

SCALE: ½" = 1'-0"

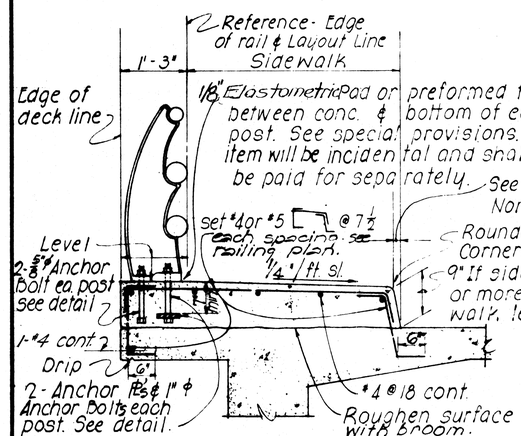
AT BRIDGE END POST

INTERMEDIATE

EXTERIOR RAILING ELEVATION

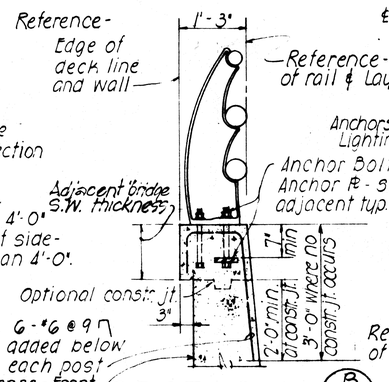
SCALE: ⅜" = 1'-0"

AT RETAINING WALL END POST



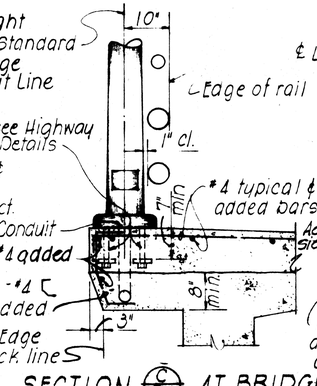
TYPICAL SECTION

SCALE: ¾" = 1'-0"

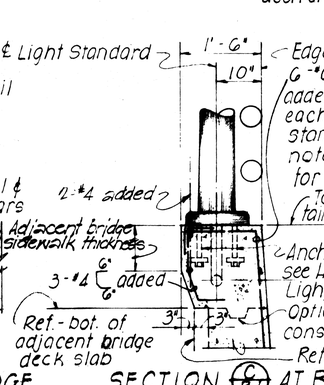


SECTION B R-1

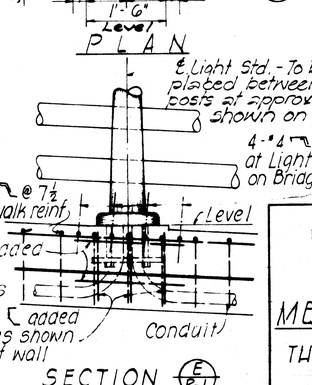
SCALE: ¾" = 1'-0"



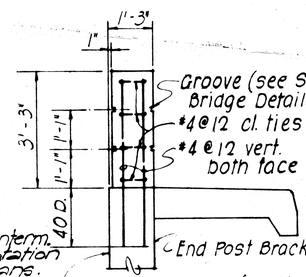
SECTION C R-1 AT BRIDGE



SECTION C R-1 AT RET. WALL



SECTION E R-1



SECTION F R-1

SCALE: ½" = 1'-0"

DETAILS OF RAILING AT LIGHT STANDARD

SCALE: ¾" = 1'-0

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS METAL BRIDGE RAILING

THREE RAIL COMBINATION TYPE

Proj. No. S-0330(2)

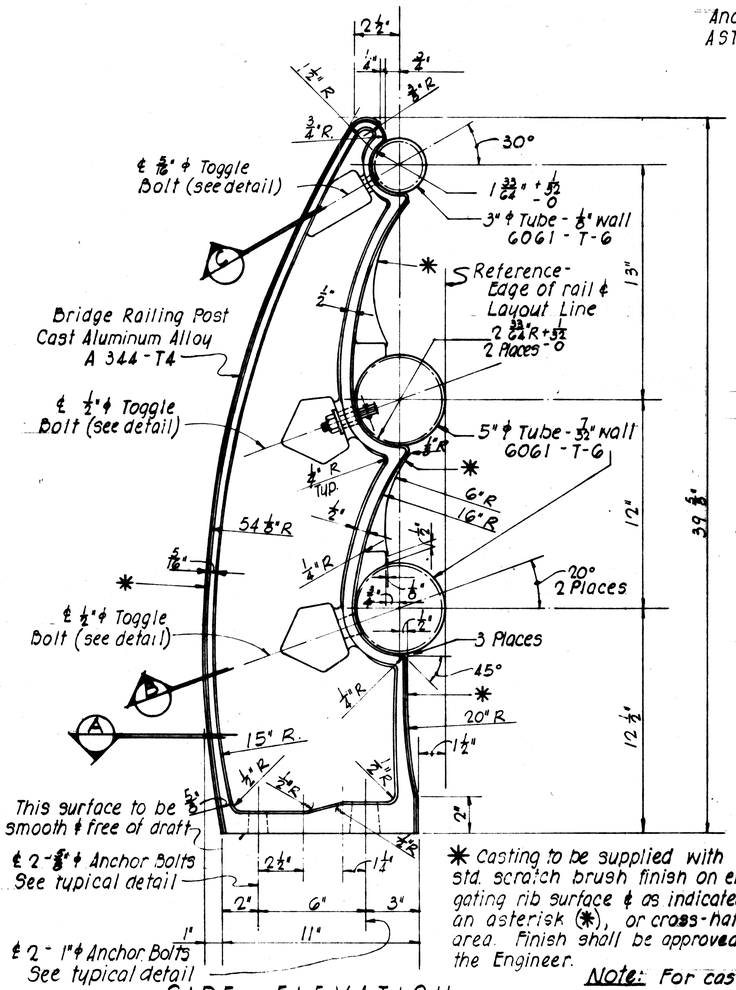
Scale as Noted Date: April, 1967

SHEET No. 32 OF 3 SHEETS

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

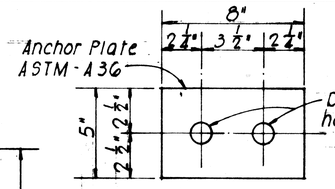
PRINTED ON NO. 10001 CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	S330(2)	1967	30	47



SIDE ELEVATION

✱ Casting to be supplied with a std. scratch brush finish on entire gating rib surface & as indicated by an asterisk (✱), or cross-hatched area. Finish shall be approved by the Engineer.

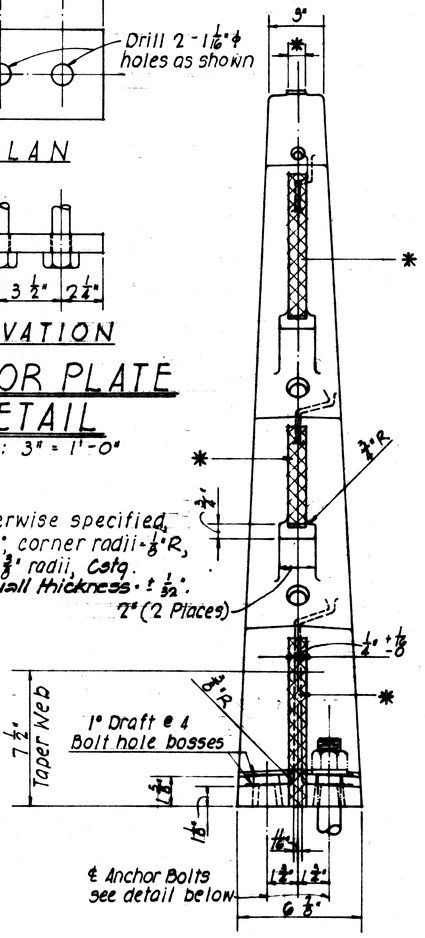


ANCHOR PLATE DETAIL

SCALE: 3" = 1'-0"

NOTE!!

Unless otherwise specified, Dft. angles - 3°, corner radii - ⅜"R, Fillet radii - ⅜" radii, Cstg. tol. - ± 1/16", & wall thickness - ± 1/32".

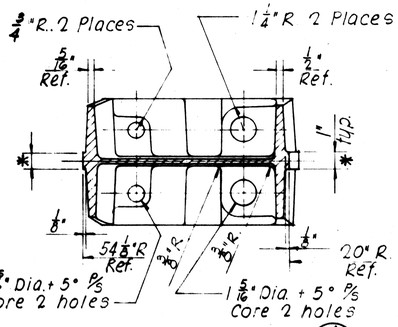


END ELEVATION

Note: For cast post specifications, see Special Provisions.

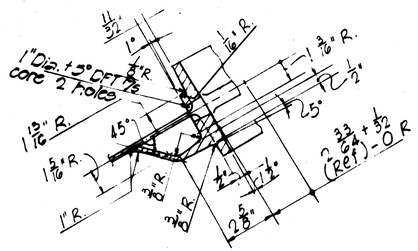
TYPICAL RAIL POST DETAILS

SCALE: 3" = 1'-0"



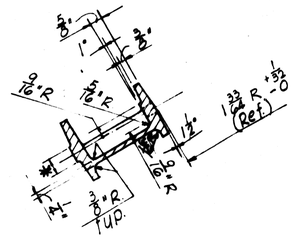
SECTION (A)

SCALE: 3" = 1'-0"



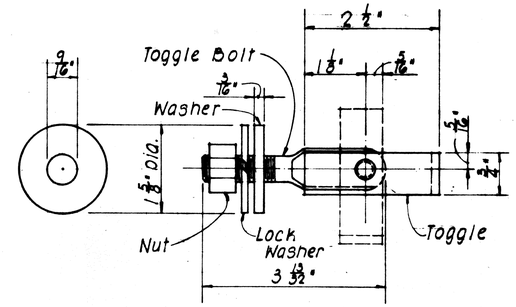
SECTION (B)

SCALE: 3" = 1'-0"



SECTION (C)

SCALE: 3" = 1'-0"



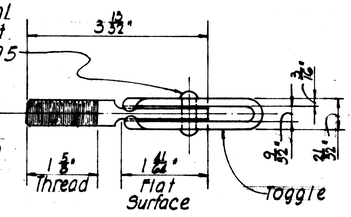
WASHER SIDE ELEVATION ASSEMBLAGE

NOTE!!

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

NOTE!!

1" dia. bolt washer size 2½" O.D. x 1 1/16" I.D. x 11/64" thick.
⅞" dia. bolt washer size 1¾" O.D. x 11/16" I.D. x 7/64" thick



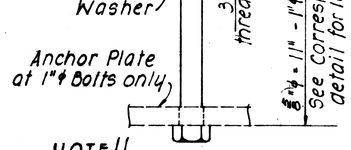
TOP PLAN

½"ϕ TOGGLE BOLT DETAIL

SCALE:

NOTE!!

Toggle Bolt Material - ½" - 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 - A 303.
Washer Material - SAE 1020 H.R. steel plates. A.S.T.M - A-7 Break sharp edges.
Nut - ½" - 13 Amer. hex. nut - Heavy Mat'l. 1035 C.R. Stl. - Heat treated ASTM A 325
Cadmium plating on steel - Type N.S. .0005 thick ASTM - A165. (All parts)
For cast post specifications, see special provisions.

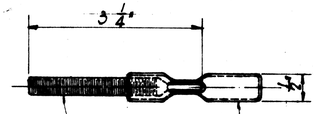


NOTE!!

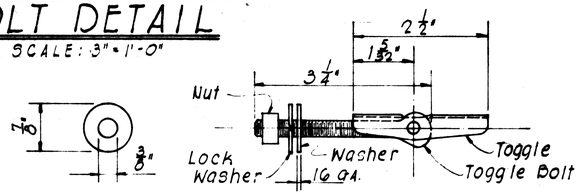
1"ϕ ⅞"ϕ Galvanized Steel ASTM-A-325-58T Anchor Bolts.

TYPICAL ANCHOR BOLT DETAIL

SCALE: 3" = 1'-0"



TOP PLAN



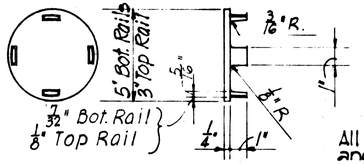
WASHER SIDE ELEVATION ASSEMBLAGE

5/16"ϕ TOGGLE BOLT DETAIL

NOTE!!

Toggle Bolt Mat'l. - 5/16" - 18 N.C. SAE 1020 C.R. Steel unannealed after forming
Toggle Mat'l. - H.R. steel pickled and oiled
Washer Mat'l. - C.R. steel (1020)
Nut Mat'l. - 5/16" - 18 N.C. Amer. std. hex. nut cold punched (1020 stl)
Cadmium plating on steel. Type N.S. .0005 thick - ASTM - A165. (All Parts)

General Note: Metal bridge railing shown is for aluminum bridge railing. See Special Provisions for alternate railing in steel.



RAIL CAP DETAIL

SCALE: 3" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

METAL BRIDGE RAILING

THREE RAIL COMBINATION TYPE

Proj. No. S-0330(2)

Scale as Noted Date: April, 1967

SHEET No. 33 OF 3 SHEETS

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

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33 (6)