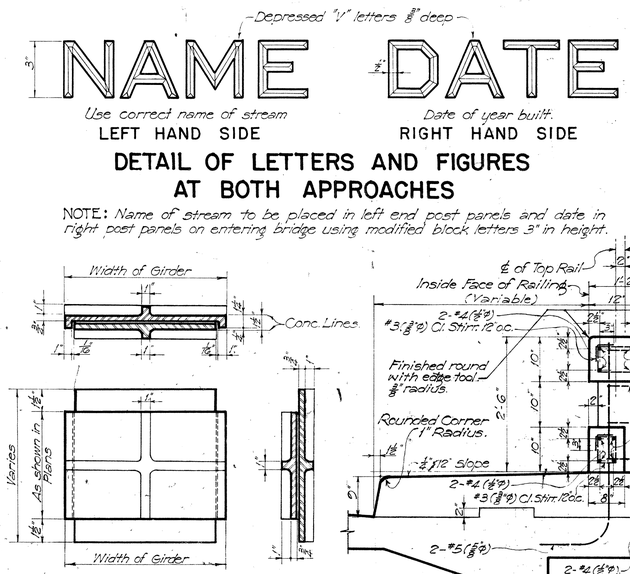
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
Hawaii	Haw.	F-47(4)	1952	20	48



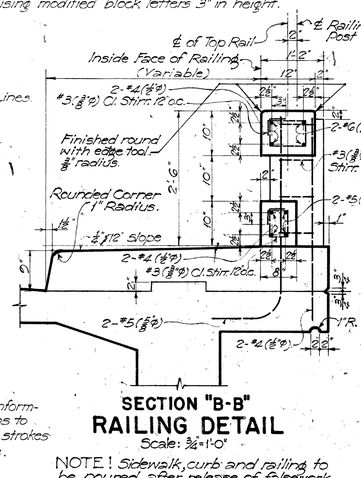
DETAIL OF LETTERS AND FIGURES AT BOTH APPROACHES

NOTE: Name of stream to be placed in left end post panels and date in right post panels on entering bridge using modified block letters 3" in height.

EXPANSION PLATES

Scale: 1½"=1'-0"

NOTE! Plates to be made of Bronze conforming to A.S.T.M., B22, Class C. Contact areas to have medium planed finish with finishing strokes parallel to longitudinal direction of bridge.



SECTION "B-B"
RAILING DETAIL

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

NOTE! Sidewalk, curb and railing to be poured after release of falsework. Forms for railing and endpost to be made of plywood.

SURFACE FINISH: The surface of the concrete railings shall be given a Class 2 Rubbed Finish as specified under Subarticle 51.3 (C)(2) of Section 51 Concrete of the Standard Specifications.

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 railing and pipe shall be hot-dip galvanized after all welding is completed.

GENERAL NOTES

CONCRETE: Class of concrete to be used in different parts of the structure are as noted on the plans.

REINFORCING STEEL: All reinforcing steel shall be Billet Steel Bars A.S.T.M. A 15 intermediate grade, or Rail Steel Bars A.S.T.M. A 16. Steel shall be made by the open-hearth process. Deformations shall conform to A.S.T.M.-A 305.

Splicing of reinforcing other than in main deck slab, girder and frame bars shall be done as shown in above sketch except where shown otherwise. Splices are to be staggered. Splices in main girder and frame bars are permitted only in bars exceeding 60'-0" in length at points to be indicated by the Engineer. These splices to be electrically arc welded according to detail and specifications. No allowance will be made in the quantities for extra weight of steel required for splices not shown on the plans.

Minimum spacing between parallel bars shall be 2½ times the diameter of round or 3 times the side dimension of square bars, but in no case shall the clear distance between the bars be less than 1⅓ times the maximum size of the coarse aggregate.

Minimum covering, measured from the surface of the concrete to the face of any reinforcing bar, shall be not less than 2 inches except in slabs where the minimum covering shall be 1 inch. In the footings of abutments and retaining walls, and in piers the minimum covering shall be 3 inches. In work exposed to the action of sea water the minimum covering shall be 4 inches except in precast concrete piles where a minimum of 3" may be used.

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

CONSTRUCTION JOINTS: All construction joints to have surface roughened and 1:2 cement grout applied immediately before the second pour. Construction joints to be located at places indicated in the plans.

WATERPROOFING:

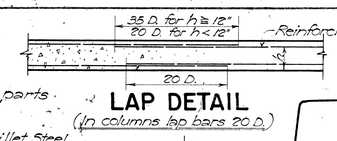
(1). Mop surface either side of joint as required with asphalt 50-100 penetration (A.S.T.M. Desig. D 5-25) applied at 200°F.

(2). Apply one layer of 55# Composition Roofing to hot asphalt.

(3). Mop surface of composition roofing and 3" beyond all around with thick coat of asphalt as specified under (1).

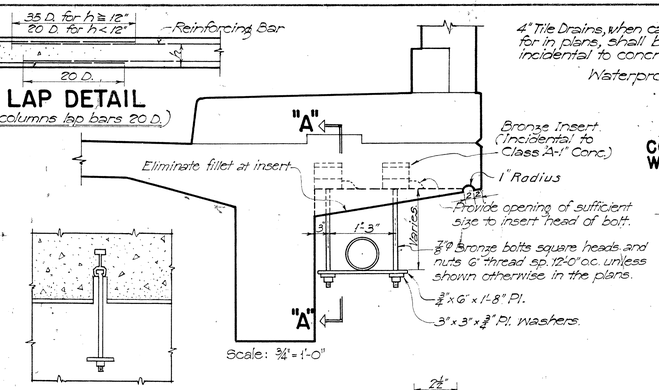
The above work is incidental to concrete and will not be paid for separately.

DAMP PROOFING: Apply damp proofing as specified in Section 66 of the Standard Specifications.



LAP DETAIL

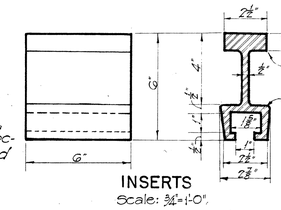
(In columns lap bars 20 D.)



SECTION "A-A"

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

JOINT FILLER: Joint filler, when called for in plans, shall be incidental to concrete and will not be paid for separately.

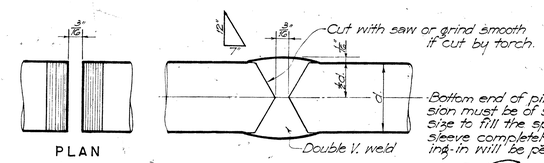


INSERTS

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

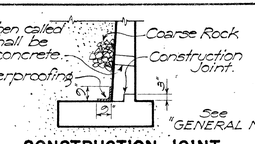
DETAIL OF PIPE HANGERS AND INSERTS

NOTE! Inserts, bolts, plates, nuts & washers to be Bronze conforming to A.S.T.M. Designation B 22 and shall be Class "D" grade.



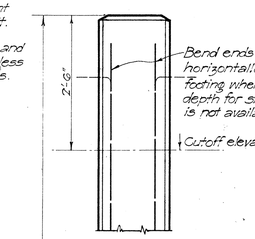
REINFORCING BAR SPLICE

Scale: Full Size

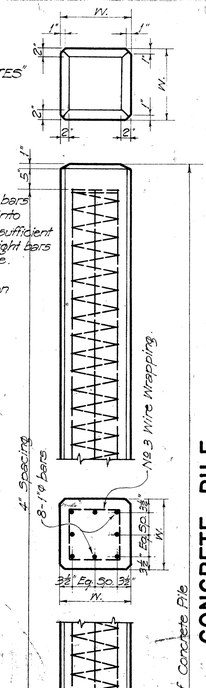


4" Tile Drains, when called for in plans, shall be incidental to concrete.

CONSTRUCTION JOINT, WATERPROOFING AND WEEPHOLES.

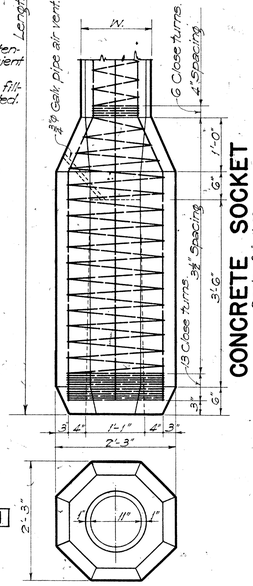


PILE CUTOFF



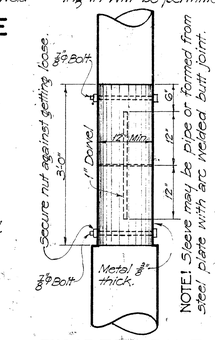
CONCRETE PILE
DETAIL OF

W. = Size of pile.



CONCRETE SOCKET

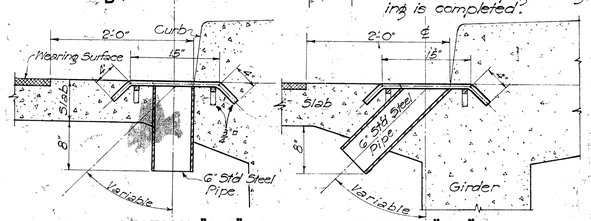
Scale: 3/4"=1'-0"



NOTE! Sleeve may be Pipe or formed from steel plate with arc welded butt joint.

TIMBER PILE SPLICE

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

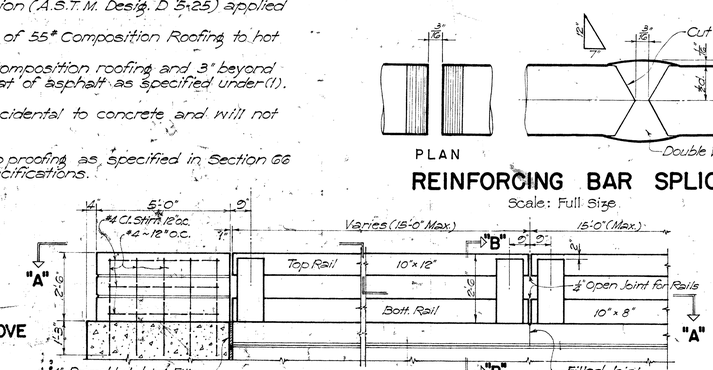


SECTION "A-A"

SECTION "A-A"

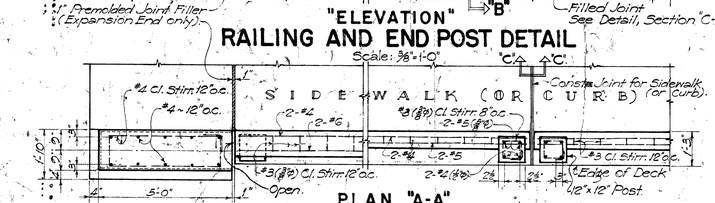
DRAINAGE DETAIL

Scale: 1"=1'-0"



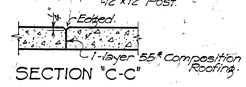
"ELEVATION"
RAILING AND END POST DETAIL

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

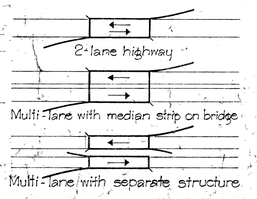


PLAN "A-A"

TOP RAIL ~ Bottom forms for top rails shall be kept in place a minimum of 14 days from date of pour.



SECTION "C-C"



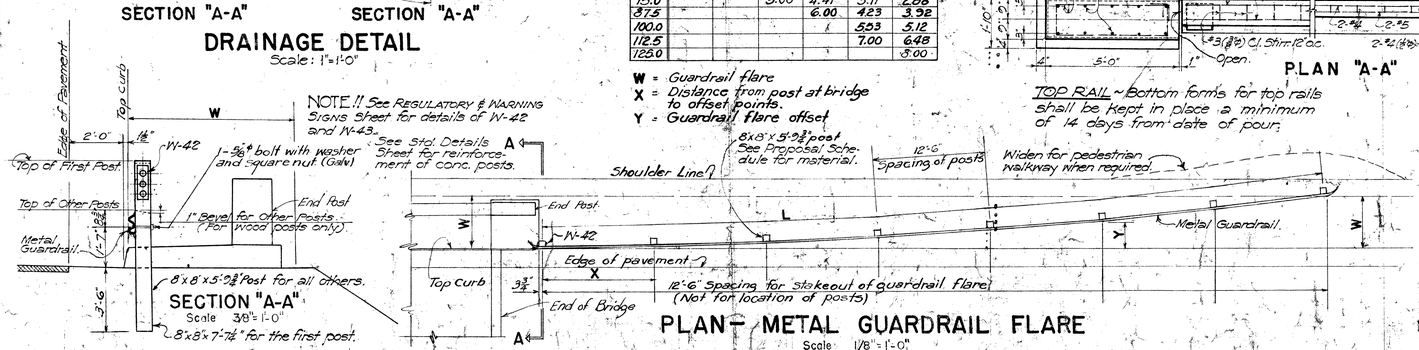
GUARDRAIL OFFSET

X	Y W=3'	W=4'	W=5'	W=6'	W=7'	W=8'
12.5	0.19	0.16	0.14	0.12	0.09	0.08
25.0	0.75	0.64	0.55	0.49	0.35	0.32
37.5	1.69	1.44	1.25	1.10	0.78	0.72
50.0	3.00	2.56	2.22	1.96	1.38	1.28
62.5		4.00	3.47	3.06	2.16	2.00
75.0			5.00	4.41	3.11	2.88
87.5				6.00	4.23	3.92
100.0					5.53	5.12
112.5					7.00	6.48
125.0						8.00

W = Guardrail flare

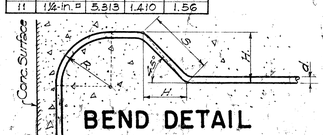
X = Distance from post at bridge to offset points.

Y = Guardrail flare offset



PLAN — METAL GUARDRAIL FLARE

Scale 1/8"=1'-0"



BEND DETAIL

REINF. BAR DESIGNATION				
BAR NO.	FORMER DESIG.	LBS./FT.	DIAM. IN.	AREA IN²
2	¼-in.ø	0.167	0.250	0.05
3	⅜-in.ø	0.376	0.375	0.11
4	½-in.ø	0.668	0.500	0.20
5	⅝-in.ø	1.043	0.625	0.31
6	¾-in.ø	1.502	0.750	0.44
7	⅞-in.ø	2.044	0.875	0.60
8	1-in.ø	2.670	1.000	0.79
9	1-in.□	3.400	1.128	1.00
10	1⅛-in.□	4.303	1.270	1.27
11	1¼-in.□	5.313	1.410	1.56

TERRITORIAL HIGHWAY DEPARTMENT

TERRITORY OF HAWAII

STANDARD BRIDGE DETAILS

Scales as Noted

APPROVED BY: _____ TERRITORIAL HIGHWAY ENGINEER

SHEET No. OF SHEETS

5479.20

DRAWN BY	R. Kawamura
TRACED BY	" "
QUANTITIES BY	" "
QUANTITIES CHECKED BY	" "
CHECKED BY	" "
NOTE BOOK No.	
PLAN	Mar. 1952