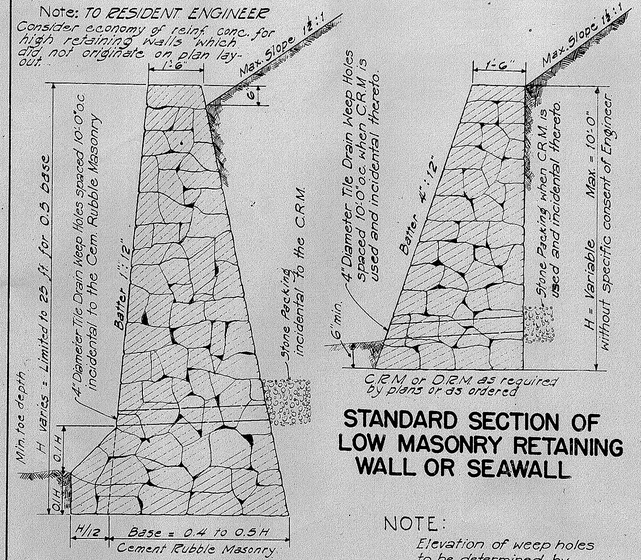
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
Hawaii	Hawn.	SDR-3(46)	1951	9	85

Note: TO RESIDENT ENGINEER
Consider economy of reinf. conc. for high retaining walls which are not originate on plan lay-out.



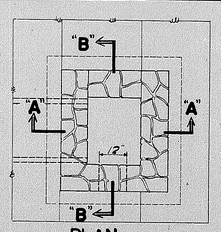
STANDARD SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL

STANDARD SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL

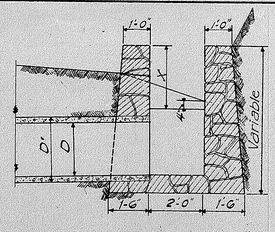
NOTE:
Elevation of weep holes to be determined by Resident Engineer. Holes to be placed as close to the existing ground line as local conditions permit.

Data Standard Masonry Drop Intake				Where Variable Equals
D'	D	L = D+6"	Cu.Yds	
22½"	18"	2'-0"	2.41	4'-6"
29"	24"	2'-6"	2.89	5'-0"
35½"	30"	3'-0"	3.38	5'-6"
42"	36"	3'-6"	3.92	6'-0"

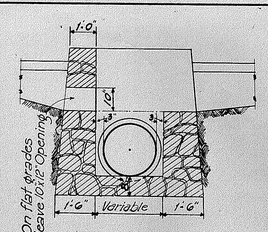
NOTE: Dimension "X" is assumed as 2'-4" in figuring the above quantities.



PLAN



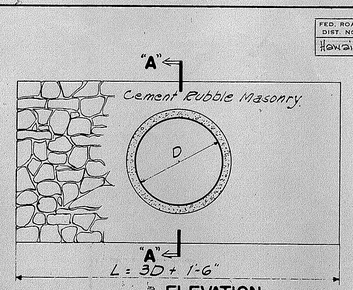
SECTION "A-A"



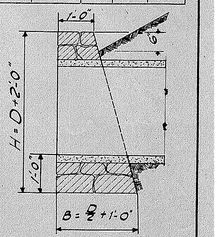
SECTION "B-B"

STANDARD MASONRY DROP INTAKE

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



ELEVATION



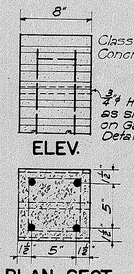
SECTION "A-A"

Cast-in-Place	Precast	Data-Standard Rubble Masonry H.W.				
Cu. Yds.	Cu. Yds.	D	H	B	L	C.Y. one H.W.
0.85	0.95	18"	3'-6"	1'-0"	6'-0"	0.93
1.23	1.45	24"	4'-0"	2'-0"	7'-6"	1.41
1.83	2.06	30"	4'-6"	2'-3"	9'-0"	2.00
2.49	2.84	36"	5'-0"	2'-6"	10'-6"	2.72

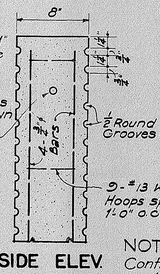
NOTE: Volume for one head wall is for corrugated pipe culvert

STANDARD MASONRY HEADWALL

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



PLAN SECT.



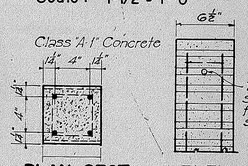
SIDE ELEV.

CONC. GATE POST

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

NOTE:
Conc. Gate Posts are required wherever gates are installed in or at the end of Std Wire Fence with Conc. Posts.

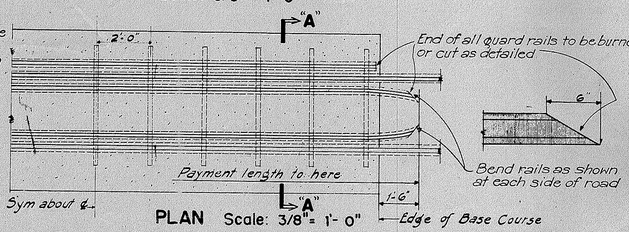
NOTE:
Contractor may either cast holes for fastening fence wire or cast post with ¾" ϕ round grooves on 2 sides.



PLAN SECT. ELEV. SIDE ELEV.

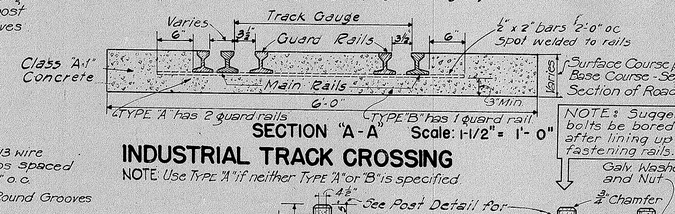
CONC. FENCE POST

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



NOTE:
Guard rails are to be of the same shape and weight as Main rails. Details may be varied to suit conditions in field

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

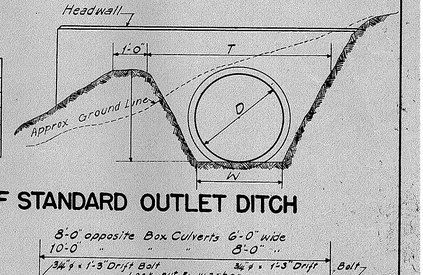


SECTION "A-A" Scale: 1-1/2" = 1'-0"

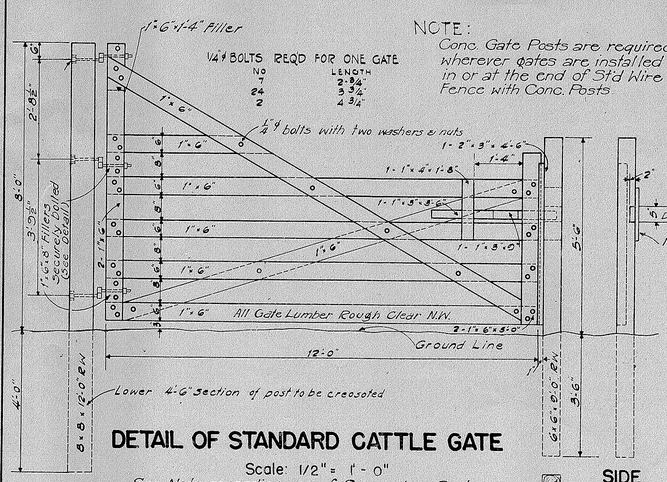
INDUSTRIAL TRACK CROSSING

NOTE: Use TYPE "A" if neither TYPE "A" or "B" is specified.

Data-Standard Outlet Ditch			
D	W	H	T = W + H
18"	24"	2'-0"	4'-0"
24"	24"	2'-0"	4'-0"
30"	30"	2'-0"	5'-0"
36"	36"	3'-0"	6'-0"



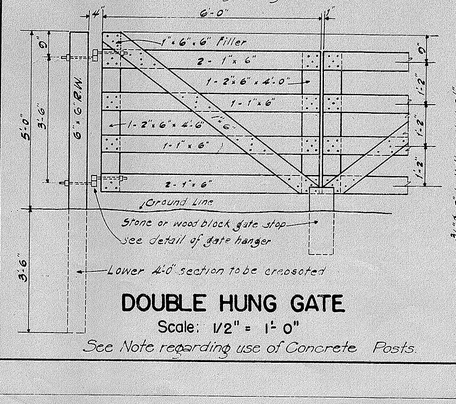
DETAIL OF STANDARD OUTLET DITCH



DETAIL OF STANDARD CATTLE GATE

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

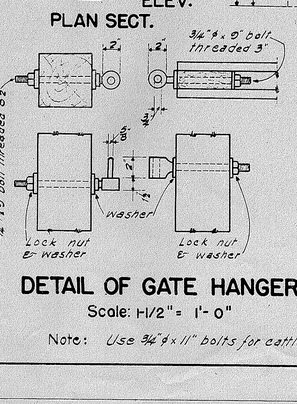
See Note regarding use of Concrete Posts.



DOUBLE HUNG GATE

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

See Note regarding use of Concrete Posts.

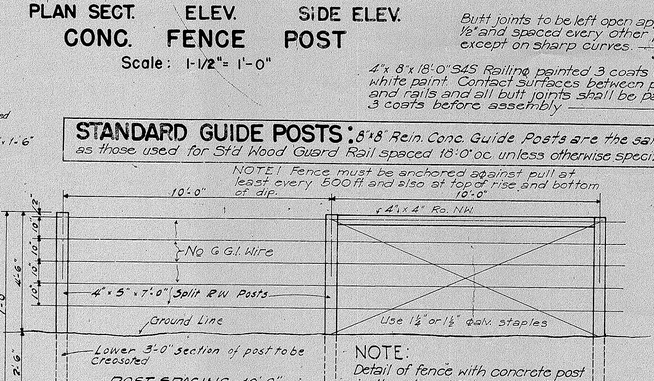


PLAN SECT.

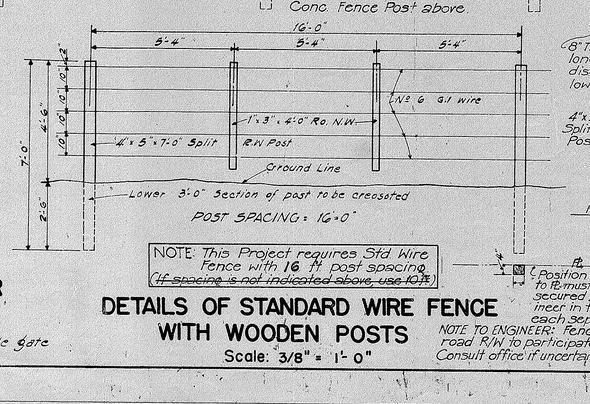
DETAIL OF GATE HANGER

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

Note: Use ¾"ϕ x 11" bolts for cattle gate



NOTE:
Detail of fence with concrete post is the same. See detail of Conc. Fence Post above.



NOTE: This Project requires Std Wire Fence with 16 ft post spacing. ~~(If spacing is not indicated above, use 10 ft)~~

DETAILS OF STANDARD WIRE FENCE WITH WOODEN POSTS

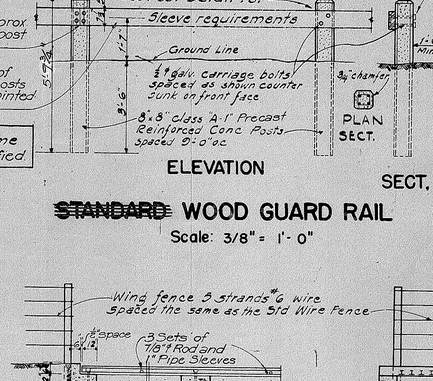
Scale: 3/8" = 1'-0"

Butt joints to be left open approx. ½" and spaced every other post except on sharp curves.

4"x 8"x 18'-0" S4S Railing painted 3 coats of white paint. Contact surfaces between posts and rails and all butt joints shall be painted 3 coats before assembly.

STANDARD GUIDE POSTS: 8"x8" Rein. Conc. Guide Posts are the same as those used for Std Wood Guard Rail spaced 16'-0" oc unless otherwise specified

NOTE: Fence must be anchored against pull at least every 500 ft and also at top of rise and bottom of dip.

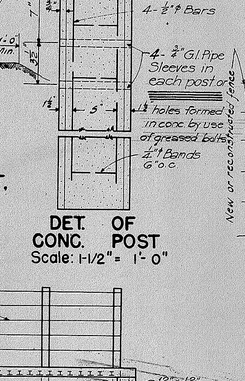


ELEVATION

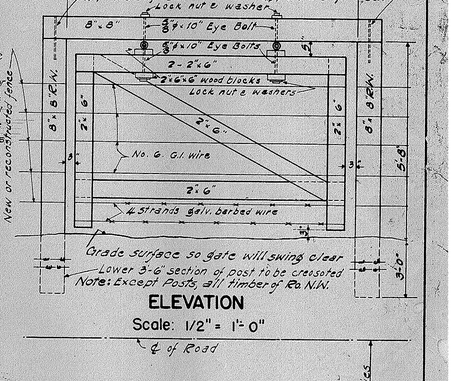
~~STANDARD~~ WOOD GUARD RAIL

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

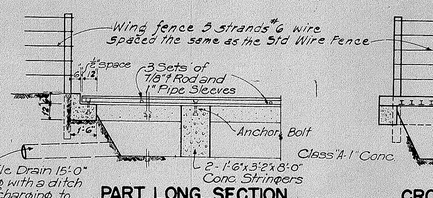
NOTE: Suggest holes in rail for bolts be bored from back of post after lining up and temporarily fastening rails.



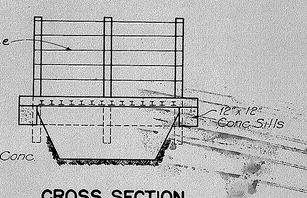
DET. OF CONC. POST
Scale: 1-1/2" = 1'-0"



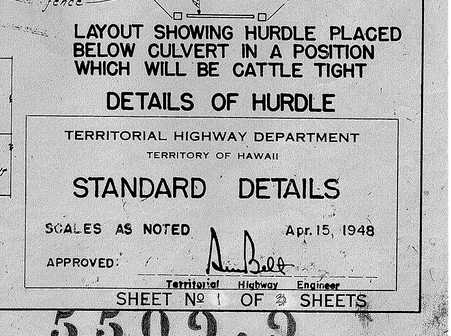
ELEVATION
Scale: 1/2" = 1'-0"



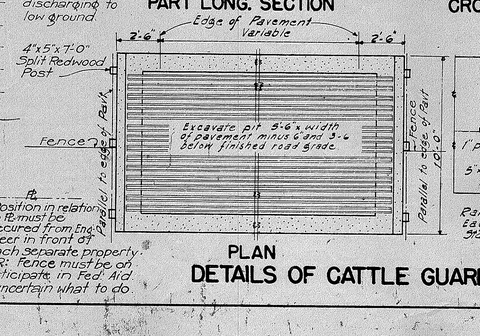
PART LONG. SECTION



CROSS SECTION



LAYOUT SHOWING HURDLE PLACED BELOW CULVERT IN A POSITION WHICH WILL BE CATTLE TIGHT



PLAN

DETAILS OF CATTLE GUARD

Approx. 6¾" oc.
60# Rail
1" pipe sleeve
⅞" Rod
5"x4"x⅜" plate
7/8"ϕ x 10" Anchor Bolt

Rails need not be one piece each. Each rail may be spliced once with 3/4 Fish Plate.

DETAILS OF HURDLE

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

STANDARD DETAILS

SCALES AS NOTED Apr. 15, 1948

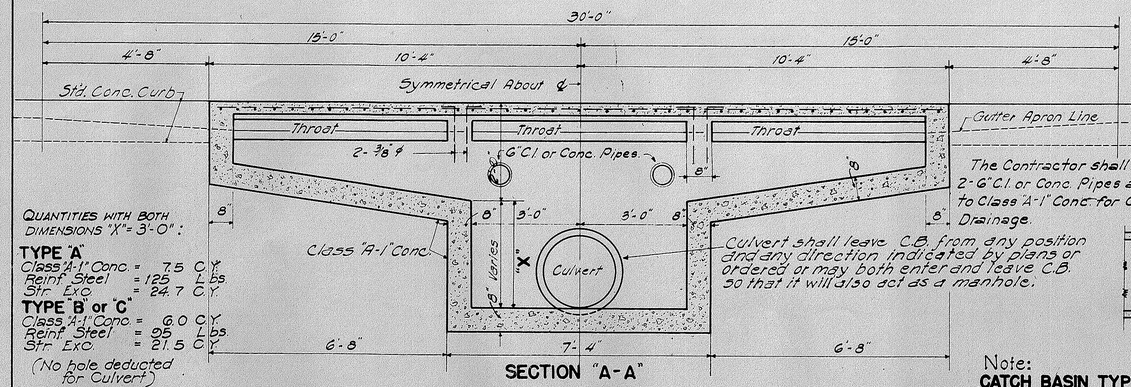
APPROVED: Territorial Highway Engineer

SHEET No. 1 OF 2 SHEETS

ORIGINAL	SURVEYS PLOTTED BY	DATE
PLAN	DESIGNED BY	
	DRAWN BY S.UEMA	
NOTE BOOK	CHECKED BY	
	QUANTITIES BY	
	CHECKED BY	
No.	QUANTITIES CHECKED BY	

5509.9

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	SUE 946(6)	1951	10	85



QUANTITIES WITH BOTH DIMENSIONS "X" = 3'-0":

TYPE "A"

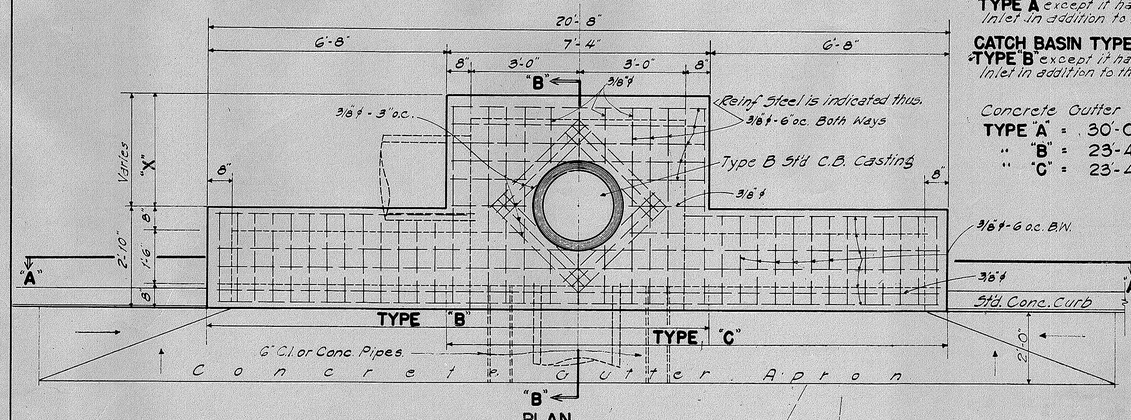
Class "A-1" Conc.	= 7.5	C.Y.
Reinf. Steel	= 125	Lbs
Str. Exc.	= 24.7	C.Y.

TYPE "B" or "C"

Class "A-1" Conc.	= 6.0	C.Y.
Reinf. Steel	= 95	Lbs
Str. Exc.	= 21.5	C.Y.

(No hole deducted for Culvert)

SECTION "A-A"



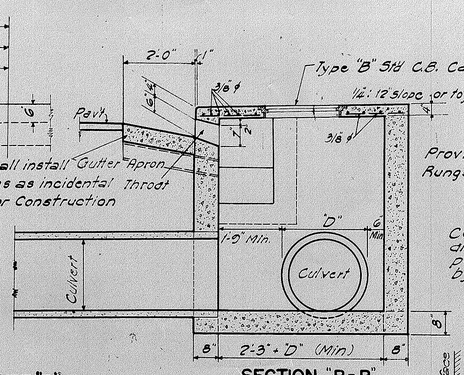
PLAN

Note:
CATCH BASIN TYPE "B" similar to **TYPE "A"** except it has only Left Side Inlet in addition to the Main Box.

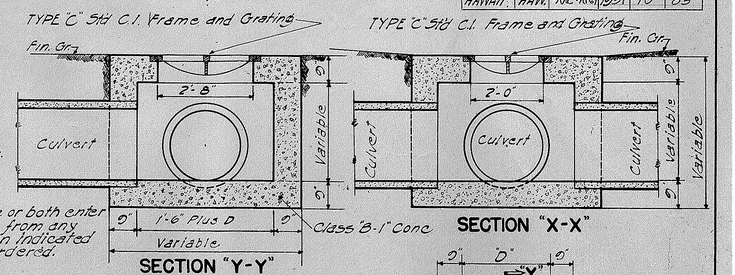
CATCH BASIN TYPE "C" similar to **TYPE "B"** except it has only Right Side Inlet in addition to the Main Box.

Concrete Gutter Apron Length:

TYPE "A"	=	30'-0"
" "B"	=	23'-4"
" "C"	=	23'-4"



SECTION "B-B"



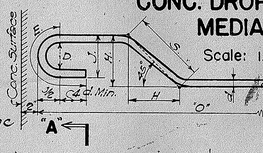
SECTION "Y-Y"

SECTION "X-X"

(NOTE: May also be used in pavement and at other places)

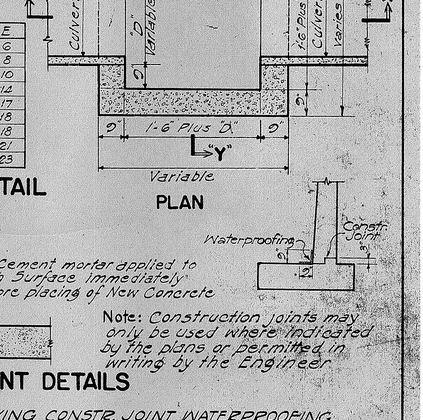
CONC. DROP INTAKE IN MEDIAL STRIPS

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



MARK	SIZE	D	J	J/2	E
300	3/8"	2	2 1/2	1 1/8	6
400	1/2"	2 1/8	3 1/8	1 3/8	8
500	5/8"	3 1/8	4 1/8	2 1/8	10
600	3/4"	5 1/8	7	3 1/8	14
700	7/8"	6 1/8	8 1/8	4 1/8	17
800	1"	7	9	4 1/8	18
800	1'-0"	7	9	4 1/8	18
900	1 1/8"	8	10 1/8	5 1/8	21
1000	1 1/8"	9	11 1/8	5 3/8	23

HOOK AND BEND DETAIL



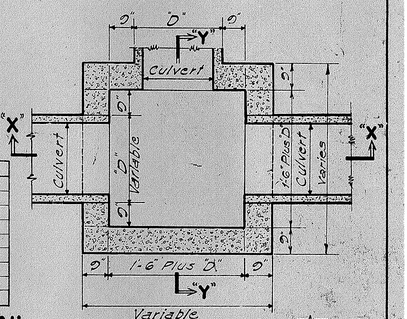
SECTION "A-A"

SECTION "B-B"

CONC. COLLAR FOR CONC. BOX CULVERT

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

Note: Collars of this type shall be used to divide culverts into approximately 30ft lengths.



PLAN

Note: Construction joints may only be used where indicated by the plans or permitted in writing by the Engineer.

CONSTR. JOINT DETAILS

METHOD OF APPLYING CONSTR. JOINT WATERPROOPING

(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.

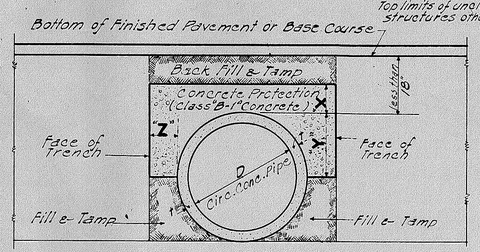
(2.) Apply one layer of 55-lb composition roofing to hot asphalt.

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

STANDARD CONCRETE CATCHBASIN TYPE "A"

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

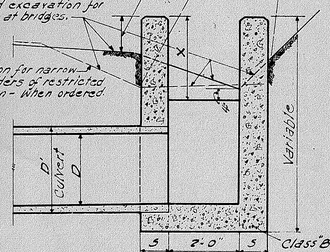
12" unless otherwise ordered.



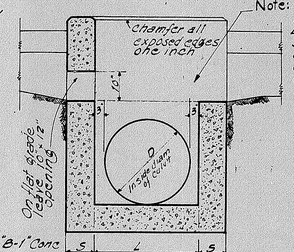
TYP. SECT. OF CULVERT WITH CONC PROTECTION

(To be used when cover is less than 18")

DATA: CONCRETE PROTECTION OVER CULVERTS		
X	Y	Z
6" for 18" D	$\frac{D}{2} + T$	Z must be from pipe to face of trench.
7" " 24" D		
8" " 30" D		Minimum = X
9" " 36" D		
10" " 42" D		Maximum pay quantity will be for Z = 12"
11" " 48" D		
12" " 54" D		

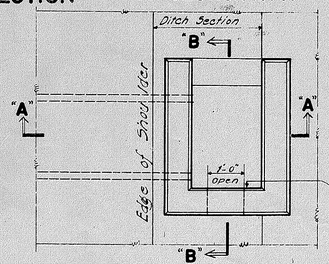


SECTION "A-A"



SECTION "B-B"

Note: This type of structure shall also be used for the drop intakes of syphons connected with irrigation ditches or flumes with appropriate changes to dimensions. In this case all joints must be made water tight.



PLAN

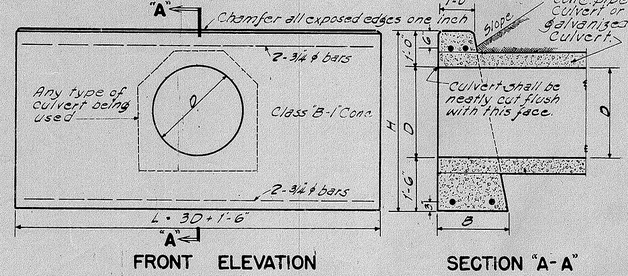
Data: Standard Drop Intake						Where Variable Equals
D"	D	L=D+6"	S	Cu. Yds.		
22½	18"	2'-0"	8"	1.10		4'-6"
20"	24"	2'-6"	8"	1.33		5'-0"
35½	30"	3'-0"	0"	1.70		5'-6"
42	36"	3'-6"	0"	2.07		6'-0"
48½	42"	4'-0"	10"	2.90		6'-6"
55"	48"	4'-6"	10"	3.27		7'-0"

Note! Dimensions "X" is assumed as 2'-4" in figuring the above quantities.

Where drainage comes from both sides lower this wall to same elevation as shown for opposite wall.

ST'D. CONC. DROP INTAKE

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



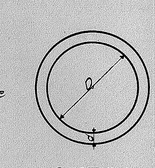
FRONT ELEVATION

SECTION "A-A"

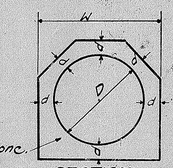
Cast-in-Place Data: Standard Concrete Headwall						Steel Cone Headwall			
Cu. Yds.	D	B	L	H	Conc. cone H.W.	No. of Bars	Size	Length	Wt. Lbs
0.92 Cu. Yds.	18"	1'-6"	6'-0"	4'-0"	1.00 Cu. Yds.	4	3/4ϕ	5'-6"	33
1.25 " "	24"	1'-6"	7'-6"	4'-6"	1.38 " "	4	"	7'-0"	42
1.93 " "	30"	2'-0"	9'-0"	5'-0"	2.17 " "	4	"	8'-6"	51
2.45 " "	36"	2'-0"	10'-6"	5'-6"	2.74 " "	4	"	10'-0"	60

STANDARD CONCRETE HEADWALL

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



SECTION



SECTION

CONC. PIPE CULVERT

Note: Thickness "t", reinforcing, and concrete used are to conform with the approved design as provided by the Specifications.

Data: Cast-in-Place Conc. Culvt.			
D	d	W	Cu. Yds. per ft.
18"	4"	2'-2"	0.11
24"	4½"	2'-9"	0.14
30"	5"	3'-4"	0.18
36"	5½"	3'-11"	0.26

CAST-IN-PLACE CONC. CULVERT

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

TERRITORIAL HIGHWAY DEPARTMENT

TERRITORY OF HAWAII

STANDARD DETAILS

SCALES AS NOTED

Apr. 15, 1948

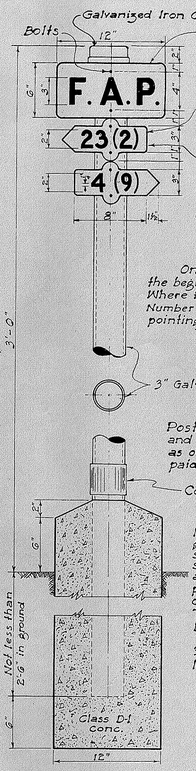
APPROVED: Territorial Highway Engineer

SHEET No. 52 OF 85 SHEETS

5509.10

IMPERIAL TRACING CLOTH

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
Hawaii	Haw.	SDES(11)	1951	11	85



ARRANGEMENT OF MARKERS

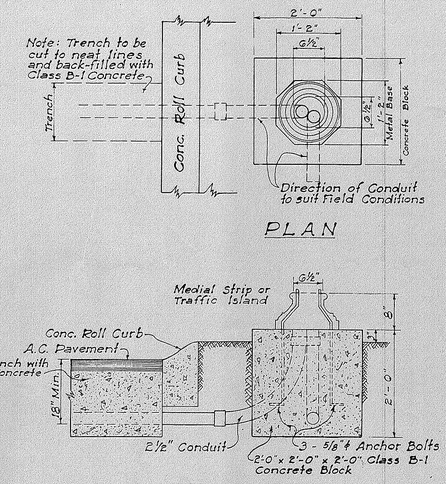
One F.A.P. Marker and one plate shall be placed at the beginning and end of each isolated F.A. Project. Where two F.A. Project adjoin, a single marker and two Number plates shall be placed, each Number plate pointing in the direction of the project to which it refers.

Post in place, complete with one F.A.P. Marker plate and its respective Number plate will be paid for as one item. Each additional Number plate will be paid for separately.

Markers and Number plates shall be № 16 Ga. galvanized iron with 3/8"ϕ holes for fastening as shown on sketch. Markers and Number plates shall be given one coat of best Chromate primer and two coats of White Marine Enamel. Before painting they shall be given a wash of 8 ounces of Copper Sulphate in one gallon of water. The lettering shall be of two coats of Black Marine Enamel.

Markers and plates shall be fastened with 3/8"ϕ galvanized bolts and washers in addition to lead washers for both sides of each plate.

FEDERAL AID MARKER
Scale: 1½" = 1'-0"



PLAN

SECTION

NOTE: Unless otherwise specified, all concrete for base for Traffic Standards, Pull Boxes, Concrete Jackets for Transite Ducts shall be Class B-1 Concrete.

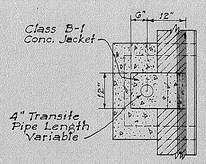
DETAIL OF BASE FOR TRAFFIC STANDARD AND DISPATCHER PEDESTAL

END VIEW — LONGITUDINAL SECTION

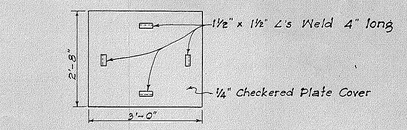
Diameter of Pipe in inches	Length of Struts in inches	Spacing of Struts in ft. for Various Heights FILL 1' to 5'	FILL 5' to 10'	FILL 10 to 20'	FILL 20 to 30	FILL Over 30'
48	38 3/8	—	—	—	6	4
54	44 3/4	6	6	6	6	4
60	51	6	6	6	6	4
66	57 1/4	6	6	6	6	4
72	63 5/8	6	6	6	5	3.5
78	69 7/8	6	6	6	4.5	3.5
84	76 1/4	6	6	6	4	3

NOTE: Length of Struts are based on 4"x4" timbers which is the minimum size recommended. If larger sills or compression caps are used, length of struts should be changed accordingly.

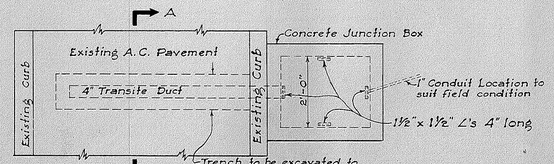
STRUTTING DIAGRAM & TABLE FOR CORRUGATED METAL PIPE CULVERT



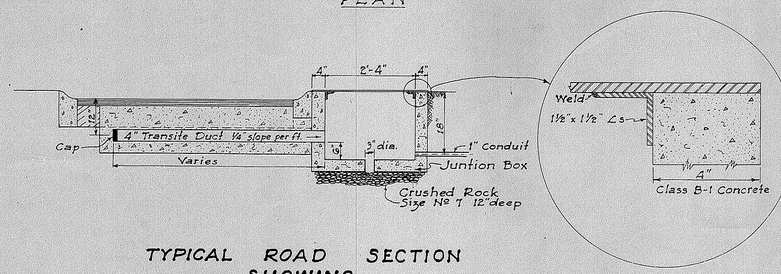
SECTION "A-A"



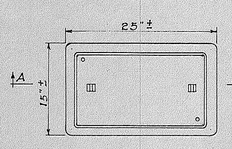
PLAN OF COVER PLATE



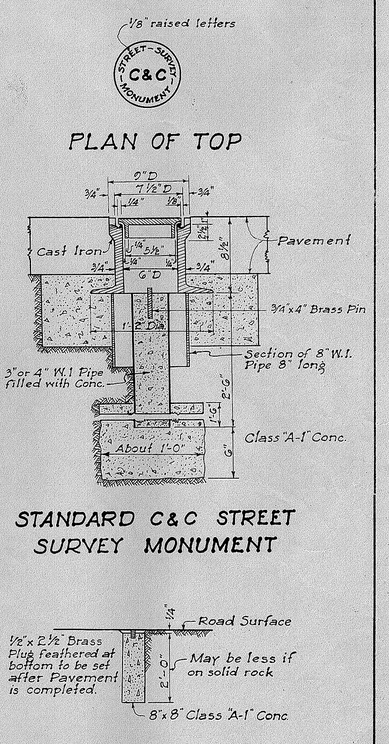
PLAN



TYPICAL ROAD SECTION SHOWING TRAFFIC DETECTOR JUNCTION BOX AND DUCT



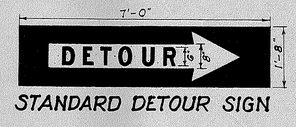
DETAIL OF PULL BOX
Scale: 1" = 1'-0"



PLAN OF TOP

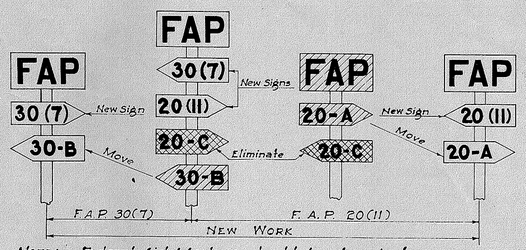
STANDARD C&C STREET SURVEY MONUMENT

CENTER LINE MONUMENT
Scale: ½" = 1'-0"

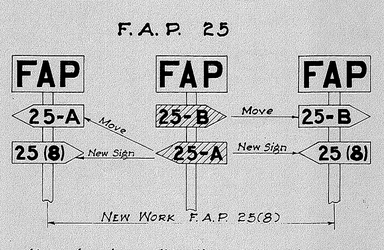


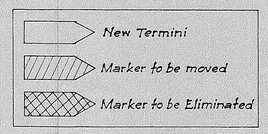
STANDARD DETOUR SIGN

F.A.P. 20 & 30



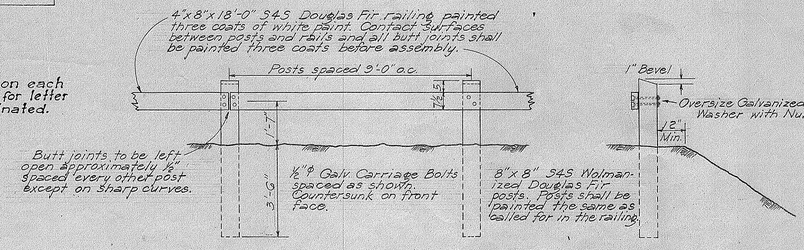
F.A.P. 25





NOTE: Federal Aid Markers should be placed at the termini of suffix designated sections. Intermediate letter designated markers of adjacent sections located within the limits of new improvements should be moved to the termini of the new work. The same procedure would be followed on each successive improvement until all markers for letter designated sections are eventually eliminated.

METHOD OF MARKING F.A. PROJECTS AT OVERLAPS (USING NUMBER SUFFIX ON NEW WORK)



WOOD GUARD RAIL WITH WOOD POSTS
3/8" = 1'-0"

SURVEY PLOTTED BY — DATE
ORIGINAL PLAN — DRAWN BY T. Tokunaga
NOTE BOOK — QUANTITIES BY
No. — QUANTITIES CHECKED BY
CHECKED BY

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

STANDARD DETAILS

SCALES AS NOTED — May 31, 1949

APPROVED: Territorial Highway Engineer

SHEET № 3 OF 3 SHEETS

5509.11