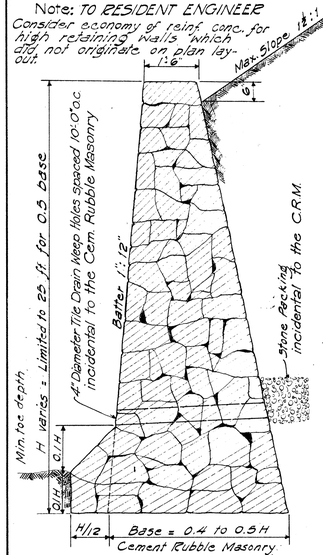
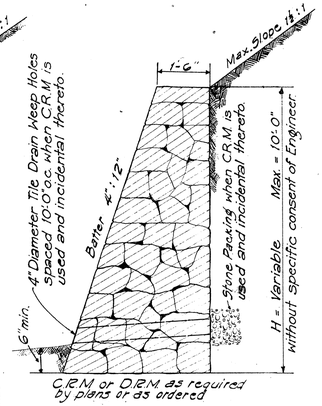
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	SUR 3(15)	1950	7	30

Note: TO RESIDENT ENGINEER
Consider economy of reinf. conc. for high retaining walls which did not originate on plan layout.



STANDARD SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL

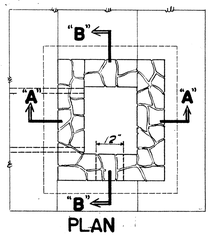


STANDARD SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL

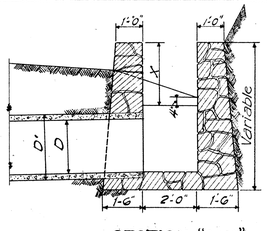
NOTE:
Elevation of weep holes to be determined by Resident Engineer. Holes to be placed as close to the existing ground line as local conditions permit.

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

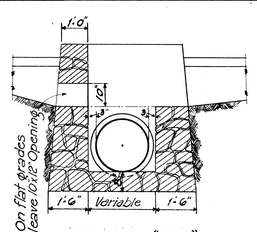
NOTE: *Dimension "X" is assumed as 2'-4" in figuring the above quantities.*



PLAN



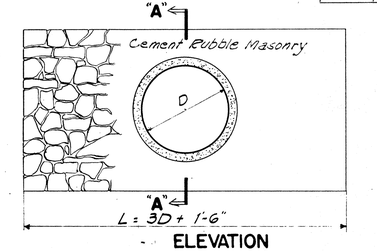
SECTION "A-A"



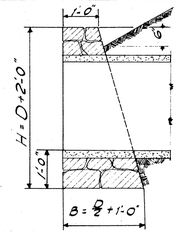
SECTION "B-B"

STANDARD MASONRY DROP INTAKE

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



ELEVATION



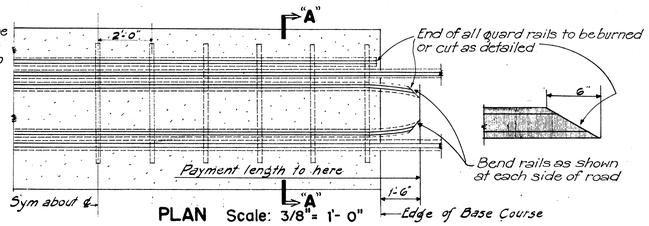
SECTION "A-A"

Cast-in-Place	Precast	Data-Standard Rubble Masonry H.W.				
Cu. Yds.	Cu. Yds.	D	H	B	L	CY. one H.W.
0.85	0.95	18"	3'-6"	1'-9"	6'-0"	0.93
1.28	1.45	24"	4'-0"	2'-0"	7'-6"	1.41
1.83	2.06	30"	4'-6"	2'-3"	9'-0"	2.00
2.40	2.84	36"	5'-0"	2'-6"	10'-6"	2.72

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

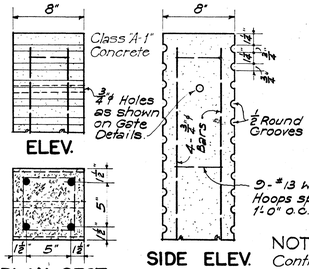
STANDARD MASONRY HEADWALL

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



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

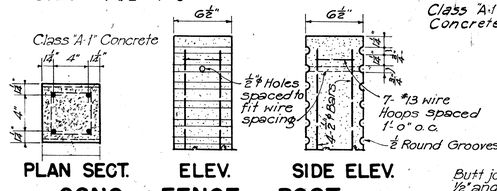
NOTE:
Guard rails are to be of the same shape and weight as Main rails. Details may be varied to suit conditions in field.



CONC. GATE POST

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

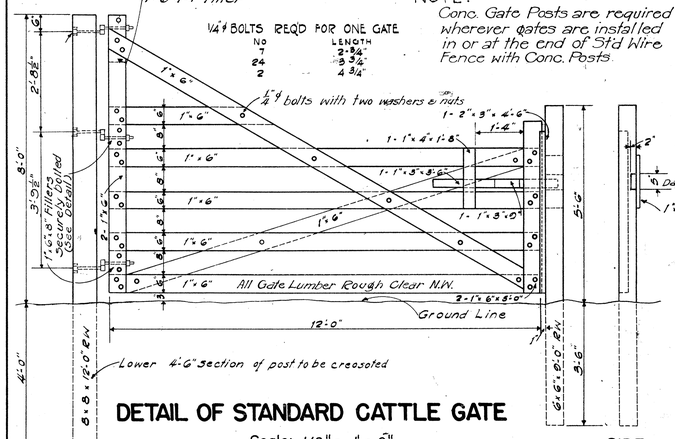
NOTE:
Contractor may either cast holes for fastening fence wire or cast post with ¾"-½ round grooves on 2 sides.



CONC. FENCE POST

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

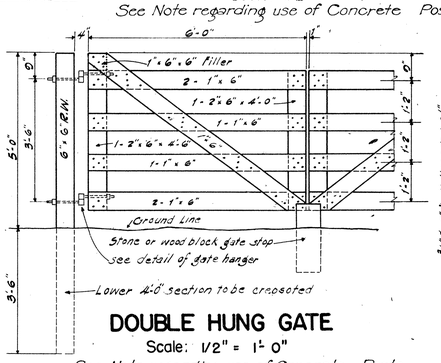
NOTE:
Conc. Gate Posts are required wherever gates are installed in or at the end of Std Wire Fence with Conc. Posts.



DETAIL OF STANDARD CATTLE GATE

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

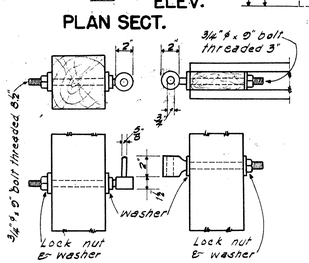
See Note regarding use of Concrete Posts.



DOUBLE HUNG GATE

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

See Note regarding use of Concrete Posts.



PLAN SECT.

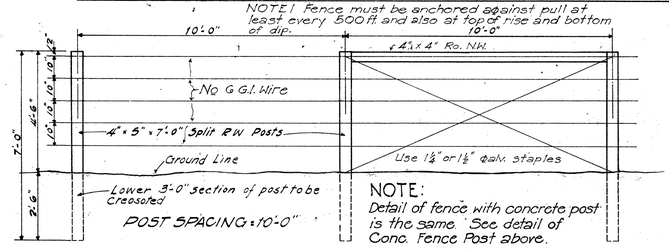
SIDE ELEV.

DETAIL OF GATE HANGER

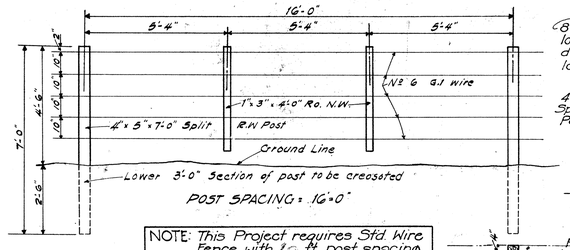
Scale: 1-1/2" = 1'-0"

Note: *Use ¾"ø x 11" bolts for cattle gate*

STANDARD GUIDE POSTS: *8"x8" Reinforced Conc. Posts same as those used for Std Wood Guard Rail spaced 18'-0" oc. unless otherwise specified.*



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



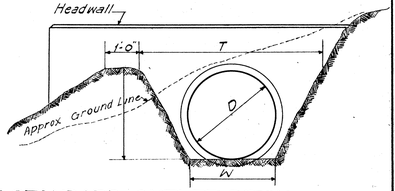
NOTE: *This Project requires Std. Wire Fence with 10 ft post spacing. (If spacing is not indicated above, use 10ft.)*

DETAILS OF STANDARD WIRE FENCE WITH WOODEN POSTS

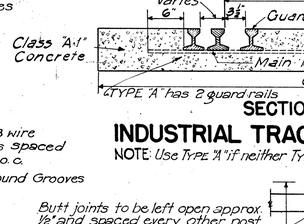
Scale: 3/8" = 1'-0"

NOTE TO ENGINEER: *Fence must be on road R/W to participate in Fed. Aid. Consult office if uncertain what to do.*

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

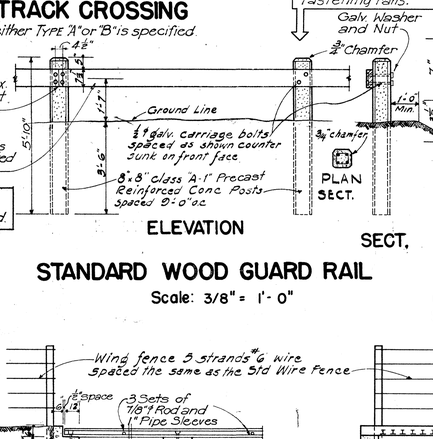


SECTION "A-A" Scale: 1-1/2" = 1'-0"

INDUSTRIAL TRACK CROSSING

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

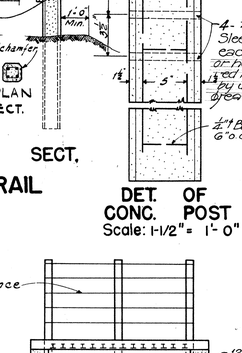
NOTE: *Suggest holes in rail for bolts be bored from back of post after lining up and temporarily fastening rails.*



ELEVATION SECT.

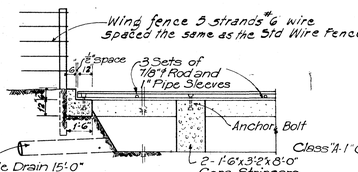
STANDARD WOOD GUARD RAIL

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

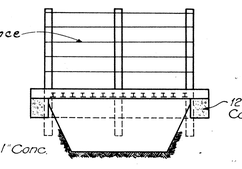


DET. OF CONC. POST

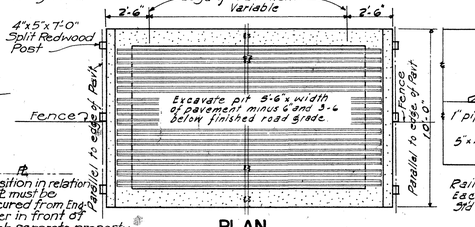
Scale: 1-1/2" = 1'-0"



PART LONG. SECTION

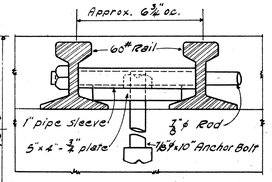


CROSS SECTION

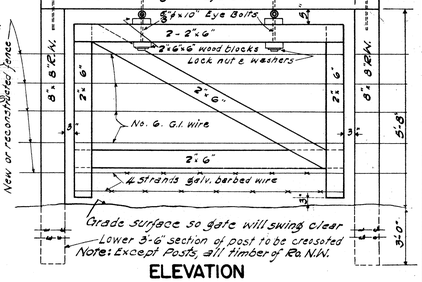


PLAN

DETAILS OF CATTLE GUARD

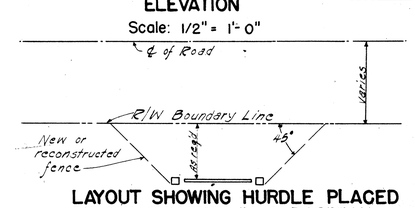


Rails need not be one piece each. Each rail may be spliced once with 3rd Fish Plate.



ELEVATION

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



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

DETAILS OF HURDLE

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

STANDARD DETAILS

SCALES AS NOTED Apr. 15, 1948

APPROVED: Territorial Highway Engineer

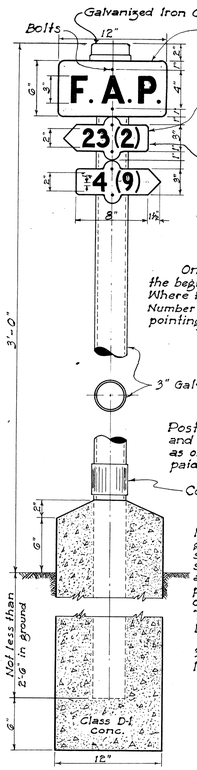
SHEET No 1 OF 3 SHEETS

5401.5

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

NBECO, N.Y.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	SOR 305(1)	1950	8	30



NOTE: This plate is always "F.A.P." or "F.A.S."

This shall include special letter prefixes as ordered by the Engineer.

Lettering as required.

6 Holes for ⅜"ϕ Bolts to be drilled in every post.

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.

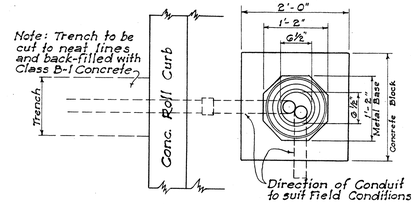
Post in place, complete with one F.A.P. Marker plate and its respective Number plate will be paid for as one item. Each additional Number plate will be paid for separately.

Markers and Number plates shall be №10 Ga. galvanized iron with ⅜"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.

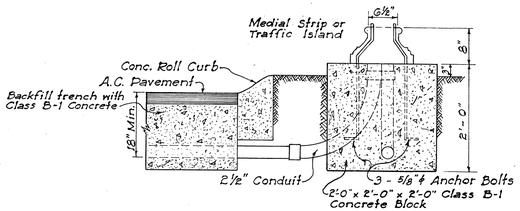
Markers and plates shall be fastened with ⅜"ϕ galvanized bolts and washers in addition to lead washers for both sides of each plate.

FEDERAL AID MARKER

Scale: 1½" = 1'-0"



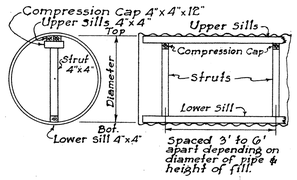
PLAN



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

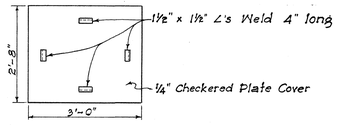


END VIEW — LONGITUDINAL SECTION

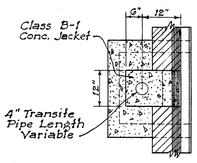
Diameter of Pipe in inches	Length of Struts in inches	Spacing of Struts in ft. for Various Heights: FILL 1' to 5'	FILL 5' to 10'	FILL 10 to 20'	FILL 20 to 30'	FILL Over 30'
48	38 3/8	–	–	–	G	A
54	44 3/4	G	G	G	G	A
60	51	G	G	G	G	A
62	57 1/4	G	G	G	G	A
72	63 5/8	G	G	G	5	3.5
78	69 7/8	G	G	G	4.5	3.5
84	76 1/4	G	G	G	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.

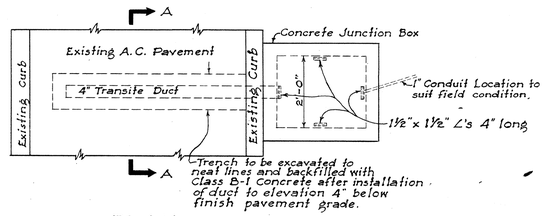
STRUTTING DIAGRAM & TABLE FOR CORRUGATED METAL PIPE CULVERT



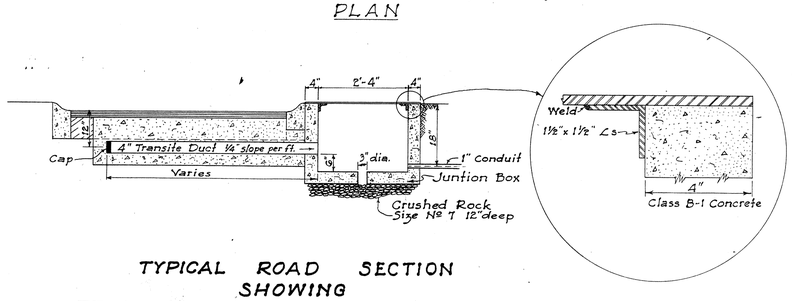
PLAN OF COVER PLATE



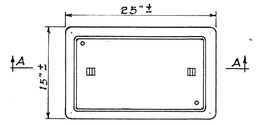
SECTION "A-A"



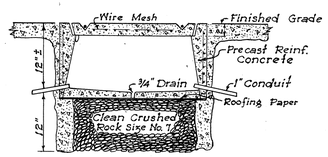
PLAN



TYPICAL ROAD SECTION SHOWING TRAFFIC DETECTOR JUNCTION BOX AND DUCT



PLAN

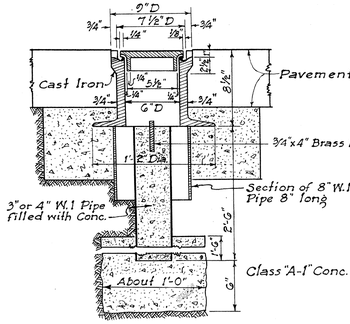


SECTION A-A

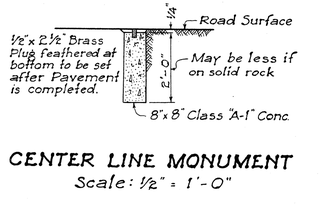
DETAIL OF PULL BOX

Scale: 1" = 1'-0"

PLAN OF TOP

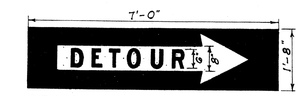


STANDARD C&C STREET SURVEY MONUMENT



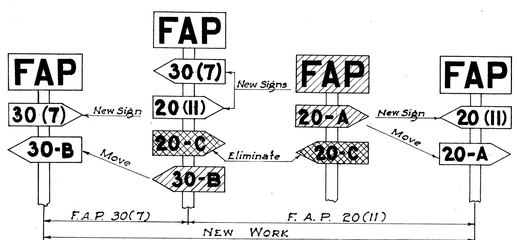
CENTER LINE MONUMENT

Scale: ½" = 1'-0"

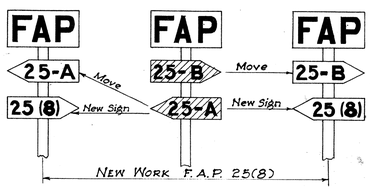


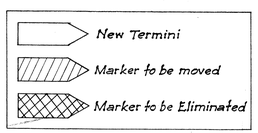
STANDARD DETOUR SIGN

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)

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

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

STANDARD DETAILS

SCALES AS NOTED — May 31, 1949

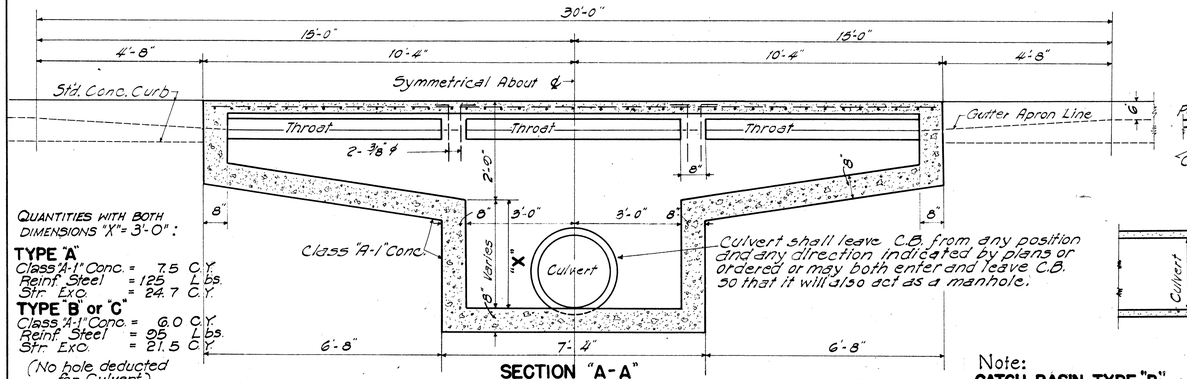
APPROVED: ..... Territorial Highway Engineer

SHEET № 2 OF 3 SHEETS

5401.8

158 ARKWRIGHT TRACING CLOTH K & E CO., N. Y.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW. SDR 3(15)	1950	9	30	



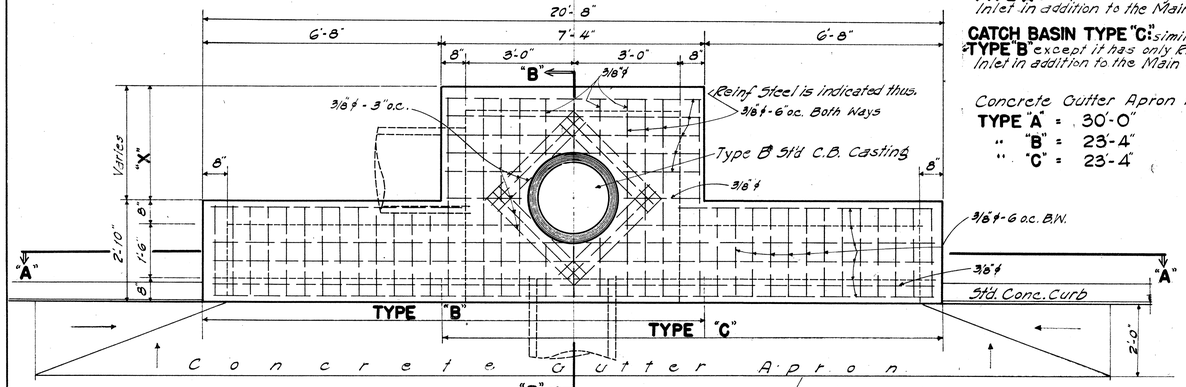
QUANTITIES WITH BOTH DIMENSIONS "X" = 3'-0":

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

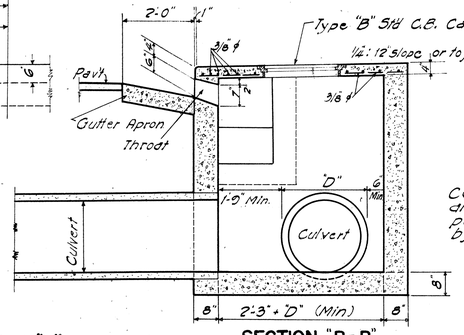
STANDARD CONCRETE CATCHBASIN TYPE "A"

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

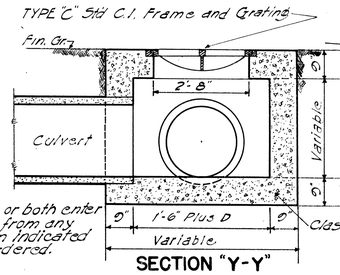
Note:
CATCH BASIN TYPE "B": similar to TYPE "A" except it has only Left Side Inlet in addition to the Main Box.

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

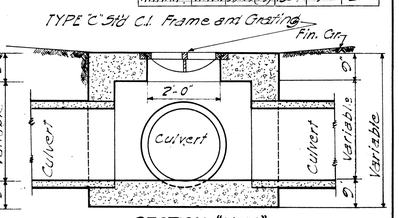
Concrete Gutter Apron Length:
TYPE "A" = 30'-0"
" "B" = 23'-4"
" "C" = 23'-4"



SECTION "B-B"



SECTION "Y-Y"

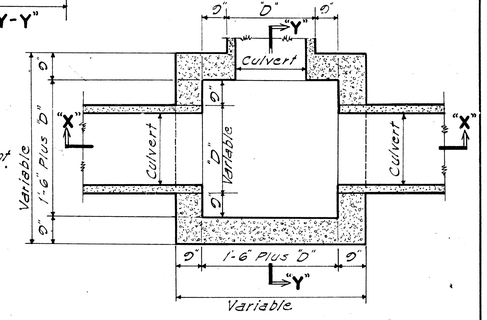


SECTION "X-X"

CONC. DROP INTAKE IN MEDIAL STRIPS

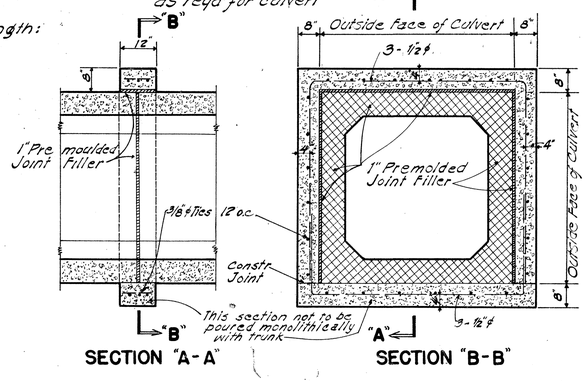
Scale: 1/2" = 1'-0"

Note: May also be used in pavement and at other places.



PLAN

Use same class of conc as reqd for culvert

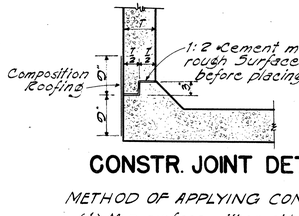


SECTION "A-A" SECTION "B-B"

CONC. COLLAR FOR CONC. BOX CULVERT

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

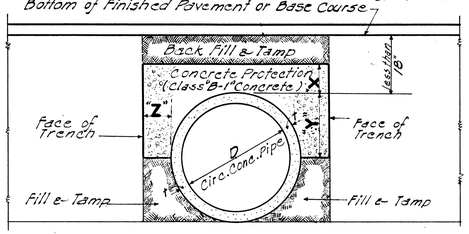
Note: Collars of this type shall be used to divide culverts into approximately 30 ft lengths.



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 WATERPROOFING
(1.) Mop surface either side of joint as required with asphalt 85-100 penetration 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)



TYP. SECT. OF CULVERT WITH CONC PROTECTION

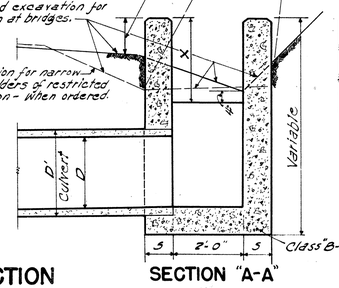
(To be used when cover is less than 18")

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 be Z = 12"
11" " 48" D		
12" " 54" D		

Excavate recess in roadway excavation slope for inlet to dimensions and form designated by Engineer. This is "Unclassified Excavation."

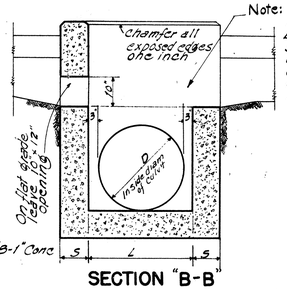
12" unless otherwise ordered.

Top limits of unclassified excavation for structures other than at bridges.

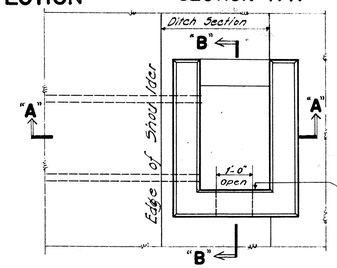


SECTION "A-A"

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.



SECTION "B-B"



PLAN

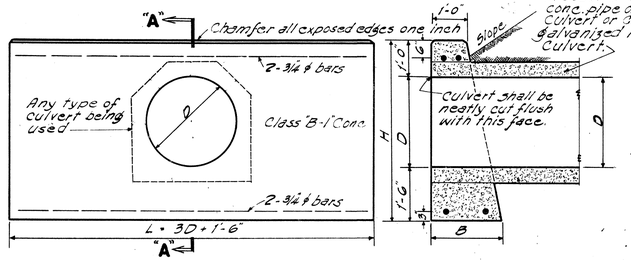
Data: Standard Drop Intake					Where Variable Equals
D'	D	L = D+6"	S	Cu. Yds.	
22½°	18"	2'-0"	8"	1.10	4'-6"
20°	24"	2'-6"	8"	1.33	5'-0"
35½°	30"	3'-0"	0"	1.79	5'-6"
42°	36"	3'-6"	0"	2.07	6'-0"
48½°	42"	4'-0"	10"	2.90	6'-6"
55°	48"	4'-6"	10"	3.27	7'-0"

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"

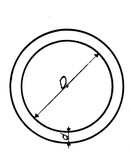


FRONT ELEVATION SECTION "A-A"

Cast-in-Place	Data: Standard Concrete Headwall					Steel One Headwall			
Cu. Yds.	D	B	L	H	Conc. one 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	3/4"ϕ	5'-6"	33
1.25 " "	24"	1'-6"	7'-6"	4'-6"	1.38 " "	4	"	7'-0"	42
1.99 " "	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

Class A-1 Conc.

SECTION

CONC. PIPE CULVERT

Note: Thickness "d" 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 Yd per ft.
18"	4"	2'-2"	0.11
24"	4½"	2'-9"	0.14
30"	5"	3'-4"	0.19
36"	6½"	3'-11"	0.26

CAST-IN-PLACE CONC. CULVERT

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DESIGNED BY	
	DRAWN BY	
	TRACED BY S. Uyeno	
NOTE BOOK	QUANTITIES 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 3 OF 3 SHEETS

5401.9