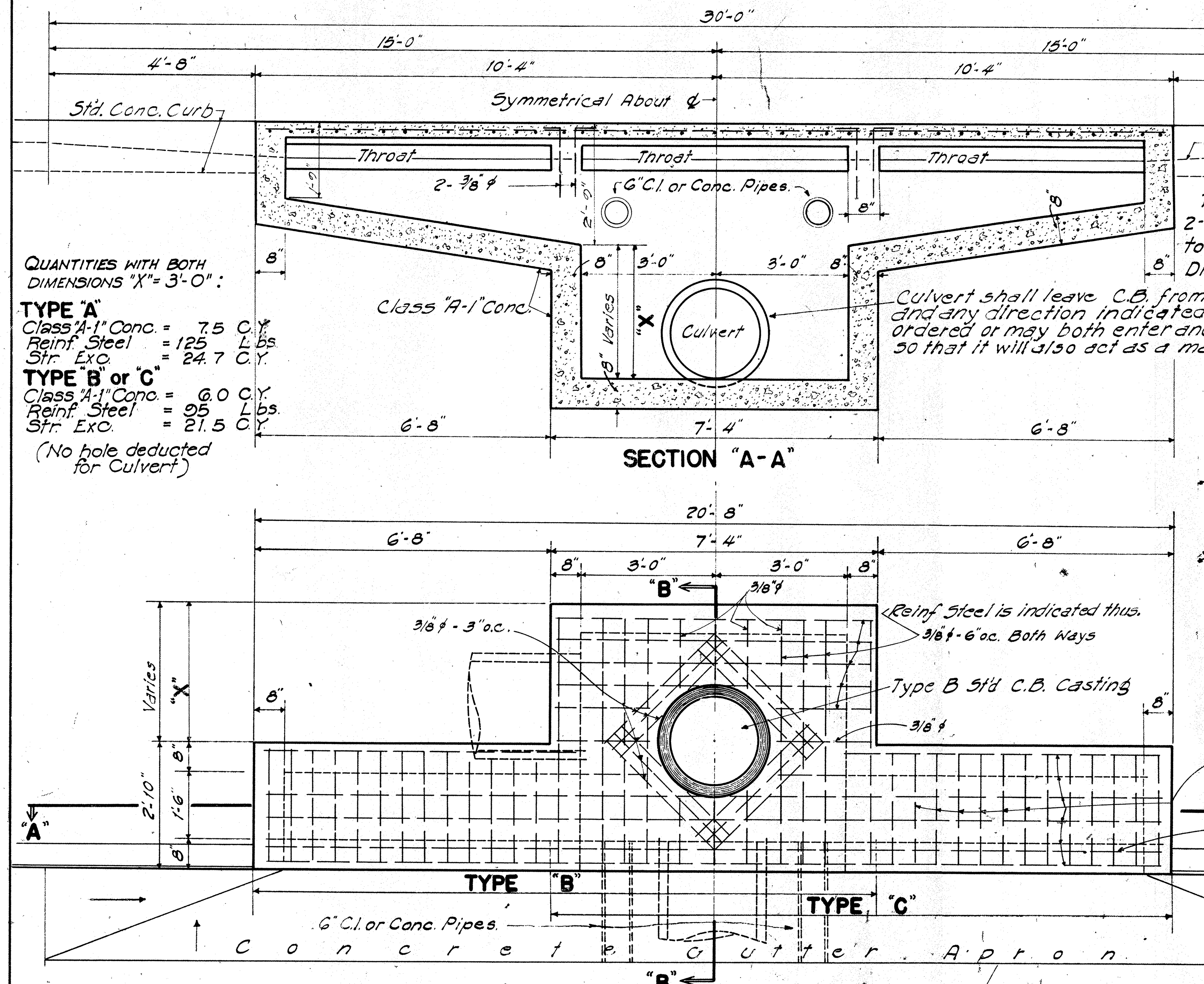
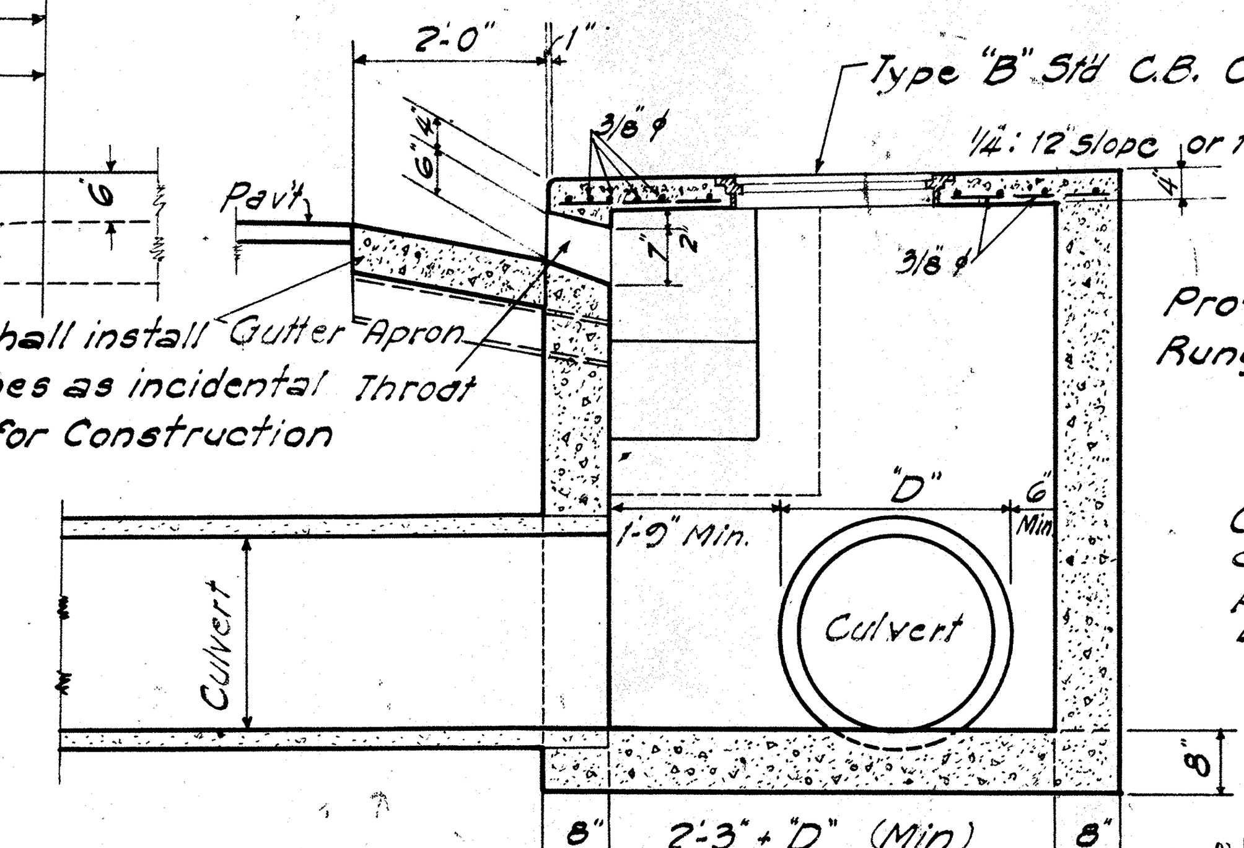
FED. ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-76(1) UNIT 2	1952	7	28



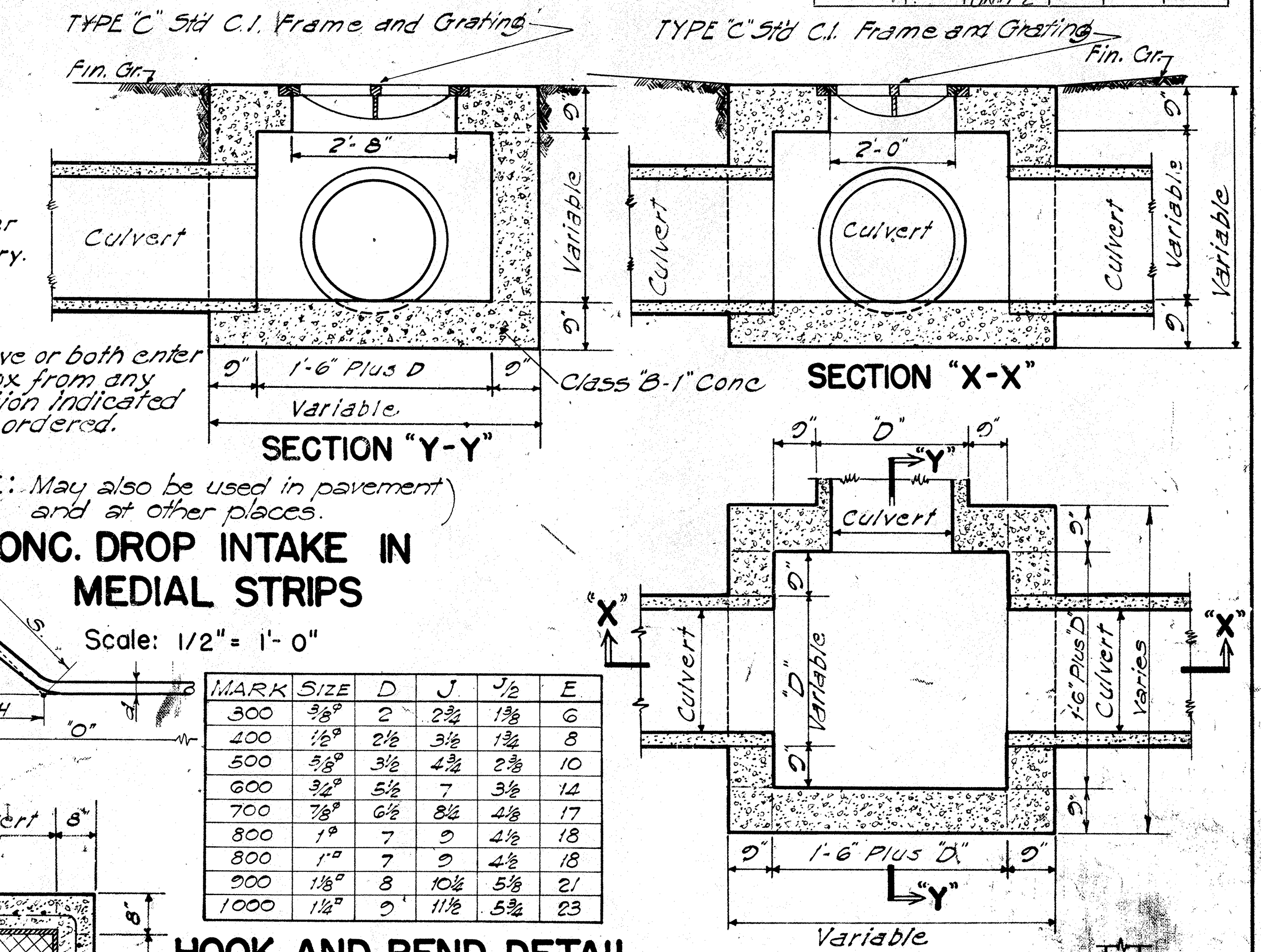
Note:
CATCH BASIN TYPE "B": similar to TYPE "A" except it has only Left Side Inlet in addition to the Main Box.
CATCH BASIN TYPE "C": similar to TYPE "B" except it has only Right Side Inlet in addition to the Main Box.

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



STANDARD CONCRETE CATCHBASIN TYPE "A"

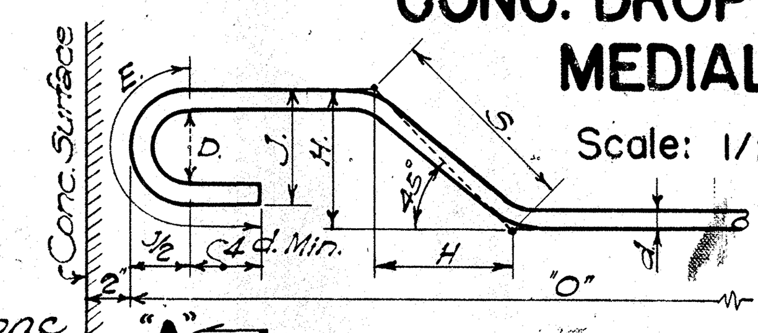
Scale: 1/2" = 1'-0"



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

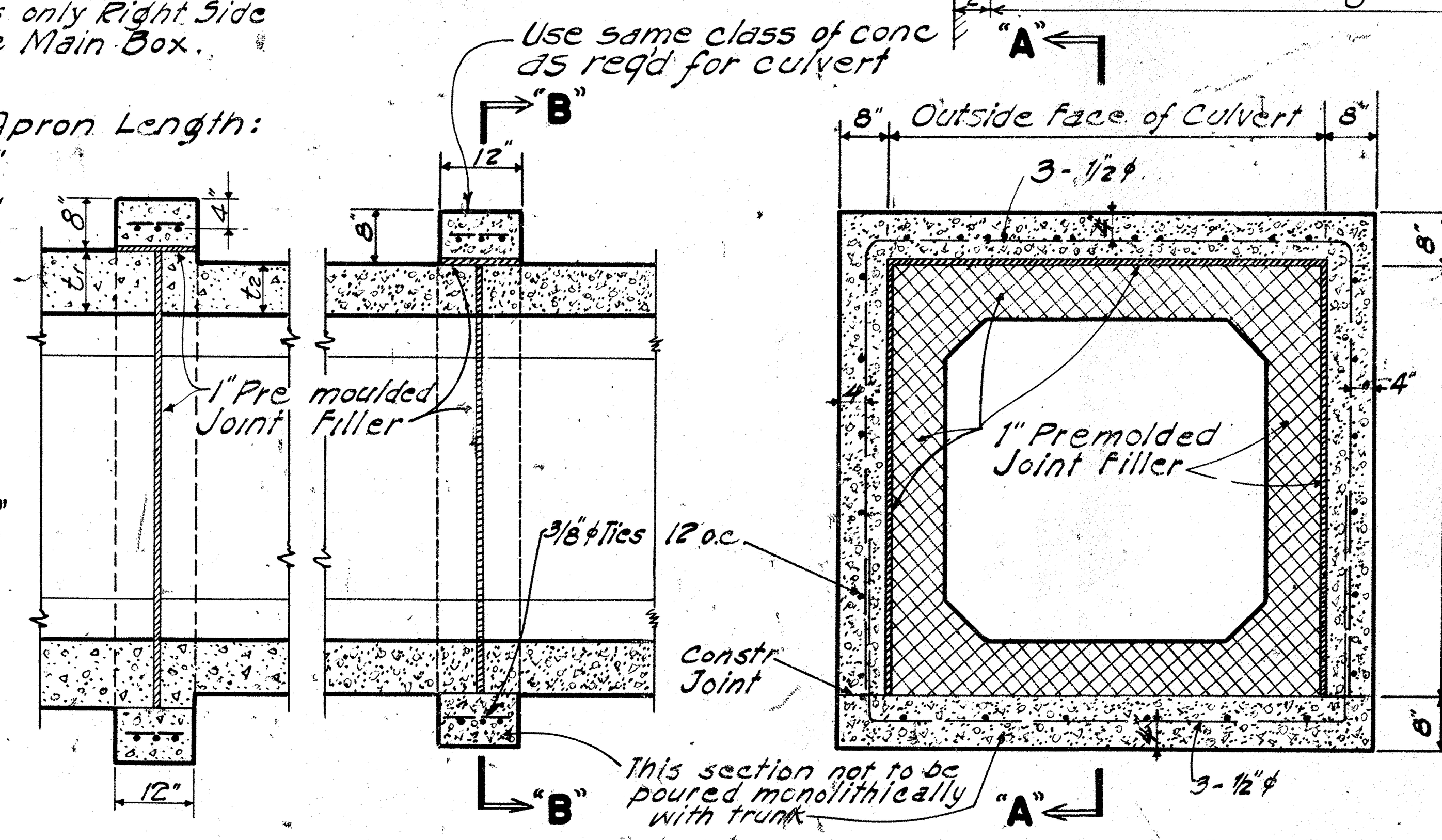
CONC. DROP INTAKE IN MEDIAL STRIPS

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



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

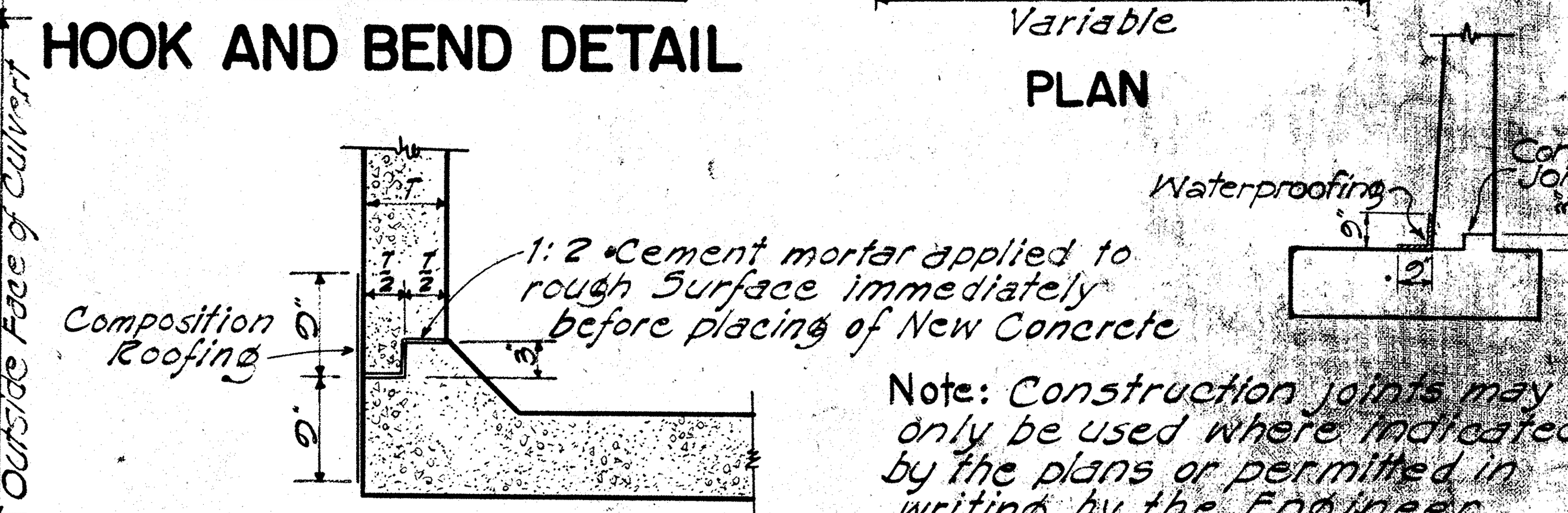
HOOK AND BEND DETAIL



CONC. COLLAR FOR CONC. BOX CULVERT

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

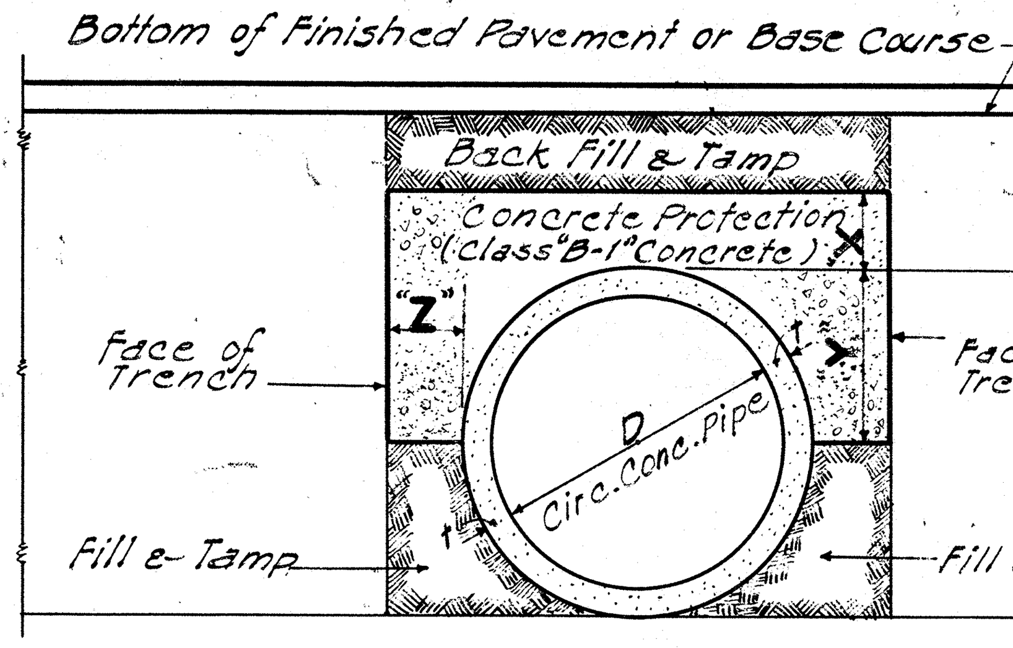
Note: Collars of this type shall be used to divide culverts into approximately 30ft lengths.



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

CONSTR. JOINT DETAILS

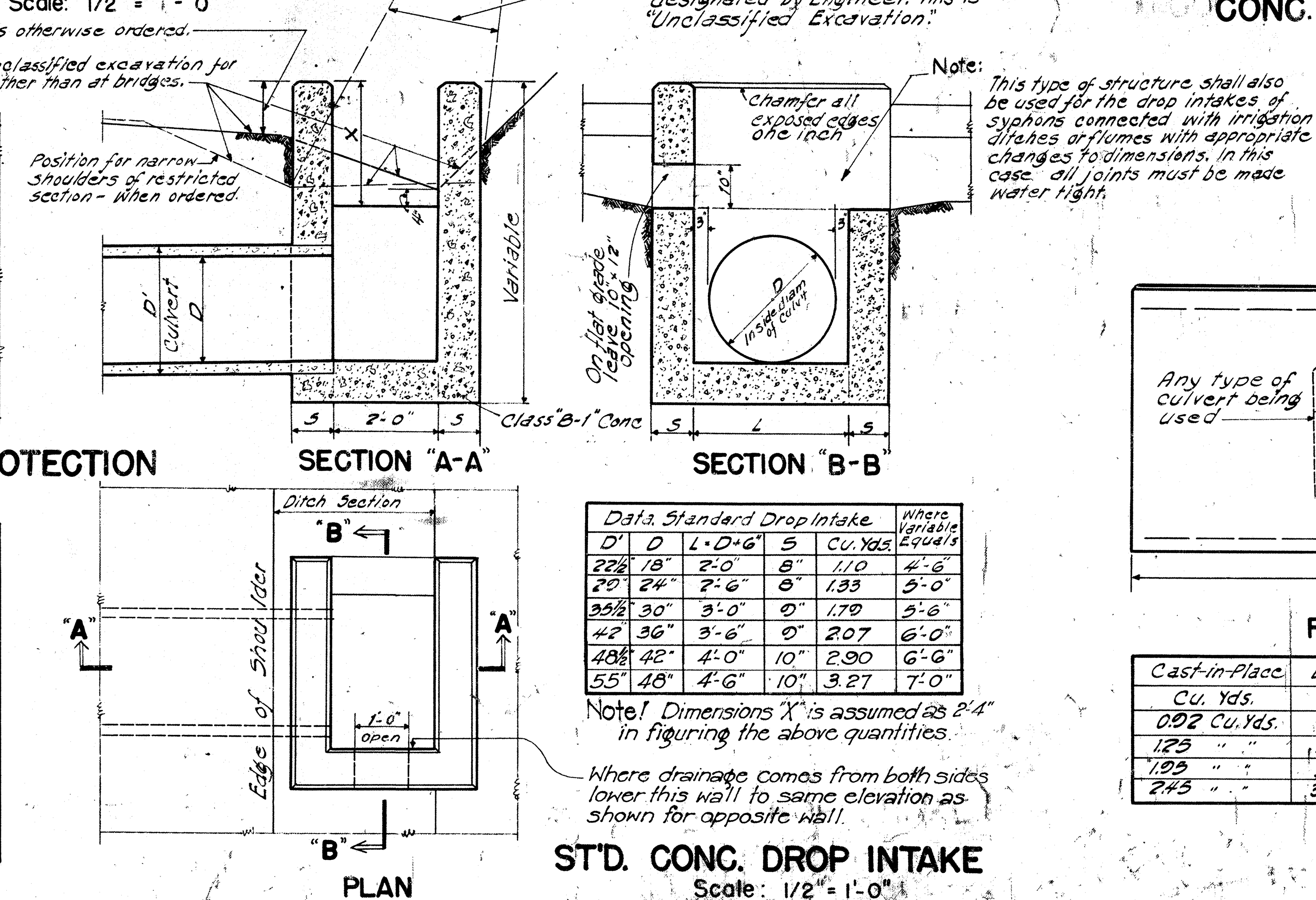
METHOD OF APPLYING CONSTR. JOINT WATERPROOFING.
(1.) Mop surface either side of joint as required with asphalt 50-100 penetration (A.S.T.M. Desig. D 5-25) applied at 200°F.
(2) Apply one layer of 55-lb composition roofing to hot asphalt.
(3.) Mop surface of composition roofing and 3" beyond all around with thick coat of asphalt as specified under (1)
The above work is incidental to concrete and will not be paid for separately.



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	D/2 + T	Z must be from pipe to face of trench
7" " 24" D		Minimum = X
8" " 30" D		Maximum pay quantity will be Z = 12"
9" " 36" D		
10" " 42" D		
11" " 48" D		
12" " 54" D		



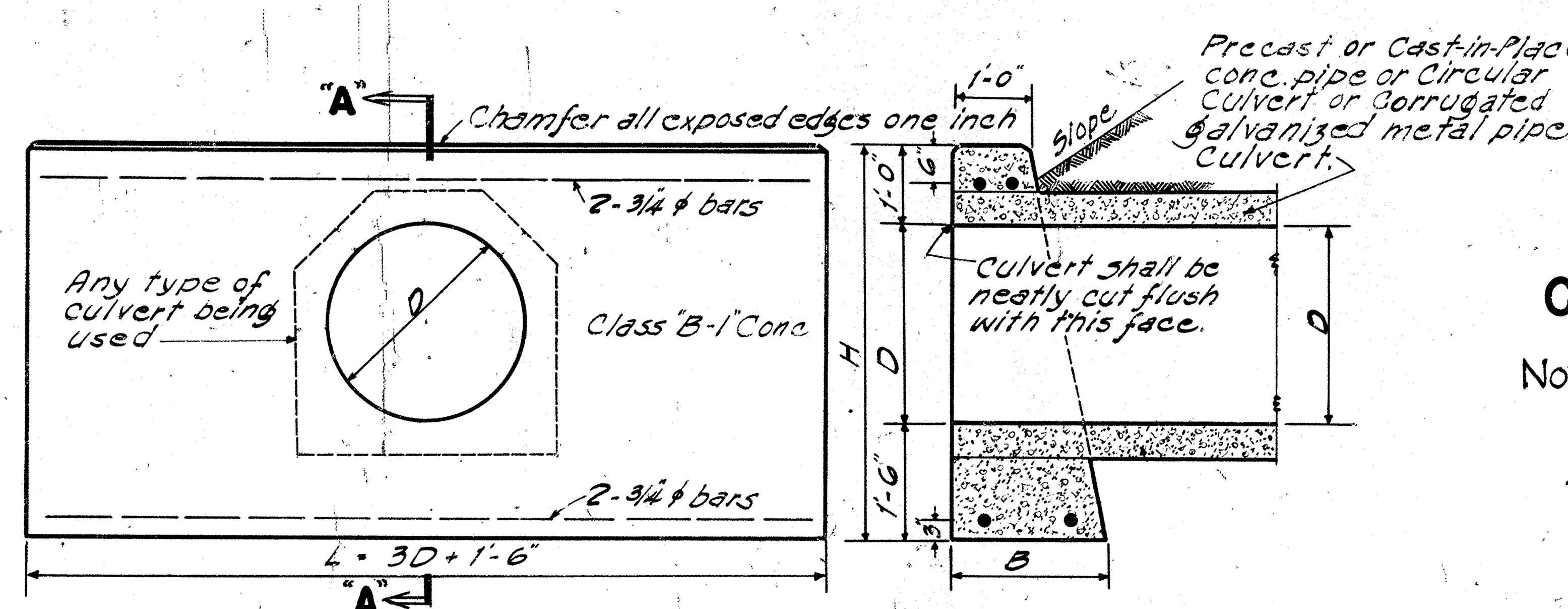
Data. Standard Drop Intake					Where Variable Equals
D'	D	L = D+6"	S	Cu. Yds.	
22 1/2"	18"	2'-0"	8"	1.10	4'-6"
29"	24"	2'-6"	8"	1.33	5'-0"
35 1/2"	30"	3'-0"	9"	1.79	5'-6"
42"	36"	3'-6"	9"	2.07	6'-0"
48 1/2"	42"	4'-0"	10"	2.90	6'-6"
55"	48"	4'-6"	10"	3.27	7'-0"

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

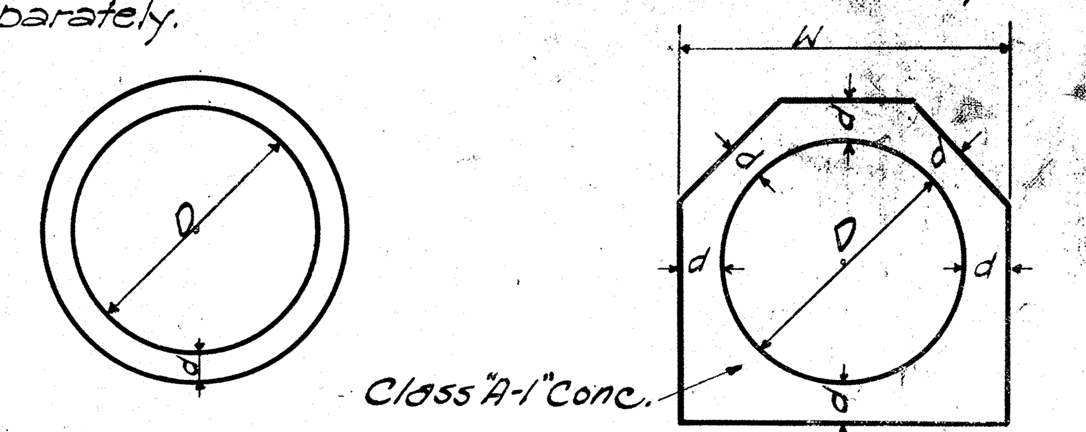
Scale: 1/2" = 1'-0"



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
1.93 " "	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"



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"	4 1/2"	2'-9"	0.14
30"	5"	3'-4"	0.19
36"	5 1/2"	3'-11"	0.26

CAST-IN-PLACE CONC. CULVERT

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

STANDARD DETAILS

SCALES AS NOTED Apr. 15, 1948
APPROVED: Territorial Highway Engineer

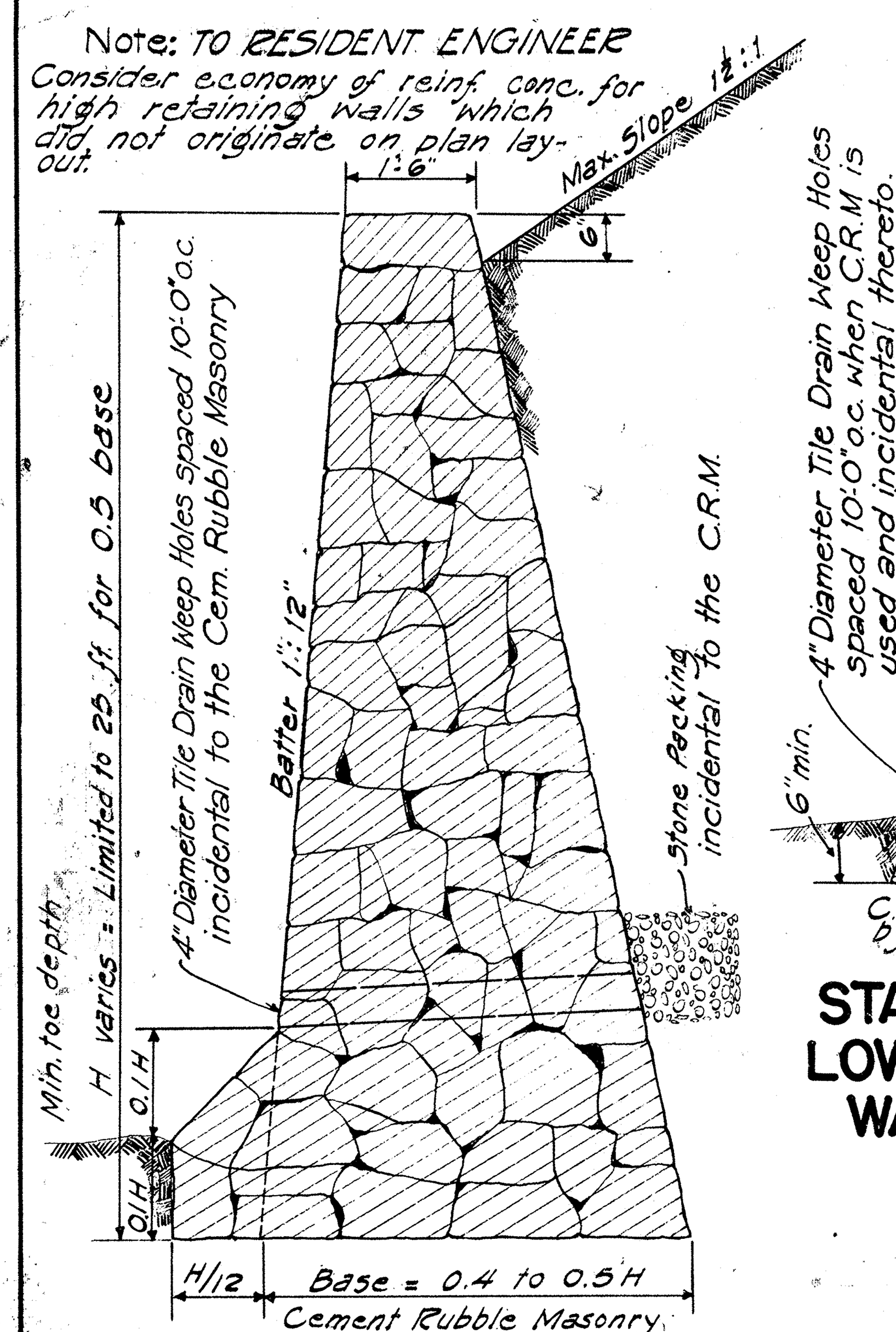
SHEET No 3 OF 4 SHEETS

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

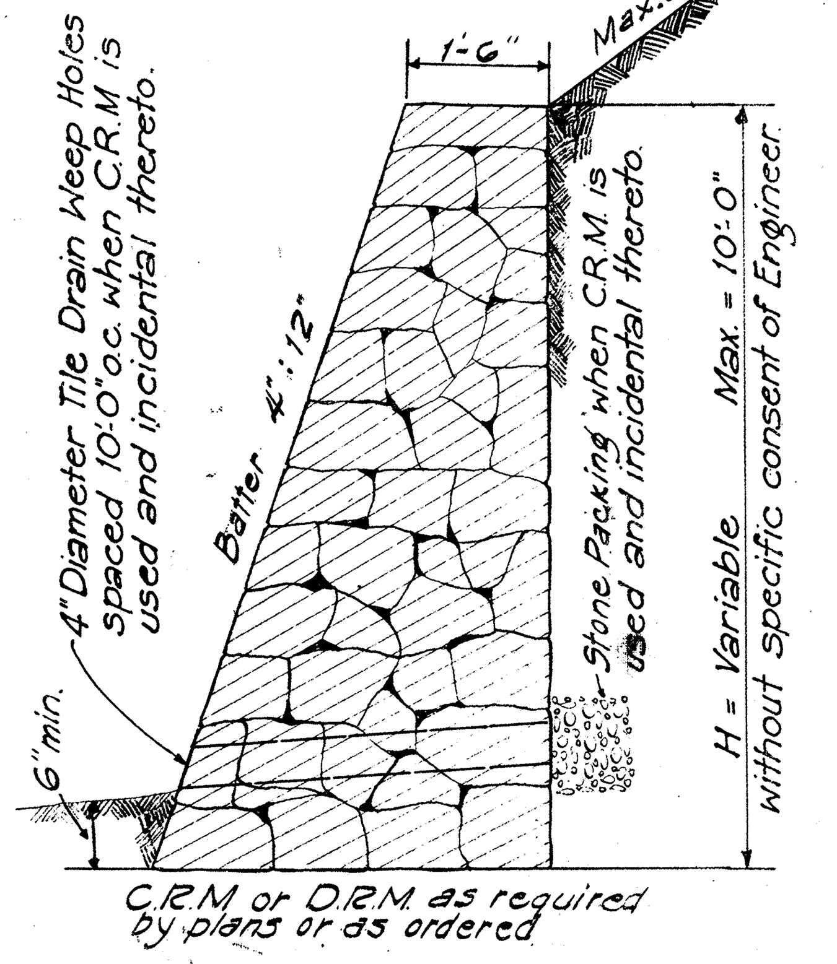
5480.7

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	[illegible]	1942	8	28

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



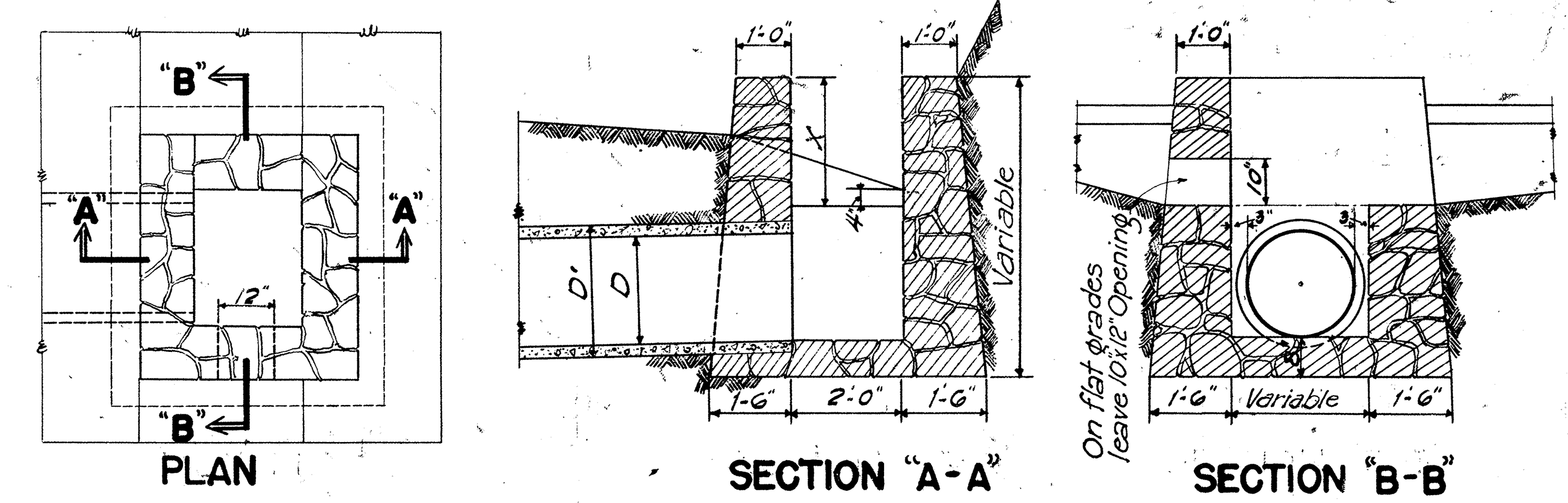
STANDARD SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL

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.

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

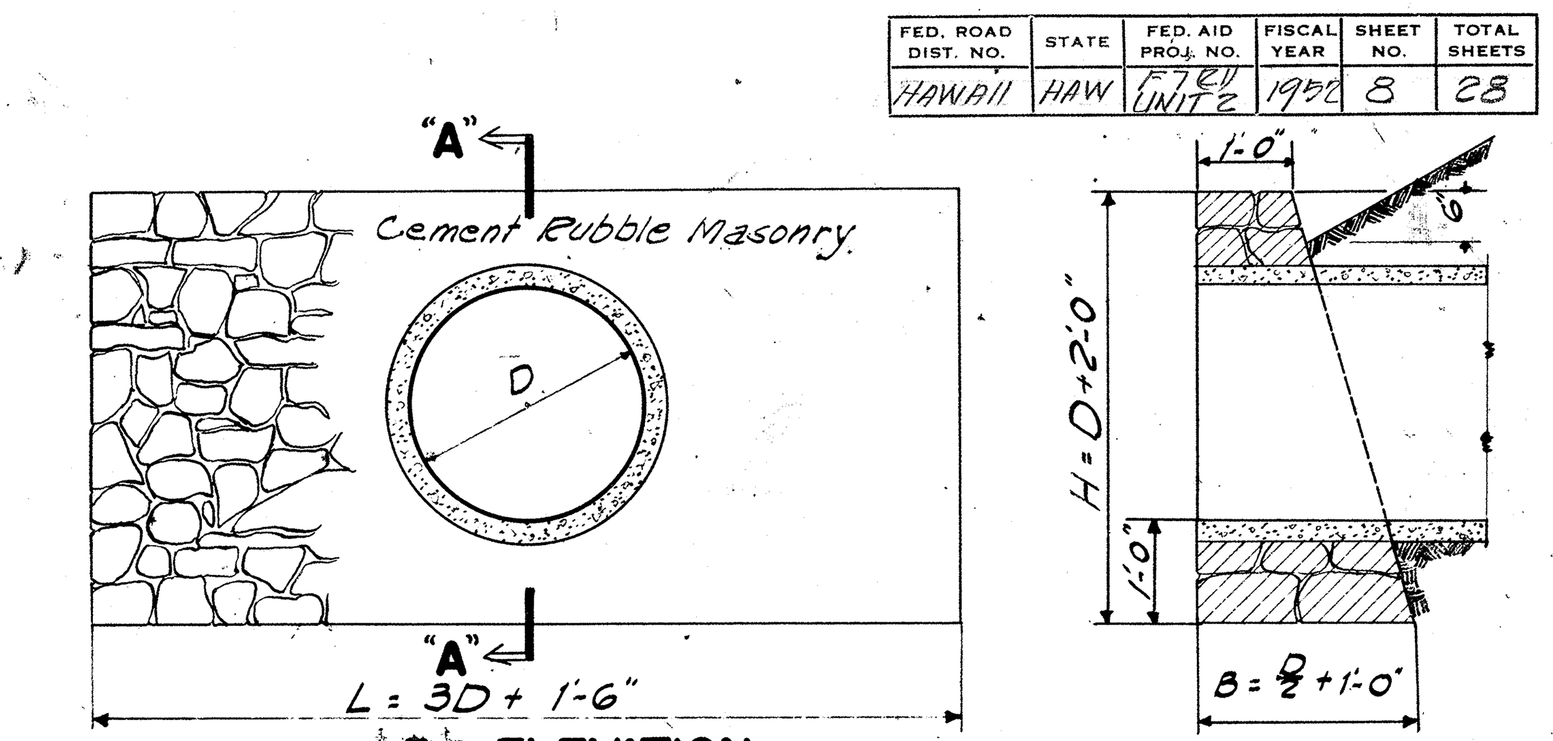
Data Standard Masonry Drop Intake				
D'	D	L= D+6"	Cu.Yds	Where Variable Equals
22½"	18"	2'-0"	2.41	4'-6"
29"	24"	2'-6"	2.89	5'-0"
35½"	30"	3'-0"	3.38	5'-6"
42"	36"	3'-6"	3.92	6'-0"

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



STANDARD MASONRY DROP INTAKE

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

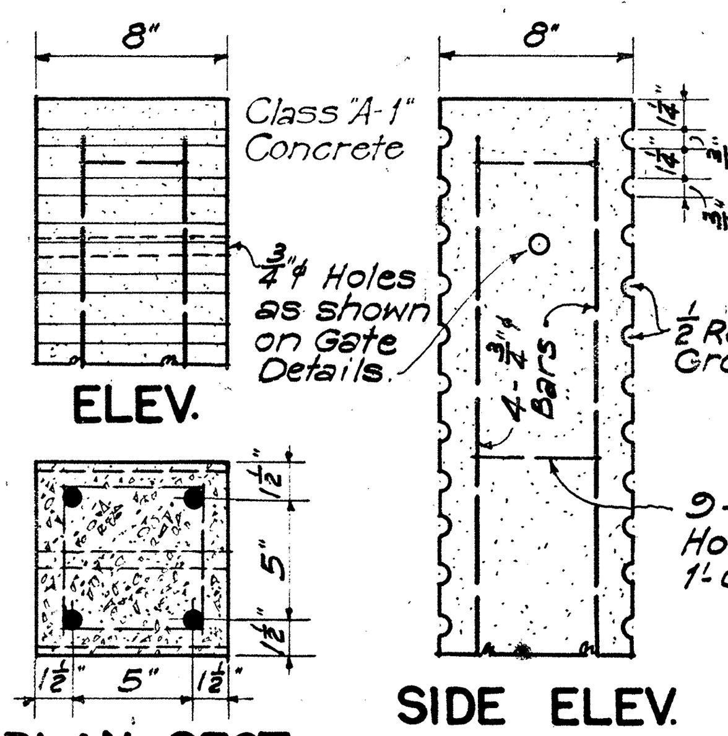


Cast-in-Place	Precast	Data-Standard Rubble Masonry H.W.				
Cu. Yds.	Cu. Yds.	D	H	B	L	C.Y. one H.W.
0.85	0.95	18"	3'-6"	1'-9"	6'-0"	0.93
1.28	1.43	24"	4'-0"	2'-0"	7'-6"	1.41
1.83	2.06	30"	4'-6"	2'-3"	9'-0"	2.00
2.49	2.84	36"	5'-0"	2'-6"	10'-6"	2.72

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

STANDARD MASONRY HEADWALL

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

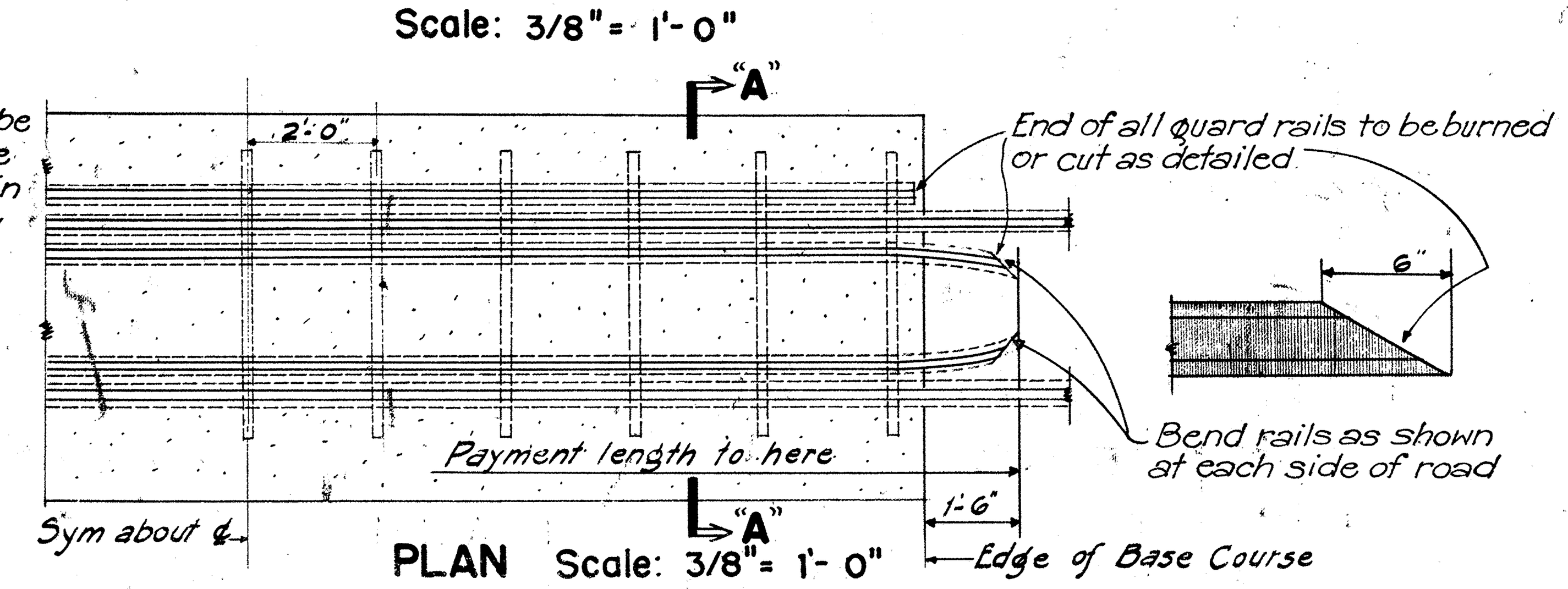


CONC. GATE POST

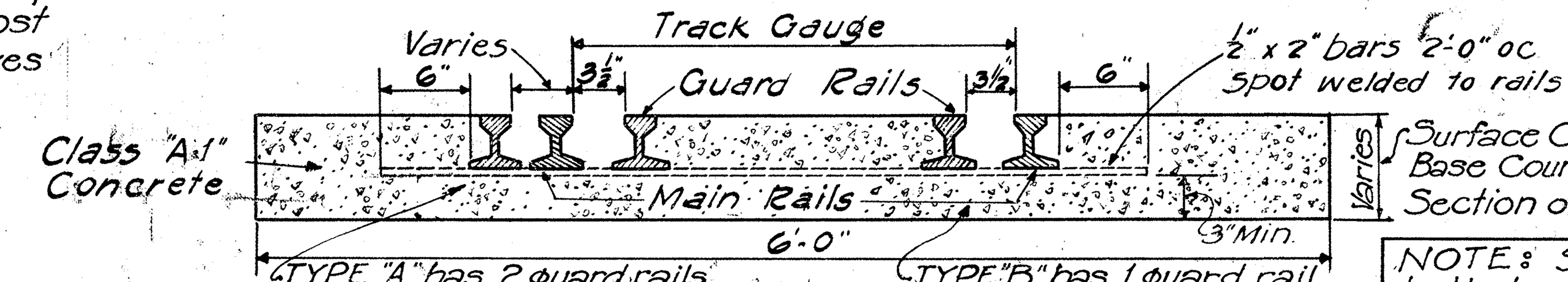
Scale: 1-1/2" = 1'-0"

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

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



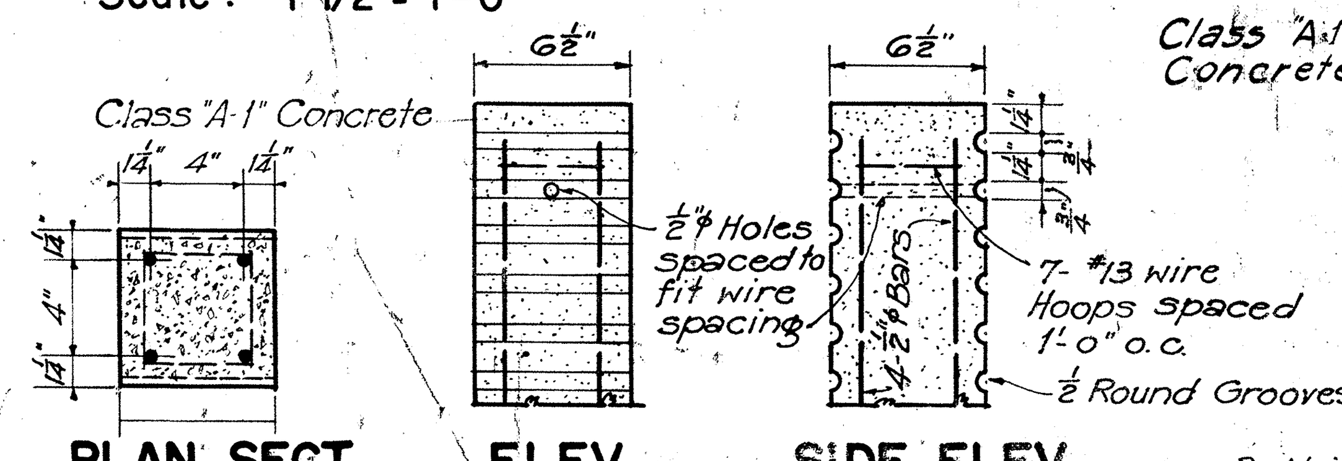
PLAN Scale: 3/8" = 1'-0"



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

INDUSTRIAL TRACK CROSSING

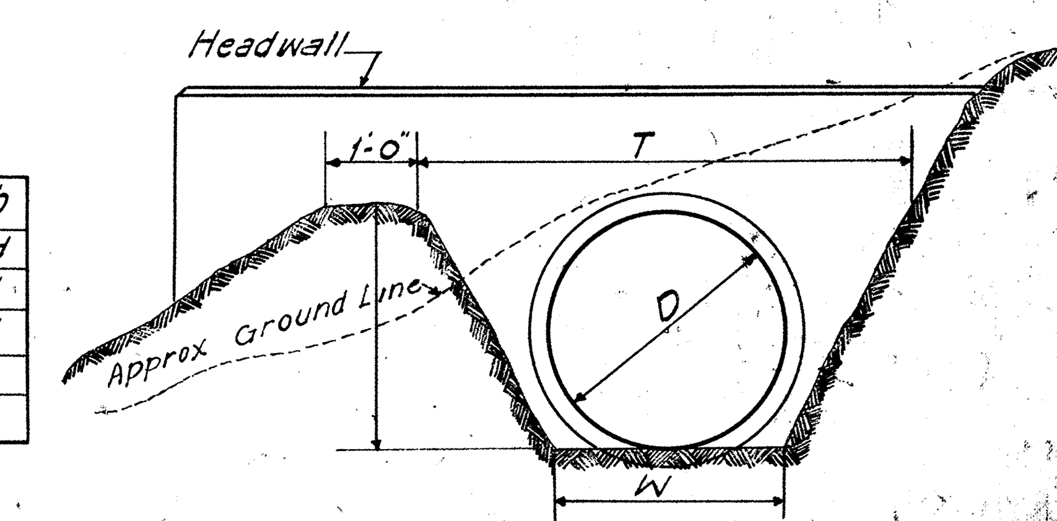
NOTE: Use TYPE "A" if neither TYPE "A" or "B" is specified.



CONC. FENCE POST

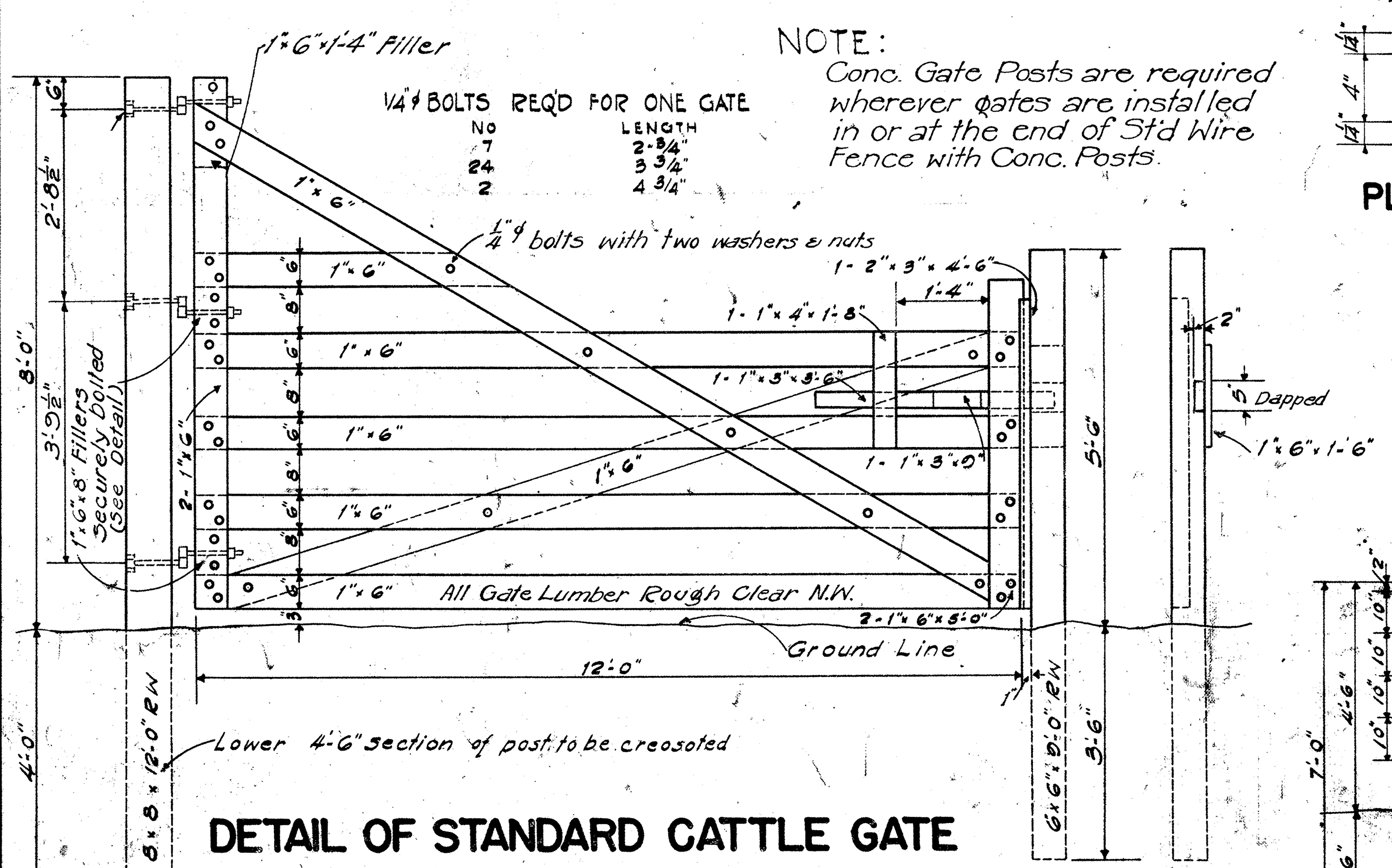
Scale: 1-1/2" = 1'-0"

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

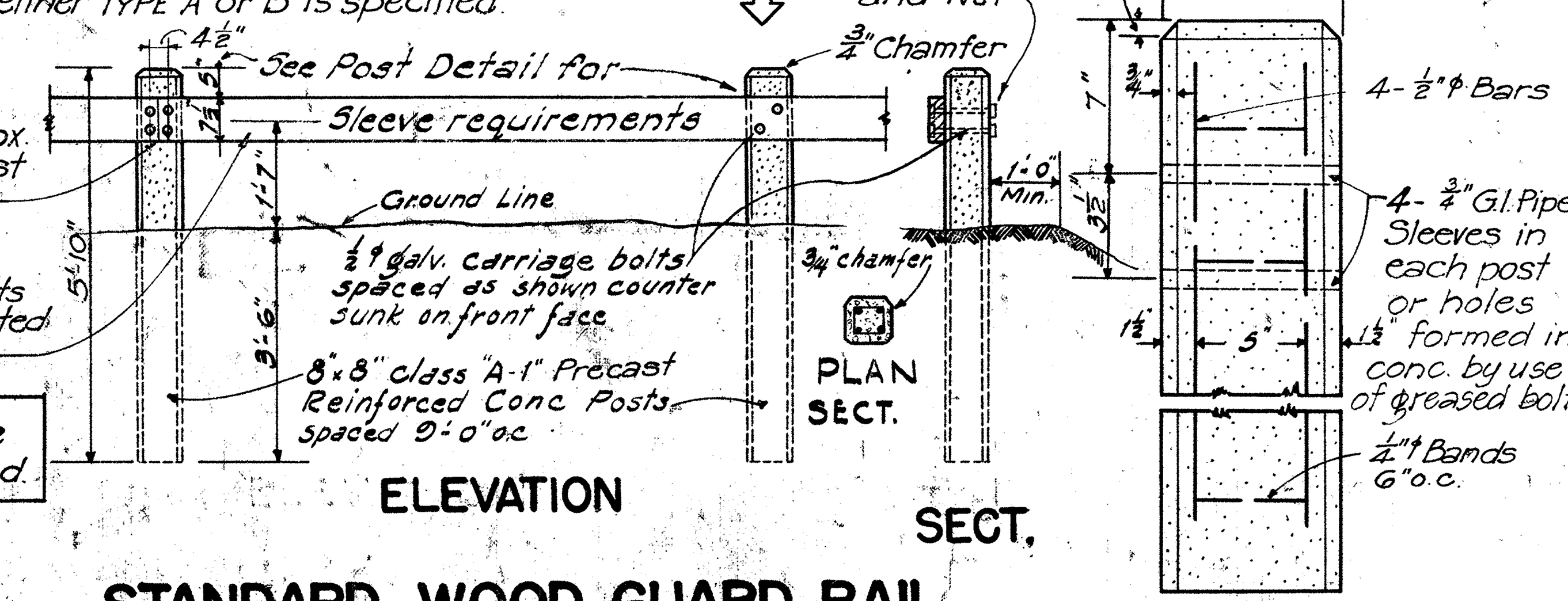
NOTE: Suggest holes in rail for bolts be bored from back of post after lining up and temporarily fastening rails.



DETAIL OF STANDARD CATTLE GATE

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

See Note regarding use of Concrete Posts.



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.

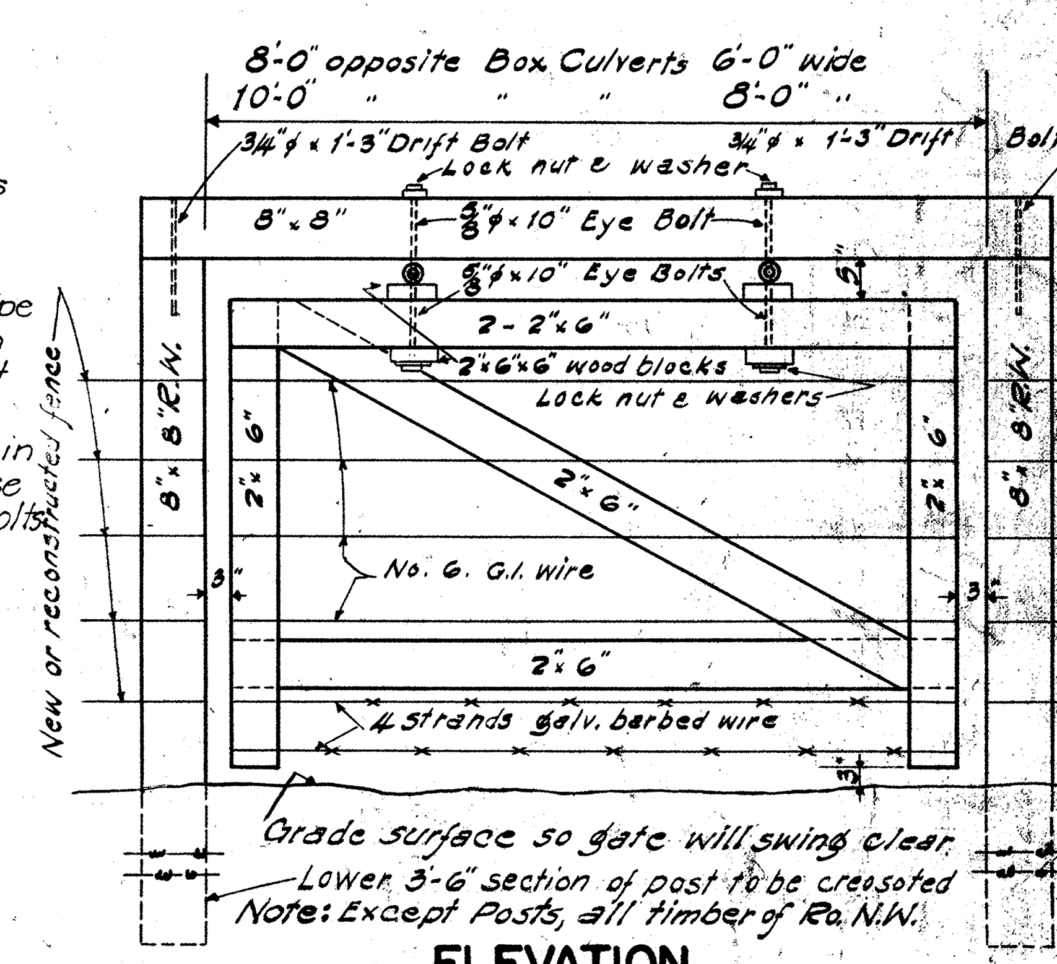
STANDARD GUIDE POSTS: 8"x8" Rein. Conc. Guide Posts are the same as those used for Std Wood Guard Rail spaced 18'-0" oc. unless otherwise specified.

STANDARD WOOD GUARD RAIL

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

DET. OF CONC. POST

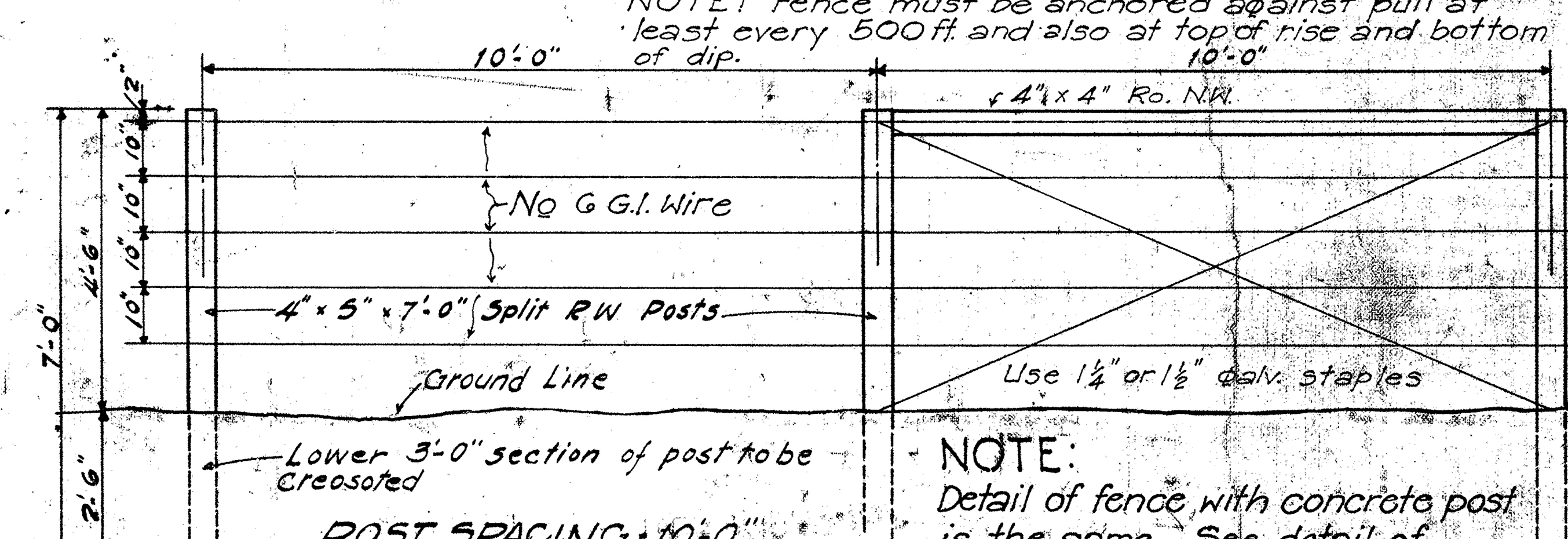
Scale: 1-1/2" = 1'-0"



ELEVATION

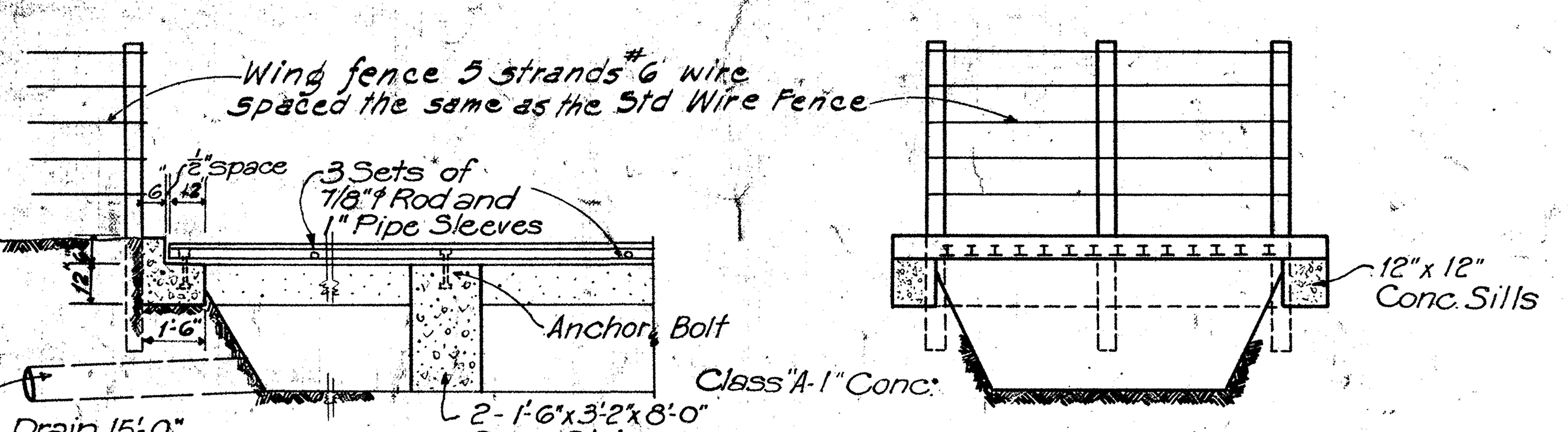
Scale: 1/2" = 1'-0"

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



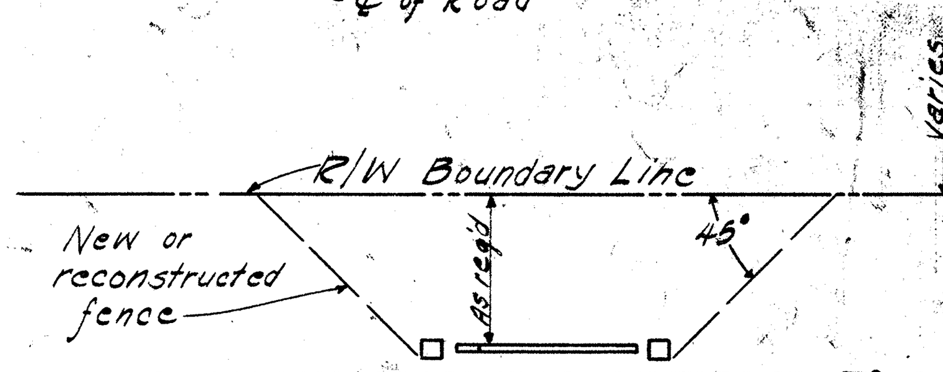
POST SPACING = 10'-0"

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



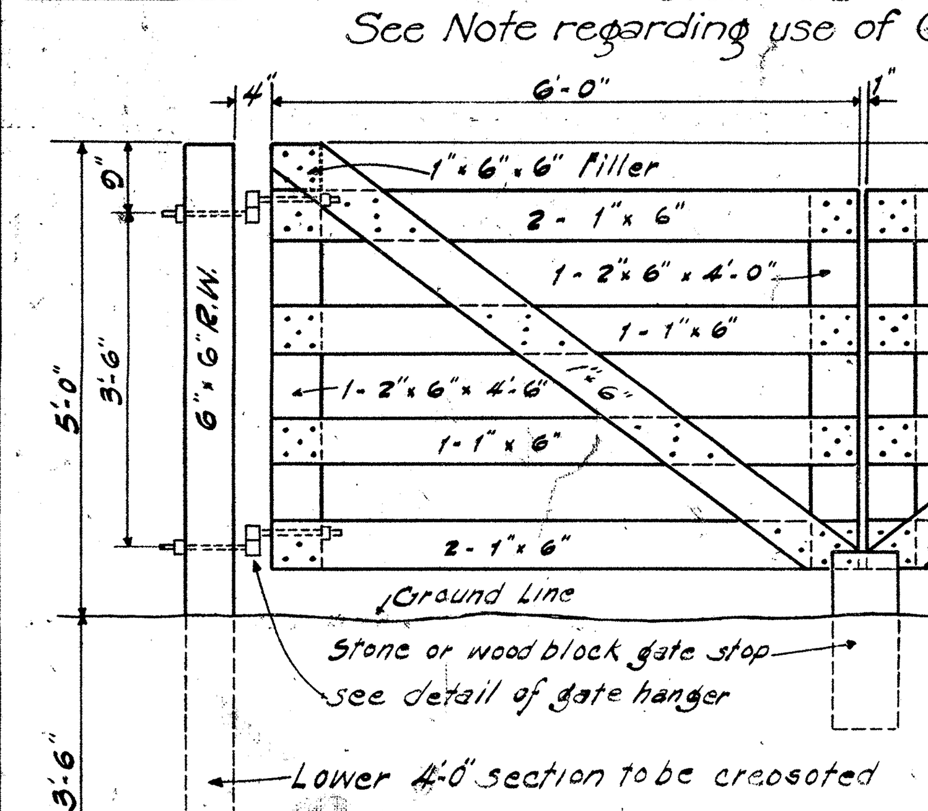
PART LONG. SECTION

CROSS SECTION



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

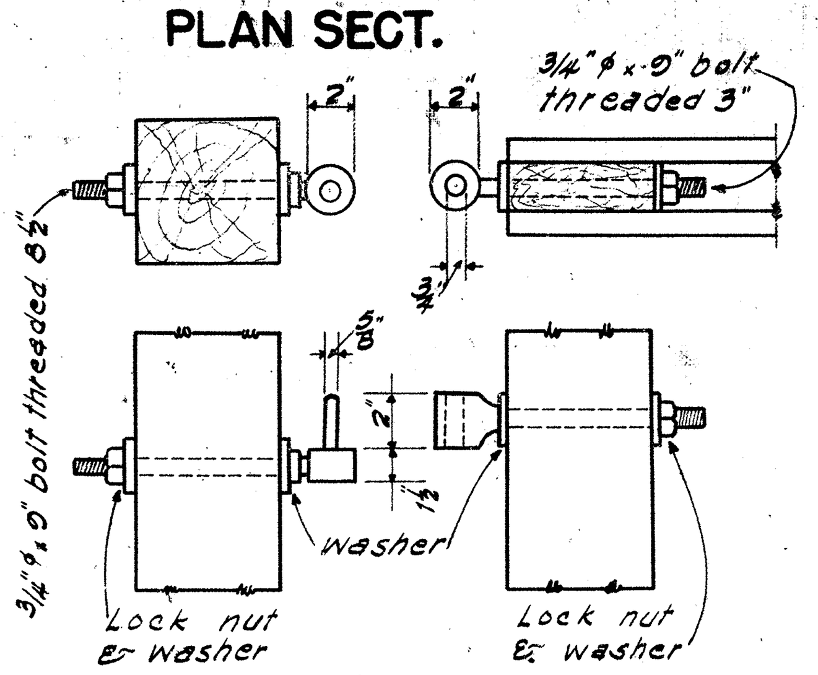
DETAILS OF HURDLE



DOUBLE HUNG GATE

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

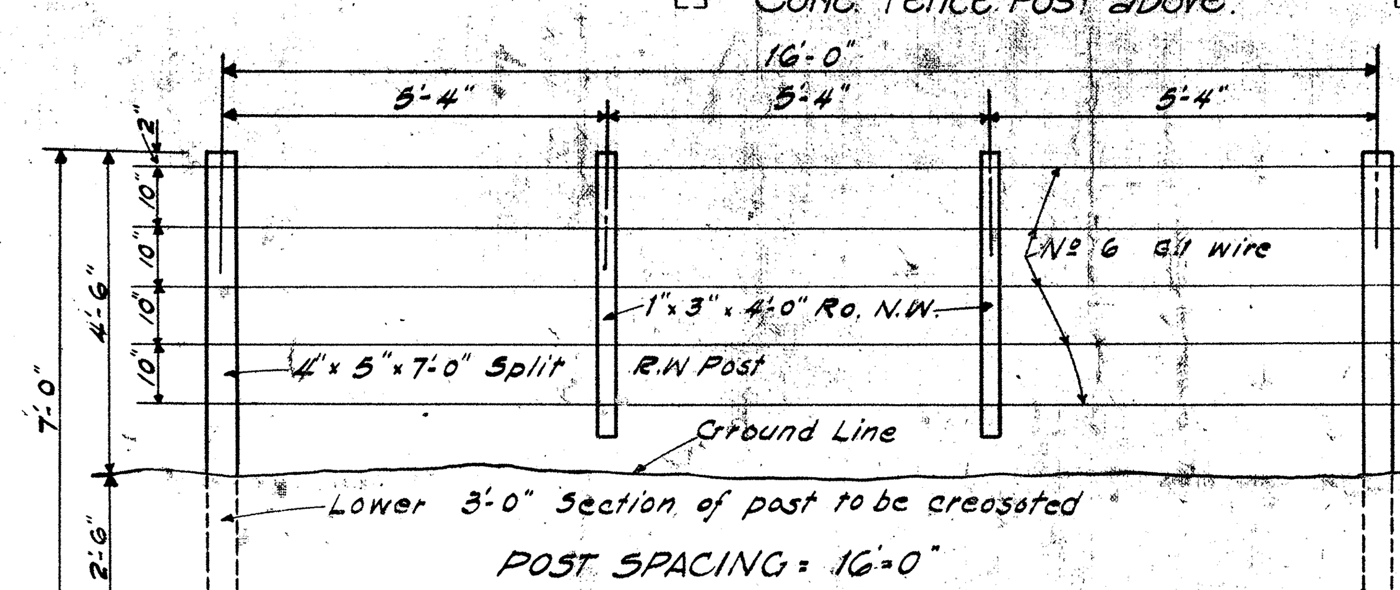
See Note regarding use of Concrete Posts.



DETAIL OF GATE HANGER

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

Note: Use ¾"x11" bolts for cattle gate



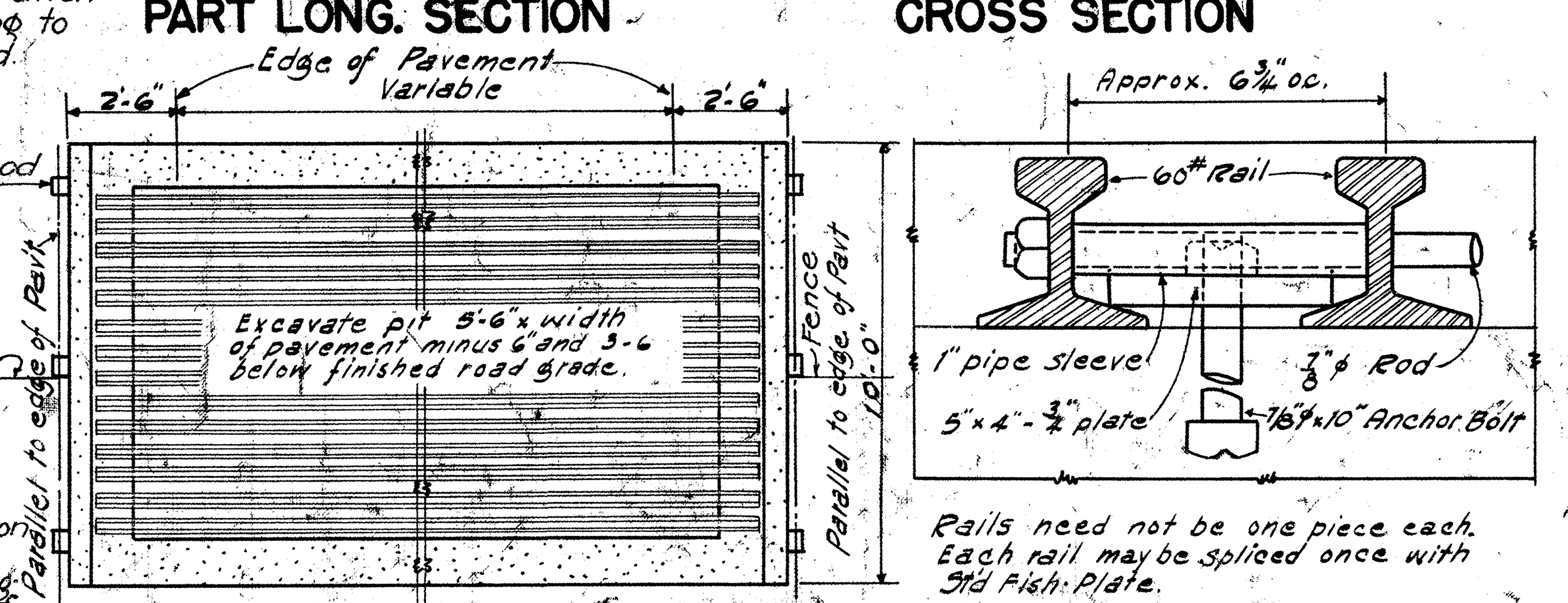
POST SPACING = 16'-0"

NOTE: This Project requires Std. Wire Fence with 10 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"

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



PLAN

DETAILS OF CATTLE GUARD

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

STANDARD DETAILS

SCALES AS NOTED Apr. 15, 1948

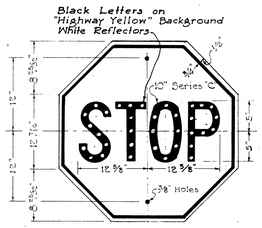
APPROVED: [signature]
Territorial Highway Engineer

SHEET No 1 OF 4 SHEETS

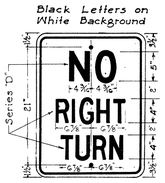
5480.8

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

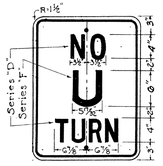
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	F727 UNIT E	1952	9	28



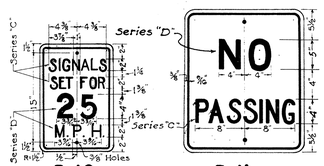
R-1
30" x 30"



R-6
18" x 24"

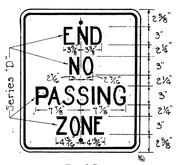


R-8
18" x 24"

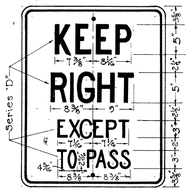


R-10
12" x 18"

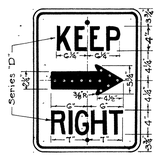
R-11
20" x 24"



R-12
20" x 24"

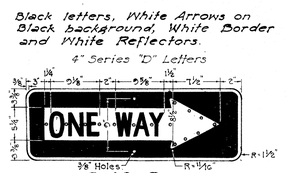


R-13
24" x 30"



R-14
18" x 24"

R-15
24" x 24"



R-16-R
*R-16-L
36" x 12"

R-18
12" x 18"

R-26
12" x 18"

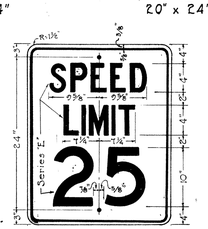
R-29
24" x 30"

R-41-S
24" x 24"

R-42-S
12" x 18"

R-43-S
12" x 18"

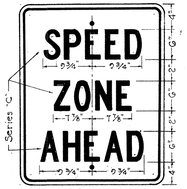
R-44-S
18" x 18"



R-102-A
24" x 30"

R-102-B
24" x 30"

R-102-C
24" x 30"



R-104
24" x 30"

R-105-A
24" x 30"

R-105-B
24" x 30"

R-105-C
24" x 30"

R-105-D
24" x 30"

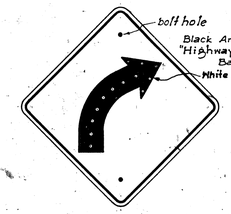
R-105-E
24" x 30"

R-105-F
24" x 30"

R-106
24" x 30"

R-107-A
24" x 30"

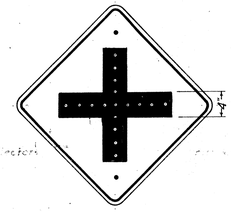
R-107
14" x 9"



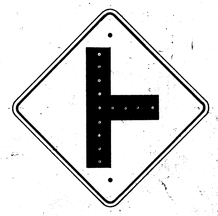
W-2-R
*W-2-L
24" x 24"

W-4-R
*W-4-L
24" x 24"

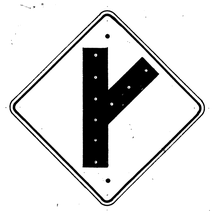
W-5-R
*W-5-L
24" x 24"



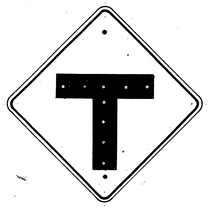
W-6
24" x 24"



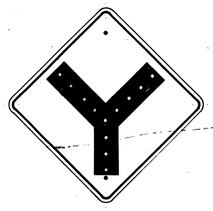
W-7
24" x 24"



W-8-R
*W-8-L
24" x 24"



W-9
24" x 24"



W-10
24" x 24"

W-13
24" x 24"

W-14
24" x 24"

W-14-A
24" x 24"

W-19
30" x 30"

W-20
30" x 30"

W-21
30" x 30"

W-22
24" x 24"

W-24
30" x 30"

W-25
24" x 24"

W-29
24" x 24"

W-38
24" x 24"

W-39
24" x 24"

W-1-R
*W-1-L
24" x 24"

All letters and figures shall be of size and design shown and shall conform with "Standard Alphabets for Highway signs" as set forth by the Public Roads Administration, Federal Works Agency. Series "C" letters and Series "D" numerals shall be used except where noted.

Note: All Regulatory (R) signs shall have black letters on a white background except where noted.
All Warning (W) signs shall have black letters or figures on a "Highway Yellow" background.
*Signs shall be similar but opposite in direction.
See Specifications for Materials and Finish.

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

REGULATORY & WARNING SIGNS

Scale: 1" = 1' May 31, 1949

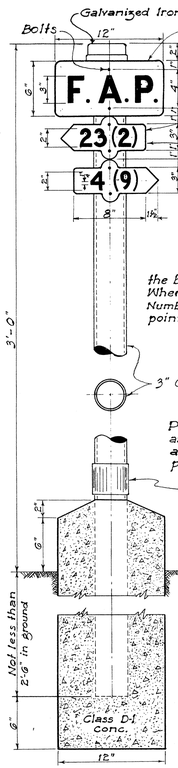
APPROVED: TERRITORIAL HIGHWAY ENGINEER

SHEET Nº OF SHEETS

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

5480.9

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	F-7(2) UNIT 2	1952	10	28



ARRANGEMENT OF MARKERS

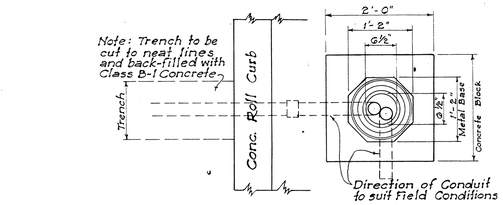
One F.A.P. Marker and one plate shall be placed at the beginning and end of each isolated F.A. Project. Where two F.A. Project adjoin, a single marker and two Number plates shall be placed, each Number plate pointing in the direction of the project to which it refers.

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.

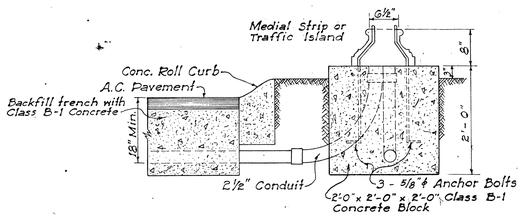
Markers and Number plates shall be № 16 Ga. galvanized iron with ⅜"ϕ holes for fastening as shown on sketch. Markers and Number plates shall be given one coat of best Chromate primer and two coats of White Marine Enamel. Before painting they shall be given a wash of 8 ounces of Copper Sulphate in one 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"



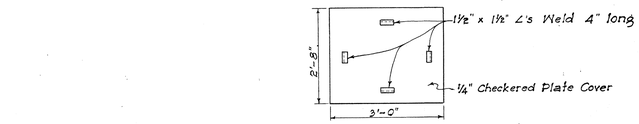
PLAN



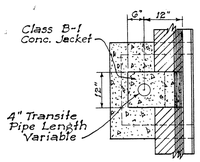
SECTION

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

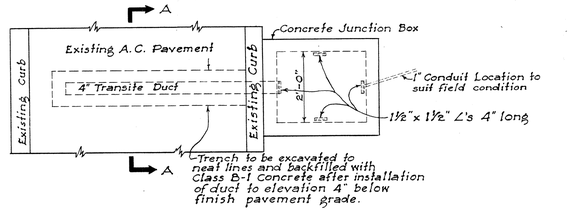
DETAIL OF BASE FOR TRAFFIC STANDARD AND DISPATCHER PEDESTAL



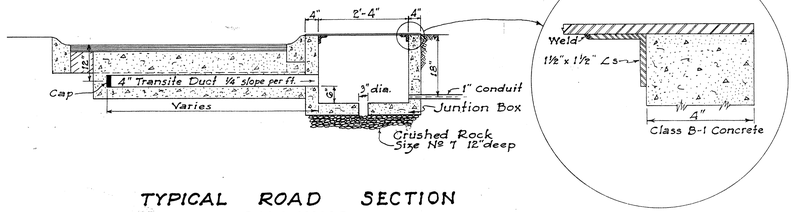
PLAN OF COVER PLATE



SECTION "A-A"

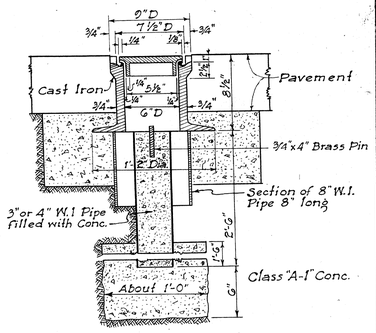


PLAN

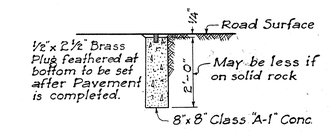


TYPICAL ROAD SECTION SHOWING TRAFFIC DETECTOR JUNCTION BOX AND DUCT

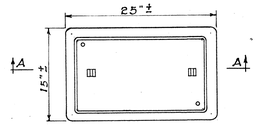
PLAN OF TOP



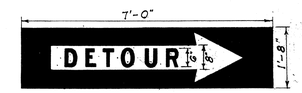
STANDARD C&C STREET SURVEY MONUMENT



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

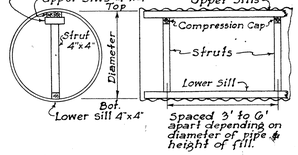


DETAIL OF PULL BOX
Scale: 1" = 1'-0"



STANDARD DETOUR SIGN

STRUTTING DIAGRAM & TABLE FOR CORRUGATED METAL PIPE CULVERT

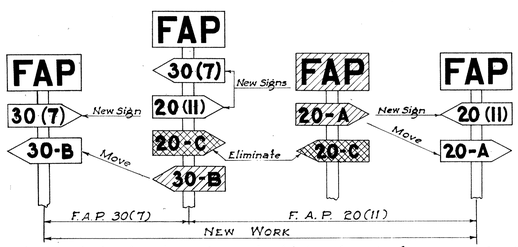


END VIEW LONGITUDINAL SECTION

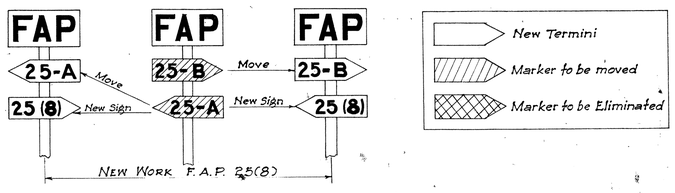
Diameter of Pipe in inches	Length of Struts in inches	Spacing of Struts in ft. for Various Heights FILL 1' to 5'	FILL 5' to 10'	FILL 10 to 20'	FILL 20 to 30'	FILL Over 30'
48	38 3/8	–	–	–	G	4
54	44 3/4	G	G	G	G	4
60	51	G	G	G	G	4
66	57 1/4	G	G	G	G	4
72	63 5/8	G	G	G	5	3.5
78	69 7/8	G	G	G	4.5	3.5
84	76 1/4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

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

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

STANDARD DETAILS

SCALES AS NOTED May 31, 1949

APPROVED: ..... Territorial Highway Engineer

SHEET № OF SHEETS

5480.10

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	F 7(2)1 UNIT 2	1952	11	28

NOTE: All signs shall be placed 10' from edge of pavement except where shoulder width is less than 10', in which case signs shall be placed at edge of shoulder.
STOP SIGN
RURAL DISTRICT
STOP
SEE NOTE ABOVE
Pavement Crown Elevation
SPEED LIMIT SIGN
BUSINESS OR RESIDENCE DISTRICT
SPEED LIMIT 25
NOT LESS THAN 7'
PARKING SIGN
BUSINESS OR RESIDENCE DISTRICT
30° to 45° with curb line
WARNING SIGN
RURAL DISTRICT
WARNING SIGN WITH ADVISORY SPEED SIGN
RURAL DISTRICT
DIRECTIONAL MARKING ASSEMBLY
RURAL DISTRICT
CONFIRMATORY ROUTE MARKERS
BUSINESS OR RESIDENCE DISTRICT
OVERSIZE JUNCTION ASSEMBLY
RURAL DISTRICT
JUNCTION
OVERSIZE TURN MARKING ASSEMBLY
BUSINESS OR RESIDENCE DISTRICT
NOTE: All Sign Posts shall be 3" Galv. Iron Pipe. Two (2) 7/16"φ bolt holes drilled at location shown. Two (2) 3/8"φ bolts with leather washers against face and back of metal sign.
HEIGHT AND LATERAL LOCATION OF SIGNS - TYPICAL INSTALLATIONS
Scale: 1" = 3'-0"
Black letter and crossbuck on "Highway Yellow" background
7/16"φ bolt holes drilled at 24" center
Series "D"
White Reflectors
W-32
30" Diameter
Scale: 1" = 1'-0"
NOTE: This sign shall be placed from 300 to 500 feet from R.R. intersections in rural areas and a minimum distance of 100 feet from R.R. intersections in Residence or Business districts.
Black letters on White background
RAIL ROAD CROSSING
Series "C"
3 TRACKS
White Reflectors
4" Pipe
Coupling
Pavement Crown Elev.
Ground
Varies
Conc. Base similar to one shown for Federal Aid Marker
W-33
Scale: 1/2" = 1'
Black letters and figures on "Highway Yellow" background
25 M.P.H.
35 M.P.H.
Series "D"
Series "C"
W-35-A
13" x 13"
W-35-B
13" x 13"
Scale: 1" = 1'-0"
3" Yellow Reflectors
Bolts
1/2" holes
Top of curb
4" x 4" S4S Redwood Post
1" x 4" x 8" Rwd. Anchor Blk. fasten with 12d nails
W-41
NOTE: These posts to replace Metal Guard Rail Post adjacent to Bridges where shown on plans.
1" Bevel
NOTE: Lower reflectors to be 6" higher than rail post
Redwood Post
Three 3" Red Reflectors
Two 3" Clear Reflectors
W-42
W-43
Scale: 1 1/2" = 1'-0"
NOTE: This marker shall be installed opposite and at the same height as marker W-42
Oversize Galv. Washer W/Nut
PLAN
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.
Butt Joints to be left open approx. 1/8" spaced every other post except on sharp curves.
3/4"φ Galv. Carriage Bolts spaced as shown. Counter sunk on front face.
8" x 8" S4S Wolmanized Posts 9'-0" C.C.
12" Min.
Notes: All bolt holes in posts shall be drilled before treatment with Wolman salt. Posts shall be painted the same as called for in the railing.
ELEVATIONS
WOOD GUARD RAIL W/WOOD POSTS
3/8" = 1'-0"

TERRITORIAL HIGHWAY DEPARTMENT

TERRITORY OF HAWAII

REGULATORY & WARNING SIGNS

SCALE AS NOTED — May 31, 1949

APPROVED: [signature] Territorial Highway Engineer

SHEET No OF SHEETS

5480.11

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