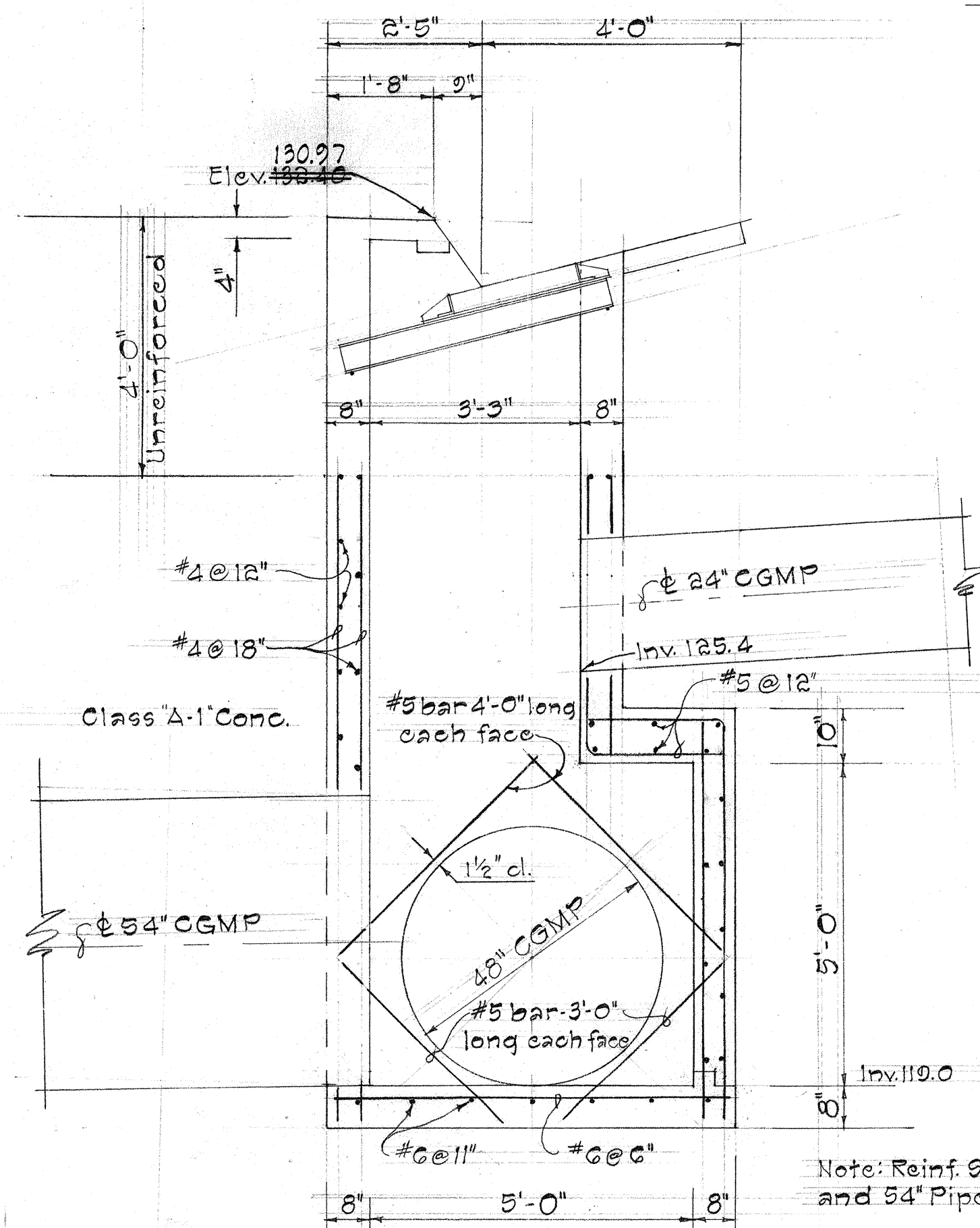
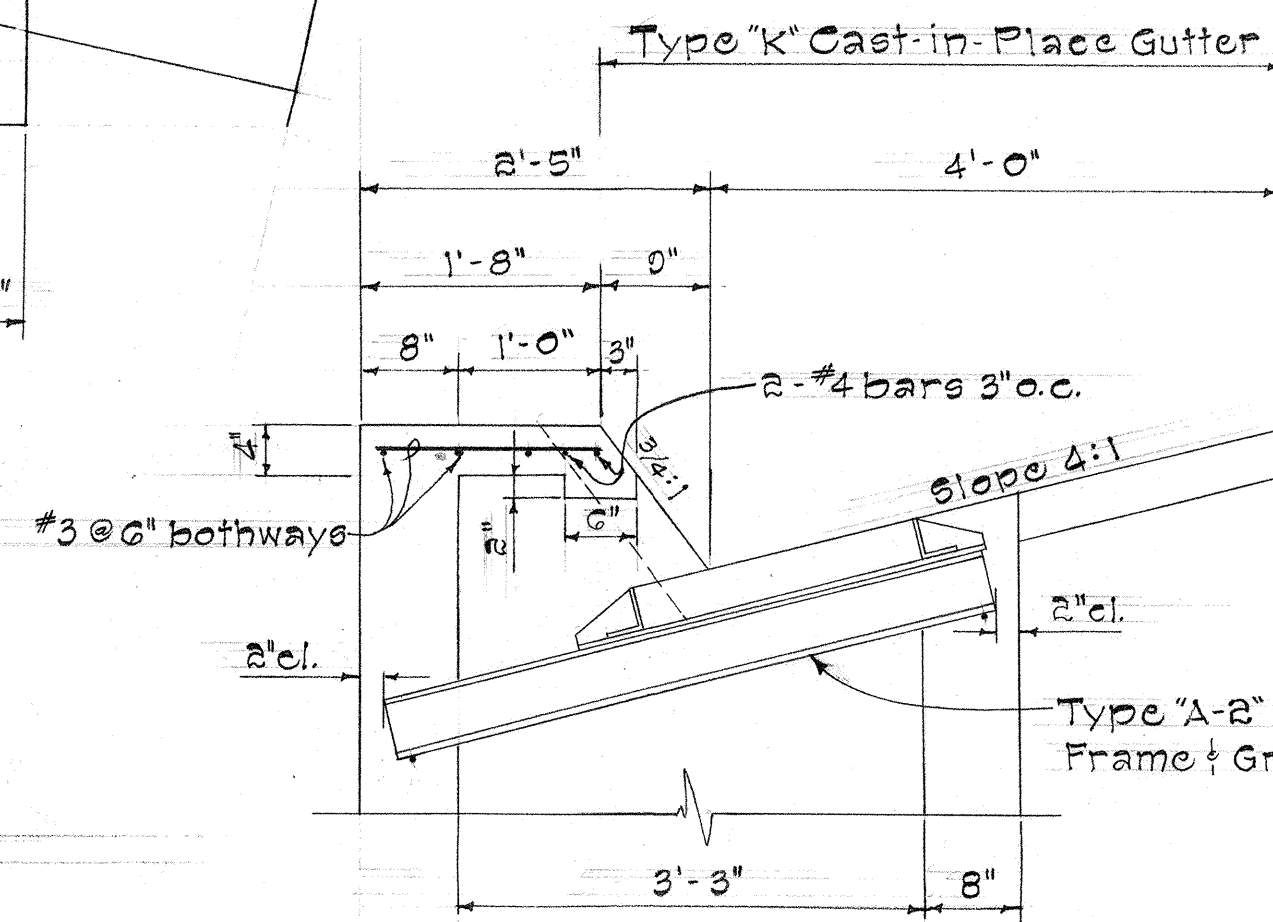
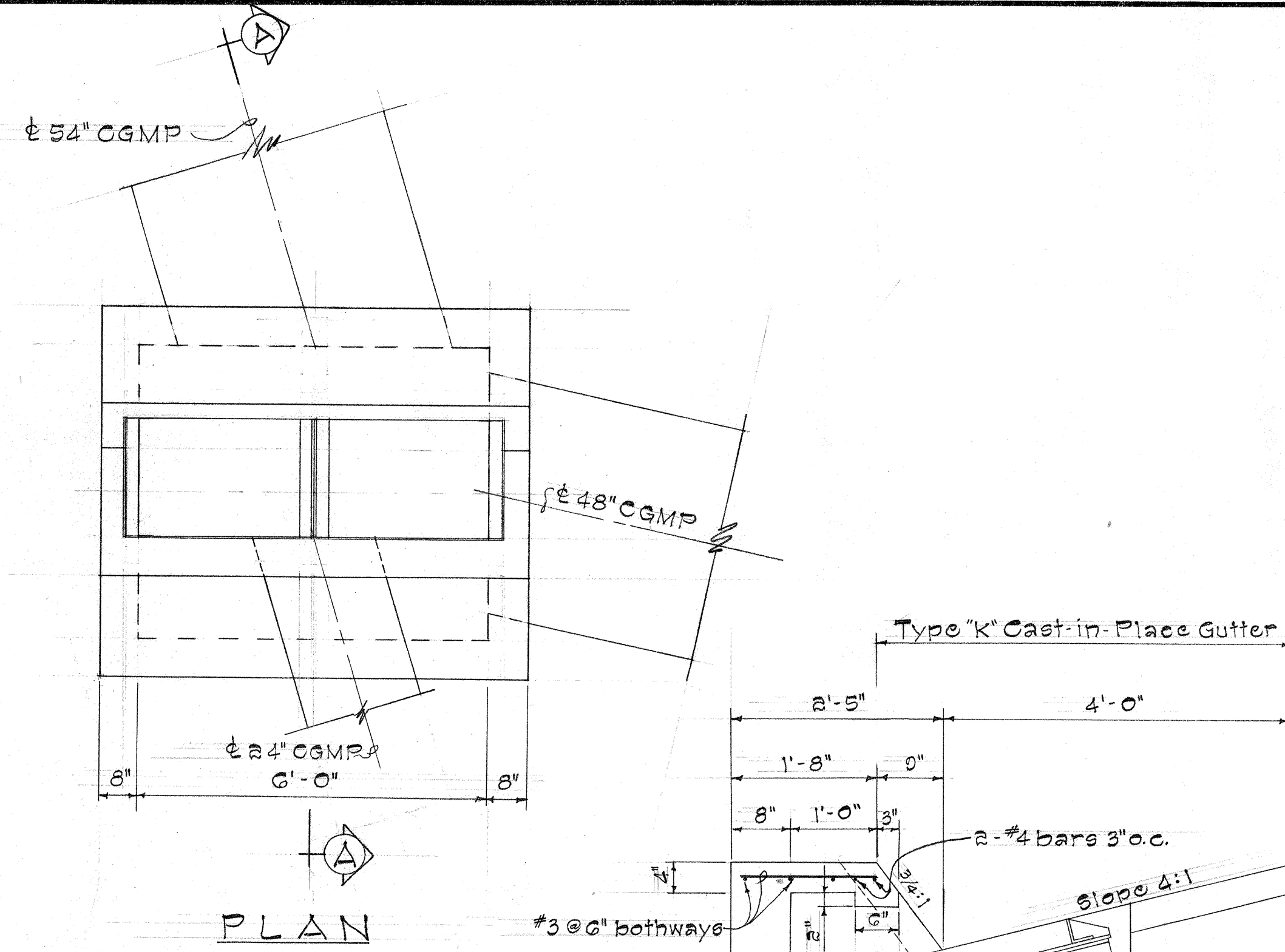


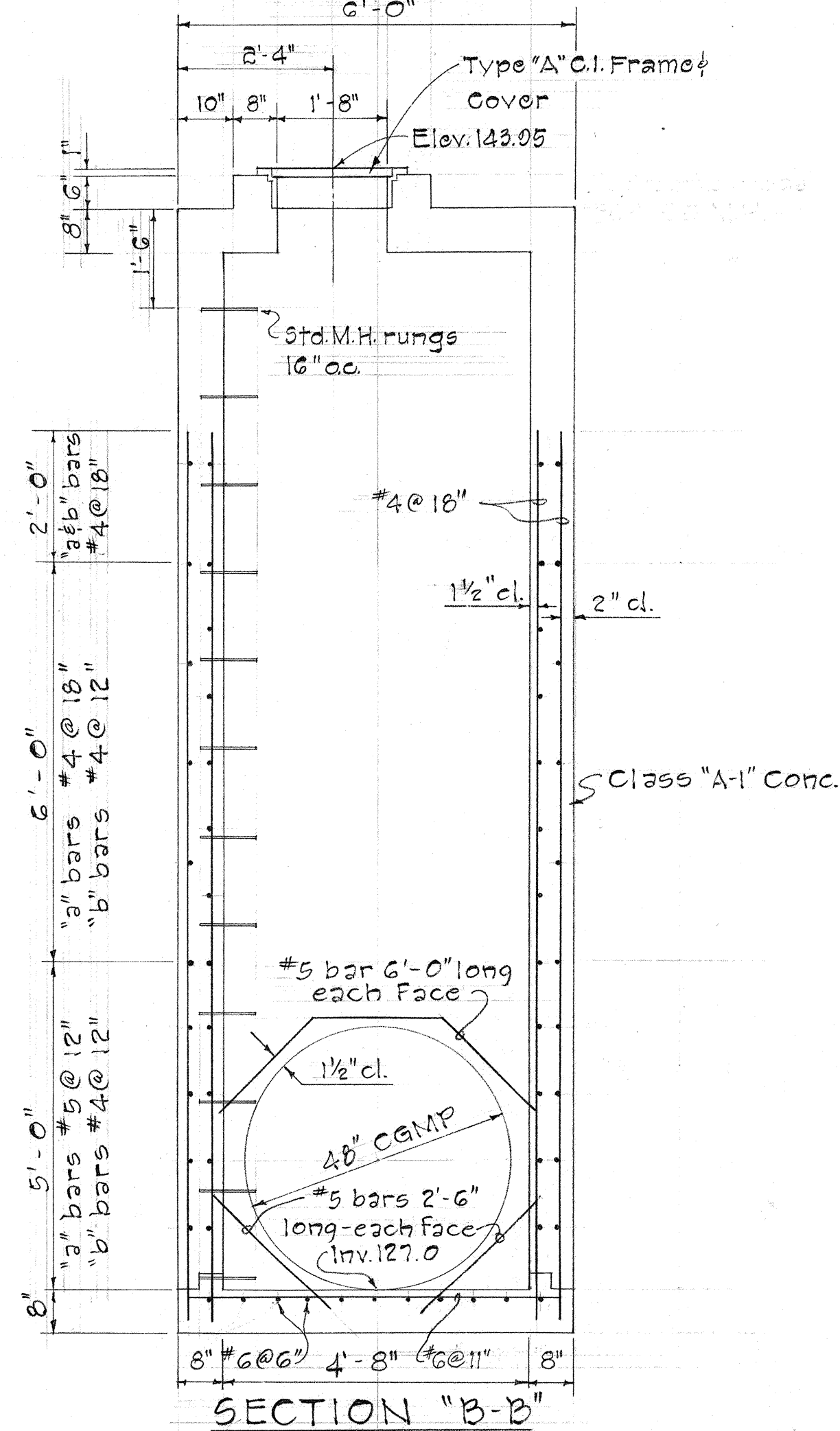
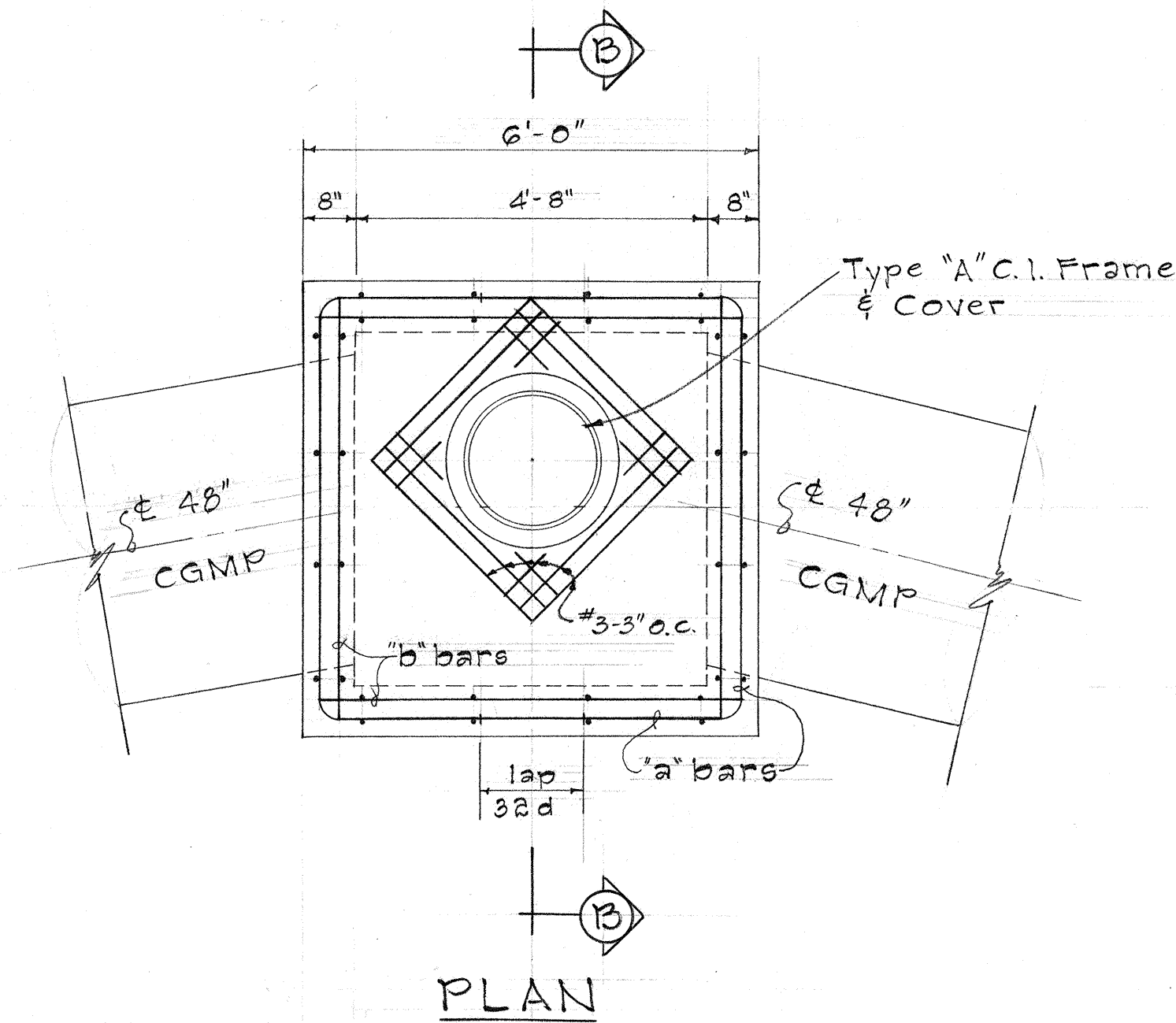
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0330(2)	1967	12	47



SECTION "A-A"

MODIFIED CATCH BASIN AT STA. 7+54

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

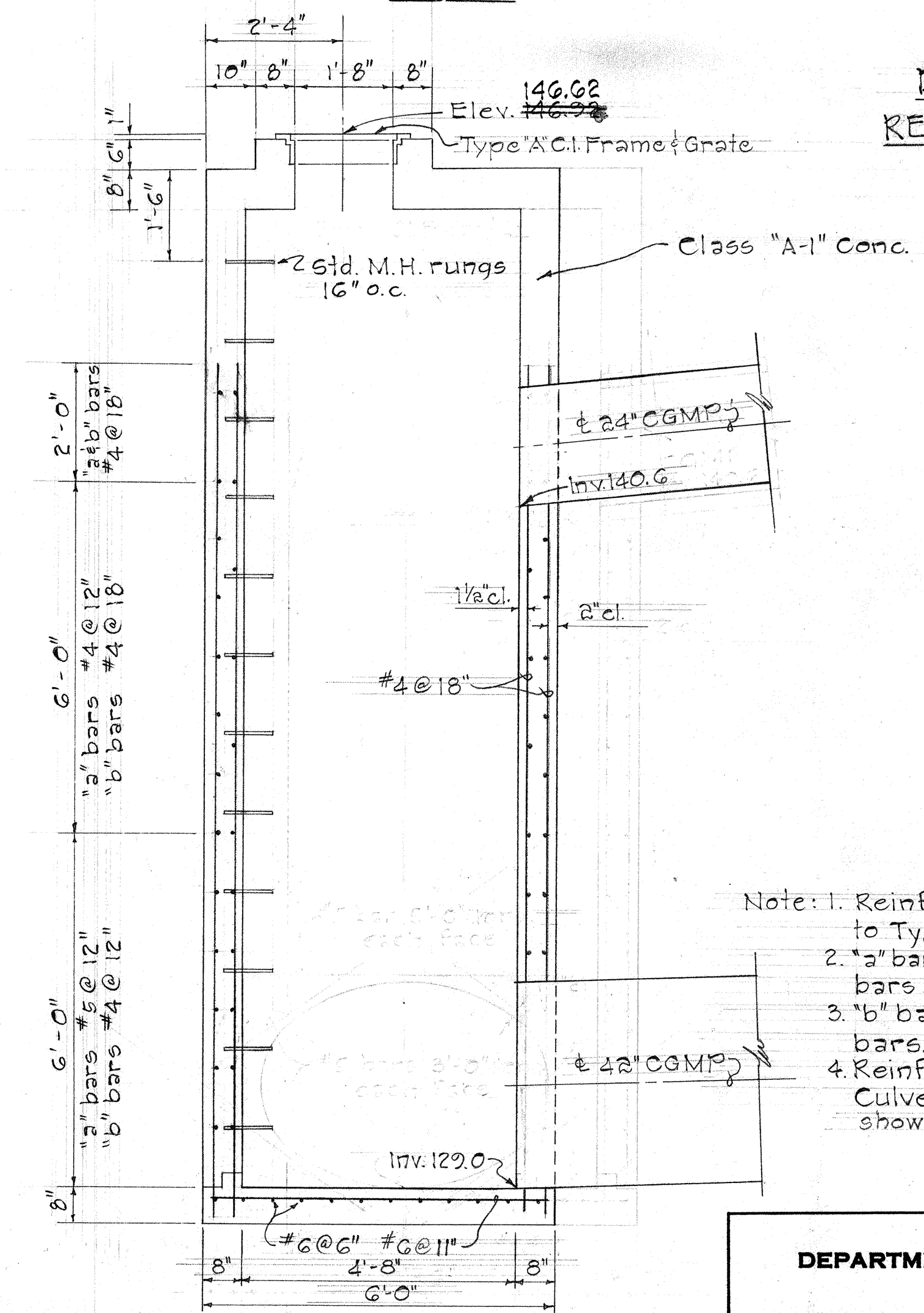
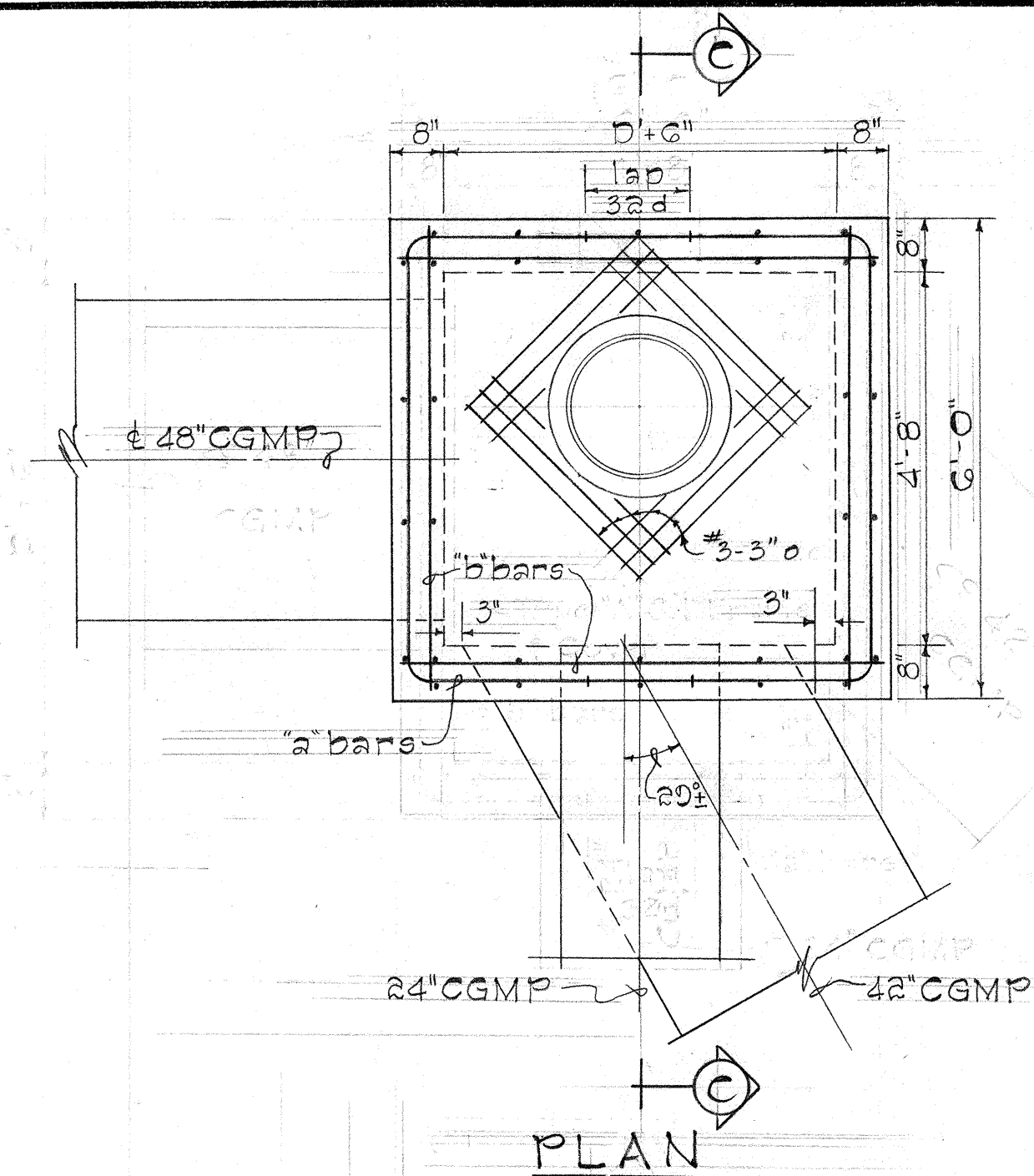


SECTION "B-B"

Note: 1. Reinf. Steel for top slab is similar to Type C-1 S.D.M.H.
2. "a" bars refer to outside horizontal bars.
3. "b" bars refer to inside horizontal bars.
4. Reinf. Steel around both 48" Pipe Culverts are identical.

S.D.M.H. AT STA. 10+25

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



SECTION "C-C"

S.D.M.H. AT STA. 11+65 RT.

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

DETAIL OF ADDITIONAL REINF. AROUND 24" CULVERT
No Scale

Note: 1. Reinf. Steel for top slab is similar to Type C-1 S.D.M.H.
2. "a" bars refer to outside horizontal bars.
3. "b" bars refer to inside horizontal bars.
4. Reinf. Steel around 42" and 48" Pipe Culverts are similar to the ones shown in S.D.M.H. at Sta. 10+25.

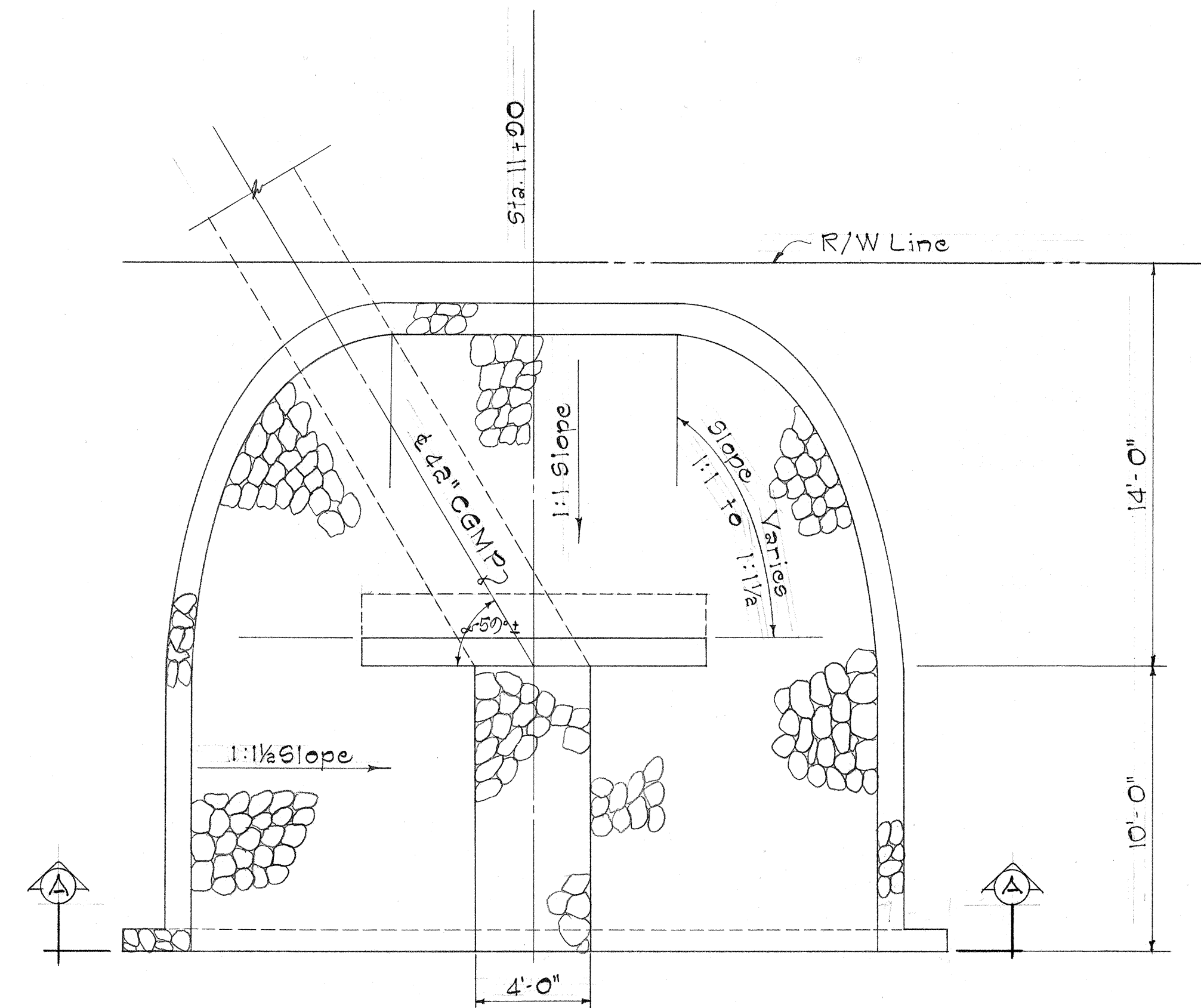
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
MODIFIED C.B. @ STA. 7+54
AND S.D.M.H. @ STA. 10+25 & 11+65
KAHEKILI HIGHWAY

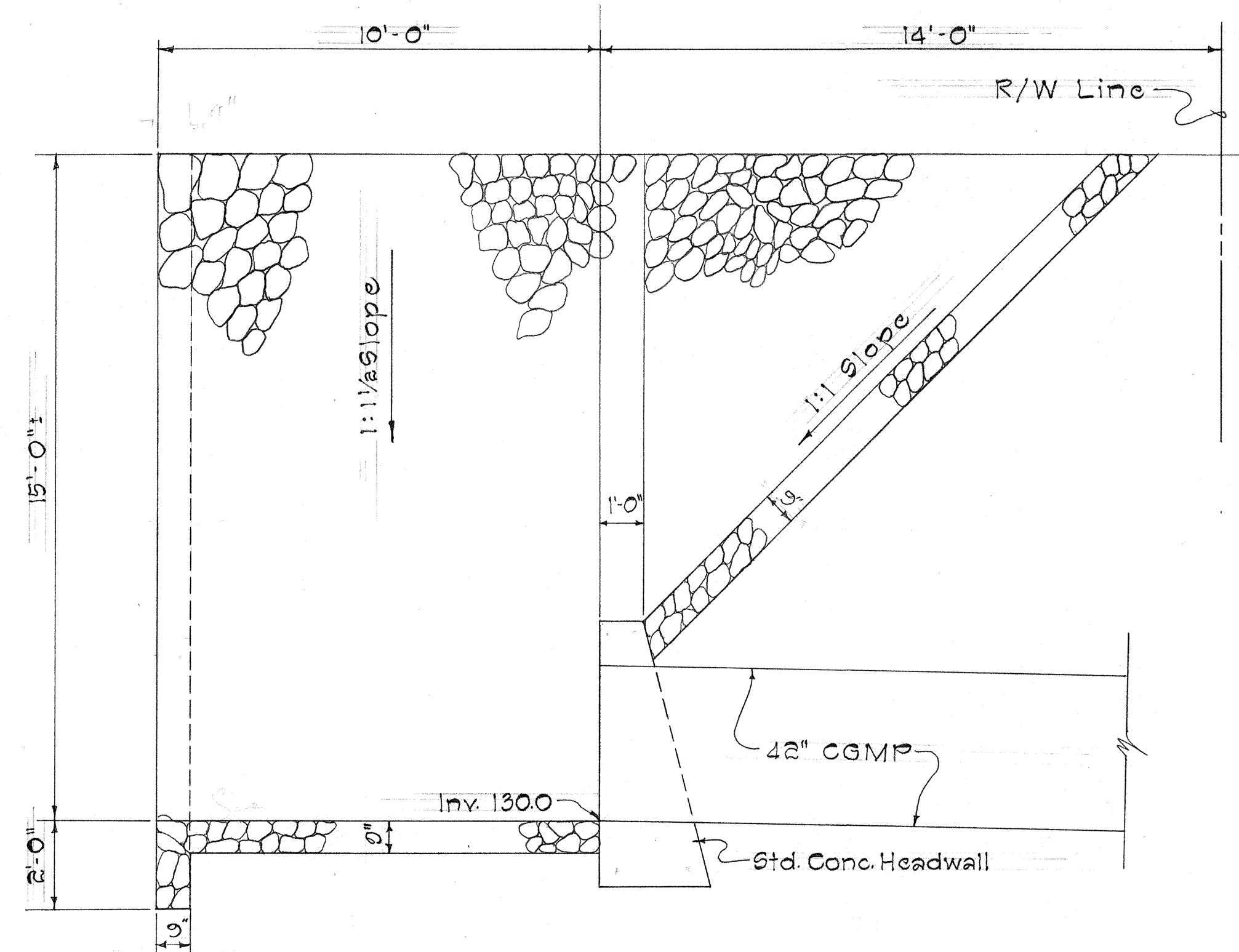
Waihee Bridge and Approaches
Proj. No. 5-0330(2)
Scale: As Shown Date: Mar. 1967

SHEET No. 1 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0330(2)	1967	12	47

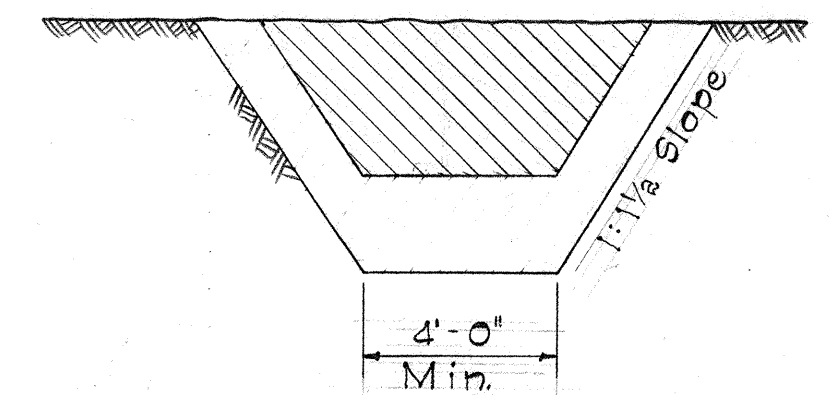


PLAN
Scale: 1/4" = 1'-0"

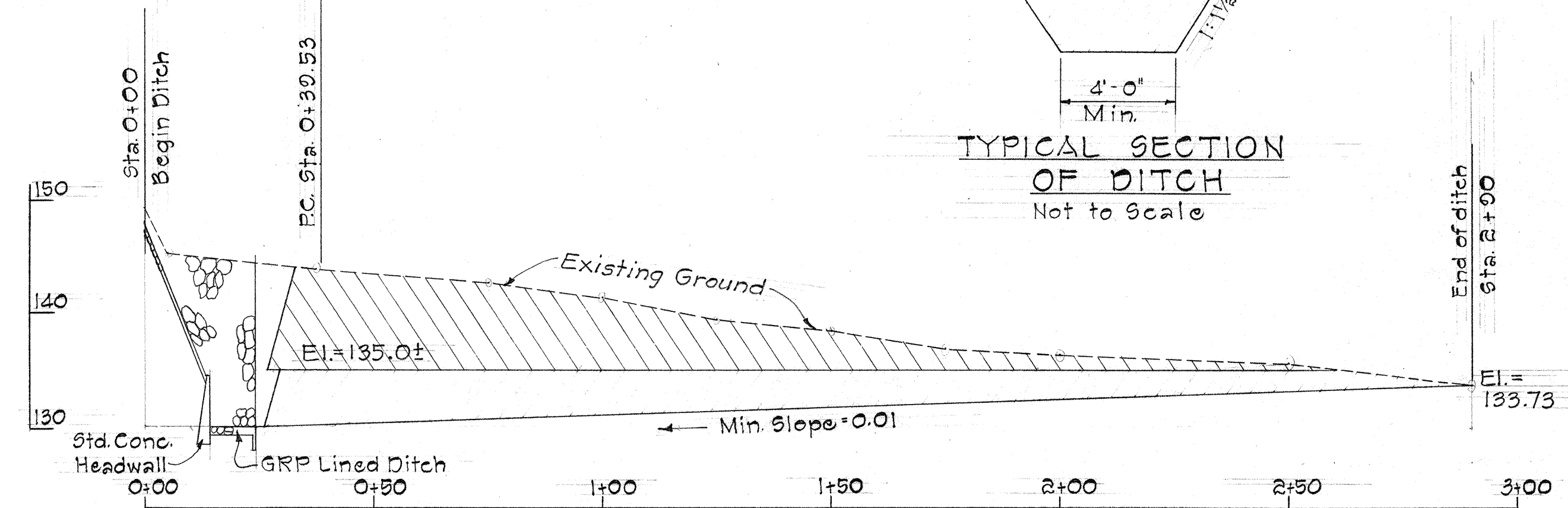


PROFILE
Scale: 3/8" = 1'-0"

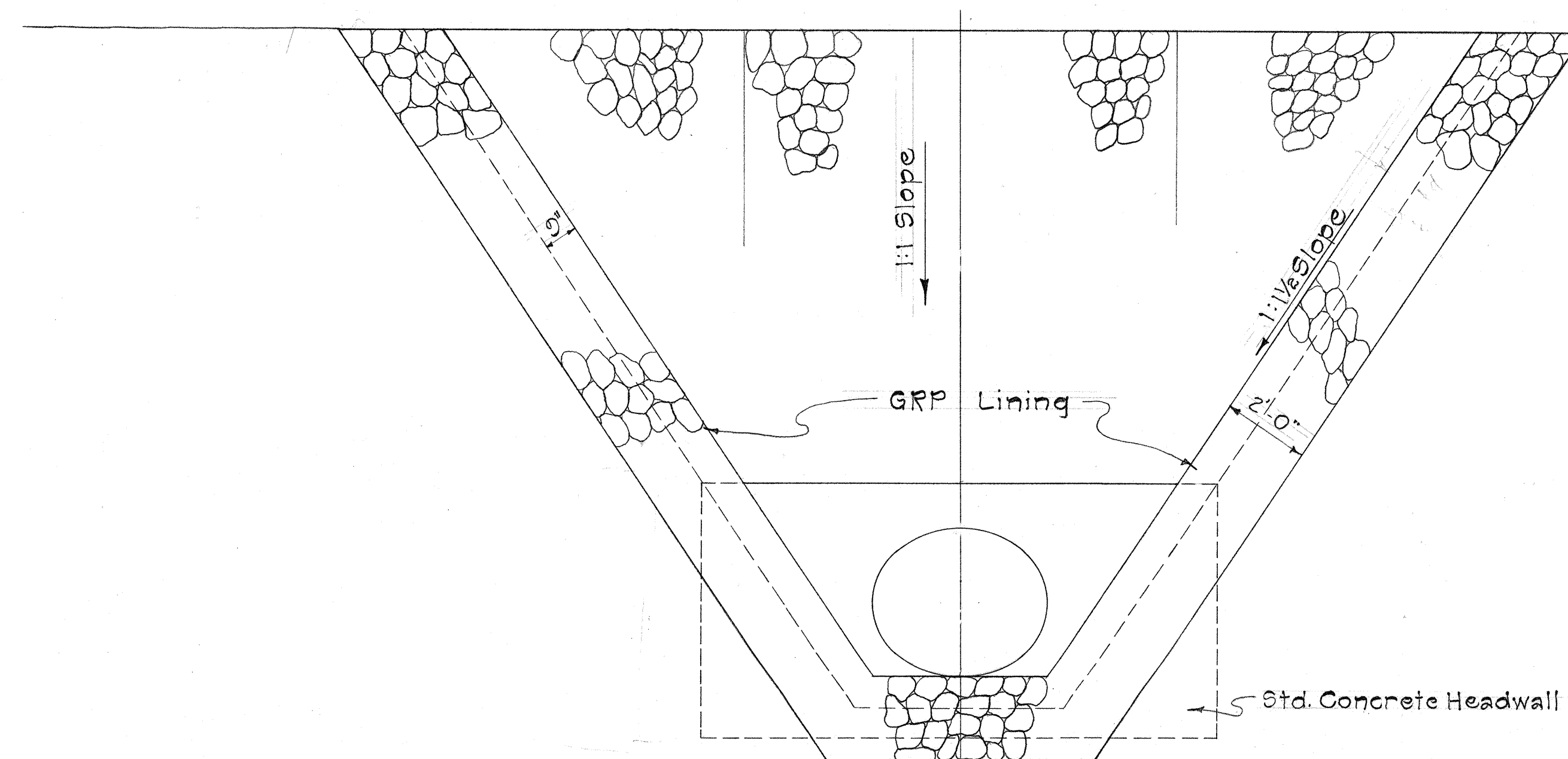
DITCH & CHANNEL EXC.
States portion
Plantation's portion



TYPICAL SECTION
OF DITCH
Not to Scale



PROFILE OF DRAINAGE DITCH



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

DETAIL OF INTAKE STRUCTURE AT STA. 11+00

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE DETAIL
INTAKE STRUCTURE
AT STA. 11+00
KAHEKILI HIGHWAY
Waihee Bridge and Approaches
Proj. No. 5-0330(2)
Scale: As Shown Date: Mar. 1967
SHEET No. 2 OF 7 SHEETS

DATE	DESIGNED BY	CHECKED BY
PLAN	NOTED BY	NOTED BY
NOTE BOOK	DESIGNED BY	CHECKED BY
No.	DESIGNED BY	CHECKED BY

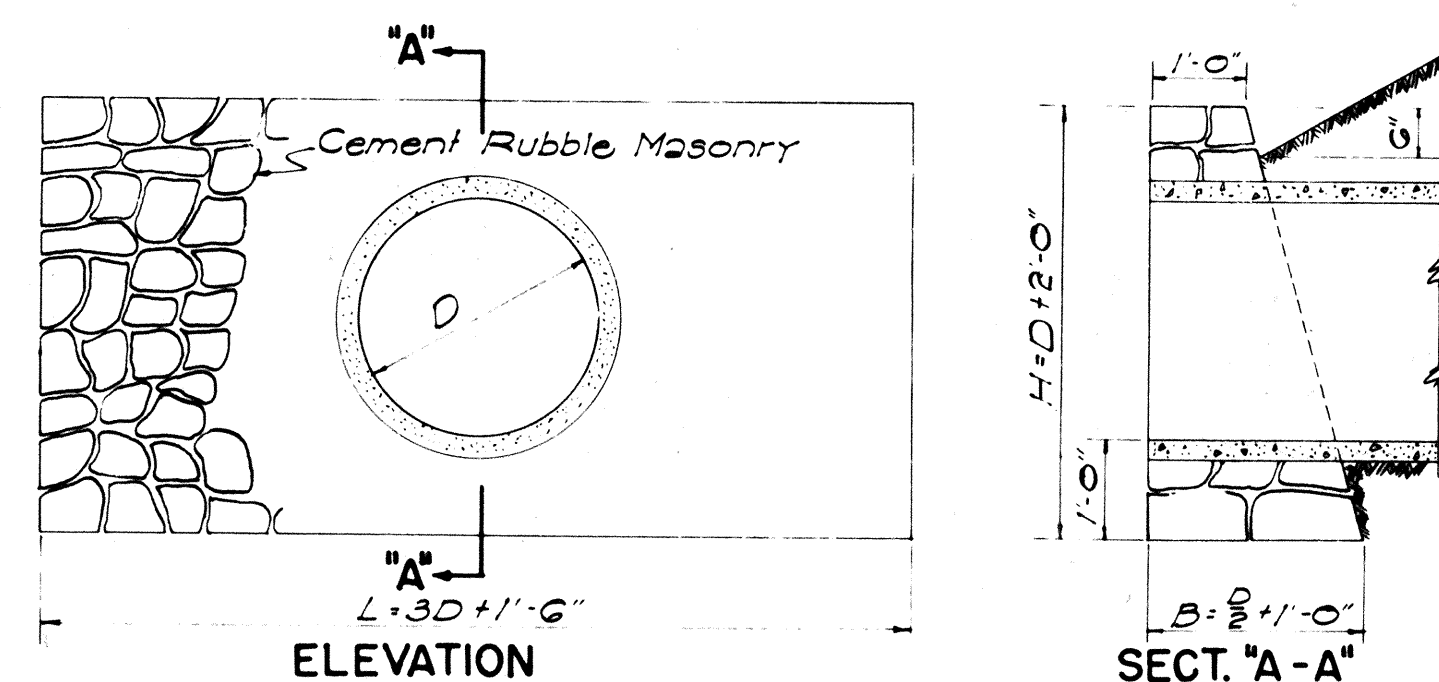
DATA FOR OUTLET DITCH				
D	W	H	T-W+H	
18"	24"	2'-0"	4'-0"	
24"	30"	2'-0"	4'-6"	
30"	30"	2'-6"	5'-0"	
36"	36"	3'-0"	6'-0"	

DETAIL OF OUTLET DITCH
Scale: 1/2" = 1'-0"

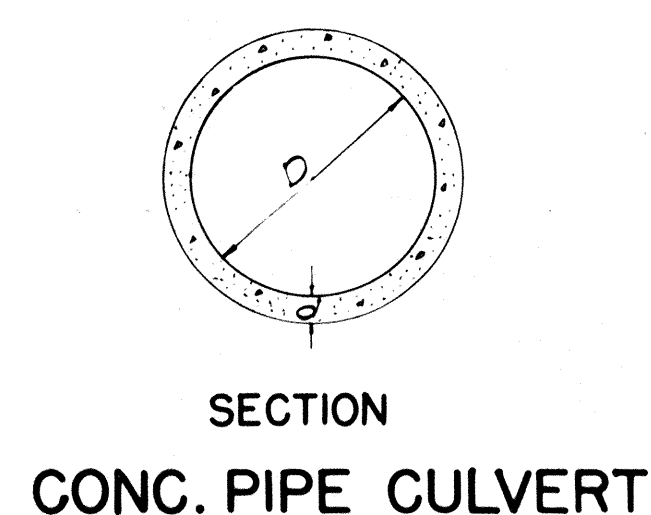
DATA FOR MASONRY DROP INTAKE					Where Variables Equal
D	D	L-D+G	Cu Yds		
23"	18"	2'-5"	3.02	4'-6"	
30"	24"	3'-0"	3.61	5'-0"	
37"	30"	3'-7"	4.21	5'-6"	
44"	36"	4'-2"	4.85	6'-0"	

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

DATA-MASONRY HEADWALL					Cast-in-Place Conc. Culvert	Corrugated Pipe Culvert
D	H	B	L	Cu Yds	Cu Yds	Cu Yds
18"	3'-6"	1'-0"	6'-0"	0.83	0.05	0.03
24"	4'-0"	2'-0"	7'-6"	1.28	1.45	1.41
30"	4'-6"	2'-3"	9'-0"	1.83	2.06	2.00
36"	5'-0"	2'-6"	10'-6"	2.40	2.84	2.72



DETAIL OF MASONRY HEADWALL
Scale: 1/2" = 1'-0"



SECTION CONC. PIPE CULVERT

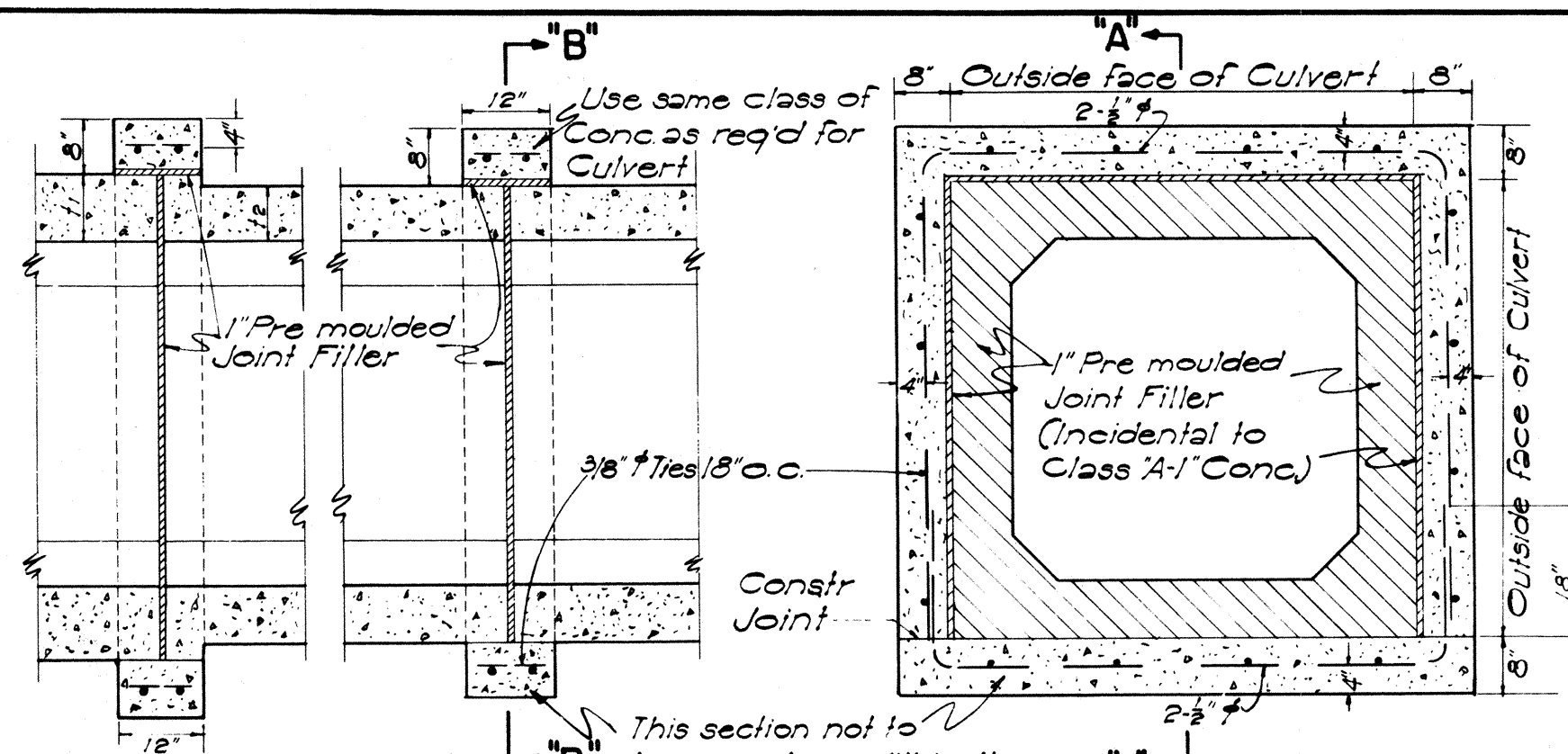
NOTE:
Thickness 'd', reinforcing, and concrete used, are to conform with the approved design as provided by the Specifications.

DATA-CAST-IN-PLACE CONC. CULVERT				
D	d	W	Cu Yds 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

DATA FOR CONC. HEADWALL					Cast-in-Place Conc. Culvert	Steel For One Headwall
D	B	L	H	Cu Yds	Cu Yds	No. of Bars Size Length Lbs.
18"	1'-6"	6'-0"	4'-0"	0.02	1.00	4 3/4" 5'-6" 33
24"	1'-6"	7'-6"	4'-6"	1.25	1.38	4 3/4" 7'-0" 42
30"	2'-0"	9'-0"	5'-0"	1.05	2.17	4 3/4" 8'-6" 51
36"	2'-0"	10'-6"	5'-6"	2.45	2.74	4 3/4" 10'-0" 60
42"	2'-6"	12'-0"	6'-0"		3.87	4 3/4" 11'-6" 60
48"	2'-6"	13'-6"	6'-6"		4.66	4 3/4" 13'-0" 78

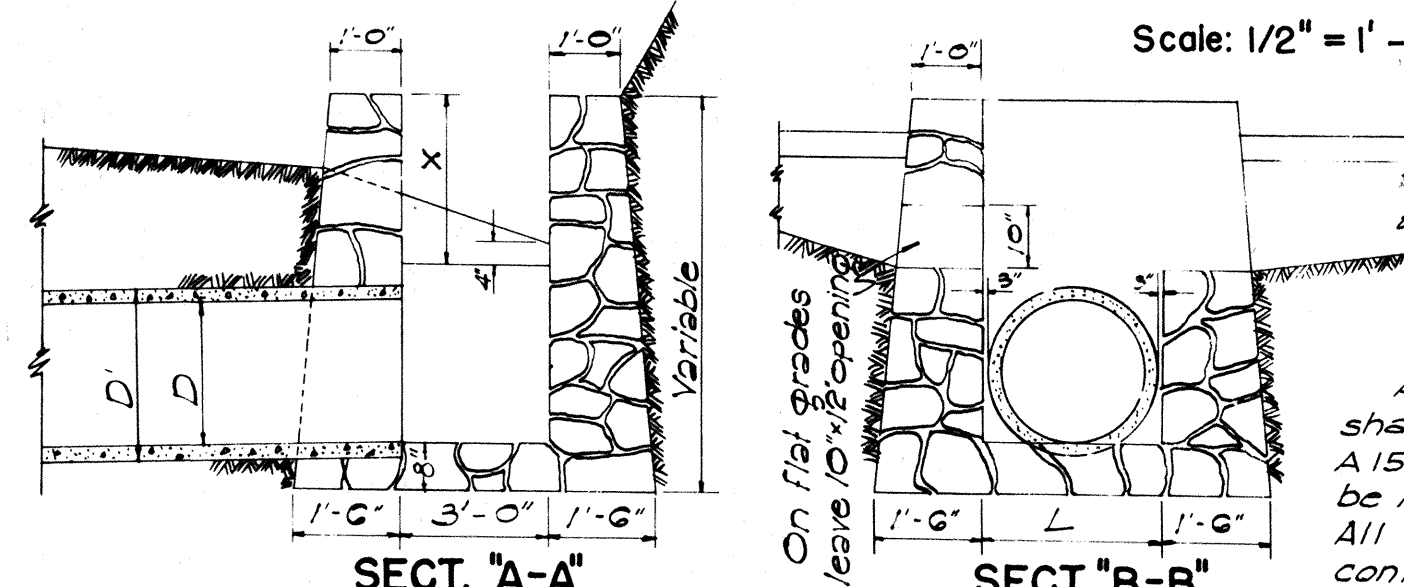
DETAIL OF CONCRETE HEADWALL
Scale: 1/2" = 1'-0"



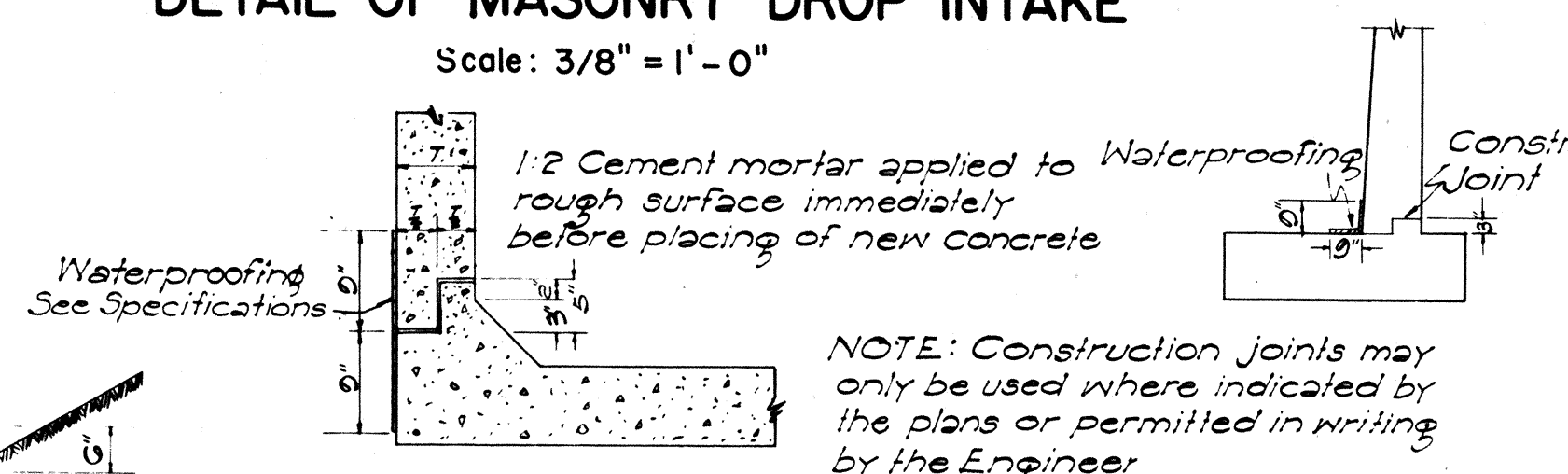
SECTION "A-A" SECTION "B-B"
CONC. COLLAR FOR CONC. BOX CULVERT
Scale: 1/2" = 1'-0"

REINFORCING BARS

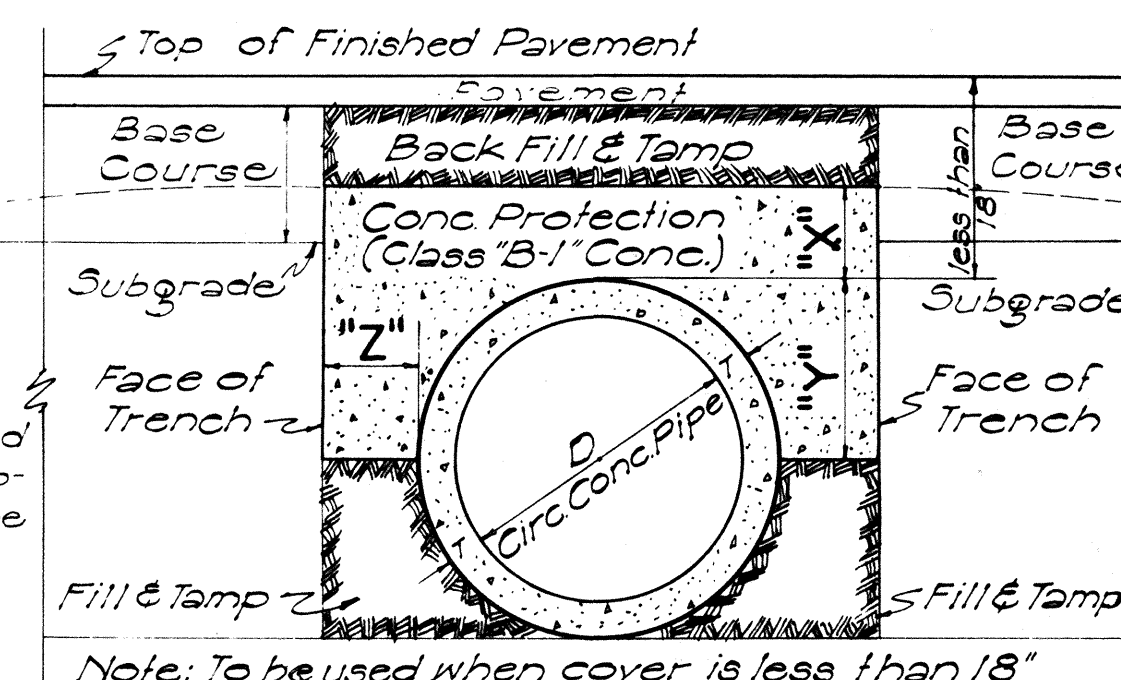
All reinforcing bars for concrete shall be Billet Steel bars, ASTM A15, intermediate grade. Steel shall be made by the open-hearth process. All bars shall be deformed type conforming to ASTM A-305.



DETAIL OF MASONRY DROP INTAKE
Scale: 3/8" = 1'-0"



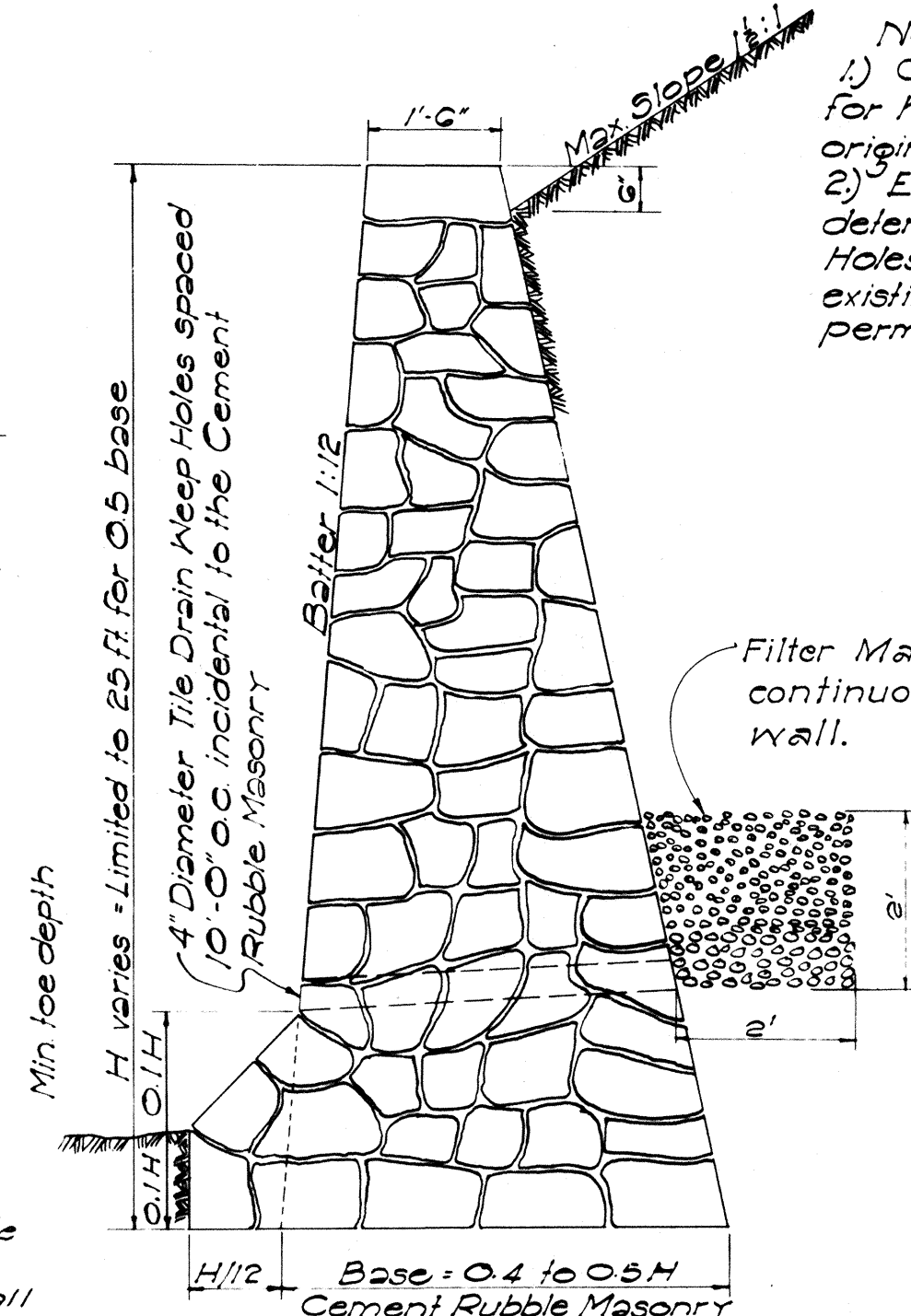
CONSTR. JOINT DETAILS



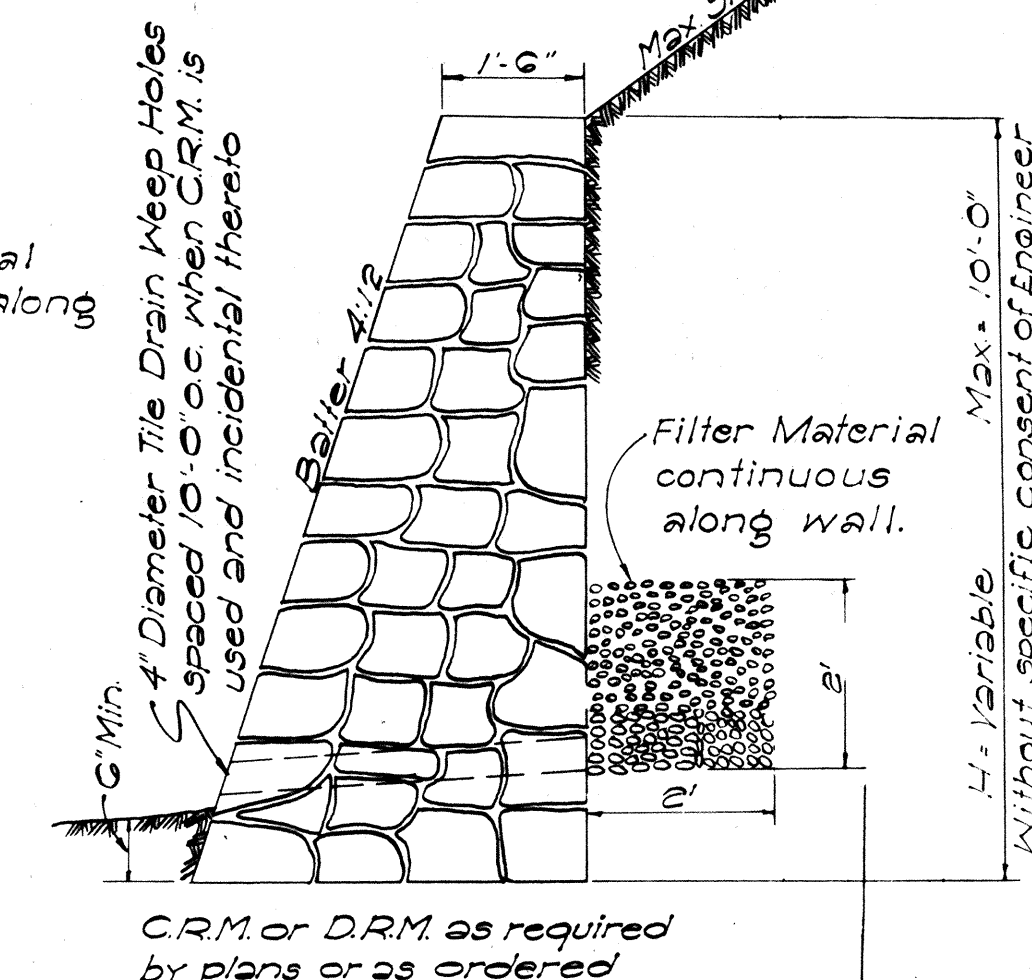
DATA FOR CONCRETE PROTECTION OVER CULVERTS		
X	Y	Z
6" for 18"D		
7" " 24"D		
8" " 30"D		
9" " 36"D		
10" " 42"D		
11" " 48"D		
12" " 54"D		

SECT. OF CULVERT WITH CONC. PROTECTION
Scale: 1" = 1'-0"

Note: To Resident Engineer
1) Consider economy of reinf. conc. for high retaining walls which did not originate on plan layout.
2) 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.



SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL

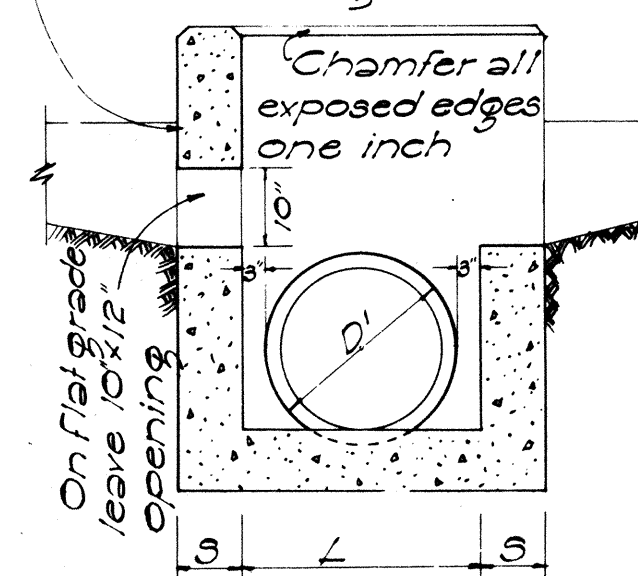


SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL

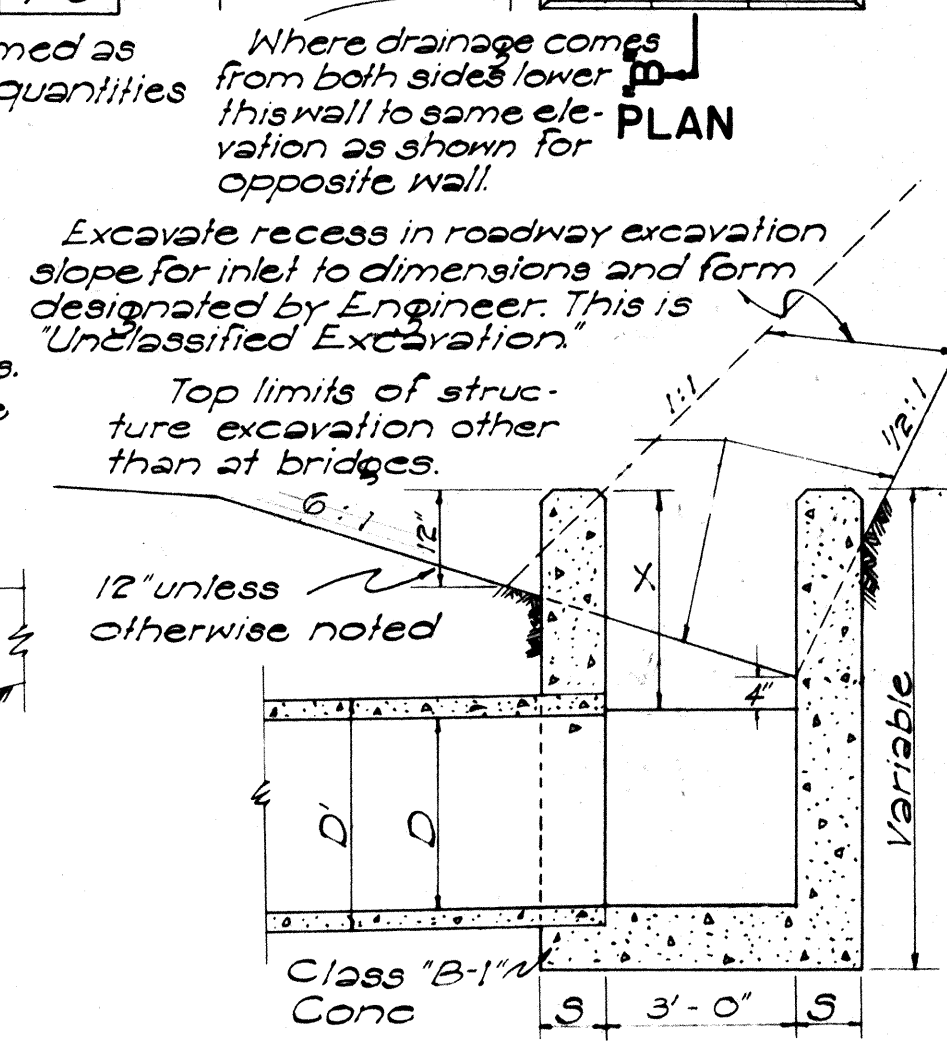
DATA-CONC. DROP INTAKE					Where Variables Equal
D	D	L-D+G	Cu Yds		
23"	18"	2'-5"	1.41	4'-6"	
30"	24"	3'-0"	1.72	5'-0"	
37"	30"	3'-7"	2.32	5'-6"	
44"	36"	4'-2"	2.73	6'-0"	
51"	42"	4'-9"	3.54	6'-6"	
58"	48"	5'-4"	4.01	7'-0"	

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

Note: This type of structure shall also be used for the Drop Intakes of Siphons connected with Irrigation Ditches or Flumes with appropriate changes to dimensions. In this case all joints must be made water tight.



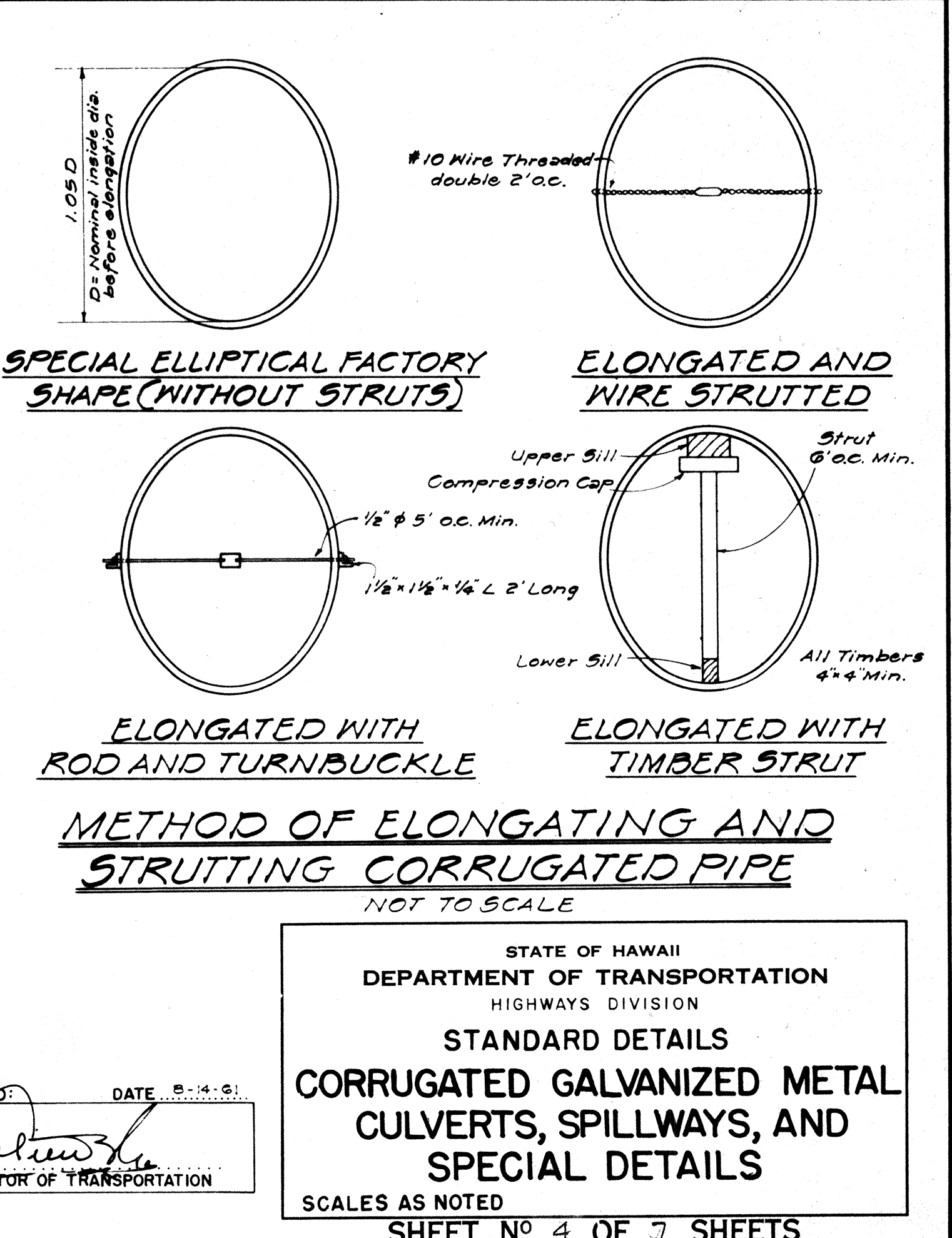
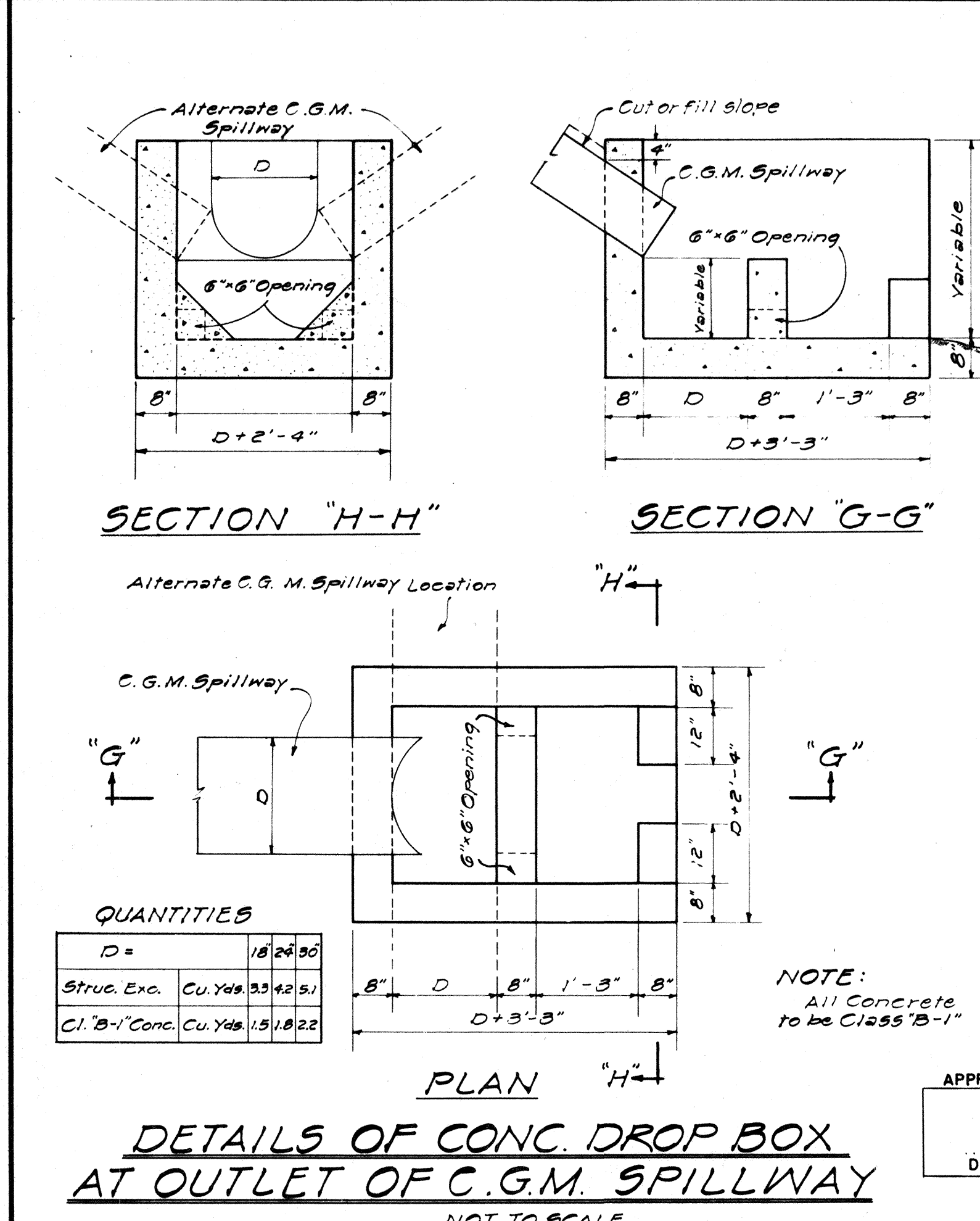
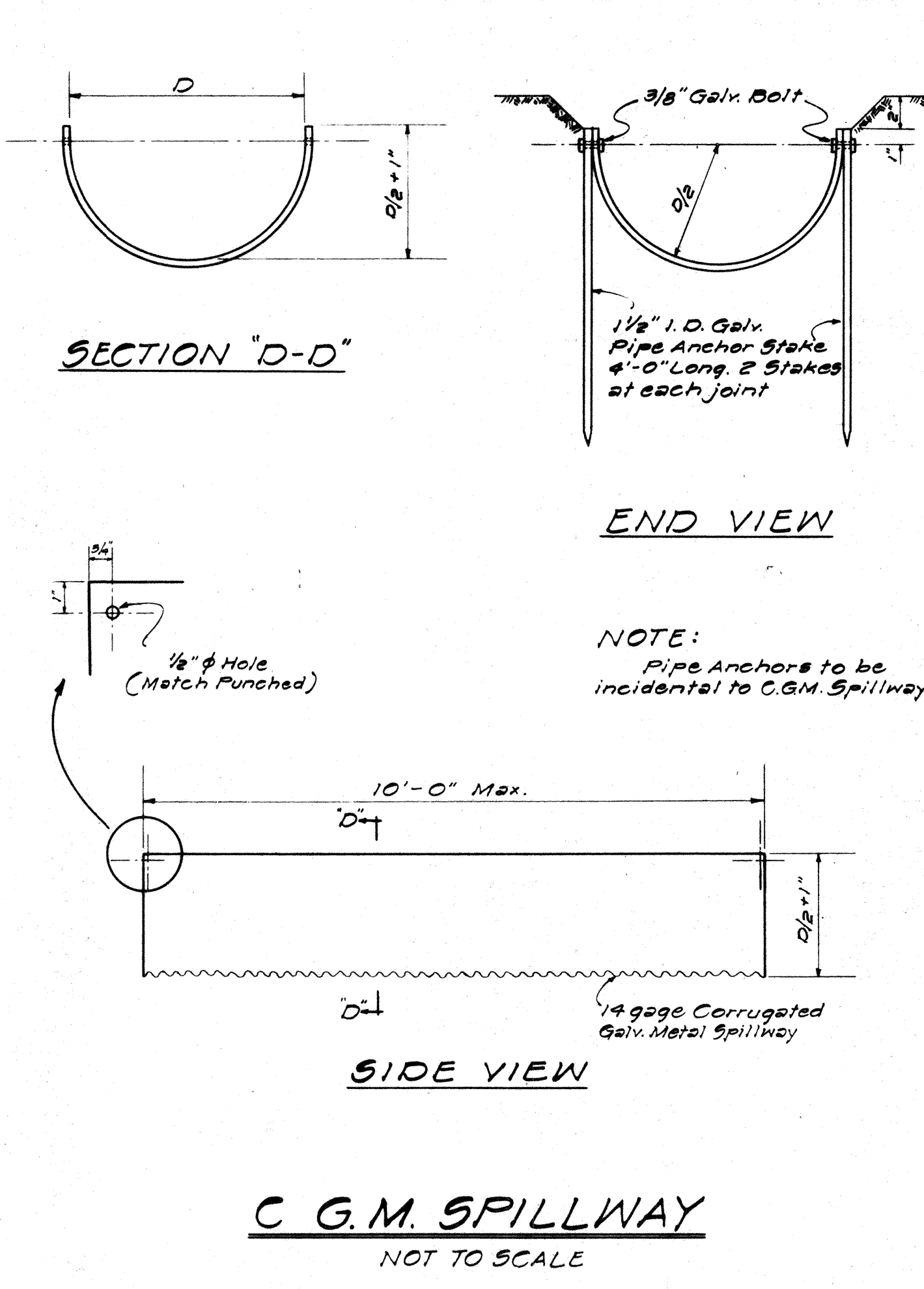
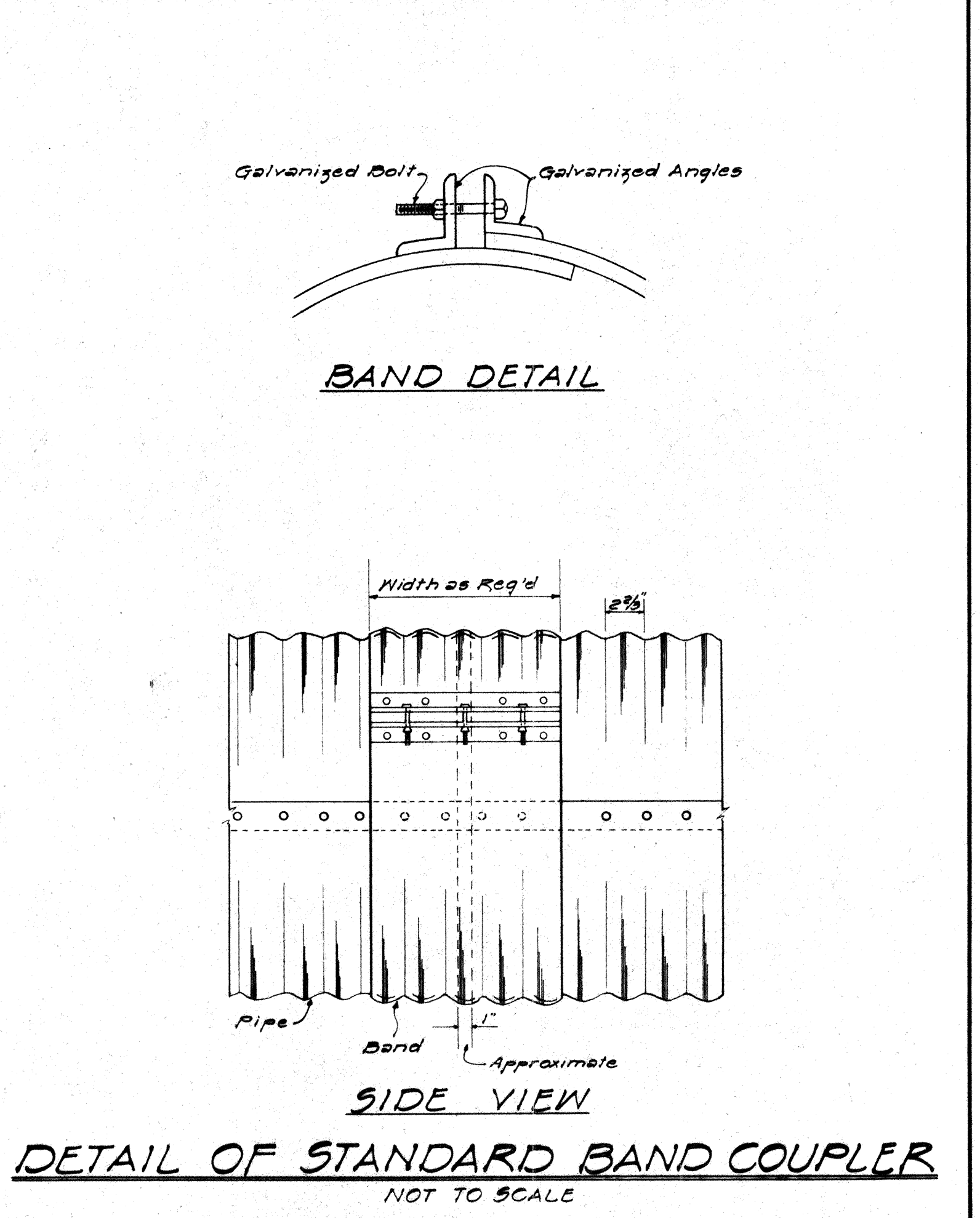
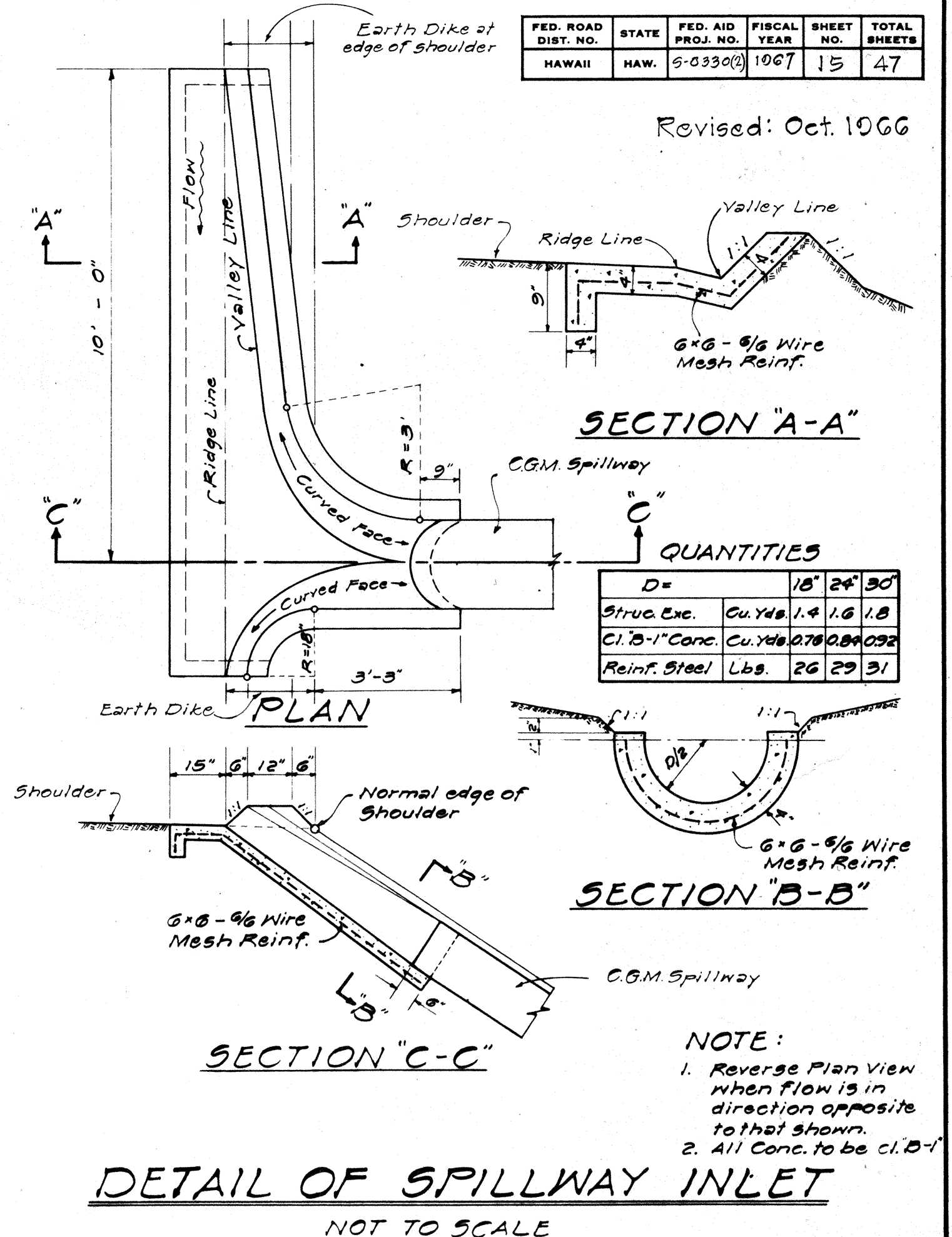
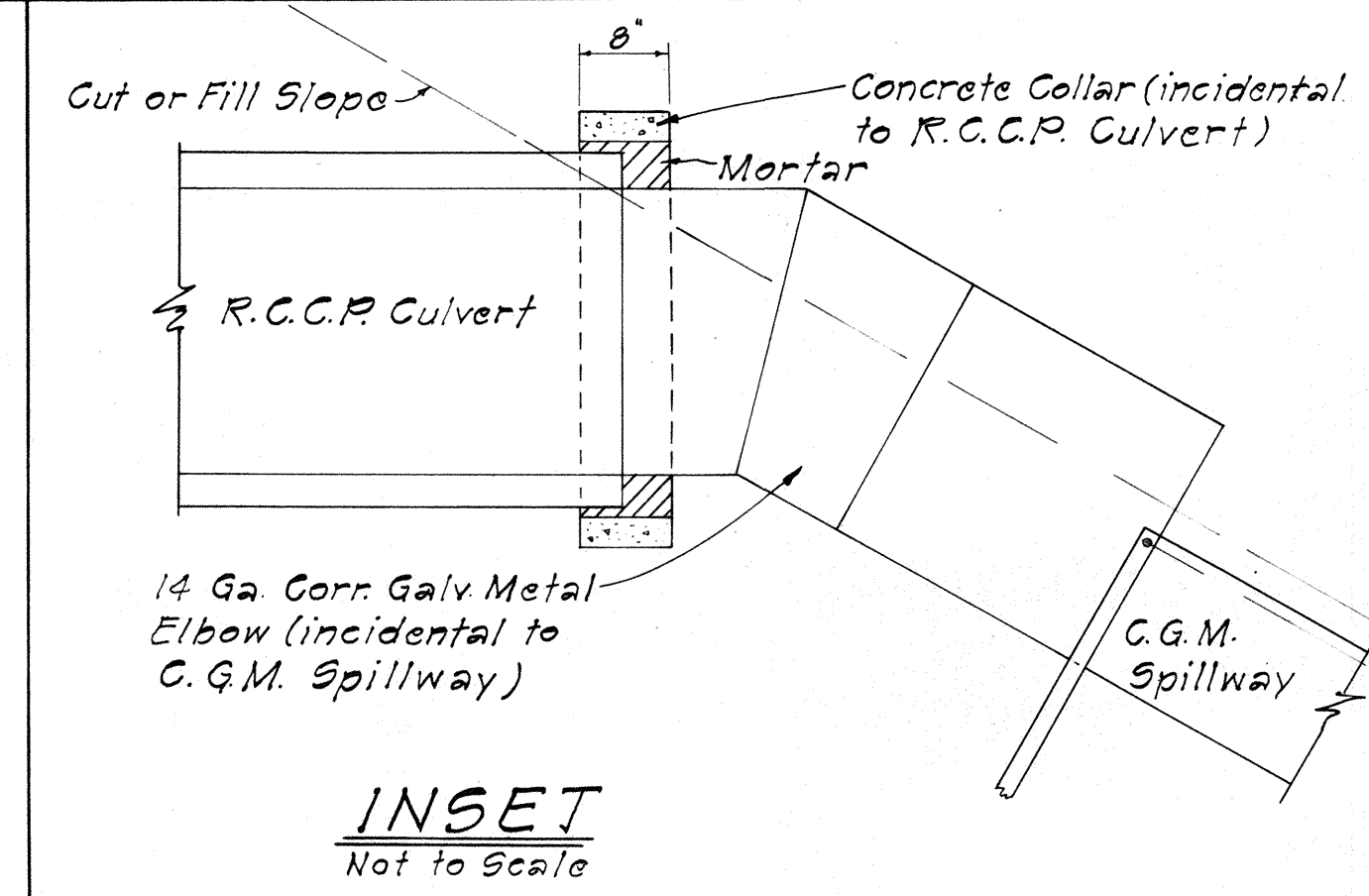
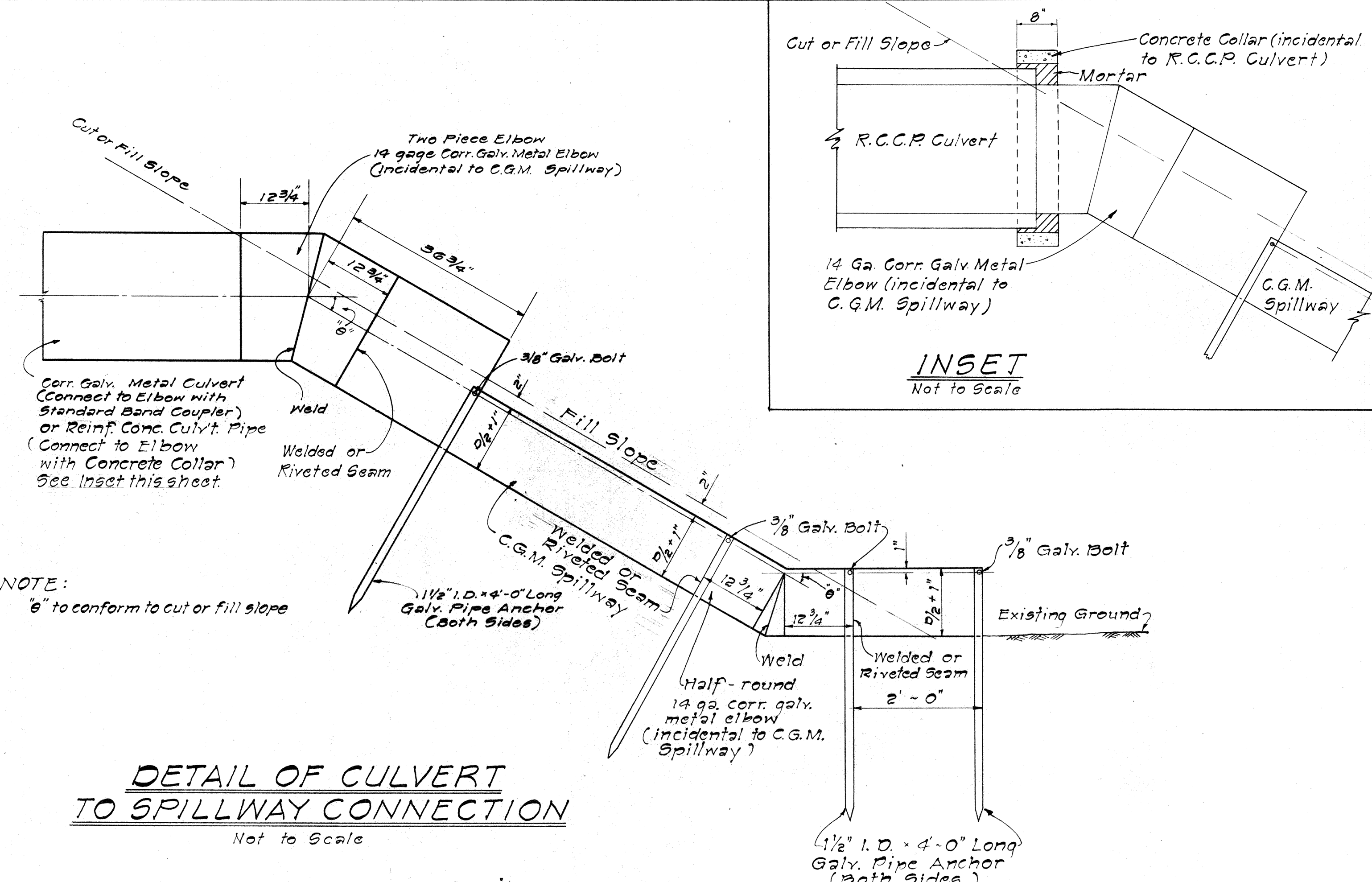
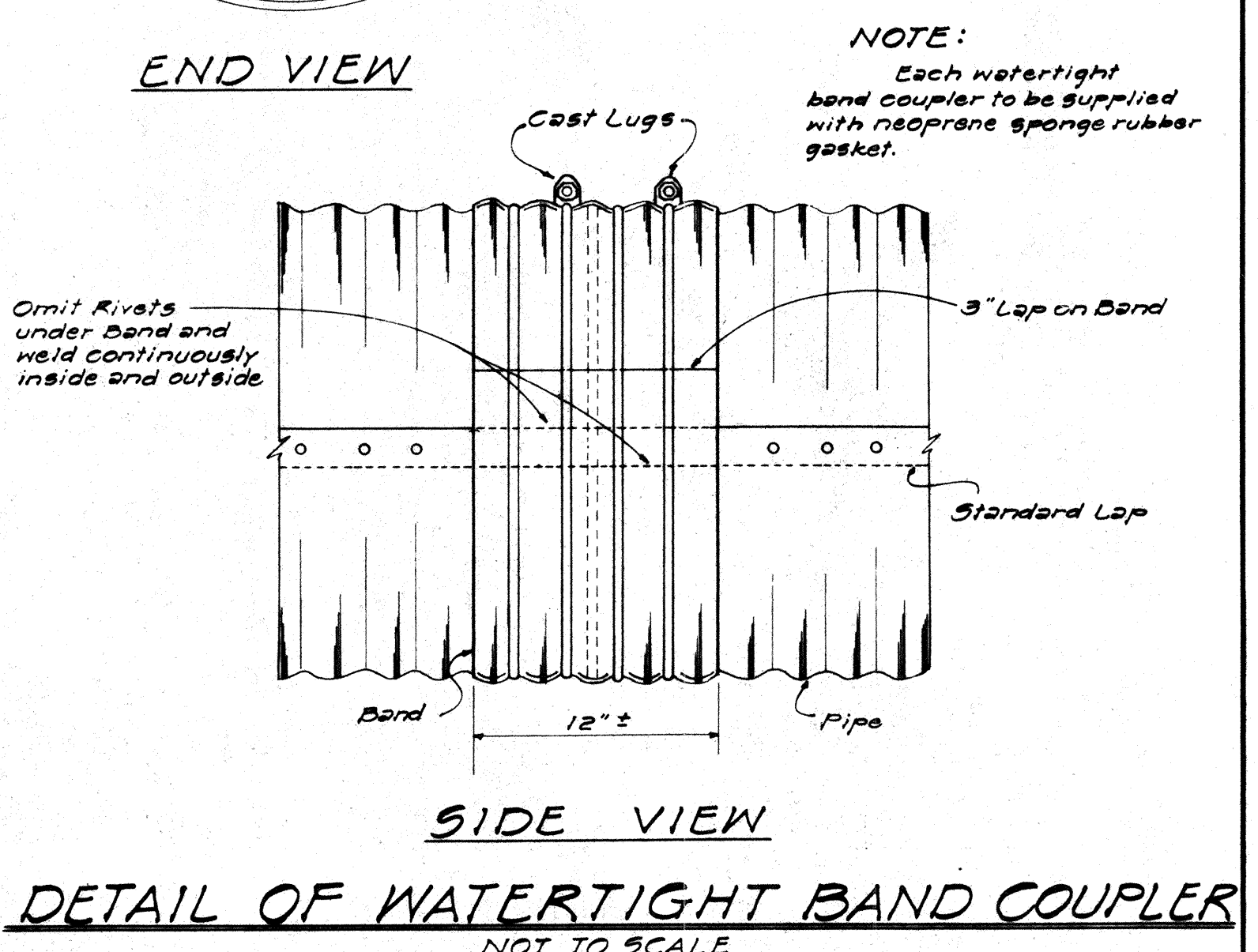
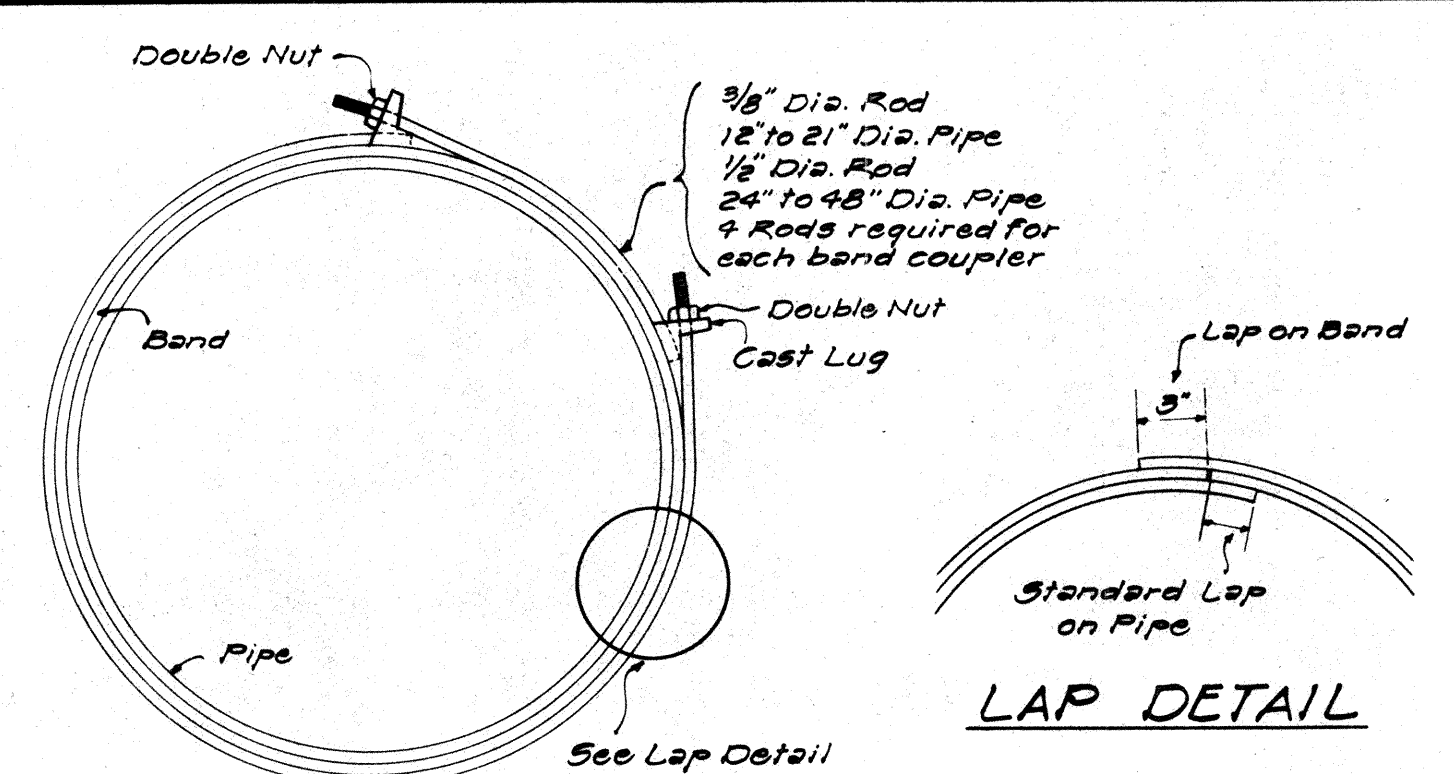
SECTION "B-B"



SECTION "A-A"

DETAIL OF CONCRETE DROP INTAKE
Scale: 1/2" = 1'-0"

Revised: Oct. 1966

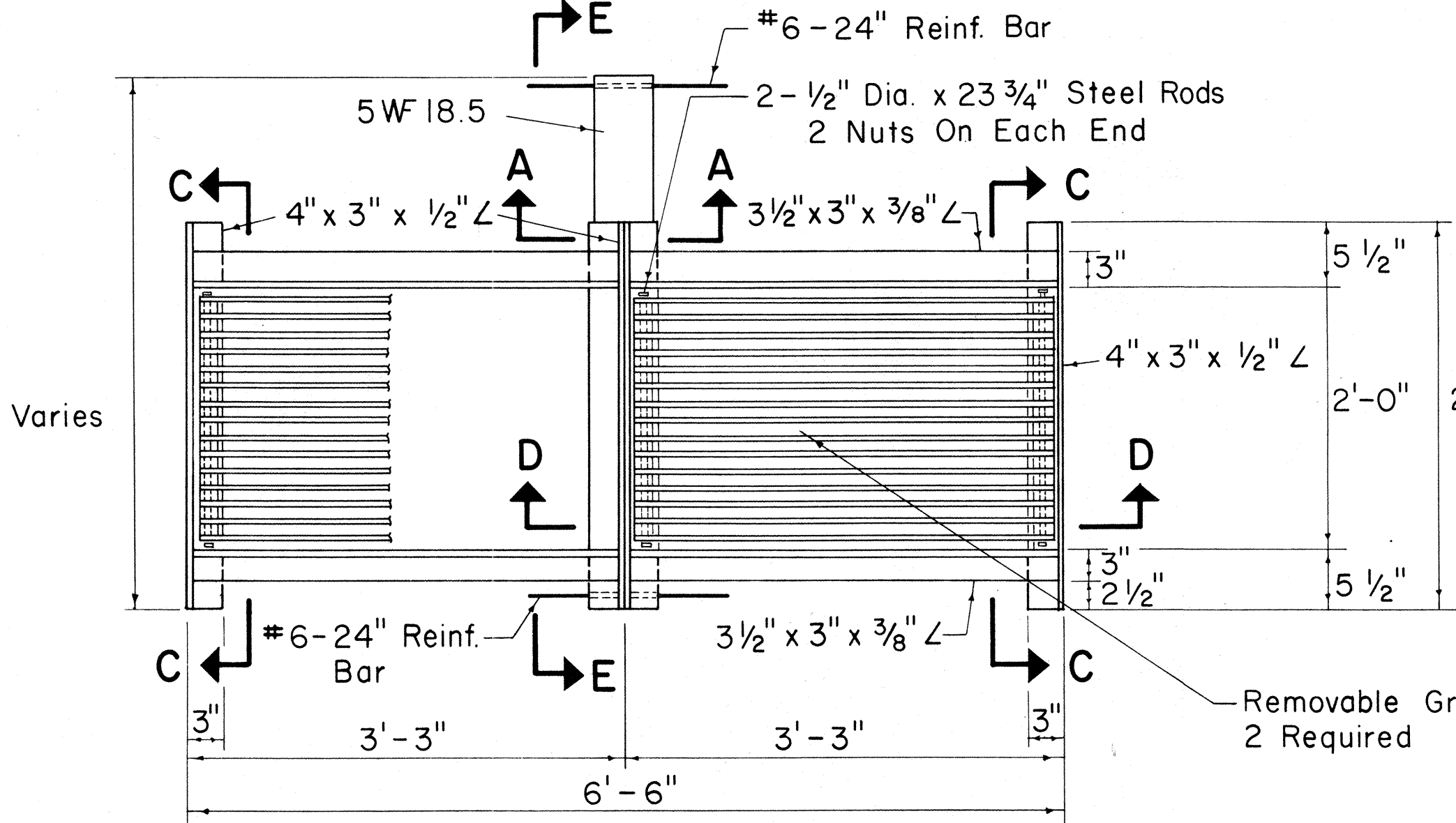


SURVEY PLOTTED BY: DATE: 5-24-66
DRAWN BY: R.Y.
DESIGNED BY: O.M.
NOTE BOOK: 5-24-66
QUANTITIES BY: 5-24-66
CHECKED BY: 5-24-66

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
CORRUGATED GALVANIZED METAL
CULVERTS, SPILLWAYS, AND
SPECIAL DETAILS
SCALES AS NOTED
SHEET NO 4 OF 7 SHEETS

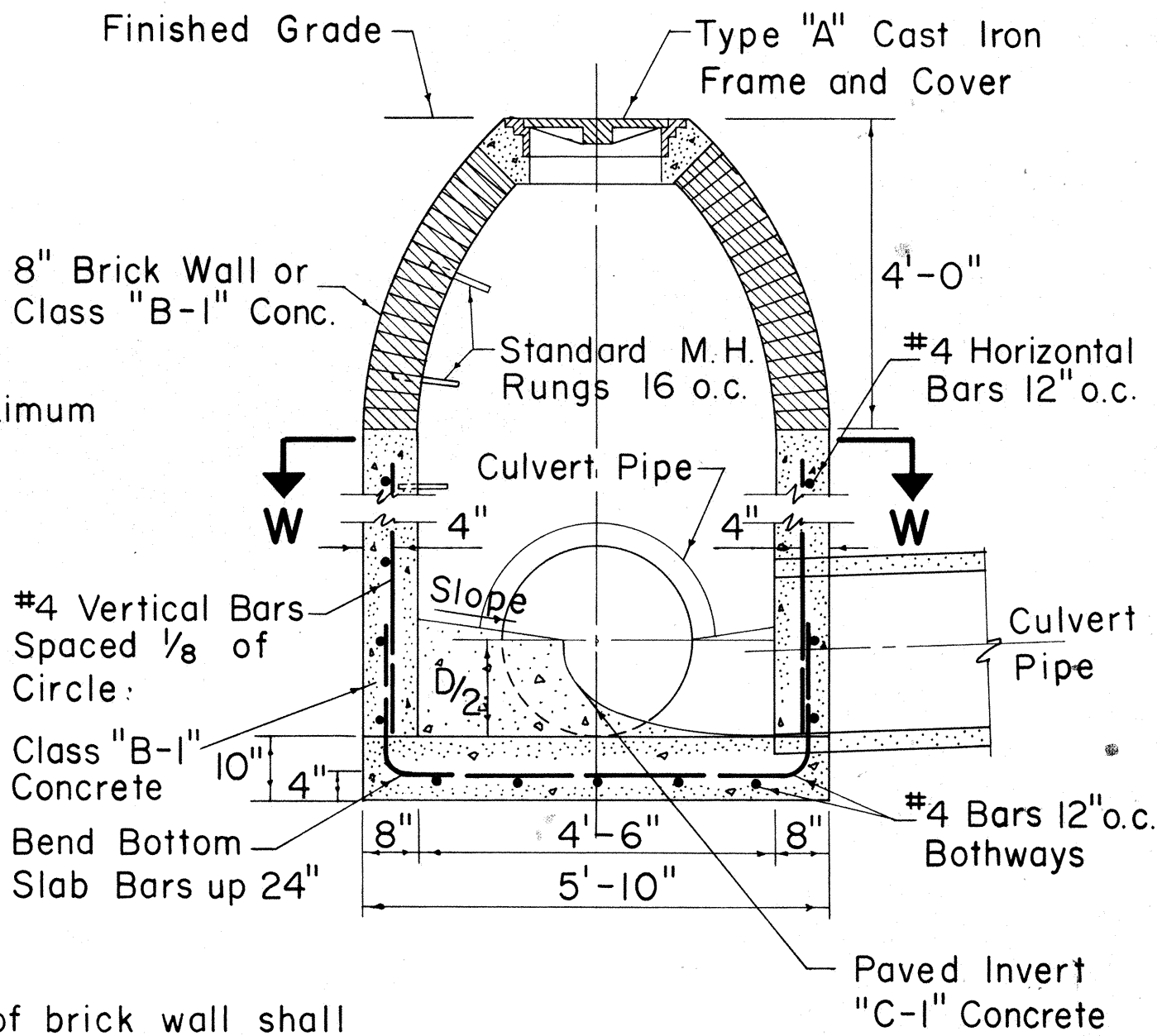
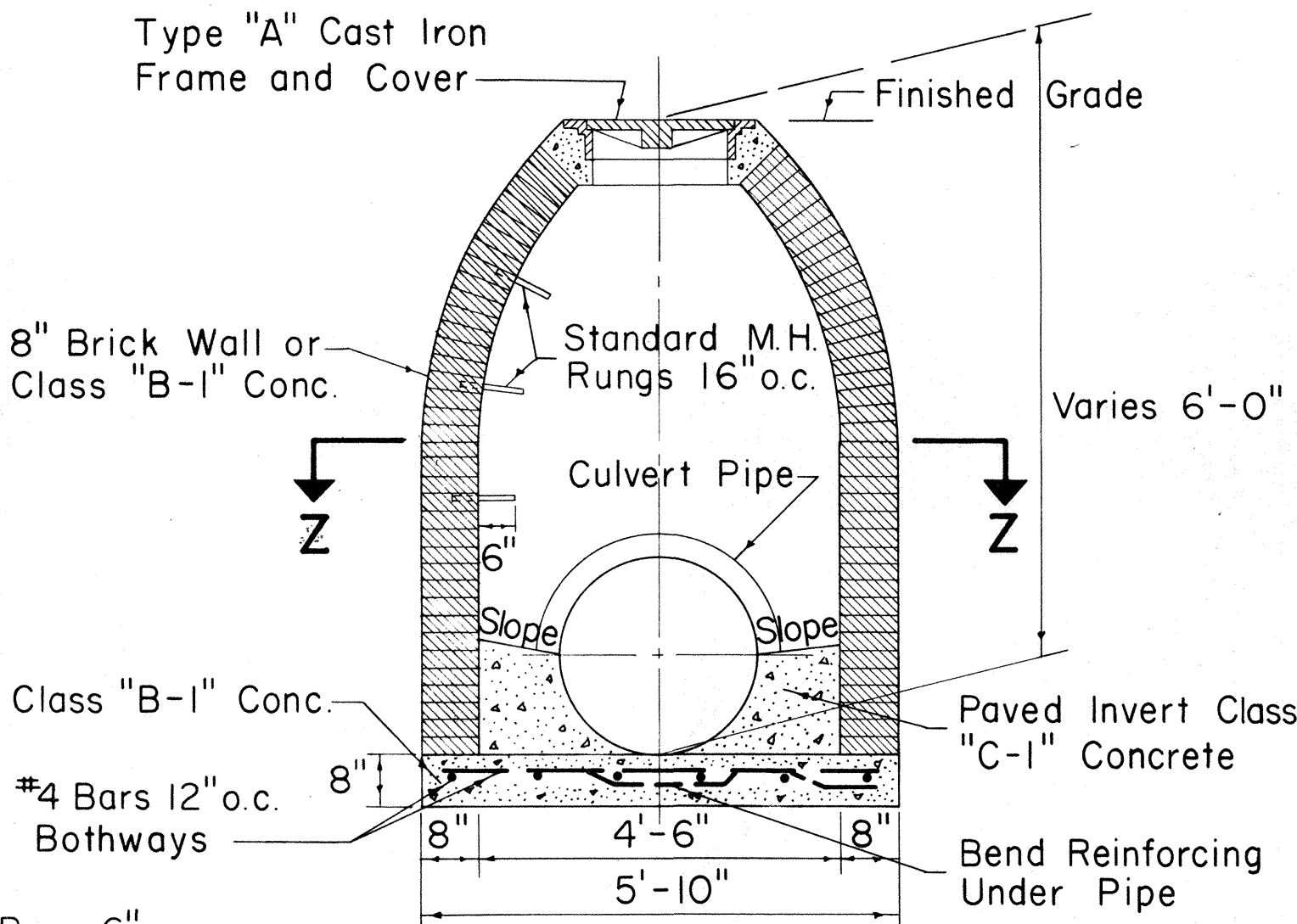
APPROVED: [Signature]
DIRECTOR OF TRANSPORTATION

Revised: Jan.25,1967



NOTE:

1. All welds $\frac{3}{8}$ " unless otherwise noted.
2. All steel shall be structural grade.
3. Grates and Frame shall be hot dip galvanized after fabrication in accordance with Section 44(H) of the Standard Specifications.
4. Detail of Types "A-1" and "A-2" Steel Frame and Grates are identical except for the thickness of end spacers and number of grate bars. See Table of End Spacer Thickness.



NOTE:

1. Exterior surface of brick wall shall be plastered with 1" thickness of 1:2 Cement Mortar.
2. Number size and direction of culvert pipes at manhole to be as shown on plans.
3. Paved invert not required at drop manholes.
4. All Class "C-1" Concrete to be incidental to Class "B-1" Concrete.

SECTION X-X

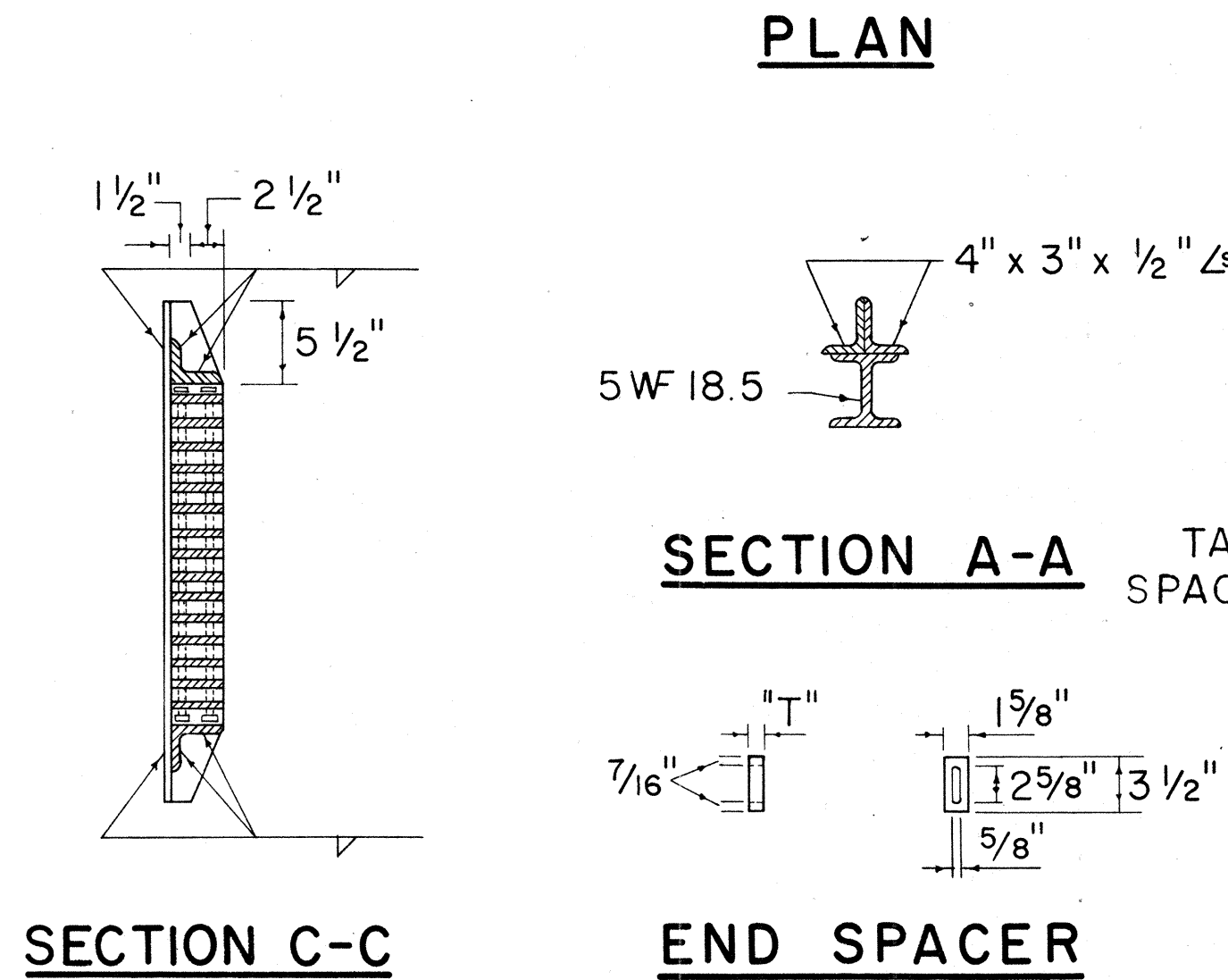
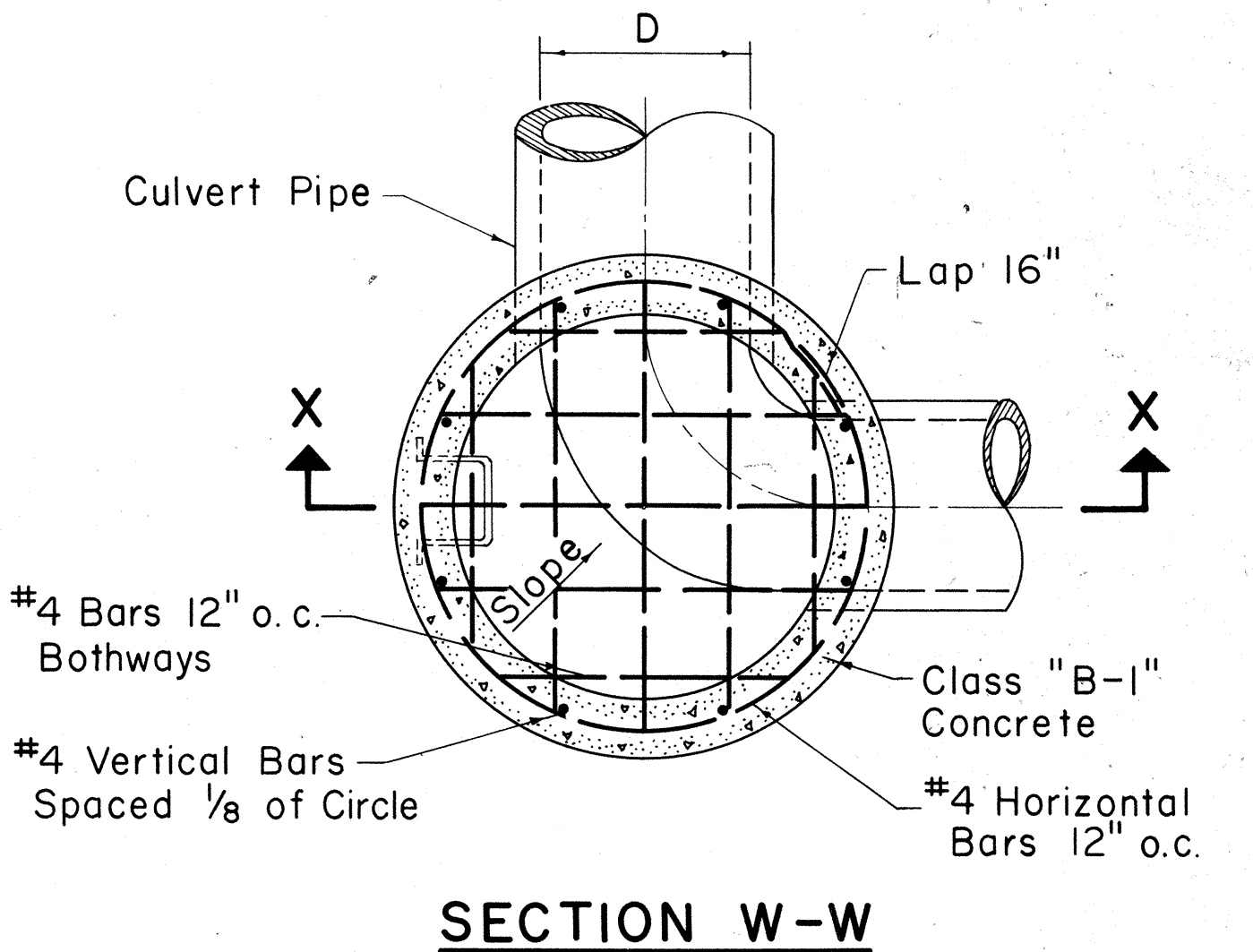
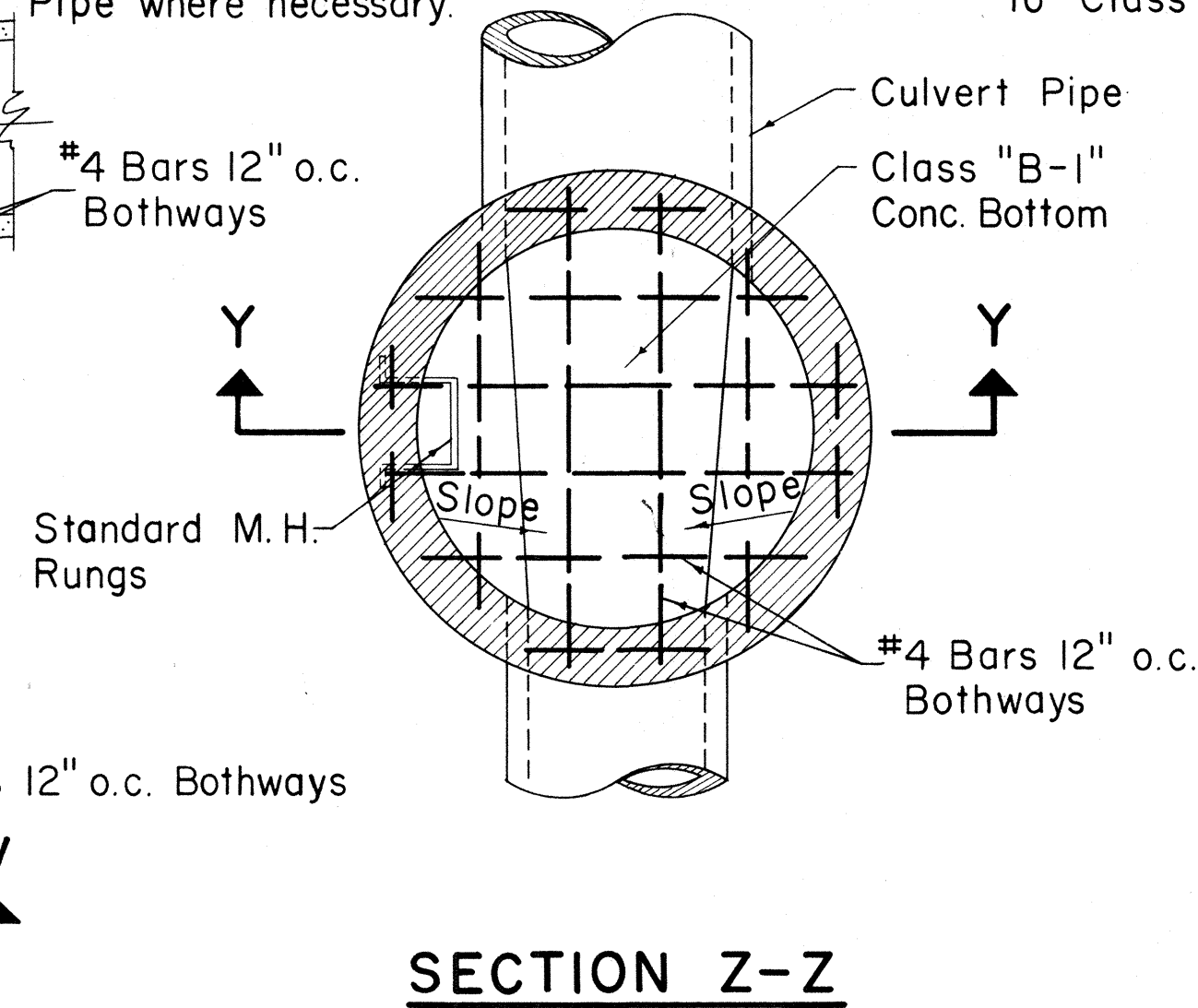
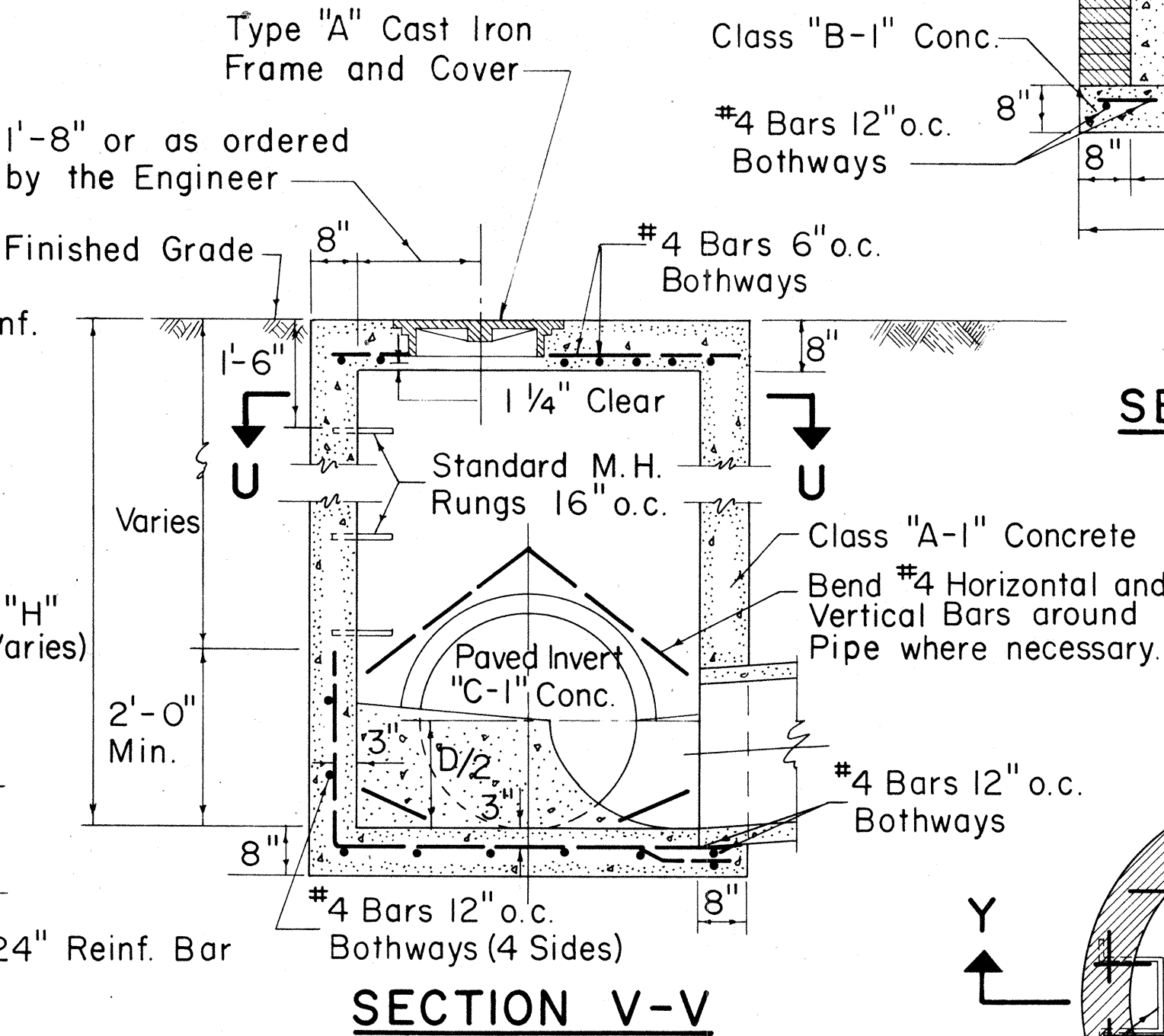


TABLE OF END SPACER THICKNESS	
TYPE FRAME & GRATES	"T" (in.)
A - 1	1
A - 2	1 3/8



SECTION C-C

END SPACER

SECTION E-E

SECTION V-V

SECTION Z-Z

SECTION W-W

TYPE "D" STORM DRAIN MANHOLE

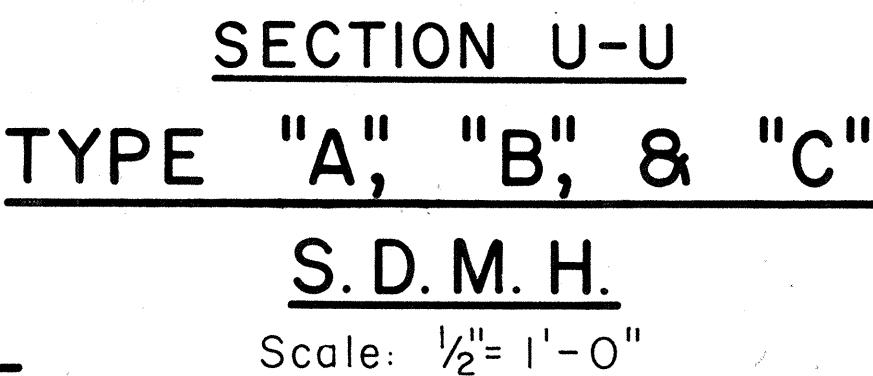
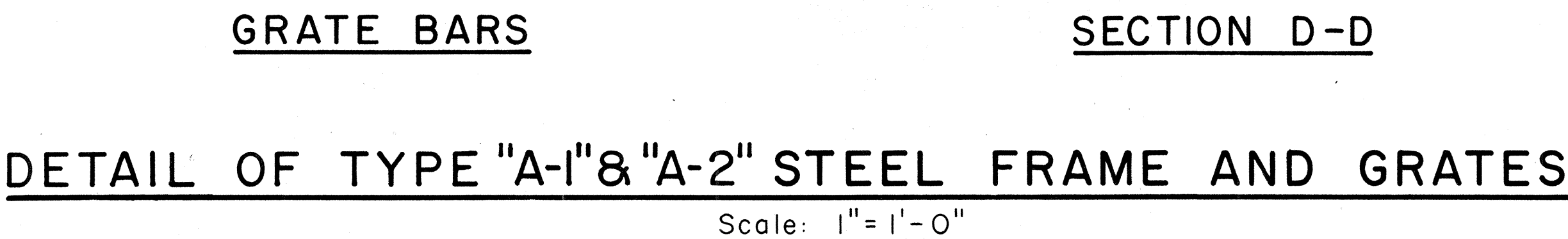
Scale: $\frac{1}{2}$ " = 1'-0"

TYPE "E" STORM DRAIN MANHOLE

Scale: $\frac{1}{2}$ " = 1'-0"

APPROVED:

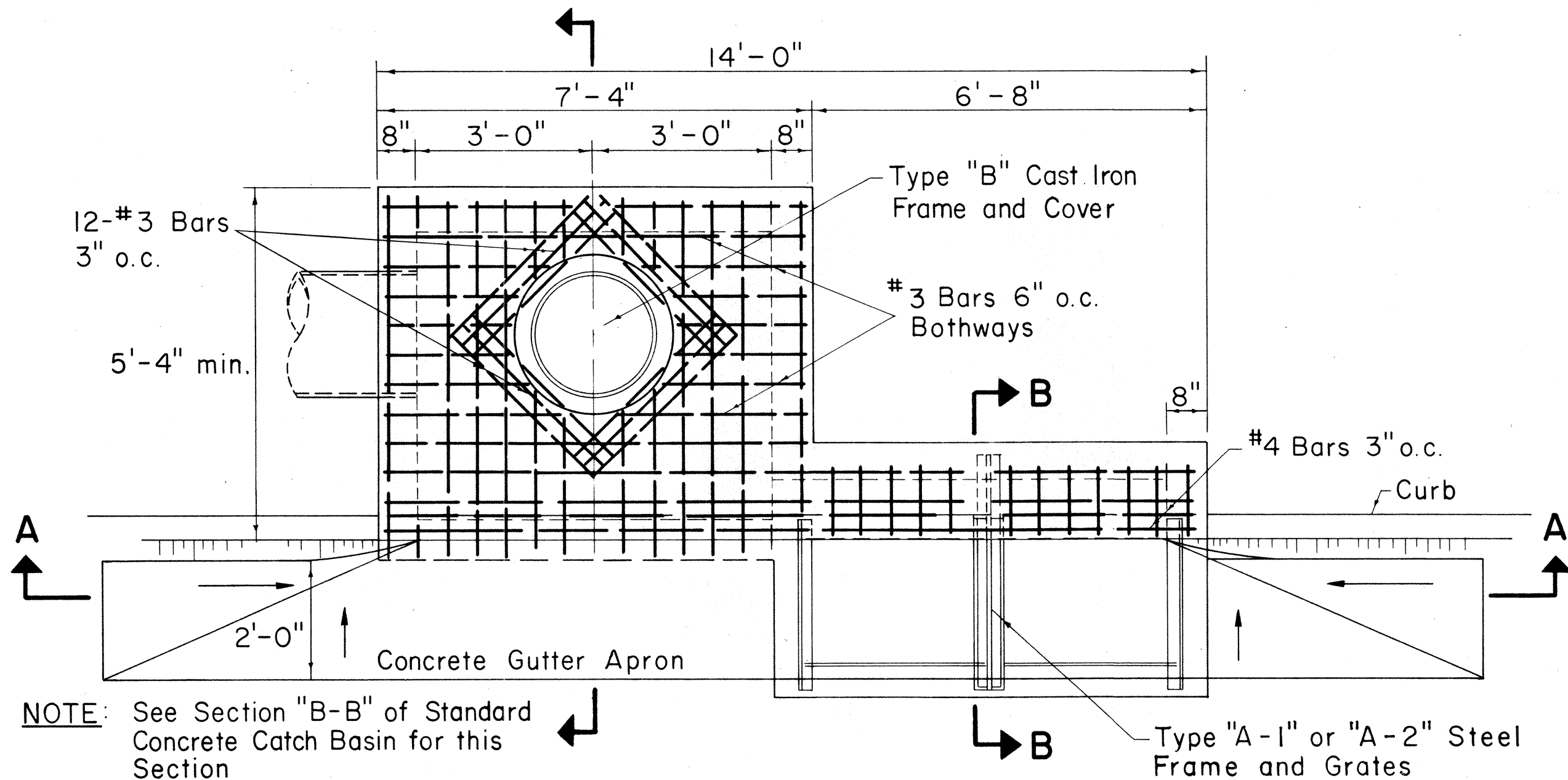
DIRECTOR OF TRANSPORTATION DATE



TYPE "A", "B", & "C" S.D.M.H.
Scale: $\frac{1}{2}$ " = 1'-0"

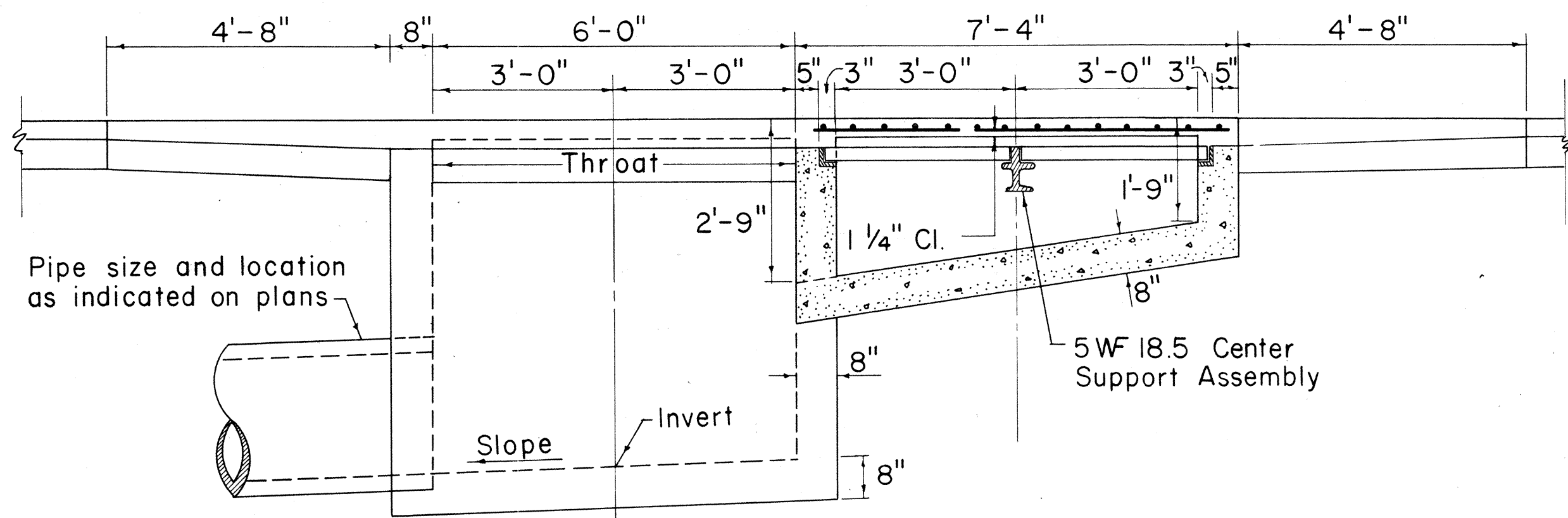
FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	6-0330(2)	1967	17	47

Revised: Jan. 25, 1967

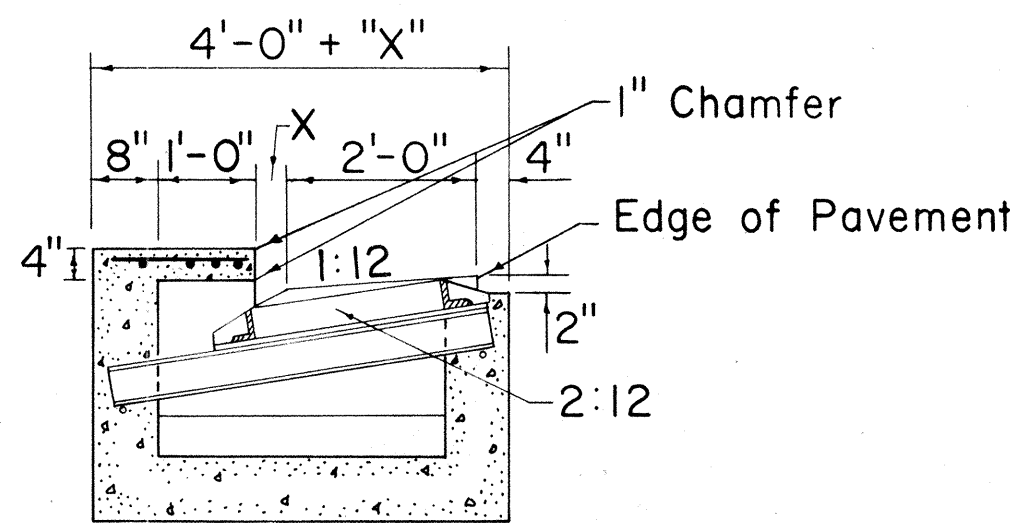


NOTE: See Section "B-B" of Standard Concrete Catch Basin for this Section

PLAN



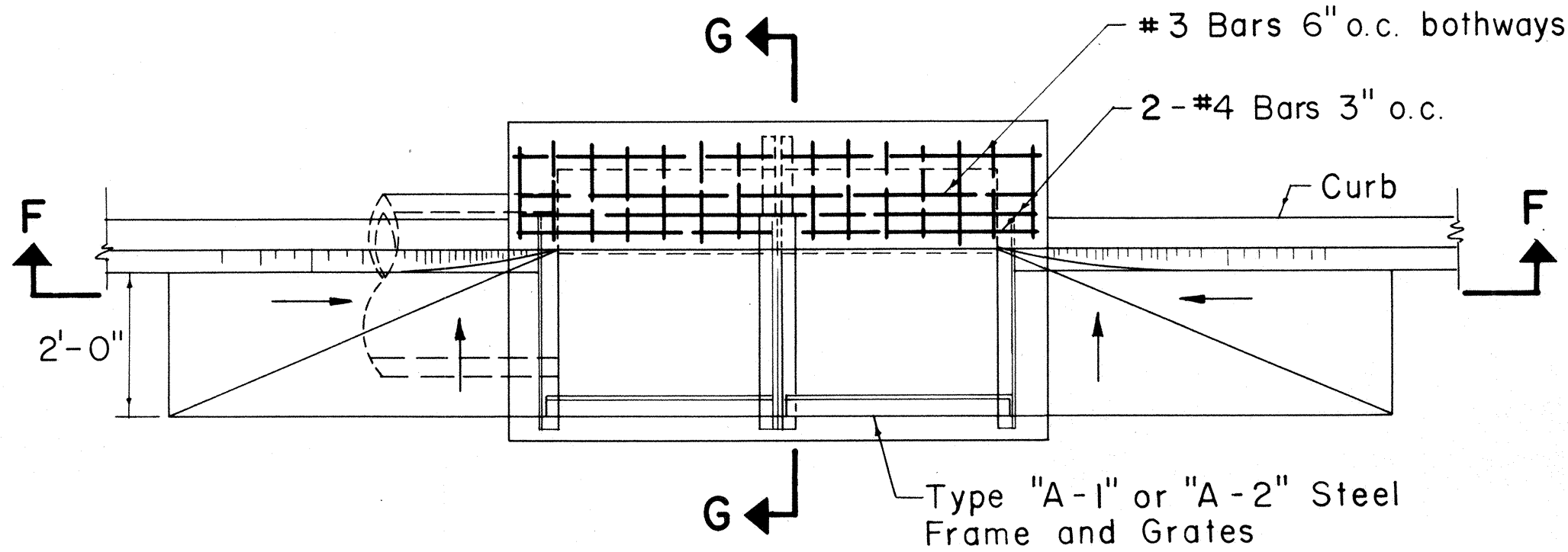
SECTION A-A



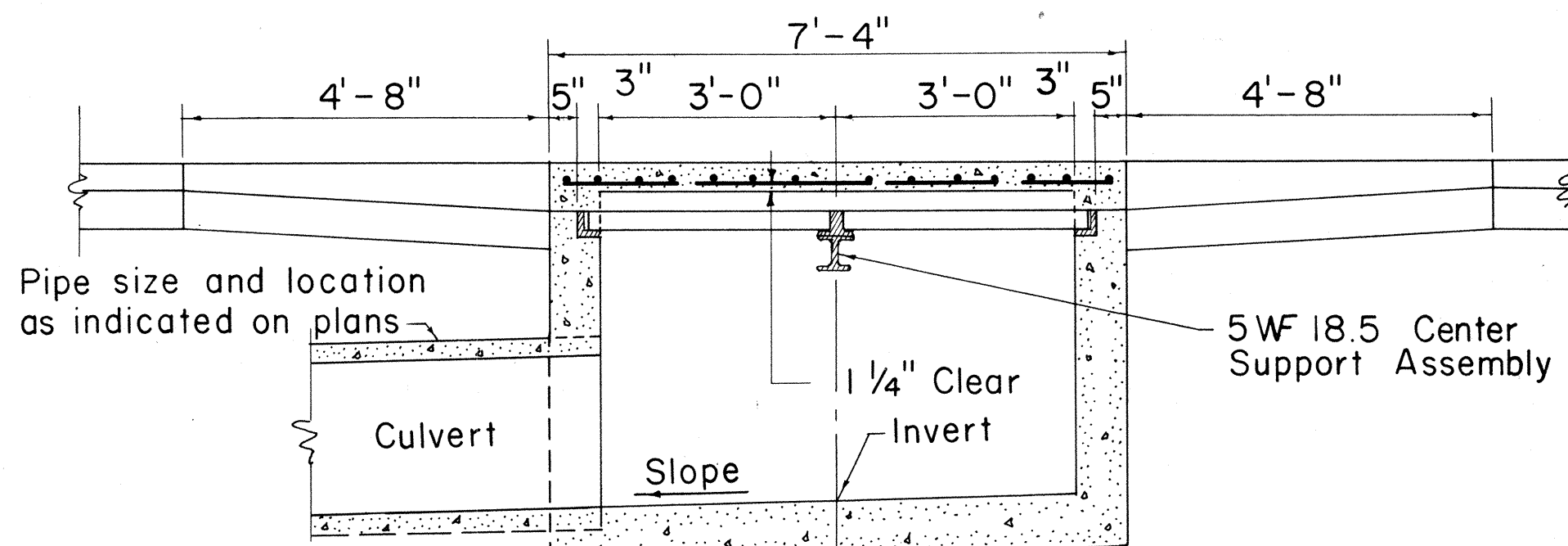
SECTION B-B

DETAIL OF TYPE "CG" CATCH BASIN

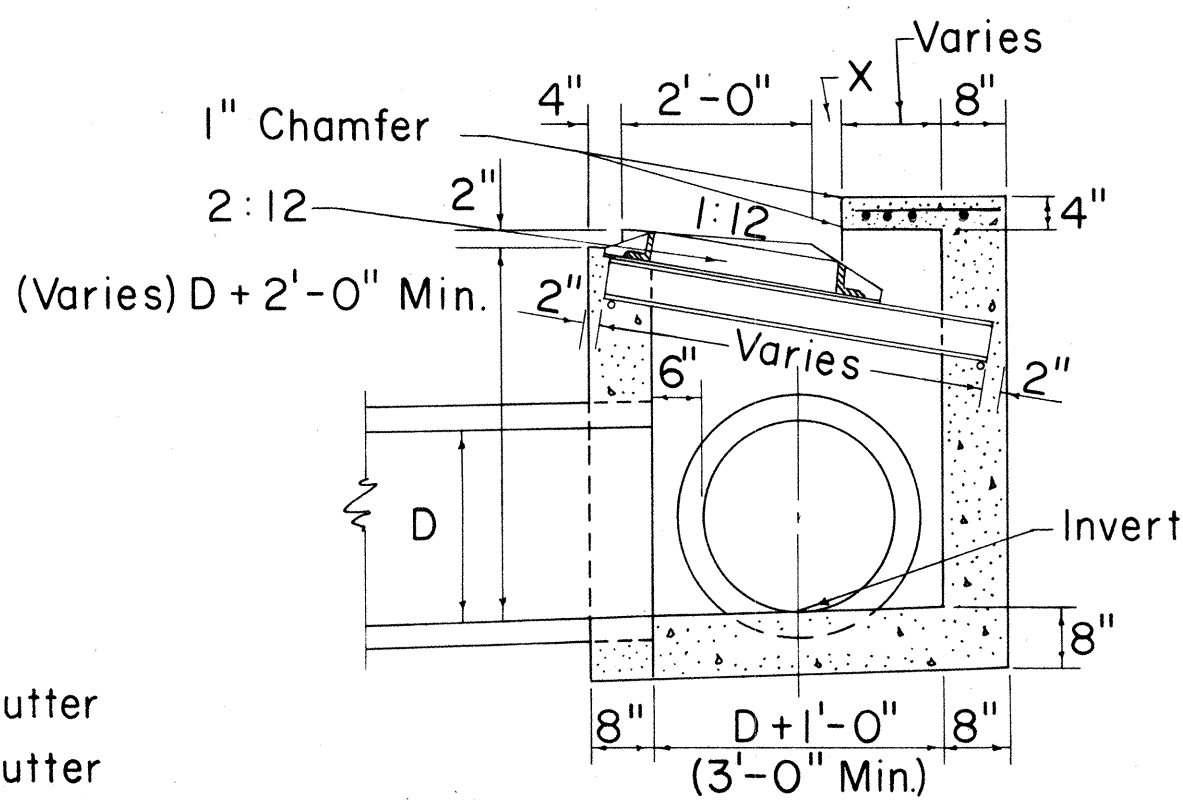
Scale: 1/2" = 1'-0"



PLAN



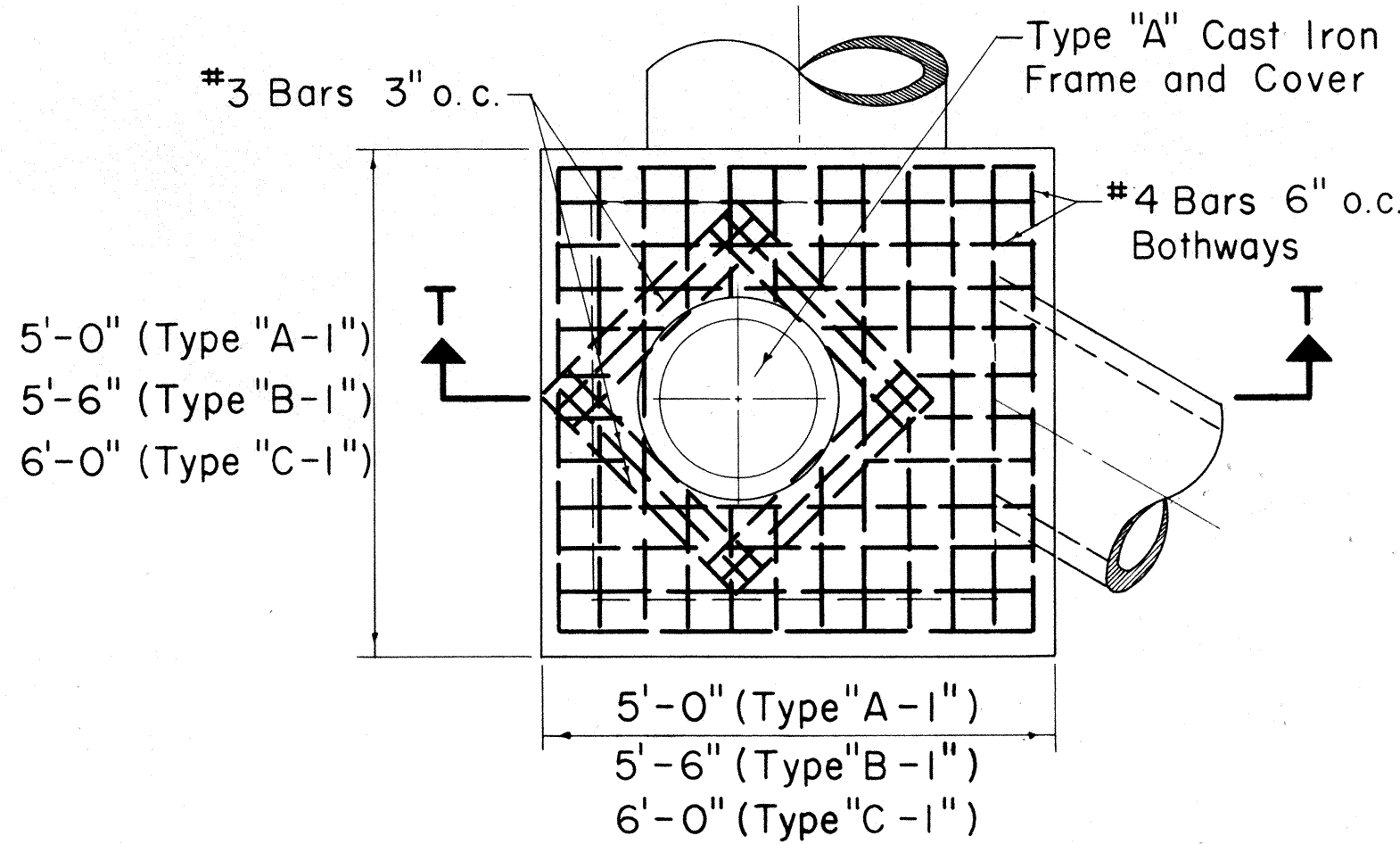
SECTION F-F



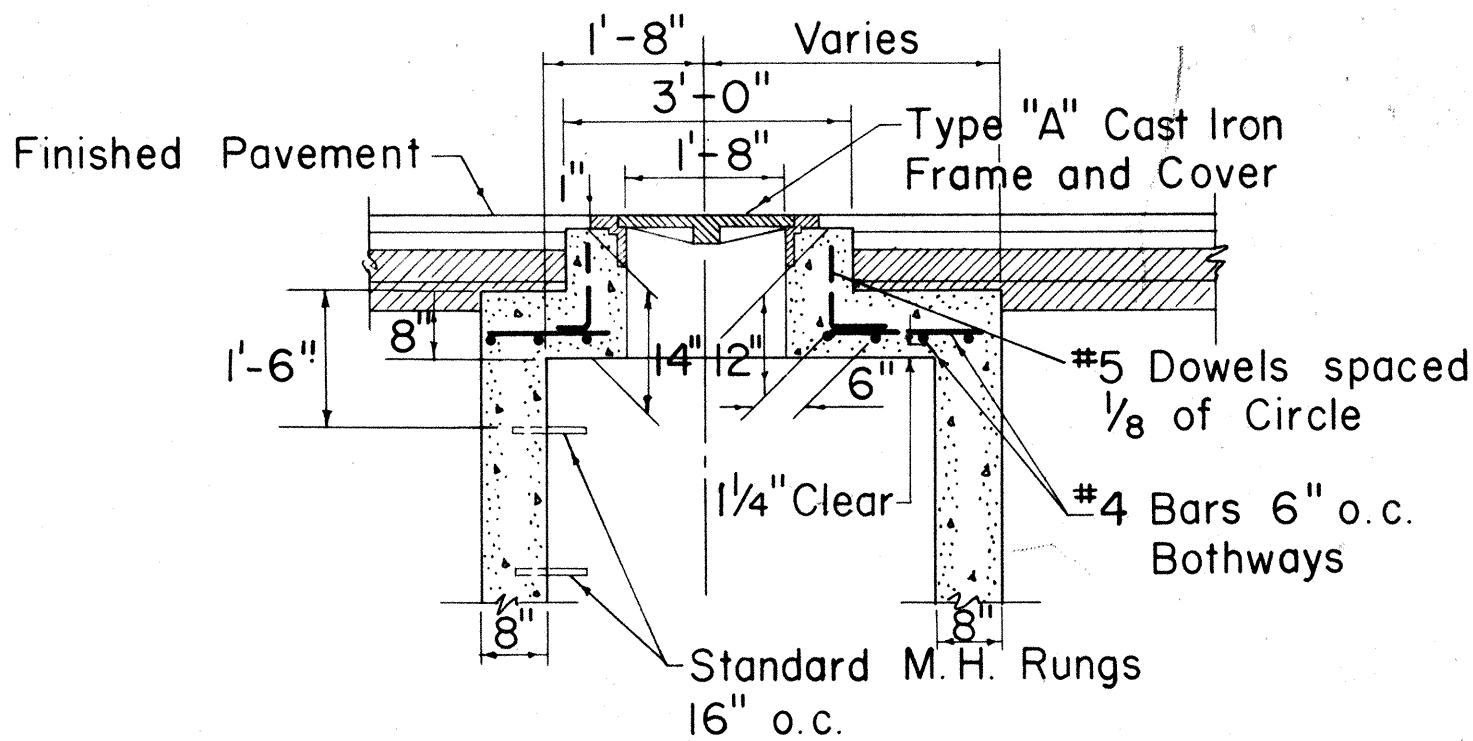
SECTION G-G

DETAIL OF TYPE "DG" CATCH BASIN

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



PLAN



SECTION T-T

TYPE "A-1", "B-1", & "C-1"
STORM DRAIN MANHOLE
TOP DETAIL UNDER PAVEMENT
(BOTTOM DETAIL SIMILAR TO TYPE "A", "B", & "C")
Scale: 1/2" = 1'-0"

APPROVED:

DIRECTOR OF TRANSPORTATION DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CATCH BASINS AND
STORM DRAIN MANHOLES

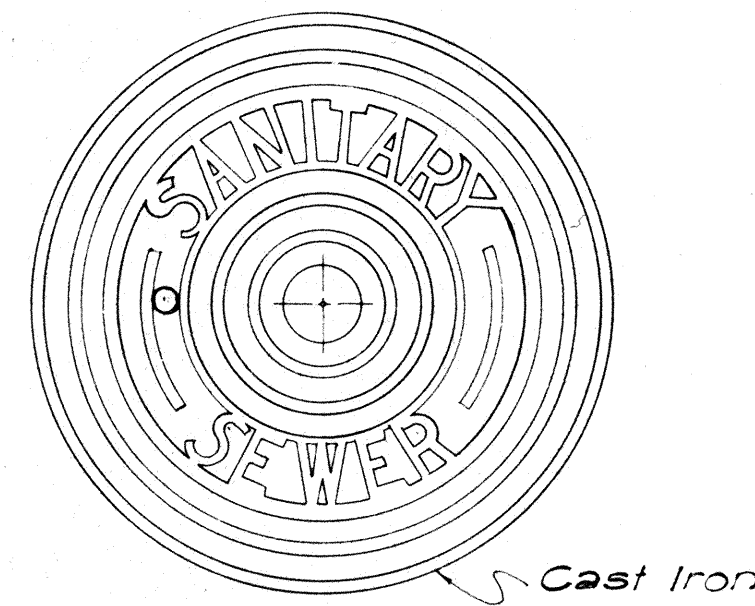
Scales: As Noted Date

SHEET NO. 6 OF 7 SHEETS

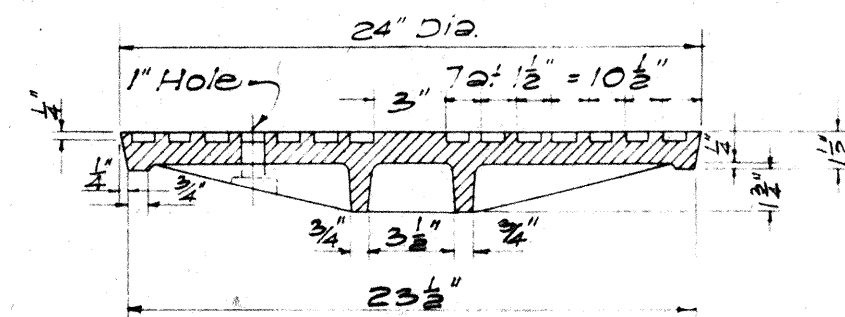
2/17/59
3:45:50

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	5-0930(2)	1967	18	47
August 1957					

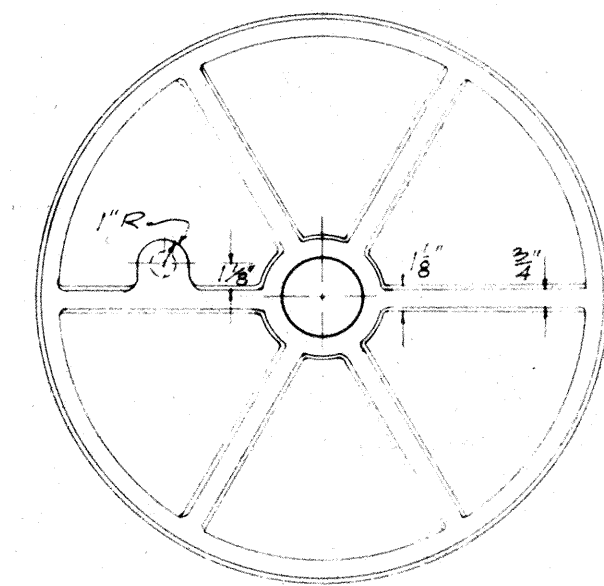
NOTE: Stock Pattern From Novelty Foundry ~ Honolulu



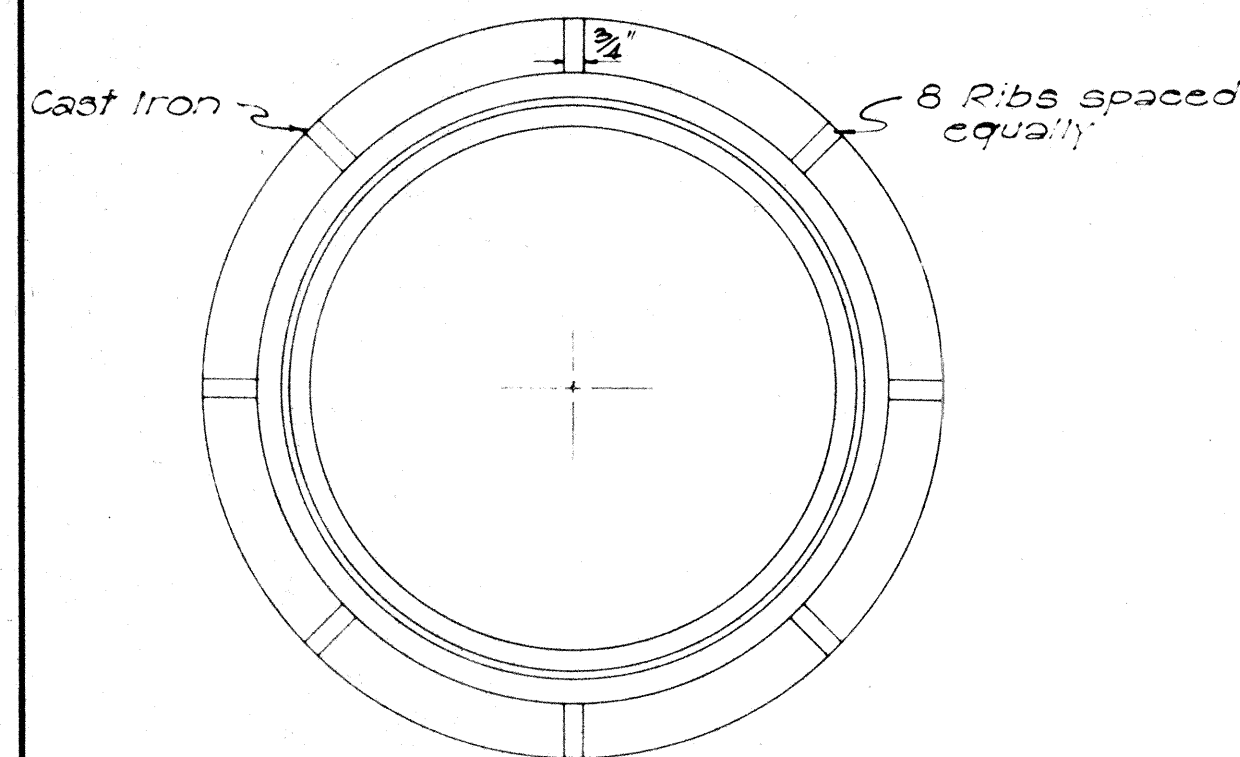
TOP VIEW OF COVER



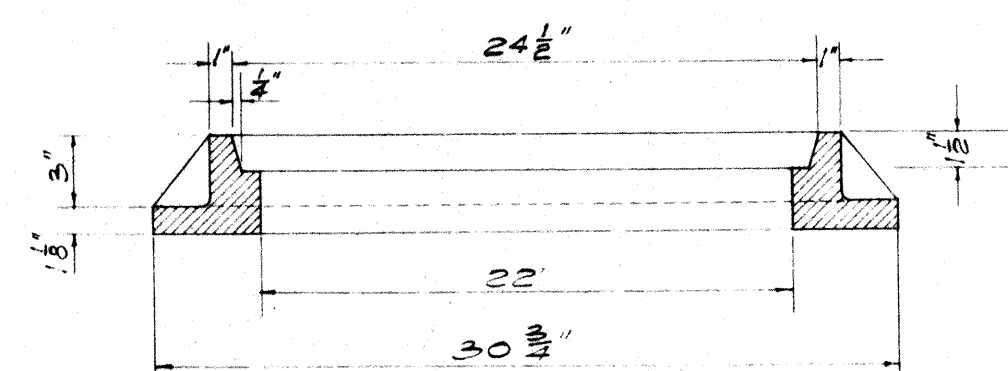
SECTION



BOTTOM VIEW OF COVER

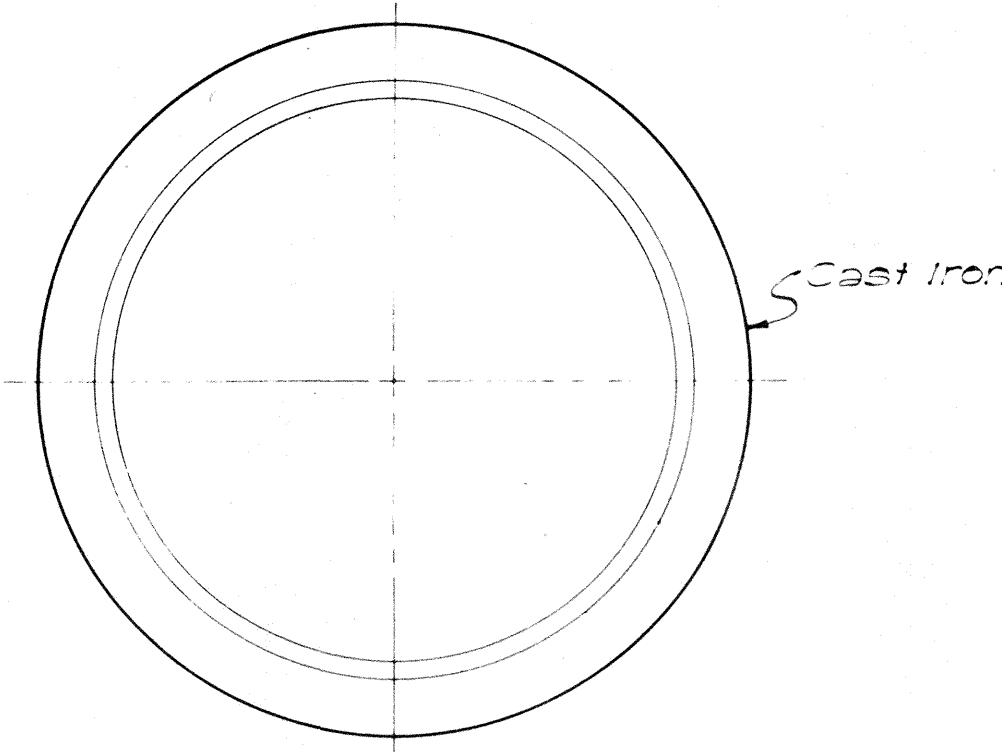


PLAN OF RIM

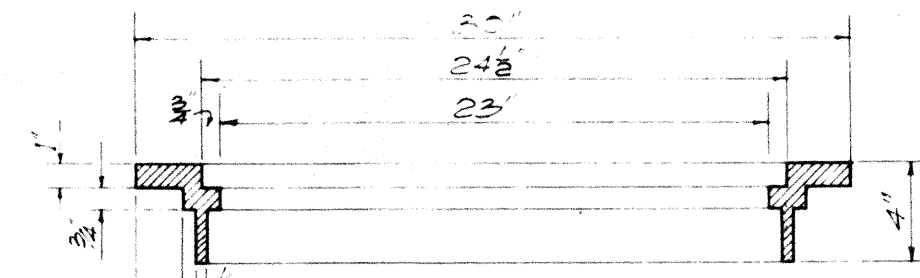


SECTION OF RIM
DETAILS OF TYPE "S"
CAST IRON FRAME AND COVER

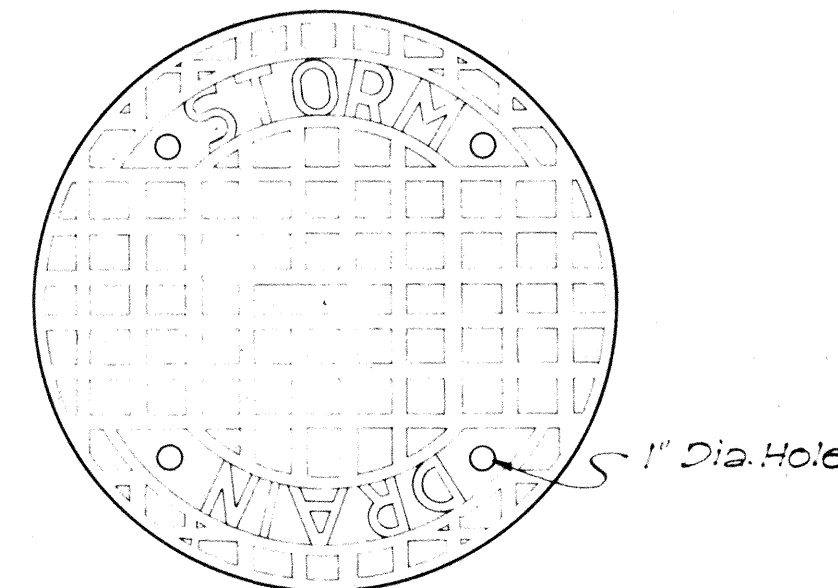
SCALE: 1-1/2" = 1'-0"



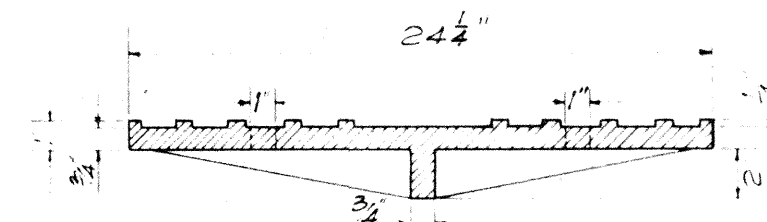
PLAN OF RIM



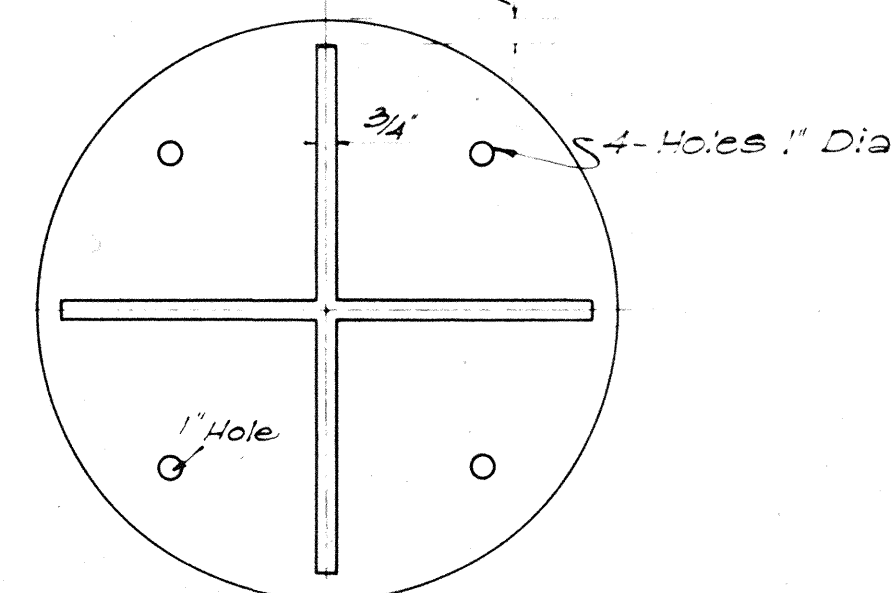
SECTION OF RIM



TOP VIEW OF COVER



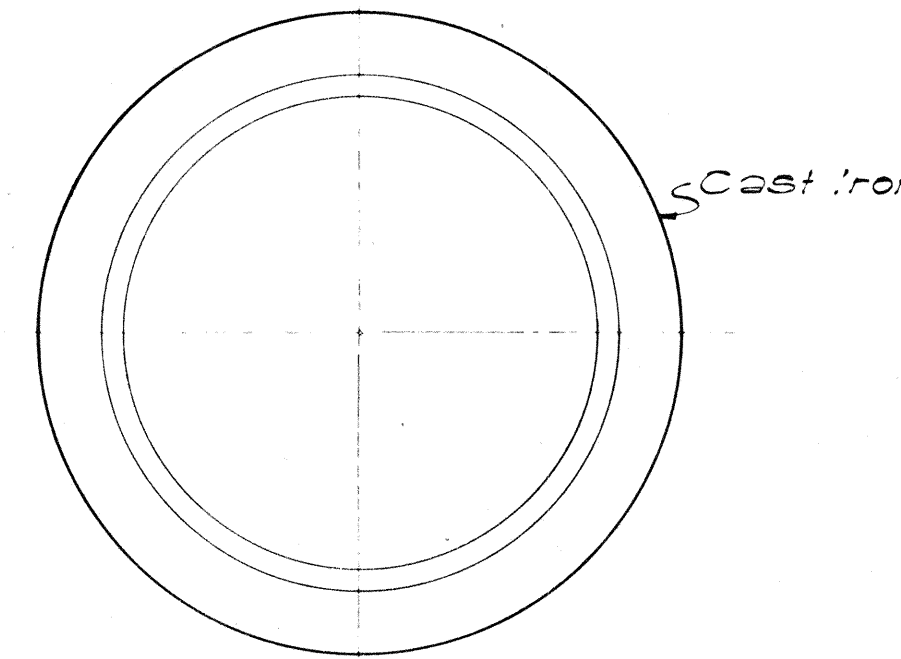
SECTION



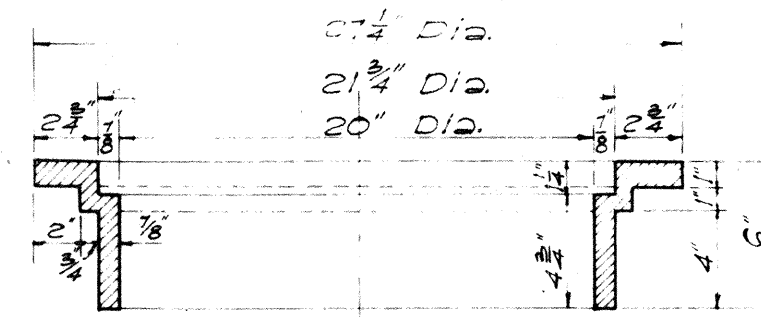
BOTTOM VIEW OF COVER

DETAILS OF TYPE "B"
CAST IRON FRAME AND COVER

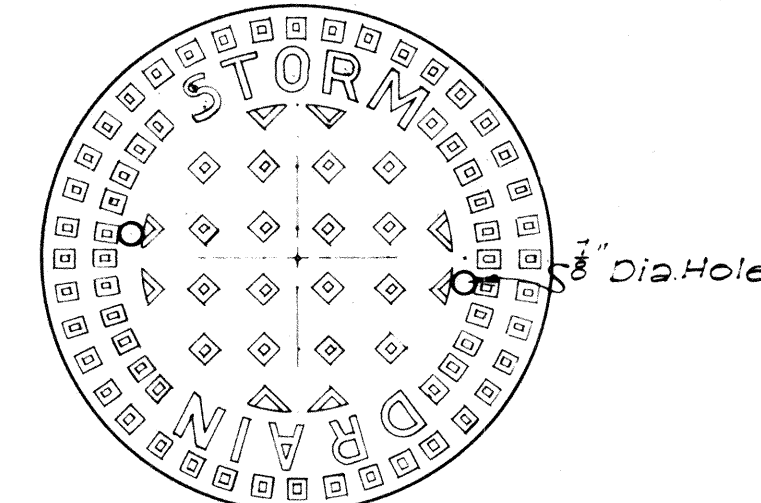
SCALE: 1-1/2" = 1'-0"



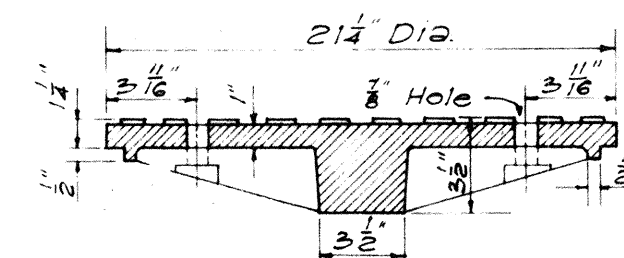
PLAN OF RIM



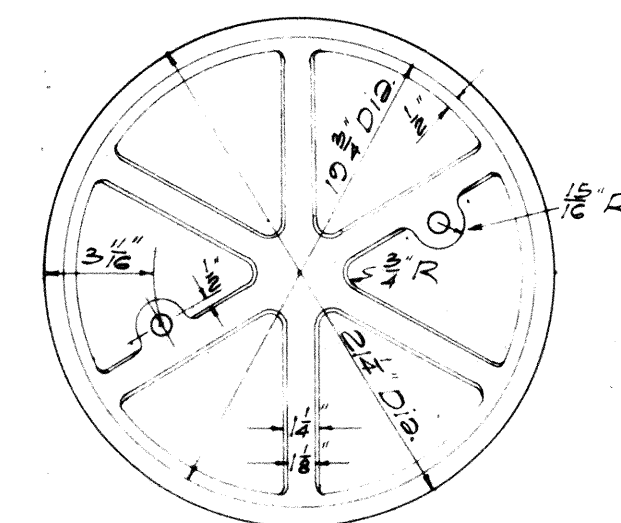
SECTION OF RIM



TOP VIEW OF COVER



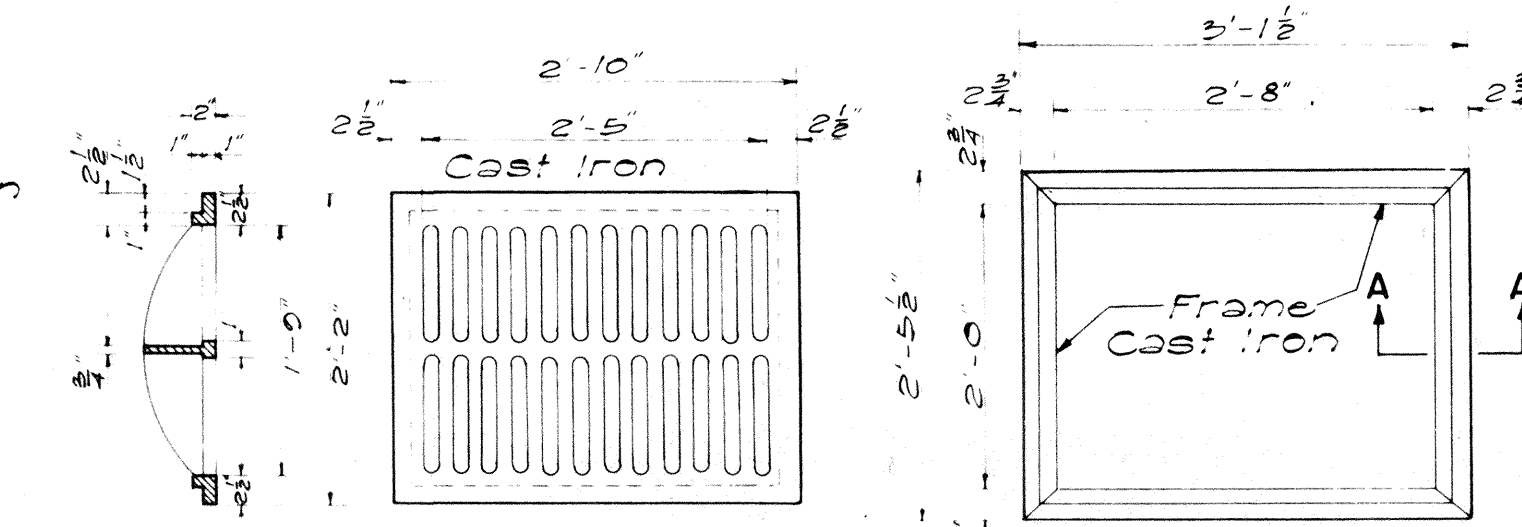
SECTION



BOTTOM VIEW OF COVER

DETAILS OF TYPE "A"
CAST IRON FRAME AND COVER

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



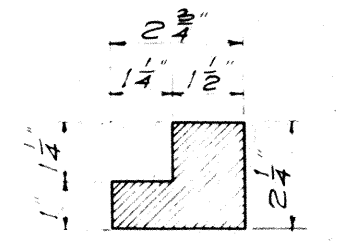
SECTION

TOP VIEW

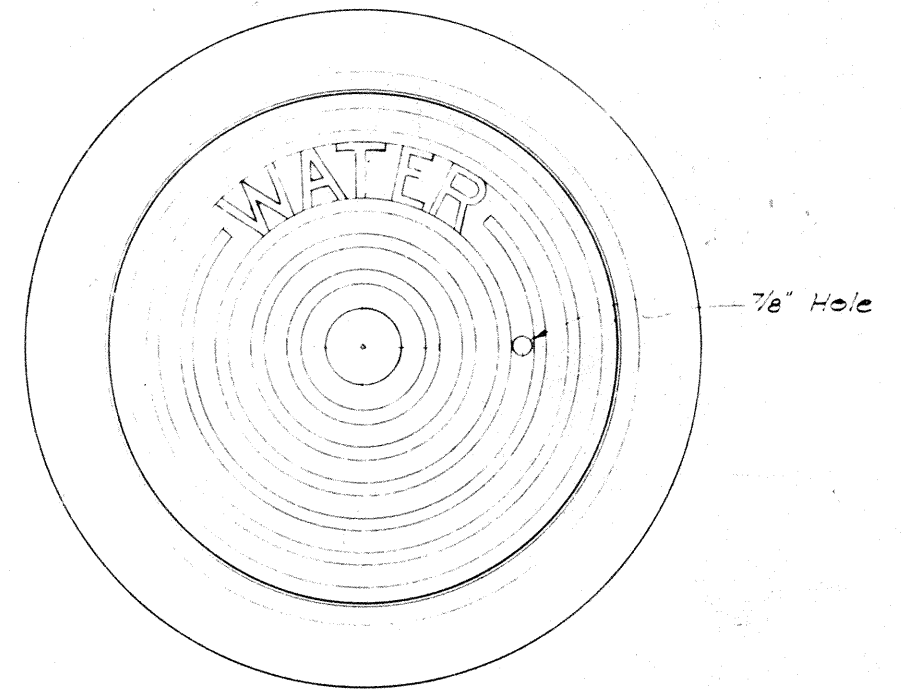
TOP VIEW

TYPE C C.I. FRAME AND GRATING

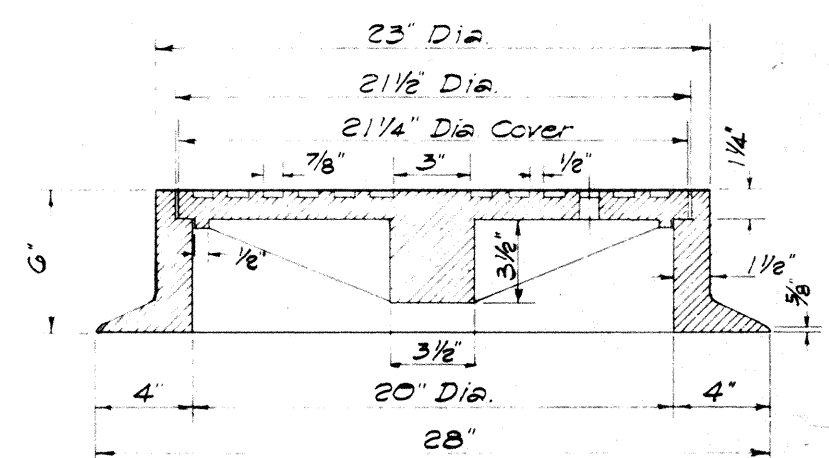
SCALE: 3/4" = 1'-0"



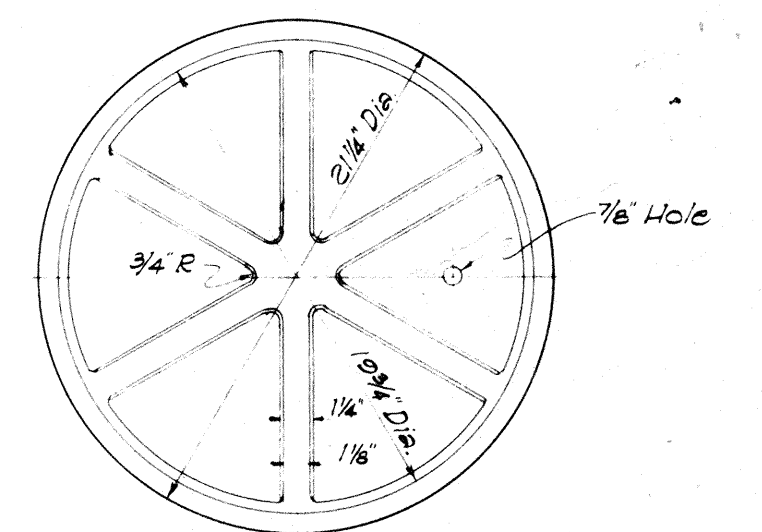
SECTION "A-A"
SCALE 3" = 1'-0"



PLAN OF FRAME AND COVER



SECTION OF FRAME AND COVER



BOTTOM VIEW OF COVER

DETAILS OF TYPE "W"
CAST IRON FRAME AND COVER

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CATCH BASIN AND
MANHOLE CASTINGS

SCALES AS NOTED

SHEET NO. 7 OF 7 SHEETS

NOTE:

THE TYPE "S" CAST IRON FRAME AND COVER SHOWN ON THIS SHEET IS EQUIVALENT TO THE CITY AND COUNTY OF HONOLULU, DIVISION OF SEWERS' TYPE "A" CAST IRON MANHOLE FRAME AND COVER.

THE TYPE "W" CAST IRON FRAME AND COVER SHOWN ON THIS SHEET IS EQUIVALENT TO THE CITY AND COUNTY OF HONOLULU, BOARD OF WATER SUPPLY'S CAST IRON MANHOLE FRAME AND COVER, 20" SIZE.

DATE	2/17/59
DESIGNED BY	Calisto
DRAWN BY	Calisto
TRACED BY	Calisto
QUANTITIES BY	Calisto
CHECKED BY	Calisto

ORIGINAL PLAN	NO.
NOTE BOOK	NO.