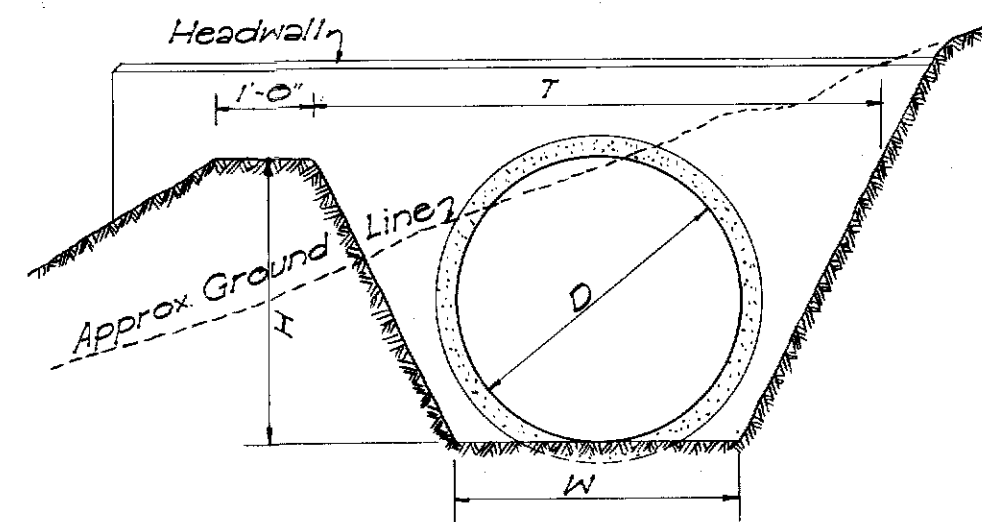


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DATA FOR OUTLET DITCH				
D	W	H	T+H+H	
18"	24"	2'-0"	4'-0"	
24"	30"	2'-0"	4'-6"	
30"	30"	2'-6"	5'-0"	
36"	36"	3'-0"	6'-0"	



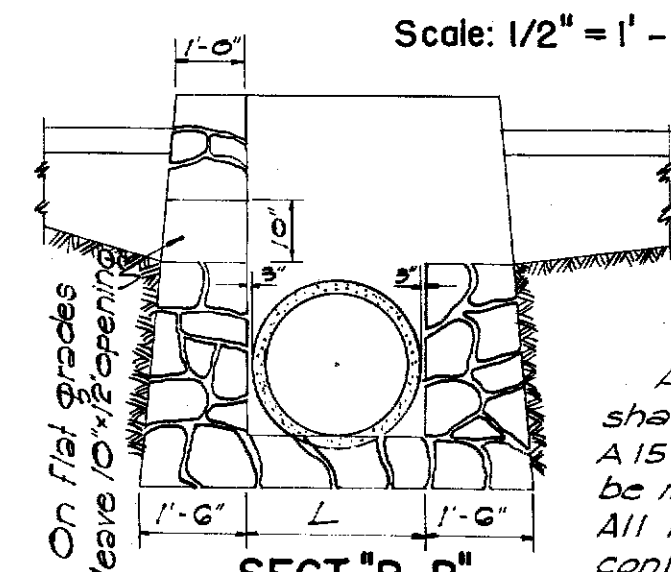
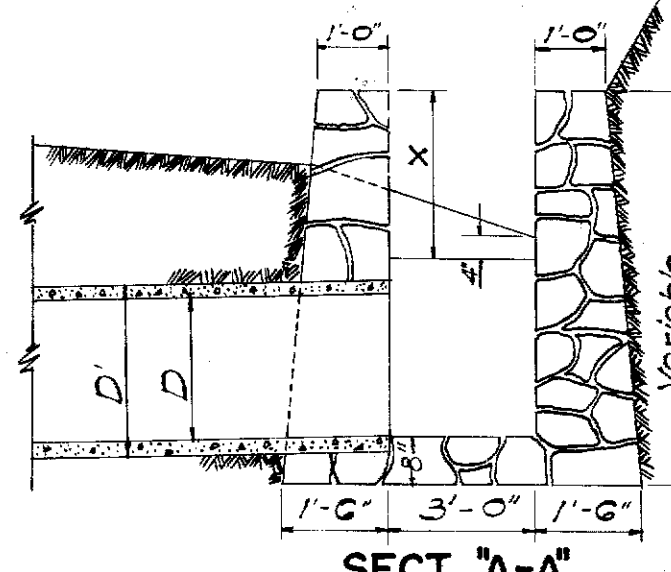
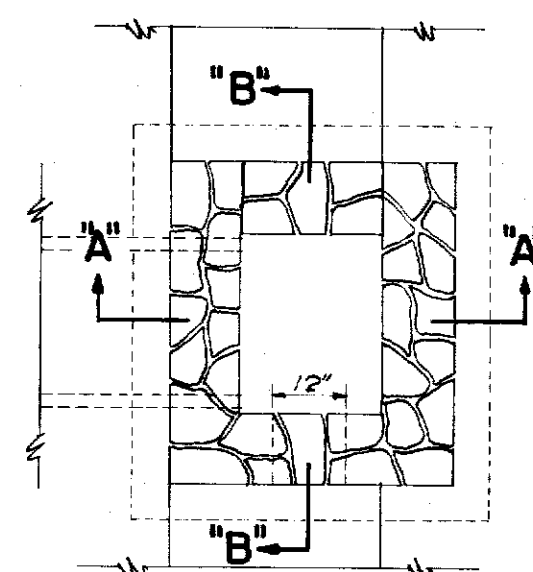
DETAIL OF OUTLET DITCH

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:

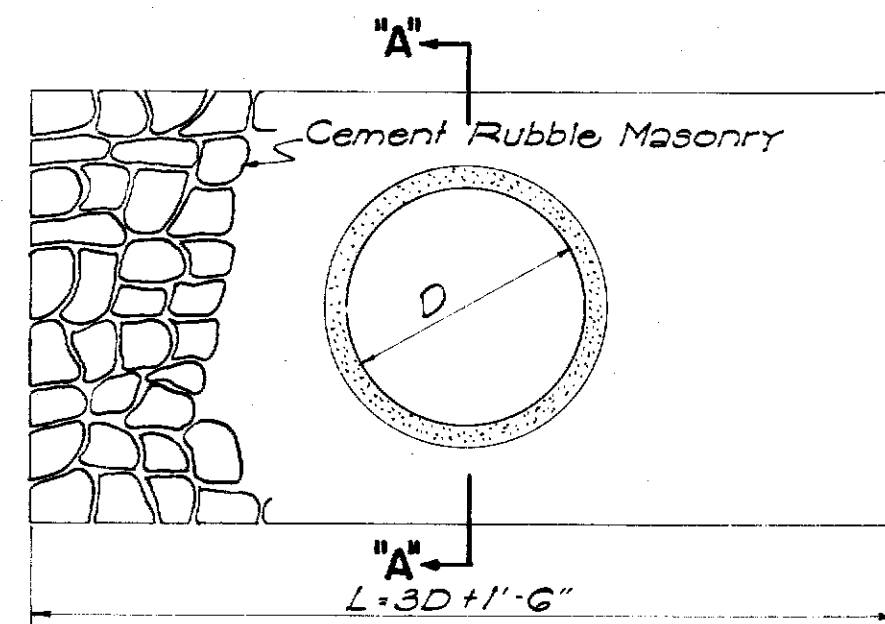
Dimension "X" is assumed as 2'-4" in figuring the above quantities.



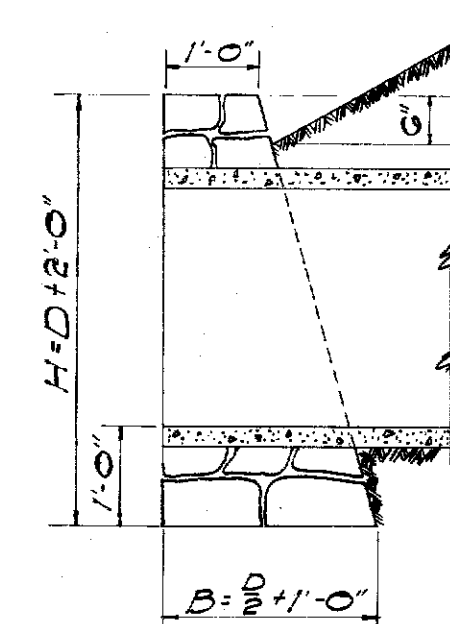
DETAIL OF MASONRY DROP INTAKE

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

DATA - MASONRY HEADWALL					Where Variables Equal
D	H	B	L	Cu Yds	
18"	3'-6"	1'-0"	6'-0"	0.85	0.93
24"	4'-0"	2'-0"	7'-6"	1.28	1.41
30"	4'-6"	2'-3"	9'-0"	1.83	2.00
36"	5'-0"	2'-6"	10'-6"	2.40	2.72



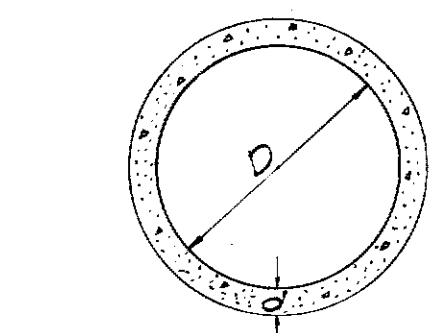
ELEVATION



SECT. "A-A"

DETAIL OF MASONRY HEADWALL

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

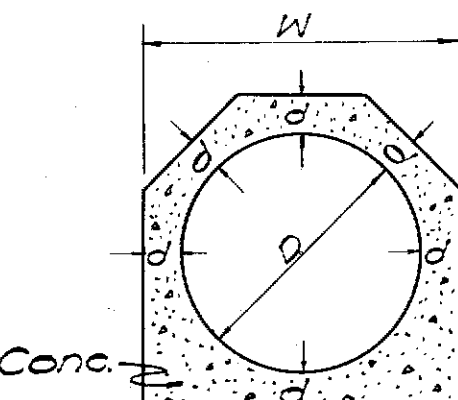


SECTION

CONC. PIPE CULVERT

NOTE:

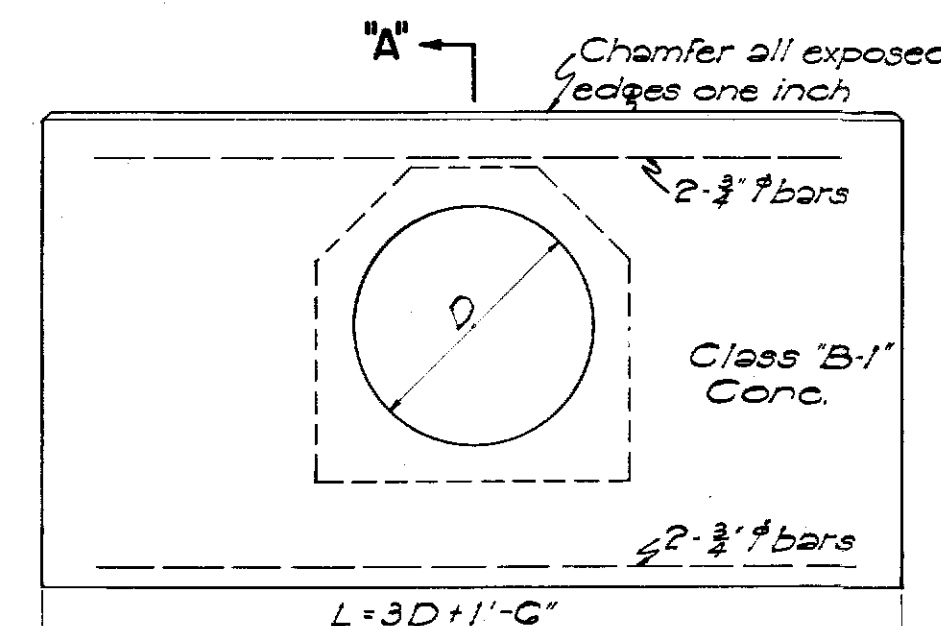
Thickness "d", reinforcing, and concrete used, are to conform with the approved design as provided by the Specifications.



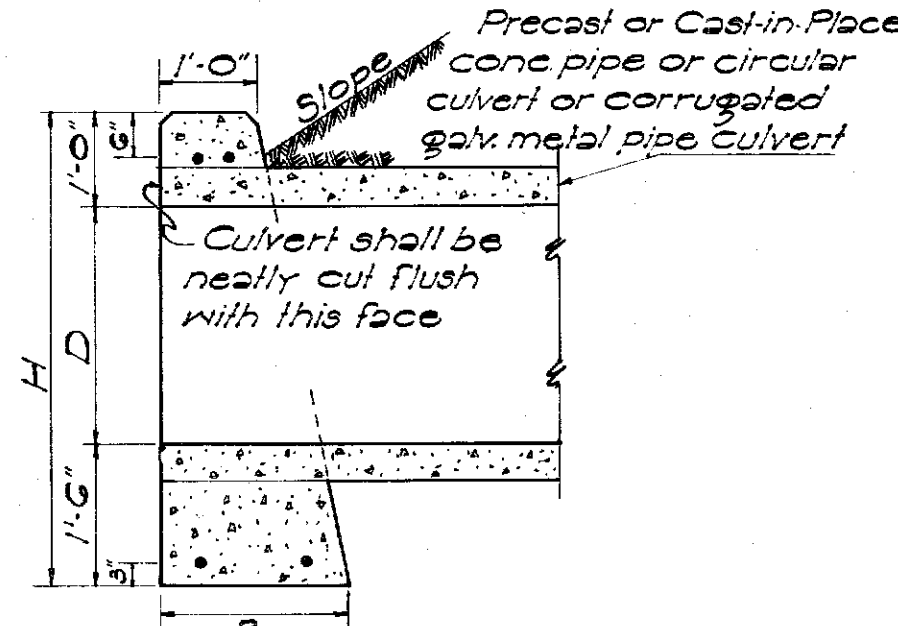
SECTION

DATA - CAST-IN-PLACE CONC. CULVERT			
D	d	W	Cu Yds per Ft.
18"	4"	2'-2"	0.11
24"	4 1/2"	2'-0"	0.14
30"	5"	3'-4"	0.19
36"	5 1/2"	3'-11"	0.26

CAST-IN-PLACE CONC. CULVERT



ELEVATION

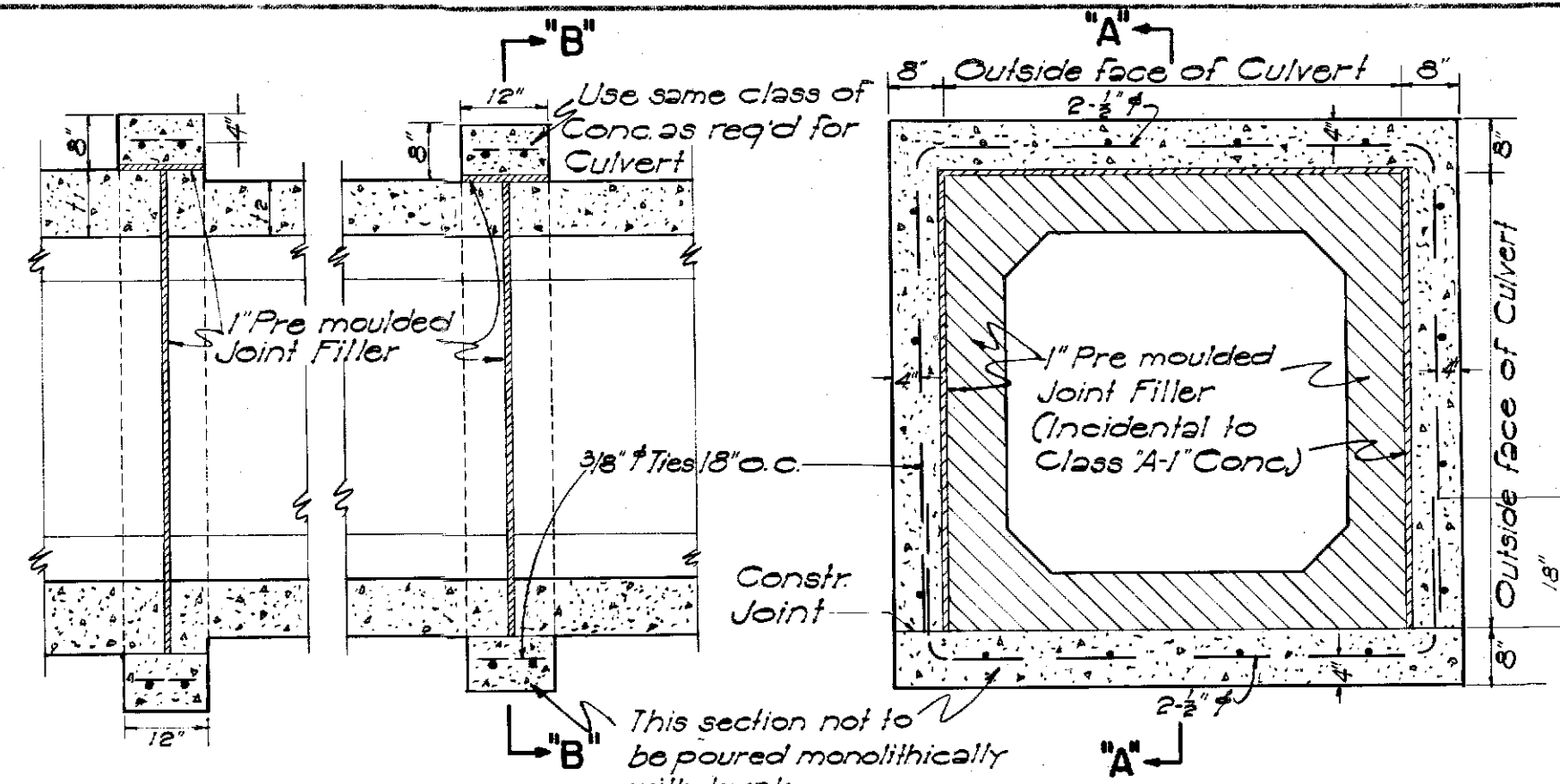


SECTION "A-A"

DATA FOR CONC. HEADWALL					Cast-in-Place Conc. Culvert	Steel For One Headwall
D	B	L	H	Cu Yds		
18"	1'-6"	6'-0"	4'-0"	0.02	1.00	4
24"	1'-6"	7'-6"	4'-6"	1.25	1.38	4
30"	2'-0"	9'-0"	5'-0"	1.05	2.17	4
36"	2'-0"	10'-6"	5'-6"	2.45	2.74	4
42"	2'-6"	12'-0"	6'-0"		3.87	4
48"	2'-6"	13'-6"	6'-6"		4.66	4

DETAIL OF CONCRETE HEADWALL

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

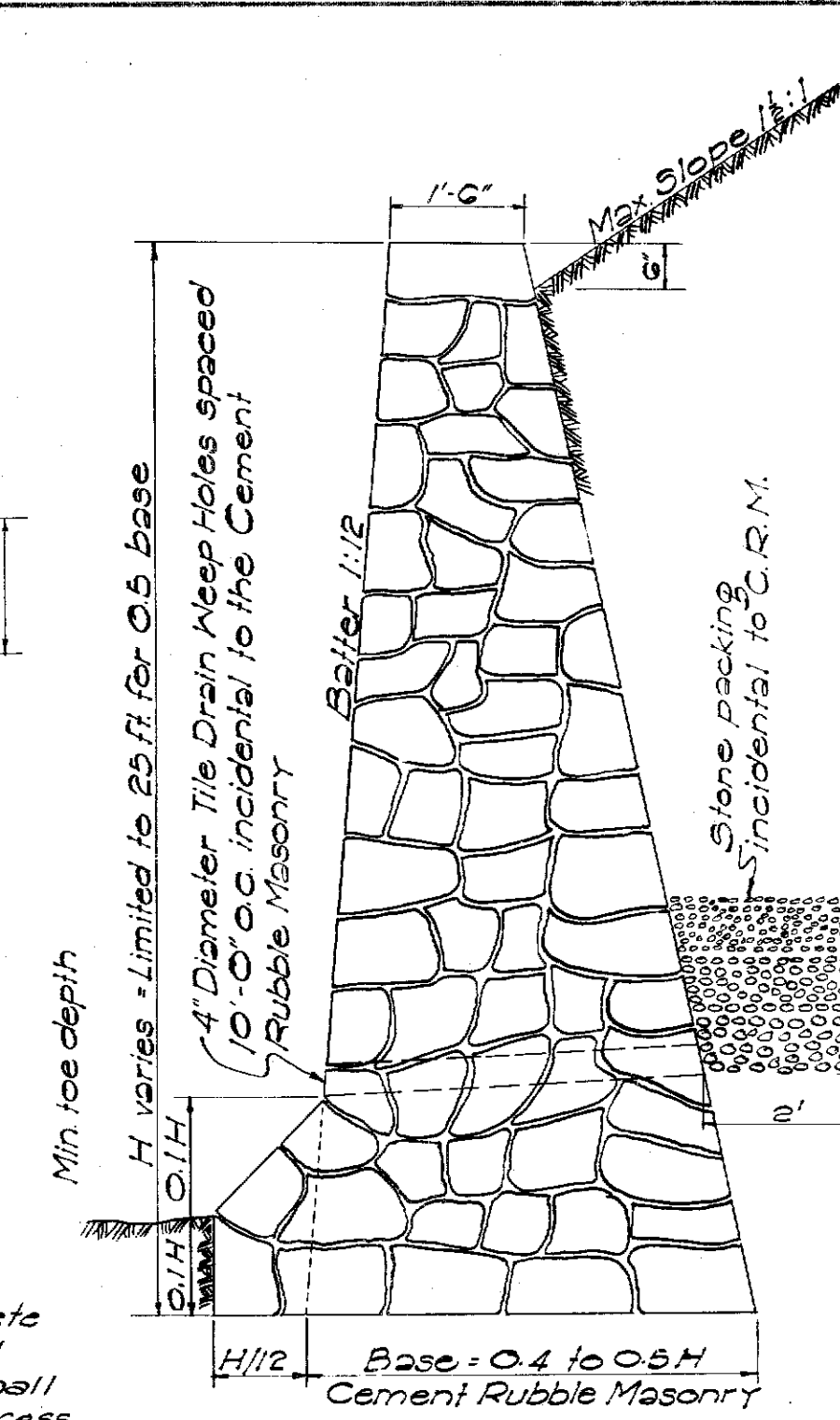


SECTION "A-A" SECTION "B-B" CONC. COLLAR FOR CONC. BOX CULVERT

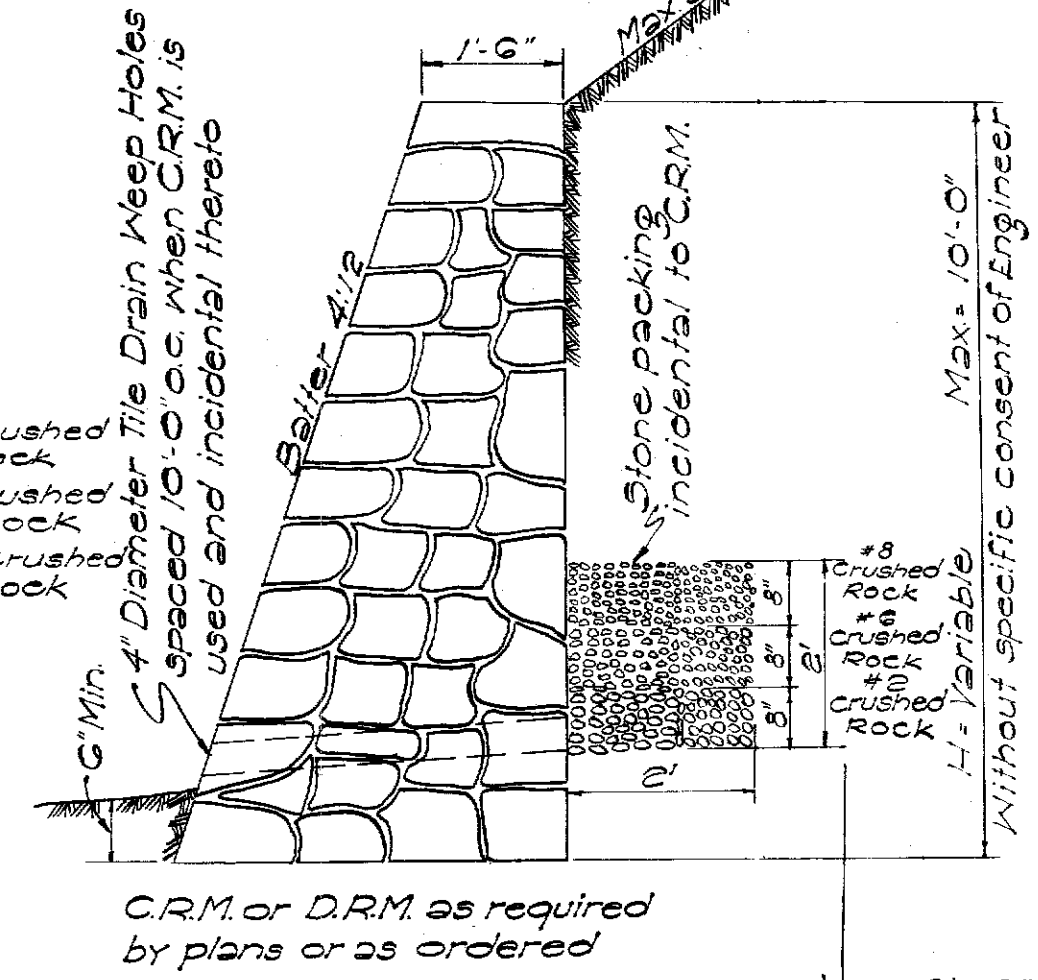
Scale: 1/2" = 1' - 0"

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.



SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL

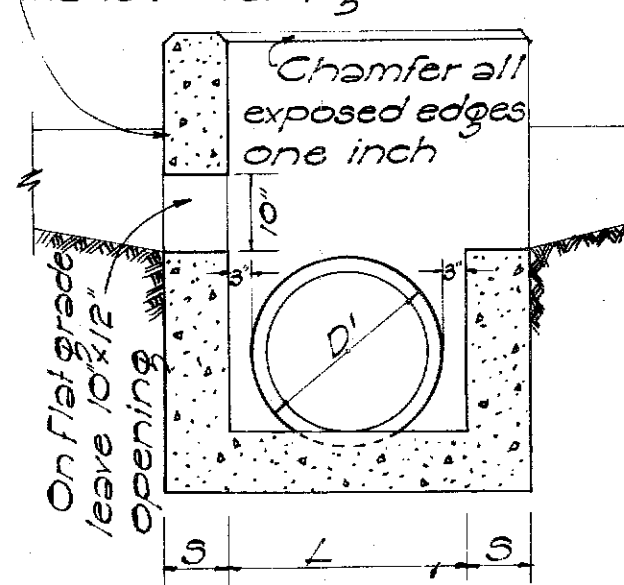


SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL

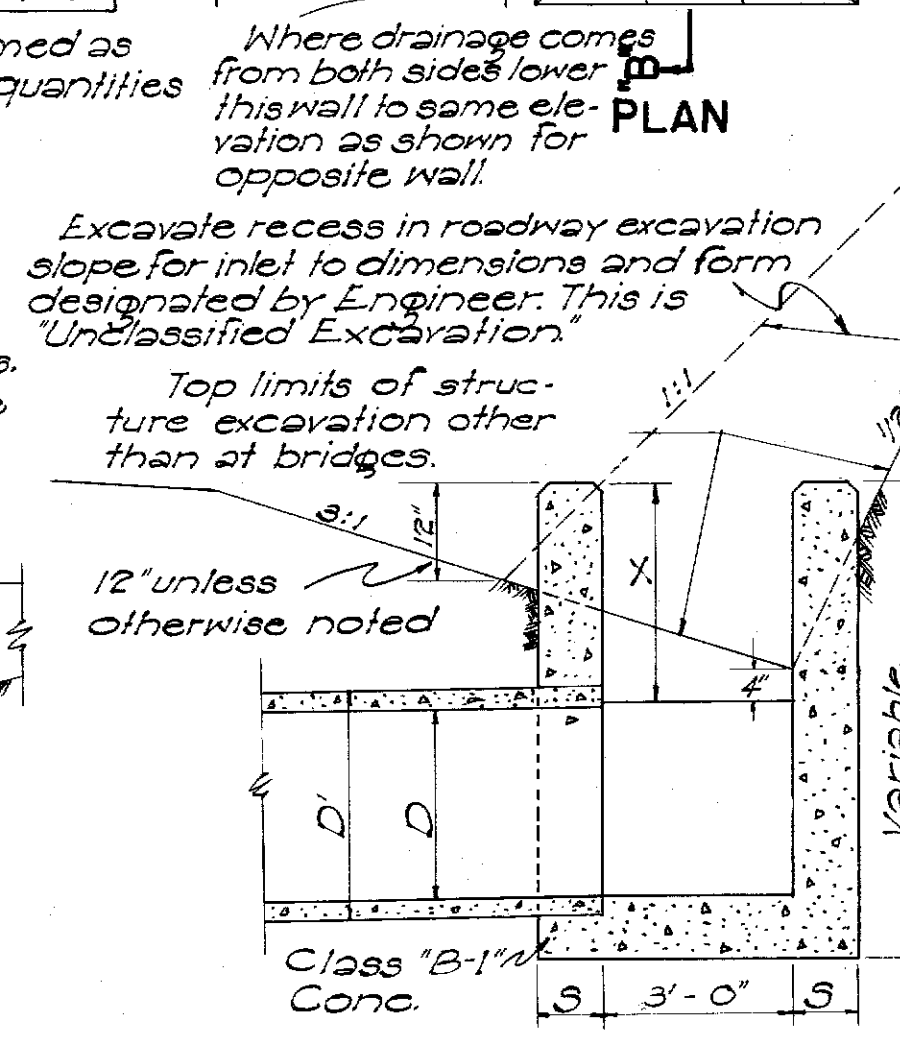
DATA - CONC. DROP INTAKE					Where Variables Equal
D	D	L+D+G	Cu Yds		
23"	18"	2'-5"	1.41	4'-6"	
30"	24"	3'-0"	1.72	5'-0"	
37"	30"	3'-7"	2.32	5'-6"	
44"	36"	4'-2"	2.73	6'-0"	
51"	42"	4'-10"	3.54	6'-6"	
58"	48"	5'-4"	4.01	7'-0"	

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"

SECT. OF CULVERT WITH CONC. PROTECTION

Scale: 1" = 1' - 0"

DATA FOR CONCRETE PROTECTION OVER CULVERTS		
X	Y	Z
6" for 18"D		Z must be from pipe to face of trench
7" " 24"D		
8" " 30"D		
9" " 36"D		
10" " 42"D		
11" " 48"D		
12" " 54"D		

PROPERTY OF DIVISION OF ENGINEERING

APPROVED: DATE: Aug. 25, 1957
STATE HIGHWAY ENGINEER

Job No. 12-63
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

STANDARD DETAILS
DROP INTAKES, RETAINING WALLS,
HEADWALLS, CONSTRUCTION JOINTS
SCALES AS NOTED