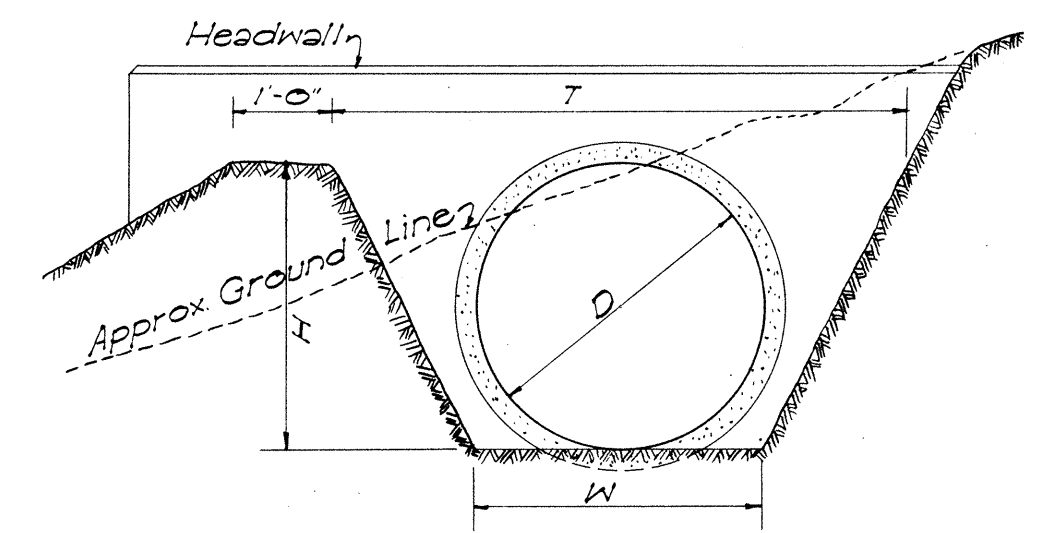


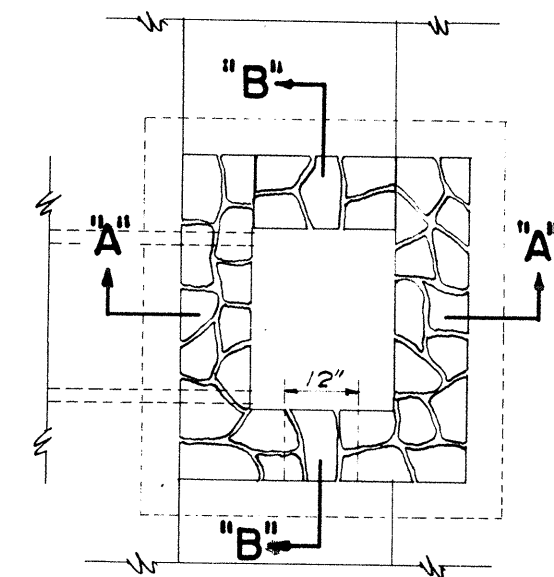
DATA FOR OUTLET DITCH			
D	W	H	T=H+H
18"	24"	2'-0"	4'-0"
24"	24"	2'-0"	4'-0"
30"	30"	2'-6"	5'-0"
36"	36"	3'-0"	6'-0"



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

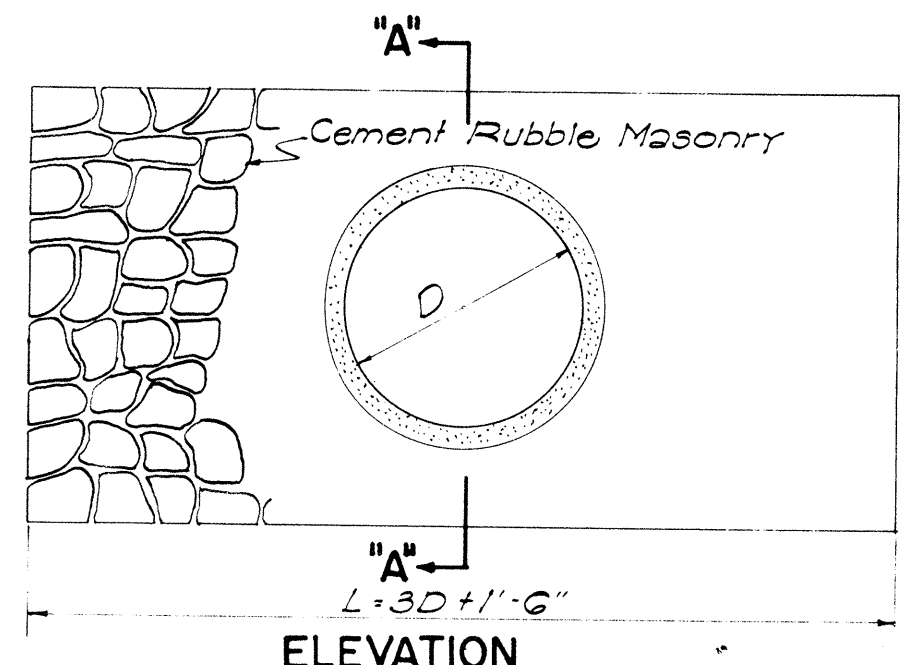
DATA FOR MASONRY DROP INTAKE				Where Variable Equal
D	D	L=D+G	Cu. Yds.	
23"	18"	2'-5"	2.41	4'-6"
30"	24"	3'-0"	2.89	5'-0"
37"	30"	3'-7"	3.38	5'-6"
44"	36"	4'-2"	3.92	6'-0"

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

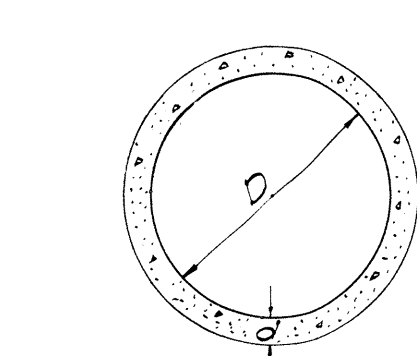


DETAIL OF MASONRY DROP INTAKE
Scale: 3/8" = 1'-0"

DATA - MASONRY HEADWALL				Cast-in-Place Conc. Culvert	Conc. Pipe Culvert	Corrugated Pipe Culvert
D	H	B	L	Cu. Yds.	Cu. Yds.	Cu. Yds.
18"	3'-6"	1'-0"	6'-0"	0.85	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"	2.49	2.84	2.72

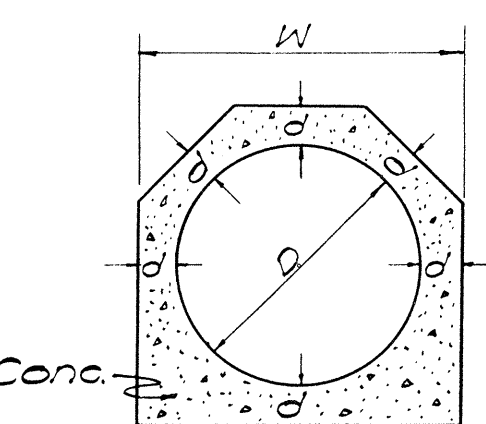


DETAIL OF MASONRY HEADWALL
Scale: 1/2" = 1'-0"



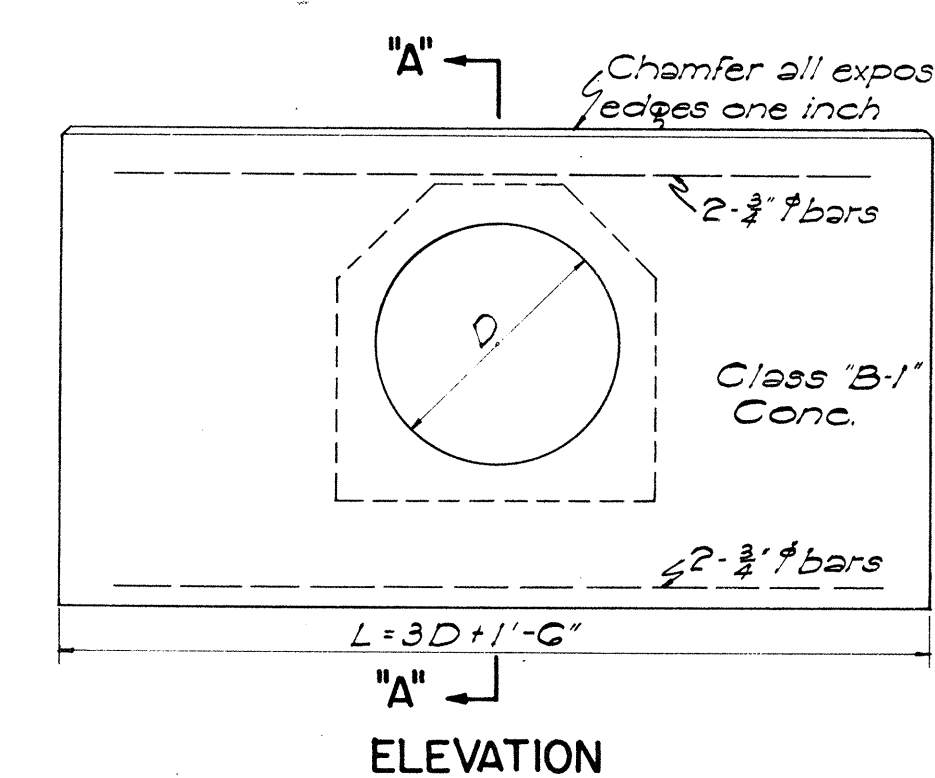
SECTION
CONC. PIPE CULVERT

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



CAST-IN-PLACE
CONC. CULVERT

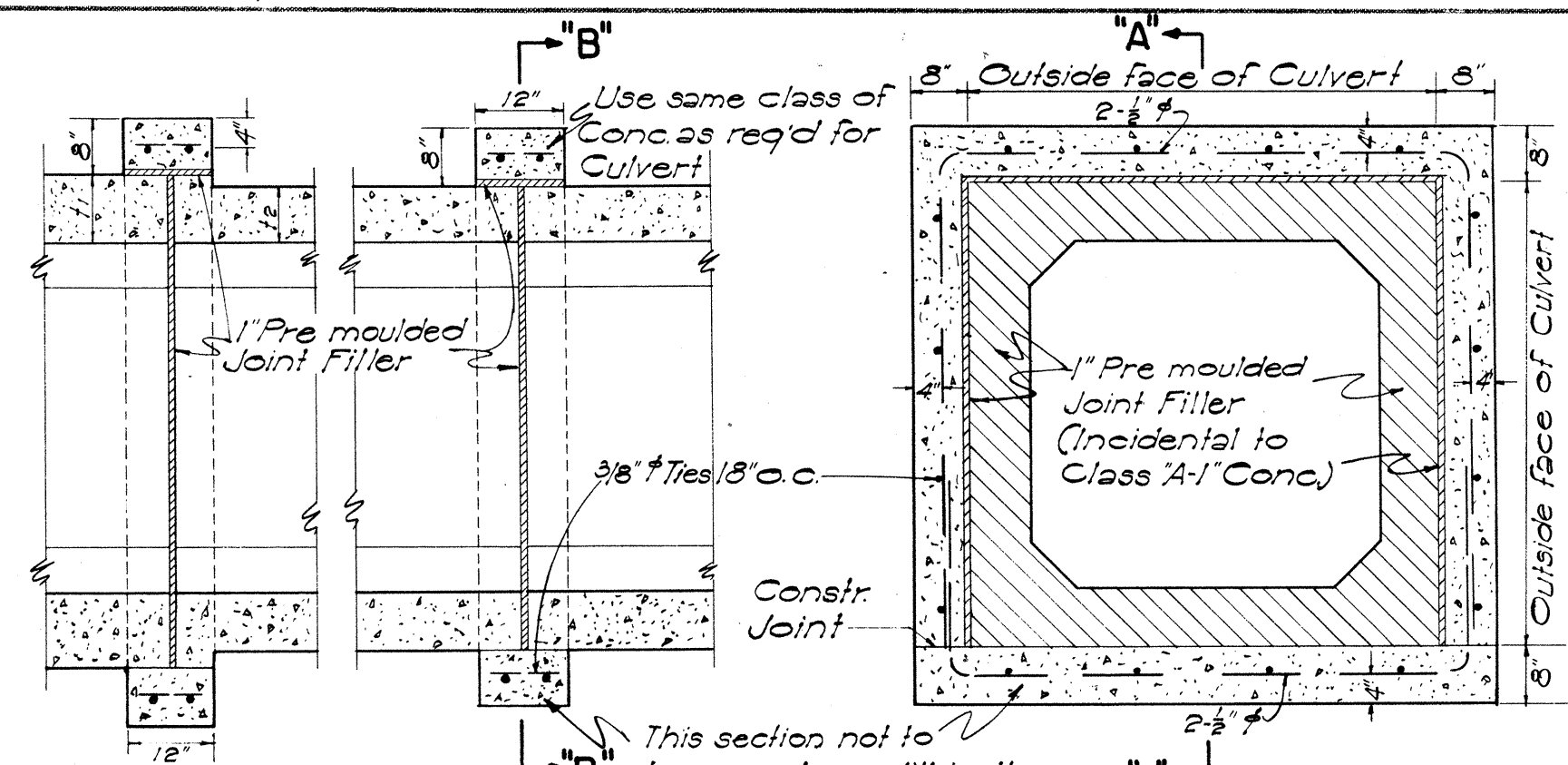
DATA - CAST-IN-PLACE CONC. CULV'T			
D	d	W	Cu. Yd. per Ft.
18"	4"	2'-2"	0.11
24"	4 1/2"	2'-9"	0.14
30"	5"	3'-4"	0.19
36"	5 1/2"	3'-11"	0.26



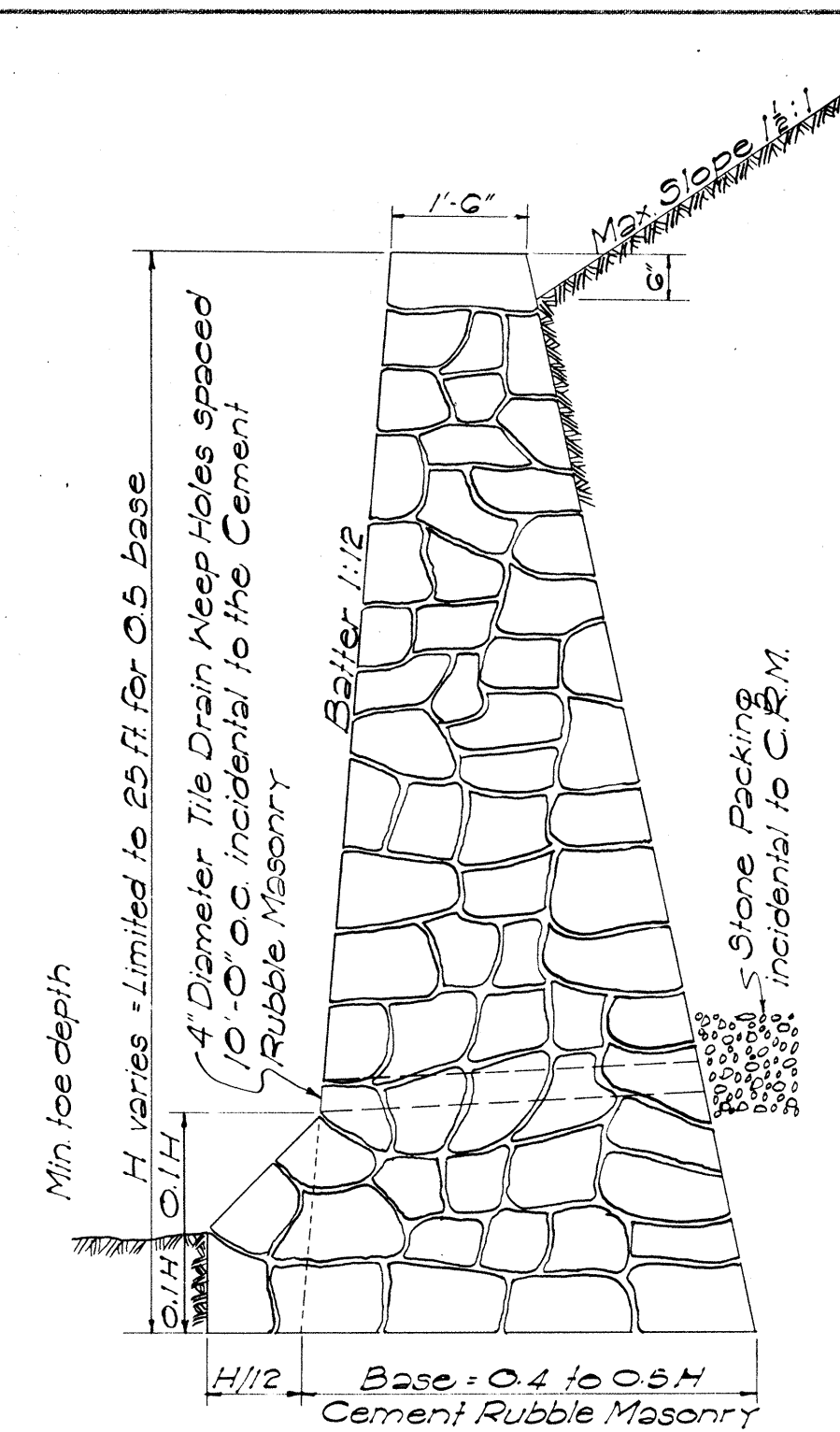
ELEVATION
DETAIL OF CONCRETE HEADWALL
Scale: 1/2" = 1'-0"

DATA FOR CONC. HEADWALL				Cast-in-Place Conc. Culvert	Conc. Pipe Culvert	Steel For One Headwall
D	B	L	H	Cu. Yd.	Cu. Yd.	No. of Bars Size Length Lbs.
18"	1'-6"	6'-0"	4'-0"	0.92	1.00	4 3/4" 2'-6" 39
24"	1'-6"	7'-6"	4'-6"	1.25	1.33	4 3/4" 7'-0" 42
30"	2'-0"	9'-0"	5'-0"	1.95	2.17	4 3/4" 8'-6" 51
36"	2'-0"	10'-6"	5'-6"	2.43	2.74	4 3/4" 10'-0" 60
42"	2'-6"	12'-0"	6'-0"	3.87	4.26	4 3/4" 11'-6" 69
48"	2'-6"	13'-6"	6'-6"	4.66	5.06	4 3/4" 13'-0" 78

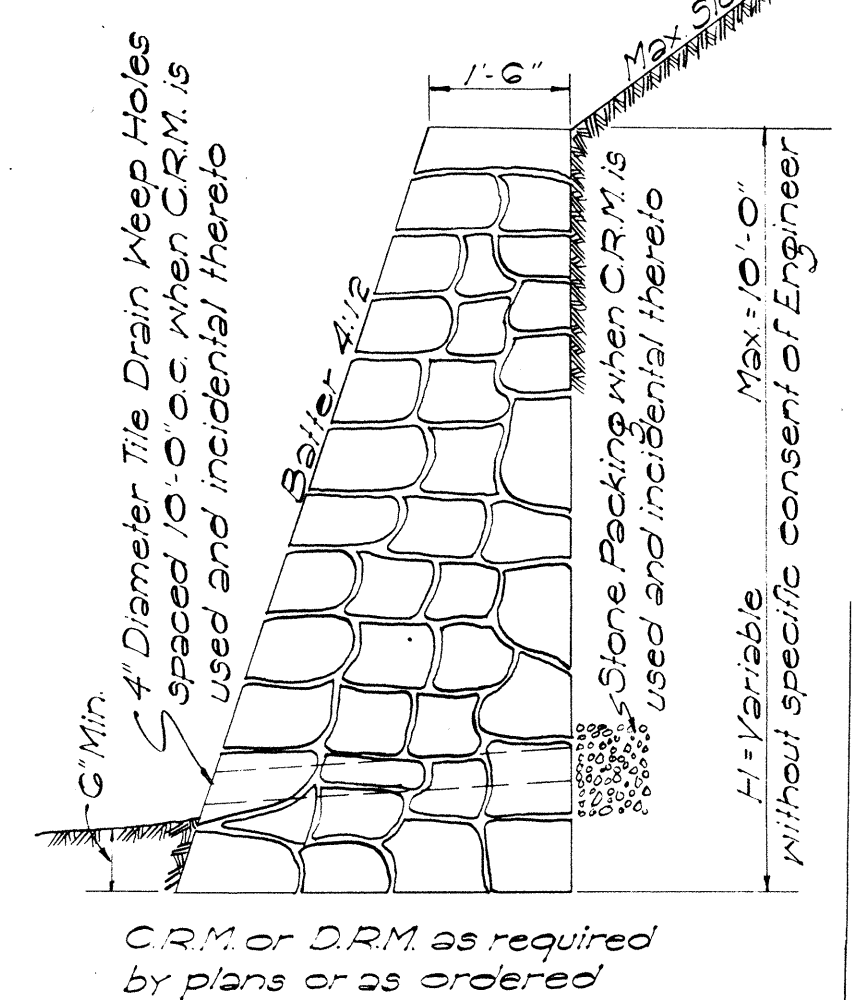
DETAIL OF CONCRETE HEADWALL
Scale: 1/2" = 1'-0"



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



SECTION OF HIGH CEMENT
RUBBLE MASONRY RETAINING
WALL OR SEAWALL



SECTION OF LOW
MASONRY RETAINING
WALL OR SEAWALL

DATA - CONC. DROP INTAKE				Where Variable Equal
D	D	L=D+G	S	Cu. Yds.
23"	18"	2'-5"	8	1.10
30"	24"	3'-0"	8	1.33
37"	30"	3'-7"	9	1.70
44"	36"	4'-2"	9	2.07
51"	42"	4'-9"	10	2.90
58"	48"	5'-4"	10	3.27

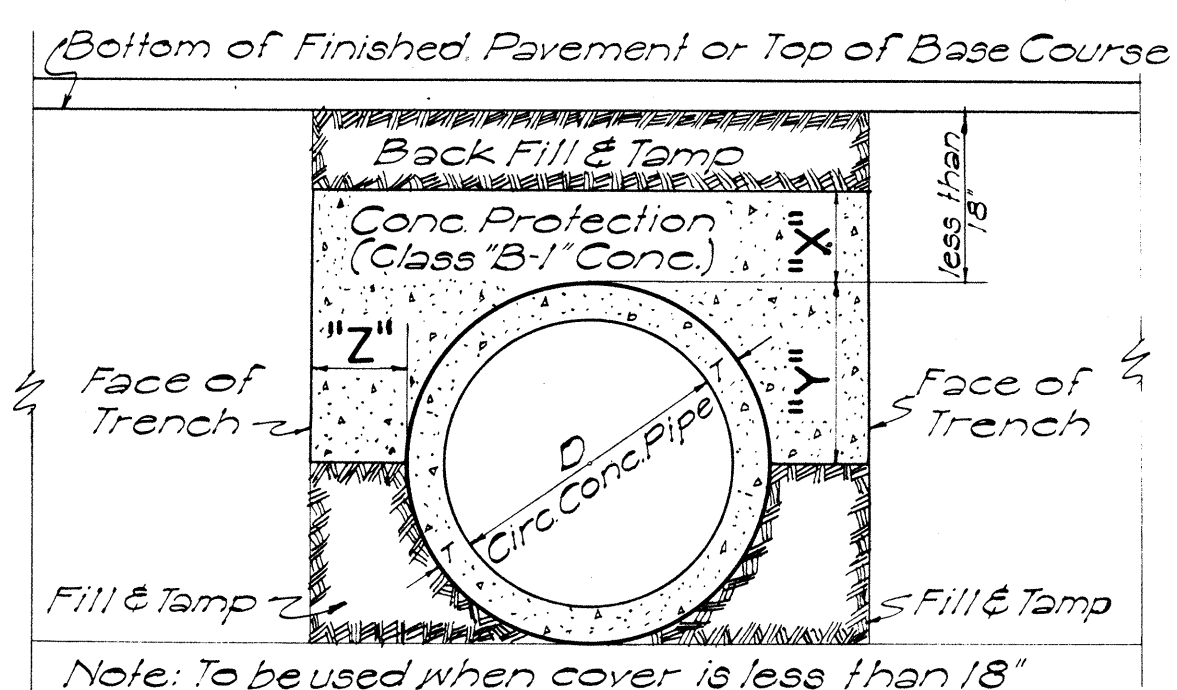
Note: Dimension "X" is assumed as 2'-4" in figuring the above quantities.

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.

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

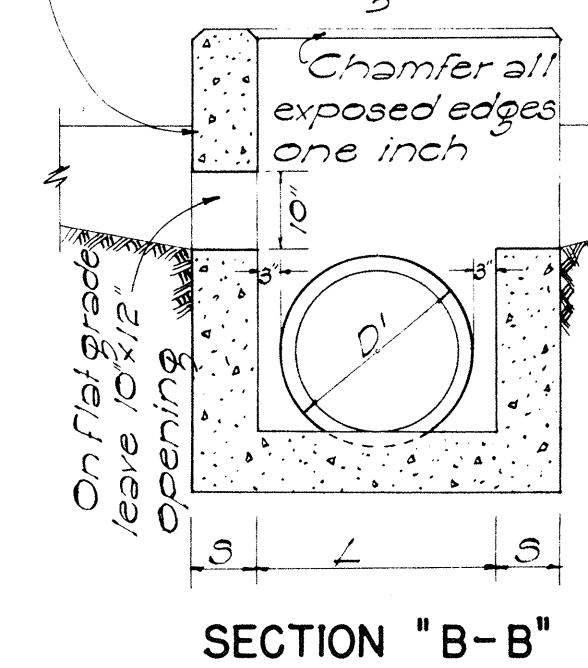
Excavate recess in roadway excavation slope for inlet to dimensions and form designated by Engineer. This is 'Unclassified' Excavation.

Top limits of unclassified excavation for structures other than at bridges 12' unless otherwise noted.

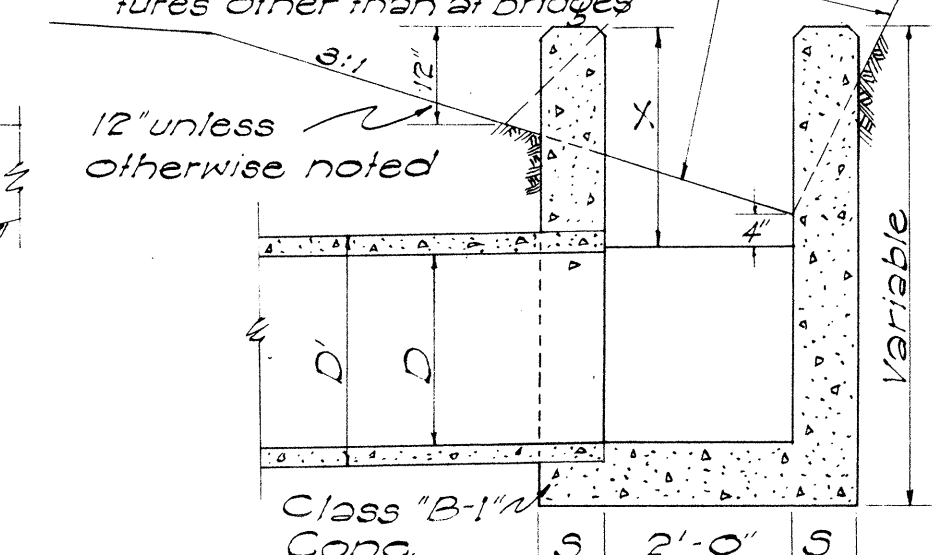


DATA FOR CONCRETE PROTECTION OVER CULVERTS		
X	Y	Z
6" for 18" D		Z must be from pipe to face of trench
7" " 24" D		
8" " 30" D		
9" " 36" D		
10" " 42" D		
11" " 48" D		
12" " 54" D		
	D/2 + T	Minimum = X Maximum pay quantity will be Z = 12"

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



SECTION "B-B"



SECTION "A-A"

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

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII
STANDARD DETAILS
DROP INTAKES, RETAINING WALLS,
HEADWALLS, CONSTRUCTION JOINTS
SCALES AS NOTED