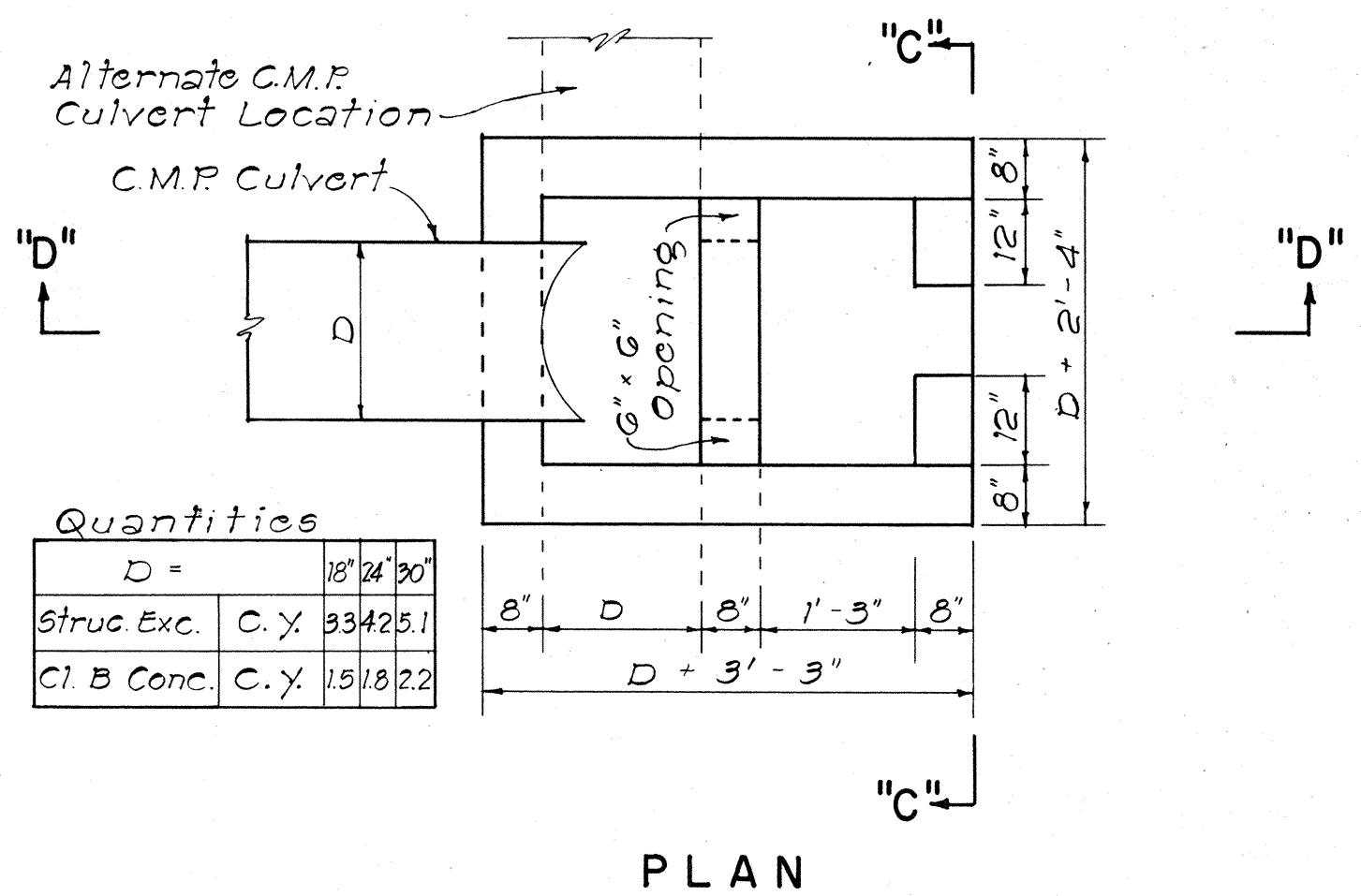
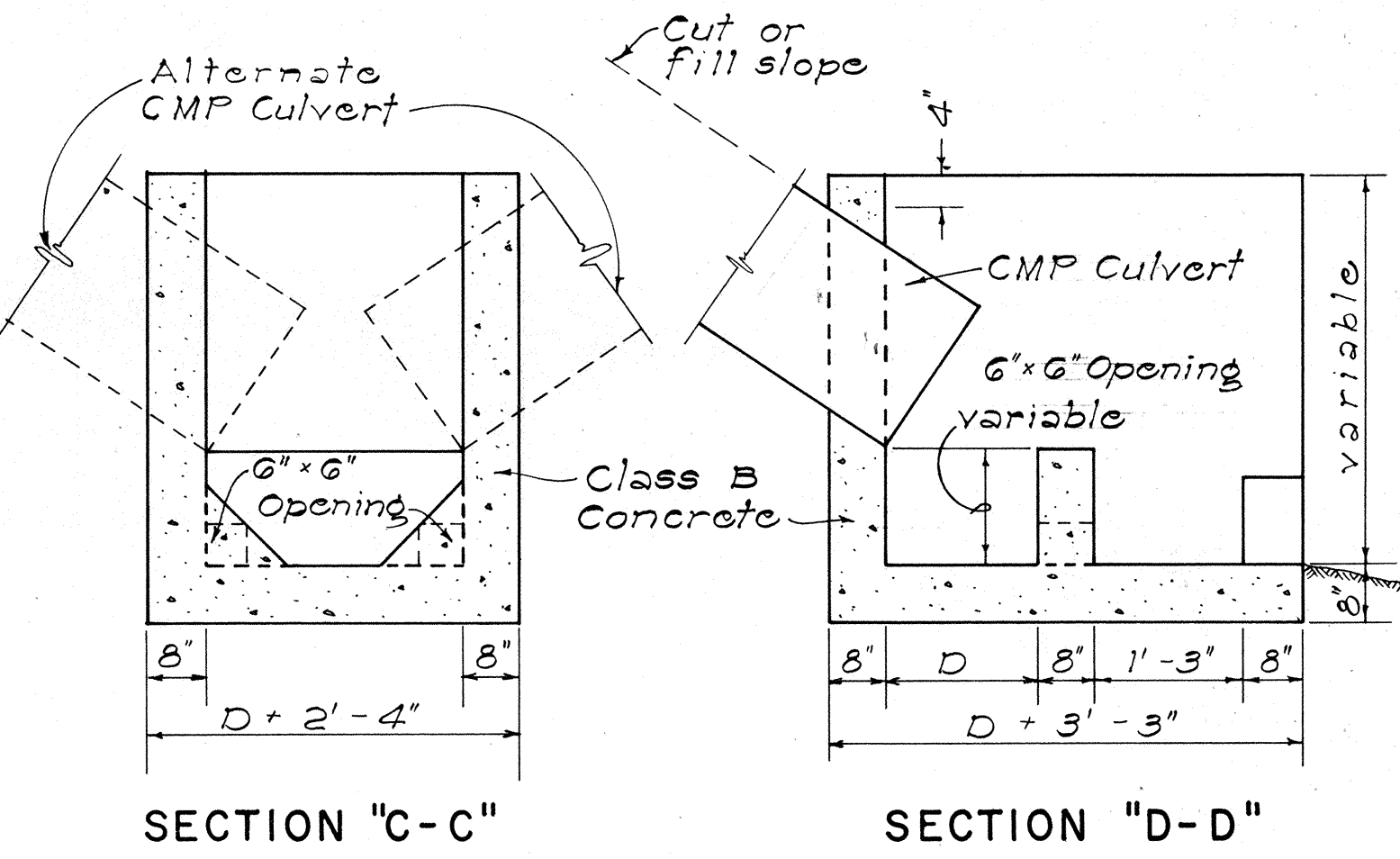


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	56C-01-71	1971	4	5



DETAILS OF CONC. DROP BOX AT OUTLET OF CULVERT PIPE
NOT TO SCALE

APPROVAL RECOMMENDED: P. Nakano 12-17-69
HYDRAULIC DESIGN ENGINEER DATE

APPROVED: 222222 12-17-69
ASSISTANT CHIEF, ENGINEERING DATE

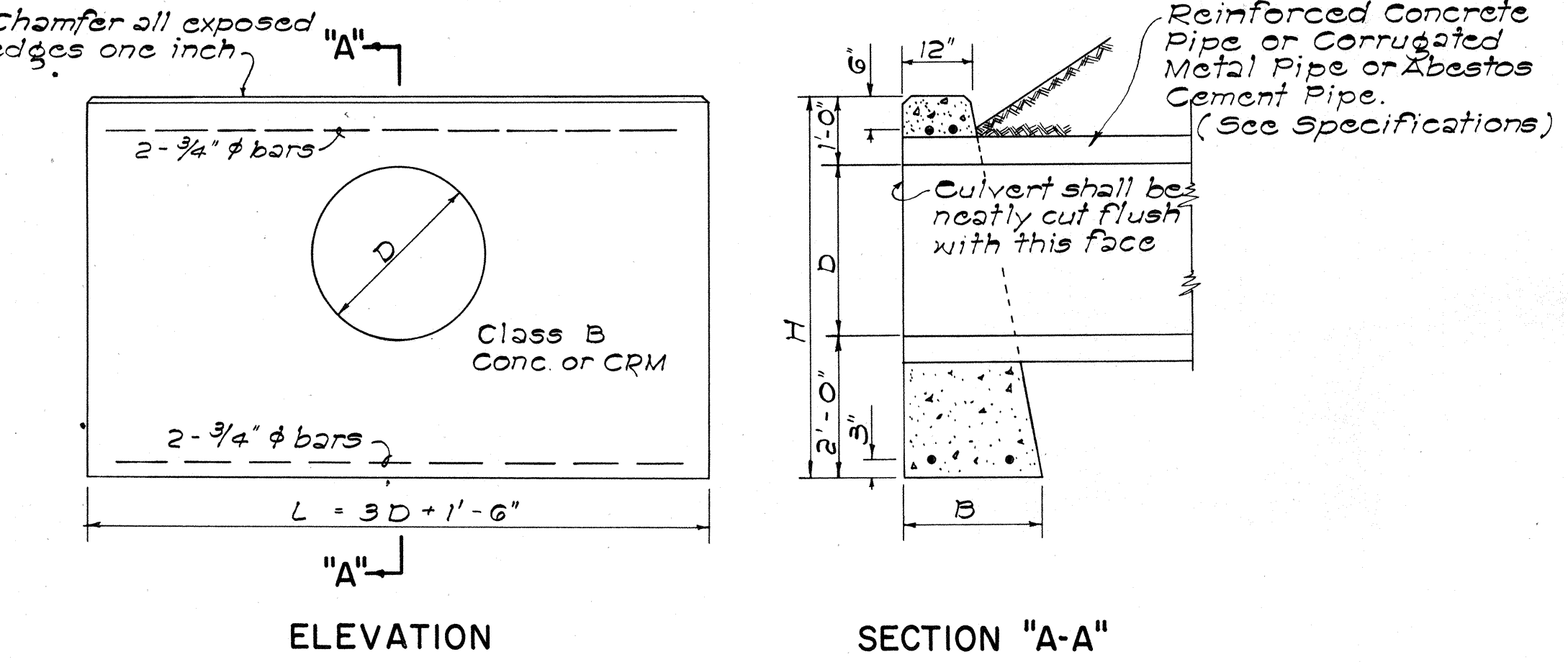
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

DROP INTAKE, HEADWALL & CONCRETE PROTECTION

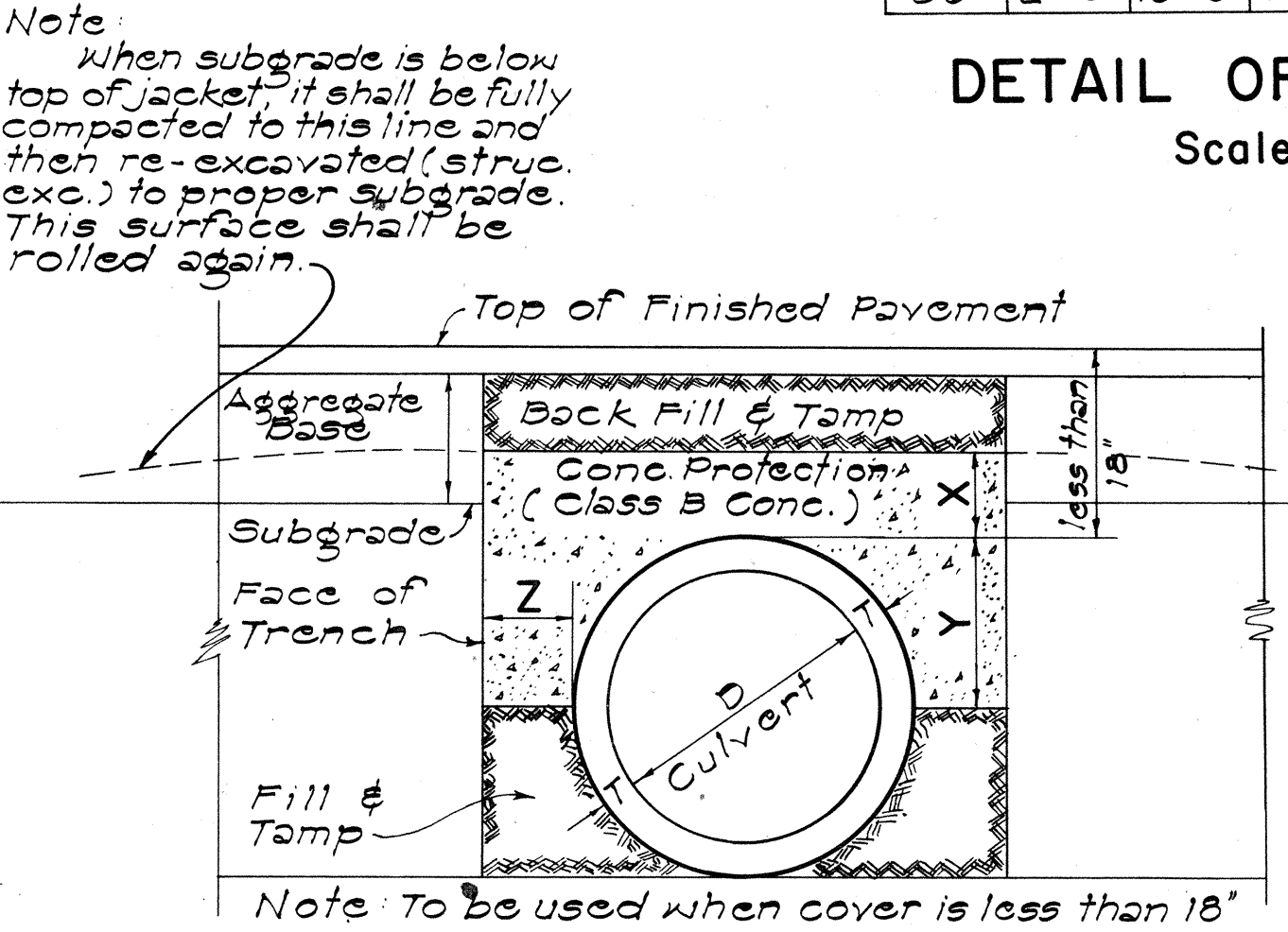
Scale: As Noted Date: Aug. 1967
SHEET No. 1 OF 1 SHEETS DH 10



DATA FOR CONC. HEADWALL				CL. B CONC. FOR S.C.P.	CL. B CONC. FOR C.M.P.	Steel For One Headwall			
D	B	L	H	Cu. Yd.	Cu. Yd.	No. of Bars	Size	Length	Lbs.
18"	1'-0"	6'-0"	4'-6"	1.12	1.17	4	3/4"	5'-6"	33
24"	1'-0"	7'-0"	5'-0"	1.52	1.60	4	3/4"	7'-0"	42
30"	2'-0"	9'-0"	5'-6"	2.36	2.49	4	3/4"	8'-6"	51
36"	2'-0"	10'-0"	6'-0"	2.94	3.13	4	3/4"	10'-0"	60
42"	2'-0"	12'-0"	6'-6"	4.19	4.47	4	3/4"	11'-6"	69
48"	2'-0"	13'-0"	7'-0"	5.01	5.36	4	3/4"	13'-0"	78

DATA - MASONRY HEADWALL				CRM FOR R.C.P.	CRM FOR C.M.P.
D	B	L	H	Cu. Yd.	Cu. Yd.
18"	1'-0"	6'-0"	4'-6"	1.24	1.29
24"	2'-0"	7'-6"	5'-0"	1.83	1.92
30"	2'-3"	9'-0"	5'-6"	2.56	2.70
36"	2'-6"	10'-6"	6'-0"	3.45	3.66

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

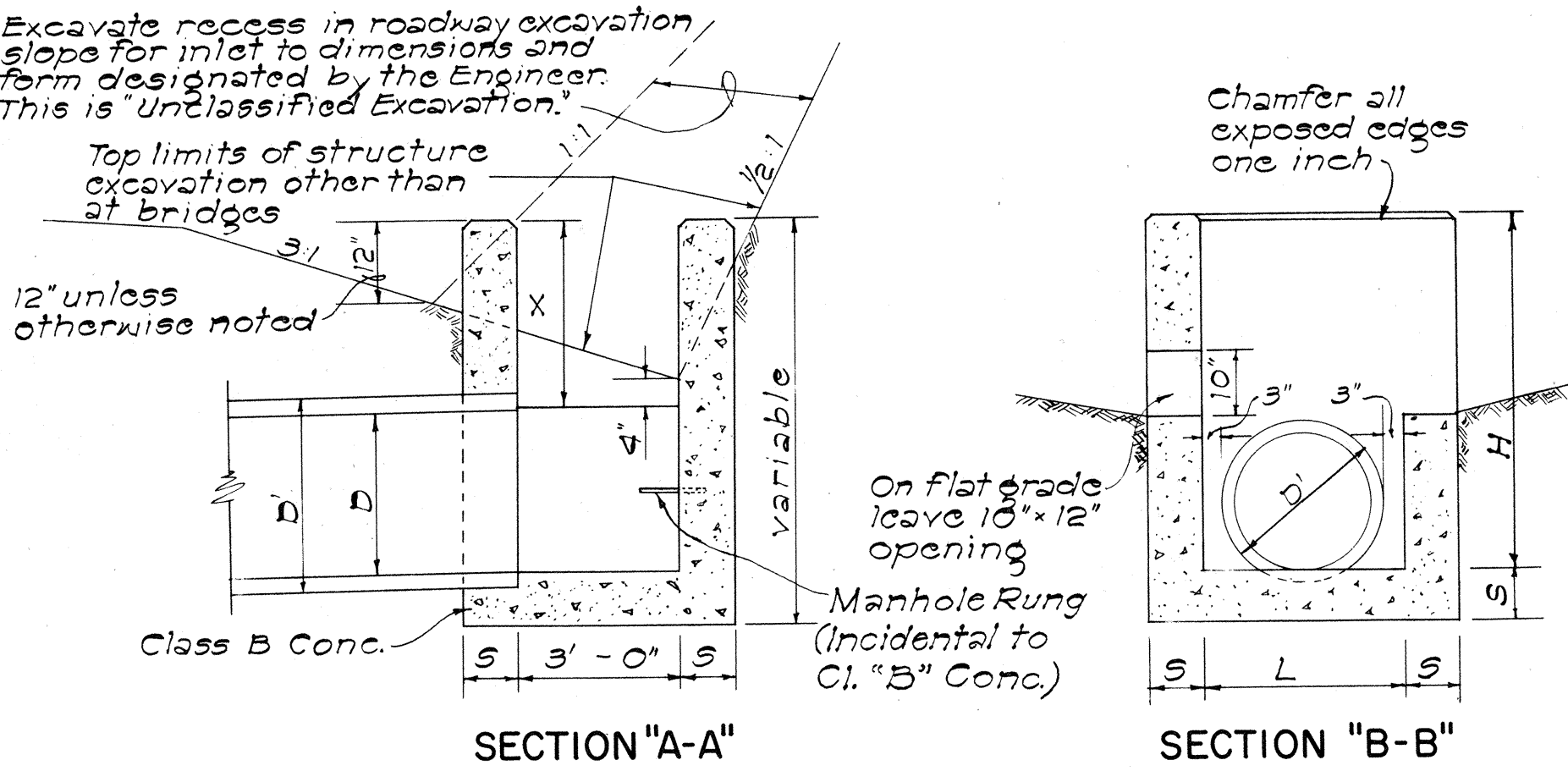
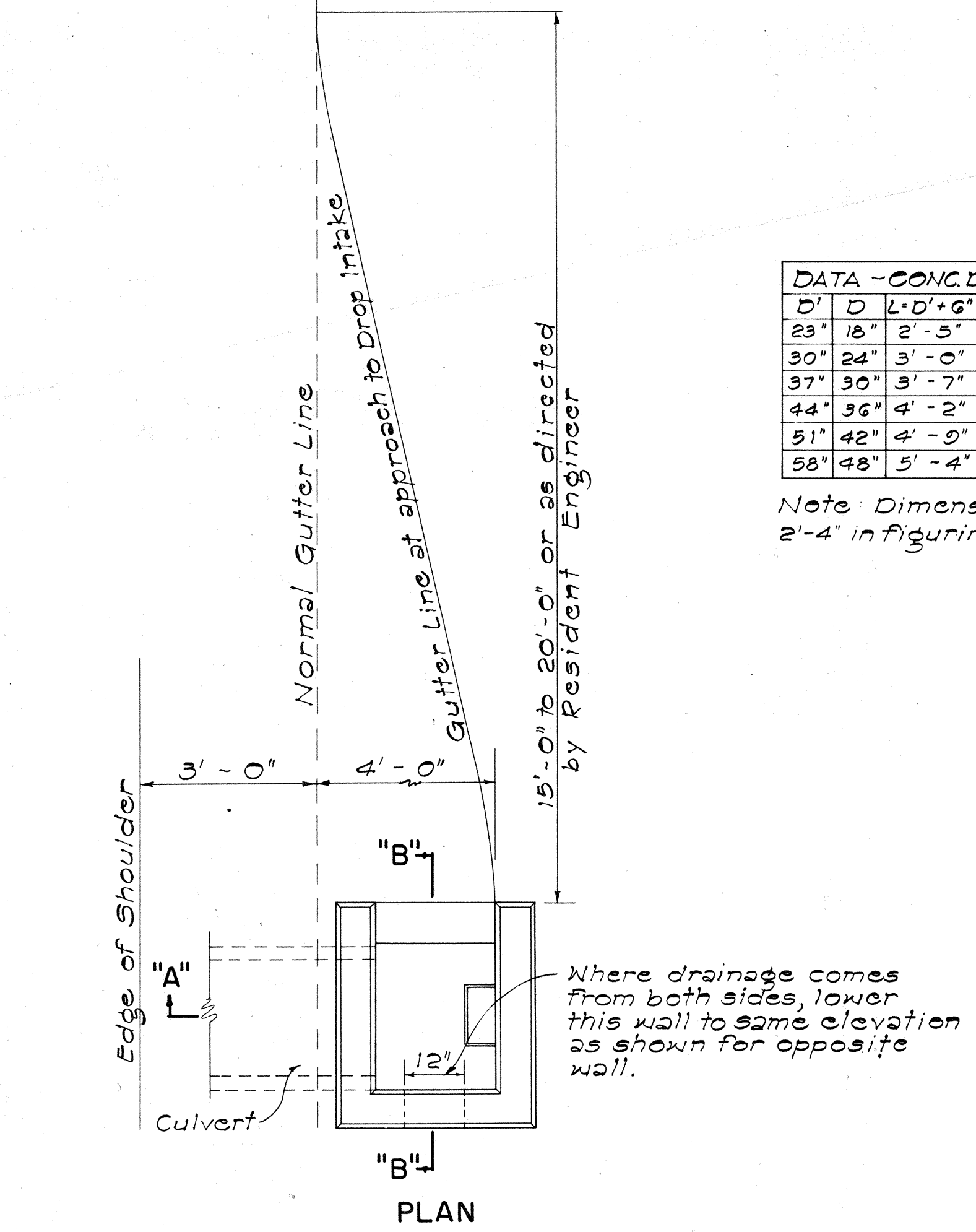


DATA FOR CONCRETE PROTECTION OVER CULVERTS		
X	Y	Z
6" for 18" D	$\frac{D}{2} + T$	Z must be from pipe to face of trench Minimum = X Maximum pay quantity will be Z = 12"
7" for 24" D		
8" for 30" D		
9" for 36" D		
10" for 42" D		
11" for 48" D		
12 for 54" D		

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

DATA - CONC. DROP INTAKE					where Variable Equals
D'	D	L-D'+6"	S	Cu. Yds	
23"	18"	2'-5"	8"	1.41	4'-6"
30"	24"	3'-0"	8"	1.72	5'-0"
37"	30"	3'-7"	9"	2.32	5'-6"
44"	36"	4'-2"	9"	2.73	6'-0"
51"	42"	4'-9"	10"	3.54	6'-6"
58"	48"	5'-4"	10"	4.01	7'-0"

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



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

GENERAL NOTES

- Culvert shall enter and leave Drop Intake from any position and in the direction indicated by the plans or ordered by the Engineer.
- D' shall be the maximum outside dimension of the culvert at the Drop Intake wall.
- Manhole Rungs (16"o.c.) are required when "H" is greater than 4 feet 6 inches. Only one rung (12 inches from the bottom) is required if "H" is 4 feet 6 inches or less. Manhole Rungs may be placed at any location as ordered by the Engineer.

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
NOTE BOOK	
CHECKED BY	