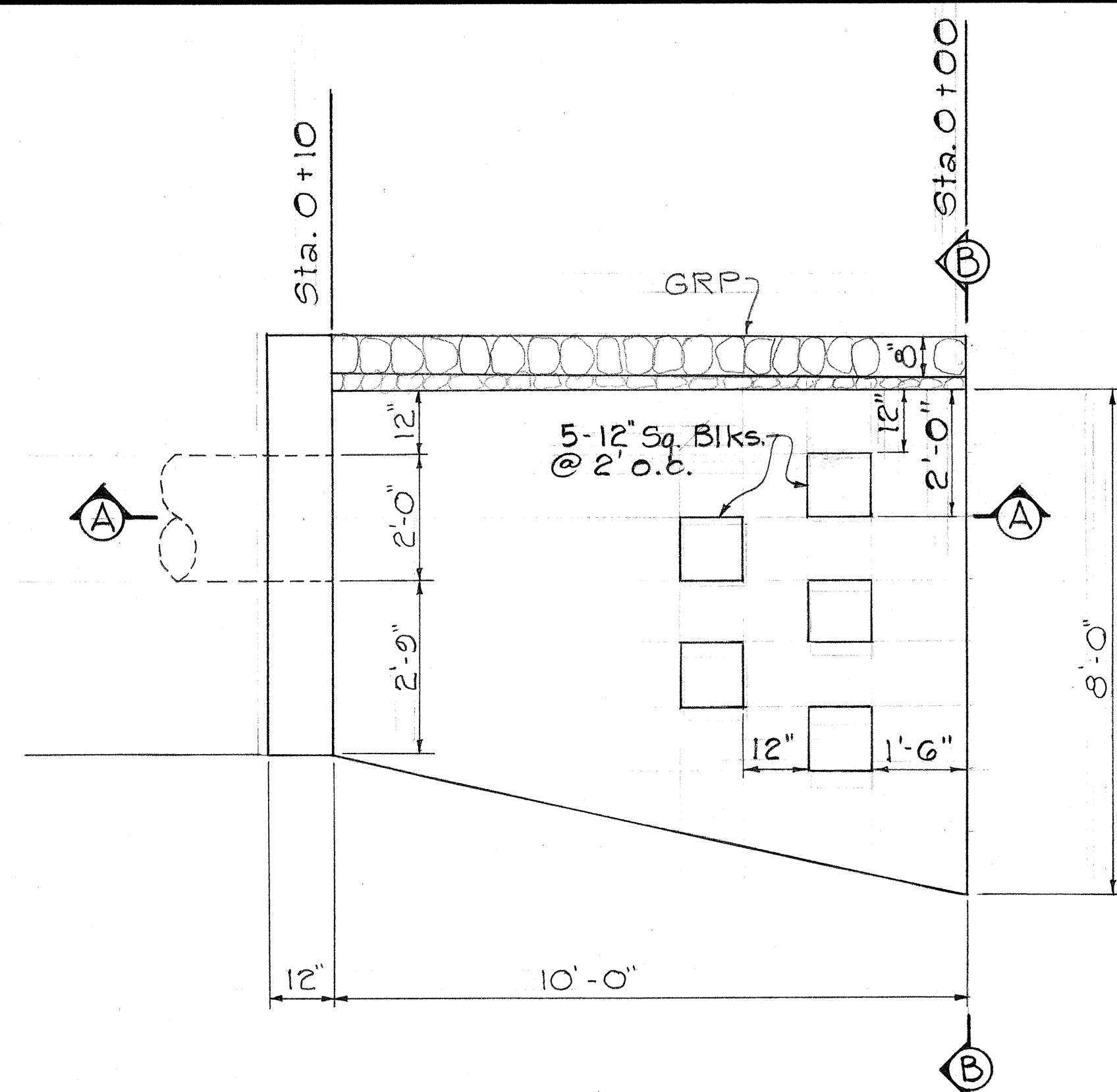
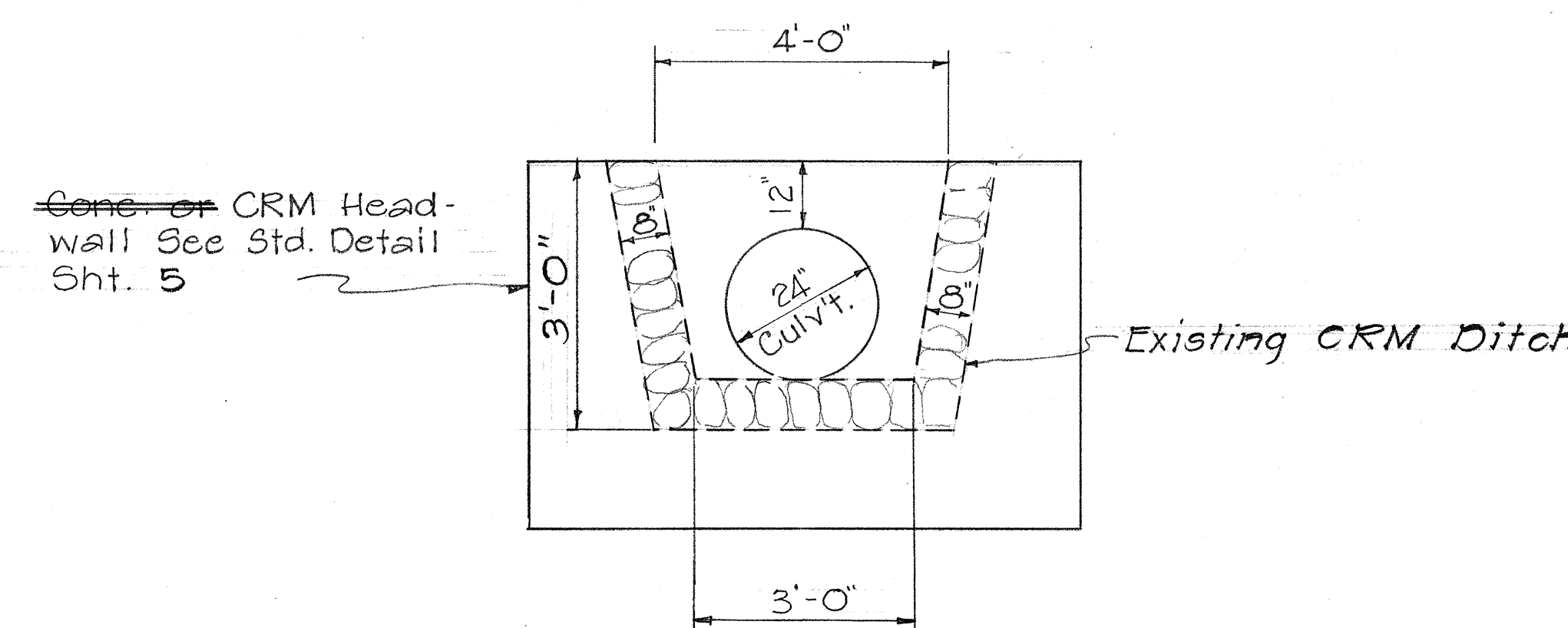


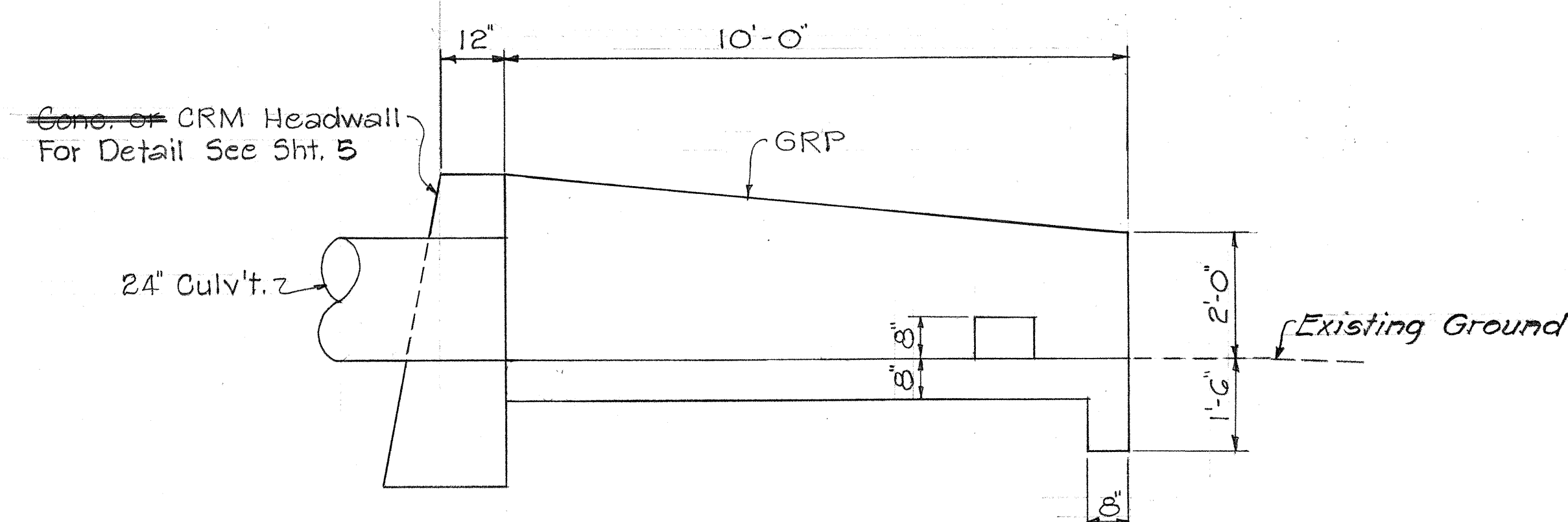
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37C-01-71	1971	3	8



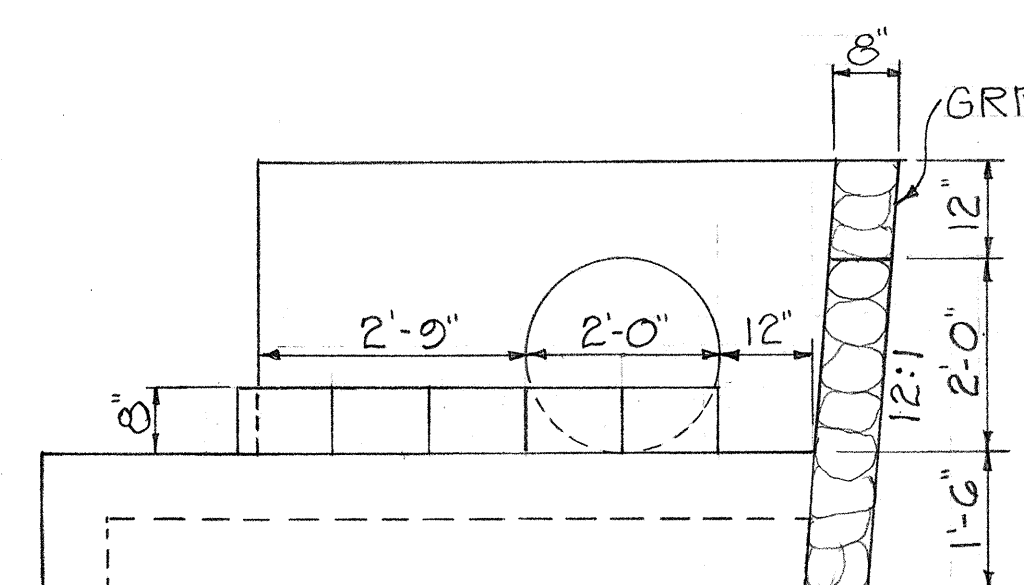
PLAN
Scale: 1/2" = 1'-0"



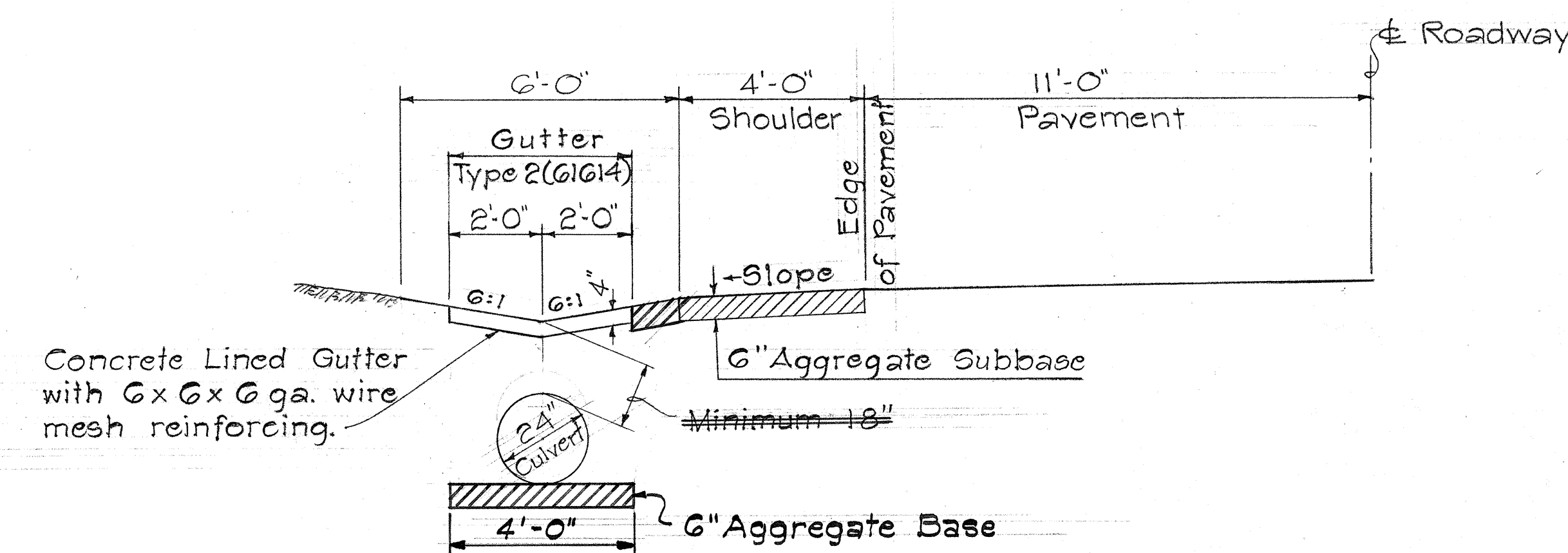
INLET DETAIL AT STA. 8+75
Scale: 1/2" = 1'-0"



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



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



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

DETAIL OF OUTLET STRUCTURE

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
DRAINAGE DETAILS DRAINAGE IMPROVEMENT ON HALEAKALA HIGHWAY PROJ. NO. 37C-01-71 SCALE AS SHOWN MAY 1971
SHEET No. 1 OF 3 SHEETS

GENERAL NOTES

- ## SPACING TABLE

NO.	REVISION	APPROVED BY	DATE
1	Curb for Top of Fill Gutters	H.P.	6-5-1

HYDRAULIC DESIGN ENGINEER

52-17-69
DATE

APPROVED

ASSISTANT CHIEF, ENGINEERING

12-11-89
DATE

Scales: As Noted

Date: Feb 1969

SHEET No. 2 OF 3 SHEETS **DH 8**



PLAN

SECTION

SECTION

PLAN



DETAILS OF 61614 OR 61616 DROP INTAKE

Scale: $\frac{3}{4}" = 1' - 0"$

* For Minimum size box of 3'-0", use 8" and eliminate reinforcing steel shown in the top portion.
 ** For Culverts larger than 30", the minimum dimension shall be D.



Scale: 3" = 1' - 0"

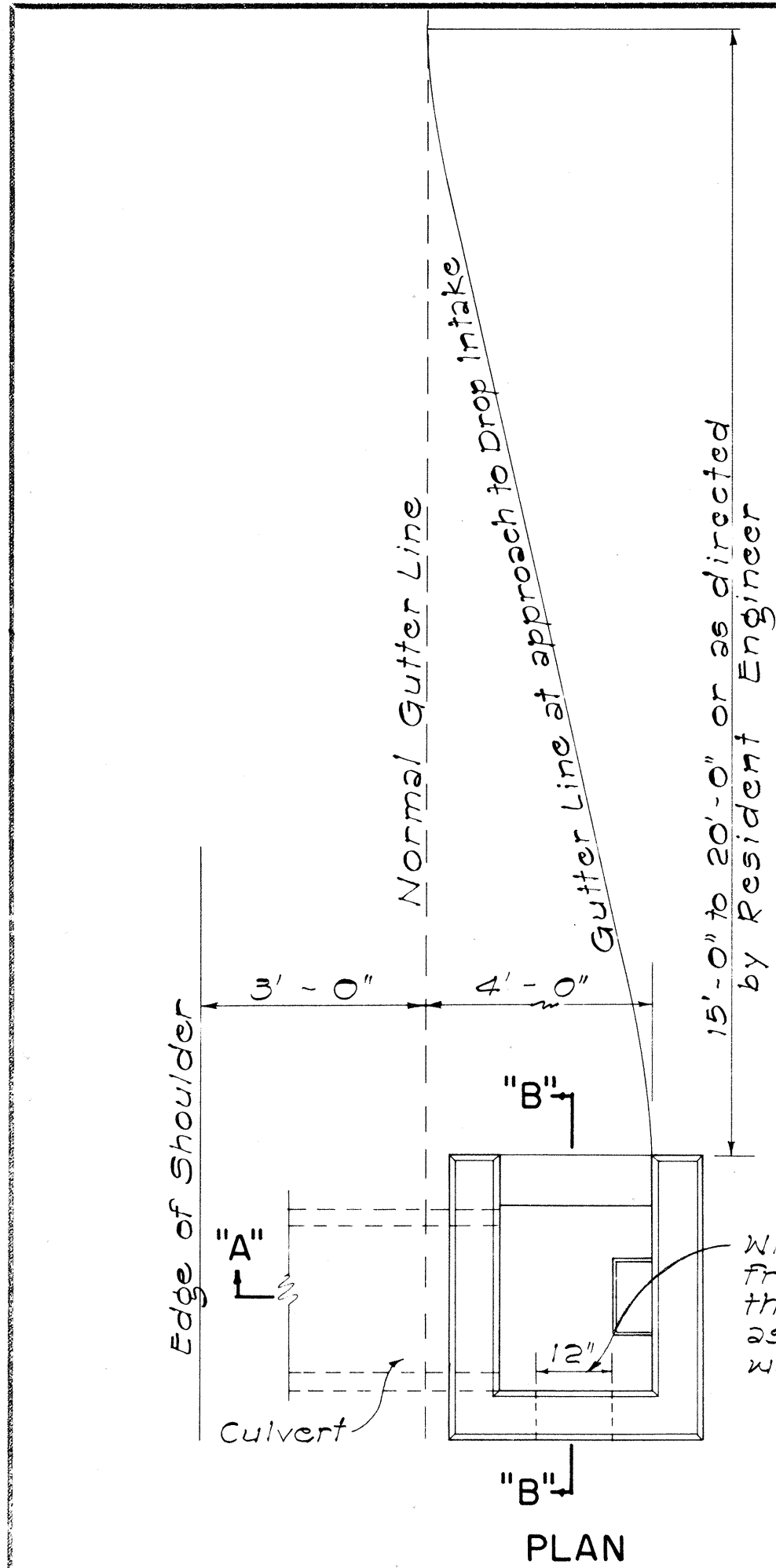


Scale: 3" = 1' - 0"

DETAILS OF TYPE 61614 OR 61616
STEEL FRAME AND GRATE

ORIGINAL PLAN	SURVEY PLOTTED BY _____	DATE _____
	DRAWN BY _____	"
	TRACED BY _____	"
NOTE BOOK	DESIGNED BY _____	"
	QUANTITIES BY _____	"
	CHECKED BY _____	"
No. _____		

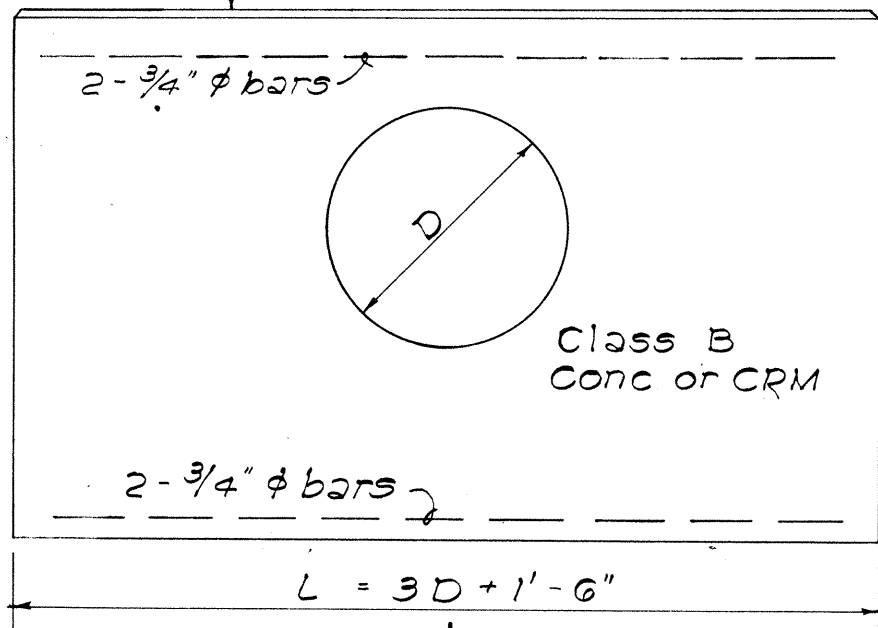
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37C-0171	1971	5	8



DATA - CONC. DROP INTAKE					Where Variable Equals
D	L	D' + G	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"

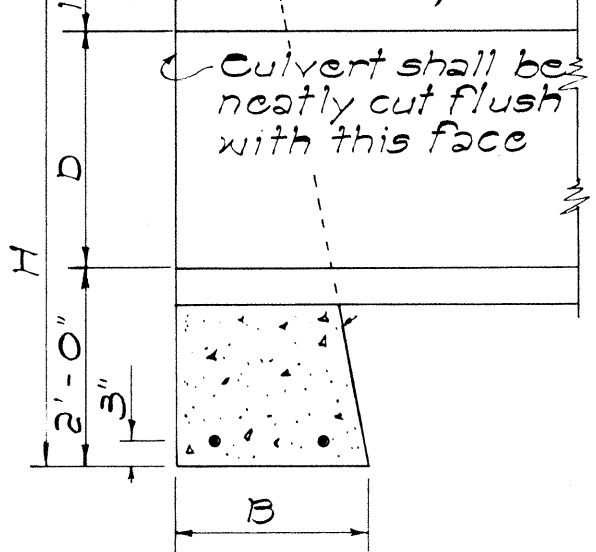
Note: Dimension "X" is assumed as 2'-4" in figuring the above quantities.

Chamfer all exposed edges one inch



ELEVATION

Reinforced Concrete Pipe or Corrugated Metal Pipe or Asbestos Cement Pipe. (See Specifications)

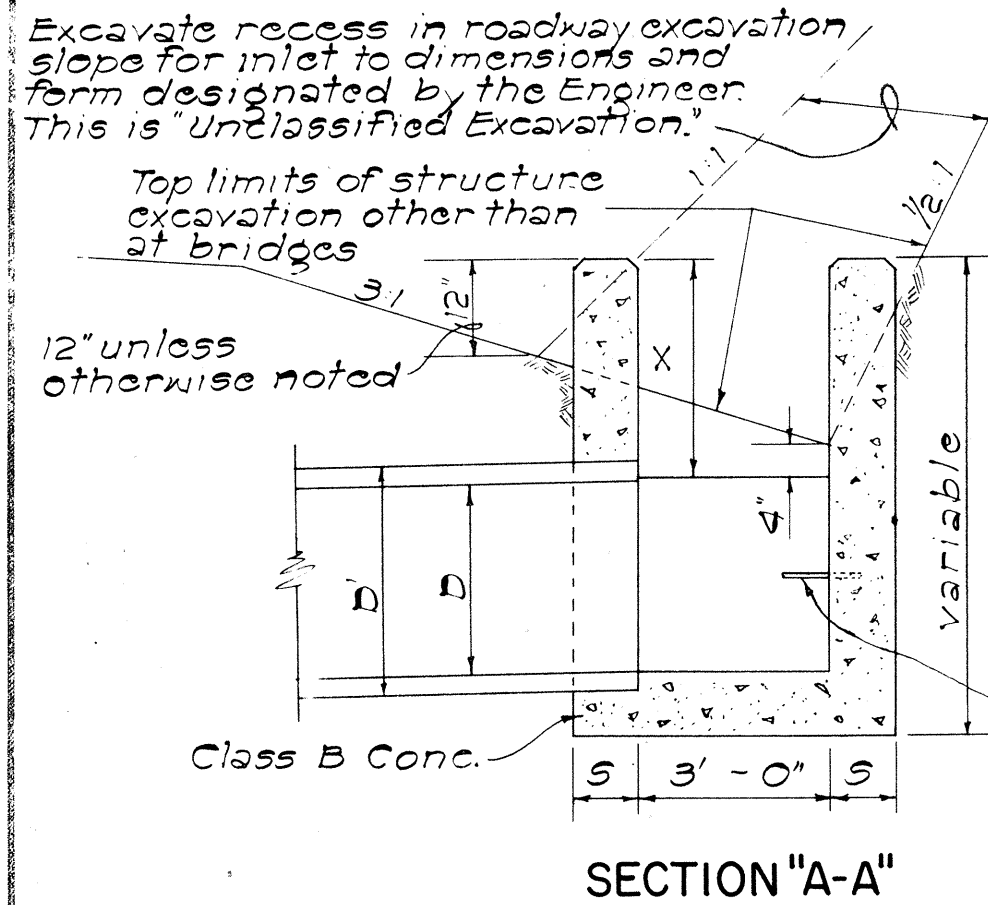


SECTION "A-A"

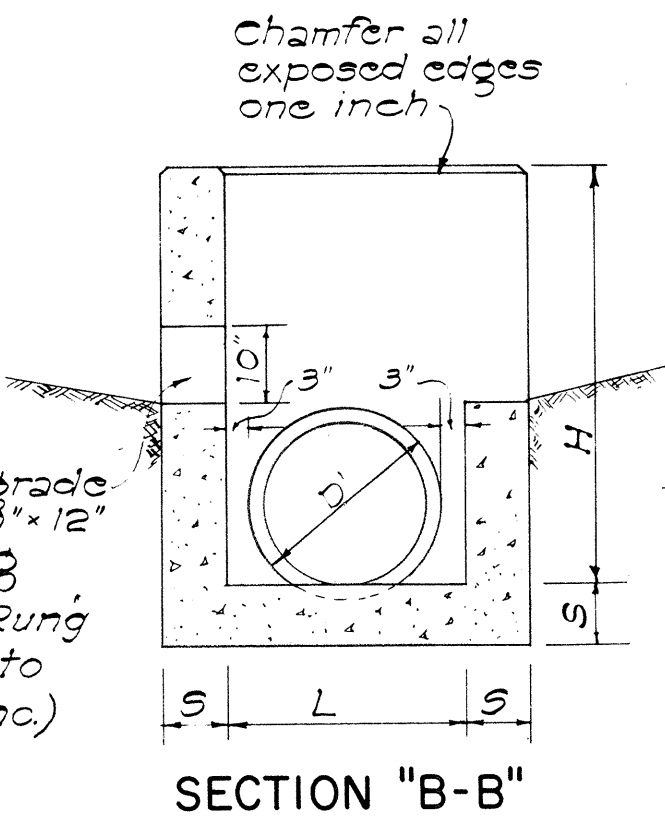
DATA FOR CONC. HEADWALL					Cl. B CONC. FOR R.C.P.	Cl. B CONC. FOR C.M.P.	Steel for One Headwall		
D	B	L	H	Cu. Yd.	Cu. Yd.	Cu. Yd.	No. of Bars	Size	Length
18"	1'-6"	6'-0"	4'-6"	1.12	1.17	4	3/4"	5'-6"	33
24"	1'-6"	7'-6"	5'-0"	1.52	1.60	4	3/4"	7'-0"	42
30"	2'-0"	9'-0"	5'-6"	2.36	2.49	4	3/4"	8'-6"	51
36"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

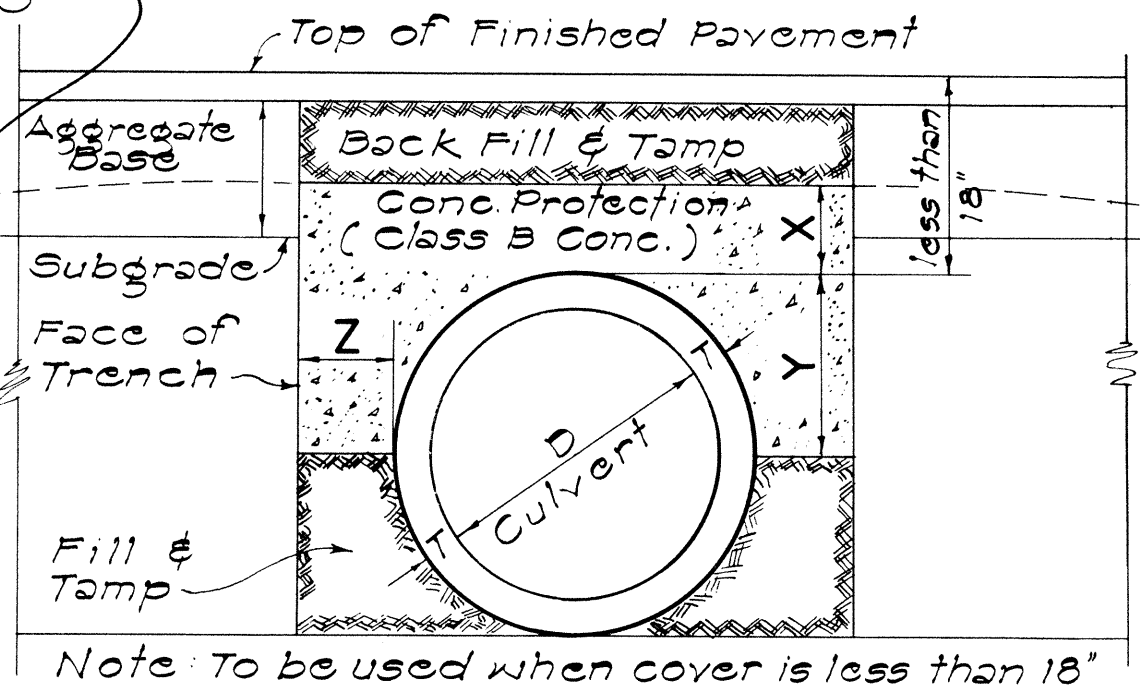


SECTION "A-A"



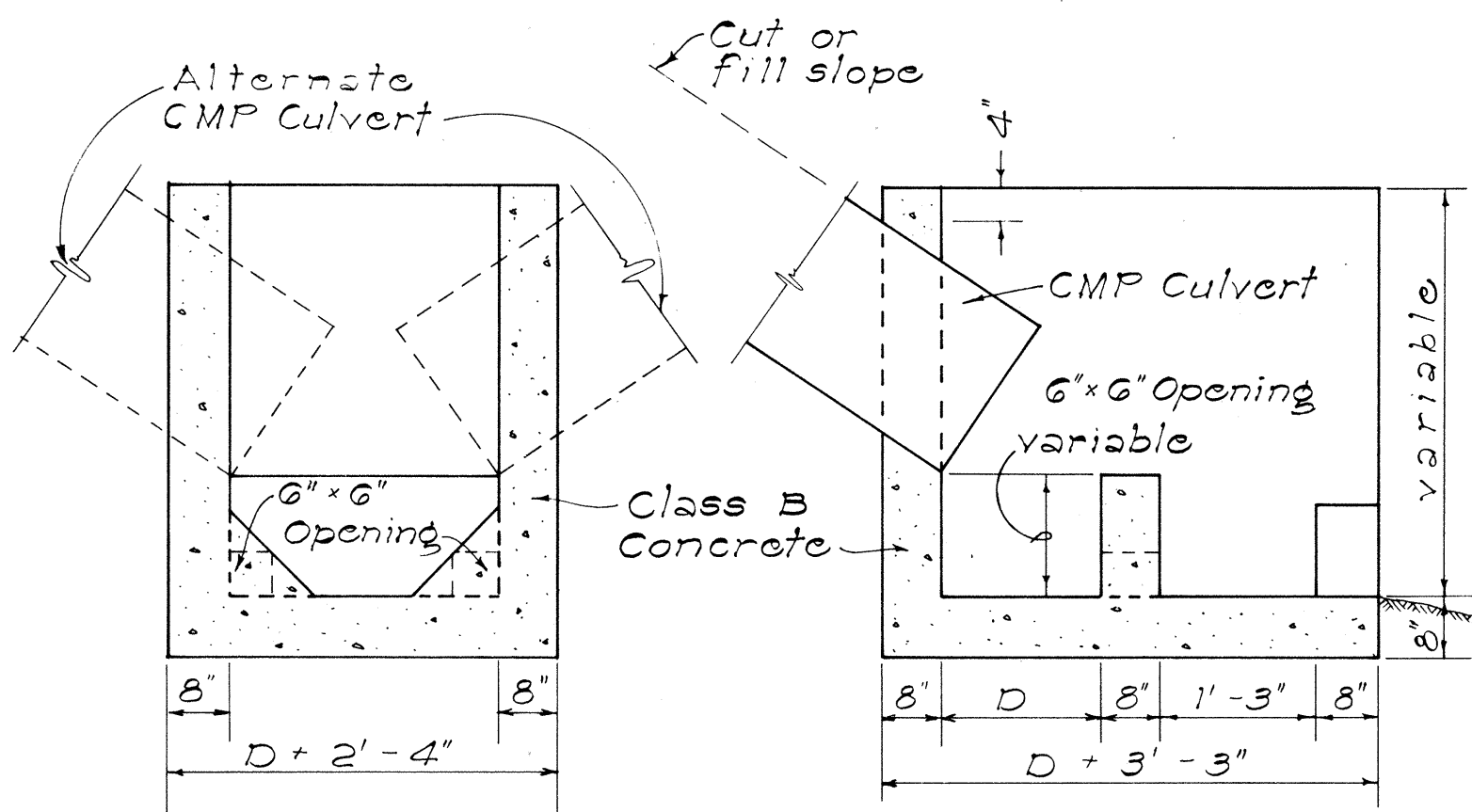
SECTION "B-B"

Note: When subgrade is below top of jacket, it shall be fully compacted to this line and then re-excavated (struc. exc.) to proper subgrade. This surface shall be rolled again.



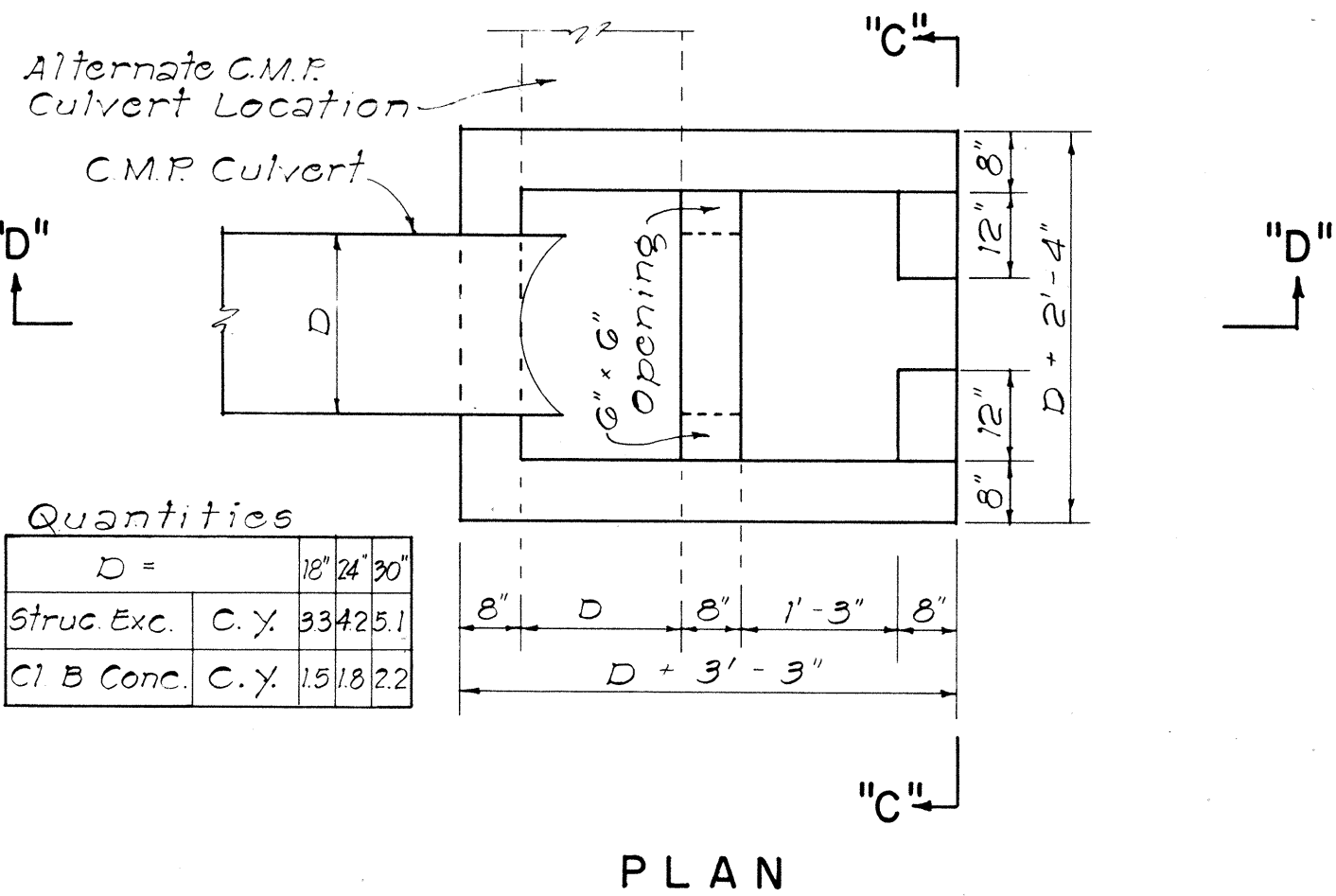
DATA FOR CONCRETE PROTECTION OVER CULVERTS		
X	Y	Z
6" for 18" D	$\frac{D}{2} + T$	Z must be from pipe to face of trench
7" for 24" D		
8" for 30" D		Minimum = X
9" for 36" D		
10" for 42" D		Maximum pay quantity will be Z = 12"
11" for 48" D		
12" for 54" D		

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



SECTION "C-C"

SECTION "D-D"



PLAN

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

APPROVAL, RECOMMENDED:
HYDRAULIC DESIGN ENGINEER
12-17-69
DATE

APPROVED:
ASSISTANT CHIEF, ENGINEERING
12-17-69
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. 3 OF 3 SHEETS
DH 10

SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

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.