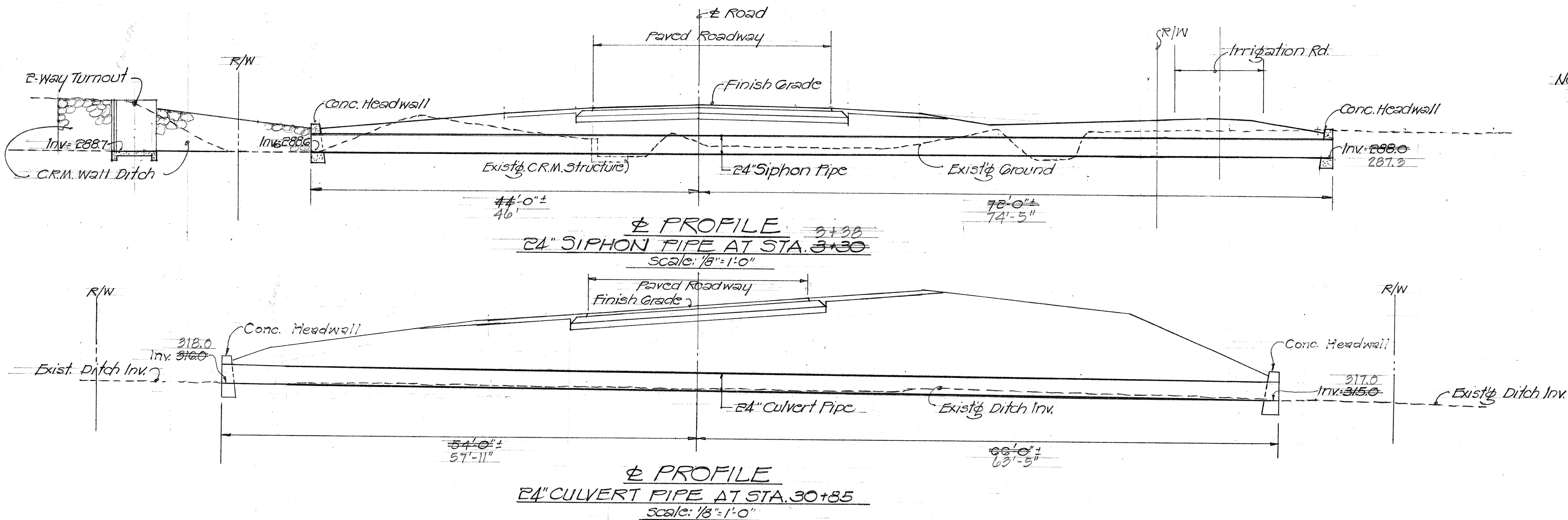
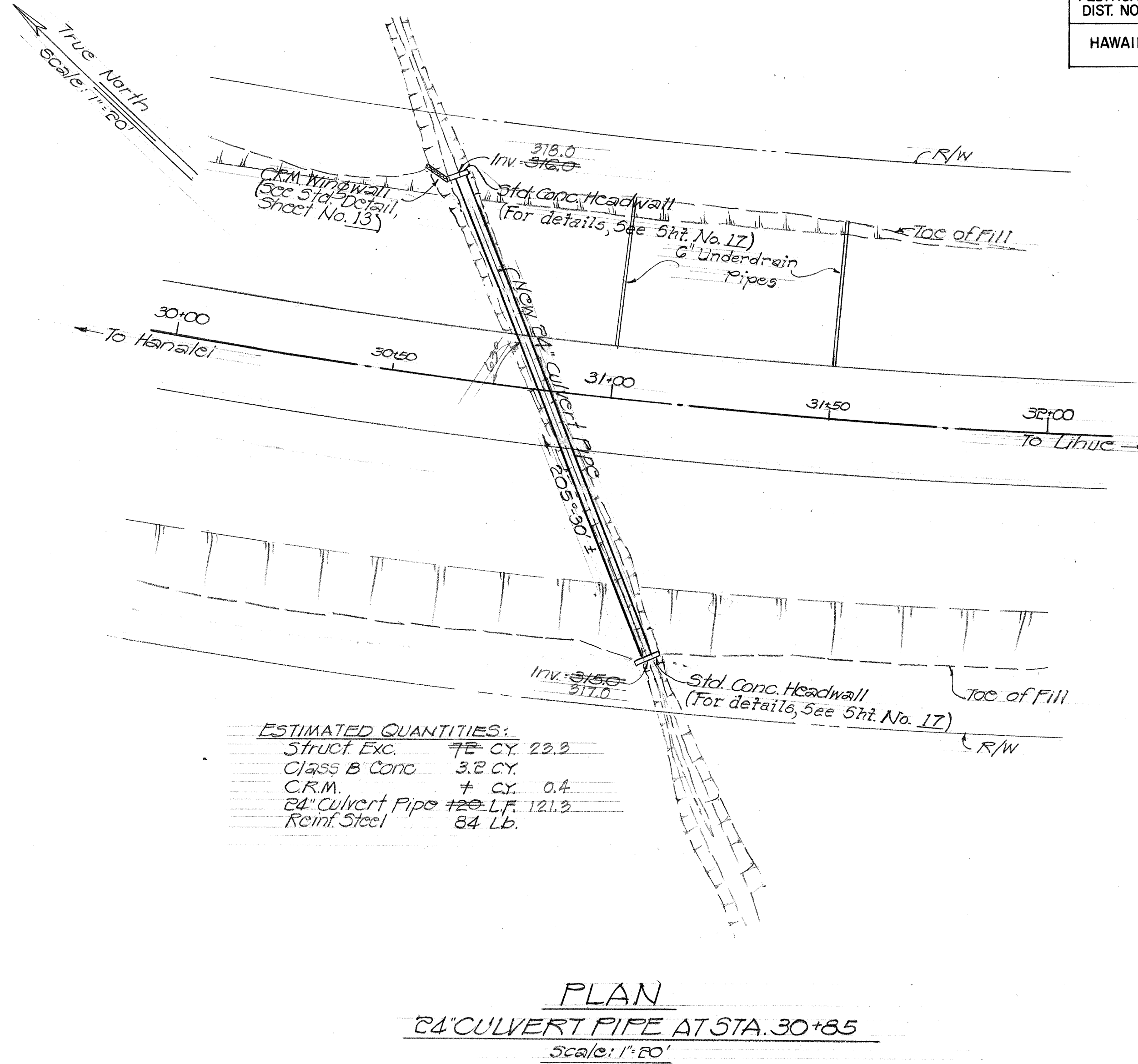
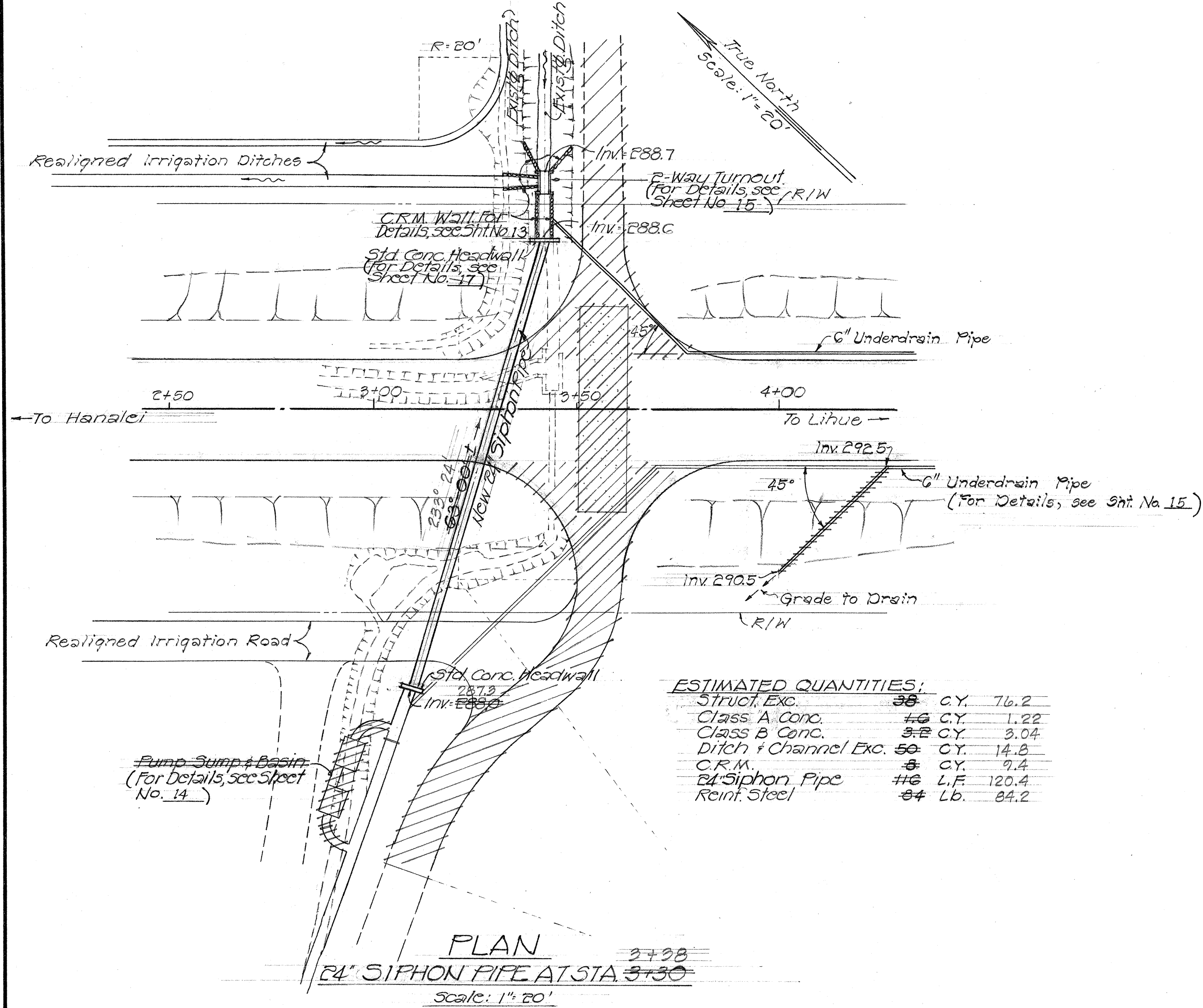


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RF-056-1(10)	1971	9	74

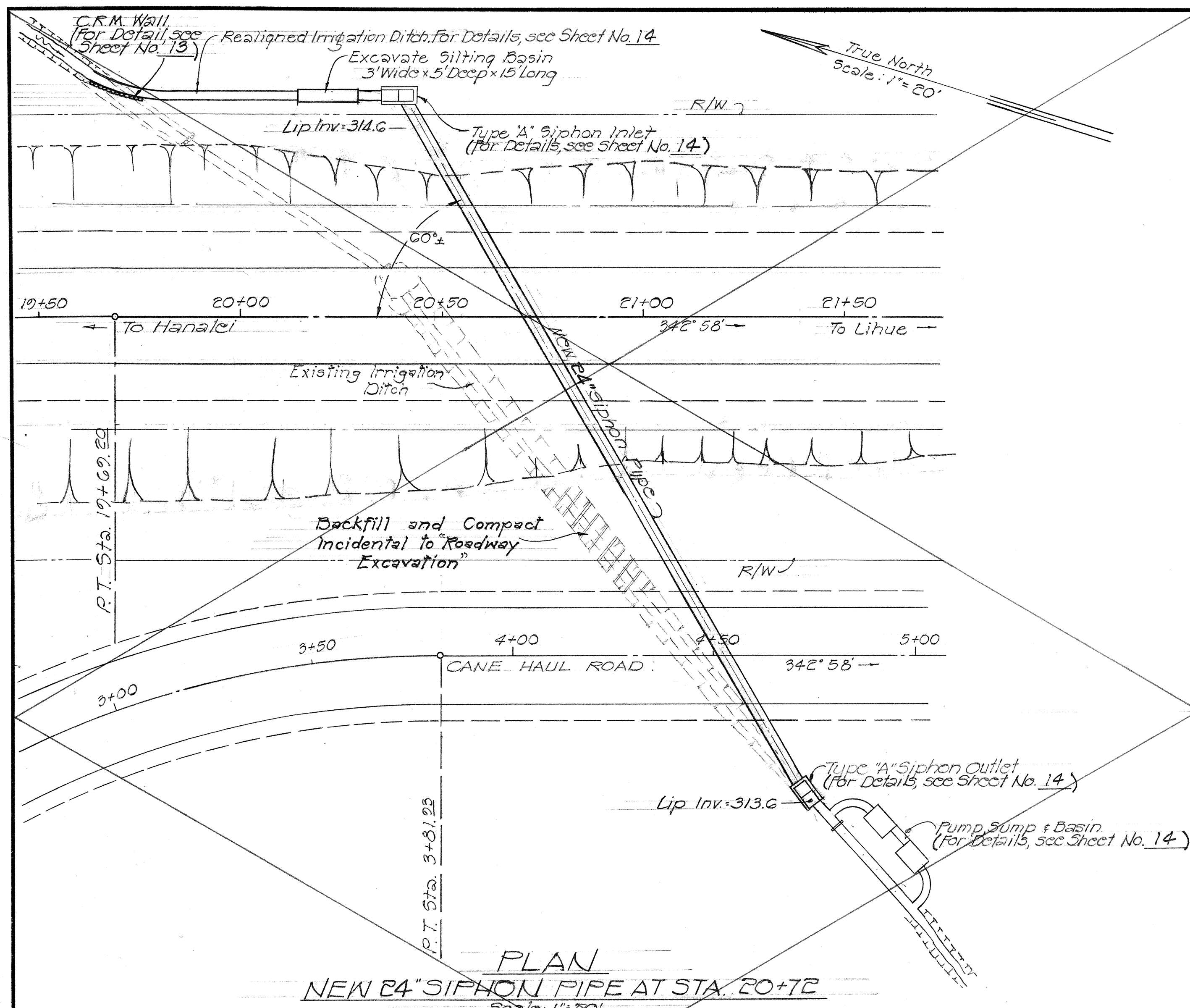


NOTE:
For Ditch, Pump Sump
and Sifting Basin see
Sheet No. 14

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PLAN & PROFILE OF 24" SIPHON
PIPE AT STA. 3+30 & 24" CULVERT
PIPE AT STA. 30+85
KAUAI BELT ROAD
PROJECT NO. RF-056-1(10)
KILAUEA TO KAHILI
Scale as noted Oct. 1970
SHEET No. 1 OF 10 SHEETS

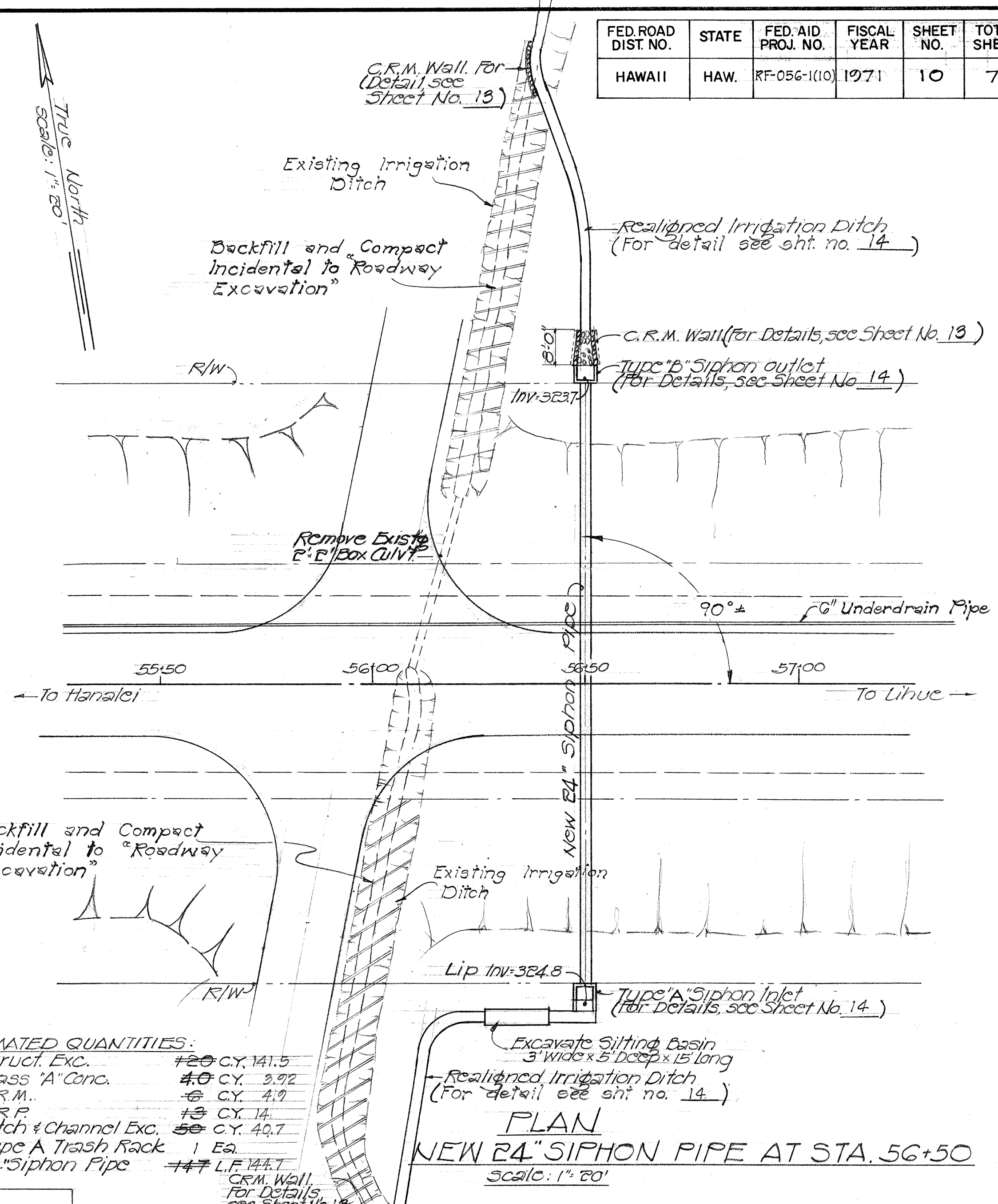
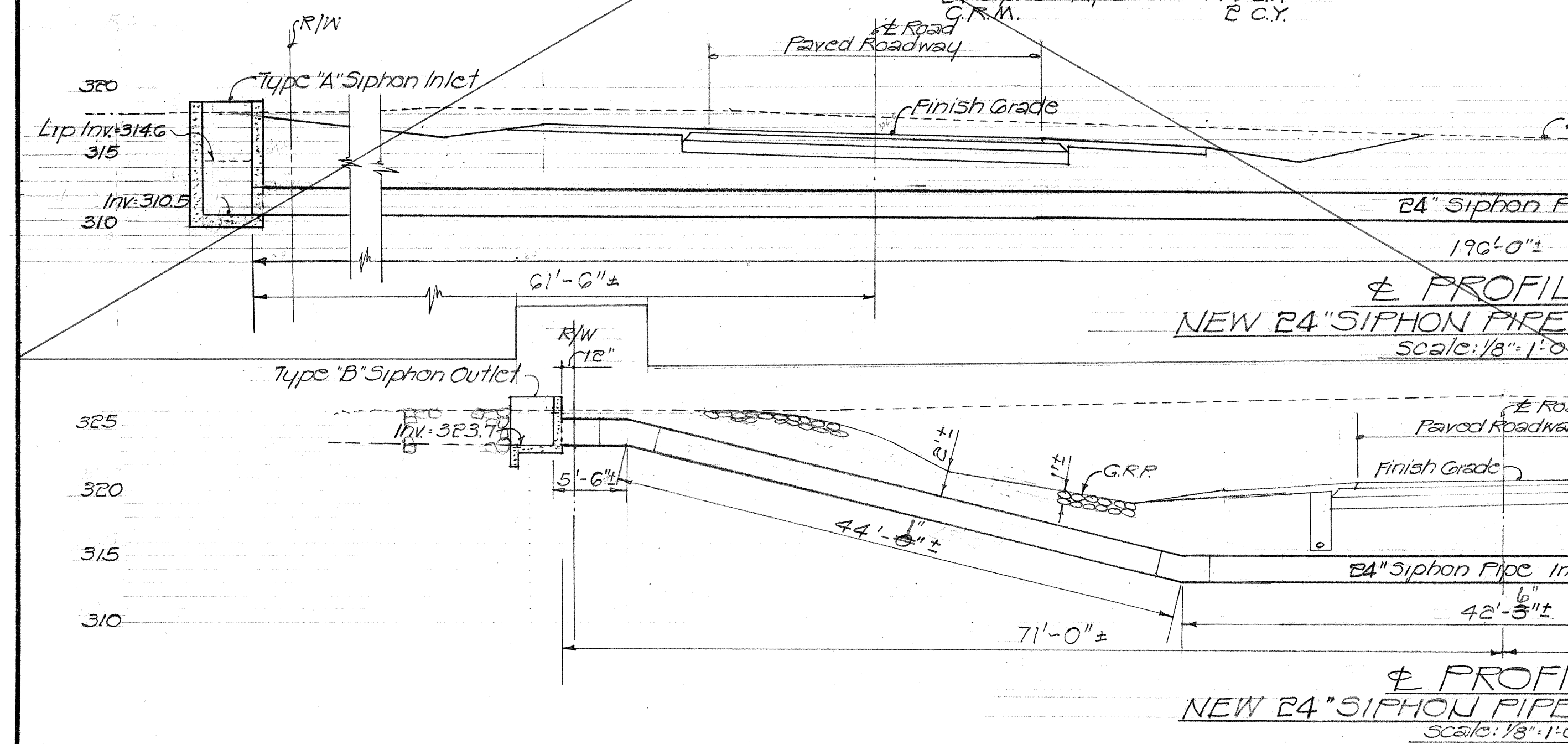
DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
NOTED BY	_____
CHECKED BY	_____
ORIGINAL	_____
PLAN	_____
NOTE BOOK	_____
NO.	_____

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RF-056-1(10)	1971	10	74



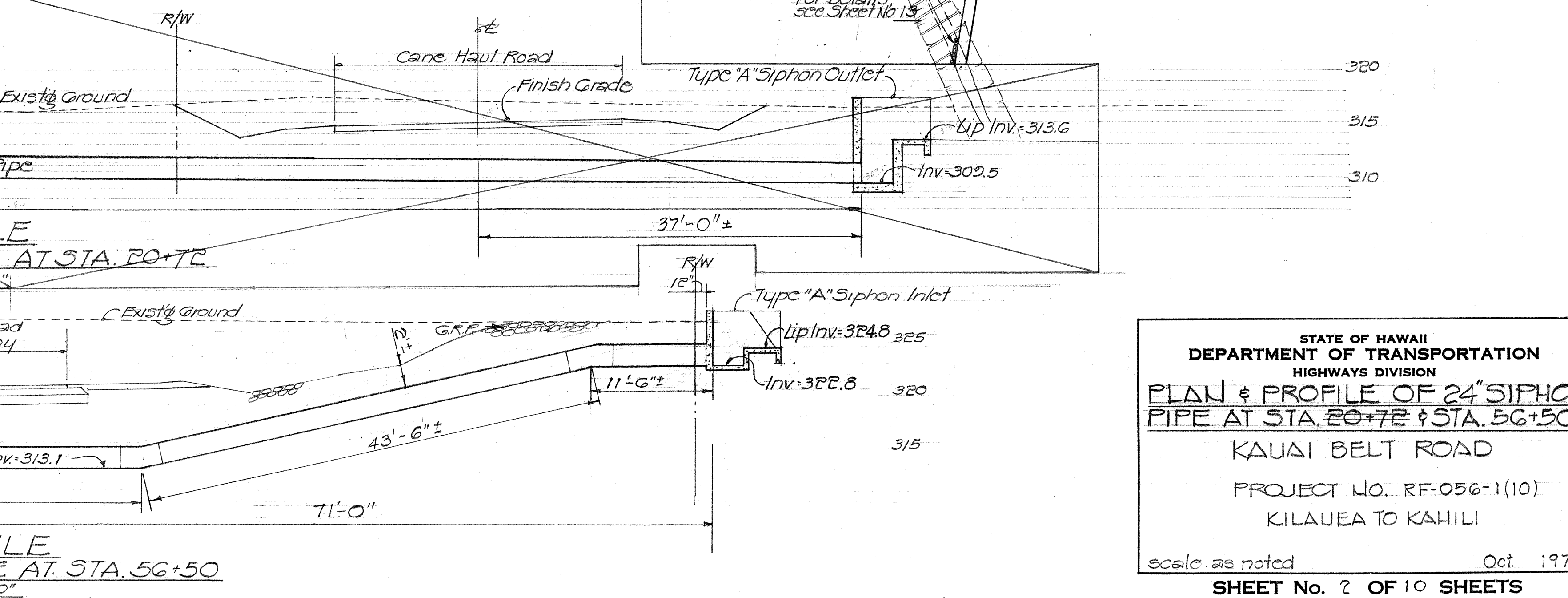
ESTIMATED QUANTITIES:

Struct. Exc.	227 C.Y.
Class 'A' Conc.	7.7 C.Y.
Ditch & Channel Exc.	50 C.Y.
Type A Trash Rack	1 Ea.
24" Siphon Pipe	196 L.F.
C.R.M.	2 C.Y.



ESTIMATED QUANTITIES:

Struct. Exc.	120 C.Y. 141.5
Class 'A' Conc.	40 C.Y. 3.92
C.R.M.	6 C.Y. 4.9
G.R.P.	13 C.Y. 14
Ditch & Channel Exc.	50 C.Y. 40.7
Type A Trash Rack	1 Ea.
24" Siphon Pipe	147 L.F. 144.7



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLAN & PROFILE OF 24" SIPHON PIPE AT STA. 20+72 & STA. 56+50

KAUAI BELT ROAD

PROJECT NO. RF-056-1(10)
KILAUEA TO KAHILI

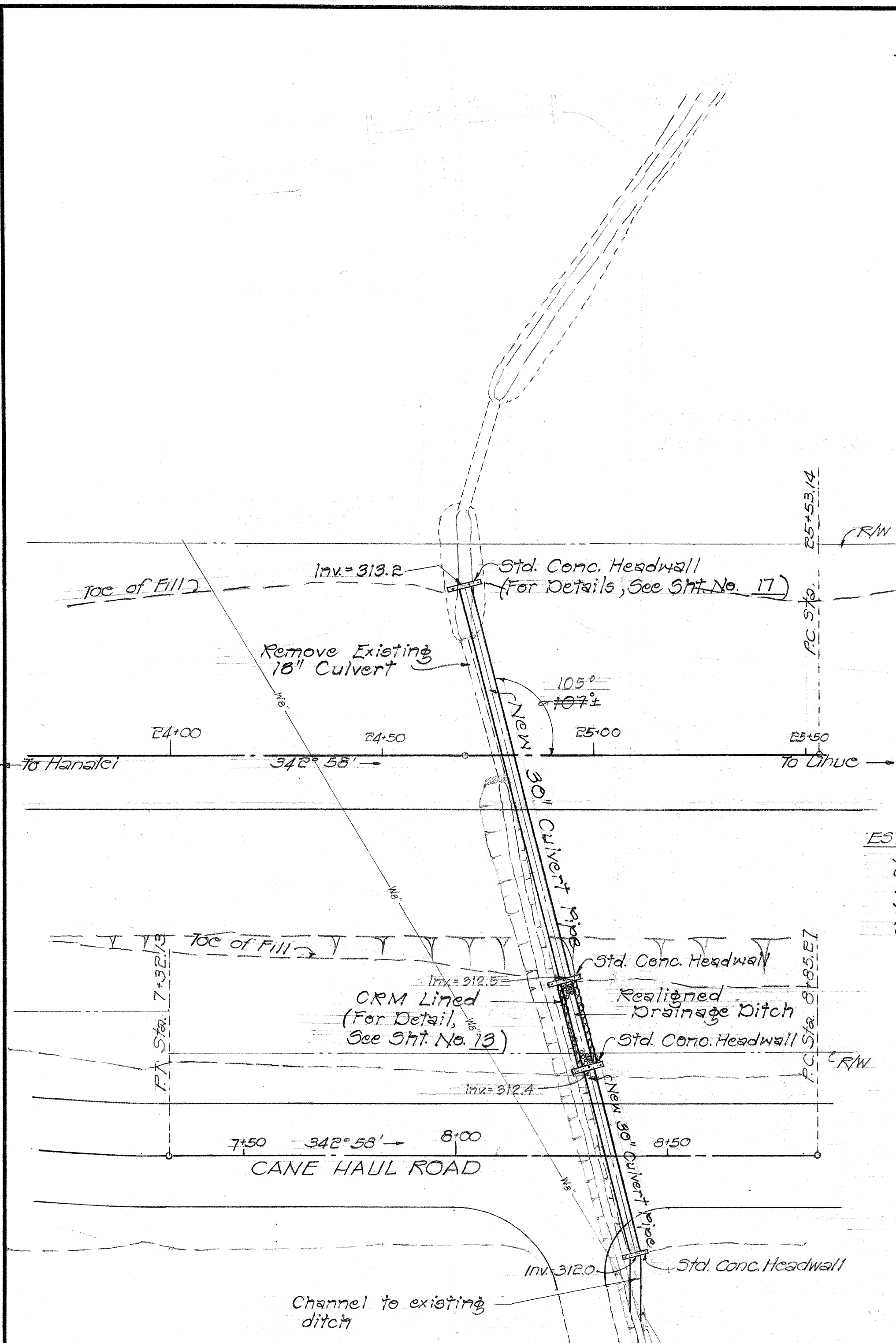
Scale as noted Oct. 1970

SHEET No. 2 OF 10 SHEETS

DATE	*****
SURVEYED BY	
DRAWN BY	
DESIGNED BY	
NOTED BY	
CHECKED BY	
NO.	

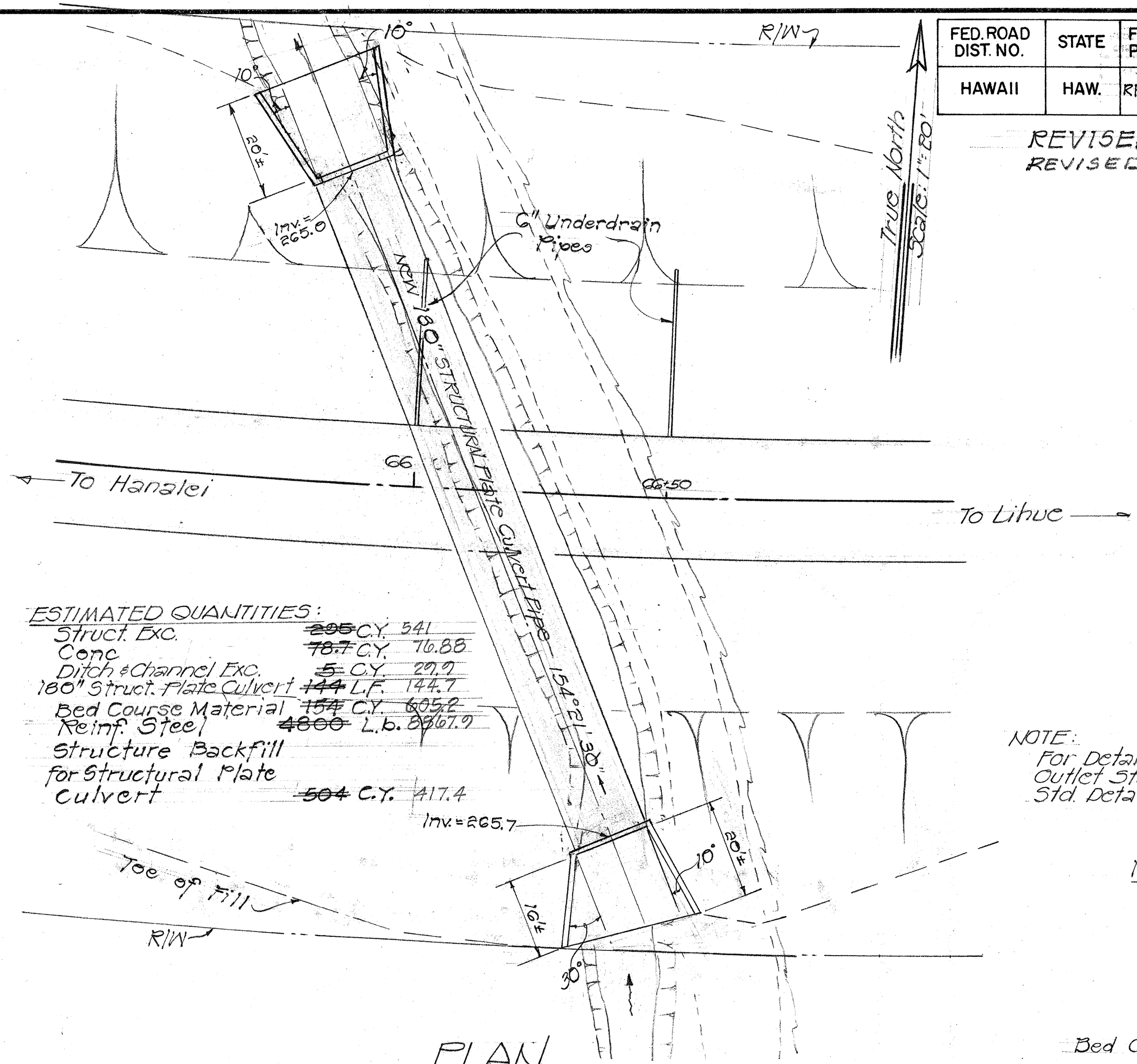
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RF-056-1(10)	1971	11	74

REVISED 6-10-71
REVISED 2-10-72



ESTIMATED QUANTITIES:

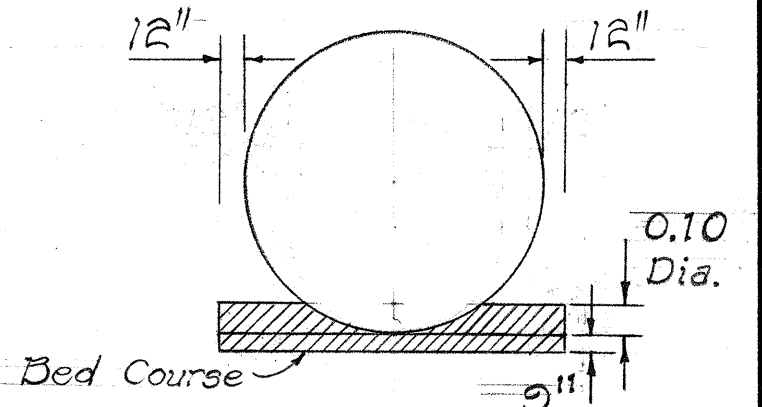
Struct. Exc.	76	CY	82.8
Class "B" CONC.	6.4	CY	9.96
Ditch & Channel Exc.	13	CY	9.4
30" Culvert Pipe	142	L.F.	142.5
Reinf. Steel	168	Lb.	204.4
C.R.M.	8.0	CY	7.3



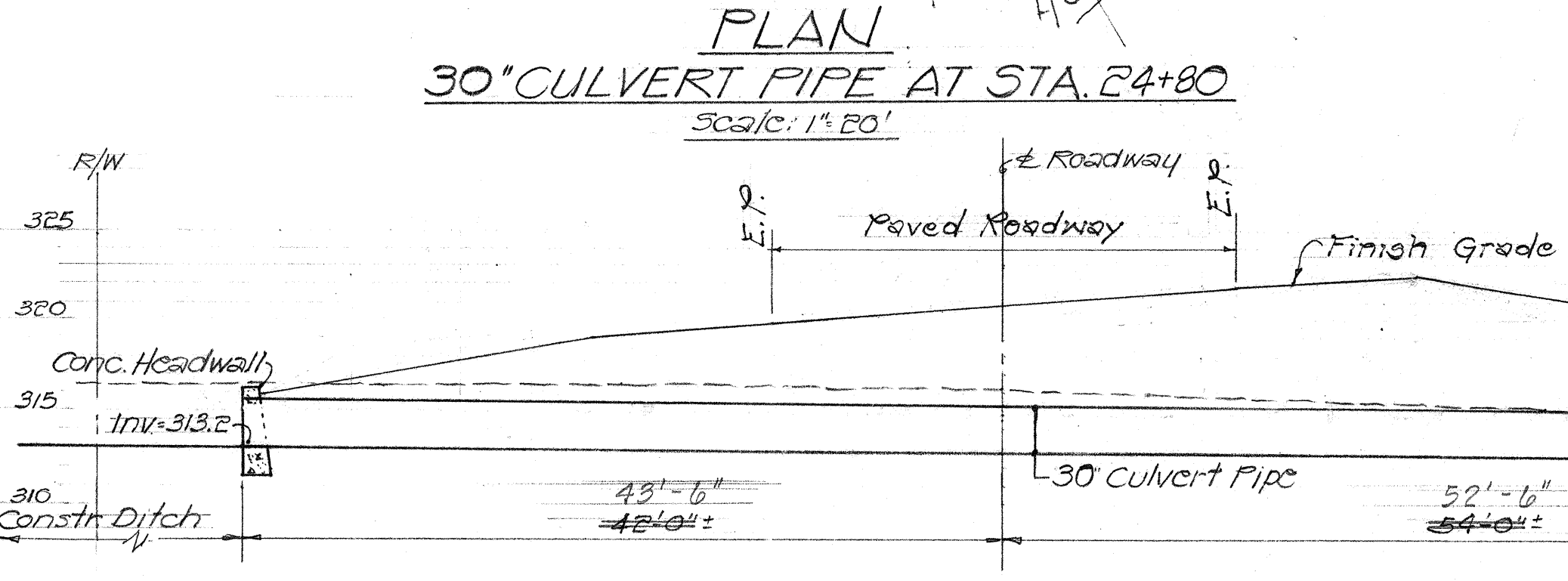
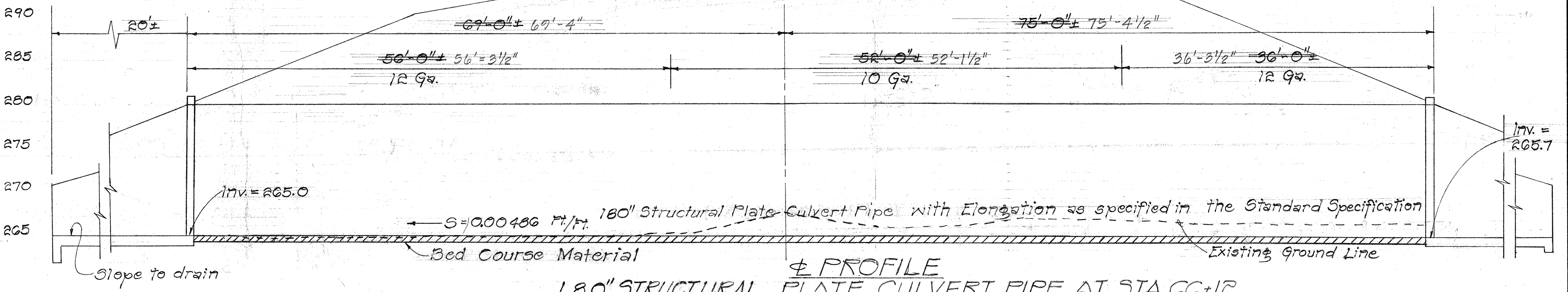
ESTIMATED QUANTITIES:

Struct. Exc.	205	CY	541
Conc.	76.7	CY	16.85
Ditch & Channel Exc.	5	CY	29.9
180" Struct. Plate Culvert	144	L.F.	144.7
Bed Course Material	154	CY	605.2
Reinf. Steel	4600	Lb.	5707.9
Structure Backfill for Structural Plate Culvert	504	C.Y.	117.4

NOTE:
For Details of Inlet & Outlet Structures, see Std. Detail Sheet No. 17



TYPICAL SECTION
BED COURSE FOR CULVERT
Not to Scale



Profile
30" CULVERT PIPE AT STA. 24+80
Scale: 1/8"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLAN & PROFILE OF 30" CULVERT PIPE AT STA. 24+80 & 180" STRUCTURAL PLATE CULVERT PIPE AT STA. 66+12

KAUAI BELT ROAD
PROJECT NO. RF-056-1(10)
KILAUEA TO KAHILI

Scale as noted Oct. 1970

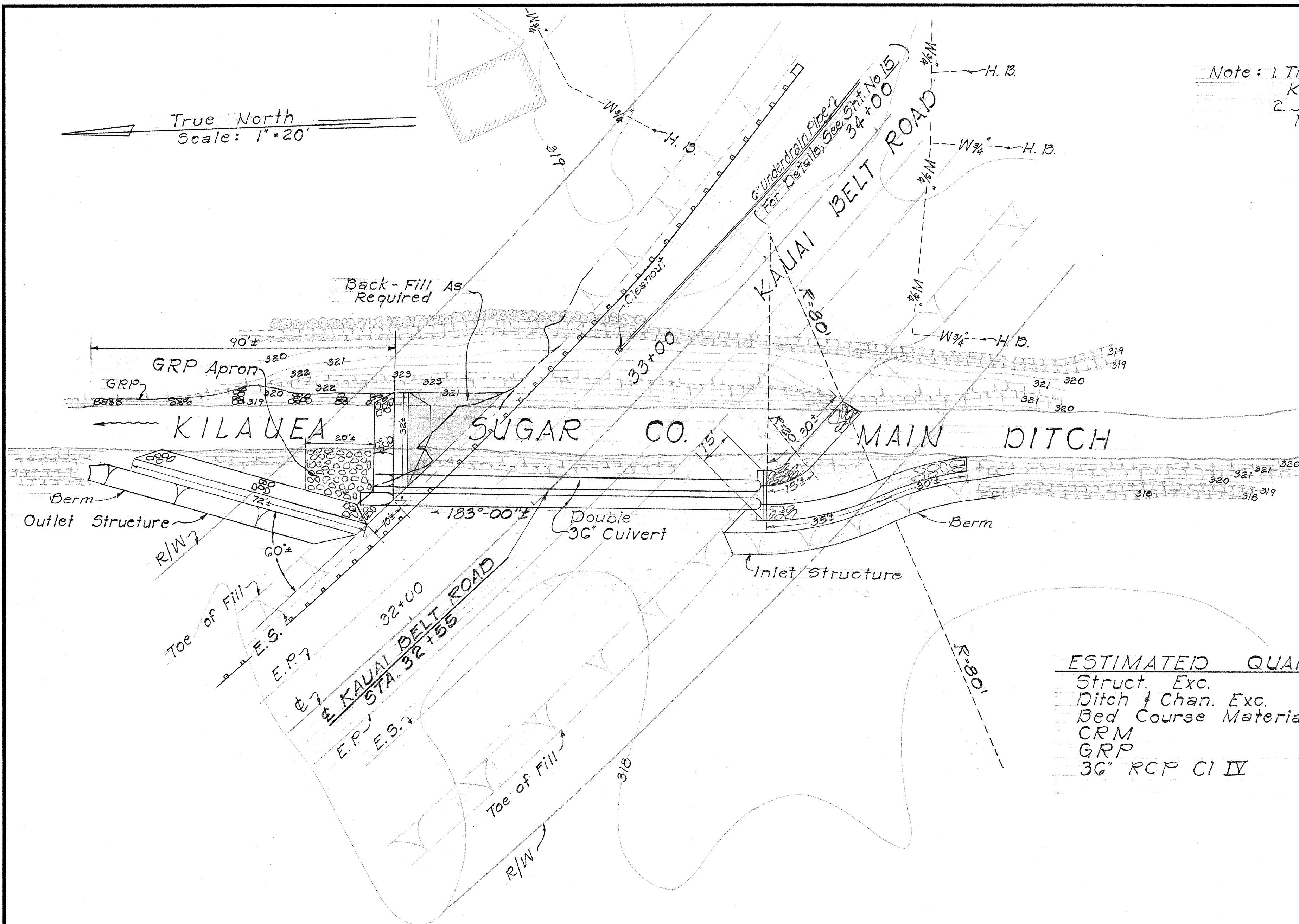
SHEET No. 3 OF 10 SHEETS

SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RF-056-1(10)	1971	12	74

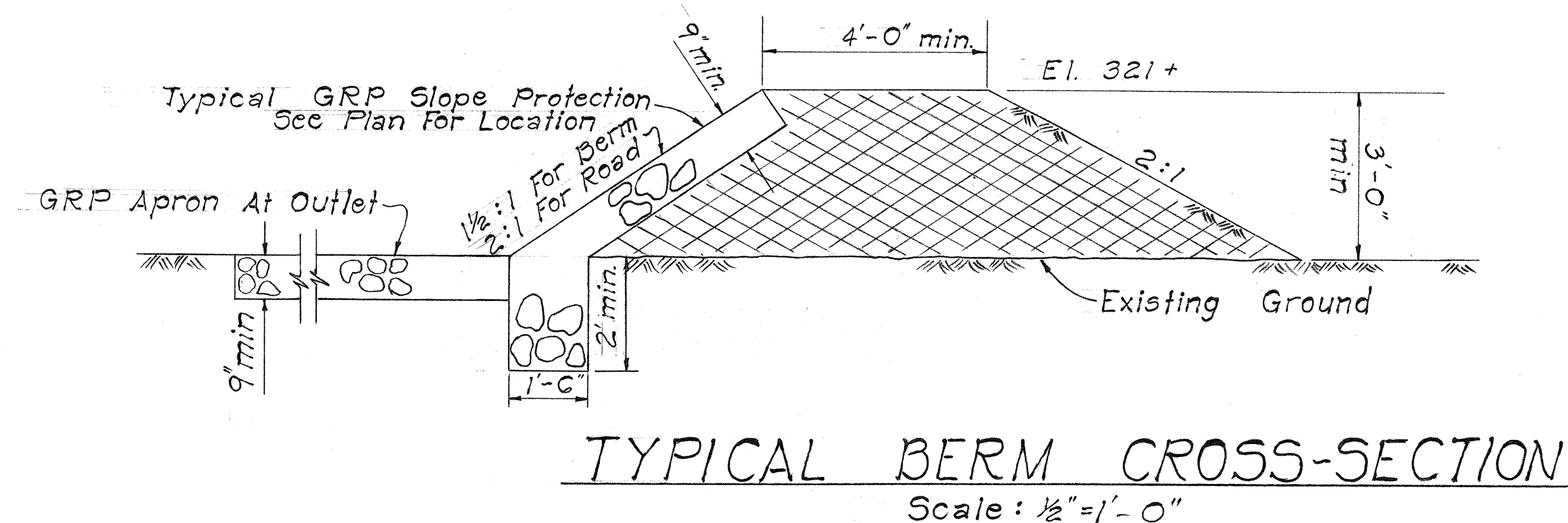
REVISED 6-10-71

- Note: 1. The Contractor shall maintain the flow of Kilauea Sugar Co. Main Ditch during construction.
2. Joints for RCP Culverts shall be made with Rubber Gaskets and shall be watertight.

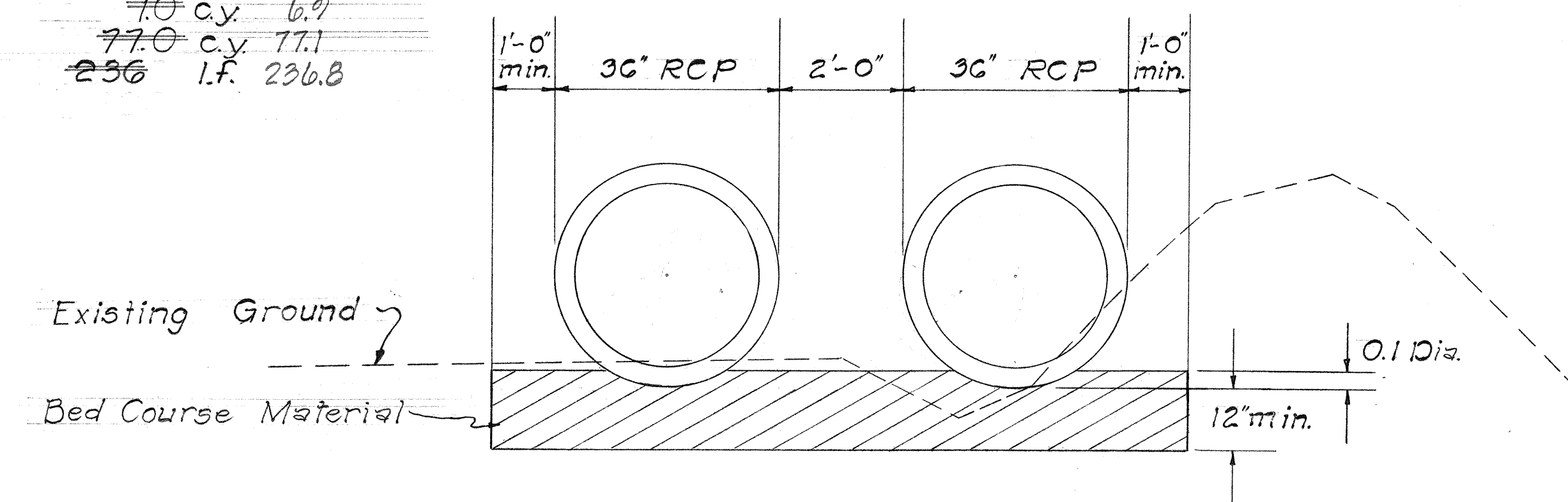


PLAN
Scale: 1" = 20'

ESTIMATED QUANTITIES	
Struct. Exc.	456 c.y. 147.6
Ditch & Chan. Exc.	650 c.y. 66.2
Bed Course Material	640 c.y. 77.4
CRM	70 c.y. 6.9
GRP	770 c.y. 77.1
36" RCP CI IV	236 l.f. 236.8

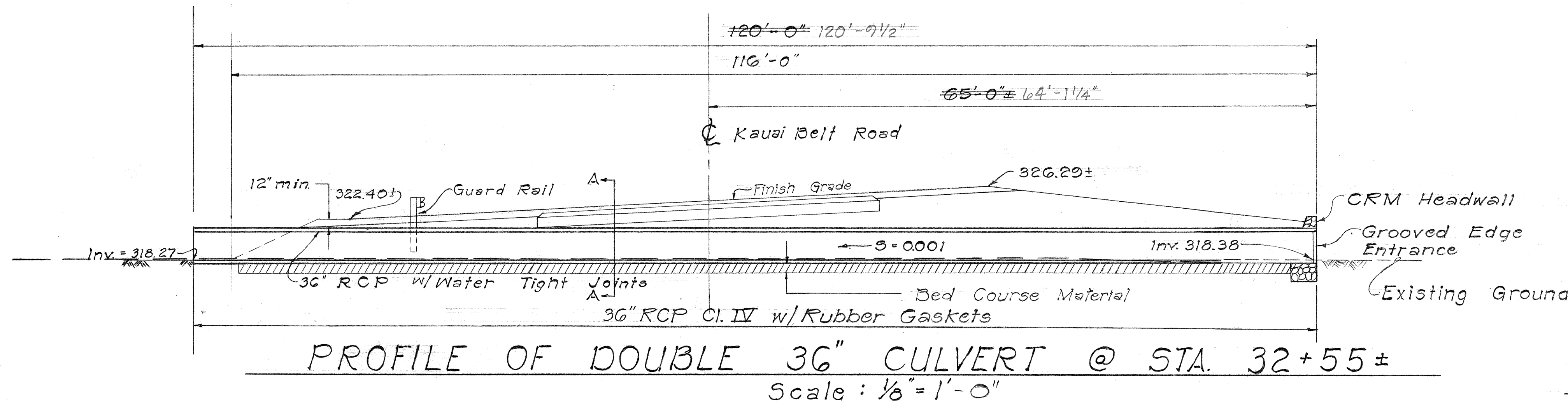


TYPICAL BERM CROSS-SECTION
Scale: 1/2" = 1'-0"

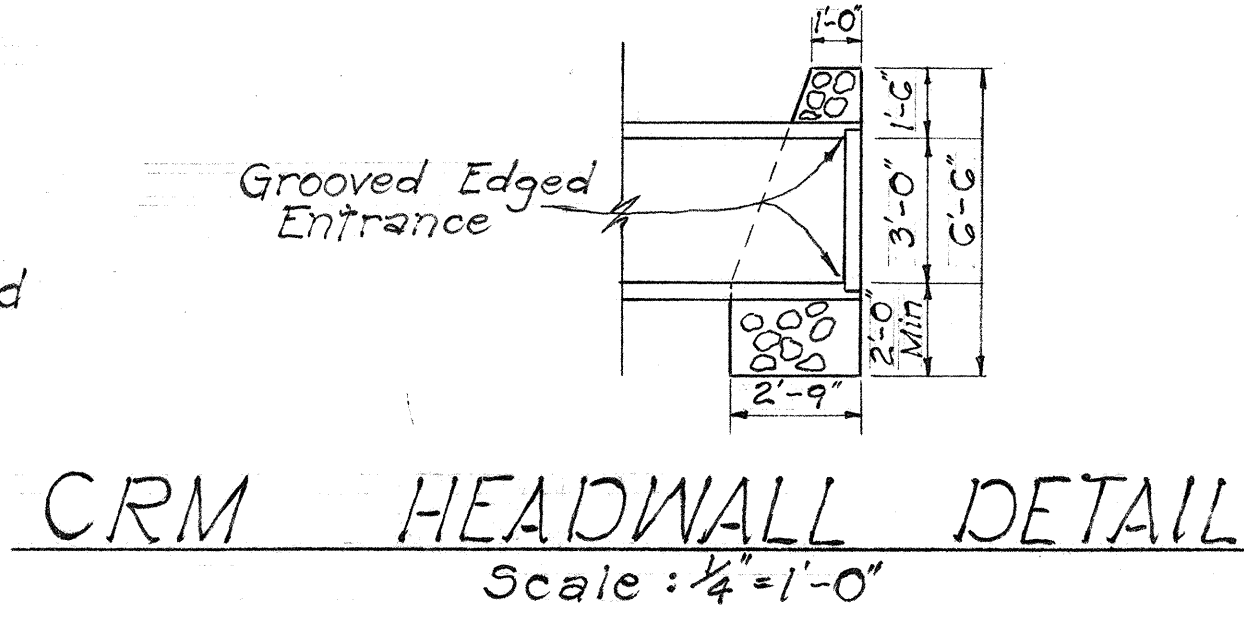


SECTION A-A
Scale: 1/2" = 1'-0"

TYPICAL SECTION
BED COURSE MATERIAL FOR CULVERTS



PROFILE OF DOUBLE 36" CULVERT @ STA. 32+55±
Scale: 1/8" = 1'-0"

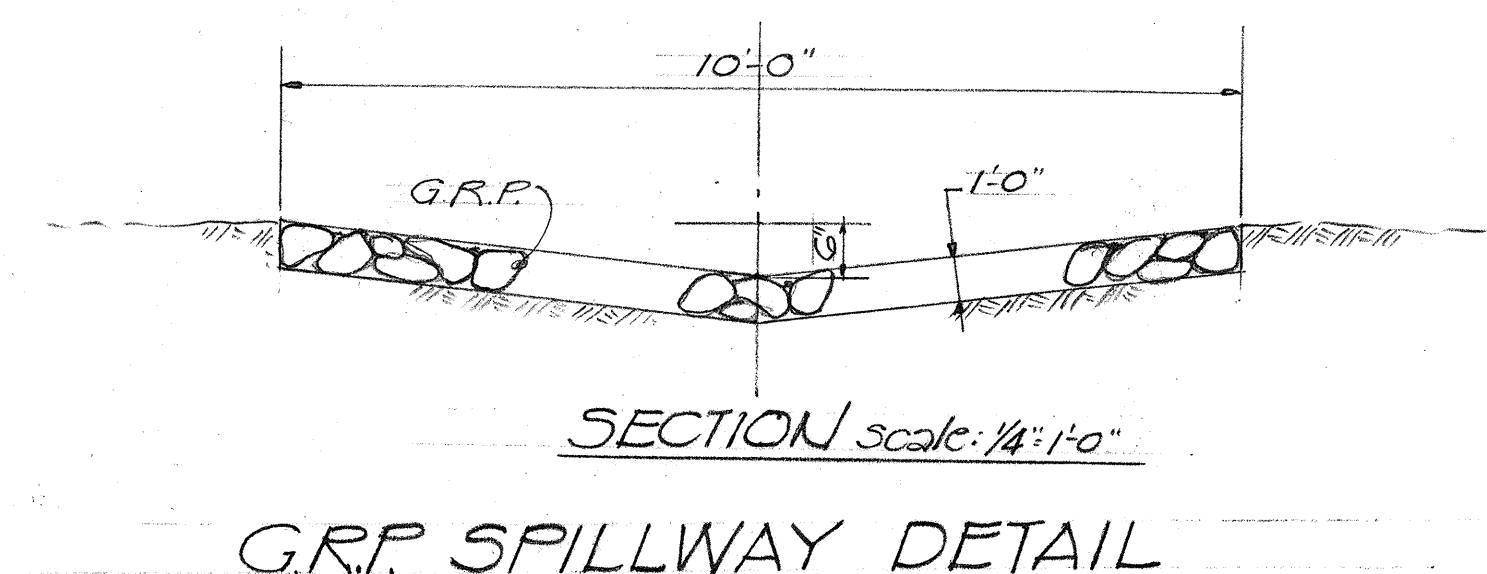
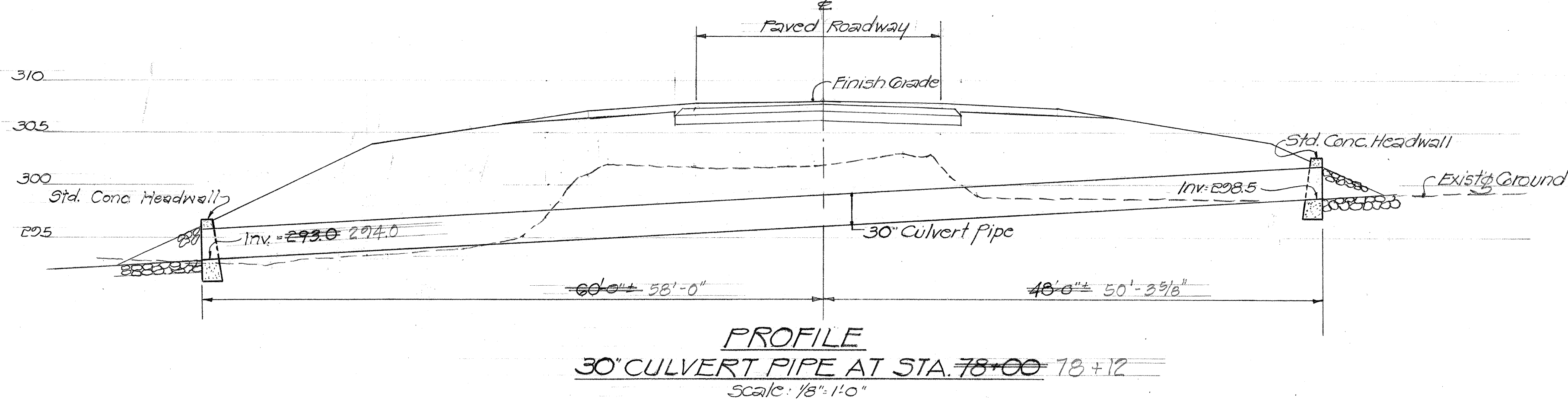
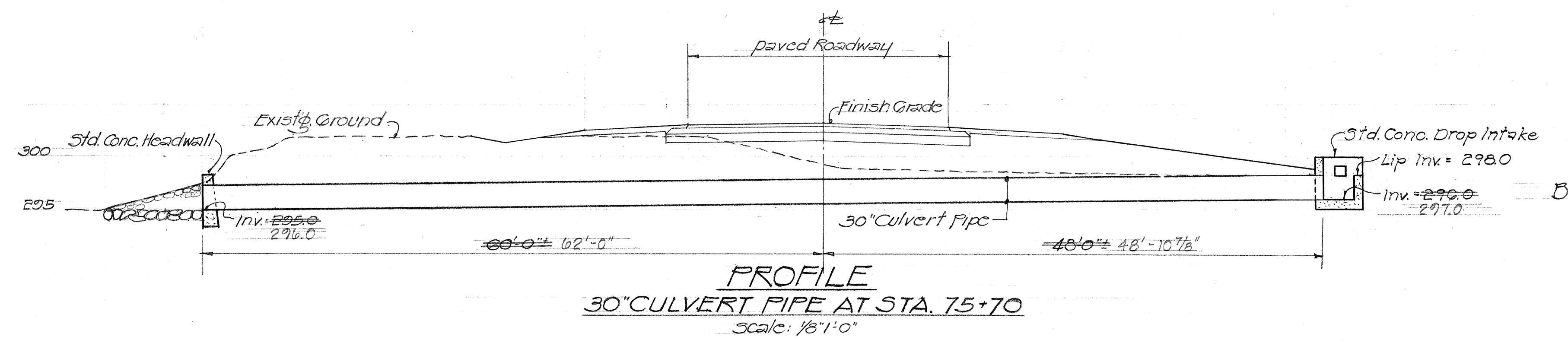
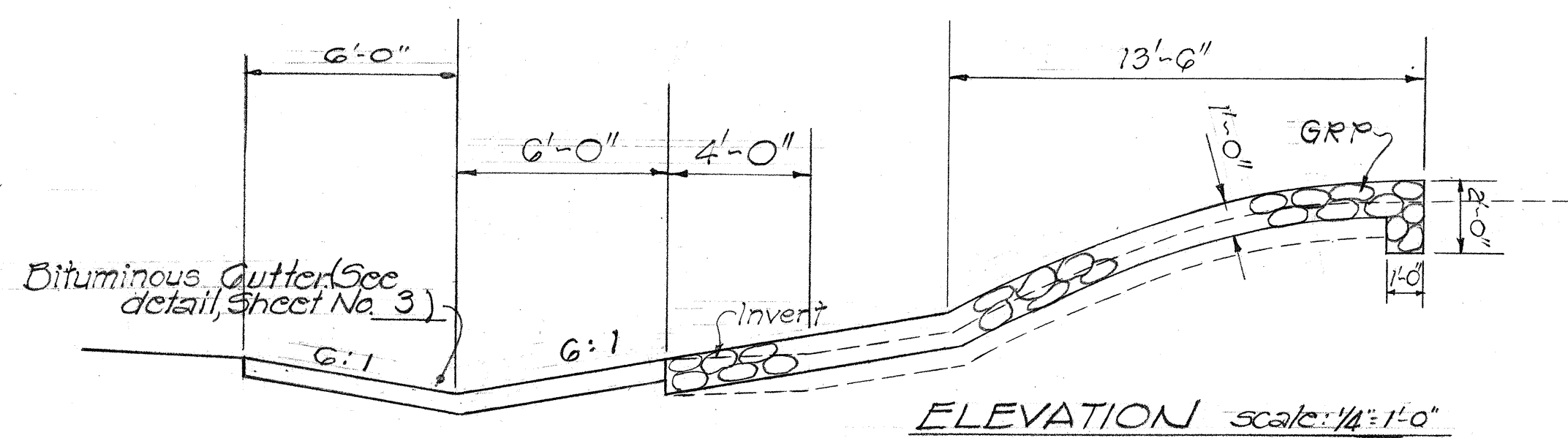
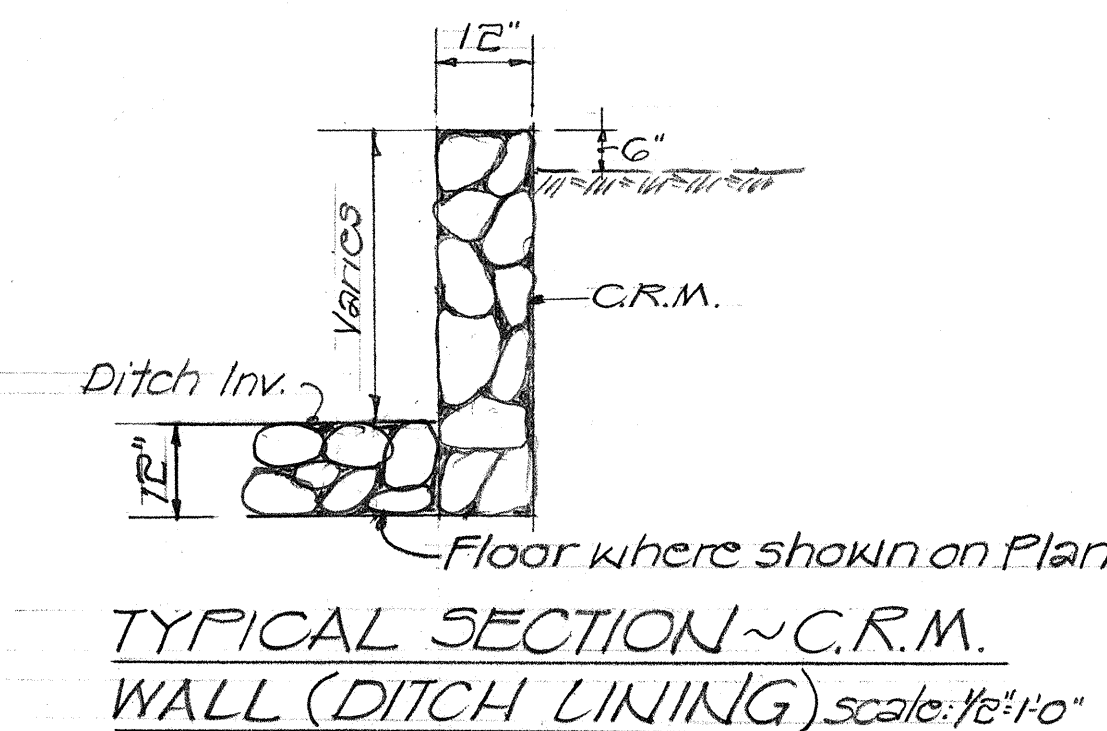
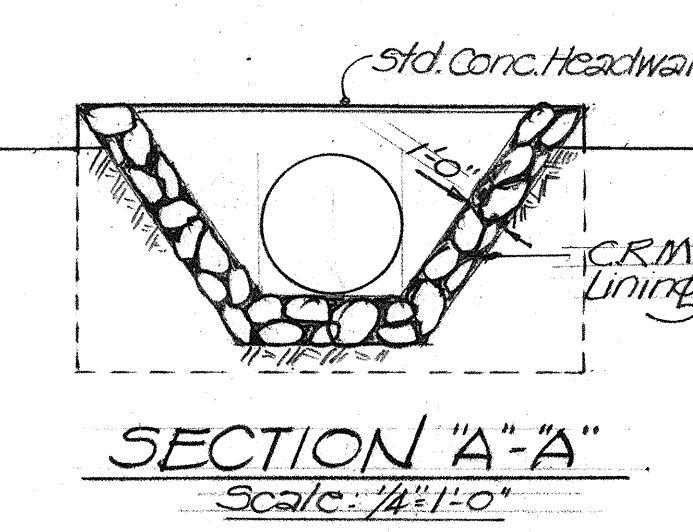
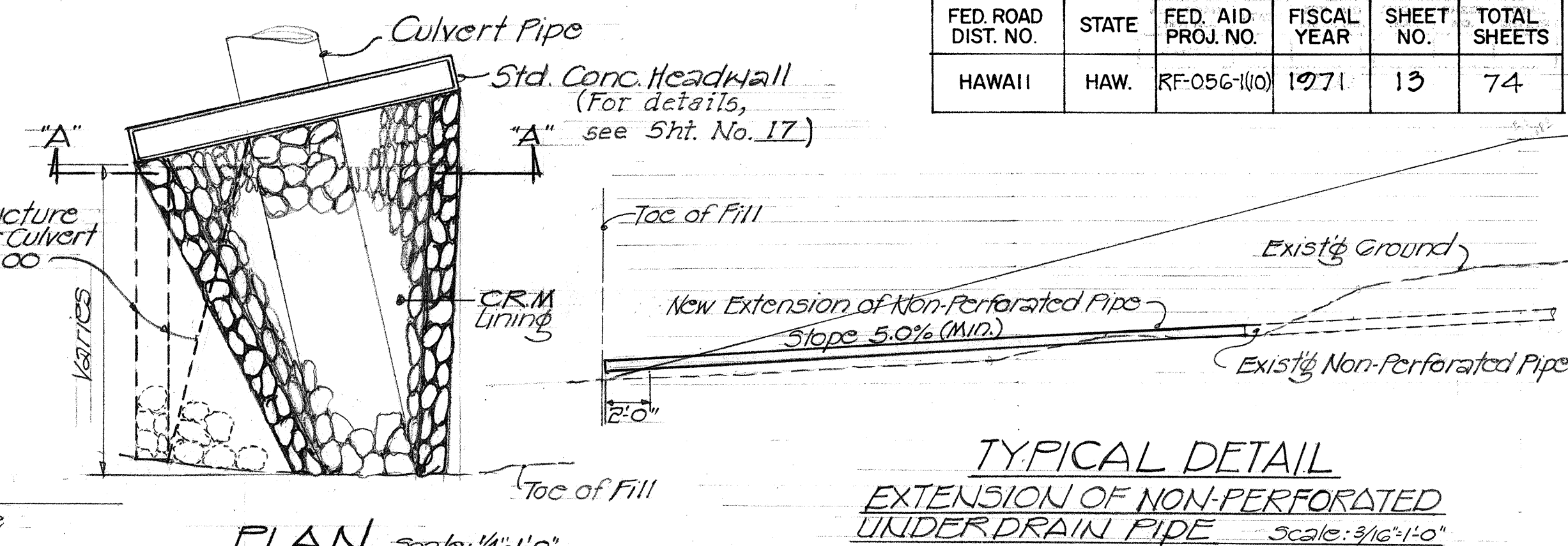
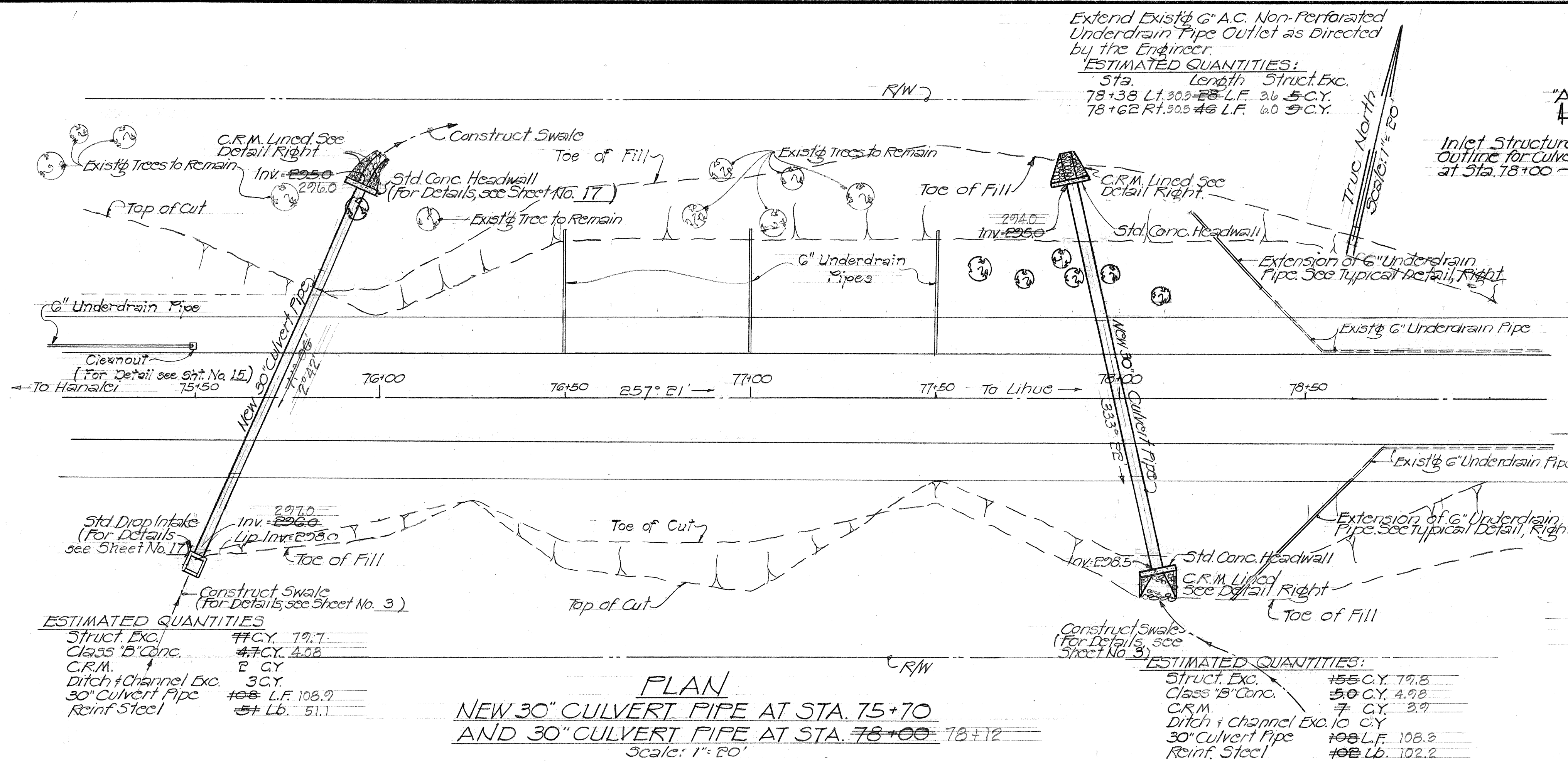


CRM HEADWALL DETAIL
Scale: 1/4" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DETAILS OF DOUBLE 36" CULVERTS FOR KILAUEA SUGAR CO. MAIN DITCH AT STA. 32+55
KAUAI BELT ROAD
PROJECT NO RF-056-1(10)
KILAUEA TO KAHILI
Scale: As Shown June 1970
SHEET No. 4 OF 10 SHEETS

DESIGNED BY	DATE
CHECKED BY	
NOTED BY	
PLANNED BY	
ORIGINAL	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RF-056-1(10)	1971	13	74



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLAN AND PROFILE OF 30" CULVERT PIPE AT STA. 75+70 AND 30" PIPE AT STA. 78+00

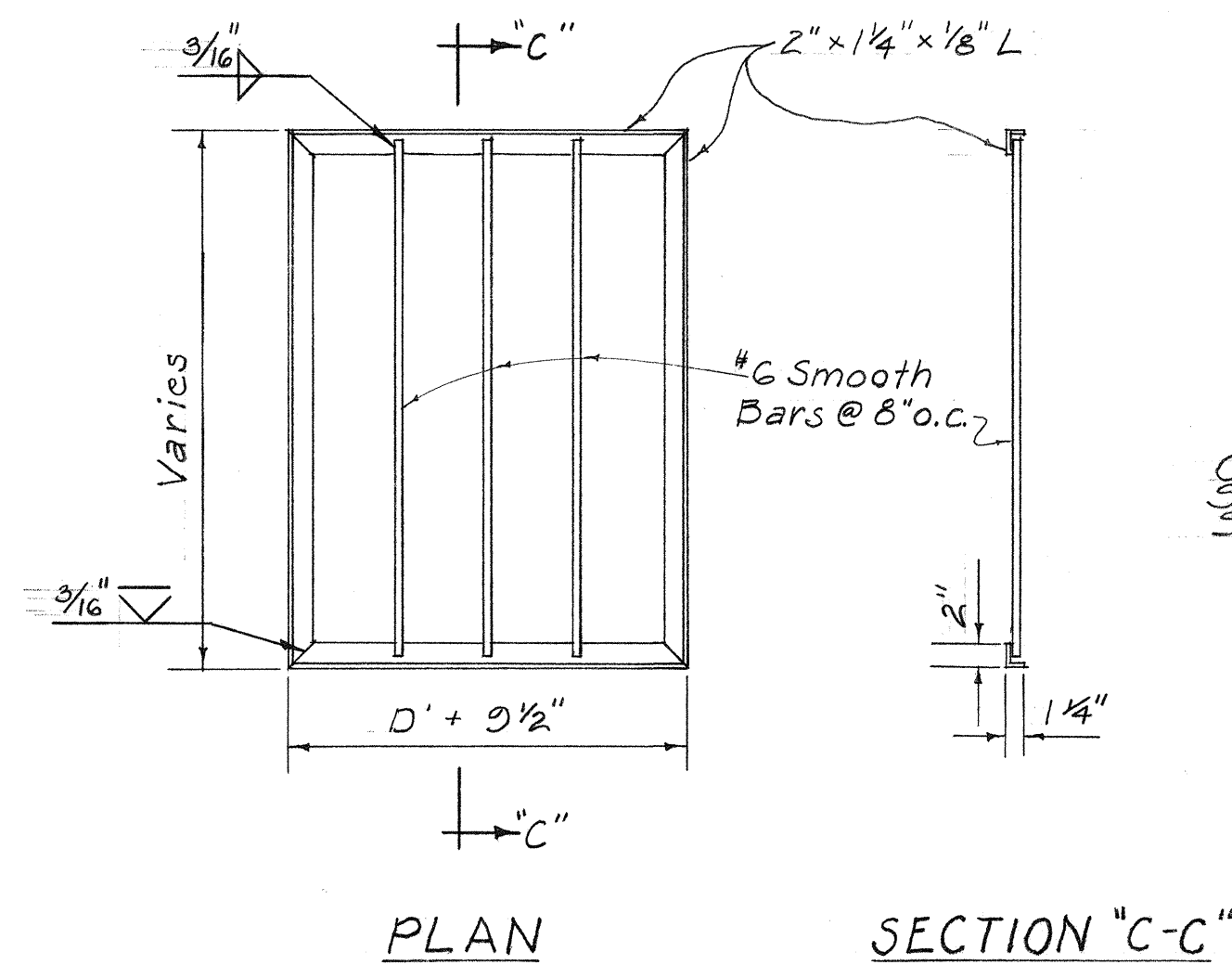
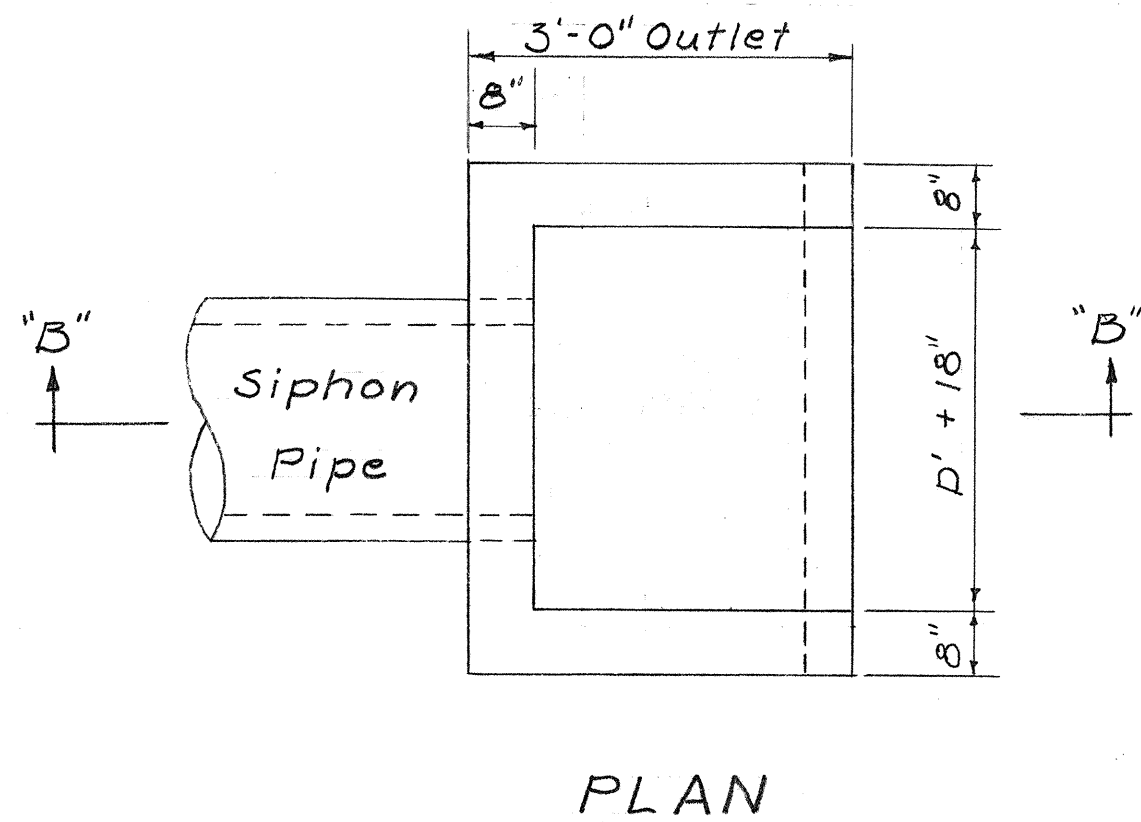
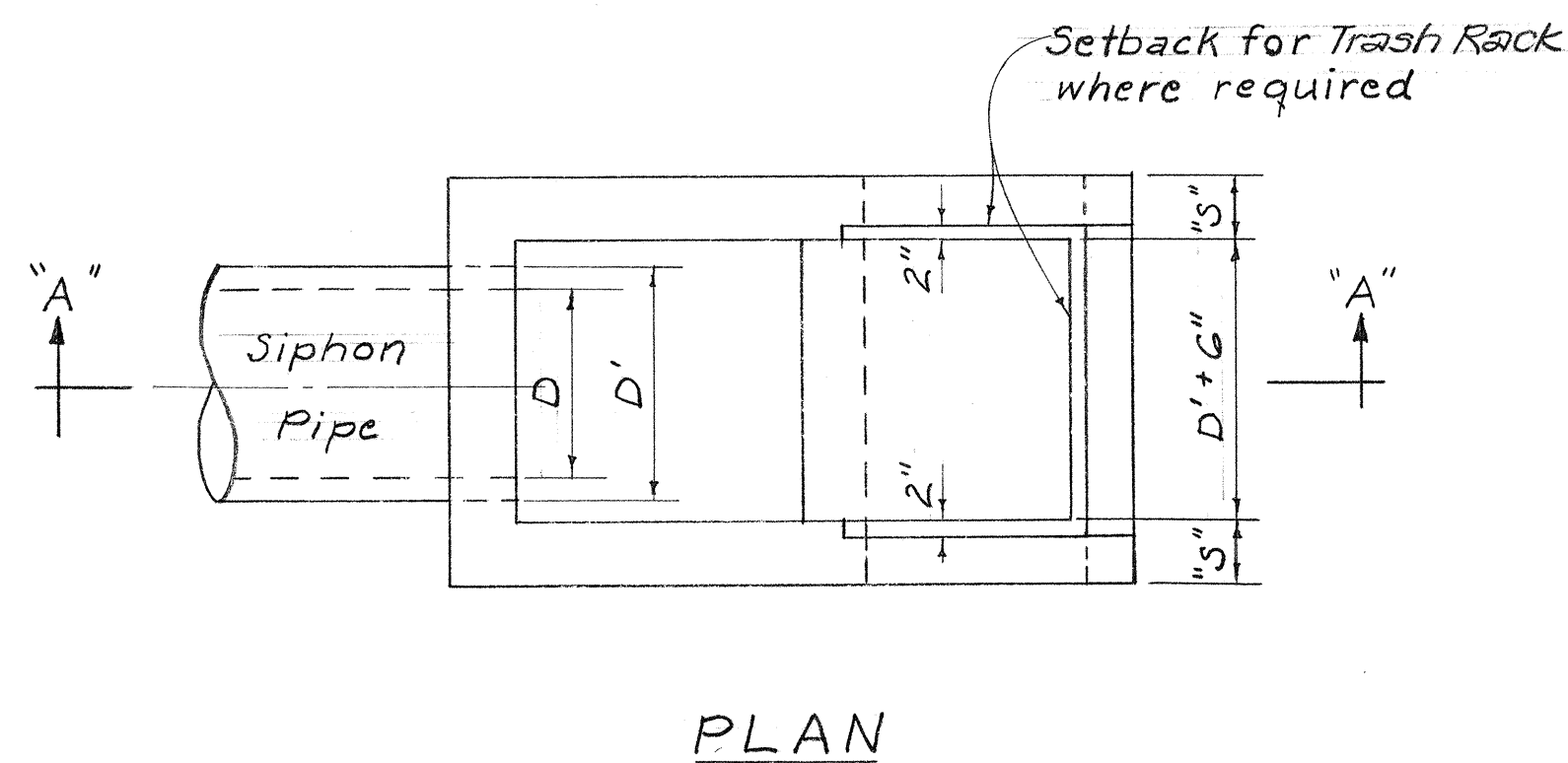
KAUAI BELT ROAD
PROJECT NO. RF-056-1(10)
KILAUEA TO KAHILI

Scale: As Shown Oct. 1970

SHEET No. 5 OF 10 SHEETS

DATE	
SURVEY PLOTTED BY	
DRAWN BY	
DESIGNED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RF-056-1(10)	1971	14	74



TYPE A TRASH RACK
(For Type "A" Inlet)

TRASH RACK DETAIL FOR
SIPHON INLET
Scale: 3/4" = 1'-0"

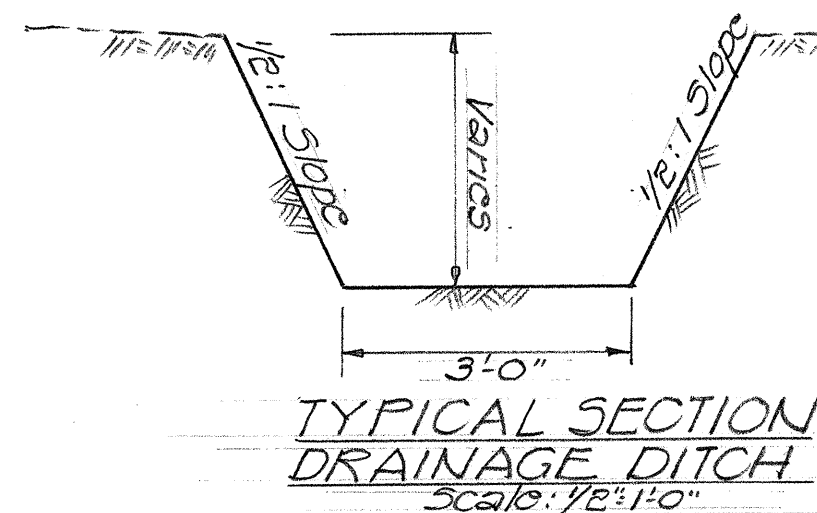
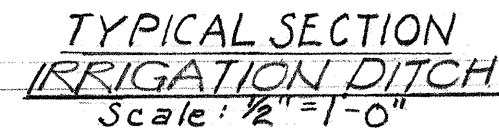
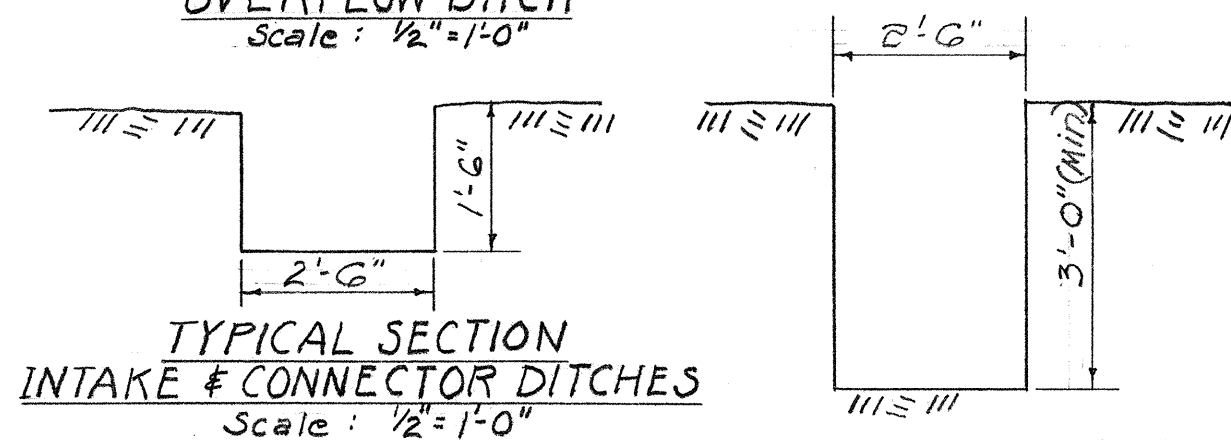
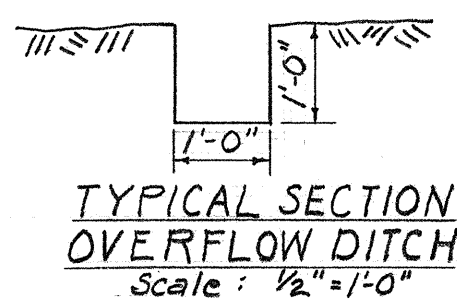
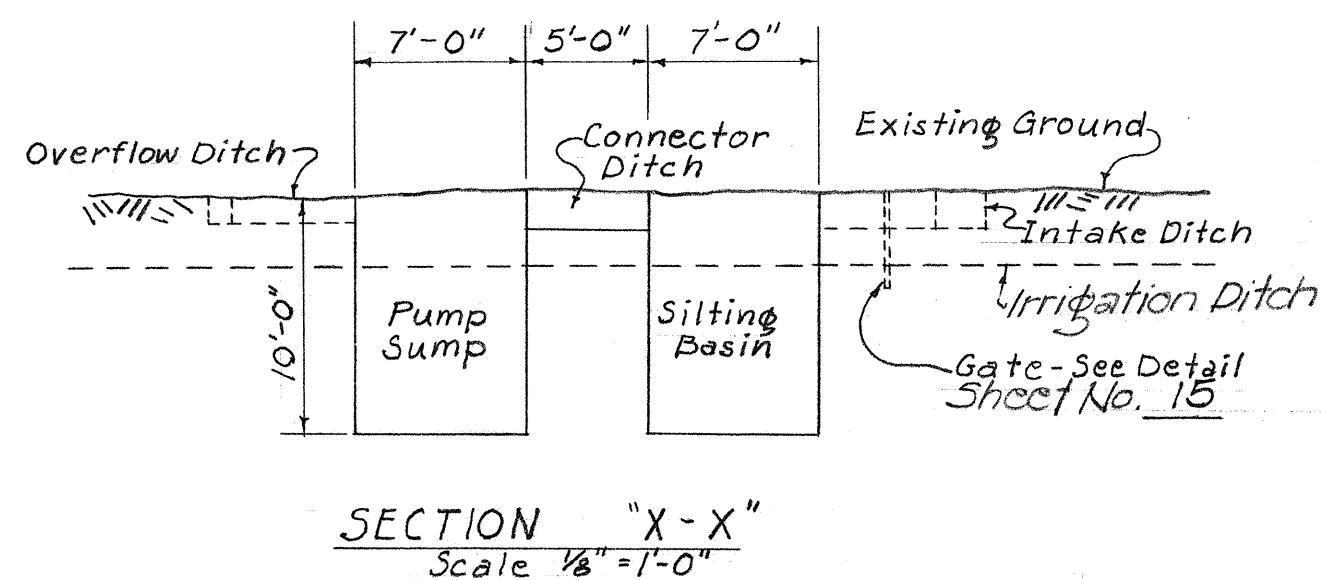
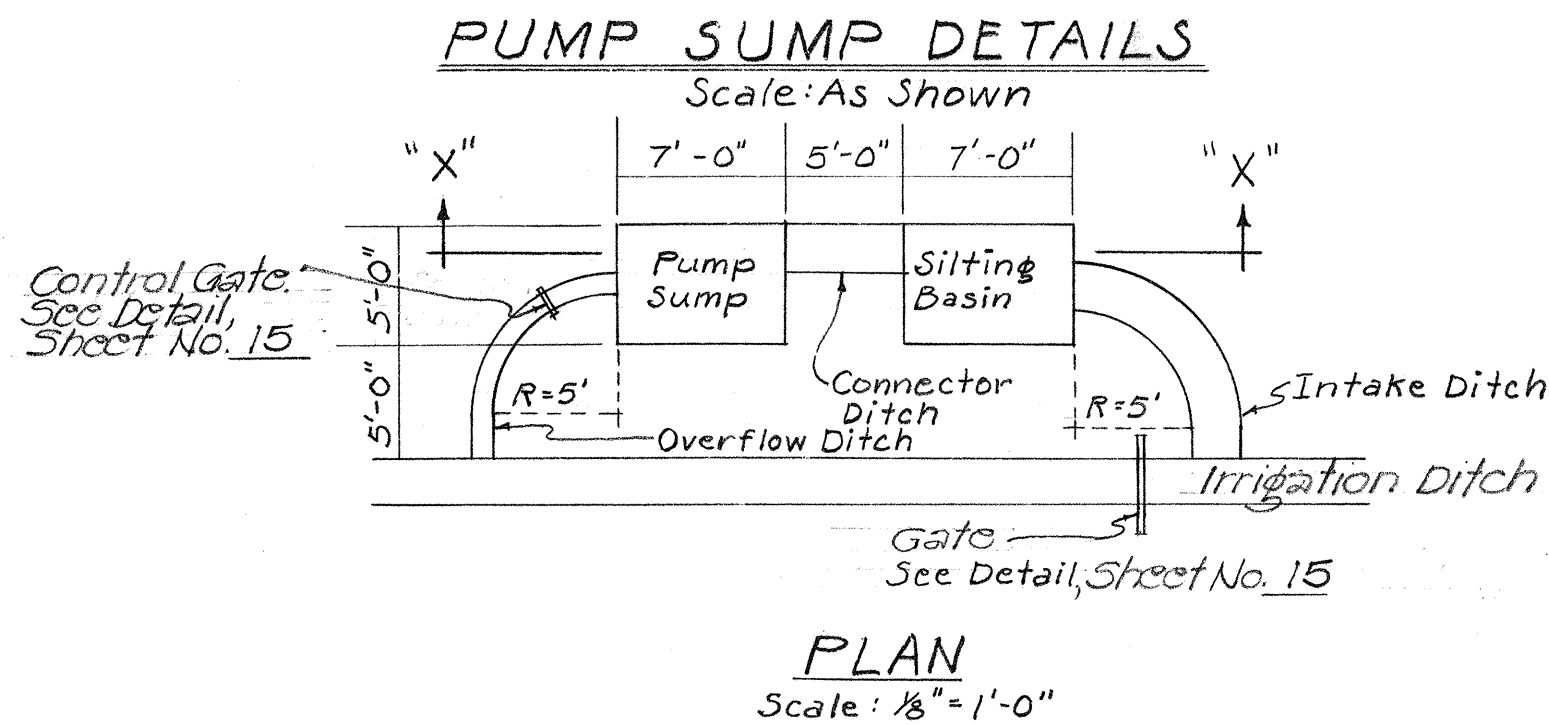
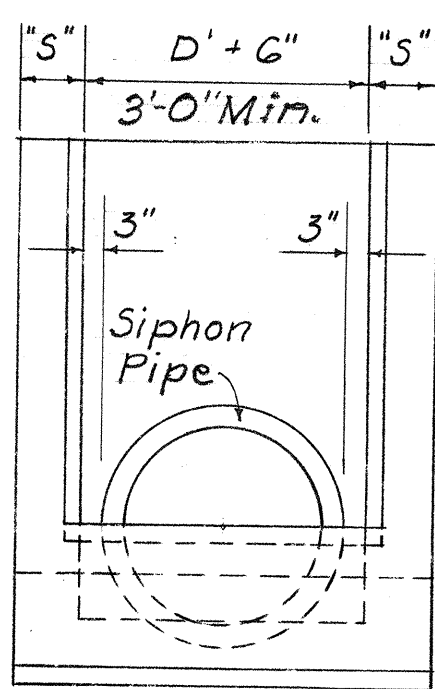


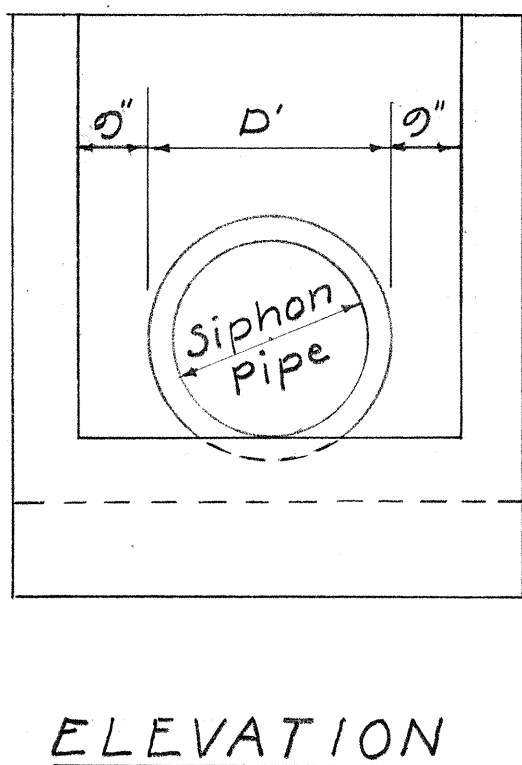
TABLE OF
WALL THICKNESS

"D"	"S"
in.	in.
24"	8"
30"	2"
36"	2"



- Notes:
- 1-Siphon Outlet similar except no Trash Rack are required.
 - 2-Varies according to Lip Invert and top of Siphon Inlet or Outlet, Top to be 12" minimum from top of ditch bank.
 - 3-Varies according to Pipe Invert and top of Siphon Inlet or Outlet.
 - 4-Culvert shall leave siphon inlet or outlet from any position and any direction indicated by plans or ordered by the Engineer.
- DETAILS OF TYPE "A" SIPHON INLET & OUTLET
Scale: 1/2" = 1'-0"

DETAILS OF TYPE "B" SIPHON OUTLET
Scale: 1/2" = 1'-0"



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIPHON AND PUMP SUMP DETAILS

KAUAI BELT ROAD

PROJECT NO. RF-056-1(10)

KILAUEA TO KAHILI

Scale as noted Oct. 1970

SHEET No. 6 OF 10 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
PLACED BY	
CHECKED BY	
NOTED BY	
NO.	

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

IRRIGATION

SUMMARY

PROJECT: KAUAI BELT ROAD, (KILAUEA TO KAHILI)

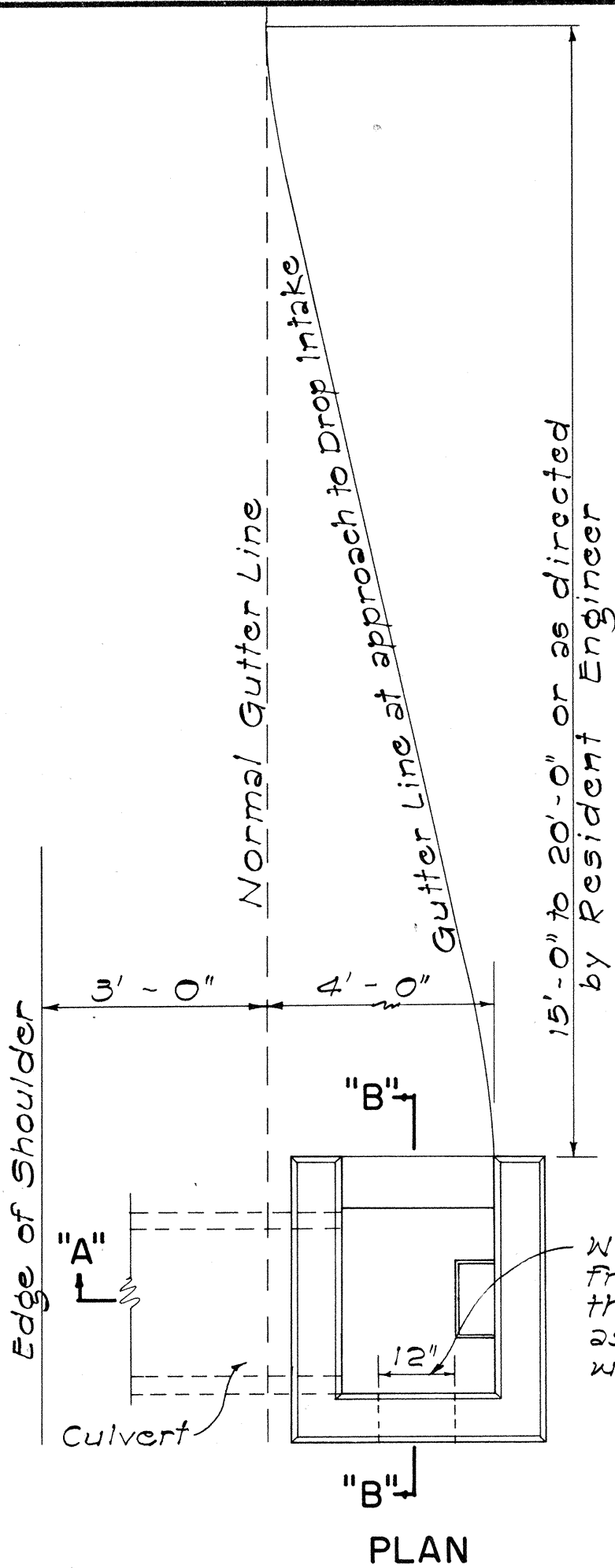
F.A.P. PROJECT NO.: RF-056-1(10)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RF-056-1(10)	1971	16	74

REVISED 6-10-71
REVISED 2-10-72

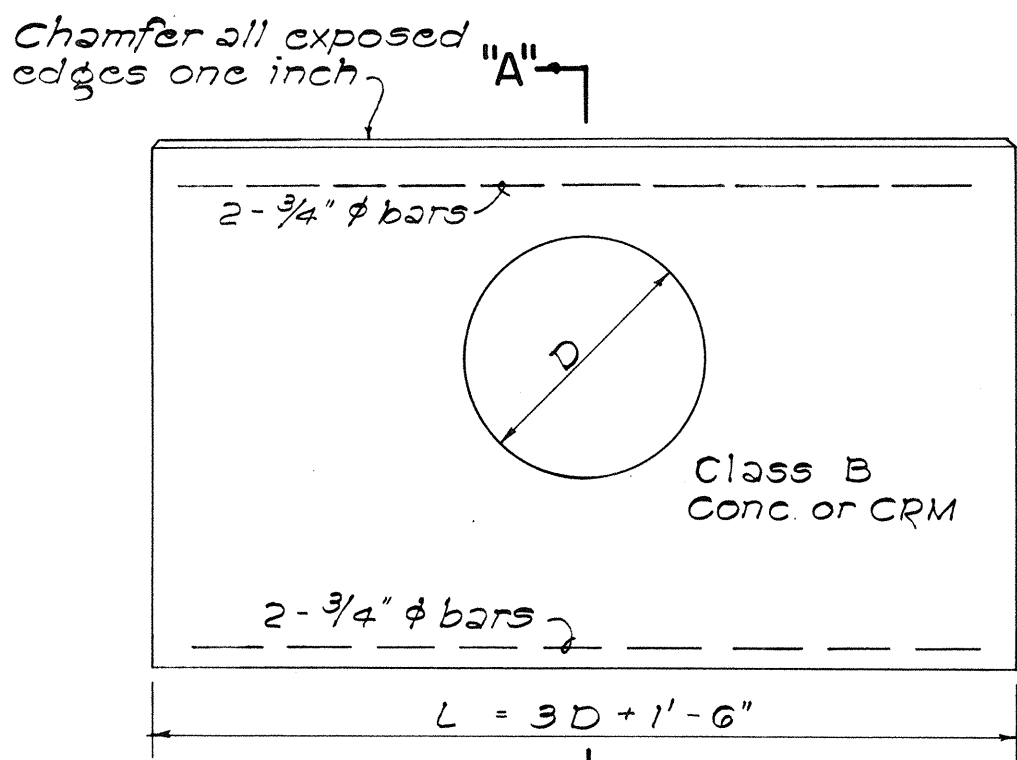
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RF-056-1(10)	1971	17	74

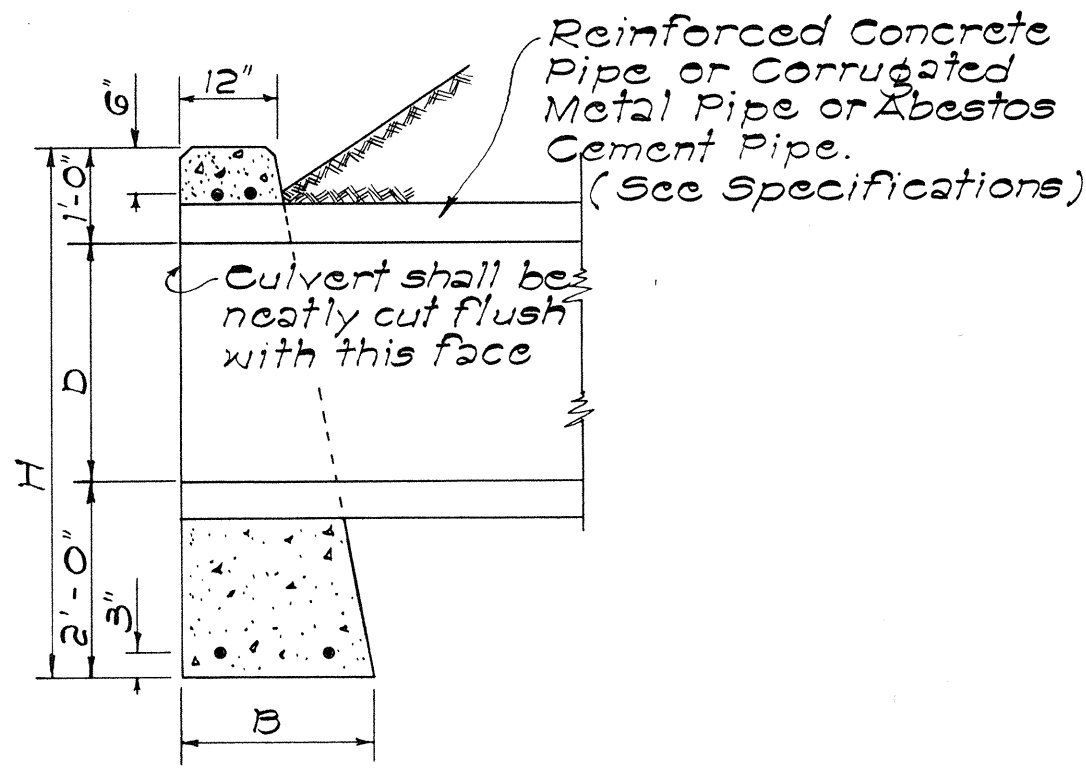


D'	D	L: D' + 6"	S	Cu. Yds.	Where Variable Equals
23"	18"	2'-5"	8"	1.41	4'-6"
30"	24"	3'-0"	8"	1.72	5'-0"
37"	30"	3'-7"	9"	2.32	5'-6"
44"	36"	4'-2"	9"	2.73	6'-0"
51"	42"	4'-9"	10"	3.54	6'-6"
58"	48"	5'-4"	10"	4.01	7'-0"

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



ELEVATION



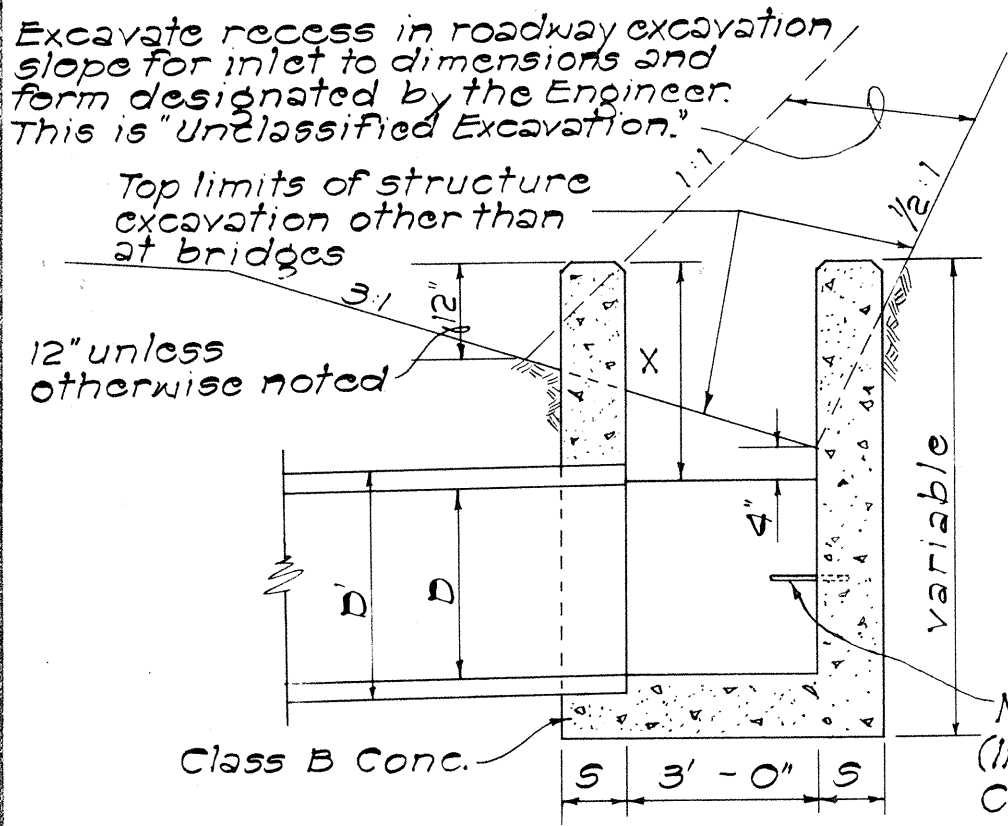
SECTION "A-A"

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.	No. of Bars	Size	Length	Lbs.
18"	1'-6"	6'-0"	4'-6"	1.12	1.17	4	3/4"	5'-6"	33
24"	1'-6"	7'-0"	5'-0"	1.52	1.60	4	3/4"	7'-0"	42
30"	2'-0"	8'-0"	5'-6"	2.36	2.49	4	3/4"	8'-0"	51
36"	2'-0"	10'-0"	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

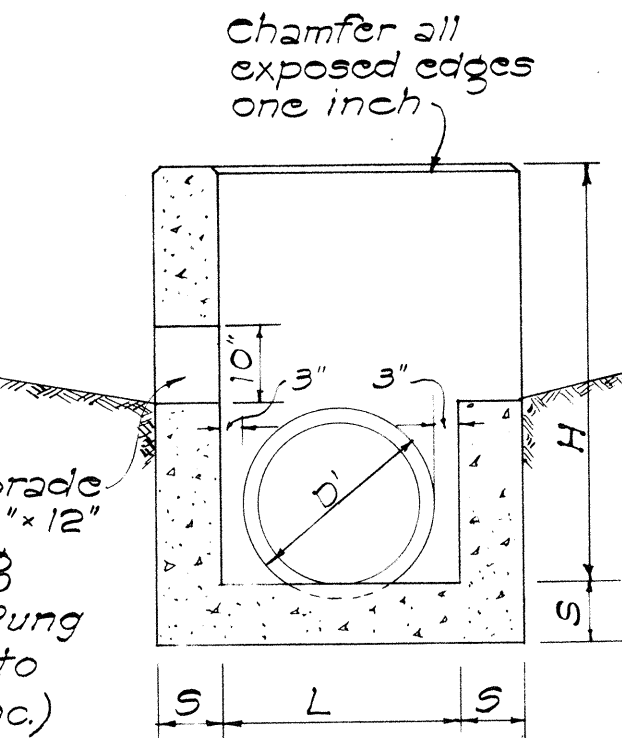
DATA - MASONRY HEADWALL				CRM FOR R.C.P.	CRM FOR C.M.P.
D	B	L	H	Cu. Yd.	Cu. Yd.
18"	1'-0"	6'-0"	4'-6"	1.24	1.29
24"	2'-0"	7'-6"	5'-0"	1.83	1.92
30"	2'-3"	9'-0"	5'-6"	2.56	2.70
36"	2'-6"	10'-6"	6'-0"	3.45	3.66

DETAIL OF HEADWALL

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



SECTION "A-A"



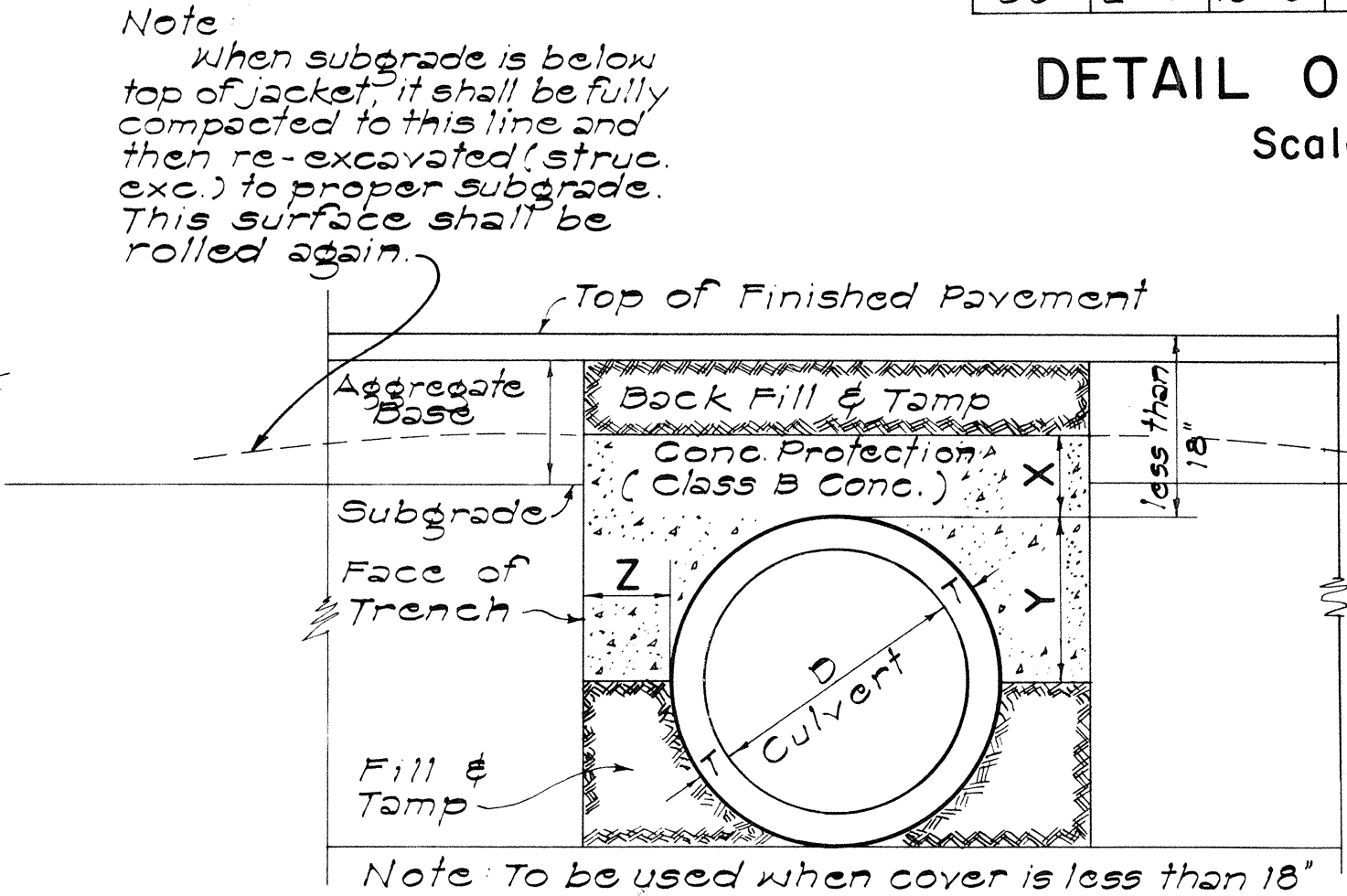
SECTION "B-B"

DETAIL OF CONCRETE DROP INTAKE

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

GENERAL NOTES

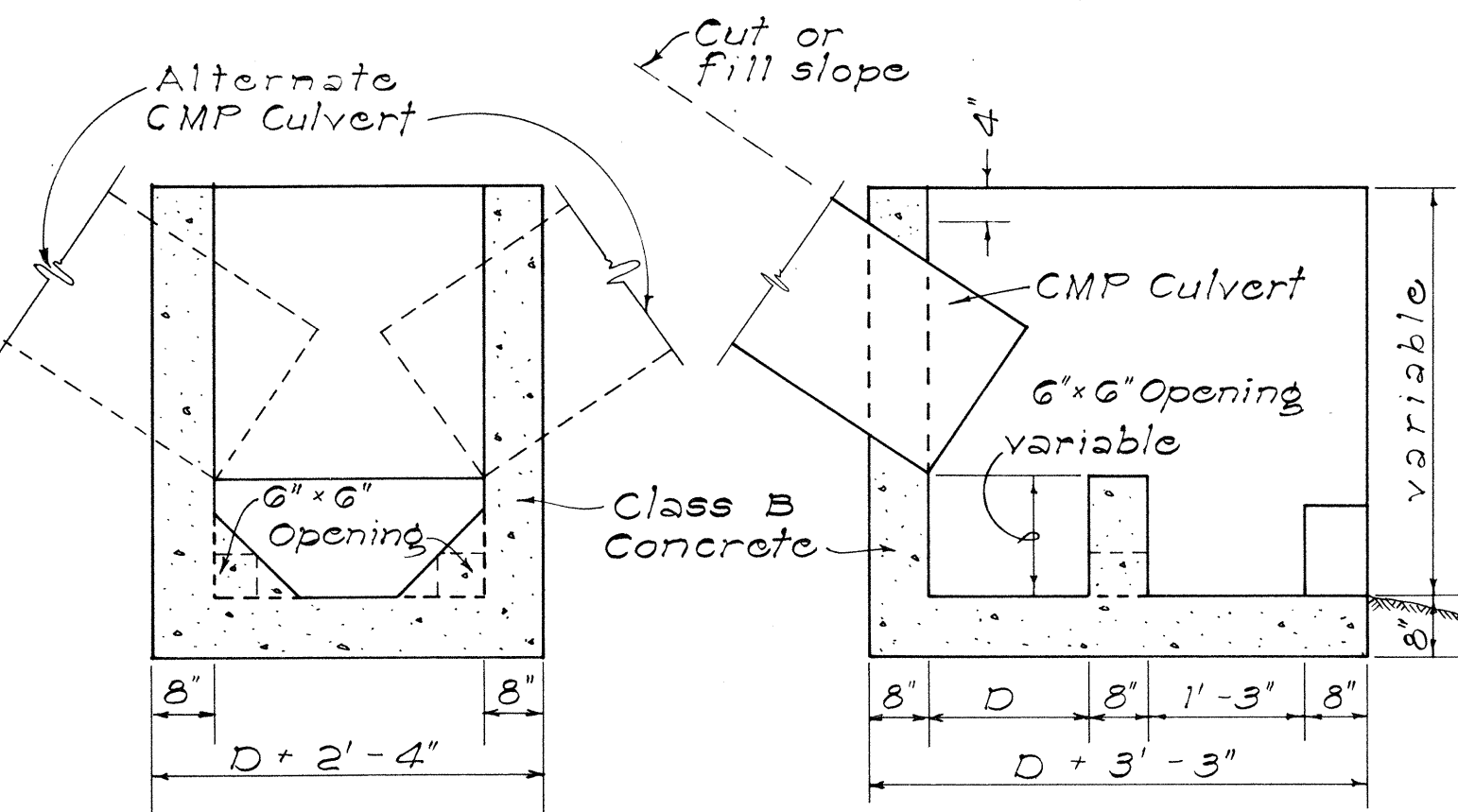
- Culvert shall enter and leave Drop Intake from any position and in the direction indicated by the plans or ordered by the Engineer.
- D' shall be the maximum outside dimension of the culvert at the Drop Intake wall.
- Manhole Rungs (16" o.c.) are required when "H" is greater than 4 feet 6 inches. Only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



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		
9" for 36" D		Minimum = X
10" for 42" D		
11" for 48" D		Maximum pay quantity will be Z = 12"
12 for 54" D		

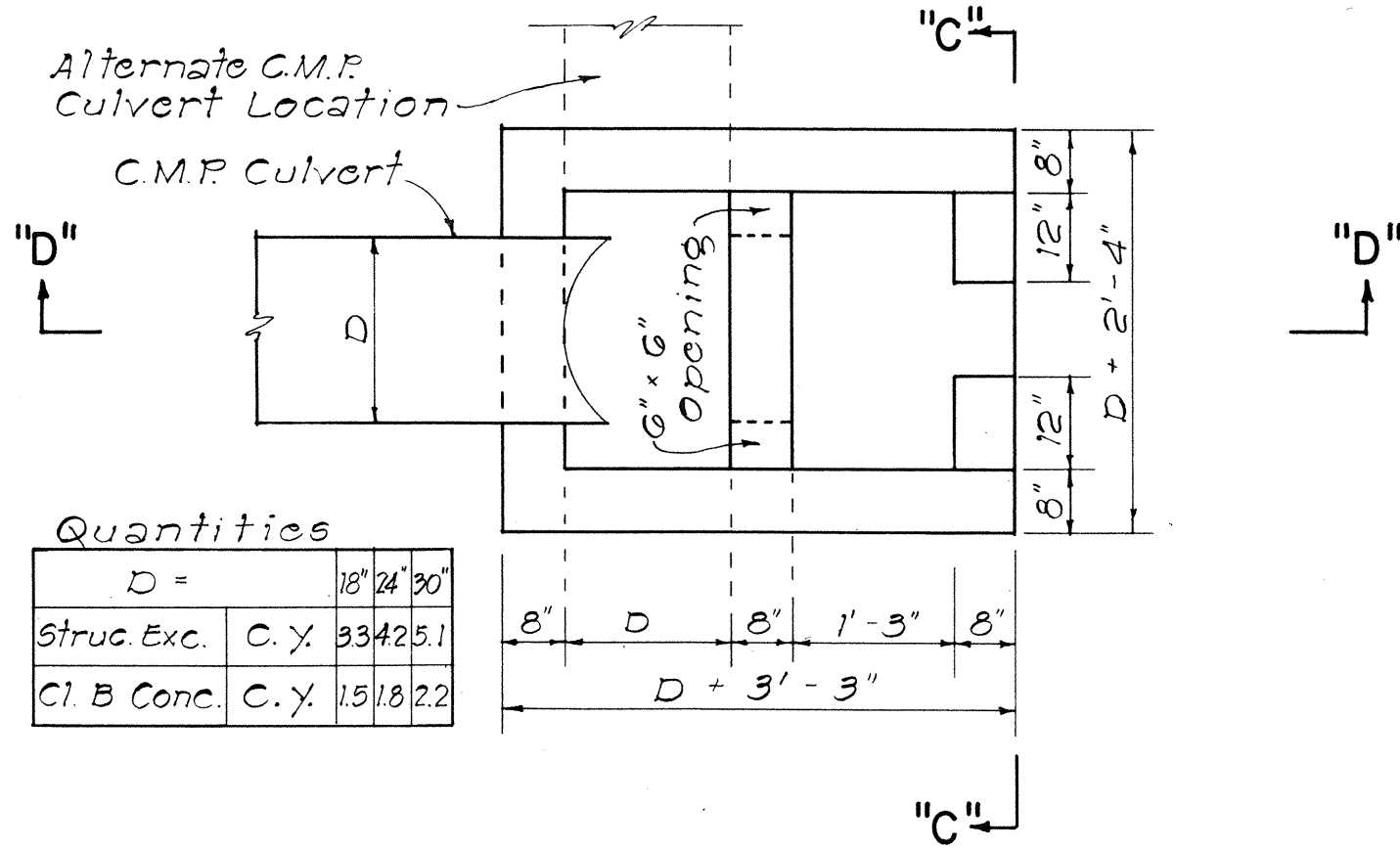
SECT. OF CULVERT WITH CONC. PROTECTION

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

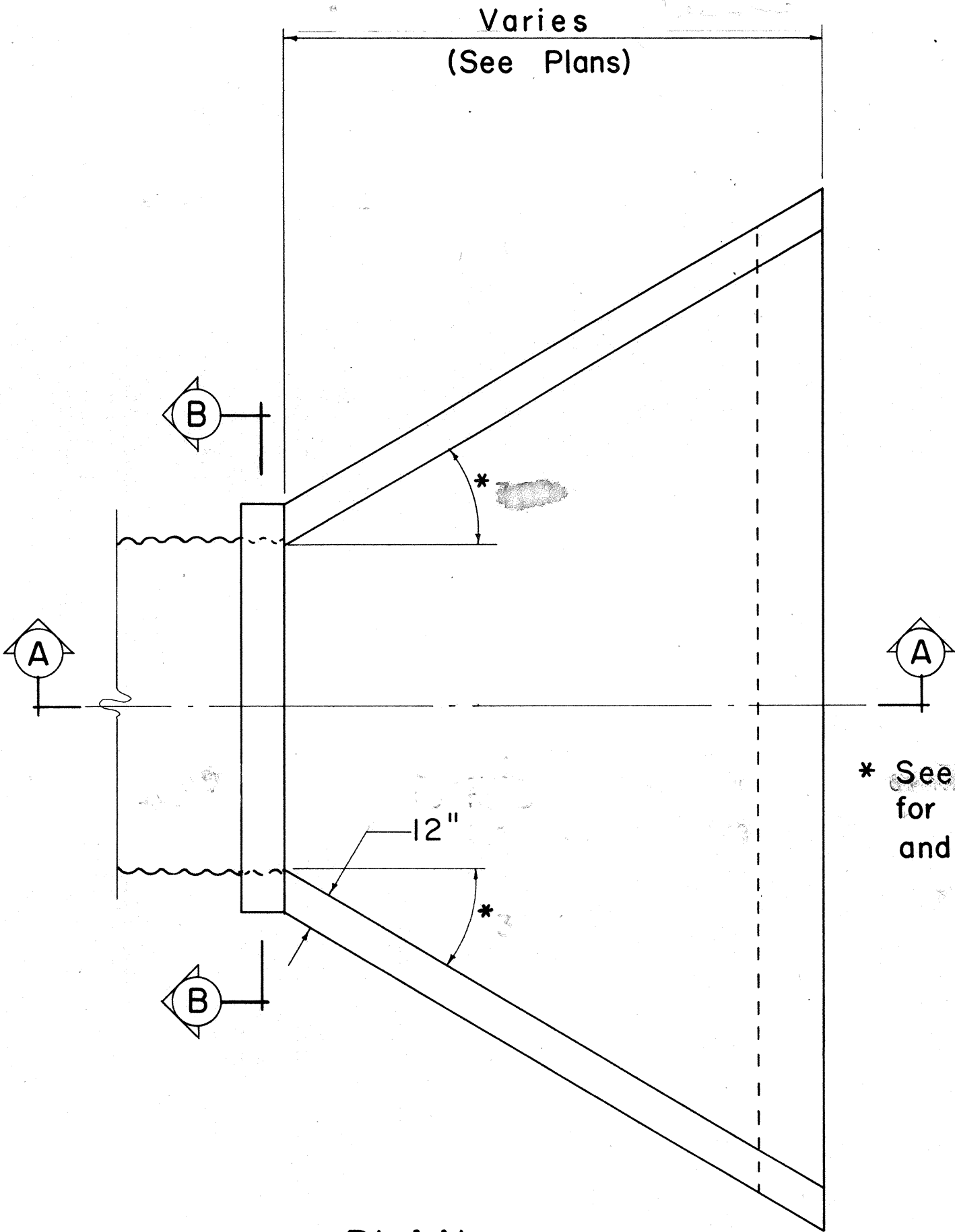
Scale: As Noted Date: Aug. 1967

SHEET No. 9 OF 10 SHEETS DH 10

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RF-056-1(10)	1971	18	74

GENERAL NOTES

1. Concrete: All concrete shall be Class A.
2. Cut-off Wall: The depth of wall shown on the plan may be reduced if rock is encountered at a higher elevation.



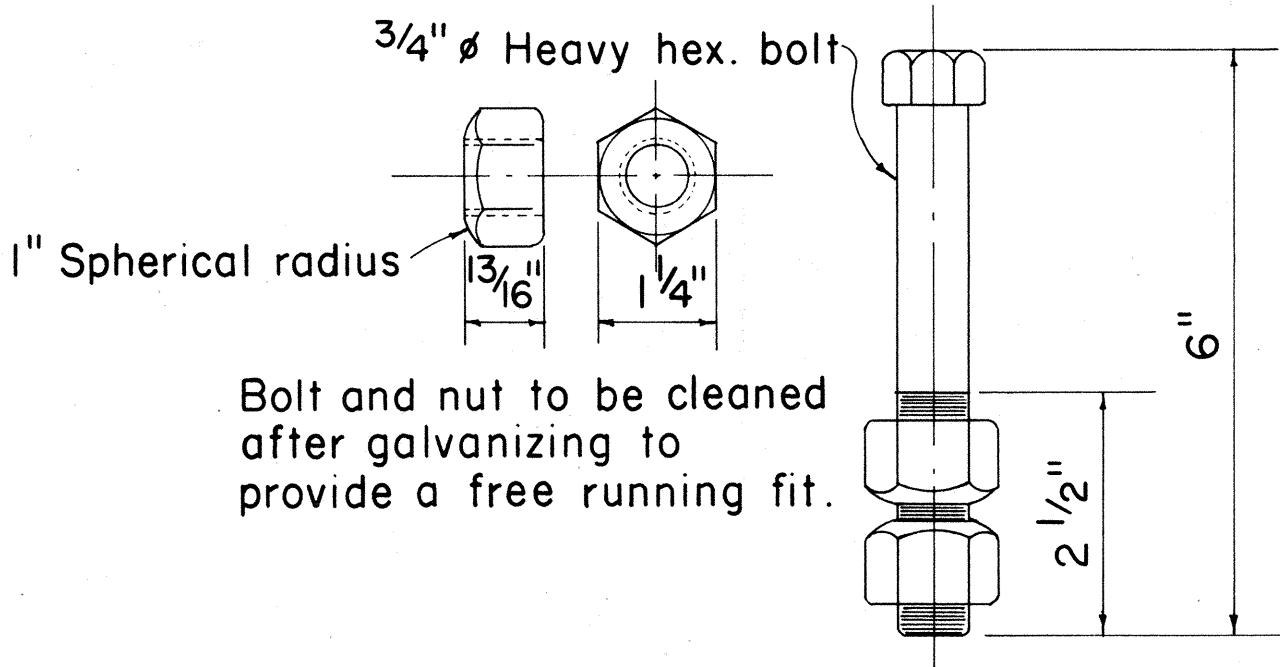
PLAN

* See Plans Sheet No. 11 for length of wingwalls and degree of flare.

5 Bars at 12" Bothways

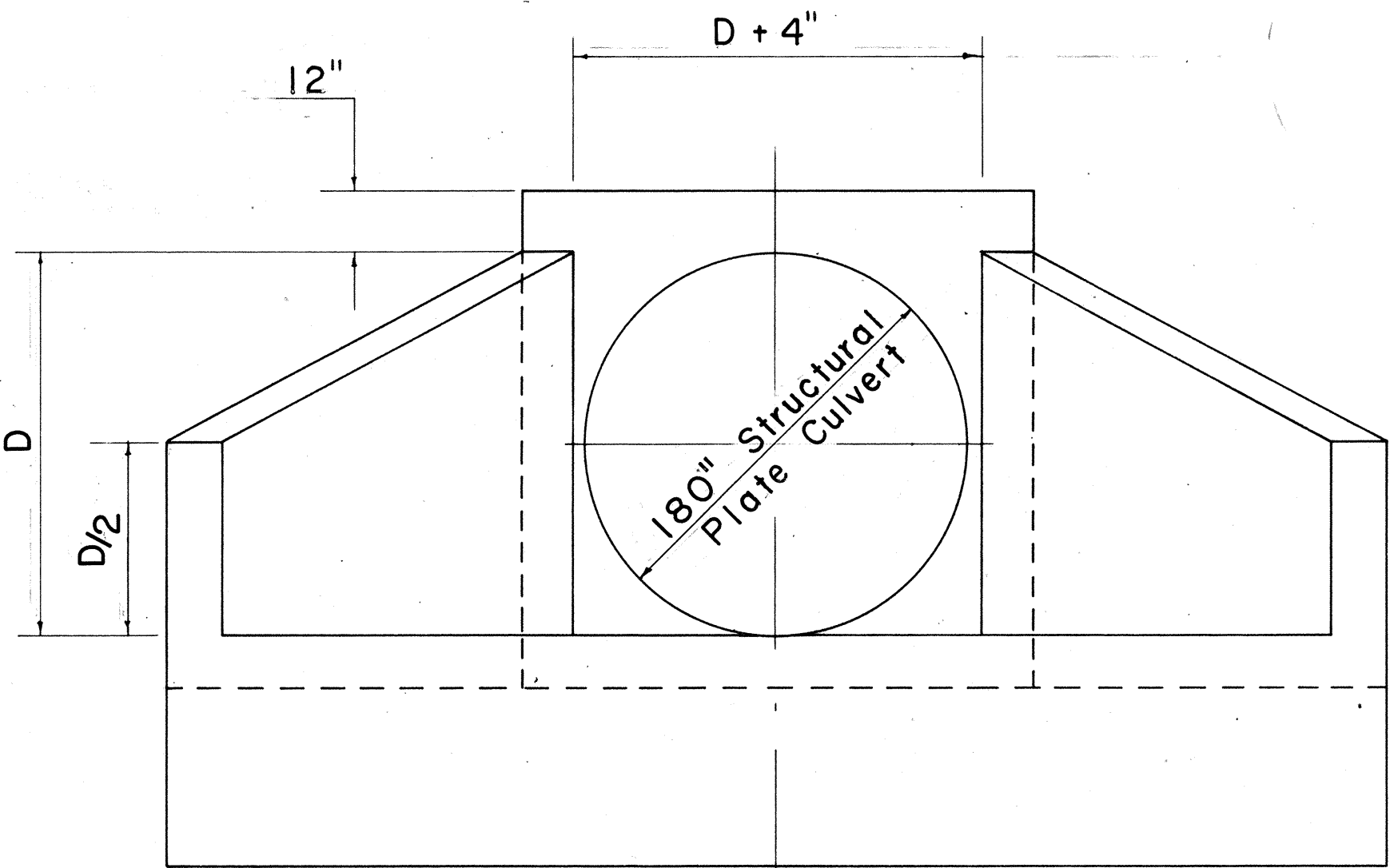
5 Bars at 12"

See Section A-A for additional reinforcing (additional bars to extend D/2 above slab)

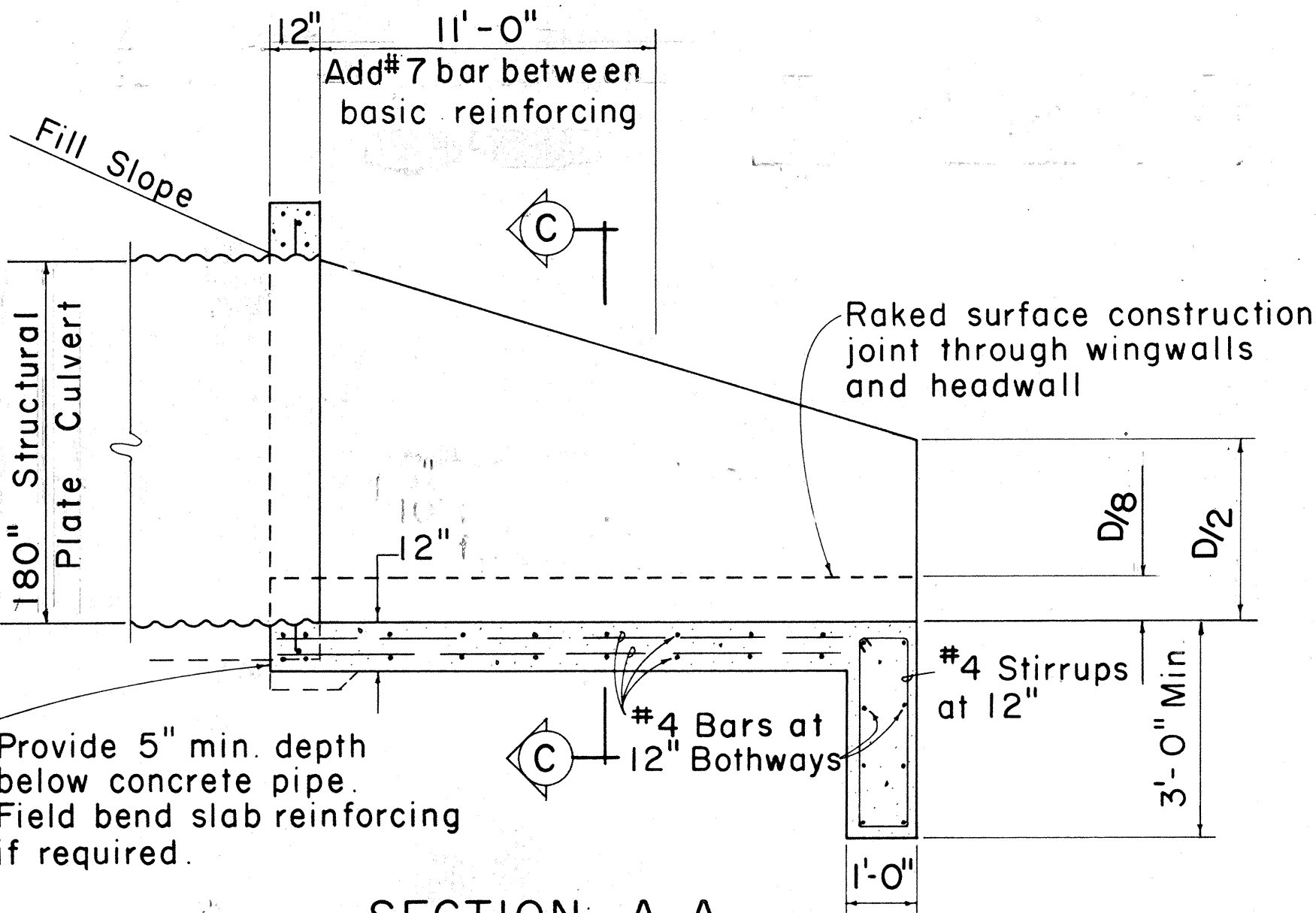


ANCHOR BOLT DETAIL

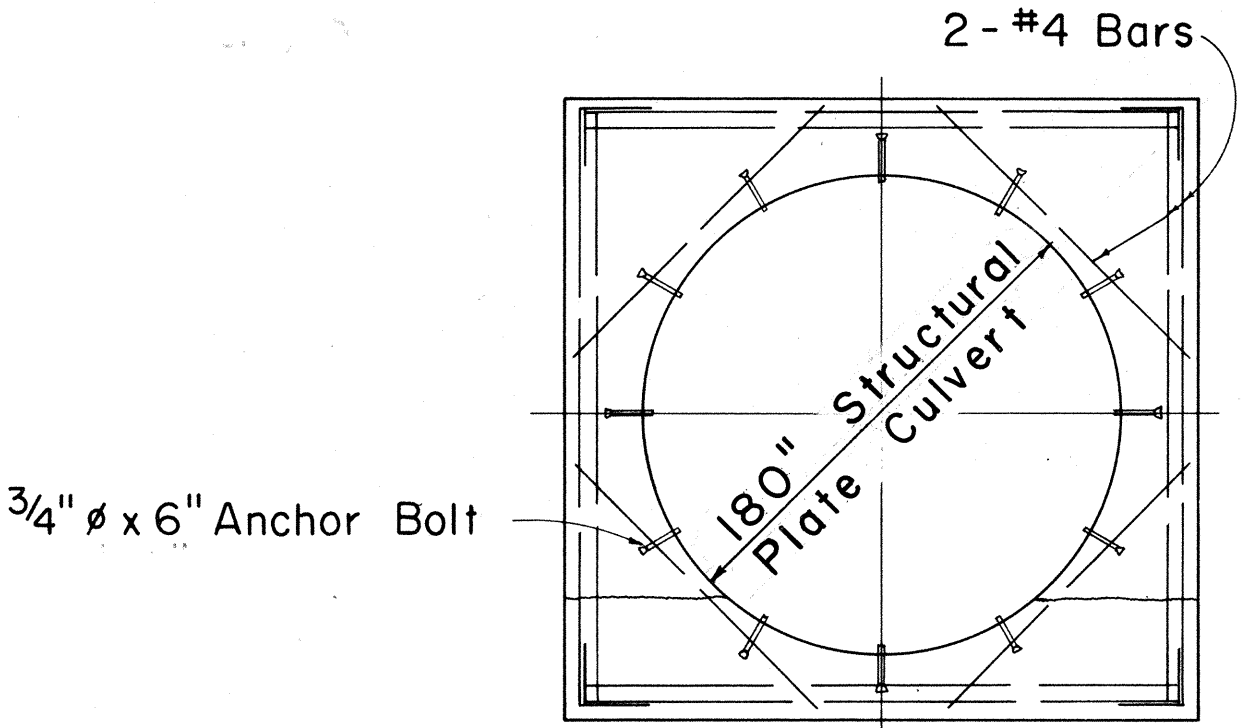
SECTION C-C



FRONT ELEVATION



SECTION A-A



SECTION B-B

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
INLET AND OUTLET DETAILS
FOR 180" STRUCTURAL PLATE
CULVERT AT STA. 66+12
KAUAI BELT ROAD
PROJECT NO. RF-056-1(10)
KILAUEA TO KAHILI
Not to Scale Date: March 1971
SHEET No. 10 OF 10 SHEETS

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
NOTE BOOK	
No.	