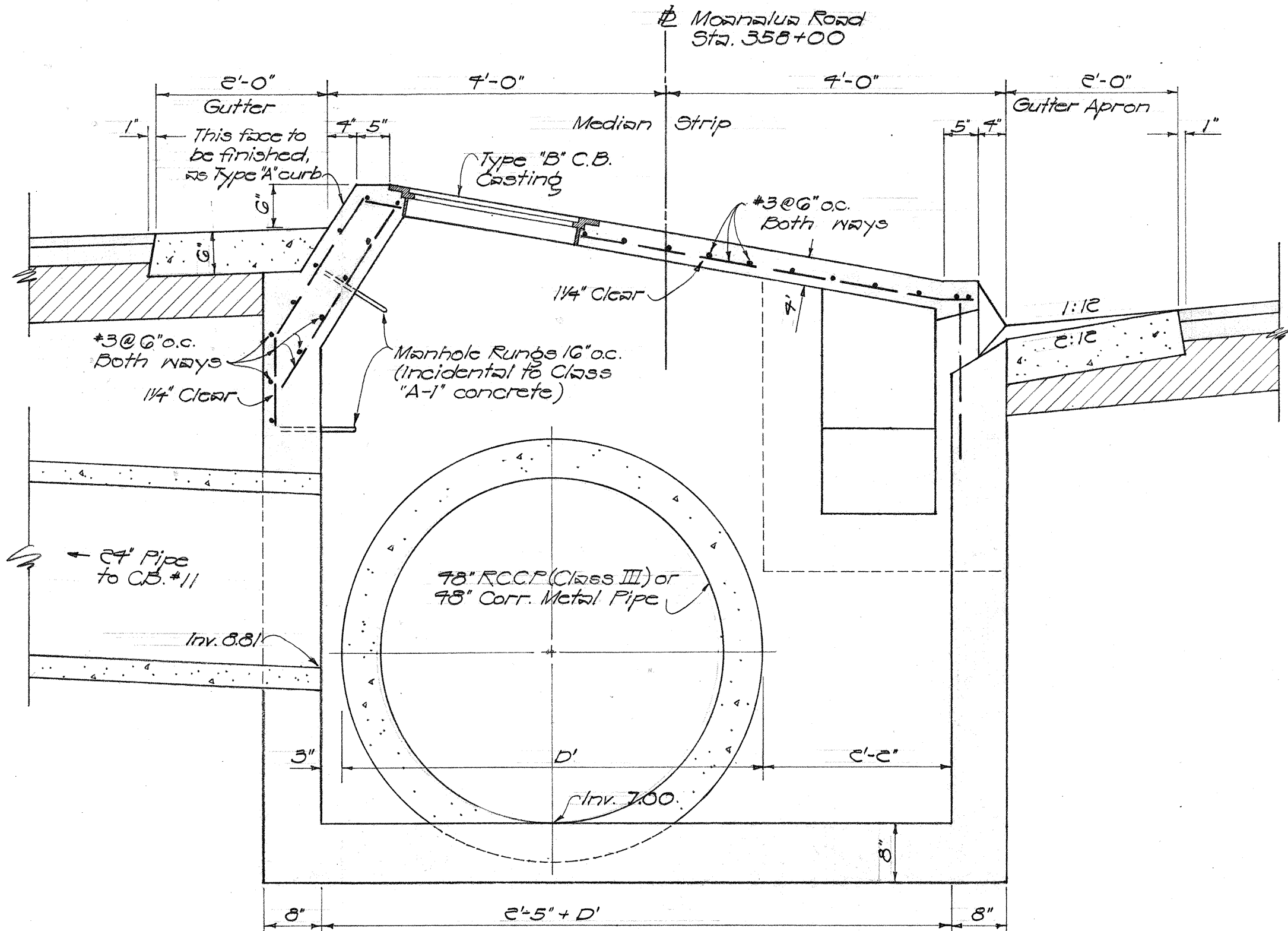


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	US-072(3)	1960	16	79
		BU-072-1(1)	1960	CG	118
		BU-065-1(1)	1960	CS	115



SPECIAL DETAIL SECTION
OF C.B. #12
Scale: 3/4" = 1'-0"

Note: Unless shown or noted otherwise on this detail, C.B. #12 shall be constructed as a standard catch basin, type "C". See Standard Details for plan view and other details. Gutter and Gutter Apron shall not be part of catch basin, but shall be paid for under the item of Type "AG" curb and gutter.

NOTE:
See Cost Control Sheet
for Quantities

SUMMARY OF DRAINAGE PIPE ALTERNATE

FROM	TO	PIPE LENGTH	ALT. 'A' CONC. PIPE	ALT. 'B' CORR. PIPE
CB 3-A	Exist. CB.	80	C4'-IV	C4'-14ga.
CB 4-A	SDMH 1-A	188	3G'-III	7C'-1Cga.
CB 5-A	CB 4-A	70	C4'-IV	C4'-14ga.
CB 6-A	5x3' C.B.C.	78	C4'-IV	C4'-14ga.
CB 1	SDMH 1-A	226	3G'-III	3G'-1Cga.
CB 2	SDMH 1	32	C4'-IV	C4'-14ga.
CB 3	SDMH 1	30	C4'-IV	C4'-14ga.
CB 4	CB 1-A	140	C4'-III	C4'-14ga.
CB 5	CB 1	170	3G'-III	3G'-1Cga.
CB 6	SDMH 3	32	C4'-IV	C4'-14ga.
CB 7	SDMH 3	30	C4'-IV	C4'-14ga.
CB 8	SDMH 2	176	C4'-III	C4'-14ga.
CB 9	CB 5	174	3G'-III	3G'-1Cga.
CB 10	CB 9	122	3G'-III	3G'-1Cga.
CB 10-A	CB 10	20	3G'-III	3G'-14ga.
CB 11	CB 12	32	C4'-IV	C4'-14ga.
CB 12	SDMH 3	270	4B'-VII	54'-1Cga.
CB 14	CB 13	70	C4'-IV	C4'-14ga.
CB 15	SDMH 7	25	C4'-III	NONE
CB 16	SDMH 4	92	C4'-IV	30'-14ga.
"	"	80	C4'-III	"
CB 17	SDMH 5	176	4B'-IV	48'-1Cga.
CB 18	CB 17	32	C4'-IV	C4'-14ga.
CB 19	SDMH 8	24	C4'-IV	C4'-14ga.
CB 20	CB 19	20	C4'-IV	C4'-14ga.
CB 21	SDMH 10	80	C4'-IV	C4'-14ga.
CB 22	SDMH 8	60	C4'-IV	C4'-14ga.
"	"	12	C4'-III	"
CB 23	CB 22	134	C4'-III	C4'-14ga.
CB 24	SDMH 11	28	C4'-IV	C4'-14ga.
CB 25	CB 26	32	C4'-IV	C4'-14ga.
CB 26	SDMH 9	176	3G'-III	3G'-1Cga.
CB 27	SDMH 12	8	1B'-III	1B'-1Cga.
CB 28	SDMH 13	16	1B'-III	1B'-1Cga.
CB 29	CB 28	28	1B'-III	1B'-1Cga.
CB 30	SDMH 14	37	C4'-IV	C4'-14ga.
CB 31	SDMH 15	148	C4'-IV	C4'-14ga.
CB 32	SDMH 14A	114	3G'-III	30'-14ga.
CB 33	CB 32	32	C4'-IV	C4'-14ga.
CB 34	SDMH 17	18	C4'-IV	C4'-14ga.
CB 35	SDMH 15	28	C4'-IV	C4'-14ga.
CB 36	SDMH 19	70	C4'-IV	C4'-14ga.
CB 37	SDMH 19	160	C4'-III	C4'-14ga.
CB 38	SDMH 20	40	C4'-IV	C4'-14ga.
CB 39	SDMH 20	56	C4'-IV	C4'-14ga.
CB 40	SDMH 20	166	C4'-III	C4'-14ga.
CB 41	Outlet	6	C4'-III	C4'-14ga.
CB 42	SDMH 35	58	C4'-II	C4'-14ga.
CB 80	SDMH 37	32	C4'-III	24'-14ga.
CB 81	SDMH 6	100	24'-III	NONE
SDMH 1	CB 1-A	70	4B'-IV	54'-1Cga.
"	"	165	4B'-III	"
SDMH 2	CB 4	110	C4'-IV	C4'-14ga.
SDMH 3	SDMH 1	220	4B'-III	54'-1Cga.
SDMH 4	CB 10	116	3G'-IV	3G'-1Cga.
"	"	52	3G'-III	"
SDMH 5	CB 12	145	4B'-III	48'-1Cga.
SDMH 6	CB 15	26	C4'-III	NONE
SDMH 7	CB 21	120	C4'-III	NONE
SDMH 8	CB 16	26	C4'-IV	C4'-14ga.
"	"	54	C4'-III	"
SDMH 9	CB 17	176	3G'-IV	4C'-1Cga.
SDMH 10	SDMH 9	33	C4'-IV	C4'-14ga.
SDMH 11	CB 25	17	C4'-III	C4'-14ga.
SDMH 13	CB 23	20	C4'-IV	C4'-14ga.
"	"	130	C4'-III	"
SDMH 14	CB 26	246	3G'-IV	30'-14ga.
SDMH 14A	SDMH 14	170	3G'-IV	30'-14ga.
SDMH 15	SDMH 16	20	C4'-IV	C4'-14ga.
SDMH 16	CB 32	36	C4'-IV	C4'-14ga.

SUMMARY OF C.B. QUANTITIES

C.B. No.	TYPE	EST. QTY.	CL. A-1 CONC.	REINF. STEEL	STR. EXC.
1-A	D	16.35	1C.7	88	54.1
3-A	B	11.72	8.2	28	34.7
4-A	C	4.31	5.2	112	20.3
5-A	C	5.28	5.4	28	12.2
6-A	B	7.58	5	28	17.5
1	C	7.31	7.2	112	30.1
2	C	5.04	5.3	28	18.6
3	B	5.17	5.4	28	18.2
4	D	7.58	4.8	67	15.4
5	C	7.06	7.7	112	22.3
6	C	4.67	5.1	28	17.7
7	B	4.83	5.2	28	18.1
8	D	5.38	4.4	67	13.4
9	C	6.86	7.6	112	28.6
10	D	7.44	6.7	67	24.7
11	C	4.31	6.5	28	24
12	C	6.11	7.7	128	28.2
13	C	7.15	6.3	28	17.4
14	C	5.41	5.3	28	18.8
15	D	3.60	3.4	67	10
16	D	10.86	7.5	67	12.2
17	C	6.57	7.4	112	27.7
18	C	4.74	5.1	28	17.8
19	C	6.88	6.3	28	23.3
20	B	6.61	6.2	28	22.8
21	D	5.88	7.6	67	15.3
22	D	8.82	6.3	67	17.0
23	D	7.21	6.5	67	16.5
24	D	5.10	4.2	67	13.8
25	C	4.74	5.2	28	17.2
26	C	6.58	7.0	28	26.3
27	D	6.26	5.3	67	18.5
28	D	2.03	6.4	67	23.2
29	D	8.71	6.3	67	22.2
30	D	5.10	7.2	67	13.8
31	D	6.18	5.4	77	18.7
32	C	5.80	6.5	113.5	23.2
33	C	6.12	6.4	108	23.5
34	D	6.28	5	67	17.0
35	C	5.04	5.8	108	20.4
36	D	5.87	4.5	67	15.7
37	B	5.21	6.3	108	22.2
38	D	6.02	4.8	67	16.3
39	B	4.23	5.2	28	18.3
40	B	4.31	5.3	108	18.3
41	B	3.02	4.0	28	12.7
70	B	5.50	5.6	28	12.8
80	B	4.75	5.2	28	17.2
81	D	5.78	4.6	67	15.5
10-A	D	10.0	7.5	77	28.6

HAWAII STATE HIGHWAY DEPARTMENT

C.B. QUANTITIES, ALTERNATE PIPE
SCHEDULE & C.B. No.12 SPECIAL DETAIL

MOANALUA ROAD US-S-0720(3) UNIT 3
LUNALILO FREEWAY BU-072-1(2) UNIT 4
MIDDLE STREET BU-065-1(1) UNIT 3

Scale: As Noted

March 1959

SHEET No. 1 OF 5 SHEETS

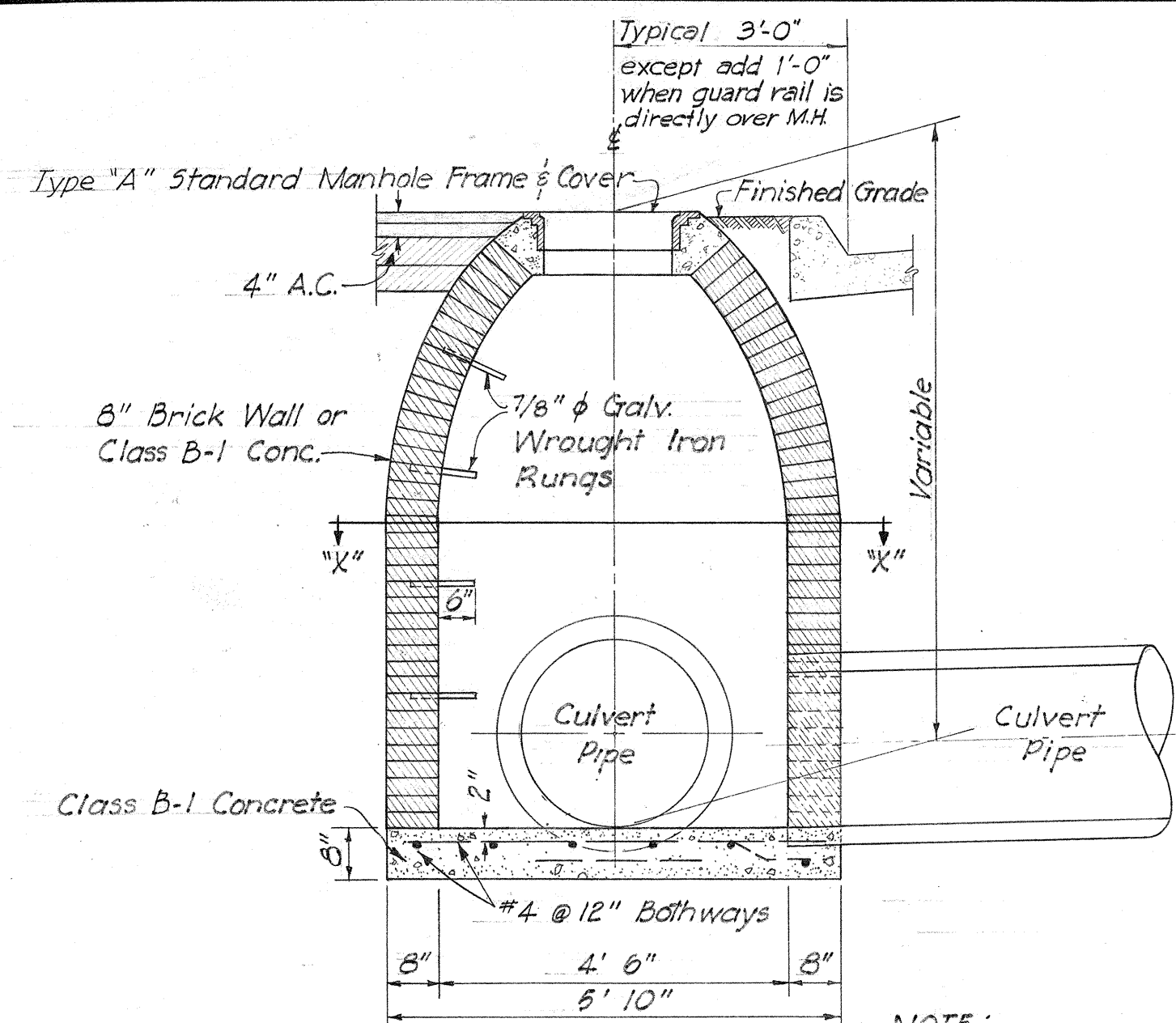
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\$174.26

\$161.25

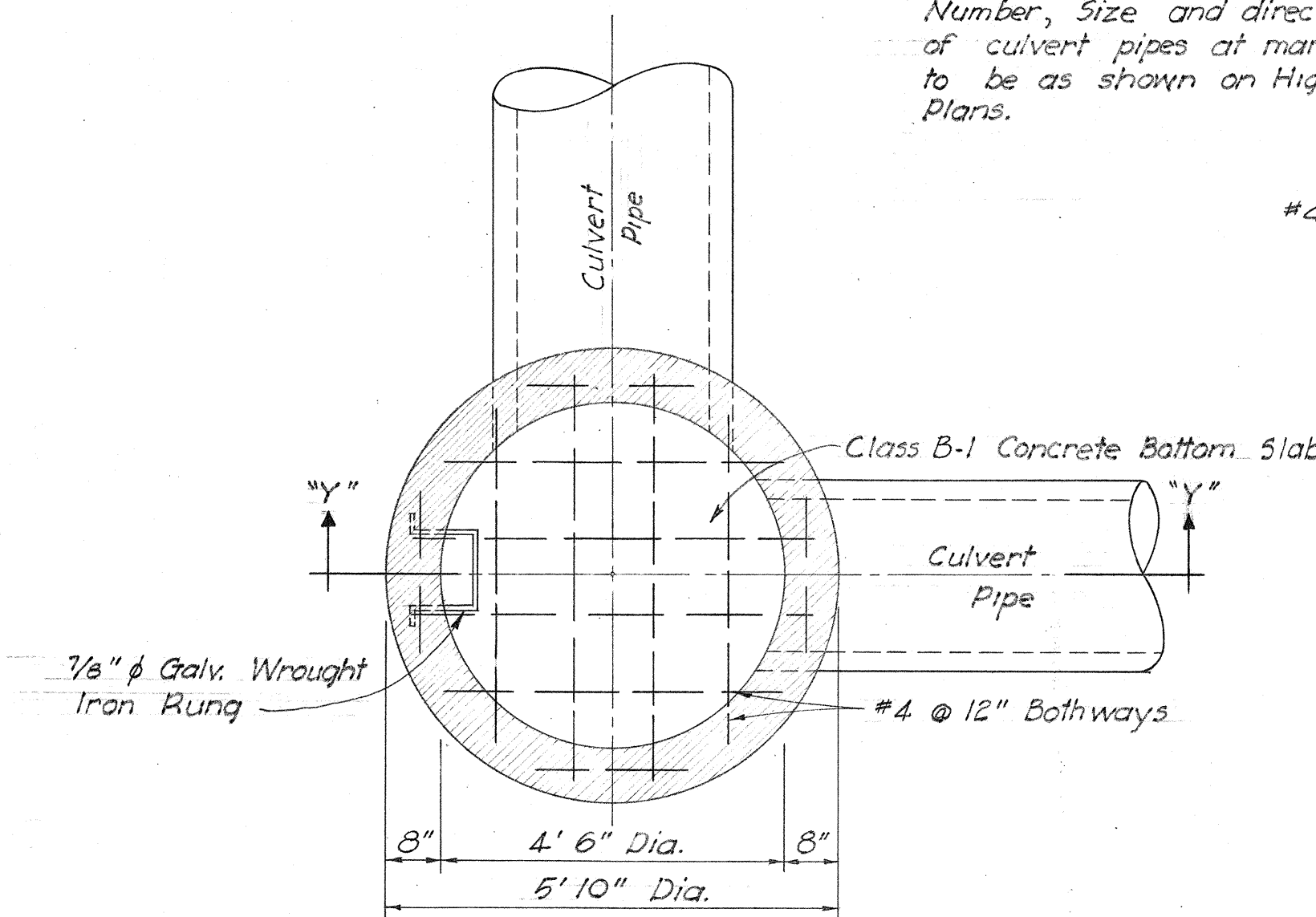
34

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	US-0720(3)	1960	17	79
		BU-072-1(2)	1960	27	118
		BU-065-1(1)	1960	26	118



SECTION "Y-Y"

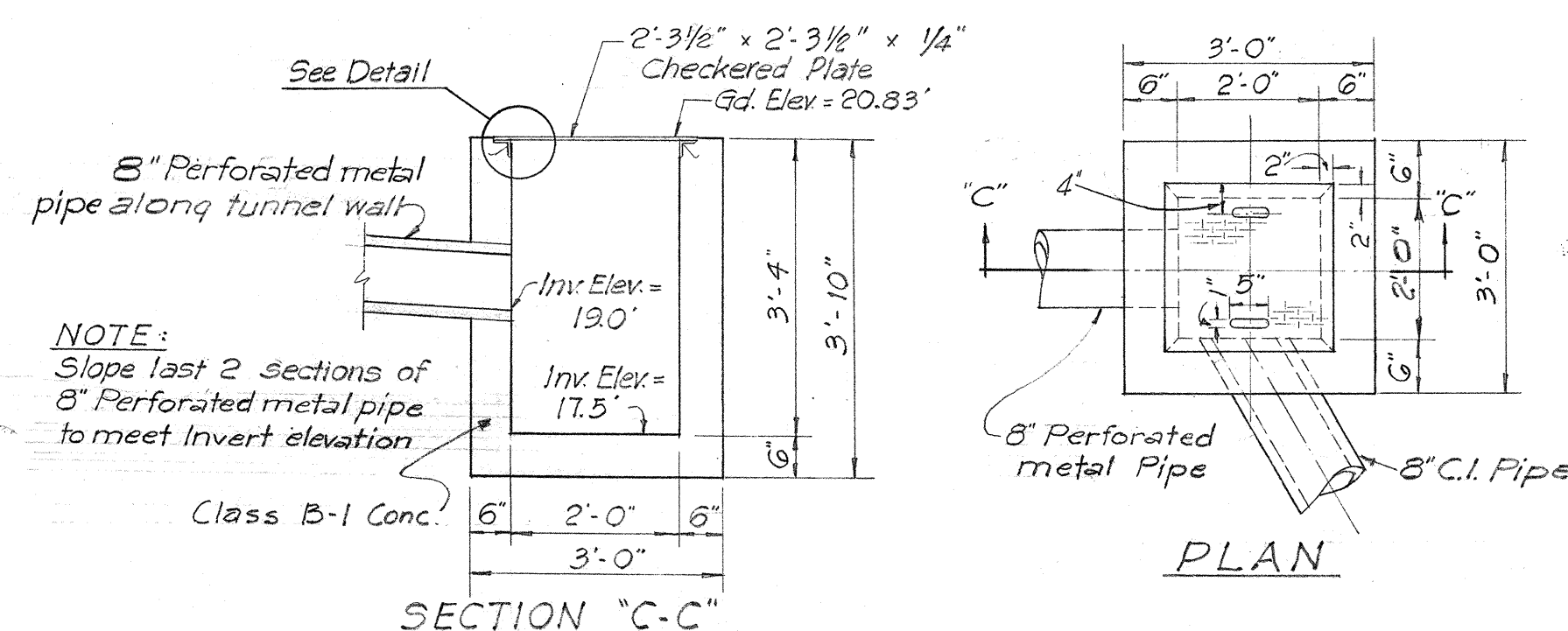
NOTE:
If Brick is used, exterior surface of wall shall be plastered with 1" thickness of 1:2 Cement Mortar.
Number, Size and direction of culvert pipes at manhole to be as shown on Highway Plans.



SECTION "X-X"

TYPE "D" STORM DRAIN MANHOLE

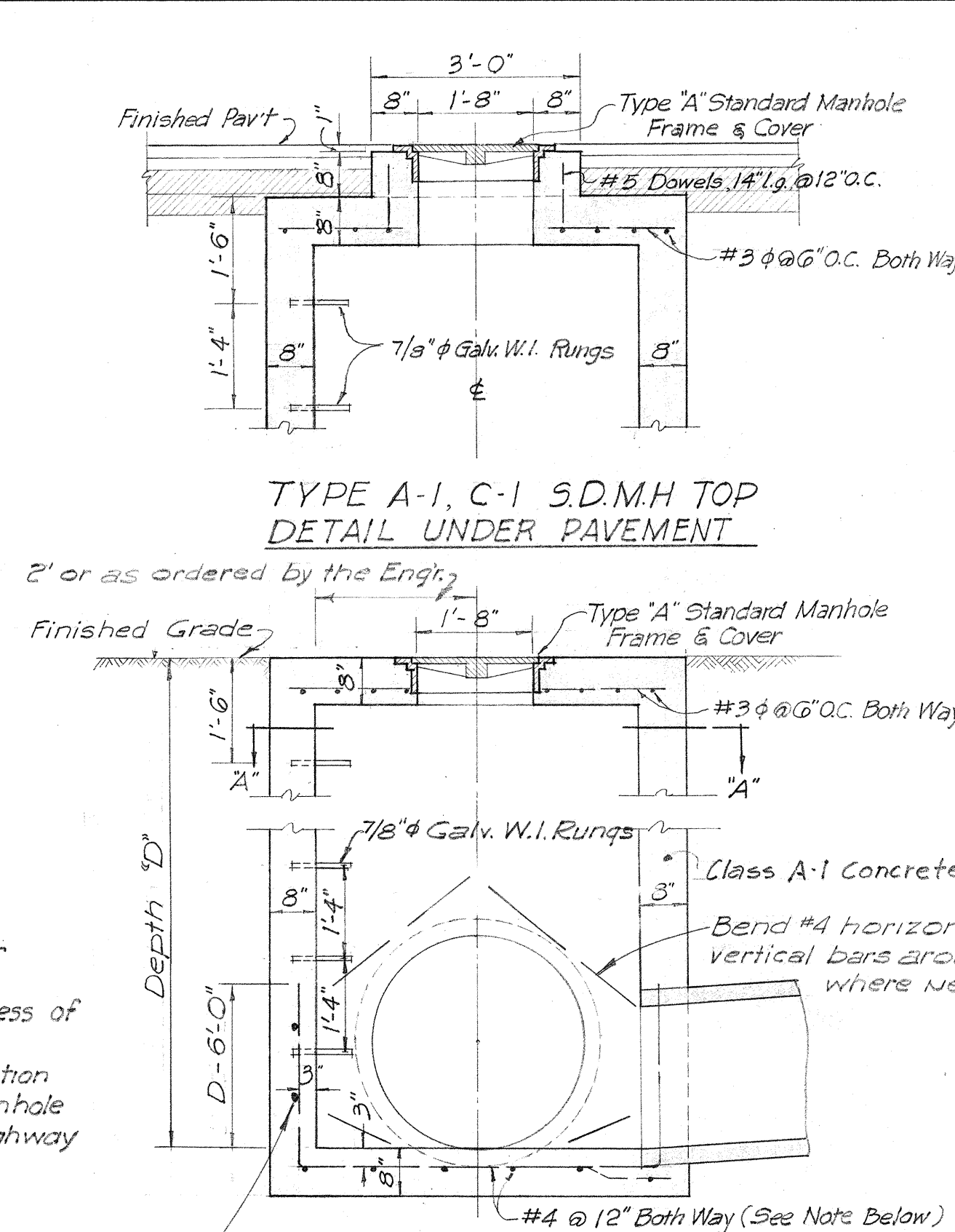
Scale: 1/2" = 1'-0"



SECTION "C-C"

HAND HOLE FOR 8" PIPE DRAIN
AT EAST PORTAL OF TUNNEL (STRUCTURE "C-D")

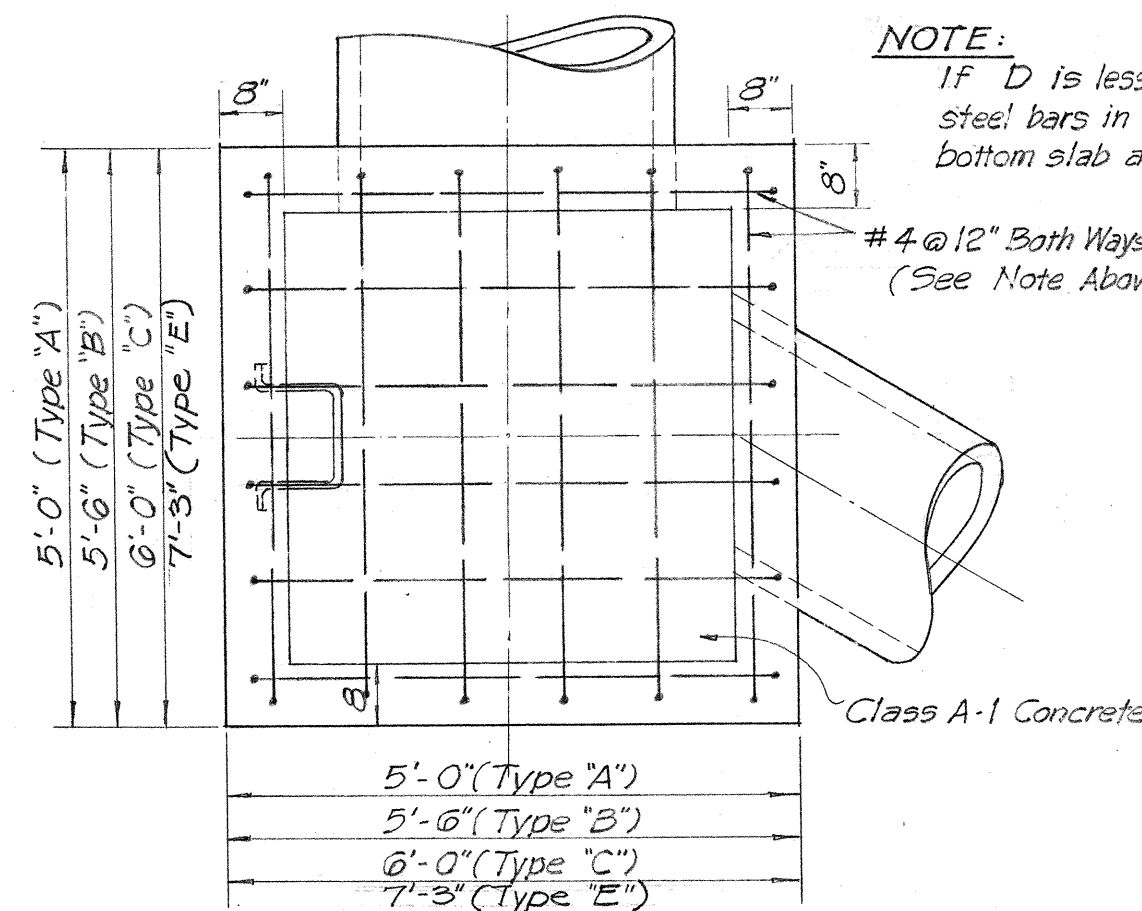
Scale: 1/2" = 1'-0"



TYPE A-1, C-1 S.D.M.H. TOP
DETAIL UNDER PAVEMENT

2" or as ordered by the Engr.

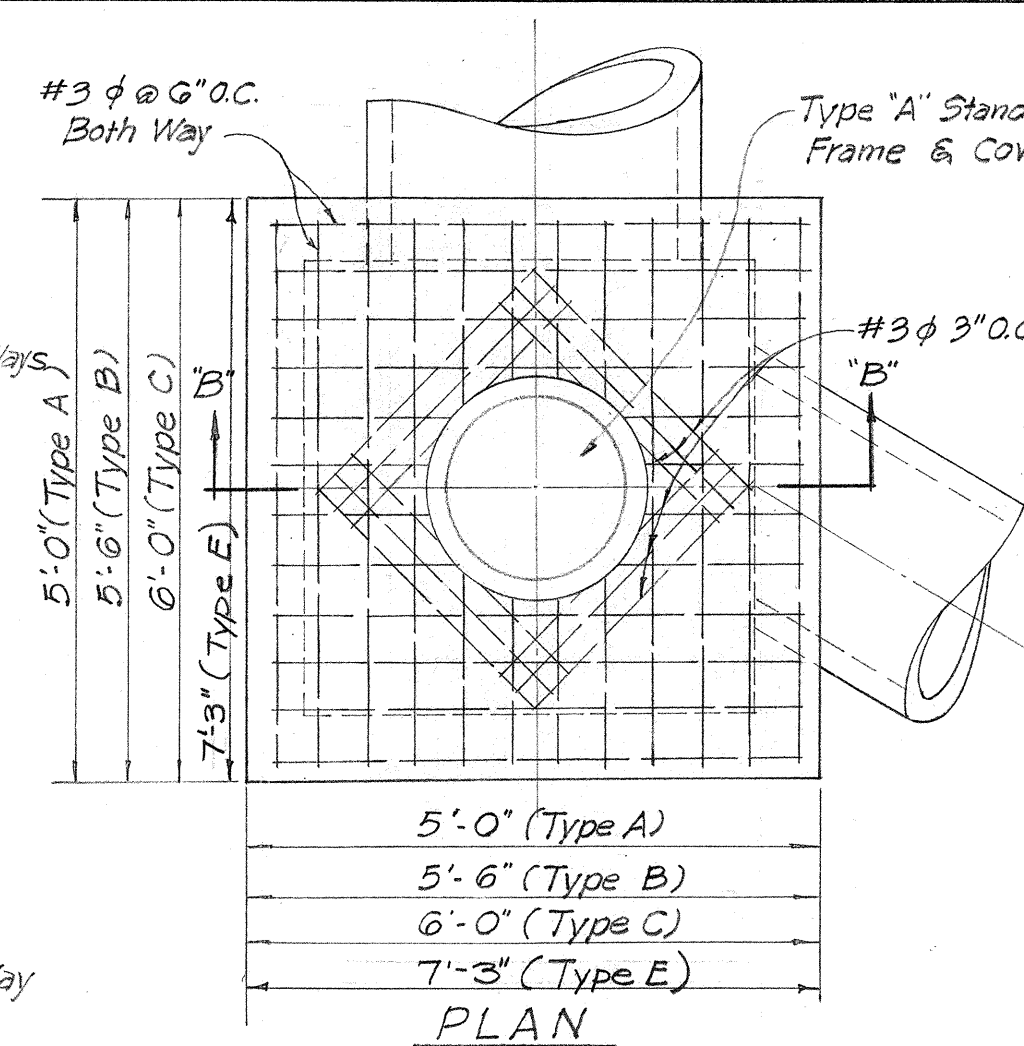
SECTION "B-B"
TYPE "A", "B" & "C" S.D.M.H.
UNDER UNPAVED AREAS



SECTION "A-A"

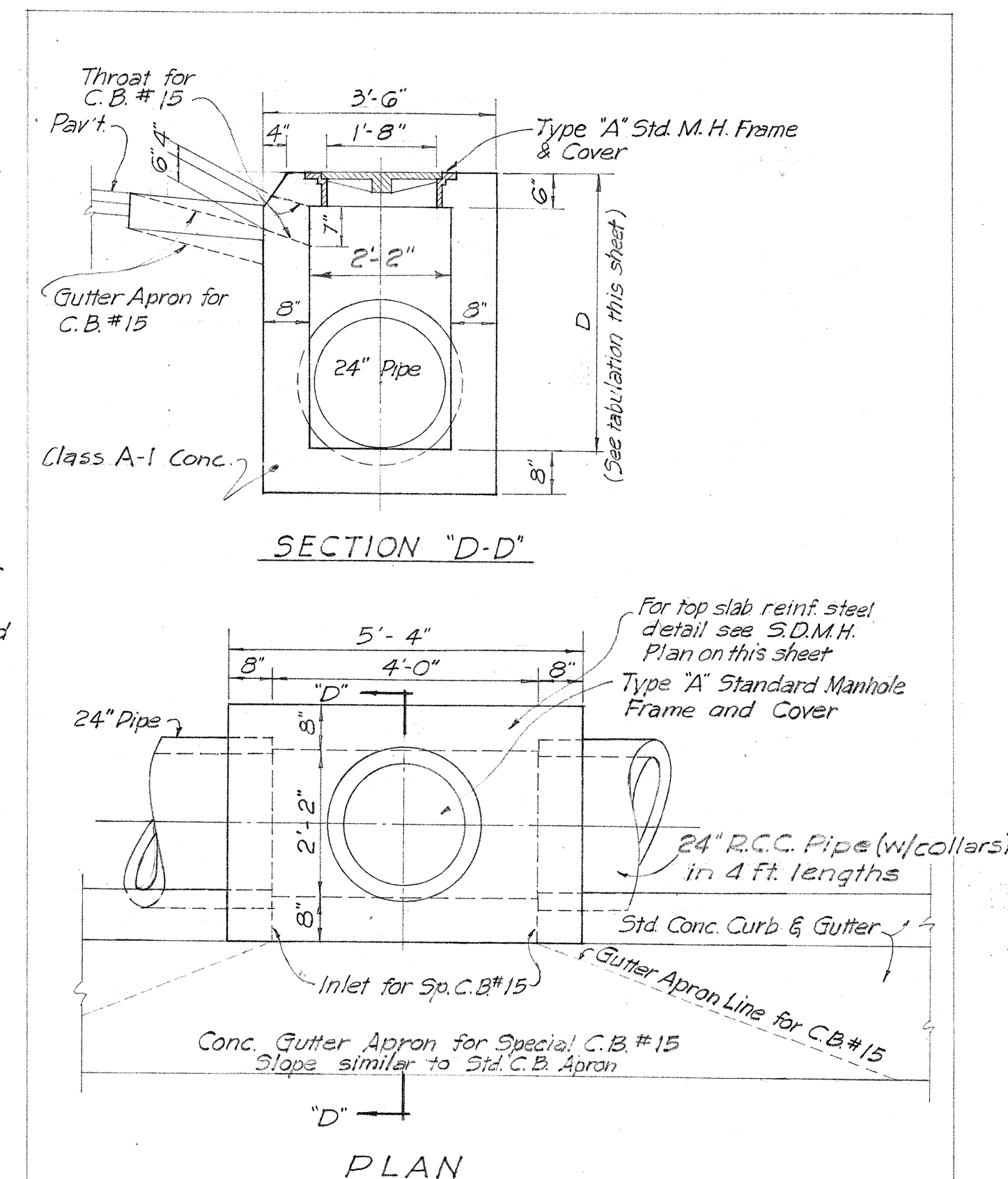
TYPE "A", "B", "C" & "E" S.D. MANHOLE

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



TYPE "E" S.D.M.H. TOP
IN MEDIAN STRIP
(Walls and Bottom Slab
similar to Types A, B & C)
SCALE: 1/2" = 1'-0"

See Cost Control Sheets
for Quantities



SECTION "D-D"

PLAN
S.D. MANHOLE NO. 6, 7 & C.B. NO. 15

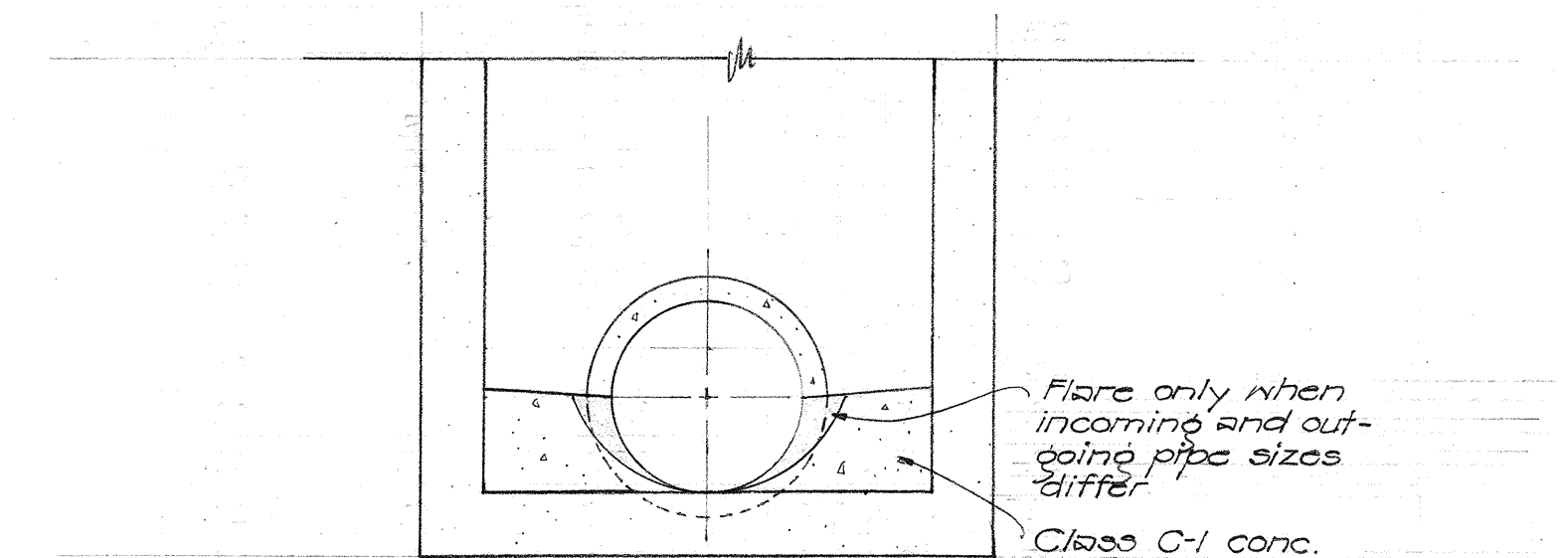
Scale: 1/2" = 1'-0"

NOTE:
C.B. #15 details are similar to that of S.D.M.H. #6 & 7
except as shown on Plan & Section above

TABULATION OF S.D.M.H.

SDMH No.	TYPE	D ft.	ESTIMATED QUANTITIES			
			CL. A-1 CONC. c.y.	CL. B-1 CONC. c.y.	REINF. STEEL lbs.	STR. EXC. c.y.
1	E	6.11	4.7		77	80.6
2	D	6.85		0.7	32	13.4
3	E	6.7	3.5		77	81.2
4	C-1	12.61	7.3		278	82.0
5	E	6.91	4.4		61	16.6
6	SP	5.83	2.3		32	8.5
7	SP	4.44	2.1		32	6.6
8	A-1	8.25	4.3		151	12.7
9	C	8.1	5.4		175	80.8
10	D	7.20		0.7	32	14.1
11	D	6.88		0.7	32	13.5
12	D	7.00		0.7	32	13.7
13	A-1	9.36	4.4		157	18.0
14	D	6.55		0.7	32	12.5
14-A	D	6.04		0.7	32	14.5
15	D	7.49		0.7	32	14.5
16	D	5.20		0.7	32	10.5
17	D	7.68		0.7	32	16
18	D	6.41		0.7	32	16
19	A	7.20	3.6		37	14.4
20	A	6.73	3.3		37	13.7
35	D	7.68		0.7	32	14.7
36	A	8.25	4.7		191	17.4
37	A	8.61	7.1		137	16.8
1-A	D	6.14		0.7	32	12.14
E-A	D	6.0		0.7	32	10.7

NOTE: Provide Type "A" Standard Manhole Frames and Covers for all manholes in above tabulation.

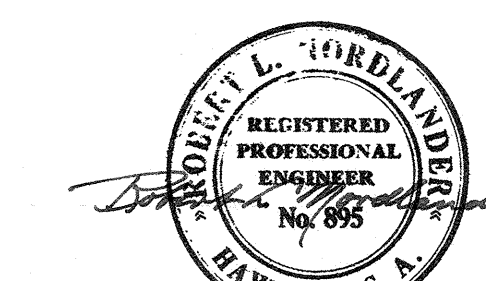


DETAIL OF PAVED
INVERT FOR S.D.M.H.

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

NOTE: Paved invert required
only where there is a continuous
flow at the invert without drop.

DATE	12-59
DESIGNED BY	W.L.G.
DRAWN BY	W.L.G.
CHECKED BY	W.L.G.
NOTED BY	W.L.G.
QUANTITIES CHECKED BY	W.L.G.
NO.	



BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers

HAWAII STATE HIGHWAY DEPARTMENT STATE OF HAWAII	
STORM DRAIN MANHOLE DETAILS	
MOANALUA ROAD	US-S-0720(3) UNIT 3
LUNALILO FREEWAY	BU-072-1(2) UNIT 4
MIDDLE STREET	BU-065-1(1) UNIT 3

SHEET NO. 2 OF 5 SHEETS

8526.17 \$174.27 \$161.26 35