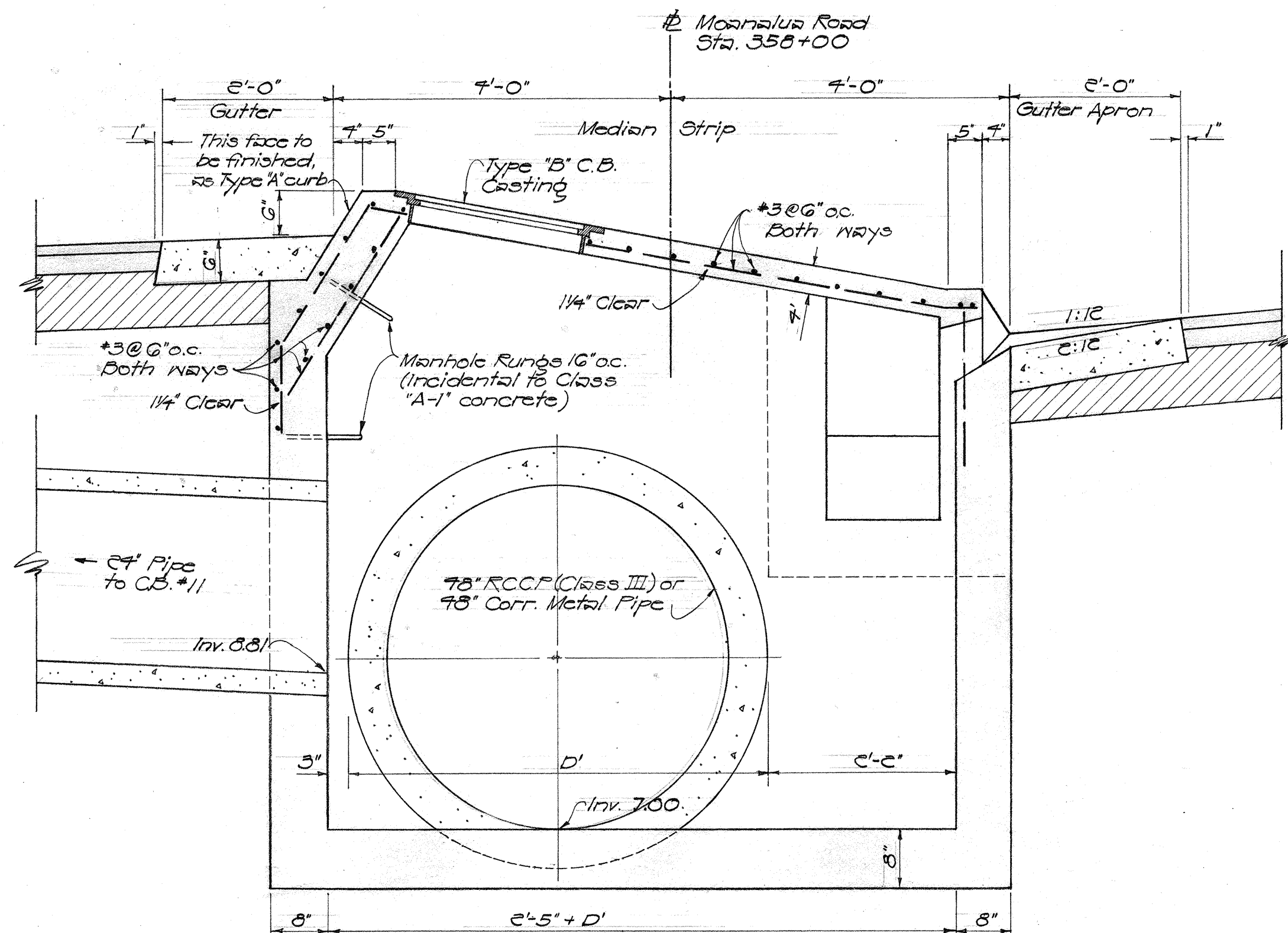




SPECIAL DETAIL SECTION
OF C.B. #12
Scale: 3/4" = 1'-0"

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 CONC. PIPE	ALT. 'A' CONC. PIPE	ALT. 'B' CONC. PIPE
CB 3-A	Exist. CB	80	C4-IV	C4-IV
CB 4-A	SDMH 14	188	3G-III	4C-IV
CB 5-A	CB 6-A	70	C4-IV	C4-IV
CB 6-A	5x3' CBC	48	C4-IV	C4-IV
CB 1	SDMH 14	226	3G-III	3G-IV
CB 2	SDMH 1	32	C4-IV	C4-IV
CB 3	SDMH 1	30	C4-IV	C4-IV
CB 4	CB 1-A	140	C4-III	C4-IV
CB 5	CB 1	106	3G-III	3G-IV
CB 6	SDMH 3	32	C4-IV	C4-IV
CB 7	SDMH 3	30	C4-IV	C4-IV
CB 8	SDMH 2	146	C4-III	C4-IV
CB 9	CB 5	104	3G-III	3G-IV
CB 10	CB 5	122	3G-III	3G-IV
CB 10-A	CB 10	20	3G-III	3G-IV
CB 11	CB 12	32	C4-IV	C4-IV
CB 12	SDMH 3	270	4B-III	5A-IV
CB 14	CB 13	40	C4-IV	C4-IV
CB 15	SDMH 7	25	C4-III	NONE
CB 16	SDMH 4	22	C4-IV	3G-IV
"	"	80	C4-III	"
CB 17	SDMH 5	106	4B-III	4B-IV
CB 18	CB 17	32	C4-IV	C4-IV
CB 19	SDMH 8	24	C4-IV	C4-IV
CB 20	CB 19	20	C4-IV	C4-IV
CB 21	SDMH 10	80	C4-IV	C4-IV
CB 22	SDMH 8	60	C4-IV	C4-IV
"	"	12	C4-III	"
CB 23	CB 22	134	C4-III	C4-IV
CB 24	SDMH 11	28	C4-IV	C4-IV
CB 25	CB 26	32	C4-IV	C4-IV
CB 26	SDMH 7	106	3G-III	3G-IV
CB 27	SDMH 12	8	1B-III	1B-IV
CB 28	SDMH 13	16	1B-III	1B-IV
CB 29	CB 28	28	1B-III	1B-IV
CB 30	SDMH 14	37	C4-IV	C4-IV
CB 31	SDMH 15	148	C4-IV	C4-IV
CB 32	SDMH 14A	114	3G-III	3G-IV
CB 33	CB 32	36	C4-IV	C4-IV
CB 34	SDMH 17	18	C4-IV	C4-IV
CB 35	SDMH 15	28	C4-IV	C4-IV
CB 36	SDMH 19	70	C4-IV	C4-IV
CB 37	SDMH 19	120	C4-III	C4-IV
CB 38	SDMH 20	40	C4-IV	C4-IV
CB 39	SDMH 20	56	C4-IV	C4-IV
CB 40	SDMH 30	120	C4-III	C4-IV
CB 41	Outlet	6	C4-III	C4-IV
CB 72	SDMH 35	58	C4-IV	C4-IV
CB 80	SDMH 37	30	C4-III	C4-IV
CB 81	SDMH 6	100	24-III	NONE
SDMH 1	CB 1-A	70	4B-IV	5A-IV
"	"	125	4B-III	"
SDMH 2	CB 4	110	C4-IV	C4-IV
SDMH 3	SDMH 1	220	4B-III	5A-IV
SDMH 4	CB 10	112	3G-IV	3G-IV
"	"	52	3G-III	"
SDMH 5	CB 12	145	4B-III	4B-IV
SDMH 6	CB 15	26	C4-III	NONE
SDMH 7	CB 21	120	C4-III	NONE
SDMH 8	CB 16	26	C4-IV	C4-IV
"	"	54	C4-III	"
SDMH 9	CB 17	106	3G-IV	4C-IV
SDMH 10	SDMH 9	33	C4-IV	C4-IV
SDMH 11	CB 25	17	C4-III	C4-IV
SDMH 13	CB 23	20	C4-IV	C4-IV
"	"	130	C4-III	"
SDMH 14	CB 26	246	3G-IV	3G-IV
SDMH 14A	SDMH 14	120	3G-III	3G-IV
SDMH 15	SDMH 16	20	C4-IV	C4-IV
SDMH 16	CB 32	36	C4-IV	C4-IV

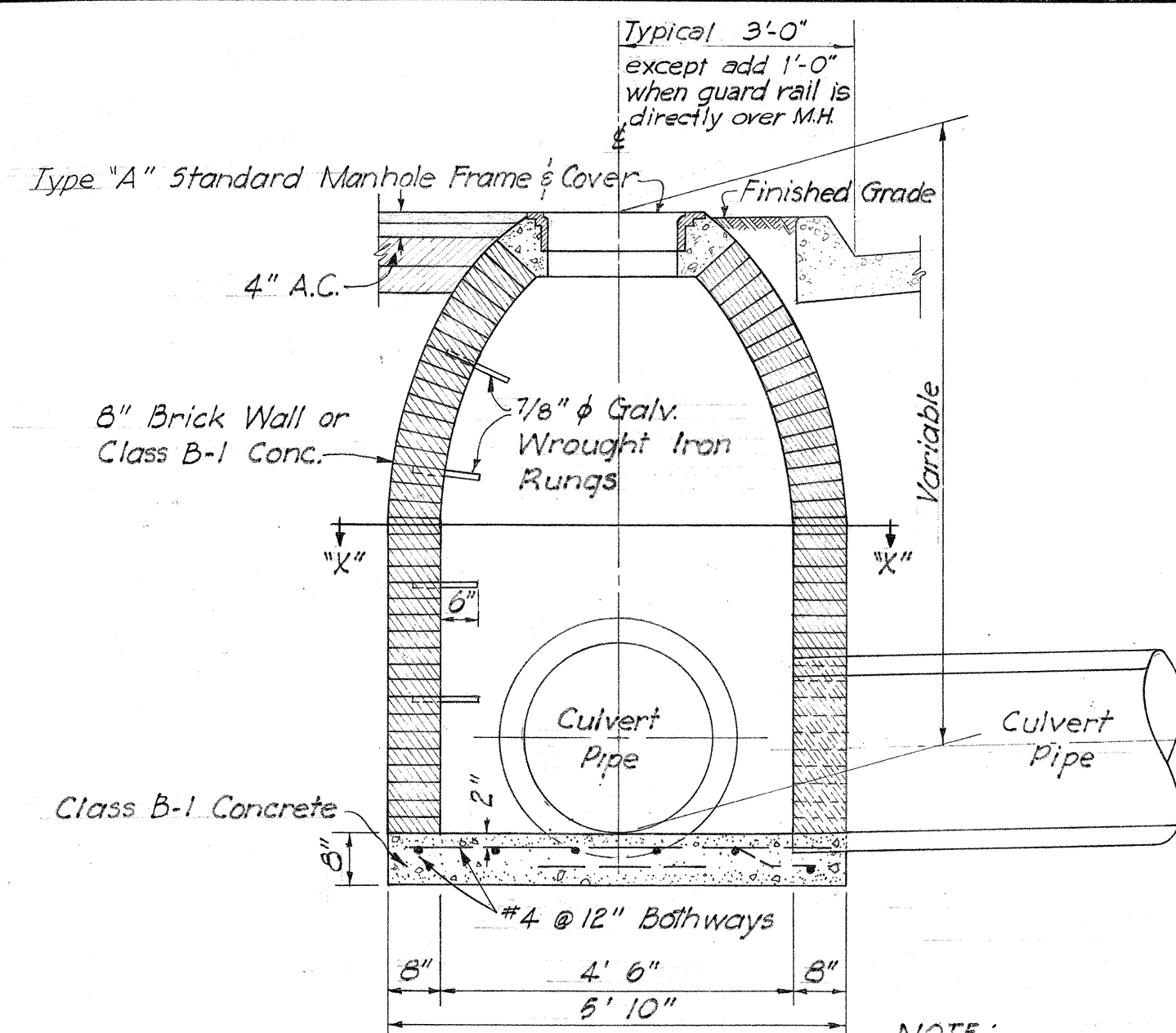
SUMMARY OF C.B. QUANTITIES

C.B. NO.	TYPE	D. BOT. OF TOP SLAB TO INV. FT.	ESTIMATED QUANTITIES	REIN. CONC. STEEL LB.	STR. EXC. CY.
1-A	D	16.35	16.7	88	57.1
3-A	B	11.72	8.2	28	37.7
4-A	C	4.31	5.2	11.2	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	11.2	30.1
2	C	5.07	5.3	28	18.6
3	B	5.17	5.4	28	18.2
4	D	7.58	4.8	27	15.4
5	C	7.06	7.7	11.2	22.3
6	C	4.27	5.1	28	17.7
7	B	4.83	5.2	28	18.1
8	D	5.38	4.4	27	13.4
9	C	6.86	7.6	11.2	28.6
10	D	7.47	6.7	27	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	3.20	3.4	27	10
16	D	10.86	7.5	27	12.2
17	C	6.57	7.4	11.2	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	4.6	27	15.3
22	D	8.82	6.3	27	17.0
23	D	2.21	6.5	27	16.5
24	D	5.10	4.2	27	13.8
25	C	7.74	5.2	28	17.2
26	C	6.58	7.0	28	26.3
27	D	6.26	5.3	27	18.5
28	D	2.03	6.4	27	23.7
29	D	8.71	6.3	27	22.2
30	D	5.10	4.2	27	13.8
31	D	6.18	5.4	27	18.7
32	C	5.80	6.5	113.5	23.2
33	C	6.12	6.4	108	23.5
34	D	6.38	5	27	17.0
35	C	5.07	5.8	108	20.4
36	D	5.87	4.5	27	15.7
37	B	5.21	6.3	108	22.2
38	D	6.02	4.8	27	16.3
39	B	4.23	5.2	28	18.3
40	B	4.31	5.3	108	18.3
41	B	3.09	4.0	28	12.7
72	B	5.50	5.6	28	12.8
80	B	4.75	5.2	28	17.2
81	D	5.78	4.6	27	15.5
10-A	D	10.0	7.5	27	28.6

SDMH 18	SDMH 17	108	C4-IV	C4-IV
SDMH 19	CB 33	210	C4-III	C4-IV
SDMH 20	CB 37	28	C4-III	C4-IV
SDMH 35	SDMH 36	158	C4-III	C4-IV
SDMH 36	SDMH 37	140	C4-IV	C4-IV
"	"	34	C4-III	"
SDMH 37	CB 81	24	C4-IV	C4-IV
Conc. Channel	SDMH 2-A	128	C4-III	24-144
CDI 1	CB 16	14	1B-III	1B-IV
CDI 2	CB 22	10	1B-III	1B-IV
CDI 3	CB 31	16	1B-III	1B-IV
CDI 4	SDMH 18	40	C4-III	C4-IV
CDI 5	CDI 6 (2)	70	C4-IV	C4-IV
CDI 6	Outlet	38	C4-IV	3G-IV
CDI 7	CB 72	38	C4-IV	C4-IV

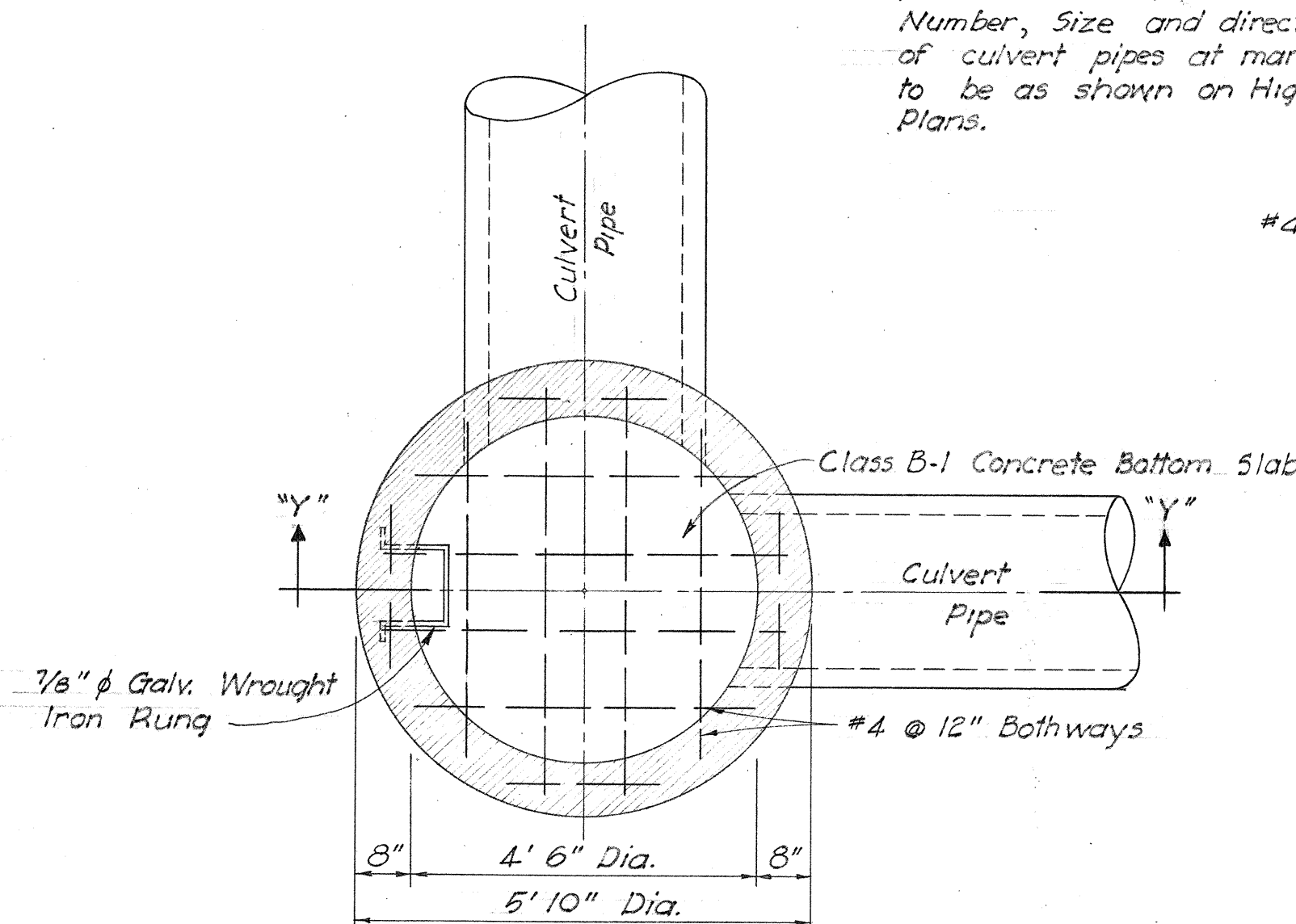
HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII
C.B. QUANTITIES, ALTERNATE PIPE
SCHEDULE & C.B. No. 12 SPECIAL DETAIL
MOANALUA ROAD US-S-0720(3) UNIT 3
LUNALILO FREEWAY BU-072-1(2) UNIT 4
MIDDLE STREET BU-065-1(1) UNIT 3
Scale: As Noted March 1959

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	1060	17	79	
		1060	27	118	
		1060	26	115	



SECTION "Y-Y"

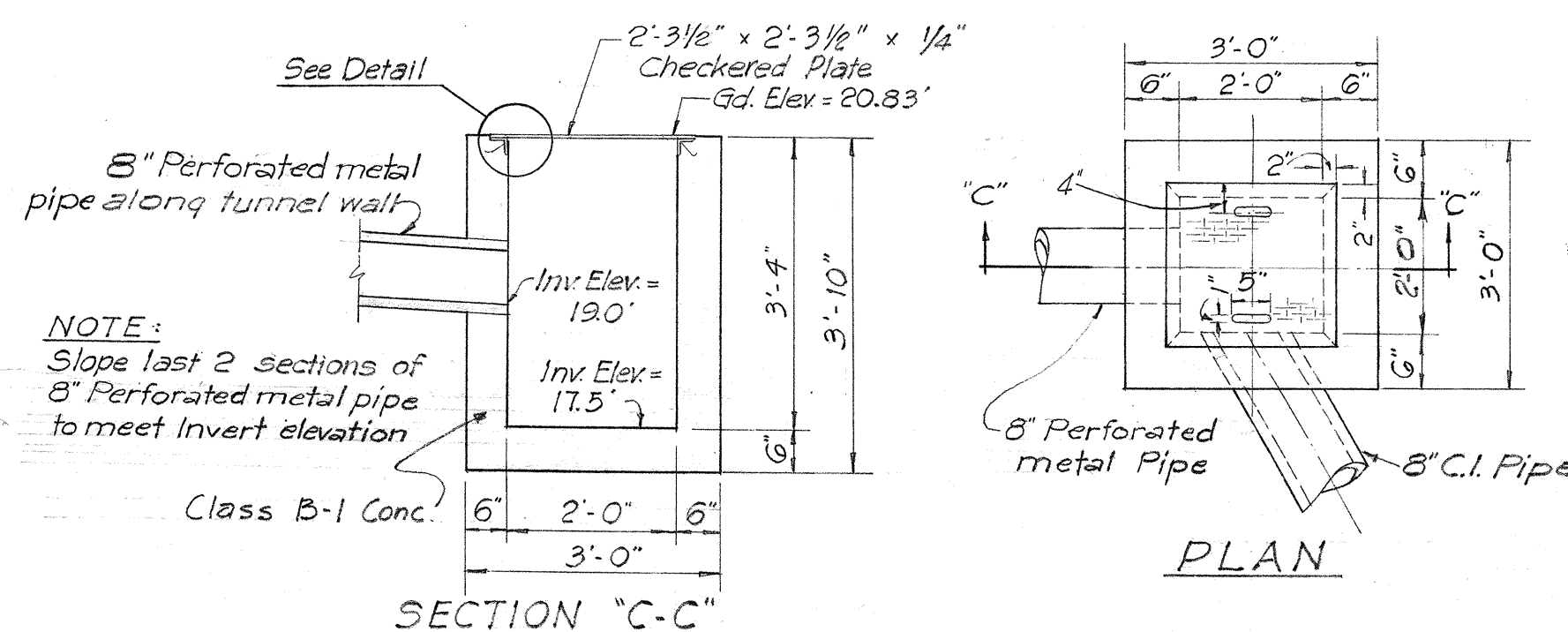
NOTE:
If Brick is used, exterior surface of wall shall be plastered with 1" thickness of 1:2 Cement Mortar.
Number, Size and direction of culvert pipes at manhole to be as shown on Highway Plans.



SECTION "X-X"

TYPE "D" STORM DRAIN MANHOLE

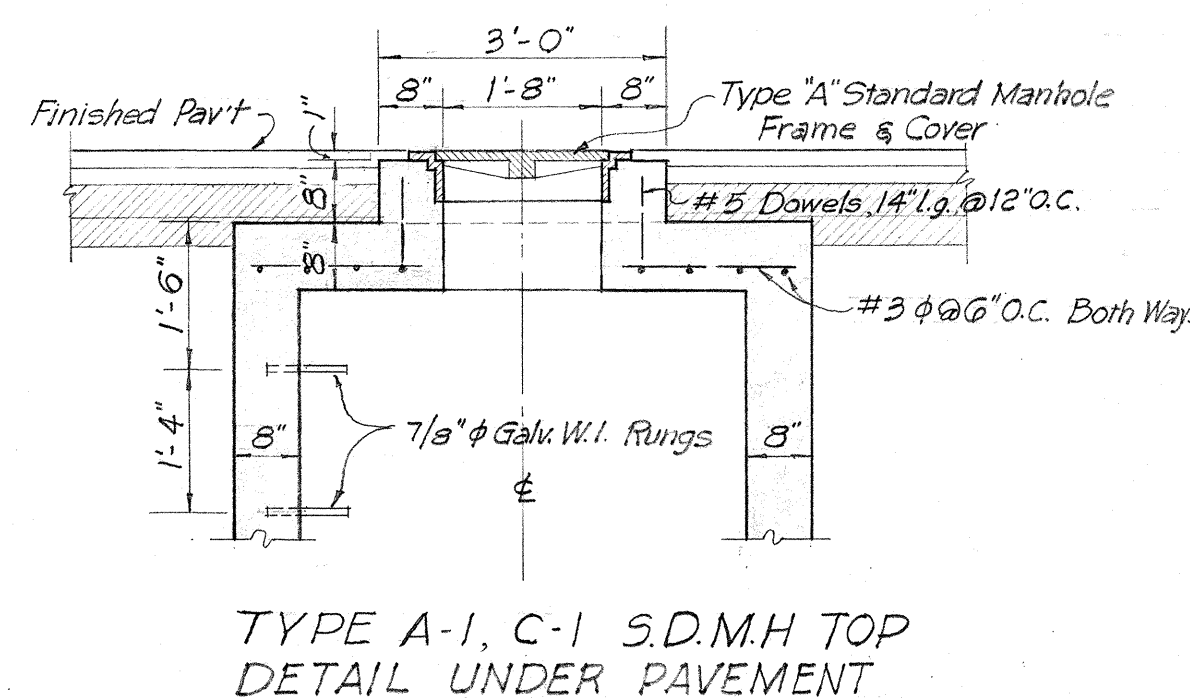
Scale: 1/2" = 1'-0"



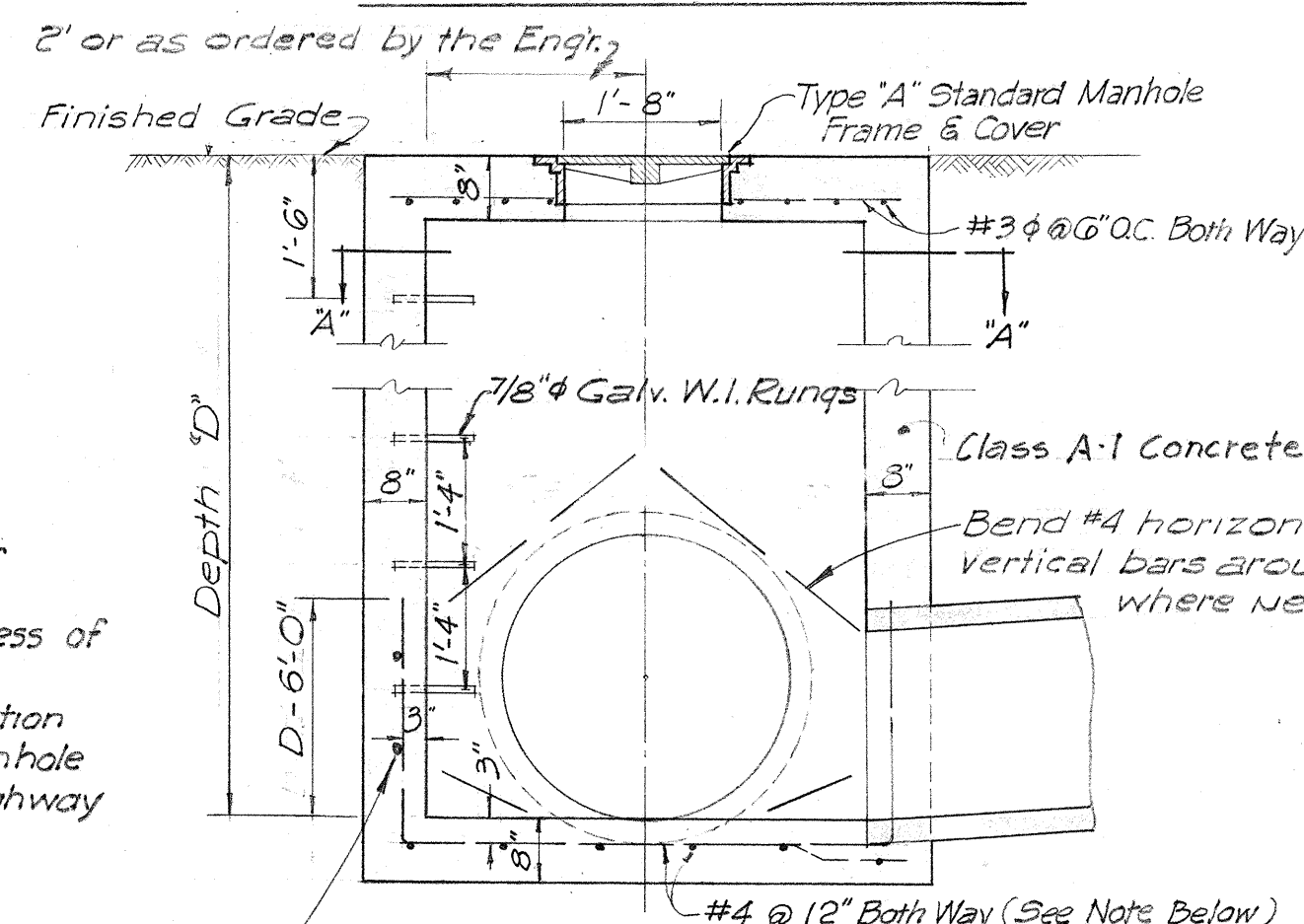
SECTION "C-C"

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

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

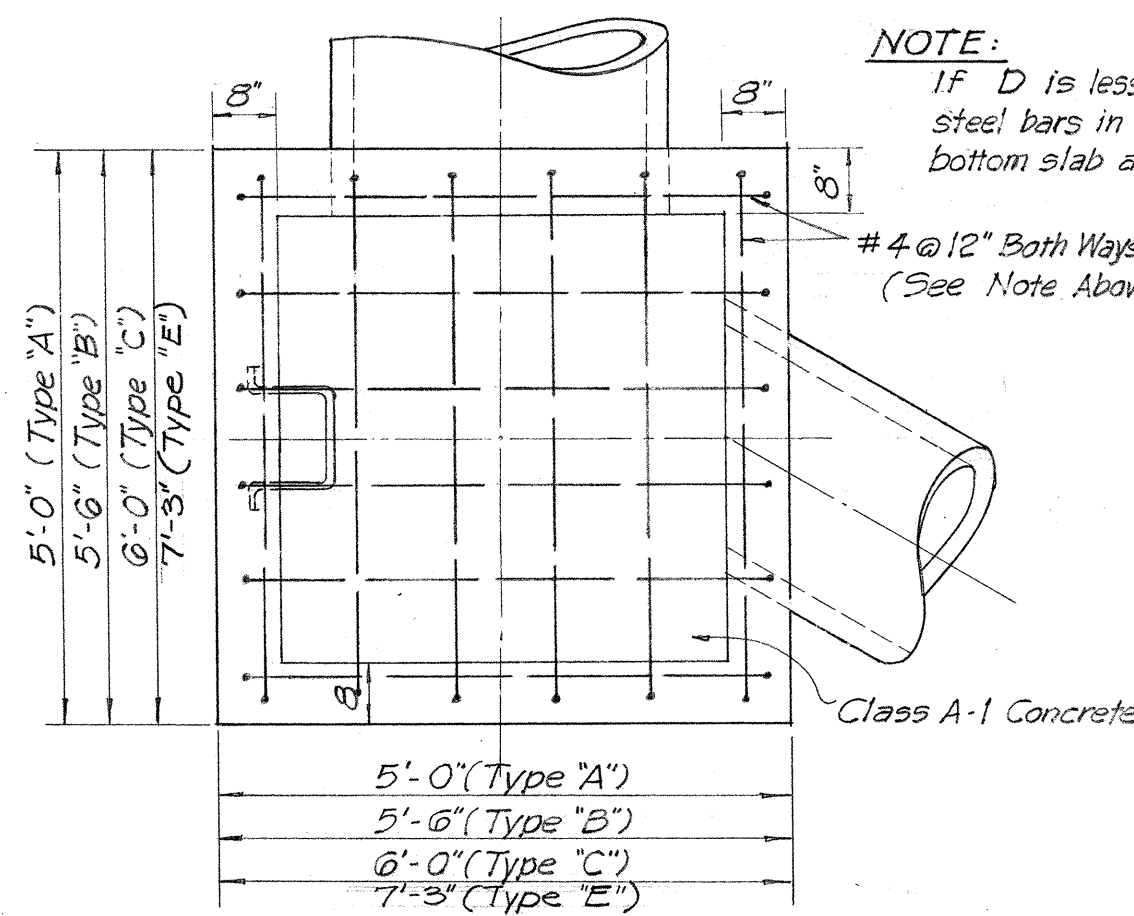


TYPE A-1, C-1 S.D.M.H. TOP
DETAIL UNDER PAVEMENT



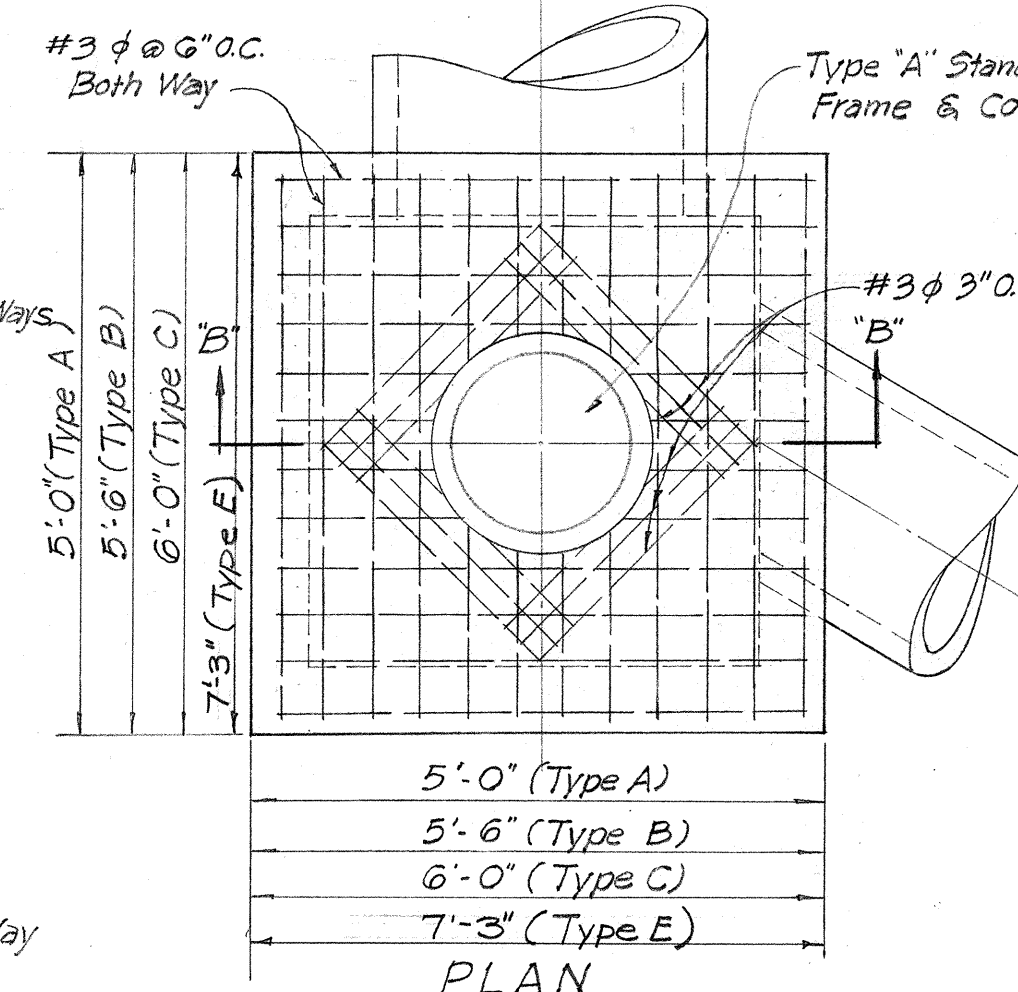
SECTION "B-B"
TYPE "A", "B" & "C" S.D.M.H.
UNDER UNPAVED AREAS

NOTE:
If 'D' is less than 8, reinf. steel bars in 4 sides and bottom slab are not required (See Note Above).



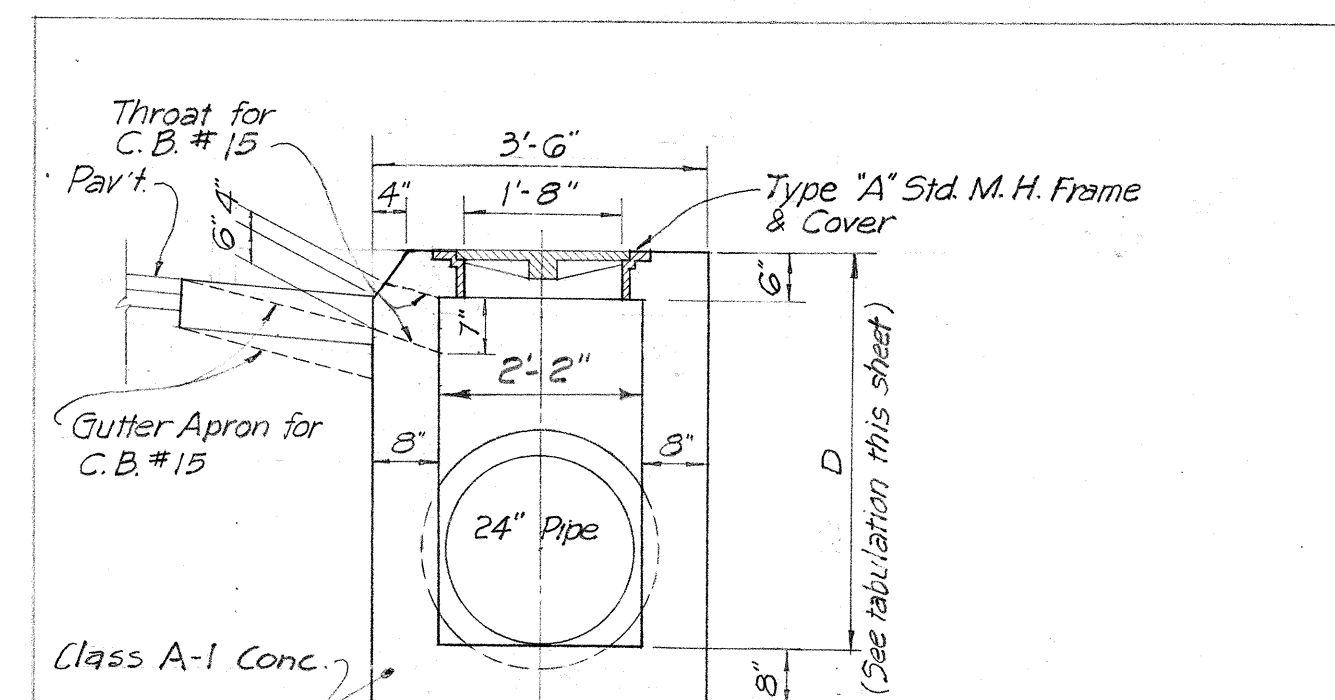
SECTION "A-A"
TYPE "A", "B", "C" & "E" S.D. MANHOLE

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

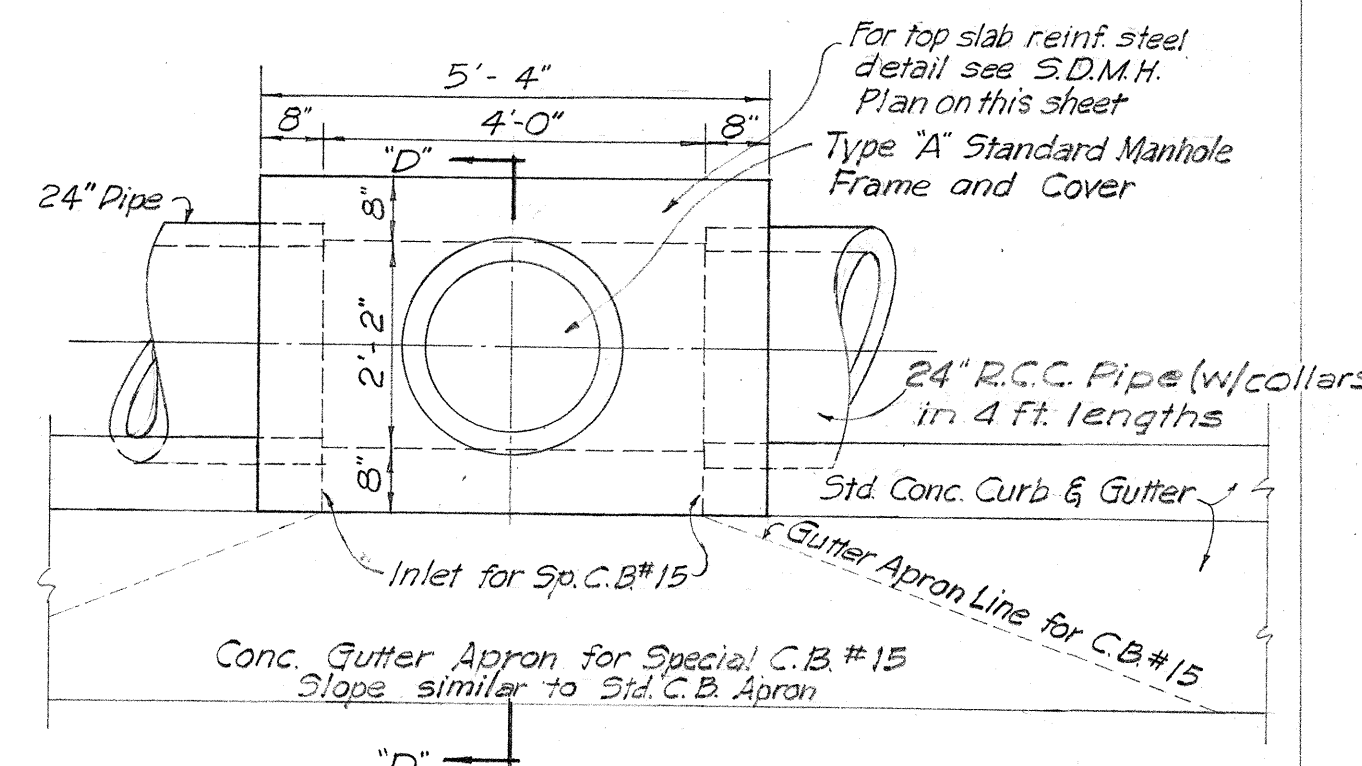


TYPE "E" S.D.M.H. TOP
IN MEDIAN STRIP
(Walls and Bottom Slab similar to Types A, B & C)
SCALE: 1/2" = 1'-0"

See Cost Control Sheets
for Quantities



SECTION "D-D"



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

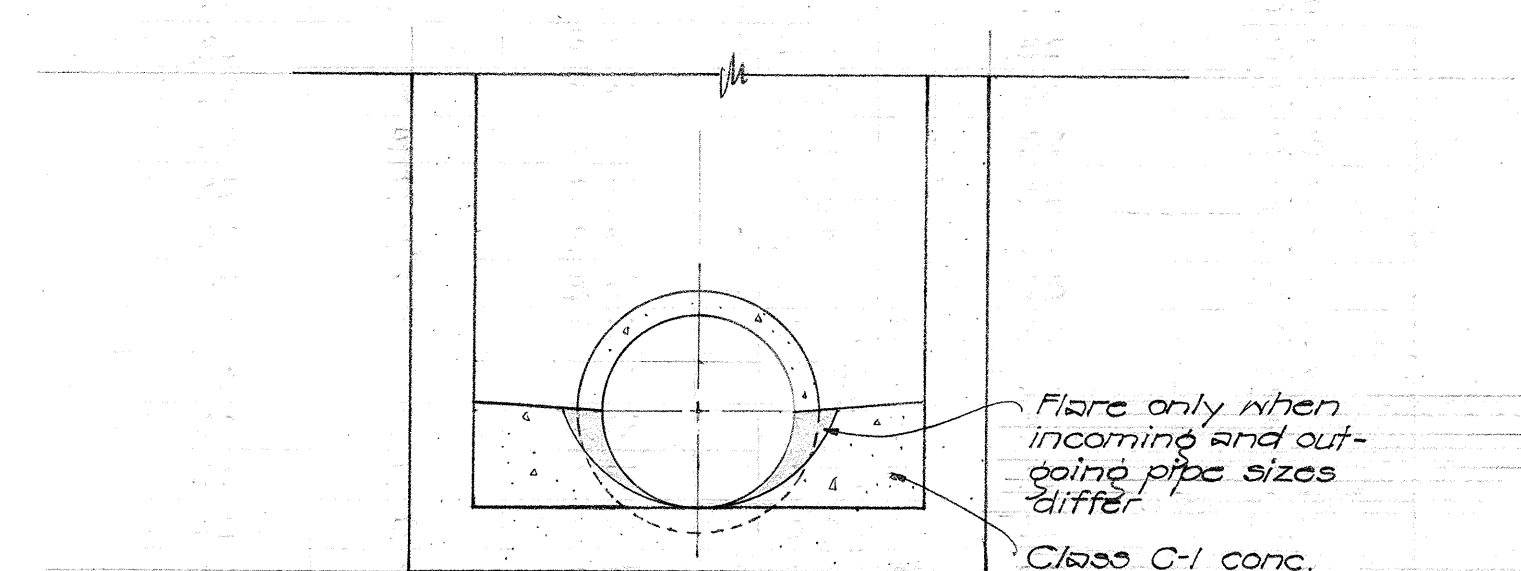
Scale: 1/2" = 1'-0"

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	21.2
4	C-1	12.61	7.3		278	22.0
5	E	6.51	4.4		61	12.6
6	SP.	5.25	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		125	20.8
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	6.35		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		32	14.4
20	A	6.73	3.3		32	13.7
35	D	7.68		0.7	32	14.7
36	A	8.25	4.7		171	17.4
37	A	8.61	4.1		137	16.8
1-A	D	6.14		0.7	32	12.14
E-A	D	6.0		0.7	32	10.7

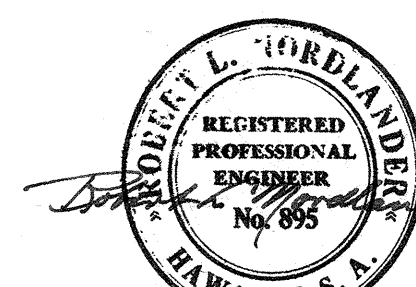
NOTE: Provide Type "A" Standard Manhole Frames and Covers for all manholes in above tabulation.



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.



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

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

STORM DRAIN MANHOLE DETAILS

MOANALUA ROAD US-5-0720(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

\$526.17 \$174.27 \$161.26