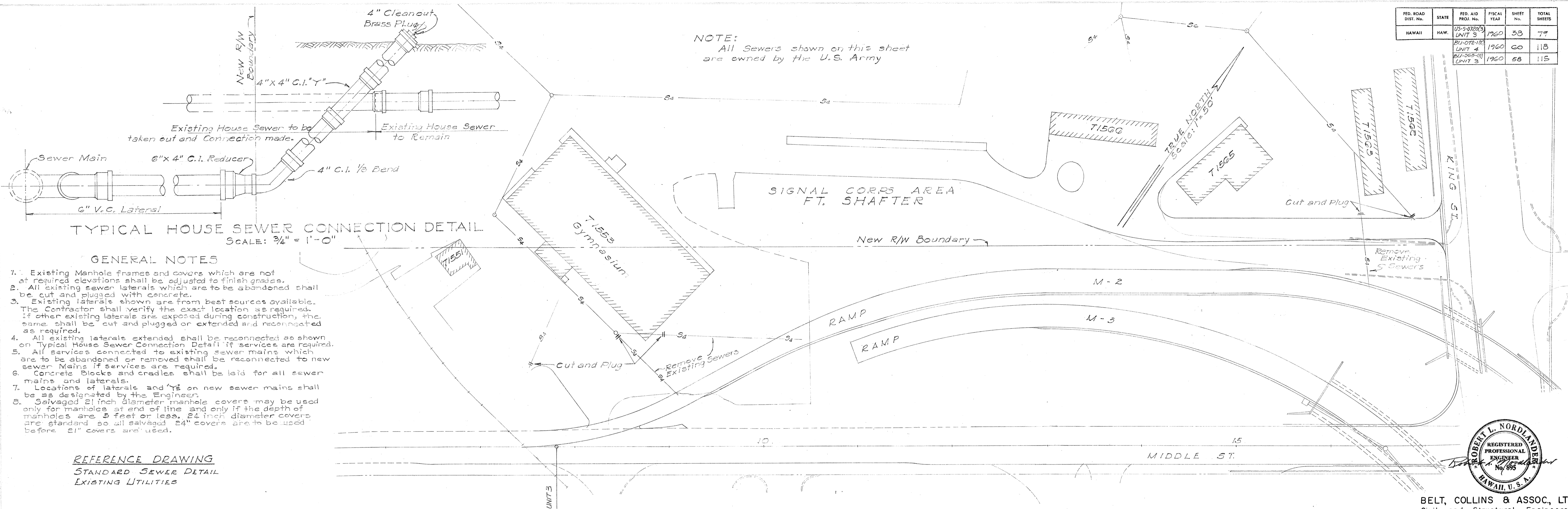


FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	US-5072(3) UNIT 3	1960	58	77
		BU-072-10 UNIT 4	1960	60	118
		BU-350(1) UNIT 3	1960	58	118

NOTE:
All Sewers shown on this sheet are owned by the U.S. Army

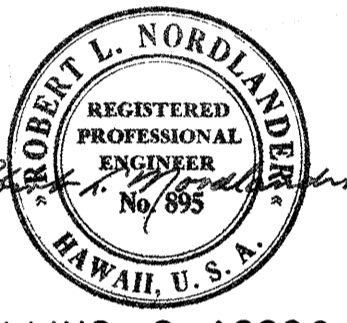


TYPICAL HOUSE SEWER CONNECTION DETAIL
SCALE: 3/4" = 1'-0"

GENERAL NOTES

- Existing Manhole frames and covers which are not at required elevations shall be adjusted to finish grades.
- All existing sewer laterals which are to be abandoned shall be cut and plugged with concrete.
- Existing laterals shown are from best sources available. The Contractor shall verify the exact location as required. If other existing laterals are exposed during construction, the same shall be cut and plugged or extended and reconnected as required.
- All existing laterals extended shall be reconnected as shown on Typical House Sewer Connection Detail if services are required.
- All services connected to existing sewer mains which are to be abandoned or removed shall be reconnected to new sewer Mains if services are required.
- Concrete Blocks and cradles shall be laid for all sewer mains and laterals.
- Locations of laterals and 1/2" on new sewer mains shall be as designated by the Engineer.
- Salvaged 21 inch diameter manhole covers may be used only for manholes at end of line and only if the depth of manholes are 5 feet or less. 24 inch diameter covers are standard so all salvaged 24" covers are to be used before 21" covers are used.

REFERENCE DRAWING
STANDARD SEWER DETAIL
EXISTING UTILITIES



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

APPROVED:
[Signature]
SEWER SYSTEM SUPT. DATE 7-22-59

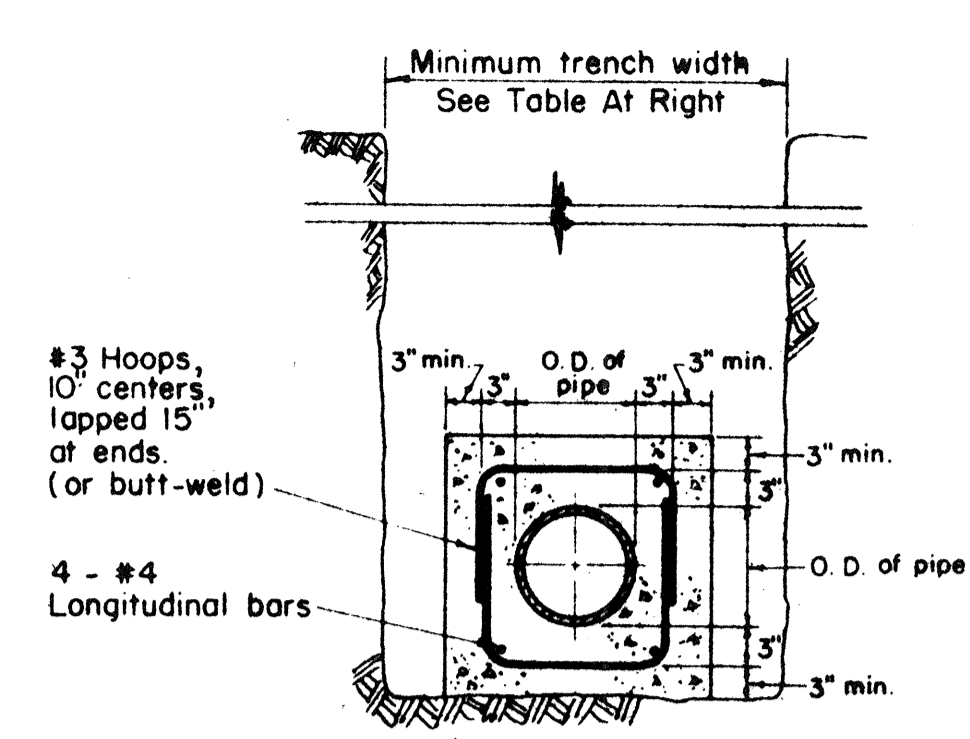
SEWER
SHEET No. 1 OF 4 SHEETS

\$526.38 \$174.60 \$161.58 92

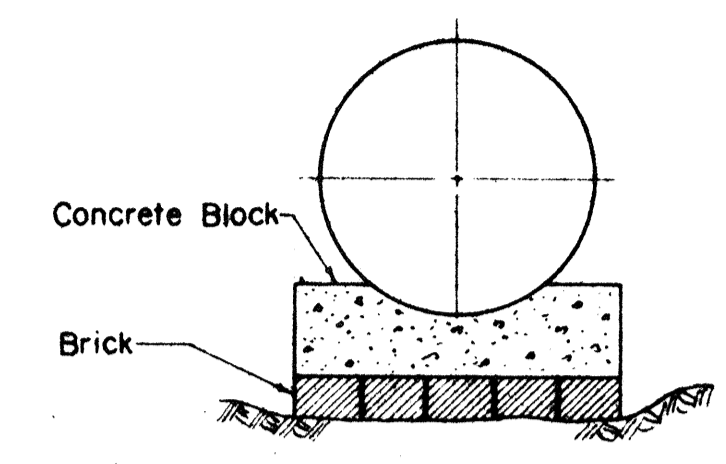
SURVEYED
 PLANNED
 NOTED
 CHECKED
 DATE

PROFILE
 SURVEYED
 PLANNED
 NOTED
 CHECKED
 DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	HAWAII	US-5-0720(3)	1960	40	79
		BU-072-1(2)	1960	64	118
		BU-065-1(1)	1960	59	115

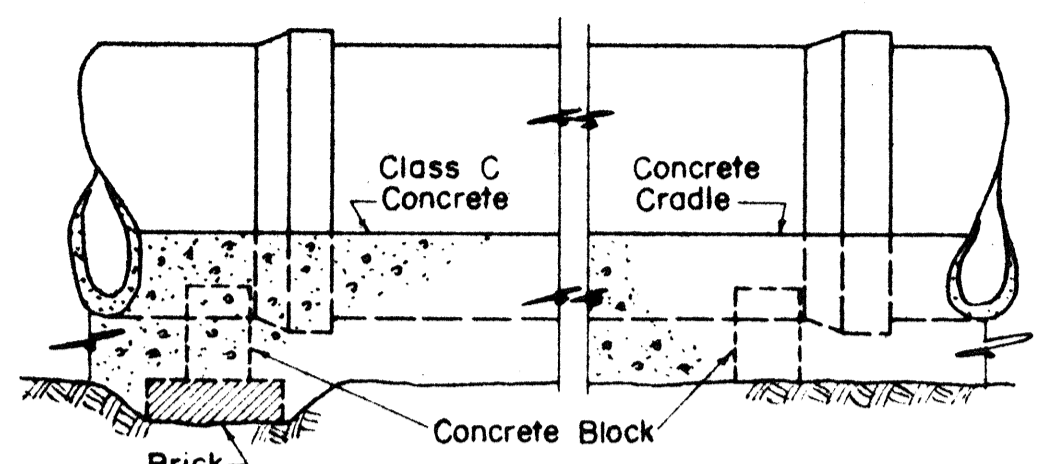


DETAIL OF CONCRETE JACKET
Scale: 3/4" = 1'-0"



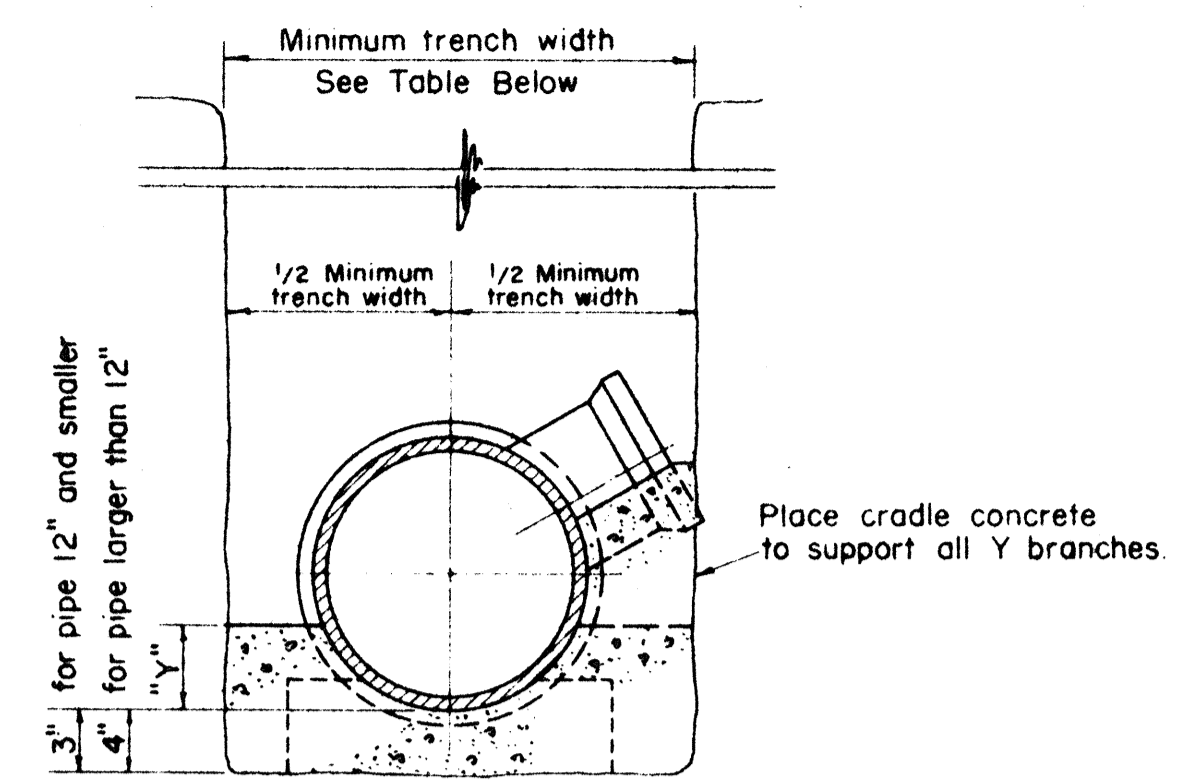
METHOD OF USING BRICKS UNDER CONCRETE BLOCKS

NOTE: Minimum width of cradle shall be minimum trench width.

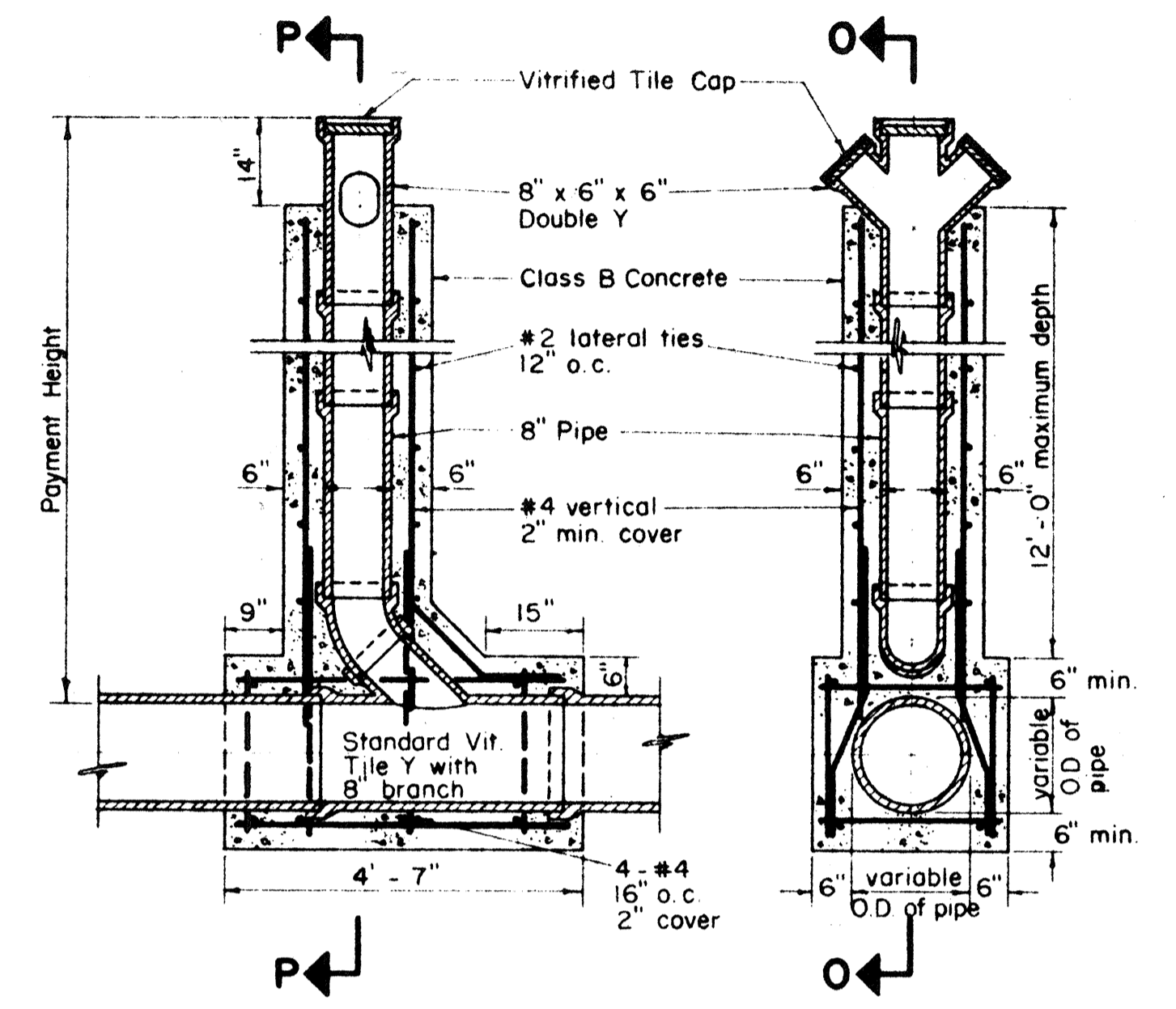
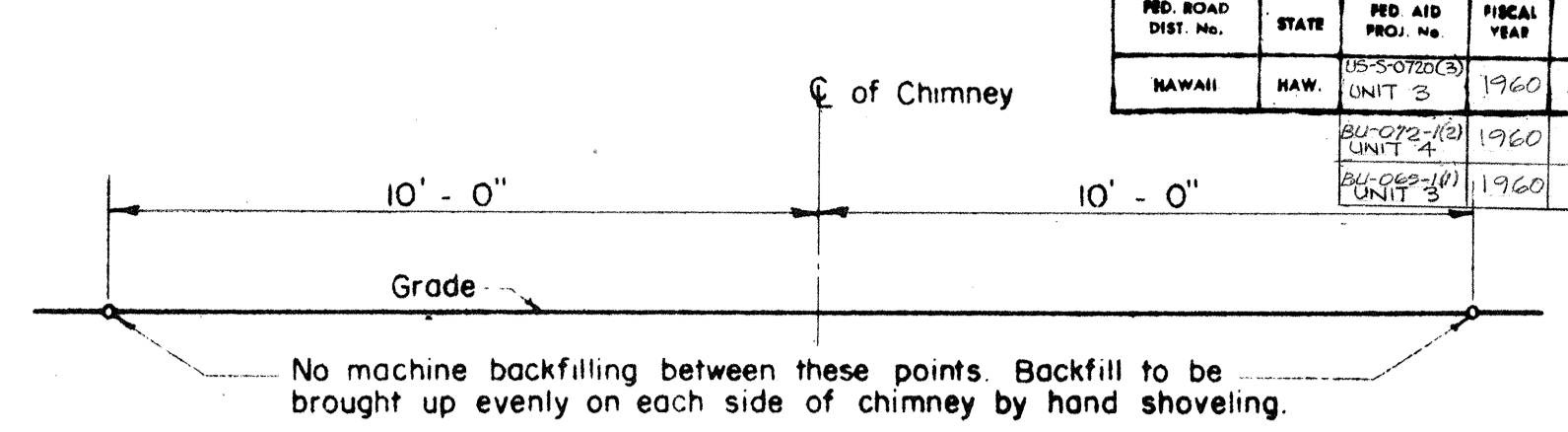


ELEVATION SHOWING METHOD OF LAYING PIPE
Not To Scale

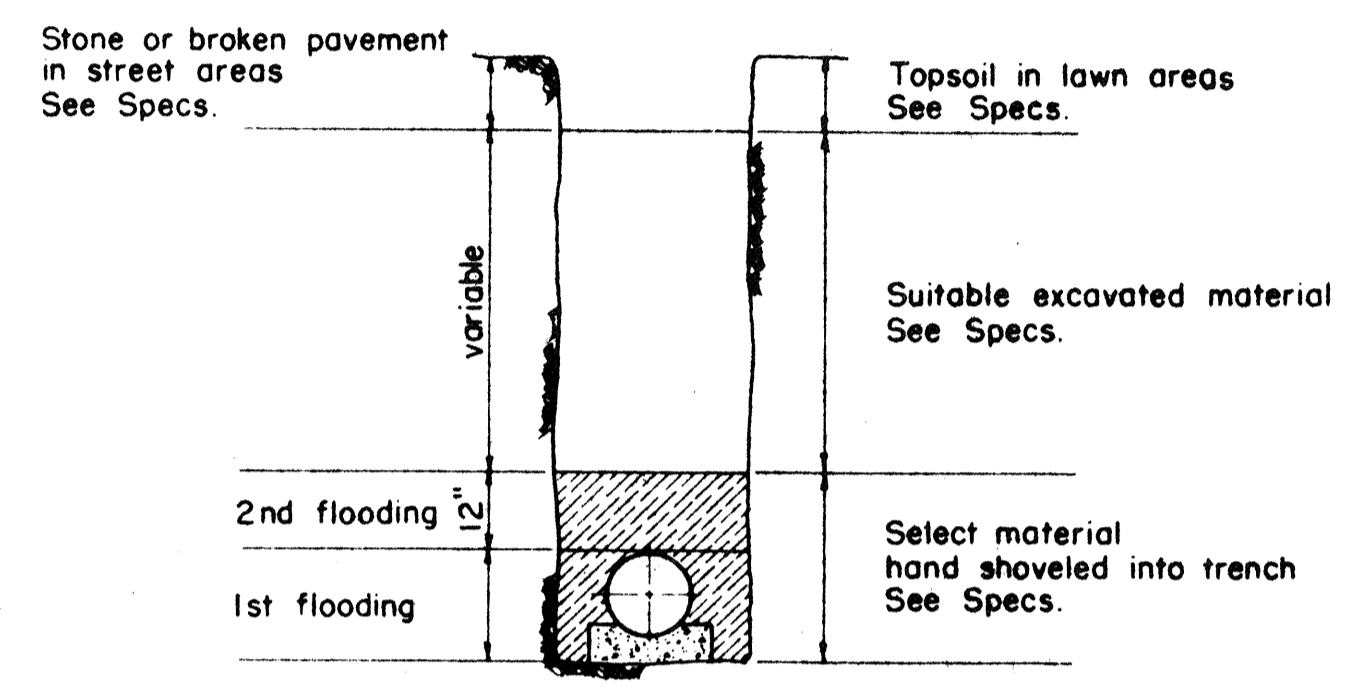
Contractor shall set Concrete Blocks on undisturbed ground. Where ground is too low, the contractor shall not heap up dirt under the Concrete Block but use Concrete Bricks to take up the deficiency, scraping away beneath Concrete Block to give sufficient room for Brick.



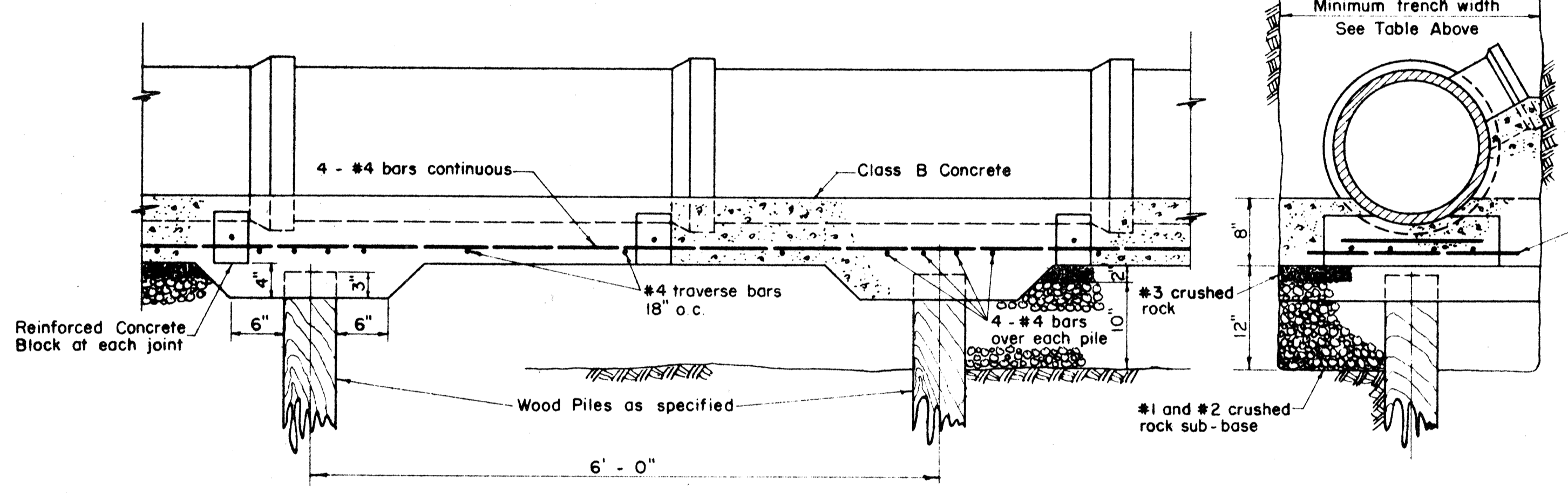
TRENCH WIDTHS		DIMENSIONS OF CONC. CRADLE		
Pipe Size	Min. Width	Pipe Size	"Y"	Width
6"	24"	6"	3"	24"
8"	24"	8"	3 1/2"	24"
10"	24"	10"	3 1/2"	24"
12"	30"	12"	3 1/2"	30"
15"	30"	15"	4 1/2"	30"
18"	36"	18"	5 1/2"	36"
21"	36"	21"	5 1/2"	36"
24"	45"	24"	6 1/2"	45"
27"	45"	27"	7"	45"
30"	50"	30"	7"	50"



DETAILS OF CHIMNEY
Scale: 1/2" = 1'-0"
NOTE: All Reinforcing Rods #4 Except Lateral Ties. Laps - 40 Diameters

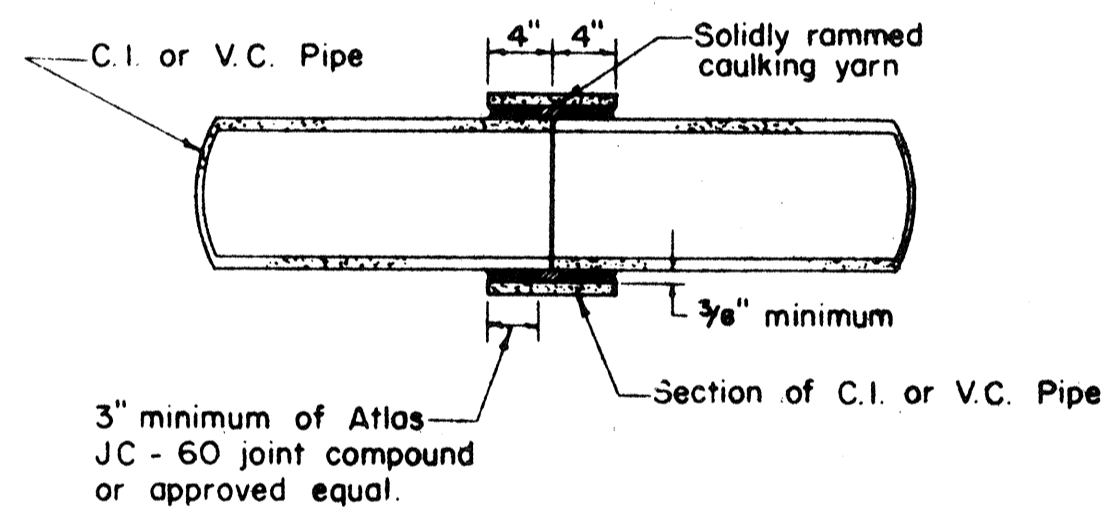


METHOD OF BACKFILL
Not To Scale

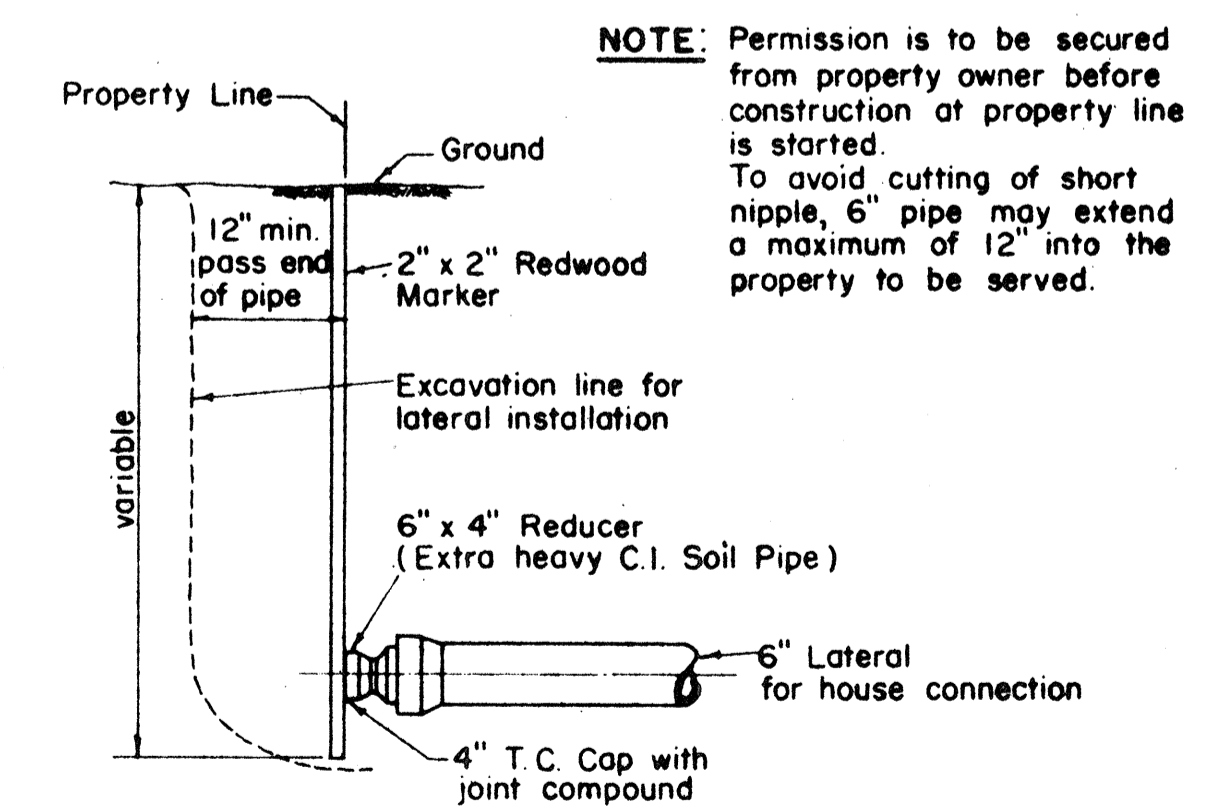


DETAIL OF REINFORCED CONCRETE CRADLE ON WOOD PILES (FOR 6, 8, 10, & 12 IN. V.C. PIPE)

DETAIL OF REINFORCED CONCRETE CRADLE WITHOUT PILES SIMILAR EXCEPT FOR WOOD PILES AND PILE CAPS

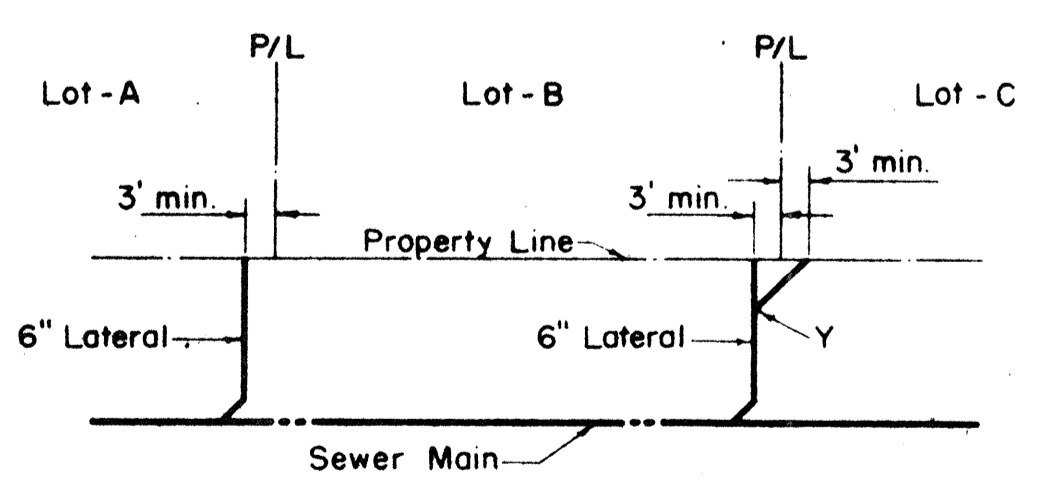


BUTT JOINT DETAIL
Scale: 1" = 1'-0"

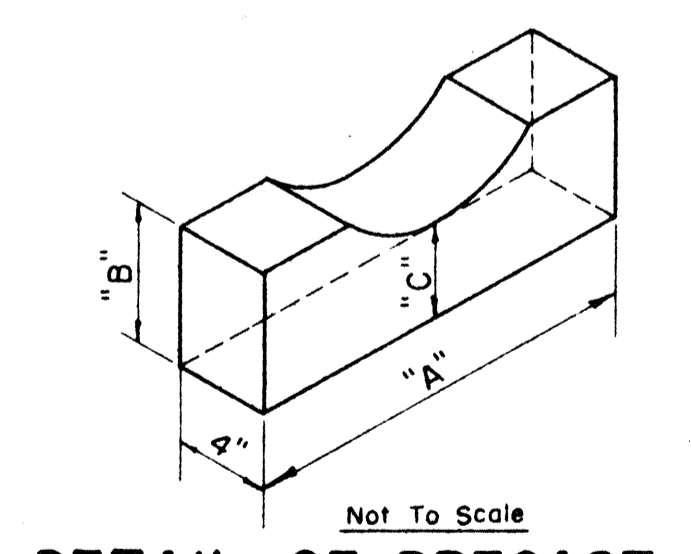


DETAIL AT PROPERTYLINE

CONSTRUCTION OF LATERALS
Not To Scale

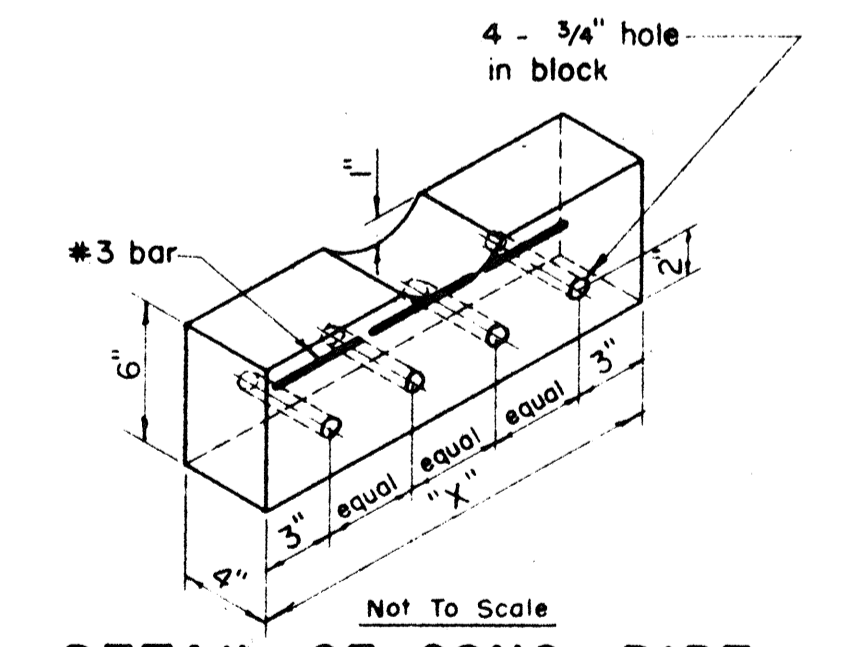


LAYOUT



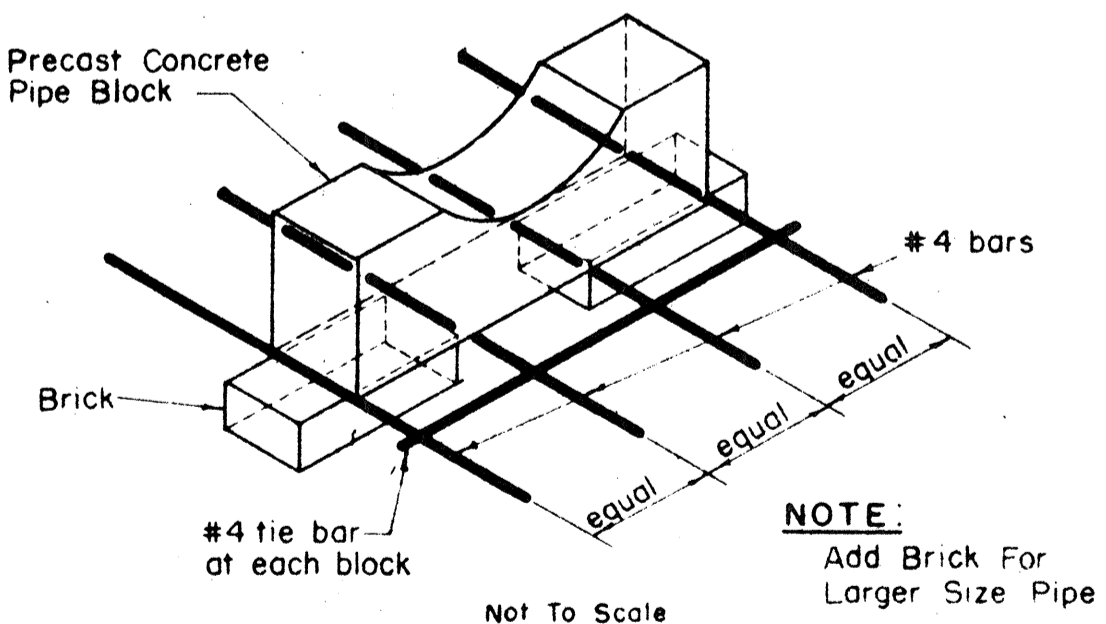
DETAIL OF PRECAST CONCRETE PIPE BLOCK

CONCRETE BLOCK DIMENSIONS			
Pipe Size	"A"	"B"	"C"
6"	1'-2"	6"	3"
8"	1'-5"	6"	3"
10"	1'-7"	6"	3"
12"	1'-7"	6"	3"
15"	1'-8"	6"	4"
18"	1'-9"	6"	4"
21"	1'-10"	6"	4"
24"	1'-11"	6"	4"
27"	2'-0"	6"	4"
30"	2'-3"	6"	4"



DETAIL OF CONC. PIPE BLOCK FOR REINF. CRADLE

DIM. OF REINF. CONCRETE BLOCK	
Pipe Size	"X"
6"	1'-6"
8"	1'-6"
10"	1'-8"
12"	1'-8"
15"	1'-10"
18"	1'-10"
21"	1'-10"
24"	2'-0"
27"	2'-0"
30"	2'-0"



ALTERNATE DETAIL OF CONC. PIPE BLOCK FOR REINF. CRADLE

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII
MOANALUA ROAD US-5-0720(3) UNIT 3
LUNALILO FREEWAY BU-072-1(2) UNIT 4
MIDDLE STREET BU-065-1(1) UNIT 3

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
DIVISION OF SEWERS

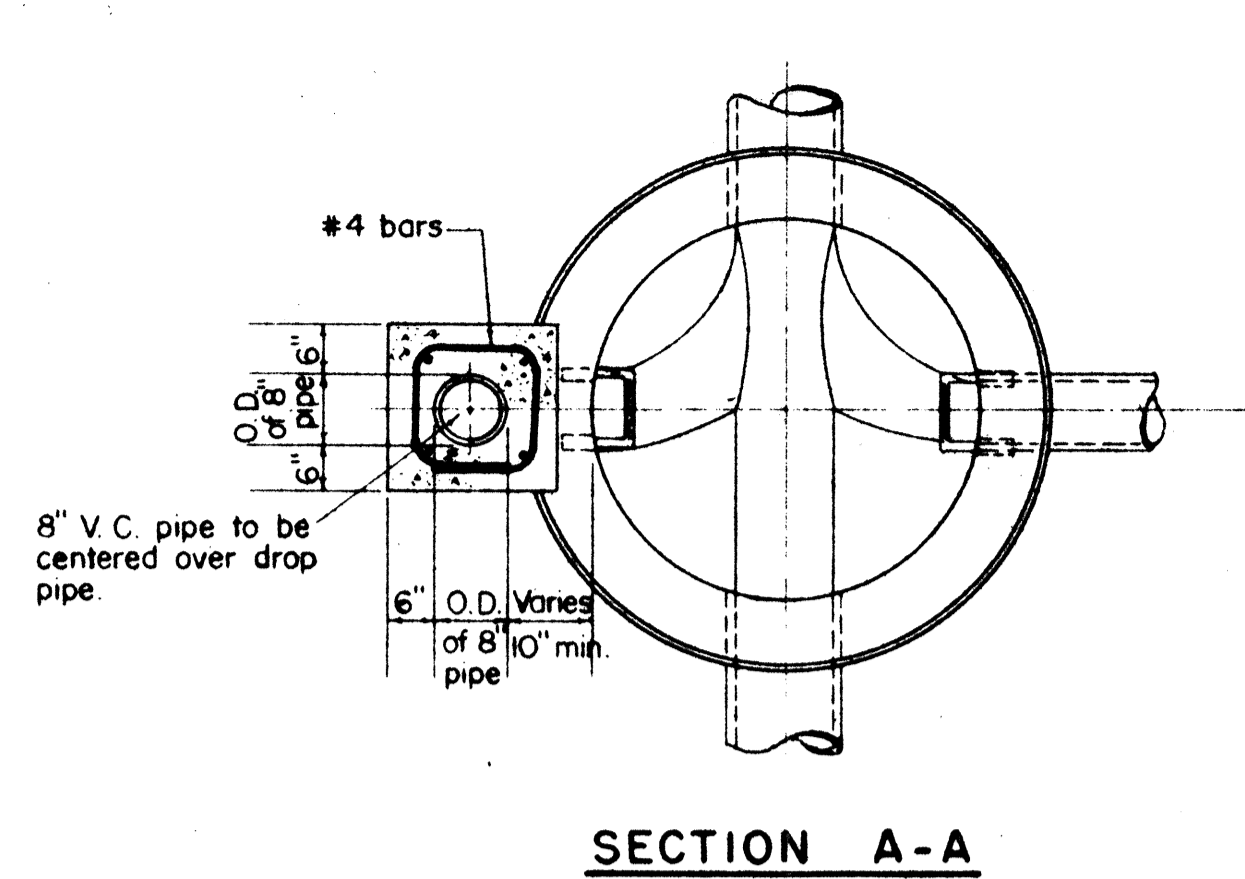
REVISED
STANDARD DETAILS
(SUPERSEDES STANDARD DATED 11-1-54)

ENGINEER: *A. Temp* DATE: October 4, 1957
DRAFTSMAN: *J. M. T.* CHECKED BY: *A. P. S.*
SCALE: As Shown TRACER: *J. M.*
APPROVED: *J. M.* APPROVED: *J. M.*
Acty. CHIEF ENGINEER DIVISION ENGINEER

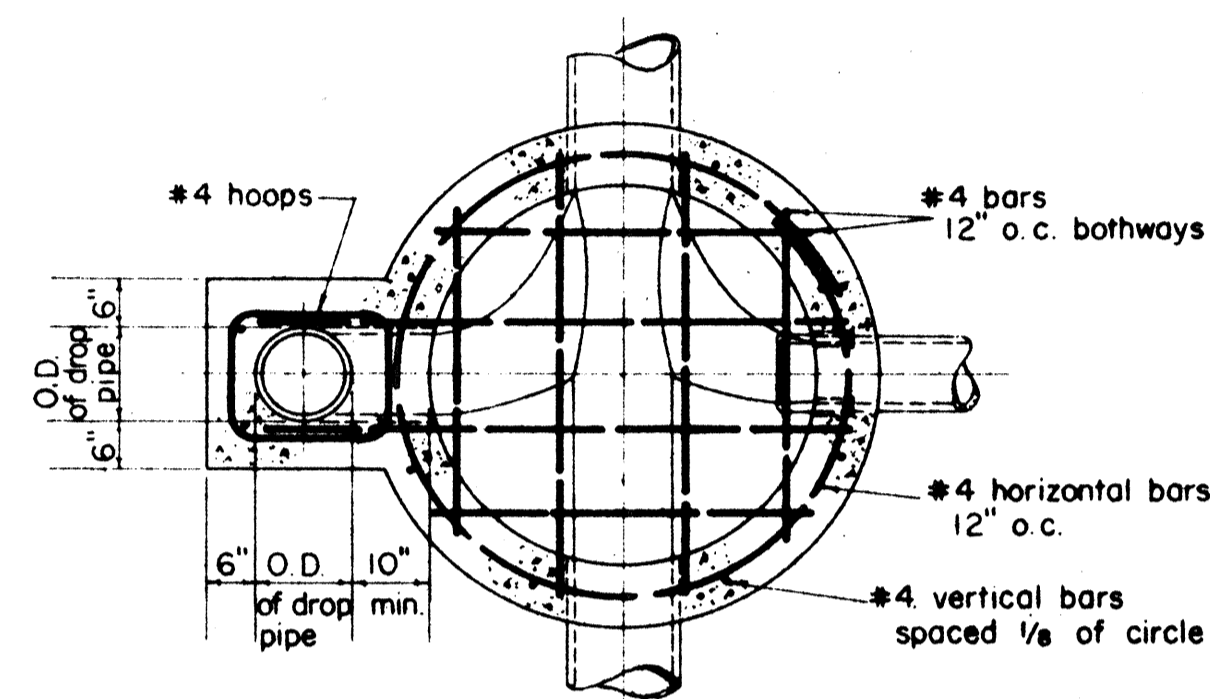
W. S. PROFILE S. R.
C. R. SEC. P. R. S. R.
W. M. BY: P. W. BY: S. BY:

SHEET NO. 1 OF 3 SHEETS

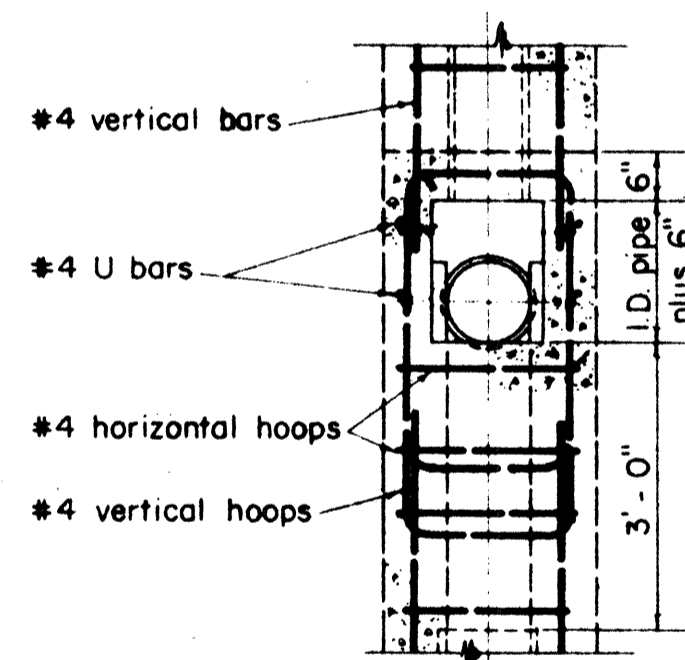
PROJ. NO.	STATE	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
155-0720(3)	HAWAII	1960	41	79
BU-065(1)		1960	65	118
BU-065(1)		1960	60	115



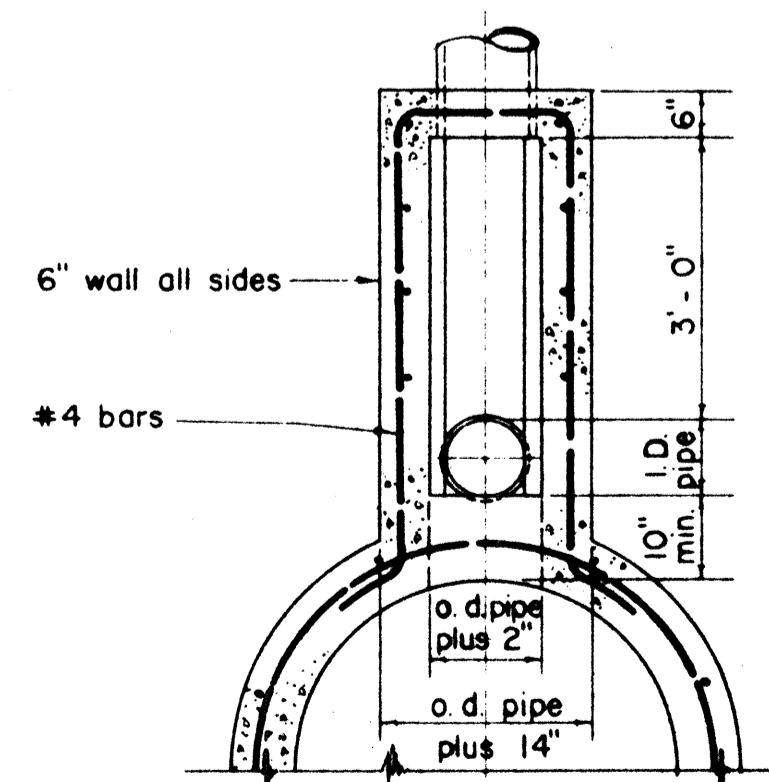
SECTION A-A



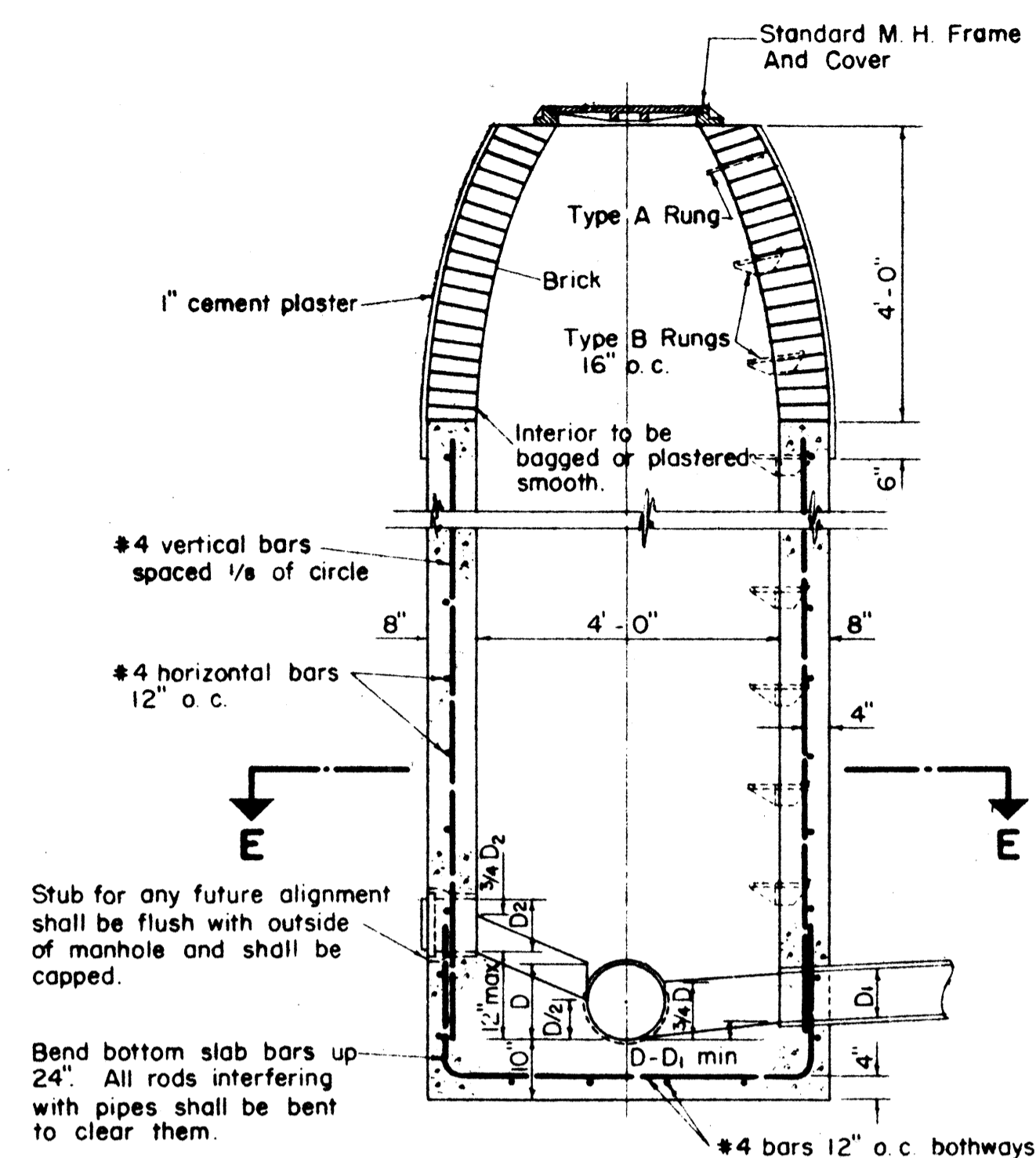
SECTION B-B



SECTION C-C

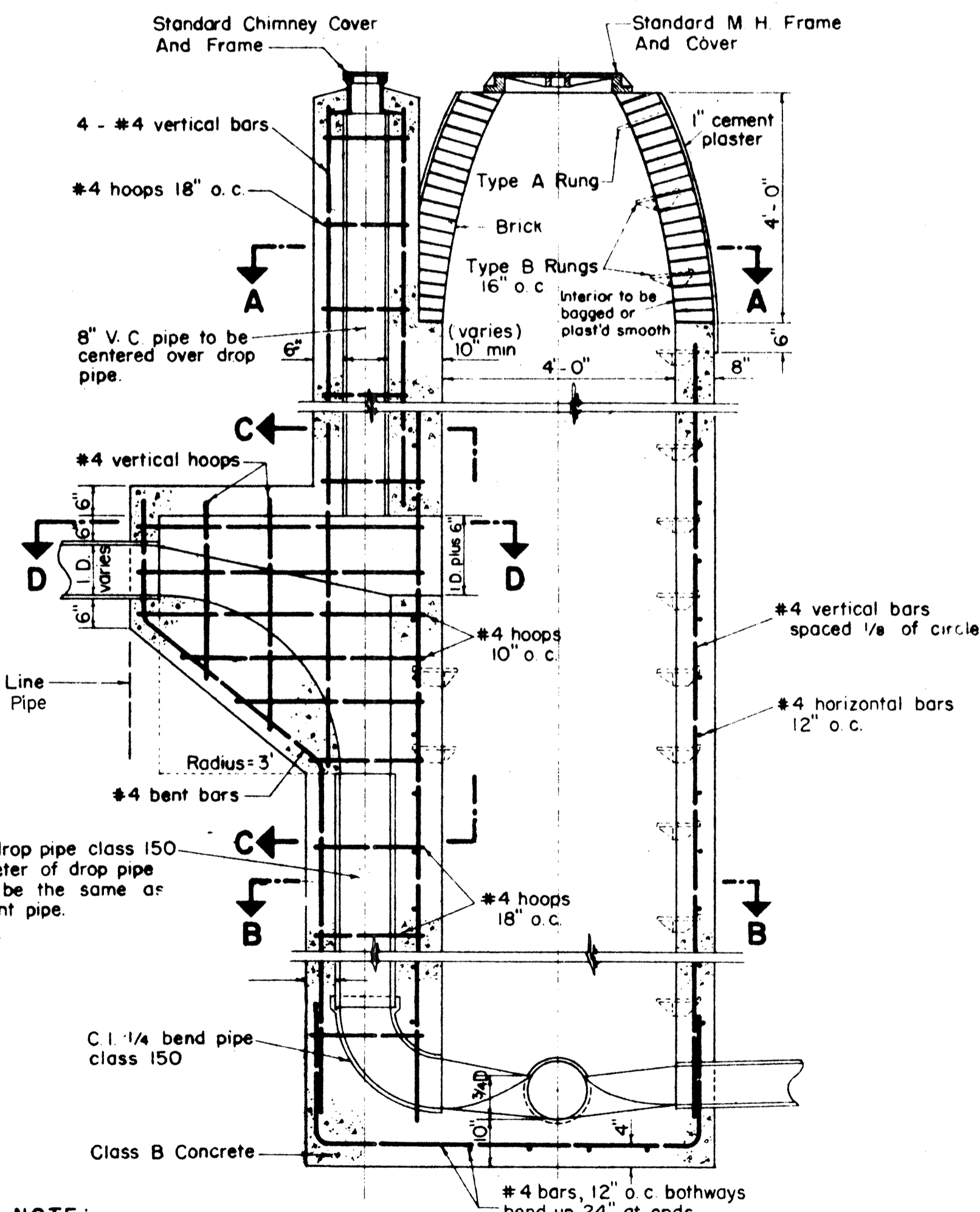


SECTION D-D



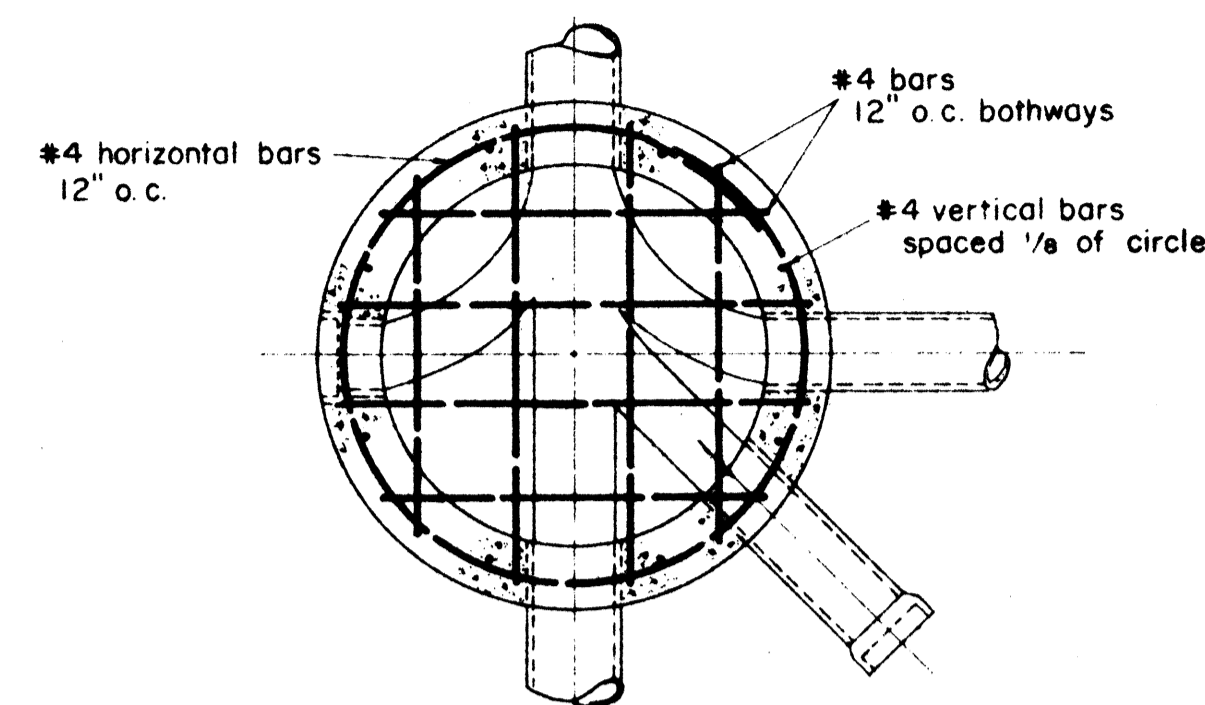
PLAIN MANHOLE

Scale 1/2" = 1'-0"

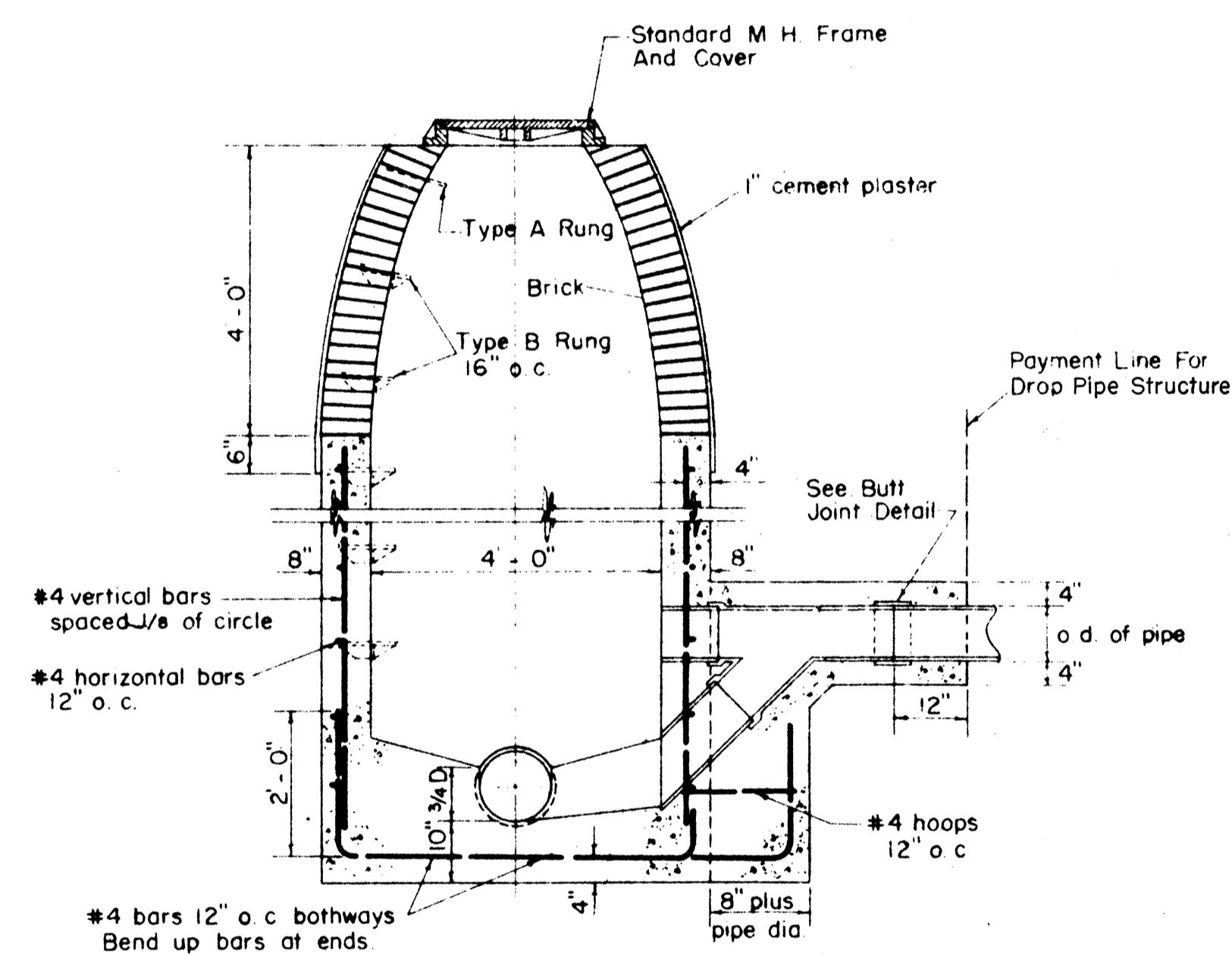


(FOR DROPS OVER 5.0 FEET) DROP MANHOLE

Scale 1/2" = 1'-0"



SECTION E-E



(FOR DROPS UNDER 5.0 FEET) (SHALLOW) DROP MANHOLE

Scale 1/2" = 1'-0"

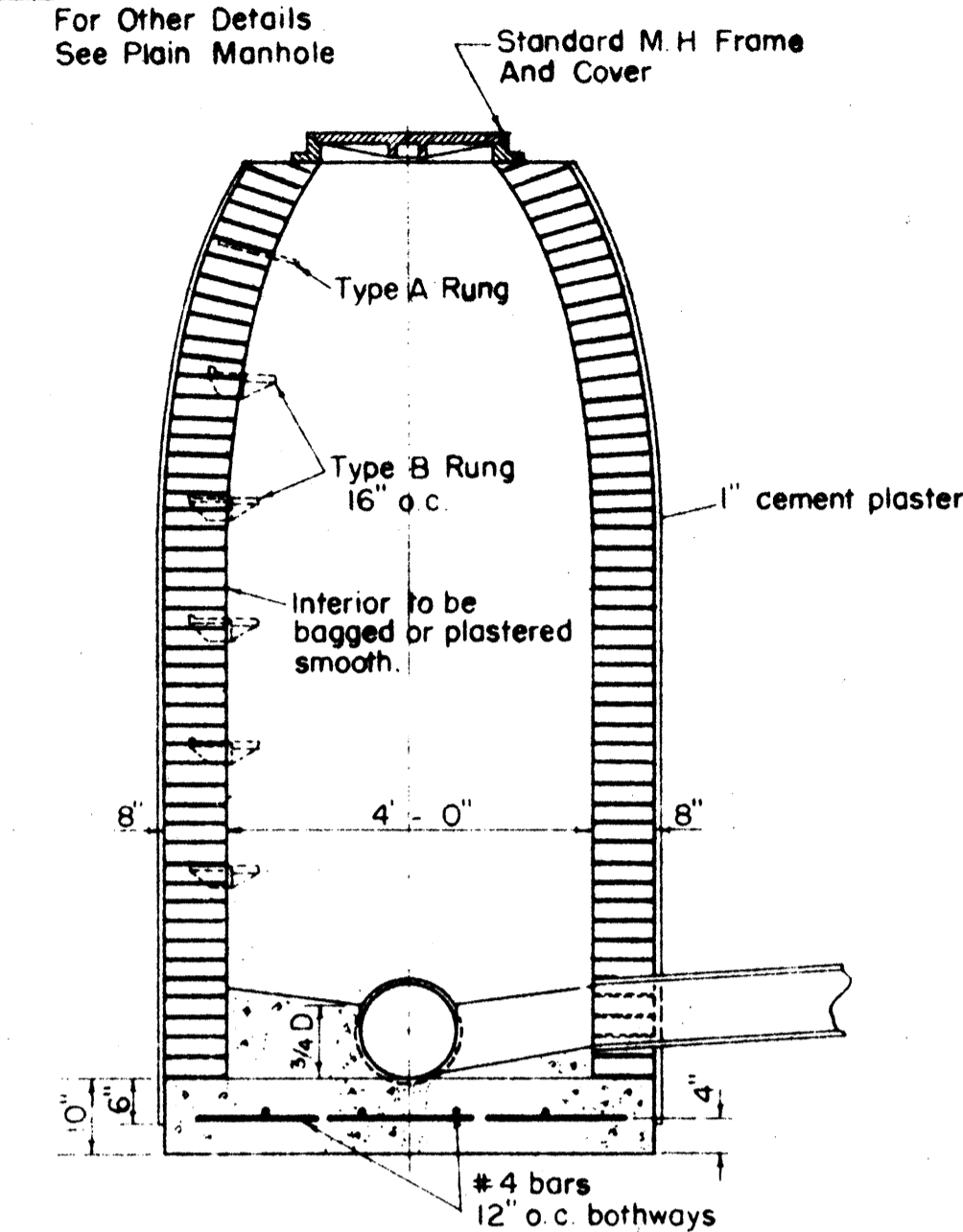
NOTE:

- Manhole rungs shall not be aligned above any flow line.
- No rungs shall be installed in manholes less than 3' high.
- When not otherwise noted, manhole stubs shall be sloped as follows:

Pipe Size	Rise Per Foot
6"	1/8"
8"	3/32"
10"	1/16"
12"	1/16"
- All reinforcing rods interfering with pipes shall be bent to clear them.
- Bar laps to be 40 diameters in length.
- Data for special manholes not shown shall be similar to that for plain manholes.
- Size of drop pipe in all Drop Manholes shall be same as influent line.
- Manhole wall to be of reinforced concrete to height 1' above normal ground water table.

NOTE:

For Other Details See Plain Manhole



(MAXIMUM HEIGHT - 10.0 FEET) BRICK MANHOLE

Scale 1/2" = 1'-0"

Payment for excavation for manholes shall be made under unit price for structural excavation and shall be measured to one foot outside of walls from original ground elevation to authorized bottom elevation.
 Payment for manhole walls (brick, precast concrete or cast-in-place concrete) shall include brick, precast concrete pipe sections, mortar, concrete, reinforcing steel, cast-iron steps, galvanized wrought iron rungs, and plastering.
 Payment for manhole bases shall include concrete, reinforcing steel, and the construction of inverts.

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

DEPARTMENT OF PUBLIC WORKS
 CITY AND COUNTY OF HONOLULU
 DIVISION OF SEWERS

REVISED
 STANDARD DETAILS
 (SUPERSEDES STANDARD DATED 11-1-54)

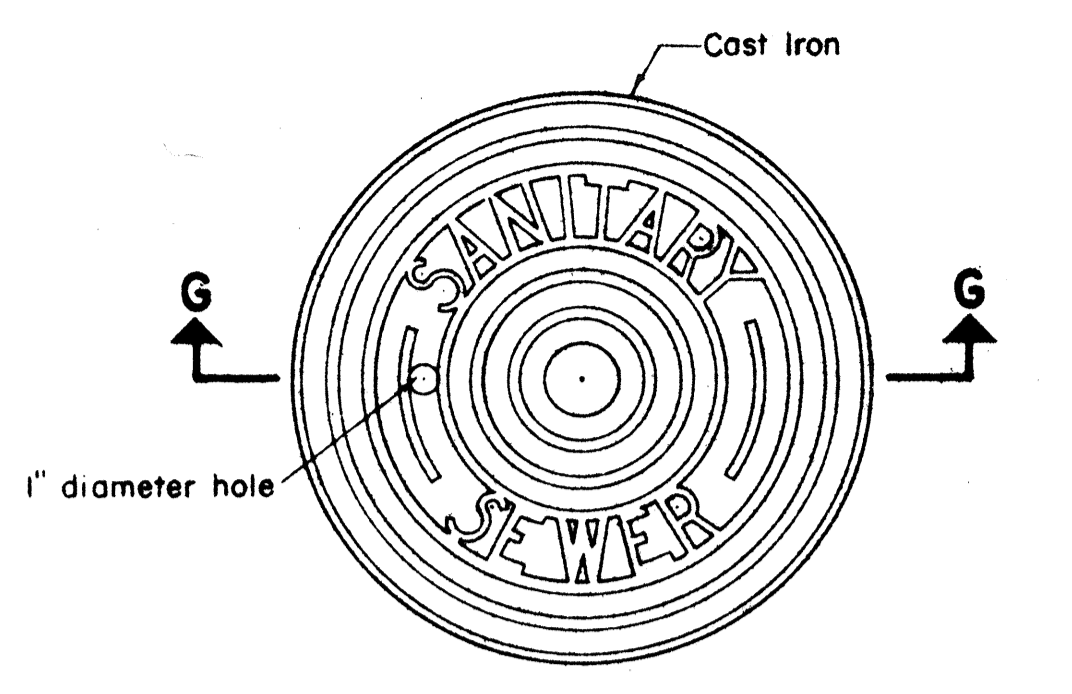
ENGINEER: *A. J. ...* DATE: October 4, 1957
 DRAFTSMAN: *A. J. ...* CHECKED BY: *A. J. ...*
 SCALE: 1/2" = 1'-0" TRACER: *A. J. ...*
 APPROVED: *A. J. ...* APPROVED: *A. J. ...*
 CHIEF ENGINEER DIVISION ENGINEER

W. S.	PROFILE	C. P.
CR. SEC.	F. S.	S. S.
W. M. BY:	F. W. BY:	S. W. BY:

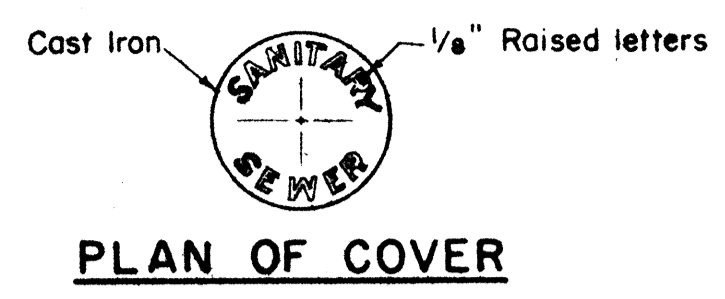
SHEET NO. 2 OF 3 SHEETS

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	US-3-0720(3)	1950	46	77
		US-3-0720(2)	1950	66	118
		US-3-0720(1)	1950	61	118

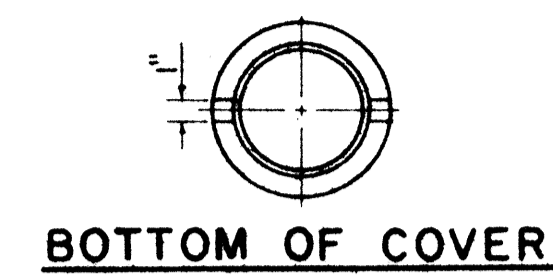
NOTE: Reinforcing steel shall be the same as that required for plain manhole except as noted.



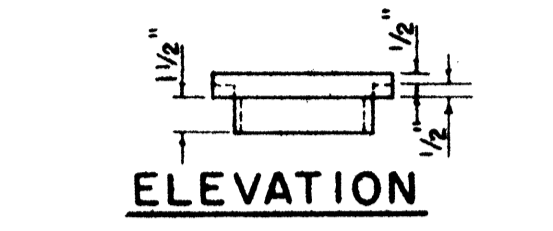
PLAN OF MANHOLE COVER
Scale: 1/2" = 1'-0"



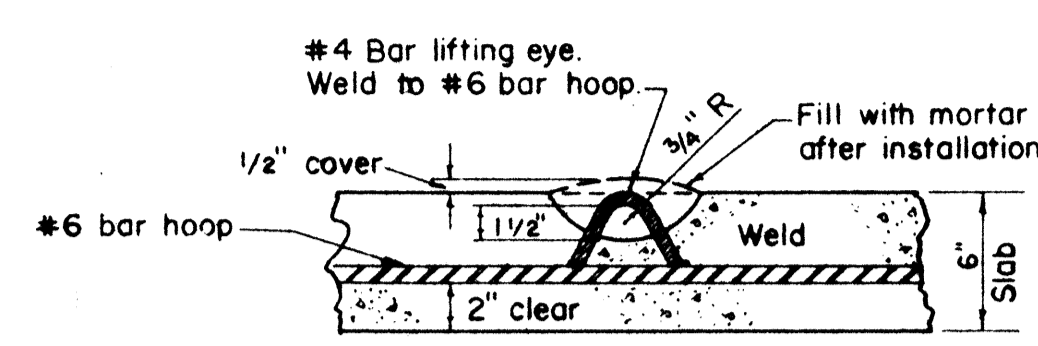
PLAN OF COVER



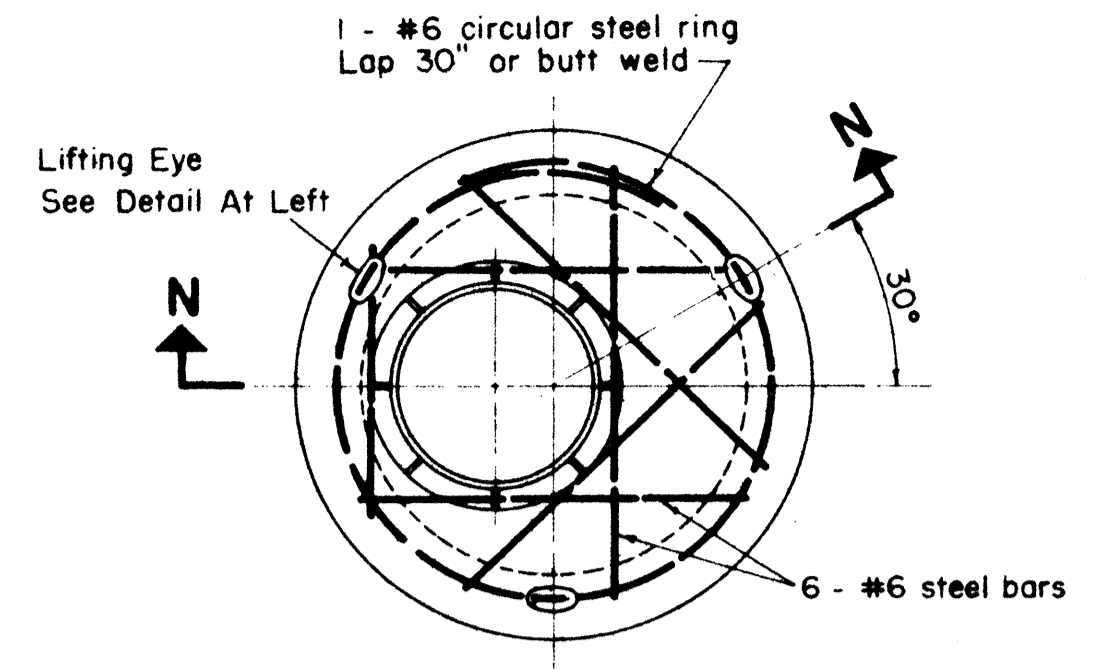
BOTTOM OF COVER



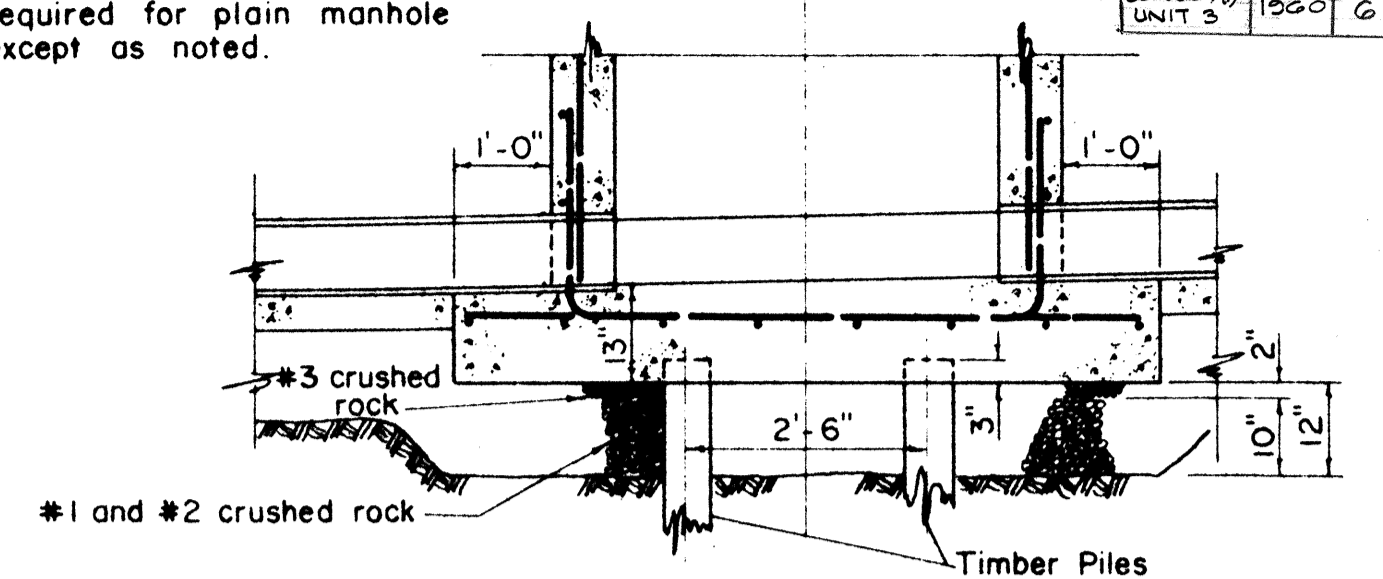
ELEVATION



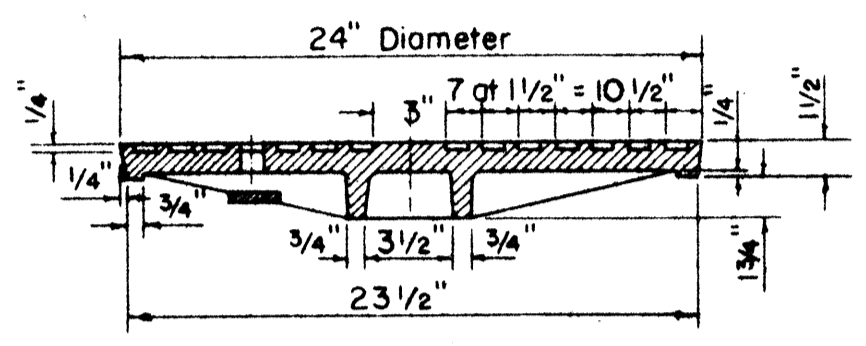
SECTION OF LIFTING EYE
Scale: 1/2" = 1'-0"



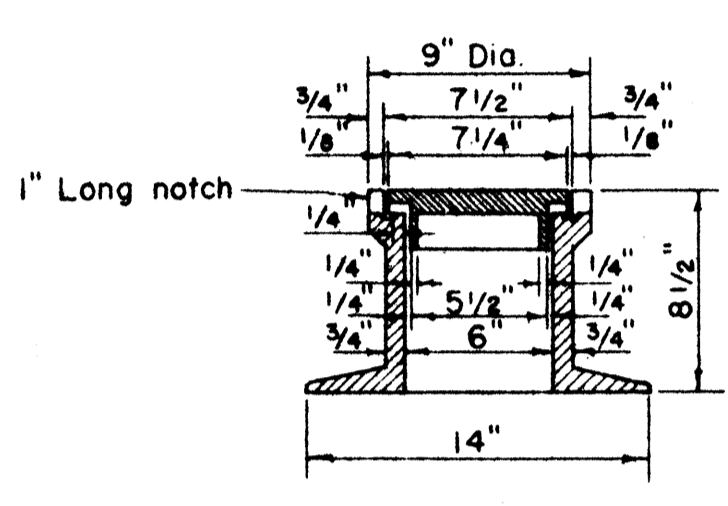
PLAN PRECAST MANHOLE
Scale: 1/2" = 1'-0"



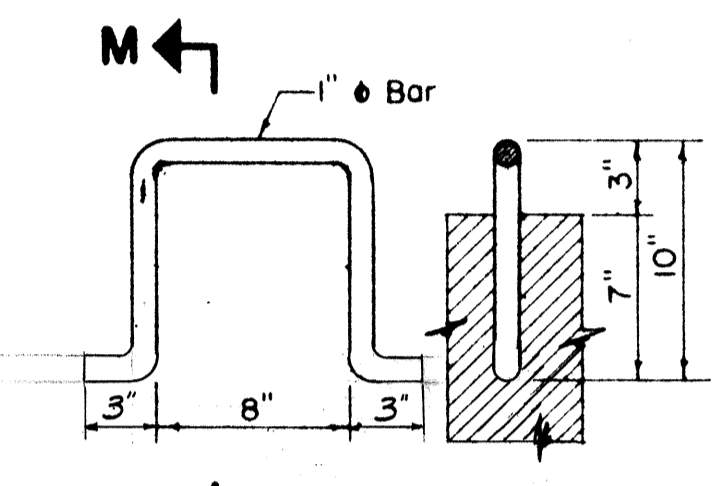
SECTION F-F



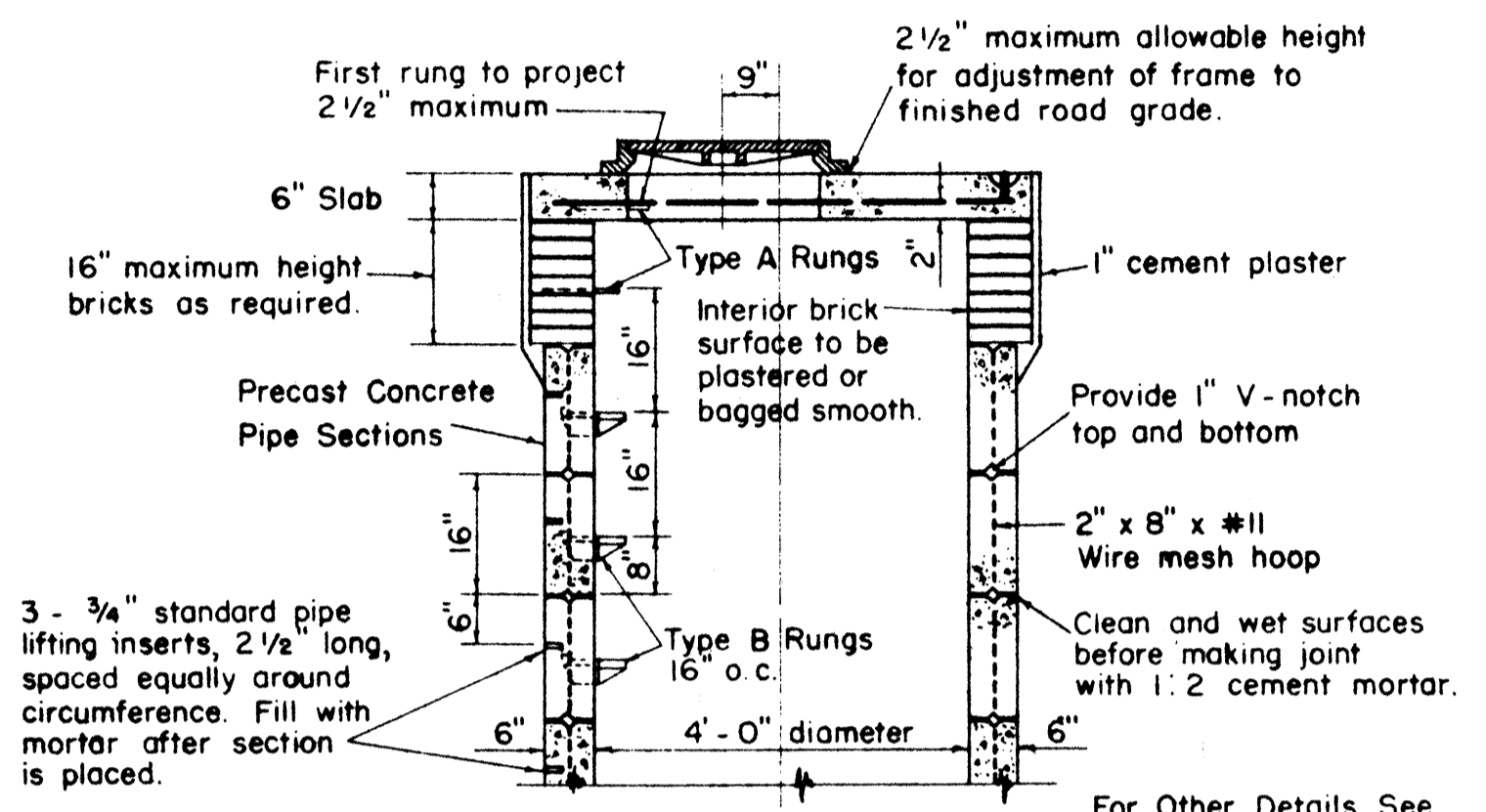
SECTION G-G



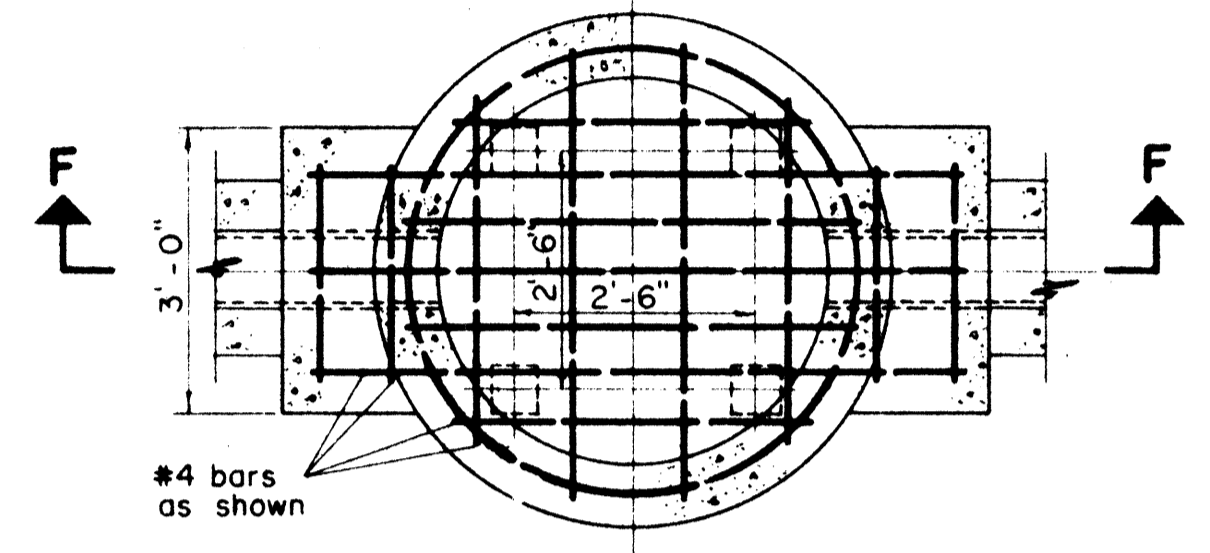
SECTION



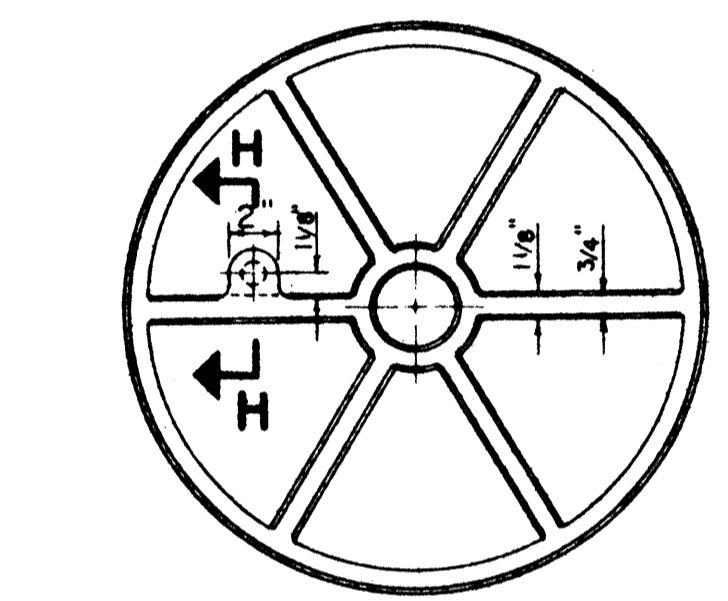
PLAN SECTION M-M



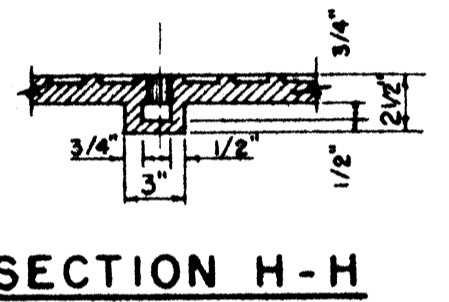
SECTION N-N



PLAN DETAIL OF PILES UNDER MANHOLES
Scale: 1/2" = 1'-0"



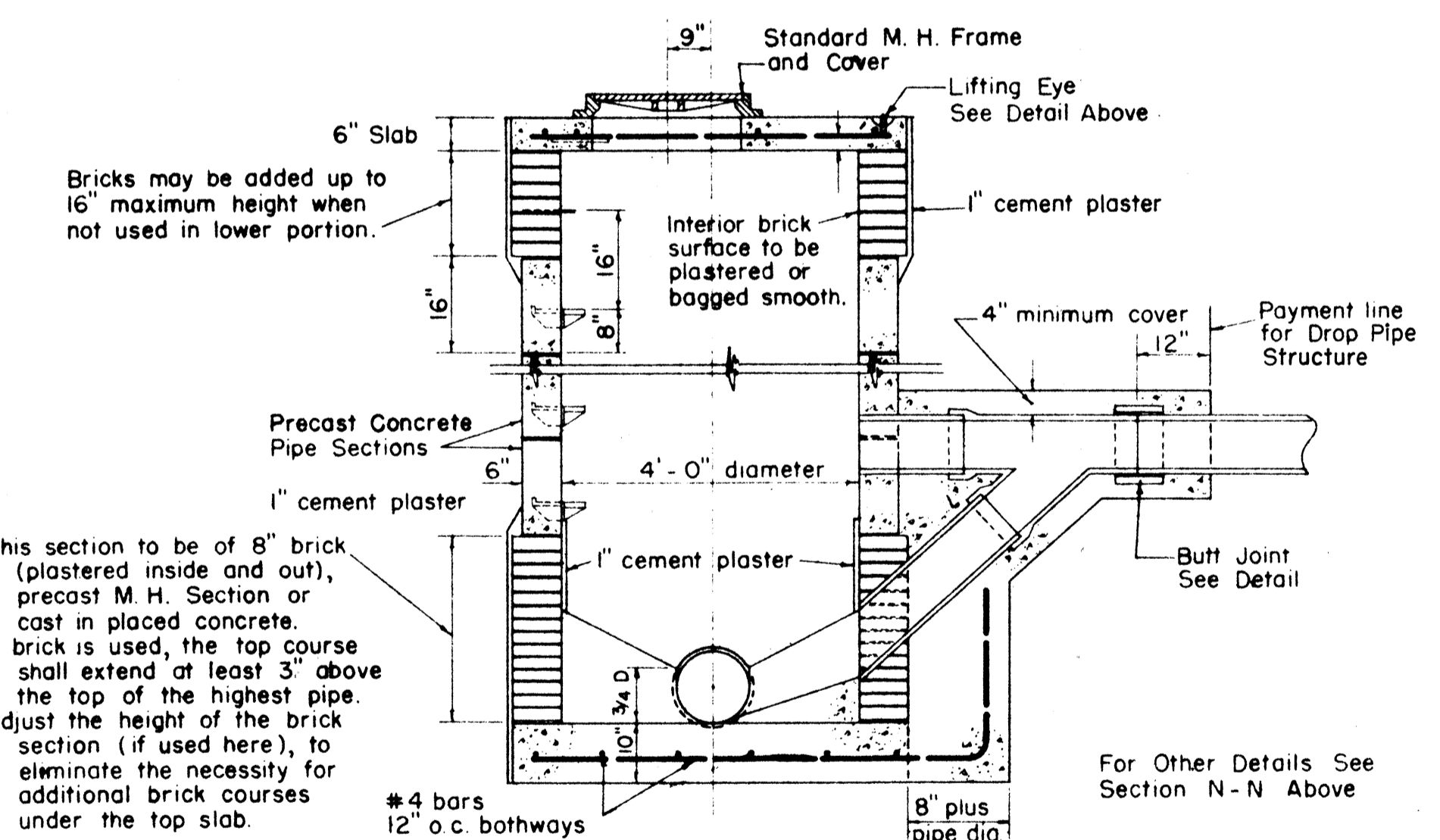
BOTTOM VIEW OF COVER
Scale: 1/2" = 1'-0"



SECTION H-H

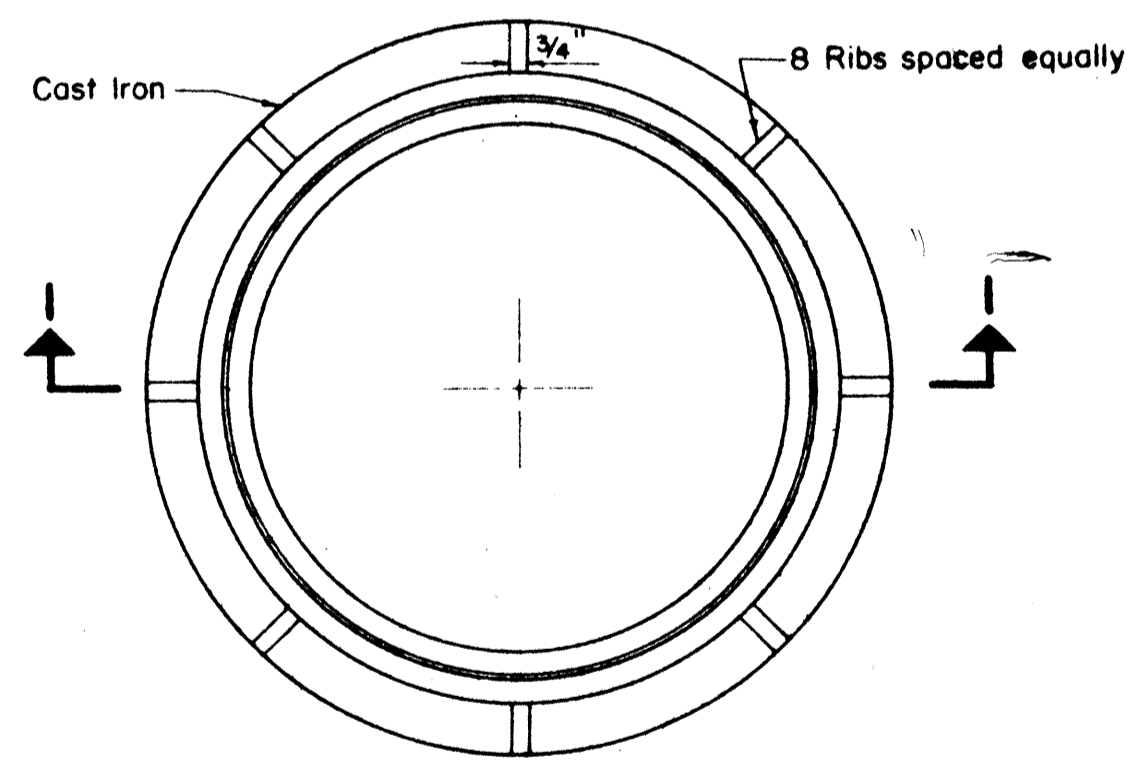
DROP MANHOLE CHIMNEY CASTINGS
Scale: 1/2" = 1'-0"

TYPE A MANHOLE RUNGS WROUGHT IRON
Scale: 1/2" = 1'-0"

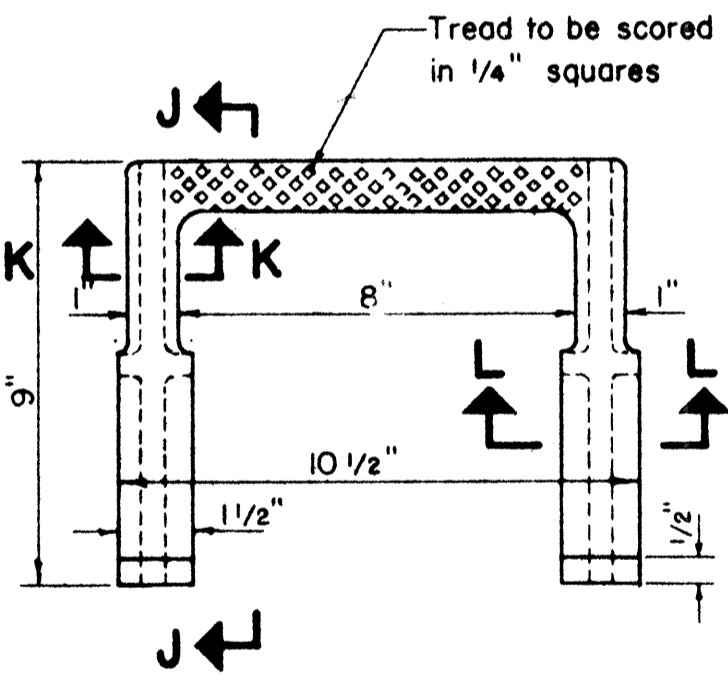


SHALLOW DROP MANHOLE USING PRECAST CONCRETE PIPE SECTIONS
Scale: 1/2" = 1'-0"

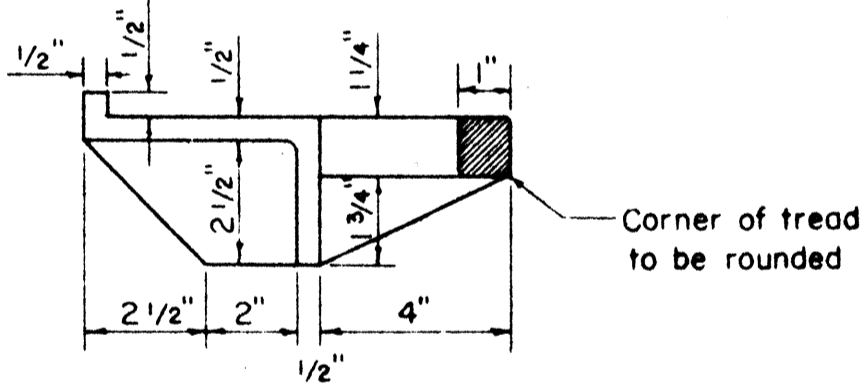
- NOTE:
- When backfilling around Precast Manhole, material shall be deposited in such a manner that the difference in elevation on one side of the manhole shall not exceed the elevation on the other side by more than 5 feet.
 - Pipe Sections may be made in heights other than 16 inches if desired.
 - Size of drop pipe shall be same as influent pipe.



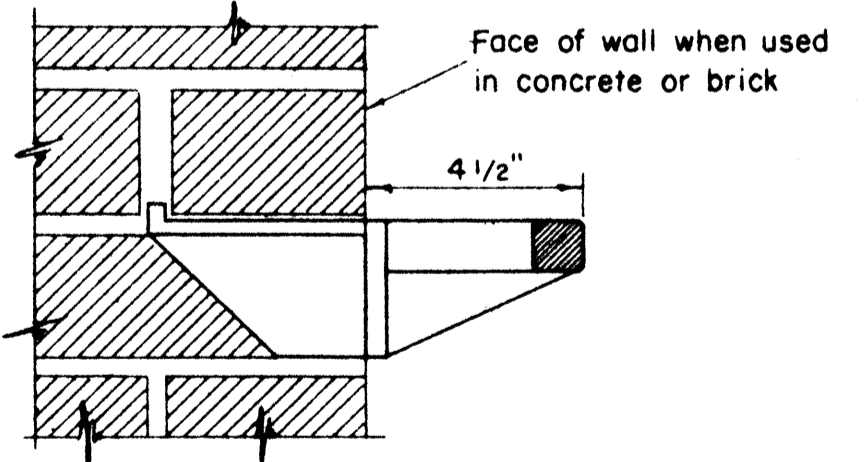
PLAN OF MANHOLE FRAME
Scale: 1/2" = 1'-0"



SECTION K-K

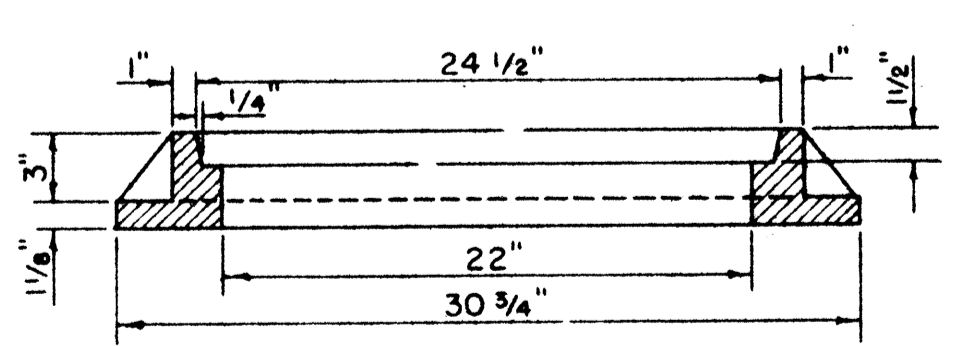


SECTION J-J



METHOD OF INSTALLATION

TYPE B MANHOLE RUNGS (CAST IRON)
Scale: 3" = 1'-0"



SECTION I-I

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

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
DIVISION OF SEWERS

REVISED STANDARD DETAILS
(SUPERSEDES STANDARD DATED 11-1-54)

ENGINEER: *A. J. Jones* DATE: October 4, 1957
DRAFTSMAN: *V. M. Jones* CHECKED BY: *V. M. Jones*
SCALE: As Shown TRACER: *V. M. Jones*
APPROVED: *A. J. Jones* APPROVED: *V. M. Jones*
CHIEF ENGINEER DIVISION ENGINEER

W. S. PROFILE C. E.
C. E. F. B. S. R.
W. M. BY: P. W. BY: S. BY:

SHEET NO. 3 OF 3 SHEETS