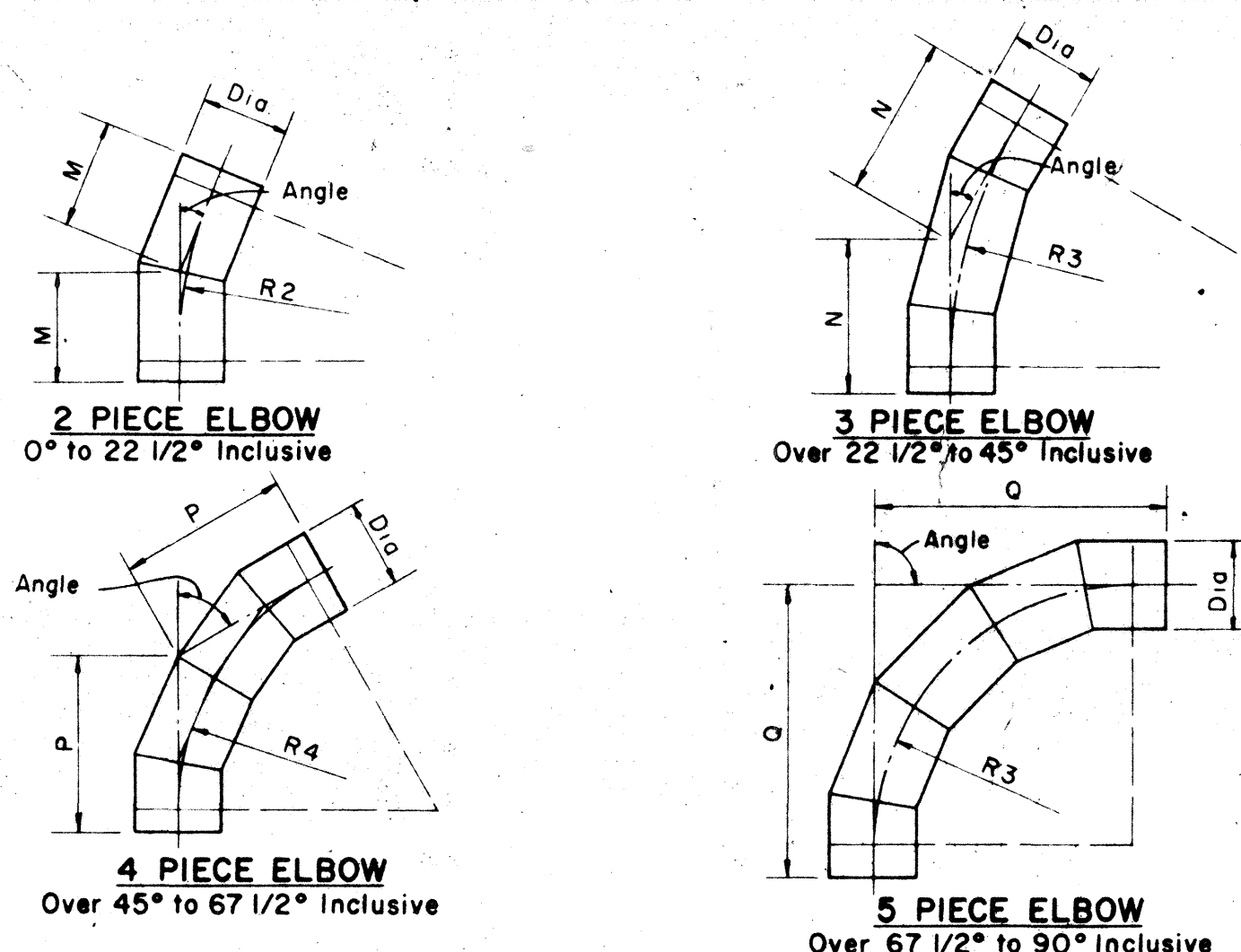




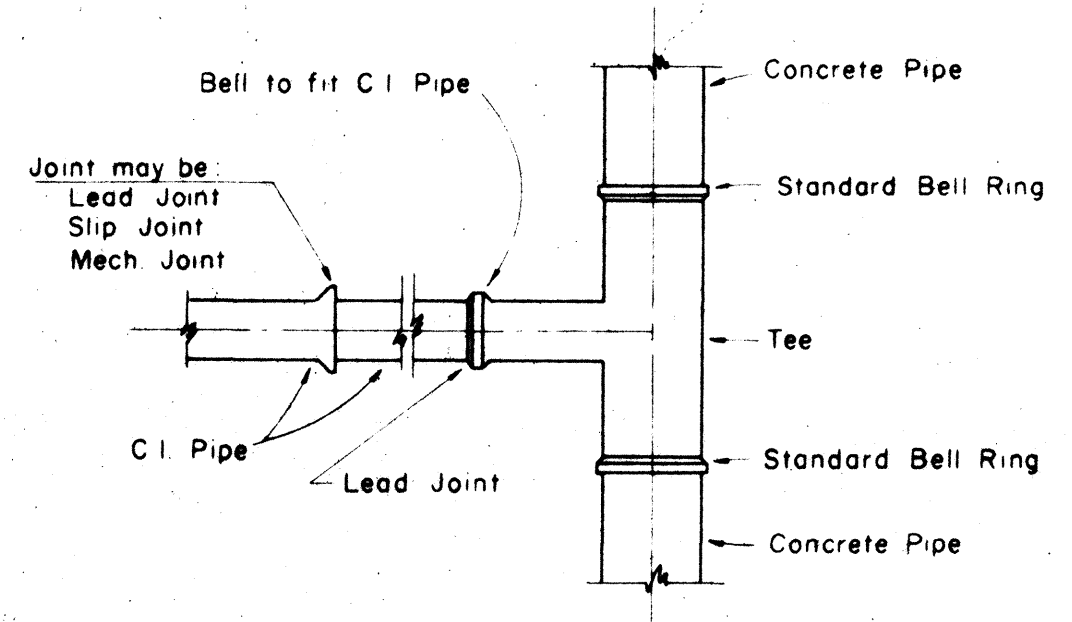
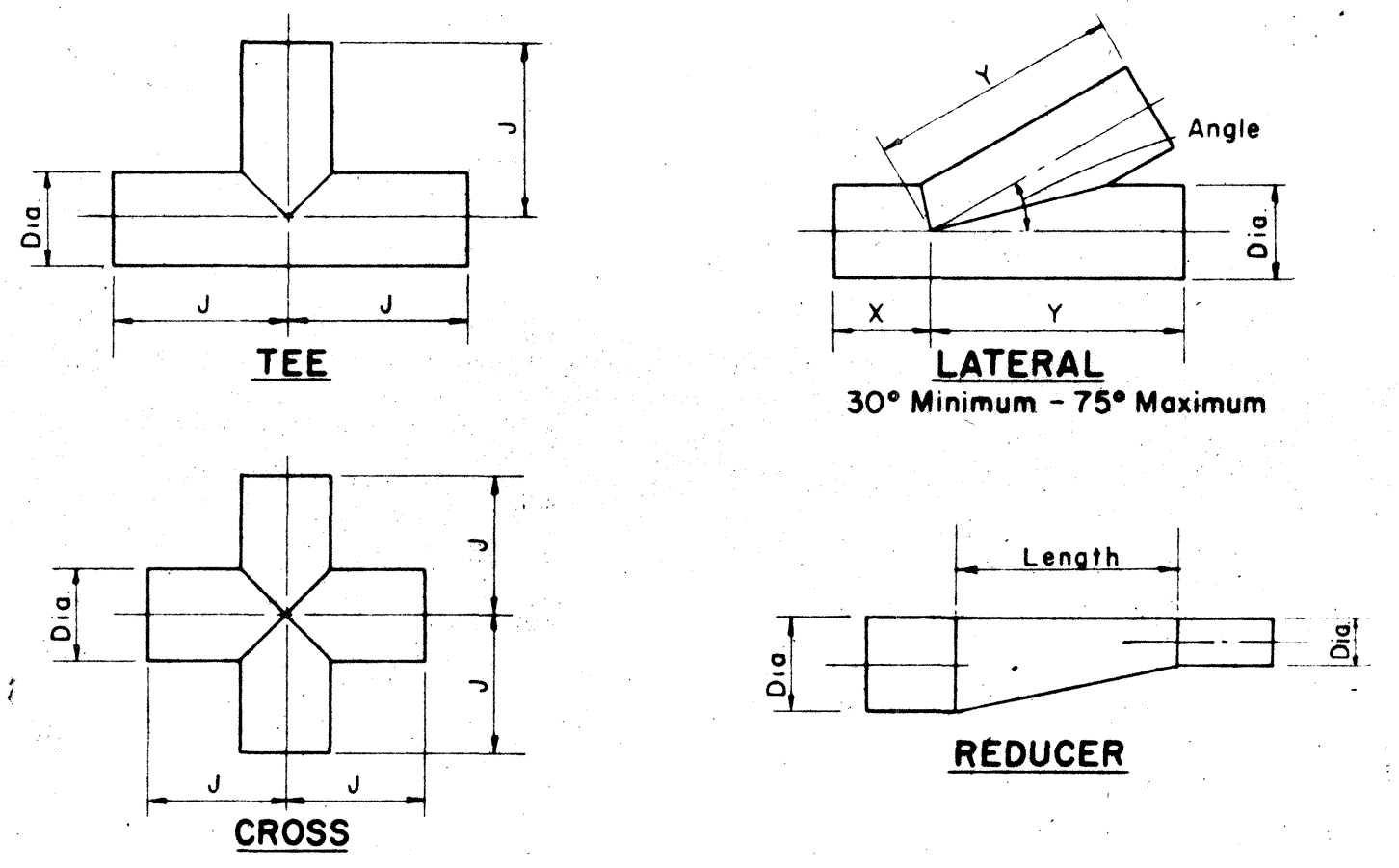
STANDARD FITTING DIMENSIONS														
DIAMETER	TEE		CROSS (Both Ways) J+J	LATERAL (30° to 75°)		ELBOWS (Center to End)								
	Run J+J	Outlet J		Run X+Y	Outlet Y	2 Piece (up to 22 1/2°)		3 Piece (22 1/2° to 45°)		4 Piece (45° to 67 1/2°)		5 Piece (67 1/2° to 90°)		
						M	R2	N	R3	P	R4			
16"	34"	17"	34"	62"	52"	12"	60"	18"	44"	26"	39"	34"		
18"	36"	18"	36"	66"	56"	12"	60"	19"	47"	27"	41"	36"		
20"	38"	19"	38"	72"	60"	13"	65"	20"	49"	28"	42"	39"		
22"	40"	20"	40"	78"	66"	13"	65"	21"	51"	30"	45"	41"		
24"	42"	21"	42"	84"	72"	14"	70"	22"	54"	32"	48"	44"		
30"	60"	30"	60"	96"	84"	15"	75"	25"	61"	37"	51"	51"		
36"	66"	33"	66"	110"	96"	16"	80"	27"	66"	40"	60"	56"		

DIMENSIONS FOR ECCENTRIC REDUCER REDUCING SECTION

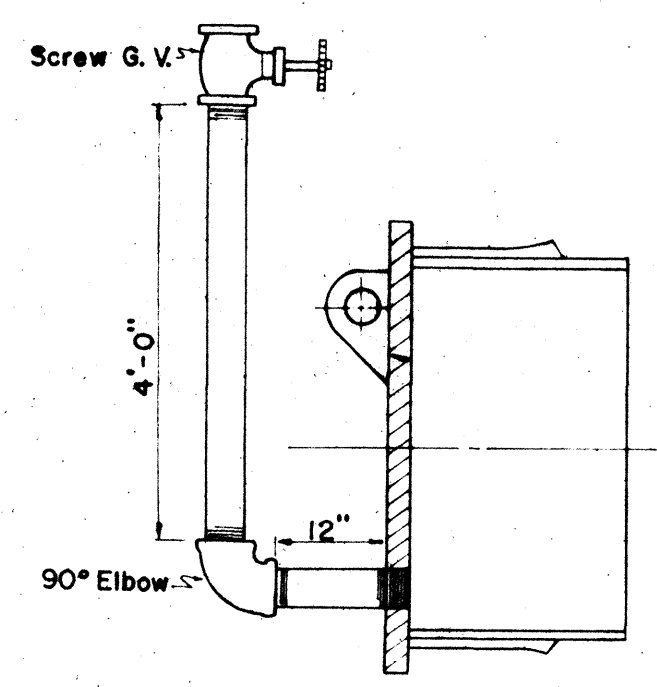
36" X 30" Eccentric Reducer - Length 66"
30" X 24" Eccentric Reducer - Length 66"
24" X 20" Eccentric Reducer - Length 26"
20" X 16" Eccentric Reducer - Length 26"

NOTE:

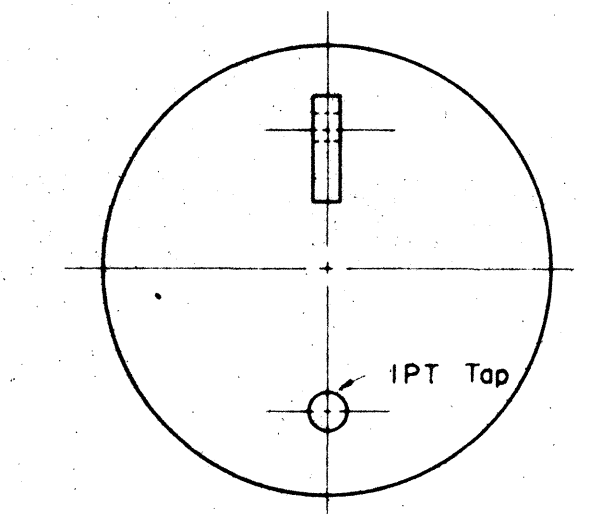
All dimensions shown are laying lengths.
 All fittings and specials shall be fabricated independent from pipe sections and in accordance with the dimensions shown.
 All fittings and specials shall be all bell unless otherwise noted.
 All tees, wyes, crosses and reducers 16-inch in diameter and larger shall be reinforced with steel ribs or steel crotch plates welded continuously to the cylinder or by other methods to withstand the longitudinal crushing effect caused by the test pressure as called for in the plans.



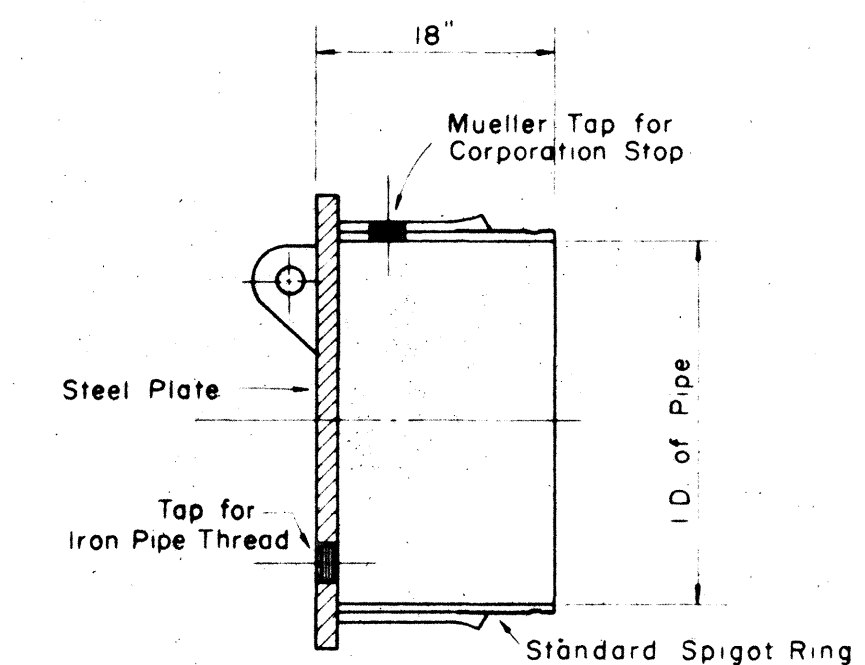
TYPICAL CAST IRON PIPE CONNECTION TO CONCRETE CYLINDER PIPE



TYPICAL SECTION OF TEMPORARY CLEANOUT

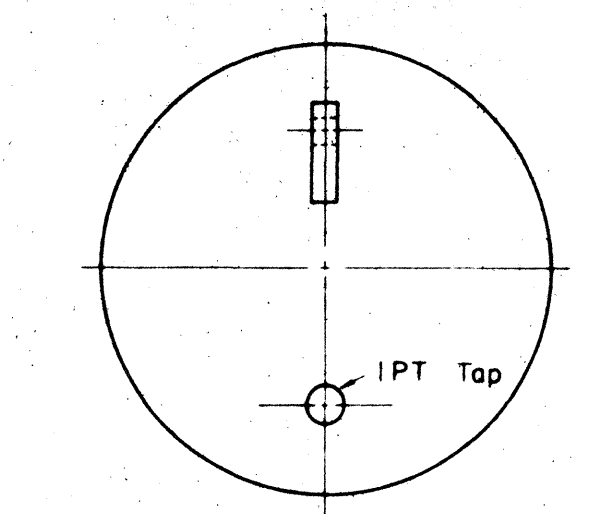


PLAN OF STEEL PLATE

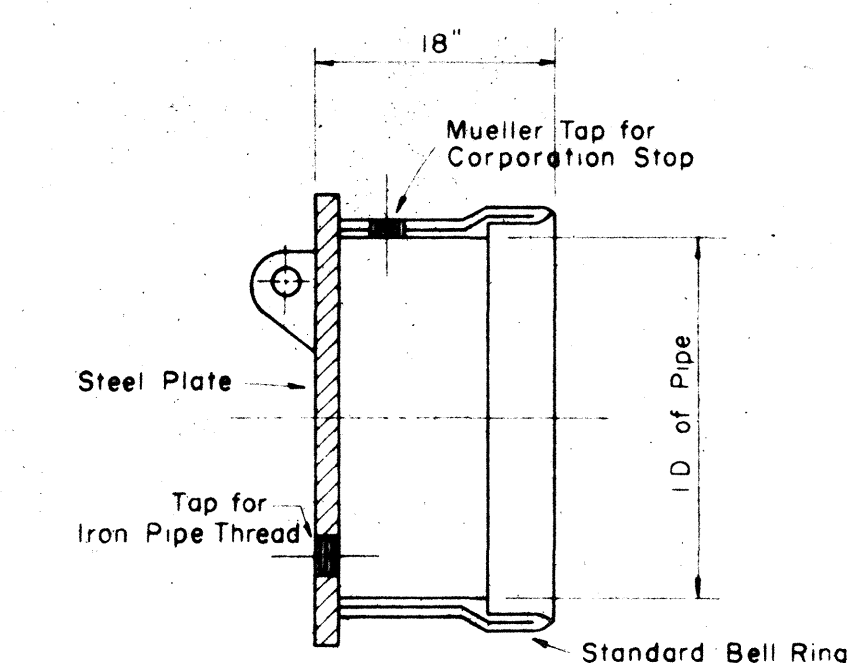


SECTION

DETAIL OF PLUG

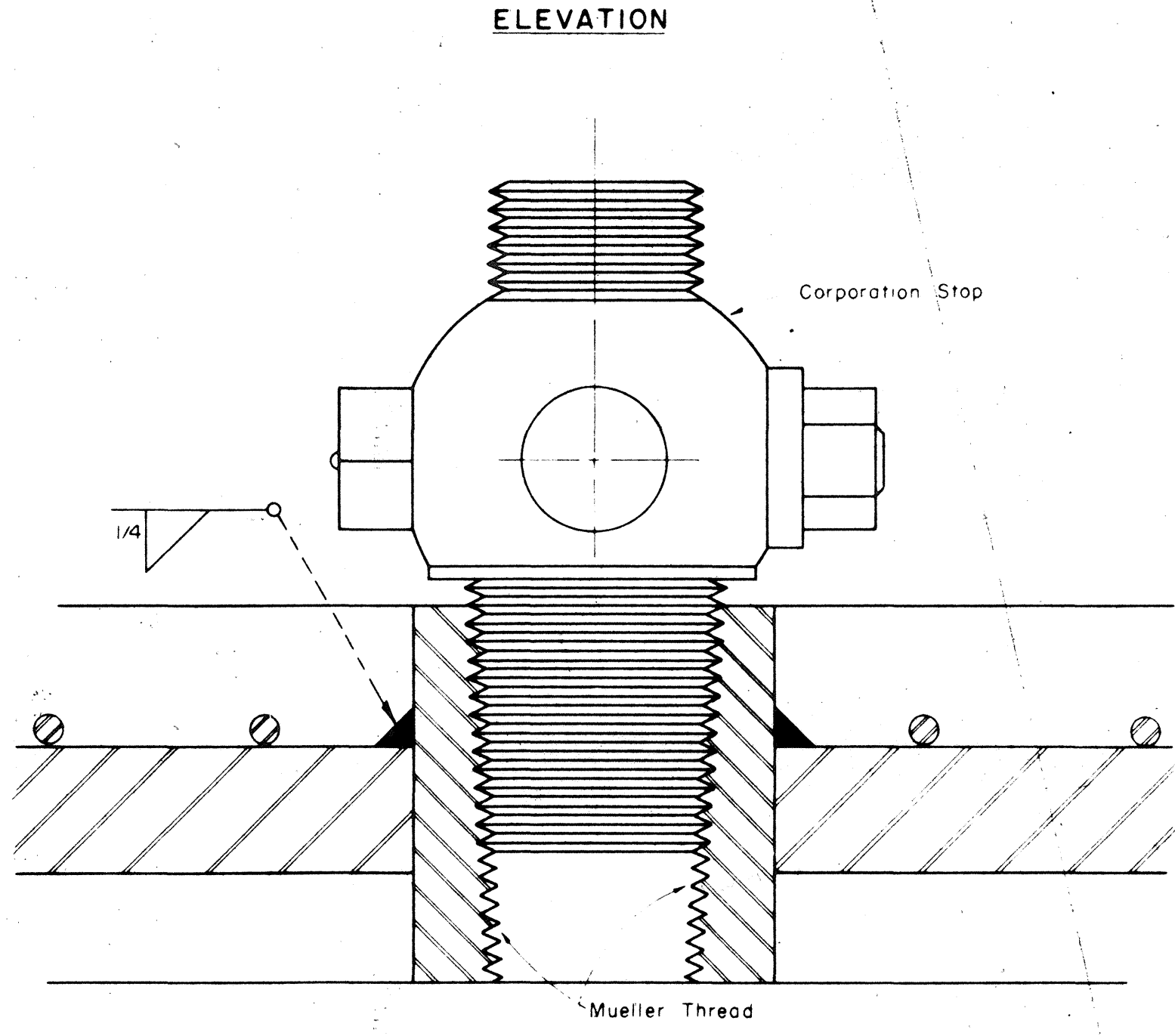
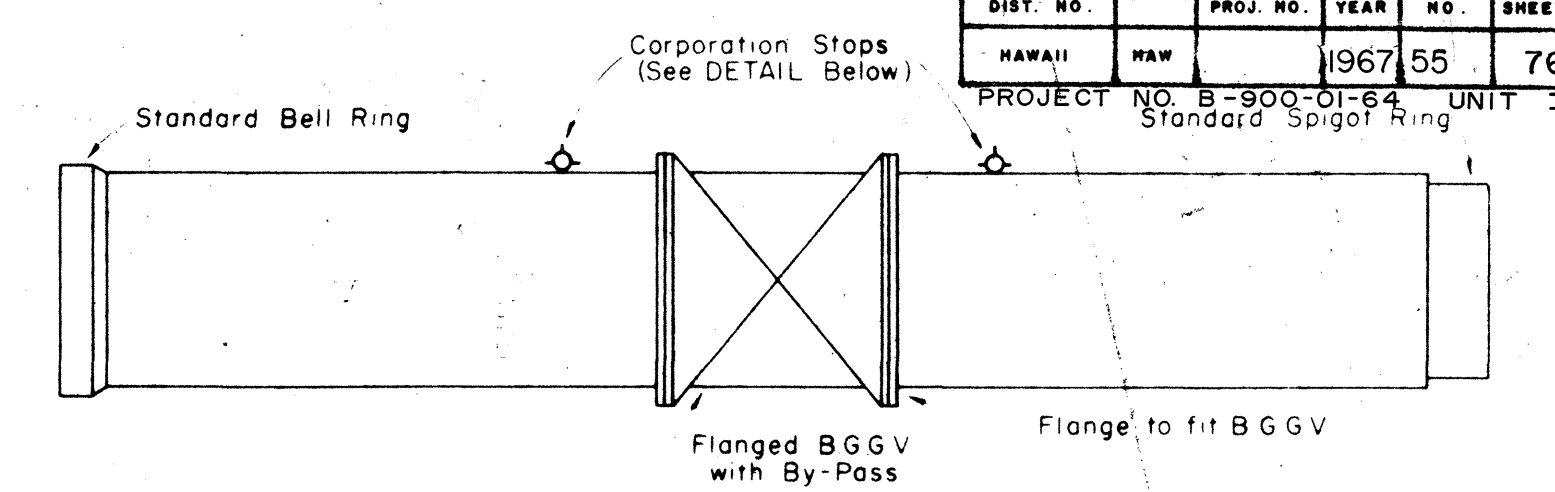


PLAN OF STEEL PLATE

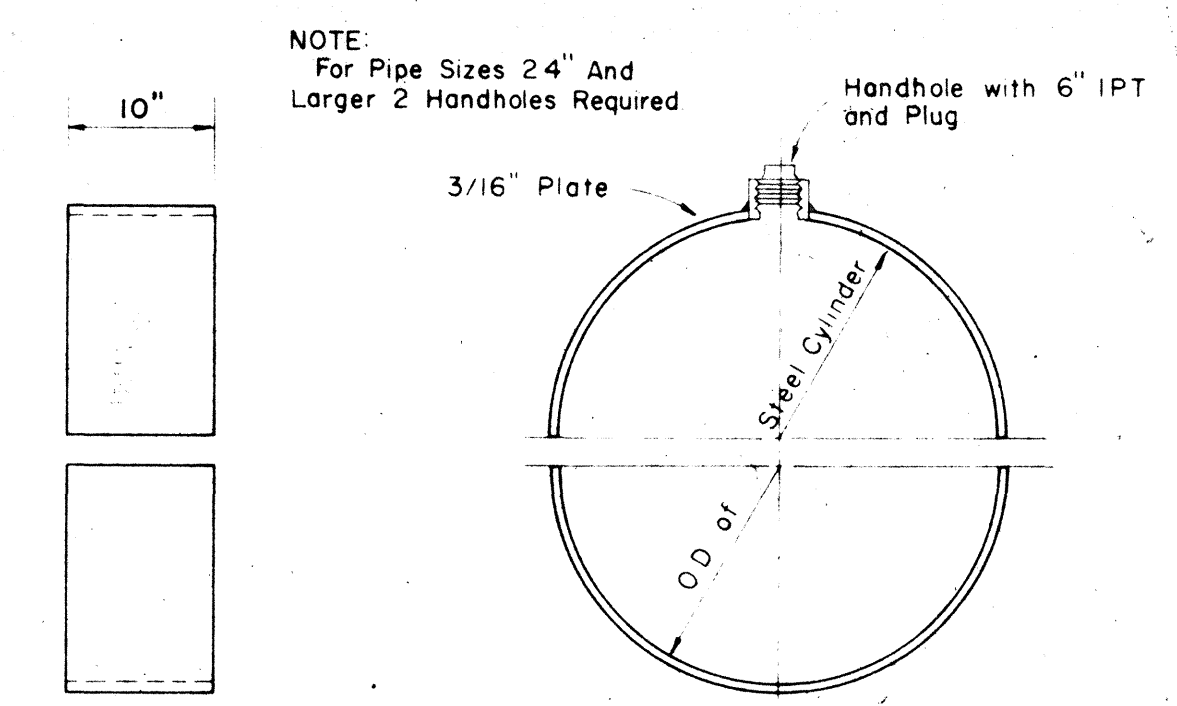


SECTION

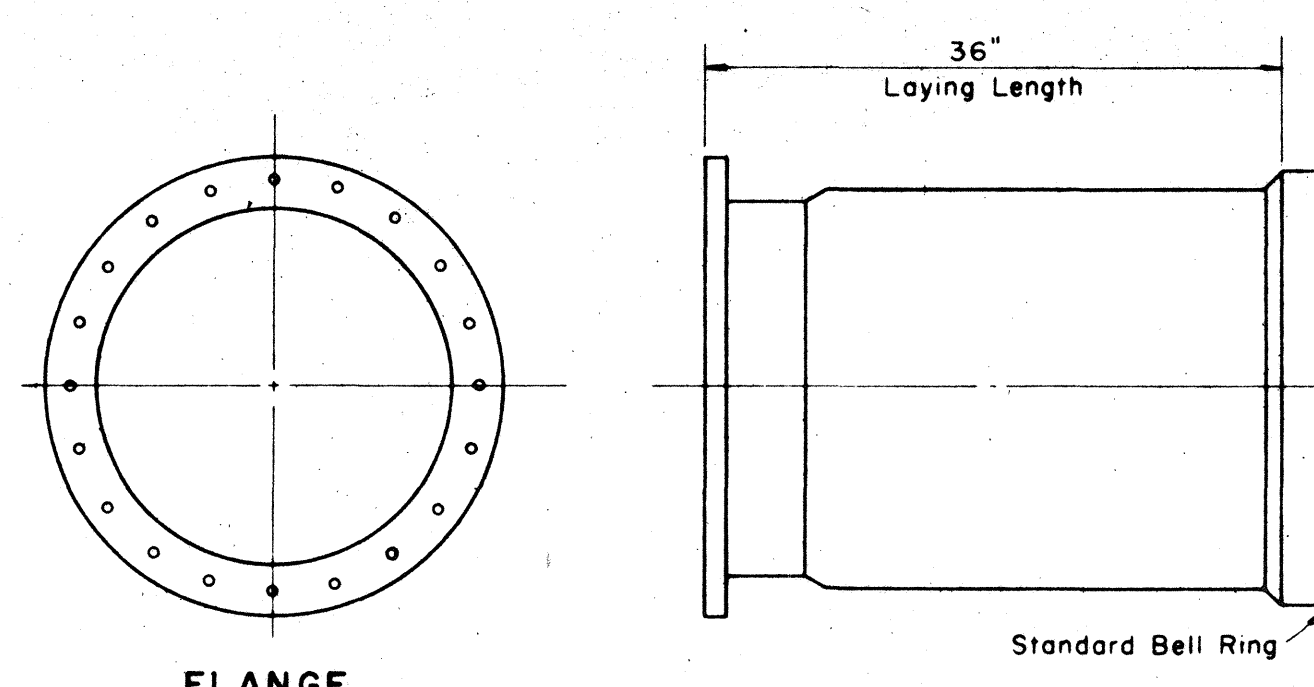
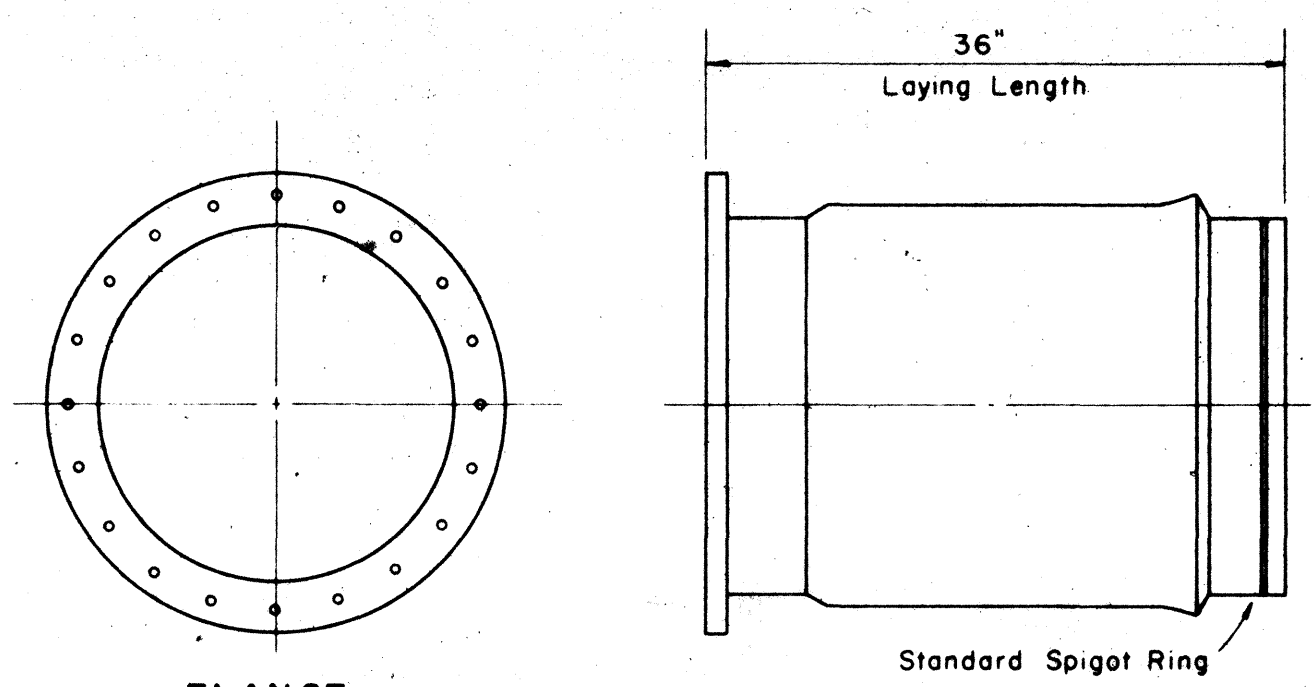
DETAIL OF CAP



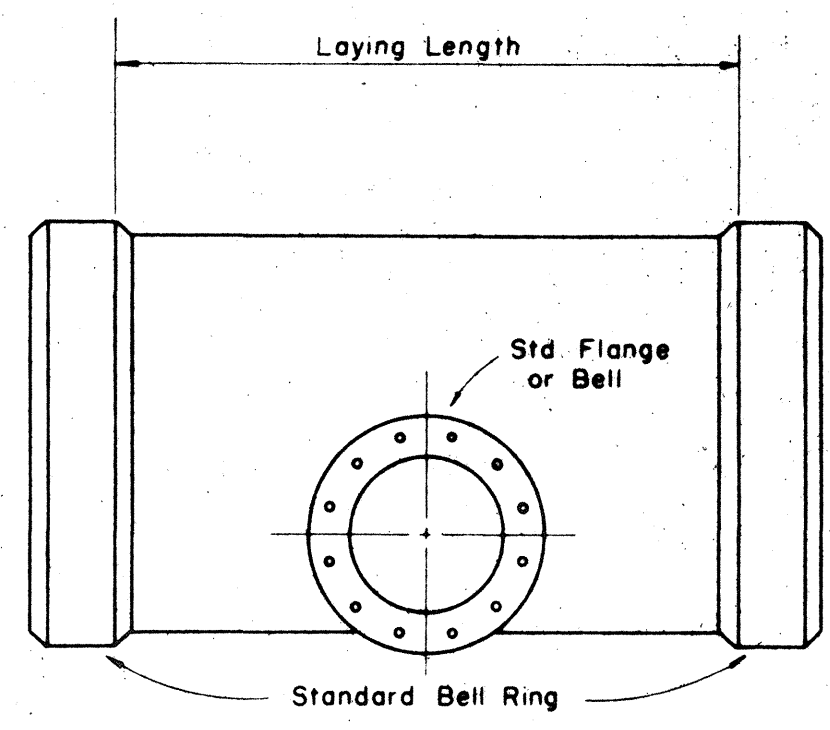
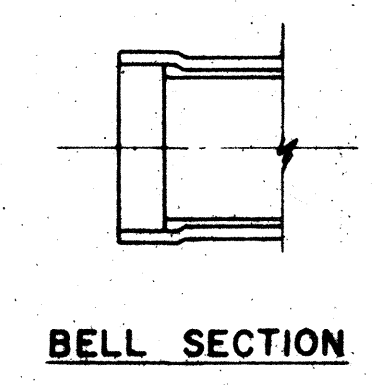
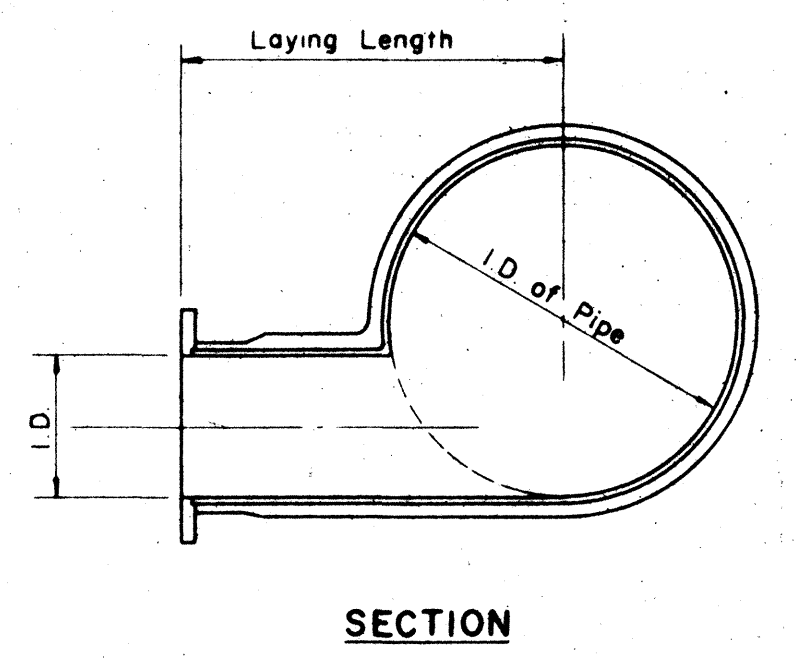
TYPICAL SECTION THRU CONCRETE PIPE AT CORPORATION STOP



DETAIL OF SPLIT BUTT STRAP



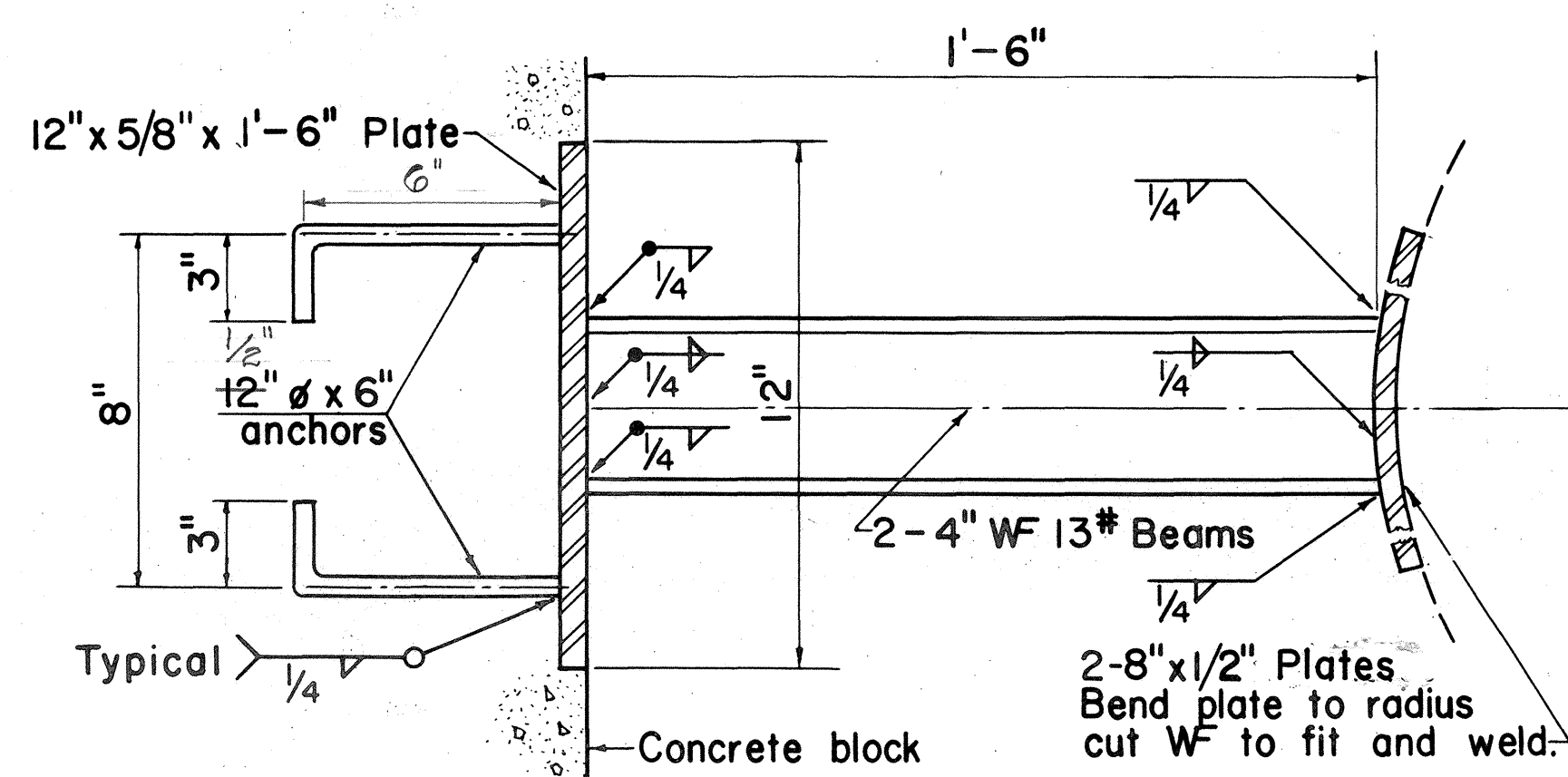
TYPICAL DETAIL OF ADAPTER



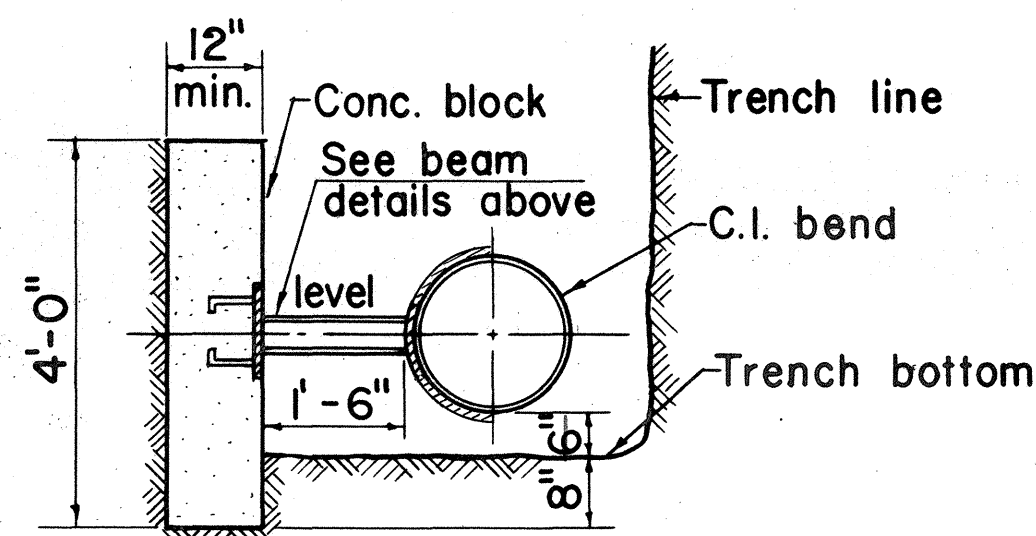
TYPICAL DETAIL OF BLOW-OFF TEE

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION		SURVEYED BY	
WATER DETAILS CONCRETE CYLINDER PIPE MISCELLANEOUS DETAILS		DRAWN BY L.K.	
APPROVED		TRACED BY L.K.	
SCALE No Scale		ENGINEER	
DATE April 25, 1962		CHECKED BY	
BOARD OF WATER SUPPLY HONOLULU, HAWAII		FILE	
SHEET 1 OF 6 SHEETS		POCKET FOLDER NO.	

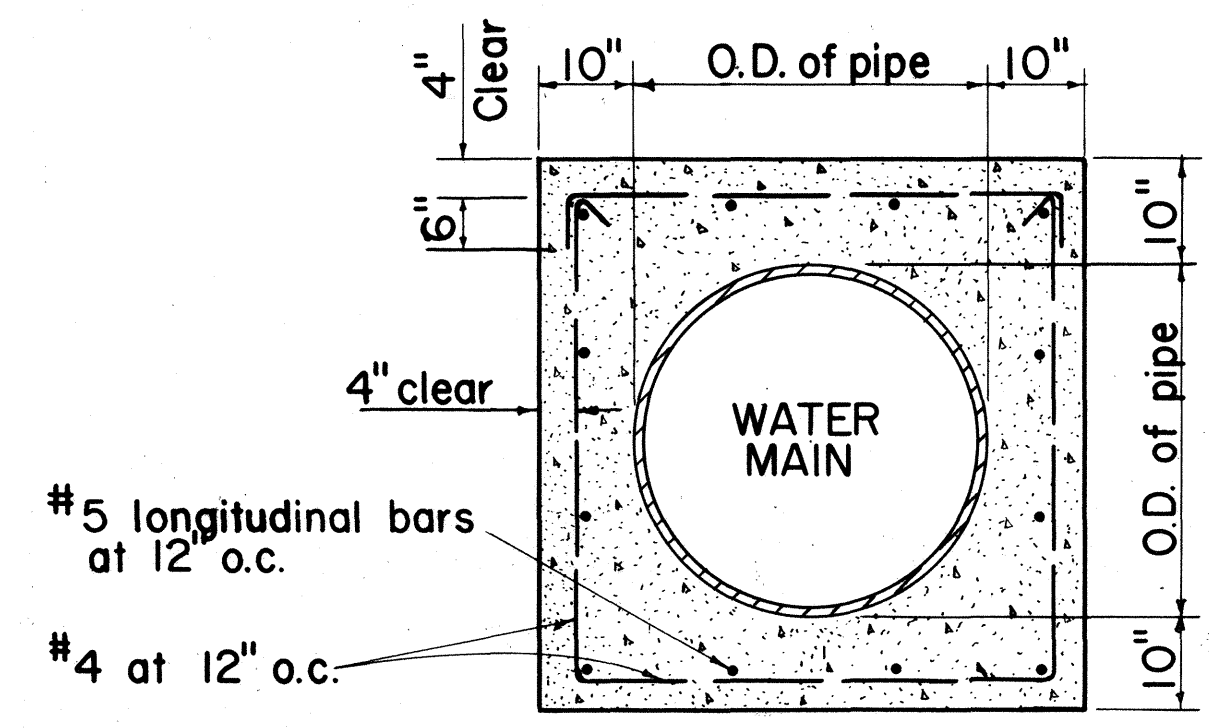
PROJECT NO. B-900-01-64 UNIT I



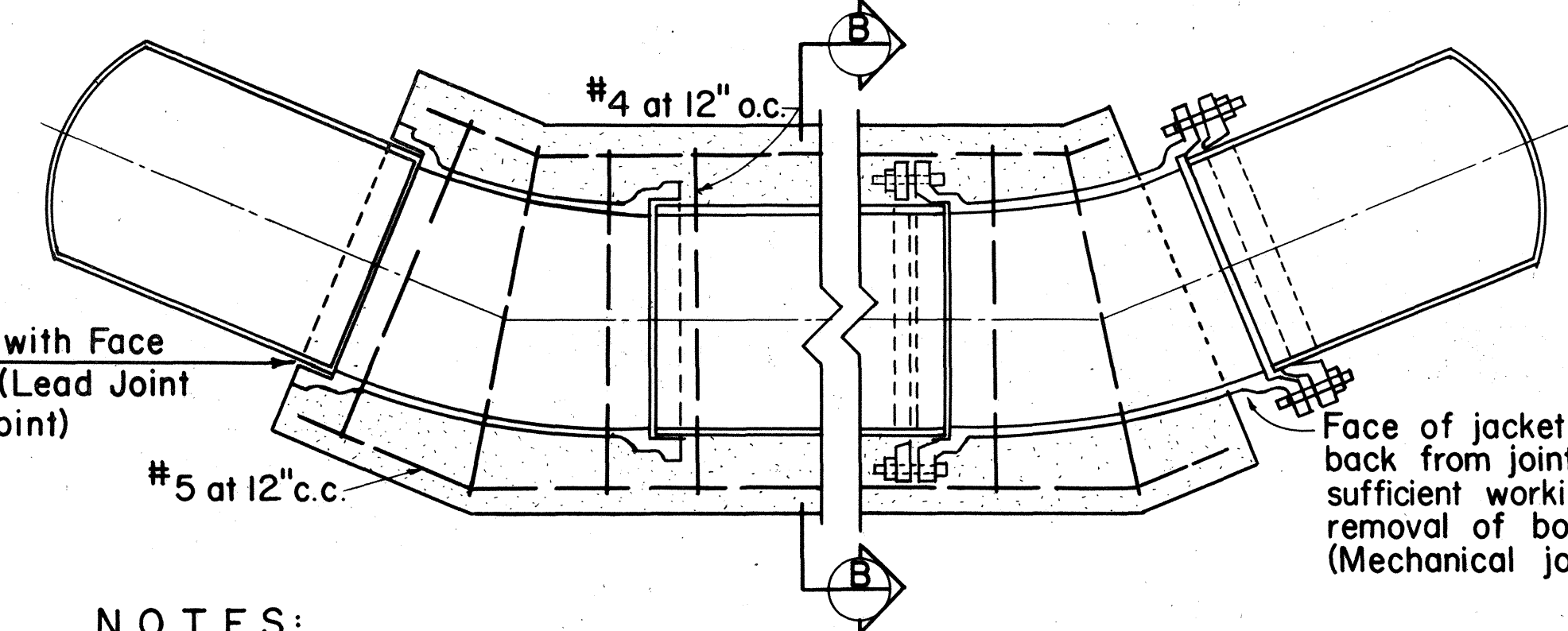
BEAM DETAIL
Scale: 3" = 1'-0"



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



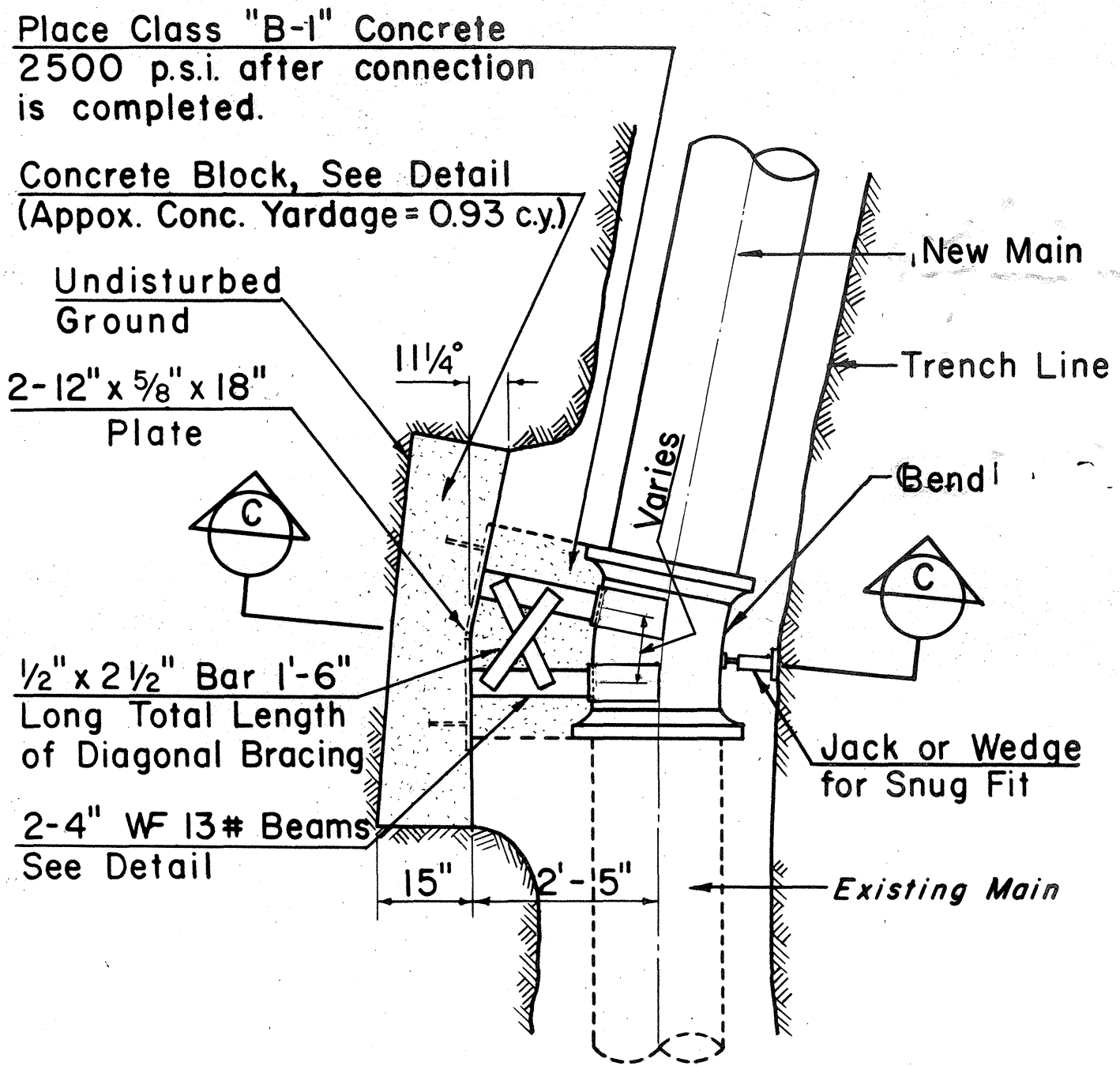
SECTION B



- NOTES:**
- Jacket to be poured after completion of test.
 - 2 1/2" depth of lead for lead joint pipe required at all embedded joints.
 - Wherever construction joints are required, 6" rubber or neoprene waterstops shall be installed. Waterstops shall be of the type specified and manufactured by the Servicized Products Corporation, Gate Rubber Company or approved equal.

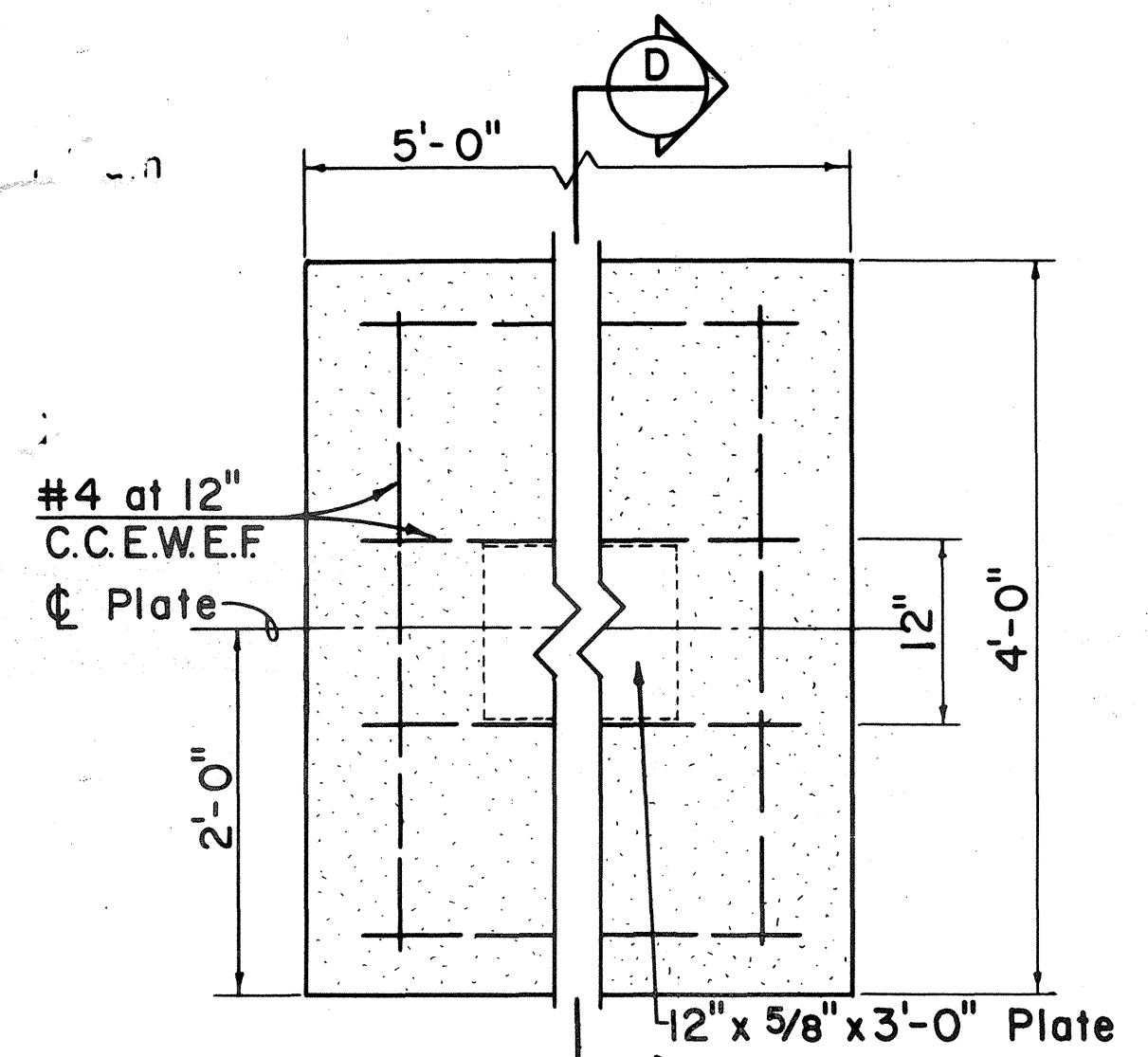
REINFORCED CONCRETE JACKET

Scale: Not to Scale

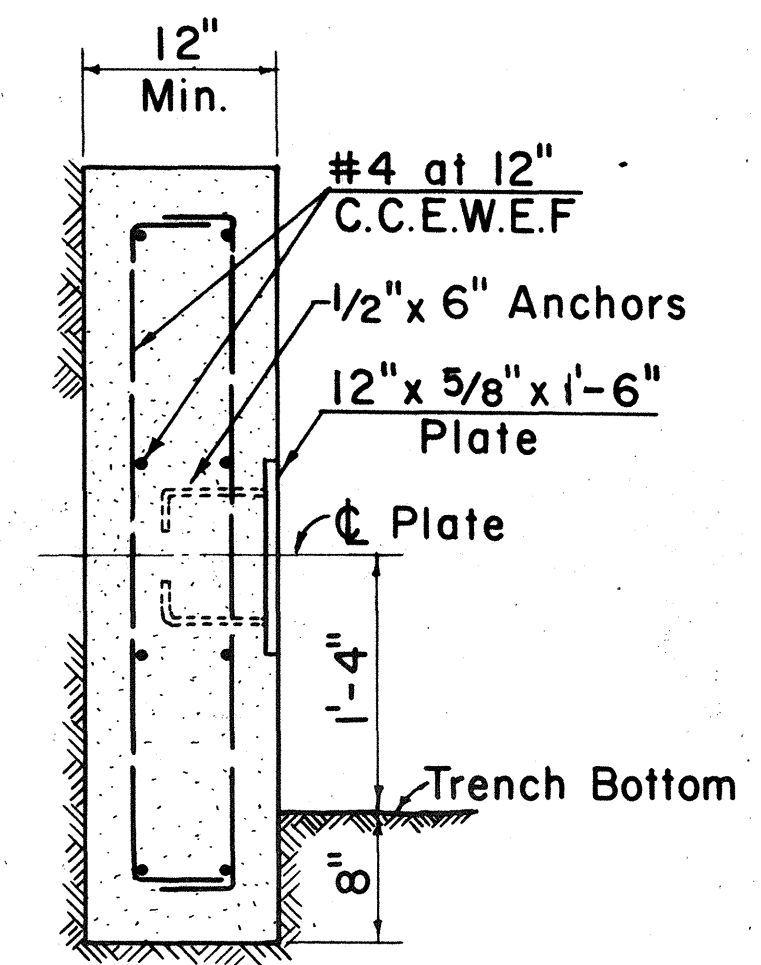


PLAN
Scale: 1/2" = 1'-0"

NOTE:
Concrete Block with structural strut shall be used for bends at connections or for tee connections.

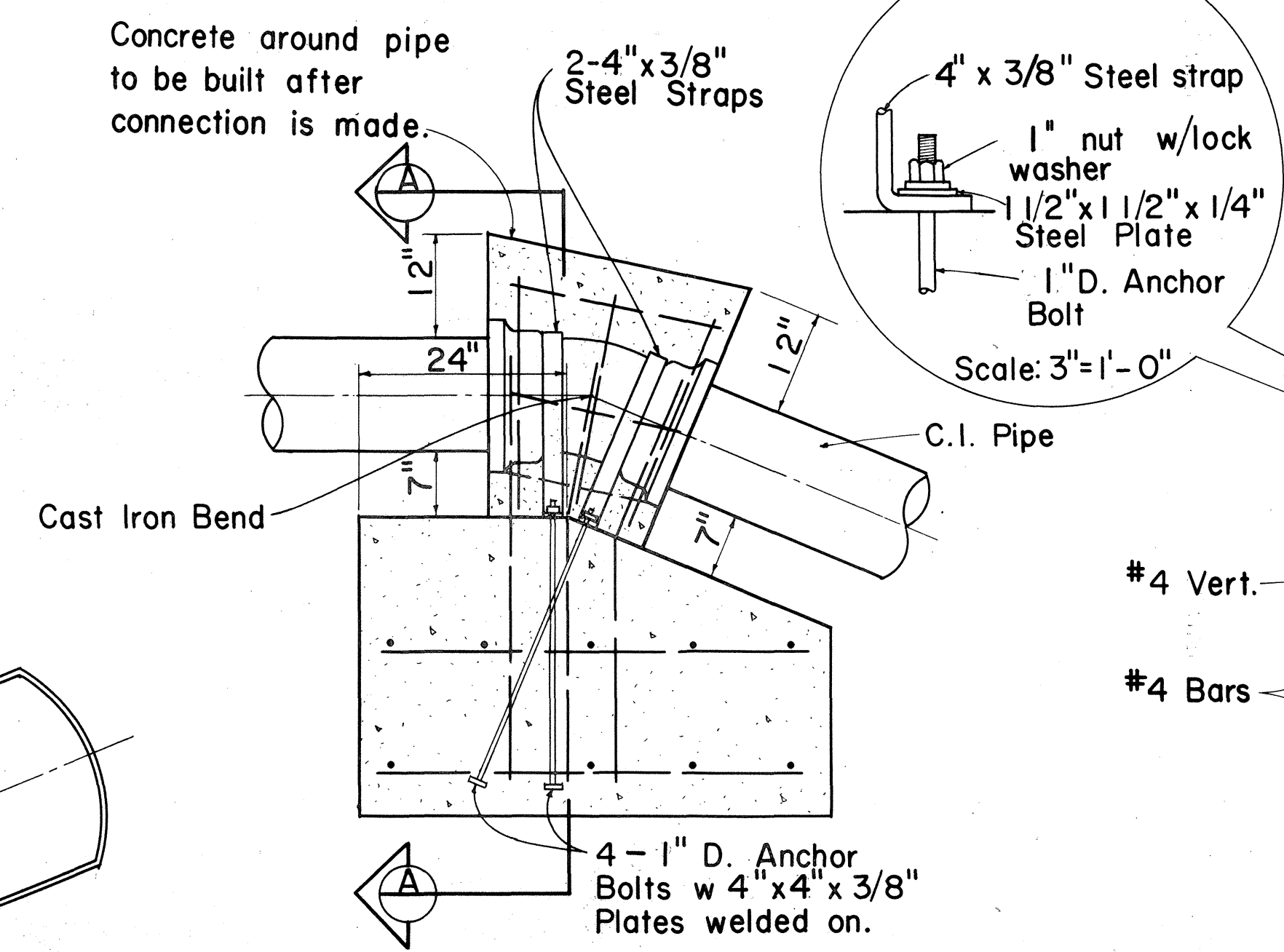


ELEVATION

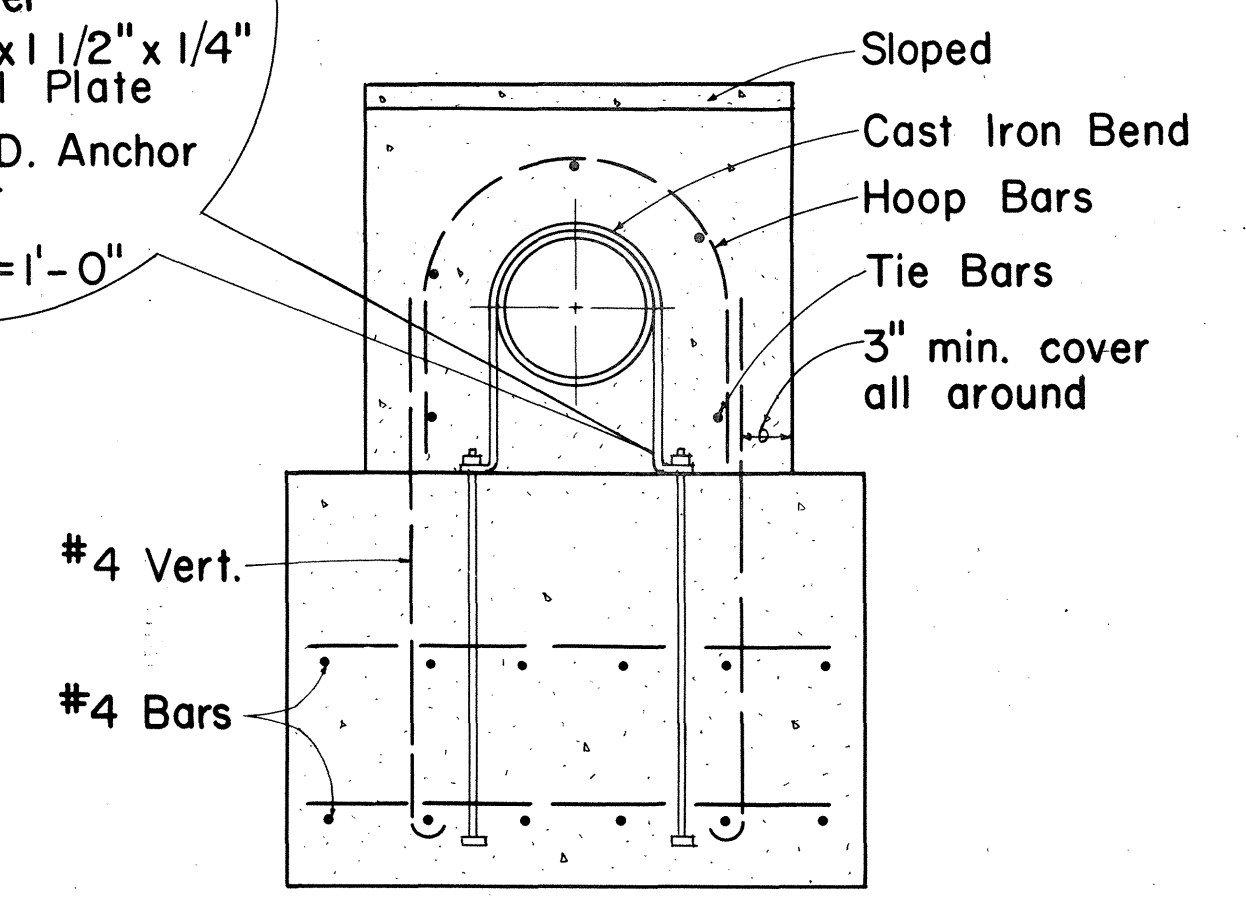


SECTION D

DETAILS OF CONCRETE BLOCK
Scale: 1" = 1'-0"



ELEVATION

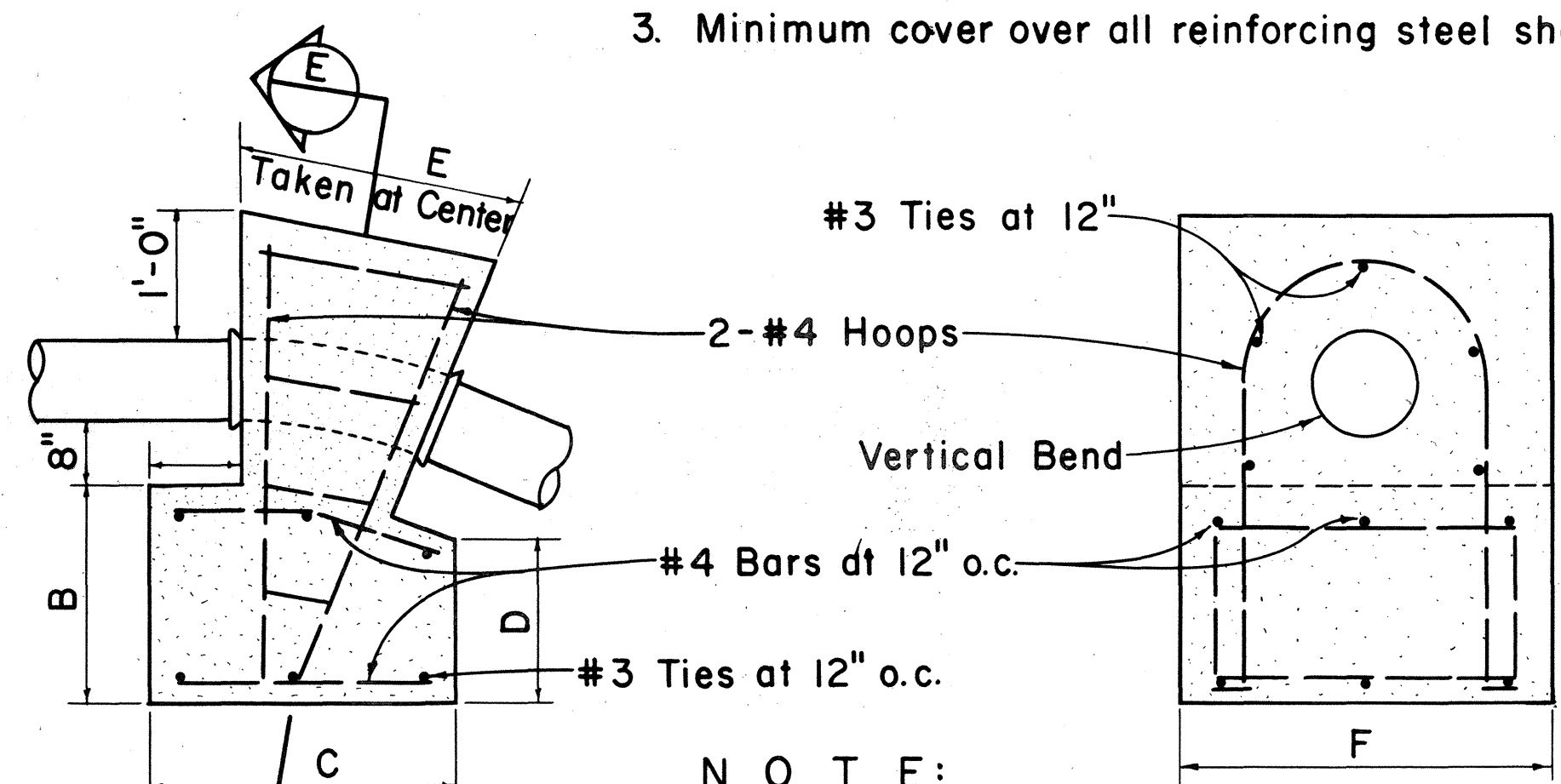


SECTION A

TYPICAL DETAIL OF CONCRETE REACTION BLOCK WITH STRAPS
Scale: 3/4" = 1'-0"

GENERAL NOTES:

- Detail drawings of actual precast blocks and other reaction blocks (not precast) to be used, shall be furnished during construction by B.W.S. and or State.
- Steel straps, anchor bolts, nuts, washers, etc., furnished and installed by the Contractor will not be paid for directly, but shall be considered incidental to the various contract items for the water system.
- Minimum cover over all reinforcing steel shall be 3 inches.



ELEVATION

SECTION E

TYPICAL DETAIL OF REINFORCED CONCRETE REACTION BLOCK FOR TOP VERTICAL BENDS
Scale: Not to Scale

1/16 VERTICAL BENDS, A.W.A.A. 250 p.s.i.

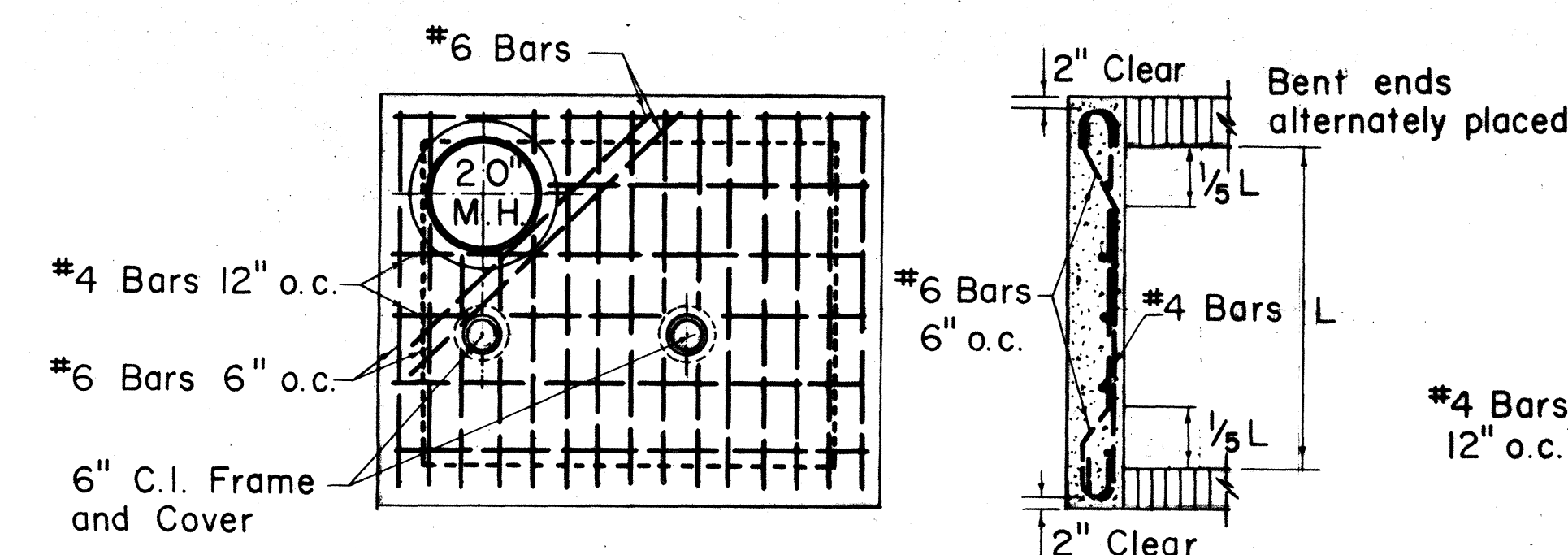
PIPE SIZE	DIMENSIONS						CU. YDS.
	A	B	C	D	E	F	
8	1'-0"	2'-0"	3'-0"	1'-6"	1'-6"	4'-0"	1 1/4
6	0'-9"	1'-9"	2'-6"	1'-4"	1'-6"	3'-0"	3/4

APPROVED:

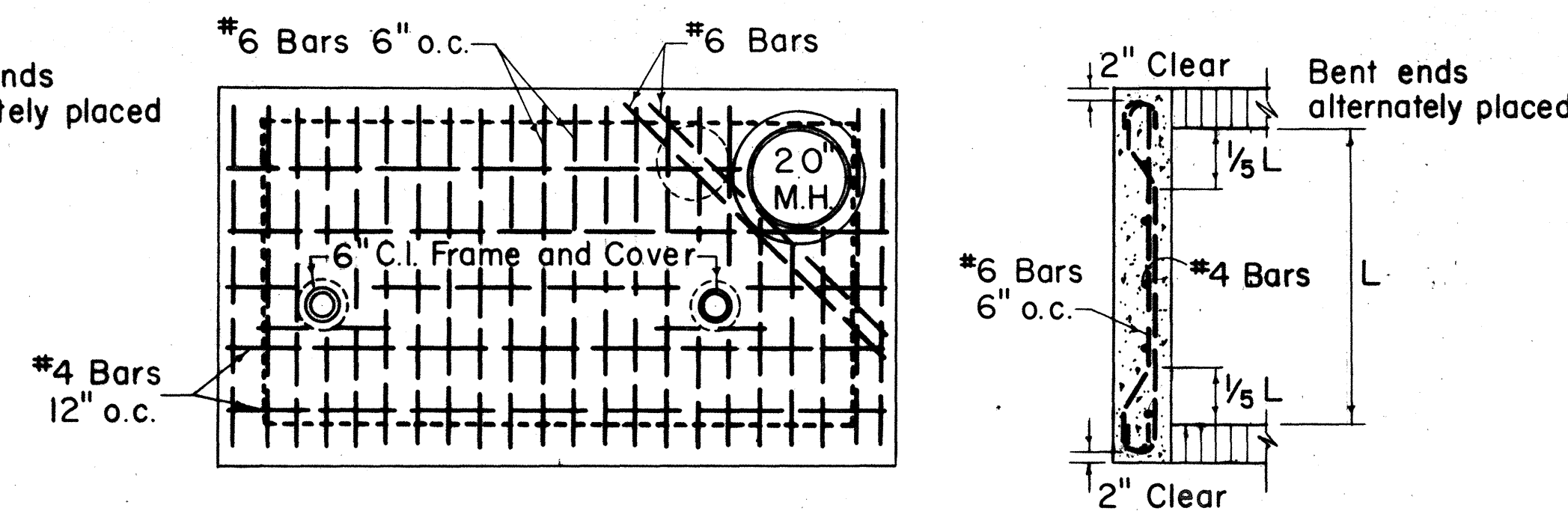
L. Hawalemi 10/3/67
CHIEF, ENGINEERING DIVISION
BOARD OF WATER SUPPLY

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU
STANDARD DETAILS

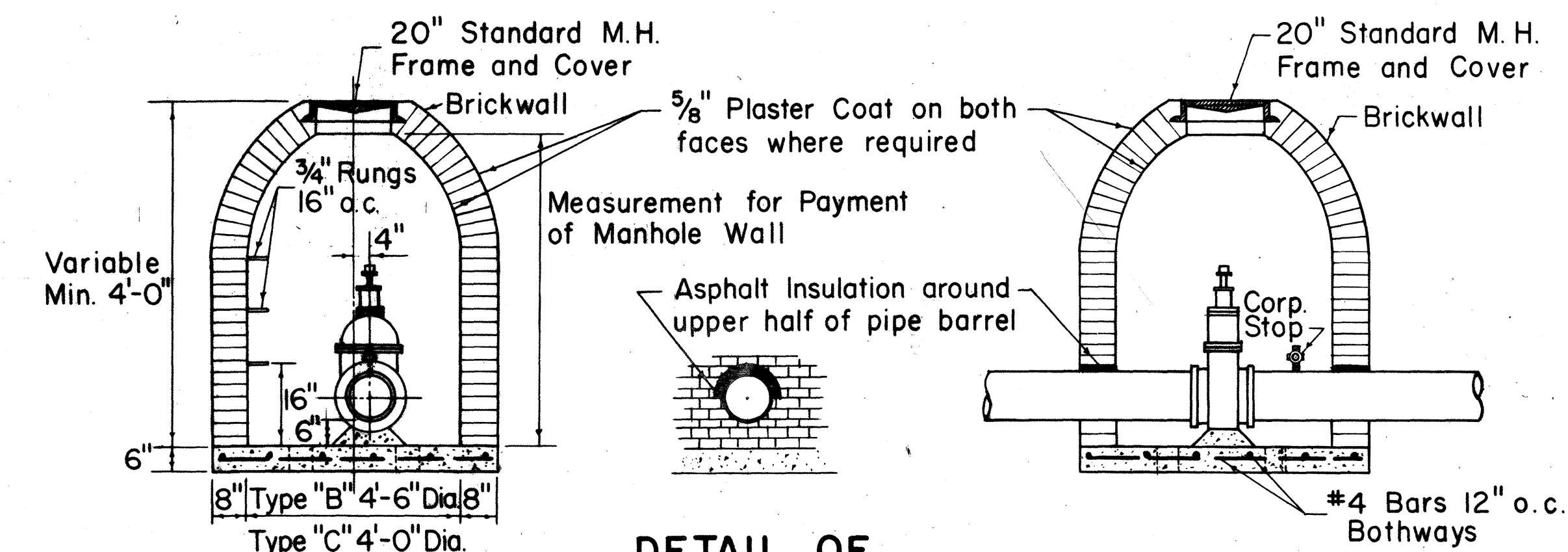
TYPICAL DETAIL OF CONCRETE BLOCK WITH STRUCTURAL STRUT



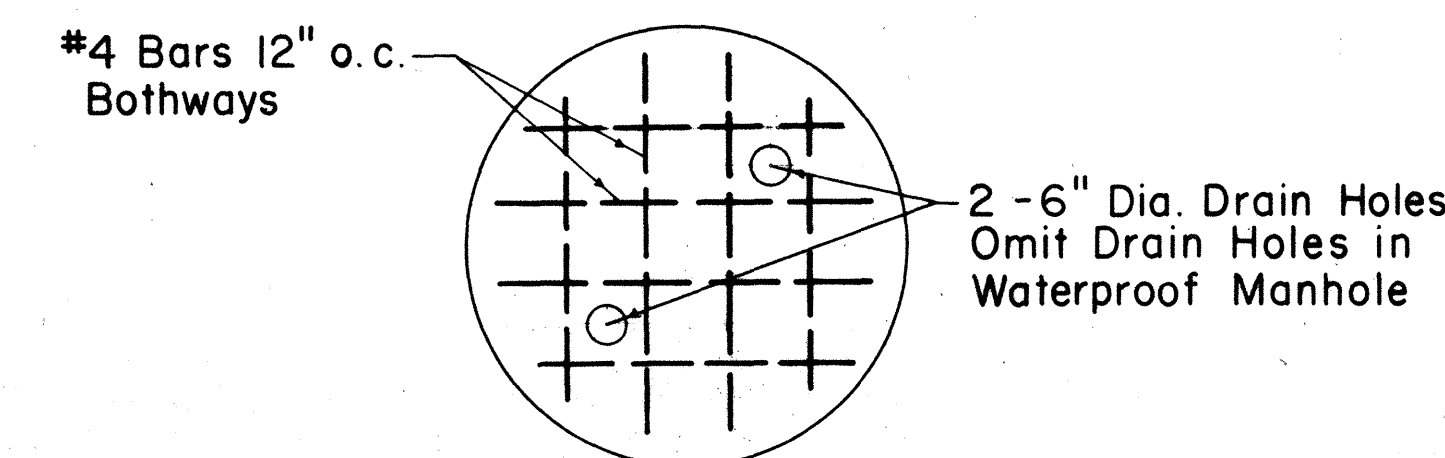
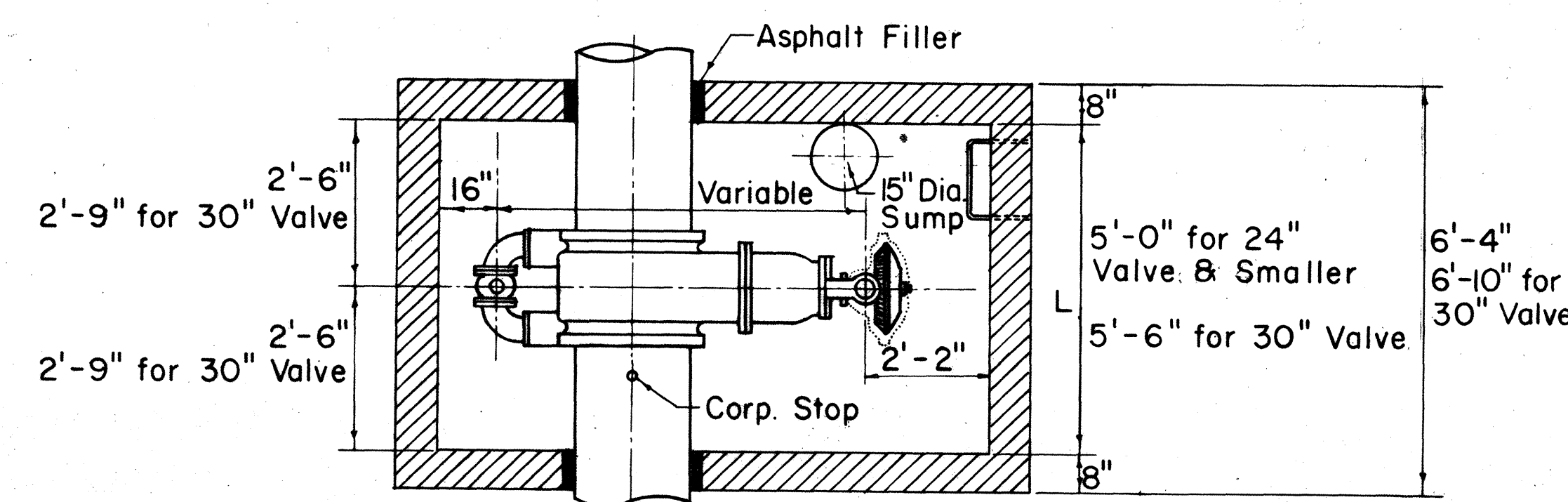
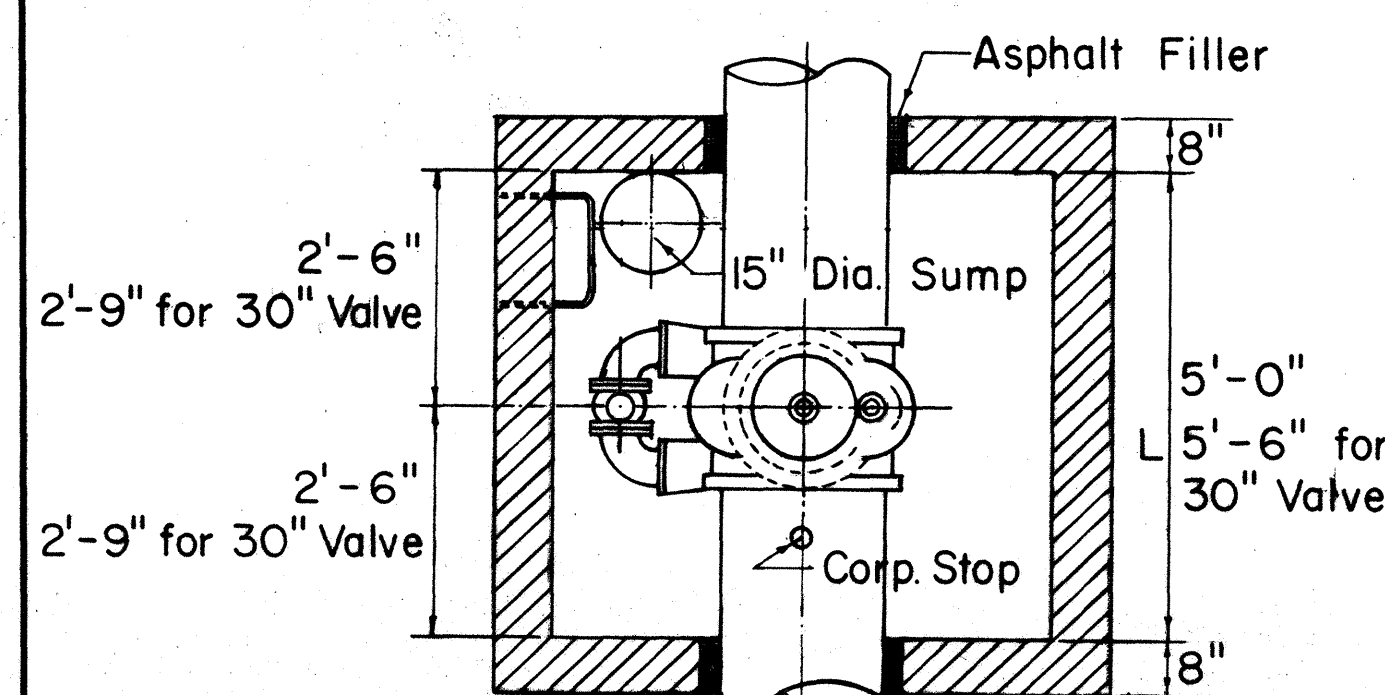
PLAN OF TOP SLAB



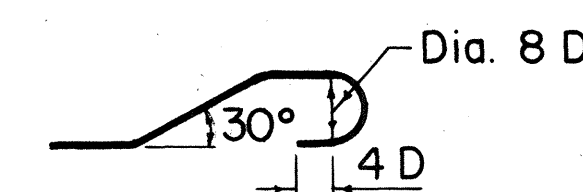
PLAN OF TOP SLAB



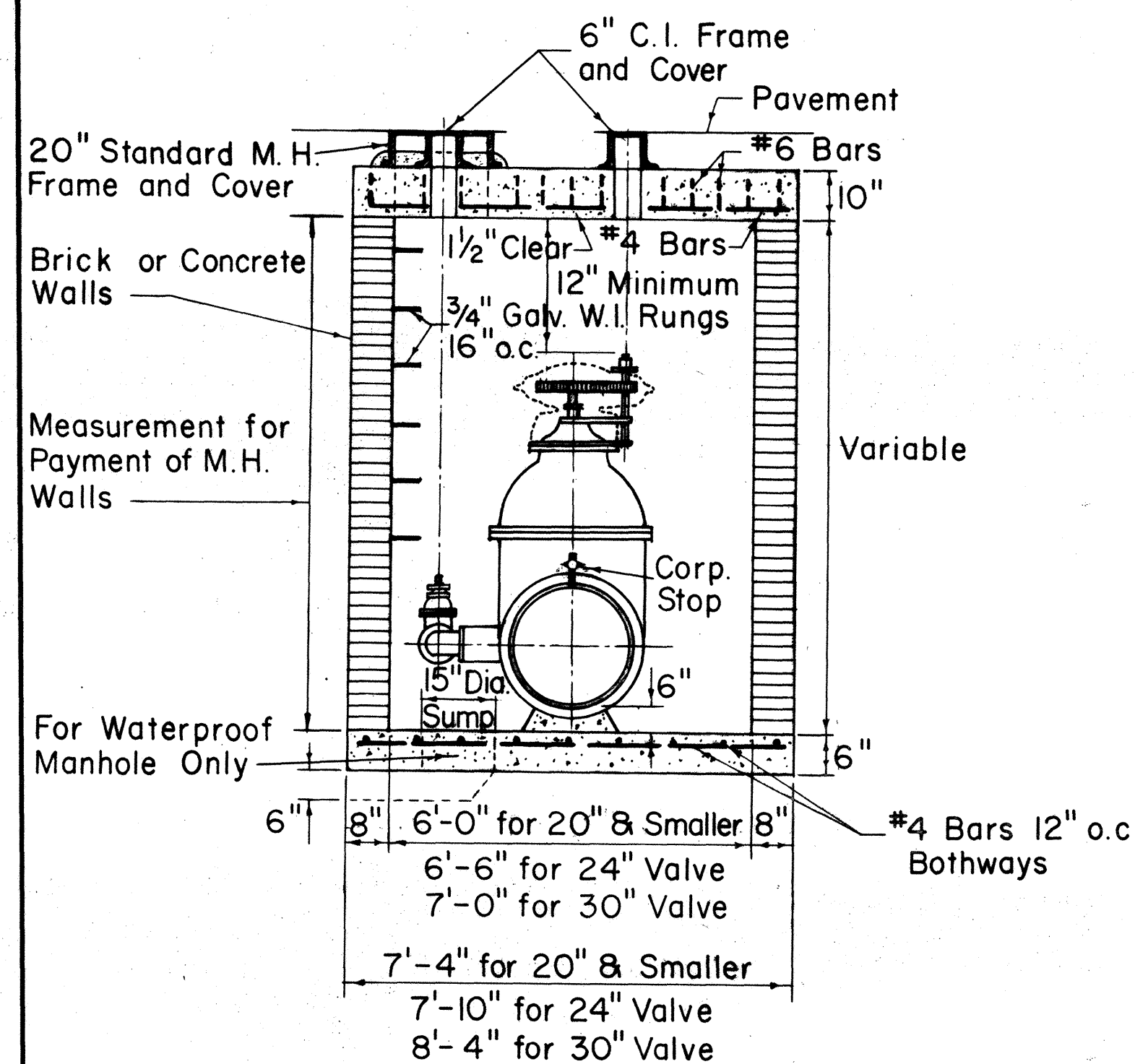
DETAIL OF ASPHALT FILLER



STEEL DETAIL IN BOTTOM SLAB

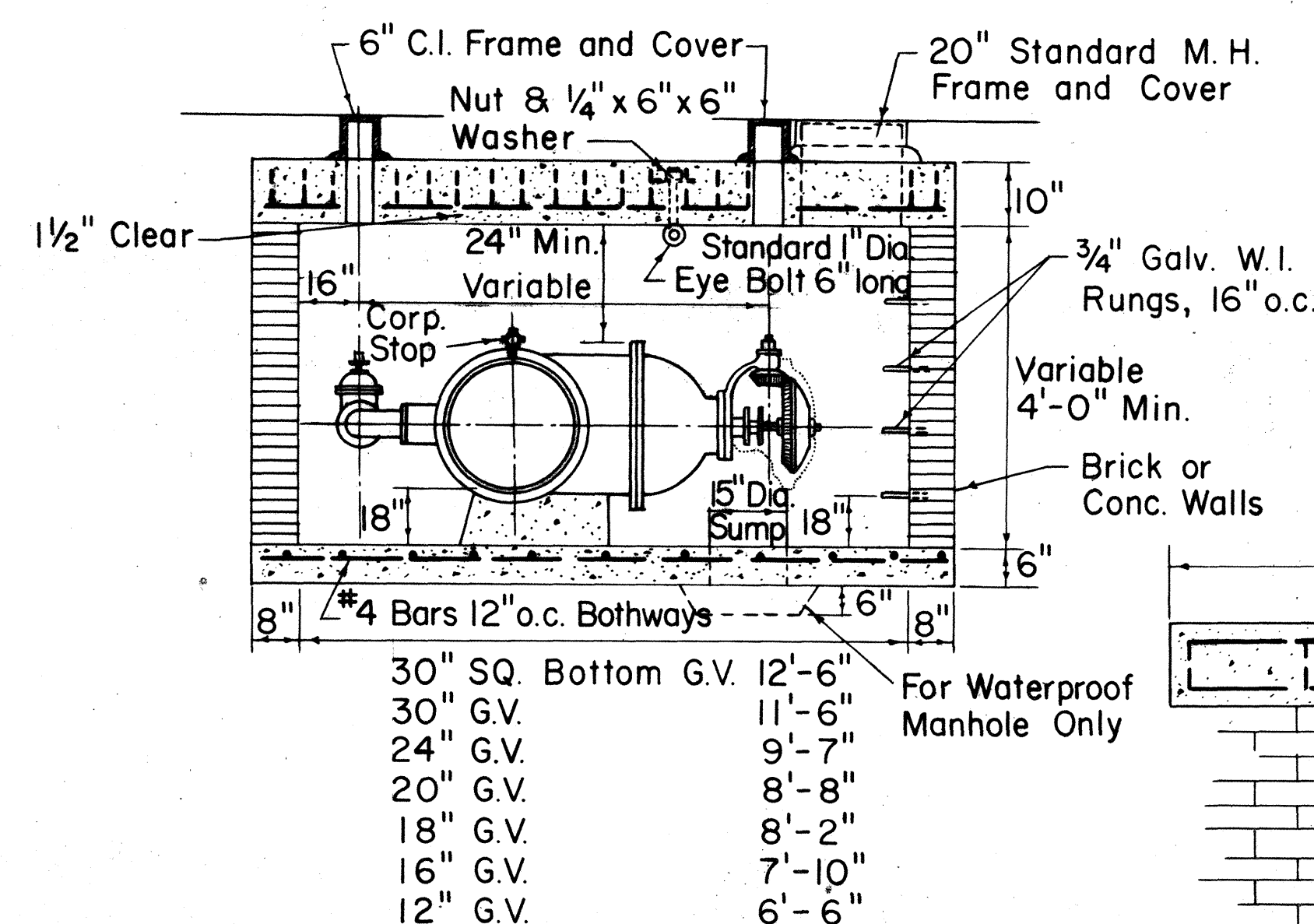


BAR BENDING DETAIL



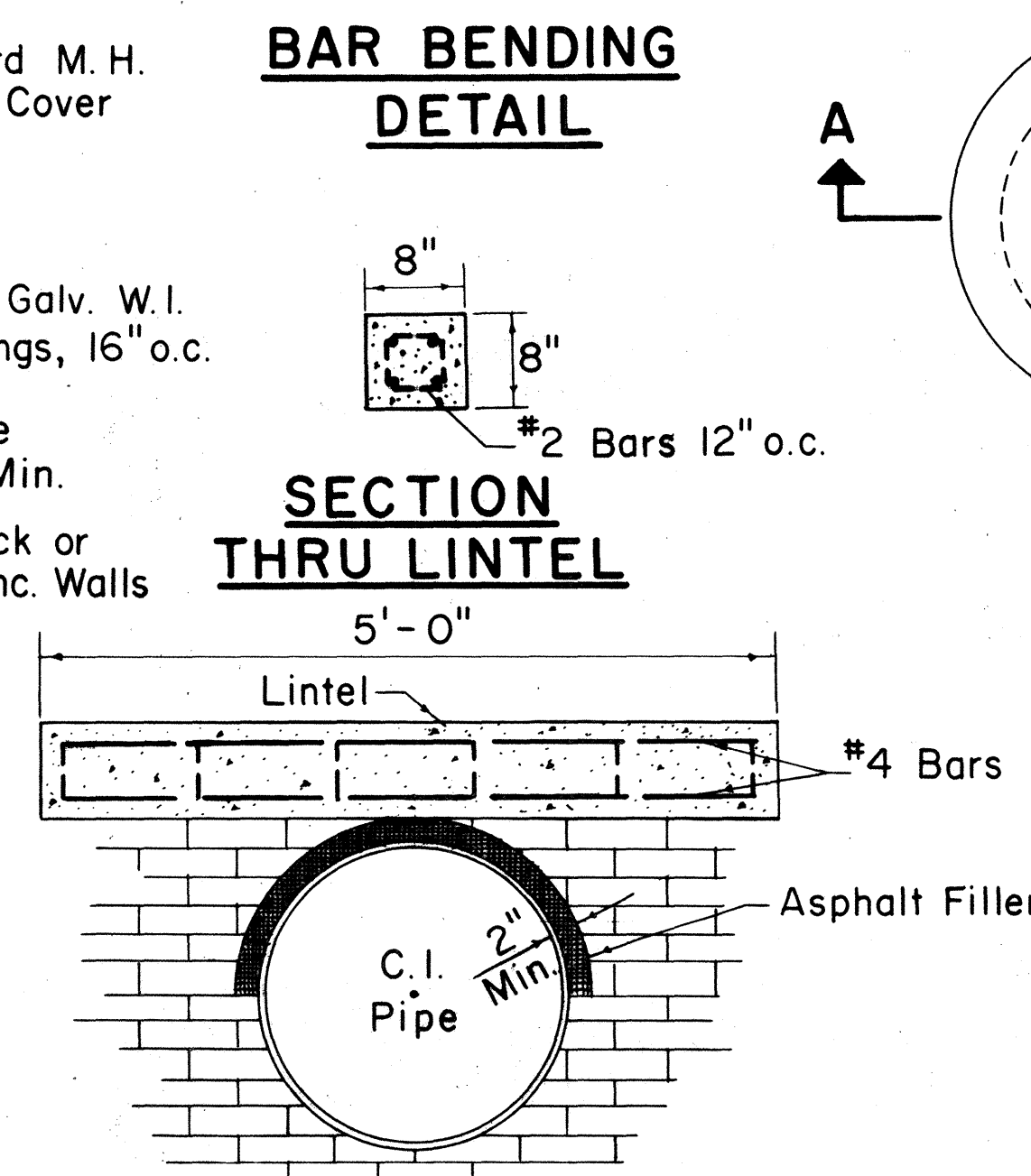
SECTION

TYPE "A" MANHOLE FOR SPUR GEARED GATE VALVES

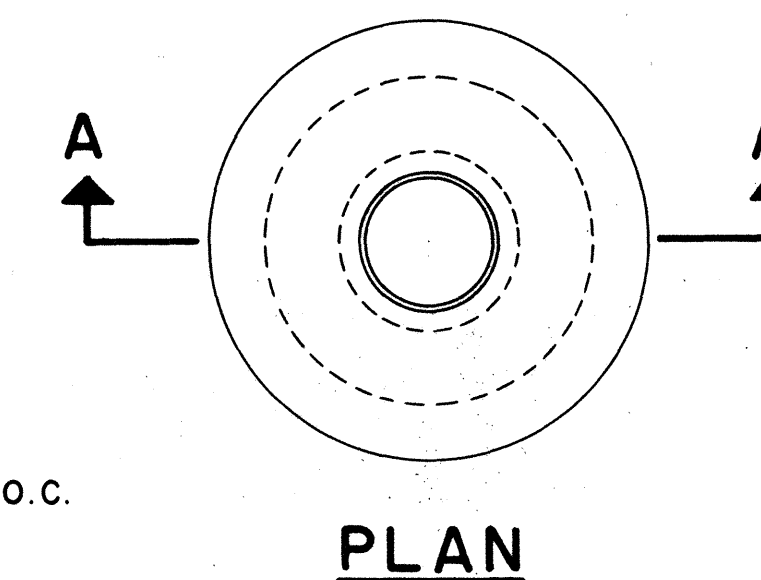


SECTION

TYPE "A" MANHOLE FOR BEVEL GEARED GATE VALVES



DETAIL OF LINTEL AND ASPHALT FILLER

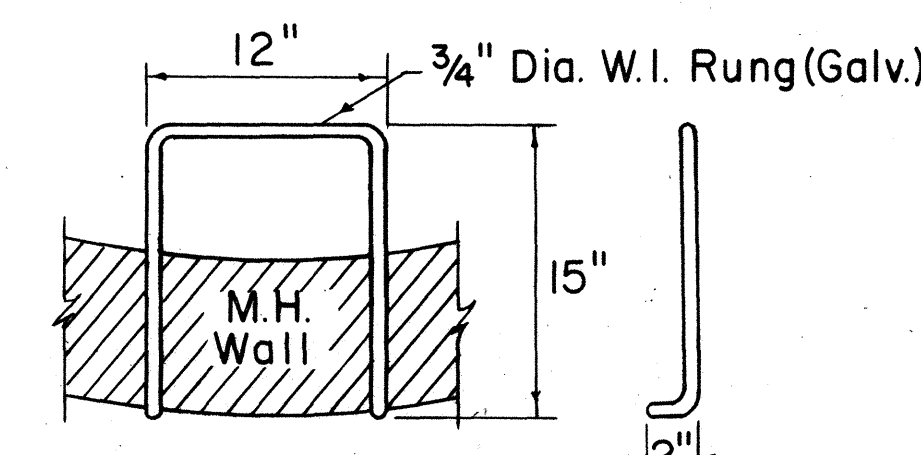


PLAN

TYPE "B" AND "C" MANHOLES
TYPE "B" 4'-6" DIA. (FOR 12" G.V.)
TYPE "C" 4'-0" DIA. (FOR 6" & 8" G.V.)

TABLE "A"
REQUIRED CORPORATION STOP SIZES AT GATE VALVE

DIA. OF MAIN INCHES	SIZE OF CORP. STOP
4	1" x 1 1/4"
6	1" x 1 1/4"
8	1" x 1 1/4"
12	1" x 1 1/4"
16	1" x 1 1/4"
20	1" x 1 1/4"
24	1 1/2" x 2"
36	1 1/2" x 2"
42	1 1/2" x 2"



DETAIL OF RUNG

APPROVED:

A. Kawahara 10/3/67
CHIEF, ENGINEERING DIVISION
BOARD OF WATER SUPPLY

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU

STANDARD DETAILS

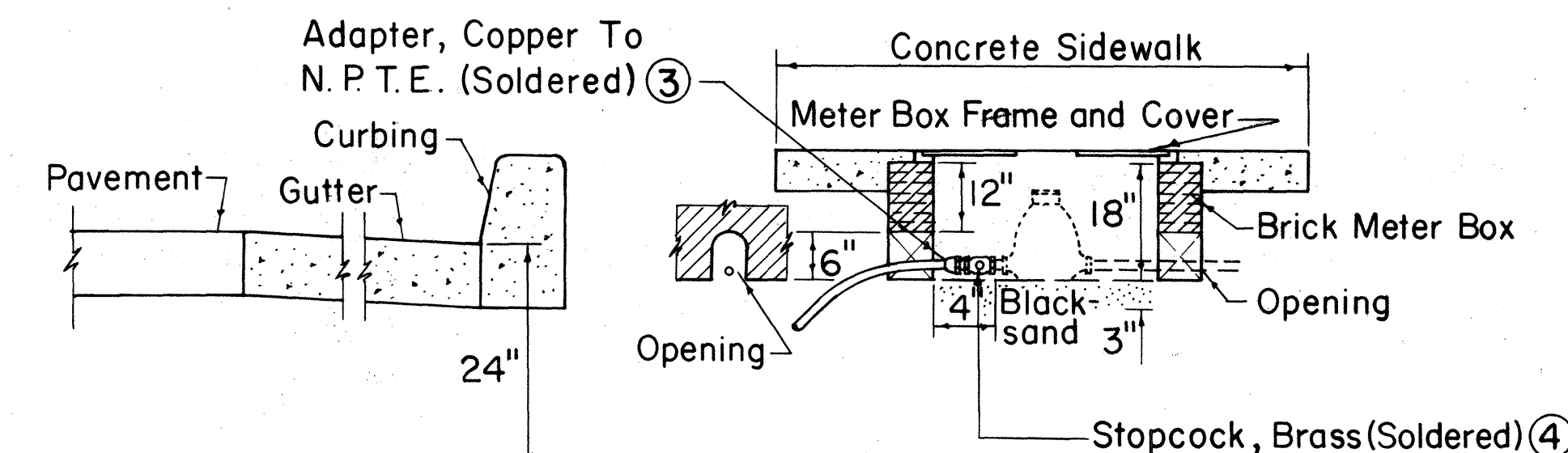
Not to Scale Date
SHEET NO. 3 OF 6 SHEETS

SCHEDULE OF COPPER FITTINGS (SOLDERED JOINT)

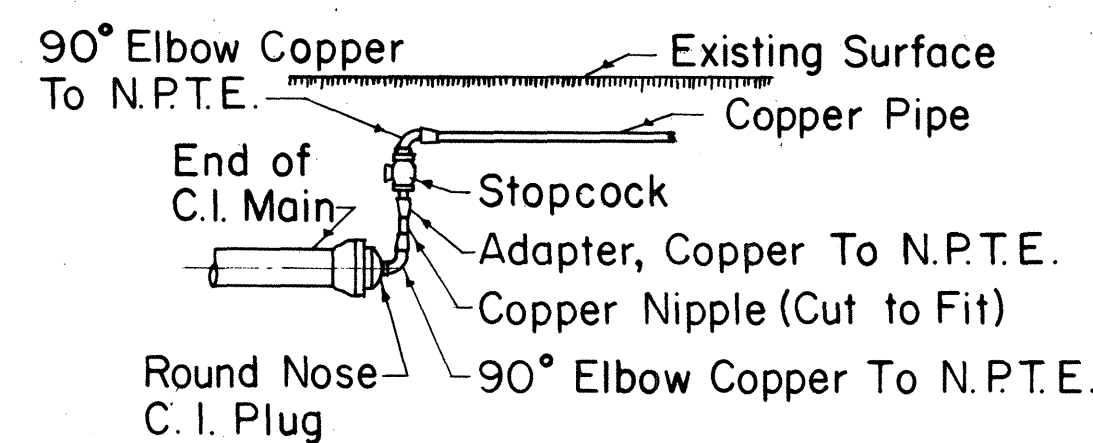
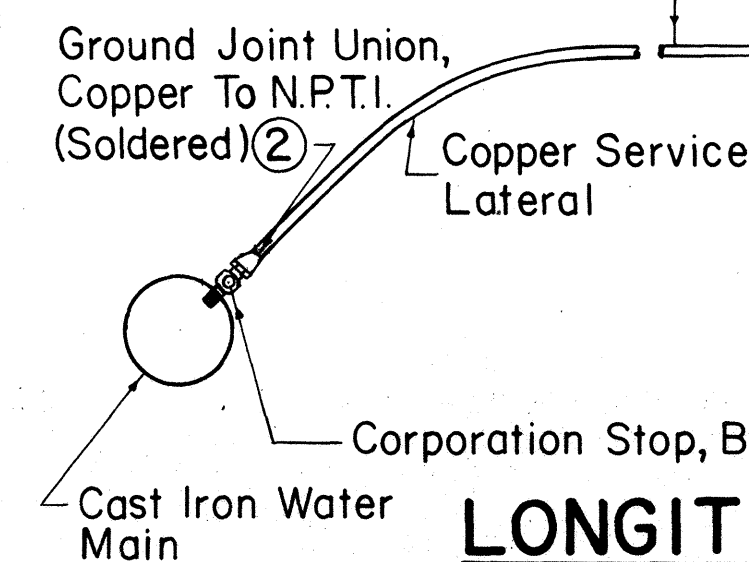
ITEM NO.	DESCRIPTION	SINGLE SERVICE CONN.	MULTIPLE SERV. CONN.	
			TWO SERVICES	THREE SERVICES
1	Corporation Stop Brass (H-10003)	1	1	1
2	Ground Joint Union (Style Copper To N.P.T.E. No. C-109)	1	1	1
3	Adapter, Copper To N.P.T.E. (Style No. C-101)	2	1	1
4	Stopcock Brass (BWS Standard)	1	1	1
5	Fitting Adapter, (Style Fitting To N.P.T.E. No. C-104)	—	1	1
6	Tee, Copper To Copper To Copper (Style No. T-300)	—	1	1
7	Bushings, Fitting To Copper (Style No. C-103)	—	2	2
8	90° Elbow, Copper To Copper (Style No. C-200)	—	2	2
9	Adapter, Copper To N.P.T.E. (Style No. C-101)	1	2	3
10	Stopcock Brass (BWS Standard)	1	2	3
11	Reducing Tee, Copper To Copper To Copper (Substitute For Items Number 6 and 7). (Style No. T-300)	—	1	1
12	Tee, Copper To Copper To Copper (Style No. T-300)	—	—	1
13	Bushing, Fitting To Copper (Style No. C-103)	—	—	1
14	Reducing Tee, Copper To Copper To Copper (Substitute For Items Number 12 and 13) (Style No. T-300)	—	—	1

NOTE:

Reference Numbers shown thus (H-10003) are from Mueller Co. Catalog "H" and (Style No. T-300) are from Mueller Brass Co. "Streamline" Catalog S-354. Approved Equal may be used.

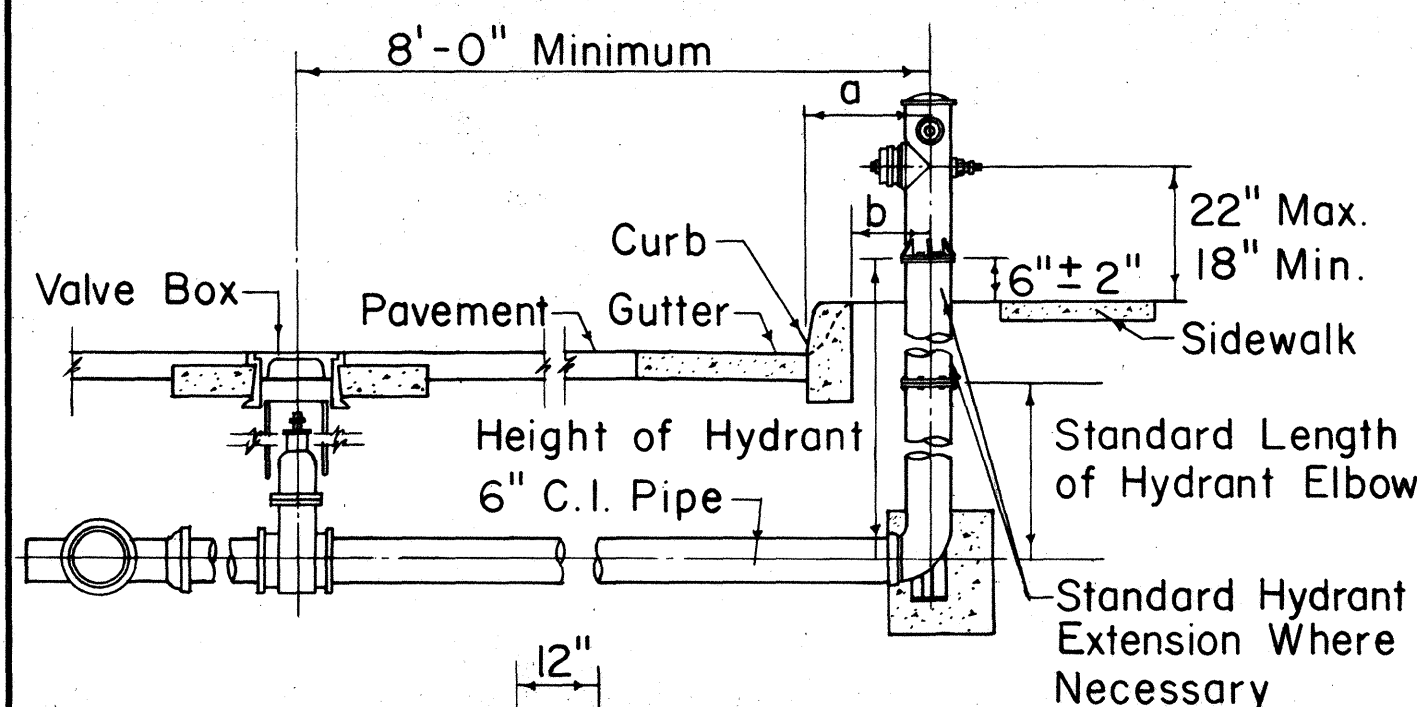


LONGITUDINAL SECTION



SOLDERED JOINT

SERVICE LATERAL CONNECTION AT END OF LINE

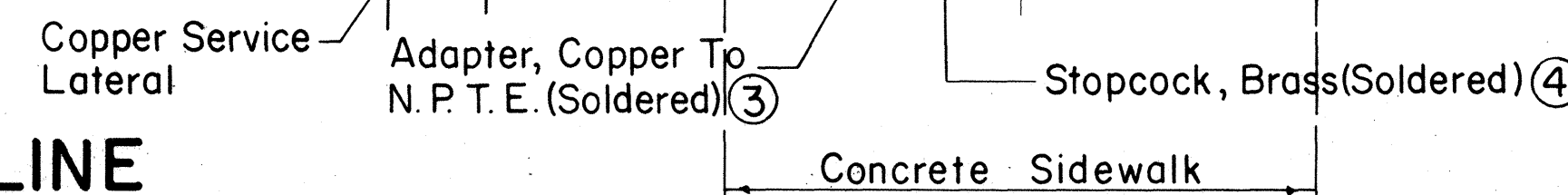


a	20" Min. (Standard Curb)
b	20" Min. (Roll Curb)

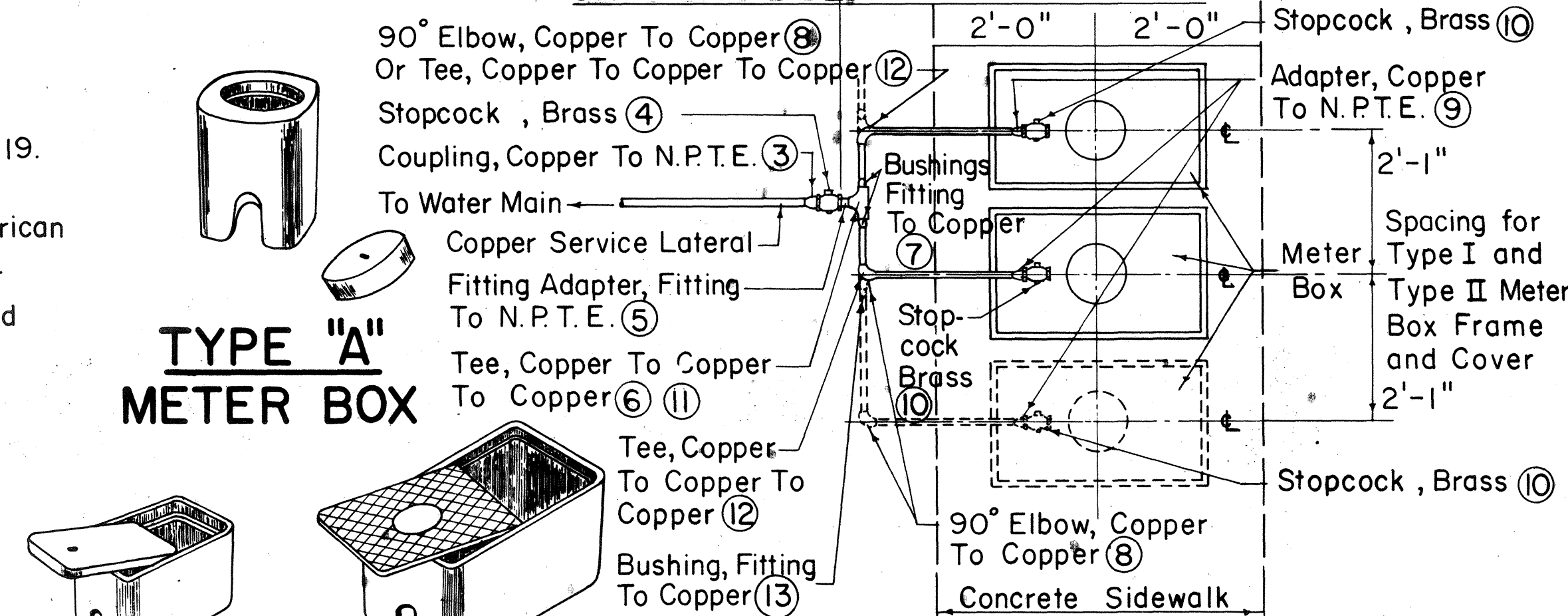
NOTE:

Gaskets for flanged joints shall be $\frac{1}{16}$ inch duck-inserted rubber packing Garlock No. 19. Bolts shall be $\frac{5}{8}$ " diameter x $2\frac{3}{4}$ " long steel machine bolts with cut threads, American Standard heavy hexagon heads, galvanized. Nuts shall be American Standard heavy cold punched hexagon nuts, galvanized.

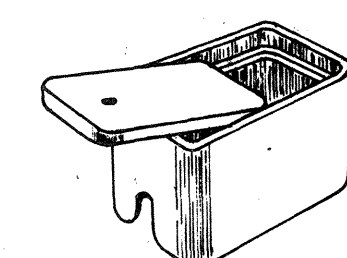
SINGLE SERVICE CONNECTION



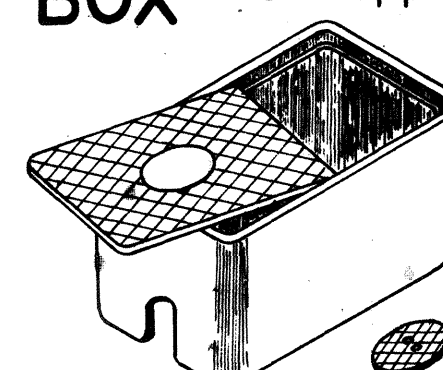
SERVICE LATERAL SERVICE CONNECTION



TYPE "A" METER BOX



TYPE "B" METER BOX

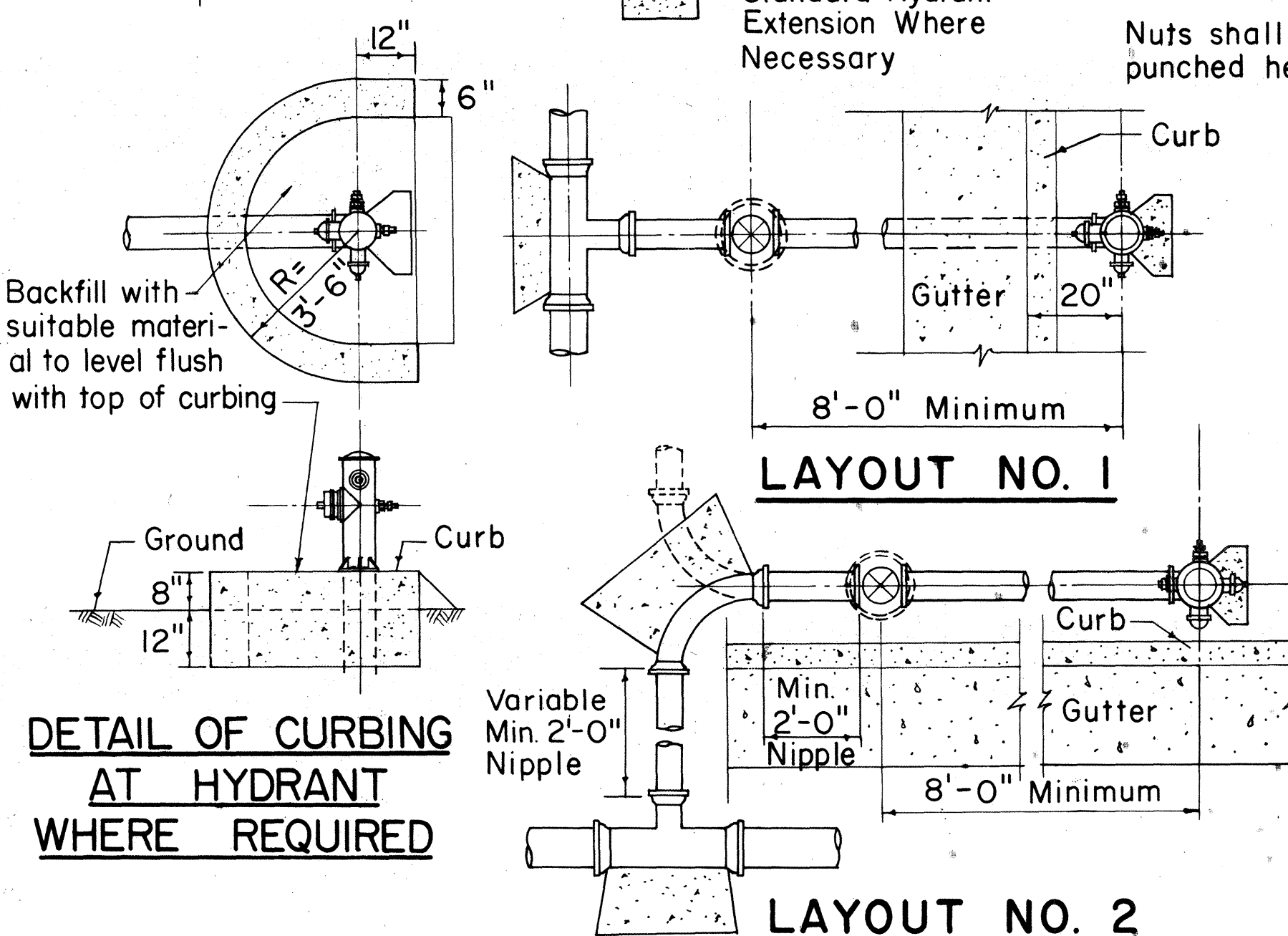


TYPE "X" METER BOX

MULTIPLE SERVICE CONNECTION SOLDERED JOINTS

STANDARD LENGTHS FOR HYDRANT ELBOWS	
	30"
	36"
	42"
	48"

Standard Hydrant Extensions are available in the following Lengths:
6 to 30 inches long in increments of 6 inches



DETAIL OF CURBING AT HYDRANT WHERE REQUIRED

LAYOUT NO. 2

STANDARD FIRE HYDRANT LAYOUT

METER BOX DATA

TYPE METER BOX	METER SIZES	OVERALL DIMENSIONS AT BOTTOM	OVERALL DIMENSIONS AT TOP	COMPLETE WEIGHT	OVERALL DIMENSIONS OF LID
A	$\frac{5}{8}$ " or $\frac{3}{4}$ " Without Valve	7 $\frac{1}{4}$ " x 7 $\frac{1}{4}$ "	10" x 10"	45 lbs.	7 $\frac{3}{8}$ " Dia.
B	$\frac{5}{8}$ " or $\frac{3}{4}$ "	9 $\frac{1}{2}$ " x 16"	12 $\frac{1}{4}$ " x 18 $\frac{3}{8}$ "	82 lbs.	8 $\frac{3}{4}$ " x 14 $\frac{1}{2}$ "
X		14 $\frac{1}{2}$ " x 23 $\frac{1}{2}$ "	16" x 25"	143 lbs.	13 $\frac{1}{8}$ " x 22 $\frac{1}{8}$ "

APPROVED:

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BOARD OF WATER SUPPLY

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU

STANDARD DETAILS

Not to Scale

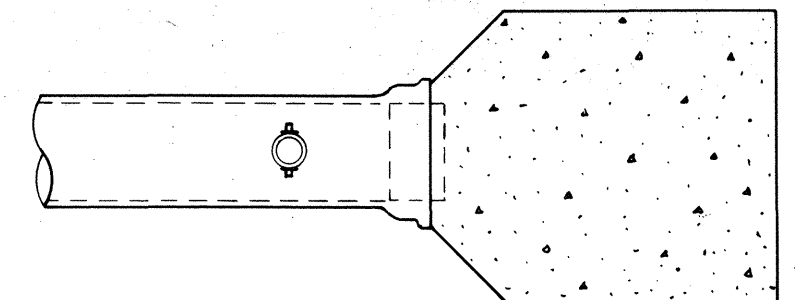
Date

SHEET NO. 4 OF 6 SHEETS

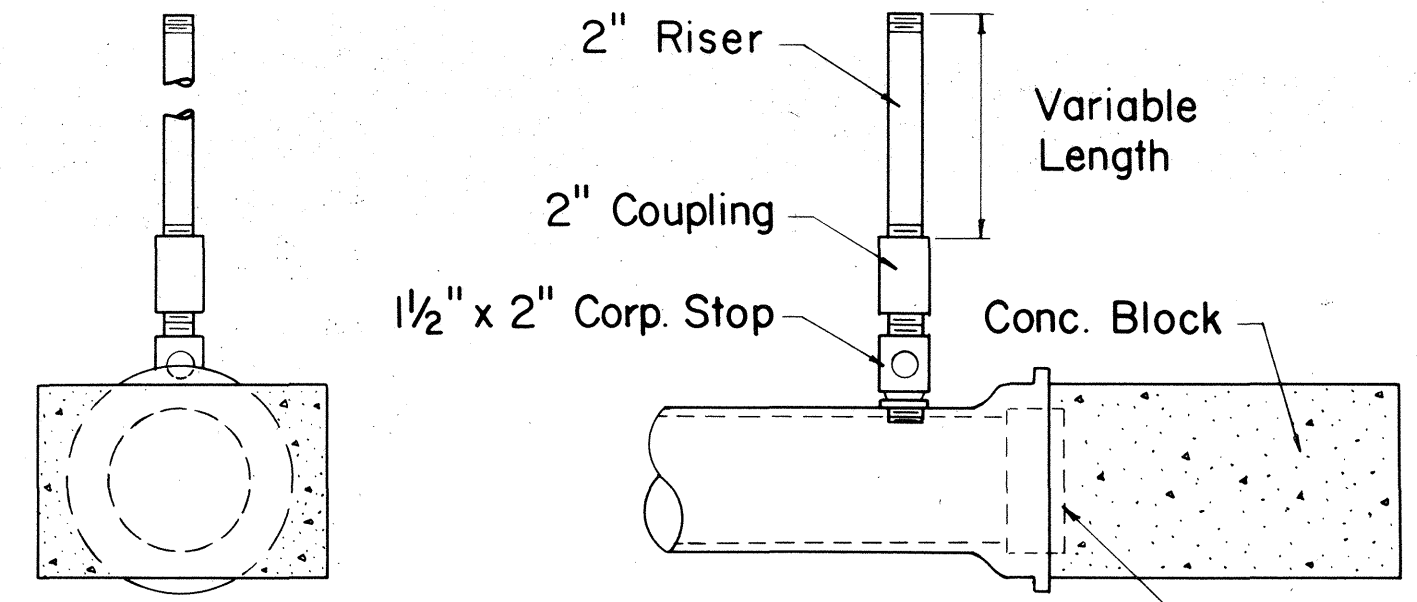
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII		1967	59	76

PROJECT NO. B-900-01-64 UNIT I

NOTE:
Contractor to furnish 1/2" brass plug (Tapered thread) to replace corporation stop upon completion of chlorination.



TOP VIEW

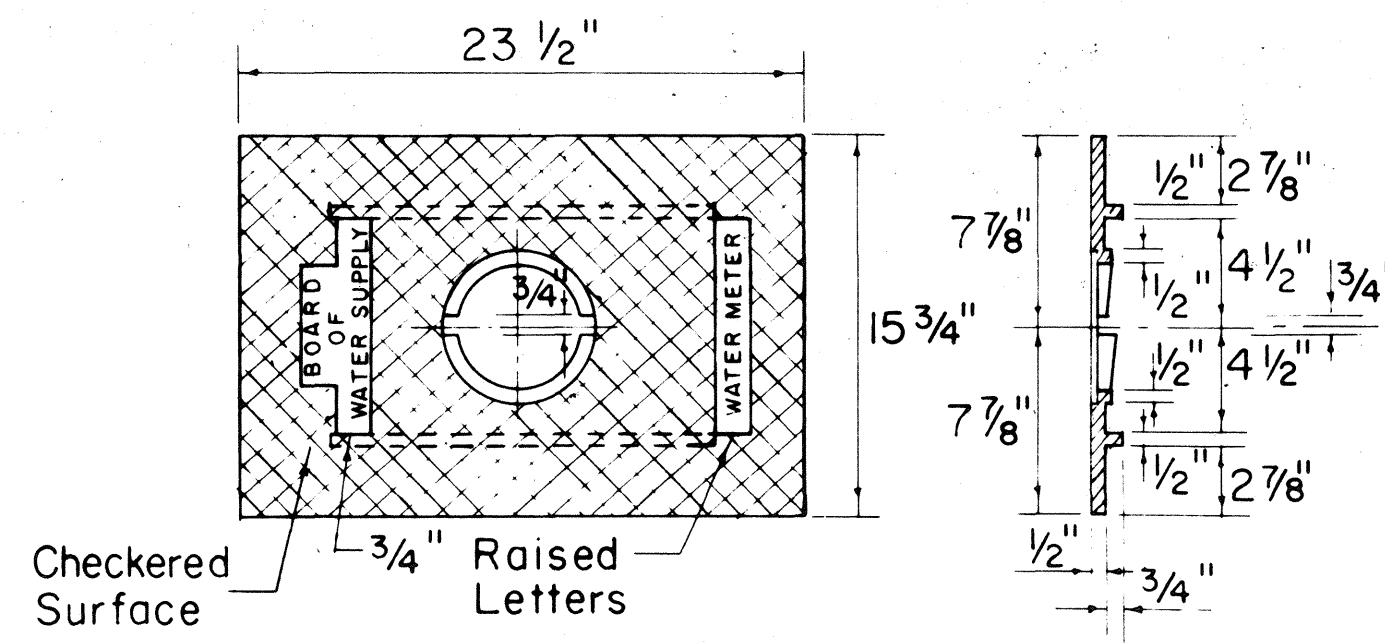


END VIEW

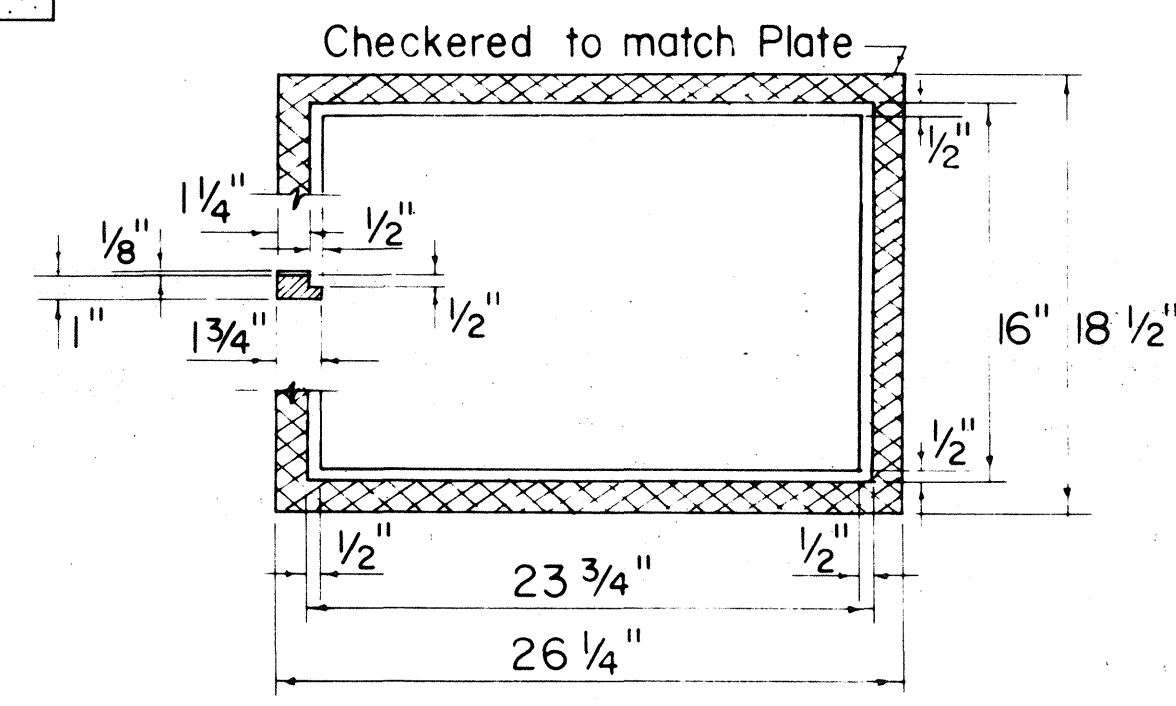
SIDE VIEW

DETAIL OF TEMPORARY 2" CLEANOUT

Not to Scale



COVER PLATE

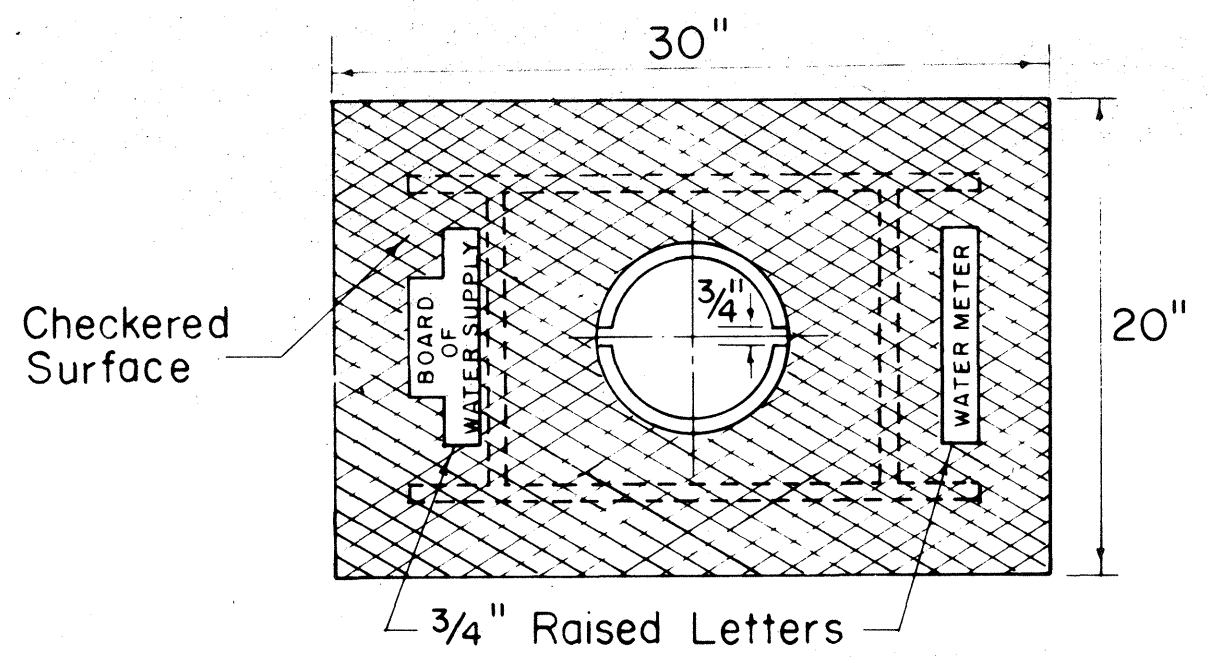


FRAME

CAST IRON FRAME AND PLATE

TYPE II

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

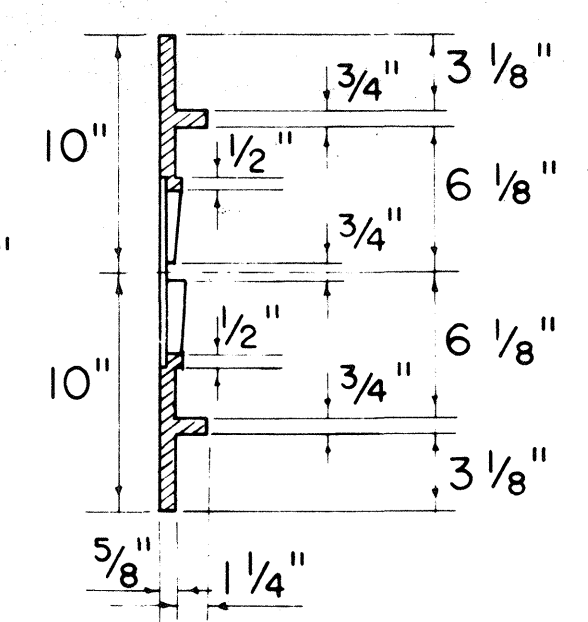


COVER PLATE

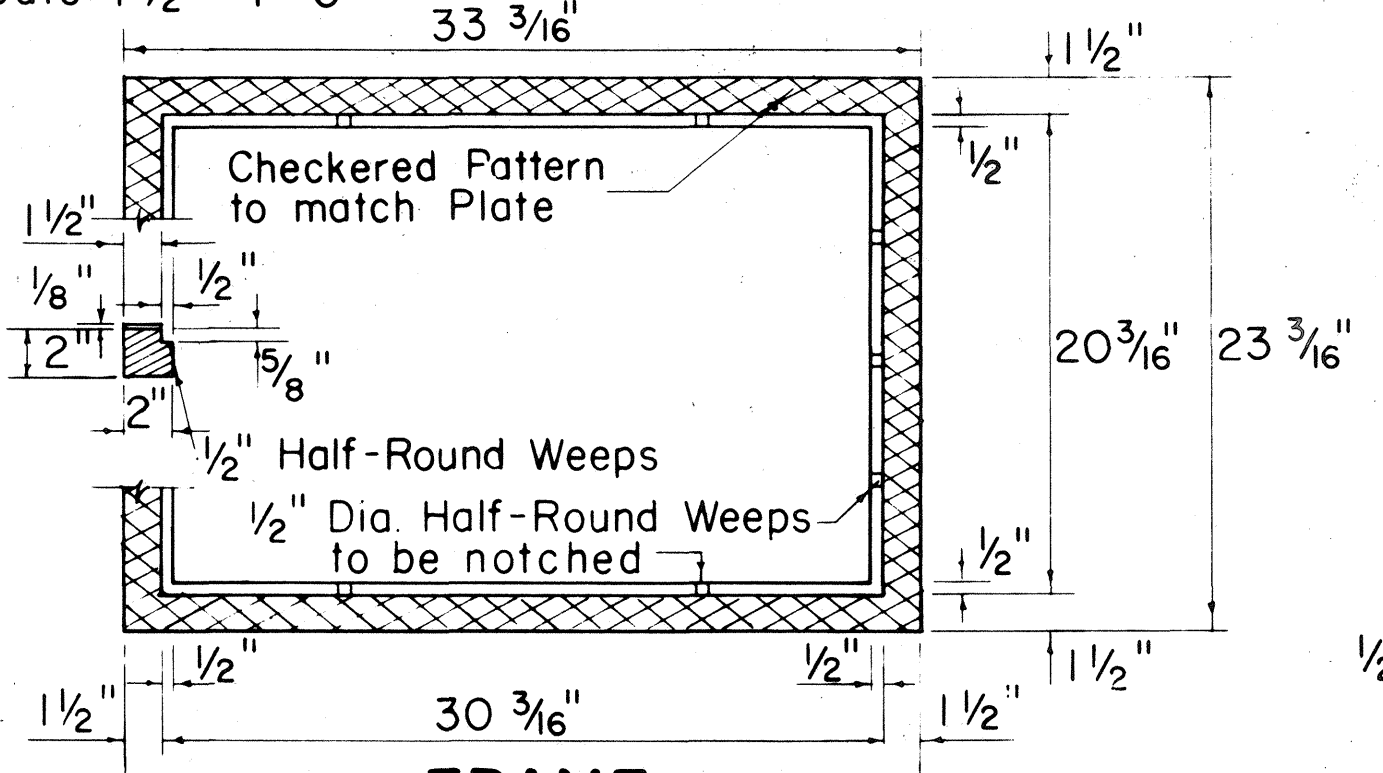
CAST IRON FRAME, PLATE AND COVER

TYPE III

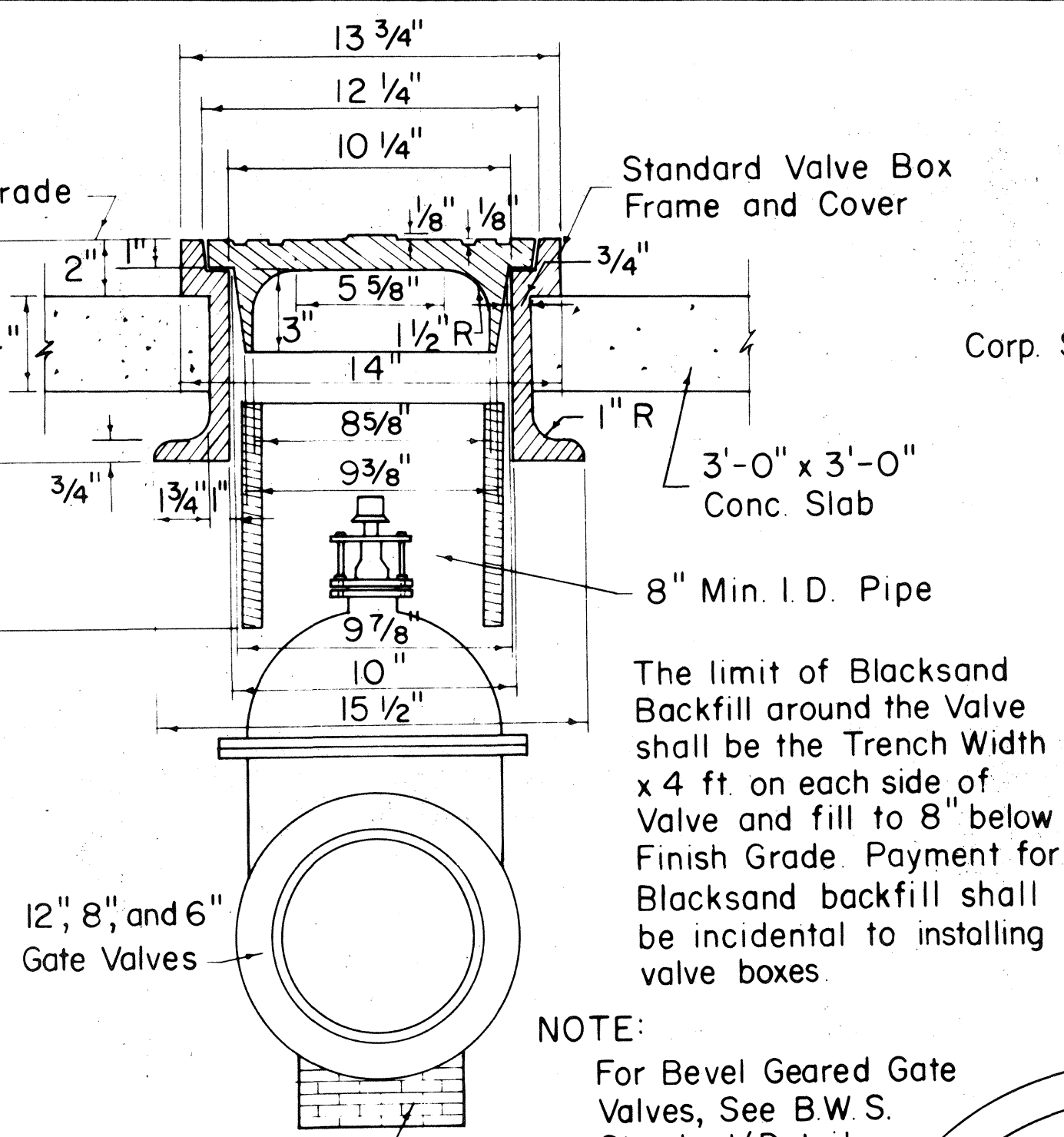
Scale: 1 1/2" = 1'-0"



READING COVER

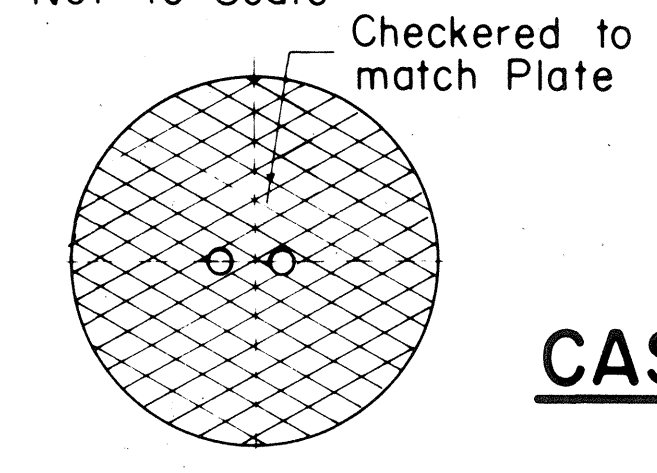


FRAME



INSTALLATION OF VALVE BOX FOR GATE VALVES

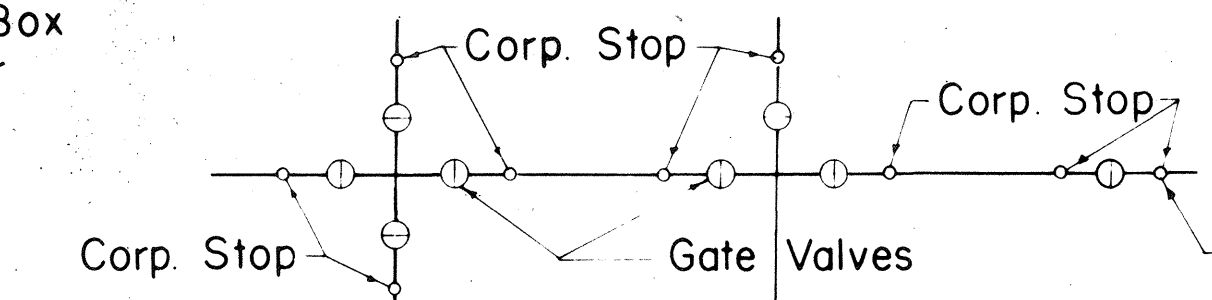
Not to Scale



READING COVER

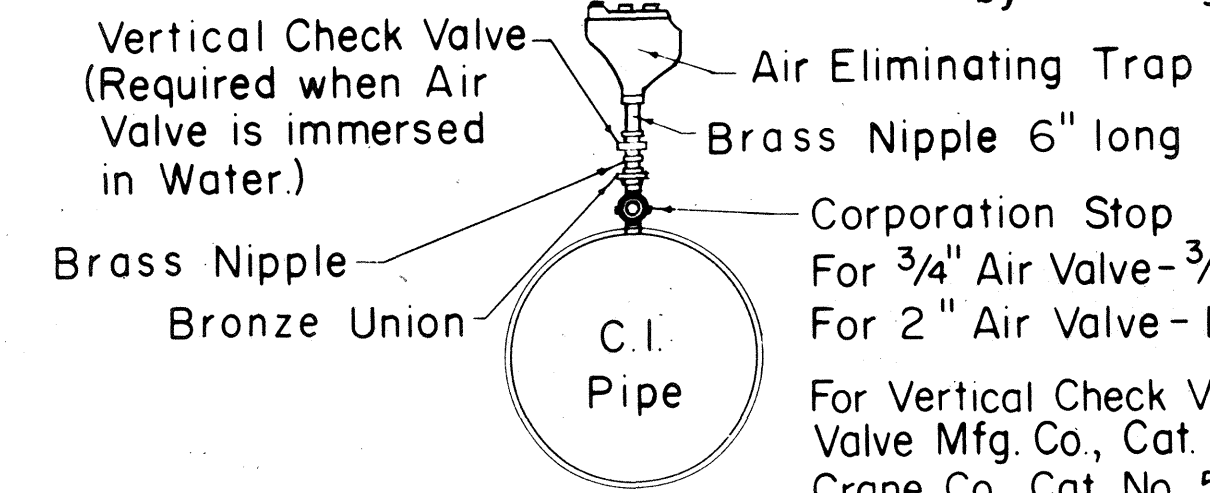
CHECKERED PATTERN CAST IRON COVER FOR TYPE II FRAME

Not to Scale



CORP. STOP LAYOUT

Not to Scale



DETAIL OF CONNECTION FOR AIR ELIMINATING TRAP

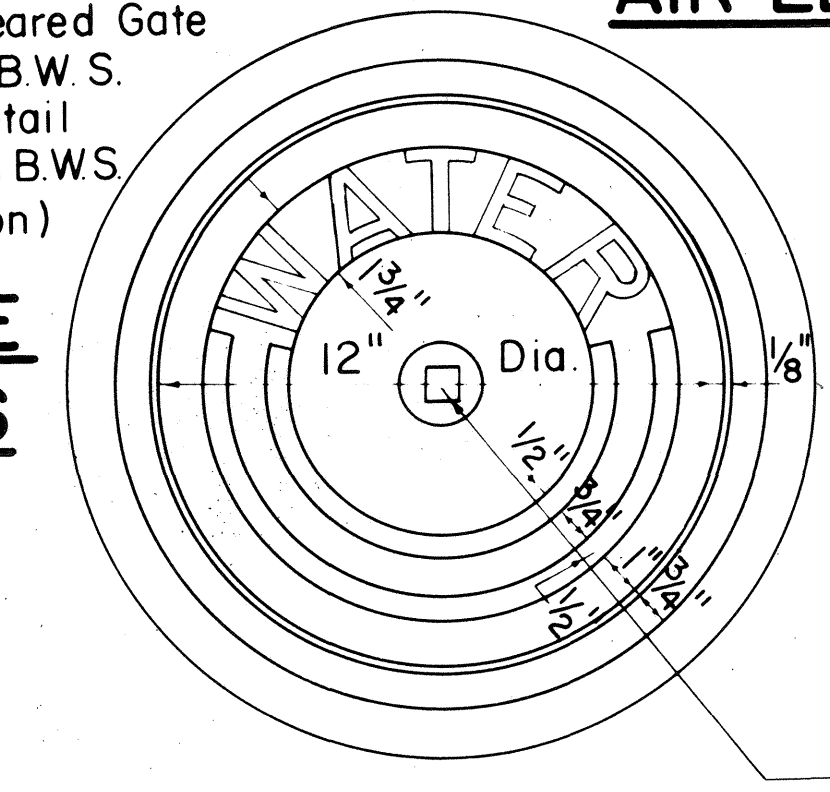
Not to Scale

Offset word "WATER" 1 3/4" high, 1/8" deep

NOTE:

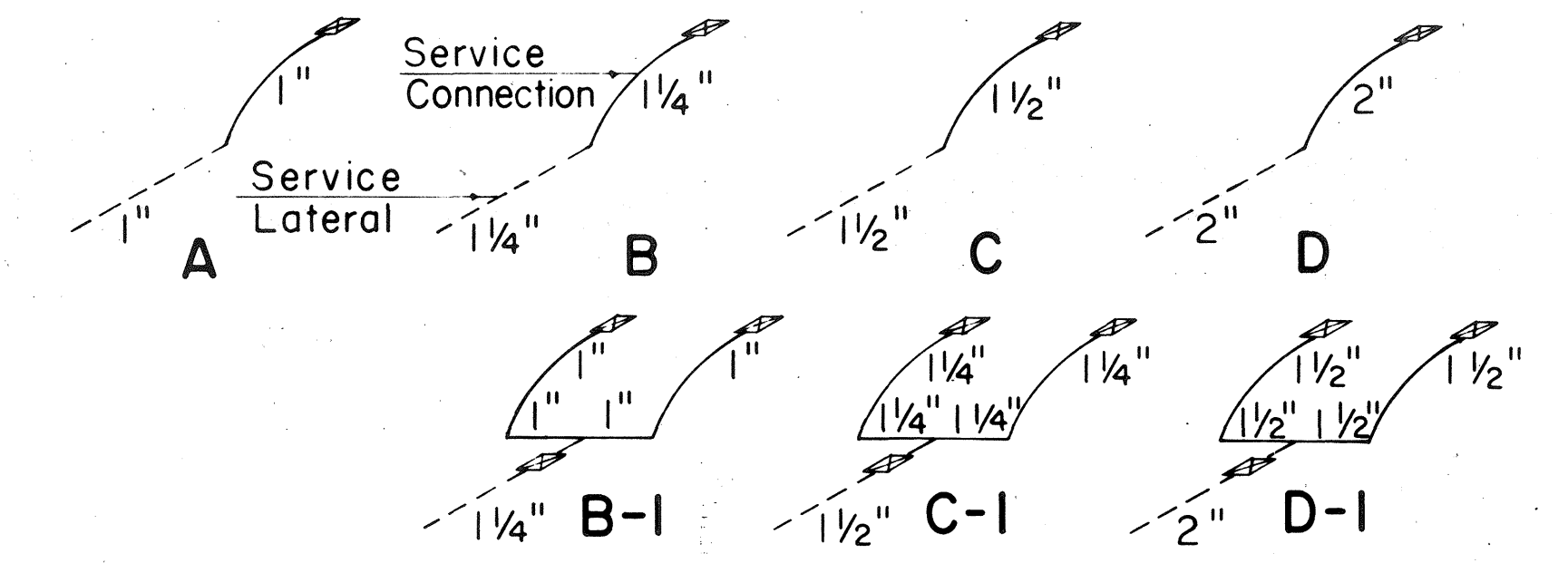
All castings shall be made accurately to the dimensions shown. Seat and Cover shall be ground where necessary to secure flat and true surfaces. The Cover shall not rattle in any position.

Minor changes in dimensions may be made to suit foundry conditions provided such changes are approved by the Board of Water Supply.



CAST IRON FRAME AND COVER

Scale: 3" = 1'-0"



TYPICAL LAYOUT OF SERVICE LATERALS AND CONNECTIONS

Not to Scale

APPROVED:

S. Kawakami 10/3/67
CHIEF, ENGINEERING DIVISION
BOARD OF WATER SUPPLY

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU

STANDARD DETAILS

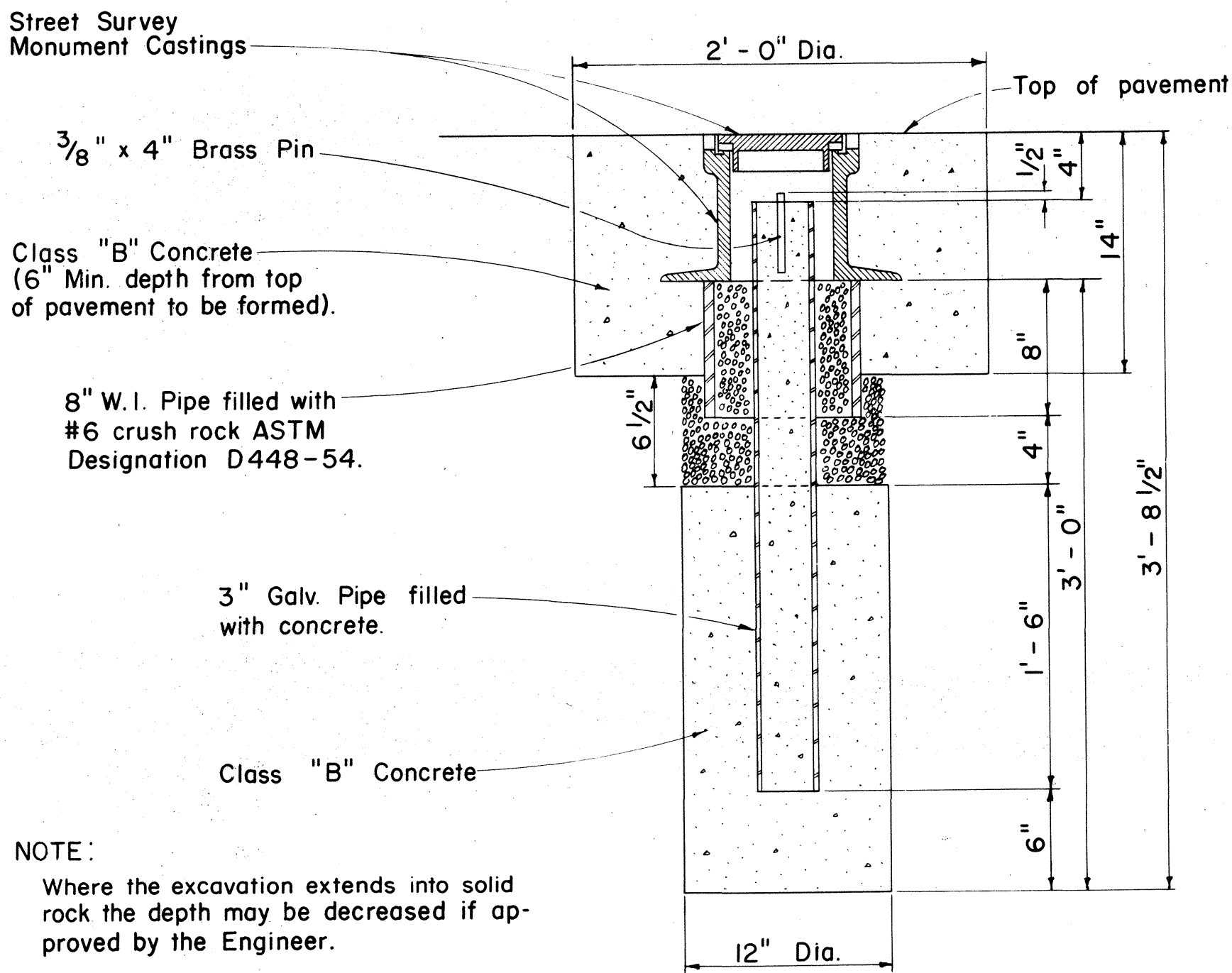
Scale: As Noted

Date

SHEET NO. 5 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW		1967	60	76

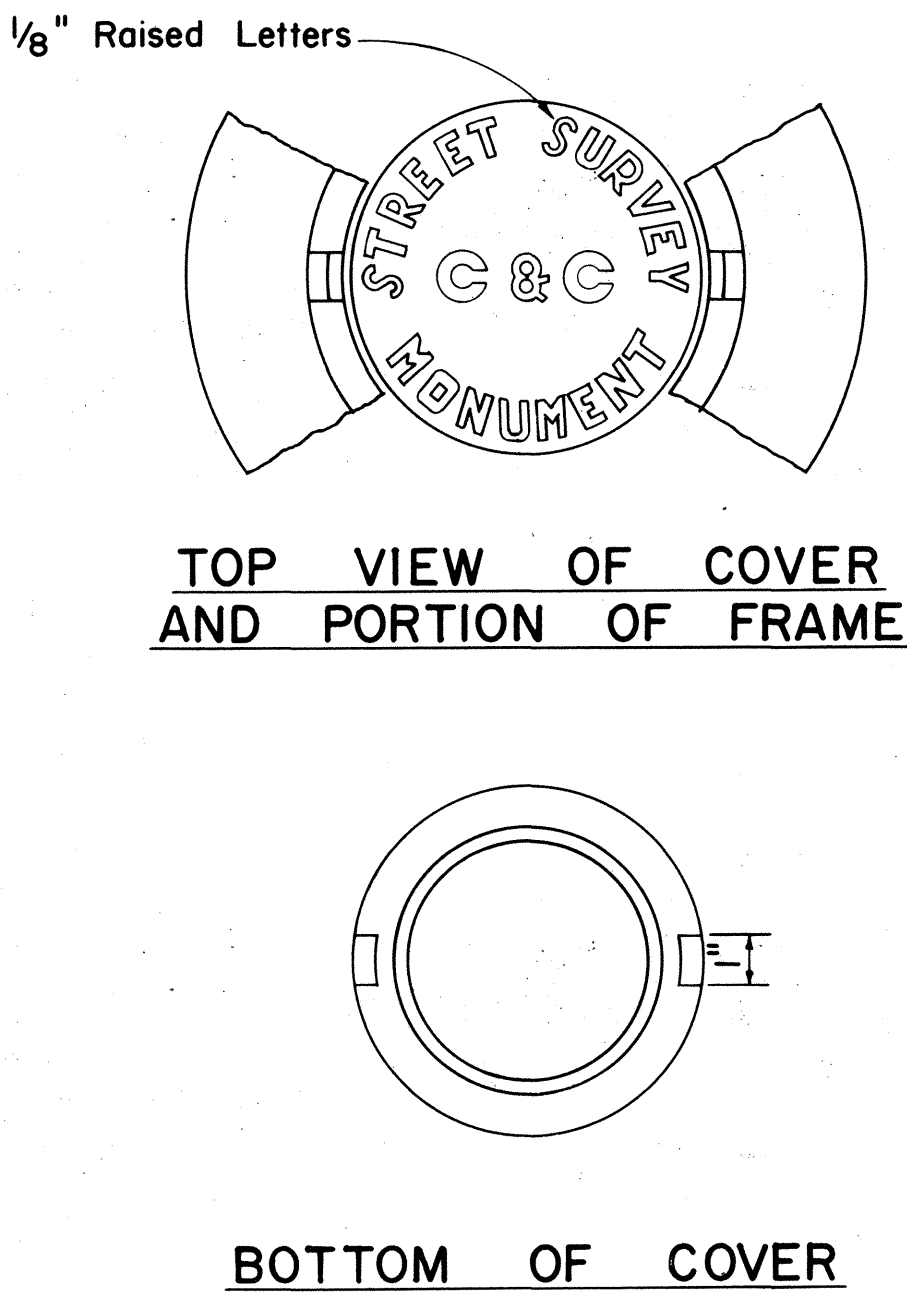
PROJECT NO. B-900-01-64 UNIT I



NOTE:
Where the excavation extends into solid rock the depth may be decreased if approved by the Engineer.

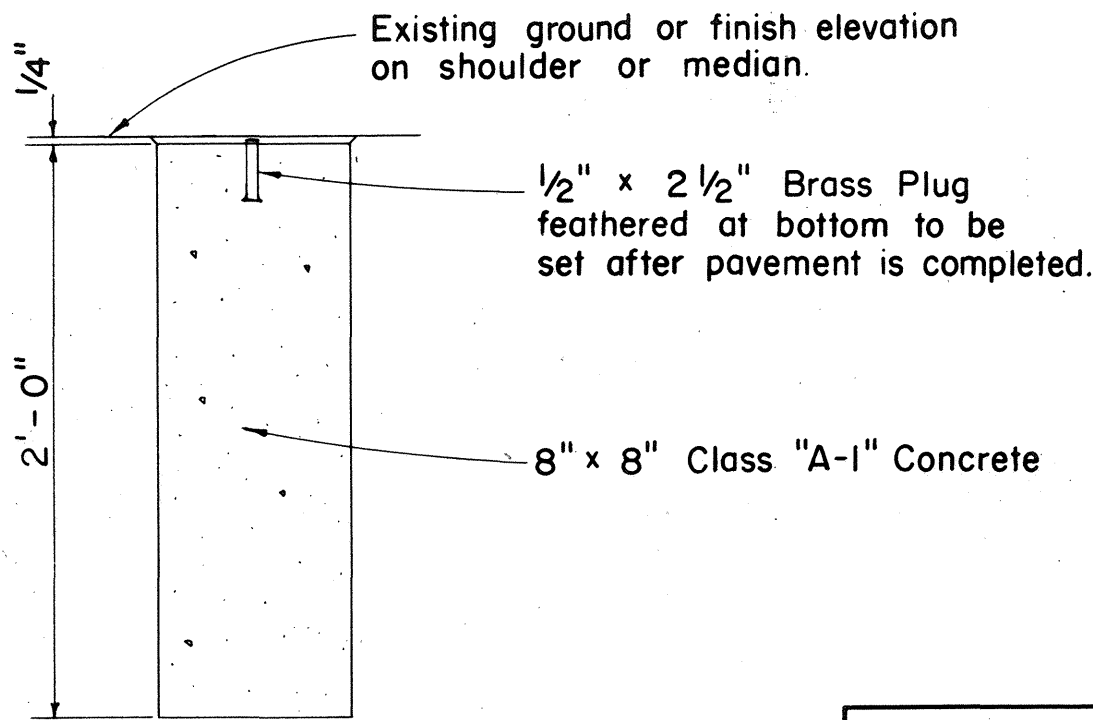
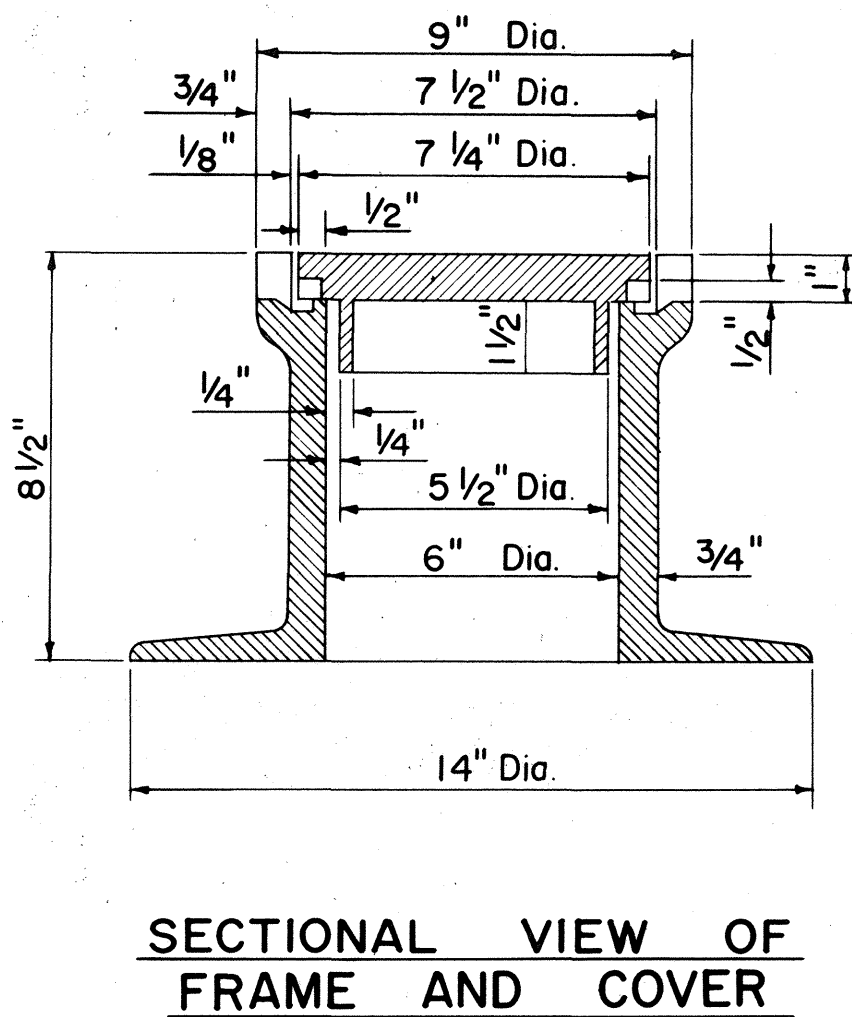
STREET SURVEY MONUMENT

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



STREET SURVEY MONUMENT CASTINGS

Scale: 3" = 1' - 0"



DETAIL FOR
AND REFERENCE
SURVEY MONUMENT

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS

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