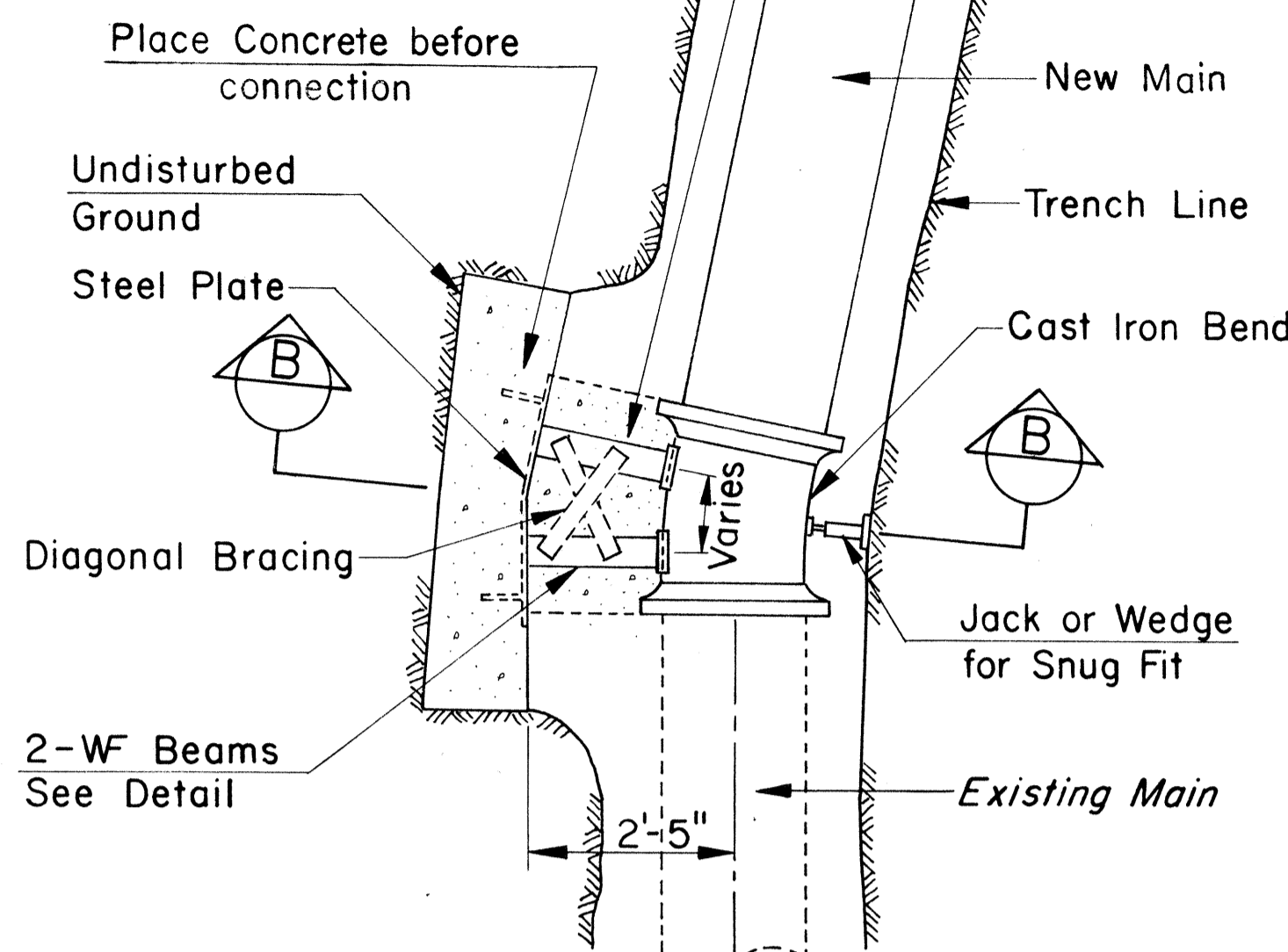
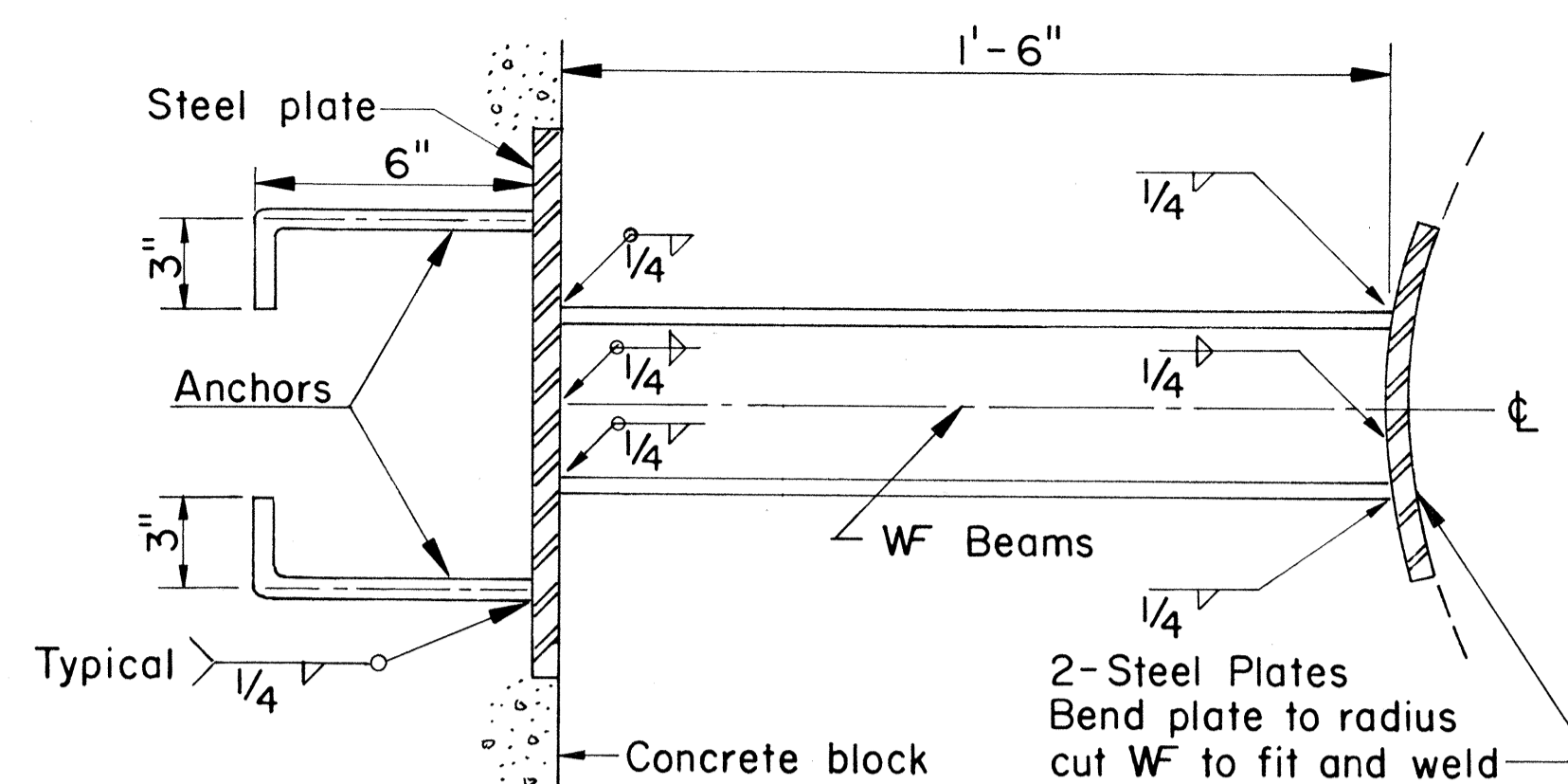


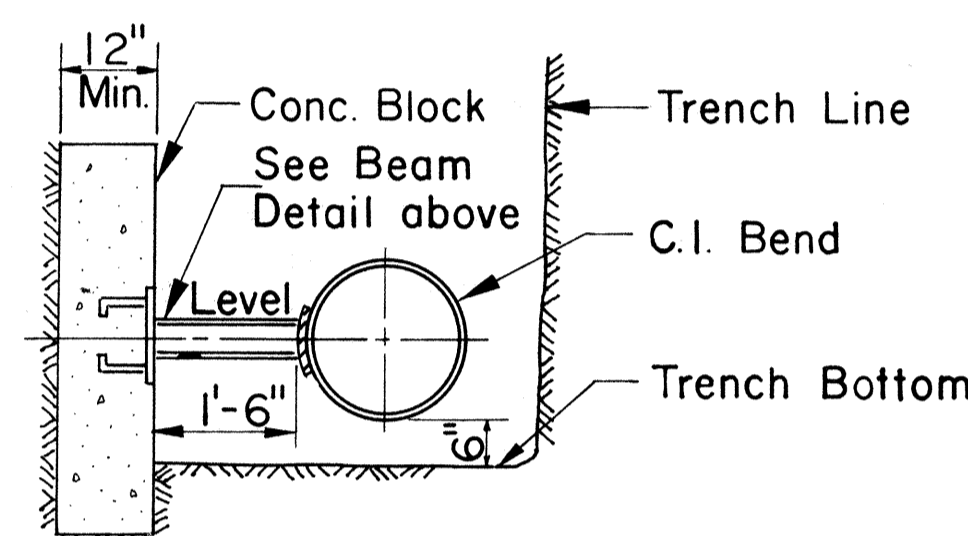
Place Class "B" Concrete  
2500 psi. after connection  
is completed.



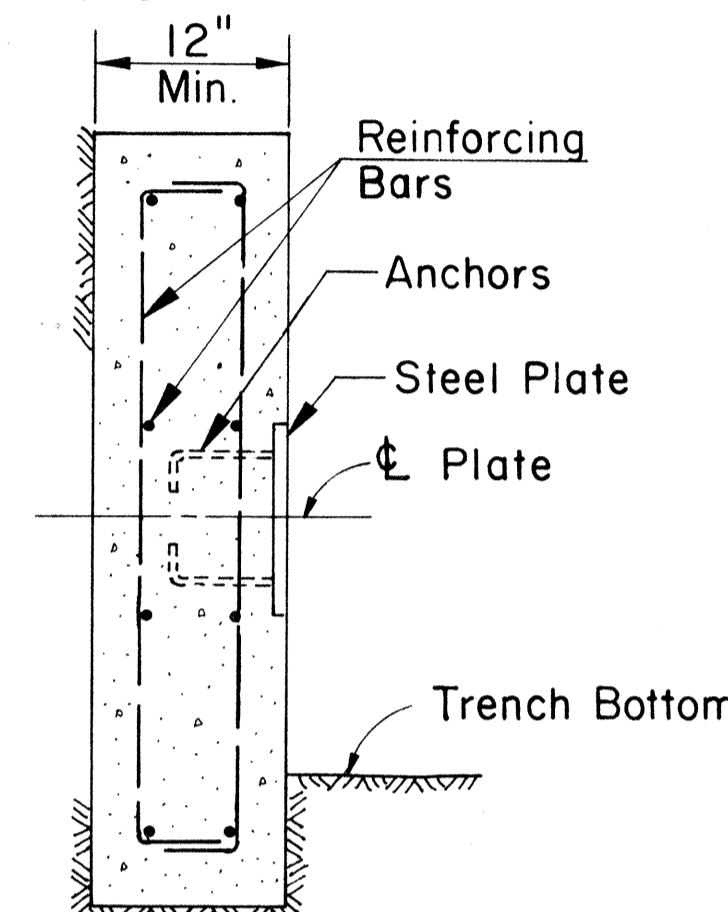
**PLAN**  
Scale: 1/2" = 1'-0"



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



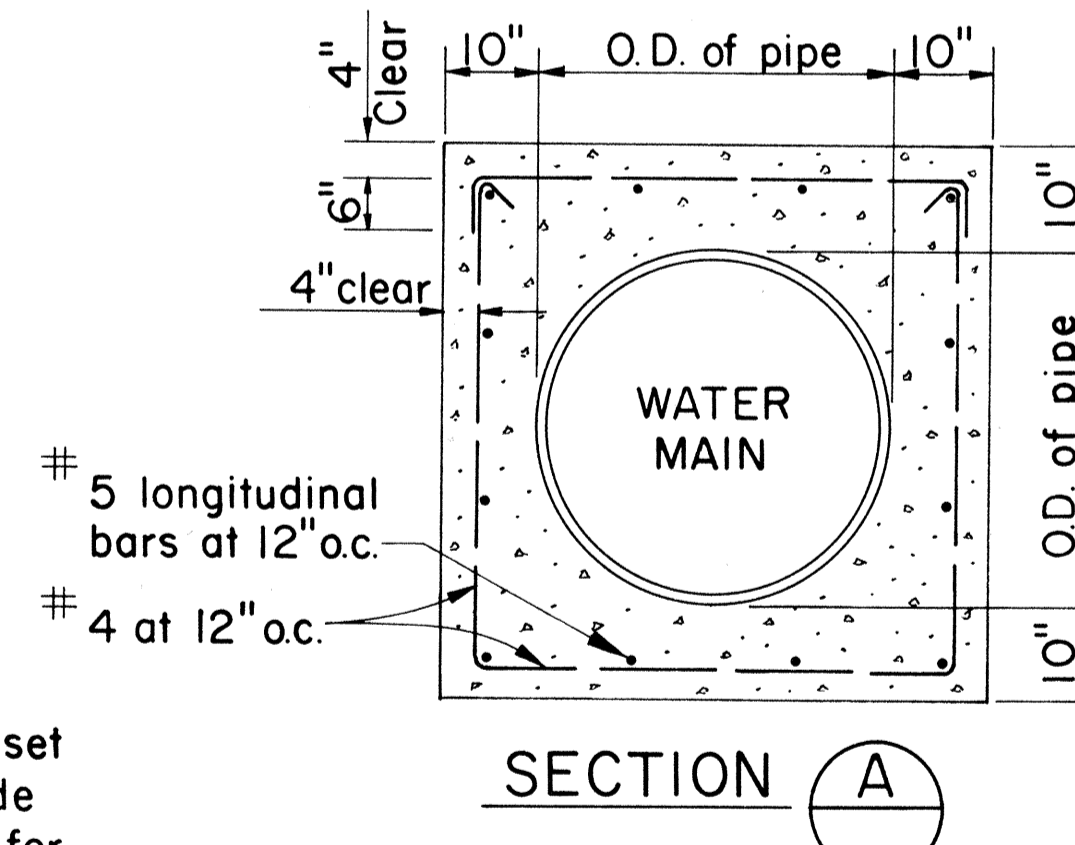
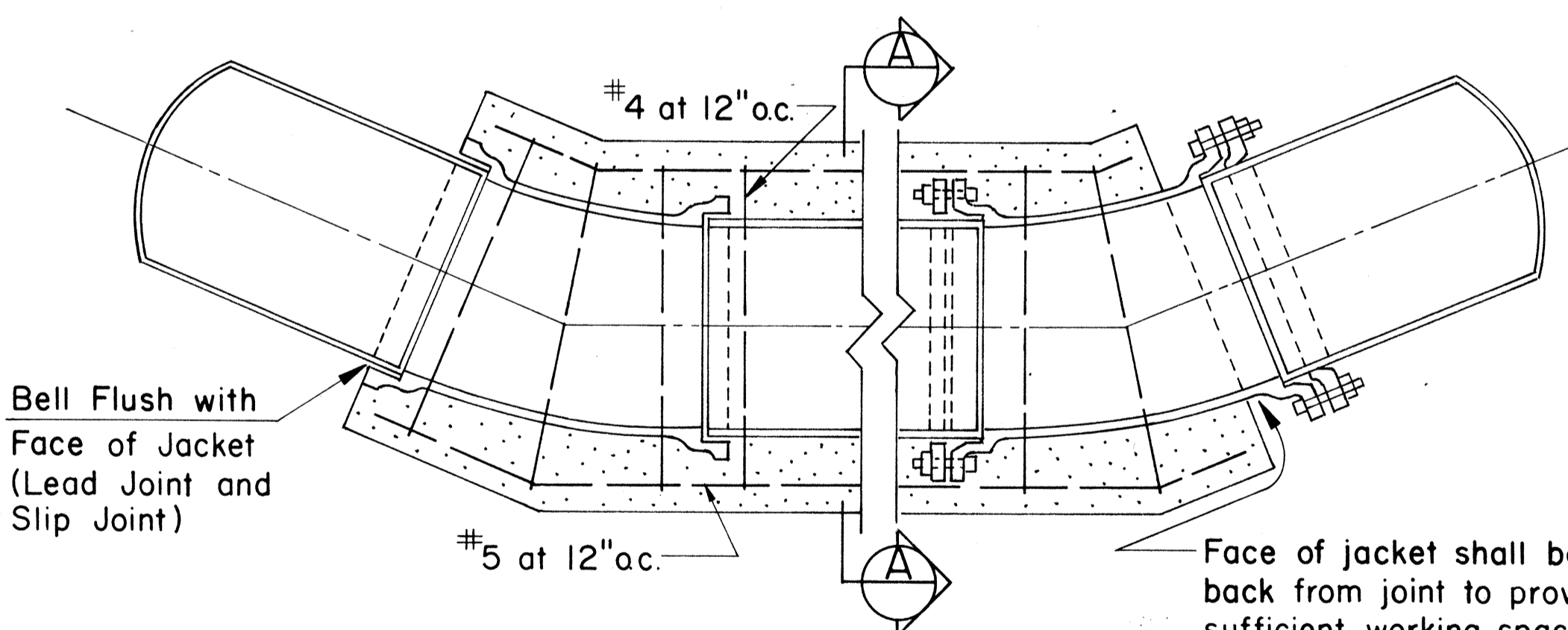
**SECTION B**  
Scale: 1/2" = 1'-0"



**CONCRETE BLOCK DETAIL**  
Scale: 1" = 1'-0"

## TYPICAL DETAIL OF CONCRETE BLOCK WITH STRUCTURAL STRUT

FIGURE 20



**SECTION A**

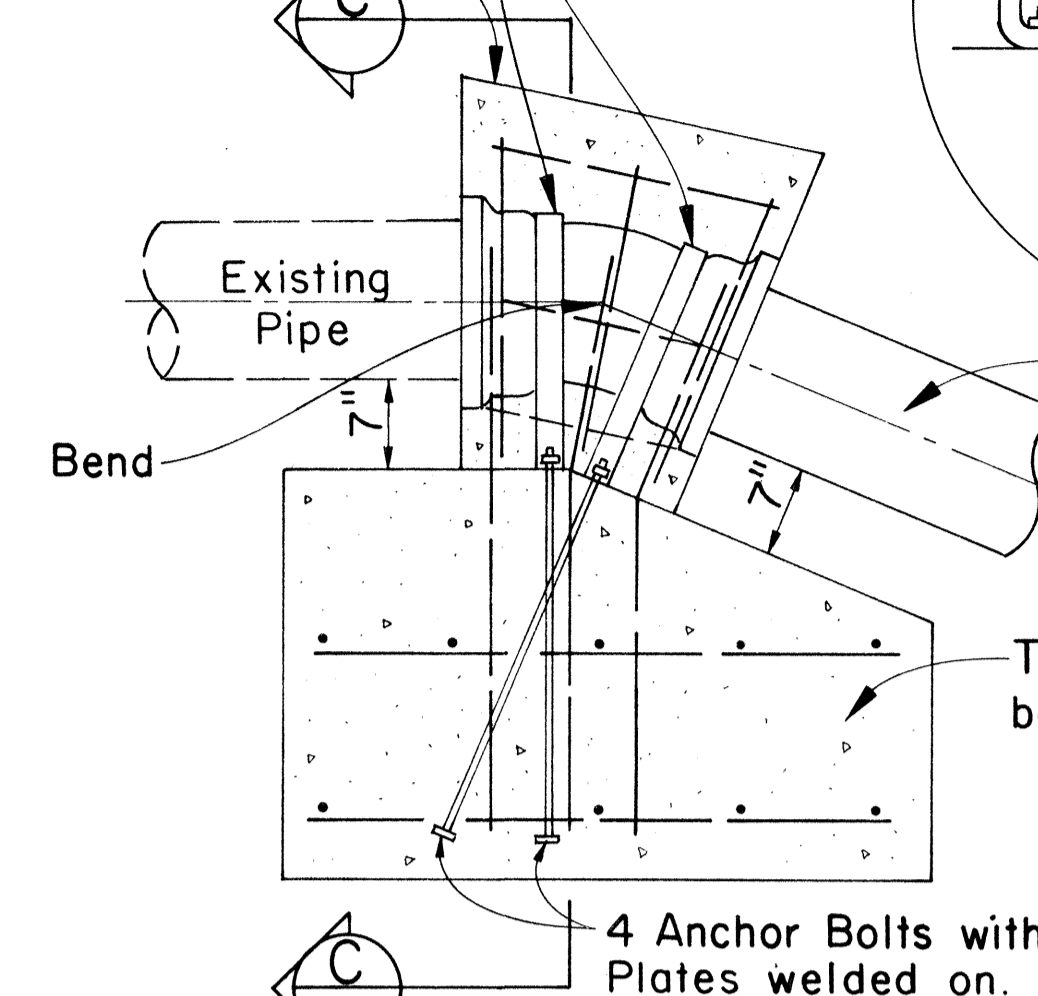
- NOTES:
1. Jacket to be poured after completion of test unless otherwise approved by the Engineer.
  2. 2 1/2" depth of lead for lead joint pipe required at all embedded joints.
  3. Wherever construction joints are required, 6" rubber or neoprene waterstops shall be installed. Waterstops shall be of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

## REINFORCED CONCRETE JACKET

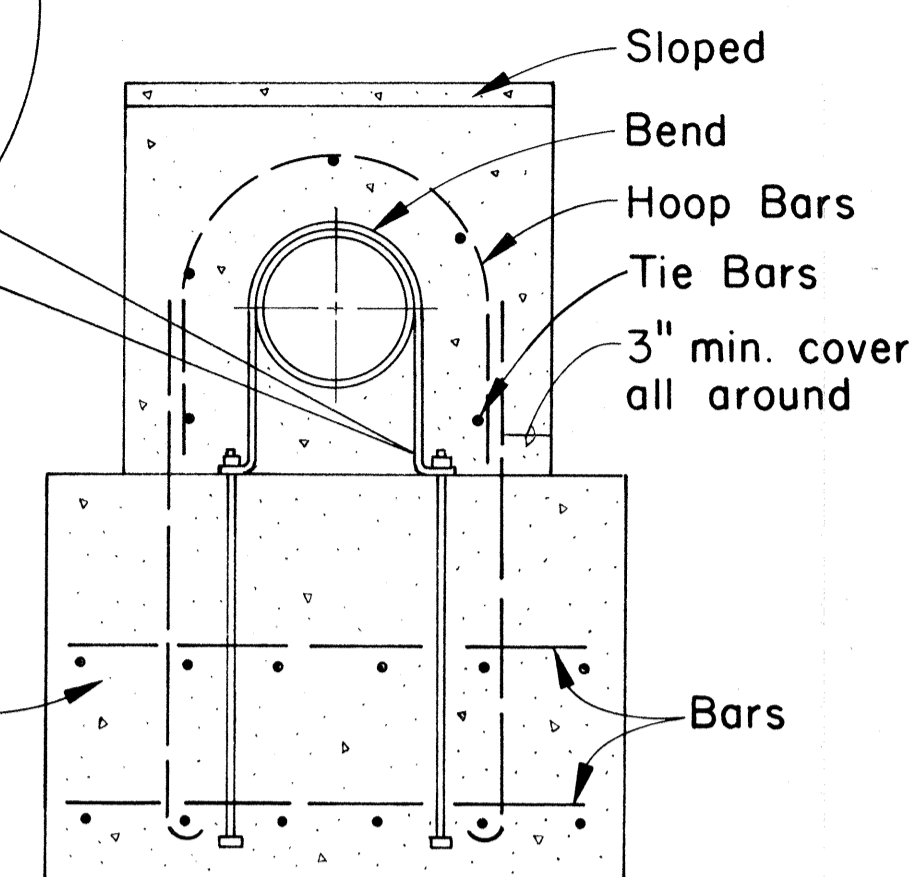
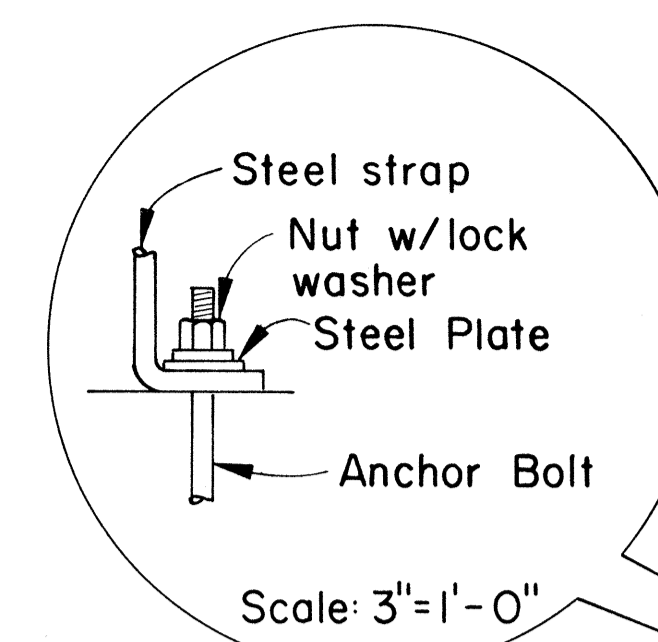
Scale: Not to Scale

FIGURE 17

Concrete around pipe  
to be poured after  
connection is made



**ELEVATION**



**SECTION C**

## TYPICAL DETAIL OF CONCRETE REACTION BLOCK WITH STRAPS

Scale: 3/4" = 1'-0"

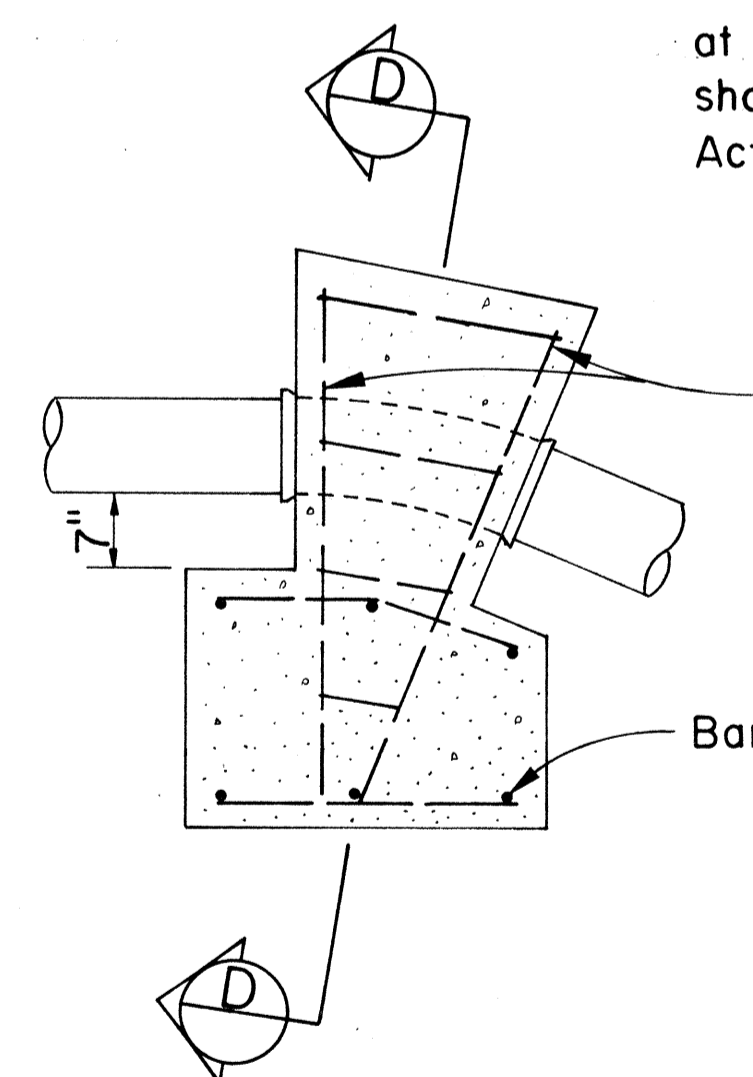
### GENERAL NOTES (FOR FIGURES 20 & 21)

1. Detail drawings of actual blocks to be used, shall be furnished during construction by B.W.S. and or state.
2. 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.
3. Minimum cover over all reinforcing steel shall be 3 inches.

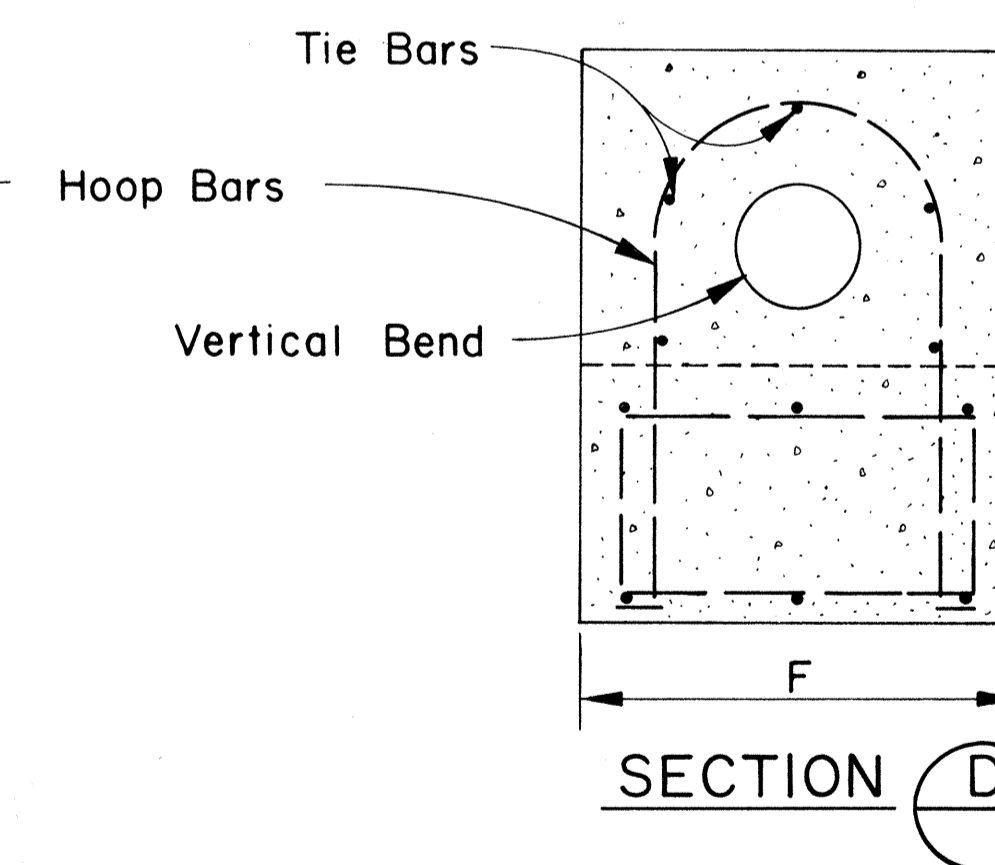
FIGURE 21

### NOTE:

The reinf. conc. reaction block as shown in this typical detail shall be constructed at top vertical bends only. After trench is dug at block location, the Contractor shall construct the block as directed by the Engineer to meet ground conditions. Actual size of Reaction Block shall also be determined by the Engineer.



**ELEVATION**



**SECTION D**

## TYPICAL DETAIL OF REINFORCED CONCRETE REACTION BLOCK FOR TOP VERTICAL BENDS

Scale: Not to Scale

FIG

### APPROVED:

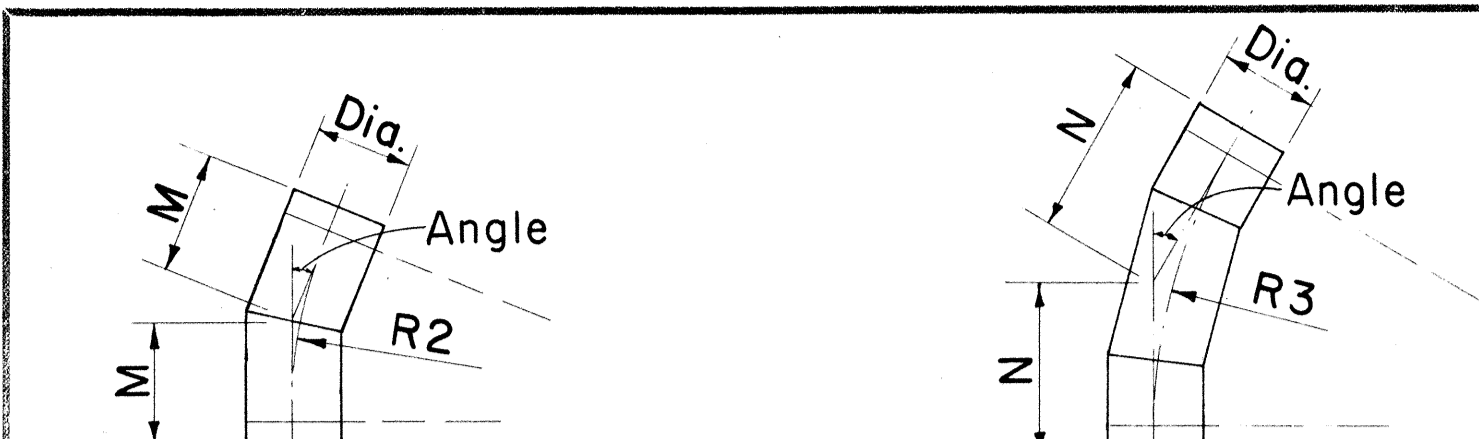
ASSISTANT CHIEF ENGINEER  
BOARD OF WATER SUPPLY

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

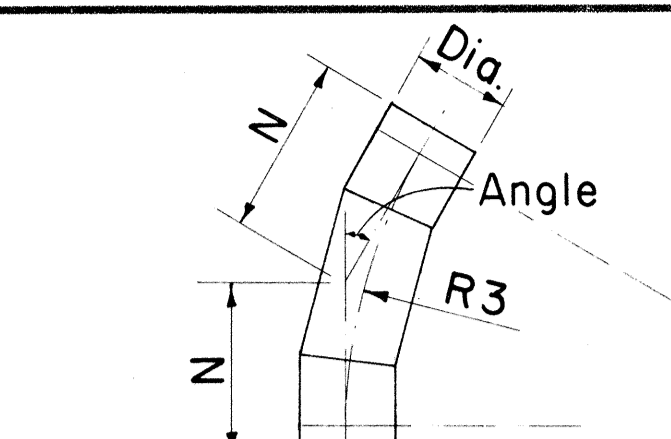
STANDARD DETAILS  
BOARD OF WATER SUPPLY

SHEET No. 1 OF 3 SHEETS

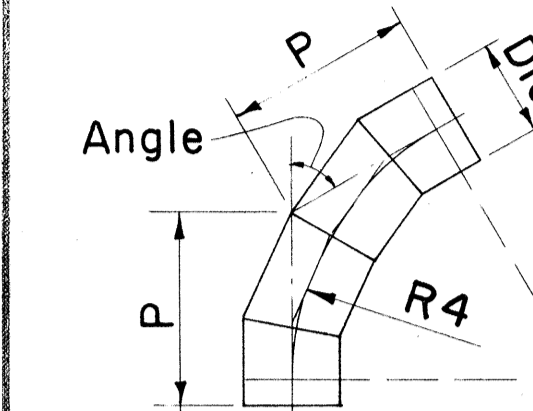
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	93A-01-75	1975	14	17



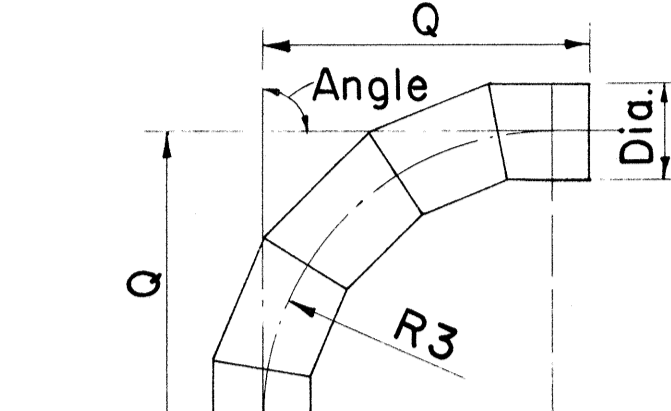
**2 PIECE ELBOW**  
6° to 22 1/2° Inclusive



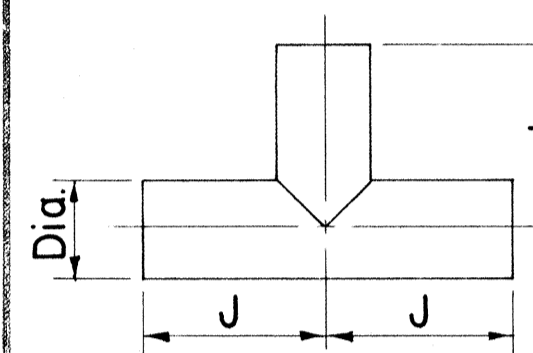
**3 PIECE ELBOW**  
Over 22 1/2° to 45° Inclusive



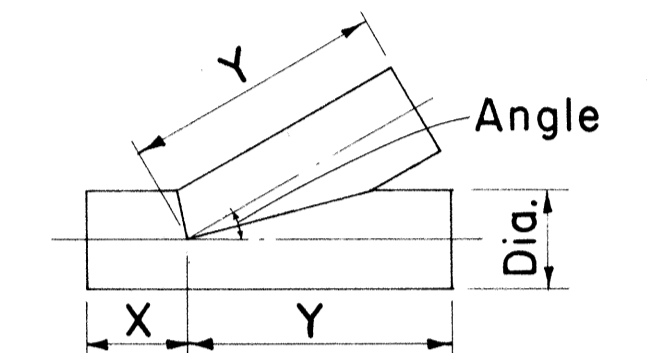
**4 PIECE ELBOW**  
Over 45° to 67 1/2° Inclusive



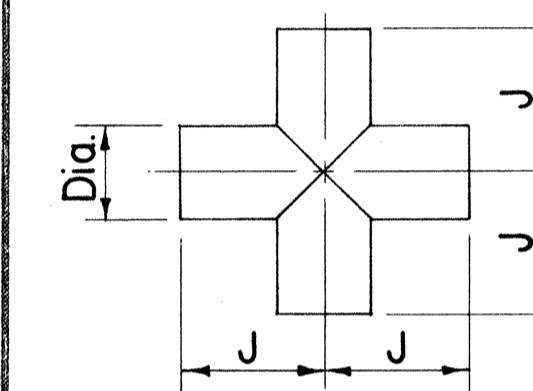
**5 PIECE ELBOW**  
Over 67 1/2° to 90° Inclusive



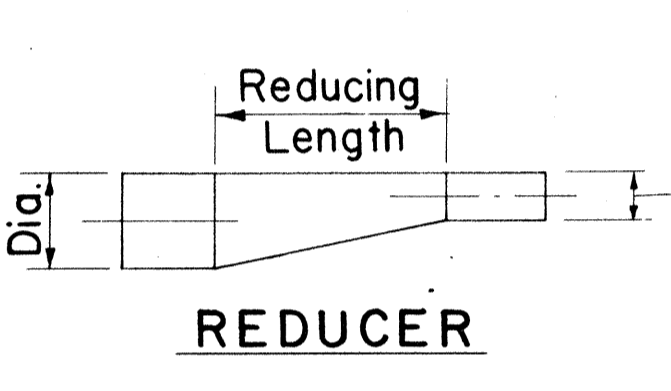
**TEE**



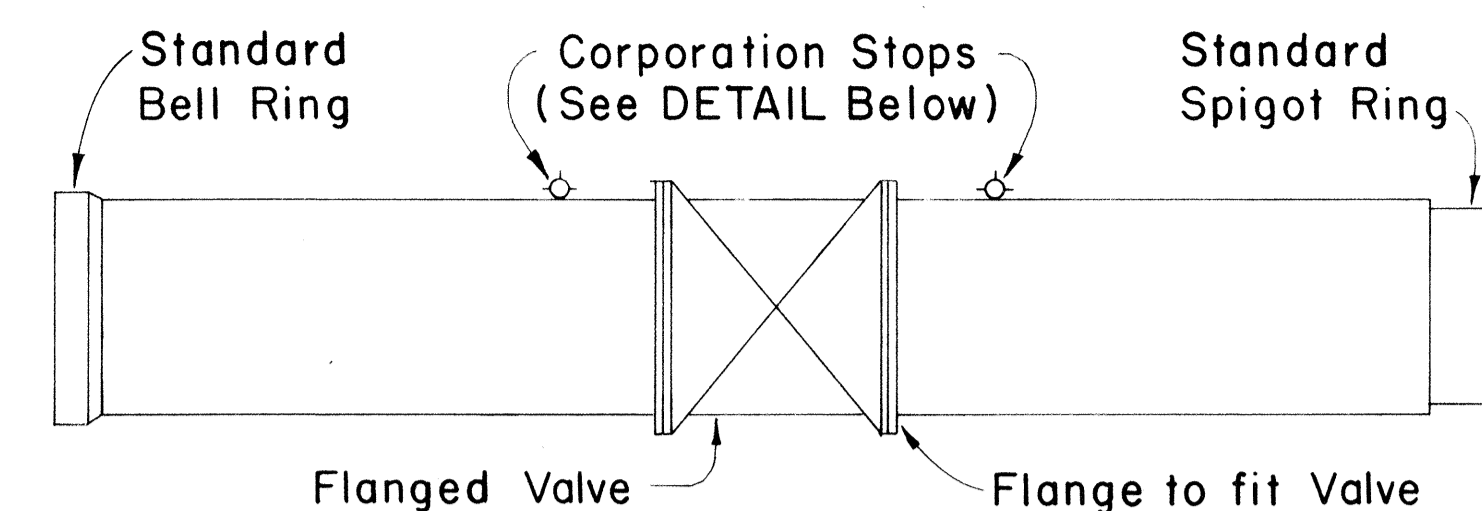
**LATERAL**  
30° Minimum - 75° Maximum



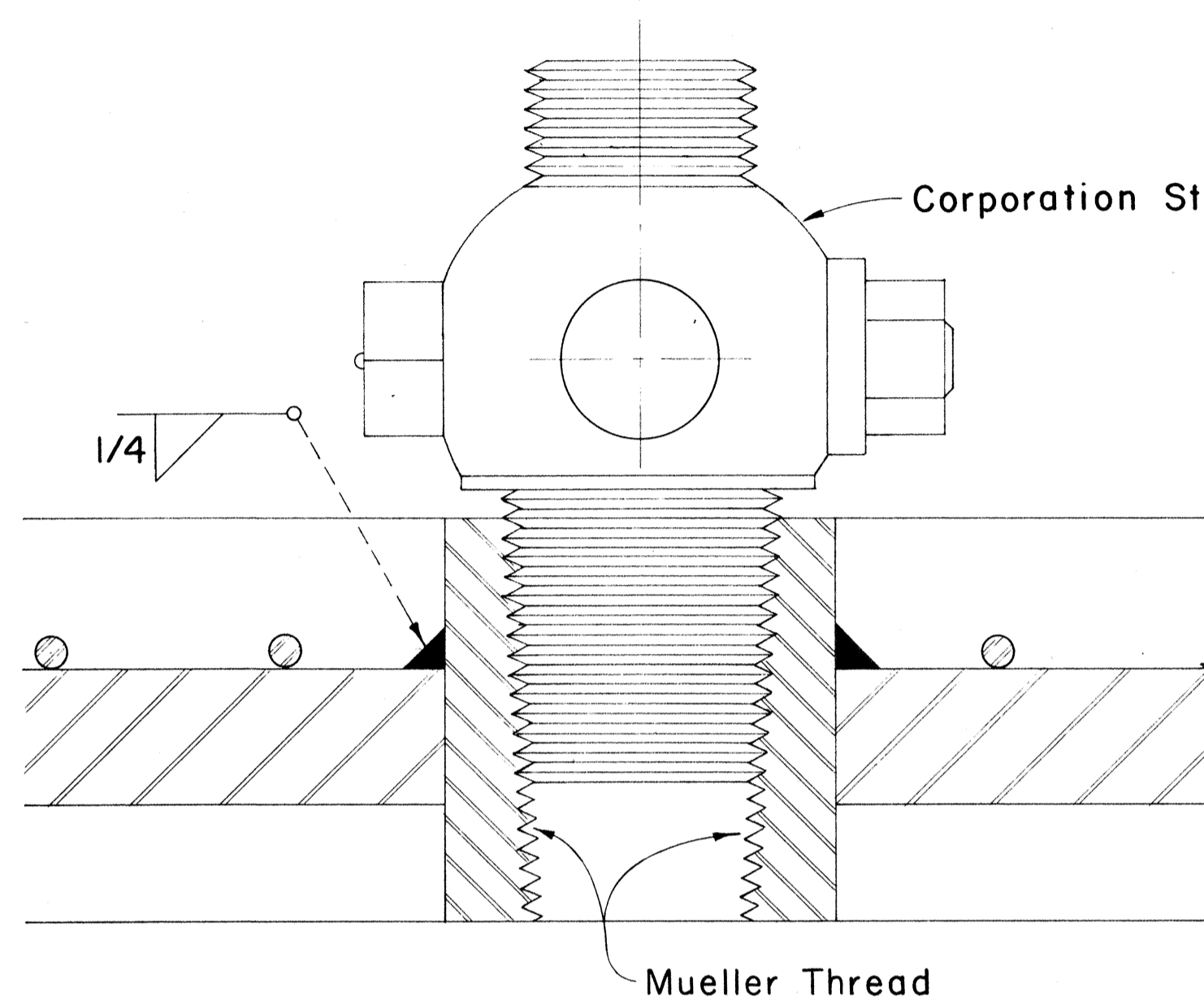
**CROSS**



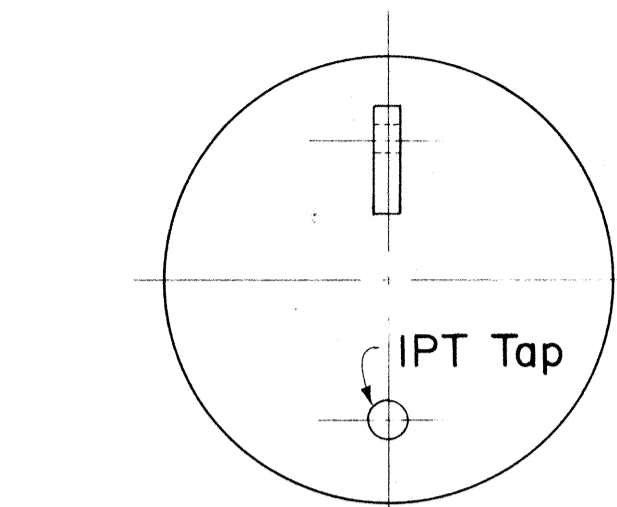
**REDUCER**



**ELEVATION**

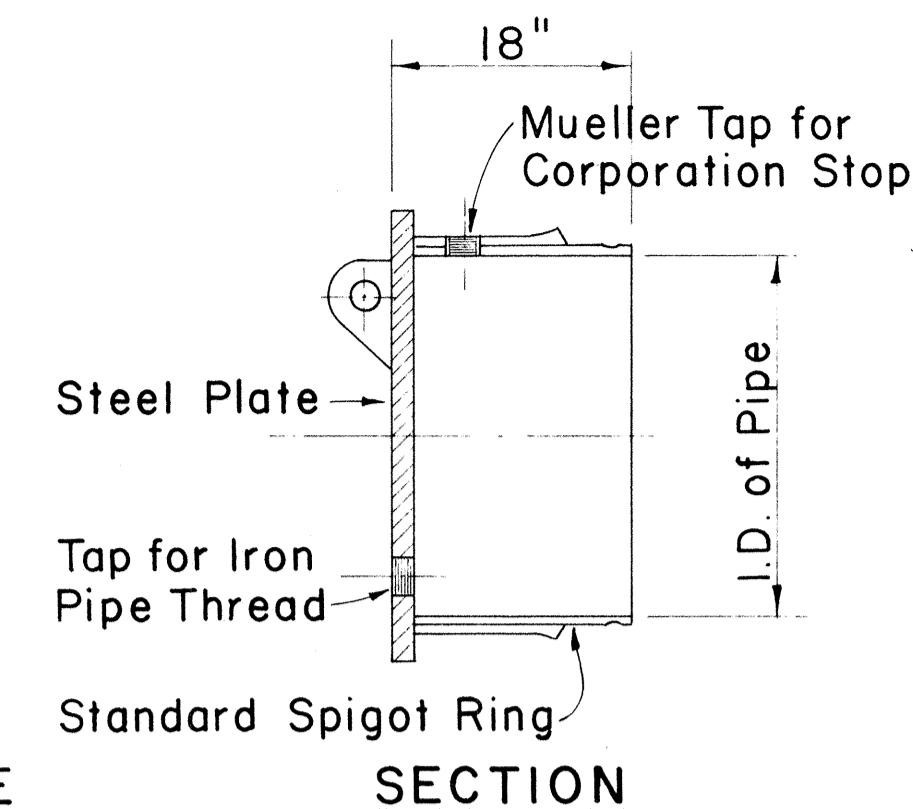


**TYPICAL SECTION THRU CONCRETE PIPE AT CORPORATION STOP**

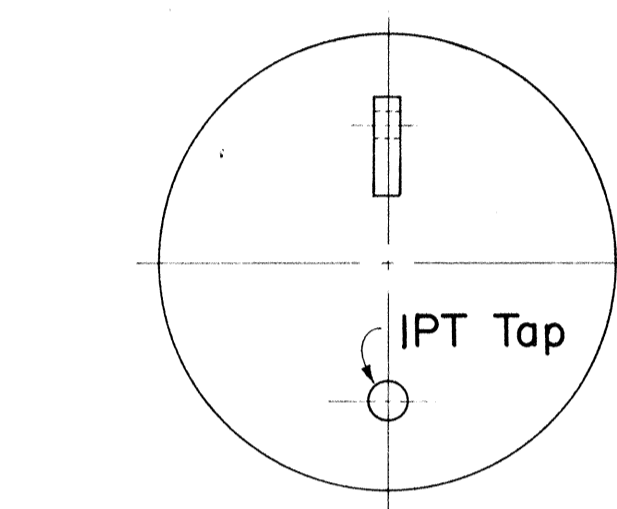


**ELEV. OF STEEL PLATE**

**DETAIL OF PLUG**

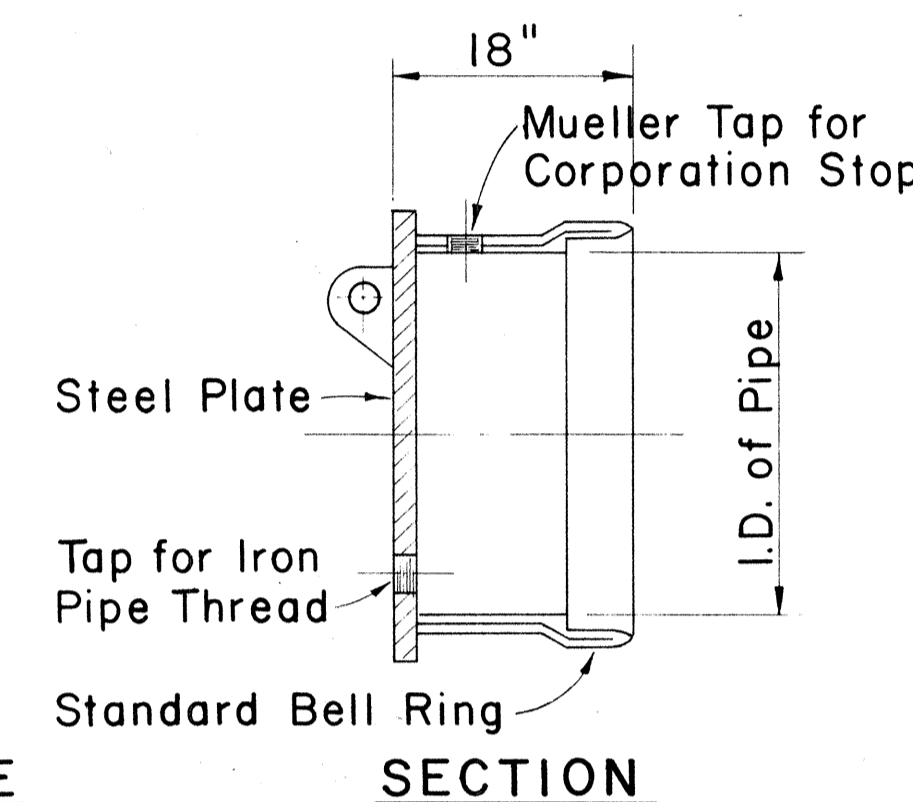


**SECTION**

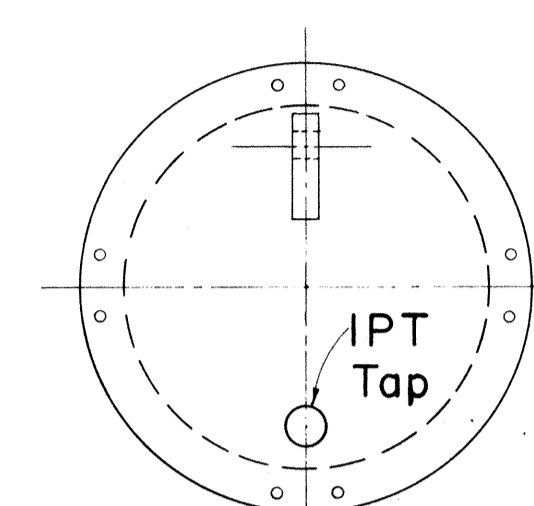


**ELEV. OF STEEL PLATE**

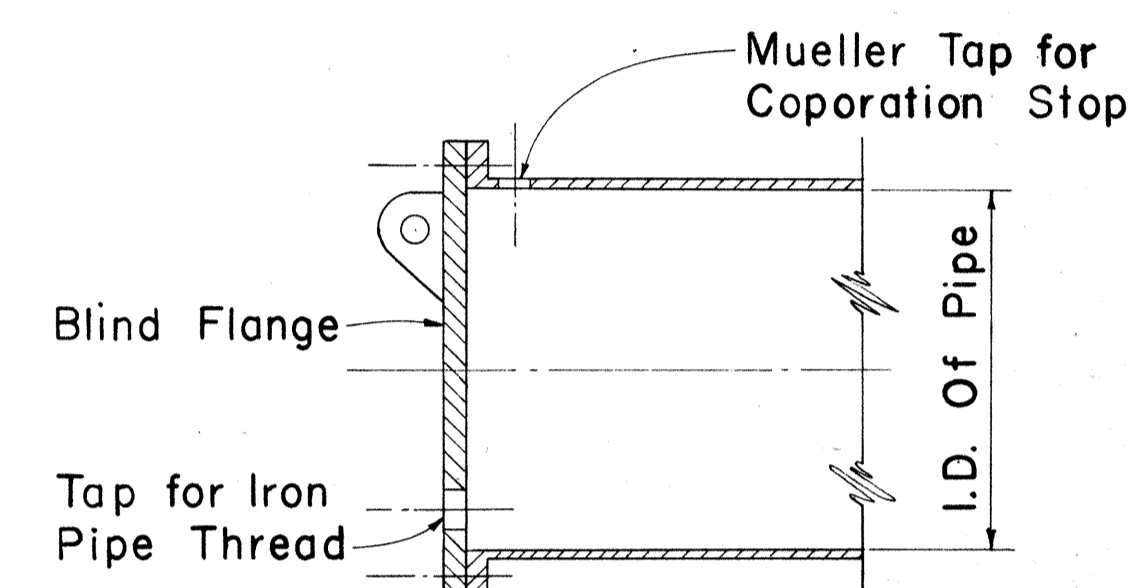
**DETAIL OF CAP**



**SECTION**



**ELEV. OF BLIND FLANGE**



**SECTION**

**DETAIL OF BLIND FLANGE**

**STANDARD FITTING DIMENSIONS**

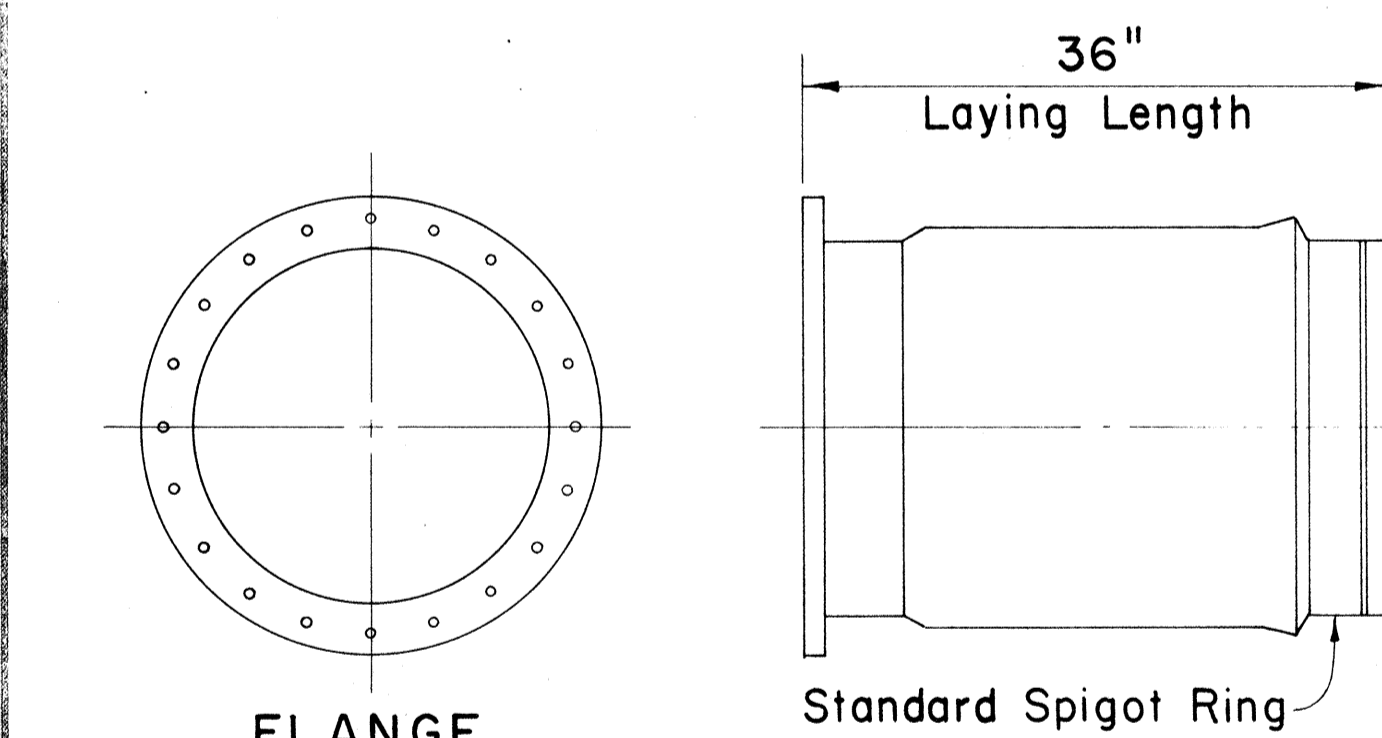
DIAMETER	TEE		CROSS (Both Ways) J+J	LATERAL (30° to 75°) Run X+Y Outlet Y		ELBOWS (Center to End)							
						2 Piece (up to 22 1/2°)		3 Piece (22 1/2° to 45°)		4 Piece (45° to 67 1/2°)		5 Piece (67 1/2° to 90°)	
	Run J+J	Outlet J				M	R2	N	R3	P	R4	Q	R5
16"	34"	17"	34"	62"	52"	12"	60"	18"	44"	26"	39"	44"	40"
18"	36"	18"	36"	66"	56"	12"	60"	19"	47"	27"	41"	36"	32"
20"	38"	19"	38"	72"	60"	13"	65"	20"	49"	28"	42"	54"	50"
22"	40"	20"	40"	78"	66"	13"	65"	21"	51"	30"	45"	41"	37"
24"	42"	21"	42"	84"	72"	14"	70"	22"	54"	32"	48"	64"	60"
30"	60"	30"	60"	96"	84"	15"	75"	25"	61"	37"	51"	79"	75"
36"	66"	33"	66"	110"	96"	16"	80"	27"	66"	40"	60"	94"	90"
42"	72"	36"	72"	124"	108"	17"	85"	30"	71"	49"	69"	109"	105"

**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"  
 42" x 36" Eccentric Reducer - Length 66"  
 42" x 30" Eccentric Reducer - Length 66"

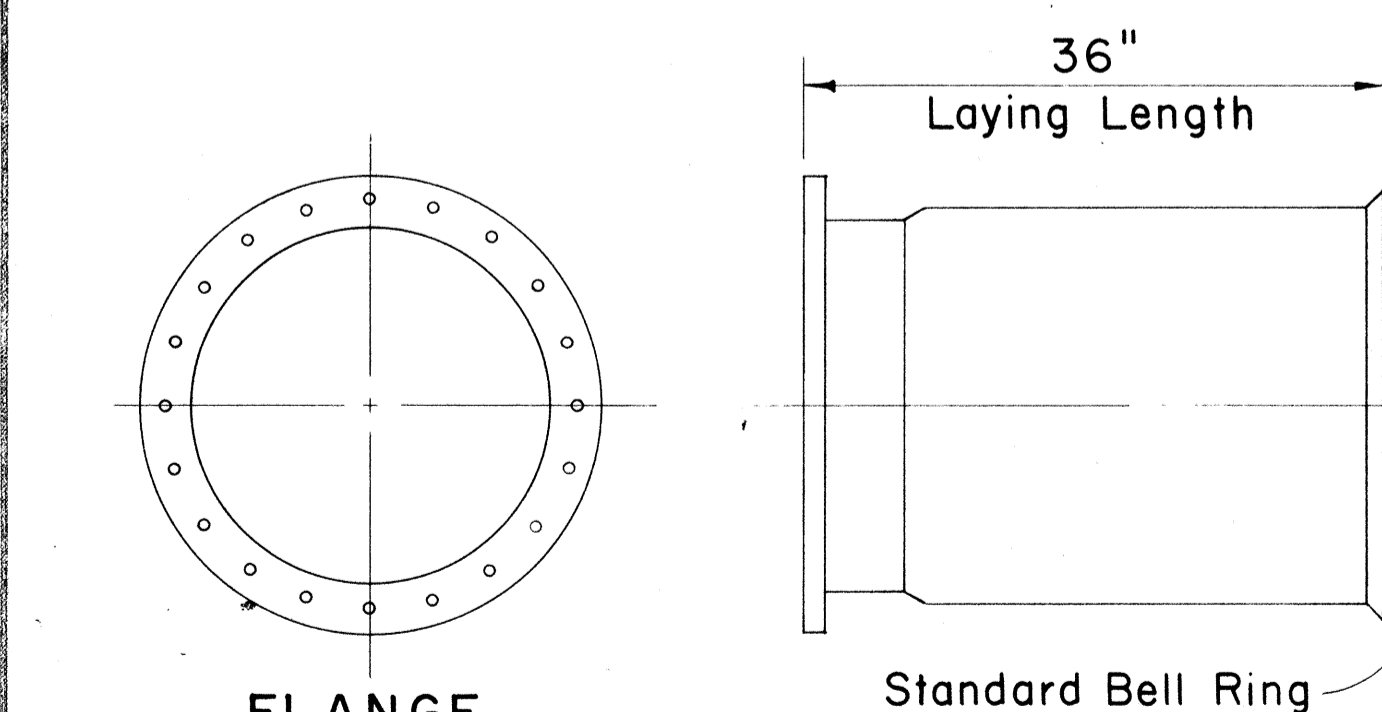
**NOTE:**

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.



**FLANGE**

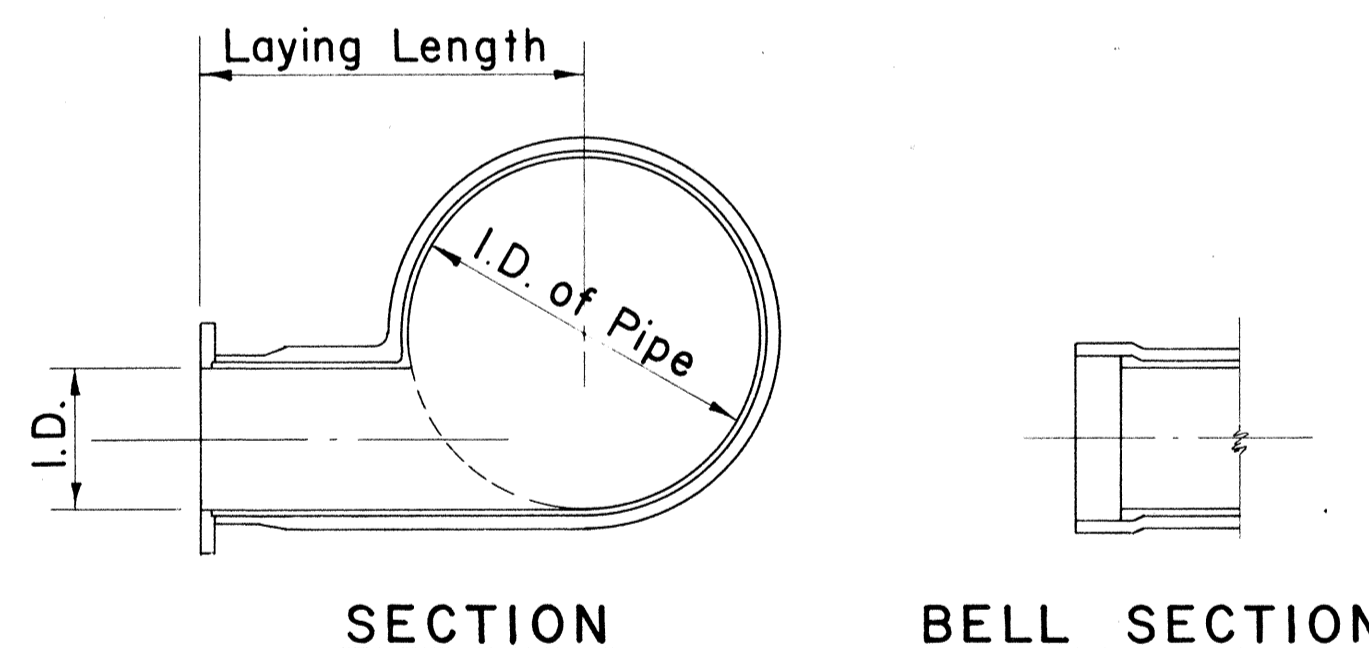
See Specs. for Flange Class



**FLANGE**

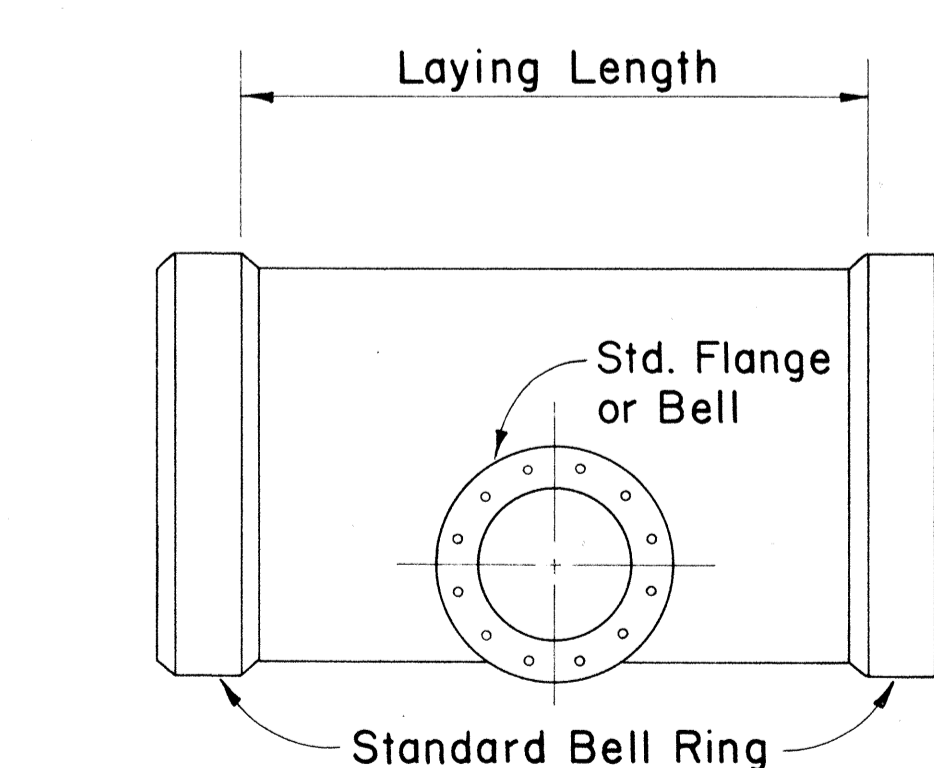
See Specs. for Flange Class

**TYPICAL DETAIL OF ADAPTER**



**SECTION**

**BELL SECTION**



**TYPICAL DETAIL OF BLOW-OFF TEE**

APPROVED:

*D. Kawakami* 1/17/75  
 ASSISTANT CHIEF ENGINEER  
 BOARD OF WATER SUPPLY  
 SHEET NO. 1 OF 2 SHEETS

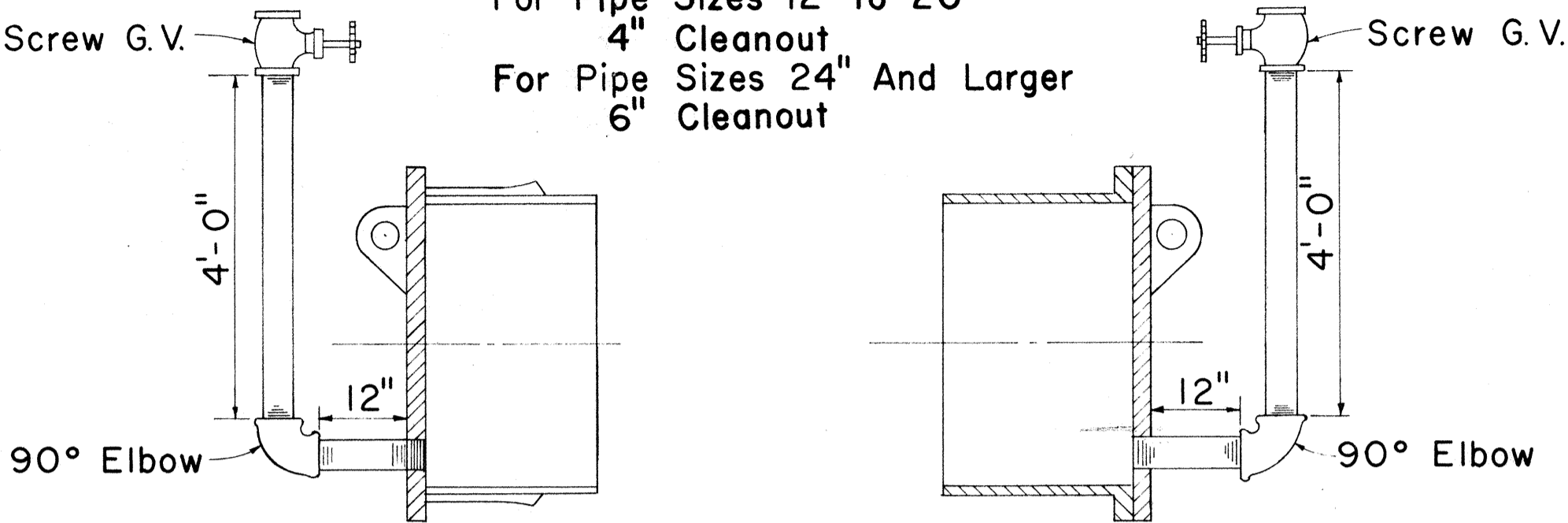
STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
 BOARD OF WATER SUPPLY  
 CITY & COUNTY OF HONOLULU  
**CONCRETE CYLINDER PIPE  
 MISCELLANEOUS DETAILS**

Scale: No Scale Date: Jan. 1975

SHEET NO. 2 OF 3 SHEETS

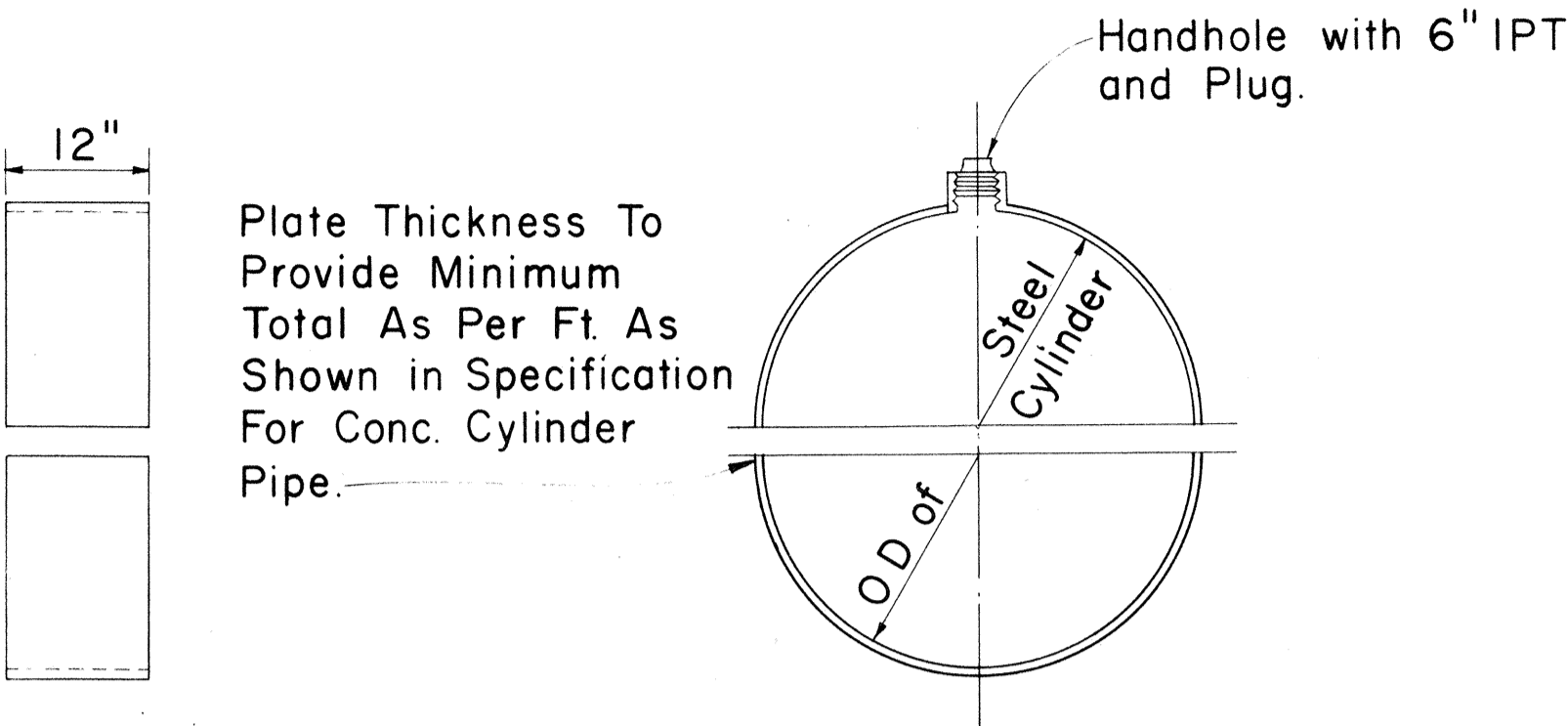
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	03A-01-75	1975	15	17

NOTE:  
 For Pipe Sizes 8" And Smaller  
 2 1/2" Cleanout  
 For Pipe Sizes 12" to 20"  
 4" Cleanout  
 For Pipe Sizes 24" And Larger  
 6" Cleanout

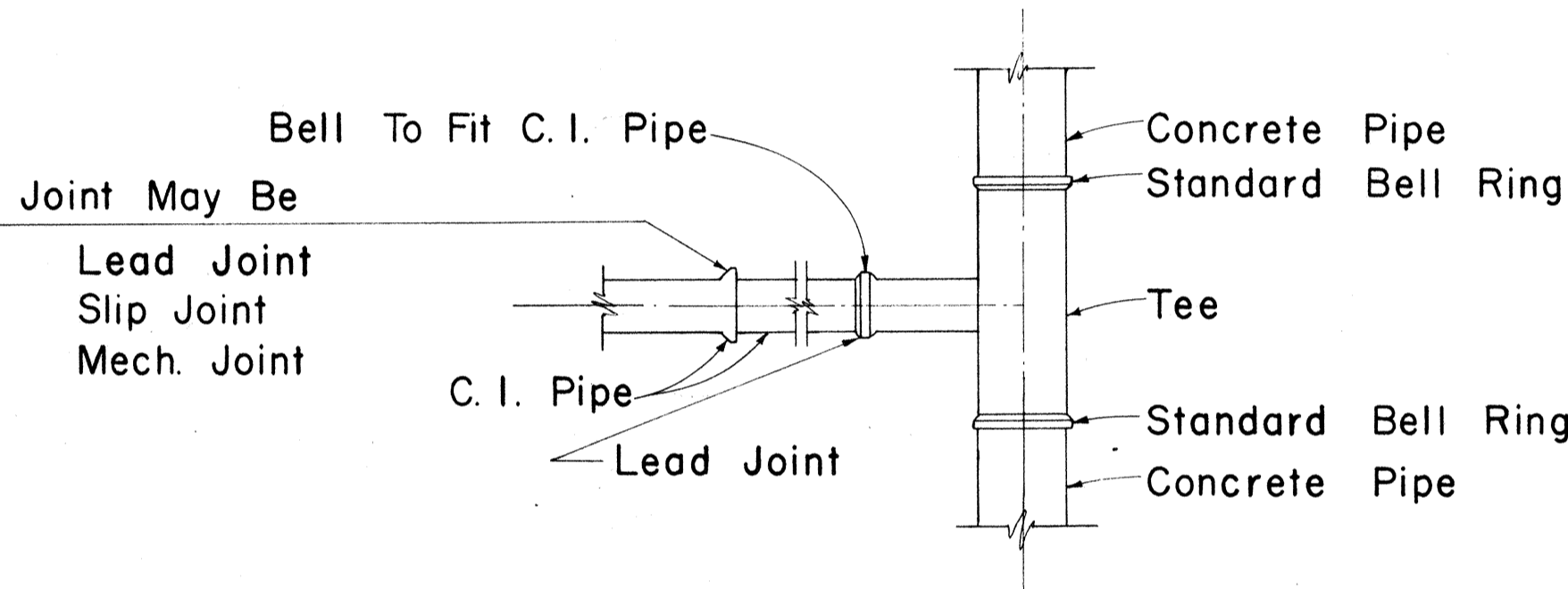


TYPICAL SECTION OF TEMPORARY CLEANOUT

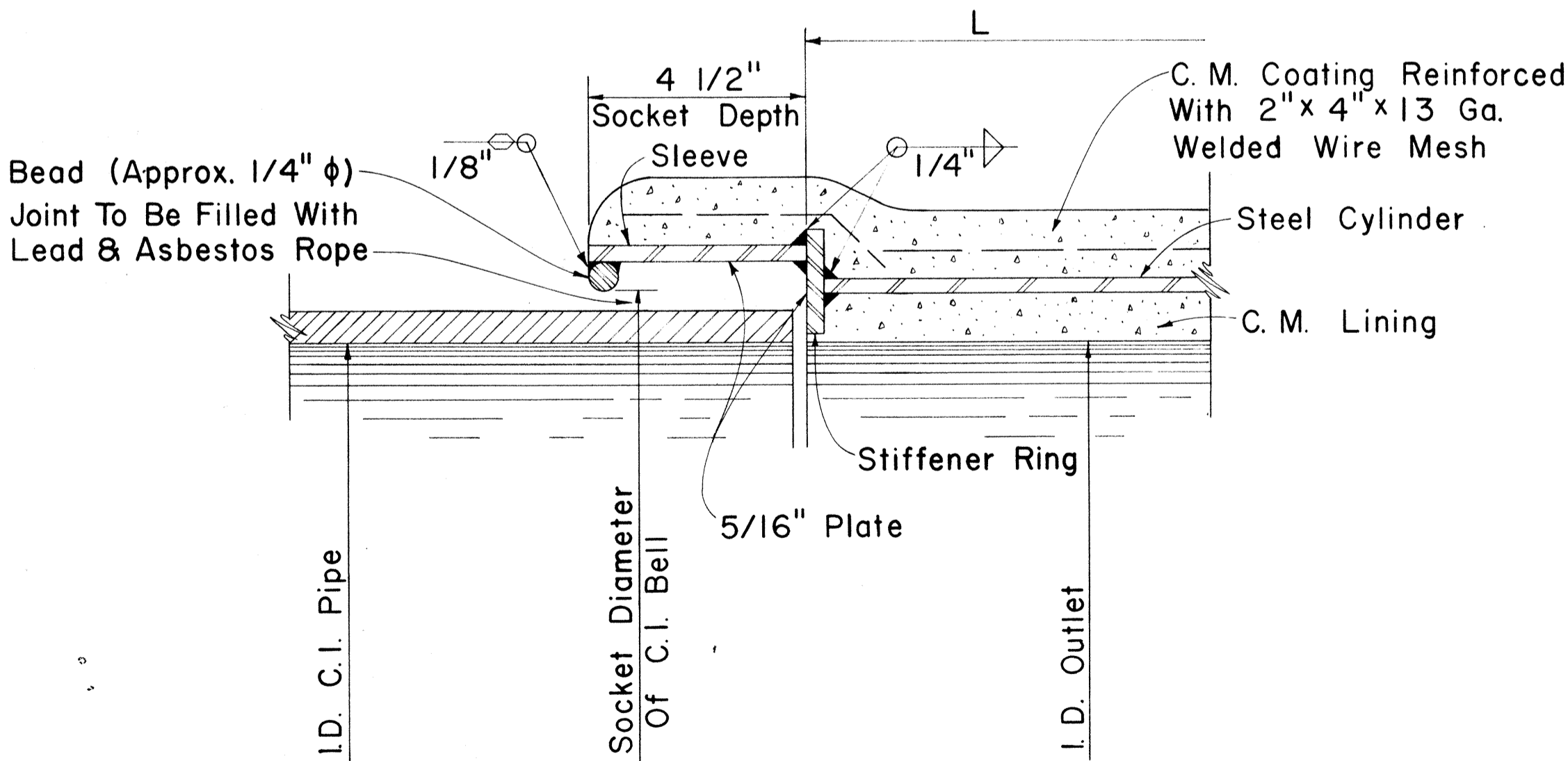
NOTE:  
 For Pipe Sizes 24" And  
 Larger 2 Handholes Required.



DETAIL OF SPLIT BUTT STRAP



TYPICAL CAST IRON PIPE CONNECTION  
 TO CONCRETE CYLINDER PIPE



DETAIL OF C.I. ADAPTER

APPROVED:  
*S. Kawakami* 1/17/75  
 ASSISTANT CHIEF ENGINEER  
 BOARD OF WATER SUPPLY  
 SHEET NO. 2 OF 2 SHEETS

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
 BOARD OF WATER SUPPLY  
 CITY & COUNTY OF HONOLULU  
 CONCRETE CYLINDER PIPE  
 MISCELLANEOUS DETAILS  
 Scale: No Scale Date: Jan. 1975  
 SHEET No. 3 OF 3 SHEETS