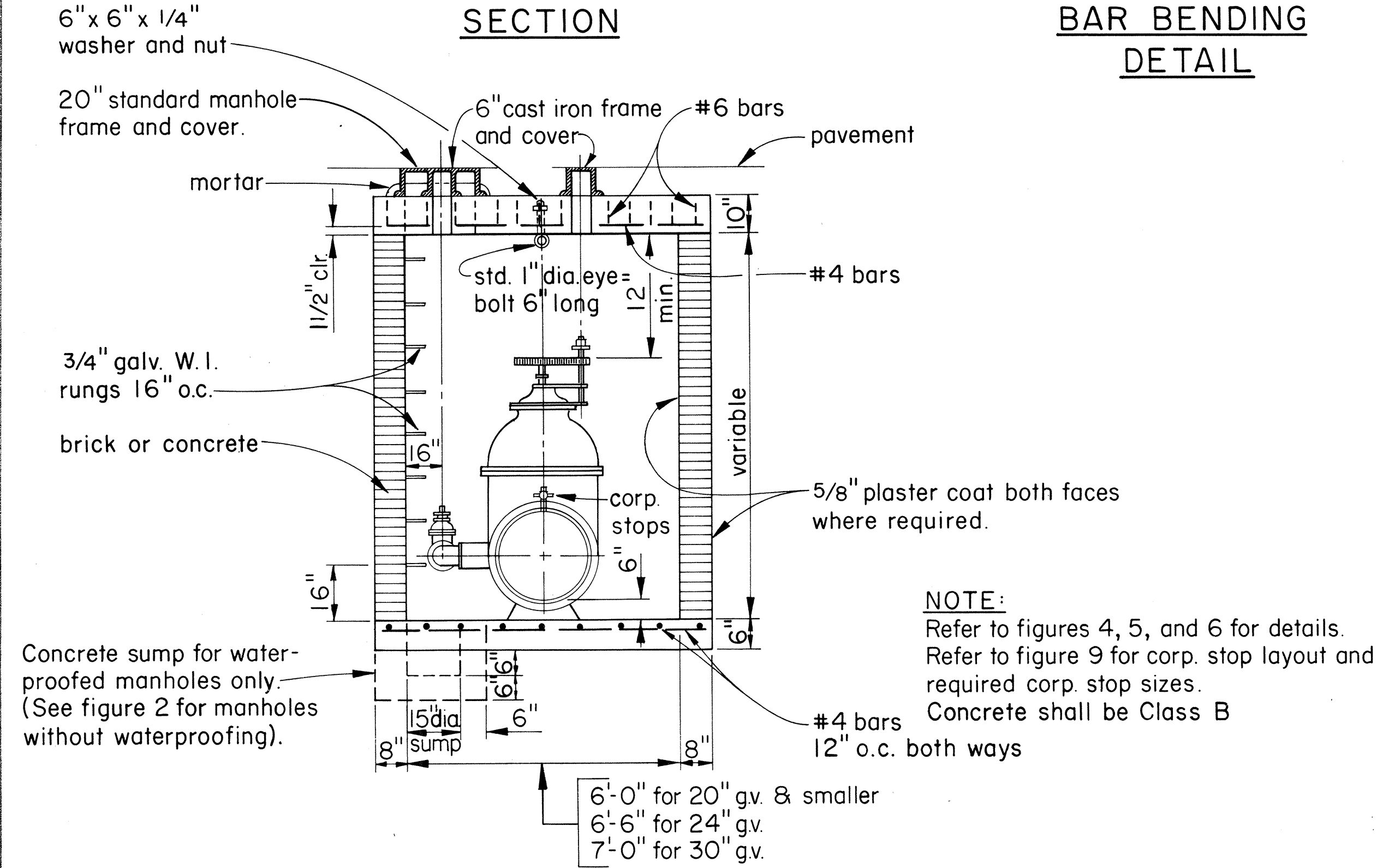
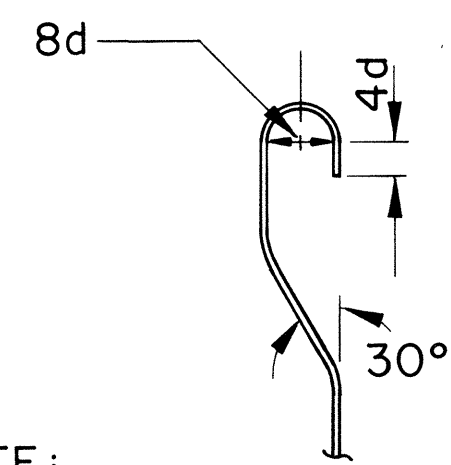
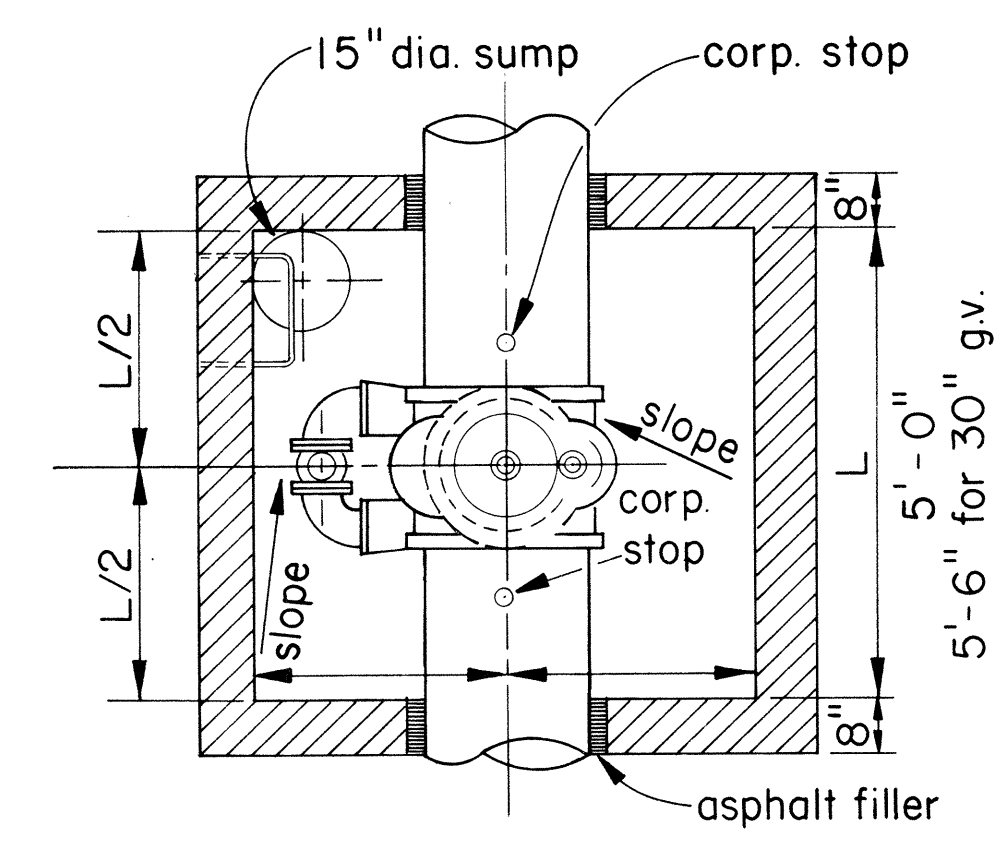
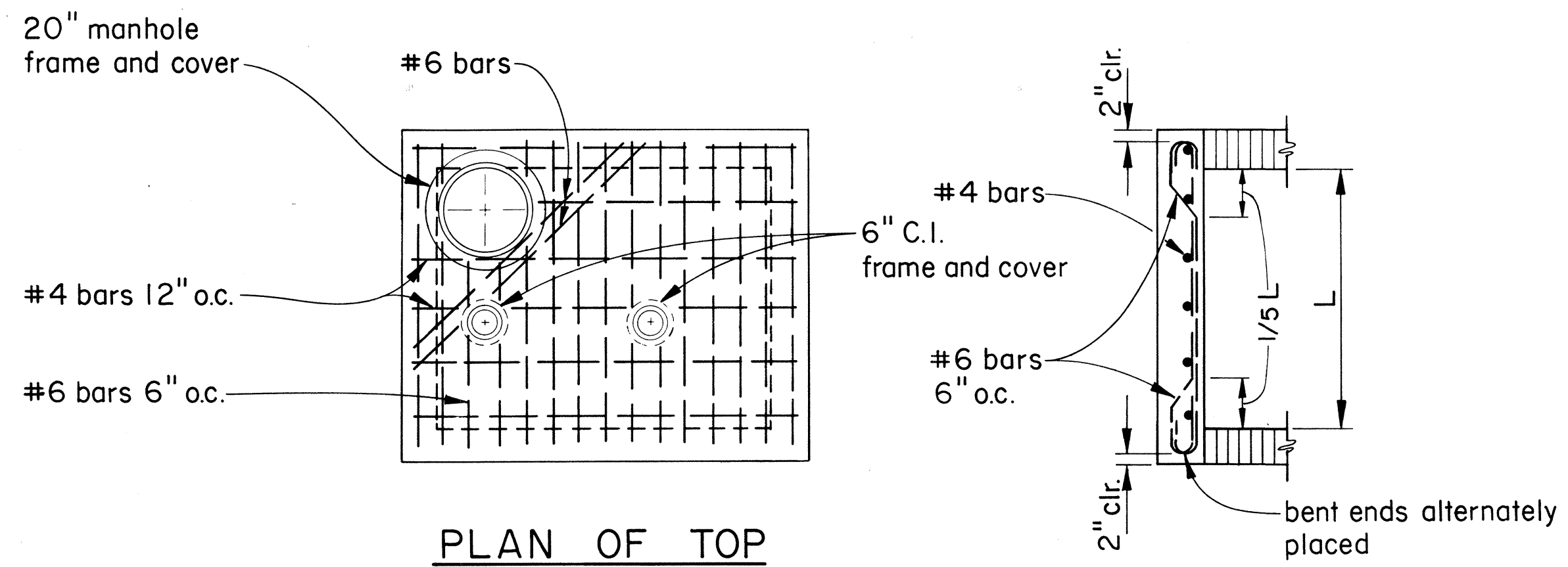


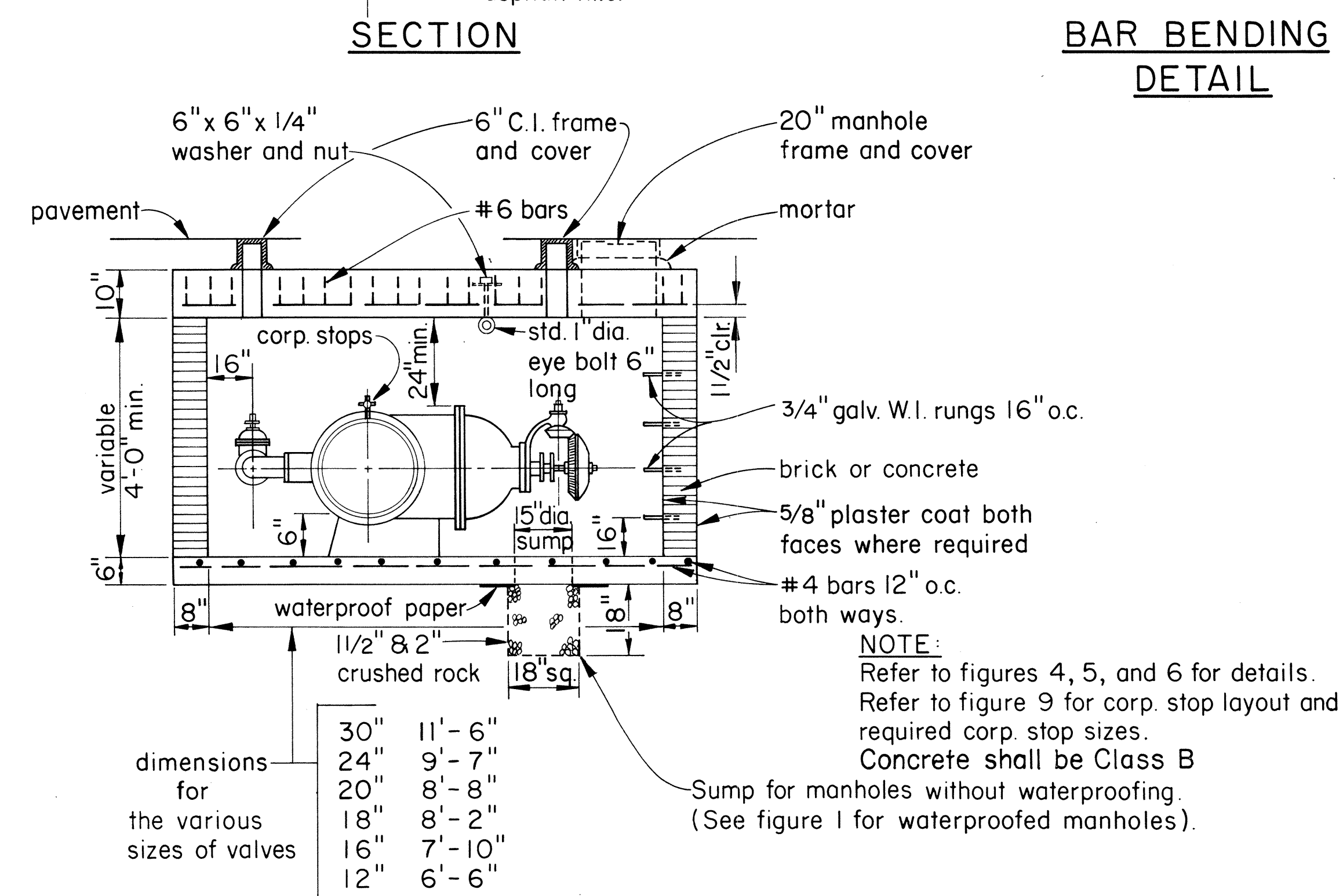
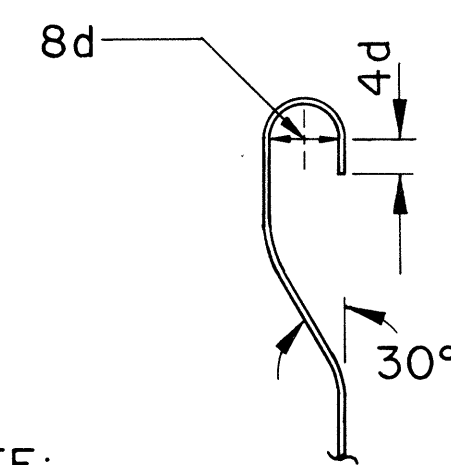
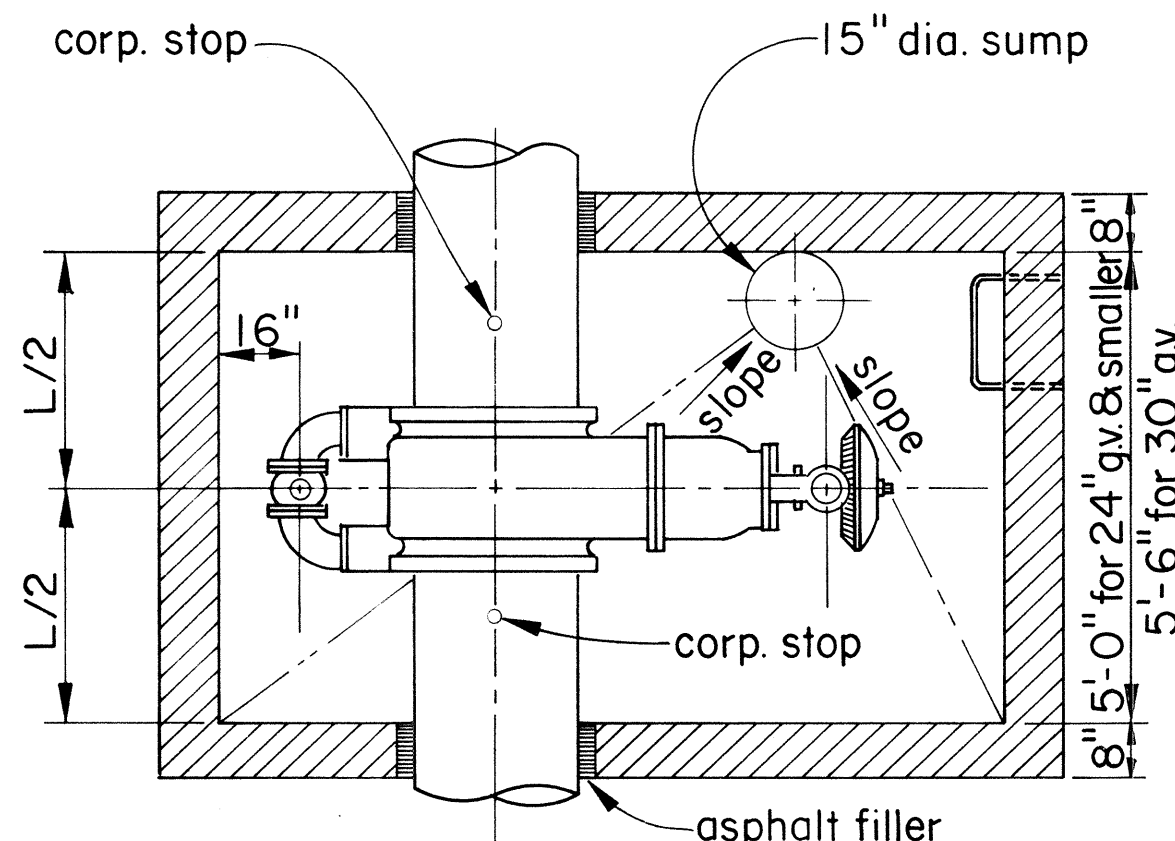
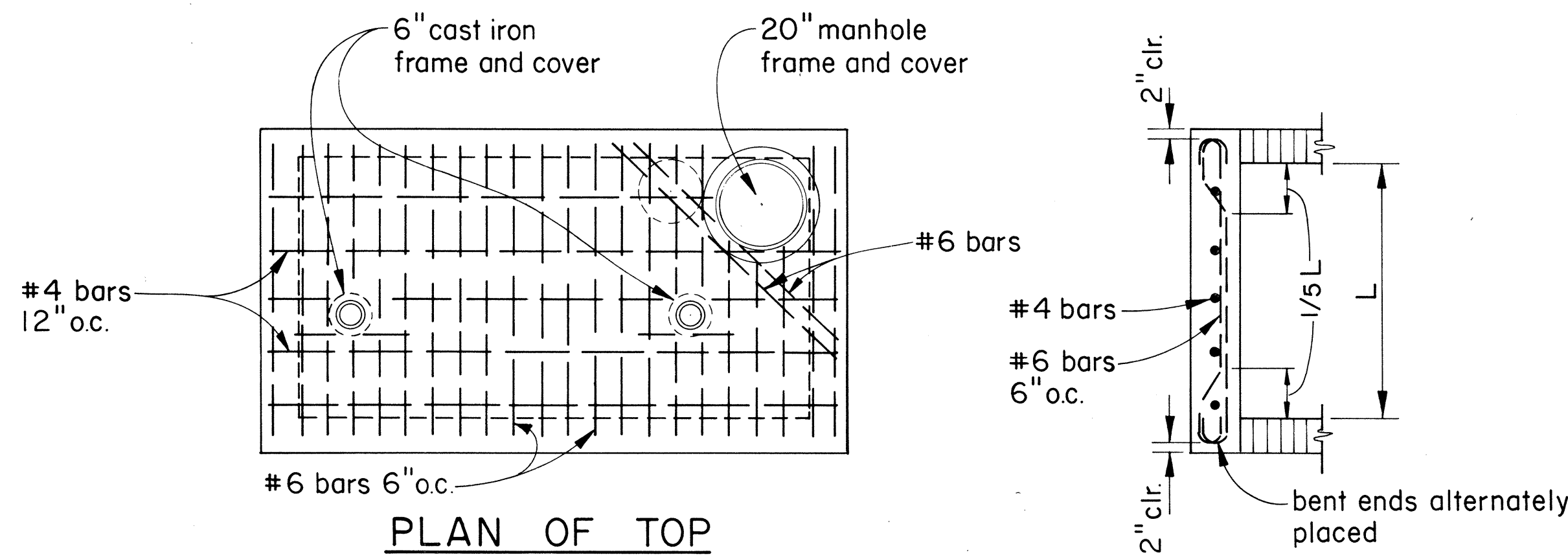
FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	72	100

PROJECT NO. 93A-02-TO



TYPE A MANHOLE FOR SPUR GEARED VALVES

FIGURE 1



TYPE A MANHOLE FOR BEVEL GEARED VALVES

FIGURE 2

APPROVED:

ASSISTANT CHIEF ENGINEER

BOARD OF WATER SUPPLY

DATE

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

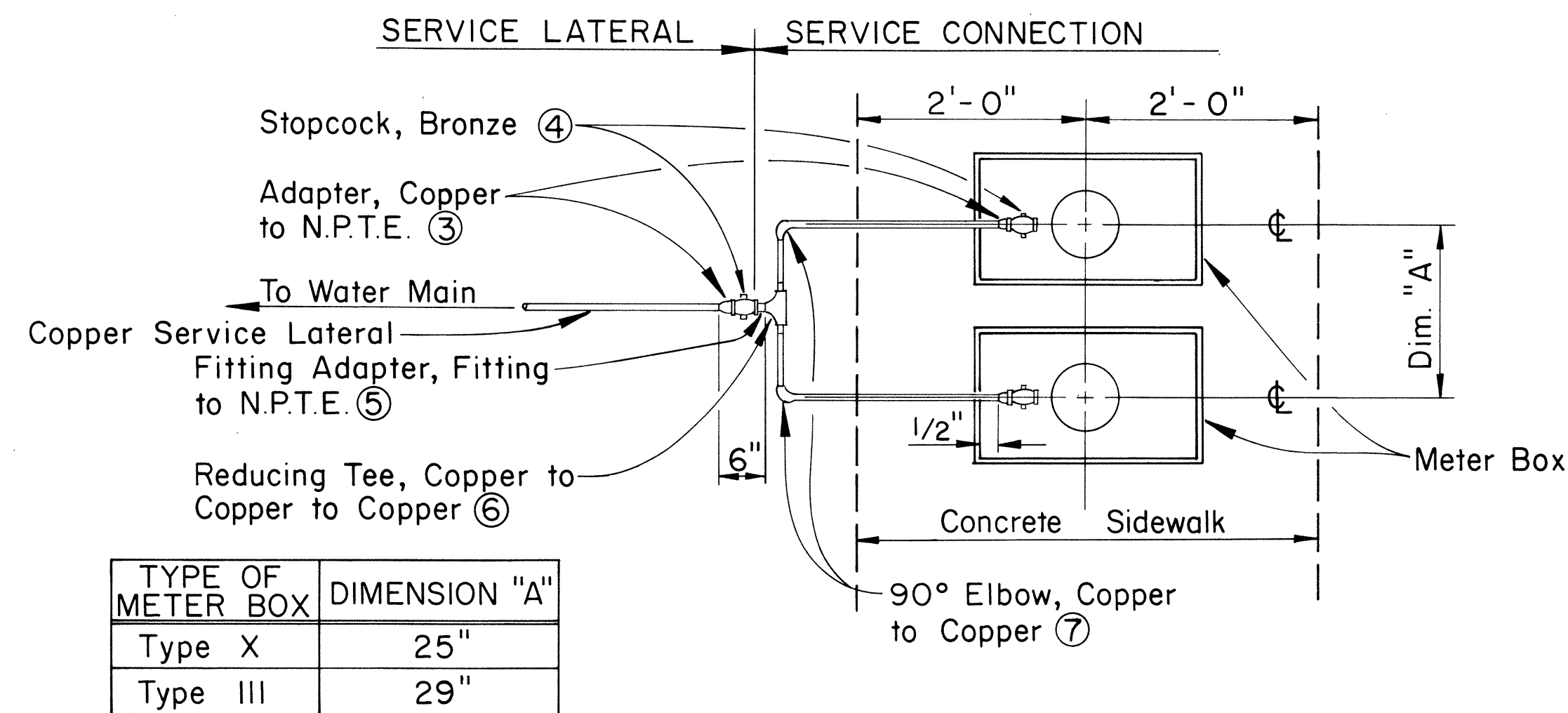
STANDARD DETAILS

BOARD OF WATER SUPPLY

SHEET No. 1 OF 5 SHEETS

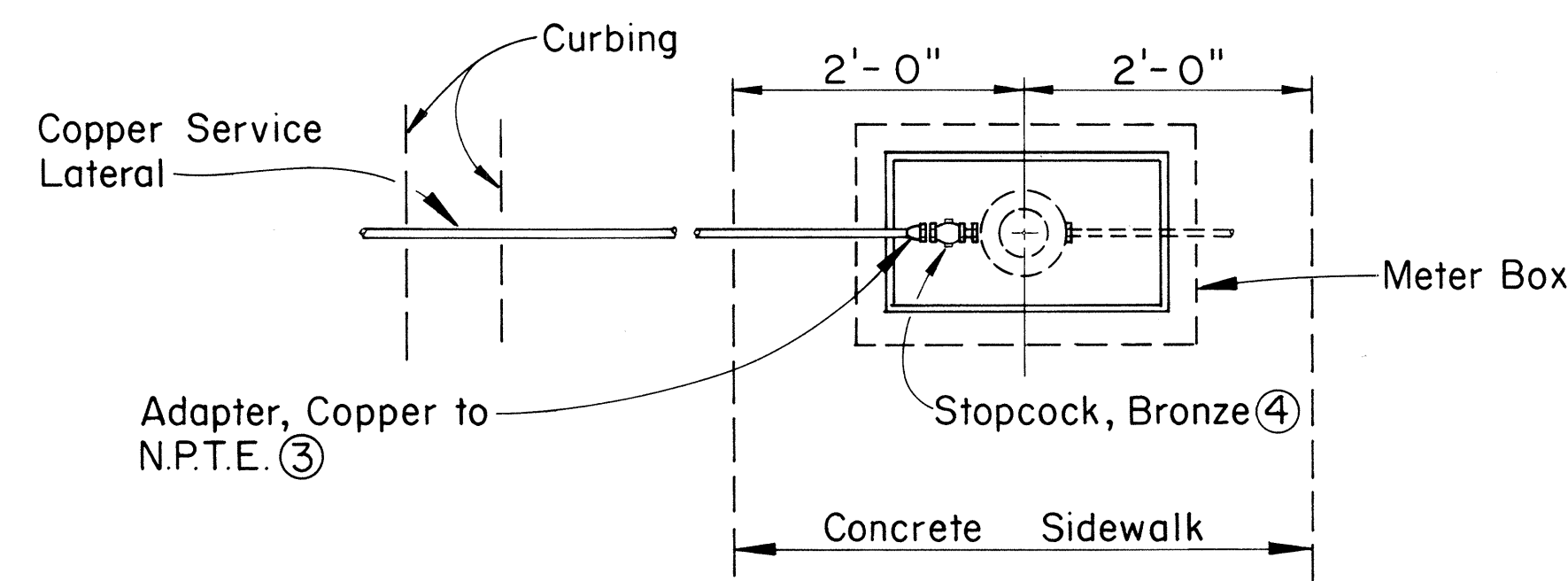
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	74	100

PROJECT NO. 93A-02-70



MULTIPLE SERVICE CONNECTION

FIGURE 24



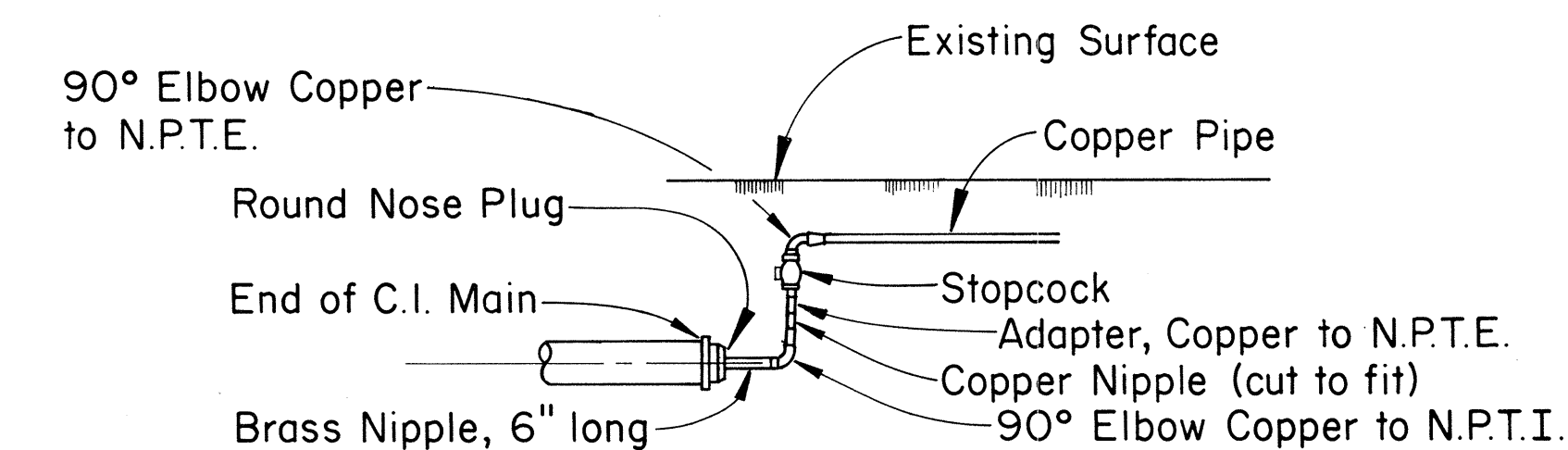
SINGLE SERVICE CONNECTION

FIGURE 23

ITEM NO.	DESCRIPTION	SINGLE SERVICE CONN.	MULTIPLE SERVICE CONN.
1	Corporation Stop Bronze (H-10003)	1	1
2	Ground Joint Union Copper to N.P.T.I.	1	1
3	Adapter, Copper to N.P.T.E.	1	3
4	Stopcock, Bronze	1	3
5	Fitting Adapter, Fitting to N.P.T.E.	—	1
6	Reducing Tee, Copper to Copper to Copper	—	1
7	90° Elbow, Copper to Copper	—	2

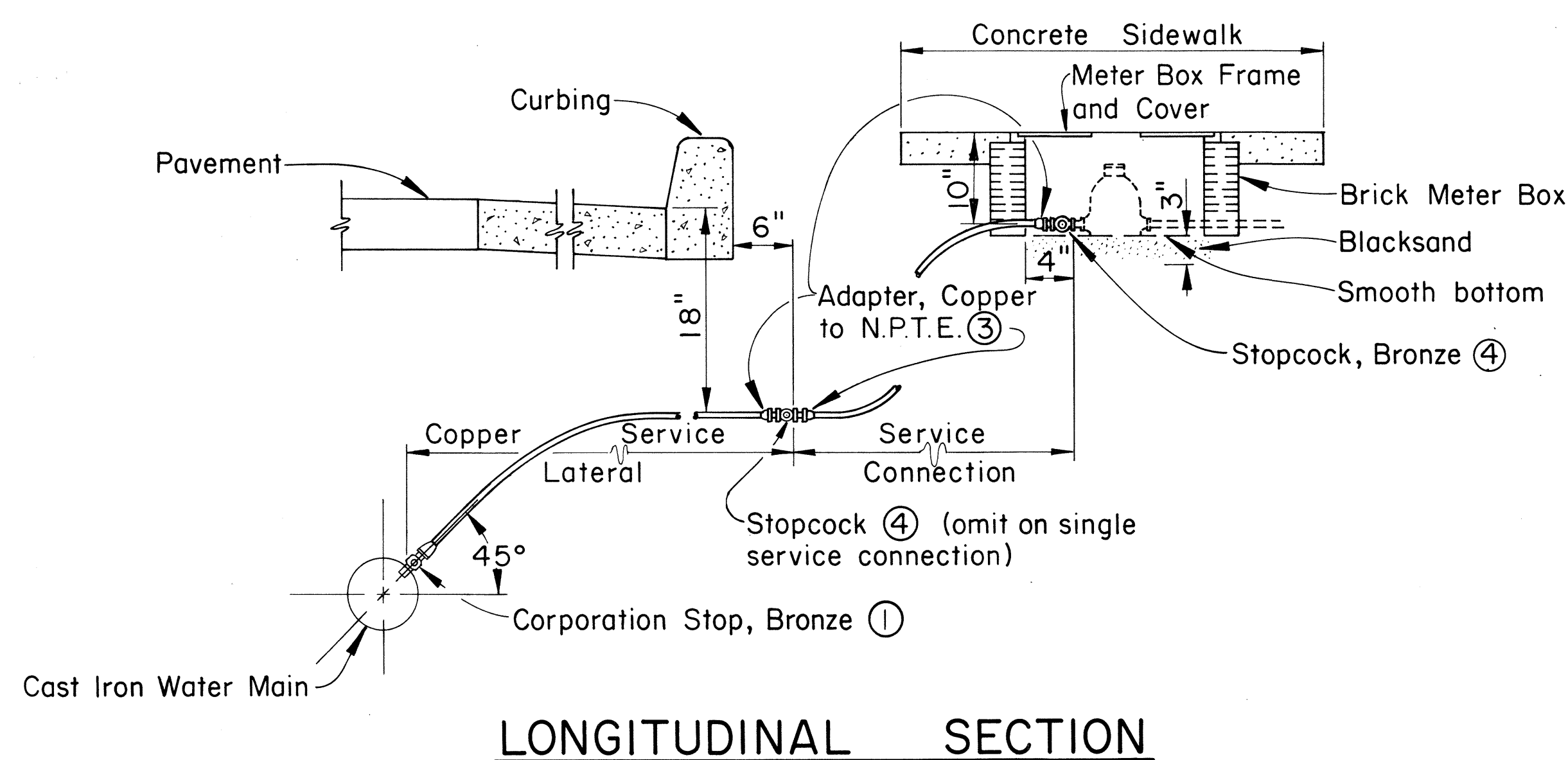
SCHEDULE OF COPPER FITTINGS

FIGURE 25



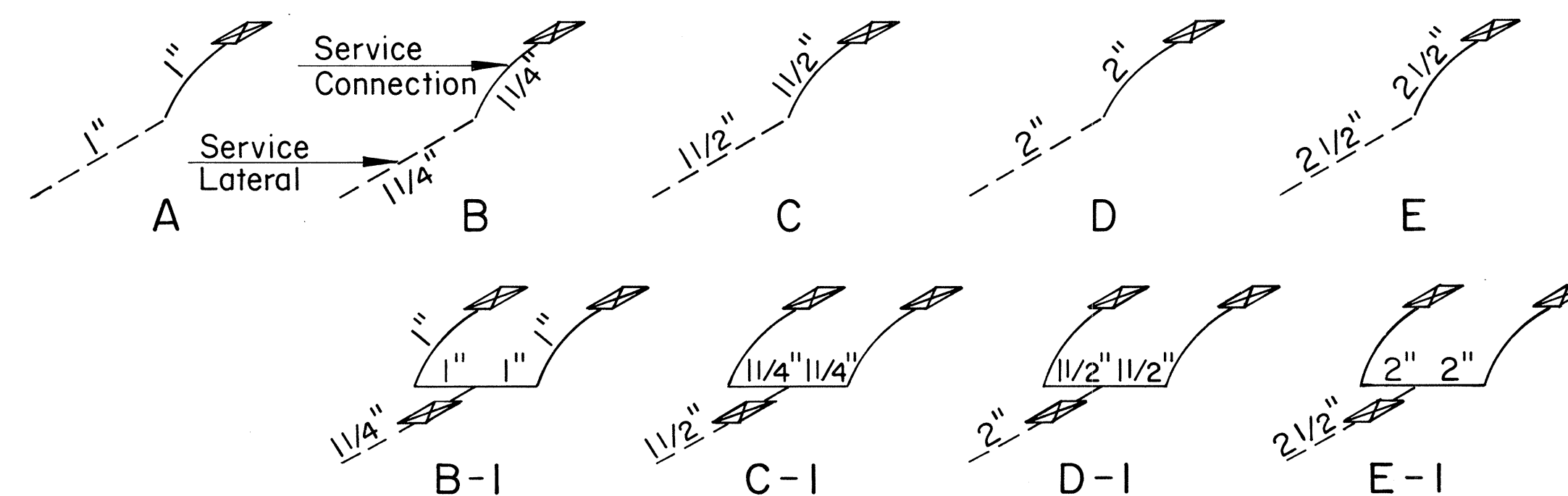
SERVICE LATERAL CONNECTION AT END OF LINE

FIGURE 26



LONGITUDINAL SECTION

FIGURE 22



TYPICAL LAYOUT OF SERVICE LATERALS AND CONNECTIONS

FIGURE 27

APPROVED:

ASSISTANT CHIEF ENGINEER

BOARD OF WATER SUPPLY

DATE

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

STANDARD DETAILS

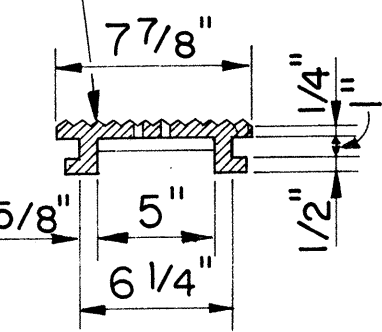
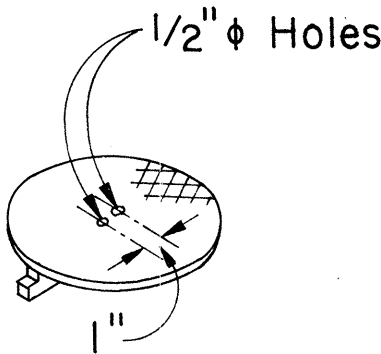
BOARD OF WATER SUPPLY

SHEET No. 3 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	75	100

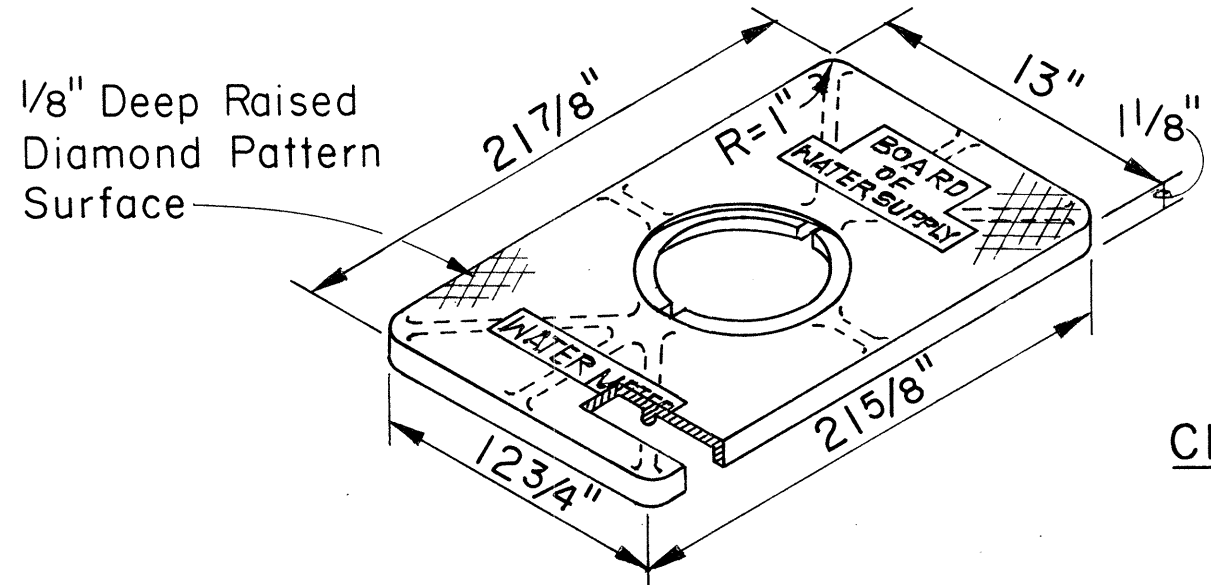
PROJECT NO. 93A-02-70

1/8" Raised Checkered Pattern Surface



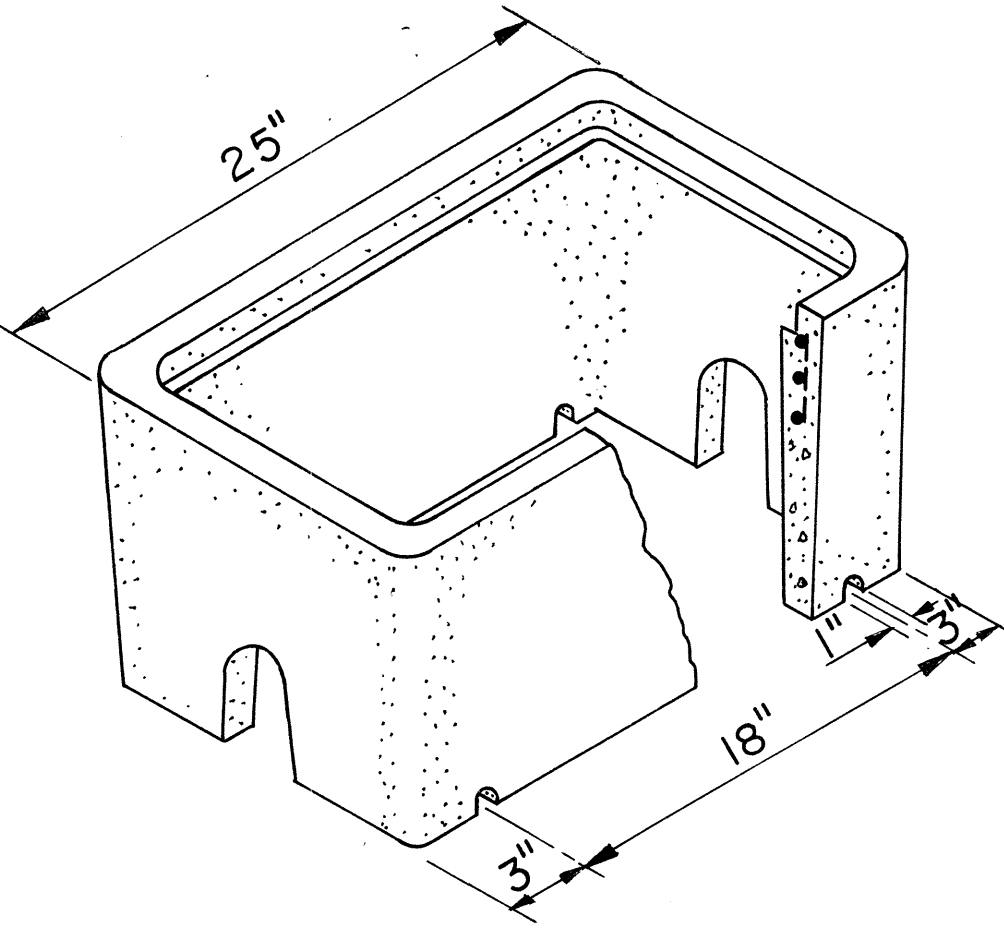
CAST IRON READING COVER

NOTE:
Thickness dimensions are net.
Add 1/8" for raised surfaces.

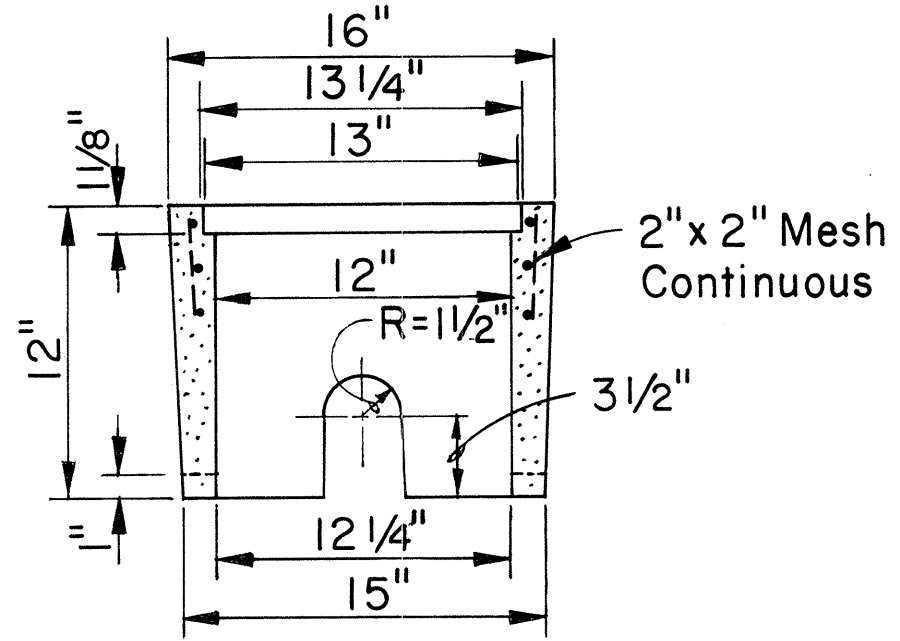


CHECKERED PATTERN

CAST IRON COVER
WT. = 36 LBS.



CONCRETE BOX
WT. = 107 LBS.



METER BOX AND COVER
TYPE "X"

FIGURE 30

TYPE III METER BOX

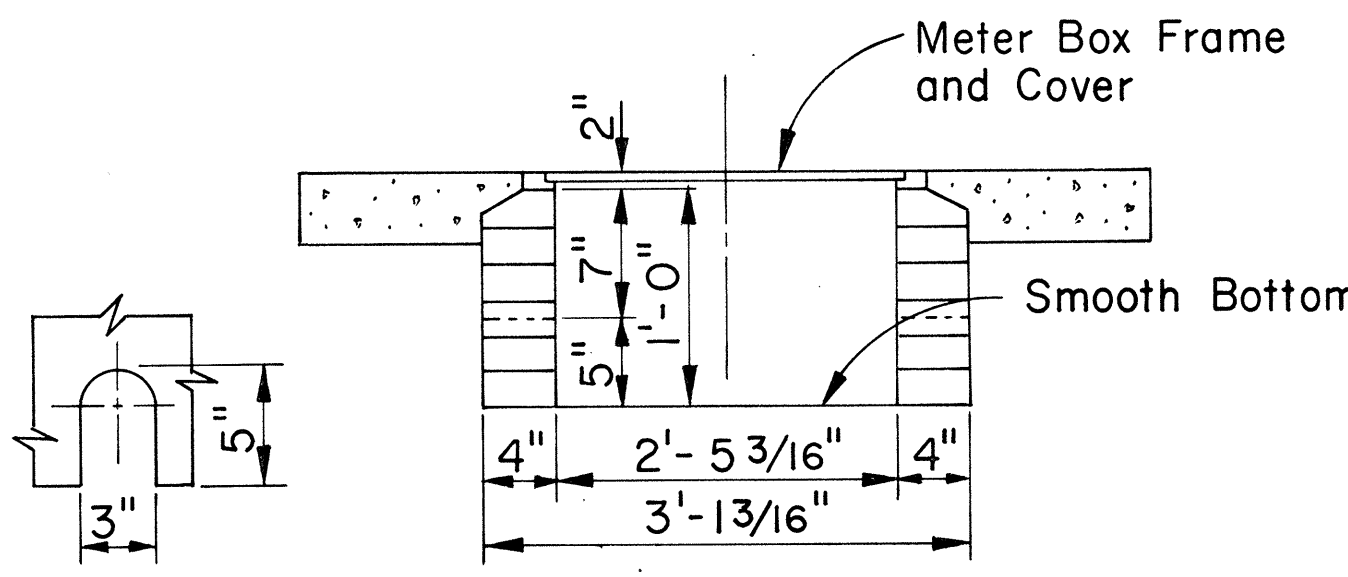
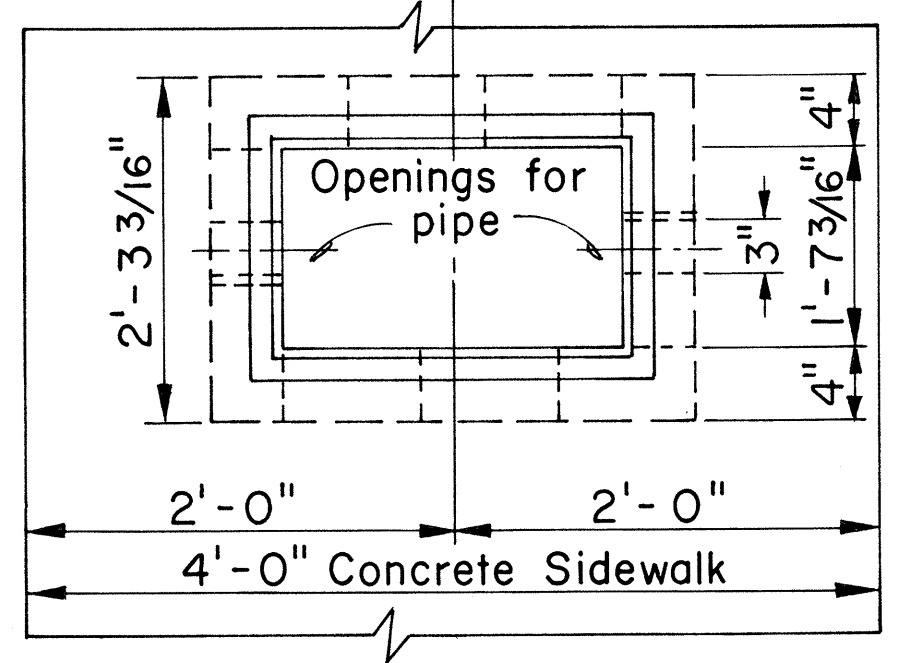
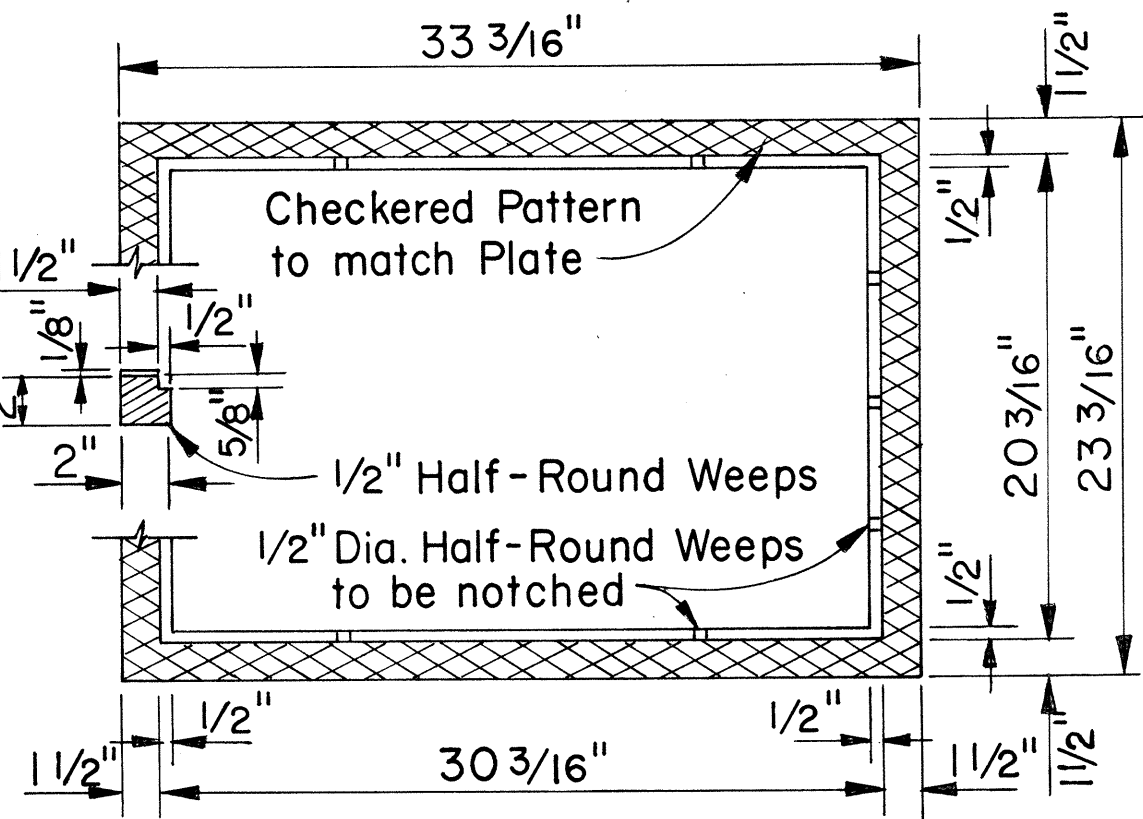
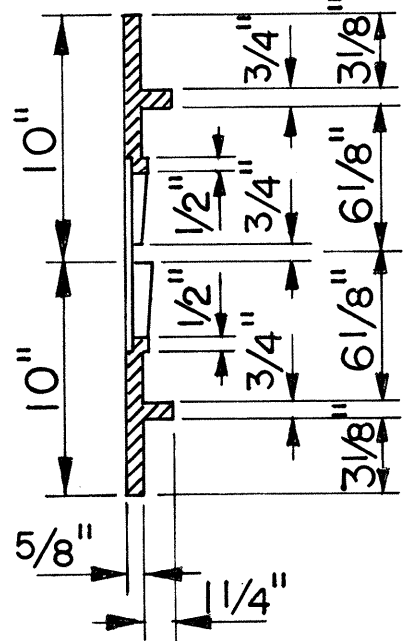
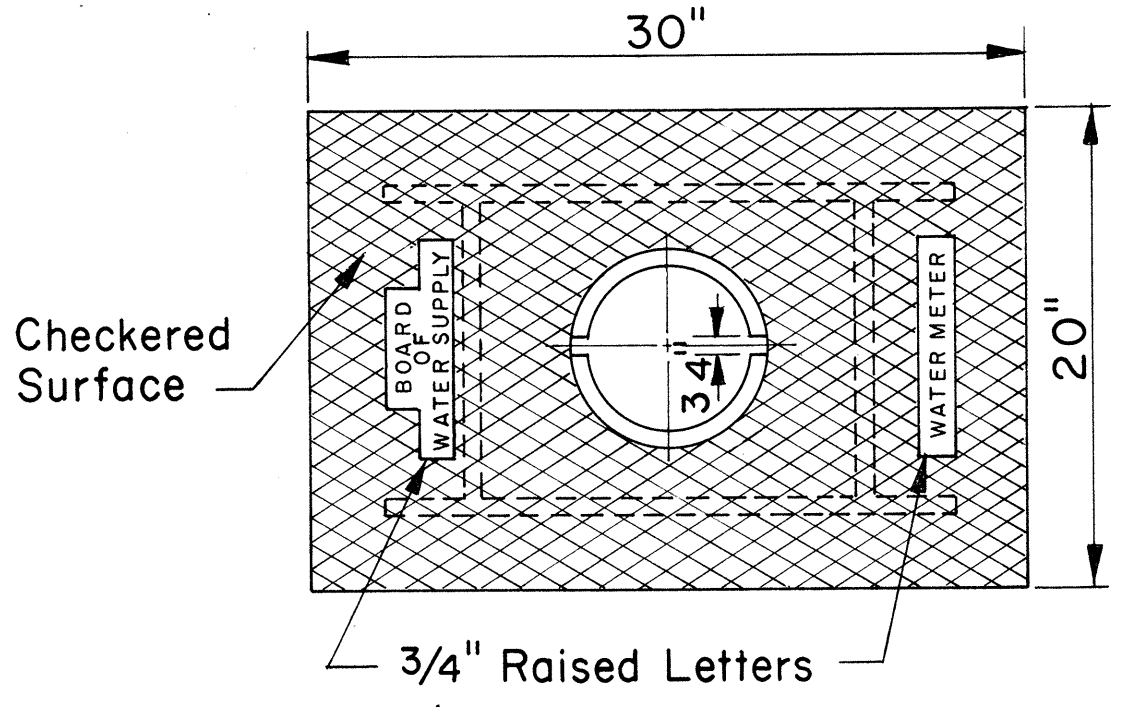
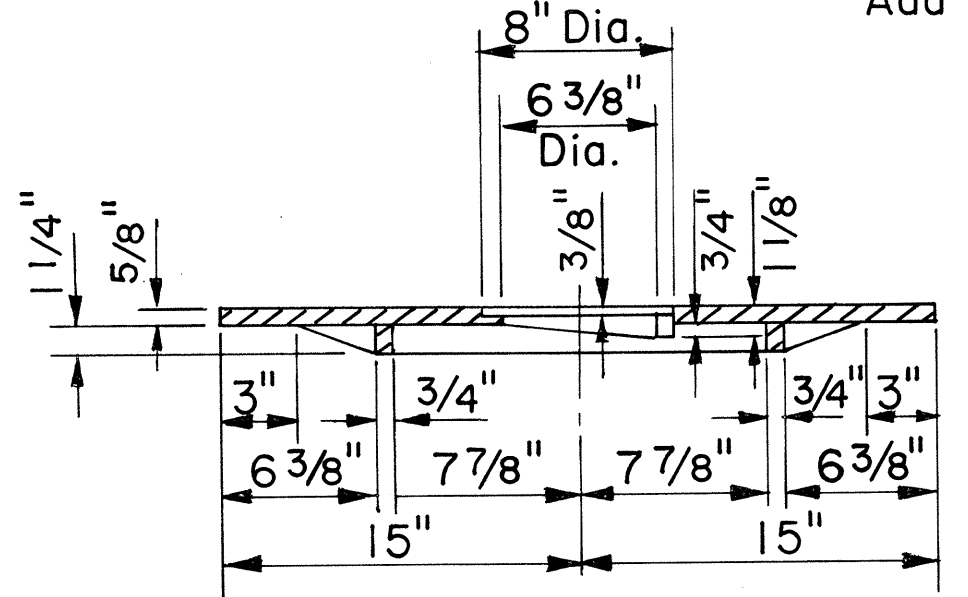


FIGURE 29

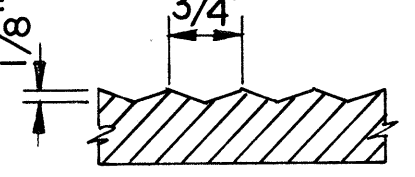


FRAME

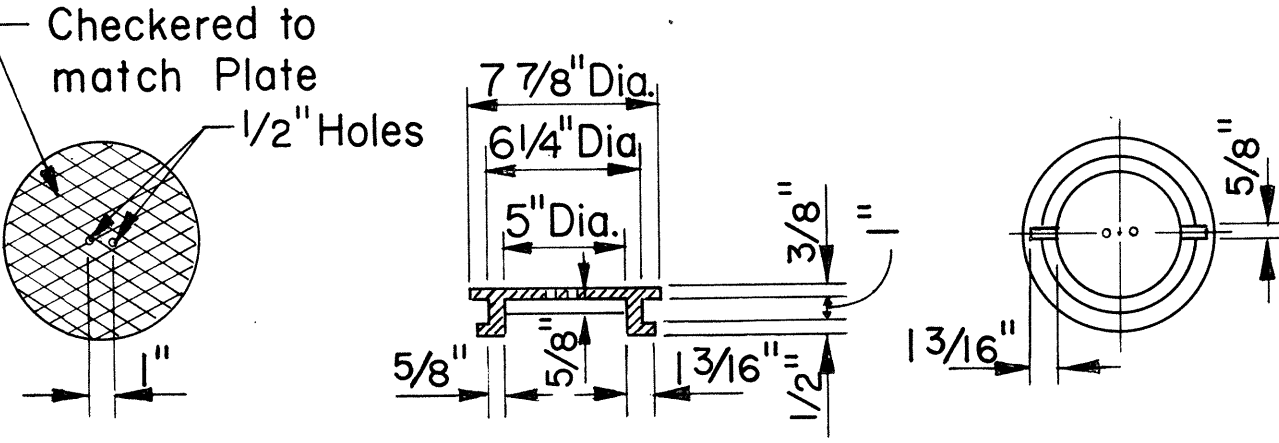
NOTE:
Thickness dimensions are net.
Add 1/8" for raised surfaces.



COVER PLATE



CHECKERED PATTERN



READING COVER

CAST IRON FRAME, PLATE AND COVER
TYPE III

FIGURE 28

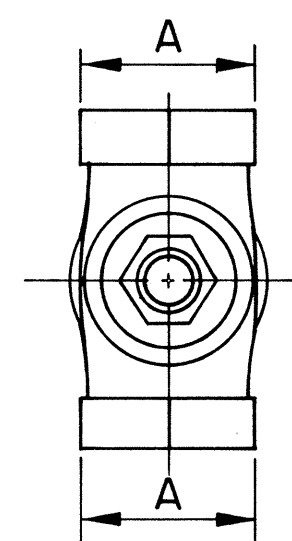
APPROVED:
[Signature]
ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
BOARD OF WATER SUPPLY

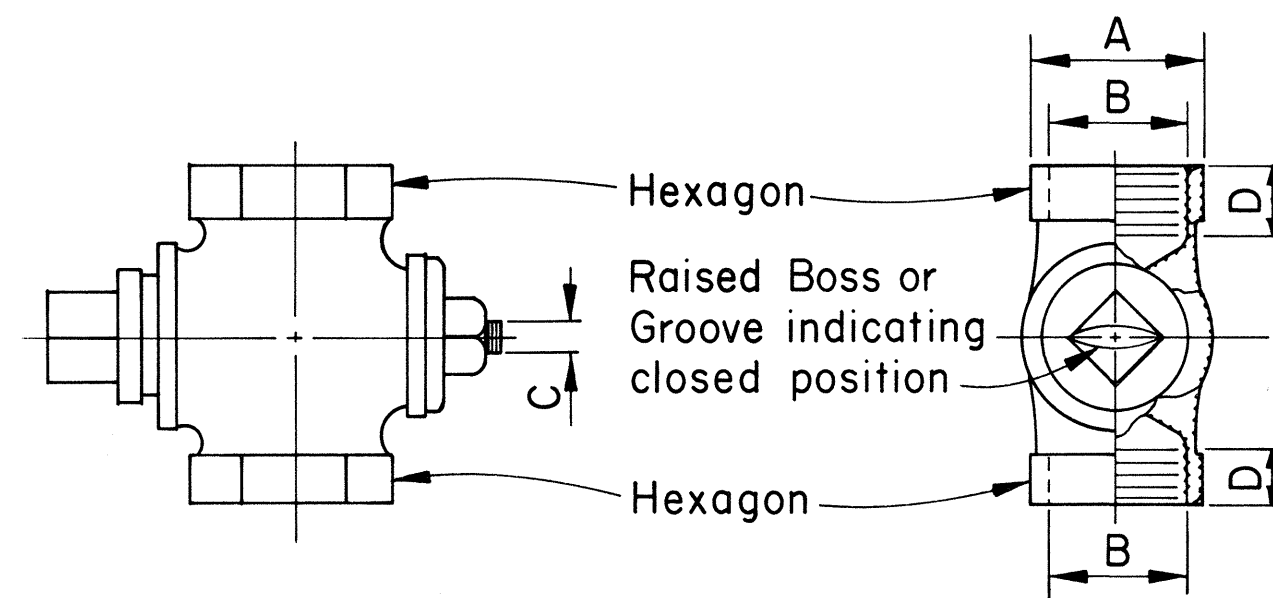
SHEET No. 4 OF 5 SHEETS

All dimensions are in inches. Thread dimensions must be as shown. Dimensions A, C and D may vary but shall not be less than the minimums shown in the accompanying table. Minimum acceptable weight of complete fitting may be 5% less than average weight. Metal composition shall conform to A.S.T.M. Designation B 62. The stopcock shall have either a raised boss on the head or a groove cut into the head to indicate the open and closed position of the stopcock. The net area (in square inches) of the opening through the stopcock shall be not less than that shown in the accompanying table (E). The taper of the plug of the stopcock shall be approximately 1 5/8 inches to the foot. Suitable markings on all stopcocks must be made to indicate the manufacturer.

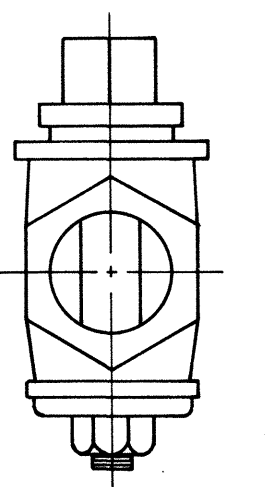
SIZE	Minimum A	Pipe Thread B	Minimum C	Minimum D	Average Weight of Complete Fitting lbs. oz.	Minimum E
1/2	1 1/8	1/2"	3/8	5/8	0 9	0.190
3/4	1 3/8	3/4"	9/16	5/8	1 2	0.428
1	1 5/8	1"	5/8	5/8	1 10	0.746
1 1/4	2	1 1/4"	11/16	5/8	2 12	1.166
1 1/2	2 3/8	1 1/2"	3/4	3/4	4 0	1.679
2	2 7/8	2"	7/8	7/8	6 11	2.922
2 1/2	3 5/8	2 1/2"	13/16	15/16	10 6	4.000



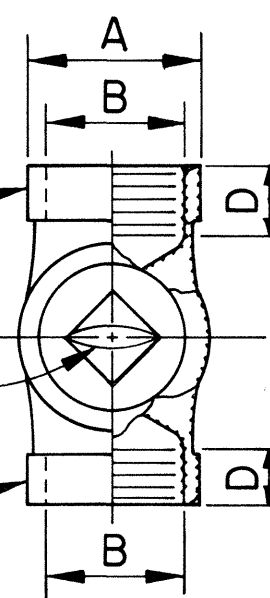
BOTTOM



SIDE



END



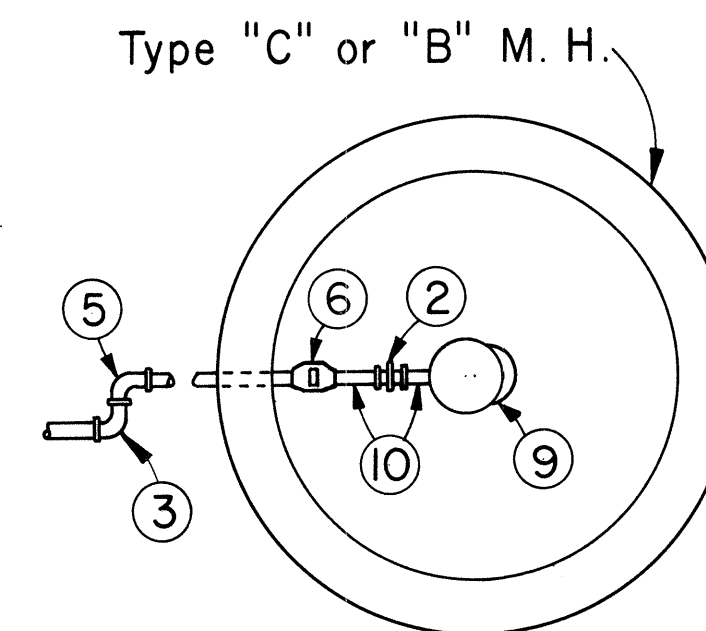
TOP

STOP COCK

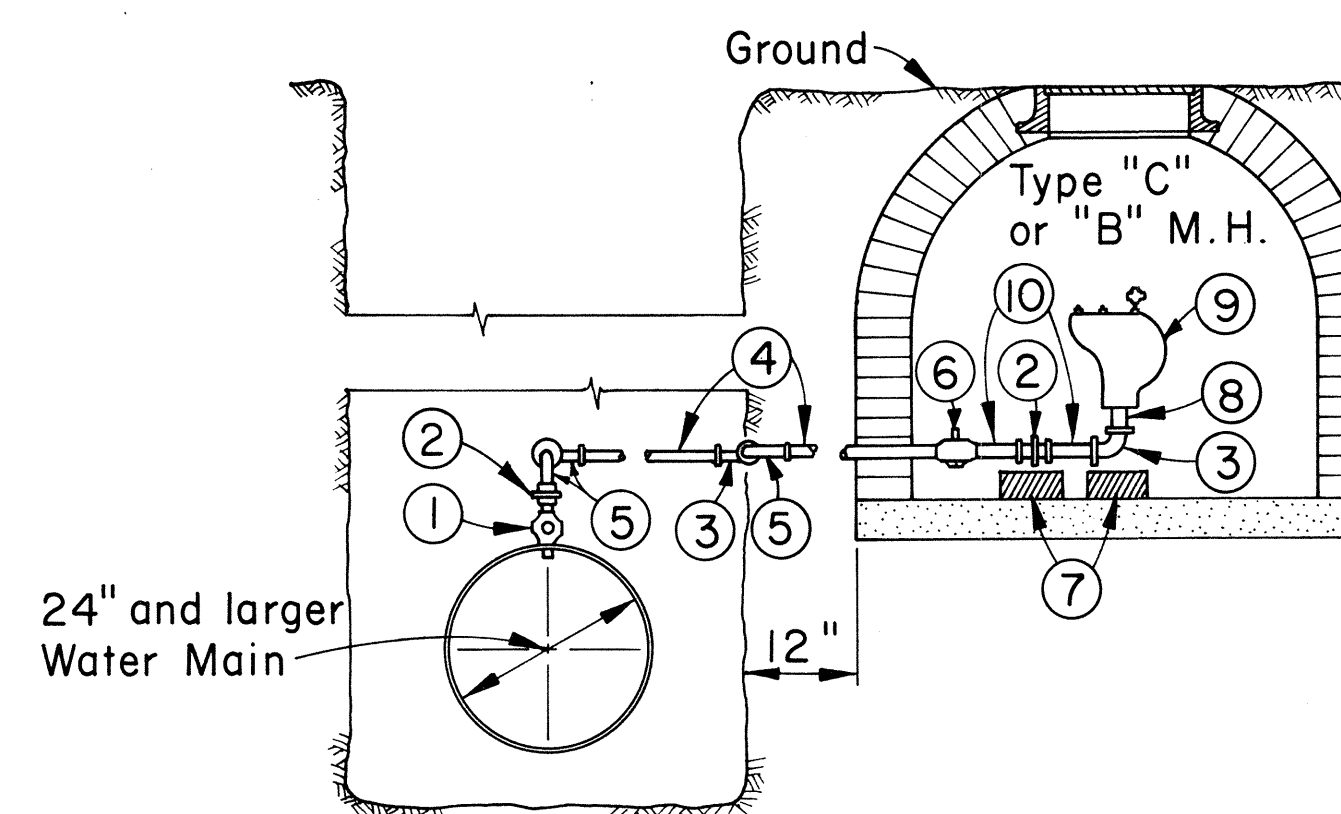
FIGURE 31

LIST OF MATERIALS

ITEM	NO. REQ.	DESCRIPTION
1	1	1 1/2" x 2" Corporation Stop
2	2	2" Union, bronze
3	3	2" 90° Elbow, bronze
4	2	2" Brass Pipe, cut to fit
5	3	2" Street Elbow
6	1	2" Stop Cock
7	2	Brick Support
8	1	2" Dia. x 4" Nipple, brass
9	1	2" Air Relief Valve
10	2	2" Dia. x 6" Nipple, brass



PLAN



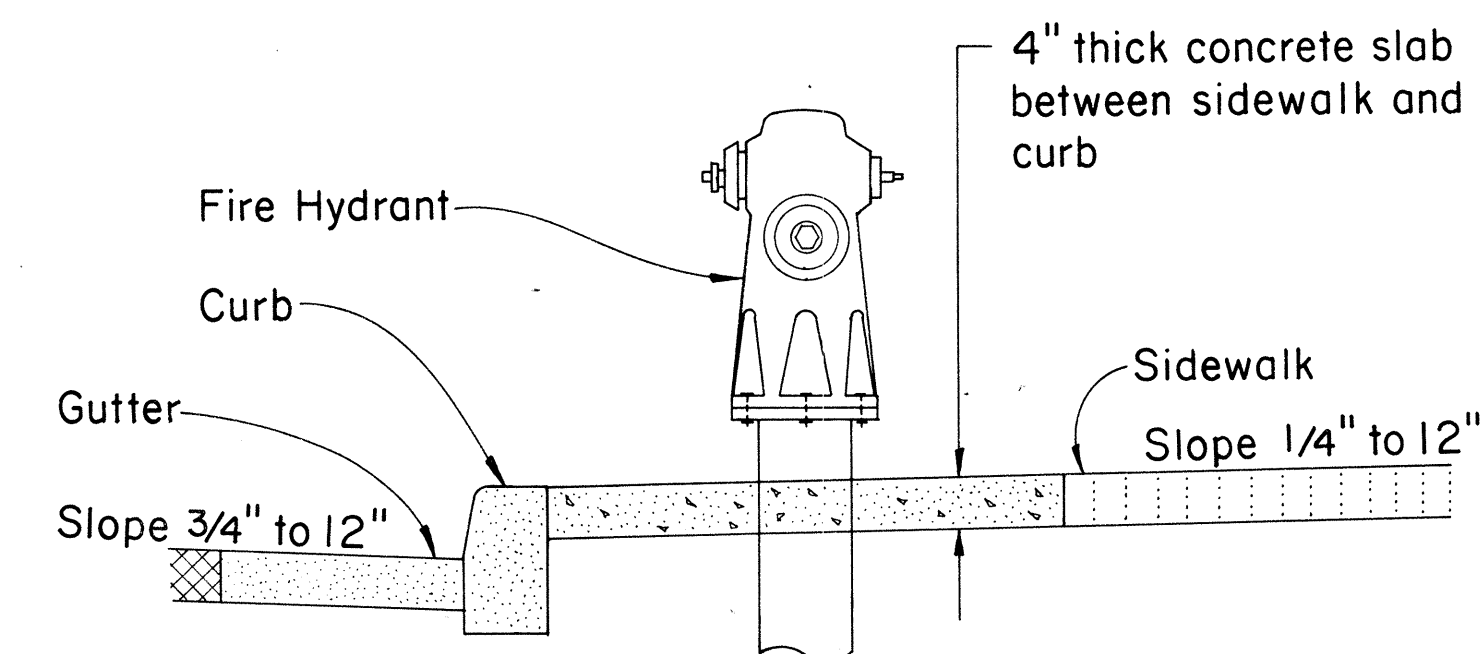
ELEVATION

OFFSET MANHOLE FOR AIR RELIEF VALVE

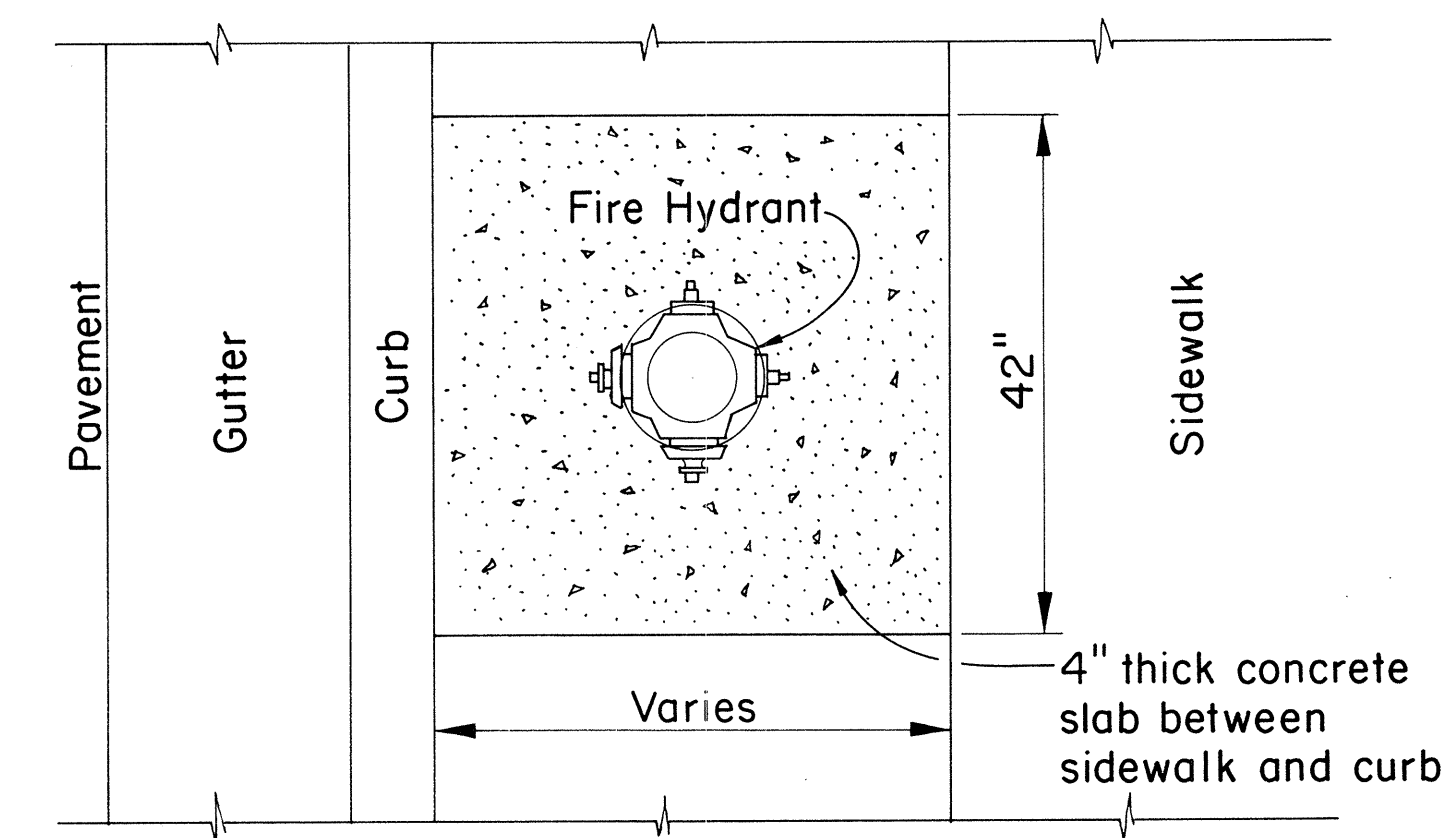
FIGURE 33

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	76	100

PROJECT NO. 93A-02-70



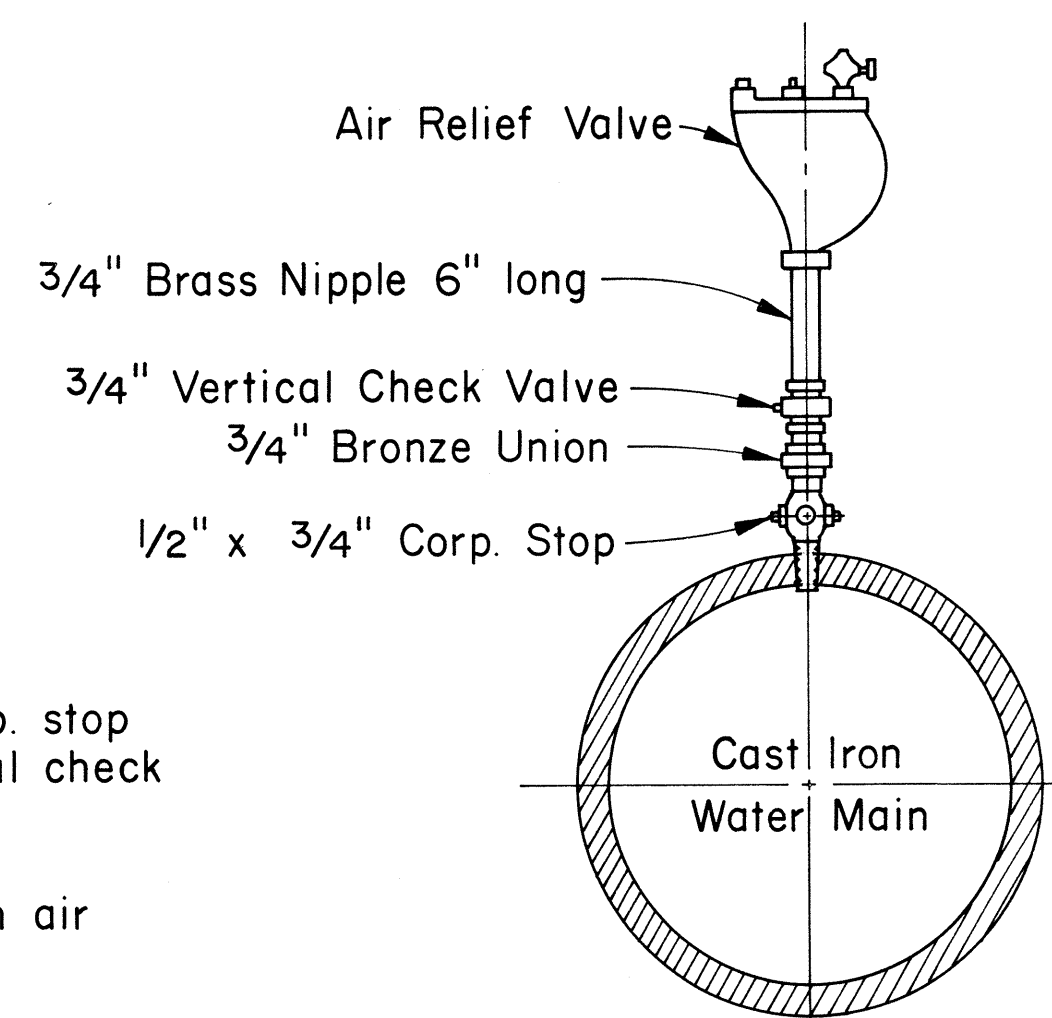
SECTION



PLAN

DETAIL OF FIRE HYDRANT CONCRETE PAD

FIGURE 34



NOTE:

For 2" air relief valve, size of corp. stop shall be 1 1/2" x 2". Union, vertical check valve and nipple shall be 2".

Vertical check valve required when air relief valve is immersed in water.

STANDARD CONNECTION FOR AIR RELIEF VALVE

FIGURE 32

APPROVED:

ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY

DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
BOARD OF WATER SUPPLY

SHEET No. 5 OF 5 SHEETS