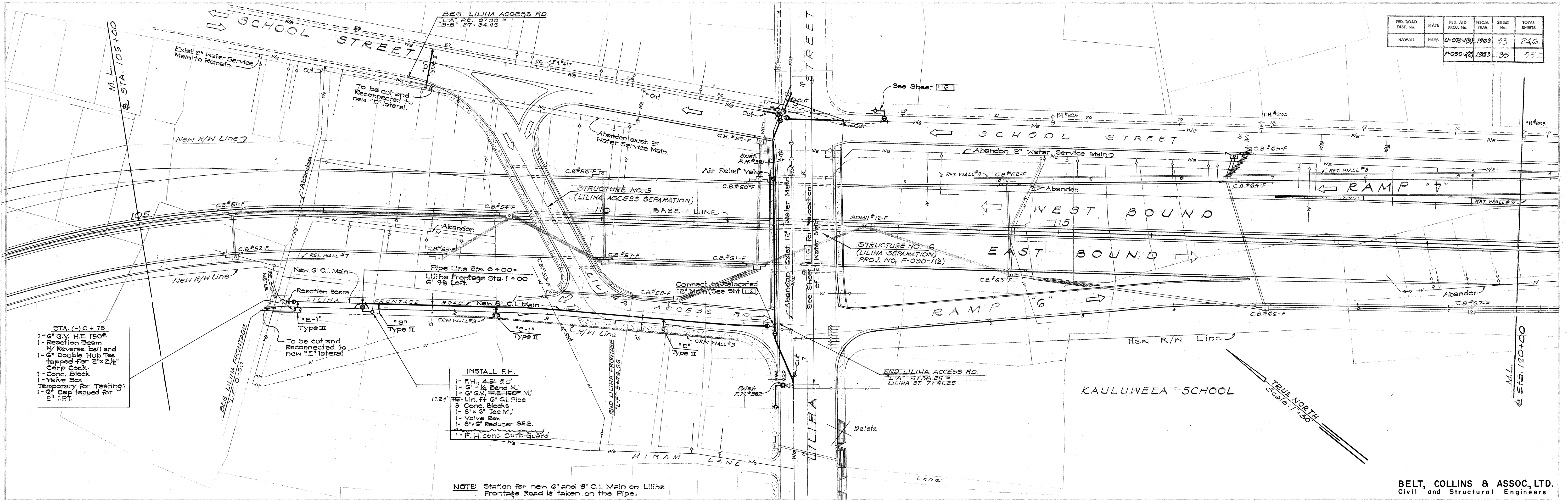


FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
	HAWAII	U-028-1(3)	1963	23	246
		F-090-1(2)	1963	35	73

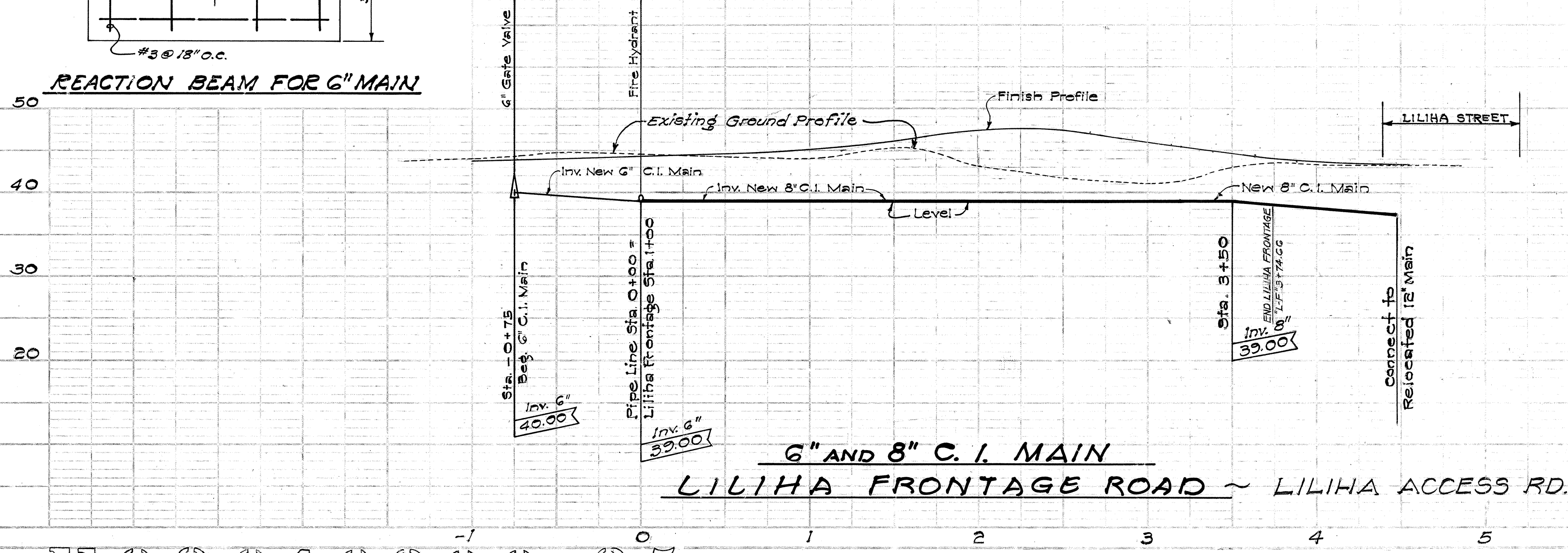
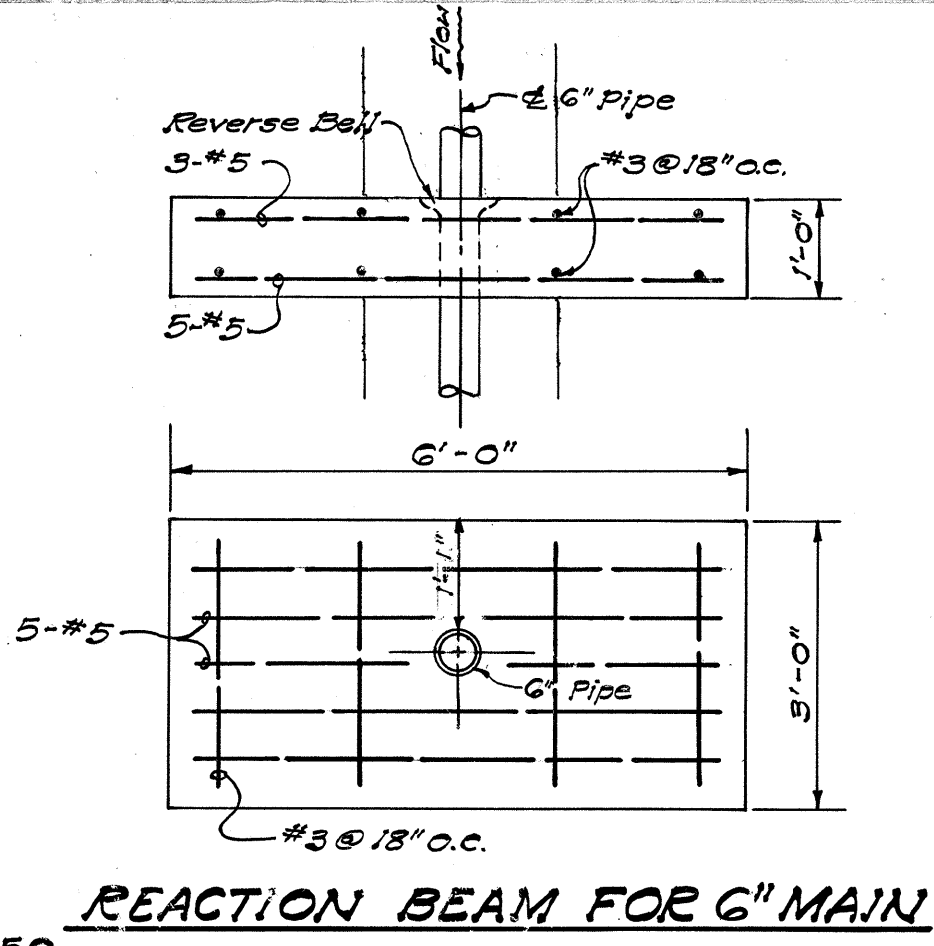
PLAN	DATE	BY	CHKD.	DATE	BY	CHKD.
DESIGNED						
PLOTTED						
CHECKED						
NOTED						
NO.						



NOTE: Station for new 6" and 8" C.I. Main on Liliha Frontage Road is taken on the Pipe.

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

PROFILE	DATE	BY	CHKD.	DATE	BY	CHKD.
DESIGNED						
PLOTTED						
CHECKED						
NOTED						
NO.						



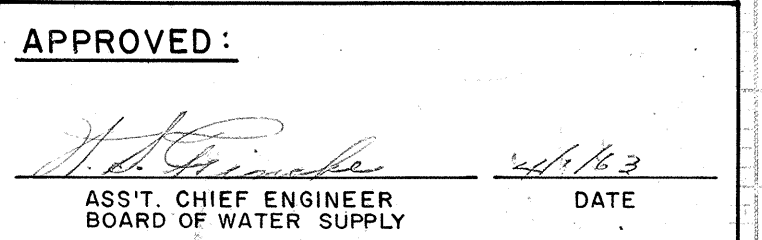
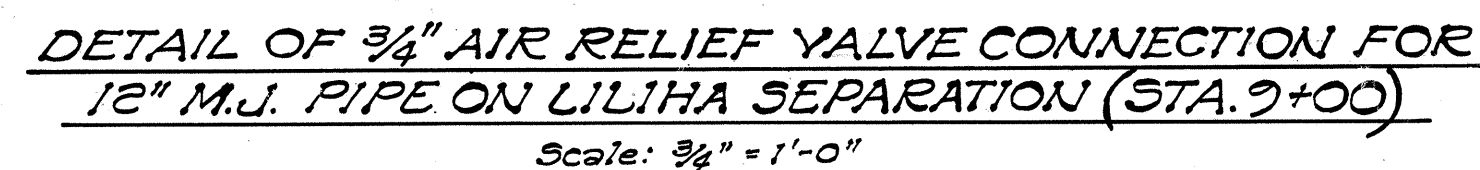
APPROVED:
[Signature]
ASS'T. CHIEF ENGINEER
BOARD OF WATER SUPPLY
DATE: 4/1/63

WATER
SHEET NO. 4 OF 10 SHEETS

17 09 01 02 00 . 35

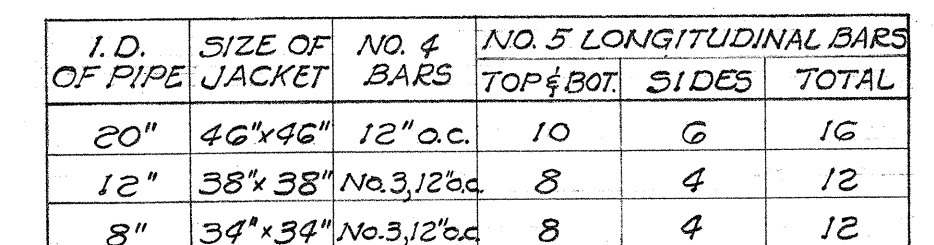
U 07 21 03 00 0 . 93

NOTE:
Bracing Strap shall be
incidental to 3/4" Air
Relief Valve



SHEET No. 6 OF 10 SHEETS

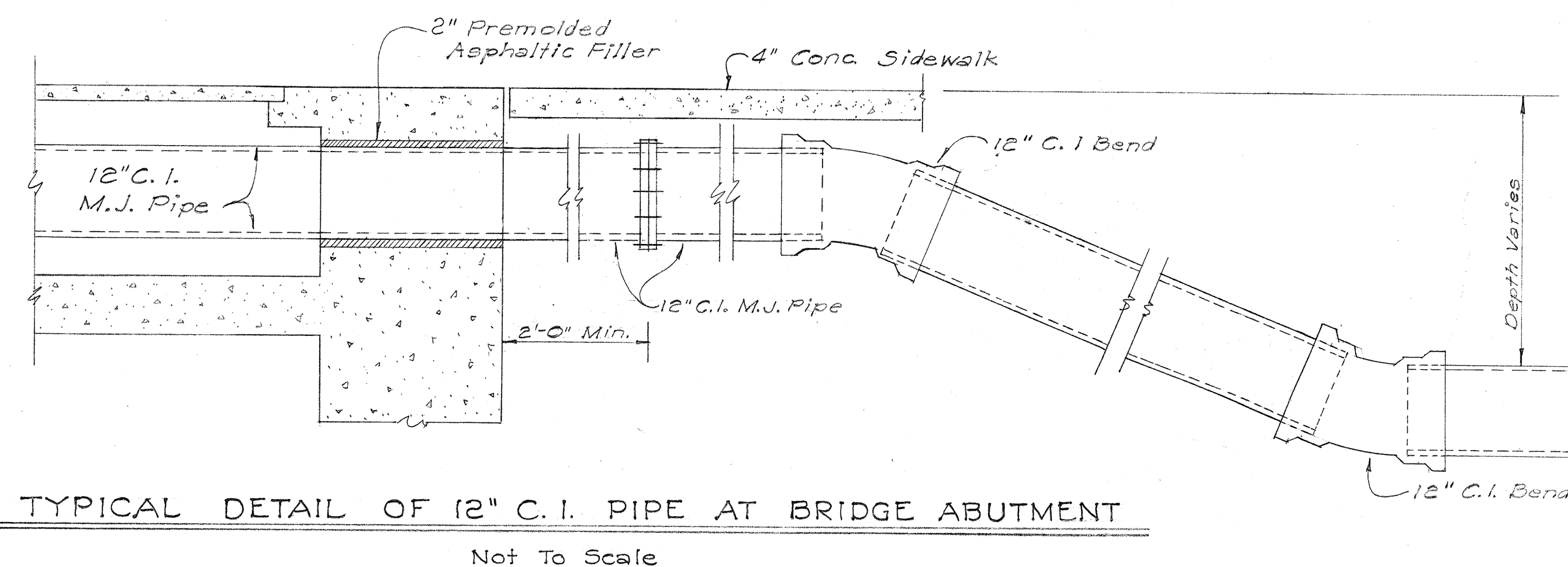
NOTE:
Pipe hangers shall be spaced 8'-0" on centers.
Pipe hangers adjacent to pipe joints shall be located approximately 4'-0" from pipe joints.
All exposed metal surfaces shall be given one coat of approved primer coat and final coat of rust preventive (Metal gray) approved by the Engineer.



Jacket to be poured after completion of test.
Lead joint required at both faces of jacket.
2 1/2" depth of lead required at all embedded joints.

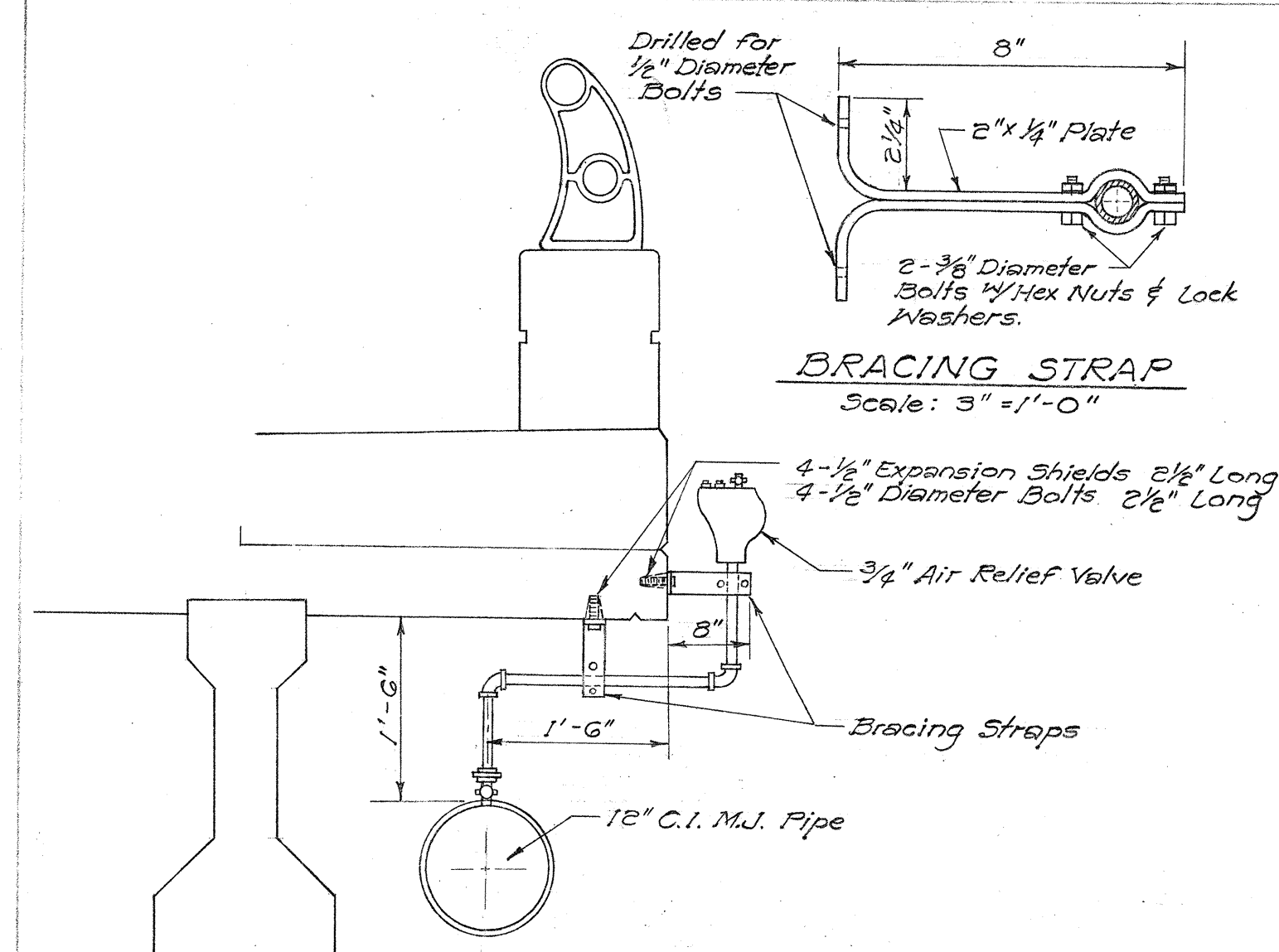
TYPICAL DETAIL OF REINFORCED CONCRETE JACKET

Scale: $\frac{1}{2}'' = 1' - 0''$



TYPICAL DETAIL OF 12" C.I. PIPE AT BRIDGE ABUTMENT

Not To Scale



DETAIL OF 3/4" AIR RELIEF VALVE CONNECTION
ON 12" C.I. WATER MAIN SUSPENDED FROM KAPALAMA
BRIDGE NO. 2 SOUTH FRONTAGE STA. 16+45 ±
Scale: 3/4" = 1' - 0"

NOTE:

Bracing Strap shall be incidental to
3/4" Air Relief Valve.

APPROVED:

W. S. Grimes 4/16/3
ASS'T. CHIEF ENGINEER DATE
BOARD OF WATER SUPPLY

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISC. WATER DETAILS

LUNALILO FREEWAY	U-072 - 1 (3)
VINEYARD BOULEVARD	U-098 - 1 (4)
LILIHA STREET	F-090 - 1 (2)

SHEET No. 7 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YR.	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	96	246
		U-098-1(4)	1963	40	88
		F-090-1(2)	1963	38	73

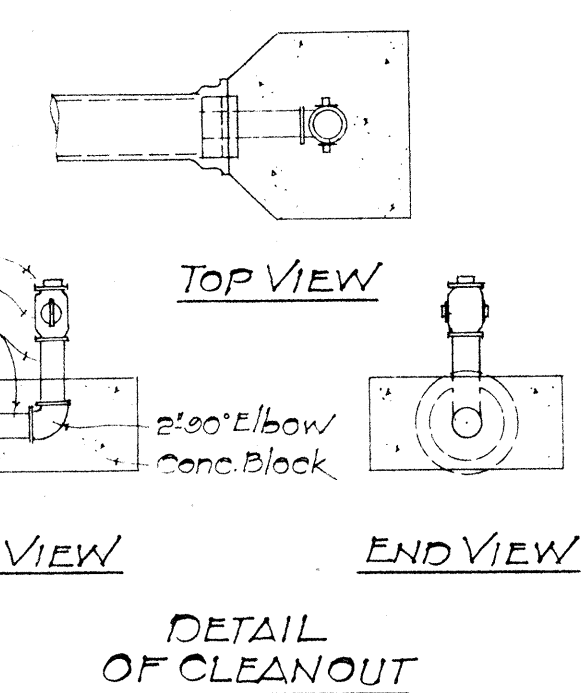
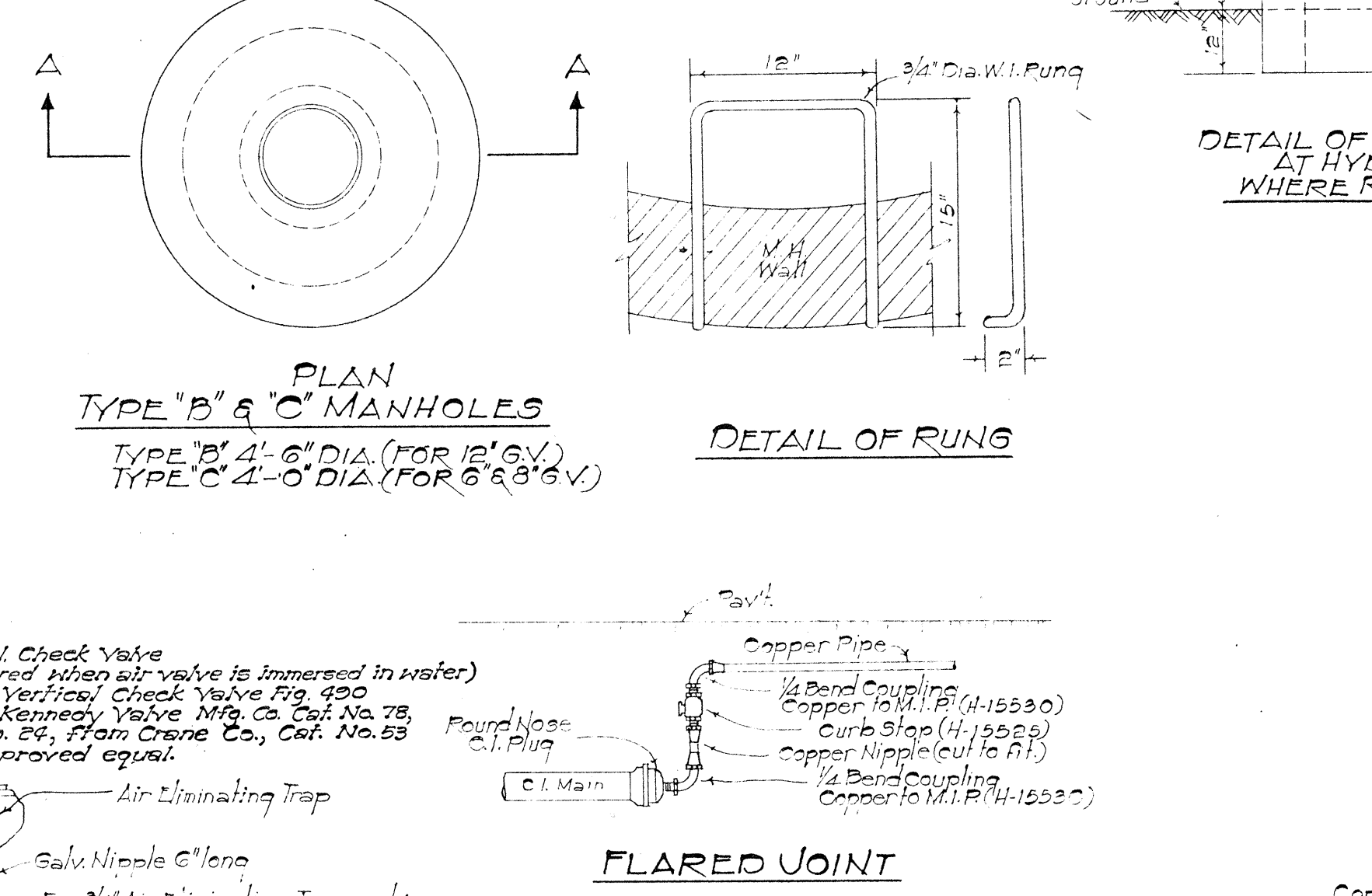
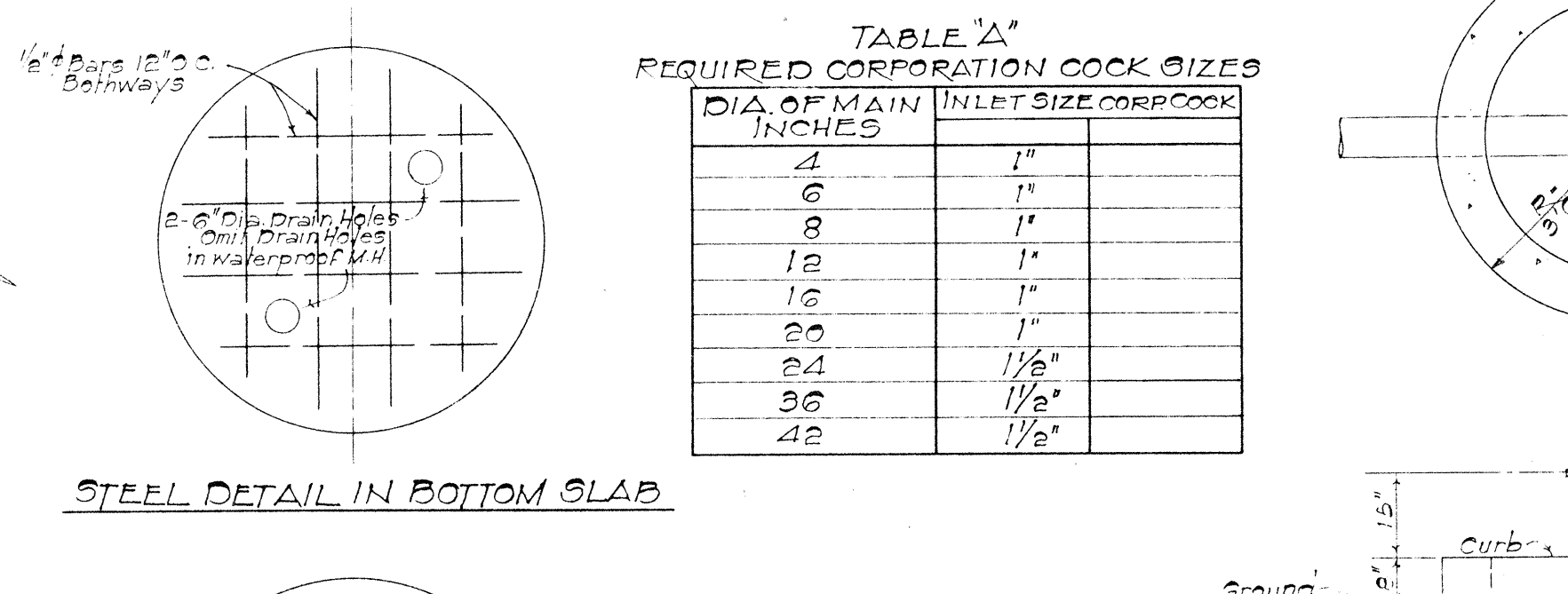
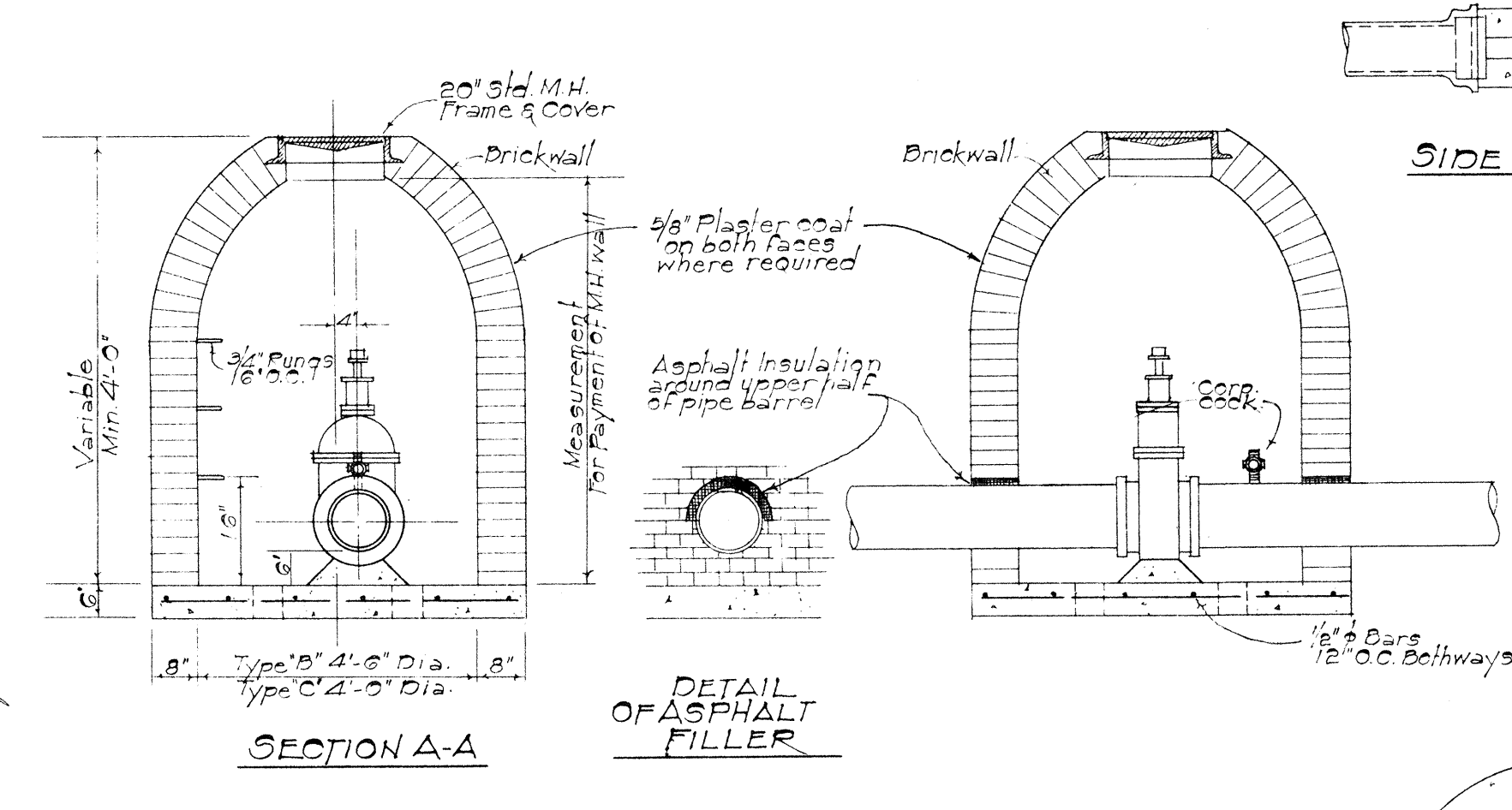
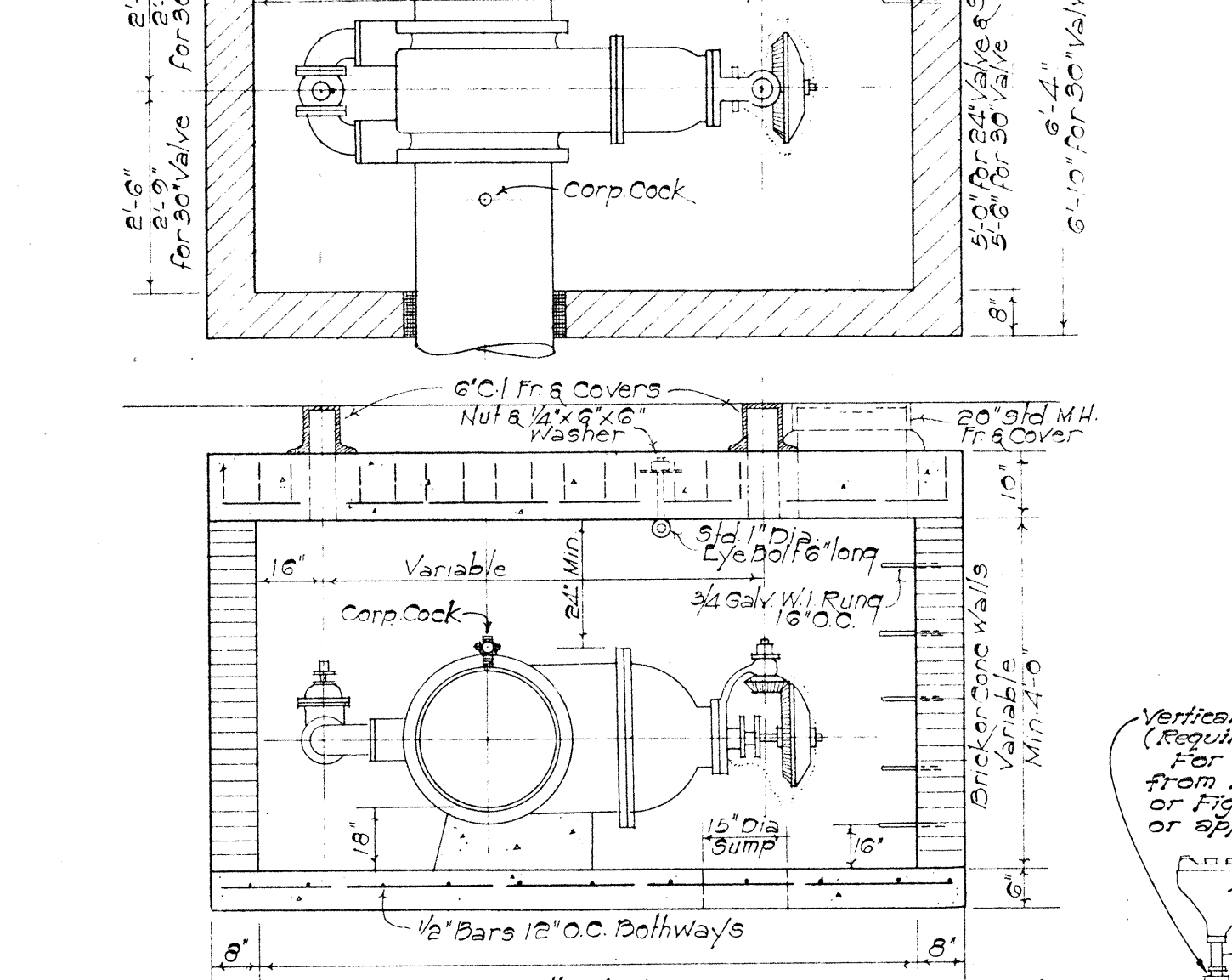
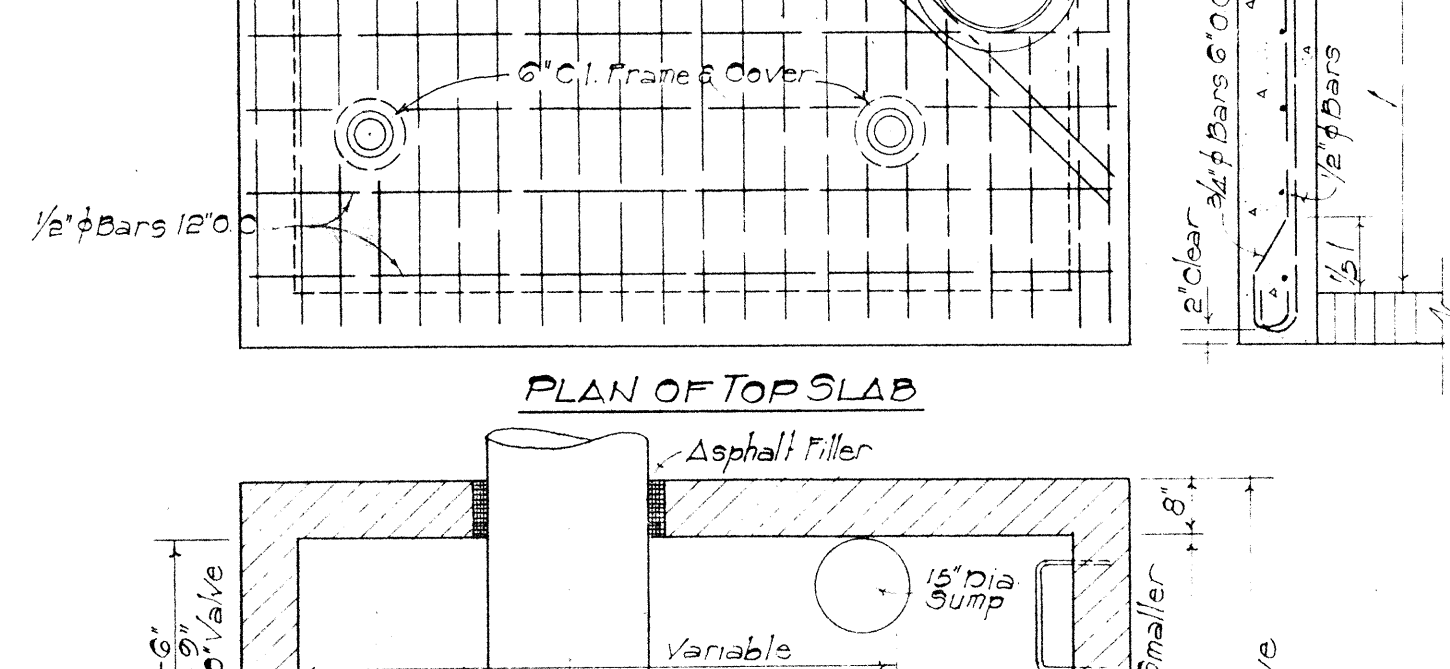
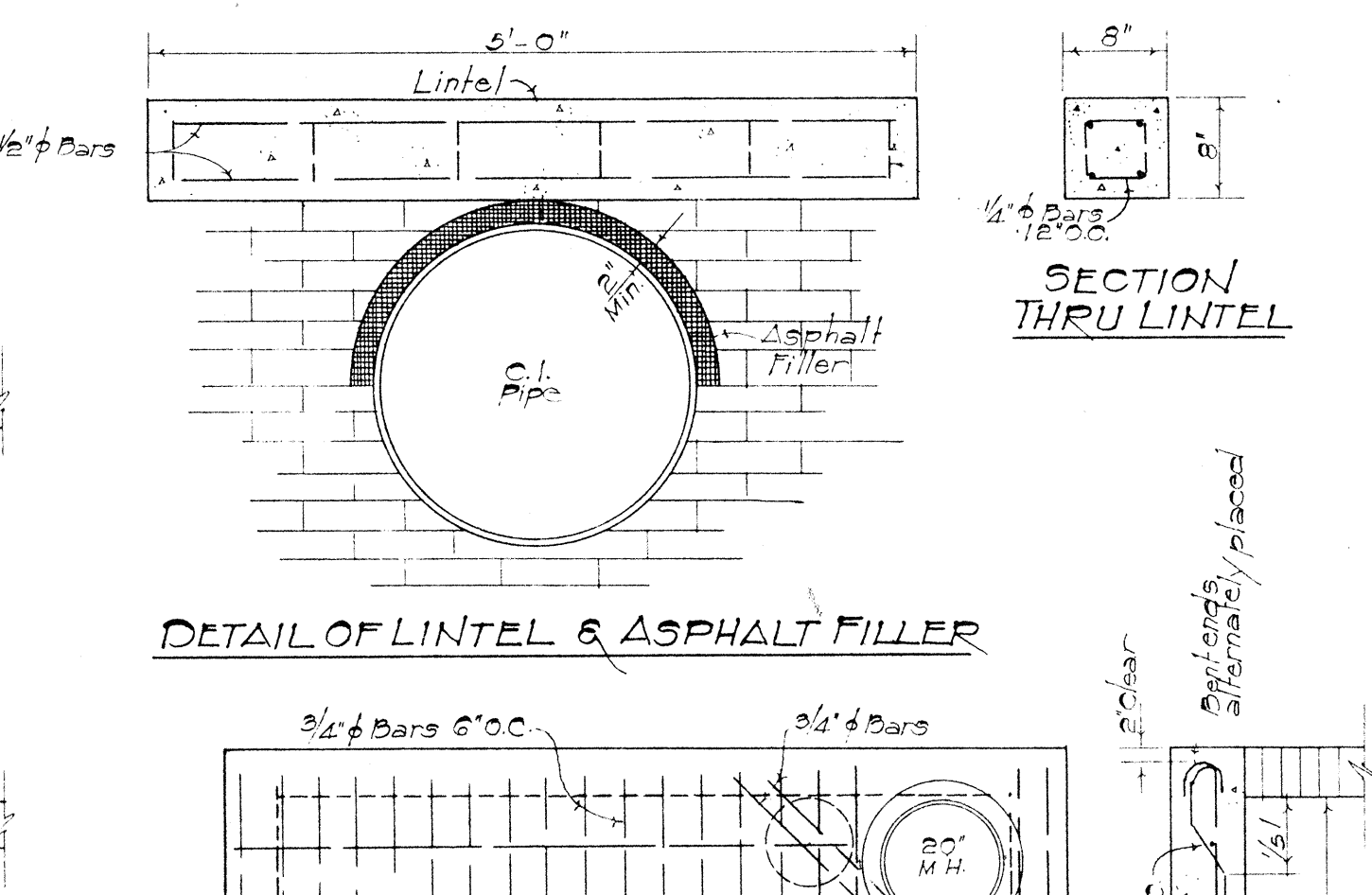
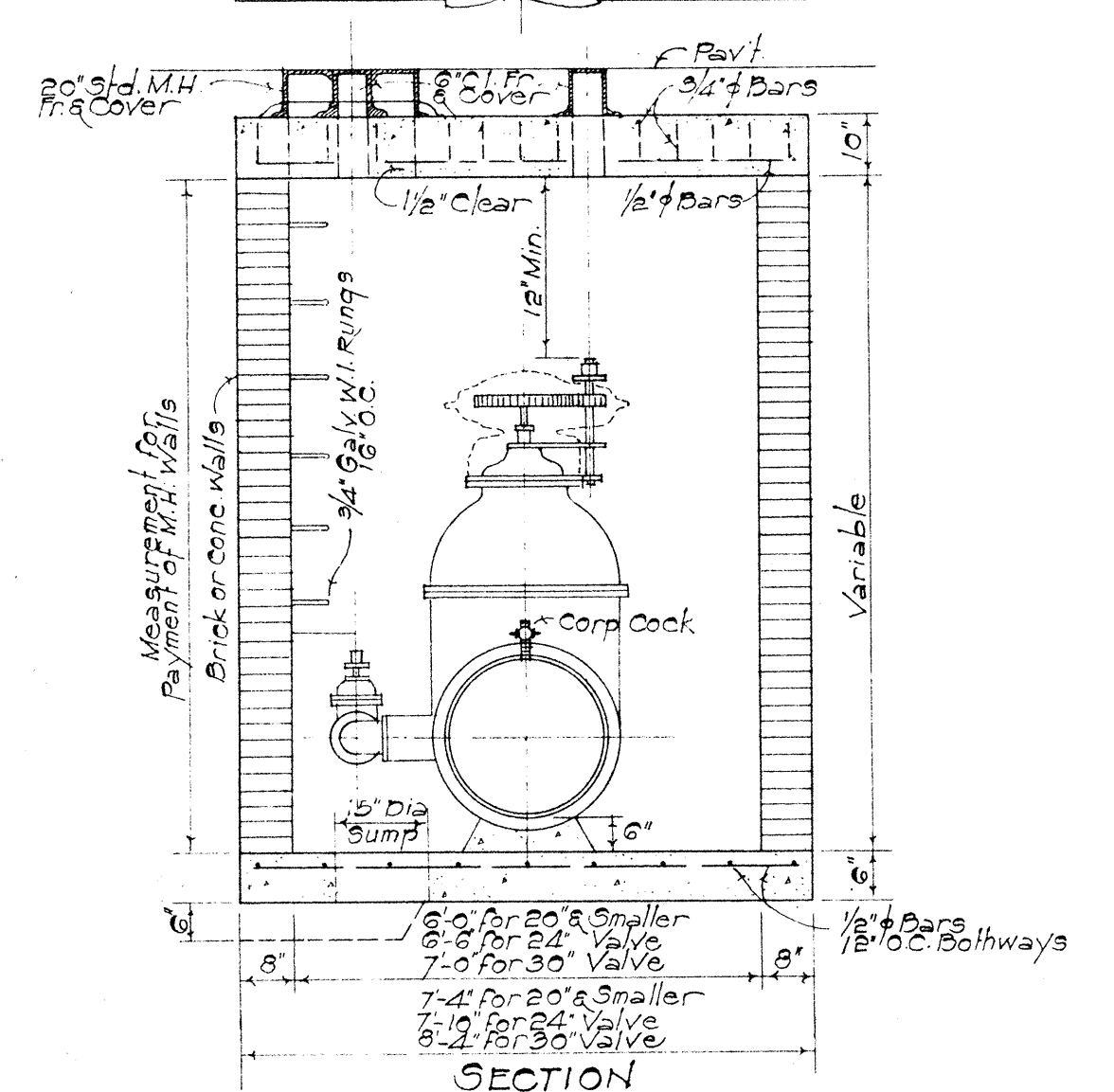
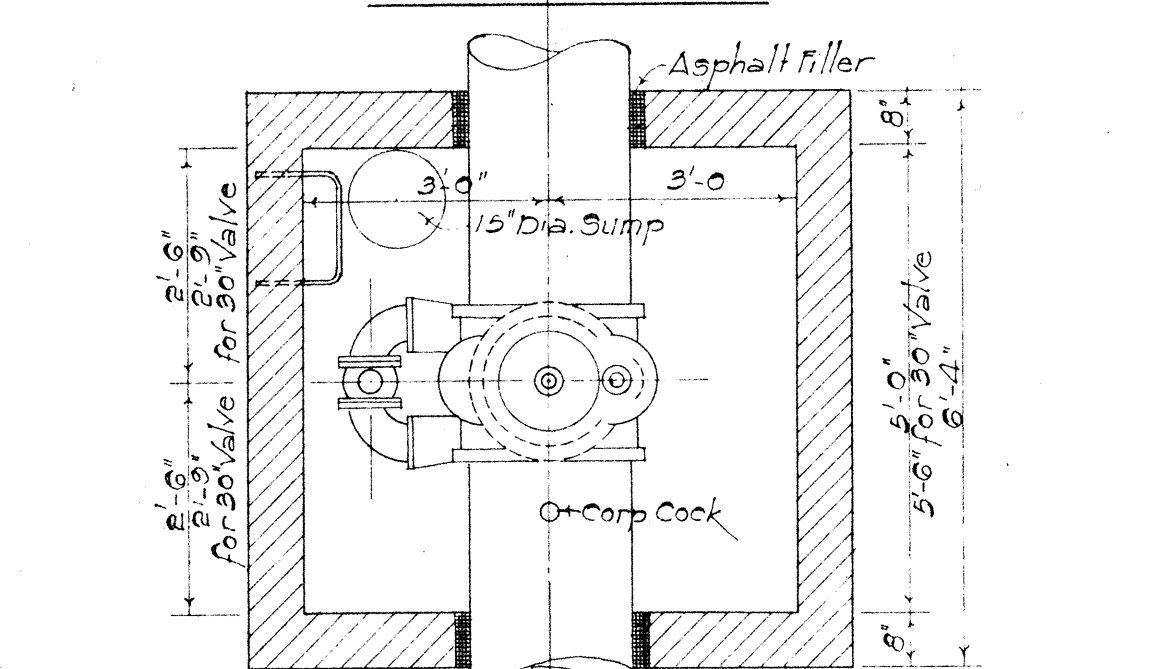
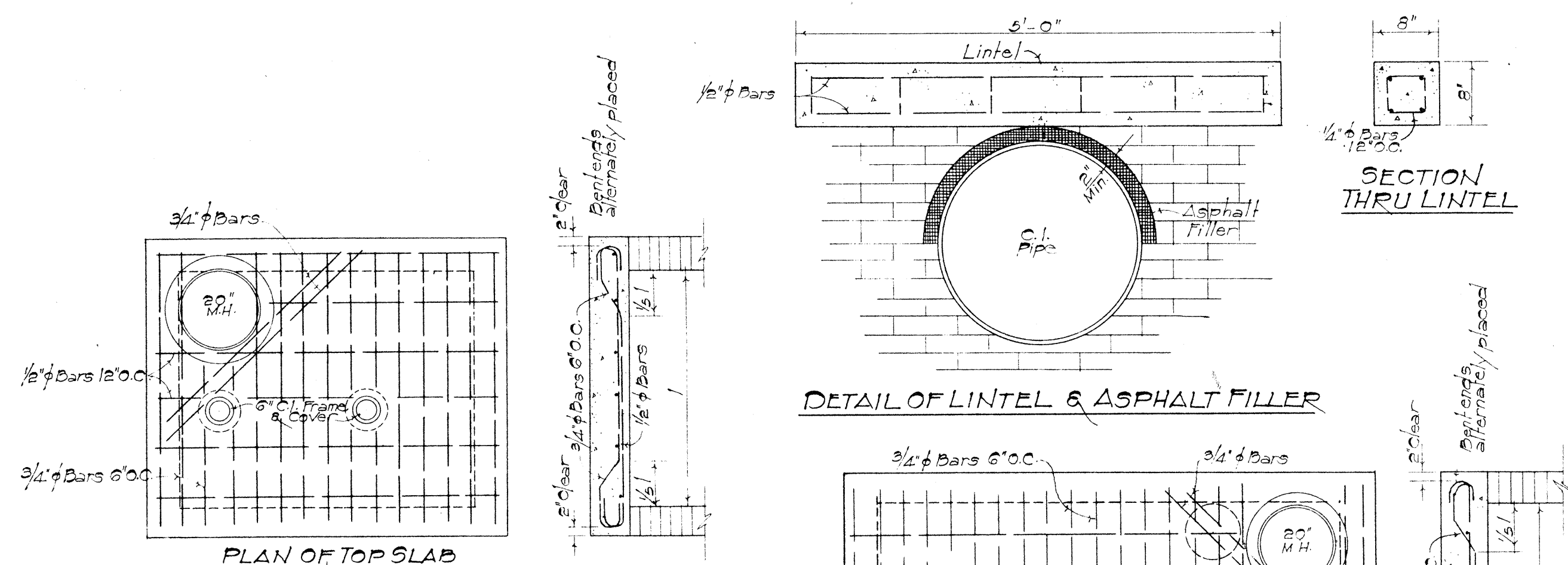
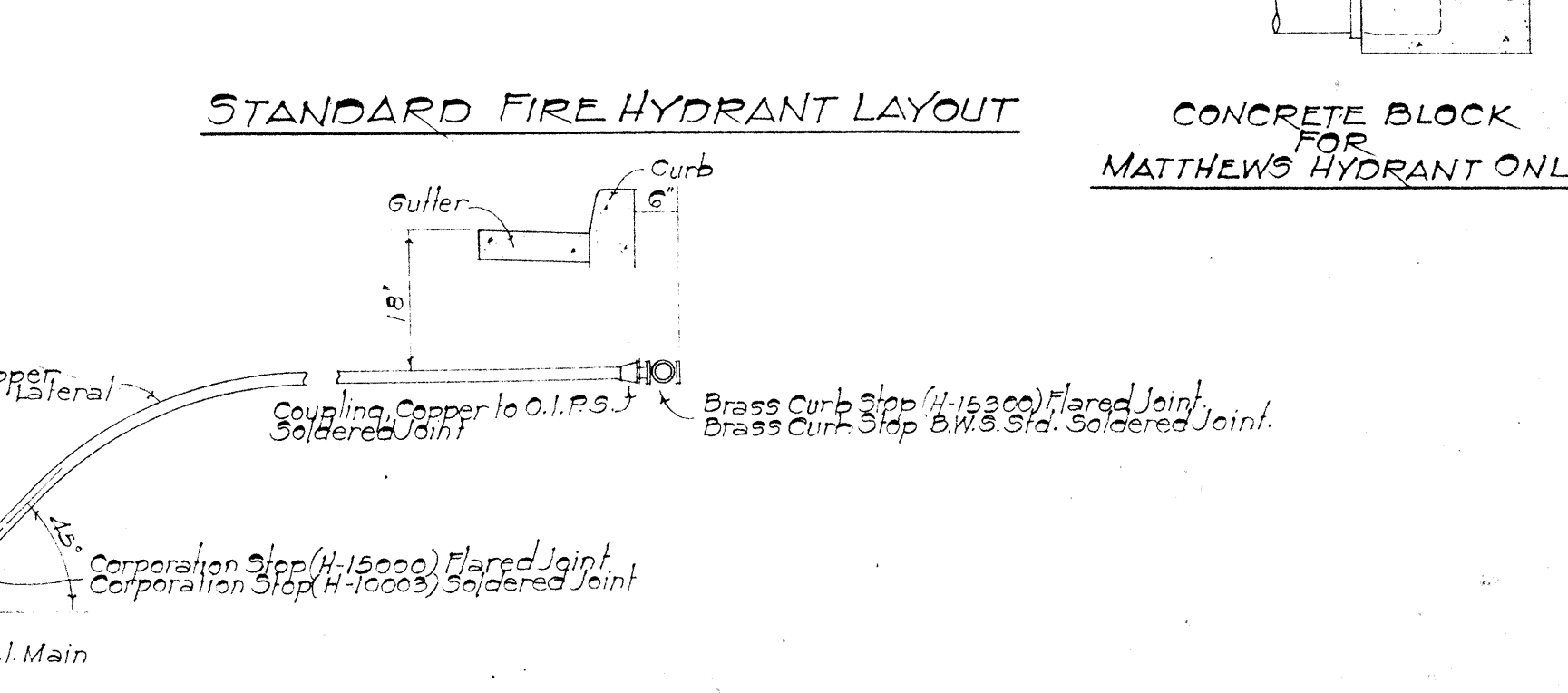
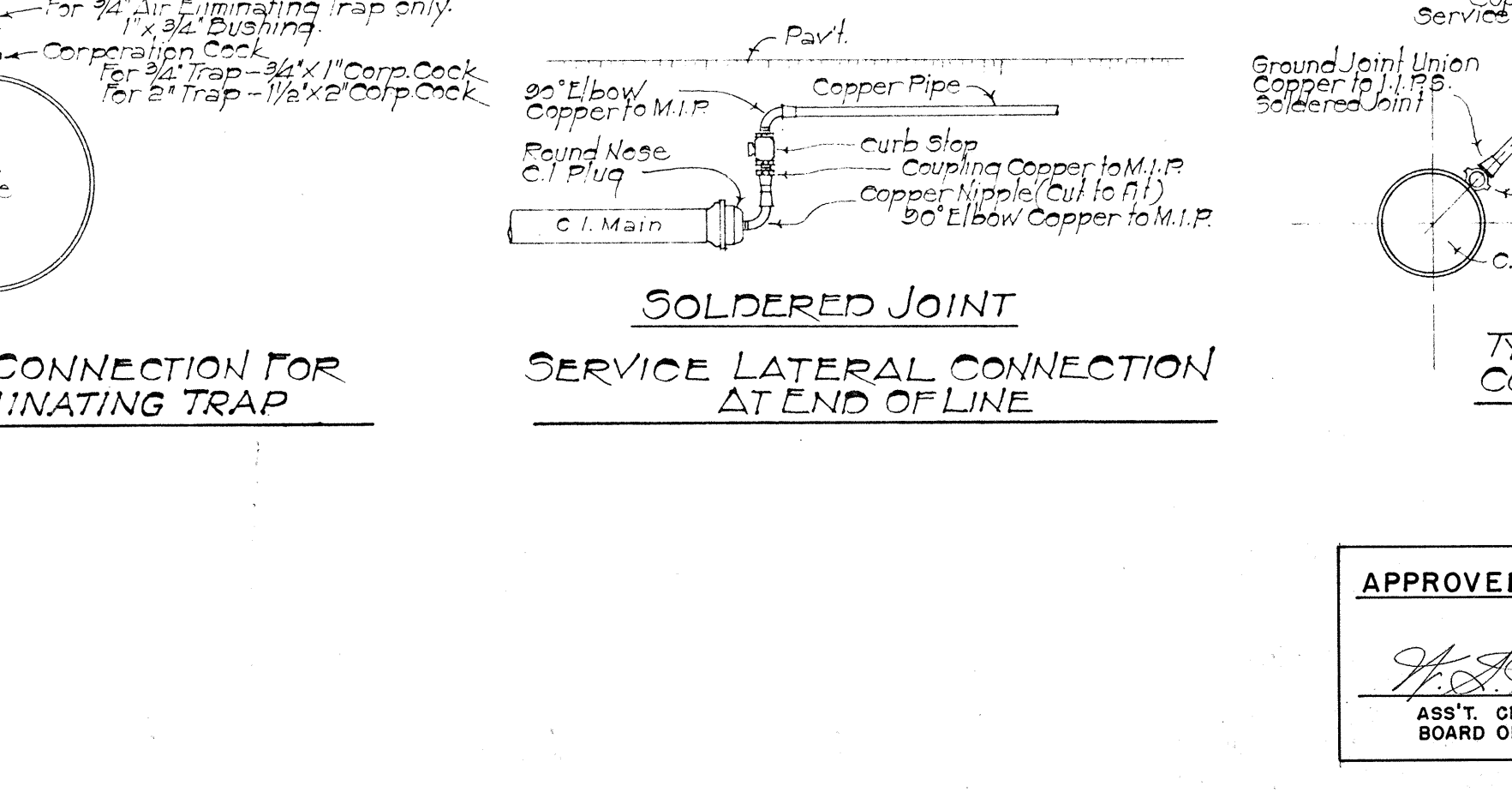
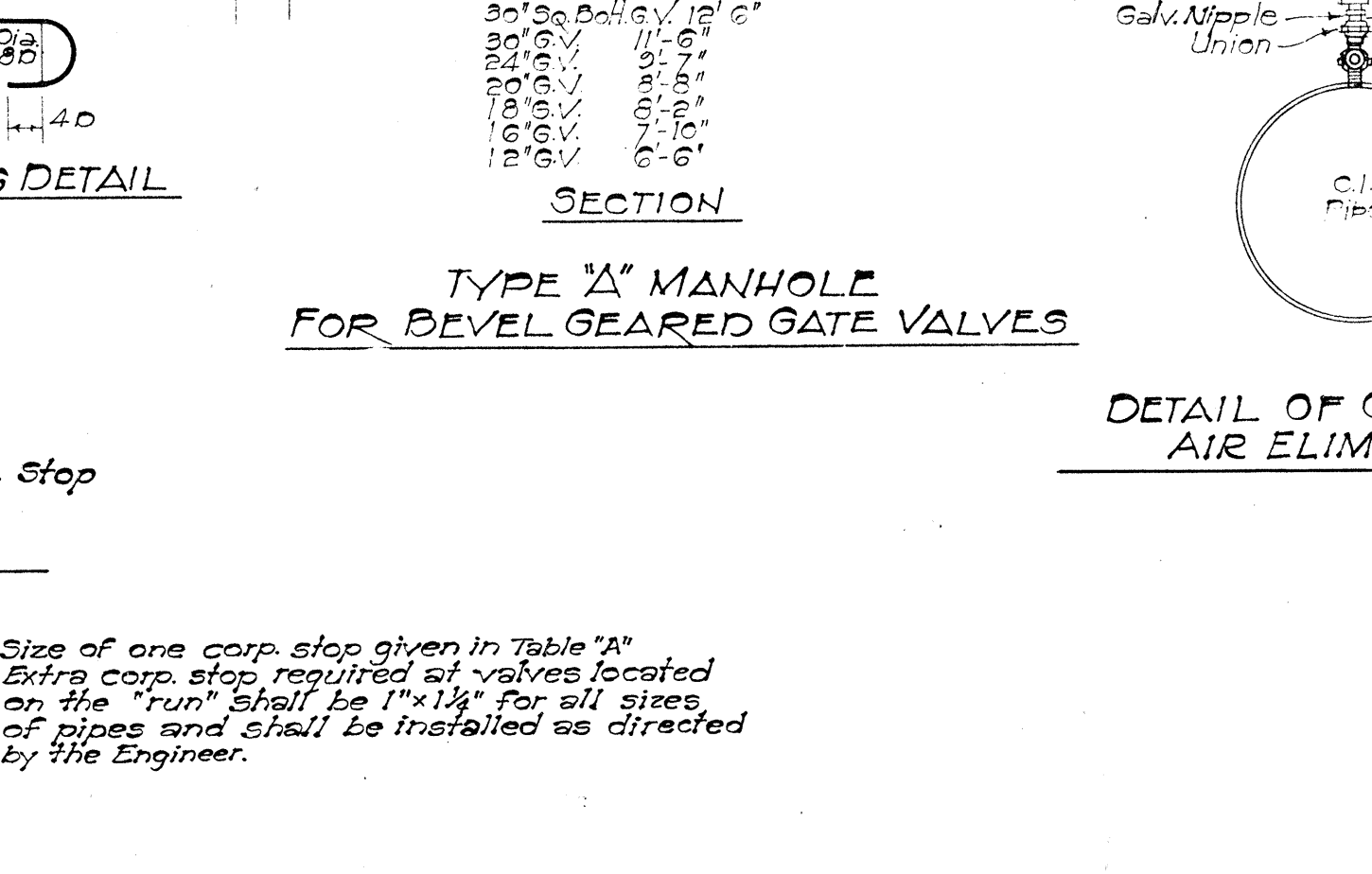
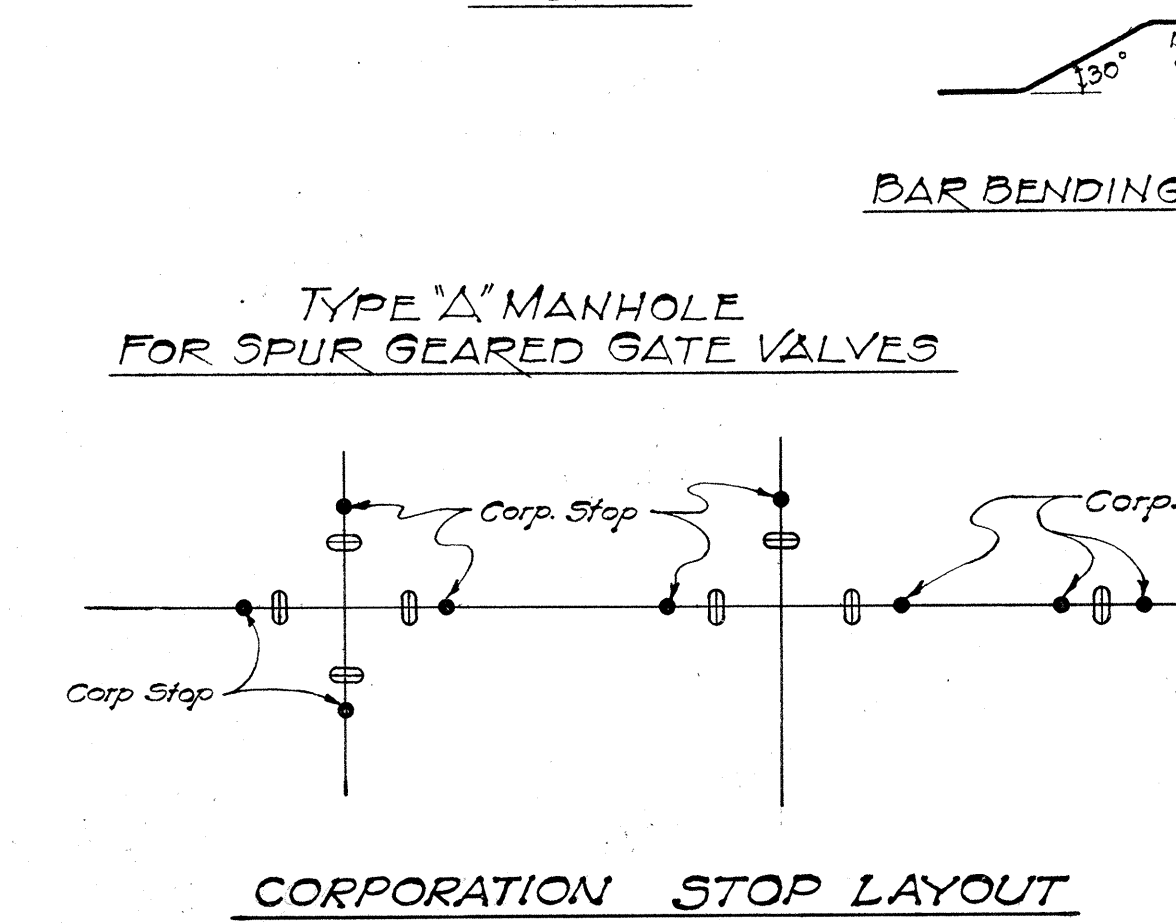
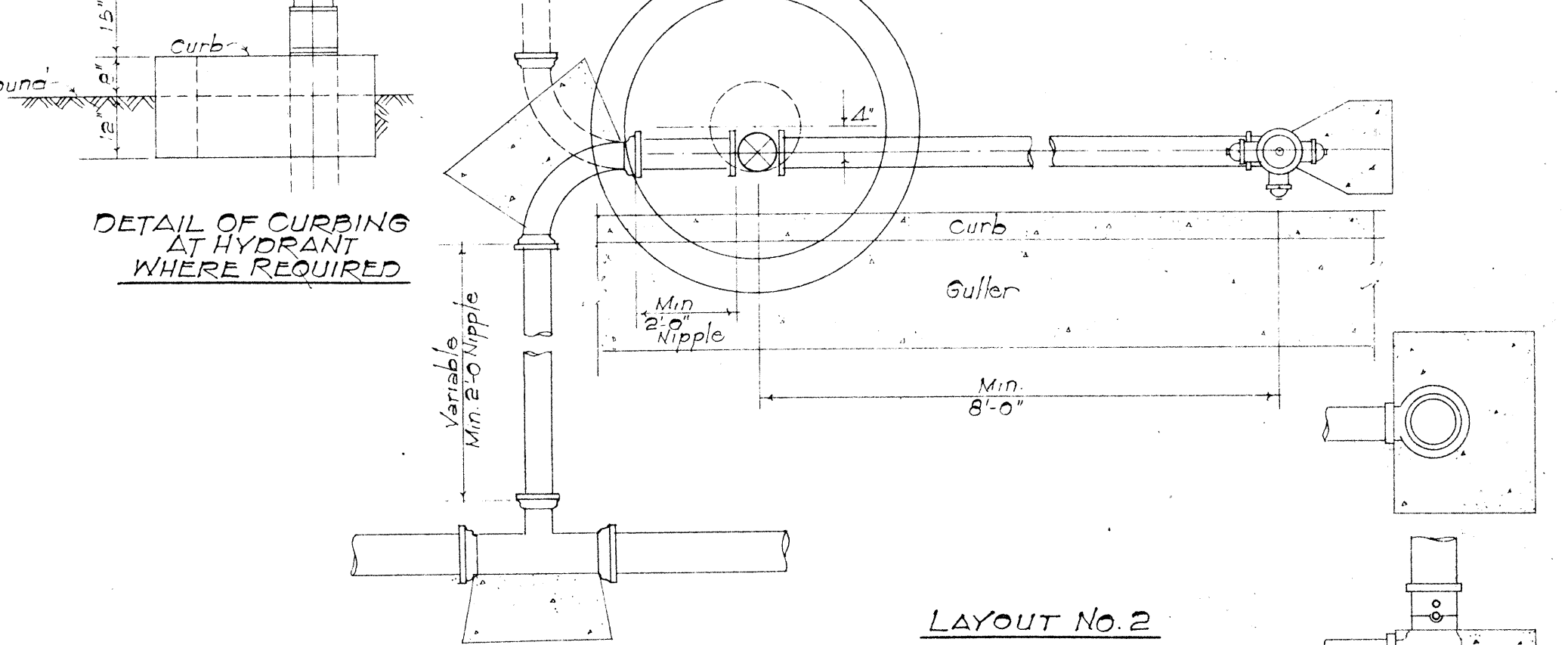
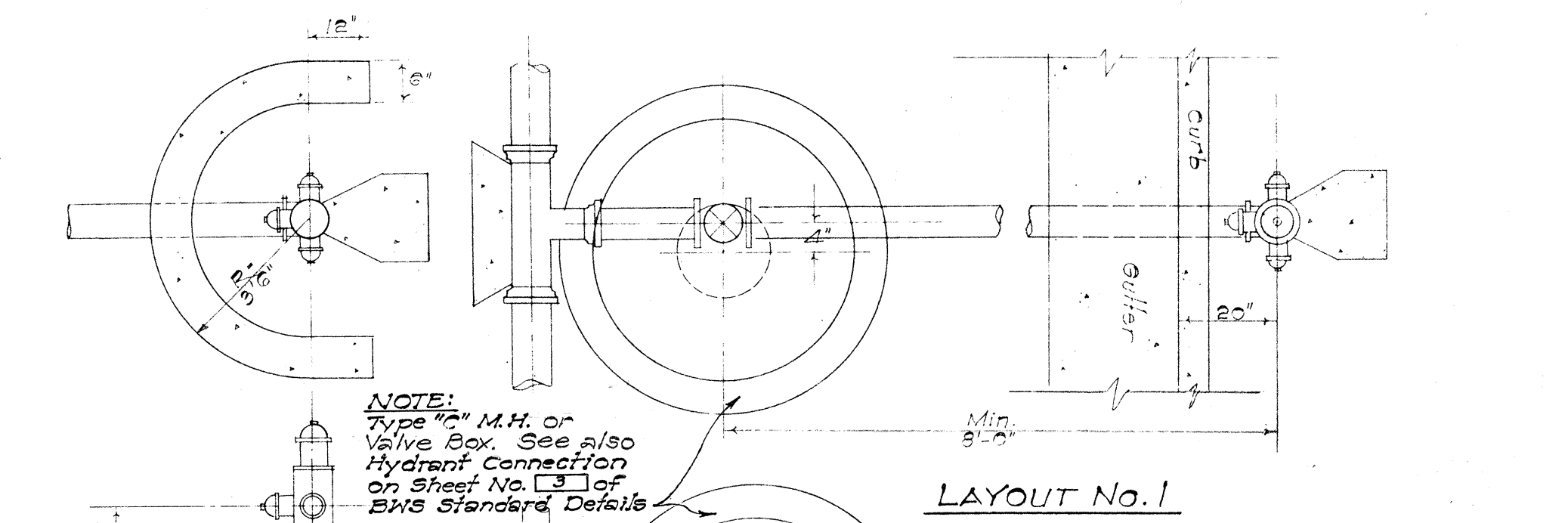


TABLE "A"
REQUIRED CORPORATION COCK SIZES

DIA. OF MAIN INCHES	INLET SIZE CORPORATION COCK
4	1"
6	1"
8	1"
12	1"
16	1"
20	1"
24	1 1/2"
36	1 1/2"
42	1 1/2"



Size of one corp. stop given in Table "A". Extra corp. stop required at valves located on the "run" shall be 1" x 1 1/2" for all sizes of pipe and shall be installed as directed by the Engineer.

Size of one corp. stop given in Table "A". Extra corp. stop required at valves located on the "run" shall be 1" x 1 1/2" for all sizes of pipe and shall be installed as directed by the Engineer.

Size of one corp. stop given in Table "A". Extra corp. stop required at valves located on the "run" shall be 1" x 1 1/2" for all sizes of pipe and shall be installed as directed by the Engineer.

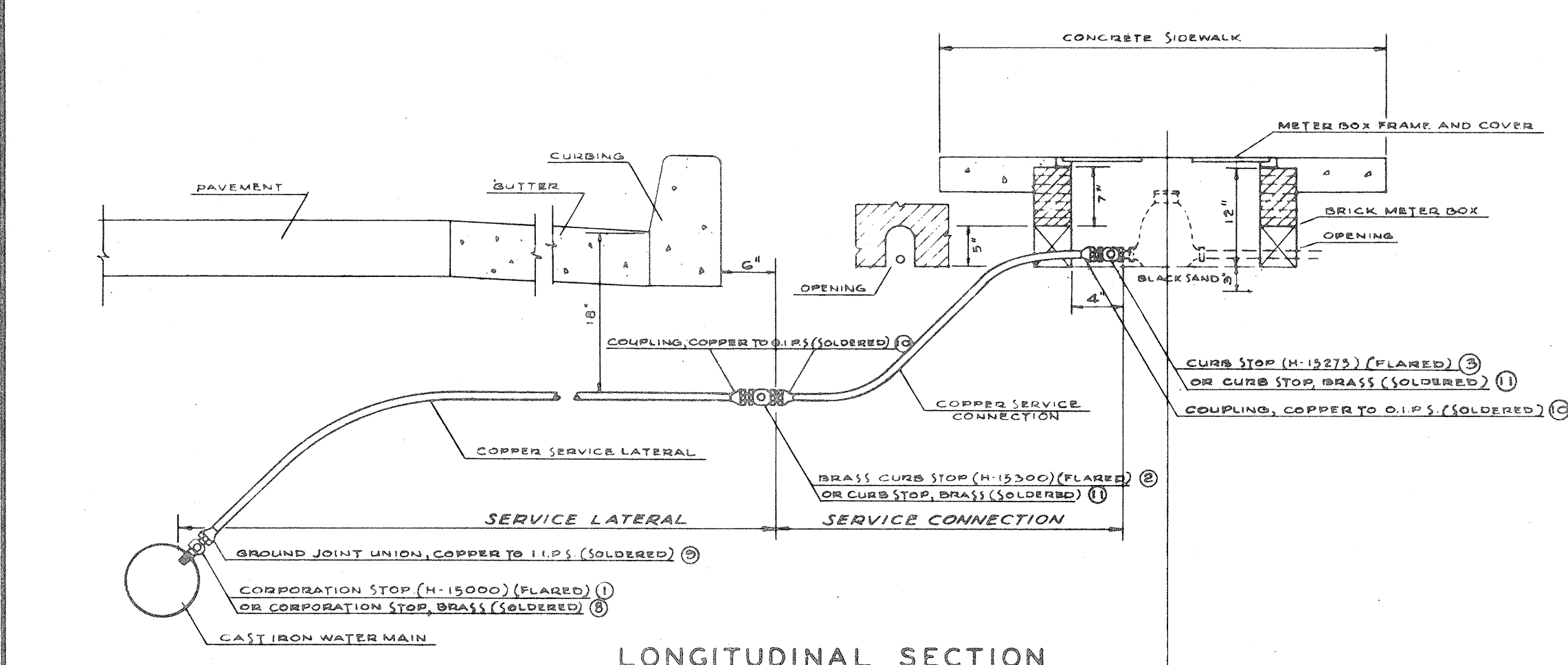
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
STANDARD DETAILS
LUNALILO FREEWAY
VINEYARD BOULEVARD
LILIHA STREET

U-072-1(3)
U-098-1(4)
F-090-1(2)

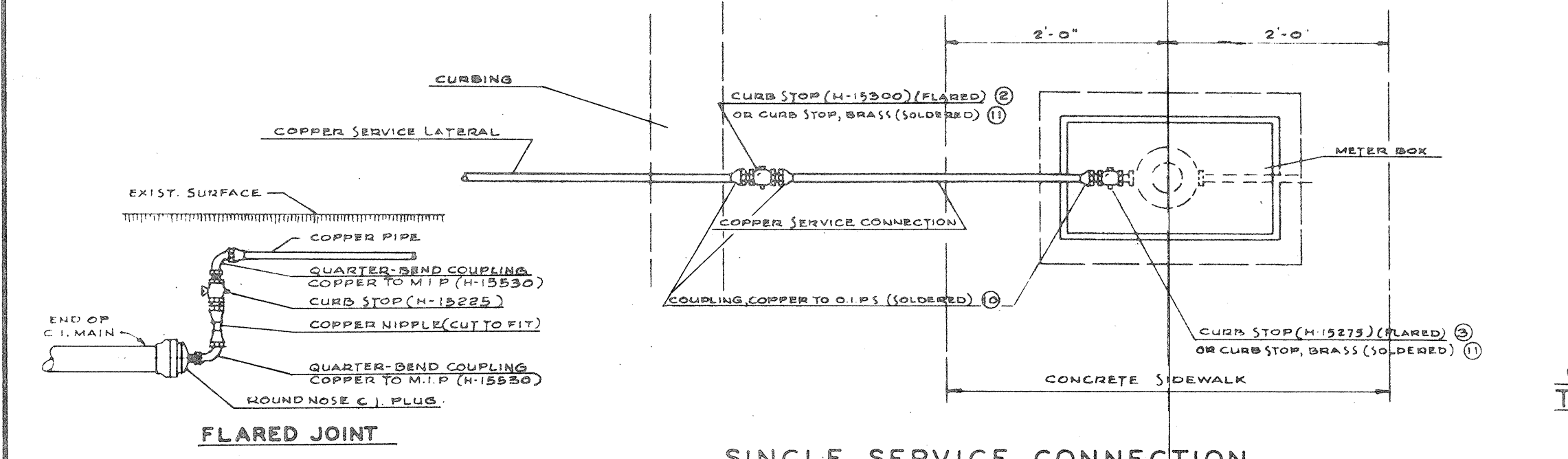
SHEET NO. 8 OF 10 SHEETS

APPROVED: *[Signature]* DATE 4/1/63
ASS'T. CHIEF ENGINEER
BOARD OF WATER SUPPLY

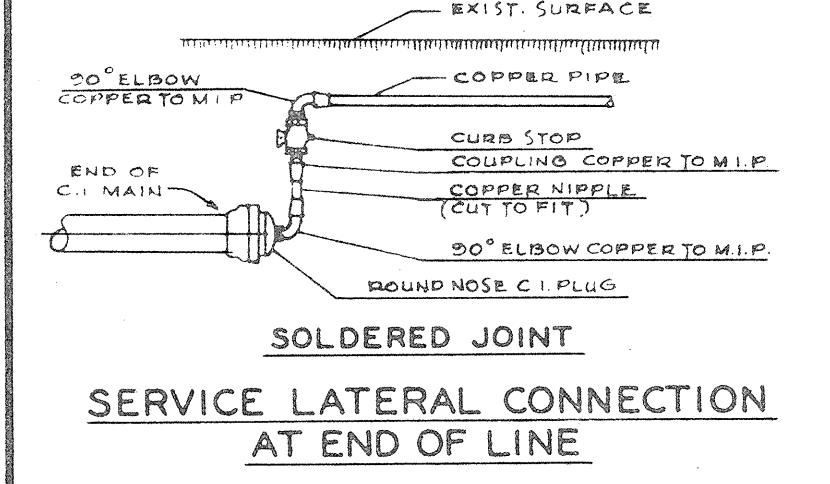
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	27	246
		U-098-1(4)	1963	41	88
		F-090-1(2)	1963	30	73



LONGITUDINAL SECTION



SINGLE SERVICE CONNECTION

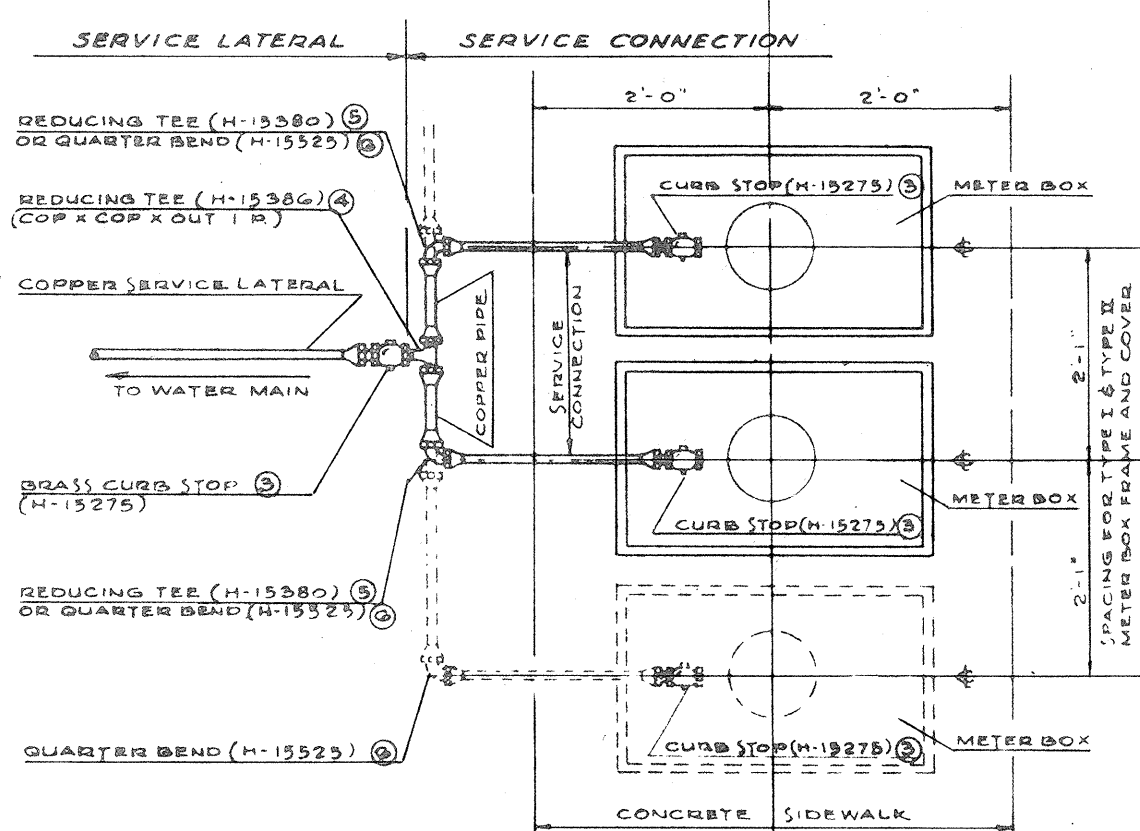


SOLDERED JOINT
SERVICE LATERAL CONNECTION
AT END OF LINE

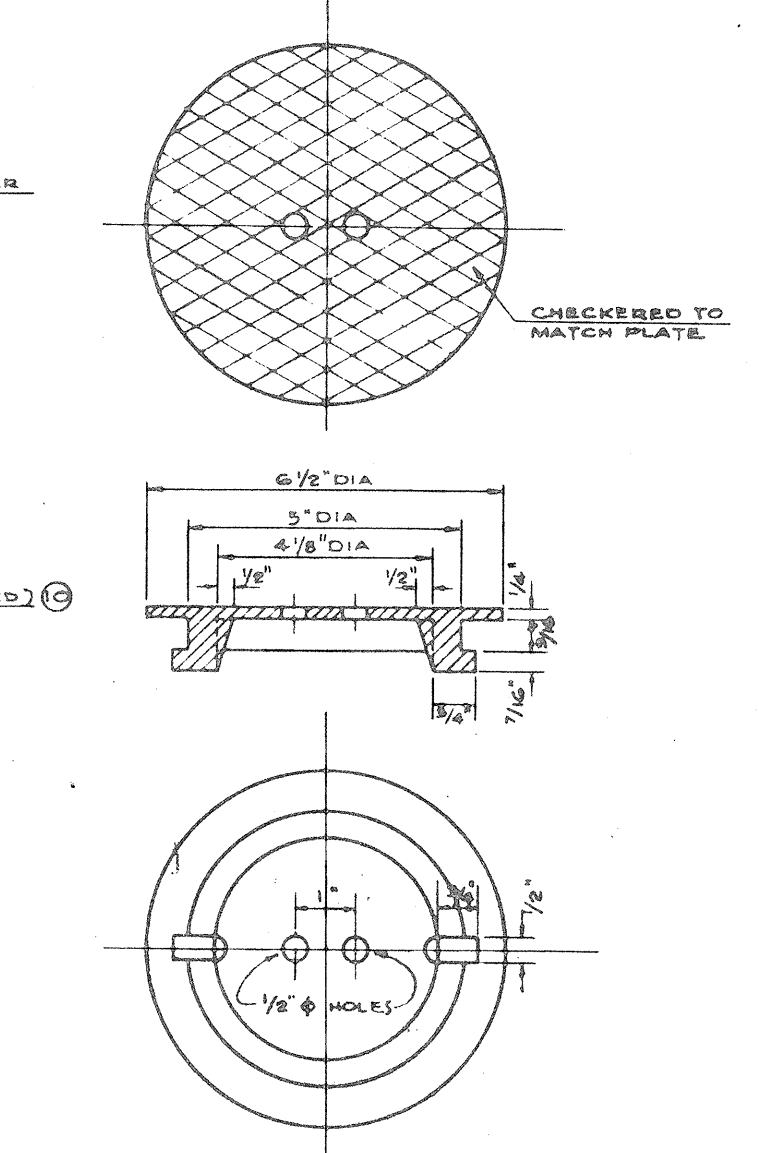
SCHEDULE OF COPPER FITTINGS
(FLARED JOINT)

ITEM NO.	DESCRIPTION	SINGLE SERVICE CONN.	MULTIPLE SERV. CONN. TWO SERVICES	MULTIPLE SERV. CONN. THREE SERVICES
1	CORPORATION STOP WITH STRAIGHT COUPLING NUT (H-15000)	1	1	1
2	BRASS CURB STOP (H-15000)	1	-	-
3	CURB STOP WITH TUBE NUT COPPER TO INSIDE I.P. (H-15273)	1	3	4
4	REDUCING TEE WITH TUBE NUTS, COPPER TO COPPER TO OUTSIDE I.P. (H-15386)	-	1	1
5	REDUCING TEES WITH TUBE NUTS, COPPER TO COPPER TO COPPER (H-15380)	-	-	1
6	1/4 BEND UNION COUPLING WITH TUBE NUTS, COPPER TO COPPER (H-15353)	-	2	2
7	THREE PART UNION COUPLING (H-15400) OR SOLDER COUPLING	TO BE USED IN SPLICING ODD LENGTHS OF COPPER PIPE	-	-

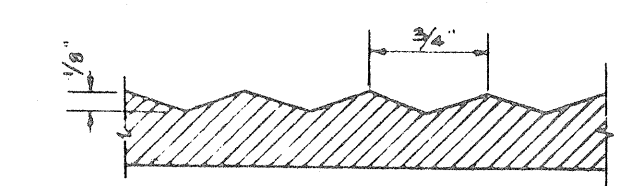
NOTE:
REFERENCE NUMBERS SHOWN ARE FROM MUELLER CATALOG "H" FOR PURPOSES OF IDENTIFYING FITTINGS. APPROVED EQUAL MAY BE USED.



MULTIPLE SERVICE CONNECTION
FLARED JOINTS



READING COVER



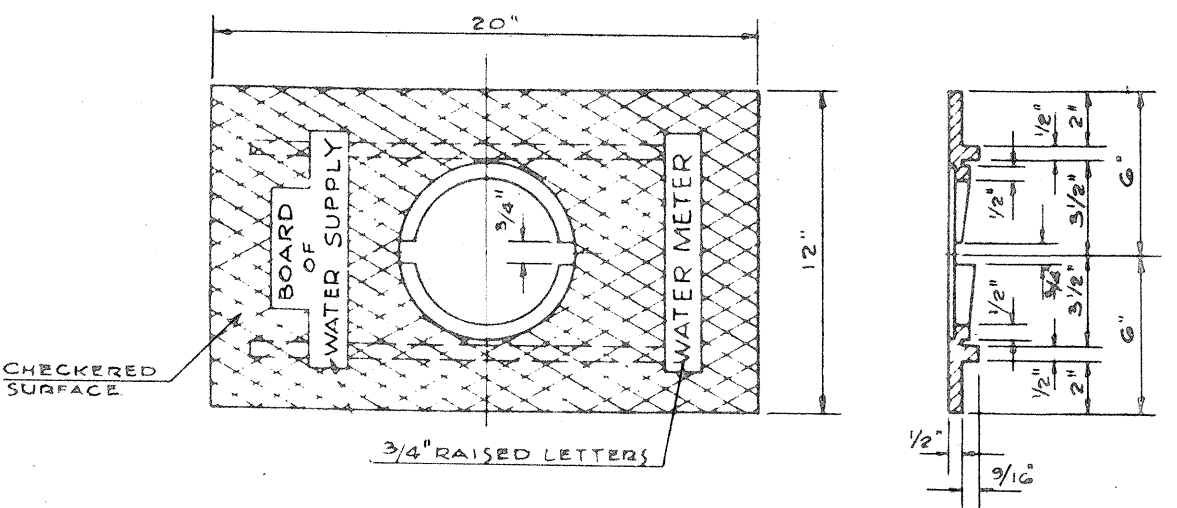
CHECKERED PATTERN

CAST IRON COVER FOR
TYPE I & TYPE II FRAMES

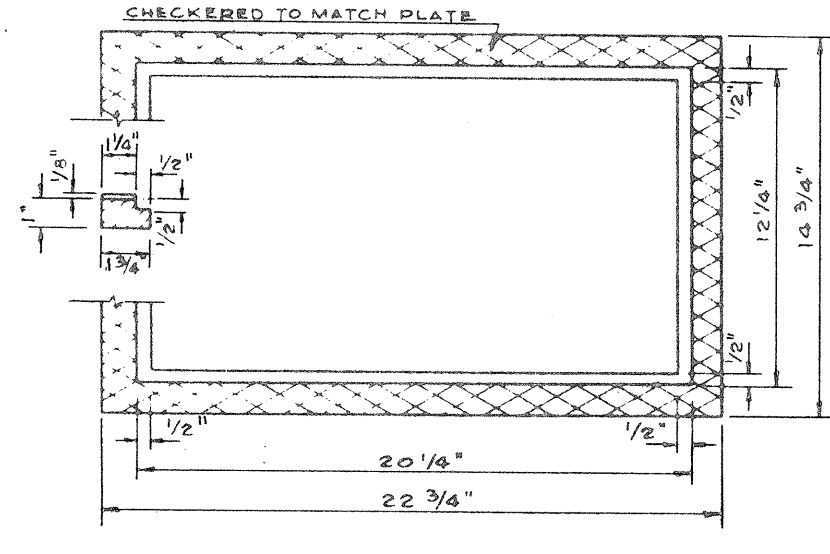
SCHEDULE OF COPPER FITTINGS
(SOLDERED JOINT)

ITEM NO.	DESCRIPTION	SINGLE SERVICE CONN.	MULTIPLE SERV. CONN. TWO SERVICES	MULTIPLE SERV. CONN. THREE SERVICES
8	CORPORATION STOP, BRASS (H-10003)	1	1	1
9	GROUND JOINT UNION (H-14242) COPPER TO I.P.S. (A-11427)	1	1	1
10	COUPLING, COPPER TO O.I.P.S. (A-1533 TO A-1578)	2	1	1
11	CURB STOP, BRASS (S.W.S. STANDARD)	1	1	1
12	FITTING ADAPTER, (A-1552 TO FITTING TO O.I.P.S. (A-1578)	-	1	1
13	TEE, COPPER TO COPPER TO COPPER (A-1566 TO A-2710)	-	1	1
14	BUSHINGS, FITTING TO COPPER (W-1343 TO W-1367)	-	2	2
15	90° ELBOW, COPPER TO COPPER (A-1537 TO A-2704)	-	2	2
16	COUPLING, COPPER TO O.I.P.S. (A-1535 TO A-1572)	1	2	3
17	CURB STOP, BRASS (S.W.S. STANDARD)	1	2	3
18	REDUCING TEE, COPPER TO COPPER TO COPPER (SUBSTITUTE FOR ITEM NUMBERS 13 & 14). (A-1566 TO A-2710)	-	1	1
19	TEE, COPPER TO COPPER TO COPPER (A-1566 TO A-2710)	-	-	1
20	BUSHING, FITTING TO COPPER (W-1343 TO W-1367)	-	-	1
21	REDUCING TEE, COPPER TO COPPER TO COPPER (SUBSTITUTE FOR ITEM NUMBERS 18 & 20 (A-1566 TO A-2710)	-	-	1

NOTE:
REFERENCE NUMBERS SHOWN THUS, (H-10003) ARE FROM MUELLER CO. CATALOG "H" AND (A-11424) ARE FROM MUELLER BRASS CO. "STEAMLINE" CATALOG "H". APPROVED EQUAL MAY BE USED.

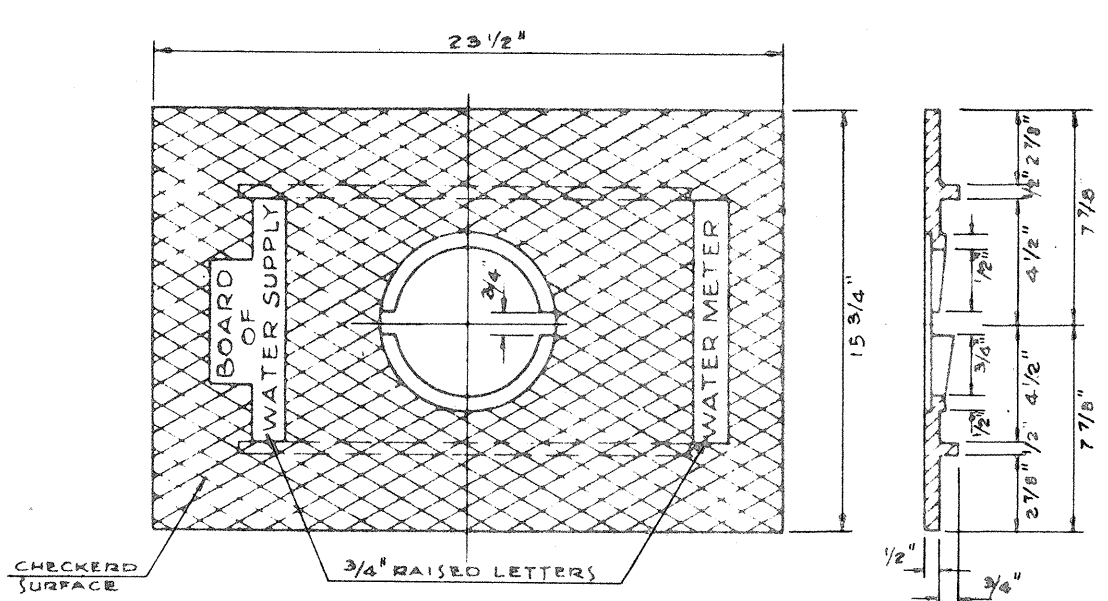


COVER PLATE

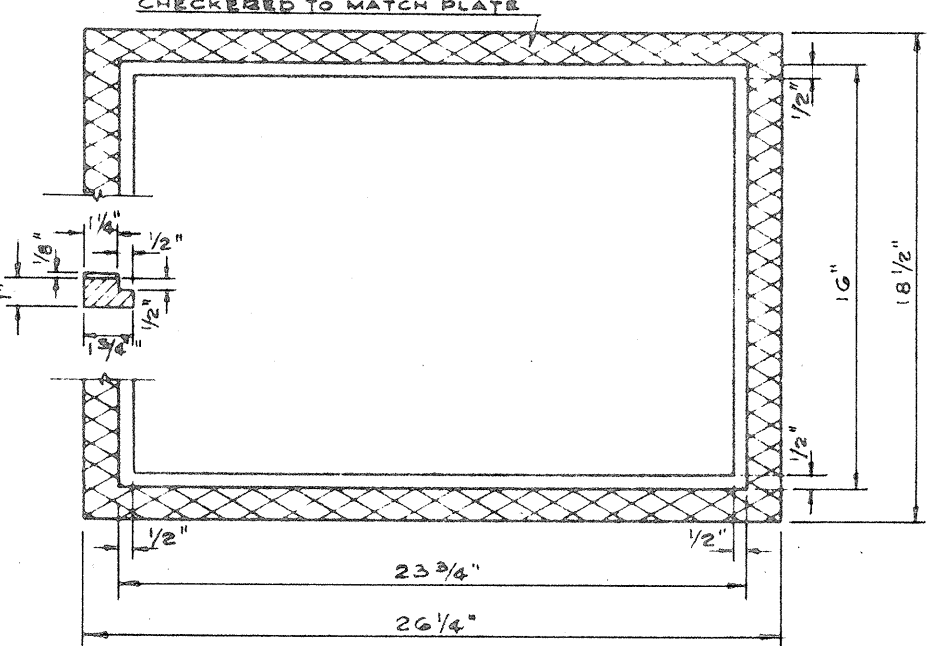


FRAME

CAST IRON FRAME AND PLATE
TYPE I

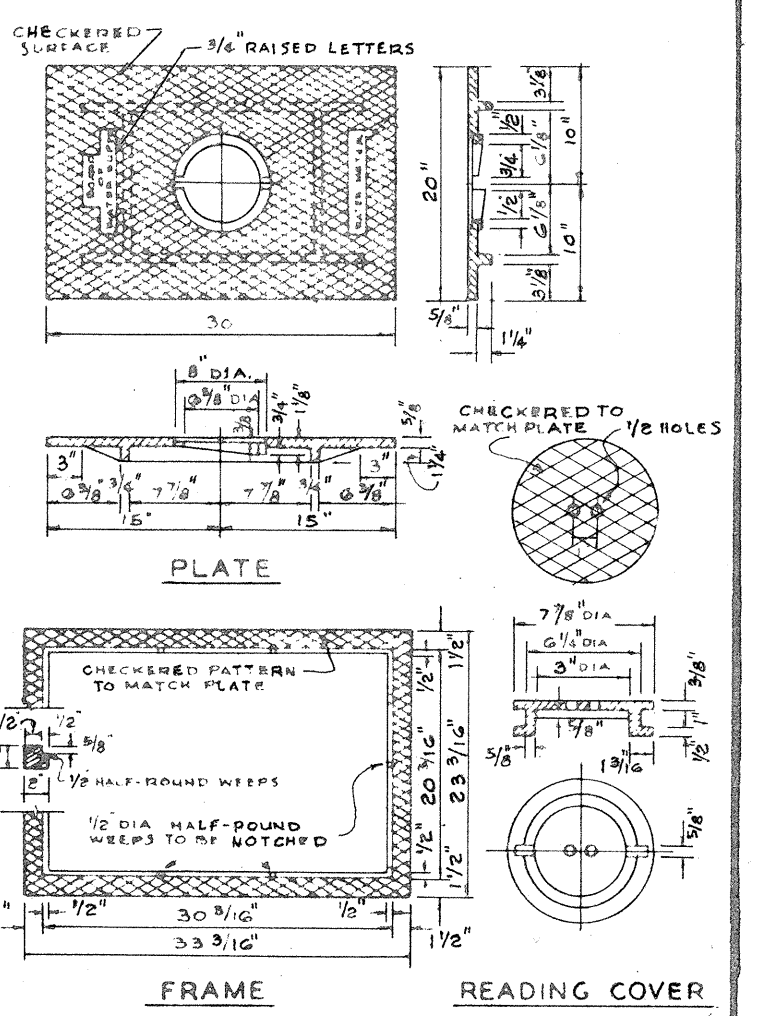


COVER PLATE

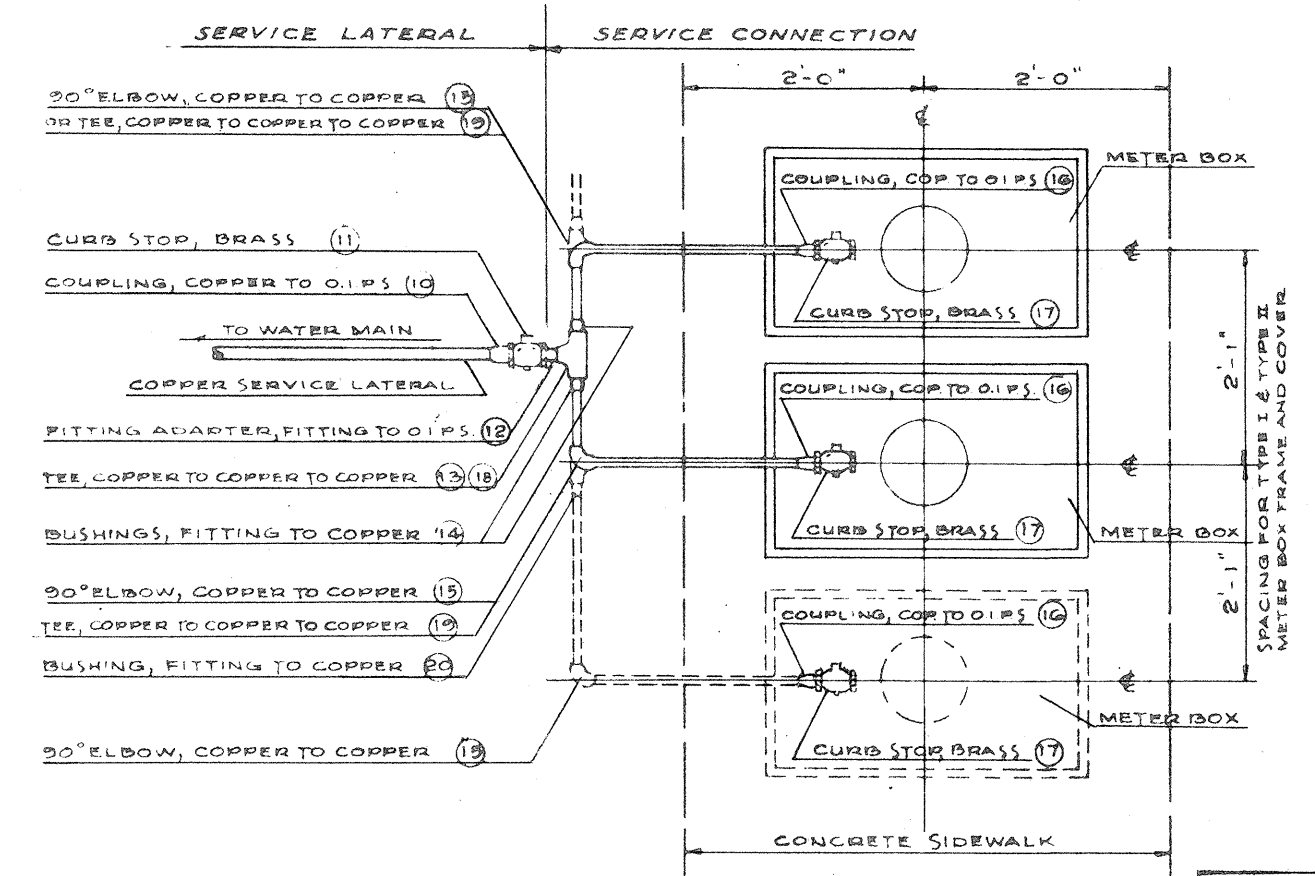


FRAME

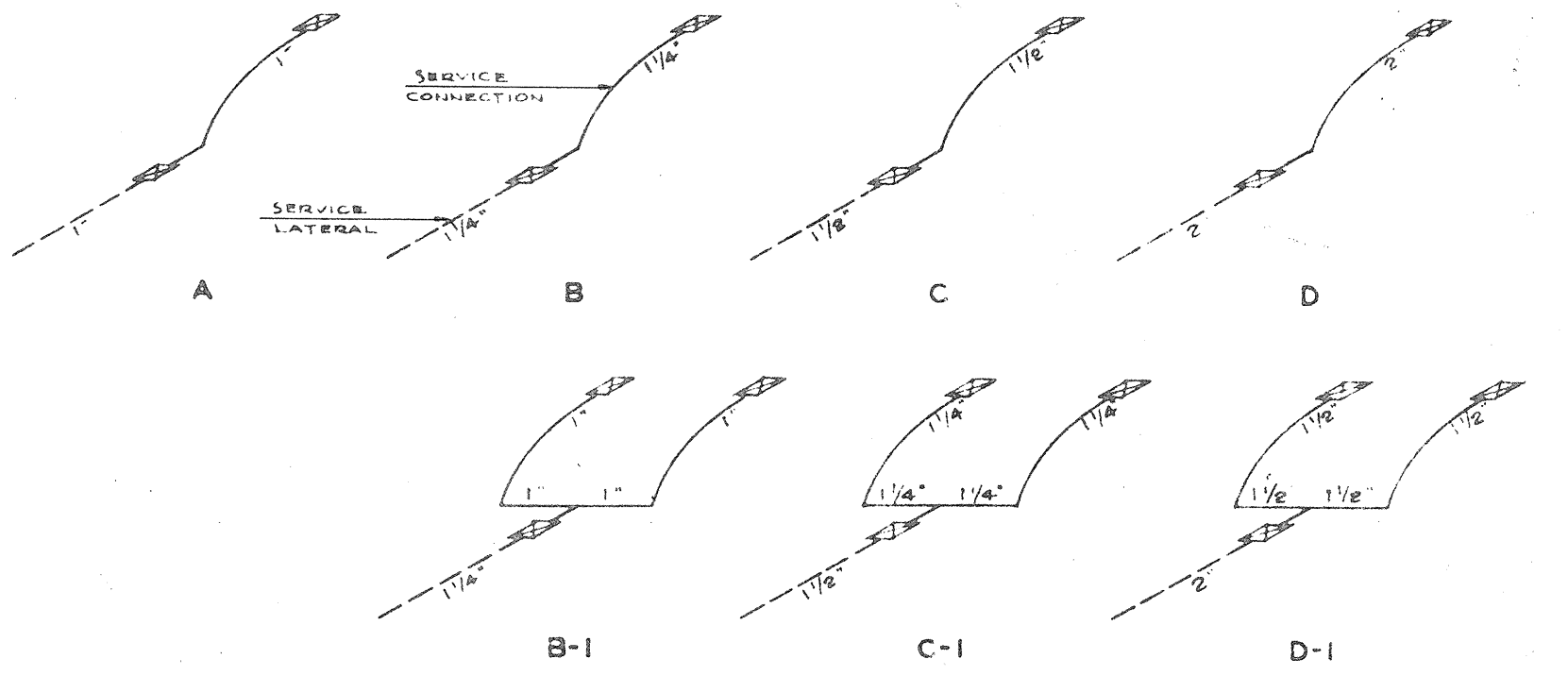
CAST IRON FRAME AND PLATE
TYPE II



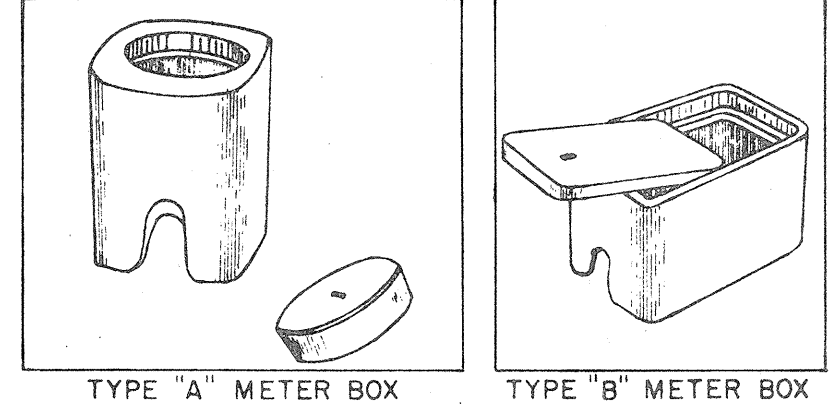
CAST IRON FRAME, PLATE & COVER
TYPE III



MULTIPLE SERVICE CONNECTION
SOLDERED JOINTS



TYPICAL LAYOUT OF
SERVICE LATERALS AND CONNECTIONS



TYPE "A" METER BOX

TYPE "B" METER BOX

METER BOX DATA

TYPE METER BOX	METER SIZES	OVERALL DIMENSIONS AT BOTTOM	OVERALL DIMENSIONS AT TOP	COMPLETE WEIGHT	OVERALL DIMENSIONS OF LID
A	5/8" or 3/4" Without Valve	7 1/4" x 7 1/4"	10" x 10"	45 lbs.	7 3/8" Dia.
B	5/8" or 3/4"	9 1/2" x 16"	12 1/4" x 18 3/8"	82 lbs.	8 3/4" x 14 1/2"

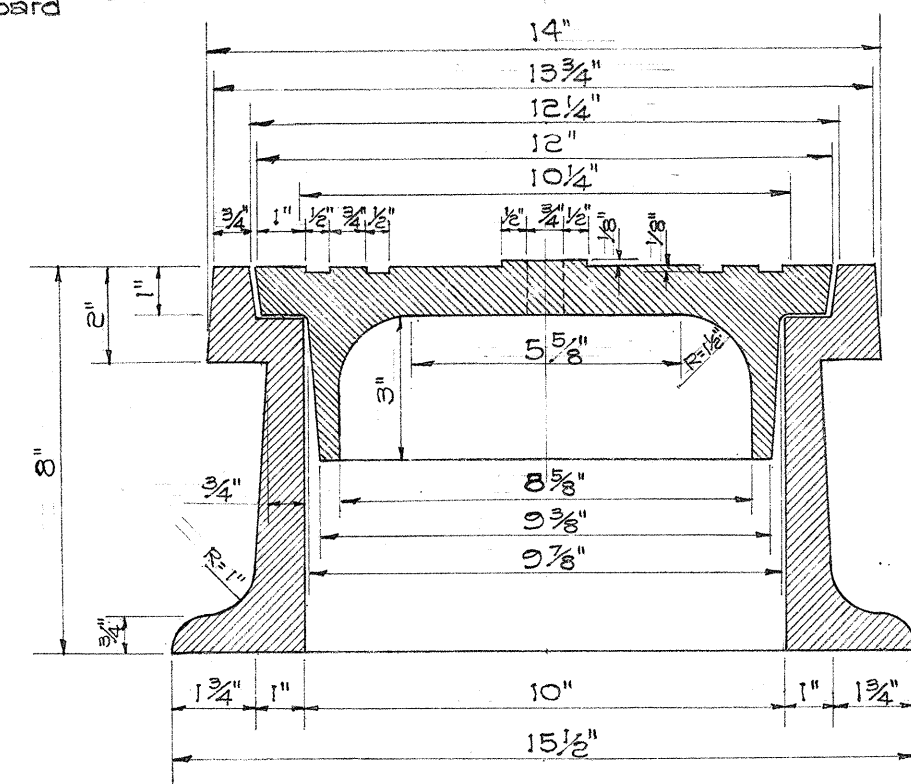
APPROVED:
[Signature]
ASS'T. CHIEF ENGINEER
BOARD OF WATER SUPPLY
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
STANDARD DETAILS
LUNALILO FREEWAY U-072-1(3)
VINEYARD BOULEVARD U-098-1(4)
LILIHA STREET F-090-1(2)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	78	246
		U-098-1(4)	1963	42	88
		F-090-1(2)	1963	40	73

NOTE:

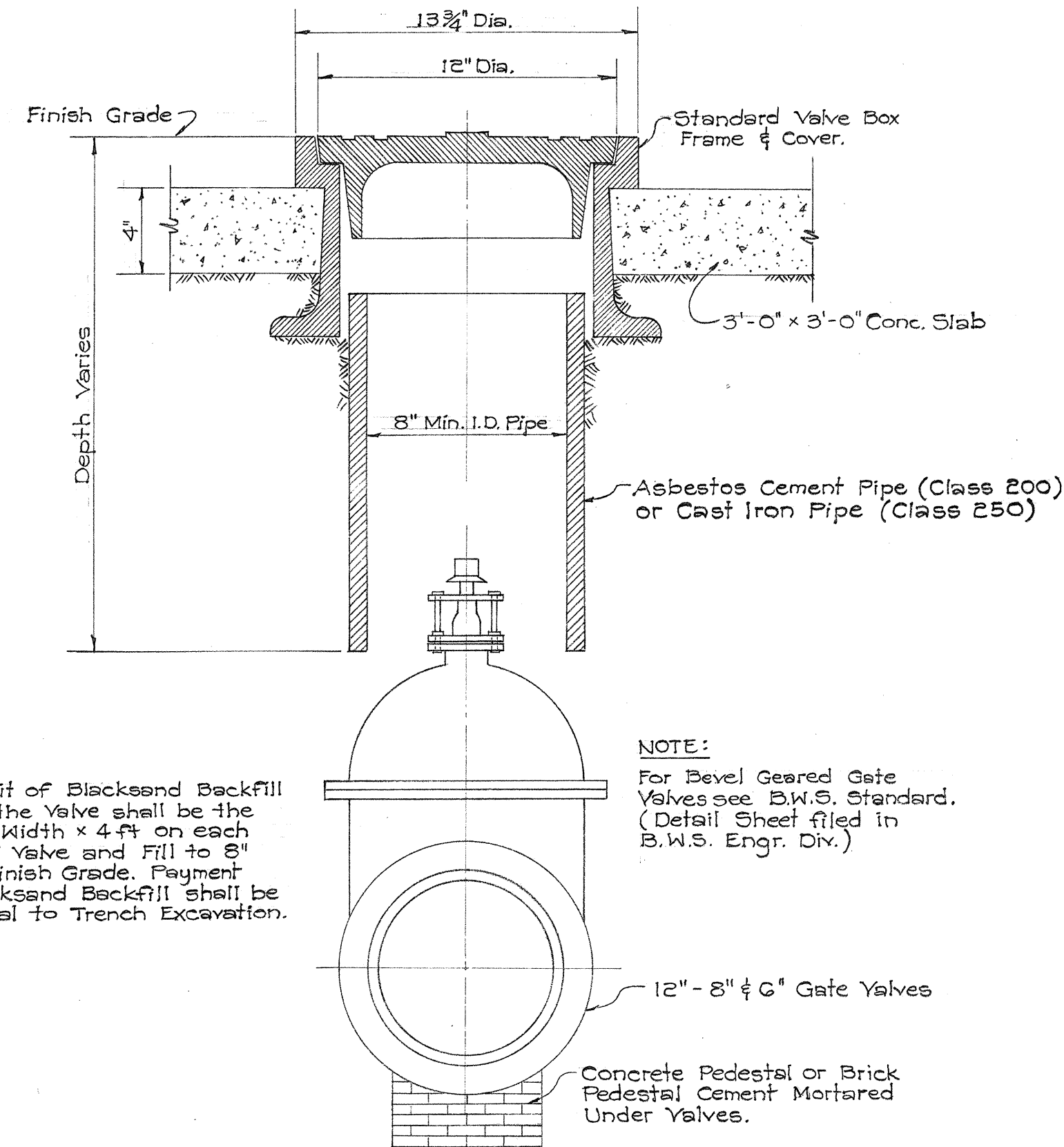
All castings shall be made accurately to the dimensions shown. Seat and cover shall be ground where necessary to secure flat and true surfaces. The cover shall not rattle in any position. Minor changes in dimensions may be made to suit foundry conditions provided such changes are approved by the Board of Water Supply.



CAST IRON FRAME & COVER

Scale: 1/4" = 1"

The limit of Blacksand Backfill around the Valve shall be the Trench Width x 4 ft on each side of Valve and Fill to 8" below Finish Grade. Payment for Blacksand Backfill shall be incidental to Trench Excavation.

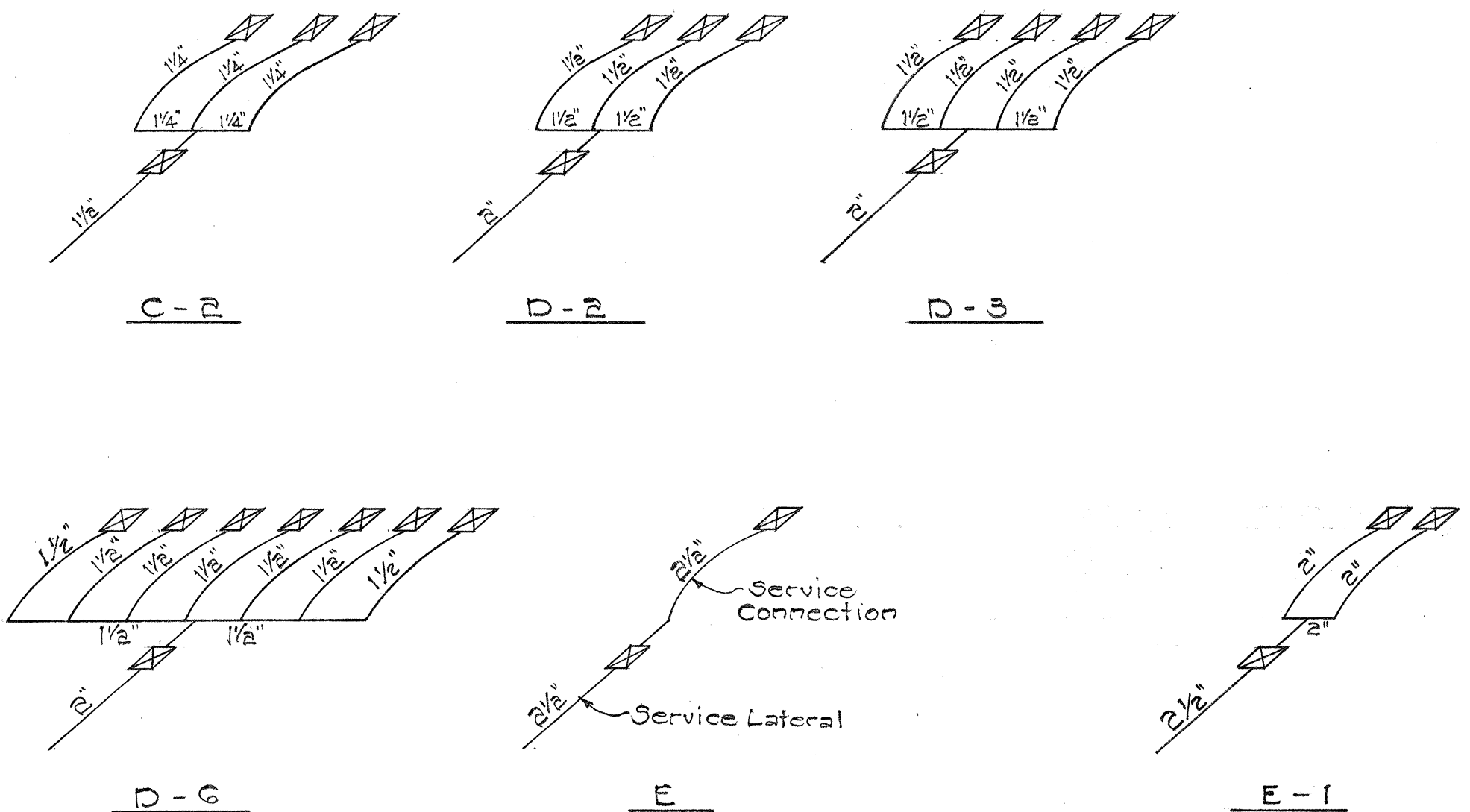


INSTALLATION OF VALVE BOX FOR GATE VALVES

Not to Scale

NOTE:

- Prior to backfilling around the valves and the installation of valve boxes, the gate valves shall be cleaned and given one coat of paint. See Standard Specifications.
- Upon completion of the valve boxes, the cast-iron frames and covers shall be cleaned and painted with one coat of approved asphaltum paint.



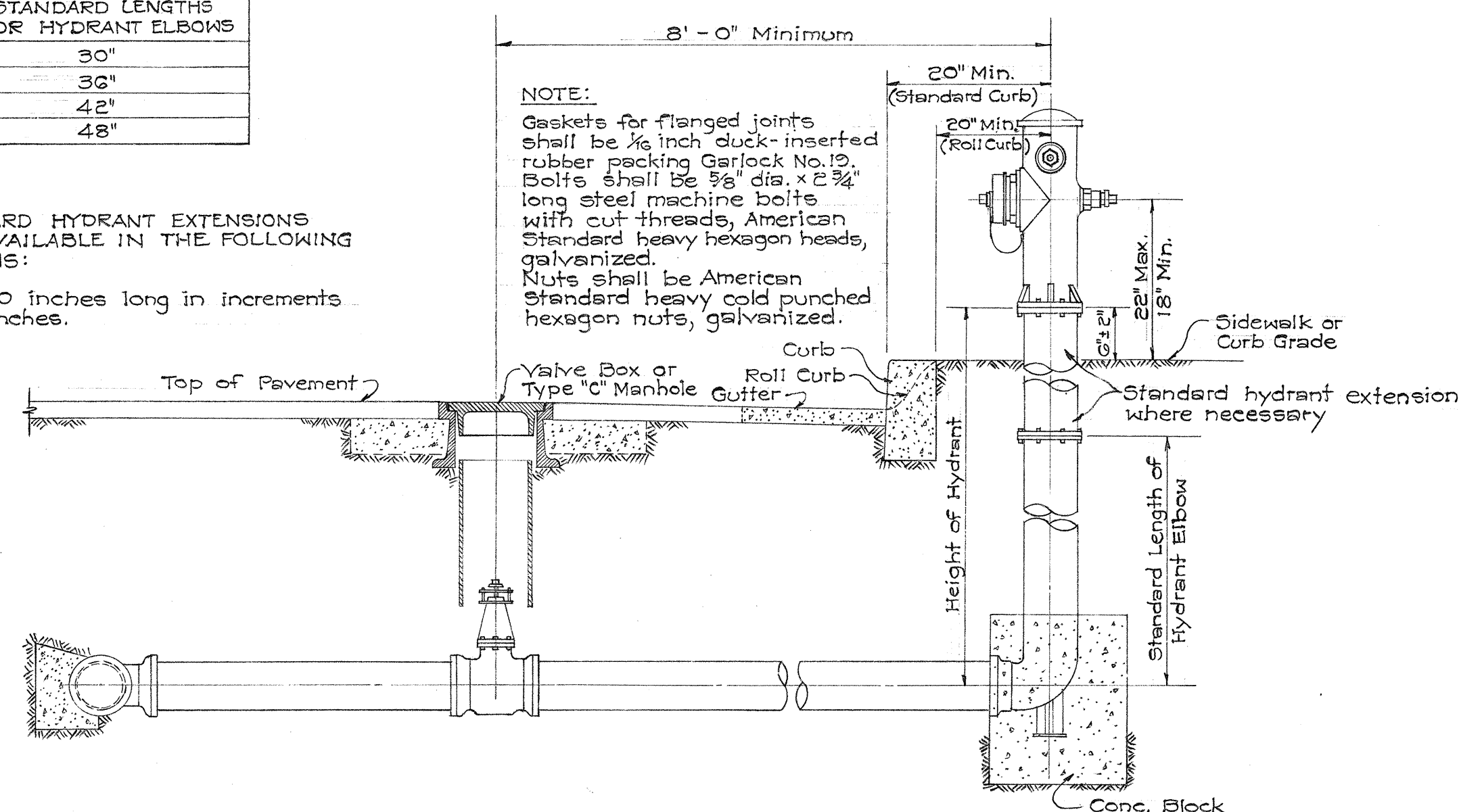
TYPICAL LAYOUT OF SERVICE LATERALS & CONNECTIONS
NOT SHOWN ON THE STANDARD DETAIL SHEETS

Not to Scale

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.



HYDRANT CONNECTION

STRAIGHT RUN

(Not to Scale)

APPROVED:

W. H. Hinchey
ASST. CHIEF ENGINEER
BOARD OF WATER SUPPLY
DATE 4/1/63

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
STANDARD DETAILS
LUNALILO FREEWAY U-072-1(3)
VINEYARD BOULEVARD U-098-1(4)
LILIHA STREET F-090-1(2)

SCALE: AS NOTED

1963

SHEET No. 10 OF 10 SHEETS