

1. Location of existing water mains and appurtenances shown on the plans are approximate only.
2. Wherever connections to existing mains are shown on the plans, the contractor shall expose the existing mains prior to excavation of main trenches to verify their locations and depths.
3. The contractor shall be responsible for all damages to existing water mains and appurtenances.
4. Where RM, tile or concrete mains are to be constructed, the contractor shall provide at his own expense, adequate size sleeves in wall at locations approved by the Board of Water Supply engineer to facilitate consumer water pipe extension into the property.
5. The contractor shall notify the Board of Water Supply in writing one week prior to commencing work on the water system.
6. All existing water manholes shall be adjusted to new grade.
7. Unless otherwise specified F.H. to be installed off an existing main shall be installed by the BWS.
8. Wherever water mains are installed across cut banks of Roadway, surfaces of such trenches shall be rip-rapped with Grouted Rubble Paving to prevent any erosion of backfilled materials.
9. All fire hydrants, valves, fittings, pipes, manhole frames & covers, rungs, etc. that are removed and not reused, shall be cleaned and returned to BWS. Kalihi Store yard except materials removed from the U.S. Army Reservation shall be returned to the Sector Engineer, Ft. Shafter.
10. Fire hydrants to be salvaged shall be removed and returned to Kalihi yard by BWS. crew and the cost charged to the contractor.
11. The contractor shall arrange with BWS to cut-off existing laterals, remove meter boxes and appurtenances prior to cleaning and grading operations. Contractor shall make all connections into existing water main for connections larger than 12" BWS construction standard shall be by use of service boss tapped for the required size corporation cock.
12. All those water main materials required in this project and not replaced, shall be loaded at the various State yard, hauled to the job site and unloaded at the contractor's cost thereof shall be incidental to the various items.
13. Removal and reinstallation costs of 2" temporary cover for testing and chlorination of new water mains shall be cost of pipe installation.
14. When "F.H. (reused)" is indicated on the plan and it is to be installed off a new main, the Contractor shall be conditioned of new substitute fire hydrant from the Storeyard.

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	US-5-0780-3 UNIT 3	1953	43	7
		0078-1(2) UNIT 4	1959	67	11
		04-065-1(1) UNIT 3	1959	62	1

END OF PROJ. US-S-0720
 \$42. 359 + 49.08
 BEG. OF PROJ. BU-072-1(2)
 \$42. 7 + 50

A circular professional engineer seal for Robert L. Nordlander. The outer ring contains the text "ROBERT L. NORDLANDER" at the top and "STATE OF CALIFORNIA" at the bottom. The inner circle contains the text "REGISTERED PROFESSIONAL ENGINEER" and "No. 995". A signature is written across the seal.

BELT, COLLINS & ASSOC., LT
Civil and Structural Engineer

NOTE:

THESE PLANS WERE PREPARED IN COOPERATION WITH
THE OFFICE OF THE BOARD OF WATER SUPPLY,
CITY & COUNTY OF HONOLULU.

APPROVED: *W.D. Smith* 8/17/59
ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY

WATER

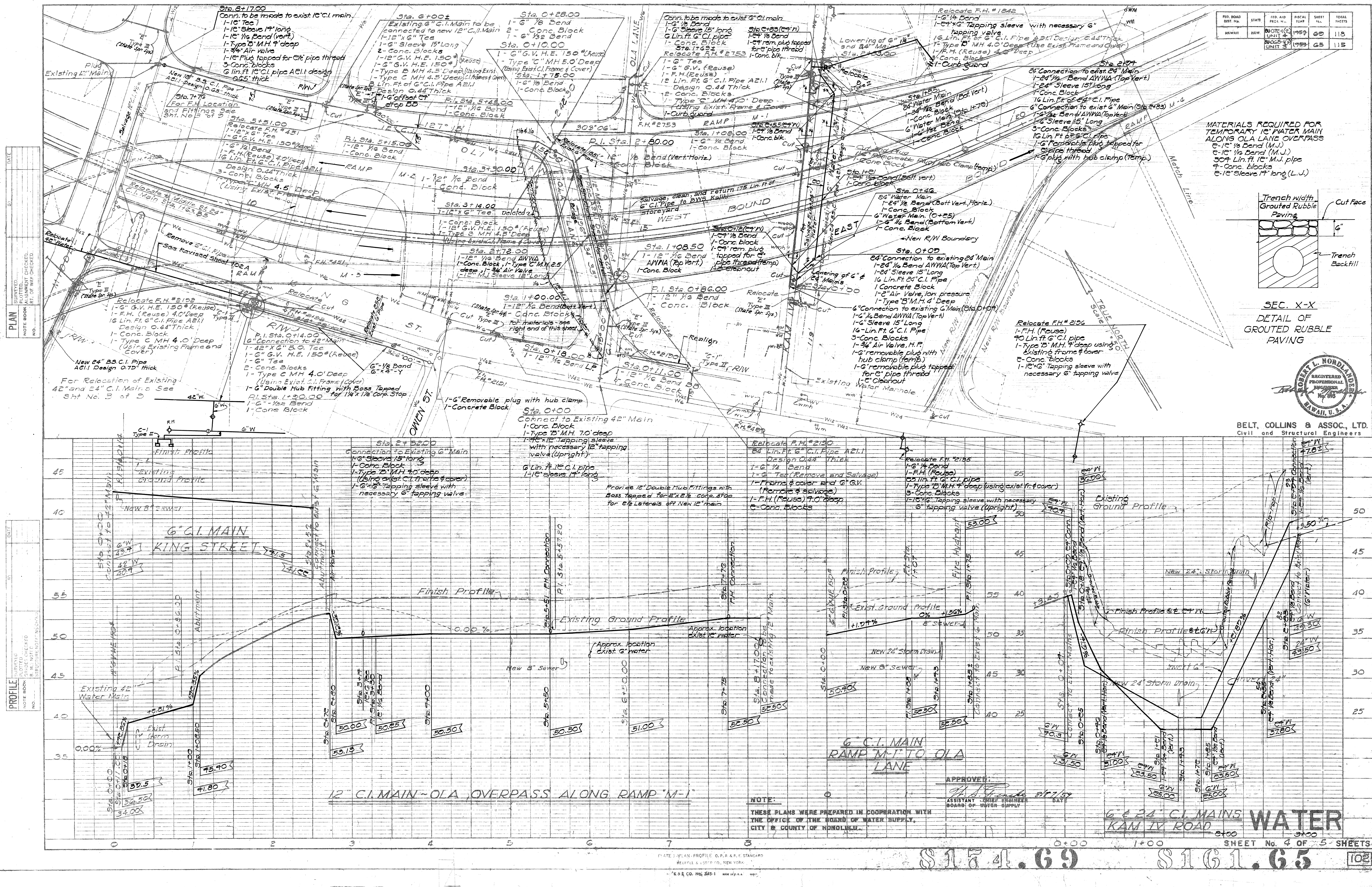
SHEET No. 1 OF 5 SHEETS

99

PLATE 3 PLAN - PROFILE O.P. & P.E. STANDARD
(KUFFEL & ESSER CO., NEW YORK).
K & E CO. NO. 345.1 MADE IN U.S.A. 1958

\$174.65

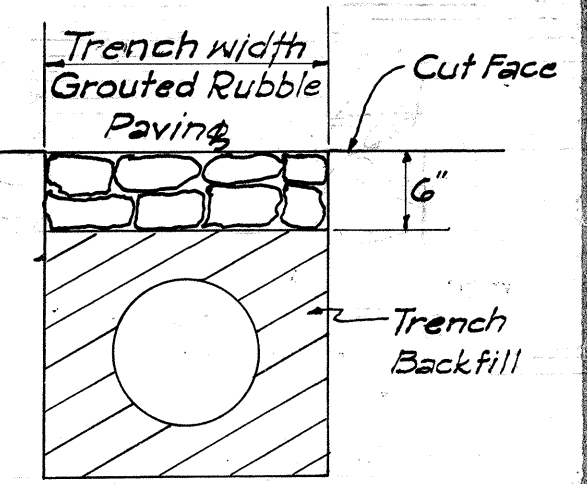
\$161.62



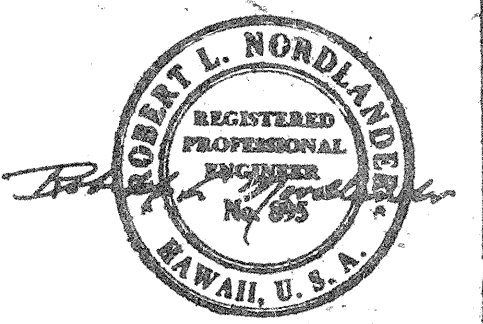
REV.	DATE	BY	CHKD.	DESCRIPTION
1	10/1/59	W. J. Collins	W. J. Collins	Initial Design
2	10/1/59	W. J. Collins	W. J. Collins	Revised Design
3	10/1/59	W. J. Collins	W. J. Collins	Final Design

MATERIALS REQUIRED FOR
TEMPORARY 12" WATER MAIN
ALONG OLA LANE OVERPASS

- 6-12" 1/2 Bend (M.J.)
- 504 Lin. Ft. 12" M.J. pipe
- 4-Conc. Blocks
- 6-12" Sleeve 17' long (L.U.)



SEC. X-X
DETAIL OF
GROUTED RUBBLE
PAVING

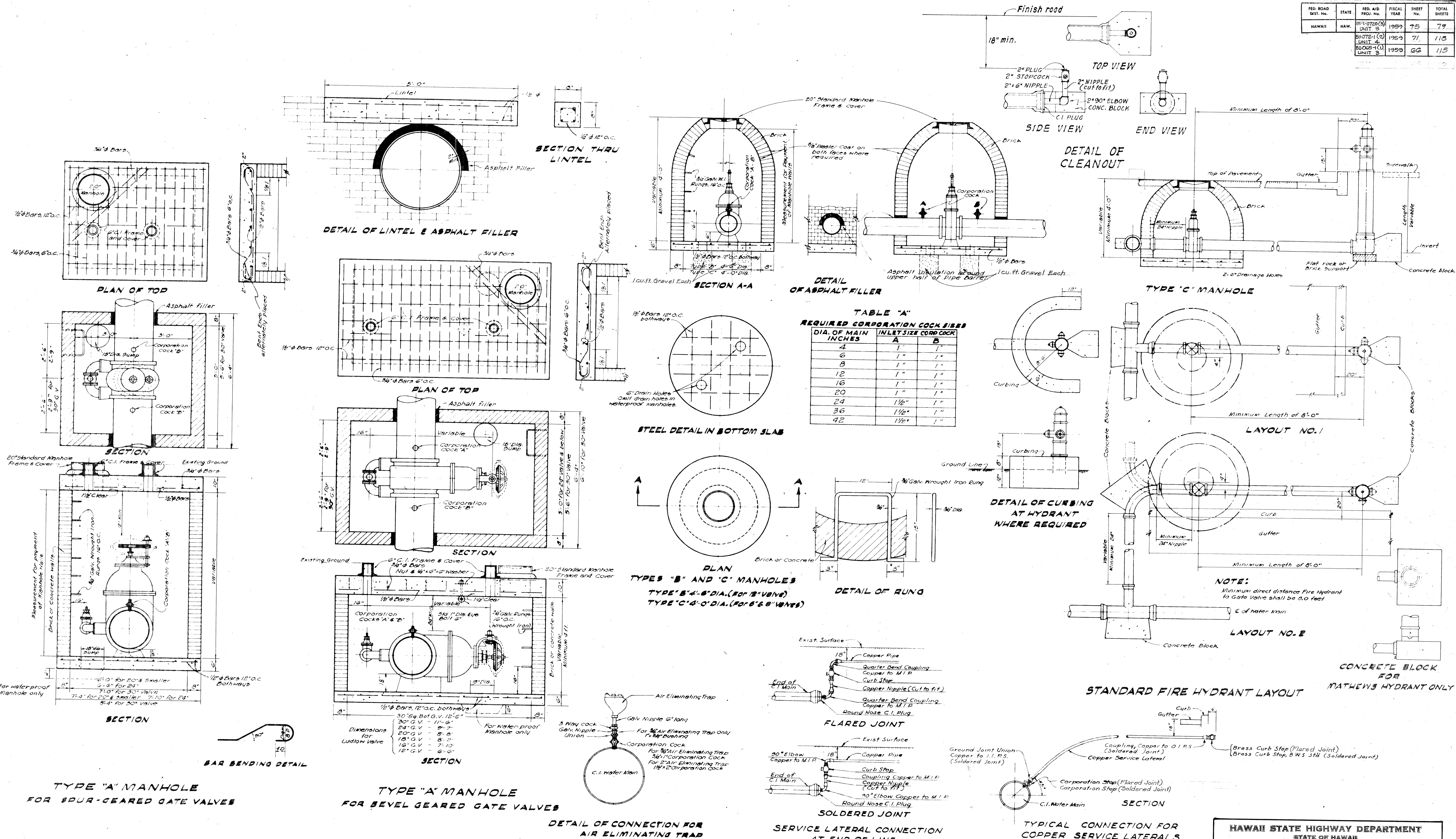


BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers

APPROVED: *W. J. Collins* 10/1/59
ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY

NOTE:
THESE PLANS WERE PREPARED IN COOPERATION WITH
THE OFFICE OF THE BOARD OF WATER SUPPLY,
CITY & COUNTY OF HONOLULU.

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	US-0720(3) UNIT 3	1959	75	77
		US-0720(3) UNIT 4	1959	71	118
		US-0720(3) UNIT 5	1959	66	115



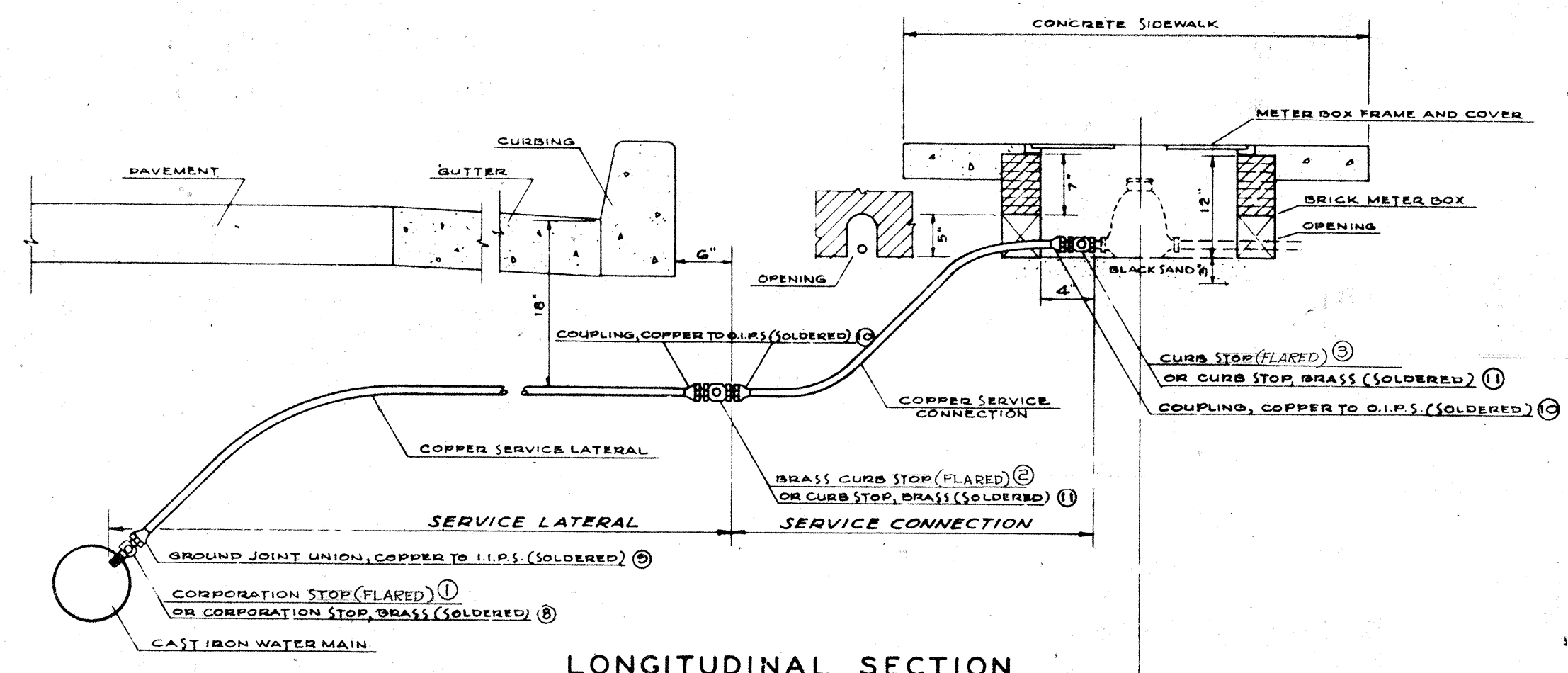
HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

BOARD OF WATER SUPPLY
STANDARD DETAILS

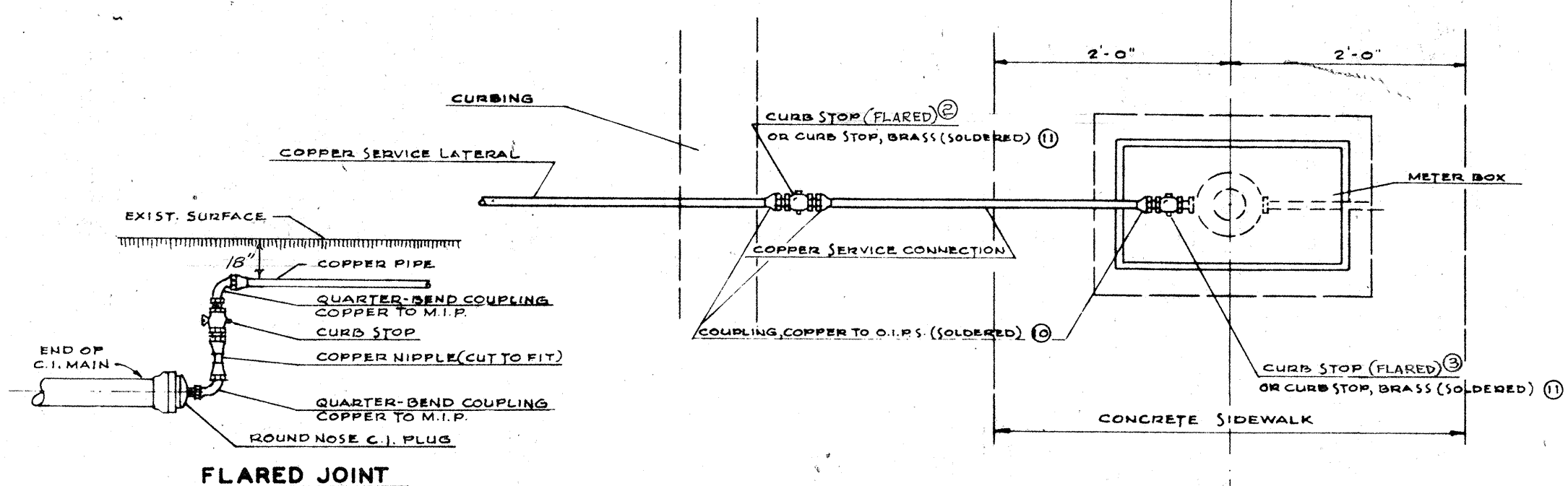
MOANALUA ROAD
LUNALILO FREEWAY
MIDDLE STREET

US-S-0720(3) UNIT 3
BU-072-1(2) UNIT 4
BU-065-1(1) UNIT 3

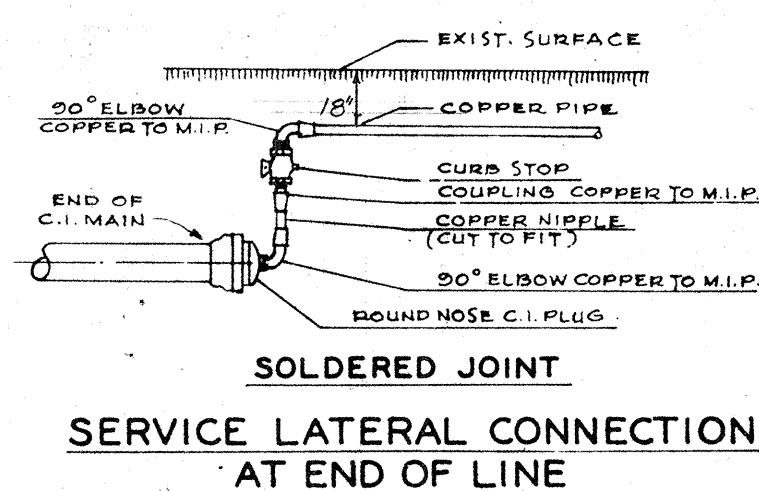
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	05-5-0720(3) UNIT 3	1959	46	77
		BU-072-1(2) UNIT 4	1959	7C	118
		BU-065-1(1) UNIT 5	1959	G7	115



LONGITUDINAL SECTION

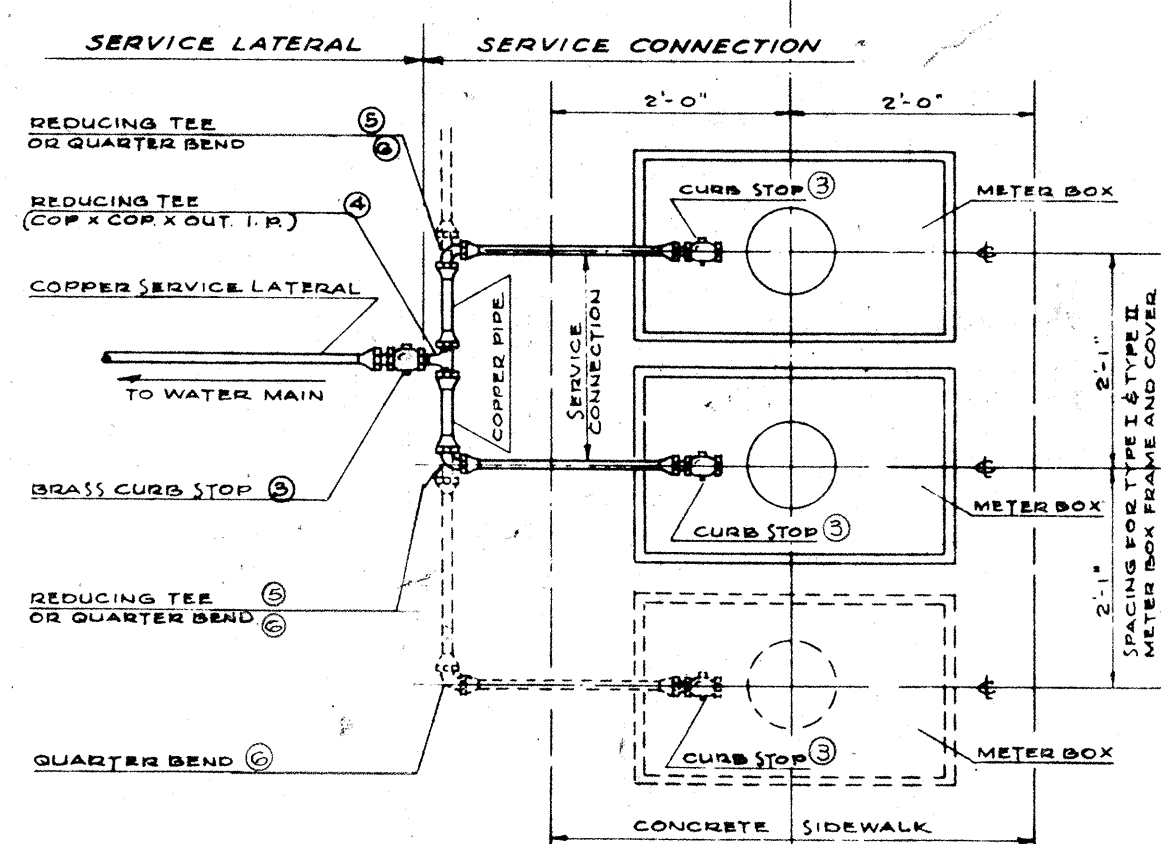


SINGLE SERVICE CONNECTION

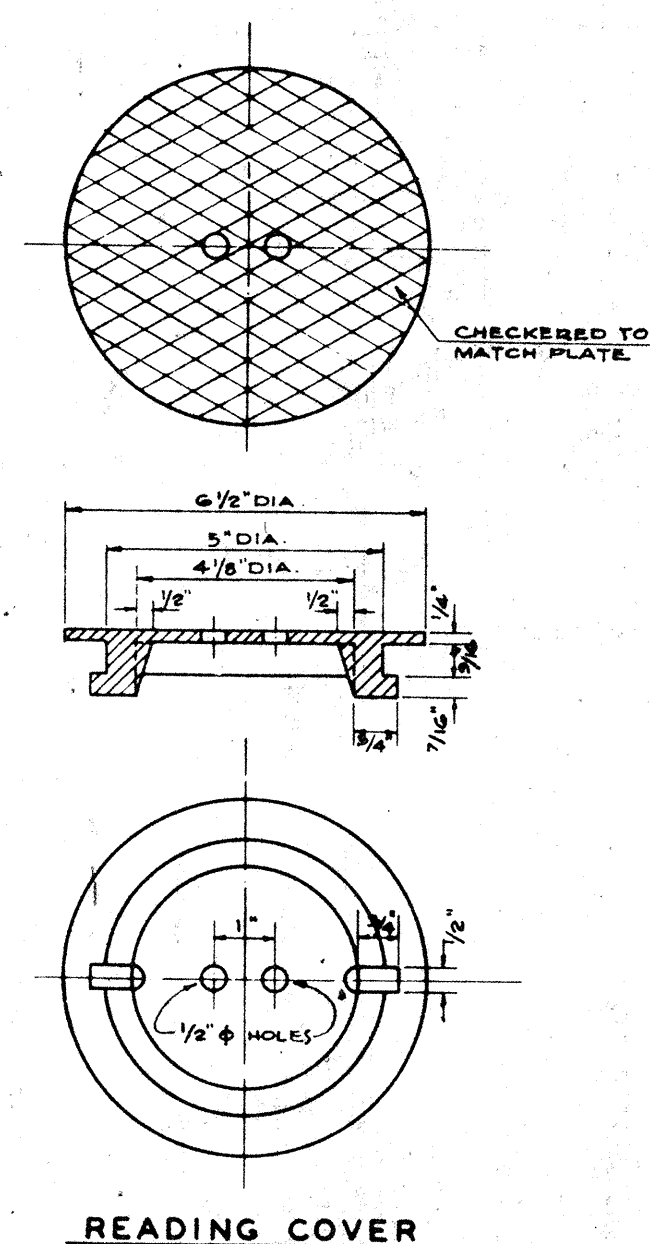


SERVICE LATERAL CONNECTION AT END OF LINE

ITEM NO.	DESCRIPTION	SINGLE SERVICE CONN.	TWO SERVICES	THREE SERVICES
1	CORPORATION STOP WITH STRAIGHT COUPLING NUT	1	1	1
2	BRASS CURB STOP	1	-	-
3	CURB STOP WITH TUBE NUT COPPER TO INSIDE I.P.	1	3	4
4	REDUCING TEE WITH TUBE NUTS COPPER TO COUPLER TO OUTSIDE I.P.	-	1	1
5	REDUCING TEES WITH TUBE NUTS COPPER TO COUPLER	-	-	1
6	1/4 BEND UNION COUPLING WITH TUBE NUTS COPPER TO COUPLER	-	2	2
7	THREE PART UNION COUPLING OR SOLDER COUPLING	TO BE USED IN SPLICING ODD LENGTHS OF COPPER PIPE	-	-



MULTIPLE SERVICE CONNECTION FLARED JOINTS



READING COVER

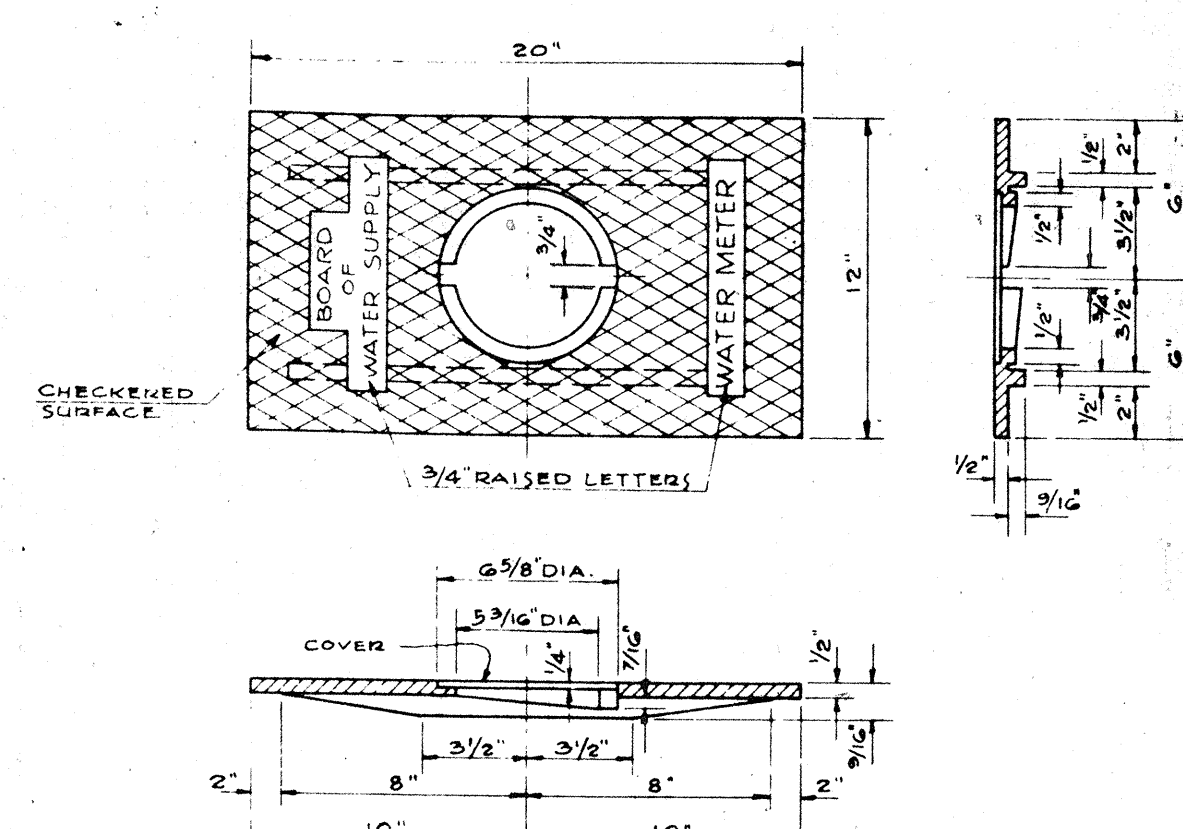
CHECKERED PATTERN

CAST IRON COVER FOR TYPE I & TYPE II FRAMES

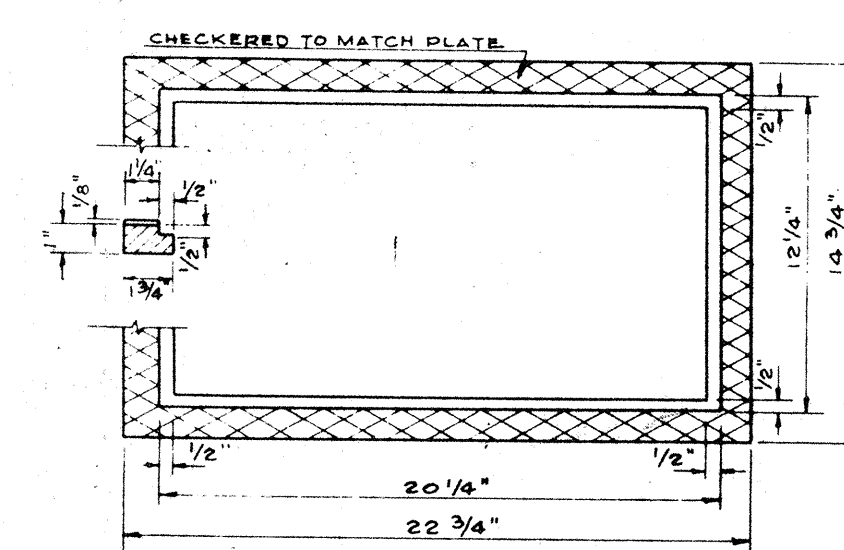
ITEM NO.	DESCRIPTION	SINGLE SERVICE CONN.	TWO SERVICES	THREE SERVICES
8	CORPORATION STOP, BRASS	1	1	1
9	GROUND JOINT UNION COPPER TO I.P.S.	1	1	1
10	COUPLING, COPPER TO O.I.P.S.	2	1	1
11	CURB STOP, BRASS (B.W.S. STANDARD)	1	1	1
12	FITTING ADAPTER, FITTING TO O.I.P.S.	-	1	1
13	TEE, COPPER TO COPPER TO COUPLER	-	1	1
14	BUSHINGS, FITTING TO COPPER	-	2	2
15	90° ELBOW, COPPER TO COPPER	-	2	2
16	COUPLING, COPPER TO O.I.P.S.	1	2	3
17	CURB STOP, BRASS (B.W.S. STANDARD)	1	2	3
18	REDUCING TEE, COPPER TO COPPER TO COUPLER (SUBSTITUTE FOR ITEM NUMBER 13 & 14)	-	1	1
19	TEE, COPPER TO COPPER TO COUPLER	-	-	1
20	BUSHING, FITTING TO COPPER	-	-	1
21	REDUCING TEE, COPPER TO COPPER TO COUPLER (SUBSTITUTE FOR ITEM NUMBER 13 & 14)	-	-	1

NOTE:

THESE PLANS WERE PREPARED IN COOPERATION WITH THE OFFICE OF THE BOARD OF WATER SUPPLY, CITY & COUNTY OF HONOLULU.

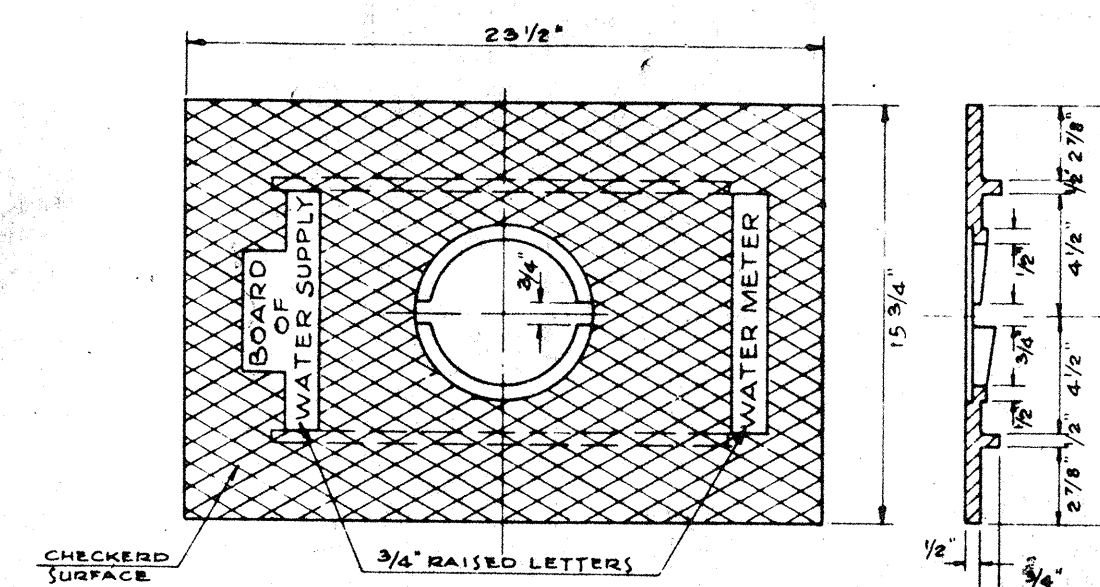


COVER PLATE

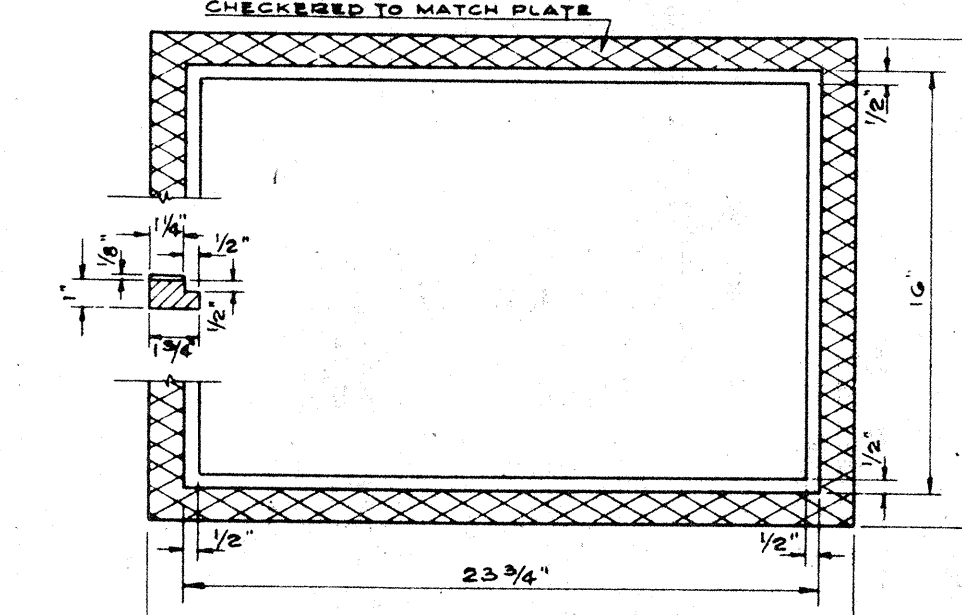


FRAME

CAST IRON FRAME AND PLATE TYPE I

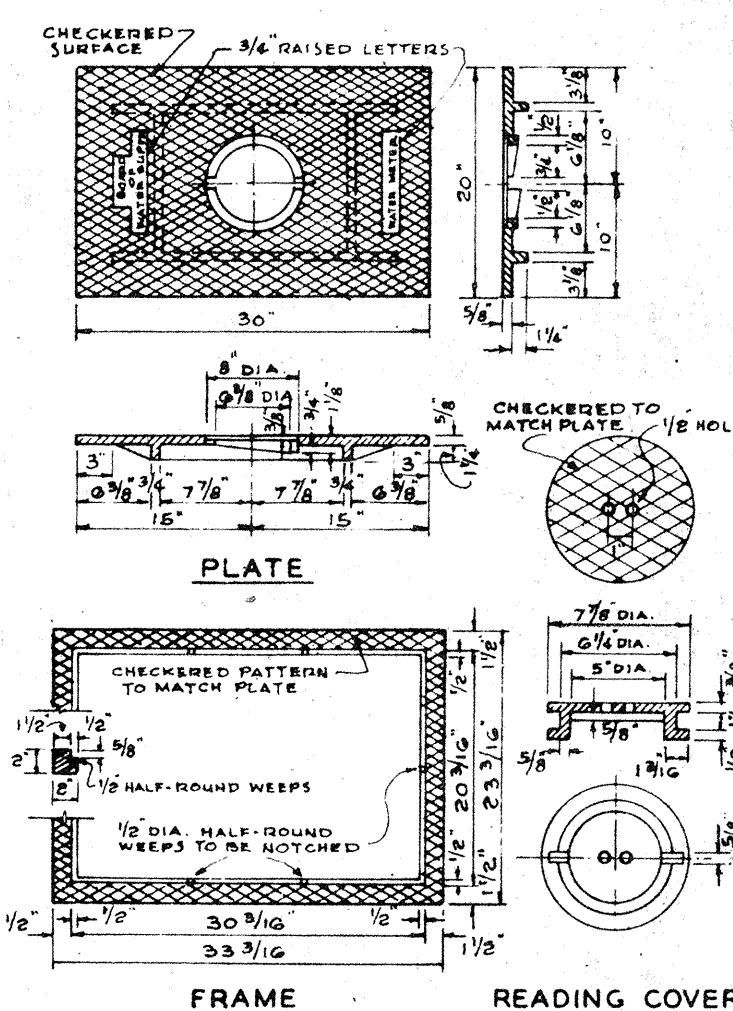


COVER PLATE

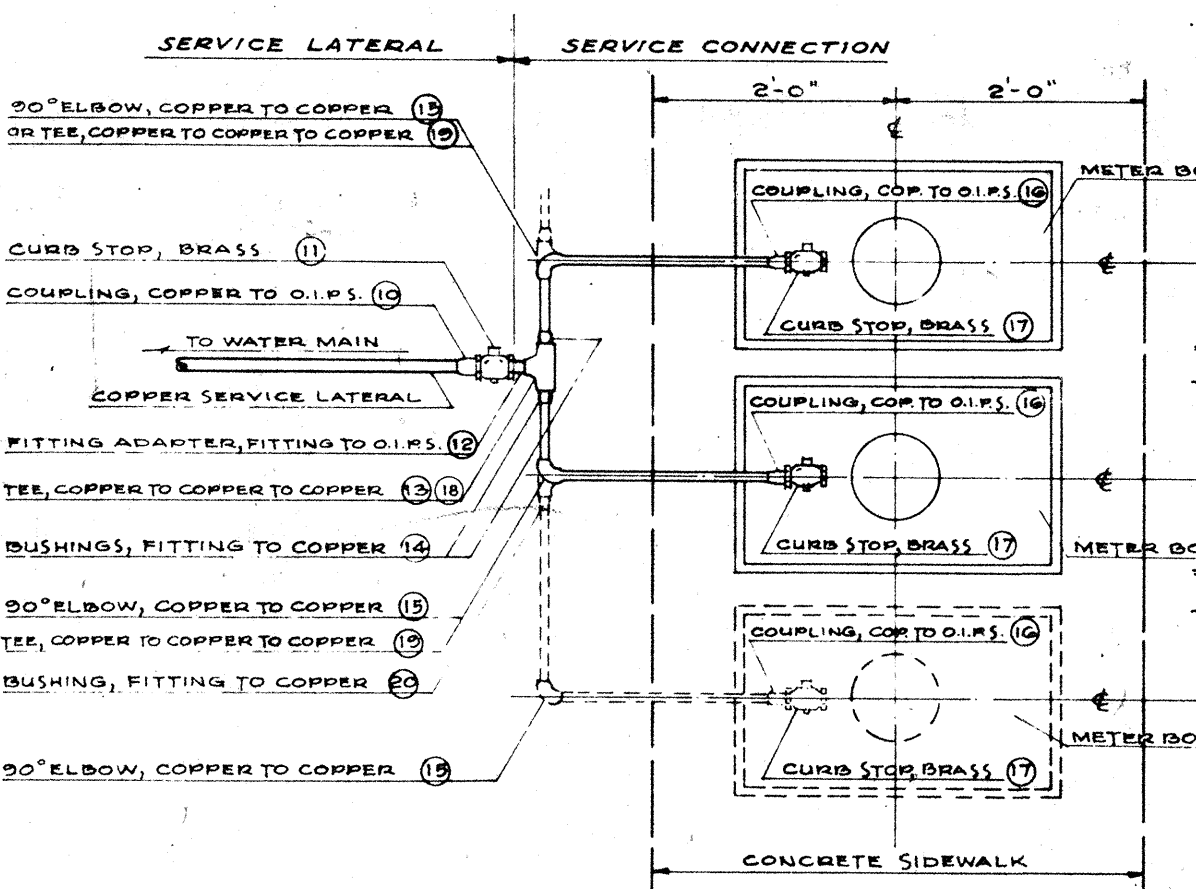


FRAME

CAST IRON FRAME AND PLATE TYPE II



CAST IRON FRAME, PLATE & COVER TYPE III



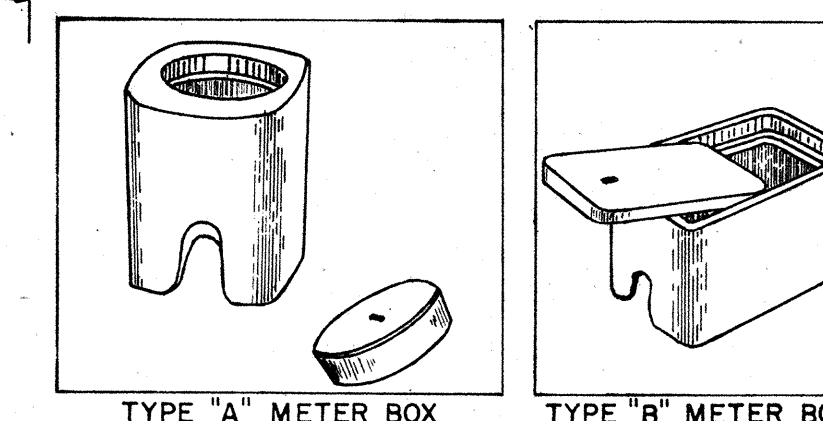
MULTIPLE SERVICE CONNECTION SOLDERED JOINTS

NOTE:

USE OF COPPER PIPE AND FITTINGS WITH "SOLDERED" JOINTS OPTIONAL UNTIL FURTHER NOTICE.

APPROVED:

8/17/59
ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY

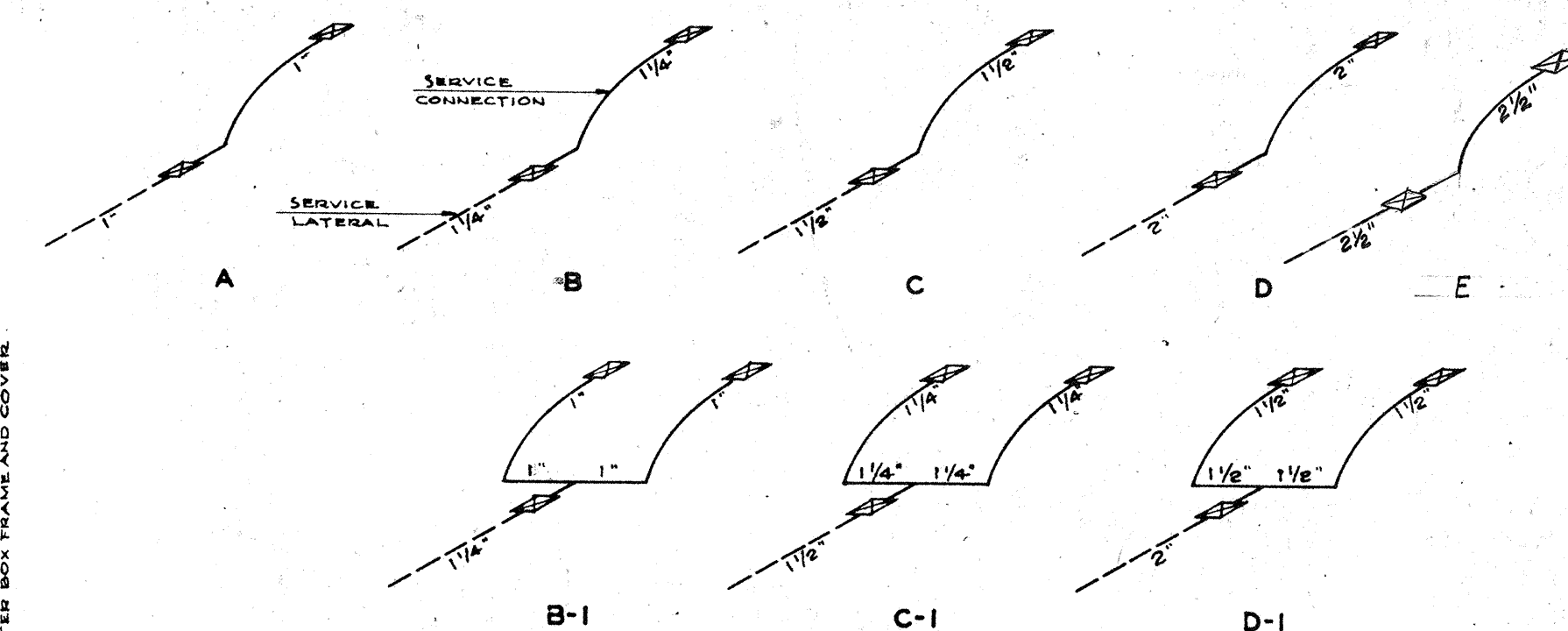


TYPE "A" METER BOX

TYPE "B" METER BOX

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"

TYPICAL LAYOUT OF SERVICE LATERALS AND CONNECTIONS

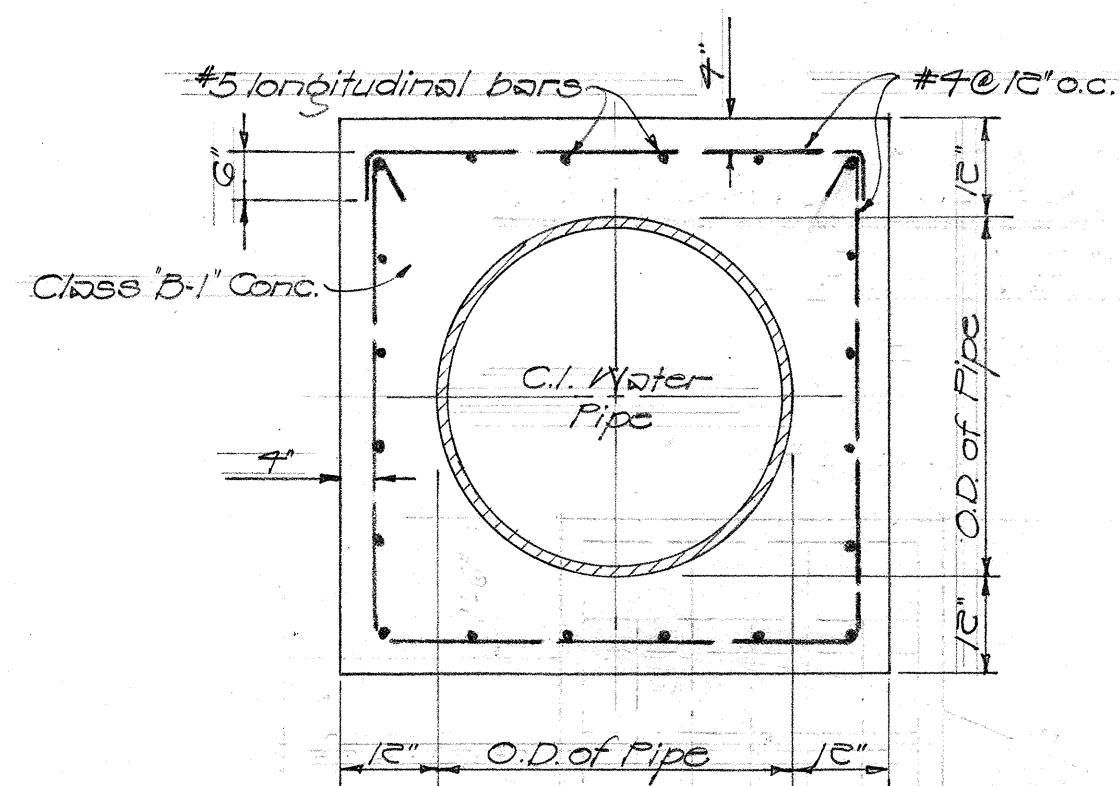


HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII
BOARD OF WATER SUPPLY
STANDARD DETAILS

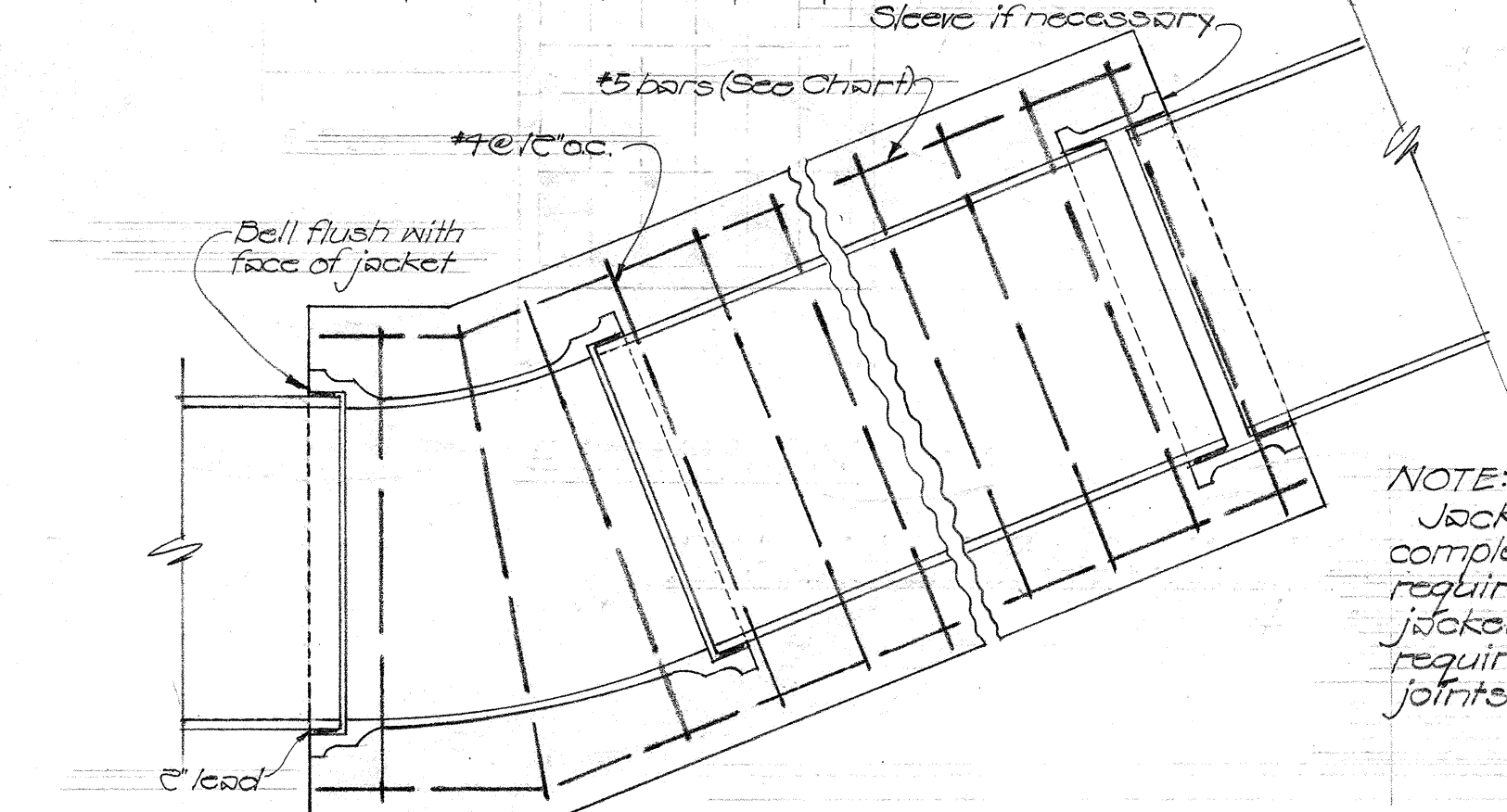
MOANALUA ROAD
LUNALILO FREEWAY
MIDDLE STREET

US-5-0720(3) UNIT 3
BU-072-1(2) UNIT 4
BU-065-1(1) UNIT 3

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	155-0000	1950	47	79
		BU-072-1(2)	1950	73	118
		BU-065-10	1950	68	115

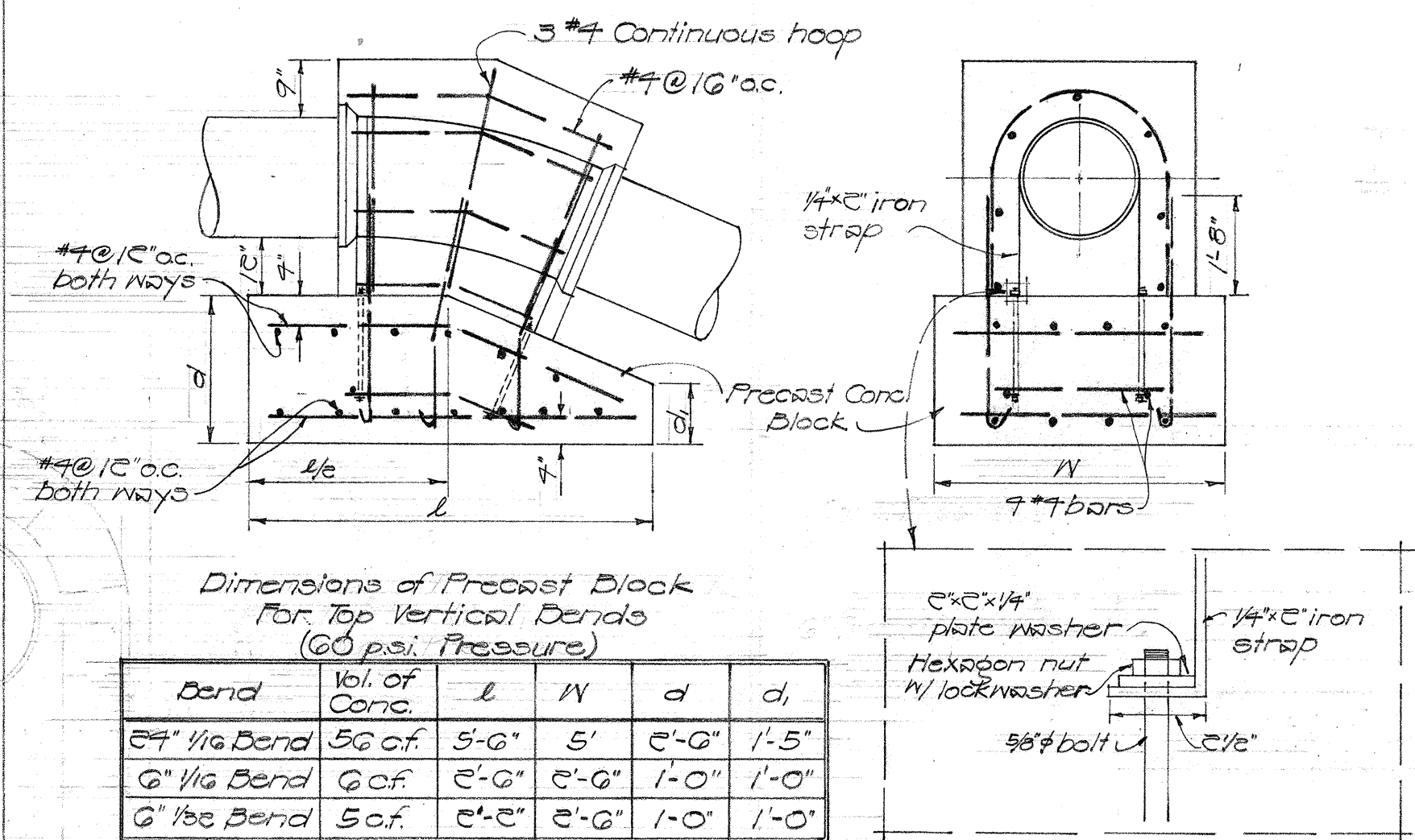


I.D. of Pipe	Size of Jacket	#4 bars Top/bot.	#5 Longitudinal Bars Sides	Total
7 1/2"	28" x 28"	12	8	20
30"	28" x 28"	12	8	20
30"	56" x 56"	10	6	16
34"	50" x 50"	10	6	16
30"	76" x 76"	10	6	16
16"	76" x 76"	8	7	15
15"	38" x 38"	8	7	15
6"	38" x 38"	6	6	12
4"	30" x 30"	6	6	12



REINFORCED CONCRETE JACKET
Not to scale

NOTE:
Jacket to be poured after completion of test. Lead joint required at both faces of jacket. 6" depth of lead required at all embedded joints.

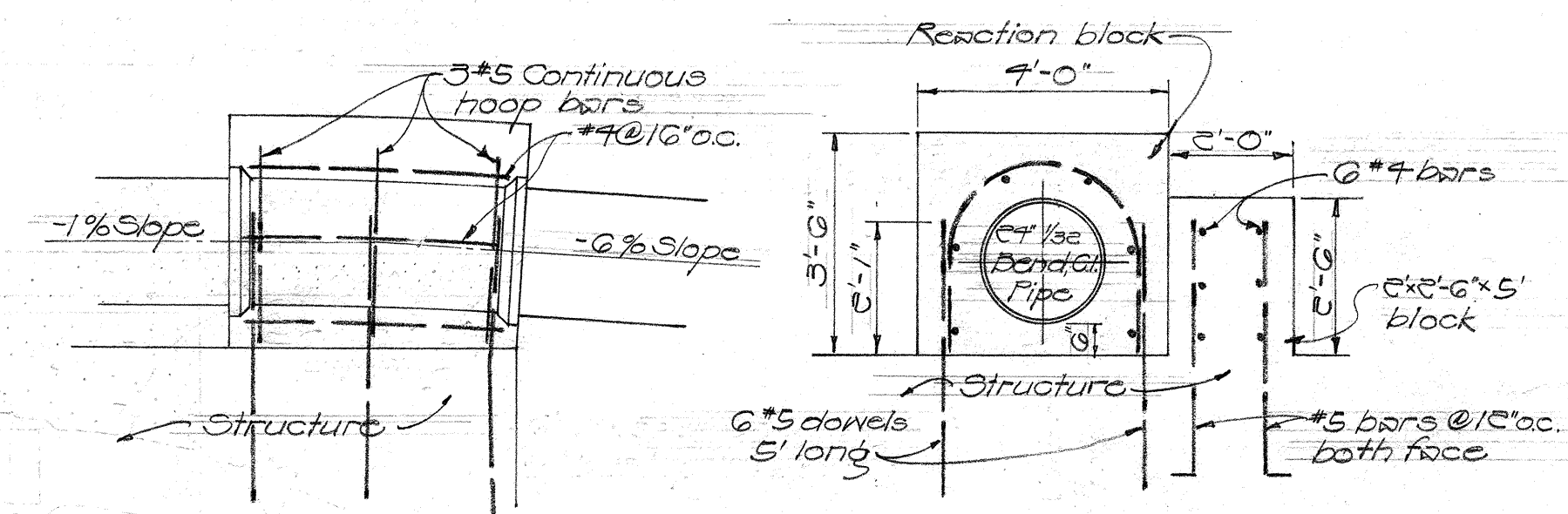


Dimensions of Precast Block for Top Vertical Bends (60 psi. Pressure)

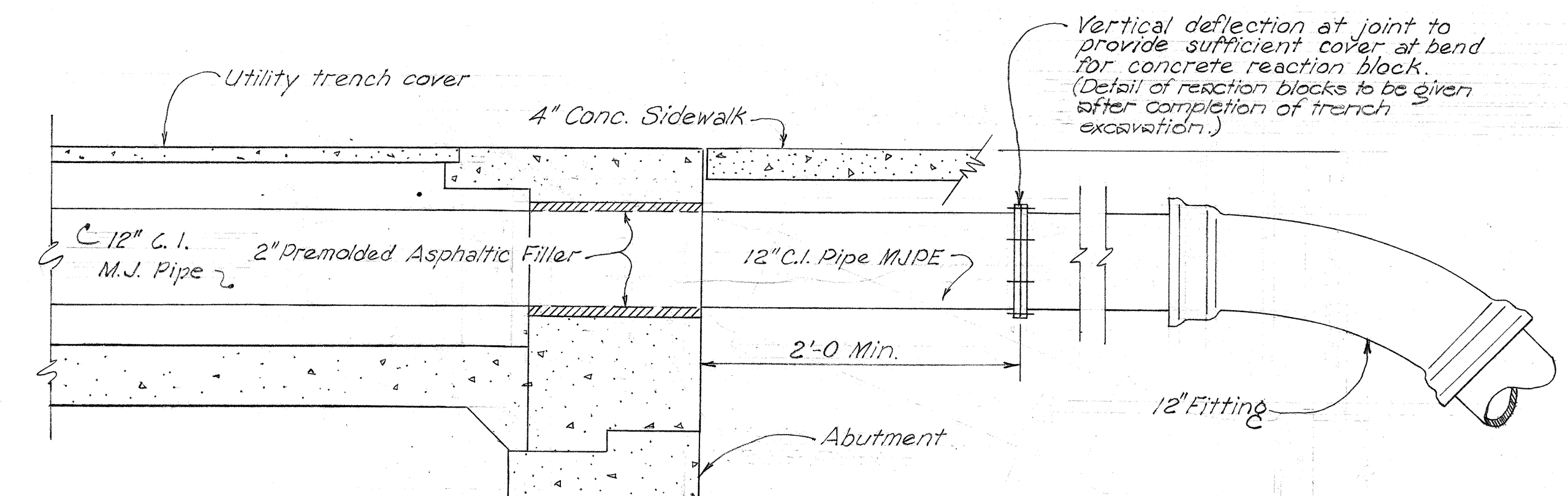
Bend	Vol. of Conc.	L	W	d	d ₁
69 1/8" Bend	56 cf.	5'-0"	5'	6'-0"	1'-5"
6" 1/8" Bend	6 cf.	6'-0"	6'-0"	1'-0"	1'-0"
6" 1/8" Bend	5 cf.	6'-0"	6'-0"	1'-0"	1'-0"

TOP VERTICAL REACTION BLOCKS FOR KAM IV ROAD AT CONNECTIONS
Not to scale

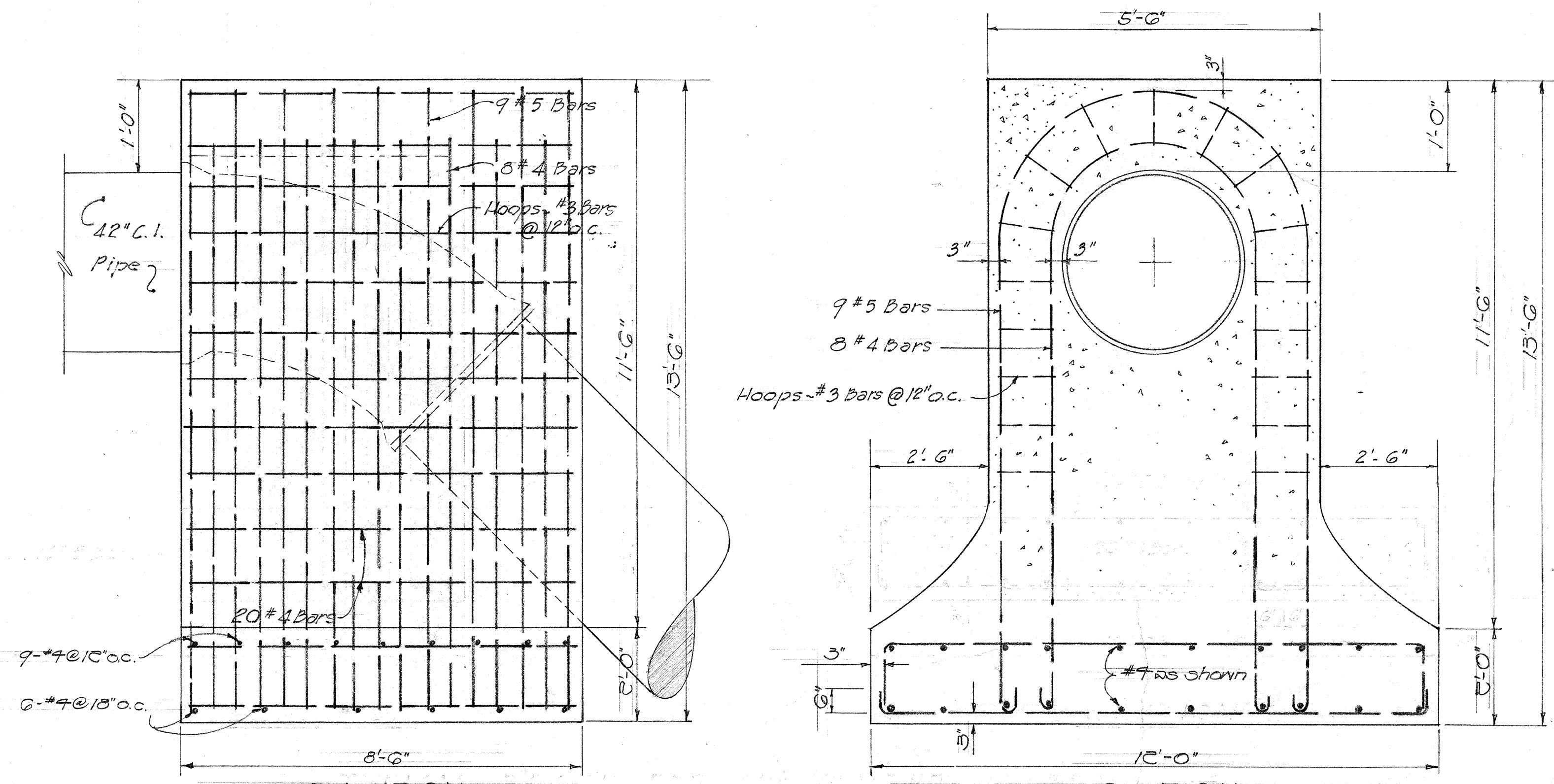
(Bends to be installed by BWS. Reaction blocks to be installed by Contractor.)



REACTION BLOCK FOR TOP VERTICAL-HORIZONTAL 69 1/8" BEND AT STA. 1+00, MIDDLE STREET
Not to scale

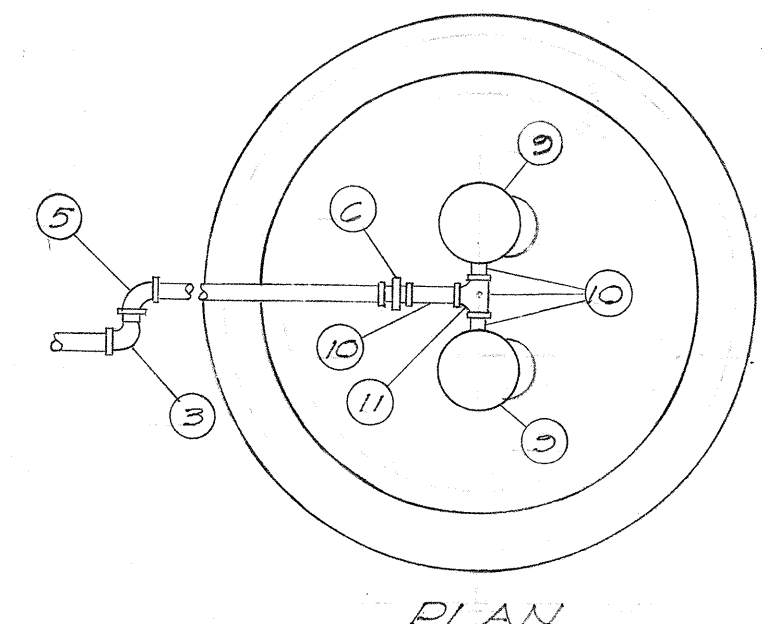


12" C.I. PIPE CONNECTION (OLA LANE OVERPASS)

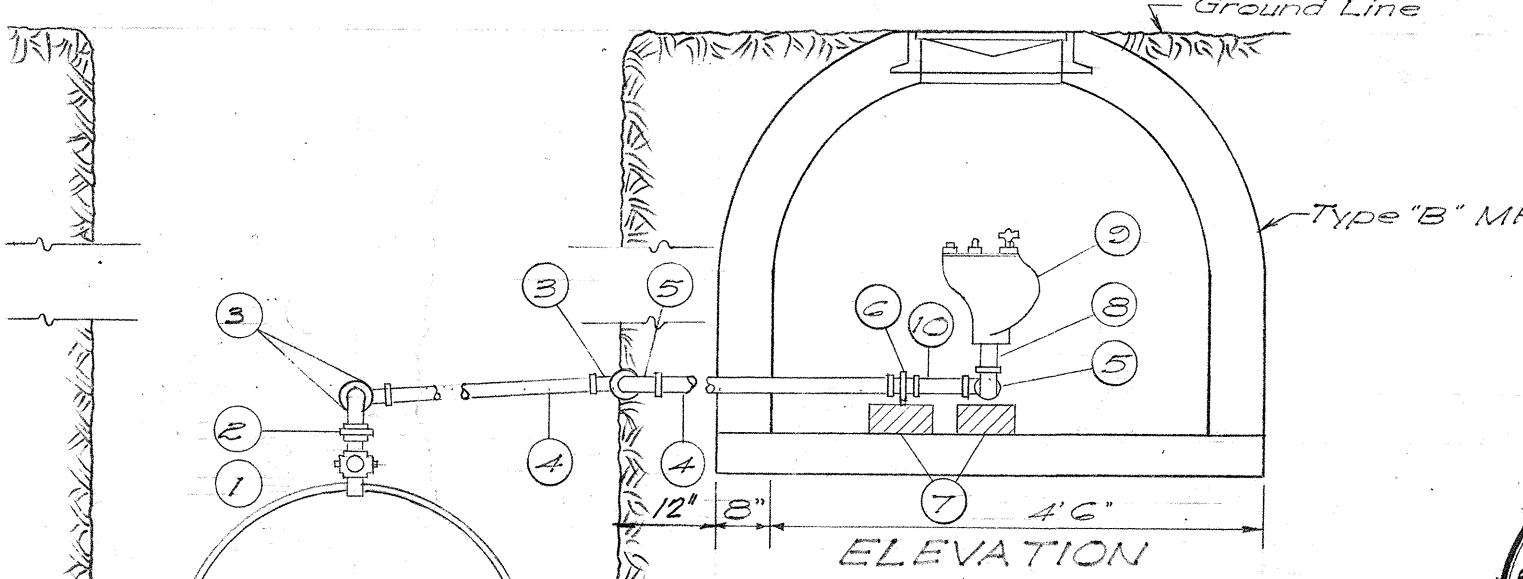


TYPICAL BLOCK FOR 72" 1/8 VERTICAL BEND

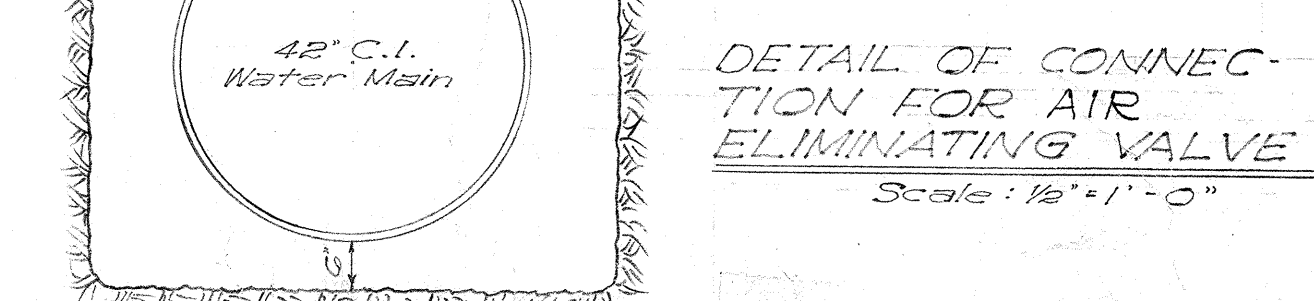
17.7 cu. yds. (Reaction block anchored in rock)
Not to scale
(Details subject to revision in field)



PLAN



ELEVATION



DETAIL OF CONNECTION FOR AIR ELIMINATING VALVE
Scale: 1/2" = 1'-0"

LIST OF MATERIALS

Item No.	Qty.	DESCRIPTION
1	1	1/2" Corporation Cock
2	1	2" Union, Galv.
3	3	2" S.T. Elbow Galv.
4	2	2" Galv. Pipe, Cut to Fit
5	3	20° Elbow, Galv.
6	1	2" 3-Way Cock, Brass
7	2	Brick Support
8	2	2" x 4" Nipple, Galv.
9	2	2" Air Elim. Valve
10	3	2x2" Nipple, Galv.
11	1	2" Tee, Galv.

ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY
DATE 8/17/59

ROBERT L. NORDLANDER
REGISTERED PROFESSIONAL ENGINEER
HAWAII, U.S.A.

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

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

SHEET NO. 3 OF 3 SHEETS

\$526.47 \$174.73 \$161.68 106