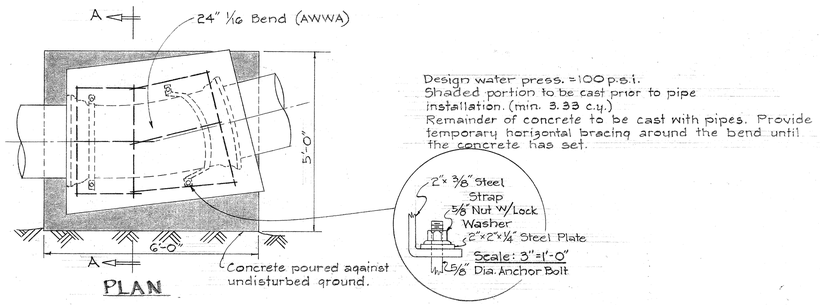
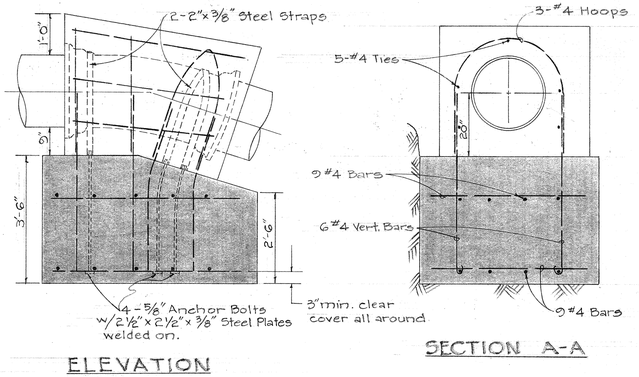
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 1	1964	22	34



PLAN

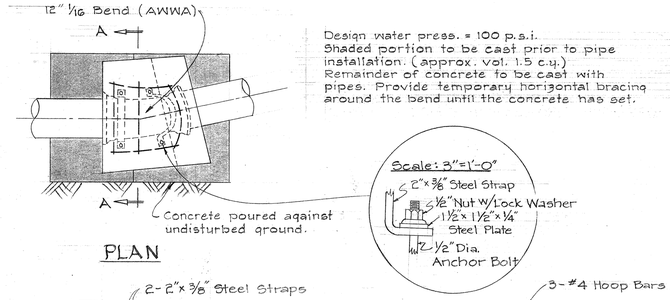


ELEVATION

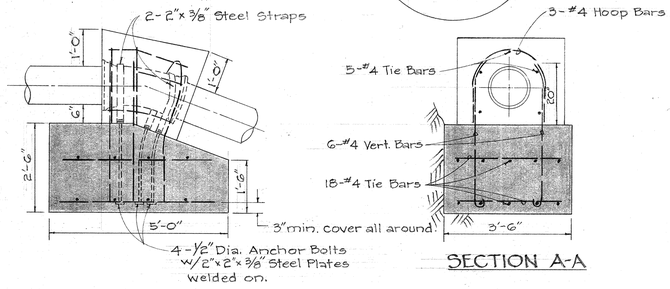
SECTION A-A

REINFORCED CONC. REACTION BLOCK
24" C.I. MAIN LOWERING
KAPAHULU AVE. ℄ STA. 18+47± TO STA. 19+05±

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



PLAN

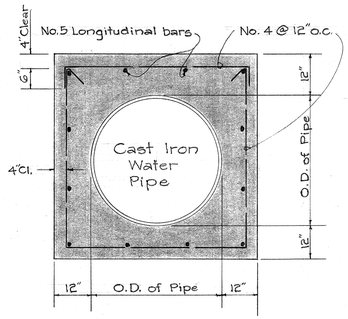


ELEVATION

SECTION A-A

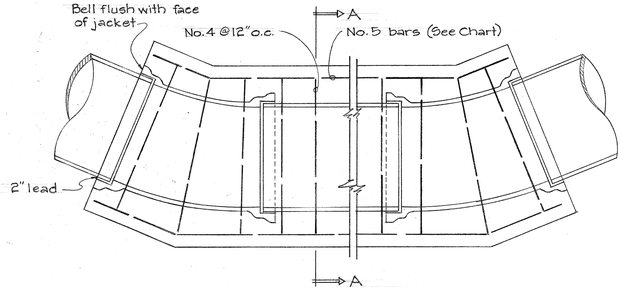
REINFORCED CONC. REACTION BLOCK
12" WATER MAIN LOWERING
KAPAHULU AVE. ℄ STA. 18+39± TO STA. 19+00±

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



I.D of Pipe	Size of Jacket	No.4 Bars	No.5 Longitudinal Bars		
			Top & Bottom	Sides	Total
24"	50"x50"	12" o.c.	10	6	16
12"	38"x38"	12" o.c.	8	4	12

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.



REINFORCED CONCRETE JACKET

UTILITIES LEGEND

---S---6---	Existing Sewer Line
——S——6——	New Sewer Line
---W---6---	Existing Water Line
——W——6——	New Water Line
---G---2---	Existing Gas Line
——G——2——	New Gas Line
--------#---	Cut existing Sewer, Water or Gas Line
+-+-+-+-+-+-	Remove Existing Sewer, Water or Gas Line
⊙SMH	Existing (Sewer, Water, Gas) Manhole
◉SMH	Existing (Sewer, Water, Gas) Manhole to be adjusted.
⊙SMH	New (Sewer, Water, Gas) Manhole
------▭WM---	Existing Water Meter
------▬WM---	New Water Meter
FH	Existing Fire Hydrant
o E.P.	Existing Elec. or Tel. pole
x T.P.	Existing Elec. or Tel. pole to be removed
——o	Existing Pole with existing Anchor
CP	Existing Pull Box or Service Box
	Existing Manhole or Handhole
--TC----TC--	Existing Telephone Cables.
--TS---TS--	Existing Conduit for Traffic Signal System
-#-A.I.B.-#-	Cut and Abandon in Place existing Sewer, Water or Gas Line

GENERAL UTILITY NOTES

1. Both the horizontal and vertical locations of existing utilities shown on these plans are based on existing records of varying degrees of accuracy and completeness and have been verified wherever possible by field surveys. (The Contractor shall verify actual location of utilities which are to be relocated or adjusted.)
2. Blasting shall not be permitted from Culvert Sta. 11+00 to 16+00 because of proximity of the B.W.S. Kaimuki Pumping Station and water transmission mains. The Contractor is also cautioned against using explosives in other areas near existing water mains without approval from the Engineer.
3. All trees, lawns, shrubbery, fences, etc., disturbed in the process of performing work on utility service lines in affected properties, shall be restored to original condition by the Contractor. Such restoration work will not be paid for separately, but shall be considered as incidental to the various contract items for the utility adjustments.
4. Existing utility lines crossing over the excavation for box culvert shall be properly supported and/or rerouted by the Contractor as directed by the Engineer to maintain continued service. Backfilling around these lines shall be performed in accordance with the applicable requirements of the Standard Specifications as modified by the Special Provisions. The Contractor shall exercise caution at all times, and any damage or disturbance to the existing facilities shall be the Contractors responsibility and shall be restored to its original condition at his own expence. All equipment, labor, materials and other incidentals necessary to support and/or reroute existing utility lines shall not be paid for seperately but shall be considered as incidental to the excavation for box culvert.

GENERAL WATER NOTES

1. The Contractor shall notify the Board of Water Supply in writing one week prior to commencing work on the water system.
2. Asterisk (*) indicates work to be performed by B.W.S. Materials to be furnished by the Contractor unless specified as "Reuse".
3. All excavation and backfill for water utility adjustment work, including meter to house connections, shall be done by the Contractor.
4. Prior to trench excavation for relocated mains, the Contractor shall expose existing mains at connections to the relocated mains to verify the locations and depths. Excavation around existing pipes shall be performed by hand.
5. Existing water mains replaced by relocated mains shall be abandoned, and where removal of abandoned pipe is not necessary, the open pipe ends shall be plugged with Class "C-1" concrete. Costs for removing or plugging abandoned pipes shall be considered incidental to pipe trench excavation.
6. Steel straps and plates, anchor bolts, nuts and other appurtenances for the concrete reaction blocks shall be abandoned, and where removal of abandoned pipe is not necessary, the open pipe ends shall be plugged with Class "C-1" concrete. Costs for removing or plugging abandoned pipes shall be considered incidental to pipe trench excavation.
7. All corporation stops furnished by the Contractor shall be tapped and installed by the Board of Water Supply.
8. Conc. in reaction and test blocks and reinf. conc. jacket shall be Class "B-1".

GENERAL SEWER NOTES

1. If laterals other than those shown on the plans are exposed during construction, the same shall be cut, plugged, or extended and reconnected as required.
2. When existing sewer mains are to be abandoned or removed, the Contractor shall reconnect any lateral presently in use to the new sewer main if continued service is required.
3. Concrete blocks and cradles shall be placed for all sewer mains and laterals.
4. The 6-inch V.C. sewer line from Sewer Manhole No. 3 to Sewer Manhole No. 5 (exclude Sewer Manhole No. 3 and include Sewer Manhole No. 5) shall be considered as private sewer line and shall be paid for under house sewer connection.
5. Concrete for concrete blocks and concrete cradles shall be Class "C-1" and for reinforced concrete jackets and manholes, Class "B-1".

GENERAL TELEPHONE AND ELECTRIC NOTES

1. Should existing electric poles be encountered in the box culvert excavation area, the Contractor shall provide temporary supports, as directed by the Engineer. Temporary support of electric poles will not be paid for directly but shall be considered as incidental to excavation for the box culvert.

GENERAL GAS NOTES

1. For the cutting and plugging of existing gas utility lines, the Contractor shall contact the Honolulu Gas Company.

APPROVED:

PRINCPL. ELECTRICAL ENG'R., H.E. Co., Inc.	DATE
PRINCPL. DISTRIBUTION ENG'R., H.E. Co., Inc.	8-18-64 DATE
OUTSIDE PLANT ENGINEER, H.T. Co., Ltd.	8-18-64 DATE
ASSISTANT CHIEF ENGINEER B.W.S.	8/10/64 DATE
SEWER SYSTEM DIRECTOR DIV. OF SEWERS	8/6/64 DATE
PLAN'G ENGR. & OAHU DISTR. MGR. HONOLULU GAS COMPANY, LTD.	8-11-64 DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SPECIAL DETAIL FOR UTILITIES

REACTION BLOCK, CONC. JACKET, LEGEND AND NOTES

INTERSTATE HIGHWAY
Proj. No. I-HI-1(5):24 Unit 1

Scale: As Noted Date: April, 1964

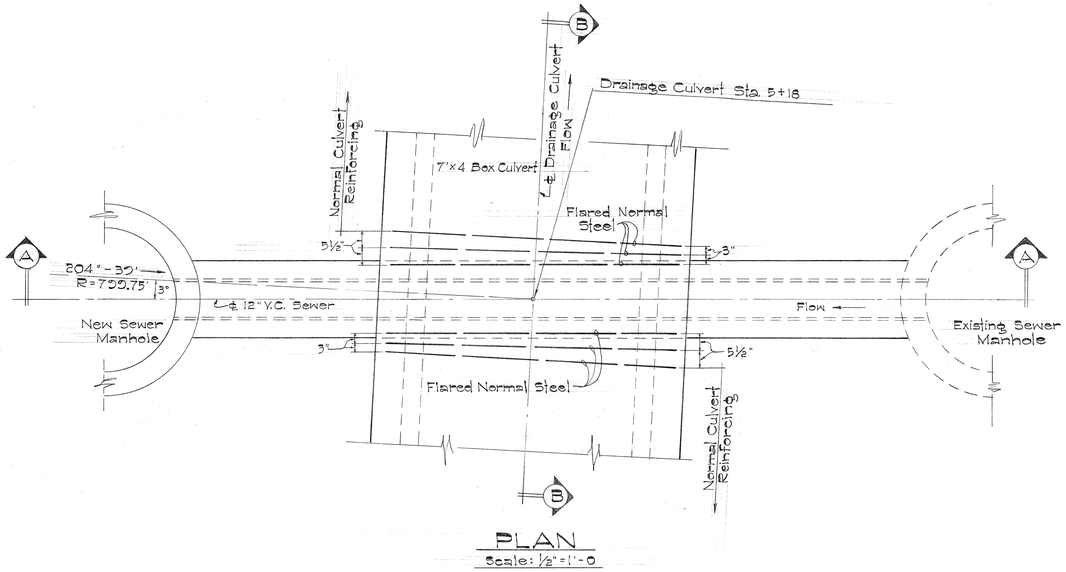
SHEET No. 1 OF 4 SHEETS

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

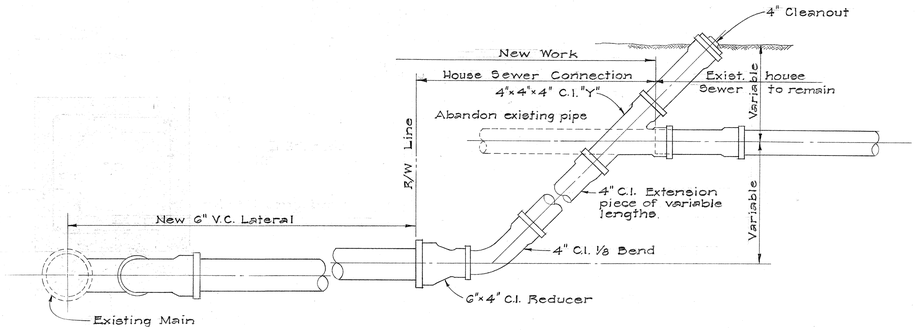
PRINTED ON CLEARPRINT 1000-H

22

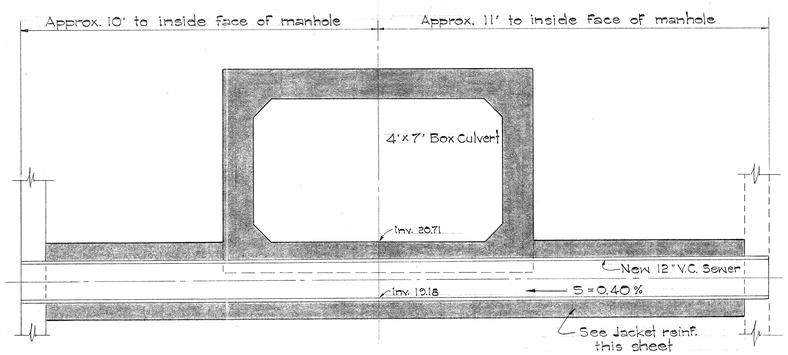
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 1	1964	2.3	34



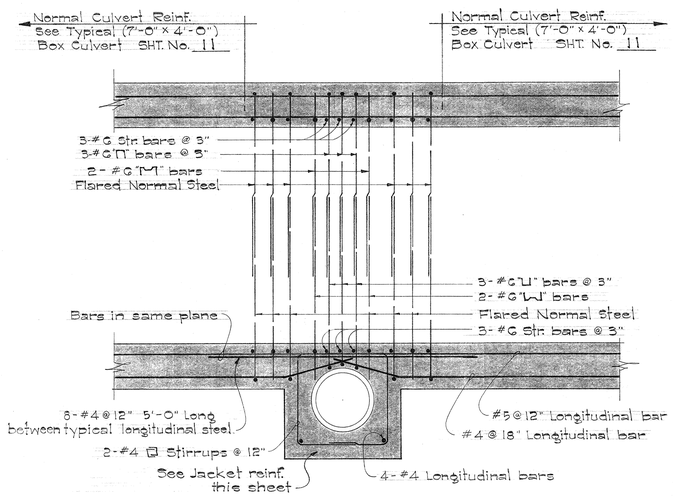
PLAN
Scale: ½"=1'-0



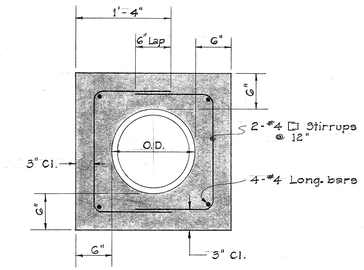
TYPICAL DETAIL OF HOUSE SEWER CONNECTION
Scale: ¾"=1'-0"



SECTION "A-A"
Scale: ½"=1'-0"



SECTION "B-B"
Scale: ¾"=1'-0"



DETAIL OF CONCRETE JACKET FOR 12" V.C. SEWER
SCALE: 1"=1'-0"

NOTE:
Concrete Jacket for 12" Sewer Line to be formed and cast with concrete box culvert.

DETAILS OF CONCRETE BOX CULVERT CROSSING OVER NEW 12" V.C. SEWER AT CULVERT STATION 5+18

Scale: As shown

APPROVED:

R. Arita — SEWER SYSTEM DIRECTOR — DIV. OF SEWERS — 8/6/64 — DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SPECIAL DETAIL FOR UTILITIES
CULVERT CROSSING OVER SEWER LINE & TYPICAL HOUSE SEWER CONNECTION
INTERSTATE HIGHWAY
Proj. No. I-HI-1(5):24 Unit 1

Scale: As Noted — Date: April, 1964

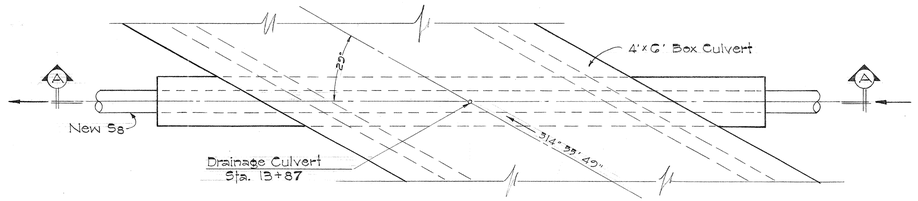
SHEET No. 2 OF 4 SHEETS

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

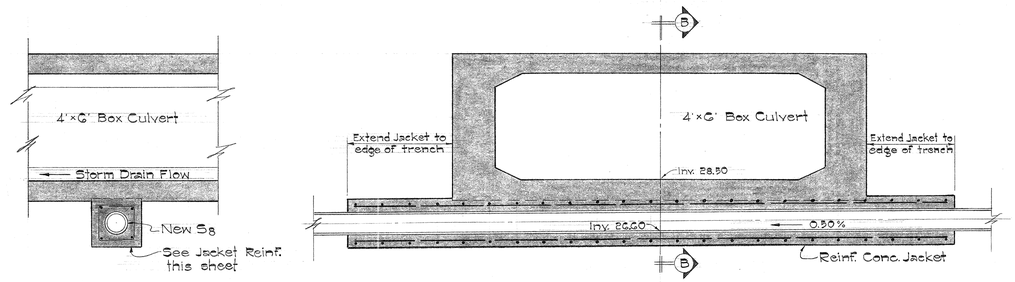
PRINTED ON CLEARPRINT 1000-H

23

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 1	1964	24	34



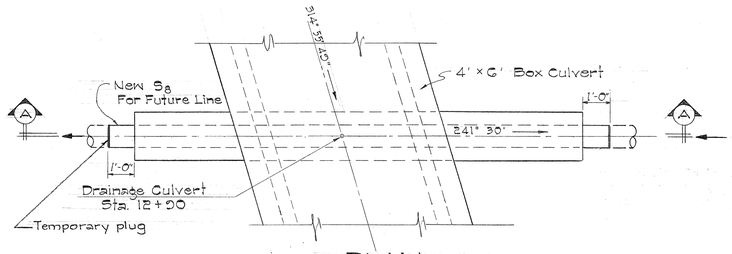
PLAN



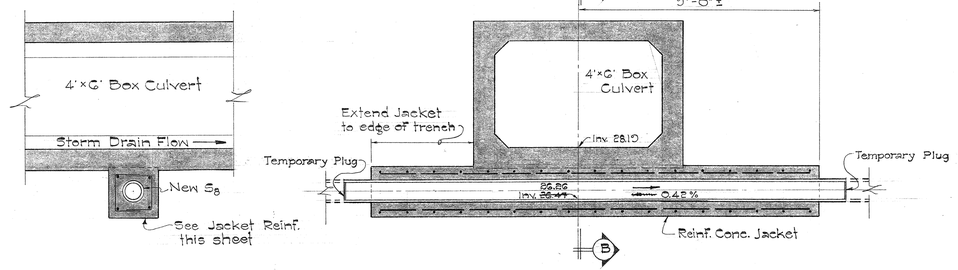
SECTION "B-B" SECTION "A-A"

DETAILS OF NEW 8" V.C. SEWER TO BE INSTALLED UNDER CONCRETE BOX CULVERT AT CULVERT STATION 13+87

Scale: 3/8" = 1'-0"



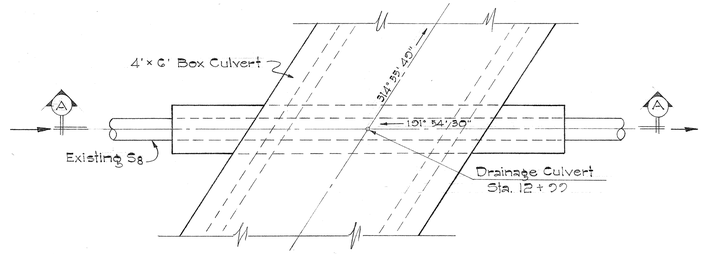
PLAN



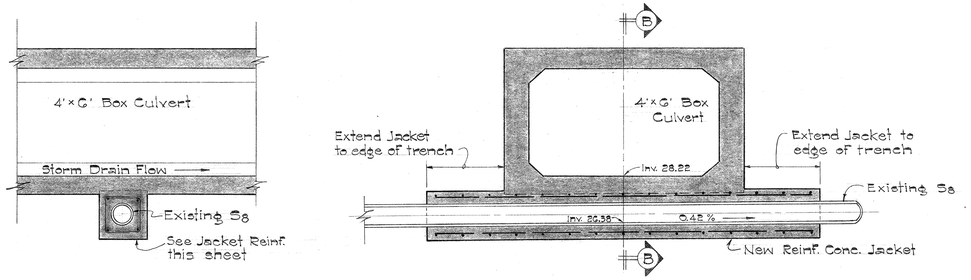
SECTION "B-B" SECTION "A-A"

DETAILS OF NEW 8" V.C. SEWER TO BE INSTALLED UNDER CONCRETE BOX CULVERT AT CULVERT STATION 12+90

Scale: 3/8" = 1'-0"



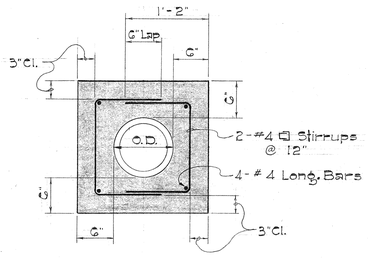
PLAN



SECTION "B-B" SECTION "A-A"

DETAILS OF CONCRETE BOX CULVERT CROSSING OVER EXISTING 8" V.C. SEWER AT CULVERT STATION 12+90

Scale: 3/8" = 1'-0



DETAIL OF CONCRETE JACKET FOR 8" V.C. SEWER

SCALE: 1"=1'-0"

NOTE:

Concrete Jackets for 8" Sewer Lines to be formed and cast with conc. Box Culvert. For culvert reinforcing, See Typical on Sht. No. 11.

APPROVED:

SEWER SYSTEM DIRECTOR — DIV. OF SEWERS — 8/6/64 DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SPECIAL DETAIL FOR UTILITIES

CULVERT CROSSING OVER SEWER LINE

INTERSTATE HIGHWAY
Proj. No. I-HI-1(5):24 Unit 1

Scale: As Noted Date: April, 1964

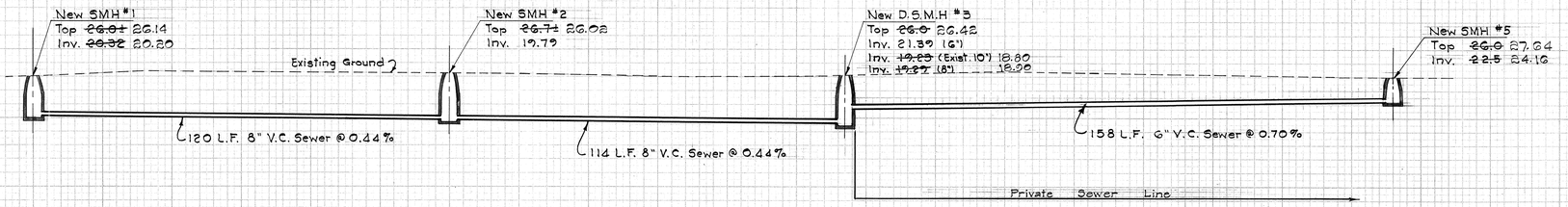
SHEET No. 3 OF 4 SHEETS

24

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

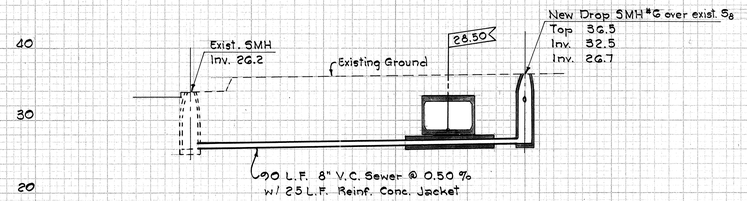
PRINTED ON CLEARPRINT 1000-H

FED. ROAD DIST. No.	STATE	PROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5)24 Unit 1	1964	25	34



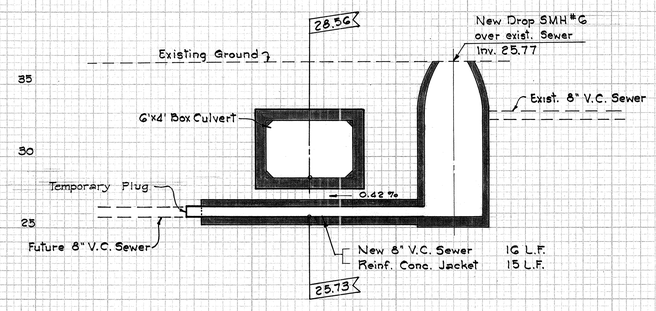
SEWER PROFILE "S-1"

Scale: Hor. 1" = 20'-0"
Ver. 1" = 10'-0"



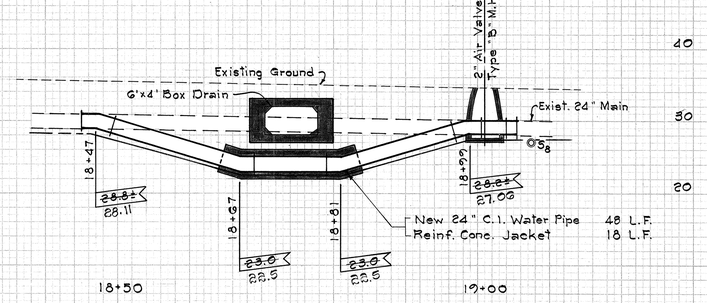
SEWER PROFILE "S-2"

Scale: Hor. 1" = 20'-0"
Ver. 1" = 10'-0"



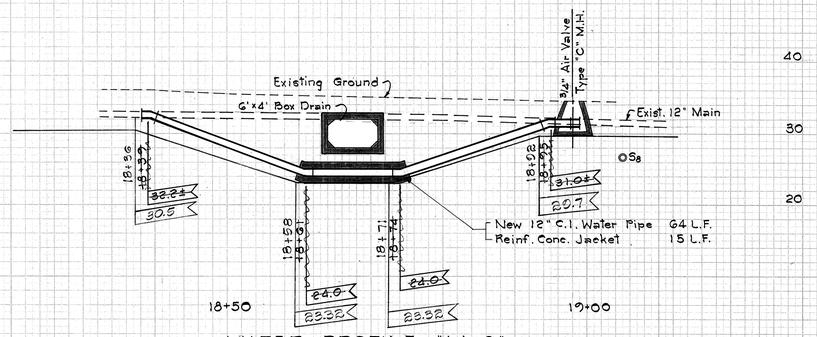
SEWER PROFILE "S-3"

Scale: Hor. 1" = 5'-0"
Ver. 1" = 5'-0"



WATER PROFILE "W-1"

Scale: Hor. 1" = 10'-0"
Ver. 1" = 10'-0"



WATER PROFILE "W-2"

Scale: Hor. 1" = 10'-0"
Ver. 1" = 10'-0"

APPROVED:

J. Kawakami — ASSISTANT CHIEF ENGINEER B.W.S. — 8/10/64 DATE

F. Doud — SEWER SYSTEM DIRECTOR DIV. OF SEWERS — 8/10/64 DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SPECIAL DETAIL FOR UTILITIES

SEWER AND WATER PROFILES

INTERSTATE HIGHWAY
Proj No. I-H1-1(5):24 Unit 1

Scale: As Noted Date: April, 1964

SHEET No. 4 OF 4 SHEETS

25

FINAL SURVEY — ORIGINAL SURVEY
SURVEYED / PLOTTED / TEMPLATE / AREAS / AREAS CHECKED
NOTE BOOK / NO. / BY / DATE

PLATE 3—CROSS SECTION O. P. R. & R. E. STANDARD
J. H. WEIL CO., PHILADELPHIA.

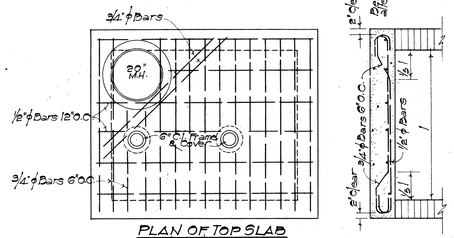
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	I-HI-1(5)-24 Unit 1	1964	26	34

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

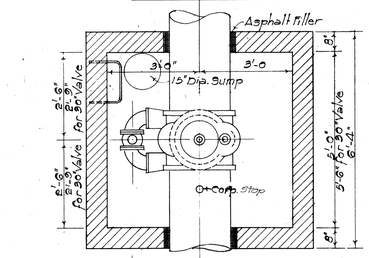
STANDARD LENGTHS FOR HYDRANT ELBOWS
30"
36"
42"
48"

STANDARD HYDRANT EXTENSIONS ARE AVAILABLE IN THE FOLLOWING LENGTHS:

6 to 30 inches long in increments of 6 in.

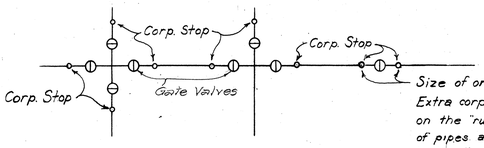


PLAN OF TOP SLAB



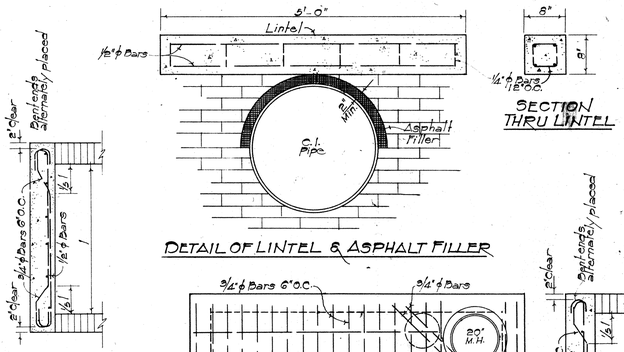
SECTION

TYPE "A" MANHOLE
FOR SPUR GEARED GATE VALVES



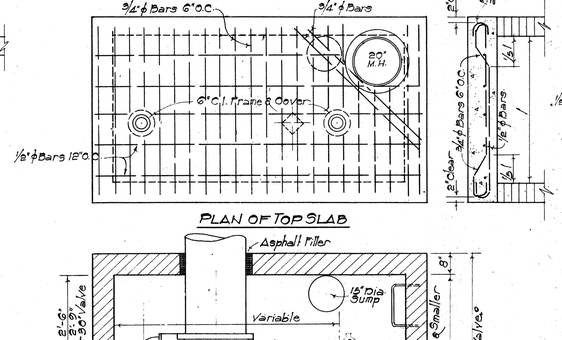
CORP STOP LAYOUT

Size of one Corp. stop given in Table "A". Extra corp. stop required at valves located on the "run" shall be 1" x 1¼" for all sizes of pipes and shall be installed as directed by the Engineer.

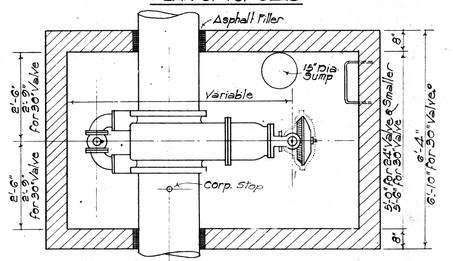


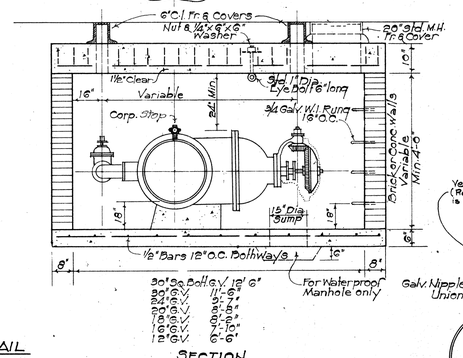
SECTION THRU LINTEL

DETAIL OF LINTEL & ASPHALT FILLER



PLAN OF TOP SLAB

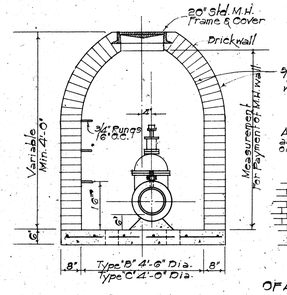




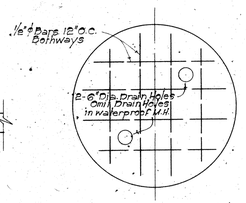
SECTION

TYPE "A" MANHOLE
FOR BEVEL GEARED GATE VALVES

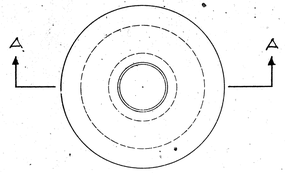
BAR BENDING DETAIL



SECTION A-A

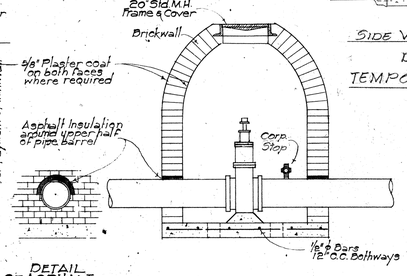


STEEL DETAIL IN BOTTOM SLAB

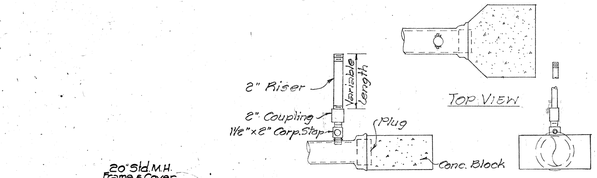


PLAN
TYPE "B" & "C" MANHOLES

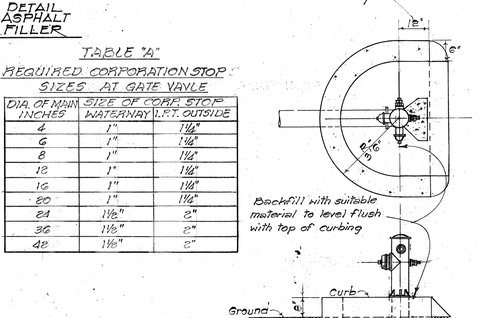
TYPE "B" 4'-6" DIA. (FOR 12' G.V.)
TYPE "C" 4'-0" DIA. (FOR 6', 8' G.V.)

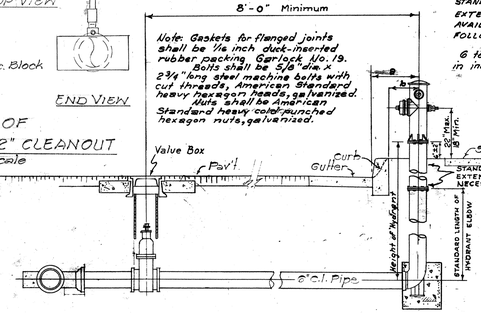


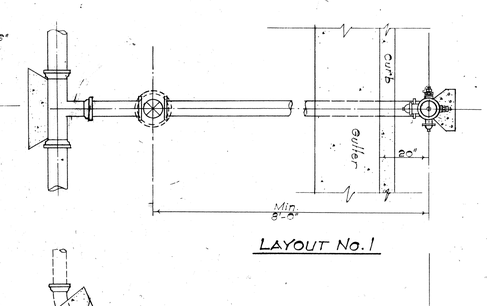
DETAIL OF ASPHALT FILLER



DETAIL OF TEMPORARY 2" CLEANOUT
Not to Scale

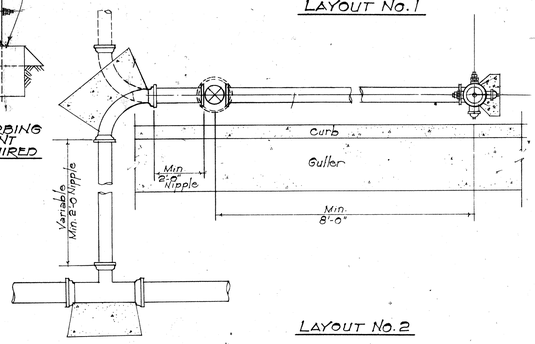






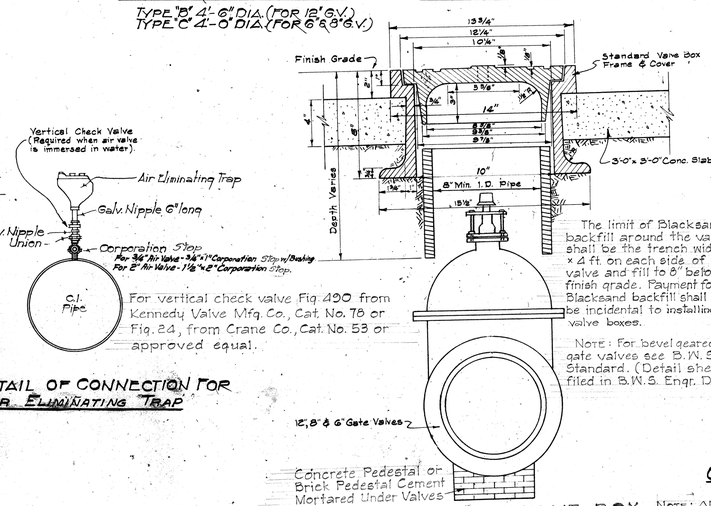
LAYOUT No. 1

DETAIL OF CURBING AT HYDRANT WHERE REQUIRED



LAYOUT No. 2

DETAIL OF RUNG



INSTALLATION OF VALVE BOX
FOR GATE VALVES
Not to Scale

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 installing valve boxes.

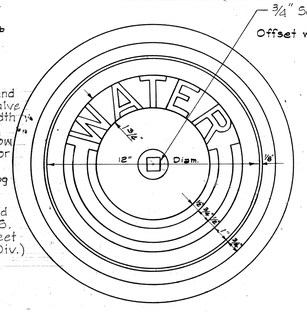
NOTE: For bevel geared gate valves see B.W.S. Standard. (Detail sheet filed in B.W.S. Engr. Div.)

For vertical check valve Fig. 490 from Kennedy Valve Mfg. Co., Cat. No. 78 or Fig. 24, from Crane Co., Cat. No. 53 or approved equal.

DETAIL OF CONNECTION FOR AIR ELIMINATING TRAP

TABLE "A"
REQUIRED CORPORATION STOP SIZES AT GATE VALVE

DIA. OF MAIN INCHES	SIZE OF CORP. STOP WATERWAY	I.P.T. OUTSIDE
4	1"	1¼"
6	1"	1¼"
8	1"	1¼"
12	1"	1¼"
16	1"	1¼"
20	1"	1¼"
24	1½"	2"
36	1½"	2"
48	1½"	2"



STANDARD FIRE HYDRANT LAYOUT

CAST IRON FRAME & COVER

Scale: ½" = 1"

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 B.W.S.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

INTERSTATE HIGHWAY
PROJ. No. I-HI-1(5): 24 UNIT 1

Revised: June 20, 1962
Revised: Mar. 3, 1962

STANDARD DETAILS

DRAWN BY: D.A.
TRACED BY: P.H.
CHECKED BY: S.K.
ENGINEER: W.S.F.
DRAWING NO. 1367

APPROVED _____ MANAGER & CHIEF ENGINEER

FILE

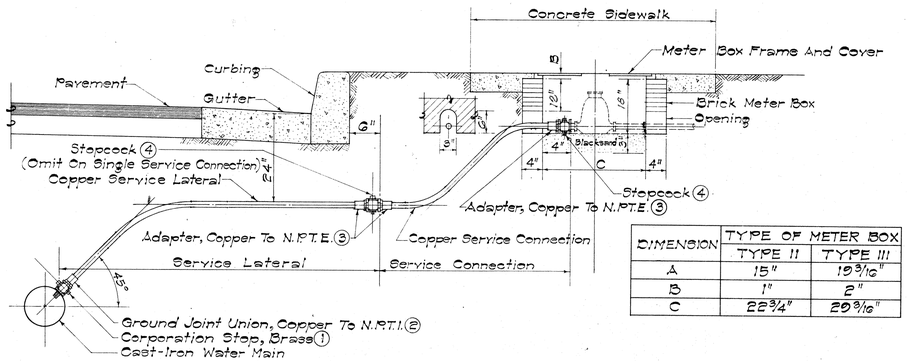
SCALE: AS SHOWN	DATE: 1-5-58	POCKET	FOLDER	NO.
		18	2	16

BOARD OF WATER SUPPLY
Honolulu, T.H.

SHEET 1 OF 5 SHEETS

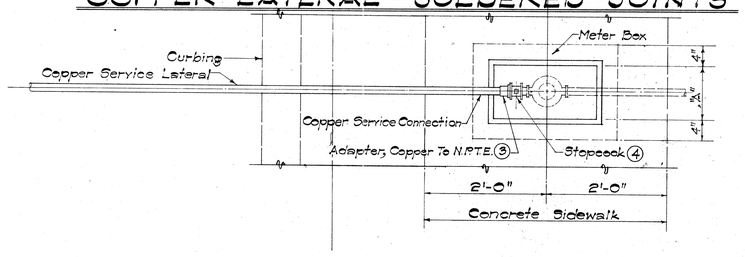
26

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	I-HI-1(5)24 Unit 1	1964	27	34

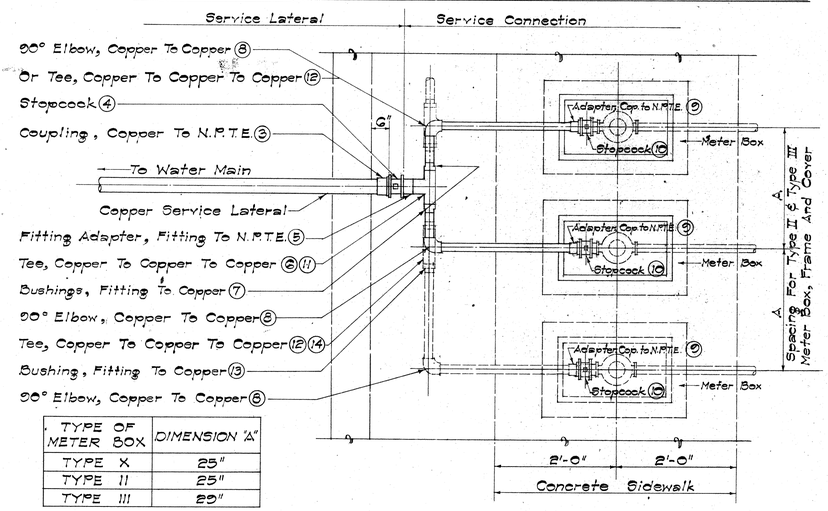


DIMENSION	TYPE OF METER BOX	
	TYPE II	TYPE III
A	15"	19 3/16"
B	1"	2"
C	22 3/4"	20 3/16"

LONGITUDINAL SECTION
COPPER LATERAL - SOLDERED JOINTS

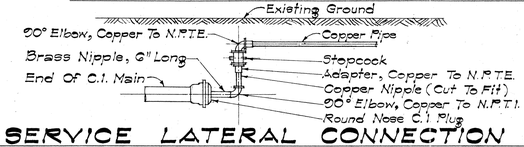


SINGLE SERVICE CONNECTION
COPPER LATERAL - SOLDERED JOINTS

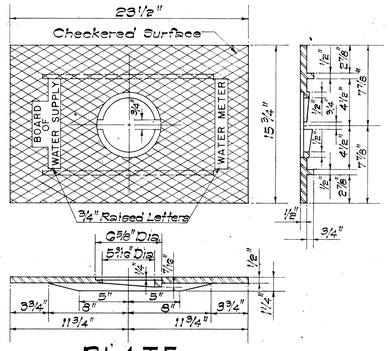


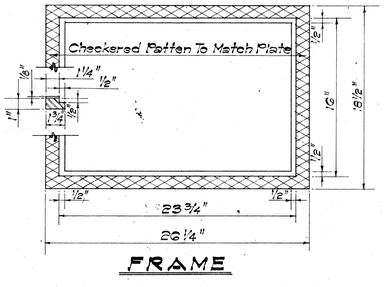
TYPE OF METER BOX	DIMENSION "A"
TYPE X	25"
TYPE II	25"
TYPE III	29"

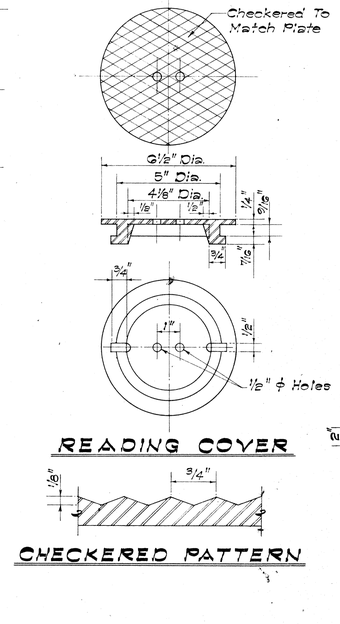
MULTIPLE SERVICE CONNECTION
COPPER LATERAL - SOLDERED JOINTS

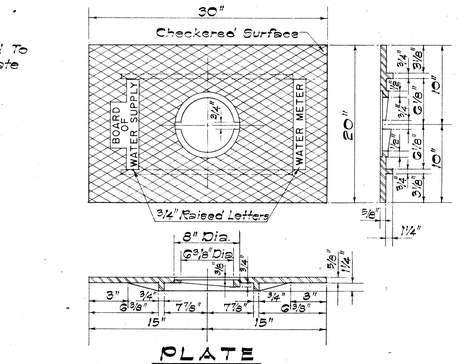


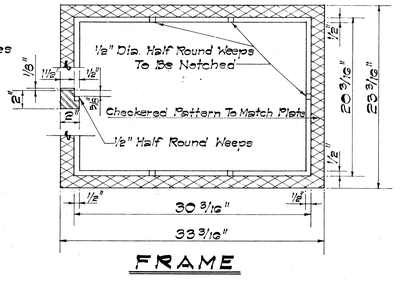
SERVICE LATERAL CONNECTION AT END OF LINE
COPPER LATERAL - SOLDERED JOINTS

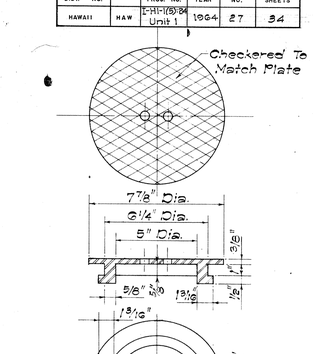










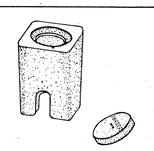


TYPE II METER BOX
CAST-IRON FRAME, PLATE & COVER

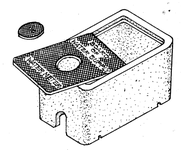
TYPE III METER BOX
CAST-IRON FRAME, PLATE & COVER

ITEM NO.	DESCRIPTION	SINGLE SERVICE CONN.	MULTIPLE SERVICE CONNECTION TWO SERVICES	MULTIPLE SERVICE CONNECTION THREE SERVICES
1	Corporation Stop, Brass	1	1	1
2	Ground Joint Union, Copper To N.P.T.E.	1	1	1
3	Adapter, Copper To N.P.T.E.	2	1	1
4	Stopcock, (B.W.S. Standard)	1	1	1
5	Fitting Adapter, Fitting To N.P.T.E.	—	1	1
6	Tee, Copper To Copper To Copper	—	1	1
7	Bushings, Fitting To Copper	—	2	2
8	90° Elbow, Copper To Copper	—	2	2
9	Adapter, Copper To N.P.T.E.	1	2	3
10	Stopcock, (B.W.S. Standard)	1	2	3
11	Reducing Tee, Copper To Copper To Copper (Substitute For Items Nos. 6 & 7)	—	1	1
12	Tee, Copper To Copper To Copper	—	—	1
13	Bushings, Fitting To Copper	—	—	1
14	Reducing Tee, Copper To Copper To Copper (Substitute For Items Nos. 12 & 13)	—	—	1

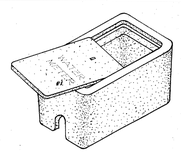
SCHEDULE OF COPPER FITTINGS



TYPE "A" CONCRETE BOX



TYPE "X" METER BOX

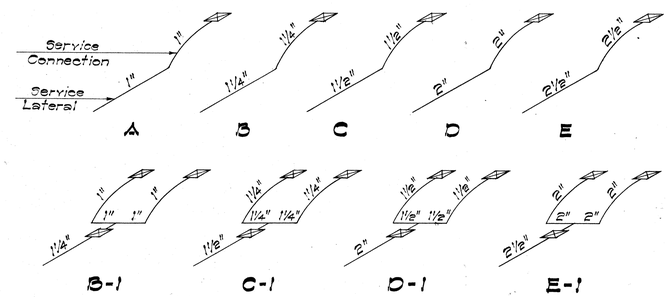


TYPE "B" METER BOX

CAST-IRON COVER

METER BOX DATA

TYPE OF METER BOX	METER SIZES	OVERALL DIM. AT BOTTOM	OVERALL DIM. AT TOP	COMPLETE WEIGHT	OVERALL DIM. OF LID
A	5/8" OR 3/4" WITHOUT VALVE	7 1/4" x 7 1/4"	10" x 10"	45 LBS.	7 5/16" 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"
X		14 1/2" x 23 1/2"	16" x 25"	143 LBS.	13 1/8" x 22 1/8"



TYPICAL LAYOUT OF
SERVICE LATERAL AND CONNECTION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

INTERSTATE HIGHWAY
PROJ. No. I-HI-1(5):24 UNIT 1

Date: April 1, 1964

STANDARD DETAILS

COPPER SERVICE LATERALS AND CONNECTIONS
C.I. METER BOX FRAMES AND COVERS

SURVEYED BY:	
DRAWN BY:	K.L.
TRACED BY:	K.L.
ENGINEER:	T.T.
CHECKED BY:	J.N.

APPROVED: _____ MANAGER & CHIEF ENGINEER

FILE		
POCKET	FOLDER	NO.

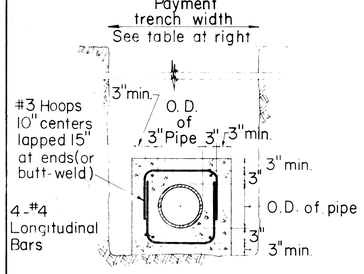
SCALE: NO SCALE | DATE: AUGUST 8, 1963

BOARD OF WATER SUPPLY
HONOLULU, HAWAII

SHEET 2 OF 3 SHEETS | FIELD BOOK NO.

27

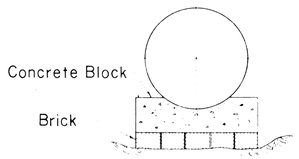
FED AID DIST. NO.	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(8)24 Unit 1	1964	28	34



DETAIL OF CONCRETE JACKET

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

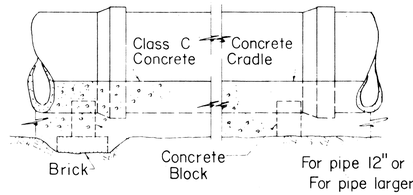
NOTE:
Payment width of cradle shall be payment trench width.



METHOD OF USING BRICKS UNDER CONCRETE BLOCKS

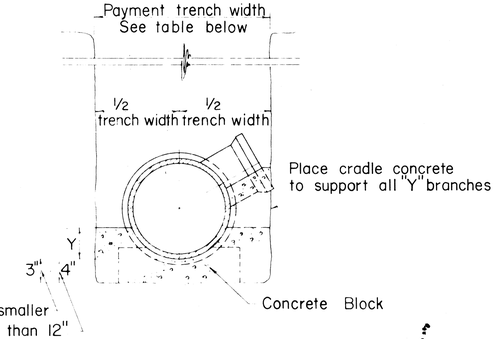
Not To Scale

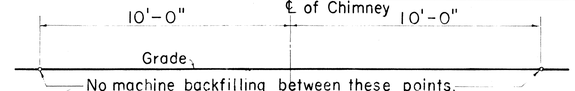
Contractor shall set Concrete Blocks on undisturbed ground. Where ground is too low, the contractor shall not heap up dirt under the Concrete Block but use Concrete Bricks to take up the deficiency, scraping away beneath Concrete Block to give sufficient room for Brick.



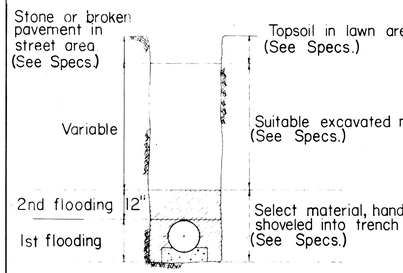
ELEVATION SHOWING METHOD OF LAYING PIPE

Not To Scale



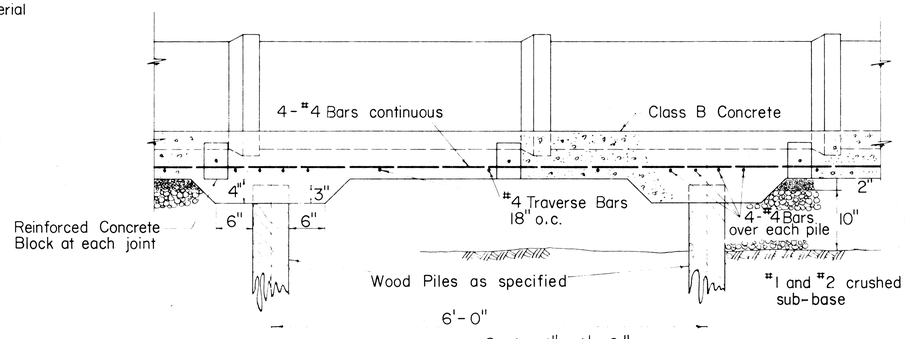


No machine backfilling between these points. Backfilling to be brought up evenly on each side of chimney by hand shoveling.

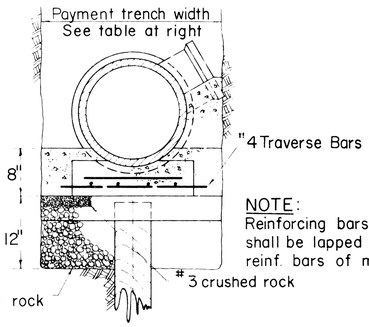


METHOD OF BACKFILL

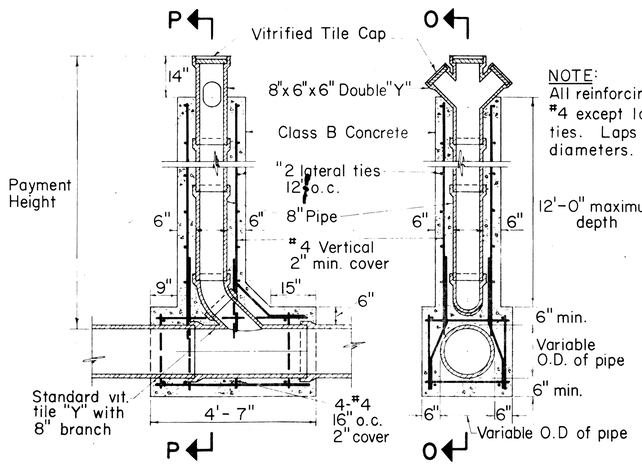
Not To Scale



Scale: 1" = 1'-0"



NOTE:
Reinforcing bars of laterals shall be lapped 40 dia. to reinf. bars of mains.



NOTE:
All reinforcing rods #4 except lateral ties. Laps 40 diameters.

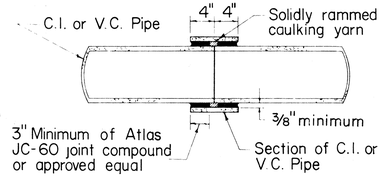
SECTION O-O

SECTION P-P

DETAILS OF CHIMNEY

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

Payment quantities for trench excavation, crushed rock fill, crushed rock cradle, and crushed rock sub-base shall be computed using payment trench widths as shown in the table of "Trench Widths". No payment shall be made for excess quantities resulting from trench widths greater than the payment trench widths shown.

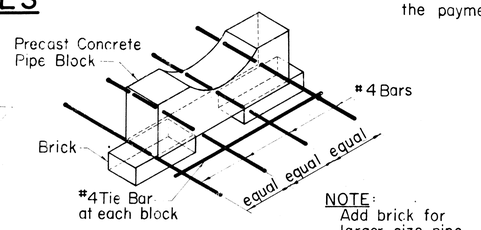


BUTT JOINT DETAIL

Scale: 1" = 1'-0"

DETAIL OF REINFORCED CONCRETE CRADLE ON WOOD PILES (FOR 6, 8, 10 & 12 IN. V.C. PIPE)

DETAIL OF REINFORCED CONCRETE CRADLE WITHOUT PILES SIMILAR EXCEPT FOR WOOD PILES AND PILE CAPS



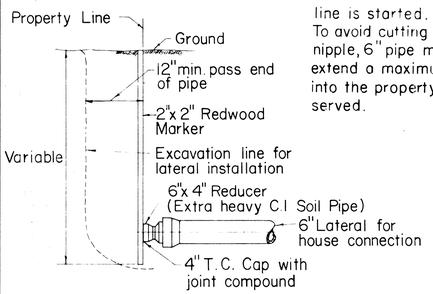
NOTE:
Add brick for larger size pipe

Not To Scale

ALTERNATE DETAIL OF CONC. PIPE BLOCK FOR REINF. CRADLE

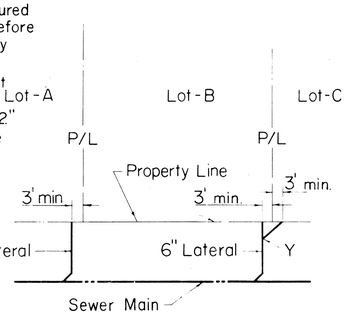
TRENCH WIDTHS	
PIPE SIZE	PAY. WIDTH
6"	24"
8"	24"
10"	24"
12"	30"
15"	30"
18"	36"
21"	36"
24"	45"
27"	45"
30"	50"

DIM. OF CONC. CRADLE		
PIPE SIZE	"Y"	WIDTH
6"	3"	24"
8"	3"	24"
10"	3"	24"
12"	3"	30"
15"	4"	30"
18"	5"	36"
21"	5"	36"
24"	6"	45"
27"	7"	45"
30"	7"	50"



NOTE: Permission is to be secured from property owner before construction at property line is started. To avoid cutting of short nipple, 6" pipe may extend a maximum of 12" into the property to be served.

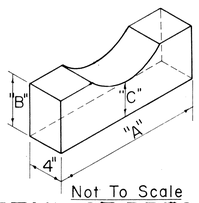
DETAIL AT PROPERTY LINE



LAYOUT

CONSTRUCTION OF LATERAL

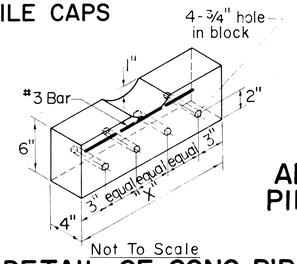
Not To Scale



Not To Scale

DETAIL OF PRECAST CONC. PIPE BLOCK

CONCRETE BLOCK DIMENSIONS			
PIPE SIZE	"A"	"B"	"C"
6"	1'-2"	6"	3"
8"	1'-5"	6"	3"
10"	1'-7"	6"	3"
12"	1'-7"	6"	3"
15"	1'-8"	6"	4"
18"	1'-9"	6"	4"
21"	1'-10"	6"	4"
24"	1'-11"	6"	4"
27"	2'-0"	6"	4"
30"	2'-3"	6"	4"



Not To Scale

DETAIL OF CONC. PIPE BLOCK FOR REINF. CRADLE

DIM. OF REINF. CONC. BLOCK	
PIPE SIZE	"X"
6"	1'-6"
8"	1'-6"
10"	1'-8"
12"	1'-8"
15"	1'-10"
18"	1'-10"
21"	1'-10"
24"	2'-0"
27"	2'-0"
30"	2'-0"

APPROVED:

Edwin 8/6/64

SEWER SYSTEM DIRECTOR, DIVISION OF SEWERS — DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DIVISION OF SEWERS
CITY & COUNTY OF HONOLULU

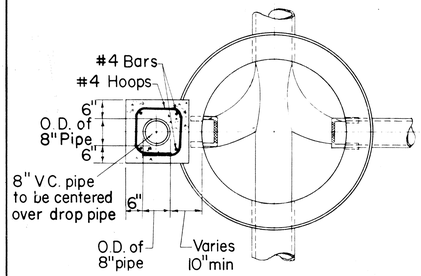
STANDARD DETAILS

SEWERS - CONCRETE JACKET & MISCELLANEOUS DETAILS

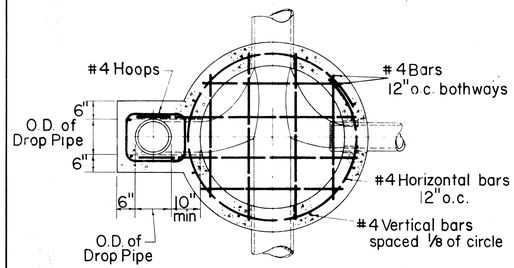
Scales: As Noted — Date

SHEET NO. 3 OF 5 SHEETS

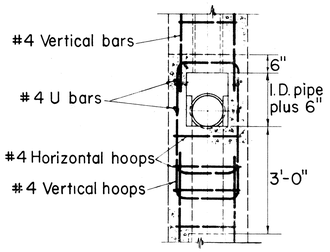
FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-(9):24 Unit 1	1964	29	34



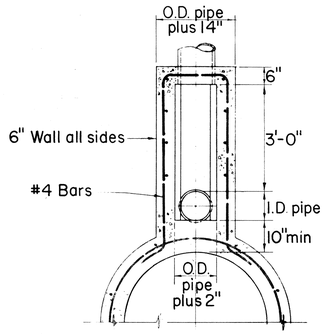
SECTION A-A



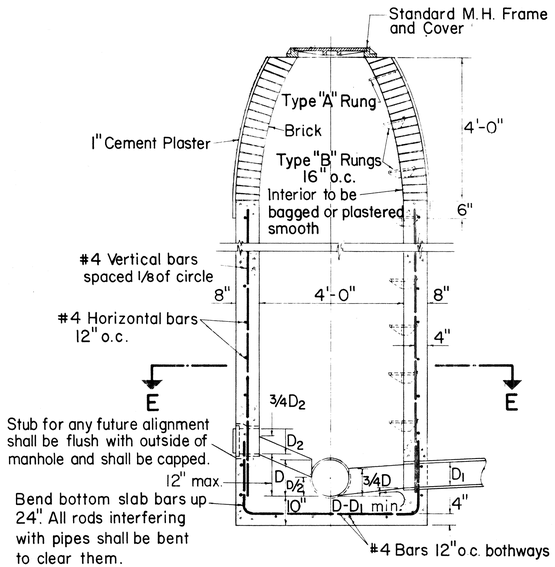
SECTION B-B



SECTION C-C

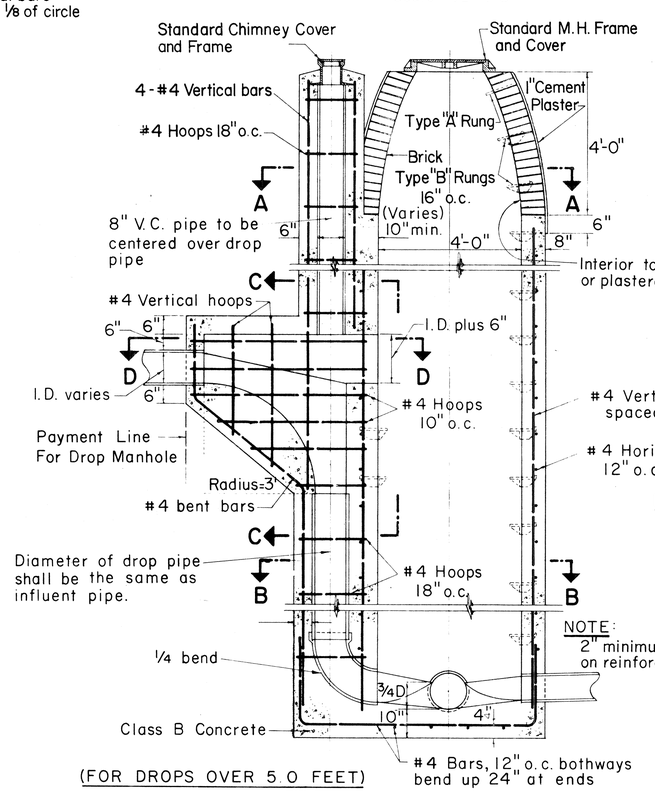


SECTION D-D



PLAIN MANHOLE

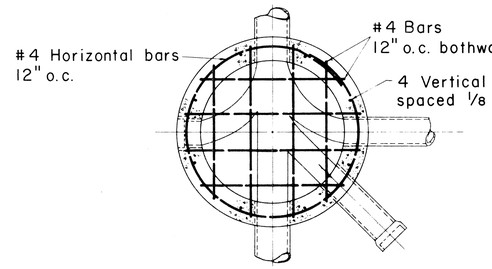
Scale: ½"=1'-0"



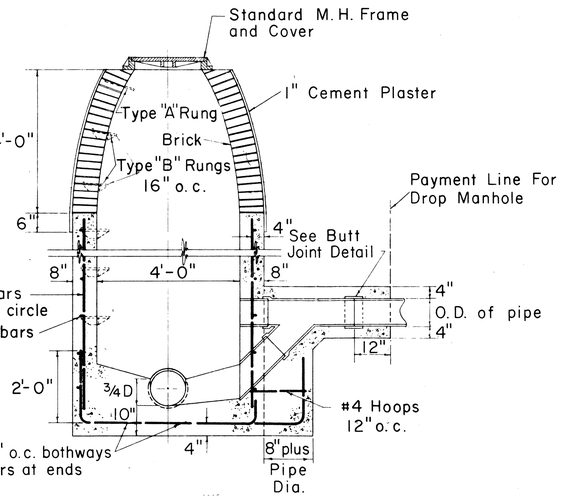
(FOR DROPS OVER 5.0 FEET)

DROP MANHOLE

Scale: ½"=1'-0"



SECTION E-E



(FOR DROPS UNDER 5.0 FEET)

SHALLOW DROP MANHOLE

Scale: ½"=1'-0"

NOTE:

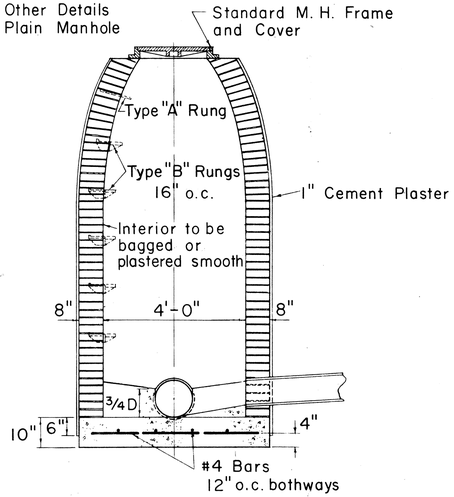
1. Manhole rungs shall not be aligned above any flow line.
2. No rungs shall be installed in manholes less than 3' high.
3. When not otherwise noted, manhole stubs shall be sloped as follows:

Pipe Size	Rise Per Foot
6"	1/8"
8"	3/32"
10"	1/16"
12"	1/16"

4. All reinforcing rods interfering with pipes shall be bent to clear them.
5. Bar laps to be 40 diameters in length.
6. Data for special manholes not shown shall be similar to that for plain manholes.
7. Size of drop pipe in all Drop Manholes shall be same as influent line.
8. Manhole wall to be of reinforced concrete to height 1' above normal ground water table.

NOTE:

For Other Details See Plain Manhole



(MAXIMUM HEIGHT - 10.0 FEET)

BRICK MANHOLE

Scale: ½"=1'-0"

Payment for excavation for manholes shall be made under unit price for trench excavation and shall be measured to one foot outside of walls from original ground elevation to authorized bottom elevation.

Payment for manhole walls (brick, precast concrete or cast-in-place concrete) shall include brick, precast concrete pipe sections, mortar, concrete, reinforcing steel, cast-iron steps, galvanized wrought iron rungs, and plastering.

Payment for manhole bases shall include concrete, reinforcing steel, and the construction of inverts.

APPROVED:

D. Mora — 8/6/64

SEWER SYSTEM DIRECTOR, DIVISION OF SEWERS — DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DIVISION OF SEWERS
CITY & COUNTY OF HONOLULU

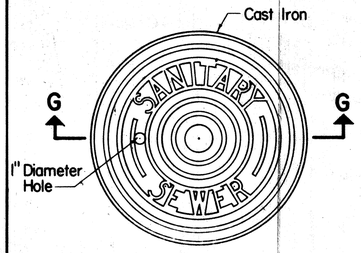
STANDARD DETAILS

SEWERS - DROP MANHOLE AND BRICK MANHOLE DETAILS

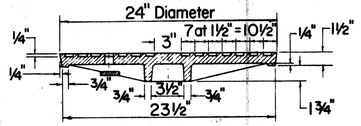
Scales: As Noted — Date

SHEET NO. 4 OF 5 SHEETS

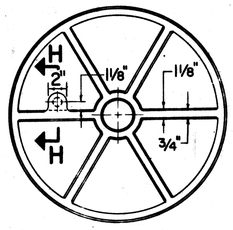
FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-(5):24 Unit 1	1964	30	34



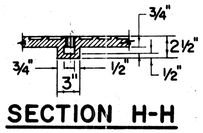
PLAN OF MANHOLE COVER



SECTION G-G



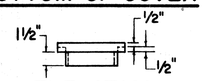
BOTTOM VIEW OF COVER



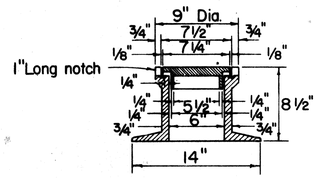
SECTION H-H

PLAN OF COVER

BOTTOM OF COVER



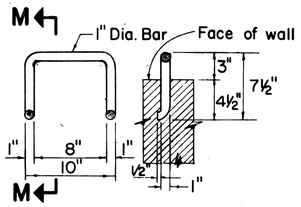
ELEVATION



SECTION

DROP MANHOLE CHIMNEY CASTINGS

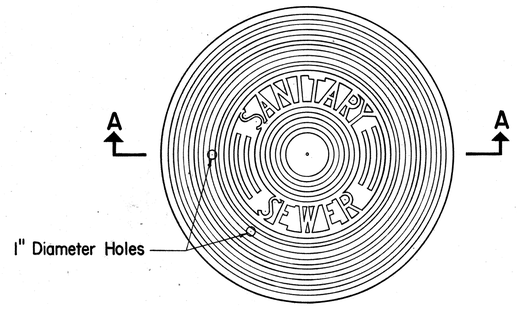
Scale: 1 1/2" = 1'-0"



PLAN SECTION M-M

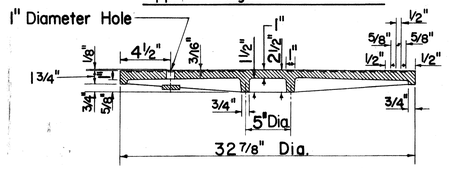
TYPE "A" MANHOLE RUNGS WROUGHT IRON

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

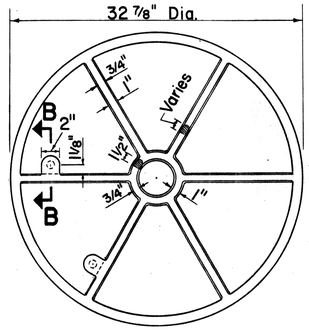


PLAN OF MANHOLE COVER

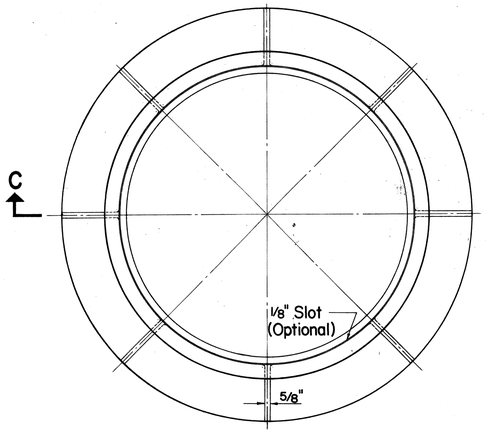
Approx. Weight 260 Pounds



SECTION A-A

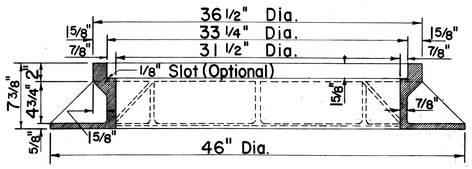


BOTTOM VIEW OF COVER

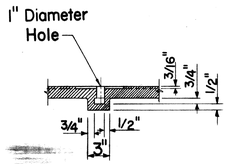


PLAN OF MANHOLE FRAME

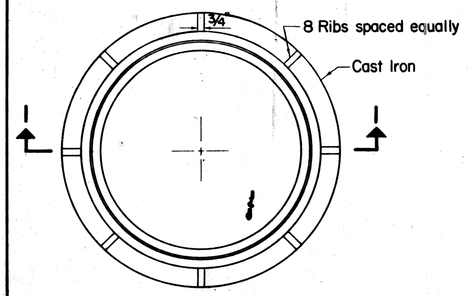
Approx. Weight 437 Pounds



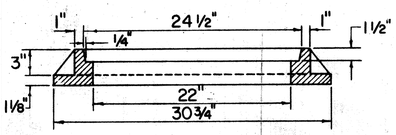
SECTION C-C



SECTION B-B



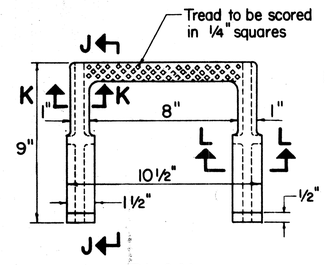
PLAN OF MANHOLE FRAME



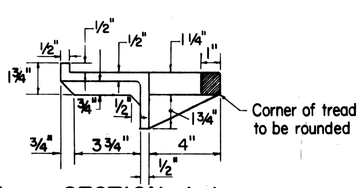
SECTION I-I

TYPE "A" SEWER MANHOLE FRAME AND COVER

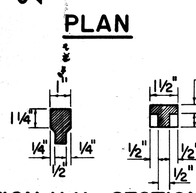
Scale: 1 1/2" = 1'-0"



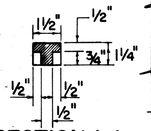
PLAN



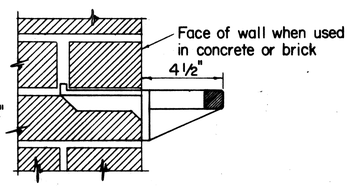
SECTION J-J



SECTION K-K



SECTION L-L



METHOD OF INSTALLATION

TYPE "B" MANHOLE RUNGS (CAST IRON)

Scale: 3" = 1'-0"

TYPE "B" SEWER MANHOLE FRAME AND COVER

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

APPROVED:

V. Nova — 8/6/64
SEWER SYSTEM DIRECTOR, DIVISION OF SEWERS — DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DIVISION OF SEWERS
CITY & COUNTY OF HONOLULU

STANDARD DETAILS

Scales: As Noted — Date

SHEET NO. 5 OF 5 SHEETS

30

29

33 (1)