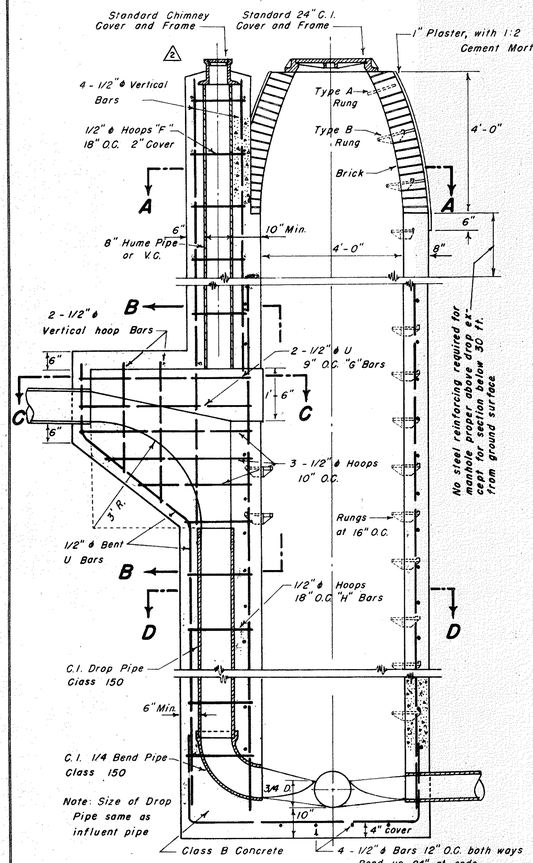
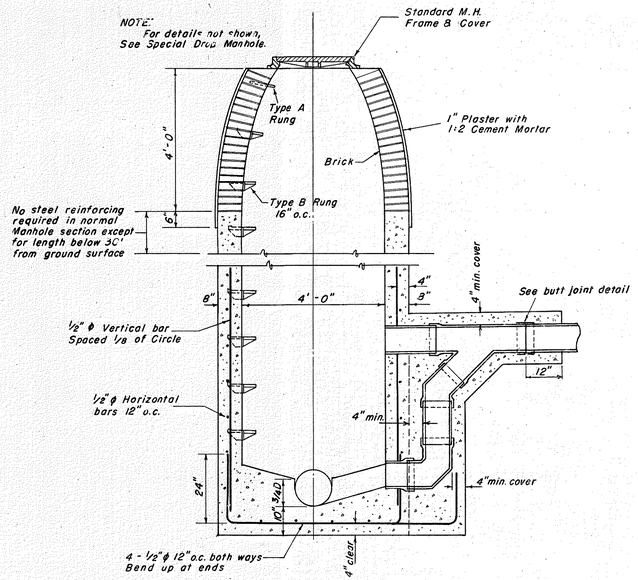
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	FU 44(3)	1950	78	114

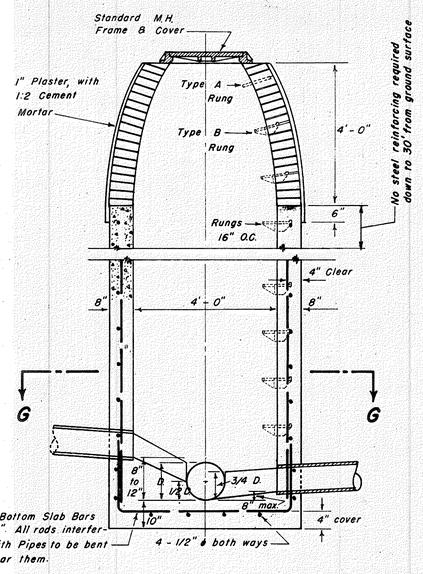


SPECIAL DROP MANHOLE



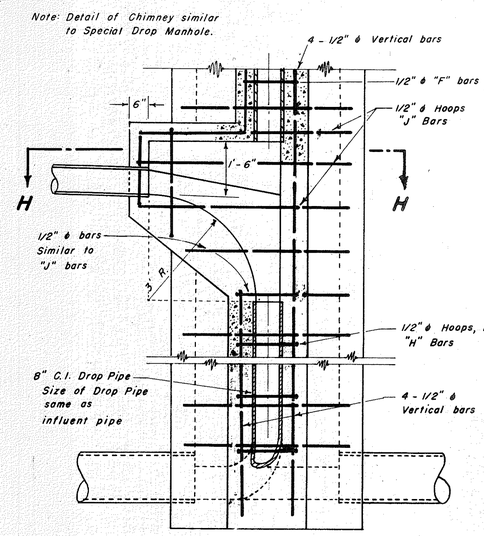
⚠2 DROP MANHOLE

For invert differences greater than 5'-0"

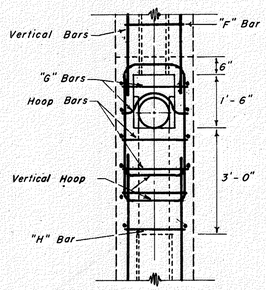


PLAIN MANHOLE

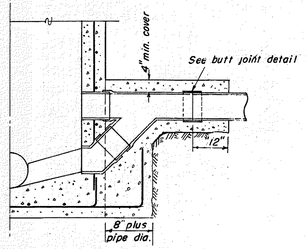
NOTE: No steel reinforcing required for Manholes less than 30 ft. in height except for bottom slab.



SPECIAL SIDE DROP MANHOLE SECTION 1-1

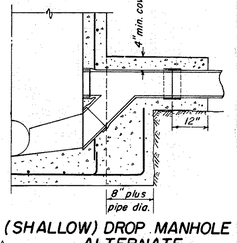


SECTION B-B



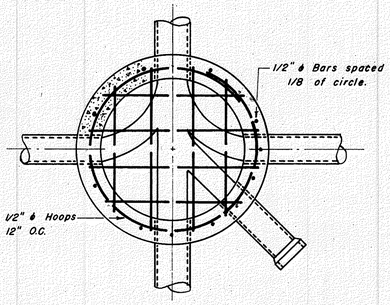
⚠2 (SHALLOW) DROP MANHOLE

NOTE: Use this drop detail for invert differences of 5'-0" and less.

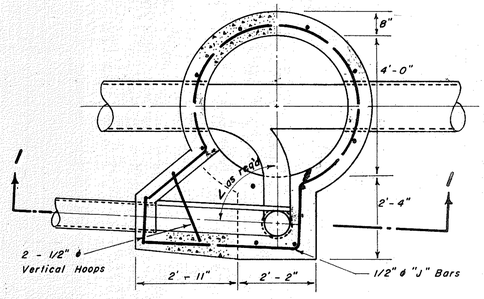


⚠2 (SHALLOW) DROP MANHOLE ALTERNATE

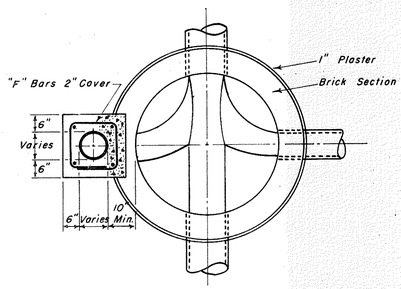
NOTE: Cut pipe vertically through "Y" or extension for drops where detail to left cannot be used



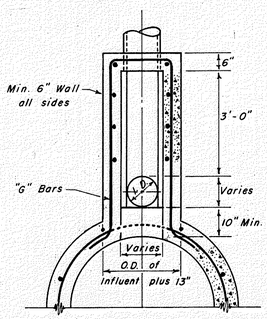
SECTION G-G



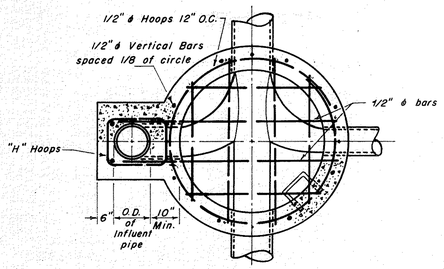
SECTION H-H



SECTION A-A



SECTION C-C



SECTION D-D

NOTES

⚠1 1. Manhole rungs shall not be aligned above any flow line.

2. 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"

3. All reinforcing rods interfering with pipes shall be bent to clear them.

4. Data for special manholes not shown shall be similar to that for Plain Manholes.

5. Bar laps to be 40 diameters in length.

⚠1 6. No rungs shall be installed in manholes less than 3' high

REVISION	DATE	BRIEF	MADE BY	APPROVED
⚠3	6/9/50	Open Drop Manhole details deleted & Drop Manhole details modified.	H.L.	
⚠2	10/20/49	Concrete placed around Chimney Frame	H.B.	
⚠1	8/30/48	Notes 1 & 6 added	N.Y.	

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

KAPALAMA RELIEF SEWER
SECTION #3
STANDARD DETAILS
HONOLULU-PEARL HARBOR ROAD
PROJECT No. FU 44(3) 2ND UNIT

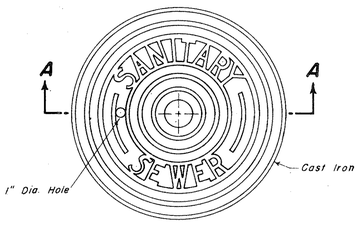
ENGINEER F. Sunn — DATE 4-1-49
DRAFTSMAN E. Sunn, A. Kanayama — CHECKED BY
SCALE 3/4"=1'-0" — TRACER A. Kanayama
APPROVED: CHIEF ENGINEER
APPROVED: ENGINEER, DIV. OF SEWERS; ENGINEER, BUR. OF PLANS

NOTE: THESE PLANS WERE PREPARED IN THE OFFICE OF DEPARTMENT OF PUBLIC WORKS, CITY & COUNTY OF HONOLULU.

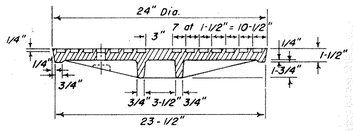
5484.78 SHEET 12 of 14

FILE	POCKET	FOLDER	NO.
G	13	1	15

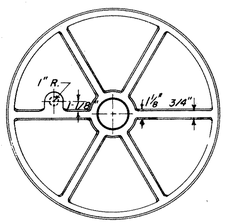
FED. ROAD ST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	FU 44(3)	1950	79	114



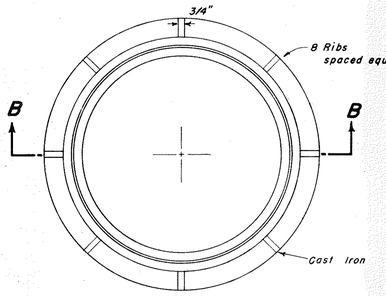
PLAN OF MANHOLE COVER
Scale 1-1/2"= 1'-0"



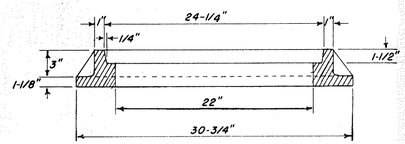
SECTION A - A



⚠1 BOTTOM VIEW OF COVER
Scale 1-1/2"= 1'-0"

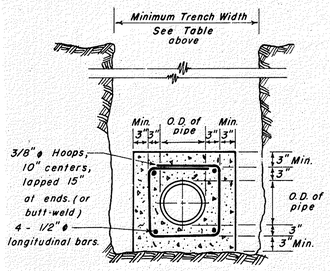


⚠1 PLAN OF MANHOLE FRAME
Scale 1-1/2"= 1'-0"

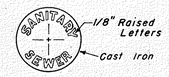


⚠ SECTION B - B

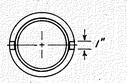
TRENCH WIDTHS	
Pipe Size	Min. Width
6"	24"
8"	24"
10"	24"
12"	30"
15"	30"
18"	36"
21"	36"
24"	45"
27"	45"
30"	50"



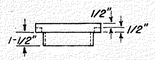
DETAIL OF CONCRETE JACKET



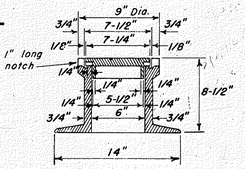
PLAN OF COVER



BOTTOM OF COVER



ELEVATION

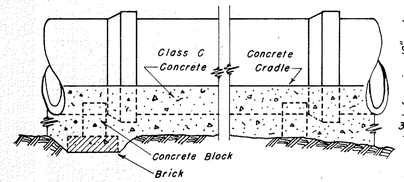


⚠ SECTION

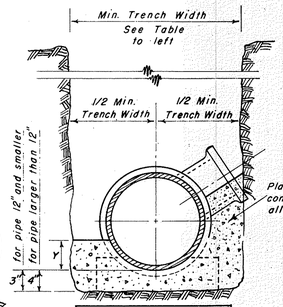
DROP MANHOLE CHIMNEY CASTINGS
Scale 1-1/2"= 1'-0"

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 shall use Concrete Bricks, to take up the deficiency, scraping away beneath Concrete Block to give sufficient room for Brick.

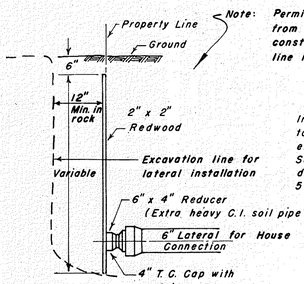
Note: Minimum width of cradle shall be minimum trench width.



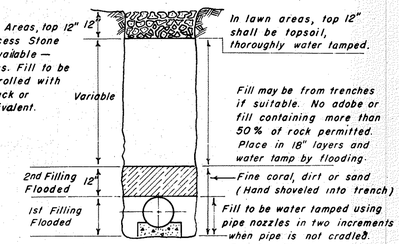
ELEVATION SHOWING METHOD OF LAYING PIPE



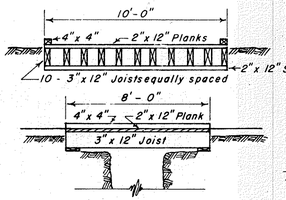
DIM. OF CONC. CRADLE	
Pipe Size	"Y"
6"	3"
8"	3"
10"	3"
12"	3"
15"	4"
18"	5"
21"	5"
24"	6"
27"	7"
30"	7"



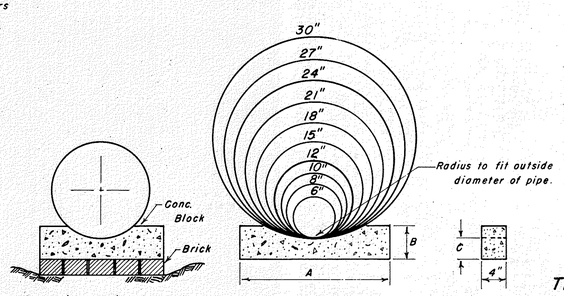
⚠2 CONSTRUCTION AT PROPERTY LINE
Scale 1/2" = 1'-0"



METHOD OF BACKFILL



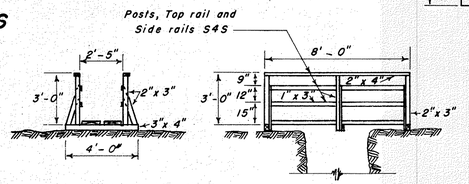
DETAILS
WOODEN BRIDGE OVER TRENCHES AT ROAD CROSSINGS
Scale 1/4"= 1'-0"



Showing method of use of Bricks to set pipe on firm ground.

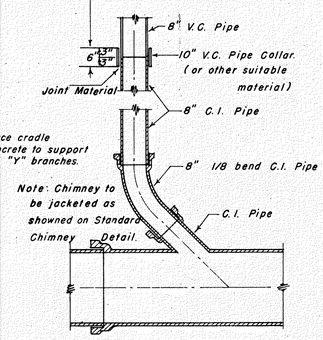
DETAIL OF PRECAST CONCRETE BLOCKS

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"

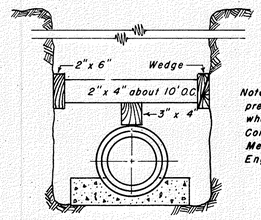


DETAILS
CROSS WALKS OVER TRENCHES
Scale 1/4"= 1'-0"

Detail above this line similar to Standard Chimney Detail.

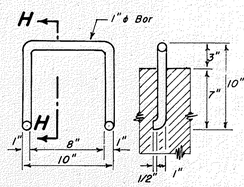


CHIMNEY DETAIL FOR CAST IRON SEWER LINE
Scale 1/2" = 1'-0"



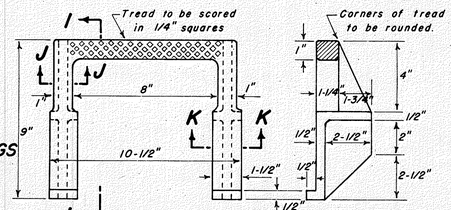
PIPE FLOATATION PREVENTION Scale 1" = 1'-0"

Note: Suggested Method for preventing Pipe from floating when pouring cradle. Contractor may use any other Method if approved by the Engineer.



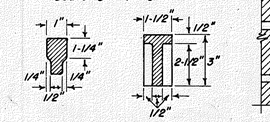
PLAN SECTION H-H

TYPE A RUNGS
WROUGHT IRON M.H. STEPS
Scale 1-1/2"= 1'-0"



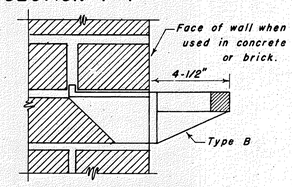
PLAN SECTION I-I

TYPE B RUNGS
Scale 3" = 1'-0"

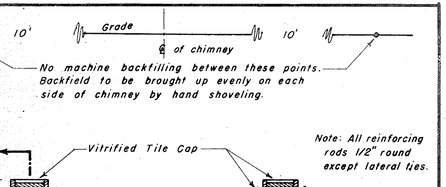


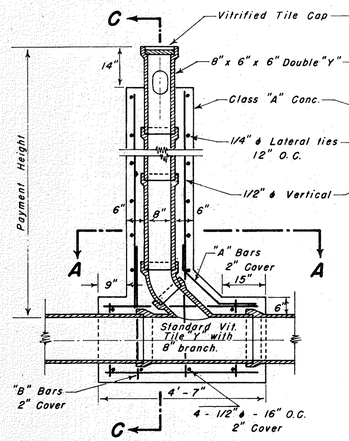
SECTION J-J SECTION K-K

CAST IRON M.H. STEPS
Scale 3" = 1'-0"



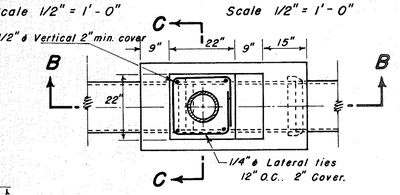
METHOD OF INSTALLATION





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

SECTION C - C
Scale 1/2" = 1'-0"



SECTION A - A
Scale 1/2" = 1'-0"

STEEL SCHEDULE			
Mark	Steel	Shape	Req.
"A"	1/2ϕ	24" 45° 6" 45° Determine in field.	2 Pcs.
"B"	1/2ϕ	22-1/2° "L" 24" 22-1/2° 9"	4 Pcs.

CHIMNEY DETAILS

Note: Dimensions shown may be varied to accomodate specific brand of pipe furnished by Contractor.

Note: Contractor shall use such Standard Details shown above as are applicable to, and called for, on this project.

When lateral sewers are constructed from the trunk sewer to the property line, the grade of such lateral sewer shall be 1/4" per lineal foot unless otherwise ordered by the engineer.

NOTE: THESE PLANS WERE PREPARED IN THE OFFICE OF DEPARTMENT OF PUBLIC WORKS, CITY & COUNTY OF HONOLULU.

REVISION	DATE	BRIEF	MADE BY	APPROVED
⚠2	8/23/50	Const. at prop. line altered	Y. N.	
⚠1	10/20/49	M. H. Castings modified	H. B.	

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

KAPALAMA RELIEF SEWER
SECTION #3
STANDARD DETAILS
HONOLULU-PEARL HARBOR ROAD
PROJECT No. FU 44(3) 2ND UNIT

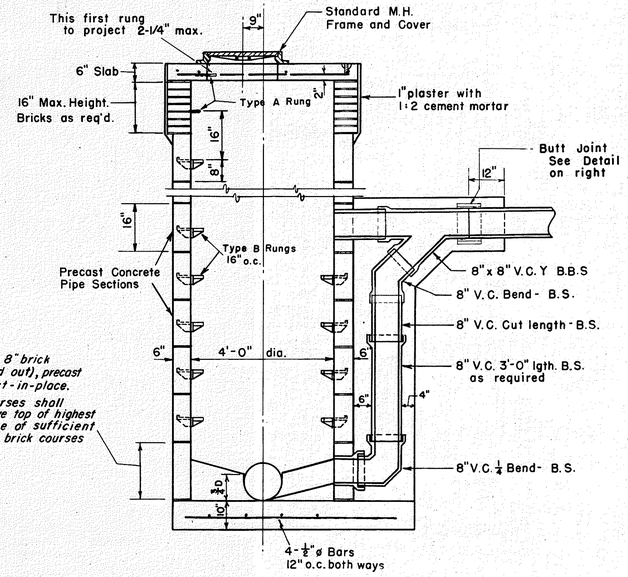
ENGINEER F. Sunn — DATE 4-1-49
DRAFTSMAN F. Sunn, A. Kanayama — CHECKED BY H. Dunlap
SCALE As Shown — TRACER A. Kanayama
APPROVED — APPROVED
CHIEF ENGINEER — ENGINEER, DIV. OF SEWERS
ENGINEER, BUREAU OF PLANS

5484.79

SHEET 15 of 14

FILE	POCKET	FOLDER	NO.
G	13	1	16

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FU 44(5)	1950	80	114



This section to be of 8" brick (plastered inside and out), precast M.H. Section or cast-in-place.

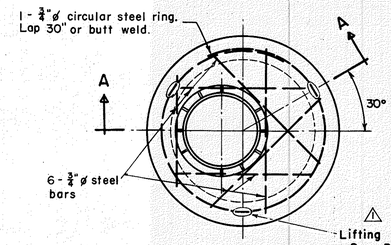
If brick is used, courses shall run at least 3" above top of highest pipe and should be of sufficient height to eliminate brick courses below top slab.

⚠

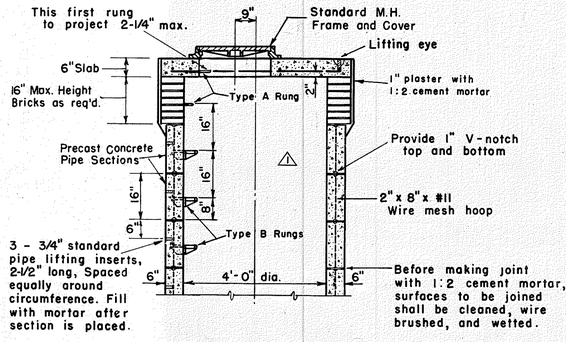
DROP MANHOLE
USING PRECAST CONCRETE PIPE SECTIONS
FOR MANHOLES LESS THAN 20 FT. IN HEIGHT

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

NOTE : (Shallow) Drop M.H. may be constructed similarly

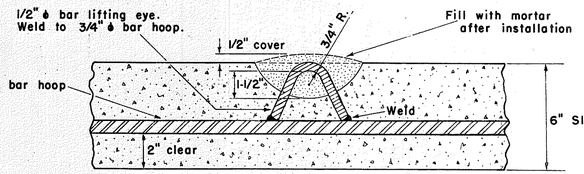


PLAN OF PRECAST MANHOLE
Scale: ½" = 1'-0"

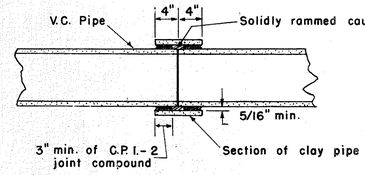


SECTION A-A
Scale: 1/2" = 1'-0"

NOTE: Pipe Sections may be made in heights other than 16" if desired.



SECTION OF LIFTING EYE ⚠
Scale: 3" = 1'-0"



BUTT JOINT DETAIL ⚠
Scale: 1" = 1'-0"

NOTE:
THESE PLANS WERE PREPARED IN THE OFFICE OF DEPARTMENT OF PUBLIC WORKS, CITY & COUNTY OF HONOLULU.

Revision	DATE	BRIEF	Made by	APPROVED
⚠	6/7/50	Revised details of Precast Manholes	A. K.	MW

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

KAPALAMA RELIEF SEWER
SECTION #3
STANDARD DETAILS
HONOLULU-PEARL HARBOR ROAD
PROJECT No. FU 44 (3) 2ND UNIT

ENGINEER F. Sunn — DATE July 13, 1949
DRAFTSMAN A. Kanoyama — TRACER H. Lum
SCALE As Noted — CHECKED BY H. Bailey
APPROVED: — APPROVED:
CHIEF ENGINEER — DIVISION ENGINEER
ENGINEER, BUR. OF PLANS

5484.80 SHEET 1 OF 4

FILE	POCKET	FOLDER	NO.
G	13	1	17