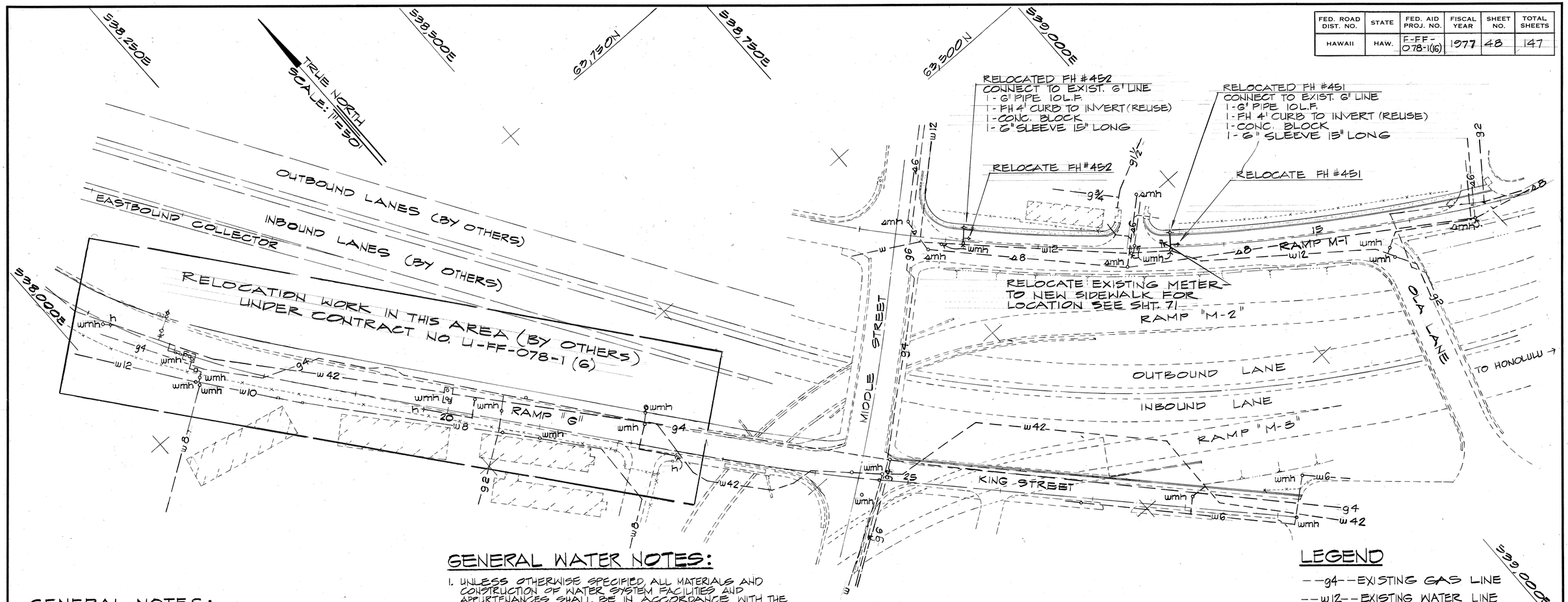
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-FF-078-1(16)	1977	48	147



PLAN
SCALE: 1"=50'

GENERAL NOTES:

1. ELEVATION DATUM BASED ON MEAN SEA LEVEL DATUM.
2. CONTRACTOR SHALL BE RESPONSIBLE AND PAY FOR ALL DAMAGES TO EXISTING UTILITIES.
3. SERVICES SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. ALTERATIONS TO SERVICE LINES SHALL BE DONE WITH THE LEAST AMOUNT OF DISTURBANCE TO THE EXISTING SERVICES.
4. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES, APPURTENANCES AND STRUCTURES SHOWN ARE BASED ON AVAILABLE RECORDS VERIFIED WHENEVER POSSIBLE BY FIELD SURVEYS. THE CONTRACTOR SHALL VERIFY LOCATIONS AND INVERTS OF EXISTING LINES AND SHALL BE REQUIRED TO MAKE ADJUSTMENTS TO ANY NEW OR EXISTING SYSTEMS AS NECESSARY WITH THE APPROVAL OF THE ENGINEER OR WHENEVER DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL NOT ASSUME THAT WHERE NO EXISTING UTILITIES ARE SHOWN, THAT NONE EXIST.
5. ALL EXISTING WATER, SEWER AND GAS LINES TO REMAIN UNLESS OTHERWISE NOTED.

GENERAL WATER NOTES:

1. UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND CONSTRUCTION OF WATER SYSTEM FACILITIES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, DATED 1976, AS AMENDED, OF THE HAWAII HIGHWAYS DIVISION, DEPARTMENT OF TRANSPORTATION.
2. PRIOR TO EXCAVATING FOR NEW DRAIN, SEWER AND OTHER UTILITY LINES, THE CONTRACTOR SHALL VERIFY IN THE FIELD THE LOCATION OF EXISTING WATER MAINS AND APPURTENANCES. WHERE THE INSTALLATION OF NEW DRAIN, SEWER OR OTHER UTILITY LINES ARE TO CROSS OVER OR UNDER EXISTING WATER MAINS, THE CONTRACTOR SHALL EXPOSE THE EXISTING WATER MAINS PRIOR TO TRENCHING. EXCAVATION AROUND WATER MAINS SHALL BE DONE BY HAND.
3. ITEMS INDICATED AS "RELOCATE" ON THE PLANS SHALL BE REMOVED, CLEANED PAINTED AND REINSTALLED AT THE NEW LOCATION BY THE CONTRACTOR UNLESS OTHERWISE SPECIFIED.
4. THE MINIMUM CLEARANCE BETWEEN FIRE HYDRANTS AND UTILITY POLES OR LIGHT STANDARDS SHALL BE 3.0 FEET.
5. THE CONTRACTOR SHALL NOTIFY THE BOARD OF WATER SUPPLY IN WRITING ONE WEEK PRIOR TO COMMENCING WORK ON THE MAIN.
6. APPROVAL BY THE BOARD OF WATER SUPPLY IS BASED SOLELY ON THE ADEQUACY OF THE WATER SUPPLY. DISCREPANCIES, IF ANY, OF ALIGNMENTS, GRADES, FITTINGS, ETC. SHALL BE THE RESPONSIBILITY OF THE ENGINEER WHO PREPARED THE PLANS.
7. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES AS SHOWN ON THE PLANS ARE FROM THE LATEST AVAILABLE DATA BUT IS NOT GUARANTEED AS TO ACCURACY OR THE ENCOUNTERING OF OTHER OBSTACLES DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR ALL DAMAGES TO EXISTING UTILITIES.
8. UNLESS OTHERWISE SPECIFIED, CONNECTIONS TO EXISTING WATER MAINS AND CHLORINATION OF NEW MAINS SHALL BE DONE BY THE CONTRACTOR, WITH THE BWS INSPECTOR COORDINATING THE WORK. FOR DETAILS, CONTACT BWS ENGINEERING DIVISION, CONSTRUCTION SECTION.
9. RE-APPROVAL SHALL BE REQUIRED IF THIS PROJECT IS NOT CONSTRUCTED WITHIN A PERIOD OF ONE YEAR. (SEE RULES AND REGULATIONS OF BOARD OF WATER SUPPLY).

LEGEND

- g4 EXISTING GAS LINE
- w12 EXISTING WATER LINE
- s8 EXISTING SEWER
- wmh EXISTING WATER MANHOLE
- h EXISTING FIRE HYDRANT
- smh EXISTING SEWER MANHOLE
- x---x---x EXISTING CHAIN LINK FENCE

APPROVED BY:
Walter K. Maruyama 1/20/77
ASSISTANT CHIEF ENGINEER — DATE
BOARD OF WATER SUPPLY

GARY T. YAMAMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 2997
HAWAII, U.S.A.

WILBERT T. TAKAMIYA
REGISTERED PROFESSIONAL ENGINEER
No. 1684
HAWAII, U.S.A.

Wilbert T. Takamiya
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

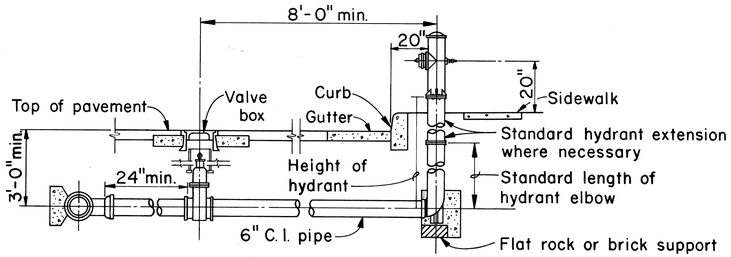
UTILITY LAYOUT PLAN WATER

MOANALUA ROAD
PUULOA I.C. TO MIDDLE ST - UNIT IA
F.A. Proj. No. F-FF-078-1(16)
SCALE: AS SHOWN DATE: DEC. 17, 1976

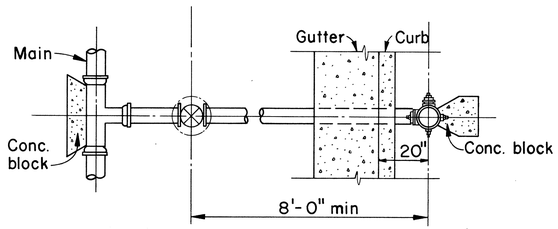
SHEET No. 1 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-FF-078-1(16)	1977	49	147



SECTION



PLAN

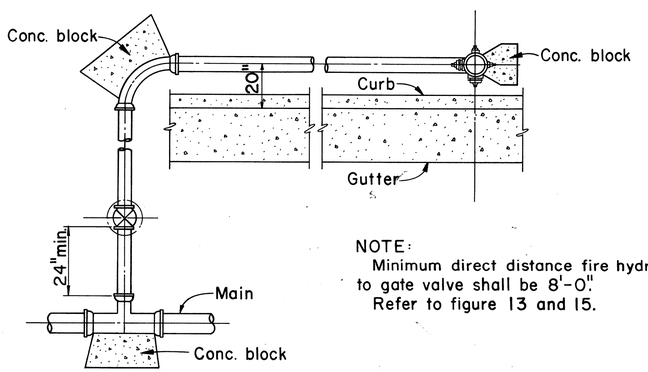
STANDARD LENGTHS FOR HYDRANT ELBOW
30"
36"
42"
48"

Standard hydrant extensions are available in the following lengths:
6 to 30 inches long in increments of 6 inches.

NOTE:
Gaskets for flanged joints shall be 1/16" duck-inserted rubber packing Garlock No. 19.
Bolts shall be 5/8" diameter x 2 3/4" long steel machine bolts with cut threads, American Standard heavy hexagon heads, galvanized.
Nuts shall be American Standard heavy cold punched hexagon nuts, galvanized.

HYDRANT CONNECTION STRAIGHT RUN

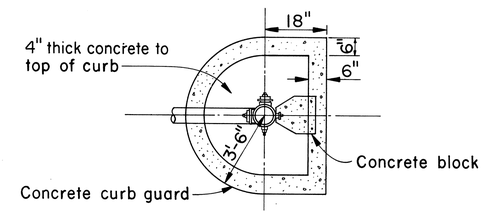
FIGURE 13



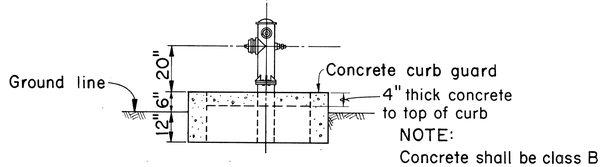
NOTE:
Minimum direct distance fire hydrant to gate valve shall be 8'-0".
Refer to figure 13 and 15.

HYDRANT CONNECTION WITH ELBOW

FIGURE 14



PLAN

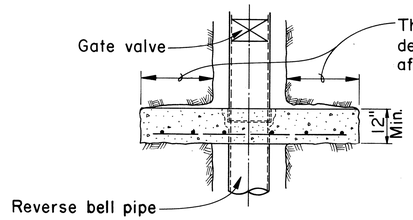


NOTE:
Concrete shall be class B

ELEVATION

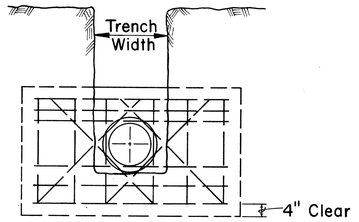
DETAIL OF CURB GUARD AT HYDRANT

FIGURE 15



PLAN

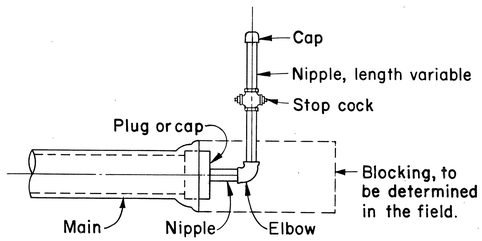
NOTE:
Size and spacing of bars will depend on working pressure. Detail of actual beam to be used shall be furnished during construction by the engineer who prepared the plans.



ELEVATION

CONCRETE REACTION BEAM

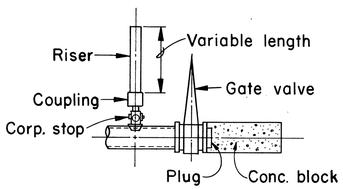
FIGURE 18



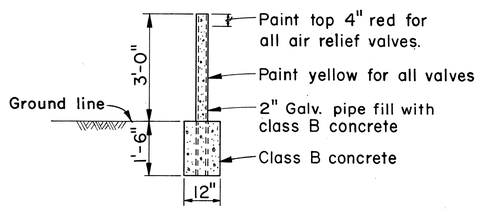
DETAIL OF TEMPORARY CLEANOUT

NOTES:
1. The sizes of cleanout unless otherwise shown on the plans or directed by the Engineer shall be:
8 inch and smaller mains - 2 1/2 inch cleanout
12 inch to 20 inch mains - 4 inch cleanout
24 inch and larger mains - 6 inch cleanout

2. Temporary cleanout shall include the plug or cap, concrete block, and all appurtenances as shown.



DETAIL OF RISER



DETAIL OF VALVE MARKER

CLEANOUTS, RISERS AND VALVE MARKERS

FIGURE 16

APPROVED:

ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY

DATE 1/24/73

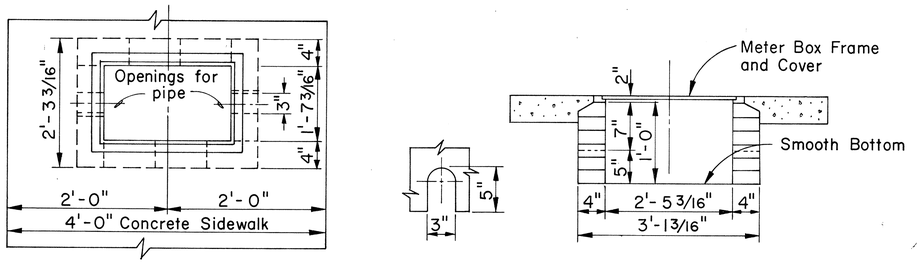
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
BOARD OF WATER SUPPLY

SHEET No. OF SHEETS

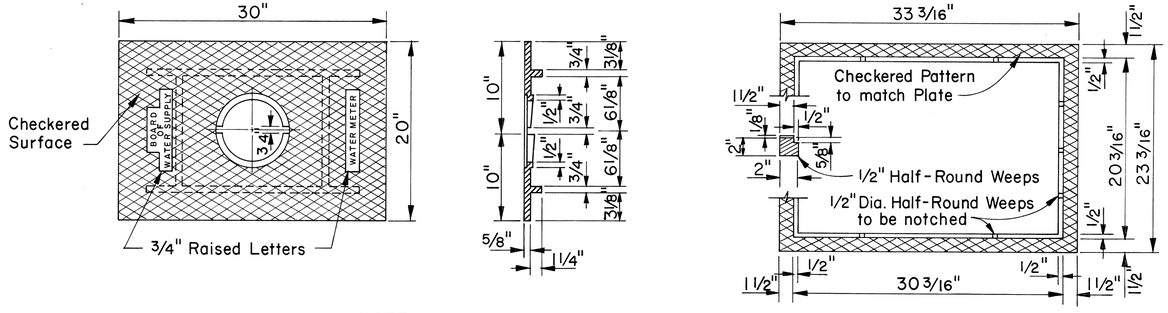
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	"
No.	TRACED BY	"
	DESIGNED BY	"
	QUANTITIES BY	"
	CHECKED BY	"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-FF-078-1(16)	1977	50	147



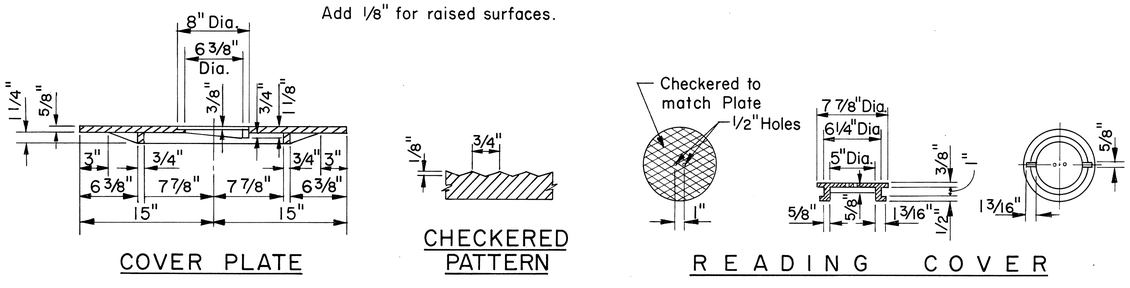
TYPE III METER BOX

FIGURE 29



FRAME

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



COVER PLATE

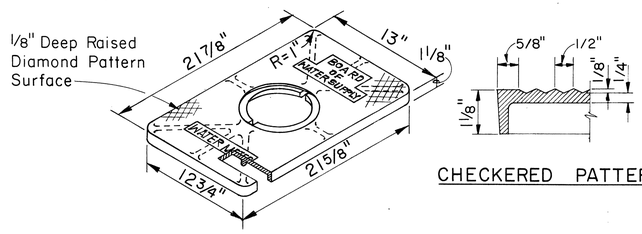
CHECKERED PATTERN

READING COVER

CAST IRON FRAME, PLATE AND COVER
TYPE III

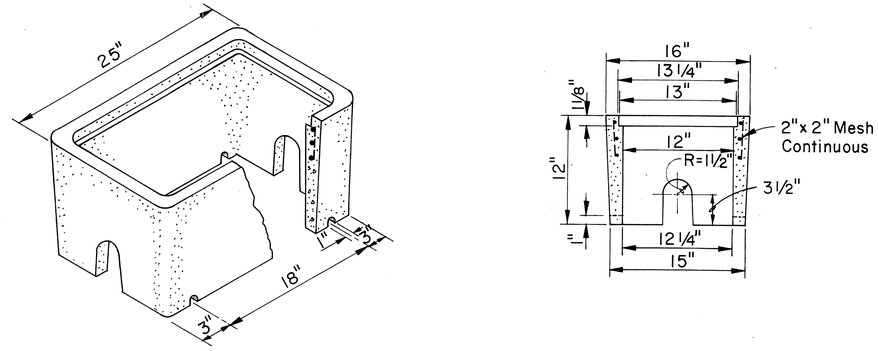
FIGURE 28

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



CAST IRON COVER
WT. = 36 LBS.

CAST IRON READING COVER



CONCRETE BOX
WT. = 107 LBS.

METER BOX AND COVER
TYPE "X"

FIGURE 30

APPROVED:

ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY

DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
BOARD OF WATER SUPPLY

SHEET No. OF SHEETS

50

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

K&E IMPERIAL™ LA 3207

\A/ 7