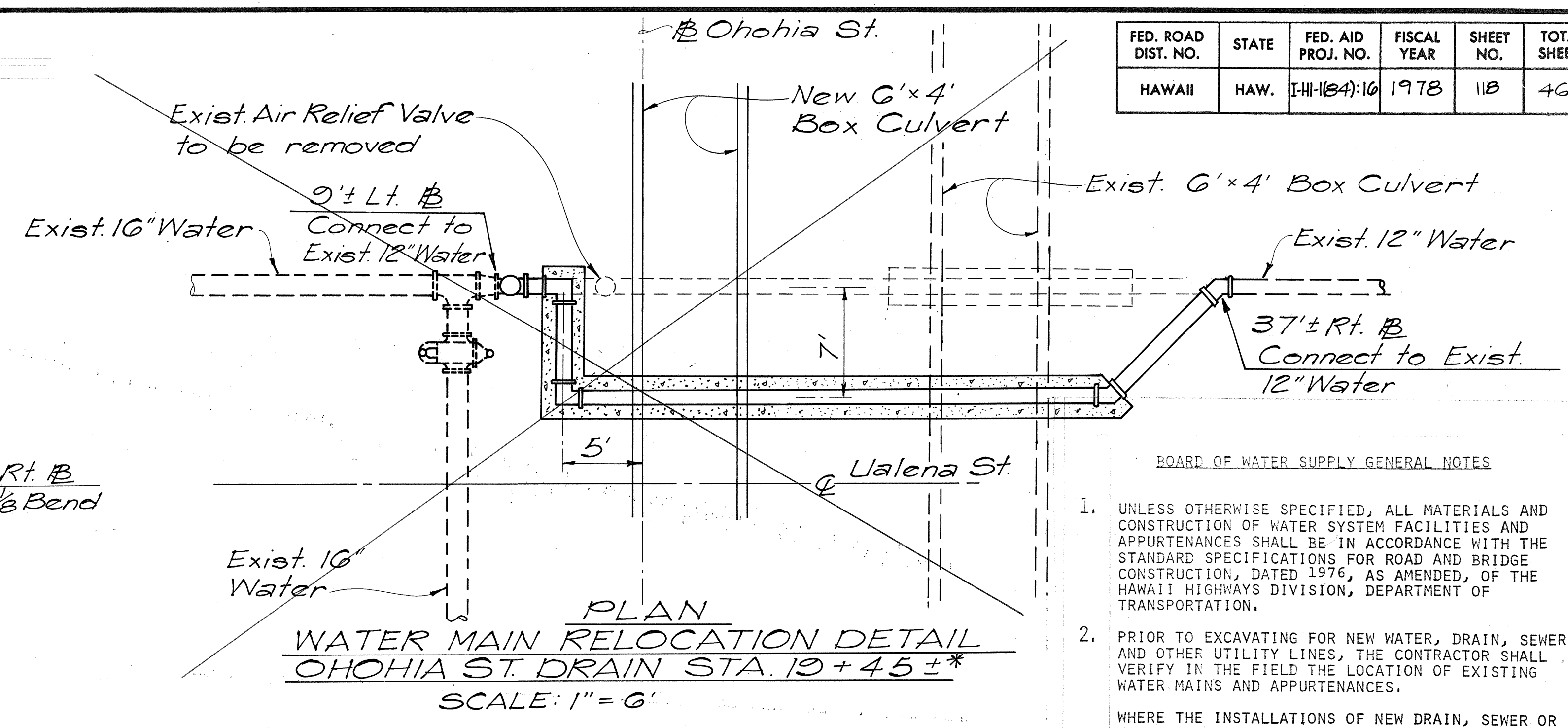
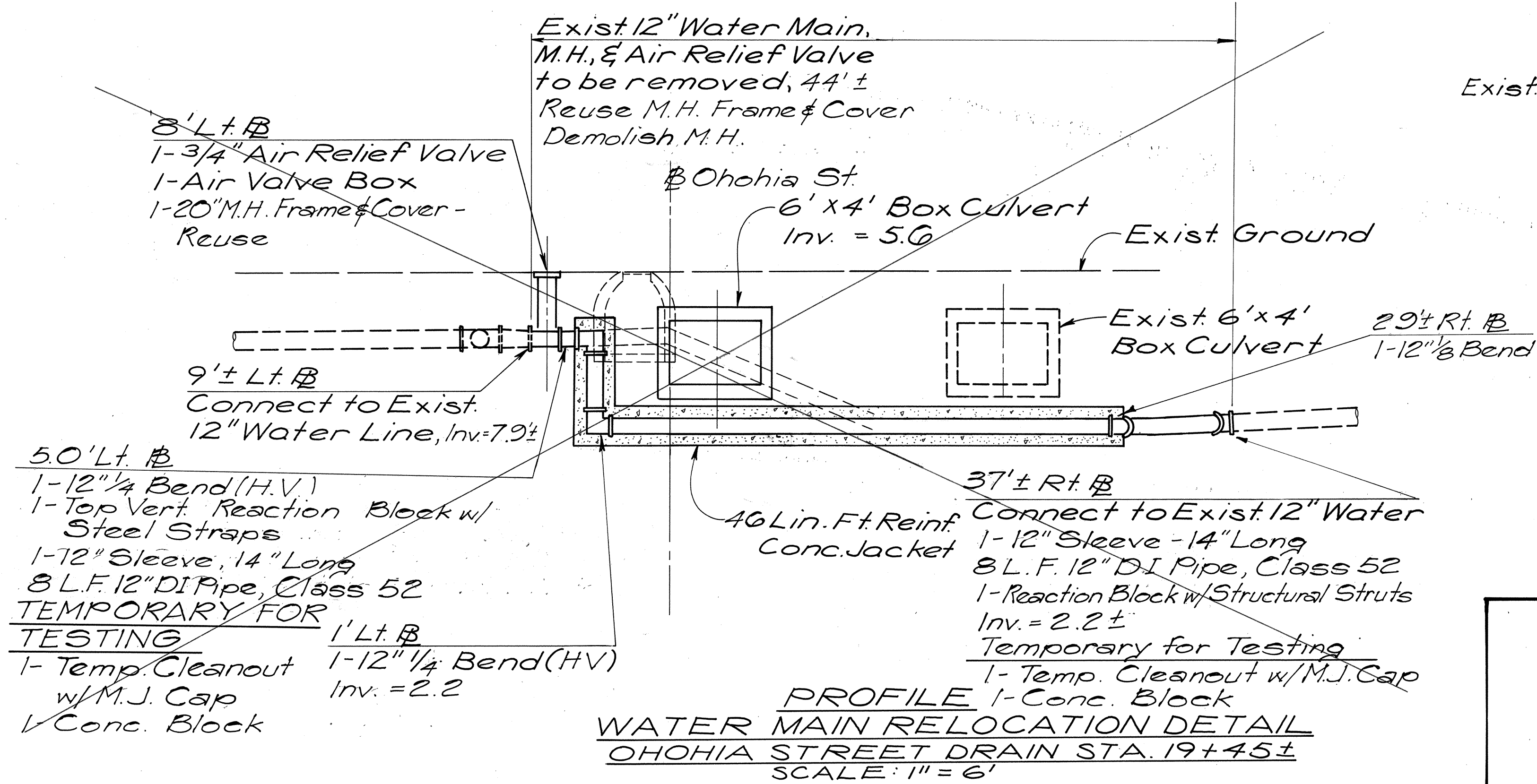


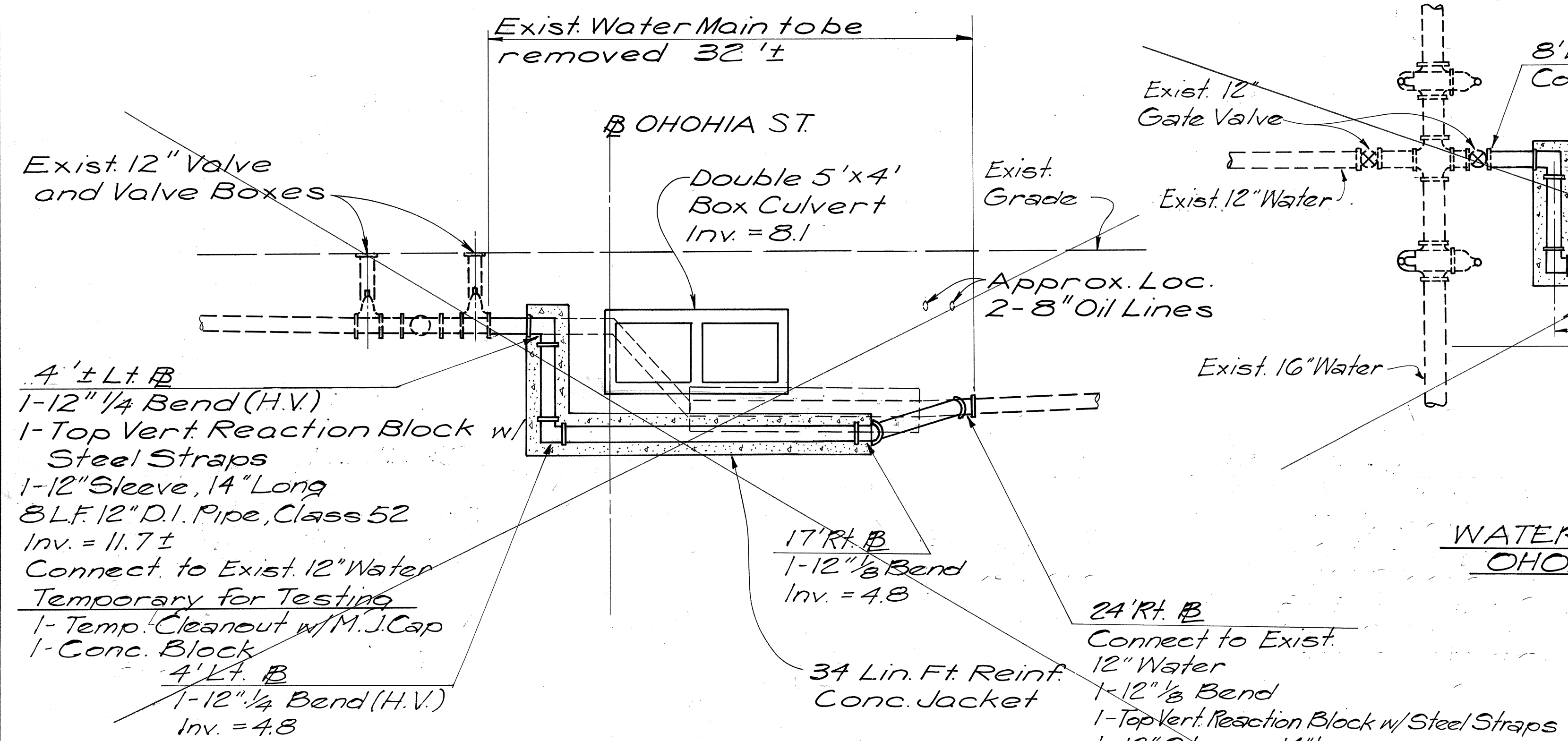
SEE SHEET No. C.O. 1185-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-184-10	1978	118	466



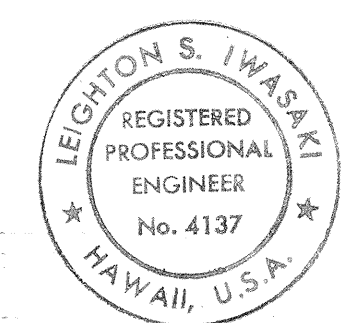
BOARD OF WATER SUPPLY GENERAL NOTES

- 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.
- PRIOR TO EXCAVATING FOR NEW WATER, DRAIN, SEWER AND OTHER UTILITY LINES, THE CONTRACTOR SHALL VERIFY IN THE FIELD THE LOCATION OF EXISTING WATER MAINS AND APPURTENANCES.
- WHERE THE INSTALLATIONS 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.
- ITEMS INDICATED AS "RELOCATE" ON THE PLANS SHALL BE REMOVED, CLEANED, PAINTED AND REINSTALLED AT THE NEW LOCATION BY THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. ITEMS INDICATED AS "SALVAGE" SHALL BE REMOVED, CLEANED, PAINTED AND RETURNED TO BWS YARD.
- 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.
- THE CONTRACTOR SHALL NOTIFY THE BOARD OF WATER SUPPLY IN WRITING ONE WEEK PRIOR TO COMMENCING WORK ON THE MAIN.
- THE NEW MAINS SHALL BE INSTALLED, TESTED AND PLACED IN SERVICE PRIOR TO PLACING ANY FILL OR PERFORMING ANY WORK OVER OR NEAR THE EXISTING MAINS.
- 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 THE 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.
- DEGREE OF ALL BENDS OR LENGTH OF ADJACENT PIPES REQUIRED AT POINTS OF CONNECTION TO THE EXISTING MAIN SHALL BE VERIFIED AFTER EXPOSURE OF THE EXISTING MAIN PRIOR TO THE START OF CONSTRUCTION WORK.
- THERE SHALL BE A MINIMUM HORIZONTAL CLEARANCE OF 3 FEET AND A MINIMUM VERTICAL CLEARANCE OF 6 INCHES BETWEEN WATER MAINS AND OTHER UTILITIES, HECO, HICO, AND OTHER UTILITY POLES, HANDHOLES, MANHOLES, SEWER MAINS AND APPURTENANCES ALSO HAVE MINIMUM OF 3 FEET CLEARANCE FROM WATER MAINS AND OTHER WATER SYSTEM APPURTENANCES.
- ALL EXISTING WATER METERS SHALL BE REMOVED AND REINSTALLED AT THE SPECIFIED LOCATIONS BY THE CONTRACTOR WITH THE BWS INSPECTOR COORDINATING THE WORK.
- WORKING PRESSURES NOTED ON THE PLANS FOR AIR RELIEF VALVES ARE FOR BWS INFORMATION ONLY.



PLAN
WATER MAIN RELOCATION DETAIL
OHOHIA ST. DRAIN STA. 14+43.5
SCALE: 1" = 6'

- WATERLINES SHALL BE DUCTILE IRON CI.52
- PIPE TEST PRESSURE SHALL BE 150 PSI.
- 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 PLANNING AND ENGINEERING DIVISION, ENGINEERING BRANCH, CONSTRUCTION SECTION
- ALL DUCTILE IRON WATER MAINS, FITTINGS AND VALVES SHALL BE ENCASED IN PLASTIC MATERIAL IN ACCORDANCE WITH ANSI SPECIFICATIONS A21.5-1972 OR AWWA SPECIFICATIONS C105-72, POLYETHYLENE ENCASEMENT FOR GRAY AND DUCTILE CAST IRON PIPING FOR WATER AND OTHER LIQUIDS.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Leighton S. Iwasaki
signature

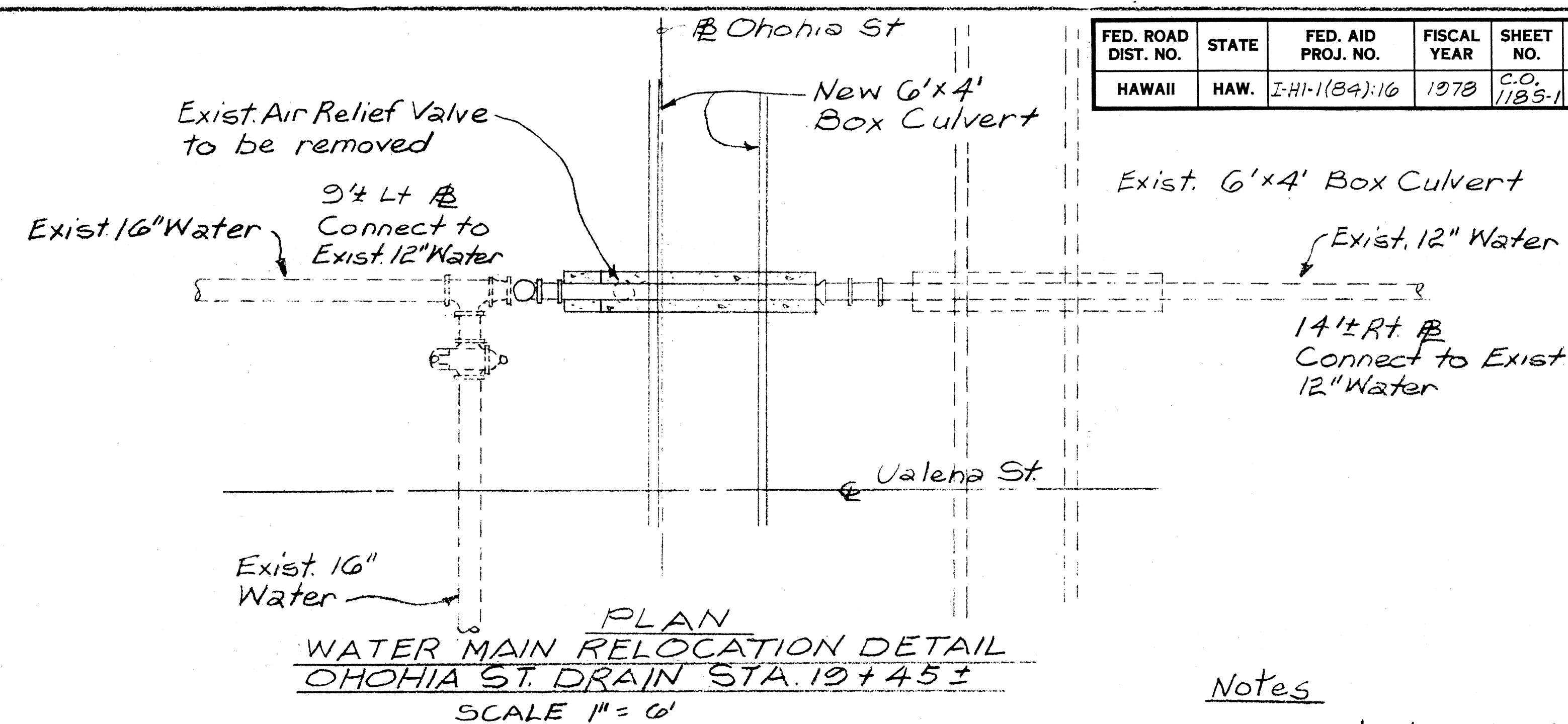
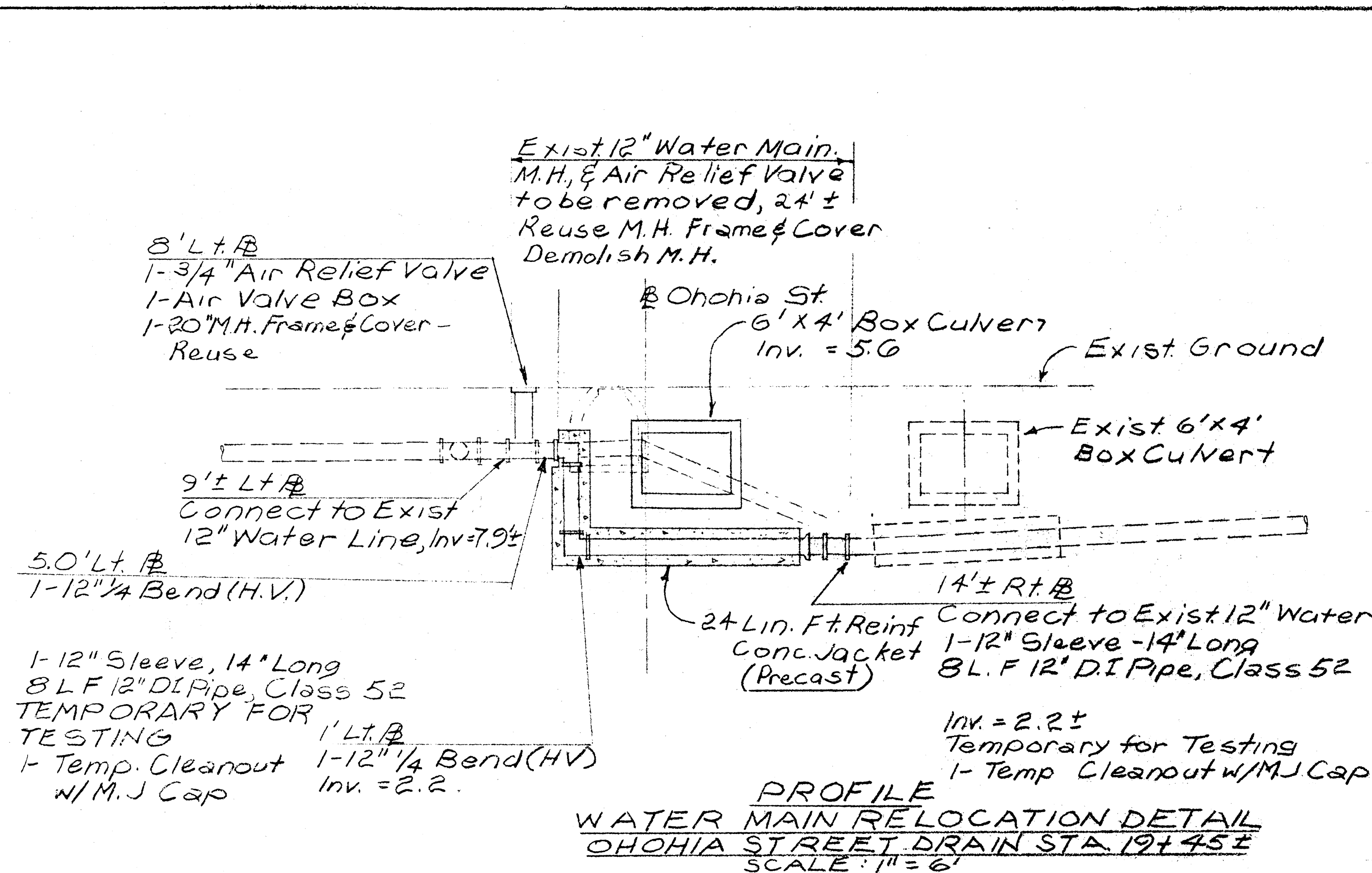
REAPPROVED (DUE TO TIME LAPSE)
Chief, Planning & Engrg. #
BOARD OF WATER SUPPLY
DATE 6/13/78

APPROVED:
Chief, Planning & Engineering #
BOARD OF WATER SUPPLY
DATE 8/24/77

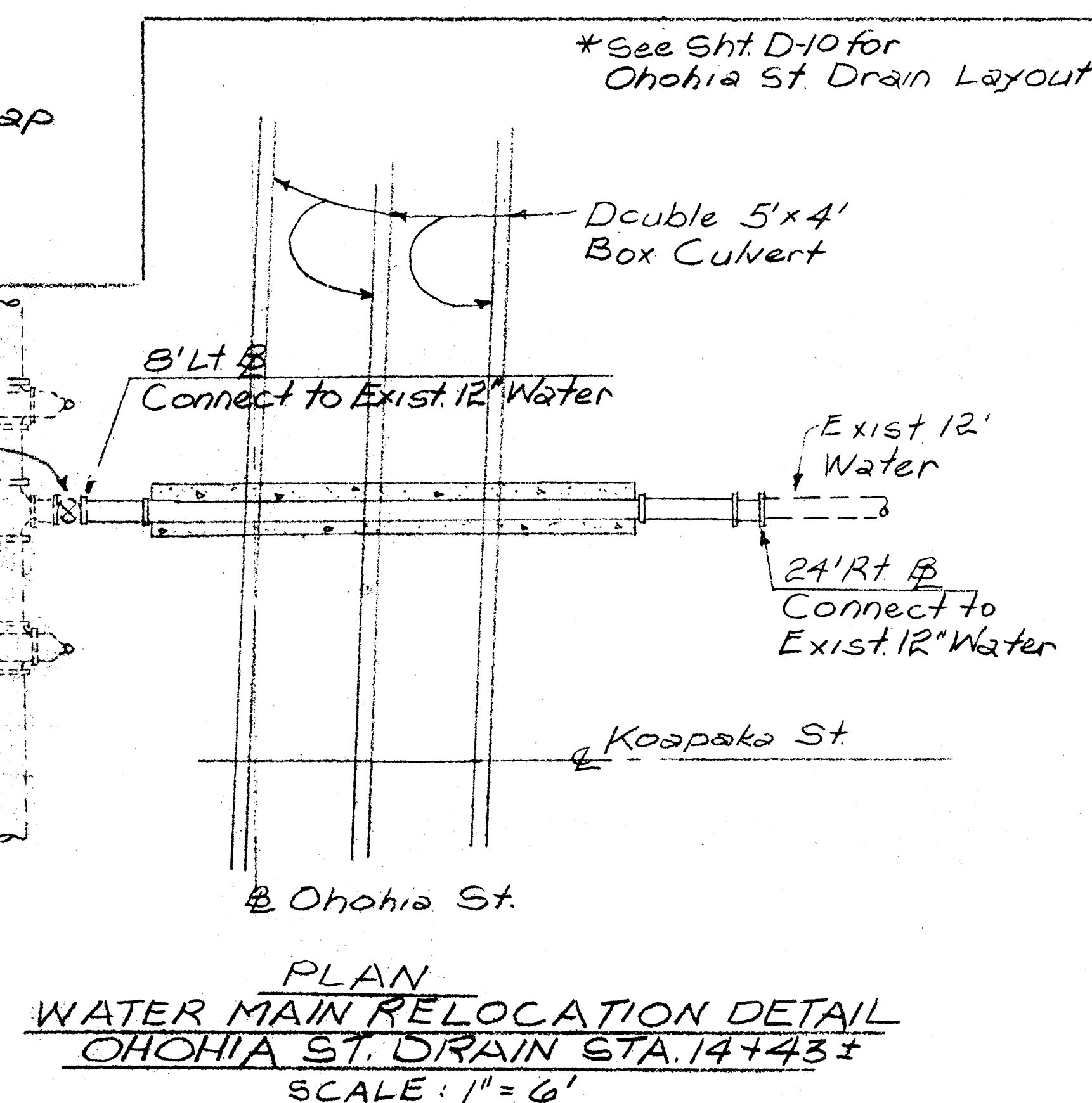
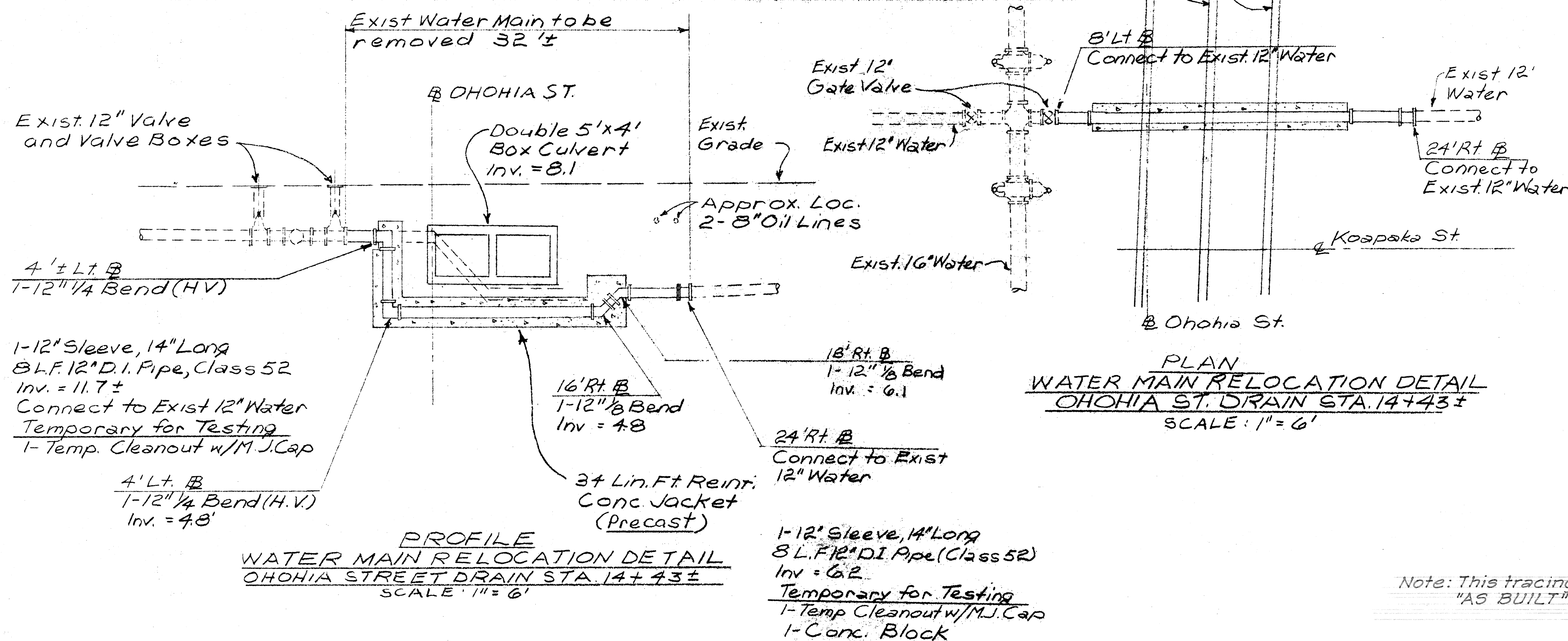
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WATER MAIN RELOCATION
(OHOHIA ST. DRAIN)
AIRPORT INTERCHANGE
F.A.I. PROJ. NO. I-HI-184-10
SCALE: AS SHOWN DATE: JULY 13, 1978
SHEET No. U-1 OF 9 SHEETS

DATE	
SURVEY PLOTTED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(84):16	1978	C.O. 1185-1	466



Notes
1. See Original plan sheet.



Note: This tracing prepared during "AS BUILT" postings.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WATER MAIN RELOCATION
(OHOHIA ST. DRAIN)

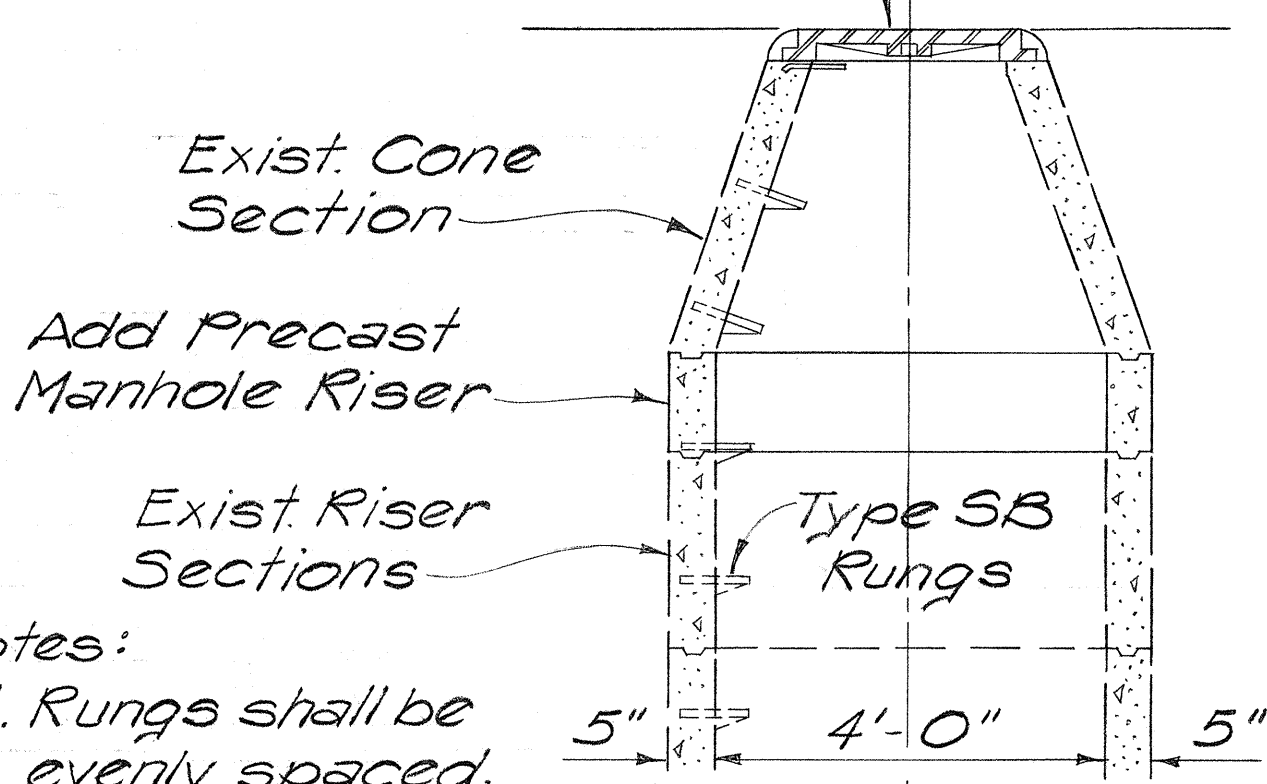
AIRPORT INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(84):16
SCALE AS SHOWN DATE: JUNE 4, 1978

C.O. 118 S-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(84):16	1978	119	466

MANHOLE & VALVE BOX ADJUSTMENTS						
No.	Item	Station	Q 9's ±	Fin.El. X ±	Remarks	
1	Comm. Manhole	162+07	31.8' Rt.	27.0	1.6'	
2	Elec. Manhole	162+25	38.3' Rt.	26.9	1.7'	
3	Comm. Manhole	163+46	18' Rt.	28.0	2.0'	
4	Comm. Manhole	163+86	133' Rt.	24.5	-	
5	Water Manhole *	166+75	97' Lt.	30.0		Type A M.H.
6	Gas Valve Box	166+83	10' Lt.	29.8		
7	Water Manhole *	166+83	107' Lt.			See Gen. Note #3
8	Elec. Manhole	167+45	45' Rt.	29.2	1.7'	M.H. has 2 Necks
9	Water Manhole *	167+67	111.4' Lt.	30.6		Type C M.H.
10	Comm. Manhole	167+81	133' Rt.	27.6	-	
11	Water Manhole *	167+90	110' Lt.	30.7		Type C M.H.
12	Comm. Manhole	168+55	34' Rt.	29.7	2.0'	
13	Comm. Manhole	168+72	27' Rt.	29.9	1.8'	
14	Comm. Manhole	168+90	18' Rt.	30.1	-	Verify Locat.
15	Comm. Manhole	172+10	31.8' Rt.	30.1	3.4'	
16	Elec. Manhole	172+35	47' Rt.	29.8	1.9'	M.H. has 2 Necks
17	Comm. Manhole	173+93	19' Rt.	30.0	-	
18	Gas Valve Box	174+85	85' Lt.	30.0		
19	Comm. Manhole	177+20	20' Rt.	28.5	-	
20	Comm. Manhole	177+20	30.6 Rt.	28.4	1.4'	
21	Elec. Manhole	178+75	39.5' Rt.	27.6	1.9'	
22	Gas Valve Box	180+76	86' Lt.	28.9		
23	Comm. Manhole	183+10	31.5' Rt.	25.8	1.7'	
24	Elec. Manhole	184+80	39.5' Rt.	24.9	1.5'	
25	Comm. Manhole	185+00	19' Rt.	25.3	-	
26	Water Manhole *	189+22	111' Lt.	22.5		No Adj. Req'd
27	Comm. Manhole	189+92	33.5' Rt.	22.8	2.6'	
28	Comm. Manhole	190+38	19' Rt.	23.0	-	
29	Water Manhole *	191+40	25' Lt.	23.1		Type B M.H.
30	Water Manhole *	191+44	109' Lt.	21.4		No Adj. Req'd
31	Elec. Manhole	191+65	50' Rt.	21.8	2.6'	
32	Comm. Manhole	192+30	38' Rt.	21.7	1.3'	
33	Comm. Manhole	195+88	19' Rt.	20.5	-	
34	Comm. Manhole	197+25	31.8' Rt.	19.7	1.3'	
35	Elec. Manhole	197+42	38.3' Rt.	19.5	1.4'	
36	Navy Sewer Manhole	199+56	10' Rt.	19.4		
37	Water Valve Box *	166+78	113' Rt.	27.8		
38	Comm. Manhole	199+92	18' Rt.	18.8	-	
39	Navy Sewer Manhole	200+03	55' Rt.	18.2		
40	Comm. Manhole	200+10	24' Rt.	18.6	-	
41	Navy Sewer Manhole	200+35	125' Rt.	17.3		
42	Water Manhole *	200+70	114' Lt.	18.7		Type A M.H.
43	Comm. Manhole	200+78	31.5' Rt.	18.2	2.0'	
44	Elec. Manhole	201+72	39.5' Rt.	17.7	1.9'	
45	Comm. Manhole	203+94	18' Rt.	17.1	-	
46	Comm. Manhole	205+50	31.8' Rt.	16.2	1.7'	
47	Elec. Manhole	206+40	39.5' Rt.	15.7	3.0'	
48	Comm. Manhole	208+40	20' Rt.	15.0	-	
49	Gas Valve Box	210+00	52' Lt.	13.6		
50	Gas Test Box	167+00	22' Lt.	30.0		
51	Gas Test Box	168+00	100' Lt.	31.0		
52	Gas Test Box	178+00	99' Lt.	30.5		
53	Gas Test Box	187+00	22' Lt.	25.2		
54	Gas Test Box	188+50	98' Lt.	25.0		
55	Gas Test Box	207+00	23' Lt.	15.9		

Manhole Frame & Cover



Notes:

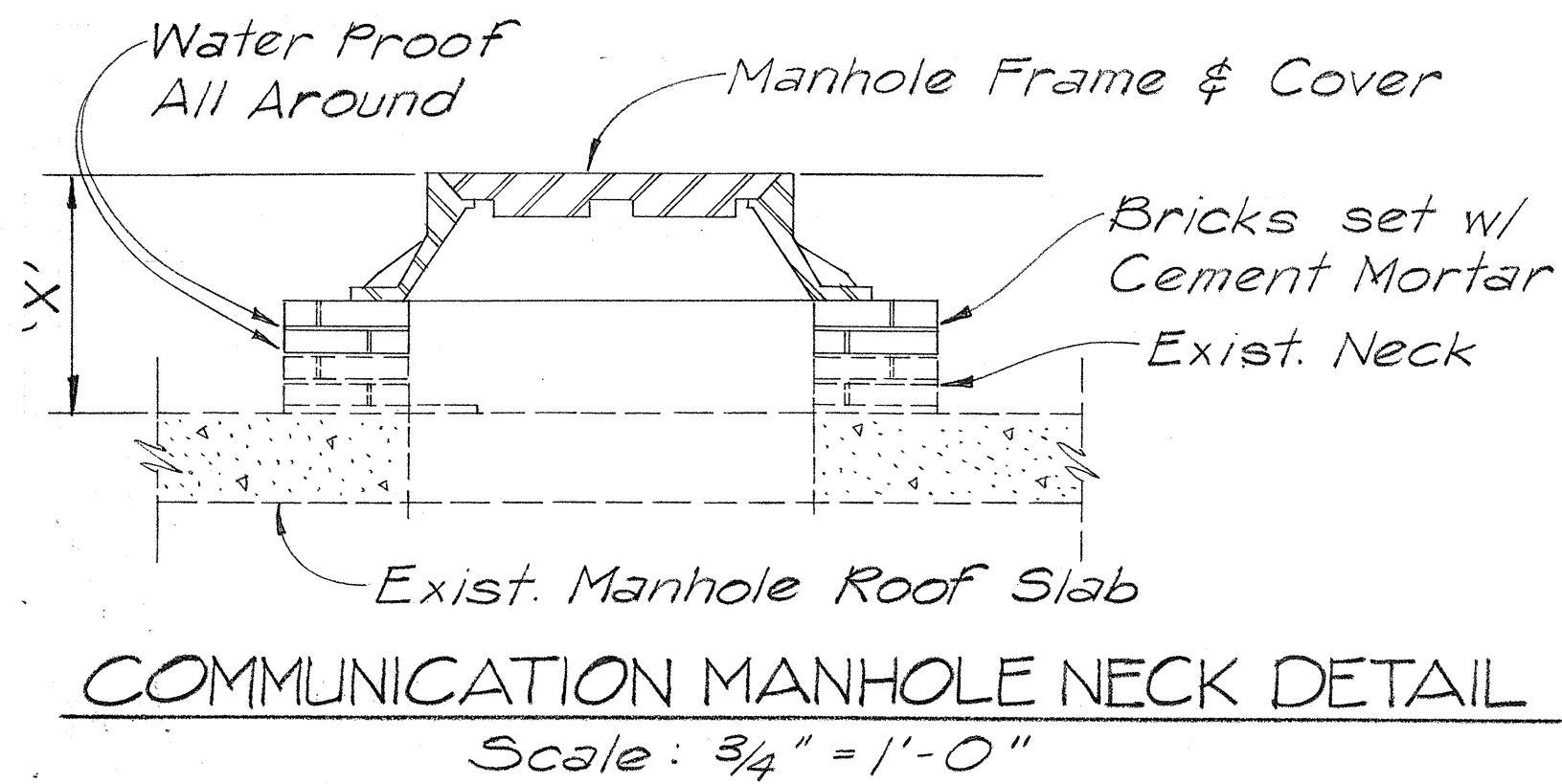
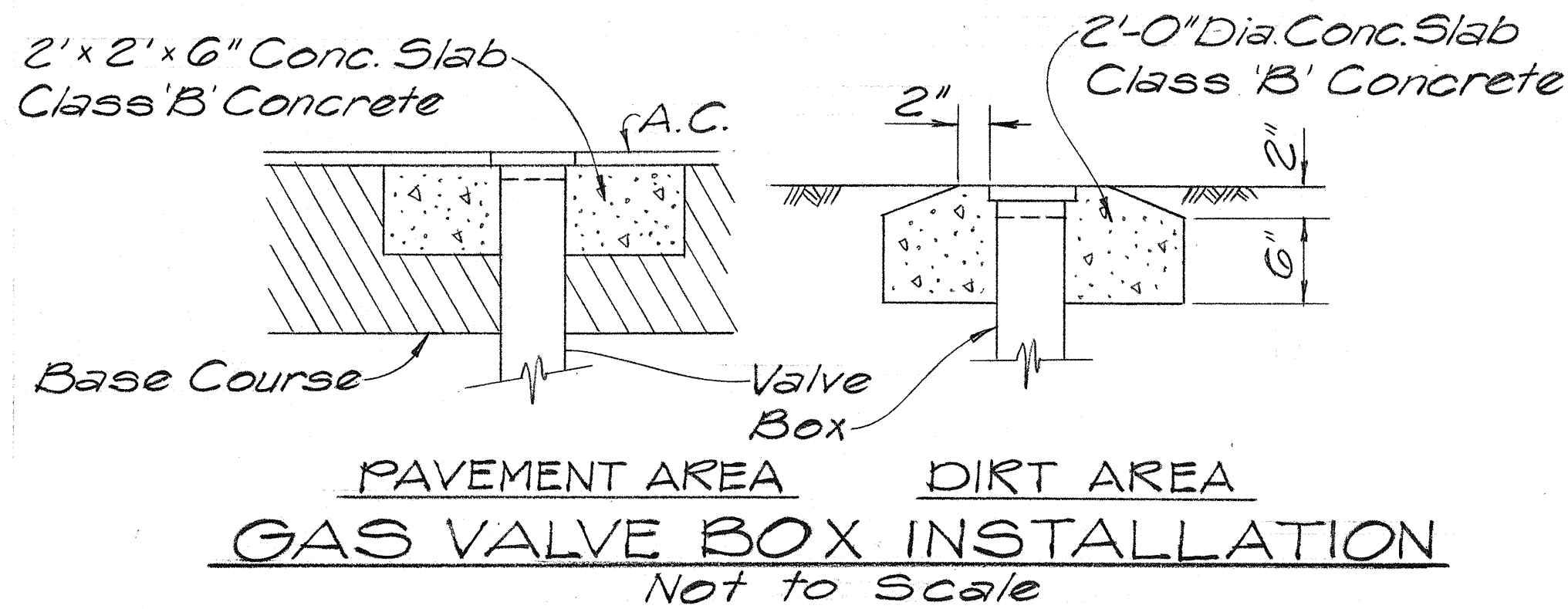
1. Rungs shall be evenly spaced. Max. spacing shall be 12" o.c.
2. Details of riser section and joint shall be approved by the Engineer.

ADJUSTMENT TO PRECAST SEWER MANHOLE
Scale: 1/2" = 1'-0"

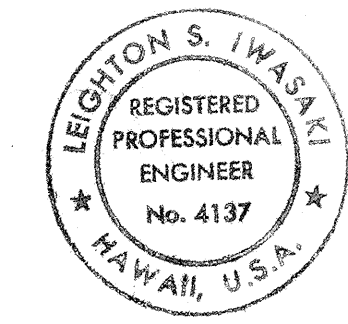
GENERAL NOTES:

1. Gas boxes not included in the schedule shall be adjusted by Gasco. The Contractor shall contact Gasco ten(10) days prior to adjustment of boxes.
2. Notify BWS and HTCO 48 hours prior to adjusting manholes and valve boxes.
3. Sewer manholes shall be adjusted by adding precast manhole riser sections.
4. All communication manholes shall be adjusted by adding or removing bricks from the existing neck.
5. Items not included in the schedule are not to be assumed abandoned. The Contractor shall verify abandoned items with the Engineer prior to demolishing such items.
6. Costs for excavation and demolishing of the items listed shall be incidental to the adjustment work.

See Sheet U-3 for Continuation



APPROVED: [Signature] 5-25-78
HAWAIIAN ELECTRIC CO., INC. DATE
APPROVED: [Signature] 6-2-78
HAWAIIAN TELEPHONE CO. DATE
APPROVED: [Signature] 5/26/78
GASCO INC. DATE
APPROVED: _____
CHIEF DIVISION OF SEWERS DATE
APPROVED: [Signature] 9/16/78
CHIEF PLANNING AND ENGINEERING DATE
BOARD OF WATER SUPPLY



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
[Signature]
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UTILITY ADJUSTMENT
SCHEDULE AND DETAILS
AIRPORT INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(84):16
SCALE: AS SHOWN DATE: JULY 13, 1978
SHEET No. U-2 OF 9 SHEETS

ORIGINAL PLAN
DATE
DRAWN BY
CHECKED BY
NOTED BY
QUANTITIES BY
CHECKED BY
No.

GENERAL NOTES (Continuation)

20" Std. Manhole Frame & Cover

6" C.I. Frame & Cover

Mortar

Roofing Paper

3/8" Plaster Coat Both Faces where required

Std. 1" dia. Eye Bolt 6" long

Exist. 3/4" Galv.

Rungs 1/2" o.c.

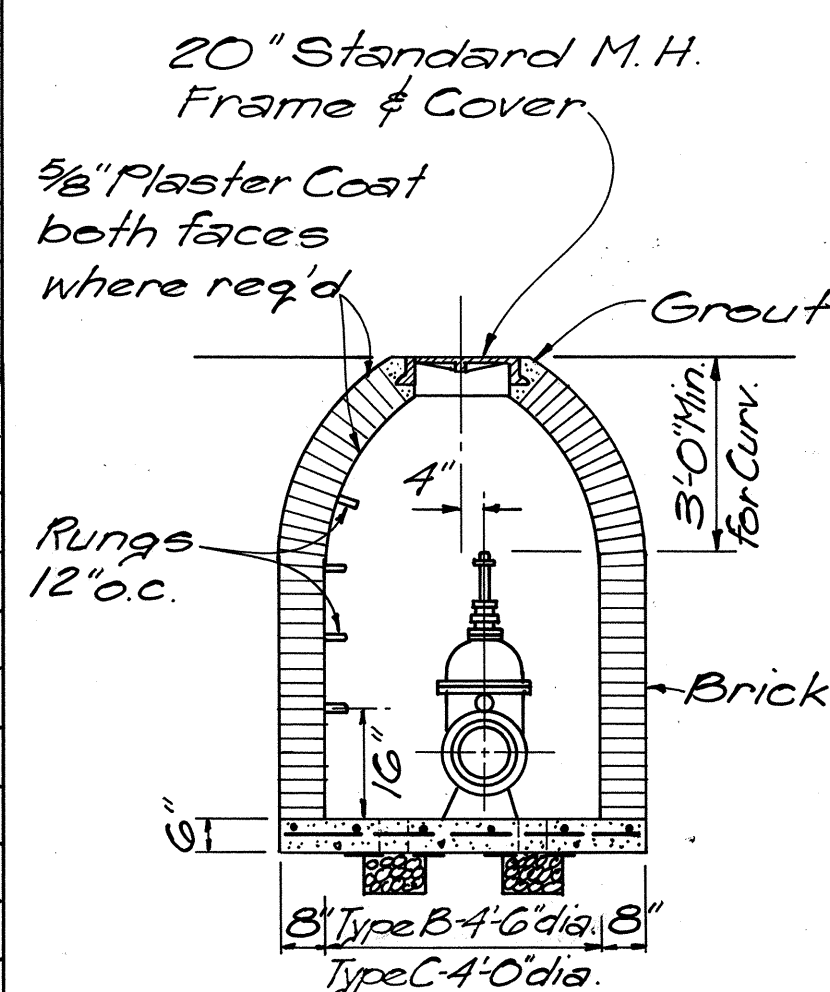
Brick

8"

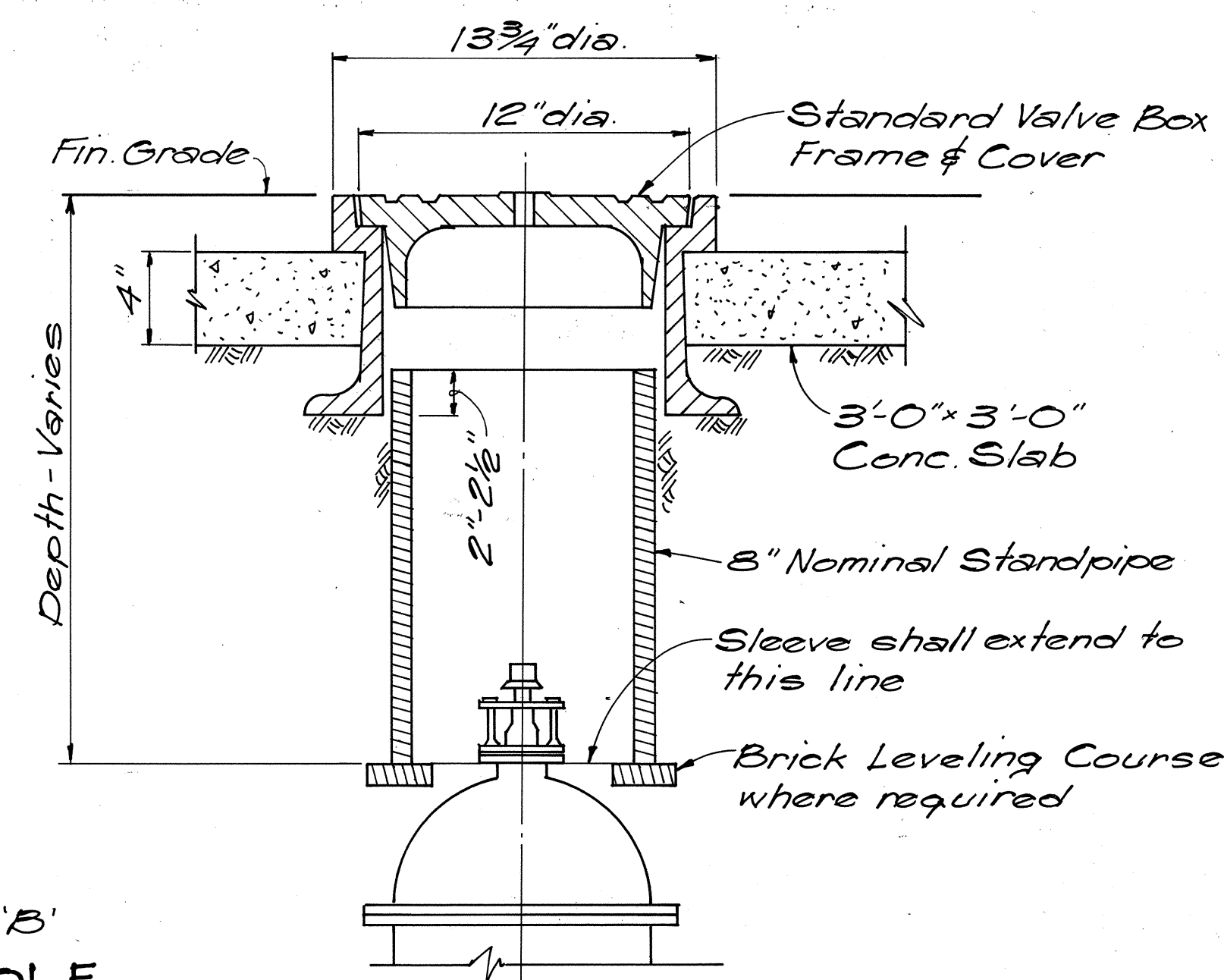
3"

NOTES:
1. Concrete shall be Class "B".
2. Inside Dimension of Manhole = 5' x 9'-7".

Adjust. Req'd.



TYPE B & C MANHOLE



VALVE BOX INSTALLATION

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. Approval by the Board of Water Supply is based solely on the adequacy of the Water Supply. Discrepancies, if any, of alignments, grades, etc., shall be the responsibility of the Engineer who prepared the plans.
3. The Contractor shall notify the Board of Water Supply in writing one week prior to commencing work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES

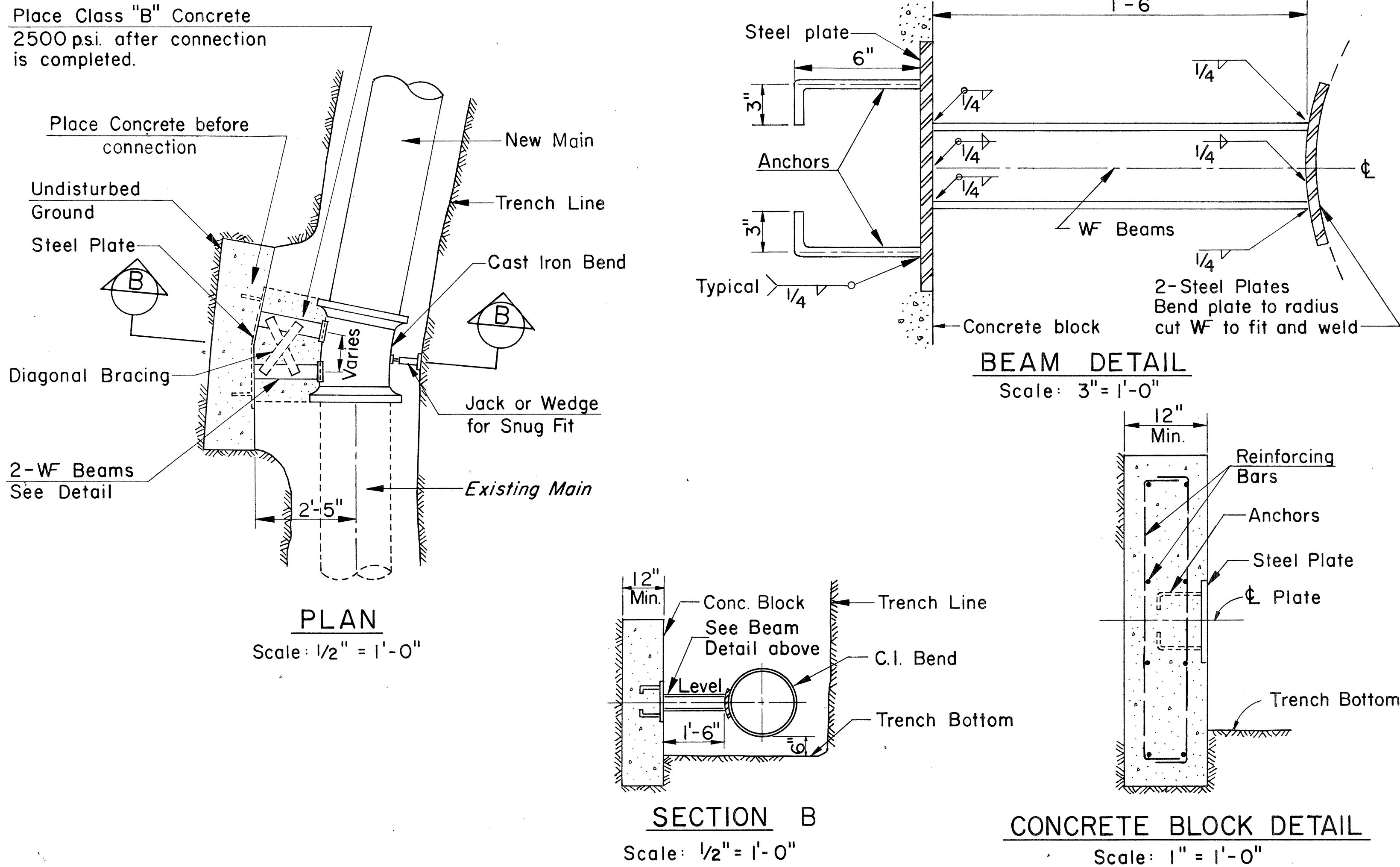
UTILITY ADJUSTMENT
SCHEDULE AND DETAILS

AIRPORT INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(84):10

SCALE: AS SHOWN DATE: JULY 15, 1974

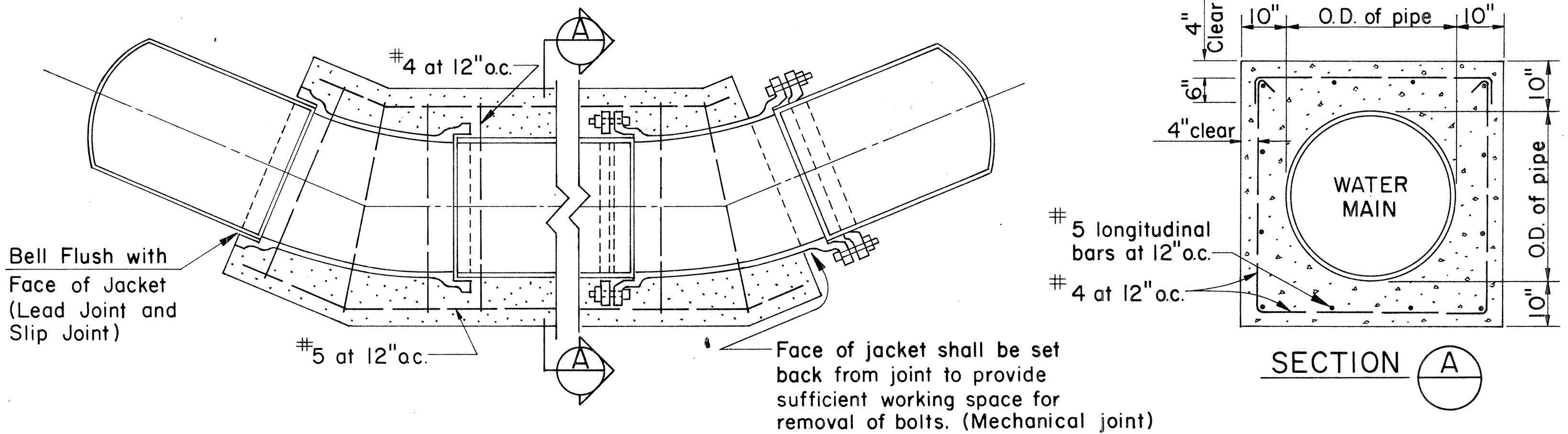
SHEET No. 4-3 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(84)-16	1978	122	466



TYPICAL DETAIL OF CONCRETE BLOCK WITH STRUCTURAL STRUT

FIGURE 20

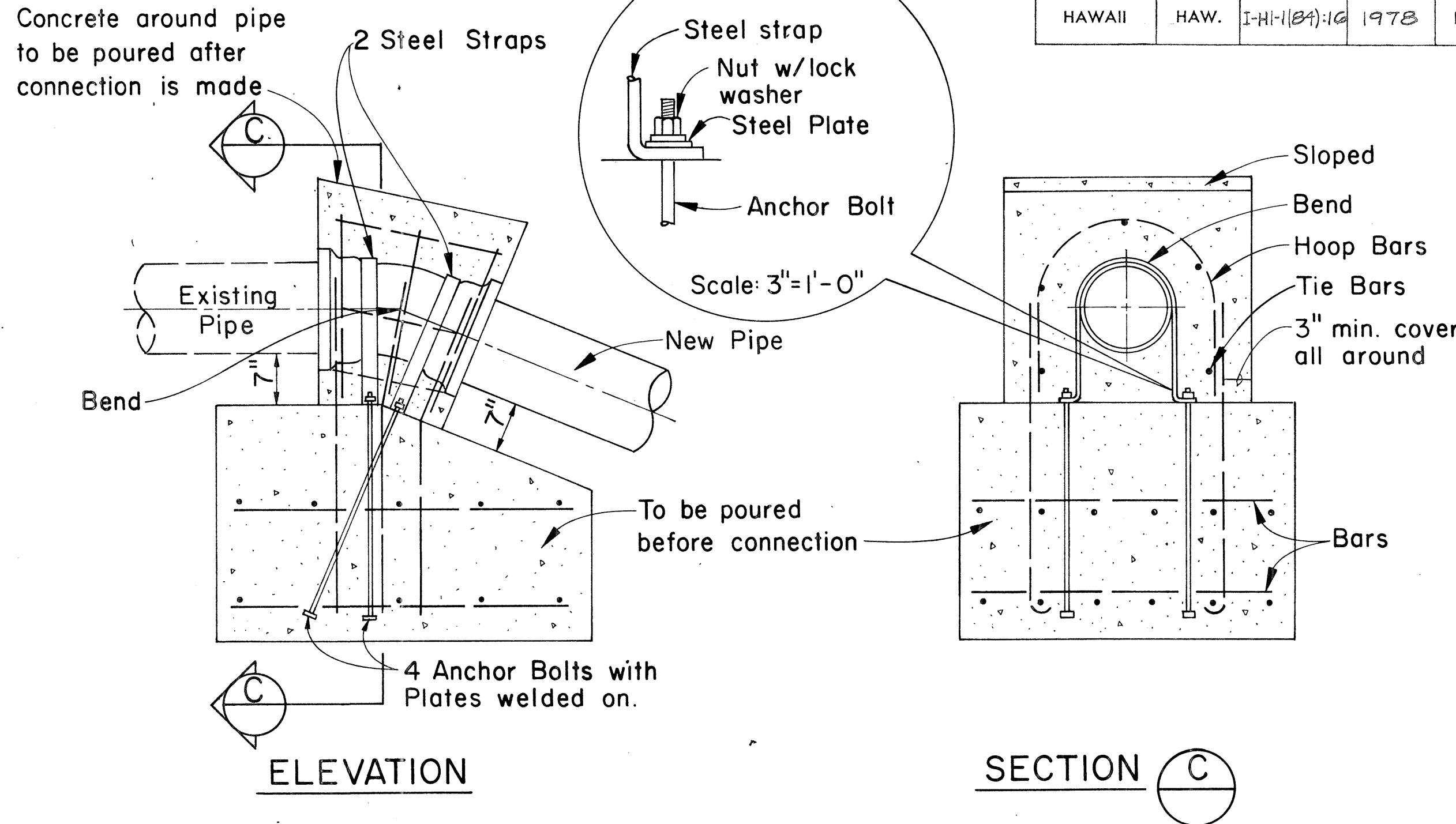


- NOTES:
1. Jacket to be poured after completion of test unless otherwise approved by the Engineer.
 2. 2 1/2" depth of lead joint pipe required at all embedded joints.
 3. Wherever construction joints are required, 6" rubber or neoprene waterstops shall be installed. Waterstops shall be of the type specified and manufactured by the Servitized Products Corporation, Gate Rubber Company or approved equal.

REINFORCED CONCRETE JACKET

Scale: Not to Scale

FIGURE 17



TYPICAL DETAIL OF CONCRETE REACTION BLOCK WITH STRAPS

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

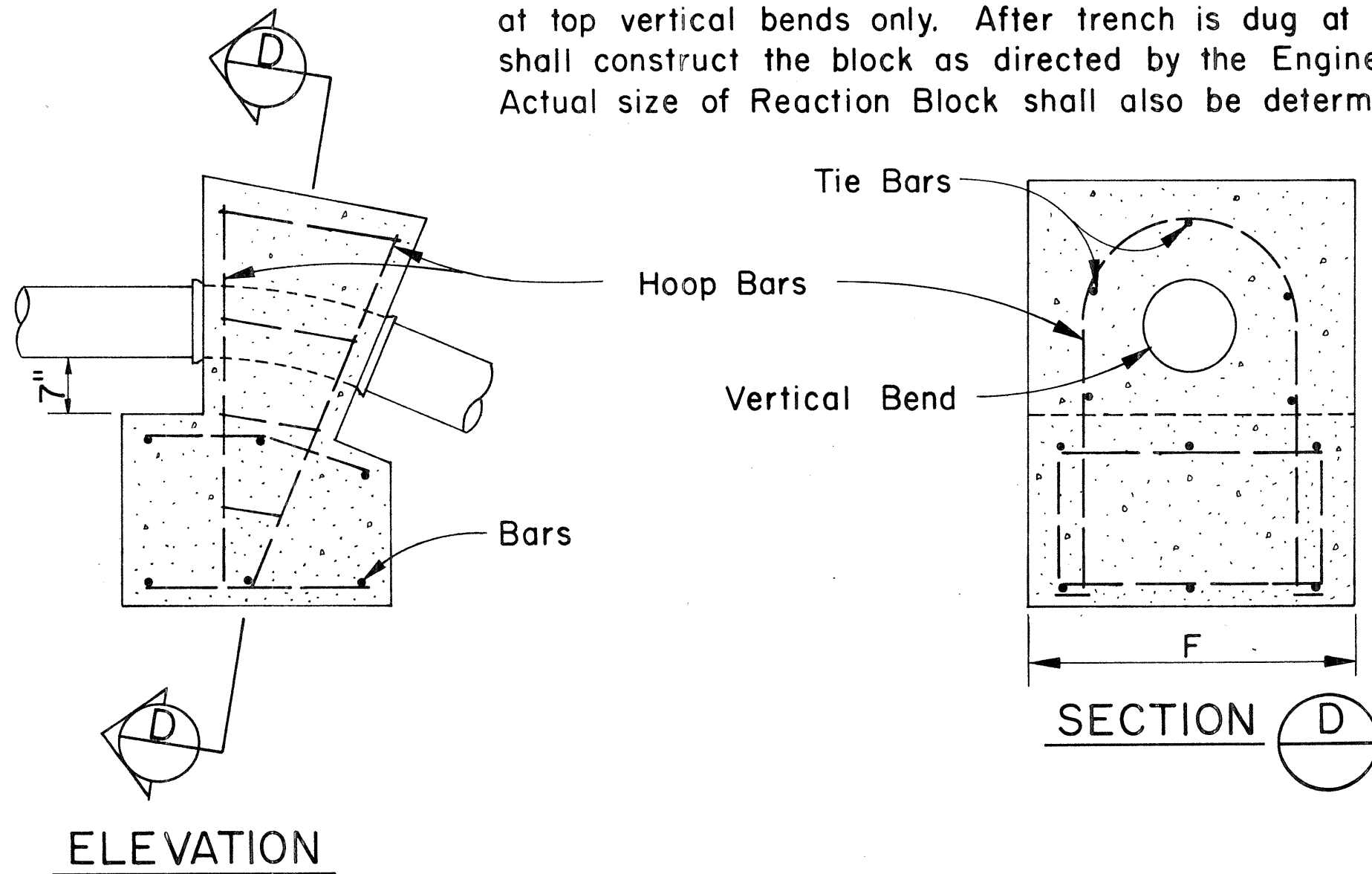
GENERAL NOTES (FOR FIGURES 20 & 21)

1. Detail drawings of actual blocks to be used, shall be furnished during construction by state.
2. Steel straps, anchor bolts, nuts, washers, etc., furnished and installed by the Contractor will not be paid for directly, but shall be considered incidental to the various contract items for the water system.
3. Minimum cover over all reinforcing steel shall be 3 inches.

FIGURE 21

NOTE:

The reinf. conc. reaction block as shown in this typical detail shall be constructed at top vertical bends only. After trench is dug at block location, the Contractor shall construct the block as directed by the Engineer to meet ground conditions. Actual size of Reaction Block shall also be determined by the Engineer.



NOTE:
All Structural Steel for Concrete Reaction Blocks shall be incidental.

APPROVED:

[Signature] 6/13/78
CHIEF, PLANNING AND ENGINEER
BOARD OF WATER SUPPLY

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
BOARD OF WATER SUPPLY

AIRPORT INTERCHANGE
F.A.I. PROJ. NO. I-H-1(84)-16

SCALE: AS SHOWN DATE: JULY 13, 1978

SHEET No. 05 OF 9 SHEETS

TYPICAL DETAIL OF REINFORCED CONCRETE REACTION BLOCK FOR TOP VERTICAL BENDS

Scale: Not to Scale

FIG