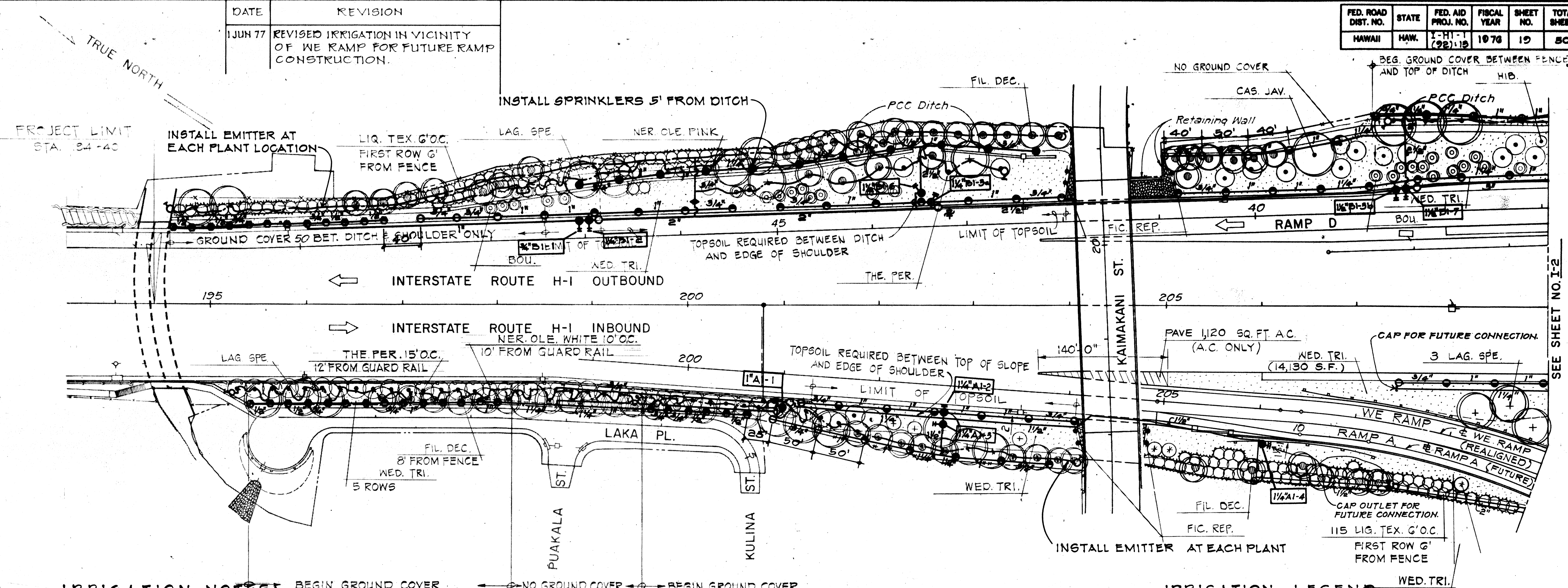


DATE	REVISION
1 JUN 77	REVISED IRRIGATION IN VICINITY OF WE RAMP FOR FUTURE RAMP CONSTRUCTION.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1 (92):12	1976	12	50



IRRIGATION NOTES: BEGIN GROUND COVER — NO GROUND COVER — BEGIN GROUND COVER

- SPRINKLERS (TYPES J-25P, J-30P, J-35P, J-40P & J-65P) IN GROUND COVER AND SHRUB MASS AREAS SHALL BE INSTALLED ON GALV. STEEL RISERS 18 INCHES AND 36 INCHES ABOVE THE GROUND.
- SPRINKLERS (TYPES S-4 AND S-13) WITHIN 10 FEET OF SHOULDERS SHALL BE INSTALLED ON NON-RIGID P.V.C. RISERS WITH SPRING. SPRINKLERS (TYPE S-13) BEHIND GUARD RAILS, BRIDGE COLUMNS AND AT LOCATIONS OTHER THAN SHOULDER AREAS SHALL BE INSTALLED ON GALVANIZED STEEL RISERS 10 INCHES ABOVE GROUND.
- SPRINKLERS (TYPES J-25P, J-35P, & J-65P) AND QUICK COUPLING VALVES WITHIN 5 FEET OF SHOULDERS, CURBS AND PAVED AREAS SHALL BE INSTALLED ON SWING JOINTS. SWING JOINTS WILL NOT BE REQUIRED FOR SPRINKLERS BEHIND GUARD RAILS OR WALLS. SWING JOINTS WILL BE THE SAME SIZE AS THE RISER CONNECTION. SPRINKLERS (TYPES P-30P, P-37P, P-41F, P-62P & P-84F) SHALL BE INSTALLED WITH FLEX. SWING JOINT.
- CONTROL VALVES, GATE VALVES, VALVE ASSEMBLY UNITS, AIR RELIEF VALVES AND REMOTE CONTROL VALVES SHOWN ADJACENT TO CURBS, SHOULDERS AND PAVED AREAS SHALL BE INSTALLED 4 FEET FROM THE ABOVE MENTIONED.
- SPRINKLERS AND QUICK COUPLING VALVES SHALL BE INSTALLED 5 FEET FROM CURBS, SHOULDERS, STRUCTURES, DITCHES, SLOPE PAVING AND GUARD RAILS, A MAXIMUM OF 3 FEET FROM FENCES AND SPRINKLERS SHOWN ADJACENT TO SIDEWALKS SHALL BE INSTALLED A MAXIMUM OF 12 INCHES FROM SIDEWALKS UNLESS OTHERWISE NOTED.
- POP-UP SPRINKLERS SHALL BE INSTALLED IN CONCRETE PROTECTORS EXCEPT FULL CIRCLE SPRINKLERS IN BERMUDA AREAS.
- SPRINKLER SPACING SHALL BE AS SHOWN ON THE SPRINKLER SCHEDULE (SEE SHEET NO. I-26 OF I-32) OR AS NOTED ON THE PLANS.
- EXACT LOCATION OF BOOSTER STATIONS WILL BE DETERMINED BY THE ENGINEER. SEE SHEETS I-22 & I-23.
- PLANTINGS ARE SHOWN FOR IRRIGATION DESIGN PURPOSES ONLY. CONTRACTOR SHALL REFER TO LANDSCAPE PLANS FOR THE PLANT LOCATIONS.
- CONDUIT PROVIDED FOR HECO. PRIMARY ELECTRIC SERVICE CONDUCTORS SHALL BE CONCRETE ENCASED, NON-METALLIC CONDUIT RUN UNDER THE TRAVELED WAY OR UNDER SHOULDER SHALL BE CONCRETE ENCASED, STEEL OR P.V.C. CONDUIT RUN ELSEWHERE UNDERGROUND SHALL BE DIRECTLY BURIED, NON-METALLIC, MINIMUM 1-INCH SIZE. SEE DETAIL 4/20. EXPOSED CONDUIT SHALL BE STEEL.
- INSTALL 240-VOLT AND 120-VOLT WIRING IN CONDUIT. INSTALL 30-VOLT WIRING IN CONDUIT OR DIRECTLY BURY. 240 VOLT, 120 VOLT, 30 VOLT WIRING MAY BE INSTALLED IN THE SAME CONDUIT.

IRRIGATION LEGEND

- | | |
|---|--|
| <ul style="list-style-type: none"> WATER METER BACKFLOW PREVENTER ELECTRIC AUTOMATIC MASTER CONTROLLER ELECTRIC AUTOMATIC SATELLITE CONTROLLER GATE VALVE AIR RELIEF AND VACUUM RELIEF VALVES ELECTRIC REMOTE CONTROL VALVE PRESSURE REGULATOR VALVE QUICK COUPLING VALVE ON RISER QUICK COUPLING VALVE IN VALVE PROTECTOR GARDEN VALVE VALVE ASSEMBLY UNIT (VAU) BOOSTER STATION PRESSURE RELIEF VALVE | <ul style="list-style-type: none"> PLASTIC PIPE (SUPPLY LINE) GALVANIZED STEEL PIPE (SUPPLY LINE) PLASTIC PIPE (IRRIGATION LINE) EXISTING WATERLINE AND ELECTRICAL CONDUIT (SIZE AS NOTED) EXISTING SPRINKLER SUPPLY LINES ELECTRICAL CONDUIT W/POWER WIRES AND/OR CONTROL WIRES (AS REQUIRED BY MASTER-SATELLITE CONTROL SYSTEM) OR AS SHOWN. SEE NOTES 10 & 11. PULLBOX TYPE B-SEE DETAIL 3/32. |
|---|--|

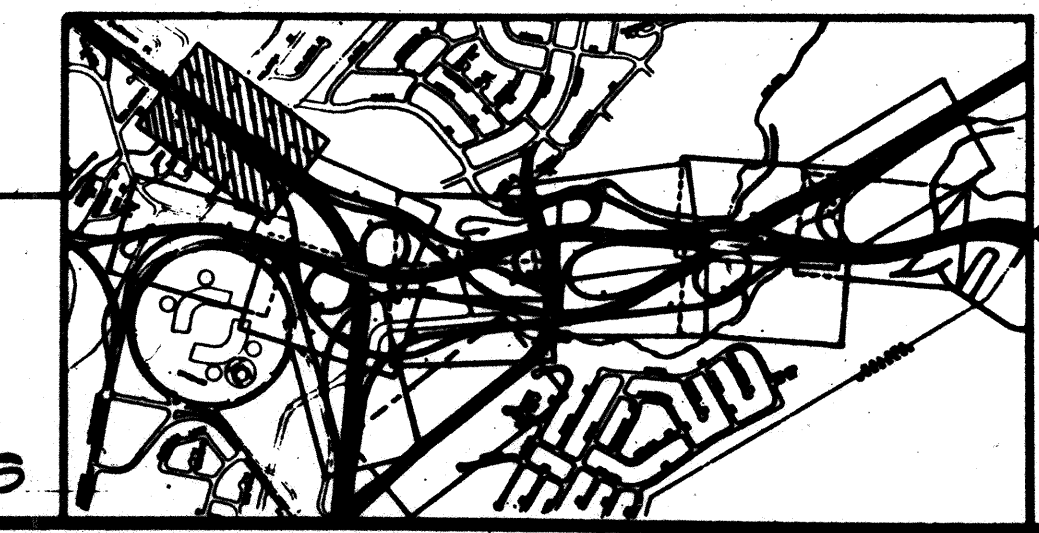
REMOTE CONTROL VALVE SIZE: 1 1/2" AI-1

SATELLITE No. / STATION No.

REMOTE CONTROL VALVE CODE

NOTE: SEE SHEET I-26 FOR SPRINKLER HEAD LEGEND.

SEE DETAIL 1/12 SHEET SHOWING DETAIL REFERENCES TO DETAILS



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

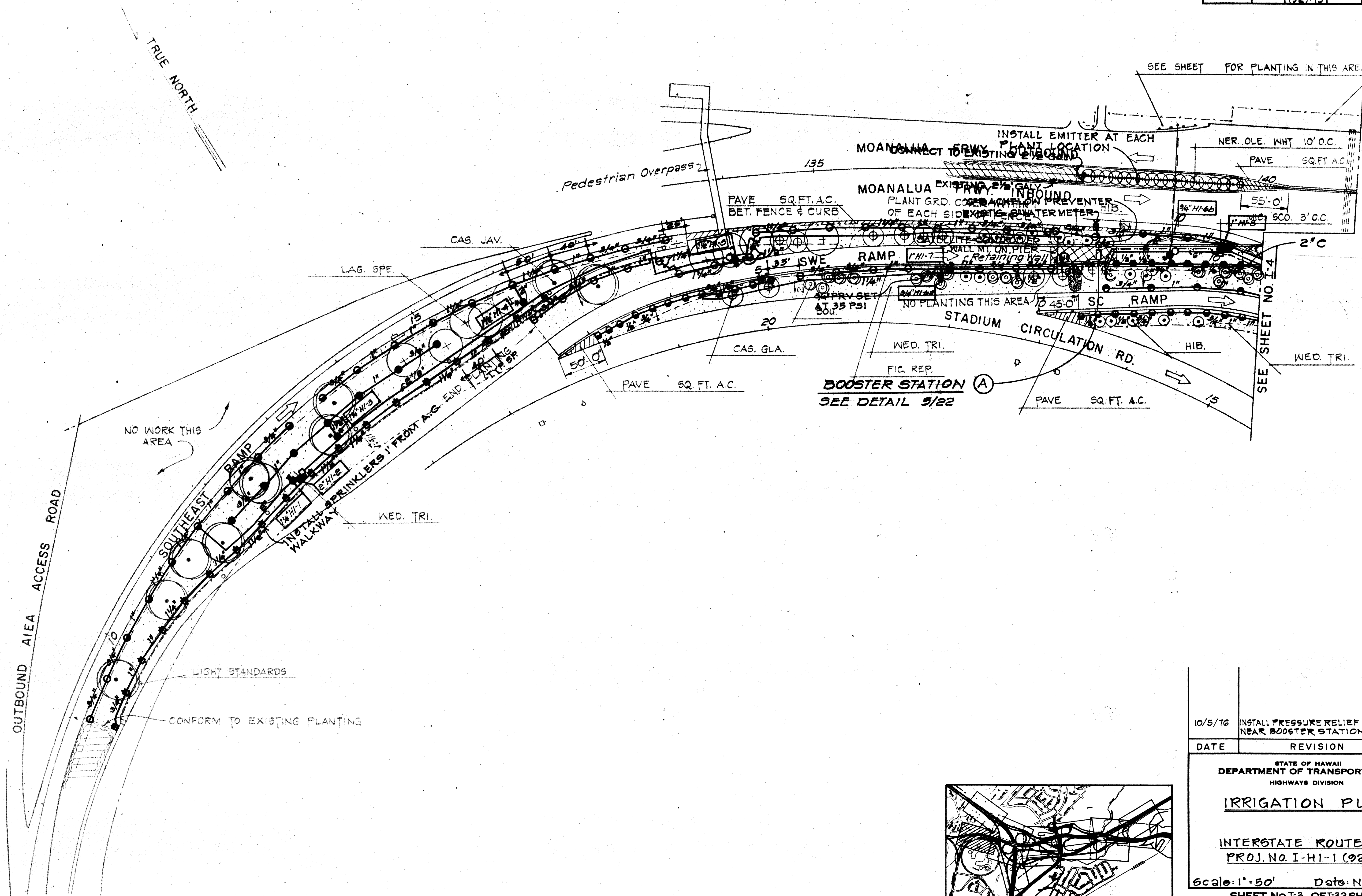
IRRIGATION PLAN

INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1 (92):12

Scale: 1" = 50' Date: Nov. 1976
SHEET NO. 1 OF 12 SHEETS

DATE: 1 JUN 77
DRAWN BY: [blank]
CHECKED BY: [blank]
NOTES: [blank]

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
HAWAII	HAW.	1-11-1 (22) 11	1976	21	50



10/5/76	INSTALL PRESSURE RELIEF VALVE NEAR BOOSTER STATION (A)
DATE	REVISION

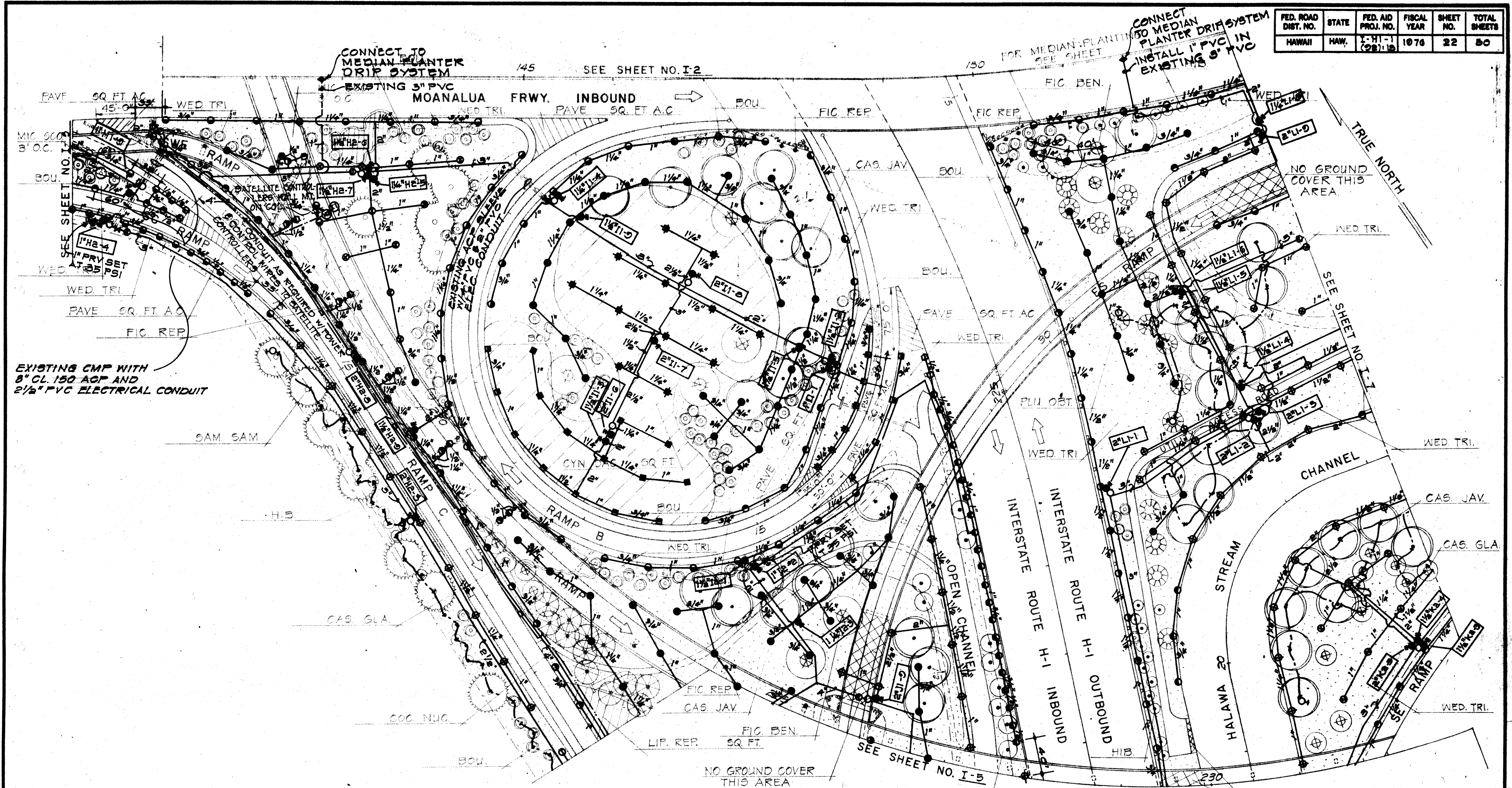
**STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION**

IRRIGATION PLAN

INTERSTATE ROUTE H-1
PROJ. NO. I-H1-1 (92):13

Scale: 1" = 50' Date: Nov. 1975
SHEET NO. I-3 OF I-32 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1 (92)10	1976	22	50



DATE	_____
SURVEY PLATTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
NOTED BY	_____
CHECKED BY	_____



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1 (92)10

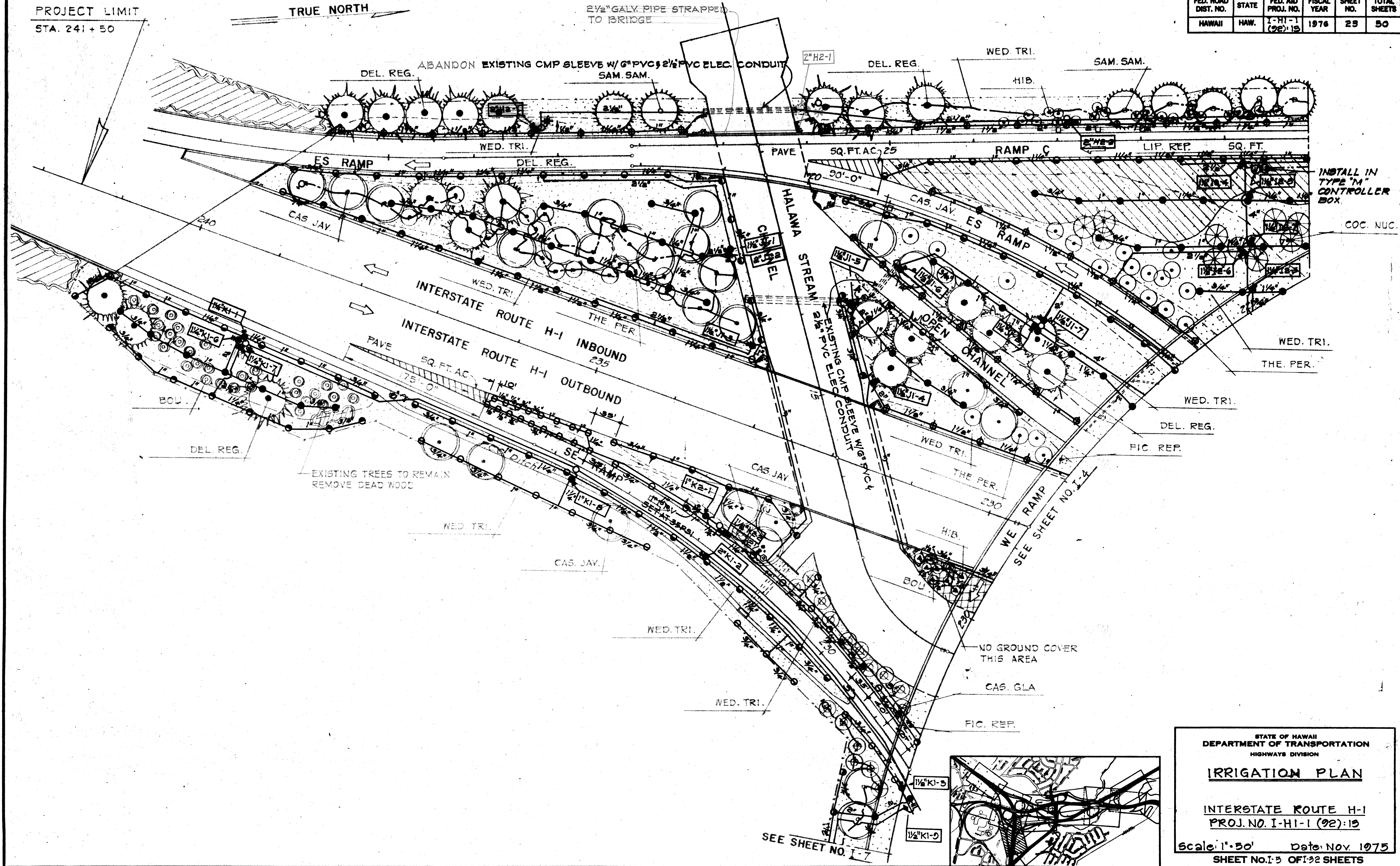
Scale: 1" = 50' Date: Nov. 1975
SHEET NO. I-4 OF 25 SHEETS

PROJECT LIMIT
STA. 241+50

TRUE NORTH

2 1/2" GALV. PIPE STRAPPED
TO BRIDGE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1 (92):19	1976	23	50



SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

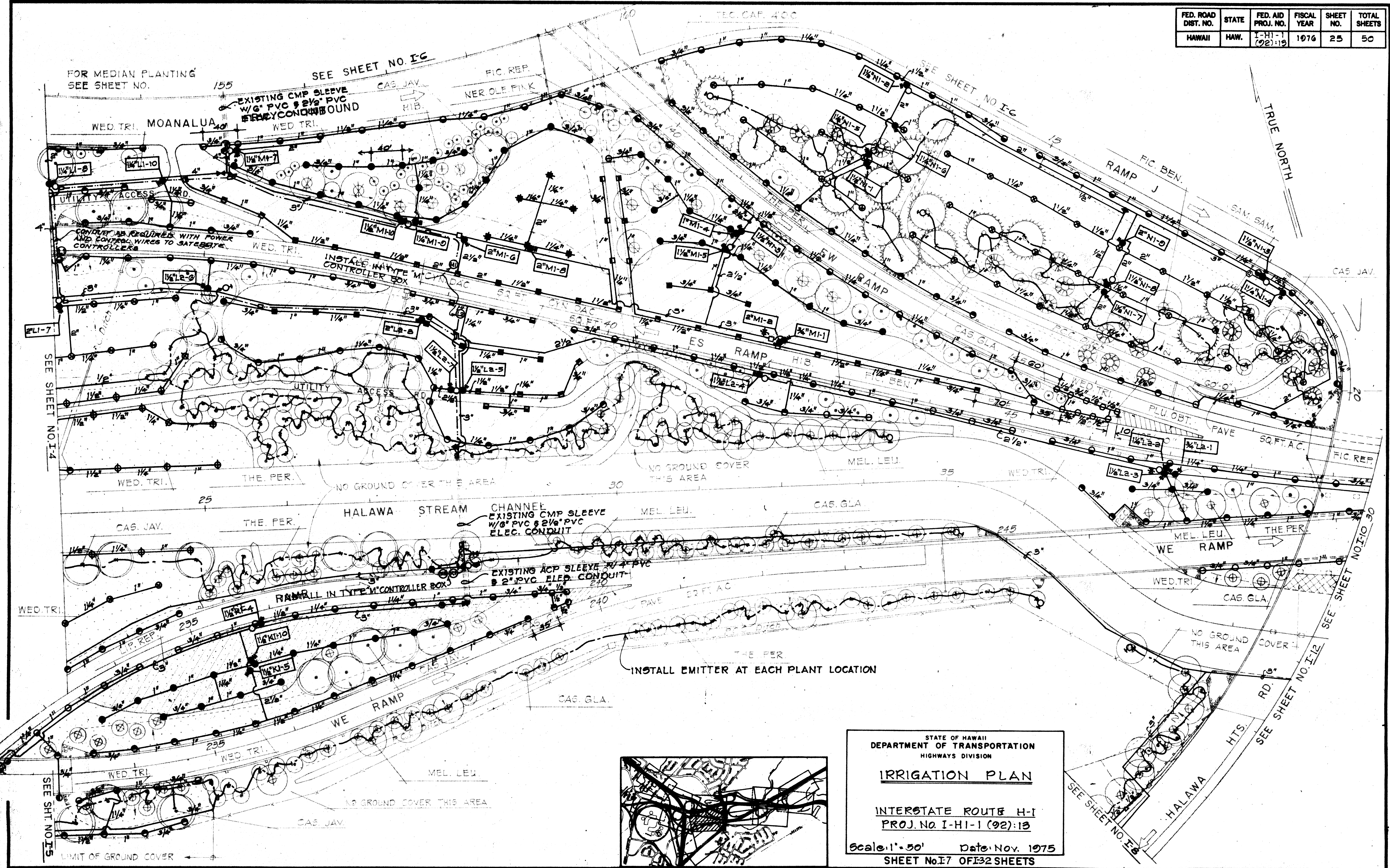
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1 (92):19

Scale: 1"=50' Date: Nov. 1975
SHEET NO. 23 OF 52 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1 (92)13	1976	25	50



DATE	.....
DESIGNED BY	.....
CHECKED BY	.....
NOTED BY	.....
APPROVED BY	.....



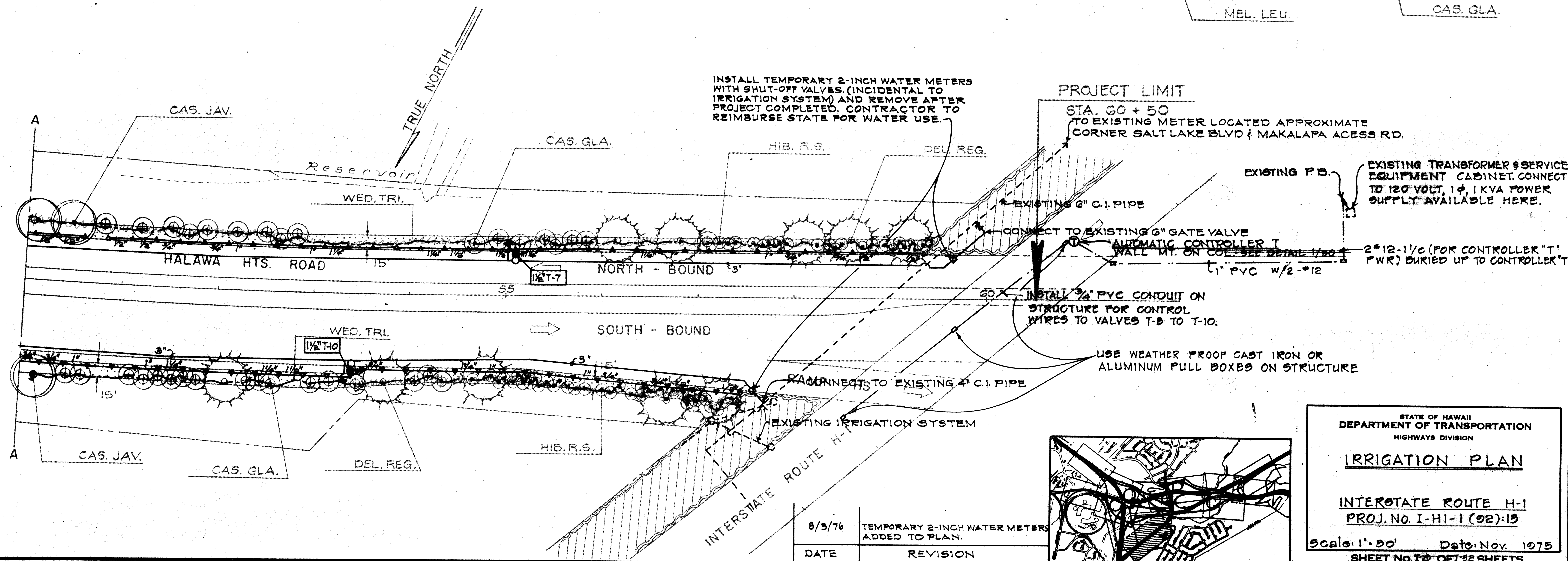
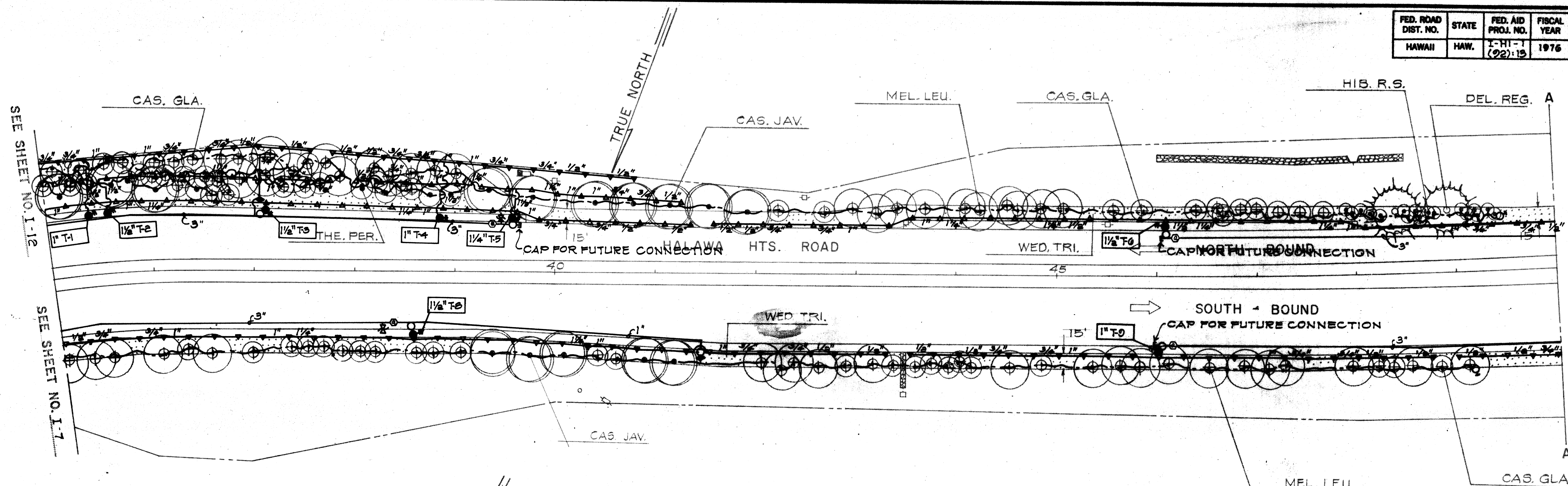
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1 (92)13

Scale: 1" = 50' Date: Nov. 1975
SHEET No. 17 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1 (92):19	1976	26	50



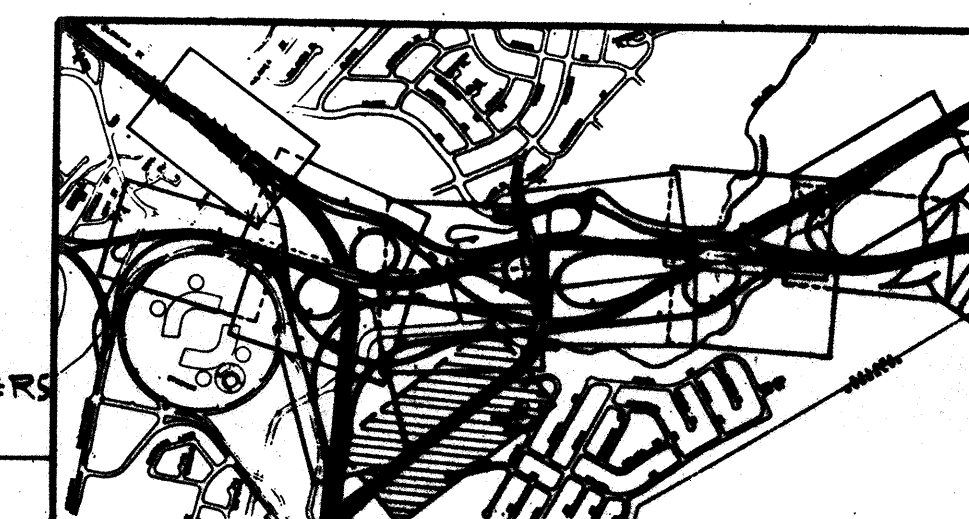
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1 (92):19

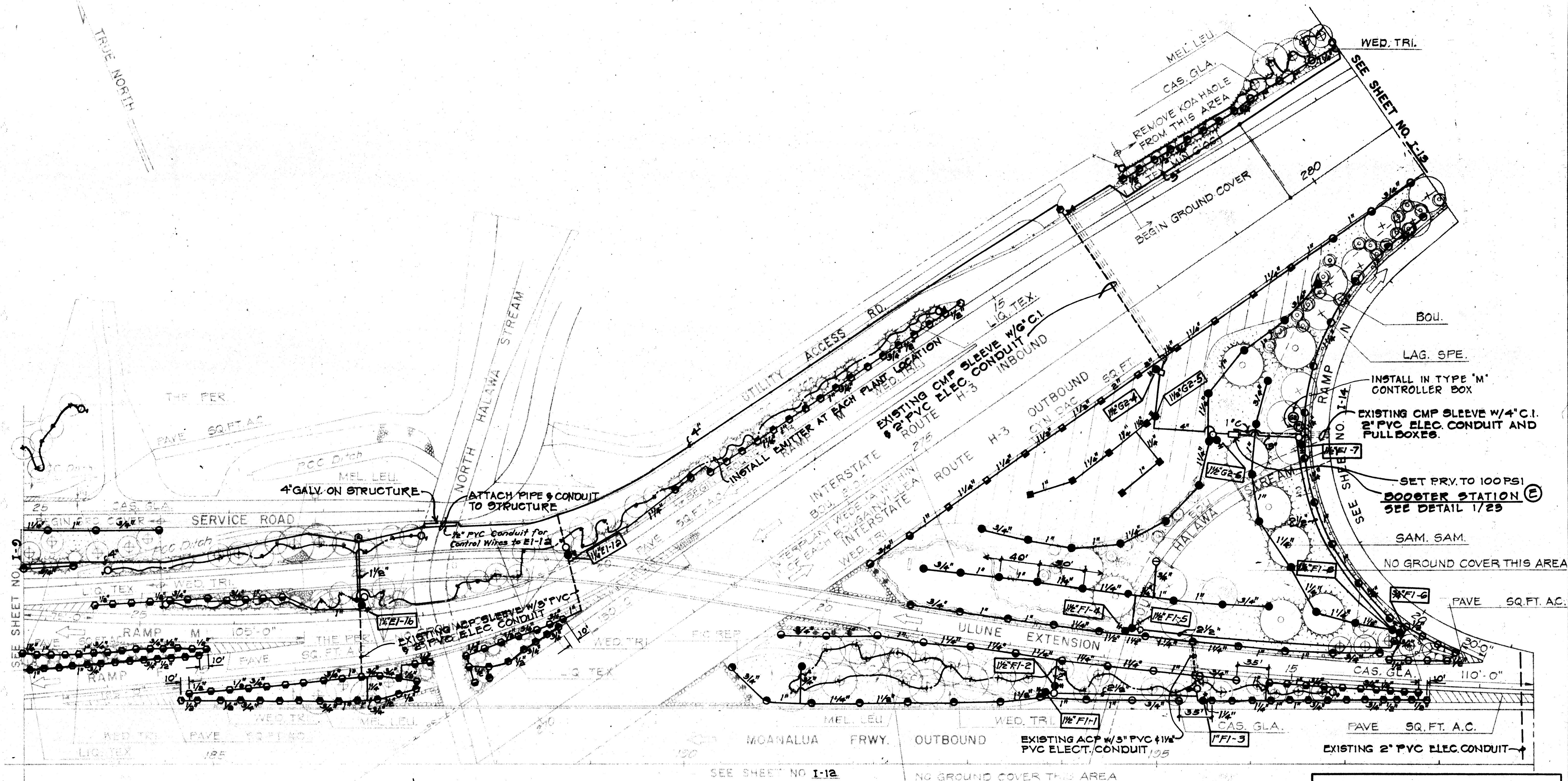
Scale: 1" = 50' Date: Nov. 1975
SHEET NO. 26 OF 52 SHEETS

8/3/76	TEMPORARY 2-INCH WATER METERS ADDED TO PLAN.
DATE	REVISION



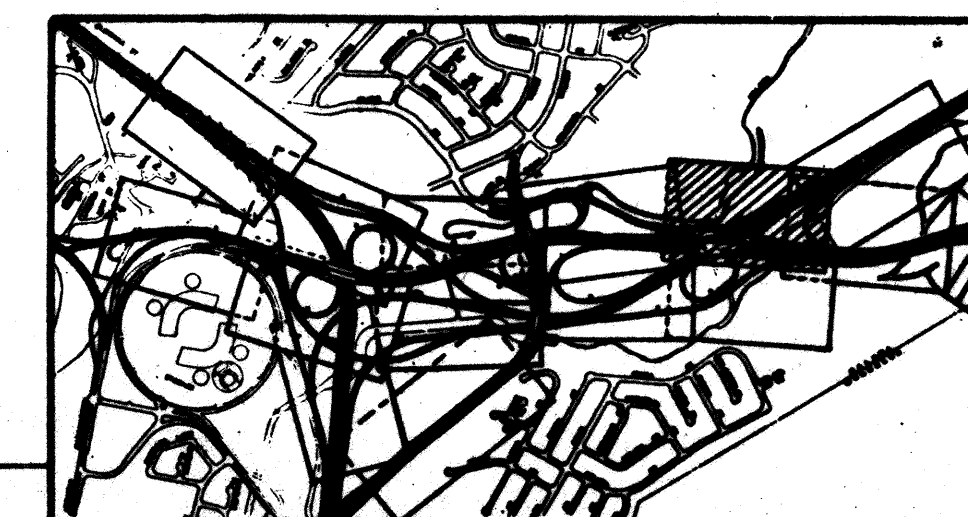
ADD. 26

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1 (92):19	1976	29	50



DATE	.....
DESIGNED BY	.....
CHECKED BY	.....
NOTED BY	.....
NO.	.....

0-14-76	Added sprinklers to E1-12 and E1-1b, change valve size for E1-12.
DATE	REVISION



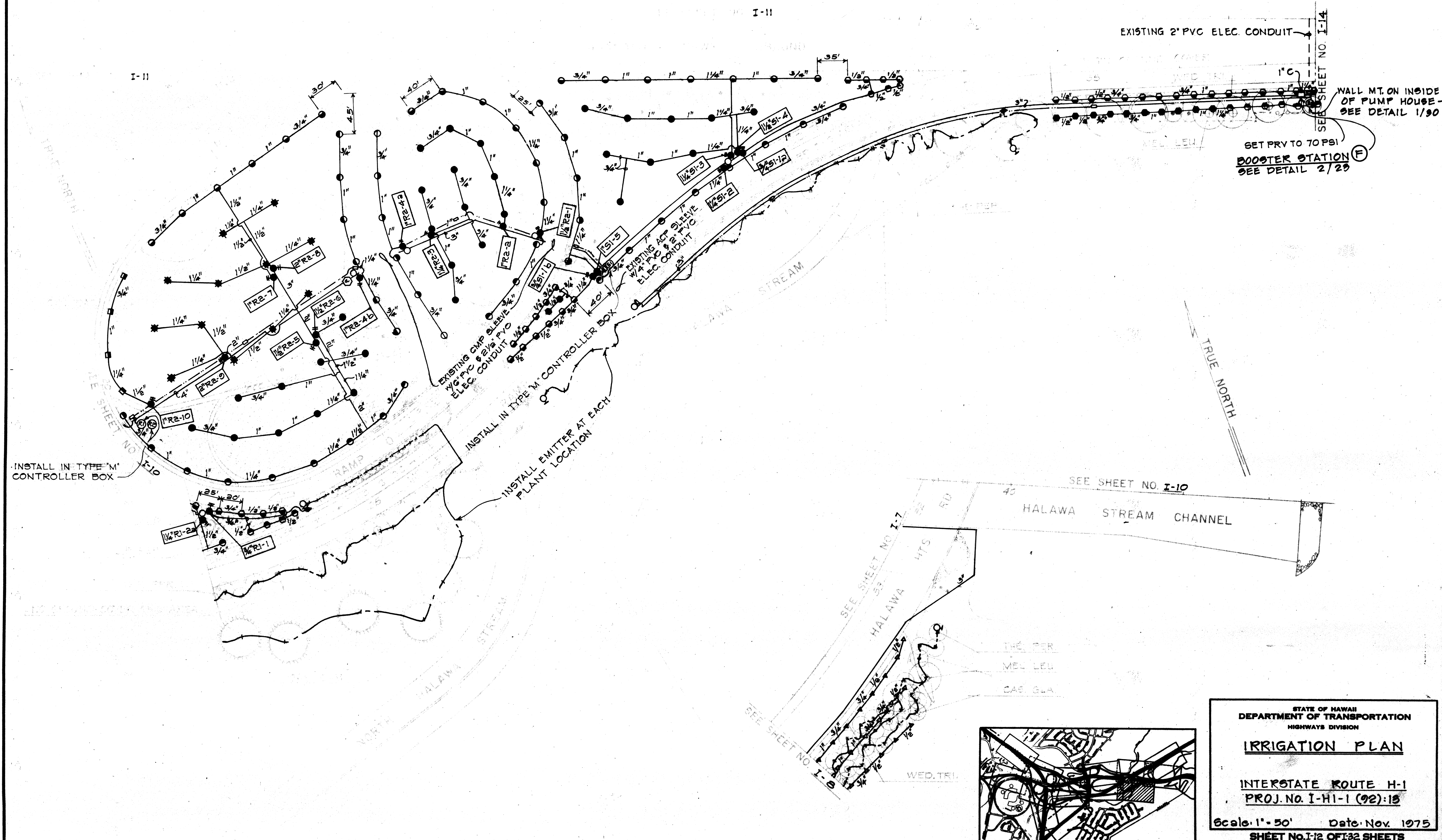
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

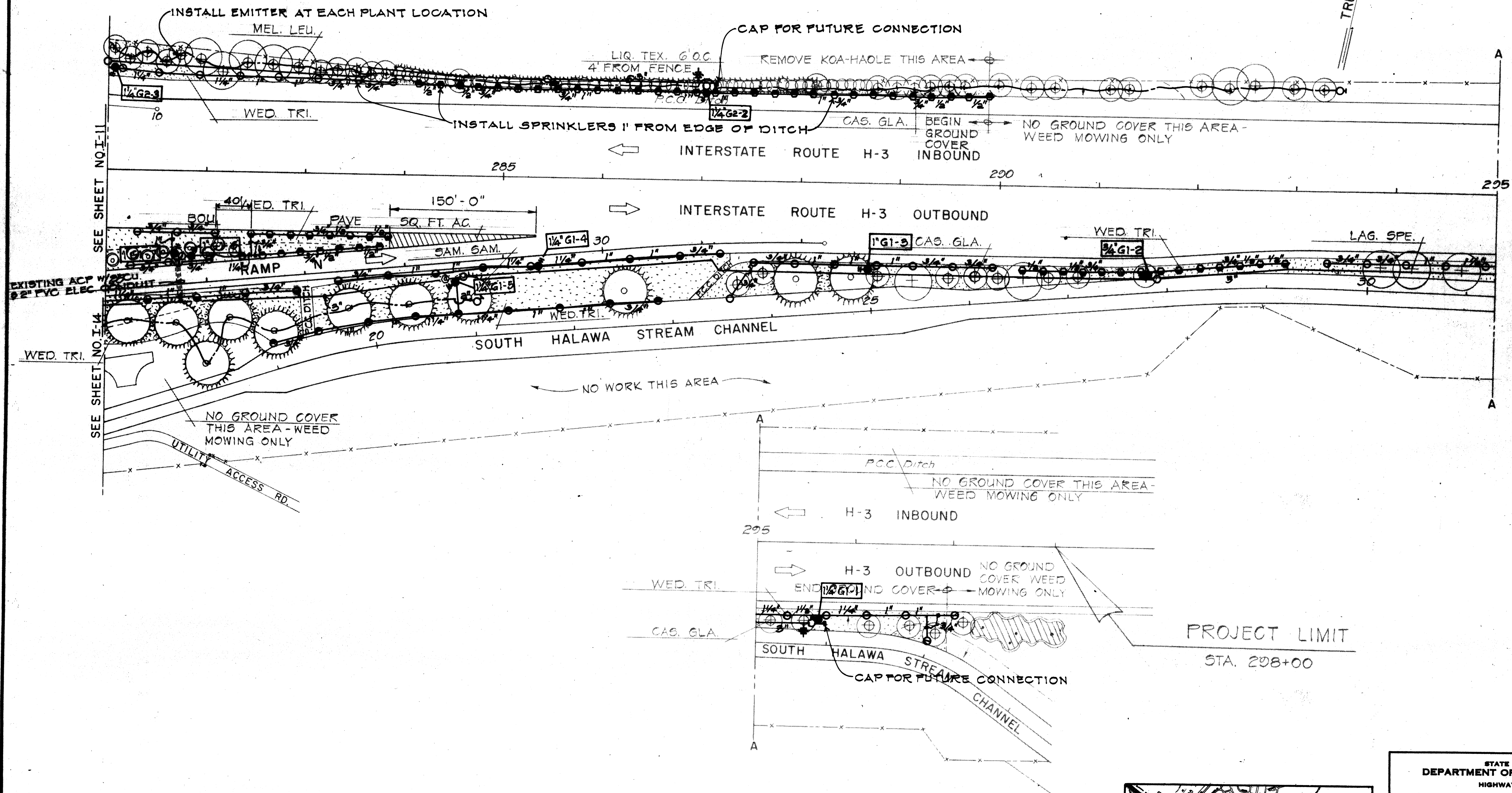
INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1 (92):19

Scale: 1" = 50' Date: Nov. 1975
SHEET NO. I-II OF 32 SHEETS

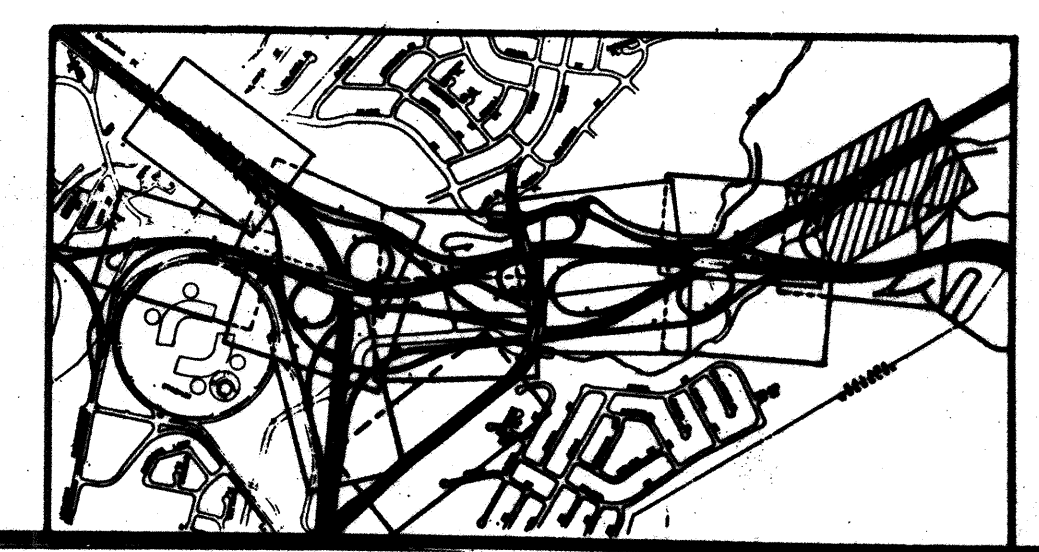
ORIGINAL PLAN	SURVEY PLOTTED BY _____	DATE _____
	DRAWN BY _____	"
	TRACED BY _____	"
NOTE BOOK	DESIGNED BY _____	"
	QUANTITIES BY _____	"
No. _____	CHECKED BY _____	"



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1 (92):13	1975	31	50



DATE	
SURVEY PLOTTED BY	
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	



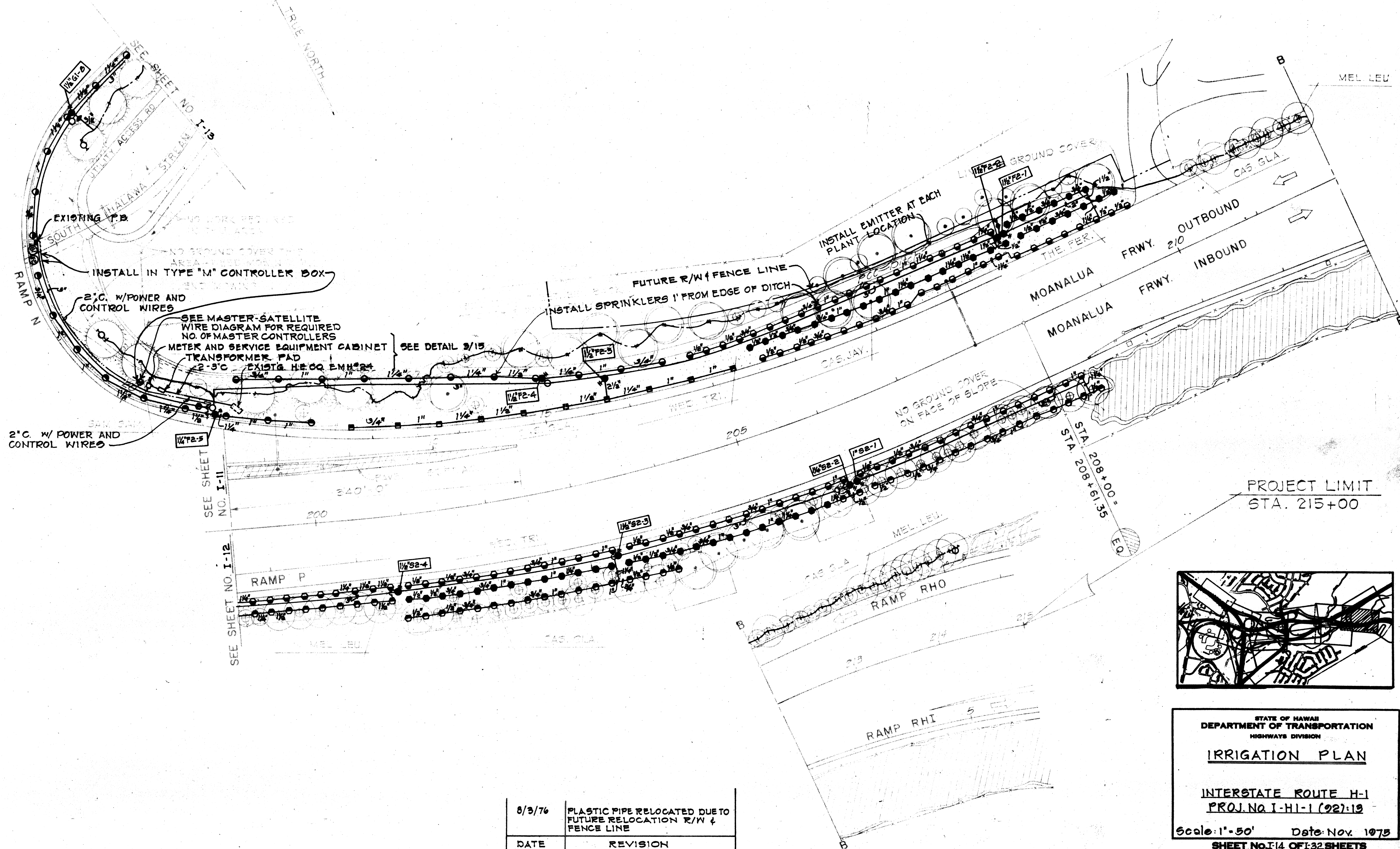
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

INTERSTATE ROUTE H-1
PROJ. No I-HI-1 (92):13

Scale: 1" = 50' Date: Nov. 1975
SHEET NO. I-13 OF 132 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-1-1 (92) 13	1976	92	50



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1 (92) 13

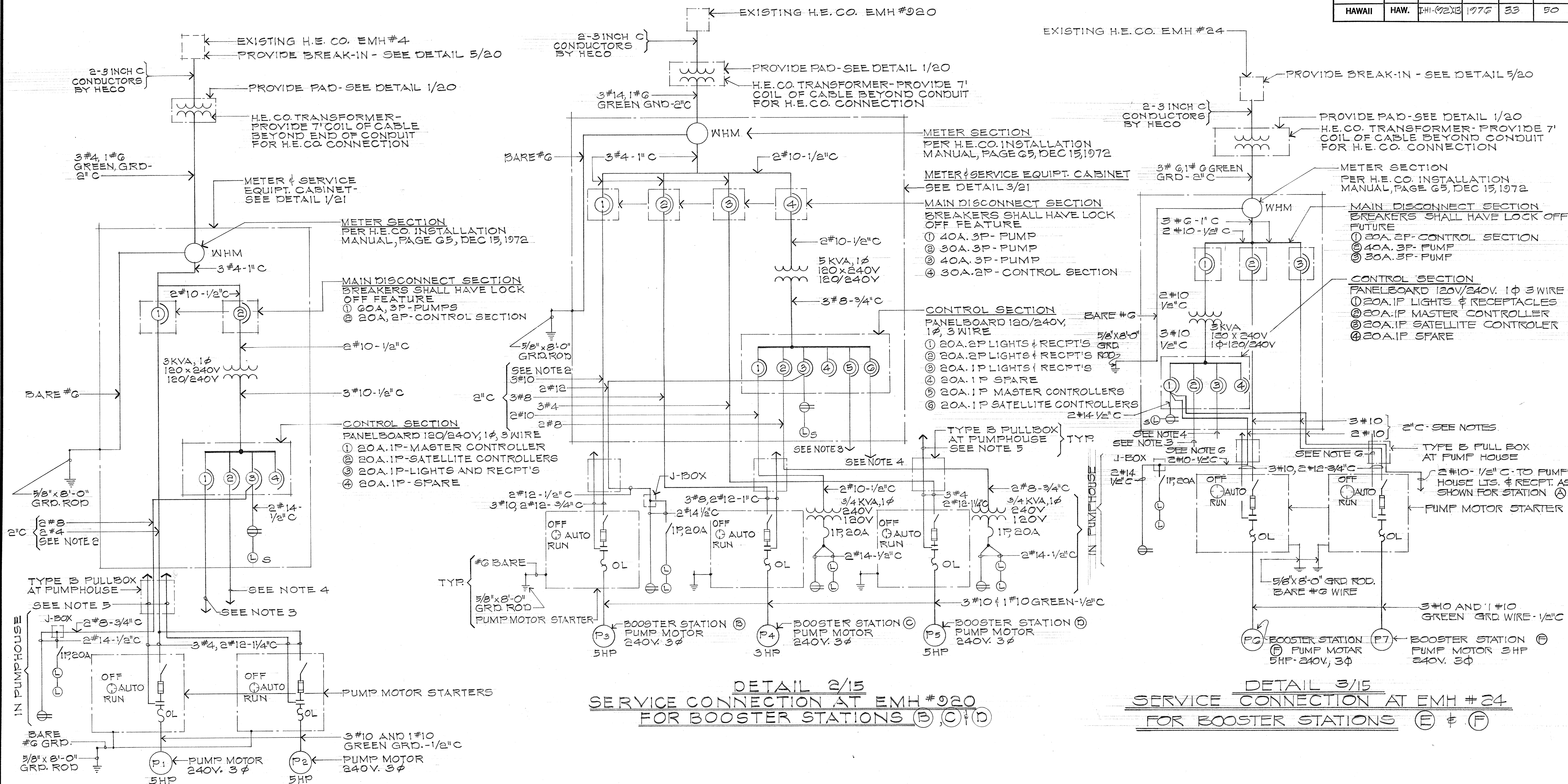
Scale: 1"=50' Date: Nov. 1975

SHEET NO. 14 OF 32 SHEETS

8/3/76	PLASTIC PIPE RELOCATED DUE TO FUTURE RELOCATION R/W & FENCE LINE
DATE	REVISION

ADD. 32

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HI-1(92)13	1975	33	50



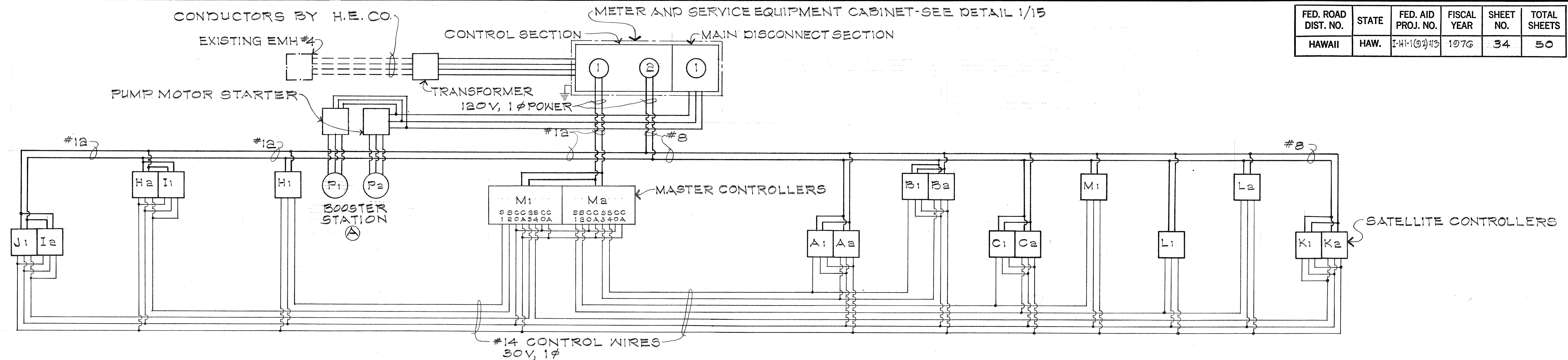
- NOTES:
1. ALL WIRE SIZES ARE A.W.G., COPPER.
 2. PROVIDE CONDUIT OF INDICATED SIZE. UTILIZE EXISTING CONDUIT AS PLAN SHEETS SHOW. RUN OTHER WIRING WITH PUMP FEEDER AS REQUIRED.
 3. PROVIDE POWER WIRES TO MASTER AS REQUIRED.
 4. PROVIDE POWER WIRES TO SATELLITES AS REQUIRED.
 5. PUMP START WIRES TO FLOW SWITCH.
 6. PUMP START WIRES TO SATELLITE OR MASTER CONTROLLER. SEE MASTER-TO-SATELLITE WIRING DIAGRAM.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION SYSTEM
ONE LINE DIAGRAM FOR
SERVICE CONNECTIONS
AND BOOSTER STATIONS
INTERSTATE ROUTE H-1
PROJ. NO. HI-1(92)13
DATE JUN 1976

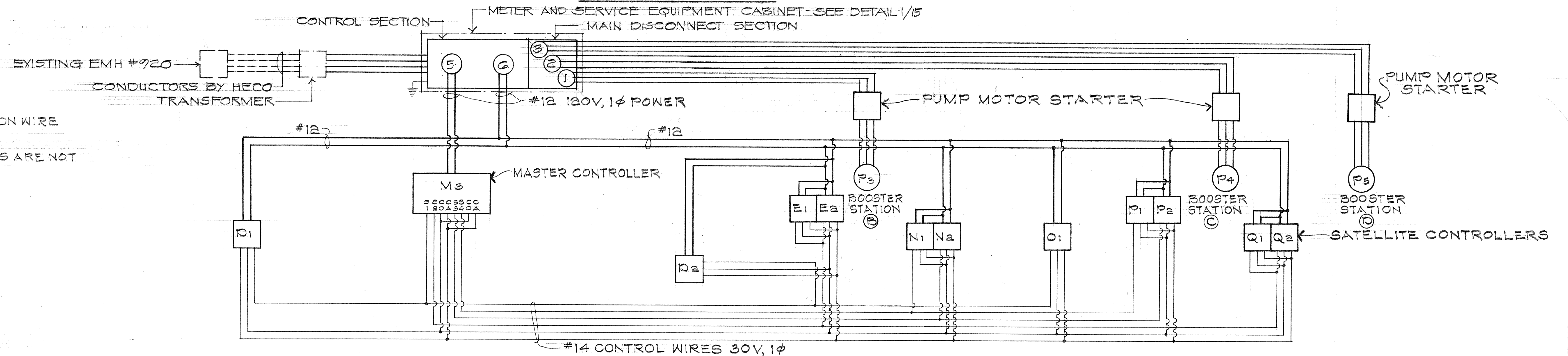
SHEET No. 115 OF 133 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(92)113	1976	34	50

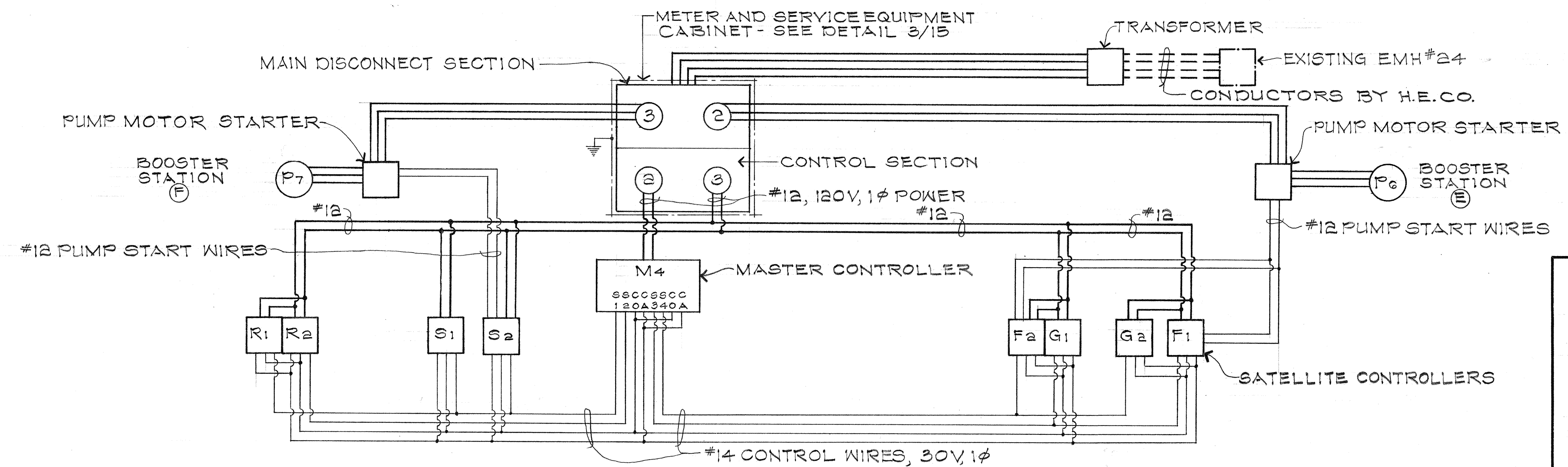


DETAIL 1/16

- NOTES:
1. S1 - START WIRE, CO - COMMON WIRE
 2. CA - CANCEL WIRE
 3. SEE NOTES 10 & 11 SHEET 1
 4. PUMPHOUSE LIGHTING CIRCUITS ARE NOT SHOWN HERE - SEE SHEET 15.



DETAIL 2/16

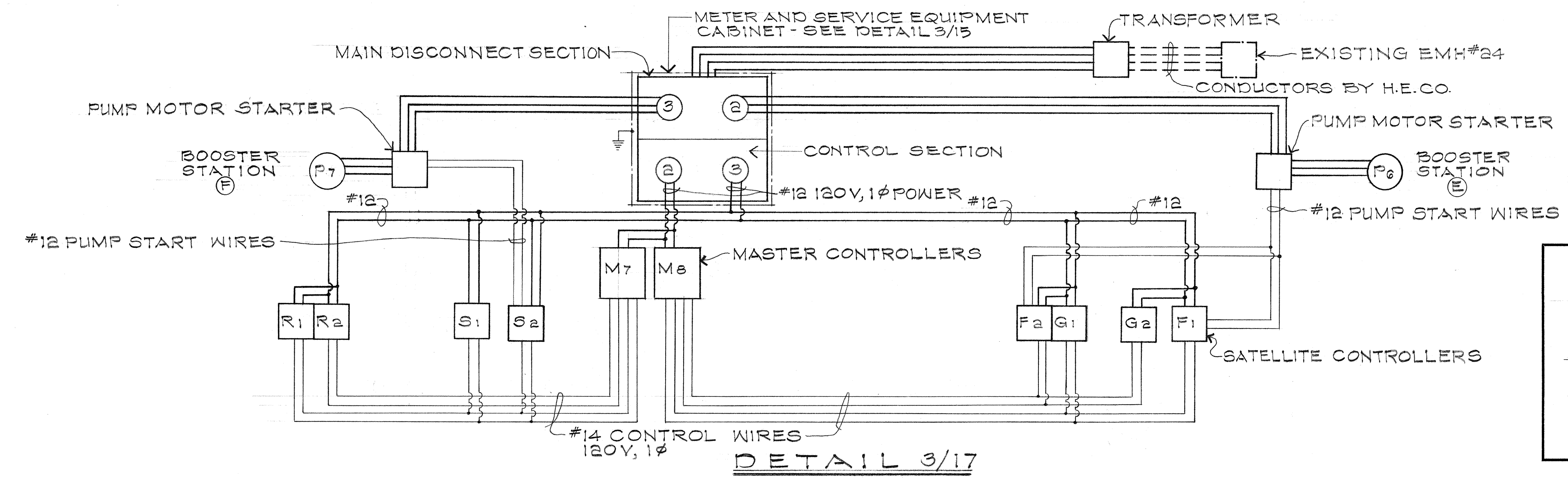
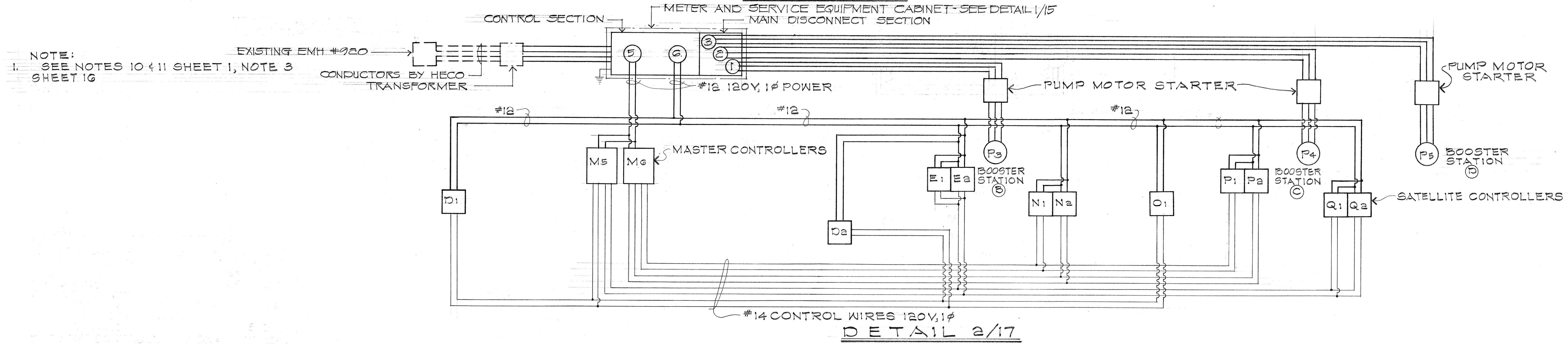
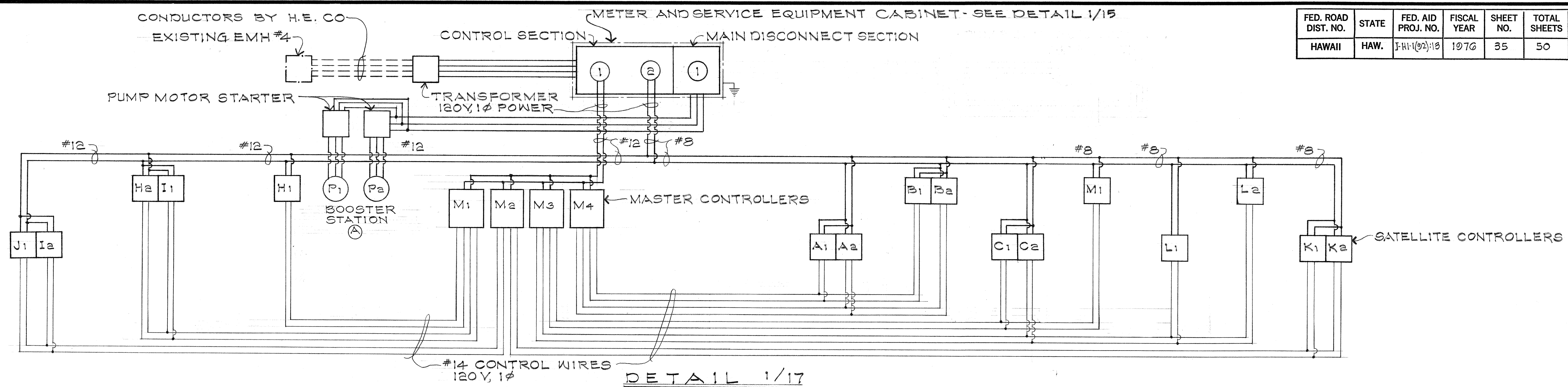


DETAIL 3/16

NOTE:
REVISED OPTION "C" WAS
INSTALLED BY CONTRACTOR.
REFER TO PLAN SHT. NOS.
C.O. 36 AND C.O. 36 S-1.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IRRIGATION SYSTEM
WIRING DIAGRAMS -
MASTER TO SATELLITE CONTROLLER
OPTION "A"
INTERSTATE ROUTE H-1
PROJ. NO. I-H-1(92)113
Date: Mar. 1976
SHEET NO. 116 OF 132 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(02)13	1976	35	50



NOTE: REVISED OPTION "C" WAS INSTALLED BY CONTRACTOR. REFER TO PLAN SHT. NOS. C.O. 36 AND C.O. 36 S-1

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION SYSTEM

WIRING DIAGRAMS
MASTER TO SATELLITE CONTROLLER
OPTION "B"

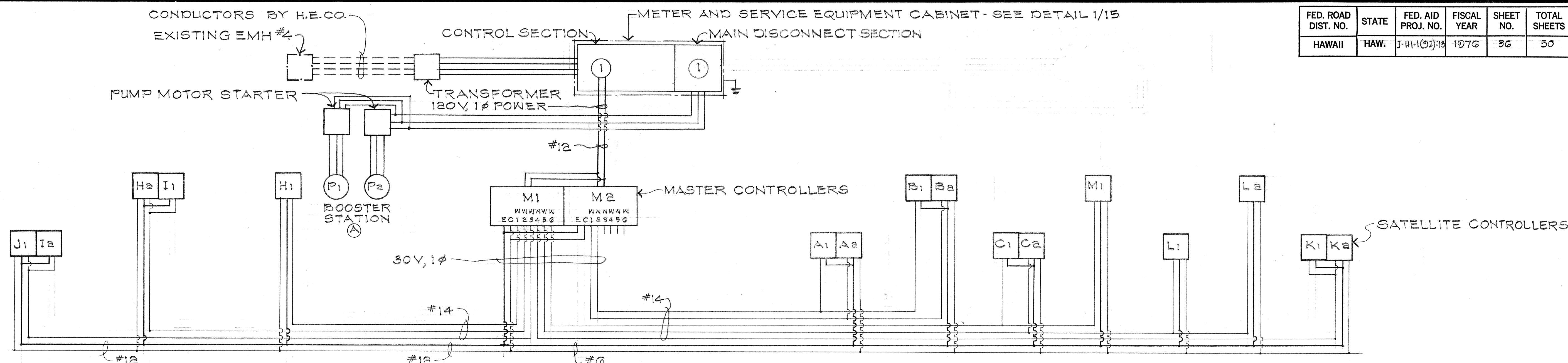
INTERSTATE ROUTE H-1
PROJ. NO. I-H-1(02)13

Date: Mar 1976

SHEET NO. 17 OF 132 SHEETS

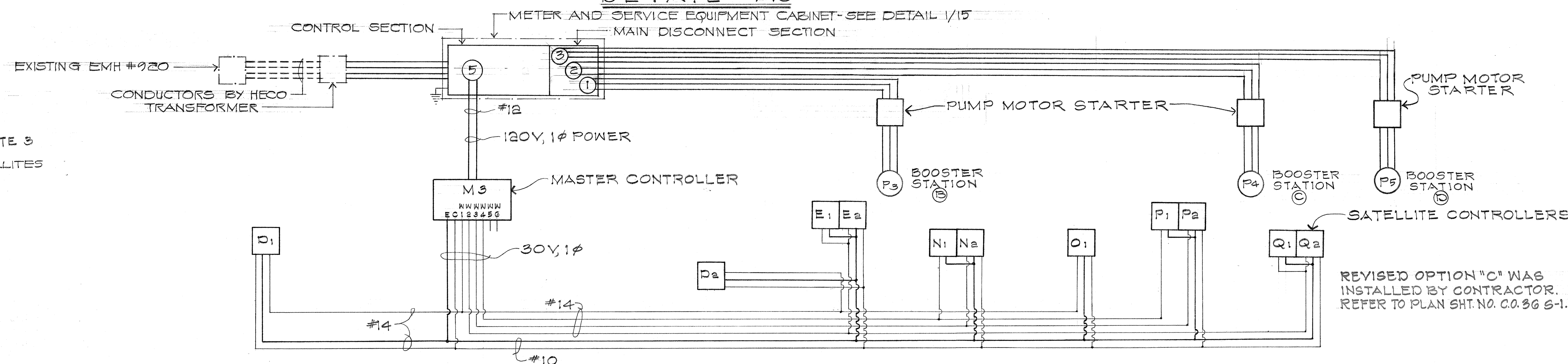
SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	J-41-1(92):13	1976	36	50

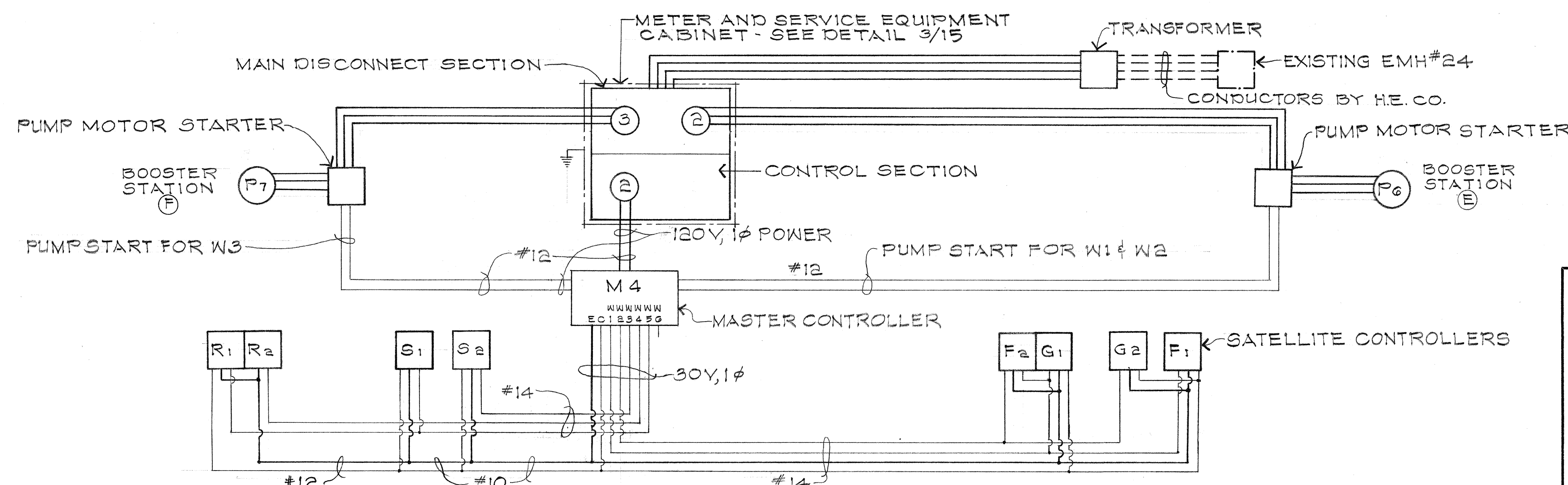


DETAIL 1/18

- NOTE:
1. E - ENERGY WIRE
C - COMMON WIRE
W1 TO W6 - START WIRE
 2. SEE NOTES 10, 11 SHEET 1, NOTE 3 SHEET 16
 3. ELECTRICAL POWER TO SATELLITES SUPPLIED BY E AND C WIRES.



DETAIL 2/18



DETAIL 3/18

12-9-76	Change #12 wire to #10 from Master M4 to S1. Add #14 wire from Master M4 to Control S2 separate from S1 and R1.
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IRRIGATION SYSTEM
WIRING DIAGRAMS
MASTER TO SATELLITE CONTROLLER
OPTION "C"
INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1(92):13

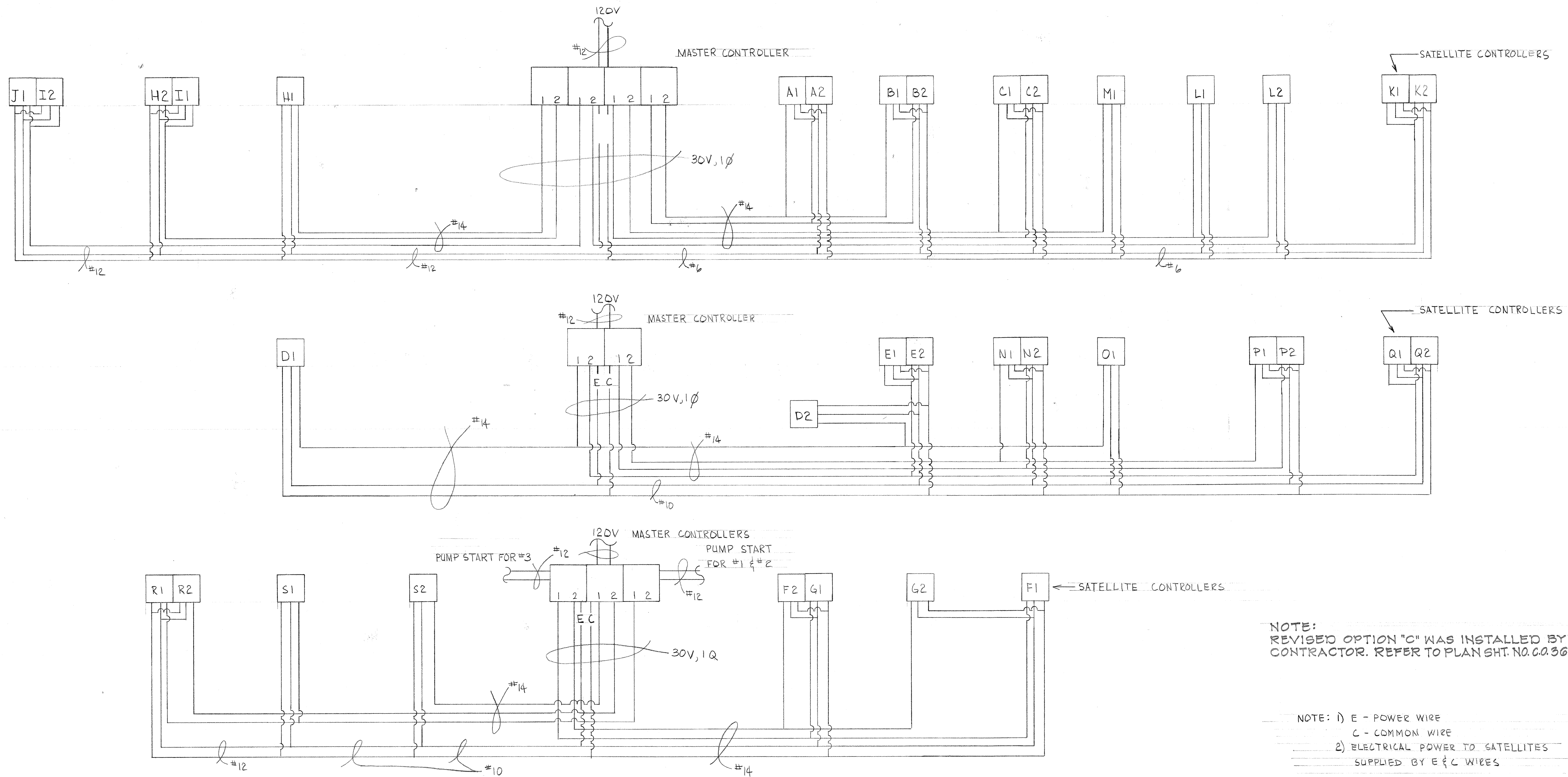
Date: Mar 1976

SHEET No. 18 OF 132 SHEETS

C.O. 36

ORIGINAL PLAN	DATE
DESIGNED BY	
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(92)-13	1976	6036 S-1	50



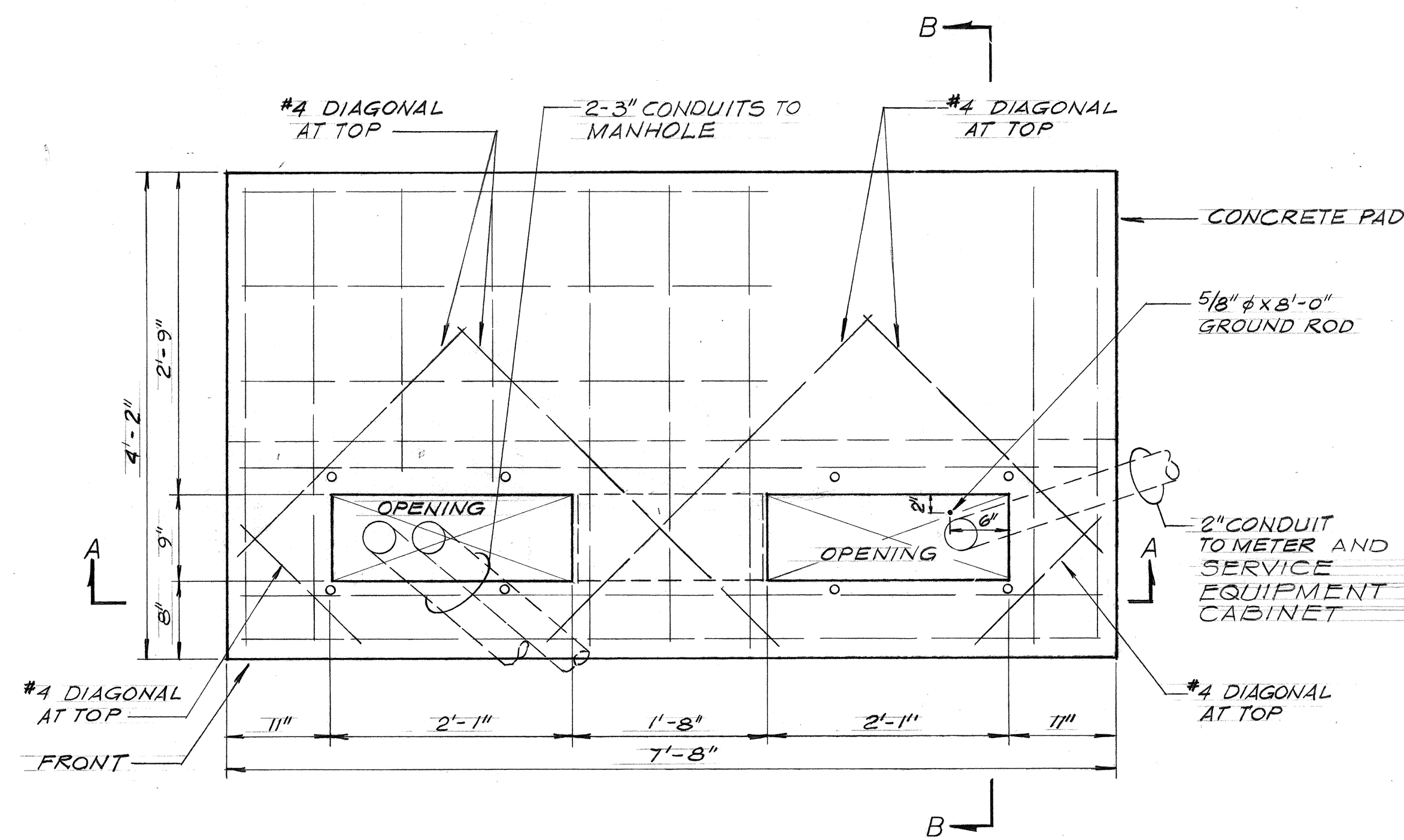
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTED BY	DRAWN BY	
DESIGNED BY	CHECKED BY	
NO.		

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MASTER TO SATELLITE
CONTROLLER WIRING DIAGRAM
REVISED OPTION "C"
INTERSTATE ROUTE H-1 FAIR NO. I-HI-1(92)-13

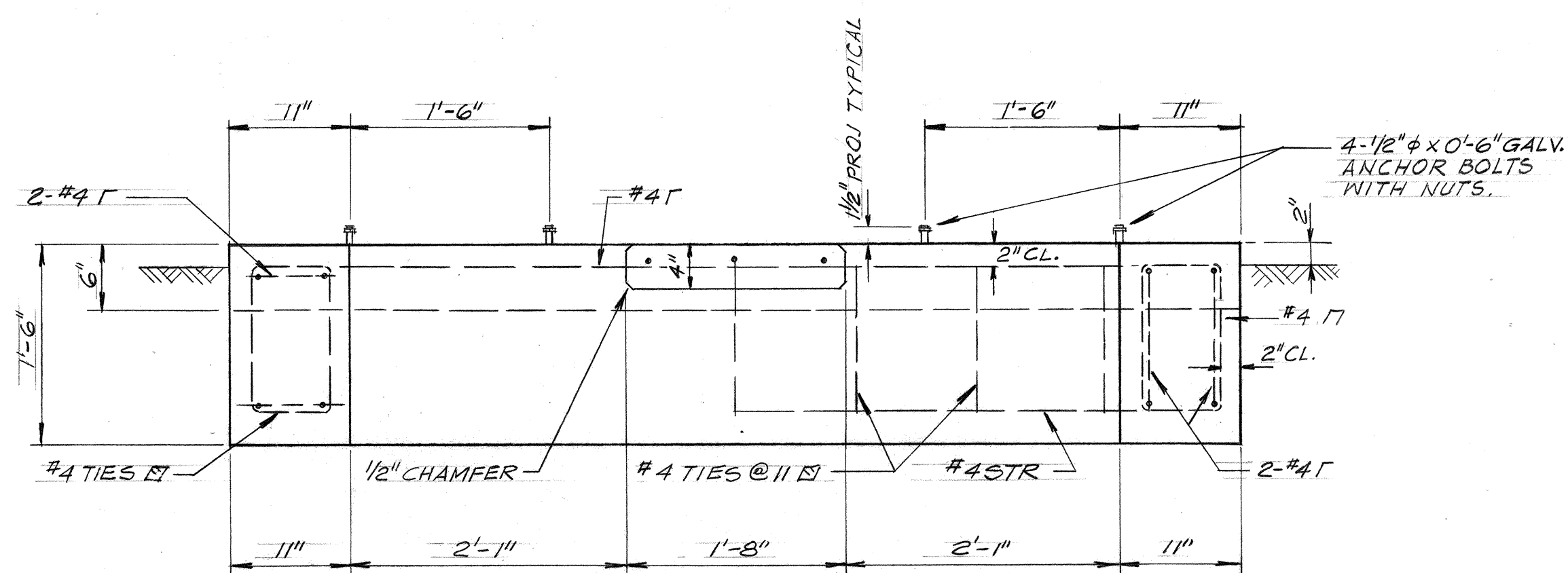
SHEET NO. OF SHEETS

C036S-1

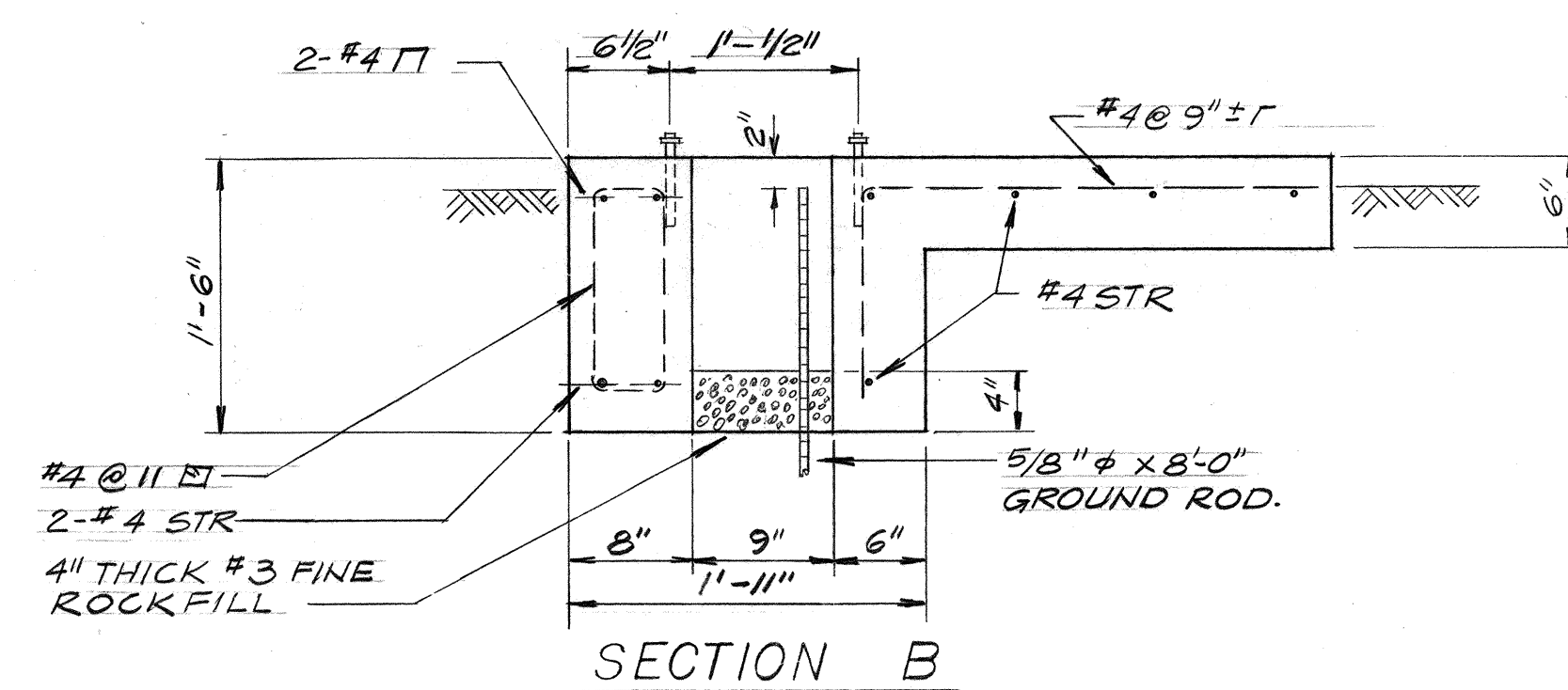
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-I (92)13	1976	38	50



PLAN

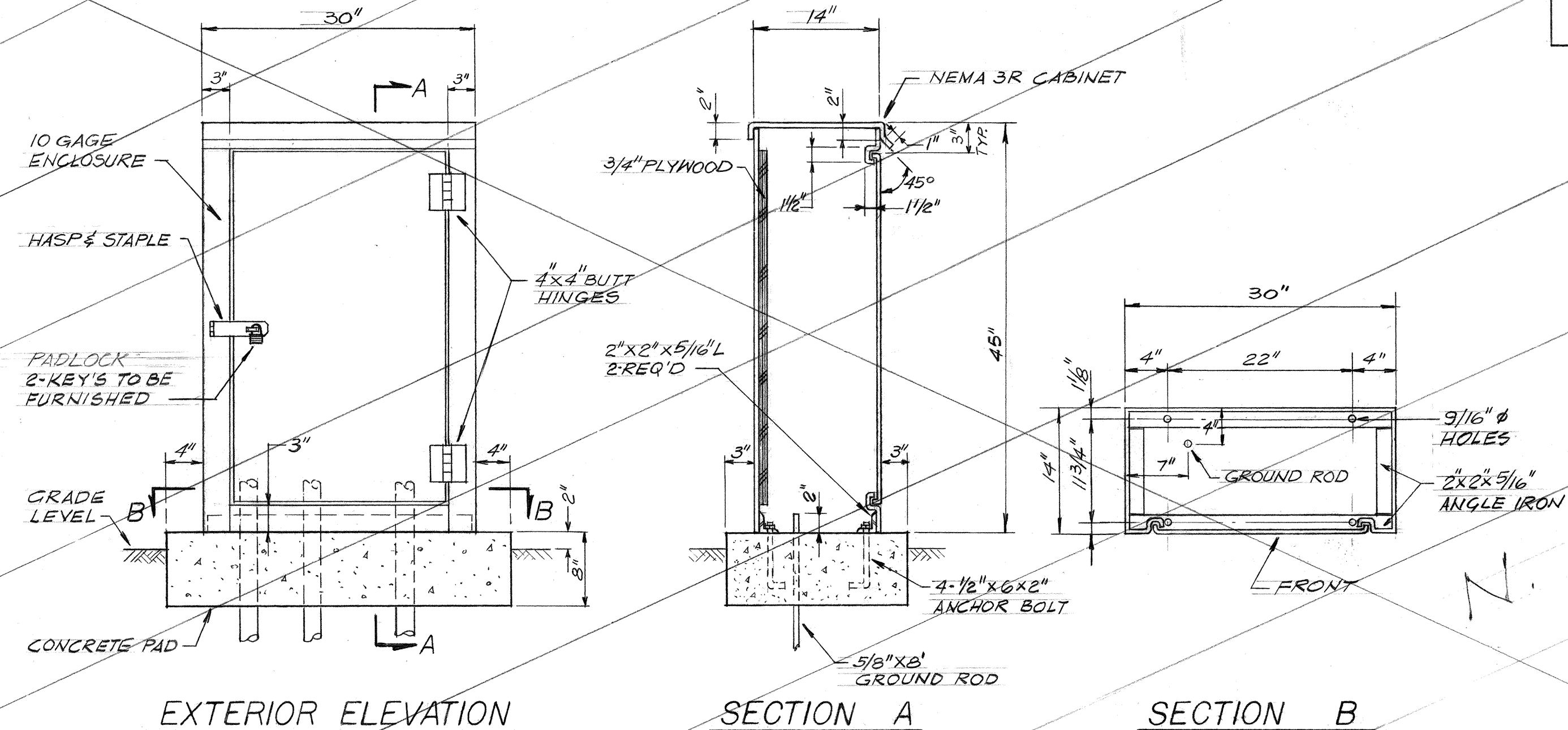


SECTION A



TRANSFORMER PAD

DETAIL 1/20



~~EXTERIOR ELEVATION~~

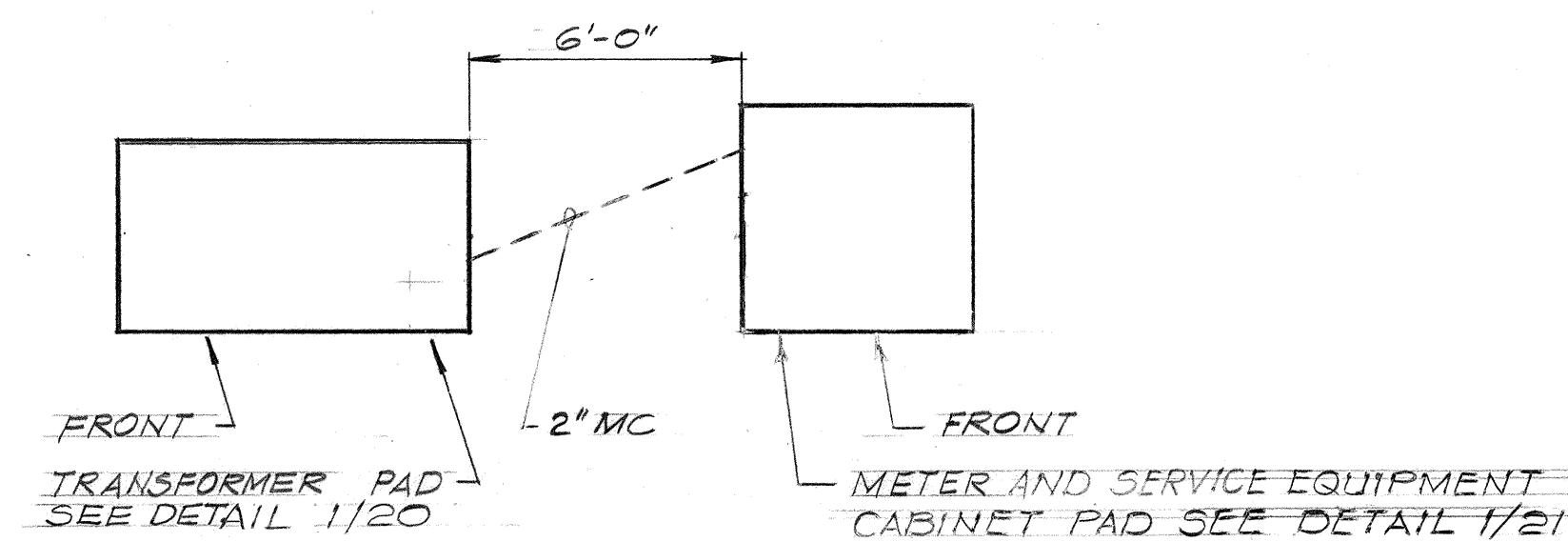
SECTION A

SECTION B

~~CONTROL CABINET & CONCRETE PAD~~

SCALE: 1" = 1'-0"

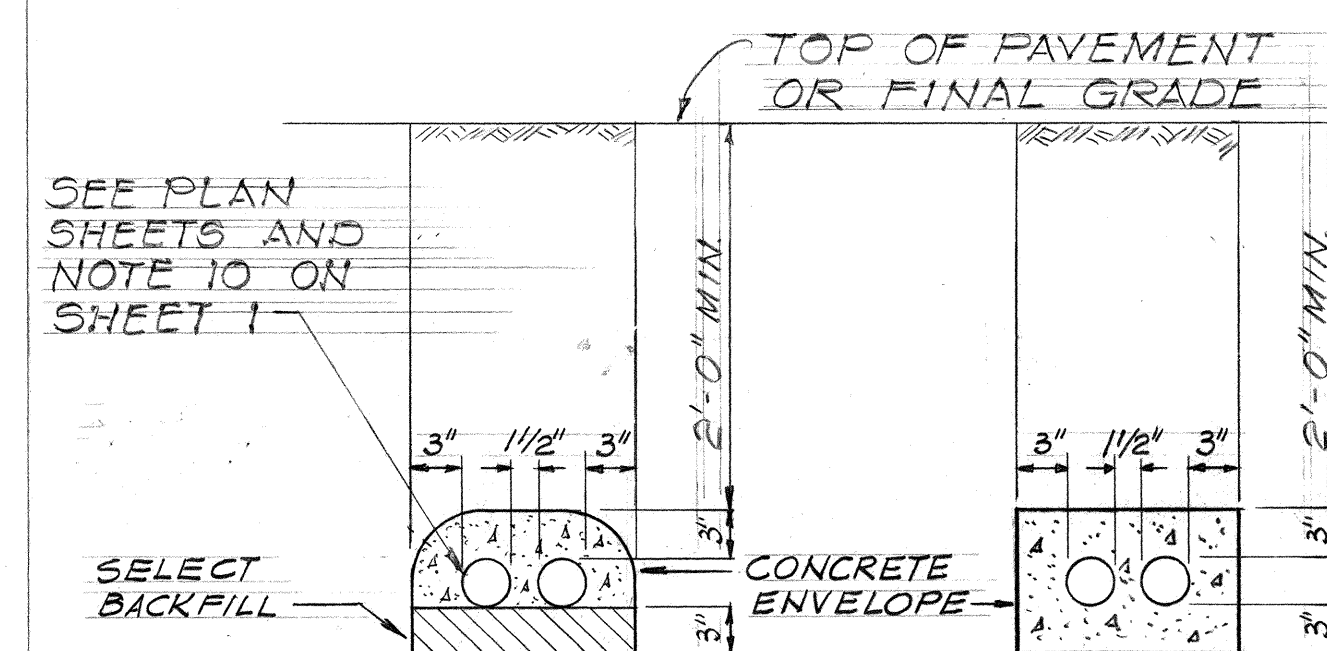
DETAIL 2/1E



TRANSFORMER & METER AND SERVICE EQUIPMENT CABINET

SCALE: $1/4" = 1'-0"$

DETAIL 3/20



SECTION A

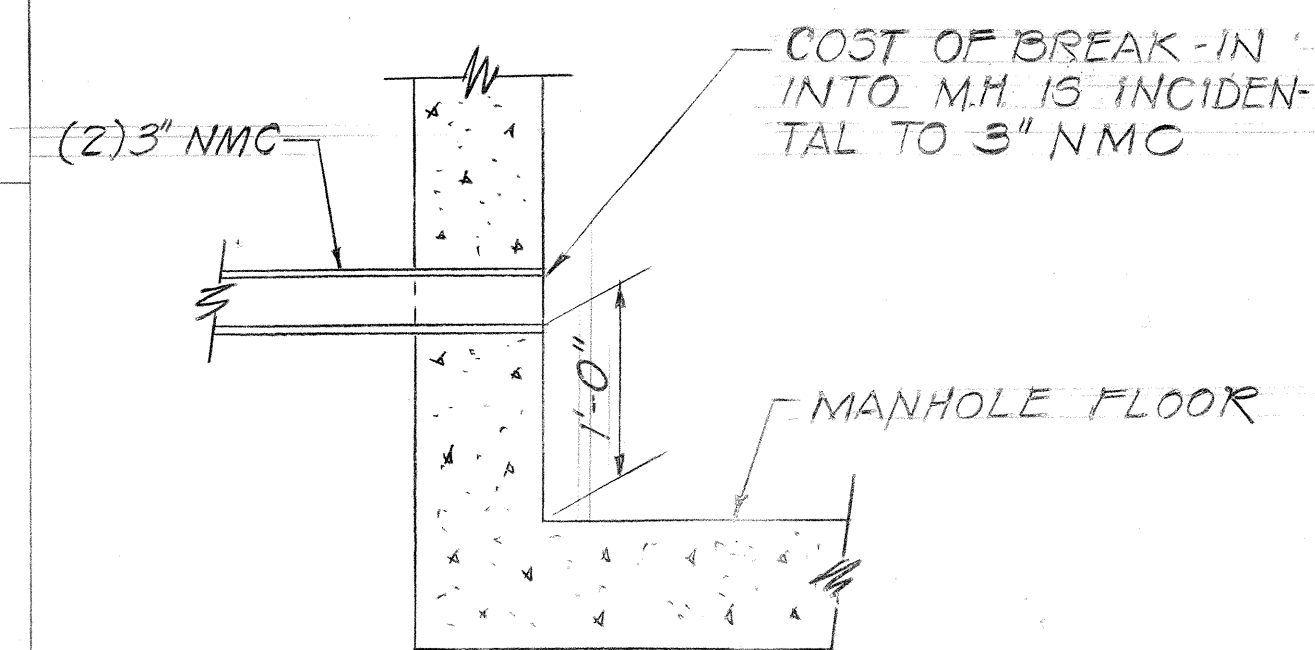
SECTION B

NOTE: SECTION A OR B MAY BE USED.

CONDUIT INSTALLATION

SCALE: 1" = 1'-0"

DETAIL 4/20



DETAIL 5/20

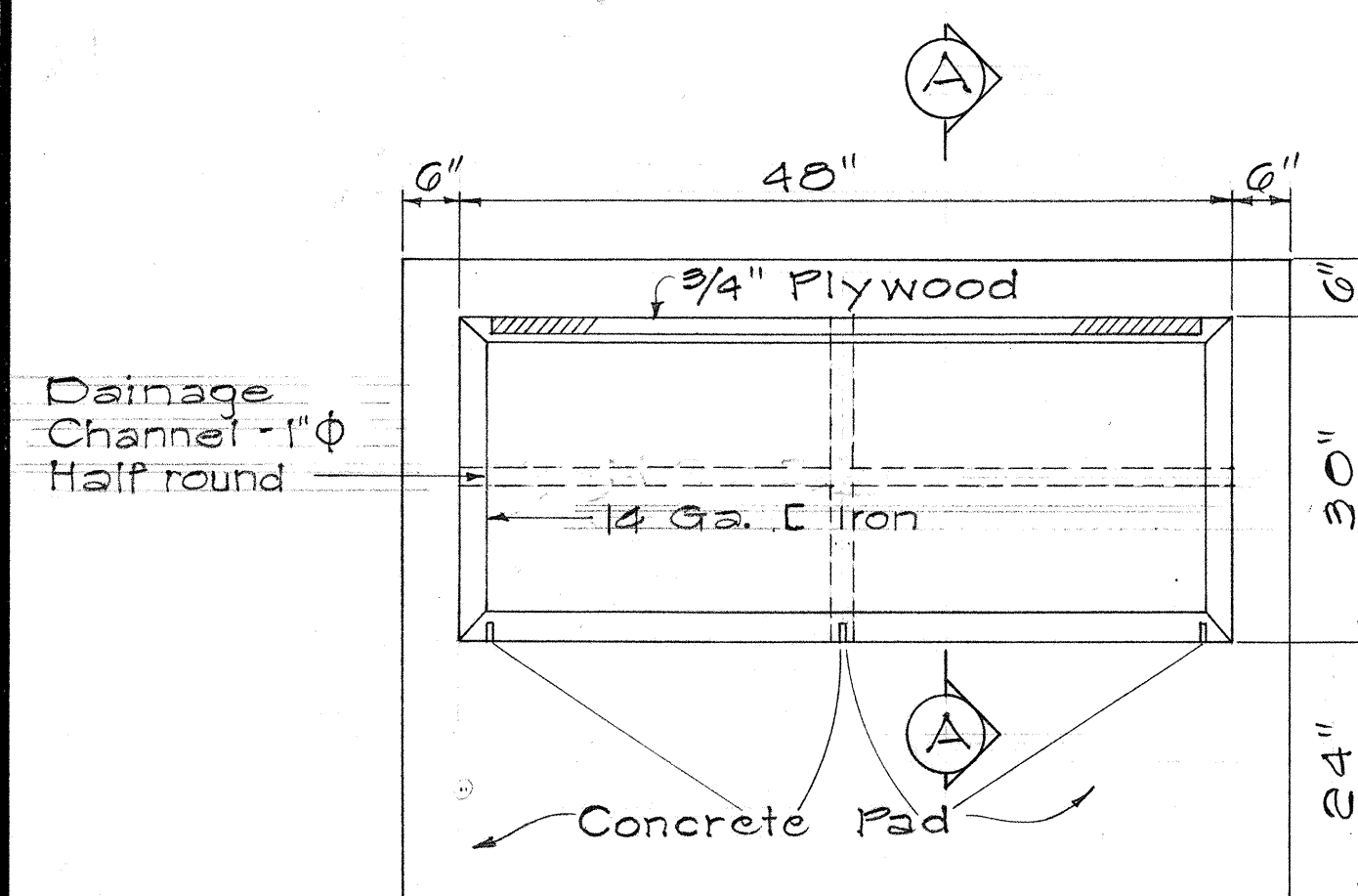
TYPICAL DETAIL OF BREAK-IN
INTO ELECTRICAL MANHOLE

SCALE: 1" = 1'-0"

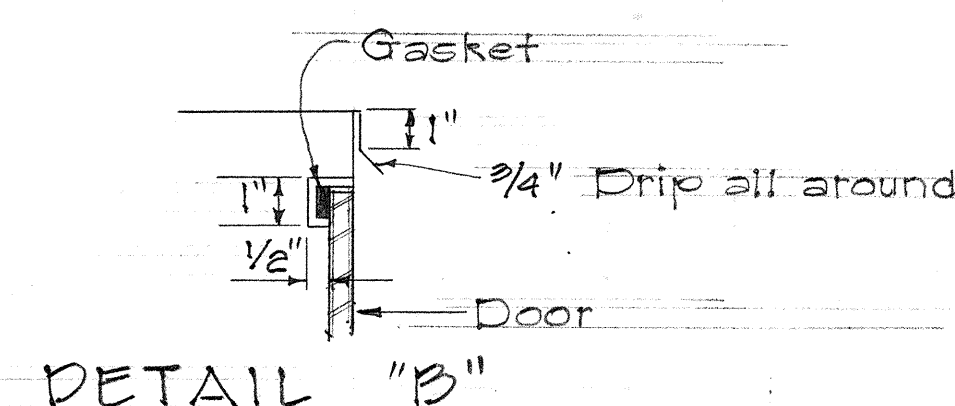
NOTE: CONTACT H.E.C.O INSPECTION
DIVISION FOR INSPECTOR TO
SUPERVISE BREAK-IN INTO
ELECTRICAL MANHOLE.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IRRIGATION SYSTEM
ELECTRICAL DETAILS
INTERSTATE ROUTE H-1
PROJ. NO. I-H1-1(02):13
Scale: As Shown Date: Mar. 1970
SHEET No. I-200F 32 SHEETS

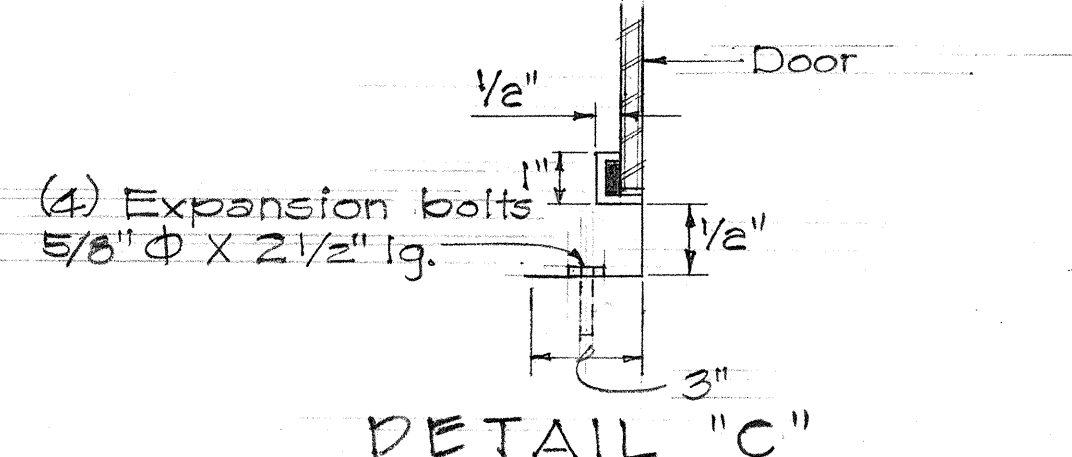
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(02):13	1976	39	50



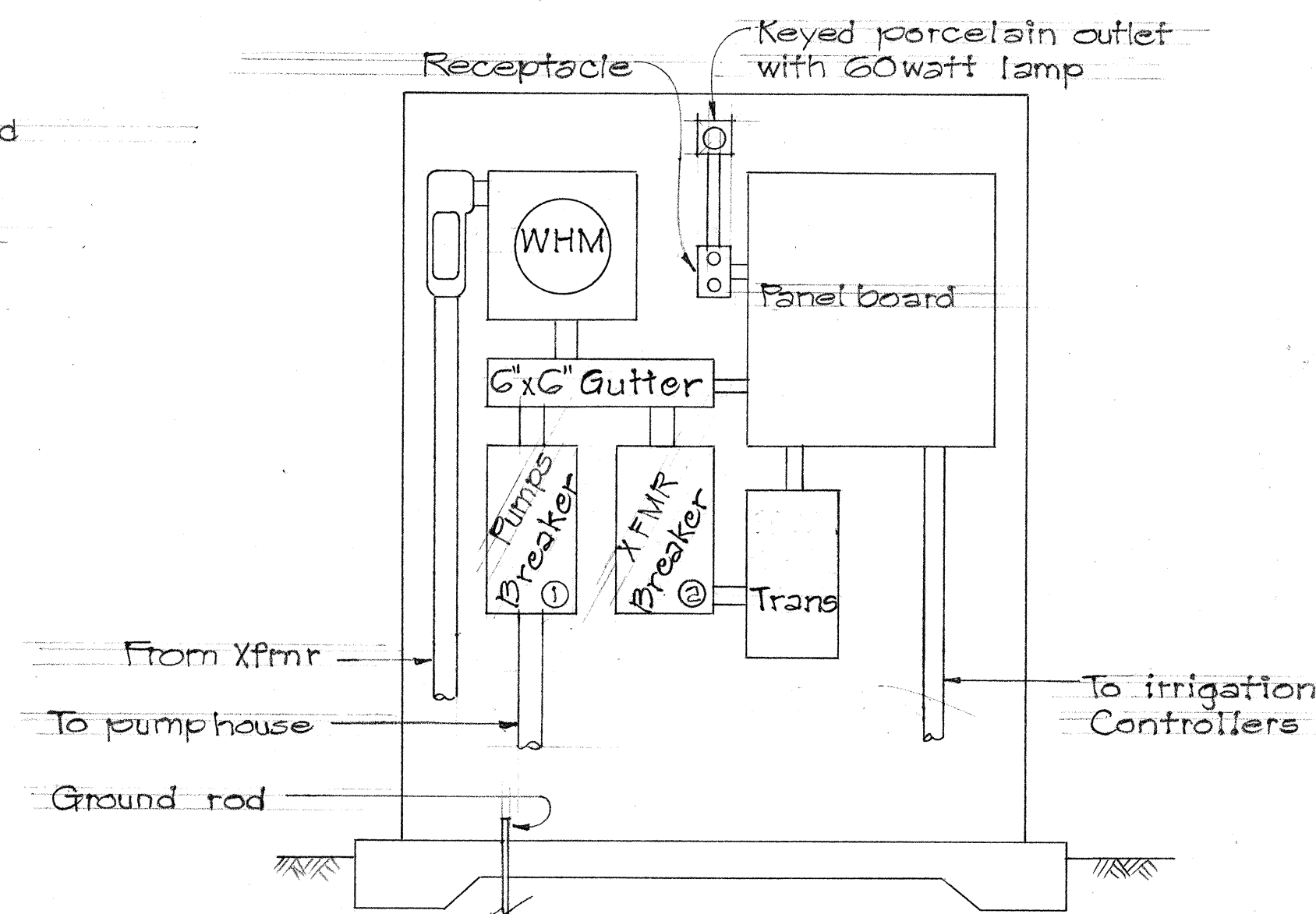
PLAN



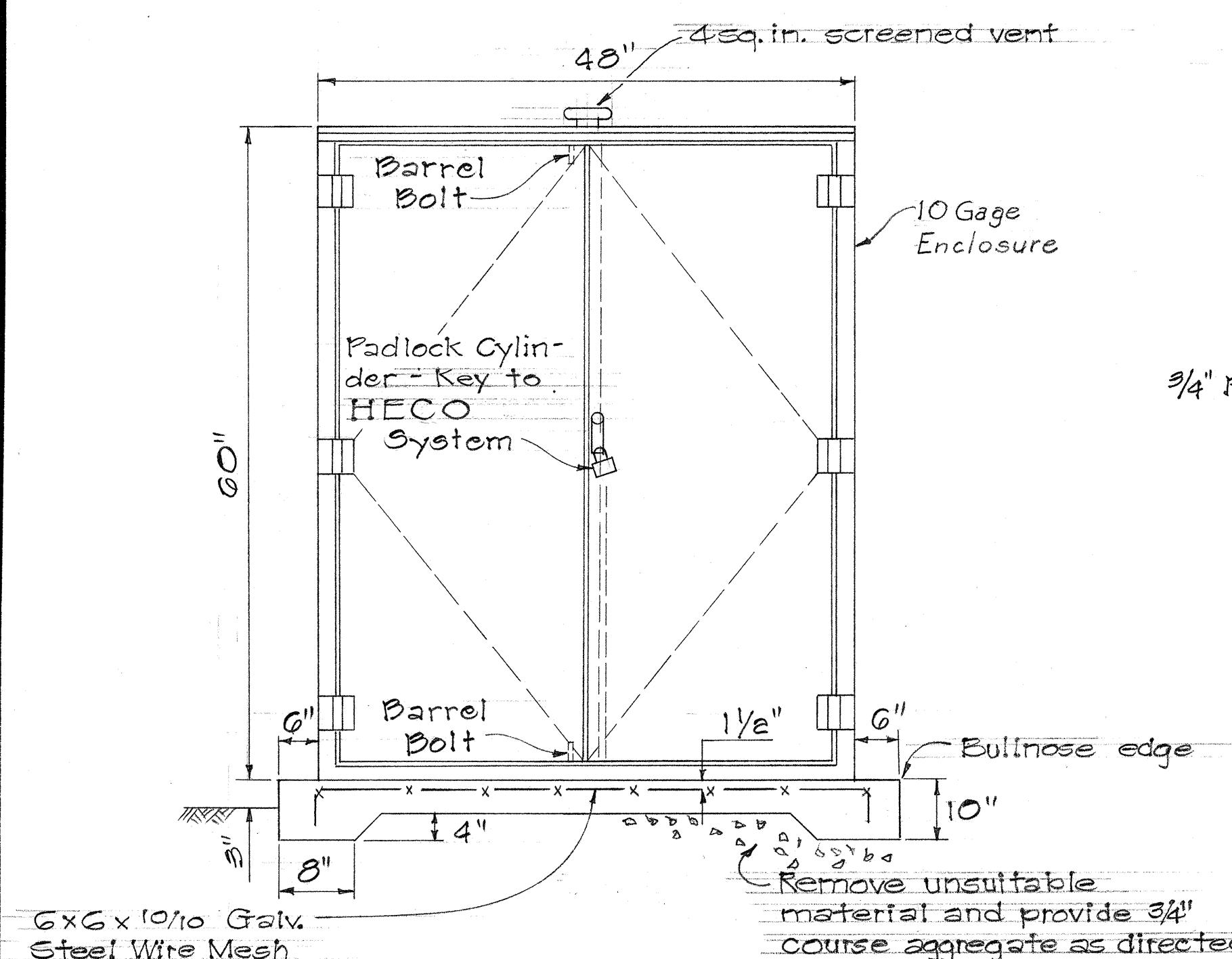
DETAIL "B"



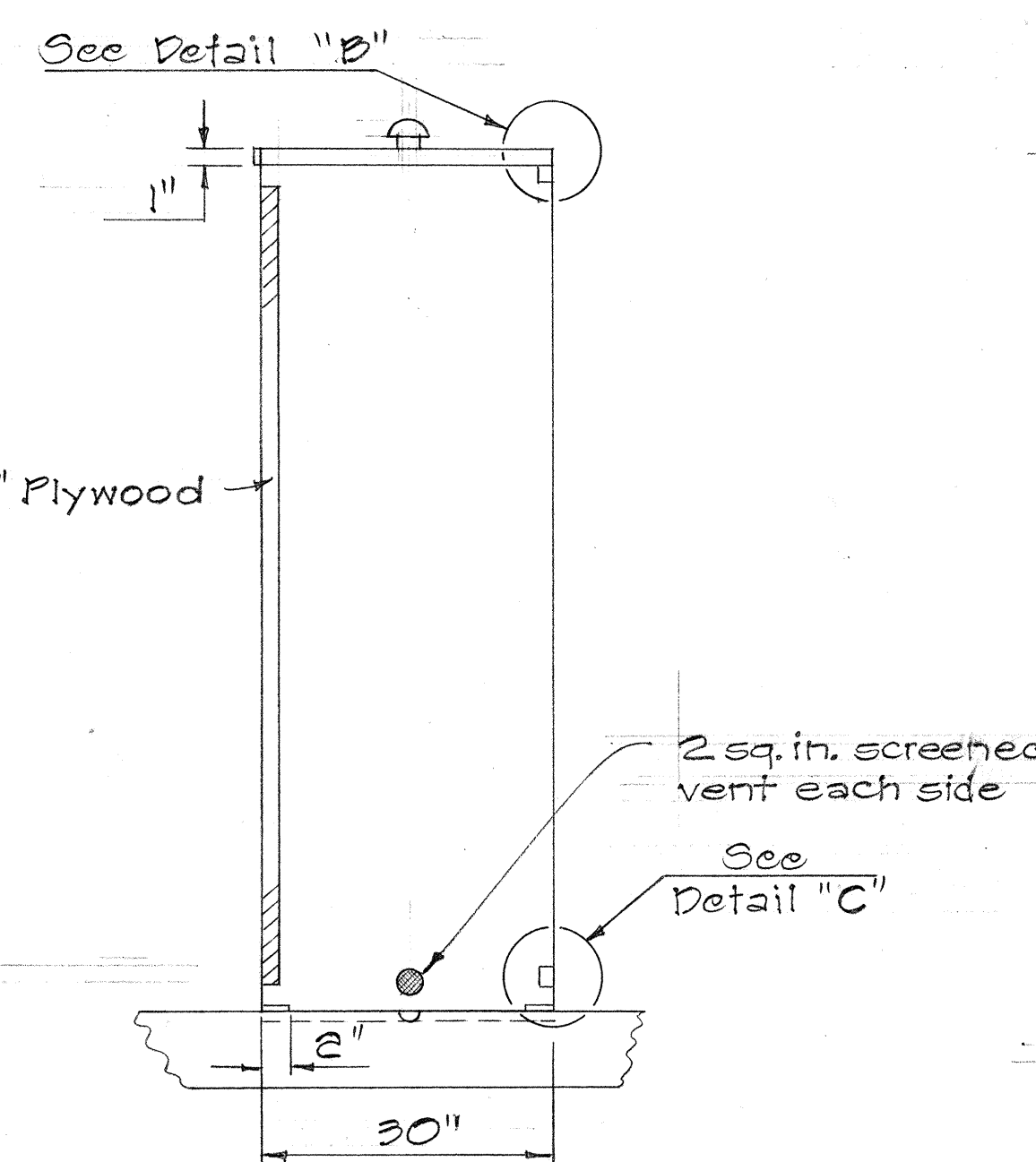
DETAIL "C"



INTERIOR ELEVATION



FRONT ELEVATION

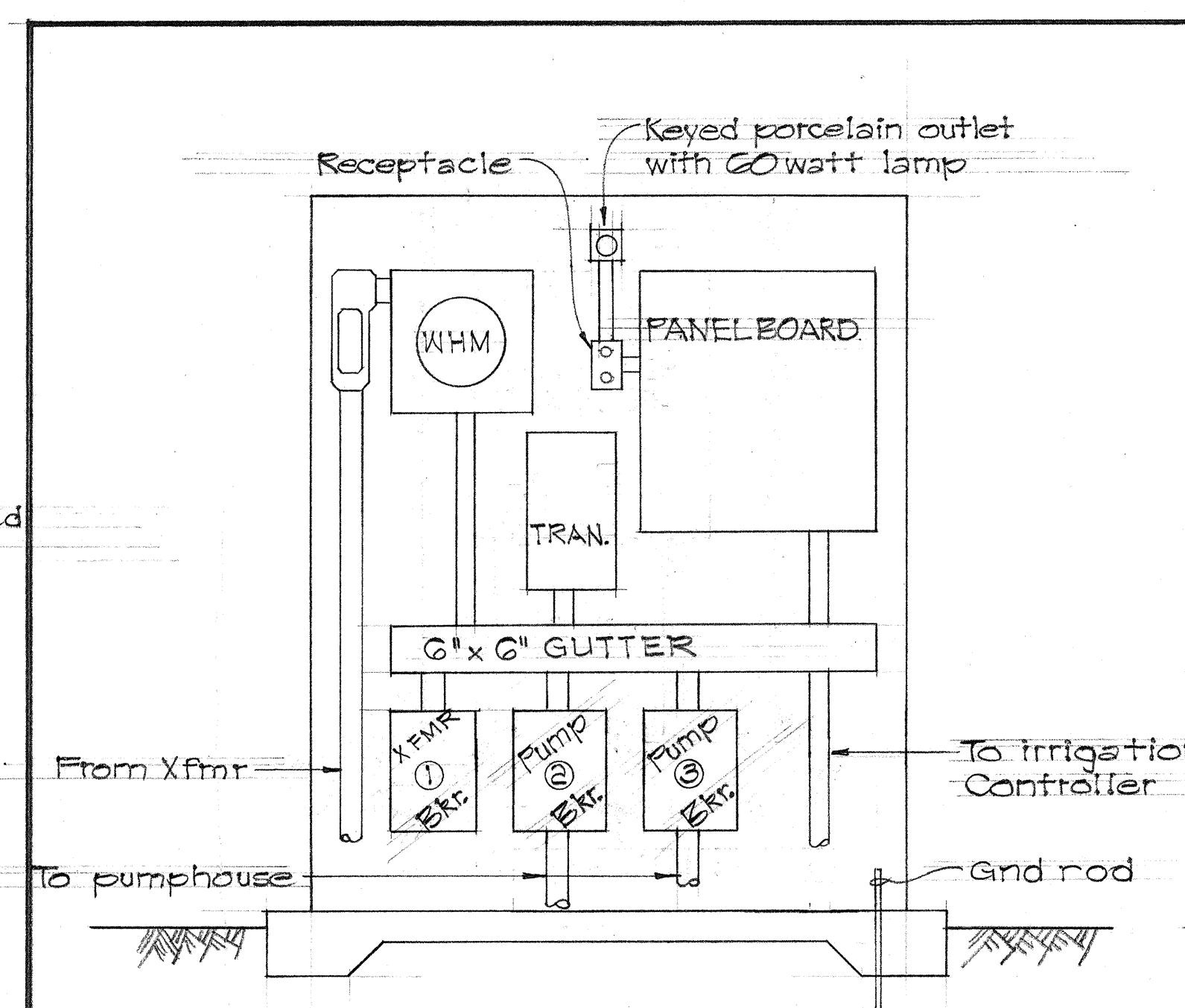


SECTION "A-A"

DETAIL 1/21
METER AND SERVICE EQUIPMENT CABINET
AT EMH #4 SERVICE CONNECTION
FOR BOOSTER STATION (A)

Not to Scale

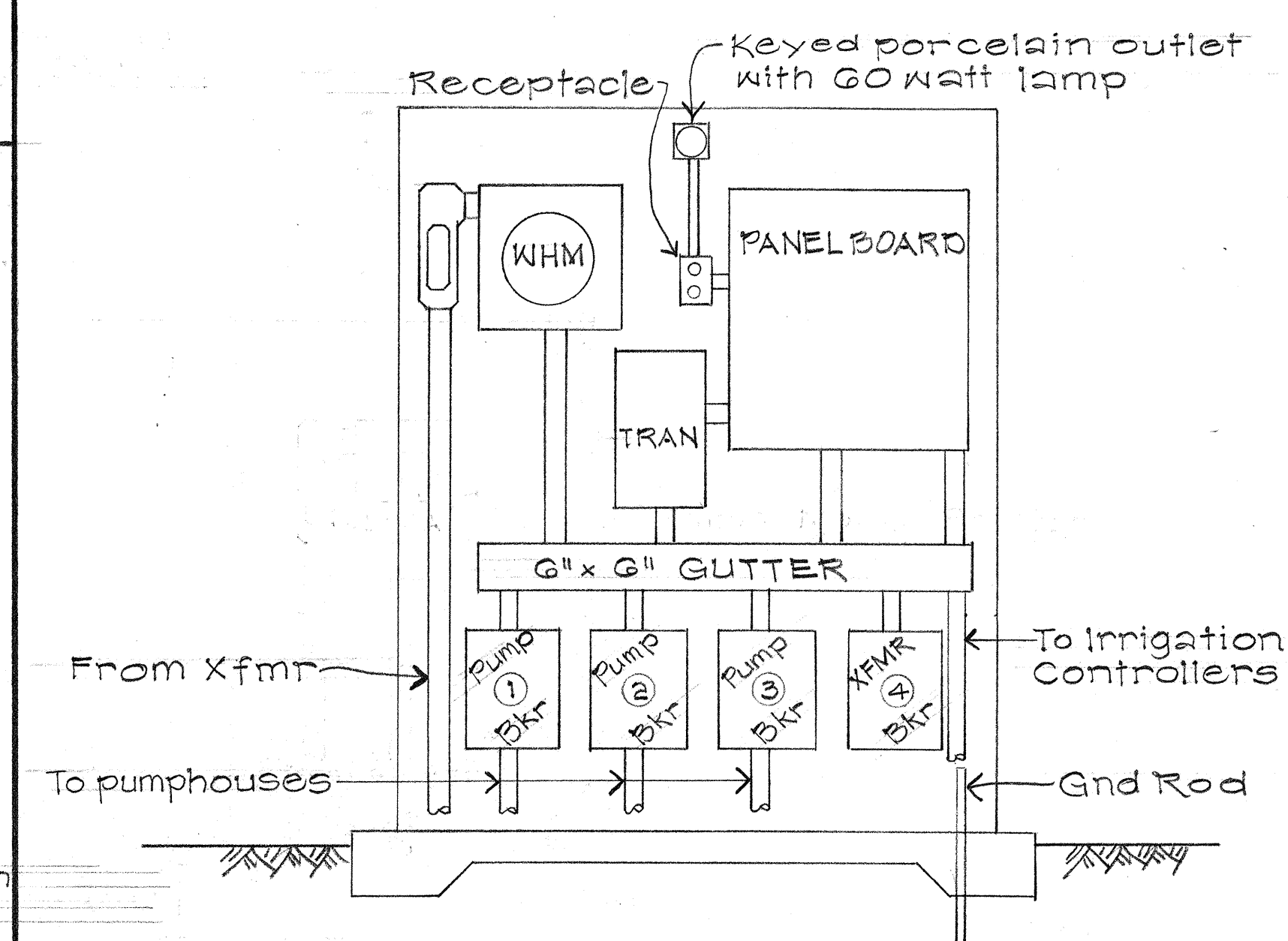
NOTE: Indicated dimensions of cabinets are the minimum required and shall be enlarged as required to properly house the equipment approved for installation.



DETAIL 2/21
INTERIOR ELEVATION

METER AND SERVICE EQUIPMENT CABINET
AT EMH #24 FOR BOOSTER STATIONS
(E) & (F)

NOTE: For cabinet and pad details see Detail 1/21

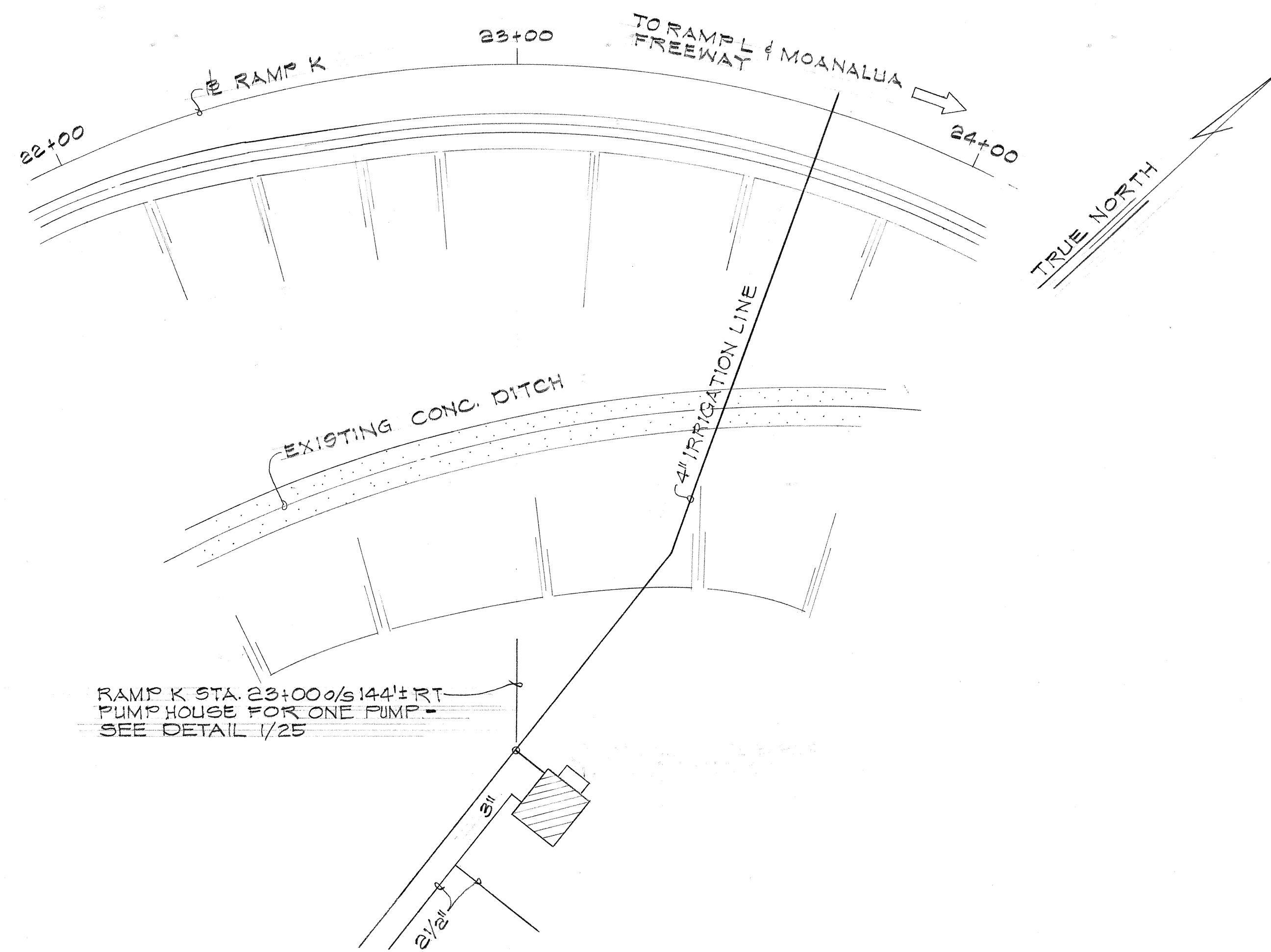


DETAIL 3/21
INTERIOR ELEVATION
METER AND SERVICE EQUIPMENT CABINET
AT EMH #920 FOR BOOSTER STATIONS
(B) (C) & (D)

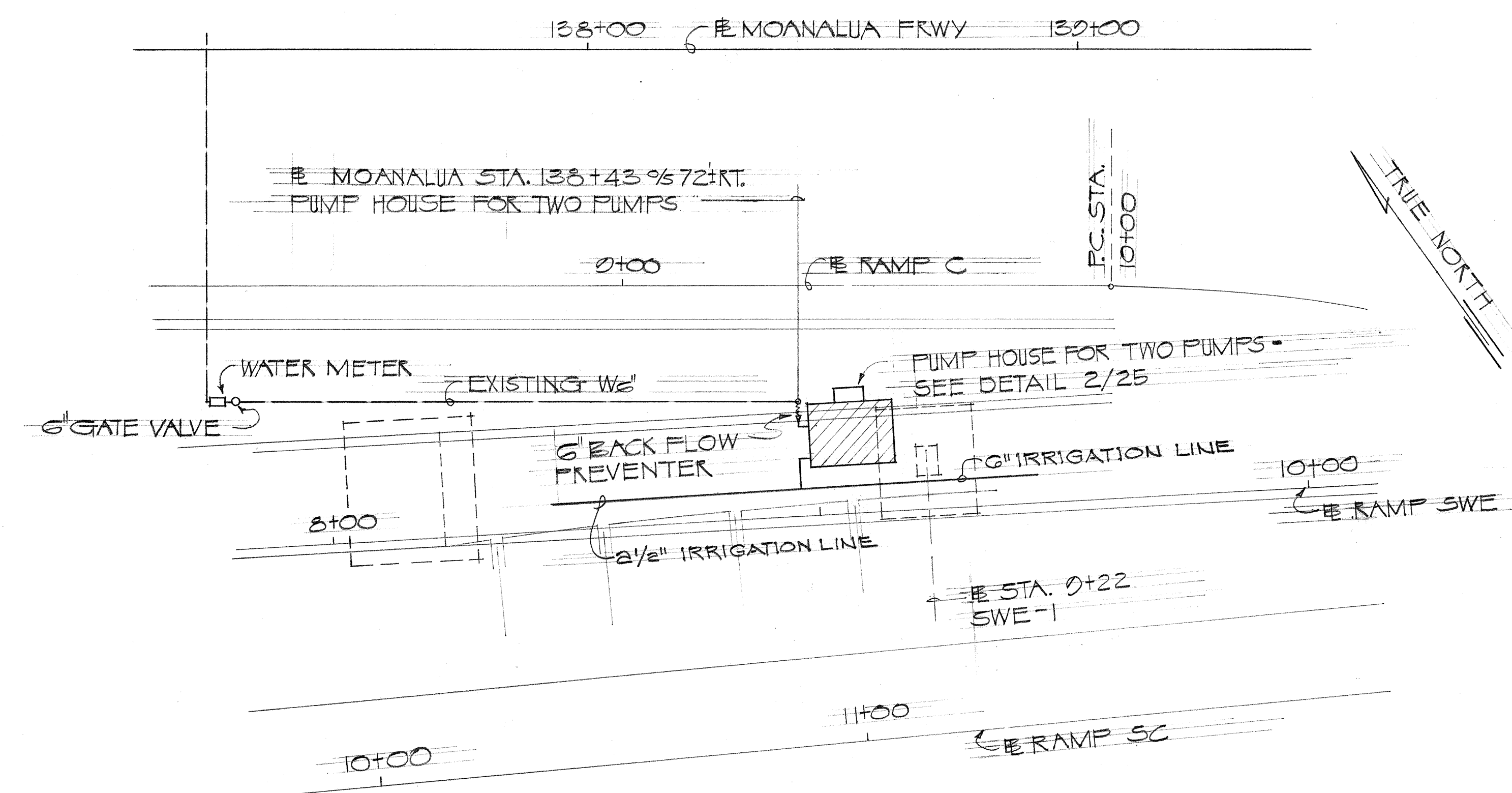
NOTE: For cabinet and pad details see Detail 1/21

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IRRIGATION SYSTEM
ELECTRICAL DETAILS
INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1(02):13
Not to Scale Date: Mar. 1976
SHEET No. 121 OF 132 SHEETS

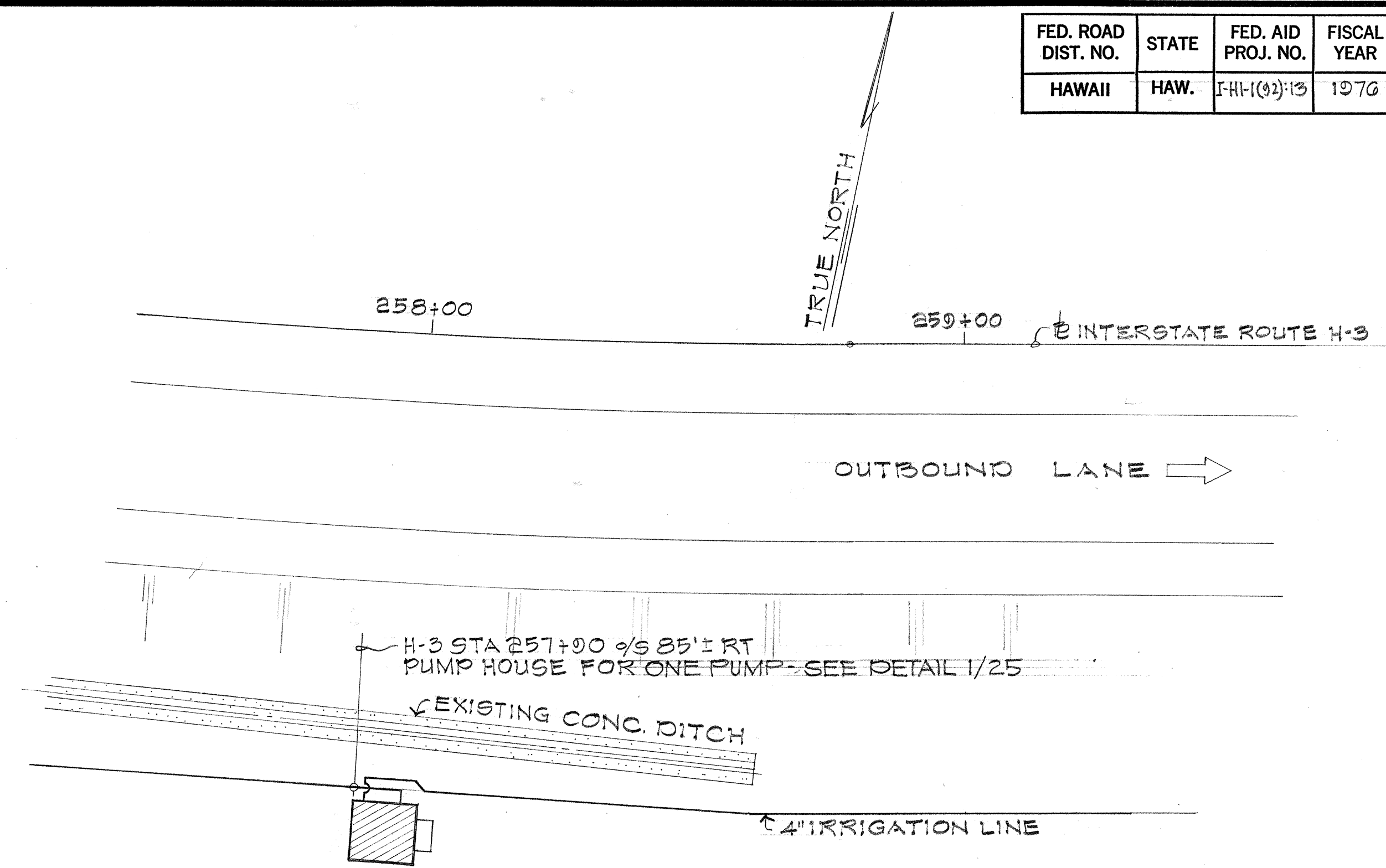
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-H-1(92):13	1976	40	50



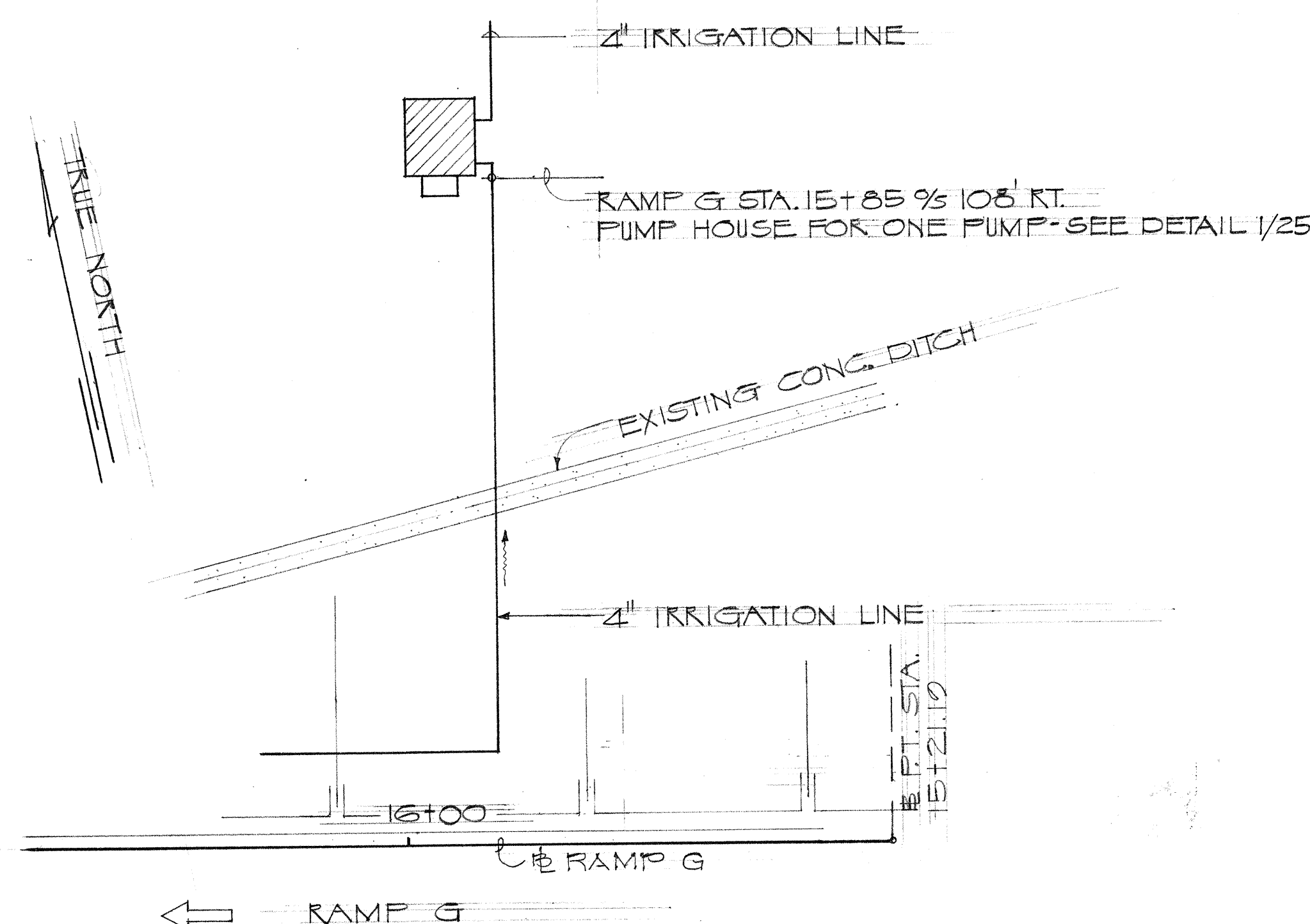
DETAIL 1/22
BOOSTER STATION (C)



DETAIL 3/22
BOOSTER STATION (A)



DETAIL 2/22
BOOSTER STATION (D)



DETAIL 4/22
BOOSTER STATION (E)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IRRIGATION SYSTEM
SITE PLANS FOR PUMP HOUSES

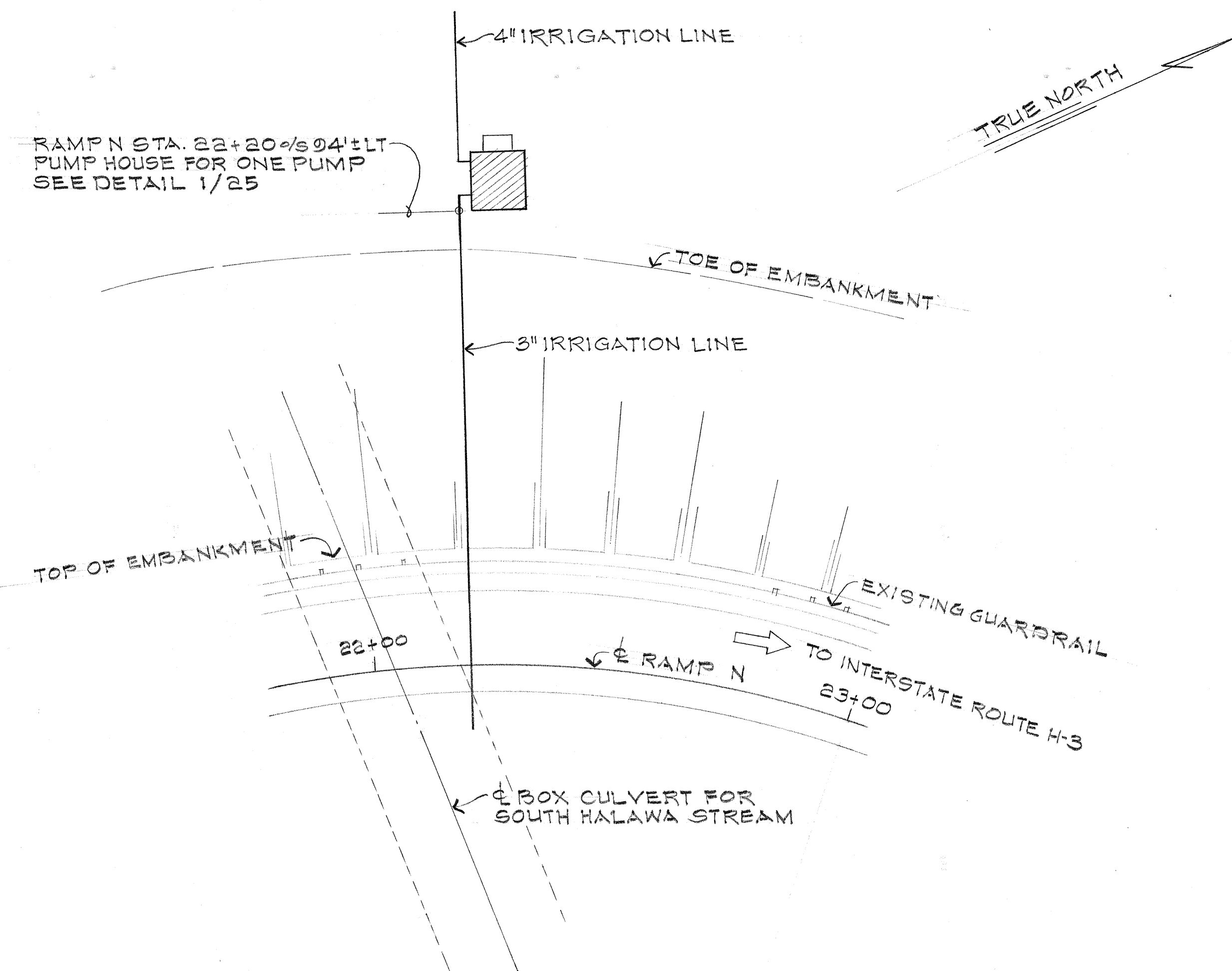
INTERSTATE ROUTE H-1
PROJ. NO. I-H-1(92):13

Scale: 1" = 20'-0" Date: Mar. 1976
SHEET No. E22 OF 32 SHEETS

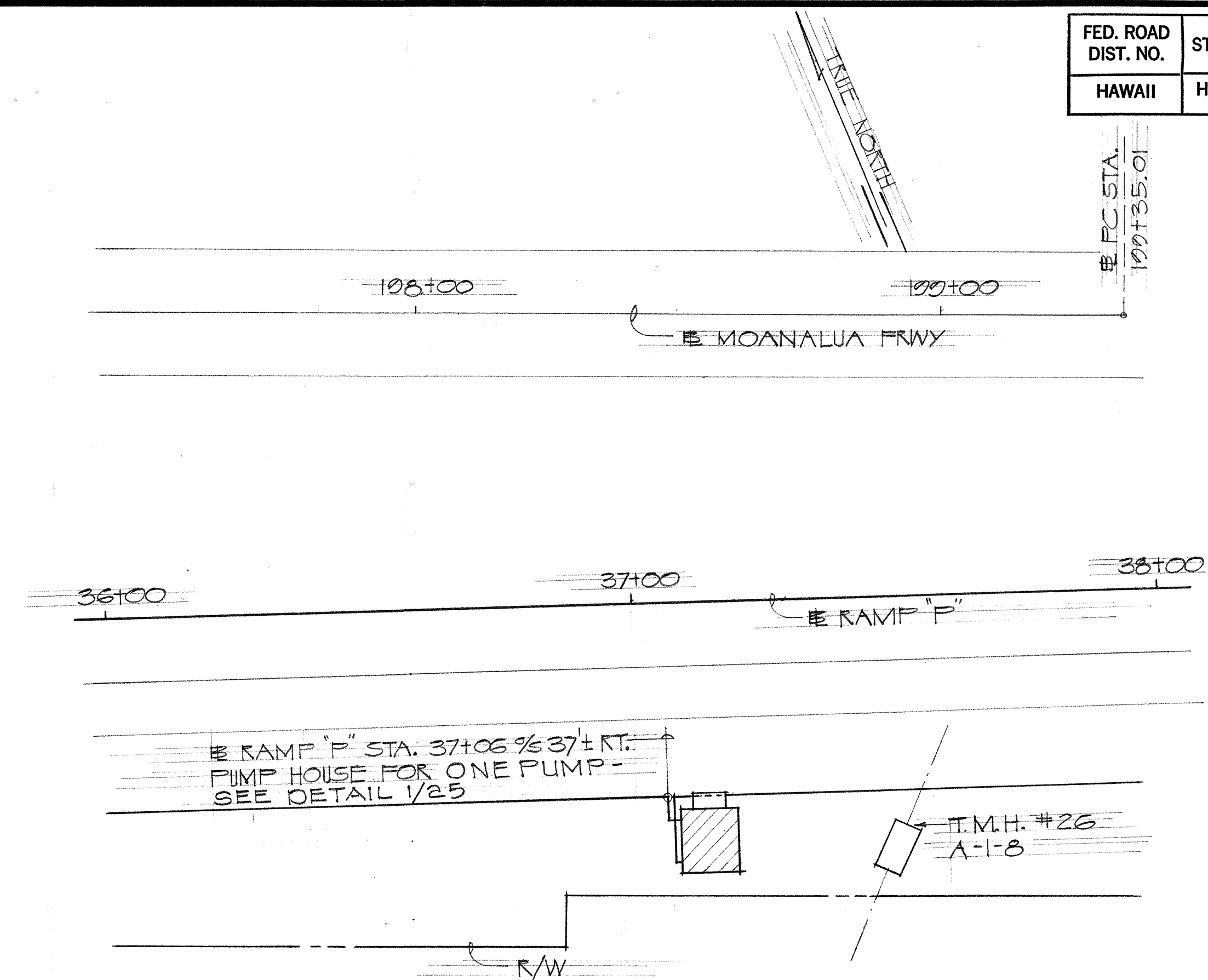
SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

ORIGINAL PLAN	No.
NOTE BOOK	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(92):13	1976	41	50



DETAIL 1/23 BOOSTER STATION (E)

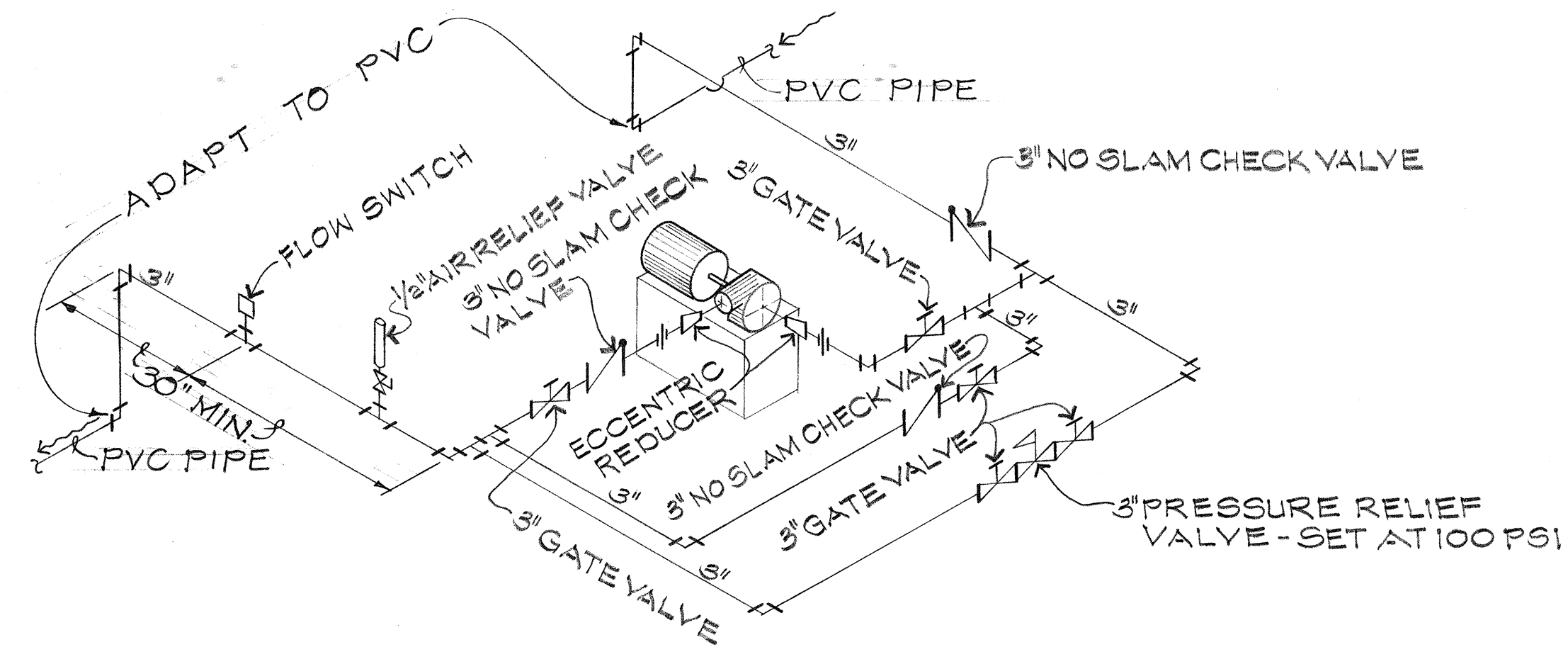


DETAIL 2/23 BOOSTER STATION (F)

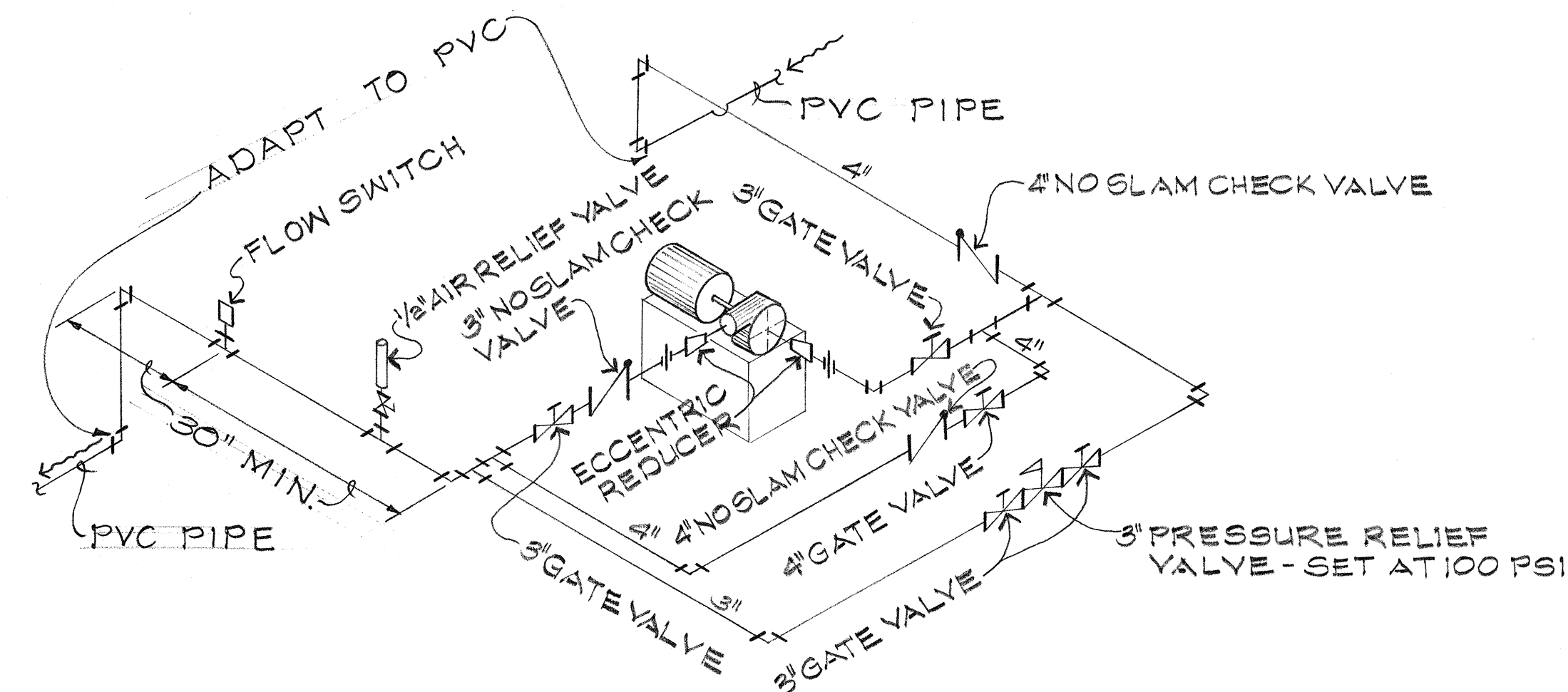
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<u>IRRIGATION SYSTEM</u>	
<u>SITE PLANS FOR PUMP HOUSES</u>	
<u>INTERSTATE ROUTE H-1</u>	
<u>PROJ. NO. I-HI-1(92):13</u>	
Scale: 1" = 20' 0"	Date: Mar. 1976
SHEET NO. 41 OF 50 SHEETS	

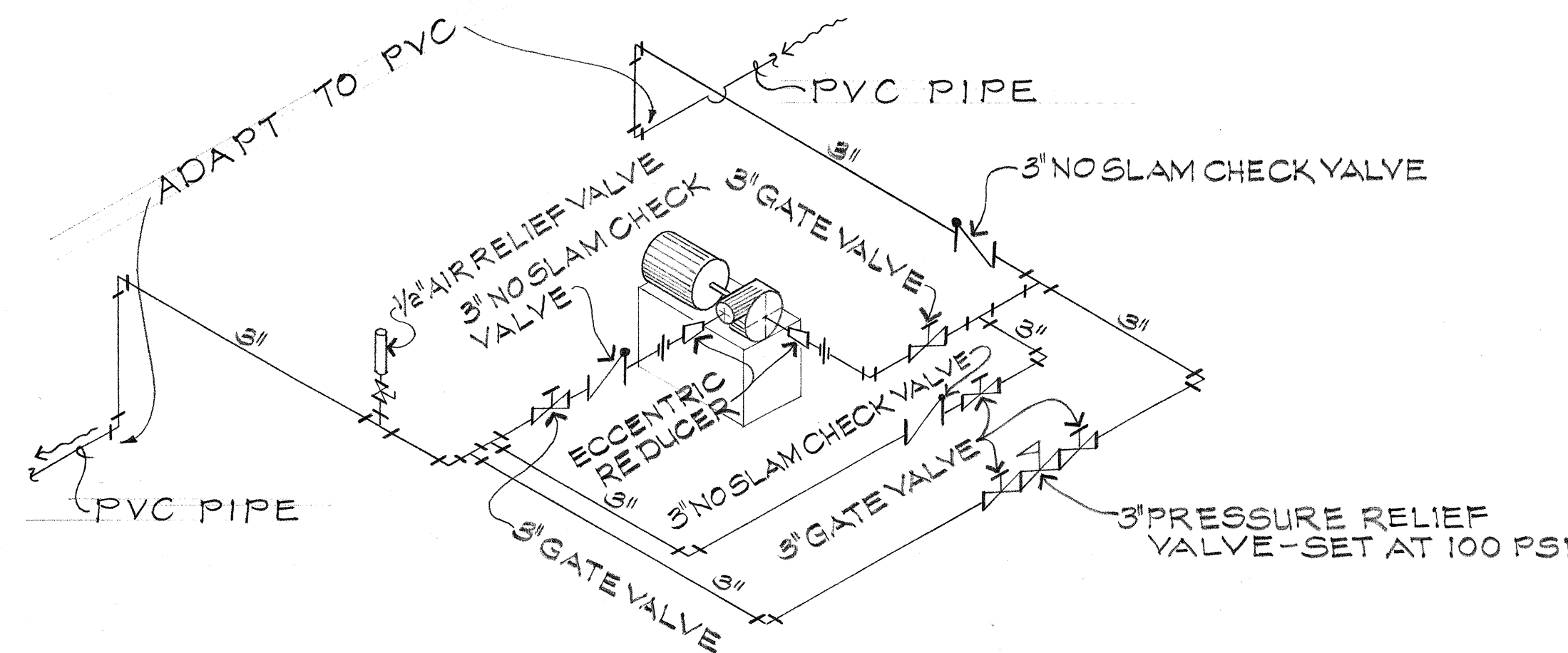
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(92):13	1976	42	50



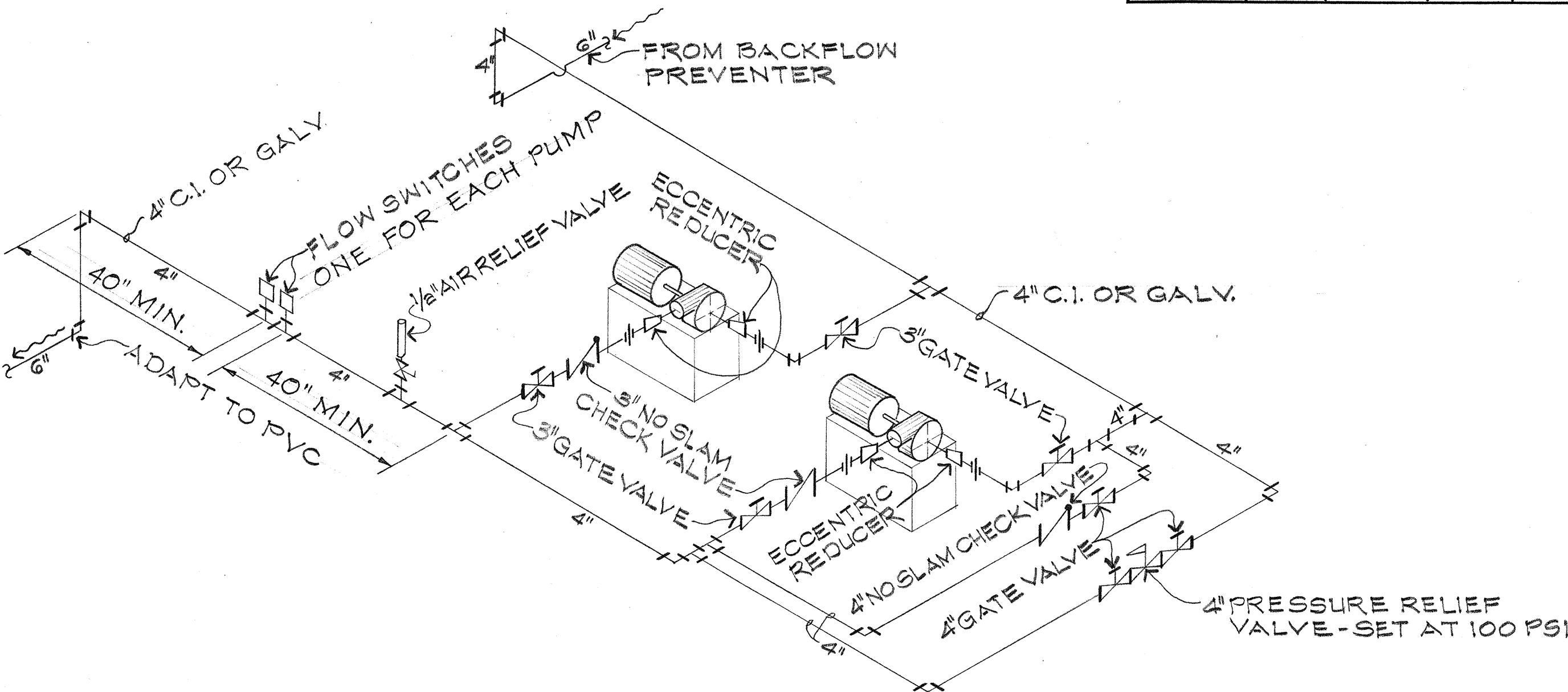
BOOSTER PUMP UNIT PIPE ISOMETRIC
PUMP NO. 4



BOOSTER PUMP UNIT PIPE ISOMETRIC
PUMPS NO. 3 & 5



BOOSTER PUMP UNIT PIPE ISOMETRIC
PUMPS NO. 6 & 7



BOOSTER PUMP UNIT PIPE ISOMETRIC
PUMPS NO. 1 & 2

PUMP REQUIREMENTS			
PUMP NO.	BHP	Q, GPM	T.D.H., FT.
1, 2, 3 & 5	5	200	59
4	3	100	70
6	5	120	99
7	3	50	142

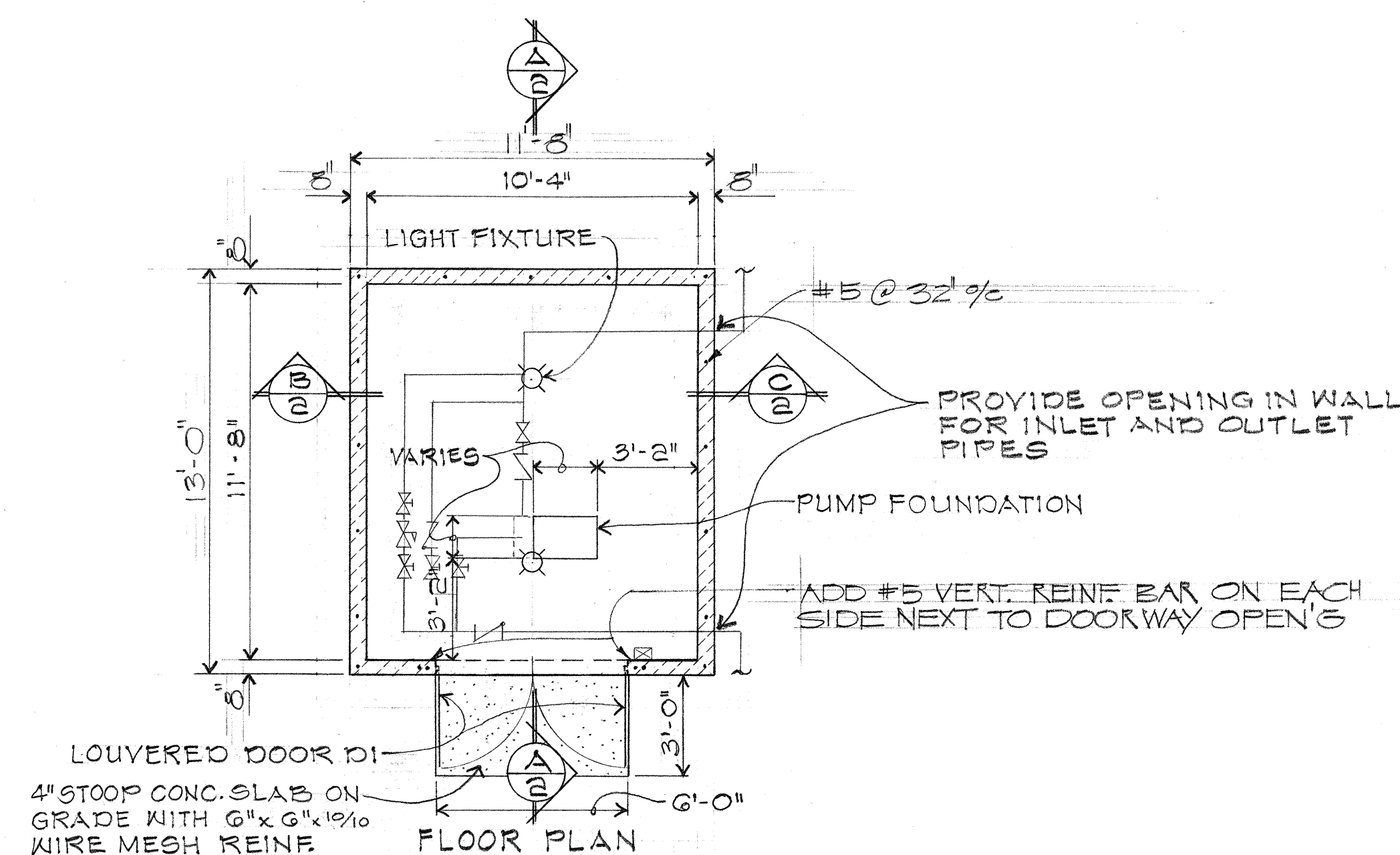
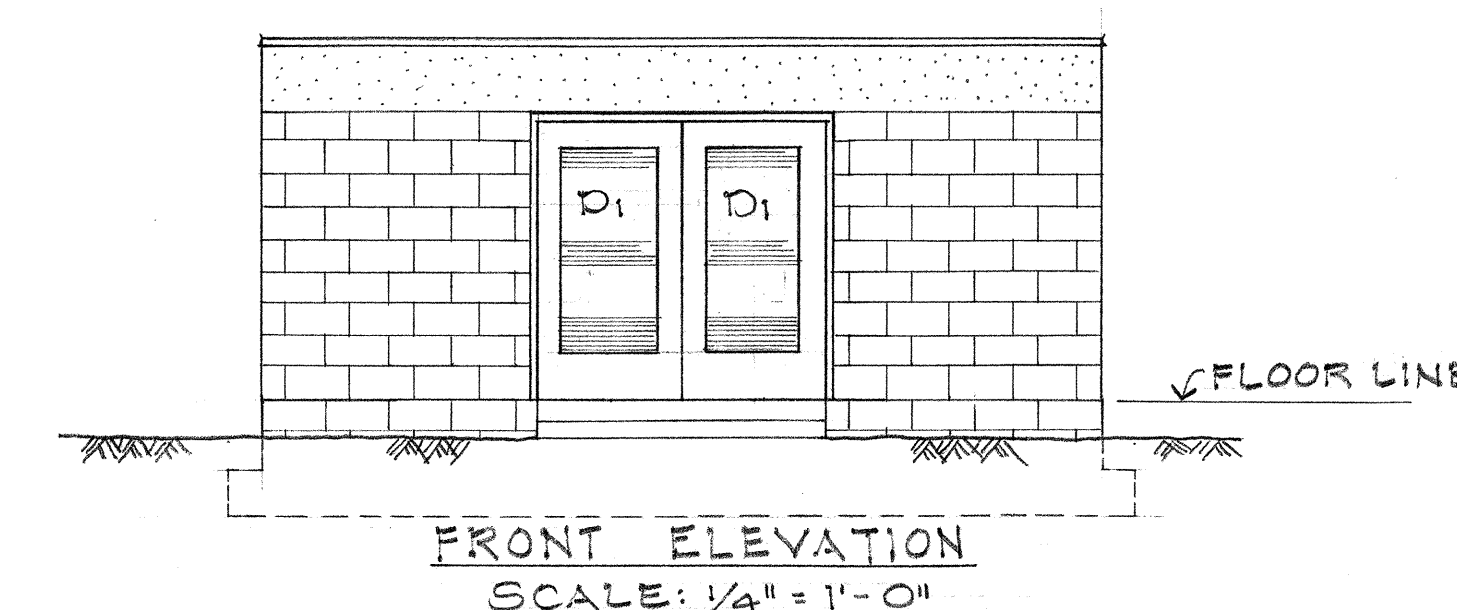
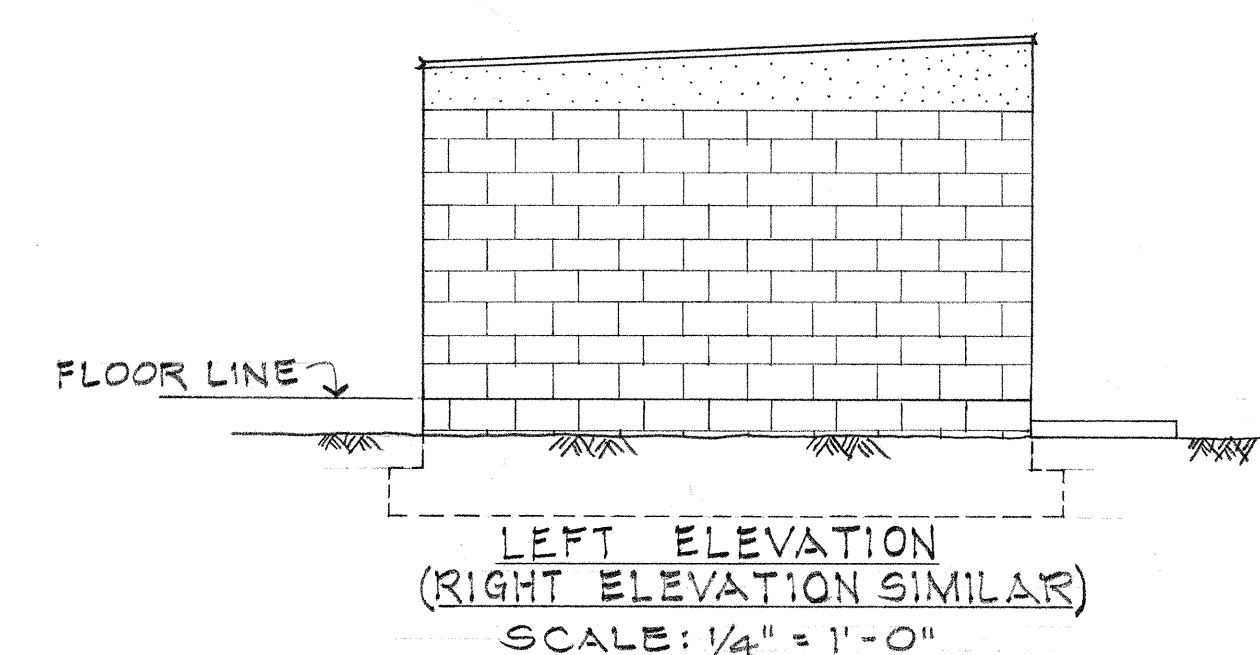
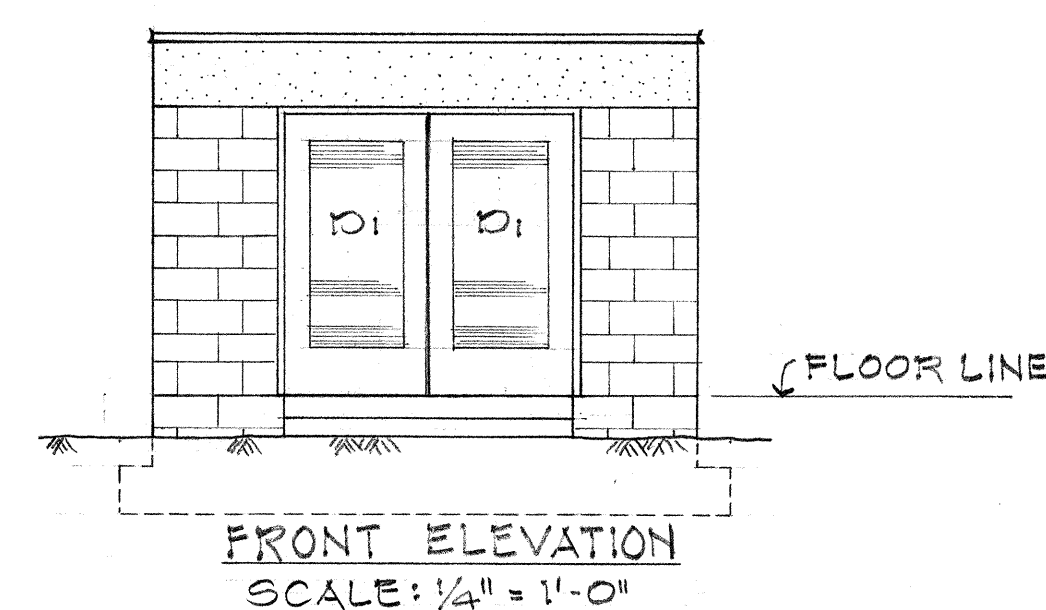
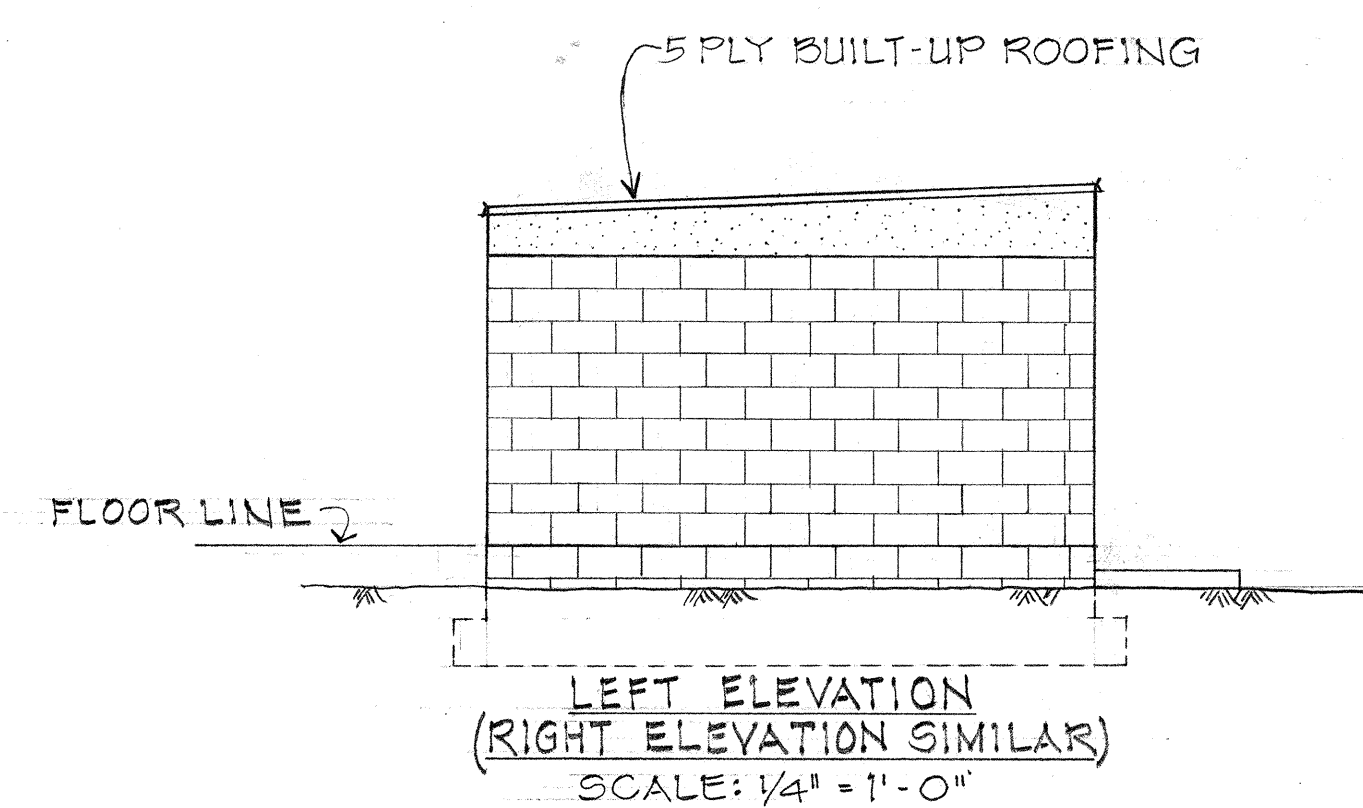
- NOTE:
1. Pipe at Pump House shall be cast iron or galvanized steel with screwed or flanged connection.
 2. Contractor shall provide the necessary supports for the pipe and valves.

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

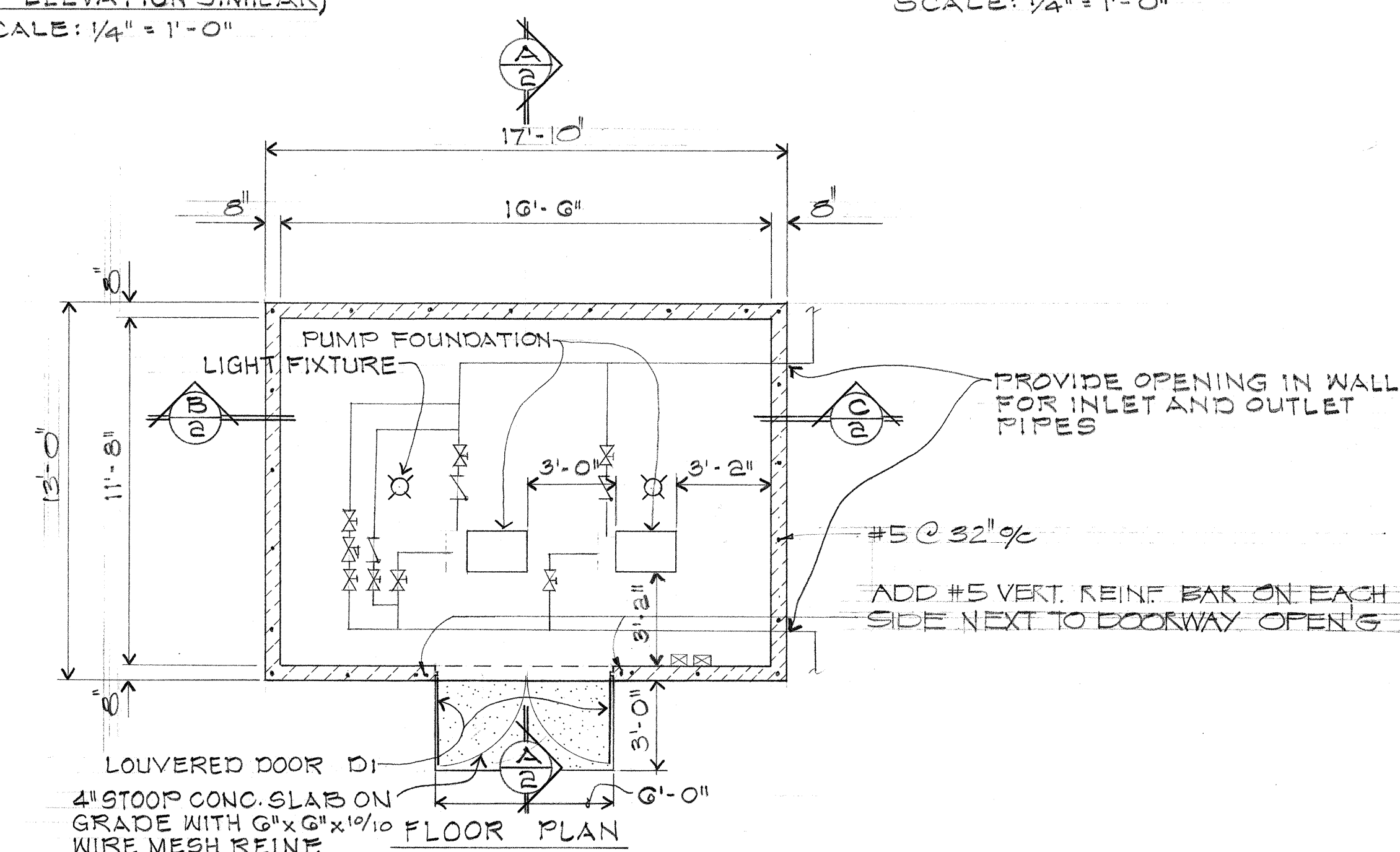
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION SYSTEM
BOOSTER PUMP UNIT PIPE ISOMETRIC DETAILS
INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1(92):13
Date: Mar 1976
SHEET NO. 42 OF 52 SHEETS

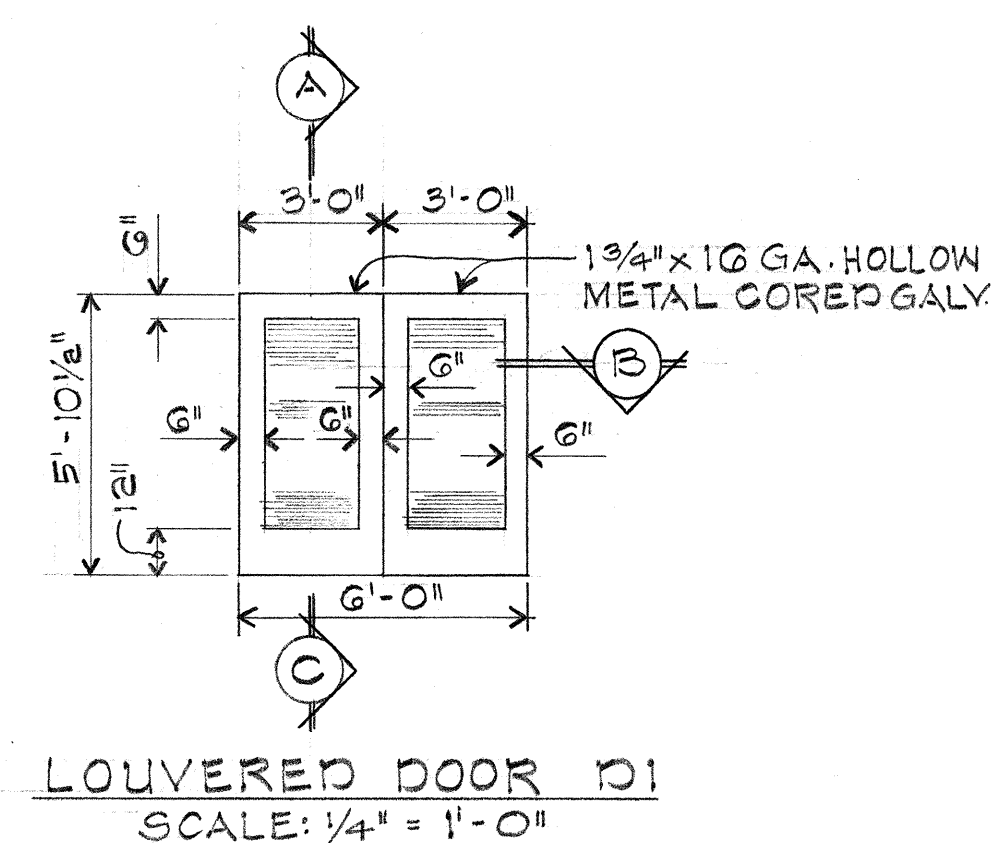
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
HAWAII	HAW.	I-HI-1(02):13	1976	43	50



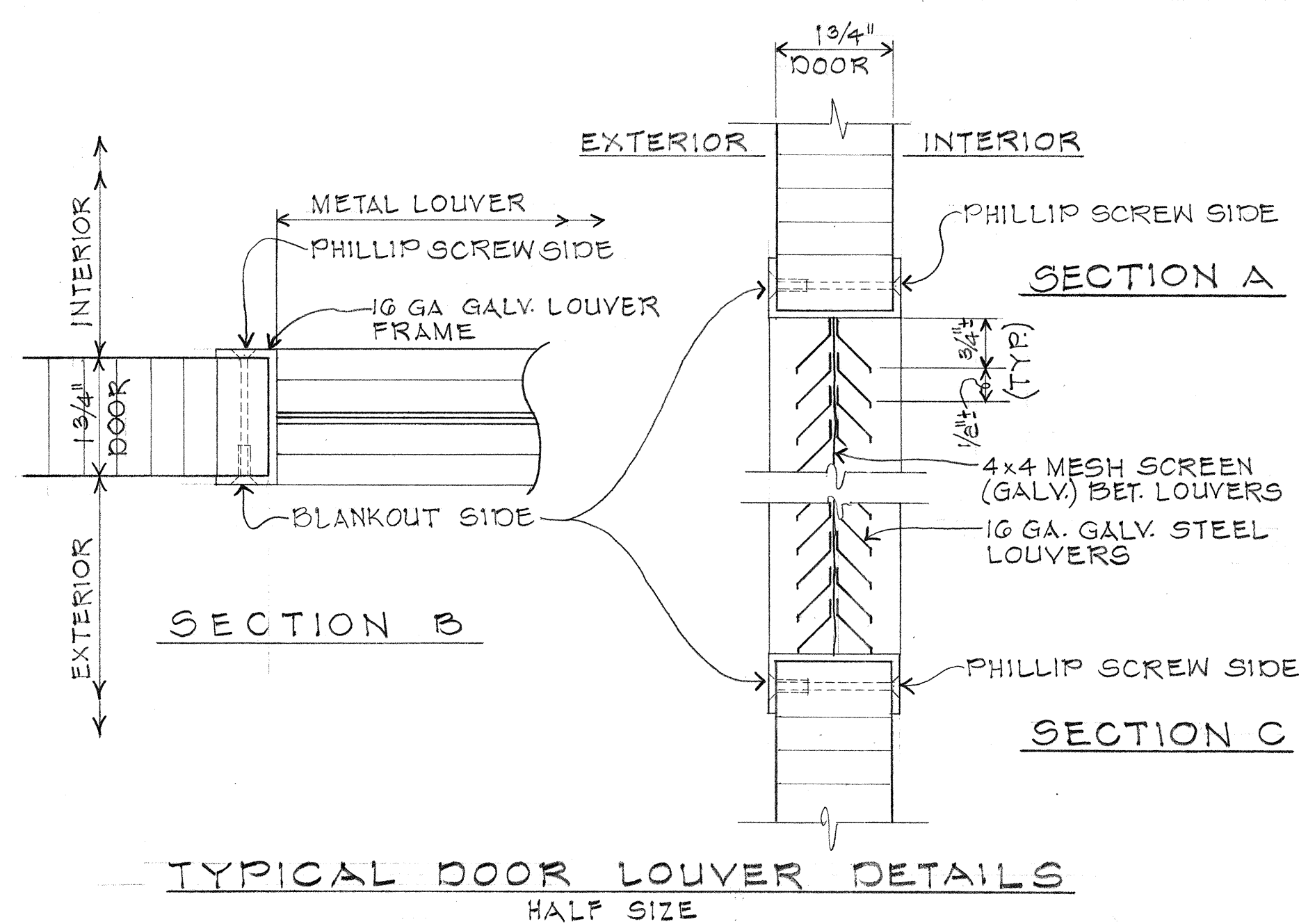
DETAIL 1/25 PUMP HOUSE FOR ONE PUMP
SCALE: 1/4" = 1'-0"



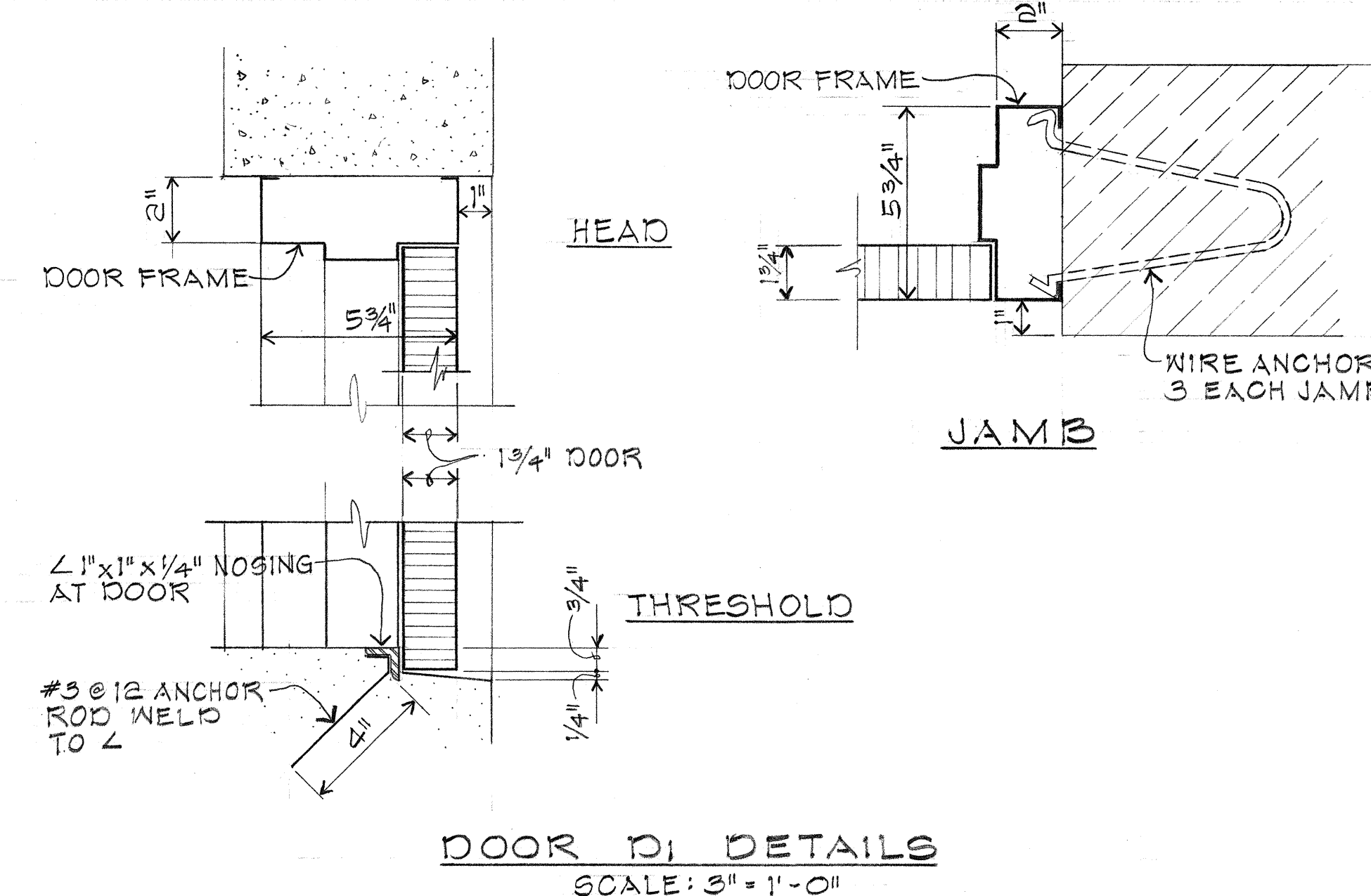
DETAIL 2/25 PUMP HOUSE FOR TWO PUMPS
SCALE: 1/4" = 1'-0"



LOUVERED DOOR D.
SCALE: $\frac{1}{4}" = 1'-0"$



TYPICAL DOOR LOUVER DETAILS
HALF SIZE

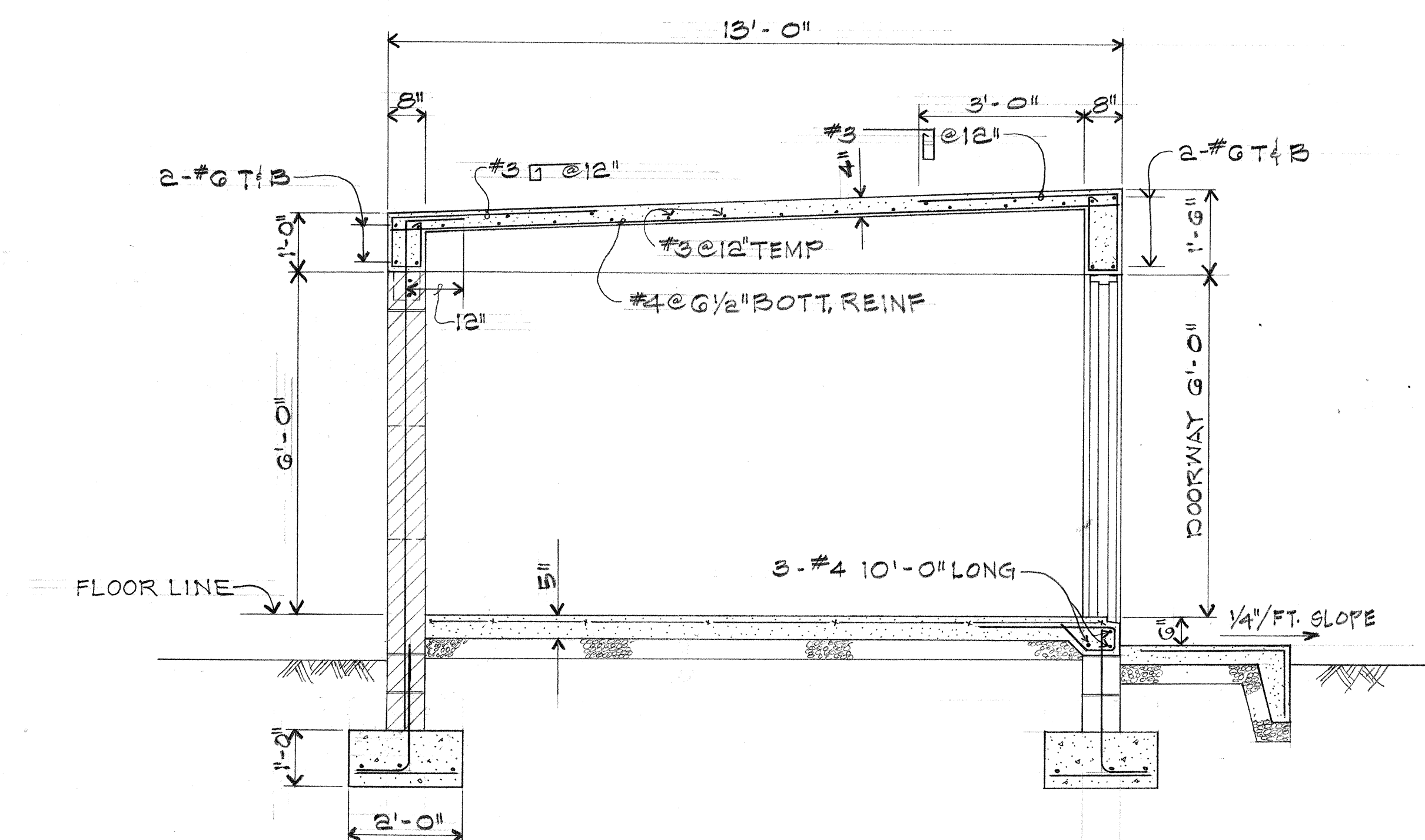


DOOR D1 DETAILS
SCALE: 3" = 1'-0"

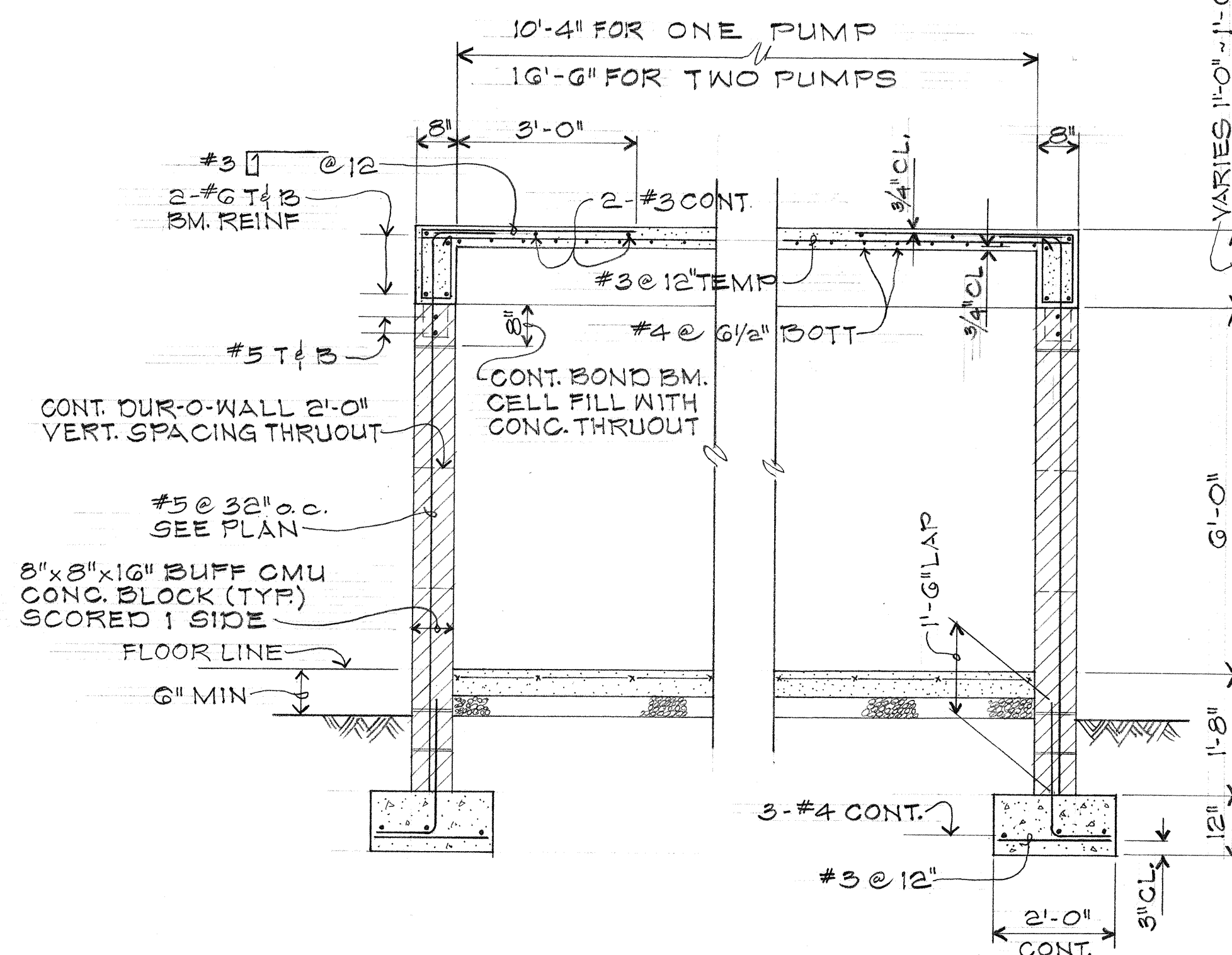
ORIGINAL PLAN	SURVEY PLOTTED BY _____	DATE _____
	DRAWN BY _____	" _____
	TRACED BY _____	" _____
	DESIGNED BY _____	" _____
	QUANTITIES BY _____	" _____
	CHECKED BY _____	" _____
No. _____		

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IRRIGATION SYSTEM
DETAILS FOR PUMP HOUSE
INTERSTATE ROUTE H-1
PROJ. NO. I-H1-1(02):13
Scale: As Shown Date: Mar 1976
SHEET No. I-25 OF 132 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(92):13	1976	44	50

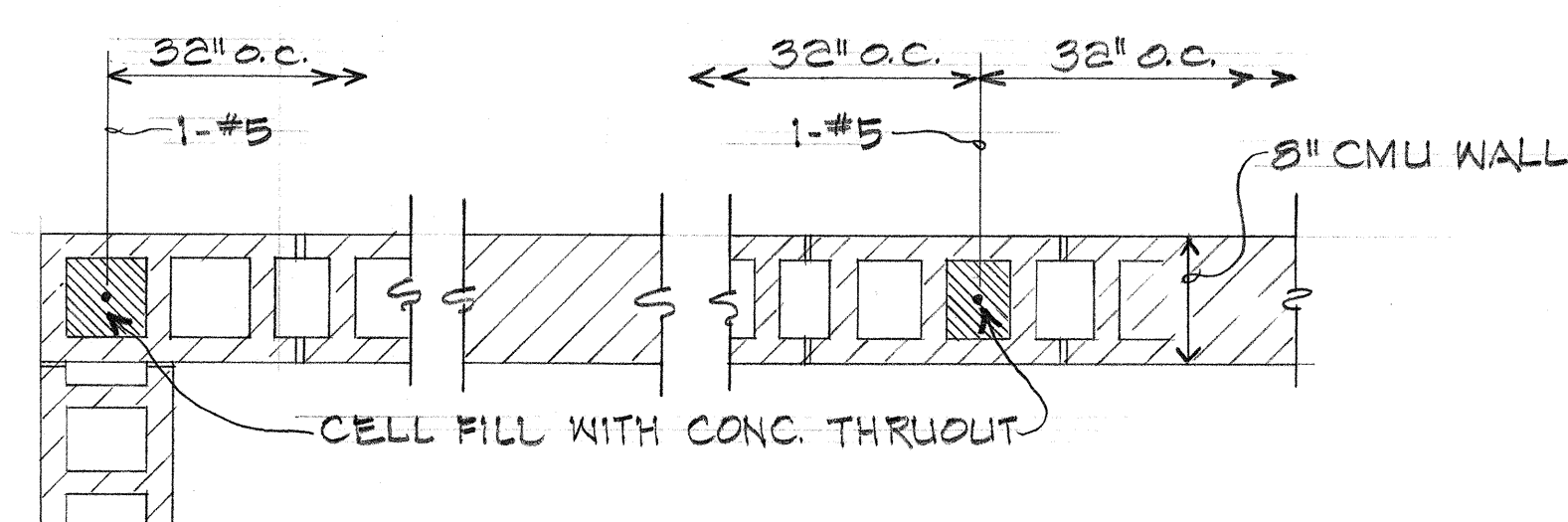


SECTION A-A
SCALE: 1/2" = 1'-0"

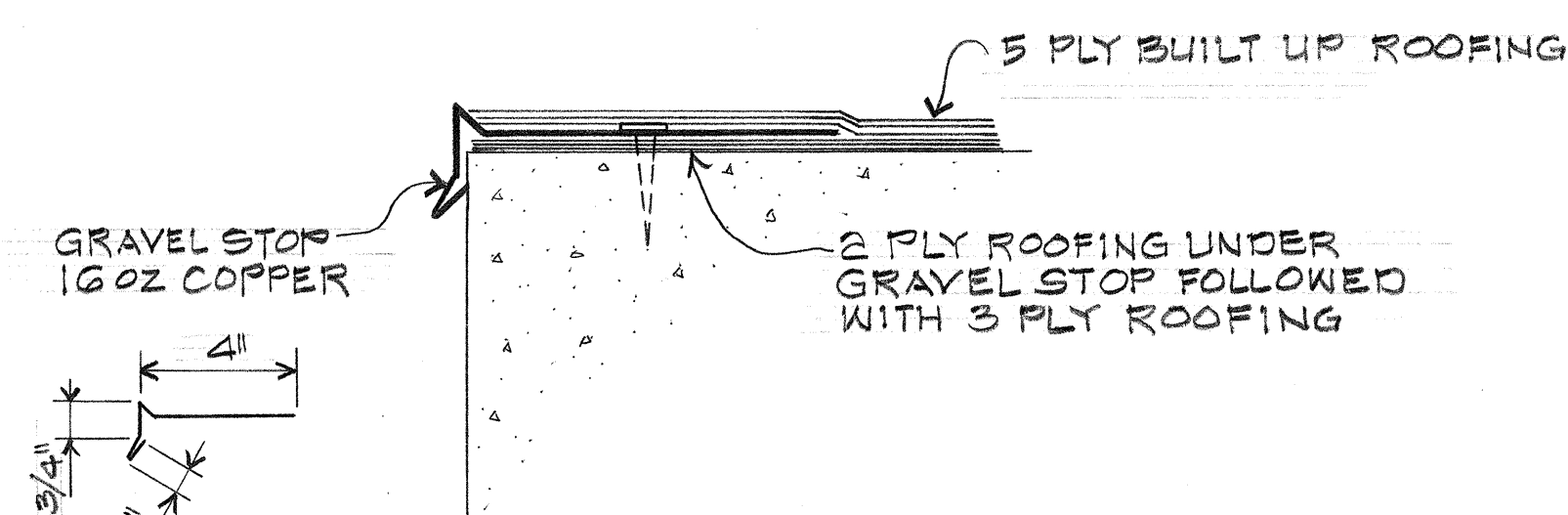


SECTION B-B
SCALE: 1/2" = 1'-0"

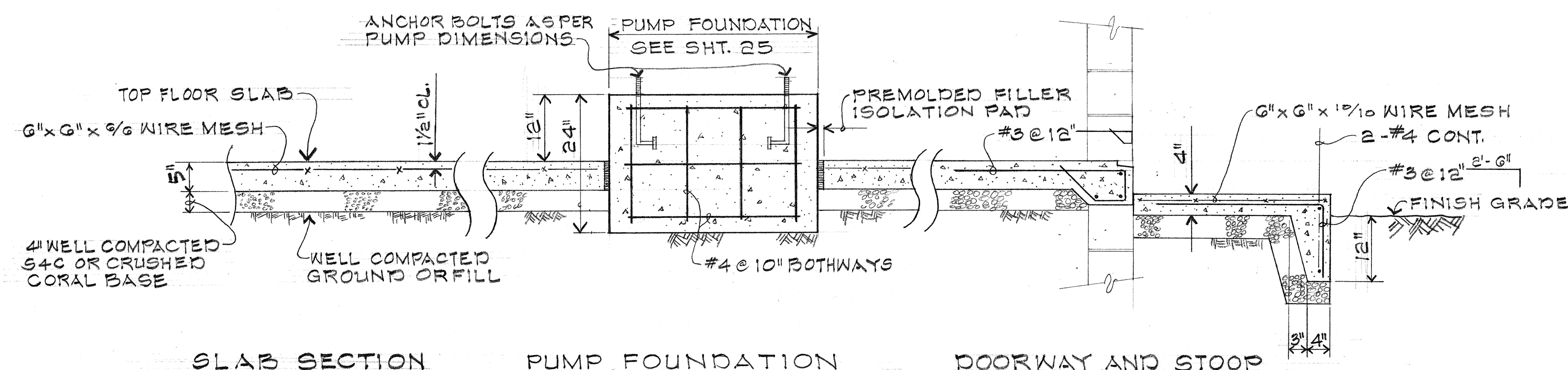
SECTION C-C
SCALE: 1/2" = 1'-0"



AT CORNER OR
NON CONTINUOUS ENDS
TYPICAL CMU SECTION
SCALE: 1" = 1'-0"



TYPICAL ROOF & GRAVEL STOP DETAIL
SCALE: 1/2" = 1'-0"



SLAB SECTION
PUMP FOUNDATION
DOORWAY AND STOOP
TYPICAL SLAB ON GRADE
SCALE: 3/4" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IRRIGATION SYSTEM
DETAILS FOR PUMP HOUSE
INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1(92):13
Scale: As Shown Date: Mar. 1976
SHEET No. 12 OF 132 SHEETS

CONTROLLER NO.	A1		A2		B1		B2		C1		C2		D1		D2		E1		E2		F1		F2		G1		H1		H2	
STATION No.	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER
1	4	S-13	4	S-13	4	S-13	6	P-56	6	J-35	6	P-56 P-37	6	J-35	6	J-35	6	S-13	6	S-13	6	J-35	6	S-13	6	J-35	6	J-35	6	J-65
2	6	J-35	6	J-35	6	J-35 J-25 30-35	6	J-35	6	P-37 J-35	6	J-35	6	J-35	6	J-35	6	J-35	6	J-35	6	S-13	6	S-13	4	P-62	6	J-65		
3	6	J-35	6	J-35	6	J-35	8	J-30	6	J-35	4	P-41 P-37	6	J-35	6	J-25	6	J-35	4	P-37	6	S-13	4	P-37	6	J-25	8	J-30	6	J-65
4	6	J-35	6	J-35	6	J-35	6	J-35	6	J-35	8	J-35 J-30	6	J-35	6	J-35	6	J-35	6	J-35	6	J-35	6	J-35	6	J-35	6	J-35	6	S-13
5	2	Nozzle	6	J-30	6	J-35	6	J-35	6	J-35	6	J-35	6	J-25	2	S-51	6	J-35	6	J-35	8	J-30	6	J-35	6	J-35	6	J-25	6	J-35
6	2	Nozzle	6	J-30	8	J-30	6	J-25	6	P-84	8	J-30 J-25	6	J-35	6	J-35	6	J-30	8	J-30	6	P-56	—	—	6	S-13	6	S-13	8	J-40
7	4	S-13	6	J-30	6	J-35	6	J-25	6	P-84	6	J-35	8	J-30	6	J-30	6	S-13	6	P-41	6	J-35	—	—	6	J-25	6	J-25	8	J-40
8	6	P-37	6	J-30	6	J-35	6	J-25	6	J-30	6	S-13 J-35	6	J-35	6	J-35	6	J-35	8	J-30	8	J-30	—	—	6	J-35	6	J-35	6	J-35
9	6	P-84	6	P-84	6	J-35	4	S-13	6	J-30	8	J-30	—	—	6	J-30	6	S-13	—	—	—	—	—	—	—	—	6	J-35	6	J-35
10	6	P-84	6	J-30	6	P-41	6	P-41	6	J-30	—	—	—	—	6	J-30	6	P-41	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL TIME	48		58		60		60		60		58		50		56		60		50		50		28		48		54		58	

CONTROLLER NO.	I1		I2		J1		K1		K2		L1		L2		M1		N1		N2		O1		P1		P2		Q1		Q2	
STATION No.	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER
1	4	P-62	6	P-37	6	J-35	6	J-35	6	P-56	6	J-35	4	S-51	6	P-56	6	J-35	6	J-35	6	J-35	6	J-35	6	J-35	6	P-84	6	J-35
2	6	J-35	6	S-13	8	J-30	6	J-35	6	J-35	6	J-65	6	J-35	4	P-37	6	J-35	6	J-35	6	J-35	4	P-37	6	J-35	6	J-30	6	J-30
3	4	P-37	8	J-30	6	J-35	6	J-35	6	J-35	6	J-65	8	J-35	6	J-35	6	J-35	6	J-35	6	J-35	6	J-30	8	J-30	6	J-30	6	J-35
4	6	J-35	6	J-35	6	J-65	6	J-35	6	J-40	6	J-65	6	J-25	6	J-30	6	J-35	6	J-30	8	J-30	6	P-84	6	P-84	6	P-84	6	S-13
5	8	J-30	8	J-30	8	J-35	6	J-35	6	J-65	6	J-65	4	P-37	6	J-30	6	J-40	6	S-4	6	J-35	6	P-84	6	P-84	6	J-35	6	J-35
6	6	P-41	6	J-65	6	J-65	6	J-30	—	—	6	J-30	6	J-35	4	P-37	6	J-40	6	J-35	8	J-30	6	P-84	6	P-84	6	P-84	6	J-35
7	6	P-84	8	J-30	6	J-35	6	J-35	—	—	6	J-40	6	J-35	6	J-35	6	J-40	6	J-35	—	—	6	J-35	6	P-84	6	P-84	6	J-35
8	6	P-84	8	J-30	8	J-30	6	J-25	—	—	6	J-35	6	P-41	6	P-84	6	J-40	6	J-35	—	—	6	J-30	6	P-84	6	J-35	6	J-35
9	8	J-30	—	—	6	J-65	6	J-35	—	—	6	J-65	—	—	6	J-30	6	J-40	6	J-30	—	—	6	P-84	6	P-84	6	J-65	6	J-35
10	—	—	—	—	—	—	6	J-30	—	—	6	J-30	—	—	6	J-30	—	—	6	J-30	—	—	6	J-30	—	—	6	J-30	4	S-51
TOTAL TIME	54		56		60		60		30		60		46		56		54		60		40		58		56		60		58	

CONTROLLER No.	R1		R2		S1		S2		G2		PROPOSED IRRIGATION PROGRAMS -(MAXIMUM OPERATION)							
STATION No.	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	TIME MIN.	SPRINK- LER	CONTROL- LERS	EST. G.P.M.	EVERYDAY WATERING START TIMES @.30"/DAY@.005"/HR.	4TH-DAY PROGRAM START EVERY HOUR @.005"/HR.	EVERY OTHER DAY WATERING @ ~ 0.05"/HR.			
1	6	S-13	6	J-35	6	S-13	6	S-13	28	None								
2	6	J-35	6	J-30	6	J-35	6	S-13	6	S-13	A1,B1,I2,J1	370	12, 4, 8	12, 4, 8	Sun, Thr.	Mon.		
3	6	P-37	6	J-30	6	J-35	6	S-13	6	J-25	A2,B2,H2,I1	410	1, 5, 9	1, 5, 9	Mon, Fri	Tue.		
4	4	P-37	6	J-35	8	J-30	6	S-13	4	P-37	C1,M1,K1,X2	393	2, 6, 10	2, 6, 10	Tue., Sat.	Wed.		
5	4	P-37	6	J-35	6	J-35	—	—	6	P-41	C2,L1,I2,H1,T	424	3, 7, 11	3, 7, 11	Wed.	Sun., Thr.		
6	6	J-35	6	J-30	—	—	—	—	8	J-30	Q1,Q2,E1,E2,F2,G2	415	12, 4, 8	12, 4, 8	Sun, Thr.	Mon.		
7	6	P-84	6	J-35	—	—	—	—	—	—	F1,G1,P1,N1	311	1, 5, 9	1, 5, 9	Mon., Fri.	Tue.		
8	6	P-84	6	P-84	—	—	—	—	—	—	R1,S1,G2	370	2, 6, 10	2, 6, 10	Tue, Sat.	Wed.		
9	8	J-40	6	P-84	—	—	—	—	—	—	D1,D1,D2,R2	331	3, 7, 11	3, 7, 11	Wed.	Sun. Thr.		
10	6	P-84	4	P-37	—	—	—	—	—	—								
TOTAL TIME	58		58		32		24		58									

EST. CONSUMPTIVE USE				TIME REQUIRED, HRS/DAY AT 2.0% SLOPE	
MONTH	MEAN DAILY W/RAINFALL	MEAN DAILY W/O RAIN	FOR MEAN DAILY W/RAINFALL	FOR MEAN DAILY W/O RAIN	
JAN	.06" / DAY	0.15" / DAY	~8	16	
FEB	.06 "	0.15 "	~8	16	
MAR	.08 "	0.15 "	8	16	
APR	.11 "	0.18 "	~8	20	
MAY	.15 "	0.20 "	16	20	
JUN	.15 "	0.18 "	16	20	
JUL	.18 "	0.22 "	20	24	
AUG	.18 "	0.24 "	20	24	
SEPT	.15 "	0.18 "	16	20	
OCT	.15 "	0.18 "	16	20	
NOV	.07 "	0.15 "	~8	16	
DEC	.01 "	0.15 "	—	16	

AUTOMATIC CONTROLLER T		
STATION NO.	TIME MIN.	SPRINKLER
1	4	P-30
2	4	P-30
3	4	P-30
4	4	P-30
5	4	P-30
6	4	P-30
7	4	P-30
8	4	P-30
9	4	P-30
10	4	P-30
TOTAL TIME	40	

DRIP IRRIGATION PROGRAM (PEAK PERIOD)			
PLANT SIZE	PRESSURE SETTING @ YAL	HOURS PER DAY	
5 GAL.	25	4-6	
25 GAL.	25	10	

NOTE: For drip system with 5 gal. and 25 gal. trees, use two emitters per 25 gal. tree and one emitter per 5 gal. tree and set timing for 4-6 hours per day.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IRRIGATION SYSTEM
SPRINKLER PROGRAM
INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1(92)13
Date: Mar. 1976
SHEET No. I-27 OF 132 SHEETS

NOTES:

- It shall be the responsibility of the operator to adjust the program to the changes due to the seasons and site. There are several combination of start times and start days that can be used. Program the Satellite Controllers in sequence as grouped in the irrigation program.
- The program shown will need to be adjusted to the manufacturers Master-Satellite Controllers operational characteristics and as noted in Note 1.

1 JUN 77	CHANGE TIMING FOR CONTROLLER A-1 DUE TO REVISION OF IRRIGATION IN VICINITY OF WE RAMP.
DATE	REVISION

DATE: _____
SURVEY PLOTTED BY: _____
DRAWN BY: _____
CHECKED BY: _____
DESIGNED BY: _____
NOTED BY: _____
QUANTITIES BY: _____
ORIGINAL PLAN: _____
NOTE BOOK: _____
NO. _____

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HI-1(92)13	1976	46	50

SPRINKLER SCHEDULE																
SYMBOL		TYPE SPRINKLER	SPRAY PATTERN	RISER CONNECTION (IPS)	OPERATING PRESSURE (PSI)	NOZZLE SIZE	APPROXIMATE DISCHARGE (GPM)	RADIUS	ADJ. ARC STOP *	DISCHARGE ADJUSTMENT	BACKSPASH PREVENTION DEVICE	MATERIAL	ADJ. DIST. CONTROL	TYPICAL SPACING **	REMARKS	
⊖		J-25P ROTARY SIDE IMPACT	P	1/2"	35	9/64"	3.4	33'	✓	-	✓	BB	BAFFLE	40'		
●		J-30P ROTARY SIDE IMPACT	F	3/4"	40	9/64" x 3/32"	5.2	41'	-	-	-	BB	-	50'		
⊖		J-35P ROTARY SIDE IMPACT	P	3/4"	40	11/64"	5.4	45'	✓	-	✓	BB	BAFFLE	50'		
⊖		J-40P ROTARY SIDE IMPACT	F	3/4"	45	3/16" x 3/32"	8.6	51'	-	-	-	BB	-	50'		
⊖		J-65P ROTARY SIDE IMPACT	P	1"	55	7/32"	10.4	56'	-	-	-	BB	BAFFLE	60'		
△		P-30P STREAM ROTOR POP-UP	P	3/4"	35	-	1.4	21'	-	-	-	PL	-	25'	MIN. 3" POP-UP	
⊖		P-37P ROTOR POP-UP SIDE IMPACT	P	1"	45	13/64"	7.8	44'	-	-	-	BB	-	50'	MIN. 2" POP-UP, BB, AL OR CI HOUSING	
⊖		P-41F ROTOR POP-UP SIDE IMPACT	F	1"	45	AS PER mfg	11.5	51'	-	-	-	BB	-	50'	MIN. 2" POP-UP, BB, AL OR CI HOUSING	
⊕⊕⊕		P-50 F,H,Q STREAM SPRAY POP-UP	F,H,Q	1/2" or 3/4"	30-35	-	0.7-2.9	22'	-	-	-	BB or PL	-	20'	MIN. 2" POP-UP	
⊖		P-62P ROTOR POP-UP	P	3/4"	50	-	5	43'	-	✓	-	PL	-	40'	MIN. 2 3/8" POP-UP	
⊖		P-84F ROTOR POP-UP	F	1"	60	AS PER mfg	17.6	56'	-	-	-	BB	-	60'	MIN. 1" POP-UP, BB, AL OR CI HOUSING	
●●●		S-13 F,H,Q STREAM SPRAY	F,H,Q	1/2"	30	-	0.8-2.1	22'	-	✓	-	BB OR PL	-	20'		
—		S-4H FAN SPRAY W/NOZZLE ADAPTER 1/2" FEMALE	H	1/2"	15	-	0.3	4'	-	-	-	BB OR PL	-	AS SHOWN		
▲		S-51F BUBBLE HEAD	FLO	1/2"	30	-	2.4	-	-	✓	-	BB OR PL	-	AS SHOWN		
⌘		D EMITTER	-	-	-	-	-	-	-	-	-	-	-	-	SEE SPEC. PROVISION	

P - PART CIRCLE
F - FULL CIRCLE
H - HALF CIRCLE
Q - QUARTER CIRCLE

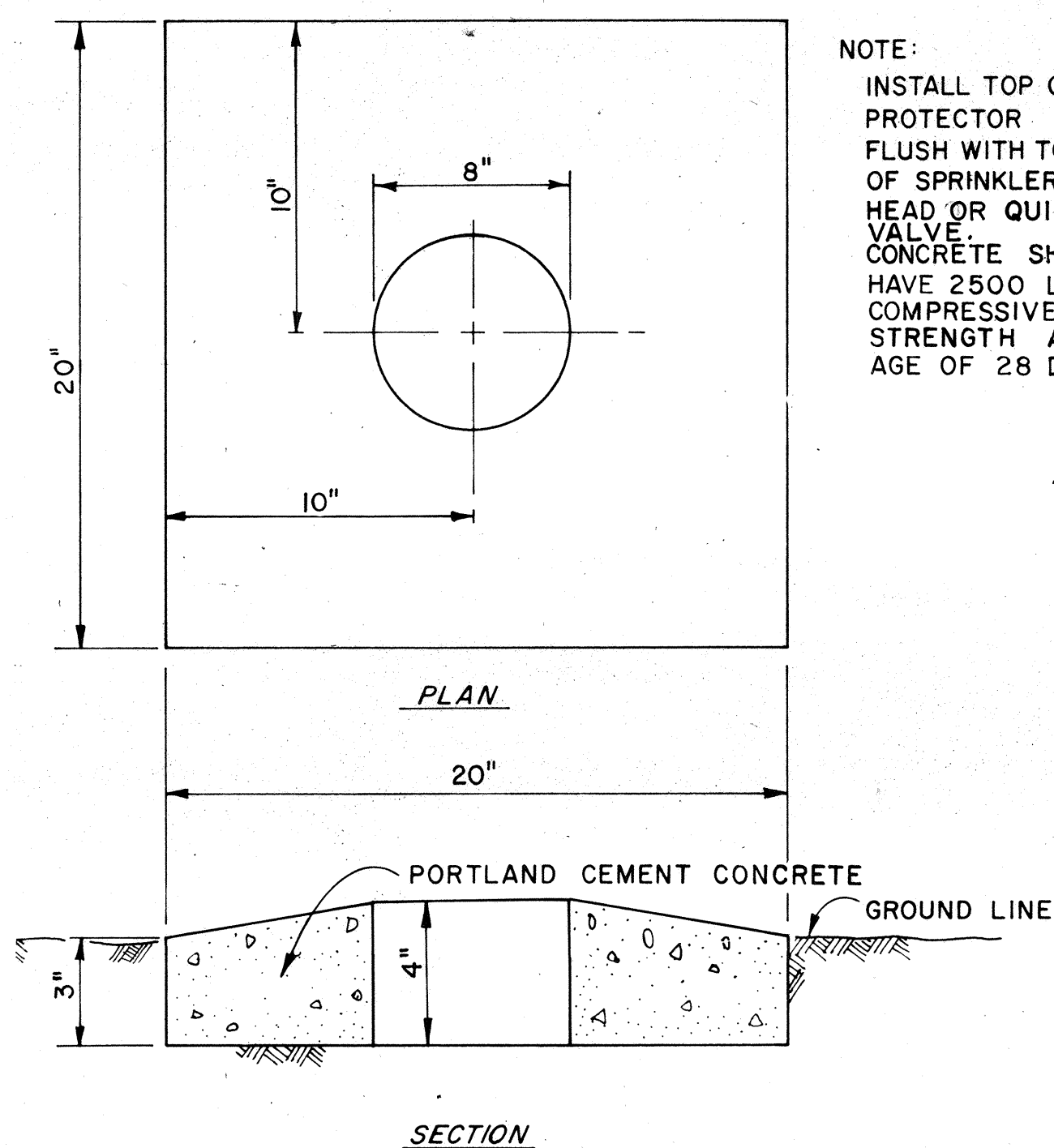
* ALL ADJUSTABLE ARC STOPS SHALL BE POSITIVE LOCKING
** UNLESS OTHERWISE NOTED ON PLANS

BB - BRASS OR BRONZE
PL - PLASTIC
AL - ALUMINUM
CI - CAST IRON

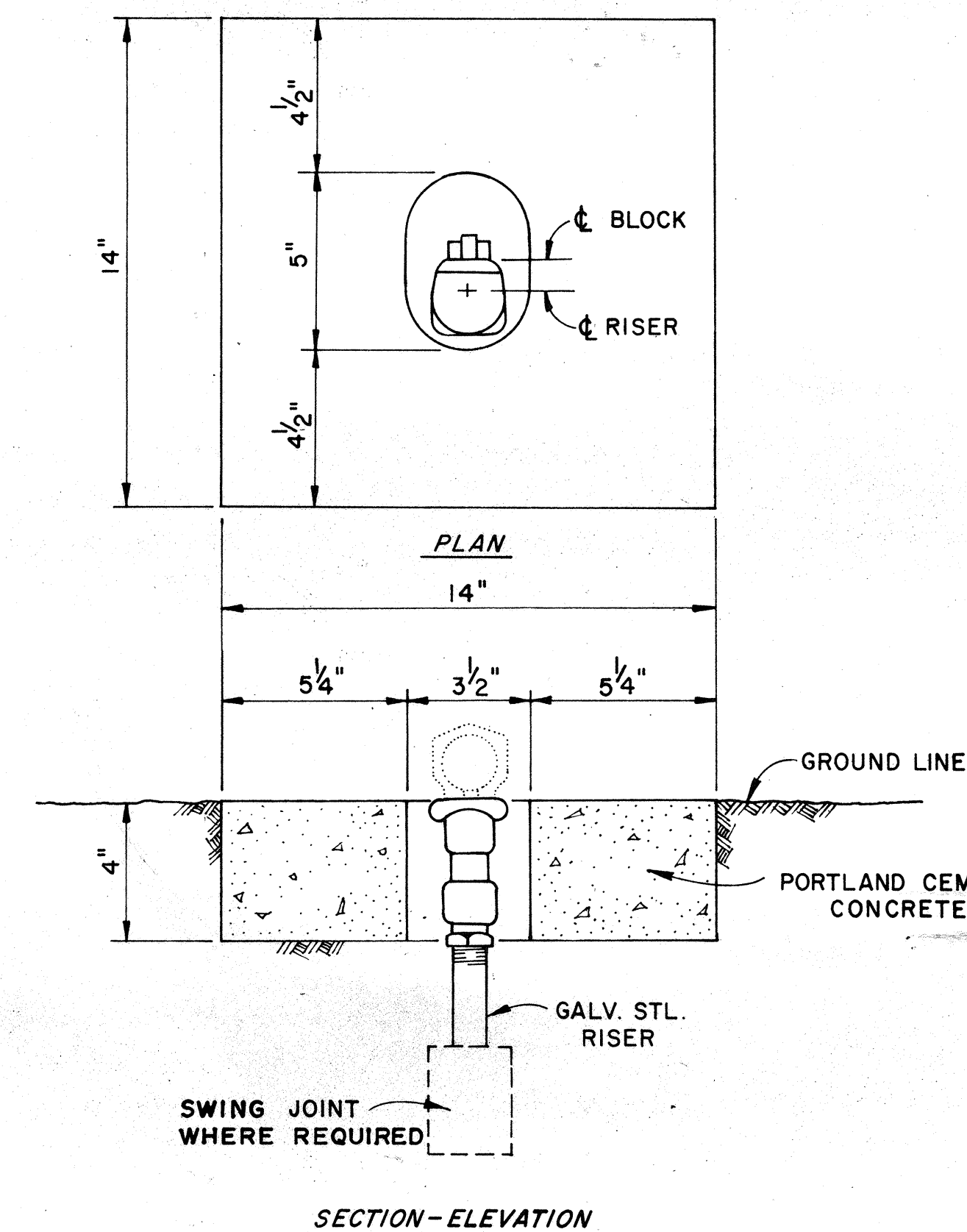
ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IRRIGATION SYSTEM
SPRINKLER SCHEDULE
INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1(92)-13
Date: Mar. 1976
SHEET No. 128 OF 132 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(02):13	1976	47	50

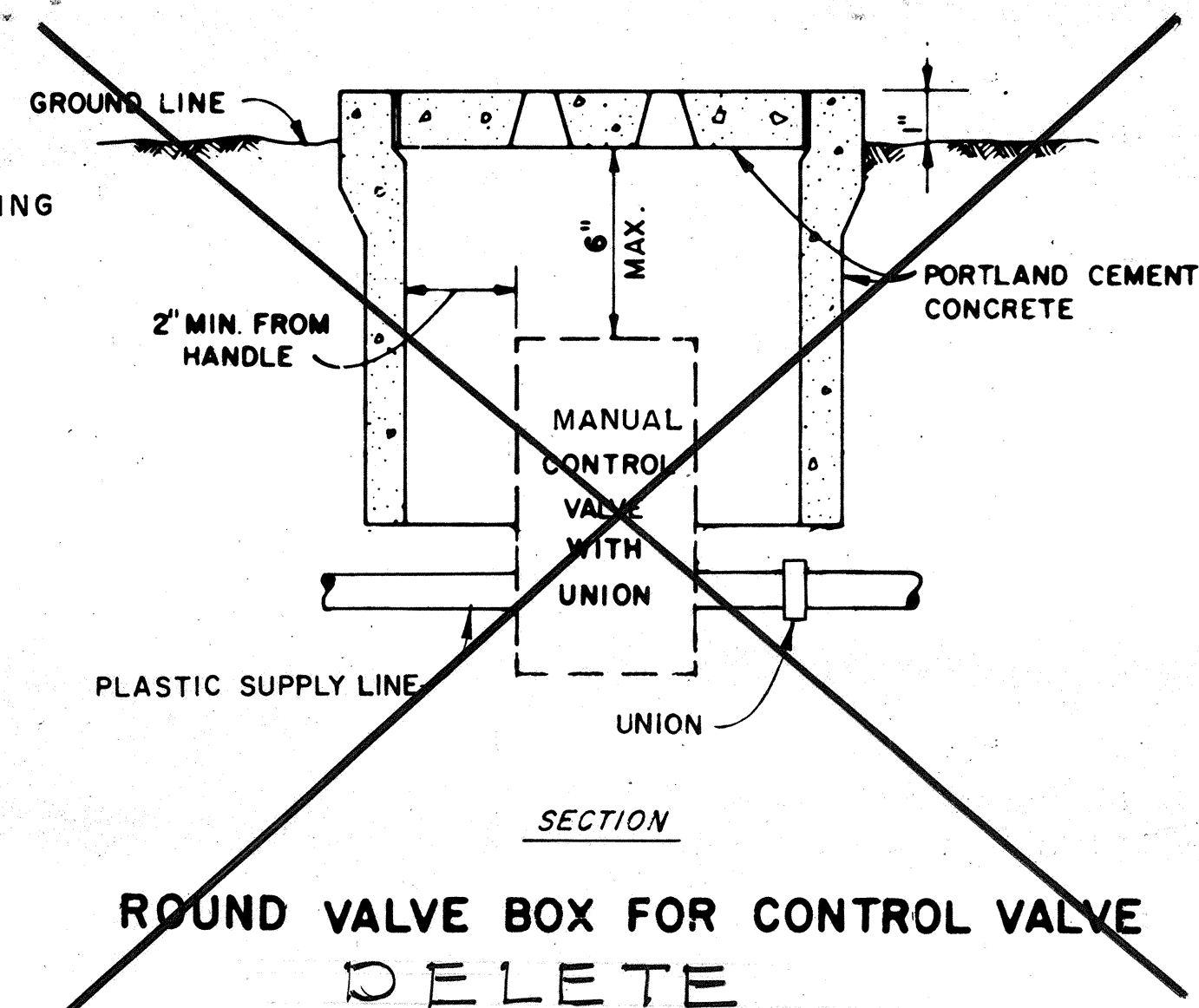


CONCRETE PROTECTOR
FOR TYPE "P-37 P" SPRINKLER

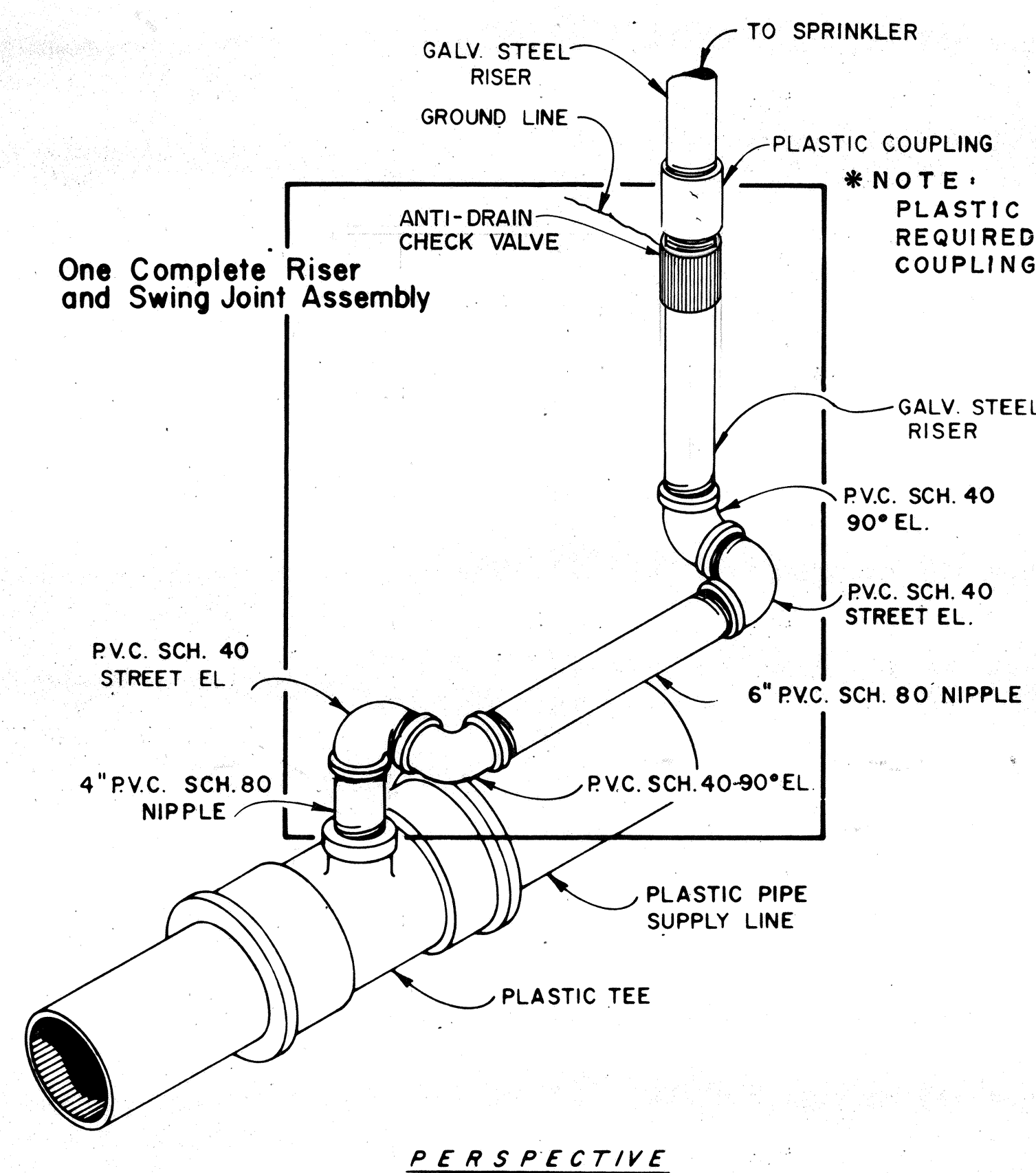


VALVE PROTECTOR AND CONNECTION
FOR QUICK COUPLING VALVE
AND SPRINKLER TYPES
P-30 P, P-56 P & P-62 P

NOTE:
INSTALL TOP OF
PROTECTOR
FLUSH WITH TOP
OF SPRINKLER
HEAD OR QUICK COUPLING
VALVE.
CONCRETE SHALL
HAVE 2500 LBS.
COMPRESSIVE
STRENGTH AT THE
AGE OF 28 DAYS.

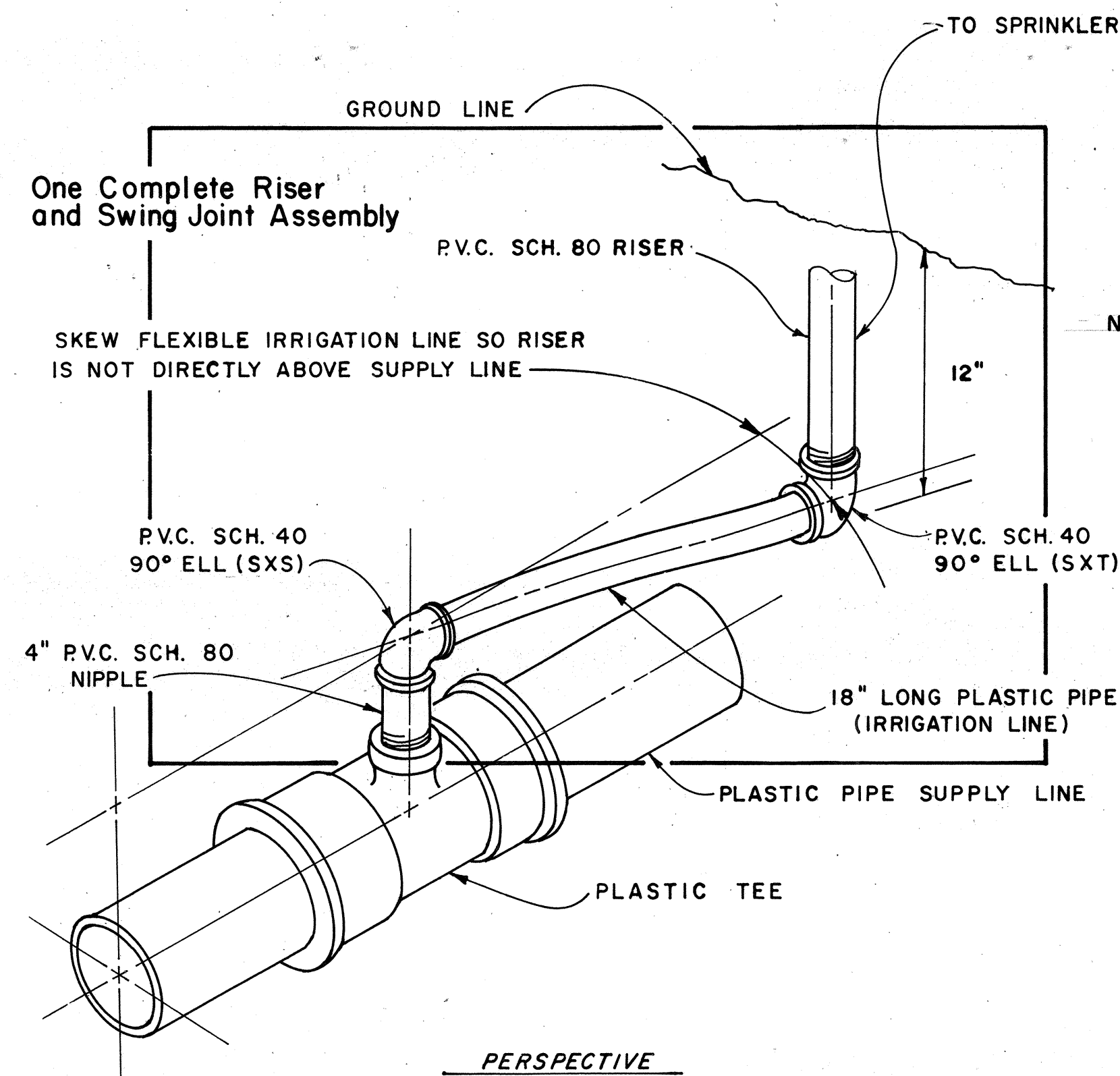


ROUND VALVE BOX FOR CONTROL VALVE
DELETE

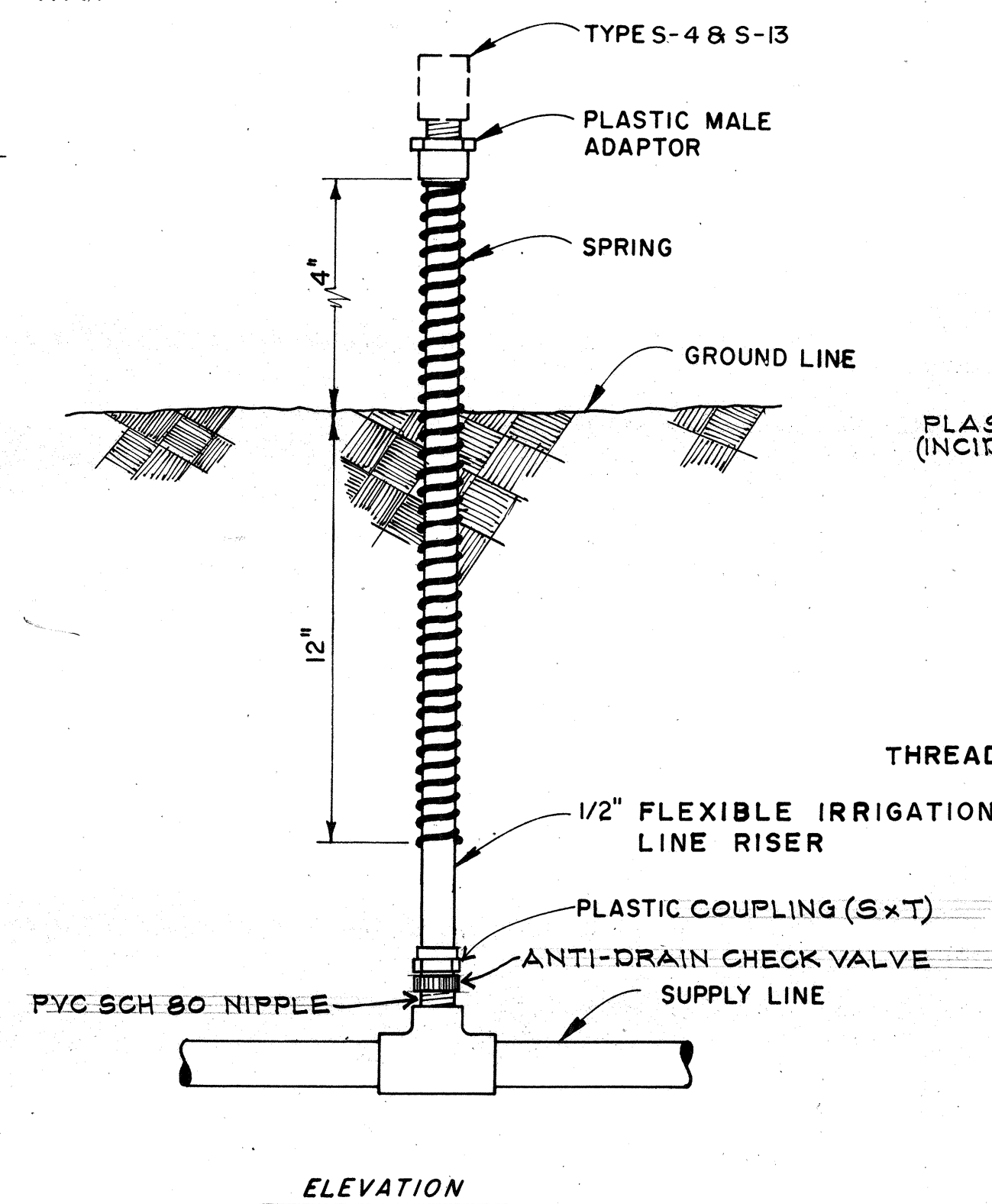


RISER AND SWING JOINT ASSEMBLY

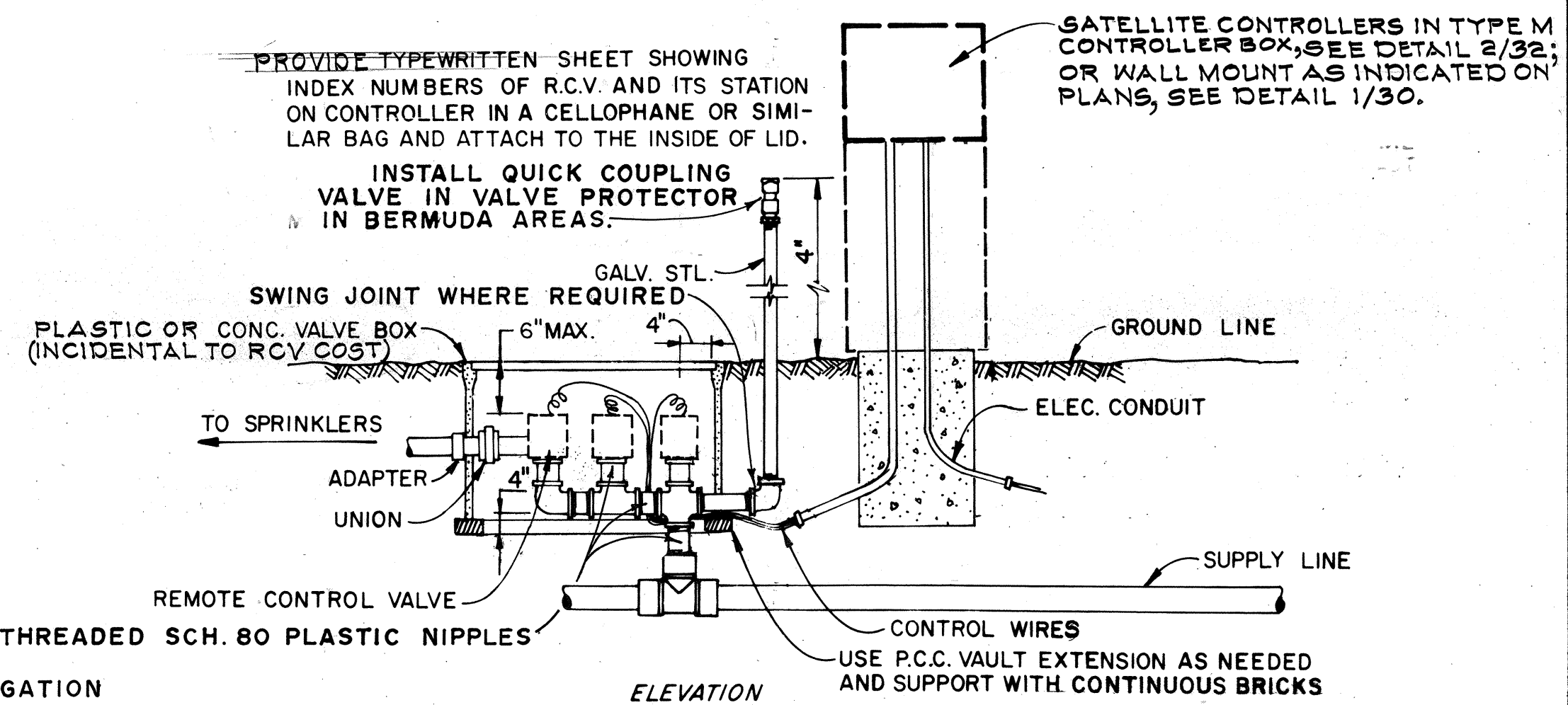
NOTE: THE SPRINKLER HEAD WITH THE REQUIRED RISER,
SWING JOINT, ANTI-DRAIN CHECK VALVE AND CONCRETE
PROTECTOR SHALL BE MEASURED AND PAID FOR AS A
UNIT.



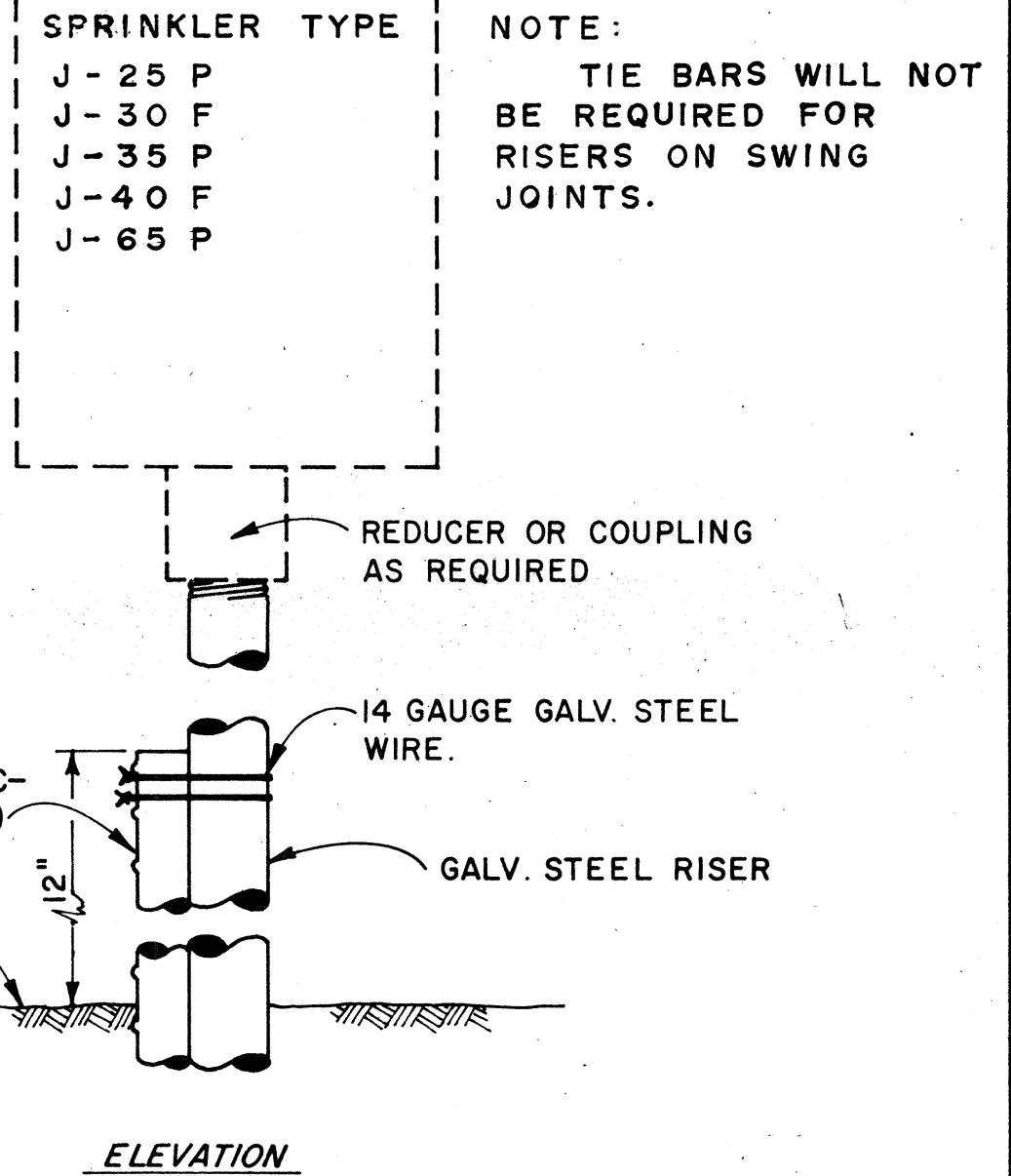
RISER AND FLEXIBLE SWING JOINT ASSEMBLY



RISER ASSEMBLY FOR TYPE S-4 & S-13 SPRINKLER



REMOTE CONTROL VALVE AND CONTROLLER INSTALLATION



RISER WITH TIE BAR

NOTE:
TIE BARS WILL NOT
BE REQUIRED FOR
RISERS ON SWING
JOINTS.

SPRINKLER TYPE
J-25 P
J-30 F
J-35 P
J-40 F
J-65 P

REDUCER OR COUPLING
AS REQUIRED

14 GAUGE GALV. STEEL
WIRE.

GALV. STEEL RISER

36" NO.4 REINFORC-
ING BAR (TIE BAR)

GROUND LINE

ELEVATION

TO SPRINKLER TYPE:

P-30 P

P-37 P

P-41 F

P-62 P

P-84 F

NOTE: INSTALL ANTI-DRAIN
CHECK VALVE WITH
SPRINKLER

GROUND LINE

ELEVATION

TO SPRINKLERS

ADAPTER

UNION

REMOTE CONTROL VALVE

THREADED SCH. 80 PLASTIC NIPPLES

CONTROL WIRES

USE P.C.C. VAULT EXTENSION AS NEEDED
AND SUPPORT WITH CONTINUOUS BRICKS

GROUND LINE

ELEVATION

SWING JOINT WHERE REQUIRED

6" MAX.

PLASTIC OR CONC. VALVE BOX
(INCIDENTAL TO RCV COST)

INSTALL QUICK COUPLING
VALVE IN VALVE PROTECTOR
IN BERMUDA AREAS.

PROVIDE TYPEWRITTEN SHEET SHOWING
INDEX NUMBERS OF R.C.V. AND ITS STATION
ON CONTROLLER IN A CELLOPHANE OR SIMI-
LAR BAG AND ATTACH TO THE INSIDE OF LID.

SATELLITE CONTROLLERS IN TYPE M
CONTROLLER BOX; SEE DETAIL 2/32;
OR WALL MOUNT AS INDICATED ON
PLANS, SEE DETAIL 1/30.

GROUND LINE

ELEVATION

TO SPRINKLERS

ADAPTER

UNION

REMOTE CONTROL VALVE

THREADED SCH. 80 PLASTIC NIPPLES

CONTROL WIRES

USE P.C.C. VAULT EXTENSION AS NEEDED
AND SUPPORT WITH CONTINUOUS BRICKS

GROUND LINE

ELEVATION

SWING JOINT WHERE REQUIRED

6" MAX.

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GROUND LINE

ELEVATION

TO SPRINKLERS

ADAPTER

UNION

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TO SPRINKLERS

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6" MAX.

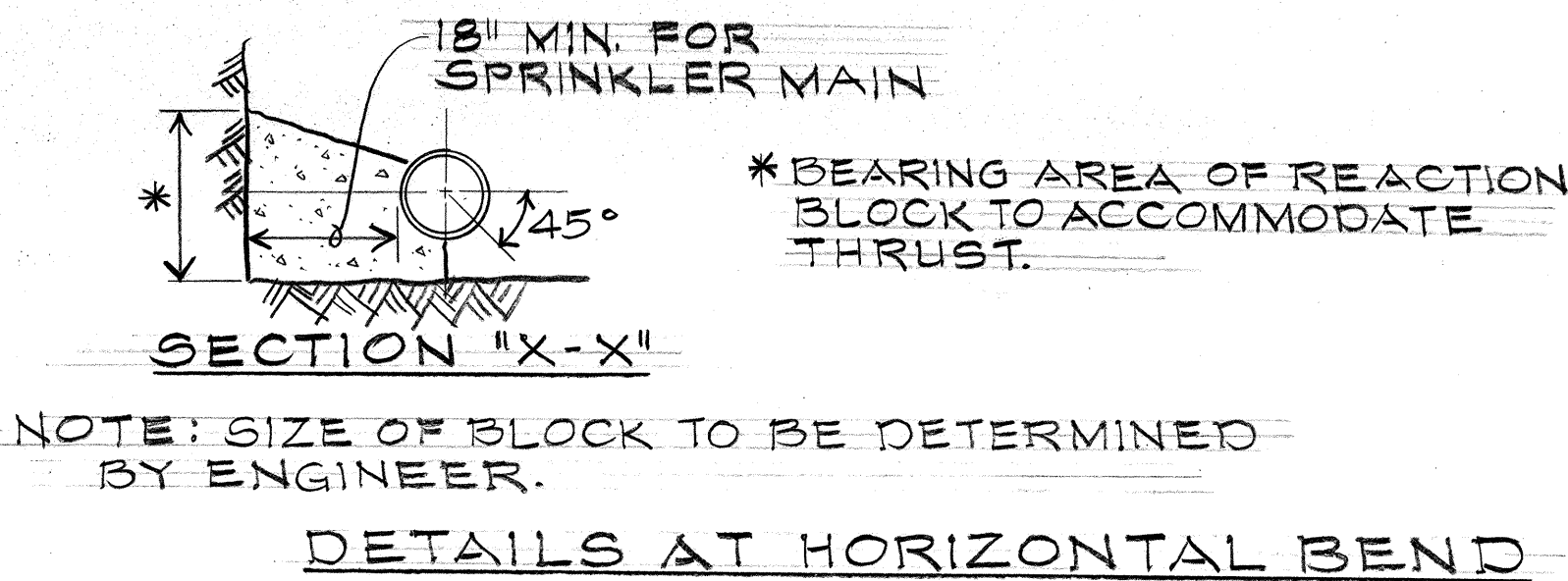
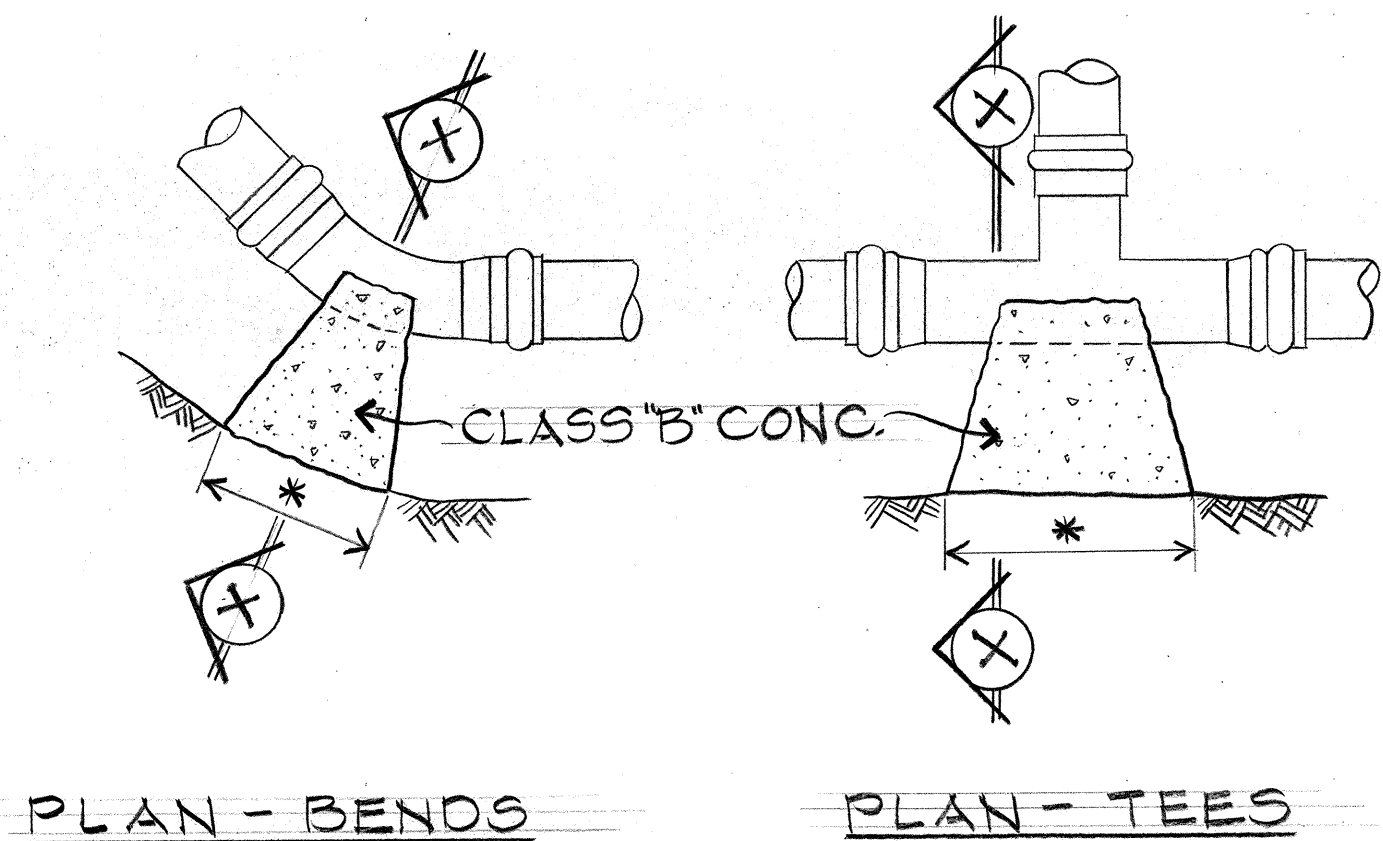
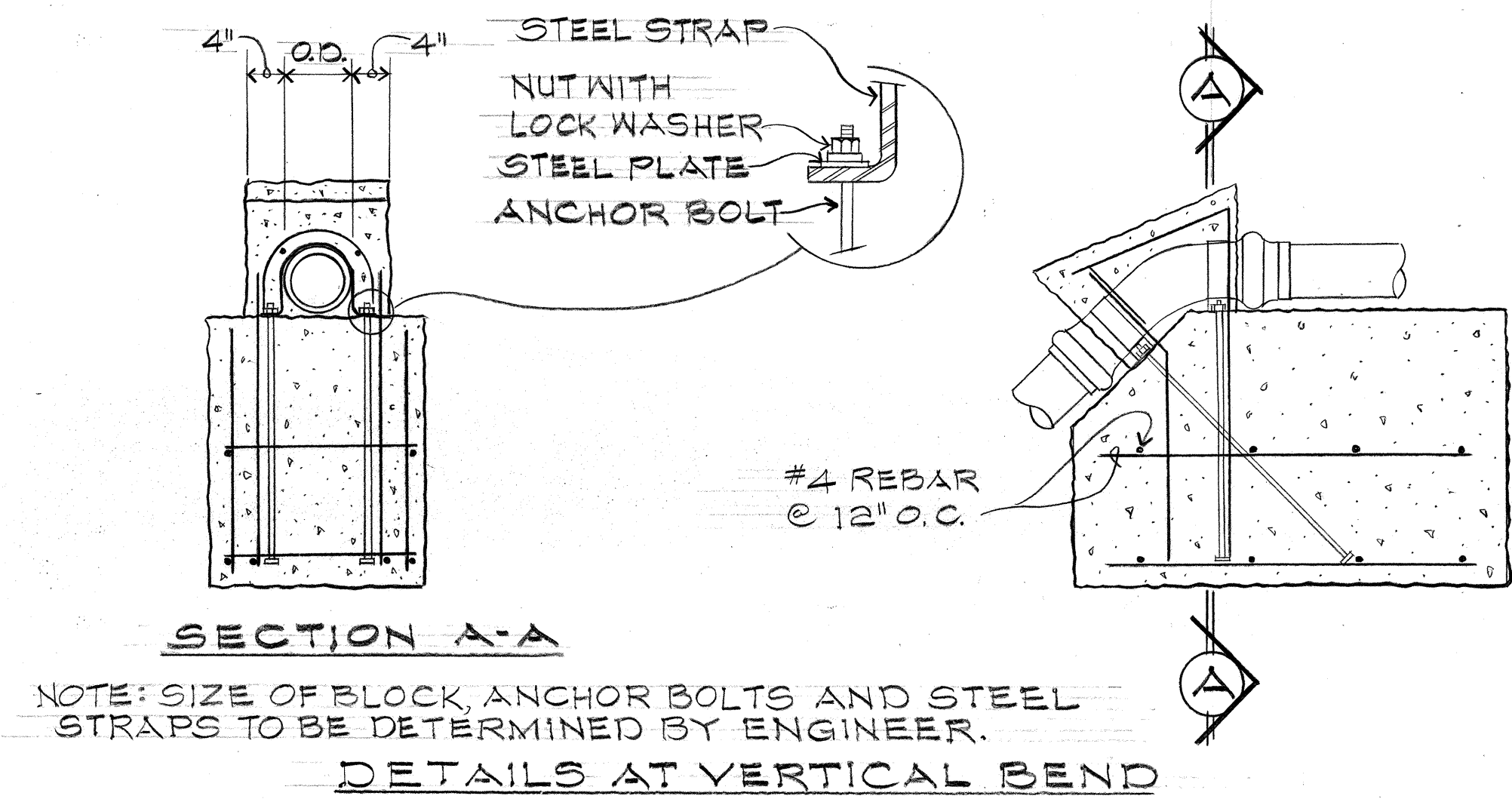
PLASTIC OR CONC. VALVE BOX
(INCIDENTAL TO RCV COST)

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VALVE IN VALVE PROTECTOR
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LAR BAG AND ATTACH TO THE INSIDE OF LID.

SATELLITE CONTROLLERS IN TYPE M
CONTROLLER BOX; SEE DETAIL 2/32

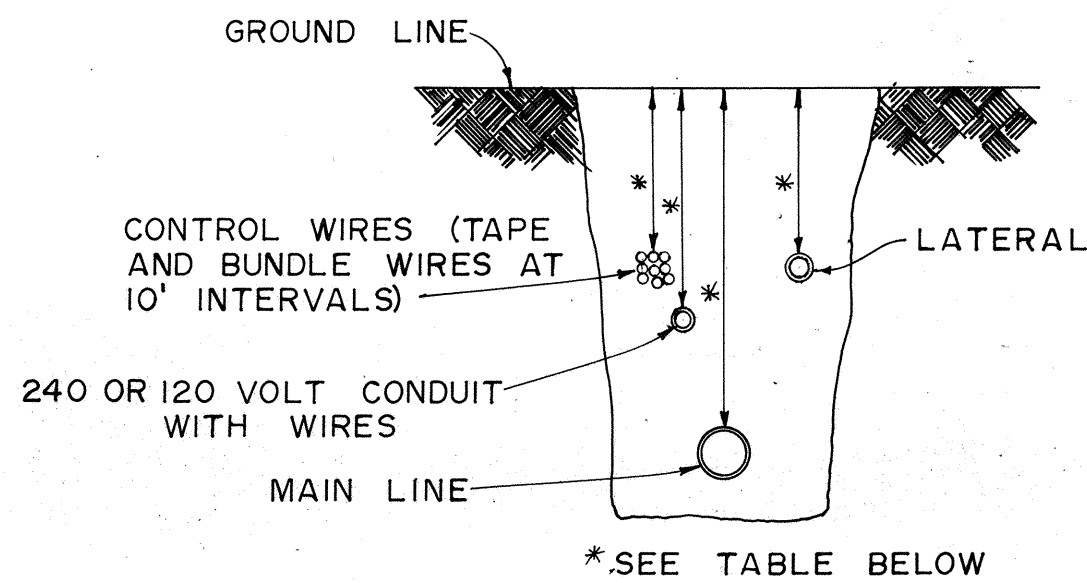
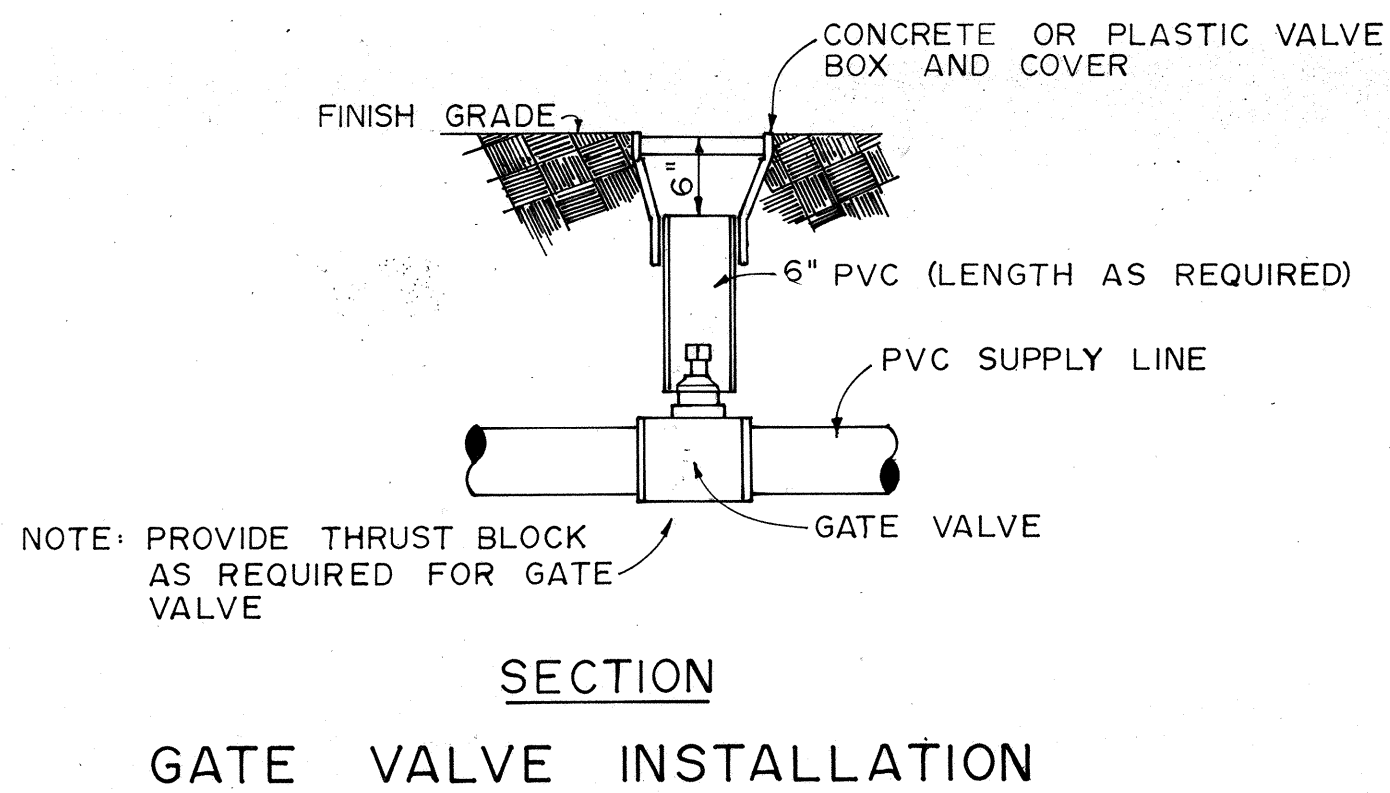
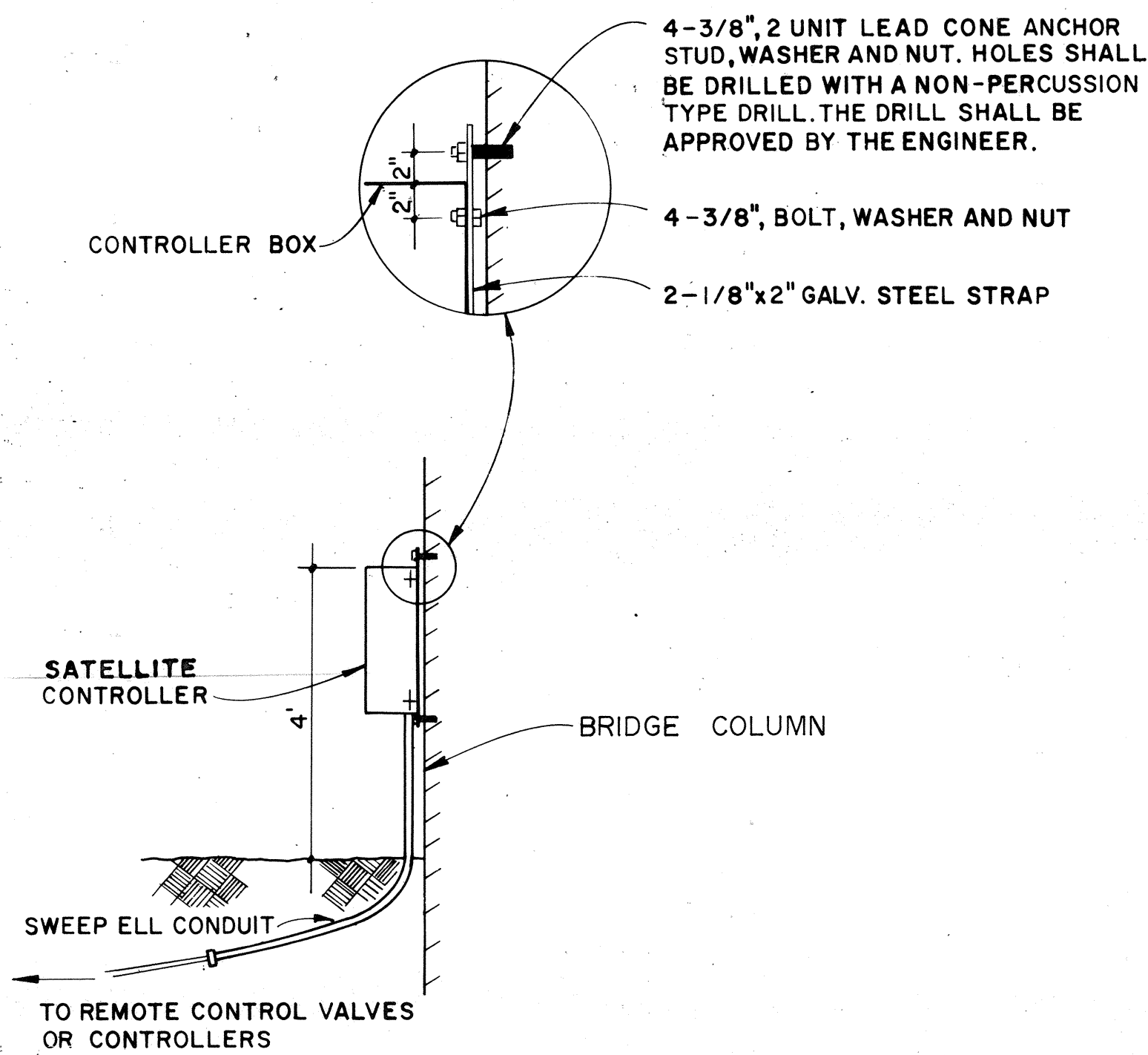
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H-1(02):13	1976	48	50



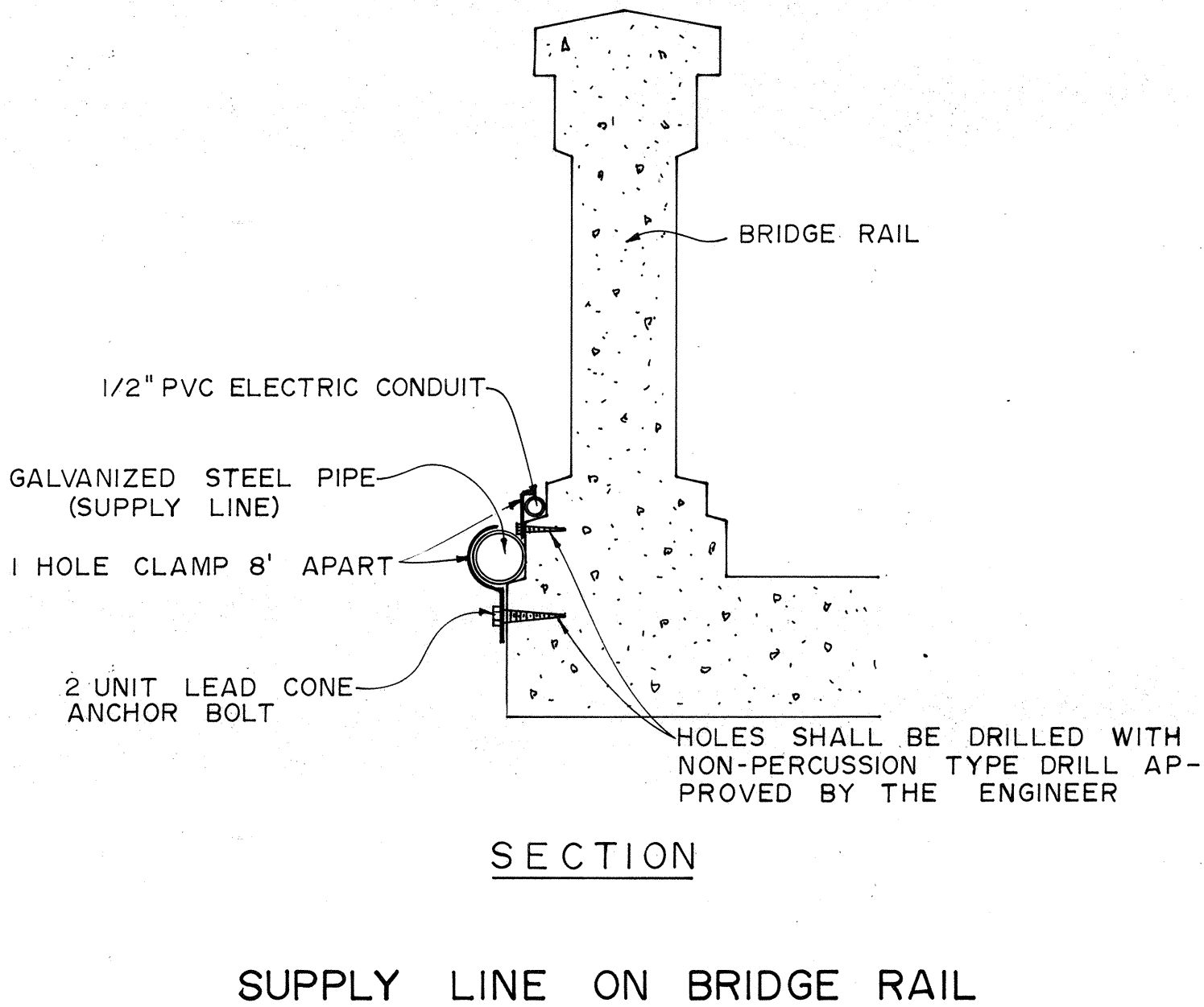
SPRINKLER WATER MAIN				
THRUST AT FITTINGS, LBS. AT 100 PSI				
120 PSI AWWA WATER HAMMER				
PIPE SIZE	90° EL	45° EL	TEE	
2 1/2"	1,725	930	1,220	
3"	2,550	1,380	1,880	
4"	4,230	2,290	3,000	
6"	9,150	5,000	6,470	

SPRINKLER WATER LATERAL				
THRUST AT FITTINGS, LBS. AT 100 PSI				
PIPE SIZE	90° EL	45° EL	TEE	
1 1/2"	345	185	245	
2"	535	235	380	
2 1/2"	785	425	555	
3"	1,160	630	820	

DETAILS OF REACTION BLOCKS



	* MINIMUM COVER
SPRINKLER LATERALS	18"
SPRINKLER MAINS	
4" AND SMALLER	24"
6"	30"
ELECTRICAL CONDUITS	24"
CONTROL WIRES	24"

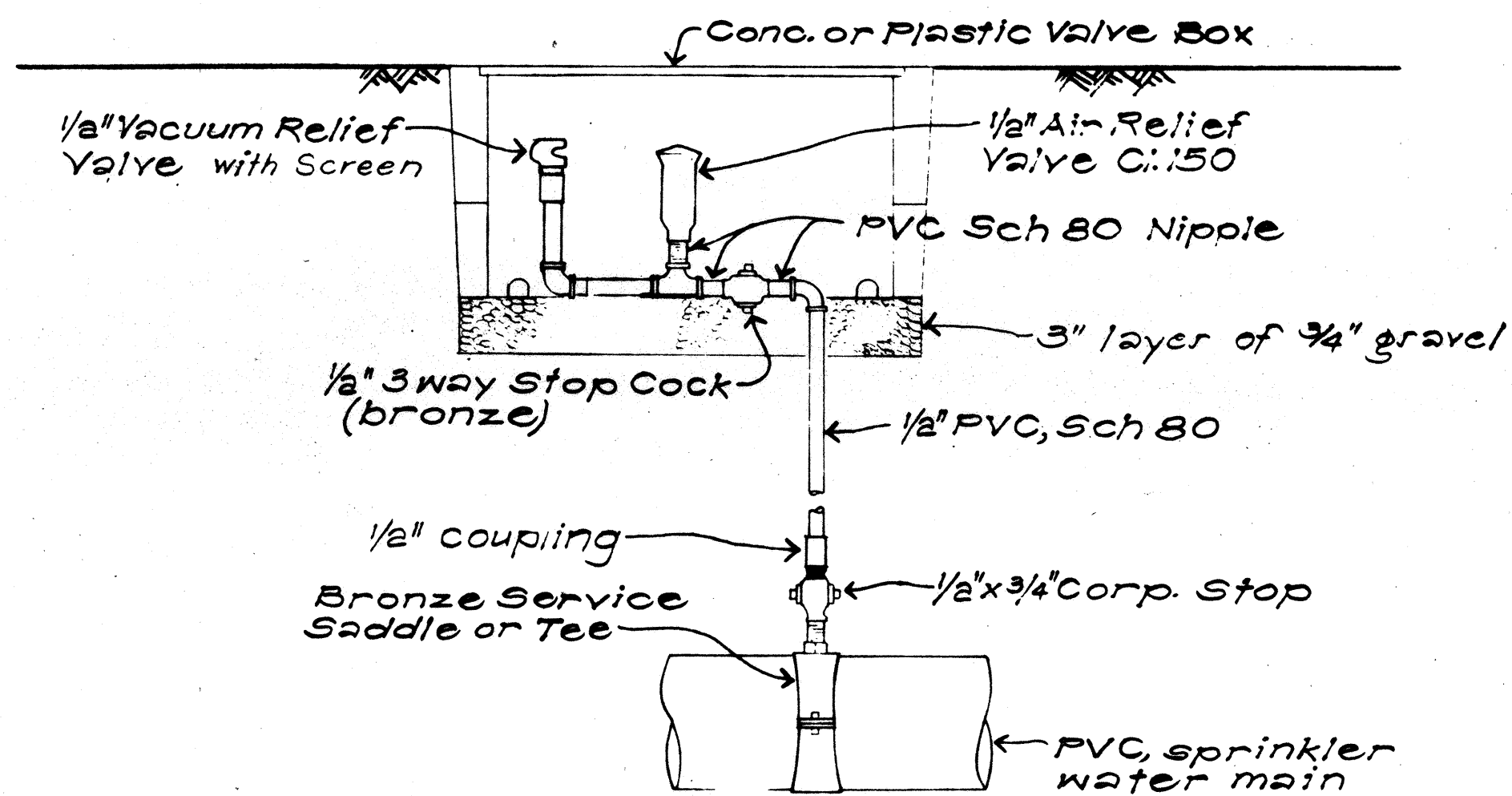


DATE	BY
DESIGNED BY	
TRACED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

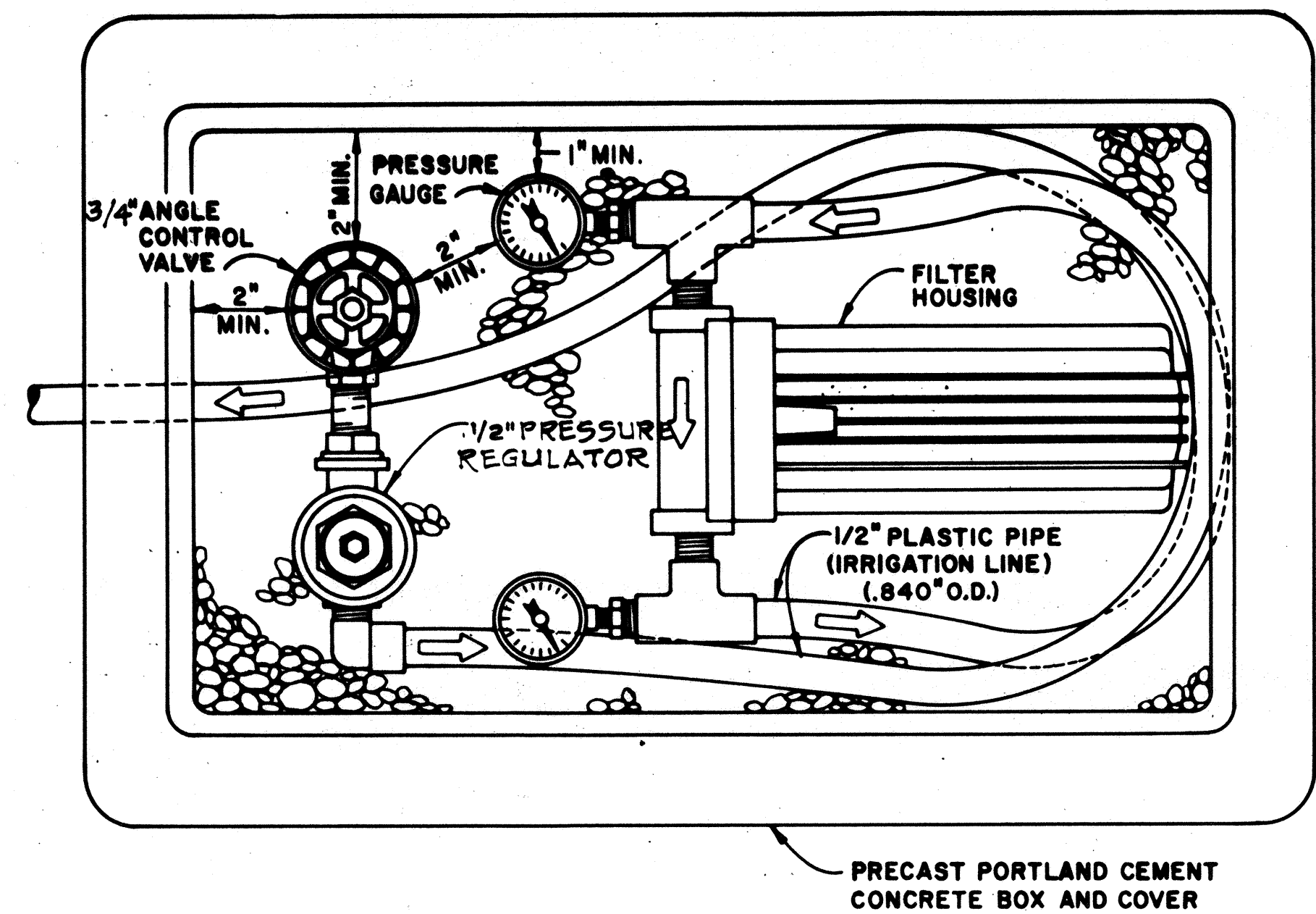
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IRRIGATION SYSTEM
DETAILS

INTERSTATE ROUTE H-1
PROJ. NO. I-H-1(02):13
Not to Scale Date: Mar 1976
SHEET NO. 1-30 OF 32 SHEETS

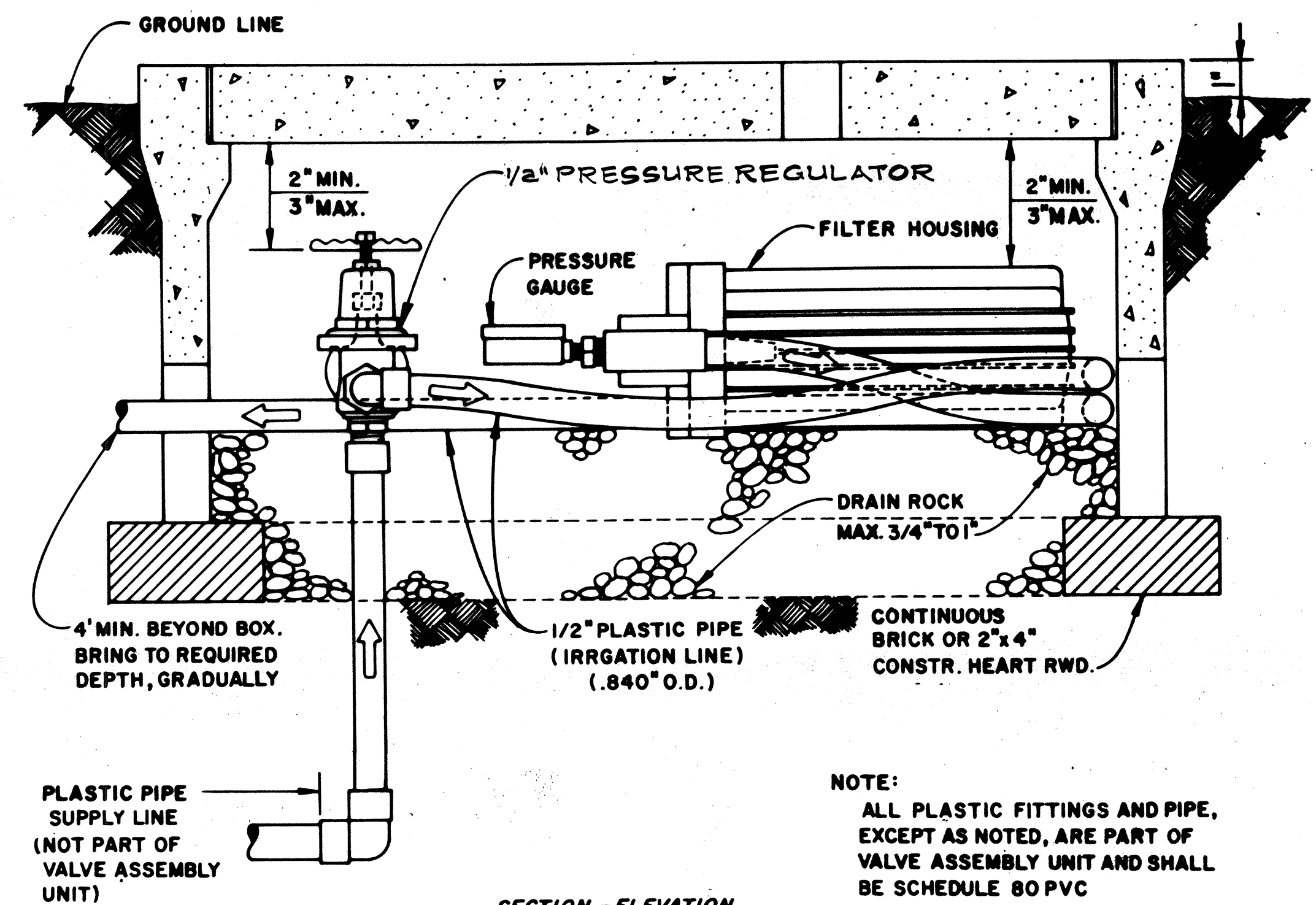
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(02)13	1976	49	50



TYPICAL INSTALLATION DETAIL FOR AIR RELIEF AND VACUUM RELIEF VALVES

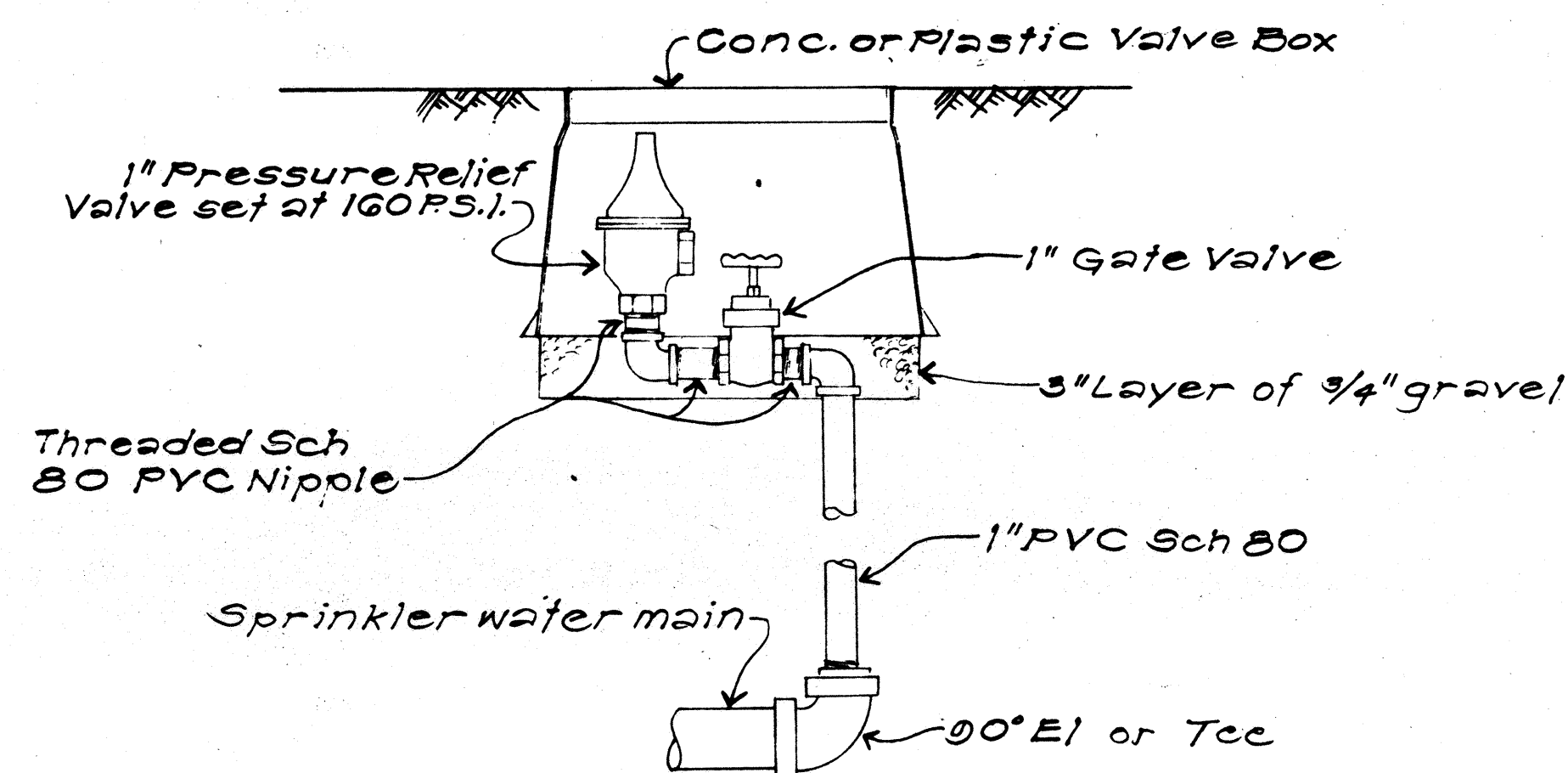


**PLAN
VALVE ASSEMBLY UNIT**

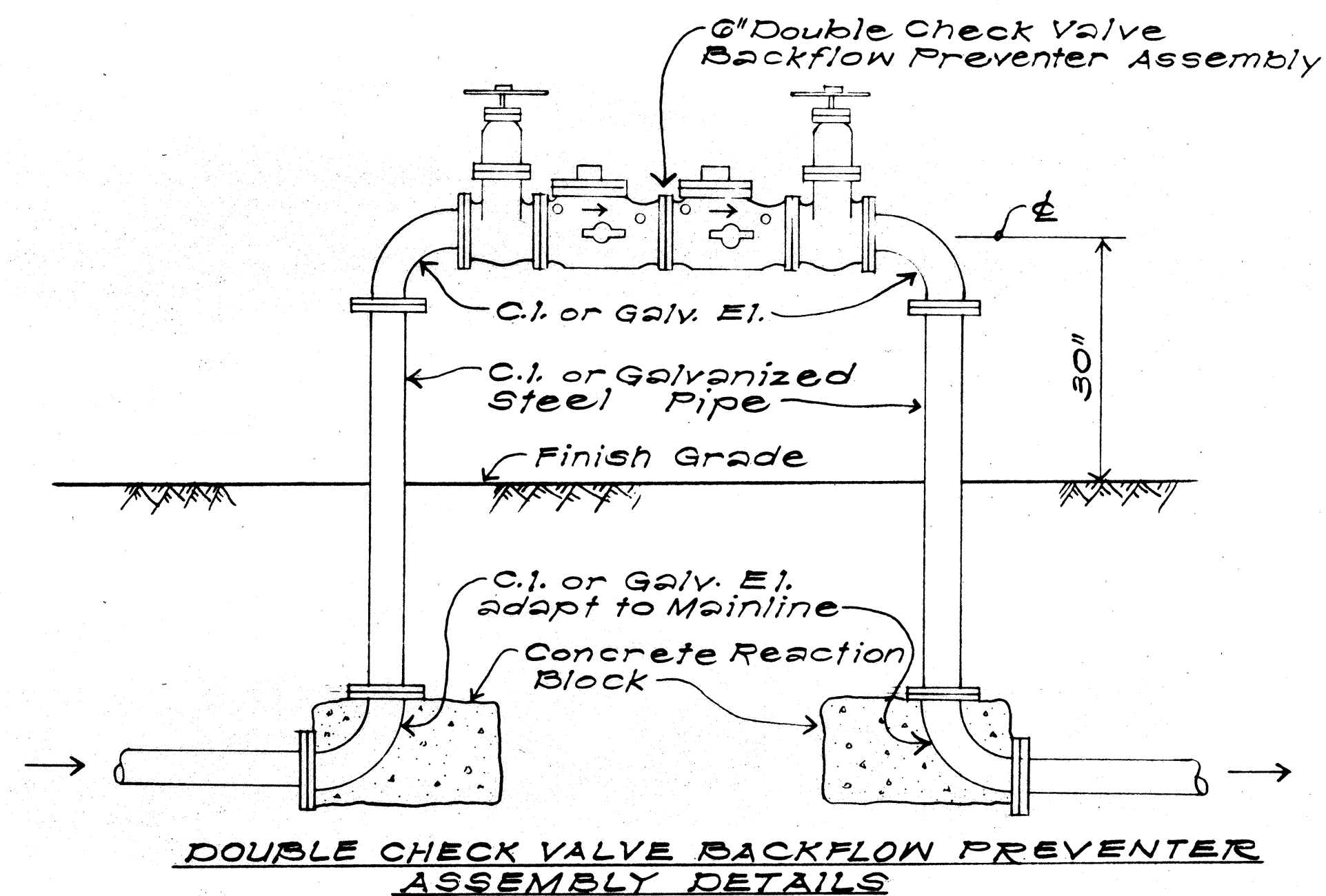


**SECTION-ELEVATION
VALVE ASSEMBLY UNIT**

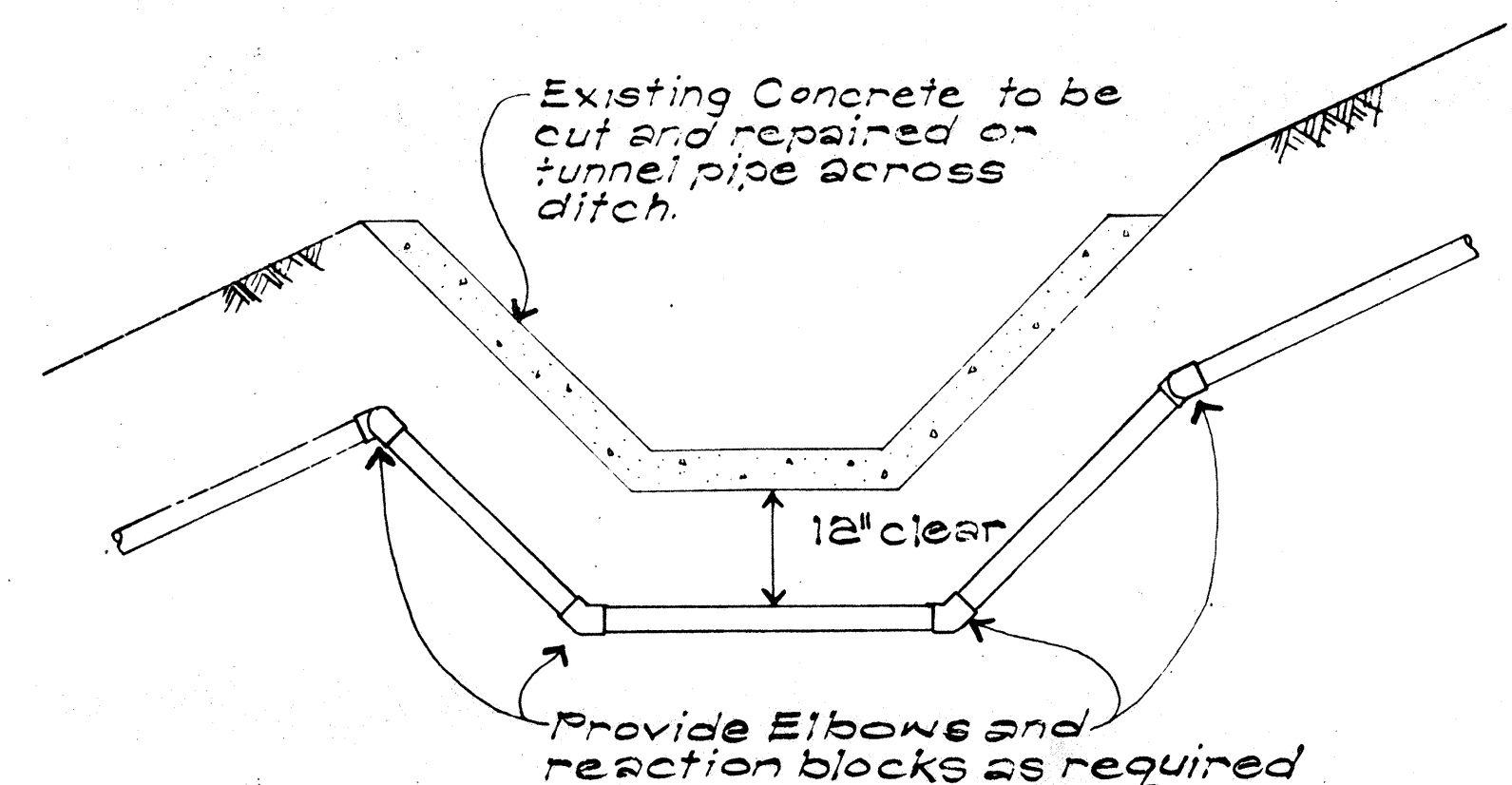
NOTE:
ALL PLASTIC FITTINGS AND PIPE,
EXCEPT AS NOTED, ARE PART OF
VALVE ASSEMBLY UNIT AND SHALL
BE SCHEDULE 80 PVC



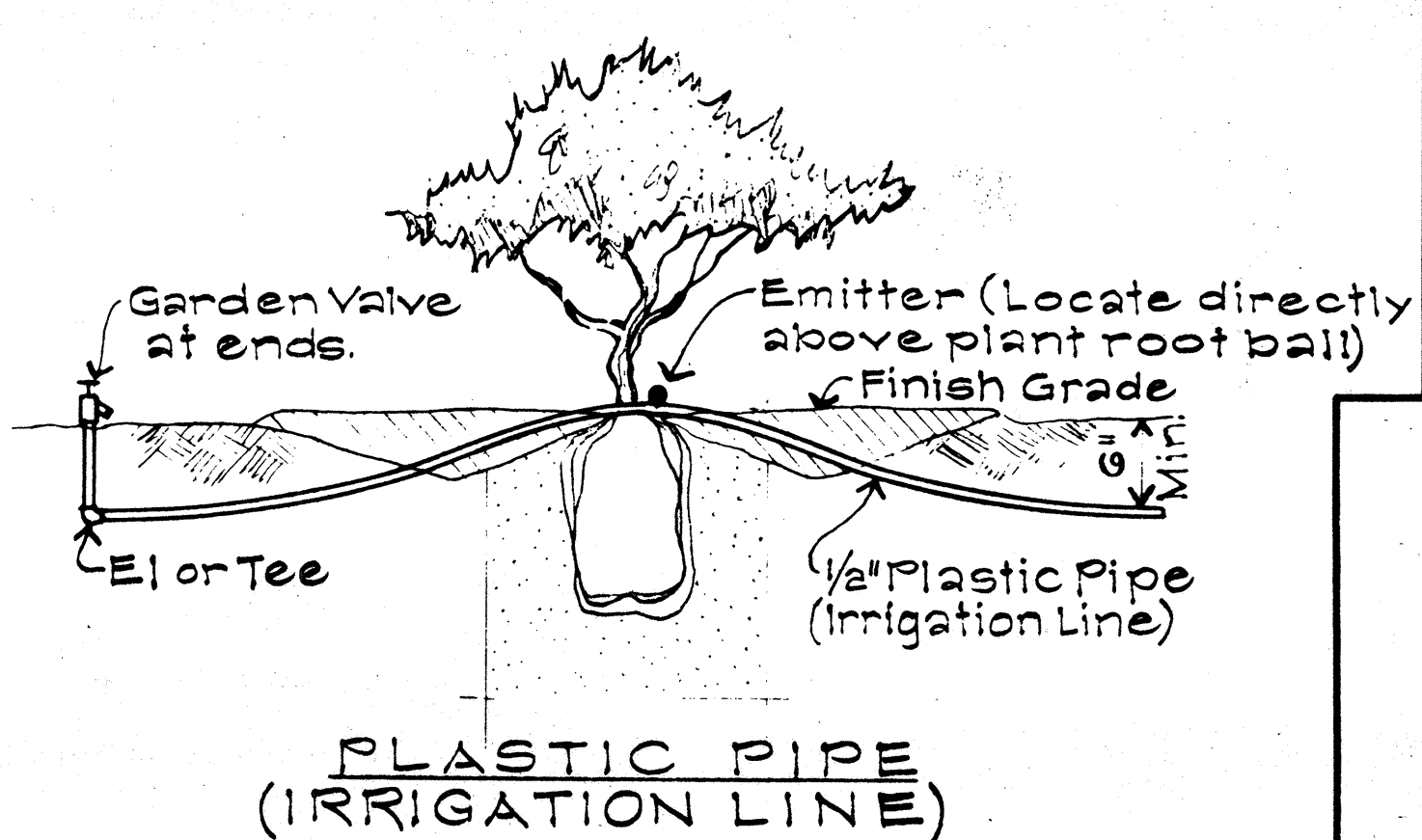
PRESSURE RELIEF VALVE ASSEMBLY CONNECTION DETAILS



DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY DETAILS



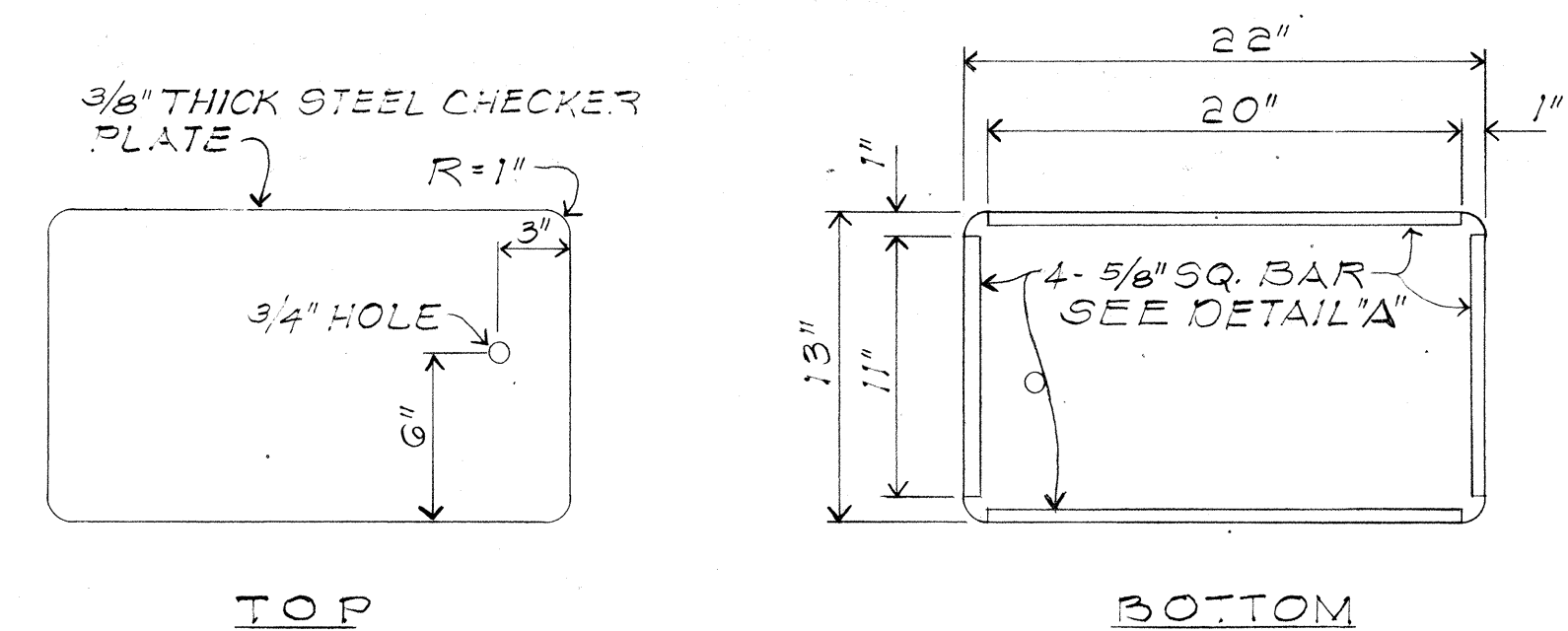
TYPICAL DITCH CROSSING DETAIL



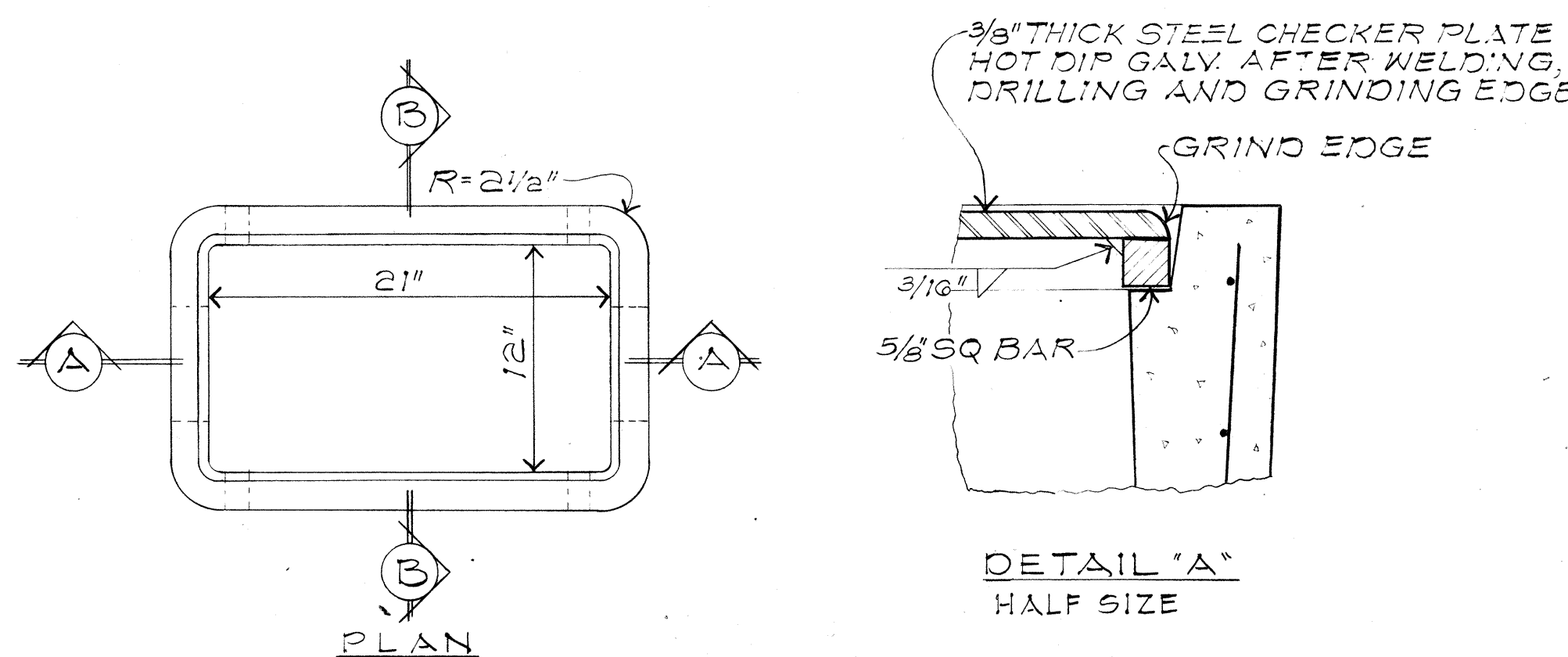
**PLASTIC PIPE
(IRRIGATION LINE)**

9-14-76	DETAIL OF VALVE ASSEMBLY UNIT CHANGED.
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION IRRIGATION SYSTEM DETAILS	
INTERSTATE ROUTE H-1 PROJ. NO. I-H-1(02)13	
Not to Scale Date: Mar. 1976	
SHEET NO. 131 OF 132 SHEETS	

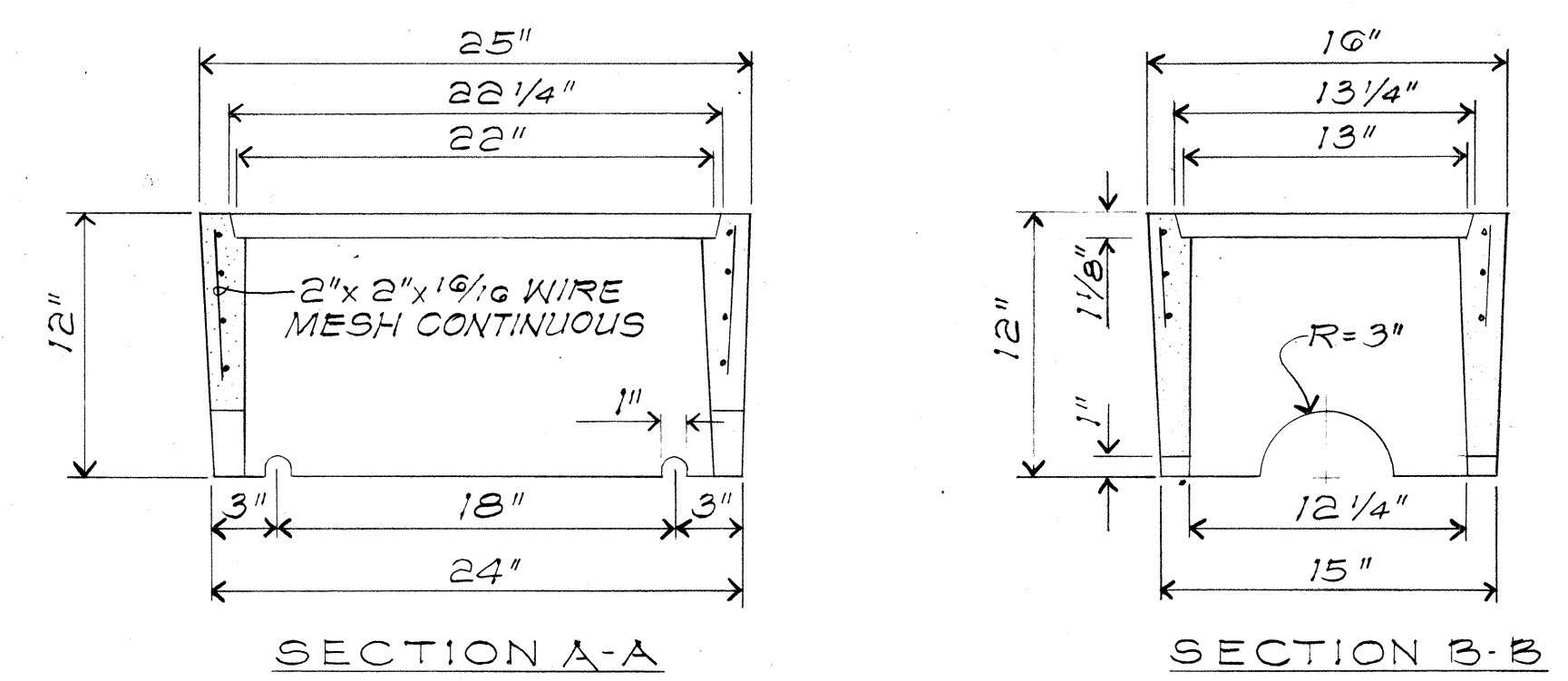
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(92)13	1976	ADD. 50 S-1	50



DETAIL OF COVER



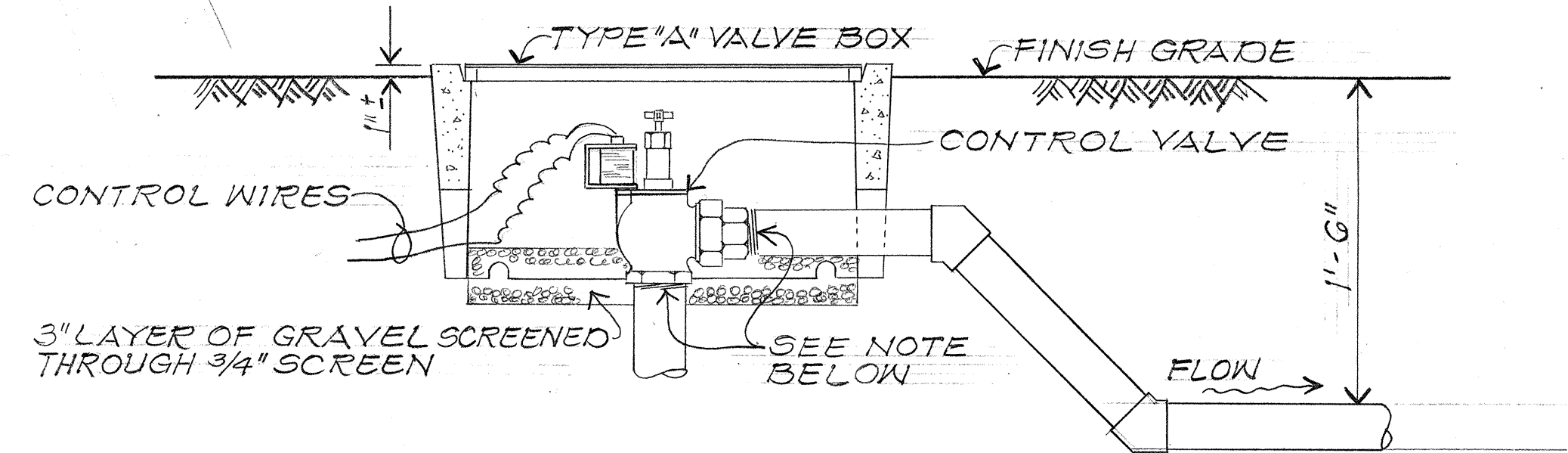
DETAIL "A" HALF SIZE



DETAIL OF BOX
DETAILS OF TYPE "A" VALVE BOX

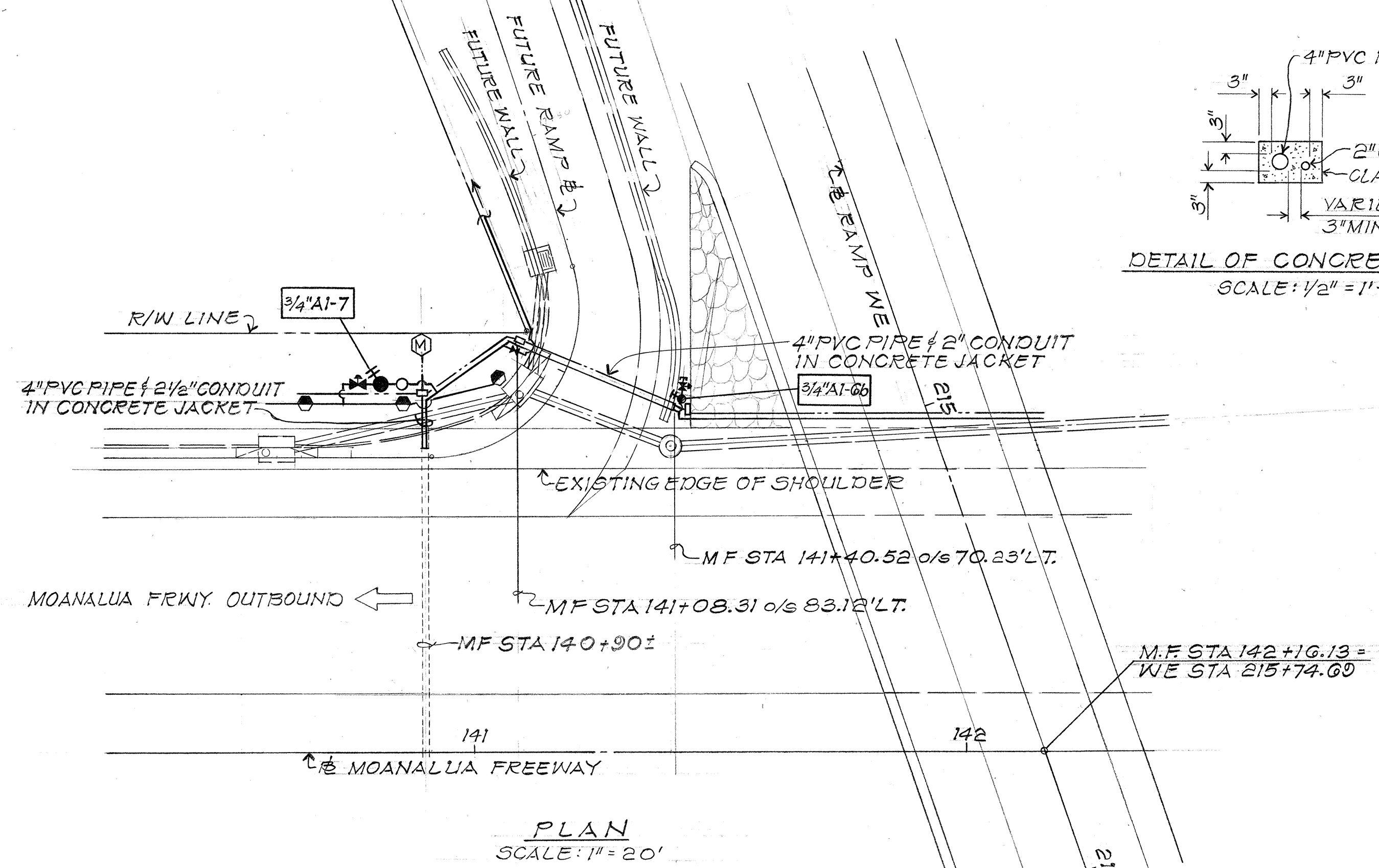
- GENERAL NOTES:
1. THE TYPE "A" VALVE BOX IS SIMILAR TO A HONOLULU BOARD OF WATER SUPPLY TYPE "X" METER BOX.
 2. THE VALVE COVER MAYBE SUBSTITUTED WITH THE BWS METER COVER, BUT THE WORDS "BOARD OF WATER SUPPLY" AND "WATER METER" SHALL BE GROUND OFF. IMPRINT THE WORDS "SPRINKLER VALVE" ON THE COVER.
 3. PLASTIC VALVE BOXES MAY BE SUBSTITUTED FOR THE TYPE "A" VALVE BOXES. PLASTIC VALVE BOXES SHALL BE COMMERCIALY MANUFACTURED PRODUCTS AND SHALL BE A RIGID COMBINATION OF POLYOLEFIN AND FIBROUS INORGANIC COMPONENTS. PHYSICAL PROPERTIES SHALL BE AS FOLLOWS:

	ASTM TEST METHOD	MINIMUM TEST VALUE
TENSILE STRENGTH	D 638	3,400 PSI
IMPACT STRENGTH	D 256	1.5 FT LB/IN
DUROMETER HARDNESS	D 676	63
DEFLECTION TEMPERATURE	D 646	230° F
SPECIFIC GRAVITY	D 792	1.15

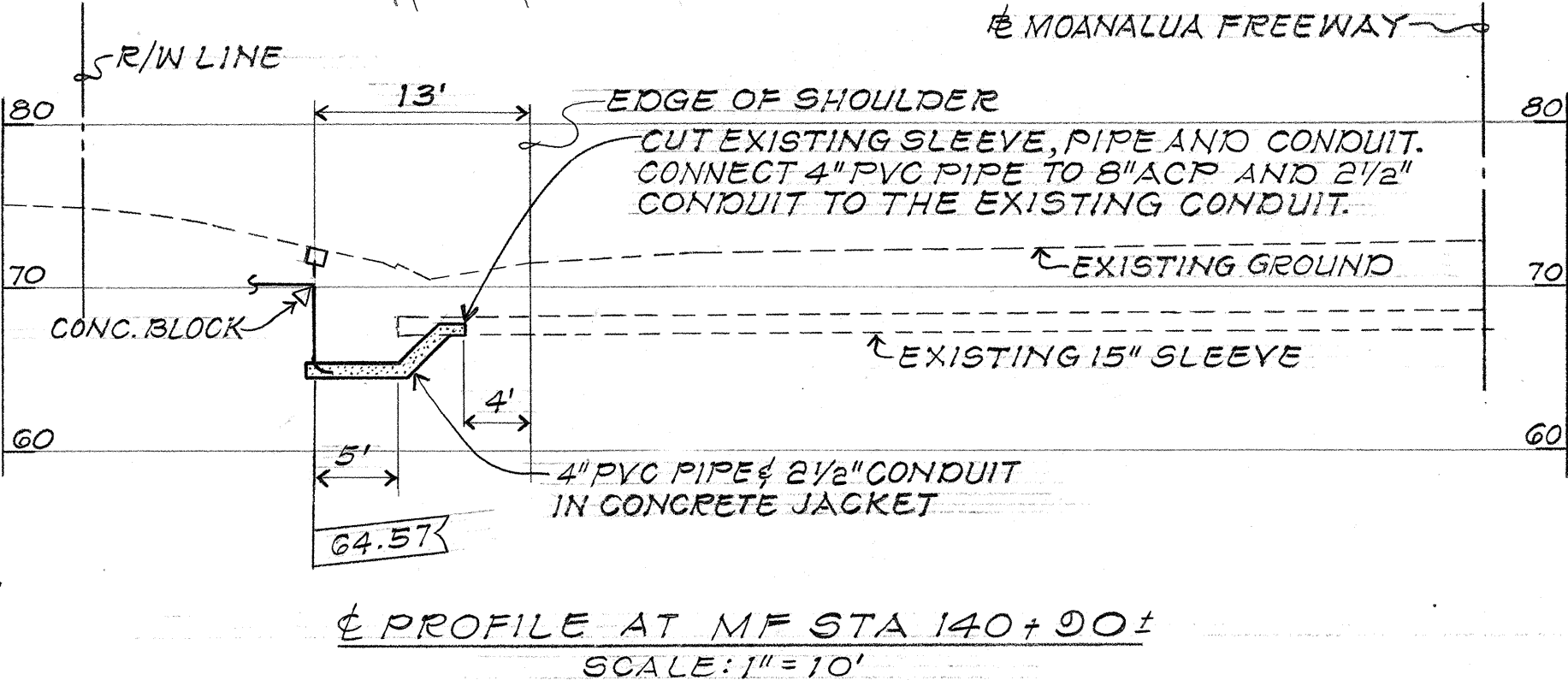
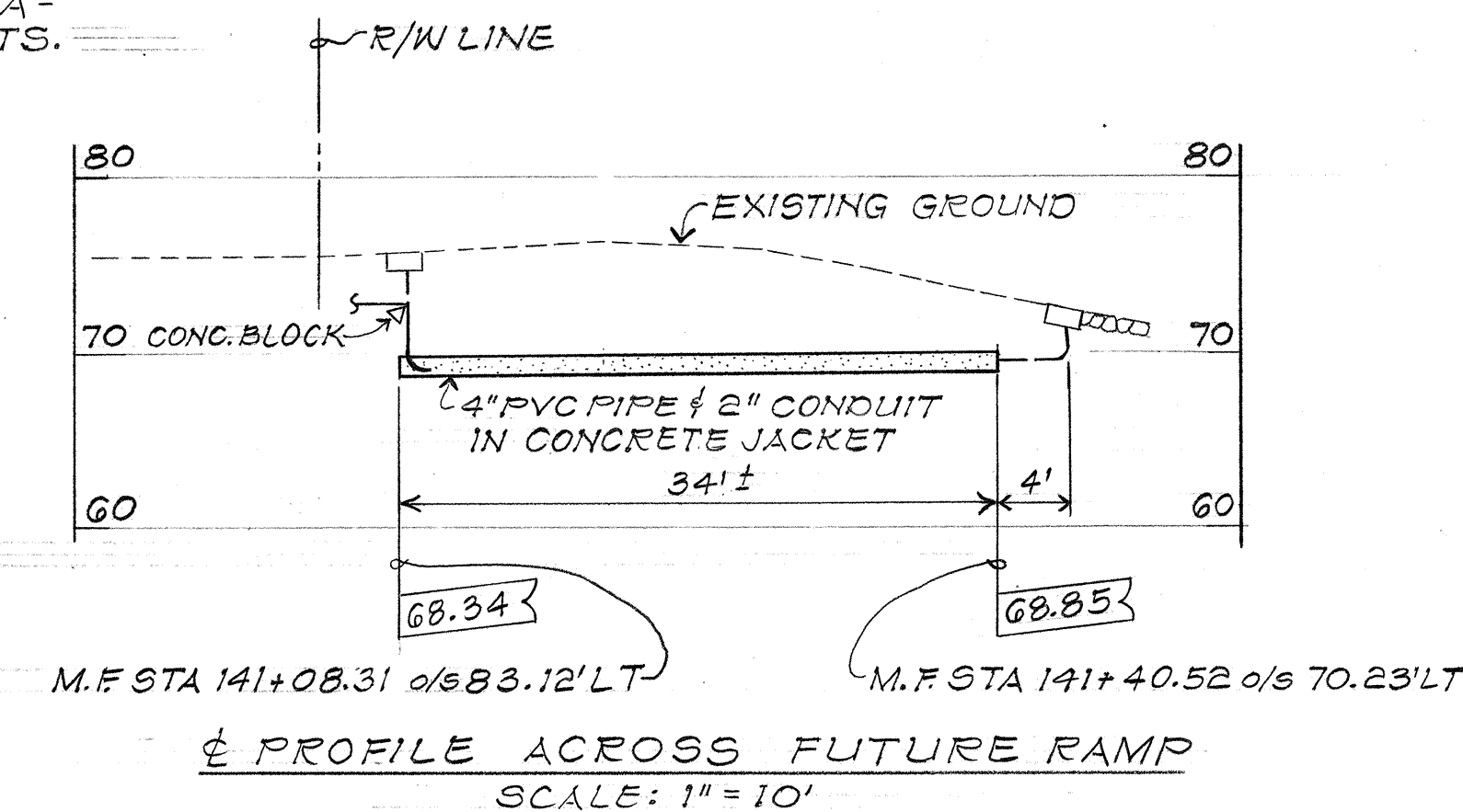


TYPE "A" VALVE BOX INSTALLATION FOR CONTROL VALVE

NOTE: WHERE THE CONTROL VALVE IS SMALLER THAN THE PIPE INDICATED ON PLANS, THE CONTRACTOR SHALL PROVIDE THE NECESSARY FITTINGS TO REDUCE THE PIPE AT THE CONTROL VALVE.



DETAIL OF CONCRETE JACKET
SCALE: 1/2" = 1'-0"



1 JUN 77	DETAILS OF PIPE CROSSING IN VICINITY OF RAMP WE AND MOANALUA FREEWAY
8/3/76	Sheet added to contract plan to show details of Type "A" Valve Box.
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION IRRIGATION SYSTEM DETAILS	
INTERSTATE ROUTE H-1 PROJ. NO. I-HI-1(92):13	
Not to Scale Date: AUG. 1976	
SHEET NO. OF SHEETS	