

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-RF-031- 1(6)	1978	198	262

ESTIMATED QUANTITIES FOR IRRIGATION
SYSTEM AT KIHAI ROAD

Item No.	Item	Quantity	Unit
616.1130	1-1/4 Inch Copper Pipe	80	L.F.
616.1210	3/4-Inch PVC Pipe	2000	L.F.
616.1220	1-Inch PVC Pipe	160	L.F.
616.1230	1-1/4-Inch PVC Pipe	240	L.F.
616.2210	5-10(Q, H and F) Sprinkler Head	52	EA.
616.2301	P-21 (Q, H, 135' F, 3/4 F, and F) Sprinkler Head	41	EA.
616.3001	3/4 Inch Quick Coupler Valve with Concrete Protector	1	EA.
616.3510	1-Inch Remote Control Valve with Valve Box	7	EA.
616.3664	1-Inch Double Check Valve Backflow Preventer Unit	1	EA.
616.3901	Type B Valve Box	2	EA.
616.7008	Automatic Controller (8 Stations Minimum)	1	EA.
616.7040	Automatic Controller Cabinet with Concrete Pad	1	EA.
616.9050	Control Wiring (14 Ga.) from Controller to Remote Control Valves		L.S.
616.9400	2-Inch PVC Conduit	40	L.F.
616.9450	Rain Sensor and Appurtenances.	1	EA
616.9451	Tensiometer with Plastic Housing	1	EA

ESTIMATED QUANTITIES FOR PFIZER GENETICS
IRRIGATION SYSTEM (AT STA. 517+00±)
REHABILITATION

Item No.	Item	Quantity	Unit
206.2041	Structure Excavation for Irrigation System	140	C.Y.
624.1696	Furnishing & Installing 3-Inch PVC Pipe, Class 200, Including Fittings	420	EA.
624.1703	Furnishing & Installing 8-Inch A.C. Pipe, Class 3300	145	L.F.
624.1000	Removing and Returning Irrigation Pipes and Sprinkler Heads within State R.O.W. (To Pfizer Genetics Yard)	1	L.S.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

IRRIGATION PLAN

PIILANI HIGHWAY
VICINITY OF MOKULELE HIGHWAY TO
VICINITY OF KILOHANA STREET
F.A. PROJECT NO. F-RF-031-1(6)

SCALE: AS SHOWN DATE SEP 1978

SHEET No. 1 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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SPRINKLER SCHEDULE & LEGEND

SYMBOL	SPRINKLER No.	Q	PSI	COVERAGE	IPS	ADJ. NOZZLE	MATERIAL	MIN. FOR LIP	TYPICAL SPACING
✓	S-10H	1.03	20	8'R	1/2"	✓	BB or PL	-	10'
✓	S-10Q	0.74	20	8'R	1/2"	✓	BB or PL	-	10'
○	P-21F	2.88	35	21'R	3/4"	-	PL	12"	15'
○	P-21 3/4 F	1.91	35	21'R	3/4"	-	PL	12"	15'
○	P-21-135F	1.04	35	21'R	3/4"	-	PL	12"	15'
○	P-21-H	1.38	35	21'R	3/4"	-	PL	12"	15'
○	P-21-Q	0.70	35	21'R	3/4"	-	PL	12"	15'

- WATER METER
□ BACKFLOW PREVENTER (DOUBLE CHECK VALVES)
□ 3/4" QUICK COUPLER VALVE WITH CONC. PROTECTOR
- TENSIO METER
● REMOTE CONTROL VALVE
Q APPROXIMATE DISCHARGE (GPM)
PSI OPERATING PRESSURE
R RADIUS
IPS RISER CONNECTION SIZE
BB BRASS OR BRONZE
PL PLASTIC
— IRRIGATION LINE (MAINS AND LATERALS)
--- ELECTRICAL CONDUIT WITH CONTROL WIRES
--- ELECTRICAL CONDUIT WITH POWER WIRES
-W12- EXISTING WATER MAIN

Station No. ^{2-1"} Remote Control Valve Size
REMOTE CONTROL VALVE CODE

True North
Scale: 1"=20'

WATER SUPPLY NOTES:

1. THE CONTRACTOR SHALL NOTIFY THE DEPT. OF WATER SUPPLY IN WRITING, ONE WEEK PRIOR TO COMMENCEMENT OF WORK.
2. MINIMUM COVER OVER WATER MAIN, 6" OR LARGER, EQUALS 3'-0". MINIMUM COVER, FOR 4" OR LESS= 2'-6".
3. ALL MATERIALS USED AND METHOD OF CONSTRUCTION OF WATER SYSTEM FACILITIES SHALL BE IN ACCORDANCE WITH DEPT. OF WATER SUPPLY STANDARDS.
4. THE EXACT DEPTH AND LOCATION OF EXISTING WATERLINES, SERVICE LATERALS AND OTHER FACILITIES ARE NOT SHOWN. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE SAME PRIOR TO TRENCHING OF NEW WATERLINE. THE COST OF LOWERING RELOCATING OR ADJUSTING EXISTING WATERLINE SERVICE LATERALS (UNLESS OTHERWISE NOTED) AND OTHER UTILITIES SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE NEW WATERLINE AND WILL NOT BE PAID FOR SEPARATELY. FACILITIES DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR AT HIS EXPENSE.
5. CONNECTION TO DEPARTMENT OF WATER SUPPLY SYSTEM.
 - A. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, DEPTH, TYPE AND CONDITION OF THE EXISTING LINE BEFORE ORDERING MATERIALS FOR THE HOOKUP. HOWEVER, HE SHALL CHECK WITH THE DEPT. OF WATER SUPPLY BEFORE EXCAVATING FOR VERIFICATION PURPOSES. HE SHALL BE RESPONSIBLE FOR FURNISHING THE CORRECT FITTINGS, ADAPTORS, NIPPLES AND OTHER MATERIALS, AS REQUIRED, FOR THE HOOKUP.
 - B. WHENEVER FEASIBLE, MECHANICAL JOINT FITTINGS SHALL BE USED.
 - C. AUTHORIZED DEPT. OF WATER SUPPLY PERSONNEL WILL MAKE THE FINAL CONNECTION TO THE EXISTING LINE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED BY THE DEPT. OF WATER SUPPLY FOR SAID WORK, INCLUDING THE COST OF PRESSURE TESTING.
 - D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIAL, EQUIPMENT AND LABOR FOR CHLORINATION, TRENCH EXCAVATION, BACKFILLING, PAVING, AND OTHER WORK NECESSARY TO COMPLETE THE HOOKUP, AS DIRECTED BY AND TO THE SATISFACTION OF THE DEPT. OF WATER SUPPLY.
6. THE CONTRACTOR SHALL SUBMIT MATERIALS LIST TO DEPT. OF WATER SUPPLY FOR APPROVAL PRIOR TO CONSTRUCTION.

APPROVED:

G. J. Smith
DIRECTOR, DEPT. OF WATER SUPPLY,
COUNTY OF MAUI
4-2-79
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

IRRIGATION PLAN

PIILANI HIGHWAY
VICINITY OF MOKULELE HIGHWAY TO
VICINITY OF KILOHANA STREET
F.A. PROJECT NO. F-RF-031-1(6)

SCALE: AS SHOWN DATE SEP 1978

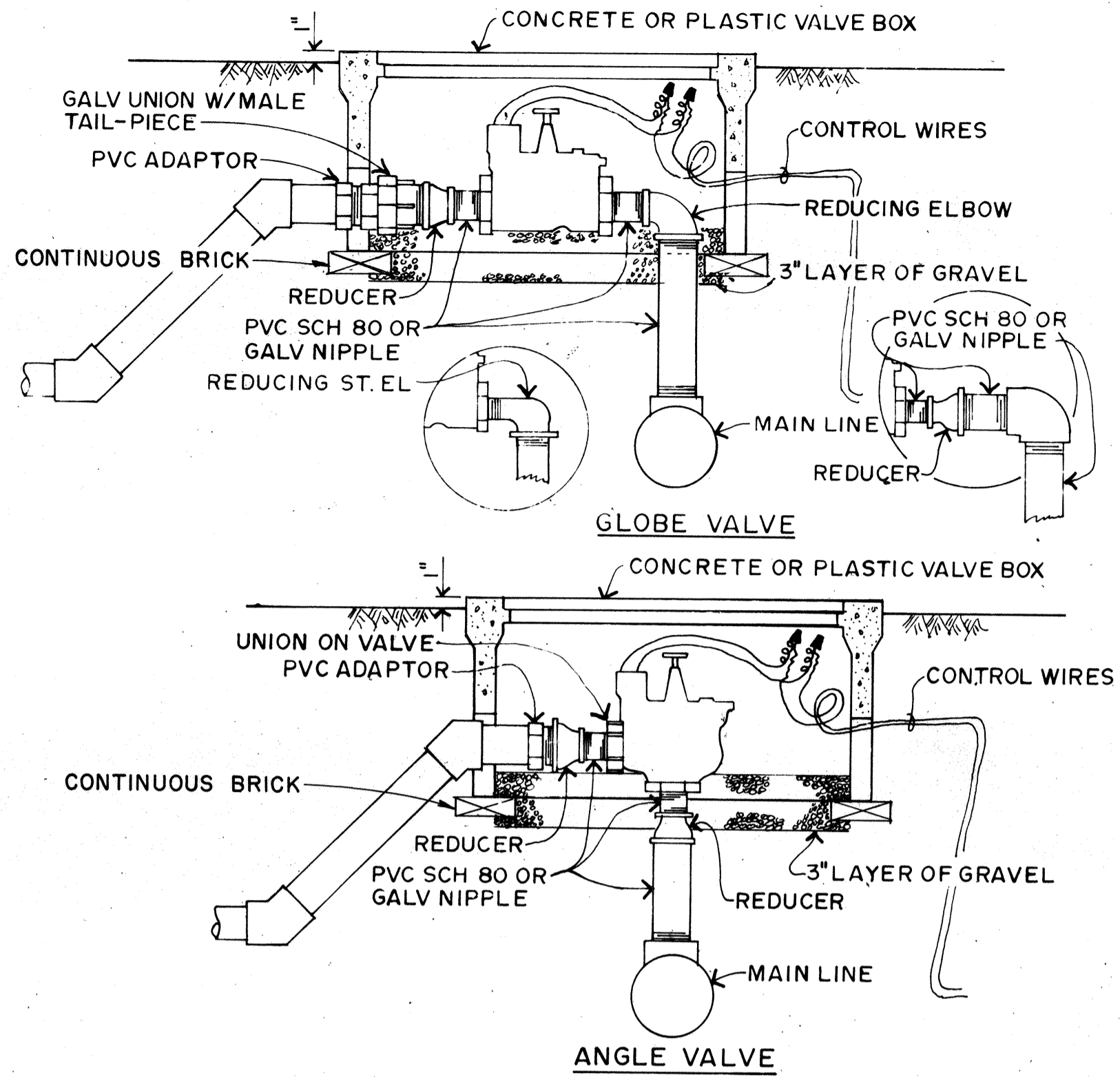
SHEET No. 2 OF 6 SHEETS

R 199

DATE
DESIGNED BY
CHECKED BY
NOTE BOOK
NO.

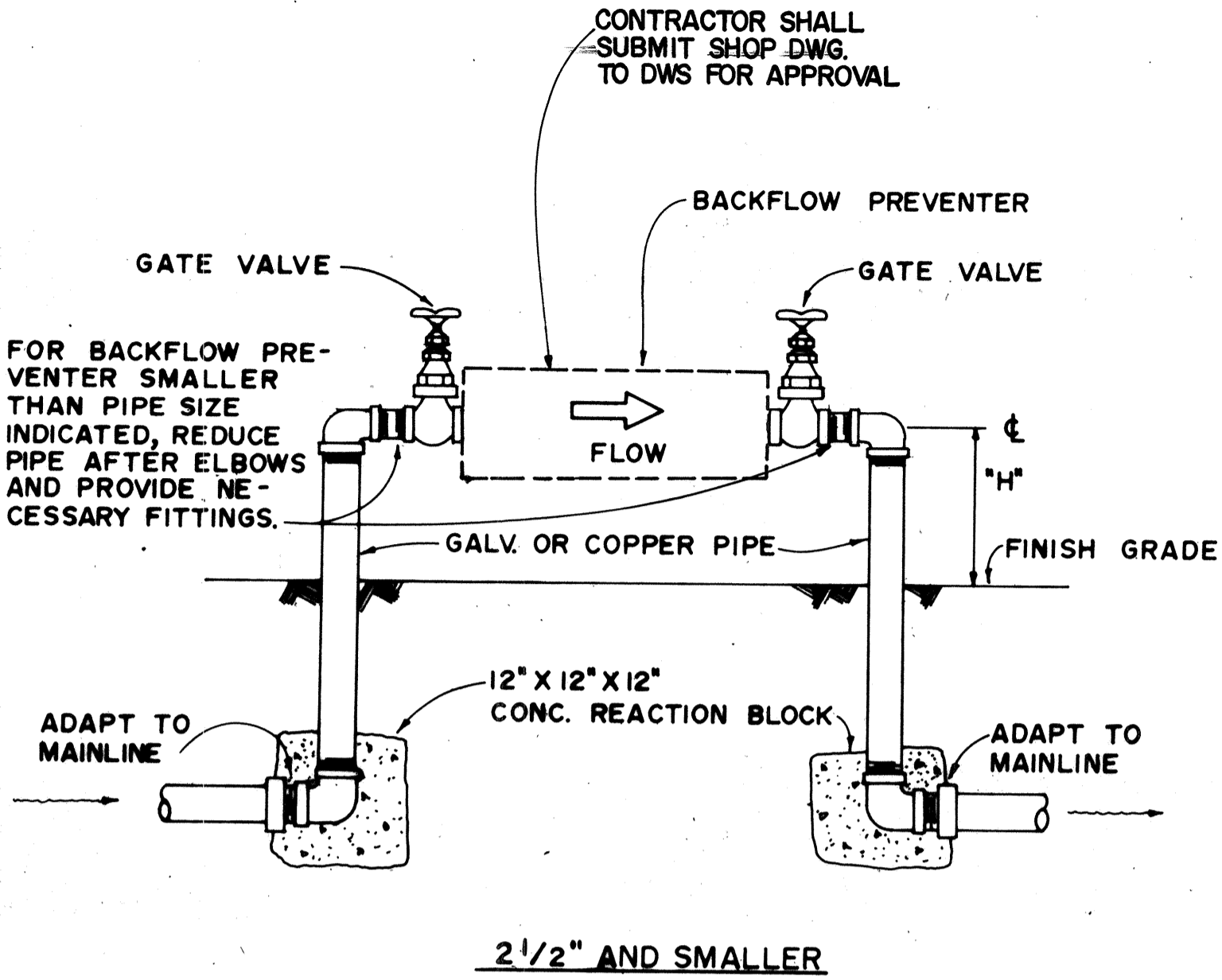
DATE	11/24/78
REVISION	Delete Type "B" Pull Box adjacent to Cabinet

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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TYPICAL CONTROL VALVE DETAIL

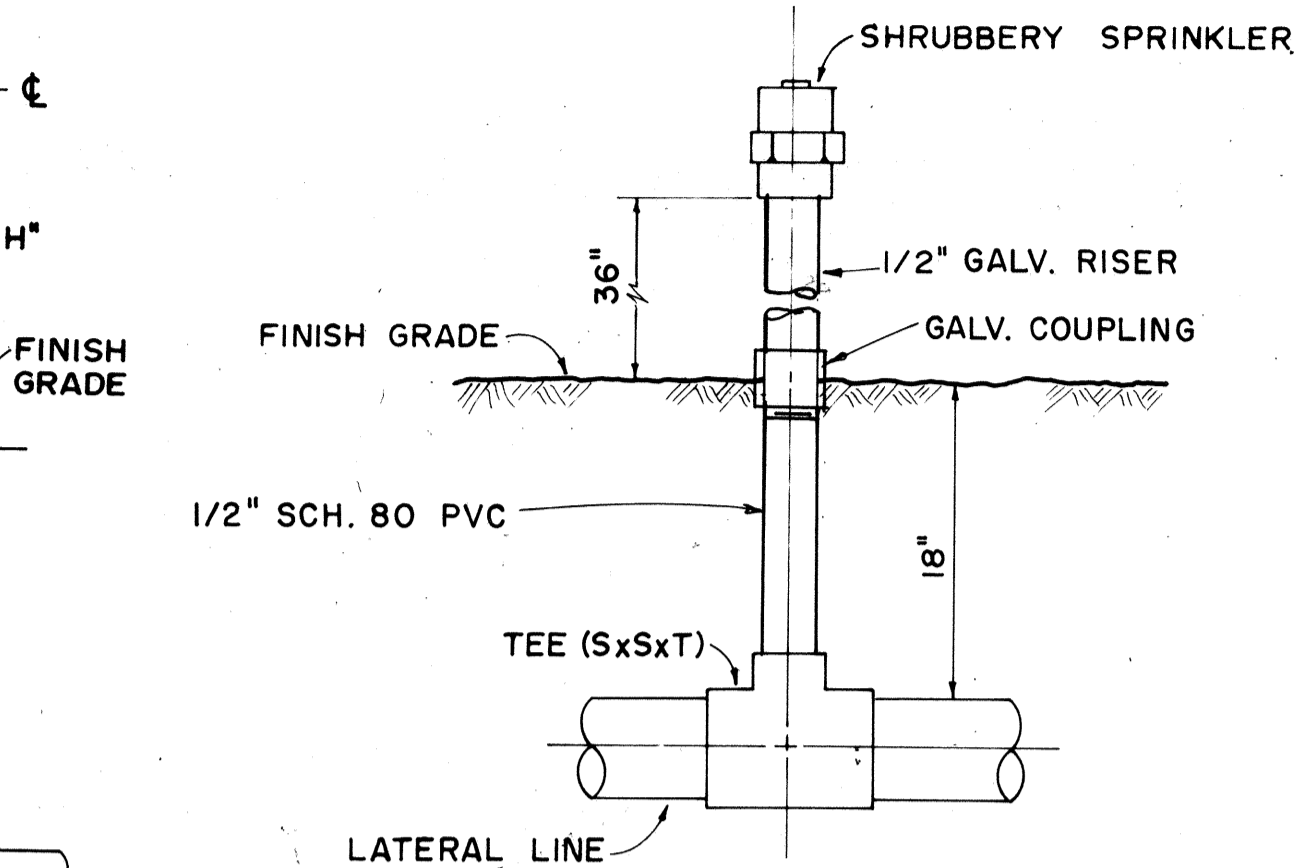
NOTE: A 2" MINIMUM CLEARANCE SHALL BE REQUIRED ON ALL SIDES OF THE VALVE.



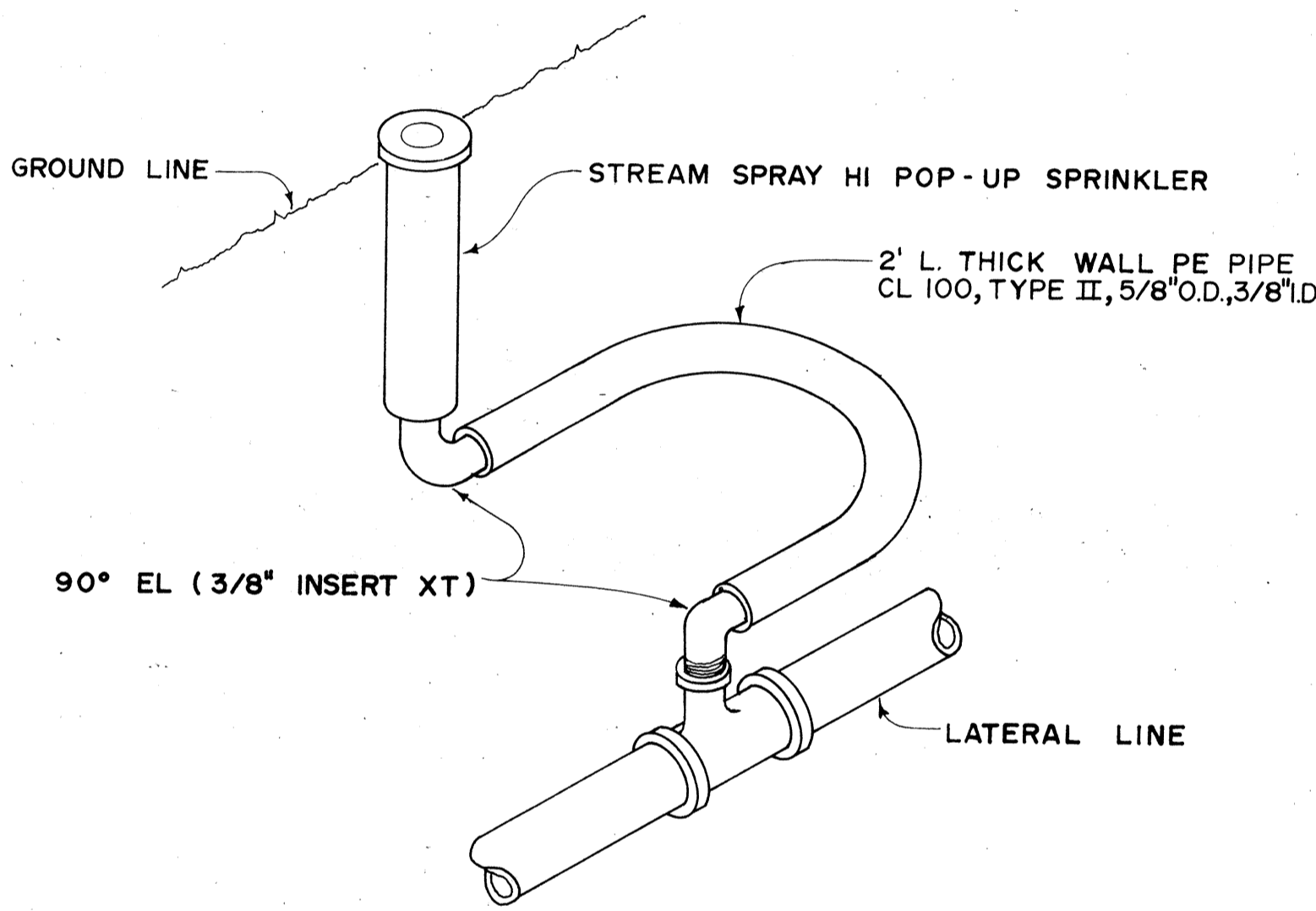
BACKFLOW PREVENTION UNIT DETAIL

- NOTES:
- ONLY ONE TYPE OF PIPE AND FITTINGS SHALL BE USED.
 - BACKFLOW PREVENTION UNIT SHALL BE PRIME COATED AND PAINTED WITH TWO COATS OF DARK GREEN ENAMEL PAINT TO THE FINISH GRADE.
 - DUCTILE IRON, CAST IRON OR GALVANIZED PIPE BELOW FINISH GRADE SHALL BE PAINTED WITH TWO COATS OF ASPHALT PAINT.
 - THERE SHALL BE NO OBSTRUCTION WITHIN A DISTANCE OF TWO (2) FEET SURROUNDING THE BACKFLOW PREVENTION UNIT.

SIZE OF PIPE	"H"
3/4" - 1 1/2"	18"
2" - 3"	24"
4" - 6"	30"

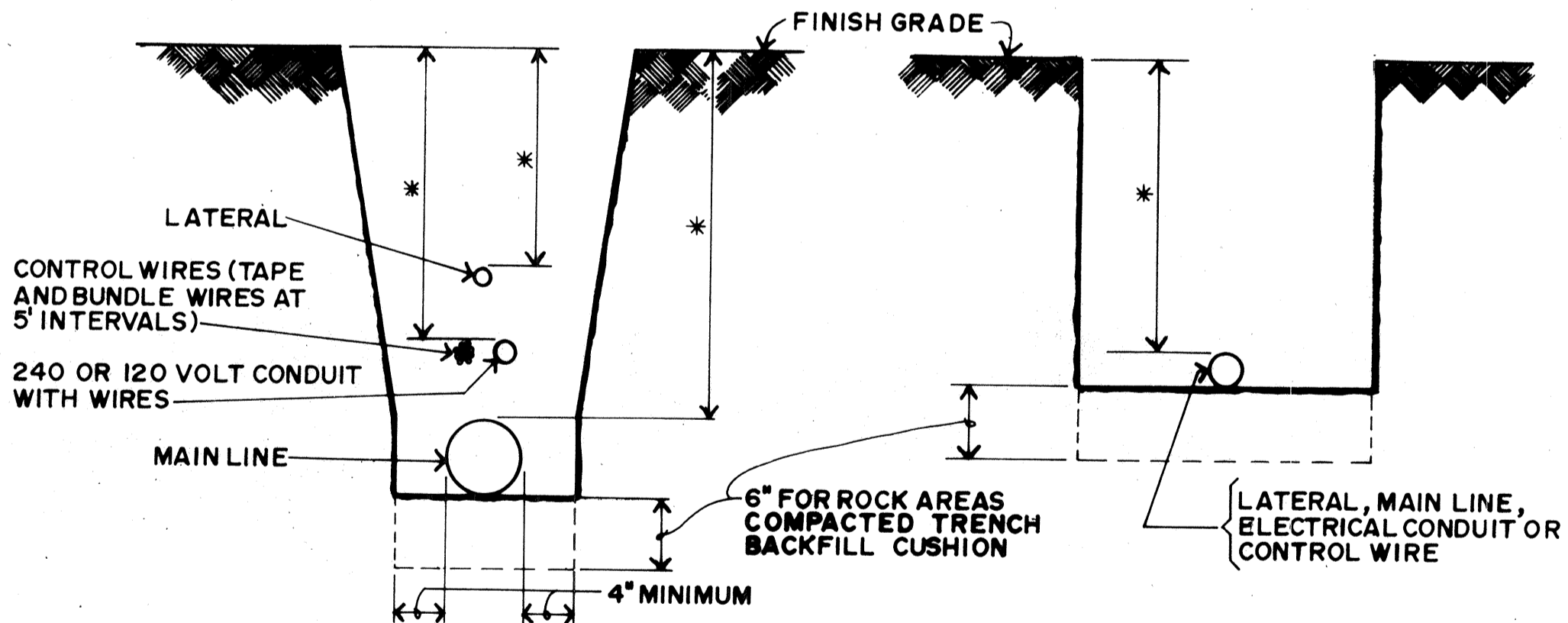


DETAIL OF SPRINKLER HEAD ON RISER IN NAUPAKA



PERSPECTIVE

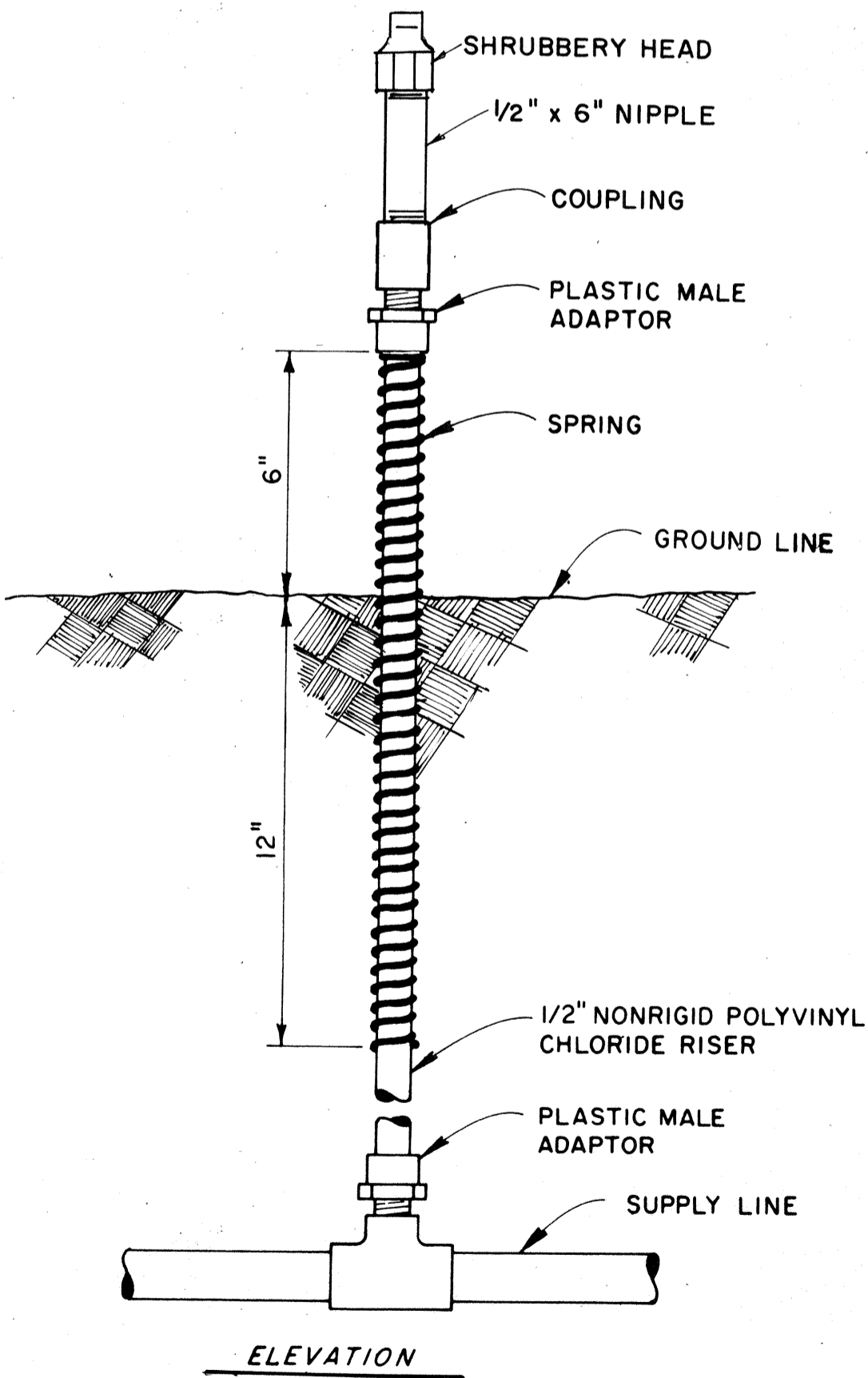
STREAM SPRAY HI POP-UP SPRINKLER DETAIL
P-21



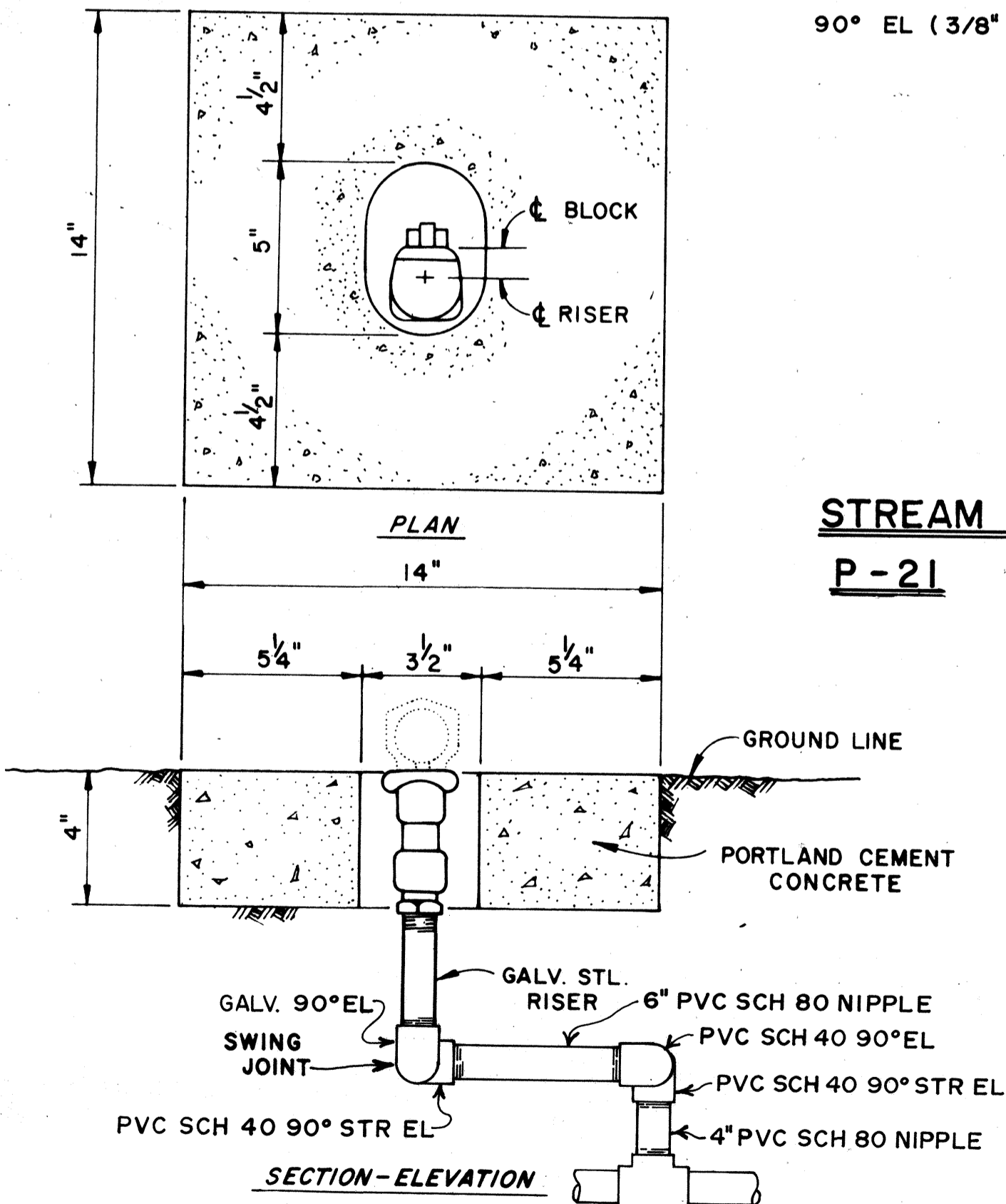
	MINIMUM COVER
SPRINKLER LATERALS	12"
SPRINKLER MAINS	12"
1/2" TO 2 1/2"	18"
3" OR 4"	24"
OVER 4"	30"
ELECTRICAL CONDUIT	24"
CONTROL WIRES	18"

- NOTES:
- PIPES UNDER ROADWAY SHALL HAVE MINIMUM COVER OF 24 INCHES AND SHALL NOT BE IN THE ROADWAY STRUCTURE.
 - THERE SHALL BE A 3" MINIMUM CLEARANCE BETWEEN CONTROL WIRE BUNDLE, CONDUIT, MAIN AND LATERAL LINES.
 - THE WIDTH OF THE TRENCH SHALL BE AS NARROW AS PRACTICAL TO FACILITATE INSTALLATION, APPROXIMATELY TWICE THE OUTSIDE DIAMETER OF THE PIPE WITH A MINIMUM OF 6".

TRENCH DETAIL



RISER ASSEMBLY FOR S-10 SPRINKLERS
IN MEDIAN



VALVE PROTECTOR AND CONNECTION
FOR QUICK COUPLING VALVE

APPROVED:

[Signature] 4-2-87
DIRECTOR, DEPT. OF WATER SUPPLY,
COUNTY OF MAUI DATE

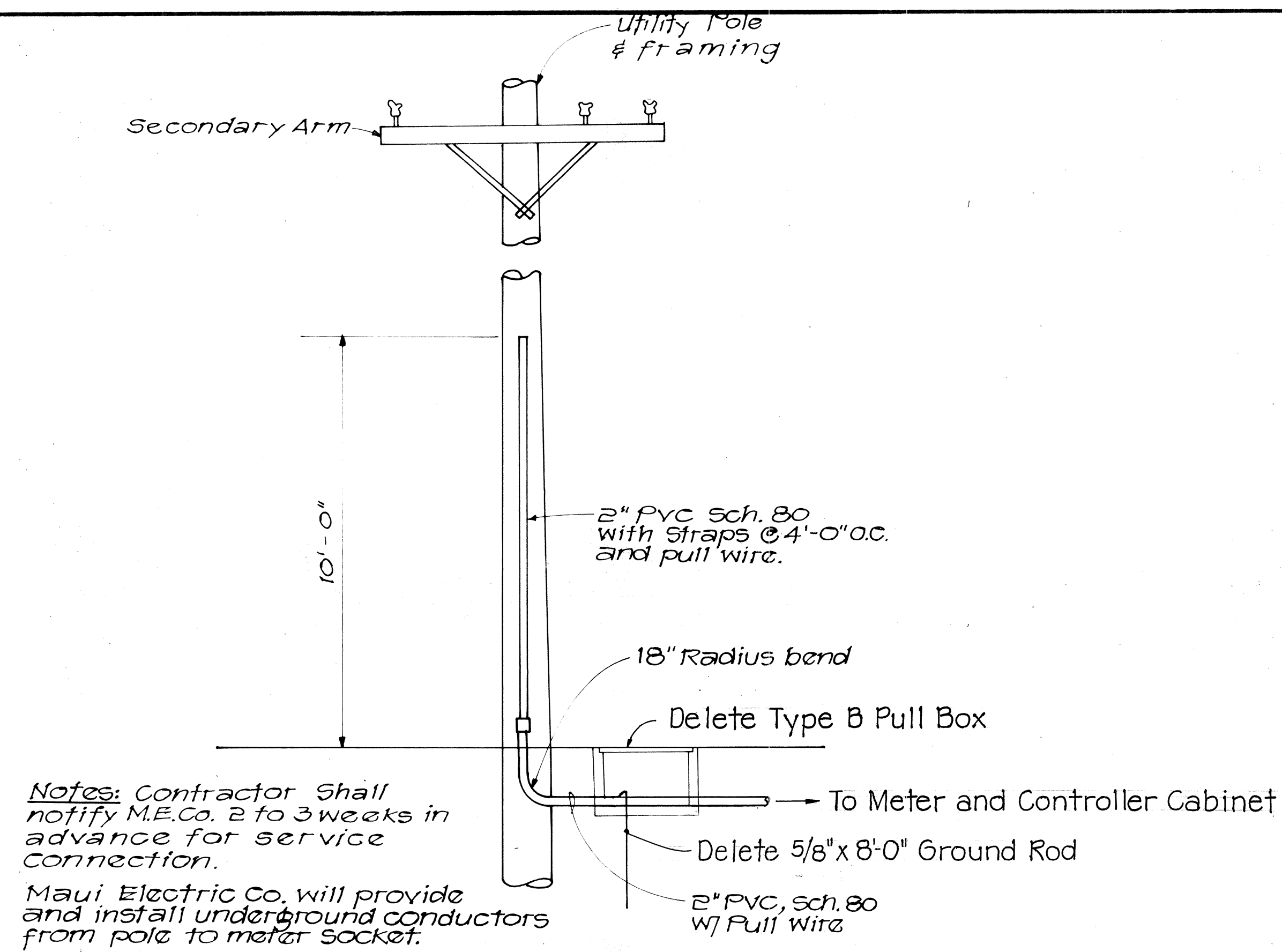
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

IRRIGATION PLAN

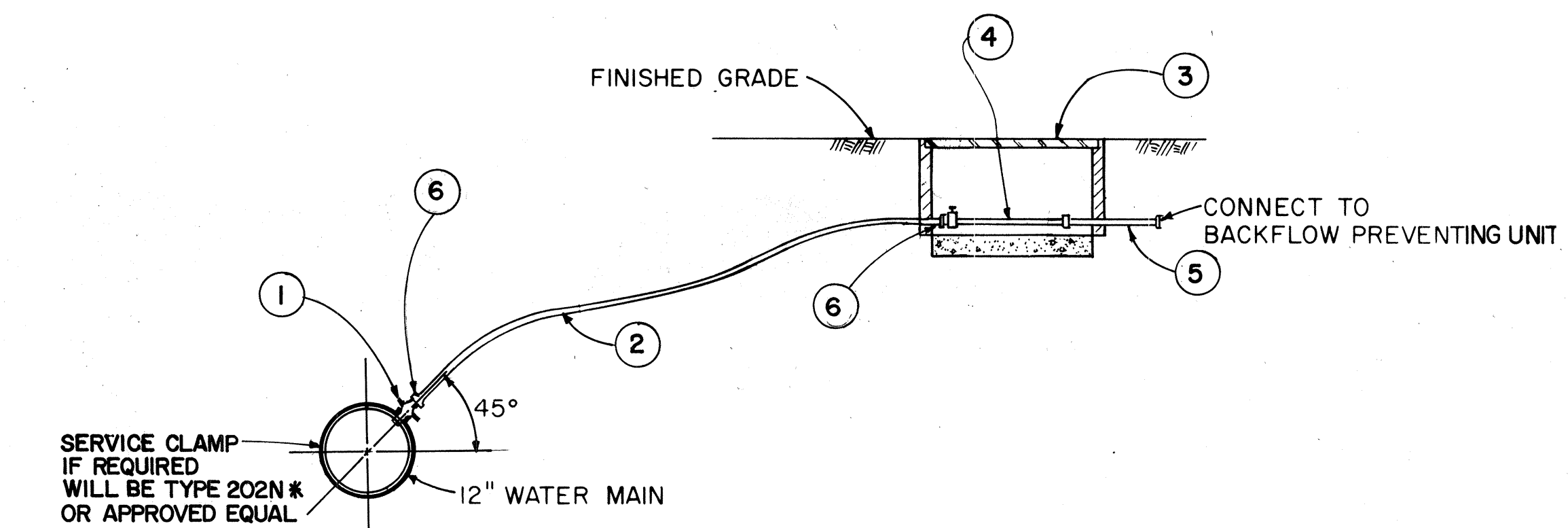
PIILANI HIGHWAY
VICINITY OF MOKULELE HIGHWAY TO
VICINITY OF KILOHANA STREET
F.A. PROJECT NO. F-RF-031-1(6)

SCALE: AS SHOWN DATE SEP 1978

SHEET No. 3 OF 6 SHEETS



120 V.A.C. ELECTRIC SERVICE CONNECTION AT UTILITY POLE
Not to Scale

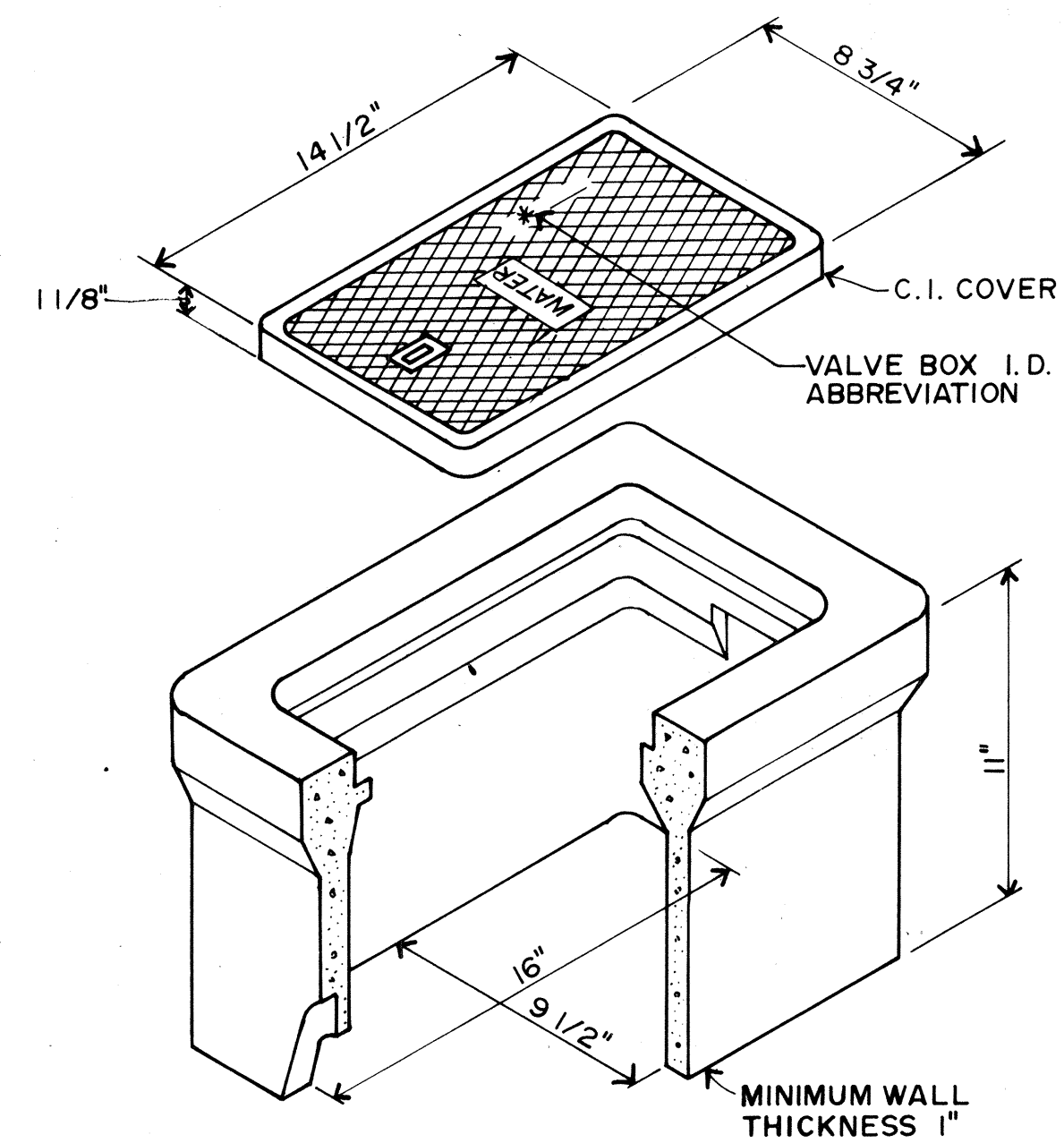


WATER SERVICE CONNECTION DETAIL

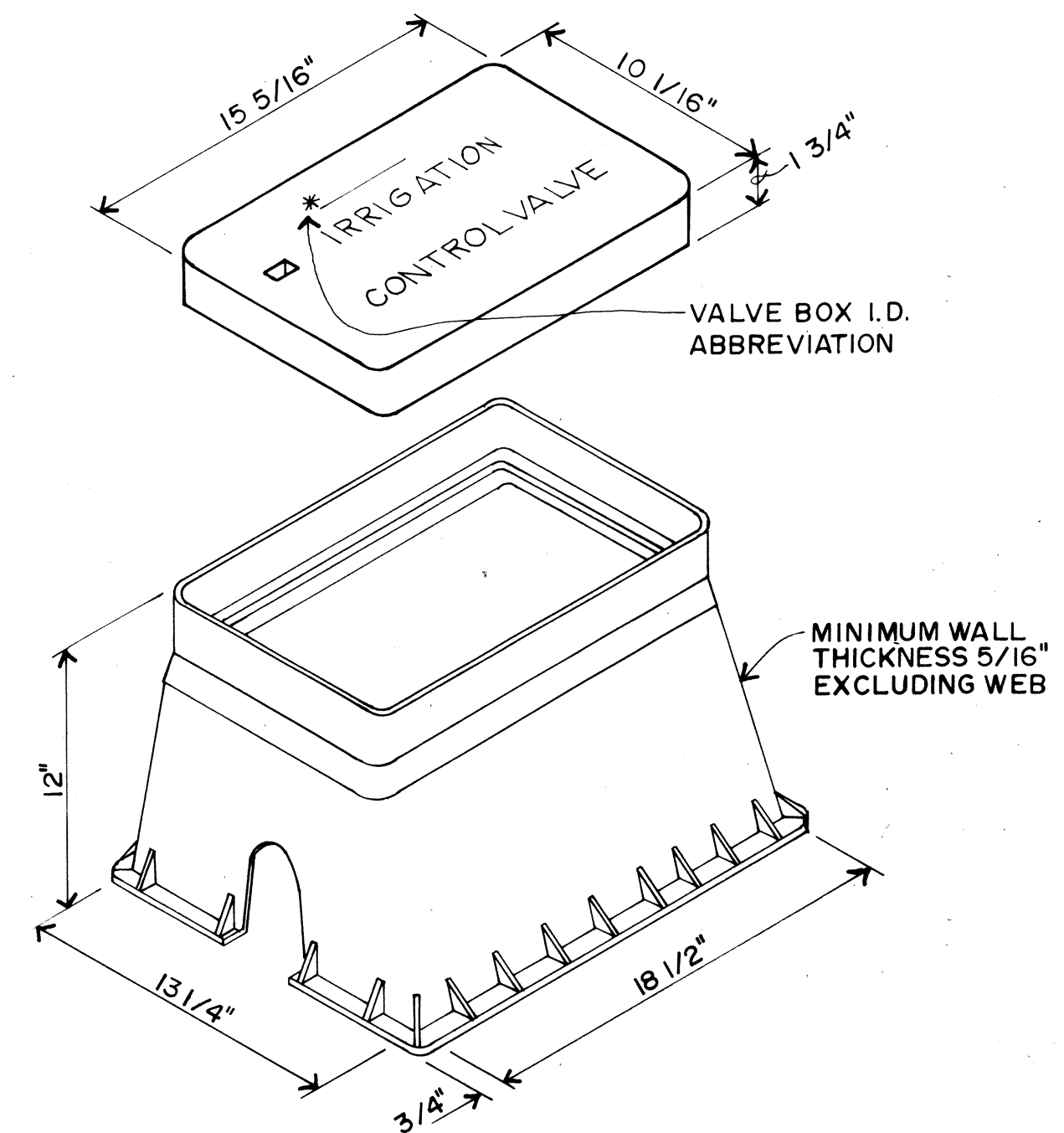
NOT TO SCALE

- NOTES:**
1. MAUI DEPT. OF WATER SUPPLY SHALL FURNISH 3/4" WATER METER. CONTRACTOR SHALL NOTIFY M.D.W.S. IN WRITING ONE WEEK IN ADVANCE FOR SERVICE CONNECTION.
 2. FOR COPPER TUBE INSTALLATION, DELETE INSERTS (6).
 3. ALL FITTINGS AND MATERIALS LISTED BY BRAND NAMES OR APPROVED EQUAL.
- * FORD METER BOX MANUFACTURING CO'S NO.

TYPE	METER SIZE	① CORP. STOP	② SERVICE TUBING	③ C.I. METER BOX	④ METER IDLER	⑤ BRASS I.P.T. NIPPLE	⑥ PLASTIC STIFFENER
A	3/4"x3/4"	3/4"x1" AWWA THREAD XPU (F-1000)*	1" COPPER OR PE CLASS 160	1"x3/4" P.J. INLET (NO.3 YOKEBOX)	1" x 9"	1/4" x 8"	1" STAINLESS STL. INSERT (52) *



CONCRETE VALVE BOX



PLASTIC VALVE BOX

TYPE "B" VALVE BOX
NOT TO SCALE

START TIMES - DAY

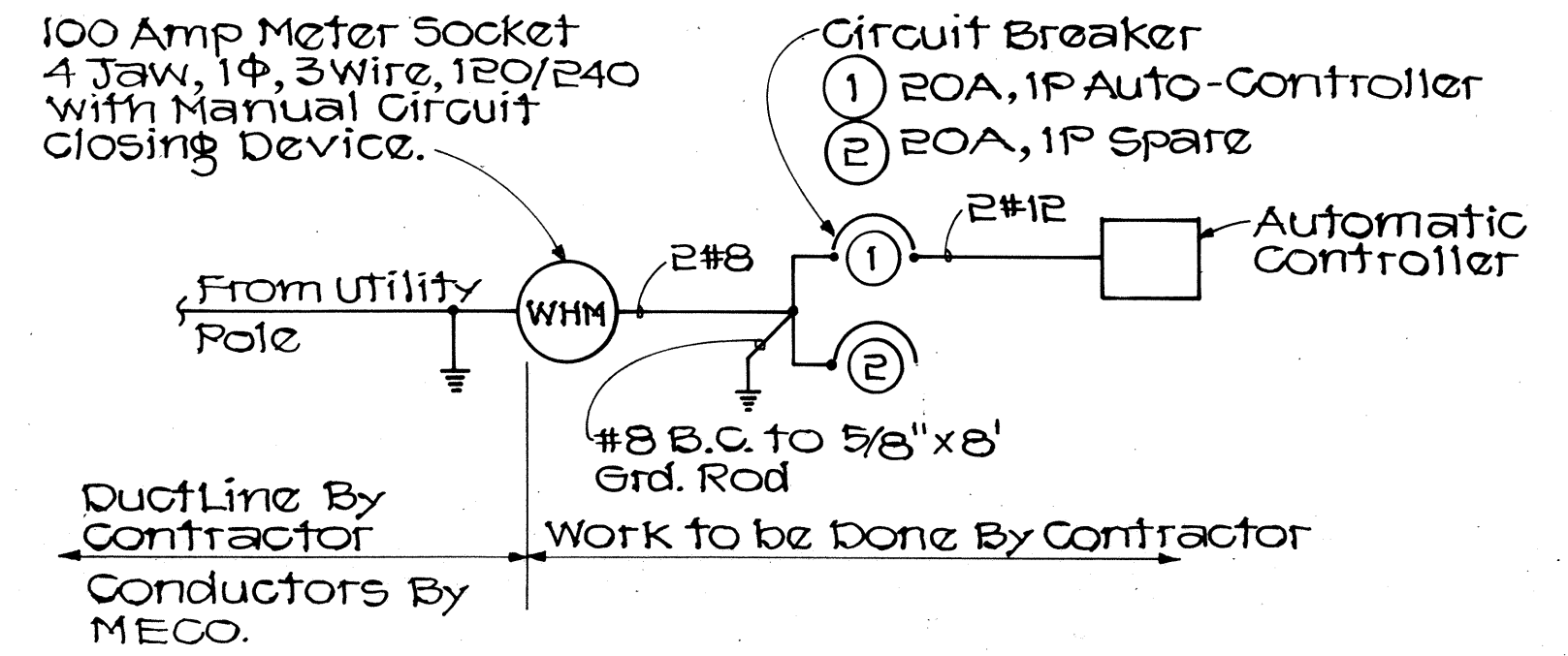
	S	M	T	W	T	F	S	S	M	T	W	T	F	S
"A" PROGRAM	X		X		X		X		X		X		X	
"B" PROGRAM	X				X				X				X	

START TIMES - HOUR

	A.M.											P.M.												
	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
"A" & "B" PROGRAM			X		X																			

IRRIGATION PROGRAM

- NOTE:**
1. "A" PROGRAM SHALL BE FOR BEACH MORNING GLORY.
 2. "B" PROGRAM SHALL BE FOR NAUPAKA.
 3. OPERATOR SHALL ADJUST PROGRAM TO SUIT FIELD CONDITIONS.



SERVICE CONNECTION ONE-LINE DIAGRAM

Not to Scale

APPROVED:

[Signature]
DIRECTOR, DEPT. OF WATER SUPPLY,
COUNTY OF MAUI

4-2-79
DATE

11/24/78

Delete Type "B" Pull Box
adjacent to Utility Pole

DATE

REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

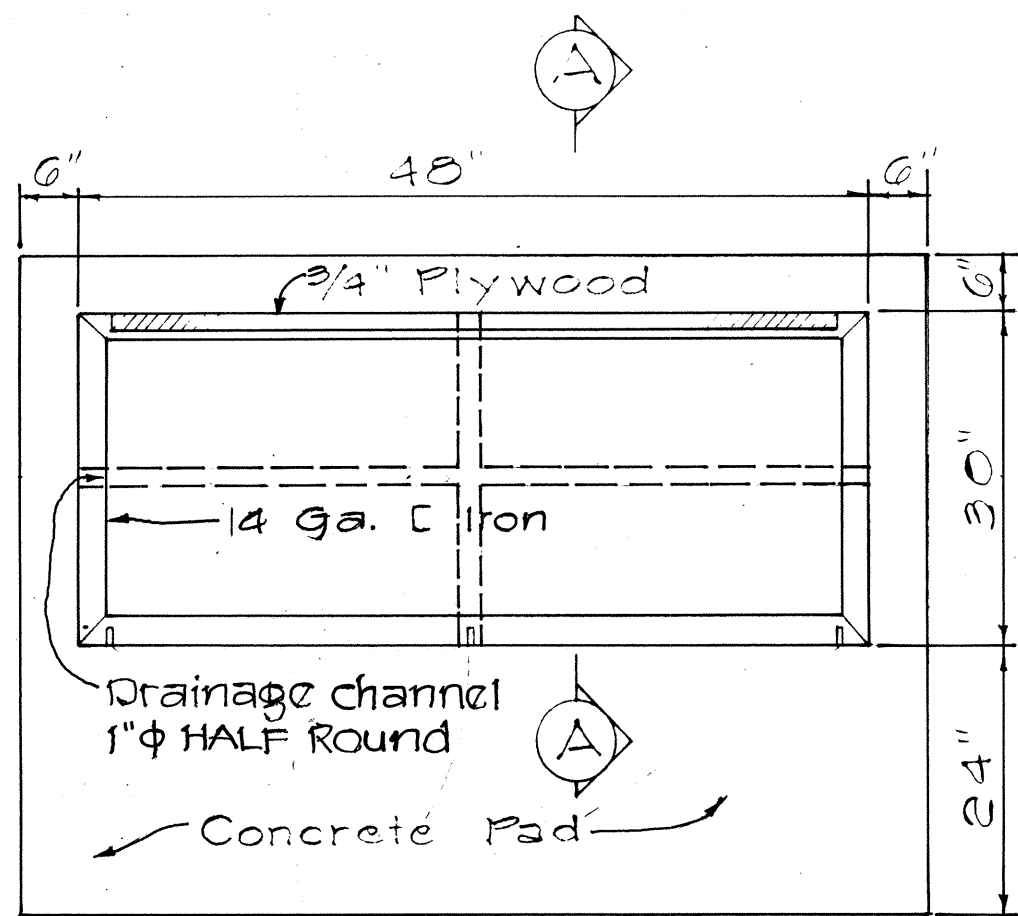
IRRIGATION PLAN

PIILANI HIGHWAY
VICINITY OF MOKULELE HIGHWAY TO
VICINITY OF KILOHANA STREET
F.A. PROJECT NO. F-RF-031-1(6)

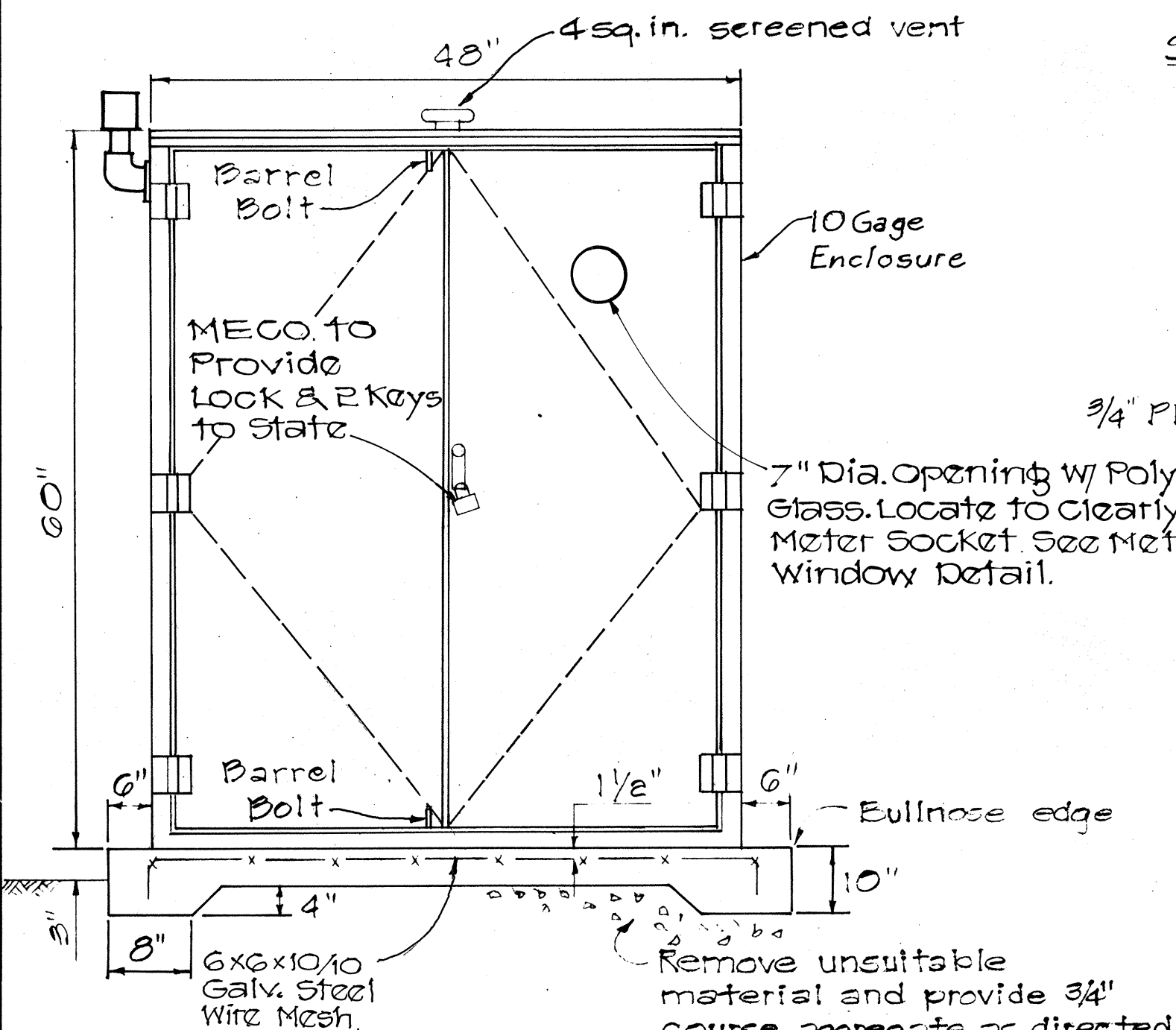
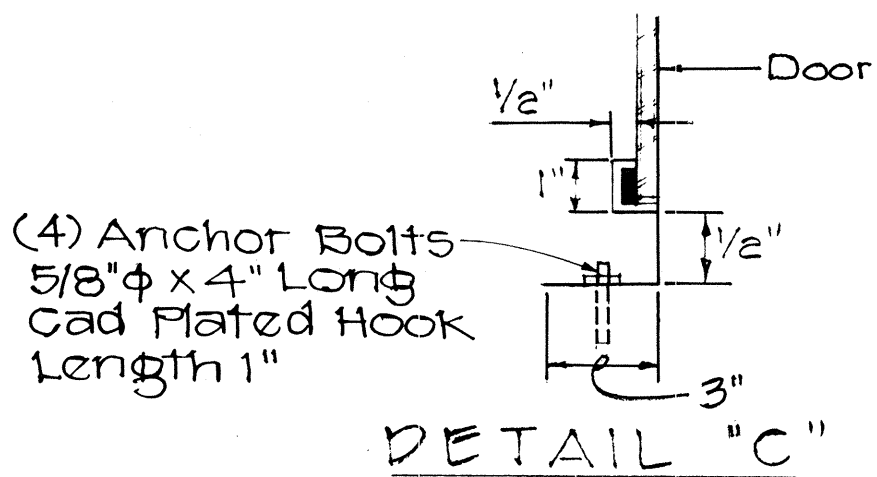
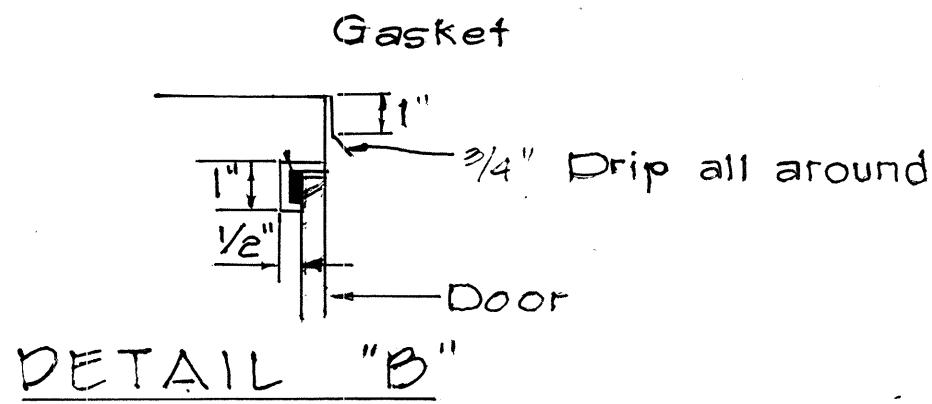
SCALE: AS SHOWN DATE: SEP 1978

SHEET No. 4 OF 6 SHEETS

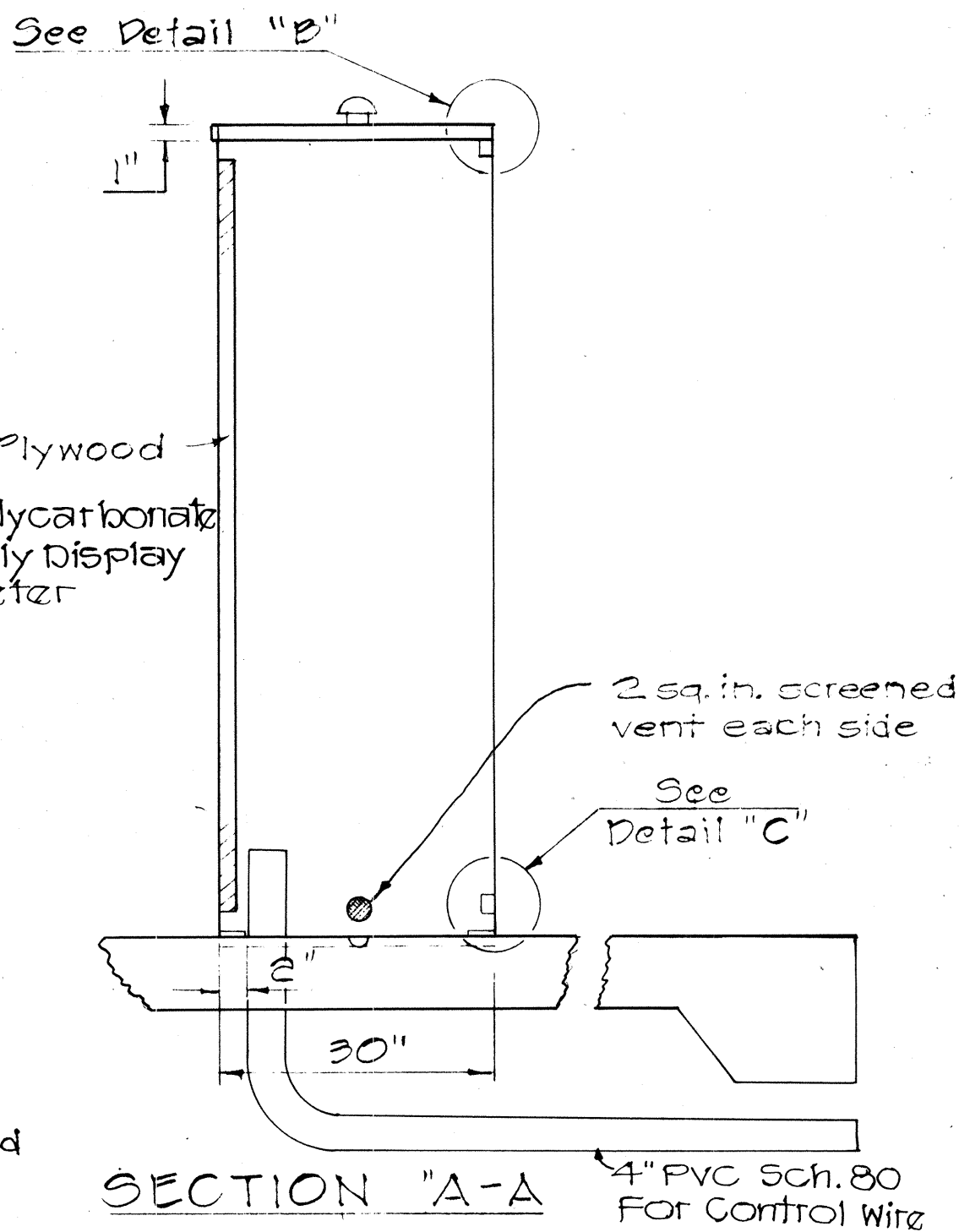
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-RF-031-1(6)	1978	202	262



PLAN

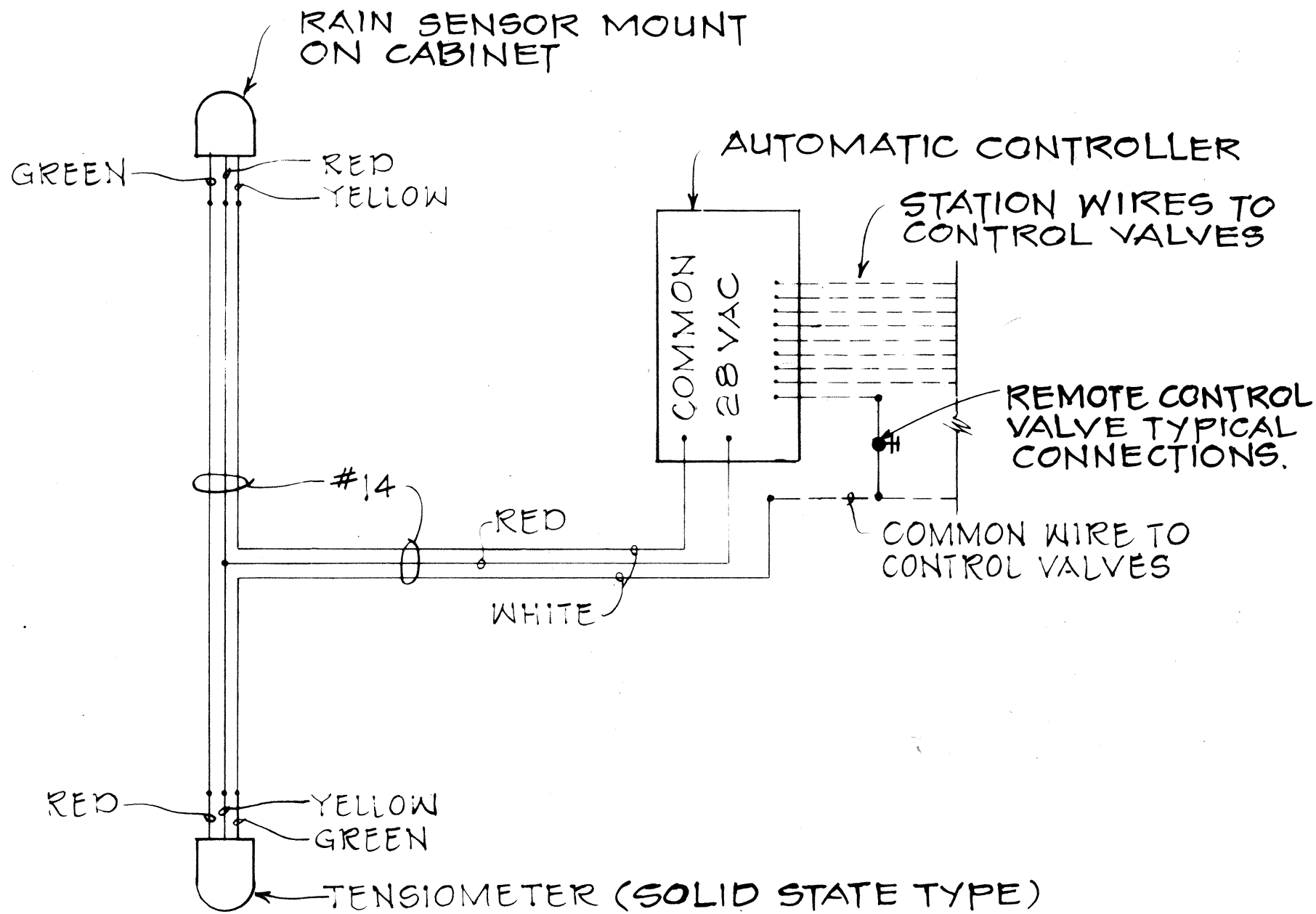


FRONT ELEVATION

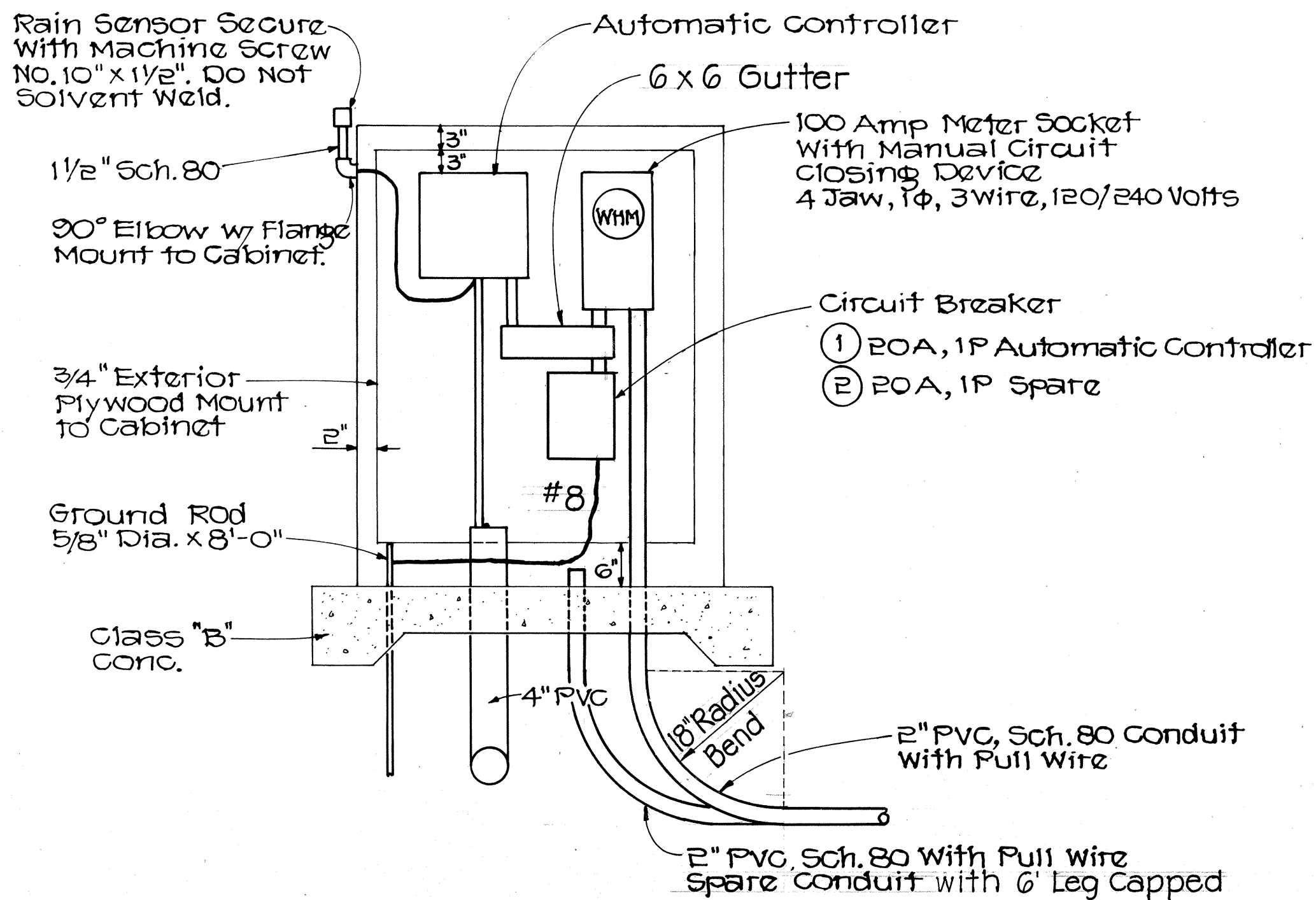


SECTION "A-A"

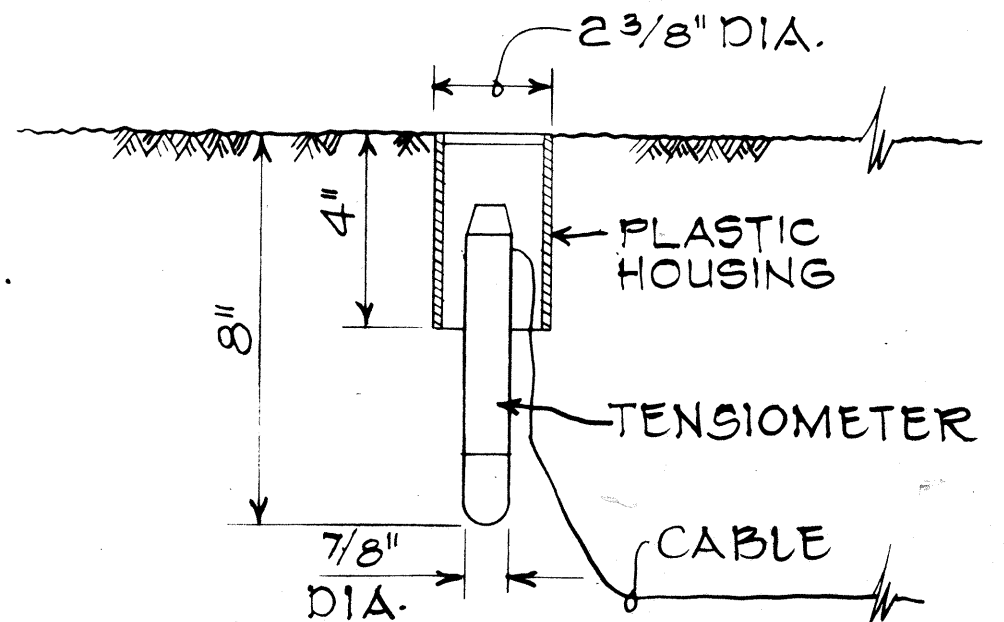
METER AND AUTOMATIC CONTROLLER CABINET DETAIL
Not to Scale



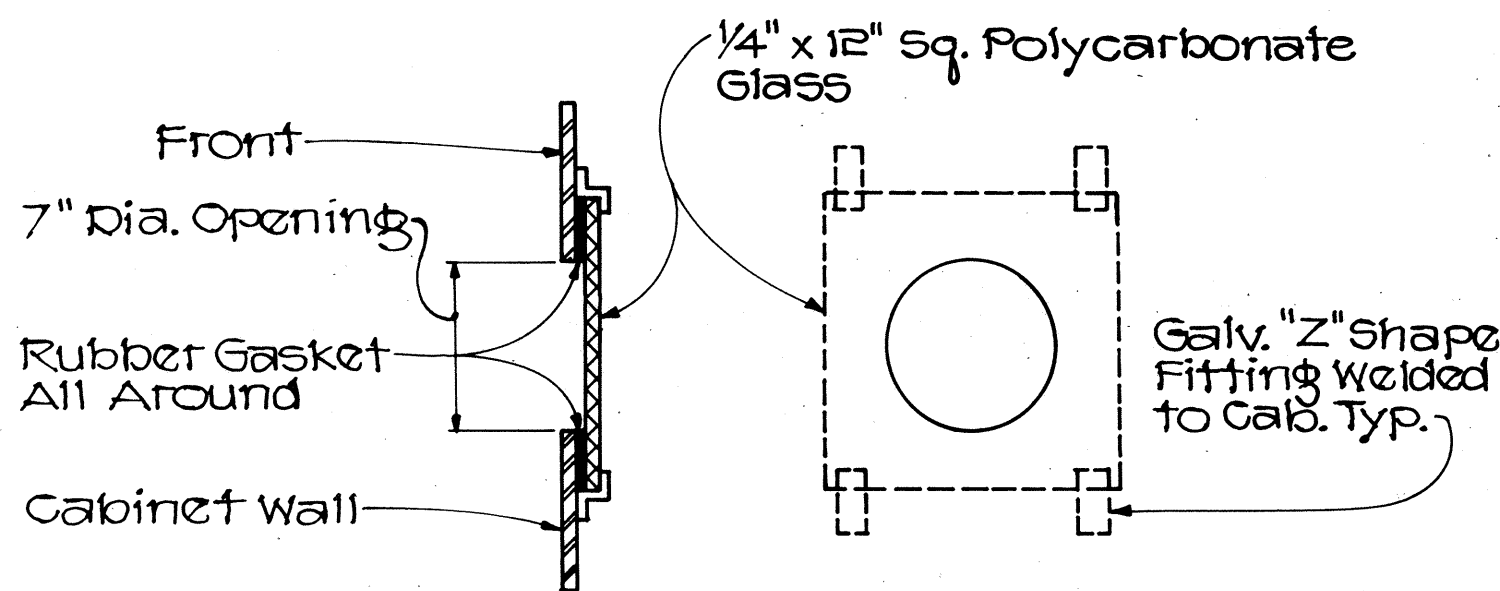
RAIN SENSOR AND TENSIO METER WIRE DIAGRAM



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



TENSIO METER INSTALLATION DETAIL
SCALE: 3" = 1'-0"



SIDE VIEW FRONT
METER WINDOW DETAIL
Not to Scale

APPROVED:
[Signature] 4-2-79
DIRECTOR, DEPT. OF WATER SUPPLY,
COUNTY OF MAUI DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION
IRRIGATION PLAN
PIILANI HIGHWAY
VICINITY OF MOKULELE HIGHWAY TO
VICINITY OF KILOHANA STREET
F.A. PROJECT NO. F-RF-031-1(6)
SCALE: AS SHOWN DATE SEP 1978
SHEET No. 5 OF 6 SHEETS

DATE	REVISION
11/24/78	Substitute Bottom Entry Conduit for Side Entry Conduit into Meter Socket (See Interior Elevation).

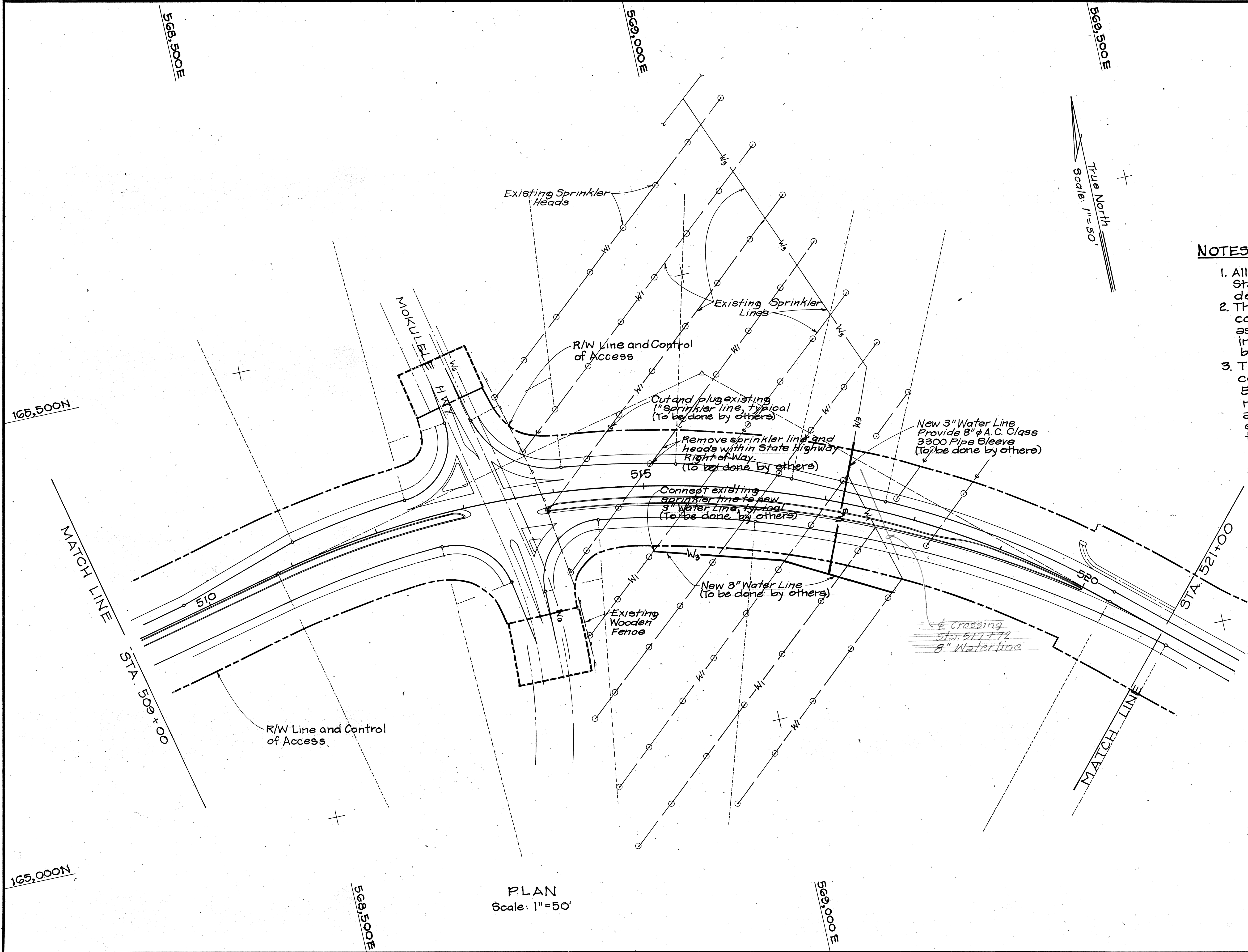
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-RF-031-1(6)	1978	203	262

True North
Scale: 1"=50'

NOTES:

1. All irrigation rehabilitation work between Stations 513+00 and 519+00 shall be done by others.
2. The Contractor shall coordinate his construction activities with others so as not to delay or hamper the irrigation rehabilitation work done by others.
3. The Contractor shall not commence construction work between Stations 513+50 and 518+50 until the irrigation rehabilitation work done by others are completed. The Contractor shall exercise care so as not to disturb the irrigation lines within the highway right-of-way. Water supply shall be maintained at all times.

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



PLAN
Scale: 1"=50'

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

IRRIGATION PLAN

PIILANI HIGHWAY
VICINITY OF MOKULELE HIGHWAY TO
VICINITY OF KILOHANA STREET
F.A. PROJECT NO. F-RF-031-1(6)

SCALE: AS SHOWN DATE SEP 1978

SHEET No. 6 OF 6 SHEETS