

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | I-HI-1(20):15      | 1976        | 220       | 350          |

| LEGEND AND SPRINKLER HEAD SPECIFICATIONS |        |                                                |                |                    |            |          |             |                                                           |
|------------------------------------------|--------|------------------------------------------------|----------------|--------------------|------------|----------|-------------|-----------------------------------------------------------|
| SYMBOL                                   | NUMBER | DESCRIPTION                                    | PRESSURE (PSI) | RADIUS OF COVERAGE | FLOW (GPM) | SPACINGS | RISER       | SPECIAL FEATURES                                          |
| ●                                        | S12-Q  | SHRUBBERY-QUARTER CIRCLE                       | 20             | 12'                | 1.6        | 14'      | 1/2" I.P.S. |                                                           |
| ●                                        | S8-H   | SHRUBBERY-HALF CIRCLE                          | 15             | 8'                 | 1.2        | 10'      | 1/2" I.P.S. |                                                           |
| ●                                        | S12-H  | SHRUBBERY-HALF CIRCLE                          | 20             | 12'                | 2.2        | 14'      | 1/2" I.P.S. |                                                           |
| ●                                        | S15-H  | SHRUBBERY-HALF CIRCLE                          | 30             | 15'                | 3.4        | 15'      | 1/2" I.P.S. |                                                           |
| ●                                        | S12-F  | SHRUBBERY-FULL CIRCLE                          | 20             | 12'                | 3.2        | 14'      | 1/2" I.P.S. |                                                           |
| ●                                        | P12-Q  | POP-UP, QUARTER CIRCLE                         | 20             | 12'                | 1.6        | 15'      | 1/2" I.P.S. | 2" POP-UP                                                 |
| ●                                        | P12-U  | POP-UP, HALF CIRCLE                            | 20             | 12'                | 2.3        | 15'      | 1/2" I.P.S. | 2" POP-UP                                                 |
| ●                                        | P12-F  | POP-UP, FULL CIRCLE                            | 20             | 12"                | 3.3        | 15"      | 1/2" I.P.S. | 2" POP-UP                                                 |
| ●                                        | I-38   | FULL(F) OR PART(P) CIRCLE IMPACT, 5/32" NOZZLE | 30             | 38'                | 3.8        | 40'      | 1/2         |                                                           |
| ○                                        |        | AIR RELIEF VALVE W/VALVE BOX                   |                |                    |            |          |             |                                                           |
| ⊗                                        | G.V.   | GATE VALVE                                     |                |                    |            |          |             |                                                           |
| ■                                        | R.C.V. | ELECTRIC REMOTE CONTROL VALVE                  |                |                    |            |          |             | 24 V. WATERPROOF SOLENOID<br>INSTALL IN VALVE BOX W/COVER |
| Ⓜ                                        |        | AUTOMATIC CONTROLLER - 11 STATIONS (MIN.)      |                |                    |            |          |             | PEDESTAL MOUNTED                                          |

GENERAL NOTES:

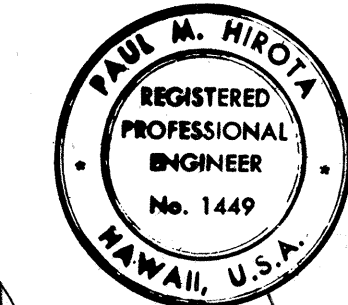
1. RISER SUPPORTS SHALL BE 3/4 " 6 GALVANIZED STEEL PIPE OR #6 REINFORCING BAR. ALL RISERS & RISER SUPPORTS SHALL BE PAINTED A FLAT BLACK COLOR.
2. CONCRETE REACTION BLOCKS AND REINFORCED CONCRETE JACKET SHALL BE CLASS B.
3. MINIMUM LINE SIZE BETWEEN SPRINKLER HEADS SHALL BE AS SHOWN ON THE PLANS.
4. FINAL LOCATIONS OF REMOTE CONTROL VALVES SHALL BE DETERMINED BY THE ENGINEER.
5. ALL SPRINKLER LATERALS UNDER ROADWAY SHALL BE AT A DEPTH OF 2'-0".
6. ALL SPRINKLER MAINS SHALL BE AT A DEPTH OF 3'-0".
7. TRENCH WIDTHS FOR SPRINKLER LATERALS SHALL BE NOT LESS THAN 12".
8. CONTRACTOR SHALL ADJUST ALL SPRINKLER HEADS FOR PROPER COVERAGE.
9. NO ROCKS OR SHARP OBJECTS ONE INCH OR LARGER SHALL BE USED IN THE BACKFILLING OF TRENCHES.
10. ALL WIRING UNDER ROADWAY TO BE INSTALLED IN CONDUITS.
11. ALL SPRINKLER LATERALS UNDER ROADWAY SHALL BE SLEEVED OR CONCRETE ENCASED.
12. ALL SPRINKLER LATERALS UNDER ROADWAY SHALL BE COPPER.

LEGEND NOTES:

1. "PRESSURE" IS THE MINIMUM PRESSURE, IN POUNDS PER SQUARE INCH, WHICH IS AVAILABLE AT THE BASE OF THE LAST HEAD. THE OPERATING PRESSURE OF ACCEPTABLE HEADS MUST NOT EXCEED THIS VALUE WHEN OPERATING AT THE TABULATED FLOW AND RADIUS.
2. "RADIUS OF COVERAGE" IS THE MINIMUM RADIUS AT THE TABULATED PRESSURE.
3. "FLOW" IS THE MAXIMUM FLOW, IN GALLONS PER MINUTE, WHICH IS DISCHARGED AT THE TABULATED PRESSURE.
4. "SPACING" IS THE CENTER TO CENTER SPACING OF SPRINKLER HEADS, UNLESS OTHERWISE NOTED OR SHOWN ON THE PLANS.

| ESTIMATED QUANTITIES                   |             |                                                               |            |
|----------------------------------------|-------------|---------------------------------------------------------------|------------|
| STRUCTURAL EXCAVATION                  | 2,500 C.Y.  | CAST IRON FITTINGS                                            | 2,705 LBS. |
| CLASS "B" CONCRETE                     | 170 C.Y.    | S-8 (HALF) SPRINKLER HEAD                                     | 69 EA.     |
|                                        |             | S-12 (QUARTER, HALF, FULL) SPRINKLER HEAD                     | 467 EA.    |
| BED COURSE MATERIAL                    | 50 C.Y.     | S-15 (HALF) SPRINKLER HEAD                                    | 94 EA.     |
| REINFORCED CONCRETE JACKET FOR 3" MAIN | 45 L.F.     | P-12 (QUARTER, HALF, FULL) SPRINKLER HEAD                     | 192 EA.    |
| REINFORCED CONCRETE JACKET FOR 4" MAIN | 175 L.F.    | I-38 IMPACT SPRINKLER HEAD (PART, FULL)                       | 83 EA.     |
| 3/4" AIR RELIEF VALVE & VALVE BOX      | 3 EA.       |                                                               |            |
| 2-1/2" PIPE CONDUIT                    | 920 L.F.    | I-1/4" ELECTRIC CONTROL VALVE W/TYPE "B" VALVE BOX            | 6 EA.      |
| DIRECT BURIAL CABLE                    | 24,000 L.F. | I-1/2" ELECTRIC CONTROL VALVE W/TYPE "B" VALVE BOX            | 19 EA.     |
| 1/2" PIPE                              | 3,010 L.F.  | 2" ELECTRIC CONTROL VALVE W/TYPE "B" VALVE BOX                | 11 EA.     |
| 3/4" PIPE                              | 2,630 L.F.  | 4" GATE VALVE W/VALVE BOX                                     | 4 EA.      |
| 1" PIPE                                | 3,280 L.F.  | 3" GATE VALVE W/VALVE BOX                                     | 1 EA.      |
| 1" COPPER PIPE (NO OPTION)             | 115 L.F.    | 1" SHUT-OFF VALVE W/TYPE "A" VALVE BOX                        | 1 EA.      |
| 1-1/4" PIPE                            | 1,090 L.F.  | HOSE BIBB                                                     | 1 EA.      |
| 1-1/2" PIPE                            | 2,160 L.F.  | STATION (SATELLITE) AUTOMATIC CONTROLLER - 11 STATIONS (MIN.) | 3 EA.      |
| 2" PIPE                                | 1,840 L.F.  |                                                               |            |
| 2" COPPER PIPE (NO OPTION)             | 110 L.F.    |                                                               |            |
| 2-1/2" PIPE                            | 1,260 L.F.  |                                                               |            |
| 2-1/2" COPPER PIPE (NO OPTION)         | 560 L.F.    |                                                               |            |
| 3" PIPE                                | 530 L.F.    |                                                               |            |
| 3" COPPER PIPE (NO OPTION)             | 45 L.F.     |                                                               |            |
| 4" PIPE                                | 4800 L.F.   |                                                               |            |
| 12" PIPE                               | 12 L.F.     |                                                               |            |

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| ORIGINAL DRAWN BY |      |
| TRACED BY         |      |
| DESIGNED BY       |      |
| CHECKED BY        |      |
| NO.               |      |



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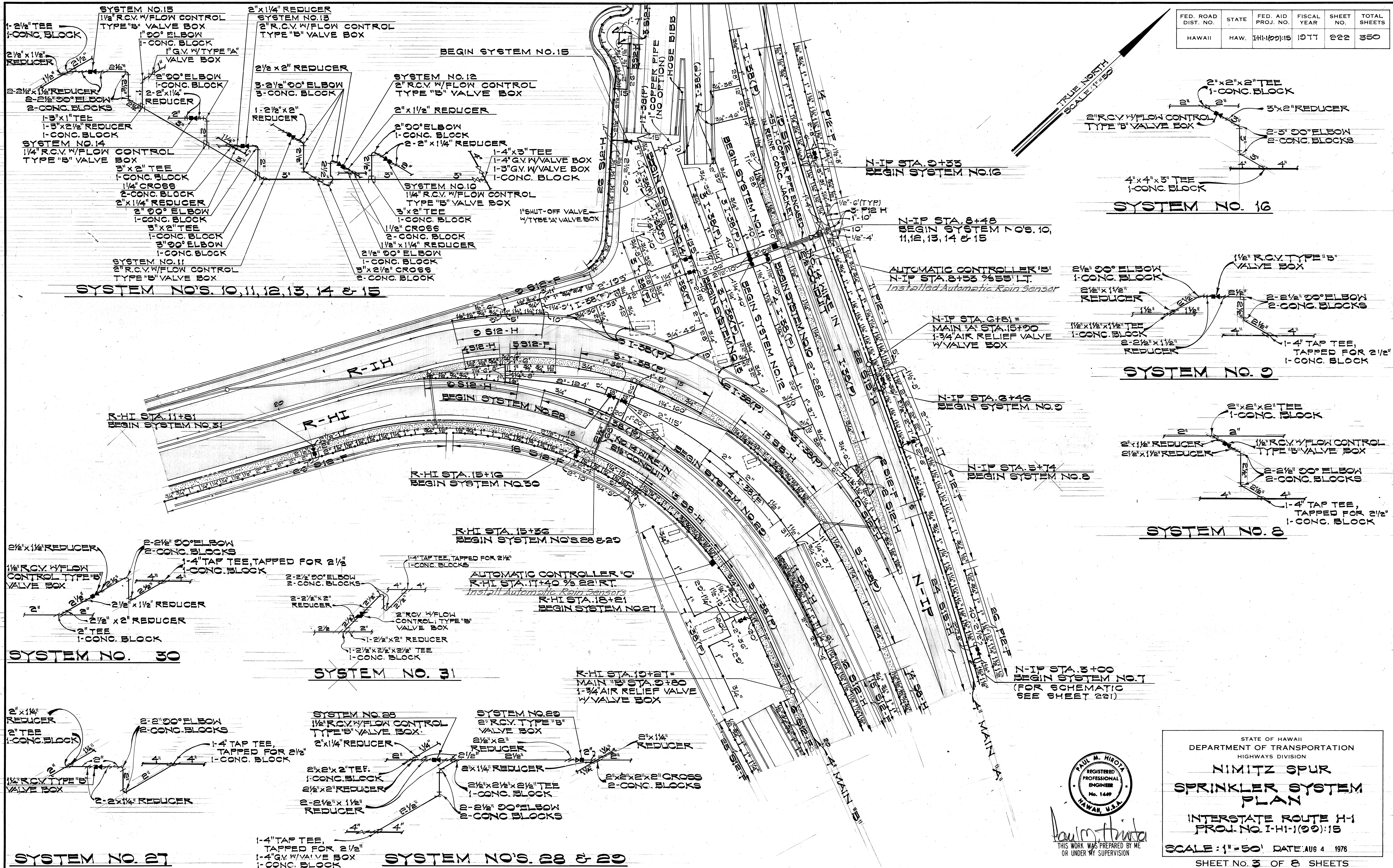
|                                                                      |
|----------------------------------------------------------------------|
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION |
| NIMITZ SPUR<br>SPRINKLER SYSTEM                                      |
| GENERAL NOTES & LEGEND                                               |
| INTERSTATE ROUTE - H-1<br>PROJECT NO. I-HI-1(20):15                  |
| SCALE: AS NOTED DATE: AUG 4 1976                                     |
| SHEET NO. 1 OF 8 SHEETS                                              |







| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 144(00)15          | 1977        | 222       | 350          |



PAUL M. HIROTA  
REGISTERED  
PROFESSIONAL  
ENGINEER  
No. 1499  
HAWAII, U.S.A.

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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**NIMITZ SPUR  
SPRINKLER SYSTEM  
PLAN**

INTERSTATE ROUTE H-1  
PROJ. NO. I-H-1(90)15

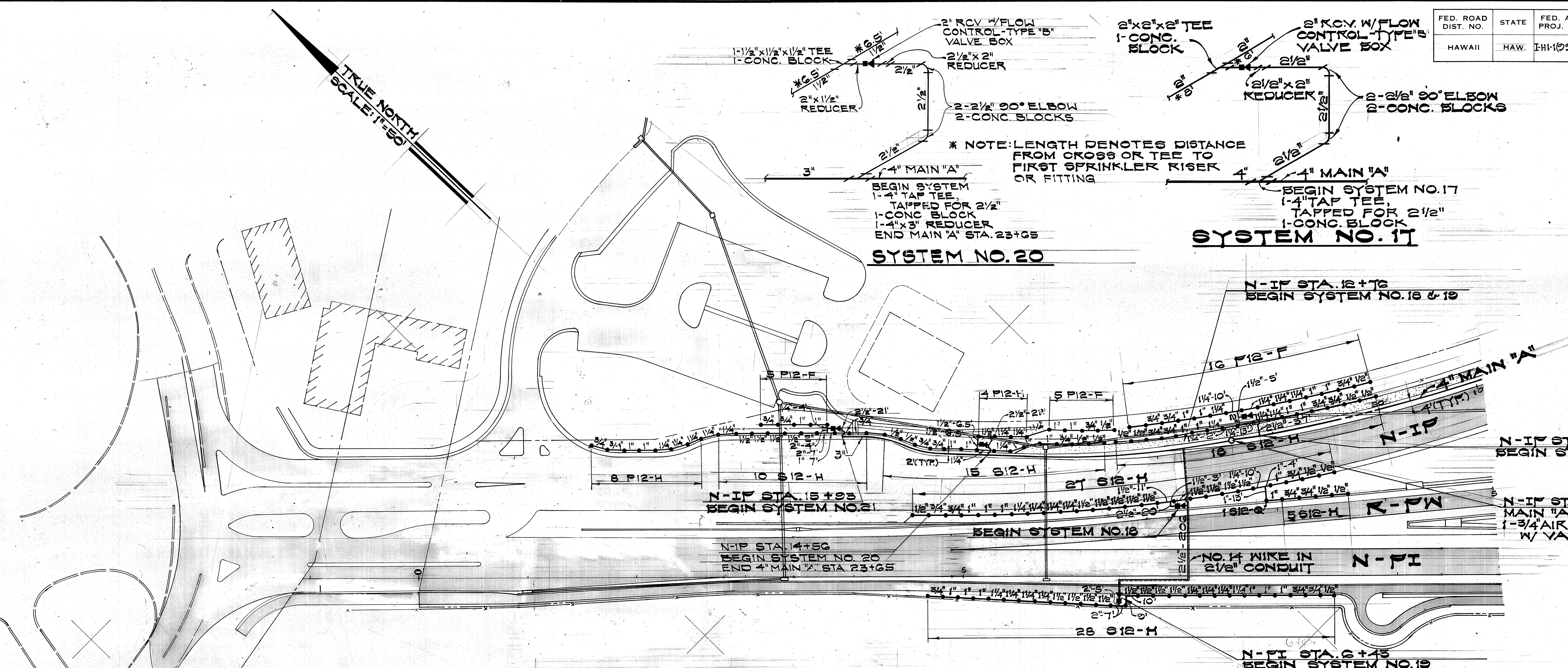
SCALE: 1" = 50' DATE: AUG 4, 1976

SHEET NO. 3 OF 8 SHEETS

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DRAWN BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
NOTED BY: \_\_\_\_\_  
NO. \_\_\_\_\_

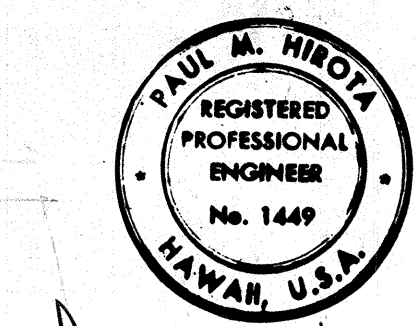


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | IHI-10015          | 1977        | 223       | 350          |



**SYSTEM NO. 21**

**SYSTEM NO'S. 18 & 19**

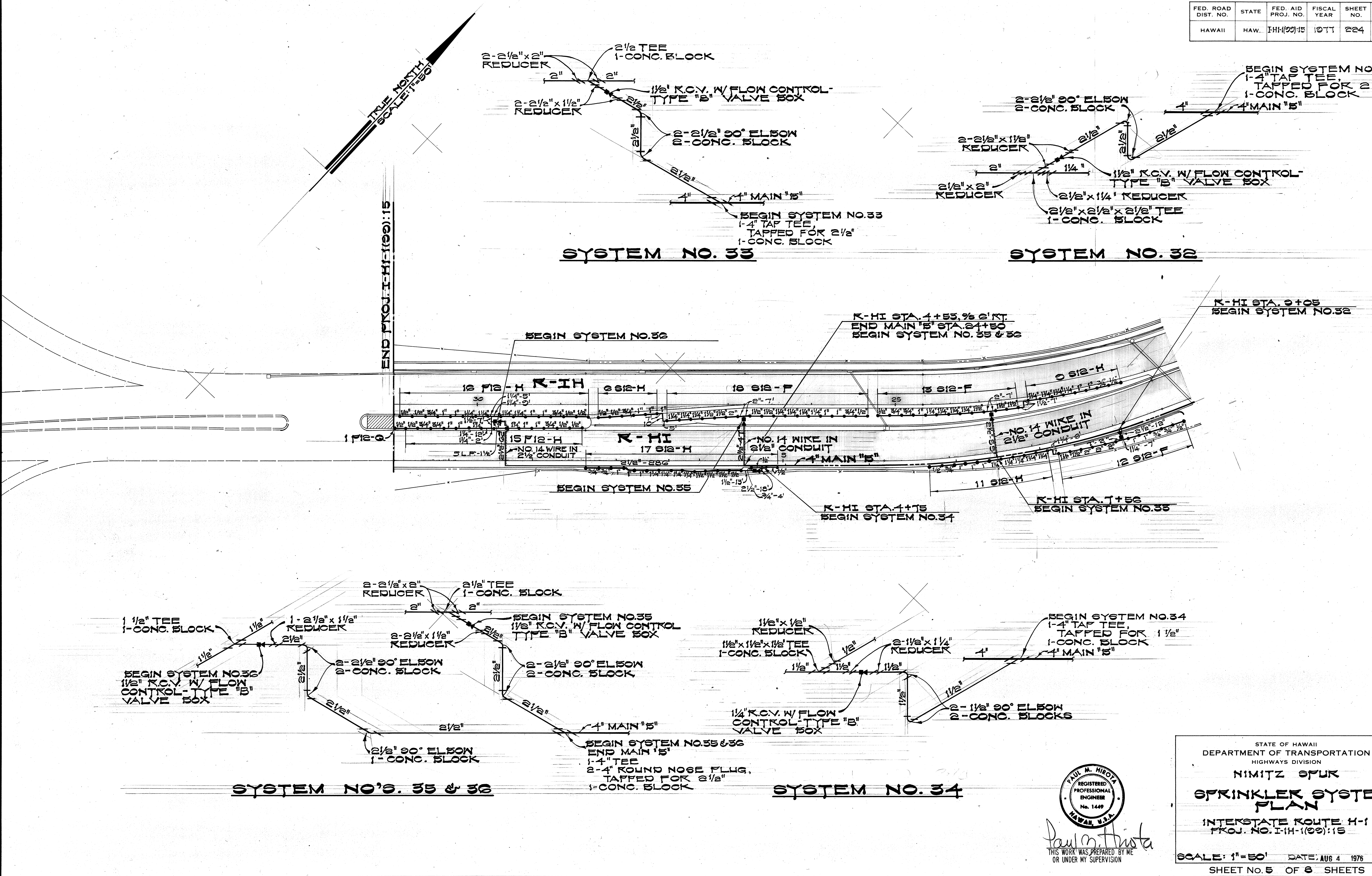


STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**NIMITZ SPUR**  
**SPRINKLER SYSTEM PLAN**  
INTERSTATE ROUTE H-1  
PROJ. NO. IHI-1(00)15  
SCALE: 1"=50' DATE: AUG 4 1976  
SHEET NO. 4 OF 8 SHEETS

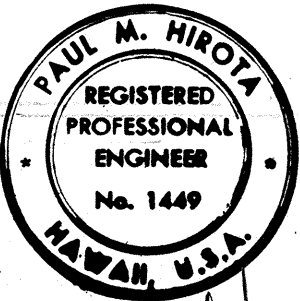
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| DATE              |  |
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| DRAWN BY          |  |
| CHECKED BY        |  |
| NOTED BY          |  |
| NO.               |  |



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 111-1(99)15        | 1977        | 224       | 350          |



|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| DESIGNED BY       |      |
| QUANTITIES BY     |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     |      |
| NOTE BOOK         |      |
| NO.               |      |

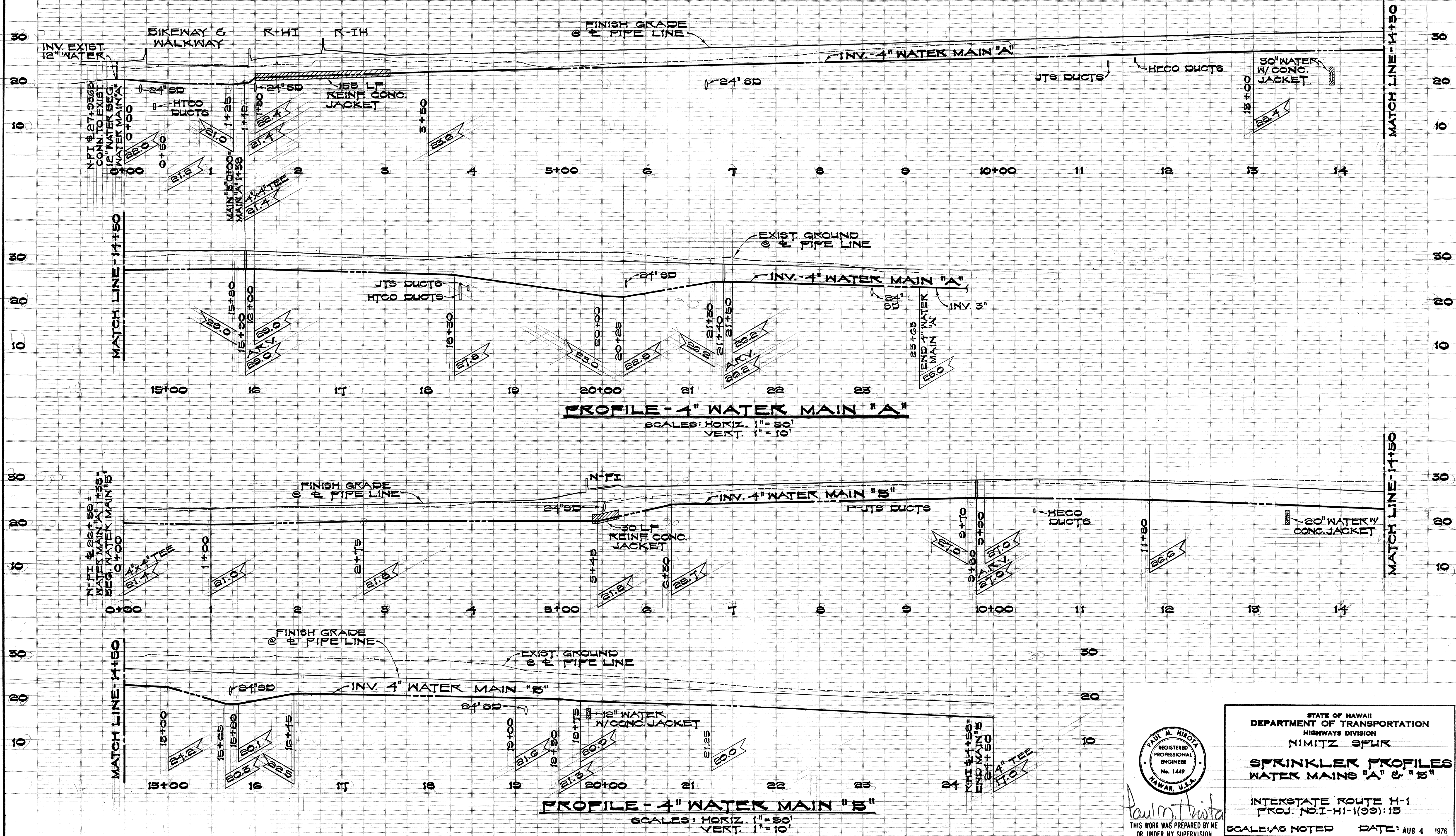


Paul M. Hirota  
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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**NIMITZ SPUR**  
**SPRINKLER SYSTEM PLAN**  
INTERSTATE ROUTE H-1  
PKOJ. NO. 111-1(99)15  
SCALE: 1"=50' DATE: AUG 4 1976  
SHEET NO. 5 OF 8 SHEETS



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | I-HI-1(99):15      | 1977        | 225       | 350          |



|               |       |
|---------------|-------|
| DATE          | _____ |
| DESIGNED BY   | _____ |
| CHECKED BY    | _____ |
| NOTED BY      | _____ |
| QUANTITIES BY | _____ |
| ORIGINAL PLAN | _____ |
| NO.           | _____ |



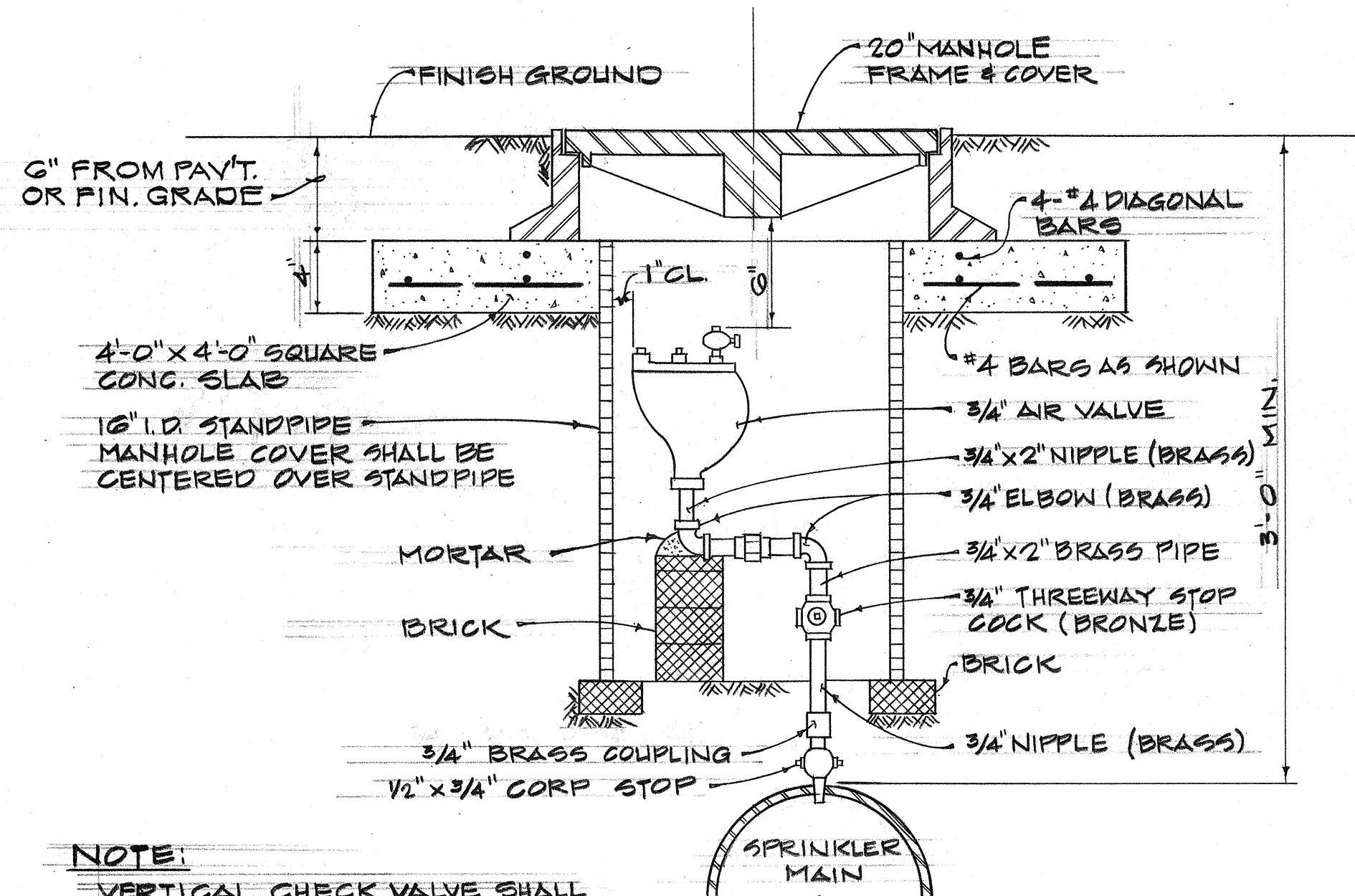
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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
NIMITZ SPUR  
**SPRINKLER PROFILES**  
**WATER MAINS "A" & "B"**  
INTERSTATE ROUTE H-1  
PROJ. NO. I-HI-1(99):15  
SCALE: AS NOTED    DATE: AUG 4 1976  
SHEET No. 2 OF 8 SHEETS



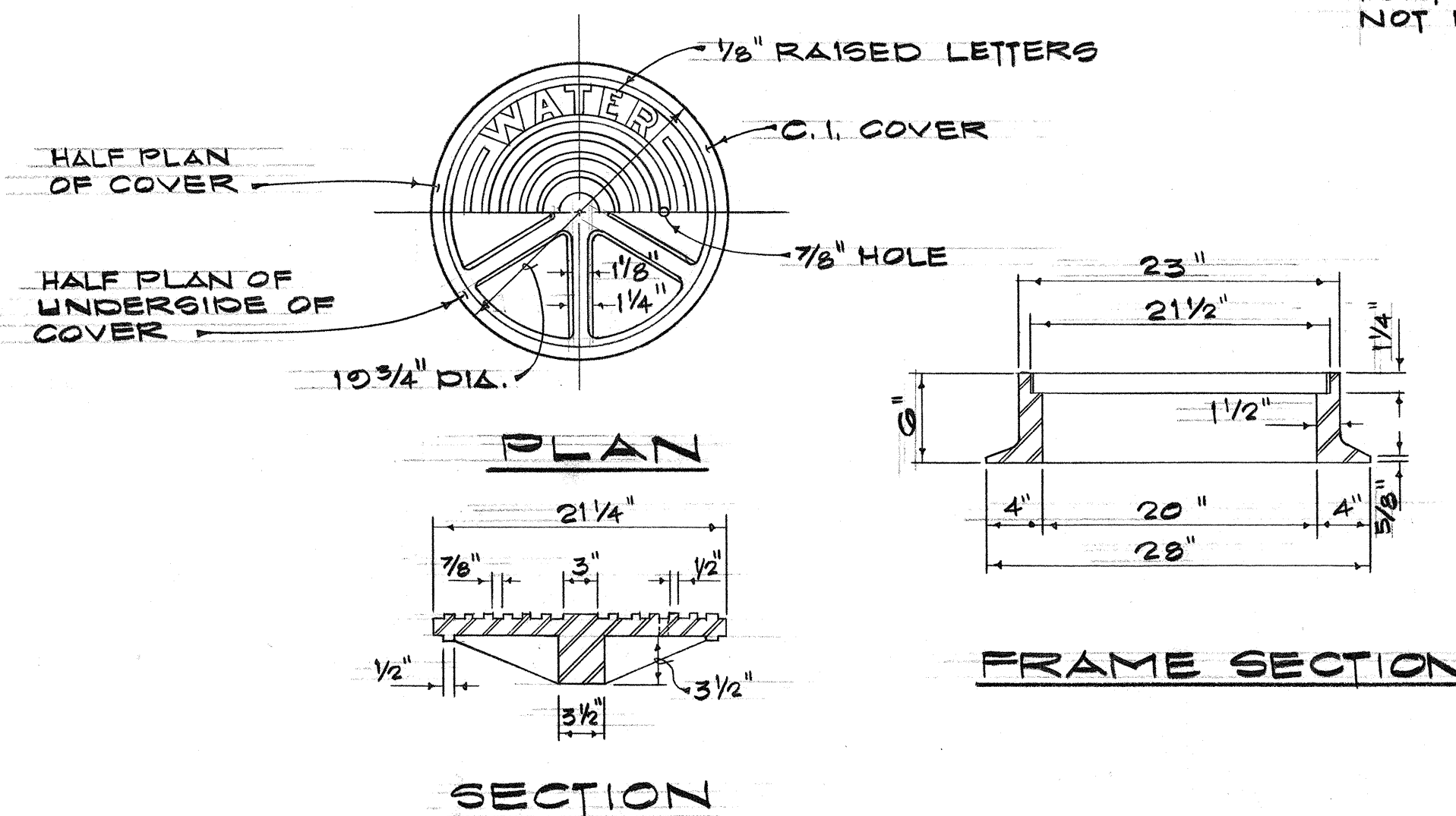
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|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | IHH00115           | 1977        | 226       | 350          |

NOTE:  
ALL CASTINGS SHALL BE MADE ACCURATELY TO THE DIMENSIONS SHOWN. SEAT AND COVER SHALL BE MACHINED, NOT GROUND TO SECURE FLAT AND TRUE SURFACES. THE COVER SHALL NOT RATTLE IN ANY POSITION.

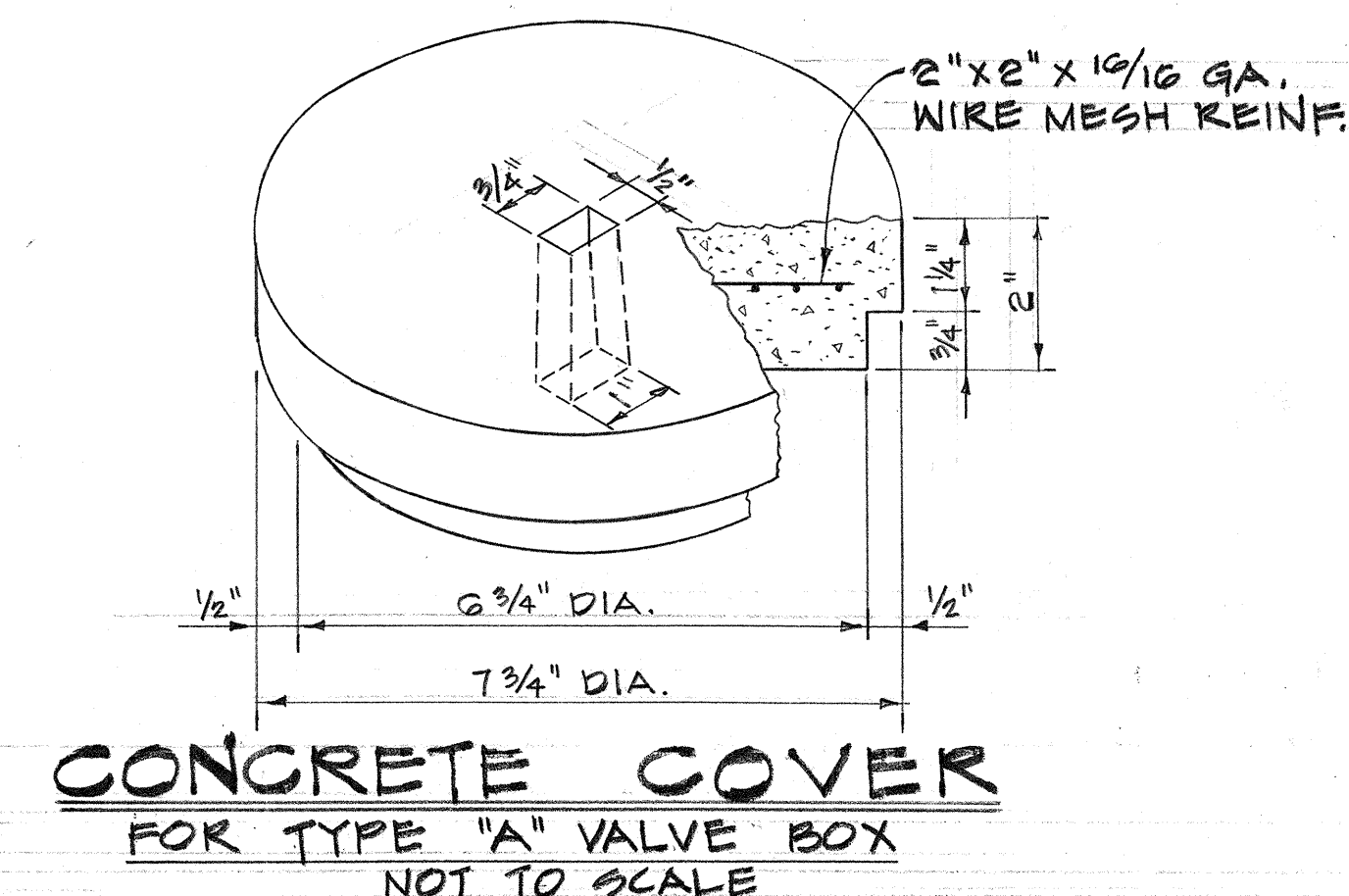


NOTE:  
VERTICAL CHECK VALVE SHALL BE USED IN LIEU OF COUPLING WHEN THREEWAY STOP COCK IS IMMERSED IN WATER

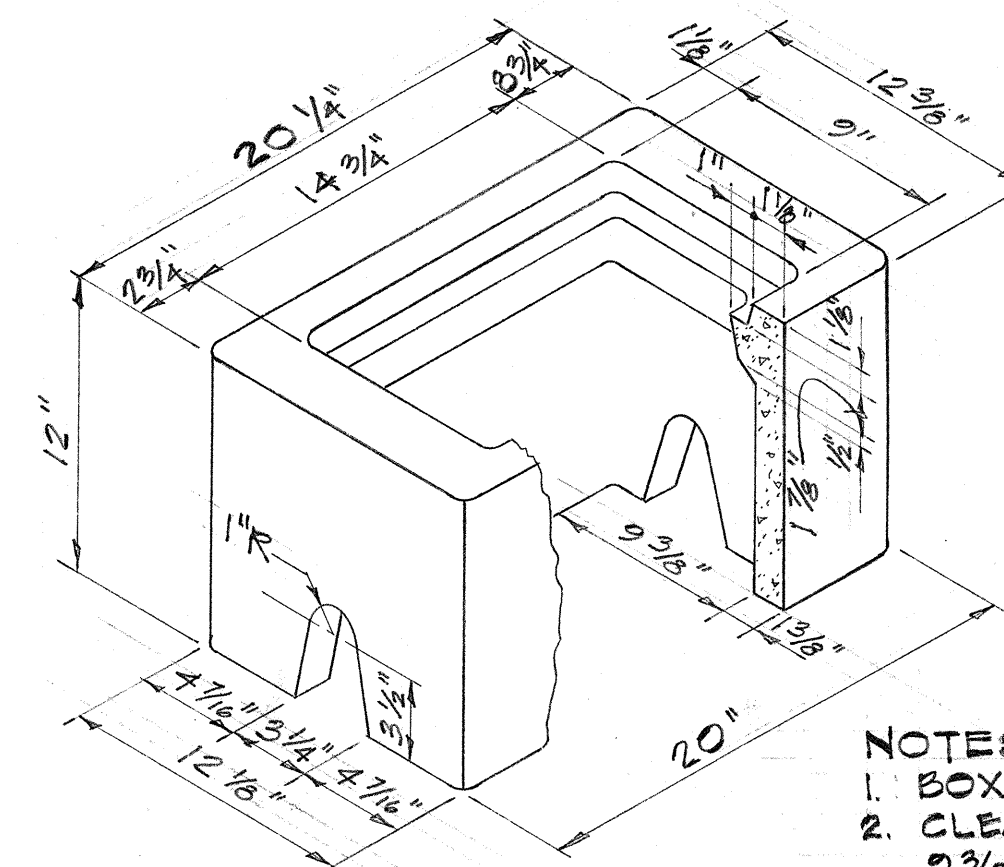
**AIR RELIEF VALVE & VALVE BOX**  
NOT TO SCALE



**TYPICAL MANHOLE FRAME & COVER**  
NOT TO SCALE

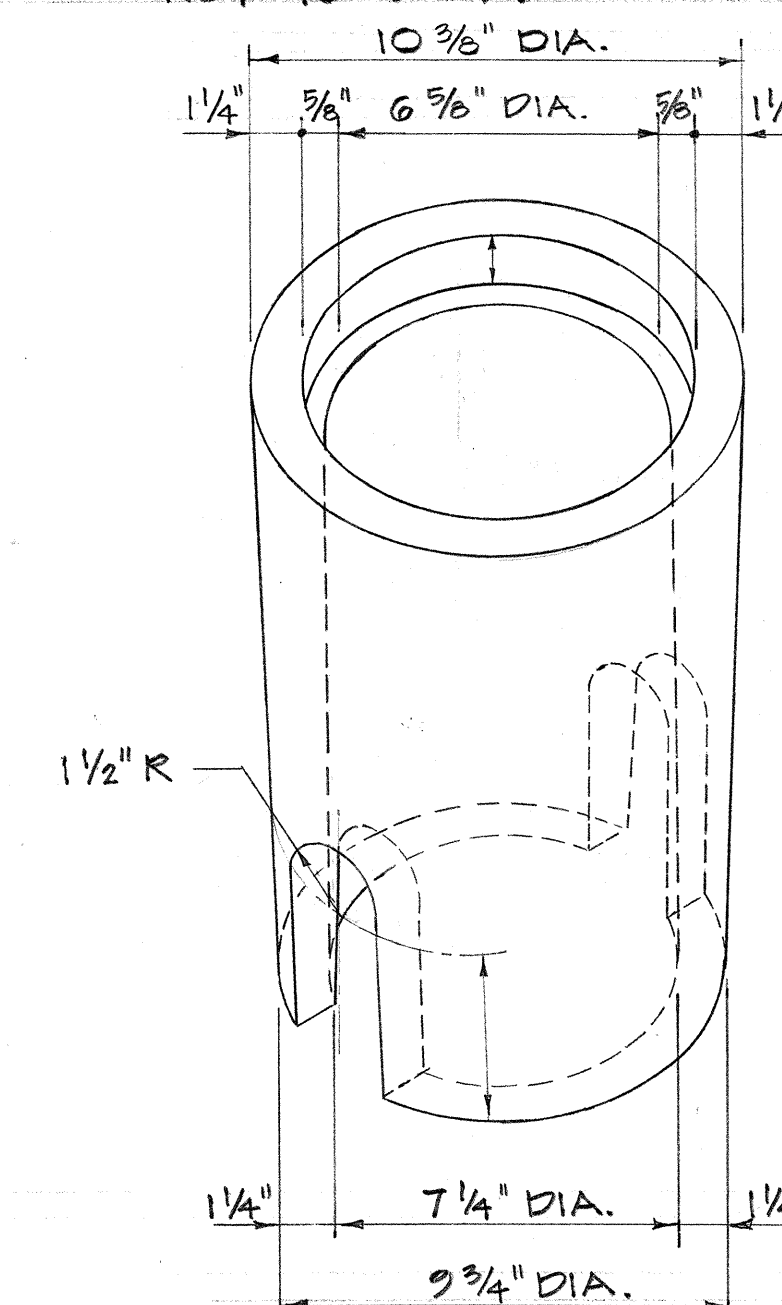


**CONCRETE COVER**  
FOR TYPE "A" VALVE BOX  
NOT TO SCALE

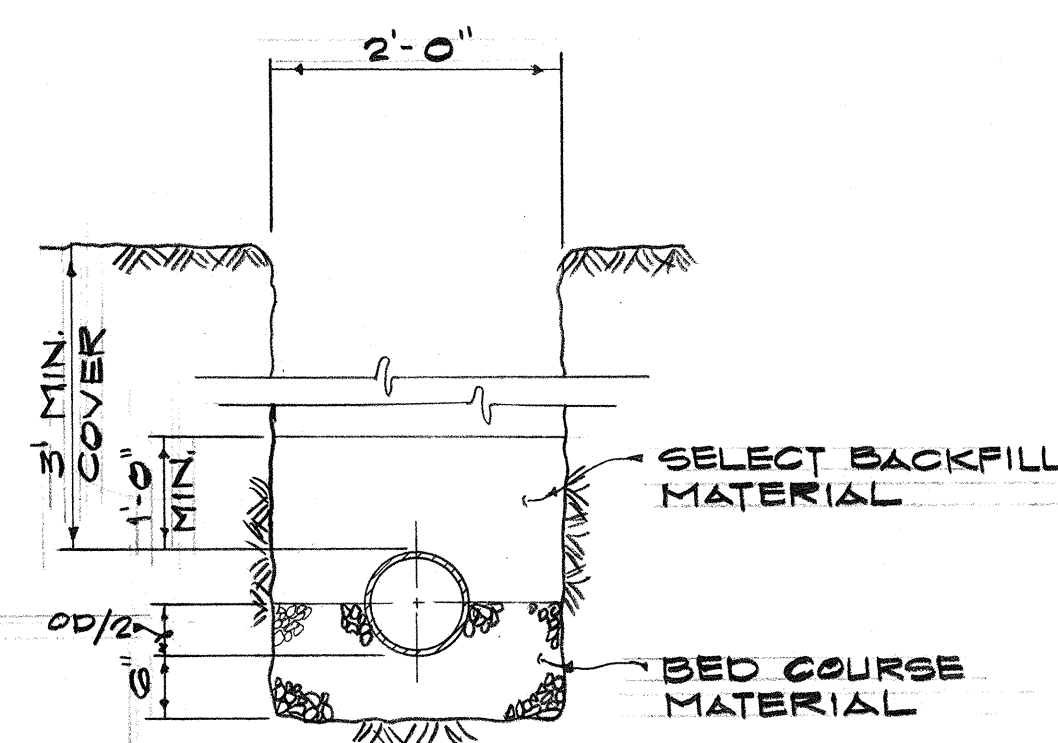


NOTES:  
1. BOX SHALL BE NON-REINFORCED  
2. CLEAR INSIDE DIMENSION 9 3/8" X 17 1/4"  
3. COVER SHALL BE REINFORCED WITH 2" X 2" X 10 GA. WIRE MESH

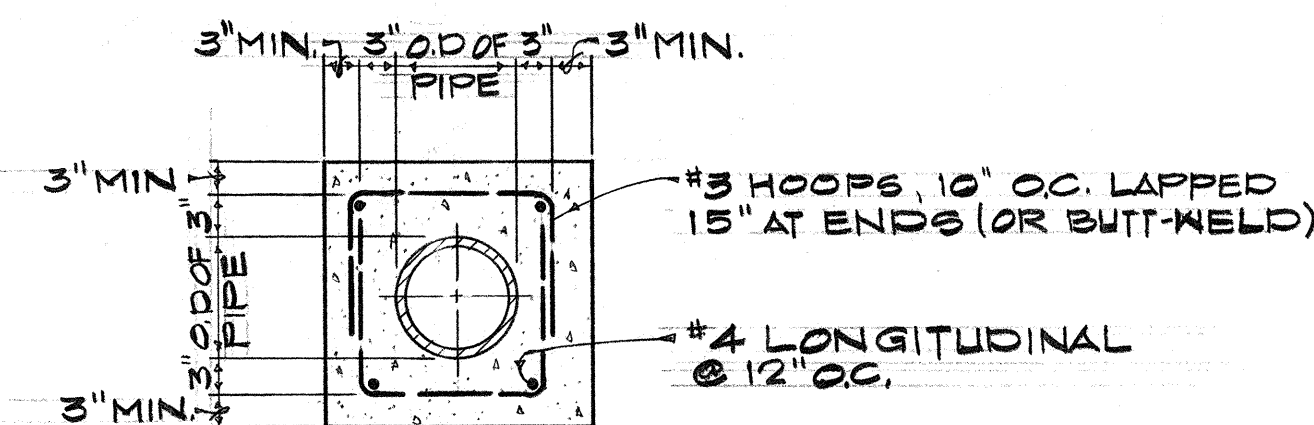
**TYPE "B" VALVE BOX**  
NOT TO SCALE



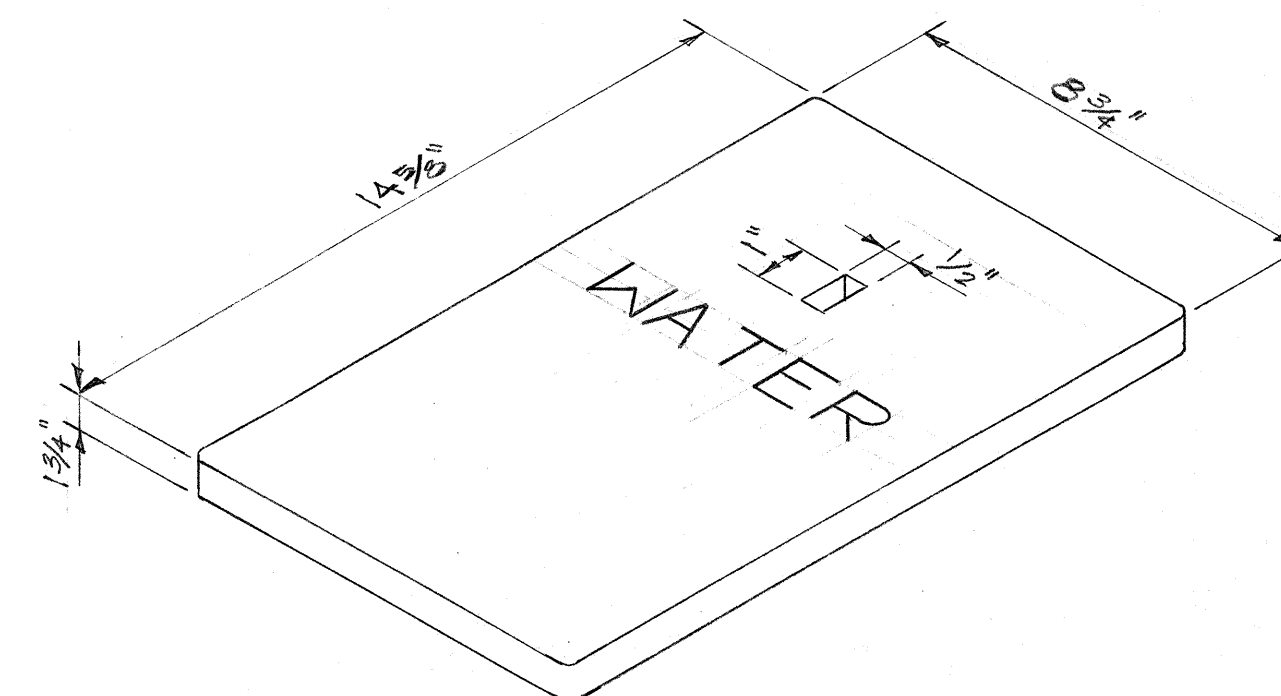
NOTE: BOX SHALL BE NON-REINFORCED  
**TYPE "A" VALVE BOX**  
NOT TO SCALE



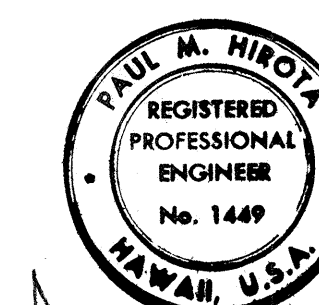
**TRENCH DETAIL**  
NOT TO SCALE



**REINFORCED CONCRETE JACKET**  
NOT TO SCALE



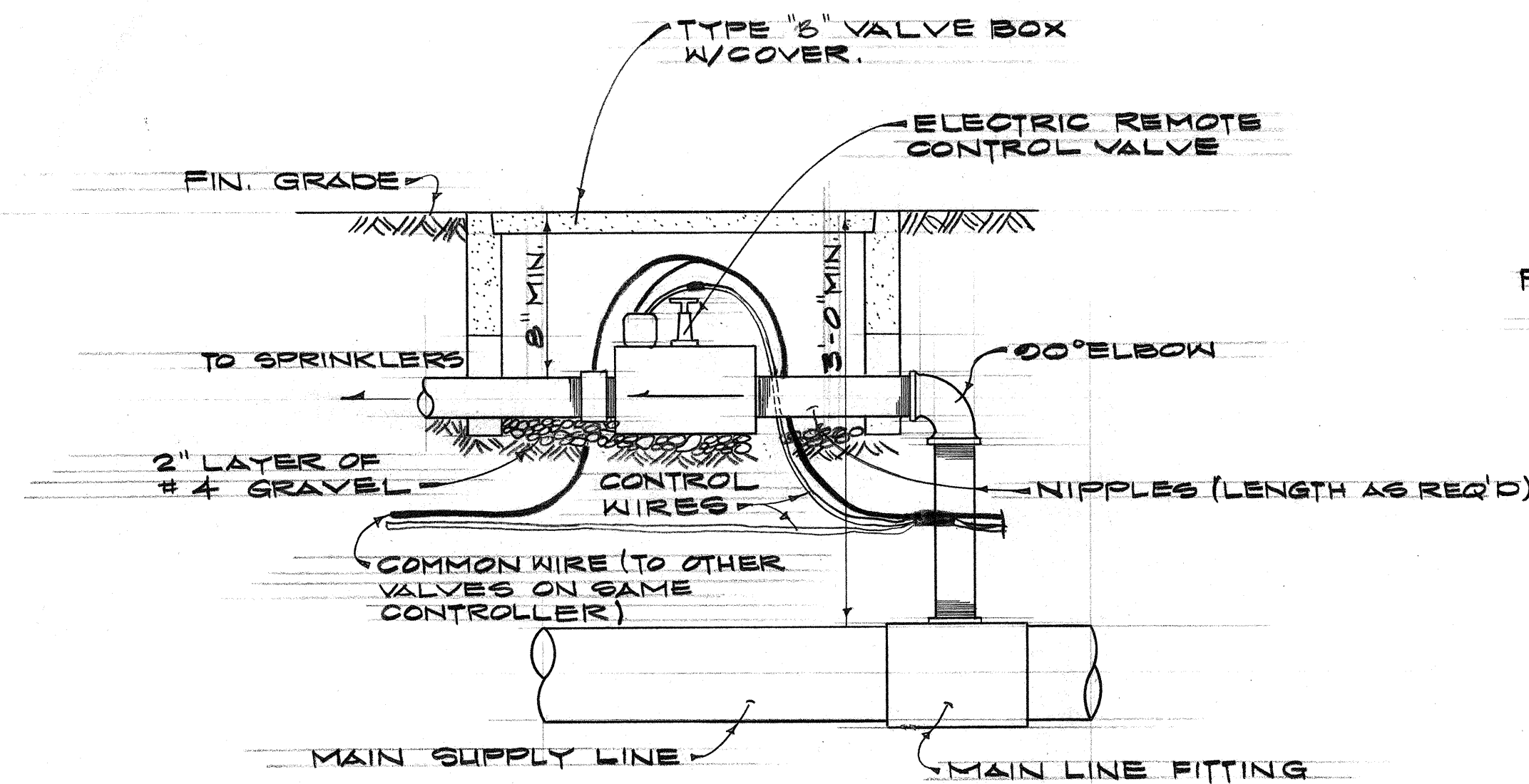
**CONCRETE COVER**  
FOR TYPE "B" VALVE BOX  
NOT TO SCALE



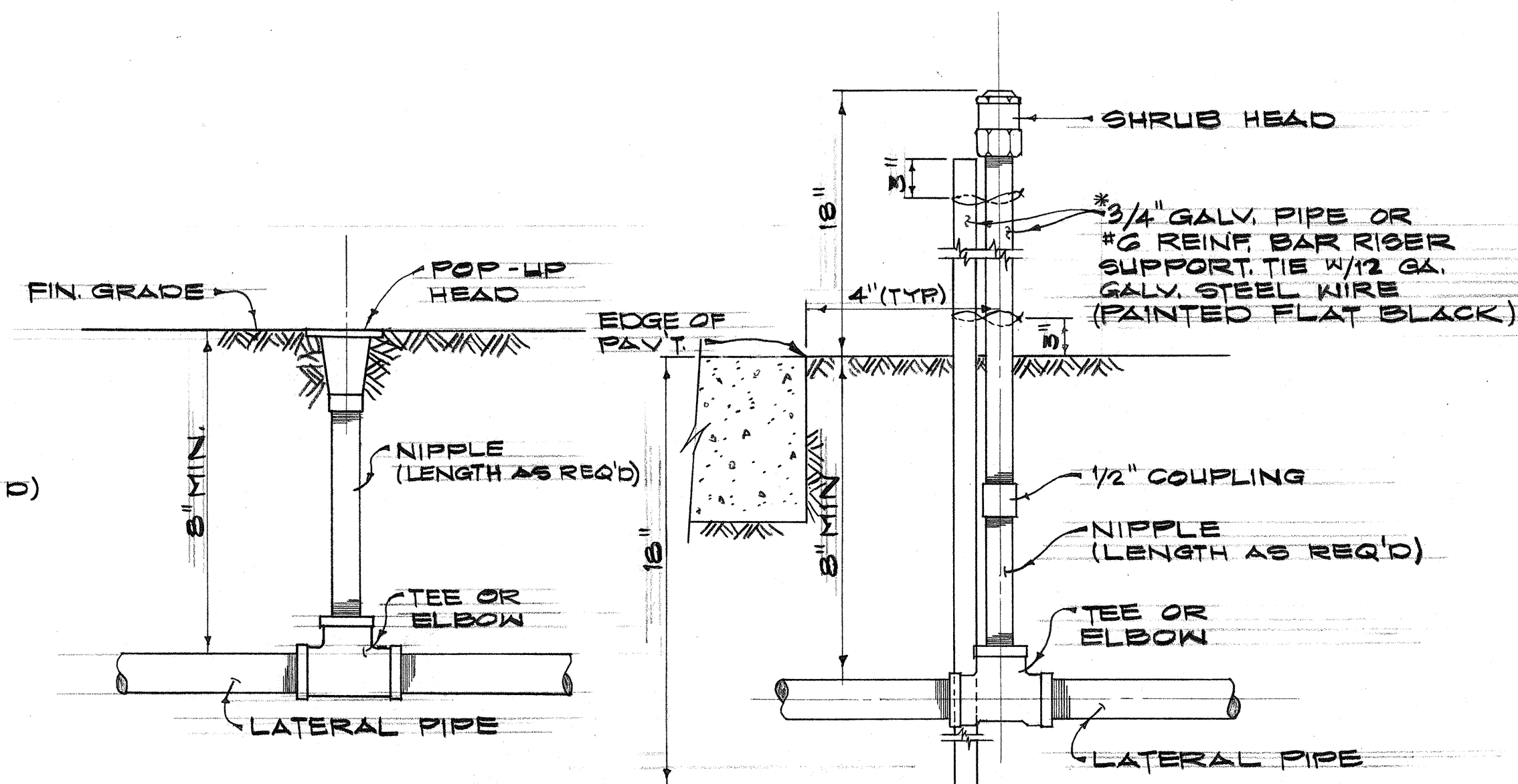
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|----------------------------------------------------------------------|------------------|
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION |                  |
| NIMITZ SPUR                                                          |                  |
| SPRINKLER DETAILS                                                    |                  |
| INTERSTATE ROUTE H-1<br>PROJ. NO. IHH-00115                          |                  |
| SCALE: AS NOTED                                                      | DATE: AUG 4 1976 |
| SHEET NO. 7 OF 8 SHEETS                                              |                  |

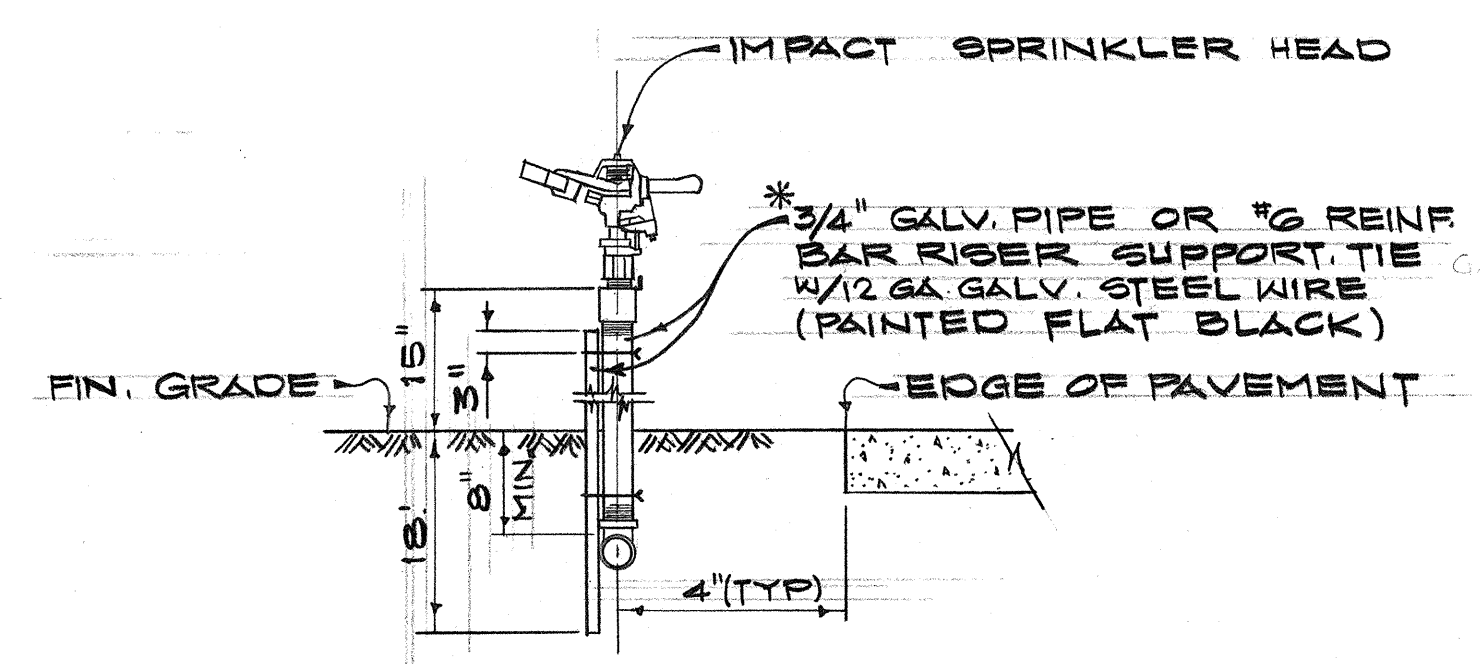




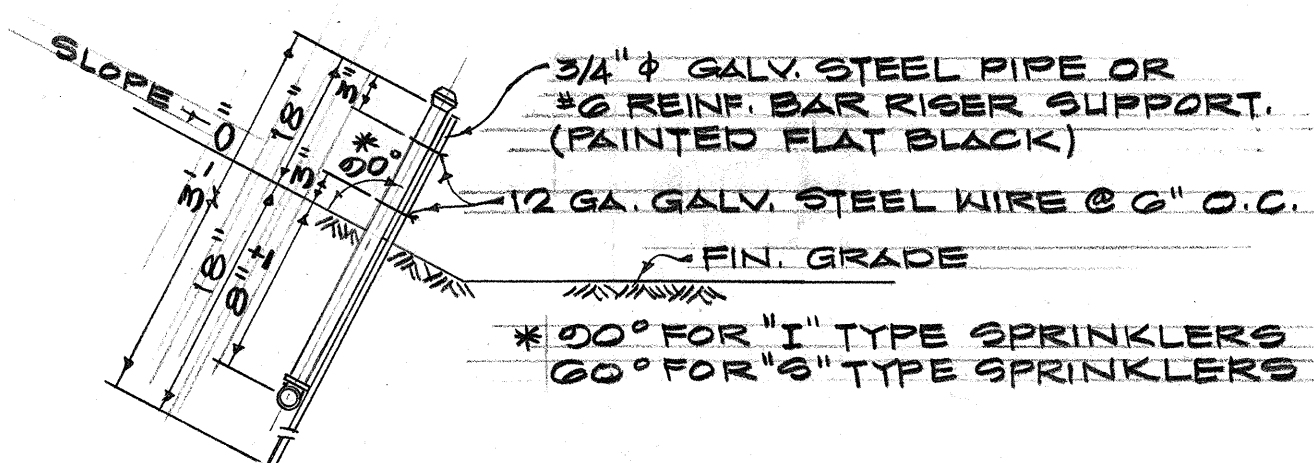
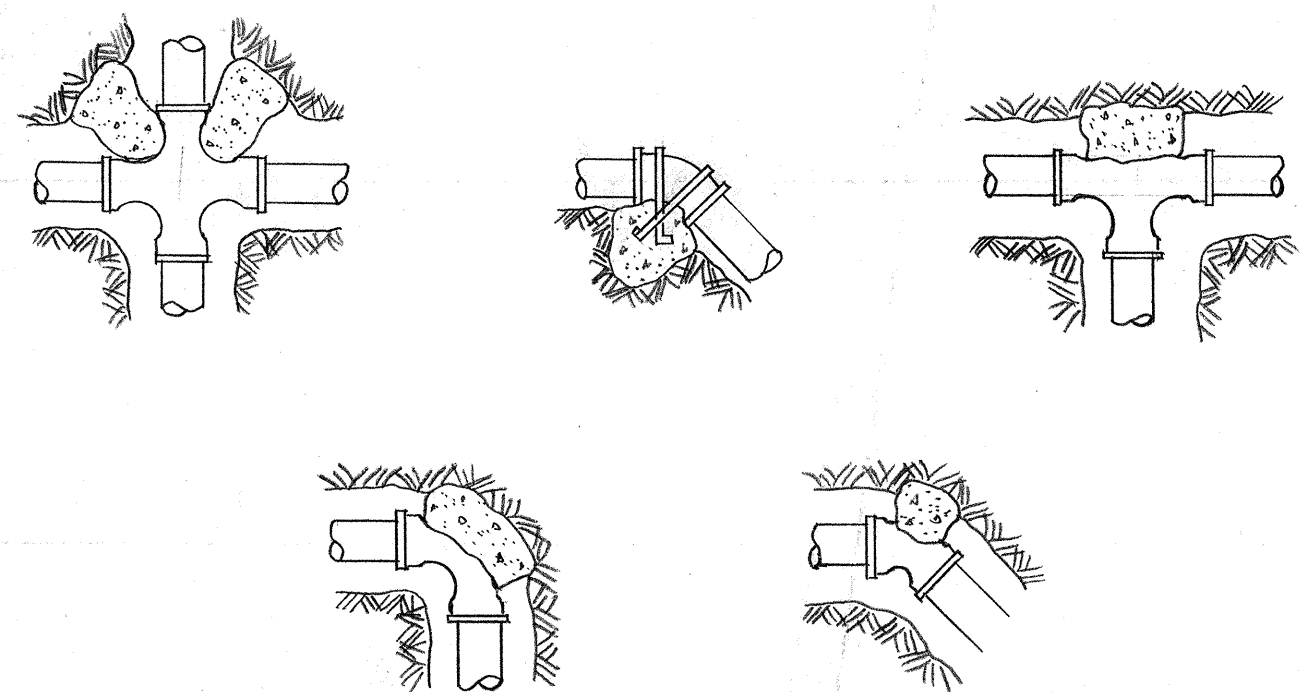
**SOLENOID VALVE BOX**  
NOT TO SCALE



**TYPICAL POP-UP AND SHRUB HEAD DETAIL**  
NOT TO SCALE



**IMPACT HEAD DETAIL**  
NOT TO SCALE



**INSTALLATION OF SPRINKLER ON SLOPE**  
NOT TO SCALE

- INSTALLATION NOTES:**
1. ALL LINES SHALL BE INSTALLED AND TESTED ACCORDING TO MANUFACTURER'S INSTALLATION GUIDE. EACH SHALL BE A PART OF THE INSTALLATION SPECIFICATIONS.
  2. THE CONTRACTOR SHALL ARRANGE FOR THE SERVICE OF THE MANUFACTURER'S QUALIFIED INSTRUCTOR.

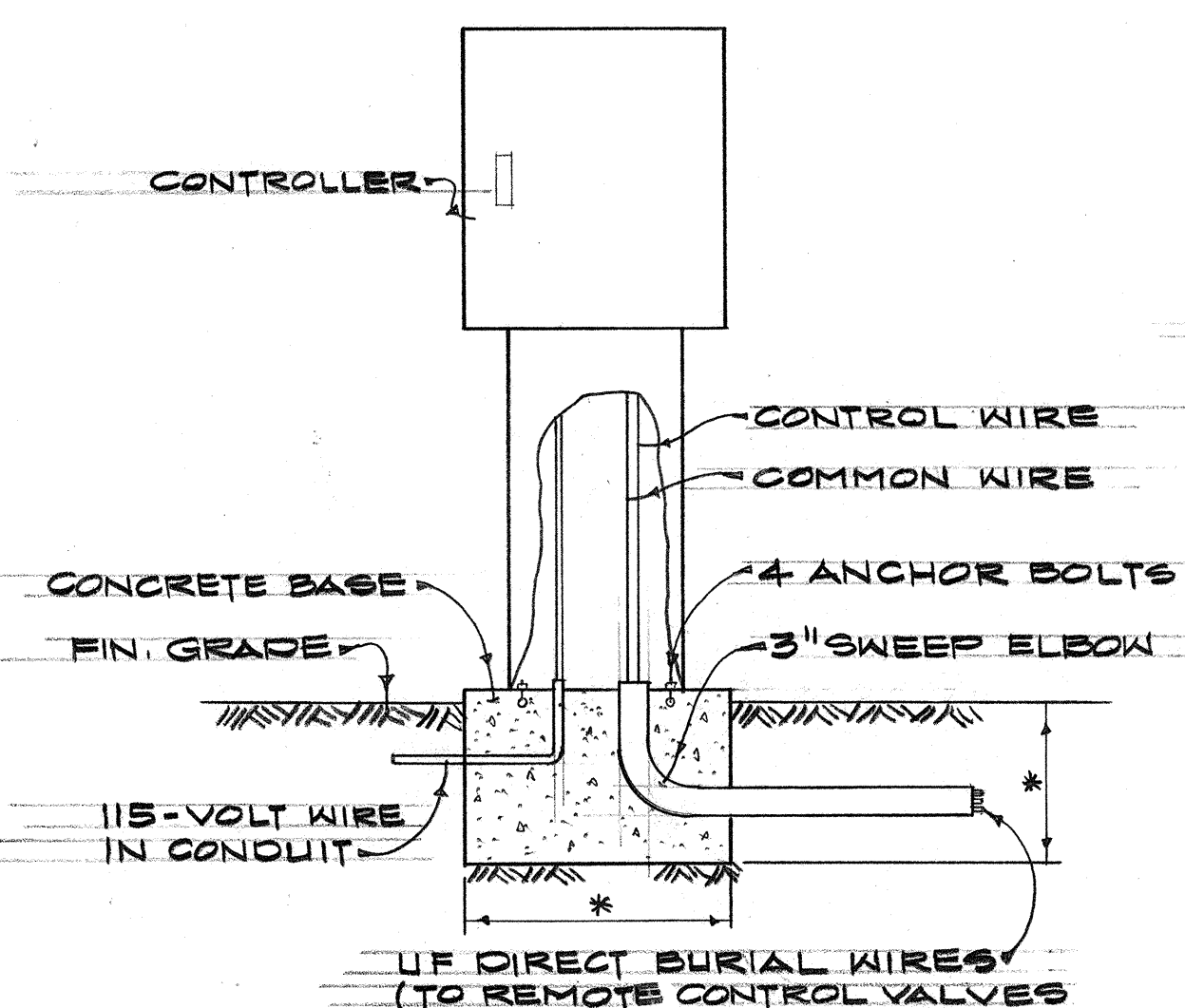
**TYPICAL THRUST BLOCK DETAIL FOR SPRINKLER MAIN AND WATER LATERAL**  
NOT TO SCALE

| BEARING AREA REQUIRED FOR THRUST BLOCKS (SQ. FT.) |      |        |      |        |        |      |
|---------------------------------------------------|------|--------|------|--------|--------|------|
| PIPE SIZE                                         | 3"   | 2 1/2" | 2"   | 1 1/2" | 1 1/4" | 4"   |
| TEES & CROSSES                                    | 1.00 | 0.50   | 0.50 | 0.50   | 0.50   | 1.25 |
| 90° BEND                                          | 1.25 | 0.75   | 0.50 | 0.50   | 0.50   | 2.00 |
| 45° BEND                                          | 0.75 | 0.50   | 0.50 | 0.50   | 0.50   | 1.00 |

| OPERATING SCHEDULE |                  |                 |               |                 |               |                 |
|--------------------|------------------|-----------------|---------------|-----------------|---------------|-----------------|
| STATION NUMBER     | CONTROLLER NO. A |                 | B             |                 | C             |                 |
|                    | STARTING TIME    |                 | STARTING TIME |                 | STARTING TIME |                 |
|                    | SYSTEM NO.       | IRRIGATION TIME | SYSTEM NO.    | IRRIGATION TIME | SYSTEM NO.    | IRRIGATION TIME |
| 1                  | 1                | 12              | 10 & 14       | 14              | 25            | 11              |
| 2                  | 2                | 8               | 11            | 30              | 26            | 11              |
| 3                  | 3                | 15              | 12            | 50              | 27            | 60              |
| 4                  | 4                | 8               | 13            | 60              | 28            | 0               |
| 5                  | 5                | 11              | 15            | 8               | 29            | 56              |
| 6                  | 6                | 8               | 16            | 14              | 30            | 0               |
| 7                  | 7                | 8               | 17            | 10              | 31            | 10              |
| 8                  | 8                | 13              | 18            | 0               | 32 & 34       | 0               |
| 9                  | 9                | 0               | 19            | 8               | 33            | 11              |
| 10                 | 23               | 8               | 20            | 12              | 35            | 12              |
| 11                 | 24               | 13              | 21            | 12              | 36            | 6               |

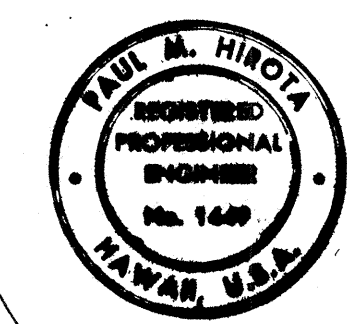
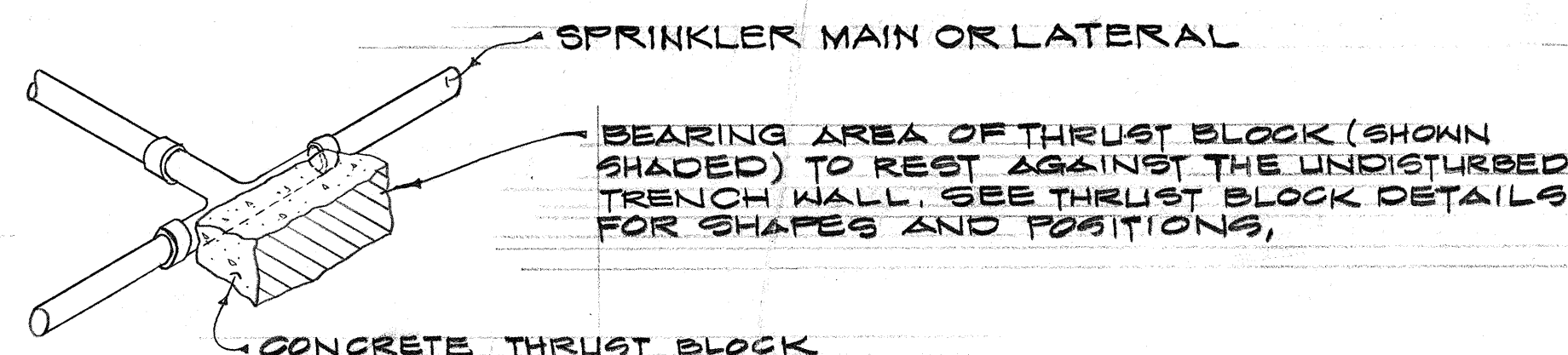
- NOTE:**
1. DAYS OF OPERATION - M, T, W, TH, F, S
  2. ALL WIRES ARE NO. 14 WIRE

\*NOTE: 3/4" GALV. PIPE OR #6 REINF. BAR RISER SHALL BE INCIDENTAL TO THE SPRINKLER HEAD.



\*NOTE: CONCRETE BASE TO BE SIZED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS

**CONTROLLER DETAIL**  
NOT TO SCALE



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**NIMITZ SPUR**

**MISCELLANEOUS SPRINKLER DETAILS**

INTERSTATE ROUTE H-1  
PROJECT NO. I-H-1(00)15  
SCALE: AS NOTED DATE AUG 4 1978

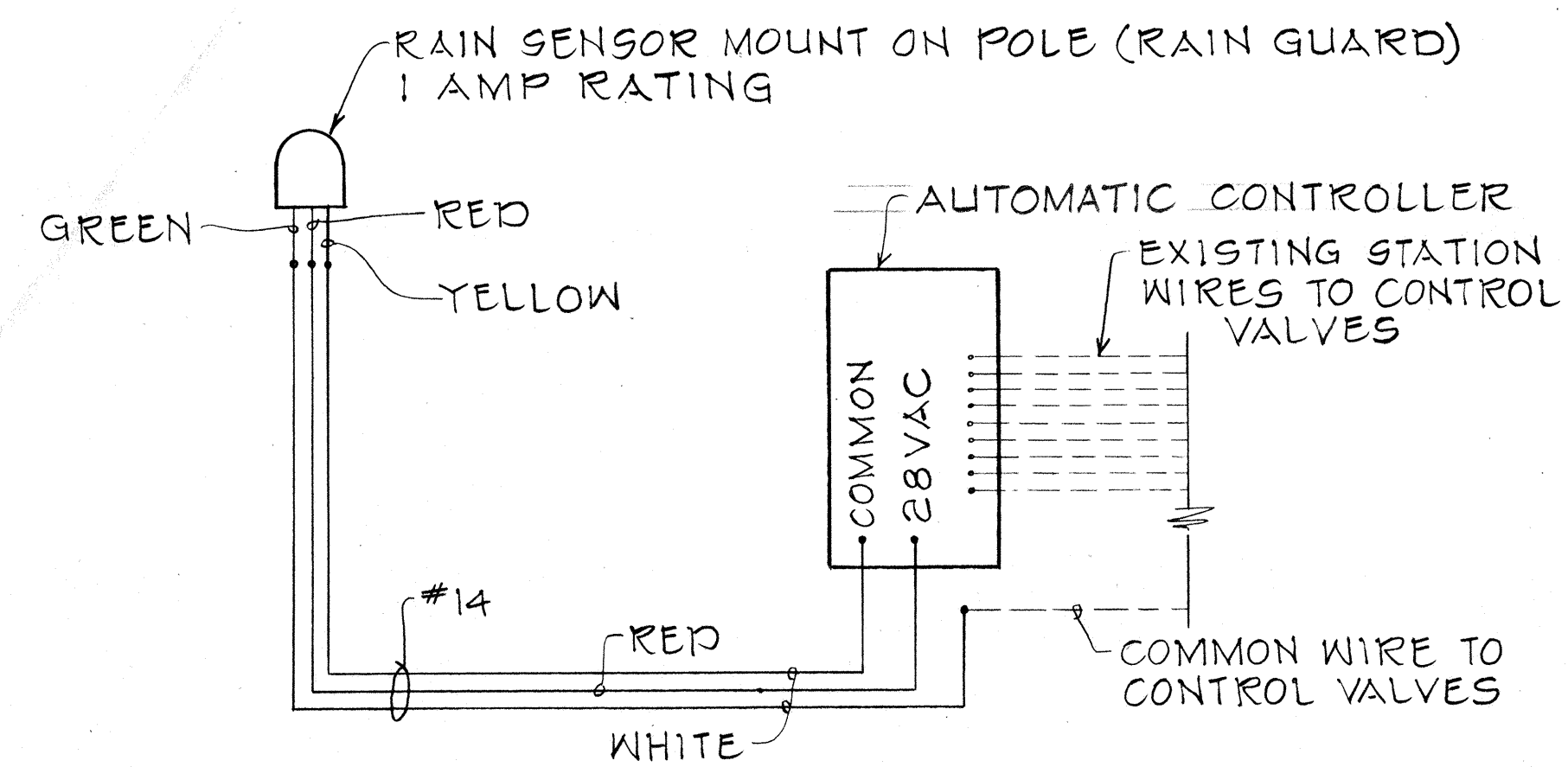
SHEET NO. 8 OF 8 SHEETS

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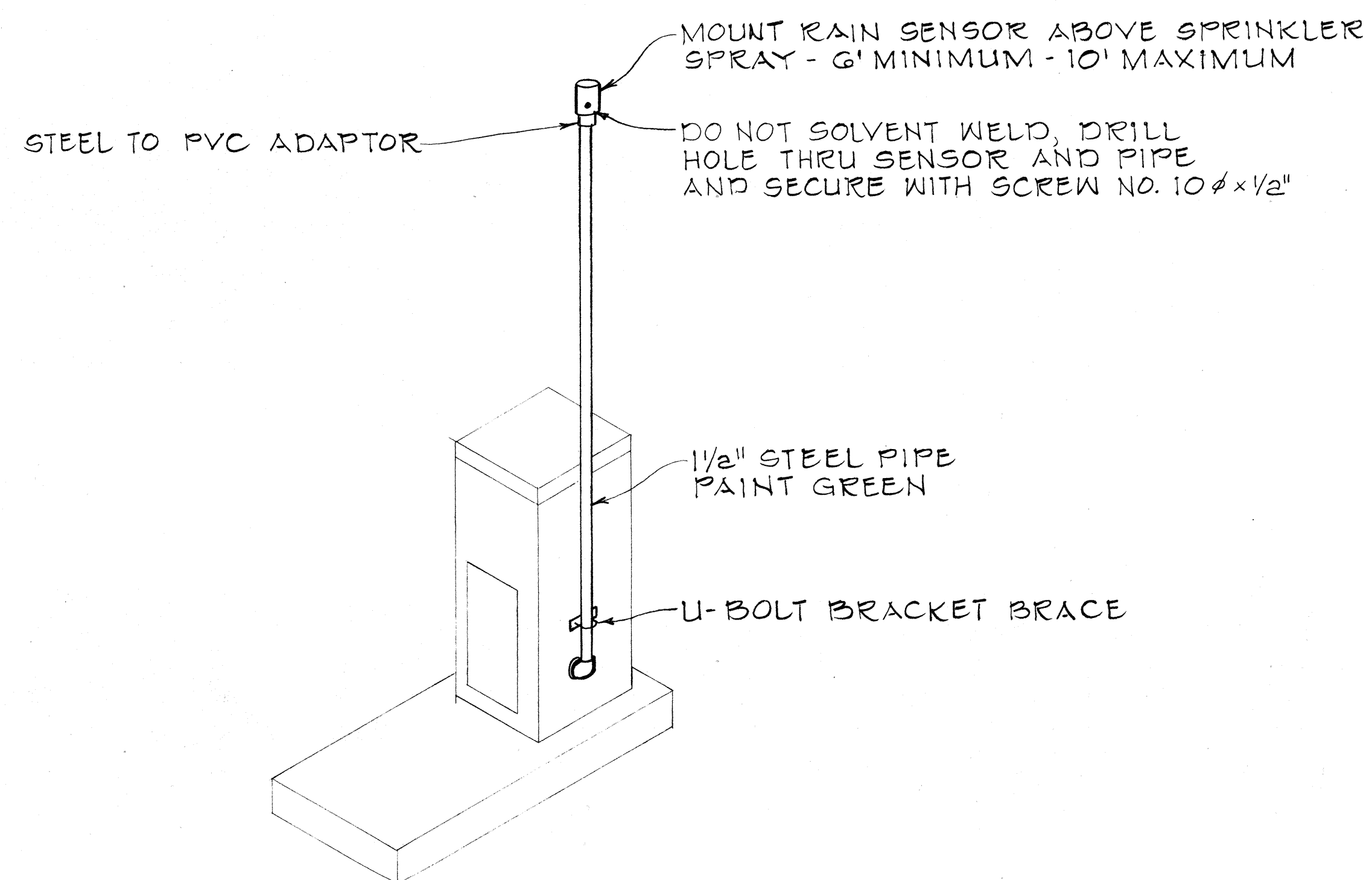
DATE  
SURVEY PLOTTED BY  
ORIGINAL DRAWN BY  
DESIGNED BY  
NOTED BY  
CHECKED BY  
NO.



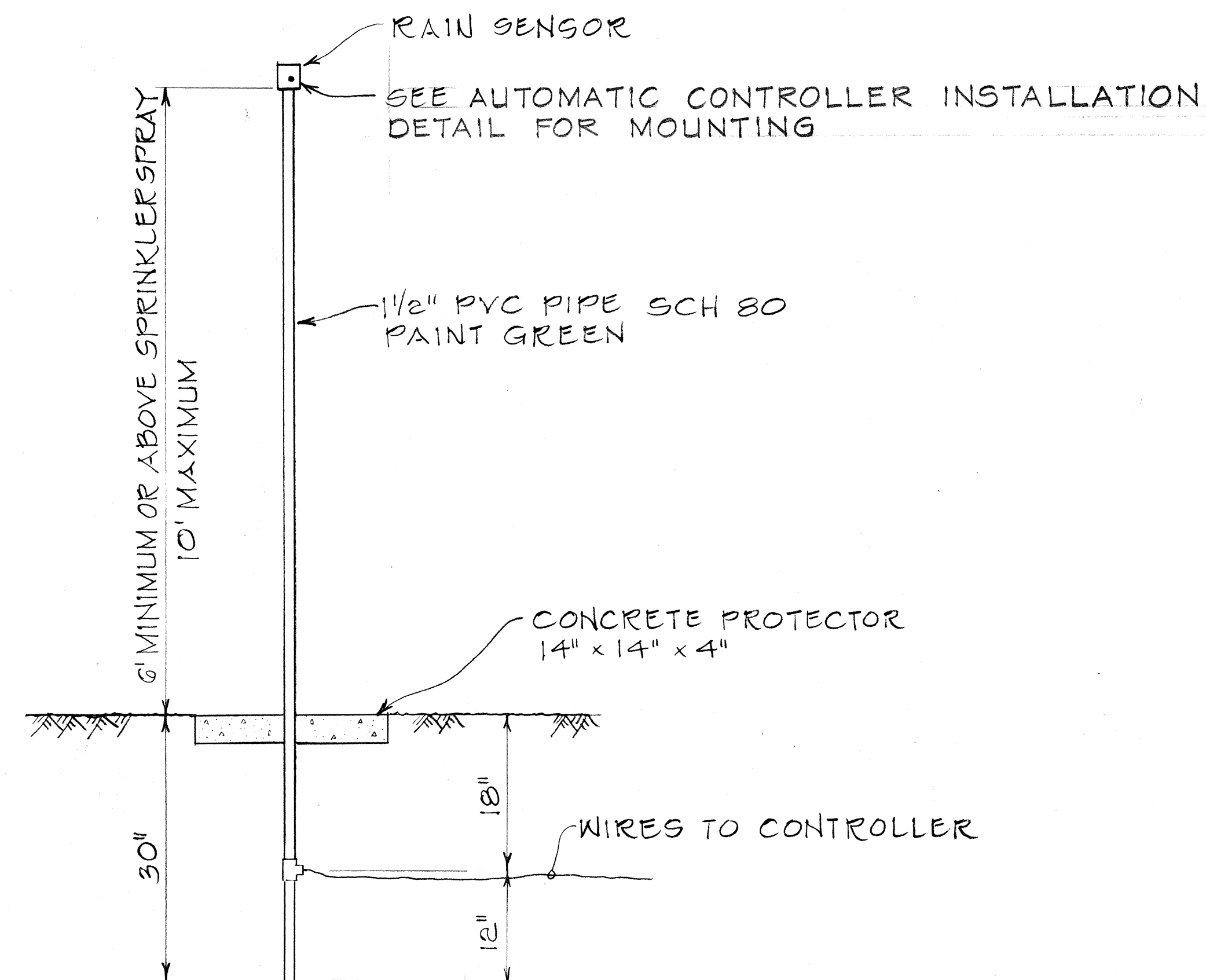
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 1-HI-1(00):15      | 1979        | C022751   |              |



RAIN SENSOR WIRE DIAGRAM AT AUTOMATIC CONTROLLER



TYPICAL RAIN SENSOR INSTALLATION AT AUTOMATIC CONTROLLER



TYPICAL DETAIL RAIN SENSOR ON POLE

|                   |             |
|-------------------|-------------|
| DATE              | DATE        |
| SURVEY PLOTTED BY | DESIGNED BY |
| DRAWN BY          | CHECKED BY  |
| NOTE BOOK         |             |
| No.               |             |

3 DEC. 79 Sheet added to Contract Plan to show additional details.

DATE REVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION  
IRRIGATION SYSTEM

DETAILS

NIMITZ SPUR  
PROJ NO 1-HI-1(00):15

Not to Scale Date: DEC. 1979

SHEET NO. OF SHEETS

C0227 S-1