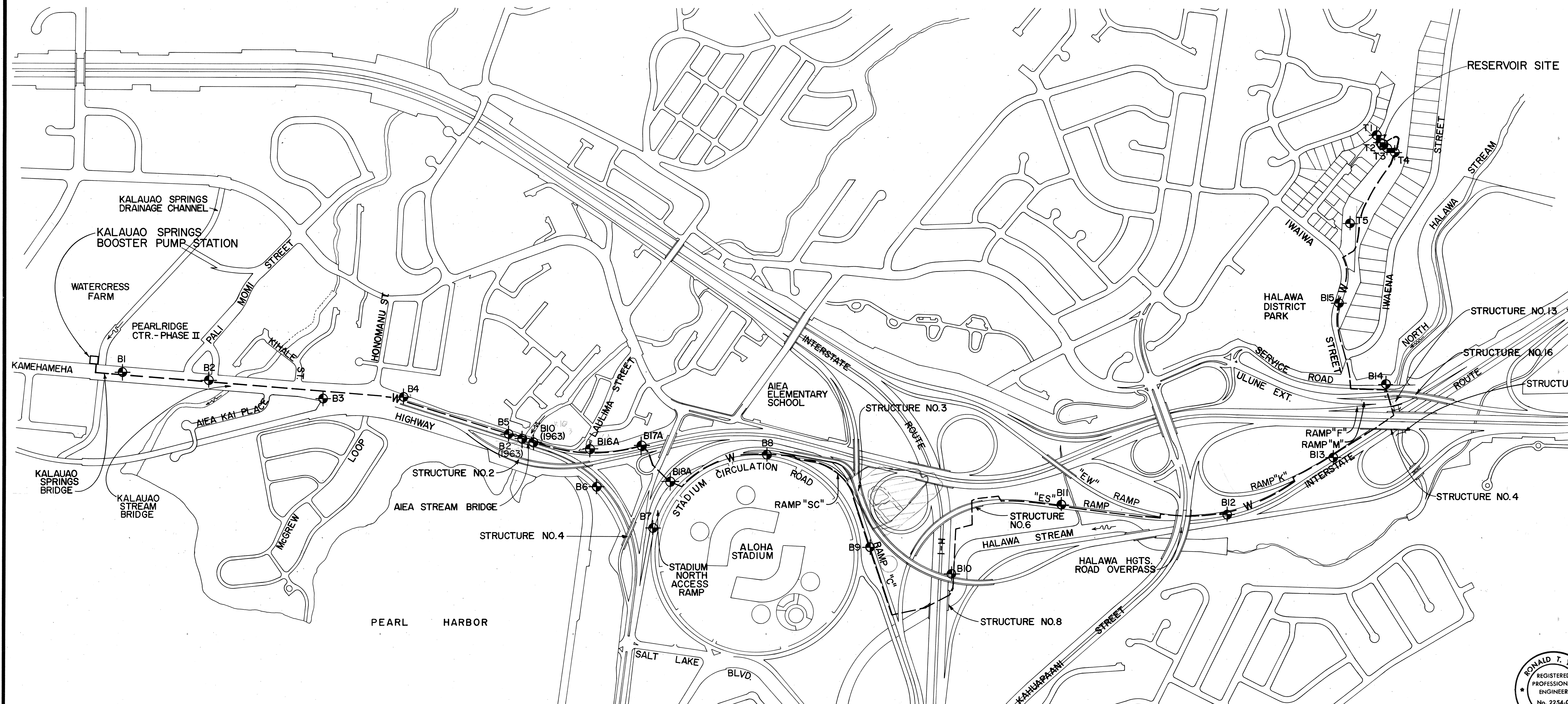
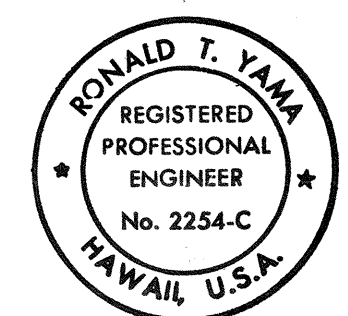
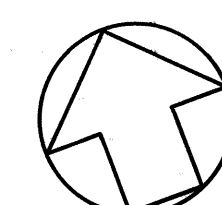


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | IR-HI-1(203) | 1987 | 7 | 87 |



• APPROXIMATE LOCATION OF BORINGS



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.
Ronald T. Yama

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATIONS

H-1 NON-POTABLE WATER SYSTEM
KALAUAO SPRINGS TO HALAWA RESERVOIR
F.A.I. PROJ. NO. IR-HI-1 (203)

SCALE: 1" = 400' DATE: 1/20/87

SHEET No. C-5 OF 64 SHEETS

BORING NO. B1
SURFACE ELEV. 10.8±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|--|
| 0 | | ML-CL | CLAYEY SILT-BROWN, SLIGHTLY MOIST, MEDIUM STIFF TO STIFF, WITH GRAVELS. |
| 5 | | ML | CLAYEY SILT-MOTTLED REDDISH BROWN, MOIST, STIFF, WITH WEATHERED GRAVELS. GRADING TO BROWN COLOR AND SOFT TO FIRM FROM 7 FEET. |
| 10 | | | WEATHERED GRAVELS AND COBBLES AT 10 FEET. |

END BORING AT 11 FEET.

BORING NO. B2
SURFACE ELEV. 12.7±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|---|
| 0 | | ML-CL | CLAYEY SILT-BROWN, SLIGHTLY MOIST, STIFF WITH GRAVELS. |
| 5 | | ML | CLAYEY SILT-MOTTLED REDDISH BROWN, MOIST, STIFF, WITH WEATHERED GRAVELS. GRADING TO GRAYISH BROWN COLOR AND SANDY FROM 9 FEET. |
| 10 | | | |

END BORING AT 10 FEET.

BORING NO. B3
SURFACE ELEV. 25.5±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|--|
| 0 | | GM | SILTY GRAVELS-GRAY, SLIGHTLY MOIST, MEDIUM DENSE. COVERED BY 2 INCHES OF ASPHALTIC CONCRETE. |
| 5 | | ML-CL | CLAYEY SILT-MOTTLED BROWN, MOIST, STIFF, WITH SAND AND GRAVELS. BOULDER AT 4.5 FEET. |
| 10 | | | GRADING TO MOTTLED ORANGE BROWN COLOR FROM 10 FEET. |

END BORING AT 10.5 FEET.

BORING NO. B4
SURFACE ELEV. 37.2±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|--|
| 0 | | ML-CL | CLAYEY SILT-MOTTLED BROWN, SLIGHTLY MOIST, MEDIUM STIFF TO STIFF, WITH GRAVELS. |
| 5 | | SM | SANDY SILT-BROWN TO GRAYISH BROWN, MOIST, MEDIUM STIFF. VERY MOIST AT 9 FEET. |
| 10 | | | |

END BORING AT 10 FEET.

BORING NO. B5
SURFACE ELEV. 10.7±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|--|
| 0 | | GM | SILTY GRAVELS-GRAY, SLIGHTLY MOIST, DENSE. COVERED BY 5 INCHES OF ASPHALTIC CONCRETE. |
| 5 | | ML | CLAYEY SILT-MOTTLED DARK GRAY MOIST, MEDIUM STIFF TO STIFF, WITH GRAVELS, FUEL ODOR. GRADING SOFT AND SLIGHTLY ORGANIC FROM 7 FEET. |
| 10 | | | |

END BORING AT 10 FEET.

BORING NO. B6
SURFACE ELEV. 23.5±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|--|
| 0 | | ML-CL | CLAYEY SILT-BROWN, SLIGHTLY MOIST, MEDIUM STIFF TO STIFF, WITH GRAVELS AND CORAL FRAGMENTS. GRADING TO MOTTLED ORANGE BROWN COLOR FROM 3 FEET. |
| 5 | | SM | SANDY SILT-MOTTLED BROWN, MOIST, MEDIUM STIFF TO STIFF, WITH WEATHERED GRAVELS. CONCRETE FRAGMENTS AT 4.5 FEET. |
| 10 | | | |

END BORING AT 10.5 FEET.

BORING NO. B7
SURFACE ELEV. 49.2±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|---|
| 0 | | GM | SILTY GRAVELS-GRAYISH BROWN, SLIGHTLY MOIST, DENSE. COVERED BY 2½ INCHES OF ASPHALTIC CONCRETE AND 6 INCHES OF BASE COURSE. |
| 5 | | ML | CLAYEY SILT-BROWN, MOIST, STIFF, WITH SAND AND GRAVELS. GRADING TO GRAYISH BROWN COLOR FROM 10 FEET. |
| 10 | | | |

END BORING AT 10.5 FEET.

BORING NO. B8
SURFACE ELEV. 53.5±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|--|
| 0 | | CL | SILTY CLAY-BROWN, MOIST, STIFF, WITH GRAVELS. COVERED BY 2 INCHES OF ASPHALTIC CONCRETE AND 6 INCHES OF BASE COURSE. |
| 5 | | SM | SANDY SILT-GRAYISH BROWN, MOIST, STIFF, SLIGHTLY CEMENTED. GRADING TO GRAY COLOR FROM 8 FEET. |
| 10 | | | |

END BORING AT 10.5 FEET.

BORING NO. B9
SURFACE ELEV. 39.0±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|---|
| 0 | | ML | CLAYEY SILT-MOTTLED REDDISH BROWN TO BROWN, MOIST, MEDIUM STIFF, WITH SAND AND GRAVELS. COVERED BY 3 INCHES OF ASPHALTIC CONCRETE AND 16 INCHES OF SILTY GRAVELS. |
| 5 | | | PURPLISH BROWN SILTY GRAVELS AT 6 FEET. |
| 10 | | CL | SILTY CLAY-MOTTLED BROWN, MOIST, STIFF, WITH WEATHERED GRAVELS. |

END BORING AT 11.5 FEET.

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | IR-HI-1(203) | 1987 | 8 | 87 |

BORING NO. B10
SURFACE ELEV. 33.3±

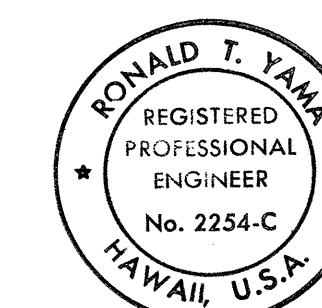
| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|--|
| 0 | | ML-CL | CLAYEY SILT-BROWN, MOIST, STIFF, WITH GRAVELS. COVERED BY ½ INCH OF ASPHALTIC CONCRETE AND 12 INCHES OF SILTY GRAVELS. |
| 5 | | | GRADING MEDIUM STIFF FROM 6 FEET. |
| 10 | | | GRADING TO MOTTLED ORANGE BROWN COLOR FROM 9 FEET. |

END BORING AT 10.5 FEET.

BORING NO. B11
SURFACE ELEV. 35.9±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|--|
| 0 | | GM | SILTY GRAVELS-GRAYISH BROWN, MOIST, DENSE. COVERED BY 4½ INCHES OF ASPHALTIC CONCRETE. |
| 5 | | ML-CL | CLAYEY SILT-GRAYISH BROWN, MOIST, MEDIUM STIFF TO STIFF, WITH GRAVELS. |
| 10 | | | GRADING FIRM FROM 7.5 FEET. |

END BORING AT 10 FEET.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Ronald T. Yama

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

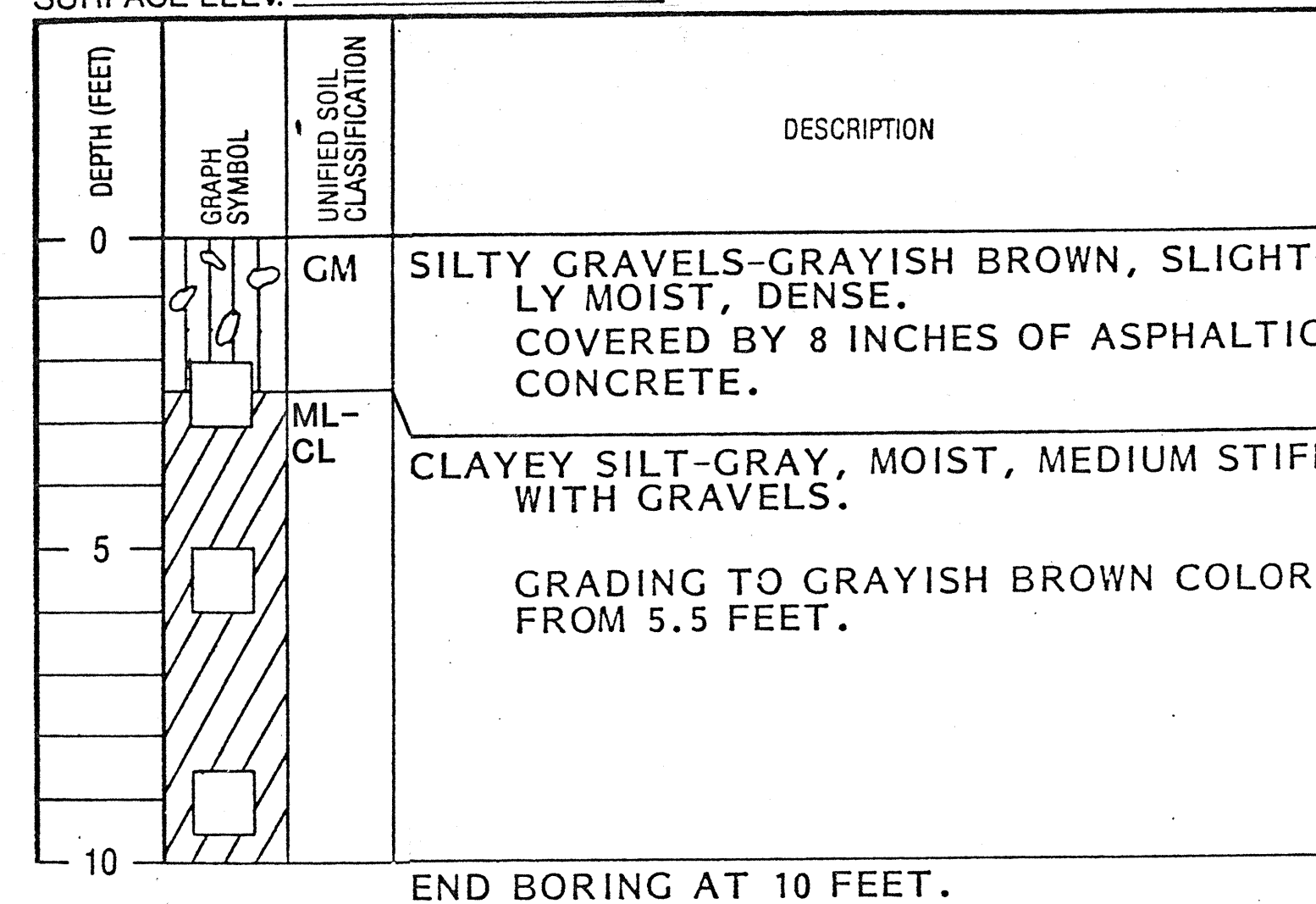
H-I NON-POTABLE WATER SYSTEM
KALAUAO SPRINGS TO HALAWA RESERVOIR
F.A.I. PROJ. NO. IR-HI-1 (203)

SCALE: NOT TO SCALE DATE: 1/20/87

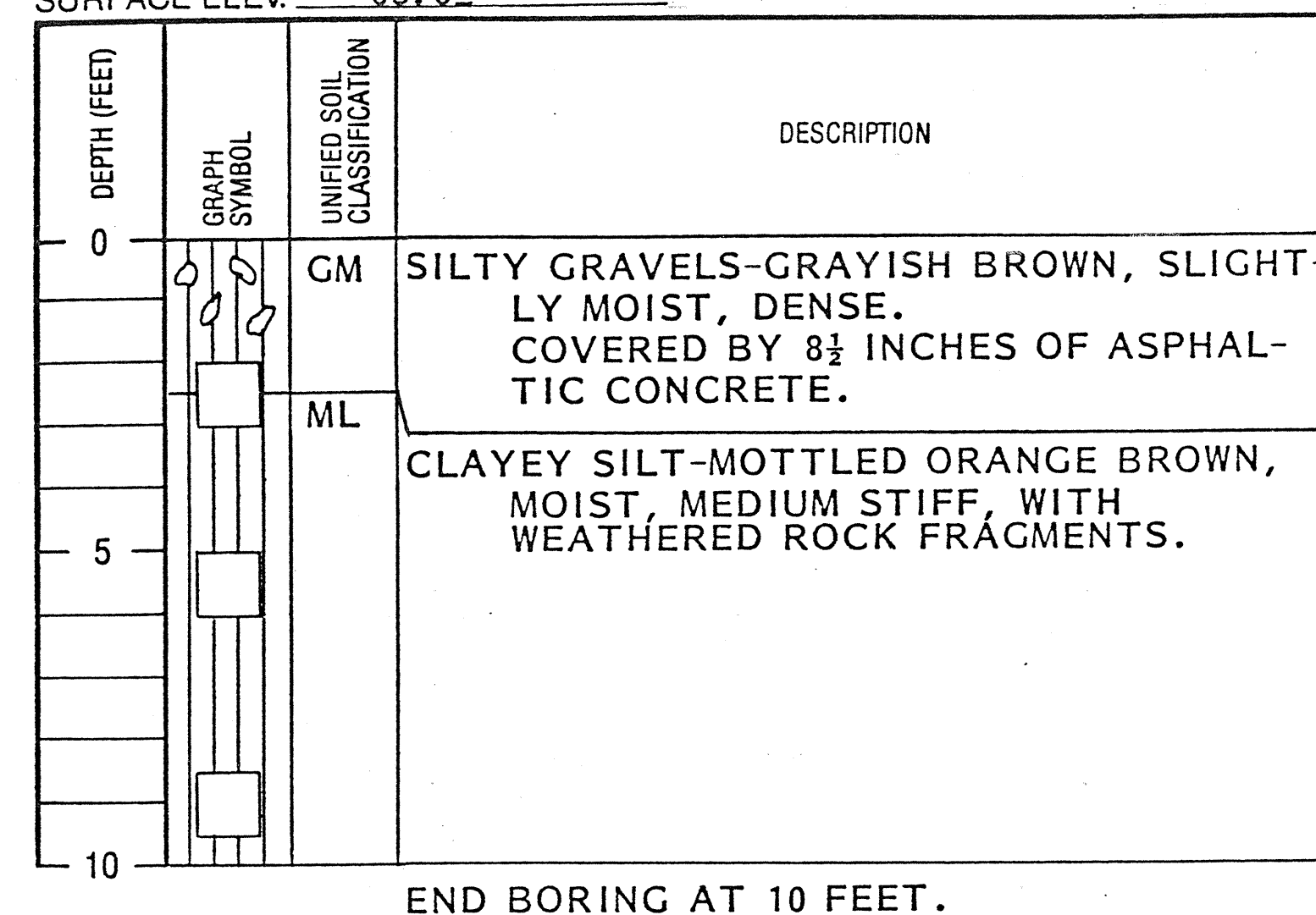
SHEET NO. 6 OF 64 SHEETS

DATE: _____
SURVEY PLATTED BY: _____
DRAWN BY: _____
DESIGNED BY: _____
CHECKED BY: _____
NOTE BOOK NO. _____

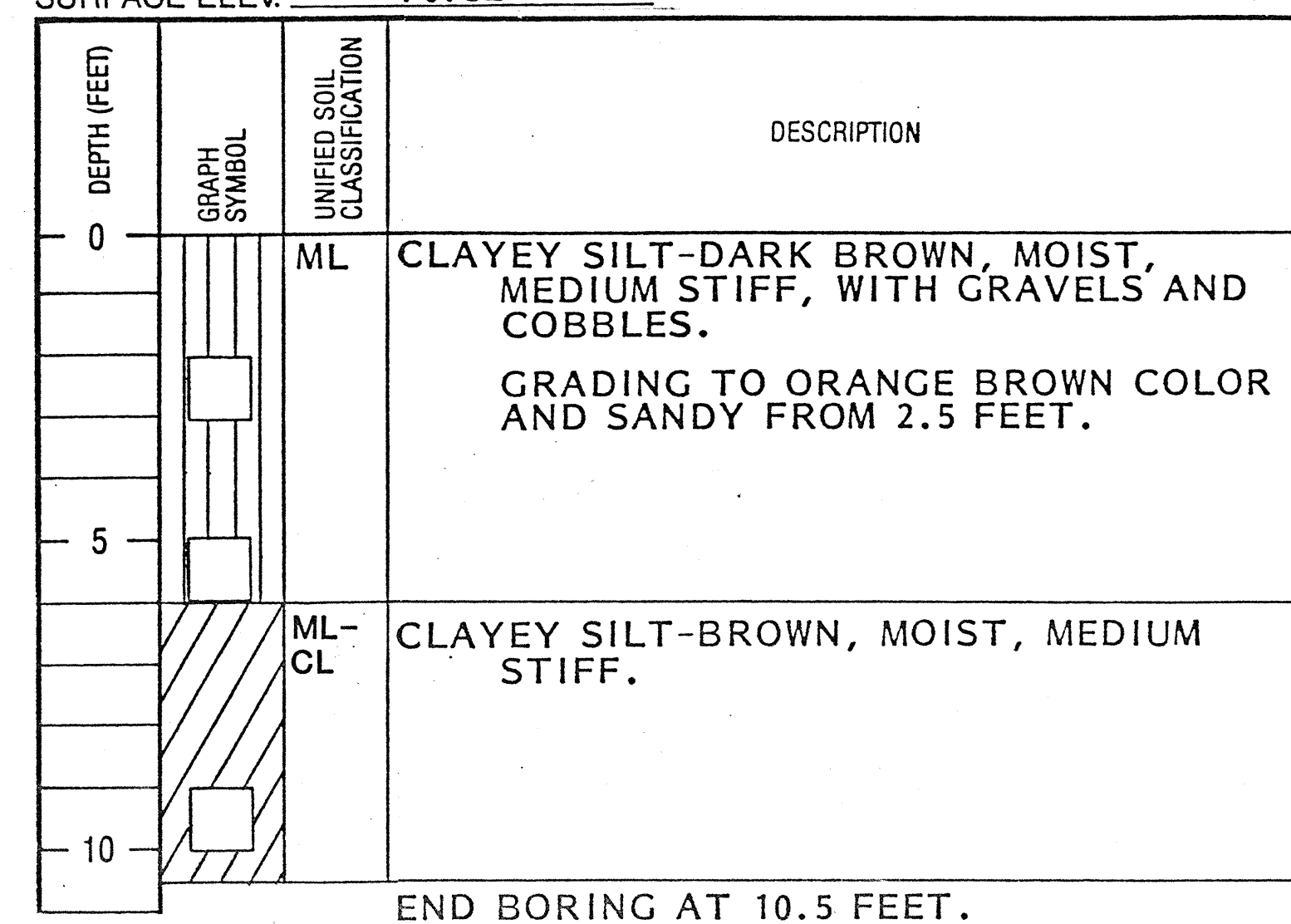
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SURFACE ELEV. 46.0±



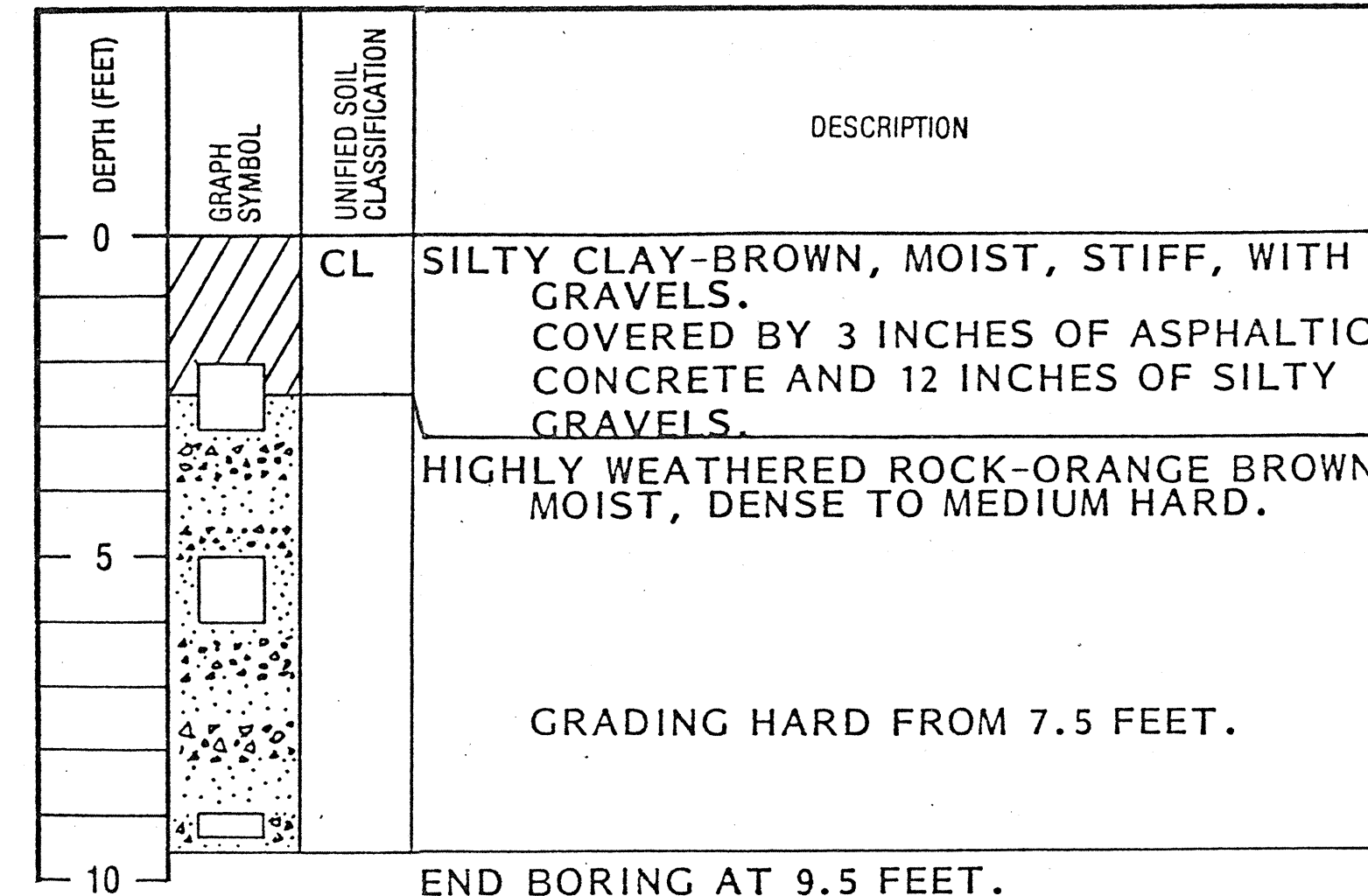
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SURFACE ELEV. 63.0±



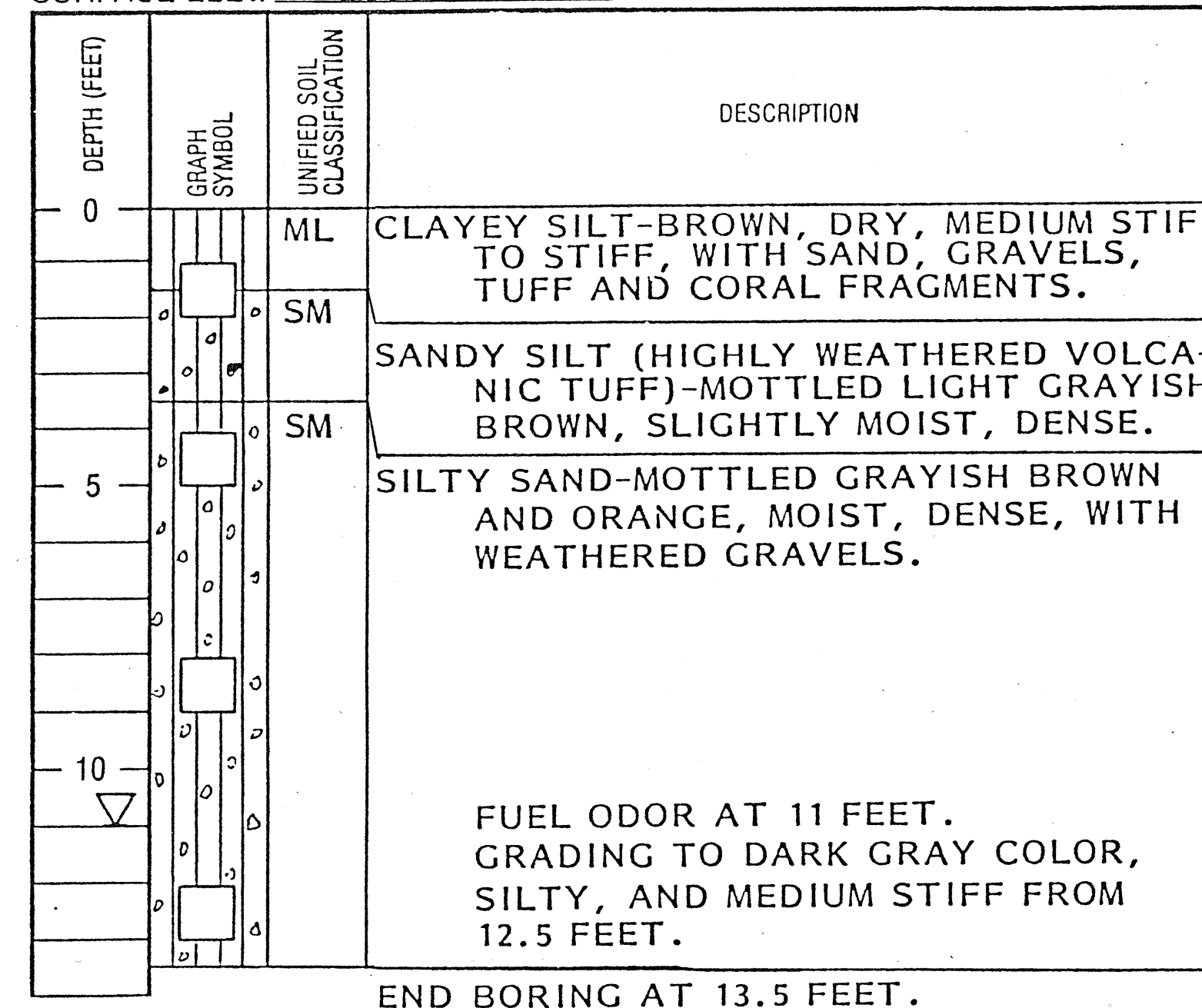
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SURFACE ELEV. 70.5±



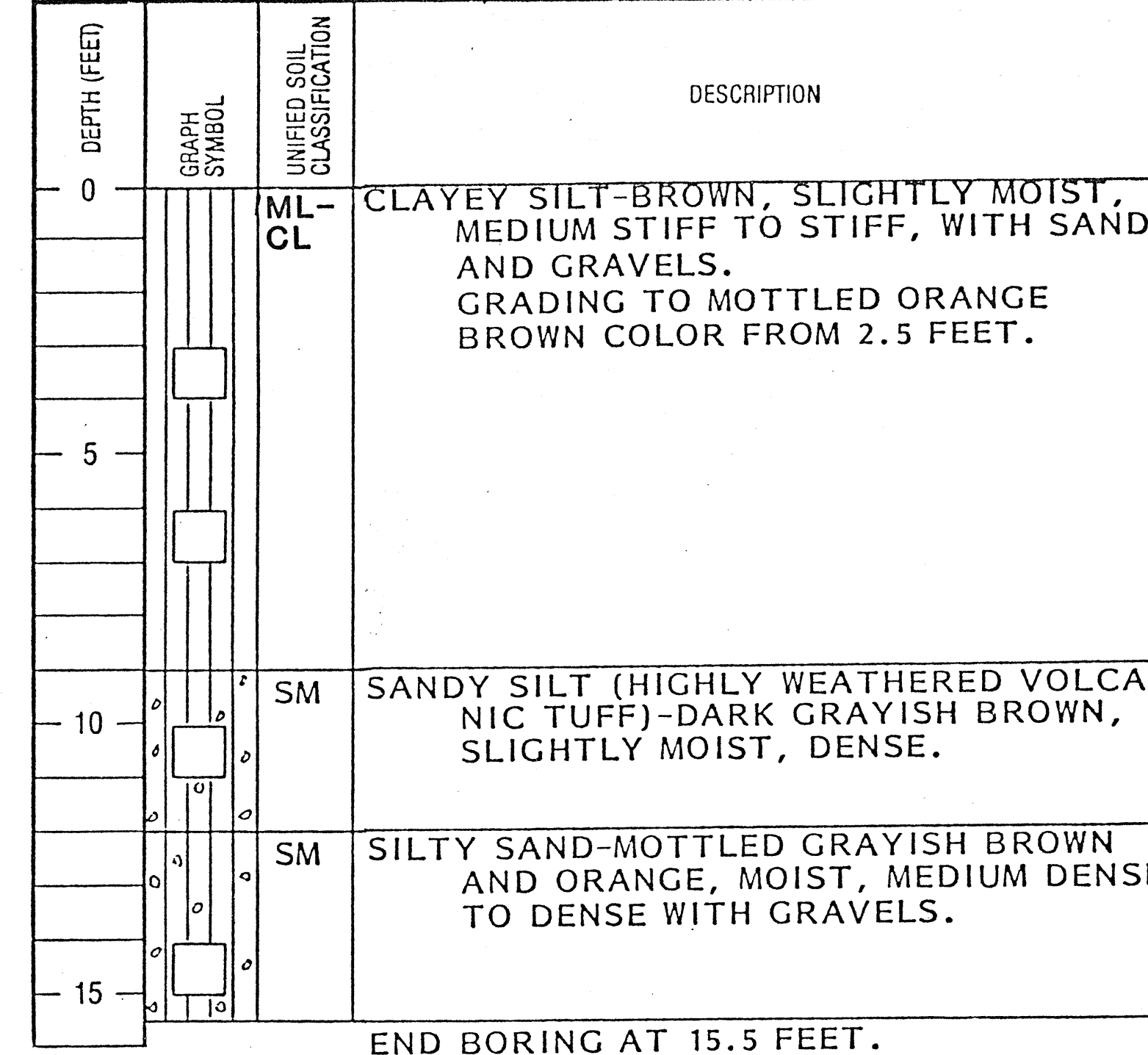
BORING NO. B15
SURFACE ELEV. 117±



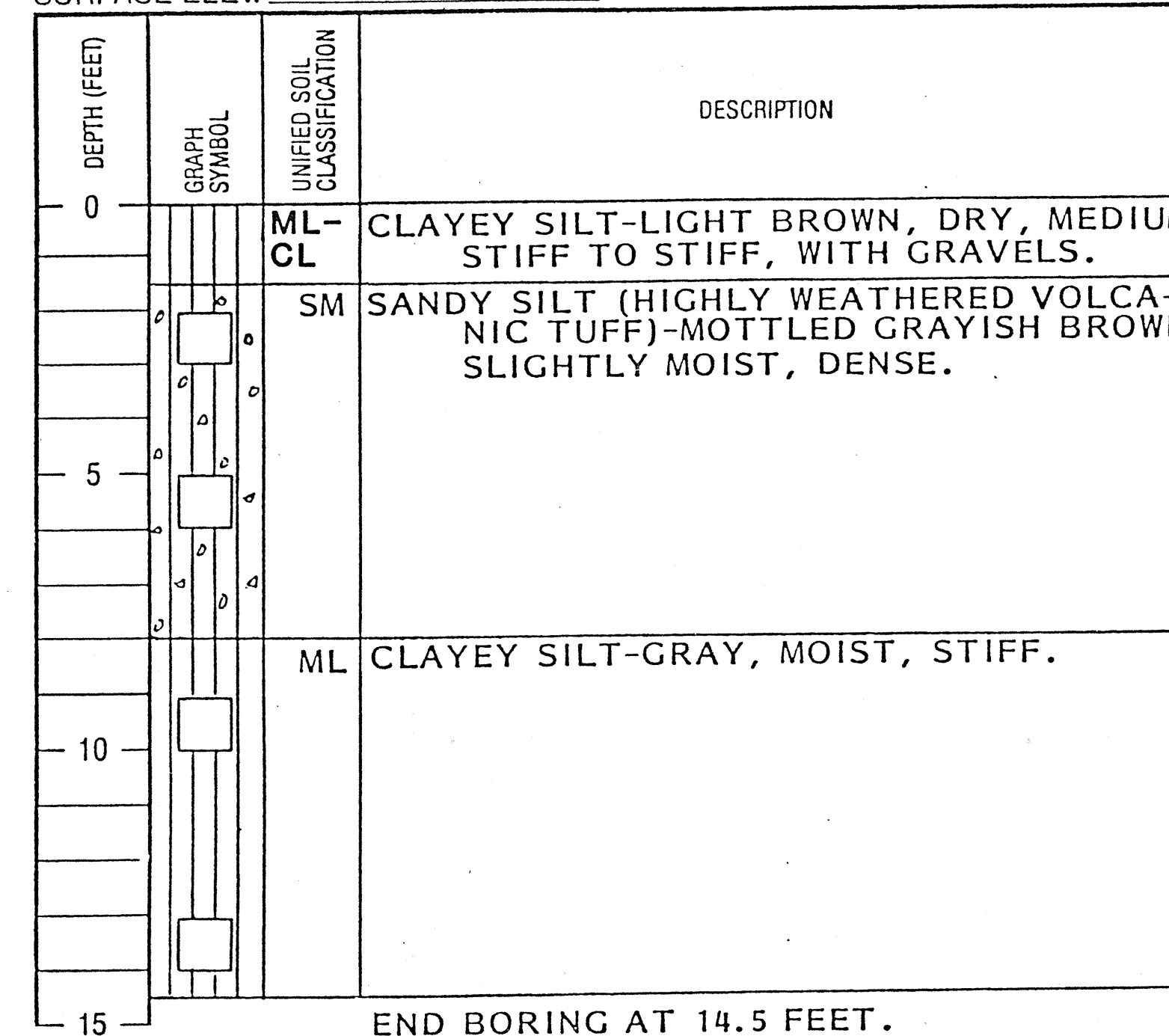
BORING NO. B16-A
SURFACE ELEV. 20.5±



BORING NO. B17-A
SURFACE ELEV. 34.0±

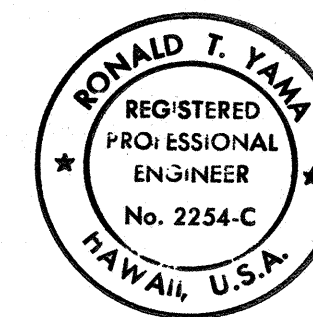


BORING NO. B18-A
SURFACE ELEV. 54.5±



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | IK-HI-1(203) | 1987 | 9 | 87 |

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

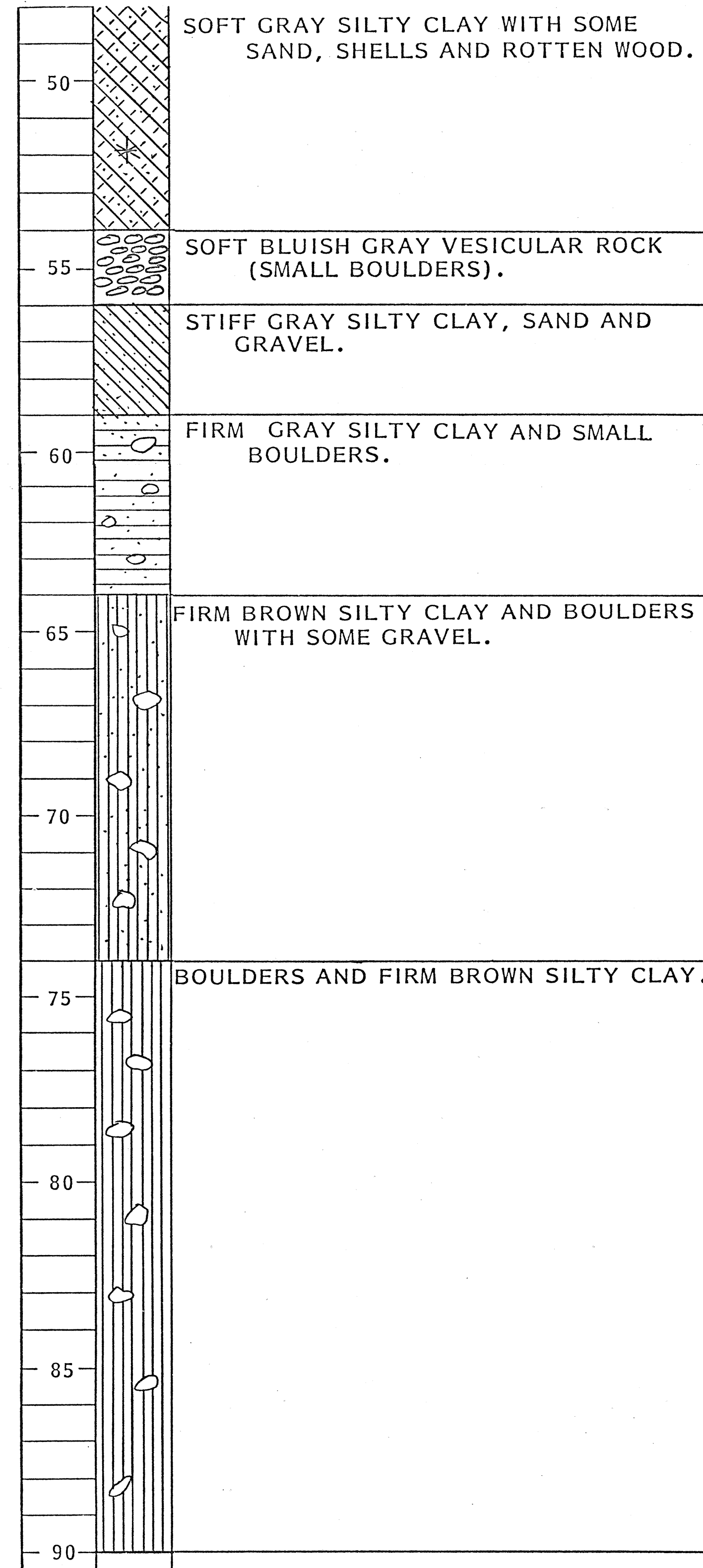
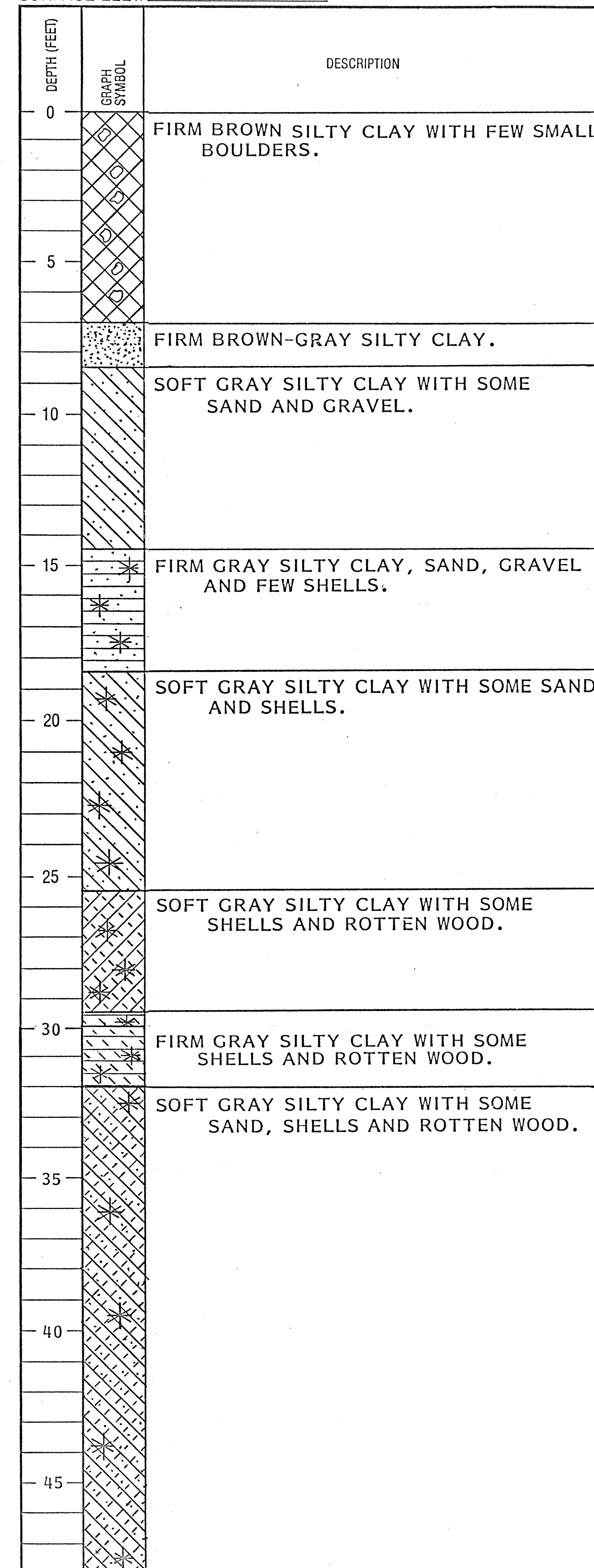


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ME OR UNDER MY SUPERVISION.

Ronald T. Yama

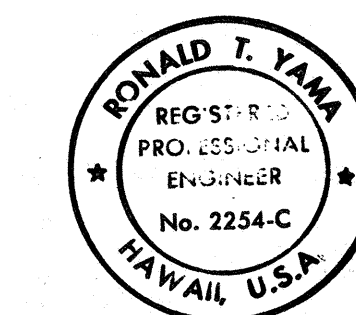
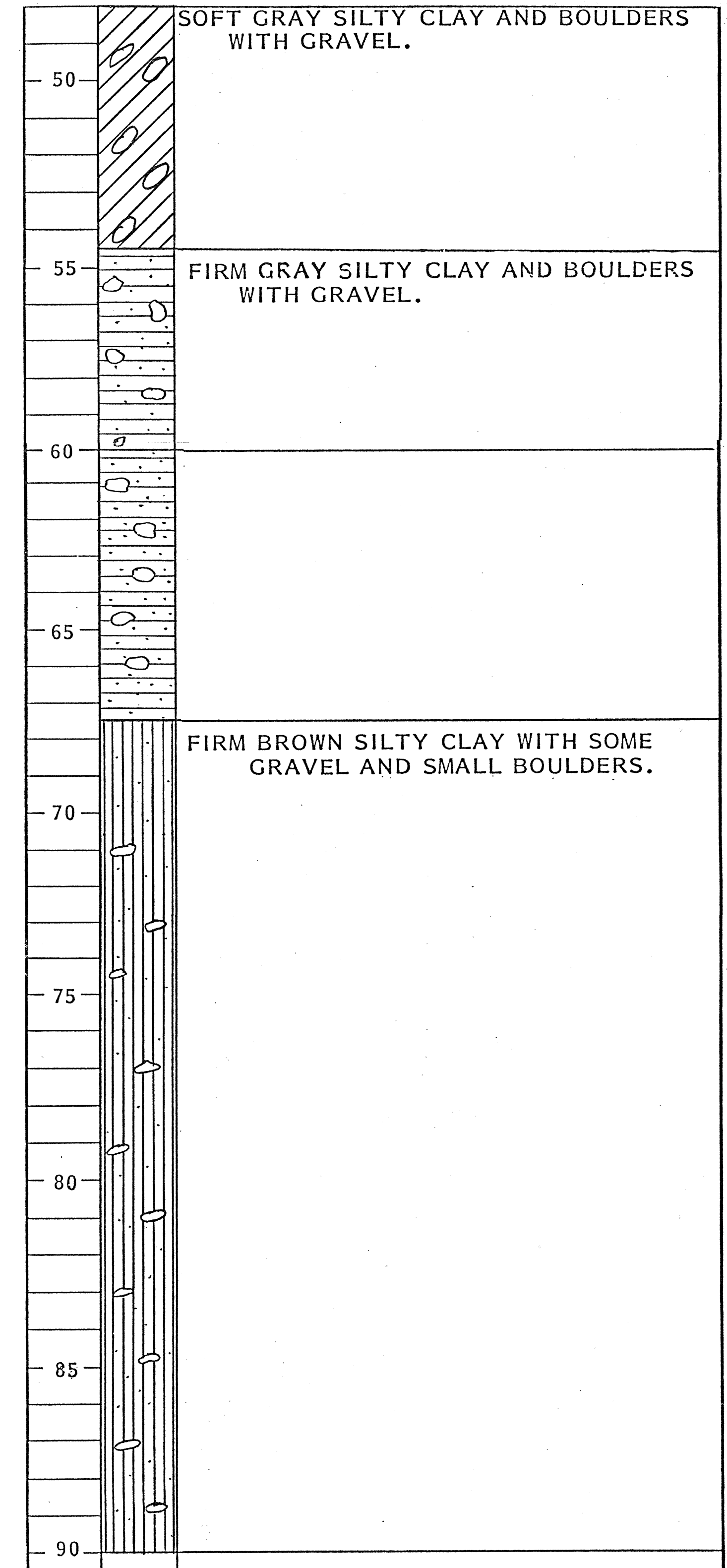
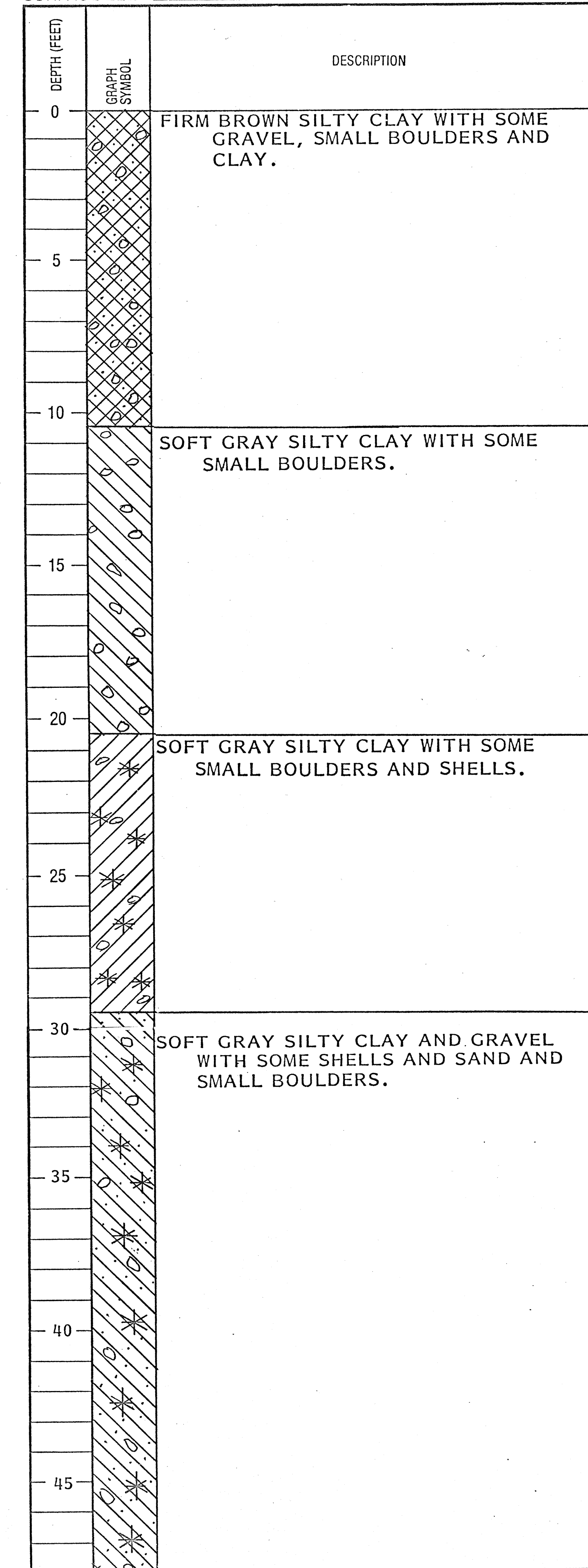
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|---|
| STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION |
| BORING LOGS |
| H-I NON-POTABLE WATER SYSTEM KALAUAO SPRINGS TO HALAWA RESERVOIR F.A.I. PROJ. NO. IR-HI-1 (203) |
| SCALE: NOT TO SCALE DATE: 1/20/87 |
| SHEET No. C-7 OF 64 SHEETS |

BORING NO. B2 (1963)
SURFACE ELEV. 11±



NOTE:
BORINGS NUMBERS 2 AND 10 WERE EXTRACTED FROM CONSTRUCTION PLANS - PROJECT NO. F-090-1(4) AIEA STREAM BRIDGE DATED JUNE 1963.

BORING NO. B10 (1963)
SURFACE ELEV. 12±



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Ronald T. Yama

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

H-1 NON-POTABLE WATER SYSTEM
KALAUAO SPRINGS TO HALAWA RESERVOIR
F.A.I. PROJ. NO. IR-HI-1 (203)

SCALE: NOT TO SCALE DATE: 1/20/87

SHEET No. C-8 OF 64 SHEETS

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

BORING NO. T1
SURFACE ELEV. 275.0±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|---|
| 0 | | CL | SILTY CLAY-MOTTLED REDDISH BROWN, MOIST, STIFF, WITH GRAVELS. |
| 5 | | | HIGHLY WEATHERED ROCK-MOTTLED RED AND GRAY, MOIST, MEDIUM HARD. BEGIN NX CORING FROM 3 FEET. 40% RECOVERY FROM 3 TO 5.5 FEET. |
| 10 | | | BASALT-GRAY, HARD, FRACTURED. 100% RECOVERY FROM 5.5 TO 7 FEET. WEATHERED AT 7 FEET. 100% RECOVERY FROM 8 TO 12 FEET. |
| 15 | | | 100% RECOVERY FROM 12 TO 15 FEET. |
| | | | 100% RECOVERY FROM 15 TO 18 FEET. |

END BORING AT 18 FEET.

BORING NO. T2
SURFACE ELEV. 262.5±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|---|
| 0 | | CL | SILTY CLAY-MOTTLED REDDISH BROWN, SLIGHTLY MOIST, MEDIUM STIFF TO STIFF, WITH WEATHERED GRAVELS AND COBBLES. |
| 5 | | | HIGHLY WEATHERED ROCK-MOTTLED RED AND GRAY, MOIST, MEDIUM HARD TO HARD. BEGIN NX CORING FROM 3.5 FEET. 47% RECOVERY FROM 3.5 TO 5 FEET. |
| 10 | | | BASALT-GRAY, HARD, FRACTURED, WITH WEATHERED SEAMS. 95% RECOVERY FROM 5 TO 9 FEET. HIGHLY FRACTURED FROM 8 TO 9.5 FEET. 98% RECOVERY FROM 9 TO 14 FEET. |
| 15 | | | 100% RECOVERY FROM 14 TO 19 FEET. |
| 20 | | | 98% RECOVERY FROM 19 TO 24 FEET. |
| 25 | | | SILT SEAM AT 20 FEET. GRADING TO MOTTLED GRAY COLOR AND MEDIUM HARD FROM 20.5 FEET. |
| 30 | | | 98% RECOVERY FROM 24 TO 29 FEET. |
| 35 | | | 100% RECOVERY FROM 29 TO 34 FEET. |
| 40 | | | WEATHERED SEAM AT 33 FEET. 100% RECOVERY FROM 34 TO 39 FEET. GRADING HARD FROM 34 FEET. |
| 45 | | | 98% RECOVERY FROM 39 TO 43 FEET. |
| | | | 100% RECOVERY FROM 43 TO 47 FEET. |

END BORING AT 47 FEET.

BORING NO. T3
SURFACE ELEV. 216.5±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|---|
| 0 | | | BASALT-MOTTLED GRAY AND ORANGE, MEDIUM HARD TO HARD, WEATHERED, VESICULAR. |
| 5 | | | BEGIN NX CORING FROM 4 FEET. 98% RECOVERY FROM 4 TO 9 FEET. |
| 10 | | | WEATHERED SEAMS FROM 6.5 TO 9 FEET. 98% RECOVERY FROM 9 TO 14 FEET. |
| 15 | | | 92% RECOVERY FROM 14 TO 19 FEET. GRADING HARD FROM 14 FEET. |
| 20 | | | 94% RECOVERY FROM 19 TO 24 FEET. |
| 25 | | | 60% RECOVERY FROM 24 TO 29 FEET. HIGHLY WEATHERED AND FRACTURED FROM 24 FEET. |
| 30 | | | 92% RECOVERY FROM 29 TO 34 FEET. |

END BORING AT 34 FEET.

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | IR-HI-1(203) | 1987 | 11 | 87 |

BORING NO. T4
SURFACE ELEV. 190±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|--|
| 0 | | MH | SILTY CLAY-BROWN, SLIGHTLY MOIST, STIFF WITH GRAVELS AND COBBLES. BOULDER AT 6 INCHES. |
| 5 | | | HIGHLY WEATHERED ROCK-MOTTLED REDDISH BROWN AND ORANGE, SLIGHTLY MOIST, DENSE. |
| 10 | | | BASALT-GRAY, HARD, VESICULAR, SLIGHTLY FRACTURED. BEGIN NX CORING FROM 8.5 FEET. 94% RECOVERY FROM 8.5 TO 13.5 FEET. |

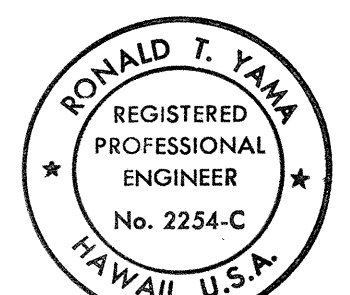
END BORING AT 13.5 FEET.

BORING NO. T5
SURFACE ELEV. 143.5±

| DEPTH (FEET) | GRAPH SYMBOL | UNIFIED SOIL CLASSIFICATION | DESCRIPTION |
|--------------|--------------|-----------------------------|--|
| 0 | | MH | SILTY CLAY-BROWN, SLIGHTLY MOIST, STIFF, WITH COBBLES AND GRAVELS. |
| 5 | | SM | SILTY SAND-GRAYISH BROWN, SLIGHTLY MOIST, DENSE, WITH HIGHLY WEATHERED CINDERS. SLIGHTLY CEMENTED FROM 4 FEET. |
| 10 | | | |

END BORING AT 9.5 FEET.

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



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Ronald T. Yama

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

H-I NON-POTABLE WATER SYSTEM
KALAUAO SPRINGS TO HALAWA RESERVOIR
F.A.I. PROJ. NO. IR-HI-1 (203)

SCALE: NOT TO SCALE DATE: 1/20/87

SHEET NO. C-9 OF 64 SHEETS