| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS | |
|------------------------|-------|-----------------------|----------------|--------------|-----------------|--|
| HAWAII | HAW. | BR-RS-0360(6) | 1992 | 31 | 75 | |

and different sections and the section of the secti

ERNEST K. HIRATA & ASSOCIATES, INC.

BORING LOG W.O. <u>89-1856</u> STA. 291+83 DRIVING WT. 140 LB. DATE OF DRILLING 4-18-90 BORING NO. _____B6_ SURFACE ELEV 492+ DROP 30 IN. _ WATER LEVEL _____NONE__ DEPIH GRAPH UNIFIED E (FEET) SYMBOL SOIL CLASSI-DRY MOISTURE RELATIVE CONTENT COMPAC- (FCF.) (%) TION (%) DESCRIPTION CLAYEY SILT- MOTTLED YELLOWISH BROWN, 77 43 MOIST, FIRM, WITH HIGHLY WEATHERED ROCK FRAGMENTS. 83 40 89 33 20 79 32 GRADING STIFF FROM 13 FEET. HIGHLY WEATHERED ROCK- MOTTLED ORANGE BROWN, MOIST, MEDIUM DENSE TO DENSE. 9 68 53 66/10" 89 28 BASALT- GRAY, HARD, HIGHLY FRACTURED. BEGIN NX CORING FROM 24 FEET. 100% RECOVERY FROM 24 TO 29 RQD = 7%100% RECOVERY FROM 29 TO 34 FEET. RQD = 8% END BORING AT 34 FEET.

ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering

905 Makahiki Way, Makai Suite * Honolulu, Hawaii 96826 * Phone 941-5055

| | | | 900 | 5 Makahiki Way, | | | aii 96826 * Phone 941-5055 |
|-----------------|-------------|---|-----------|--|---------------|---|---|
| STA. 29 | 90+80 | : | • | | BOR | ING LO | OG W.O. <u>89-1856</u> |
| ORING SURFAC | NO EELEV | B7 /502 | | | ORIVING VOROP | | 40 LB. DATE OF DRILLING 4-10-90 0 IN. WATER LEVEL NONE |
| DEPIH (FEET) | SYMBOI. | UNIFIED SOIL CLASSI- FICATION | BLOWS/FT. | DRY DENSITY (PCF.) | MOISTURE | RELATIVE COMPAC- TION (%) | DESCRIPTION |
| - 0 - | | МН | 5 | 88 | 30 | * - 4********************************** | CLAYEY SILT- MOTTLED DARK BROWN, MOIST, FIRM, WITH HIGHLY WEATHERED ROCK FRAGMENTS. |
| - 5 - | | | 5 | 90 | 29 | | |
| | | | 5 | 89 | 32 | | |
| -10 - | | | | | | | |
| | | | 3 | 89 | 30 | | |
| - 15 - | | | 7 | 94 | 29 | | |
| - 20 - | | *************************************** | 10 | 61 | 52 | | HIGHLY WEATHERED ROCK- MOTTLED GRAYISH BROWN, MOIST, DENSE. |
| | | | | , | | | |
| - 25 - | | | 15/2" | NO RE | COVERY | | BASALT- GRAY, HARD, HIGHLY FRACTURED. BEGIN NX CORING FROM 24 FEET. |
| | | , | | • | | | 80% RECOVERY FROM 24 TO 29 FEET. RQD = 8% |
| - 30- | | | · | | | | 100% RECOVERY FROM 29 TO 34 FEET. RQD = 80% |
| - 35- | | | u. | | | | 93% RECOVERY FROM 34 TO 39 FEET. |
| | | | | | | | RQD = 10% |
| - 40 | | | | MO-99-EMERA BER ANNIA FEORE OF MEDICAL | | | END BORING AT 39 FEET. |
| | | | | | | | |
| - 45 - | | | | | | | |
| - 50 - | | | | | | | |
| | | | | | | | |
| - 55 - | | | | | | | |

Soils and Foundation Engineering 905 Makahiki Way, Makai Suite . Honolulu, Hawaii 96826 . Phone 941-5055 **BORING LOG** STA. 294+40 BORING NO. ____B8_ DRIVING WT. 140 LB. DATE OF DRILLING 4-10-90 SURFACE ELEV. 512+ DROP 30 IN. WATER LEVEL ___ DEPTH (FEET) GRAPH UNIFIED BLOWS/FT. DRY DENSITY (PCF.) MOISTURE RELATIVE COMPACTION (%) DESCRIPTION CLAYEY SILT- BROWN, MOIST, MEDIUM 11 88 30 STIFF, WITH SAND AND HIGHLY WEATHERED ROCK FRAGMENTS. 80 96 22 8 97 20 19 98 22 19 92 26 END BORING AT 16.5 FEET.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

PROFESSIONAL ENGINEER
No.4733-C
HOOLAWA BRIDGE REPLACE

HOOLAWA BRIDGE REPLACEMENT
HANA HWY., HOOLAWA, MAUI
PROJECT NO. BR-RS-0360(6)

OF

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SHEET NO.

DATE: SEPT. 17, 1990 SHEETS

| FED. ROAD | STATE | FED. AID | FISCAL | SHEET | TOTAL |
|-----------|-------|---------------|--------|-------|--------|
| DIST. NO. | | PROJ. NO. | YEAR | NO. | SHEETS |
| HAWAII | HAW. | BR-RS-0360(6) | 1992 | 32 | 75 |

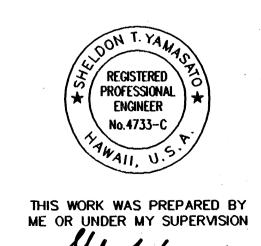
| | | | | • | ERNES | т к. ні | RATA | & ASSOCIA | TES, INC. | |
|---|--------|-----|---|--------------------------|----------|---------------------------------|------------|---|-------------|--|
| | | TT | | | | Soils and | Poundation | Engineering | | |
| | | 4 | . 90 |)5 Makabiki W | | | | 96826 * Phone 941-50 | | |
| STA. 28 | 39+30 | | | | BOK | ING LC |)G | W.O | 89-1856 | |
| BORING | | B1 | *************************************** | D | RIVING V | VT1 | 40 LB. | DATE C | OF DRILLING | 4-9-90 |
| SURFAC | EEE | 482 | 2 <u>+</u> * | | ROP | | O IN. | | LEVEL | NONE |
| DEPTH (FEET) | SYMBOI | | BLOWS/F1. | DRY DENSITY (PCF.) | | RELATIVE COMPAC- TION (%) | | | DESCRIPTION | 7.0 |
| - 0 - | | | | | | | | | | |
| | | МН | 113 | 68 | 46 | | 1 | EY SILT- MOTT MOIST, STIFF, WEATHERED F | WITH HIGHLY | , |
| - 5 - | | | 47 | 71 | 34 | | | | | |
| | | | F0 : | 70 | | | | V.V. | | |
| - 10 <i>-</i> - | | | 50 | 72 | 30 | | | LY WEATHEREI ORANGE BROV | | |
| | | | | | | | | | | |
| | | | 61/5" | 84 | 27 | | | | | |
| 15 | | | 52/5" | 88 | 20 | | | | | |
| | | 1 | | | | | END I | BORING AT 15. | 5 FEET. | ************************************** |
| -20 | : | | | | | | | ELEVATIONS B PLANS PROVIE MIYAMOTO & / | DED BY HARC | LD T. |
| MATERIA PROPERTY AND ADDRESS OF THE | | | 4 | | | | | | | |

| EEE | NOB2 E FLEV484 <u>+</u> | | | DRIVING V DROP | | 80 IN. WATER LEVEL NONE |
|--------|----------------------------|------------------------------------|--------------------------|--|--|---|
| SYMBOL | SOIL CLASSI- | | DRY DENSITY (PCF.) | | | DESCRIPTION |
| | МН | 87 | 73 | 37 | | CLAYEY SILT- MOTTLED BROWN, MOIST, STIFF, WITH HIGHLY WEATHERED ROCK FRAGMENTS. |
| | | 20 | 66 | 56 | | HIGHLY WEATHERED ROCK- MOTTLED ORANGE BROWN, MOIST, MEDIUM DENSE TO DENSE. |
| | | 22 | 73 | 49 | ** | |
| | | 62 | 82 | 40 . | | |
| | | | | | | BEGIN NX CORING AT 16 FEET. 84% RECOVERY FROM 16 TO 21 FEET. RQD = 0% |
| | | | | | | BASALT- MOTTLED GRAY, HARD. |
| | | · | | | | 100% RECOVERY FROM 21 TO 26 FEET. RQD = 76% |
| | | | | | | 100% RECOVERY FROM 26 TO 31 FEET. RQD = 56% END BORING AT 31 FEET. |
| | GRAPH | GRAPH UNIFIED SOIL CLASSI-FICATION | MH 87 | GRAPH UNIFIED BLOWS/FT DRY DENSITY (PCF.) MH 87 73 20 66 22 73 | GRAPH SYMBOI CLASSI-FICATION MH 87 73 37 20 66 56 49 | GRAPH SYMBOI CLASSI-FICATION MH 87 73 37 20 66 56 22 73 49 |

| | | 11 | 90 |)5 Makahiki W | 'av. Makai Su | | Foundation Engineering lu, Hawaii 96826 * Phone 941-5055 |
|------------------------------------|------------|--|--------------|--------------------------|-----------------|---------------------------------|--|
| | | : | | | | ING LO | |
| | 0+20 | | | | | | |
| | NO EEEV | B3 | | | RIVING V ROP | VT14 | 10 LB. DATE OF DRILLING 4-9-90 DIN. WATER LEVEL NONE |
| MAC | 45 12.15V | 40 | T | | KOP | | ZIN. WATER LEVEL NONE |
| DEPTH FEET) | SYMBOL | UNIFIED SOIL CLASSI- FICATION | BLOWS/FT | DRY DENSITY (PCF.) | | RELATIVE COMPAC- TION (%) | DESCRIPTION |
| 0 - | | МН | | | | | CLAYEY SILT- MOTTLED YELLOWISH BROWN, |
| | | IVII | 45 | 76 | 38 | | MOIST, STIFF, WITH HIGHLY WEATHERED ROCK FRAGMENTS. |
| | | | | | | | |
| 5 — | | | | | | | LUCULY WEATHERED DOOK MOTTLED |
| | | | 38 | 86 | 30 | | HIGHLY WEATHERED ROCK- MOTTLED GRAYISH BROWN, MOIST, MEDIUM DENSE. |
| ajada se agus i inni kupida da e e | | | 18 | 70 | 38 | | |
| 10 — | | | | , | | | |
| | | <u> </u> | | | | | BASALT- GRAY, HARD, FRACTURED. |
| | | , | | | | | BACKET GIRT, TIAND, TIROTOTICE. |
| 15 – | | , - | | , | | | BEGIN NX CORING FROM 11.5 FEET. 100% RECOVERY FROM 11.5 TO 16.5 FEET. RQD = 42% |
| | | | | | | | , |
| | | | | | | | 100% RECOVERY FROM 16.5 TO 21.5 FEET. RQD = 68% |
| | | | , | | | | 1142 = 3570 |
| 20 – | | j. | | | | | |
| | | | | | | - | END BORING AT 21.5 FEET. |

| | | | | | BOR | ING LC |)G | W.O | 89-1856 | |
|--------------------------------|-----------------|--|------------|--------------------------|----------------------------|---------------------------------|---------|---------------------------------|---|---------|
| | 90+65 3 NO | B4 | | D | RIVING V | VΓ14 | 40 LB. | DATE O | F DRILLING | 4-4-90 |
| | EEE | | <u>)</u> ± | | ROP | | 0 IN. | | LEVEL | NONE |
| DEPTH (FEET) | GRAPH SYMBOI | UNIFIED SOIL CLASSI- FICATION | BLOWS/FT: | DRY DENSITY (PCF.) | MOISTURE CONTENT (%) | RELATIVE COMPAC- TION (%) | | DE | ESCRIPTION | |
| 0 - | | МН | | | | | | SILT- BROWI FF, WITH GF | N, MOIST, ME | DIUM |
| - 5 | | | V. | | | | BEC | GIN NX COR 1% RECOVEI ET. | D, FRACTURE ING FROM 1. RY FROM 1.5 | 5 FEET. |
| | | : | | | | | • | | 0% RY FROM 6.5 | TO 11.5 |
| | | | | , | | | FEE | =1. RQD = 4 | 4% | |
| | | | | | | | | | | |
| - 10 | | 2 | v. | , | | | | | | |
| | | | | | | | END BOI | RING AT 11. | FEET. | |
| A ANTICIPATOR OF THE PROPERTY. | | | | | | | | | | |
| | - | | | | | | | | | |
| - 15 - | | | | | | | | | | |
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| - web 3 works about the tracks | | | | | | | | | | |
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| | | I | TE | | | ERNES | т к. ні | RATA & ASSOCIATES, INC. |
|----------|-----------------|-------------|--|-----------|--------------------------|----------------------------|---------------------------------|--|
| | | | 11 | 90 | S Makahili W | av Makai Sui | | oundation Engineering u, Hawaii 96826 • Phone 941-5055 |
| | | | | | , 14144411K1 | | ING LO | |
| | STA. 29 | | B5 | | D | | ire 1/ | 0 LB. DATE OF DRILLING 4-12-90 |
| | | NO EELEV | | | | ROP | | IN. WATER LEVEL NONE |
| | DEPTH (FEET) | SYMBOI. | UNIFIED SOIL CLASSI- FICATION | BLOWS/FT. | DRY DENSITY (PCF.) | MOISTURE CONTENT (%) | RELATIVE COMPAC- TION (%) | DESCRIPTION |
| | - 0 - | | МН | , | | | | CLAYEY SILT- MOTTLED BROWN, MOIST, MEDIUM STIFF, WITH GRAVEL. |
| | | | , | | | | | BASALT- GRAY, HARD, FRACTURED TO HIGHLY FRACTURED. |
| | - 5 - | | | | | | | BEGIN NX CORING FROM 1 FEET. 100% RECOVERY FROM 1 TO 6 FEET. RQD = 10% |
| | | | | | | | | 100% RECOVERY FROM 6 TO 11 FEET. RQD = 60% |
| | -10- | | | | | | | 83% RECOVERY FROM 11 TO 14 FEET. RQD = 50% |
| | | | | | | | | END BORING AT 14 FEET. |
| | | | | | | | | |
| V | -20 - | | | | | | | |
| | | - | | | , | | | |
| | - 25 - | | | | | | | |
| | - 30 - | - | | | | | | |



STATE OF HAWAII DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

HOOLAWA BRIDGE REPLACEMENT
HANA HWY., HOOLAWA, MAUI
PROJECT NO. BR-RS-0360(6)

SCALE: NONE DATE: SEPT. 17, 1990
SHEET NO. OF SHEETS