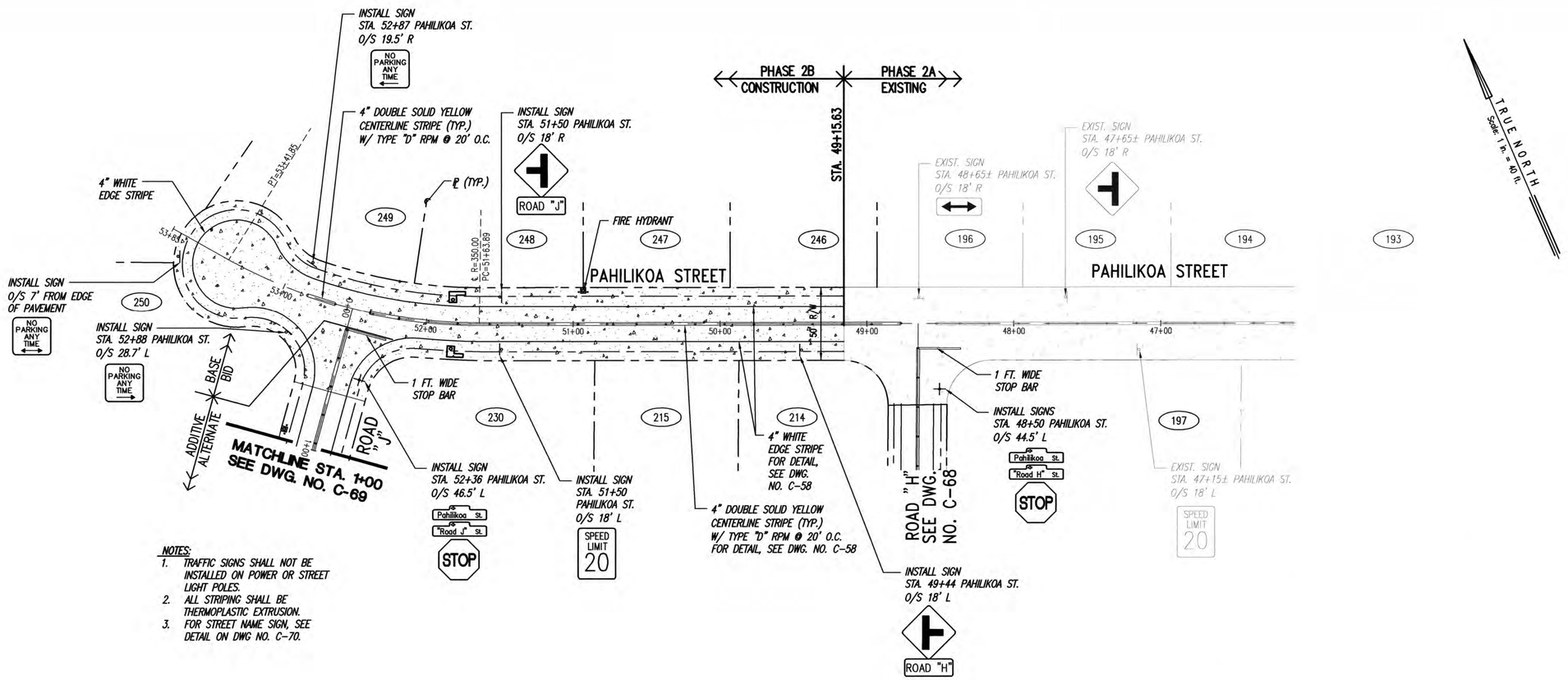
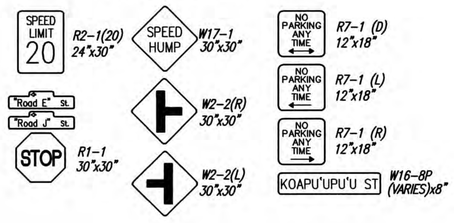



NOTES:
1. TRAFFIC SIGNS SHALL NOT BE INSTALLED ON POWER OR STREET LIGHT POLES.
2. ALL STRIPING SHALL BE THERMOPLASTIC EXTRUSION.
3. FOR STREET NAME SIGN, SEE DETAIL ON DWG NO. C-70.

## TRAFFIC SIGNS AND PAVEMENT MARKING PLAN

SCALE: 1" = 40'

### SIGN SCHEDULE




### LEGEND

| | |
|---|---|
| PP | POWER POLE |
| SL | STREET LIGHT |
| | TRAFFIC SIGN W/ POST |
| | SIGN POST ONLY (AS NOTED) |
| | AC SPEED HUMP |

**BASE BID**

40 20 0 40 80
Graphic Scale in Feet

ADDENDUM NO. 3

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |


cp&e Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii


**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

**TRAFFIC SIGNS AND PAVEMENT MARKING PLAN - PAHILIKOA STREET - BASE BID**

| DRAWN BY: HWH , CO | ENGINEER: HWH , FJC | CHECKED BY: AMM |
|---|---|---|

ANSON M. MURAYAMA
LICENSED PROFESSIONAL ENGINEER
No. 6975-C
HAWAII, U.S.A.

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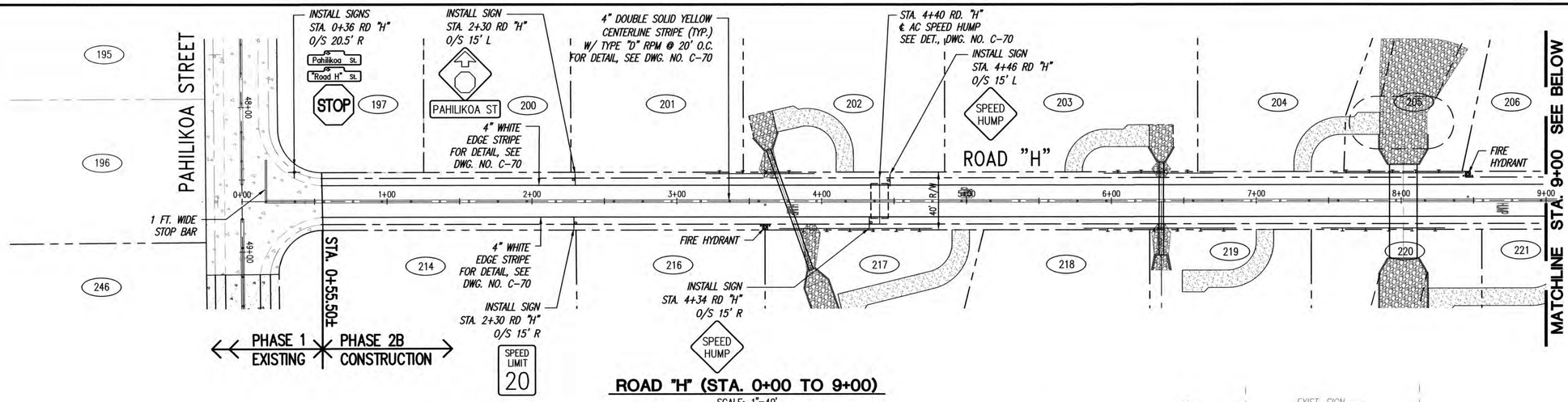
LICENSE EXPIRATION DATE: 04/30/26

DWG. NO. C-67

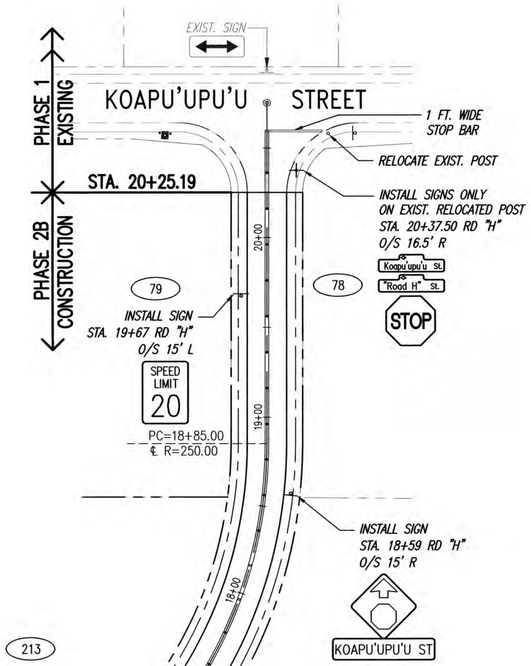
SHEET 68 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |




## ROAD "H" (STA. 0+00 TO 9+00)

SCALE: 1"=40'




## SIGN SCHEDULE

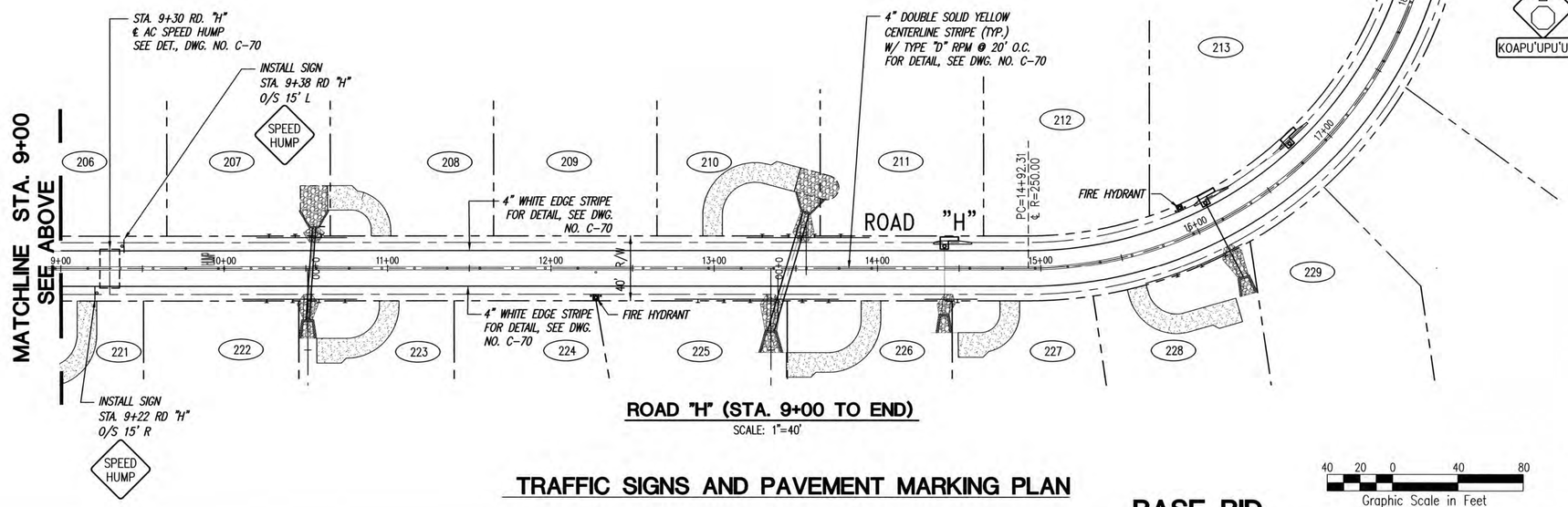
| | | |
|---|---|---|
| SPEED LIMIT 20 — R2-1(20) 24"x30" | W3-1 30"x30" | NO PARKING ANY TIME — R7-1 (D) 12"x18" |
| "Road A" St. / "Road B" St. | SPEED HUMP — W17-1 30"x30" | NO PARKING ANY TIME — R7-1 (L) 12"x18" |
| STOP — R1-1 30"x30" | KOAPU'UPU'U ST — W16-8P (VARIES)x8" | NO PARKING ANY TIME — R7-1 (R) 12"x18" |

## LEGEND

- PP — POWER POLE
- SL — STREET LIGHT
- TRAFFIC SIGN W/ POST
- SIGN POST ONLY (AS NOTED)
- AC SPEED HUMP

**NOTES:**

1. TRAFFIC SIGNS SHALL NOT BE INSTALLED ON POWER OR STREET LIGHT POLES.
2. ALL STRIPING SHALL BE THERMOPLASTIC EXTRUSION.
3. FOR STREET NAME SIGN, SEE DETAIL ON DWG NO. C-70.




## ROAD "H" (STA. 9+00 TO END)

SCALE: 1"=40'

## TRAFFIC SIGNS AND PAVEMENT MARKING PLAN

**BASE BID**

Graphic Scale in Feet (40 20 0 40 80)

ANSON M. MURAYAMA — LICENSED PROFESSIONAL ENGINEER — No. 6975-C — HAWAII, U.S.A.

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| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |

Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

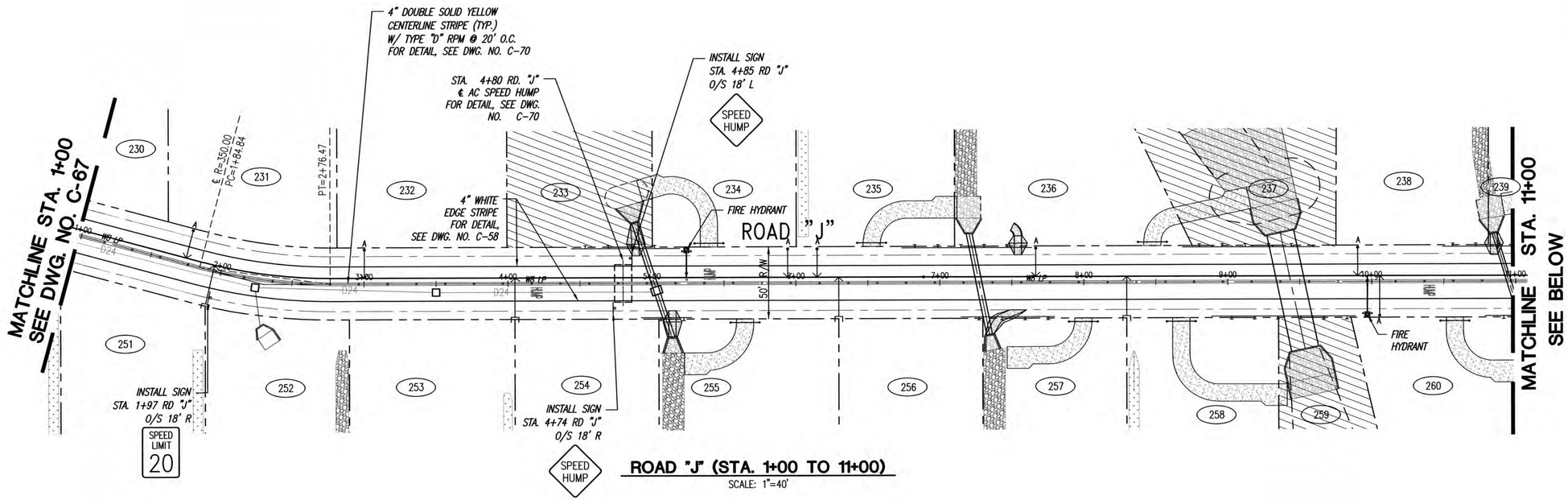
**TRAFFIC SIGNS AND PAVEMENT MARKING PLAN - ROAD H - BASE BID**

| DRAWN BY: HWH | ENGINEER: HWH , FJC | CHECKED BY: AMM |
|---|---|---|

**ADDENDUM NO. 3**

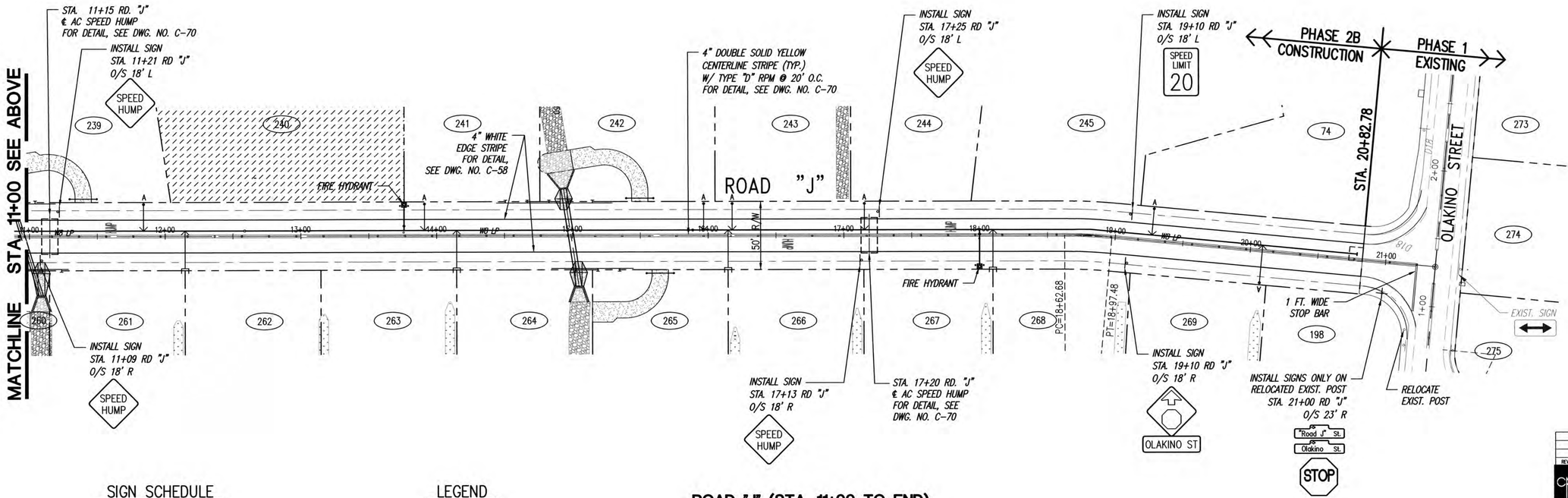
DWG. NO. **C-68** SHEET 69 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |




## ROAD "J" (STA. 1+00 TO 11+00)

SCALE: 1"=40'




## ROAD "J" (STA. 11+00 TO END)

SCALE: 1"=40'

**NOTES:**

1. TRAFFIC SIGNS SHALL NOT BE INSTALLED ON POWER OR STREET LIGHT POLES.
2. ALL STRIPING SHALL BE THERMOPLASTIC EXTRUSION.
3. FOR STREET NAME SIGN, SEE DETAIL ON DWG NO. C-70.

### SIGN SCHEDULE

| | | |
|---|---|---|
| SPEED LIMIT 20 | R2-1(20) 24"x30" | |
| "Road A" St. / "Road B" St. | | |
| STOP | R1-1 30"x30" | |
| | W3-1 30"x30" | |
| SPEED HUMP | W17-1 30"x30" | |
| KOAPU'UPU'U ST | W16-8P (VARIES)x8" | |
| NO PARKING ANY TIME | R7-1 (D) 12"x18" | |
| NO PARKING ANY TIME | R7-1 (L) 12"x18" | |
| NO PARKING ANY TIME | R7-1 (R) 12"x18" | |

### LEGEND

- PP — POWER POLE
- SL — STREET LIGHT
- TRAFFIC SIGN W/ POST
- SIGN POST ONLY (AS NOTED)
- AC SPEED HUMP

## TRAFFIC SIGNS AND PAVEMENT MARKING PLAN

## ADDITIVE ALTERNATE

Graphic Scale in Feet: 40 20 0 40 80

ANSON M. MURAYAMA — LICENSED PROFESSIONAL ENGINEER — No. 6975-C — HAWAII, U.S.A.

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| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |

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Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

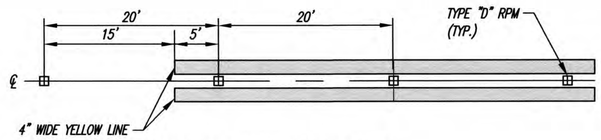
**TRAFFIC SIGNS AND PAVEMENT MARKING PLAN - ROAD J - ADDITIVE ALTERNATE**

| DRAWN BY: | ENGINEER: | CHECKED BY: |
|---|---|---|
| HWH , CO | HWH , FJC | AMM |

**ADDENDUM NO. 3**

| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |

DWG. NO. C-69 SHEET 70 OF 91 SHEETS

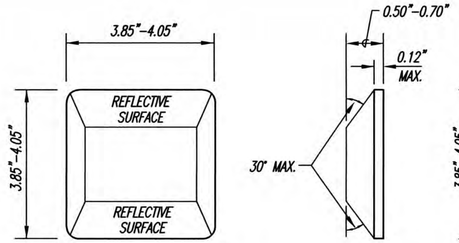



**DOUBLE SOLID YELLOW CENTERLINE STRIPE**

NOT TO SCALE


**WHITE EDGE STRIPE**

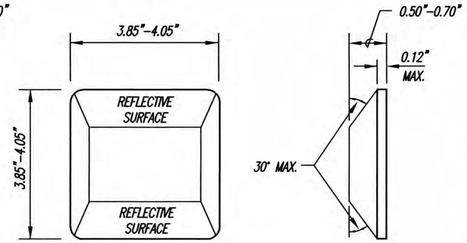
NOT TO SCALE




**TYPE DB**

**TWO-WAY BLUE REFLECTIVE MARKER**

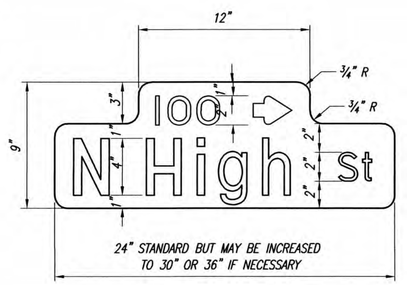
NOT TO SCALE




**TYPE D**

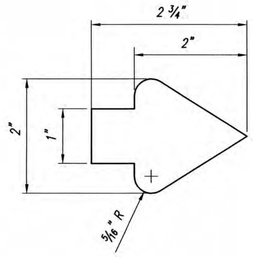
**TWO-WAY YELLOW REFLECTIVE MARKER**

NOT TO SCALE



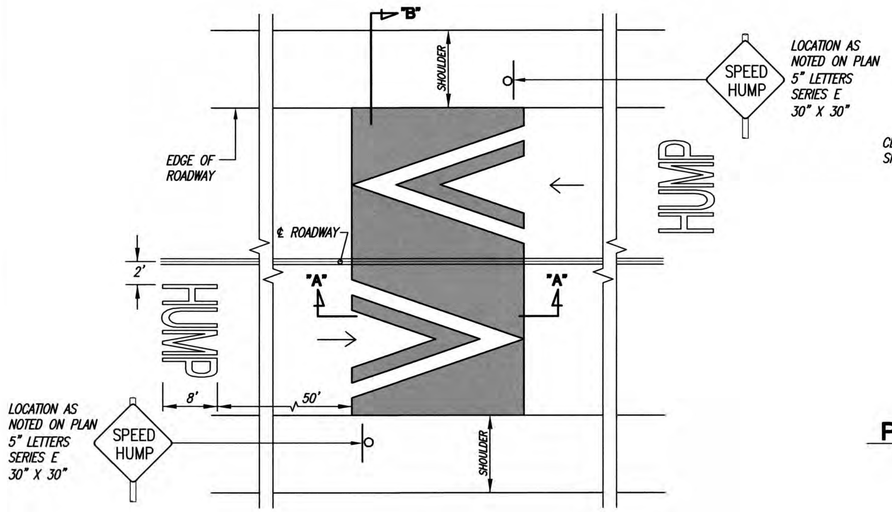

**STANDARD STREET NAME SIGN**

NOT TO SCALE

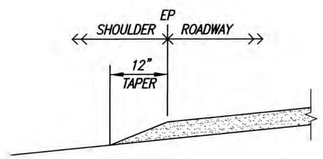



NOTES:

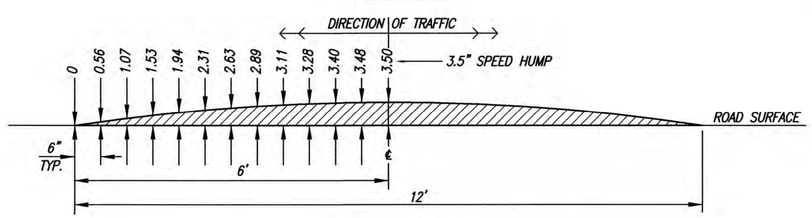
1. SIGNS SHALL BE 0.080" MIN. THICKNESS ALUM. SHEET (ASTM: B-209 ALLOY 6061-T6 AS AMENDED FLATSHEET).
2. REFLECTIVE SHEETS SHALL BE SCOTCHLITE SHEETING #3277 GREEN FOR FACE AND SCOTCHLITE #2270 SILVER FOR LETTERS AND NUMBERS OR EQUAL.




**PLAN**



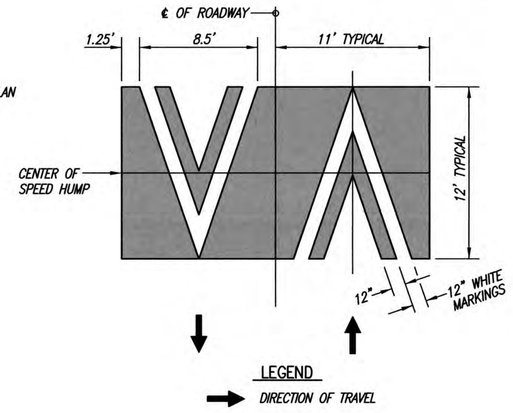

**SECTION "B"**




**SECTION "A"-"A"**

**SPEED HUMP DETAIL**

NOT TO SCALE

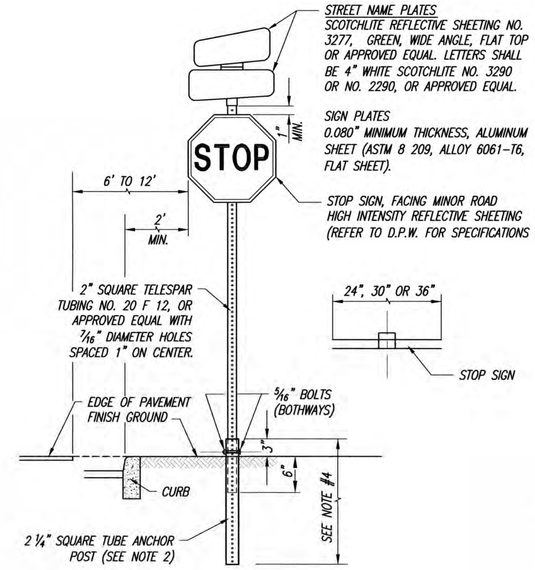



**PAVEMENT MARKINGS FOR SPEED HUMPS**

NOT TO SCALE

## GENERAL NOTES

1. SIGNS SHALL CONFORM TO THE LATEST EDITIONS OF FHWA PUBLICATIONS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS," "STANDARD ALPHABETS FOR HIGHWAY SIGNS," AND "STANDARD HIGHWAY SIGNS," AND AS AMENDED.
2. ALL SIGNS SHALL BE MADE OF HIGH INTENSITY REFLECTIVE SHEETING MATERIALS.
3. INSTALL WARNING SIGNS AT EACH APPROACH OF A SPEED HUMP OR SERIES OF SPEED HUMPS WITHIN A STREET BLOCK. WORDING FOR SIGNS APPROACHING A SINGLE HUMP SHALL READ "SPEED HUMP" AND WORDING FOR A SERIES OF HUMPS SHALL READ IN THE PLURAL FORM "SPEED HUMPS".
4. PAVEMENT WORK SHALL CONFORM TO, DOT STANDARD PLAN TE-35.
5. ALL WORK AND MATERIALS REQUIRED TO COMPLETE THE AC PAVING, SIGNS, AND MARKINGS SHALL CONFORM TO THE REQUIREMENTS THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION 2005".
6. PRIOR TO ACCEPTANCE, THE COUNTY INSPECTOR WILL TEST THE SURFACE OF THE HUMP USING A PARABOLIC TEMPLATE AT THE MIDPOINT. THE VARIATION OF THE SURFACE FROM THE TESTING EDGE BETWEEN TWO CONTACTS WITH THE SURFACE SHALL NOT EXCEED ONE-QUARTER (¼) INCH.
7. CONTACT ANY OTHER APPLICABLE UTILITY COMPANIES FOR THE LOCATION OF UNDERGROUND LINES PRIOR TO INSTALLING SIGNS IN THE SHOULDER AREAS.




**STREET NAME AND STOP SIGN DETAILS**

NOT TO SCALE

NOTES:

1. THE INSIDE OF THE 2 ¼" ANCHOR POST MUST BE KEPT FREE OF IMPEDIMENTS TO ASSURE EASY INSERTS OF THE 2" SIGN POST.
2. SQUARE TUBE POSTS SHALL BE TELESCOPING PERFORATED TELESPAR TUBING OR APPROVED EQUAL.
3. THE EXACT SIGN DIMENSION WILL BE IN CONFORMANCE WITH THE CURRENT MUTCD, AS AMENDED, OR AS DESIGNATED ON THE PLANS OR BY THE MANAGER.
4. THE 2 ¼" ANCHOR POST SHALL BE 4' LONG FOR NORMAL OR POOR GROUND CONDITIONS AND 30" FOR ROCKY CONDITIONS.
5. FLANGED CHANNEL POST APPROVED BY THE STATE HIWAYS DIVISION IS ACCEPTABLE AS APPROVED EQUAL FOR 2" SQUARE TUBING.
6. SIGN POST MUST BE FIRM AND NOT SHAKY, OTHERWISE CONCRETE MUST BE USED TO STABILIZE THE ANCHOR POST.

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |

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**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

**TRAFFIC SIGNS AND PAVEMENT MARKINGS DETAILS - BASE BID**

| DRAWN BY: HWH | ENGINEER: HWH , FJC | CHECKED BY: AMM |
|---|---|---|

ANSON M. MURAYAMA
LICENSED PROFESSIONAL ENGINEER
No. 6975-C
HAWAII, U.S.A.

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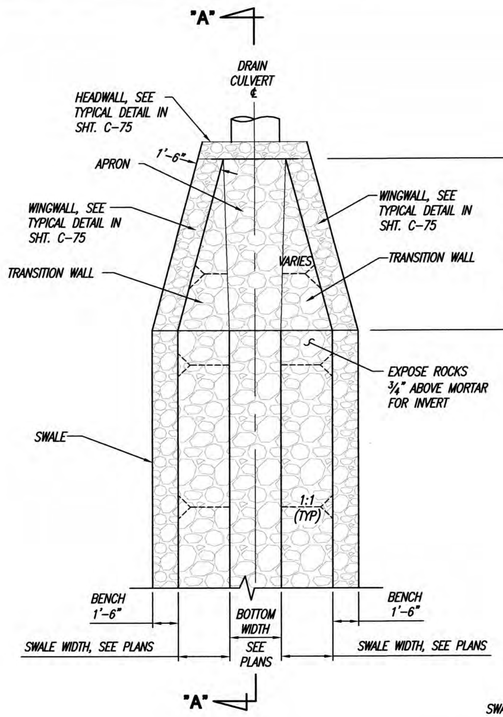
**BASE BID**

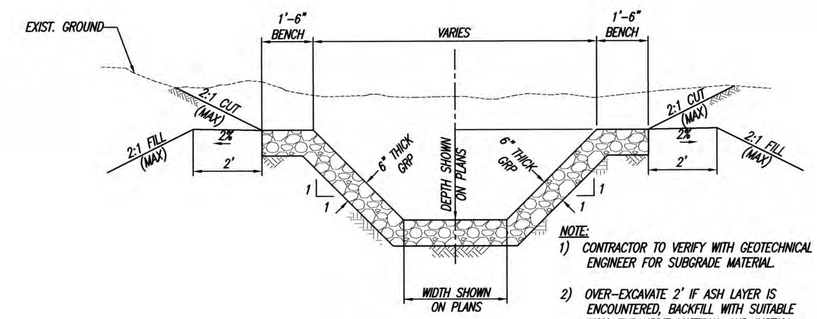
**ADDENDUM NO. 3**

| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |

DWG. NO. **C-70** SHEET 71 OF 91 SHEETS



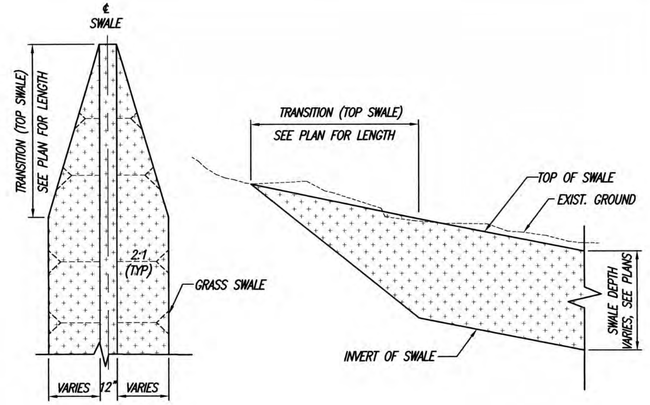

## PLAN




NOTE:
1) CONTRACTOR TO VERIFY WITH GEOTECHNICAL ENGINEER FOR SUBGRADE MATERIAL.
2) OVER-EXCAVATE 2' IF ASH LAYER IS ENCOUNTERED, BACKFILL WITH SUITABLE NON-EXPANSIVE MATERIAL AND INSTALL GEOTEXTILE FABRIC (SUCH AS MIRAFI 140 OR APPROVED EQUAL) SEPARATING ASH AND NON-EXPANSIVE MATERIAL.

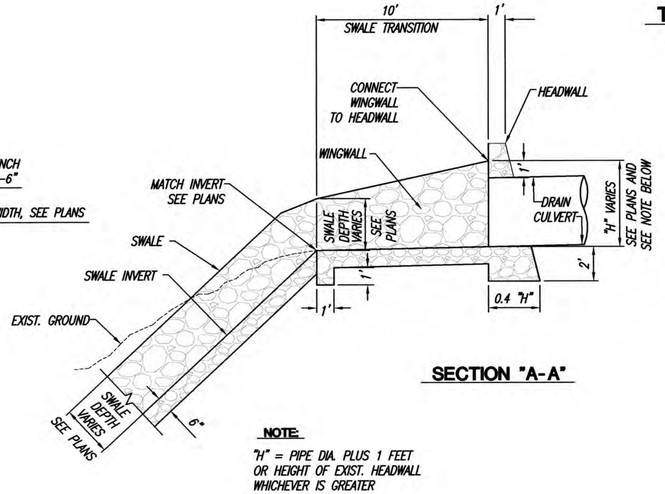
## TYPICAL GRP SWALE SECTION

NOT TO SCALE




## GRASS SWALE TOP TRANSITION DETAILS

NOT TO SCALE

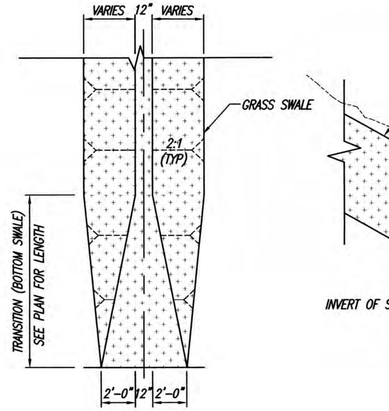



## SECTION "A-A"

NOTE:
"H" = PIPE DIA. PLUS 1 FEET OR HEIGHT OF EXIST. HEADWALL WHICHEVER IS GREATER

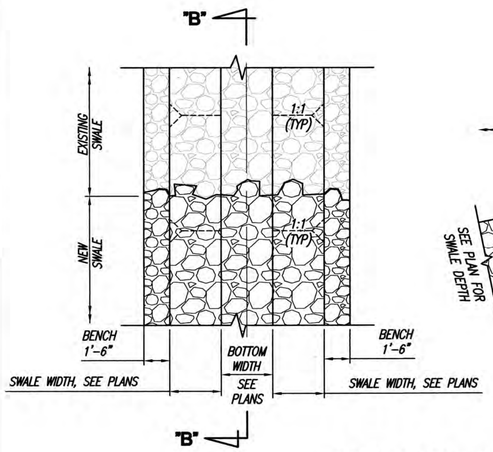
## SWALE CONNECTION TO CULVERT DETAIL WITH WINGWALL

NOT TO SCALE



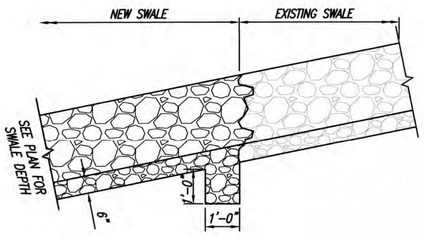

## GRASS SWALE BOTTOM TRANSITION DETAILS

NOT TO SCALE

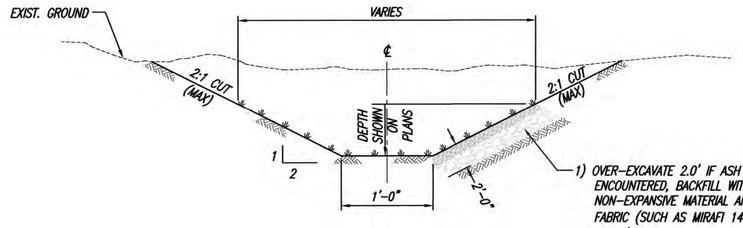



## CONNECTION EXISTING SWALE TO NEW SWALE EXTENSION

NOT TO SCALE




## SECTION "B-B"




1) OVER-EXCAVATE 2.0' IF ASH LAYER IS ENCOUNTERED, BACKFILL WITH SUITABLE NON-EXPANSIVE MATERIAL AND INSTALL GEOTEXTILE FABRIC (SUCH AS MIRAFI 140 OR APPROVED EQUAL) SEPARATING ASH AND NON-EXPANSIVE MATERIAL.
2) PLACE 4" TOP SOIL AND GRASS ALL EXPOSED AREA WITH HYDROSEED.

## TYPICAL GRASS SWALE SECTION

NOT TO SCALE

# BASE BID

ADDENDUM NO. 3

ANSON M. MURAYAMA
LICENSED PROFESSIONAL ENGINEER
No. 6975-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |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Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii


**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**

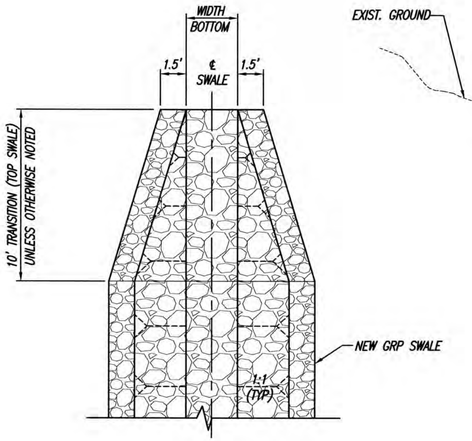
KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

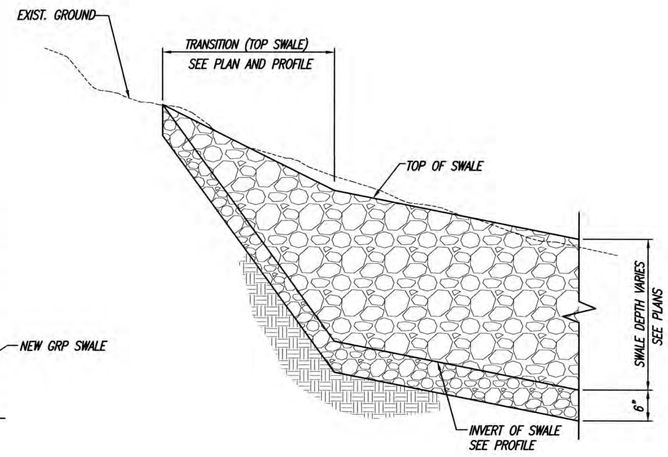
**SWALE DETAIL - 1 - BASE BID**

| DRAWN BY: CO | ENGINEER: CO | CHECKED BY: AMM |
|---|---|---|



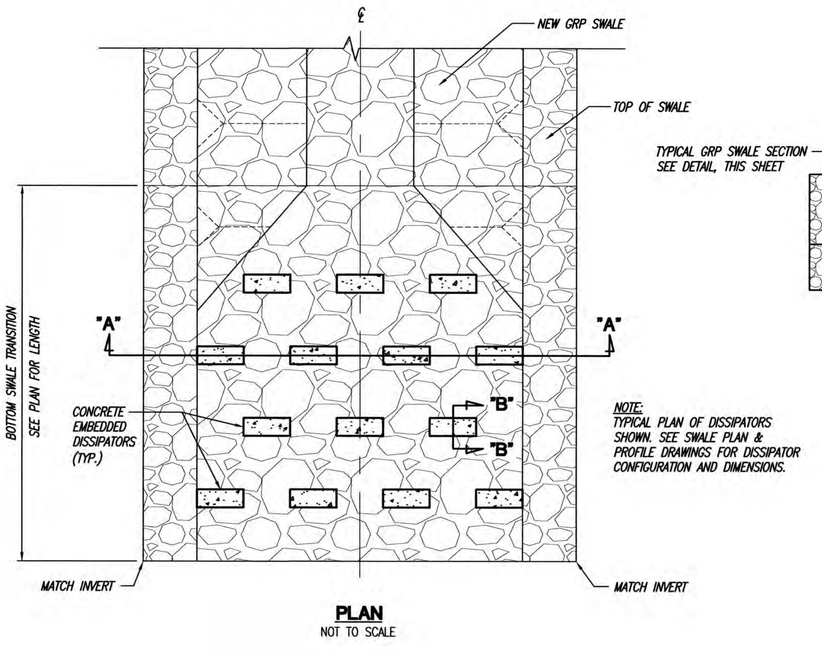
| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |



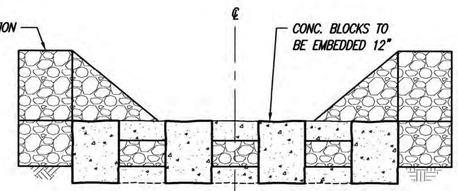

## GRP SWALE TOP TRANSITION DETAILS

NOT TO SCALE

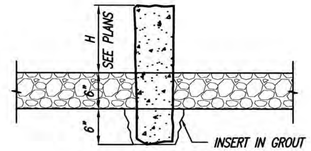



**PLAN**
NOT TO SCALE

NOTE:
TYPICAL PLAN OF DISSIPATORS SHOWN. SEE SWALE PLAN & PROFILE DRAWINGS FOR DISSIPATOR CONFIGURATION AND DIMENSIONS.




**SECTION "A-A"**




**SECTION "B-B"**

## GRP SWALE BOTTOM DISSIPATORS TYPICAL DETAILS

NOT TO SCALE

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |


cp&e Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii


**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**
KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

**SWALE DETAIL - 2 - BASE BID**

| DRAWN BY: CO | ENGINEER: CO | CHECKED BY: AMM |
|---|---|---|

ANSON M. MURAYAMA
LICENSED PROFESSIONAL ENGINEER
No. 6975-C
HAWAII, U.S.A.

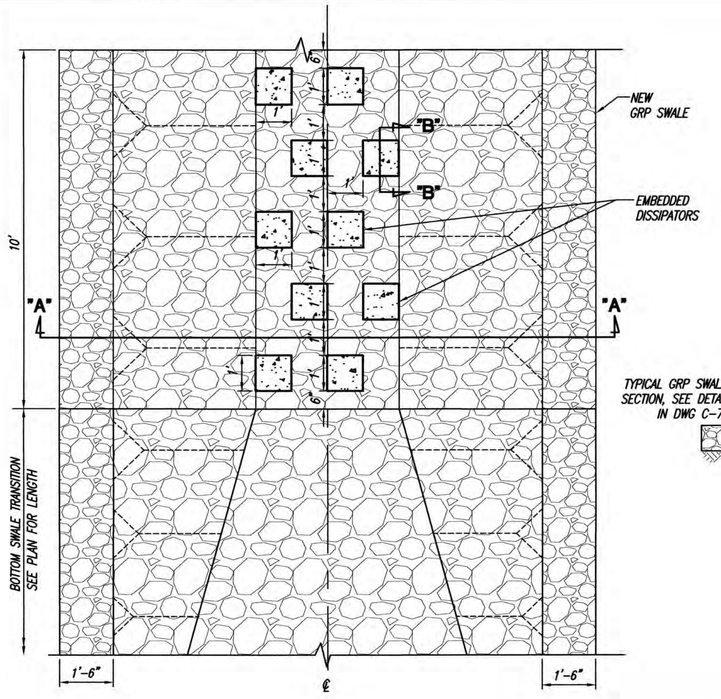
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

**BASE BID**

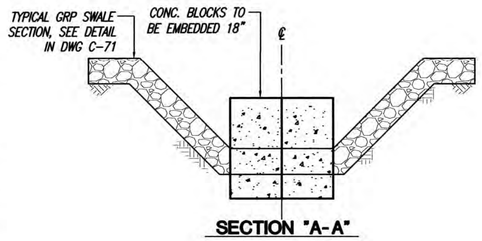
**ADDENDUM NO. 3**

DWG. NO. **C-72** SHEET 73 OF 91 SHEETS

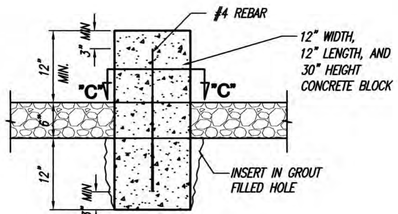
| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |



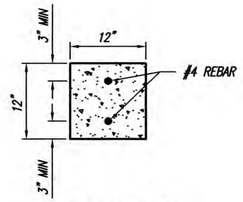

**PLAN**
NOT TO SCALE



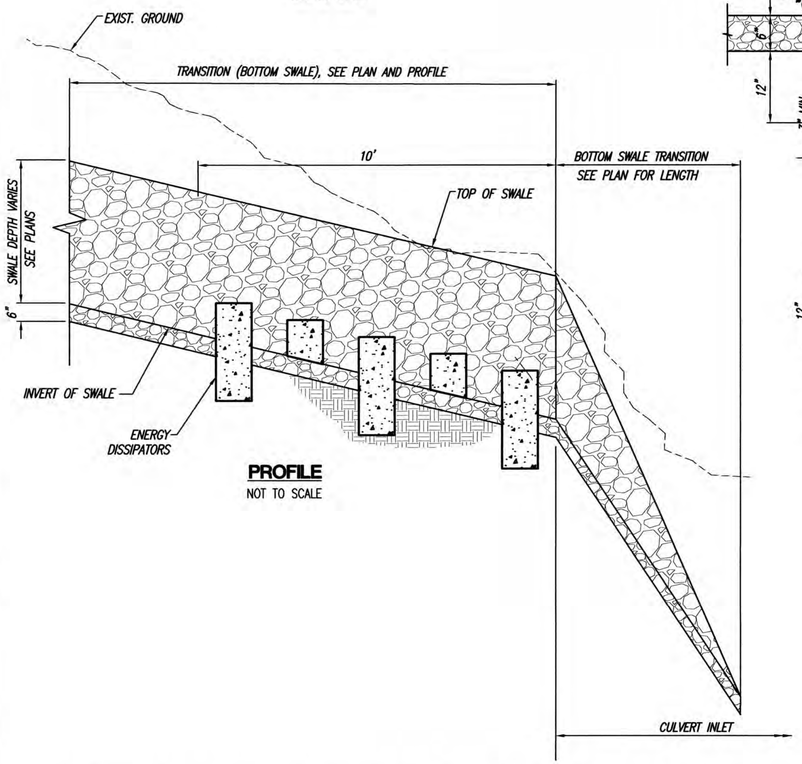

**SECTION "A-A"**




**SECTION "B-B"**



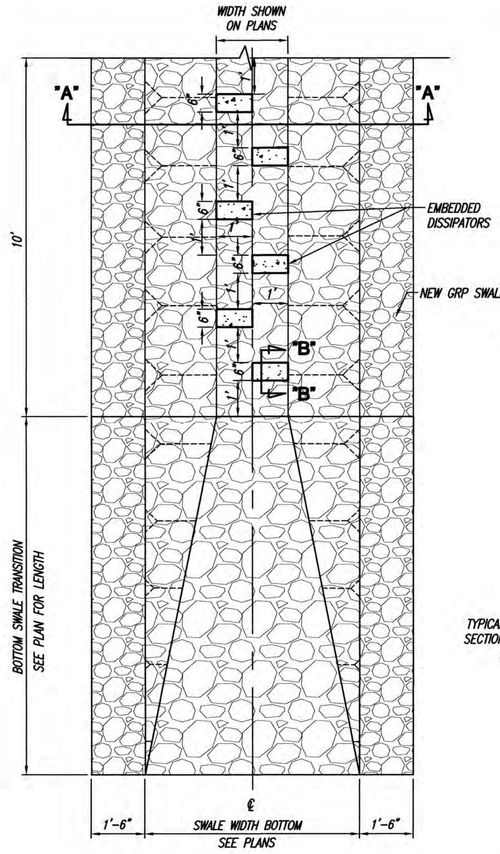

**SECTION "C-C"**



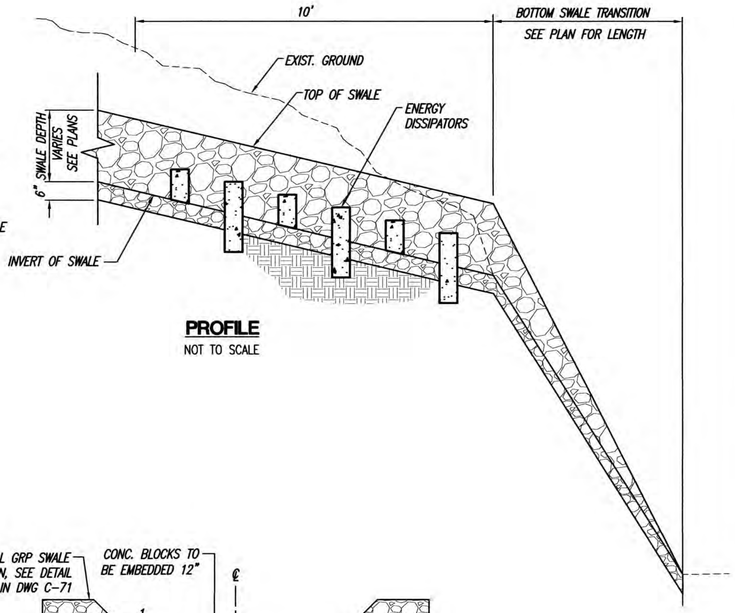

**PROFILE**
NOT TO SCALE

## GRP SWALE BOTTOM TRANSITION DETAILS (AT CULVERT INLET) FOR SWALES WITH 4' DEPTH AND 4' BOTTOM WIDTH

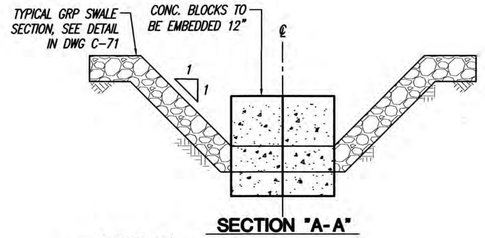
NOT TO SCALE



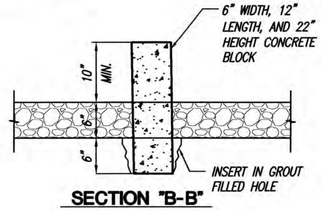

**PLAN**
NOT TO SCALE




**PROFILE**
NOT TO SCALE




**SECTION "A-A"**




**SECTION "B-B"**

## GRP SWALE BOTTOM TRANSITION DETAILS (AT CULVERT INLET)

NOT TO SCALE

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |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Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii


# KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

## SWALE DETAIL - 3 - BASE BID

| DRAWN BY: CO | ENGINEER: CO | CHECKED BY: AMM |
|---|---|---|

ANSON M. MURAYAMA
LICENSED PROFESSIONAL ENGINEER
No. 6975-C
HAWAII, U.S.A.

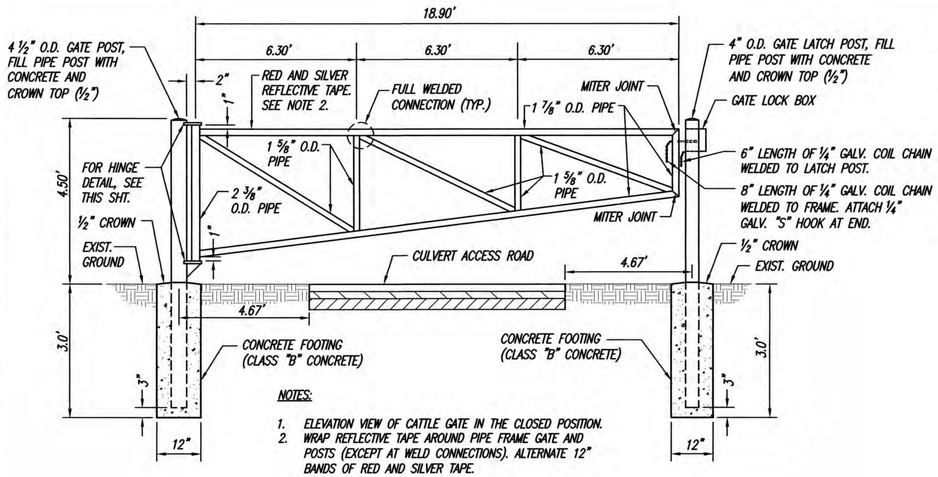
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

**BASE BID**

ADDENDUM NO. 3

DWG. NO. **C-73** SHEET 74 OF 91 SHEETS

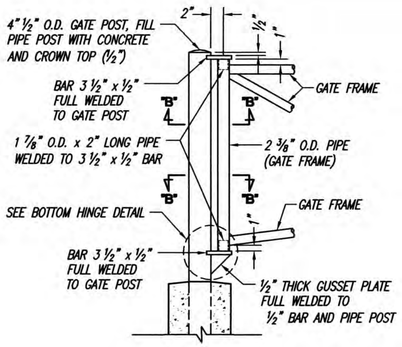
| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |



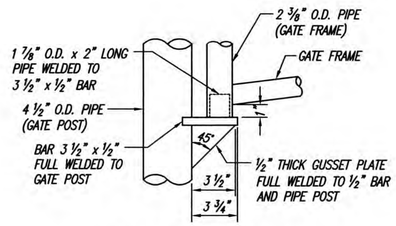

NOTES:

1. ELEVATION VIEW OF CATTLE GATE IN THE CLOSED POSITION.
2. WRAP REFLECTIVE TAPE AROUND PIPE FRAME GATE AND POSTS (EXCEPT AT WELD CONNECTIONS). ALTERNATE 12" BANDS OF RED AND SILVER TAPE.

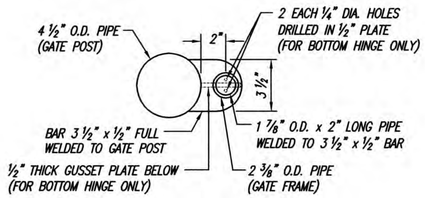
**ELEVATION**
NOT TO SCALE



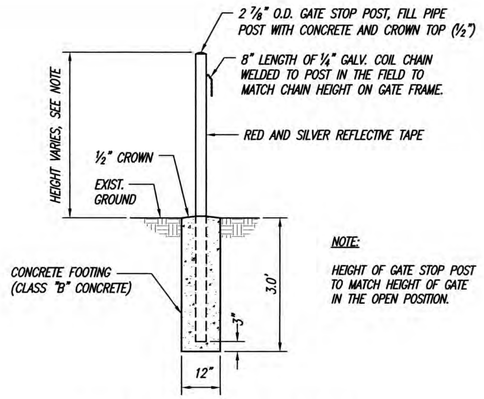

**HINGE DETAIL**
NOT TO SCALE




**BOTTOM HINGE DETAIL**
NOT TO SCALE




**SECTION "B-B"**
NOT TO SCALE

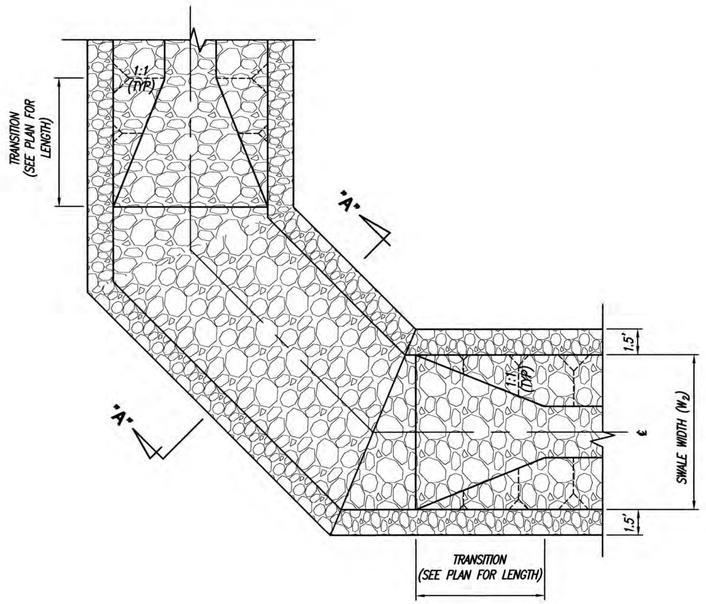



NOTE:

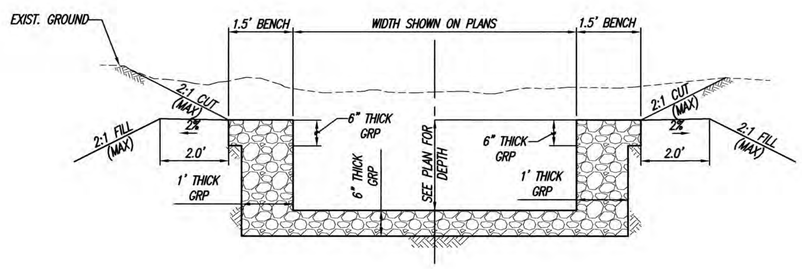
HEIGHT OF GATE STOP POST TO MATCH HEIGHT OF GATE IN THE OPEN POSITION.

**TYPICAL GATE STOP POST**
NOT TO SCALE

**CATTLE GATE DETAIL**
NOT TO SCALE




**GRP SWALE TRAPEZOIDAL TO RECTANGULAR TRANSITION**
NOT TO SCALE




**SECTION "A-A"**
NOT TO SCALE

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |

cp&e **Community Planning and Engineering, Inc.**
Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**
KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

**SWALE DETAIL - 4 - BASE BID**

| DRAWN BY: JSO , CO | ENGINEER: JO , HWH | CHECKED BY: AMM |
|---|---|---|

ANSON M. MURAYAMA
LICENSED PROFESSIONAL ENGINEER
No. 6975-C
HAWAII, U.S.A.

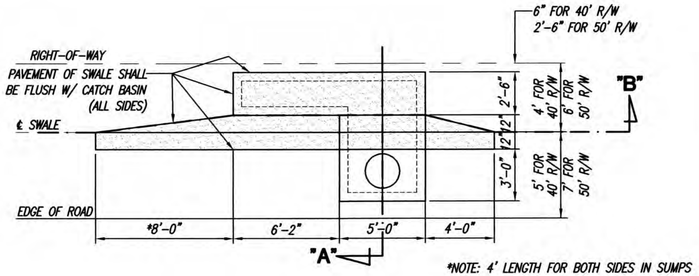
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

**BASE BID**

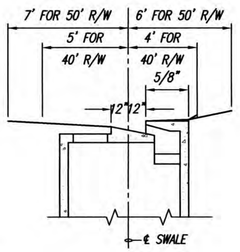
**ADDENDUM NO. 3**



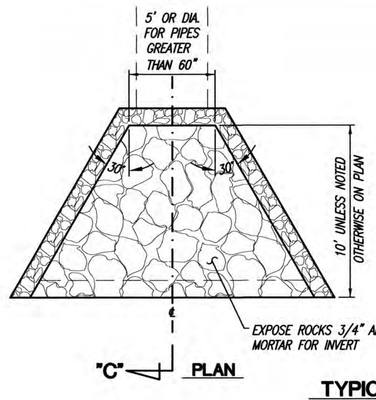
| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |



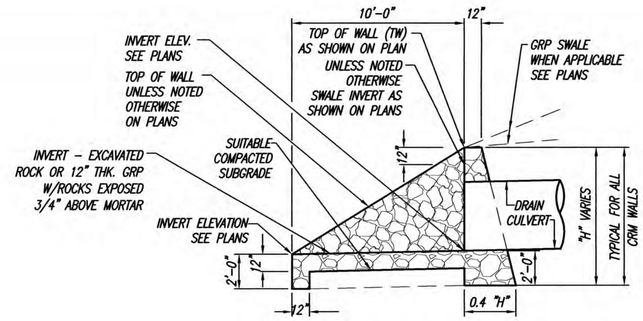

*NOTE: 4' LENGTH FOR BOTH SIDES IN SUMPS




SECTION "A"



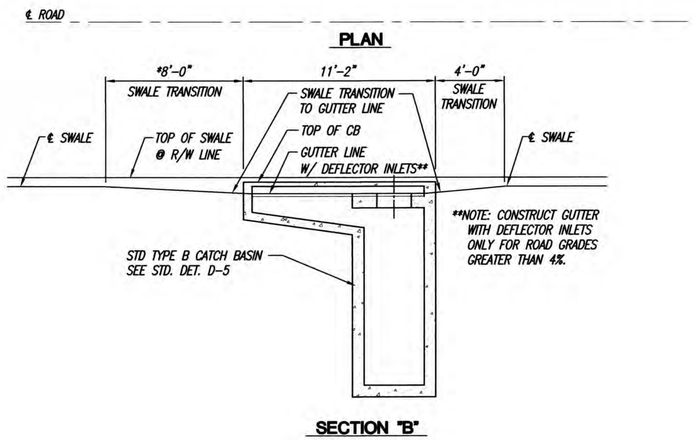

PLAN




SECTION "C"

## TYPICAL DETAIL - CRM INLET AND OUTLET FOR CAP CULVERTS AND CRM WALL

SCALE : ¼" = 1'-0"

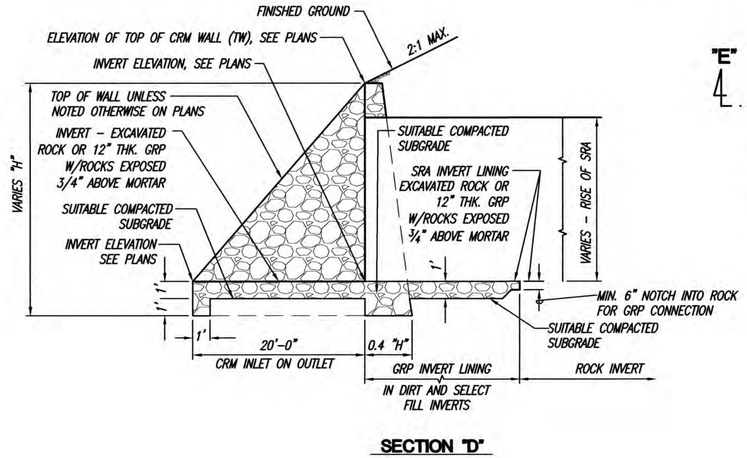



PLAN

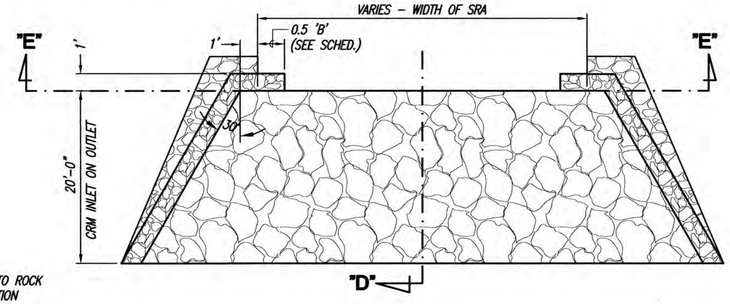
SECTION "B"

## DETAIL - TRANSITION GUTTER FOR CATCH BASINS

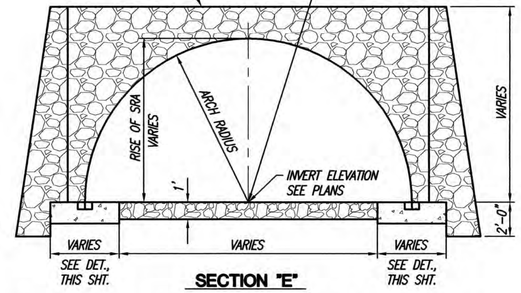
SCALE : ¼" = 1'-0"




SECTION "D"



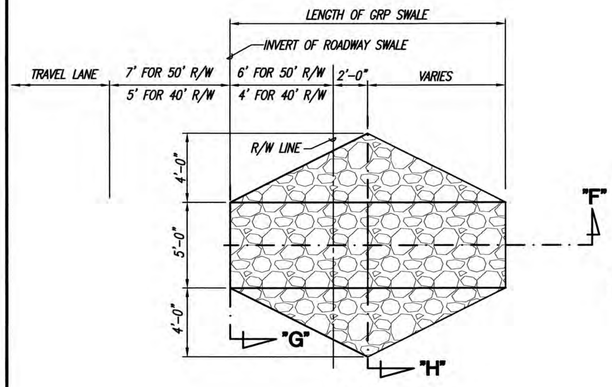

PLAN



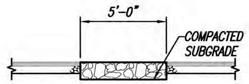

SECTION "E"

## TYPICAL DETAIL - CRM INLET AND OUTLET AND INVERT LINING FOR SRA CULVERTS

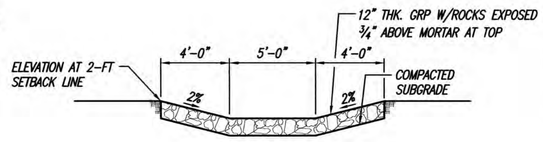
SCALE : ¼" = 1'-0"



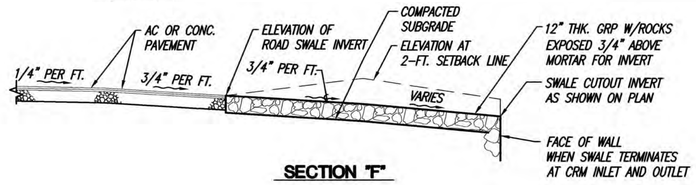

PLAN




SECTION "G"



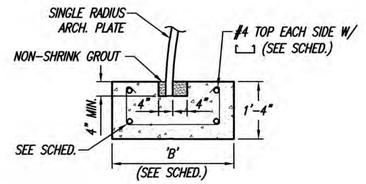

SECTION "H"




SECTION "F"

## TYPICAL DETAIL - SWALE CUTOUTS

SCALE : ¼" = 1'-0"




| FOOTING SCHEDULE | | | | | | |
|---|---|---|---|---|---|---|
| | FOOTING ON ENGINEERED FILL | | | FOOTING ON BASALTIC ROCK | | |
| SPAN x RISE | 'B' | ⌴ REINF. | LONGIT. REINF. | 'B' | ⌴ REINF. | LONGIT. REINF. |
| 19'-0"x 8'-3" | 4'-6" | #5@12"O.C. | 4-#5 CONT. | 2'-6" | #5@12"O.C. | 2-#5 CONT. |

## SRA FOOTING DETAIL AND SCHEDULE

NOT TO SCALE

### SINGLE RADIUS ARCH CULVERTS:

1. ALL WORK SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" (1986).
2. SINGLE RADIUS ARCH CULVERTS SHALL BE FURNISHED AND DESIGNED BY CONTECH CONSTRUCTION PRODUCTS, INC. OR APPROVED EQUAL.
3. METAL CULVERTS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES. CULVERTS SHALL BE DESIGNED FOR AN HS-20-44 TRUCK.
4. CONCRETE FOR FOOTINGS SHALL BE CLASS A, IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
5. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60.
6. MINIMUM COVER IN INCHES FOR REBARS FOR CAST-IN-PLACE CONCRETE:
   CONCRETE CAST AGAINST EARTH . . . . . 3"
   FORMED CONCRETE EXPOSED TO EARTH OR WEATHER . . 2"
7. UNLESS OTHERWISE NOTED, SPLICES, LAPS, DOWEL EXTENSIONS AND EMBEDMENTS SHALL BE 40 BAR DIAMETERS.

# BASE BID

ANSON M. MURAYAMA
LICENSED PROFESSIONAL ENGINEER
No. 6975-C
HAWAII, U.S.A.

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| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |


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Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii


KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI

OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS

TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

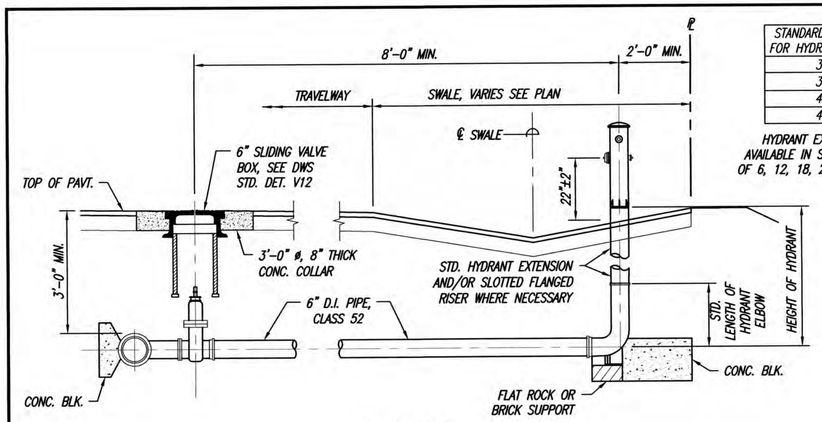
DRAINAGE DETAILS - BASE BID

| DRAWN BY: CO | ENGINEER: FJC | CHECKED BY: AMM |
|---|---|---|

ADDENDUM NO. 3



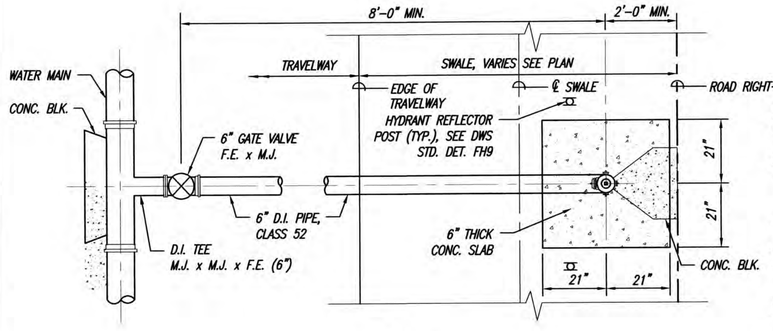
| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |




| STANDARD LENGTHS FOR HYDRANT ELBOW |
|---|
| 30" |
| 36" |
| 42" |
| 48" |

HYDRANT EXTENSIONS ARE AVAILABLE IN STANDARD LENGTHS OF 6, 12, 18, 24, AND 30 INCHES.

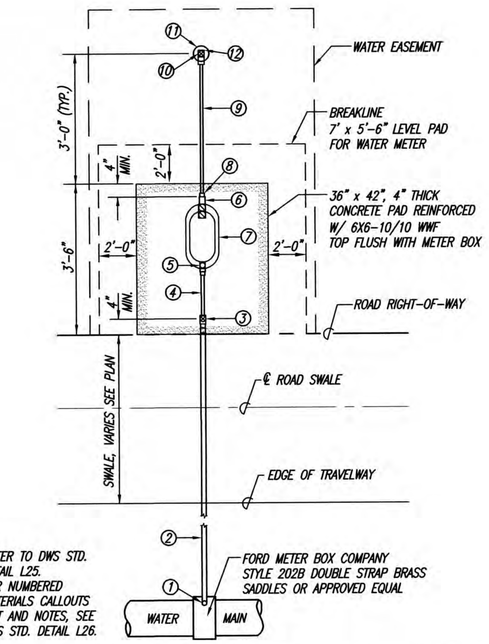
## SECTION
NOT TO SCALE




## PLAN
NOT TO SCALE

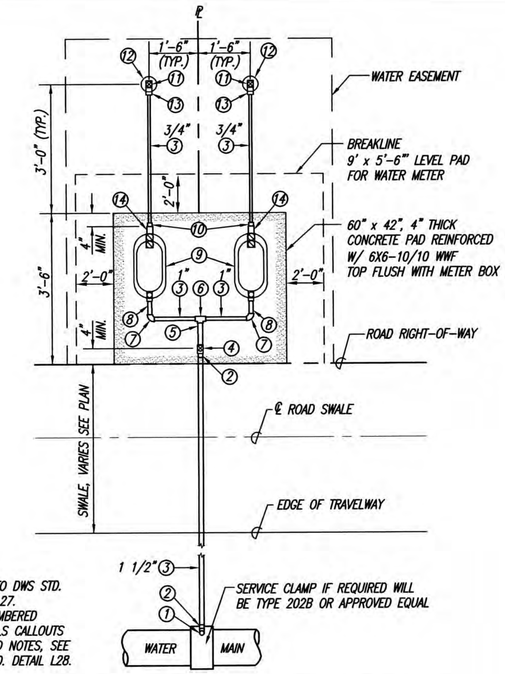
NOTES:
1. GASKETS FOR FLANGED JOINTS SHALL BE 1/8" DUCK-INSERTED RUBBER PACKING GARLOCK NO. 19 OR APPROVED EQUAL.
2. BOLTS SHALL BE BREAK-OFF TYPE, 5/8" DIA. x 3" LONG MACHINE BOLTS WITH CUT THREADS, AMERICAN STANDARD COARSE HEXAGON HEADS, STAINLESS STEEL OR SILICON BRONZE. INSTALL BOLT WITH THREADS FACING DOWN.
3. NUTS SHALL BE AMERICAN STANDARD HEAVY COLD PUNCHED HEXAGON NUTS, STAINLESS STEEL OR SILICON BRONZE.
4. CONCRETE SHALL BE DWS 2500.
5. REFER TO PLATE FH9 FOR FIRE HYDRANT INSTALLATION WHERE NO STREET CURBING.
6. FLANGED OUTLET FOR THE TEE IS MANDATORY FOR MAUI.
7. TAPPING SLEEVE WITH TAPPING VALVE ASSEMBLY MAY BE USED FOR CONNECTION TO EXIST. MAIN.
8. LUBRICATE HYDRANT NOZZLE THREADS WITH NON-TOXIC GREASE.
9. PROVIDE SLOTTED FLANGED RISER FOR HYDRANT AS NEEDED TO ALIGN 4-1/2" NOZZLE PERPENDICULAR TO CURB.
10. INSTALL BLUE REFLECTIVE PAVEMENT HYDRANT MARKERS. SEE PLATES FH12 AND FH13. FOR DETAIL, SEE DWG. NO. C-70. FOR PAVEMENT MARKINGS PLAN, SEE DWG. NOS. C-67 TO C-69.

## HYDRANT CONNECTION DETAIL
NOT TO SCALE



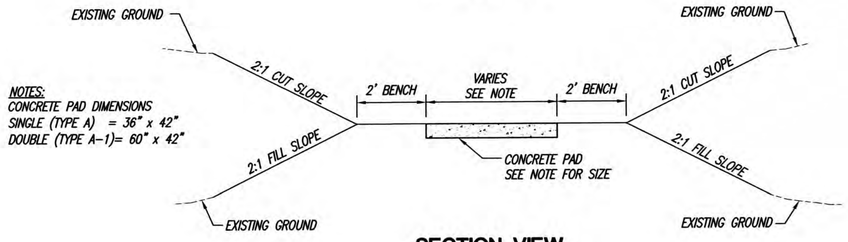

NOTES:
1. REFER TO DWS STD. DETAIL L25.
2. FOR NUMBERED MATERIALS CALLOUTS LIST AND NOTES, SEE DWS STD. DETAIL L26.

## SINGLE SERVICE LATERAL TYPE "A", 5/8" & 3/4" METERS
NOT TO SCALE




NOTES:
1. REFER TO DWS STD. DETAIL L27.
2. FOR NUMBERED MATERIALS CALLOUTS LIST AND NOTES, SEE DWS STD. DETAIL L28.

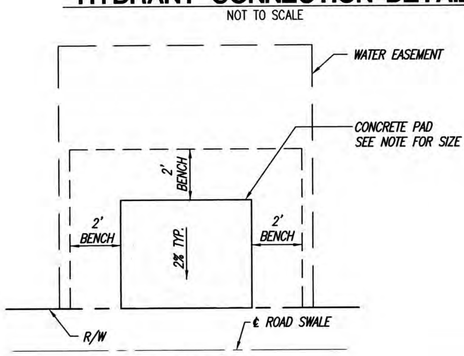
## DOUBLE SERVICE LATERAL TYPE "A-1", 5/8" & 3/4" METERS
NOT TO SCALE



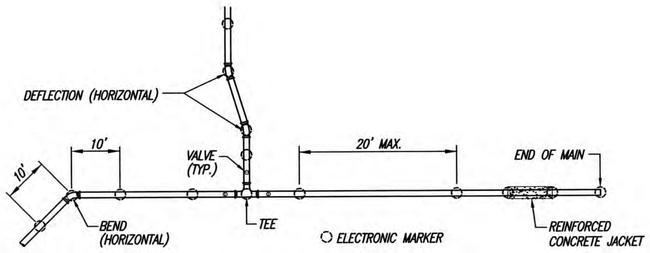

NOTES:
CONCRETE PAD DIMENSIONS
SINGLE (TYPE A) = 36" x 42"
DOUBLE (TYPE A-1)= 60" x 42"

## SECTION VIEW

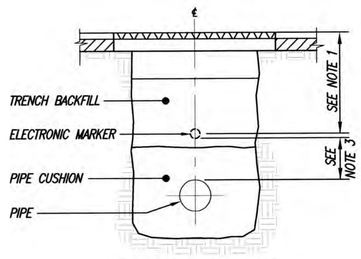
## WATER METER CONCRETE PAD GRADING DETAILS
NOT TO SCALE




## PLAN VIEW



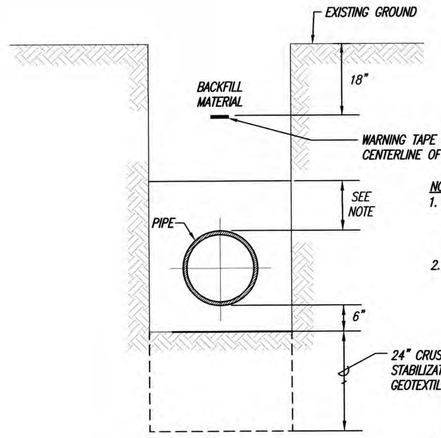

## PLAN VIEW




NOTES:
1. INSTALL ELECTRONIC MARKER OVER CENTERLINE OF PIPE AT A MINIMUM DEPTH OF 2 FEET AND A MAXIMUM DEPTH OF 3 FEET FROM FINISH GRADE.
2. INSTALL TRENCH BACKFILL AND PIPE CUSHION MATERIAL IN ACCORDANCE TO THE PLANS AND SPECIFICATIONS.
3. INSTALL ELECTRONIC MARKER AT A MINIMUM CLEARANCE OF 6-INCHES ABOVE THE PIPE OR CONCRETE JACKET.

## SECTION VIEW

## TYPICAL ELECTRONIC MARKER INSTALLATION
NOT TO SCALE




NOTES:
1. 12" OF CUSHION MATERIAL FOR PIPES 16" OR LARGER. 6" CUSHION MATERIAL FOR PIPES 12" OR SMALLER AT LOCATIONS WHERE INVERT IS ABOVE 4-FOOT ELEVATION.
2. 12" OF CUSHION MATERIAL FOR ALL PIPE SIZES AT LOCATIONS WHERE THE INVERT IS AT OR BELOW THE 4-FOOT ELEVATION.

## TRENCH BACKFILL
NOT TO SCALE

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |

cp&e Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**
KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

**WATER DETAILS - BASE BID**

| DRAWN BY: JSO | ENGINEER: JSO | CHECKED BY: AMM |
|---|---|---|

ANSON M. MURAYAMA
LICENSED PROFESSIONAL ENGINEER
No. 6975-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

**BASE BID**

**ADDENDUM NO. 3**

DWG. NO. **C-76** SHEET 77 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |

BORING LOCATION: See Plate 3 | DRILLER: Ed Gaynor
BORING ELEVATION (ft): | LOGGED BY: DSC
DATE (S) DRILLED: 03/08/13 | TYPE RIG: Bobcat 325

**BORING TP-4**

| OTHER LAB TESTS | DRY UNIT WEIGHT (pcf) | MOISTURE CONTENT (%) | CORE RECOVERY (%) | R.Q.D. (%) | NUMBER OF BLOWS/12" | SAMPLER TYPE | DEPTH IN FEET | GRAPHIC SYMBOL | U.S.C.S. | GEOTECHNICAL DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0 | | | Light Brush, bushes |
| SA#1 | | 3.2 | | | | GRAB 4-1 | 1 | | GW GM | Well-Graded GRAVEL with SILT and SAND, brown, boulders, cobbles, gray, strong, trace rootlets, trace red clay, dry |
| | | | | | | | | | | BASALT |
| | | | | | | | 2 | | | Test pit terminated at about 1.75 ft (Refusal). Ground water was not encountered. |
| | | | | | | | 3 | | | |
| | | | | | | | 4 | | | |
| | | | | | | | 5 | | | |
| | | | | | | | 6 | | | |
| | | | | | | | 7 | | | |
| | | | | | | | 8 | | | |

SAMPLE TYPE
D&M - Dames & Moore SPT - Standard Penetration
CB - Core Barrel SH - Shelby Tube
AUG - Auger Cuttings NR - No Recovery

OTHER LABORATORY TESTS
MD - Moisture/Density UC - Unconfined Compression
CON - Consolidation Test SG - Specific Gravity
PI - Atterberg Limits SA - Sieve Analysis

LOG OF BORING

CONSULTANTS, LLC
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Subdivision Phases 1, 2 and 4A
Kula, Makawao, Maui, Hawaii

DATE: April 2013 | PROJECT NO.: 212302.20

PLATE 8

BORING LOCATION: See Plate 3 | DRILLER: Ed Gaynor
BORING ELEVATION (ft): | LOGGED BY: DSC
DATE (S) DRILLED: 03/08/13 | TYPE RIG: Bobcat 325

**BORING TP-9**

| OTHER LAB TESTS | DRY UNIT WEIGHT (pcf) | MOISTURE CONTENT (%) | CORE RECOVERY (%) | R.Q.D. (%) | NUMBER OF BLOWS/12" | SAMPLER TYPE | DEPTH IN FEET | GRAPHIC SYMBOL | U.S.C.S. | GEOTECHNICAL DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0 | | | DRY VEGETATION GRASS |
| | | | | | | GRAB 9-1 | 1 | | MH | Clayey SILT, brown, soft/stiff, trace rootlets, moist |
| | | | | | | | 2 | | GP | BASALT |
| | | | | | | | | | | Test pit terminated at about 2 ft (Refusal). Ground water was not encountered. |
| | | | | | | | 3 | | | |
| | | | | | | | 4 | | | |
| | | | | | | | 5 | | | |
| | | | | | | | 6 | | | |
| | | | | | | | 7 | | | |
| | | | | | | | 8 | | | |

SAMPLE TYPE
D&M - Dames & Moore SPT - Standard Penetration
CB - Core Barrel SH - Shelby Tube
AUG - Auger Cuttings NR - No Recovery

OTHER LABORATORY TESTS
MD - Moisture/Density UC - Unconfined Compression
CON - Consolidation Test SG - Specific Gravity
PI - Atterberg Limits SA - Sieve Analysis

LOG OF BORING

CONSULTANTS, LLC
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Subdivision Phases 1, 2 and 4A
Kula, Makawao, Maui, Hawaii

DATE: April 2013 | PROJECT NO.: 212302.20

PLATE 13

BORING LOCATION: See Site Plan | DRILLER: PSC
BORING ELEVATION: | LOGGED BY: JGN
DATE (S) DRILLED: 6/04 | TYPE RIG: Backhoe Excavator

**BORING NO. TP-28**

| OTHER LAB TESTS | DRY UNIT WEIGHT (pcf) | MOISTURE CONTENT (%) | CORE RECOVERY (%) | R.Q.D. (%) | NUMBER OF BLOWS/12" | SAMPLE NUMBER | DEPTH IN FEET | GRAPHIC SYMBOL | U.S.C.S. | GEOTECHNICAL DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | BS-28 | 0 | | | SILT, brown, medium stiff, moist with traces of gravel and rootlets. |
| Pi=2 | | | | | | | 1 | | MH | |
| DH=1.9 | | | | | | | | | | |
| | | 27.9 | | | | | 2 | | | Gravelly SILT with basaltic cobbles and boulders, traces of clay and rootlets, dark brown, moist |
| | | | | | | | 3 | | MH | |
| | | | | | | | 4 | | | |
| | | | | | | | 5 | | | BASALT,dark gray, fresh to moderately weathered, strong, fractured |
| | | | | | | | 6 | | | Test pit terminated at about 5.25 ft. Groundwater was not encountered. |

SAMPLE TYPE
MC - Modified California SPT - Standard Penetration
CB - Core Barrel SH - Shelby Tube
AUG - Auger Cuttings D&M - Dames & Moore

OTHER LABORATORY TESTS
MD - Moisture/Density UC - Unconfined Compression
CON - Consolidation Test SG - Specific Gravity
PI - Atterberg Limits SA - Sieve Analysis

LOG OF BORING

*Geotechnical & Environmental Consultants*
*Construction Management, Testing & Inspection*

Keokea/Waiohuli Development
Kula, Makawao, Maui, Hawaii

DATE: March 2005 | PROJECT NO.: 24304.10

PLATE NO. 30

BORING LOCATION: See Site Plan | DRILLER: PSC
BORING ELEVATION: | LOGGED BY: JGN
DATE (S) DRILLED: 7/04 | TYPE RIG: Backhoe

**BORING NO. TP-29**

| OTHER LAB TESTS | DRY UNIT WEIGHT (pcf) | MOISTURE CONTENT (%) | CORE RECOVERY (%) | R.Q.D. (%) | NUMBER OF BLOWS/12" | SAMPLE NUMBER | DEPTH IN FEET | GRAPHIC SYMBOL | U.S.C.S. | GEOTECHNICAL DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | BS-29 | 0 | | | Silty GRAVEL, gray tuffaceous gravels, cobbles and boulders with a clayey silt matrix, trace rootlets, brown, moist |
| | | | | | | | 1 | | GW GM | |
| | | | | | | | 2 | | | BASALT dark gray, slightly to moderately weathered, strong to very strong. |
| | | | | | | | 3 | | | Test pit terminated at about 3.5 ft. Groundwater was not encountered |
| | | | | | | | 4 | | | |

SAMPLE TYPE
MC - Modified California SPT - Standard Penetration
CB - Core Barrel SH - Shelby Tube
AUG - Auger Cuttings D&M - Dames & Moore

OTHER LABORATORY TESTS
MD - Moisture/Density UC - Unconfined Compression
CON - Consolidation Test SG - Specific Gravity
PI - Atterberg Limits SA - Sieve Analysis

LOG OF BORING

*Geotechnical & Environmental Consultants*
*Construction Management, Testing & Inspection*

Keokea/Waiohuli Development
Kula, Makawao, Maui, Hawaii

DATE: March 2005 | PROJECT NO.: 24304.10

PLATE NO. 31

BORING LOCATION: See Plate 3 | DRILLER: Ed Gaynor
BORING ELEVATION (ft): | LOGGED BY: DSC
DATE (S) DRILLED: 03/08/13 | TYPE RIG: Bobcat 325

**BORING TP-5**

| OTHER LAB TESTS | DRY UNIT WEIGHT (pcf) | MOISTURE CONTENT (%) | CORE RECOVERY (%) | R.Q.D. (%) | NUMBER OF BLOWS/12" | SAMPLER TYPE | DEPTH IN FEET | GRAPHIC SYMBOL | U.S.C.S. | GEOTECHNICAL DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0 | | | DRY GRASS VEGETATION |
| | | | | | | GRAB 5-1 | 1 | | ML SM | Sandy SILT, brown, soft, with gravel cobbles and boulders, dry |
| SA#1 | | 15.9 | | | | | 2 | | | |
| | | | | | | | 3 | | | |
| | | | | | | | 4 | | | BASALT, vessicate, strong, gray |
| | | | | | | | 5 | | | Test pit terminated at about 4.5 ft (Refusal). Ground water was not enountered. |
| | | | | | | | 6 | | | |
| | | | | | | | 7 | | | |
| | | | | | | | 8 | | | |

SAMPLE TYPE
D&M - Dames & Moore SPT - Standard Penetration
CB - Core Barrel SH - Shelby Tube
AUG - Auger Cuttings NR - No Recovery

OTHER LABORATORY TESTS
MD - Moisture/Density UC - Unconfined Compression
CON - Consolidation Test SG - Specific Gravity
PI - Atterberg Limits SA - Sieve Analysis

LOG OF BORING

CONSULTANTS, LLC
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Subdivision Phases 1, 2 and 4A
Kula, Makawao, Maui, Hawaii

DATE: April 2013 | PROJECT NO.: 212302.20

PLATE 9

BORING LOCATION: See Plate 3 | DRILLER: Ed Gaynor
BORING ELEVATION (ft): | LOGGED BY: DSC
DATE (S) DRILLED: 03/08/13 | TYPE RIG: Bobcat 325

**BORING TP-6**

| OTHER LAB TESTS | DRY UNIT WEIGHT (pcf) | MOISTURE CONTENT (%) | CORE RECOVERY (%) | R.Q.D. (%) | NUMBER OF BLOWS/12" | SAMPLER TYPE | DEPTH IN FEET | GRAPHIC SYMBOL | U.S.C.S. | GEOTECHNICAL DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0 | | | DRY VEGETATION GRASS |
| MDVCSR | 73 | 37.0 | | | | GRAB 6-1 | 1 | | MH | SILT, brown, stiff, trace rootlets and clay, with basalt cobbles and boulders, dry |
| | | | | | | | 2 | | | |
| | | | | | | | 3 | | | |
| | | | | | | | 4 | | | BASALT, strong, weathered, gray, dry |
| | | | | | | | 5 | | | Test pit terminated at about 4 ft (Refusal). Ground water was not enountered. |
| | | | | | | | 6 | | | |
| | | | | | | | 7 | | | |
| | | | | | | | 8 | | | |

SAMPLE TYPE
D&M - Dames & Moore SPT - Standard Penetration
CB - Core Barrel SH - Shelby Tube
AUG - Auger Cuttings NR - No Recovery

OTHER LABORATORY TESTS
MD - Moisture/Density UC - Unconfined Compression
CON - Consolidation Test SG - Specific Gravity
PI - Atterberg Limits SA - Sieve Analysis

LOG OF BORING

CONSULTANTS, LLC
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Subdivision Phases 1, 2 and 4A
Kula, Makawao, Maui, Hawaii

DATE: April 2013 | PROJECT NO.: 212302.20

PLATE 10

BORING LOCATION: See Site Plan | DRILLER: PSC
BORING ELEVATION: | LOGGED BY: JGN
DATE (S) DRILLED: 6/04 | TYPE RIG: Backhoe Excavator

**BORING NO. TP-24**

| OTHER LAB TESTS | DRY UNIT WEIGHT (pcf) | MOISTURE CONTENT (%) | CORE RECOVERY (%) | R.Q.D. (%) | NUMBER OF BLOWS/12" | SAMPLE NUMBER | DEPTH IN FEET | GRAPHIC SYMBOL | U.S.C.S. | GEOTECHNICAL DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | BS-24 | 0 | | | Silty GRAVEL, basaltic gravels, cobbles, and boulders with silt matrix, trace rootlets, brown, moist |
| | | 33.1 | | | | | 1 | | GW GM | |
| | | | | | | | 2 | | | BASALT gray, slightly to moderately weathered, strong,fractured |
| | | | | | | | | | | Test pit terminated at about 1.75 ft. Groundwater was not encountered. |

SAMPLE TYPE
MC - Modified California SPT - Standard Penetration
CB - Core Barrel SH - Shelby Tube
AUG - Auger Cuttings D&M - Dames & Moore

OTHER LABORATORY TESTS
MD - Moisture/Density UC - Unconfined Compression
CON - Consolidation Test SG - Specific Gravity
PI - Atterberg Limits SA - Sieve Analysis

LOG OF BORING

*Geotechnical & Environmental Consultants*
*Construction Management, Testing & Inspection*

Keokea/Waiohuli Development
Kula, Makawao, Maui, Hawaii

DATE: March 2005 | PROJECT NO.: 24304.10

PLATE NO. 26

BORING LOCATION: See Site Plan | DRILLER: PSC
BORING ELEVATION: | LOGGED BY: JGN
DATE (S) DRILLED: 7/04 | TYPE RIG: Backhoe

**BORING NO. TP-25**

| OTHER LAB TESTS | DRY UNIT WEIGHT (pcf) | MOISTURE CONTENT (%) | CORE RECOVERY (%) | R.Q.D. (%) | NUMBER OF BLOWS/12" | SAMPLE NUMBER | DEPTH IN FEET | GRAPHIC SYMBOL | U.S.C.S. | GEOTECHNICAL DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | BS-25 | 0 | | | Silty GRAVEL, gray tuffaceous gravel (clinker), cobbles and boulders with silt (volcanic ash), trace rootlets, brown, moist |
| | | | | | | | 1 | | GW GM | |
| | | | | | | | 2 | | | BASALT, dark gray, slightly to moderately weathered, strong |
| | | | | | | | | | | Test pit terminated at about 1.75 ft. Groundwater was not encountered |
| | | | | | | | 3 | | | |

SAMPLE TYPE
MC - Modified California SPT - Standard Penetration
CB - Core Barrel SH - Shelby Tube
AUG - Auger Cuttings D&M - Dames & Moore

OTHER LABORATORY TESTS
MD - Moisture/Density UC - Unconfined Compression
CON - Consolidation Test SG - Specific Gravity
PI - Atterberg Limits SA - Sieve Analysis

LOG OF BORING

*Geotechnical & Environmental Consultants*
*Construction Management, Testing & Inspection*

Keokea/Waiohuli Development
Kula, Makawao, Maui, Hawaii

DATE: March 2005 | PROJECT NO.: 24304.10

PLATE NO. 27

**ADDITIVE ALTERNATE**

NOTE:
BORING AND TEST PIT LOGS TAKEN FROM "PRELIMINARY GEOTECHNICAL EXPLORATION REPORT KEOKEA-WAIOHULI DEVELOPMENT PROJECT" PREPARED BY PSC CONSULTANTS, LLC, DATED MARCH 31, 2005 AND "PRELIMINARY GEOTECHNICAL EXPLORATION REPORT KEOKEA-WAIOHULI SUBDIVISION PHASES 1, 2, AND 4A" PREPARED BY PSC CONSULTANTS, LLC, DATED APRIL 05, 2013.

**BASE BID/ADDITIVE ALTERNATE**

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |


cp&e Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii


**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**
KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEY: (2) 2-2-002:014 AND (2) 2-2-033:023

**BORING LOGS - BASE BID/ ADDITIVE ALTERNATE**

| DRAWN BY: | ENGINEER: | CHECKED BY: |
|---|---|---|
| | | |

**ADDENDUM NO. 3**



| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |

GENERAL

A. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE CITY AND COUNTY OF HONOLULU DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS/DETAILS AND AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020. HOWEVER, WHERE REFERENCE IS MADE TO PERFORMANCE CONFORMING TO OTHER STANDARDS, THE MORE STRINGENT SHALL APPLY.
B. THE CONTRACTOR SHALL COMPARE ALL THE CONTRACT DOCUMENTS WITH EACH OTHER AND REPORT IN WRITING TO THE ENGINEER ALL INCONSISTENCIES AND OMISSIONS.
C. THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS AND VERIFY FIELD CONDITIONS AND SHALL COMPARE SUCH FIELD MEASUREMENTS AND CONDITIONS WITH THE DRAWINGS BEFORE COMMENCING WORK. REPORT IN WRITING TO THE ENGINEER ALL INCONSISTENCIES AND OMISSIONS.
D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES.
E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR METHODS OF CONSTRUCTION, WORKMANSHIP AND JOB SAFETY. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND BRACING AS REQUIRED FOR STABILITY OF STRUCTURAL MEMBERS AND SYSTEMS.
F. CONSTRUCTION LOADING SHALL NOT EXCEED DESIGN LIVE LOAD UNLESS SPECIAL SHORING IS PROVIDED. ALLOWABLE LOADS SHALL BE REDUCED IN AREAS WHERE THE STRUCTURE HAS NOT ATTAINED FULL DESIGN STRENGTH.
G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE ADJACENT PROPERTIES, STRUCTURES, STREETS AND UTILITIES DURING THE CONSTRUCTION PERIOD.
H. DETAILS NOTED AS TYPICAL ON THE STRUCTURAL DRAWINGS SHALL APPLY IN ALL CONDITIONS UNLESS SPECIFICALLY SHOWN OR NOTED.

DESIGN CRITERIA

A. DESIGN LIVE LOADS:---------- AASHTO HL-93

FOUNDATION

A. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL ENGINEERING EXPLORATION, KEOKEA-WAIOHULI DEVELOPMENT PROJECT, KULA, KEOKEA, MAUI, HAWAII BY PSC CONSULTANTS, LLC, DATED MARCH, 2005, AND THE GEOTECHNICAL ENGINEERING EXPLORATION, KEOKEA-WAIOHULI SUBDIVISION PHASES 1,2, AND 4A, KULA, MAKAWAO, MAUI, HAWAII BY PSC CONSULTANTS, LLC, DATED APRIL, 2013.
B. CONTRACTOR SHALL PROVIDE FOR DE-WATERING OF EXCAVATION FROM SURFACE WATER, GROUND WATER OR SEEPAGE.
C. EXCAVATIONS FOR ANY PURPOSE SHALL NOT REMOVE LATERAL SUPPORT FROM ANY FOOTING OR FOUNDATION WITHOUT FIRST UNDERPINNING OR PROTECTING THE FOOTING OR FOUNDATION AGAINST SETTLEMENT OR LATERAL TRANSLATION.
D. THE EXISTING UPPER SILT/VOLCANIC ASH SOILS DO NOT CONTAIN, OR HAVE VERY LITTLE PERCENTAGE OF COARSE MATERIAL AND ARE NOT SUITABLE FOR SUPPORT AND SHOULD BE OVER EXCAVATED AND REPLACED WITH SELECT ONSITE GRANULAR SOILS OR BORROW. THE SILT/VOLCANIC ASH SHOULD BE OVER EXCAVATED DOWN TO AT LEAST 2 FEET OR UNTIL STIFF TO VERY STIFF OR DENSE GRAVELLY MATERIALS ARE ENCOUNTERED, AND REPLACED WITH SELECT GRANULAR MATERIALS.
E. FILL SHOULD BE PLACED IN LEVEL LIFTS WITH A MAXIMUM LOOSE THICKNESS OF 8-INCHES AND COMPACTED TO A MINIMUM OF 90 PERCENT. EACH LAYER SHOULD BE SPREAD UNIFORMLY AND PROCESSED TO ATTAIN UNIFORMITY OF THE MATERIAL AND WATER CONTENT. ADDITIONAL FILL MATERIAL SHOULD NOT BE PLACED ON ANY FILL LAYER WHICH HAS NOT BEEN PROPERLY COMPACTED AND TESTED. LAVA TUBES, IF ENCOUNTERED, SHOULD BE FILLED WITH SELECT GRANULAR MATERIAL.
F. SLABS SHALL BEAR ON A 8" THICK LAYER OF SELECT GRANULAR FILL MATERIAL COMPACTED TO A MINIMUM OF 90% RELATIVE COMPACTION. BOTTOM OF FOOTINGS SHALL BE COMPACTED TO PROVIDE A RELATIVELY FIRM AND SMOOTH BEARING SURFACE PRIOR TO PLACEMENT OF REINFORCING STEEL AND CONCRETE. PRIOR TO PLACING THE SELECT GRANULAR FILL MATERIAL, THE SUBGRADE SHALL BE SCARIFIED TO A DEPTH OF ABOUT 12", MOISTURE CONDITIONED TO BETWEEN 2 AND 4 PERCENT ABOVE THE OPTIMUM MOISTURE CONTENT, AND RECOMPACTED TO A MINIMUM OF 90% RELATIVE COMPACTION.
G. UNLESS NOTED OTHERWISE, THE MINIMUM DEPTH OF FOOTINGS BELOW THE UNDISTURBED GROUND SURFACE SHALL BE 18 INCHES.
H. EXCAVATIONS FOR FOUNDATIONS SHALL BE MONITORED AND APPROVED BY PSC PRIOR TO PLACEMENT OF CONCRETE AND REINFORCING STEEL TO CONFIRM FOUNDATION BEARING CONDITIONS AND REQUIRED EMBEDMENT DEPTHS.
I. CONTRACTOR SHALL BRACE OR PROTECT ALL WALLS BELOW GRADE FROM LATERAL LOADS UNTIL THEY HAVE ATTAINED THEIR FULL DESIGN STRENGTH.
J. JOINTS IN WALLS AND FLOOR, JOINTS BETWEEN THE WALL AND FLOOR AND PENETRATIONS IN THE WALL AND FLOOR SHALL BE MADE WATERTIGHT UTILIZING APPROVED METHODS AND MATERIALS.

CONCRETE

A. CONCRETE CONSTRUCTION SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE ACI 318 AND CITY AND COUNTY OF HONOLULU DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS.
B. CONCRETE SHALL BE NORMAL WEIGHT HARD ROCK CONCRETE WITH A MAXIMUM W/C RATIO OF 0.45 AND MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
C. CONCRETE DELIVERY TICKETS SHALL RECORD ALL FREE WATER IN THE MIX: AT BATCHING BY PLANT, FOR CONSISTENCY BY DRIVER, AND ANY ADDITIONAL REQUEST BY CONTRACTOR IF PERMITTED BY THE MIX DESIGN.
D. WATER USED IN MIXING CONCRETE SHALL BE CLEAN AND FREE FROM INJURIOUS AMOUNTS OF OILS, ACIDS, ALKALIS, SALTS, ORGANIC MATERIALS OR OTHER SUBSTANCES THAT ARE DELETERIOUS TO CONCRETE OR STEEL REINFORCEMENT.
E. ALL INSERTS, ANCHOR BOLTS, PLATES, AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE HOT-DIP GALVANIZED ACCORDING TO ASTM A153 UNLESS OTHERWISE NOTED.
F. REINFORCING BARS, ANCHOR BOLTS, INSERTS, AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE SECURED IN POSITION PRIOR TO PLACEMENT OF CONCRETE.
G. ALL EXPOSED EDGES HALL HAVE A CONTINUOUS ¾" CHAMFER, UNLESS NOTED OTHERWISE.

PRECAST CONCRETE:

A. PRECAST CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
B. CONSTRUCTION OF PRECAST DRAINAGE STRUCTURES SHALL CONFORM TO ASTM C913.
C. ALL JOINTS SHALL BE CONSTRUCTED TRUE TO THE DIMENSIONS SHOWN ON THE DRAWINGS.
D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS FOR CONFORMANCE TO THE PLANS AND SPECIFICATIONS, CORRECT DETAILS AND PARTS FIT TOGETHER AS SPECIFIED AFTER ASSEMBLY.
E. IF THE PERMISSIBLE VARIATIONS/TOLERANCES ARE EXCEEDED, THE PRECAST SECTIONS MAY BE ACCEPTABLE UPON RECEIPT OF A SIGNED AND STAMPED CERTIFICATION FROM THE DESIGN ENGINEER THAT:
   1. EXCEEDING THE TOLERANCE/VARIATION DOES NOT AFFECT THE STRUCTURAL INTEGRITY OF THE UNIT.
   2. THE UNIT CAN BE BROUGHT WITHIN TOLERANCE BY STRUCTURALLY SATISFACTORY MEANS; OR
   3. THE TOTAL ERECTED ASSEMBLY CAN BE MODIFIED TO MEET ALL STRUCTURAL REQUIREMENTS.
G. LIFT ANCHORS EMBEDDED SIZE AND LOCATION IN CONCRETE TO BE DETERMINED BY PROVIDER SUBJECT TO REVIEW BY DESIGN ENGINEER.
H. AT ALL CORNER EDGES EXPOSED AFTER THE FULL PRECAST CONSTRUCTION SHALL HAVE A CONTINUOUS ¾" CHAMFER, UNLESS NOTED OTHERWISE.

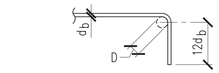
REINFORCING STEEL

A. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
B. EPOXY COATED REINFORCING SHALL CONFORM TO ASTM A775.
C. CLEAR CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
   1. CAST AGAINST AND EXPOSED TO EARTH:--------- 3"
   2. FORMED AND EXPOSED TO EARTH OR WEATHER:----2"
D. REINFORCING STEEL SHALL BE SPLICED WHERE INDICATED ON PLANS. PROVIDE LAP SPLICE LENGTH PER TYPICAL DETAILS AND SCHEDULE, UNLESS OTHERWISE NOTED.
E. MECHANICAL SPLICE CONNECTORS SHALL DEVELOP IN TENSION 125 PERCENT OF THE SPECIFIED MINIMUM YIELD STRENGTH OF REINFORCING BARS.
F. STANDARD HOOKS ON REINFORCING BARS USED SHALL COMPLY WITH ACI 318, SECTION 7.1.
G. MINIMUM REINFORCEMENT BEND DIAMETERS SHALL COMPLY WITH ACI 318, SECTION 7.2.
H. BAR PLACEMENT SHALL CONFORM TO SECTION 48 "REINFORCING STEEL OF STANDARD SPECIFICATIONS".

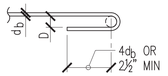
| MINIMUM SPLICE AND DEVELOPMENT LENGTHS | | | | | |
|---|---|---|---|---|---|
| BAR SIZE | LAP SPLICE | | DEVELOPMENT | | |
| | | | STRAIGHT | | WITH STANDARD HOOK |
| | TOP BARS | OTHER BARS | TOP BARS | OTHER BARS | |
| #3 | 26" | 20" | 20" | 16" | 8" |
| #4 | 34" | 26" | 26" | 20" | 10" |
| #5 | 42" | 32" | 32" | 24" | 12" |
| #6 | 50" | 38" | 38" | 30" | 16" |

NOTES:

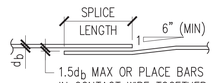
1. LENGTHS ARE FOR CONCRETE WITH REBAR SPACED AT 6 BAR DIAMETERS MINIMUM. INCREASE LENGTHS BY 25% FOR BARS SPACED LESS THAN 6 BAR DIAMETERS.
2. "TOP BARS" ARE HORIZONTAL BARS WITH 12" OR MORE OF CONCRETE CAST BELOW.
3. D = $6d_b$.




90° BEND




180° BEND

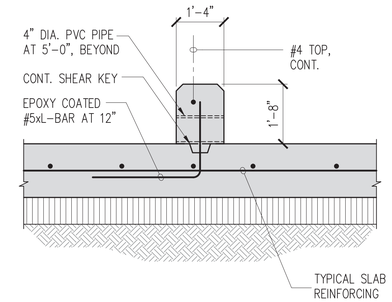



BAR LAP

1 S-1

## TYPICAL REBAR SPLICE AND DEVELOPMENT LENGTH SCHEDULE

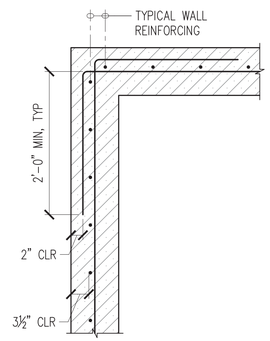
NOT TO SCALE




2 S-1

## TYPICAL WEIR DETAIL

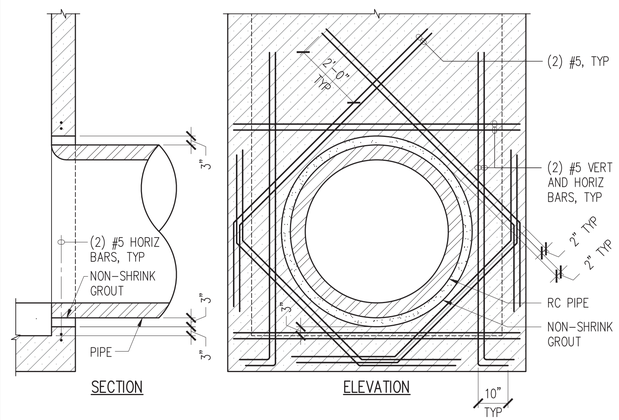
NOT TO SCALE




3 S-1

## TYPICAL PRECAST WALL CORNER BEND DETAIL

NOT TO SCALE

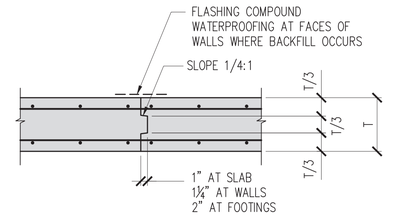



NOTE:
ALL BARS LOCATED AT MID-DEPTH OF WALL.

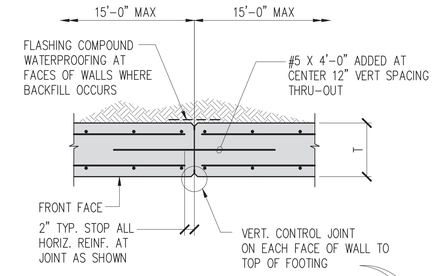
4 S-1

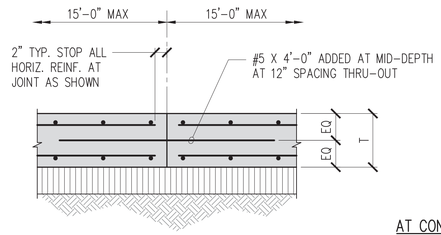
## TYPICAL ADDED REINFORCING AT PRECAST PIPE OPENINGS

NOT TO SCALE

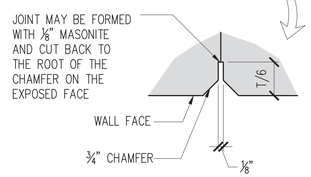



AT CONSTRUCTION JOINT (WALLS, FOOTINGS)




AT CONTRACTION JOINT

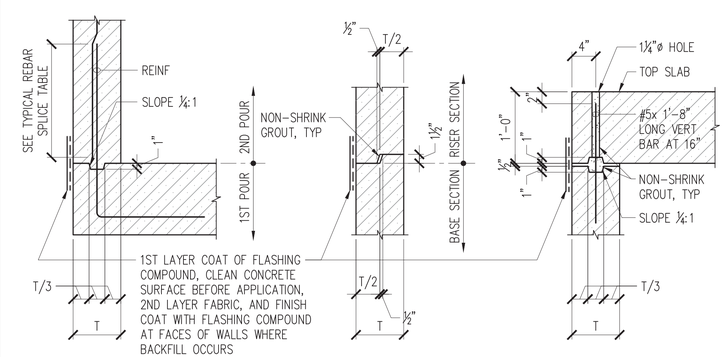



NOTE:
CONTRACTION JOINTS PLACED PARALLEL TO WEIR WALL SHALL NOT BE LOCATED WITHIN 5'-0" OF WALL

5 S-1

## TYPICAL JOINT DETAIL

NOT TO SCALE




6 S-1

## TYPICAL PRECAST CONSTRUCTION JOINT DETAILS

NOT TO SCALE

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|---|---|---|---|
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1288 Queen Emma Street, Third Floor Honolulu, Hawaii


KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014, (2) 2-2-033: 007 TO 008, 009 TO 022, 025 TO 027, 038 TO 058, AND (2) 2-2-34: 016 TO 026

STRUCTURAL GENERAL NOTES AND TYPICAL DETAILS

| DRAWN BY: | ENGINEER: | CHECKED BY: |
|---|---|---|
| | | |

JERRY S FUJITA
LICENSED PROFESSIONAL ENGINEER
No. 11573-S
HAWAII, U.S.A.

(EXPIRES 4/30/2024)

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Jerry S Fujita

ADDENDUM NO. 3

DWG. NO. S-1 SHEET 79 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
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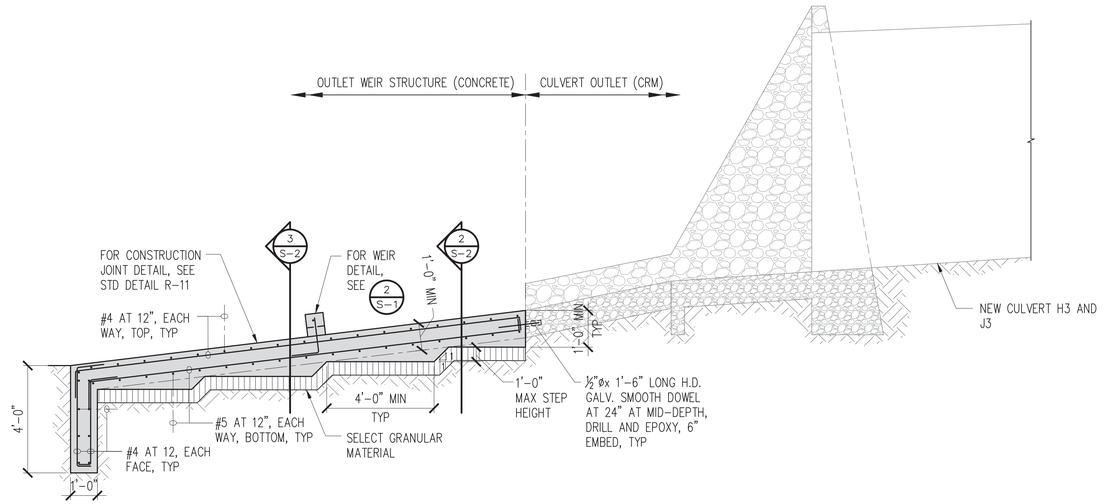
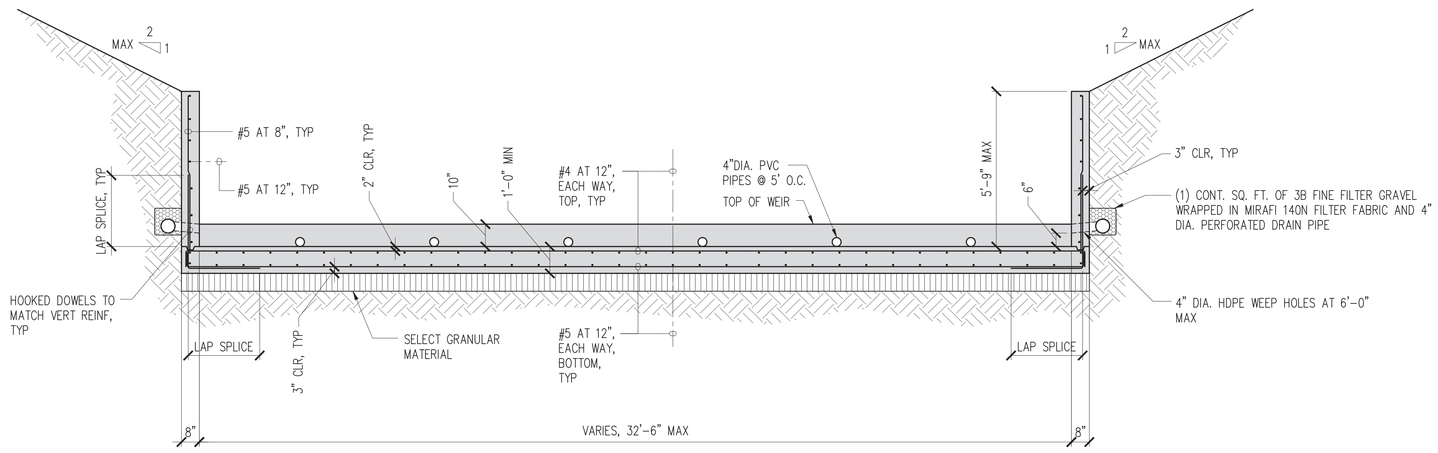
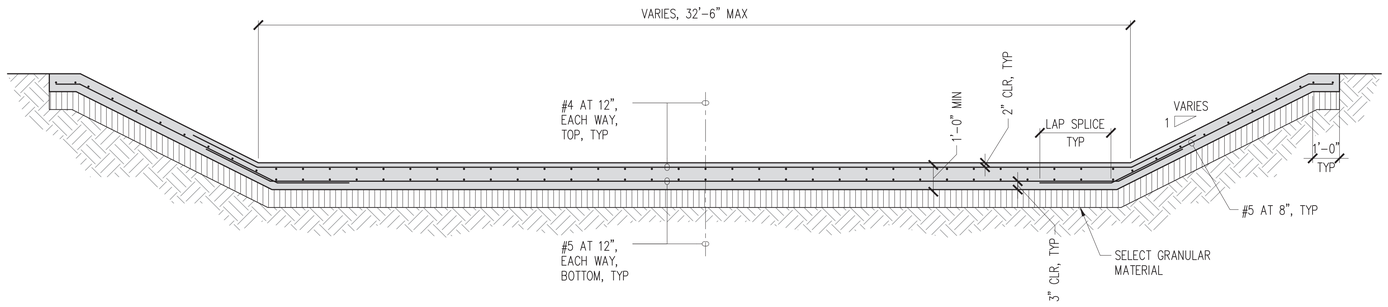
NOTE:
1. FOR OUTLET WEIR STRUCTURE DIMENSIONS AND LOCATIONS, SEE CIVIL DWGS
2. PROVIDE CONTRACTION JOINTS AT 15FT MAXIMUM. FOR DETAIL, SEE 3/S-1
3. CHAMFERS NOT REQUIRED AT SLAB CONTRACTION JOINTS




1 S-2 LONGITUDINAL SECTION
OUTLET WEIR STRUCTURE - H3 AND J3
NOT TO SCALE




2 S-2 SECTION
SCALE: 3/8" = 1'-0"




3 S-2 SECTION
SCALE: 3/8" = 1'-0"

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| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
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# KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014, (2) 2-2-033: 007 TO 008, 009 TO 022, 025 TO 027, 038 TO 058, AND (2) 2-2-34: 016 TO 026

## WEIR STRUCTURE SECTIONS AND DETAILS

| DRAWN BY: | ENGINEER: | CHECKED BY: |
|---|---|---|
| | | |

**ADDENDUM NO. 3**

DWG. NO. S-2

SHEET 80 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
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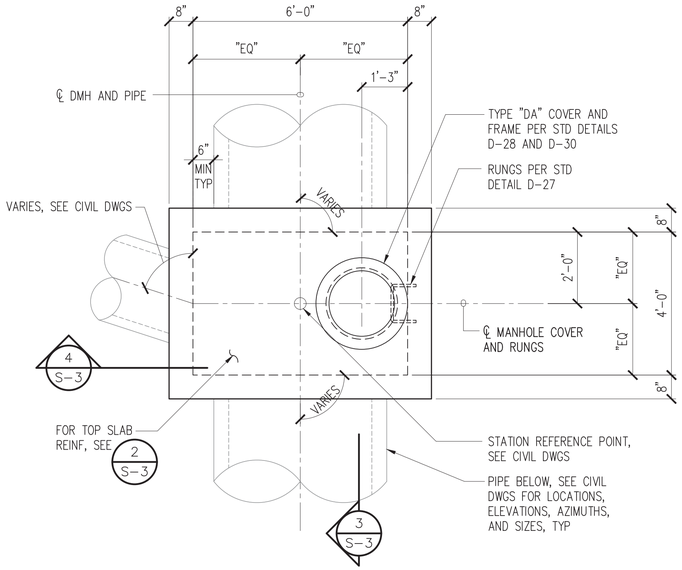
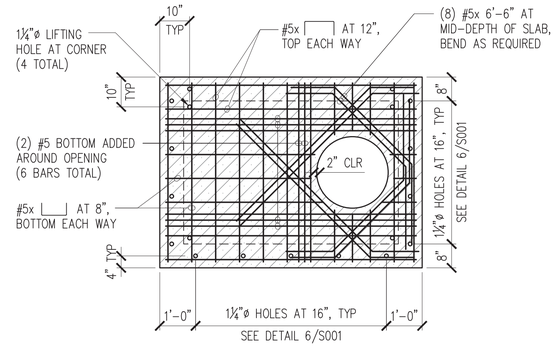



## 1 S-3 PLAN VIEW - SPECIAL DRAIN MANHOLE DMH J1A

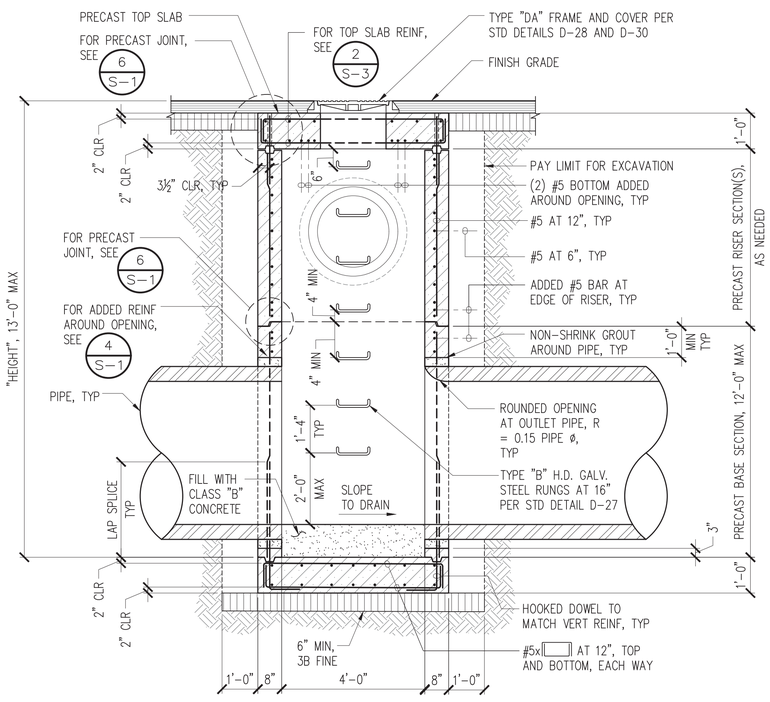
SCALE: 1/2" = 1'-0"




## 2 S-3 PLAN - TOP SLAB REINFORCING STEEL

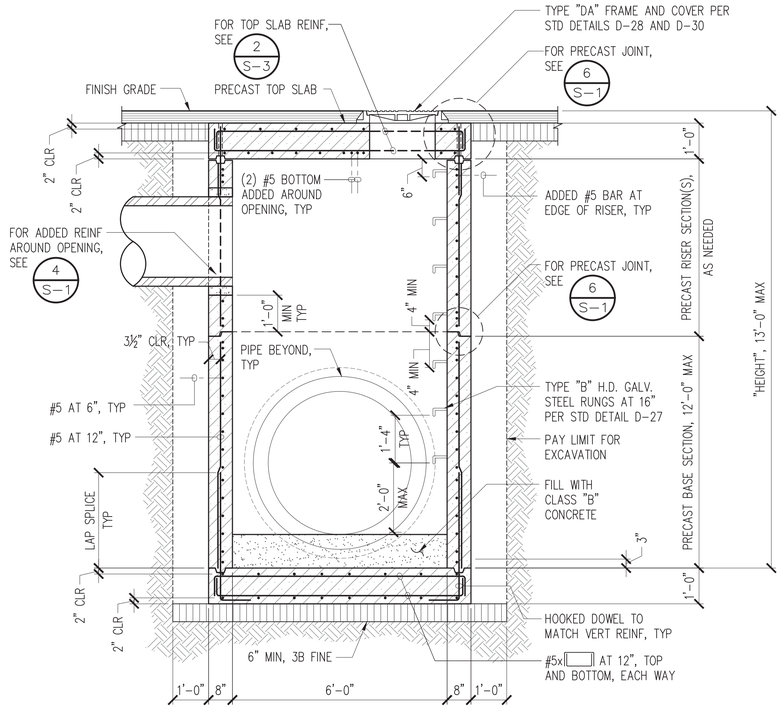
SCALE: 1/2 " = 1'-0"

NOTES:
1. FOR DRAIN MANHOLE ELEVATIONS, SEE CIVIL DWGS
2. TOP OF STRUCTURE ELEVATION IS BASED ON THE STATION REFERENCE POINT AT CENTER OF MANHOLE. THE CONTRACTOR SHALL SLOPE THE WALLS AND/OR THE TOP SLAB TO ADJUST TO THE ACTUAL SLOPE AS REQUIRED.
3. WHERE RISER SECTIONS ARE NOT USED, THE BASE SECTIONS SHALL EXTEND UP TO THE BOTTOM OF THE TOP SLAB WITH THE TOP SLAB JOINT.
4. ROUNDED OPENING AT OUTLET PIPE(S) MIN. RADIUS = 0.15 PIPE DIAM., TYP




## 3 S-3 SECTION

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




## 4 S-3 SECTION

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

**ADDITIVE ALTERNATE**

**ADDENDUM NO. 3**

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## PRECAST DRAIN MANHOLE PLANS AND SECTIONS

| DRAWN BY: | ENGINEER: | CHECKED BY: |
|---|---|---|
| | | |

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(EXPIRES 4/30/2024)

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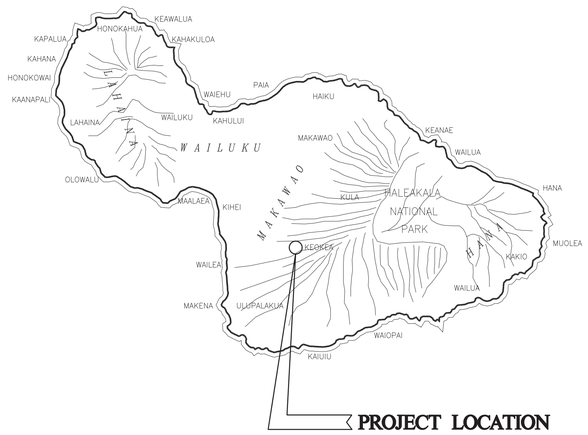
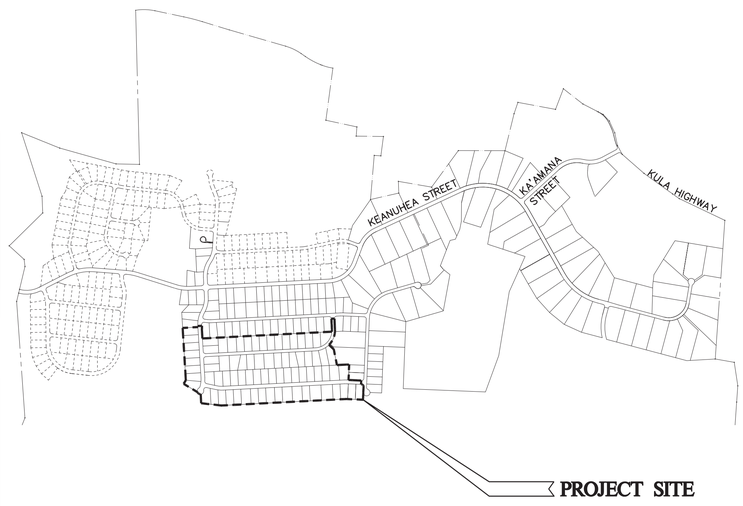



## VICINITY MAP
NOT TO SCALE

NORTH




NORTH

## LOCATION MAP
NOT TO SCALE

# GENERAL NOTES:

1. PROVIDE 3' MINIMUM HORIZONTAL CLEAR & 6" VERTICAL CLEAR BETWEEN WATER LINES & ALL ELECTRICAL SYSTEMS.

2. CONTRACTOR SHALL BE RESPONSIBLE TO ARRANGE WITH THE GENERAL CONTRACTOR TO IDENTIFY THE LOCATIONS OF CIVIL SITE UTILITIES, DRIVEWAYS, ETC. PRIOR TO ELEC-TRICAL CONTRACTORS LAYOUT OF ELECTRIC, TELEPHONE, STREET LIGHT, TRAFFIC SIGNAL, AND CATV SYSTEMS.

# NOTES FOR CONSTRUCTION

a. THE LOCATION OF OVERHEAD AND UNDERGROUND FACILITIES SHOWN ON THE PLANS ARE FROM EXISTING RECORDS WITH VARYING DEGREES OF ACCURACY AND ARE NOT GUARANTEED AS SHOWN. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN PROXIMITY OF UNDERGROUND LINES AND SHALL MAINTAIN ADEQUATE CLEARANCE WHEN OPERATING EQUIPMENT UNDER ANY OVERHEAD LINES.

b. THE CONTRACTOR IS TO COMPLY WITH THE DIRECTIONS OF THE STATE OF HAWAII OCCUPATIONAL SAFETY AND HEALTH LAW (DOSH).

c. WHEN TRENCH EXCAVATION IS ADJACENT TO EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS AND SETTLEMENT, AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDERPINNING TO FULLY PROTECT IT FROM DAMAGE.

d. WHERE PEDESTRIAN WALKWAYS EXIST, SUCH WALKWAYS SHALL BE MAINTAINED IN PASSABLE CONDITION OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGE BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED.

e. DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THESE RIGHT-OF-WAYS ARE OTHERWISE PROVIDED FOR SATISFACTORILY.

f. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN BY THE ENGINEER TO EXIST FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.

# EQUIPMENT SCHEDULE

THE MAUI ELECTRIC Co., SANDWICH ISLES COMMUNICATIONS, INC., COMMUNITY ANTENNA TELEVISION & STREET LIGHTING PULLBOXES, HANDHOLE, TRANSFORMER PAD LOTS & SWITCHING EQUIPMENT PAD LOTS SHALL BE CONSTRUCTED BY THE CONTRACTOR AS SHOWN IN THESE DRAWINGS & IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS:

| TYPE | DESCRIPTION |
|---|---|
| 13" X 24" COMMUNICATION PULLBOX | 13" X 24" X 30" POLYMER CONCRETE BOX WITH NON-SKID SURFACE POLYMER CONCRETE 20K "TRAFFIC" RATED COVER, "SIC" INSCRIBED ON COVER. PROVIDED IN ACCORDANCE WITH SANDWICH ISLES COMMUNICATIONS REQUIRE-MENTS, TYPE UHC 13x24 |
| 30" X 48" COMMUNICATION HANDHOLE | 2'-6" X 4'-0" X 33" FIBRE REINFORCED PLASTIC HANDHOLE WITH NON-SKID SURFACE POLYMER CONCRETE 20K "TRAFFIC" RATED COVERS, "SIC" INSCRIBED ON COVERS. PROVIDED IN ACCORDANCE WITH SANDWICH ISLES COMMUNICATIONS REQUIREMENTS, TYPE UHC 30x48. VERIFY DEPTH OF HANDHOLE. |
| 3' X 5' COMMUNICATION HANDHOLE | 3'-9" X 5'-9" X 3'-7" REINFORCED CON-CRETE HANDHOLE WITH TRAFFIC RATED FRAME AND COVERS, PROVIDED IN ACCORDANCE WITH SANDWICH ISLES COMMUNICATIONS REQUIREMENTS, TYPE UHC-35. VERIFY DEPTH OF HANDHOLE. |
| 2' X 4' CATV PULLBOX | 2'-0" X 4'-0" PRECAST CONCRETE PULLBOX WITH TWO PIECE POLYMER CONCRETE "SLIP-NOT" COVERS SIMILAR TO HTCO 2' X 4' PULLBOX, HTCO DRAWING NO. 34056, EXCEPT WITH "CATV" INSCRIBED ON COVER. |
| 2' X 4' MECO HANDHOLE | 2' X 4' PRECAST CONRETE HANDHOLE WITH PRECAST CONCRETE COVER, PROVIDED IN ACCORDANCE WITH MECO STANDARD DRAWING NO. 30-2005 |

# ELECTRICAL SYMBOLS

| SYMBOL | DESCRIPTION |
|---|---|
| —○ | STREET LIGHT, 100W HIGH PRESSURE SODIUM LUMINAIRE & GALVANIZED STEEL BRACKET ARM PROVIDED BY MECO ON UTILITY POLE |
| ○--⊘ | EXISTING STREET LIGHT & BRACKET ARM TO REMAIN |
| ⊘×⊘ | REMOVE & RELOCATE EXISTING STREET LIGHT & BRACKET ARM, DEMOLISH EXST. CONC. BASE 2 FT. BELOW FINISH GRADE |
| ○ | UTILITY POLE PROVIDED BY MECO |
| ⊘ | FUTURE/EXISTING UTILITY POLE |
| ←——— | ANCHOR GUYING, PROVIDED BY RESPECTIVE UTILITY COMPANY |
| ←------ | FUTURE/EXISTING ANCHOR GUYING |
| 1 | NOTE SYMBOL, SEE PLAN FOR NOTES |
| ←\|\| | GROUND ROD, 5/8" DIA. X 8'-0" (BMZ) |
| —+-·—— | BREAKLINE TO BEGIN & END DUCT SECTION TYPE |
| ——·—0 | ELECTRIC/COMM DUCTLINE WITH DESIGNATORS; INDICATES TYPE "A" DUCT SECTION WITH "2-4S" DUCTS. SEE SHEET E-8 FOR DUCT SECTIONS AND CONDUIT SCHEDULES |
| A 2-4S | |
| ——·——a | STUB, CAP, & MARK CONDUIT(S) WITH CONCRETE MARKER |
| ═══ | SAWCUT EXST. A.C. PAVEMENT, CONC. SIDEWALK, CURB & GUTTER PRIOR TO TRENCH EXCAVATION. RESTORE SUBBASE, BASECOURSE, PAVEMENT, CONC. SIDEWALK, CURB & GUTTER PER COUNTY REQUIREMENTS, THICKNESS SHALL MATCH EXST ROAD DESIGN |
| E-OH | ELEC OVERHEAD LINES PROVIDED BY MECO |
| ---f-oh--- | FUTURE ELEC OVERHEAD LINE |
| ---e--- | EXST. UNDERGROUND DUCTLINE & WIRING |
| ---t--- | EXST. UNDERGROUND TEL. CABLES |
| —et-oh— | EXISTING ELEC/COMM OVERHEAD LINE |
| —×—et-oh—×— | EXISTING ELEC/COMM OVERHEAD LINE TO BE REMOVED BY RESPECTIVE UTILITY CO. |
| ▭ | SIC COM 13" X 24" PULLBOX |
| ◪ | SIC COM 30" X 48" HANDHOLE |
| ◪ | SIC COM 3' X 5' HANDHOLE |
| ▭▭ | CATV 2' X 4' PULL BOX |
| ⊠ | MECO 2' X 4' HANDHOLE |
| V | CATV POWER SUPPLY EQUIP., 6' X 6' EASEMENT, SEE DETAIL A/E-11 |

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |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## KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

## ELEC SYMBOLS, LOCATION MAP, VICINITY MAP, EQUIPMENT SCHEDULE AND NOTES

| DRAWN BY: CAD | ENGINEER: GTN | CHECKED BY: SS |
|---|---|---|

APPROVED:

APPROVED BY:

HAWAIIAN TELCOM DATE

STEVEN H. SAKAI LICENSED PROFESSIONAL ENGINEER No. 7637-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

ADDENDUM NO. 3

DWG. NO. E-1 SHEET 82 OF 91 SHEETS

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# ELECTRICAL SITE PLAN

SCALE: 1" = 300'

NORTH

300' 150' 0 300' 600'

SCALE: 1"=300'

GRAPHIC SCALE

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No. 7637-E
HAWAII, U.S.A.

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| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |


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## KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

## ELECTRICAL SITE PLAN

| DRAWN BY: CAD | ENGINEER: GTN | CHECKED BY: SS |
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APPROVED:

ADDENDUM NO. 3

DWG. NO. E-2

SHEET 83 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
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## MAUI ELECTRIC COMPANY (MECO) NOTES

1. LOCATION OF MECO FACILITIES

THE LOCATION OF MECO'S OVERHEAD AND UNDERGROUND FACILITIES SHOWN ON THE PLANS ARE FROM EXISTING RECORDS WITH VARYING DEGREES OF ACCURACY AND ARE NOT GUARANTEED AS SHOWN. THE CONTRACTOR SHALL VERIFY IN THE FIELD THE LOCATIONS OF THE FACILITIES AND SHALL EXERCISE PROPER CARE IN EXCAVATING AND WORKING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES AND UTILITY CROSSINGS ARE SHOWN, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS AND CROSSINGS TO VERIFY THE DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO MECO'S FACILITIES WHETHER SHOWN OR NOT SHOWN ON THE PLANS.

2. COMPLIANCE WITH HAWAII OCCUPATIONAL SAFETY AND HEALTH LAWS

THE CONTRACTOR SHALL COMPLY WITH THE STATE OF HAWAII'S OCCUPATIONAL SAFETY AND HEALTH LAWS AND REGULATIONS, INCLUDING WITHOUT LIMITATION, THOSE RELATED TO WORKING ON OR NEAR EXPOSED OR ENERGIZED ELECTRICAL LINES AND EQUIPMENT.

3. EXCAVATION PERMIT

THE CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT FROM MECO TWO WEEKS PRIOR TO STARTING CONSTRUCTION. PLEASE REFER TO OUR REQUEST NUMBER AT THAT TIME.

4. CAUTION!!! ELECTRICAL HAZARD!!!

EXISTING MECO OVERHEAD AND UNDERGROUND LINES ARE ENERGIZED AND WILL REMAIN ENERGIZED DURING CONSTRUCTION UNLESS PRIOR SPECIAL ARRANGEMENTS HAVE BEEN MADE WITH MECO. ONLY MECO PERSONNEL ARE TO HANDLE THESE ENERGIZED LINES AND ERECT TEMPORARY GUARDS TO PROTECT THESE LINES FROM DAMAGE. THE CONTRACTOR SHALL WORK CAUTIOUSLY AT ALL TIMES TO AVOID ACCIDENTS AND DAMAGE TO EXISTING MECO FACILITIES, WHICH CAN RESULT IN ELECTROCUTION.

5. OVERHEAD LINES

STATE LAW REQUIRES THAT A WORKER AND THE LONGEST OBJECT HE OR SHE MAY CONTACT CANNOT COME CLOSER THAN A MINIMUM RADIAL CLEARANCE OF 10 FEET WHEN WORKING CLOSE TO OR UNDER ANY OVERHEAD LINES RATED 50KV AND BELOW. FOR EACH ADDITIONAL 1KV ABOVE 50KV, AN ADDITIONAL 0.4 INCH SHALL BE ADDED TO THE 10- FOOT CLEARANCE REQUIREMENT. THE PRECEDING INFORMATION ON LINE CLEARANCE REQUIREMENTS IS PROVIDED AS A CONVENIENCE AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE INFORMED OF AND COMPLY WITH ANY REVISIONS OR AMENDMENTS TO THE LAW.

SHOULD THE CONTRACTOR ANTICIPATE THAT HIS WORK WILL RESULT IN THE NEED TO ENCROACH WITHIN THE MINIMUM REQUIRED CLEARANCE AT ANY TIME, THE CONTRACTOR SHALL NOTIFY MECO AT LEAST FOUR (4) WEEKS PRIOR TO THE PLANNED ENCROACHMENT SO THAT, IF FEASIBLE, THE NECESSARY PROTECTIONS (E.G. RELOCATE, DE- ENERGIZE, OR BLANKET MECO LINES) CAN BE PUT IN PLACE. MECO'S COST OF SAFEGUARDING ITS LINES WILL BE CHARGED TO THE CONTRACTOR.

CONTACT MECO'S CUSTOMER INSTALLATIONS DEPARTMENT AT FOR ASSISTANCE IN IDENTIFYING AND SAFEGUARDING OVERHEAD POWER LINES.

REFER TO SECTION X OF MECO'S ELECTRIC SERVICE INSTALLATION MANUAL FOR ADDITIONAL GUIDELINES WHEN WORKING AROUND MECO'S FACILITIES. A COPY MAY BE OBTAINED FROM MECO'S CUSTOMER INSTALLATIONS DEPARTMENT.

6. POLE BRACING

A MINIMUM CLEARANCE OF 10 FEET MUST BE MAINTAINED WHEN EXCAVATING AROUND UTILITY POLES AND/OR THEIR ANCHOR SYSTEM TO PREVENT WEAKENING OR POLE SUPPORT FAILURE. SHOULD WORK REQUIRE EXCAVATING WITHIN 10 FEET OF A POLE AND/OR ITS ANCHOR SYSTEM, THE CONTRACTOR SHALL PROTECT, SUPPORT, SECURE, AND TAKE ALL OTHER PRECAUTIONS TO PREVENT DAMAGE TO OR LEANING OF THESE POLES. THE CONTRACTOR IS RESPONSIBLE FOR ALL ASSOCIATED COSTS TO BRACE, REPAIR, OR STRAIGHTEN POLES. ALL MEANS OF STRUCTURAL SUPPORT FOR THE POLE PROPOSED BY THE CONTRACTOR SHALL FIRST BE REVIEWED BY MECO BEFORE IMPLEMENTATION. FOR POLE BRACING INSTRUCTIONS, THE CONTRACTOR SHALL CALL THE MECO CONSTRUCTION AND MAINTENANCE DEPT., CUSTOMER & SYSTEM SUPERINTENDENT A MINIMUM OF TWO (2) WEEKS IN ADVANCE.

7. UNDERGROUND LINES

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF UNDERGROUND LINES. MECO'S EXISTING ELECTRICAL CABLES ARE ENERGIZED AND WILL REMAIN ENERGIZED DURING CONSTRUCTION. ONLY MECO PERSONNEL ARE TO BREAK INTO EXISTING MECO FACILITIES, HANDLE THESE CABLES, AND ERECT TEMPORARY GUARDS TO PROTECT THESE CABLES FROM DAMAGE. THE COST OF MECO'S ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF ITS UNDERGROUND LINES WILL BE CHARGED TO THE CONTRACTOR.

FOR VERIFICATION OF UNDERGROUND LINES, THE CONTRACTOR SHALL CALL MECO'S UNDERGROUND DIVISION A MINIMUM OF 72 HOURS IN ADVANCE.

FOR ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF THESE LINES, THE CONTRACTOR SHALL CALL MECO'S CONSTRUCTION & MAINTENANCE DEPT., CUSTOMER & SYSTEM SUPERINTENDENT A MINIMUM OF TWO (2) WEEKS IN ADVANCE.

8. EXCAVATIONS

WHEN TRENCH EXCAVATION IS ADJACENT TO OR BENEATH MECO'S EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR IS RESPONSIBLE FOR:

a) SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE AND TO PREVENT POSSIBLE SLIDES, CAVE-INS, AND SETTLEMENTS.
b) PROPERLY SUPPORTING EXISTING STRUCTURES OR FACILITIES WITH BEAMS, STRUTS, OR UNDER-PINNINGS TO FULLY PROTECT IT FROM DAMAGE.
c) BACKFILLING WITH PROPER BACKFILL MATERIAL INCLUDING SPECIAL THERMAL BACKFILL WHERE EXISTING (REFER TO ENGINEERING DEPARTMENT FOR THERMAL BACKFILL SPECIFICATIONS).

9. RELOCATION OF MECO FACILITIES

ANY WORK REQUIRED TO RELOCATE OR MODIFY MECO FACILITIES SHALL BE DONE BY MECO, OR BY THE CONTRACTOR UNDER MECO'S SUPERVISION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION, AND SHALL PROVIDE NECESSARY SUPPORT FOR MECO'S WORK, WHICH MAY INCLUDE, BUT NOT BE LIMITED TO, EXCAVATION AND BACKFILL, PERMITS AND TRAFFIC CONTROL, BARRICADING, AND RESTORATION OF PAVEMENT, SIDEWALKS, AND OTHER FACILITIES.

ALL COSTS ASSOCIATED WITH ANY RELOCATION OR MODIFICATION (EITHER TEMPORARY OR PERMANENT) FOR THE CONVENIENCE OF THE CONTRACTOR, OR TO ENABLE THE CONTRACTOR TO PERFORM HIS WORK IN A SAFE AND EXPEDITIOUS MANNER IN FULFILLING HIS CONTRACT OBLIGATIONS SHALL BE BORNE BY THE CONTRACTOR.

10. CONFLICTS

ANY REDESIGN OR RELOCATION OF MECO'S FACILITIES NOT SHOWN ON THE PLANS MAY BE CAUSE FOR LENGTHY DELAYS. THE CONTRACTOR ACKNOWLEDGES THAT MECO IS NOT RESPONSIBLE FOR ANY DELAY OR DAMAGE THAT MAY ARISE AS A RESULT OF ANY CONFLICTS DISCOVERED OR IDENTIFIED WITH RESPECT TO THE LOCATION OR CONSTRUCTION OF MECO'S ELECTRICAL FACILITIES IN THE FIELD, REGARDLESS OF WHETHER THE CONTRACTOR HAS MET THE REQUESTED MINIMUM ADVANCE NOTICES. IN ORDER TO MINIMIZE ANY DELAY OR IMPACT ARISING FROM SUCH CONFLICTS, MECO SHOULD BE NOTIFIED IMMEDIATELY UPON DISCOVERY OR IDENTIFICATION OF SUCH CONFLICT.

11. DAMAGE TO MECO FACILITIES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL MECO SURFACE AND SUBSURFACE UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO MECO'S FACILITIES AS A RESULT OF HIS OPERATIONS. THE CONTRACTOR SHALL IMMEDIATELY REPORT SUCH DAMAGES TO MECO'S TROUBLE DISPATCHER. REPAIR WORK SHALL BE DONE BY MECO OR BY THE CONTRACTOR UNDER MECO'S SUPERVISION COSTS FOR DAMAGES TO MECO'S FACILITIES SHALL BE BORNE BY THE CONTRACTOR.

12. MECO STAND-BY PERSONNEL

THE CONTRACTOR MAY REQUEST MECO TO PROVIDE AN INSPECTOR TO STAND-BY DURING CONSTRUCTION NEAR MECO'S FACILITIES. THE COST OF SUCH INSPECTION WILL BE CHARGED TO THE CONTRACTOR.

THE CONTRACTOR SHALL CALL THE MECO CONSTRUCTION AND MAINTENANCE DEPT., CUSTOMER & SYSTEM SUPERINTENDENT A MINIMUM OF 5 WORKING DAYS IN ADVANCE TO ARRANGE FOR MECO STAND-BY PERSONNEL.

13. CLEARANCES

THE FOLLOWING CLEARANCES SHALL BE MAINTAINED BETWEEN MECO'S DUCTLINE AND ALL ADJACENT STRUCTURES (CHARTED AND UNCHARTED) IN THE TRENCH:

| STRUCTURE TYPE | MINIMUM CLEARANCE(INCHES) |
|---|---|
| WATER LINES, PARALLEL | 36 (A) |
| WATER LINES, CROSSING | 12 (B) |
| SEWER LINES, PARALLEL | 36 (C) |
| SEWER LINES, CROSSING | 24 (D) |
| DRAIN LINES, PARALLEL | 12 |
| DRAIN LINES, CROSSING | 6 (E) |
| ELECTRICAL AND GAS LINES, PARALLEL | 12 |
| ELECTRICAL AND GAS LINES, CROSSING | 12 |
| TELEPHONE LINES, PARALLEL | 6 (E) |
| TELEPHONE LINES, CROSSING | 6 (E) |
| CHEVRON OIL LINES, PARALLEL | 36 |
| CHEVRON OIL LINES, CROSSING | 48 BELOW OIL LINE (F) |

A. THE MINIMUM HORIZONTAL CLEARANCES TO WATER LINES PARALLEL TO ELECTRICAL DUCTLINES MUST BE INCREASED TO 60 INCHES IF THE WATER LINE IS GREATER THAN 16 INCHES IN DIAMETER
B. THE MINIMUM VERTICAL CLEARANCES TO WATER LINES CROSSING ELECTRICAL DUCTLINES CAN BE REDUCED TO 6 INCHES IF THE ELECTRICAL DUCTLINE STRUCTURE IS CONCRETE ENCASED AND IS BELOW THE WATER LINE AND THE WATER LINE IS LESS THAN 16 INCHES IN DIAMETER.
C. A MINIMUM HORIZONTAL CLERANCE OF 36 INCHES IS REQUIRED BETWEEN NEW HANDHOLES AND EXISTING SEWER LATERALS.
D. THE MINIMUM VERTICAL CLEARANCES TO SEWER PIPES CROSSING ELECTRICAL DUCTLINES CAN BE REDUCED TO 12 INCHES IF THE SEWER PIPE IS JACKETED IN CONCRETE.
E. THE MINIMUM CLEARANCES SHALL BE INCREASED TO 12 INCHES IF THE ELECTRICAL DUCTLINE IS DIRECT BURIED.
F. THE MINIMUM VERTICAL CLEARANCES TO OIL LINES CROSSING ELECTRICAL DUCTLINES CAN BE REDUCED TO 24 INCHES BELOW OIL LINES IF THE CROSSINGS ARE ENCASED IN 6 INCHES OF CONCRETE.
G. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER & MECO OF ANY HEAT SOURCES (POWER CABLE DUCT BANK, STEAMLINE, ETC.) ENCOUNTERED THAT ARE NOT PROPERLY IDENTIFIED ON THE DRAWING.

14. INDEMNITY

THE CONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS MECO FROM AND AGAINST ALL LOSSES, DAMAGES, CLAIMS, AND ACTIONS, INCLUDING BUT NOT LIMITED TO REASONABLE ATTORNEY'S FEES AND COSTS BASED UPON OR ARISING OUT OF DAMAGE TO PROPERTY OR INJURIES TO PERSONS, OR OTHER TORTIOUS ACTS CAUSED OR CONTRIBUTED TO BY CONTRACTOR OR ANYONE ACTING UNDER ITS DIRECTION OR CONTROL OR ON ITS BEHALF; PROVIDED CONTRACTOR'S INDEMNITY SHALL NOT BE APPLICABLE TO ANY LIABILITY BASED UPON THE SOLE NEGLIGENCE OF MECO.

15. SCHEDULE

CONTRACTOR SHALL FURNISH HIS CONSTRUCTION SCHEDULE __ WORKING DAYS PRIOR TO STARTING WORK ON MECO FACILITIES. CONTRACTOR SHALL GIVE MECO, IN WRITING __ WORKING DAYS NOTICE TO PROCEED WITH MECO'S PORTION OF WORK.

16. AUTHORITY

ALL CONSTRUCTION, RESTORATION WORK, AND INSPECTION SHALL BE SUBJECT TO WHICHEVER GOVERNMENTAL AGENCY HAS AUTHORITY OVER THE WORK.

17. SPECIFICATIONS

CONSTRUCTION OF MECO'S UNDERGROUND FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST REVISIONS OF MECO SPECIFICATIONS CS7001, CS7003, CS7202, CS9301, AND CS9401 AND APPLICABLE MECO STANDARDS.

18. CONSTRUCTION

CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES TO PROPERLY PERFORM AND FULLY COMPLETE ALL WORK SHOWN ON THE CONTRACT, DRAWINGS, AND SPECIFICATIONS. ALL MATERIALS SHALL BE NEW AND MANUFACTURED IN THE UNITED STATES OF AMERICA. ALL MANHOLE, HANDHOLE, AND DUCTLINE INSTALLATIONS SHALL BE INSPECTED AND APPROVED BY MECO PRIOR TO EXCAVATION AND PRIOR TO PLACING CONCRETE. CONTRACTOR SHALL NOTIFY MECO'S INSPECTION DIVISION AT 543-4356 AT LEAST 48 HOURS PRIOR TO PLACING CONCRETE.

CONTRACTOR TO COORDINATE WORK TO BREAK INTO MECO'S EXISTING ELECTRICAL FACILITIES WITH MECO'S UNDERGROUND DIVISION AT 543-7871 AT LEAST 10 WORKING DAYS IN ADVANCE.

19. STAKEOUT

THE CONTRACTOR SHALL ARRANGE FOR TONEOUTS OF ALL UNDERGROUND FACILITIES AND SHALL STAKEOUT ALL PROPOSED MECO FACILITIES WITHIN THE PROJECT AREA SO AS TO NOT CONFLICT WITH ANY UTILITY (EXISTING OR PROPOSED) AND ANY PROPOSED CONSTRUCTION OR IMPROVEMENT WORK FOR VERIFICATION BY MECO BEFORE PROCEEDING WITH MECO WORK.

21. DUCTLINES

ALL DUCTLINE INSTALLATIONS SHALL BE PVC SCHEDULE 40 ENCASED IN CONCRETE, UNLESS OTHERWISE NOTED. ALL COMPLETED DUCTLINES SHALL BE MANDREL TESTED BY THE CONTRACTOR IN THE PRESENCE OF MECO'S INSPECTOR USING MECO'S STANDARD PRACTICE. THE CONTRACTOR SHALL INSTALL A 1/8" POLYOLEFIN PULL LINE IN ALL COMPLETED DUCTLINES AFTER MANDREL TESTING IS COMPLETE.

22. JOINT POLE REMOVAL

THE LAST JOINT POLE OCCUPANT OFF THE POLES SHALL REMOVE THE POLES.

23. AS-BUILT PLANS

THE CONTRACTOR SHALL PROVIDE MECO WITH TWO SETS OF AS-BUILT REPRODUCIBLE TRACINGS SHOWING THE OFFSETS, STATIONING, AND VERTICAL ELEVATION OF THE DUCT LINE(S) CONSTRUCTED.

STEVEN H. SAKAI
LICENSED PROFESSIONAL ENGINEER
No. 7637-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |


Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
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# KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

## MECO NOTES

| DRAWN BY: CAD | ENGINEER: GTN | CHECKED BY: SS |
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APPROVED:

ADDENDUM NO. 3

DWG. NO. E-3

SHEET 84 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
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## CATV CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL LICENSES AND PERMITS AND SHALL GIVE ALL NOTICES NECESSARY AND INCIDENT TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.
2. THE LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THEIR LOCATIONS AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO THESE UTILITIES AS A RESULT OF HIS OPERATIONS. ADJUSTMENTS TO THE NEW DUCTLINE ALIGNMENT, IF REQUIRED, SHALL BE MADE TO PROVIDE THE REQUIRED CLEARANCES.
3. THE CONTRACTOR SHALL BRACE ALL POLES OR LIGHT STANDARDS NEAR THE NEW DUCTLINE, MANHOLE OR HANDHOLE DURING ITS OPERATIONS.
4. THE CONTRACTOR SHALL SAW-CUT A.C. PAVEMENT, CONCRETE GUTTER, AND CONCRETE SIDEWALK WHEREVER NEW MANHOLES, HANDHOLES, PULLBOXES OR DUCTLINES ARE TO BE PLACED AND SHALL RESTORE TO EXISTING CONDITION OR BETTER.
5. THE UNDERGROUND PIPES, CABLES, OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREAS. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
6. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE COST FOR SUPLEMENTARY MEASURES, WHICH WILL BE REQUIRED BY THE CITY AND COUNTY, SHALL BE BORNE BY THE CONTRACTOR.
7. PRIOR TO THE EXCAVATION OF THE DUCTLINE, THE CONTRACTOR SHALL REQUEST THAT SPECTRUM OCEANIC LOCATE EXISTING DUCTLINES WHEREVER REQUIRED.
8. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTION NOT TO DAMAGE EXISTING CABLES OR DUCTS. ANY WORK INVOLVING EXISTING CABLES OR DUCTS SHALL BE DONE IN THE PRESENCE OF THE SPECTRUM OCEANIC'S INSPECTOR OR HIS REPRESENTATIVE. TEMPORARY CABLE AND DUCT SUPPORT SHALL BE PROVIDED WHENEVER NECESSARY.
9. THE CONTRACTOR SHALL NOTIFY THE SPECTRUM OCEANIC INSPECTOR 72 HOURS PRIOR TO THE START OF WORK ON CATV INFRASTRUCTURE, POURING CONCRETE, OR BACKFILLING. SPECTRUM OCEANIC'S INSPECTOR(S) PERRY SAMUELU AT 387-2496 OR PAUL CASPILLO AT 479-1637.
10. WHEREVER CONNECTIONS TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES PRIOR TO EXCAVATION OF THE MAIN TRENCHES TO VERIFY THEIR LOCATIONS AND DEPTHS.
11. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND FURNISH ALL LABOR AND EQUIPMENT NECESSARY TO INSTALL THE DUCTLINE IN PLACE COMPLETE.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL REQUIRED LINES AND GRADES AND SHALL PRESERVE ALL BENCHMARKS AND WORKING POINTS NECESSARY TO LAY OUT THE WORK CORRECTLY. THE NEW DUCTLINE SHALL BE ADJUSTED BY THE CONTRACTOR TO SUIT THE EXISTING CONDITIONS AND THE DETAILS AS DESCRIBED IN THE PLANS.
13. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE OF HAWAII, DEPARTMENT OF HEALTH.
14. THE LOCATION OF CATV FACILITIES SHOWN ON PLANS ARE FROM EXISTING RECORDS WITH VARYING DEGREES OF ACCURACY AS TO ITS ACTUAL FIXED LOCATION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN CLOSE PROXIMITY OF CATV FACILITIES.
15. THE CONTRACTOR SHALL OBTAIN EXCAVATION PERMIT CLEARANCE FROM OCEANIC'S ENGINEERING SECTION LOCATED AT 200 AKAMAINUI STREET, MILILANI TECH PARK.
16. FOR ANY FIELD ASSISTANCE OR VERIFICATION OF CATV FACILITIES, THE CONTRACTOR SHALL CALL SPECTRUM OCEANIC AT 625-2100 AND ASK FOR THE OSP ENGINEERING DEPARTMENT.
17. ANY WORK REQUIRED TO RELOCATE CATV FACILITIES SHALL BE DONE BY OCEANIC CABLE AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION REQUIREMENTS AND ASSOCIATED COSTS.
18. ANY DAMAGE TO SPECTRUM OCEANIC'S FACILITIES SHALL BE REPORTED TO SPECTRUM OCEANIC'S TOC DEPARTMENT AT 625-8169.
19. THE CONTRACTOR SHALL TUNNEL UNDER EXISTING CONCRETE CURB AND GUTTER AS NECESSARY TO EXTEND CONDUIT INTO EXISTING CATV PULLBOX AND INTO PROPOSED POWER SUPPLY PULLBOX.
20. ALL EXISTING IMPROVEMENTS THAT ARE DISTRIBUTED DURING THE CONSTRUCTION PHASE SHALL BE RESTORED TO ITS ORIGINAL OR BETTER BETTER CONDITION AT NO COST TO THE CITY AND COUNTY IN ACCORDANCE WITH CITY'S STANDARDS.
21. AT LOCATIONS WHERE EXISTING CATV PULLBOX REPLACEMENT IS PROPOSED, THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTION NOT TO DAMAGE THE EXISTING CABLES IN THE PULLBOX. ALL DAMAGES TO EXISTING CABLES SHALL BE REPAIRED BY OCEANIC CABLE AND PAID FOR BY THE CONTRACTOR.
22. COORDINATE ALL PENETRATION OF TELEPHONE PULLBOXES WITH HAWAIIAN TELCOM INSPECTOR.
23. SMOOTH FINISH INSIDE WALL OF EXISTING PULLBOXES AND HANDHOLES TO ITS ORIGINAL CONDITION OR BETTER.
24. ALL NEW CONCRETE ENCASED CONDUIT SHALL BE PVC PIPE-SCHEDULE 40. ALL NEW DIRECT-BURIED CONDUIT SHALL BE PVC PIPE-SCHEDULE 80. USE OF ANY OTHER MATERIAL TYPE (GTS, ETC) SHALL BE LIMITED TO MATCHING EXISTING FACILITIES. CONNECTION OF DISSIMILAR MATERIALS TO REQUIRE APPROVAL FROM SPECTRM OCEANIC'S INSPECTOR AND ENGINEERING DEPARTMENT.
25. THE CONTRACTOR SHALL PLACE POLY CORD THROUGH OUT PROJECT, AND SECURE IN MANHOLES, HANDHOLES, AND PULLBOXES.
26. FOR 3" CONDUITS OR LARGER, THE CONTRACTOR SHALL INSTALL NEPTCO WP1800 MULETAPE OR APPROVED EQUAL IN ALL DUCTLINES, LEAVE MULETAPE IN PLACE FOR FUTURE USE AS A PULL OR FISH LINE, UNLESS OTHERWISE NOTED. REFERENCE GTE MATERIAL CODE NO. 571154. ALL DUCTS SHALL BE CAPPED TO PREVENT ENTRY OF FOREIGN MATERIAL DURING CONSTRUCTION AND AT COMPLETION OF INSTALLATION. ENDBELLS ARE REQUIRED FOR CONDUITS 2" AND LARGER.
27. PENETRATION INTO PULLBOXES IF NECESSARY TO BE FROM FACTORY INSTALLED OPENING OR FROM BRICKS POSITION. PENETRATION FROM PULLBOX WALLS IS NOT ACCEPTABLE.
28. BENDS IN THE DUCT ALIGNMENT, DUE TO CHANGES IN GRADE SHALL HAVE A MINIMUM RADIUS OF 20-FEET. ALL 90-DEGREE C-BENDS AT A POLE OR AT THE BUILDING FLOOR SLAB PENETRATION, SHALL HAVE A BEND RADIUS OF TEN TIMES THE DIAMETER OF THE DUCT OR GREATER.
29. MINIMUM LENGTH OF CONDUIT USED SHALL NOT BE LESS THAN 5-FEET IN LENGTH. USE OF PARTIAL CONDUIT SECTIONS ALLOWABLE IS AT SPECTRUM OCEANIC'S INSPECTOR(S) DISCRETION..
30. ALL CONDUITS SHALL ENTER THROUGH THE END "SHORT WALL" OF THE PULL-BOX. ENTRY SHALL BE AT 90 DEGREES (PERPENDICULAR) TO WALL FACE WITH BENDS NO LESS THAN 12" FROM EXTERIOR WALL.
31. A MINIMUM OF (2) PRECAST SECTIONS MUST BE USED ON ALL 2X4 OR 2X6 PULLBOXES.
32. ALL NEW CONSTRUCTION SHALL UTILIZE CONCRETE PRECAST BASE UNLESS OTHERWISE APPROVED OR SPECIFIED BY SPECTRUM OCEANIC'S INSPECTOR(S).
33. WHEN THREE (3) OR MORE 4" CONDUITS ENTER ONE END WALL OF ANY PULLBOX, ONLY BRICK BASES WILL BE ALLOWED UNLESS OTHERWISE INSTRUCTED/APPROVED BY SPECTRUM OCEANIC'S INSPECTOR(S).
34. TWO MINIMUM LAYERS OF BRICKS TO BE USED LOWER THAN THE LOWEST DUCT ENTERING THE PULLBOX. TOP LAYER OF BRICK TO BE FLUSH WITH TOP OF CONDUIT OR HIGHER.
35. FOR UPGRADE/REPAIRS TO EXISTING PULLBOXES, BRICKS MAY BE USED AND SHALL ALWAYS BE AT LEAST TWO LAYERS LOWER THAN THE LOWEST DUCT ENTERING THE PULLBOX.
36. AT NO TIME SHALL CEMENT MORTAR, WOOD, OR ANY OTHER MATERIAL BE USED BETWEEN PRECAST SECTIONS.
37. LEVELING OR RAISING OF BOXES TO GRADE MUST BE DONE:
    A. PRE-CAST BASE(S) - USING GRAVEL LAYER UNDER BASE (TYPE 3B OR EQUIVALENT APPROVED BY SPECTRUM OCEANIC'S INSPECTOR.
    B. BRICK BASE(S) - ADJUSTMENTS TO BRICKWORK SECTION. THE PERMANENT INSTALLATION OF WOODEN WEDGES TO ACCOMPLISH THIS PURPOSE WILL NOT BE ACCEPTED.
38. 5/8" COPPER GROUND RODS SHALL BE PLACED IN ALL PULLBOXES UNLESS OTHERWISE DIRECTED BY SPECTRUM OCEANIC. GROUND RODS WILL BE PLACED IN THE CORNER 3" TO 4" FROM THE WALL AND AWAY FROM ANY CONDUIT WITH NO MORE THAN 8" STICKING UP ABOVE GROUND.
39. TRENCHING TO BE BY HAND DIGGING NEAR AND ACROSS EXISTING UTILITY LINES.
40. MINIMUM CLEARANCE BETWEEN STREET LIGHT STAND AND FIRE HYDRANTS SHALL BE THREE FEET.
41. UNDERGROUND UTILITIES SHOWN HEREON IS FOR INFORMATION ONLY. NO GUARANTEE IS MADE ON THE ACCURACY OR COMPLETENESS OF SAID INSTALLATION.
42. FOR UNDERGROUND CABLE LOCATING AND MARKING, FIVE WORKING DAYS ADVANCE NOTICE IS REQUIRED. THREE WORKING DAYS ADVANCE NOTICE IS REQUIRED FOR ANY INSPECTION BY A DESIGNATED REPRESENTATIVE. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS NOT TO DAMAGE ANY EXISTING CABLES OR DUCTS. SPECTRUM OCEANIC'S INSPECTOR OR DESIGNATED REPRESENTATIVE IS REQUIRED TO BE AT ANY JOB SITE WHENEVER THERE WILL BE A BREAKAGE INTO OR ENTRY INTO ANY STRUCTURE THAT CONTAIN SPECTRUM OCEANIC'S FACILITIES.
43. CONCRETE STRENGTH SHALL BE 3000 PSI IN 28 DAYS.
44. CURING AND BACKFILLING. MAINTAIN CONCRETE IN A MOIST CONDITION FOR 24 HOURS MINIMUM FOR 3,000 PSI AND 48 HOURS MINIMUM FOR 2,500 PSI BEFORE COMPACTED BACKFILLING; 72 HOURS MINIMUM BEFORE PERMITTING MOTOR TRAFFIC LOAD ON DUCTLINE. CURING METHOD SHALL MEET SPECTRUM OCEANIC'S INSPECTOR'S APPROVAL.
45. INSTALL 4-MIL. THICK ORANGE COLOR WARNING TAPE 3-INCH WIDE, ENTIRE LENGTH OF TRENCH WHEN PLACING CATV CONDUITS. TAPE SHOULD READ "CAUTION BURIED CABLE LINE BELOW". MANUFACTURED BY HARRIS INDUSTRIES, INC., CATALOG NUMBER UT-43 OR EQUIVALENT TAPE. TAPE TO BE INSTALLED 12-INCHES BELOW GRADE.
46. AFTER DUCTLINE HAS BEEN COMPLETED, A MANDREL WITH A SQUARE FRONT NOT LESS THAN 12-INCH LONG AND HAVING A DIAMETER OF $^{1}/_{4}$-INCH LESS THAN THE INSIDE DIAMETER OF DUCT, SHALL BE PULLED THROUGH EACH DUCT AFTER WHICH A BRUSH WITH STIFF BRISTLES SHALL BE PULLED THROUGH TO MAKE CERTAIN THAT NO PARTICLES OF EARTH, SAND, OR GRAVEL HAVE BEEN LEFT INSIDE. DUCTS SHALL BE COMPLETELY DRY AND CLEAN.
47. METALLIC ENTRANCE CONDUITS SHALL BE GROUNDED.
48. ALL CONDUITS WITHIN A BUILDING SHALL:
    A) BE INSTALLED IN THE SHORTEST AND STRAIGHTEST POSSIBLE RUN.
    B) HAVE NO SECTION LONGER THAN 100-FEET NOR CONTAIN MORE THAN TWO 90-DEGREE BENDS. AN APPROVED SIZED JUNCTION BOX OR GUTTER BOX SHALL BE PLACED IF THIS IS EXCEEDED.
    C) ALL BENDS SHALL BE LONG SWEEP-RADIUS BENDS BUT THE INSIDE RADIUS OF THE BEND MUST NEVER BE LESS THAN TEN TIMES THE DIAMETER OF THE CONDUIT.
49. ALL CONSTRUCTION MUST BE INSPECTED AND APPROVED BY SPECTRUM OCEANIC PRIOR TO THE INSTALLATION OF ANY OF ITS FACILITIES AND THE ENERGIZING OF ITS SYSTEM.
50. CONTRACTOR AND/OR CUSTOMER SHALL PROVIDE OCEANIC WITH SUFFICIENT INSTALLATION TIME IN THEIR OCCUPANCY TIME TABLE.

## HAWAIIAN TELCOM (HTCO) NOTES:

1. THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL LICENSES AND PERMITS AND SHALL GIVE ALL NOTICES NECESSARY AND INCIDENT TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.
2. THE CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT AND TONING REQUEST FROM HAWAIIAN TELCOM'S EXCAVATION PERMIT SECTION, LOCATED AT 1177 BISHOP STREET, TWO WEEKS PRIOR TO THE START OF CONSTRUCTION. HOURS OF BUSINESS ARE 8:00 A.M. TO 11:00 A.M. AND 12:00 P.M. TO 3:00 P.M. MONDAY THROUGH FRIDAY, EXCEPT HOLIDAYS.
3. PRIOR TO THE EXCAVATION OF THE DUCTLINE, THE CONTRACTOR SHALL REQUEST HAWAIIAN TELCOM TO LOCATE EXISTING DUCTLINE WHEREVER REQUIRED. FOR UNDERGROUND CABLE LOCATING AND MARKING, FIVE (5) WORKING DAYS ADVANCE NOTICE IS REQUIRED. THREE (3) WORKING DAYS ADVANCE NOTICE IS REQUIRED FOR ANY INSPECTION BY A DESIGNATED REPRESENTATIVE.
4. THE LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION AND SHALL MAINTAIN PROPER CLEARANCES WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF HAWAIIAN TELCOM FACILITIES. THE CONTRACTOR SHALL VERIFY THEIR LOCATIONS AND SHALL BE LIABLE FOR ANY DAMAGES TO HAWAIIAN TELCOM FACILITIES. ANY DAMAGES SHALL BE REPORTED IMMEDIATELY TO HAWAIIAN TELCOM'S REPAIR SECTION AT #611 (24 HOURS) OR TO THE EXCAVATION PERMIT SECTION AT 546-7746 (NORMAL WORKING HOURS, MONDAY THROUGH FRIDAY, EXCEPT HOLIDAYS). AS A RESULT OF HIS OPERATIONS, ADJUSTMENTS TO THE NEW DUCTLINE ALIGNMENT, IF REQUIRED, SHALL BE MADE TO PROVIDE THE REQUIRED CLEARANCES.
5. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTION NOT TO DAMAGE EXISTING CABLES OR DUCTS. A HAWAIIAN TELCOM INSPECTOR OR DESIGNATED REPRESENTATIVE IS REQUIRED TO BE AT ANY JOB SITE WHENEVER THERE WILL BE A BREAKAGE INTO OR ENTRY INTO ANY STRUCTURE THAT CONTAIN HAWAIIAN TELCOM FACILITIES. TEMPORARY CABLE AND DUCT SUPPORTS SHALL BE PROVIDED WHEREVER NECESSARY.
6. THE CONTRACTOR SHALL NOTIFY HAWAIIAN TELCOM'S INSPECTOR OR DESIGNATED REPRESENTATIVE A MINIMUM OF 72 HOURS PRIOR TO EXCAVATION, BRACING, OR BACKFILLING OF HAWAIIAN TELCOM'S STRUCTURES OR FACILITIES.
7. ALL APPLICABLE CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE "HAWAIIAN TELCOM STANDARD SPECIFICATIONS FOR PLACING TELEPHONE SYSTEMS" DATED JANUARY 2007, ALL SUBSEQUENT AMENDMENTS AND ADDITIONS, AND ALL OTHER PERTINENT STANDARDS FOR TELEPHONE CONSTRUCTION. CONTRACTOR SHALL FAMILIARIZE HIS PERSONNEL BY OBTAINING APPLICABLE SPECIFICATIONS.
8. WHEN EXCAVATION IS ADJACENT TO OR BENEATH HAWAIIAN TELCOM'S EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR SHALL:
    a. SHEET AND/OR BRACE THE EXCAVATION TO PREVENT SLIDES, CAVE-INS, OR SETTLEMENTS TO ENSURE NO MOVEMENT TO HAWAIIAN TELCOM'S STRUCTURES OR FACILITIES.
    b. PROTECT EXISTING STRUCTURES AND/OR FACILITIES WITH BEAMS, STRUTS, OR UNDERPINNING WHILE EXCAVATING BENEATH THEM TO ENSURE NO MOVEMENT TO HAWAIIAN TELECOM'S STRUCTURES OR FACILITIES.
8. THE CONTRACTOR SHALL BRACE ALL POLES OR LIGHT STANDARDS NEAR THE NEW DUCTLINE, MANHOLE, OR HANDHOLE DURING HIS OPERATIONS.
9. THE CONTRACTOR SHALL SAW-CUT AC. PAVEMENT AND CONCRETE GUTTER WHEREVER NEW MANHOLES, HANDHOLES, OR DUCTLINES ARE TO BE PLACED AND SHALL RESTORE TO EXISTING CONDITION OR BETTER.
10. THE CONTRACTOR SHALL COMPLY WITH THE POLICY ADOPTED BY THE DEPARTMENT OF PLANNING AND PERMITTING, CITY AND COUNTY OF HONOLULU, CONCERNING THE REPLACEMENT OF CONCRETE SIDEWALKS AFTER EXCAVATION WORK.
11. THE CONTRACTOR SHALL COMPLY WITH THE POLICY ADOPTED BY THE DEPARTMENT OF PLANNING AND PERMITTING, CITY AND COUNTY OF HONOLULU, CONCERNING THE REPLACEMENT OF CONCRETE SIDEWALKS AFTER EXCAVATION WORK.
12. THE UNDERGROUND PIPES, CABLES, OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
13. WHEREVER CONNECTIONS TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES PRIOR TO EXCAVATION OF THE MAIN TRENCHES TO VERIFY THEIR LOCATIONS AND DEPTHS.
14. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE COST FOR SUPPLEMENTARY MEASURES, WHICH WILL BE REQUIRED BY THE CITY AND COUNTY, SHALL BE BORNE BY THE CONTRACTOR.
15. THE CONTRACTOR SHALL PUMP ALL MANHOLES DRY DURING FINAL INSPECTION.
16. THE CONTRACTOR SHALL NOTIFY HAWAIIAN TELCOM INSPECTOR 24 HOURS PRIOR TO THE POURING OF CONCRETE OR BACKFILLING.
17. WHEN CONNECTING TO MANHOLE WALLS, ALL EXISTING REINFORCING BARS SHALL BE LEFT INTACT. DUCTS SHALL BE ADJUSTED IN THE FIELD IN ORDER TO CLEAR REINFORCING
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL REQUIRED LINES AND GRADES AND SHALL PRESERVE ALL BENCH MARKS AND WORKING POINTS NECESSARY TO LAY OUT THE WORK CORRECTLY. THE NEW DUCTLINE SHALL BE ADJUSTED BY THE CONTRACTOR TO SUIT THE EXISTING CONDITIONS AND THE DETAILS AS DESCRIBED IN THE PLANS.
19. MINIMUM CONCRETE STRENGTH SHALL BE:
    -FOR DUCTLINE 2500 PSI AT 28 DAYS
    -FOR MANHOLE 3000 PSI AT 28 DAYS OR AS SPECIFIED IN DESIGN NOTES
20. BENDS IN THE DUCT ALIGNMENT, DUE TO CHANGES IN GRADE SHALL HAVE A MINIMUM RADIUS OF 25 FEET. ALL 90 DEGREE C-BENDS AT A POLE OR AT THE BUILDING FLOOR SLAB PENETRATION, SHALL HAVE A BEND RADIUS OF TEN TIMES THE DIAMETER OF THE DUCT OR GREATER.
21. AFTER DUCTLINE HAS BEEN COMPLETED, A MANDREL WITH A SQUARE FRONT NOT LESS THAN 12" LONG AND HAVING A DIAMETER OF 1/4" LESS THAN THE INSIDE DIAMETER OF THE DUCT, SHALL BE PULLED THROUGH EACH DUCT AFTER WHICH A BRUSH WITH STIFF BRISTLES SHALL BE PULLED THROUGH TO MAKE CERTAIN THAT NO PARTICLES OF EARTH, SAND, OR GRAVEL HAVE BEEN LEFT INSIDE. DUCTS SHALL BE COMPLETELY DRY AND CLEAN.
22. ALL DUCTS AND CONDUITS SHALL HAVE AN 1800# POLYESTER MULE-TAPE (NEPTCO, WP1800P, HAWAIIAN TELCOM MATERIAL CODE NO. 571154) INSTALLED THROUGHOUT ITS ENTIRE LENGTH. ALL DUCTS SHALL BE CAPPED TO PREVENT ENTRY OF FOREIGN MATERIAL DURING CONSTRUCTION AND AT THE COMPLETION OF INSTALLATION.

APPROVALS:

HAWAIIAN TELCOM _____ DATE

SPECTRUM OCEANIC _____ DATE

STEVEN H. SAKAI LICENSED PROFESSIONAL ENGINEER No. 7637-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |

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Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

**CATV AND HAWAIIAN TELECOM NOTES**

| DRAWN BY: CAD | ENGINEER: GN | CHECKED BY: SS |
|---|---|---|

APPROVED:

**ADDENDUM NO. 3**

DWG. NO. E-4 SHEET 85 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
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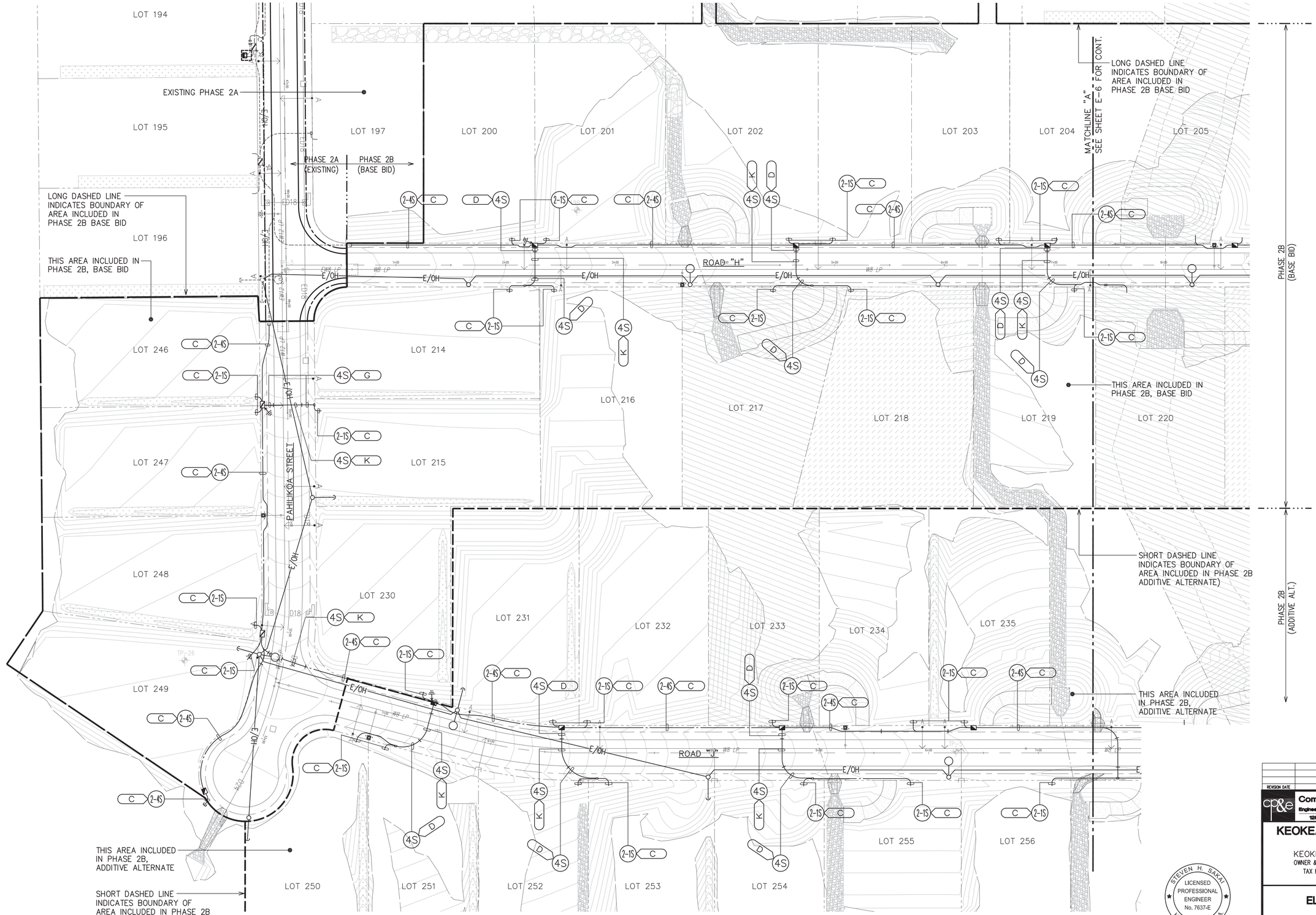


# ELECTRICAL DISTRIBUTION PLAN I

SCALE: 1" = 40'

NORTH

40' 20' 0 40' 80'

SCALE: 1"=40'

GRAPHIC SCALE

STEVEN H. SAKAI LICENSED PROFESSIONAL ENGINEER No. 7637-E HAWAII, U.S.A.

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## KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI

OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS

TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

## ELECTRICAL DISTRIBUTION PARTIAL PLAN I

| DRAWN BY: CAD | ENGINEER: GF | CHECKED BY: SS |
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APPROVED:

ADDENDUM NO. 3

DWG. NO. E-5

SHEET 86 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
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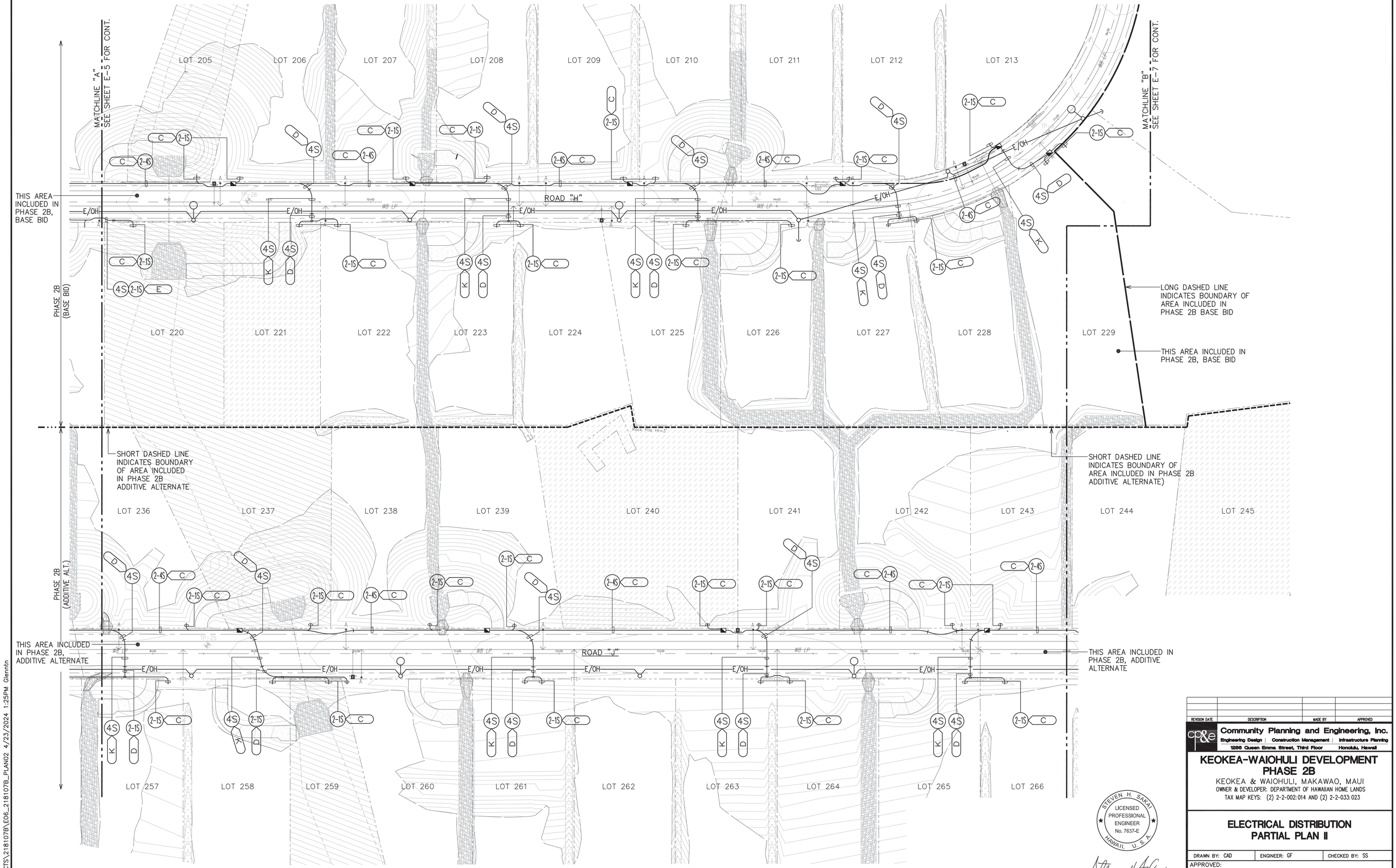


# ELECTRICAL DISTRIBUTION PLAN II

SCALE: 1" = 40'

NORTH

40' 20' 0 40' 80'

SCALE: 1"=40'

GRAPHIC SCALE

STEVEN H. SAKAI
LICENSED PROFESSIONAL ENGINEER
No. 7637-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
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## KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

## ELECTRICAL DISTRIBUTION PARTIAL PLAN II

| DRAWN BY: CAD | ENGINEER: GF | CHECKED BY: SS |
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APPROVED:

ADDENDUM NO. 3

DWG. NO. E-6

SHEET 87 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
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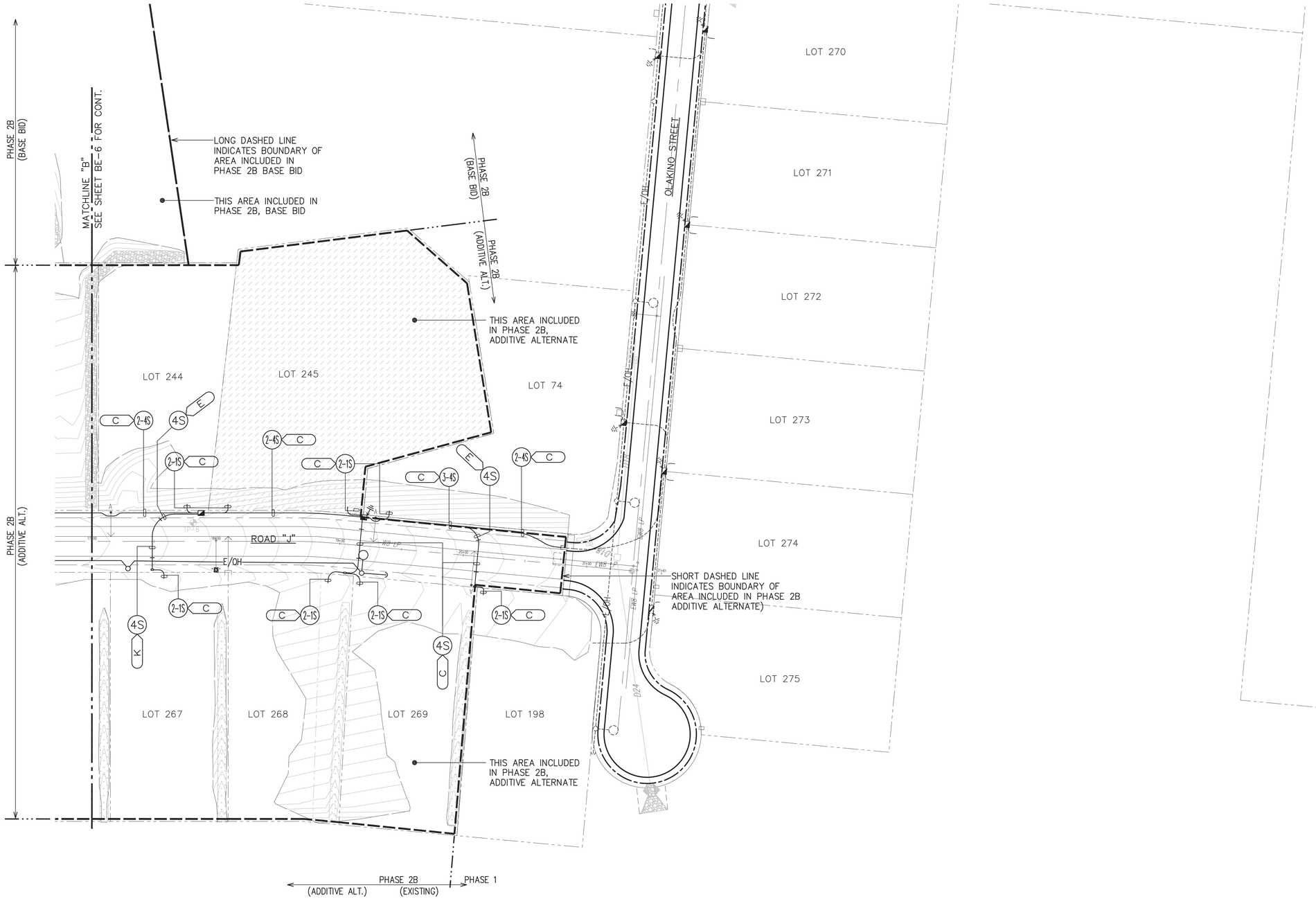


NORTH

## ELECTRICAL DISTRIBUTION PLAN III

SCALE: 1" = 40'

40' 20' 0 40' 80'

SCALE: 1"=40'

GRAPHIC SCALE

STEVEN H. SAKAI
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No. 7637-E
HAWAII, U.S.A.

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|---|---|---|---|
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# KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

## ELECTRICAL DISTRIBUTION PARTIAL PLAN III

| DRAWN BY: CAD | ENGINEER: GF | CHECKED BY: SS |
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APPROVED:

ADDENDUM NO. 3

DWG. NO. E-7

SHEET 88 OF 91 SHEETS

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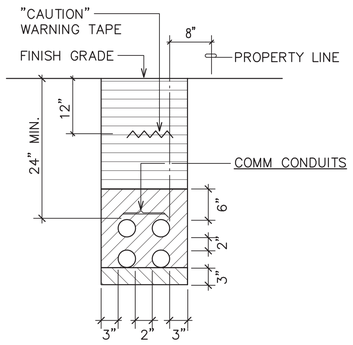


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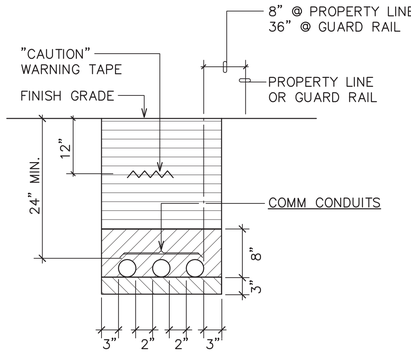


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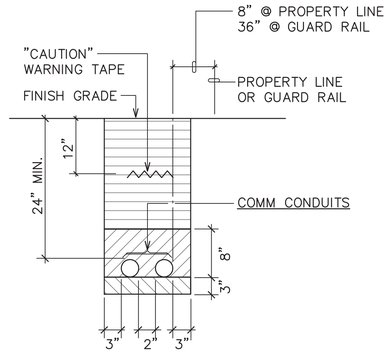


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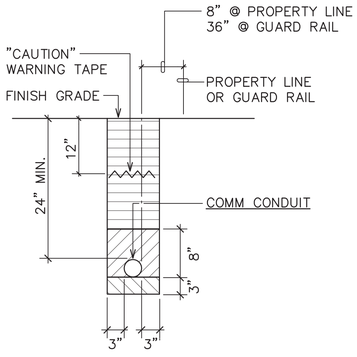


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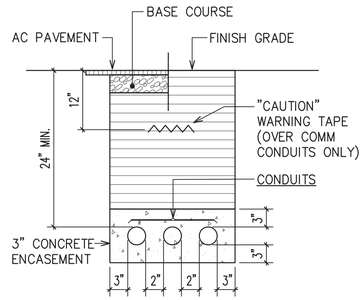


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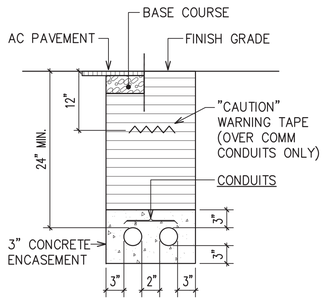


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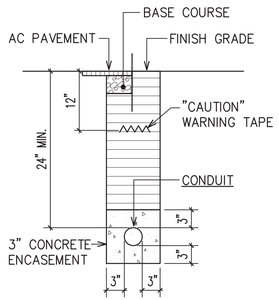


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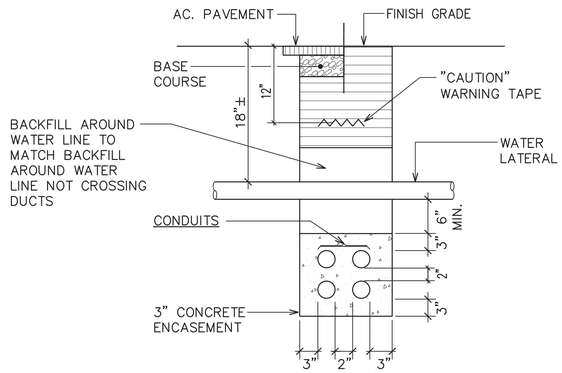


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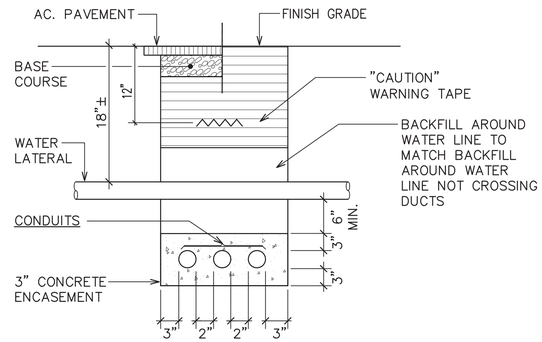


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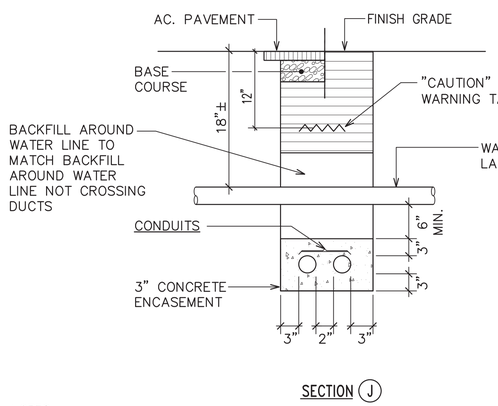


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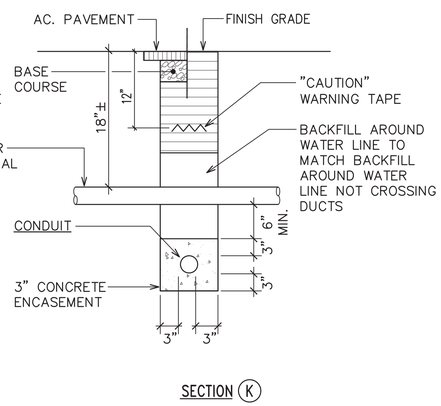


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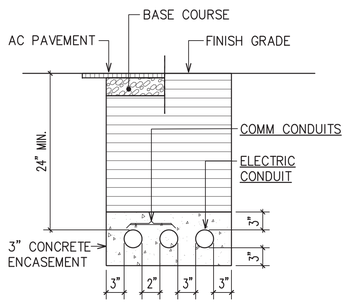


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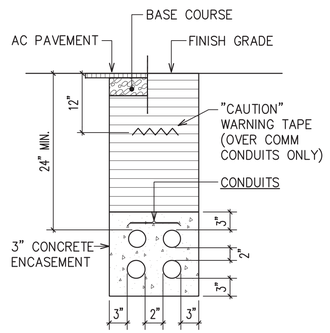


SECTION (M)

## CONDUIT SCHEDULE

| ITEM | DESCRIPTION |
|---|---|
| (2E) | MAUI ELECTRIC CO. 1–2"C |
| (2-2E) | MAUI ELECTRIC CO. 2–2"C |
| (3-2E) | MAUI ELECTRIC CO. 3–2"C |
| (3E) | MAUI ELECTRIC CO. 1–3"C |
| (2-3E) | MAUI ELECTRIC CO. 2–3"C |
| | |
| | |
| (2-1S) | SANDWICH ISLES COMM UD(2x1–1") |
| (2S) | SANDWICH ISLES COMM UD(1x1–2") |
| (4S) | SANDWICH ISLES COMM UD(1x1–4") |
| (2-4S) | SANDWICH ISLES COMM UD(2x1–4") |
| (3-4S) | SANDWICH ISLES COMM UD(3x1–4") |
| (4-4S) | SANDWICH ISLES COMM UD(2x2–4") |
| | |
| | |
| (4V) | CATV 4"C |
| | |
| | |
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| | |
| | |

## BACKFILL NOTES:

TYPE "A" BACKFILL – EARTH & GRAVEL. ROCK SIZE TO BE 1" MAX & THE MIXTURE TO CONTAIN NOT MORE THAN 50% BY VOLUME OF ROCK PARTICLES. THE MATERIAL SHALL BE NONEXPANSIVE. 95% COMPACTION.

TYPE "B" BACKFILL – EARTH & GRAVEL. MIXTURE MUST PASS A $\frac{1}{2}$" MESH SCREEN & CONTAIN NOT MORE THAN 20% BY VOLUME OF ROCK PARTICLES. 95% COMPACTION.

NOTE – IF NORMAL MATERIAL AT BOTTOM OF TRENCH IS NOT TYPE "B", AN ADDITIONAL 3" SHALL BE EXCAVATED & TYPE "B" BACKFILL PROVIDED.

CONCRETE – 3" ENCASEMENT, 2500 PSI COMPRESSIVE STRENGTH @ 28 DAYS.

**NOTES:**

1. ELECTRIC WARNING TAPE–HEAVY GAUGE 4 MIL, RED WITH BLACK LETTERING, 3" WIDE, "BURIED ELECTRIC LINE BELOW–CAUTION" @ DIRECT BURIED CONDUITS.
2. "CAUTION" WARNING TAPE REQUIRED OVER ENTIRE LENGTH OF ALL CONDUITS.
3. 3" SEPARATION REQUIRED BETWEEN ELECTRICAL AND COMM. CONDUITS WITHIN CONCRETE ENCASEMENT.

# TYPICAL DUCT SECTIONS

NOT TO SCALE

STEVEN H. SAKAI LICENSED PROFESSIONAL ENGINEER No. 7637-E HAWAII, U.S.A.

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| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |


Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii


**KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B**

KEOKEA & WAIOHULI, MAKAWAO, MAUI

OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS

TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

**TYPICAL DUCT SECTIONS**

| DRAWN BY: CAD | ENGINEER: GTN | CHECKED BY: SS |
|---|---|---|

APPROVED:

**ADDENDUM NO. 3**



| FILE | POCKET | FOLDER | NO. |
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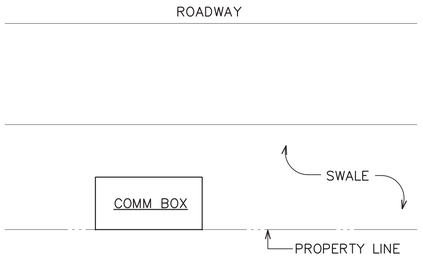
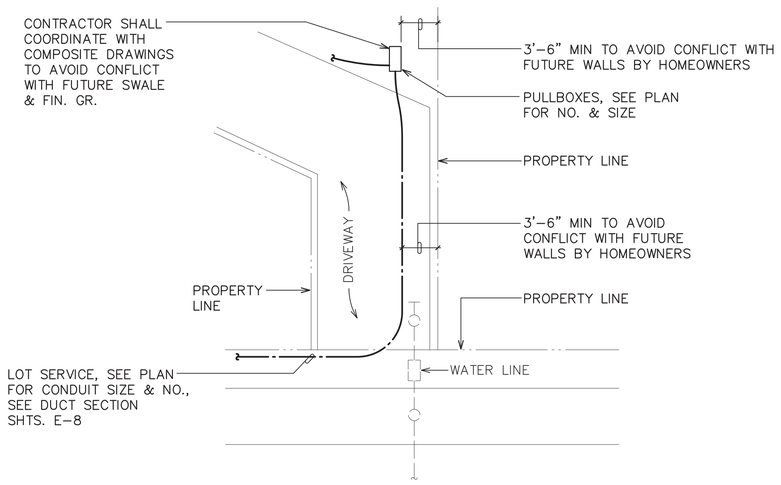
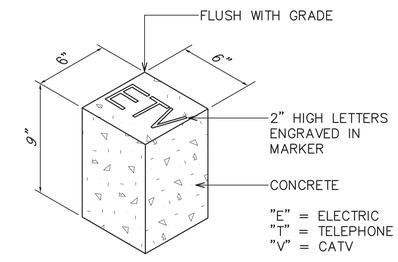


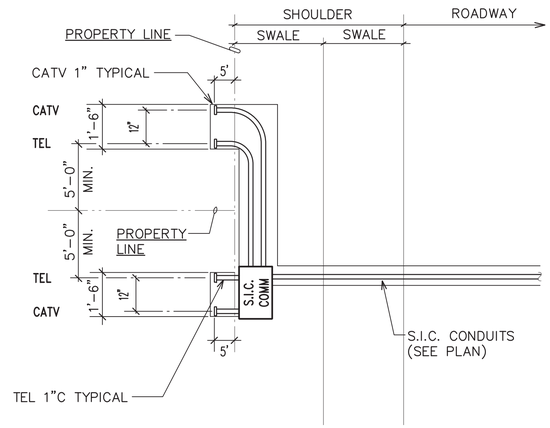

A / E-9 TYPICAL HANDHOLE GROUP ARRANGEMENT
NOT TO SCALE



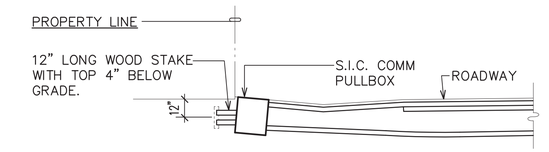

B / E-9 SERVICE CONDUITS @ FLAGLOTS
NOT TO SCALE



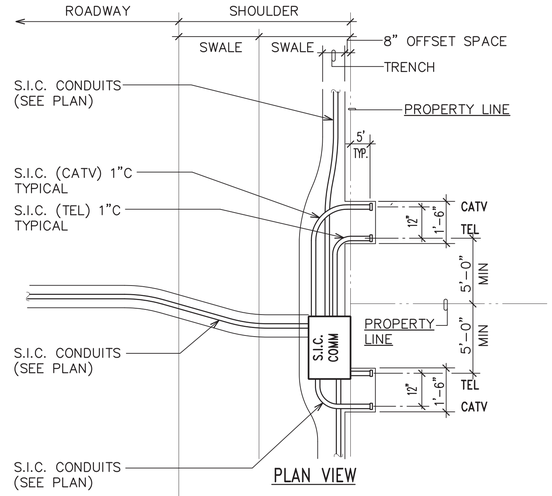

C / E-9 CONCRETE CONDUIT STUB-OUT MARKER
NOT TO SCALE



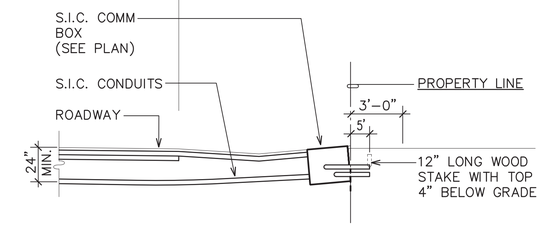

PLAN VIEW




ELEVATION




PLAN VIEW




ELEVATION

D / E-9 TYPICAL LOT SERVICE
NOT TO SCALE

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |

**Community Planning and Engineering, Inc.**
Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

# KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

## TYPICAL LOT SERVICE DETAILS

| DRAWN BY: CAD | ENGINEER: GTN | CHECKED BY: SS |
|---|---|---|

APPROVED:

STEVEN H. SAKAI
LICENSED PROFESSIONAL ENGINEER
No. 7637-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

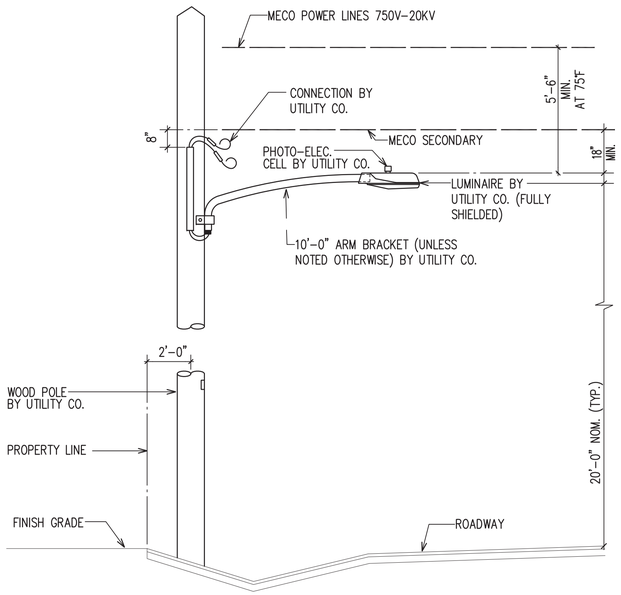
ADDENDUM NO. 3

DWG. NO. E-9

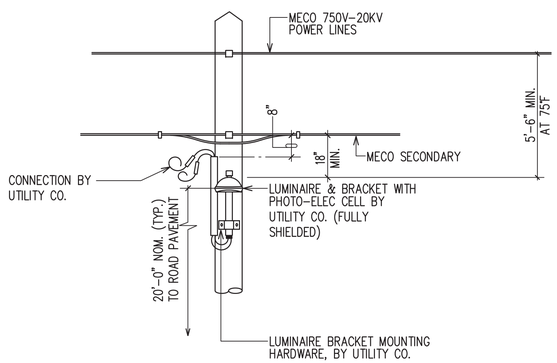
SHEET 90 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |

Z:\ACAD\PROJECTS\218107B\E09_218107B_LOTSVC01 3/11/2024 7:58AM Glennth




A E-10 STREET LIGHT DEAD END INSTALLATION
NOT TO SCALE




B E-10 STREET LIGHT TANGENT INSTALLATION
NOT TO SCALE

Z:\ACAD\PROJECTS\218107B\E10_218107B_STLTDET01 3/11/2024 7:56AM Glennth

| REVISION DATE | DESCRIPTION | MADE BY | APPROVED |
|---|---|---|---|
| | | | |

cp&e Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

# KEOKEA-WAIOHULI DEVELOPMENT PHASE 2B

KEOKEA & WAIOHULI, MAKAWAO, MAUI
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEYS: (2) 2-2-002:014 AND (2) 2-2-033:023

## MISCELLANEOUS DETAILS

| DRAWN BY: CAD | ENGINEER: GTN | CHECKED BY: SS |
|---|---|---|

APPROVED:

STEVEN H. SAKAI
LICENSED PROFESSIONAL ENGINEER
No. 7637-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/26

ADDENDUM NO. 3

DWG. NO. E-10 SHEET 91 OF 91 SHEETS

| FILE | POCKET | FOLDER | NO. |
|---|---|---|---|
| | | | |