State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION
1151 Punchbowl Street, Room 221
Honolulu, Hawaii 96813

ADDENDUM NO. 2

TO

Job No. F48C612A
Keaiwa Heiau State Recreation Area Water System Improvements
Aiea, Hawaii

May 19, 2026

The items listed hereinafter are hereby made a part of the contract for the above project and shall govern the work, taking precedence over previously issued plans and specifications governing the items mentioned.

PLANS (Revisions by description only unless referenced by attached figures.)

1. Sheet C-5 – General Plan, Replace sheet with the attached Sheet C-5.
    a. Added Note 14.

2. Sheet C-6 – Plan & Profile 1, Replace sheet with the attached revised Sheet C-6.
    a. Added new quick coupling valve.

3. Sheet C-7 – Plan & Profile 2, Replace sheet with the attached revised Sheet C-7.
    a. Added new gate valve and Air relief valve.

4. Sheet C-8 – Plan & Profile 3, Replace sheet with the attached revised Sheet C-8.
    a. Added new quick coupling valve.
    b. Revised pipe stub out.
    c. Added detail.

5. Sheet C-9 – Plan & Profile 4, Replace sheet with the attached revised Sheet C-9.
    a. Added new quick coupling valve.

6. Sheet C-10 – Plan & Profile 5, Replace sheet with the attached revised Sheet C-10.
    a. Added new quick coupling valve.
    b. Added new air relief valve.
    c. Revised piping and tanks for bladder tank area.
    d. Revised existing redwood tank structure to remain in place.

7. Sheet C-12 – Plan & Profile 7, Replace sheet with the attached revised Sheet C-12.

a. Added new quick coupling valve.

8. Sheet C-13 – Plan & Profile 8, Replace sheet with the attached revised Sheet C-13.
    a. Added new quick coupling valve.

9. Sheet C-14 – Plan & Profile 9, Replace sheet with the attached revised Sheet C-14.
    a. Added new quick coupling valve.

10. Sheet C-15 – Water Details, Replace sheet with the attached revised Sheet C-15.
    a. Added new detail.

11. Sheet C-16 – Water Details 2, Replace sheet with the attached revised Sheet C-16.
    a. Revised Tank Building Layout Detail

12. Sheet S-2 – Tank Enclosure Building, Replace sheet with the attached revised Sheet S-2.
    a. Revised Building Foundation Plan.

SPECIFICATIONS

1. Proposal- Delete in its entirety and replace with the attached revised Proposal.
    a. Added new bid items.
    b. Deleted ¾" Hose bibb and Demolition of existing structure bid items.
    c. Added Additive 1 – Stone Veneer
    d. Added Additive 2 – Road Repair.
    e. Revised Condition of Award Section, 1st paragraph.
    f. Added Joint Contractors or Subcontractors List for Additive 1 and Additive 2.

2. Information and Instruction to Bidders – Delete in its entirety and replace with the attached revised Information and Instruction to Bidders.
    a. Added Paragraph K – Evaluation Criteria
    b. Added Paragraph L – Method of Award

3. Table of Contents – Delete in its entirety and replace with the attached revised Table of Contents.

4. Add new Section 01230 – Additive Bid Items.

5. Add new Section 02226 – Roadway Excavation.

6. Add new Section 02512 – Asphalt Concrete.

7. Section 02577 – Pavement Markings – Delete in its entirety and replace with attached revised Section 02577.
    a. Entire section was revised.

8. Section 02675 – Testing and Chlorination -Delete in its entirety and replace with the attached revised Section 02675.
    a. Added Subsection 3.1.B for pressure testing working pressure requirements.
    b. Revised Subsection 3.2.D Chlorination.

9. Add new Section 04400 – Stone Masonry.

GENERAL INFORMATION

A virtual pre-bid meeting was held on May 12, 2026. The pre-bid meeting agenda and attendees are attached for information only. The following questions were received during the meeting and through HIePRO, along with their corresponding responses.

1. Question: Will the root barrier be installed on both sides of the waterline for the entire alignment

   Response: The root barrier is generally intended to be installed only on the side where tree roots are present. In most cases, this will be on one side of the waterline only. If roots are encountered on both sides, installation may be required on both sides in those specific areas. The quantity in the Proposal is intended to correspond approximately to the same linear footage as the waterline.

2. Question: Is CLSM required only at roadway crossings, and is the entire trench at those crossings to be filled with CLSM?

   Response: Yes. The intent is for the trench at roadway crossings to be fully backfilled with CLSM in accordance with the trench detail in the plans and specifications.

3. Question: Will there be restrictions on construction phasing or limits on the amount of work area/trenching that can be open at one time to accommodate park guests and visitors?

   Response: The existing water system must remain operational until the new system is fully installed, tested, and ready to convert from the old system to the new system. Contractor access and work areas may proceed as needed provided that:

   - Public access through the park is maintained,
   - Open trench safety requirements are followed, and
   - Excessive open trench lengths are avoided.

   See Addendum 1 for requirements for open trenches.

4. Question: Was clearing and grubbing just within the trench limits or is there another limit?

   Response: Where needed for construction purposes and for the site area. This includes things like trimming trees if required for equipment.

5. Question: Are there restrictions related to native birds nesting near the project area, and would that limit use of equipment or work activities near trees?

   Response: The primary area of concern is near the northern trailhead and the new bladder tank area, where the ‘Elepaio was once surveyed in the area. The area appears to be cleared so no construction restrictions are anticipated. Also, a DLNR, Division of Forestry and Wildlife Biologist will inspect the site prior to construction. Contractors should remain mindful of biological resource protection requirements.

6. Question: Since bidders are required to hold pricing for 365 days, when is the anticipated Notice to Proceed (NTP)?

   Response: We anticipate NTP sometime in Fall of 2026. Potential protests or pending permits could delay the schedule.

7. Question: What is the existing water system pressure at the park for purposes of pressure testing requirements?

   Response: The pressure at the pump station is approximately 140 PSI. The specifications require testing pressures of approximately 225 PSI in accordance with the specifications.

8. Question: Can you clarify the chlorination method to be used?

   Response: AWWA standards will be used.

9. Question: Is there any electrical work?

   Response: No electrical work.

10. Question: In the proposal Base Bid Line Item 5. LS Arborist Services. The Arborist Services is a Lump Sum. Are the Arborist Services only needed when the contractor does the Asphalt trench pavement repair?

    Response: The arborist services is for the whole project. Arborist should be retained and consulted to review the contractors potential work and in the event they need to trim roots.

Engineering Division

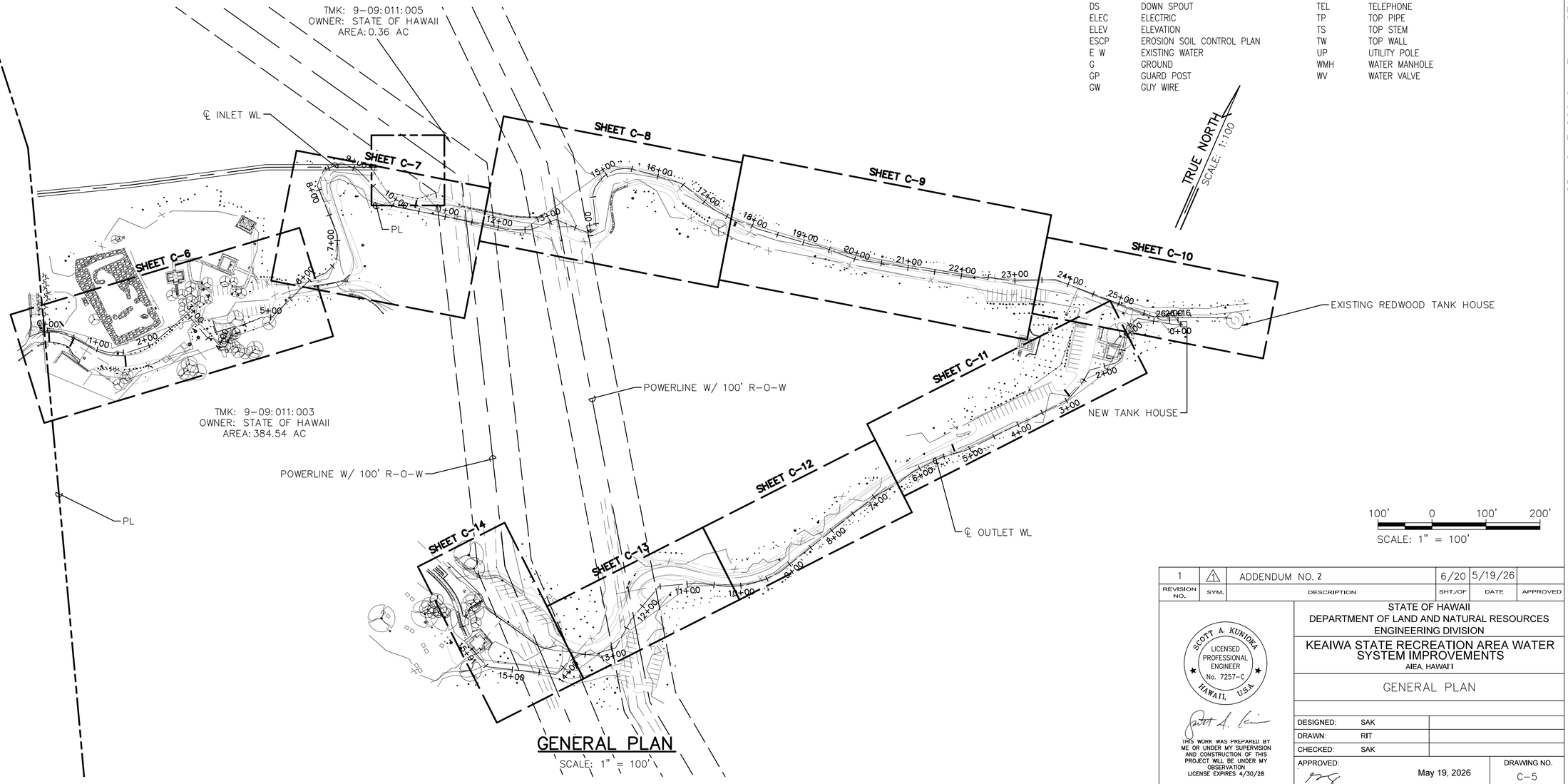
Dina U. Lau
Acting Chief Engineer

WATERLINE NOTES

1. ALL WORK SHALL BE DONE ACCORDING TO THE WATER SYSTEM STANDARDS, STATE OF HAWAII, DATED 2002, AS AMENDED HEREIN REFERRED TO AS THE WSS.
2. ALL EXISTING WATERLINES, WATERLINE APPURTENANCES, AND UTILITY LOCATIONS SHOWN ON THE PLANS ARE OBTAINED FROM THE LATEST RELIABLE SOURCES. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE EXACT LOCATION OF ALL UTILITIES IN THE FIELD AND SHALL BEAR ALL COST FOR DAMAGES DONE DURING THE CONTRACT PERIOD.
3. WHERE WATER SHUTOFF OF MORE THAN 3-HOURS BECOMES NECESSARY, THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL PROVIDE A TEMPORARY BYPASS LINE, SIZE OF WHICH SHALL BE DETERMINED BY THE ENGINEER. THE ENGINEER ALSO RESERVES THE RIGHT TO REQUIRE BYPASS LINES, REGARDLESS OF THE WATER SHUT-OFF PERIOD, IF DEEMED NECESSARY.
4. CONSTRUCTION PROJECTS REQUIRING TEMPORARY WATER SERVICE FROM BWS SHALL BE METERED AND PAID FOR BY THE CONTRACTOR.
5. ALL NEWLY INSTALLED WATERLINES SHALL HAVE A 4 MIL THICK, 6-INCH WIDE, NON-METALLIC BLUE WARNING TAPE OVER CENTERLINE OF PIPE LABELED "CAUTION – WATERLINE BURIED BELOW" PLACED 12-INCHES BELOW FINISHED GRADE ALONG THE ENTIRE LENGTH OF THE TRENCH.
6. MINIMUM VERTICAL CLEARANCE BETWEEN WATERLINES AND OTHER UTILITIES SHALL BE 12-INCHES PROVIDED THE OTHER UTILITY IS CONCRETE JACKETED, AND 18-INCHES IF NO CONCRETE JACKETS ARE USED. IN ALL APPLICABLE INSTANCES, THE WATERLINES SHALL BE AT A GRADE HIGHER THAN OTHER UTILITIES. UTILIZE PERPENDICULAR CROSSINGS WHERE PRACTICABLE. FOR WATERLINES, CENTER FULL PIPE LENGTHS AT UTILITY CROSSINGS WHENEVER POSSIBLE.
7. WHEN WATERLINE IS WITHIN 6-FEET OF A PRESSURIZED SEWER LINE OR WITHIN 18-INCHES OF A GRAVITY SEWER LINE, THE SEWER MAIN SHALL BE REINFORCED CONCRETE JACKETED. WHENEVER A WATER MAIN CROSSES UNDER A SEWER MAIN, THE SEWER MAIN SHALL HAVE REINFORCED CONCRETE JACKET ON BOTH SIDES OF CROSSING TO A DISTANCE OF 5-FEET FROM THE WATERLINE (MEASURED PERPENDICULAR TO WATERLINE). STANDARD CONCRETE JACKET DETAILS FOR SEWER LINES AS SPECIFIED BY THE DEPARTMENT OF PUBLIC WORKS STANDARDS SHALL BE FOLLOWED. PLASTIC PIPES SHALL NOT BE JACKETED. DUCTILE IRON OR CONCRETE CYLINDER PIPE SHALL BE USED FOR THE PORTION TO BE JACKETED.
8. ALL FITTINGS FOR PVC PIPES SHALL BE INJECTION MOLDED PVC SCHEDULE 80 FITTINGS CONFORMING TO ASTM D246.
9. ALL GATE VALVES SHALL BE OF THE RESILIENT-SEATED GATE VALVES TYPE AND MANUFACTURED TO MEET ALL ALL APPLICABLE REQUIREMENTS OF AWWA C509 AND RATED FOR SERVICE AT 200 PSI WORKING PRESSURE. VALVES SHALL HAVE NO-RISING STEMS, OPEN BY TURNING LEFT AND PROVIDED WITH 2-INCH SQUARE NUT WITH ARROW CAST IN METAL TO INDICATE DIRECTION OF OPENING. EACH VALVE SHALL HAVE MANUFACTURER'S NAME, PRESSURE RATING AND YEAR IN WHICH MANUFACTURED CAST ON THE BODY..
10. THE WATERLINE SHALL BE TESTED AT A MINIMUM OF 225 PSI OR ONE-AND-ONE-HALF TIMES THE STATIC WATER PRESSURE AT THE LOW POINT (WHICHEVER IS GREATER). THE TESTING SHALL BE DONE JUST PRIOR TO PAVING WHENEVER APPLICABLE.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CHLORINATION OF THE WATER SYSTEM PER THE MOST CURRENT STANDARDS OF BOTH DOH AND BWS AND SHALL BEAR ALL COST(S). THE PERSON(S) ENGAGED TO DO THE CHLORINATION WORK MUST HAVE THE APPROPRIATE AND VALID LICENSE TO PERFORM THE WORK IN THE STATE OF HAWAII.
12. EXISTING WATERLINES, VALVES, FITTINGS AND APPURTENANCES NOT DESIGNATED "REMOVE AND SALVAGE" SHALL BE ABANDONED IN PLACE. ALL EXPOSED VALVE BOXES VALVES, PIPES AND APPURTENANCES SHALL BE REMOVED AND DISPOSED OF PROPERLY AT NO COST TO THE STATE.
13. SOLDER (1/8-INCH DIA.) AND FLUX USED SHALL NOT CONTAIN MORE THAN 0.2% LEAD
14. EXISTING WATERLINE SHALL BE KEPT IN CONTINUOUS SERVICE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL NOT INTERRUPT SERVICE UNTIL THE NEW WATERLINE IS FULLY INSTALLED, TESTED, DISINFECTED, APPROVED, AND PLACED INTO OPERATION.

ABBREVIATIONS:

AC	ASPHALT CONCRETE	H	HEIGHT
B	BOTTOM	HB	HOSE BIB
BB	BOTTOM BANK	INV	INVERT
BC	BOTTOM CURB	IV	IRRIGATION VALVE
BW	BOTTOM WALL	LP	LAMP POST
CD	CONDUIT	MB	MAILBOX
CLF	CHAIN LINK FENCE	O/H	OVERHEAD
CMU	CONCRETE MASONRY UNIT (HOLLOW TILE)	PBX	PANEL BOX OR PULL BOX
CO	CLEAN OUT	SMH	SEWER MANHOLE
CONC/CC	CONCRETE	STA	STATION
CRM	CONCRETE RUBBLE MASONRY (ROCK) WALL	T	TOP
D	DIAMETER OR DRAIN	TB	TOP BANK
DI	DRAIN INLET	TC	TOP CURB
DS	DOWN SPOUT	TEL	TELEPHONE
ELEC	ELECTRIC	TP	TOP PIPE
ELEV	ELEVATION	TS	TOP STEM
ESCP	EROSION SOIL CONTROL PLAN	TW	TOP WALL
E W	EXISTING WATER	UP	UTILITY POLE
G	GROUND	WMH	WATER MANHOLE
GP	GUARD POST	WV	WATER VALVE
GW	GUY WIRE		



GENERAL PLAN
SCALE: 1" = 100'

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	⚠	ADDENDUM NO. 2	6/20	5/19/26	

SCOTT A. KUNIOKA
LICENSED PROFESSIONAL ENGINEER
No. 7257-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION
LICENSE EXPIRES 4/30/28

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAII

GENERAL PLAN

DESIGNED:	SAK	
DRAWN:	RIT	
CHECKED:	SAK	
APPROVED:	May 19, 2026	DRAWING NO. C-5
CHIEF ENGINEER	DATE	

JOB NO. F48C612A SHEET NO. 6 OF 20 SHEETS

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

Last Save by: RIT
Last Saved: 5/18/2026
Plotted on: 5/19/2026
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TRUE NORTH
SCALE: 1"=20'

KEAIWA HEIAU STATE RECREATION AREA

EXIST. WATER METER

EXIST 1–½" COPPER WL (TO REMAIN)

EXIST 1–½" COPPER WL

AIEA HEIGHTS DRIVE (CITY)

(ALT. 17 TO ℄ INLET WL STA. 23+14.31)
334°04'58"
64.29'

℄ INLET WL

EXIST. 2" COPPER WL

MATCH LINE STA. 06+10.00
SEE SHT C-7

CAMPSITES
AIEA TRAIL LOOP
PICNIC AREA

1 STA. 3+88.78 INLET WL
1 – 2" CXFIPT COPPER COUPLING
1 – 2" PVC MALE ADAPTER
1 – 2" x 3" PVC BUSHING
1 – 3" GV SEE DET. 3/C-16
1 – 12" VALVE BOX
CONN. TO 2" EXISTING WATERLINE

2 STA. 3+90.78 INLET WL
1 – 3" ⅙ BEND, (H)
1 – CONC. BLOCK

3 STA. 3+93.28 WL
1 – 3" 1/32 BEND, (H)
1 – CONC. BLOCK

4 STA. 3+98.28 INLET WL
1 – 3" ⅛ BEND, (H)
1 – CONC. BLOCK

5 STA. 4+26.97 INLET WL
1 – 3" ⅛ BEND, (H) ROT. 8° 58'29"
1 – CONC. BLOCK

6 STA. 4+83.67 INLET WL
1 – 3" ⅙ BEND, (H)
1 – CONC. BLOCK

7 STA. 5+01.91 INLET WL
1 – 3" ⅛ BEND, (H) ROT. 4°12'56"
1 – CONC. BLOCK
1 – 3" GV SEE DET. 3/C-16
1 – 12" VALVE BOX

8 STA. 5+56.59 INLET WL
BEGIN PAVEMENT TRENCH RESTORATION SEE DET. 1/C-15

9 STA. 6+01.91 INLET WL
1 – 3" ⅙ BEND, (H) ROT. 4°12'56"
1 – CONC. BLOCK
END PAVEMENT TRENCH RESTORATION

10 STA. 4+50.00 INLET WL
INSTALL NEW QUICK COUPLING VALVE W/ BALL VALVE. SEE DET. 3/C-15

NOTE:
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ALL EXISTING UTILITIES ARE APPROXIMATES BASED ON PREVIOUS PLANS. CONTRACTOR TO FIELD VERIFY ANY EXISTING UTILITIES.

THE NEW WATERLINE SHOULD BE KEPT A MINIMUM OF 2' AWAY FROM THE EXISTING WATER LINE AND CROSSINGS SHOULD BE MINIMIZED WHERE POSSIBLE.

IF WATER, SEWAGE OR ELECTRICAL SERVICES ARE PLANNED TO BE INTERRUPTED FOR MORE THAN 1 HOUR, PROVIDE FOR TEMPORARY WATER, SEWAGE, AND ELECTRICAL SERVICES DURING THE INTERRUPTION AT NO ADDITIONAL COST TO THE STATE. IF A COMFORT STATION NEEDS TO BE CLOSED, A STANDARD PORTABLE TOILET AND AN ADA PORTABLE TOILET NEEDS TO BE PROVIDED PER CLOSED COMFORT STATION.

PLAN
SCALE: 1" = 20'

PROFILE
HORZ. SCALE: 1" = 20'
VERT. SCALE 1" = 4'

MATCH LINE STA. 06+10.00
SEE SHT C-7

SCALE: 1" = 4'–0"
SCALE: 1" = 20'–0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	⚠	ADDENDUM NO. 2	7/20	5/19/26	

SCOTT A. KUNIOKA
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No. 7257-C
HAWAII, U.S.A.

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LICENSE EXPIRES 4/30/28

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAII

PLAN & PROFILE 1

DESIGNED:	SAK
DRAWN:	RIT
CHECKED:	SAK
APPROVED:	May 19, 2026 (DATE)
CHIEF ENGINEER	

DRAWING NO. C-6

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

Last Save by: RIT
Last Saved: 5/18/2026
Plotted on: 5/19/2026
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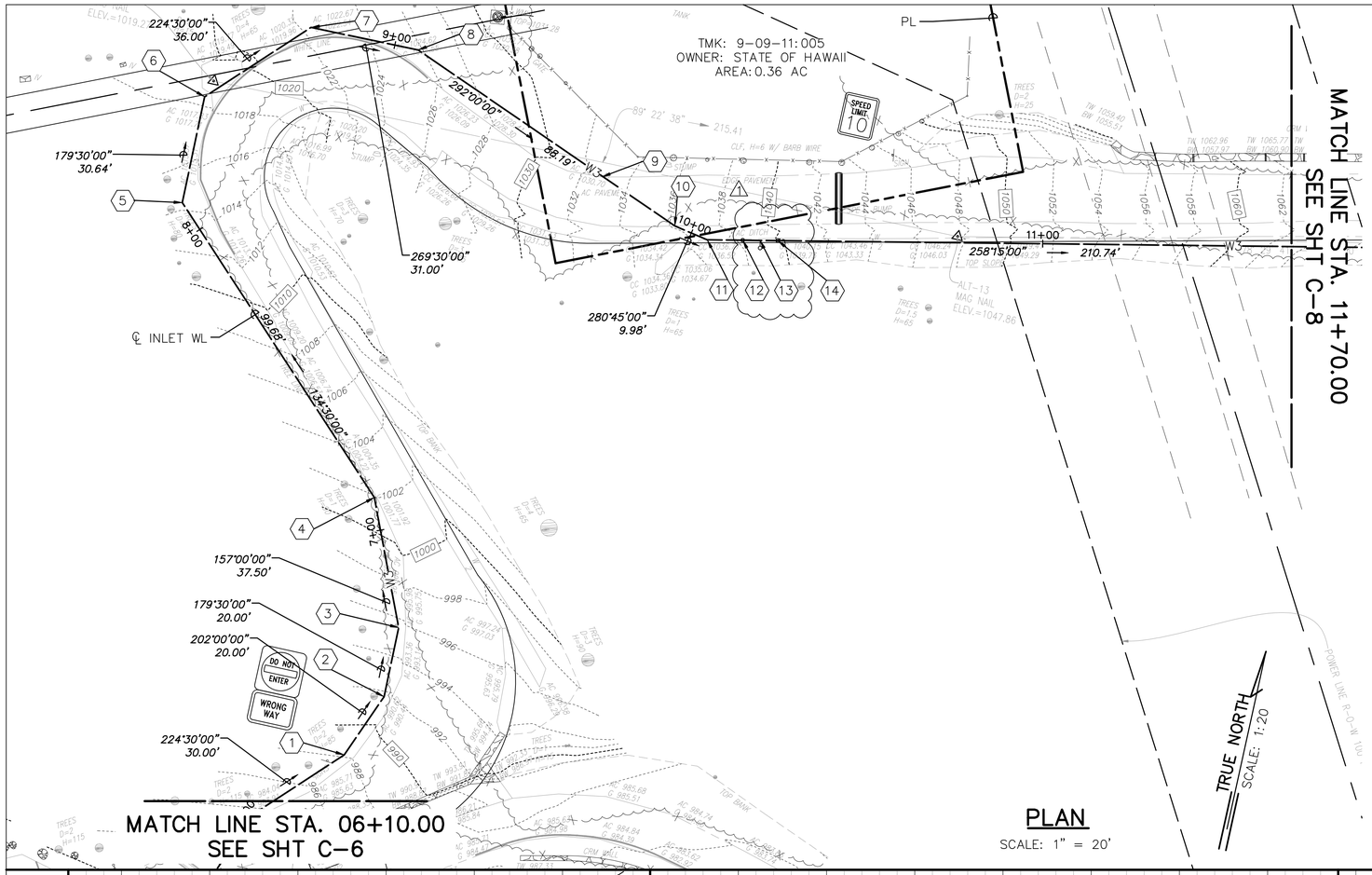

PLAN

SCALE: 1" = 20'

1. STA. 6+31.91 INLET WL
   1 – 3" 1/16 BEND, (H) ROT. 2°24'56"
2. STA. 6+51.91 INLET WL
   1 – 3" 1/16 BEND, (H) ROT. 2°24'56"
   1 – CONC. BLOCK
3. STA. 6+71.91 INLET WL
   1 – 3" 1/16 BEND, (H)
   1 – CONC. BLOCK
4. STA. 7+09.41 INLET WL
   1 – 3" 1/16 BEND, (H) ROT. 3°54'59"
   1 – CONC. BLOCK
5. STA. 8+09.09 INLET WL
   1 – 3" 1/8 BEND, (H)
   1 – CONC. BLOCK
6. STA. 8+39.73 INLET WL
   1 – 3" 1/8 BEND, (H)
   1 – CONC. BLOCK
7. STA. 8+75.73 INLET WL
   1 – 3" 1/8 BEND, (H)
   1 – CONC. BLOCK
8. STA. 9+06.73 INLET WL
   1 – 3" 1/16 BEND, (H) ROT. 00°09'05"
   1 – CONC. BLOCK
9. STA. 9+70.00 INLET WL
   BEGIN PAVEMENT TRENCH RESTORATION
   SEE DET. 1 / C-15
10. STA. 9+94.93 INLET WL
    1 – 3" 1/32 BEND, (H) ROT. 03°39'14"
    1 – CONC. BLOCK
11. STA. 10+04.91 INLET WL
    1 – 3" 1/16 BEND, (H) ROT. 10°14'31""
    1 – CONC. BLOCK
    END PAVEMENT TRENCH RESTORATION

1 ⚠

12. STA. 10+15.00 INLET WL
    1 – 3" GV SEE DET. 3 / C-16
    1 – 12" VALVE BOX 3 / C-16
13. STA. 10+20.00 INLET WL
    1 – 3/4" ARV SEE
    SEE WSS STD DET. V2
    1 – 3"X3"X3/4" SCH 80 PVC TEE
14. STA. 10+25.00 INLET WL
    1 – 3" 1/32 BEND, (V) 3 / C-16
    1 – CONC. BLOCK

NOTE:
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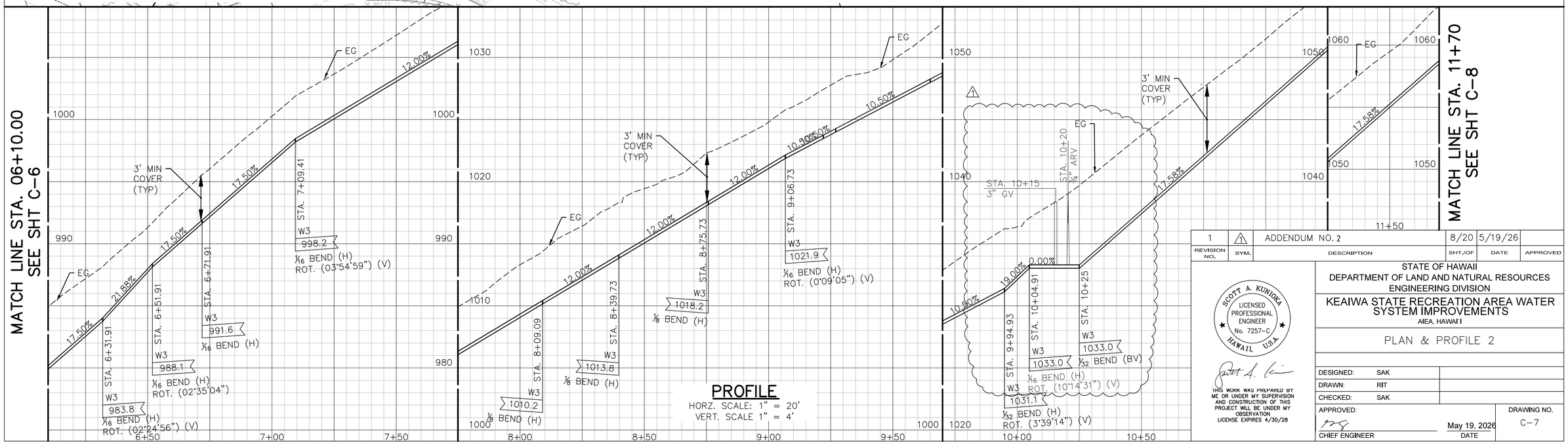
4' 0 4' 8'
SCALE: 1" = 4'-0"
20' 0 20' 40'
SCALE: 1" = 20'-0"



PROFILE

HORZ. SCALE: 1" = 20'
VERT. SCALE 1" = 4'

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	⚠	ADDENDUM NO. 2		8/20 5/19/26	

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAII

PLAN & PROFILE 2

DESIGNED:	SAK	
DRAWN:	RIT	
CHECKED:	SAK	
APPROVED:		DRAWING NO. C-7
CHIEF ENGINEER		May 19, 2026 DATE

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

Last Save by: RIT
Last Saved: 5/18/2026
Plotted on: 5/19/2026
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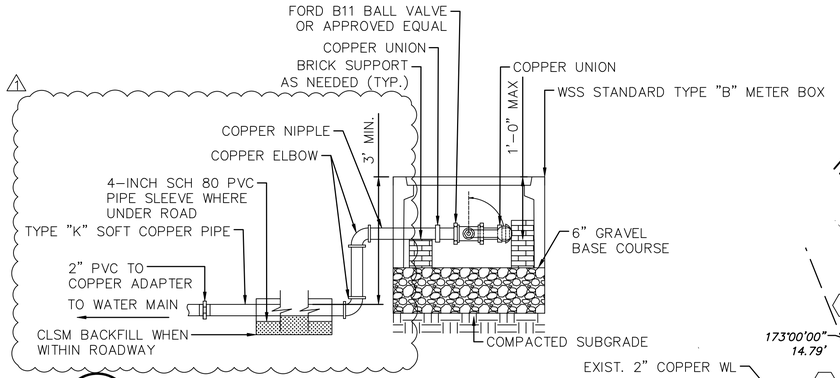

1 / C-8 **BALL VALVE STUB OUT DETAIL**

NOT TO SCALE

TRUE NORTH
SCALE: 1:20

MATCH LINE STA. 11+70
SEE SHT C-7

MATCH LINE STA. 17+60.00
SEE SHT C-9

EXIST. 2" COPPER WL

℄ INLET WL

ALT-10 MAG NAIL

ALT-11 MAG NAIL ELEV.=1125.00

ALT-12 MAG NAIL ELEV.=1084.9

PLAN

SCALE: 1" = 20'

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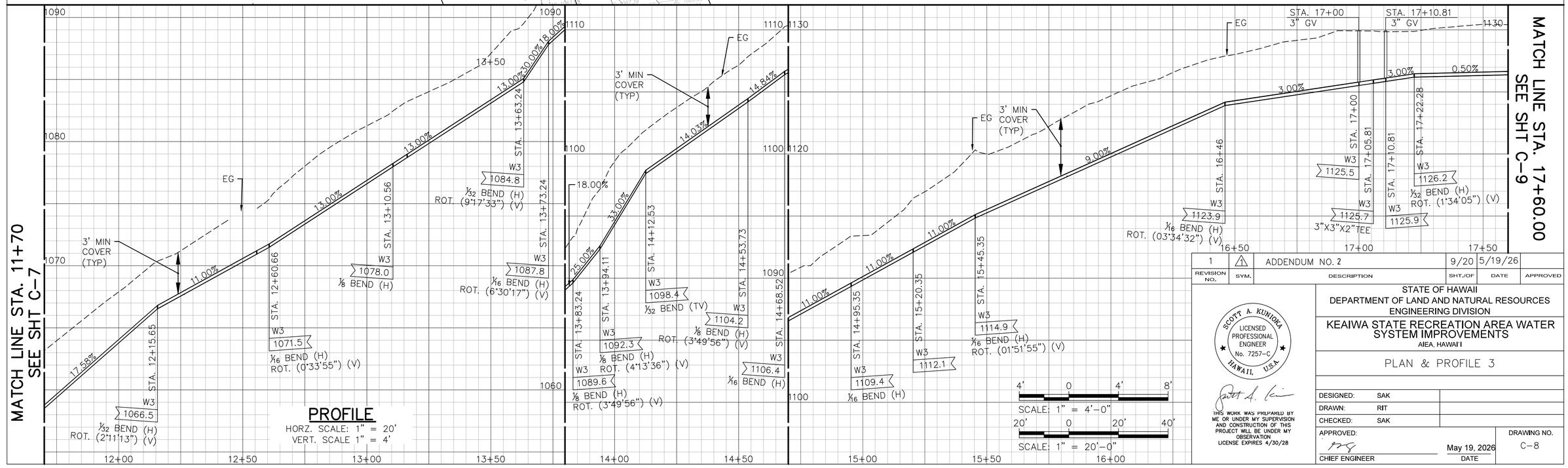
1. STA. 12+15.65 INLET WL
   1 – 3" ⅛ BEND, (H) ROT. 2°11'13"
   1 – CONC. BLOCK
2. STA. 12+60.56 INLET WL
   1 – 3" ⅛ BEND, (H) ROT. 0°33'55"
   1 – CONC. BLOCK
   BEGIN PAVEMENT TRENCH RESTORATION SEE DET. 1 / C-15
3. STA.13+10.56 INLET WL
   1 – 3" ⅛ BEND, (H) ROT. 24°07'15"
   1 – CONC. BLOCK
   END PAVEMENT TRENCH RESTORATION
4. STA. 13+63.24 INLET WL
   1 – 3" ⅛ BEND, (H) ROT. 9°17'32"
   1 – CONC. BLOCK
5. STA. 13+73.24 INLET WL
   1 – 3" ⅛ BEND, (H) ROT. 03°49'56"
   1 – CONC. BLOCK
6. STA. 13+83.24 INLET WL
   1 – 3" ⅛ BEND, (H) ROT. 3°49'56"
   1 – CONC. BLOCK
7. STA. 13+94.11 INLET WL
   1 – 3" ⅛ BEND, (H) ROT. 4°13'36"
   1 – CONC. BLOCK
8. STA. 14+53.73 INLET WL
   1 – 3" ⅛ BEND, (H) ROT. 6°17'56"
   1 – CONC. BLOCK
9. STA. 14+69.07 INLET WL
   1 – 3" ⅛ BEND, (H) ROT. 0°02'25"
   1 – CONC. BLOCK
10. STA. 14+95.91 INLET WL
    1 – 3" ⅛ BEND, (H) ROT. 0°55'35"
    1 – CONC. BLOCK
11. STA. 15+20.91 INLET WL
    1 – 3" ⅛ BEND, (H)
    1 – CONC. BLOCK
12. STA. 15+45.35 INLET WL
    1 – 3" ⅛ BEND, (H) ROT. 01°51'56"
    1 – CONC. BLOCK
13. STA. 16+46 INLET WL
    1 – 3" ⅛ BEND, (H) ROT. 03°34'32"
    1 – CONC. BLOCK
14. STA. 17+00 INLET WL
    1 – 3" GV SEE DET. 3 / C-16
    1 – 12" VALVE BOX
15. STA. 17+05.81 INLET WL
    1 – 3"X3"X2" TEE
    28 LF – TYPE "K" SOFT COPPER PIPE
    20 LF – SCH 80 PVC 4"
    INSTALL BALL VALVE STUB OUT DETAIL THIS SHT.
16. STA. 17+10.81 INLET WL
    1 – 3" GV SEE DET. 3 / C-16
    1 – 12" VALVE BOX
17. STA. 17+22.28 INLET WL
    1 – 3" ⅛ BEND, (H) ROT. 01°34'05"
    1 – CONC. BLOCK
18. STA. 12+50.00 INLET WL
    INSTALL NEW QUICK COUPLING VALVE W/ BALL VALVE. SEE DET. 3 / C-6



REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	1	ADDENDUM NO. 2	9/20	5/19/26	

SCOTT A. KUNIOKA
LICENSED PROFESSIONAL ENGINEER
No. 7257-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION
LICENSE EXPIRES 4/30/28

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAII

PLAN & PROFILE 3

DESIGNED:	SAK	
DRAWN:	RIT	
CHECKED:	SAK	
APPROVED:	CHIEF ENGINEER	May 19, 2026 DATE

DRAWING NO. C-8

JOB NO. F48C612A

SHEET NO. 9 OF 20 SHEETS

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

Last Save by: RIT
Last Saved: 5/18/2026
Plotted on: 5/19/2026
G:\PLNR2403 Keaiwa Heiau\300 DSGN\310 PLANS\DLNR 2403 Plan & Profile 3.dwg

1. STA. 17+63.48 INLET WL
   1 – 3" 1/16 BEND, (H) ROT. 0°53'07"
   1 – CONC. BLOCK
2. STA. 17+95.79 INLET WL
   1 – 3" 1/32 BEND, (H)
   1 – CONC. BLOCK
3. STA. 18+11.05 INLET WL
   1 – 3" 1/32 BEND, (H)
   1 – CONC. BLOCK
4. STA. 19+14.21 INLET WL
   1 – 3" 1/32 BEND, (H) ROT. 08°57'47"
   1 – CONC. BLOCK
5. STA. 19+28.86 INLET WL
   1 – 3" 1/32 BEND, (H) ROT. 04°54'40"
   1 – CONC. BLOCK
6. STA. 20+00.67 INLET WL
   1 – 3" 1/32 BEND, (H) ROT. 0°41'13"
   1 – CONC. BLOCK
8. STA. 22+00.00 INLET WL
   1 – 3" 1/32 BEND, (H) ROT. 07°13'10"
   1 – CONC. BLOCK
8. STA. 22+18.93 INLET WL
   1 – 3" 1/32 BEND, (H) ROT. 07°13'10"
   1 – CONC. BLOCK
9. STA. 22+49.26 INLET WL
   1 – 3" 1/32 BEND, (H) ROT. 04°14'49"
   1 – CONC. BLOCK
10. STA. 22+94.26 INLET WL
    1 – 3" 1/32 BEND, (H) ROT. 02°44'56"
    1 – CONC. BLOCK

11. STA. 19+70.00 INLET WL
    INSTALL NEW QUICK COUPLING VALVE W/ BALL VALVE. SEE DET. 3/C-6

NOTE:
IMPROVEMENTS TO EXISTING 1–½" COPPER WATERLINE FROM THE EXISTING METER TO THE PUMP STATION WILL NOT BE DONE WITHIN THIS PROJECT. NO WORK NEAR THE EXISTING HEIAU WILL BE ALLOWED. WORK SHALL BEGIN FROM STATION 3+88.78.

ALL EXISTING UTILITIES ARE APPROXIMATES BASED ON PREVIOUS PLANS. CONTRACTOR TO FIELD VERIFY ANY EXISTING UTILITIES.

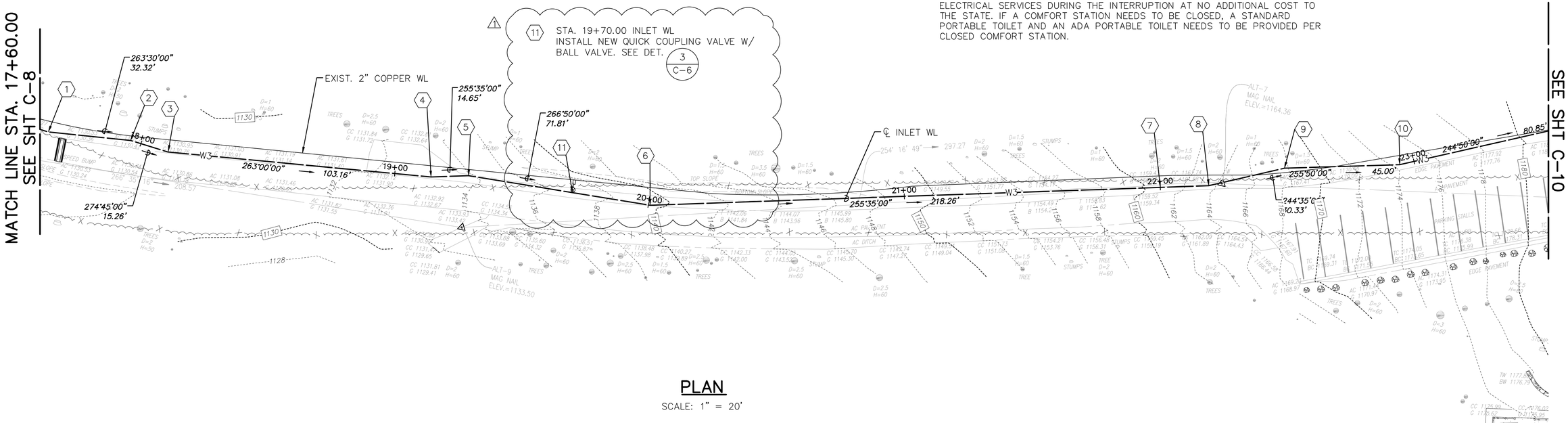
THE NEW WATERLINE SHOULD BE KEPT A MINIMUM OF 2' AWAY FROM THE EXISTING WATER LINE AND CROSSINGS SHOULD BE MINIMIZED WHERE POSSIBLE.

IF WATER, SEWAGE OR ELECTRICAL SERVICES ARE PLANNED TO BE INTERRUPTED FOR MORE THAN 1 HOUR, PROVIDE FOR TEMPORARY WATER, SEWAGE, AND ELECTRICAL SERVICES DURING THE INTERRUPTION AT NO ADDITIONAL COST TO THE STATE. IF A COMFORT STATION NEEDS TO BE CLOSED, A STANDARD PORTABLE TOILET AND AN ADA PORTABLE TOILET NEEDS TO BE PROVIDED PER CLOSED COMFORT STATION.

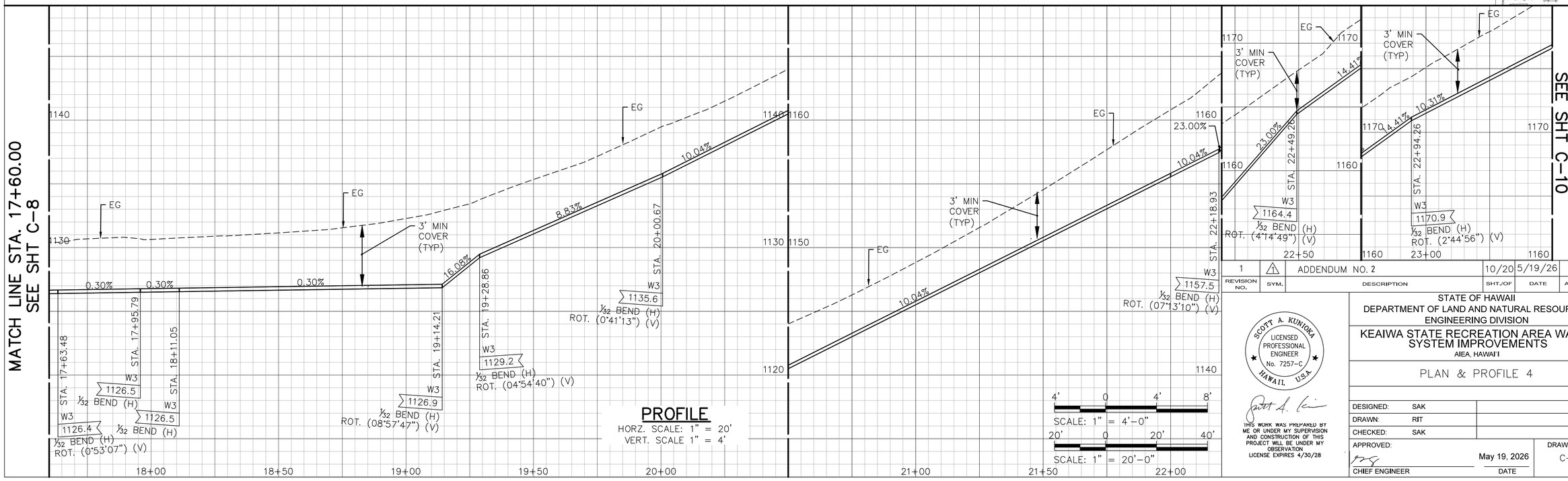
TRUE NORTH
SCALE: 1:20

MATCH LINE STA. 17+60.00
SEE SHT C-8

MATCH LINE STA. 23+50.00
SEE SHT C-10



PLAN
SCALE: 1" = 20'



PROFILE
HORZ. SCALE: 1" = 20'
VERT. SCALE 1" = 4'

SCALE: 1" = 4'–0"
SCALE: 1" = 20'–0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	1	ADDENDUM NO. 2	10/20	5/19/26	

SCOTT A. KUNIOKA
LICENSED PROFESSIONAL ENGINEER
No. 7257-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION
LICENSE EXPIRES 4/30/28

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAII

PLAN & PROFILE 4

DESIGNED:	SAK	
DRAWN:	RIT	
CHECKED:	SAK	
APPROVED:	May 19, 2026 (DATE)	DRAWING NO. C-9
CHIEF ENGINEER		

JOB NO. F48C612A

SHEET NO. 10 OF 20 SHEETS

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

Last Save by: RIT
Last Saved: 5/18/2026
Plotted on: 5/19/2026

G:\DLNR2403 Keaiwa Heiau\300 DSGN\310 PLANS\DLNR 2403 Plan & Profile 4.dwg

1. STA. 23+75.11 INLET WL
1 – 3" 1/16 BEND, (H) ROT. 0°02'43"
1 – CONC. BLOCK

2. STA. 24+17.00 INLET WL
1 – 3"X3"X1" TEE
1 – 1" PVC TO COPPER TRANSITION ADAPTER
1 – 1" TO ¾" BUSHING
1 – CONC. BLOCK
50 LF – NEW ¾" COPPER
RECONNECT TO EXIST. WATER FOUNTAIN

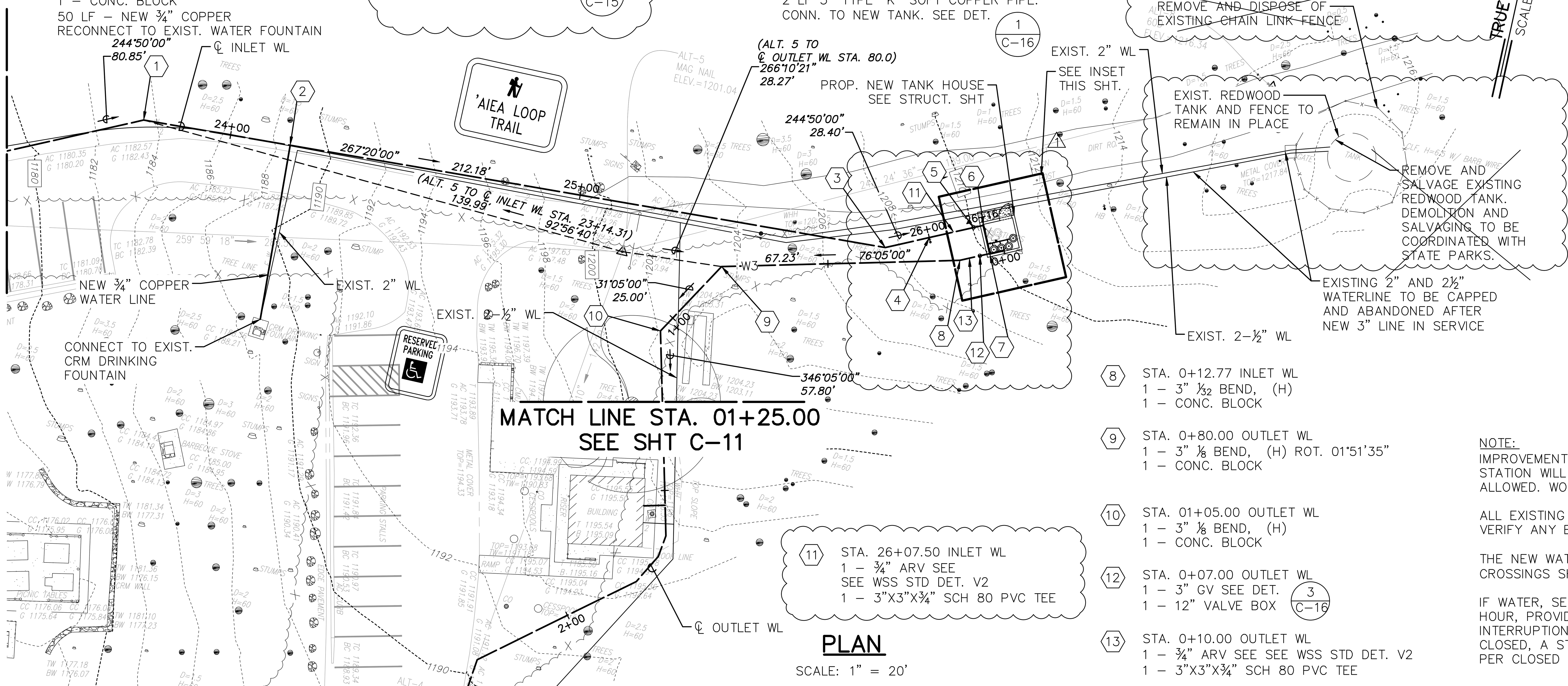
3. STA. 25+87.29 INLET WL
1 – 3" 1/16 BEND, (H)
1 – CONC. BLOCK

4. STA. 26+00.00 INLET WL
INSTALL NEW QUICK COUPLING VALVE W/ BALL VALVE. SEE DET. 5/C-15

5. STA. 26+12.52 INLET WL
1 – 3" GV SEE DET. 3/C-16
1 – 12" VALVE BOX

6. END INLET WL
STA. 26+15.69 INLET WL
= STA. 0+00 OUTLET WL O/S 8' LT. OUTLET WL
1 – 3" PVC TO COPPER TRANSITION ADAPTER
2 LF 3" TYPE "K" SOFT COPPER PIPE.
CONN. TO NEW TANK. SEE DET. 1/C-16

7. BEGIN OUTLET WL
STA. 0+05 OUTLET WL
= STA. 26+15.69 O/S 8' RT. INLET WL
2 LF 3" TYPE "K" SOFT COPPER PIPE.
1 – COPPER TO PVC TRANSITION ADAPTER
CONN. TO NEW TANK. SEE DET. 1/C-16



PLAN

SCALE: 1" = 20'

8. STA. 0+12.77 INLET WL
1 – 3" 1/32 BEND, (H)
1 – CONC. BLOCK

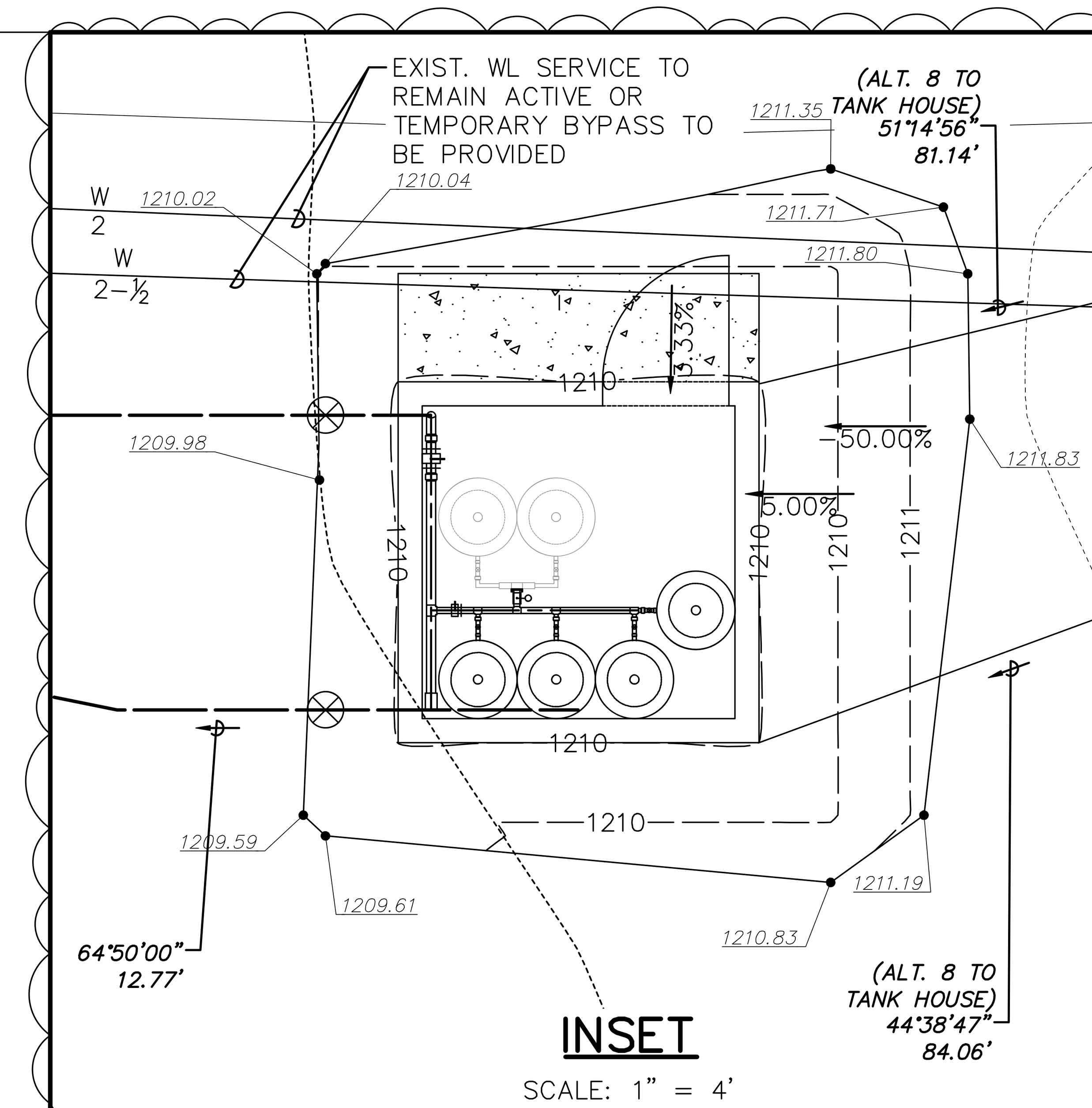
9. STA. 0+80.00 OUTLET WL
1 – 3" ⅛ BEND, (H) ROT. 01°51'35"
1 – CONC. BLOCK

10. STA. 01+05.00 OUTLET WL
1 – 3" ⅛ BEND, (H)
1 – CONC. BLOCK

11. STA. 26+07.50 INLET WL
1 – ¾" ARV SEE
SEE WSS STD DET. V2
1 – 3"X3"X¾" SCH 80 PVC TEE

12. STA. 0+07.00 OUTLET WL
1 – 3" GV SEE DET. 3/C-16
1 – 12" VALVE BOX

13. STA. 0+10.00 OUTLET WL
1 – ¾" ARV SEE SEE WSS STD DET. V2
1 – 3"X3"X¾" SCH 80 PVC TEE



INSET

SCALE: 1" = 4'

NOTE:

IMPROVEMENTS TO EXISTING 1-½" COPPER WATERLINE FROM THE EXISTING METER TO THE PUMP STATION WILL NOT BE DONE WITHIN THIS PROJECT. NO WORK NEAR THE EXISTING HEIAU WILL BE ALLOWED. WORK SHALL BEGIN FROM STATION 3+88.78.

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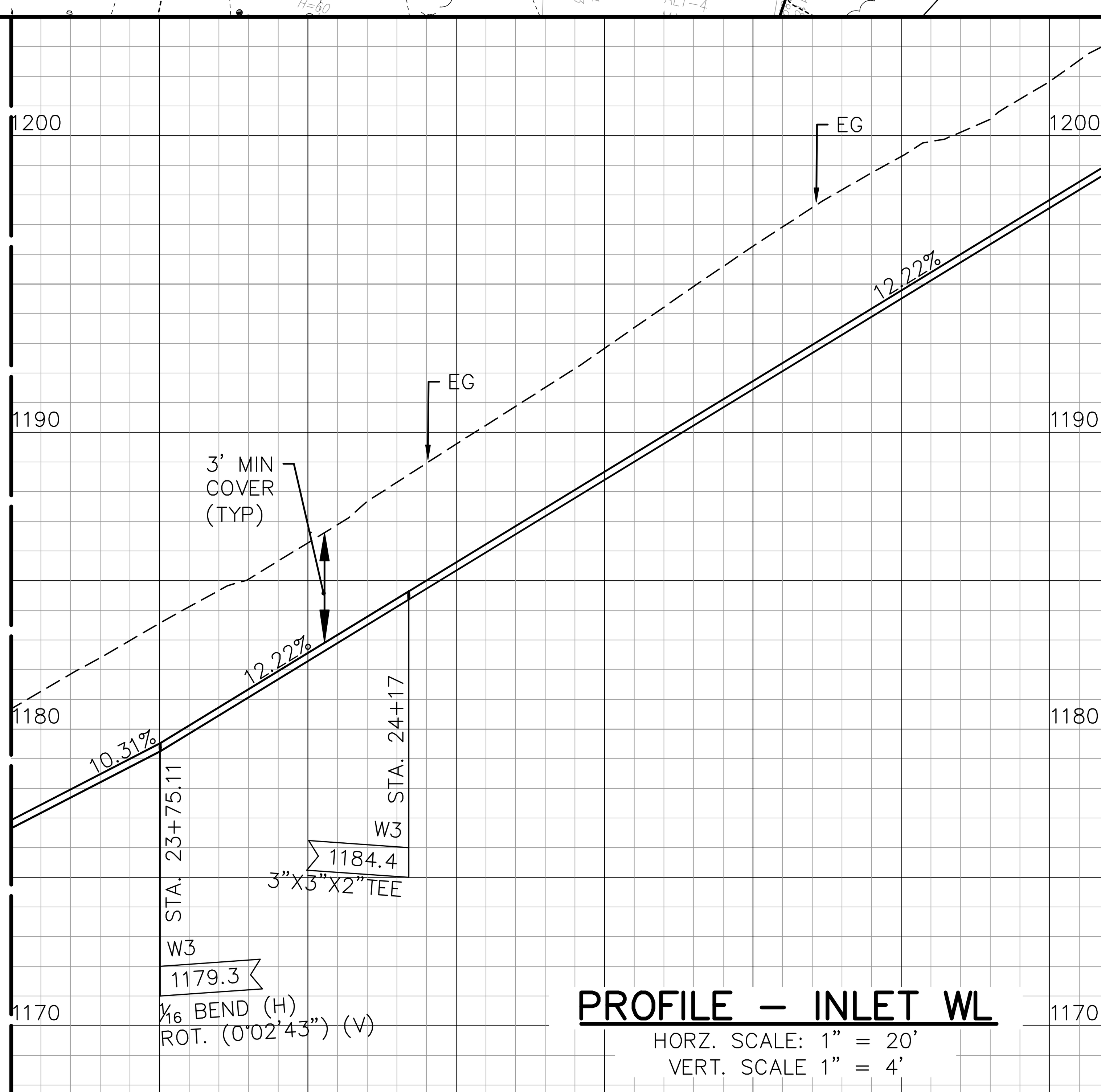
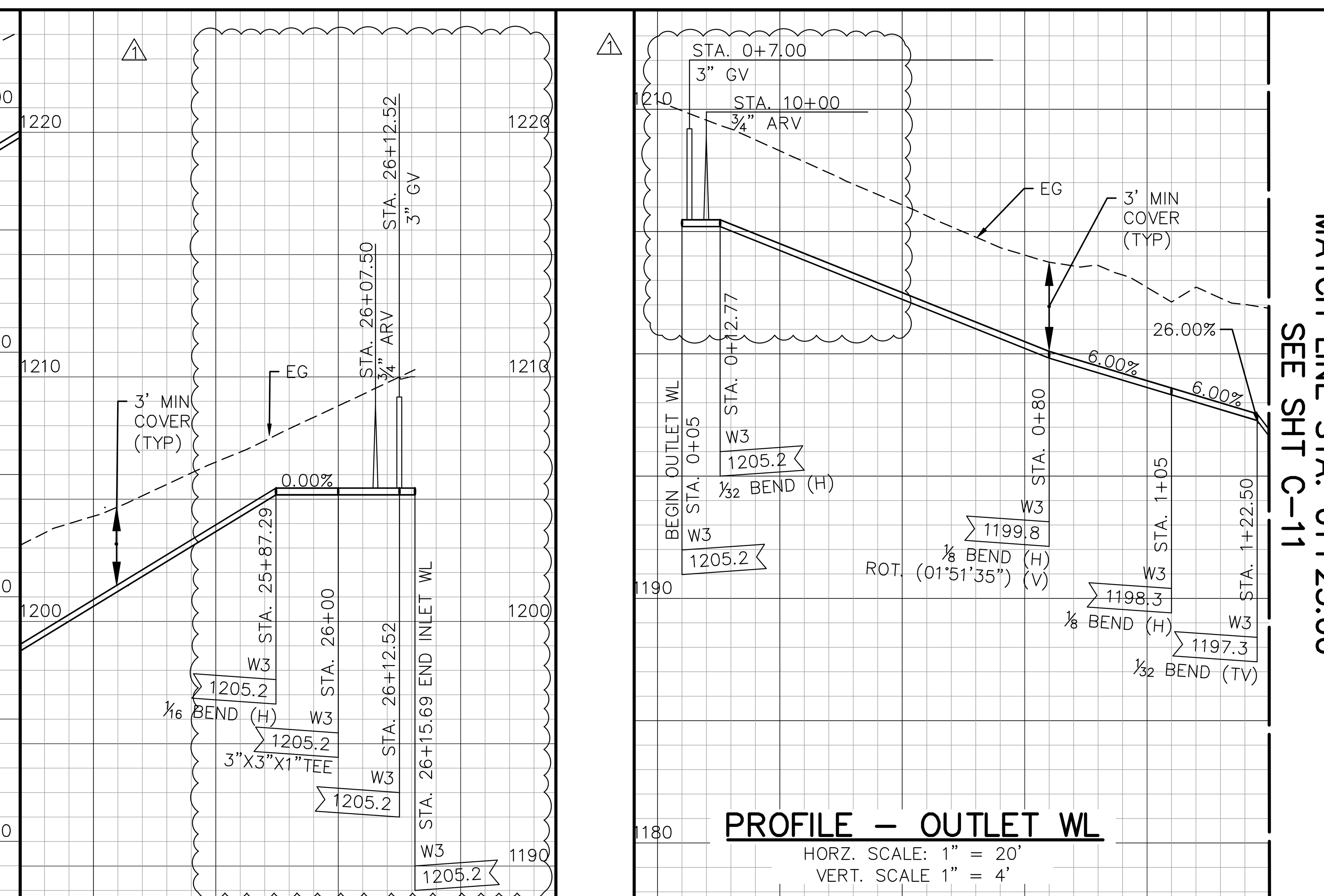


PROFILE – INLET WL

HORZ. SCALE: 1" = 20'
VERT. SCALE 1" = 4'



PROFILE – OUTLET WL

HORZ. SCALE: 1" = 20'
VERT. SCALE 1" = 4'

SCALE: 1" = 4'-0"

SCALE: 1" = 20'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	1	ADDENDUM NO. 2	11/20	5/19/26	

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

AIEA, HAWAI'I

PLAN & PROFILE 5

SCOTT A. KUNIOKA
LICENSED PROFESSIONAL ENGINEER
No. 7257-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION
LICENSE EXPIRES 4/30/28

DESIGNED:	SAK
DRAWN:	RIT
CHECKED:	SAK
APPROVED:	

CHIEF ENGINEER — DATE: May 19, 2026

DRAWING NO. C-10

JOB NO. F48C612A — SHEET NO. 11 OF 20 SHEETS

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

Last Save by: RIT
Last Saved: 5/18/2026
Plotted on: 5/19/2026
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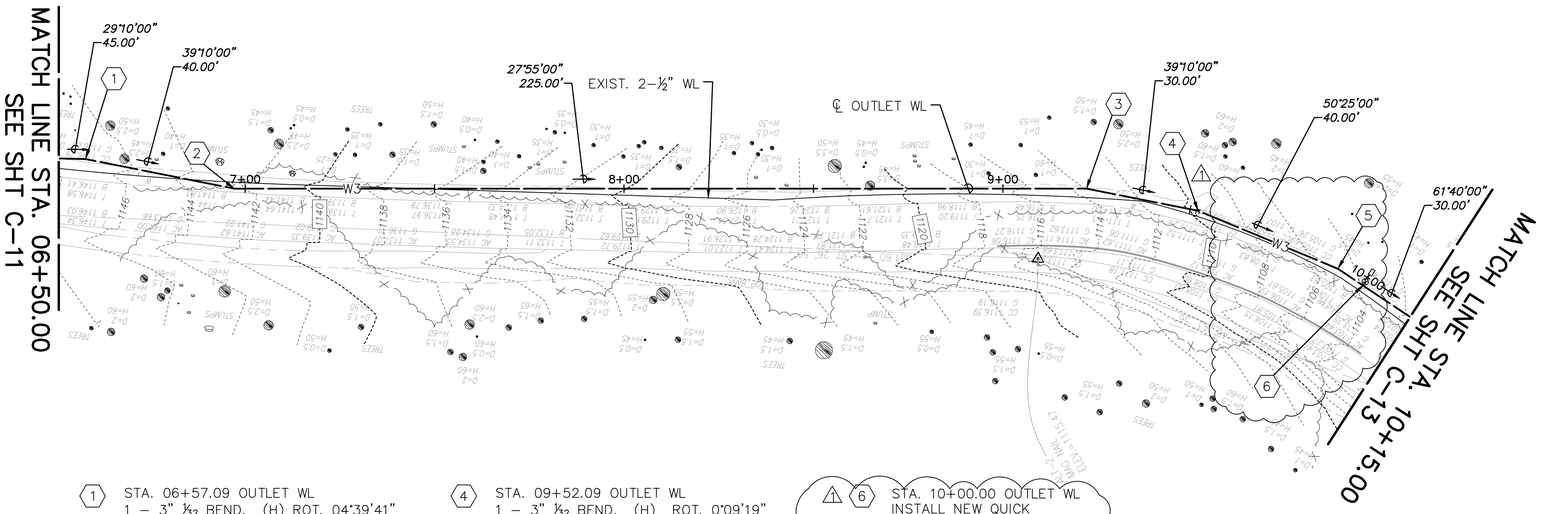

1 STA. 06+57.09 OUTLET WL
1 – 3" 1/32 BEND, (H) ROT. 04°39'41"
1 – CONC. BLOCK

2 STA. 06+97.09 OUTLET WL
1 – 3" 1/32 BEND, (H) ROT. 02°53'32"
1 – CONC. BLOCK

3 STA. 09+22.09 OUTLET WL
1 – 3" 1/32 BEND, (H) ROT. 01°07'36"
1 – CONC. BLOCK

4 STA. 09+52.09 OUTLET WL
1 – 3" 1/32 BEND, (H) ROT. 0°09'19"
1 – CONC. BLOCK

5 STA. 09+92.09 OUTLET WL
1 – 3" 1/16 BEND, (H) ROT. 01°57'55"
1 – CONC. BLOCK

⚠1 6 STA. 10+00.00 OUTLET WL
INSTALL NEW QUICK COUPLING VALVE W/ BALL VALVE. SEE DET. 5 C-15

NOTE:
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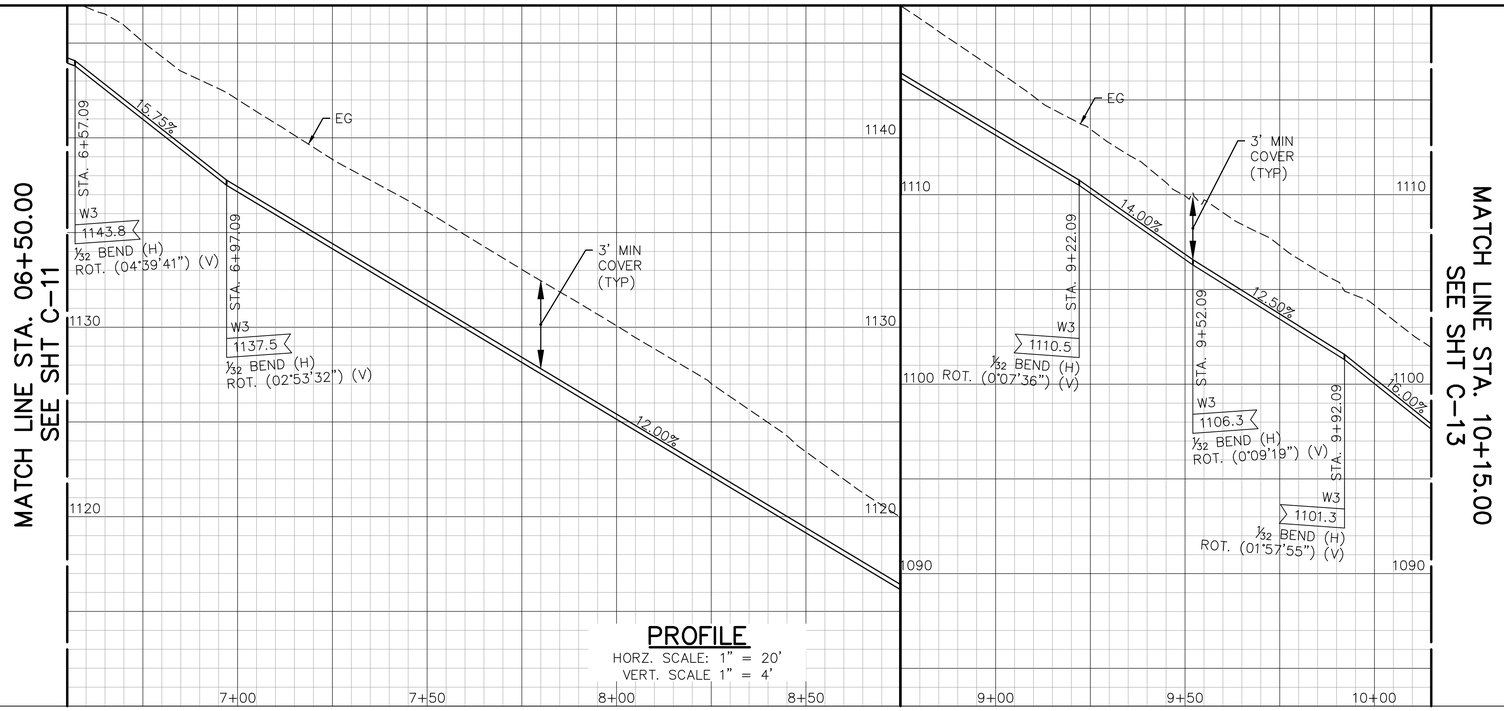
PLAN
SCALE: 1" = 20'



PROFILE
HORZ. SCALE: 1" = 20'
VERT. SCALE 1" = 4'

4' 0 4' 8'
SCALE: 1" = 4'-0"

20' 0 20' 40'
SCALE: 1" = 20'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	⚠1	ADDENDUM NO. 2	13/20	5/19/26	

SCOTT A. KUNIOKA
LICENSED PROFESSIONAL ENGINEER
No. 7257-C
HAWAII, USA

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION
LICENSE EXPIRES 4/30/28

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAII

PLAN & PROFILE 7

DESIGNED:	SAK	
DRAWN:	RIT	
CHECKED:	SAK	
APPROVED:	May 19, 2026 (DATE)	DRAWING NO. C-12
CHIEF ENGINEER		

JOB NO. F48C612A SHEET NO. 13 OF 20 SHEETS

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

Last Save by: RIT
Last Saved: 5/18/2026
Plotted on: 5/19/2026
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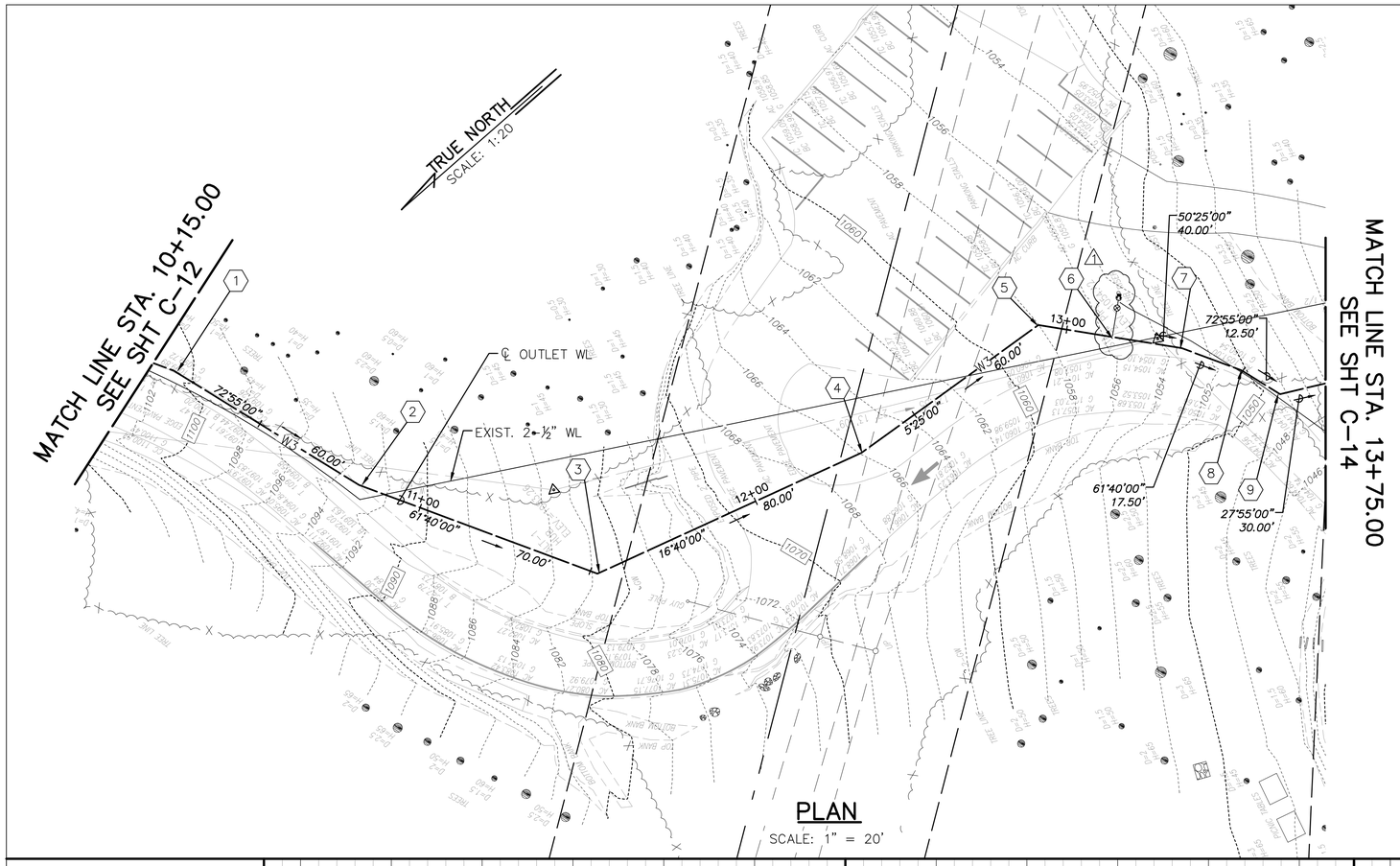

PLAN

SCALE: 1" = 20'

1. STA. 10+22.09 OUTLET WL
   1 – 3" 1/32 BEND, (H) ROT. 01°18'59"
   1 – CONC. BLOCK
2. STA. 10+82.09 OUTLET WL
   1 – 3" 1/32 BEND, (H) ROT. 01°41'0"
   1 – CONC. BLOCK
3. STA. 11+52.09 OUTLET WL
   1 – 3" 1/8 BEND, (H) ROT. 08°00'8"
   1 – CONC. BLOCK
4. STA. 12+32.09 OUTLET WL
   1 – 3" 1/32 BEND, (H) ROT. 01°33'16"
   1 – CONC. BLOCK
5. STA. 12+92.09 OUTLET WL
   1 – 3" 1/8 BEND, (H) ROT. 0°19'22"
   1 – CONC. BLOCK
6. STA. 13+12.79 OUTLET WL
   1 – 3"x3"x1" TEE
   REPLACE EXIST. HOSE BIBBS WITH NEW QUICK COUPLING VALVE W/ BALL VALVE. SEE DET. 5/C-15
7. STA. 13+32.09 OUTLET WL
   1 – 3" 1/16 BEND, (H) ROT. 03°11'47"
   1 – CONC. BLOCK
8. STA. 13+49.59 OUTLET WL
   1 – 3" 1/32 BEND, (H) ROT. 04°06'36"
   1 – CONC. BLOCK
9. STA. 13+62.09 OUTLET WL
   1 – 3" 1/16 BEND, (H) ROT. 02°08'10"
   1 – CONC. BLOCK

NOTE:
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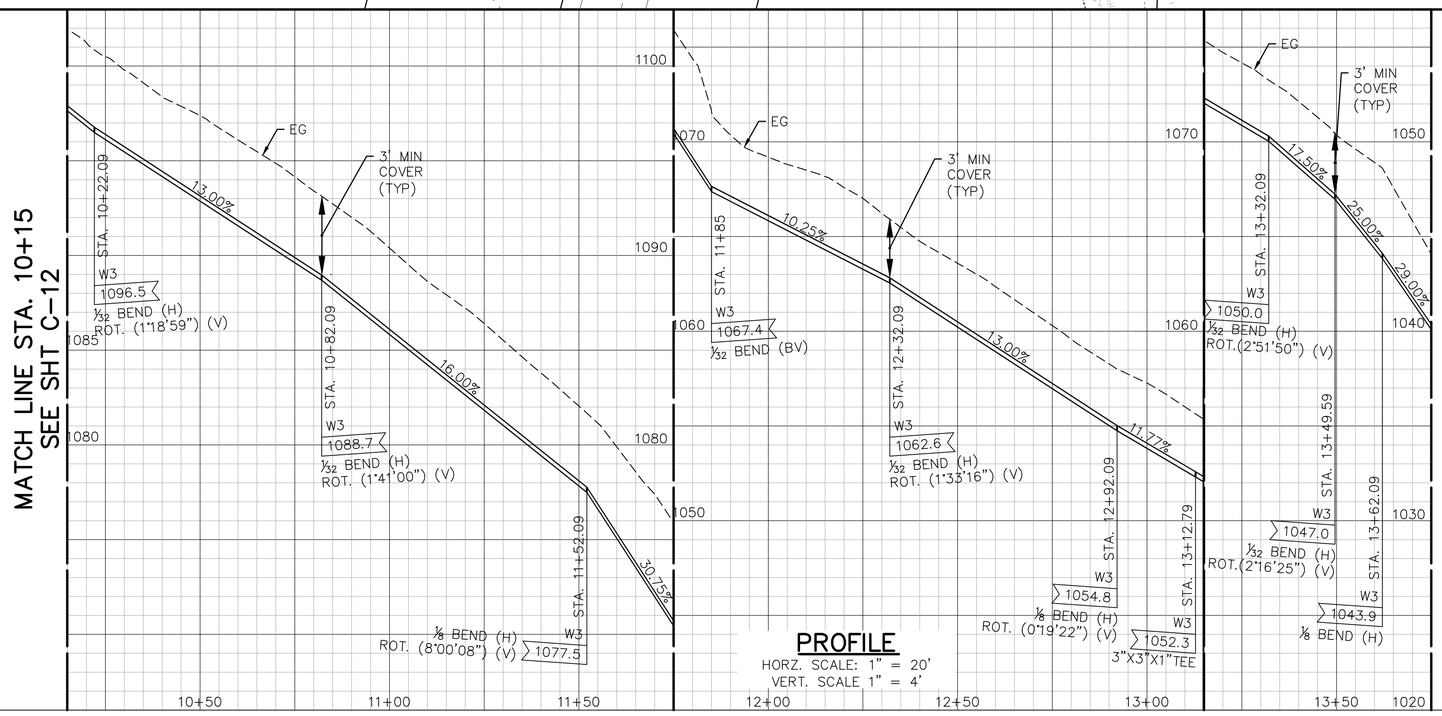

PROFILE

HORZ. SCALE: 1" = 20'
VERT. SCALE 1" = 4'

4' 0 4' 8'
SCALE: 1" = 4'-0"

20' 0 20' 40'
SCALE: 1" = 20'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	1	ADDENDUM NO. 2	14/20	5/19/26	

SCOTT A. KUNIOKA
LICENSED PROFESSIONAL ENGINEER
No. 7257-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
LICENSE EXPIRES 4/30/28

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAII

PLAN & PROFILE 8

DESIGNED:	SAK	
DRAWN:	RIT	
CHECKED:	SAK	
APPROVED:	May 19, 2026 (DATE)	DRAWING NO. C-13
CHIEF ENGINEER		

JOB NO. F48C612A

SHEET NO. 14 OF 20 SHEETS

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

Last Save by: RIT
Last Saved: 5/18/2026
Plotted on: 5/19/2026

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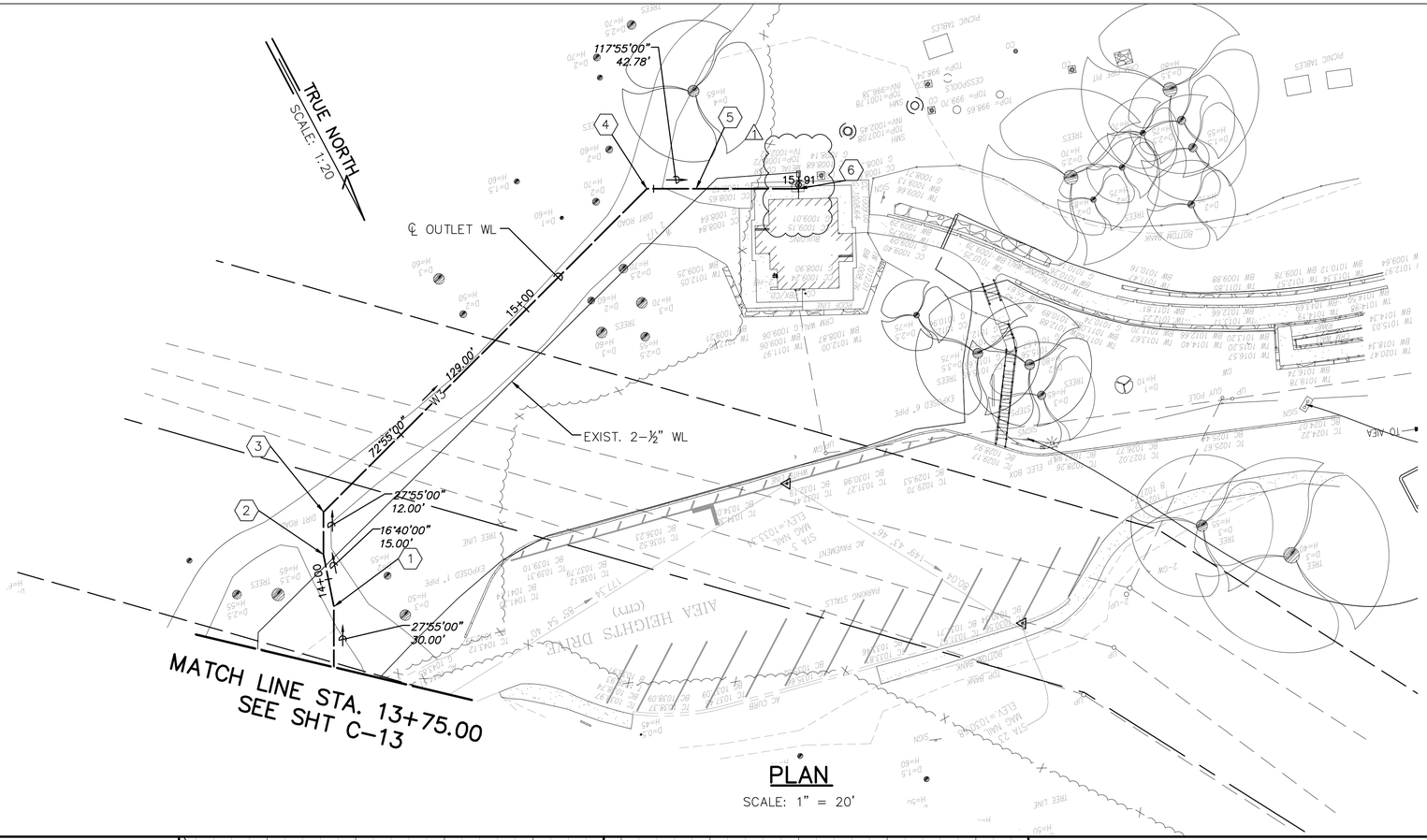

PLAN
SCALE: 1" = 20'

1. STA. 13+92.09 OUTLET WL
   1 – 3" ½₃₂ BEND, (H) ROT. 02°51'50"
   1 – CONC. BLOCK
2. STA. 14+07.09 OUTLET WL
   1 – 3" ½₃₂ BEND, (H) ROT. 02°16'25"
   1 – CONC. BLOCK
3. STA. 14+19.09 OUTLET WL
   1 – 3" ½₃₂ BEND, (H)
   1 – CONC. BLOCK
4. STA. 15+48.09 OUTLET WL
   1 – 3" ½₃₂ BEND, (H)
   1 – CONC. BLOCK
5. STA. 15+62.00 OUTLET WL
   1 – 3" GV
   1 – 12" VALVE BOX WSS STD DET. V–14
6. END OUTLET WL
   STA. 15+90.86 OUTLET WL
   CONN. TO EXIST. COMFORT STATION
   SEE DET. 6/C–15

1 – 2" BRASS PRESSURE REGULATOR
AR: 25 PSI TO 75 PSI
OR: 25 PSI TO 300 PSI

INSTALL NEW QUICK COUPLING VALVE W/ BALL VALVE. SEE DET. 5/C–15

NOTE:
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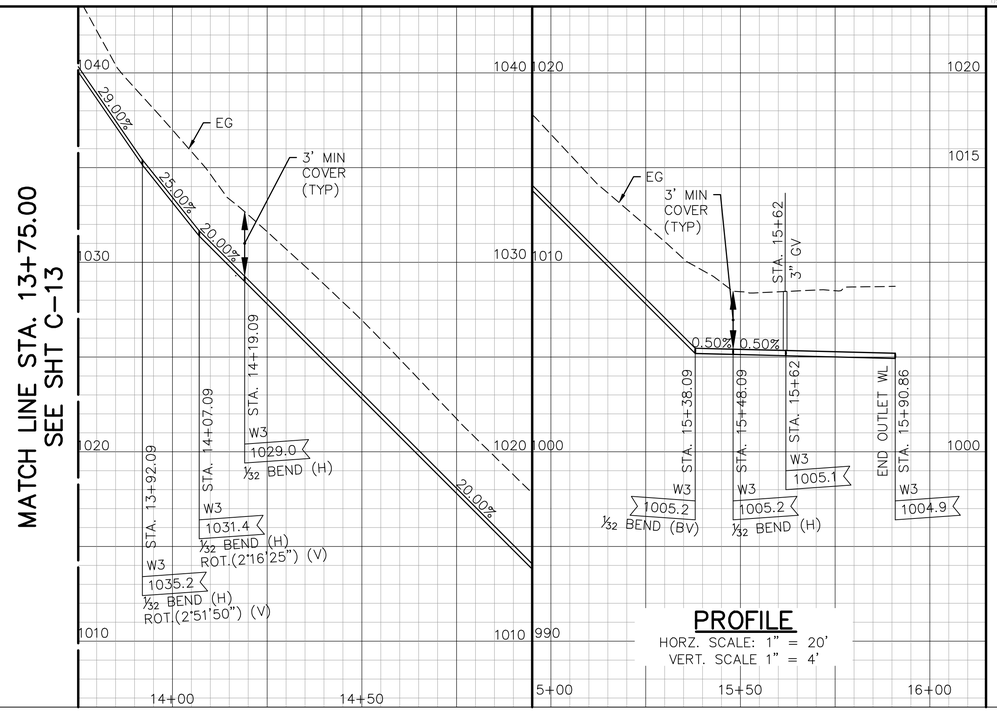

PROFILE
HORZ. SCALE: 1" = 20'
VERT. SCALE 1" = 4'

4' 0 4' 8'
SCALE: 1" = 4'–0"
20' 0 20' 40'
SCALE: 1" = 20'–0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	⚠1	ADDENDUM NO. 2	15/20	5/19/26	

SCOTT A. KUNIOKA
LICENSED PROFESSIONAL ENGINEER
No. 7257–C
HAWAII, U.S.A.

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LICENSE EXPIRES 4/30/28

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAII

PLAN & PROFILE 9

DESIGNED:	SAK	
DRAWN:	RIT	
CHECKED:	SAK	
APPROVED:	May 19, 2026 (DATE)	DRAWING NO. C–14
CHIEF ENGINEER		

JOB NO. F48C612A SHEET NO. 15 OF 20 SHEETS

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

Last Save by: RIT
Last Saved: 5/18/2026
Plotted on: 5/19/2026
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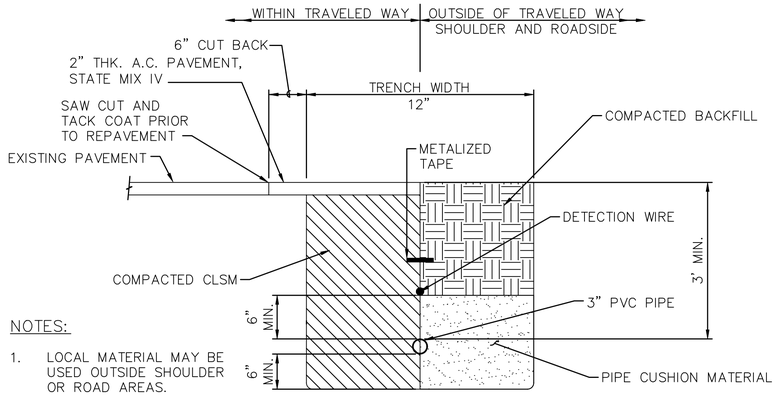


NOTES:

1. LOCAL MATERIAL MAY BE USED OUTSIDE SHOULDER OR ROAD AREAS.

1 C-15 WATERLINE TRENCH DETAIL

NOT TO SCALE

THRUST BLOCKS SCHEDULE				
BEND	LENGTH	WIDTH	HEIGHT	VOLUME (CY)
1/32	1'-0"	1'-0"	1'	0.0400
1/16	1'-0"	2'-0"	1'	0.0740
1/8	1'-0"	2'-0"	1'	0.0752
1/4	1'-7"	1'-7"	1.5'	0.1400

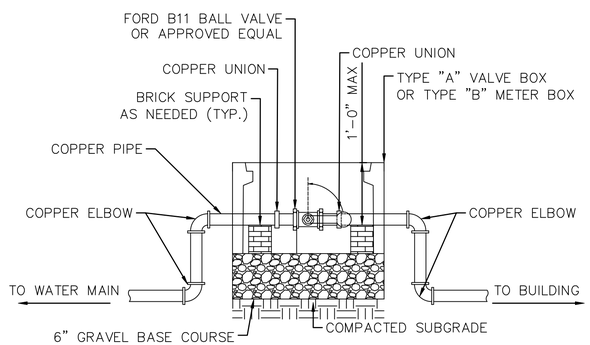
TOP VERTICAL THRUST BLOCKS SCHEDULE				
BEND	A	B	C	D
1/32	2'-3"	1'-6"	1'-3"	2'-6"
1/8	2'-6"	2'-3"	1'-9"	2'-6"

THRUST BLOCK NOTES:

1. CONCRETE USED SHALL BE DWS 2500 CONCRETE
2. CONCRETE SHALL ONLY BE LAID AGAINST UNDISTURBED SOIL.
3. PVC PIPES AND FITTINGS SHALL BE WRAPPED WITH A ONE MILL OR HEAVIER PLASTIC SHEETING PRIOR TO BEING EMBEDDED IN CONCRETE

2 C-15 THRUST BLOCK SCHEDULE

NOT TO SCALE

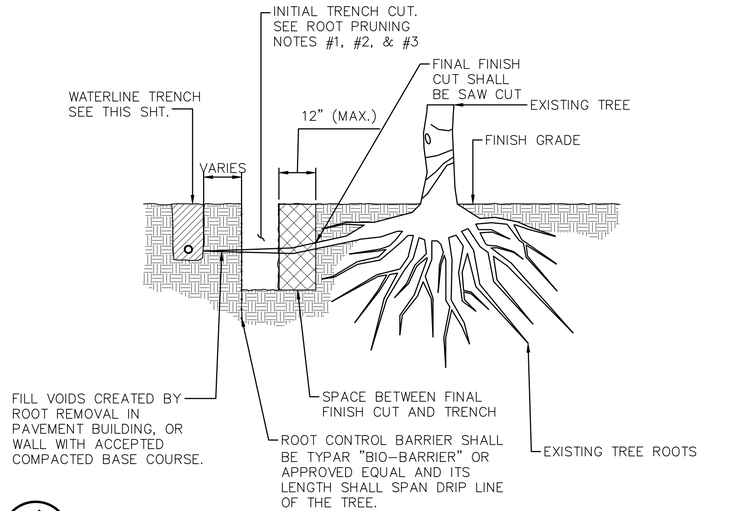


3 C-15 BALL VALVE DETAIL

NOT TO SCALE

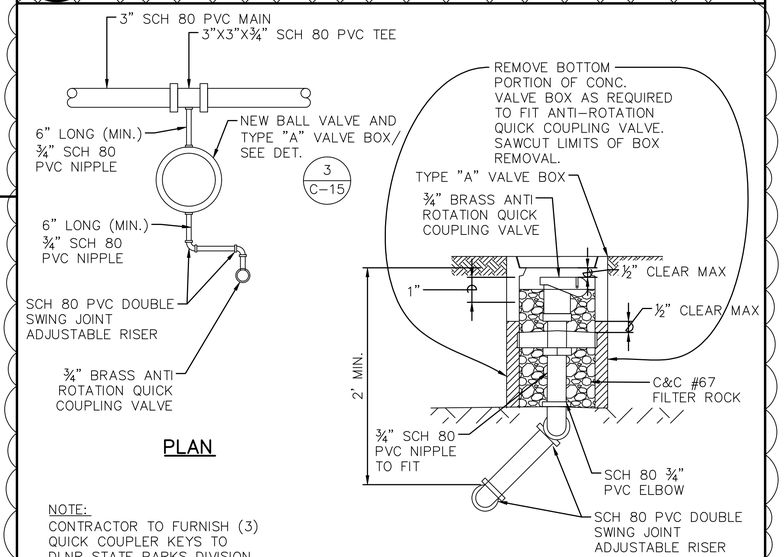
ROOT PRUNING NOTES:

1. MAKE INITIAL TRENCH CUTS 6" BEYOND THE FINAL FINISH CUT WHEN USING A TRENCHER.
2. MAKE INITIAL TRENCH CUT 12" BEYOND THE FINAL FINISH CUT AND AVOID RIPPING ROOTS WHEN USING BACKHOE.
3. BACKFILL TRENCH WITH NATIVE SOIL DUG FROM THE TRENCH AND COMPACT ALL VOIDS TO WATCH EXISTING, FINISH GRADE, AND SEED, SPRIG OR SOD WITH GRASS AS SPECIFIED.
4. WHEN USING BACKHOE EQUIPMENT, USE THE FRONT EDGE OF BUCKET TO SEVER THE TREE ROOTS TO ENSURE A CLEAN CUT OF THE ROOTS.
5. HAND EXCAVATE AROUND ROOTS TO THE SIZE OF DESIRED ROOTBALL AND THEN TRIM OFF PROTRUDING ROOTS BY HAND SAW OR CHAINSAW.
6. WORK SHALL BE DONE UNDER THE DIRECT SUPERVISION OF A QUALIFIED ARBORIST.
7. THE QUALIFIED ARBORIST AND THE DIVISION OF STATE PARKS SHALL DETERMINE THE AMOUNT OF TREE CANOPY THAT SHALL BE PRUNED AFTER.
8. ALL PRUNE ROOTS AND BRANCHES SHALL BE REMOVED AND DISPOSED.



4 C-15 TYPICAL TRENCH AND PAVEMENT REPAIR SECTION

NOT TO SCALE



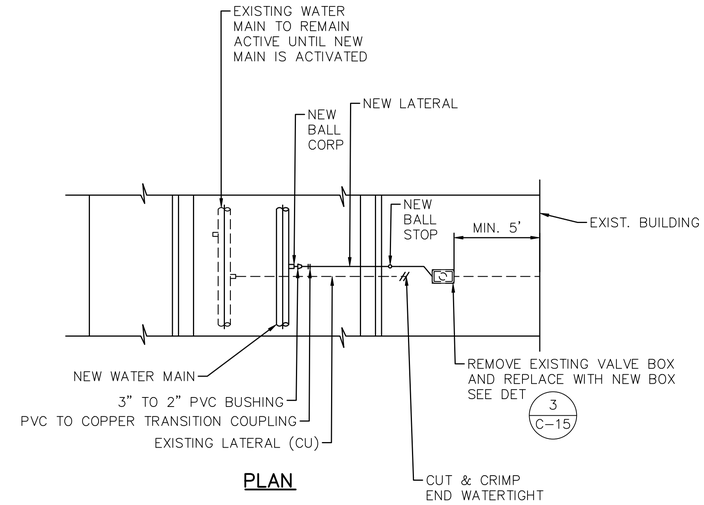
PLAN

PROFILE

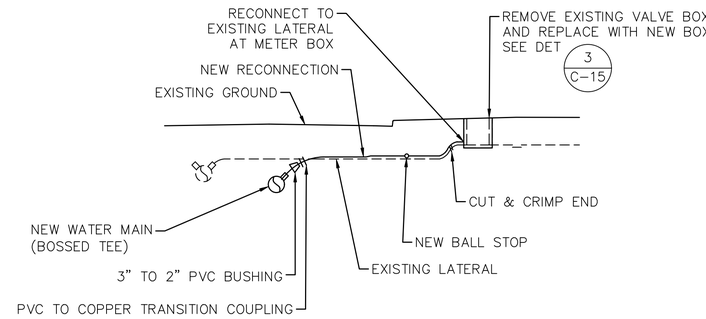
NOTE:
CONTRACTOR TO FURNISH (3) QUICK COUPLER KEYS TO DLNR STATE PARKS DIVISION.

5 C-15 QUICK COUPLING VALVE ASSEMBLY

NOT TO SCALE



PLAN



PROFILE

NOTES:

1. ALL LATERAL RECONNECTIONS SHALL BE AT THE METER BOX CU TO NPTE ADAPTER.
2. FOR WATER LATERALS THAT ARE 1-½" A WSS STANDARD TYPE "A" VALVE BOX SHALL BE USED. FOR 2" LATERALS A TYPE "B" METER BOX SHALL BE USED.
3. FOR LATERAL CONNECTIONS WITHIN CONCRETE JACKETS, INSTALL LATERAL CONNECTION UP TO BALL CORP. JACKET MAIN AND COMPLETE LATERAL.

6 C-15 LATERAL RECONNECTION SCHEMATIC DETAIL

NOT TO SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	⚠	ADDENDUM NO. 2	16/20	5/19/26	

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAII

WATER DETAILS

SCOTT A. KUNIOKA LICENSED PROFESSIONAL ENGINEER No. 7257-C HAWAII, U.S.A.

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DESIGNED:	SAK
DRAWN:	RIT
CHECKED:	SAK
APPROVED:	May 19, 2026 (DATE)
CHIEF ENGINEER	

DRAWING NO. C-15

JOB NO. F48C612A SHEET NO. 16 OF 20 SHEETS

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

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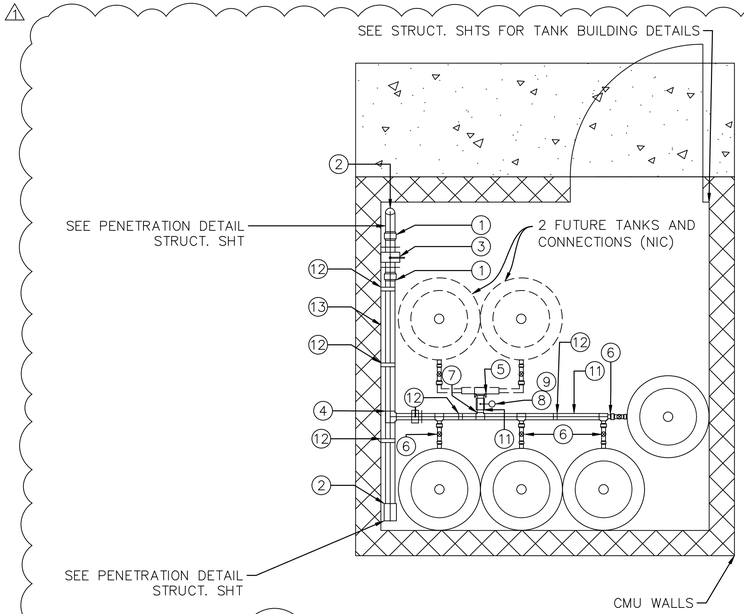


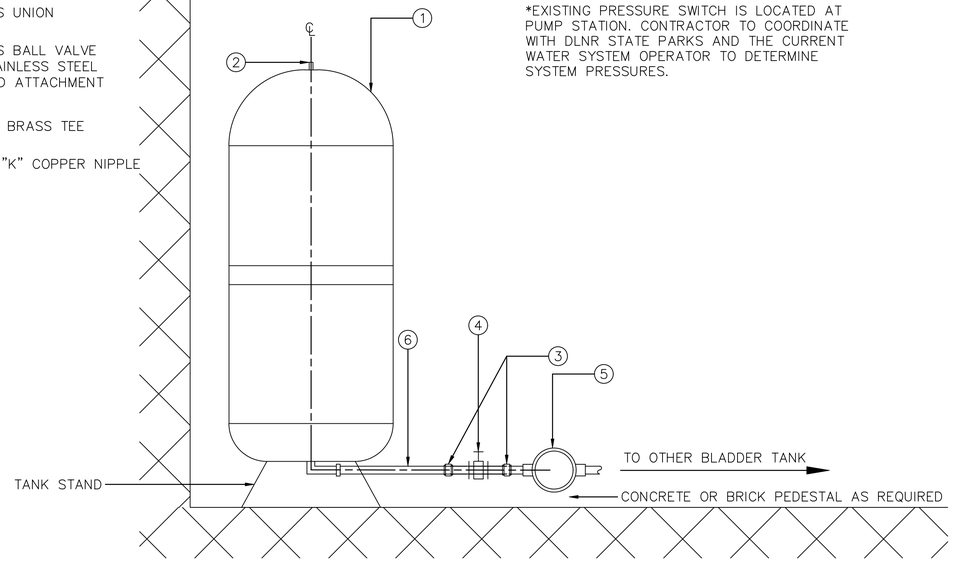
1. 3" BRASS UNION
2. 3" BRASS ELBOW
3. 3" FORD B11 BALL VALVE OR APPROVED EQUAL WITH STAINLESS STEEL HANDLE
4. 3"X3"X2" BRASS TEE
5. 2" COPPER CAP
6. TANK CONNECTION DETAIL SEE DET. 2/C-16
7. 2"X2"X½" BRASS TEE
8. ¼" NPT PRESSURE GAUGE
9. ½"X¼" BRASS BUSHING
10. 2" FORD B11 BALL VALVE OR APPROVED EQUAL WITH STAINLESS STEEL HANDLE
11. 2" TYPE K SOFT COPPER PIPE
12. SS ADJUSTABLE PIPE/VALVE SADDLE. INCLUDING 2-1/2" WEDGE ANCHOR AND ¼" THICK TEFLON INSULATION STRIP.
13. 3" TYPE "K" SOFT COPPER PIPE

1/C-16 TANK BUILDING LAYOUT DETAIL
SCALE: NTS

1. WELLXTROL WX-350 TANK OR APPROVED EQUAL
2. STAINLESS STEEL SCHRADER VALVE
3. 1-¼" BRASS UNION
4. 1-¼" BRASS BALL VALVE W/ 316 STAINLESS STEEL HANDLE AND ATTACHMENT NUTS
5. 2"X2"X1-¼" BRASS TEE
6. 1-¼" TYPE "K" COPPER NIPPLE

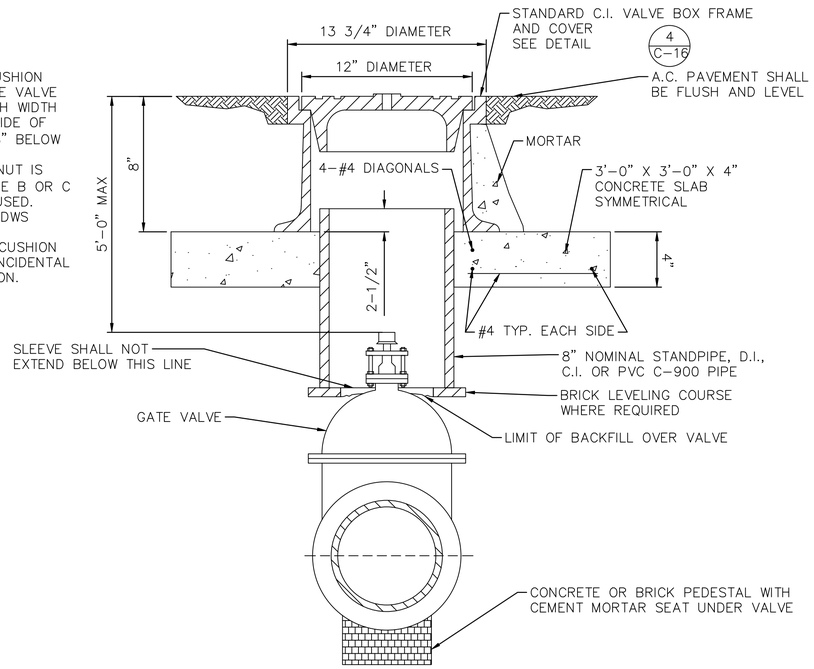
PUMP CONTROL NOTES:

*EXISTING PRESSURE SWITCH IS LOCATED AT PUMP STATION. CONTRACTOR TO COORDINATE WITH DLNR STATE PARKS AND THE CURRENT WATER SYSTEM OPERATOR TO DETERMINE SYSTEM PRESSURES.

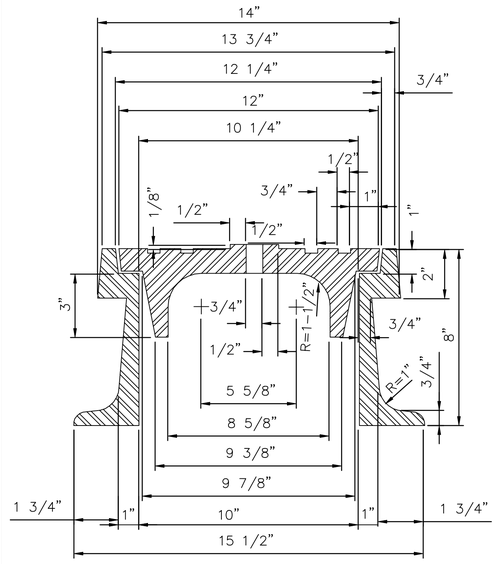


2/C-16 TANK CONNECTION DETAIL
SCALE: NTS

NOTES:
1. THE LIMIT OF PIPE CUSHION BACKFILL AROUND THE VALVE SHALL BE THE TRENCH WIDTH X 4 FEET ON EACH SIDE OF VALVE AND FILL TO 8" BELOW FINISH GRADE.
2. IF VALVE OPERATOR NUT IS DEEPER THAN 5', TYPE B OR C MANHOLE SHALL BE USED.
3. CONCRETE SHALL BE DWS 2500.
4. PAVEMENT FOR PIPE CUSHION BACKFILL SHALL BE INCIDENTAL TO VALVE INSTALLATION.

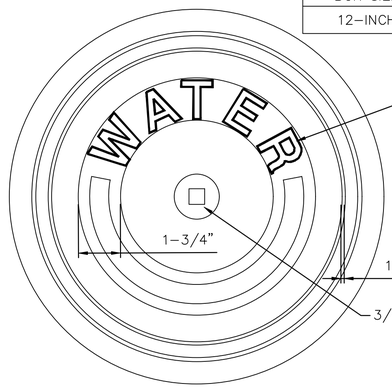


3/C-16 12" VALVE BOX INSTALLATION FOR GATE VALVE
NOT TO SCALE



CAST IRON FRAME

TABLE 200-9 – MINIMUM WEIGHT FOR MANHOLE/VALVE BOX COVERS AND FRAMES		
MANHOLE/VALVE BOX SIZE	COVER WEIGHT (POUNDS)	FRAME WEIGHT (POUNDS)
12-INCH	45	80



1/8" RAISED LETTERS

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

3/4" SQUARE HOLE

CAST IRON COVER

4/C-16 12" VALVE BOX FRAME & COVER
NOT TO SCALE

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1	⚠	ADDENDUM NO. 2	17/20	5/19/26	

SCOTT A. KUNIOKA LICENSED PROFESSIONAL ENGINEER No. 7257-C HAWAII, U.S.A.

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LICENSE EXPIRES 4/30/28

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAII

WATER DETAILS 2

DESIGNED:	SAK	
DRAWN:	RIT	
CHECKED:	SAK	
APPROVED:	May 19, 2026 (DATE)	DRAWING NO. C-16
CHIEF ENGINEER		

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

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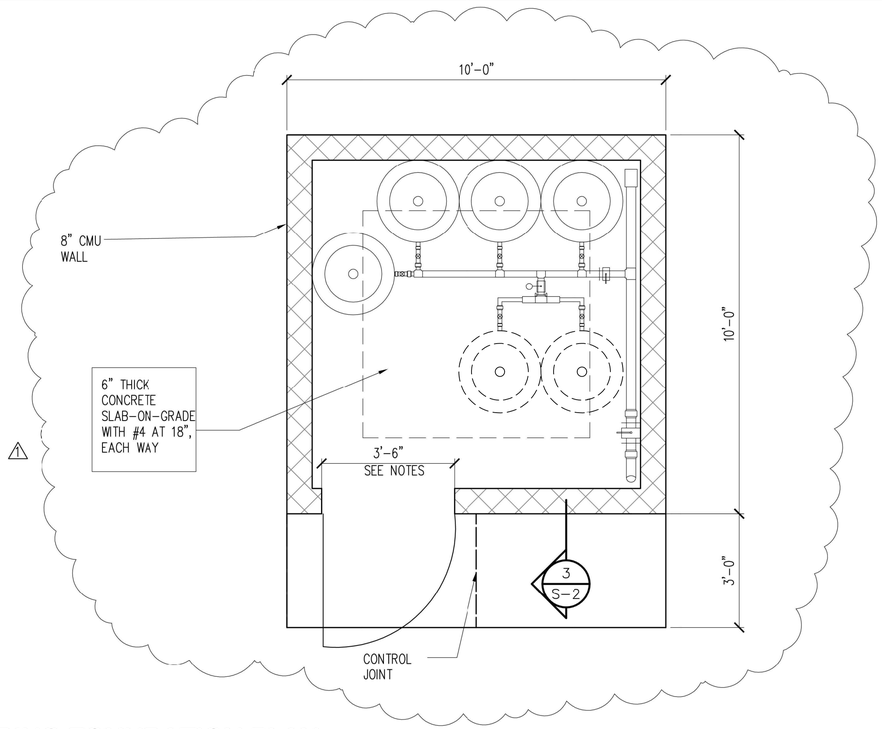
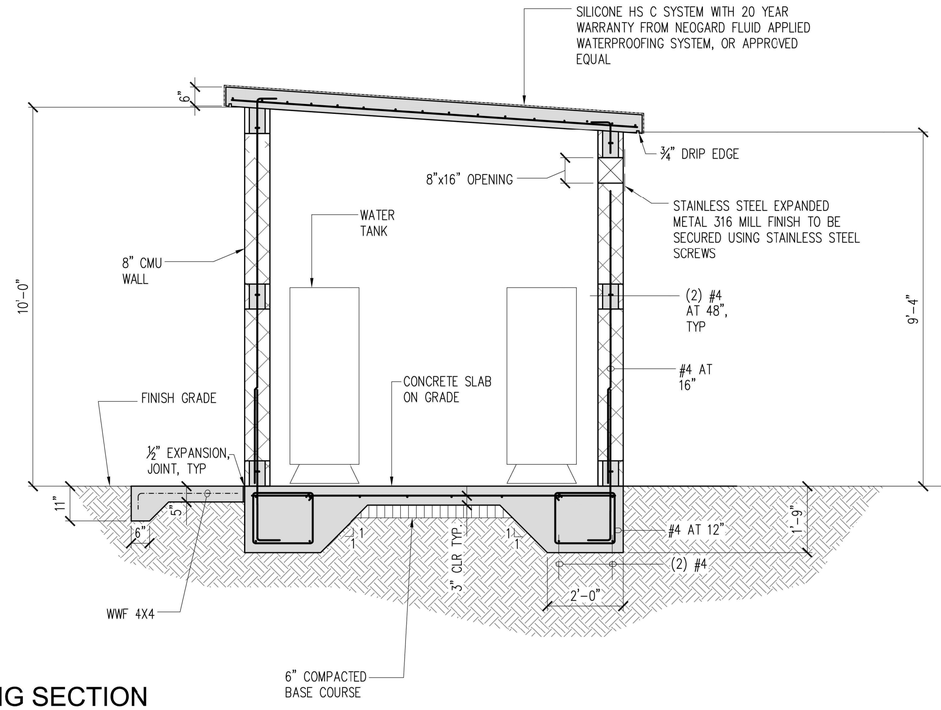
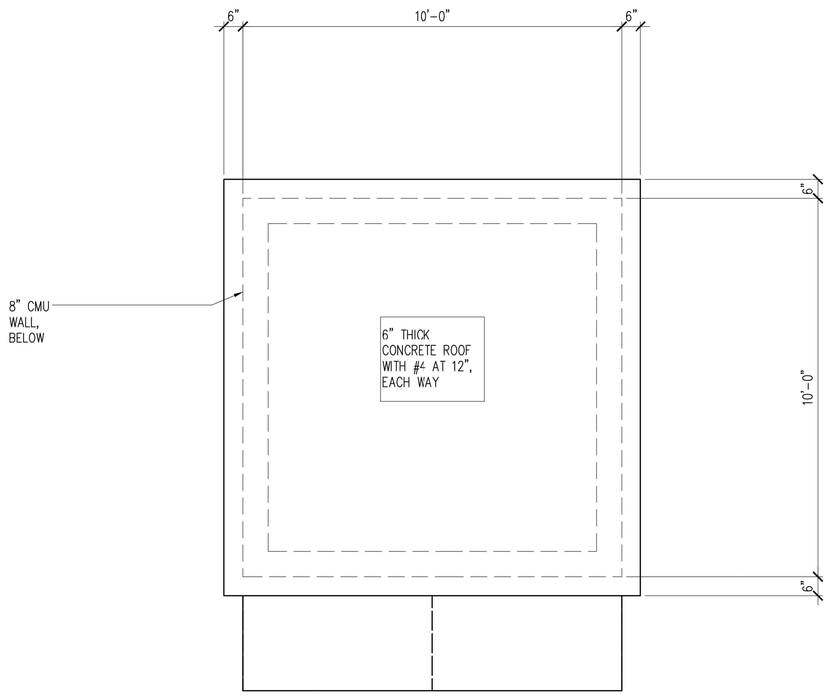


1 S-2 **BUILDING FOUNDATION PLAN**
SCALE: 1/2" = 1'-0"



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



2 S-2 **BUILDING ROOF PLAN**
SCALE: 1/2" = 1'-0"

DOOR NOTES:

DIMENSIONS: DOOR TO BE 36" X 80" (STANDARD WIDTH) OR SPECIFY YOUR EXACT OPENING WIDTH.

MATERIAL: ENTIRE ASSEMBLY (DOOR AND FRAME) TO BE STAINLESS STEEL TYPE 316 WITH A #4 BRUSHED FINISH. CONSTRUCTION: DOOR TO BE 16-GAUGE HOLLOW METAL WITH A SEAMLESS EDGE AND POLYSTYRENE CORE (FOR OUTDOOR INSULATION).

HARDWARE PREP: FACTORY-PREPPED FOR A GRADE 1 MORTISE LOCK.

HINGE SECURITY: SUPPLY THREE (3) HEAVY-DUTY 316 STAINLESS STEEL HINGES FEATURING:
NON-REMOVABLE PINS (NRP)
AND SECURITY STUDS (DOG BOLTS) TO PREVENT DOOR REMOVAL IF HINGES ARE CUT.

OUTSWING PROTECTION: PROVIDE A 12-GAUGE 316 STAINLESS STEEL LATCH GUARD TO PROTECT THE MORTISE LOCK FROM PRYING OR TAMPERING.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
1	⚠1	ADDENDUM NO. 2	19/20	5/19/26	

SAID POURCHOT
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

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LICENSE EXPIRES 4/30/28

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS
AIEA, HAWAI'I

TANK ENCLOSURE BUILDING

DESIGNED:	
DRAWN:	
CHECKED:	
APPROVED:	DRAWING NO. S-2
CHIEF ENGINEER	May 19, 2026 DATE

JOB NO. F48C612A

JOB NO. F48C612A KEAIWA STATE RECREATION AREA WATER SYSTEM IMPROVEMENTS

INFORMATION AND INSTRUCTIONS TO BIDDERS

CONTENTS

INFORMATION AND INSTRUCTIONS TO BIDDERS

A. PROJECT LOCATION AND SCOPE OF WORK: The project location and scope of work shall be as generally described in the Notice to Bidders.

B. PROPOSALS**:** Bidders shall submit their bid, including the completed proposal form, bid bond, and any other documents required by the solicitation as part of their bid through the State of Hawaii e-Procurement System (HIePRO). See Item D, PROPOSAL FORM.

C. GENERAL CONDITIONS: The Department of Land and Natural Resources Interim General Conditions dated October 1994, as amended, shall be made a part of these contract specifications and are referred to hereafter as the General Conditions.

D. PROPOSAL FORM: **The Bidders shall fill out and upload the electronic copy of the proposal form to the HIePRO website when submitting the bid. Bid Proposals shall not be mailed, faxed or delivered to the State, unless requested to do so after the designated closing date. The successful Bidder shall fill out and print a hard copy of the proposal form, sign and submit the form with the contract award package.**

E. OMISSIONS OR ERASURES: Any proposal which contains any omission or erasure or alteration not properly initialed, or conditional bid, or other irregularity may be rejected by the Board of Land and Natural Resources (Board).

F. NOTICE OF INTENT TO BID AND QUESTIONNAIRE:
A Notice of Intent to Bid is not required for this project. In compliance with HRS Section 103D-310, the lowest responsive and responsible bidder may be required to complete a questionnaire. When requested by the State, the completed questionnaire shall be submitted to the Chief Engineer for evaluation. Failure to furnish the requested information within the time allowed may be grounds for a determination of non-responsibility, in accordance with HRS Section 103D-310 and HAR Section 3-122-108.

G. BID SECURITY: A bid security will be furnished by each bidder as provided in sub-section 2.7 of the General Conditions. The successful bidder's bid security will be retained until Contract execution and furnished a performance and payment bond in an amount equal to one hundred percent (100%) of the total Contract price, including an amount estimated to be required for extra work, is furnished.

The Board reserves the right to hold the bid securities of the four lowest bidders until the successful bidder has entered into a contract and has furnished the required performance bond. All bid securities will be returned in accordance with sub-section 3.5 of the General Conditions.

Should the successful bidder fail to enter into a contract and furnish a satisfactory performance bond within the time stated in the proposal, the bid security shall be forfeited as required by law.

H. CONTRACTOR'S LICENSE REQUIRED: The Board will reject all bids received from contractors who have not been licensed by the State Contractors License Board in accordance with Chapter 444, HRS; Title 16, Chapter 77, Hawaii Administrative Rules; and statutes amendatory thereto.

I. IRREGULAR BIDS: No irregular bids or propositions for doing the work will be considered by the Board.

J. WITHDRAWAL OF BIDS: No bidder may withdraw his bid between the time of the opening thereof and the award of contract.

K. EVALUATION OF CRITERIA:

1. The total lump sum base bid price and additives will be adjusted to reflect the applicable preferences.

2. Evaluating Bids with Additive Bid Items:

   a. After the solicitation ends, the State will announce the project control budget. All bids will be evaluated on the basis of the same additive item.

   b. If the Base Bids of all the Bidders are within the project control budget (after application of the various preferences), Additive 1 and then Additive 2 are added to the Base Bid amount. This (these) sum(s) are compared to the project control budget and must be within the project control budget.

   c. The Bidder with the lowest Base Bid or lowest aggregate amount (Base Bid plus additives), within the project control budget, is the "Low Bidder" for the project and is designated for award.

L. METHOD OF AWARD:

1. The contract will be awarded to the lowest responsive and responsible Bidder whose bid, including any additive(s), meets the requirements and criteria set forth in the solicitation documents and as determined by the Board of Land and Natural Resources.

2. In the event the Lump Sum Base Bid of all bidders exceeds the project control budget, the Department reserves the right to make an award to the bidder with the lowest total lump sum base bid, after application of the preferences is designated, if additional funds are available or by reducing the scope of work through negotiation.

M. SUCCESSFUL BIDDER TO FILE PERFORMANCE AND PAYMENT BONDS: The successful bidder will be required to file performance and payment bonds each; in the amount equal to the total contract price, including amounts estimated to be required for extra work, as provided in sub-section 3.6 of the General Conditions.

N. NUMBER OF EXECUTED ORIGINAL COUNTERPARTS OF CONTRACT DOCUMENTS: If requested by the Board, six copies of the Contract, performance and payment bonds shall be executed.

O. CHANGE ORDERS: No work of any kind in connection with the work covered by the plans and specifications shall be considered as change order work, or entitle the Contractor to extra compensation, except when the work has been ordered in writing by the Chief Engineer (Engineer) and in accordance with sub-section 4.2 of the General Conditions.

The Contractor shall clearly identify and inform the Engineer in writing of any deviations from the contract documents at the time of submission and shall obtain the Engineer's written approval to the specified deviation prior to proceeding with any work.

P. WAGES AND HOURS: In accordance with sub-sections 7.3 to 7.9 of the General Conditions relative to hours of labor, minimum wages and overtime pay, the current minimum wage rates promulgated by the Department of Labor and Industrial Relations (DLIR) shall be paid to the various classes of laborers and mechanics engaged in the performance of this contract on the job site. The minimum wages shall be increased during the performance of the contract in an amount equal to the increase in the prevailing wages for those kinds of work as periodically determined by the DLIR.

The Department of Land and Natural Resources will not recognize any claim for additional compensation because of the payment by the Contractor of any wage rate in excess of the said minimum wage rates. The possibility of wage increase is one of the elements to be considered by the Contractor in determining his bid, and will not, under any circumstances, be considered as the basis of a claim against the Department under this Contract.

No work shall be done on Saturdays, Sundays, legal State holidays, and/or in excess of eight (8) hours each day without the written consent of the Engineer. Should permission be granted to work at such times, the Contractor shall pay for all inspection administrative costs thereof. No work shall be done at night unless authorized by the Engineer.

Q. PERMITS: The State will process permit applications whenever possible, and the Contractor shall procure the pre-processed permits and pay the required fees. If permit applications are not processed by the State, the Contractor shall process the permit applications, permits and licenses, and pay all charges and fees. In all cases, the Contractor shall give all notices necessary and incident to the due and lawful prosecution of the work.

R. PROPERTY DAMAGE: It shall be the responsibility of the contractor to respect State property and to prevent damage to existing improvements. The Contractor will be responsible for damages resulting from construction operations. Immediately upon discovery, the Contractor shall repair such damage to the satisfaction of the Engineer.

All trees and shrubbery outside the excavation, embankment or construction limits shall be fully protected from injury.

S. TIME: The time of completion is specified in the Proposal. It is the Board's intention to insist the Contractor diligently prosecute the work to completion within the specified time.

Prospective bidders are reminded that the State has the option to proceed with or abandon a project depending on whether the project can be completed for occupancy in the specified time.

It is the bidder's responsibility to check the availability of all materials before bidding. The bidder shall select sub-contractors and suppliers who can warrant availability and delivery of all specified or qualified materials to assure project completion within the specified time.

The successful bidder must assume all risks for completing the project by the specified date. There shall be no extension of time for any reason except for delays caused by acts of God, labor disputes involving unions, or actions of the State. If for any reason the project falls behind schedule, the Contractor shall at its own cost, take necessary remedial measures to get the project back on schedule, i.e., working overtime, air freighting all materials, etc. In addition, if the Contractor fails to fully complete the project by the completion date, Contractor will be required to make the facility usable at its own cost.

T. BIDDER'S RESPONSIBILITY TO PROVIDE PROPER SUPERINTENDENCE: The successful low bidder shall designate in writing to the Engineer the name of its authorized superintendent (Superintendent), who will be present at the job site whenever any work is in progress. The Superintendent shall be responsible for all work, receiving and implementing instructions from the Engineer in a timely manner. The cost for superintendence shall be considered incidental to the project.

If the Superintendent is not present at the site of work, the Engineer shall have the right to suspend the work as described under sub-section 5.5 c. and 7.20 - Suspension of Work of the General Conditions.

U. LIQUIDATED DAMAGES: Liquidated damages in the amount specified in the Proposal will be assessed for each and every calendar day from and after the expiration of the time period stated in the Contract for the completion of the project.

V. HIRING OF HAWAII RESIDENTS: The Contractor shall comply with Act 68, SLH 2010, in the performance and for the duration of this contract. The Contractor shall ensure that Hawaii residents compose not less than eighty percent of the workforce employed to perform the contract work on the project. The eighty percent requirement shall be determined by dividing the total number of hours worked on the contract by Hawaii residents, by the total number of hours worked on the contract by all employees of the Contractor in the performance of the contract. The hours worked by any Subcontractor of the Contractor shall count towards the calculation for this section. The hours worked by employees with shortage trades, as determined by the Department of Labor and Industrial Relations (DLIR), shall not be included in the calculation for this section.

The requirements shall apply to any subcontract of $50,000 or more in connection with the Contractor, that is, such Subcontractors must also ensure that Hawaii residents compose not less than eighty percent of the Subcontractor’s workforce used to perform the subcontract.

W. WATER AND ELECTRICITY: The Contractor shall make all necessary arrangements and pay all expenses for water and electricity used in the construction of this project.

X. PUBLIC CONVENIENCE AND SAFETY: The Contractor shall conduct construction operations with due regard to the convenience and safety of the public at all times. No materials or equipment shall be stored where it will interfere with the safe passage of public traffic. The Contractor shall provide, install, and maintain in satisfactory condition, all necessary signs, flares and other protective facilities and shall take all necessary precautions for the protection of the work and the convenience and safety of the public. The Engineer shall

have the right to suspend the performance of the work in accordance with sub-section 7.20 - Suspension of Work of the General Conditions.

Y. WORK TO BE DONE WITHOUT DIRECT PAYMENT: Whenever the contract that the Contractor is to perform work or furnish materials of any kind for which no price is fixed in the contract, it shall be understood that the Contractor shall perform such work or furnish said materials without extra charge or allowance or direct payment of any sort. The cost of performing such work or furnishing said material is to be included by the Contractor in a unit price for the appropriate item unless it is expressly specified that such work or material is to be paid for as extra work.

Z. AS-BUILT DRAWINGS: As-built drawings, the intent of which is to record the actual in-place construction so that any future renovations or tie-ins can be anticipated accurately, shall be required. All authorizations given by the Engineer to deviate from the plans shall be drawn on the job site plans. All deviations from alignments, elevations and dimensions which are stipulated on the plans shall be recorded on the as-built drawings. Final as-built drawings shall be submitted to the Engineer for review and approval. After the Engineer approves the as-built drawings, the contractor shall submit an electronic copy in Adobe PDF format on CD ROM.

AA. ASBESTOS CONTAINING MATERIALS: The use of asbestos containing materials or equipment is prohibited. The Contractor shall insure that all materials and equipment incorporated in the project are asbestos-free

BB. WORKER SAFETY: The Contractor shall provide, install and maintain in satisfactory condition all necessary protective facilities and shall take all necessary precautions for the protection and safety of its workers in accordance with the Occupational Safety and Health Standards for the State of Hawaii. The Engineer shall have the right to suspend the performance of the work in accordance with sub-section 7.20 - Suspension of Work of the General Conditions.

CC. TOILET FACILITIES: All toilet facilities constructed at the project site shall be in accordance with the Public Health Regulations of the State Department of Health (DOH). All necessary precautions shall be observed at the project site. The use of sanitary facilities shall be strictly enforced and workers violating these provisions shall be promptly discharged.

DD. SIGNS: Whenever the project involves closing or obstructing any public thoroughfare, the Contractor shall provide traffic signs conforming to the applicable provisions of the current edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways", published by the Federal Highway Administration as directed by the Engineer for the purpose of diverting or warning traffic prior to the construction area. All traffic signs shall bear proper wording stating thereon the necessary information as to diverting or warning traffic.

When indicated in the Proposal, the Contractor shall provide a project sign, size 4'-0" x 7'-0" to be placed as directed by the Engineer. The sign shall be constructed in accordance with Section 01581 - Project Sign of these specifications and approved by the Engineer. All wording, type and size of lettering and color selection shall be as specified in these specifications or as approved by the Engineer.

All signs shall be kept neat and clean, and properly erected at all times.

EE. FIELD OFFICE AREA FOR DEPARTMENT: When indicated in the Proposal, the Contractor shall provide a housed working area of at least 100 square feet adjacent to the Contractor's office for the Department's use. This area will be used by the Engineer to perform tests and to store equipment. As a minimum, the field office shall include the following: standard sized office desk and chair, lighting, ventilation, window-type air conditioning rated at 5,000 BTU, door and window with locking hardware, electrical outlets, and working communications facilities (a cellular telephone is acceptable). The Department will pay for all long distance toll charges made by the Engineer.

FF. QUANTITIES: All bids will be compared on the basis of quantities of work to be done as shown in the Proposal; the quantities shown in the Unit Price items are estimated, being given as a basis for comparison of bids. The Board reserves the right to increase or decrease the quantities given under the items or delete items entirely as may be required during the progress of the work.

GG. OTHER HEALTH MEASURES: Forms of work site exposure or conditions which may be detrimental to the health or welfare of workers or of the general public shall be eliminated or reduced to safe levels as required by the DOH codes, standards, and regulations. Suitable first aid kits and a person qualified to render first aid, as specified in the DOH regulations, shall be provided at all times when work is scheduled.

HH. HAWAII BUSINESS OR COMPLIANT NON-HAWAII BUSINESS REQUIREMENT: Bidders (Contractors) shall be incorporated or organized under the laws of the State or be registered to do business in the State as a separate branch or division that is capable of fully performing under the contract, as stipulated in §3-122-112 HAR.

II. COMPLIANCE WITH §3-122-112 HAR:

As a condition for award of the contract and as proof of compliance with the requirements of 103D-310(c) HRS, the apparent low bidder shall furnish the required documents to the Department. If the valid required certificates are not submitted on a timely basis for award of a contract, a bidder otherwise responsive and responsible may not receive the award. Bidder is responsible to apply for and submit the following documents to the Department.

A. TAX CLEARANCE REQUIREMENTS (HRS Chapter 237): Bidder shall obtain a tax clearance certificate from the Hawaii State Department of Taxation (DOTAX) and the Internal Revenue Service (IRS). The certificate is valid for six months from the most recently approved stamp date on the certificate; the certificate must be valid on the date received by the Department.

B. Department of Labor (DLIR) "**Certificate of Compliance**". (HRS Chapter 383 - Unemployment Insurance, Chapter 386 - Workers' Compensation, Chapter 392 - Temporary Disability Insurance, and 393 – Prepaid Health Care): Bidder shall obtain a certificate of compliance from the Hawaii State Department of Labor and Industrial relations (DLIR). The certificate is valid for six months from the date of issue; certificates must be valid on the date received by the Department.

C. Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG) "**Certificate of Good Standing**". Bidder shall obtain a certificate of good standing issued by the Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG). The certificate of good standing is valid for

six months from the date of issue; certificates must be valid on the date received by the Department.

Alternately, instead of separately applying for these certificates at the various state agencies, bidder may choose to use the Hawaii Compliance Express (HCE), which allows businesses to register online through a simple wizard interface at http://vendors.ehawaii.gov to acquire a "Certificate of Vendor Compliance" indicating the bidder's status is compliant with the requirements of §103D-310(c), HRS, and shall be accepted for contracting and final payment purposes. Bidders that elect to use the new HCE services will be required to pay an annual fee of $12.00 to the Hawaii Information Consortium, LLC (HIC). Bidders choosing not to participate in the HCE program will be required to provide the paper certificates as instructed in the previous paragraphs.

P R O P O S A L

FOR

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION
State of Hawaii

Job No. F48C612A
Keaiwa Heiau State Recreation Area Water System Improvements
Aiea, Hawaii

_____, 2026

Chief Engineer
Engineering Division
Department of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Dear Sir:

The undersigned, having carefully examined the local conditions and all available records and information covering conditions which may affect the cost of the work to be performed, and having carefully examined the Plans and Specifications, and other contract documents, hereby proposes to furnish and pay for all materials, tools, equipment, labor and other incidental work necessary. The work shall consist of replacement of an existing water line, new water bladder tanks, new tank enclosure building and related site work, as required or called for in this Proposal, all according to the true intent and meaning of the Notice to Bidders, Information and Instructions to Bidders, Proposal, Detailed Specifications, Interim General Conditions, Plans, and any and all addenda for:

Job No. F48C612A
Keaiwa Heiau State Recreation Area Water System Improvements
Aiea, Hawaii

on file in the office of the Engineering Division for the TOTAL BASE BID (Items 1-33) of:

_____

_____Dollars ($_____)
and will fully complete all work under this contract within 300 consecutive calendar days from the date of written notice to proceed, including date of said order, said total sum being itemized on the following pages.

PROPOSAL

Item No.	Quantity	Unit	Description	Unit Price	Total
BASE BID					
1.		LS	Clearing and grubbing	LS	$
2.	14	SY	1-1/2" thick asphaltic concrete pavement (State Mix No. V) inclusive of surface preparation, in place complete	$	$
3.	14	SY	6" thick base course for A.C. Pavement inclusive of compaction, in place complete	$	$
4.	4087	LF	Root Barrier	$	$
5.		LS	Arborist Services	LS	$
6.	4,211	LF	Furnish and install 3-inch SCH 80 PVC waterline inclusive of excavation, backfill, solvent weld, detector wire, couplings, and appurtenances in place complete.	$	$
7.	2	EA	New 2-inch Copper lateral to existing comfort station including removing existing valve boxes, and installation of new WSS Type "B" Meter box and valves.	$	$
8.	14	CY	Controlled Low Strength Material CLSM for backfill of waterlines under roads.	$	$
9.	3	EA	3"x3"x2" PVC SCH 80 Tee, Solvent Welded	$	$
10.	2	EA	3"x3"x1" PVC SCH 80 Tee, Solvent Welded	$	$
11.	20	EA	3" PVC SCH 80 1/32 Bend, Solvent Welded	$	$
12.	21	EA	3" PVC SCH 80 1/16 Bend, Solvent Welded	$	$
13.	12	EA	3" PVC SCH 80 1/8 Bend, Solvent Welded	$	$
14.	6	EA	3" Gate Valve & Box, in place complete	$	$
15.	1	EA	2" Cover and Cap, in place complete	$	$
16.	1	EA	1" Air Relief Valve Unit and Box, in place Complete	$	$

Item No.	Quantity	Unit	Description	Unit Price	Total
BASE BID					
17.	5	CY	DWS 2,500 concrete for reaction blocks, test blocks, concrete beams, slabs, inclusive of necessary structural struts, straps, rods, reinforcing steel and appurtenances, with Geotextile Fabric for abrasion resistance, in place complete.	$	$
18.		LS	Site BMP measures for water pollution and erosion and sediment control during construction phase of project, including installation, maintenance, and removal at end of project	LS	$
19.	12	LF	3" Type "K" Copper Waterline In Place Complete including pipe anchors fittings, and tape wrap.	$	$
20.	2	EA	3" Brass Elbow	$	$
21.	1	EA	3" x 3" x 2" Brass Tee	$	$
22.	1	EA	2" x 2" x 1/2" Brass Tee	$	$
23.	1	EA	1/4" Pressure Gauge w/ 2-1/2" diameter face and minimum pressure rating of 0-100 psi including 1/2" to 1/4 inch bushing.	$	$
24.	4	EA	Ford B11 2" ball valve with stainless steel handle and attachment nuts or approved equal.	$	$
25.	4	EA	Install new 80 Gallon Bladder Tank including manifold and 3-inch manifold and 1-1/4Inch connection in place complete.	$	$
26.	7	EA	New 3/4 - Inch anti-rotation quick coupling valve in place complete including ball valve, piping, valve/meter box fittings and appurtenances.		
27.		LS	Pressure testing and chlorination for new waterline and laterals.	LS	$
28.	13	CY	Unclassified excavation for Tank Building, including 2' over excavation.	$	$
29.		LS	Bladder Tank Building, in place complete.	LS	$
30.	1	CY	Concrete for sidewalk in place complete including reinforcing steel.	$	$

Item No.	Quantity	Unit	Description	Unit Price	Total
Base Bid					
31.	1	EA	Project Sign	$	$
32.	Allowance		Field Office	Allowance	$ 10,000.00
			Subtotal Base Bid (Items 1-32)		$
33.		LS	Mobilization and Demobilization (not to exceed 10% of the Subtotal Base Bid)	LS	$
			Total Base Bid (Items 1-33)		$

Additive 1 Stone Veneer					
34.		LS	Provide and install 4-inch thick natural lava moss rock veneer on all four (4) exterior sides of the bladder tank building CMU walls, complete with mortar, anchors/ties, flashing, weeps, joint finishing, and all labor, materials, equipment, and incidentals necessary for a complete installation.	$	$
			Total Additive 1 Bid (Item 34)		$
Additive 2 Road Repair					
35.	4000	SY	Resurface road (entire width) and parking areas with 1-inch asphalt concrete overlay, including surface preparation, repair of potholes, cracks, and depression, in place complete.	$	$
36.	900	SY	1-1/2" thick asphaltic concrete pavement (State Mix No. V) inclusive of surface preparation, in place complete	$	$
37.	900	SY	6" thick base course for A.C. Pavement inclusive of compaction, in place complete	LS	$
38.	5	EA	Remove and replace existing speed bumps, in place complete	$	$
39.	780	LF	Replace pavement markings, 4-inch wide white parking stall lines, in place complete.	$	$
40.	3	EA	Replace existing arrow pavement markings, white, in place complete	$	$
			Subtotal Additive 2 (Items 35 - 40)		$
41.		LS	Mobilization and Demobilization (not to exceed 10% of the Subtotal Additive 2 Bid)	LS	$
			Total Additive 2 Bid (Items 35 -41)		$

RECYCLED PRODUCTS PREFERENCE

This project allows a 10% price preference for recycled products in accordance with HRS 103D-1005. Please indicate your selection of recycled or non-recycled product by indicating its cost FOB jobsite unloaded in the schedule below, including applicable General Excise & Use Taxes.

DESCRIPTION	RECYCLED PRODUCT COST	NONRECYCLED PRODUCT COST
_____	$_____	$_____
_____	$_____	$_____
_____	$_____	$_____
_____	$_____	$_____

The bidder requesting a recycled product preference shall also complete and submit the form "CERTIFICATION OF RECYCLED CONTENT" as shown in the Interim General Conditions and provide all supporting information with this proposal. Additional information may be requested to qualify a product.

The following definitions are applicable to the CERTIFICATION OF RECYCLED CONTENT form:

"Post-consumer recovered material" means any product used by a consumer, including a business that purchases the material, that has served its intended end use, and that has been separated or diverted from the solid waste stream for the purpose of use, reuse, or recycling.

"Product" includes materials, manufactures, supplies, merchandise, goods, wares, and foodstuffs.

"Recovered material" means waste material and by-products that have been separated, diverted, or removed from the solid waste stream after a manufacturing process for the purpose of use, reuse, or recycling. Recovered material does not include those materials and by-products that are generated and normally reused on-site or within original manufacturing processes (such as mill broke, in the case of paper products).

"Recycled content" means the percentage of a product composed of recovered material, or post-consumer recovered material, or both.

"Recycled product" means a product containing recovered material, or post-consumer recovered material, or both.

The bidder agrees that preference for recycled products shall be taken into consideration to determine the low bidder in accordance with said Section and the rules promulgated, however, the award of contract will be in the amount of the bid offered exclusive any preference.

APPRENTICESHIP AGREEMENT PREFERENCE

1. If applicable to this project, any bidder seeking the preference must be a party to an apprenticeship agreement registered with the State Department of Labor and Industrial Relations (DLIR) at the time the bid is submitted for each apprenticeable trade the bidder will employ to construct the project. "Employ" means the employment of a person in an employer-employee relationship.

    a. The apprenticeship agreement shall be registered with the DLIR and conform to the requirements of Hawaii Revised Statutes Chapter 372.

    b. Subcontractors do not have to be a party to an apprenticeship agreement for the bidder to obtain preference.

    c. The bidder is not required to have apprentices in its employ at the time the bid is submitted to qualify for the preference.

2. A bidder seeking the preference must state the apprenticeable trade the bidder will employ for each trade to be employed to perform the work by submitting a completed signed original *Certification Form 1* verifying participation in an apprenticeship program registered with DLIR. "Apprenticeable trade" shall have the same meaning as "apprenticeable occupation" pursuant to Hawaii Administrative Rules (HAR) §12-30-5.

    a. The *Certification Form 1* shall be authorized by an apprenticeship sponsor listed on the DLIR list of registered apprenticeship programs. "Sponsor" means an operator of an apprenticeship program and in whose name the program is approved and registered with the DLIR pursuant to HAR §12-30-1.

    b. The authorization shall be an original signature by an authorized official of the apprenticeship sponsor.

    c. The completed signed original *Certification Form 1* for each trade must be submitted with the bid. Previous certifications shall not apply.

    d. When filling out the *Certification Form 1*, the name of Apprenticeable Trade and Apprenticeship Sponsor must be the same as recorded in the List of Construction Trades in Registered Apprenticeship Programs that is posted on the DLIR website. "Registered apprenticeship program" means a construction trade program approved by the DLIR pursuant to HAR §12-301 and §12-30-4.

    e. The *Certificate Form 1* and the List of Construction Trades in Registered Apprenticeship Programs is available on the DLIR website at: http://hawaii.gov/labor/wdd.

3. Upon receiving the *Certification Form 1*, the Procurement Officer will verify that the apprenticeship program is on the List of Construction Trades in Registered Apprenticeship Programs and that the form is signed by an authorized official of the Apprenticeship Program Sponsor. If the programs and signature are not confirmed by the DLIR, the bidder will not qualify for the preference.

4. If the bidder is certified to participate in an apprenticeship program for each trade which will be

employed by the bidder for the project, a preference will be applied to decrease the bidder's bid amount by five percent (5%) for evaluation purposes.

5. Should the bidder qualify for other preferences, all applicable preferences shall be applied to the bid price.

CONTRIBUTIONS BY STATE AND COUNTY CONTRACTORS PROHIBITED

Contractors are hereby notified of the applicability of Section 11-355, HRS, which states that campaign contributions are prohibited from specified State or county government contractors during the term of the contract if the contractors are paid with funds appropriated by a legislative body.

CONDITION OF AWARD

It is understood that the award of the contract will be made on the basis of the lowest responsible Total Base Bid and Additive Bids in accordance with the "Information and Instruction to Bidders", Items K and L, and as selected by the Board of Land and Natural Resources.

It is understood and agreed that the Board of Land and Natural Resources reserves the right to reject any and/or all bids and waive any defects when, in the Board's opinion, such rejection or waiver will be for the best interest of the State of Hawaii.

In the event all bids exceed available funds certified by the appropriate fiscal officer, the head of the purchasing agency responsible for the procurement in question is authorized in situations where time or economic considerations preclude resolicitation of work of a reduced scope to negotiate an adjustment of the bid price, including changes in the bid requirements, with the low responsible and responsive bidder, in order to bring the bid within the amount of available funds. It is understood and agreed upon that the head of the purchasing agency may delete a portion or all of any item(s) in the proposal at the stated unit or lump sum price as necessary to stay within the available funding. The bidder is responsible to make an earnest effort to represent the actual cost of each item, including all materials, labor, equipment, overhead and profit in their bid proposal to preclude claims of anticipated profit or loss of profit because of an unbalanced bid proposal.

It is also understood that if a mutually agreeable cost for the reduced scope of work necessitated by a lack of available funds cannot be agreed upon between the bidder and the head of the purchasing agency within 14 calendar days after the bid opening, then the bid may be rejected in the best interest of the purchasing agency, and the head of the purchasing agency may negotiate in progressive order (lowest to highest) with the next lowest responsible and responsive bidder.

It is also understood and agreed that the award of the contract shall be conditioned upon funds being made available for this project and further upon the right of the Board of Land and Natural Resources to hold all bids received for a period of one hundred eighty (180) days from the date of the opening thereof, unless otherwise required by law, during which time no bid may be withdrawn.

It is also understood that Notice to Proceed may be delayed up to three hundred and sixty-five (365) calendar days after the bid opening date, and that no additional compensation will be provided for any claim for escalation or delay for issuance of Notice to Proceed on or before that date.

It is also understood and agreed that the quantities given herewith are approximate only and are subject to increase or decrease, and that the undersigned will perform all quantities of work as either increased or decreased, in accordance with the provisions of the Contract Specifications.

It is also understood and agreed that the estimated quantities shown for the items for which a UNIT PRICE is asked in this Proposal are only for the purpose of comparing on a uniform basis, bids offered for the work under this contract, and the undersigned agrees that he is satisfied with and will at no time, dispute said estimated quantities as a means of claims for anticipated profit or loss of profit, because of a difference between the quantities of the various classes of work done or the materials and equipment installed, and the said estimated quantities. On UNIT PRICE bids, payment will be made only for the actual number of units incorporated into the finished project at the contract UNIT PRICE.

After the HIePRO bid due date and time, the figures will be extended and/or totaled in accordance with the bid prices of the acceptable proposals and the totals will be compared. In the comparison of bids, words written in the proposal shall govern over figures and unit prices will govern over totals. Until

the award of the contract, however, the right will be reserved to reject any and all proposals and to waive any defects or technicalities as may be deemed best for the interest of the State.

It is also understood and agreed that liquidated damages in the amount of Two Hundred and No/100 dollars ($200.00) for each and every calendar day in excess thereof prior to completion of the contract shall be withheld from payments due to the Contractor.

It is also understood and agreed that if this bid is accepted, the successful bidder must enter into and execute a contract with the Board of Land and Natural Resources and furnish a Performance and Payment Bond, as required by law. These bonds shall conform to provisions of Section 103D-324 and 325, Hawaii Revised Statutes and any law applicable hereto.

It is also understood and agreed that the successful bidder will provide all necessary labor, materials, tools, equipment, and other incidentals necessary to do all the work and furnish all the materials specified in the contract in the manner and time herein prescribed, and according to the requirements of the Engineer as therein set forth.

It is understood that by submitting this proposal, the undersigned is declaring that his firm has not been assisted or represented on this matter by an individual who has, in a State capacity, been involved in the subject matter of this contract in the past two years.

It is understood that by submitting this proposal in accordance with HAR 3-122-192, the undersigned is declaring that the price submitted is independently arrived without collusion.

It is also understood that by submitting this proposal, a Certification for Safety and Health Programs for bids in excess of $100,000 (in accordance with HRS 396-18), the undersigned certifies that his organization will have a written safety and health plan for this project that will be available and implemented by the Notice to Proceed date of this project. Details of the requirements of this plan may be obtained from the Department of Labor and Industrial Relations, Occupational, Safety and Health Division (HIOSH).

It is further understood and agreed that the successful bidder shall comply with paragraph 3.1.a "SUBCONTRACTING" of the General Provisions which requires that the contractor shall perform with his own organization and with the assistance of workmen under his immediate superintendence, work of a value not less than twenty percent (20%) of the value of all work embraced in the Contract, except that certain contract items of work, if specifically referred to in the special provisions, will be exempted from said twenty percent requirement.

Compliance with §103-310 HRS. As a condition of award all bidders shall comply with all laws governing entities doing business in the State, including Chapter 237 HRS (general excise tax); Chapter 383 HRS (employment security – unemployment insurance); Chapter 386 HRS (workers compensation); Chapter 392 HRS (temporary disability insurance); and Chapter 393 HRS (pre-paid health care), and shall produce all documents to the State (DLNR, Engineering Division) required to demonstrate compliance with these subsections. Any bidder making a false affirmation or certification under this subsection shall be suspended and may be debarred from further offerings or awards pursuant to §103D-702 HRS.

RECEIPT OF ADDENDA

The bidder also acknowledges receipt of any and all addenda issued by the Engineering Division, by recording the date of receipt of the respective addenda in the space provided below:

Addendum	Date Received	Addendum	Date Received
No. 1	_____	No. 5	_____
No. 2	_____	No. 6	_____
No. 3	_____	No. 7	_____
No. 4	_____	No. 8	_____

It is understood that failure to receive any such addendum shall not relieve the Contractor from any obligation under this Proposal as submitted.

It is also understood and agreed that if this Proposal is accepted and the undersigned should fail or neglect to contract as aforesaid, the Board may determine that the bidder has abandoned the Contract, and thereupon, forfeiture of the security accompanying his proposal shall operate and the same shall become the property of the Board.

JOINT CONTRACTORS OR SUBCONTRACTORS TO BE ENGAGED ON THIS PROJECT

The Bidder agrees that the following is a complete listing of all joint contractors or subcontractors covered under Chapter 444, Hawaii Revised Statutes (HRS), who will be engaged by the Bidder on this project to perform the required work indicated pursuant to Section 103D-302, HRS. It is the sole responsibility of the contractor to review the requirements of this Project and determine the appropriate licenses that are required to complete the Project. The Bidder certifies that the completed listing of joint contractors or subcontractors fulfills the requirements for the project and the Bidder, together with the listed subcontractors or joint contractors have all the specialty contractor's licenses to complete the work, except as provided for in HRS §103D-302(b). Failure of the Bidder to comply with this requirement may be just cause for rejection of the bid.

"A" General Engineering Contractors and "B" General Building Contractors are reminded that due to the Hawaii Supreme Court's January 28, 2002 decision in Okada Trucking Co., Ltd. v. Board of Water Supply, et al., 97 Haw. 450 (2002), they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area in which the general contractor has no license. Although the "A" and "B" contractor may still bid on and act as the "prime" contractor on an "A" or "B" project (See, *HRS §*444-7 *for the definitions of an "A" and "B" project.*), respectively, the "A" and "B" contractor may only perform work in the areas in which they have the appropriate contractor's license (*An "A" or "B" contractor obtains "C" specialty contractor's licenses either on its own, or automatically under HAR § 16-77-32*). The remaining work must be performed by appropriately licensed entities.

General Engineering "A" Contractors automatically have these "C" specialty contractor's licenses: C-3, C-9, C-10, C-17, C-24, C-31a, C-32, C-35, C-37a, C-37b, C-38, C-43, C-49, C-56, C-57a, C-57b and C-61.

General Building "B" Contractors automatically have these "C" specialty contractor's licenses: C-5, C-6, C-10, C-12, C-24, C-25, C-31a, C-32a, C-42a and C-42b.

In completing the Joint Contractors or Subcontractors List, describe the specialty contractor's nature and scope of work to be performed for this project and provide the complete firm name of the joint contractor or subcontractor in the respective columns. If the Bidder is a general contractor and providing the work of the required specialty contractor, fill in the Bidder's (general contractor's) name and nature and scope of work to be performed on this project.

List only one joint contractor or subcontractor per required specialty contractor's classification, unless within the same specialty, the work of each joint contractor or subcontractor can be described so that there is no overlap in work descriptions.

If a contractor's license is required by law for the performance of the work which is called for in this bid, the bidder and all subcontractors must have the required license before the submission of the bidder's proposal in the case of a non-federal aid project, and for federal-aid projects, the bidder must have the required license prior to the award of the project and all subcontractors prior to the start of the subcontracted work.

Base Bid

COMPLETE FIRM NAME OF JOINT CONTRACTOR OR SUBCONTRACTOR	NATURE AND SCOPE OF WORK TO BE PERFORMED

JOINT CONTRACTORS OR SUBCONTRACTORS LIST FOR THE ADDITIVE(S)

Bidder agrees that for projects with additives(s), the Bidder, joint contractor or subcontractor listed inthe completed "Joint Contractors or Subcontractors List for the Additives(s)" will perform work for the respective additives.

Additive 1

COMPLETE FIRM NAME OF JOINT CONTRACTOR OR SUBCONTRACTOR	NATURE AND SCOPE OF WORK TO BE PERFORMED

Additive 2

COMPLETE FIRM NAME OF JOINT CONTRACTOR OR SUBCONTRACTOR	NATURE AND SCOPE OF WORK TO BE PERFORMED

Enclosed herewith is a:

1.	Surety Bond (*1)	)	
2.	Legal Tender (*2)	)	
3.	Cashier's Check (*3)	)	
4.	Certificate of Deposit (*3)	)	in the
5.	Certified Check (*3)	)	amount
6.	Official Check (*3)	)	of
7.	Share Certificate (*3)	)	
8.	Teller's Check (*3)	)	
9.	Treasurer's Check (*3)	)	

(Cross Out Those Not Applicable)

_____

_____Dollars ($_____)

as required by law.

Exact Legal Name of Company, Joint Venture or Partnership

Company is:
☐ Sole Proprietor ☐ Partnership ☐ Corporation ☐ Joint Venture ☐ Other _____

Contractor's License No.: _____

Federal I.D. No.: _____

Hawaii General Excise Tax License I.D. No.: _____

Payment address (other than street address below): _____

City, State, Zip Code: _____

Business Address (street address): _____

City, State, Zip Code: _____

Respectfully submitted,

By _____
Authorized (Original) Signature (*4)

Title: _____

Print Name: _____

Date: _____

Telephone No.: _____

E-Mail Address: _____

NOTES:

1. Surety bond underwritten by a company licensed to issue bonds in this State;

2. Legal tender; or

3. A certificate of deposit; share certificate; or cashier's, treasurer's, teller's, or official check drawn by, or a certified check accepted by, and payable on demand to the State by a bank, a savings institution, or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration.

   A. These instruments may be utilized only to a maximum of $100,000.

   B. If the required security or bond amount totals over $100,000, more than one instrument not exceeding $100,000 each and issued by different financial institutions shall be accepted.

4. Please attach to this page evidence of the authority of this officer to submit bids on behalf of the Company and also the names and residence addresses of all officers of the Company.

5. Fill in all blank spaces with information asked for or bid may be invalidated. PROPOSAL MUST BE INTACT, MISSING PAGES MAY INVALIDATE YOUR BID.

End of Proposal

TABLE OF CONTENTS

DIVISION 8 – DOORS AND WINDOWS
NOT USED

DIVISION 9 – FINISHES
Painting 09900

DIVISION 10 -SPECIALTIES
NOT USED

DIVISION 11 – EQUIPMENT
NOT USED

DIVISION 12 – FURNISHINGS
NOT USED

DIVISION 13 –SPECIAL CONSTRUCTION
NOT USED

DIVISION 14 –CONVEYING SYSTEMS
NOT USED

DIVISION 15 –MECHANICAL
NOT USED

DIVISION 16 –ELECTRICAL
NOT USED

SECTION 01230

ADDITIVE BID ITEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for additive bid items.

B. The description of additive bid items is not intended to give a detailed description of all additional work required by the additive bid item(s), as only the principal features of such additional work are listed.

C. Should anyone or all of the additive bid items become a part of the contract, the cost of all additional work required by the additive bid item(s), even though not specifically mentioned herein, are included in the lump sum bid price.

1.2 DEFINITIONS

A. Additive Bid Item: An amount proposed by Bidders (Offerors) and stated on the Proposal Form for certain work defined in the Bidding Requirements that may be added to the Total Lump Sum Base Bid Price amount if State decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

The cost for each additive bid item is the net addition to the Contract Sum to incorporate additive bid item into the Work. No other adjustments are made to the Total Lump Sum Base Bid Price.

1.3 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the additive bid item into the Project.

Include as part of each additive bid item, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of additive bid item.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each additive bid item. Indicate if additive bid items have been accepted, rejected, or deferred for later consideration.

C. Execute accepted additive bid items under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Additive Bid Items is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each additive bid item.

PART 2 – GENERAL (Not Used)

PART 3 – EXECUTION

3.1 SCHEDULE OF ADDITIVE BID ITEMS

A. Additive Bid 1: Stone Veneer on all 4 exterior walls of Bladder Tank Building.

B. Additive Bid 2: Road Repair Work

END OF SECTION

SECTION 02226

ROADWAY EXCAVATION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

Roadway excavation shall consist of the removal and proper disposal of all materials necessary and required for the formation of the roadway prism, including the construction of the roadbed, parking lot, embankments, subgrade, the removal and disposal of surplus or unsuitable material, and the necessary excavation for the installation of gutters, and retaining wall along the right-of-way. It shall also include all of the above work necessary in connection with intersections, side roads, private roadways, approaches and the refilling of excavations caused by the removal of structures, tree roots, and the replacement of unsuitable material.

A. It shall be the responsibility of the Contractor to examine the project site and determine for himself the existing conditions.

B. Obvious conditions of the site existing on the date of the bid opening shall be accepted as part of the work, even though they may not be clearly indicated on the drawings and/or described herein or may vary therefrom.

C. All debris of any kind accumulated from clearing shall be disposed of from the site, and the whole area left clean. The Contractor shall be required to make all necessary arrangements relative to the proposed place of disposal.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 INSTALLATION

A. Roadway excavation shall be done to the required subgrade to accept the new pavement structure. Subgrade shall be compacted with on-site excavated material approved by the Engineer when filling is required to bring the subgrade elevation to its required height. Subgrade preparation shall conform to the requirement as follows:

1. Preparation. In advance of setting line and grade stakes, the subgrade area shall be cleared of brush, weeds, vegetation, and debris, all of which shall be satisfactorily disposed of to the satisfaction of the Engineer. All depressions and ruts which contain water shall be drained.

All unsuitable material, such as adobe, muck, expansive clay and materials with debris or organic matter, encountered above the road subgrade, shall be removed and hauled away from the project site. Unless a specific site is designated in the special provisions for disposal of unsuitable material, the Contractor is responsible to find a convenient site. The hauling and disposing of the unsuitable material shall be considered as incidental to the excavation work. The Engineer shall determine if the material is unsuitable.

2. Finished Subgrade. The finished subgrade shall have a density of al least 95% of its maximum density for a depth of 6 inches or more. The surface shall be rolled until the material does not creep under the roller and finished smooth to the required grade and cross section.

3. Protection of Subgrade. The subgrade shall be shaped and sloped to drain.

4. Surface Tolerance. The finished subgrade upon which subbase or base course is placed shall not vary more than 0.10 foot above or below the theoretical grade.

   All unnecessary traffic shall be kept off the prepared subgrade. Should it become necessary to haul materials and aggregate over the prepared subgrade, the Contractor shall drag and roll the traveled way as frequently as may be necessary to remove ruts, cuts and breaks in the surface. The surface shall be brought up to grade, compacted and rolled smooth before placing the subsequent layer of specified material.

   Should the prepared subgrade become soft, spongy, or yielding due to the weather or excessive sprinkling, the Contractor shall at his own expense remove and replace the soft material or let it dry out sufficiently, then recompact the material to the required density and grade.

END OF SECTION

SECTION 02512

ASPHALTIC CONCRETE

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

Asphaltic concrete shall consist of a mixture of mineral aggregate and bituminous material, mixed at a central plant in the proportions hereinafter specified and spread and compacted on a prepared base or existing road surface.

The pavement may consist of a surface course mixture and leveling course mixture, as herein specified.

PART 2 - PRODUCTS

2.1 MATERIALS

All materials and workmanship shall conform to the requirements of the State of Hawaii, Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, including applicable Special Provisions.
The following sections shall apply:

Section 401 – Hot Mix Asphalt (HMA) Pavement
Section 407 – Tack Coat
Section 420 – Prime Coat
Section 702 – Bituminous Materials
Section 703 – Aggregates
Section 712 – Miscellaneous

Leveling or base course mixture shall be Mix No. 5, surface wearing course mixture shall be Mix V.

PART 3- EXECUTION

3.1 DETAILS

A. Prime Coat: All surfaces on or against which asphalt concrete is to be placed shall first receive a prime or tack coat in accordance with Section 407and Section 420, respectively.

Before application of tack coat, the Contractor shall clean existing pavement surfaces by power brooming and removal of loose material, dust, dirt, sand, and other foreign matter.

B. Laying Wearing Surface: In advance of placing asphalt concrete over an existing base, surfacing, or pavement, and after the base, surfacing, or pavement has been prepared as

herein specified, and if ordered by the Engineer or shown on the plans, a leveling course mixture shall be spread to level irregularities, dips, depressions, sags, and excessive crown, and to provide a smooth base of uniform grade and cross-section in order that the surface course will be of uniform thickness. The above specified material shall not be placed more than one day in advance of placing the surface course. No additional compensation will be allowed for placing leveling course mixture as specified above and full compensation for all work incidental to such operations shall be considered as included in the contract prices or price paid for the asphalt concrete mixture used.

The wearing surface shall be spread with self-propelled mechanical spreading and finishing equipment, provided with a screed or strike-off assembly capable of distributing not less than the full width of a traffic lane. The screed shall be adjustable to the required crown and elevation. Screeding includes any cutting, crowding or other action which is effective on the mixture without tearing, shoving, or gouging, and which produces a finished surface of an even texture. The equipment shall be provided with rolling, tamping, or other suitable compacting devices, and shall be operated with a forward speed of not more than 20 feet per minute.

If the spreading and finishing equipment leaves ridges, indentations, or other marks in the surface that cannot be eliminated by rolling or prevented by adjustment in operation, its use shall be discontinued, and other acceptable equipment shall be furnished by the Contractor.

If more than one course is to be laid in any area, not more than 24 hours shall elapse between the spreading and finishing of any two successive courses in that area.

The self-propelled mechanical spreading and finishing machine shall be capable of propelling the vehicle being unloaded in uniform manner and, if necessary, the load of the haul vehicle shall be so limited that satisfactory spreading will be obtained. While being unloaded, the vehicle shall be firmly attached to the machine and the brakes on the vehicle shall not be depended upon to obtain contact between the vehicle and the machine.

Before placing asphalt concrete wearing surface adjacent to cold transverse construction joints, such joints shall be trimmed to a vertical face in a neat line. The location of the proposed joint shall be tested with a 10-foot straight-edge and cut back such that when the straight-edge is laid on the finished surface parallel with the center line of the street, the surface shall in no place vary from the lower edge of the straight-edge more than 1/8 inch.

Before placing asphalt concrete adjacent to any existing asphalt concrete, the face of the existing asphalt concrete shall be trimmed to a vertical face in a neat line.

Where asphalt concrete wearing surface is placed adjacent to a Portland cement concrete gutter, the asphalt concrete wearing surface shall be so laid that its surface, after compaction, will approximately be 1/4-inch above the surface of the adjacent concrete. The edge of the asphalt concrete wearing surface shall then be smoothed and sealed over a width of approximately 3 inches with hot hand-irons having a self-contained heating unit.

At locations where the width of asphalt concrete mixture to be spread is too narrow to permit the use of self-propelled mechanical spreading and finishing equipment, or where the surfacing is to extend to a featheredge and the use of such a machine is not practicable, the mixture may be spread by hand-raking. Where hand-raking is permitted, the mixture shall be finally shaped and smoothed by means of a wooden float 8 feet long, one-inch thick and 4 inches wide. The float shall be rigidly ribbed, and to insure a true and flat surface on the underside, adjusting screws shall be placed between the rib and float at not more than 24-inch centers. The float shall be operated by means of a long handle, from the side of the area being paved or surfaced, and parallel with the center line of the pavement or surfacing. High spots and irregularities that are transverse to the path of traffic shall be cut down and the material redistributed over the area. The maximum depth of wearing surface which may be spread and rolled in one course shall not exceed a compacted thickness of 2 inches. Where such thickness exceeds 2 inches, it shall be spread and rolled in courses each not to exceed a compacted thickness of 1-1/2 inches unless otherwise specified in these specifications.

Wearing surface mixture shall be placed using self-propelled paving equipment unless otherwise approved by the Engineer..

No wearing surface shall be spread when the atmospheric temperature is below 50ºF or during other unsuitable weather, or when the base is wet.

C. Rolling: Immediately after the wearing surface has been laid as specified above, it shall be compressed with power rollers, smooth running, and in first-class mechanical condition. Initial rolling or tamping shall be performed when the temperature of the mixture is between 220NF and 245NF.

After the first pass of the roller, any low or grainy spots shall be broken up with a hot rake and more material worked in to insure a surface of uniform texture and maximum density. Rolling equipment shall be self-propelled. Initial rolling of asphalt concrete mixtures shall be performed by means of a three-wheeled roller weighing not less than 12 tons and with a compression on the rear wheels of not less than 325 pounds per linear inch of tire width, or in lieu thereof, by means of a three-axle tandem roller weighing not less than 12 tons. For production not exceeding 150 tons per hour, not less than one of the above specified rollers shall be used for initial rolling. For productions in excess of 150 tons per hour, one additional roller of a type designated by the Engineer will be required for each additional 100 tons or fraction thereof of asphalt concrete mixture placed.

Three-axle-tandem type rollers shall be so constructed that the rolls, when locked in position for all treads to be in one plane, are held with a rigidity which will permit the following test under full load. With the weight of the roller supported on the central roll, the tread of the central roll shall not be more than 1/8-inch above the plane tangent to the treads of the end rolls. With the weight of the roller supported on the end rolls, the tread of the central roll shall not be more than 1/4-inch below the plane tangent to the treads of the end rolls.

In general, three-axle tandem roller shall not be used in rolling over a crown or on warped surfaces when the axle is in a locked position.

Finishing rolling of asphalt concrete mixtures shall be performed by means of a tandem roller weighing not less than 10 tons.

Rolling shall continue until the compressed pavement or surfacing has a relative specific gravity of not less than 95 percent of the specific gravity of the combined mixture without voids.

D. Smoothness: The finished surface of the pavement shall be true to grade and cross-section, free from depressions, or grainy spots, and shall show a uniform distribution of aggregate.

When a straight-edge, 10 feet long, is laid on the finished surface parallel to the center line of the pavement, the surface shall in no place vary from the lower edge of the straight-edge more than 3/16 of an inch.

No traffic shall be permitted on any course of asphalt concrete until it has cooled and set, except such traffic as may be necessary for construction purposes.

END OF SECTION

SECTION 02760

PAVEMENT MARKINGS

PART I -GENERAL

1.1 SUMMARY

A. Provide thermoplastic pavement markings as indicated on the plans and as specified herein.

1.2 REFERENCES

A. State of Hawaii, Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, including applicable Special Provisions. (Paragraphs concerning Measurements and Payments in the sections are not applicable to this project.)

1. Pavement Markings ..... Section 629

2. Pavement Marking Materials..... Section 755

1.3 SUBMITTALS

A. Submit in accordance with Section 01300 - Submittals.

B. Certifications: Submit manufacturer's certificates attesting to the Engineer that materials and equipment meet the requirements specified.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Thermoplastic Tape shall conform to the State of Hawaii, Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, Section 755.05. Retroreflective Thermoplastic Compound Pavement Markings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Traffic marking application shall be in conformance with Section 629 - Pavement Markings and Section 755 - Pavement Marking Materials of the State of Hawaii, Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, including applicable Special Provisions. and this section.

B. Compound shall be machine-applied to pavement surface in molten state at a temperature recommended by the manufacturer. Material shall not scorch or discolor if kept at molten state temperatures for up to 4 hours. After cooling to ambient temperature and without polymerization or other chemical change, compound shall form traffic marking of quality and appearance as specified herein.

C. Material shall show no appreciable deformation or discoloration under local traffic conditions and in ambient or pavement temperatures ranging from 0 degrees F to 120 degrees F.

D. Drying time is defined as minimum elapsed time from marking application to time after which normal local traffic leaves no impression or imprint on applied marking, and after which marking attains and retains required characteristics, including thickness.

Drying time shall be in accordance with the manufacturer's recommendations.

E. Material shall allow marking to maintain original dimensions and placement. Exposed surface shall be free from tack. Applied marking shall not chip or debond under normal movement of pavement surface.

F. Pigment shall be dispersed evenly throughout material. Materials shall be of uniform density and character, throughout its thickness.

G. Material shall not smear or spread at pavement temperatures of 140 degrees F or less.

H. Parking lots and driveways shall be operational and accessible while the pavement is curing. The Contractor shall install temporary pavement striping prior to allowing public use of the parking lots and driveways. The temporary pavement striping shall be maintained until permanent pavement markings are ready to be installed.

I. Workmanship: All work performed by the Contractor in the marking of roadway and parking stripes shall be done in a workmanlike manner by mechanics who are qualified by trade, skill, experience and classification. All work shall comply in all respects with the requirements of this section. Wherein this section may fail to specify a given construction method, common practice and/or a method recommended by the Contractor, if approved by the Engineer, shall be utilized.

J. Marking: Markings shall be applied at four-inch (4") widths unless otherwise specified, at the locations and spacing indicated on the plans. Pavement markings shall not be applied until the layouts, indicated alignment and the condition of the existing surface have been approved by the Engineer.

3.2 PROTECTION OF WORK

A. Protect newly installed pavement markings from damage by pedestrians and passing vehicles. Barricade marked areas during installation and during the time required for markings to harden sufficiently to withstand traffic. Efface and replace damaged portions of markings at no additional cost to the State.

END OF SECTION

SECTION 02675

TESTING AND CHLORINATION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

This section covers the requirements for testing and chlorination requirements for potable water mains.

A. Upon completion of the installation of the water system and pressure testing, the Contractor shall flush and disinfect the water system.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PIPE PRESSURE TESTS

A. All water mains and appurtenances, including service laterals and service connection shall be subjected to a hydrostatic pressure test as described below.

B. Test per Water System Standards but not less than 1-1/2 times working pressure for 2 hours. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for one hour: decrease to 0 psig. Slowly increase again to test pressure and hold for one more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within above limits.

C. A separate test shall be made on each section of the pipeline and its appurtenances whenever any section of the work can be segregated as a unit. If valves are available at each end of the section, the test shall be made between the valves. If valves are not available, a plug or cap shall be installed and properly braced to withstand the required test pressure. When a section of the work is ready for testing, the corporation stop shall be installed in accordance with the Standard Details, shall be connected by suitable pipeline to the test pump. A stopcock shall be installed between the tap and pump. A pressure gage furnished by the Engineer shall be installed between the stopcock and the tap.

D. The section of pipe to be tested shall be completely filled with water. Care shall be taken to insure that no air pockets exist. The stopcock shall be opened and the hydrostatic pressure raised to the required pressure called for on the plans.

E. The stopcock shall be shut and the gauge observed for 30 minutes. During the 30 minutes, the pressure shall not drop more than 10 psi.

F. The Engineer may require tests to cover any section or any combination of sections and may require additional tests to be made at any time.

G. All equipment and material necessary for tests shall be furnished and installed by the Contractor.

H. After all leaks have been stopped and the test is completed, brass Mueller plugs shall be furnished and installed by the Contractor in holes made for testing purposes.

3.2 CHLORINATION OF WATER PIPELINES

A. The Contractor shall install temporary risers adjacent to certain valves for disinfection purposes prior to the start to backfill. After the water mains have been certified by the department or otherwise directed by the Engineer, the Contractor shall remove the risers. The excavation necessary to expose these risers and the final backfill shall be performed by the Contractor.

The Contractor shall expose all service connections for chlorination. After completion of the chlorination and flushing, the Contractor shall backfill the connections.

B. Disinfection Procedure. The Contractor shall perform all work necessary for the disinfection of water pipelines under the supervision of the Engineer or his authorized representative.

C. Preliminary Flushing. Where conditions permit, mains shall be flushed with maximum available pressure and velocity. Adequacy of turnovers shall be determined by the absence of particles. During all flushing operations, the Engineer or his authorized representative shall determine the rate of water use.

D. Chlorination. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities, use procedure described in AWWA C651 or as described below:

1. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine. Isolate system or part thereof and allow to stand for 24 hours.

2. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine isolate and allow to stand for 3 hours.

3. Following allowed standing time, flush system with clean, potable water until chlorine does not remain in water coming from system.

E. Sampling. Unless otherwise directed, microbiological samples shall be taken in all cases after all chlorine has been flushed out as evidenced by the ortho-tolidine test. Sampling shall be done by the Contractor under the coordination of the department's inspector with sampling bottles furnished by the contractor. Under no circumstances shall sample bottles be rinsed out.

F. Disposal of Chlorinated Water. The Contractor shall be responsible for the proper disposal of chlorinated water to safeguard public health and environment in accordance with applicable Department of Health requirements.

G. Certification. New mains shall be certified after two (2) samples that are collected 24 hours apart in unchlorinated areas, and one (1) sample that is collected in normally chlorinated areas shows the absence of no total or fecal coliform and less than 200 colony forming units (CFU) of total bacteria.

Repetition of Procedure. Disinfection of mains shall be repeated until samples show absence of coliforms as outlined in Section 3.2 (G).

Water samples that show the presence of atypical colonies, debris or results inconsistent with existing water are subject to reconfirmation. The manager reserves the right to request and test additional water samples in the interest of safeguarding public health and safety at no additional cost to the department.

H. Procedure Guideline. The disinfection procedures hereinabove are guidelines only and the department does not guarantee certification after one application.

END OF SECTION

SECTION 04400

STONE MASONRY

PART 1 -GENERAL

1.1 GENERAL REQUIREMENTS: The work includes rock veneer work on the exterior walls of the Bladder Tank building.

1.2 REFERENCES: The latest publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. ASTM C 144 - Aggregate for Masonry Mortar

B. ASTM C 150 - Portland Cement

C. MSHTO T96 - Resistance to abrasion of small size course aggregate by the use of the Los Angeles Machine.

D. MIH - Stone Masonry Design Index

1.3 SUBMITTALS

A. Samples of Stones: Two samples of rock and stones.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery, storage, and handling of materials and equipment on the site shall avoid chipping, breakage, contact with soil or contaminating material, and exposure to the elements. All materials shall be kept clean and protected from physical damage. Portland and masonry cement and lime shall be protected from weather, contamination, and if contaminated or otherwise damaged due to caking, partial set or other damage, they shall be rejected and removed from the project.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lava Moss Rock: Lava moss rock shall be clean, free of seams and blemishes or other imperfections, and when tested in accordance with MSHTO test method T96 shall show a wear not to exceed 50%. Obtain all rock or stone from the same source, unless otherwise approved. Moss rock shall be weathered field lava rock, available locally, varied in size and shape.

B. Portland Cement: ASTM C150, Type I or II.

C. Aggregate For Mortar: ASTM C 144.

D. Water: Potable.

2.2 MORTAR MIX: The method of proportioning materials shall be by volume and in such manner that the specified proportions can be controlled and accurately maintained. Fine aggregate shall be measured in a damp loose condition. Mixing shall be by a mechanical batch mixer for at least three minutes. Mortar shall be freshly prepared and uniformly mixed in one of the following proportions to obtain 2000 psi, 28-day compressive strength. Use sufficient water consistent with satisfactory workability.

1 part Portland cement
3 parts fine aggregate

2.3 ANCHOR TIES: 12 gage galvanized steel loop ties or 22 gage galvanized corrugated steel ties.

PART 3 - EXECUTION

3.1 INSPECTION: Pre-erection inspections should be conducted by the Contractor from time to time during the course of the job to assure an acceptable working condition prior to commencement of work. Corrective measures for mis-alignment of the structural work, conduit, pipes, or openings shall be corrected.

3.2 APPEARANCE: Moss rock wall shall be similar in appearance to MIH Stone Masonry Index, MR-1, Moss Rock Veneer, Hidden Joint.

3.3 LAYING OF STONE MASONRY

A. Moss rock shall not be wetted at the time of use, and all surfaces to receive mortar shall be clean.

B. Walls shall be erected by experienced stone masons, with stones set as close together as possible. No spalls shall be used on exposed face of walls. Natural flat surface or cut face of moss rock without exposed tool marks, shall be used on the exposed face unless otherwise specified. Selected stones, roughly squared and pitched to lines, shall be used at all corners, angles, and end faces of walls. Stones for the tip course of walls shall be staggered alternately, extending approximately one-third of the way through the width of the top finish, with the top face practically flat. Unless otherwise specified or indicated, a 1 inch thick (average) mortar cap shall be used.

C. The first course shall be made up oflarge stones, set in a full bed of mortar. Generally, larger stones shall be used at the bottom of the wall, and smaller stones

used at the top. All stones shall be laid in a full bed of mortar, and be so placed as to interlock in position, forming an inter-locking bond. Keystones shall be distributed uniformly throughout walls, internally as well as at horizontal faces. At each layer, vertical joints shall be broken.

D. Anchor moss rock with 12 gage galvanized steel loop ties or 22 gage galvanized corrugated ties at 2 feet on centers both ways, unless otherwise indicated.

E. Joints: Fit stones together carefully to provide uniform width and finished with recess joints.

3.4 FINISHING AND CLEANING: Mortar splotches shall be cleaned up during the course of the work as necessary. All exposed surfaces shall be washed free of mortar, scrubbing with stiff non-metallic brushes if necessary. All joints shall be pointed where defective, or should be cut out and repointed if not bonded. Upon completion of the work the area shall be clean and free of all debris, surplus and waste materials, and rubbish.

END OF SECTION

Agenda
Pre –Offer Conference
Updated 5/19/26
for

Job No. F48C612A
Keaiwa Heiau State Recreation Area Water System Improvements
Aiea, Hawaii

Date: May 12, 2026 at 10 a.m.

Location: Microsoft Teams

1. **Introductions**

2. **Brief Description of Project and Scope**

   The work shall consist of the replacement of the existing water system at the park in Aiea, Hawaii. Major work elements include installation of approximately 4,211 linear feet of new 3-inch PVC waterline, replacement of existing water bladder tanks, construction of a new bladder tank enclosure building, demolition of the existing tank structure, and related site improvements. Additional work includes excavation, paving restoration, concrete work, utility connections, erosion and sediment control measures, traffic and safety controls, arborist services, and site restoration necessary to complete the water system upgrades.

   Bid Opening is on ~~May 28, 2026~~ June 1, 2026 at 2:00 p.m. Bids shall be uploaded to HIePRO.

   Last day to submit Questions/RFIs is ~~May 18, 2026~~ May 22 at 4:30 p.m.

3. **Questions**

   Note: All answers and comments are unofficial, the official answers will be distributed in an Addendum.

1. Summary

Meeting title	Pre-Offer Conference for Job No. F48C612A, Keaiwa Heiau State Recreation Area Water
Attended participants	10
Start time	5/12/26, 9:57:15 AM
End time	5/12/26, 10:33:11 AM

2. Participants

Name		Email
Suzuki, Valerie S	DLNR Engineering	Valerie.S.Suzuki@hawaii.gov
Cole Millare (External)	Mega Construction	cole@mega-construction.org
Roy Hardy (External)	Akinaka & Associates, Ltd.	wrh@akinaka.com
Sholin, Carl E.	DLNR State Parks	carl.e.sholin@hawaii.gov
Racine Hee (External)	D&C Construction	rhee@synagro.com
Reid Takasaki (External)	Akinaka & Associates, Ltd.	rit@akinaka.com
Scott Kunioka (External)	Akinaka & Associates, Ltd.	sak@akinaka.com
Kamisugi, Renee Y	DLNR State Parks	renee.y.kamisugi@hawaii.gov
Les Jeremiah Jr.	DLNR State Parks	leslie.b.jeremiah@hawaii.gov
Siale Vete	Hawaii Works Inc.	