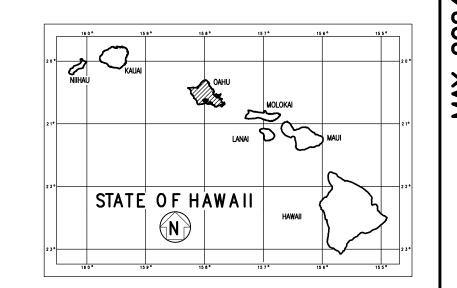
AGRIBUSINESS DEVELOPMENT CORPORATION JOB NO. 100002



WAIAHOLE WATER SYSTEM IMPROVEMENTS - WELL SITE

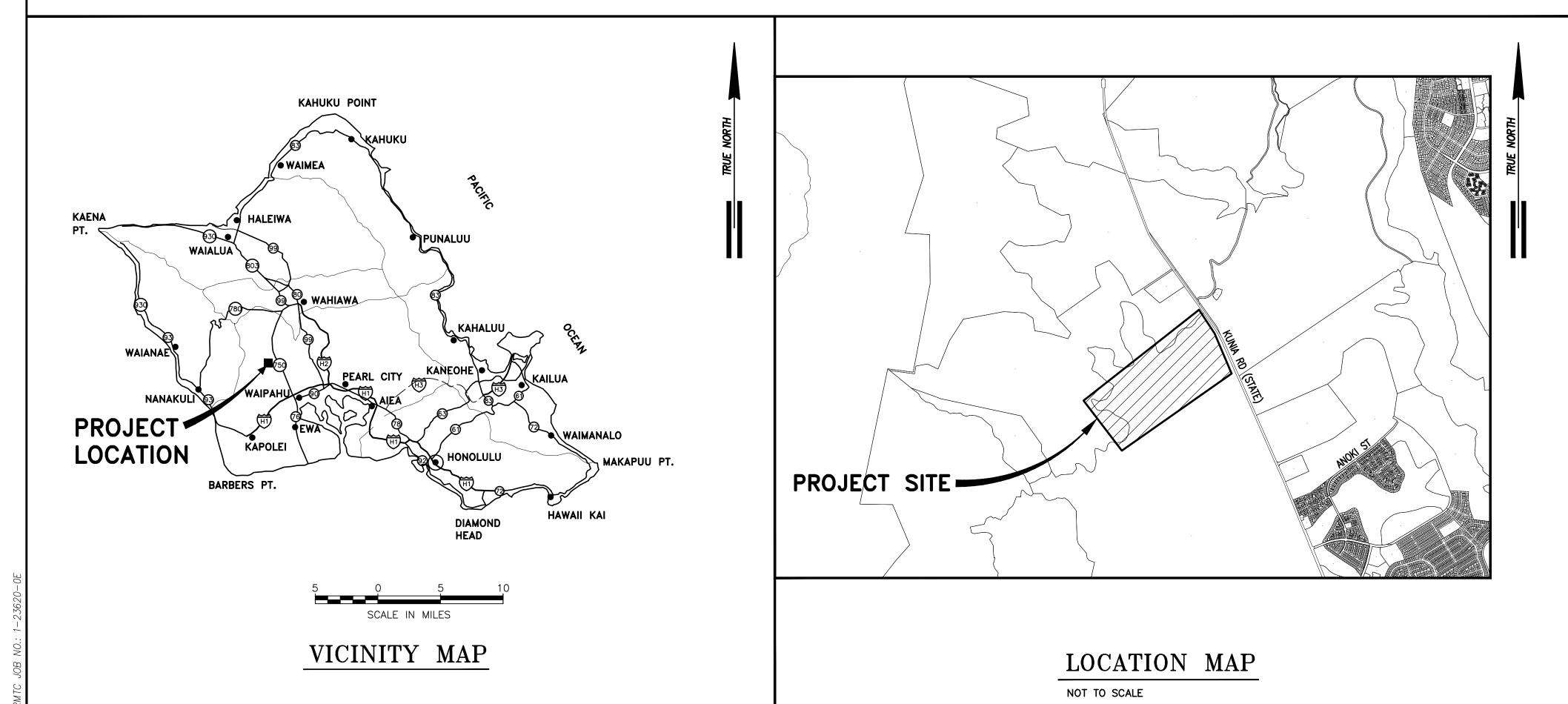
KUNIA, OAHU, HAWAII TAX MAP KEY: (1) 9-2-001: 001

PREPARED BY:



. M. TOWILL CORPORATION

33 2024 NORTH KING STREET SUITE 200 HONOLULU, HAWAI'I 96819



APPROVED:

EXECUTIVE DIRECTOR, AGRIBUSINESS DEVELOPMENT CORPORATION

DIRECTOR, DEPARTMENT OF PLANNING AND PERMITTING, CITY & COUNTY OF HONOLULU (FOR GRADING ONLY)

DATE

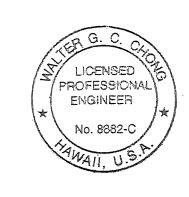
SHEET NO.				ADDDCALTON	LICT	
	DRAWING NO.	TITLE	40	ASPUALT, CONCRETE		LIQUE LEET
			AC ADJ	ASPHALT CONCRETE ADJUSTMENT	LT. M TREE	LIGHT, LEFT MONKEY POD TREE
<u>TITLE</u>						
			BC	BOTTOM CURB	MAX.	MAXIMUM
1	T001	TITLE SHEET	BDC	BOTTOM DROP CURB	MIN.	MINIMUM
			BFC	BOTTOM FACE CURB	MTCO, MTC	MUTUAL TELEPHONE COMPANY
0 11 11 11 11 11 11 11 11 11 11 11 11 11			B	BASE LINE	MTMH	MUTUAL TELEPHONE CO. MANHOLE
<u>CIVIL</u>			BV	BOTTOM VERTICAL	O.C.	ON CENTER
			BVCE	BEGINNING VERTICAL CURVE ELEVATION	0/E	OVERHEAD ELECTRICAL
2	C001	INDEX	BVCS	BEGINNING VERTICAL CURVE STATION	0/5	OFFSET
3	C001 C002 C003 C004	CONSTRUCTION NOTES 1	BW	BOTTOM WALL	PVMT., PAV'T.	PAVEMENT
4 5	C003 C004	CONSTRUCTION NOTES 2 CONSTRUCTION NOTES 3			· ·	
6	C100	PROPOSED WATERLINE AND WELL SYSTEM	BWS	BOARD OF WATER SUPPLY	PC	POINT OF CURVATURE
7	C101	WATER SYSTEM SCHEMATIC	<i>C</i> .	CHORD LENGTH	PI	POINT OF INTERSECTION
8 q	C102 C103 C104 C105 C106 C107 C201 C202 C203	KEY PLAN — EROSION AND SEDIMENT CONTROL PLANS EROSION AND SEDIMENT CONTROL NOTES & DETAILS	<i>C/L</i>	CHAIN LINKED	PM	PARKING METER
10	C104	EROSION AND SEDIMENT CONTROL PLAN — 1 (IRRIGATION LINE "A—1")	CATV	CABLE TELEVISION	PPB	PEDESTRIAN PUSH BUTTON
11	C105	EROSION AND SEDIMENT CONTROL PLAN — 1 (IRRIGATION LINE "A—1") EROSION AND SEDIMENT CONTROL PLAN — 2 (IRRIGATION LINE "C") EROSION AND SEDIMENT CONTROL PLAN — 3 (WELL SITE) EROSION AND SEDIMENT CONTROL PLAN — 4 (HAIRPIN TURN)	CBMH, CB	CATCH BASIN MANHOLE	PT	POINT OF TANGENCY
12 13	C106	EROSION AND SEDIMENT CONTROL PLAN — 3 (WELL SITE) EROSION AND SEDIMENT CONTROL PLAN — 4 (HAIRRIN TURN)	CIPP	CURE IN PLACE PIPE	PVC	POLYVINYL CHLORIDE
13 14	C201	KFY PIAN - SIIF PIANS AND PIAN & PROFILES				
15	C202	IRRIGATION LINE "A-1" PLAN & PROFILE - 1 (STA. 0+00 TO 4+00)	<u> </u>	CENTERLINE	PVI	POINT OF VERTICAL INTERSEC
16 17	C203	IRRIGATION LINE "A-1" PLAN & PROFILE - 2 (STA. 4+00 TO END)	CLR	CLEAR	R	RADIUS
1 / 18	C204 C205	IRRIGATION LINE "A-1" PLAN & PROFILE - 1 (STA. 0+00 TO 4+00) IRRIGATION LINE "A-1" PLAN & PROFILE - 2 (STA. 4+00 TO END) IRRIGATION LINE "C-1" PLAN & PROFILE - 1 (STA. 0+00 TO 5+00) IRRIGATION LINES "C-1" PLAN & PROFILE - 2 (STA. 5+00 TO END)	CO	CLEAN OUT	R/W, ROW	RIGHT—OF—WAY
19	C401	WELL SITE & GRADING PLAN	CONC.	CONCRETE	RCP	REINFORCED CONCRETE PIPE
20	C402	HAIRPIN TURN SITE PLAN & DETAILS	СТВ	CABLE TV BOX	RMV	REMOVE
21 22 23	C501 C502 C503	MISCELLANEOUS DETAILS — 1	DDC	DEPT. OF DESIGN AND CONSTRUCTION	RT.	RIGHT
22 23	C502	MISCELLANEOUS DETAILS — 2 CONCRETE PAD DETAIL			πι.	
25		CONCIL I NO DEINIE	DET.	DETAIL	5	SEWER
<u>IECHANICAL</u>			DI	DRAIN INLET	SDMH	STORM DRAIN MANHOLE
ILVIII II TIVIAL			DIA.	DIAMETER	SFM	SEWER FORCE MAIN
24	14004	WELL DINE DIAN & CECTONS	DMH	DRAIN MANHOLE	SHT.	SHEET
24 25	M201 M202	WELL PUMP PLAN & SECTIONS WELL PUMP SECTIONS & DETAILS				
25 26	M202 M203	WELL PUMP SECTIONS & DETAILS WELL PUMP DETAILS I	DPP 2004	DEPT. OF PLANNING AND PERMITTING	SIG.	SIGNAL
27	M204	WELL PUMP DETAILS II	DPW	DEPT. OF PUBLIC WORKS	SLB	STREET LIGHT BOX
			DR	DIMENSION RATIO	SMH	SEWER MANHOLE
			DTS	DEPT. OF TRANSPORTATION SERVICES	SP	SIGN POST, SIGN POLE
			DW	DRIVEWAY	SS	STAINLESS STEEL
LECTRICAL						
			ED 5.50	EDGE	STA.	STATION
28 29	E001	SYMBOLS LIST, GENERAL NOTES	ELEC.	ELECTRICAL	STD.	STANDARD
<i>29</i>	E002	HECO NOTES I	ELEV.	ELEVATION	SW	SIDEWALK
30 31	E003 E004	HECO NOTES II DUCT SECTION DETAILS AND REQUIREMENTS	EP .	ELECTRIC POLE	T	TANGENT
31 32	E101	WELL ELECTRICAL SITE PLAN	EVCE	ENDING VERTICAL CURVE ELEVATION	T(ug)	TELEPHONE (UNDERGROUND)
33	E102	ELECTRICAL PLAN			· - ·	,
34	E103	WELL PUMP ELECTRICAL PLAN	EVCS	ENDING VERTICAL CURVE STATION	<i>TC</i>	TOP OF CURB
<i>35</i>	E201 E202	ONE—LINE DIAGRAM WELL PUMP CONTROL SCHEMATIC DIAGRAM I	EXIST., EX	EXISTING	TCP	TRAFFIC CONTROL PANEL
<i>37</i>	E202 E203	SCADA SYSTEM SCHEMATIC DIAGRAM SCADA SYSTEM SCHEMATIC DIAGRAM	FAB	FIRE ALARM BOX	TDC	TOP DROP CURB
<i>38</i>	E301	WELL PUMP MCC ELEVATION	FB	FRONT TO BACK	TEL.	TELEPHONE
<i>39</i>	E401	MISCELLANEOUS ELECTRICAL DETAILS I	FH	FIRE HYDRANT	THK.	THICKNESS
40 41	E402 E403	MISCELLANEOUS ELECTRICAL DETAILS II PORTABLE GENERATOR TERMINATION CABINET				
41 42	E501	EXISTING RESERVOIR ELECTRICAL SITE PLAN	FLR.	FLOOR	π	TRAFFIC
₹2		EXISTING RESERVOIN ELECTRICAL SITE I DAY	FRP	FIBERGLASS REINFORCED POLYESTER	TLB	TRAFFIC SIGNAL LIGHT
			FT.	FOOT/FEET	TLP	TRAFFIC LIGHT POLE
			G	GAS	TMH	TRAFFIC MANHOLE
			GEN	GENERAL	TMK	TAX MAP KEY
			GP	GUARD POST	TP	TOP OF PIPE
			GRD	GROUND	<i>1</i> S	TOP OF STEM
			GUT.	GUTTER	TSB	TRAFFIC SIGNAL BOX
			GV	GAS VALVE	TSP	TRAFFIC SIGNAL POLE
			GW	GUY WIRE	75/ 7V	
						TOP VERTICAL
			H	HEIGHT OR HORIZONTAL	<i>TW</i>	TOP OF WALL
			HDPE	HIGH DENSITY POLYETHYLENE	TYP.	TYPICAL
	1		HECO	HAWAIIAN ELECTRIC COMPANY	UHMW	ULTRA HIGH MOLECULAR WEI
					VC	VERTICAL CURVE
			#1-/	HYDRAULIC GRADE LINE		
			HGL ut	HYDRAULIC GRADE LINE		WIIP
			HT	HAWAIIAN TELEPHONE COMPANY	W/	WITH
			HT H.T.M.H.	HAWAIIAN TELEPHONE COMPANY HAWAIIAN TELEPHONE MANHOLE	W/ W.L.	WATER LINE
			HT	HAWAIIAN TELEPHONE COMPANY	W/	
			HT H.T.M.H.	HAWAIIAN TELEPHONE COMPANY HAWAIIAN TELEPHONE MANHOLE	W/ W.L.	WATER LINE
			HT H.T.M.H. INV. Lc	HAWAIIAN TELEPHONE COMPANY HAWAIIAN TELEPHONE MANHOLE INVERT LENGTH OF CURVE	W/ W.L. WM WMH	WATER LINE WATER METER WATER MANHOLE
			HT H.T.M.H. INV.	HAWAIIAN TELEPHONE COMPANY HAWAIIAN TELEPHONE MANHOLE INVERT	W/ W.L. WM	WATER LINE WATER METER

WAIAHOLE WATER SYSTEM IMPROVEMENTS -WELL SITE



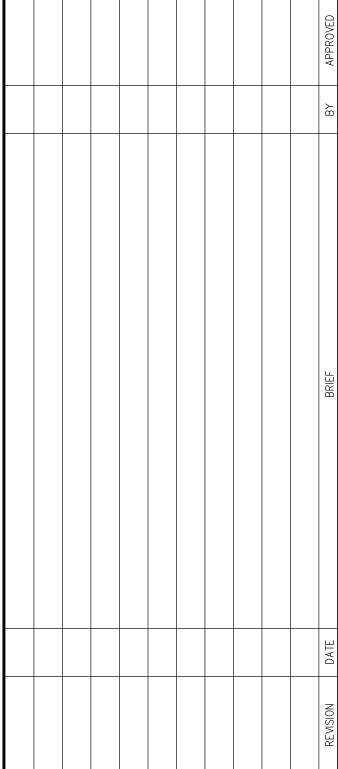
R. M. TOWILL CORPORATION

Manning * Engineering * Environmental Services * Photogrammetry * Surveying * Construction Manageme
2024 North King Street Suite 209
Honolulu Harvaii 96819



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE 4/30/26
EXP. DATE



APPROVED BY

CHECKED BY AS SHOWN MAY 2024 DPP FILE NO. 20XX/CP-XXX

INDEX

CONSTRUCTION NOTES

- 1. ALL APPLICABLE CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. SEPTEMBER 1986 AND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984, AS AMENDED, OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU AND THE COUNTIES OF KAUAI, MAUI, AND HAWAII. ALSO, ALL CONSTRUCTION WORK RELATING TO HIGH DENSITY POLYETHYLENE DRAIN PIPES SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. HIGH DENSITY POLYETHYLENE SMOOTH INTERIOR CORRUGATED DRAIN PIPES, MATCH 2013, OF THE DEPARTMENT OF PLANNING AND PERMITTING, CITY AND COUNTY OF HONOLULU.
- 2. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
- 3. NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW INTO EXISTING CITY DRAINAGE SYSTEMS, OR ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.
- 4. THE GENERAL CONTRACTOR/DEVELOPER/OWNER OF THE PROJECT SHALL BE RESPONSIBLE FOR CONFORMANCE WITH APPLICABLE PROVISIONS OF THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS," AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL," AS WELL AS CHAPTER 14 OF THE REVISED ORDINANCES OF HONOLULU, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.

THE GENERAL CONTRACTOR/DEVELOPER/OWNER OF THE PROJECT SHALL OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE(S) FOR THE FOLLOWING:

- 1. STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES THAT
- DISTURB ONE (1) ACRE OR MORE. AND 2. DISCHARGES OF HYDROTESTING EFFLUENT, DEWATERING EFFLUENT, AND WELL DRILLING EFFLUENT TO STATE WATERS.

IN ACCORDANCE WITH STATE LAW, ALL DISCHARGES RELATED TO PROJECT CONSTRUCTION OR OPERATIONS ARE REQUIRED TO COMPLY WITH STATE WATER QUALITY STANDARDS (HAWAII ADMINISTRATIVE RULES, CHAPTER 11-54). BEST MANAGEMENT PRACTICES SHALL BE USED TO MINIMIZE OR PREVENT THE DISCHARGE OF SEDIMENT, DEBRIS, AND OTHER POLLUTANTS TO STATE WATERS. PERMIT COVERAGE IS AVAILABLE FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT http://health.hawaii.gov/cwb. THE OWNER/DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL. STATE, OR LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

5. CONFINED SPACE

FOR ENTRY BY CITY PERSONNEL, INCLUDING INSPECTORS, INTO A PERMIT REQUIRED CONFINED SPACE AS DEFINED IN 29 CFR PART 1910.146(B), THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING:

- I. ALL SAFETY EQUIPMENT REQUIRED BY THE CONFINED SPACE REGULATIONS APPLICABLE TO ALL PARTIES OTHER THAN THE CONSTRUCTION INDUSTRY, TO INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING:
- A. FULL BODY HARNESSES FOR UP TO TWO PERSONNEL
- B. LIFELINE AND ASSOCIATED CLIPS
- C. INGRESS/EGRESS AND FALL PROTECTION EQUIPMENT D. TWO-WAY RADIOS (WALKIE-TALKIES) IF OUT OF LINE-OF-SIGHT
- E. EMERGENCY (ESCAPE) RESPIRATOR (10 MINUTE DURATION)
- F. CELLULAR TELEPHONE TO CALL FOR EMERGENCY ASSISTANCE
- G. CONTINUOUS GAS DETECTOR (CALIBRATED) TO MEASURE OXYGEN, HYDROGEN, SULFIDE, CARBON MONOXIDE AND FLAMMABLES (CAPABLE OF MONITORING AT A DISTANCE OF AT LEAST 20—FEET AWAY)
- H. PERSONAL MULTI-GAS DETECTOR TO BE CARRIED BY INSPECTOR
- II. CONTINUOUS FORCED AIR VENTILATION ADEQUATE TO PROVIDE SAFE ENTRY
- III. ONE ATTENDANT/RESUCE PERSONNEL TOPSIDE (TWO, IF CONDITIONS WARRANT
- 6. PURSUANT TO CHAPTER 6E, HRS, IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HONOLULU POLICE DEPARTMENT. THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES—HISTORIC PRESERVATION DIVISION (692-8015).
- 7. FOR PROJECTS ABUTTING STATE HIGHWAYS' RIGHTS-OF-WAY, THE OWNER OR HIS AUTHORIZED REPRESENTATIVE SHALL NOTIFY THE STATE DEPARTMENT OF TRANSPORTATION. HIGHWAYS DIVISION. OAHU DISTRICT. DRAINAGE DISCHARGE UNIT AT 831-6793 FOR AN ASSESSMENT OF STATE HIGHWAYS PERMIT REQUIREMENTS.
- 8. FOR BENCH MARK, SEE SHEET C100.

GRADING NOTES

- 1. ALL GRADING WORK SHALL BE DONE IN ACCORDANCE WITH CHAPTER 14, ARTICLES 13, 14, 15 AND 16, AS RELATED TO GRADING, SOIL EROSION AND SEDIMENT CONTROL OF THE REVISED ORDINANCES HONOLULU, 1990, AS AMENDED AND PER SOILS REPORT BY GEOLABS, INC. ENTITLED "GEOTECHNICAL ENGINEERING EXPLORATION WAIAHOLE WATER SYSTEM IMPROVEMENT" DATED JANUARY 26, 2021.
- 2. NO CONTRACTOR SHALL PERFORM ANY GRADING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES. STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR. THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.
- 3. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60.1, "AIR POLLUTION CONTROL."
- 4. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE
- 5. ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATERS FROM DAMAGING THE CUT FACE OF AN EXCAVATION OR THE SLOPED SURFACES OF A FILL. FURTHERMORE, ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE.
- 6. ALL SLOPES AND EXPOSED AREAS SHALL BE GRASSED OR PAVED (FOR AREAS WITHIN PROPOSED ROADWAY RIGHT-OF-WAY) OR SPRAYED WITH SOIL CEMENT CHEMICAL STABILIZER OR APPROVED EQUAL (FOR AREAS OUTSIDE OF THE PROPOSED ROADWAY RIGHT-OF-WAY) AS SOON AS FINAL GRADES HAVE BEEN ESTABLISHED. EROSION CONTROL APPLICATION SHALL NOT BE DELAYED UNTIL ALL GRADING WORK HAS BEEN COMPLETED. GRADING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA WITHIN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED SHALL BE PROTECTED.
- 7. FILLS ON SLOPES STEEPER THAN 5:1 SHALL BE KEYED.
- 8. THE CITY SHALL BE INFORMED OF THE LOCATION OF THE BORROW/DISPOSAL SITE FOR THE PROJECT WHEN THE APPLICATION FOR A GRADING PERMIT IS MADE. THE BORROW/DISPOSAL SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING
- 9. NO GRADING WORK SHALL BE DONE ON SATURDAYS, SUNDAYS AND HOLIDAYS AT ANY TIME WITHOUT PRIOR NOTICE TO THE DIRECTOR D.P.P. PROVIDED SUCH GRADING WORK IS ALSO IN CONFORMANCE WITH THE COMMUNITY NOISE CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 46, "COMMUNITY NOISE CONTROL".
- 10. THE LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE GRADING WORK.
- 11. THE GENERAL CONTRACTOR/DEVELOPER/OWNER OF THE PROJECT SHALL BE RESPONSIBLE FOR CONFORMANCE WITH APPLICABLE PROVISIONS OF THE HAWAII ADMINISTRATIVE RULES. TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS," AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL." AS WELL AS CHAPTER 14 OF THE REVISED ORDINANCES OF HONOLULU, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.

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IN ACCORDANCE WITH STATE LAW, ALL DISCHARGES RELATED TO PROJECT CONSTRUCTION OR OPERATIONS ARE REQUIRED TO COMPLY WITH STATE WATER QUALITY STANDARDS (HAWAII ADMINISTRATIVE RULES. CHAPTER 11-54). BEST MANAGEMENT PRACTICES SHALL BE USED TO MINIMIZE OR PREVENT THE DISCHARGE OF SEDIMENT. DEBRIS. AND OTHER POLLUTANTS TO STATE WATERS. PERMIT COVERAGE IS AVAILABLE FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT http://health.hawaii.gov/cwb. THE OWNER/DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL. STATE. OR LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

- 12. WHERE APPLICABLE AND FEASIBLE THE MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTH MOVING PHASE OF THE GRADING IS
- 13. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.
- 14. TEMPORARY EROSION CONTROL PROCEDURES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO APPLICATION FOR GRADING PERMIT.
- 15. IF THE GRADING WORK INVOLVES CONTAMINATED SOIL. THEN ALL GRADING WORK SHALL BE DONE IN CONFORMANCE WITH APPLICABLE STATE AND FEDERAL REQUIREMENTS.
- 16. FOR NON-CITY PROJECTS. THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING Branch, D.P.P. At 768-8084 to arrange for inspectional services and submit TWO (2) SETS OF APPROVED CONSTRUCTION PLANS SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK. FOR CITY PROJECTS, THE CONTRACTOR SHALL COORDINATE INSPECTIONAL SERVICES WITH THE RESPONSIBLE CITY AGENCY.
- 17. PURSUANT TO CHAPTER 6E, HRS, IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HONOLULU POLICE DEPARTMENT, THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES—HISTORIC PRESERVATION DIVISION (692-8015). IN ADDITION, FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL INFORM THE CIVIL ENGINEERING BRANCH, D.P.P. (768-8084); AND FOR CITY PROJECTS, NOTIFY THE RESPONSIBLE CITY AGENCY.
- 18. FOR ALL PROJECTS, WHICH WILL DISTURB ONE (1) ACRE OR MORE OF LAND, THE CONTRACTOR SHALL NOT START CONSTRUCTION UNTIL A NOTICE OF GENERAL PERMIT COVERAGE (NGPC) IS RECEIVED FROM THE DEPARTMENT OF HEALTH, STATE OF HAWAII, AND HAS SATISFIED ANY OTHER APPLICABLE REQUIREMENTS OF THE NPDES PERMIT PROGRAM. ALSO, FOR NON-CITY AND OTHER NON-GOVERNMENTAL AGENCY PROJECTS, THE CONTRACTOR SHALL PROVIDE A WRITTEN COPY OF THE NGPC TO THE PERMITTING AND INSPECTION SECTION, CIVIL ENGINEERING BRANCH, D.P.P., AT LEAST SEVEN (7) CALENDAR DAYS BEFORE THE START OF THE CONSTRUCTION. FOR CITY OR OTHER GOVERNMENTAL PROJECTS. THE CONTRACTOR SHOULD PROVIDE A WRITTEN COPY OF THE NGPC TO THE APPROPRIATE CITY DEPARTMENT OR GOVERNMENTAL AGENCY PER THEIR REQUIREMENTS.

GRADING NOTES CON'T

- 19. ALL GRADING AND CONSTRUCTION WORK SHALL IMPLEMENT MEASURES TO ENSURE THAT THE DISCHARGE OF POLLUTANTS FROM THE CONSTRUCTION SITE WILL BE REDUCED TO THE MAXIMUM EXTENT PRACTICABLE AND WILL NOT CAUSE OR CONTRIBUTE TO AN EXCEEDANCE OF WATER QUALITY STANDARDS.
- 20. NON-COMPLIANCE TO ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHALL COMMENCE IMMEDIATELY. ALL COSTS INCURRED SHALL BE BILLED TO THE VIOLATOR. FURTHERMORE, VIOLATORS SHALL BE SUBJECTED TO ADMINISTRATIVE. CIVIL AND/OR CRIMINAL PENALTIES.
- 21. FOR BENCH MARK, SEE SHEET C199.

PUBLIC HEALTH, SAFETY AND CONVENIENCE

- 1. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY.
- 2. THE CONTRACTOR AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.
- 3. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, BARRICADES, AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION. CONVENIENCE. AND SAFETY OF THE PUBLIC.

STATE OF HAWAII UTILITY NOTIFICATION CENTER

- 1. PRIOR TO EXCAVATION. THE CONTRACTOR IS REQUIRED BY SECTION 269E OF HAWAII REVISED STATUES TO CONTRACT THE HAWAII ONE CALL CENTER AT 1-866-423-7287.
- 2. THE CONTRACTOR SHALL COORDINATE WITH EMERGENCY SERVICES AND UTILITY COMPANIES TO ENSURE THAT UTILITY RELOCATIONS MEET THEIR NEEDS.

<u>TEMPORARY DUST CONTROL</u>

- 1. THE PROJECT SITE THAT IS CLEARED OF VEGETATION SHALL BE KEPT DAMP FOR SEVEN (7) DAYS A WEEK. AT THE END OF EACH DAY. THE SITE SHALL BE SUFFICIENTLY DAMPENED SO THAT THE SITE WILL REMAIN MOISTENED DURING THE
- 2. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO THAT EXCAVATION. EMBANKMENT, AND IMPORTED MATERIAL SHALL BE DAMPENED TO PREVENT DUST PROBLEMS.

MECHANICAL/ELECTRICAL DIVISION NOTES:

- 1. THE CONTRACTOR SHALL NOTIFY THE JOINT POLE COMMITTEE TWO (2) WEEKS IN ADVANCE OF ANY RELOCATION OF UTILITY POLE(S) THAT MAY BE NECESSARY.
- 2. THE CONTRACTOR SHALL NOTIFY THE MECHANICAL/ELECTRICAL DIVISION, DEPARTMENT OF DESIGN AND CONSTRUCTION, THREE (3) WORKING DAYS PRIOR TO COMMENCING WORK ON THE STREET LIGHTING SYSTEM (PHONE: 768-8431).
- 3. THE STREET LIGHTING SYSTEM SHALL BE KEPT OPERATIONAL DURING CONSTRUCTION. ANY RELOCATION REQUIRED SHALL BE APPROVED BY THE MECHANICAL/ELECTRICAL DIVISION, DEPARTMENT OF DESIGN AND CONSTRUCTION, AND PAID FOR BY THE CONTRACTOR.
- THE LOCATIONS OF THE EXISTING UNDERGROUND STREET LIGHT FACILITIES SHOWN ON THE PLANS ARE FROM EXISTING PLANS AND ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY TO THE EXISTING STREET LIGHT FACILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO THE EXISTING STREET LIGHTING FACILITIES. ANY AND ALL DAMAGES TO THESE FACILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS COST IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY AND COUNTY OF HONOLULU.
- 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO THE CITY'S EXISTING COMMUNICATIONS FIBER OPTIC CABLE SYSTEM. ANY AND ALL DAMAGES TO THESE FACILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS COST IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY AND COUNTY OF HONOLULU.

ARCHAEOLOGICAL NOTES

- KNOWN ARCHAEOLOGICAL SITE(S) ARE IDENTIFIED AND SHOWN ON THE DRAWINGS. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL FLAG ALL ARCHAEOLOGICAL SITES WITH THE ASSISTANCE OF THE PROJECT ARCHAEOLOGIST, CULTURAL SURVEYS, INC.
- 2. IF, DURING CONSTRUCTION, ANY ARCHAEOLOGICAL SITES OR REMAINS (SUCH AS ARTIFACTS, SHELL, BONE, OR CHARCOAL DEPOSITS, HUMAN BURIALS, ROCK OR CORAL ALIGNMENTS, PAVINGS, OR WALLS) ARE ENCOUNTERED, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HONOLULU POLICE DEPARTMENT, THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES—HISTORIC PRESERVATION DIVISION (692-8015). IN ADDITION, FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL INFORM THE CIVIL ENGINEERING BRANCH, D.P.P. (768-8084); AND FOR CITY PROJECTS, NOTIFY THE RESPONSIBLE CITY AGENCY.
- ALL TRENCHING AND EXCAVATION WORK IN THE ARCHAEOLOGICAL SITE(S) SHALL BE MONITORED BY AN ARCHAEOLOGIST RETAINED BY THE OWNER FOR THIS PROJECT.

WAIAHOLE WATER SYSTEM **IMPROVEMENTS -WELL SITE**

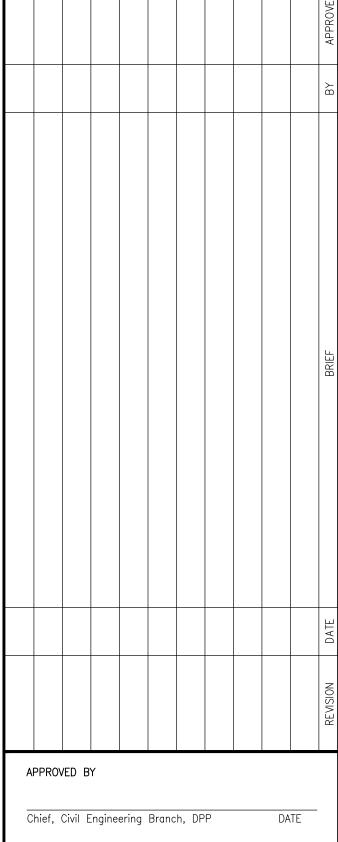


R. M. TOWILL CORPORATION 2024 North King Street Suite 206 Honolulu Hawaii 96819



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

Walt-G.C-7 4/30/26



Chief, Traffic Review Branch, DPP

ENGINEER DRAFTSMAN CHECKED BY SCALE AS SHOWN MAY 2024 DPP FILE NO. 20XX/CP-XXX

CONSTRUCTION NOTES

WATER NOTES

- 1. UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND CONSTRUCTION OF WATER SYSTEM FACILITIES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CITY AND COUNTY OF HONOLULU BOARD OF WATER SUPPLY'S "WATER SYSTEM STANDARDS" DATED 2002, THE "WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS", VOLUME 3, DATED 1991, AND ALL SUBSEQUENT AMENDMENTS AND ADDITIONS.
- 2. TEST PRESSURE SHALL BE 150 PSI. DURING THE 30-MINUTE PRESSURE TEST, THE PRESSURE SHALL NOT DROP MORE THAN 10 PSI.
- 3. THE CONTRACTOR SHALL CHLORINATE THE ENTIRE INSIDE SURFACE OF EACH PIPE AND FITTING WITH DISINFECTION SOLUTION OF 5 OUNCES OF SODIUM HYPOCHLORITE MIXED WITH 10 GALLONS OF WATER. (FOR CONNECTION ONLY)
- 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL WATER LINES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE ESPECIALLY CAREFUL WHEN EXCAVATING BEHIND WATER LINES, TEES, AND BENDS WHEREVER THERE IS A POSSIBILITY OF WATER LINE MOVEMENT DUE TO THE REMOVAL OF THE SUPPORTING EARTH BEYOND THE EXISTING REACTION BLOCKS. THE CONTRACTOR SHALL TAKE WHATEVER MEASURES NECESSARY TO PROTECT THE WATER LINES, SUCH AS CONSTRUCTING SPECIAL REACTION BLOCKS AND/OR MODIFYING HIS CONSTRUCTION METHOD.
- 5. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES AS SHOWN ON THE PLANS ARE FROM THE LATEST AVAILABLE DATA BUT IS NOT GUARANTEED AS TO THE ACCURACY OR THE ENCOUNTERING OF OTHER OBSTACLES DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR ALL DAMAGES TO EXISTING UTILITIES. THE CONTRACTOR SHALL NOT ASSUME THAT WHERE NO UTILITIES ARE SHOWN, THAT NONE FXIST.
- 6. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL BY BOARD OF WATER SUPPLY, THE MANUFACTURER'S CERTIFICATION THAT ALL CAST IRON (GRAY OR DUCTILE) FITTINGS FOR THE PROJECT CONFORM IN ALL RESPECTS TO THE SPECIFICATION.
- 7. POLYGON SHAPE FOR MECHANICAL JOINT GLANDS AS DESCRIBED IN AWWA STANDARD C111 SHALL BE "STRAIGHT—SIDED" OR AN APPROVED EQUAL ON A JOB TO JOB BASIS.
- 8. RE-APPROVAL SHALL BE REQUIRED IF THIS PROJECT IS NOT UNDER CONSTRUCTION WITHIN A PERIOD OF TWO (2) YEARS.
- 9. CONTRACTOR SHALL CUT AND PLUG ALL EXISTING UNUSED LATERALS AT THE MAIN WHETHER OR NOT SHOWN ON THE PLANS. THE DAMAGED AREA SHALL BE REPAIRED TO AN EQUAL OR BETTER CONDITION THAN THE IMMEDIATE AREA. ALL WORK SHALL BE DONE AT THE EXPENSE OF THE CONTRACTOR.
- 10. THE CONTRACTOR SHALL FURNISH AND INSTALL POLYETHYLENE WRAP, 3 FEET MINIMUM AT ALL TAPS (FOR DI PIPE AND COPPER LATERAL COMBINATION ONLY).
- 11. THE CONTRACTOR/DEVELOPER SHALL OBTAIN A NPDES PERMIT PRIOR TO CHLORINATION AND/OR DEWATERING. A COPY OF THE PERMIT SHALL BE SUBMITTED TO THE BOARD OF WATER SUPPLY, CAPITAL PROJECTS DIVISION, CONSTRUCTION SECTION.
- 12. SOIL RESISTIVITY, FOR THE SITE HAS A CORROSION RATING OF ALL REQUIRED ELECTRICAL ISOLATION PROCEDURES AND CORROSION CONTROL REQUIREMENTS SHALL APPLY.
- 13. PIPE CUSHION SHALL BE OF HIGH RESISTIVITY MATERIAL. THE CONTRACTOR SHALL SUBMIT A SOIL CERTIFICATION THAT HIGH RESISTANT CUSHION MATERIAL HAS A RESISTIVITY GREATER THAN 5,000 OHMCM. REMAINDER OF THE BACKFILL MATERIAL SHALL BE AS SPECIFIED IN VOLUME 1 OF THE WATER SYSTEM STANDARDS. PIPE CUSHION AND BACKFILL MATERIAL SHALL CONTAIN NO HAZARDOUS SUBSTANCES ABOVE REGULATORY ACTION LEVELS INCLUDING BUT NOT LIMITED TO LEAD, ASBESTOS, MERCURY, CHROMIUM, CADMIUM, ZINC, STRONTIUM, AND POLYCHLORINATED BIPHENYLS (PCB).
- 14. UPON COMPLETION OF THE PROJECT, THE DEVELOPER SHALL PROVIDE A CERTIFICATE FROM A REGISTERED SOILS ENGINEER CERTIFYING THAT THE ROAD PRISM HAS BEEN CONSTRUCTED IN ACCORDANCE TO CITY AND COUNTY ROAD STANDARDS
- 15. TWO-WAY BLUE REFLECTIVE HYDRANT MARKERS TYPE DB SHALL BE INSTALLED AT ALL NEW FIRE HYDRANT INSTALLATIONS. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS OF HYDRANT MARKERS WITH THE NEAREST HONOLULU FIRE DEPARTMENT BATTALION CHIEF.
- 16. CLEANING SHALL BE BY THE USE OF "PIGS" INTRODUCED INTO THE PIPELINE AND RUN COMPLETELY THROUGH ALL INSTALLED PIPELINES AND ALL BRANCH LINES FOR FIRE HYDRANTS. "PIGGING" OF SERVICE LATERALS IS NOT REQUIRED. BARE FOAM "PIGS" SHALL BE USED TO SWAB PIPING CLEAN AS EACH LENGTH OF THE PIPELINE IS INSTALLED. EACH "PIG" SHALL CONSIST OF A CYLINDRICAL PIECE OF POLYURETHANE FOAM WITH A DENSITY OF 3-7 POUNDS PER CUBIC FOOT AND A VINYL-COATED NOSE. OUTSIDE DIAMETER OF THE "PIG" SHALL BE EQUAL TO 1-1/4 TO 1- 1/2 TIMES THE INSIDE DIAMETER OF THE PIPE BEING INSTALLED. THE LENGTH OF THE "PIG" SHALL BE 1-1/2 TO 2 TIMES ITS DIAMETER. PRIOR TO USE, THE "PIG" SHALL BE SUBMERGED IN A CHLORINE SOLUTION OF 1 OZ. OF 5% CHLORINE BLEACH IN 5 GALLONS OF WATER. "PIGGING" OF THE PIPELINE SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE NEW PIPELINE.
- 17. ALL SECTIONS OF THE WATER MAIN REQUIRING REINFORCED CONCRETE JACKETING SHALL BE DUCTILE IRON PIPE CLASS 53 WITH DUCTILE IRON FITTINGS.
- 18. BALL CORP AND BALL STOP SHALL BE USED IN LIEU OF A CORPORATION STOP AND STOPCOCK, RESPECTIVELY.

WATER NOTES CON'T

- 23. THE CONTRACTOR SHALL FOLLOW THE FOLLOWING REVISED CHLORINATION AND WATER SAMPLING PROCEDURES:
 - THE FOLLOWING CHLORINATION AND WATER SAMPLE COLLECTION PROCEDURE SHALL APPLY TO ALL WATER PIPELINE PROJECTS:

STEP 1: CHLORINATE MAIN BY FILLING WITH WATER AND INTRODUCING CHLORINE IN SUFFICIENT QUANTITY TO OBTAIN A MINIMUM CHLORINE CONCENTRATION OF 50 PARTS PER MILLION. LEAVE CHLORINATED WATER IN MAIN OVERNIGHT.

STEP 2: FLUSH MAIN WITH FRESH WATER UNTIL ALL CHLORINE HAS BEEN FLUSHED OUT AS EVIDENCED BY THE N,N—DIETHYL—P—PHENYLENEDIAMINE (DPD) TEST, THEN COLLECT A WATER SAMPLE WHILE CONTINUING TO FLUSH THE MAIN.

STEP 3: REPEAT STEPS 1 AND 2. AFTER COLLECTING THE SECOND WATER SAMPLE, STOP FLUSHING AND ALLOW THE WATER TO STAND IN THE MAIN OVERNIGHT.

STEP 4: THOROUGHLY FLUSH THE MAIN WITH FRESH WATER UNTIL ALL WATER THAT HAD BEEN STANDING IN THE MAIN OVERNIGHT HAS BEEN FLUSHED OUT. STOP FLUSHING AND LET THE WATER STAND IN THE MAIN FOR ONE HOUR. COLLECT A WATER SAMPLE.

- B. THE MAIN IS DEEMED ACCEPTABLE AND CERTIFIED WHEN (1) TWO CONSECUTIVE WATER SAMPLES, COLLECTED 24 HOURS APART UNDER STEPS 1 AND 2, SHOW NO TOTAL AND FECAL COLIFORM AND LESS THAN 200 COLONY FORMING UNITS (CFU) OF TOTAL BACTERIA AND (2) THE SAMPLE OF WATER HELD IN THE MAIN FOR ONE HOUR, COLLECTED UNDER STEP 4, ALSO SHOWS NO TOTAL AND FECAL COLIFORM AND LESS THAN 200 CFU OF TOTAL BACTERIA.
- C. CHLORINATION, FLUSHING, SAMPLING AND TESTING WILL BE EXTENDED SHOULD UNSATISFACTORY RESULTS BE ENCOUNTERED. ANY SAMPLE THAT SHOWS POSITIVE COLIFORM PRESENCE OR TOTAL BACTERIA GREATER THAN 200 CFU IS UNSATISFACTORY.
- D. STEPS 1 AND 2 MAY BE REPEATED BEFORE COLLECTING THE ONE HOUR HOLD SAMPLE SPECIFIED IN STEP 4. REPEATING STEPS 1 AND 2 IS RECOMMENDED IN THE EVENT SAMPLES SHOW THE PRESENCE OF COLIFORMS AND/OR INCREASING TOTAL BACTERIAL RESULTS FROM ONE SAMPLE TO THE NEXT.
- E. WATER SAMPLES THAT SHOW THE PRESENCE OF ATYPICAL COLONIES,
 DEBRIS OR RESULTS INCONSISTENT WITH EXISTING WATER ARE SUBJECT TO
 RECONFIRMATION. BWS RESERVES THE RIGHT TO REQUEST AND TEST
 ADDITIONAL WATER SAMPLES IN THE INTEREST OF SAFEGUARDING PUBLIC
 HEALTH AND SAFETY.
- 24. AT THE ELECTRICAL/SIGNAL DUCTLINE WATER CROSSINGS, ADJUST ALL ELECTRICAL/SIGNAL DUCTLINE ELEVATIONS TO MAINTAIN 12" VERTICAL CLEAR SEPARATION FROM ALL WATERLINES AT NO COST.
- 25. MAINTAIN 3'-0" MIN. HORIZONTAL CLEAR SEPARATION BETWEEN ALL WATERLINE SYSTEMS AND NEAREST ELECTRICAL/SIGNAL DUCTLINES PARALLELING.
- 26. MAINTAIN 3'-0" MIN. HORIZONTAL CLEAR SEPARATION BETWEEN STREET LIGHT/TRAFFIC SIGNAL STANDARDS (INCLUDING MODULAR UNITS) AND THE NEAREST WATER SYSTEM. CONTRACTOR SHALL FIELD VERIFY FOR ANY CONFLICTS AT EACH STREET LIGHT/TRAFFIC SIGNAL STANDARD LOCATION. WHERE CONFLICTS OCCUR, THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER TO REVISE THE STREET LIGHT/TRAFFIC SIGNAL STANDARD TO PROVIDE THE REQUIRED CLEARANCES AT NO COST.
- 27. PRIOR TO ANY EXCAVATING, THE CONTRACTOR SHALL VERIFY IN THE FIELD THE LOCATION OF EXISTING WATER MAINS AND APPURTENANCES.
- 28. INSTALL 4 MIL THICK, NON-METALLIC, BLUE COLORED, 6 INCHES WIDE WARNING TAPE OVER CENTERLINE OF THE PIPE AND BELOW THE BASE COURSE ALONG THE ENTIRE LENGTH OF TRENCH. TAPE SHOULD BE MARKED WITH "CAUTION WATER LINE BURIED BELOW".
- 29. POLYVINYL CHLORIDE (PVC) PIPES SHALL BE DR14 (FOR 4"-16"). ALL DUCTILE IRON VALVES AND METALLIC FITTINGS SHALL BE WRAPPED WITH TWO LAYERS OF 8 MIL POLYETHYLENE WRAP. NO BENDING OF POLYVINYL CHLORIDE PIPES SHALL BE PERMITTED. THE INSTALLATION OF PVC PIPE, ACCORDING TO THE PLANS AND SPECIFICATIONS AS BID ON BY THE CONTRACTOR, MAY REQUIRE ADDITIONAL DESIGN WORK AND ADDITIONAL FITTINGS AND SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID IN THE PROPOSAL FOR PVC PIPE. ANY ADDITIONAL DESIGN WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 30. PVC FITTINGS, INCLUDING DEFLECTION COUPLINGS ARE NOT APPROVED.
- 31. THE CONTRACTOR SHALL INSTALL ELECTRONIC MARKERS TO ALL MAINS AND TEST THE ELECTRONIC MARKERS PRIOR TO INSTALLATIONS TO VERIFY PROPER OPERATION.
- 32. DUCTILE IRON BOSSED TEES REQUIRED FOR ALL LATERAL AND ARV CONNECTIONS TO PVC MAINS 8" AND SMALLER (DUCTILE IRON CONNECTOR PIECE LARGER THAN 8").
- 33. UNLESS OTHERWISE SPECIFIED, ALL LATERALS AND CONNECTIONS SHALL BE COPPER TYPE "C-1", WITH BLIND METER SPLICE LENGTHS, 7-1/2", TO ACCOMMODATE 3/4" METERS.

STORM DRAIN NOTES

1. SUBMITTALS

- A. PRODUCT WILL NOT BE ACCEPTED UNLESS THE PRECAST REINFORCED CONCRETE MANUFACTURER CAN PROVIDE THE FOLLOWING:
- 1) SUBMIT PLANT'S CURRENT NPCA CERTIFICATION CERTIFICATE.
- 2) SUBMIT WHAT PRODUCTS WERE PRODUCED UNDER THE NPCA CERTIFICATION PROCESS.
- 3) SUBMIT A COPY OF THE MOST RECENT ANNUAL UN—ANNOUNCED PLANT INSPECTION REPORT ALONG WITH A COPY OF ALL WRITTEN CORRECTIVE ACTION RESPONSES FOR ALL DEFICIENCIES IN THE REPORT.
- 4) SUBMIT QUALITY CONTROL TEST RECORDS FOR THE UNITS ASSOCIATED WITH THE PRODUCT DELIVERED TO THE PROJECT.

2. QUALITY ASSURANCE

- A. NATIONAL PRECAST CONCRETE ASSOCIATION PLANT CERTIFICATION
- 1) THE PRECAST CONCRETE PRODUCER MUST BE CERTIFIED BY THE NATIONAL PRECAST CONCRETE ASSOCIATION PLANT CERTIFICATION PROGRAM PRIOR TO AND DURING PRODUCTION OF THE PRODUCTS FOR THIS PROJECT.

WAIAHOLE WATER SYSTEM IMPROVEMENTS -WELL SITE



R. M. TOWILL CORPORATION

Planning • Engineering • Environmental Services • Photogrammetry • Surveying • Construction Manager

2024 North King Street Suite 206

Honolulu Havvaii 96813



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE 4/30,

REVISION DATE BRIEF BRIEF

APPROVED BY

Manager and Chief Engineer, BWS (For work affecting BWS facilities in City/State R/W and BWS easements only)

ENGINEER

DRAFTSMAN

CHECKED BY

SCALE AS SHOWN

DATE MAY 2024

DPP FILE NO. 20XX/CP—XXX

| CONSTRUCTION NOTES 2

HAWAIIAN ELECTRIC COMPANY NOTES

1. LOCATION OF HAWAIIAN ELECTRIC FACILITIES

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

2. COMPLIANCE WITH HAWAII OCCUPATIONAL SAFETY AND HEALTH LAWS

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

3. EXCAVATION CLEARANCE

THE CONTRACTOR SHALL OBTAIN AN EXCAVATION CLEARANCE FROM HAWAIIAN ELECTRIC'S PLANNING AND DESIGN SECTION OF THE TRANSMISSION & DISTRIBUTION ENGINEERING DEPARTMENT (543-5654) LOCATED AT 820 WARD AVENUE, 4TH FLOOR, A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO STARTING CONSTRUCTION.

4. CAUTION!!! ELECTRICAL HAZARD!!!

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

5. OVERHEAD LINES

STATE LAW (OSHA) REQUIRES THAT A WORKER AND THE LONGEST OBJECT HE OR SHE MAY CONTACT CANNOT COME CLOSER THAN A SPECIFIED MINIMUM RADIAL CLEARANCE WHEN WORKING CLOSE TO OR UNDER ANY OVERHEAD LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE INFORMED OF AND COMPLY WITH THE LAW.

AT ANY TIME SHOULD THE CONTRACTOR ANTICIPATE THAT HIS WORK WILL RESULT IN THE NEED TO ENCROACH WITHIN THE MINIMUM REQUIRED CLEARANCE AS STATED IN THE LAW, THE CONTRACTOR SHALL NOTIFY HAWAIIAN ELECTRIC AT LEAST THREE (3) MONTHS PRIOR TO THE PLANNED ENCROACHMENT SO THAT, IF FEASIBLE, THE NECESSARY PROTECTIONS (E.G. RELOCATE OR DE-ENERGIZE HAWAIIAN ELECTRIC LINES) CAN BE INVESTIGATED. HAWAIIAN ELECTRIC MAY ALSO BE ABLE TO BLANKET ITS DISTRIBUTION (12KV AND BELOW) LINES TO PROVIDE A VISUAL AID IN PREVENTING ACCIDENTAL CONTACT. HAWAIIAN ELECTRIC'S COST OF SAFEGUARDING OR IDENTIFYING ITS LINES WILL BE CHARGED TO THE CONTRACTOR.

CONTACT HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS AT 543-7070 FOR ASSISTANCE IN IDENTIFYING AND SAFEGUARDING OVERHEAD POWER LINES.

6. POLE BRACING

- A. CONTRACTOR SHALL NOT EXCAVATE WITHIN 10 FEET OF HAWAIIAN ELECTRIC'S UTILITY POLES OR ANY ANCHOR SYSTEM SUPPORTING THE UTILITY POLE. IF CONTRACTOR MUST EXCAVATE AN AREA MORE THAN 12 INCHES DEEP BY 12 INCHES WIDE, AND CLOSER THAN 10 FEET FROM A UTILITY POLE OR ITS ANCHOR SYSTEM, EXCEPT WHEN EXCAVATING FOR RISERS IN A SINGLE TRENCH NOT WIDER THAN 12 INCHES AND NOT DEEPER THAN 3 FEET, CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING, SUPPORTING. SECURING AND TAKING ALL PRECAUTIONS TO PREVENT DAMAGE TO OR LEANING OF EXISTING POLES. BEFORE COMMENCING SUCH EXCAVATION, CONTRACTOR MUST NOTIFY HAWAIIAN ELECTRIC WHICH MAY LEAD TO IMPLEMENTING POLE BRACING REQUIREMENTS. HAWAIIAN ELECTRIC REQUIRES A MINIMUM OF TEN (10) WORKING DAYS TO CONDUCT THE REVIEW OF CONTRACTOR'S SUBMITTAL. CONTRACTOR SHALL SUBMIT ITS BRACING CALCULATIONS AND DRAWINGS, PREPARED AND STAMPED BY A LICENSED STRUCTURAL ENGINEER. TO HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS (543-7070) FOR REVIEW. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND REMOVAL OF THE TEMPORARY POLE BRACING SYSTEM, AS WELL AS ALL COSTS INCURRED BY HAWAIIAN ELECTRIC TO REVIEW CONTRACTOR'S DRAWINGS AND TO REPAIR OR STRAIGHTEN POLES IMPACTED BY CONTRACTOR'S ACTIVITIES. INCLUDING RESPONSE AND RESTORATION COSTS INCURRED BY HAWAIIAN ELECTRIC ARISING OUT OF OR RELATED TO OUTAGES CAUSED BY CONTRACTOR'S FAILURE TO MEET THE FOREGOING REQUIREMENTS. HAWAIIAN ELECTRIC'S RECEIPT OF POLE BRACING CALCULATION OR DRAWING SUBMITTALS OF ANY CONTRACTOR, INCLUDING WORK PROCEDURE. SHALL NOT RELIEVE CONTRACTOR FROM ANY LIABILITY RESULTING FROM CONTRACTOR'S EXCAVATION NEAR OR AROUND HAWAIIAN ELECTRIC'S UTILITY POLES.
- B. HAWAIIAN ELECTRIC MAY PROVIDE TO THE CUSTOMER INFORMATION RELATED TO POLE BRACING, INCLUDING CALCULATIONS AND OTHER BASIC ENGINEERING. HOWEVER, HAWAIIAN ELECTRIC PROVIDES THIS INFORMATION FOR INFORMATIONAL PURPOSES ONLY AND DOES NOT WARRANT ANY OF THE INFORMATION PROVIDED TO CUSTOMER. HAWAIIAN ELECTRIC HEREBY DISCLAIMS ANY LIABILITY ASSOCIATED WITH THE CUSTOMER'S USE OF INFORMATION PROVIDED TO THE CUSTOMER FROM HAWAIIAN ELECTRIC. IT IS THE CUSTOMER'S DUTY TO OBTAIN ENGINEERING FROM ITS OWN ENGINEER OR CONTRACTOR IN ORDER TO BRACE POLES AND THE USE OF HAWAIIAN ELECTRIC'S INFORMATION DOES NOT EXCUSE THE CUSTOMER FROM PERFORMING ITS OWN EVALUATION OF THE BRACING NEEDS. SHOULD THE CUSTOMER INSTALL BRACING AT ANY POLE LOCATION, CUSTOMER SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS HAWAIIAN ELECTRIC FROM ANY THIRD-PARTY CLAIMS ASSOCIATED WITH THE CUSTOMER'S BRACING OF A POLE. SHOULD THE WORK CUSTOMER PERFORM AT OR NEAR THE POLE LOCATION COMPROMISE THE POLE OR ITS SURROUNDINGS IN ANY WAY, CUSTOMER SHALL RESTORE OR REPLACE THE POLE SO THAT IT IS NO LONGER COMPROMISED.

HAWAIIAN ELECTRIC COMPANY NOTES (CONTINUED)

7. UNDERGROUND LINES

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF UNDERGROUND LINES. HAWAIIAN ELECTRIC'S EXISTING ELECTRICAL CABLES ARE ENERGIZED AND WILL REMAIN ENERGIZED DURING CONSTRUCTION. ONLY HAWAIIAN ELECTRIC PERSONNEL ARE TO BREAK INTO EXISTING HAWAIIAN ELECTRIC FACILITIES, HANDLE THESE CABLES, AND ERECT TEMPORARY GUARDS TO PROTECT THESE CABLES FROM DAMAGE. THE COST OF HAWAIIAN ELECTRIC'S ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF ITS UNDERGROUND LINES WILL BE CHARGED TO THE CONTRACTOR. FOR ASSISTANCE/COORDINATION IN PROVIDING PROPER SUPPORT AND PROTECTION OF THESE LINES, THE CONTRACTOR SHALL CALL HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS AT 543-7070 A MINIMUM OF TEN (10) WORKING DAYS IN ADVANCE.

SPECIAL PRECAUTIONS ARE REQUIRED WHEN EXCAVATING NEAR HAWAIIAN ELECTRIC'S 138KV OR 46KV UNDERGROUND LINES (SEE HAWAIIAN ELECTRIC INSTRUCTIONS TO CONSULTANTS/CONTRACTORS ON "EXCAVATION NEAR HAWAIIAN ELECTRIC'S UNDERGROUND 138KV AND/OR 46KV LINES" FOR DETAILED REQUIREMENTS).

FOR VERIFICATION OF UNDERGROUND LINES, THE CONTRACTOR SHALL CALL THE HAWAII ONE CALL CENTER AT 866-423-7287 MINIMUM OF FIVE (5) WORKING DAYS IN ADVANCE.

8. UNDERGROUND FUEL PIPELINES

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF HAWAIIAN ELECTRIC'S UNDERGROUND FUEL OIL PIPELINES. SPECIAL PRECAUTIONS ARE REQUIRED WHEN EXCAVATING NEAR HAWAIIAN ELECTRIC'S UNDERGROUND FUEL OIL PIPELINES (SEE HAWAIIAN ELECTRIC'S SPECIFIC FUEL PIPELINE "GUIDELINES" TO CONSULTANTS/CONTRACTORS ON EXCAVATION NEAR HAWAIIAN ELECTRIC'S UNDERGROUND FUEL PIPELINES FOR DETAILED REQUIREMENTS).

9. EXCAVATIONS

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

- A. ARRANGING FOR HAWAIIAN ELECTRIC STANDBY PERSONNEL TO OBSERVE WORK AT
- CONTRACTOR'S COST. B. SHEETING, BRACING, OR OTHERWISE SUPPORTING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE AND TO PREVENT POSSIBLE SLIDES, CAVE—INS, AND SETTLEMENTS.
- C. PROPERLY SUPPORTING EXISTING STRUCTURES OR FACILITIES WITH BEAMS, STRUTS, UNDER-PINNINGS, OR OTHER NECESSARY METHODS TO FULLY PROTECT IT FROM
- D. BACKFILLING WITH PROPER BACKFILL MATERIAL INCLUDING SPECIAL THERMAL BACKFILL WHERE EXISTING (REFER TO ENGINEERING DEPARTMENT FOR THERMAL BACKFILL SPECIFICATIONS).

10. RELOCATION OF HAWAIIAN ELECTRIC FACILITIES

ANY WORK REQUIRED TO RELOCATE OR MODIFY HAWAIIAN ELECTRIC FACILITIES SHALL BE DONE BY HAWAIIAN ELECTRIC, OR BY THE CONTRACTOR UNDER HAWAIIAN ELECTRIC'S SUPERVISION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION, AND SHALL PROVIDE NECESSARY SUPPORT FOR HAWAIIAN ELECTRIC'S WORK. WHICH MAY INCLUDE. BUT NOT BE LIMITED TO. STAKING OF POLE/ANCHOR LOCATIONS. IDENTIFYING RIGHT OF WAY AND PROPERTY LINES. EXCAVATION AND BACKFILL. PERMITS AND TRAFFIC CONTROL. BARRICADING. AND RESTORATION OF PAVEMENT, SIDEWALKS, AND OTHER FACILITIES.

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

11. CONFLICTS

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

12. DAMAGE TO HAWAIIAN ELECTRIC FACILITIES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL HAWAIIAN ELECTRIC SURFACE AND SUBSURFACE UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO HAWAIIAN ELECTRIC'S FACILITIES AS A RESULT OF HIS OPERATIONS. THE CONTRACTOR SHALL IMMEDIATELY REPORT SUCH DAMAGES OR ANY HAZARDOUS CONDITIONS RELATED TO HAWAIIAN ELECTRIC'S LINES TO HAWAIIAN ELECTRIC'S TROUBLE DISPATCHER AT 548-7961. REPAIR WORK SHALL BE DONE BY HAWAIIAN ELECTRIC OR BY THE CONTRACTOR UNDER HAWAIIAN ELECTRIC'S SUPERVISION. COSTS FOR DAMAGES TO HAWAIIAN ELECTRIC'S FACILITIES SHALL BE BORNE BY THE CONTRACTOR.

IN CASE OF DAMAGE OR SUSPECTED DAMAGE TO HAWAIIAN ELECTRIC'S FUEL PIPELINE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY HAWAIIAN ELECTRIC'S SECURITY COMMAND CENTER AT 543-7685 (A 24-HOUR NUMBER) SO HAWAIIAN ELECTRIC PERSONNEL CAN SECURE THE DAMAGED SECTION AND REPORT ANY OIL SPILLS TO THE PROPER AUTHORITIES. ALL COSTS ASSOCIATED WITH THE DAMAGE, REPAIR, AND OIL SPILL CLEANUP SHALL BE BORNE BY THE CONTRACTOR.

13. HAWAIIAN ELECTRIC STAND-BY PERSONNEL

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

THE CONTRACTOR SHALL CALL HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS AT 543-7070 A MINIMUM OF THREE (3) MONTHS IN ADVANCE TO ARRANGE FOR HAWAIIAN ELECTRIC STAND-BY PERSONNEL.

HAWAIIAN ELECTRIC COMPANY NOTES (CONTINUED)

14. CLEARANCES

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

GUIDELINES FOR MINIMUM HORIZONTAL (PARALLEL) CLEARANCES BETWEEN HAWAIIAN ELECTRIC AND OTHER UNDERGROUND UTILITIES										
UNDERGROUND UTILITY	HAWAIIAN ELECTRIC DIRECT BURIED CABLE	HAWAIIAN ELECTRIC DIRECT BURIED IN CONDUIT (NO CONCRETE ENCASEMENT)	HAWAIIAN ELECTRIC 3" (MINIMUM) CONCRETE ENCASEMENT	APPLICABLE NOTES:						
HAWAIIAN ELECTRIC DB CONDUITS	12"	3"	<i>O"</i>							
HAWAIIAN ELECTRIC 3" ENCASEMENT	0"	0"	0"							
TELEPHONE / CATV DB	12"	12"	6"							
TELEPHONE / CATV DB DUCTS	12"	12"	6"							
TELEPHONE / CATV 3" ENCASEMENT	0"	0"	0"	5						
TRAFFIC SIGNAL	12"	12"	12"							
WATER DB (BWS OWNED)	36"	<i>36</i> "	<i>36</i> "	1, 4						
CUSTOMER OWNED WATER SERVICE LATERALS	12"	12"	12"							
WATER (CONCRETE JACKETED) (BWS OWNED)	36"	36"	36"	1, 4						
GAS DB	12"	12"	12"	1						
GAS (CONCRETE JACKETED)	12"	12"	12"	1						
SEWER DB	36"	36"	<i>36</i> "	1, 2						
SEWER (CONCRETE JACKETED)	36"	<i>36</i> "	<i>36</i> "	1, 2						
DRAIN	12"	12"	12"	1						
FUEL PIPELINES				3						

1. WHERE SPACE IS AVAILABLE. PARALLEL CLEARANCE TO OTHER UTILITIES. OR FOREIGN STRUCTURES OTHER THAN COMMUNICATION OR TRAFFIC SIGNAL SHALL BE 36".

- 2. IF 36" CLEARANCE CANNOT BE MET:
- IF CLEARANCE IS LESS THAN 12", JACKET SEWER LINE WITH REINFORCED CONCRETE (PER HAWAIIAN ELECTRIC'S STD. 30—1030) FOR A DISTANCE OF 5'PLUS PIPE DIAMETER.
- IF CLEARANCE IS BETWEEN 12" AND 36", JACKET SEWER LINE WITH PLAIN CONCRETE. 3. ALL FUEL PIPELINE CROSSINGS SHALL BE REVIEWED AND APPROVED BY THE COMPANY THAT OWNS AND MAINTAINS IT.
- 4. 5 FEET CLEAR TO WATER MAINS 16" AND LARGER.
- 5. FOR SITUATIONS WITH O" MINIMUM SEPARATION, A 6" SEPARATION IS RECOMMENDED. 6. CLEARANCES MEASURED FROM OUTER EDGES OR DIAMETERS OF UTILITIES. WHENEVER CONCRETE JACKETS ARE INVOLVED, CLEARANCES SHALL BE TOTAL CLEAR DISTANCE BETWEEN THE CONCRETE JACKET AND UTILITY CONCERNED.

HAWAIIAN ELECTRIC COMPANY NOTES (CONTINUED)

GUIDELINES FOR MINIMUM VERTICAL (CROSSING) CLEARANCES BETWEEN HAWAIIAN ELECTRIC

UNDERGROUND UTILITY	HAWAIIAN ELECTRIC DIRECT BURIED CABLE	HAWAIIAN ELECTRIC DIRECT BURIED IN CONDUIT (NO CONCRETE ENCASEMENT)	HAWAIIAN ELECTRIC 3" (MINIMUM) CONCRETE ENCASEMENT	APPLICABLI NOTES:
HAWAIIAN ELECTRIC DB CONDUITS	6"	3"	0"	
HAWAIIAN ELECTRIC 3" ENCASEMENT	0"	0"	0"	
TELEPHONE / CATV DB	12"	12"	6"	
TELEPHONE / CATV DB DUCTS	12"	12"	6"	
TELEPHONE / CATV 3" ENCASEMENT	0"	0"	0"	3
TRAFFIC SIGNAL	12"	12"	6"	
WATER DB (BWS OWNED)	12"	12"	12"	5
CUSTOMER OWNED WATER SERVICE LATERALS	6"	6"	6"	
WATER (CONCRETE JACKETED) (BWS OWNED)	12"	12"	12"	5
GAS DB	12"	12"	12"	
GAS (CONCRETE JACKETED)	12"	12"	12"	
SEWER DB	24"	24"	24"	1
SEWER (CONCRETE JACKETED)	24"	24"	24"	1
DRAIN	12"	12"	6"	
FUEL PIPELINES				2

|1. IF CLEARANCE CANNOT BE MET:

- IF CLEARANCE IS LESS THAN 12", JACKET SEWER LINE WITH REINFORCED CONCRETE (PER HAWAIIAN ELECTRIC'S STD. 30—1030) FOR A DISTANCE OF 5'PLUS PIPE DIAMETER. – IF CLEARANCE IS BETWEEN 12" AND 24", JACKET SEWER LINE WITH PLAIN CONCRETE.
- 2. ALL FUEL PIPELINE CROSSINGS SHALL BE REVIEWED AND APPROVED BY THE COMPANY THAT OWNS AND MAINTAINS IT.
- 3. FOR SITUATIONS WITH O"MINIMUM SEPARATION, A 6"SEPARATION IS RECOMMENDED.
- F. CLEARANCES MEASURED FROM OUTER EDGES OR DIAMETERS OF UTILITIES. WHENEVER CONCRETE JACKETS ARE INVOLVED, CLEARANCES SHALL BE TOTAL CLEAR DISTANCE BETWEEN THE CONCRETE JACKET AND UTILITY CONCERNED
- 36" CLEARANCE IS REQUIRED FOR TRENCHLESS INSTALLATION WORK.

THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER & HAWAIIAN ELECTRIC OF ANY HEAT SOURCES (POWER CABLE DUCT BANK, STEAMLINE, ETC.) ENCOUNTERED THAT ARE NOT PROPERLY IDENTIFIED ON THE DRAWING.

15. INDEMNITY

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

WAIAHOLE **WATER SYSTEM IMPROVEMENTS -WELL SITE**



2024 North King Street Suite 206 Honolulu Hawaii 96819



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

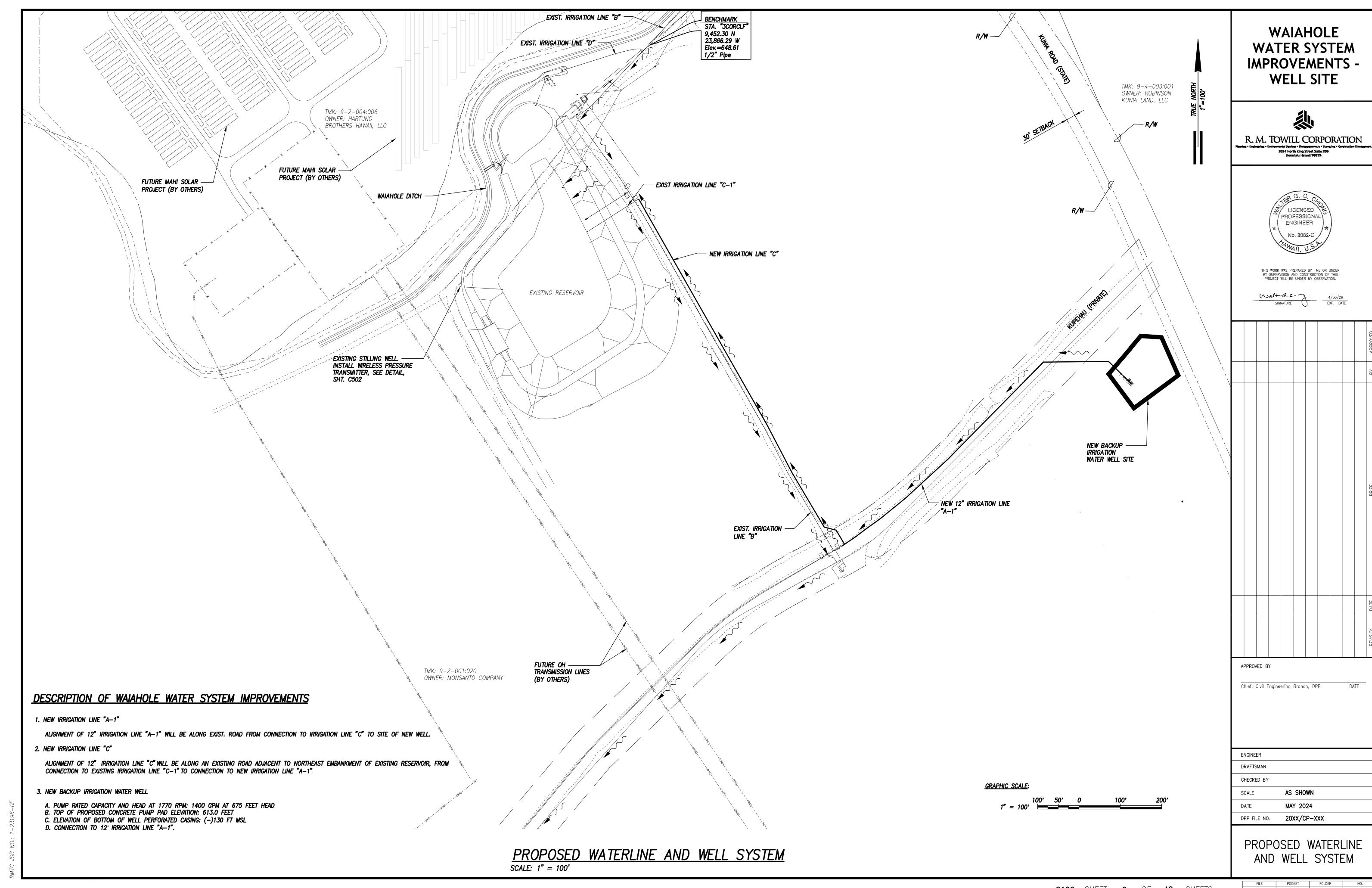
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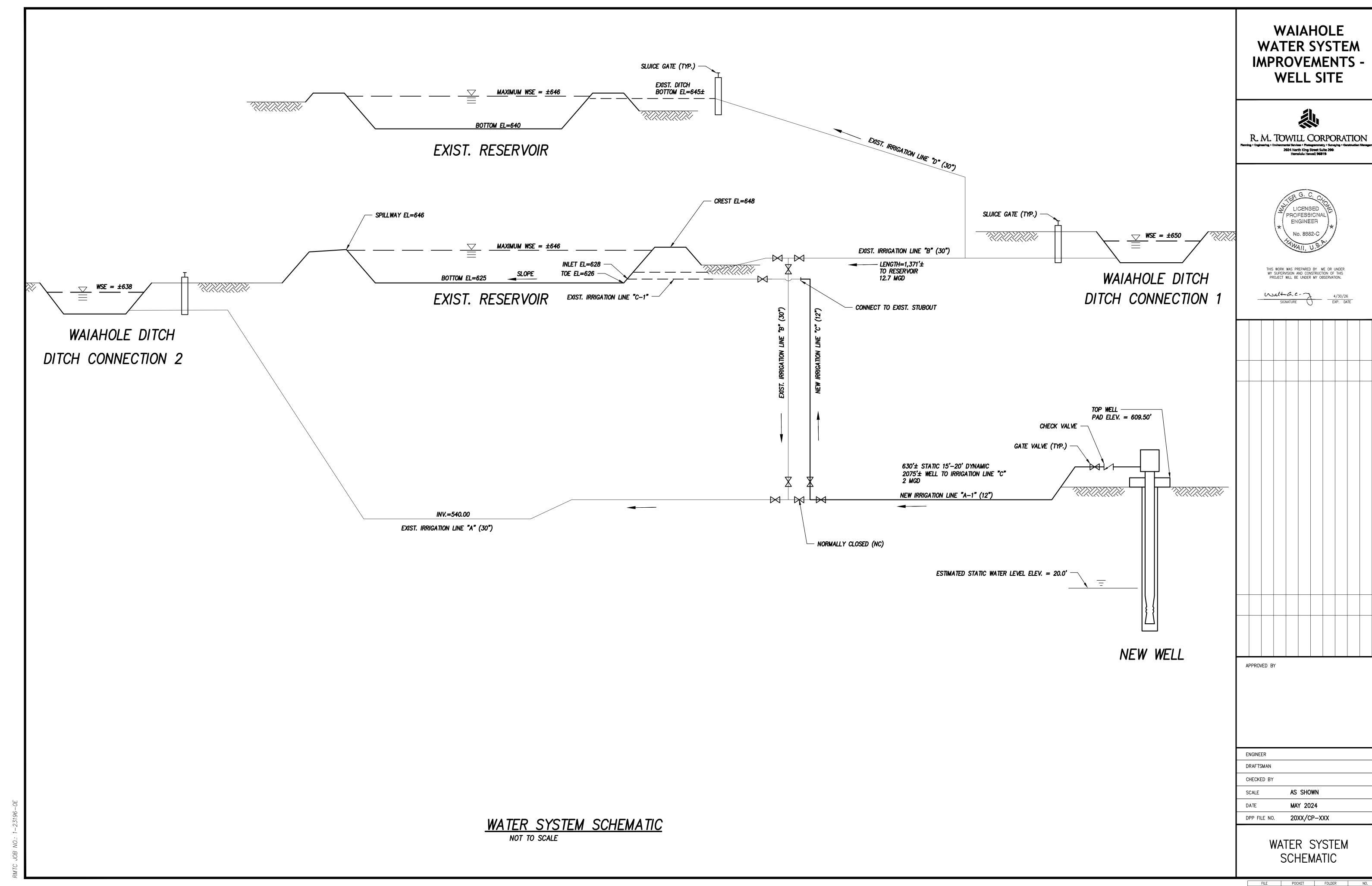
APPROVED BY

Chief, Traffic Review Branch, DPP

ENGINEER DRAFTSMAN CHECKED BY AS SHOWN SCALE MAY 2024 DPP FILE NO. 20XX/CP-XXX

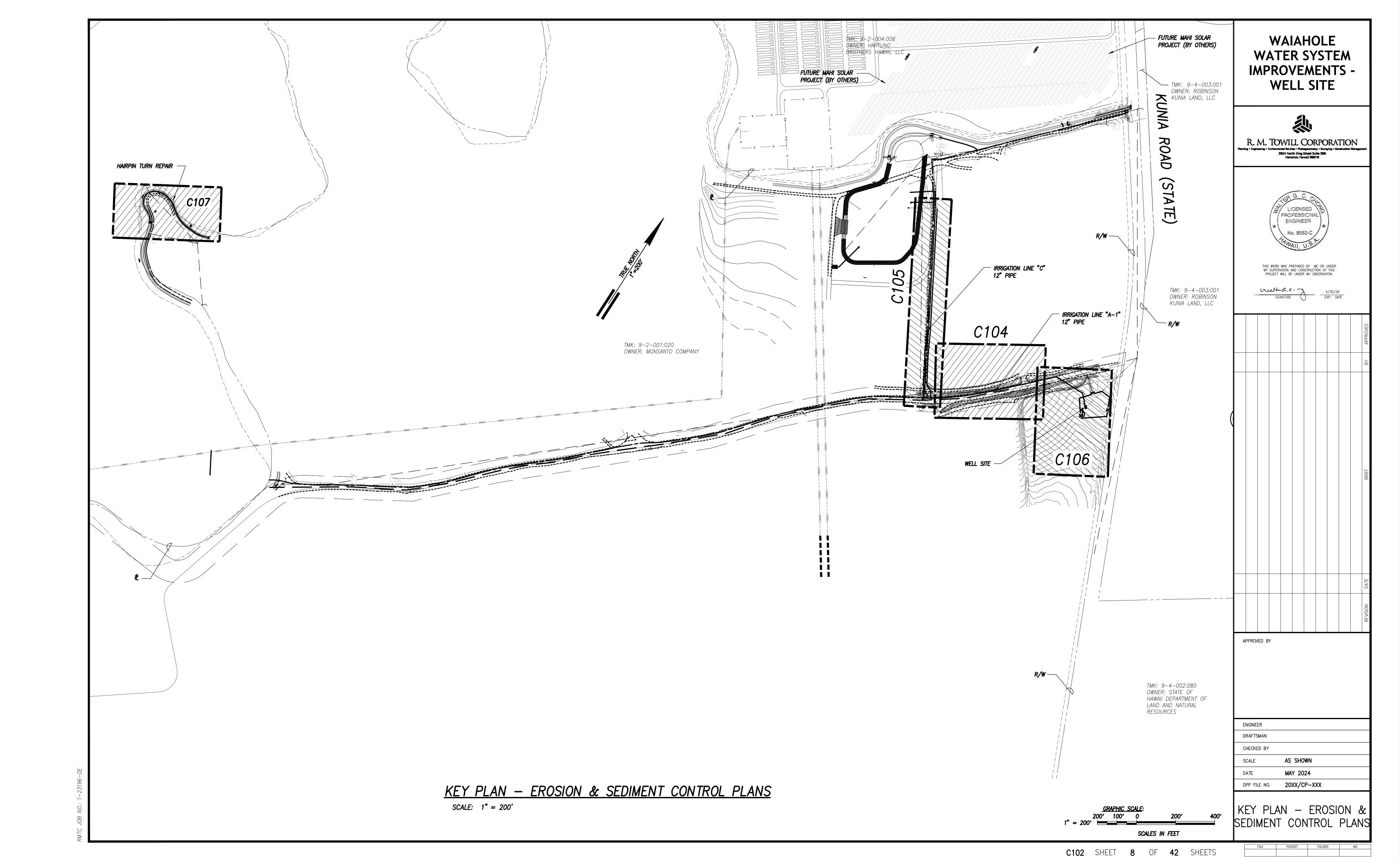
CONSTRUCTION NOTES 3





C101 SHEET 7 OF 42 SHEETS

FILE POCKET FOLDER



GOOD HOUSEKEEPING BMPS NOTES:

1. STREET SWEEPING AND VACUUMING.

ALL POLLUTANTS DISCHARGED FROM CONSTRUCTION SITE TO OFF-SITE AREAS MUST BE SWEPT OR VACUUMED EACH DAY BEFORE LEAVING THE JOB SITE.

2. MATERIALS DELIVERY, STORAGE AND USE MANAGEMENT.

PREVENT, REDUCE, OR ELIMINATE THE DISCHARGE OF POLLUTANTS FROM MATERIAL DELIVERY, STORAGE, AND USE TO THE STORM WATER SYSTEM OR WATERCOURSES BY MINIMIZING THE STORAGE OF HAZARDOUS MATERIALS ONSITE, STORING MATERIALS IN A DESIGNATED AREA, INSTALLING SECONDARY CONTAINMENT. CONSTRUCTION MATERIALS, WASTE, TOXIC AND HAZARDOUS SUBSTANCES, STOCKPILES AND OTHER SOURCES OF POLLUTION SHALL NOT BE STORED IN BUFFER AREAS. NEAR AREAS OF CONCENTRATED FLOW, OR AREAS ABUTTING THE MS4. RECEIVING WATERS, OR DRAINAGE IMPROVEMENTS THAT DISCHARGE OFF-SITE. PRIMARY AND SECONDARY CONTAINMENT CONTROLS AND COVERS SHALL BE IMPLEMENTED TO THE MAXIMUM EXTENT PRACTICAL (MEP).

3. SPILL PREVENTION AND CONTROL.

CREATE AND IMPLEMENT SPILL PREVENTION AND RESPONSE PLANS TO ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO THE MS4 AND RECEIVING WATERS FROM LEAKS AND SPILLS BY REDUCING THE CHANCE FOR SPILLS, ABSORBING, CONTAINING, AND CLEANING UP SPILLS AND PROPERLY DISPOSING OF SPILL MATERIALS. AT A MINIMUM, ALL PROJECTS SHALL CLEANUP ALL LEAKS AND SPILLS IMMEDIATELY.

4. HAZARDOUS MATERIALS.

PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM HAZARDOUS WASTE THROUGH PROPER MATERIAL USE AND WASTE DISPOSAL. IN THE EVENT THAT HAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL IMMEDIATELY NOTIFY THE DEPARTMENT OF FACILITIES MAINTENANCE, HONOLULU FIRE DEPARTMENT, AND HONOLULU POLICE DEPARTMENT OF THE DISCHARGE BY TELEPHONE. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.

5. NONHAZARDOUS MATERIALS.

IN THE EVENT THAT NONHAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL NOTIFY THE CITY DEPARTMENT OF FACILITIES MAINTENANCE BY TELEPHONE NO LATER THAN THE NEXT BUSINESS DAY. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.

6. VEHICLE AND EQUIPMENT CLEANING.

ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT CLEANING OPERATIONS BY USING OFF-SITE FACILITIES WHEN FEASIBLE, WASHING IN DESIGNATED, CONTAINED AREAS ONLY, AND ELIMINATING DISCHARGES TO THE STORM DRAIN SYSTEM BY EVAPORATING AND/OR TREATING WASH WATER, AS APPROPRIATE OR INFILTRATING WASH WATER FOR EXTERIOR CLEANING ACTIVITIES THAT USE WATER ONLY.

7. VEHICLE AND EQUIPMENT FUELING.

PREVENT FUEL SPILLS AND LEAKS BY USING OFF-SITE FACILITIES, FUELING ONLY IN DESIGNATED AREAS. ENCLOSING OR COVERING STORED FUEL, AND IMPLEMENTING SPILL CONTROLS SUCH AS SECONDARY CONTAINMENT AND ACTIVE MEASURES USING SPILL RESPONSE KITS.

8. VEHICLE AND EQUIPMENT MAINTENANCE.

ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT MAINTENANCE OPERATIONS BY USING OFF-SITE FACILITIES WHEN FEASIBLE, PERFORMING WORK IN DESIGNATED AREAS ONLY, USING SPILL PADS UNDER VEHICLES AND EQUIPMENT, CHECKING FOR LEAKS AND SPILLS, AND CONTAINING AND CLEANING UP SPILLS IMMEDIATELY.

9. SOLID WASTE MANAGEMENT.

PREVENT OR REDUCE DISCHARGE OF POLLUTANTS TO THE LAND, GROUNDWATER, AND IN STORM WATER FROM SOLID WASTE OR CONSTRUCTION AND DEMOLITION WASTE BY PROVIDING DESIGNATED WASTE COLLECTION AREAS. COLLECT SITE TRASH DAILY. AND ENSURING THAT CONSTRUCTION WASTE IS COLLECTED, REMOVED, AND DISPOSED OF ONLY AT AUTHORIZED DISPOSAL AREAS.

10. SANITARY/SEPTIC WASTE MANAGEMENT.

TEMPORARY AND PORTABLE SANITARY AND SEPTIC WASTE SYSTEMS SHALL BE MOUNTED OR STAKED IN. WELL-MAINTAINED AND SCHEDULED FOR REGULAR WASTE DISPOSAL AND SERVICING. SOURCES OF SANITARY AND/OR SEPTIC WASTE SHALL NOT BE STORED NEAR THE MS4 OR RECEIVING WATERS.

11. STOCKPILE MANAGEMENT.

STOCKPILES SHALL NOT BE LOCATED IN DRAINAGE WAYS, WITHIN 50 FEET FROM AREAS OF CONCENTRATED FLOWS, AND ARE NOT ALLOWED IN THE CITY RIGHT-OF-WAY. SEDIMENT BARRIERS OR SILT FENCES SHALL BE USED AROUND THE BASE OF ALL STOCKPILES. STOCKPILES SHALL NOT EXCEED 15 FEET IN HEIGHT. STOCKPILES GREATER THAN 15 FEET IN HEIGHT SHALL REQUIRE 8 FOOT WIDE BENCHING IN ACCORDANCE WITH ROH CHAPTER 14, ARTICLE 15. STOCKPILES MUST BE COVERED WITH PLASTIC SHEETING OR A COMPARABLE MATERIAL IF THEY WILL NOT BE ACTIVELY USED WITHIN 7 DAYS.

12. LIQUID WASTE MANAGEMENT.

LIQUID WASTE SHALL BE CONTAINED IN A CONTROLLED AREA SUCH AS A HOLDING PIT, SEDIMENT BASIN, ROLL-OFF BIN, OR PORTABLE TANK OF SUFFICIENT VOLUME AND TO CONTAIN THE LIQUID WASTES GENERATED. CONTAINMENT AREAS OR DEVICES MUST BE IMPERMEABLE AND LEAK FREE AND SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS.

13. CONCRETE WASTE MANAGEMENT.

PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM CONCRETE WASTE BY CONDUCTING WASHOUT OFFSITE OR PERFORMING ONSITE WASHOUT IN A DESIGNATED AREA CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MILLIMETER POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL. CONTAINMENT AREAS OR DEVICES SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75 PERCENT FULL. ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP, REMOVED, AND DISPOSED OF AS SOLID WASTES.

GOOD HOUSEKEEPING BMPS NOTES (CONT'D):

14. CONTAMINATED SOIL MANAGEMENT.

AT MINIMUM CONTAIN CONTAMINATED MATERIAL SOIL BY SURROUNDING WITH IMPERMEABLE LINED BERMS OR COVER EXPOSED CONTAMINATED MATERIAL WITH PLASTIC SHEETING. CONTAMINATED SOIL SHOULD BE DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

15. DUST CONTROL.

THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL PROVIDE EFFECTIVE MEASURES FOR THE CONTROL OF DUST FROM THE PROJECT SITE AND HAUL ROADS SO IT SHALL NOT BE TRANSPORTED OR DISCHARGED TO OFF-SITE AREAS. THE WORK MUST BE IN CONFORMANCE WITH AIR POLLUTION CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES: TITLE 11 CHAPTER 60.1. "AIR POLLUTION CONTROL".

16. BMP AND SITE MAINTENANCE.

THE CONTRACTOR SHALL MAINTAIN TEMPORARY EROSION CONTROL MEASURES THROUGHOUT THE PROJECT DURATION. THE CONTRACTOR SHALL CLEAN TRASH AND DEBRIS AROUND THE SURROUNDING AREA ON A WEEKLY BASIS.

EROSION AND SEDIMENT CONTROL PLAN SCHEDULE AND RAIN RESPONSE PLAN NOTES:

PROJECT SEQUENCE:

- INSTALL STABILIZED CONSTRUCTION ENTRANCES. PERIMETER CONTROLS. INLET PROTECTION. AND CLEARING AND GRUBBING AS NECESSARY FOR THE INSTALLATION OF THESE BMPS.
- 2. CONSTRUCT TEMPORARY SEDIMENT BASINS, STABILIZE IMMEDIATELY.
- 3. CONSTRUCT TEMPORARY SWALES TO DIRECT RUNOFF INTO THE SEDIMENT BASINS. STABILIZE IMMEDIATELY.
- CLEAR, GRUB AND GRADE THE SITE AS SHOWN IN THE GRADING PLANS. RELOCATE, RECONSTRUCT AND MAINTAIN BMPS AS NEEDED TO KEEP THEM EFFECTIVE AT ALL TIMES. INITIATE TEMPORARY STABILIZATION IMMEDIATELY ONCE GRADING IS COMPLETED IN EACH
- 5. INITIATE STABILIZATION OF STEEP SLOPES (> 15%) WITH HYDROSEEDING OR CHEMICAL STABILIZATION AS SOON AS GRADING IS COMPLETED ON THOSE AREAS.
- 6. PROCEED WITH CONSTRUCTION WITH LEAST POSSIBLE DISTURBANCE OF VEGETATIVE AREAS AND TEMPORARY STRUCTURES.
- 7. TEMPORARILY STABILIZE EXPOSED AREAS WITH GRASSING IF NOT BEING ACTIVELY USED WITHIN 7 DAYS.
- 8. PLANT PERMANENT GROUND COVER.
- 9. REMOVE OR DISMANTLE TEMPORARY EROSION CONTROL STRUCTURES AFTER FULL ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.
- 10. PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION.
- 11. INSPECTIONS WILL BE PERFORMED WEEKLY.

RAIN RESPONSE PLAN:

THE FOLLOWING WILL BE PERFORMED WHEN HEAVY RAINS, TROPICAL STORM OR HURRICANE IS IMMINENT OR IS FORECASTED IN THE NEXT 48 HOURS:

- 1. TEMPORARY SUSPENSION OF ACTIVE GRADING.
- 2. INSPECT ALL SEDIMENT BASINS. TEMPORARY DITCHES/ SWALES AND PERIMETER CONTROLS. AND MAINTAIN AS NEEDED. REINSTALL ANY PERIMETER CONTROLS THAT WERE REMOVED DUE TO ACTIVE WORK IN THE AREA. IF A SEVERE STORM IS EXPECTED. REMOVE INLET PROTECTION DEVICES TO PREVENT FLOODING ON SURROUNDING STREETS.
- 3. COVER OR RELOCATE MATERIAL STOCKPILES AND LIQUID MATERIAL CONTAINERS TO AVOID CONTACT WITH RAINWATER.
- 4. PLACE SPILL PANS OR OIL-ONLY SPILL PADS UNDER CONSTRUCTION VEHICLES TO PREVENT RUNOFF FROM CONTACTING ANY SPILLED PETROLEUM PRODUCTS. PROPERLY DISPOSE OF ANY ACCUMULATED OILY WATER AFTER THE RAIN EVENT.
- 5. RE-INSPECT AFTER THE APPROACHING HEAVY RAINS. TROPICAL STORM OR HURRICANE AND REPLACE OR MAINTAIN BMPS AS NEEDED.

EROSION PREVENTION / SEDIMENT CONTROL NOTES

- THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE CITY AND COUNTY OF HONOLULU'S "RULES RELATING TO WATER QUALITY."
- 2. MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTHWORK IS INITIATED.
- 3. SLOPE PROTECTION

SLOPE PROTECTION IS REQUIRED ON AREAS WITH SLOPES GREATER THAN 15% AND ON AREAS OF MODERATE SLOPE THAT ARE PRONE TO EROSION UNLESS THEY ARE BEING ACTIVELY WORKED. USE DIVERSION OF SLOPE (DIKES. SWALES. SLOPE DRAINS) TO DIVERT WATER AROUND THE SLOPE. PROVIDE A 10-FT BUFFER ZONE AT THE TOE OF SLOPE. ONLY 5 ACRES MAY BE DISTURBED AT ANYTIME ON SLOPES GREATER THAN 15%.

- 4. TEMPORARY STABILIZATION IS REQUIRED ON DISTURBED AREAS WHICH ARE AT FINAL GRADE OR WHEN THE DISTURBED AREA WILL NOT BE WORKED FOR 14 CONSECUTIVE DAYS OR MORE.
- 5. PERMANENT STABILIZATION

ALL SLOPES AND EXPOSED AREAS SHALL BE GRASSED OR SPRAYED WITH SOIL SEMENT CHEMICAL STABILIZER OR APPROVED EQUAL PRIOR TO REMOVING EROSION AND SEDIMENT MEASURES. TRAPPED SEDIMENT AND AREAS OF DISTURBED SOIL WHICH RESULT FROM THE REMOVAL OF THE TEMPORARY MEASURES SHALL BE IMMEDIATELY AND PERMANENTLY STABILIZED.

6. PRESERVE EXISTING VEGETATION

CLEARLY MARK THE AREAS TO BE PRESERVED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING MUST BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.

EROSION PREVENTION / SEDIMENT CONTROL NOTES

7. MINIMIZE SOIL COMPACTION

AREAS WHERE FINAL STABILIZATION OR INFILTRATION PRACTICES WILL BE INSTALLED SHALL BE PROTECTED FROM EXCESSIVE COMPACTION DURING CONSTRUCTION. VEHICLE AND EQUIPMENT USE SHALL BE RESTRICTED OR TECHNIQUES TO CONDITION THE SOILS TO SUPPORT VEGETATION SHALL BE IMPLEMENTED IN THE AREAS THAT HAVE BEEN COMPACTED AND ARE DESIGNATED TO REMAIN VEGETATIVE OR POST—CONSTRUCTION INFILTRATION AREAS. CLEARLY MARK THE AREAS TO BE AVOIDED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING MUST BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.

8. PERIMETER CONTROLS

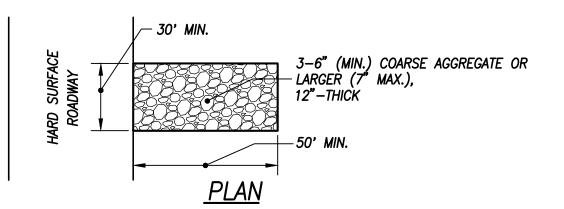
PERIMETER CONTROLS ARE REQUIRED DOWNSLOPE OF ALL DISTURBED AREAS. MAINTAIN DOWNSTREAM VEGETATED BUFFER AREA.

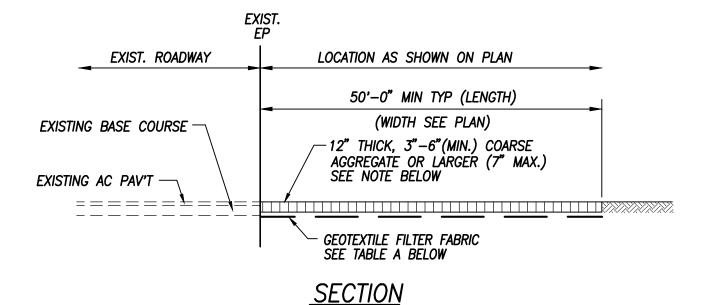
9. SEDIMENT BASINS

SEDIMENT BASINS MUST BE KEPT IN EFFECTIVE OPERATING CONDITION AND SEDIMENT SHALL BE REMOVED TO MAINTAIN AT LEAST ONE HALF OF THE DESIGN CAPACITY AT ALL TIMES.

10. TRACKING CONTROL

- MINIMIZE SEDIMENT TRACK-OUT ONTO OFF-SITE STREETS, OTHER PAVED AREAS, AND SIDEWALKS FROM VEHICLES EXITING THE CONSTRUCTION SITE BY RESTRICTING VEHICLE TRAFFIC TO PROPERLY DESIGNATED AREAS AND USING ADDITIONAL CONTROLS TO REMOVE SEDIMENT FROM VEHICLE TIRES PRIOR TO EXITING THE SITE.
- VEHICULAR PARKING AND MOVEMENTS ON PROJECT SITES MUST BE CONFINED TO PAVED SURFACES OR PREDEFINED PARKING AREAS AND VEHICLE PATHS. WHICH SHALL BE MARKED WITH FLAGS OR BOUNDARY FENCING.
- ALL POLLUTANTS AND MATERIALS THAT ARE DROPPED, WASHED, TRACKED, SPILLED, OR OTHERWISE DISCHARGED FROM A PROJECT SITE TO OFF-SITE STREETS, OTHER PAVED AREAS, SIDEWALKS OR THE MS4 MUST BE CLEANED USING DRY METHODS SUCH AS SWEEPING OR VACUUMING.
- WASHING POLLUTANTS AND MATERIALS THAT ARE DISCHARGED FROM THE PROJECT SITE TO THE MS4 INTO DRAIN INLETS OR CATCH BASINS IS PROHIBITED UNLESS THE MATERIAL IS SEDIMENT AND THE INLETS ARE DIRECTED TO A SEDIMENT BASIN OR SEDIMENT TRAP.
- 11. BEST MANAGEMENT PRACTICES (BMPS) SHALL NOT BE REMOVED UNTIL FINAL STABILIZATION IS COMPLETE FOR THAT PHASE.
- 12. REFER TO CITY AND COUNTY OF HONOLULU BEST MANAGEMENT PRACTICES MANUAL— CONSTRUCTION, FOR MORE INFORMATION ON BMPS.
- 13. THE FOLLOWING BMPS WERE DETERMINED TO BE NOT APPLICABLE BASED ON THE SPECIFIC SITE CONDITIONS. AS CONSTRUCTION PROGRESSES, REVISIONS MAY BE NECESSARY AND WILL BE PROVIDED TO DPP INSPECTORS.
- DEWATERING PRACTICES ARE NOT APPLICABLE. COMPLETION OF THE PROJECT DOES NOT INVOLVE DEWATERING PRACTICES AS IT IS NOT ANTICIPATED THAT GROUNDWATER WILL BE ENCOUNTERED.
- SEDIMENT BARRIERS ARE NOT APPLICABLE. BMP'S SUCH AS PERIMETER CONTROL AND SEDIMENT BASINS WILL BE USED AND ARE SUFFICIENT TO ADDRESS SEDIMENT RUNOFF
- BUFFER ZONES ARE NOT APPLICABLE. PROJECT SITE IS NOT WITHIN 50 FT OF STATE WATERS AND GRADING DOES NOT OCCUR ON SLOPES WITH A GRADE OF 15% OR MORE.
- SEDIMENT TRAPS ARE NOT APPLICABLE. PROJECT INVOLVES MORE THAN 5 ACRES OF DISTURBED AREA, THEREFORE SEDIMENT BASINS WILL BE USED. DIVERSION BMPS TO DIVERT RUNOFF FROM UPSTREAM AREAS AROUND DISTURBED AREAS OF THE SITE ARE NOT APPLICABLE. GRADING DOES NOT OCCUR ON EXISTING SLOPES WITH
- A GRADE OF 15% OR MORE. • DRAIN INLET PROTECTION. THERE ARE NO AFFECTED DRAIN INLETS WITHIN THE PROJECT
- 14. AN ESCP COORDINATOR IS REQUIRED FOR THIS PROJECT. THE OWNER OF THE PROPERTY OR THEIR AUTHORIZED AGENT MUST DESIGNATE A PERSON RESPONSIBLE FOR IMPLEMENTING THE ESCP AT THE PROJECT SITE ("ESCP COORDINATOR") PRIOR TO PERMIT ISSUANCE USING THE FORM PROVIDED AS APPENDIX A TO THE RULES RELATING TO WATER QUALITY.
- 15. THE CONTRACTOR SHALL COMPLY WITH THE PROJECT SCHEDULING REQUIREMENT AS SPECIFIED IN THE "ADMINISTRATIVE RULES, TITLE 20, DEPARTMENT OF PLANNING AND PERMITTING, CHAPTER 3, RULES RELATING TO WATER QUALITY", SECTION 20-3-28. THE SCHEDULED START DATE SHALL BE SUBMITTED TO THE DIRECTOR IN WRITING 2 WEEKS PRIOR TO COMMENCING ANY WORK GOVERNED BY THESE RULES.



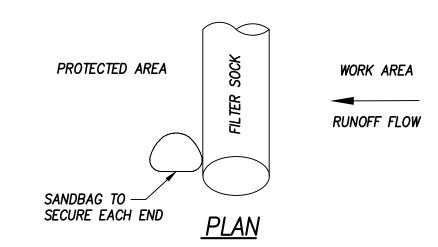


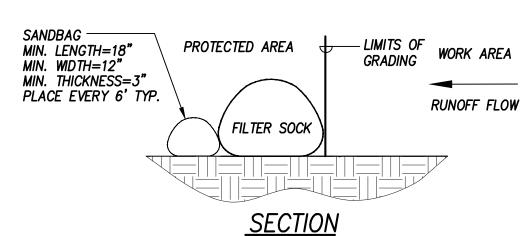
12" COARSE AGGREGATE LAYER SHALL BE REMOVED IMMEDIATELY PRIOR TO INSTALLATION OF ROADWAY BASE COURSE.

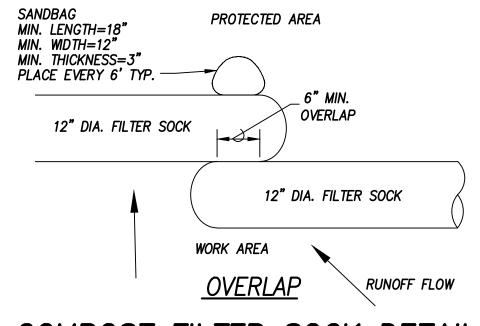
TABLE A GEO	TEXTILE REQUIREMENTS
PHYSICAL PROPERTY	REQUIREMENTS
GRAB TENSILE STRENGTH	220 LB (ASTM D1682)
ELONGATION FAILURE	60% (ASTM D1682)
MULLEN BURST STRENGTH	430 LB (ASTM D3768)
PUNCTURE STRENGTH	125 LB (ASTM D751, MODIFIED)
EQUIVALENT OPENING	SIZE 40-80 (U.S. STD SIEVE, CW-02215)

CONSTRUCTION INGRESS/EGRESS

NOT TO SCALE

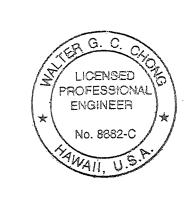






WAIAHOLE WATER SYSTEM **IMPROVEMENTS -WELL SITE**





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4/30/26

Walt-G.C-7

APPROVED BY Chief, Civil Engineering Branch, DPP

COMPOST FILTER SOCK DETAIL

NOT TO SCALE

EROSION AND SEDIMENT CONTROL NOTES

AS SHOWN

MAY 2024

20XX/CP-XXX

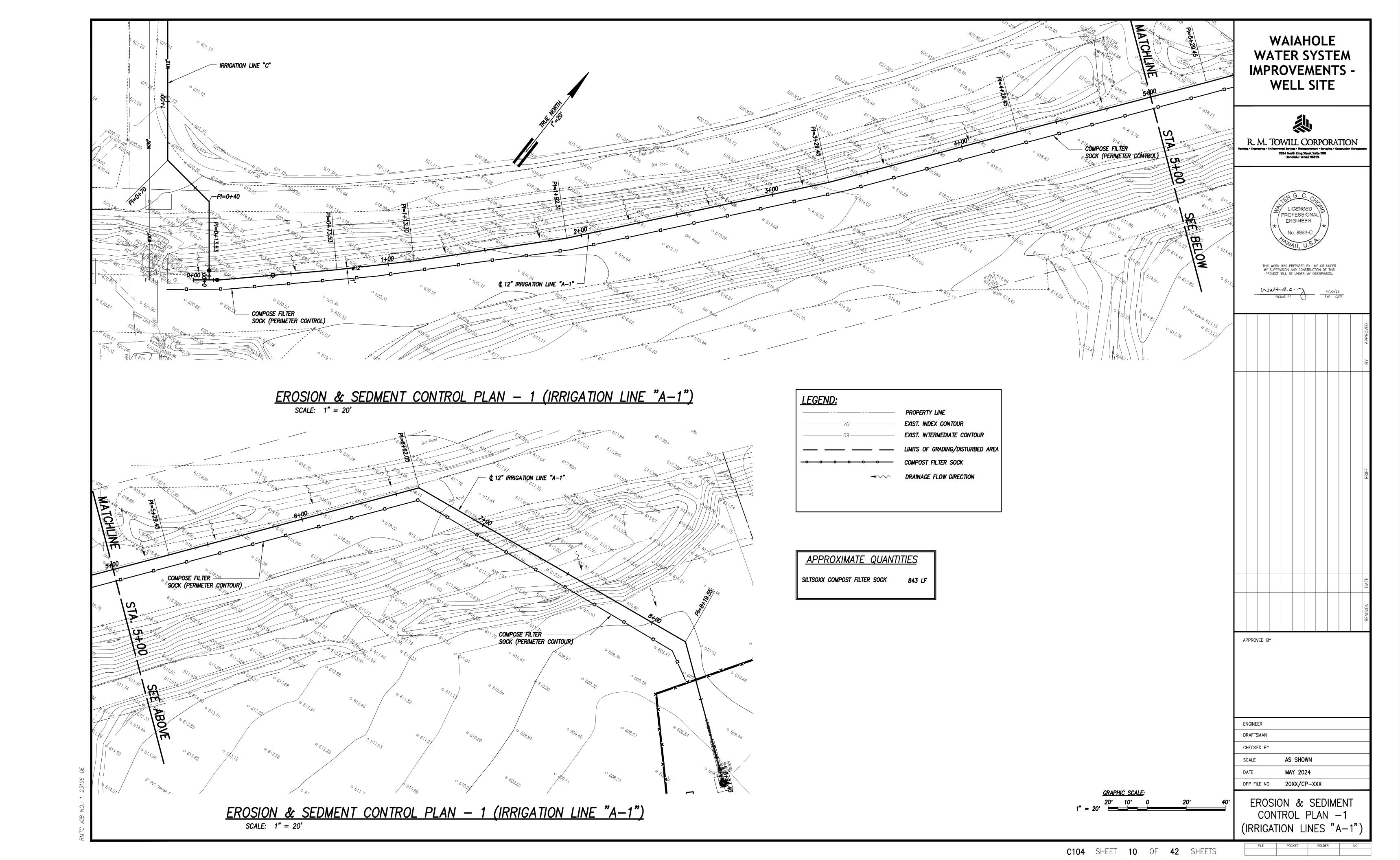
ENGINEER

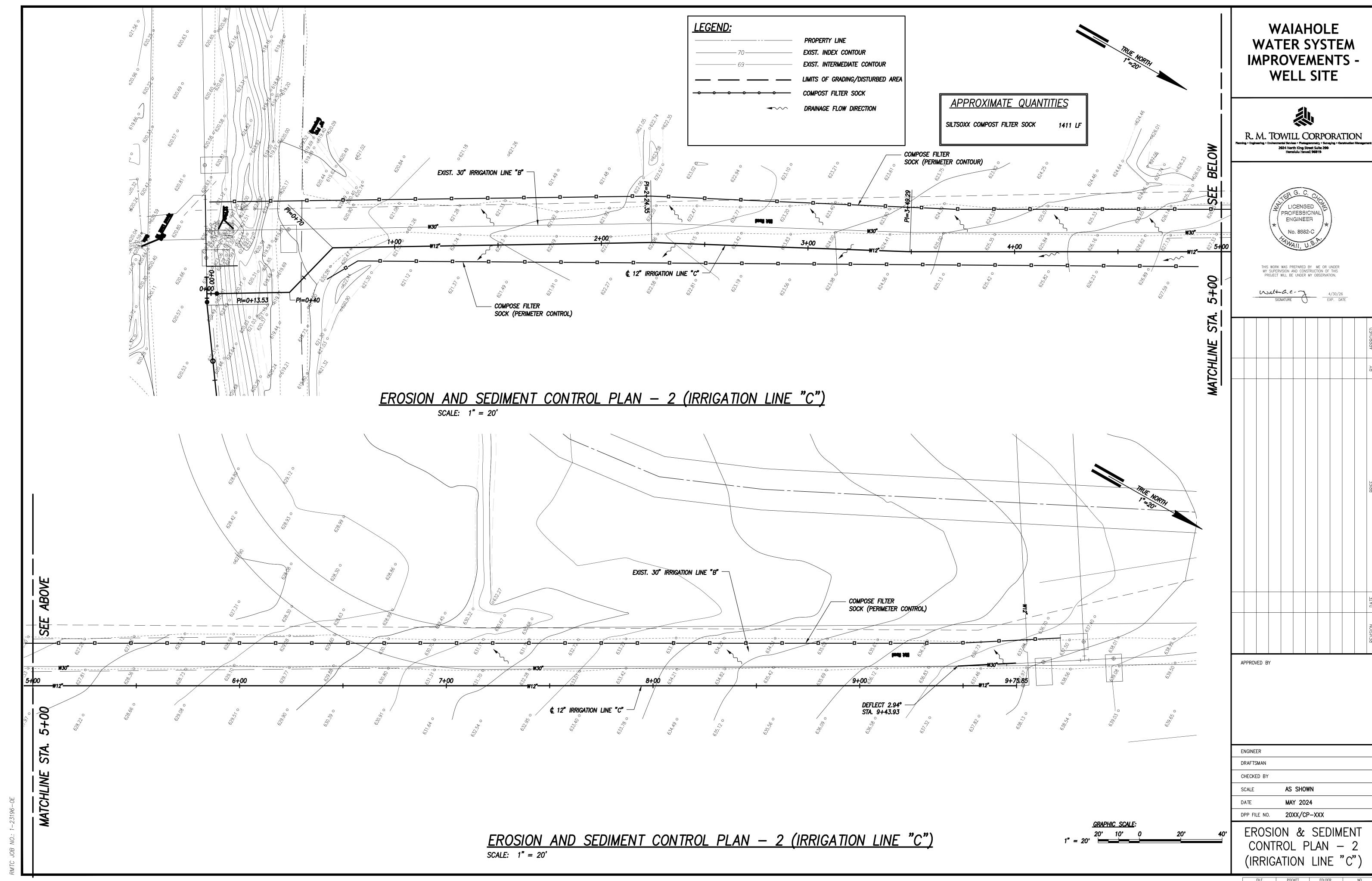
DRAFTSMAN

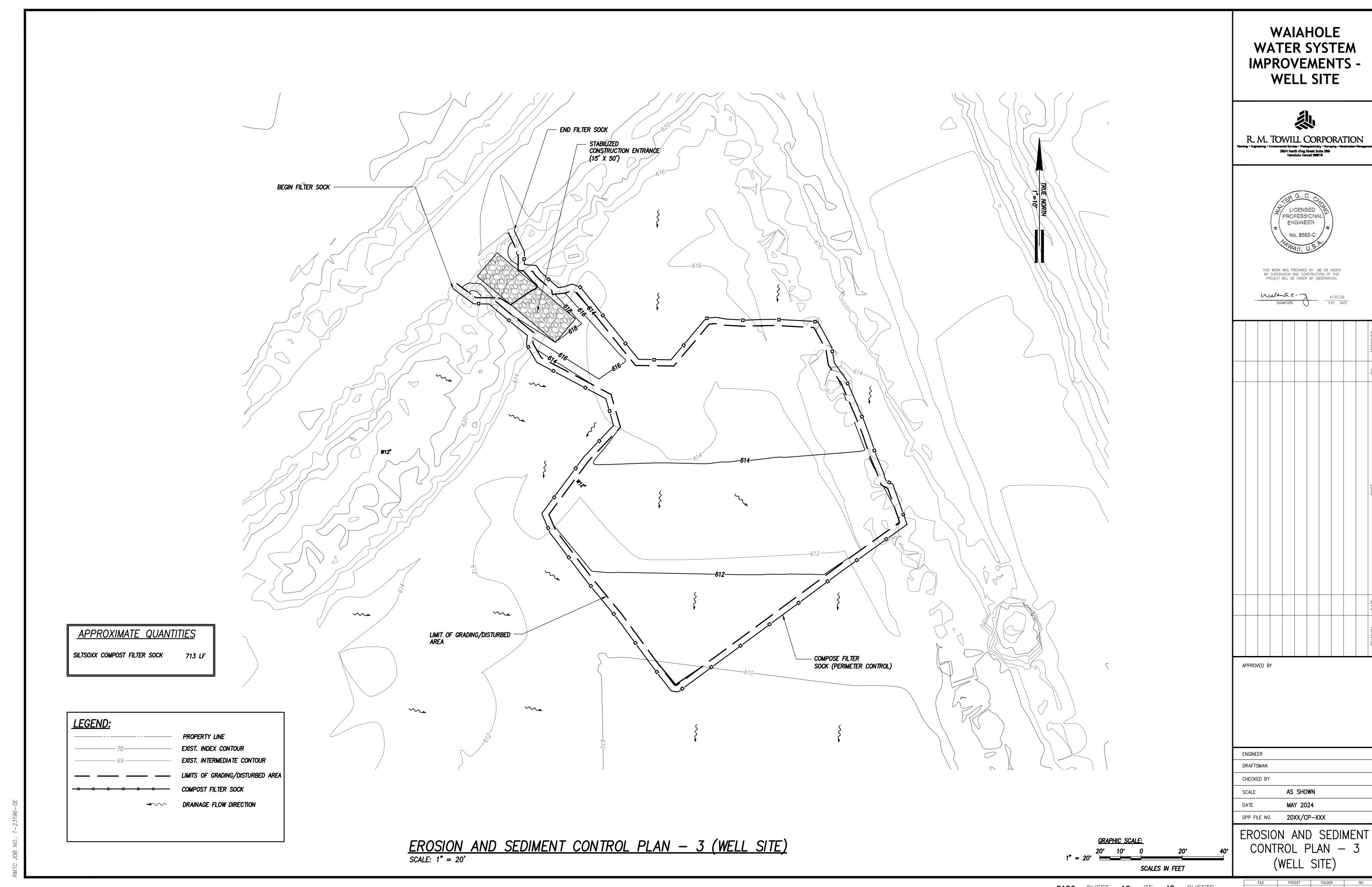
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DPP FILE NO.

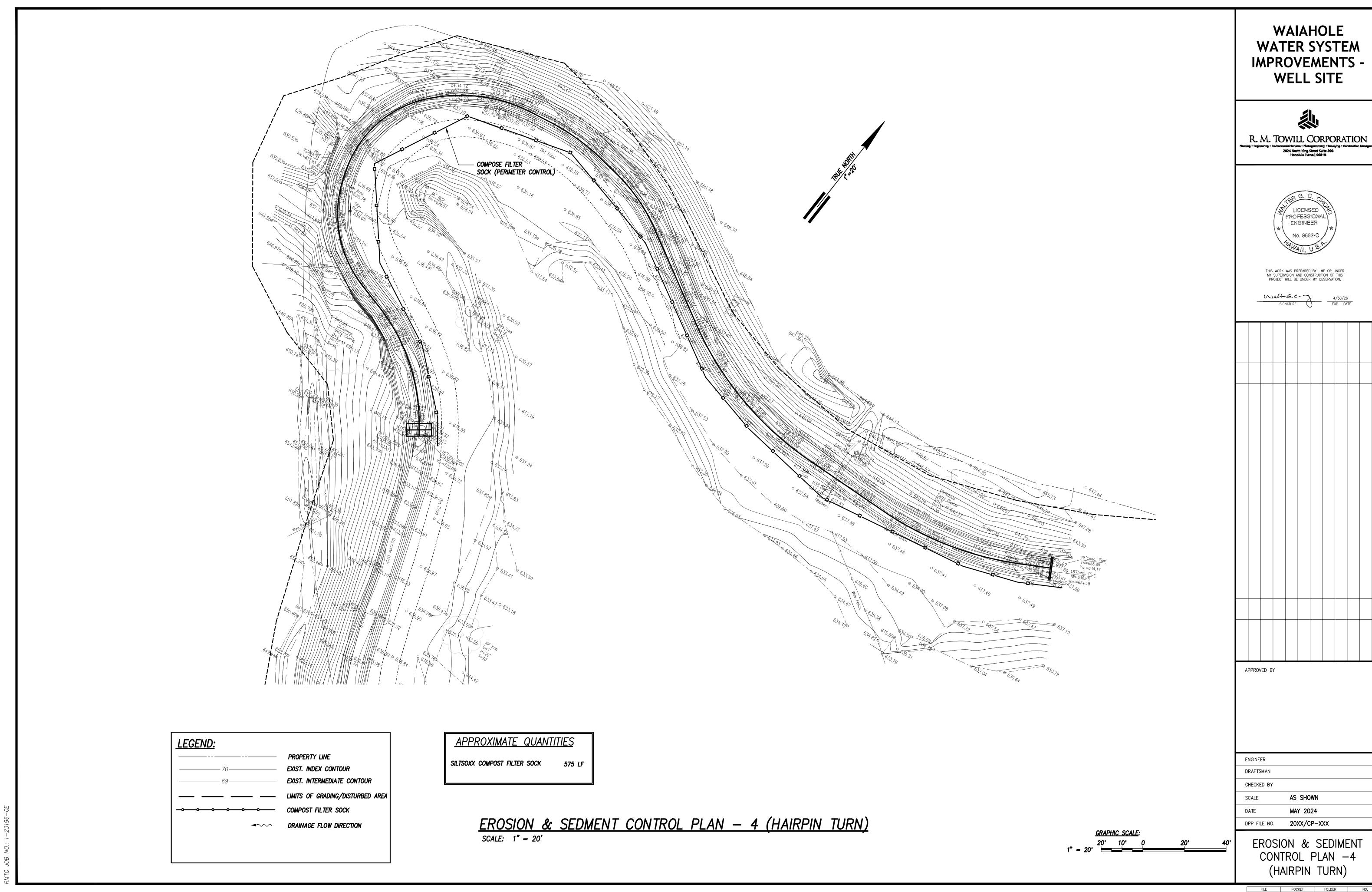
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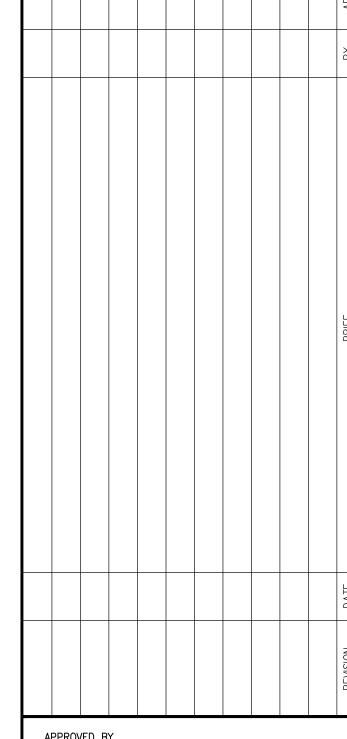


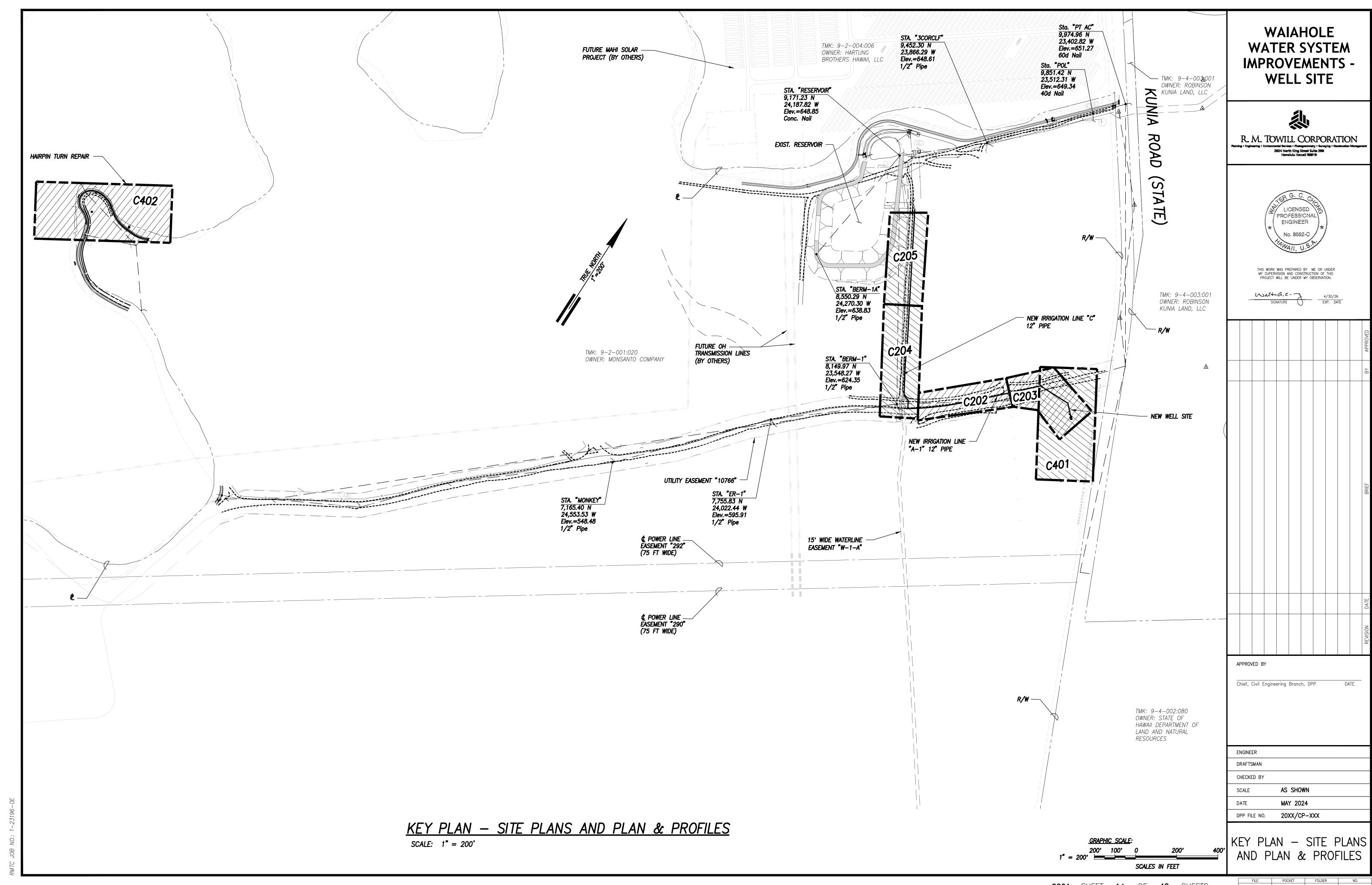


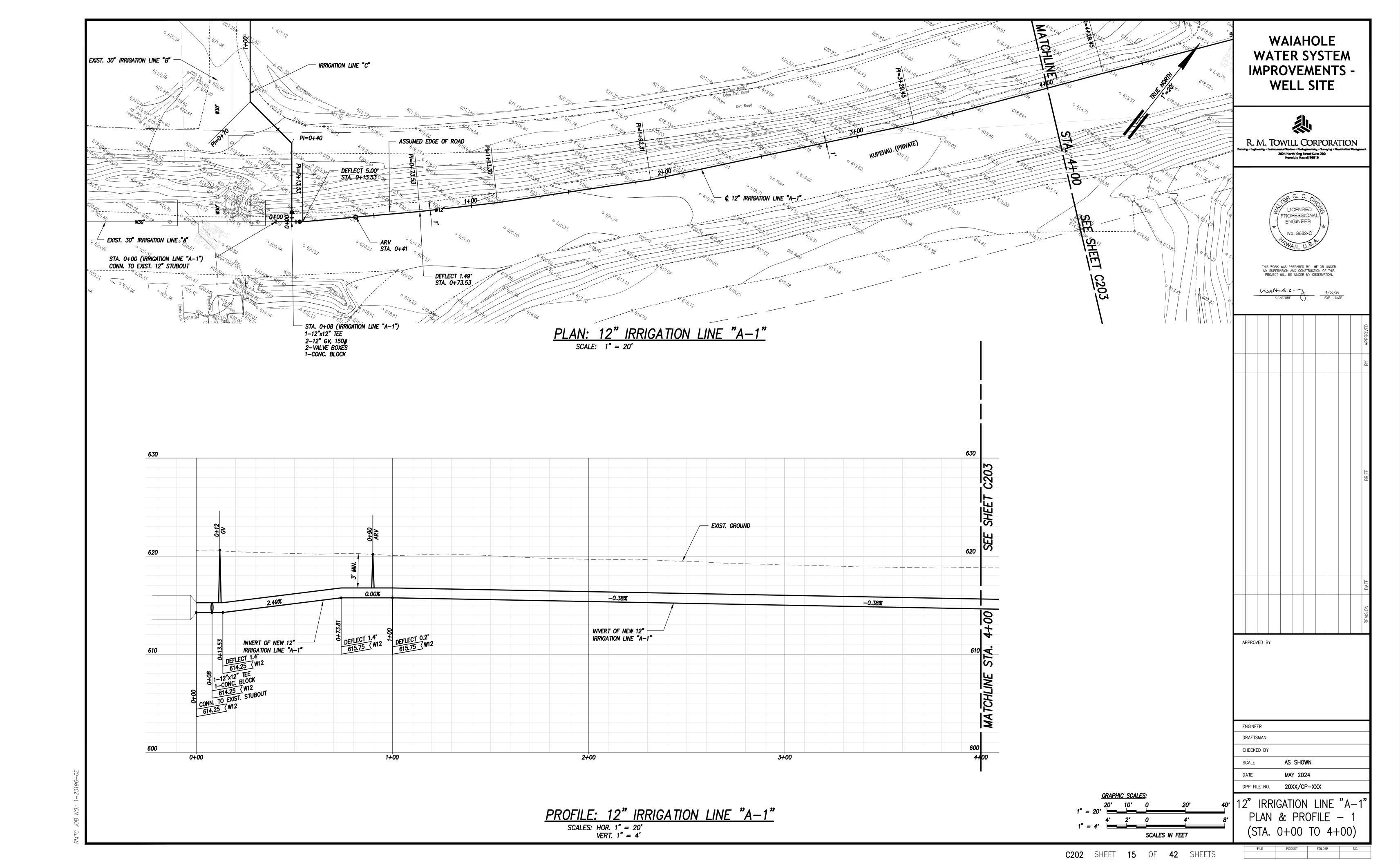


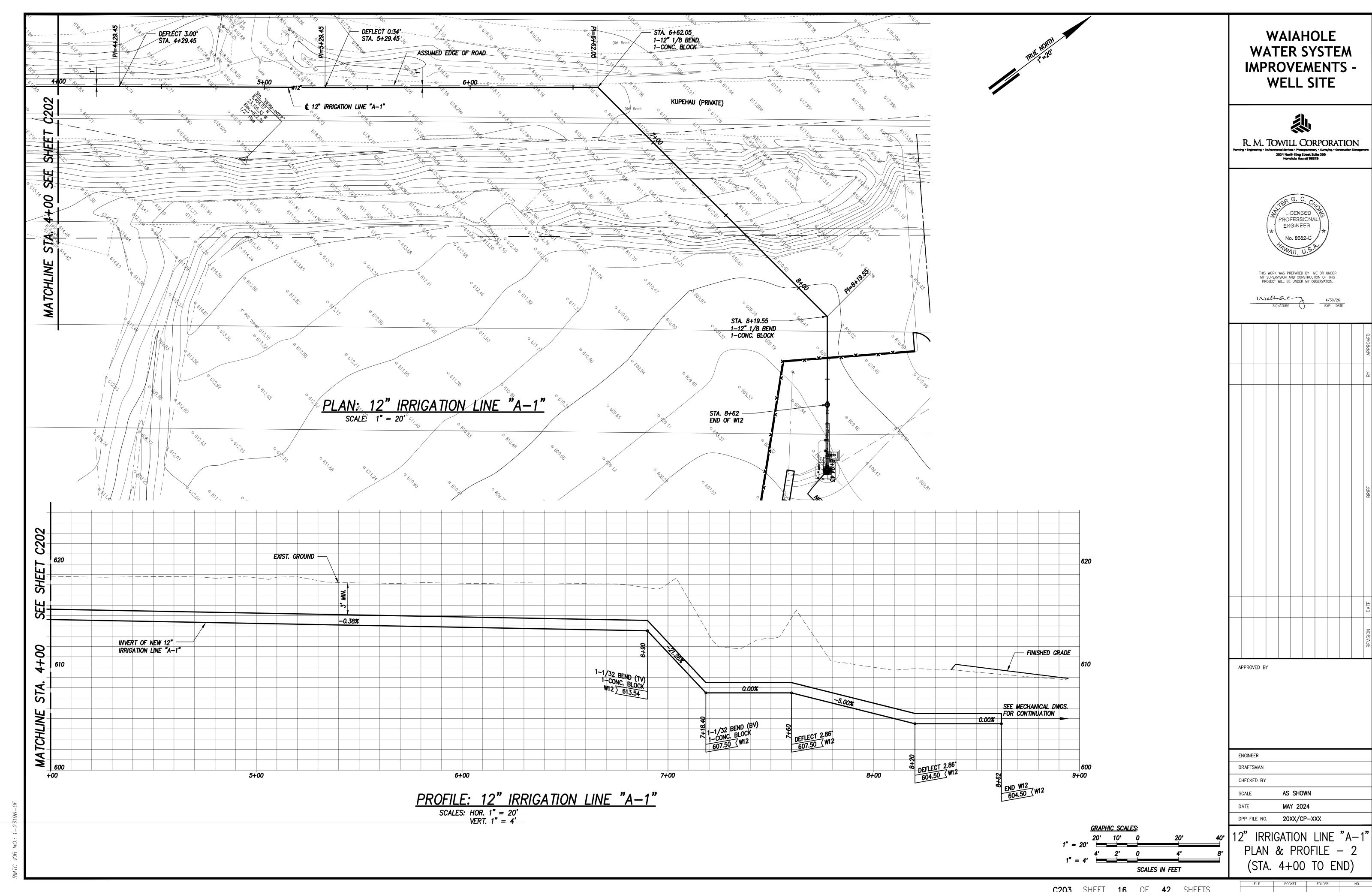
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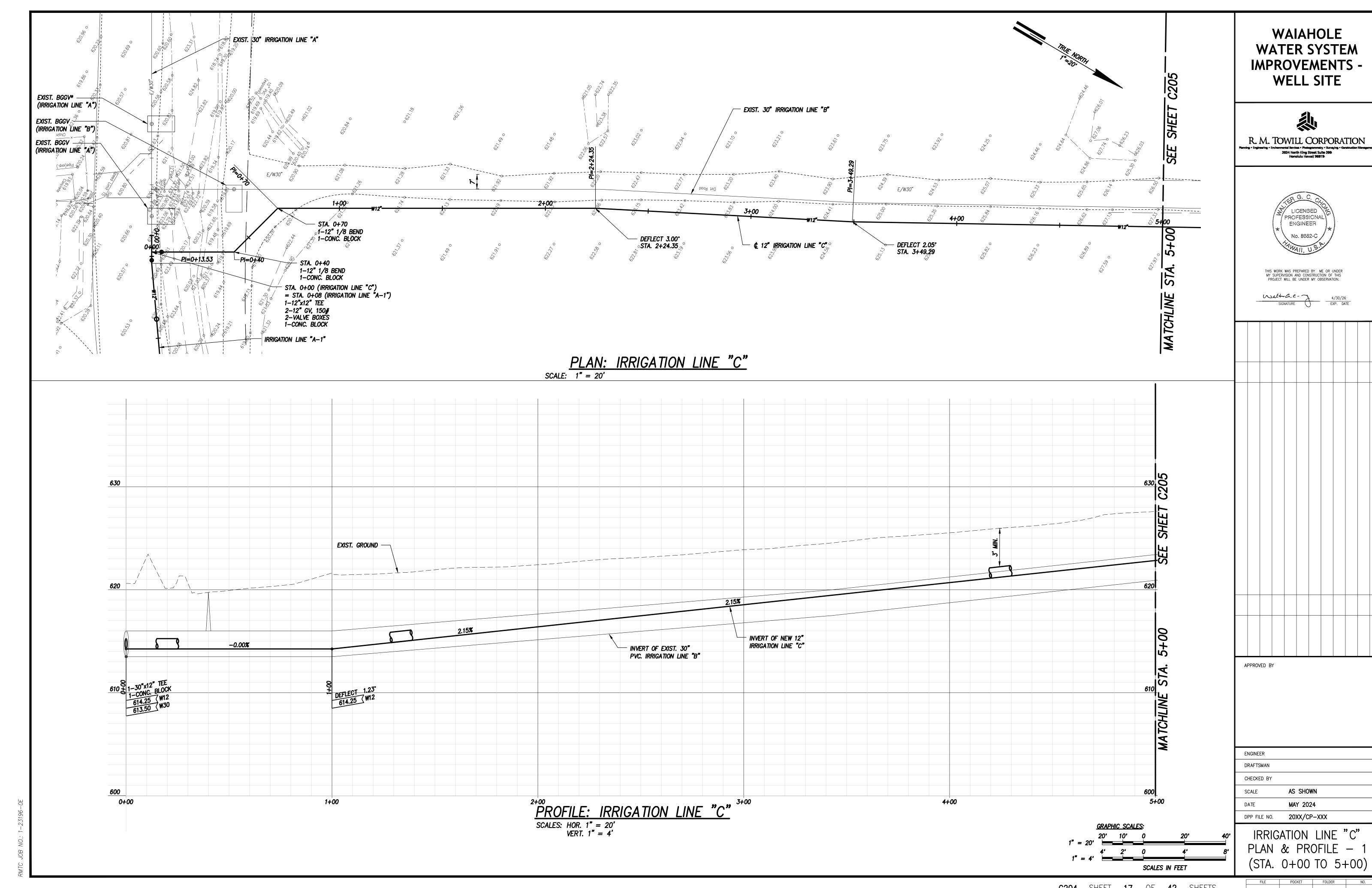


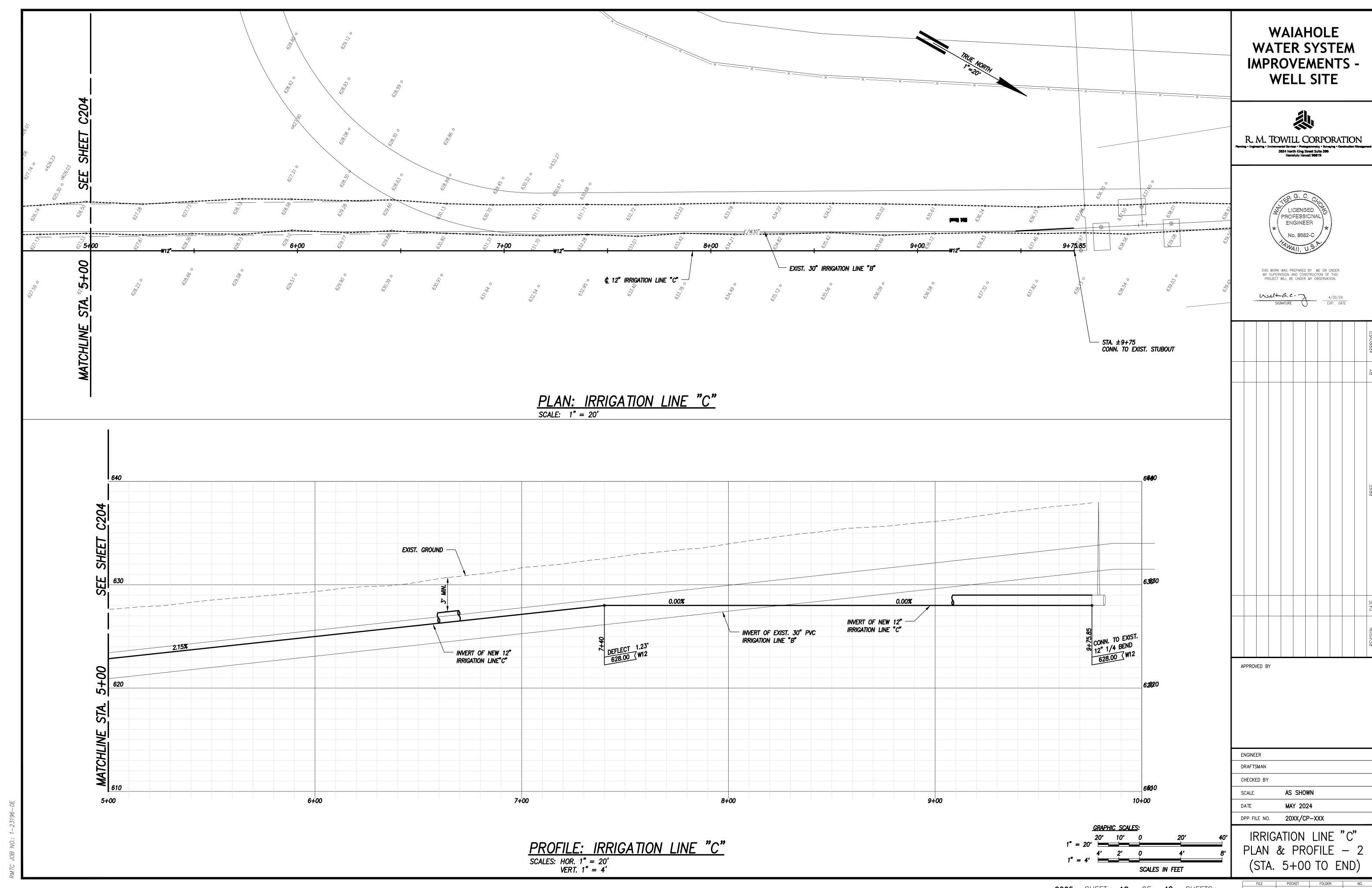


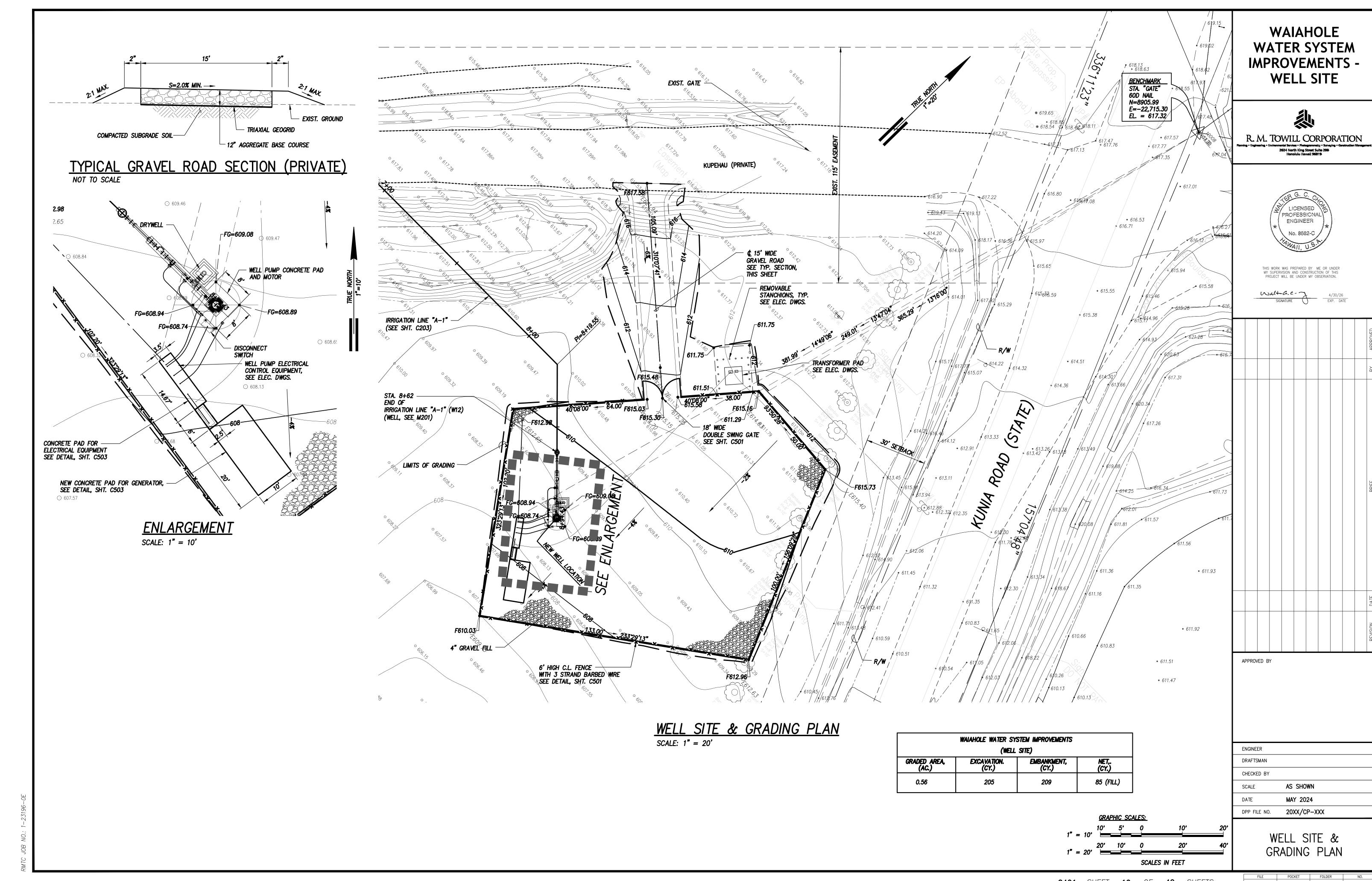






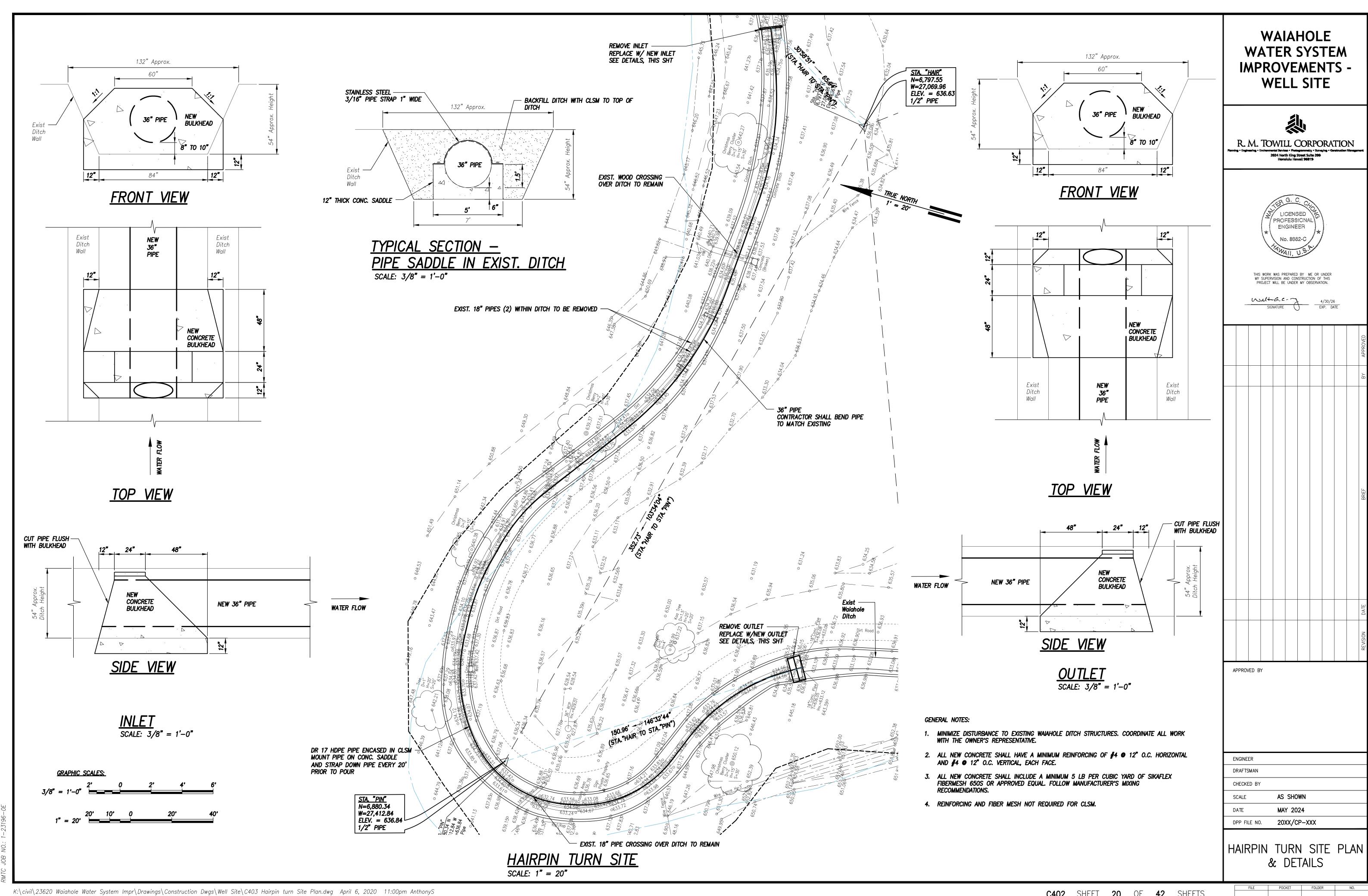


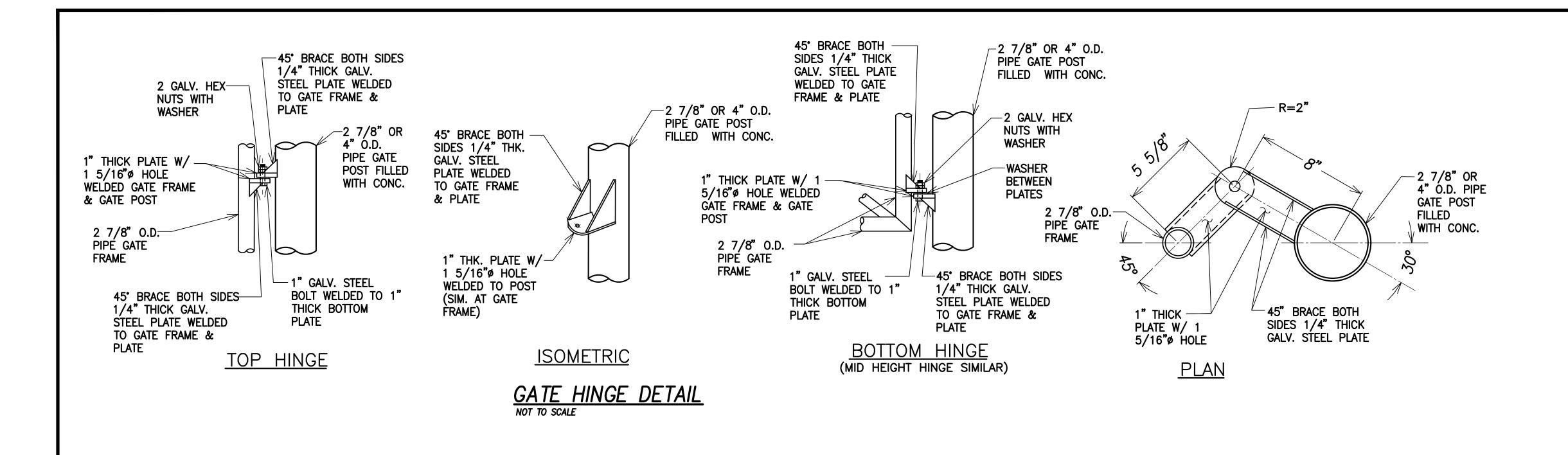


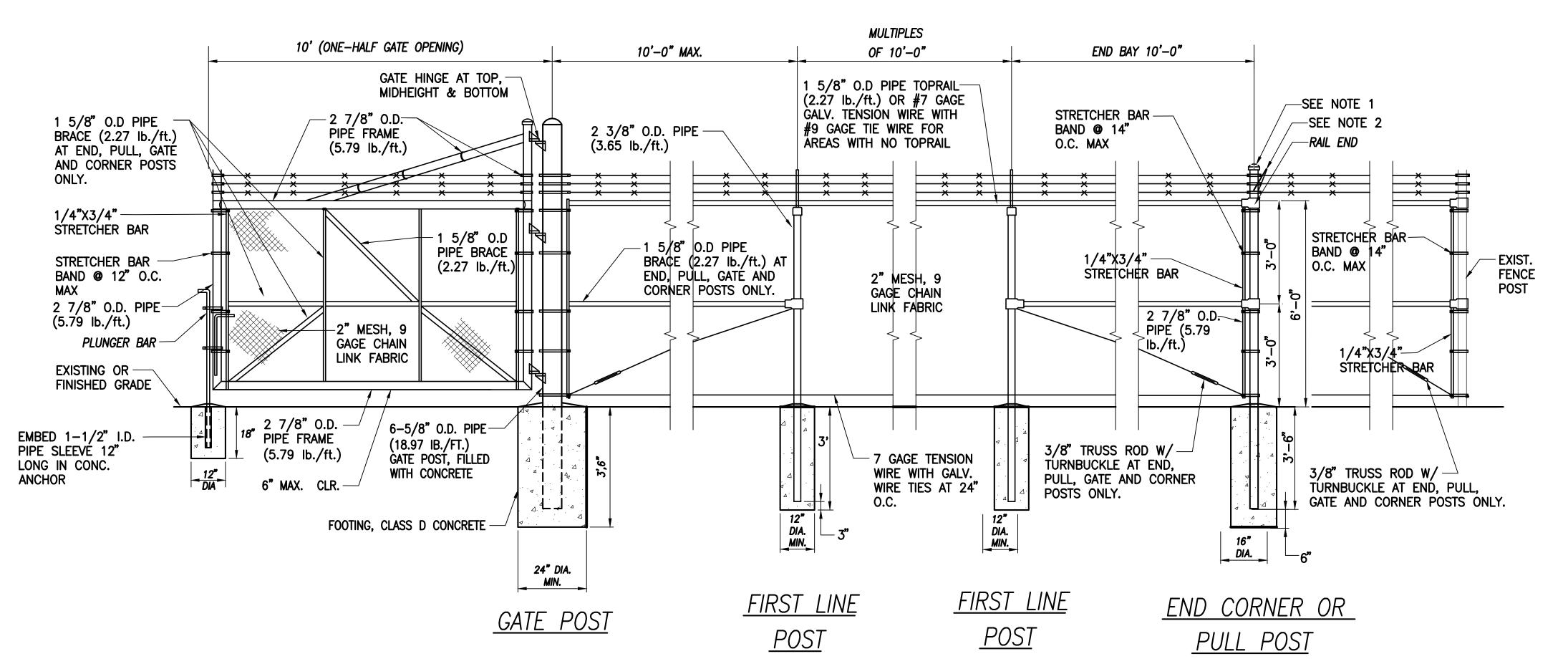


C401 SHEET 19 OF 42 SHEETS

FILE POCKET FOLDER







GATE NOTES:

1. GATE FRAME SHALL BE WELDED PIPE CONSTRUCTION.

2. FOR ALL WELDED CONNECTIONS,
CORNERS SHALL BE MITERED AND ALL
PIPE BRACES PROPERLY COPED.

- 3. ALL WELDED CONNECTIONS SHALL BE PAINTED WITH TWO COATS OF Z.R.C. COLD GALVANIZING COMPOUND.
 4. GATE HINGES SHALL BE TACK WELDED
- TO POST.

 5. PIPES, FITTINGS, AND POSTS SHALL BE HOT—DIP GALVANIZED.
- 6. TOP AND BOTTOM SELVAGES SHALL BE KNUCKLED FINISH.

FENCE NOTES

- FENCE NOTES:

 1. ALL PIPE AND POST SIZES ARE OUTSIDE DIAMETER (O.D.).

 2. PIPES, FITTINGS, AND POSTS SHALL BE HOT—DIP GALVANIZED.
- 3. FABRIC SHALL BE CONTINUOUS AND FASTENED TO END POSTS BY STRETCHER BARS AND TENSION BANDS SPACED APPROXIMATELY 12" APART.
- 4. WIRE FASTENING SHALL BE NO. 13 GAUGE GALVANIZED TIE WIRE.
 5. LINE POSTS WIRE FASTENINGS SHALL BE SPACED 14" APART.
- 6. HORIZONTAL RAILS WIRE FASTENNINGS SHALL BE SPACED 24" APART.
 7. NO SPLICING SHALL BE ALLOWED ON ALL STRAIGHT—RUN PIPES.
- 8. TOP AND BOTTOM SELVAGES SHALL BE TWISTED AND BARBED FINISH.9. AT FENCE END ONLY, EXCLUDE BARBED WIRE EXTENSION ARM AND EXTEND POST. FASTEN BARBED WIRE TO POST.
- 10. POINT EXTENSION OUTWARD OR AWAY FROM PROPERTY LINE AT AN ANGLE OF 45° FROM VERTICAL.

1" = 2' 1' 0 2' 2'

Scale in Feet

WAIAHOLE WATER SYSTEM IMPROVEMENTS -WELL SITE

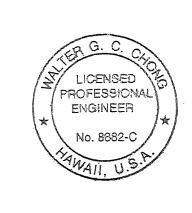


R. M. TOWILL CORPORATION

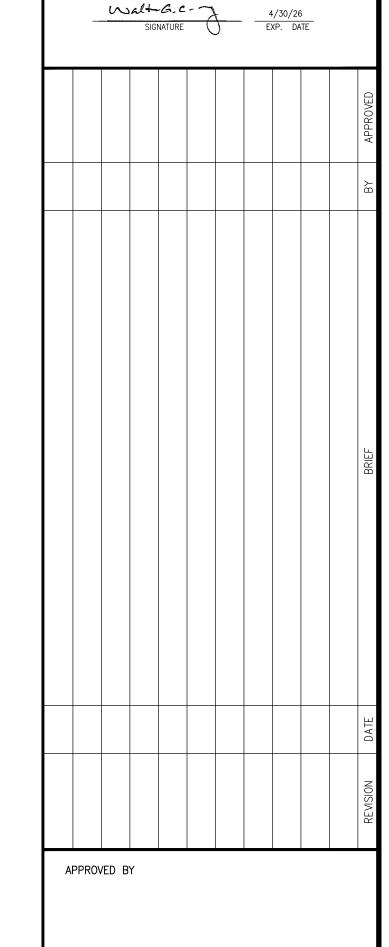
Planning • Engineering • Environmental Services • Photogrammetry • Surveying • Construction Manage

2024 North King Street Suite 208

Honolulu Hawaii 96819



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ENGINEER

DRAFTSMAN

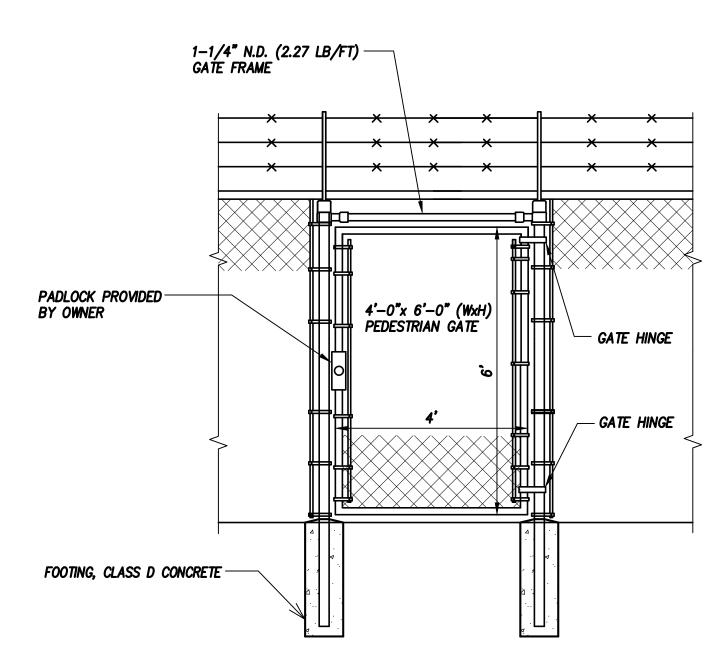
CHECKED BY

SCALE AS SHOWN

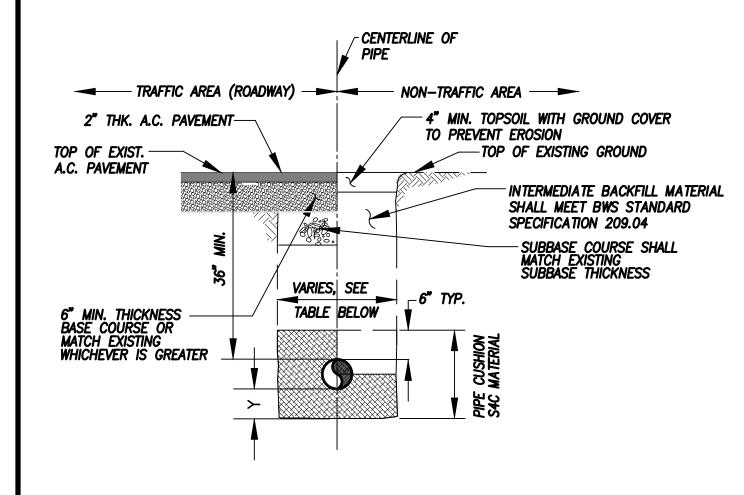
DATE MAY 2024

DPP FILE NO. 20XX/CP—XXX

MISCELLANEOUS DETAILS - 1



PEDESTRIAN GATE DETAIL



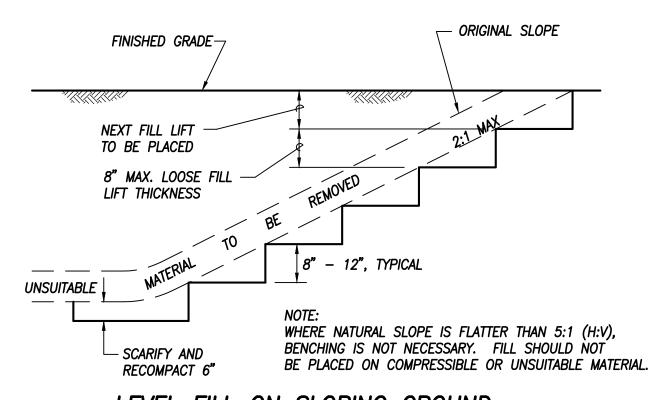
PIPE SIZE	TRENCH WIDTH	"Y" MIN.
6 "	24"	6"
8"	24"	6"
12"	24"	12"
30"	48"	12"

- 1) PAVEMENT STRUCTURE SHALL BE EQUAL OR BETTER THAN EXISTING IN THICKNESS AND QUALITY.
- 2) COMPACTION SHALL BE 95% ASTM 1557D, 1557D, METHOD "D" FOR COHESIONLESS SOILS AND 90% MAX. DENSITY FOR COHESIVE SOILS.

PIPE TRENCH FOR A

SINGULAR PIPE (PRIVATE)

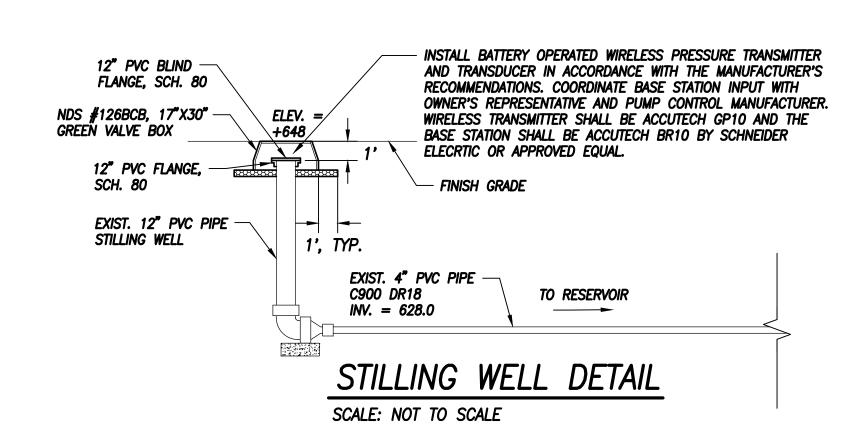
SCALE: 1"=20'

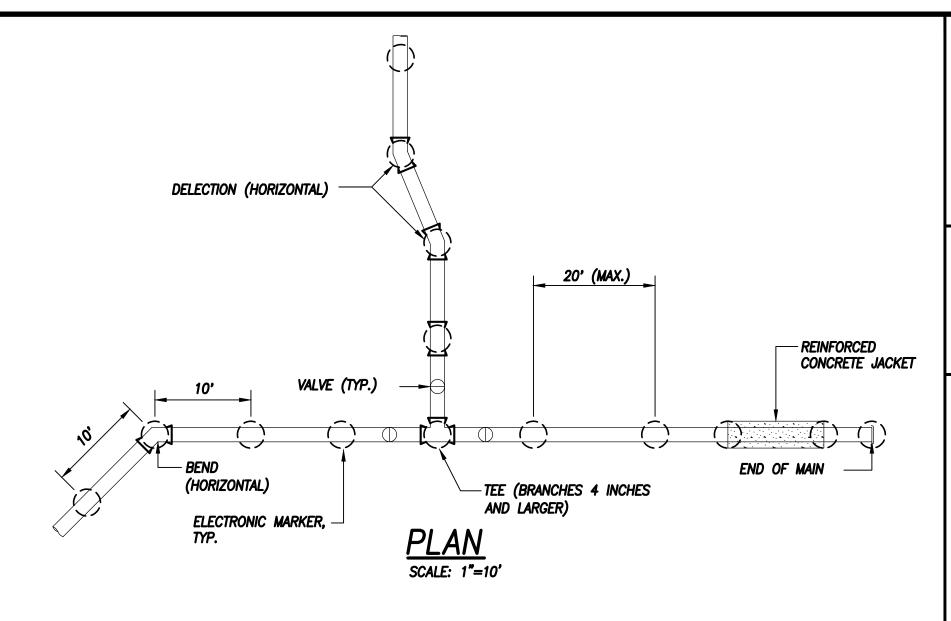


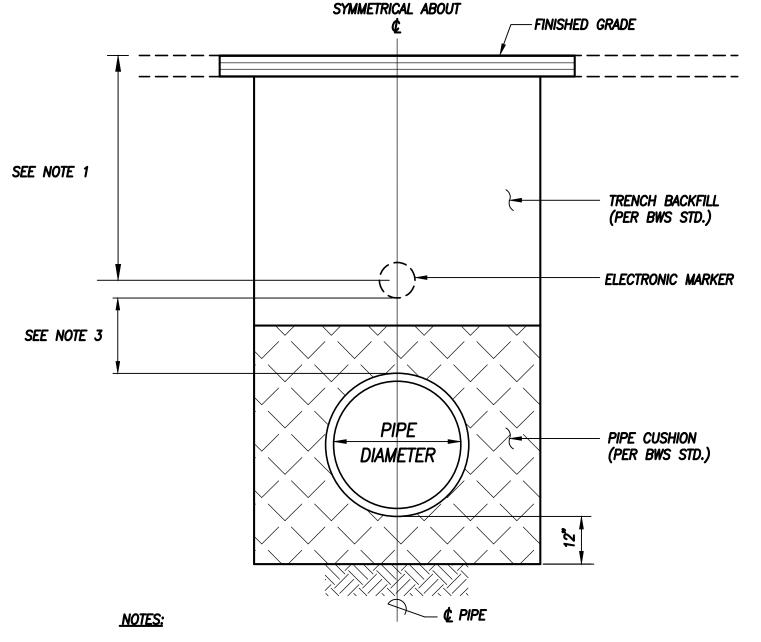
PROJECTED 1:1 PROJECTED 1:1 TOE OF SLOPE SHOWN ON GRADING PLAN NATURAL SLOPE UNSUITABLE UNSUITABLE NOTE: MAXIMUM HEIGHT OF CUT OR FILL SLOPE WITHOUT BENCH IS 15'

TYPICAL KEYING & BENCHING DETAIL NOT TO SCALE

FILL SLOPE ON SLOPING GROUND

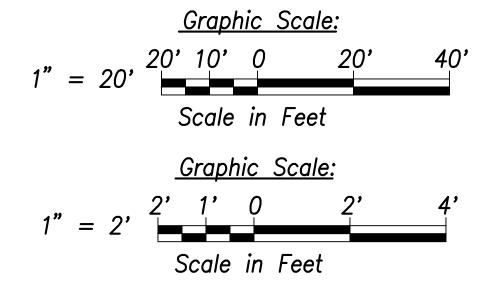






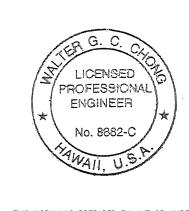
- 1. INSTALL ELECTRONIC MARKER OVER CENTER LINE OF PIPE AT A MINIMUM DEPTH OF 2 FEET AND A MAXIMUM DEPTH OF 3 FEET FROM FINISH GRADE.
- 2. INSTALL TRENCH BACKFILL AND PIPE CUSHION MATERIAL IN ACCORDANCE TO THE PLANS AND SPECIFICATIONS.
- 3. INSTALL ELECTRONIC MARKERS AT A MINIMUM CLEARANCE OF 6-INCHES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

TYPICAL ELECTRONIC MARKER INSTALLATION



WAIAHOLE WATER SYSTEM IMPROVEMENTS -WELL SITE

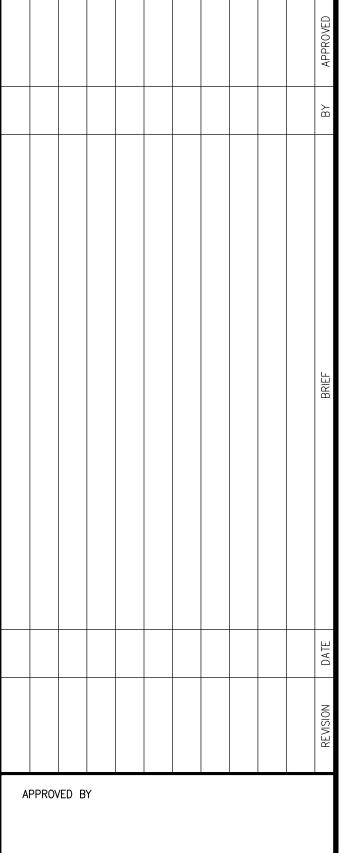




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WALL-G.CSIGNATURE

4/30/26
EXP. DATE



ENGINEER

DRAFTSMAN

CHECKED BY

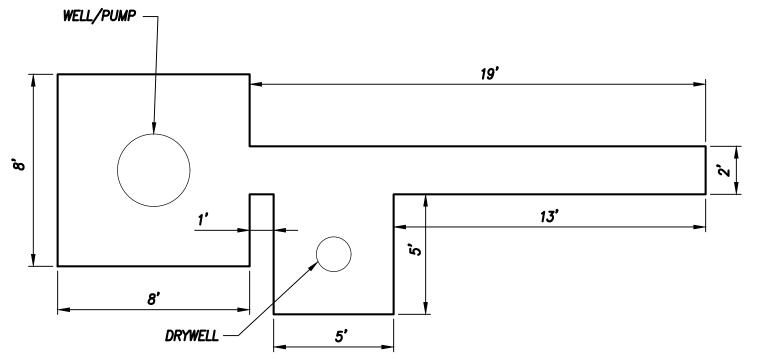
SCALE AS SHOWN

DATE MAY 2024

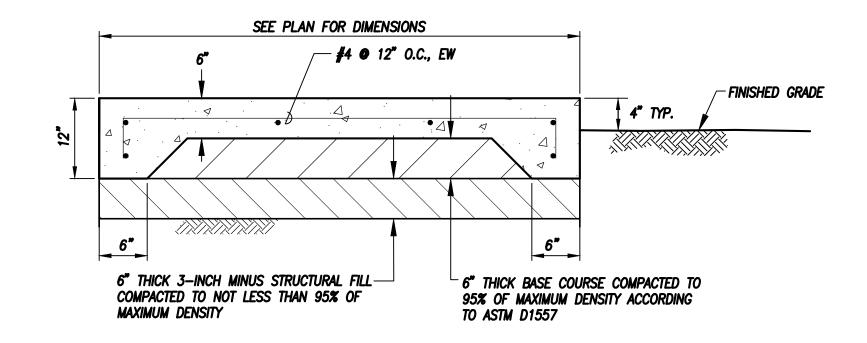
DPP FILE NO. 20XX/CP—XXX

MISCELLANEOUS DETAILS - 2

0 3015C 1 . ON GO! OF



DETAIL: CONCRETE PAD FOR PUMP/WELL/PIPE HEADER
NOT TO SCALE



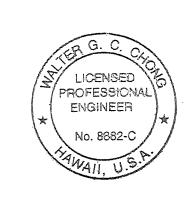
DETAIL: CONCRETE PAD FOR ELECTRICAL EQUIPMENT
NOT TO SCALE

WAIAHOLE WATER SYSTEM IMPROVEMENTS -WELL SITE



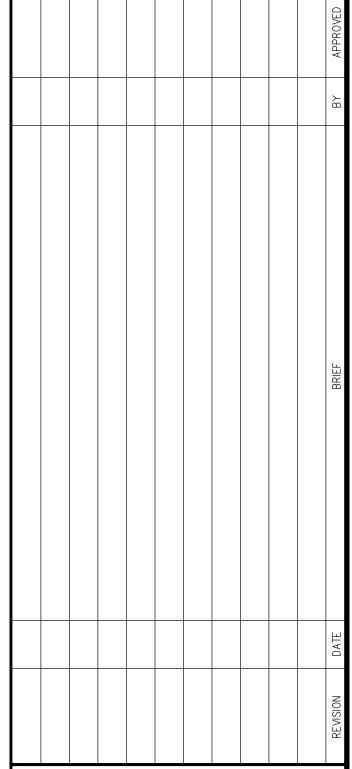
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Manning • Engineering • Environmental Services • Photogrammetry • Surveying • Gonstruction Management
2024 North King Street Suite 209
Honolulu Hawaii 96819



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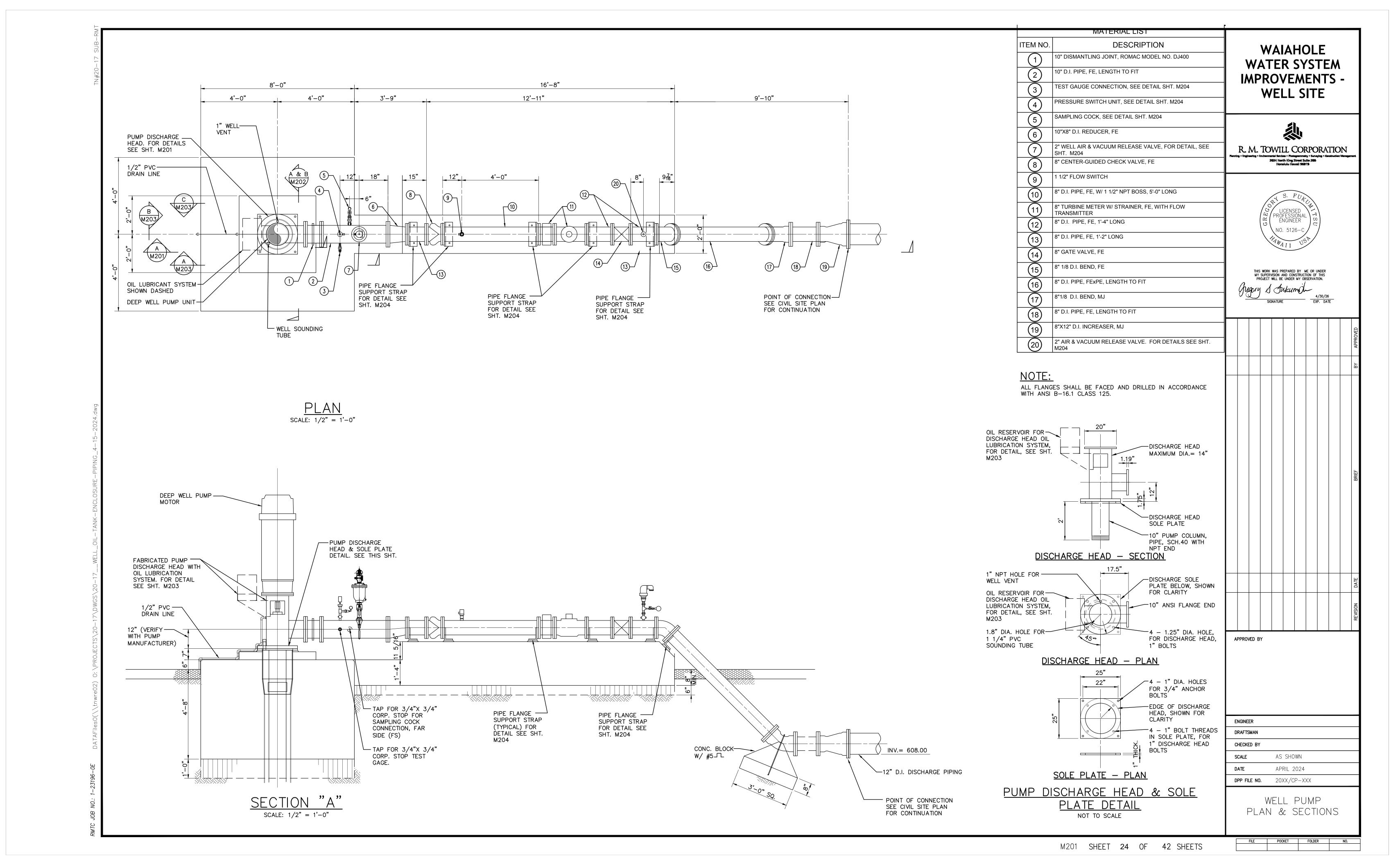
SIGNATURE 4/30/26 EXP. DATE

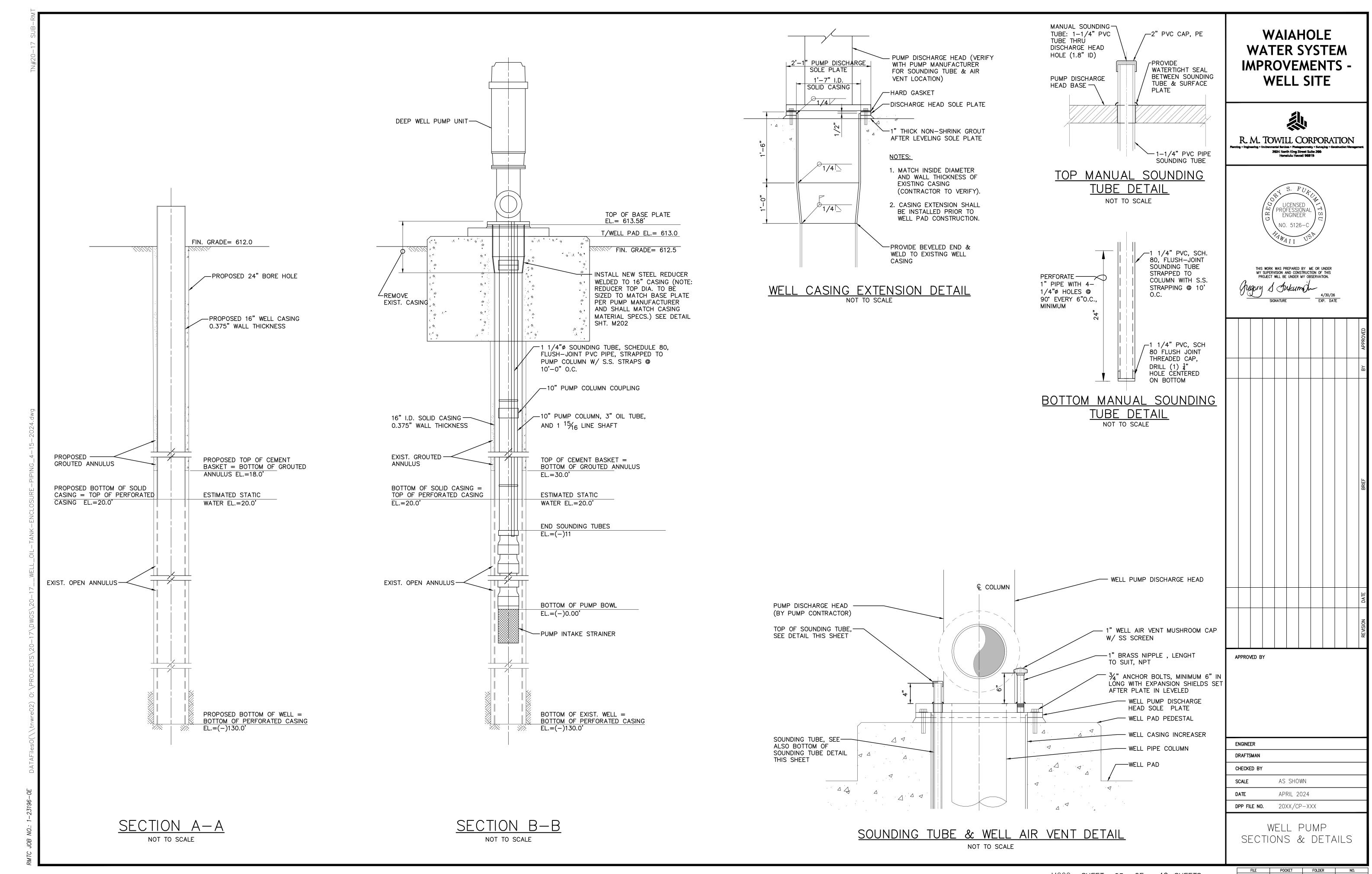


APPROVED

ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	MAY 2024
DPP FILE NO.	20XX/CP-XXX

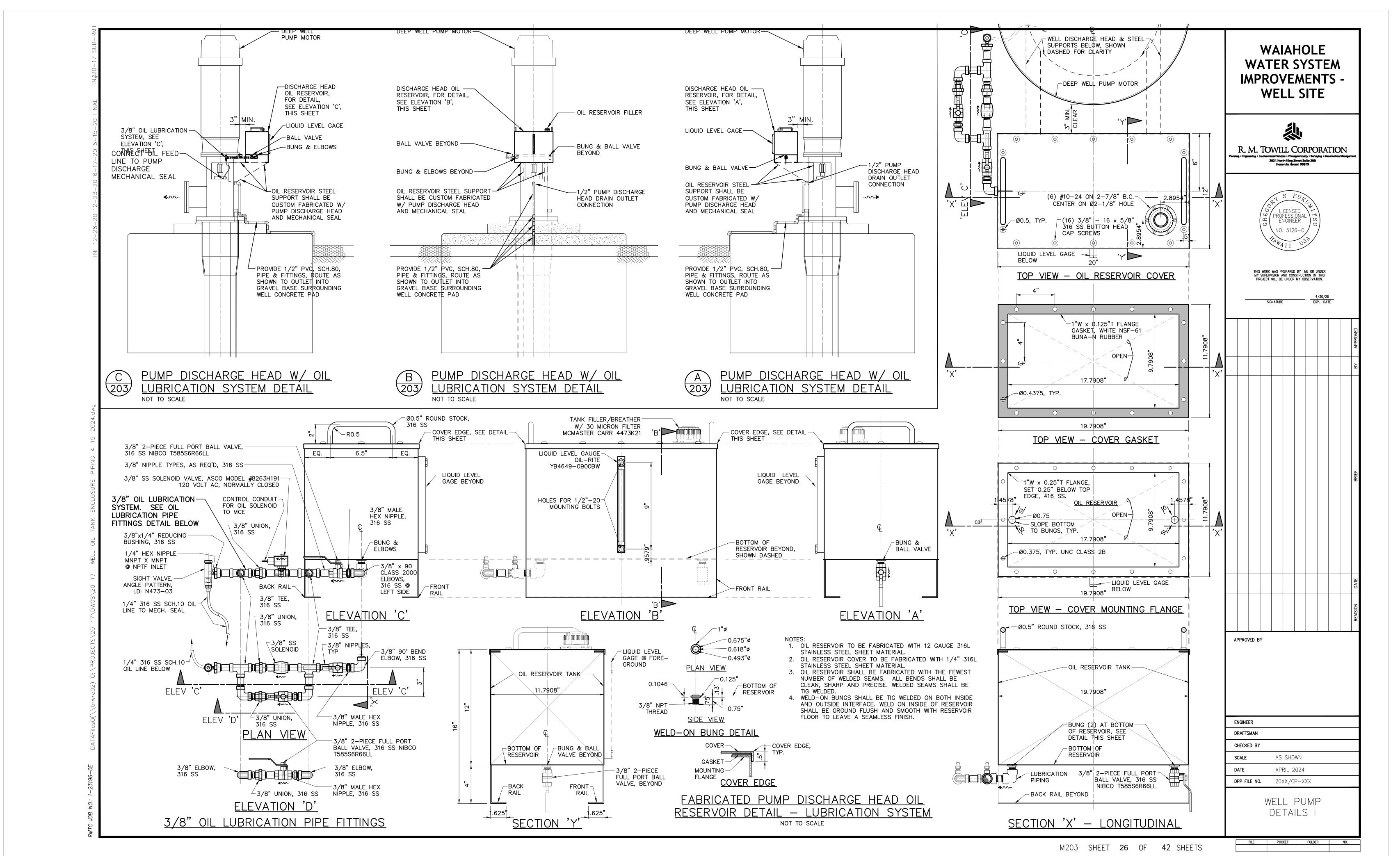
CONCRETE PAD DETAIL

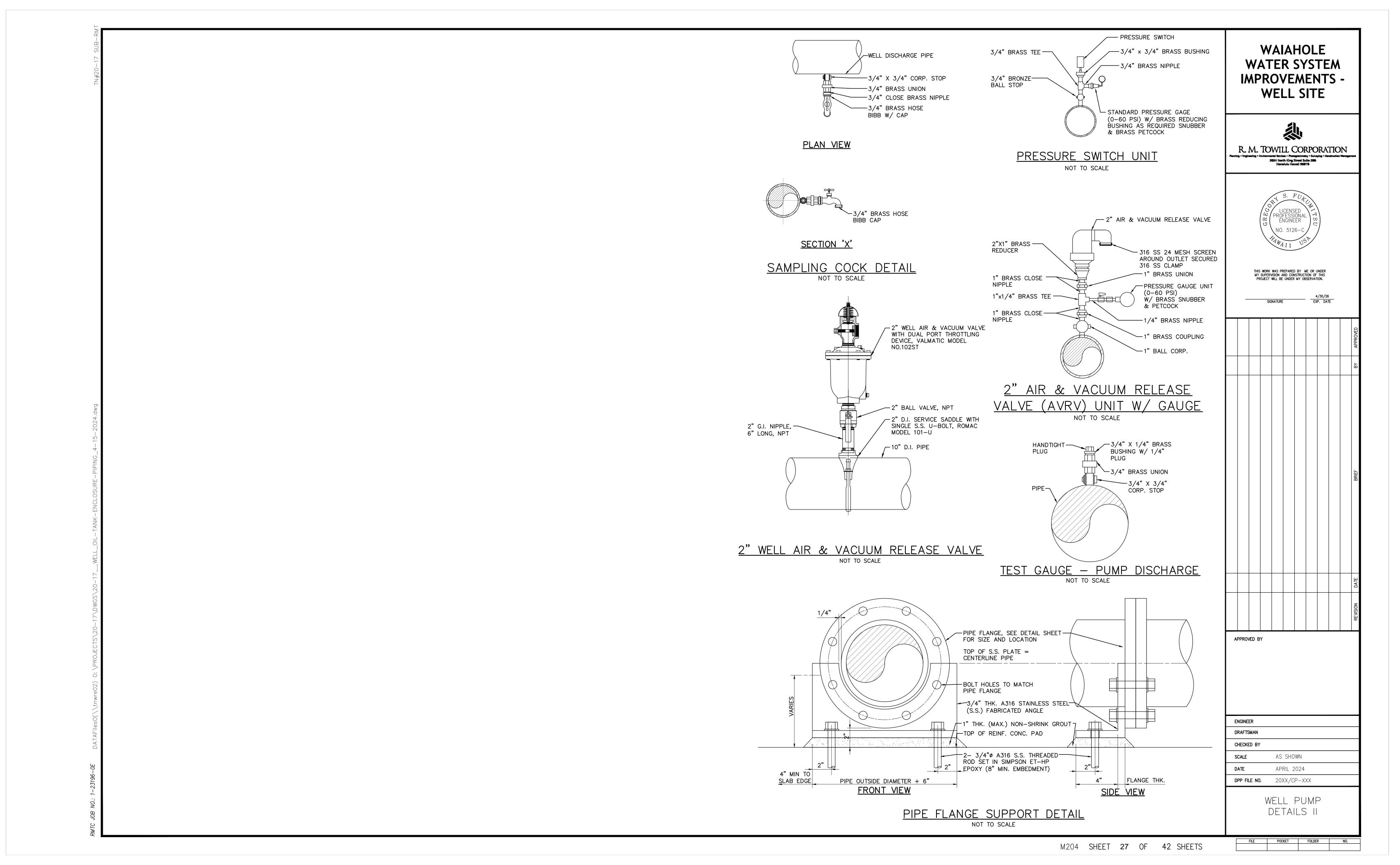




M202 SHEET **25** OF **42** SHEETS

FILE POCKET FOLDER





	ELECTRICA	L SYM	BOLS
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE, NEMA 5-15R, 120V, MTD. +18" OR	mm	FLEXIBLE CONDUIT, LIQUIDTIGHT
\vdash	AS NOTED		EXPOSED CONDUIT
	DUPLEX RECEPTACLE, WITH GROUND FAULT CIRCUIT INTERRUPTER,		CONDUIT OR DUCTLINE BELOW REF. FL. OR GROUND
-	NEMA 5-20R, 120V, MTD. +18" OR AS NOTED	lul c	CONDUIT CONCEALED ABOVE REF. FL., 3 WIRES WITH
	DUPLEX RECEPTACLE, WITH GROUND FAULT CIRCUIT INTERRUPTER,		GROUND WIRE
	NEMA 5-20R, 120V, CHANNEL MOUNTED IN WEATHERPROOF HOUSING		EXISTING UTILITY OVERHEAD LINES
	ELECTRICAL PANELBOARD		EXISTING DUCTLINE
H	JUNCTION BOX, CEIL. MTD., 4-11/16" NOM.		ELECTRIC/SIGNAL DUCTLINE WITH DESIGNATORS; ITEMS
	JUNCTION BOX, WALL MTD., 4-11/16" NOM.] =:=	IN CIRCLE INDICATES DUCT SECTION TYPE, WITH DUCT
	JUNCTION BOX MTD. ON CHANNEL SUPPORT, SEE DETAIL 1/E401		COMPLEMENTS NOTED BELOW (TYPE "A" DUCT INDICATED
			WITH 1-4"E DUCT, AND TYPE "S" DUCT WITH
\$ a	LT. SW., 1P, CONTROLLING OUTLET(S) "a", MTD. +48" OR AS NOTED	$\exists \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	1-1"C DUCT; E=ELECTRIC, T=TELEPHONE,
		1-4E 1-1C	C=CONTROLS, I=INSTRUMENTATION, A=ANTENNA); SEE SHEET E004 FOR
(E)	EQUIPMENT CONNECTION		DUCT SECTION DETAILS
M/H)	MOTOR AND MOTOR HEATER CONNECTIONS		
BFV	BUTTERFLY VALVE CONNECTION		3'X5' HECO CONCRETE HANDHOLE PER HECO
HDPS	HIGH DISCHARGE PRESSURE SWITCH CONNECTION		REQUIREMENTS AND APPROVAL
FS	FLOW SWITCH CONNECTION		
LS	LIMIT SWITCH CONNECTION		
OLS	OIL LUBE SOLENOID CONNECTION		
WFT	WELL FLOW TRANSMITTER CONNECTION	SPD	DENOTES "SURGE PROTECTIVE DEVICE"
WLT	WELL LEVEL TRANSDUCER CONNECTION	WP	DENOTES "WEATHERPROOF"
		SS	DENOTES "TYPE 316 STAINLESS STEEL"
		NOTE:	
			(S ON CONDUITS INDICATE 2 WIRES; — III— INDICATES
			-INDICATES 4 WIRES, ETC.
		1111	

ONE	E-LINE DIAGRAM SYMBOLS
SYMBOL	DESCRIPTION
\bigcap	CIRCUIT BREAKER
•	DISCONNECT SWITCH
}{ }{	TRANSFORMER, TYPE AS INDICATED
	GROUND
GFP	GROUND FAULT PROTECTION
	CURRENT TRANSFORMER
G 🗆	GROUND
N 🗆	NEUTRAL
	CONDUIT AND CIRCUITING AS INDICATED

CITY AND COUNTY OF HONOLULU REVISED ORDINANCE OF HONOLULU 2021 CHAPTER 16B
TO THE BEST OF MY KNOWLEDGE, THIS PROJECT'S DESIGN SUBSTANTIALLY CONFORMS TO THE BUILDING ENERGY CONSERVATION CODE FOR:
BUILDING COMPONENT SYSTEMS X ELECTRICAL COMPONENT SYSTEMS MECHANICAL COMPONENT SYSTEMS
SIGNATURE: DATE: 2024.04.29 NAME: BILLY J. ORNELLAS
TITLE: PRINCIPAL LICENSE NO.: 11658

BUILDING ENERGY CONSERVATION CODE	
EXTERIOR LIGHTING POWER ALLOWANCEO INSTALLED _	0
INTERIOR LIGHTING POWER ALLOWANCEO INSTALLED	0
CALCULATIONS: SEPARATE ON DRAWINGS NA (CHECK ONE)	

GENERAL CONSTRUCTION NOTES

- 1. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE HAWAIIAN ELECTRIC COMPANY.
- 2. PROVIDE POLYOLEFIN 200LB TEST PULLCORD IN ALL EMPTY CONDUITS, UNLESS OTHERWISE NOTED.
- 3. ALL ELECTRICAL EQUIPMENT ENCLOSURES AND EQUIPMENT MOUNTING HARDWARE AND FASTENERS FOR OUTDOOR INSTALLATION SHALL BE TYPE 316 STAINLESS STEEL, UNLESS OTHERWISE NOTED.

									Pn 220052
Short-Circuit Current	System	Feeder	Conductor	Conductor	Conductors			Short Circuit Current	
at Source (A)	Voltage (V)	Length (ft)	Size	Impedence Constant (C)	per Phase	f	Multiplier (M)	at Load (A)	Equipment SCCR
40,200	480	130	500 kcmil	26,706	2	0.353	0.739	29,711	35,000
40,200						128.000	0.008	312	N/A
312	208	3	#8	1,559	1	0.005	0.995	310	10,000
	at Source (A) 40,200 40,200	Short-Circuit Current System at Source (A) Voltage (V) 40,200 480 40,200	Short-Circuit Current System Feeder at Source (A) Voltage (V) Length (ft) 40,200 480 130 40,200	Short-Circuit Current System Feeder Conductor at Source (A) Voltage (V) Length (ft) Size 40,200 480 130 500 kcmil	Short-Circuit Current System Feeder Conductor Conductor at Source (A) Voltage (V) Length (ft) Size Impedence Constant (C) 40,200 480 130 500 kcmil 26,706 40,200	Short-Circuit Current System Feeder Conductor Conductor at Source (A) Voltage (V) Length (ft) Size Impedence Constant (C) per Phase 40,200 480 130 500 kcmil 26,706 2	Short-Circuit Current System Feeder Conductor Conductor Conductors at Source (A) Voltage (V) Length (ft) Size Impedence Constant (C) per Phase f 40,200 480 130 500 kcmil 26,706 2 0.353 40,200 128.000	Short-Circuit Current System Feeder Conductor Conductor Conductors at Source (A) Voltage (V) Length (ft) Size Impedence Constant (C) per Phase f Multiplier (M) 40,200 480 130 500 kcmil 26,706 2 0.353 0.739 40,200 128.000 0.008	Short-Circuit Current System Feeder Conductor Conductor Conductors Short Circuit Current at Source (A) Voltage (V) Length (ft) Size Impedence Constant (C) per Phase f Multiplier (M) at Load (A) 40,200 480 130 500 kcmil 26,706 2 0.353 0.739 29,711 40,200 128.000 0.008 312

1 SHORT CIRCUIT CALCULATIONS
E001 NOT TO SCALE

MAXIMUM AVAILABLE
FAULT CURRENT

> XXXXX AMPS

DATE: MO/DAY/YEAR

NOTE:

- 1. RED BACKGROUND
- 2. WHITE LETTERING
- 3. MINIMUM 1/4" LETTER HEIGHT, ALL CAPITAL LETTERS
- 4. INDICATE CURRENT DATE
- 5. SHANNON OR SIMILAR FONT, NON-BOLD
- 6. REFLECTIVE WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT. (DURABLE ADHESIVE MATERIALS MA MEET THIS REQUIREMENT)
- 7. FIND AVAILABLE FAULT CURRENT VALUE ON LAST COLUMN OF SHORT CIRCUIT CALCULATIONS SPREADSHEET.
- 8. PROVIDE LABEL ON MAIN BREAKER AND METERING SECTIONS OF SWITCHBOARD MCC.

FAULT CURRENT LABEL
E001 NOT TO SCALE

FED FROM HECO TRANSFORMER

NOTE:

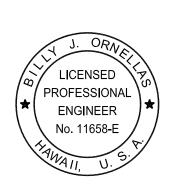
- 1. RED OR BLACK BACKGROUND
- 2. WHITE LETTERING
- 3. MINIMUM 3/16" LETTER HEIGHT
- 4. ALL CAPITAL LETTERS
- 5. SHANNON OR SIMILAR FONT, NON-BOLD
- 6. REFLECTIVE WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT. (DURABLE ADHESIVE MATERIALS MA MEET THIS REQUIREMENT)
- 7. PROVIDE LABELS ON SWITCHBOARD MCC.

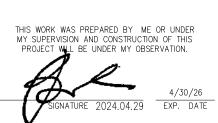
SOURCE OF SUPPLY LABEL

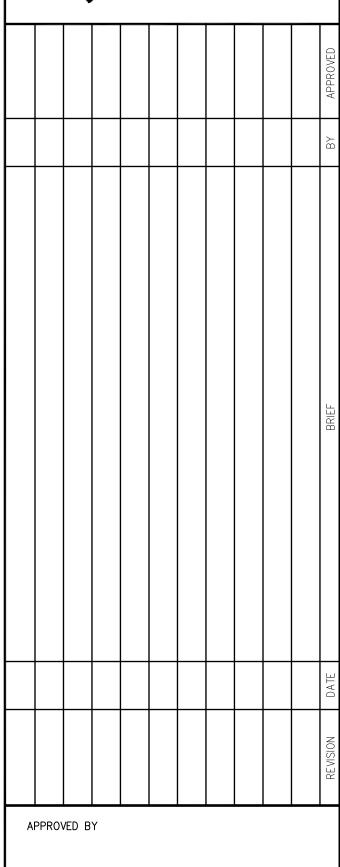
E001 NOT TO SCALE

WAIAHOLE WATER SYSTEM IMPROVEMENTS -WELL SITE









ENGINEER BO

DRAFTSMAN CAD

CHECKED BY BO

SCALE AS SHOWN

DATE APRIL 2024

DPP FILE NO. 2020/CP-XX

SYMBOLS LIST, GENERAL NOTES

1. LOCATION OF HAWAIIAN ELECTRIC FACILITIES

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

2. COMPLIANCE WITH HAWAII OCCUPATIONAL SAFETY AND HEALTH LAWS

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

3. EXCAVATION CLEARANCE

THE CONTRACTOR SHALL OBTAIN AN EXCAVATION CLEARANCE FROM HAWAIIAN ELECTRIC'S PLANNING AND DESIGN SECTION OF THE TRANSMISSION & DISTRIBUTION ENGINEERING DEPARTMENT (543–5654) LOCATED AT 820 WARD AVENUE, 4TH FLOOR, A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO STARTING CONSTRUCTION.

4. CAUTION!!! ELECTRICAL HAZARD!!!

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

5. OVERHEAD LINES

STATE LAW (OSHA) REQUIRES THAT A WORKER AND THE LONGEST OBJECT HE OR SHE MAY CONTACT CANNOT COME CLOSER THAN A SPECIFIED MINIMUM RADIAL CLEARANCE WHEN WORKING CLOSE TO OR UNDER ANY OVERHEAD LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE INFORMED OF AND COMPLY WITH THE LAW.

AT ANY TIME SHOULD THE CONTRACTOR ANTICIPATE THAT HIS WORK WILL RESULT IN THE NEED TO ENCROACH WITHIN THE MINIMUM REQUIRED CLEARANCE AS STATED IN THE LAW, THE CONTRACTOR SHALL NOTIFY HAWAIIAN ELECTRIC AT LEAST THREE (3) MONTHS PRIOR TO THE PLANNED ENCROACHMENT SO THAT, IF FEASIBLE, THE NECESSARY PROTECTIONS (E.G. RELOCATE OR DE-ENERGIZE HAWAIIAN ELECTRIC LINES) CAN BE INVESTIGATED. HAWAIIAN ELECTRIC MAY ALSO BE ABLE TO BLANKET ITS DISTRIBUTION (12KV AND BELOW) LINES TO PROVIDE A VISUAL AID IN PREVENTING ACCIDENTAL CONTACT. HAWAIIAN ELECTRIC'S COST OF SAFEGUARDING OR IDENTIFYING ITS LINES WILL BE CHARGED TO THE CONTRACTOR.

CONTACT HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS AT 543-7070 FOR ASSISTANCE IN IDENTIFYING AND SAFEGUARDING OVERHEAD POWER LINES.

6. POLE BRACING

a) CONTRACTOR SHALL NOT EXCAVATE WITHIN 10 FEET OF HAWAIIAN ELECTRIC'S UTILITY POLES OR ANY ANCHOR SYSTEM SUPPORTING THE UTILITY POLE. IF CONTRACTOR MUST EXCAVATE AN AREA MORE THAN 12 INCHES DEEP BY 12 INCHES WIDE, AND CLOSER THAN 10 FEET FROM A UTILITY POLE OR ITS ANCHOR SYSTEM, EXCEPT WHEN EXCAVATING FOR RISERS IN A SINGLE TRENCH NOT WIDER THAN 12 INCHES AND NOT DEEPER THAN 3 FEET, CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING, SUPPORTING, SECURING AND TAKING ALL PRECAUTIONS TO PREVENT DAMAGE TO OR LEANING OF EXISTING POLES. BEFORE COMMENCING SUCH EXCAVATION, CONTRACTOR MUST NOTIFY HAWAIIAN ELECTRIC WHICH MAY LEAD TO IMPLEMENTING POLE BRACING REQUIREMENTS. HAWAIIAN ELECTRIC REQUIRES A MINIMUM OF TEN (10) WORKING DAYS TO CONDUCT THE REVIEW OF CONTRACTOR'S SUBMITTAL. CONTRACTOR SHALL SUBMIT ITS BRACING CALCULATIONS AND DRAWINGS, PREPARED AND STAMPED BY A LICENSED STRUCTURAL ENGINEER, TO HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS (543-7070) FOR REVIEW. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND REMOVAL OF THE TEMPORARY POLE BRACING SYSTEM, AS WELL AS ALL COSTS INCURRED BY HAWAIIAN ELECTRIC TO REVIEW CONTRACTOR'S DRAWINGS AND TO REPAIR OR STRAIGHTEN POLES IMPACTED BY CONTRACTOR'S ACTIVITIES. INCLUDING RESPONSE AND RESTORATION COSTS INCURRED BY HAWAIIAN ELECTRIC ARISING OUT OF OR RELATED TO OUTAGES CAUSED BY CONTRACTOR'S FAILURE TO MEET THE FOREGOING REQUIREMENTS. HAWAIIAN ELECTRIC'S RECEIPT OF POLE BRACING CALCULATION OR DRAWING SUBMITTALS OF ANY CONTRACTOR, INCLUDING WORK PROCEDURE, SHALL NOT RELIEVE CONTRACTOR FROM ANY LIABILITY RESULTING FROM CONTRACTOR'S EXCAVATION NEAR OR AROUND HAWAIIAN ELECTRIC'S UTILITY POLES.

b) HAWAIIAN ELECTRIC MAY PROVIDE TO THE CUSTOMER INFORMATION RELATED TO POLE BRACING, INCLUDING CALCULATIONS AND OTHER BASIC ENGINEERING. HOWEVER, HAWAIIAN ELECTRIC PROVIDES THIS INFORMATION FOR INFORMATIONAL PURPOSES ONLY AND DOES NOT WARRANT ANY OF THE INFORMATION PROVIDED TO CUSTOMER. HAWAIIAN ELECTRIC HEREBY DISCLAIMS ANY LIABILITY ASSOCIATED WITH THE CUSTOMER'S USE OF INFORMATION PROVIDED TO THE CUSTOMER FROM HAWAIIAN ELECTRIC. IT IS THE CUSTOMER'S DUTY TO OBTAIN ENGINEERING FROM ITS OWN ENGINEER OR CONTRACTOR IN ORDER TO BRACE POLES AND THE USE OF HAWAIIAN ELECTRIC'S INFORMATION DOES NOT EXCUSE THE CUSTOMER FROM PERFORMING ITS OWN EVALUATION OF THE BRACING NEEDS. SHOULD THE CUSTOMER INSTALL BRACING AT ANY POLE LOCATION, CUSTOMER SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS HAWAIIAN ELECTRIC FROM ANY THIRD PARTY CLAIMS ASSOCIATED WITH THE CUSTOMER'S BRACING OF A POLE. SHOULD THE WORK CUSTOMER PERFORM AT OR NEAR THE POLE LOCATION COMPROMISE THE POLE OR ITS SURROUNDINGS IN ANY WAY, CUSTOMER SHALL RESTORE OR REPLACE THE POLE SO THAT IT IS NO LONGER COMPROMISED.

'. UNDERGROUND LINES

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF UNDERGROUND LINES. HAWAIIAN ELECTRIC'S EXISTING ELECTRICAL CABLES ARE ENERGIZED AND WILL REMAIN ENERGIZED DURING CONSTRUCTION. ONLY HAWAIIAN ELECTRIC PERSONNEL ARE TO BREAK INTO EXISTING HAWAIIAN ELECTRIC FACILITIES, HANDLE THESE CABLES, AND ERECT TEMPORARY GUARDS TO PROTECT THESE CABLES FROM DAMAGE. THE COST OF HAWAIIAN ELECTRIC'S ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF ITS UNDERGROUND LINES WILL BE CHARGED TO THE CONTRACTOR. FOR ASSISTANCE/COORDINATION IN PROVIDING PROPER SUPPORT AND PROTECTION OF THESE LINES, THE CONTRACTOR SHALL CALL HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS AT 543-7070 A MINIMUM OF TEN (10) WORKING DAYS IN ADVANCE.

SPECIAL PRECAUTIONS ARE REQUIRED WHEN EXCAVATING NEAR HAWAIIAN ELECTRIC'S 138KV OR 46KV UNDERGROUND LINES (SEE HAWAIIAN ELECTRIC INSTRUCTIONS TO CONSULTANTS/CONTRACTORS ON "EXCAVATION NEAR HAWAIIAN ELECTRIC'S UNDERGROUND 138KV AND/OR 46KV LINES" FOR DETAILED REQUIREMENTS).

FOR VERIFICATION OF UNDERGROUND LINES, THE CONTRACTOR SHALL CALL THE HAWAII ONE CALL CENTER AT 866-423-7287 MINIMUM OF FIVE (5) WORKING DAYS IN ADVANCE.

8. UNDERGROUND FUEL PIPELINES

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF HAWAIIAN ELECTRIC'S UNDERGROUND FUEL OIL PIPELINES. SPECIAL PRECAUTIONS ARE REQUIRED WHEN EXCAVATING NEAR HAWAIIAN ELECTRIC'S UNDERGROUND FUEL OIL PIPELINES (SEE HAWAIIAN ELECTRIC'S SPECIFIC FUEL PIPELINE "GUIDELINES" TO CONSULTANTS/CONTRACTORS ON EXCAVATION NEAR HAWAIIAN ELECTRIC'S UNDERGROUND FUEL PIPELINES FOR DETAILED REQUIREMENTS).

9. EXCAVATIONS

WHEN TRENCH EXCAVATION IS ADJACENT TO OR BENEATH HAWAIIAN ELECTRIC'S EXISTING STRUCTURES OR FACILITIES. THE CONTRACTOR IS RESPONSIBLE FOR:

- a) ARRANGING FOR HAWAIIAN ELECTRIC STANDBY PERSONNEL TO OBSERVE WORK AT CONTRACTOR'S COST.
- b) SHEETING, BRACING, OR OTHERWISE SUPPORTING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE AND TO PREVENT POSSIBLE SLIDES, CAVE—INS, AND SETTLEMENTS.
- c) PROPERLY SUPPORTING EXISTING STRUCTURES OR FACILITIES WITH BEAMS, STRUTS, UNDER-PINNINGS, OR OTHER NECESSARY METHODS TO FULLY PROTECT IT FROM DAMAGE.
 d) BACKFILLING WITH PROPER BACKFILL MATERIAL INCLUDING SPECIAL THERMAL BACKFILL WHERE EXISTING (REFER TO ENGINEERING DIVISION FOR THERMAL BACKFILL SPECIFICATIONS).

10. RELOCATION OF HAWAIIAN ELECTRIC FACILITIES

ANY WORK REQUIRED TO RELOCATE OR MODIFY HAWAIIAN ELECTRIC FACILITIES SHALL BE DONE BY HAWAIIAN ELECTRIC, OR BY THE CONTRACTOR UNDER HAWAIIAN ELECTRIC'S SUPERVISION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION, AND SHALL PROVIDE NECESSARY SUPPORT FOR HAWAIIAN ELECTRIC'S WORK, WHICH MAY INCLUDE, BUT NOT BE LIMITED TO, STAKING OF POLE/ANCHOR LOCATIONS, IDENTIFYING RIGHT OF WAY AND PROPERTY LINES, EXCAVATION AND BACKFILL, PERMITS AND TRAFFIC CONTROL, BARRICADING, AND RESTORATION OF PAVEMENT, SIDEWALKS, AND OTHER FACILITIES.

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

11. CONFLICTS

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

12. DAMAGE TO HAWAIIAN ELECTRIC FACILITIES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL HAWAIIAN ELECTRIC SURFACE AND SUBSURFACE UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO HAWAIIAN ELECTRIC'S FACILITIES AS A RESULT OF HIS OPERATIONS. THE CONTRACTOR SHALL IMMEDIATELY REPORT SUCH DAMAGES OR ANY HAZARDOUS CONDITIONS RELATED TO HAWAIIAN ELECTRIC'S LINES TO HAWAIIAN ELECTRIC'S TROUBLE DISPATCHER AT 548–7961. REPAIR WORK SHALL BE DONE BY HAWAIIAN ELECTRIC OR BY THE CONTRACTOR UNDER HAWAIIAN ELECTRIC'S SUPERVISION. COSTS FOR DAMAGES TO HAWAIIAN ELECTRIC'S FACILITIES SHALL BE BORNE BY THE CONTRACTOR.

IN CASE OF DAMAGE OR SUSPECTED DAMAGE TO HAWAIIAN ELECTRIC'S FUEL PIPELINE, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY HAWAIIAN ELECTRIC'S SECURITY COMMAND CENTER AT 543-7685 (A 24-HOUR NUMBER) SO HAWAIIAN ELECTRIC PERSONNEL CAN SECURE THE DAMAGED SECTION AND REPORT ANY OIL SPILLS TO THE PROPER AUTHORITIES. ALL COSTS ASSOCIATED WITH THE DAMAGE, REPAIR, AND OIL SPILL CLEANUP SHALL BE BORNE BY THE CONTRACTOR.

GUIDELINES FOR MINIMUM HORIZONTAL (PARALLEL) CLEARANCES BETWEEN HAWAIIAN ELECTRIC AND OTHER UNDERGROUND UTILITIES									
UNDERGROUND UTILITY	HAWAIIAN ELECTRIC DIRECT BURIED CABLE	HAWAIIAN ELECTRIC DIRECT BURIED IN CONDUIT (NO CONCRETE ENCASEMENT)		APPLICABLE NOTES:					
HAWAIIAN ELECTRIC DB CONDUITS	12"	3"	0"						
HAWAIIAN ELECTRIC 3" ENCASEMENT	0"	0"	0"						
TELEPHONE/CATV DB	12"	12"	6"						
TELEPHONE/CATV DB DUCTS	12"	12"	6"						
TELEPHONE/CATV 3" ENCASEMENT	0"	0"	0"	5					
TRAFFIC SIGNAL	12"	12"	12"						
WATER DB (BWS OWNED)	36"	36"	36"	1, 4					
CUSTOMER OWNED WATER SERVICE LATERALS		12"	12"						
WATER (CONCRETE JACKETED) (BWS OWNED)	36"	36"	36"	1, 4					
GAS DB	12"	12"	12"	1					
GAS (CONCRETE JACKETED)	12"	12"	12"	1					
SEWER DB	36"	36"	36"	1, 2					
SEWER (CONCRETE JACKETED)	36"	36"	36"	1, 2					
DRAIN	12"	12"	12"	1					
FUEL PIPELINES				3					

| NOTE

- 1. WHERE SPACE IS AVAILABLE, PARALLEL CLEARANCE TO OTHER UTILITIES, OR FOREIGN STRUCTURES OTHER THAN COMMUNICATION OR TRAFFIC SIGNAL SHALL BE 36"
- 2. IF 36" CLEARANCE CANNOT BE MET:
- IF CLEARANCE IS LESS THAN 12", JACKET SEWER LINE WITH REINFORCED CONCRETE (PER HAWAIIAN ELECTRIC'S STD. 30–1030) FOR A DISTANCE OF 5' PLUS PIPE DIAMETER.
 IF CLEARANCE IS BETWEEN 12" AND 36", JACKET SEWER LINE WITH PLAIN CONCRETE.
- 3. ALL FUEL PIPELINE CROSSINGS SHALL BE REVIEWED AND APPROVED BY THE COMPANY THAT OWNS AND MAINTAINS IT.
- 4. 5 FEET CLEAR TO WATER MAINS 16" OR LARGER.
- 5. FOR SITUATIONS WITH O" MINIMUM SEPARATION, A 6" SEPARATION IS RECOMMENDED.
- 5. CLEARANCES MEASURED FROM OUTER EDGES OR DIAMETERS OF UTILITIES. WHENEVER CONCRETE JACKETS ARE INVOLVED, CLEARANCES SHALL BE TOTAL CLEAR DISTANCE BETWEEN THE CONCRETE JACKET AND UTILITY CONCERNED.

GUIDELINES FOR MINIMUM VE	=	OSSING) CLEARANCES (RGROUND UTILITIES	HAWAIIAN ELECTRIC AN	ID
UNDERGROUND UTILITY	HAWAIIAN ELECTRIC DIRECT BURIED CABLE	HAWAIIAN ELECTRIC DIRECT BURIED IN CONDUIT (NO CONCRETE ENCASEMENT)		APPLICABLE NOTES:
HAWAIIAN ELECTRIC DB CONDUITS	6"	3"	0"	
HAWAIIAN ELECTRIC 3" ENCASEMENT	0"	0"	0"	
TELEPHONE/CATV DB	12"	12"	6"	
TELEPHONE/CATV DB DUCTS	12"	12"	6"	
TELEPHONE/CATV 3" ENCASEMENT	0"	0"	0"	3
TRAFFIC SIGNAL	12"	12"	6"	
WATER DB (BWS OWNED)	12"	12"	12"	5
CUSTOMER OWNED WATER SERVICE LATERALS	6"	6"	6"	
WATER (CONCRETE JACKETED) (BWS OWNED)	12"	12"	12"	5
GAS DB	12"	12"	12"	
GAS (CONCRETE JACKETED)	12"	12"	12"	
SEWER DB	24"	24"	24"	1
SEWER (CONCRETE JACKETED)	24"	24"	24"	1
DRAIN	12"	12"	6"	
FUEL PIPELINES				2

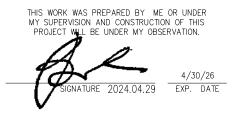
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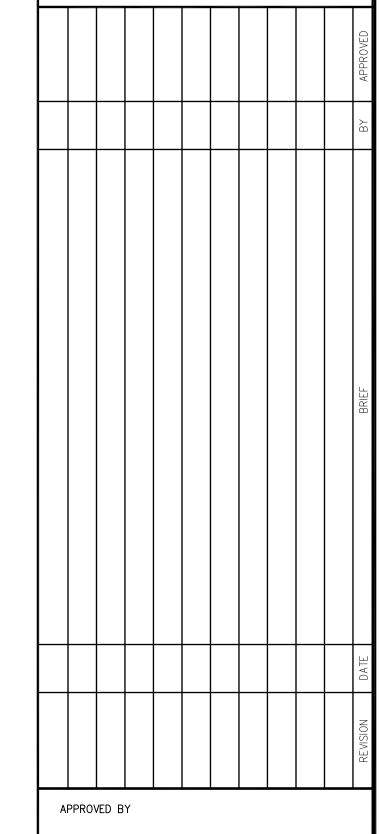
- 1. IF CLEARANCE CANNOT BE MET:
- IF CLEARANCE IS LESS THAN 12", JACKET SEWER LINE WITH REINFORCED CONCRETE
 (PER HAWAIIAN ELECTRIC'S STD. 30-1030) FOR A DISTANCE OF 5' PLUS PIPE DIAMETER.
 IF CLEARANCE IS BETWEEN 12" AND 24", JACKET SEWER LINE WITH PLAIN CONCRETE.
- 2. ALL FUEL PIPELINE CROSSINGS SHALL BE REVIEWED AND APPROVED BY THE COMPANY THAT OWNS AND MAINTAINS IT.
- 3. FOR SITUATIONS WITH O" MINIMUM SEPARATION, A 6" SEPARATION IS RECOMMENDED.
- 4. CLEARANCES MEASURED FROM OUTER EDGES OR DIAMETERS OF UTILITIES. WHENEVER CONCRETE JACKETS ARE INVOLVED, CLEARANCES SHALL BE TOTAL CLEAR DISTANCE BETWEEN THE CONCRETE JACKET AND UTILITY CONCERNED.
- 5. 36" CLEARANCE IS REQUIRED FOR TRENCHLESS INSTALLATION WORK.

WAIAHOLE WATER SYSTEM IMPROVEMENTS -WELL SITE









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DATE APRIL 2024

DPP FILE NO. 2020/CP-XX

HECO NOTES

HAWAIIAN ELECTRIC COMPANY NOTES (CONTINUED)

13. HAWAIIAN ELECTRIC STAND-BY PERSONNEL

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

THE CONTRACTOR SHALL CALL HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS AT 543-7070 A MINIMUM OF THREE (3) MONTHS IN ADVANCE TO ARRANGE FOR HAWAIIAN ELECTRIC STAND-BY PERSONNEL.

14. CLEARANCES

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

THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER & HAWAIIAN ELECTRIC OF ANY HEAT SOURCES (POWER CABLE DUCT BANK, STEAMLINE, ETC.) ENCOUNTERED THAT ARE NOT PROPERLY IDENTIFIED ON THE DRAWING

15. INDEMNITY

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

ADDITIONAL NOTES WHEN WORK INVOLVES CONSTRUCTION OF HAWAIIAN ELECTRIC FACILITIES

16. SCHEDULE

CONTRACTOR SHALL FURNISH HIS CONSTRUCTION SCHEDULE SIX (6) MONTHS PRIOR TO STARTING WORK ON HAWAIIAN ELECTRIC FACILITIES. CONTRACTOR SHALL GIVE HAWAIIAN ELECTRIC, IN WRITING, THREE (3) MONTHS NOTICE TO PROCEED WITH HAWAIIAN ELECTRIC'S PORTION OF WORK.

17. AUTHORITY

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

18. SPECIFICATIONS

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

19. CONSTRUCTION

CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES TO PROPERLY PERFORM AND FULLY COMPLETE ALL WORK SHOWN ON THE CONTRACT, DRAWINGS, AND SPECIFICATIONS. ALL MATERIALS SHALL BE NEW AND MANUFACTURED IN THE UNITED STATES OF AMERICA. ALL MANHOLE, HANDHOLE, AND DUCTLINE INSTALLATIONS SHALL BE INSPECTED AND APPROVED BY HAWAIIAN ELECTRIC PRIOR TO EXCAVATION AND PRIOR TO PLACING CONCRETE. CONTRACTOR SHALL NOTIFY HAWAIIAN ELECTRIC'S INSPECTION GROUP AT 543-2567 AT LEAST FIVE (5) WORKING DAYS PRIOR TO INSTALLING FACILITIES OR PLACING CONCRETE.

CONTRACTOR TO COORDINATE WORK TO BREAK INTO HAWAIIAN ELECTRIC'S EXISTING ELECTRICAL FACILITIES WITH HAWAIIAN ELECTRIC'S INSPECTION GROUP AT 543-2567 AT LEAST TEN (10) WORKING DAYS IN ADVANCE.

20. STAKEOUT

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

21. DUCTLINES

ALL DUCTLINE INSTALLATIONS SHALL BE PVC SCHEDULE 40 ENCASED IN CONCRETE, UNLESS OTHERWISE NOTED. ALL COMPLETED DUCTLINES SHALL BE MANDREL TESTED BY THE CONTRACTOR IN THE PRESENCE OF HAWAIIAN ELECTRIC'S INSPECTOR USING HAWAIIAN ELECTRIC'S STANDARD PRACTICE. THE CONTRACTOR SHALL INSTALL 1800# TENSILE STRENGTH MULETAPE PULL LINE IN ALL COMPLETED DUCTLINES AFTER MANDREL TESTING IS COMPLETE.

22. JOINT POLE REMOVAL

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

23. AS-BUILT PLANS

THE CONTRACTOR SHALL PROVIDE HAWAIIAN ELECTRIC WITH A SET OF ELECTRONIC AND HARD COPY PLANS OF EACH SHEET SHOWING THE OFFSETS, STATIONING, AND VERTICAL ELEVATION OF THE DUCT LINE(S) CONSTRUCTED.

WAIAHOLE WATER SYSTEM IMPROVEMENTS -WELL SITE



R. M. TOWILL CORPORATION

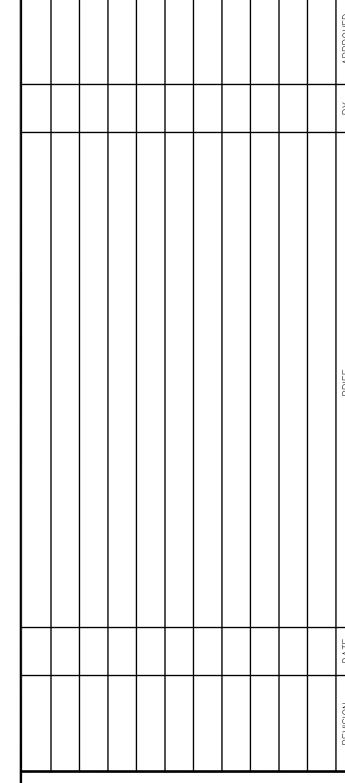
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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

4/30/26

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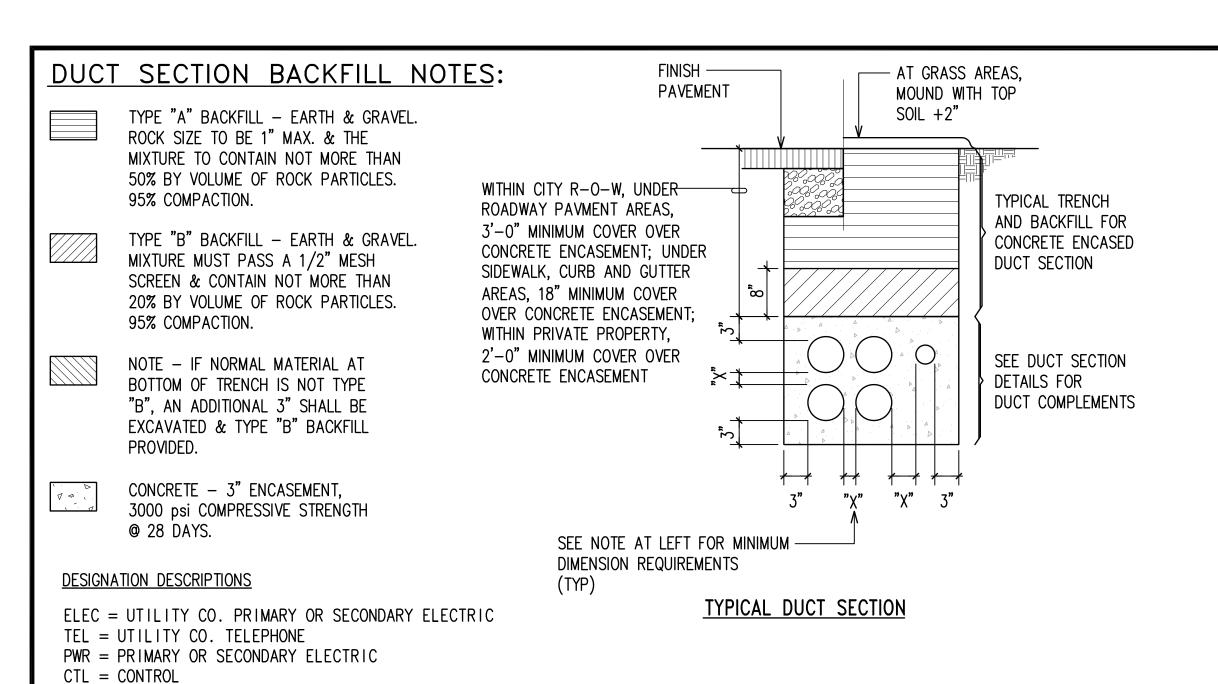


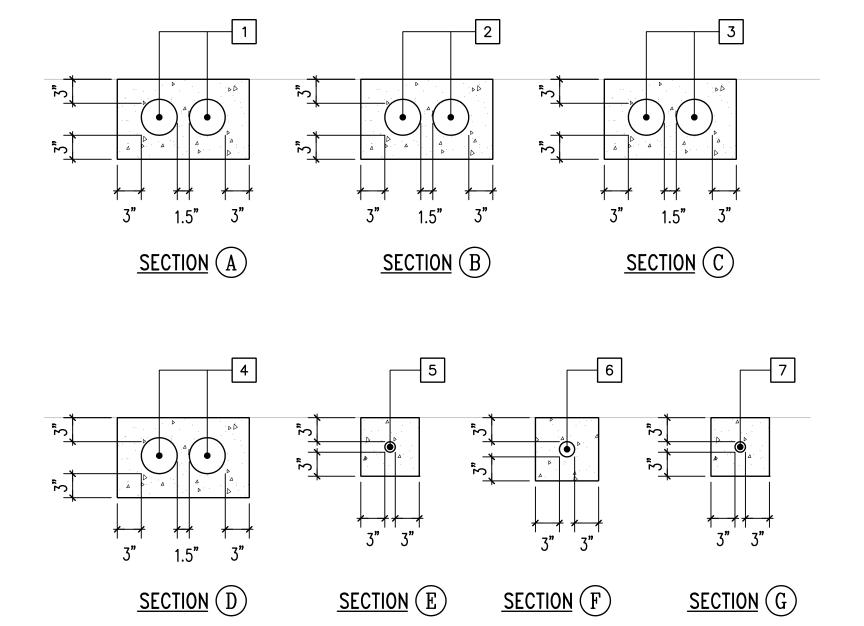
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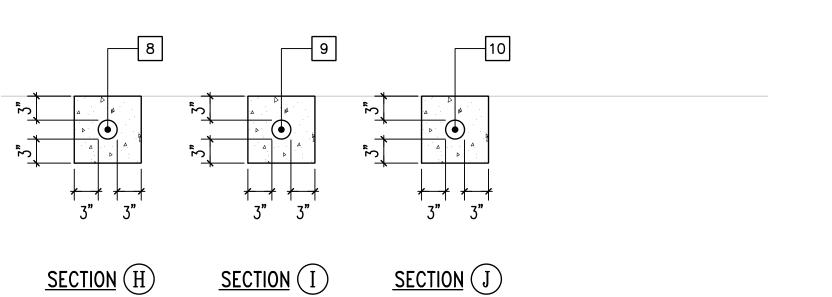
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HECO NOTES II

FILE POCKET FOLDER N







DUCT SECTION DETAILS AND REQUIREMENTS NOT TO SCALE

DUCT AND WIRE SCHEDULE

NO.	DUCT SIZE	WIRE SIZE	DESTINATION OR USE
1	4"	PC	HECO PRIMARY
			TO HECO PADMOUNTED TRANSFORMER
2	4"	SEE ONE-LINE	HECO SECONDARY
		DIAGRAM	FROM HECO PADMOUNTED TRANSFORMER TO MCC
3	4"	SEE ONE-LINE	FEEDER TO PORTABLE GENERATOR
		DIAGRAM	TERMINATION CABINET
4	4"	SEE ONE-LINE	FEEDER TO WELL PUMP
		DIAGRAM	
5	1"	2#12, 1#12 GND	DUPLEX RECEPTACLE CIRCUIT FROM PANEL "A",
			CIRCUIT A-9
6	1 1/2"	8#12 CONTROLS	WELL PUMP CONTROLS
		(2#12 SPARE)	
7	1"	4#12 CONTROLS	WELL PUMP CONTROLS
	- 11		
8	2"	1-2/C#14 TWISTED,	WELL LEVEL METER SIGNAL TO SCADA CABINET
		SHIELDED CABLES	
	0,7	W/GND	FLOW METER CLOUD TO COMP A CARDINET
9	2"	FLOW METER	FLOW METER SIGNAL TO SCADA CABINET
	- 22	CABLE	
10	2"	ANTENNA CABLE	SCADA CABINET TO ANTENNA
11			
12			

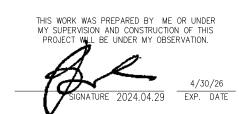
- 1. ALL CONCRETE ENCASED DUCTS SHALL BE SCHEDULE 40 PVC.
- 2. PC INDICATES PROVIDE PULLCORD.

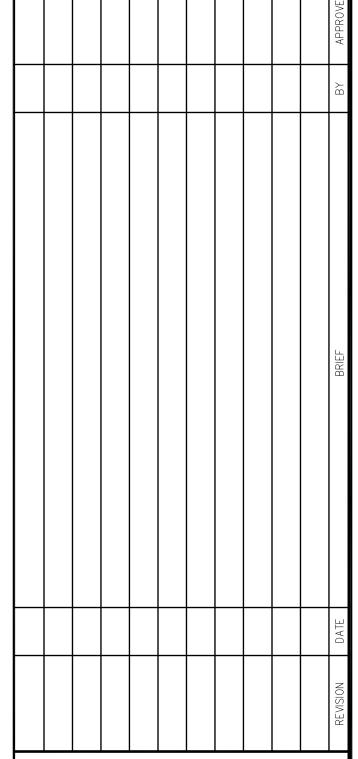
WAIAHOLE WATER SYSTEM **IMPROVEMENTS -WELL SITE**



R. M. TOWILL CORPORATION Planning • Engineering • Environmental Services • Photogrammetry • Surveying • Construction Manager 2024 North King Street Suite 200 Honolulu Hawaii 96819







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AND REQUIREMENTS

PWR - CTL/SIG = 3"
ELEC - PWR = 3"

DUCTLINES AND WATER LINE. 2. PROVIDE CONCRETE JACKET AROUND DUCTLINES. PROVIDE ONLY TYPE "B" BACKFILL AROUND WATER

SIG = INSTRUMENTATION OR ANTENNA CABLE

MINIMUM "X" DIMENSION

ELEC - ELEC = 1 1/2"

 $TEL - TEL = 1 \frac{1}{2}$

ELEC - CTL/SIG = 3"

TEL - CTL/SIG = 1 1/2"

ELEC - TEL = 3"

TEL - PWR = 3"

 $PWR - PWR = 1 \frac{1}{2}$

MINIMUM OF 3" CONCRETE

ENCASEMENT AROUND

DUCTBANK

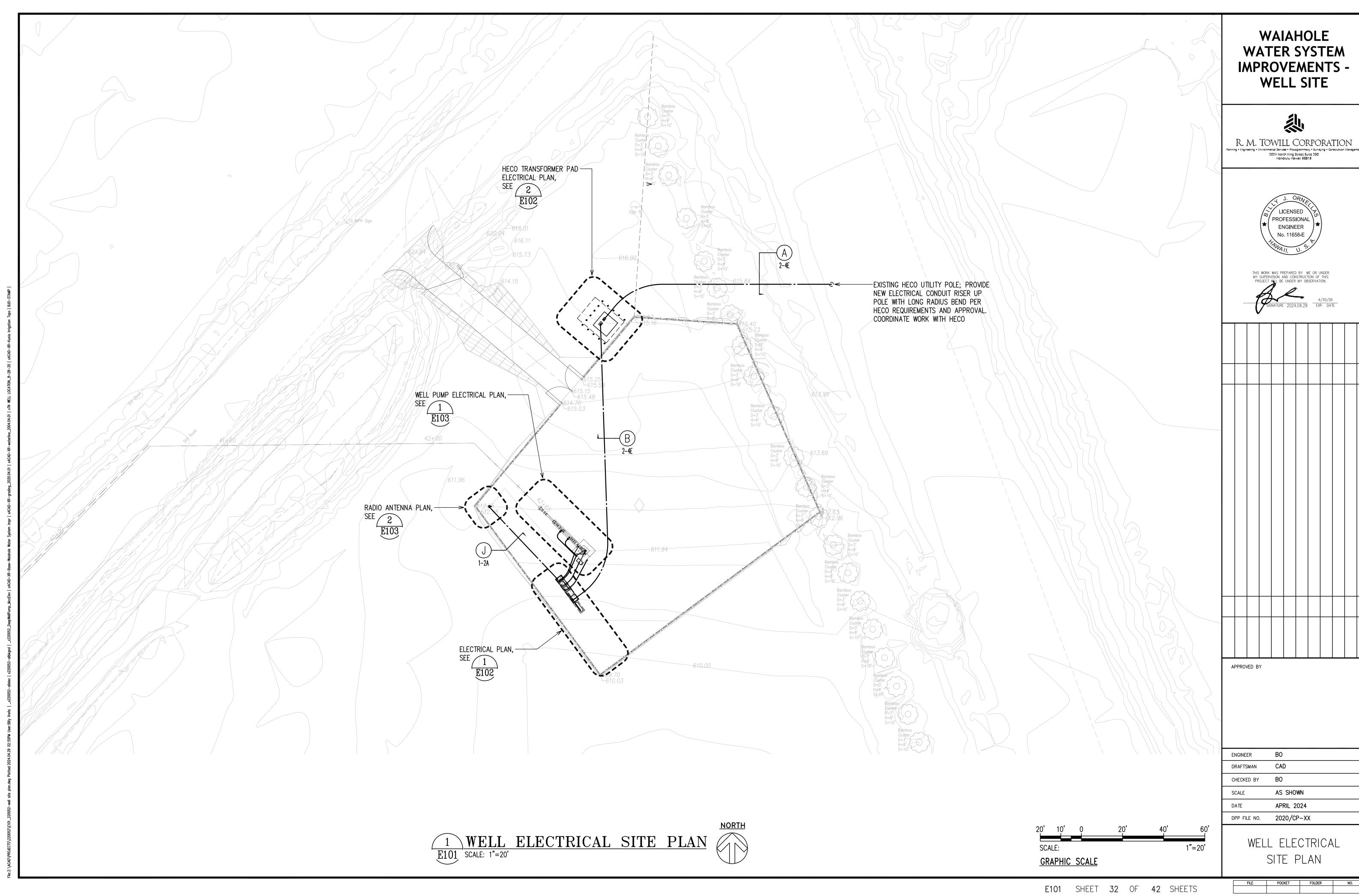
CTL/SIG - CTL/SIG = 1 1/2"

WHERE DUCTLINE CROSSES OVER WATER LINE, PROVIDE THE FOLLOWING:

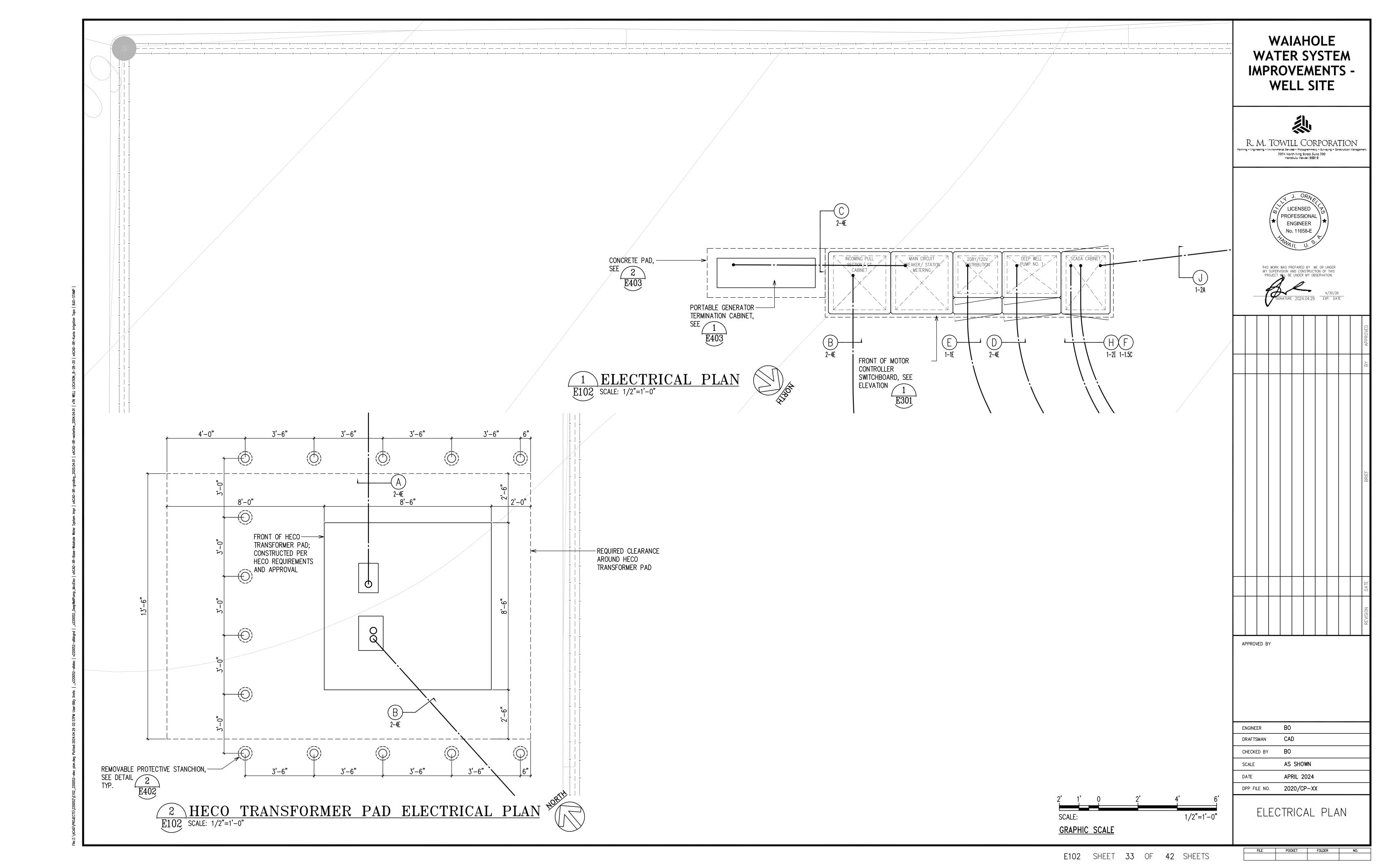
1. 6" MINIMUM SEPARATION BETWEEN

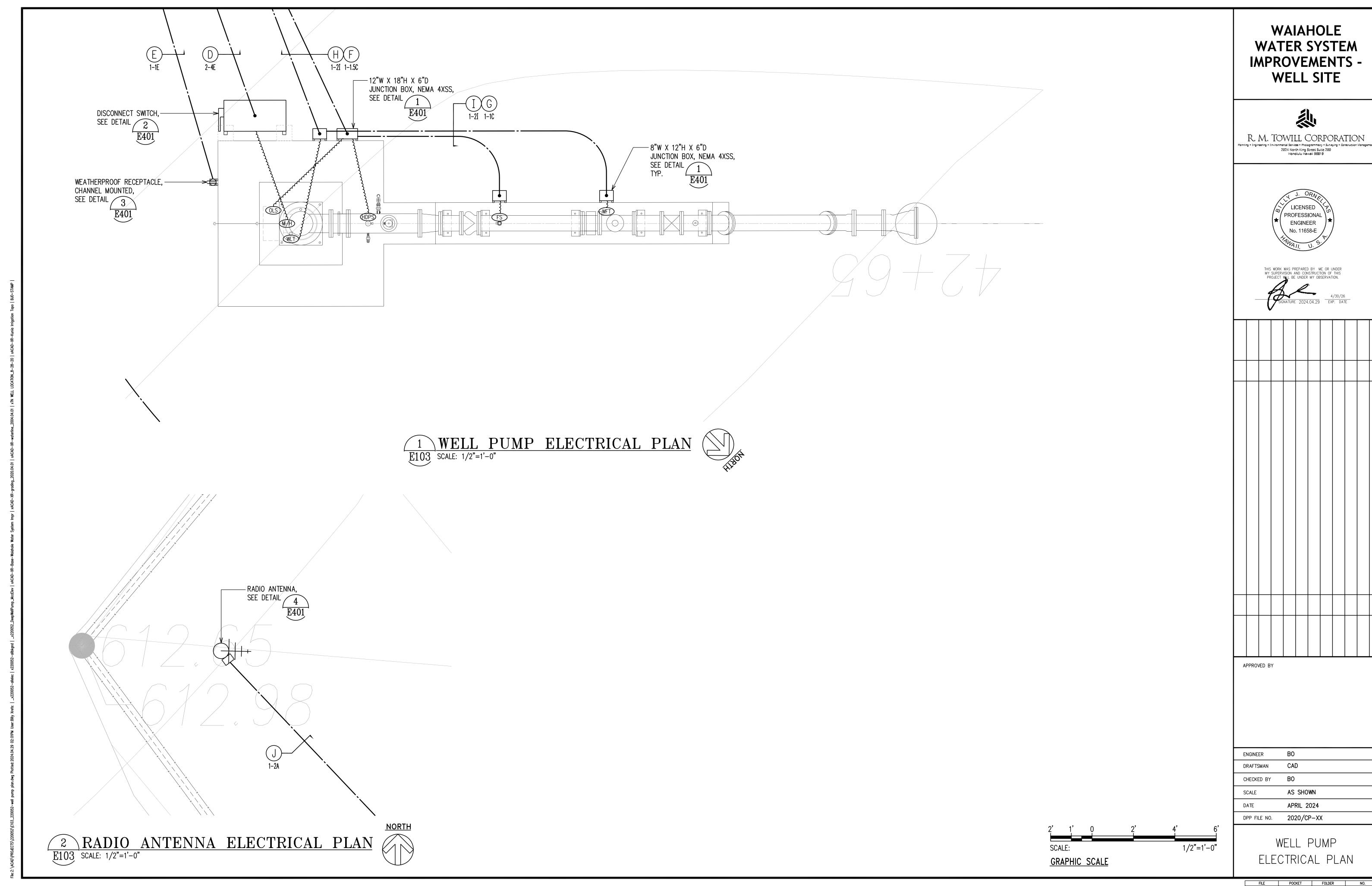
DUCT SEPARATION REQUIREMENTS

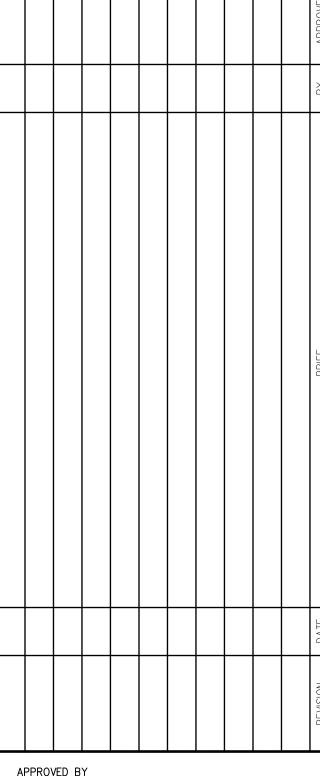
DUCT SECTION DETAILS



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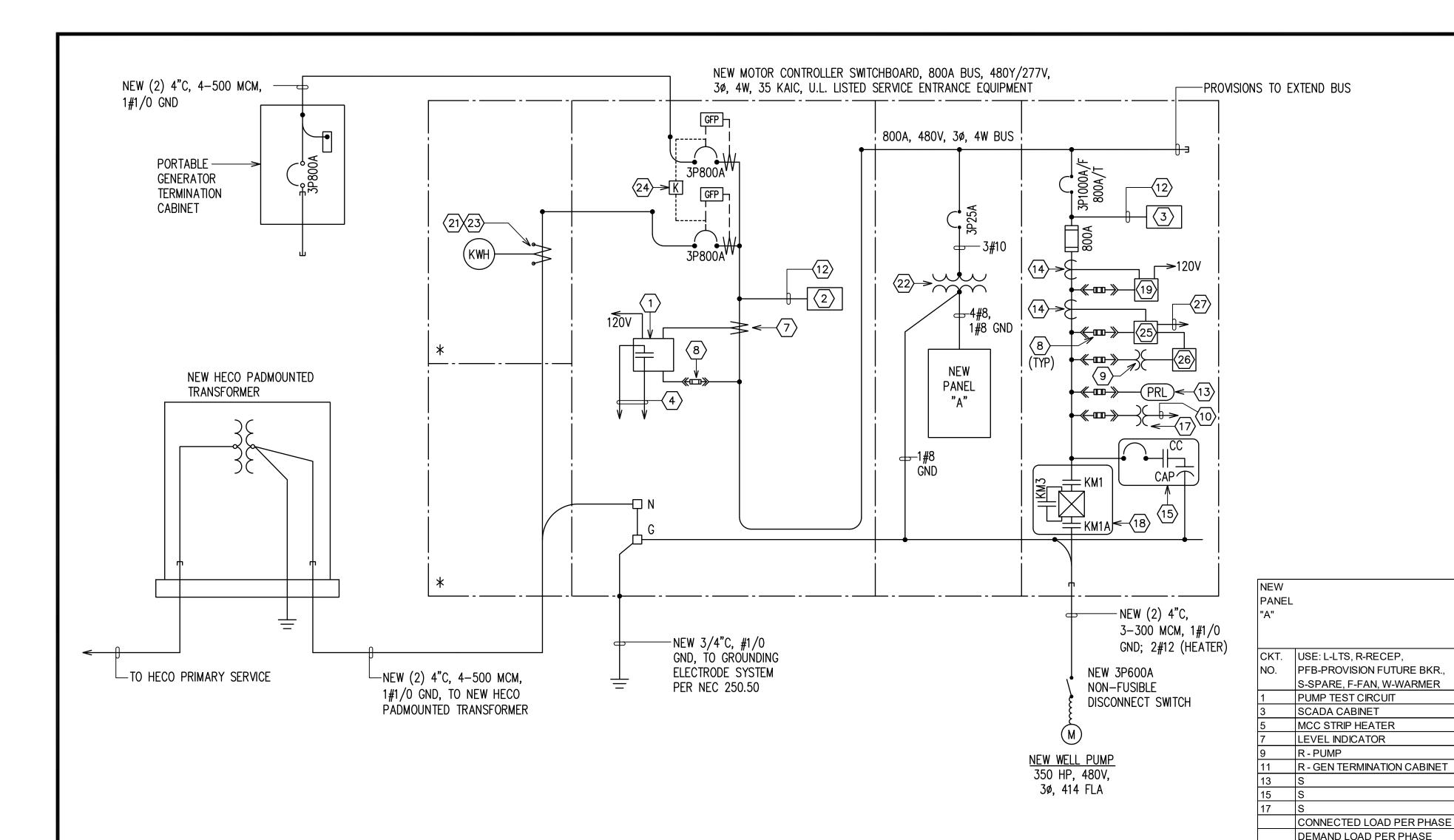






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DATE	APRIL 2024
DPP FILE NO.	2020/CP-XX

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NOTES:

50A MA MAIN BREAKER

BREAKER WIRE

1 20 12

1 20 12

1 20 12

1 20 12

1 20

1 20

1 20

POLE AMPS

208Y/120 VOLTS, 3-PHASE, 4-WIRE

10,000 A.I.C. MINIMUM INDUSTRIAL-BOLTED TYPE,

PHASE A

0.5

3.5

2.5

WITH INTEGRAL SURGE PROTECTIVE DEVICE

SIZE

1 20 12 1.0 1.0

1 20 12 0.5 0.5

1. POWER AND GROUND BUSSES SHALL NOT PROTRUDE INTO ADJACENT SCADA CABINET SECTIONS

SIZE

1.0 | 1.0 | 12 | 1 | 20 | MCC STRIP HEATER

BREAKER USE: L-LTS, R-RECEP,

20 SCADA CABINET

20 FLOW INDICATOR

TOTAL CONNECTED LOAD (KVA)

TOTAL DEMAND LOAD (KVA)

PFB

PFB

DEMAND FACTOR

HIGH LEG (AMPS)

POLE AMPS S-SPARE, F-FAN, W-WARMER

PFB-PROVISION FUTURE BKR., NO.

14

16

WAIAHOLE WATER SYSTEM **IMPROVEMENTS -WELL SITE**



R. M. TOWILL CORPORATION lanning • Engineering • Environmental Services • Photogrammetry • Surveying • Construction Manage 2024 North King Street Suite 200 Honolulu Hawaii 96819



THIS WORK WAS PREPARED BY ME OR UNDER

						APPF
						ВҮ
						BRIEF
						DATE
						EVISION

NOTES:

1. SUBMIT THE SHOP DRAWINGS OF THE MOTOR CONTROLLER SWITCHBOARD (MCS) DIRECTLY TO HECO FOR THEIR REVIEW AND APPROVAL PRIOR TO FABRICATION. COMPLY WITH HECO REQUIREMENTS RÉGARDING SHOP DRAWING SUBMITTALS AND ACCOUNT FO HECO REVIEW PROCESS DURATION IN CONSTRUCTION SCHEDULE. ALSO SUBMIT MCS SHOP DRAWING TO

3.0

2.1

ENGINEER FOR APPROVAL. MCS SHALL BE DESIGNED IN ACCORDANCE WITH "EUSERC" DRAWINGS AND REQUIREMENTS. 2. ALL GROUNDING SYSTEMS SHALL BE PROVIDED PER N.E.C. ARTICLE 250.

KVA ON BUSSES

2.0

1.4

0.5 0.5

0.5

0.5

PHASE B PHASE C

- 3. SECONDARY SERVICE: 480Y/277V, 3 PHASE, 4 WIRE.
- SHORT CIRCUIT RATING: 65,000 A.I.C.
- 4. PROVIDE SHORT CIRCUIT ANALYSIS AND COORDINATION STUDY ON THE ELECTRICAL SYSTEM. VERIFY EXACT SHORT CIRCUIT CAPACITY WITH HECO AND WITH THE RESULTS OF THE ANALYSIS AND STUDY. PROVIDE EQUIPMENT WITH APPROPRIATE RATINGS.
- 5. * INDICATES PROVISION FOR HECO SEALS.
- 6. ALL FEEDER CIRCUIT BREAKERS FOR PUMP MOTORS SHALL BE PROVIDED WITH PROVISIONS FOR LOCKING IN THE "OFF" POSITION.

480Y/277V, 3-PHASE, 4-WIRE SYSTEM SERVICE DATA:

- A. SERVICE VOLTAGE: 480Y/277V, 3-PHASE, 4-WIRE
- B. LOAD DATA:
 - CONNECTED: 350 HP DEMAND: 350 HP MISC LOAD: 15.0 KVA
- C. SERVICE CONDUCTORS: 2X 4-500KCMIL
- D. METERING: HECO STD. B-19, RATE J
- E. TYPE: UNDERGROUND

		SCH	IEDULE OF INSTRUMENTS		
KEY ON PLAN	DESCRIPTION	KEY ON PLAN	DESCRIPTION	KEY ON PLAN	DESCRIPTION
1	THREE PHASE DIGITAL MULTI-FUNCTION POWER MONITOR AND RECORDER; PROVIDE CORRECT CONNECTIONS REQUIRED FOR COMPLETE OPERATION OF MONITOR FUNCTIONS, PER MANUFACTURER'S INSTRUCTIONS, ELECTRO INDUSTRIES	(12)	SIZED BY MANUFACTURER	20	NOT USED
	NEXUS 1500 OR APPROVED EQUAL	(13)	PHASE REVERSAL/LOSS RELAY	(21)	P.T.'S BY HECO, OBTAIN REQUIREMENTS & APPROVAL FROM HECO
2	MAIN ELECTRICAL SERVICE SURGE PROTECTIVE DEVICE 480V, 3Ø, 3W	(14)	CURRENT TRANSFORMER, 600V, 800:5	(22)	DRY-TYPE TRANSFORMER, 15 KVA, 480-208Y/120V, 3 PHASE, 4 WIRE, 80°C RISE.
3	BRANCH FEEDER SURGE PROTECTIVE DEVICE 480V, 3Ø, 3W	15	CAPACITOR AND CAPACITOR BREAKER PER PUMP MOTOR MANUFACTURER'S RECOMMENDATIONS, INCLUDING ISOLATION CONTACTOR (CC) TO REMOVE CAPACITORS FROM SYSTEM	23>	C.T.'S BY HECO, OBTAIN REQUIREMENTS & APPROVAL FROM HECO
4	TO RTU, PROVIDE SOFTWARE & PROGRAM TO ACTIVATE UPON LOSS OF POWER		DURING PUMP MOTOR START UP	24	MAIN CIRCUIT BREAKER / MANUAL TRANSFER SWITCH WITH 2-MOLDED CASE CIRCUIT BREAKERS, SIZE AS INDICATED WITH
5		(16)	NOT USED		KIRK-KEY INTERLOCKS FOR NORMAL OR GENERATOR OPERATION; PREVENTS CIRCUIT BREAKERS FROM OPERATING SIMULTANEOUSLY
6		17	CONTROL TRANSFORMER, 600V FOR 480-120V, 2-1 KVA	(25)	THREE PHASE MOTOR PROTECTOR, SYMCOM, INC. MOTOR SAVER
7	CURRENT TRANSFORMER, 600V, 600:5	(18)	400 HP MOTOR STARTER, SIZE ONE STANDARD HP SIZE LARGER THAN MOTOR HP SIZE FOR COOLER SCR OPERATION, SOLID-STATE		MODEL 777KW SERIES WITH MODBUS INTERFACE
8	FUSE HOLDER WITH FUSE, 600V, SIZE BY MANUFACTURER		TYPE WITH BYPASS CONTACTOR, AND SCR ISOLATION CONTACTORS WITH SOLID STATE OVERLOAD HEATERS SELECTED TO MATCH MOTOR NAMEPLATE RATING AT 460V, 3 PHASE	(26)	THREE PHASE MOTOR PROTECTOR REMOTE MANAGER, SYMCOM, INC. MODEL RM-2000 SERIES, WITH REQUIRED RS485MS-2W SERIAL INTERFACE FOR CONNECTING TO MODEL 777KW
9	CONTROL TRANSFORMER, 600V FOR 480-120V, KVA AS REQ'D				MOTOR PROTECTOR
(10)	TO CONTROL CIRCUIT	(19)	THREE PHASE DIGITAL MULTI-FUNCTION POWER MONITOR AND RECORDER; PROVIDE CORRECT CONNECTIONS REQUIRED FOR	27	TYPE RS485 NETWORK CABLE FOR INPUT INTO SCADA SYSTEM
(11)		1	COMPLETE OPERATION OF MONITOR FUNCTIONS, PER MANUFACTURER'S INSTRUCTIONS, ELECTRO INDUSTRIES	28	

SHARK 200 OR APPROVED EQUAL

1 ONE-LINE DIAGRAM

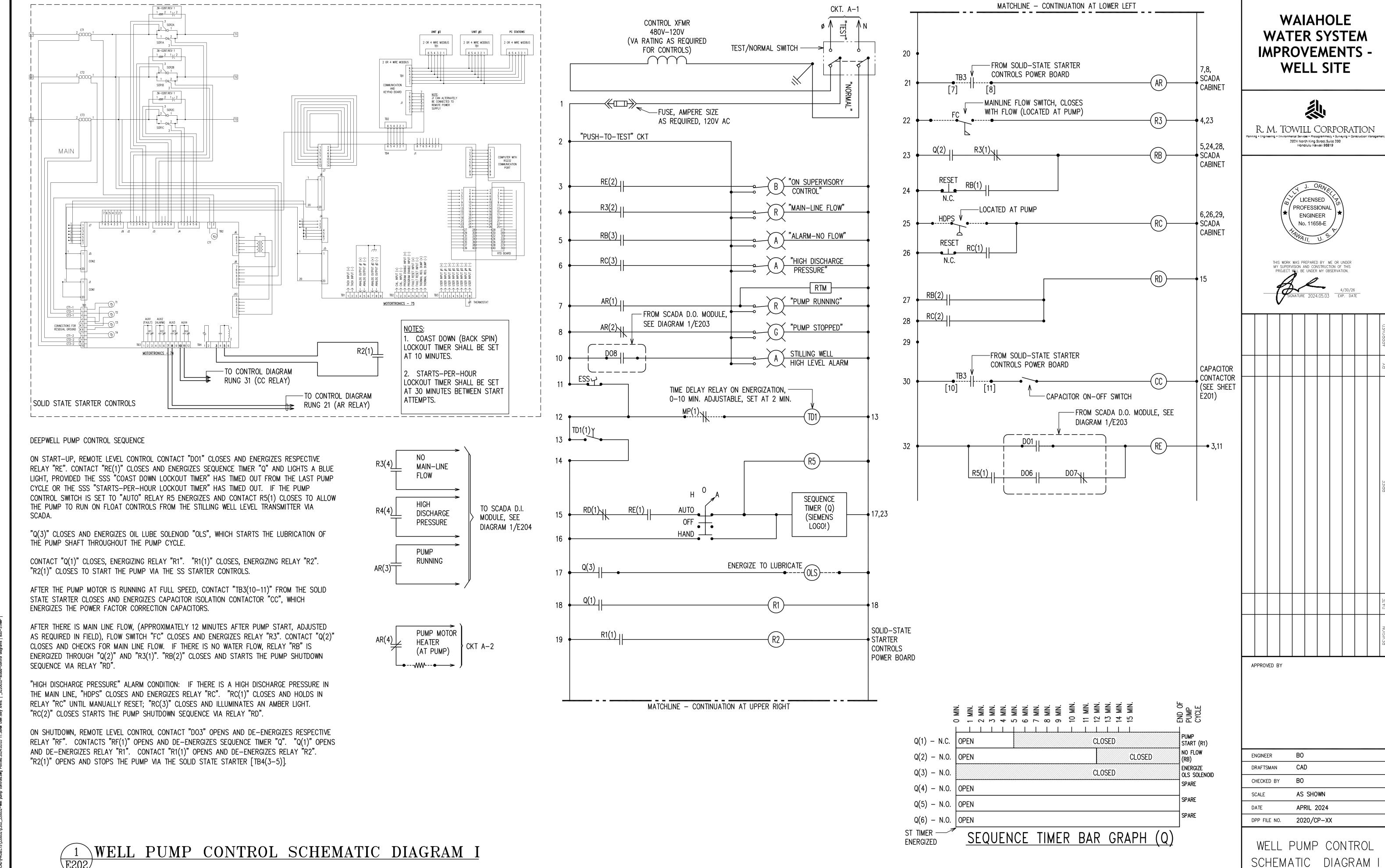
CAD DRAFTSMAN CHECKED BY BO SCALE AS SHOWN APRIL 2024 DPP FILE NO. 2020/CP-XX ONE-LINE DIAGRAM

APPROVED BY

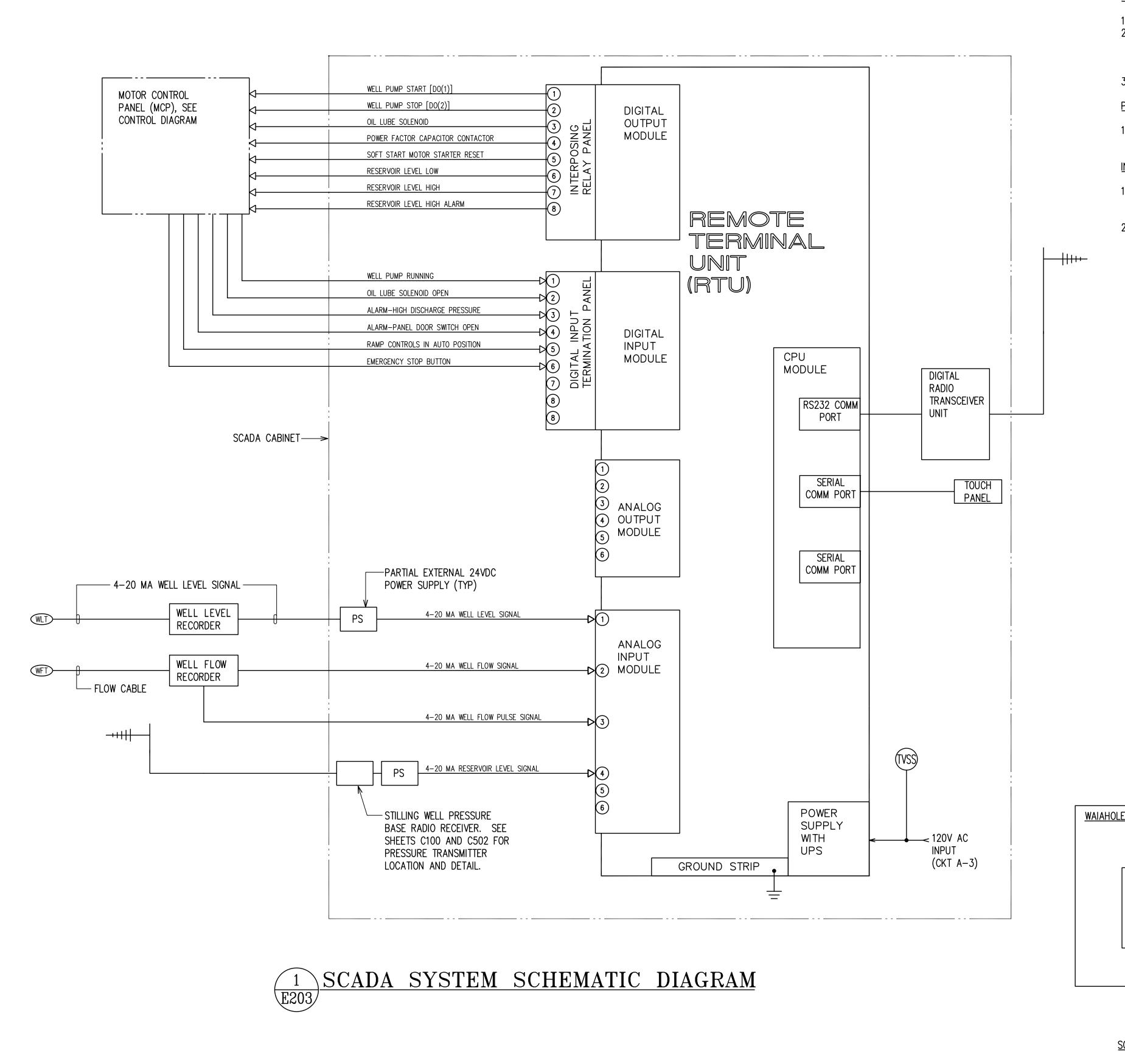
ENGINEER

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REQUIRED MINIMUM SCADA INPUT POINTS AND MINIMUM PROVISIONS FOR ITEMS TO BE DISPLAYED / CONTROLLED ON TOUCH PANEL:

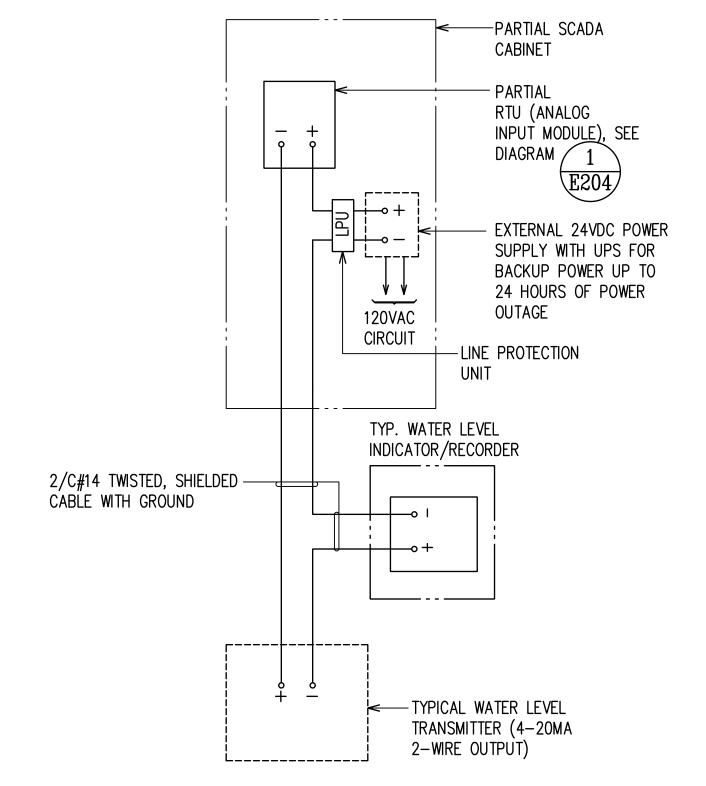
- ENTIRE SITE OVERVIEW SCREEN THAT INCLUDES THE WELL PUMP SITE.
- WELL PUMP SITE SCREEN TO INCLUDE: WELL PUMP MOTOR STATUS
- WELL LEVEL WELL FLOW
- 3. ONE ALARM SCREEN TO INCLUDE A SUMMARY OF ALARMS AND A PAST HISTORY OF ALARMS.

POWER FUNCTION MONITOR NOTES:

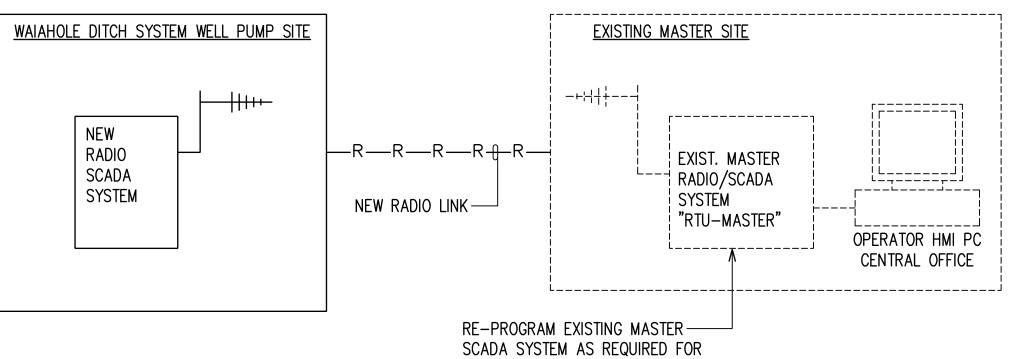
1. CONTRACTOR SHALL PROVIDE ALL REQUIRED PARAMETERS, FROM THE POWER FUNCTION MONITOR, TO BE RECORDED AT THE

INSTRUMENTATION CIRCUIT WIRING NOTES:

- 1. ALL 4-20MA INSTRUMENTATION CIRCUITS TO BE TWISTED, SHIELDED CABLES WITH GROUIND; BELDEN CATALOG NUMBER 1266A OR APPROVED EQUAL.
- 2. THE SHIELD OF THE SHIELDED CABLE SHALL BE TERMINATED TO ELECTRICAL GROUND AT ONE LOCATION ONLY AND SHALL NOT HAVE OTHER PATHS TO GROUND.



2 TYPICAL INSTRUMENTATION DIAGRAMS



ADDITION OF NEW WELL PUMP SITE

SCADA SYSTEM OPERATION NOTES:

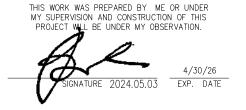
1. THE SCADA CONTRACTOR SHALL PROGRAM THE NEW RTU AND RE-PROGRAM THE EXISTING MASTER SCADA SYSTEM AS REQUIRED AND AS INDICATED IN THE SPECIFICATIONS.

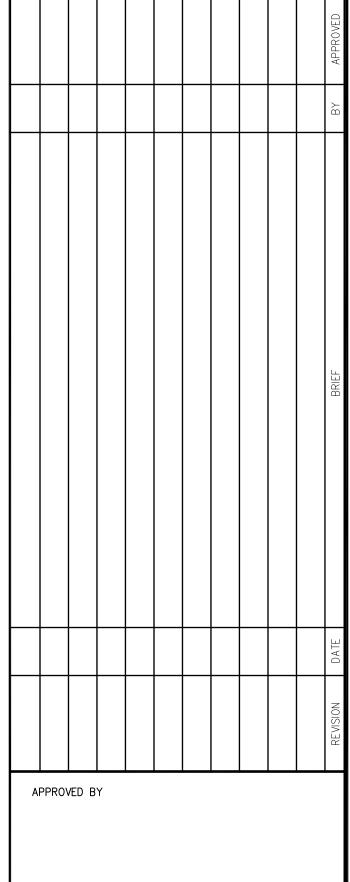
3 OVERALL SCADA SYSTEM SCHEMATIC DIAGRAM

WAIAHOLE WATER SYSTEM **IMPROVEMENTS -WELL SITE**



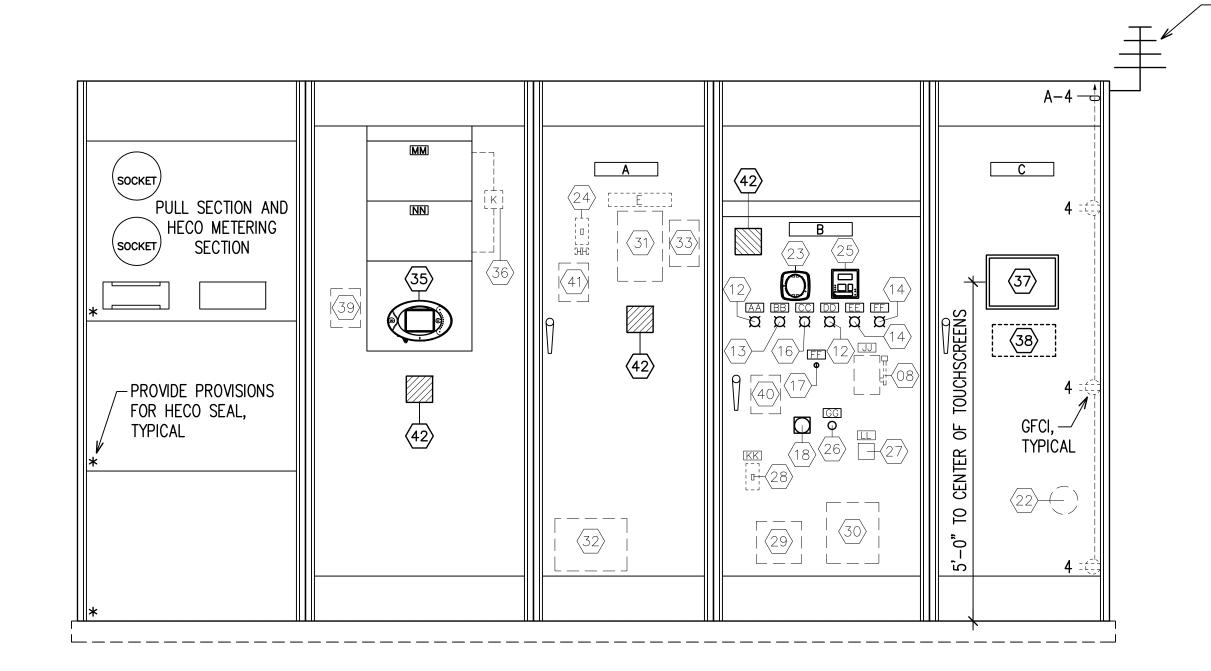






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SCADA SYSTEM SCHEMATIC DIAGRAM



ELEVATION

1 WELL PUMP MOTOR CONTROLLER SWITCHBOARD (MCS) ELEVATION SCALE: 3/4"=1'-0"

MOTOR CONTROLLER SWITCHBOARD NOTES:

- 1. REAR PANEL SHEATHING TO BE REMOVABLE FOR ALL SECTIONS.
- 2. VERIFY ALL DIMENSIONS AND LAYOUT WITH APPROVED SHOP DRAWINGS.
- 3. SWITCHBOARD STARTER COMPARTMENTS SHALL HAVE HINGED DEAD FRONT PANEL BEHIND DOORS.
- 4. GROUND ALL CONDUITS TO SWITCHBOARD GROUND BUS. EXTEND GROUND BUS THRU ALL SECTIONS OF MCS. GROUND BUS SHALL NOT PROTRUDE INTO SCADA CABINET SECTION.
- 5. PROVIDE 6" WIRING TROUGH AT BOTTOM OF SWITCHBOARD.
- 6. MOTOR CONTROLLERS SHALL HAVE PROVISIONS FOR LOCKING IN THE "OFF" POSITION.
- 7. ALL DOORS SHALL HAVE LEVER TYPE HANDLES.
- 8. DIMENSIONS OF ALL COMPARTMENTS SHALL BE AS SHOWN.

MOTOR CONTROLLER SWITCHBOARD NOTES (CONT'D):

- 9. ALL SWITCHES MOUNTED ON FRONT PANEL OF MCS SHALL BE MOUNTED NO HIGHER THAN 70" ABOVE FINISH FLOOR. THE EMERGENCY STOP PUSHBUTTON SWITCH SHALL BE MOUNTED NO HIGHER THAN 60" ABOVE FINISH FLOOR.
- 10. ENTIRE MOTOR CONTROL SWITCHBOARD SHALL BE CONSTRUCTED PER UL 891 AND NEMA PB-2 STANDARDS. METERING SECTION OF SWITCHBOARD SHALL COMPLY WITH EUSERC STANDARDS.

REMOTE ANTENNA FOR WELL PRESSURE TRANSMITTER BASE STATION. PROVIDE MOUNTING

BRACKET AS REQUIRED.

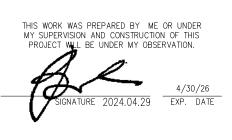
- 11. SWITCHBOARD SHOP DRAWINGS SHALL BE SUBMITTED TO HECO FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
- 12. SWITCHBOARD SHALL BE FURNISHED WITH STRIP HEATERS AND THERMOSTAT.
- 13. * INDICATES PROVISIONS FOR HECO SEAL.
- 14. PROVIDE WITH NEMA 3R TYPE 316 STAINLESS STEEL WEATHERPROOF ENCLOSURE.

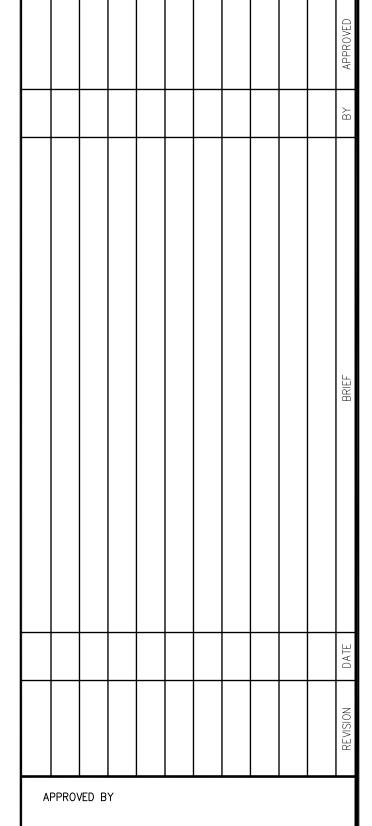
	<u>NAMEPLATES</u>		COMPONENTS #
ITEM	DESCRIPTION	ITEM	DESCRIPTION
Α	208Y/120V, 3ø, DISTRIBUTION SECTION	01	
В	WELL PUMP	02	
<u>C</u>	TELEMETERING CABINET	03	
	DANEL "A" 000V /400V 74 4W	04	
<u>E</u>	PANEL "A", 208Y/120V, 3ø, 4W	05	
F		06	
G		07	DADLOCKADLE EVTERNAL CIRCUIT DREAKED ODERATING HANDLE
H		08	PADLOCKABLE EXTERNAL CIRCUIT BREAKER OPERATING HANDLE, PER OSHA LOCK-OFF PROCEDURES
		09	PER OSHA LOCK-OFF FROCEDURES
K		10	
<u> </u>		11	
 M		12	RED LIGHT
N N		13	GREEN LIGHT
0		14	AMBER LIGHT
- Р		15	WHITE LIGHT
Q		16	BLUE LIGHT
R		17	EMERGENCY STOP RESET PUSHBUTTON
S		18	RUNNING TIME METER
		19	
U		20	
V		21	
		22	WELL PRESSURE TRANSMITTER BASE STATION W/REMOTE ANTENNA
ABOV	/E NAMEPLATES TO BE 9" X 2 1/4" X 1/8"	23	DIGITAL MULTI-FUNCTION POWER METER (ELECTRO INDUSTRIES
DILEC	CTO WITH 5/8" WHITE LETTERING & BEVELED		SHARK 200 OR APPROVED EQUAL)
EDGE		24	CIRCUIT BREAKER
* CO	ORDINATE WITH MECHANICAL AND PROVIDE	25	MOTOR PROTECTOR REMOTE MANAGER
A(CTUAL NAMEPLATE AS REQUIRED.	26	TROUBLE RESET PUSHBUTTON
		27	TEST/NORMAL SWITCH
	NAMEPLATES	28	CAPACITOR CIRCUIT BREAKER
	INAMEL LATES	29	POWER FACTOR CORRECTION CAPACITOR
ITEM	DESCRIPTION	30	SOLID-STATE STARTER WITH ISOLATION AND BY-PASS CONTACTOR
AA	MOTOR RUNNING	31	PANEL "A"
BB	MOTOR STOPPED	32	DRY TYPE TRANSFORMER
CC	ON SUPERVISORY	33	TIME CLOCK W/ ASTRONOMICAL DIAL
DD	MAIN LINE FLOW	34	
EE	NO FLOW	35	DIGITAL MULTI-FUNCTION POWER METER (ELECTRO INDUSTRIES
FF	EMERGENCY STOP AND RESET		NEXUS 1500 OR APPROVED EQUAL)
GG	TROUBLE RESET	36	KEYED SAFETY INTERLOCK SYSTEM
HH	TRANSFORMER MAIN	37	TOUCHSCREEN
<u>II</u>	DEED WELL DIND ODOUG SERVES	38	PROGRAMMABLE LOGIC CONTROLLER (PLC)
JJ	DEEP WELL PUMP CIRCUIT BREAKER	39	MAIN SERVICE SPD (480V)
KK	CAPACITOR CIRCUIT BREAKER	40	BRANCH FEEDER SPD (480V)
LL	TEST-NORMAL	41	BRANCH FEEDER SPD (208V)
MM	MAIN CIRCUIT BREAKER	42	ARC FLASH WARNING SIGN; PROVIDE PER NEC 110.16,
NN	GENERATOR MAIN BREAKER (EMERGENCY)	17	LOCATIONS AS REQUIRED
00		43	
PP			
QQ		-	
RR		-	
SS		-	
TT		-	
UU		-	
VV		-	
WW ADOV	E NAMEDIATES TO DE 4" V 0" V 4 /0"	-	
ABUV	E NAMEPLATES TO BE 4" X 2" X 1/8"	1	
	TO WITH 1/4" WHITE LETTERING & BEVELED		

WAIAHOLE WATER SYSTEM IMPROVEMENTS -WELL SITE



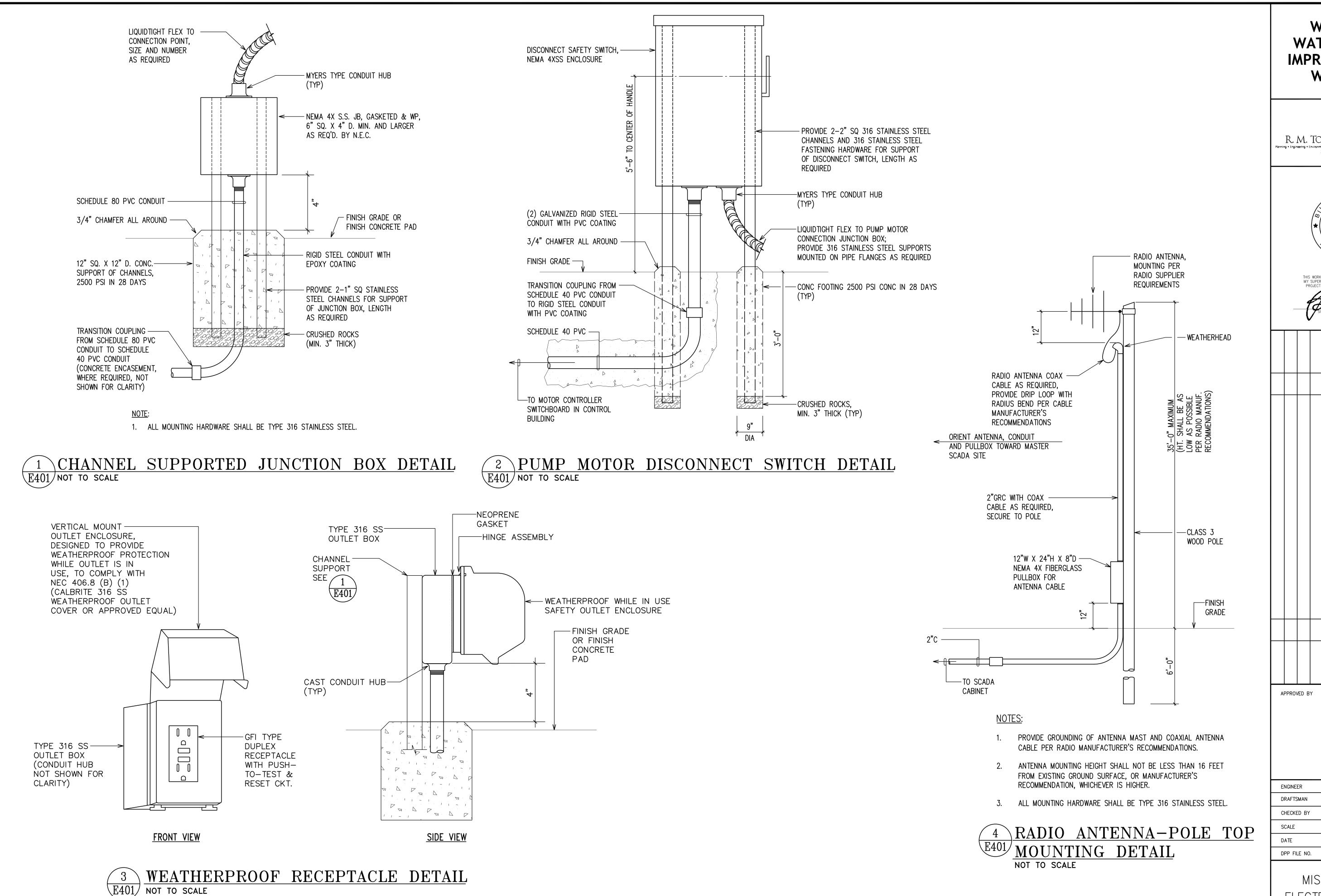






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SCALE	AS SHOWN
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WELL PUMP MCS ELEVATION



WAIAHOLE WATER SYSTEM IMPROVEMENTS -WELL SITE

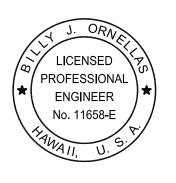


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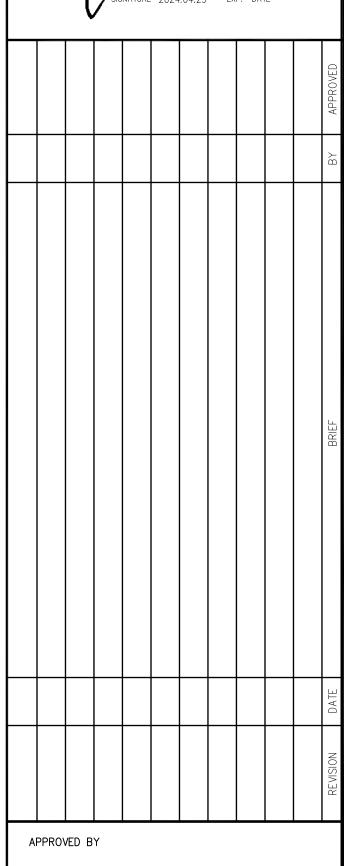
2024 North King Street Suite 200

Honolulu Hawaii 96819



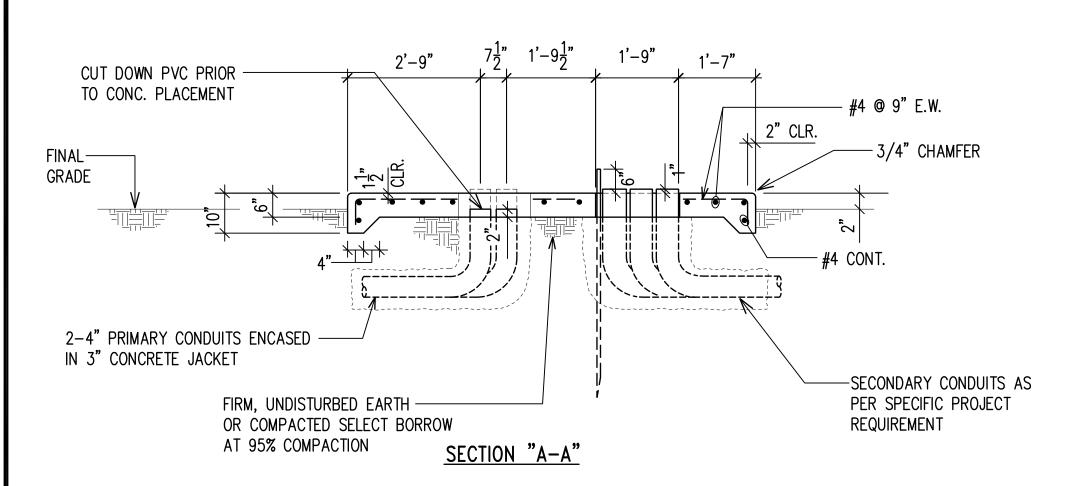
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

4/30/26
SIGNATURE 2024.04.29 EXP. DATE



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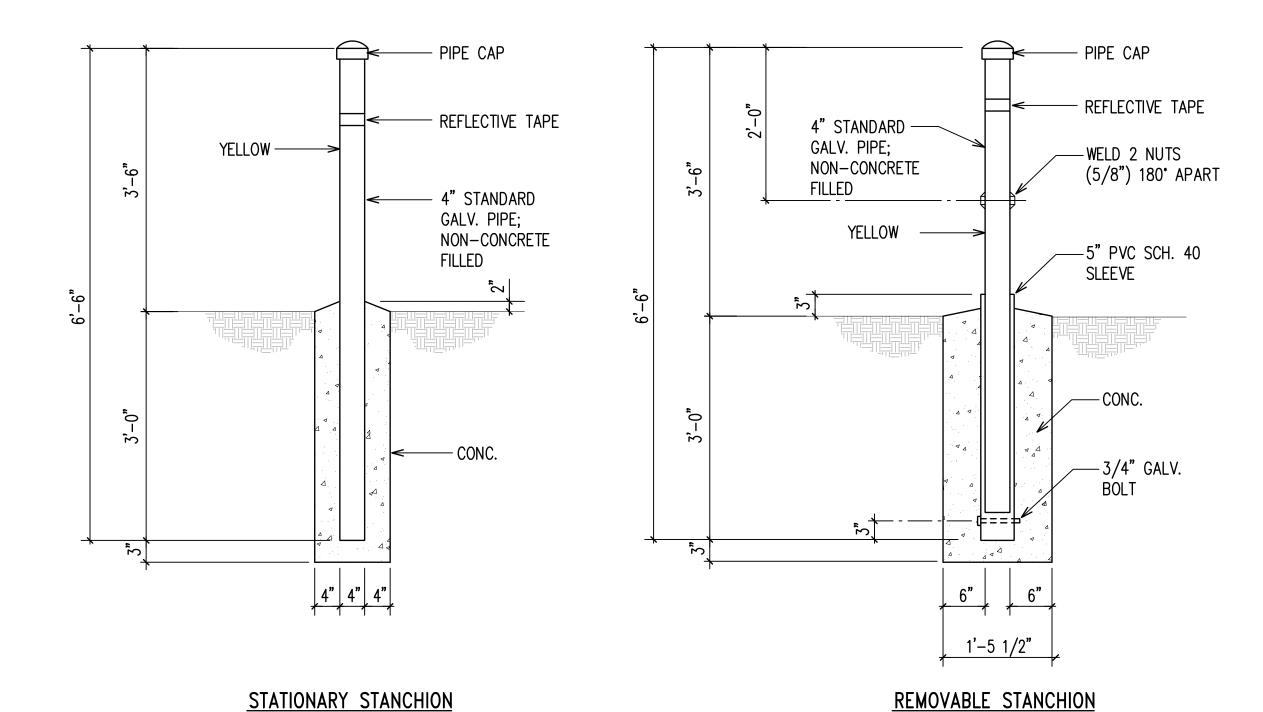
MISCELLANEOUS ELECTRICAL DETAILS



NOTES:

- 1. REFER TO STD. 30-5000 FOR LOCATIONS AND CLEARANCES.
- 2. REFER TO STD. 22-2005 FOR 3 PHASE PADMOUNTED TRANSFORMER REQUIREMENTS.
- 3. 5/8" DIAMETER x 10'-0" GROUND ROD (STOCK CODE 193457) FURNISHED BY HECO AND INSTALLED BY CUSTOMER. IF GROUND RESISTANCE IS MORE THAN 25 OHMS, INSTALL ADDITIONAL 5/8" DIAMETER x 8'-0" GROUND ROD (STOCK CODE 101527) AND CONNECT 4/0 BARE COPPER GROUND WIRE BETWEEN GROUND RODS. A MINIMUM OF 6'-0" SHALL BÉ MAINTAINED BETWEEN THE DRIVEN GROUND RODS. A SECOND GROUND ROD WILL PROBABLY BE REQUIRED WHEN SOIL RESISTIVITY IS GREATER THAN 67 OHM-METERS.
- 4. CONCRETE: 3000 PSI COMPRESSIVE STRENGTH IN 28 DAYS. MOISTURE CURE CONCRETE PAD A MINIMUM OF 7 DAYS. DO NOT INSTALL TRANSFORMER UNTIL CONCRETE COMPRESSIVE STRENGTH REACHES 1,500 PSI MINIMUM OR AFTER 14 DAYS.
- 5. REINFORCING: ASTM A615, GRADE 40 MINIMUM.
- 6. LOCATE, SECURE, AND CAP ALL CONDUITS BEFORE POURING PAD. TOP OF CONCRETE TO BE SMOOTH AND TRUE, WOOD-FLOAT FINISH, FREE OF DEFECTS, AS PER APPLICATION CITY AND COUNTY SPECIFICATIONS. ROUND ALL EXPOSED EDGES TO 3/4" CHAMFER.
- 7. MAINTAIN A RELATIVELY LEVEL, MINIMUM CLEARANCE OF 2'-6" FROM THE SIDES OF THE PAD, 2'-0" FROM THE BACK OF PAD, AND 8'-0" IN FRONT OF PAD. EXTEND CONCRETE AN ADDITIONAL 8'-0" IN FRONT IF LOCATED IN PLANTING AREA.





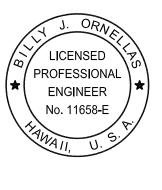
STANCHION NOTES:

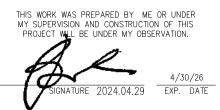
- STANCHIONS SHALL CONFORM TO ASTM A43.
- STANCHIONS SHALL BE PAINTED YELLOW PER ANSI SPEC Z535.1 TO COMPLY WITH OSHA 1910.144 FOR COLOR CODING.
- 3. A 2" WIDE STRIP OF REFLECTIVE TAPE SHALL BE PLACED 6" BELOW THE TOP OF STANCHION.

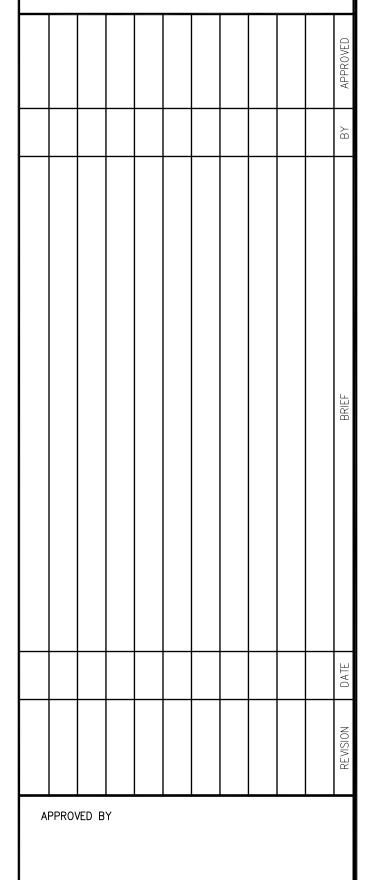
2 TYPICAL STANCHION DETAILS E402 NOT TO SCALE

WAIAHOLE WATER SYSTEM **IMPROVEMENTS -WELL SITE**



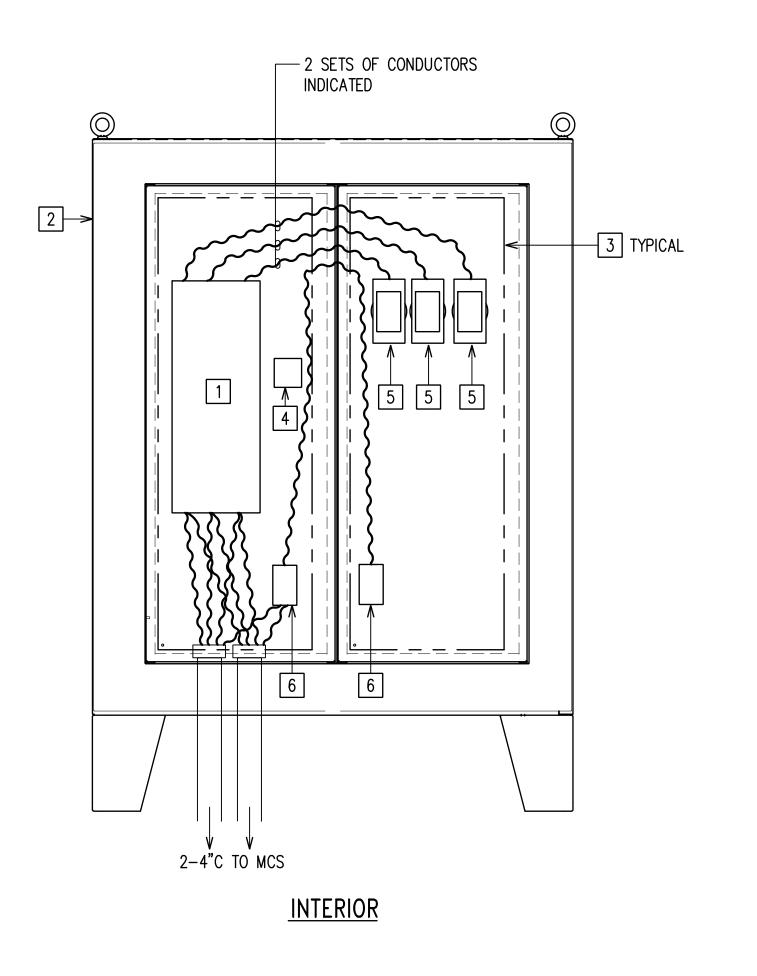






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MISCELLANEOUS ELECTRICAL DETAILS II



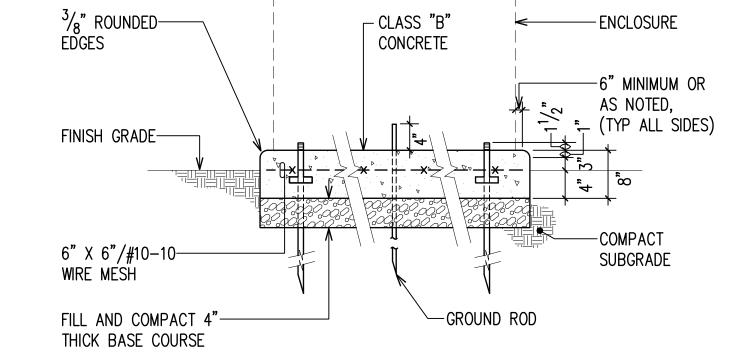
1'-6" -RECEPTACLE WITH "IN-USE" WEATHERPROOF COVER TYPE 316 2 STAINLESS STEEL ---ENCLOSURE SIDE VIEW FRONT VIEW CONCRETE SLAB --5/8"ø x 6" ANCHOR BOLTS (316 S.S.), MINIMUM OF 4 **PLACES** NOTE(S):

5**'**-0"

NOTE(S):

- CIRCUIT BREAKER
- 2 NEMA 4X STAINLESS STEEL FREE STANDING ENCLOSURE, SEE DETAIL
- 3 INTERIOR MOUNTING PANEL.
- ELECTRONIC HYGROTHERM, ADJUSTABLE HUMIDITY (50%-90% RH) AND TEMPERATURE (32-140F) SET POINTS, HIGH SWITCHING CAPACITY, CHANGE-OVER CONTACT, CONNECTION: 5—POLE TERMINAL FOR AWG 14 MX (2.5 MM SQUARE). CONNECTED TO 120V STRIP HEATERS. PENTAIR ATEMHUM OR APPROVAL EQUAL
- MECHANICAL LUGS (ILSCO #PB4-750-2N) MOUNTED ON A COPPER BUS BAR; PROVIDE 2-INCH STANDOFF INSULATORS FROM BACK OF CABINET
- MECHANICAL LUG FOR GROUND CONNECTION

- 1. 74" X 60" X 18" NEMA 4X 316 STAINLESS STEEL, FREE STANDING ENCLOSURE. CONTINUOUSLY WELDED, REMOVABLE CENTER POST, TAMPER RESISTANT HANDLES WITH 3 POINT OPERATING MECHANISM, HOFFMAN A76018SS6LP3PT OR APPROVED EQUAL
- 2 TWO 4" 316 STAINLESS STEEL THREADED HUB WITH 316 STAINLESS STEEL CONDUIT CAP
- PROVIDE CONCRETE EQUIPMENT PAD. SEE DETAIL ON THIS SHEET. SIZE CONCRETE PAD 6'-0"L X 30"W.



NOTE: CONCRETE PAD SHALL BE ADJUSTED TO FIT EQUIPMENT ENCLOSURE AT NO EXTRA CHARGE TO THE OWNER.

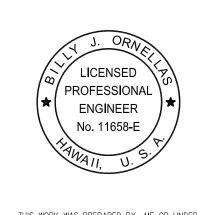
2 CONCRETE PAD DETAIL E403 NOT TO SCALE

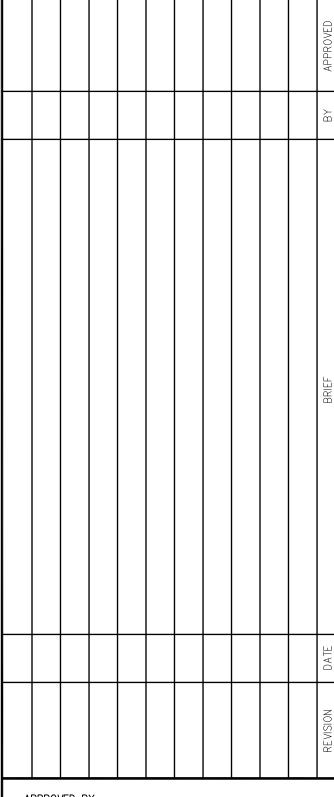
PORTABLE GENERATOR TERMINATION CABINET E403 NOT TO SCALE

WAIAHOLE WATER SYSTEM **IMPROVEMENTS -WELL SITE**



R. M. TOWILL CORPORATION lanning • Engineering • Environmental Services • Photogrammetry • Surveying • Construction Managem 2024 North King Street Suite 200 Honolulu Hawaii 96819

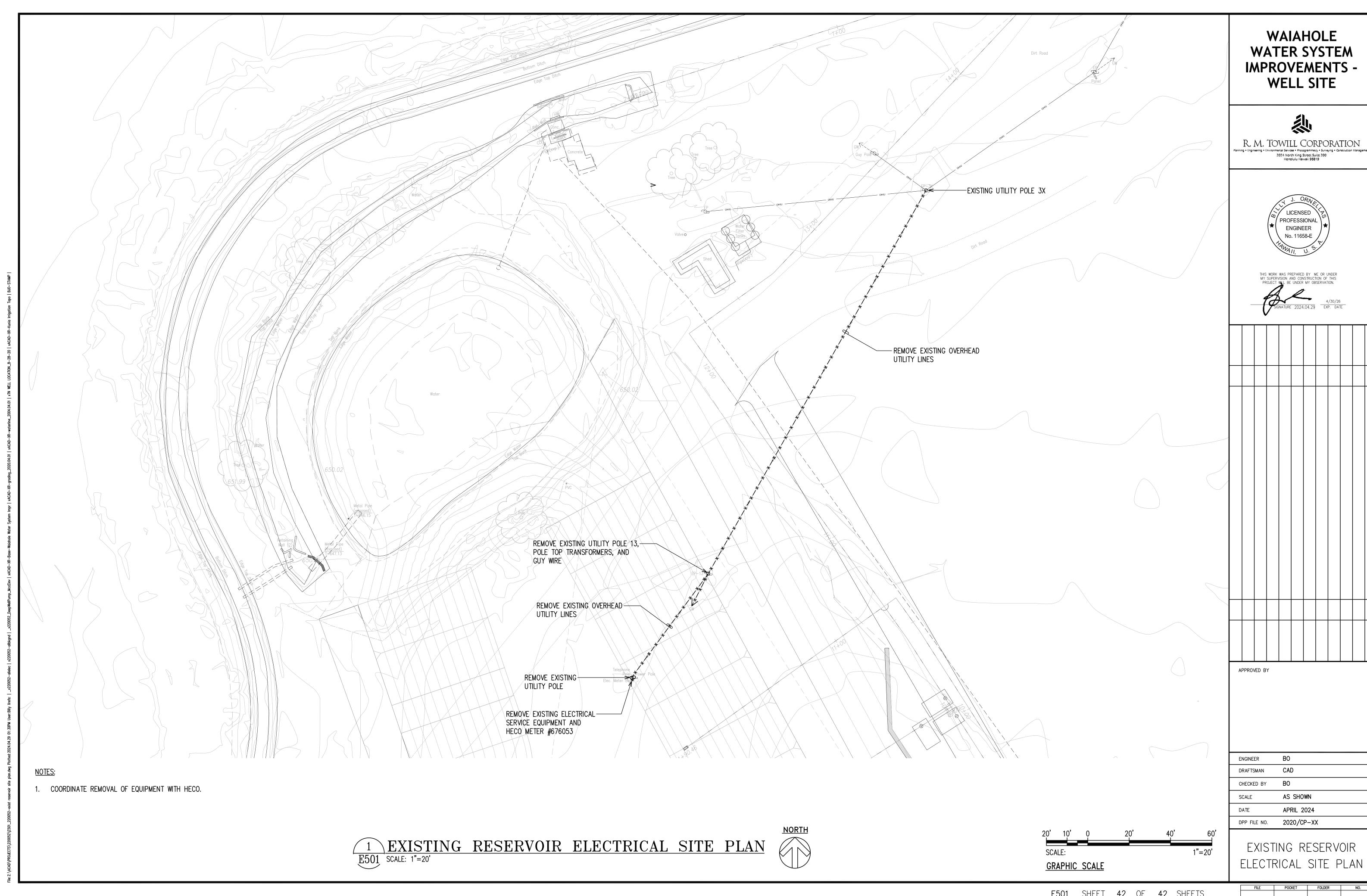




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PORTABLE GENERATOR TERMINATION CABINET



E501 SHEET 42 OF 42 SHEETS