

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

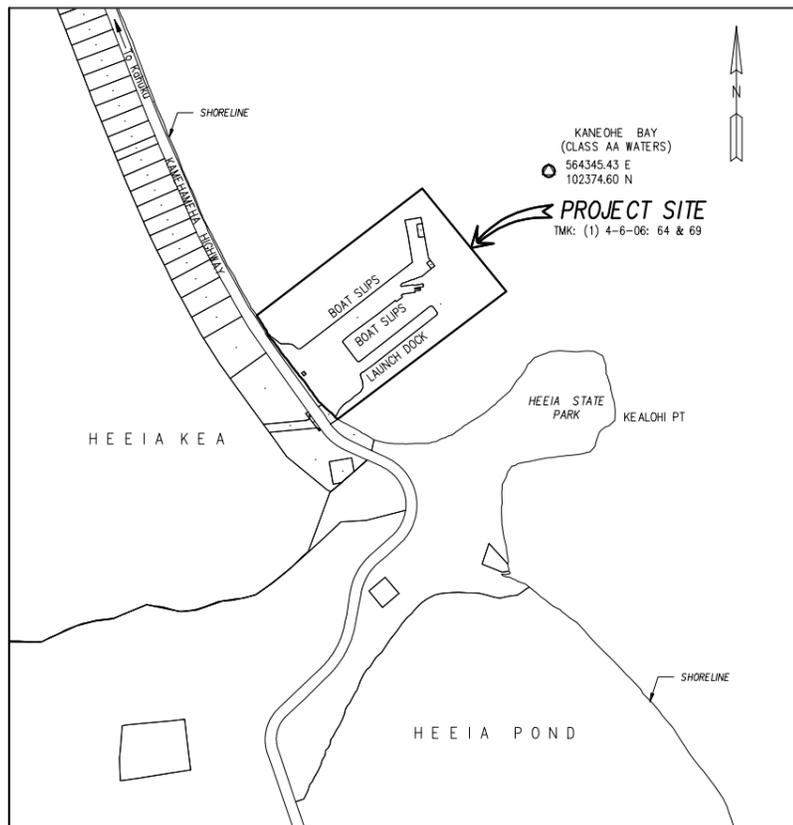
DIVISION OF BOATING AND OCEAN RECREATION

JOB NO. B78C073A

HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS

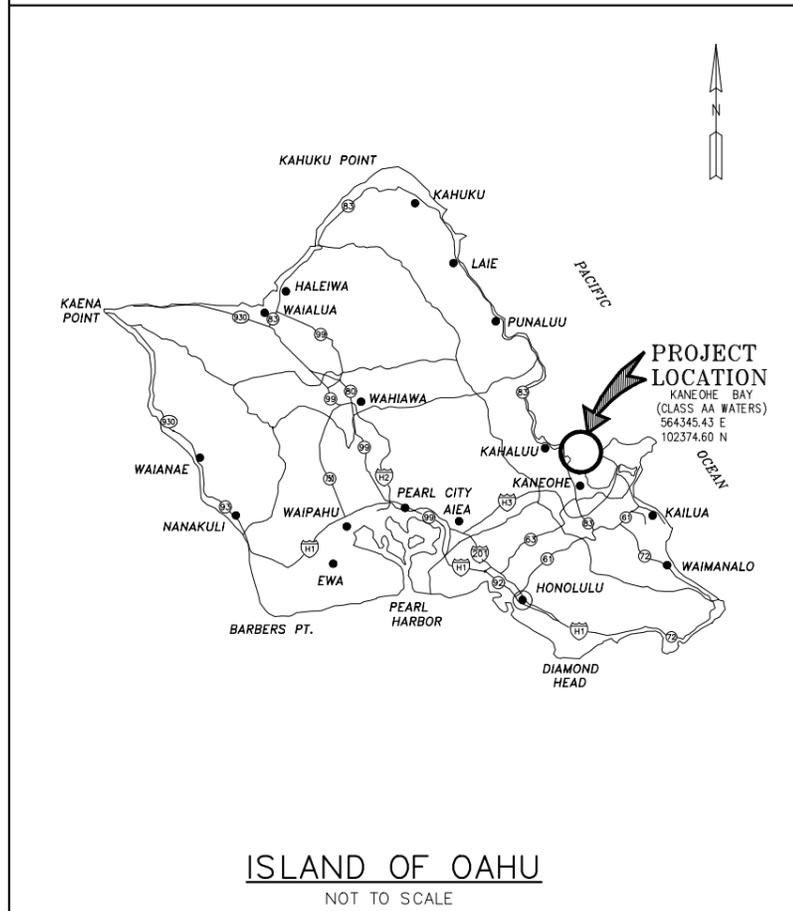
HEEIA, KOOLAUPOKO, OAHU, HAWAII

T.M.K.: (1) 4-6-06: 64 & 69



LOCATION MAP

SCALE: 1" = 300'



ISLAND OF OAHU

NOT TO SCALE

I N D E X

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APPROVED:

DATE: _____
DIRECTOR, DEPARTMENT OF PLANNING & PERMITTING
CITY & COUNTY OF HONOLULU
(FOR SITE GRADING ONLY)

APPROVED:

DATE: Mar 24, 2023
Edward R. Underwood
EDWARD R. UNDERWOOD
ADMINISTRATOR
DIVISION OF BOATING AND OCEAN RECREATION
DEPARTMENT OF LAND AND NATURAL RESOURCES

DRAWING NO.

T001

CONSTRUCTION NOTES

- 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, STATE OF HAWAII.
- THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES, APPURTENANCES AND STRUCTURES AS SHOWN ON THESE DRAWINGS WERE COMPILED FROM TOPOGRAPHIC SURVEYS PERFORMED BY CONTROLPOINT SURVEYING, INC. JOB NO. 17021, DATED MAY 25, 2017 AND SUPPLEMENTED ON JUNE 30, 2017. RECORD DRAWINGS PROVIDED BY UTILITY AND GOVERNMENT AGENCIES, AND FROM THE ENGINEER'S MEASUREMENTS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR ALL DAMAGES TO THE EXISTING UTILITIES. THE CONTRACTOR SHALL NOT ASSUME THAT WHERE NO UTILITIES ARE SHOWN, THAT NONE EXIST.
- THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND LICENSES, PAY ALL CHARGES, FEES AND TAXES, GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK AS DRAWN AND SPECIFIED.
- WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
- THE CONTRACTOR SHALL PROVIDE ACCESS TO AND FROM DRIVEWAYS AND PUBLIC STREETS AT ALL TIMES EXCEPT AS NOTED ON THE DRAWING.
- WHEN TRENCH EXCAVATION IS ADJACENT TO OR UNDER EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS AND SETTLEMENT AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDER-PINNING TO FULLY PROTECT THEM FROM DAMAGE.
- BACKFILL UNDER EXISTING STRUCTURES OR FACILITIES SHALL BE SANDY OR GRANULAR MATERIAL COMPLETELY PLACED AS SOON AS THE PIPE IS LAID AND TESTED. THE BACKFILL MATERIAL SHALL BE RAMMED WITH PROPER TOOLS UNTIL COMPACTED TO 90 TO 95 PERCENT OF ITS MAXIMUM DENSITY.
- ALL ABANDONED PIPE OPENINGS SHALL BE PLUGGED WITH CLASS B CONCRETE TO A DEPTH OF 1½ TIMES THE DIAMETER OF PIPE.
- VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER. COMMENCEMENT OF CONSTRUCTION SHALL INDICATE CONTRACTOR'S ACCEPTANCE OF EXISTING SITE CONDITIONS.
- THE CONTRACTOR SHALL NOTIFY ALL UTILITY AGENCIES TO VERIFY THE ACTUAL LOCATIONS OF ALL UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATING. THE CONTRACTOR SHALL COORDINATE ALL WORK.
- THE CONTRACTOR SHALL RESTORE TO THEIR ORIGINAL CONDITION ALL IMPROVEMENTS DAMAGED AS A RESULT OF THE CONSTRUCTION, INCLUDING PAVEMENTS, EMBANKMENTS, CURBS, SIGNS, LANDSCAPING, STRUCTURES, UTILITIES, WALLS, FENCES, ETC. AT NO ADDITIONAL EXPENSE TO THE STATE.
- FOR BENCH MARK, SEE DRAWING NO. C001.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER QUALITY AND WATER POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS" AND TITLE 11 CHAPTER 55, "WATER POLLUTION CONTROL," AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.
- THE CONTRACTOR SHALL NOT PERFORM ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW INTO EXISTING DRAINAGE SYSTEMS, ADJOINING PROPERTIES, STREETS, NATURAL WATER COURSES OR OCEAN. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY AT NO COST TO THE STATE.
- IN THE EVENT THAT ANY PREVIOUSLY UNIDENTIFIED ARCHAEOLOGICAL SITES OR REMAINS (SUCH AS ARTIFACTS, SHELLS, BONE OR CHARCOAL DEPOSITS, HUMAN BURIALS, ROCK OR CORAL ALIGNMENTS, PAVINGS, OR WALLS) ARE ENCOUNTERED, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE POLICE DEPARTMENT, STATE DEPARTMENT OF LAND AND NATURAL RESOURCES, HISTORIC PRESERVATION DIVISION (808-692-8015) AND THE ENGINEER. WORK IN THE IMMEDIATE AREA SHALL BE STOPPED UNTIL THE DIVISION IS ABLE TO ASSESS THE IMPACT AND MAKE FURTHER RECOMMENDATIONS FOR THE MITIGATIVE ACTIVITY.
- CONFINED SPACE
FOR ENTRY BY STATE 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:
A. 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:
1) FULL BODY HARNESSES FOR UP TO TWO PERSONNEL.
2) LIFELINE AND ASSOCIATED CLIPS.
3) INGRESS/EGRESS AND FALL PROTECTION EQUIPMENT.
4) TWO-WAY RADIOS (WALKIE-TALKIES) IF OUT OF LINE-OF-SIGHT.
5) EMERGENCY (ESCAPE) RESPIRATOR (10-MINUTE DURATION).
6) CELLULAR TELEPHONE TO CALL FOR EMERGENCY ASSISTANCE.
7) CONTINUOUS GAS DETECTOR (CALIBRATED) TO MEASURE OXYGEN, HYDROGEN SULFIDE, CARBON MONOXIDE AND FLAMMABLES (CAPABLE OF MONITORING AT A DISTANCE AT LEAST 20- FEET AWAY).
8) PERSONAL MULTI-GAS DETECTOR TO BE CARRIED BY INSPECTOR.
B. CONTINUOUS FORCED AIR VENTILATION ADEQUATE TO PROVIDE SAFE ENTRY CONDITIONS.
C. ONE ATTENDANT/RESCUE PERSONNEL TOPSIDE (TWO, IF CONDITIONS WARRANT IT).
- THE CONTRACTOR SHALL NOTIFY THE STATE DIVISION OF BOATING AND OCEAN RECREATION OAHU DISTRICT MANAGER (PHONE NO. 808-832-3520) AND HEEIA KEA SMALL BOAT HARBOR HARBOR MASTER (808-973-9727) AT LEAST 2 WEEKS PRIOR TO ANY CLOSURE OR SHUTDOWN OF ANY SERVICE.
- BOULDERS, ROCK, CORAL OR SIMILAR MATERIAL MAY BE ENCOUNTERED DURING EXCAVATION. EXCAVATION OF THESE MATERIALS SHALL BE DONE AT NO ADDITIONAL COST TO THE STATE.
- CONTRACTOR SHALL MAKE ARRANGEMENTS FOR UTILITIES SUCH AS ELECTRICITY, WATER, TELEPHONE, ETC. REQUIRED FOR HIS OPERATION AND ALL COSTS SHALL BE BORNE BY THE CONTRACTOR.
- THE CONTRACTOR SHALL TEST EXISTING UTILITIES PRIOR TO START OF WORK TO IDENTIFY THE PARTS OF THESE UTILITIES THAT ARE NOT IN WORKING ORDER. A REPRESENTATIVE OF THE STATE OF HAWAII, DIVISION OF BOATING AND OCEAN RECREATIONS SHALL BE PRESENT TO WITNESS THE TESTING. THE CONTRACTOR SHALL DOCUMENT THE CONDITION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL RESTORE ALL DAMAGE CAUSED BY HIS/HER OPERATIONS TO ORIGINAL CONDITIONS OR BETTER AT HIS/HER OWN EXPENSE.

SEWER NOTES

- ALL SEWER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY'S STANDARD SPECIFICATIONS, SEPTEMBER 1986, THE DEPARTMENT OF PUBLIC WORKS STANDARD DETAILS, SEPTEMBER 1984, CURRENT CITY PRACTICES AND REVISED ORDINANCES OF HONOLULU, 1990, AS AMENDED, AND THE DESIGN STANDARDS OF THE DEPARTMENT OF WASTEWATER MANAGEMENT, JULY 2017.
- CRUSHED ROCK CRADLE IS PERMITTED WHERE SOIL IS STABLE. IN AREAS OF UNSTABLE SOIL, THE DESIGN CONSULTANT WILL WORK WITH THE CONSTRUCTION ENGINEER TO DETERMINE THE SUPPORT REQUIRED.
- MINIMUM SLOPE FOR SEWER LATERALS SHALL BE 1.00% UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SEWAGE SPILLS CAUSED DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE STATE OF HAWAII DEPARTMENT OF HEALTH AND UTILIZE APPROPRIATE SAMPLING AND ANALYZING PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PUBLIC NOTIFICATION AND PRESS RELEASES. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL INSTALL "RAINSTOPPER" MANHOLE INSERTS IN ALL SEWER MANHOLES WITH TYPE "SA" FRAME AND COVER.
- GEOTEXTILE FABRIC TO ENVELOP THE PIPE CRADLE AND SELECT BACKFILL MATERIAL SHALL BE PROVIDED WHERE GROUNDWATER OR UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED.
- INVERTS SHOWN FOR EXISTING SEWER PIPING ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY LOCATION AND INVERT OF EXISTING SEWER. IN THE EVENT THAT ANY CHANGE IN ALIGNMENT OR GRADE FOR THE PROPOSED SEWERS ARE REQUIRED DUE TO EXISTING SEWER LINE INVERT OR UNFORESEEN CONFLICT WITH OTHER UTILITIES, THE CONTRACTOR SHALL ADJUST INVERTS AND ALIGNMENTS FOR NEW PIPING ACCORDINGLY. MODIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PROCEEDING WITH RE-ALIGNMENT WORK.
- CONTRACTOR SHALL PHOTOGRAPH ALL STAGES OF THE INSTALLATION OF THE WASTEWATER SYSTEM INCLUDING EXCAVATED AREAS AND TRENCHES PRIOR TO INSTALLATION, WASTEWATER SYSTEM AND PIPING PRIOR TO BACKFILL, AND WASTEWATER SYSTEM AND PIPING AFTER BACKFILLED AND PRIOR TO SURFACE RESTORATION. THE CONTRACTOR SHALL SUBMIT TWO (2) SETS OF PHOTOS (4" x 6") TO THE ENGINEER AFTER COMPLETION OF EACH STAGE NOTED.

PUBLIC HEALTH SAFETY AND CONVENIENCE NOTES

- THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH, SAFETY AND ENVIRONMENTAL QUALITY.
- THE CONTRACTOR, AT HIS/HER 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 OF HAWAII, DEPARTMENT OF HEALTH. THE STATE SHALL REQUIRE SUPPLEMENTARY MEASURES IF REQUIRED.
- THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC.
- THE CONTRACTOR'S ATTENTION IS DIRECTED TO STATE OF HAWAII, DEPARTMENT OF HEALTH, TITLE 11, HAWAII ADMINISTRATIVE RULES, CHAPTER 46, "COMMUNITY NOISE CONTROL" IN WHICH MAXIMUM ALLOWABLE NOISE LEVELS HAVE BEEN SET. IF THE CONSTRUCTION ACTIVITIES FOR THIS PROJECT WILL EXCEED THE ALLOWABLE NOISE LEVELS, THE CONTRACTOR WILL BE REQUIRED TO OBTAIN A PERMIT FROM THE DIRECTOR OF THE DEPARTMENT OF HEALTH. THE CONTRACTOR SHALL OBTAIN A COPY OF CHAPTER 46 AND BECOME FAMILIAR WITH THE NOISE LEVEL RESTRICTIONS AND THE PROCEDURES FOR OBTAINING A PERMIT FOR CONSTRUCTION ACTIVITIES. APPLICATION AND INFORMATION ON VARIANCES ARE AVAILABLE AT THE ENVIRONMENTAL HEALTH SERVICES DIVISION, 591 ALA MOANA BOULEVARD, HONOLULU, HAWAII 96813 OR BY TELEPHONE (808-586-4700).
- CONTRACTOR SHALL PROVIDE A TEMPORARY SAFE PEDESTRIAN PASSAGEWAY AROUND ALL CONSTRUCTION ACTIVITY WHENEVER PEDESTRIAN WALKWAYS ARE OBSTRUCTED. THE TEMPORARY PEDESTRIAN PASSAGEWAY SHALL CONFORM TO AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) SECTION 4.1.1(4).

ABBREVIATIONS:

AC	ASPHALTIC CONCRETE	T	TOP
BC	BOTTOM CURB	TC	TOP CURB
BFP	BACKFLOW PREVENTOR	TEL.	TELEPHONE
C	CONCRETE	TRANS.	TRANSFORMER
D	DIAMETER	TS	TOP STEM
G	G, GAS	UTIL.	LIGHT POLE
GP	GUARD POST	WM	WATER METER
H	HEIGHT	WMH	WATER MANHOLE
LP	LIGHT POLE	WV	WATER VALVE
SMH	SEWER MANHOLE	SEWER LINE	—S12"—
		WATER LINE	—W12"—

NOTE:

UNDERGROUND UTILITY LINES AND/OR STRUCTURES, IF SHOWN, ARE PROVIDED FOR INFORMATION ONLY AND ARE BASED ON INFORMATION SHOWN ON PLANS/MAPS PREPARED BY OTHERS. THE INFORMATION SHOWN, THEREFORE, MAY OR MAY NOT BE REPRESENTATIVE OF THE ACTUAL FIELD CONDITIONS. THE UNDERGROUND UTILITY LINES AND/OR STRUCTURES MAY OR MAY NOT BE PRESENT AT THE LOCATIONS SHOWN OR OTHER UNDERGROUND UTILITY LINES AND/OR STRUCTURES NOT SHOWN MAY BE PRESENT.

GENERAL NOTES FOR TRAFFIC CONTROL:

- THE CONTRACTOR SHALL DEVELOP WORKABLE TRAFFIC CONTROL PLAN FOR THE PROJECT.
- CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
- REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED. ALL SIGNS SHALL BE RESTORED UPON THE COMPLETION OF THE WORK.
- FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
- ALL TRAFFIC LANES SHALL BE A MINIMUM OF NINE (9) FEET WIDE.
- ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
- THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRECLUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E. WHEN THE SIGNS HAVE MESSAGES ON BOTH FACES).
- LANE CLOSURE SHALL BE LIMITED ONLY TO THE EXTENT OF ACCOMPLISHING EACH DAY'S WORK. AS SOON AS EACH DAY'S WORK IS COMPLETED, THE CONTRACTOR SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC.
- PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS SHALL BE REPLACED UPON COMPLETION OF WORK.
- DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THE RIGHT-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY. FURTHER, THE PERMITTEE SHALL CONTROL TRAFFIC GOING IN AND OUT OF DRIVEWAYS.

Thu, 29 Dec 2022 - 12:00pm
N:\Projects\02-01-HEEIA\KOA\WTFP\ONLY\Const\Plans\062-01_T002_Notes & Abbreviations.dwg

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.					
 SIGNATURE LICENSE EXP: 4/30/24		STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION HEEIA KEA SMALL BOAT HARBOR WASTE WATER TREATMENT SYSTEM IMPROVEMENTS			
GENERAL NOTES AND ABBREVIATIONS					
BILLS ENGINEERING, INC.					
DESIGNED: DB			SUBMITTED: BE1		
DRAWN: RE			DATE:		
CHECKED: DB			SCALE: AS SHOWN		
APPROVED:					DRAWING NO.
CHIEF ENGINEER					DATE
					T002

GRADING NOTES

1. ALL GRADING WORK SHALL BE DONE IN ACCORDANCE WITH CHAPTER 14, ARTICLES 13, 14, 15 & 16 AS RELATED TO GRADING, SOIL EROSION AND SEDIMENT CONTROL OF THE REVISED ORDINANCES OF HONOLULU, 1990, AS AMENDED, AND SOILS REPORT BY SHINSATO ENGINEERING, INC. ENTITLED "GEO TECHNICAL INVESTIGATION PROPOSED WASTEWATER TREATMENT PLANT FACILITY, HEEIA KEA SMALL BOAT HARBOR, KAMEHAMEHA HIGHWAY, KANEHOHE, HAWAII" AS PREPARED BY SHINSATO ENGINEERING INC. JUNE 21, 2017.
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 NEW LINES.
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 SODDED OR PLANTED AS SOON AS FINAL GRADES HAVE BEEN ESTABLISHED. PLANTING 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 PLANTED.
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 ORDINANCE.
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 THE 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 DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT [HTTP://HEALTH.HAWAII.GOV/CWB](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 INITIATED.
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. BUILDING PERMIT FOR RETAINING WALLS SHALL BE OBTAINED PRIOR TO COMMENCEMENT OF GRADING WORK ON SITE.
17. FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING BRANCH, D.P.P. AT 808-768-8084 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 CONSTRUCTIONAL SERVICES WITH THE RESPONSIBLE CITY AGENCY.
18. 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 (808-692-8015). IN ADDITION, FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL INFORM THE CIVIL ENGINEERING BRANCH, D.P.P. (808-768-8084); AND FOR CITY PROJECTS, NOTIFY THE RESPONSIBLE CITY AGENCY.

GRADING NOTES, (CONT'D)

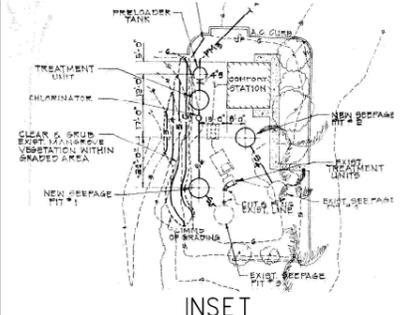
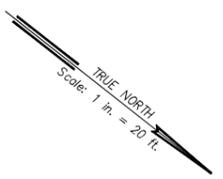
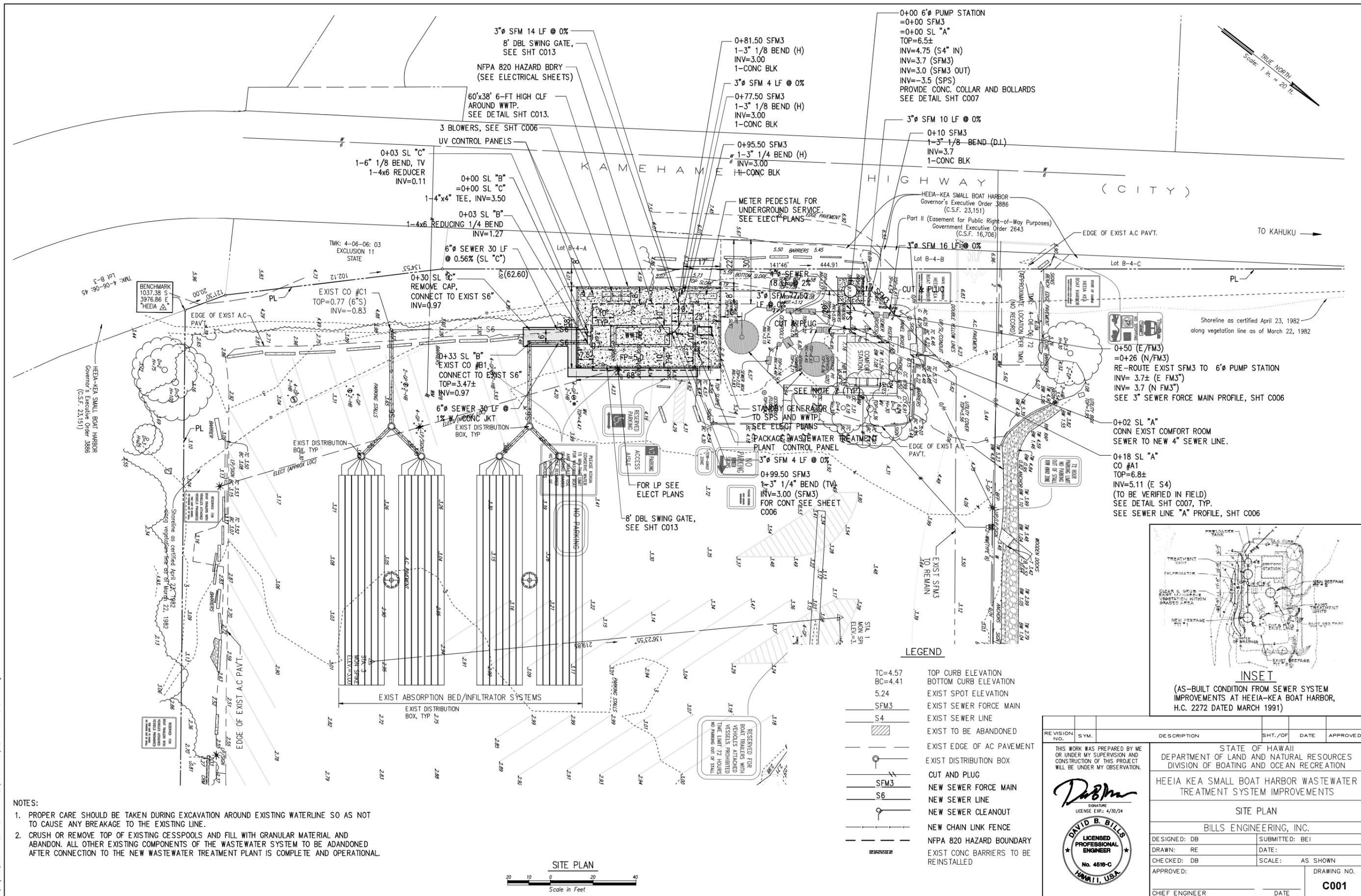
19. FOR ALL PROJECTS, WHICH WILL DISTURB ONE (1) ACRE OR MORE OF LAND, THE CONTRACTOR SHALL NOT START CONSTRUCTION UNTIL A NOTICE OF GENERAL PERMIT COVERAGE (NGPC) IS RECEIVED FROM THE DEPARTMENT OF HEALTH, STATE OF HAWAII, AND HAS SATISFIED ANY OTHER APPLICABLE REQUIREMENTS OF THE NPDES PERMIT PROGRAM. 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.
20. 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.
21. NON-COMPLIANCE TO ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHOULD COMMENCE IMMEDIATELY. ALL COSTS INCURRED SHALL BE BILLED TO THE VIOLATORS. FURTHERMORE, VIOLATORS SHALL BE SUBJECT TO ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES.
22. FOR BENCH MARK, SEE SHEET C001.

DUST CONTROL NOTES:

1. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE MEASURES IT WILL TAKE FOR THE CONTROL OF FUGITIVE DUST FROM THE WORKSITE. THE MEASURES MAY INCLUDE BUT ARE NOT LIMITED TO WATERING OF THE SITE AND FILL MATERIAL BEING PLACED, AND DELAYING WORK IN THE WEEK THAT PREVAILING WIND DIRECTION SHOULD SHIFT. 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 STANDARD CONTAINED IN THE HAWAII ADMINISTRATIVE RULES: CHAPTER 11-60, "AIR POLLUTION CONTROL". DUST SHALL BE KEPT WITHIN ACCEPTABLE LEVELS AT ALL TIMES, INCLUDING NON-WORKING HOURS, WEEKENDS AND HOLIDAYS IN CONFORMANCE WITH TITLE 11, CHAPTER 60.1-AIR POLLUTION CONTROL, AS AMENDED, OF THE STATE DEPT. OF HEALTH, PUBLIC HEALTH REGULATIONS. THE METHOD OF DUST CONTROL, AND ALL COSTS INCURRED THEREFORE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DUST DAMAGE CLAIMS.
2. CONSTRUCTION ACTIVITIES SHALL COMPLY W/PROVISIONS OF HAR CH. 11-60-1 "AIR POLLUTION CONTROL" SECTION 11-60-1-33, FUGITIVE DUST. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEASURES TO CONTROL DUST FROM ROAD AREAS AND DURING VARIOUS PHASES OF CONSTRUCTION WHICH SHALL INCLUDE, BUT ARE NOT LIMITED TO:
 - A. PLAN THE DIFFERENT PHASES OF CONSTRUCTION, FOCUSING ON MINIMIZING THE AMOUNT OF DUST GENERATING MATERIALS AND ACTIVITIES, CENTRALIZING ON-SITE VEHICULAR TRAFFIC ROUTES, AND LOCATING POTENTIALLY DUSTY EQUIP. IN AREAS OF LEAST IMPACT.
 - B. PROVIDE ADEQUATE WATER SOURCE AT THE SITE PRIOR TO START UP OF CONSTRUCTION ACTIVITIES.
 - C. LANDSCAPE AND PROVIDE RAPID COVERING OF BARE AREAS, INCLUDING SLOPES, STARTING FROM THE INITIAL GRADING PHASE.
 - D. MINIMIZE DUST FROM SHOULDERS & ACCESS ROADS.
 - E. PROVIDE ADEQUATE DUST CONTROL MEASURES DURING WEEKENDS, AFTER HOURS, AND PRIOR TO DAILY START-UP OF CONSTRUCTION ACTIVITIES.
 - F. CONTROL DUST FROM DEBRIS BEING HAULED AWAY FROM PROJECT SITE.

Thu, 05 Jun 2023 - 7:35am
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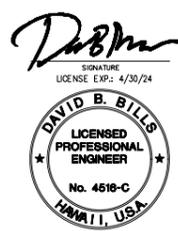
REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
 SIGNATURE LICENSE EXP: 4/30/24		STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS			
GRADING NOTES BILLS ENGINEERING, INC.					
DESIGNED: DB	SUBMITTED: BE1				
DRAWN: RE	DATE:				
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APPROVED:	DATE		DRAWING NO.		
CHIEF ENGINEER			T003		



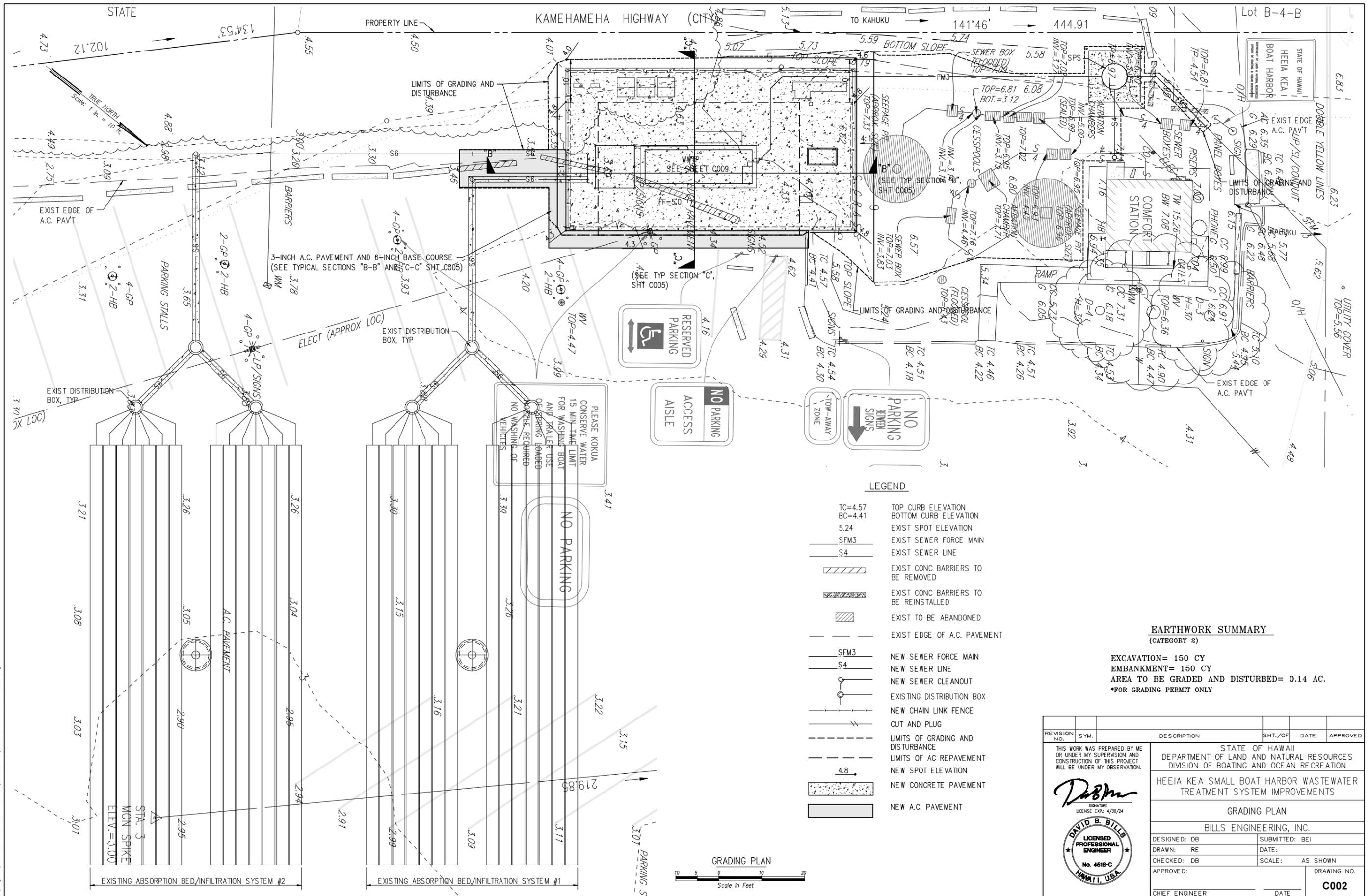
- NOTES:
1. PROPER CARE SHOULD BE TAKEN DURING EXCAVATION AROUND EXISTING WATERLINE SO AS NOT TO CAUSE ANY BREAKAGE TO THE EXISTING LINE.
 2. CRUSH OR REMOVE TOP OF EXISTING CESSPOOLS AND FILL WITH GRANULAR MATERIAL AND ABANDON. ALL OTHER EXISTING COMPONENTS OF THE WASTEWATER SYSTEM TO BE ADANDONED AFTER CONNECTION TO THE NEW WASTEWATER TREATMENT PLANT IS COMPLETE AND OPERATIONAL.



REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
<p>THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.</p> <p>STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION</p> <p>HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS</p> <p>SITE PLAN</p> <p>BILLS ENGINEERING, INC.</p> <p>DESIGNED: DB DRAWN: RE CHECKED: DB APPROVED:</p> <p>SUBMITTED: BE1 DATE: SCALE: AS SHOWN DRAWING NO. C001</p>					
<p>CHIEF ENGINEER</p>					DATE



Thu, 29 Dec 2022 - 12:42pm
R:\Projects\02-01-HEEIA KEA WWTP ONLY\Const Plans\602-01 C001 SITE PAVING



LEGEND

TC=4.57	TOP CURB ELEVATION
BC=4.41	BOTTOM CURB ELEVATION
5.24	EXIST SPOT ELEVATION
SFM3	EXIST SEWER FORCE MAIN
S4	EXIST SEWER LINE
	EXIST CONC BARRIERS TO BE REMOVED
	EXIST CONC BARRIERS TO BE REINSTALLED
	EXIST TO BE ABANDONED
	EXIST EDGE OF A.C. PAVEMENT
SFM3	NEW SEWER FORCE MAIN
S4	NEW SEWER LINE
	NEW SEWER CLEANOUT
	EXISTING DISTRIBUTION BOX
	NEW CHAIN LINK FENCE
	CUT AND PLUG
	LIMITS OF GRADING AND DISTURBANCE
	LIMITS OF AC REPAVEMENT
4.8	NEW SPOT ELEVATION
	NEW CONCRETE PAVEMENT
	NEW A.C. PAVEMENT

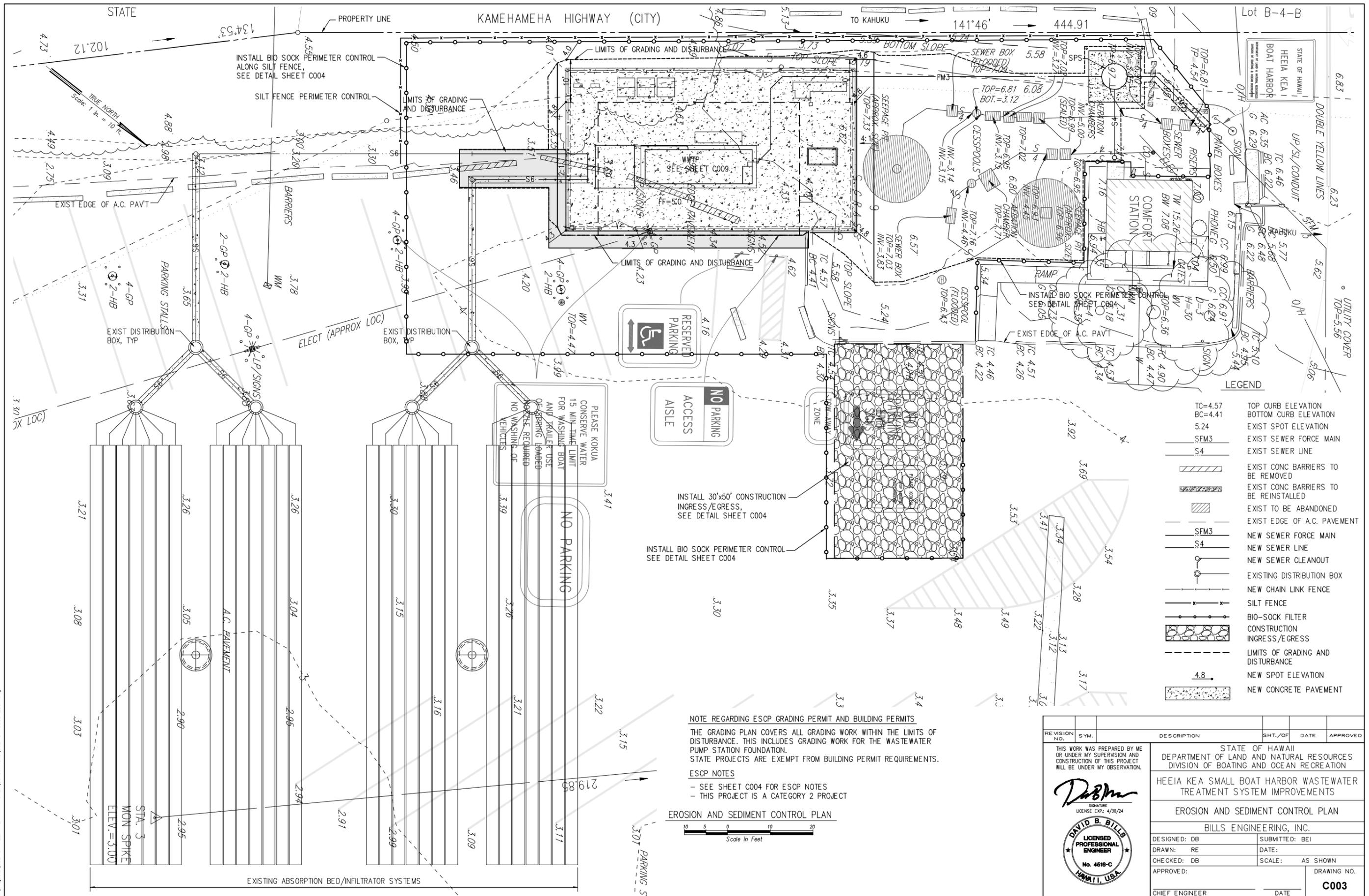
EARTHWORK SUMMARY
(CATEGORY 2)

EXCAVATION= 150 CY
 EMBANKMENT= 150 CY
 AREA TO BE GRADED AND DISTURBED= 0.14 AC.
 *FOR GRADING PERMIT ONLY

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.					
		STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION			
HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS					
GRADING PLAN					
BILLS ENGINEERING, INC.					
DESIGNED: DB			SUBMITTED: BE1		
DRAWN: RE			DATE:		
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APPROVED:			DRAWING NO.		
CHIEF ENGINEER			DATE		
					C002

David B. Bills
 SIGNATURE
 LICENSE EXP: 4/30/24
DAVID B. BILLS
 LICENSED PROFESSIONAL ENGINEER
 No. 4618-C
 HAWAII, U.S.A.

Thu, 05 Jun 2023 7:32am
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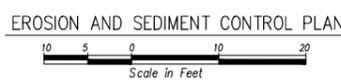


LEGEND

TC=4.57	TOP CURB ELEVATION
BC=4.41	BOTTOM CURB ELEVATION
5.24	EXIST SPOT ELEVATION
SFM3	EXIST SEWER FORCE MAIN
S4	EXIST SEWER LINE
[Symbol]	EXIST CONC BARRIERS TO BE REMOVED
[Symbol]	EXIST CONC BARRIERS TO BE REINSTALLED
[Symbol]	EXIST TO BE ABANDONED
SFM3	NEW SEWER FORCE MAIN
S4	NEW SEWER LINE
[Symbol]	NEW SEWER CLEANOUT
[Symbol]	EXISTING DISTRIBUTION BOX
[Symbol]	NEW CHAIN LINK FENCE
[Symbol]	SILT FENCE
[Symbol]	BIO-SOCK FILTER
[Symbol]	CONSTRUCTION INGRESS/EGRESS
[Symbol]	LIMITS OF GRADING AND DISTURBANCE
4.8	NEW SPOT ELEVATION
[Symbol]	NEW CONCRETE PAVEMENT

NOTE REGARDING ESCP GRADING PERMIT AND BUILDING PERMITS
 THE GRADING PLAN COVERS ALL GRADING WORK WITHIN THE LIMITS OF DISTURBANCE. THIS INCLUDES GRADING WORK FOR THE WASTEWATER PUMP STATION FOUNDATION.
 STATE PROJECTS ARE EXEMPT FROM BUILDING PERMIT REQUIREMENTS.

ESCP NOTES
 - SEE SHEET C004 FOR ESCP NOTES
 - THIS PROJECT IS A CATEGORY 2 PROJECT



REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION			STATE OF HAWAII HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS		
EROSION AND SEDIMENT CONTROL PLAN					
BILLS ENGINEERING, INC.					
DESIGNED: DB			SUBMITTED: BE1		
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CHIEF ENGINEER			DATE		
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Thu, 05 - 2023 11:35am
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GOOD HOUSEKEEPING BMPS NOTES:

- STREET SWEEPING, VACUUMING. ALL POLLUTANTS DISCHARGED FROM CONSTRUCTION SITE TO OFFSITE AREAS MUST BE SWEEPED OR VACUUMED EACH DAY BEFORE LEAVING THE JOB SITE.
- 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 WATERCOURSE BY MINIMIZING THE STORAGE OF HAZARDOUS MATERIALS ON-SITE, STORING MATERIALS IN A DESIGNATED AREA, INSTALLING SECONDARY CONTAINMENT. CONSTRUCTION MATERIALS, WASTE, TOXIC AND HAZARDOUS SUBSTANCES, STOCKPILES AND OTHER SOURCES OF POLLUTANT SHALL NOT BE STORED IN BUFFER AREAS, NEAR AREAS OF CONCENTRATED FLOW, OR AREAS ADJACENT TO THE MS4, RECEIVING WATERS, OR DRAINAGE IMPROVEMENTS THAT DISCHARGE OFFSITE. PRIMARY AND SECONDARY CONTAINMENT CONTROLS AND COVERS SHALL BE IMPLEMENTED TO THE MEP.
- SPILL PREVENTION AND CONTROL. CREATE AND IMPLEMENT SPILL PREVENTION AND RESPONSE PLAN 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.
- 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 LATER THAN 3 DAYS AFTER NOTIFICATION BY PHONE.
- 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 LATER THAN 3 DAYS AFTER NOTIFICATION BY PHONE.
- VEHICLE AND EQUIPMENT CLEANING. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT CLEANING OPERATIONS BY USING OFFSITE 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.
- VEHICLE AND EQUIPMENT FUELING. PREVENT FUEL SPILLS AND LEAKS BY USING OFFSITE 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.
- VEHICLE AND EQUIPMENT MAINTENANCE. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT MAINTENANCE OPERATIONS BY USING OFFSITE 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.
- SOLID WASTE MANAGEMENT. PREVENT OR REDUCE DISCHARGE OF POLLUTANTS TO THE LAND, GROUNDWATER, IN STORM WATER, FROM SOLID WASTE OR CONSTRUCTION AND DEMOLITION WASTE, BY PROVIDING DESIGNATED WASTE COLLECTION AREAS. COLLECT SITE TRASH DAILY, AND ENSURE THAT CONSTRUCTION WASTE IS COLLECTED, REMOVED, AND DISPOSED OF, ONLY AT AUTHORIZED DISPOSAL AREAS.
- 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.
- 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.
- 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, CHANNEL OR STORM DRAINS.
- CONCRETE WASTE MANAGEMENT. PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM CONCRETE WASTE BY CONDUCTING WASHOUT OFFSITE OR PERFORMING ON-SITE 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 SHALL BE A MINIMUM OF 10 MILLIMETER POLYETHYLENE SHEETING AND SHALL BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL. CONTAINMENT AREAS AND DEVICES SHALL 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 DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHALL BE BROKEN UP, REMOVED, AND DISPOSED OF AS SOLID WASTES.
- CONTAMINATED SOIL MANAGEMENT. AT A MINIMUM, CONTAIN CONTAMINATED MATERIAL SOIL BY SURROUNDING WITH IMPERMEABLE LINED BERMS OR COVER EXPOSED CONTAMINATED MATERIAL WITH PLASTIC SHEETING. CONTAMINATED SOIL SHALL BE DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
- DUST CONTROL FOLLOW DUST CONTROL NOTES ON T003 OF THESE PLANS.
- BMP AND SITE MAINTENANCE. FOLLOW ALL GOOD HOUSE KEEPING BMP NOTES, EROSION PREVENTION/SEDIMENT CONTRL NOTES, EROSION AND SEDIMENT CONTROL PLAN NOTES AND RAIN RESPONSE PLAN NOTES AND DETAILS OF THIS SHEET (C004).

EROSION PREVENTION/SEDIMENT CONTROL NOTES:

- THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE CITY & COUNTY OF HONOLULU'S "RULES RELATING TO WATER QUALITY".
- MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTHWORK IS INITIATED.
- 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 UPSTREAM 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 MAYBE DISTURBED AT ANYTIME ON SLOPES GREATER THAN 15%.
- 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.
- PERMANENT STABILIZATION. ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED USING VEGETATIVE COVERING, PAVEMENT, OR EQUIVALENT, 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.
- PRESERVE EXISTING VEGETATION. CLEARLY MARK THE AREAS TO BE PRESERVED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING SHALL BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.
- MINIMIZE SOIL COMPACTION AREAS. WHERE FINAL STABILIZATION OR INFILTRATION PRACTICES ARE TO BE INSTALLED, AREA 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 SHALL BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.
- PERIMETER CONTROLS ARE REQUIRED DOWN SLOPE OF ALL DISTURBED AREAS. MAINTAIN DOWNSTREAM VEGETATED BUFFER AREA.
- TRACKING CONTROL
 - MINIMIZE SEDIMENT TRACK-OUT ONTO OFFSITE 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 SITE SHALL BE CONFINED TO PAVED SURFACES OF 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 TO OFFSITE STREETS, OTHER PAVED AREAS, SIDEWALKS OR THE MS4 SHALL 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.
- BEST MANAGEMENT PRACTICES (BMPS) SHALL NOT BE REMOVED UNTIL FINAL STABILIZATION IS COMPLETE FOR THAT PHASE.
- REFER TO CITY & COUNTY OF HONOLULU BEST MANAGEMENT PRACTICES MANUAL - CONSTRUCTION, FOR MORE INFORMATION ON BMPS.
- THE FOLLOWING BMPS WERE DETERMINED TO BE NOT APPLICABLE BASED ON THE SPECIFIC SITE CONDITIONS:
 - VELOCITY DISSIPATION DEVICES
 - DIVERSION BMPS TO DIVERT RUNOFF FROM UPSTREAM AREAS AROUND DISTURBED AREAS OF THE SITE
 - STORM DRAIN INLET PROTECTION
 - SEDIMENT BARRIERS

AS CONSTRUCTION PROGRESSES, REVISIONS MAY BE NECESSARY AND SHALL BE PROVIDED TO DPP INSPECTORS. A BRIEF EXPLANATION OF WHY EACH OMITTED BMP IS UNNECESSARY OR IMPRACTICABLE HAS BEEN PROVIDED UNDER SEPARATE DOCUMENTATION TO DPP.
- THE CONTRACTOR SHALL COMPLY WITH THE PROJECT SCHEDULE REQUIREMENTS OF THE CITY'S RULES RELATING TO STORM WATER QUALITY AND SUBMIT THE SCHEDULED START DATE TWO WEEKS PRIOR.
- THE CONTRACTOR SHALL SUBMIT THE ESCP COORDINATOR DESIGNATION USING THE FORM FROM APPENDIX A TO THE CITY'S RULES RELATING TO WATER QUALITY AT THE TIME OF APPLICATION FOR THE GRADING PERMIT.
- THIS PROJECT IS A CATEGORY 2 PROJECT.
- SEE SHEET T001 FOR WATER BODY NAME, CLASSIFICATION AND COORDINATE.

GOOD HOUSEKEEPING BMPS NOTES (CONT'D):

- DEWATERING HOUSE KEEPING NOTES:
 - THE ABSORPTION BED SHALL BE PARTIALLY INSTALLED INTO THE WATER TABLE. IT IS INTENDED THAT THE ABSORPTION BEDS BE INSTALLED IN PHASES AND ACTIVE INSTALLATION BE DEWATERED BY USE OF COFFERDAMS (OR EQUAL) TO ISOLATE THE WORK AREA AND DEWATERING BE ACCOMPLISHED BY PUMPING TO INACTIVE AREAS OF THE ABSORPTION BED AREA. DEWATERING FROM ACTIVE AREAS OF ABSORPTION BED INSTALLATION INTO A COMPLETED ABSORPTION BED IS ALSO ALLOWED AS LONG AS EXCESSIVE SOLIDS ARE NOT DISCHARGED INTO A COMPLETED ABSORPTION BED. THIS MAY REQUIRE A ZONE OF INTERMEDIATE SETTLING BEFORE DISCHARGE INTO A COMPLETED ABSORPTION BED. THE CONTRACTOR SHALL PREPARE AND SUBMIT ITS PROPOSED ABSORPTION BED INSTALLATION/PHASING PLAN FOR ENGINEER APPROVAL SHOWING ACTIVE CONSTRUCTION WORK AREAS AND AREAS THAT WILL BE USED FOR DEWATERING. ONCE APPROVED THE CONTRACTOR CAN COMMENCE ABSORPTION BED INSTALLATION PER CONTRACT DRAWINGS. SHOULD THE PHASING PLAN NOT EFFECTIVELY PROVIDE INADEQUATE DEWATERING AREAS PER INSTALLATION PHASE THE CONTRACTOR SHALL MODIFY THE PHASING PLAN UNTIL EFFECTIVE BY THE CONTRACTOR'S GEOTECHNICAL AND STRUCTURAL PROFESSIONAL ENGINEERS.
 - SHOULD THE CONTRACTOR SELECT AN ALTERNATIVE METHOD OF DEWATERING NON-STORM WATER, SUCH FILTERING AND DISCHARGING TO STATE WATERS THAT NON-STORM CANNOT BE DISCHARGED FROM THE SITE WITHOUT PRIOR NOTICE TO AND APPROVAL FROM DOH (NPDES FORM G).

EROSION AND SEDIMENT CONTROL PLAN NOTES:

- PROJECT SEQUENCE:
- INSTALL STABILIZED CONSTRUCTION ENTRANCES AND TEMPORARY SILT FENCING/FILTER SOCK FOR PROTECTED AREAS, CLEARING AND GRUBBING AS NECESSARY FOR THE INSTALLATION OF THESE BMPS.
 - PROCEED WITH CONSTRUCTION AND GRADING WITH LEAST POSSIBLE DISTURBANCE OF VEGETATIVE AREAS AND TEMPORARY STRUCTURES.
 - INITIATE STABILIZATION OF STEEP SLOPES (>15%) WITH HYDROSEEDING AS SOON AS GRADING IS COMPLETED ON THOSE AREAS. INSTALL PERMANENT IRRIGATION SYSTEM PRIOR TO PERMANENT SEEDING.
 - REMOVE OR DISMANTLE TEMPORARY EROSION CONTROL STRUCTURES AFTER FULL ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.
 - PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION.
 - INSPECTIONS SHALL BE PERFORMED WEEKLY.

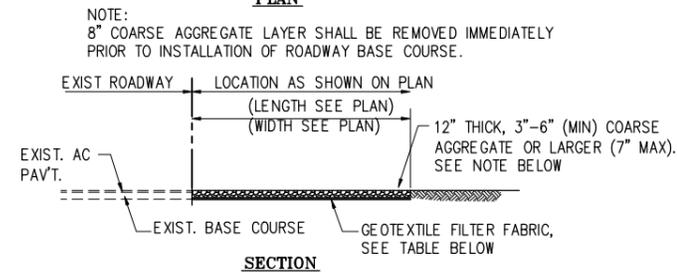
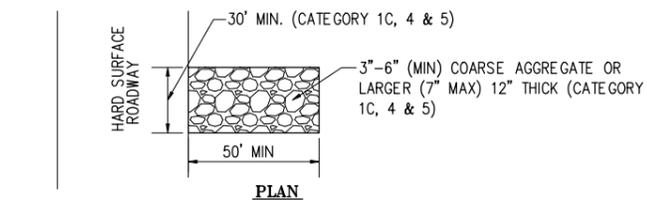
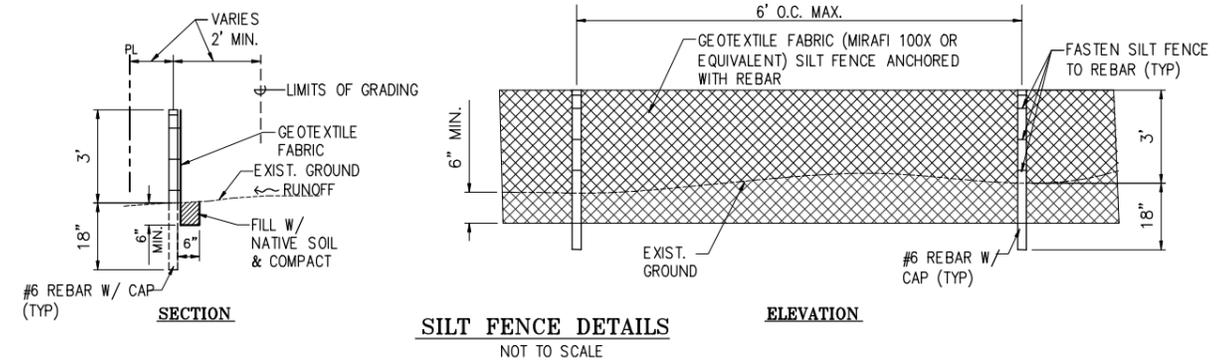


TABLE A GEOTEXTILE REQUIREMENTS	
PHYSICAL PROPERTY	REQUIREMENTS
GRAB TENSILE STRENGTH	220 LB (ASTM D1682)
ELONGATION FAILURE	60% (ASTM D1682)
MULLEN BURST STRENGTH	430 LB (ASTM D3768)
PUNCTURE STRENGTH	125 LB (ASTM D751, MODIFIED)
EQUIVALENT OPENING	SIZE 40-80 (U.S. STD SIEVE, CW-02215)

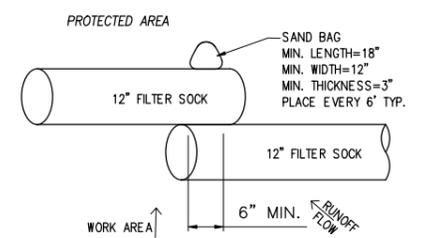
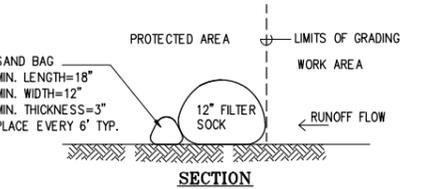
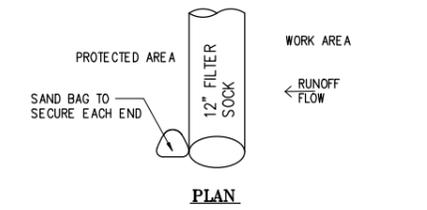
CONSTRUCTION INGRESS/EGRESS DETAILS

PRE-CONSTRUCTION, DURING CONSTRUCTION AND POST CONSTRUCTION BMP TABLE

PRE-CONSTRUCTION	DURING CONSTRUCTION	POST CONSTRUCTION
INSTALL, BIO-SOCK, SILT FENCE PER DETAILS OF ESCP OF PROJECT PLANS	MONITOR ESCP'S PER PROJECT PLAN ESCP EROSION AND SEDIMENT CONTROL NOTES AND GOOD HOUSEKEEPING NOTES	MAINTAIN PERMANENT VEGETATION (GRASS) PROVIDED ON ALL DISTURBED AREAS AS APPLICABLE
INSTALL STABILIZED CONSTRUCTION ENTRANCE PER DETAILS ESCP OF PROJECT PLANS	TEMPORARY STABILIZATION	PERMANENT STABILIZATION

RAIN RESPONSE PLAN NOTES:

- THE FOLLOWING SHALL BE PERFORMED WHEN HEAVY RAIN, TROPICAL STORM OR HURRICANE IS IMMINENT, OR IS FORECASTED IN THE NEXT 48 HOURS.
- TEMPORARILY SUSPEND ACTIVE GRADING.
- INSPECT ALL SILT FENCES, AND MAINTAIN AS NEEDED. REINSTALL ANY FENCES THAT WERE REMOVED DUE TO ACTIVE WORK IN THE AREA.
- COVER OR RELOCATE MATERIAL STOCKPILES AND LIQUID MATERIAL CONTAINERS TO AVOID CONTACT WITH RAINWATER.
- 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.
- RE-INSPECT AFTER THE APPROACHING HEAVY RAINS, TROPICAL STORM OR HURRICANE, AND REPLACE OR MAINTAIN BMPS AS NEEDED.

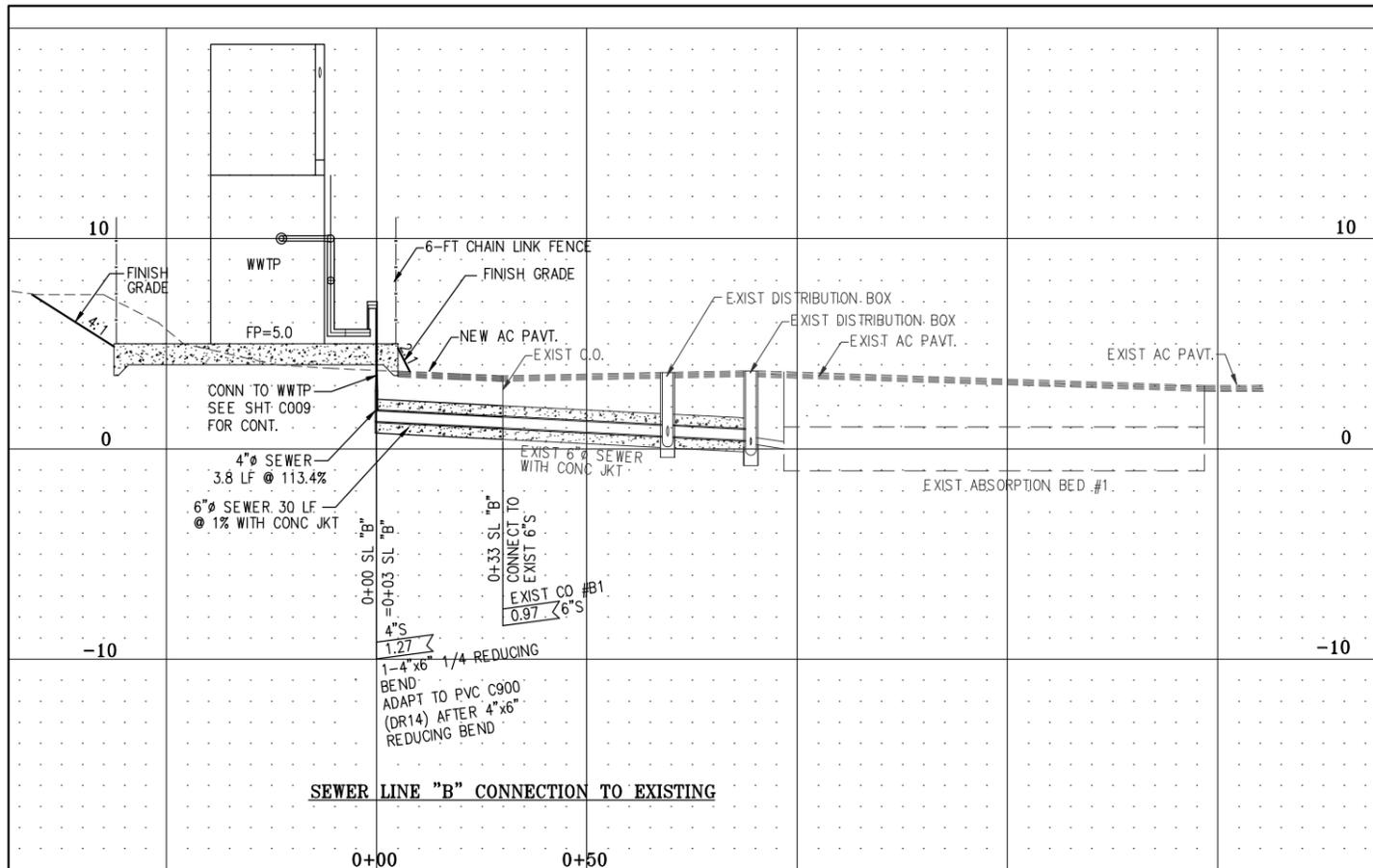


OVERLAP FILTER SOCK DETAILS

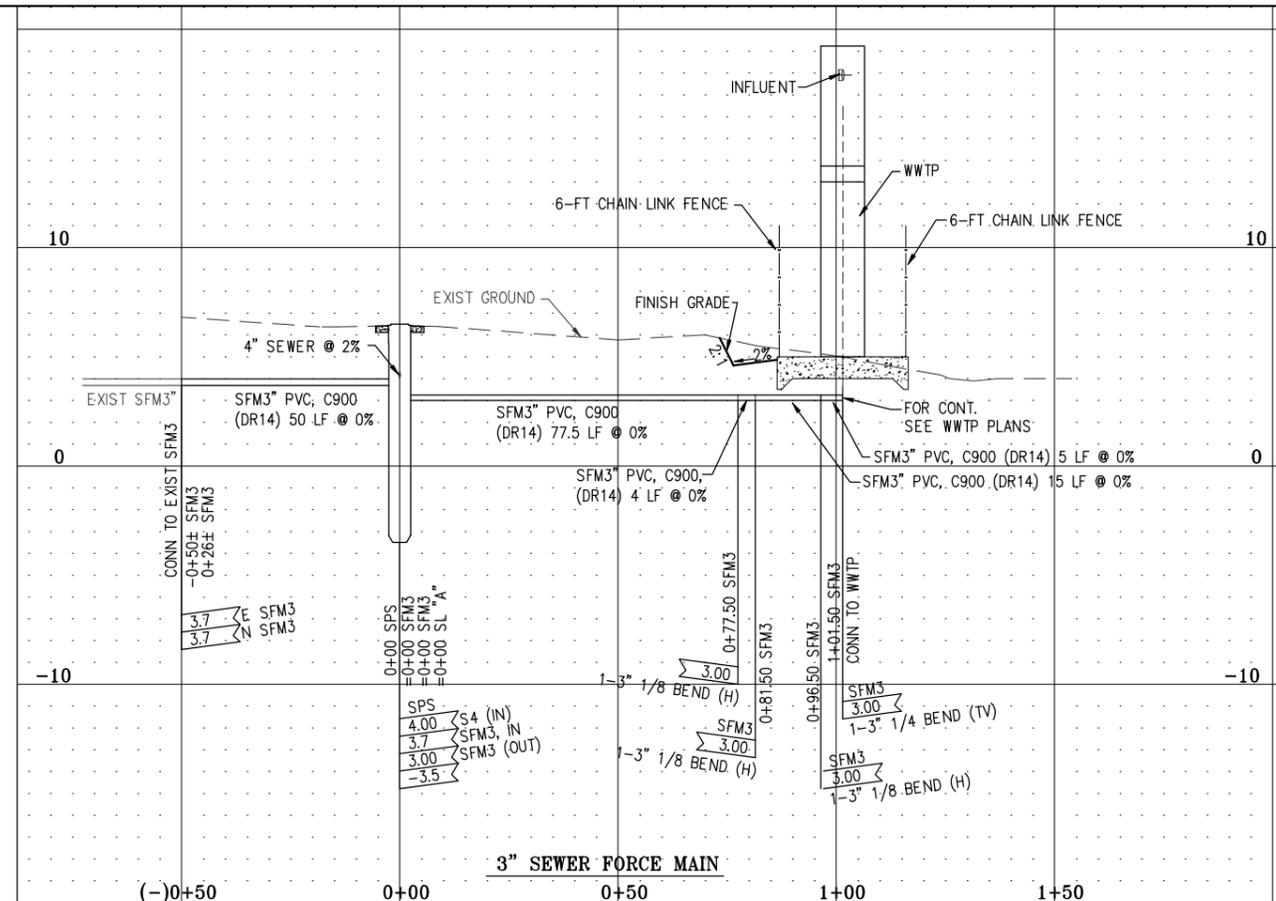
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<p>THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.</p> <p>STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION</p> <p>HEEIA KEA SMALL BOAT HARBOR WASTE WATER TREATMENT SYSTEM IMPROVEMENTS</p> <p>EROSION AND SEDIMENT CONTROL NOTES & DETAILS</p> <p>BILLS ENGINEERING, INC.</p> <p>DESIGNED: DB SUBMITTED: BE1 DRAWN: RE DATE: CHECKED: DB SCALE: AS SHOWN APPROVED: CHIEF ENGINEER DATE</p> <p>DRAWING NO. C004</p>					



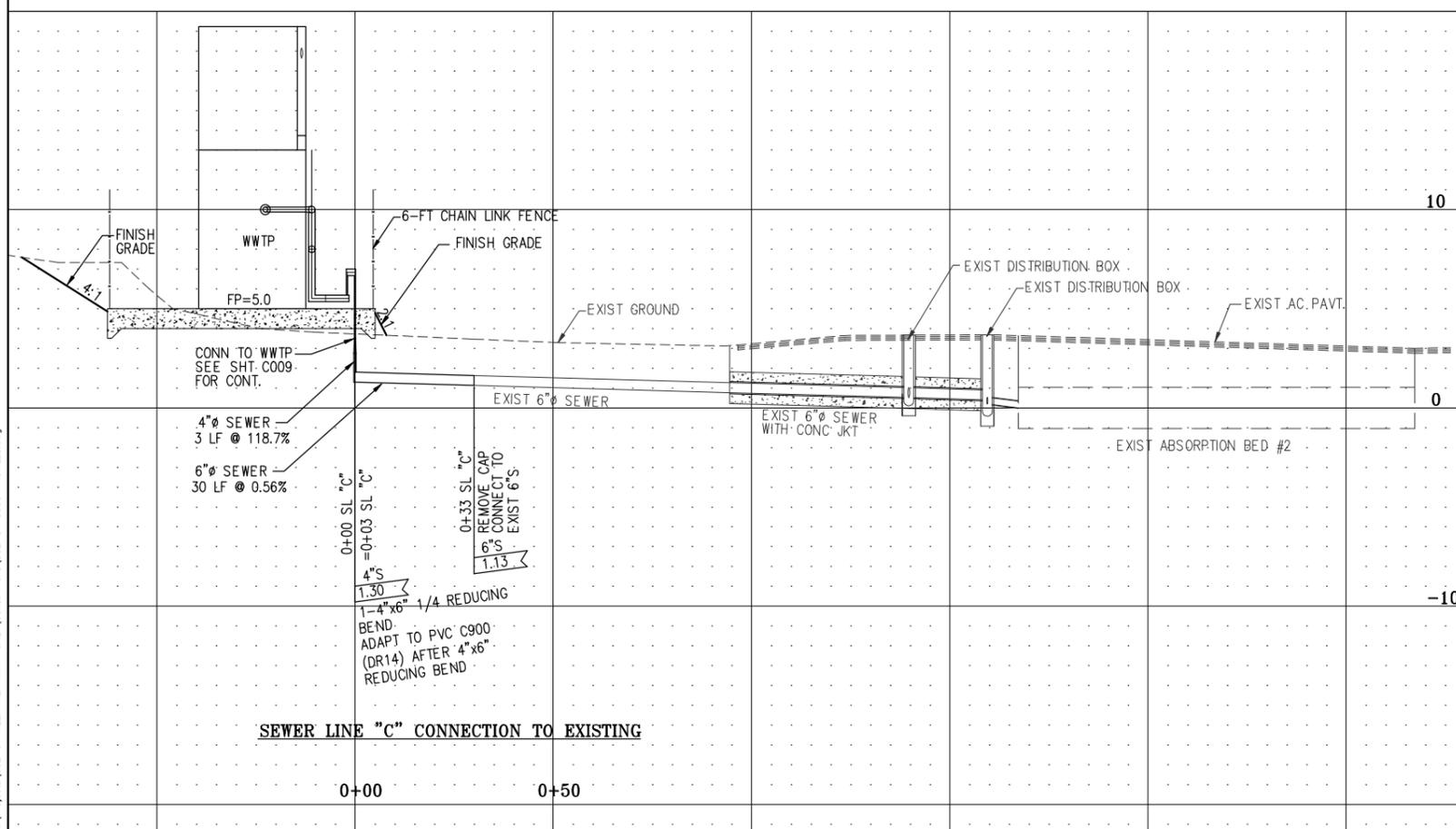
Thu, 05 Jun 2023 - 7:38am
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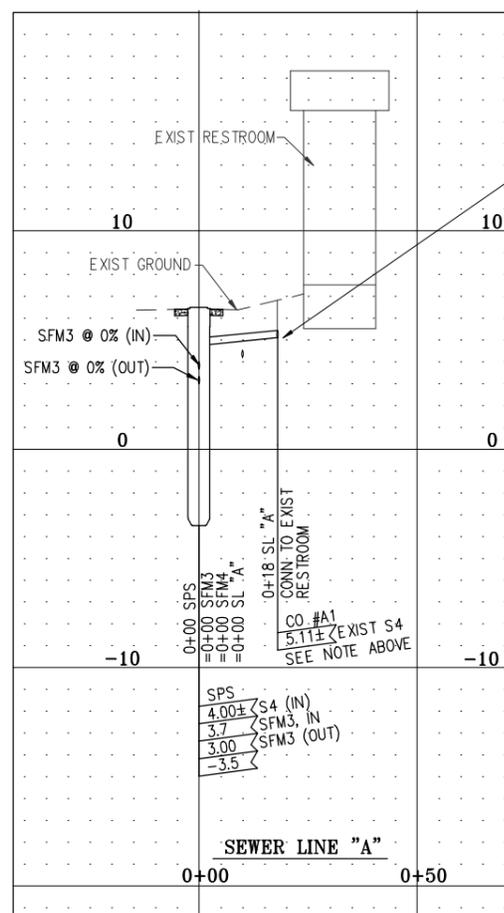
SEWER LINE "B" CONNECTION TO EXISTING



3" SEWER FORCE MAIN

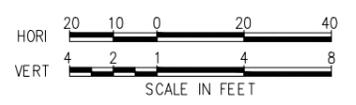


SEWER LINE "C" CONNECTION TO EXISTING



SEWER LINE "A"

NOTE:
POTHOLE AND EXPOSE EXISTING S4" FROM RESTROOM TO EXISTING TREATMENT SYSTEM. INSTALL CLEAN-OUT TO GRADE AND RUN NEW S4" (PVC, C900, DR18) AT 2% TO NEW SPS. (ABANDON EXISTING S4" TO EXISTING WWTP BE FLUSHING AND FILLING WITH CLSM).



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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF BOATING AND OCEAN RECREATION

HEEIA KEA SMALL BOAT HARBOR WASTE WATER TREATMENT SYSTEM IMPROVEMENTS

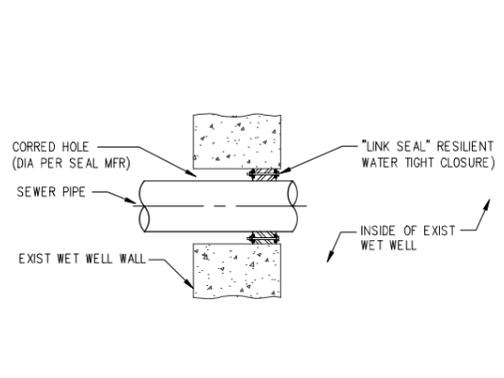
PROFILES

BILLS ENGINEERING, INC.

DESIGNED: DB SUBMITTED: BE1
DRAWN: RE DATE:
CHECKED: DB SCALE: AS SHOWN
APPROVED: CHIEF ENGINEER DATE DRAWING NO. C006

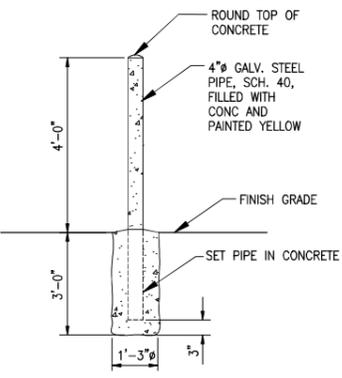
DAVID B. BILLS
LICENSED PROFESSIONAL ENGINEER
No. 4618-C
HAWAII, U.S.A.

Thu, 29 Dec 2022 - 12:49pm
R:\Projects\02-01-HEEA-KEA-WWTP ONLY\Const Plans\602-01-C006-PROFILES.dwg



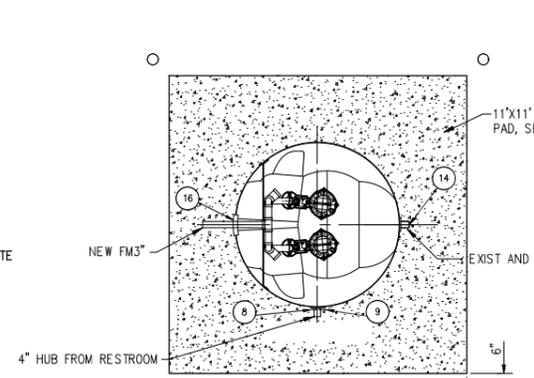
PIPE PENETRATION DETAIL

SCALE: 1" = 0'-6"

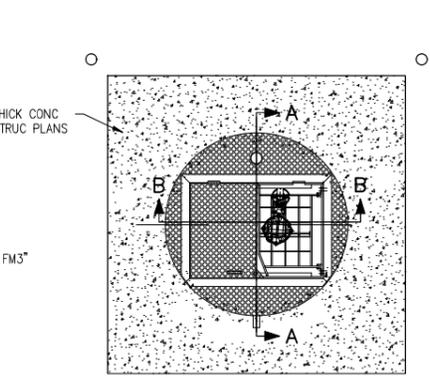


BOLLARD DETAIL

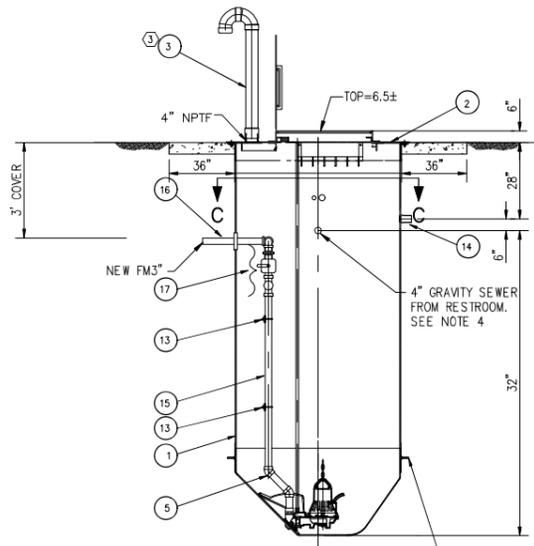
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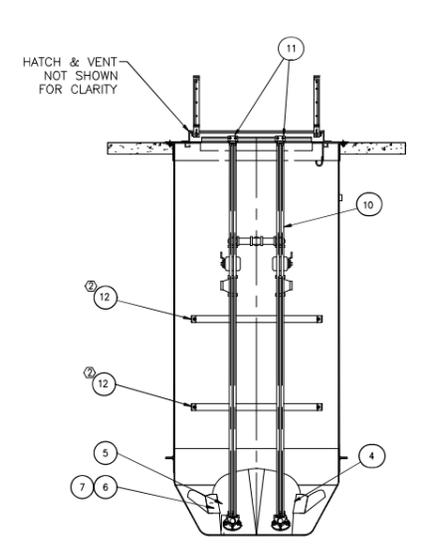
PLAN LESS COVER



PLAN WITH COVER



SECTION A-A



SECTION B-B

PUMP STATION DATA

ITEM	DESCRIPTION	PART NUMBER	QTY
1	BASIN/CYLINDER ASSEMBLY, 5'		1
2	COVER, 5'		1
3	VENT PIPE, 4" (OPTIONAL)	14-68 22 02	1
4	DISCHARGE CONNECTION, 3"	619 95 00	2
5	PIPING KIT, JOG OVER FOR 4"		2
6	NUT, 3/4-10, 316 SST	94805A135	4
7	WASHER, 13/16 ID. 1 1/2 OD, GENERAL PURPOSE, 316 SST	91950A036	4
8	SEAL, CABLE WALL, LEVEL SENSOR	1860SCF125P	1
9	SEAL, CABLE WALL, PUMP		1
10	GUIDE BAR, 3/4", 316 SST		4
11	UPPER GUIDE BAR KIT, 3/4"		2
12	BRACING, DISCHARGE PIPE		2
13	U-BOLT 3/8-16 OD, 4 1/2", 4" PIPE	29505T6	4
14	HUB FOR 3" FORCE MAIN CONNECTION		1
15	PIPE, 4", SCH 40, PVC SST		FT
16	PIPING KIT, 3"		1
17	THREADED PIPING KIT, 4"		2

* McMASTER CARR

THE SEWAGE PUMP STATION SHALL BE A TOPS SEWAGE PUMP STATION AS MANUFACTURED BY FLYGT USING FLYGT PUMPS OR ENGINEER APPROVED EQUAL.

SEWAGE PUMP STATION DETAIL

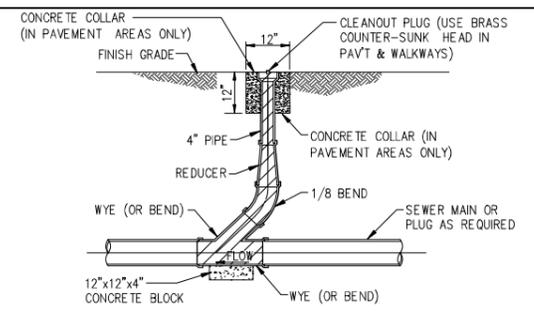
NOT TO SCALE



INFLUENT PIPE SEALING DETAIL

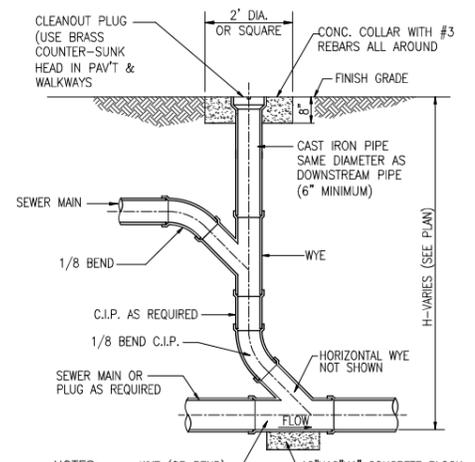
NOTES

1. STATION DEPTH: MAX. 6FL., AVAILABLE IN 1FL. INCREMENTS.
2. ALL BOLT PENETRATIONS THRU WALLS MUST BE SEALED WITH SILICONE SEALANT.
3. OPTIONAL PVC CANDY CANE STYLE VENT SHOWN. MUSHROOM STYLE VENT ALSO AVAILABLE.
4. EXPOSE GRAVITY SEWER AND MEASURE DEPTH FOR APPROPRIATE SEWER CONNECTION TO WET WELL. PUNCTURE WET WELL WALL WITH JIG SAW AND DRILL BIT, OR EQUAL USE FLYGT SEALING JOINT TO MAKE CONNECTION TO WET WELL. SEE DET BELOW.



CLEANOUT DETAIL

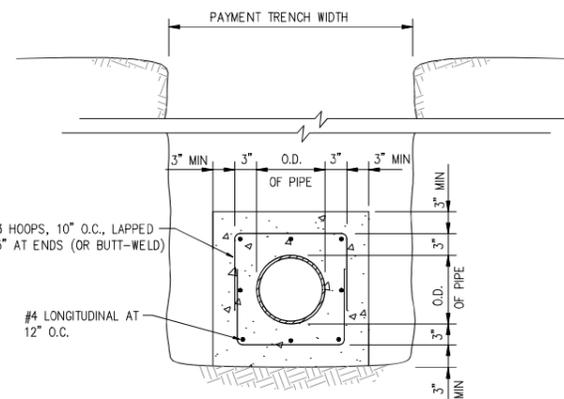
NOT TO SCALE



- NOTES:**
1. THE ENDS OF THE CAST IRON CLEANOUT PIPE SHALL HAVE AN INNER PIPE THREAD TO RECEIVE EITHER RAISED CLEANOUT PLUG OR COUNTERSUNK BRASS PLUG AS INDICATED.
 2. APPLY GREASE TO CLEANOUT PLUG THREADS PRIOR TO INSTALLATION.

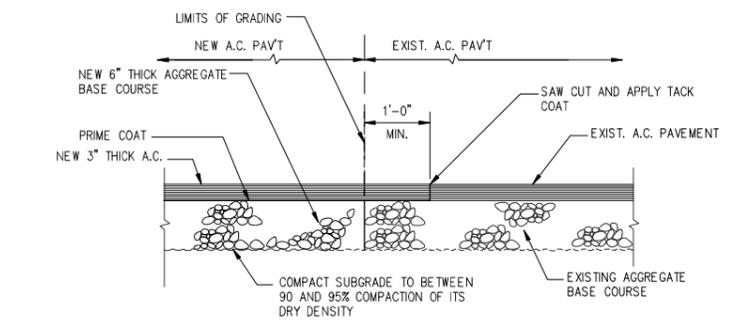
DROP CLEANOUT DETAIL

NOT TO SCALE



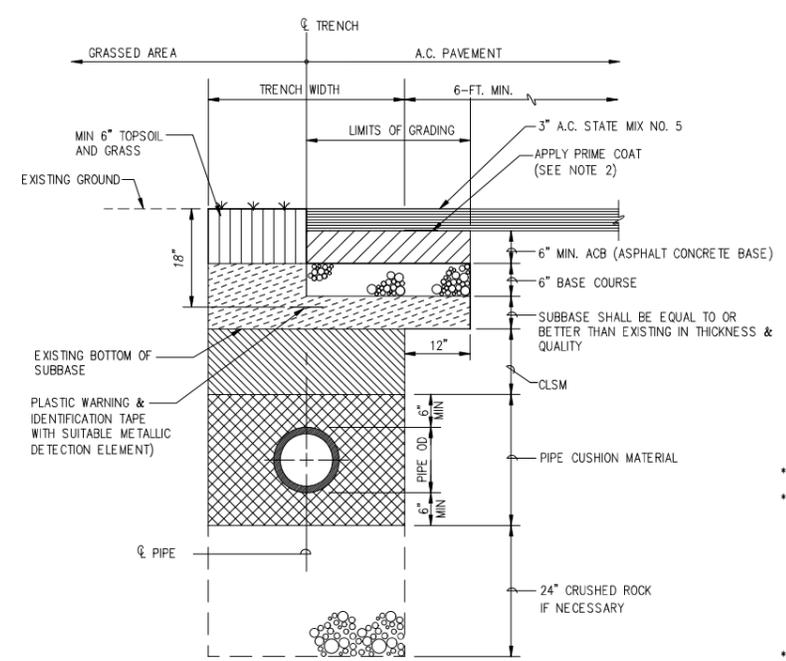
CONCRETE JACKET DETAIL

NOT TO SCALE



A.C. PAVEMENT CONNECTION DETAIL

NOT TO SCALE



TYPICAL SEWER TRENCH DETAIL (STATE)

SCALE: 3/4" = 1'-0"

REPAVING NOTES

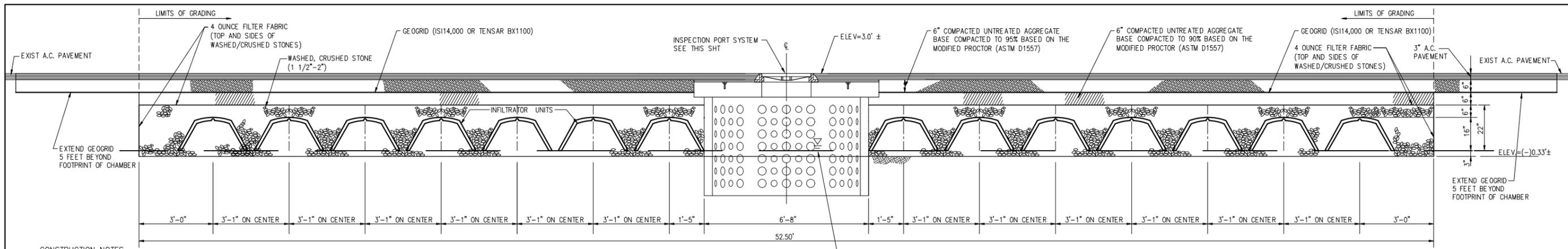
1. PAVEMENT STRUCTURE SHALL BE EQUAL TO OR BETTER THAN EXISTING IN THICKNESS AND QUALITY.
2. FOR ROAD GRADES 0% TO 7.99% PRIME COAT IS NOT REQUIRED.
3. ALL DISTURBED PAVEMENT MARKINGS SHALL BE REPLACED AND ALL REQUIRED UTILITY ADJUSTMENTS SUCH AS MANHOLE COVERS ETC. SHALL BE DONE BY THE CONTRACTOR.
4. LENGTH OF REPAIRED TRENCH SHALL BE REPAIRED TWO FEET IN ADDED LENGTH TO EACH END OF TRENCH.

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David B. Bills
SIGNATURE
LICENSE EXP: 4/30/24



Thu, 05 Jun 2023 7:39am R:\Projects\062-01-HEEIA KEA WWP ONLY\Const Plans\602-01 C007 MSC DETAILS - 1.dwg

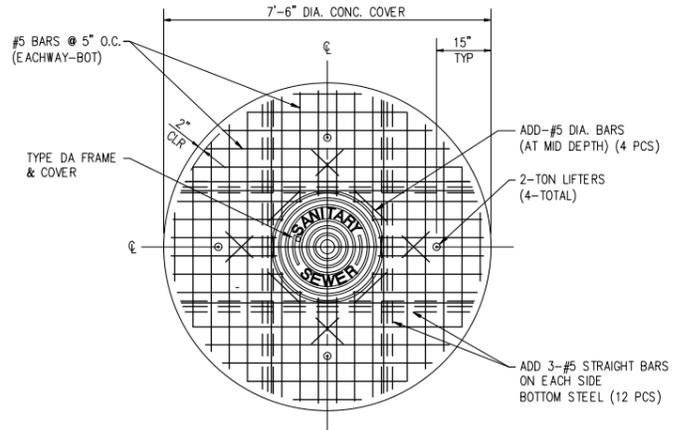


CONSTRUCTION NOTES

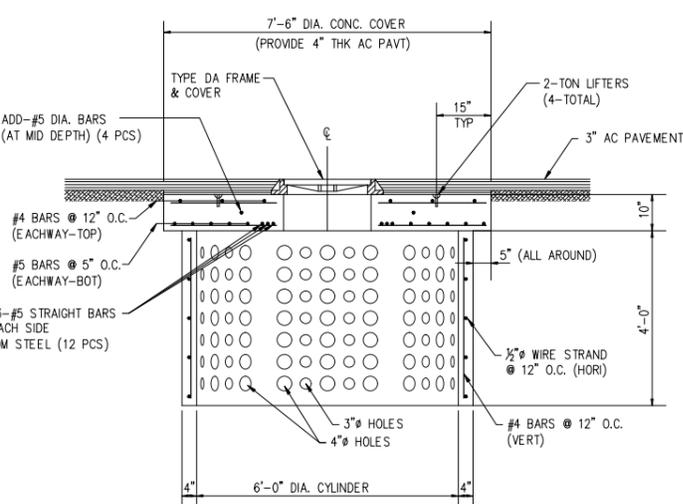
1. MAXIMUM LENGTH OF EACH INFILTRATION LINE SHALL BE 100 FEET.
2. INFILTRATION LINES SHALL BE UNIFORMLY SPACED AT A MAXIMUM OF 3'-1" APART.
3. INFILTRATION LINES SHALL BE LEVEL.
4. THE FLOOR OF THE ABSORPTION BED SHALL BE LEVEL.
5. WHERE NOT OTHERWISE SPECIFIED, THE CONSTRUCTION OF THE ABSORPTION BED SHALL CONFORM TO HAWAII ADMINISTRATIVE RULES, TITLE II, CHAPTER 62, SECTION 34.
6. THE INFILTRATOR BEDS SHALL BE INFILTRATOR WATER TECHNOLOGIES HIGH CAPACITY INFILTRATOR CHAMBER H-20 OR ENGINEER APPROVED EQUAL. THE LAYOUT IS GENERIC. CONTRACTOR SHALL FOLLOW INSTALLATION DETAILS OF SPECIFIC INFILTRATION SYSTEM AS MODIFIED BY ITEM 7 OF THESE CONSTRUCTION NOTES TO ADDRESS COMPACTION AT BOTTOM OF ABSORPTION BED.
7. PLACE A LAYER OF GEOGRID (ISI 14,000 OR TENSAR BX1100) ON THE BOTTOM OF THE INFILTRATOR EXCAVATION. PRIOR TO PLACING THE GEOGRID, THE SUBGRADE SOIL SHALL BE MADE RELATIVELY SMOOTH. A 3-INCH LAYER OF CRUSHED ROCK SHALL THEN BE PLACED OVER THE GEOGRID. THE TOP OF THE CRUSHED ROCK SHALL BE TAMPED USING 4 PASSES WITH SMALL PLATE TAMPER.

SECTION "A-A"
ABSORPTION BED/INFILTRATOR CHAMBER DETAIL
NOT TO SCALE

(TOTAL AREA PER BED = 5,250 SQ. FT., EFFECTIVE AREA PER BED = 4,267 SQ. FT.
EFFECTIVE AREA IS BED AREA LESS ZONE (6'-8") FOR INSPECTION PORT)



PLAN



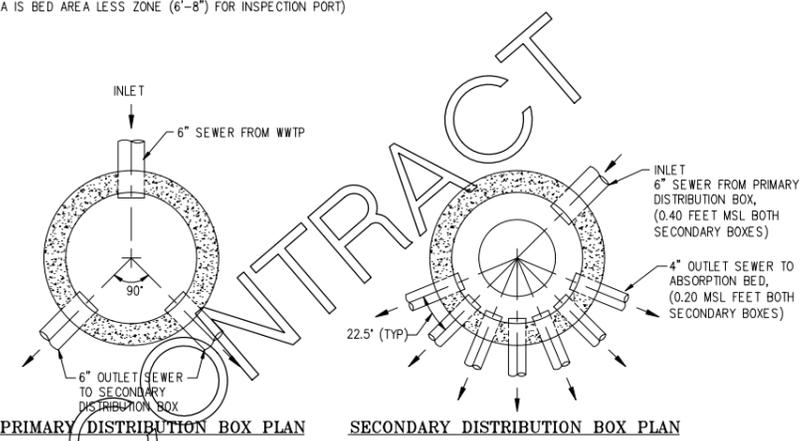
SECTION

INSPECTION PORT SYSTEM DETAIL
NOT TO SCALE

(INSPECTION PORT SYSTEM SHALL BE PRICE CESSPOOL RING OR ENGINEER APPROVED EQUAL)

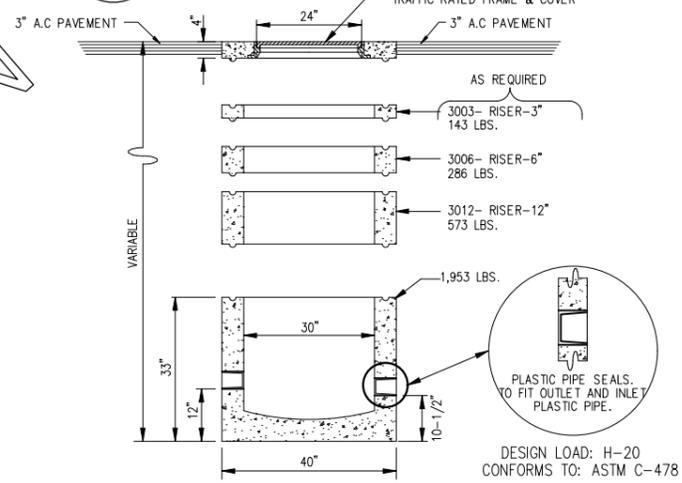
NOTES

1. ALL CONCRETE AND REINFORCED CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE PROVISIONS OF THE AMERICAN CONCRETE INSTITUTE'S BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-LATEST) AS SPECIFIED HEREIN.
2. CONCRETE COMPRESSIVE STRENGTH: 4000 PSI IN 28 DAYS
3. CEMENT SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT "STANDARD SPECIFICATION FOR PORTLAND CEMENT" ASTM DESIGNATION C-150.
4. MIXING: READY MIXED ASTM C-94
5. REINFORCING STEEL SHALL BE DEFORMED, INTERMEDIATE GRADE, CONFORMING TO THE CURRENT "STANDARD SPECIFICATIONS FOR BILLET-STEEL BARS FOR CONCRETE REINFORCEMENTS", ASTM A 615, GRADE 60
6. WIRE STRAND SHALL CONFORM TO ASTM A-416 AND HAVE A STRENGTH OF 270 KSI



PRIMARY DISTRIBUTION BOX PLAN **SECONDARY DISTRIBUTION BOX PLAN**

(SEE SITE PLAN AND PROFILES FOR INVERTS TO EACH PRIMARY BOX)



NOTE:
INVERTS OF ALL OUTLETS ARE AT SAME ELEVATION.

ELEVATION

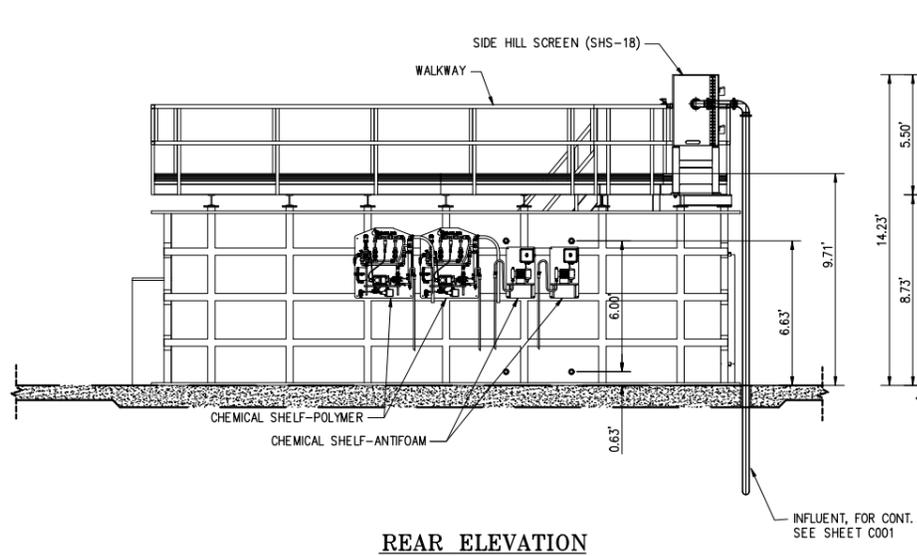
DISTRIBUTION BOX DETAILS
NOT TO SCALE

(DISTRIBUTION BOX SHALL BE PRE-CAST COMMERCIAL DISTRIBUTION BOX OR ENGINEER APPROVED EQUAL)

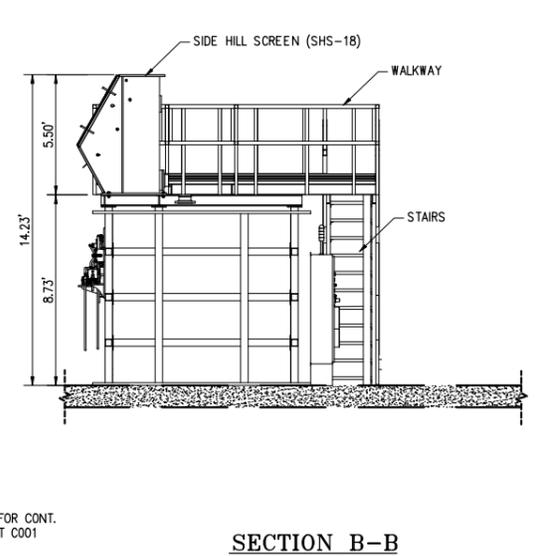
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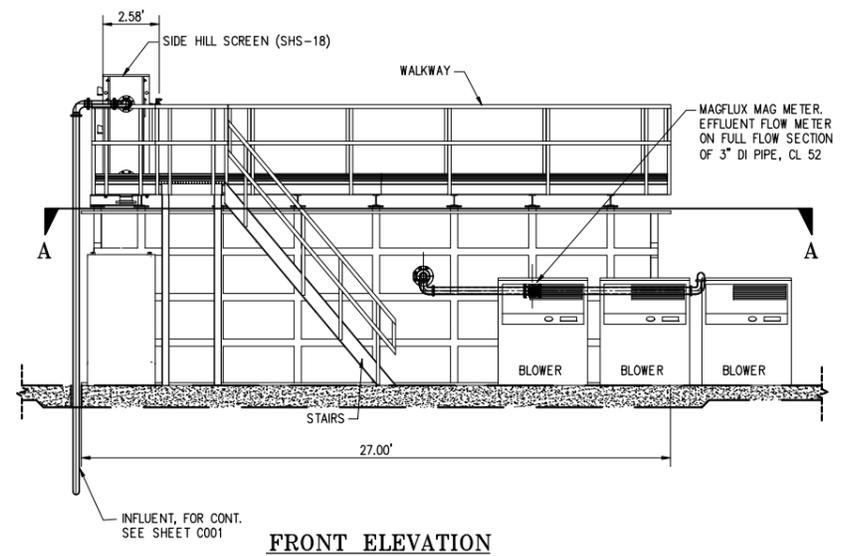
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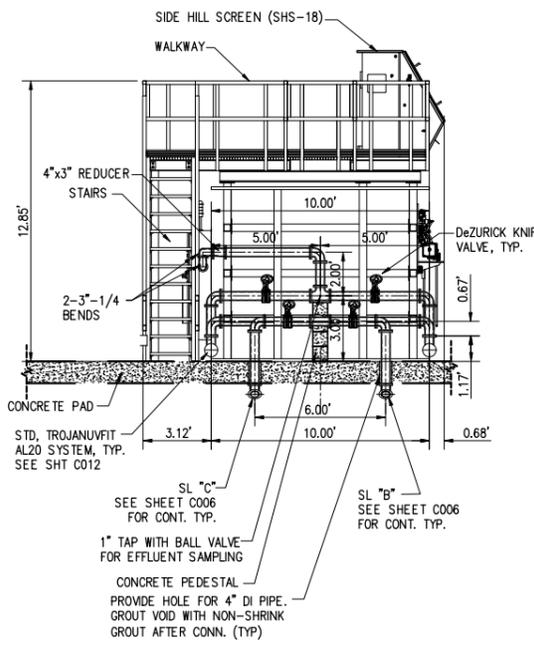
REAR ELEVATION



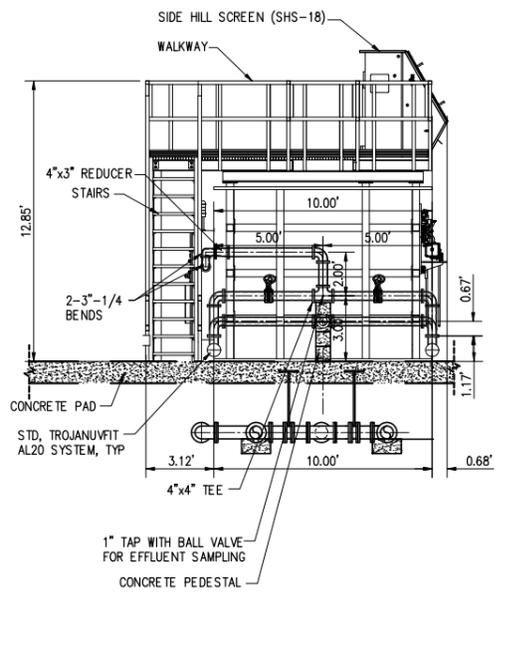
SECTION B-B



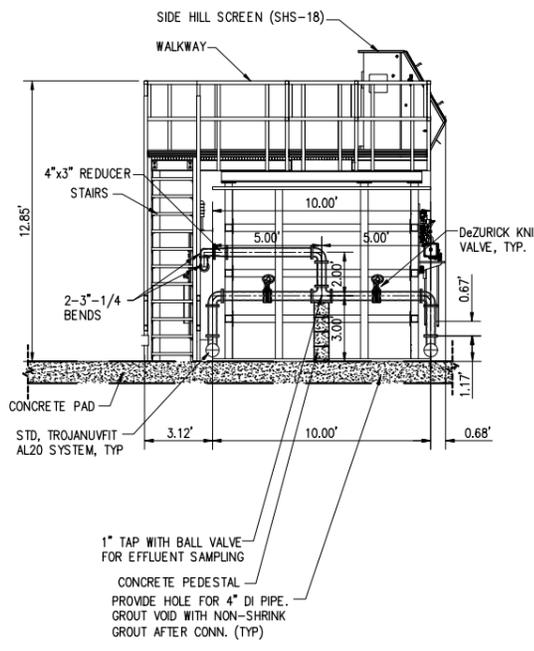
FRONT ELEVATION



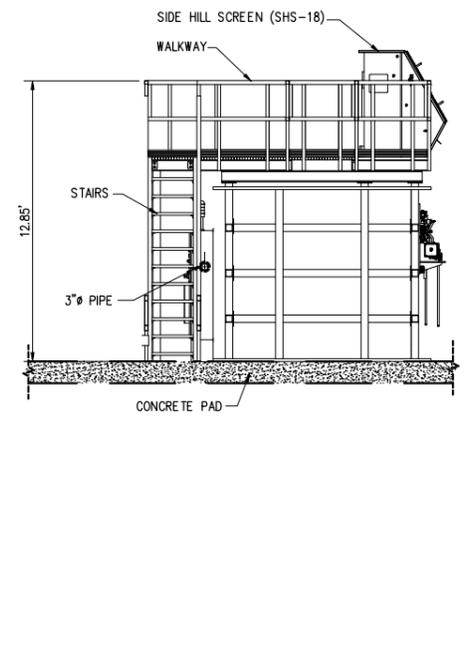
SECTION C-C



SECTION D-D



SECTION E-E

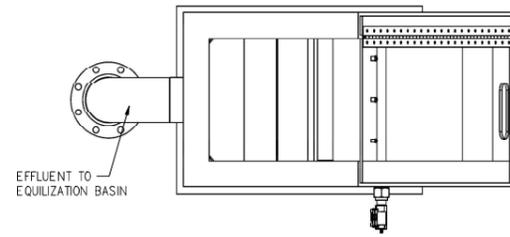


SECTION F-F

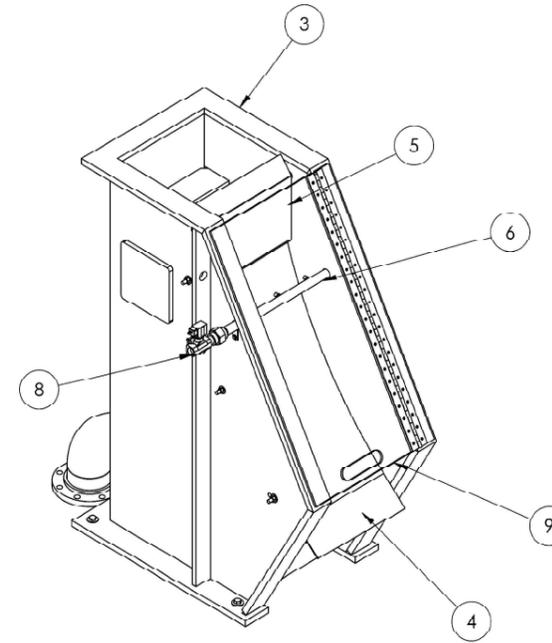
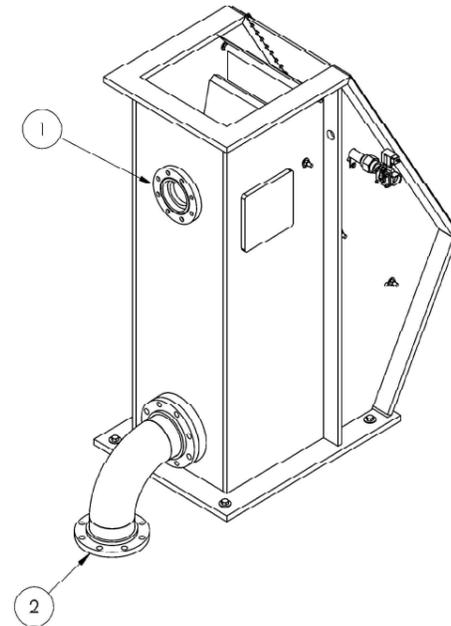
WASTEWATER TREATMENT PLANT DETAILS
SCALE: 1/4" = 1'-0"

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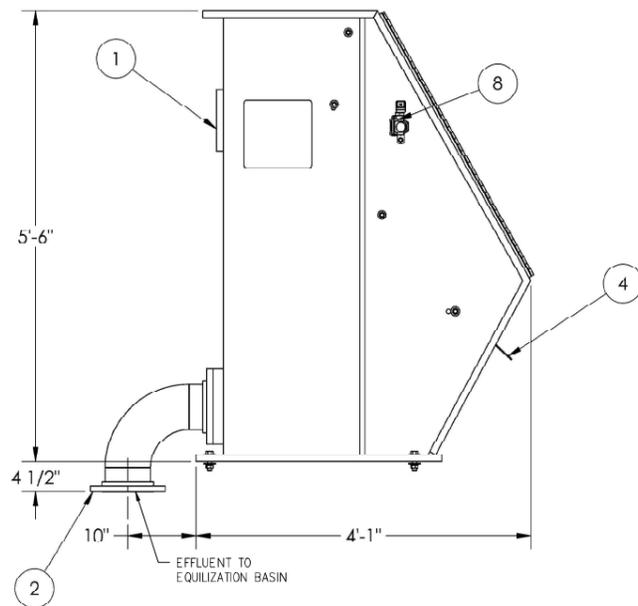
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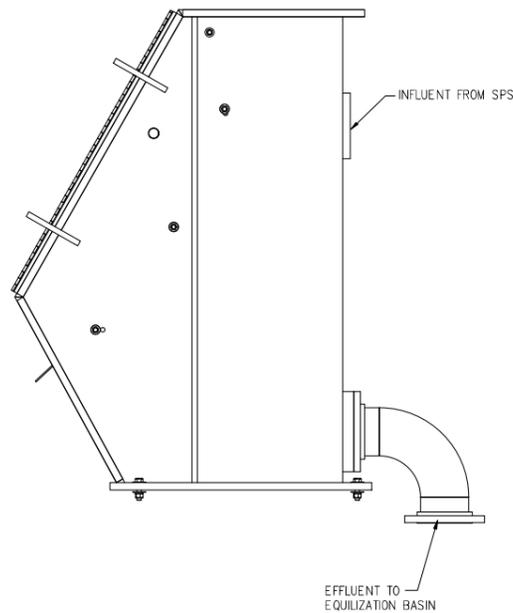
PLAN



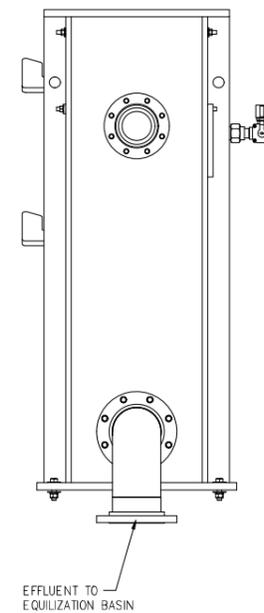
ITEM NO.	DESCRIPTION
1	INFLUENT, 4" FLANGE 150 LB
2	EFFLUENT, 6" FLANGE 150 LB
3	FRAME, POLYPROPYLENE
4	SCREEN, SS, 0.030 SLOTS
5	JOINCTION PANEL DAMPNER, SS
6	SPRAY BAR, SS
7	SOLINOID VALVE, BRASS, 1" NPT
8	SOLINOID VALVE, BRASS, 1" NPT
9	COVER, ACRYLIC



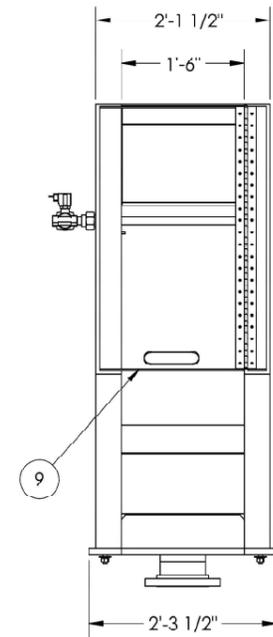
REAR VIEW



SECTION A
SIDE HILL SCREEN DETAILS
NOT TO SCALE



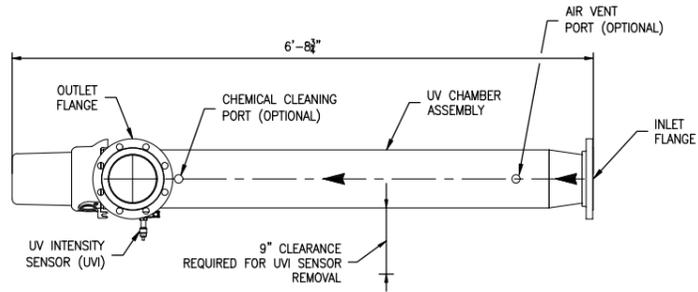
ELEVATION



SECTION B

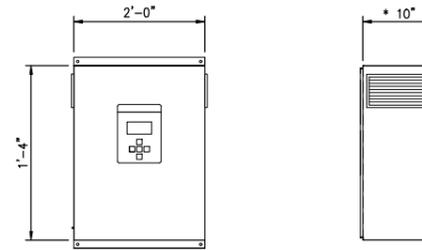
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		HEEEA KEA SMALL BOAT HARBOR WASTE WATER TREATMENT SYSTEM IMPROVEMENTS			
		SIDE HILL SCREEN DETAILS			
		BILLS ENGINEERING, INC.			
		DESIGNED: DB	SUBMITTED: BE1		
		DRAWN: RE	DATE:		
		CHECKED: DB	SCALE: AS SHOWN		
		APPROVED:	DRAWING NO.		
		CHIEF ENGINEER	DATE		C011



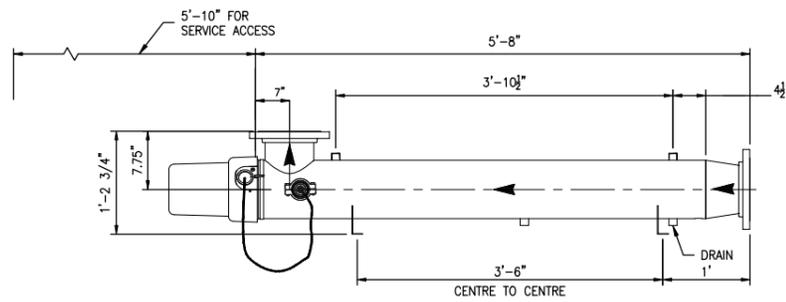
TOP VIEW (AMWS) (AUTO WIPING)

SCALE: AS SHOWN



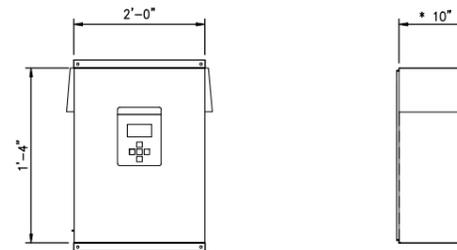
CONTROL POWER PANEL (CPP)

SCALE: AS SHOWN
NOTE: TYPE 12 OR TYPE 3R PANEL SHOWN.



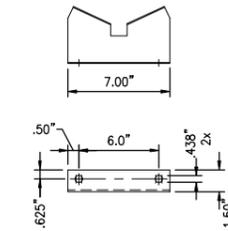
FRONT VIEW (AMWS) (AUTO WIPING)

SCALE: AS SHOWN



CONTROL POWER PANEL (CPP)

SCALE: AS SHOWN
NOTE: TYPE 4X PANEL SHOWN.



DETAIL A-A

SCALE: NOT TO SCALE (STANDARD MOUNTING BRACKETS)

NOTES:

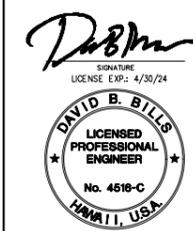
1. MAXIMUM OPERATING PRESSURE TO BE 150 psi.
2. STANDARD INTERCONNECTING CABLE LENGTH TO BE 15ft.
3. CONNECTION SEALS AND HARDWARE TO BE SUPPLIED BY THE GENERAL CONTRACTOR IN CONSULTATION WITH LOCAL TROJAN REPRESENTATIVE.
4. MOUNTING, GASKETS, BOLTS AND SAMPLING PORTS ARE TO BE SUPPLIED BY THE GENERAL CONTRACTOR IN CONSULTATION WITH THE LOCAL REPRESENTATIVE.
5. CLEARANCES FOR WIPING SYSTEMS FALL WITHIN CLEARANCES REQUIRED FOR SLEEVE REMOVAL.
6. ORIENTATION TO BE AS SHOWN ON PLANS.
7. SLAB MOUNTING SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

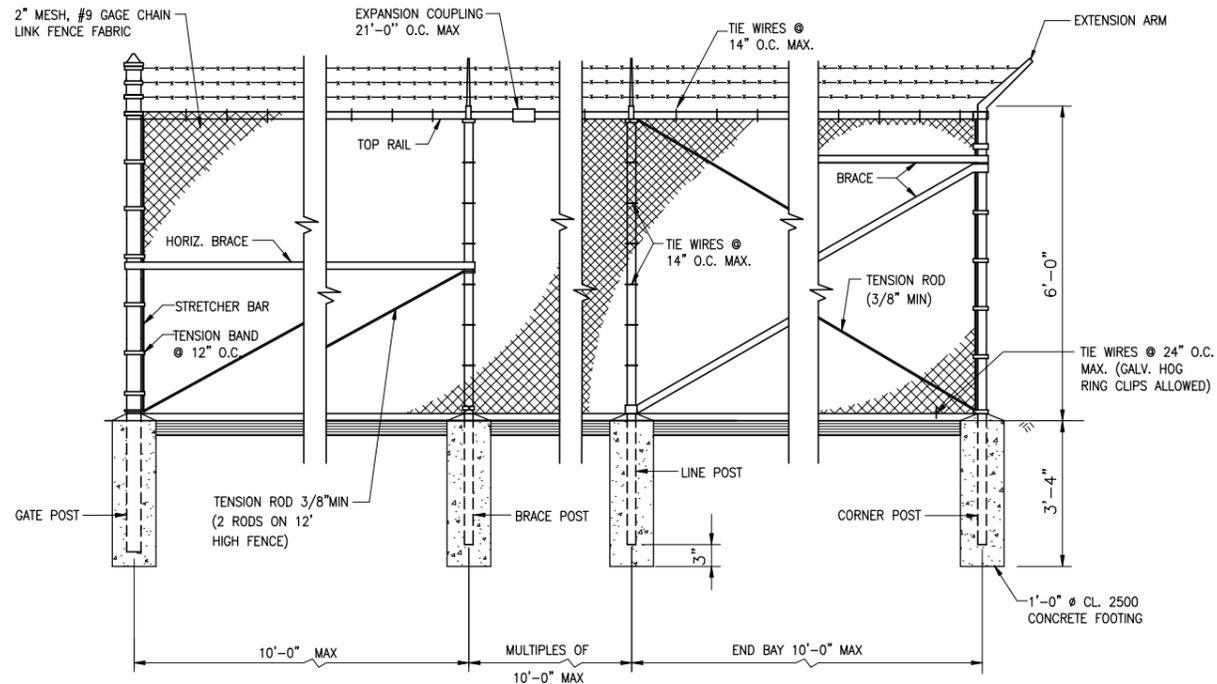
STD. TROJANUVFIT DETAILS

NOT TO SCALE

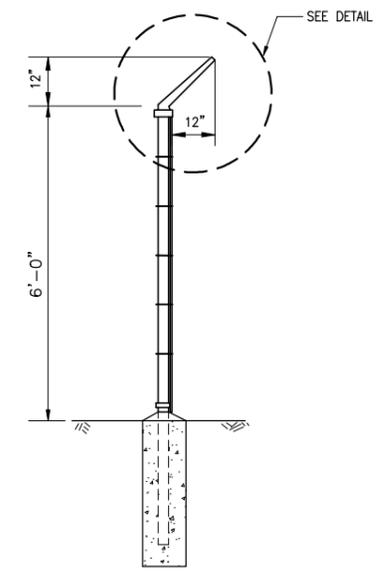
THE UV SYSTEM SHALL BE AS MANUFACTURED BY TROJAN UV (MODEL STANDARD TROJANFIT AL20 OR ENGINEER APPROVED EQUAL).

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
<p>THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.</p> <p style="text-align: right;">STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION</p> <p style="text-align: center;">HEEIA KEA SMALL BOAT HARBOR WASTE WATER TREATMENT SYSTEM IMPROVEMENTS</p> <p style="text-align: center;">STD TROJANUVFIT AL20 SYSTEM DETAILS</p> <p style="text-align: center;">BILLS ENGINEERING, INC.</p>					
DESIGNED: DB		SUBMITTED: BE1			
DRAWN: RE		DATE:			
CHECKED: DB		SCALE: AS SHOWN			
APPROVE:					DRAWING NO.
CHIEF ENGINEER _____ DATE _____					C012

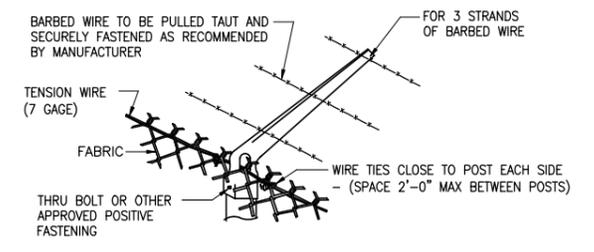




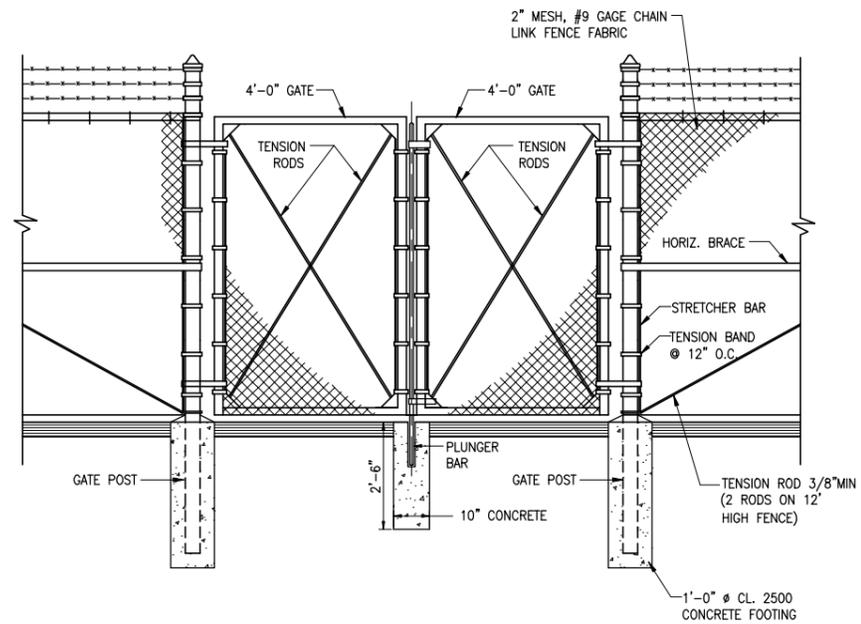
CHAIN LINK FENCE DETAILS
NOT TO SCALE



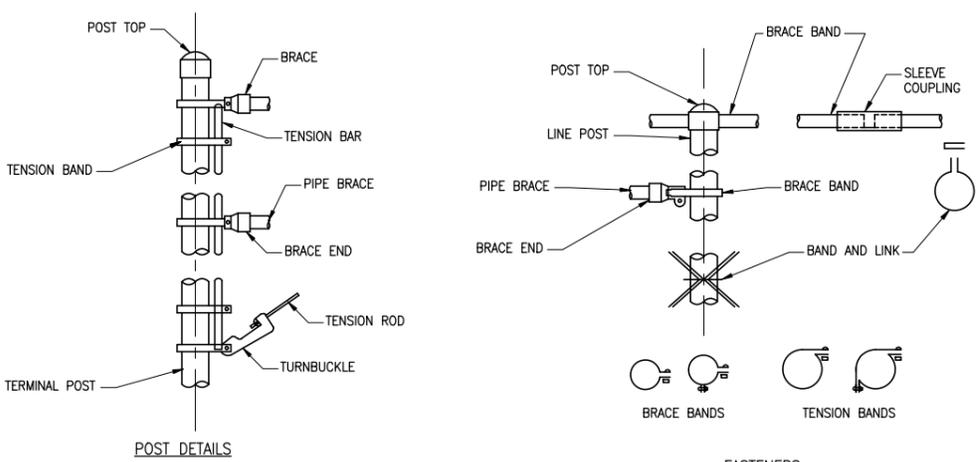
SINGLE EXTENSION ARM
SCALE: 1/2" = 1'-0"



EXTENSION ARM FOR BARBED WIRE
NOT TO SCALE



8' DOUBLE SWING GATE DETAIL
NOT TO SCALE



TYPICAL FENCE DETAILS

NOTES:

- STANDARD SIZES AND WEIGHTS OF MATERIALS IN ACCORDANCE WITH FEDERAL SPECIFICATIONS RR-F-191/GEN, RR-F-191/1, RR-F-191/2, RR-F-191/3, RR-F-191/4, AND AS INDICATED.
- FABRIC: FS RR-F-191/1; TYPE I, ZINC-COATED STEEL, 9-GAUGE STEEL WIRE, WOVEN IN 2" MESH, TWISTED AND BARBED AT BOTH SELVAGES.
- POSTS: LINE POSTS, END POSTS, CORNER POSTS, AND GATE POSTS: FS RR-F-191/3, ZINC-COATED STEEL PIPE, CLASS 1, GRADE A. BRACES TO BE CLASS 1, ZINC COATED STEEL PIPE, GRADE A, SIZE SP1. LINE POST - 2"-10" OD; CORNER, POSTS - 4" OD; GATE POST - 4" OD; RAIL AND BRACE - 1 5/8" OD.
- CONCRETE: ASTM C 94, USING 3/4" MAX SIZED AGGREGATE, 2,500 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS.
- FENCE POSTS AND RAILS TO BE PLUMB AND LEVEL. SPACING OF POSTS: 10'-0" ON CENTER MAX. INSTALL POST CAPS AS RECOMMENDED BY THE MANUFACTURERS.

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Thu, 29 Dec 2022 - 12:59pm R:\Projects\302-01 HEER K&A WWP ONLY\Const Plans\602-01 C013 FENCE DETAILS.dwg

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE 2006 INTERNATIONAL BUILDING CODE AS AMENDED AND ADOPTED BY THE CITY AND COUNTY OF HONOLULU.
2. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS AND SPECIFICATIONS.
3. THE GENERAL NOTES AND TYPICAL DETAILS SHALL APPLY UNLESS OTHERWISE SHOWN.
4. DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON DRAWINGS.
5. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW BY THE ENGINEER.
6. ALL INFORMATION SHOWN ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE START OF THE JOB AND NOTIFY ALL DISCREPANCIES TO THE ARCHITECT.
7. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.
8. DURING THE CONSTRUCTION PERIOD THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE BUILDING AND THE PROTECTION OF ADJACENT PROPERTIES, STRUCTURES, STREETS AND UTILITIES FROM DAMAGE. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING, BRACING AND GUYS IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL SAFETY STANDARDS. ANY DEVIATION MUST BE APPROVED BY OSHA.
9. ALL ERECTION PROCEDURES SHALL CONFORM TO OSHA STANDARDS. ANY DEVIATION MUST BE APPROVED BY OSHA.
10. THE CONTRACTOR SHALL NOTIFY TANIMURA & ASSOCIATES (PH. 536-1692) TWO (2) WORKING DAYS PRIOR TO BEGINNING ANY WORK WHICH WILL CONCEAL STRUCTURAL ELEMENT SUCH AS POURING CONCRETE (CONCEALING REINFORCING) OR SHEATHING WALLS (CONCEALING HOLD DOWN ANCHORS).

FOUNDATION

1. FOUNDATION DESIGN IS BASED ON GEOTECHNICAL REPORT TITLED "REPORT - GEOTECHNICAL INVESTIGATION - PROPOSED WASTEWATER TREATMENT FACILITY - HEEIA KEA SMALL BOAT HARBOR - KAMEHAMEHA HIGHWAY - KANELOE, HAWAII 96744 DATED JUNE 21, 2011 AND PREPARED BY SHINSATO ENGINEERING, INC.
2. FILL AND BACKFILL MATERIAL SHALL CONSIST OF SOIL THAT IS FREE OF ORGANICS, RUBBISH, DEBRIS AND CLAY CLODS. THE MAXIMUM SIZE PARTICLE FOR FILL AND BACKFILL SHALL BE 3' FOR THE UPPER TWO FEET BELOW FINISH GRADE AND 6' FOR FILL BELOW TWO FEET FROM FINISH GRADE.
3. PLACEMENT OF FILL AND COMPACTION SHALL BE AS RECOMMENDED IN THE GEOTECHNICAL ENGINEERING REPORT.
4. IF EXPANSIVE IS FOUND UNDER THE SLAB ON GRADE AREAS, THE EXPANSIVE SOILS SHALL BE OVEREXCAVATED TO A MINIMUM DEPTH OF 12 INCHES BELOW THE BOTTOM OF SLAB AND REPLACED WITH NON-EXPANSIVE GRANULAR FILL.
5. ALL FOOTINGS SHALL BE BOTTOMED A MINIMUM OF 12" BELOW THE LOWEST ADJACENT GRADE.
6. ALL WATER, MUD AND DEBRIS SHALL BE REMOVED FROM THE BOTTOM OF FOOTING EXCAVATIONS PRIOR TO THE PLACEMENT OF CONCRETE.
7. BACKFILL MATERIAL SHALL BE APPROVED BY GEOTECHNICAL ENGINEER BEFORE BRINGING THE BACKFILL MATERIAL TO THE PROJECT SITE.
8. ALL BACKFILLING AND COMPACTION OPERATIONS SHALL BE MONITORED BY THE PROJECT GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE.

REINFORCED CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ACI 318-05.
 2. ALL CONCRETE SHALL BE NORMAL WEIGHT (150 PCF) WITH AGGREGATES CONFORMING TO ASTM C-33. UNLESS OTHERWISE NOTED, THE COMPRESSIVE STRENGTHS OF CONCRETE AT 28 DAYS AND MAXIMUM AGGREGATE SIZES SHALL BE AS FOLLOWS:
- | | STRENGTH | AGGREGATE SIZE |
|---------------|-----------|----------------|
| EQUIPMENT PAD | 4,000 PSI | 3/4" |
| OTHERS | 2500 PSI | 3/4" |
3. MAXIMUM WATER-CEMENT RATIO SHALL NOT EXCEED 0.55.
 4. ALL REINFORCING STEEL EXCEPT TIES AND STIRRUPS SHALL CONFORM TO ASTM A615 GRADE 60. TIES, STIRRUPS AND REBARS TO BE WELDED SHALL BE ASTM A615 GRADE 40.
 5. UNLESS OTHERWISE NOTED, SPLICES, LAPS, DOUPEL EXTENSIONS AND EMBEDMENTS SHALL BE 48 BAR DIAMETERS BUT NOT LESS THAN 24" MINIMUM.
 6. ALL REINFORCING BARS MARKED CONTINUOUS (CONT.) ON THE PLANS SHALL BE LAPPED 48 BAR DIAMETERS MINIMUM, BUT NOT LESS THAN 2'-0".
 7. STAGGER ALL SPLICES WHERE POSSIBLE.
 8. ALL WELDING OF REINFORCING SHALL CONFORM TO 'STRUCTURAL WELDING CODE - REINFORCING STEEL' (AWS D1.4).

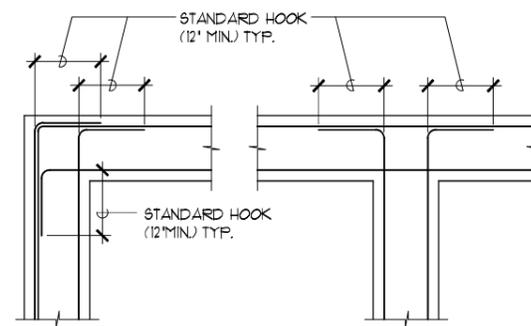
9. REBARS SHALL BE SUPPORTED, BENT AND PLACED AS PER 'MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES' ACI 315 (LATEST).
 10. MINIMUM COVER IN INCHES FOR REBARS FOR CAST-IN-PLACE CONCRETE:
- | CONCRETE CAST AGAINST EARTH | 3' |
|--|--------|
| FORMED CONCRETE EXPOSED TO EARTH OR WEATHER: | |
| #5 AND SMALLER | 1-1/2" |
| #6 AND LARGER | 2" |
| CONCRETE NOT EXPOSED TO EARTH OR WEATHER: | |
| SLABS, WALLS, AND JOISTS | 3/4" |
| BEAMS AND COLUMNS | 1-1/2" |
11. WELDED WIRE FABRIC SHALL BE GALVANIZED AND CONFORM TO ASTM A-185.
 12. UNLESS OTHERWISE SHOWN LAP OUTERMOST CROSS WIRES OF EACH SHEET OF WELDED WIRE FABRIC ONE SPACING OF CROSS WIRES PLUS 2" MINIMUM.
 13. AT TIME CONCRETE IS PLACED, REINFORCING SHALL BE FREE FROM MUD, OIL, LAITANCE OR OTHER COATINGS ADVERSELY AFFECTING BOND CAPACITY.
 14. REINFORCEMENT, ANCHOR BOLTS, SIMPSON CONNECTORS, DOUELS AND ALL OTHER EMBEDDED ITEMS SHALL BE POSITIVELY SECURED BEFORE POURING.

DESIGN CRITERIA

1. CODES: 2006 INTERNATIONAL BUILDING CODE
 2. LATERAL FORCES
- | | |
|--------------------------------------|---------|
| SEISMIC | |
| MAPPED SPECTRAL RESPONSE | 0.622 |
| S _s | 0.182 |
| S ₁ | D |
| SITE CLASS | D |
| SEISMIC IMPORTANCE FACTOR I | 1.0 |
| OCCUPANCY CATEGORY | II |
| S _{ps} | 0.539 |
| S _{p1} | 0.251 |
| SEISMIC DESIGN CATEGORY | D |
| WIND | |
| BASIC WIND SPEED | 105 MPH |
| (3 SECOND GUST) | |
| WIND IMPORTANCE FACTOR I | 1.0 |
| WIND EXPOSURE | C |
| K _{z1} TOPOGRAPHIC FACTOR | 1.3 |
| K _d DIRECTIONALITY FACTOR | 0.70 |
3. SOIL DESIGN VALUES
- | | |
|----------------------------|----------|
| ALLOWABLE BEARING PRESSURE | 1500 PCF |
|----------------------------|----------|

SPECIAL INSPECTION

1. ITEMS REQUIRING SPECIAL INSPECTION:
 - REINFORCING STEEL (2006 IBC TABLE 1704.4 PERIODIC)
 - CONCRETE PLACEMENT (2006 IBC TABLE 1704.4 CONTINUOUS)
 - ANCHOR BOLTS (2006 IBC TABLE 1704.4 PERIODIC)
 - EPOXY ANCHOR/DOUELS (CONTINUOUS)
2. NOTIFY SPECIAL INSPECTOR 4 WORKING DAYS PRIOR TO NEED OF INSPECTION SERVICES.

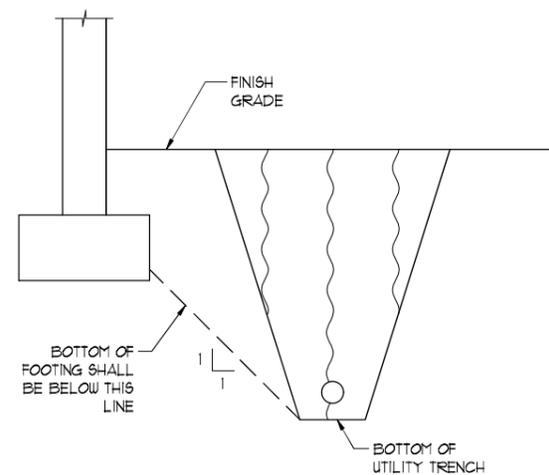


COND. AT CORNER COND. AT INTERSECTION

TYP. REINFORCING PLAN FOR CONC. FOOTINGS

SC: NOT TO SCALE

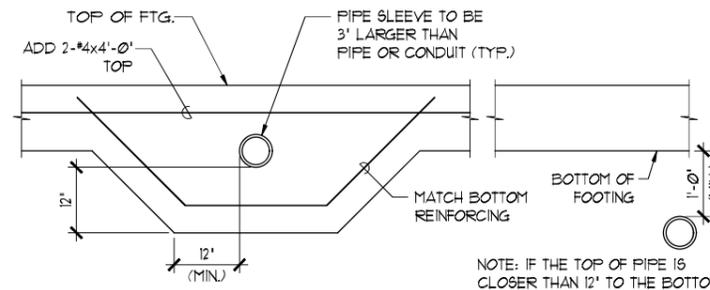
A
5001



FOOTING ADJACENT TO UTILITY TRENCH

SC: NOT TO SCALE

C
5001

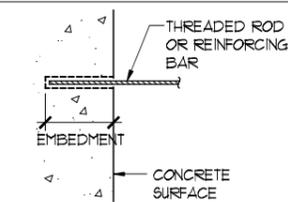


NOTE: PIPES AND CONDUITS SHALL BE PERPENDICULAR TO FOOTING. PIPES AND CONDUITS SHALL NOT RUN PARALLEL AND UNDER THE FOOTING.

TYPICAL PIPES & CONDUITS AT FOOTING DETAIL

SC: 3/4" = 1'-0"

E
5001



THREADED ROD (REBAR)	DRILL BIT DIAMETER	MINIMUM EMBEDMENT
1/2" (#4)	5/8"	4"
5/8" (#5)	3/4"	6"
3/4" (#6)	7/8"	7"

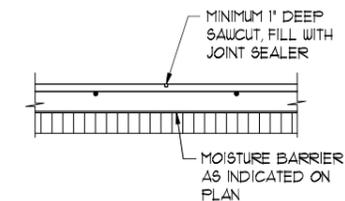
NOTES:

1. PRE APPROVAL FOR SIMPSON STRONG TIE 3G EPOXY TIE ADHESIVE. ALL SUBSTITUTION REQUEST SHALL BE SUBMITTED WITH CURRENT ICC-ESR REPORT TO ENGINEER FOR REVIEW AND APPROVAL.
2. ALL THREAD ROD SHALL BE CARBON STEEL CONFORMING TO ASTM F1554, GRADE 36 HOT DIP GALVANIZED. REINFORCING BAR SHALL BE ASTM A615 GRADE 60.
3. PRE DRILL HOLE WITH DRILL BIT COMPLYING WITH ANSI B212.15-1994.
4. CLEAN HOLE WITH OIL FREE COMPRESSED AIR (80 PSI MINIMUM) AND NYLON BRUSH.
5. FILL HOLE HALF TO TWO THIRDS FULL WITH ADHESIVE STARTING FROM BOTTOM, THEN INSERT ANCHOR TO BOTTOM OF HOLE AND TWIST CLOCKWISE TO ENSURE ADHESIVE COVERS THE ANCHOR SURFACE. ADHESIVE MUST BE LEVEL WITH CONCRETE SURFACE AFTER INSERTION OF ANCHOR.
6. ANCHOR INSTALLATION REQUIRES SPECIAL INSPECTION. CONTRACTOR SHALL USE SIMPSON ARC (ADHESIVE RETAINING CAP) AS NEEDED FOR HORIZONTAL AND OVER-HEAD APPLICATIONS.
7. PROVIDE STANDARD WASHER UNDER NUT UNLESS NOTED OTHERWISE.

3G EPOXY ANCHOR DETAIL

SC: NOT TO SCALE

B
5001



NOTES:

1. SAW CUT SHALL BE DONE AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO AVOID EXCESSIVE RAVELING, BUT NOT MORE THAN 8 HOURS AFTER FINISHING.

SAWED CONTROL JOINT

CONTROL JOINT DETAILS (C.J.)

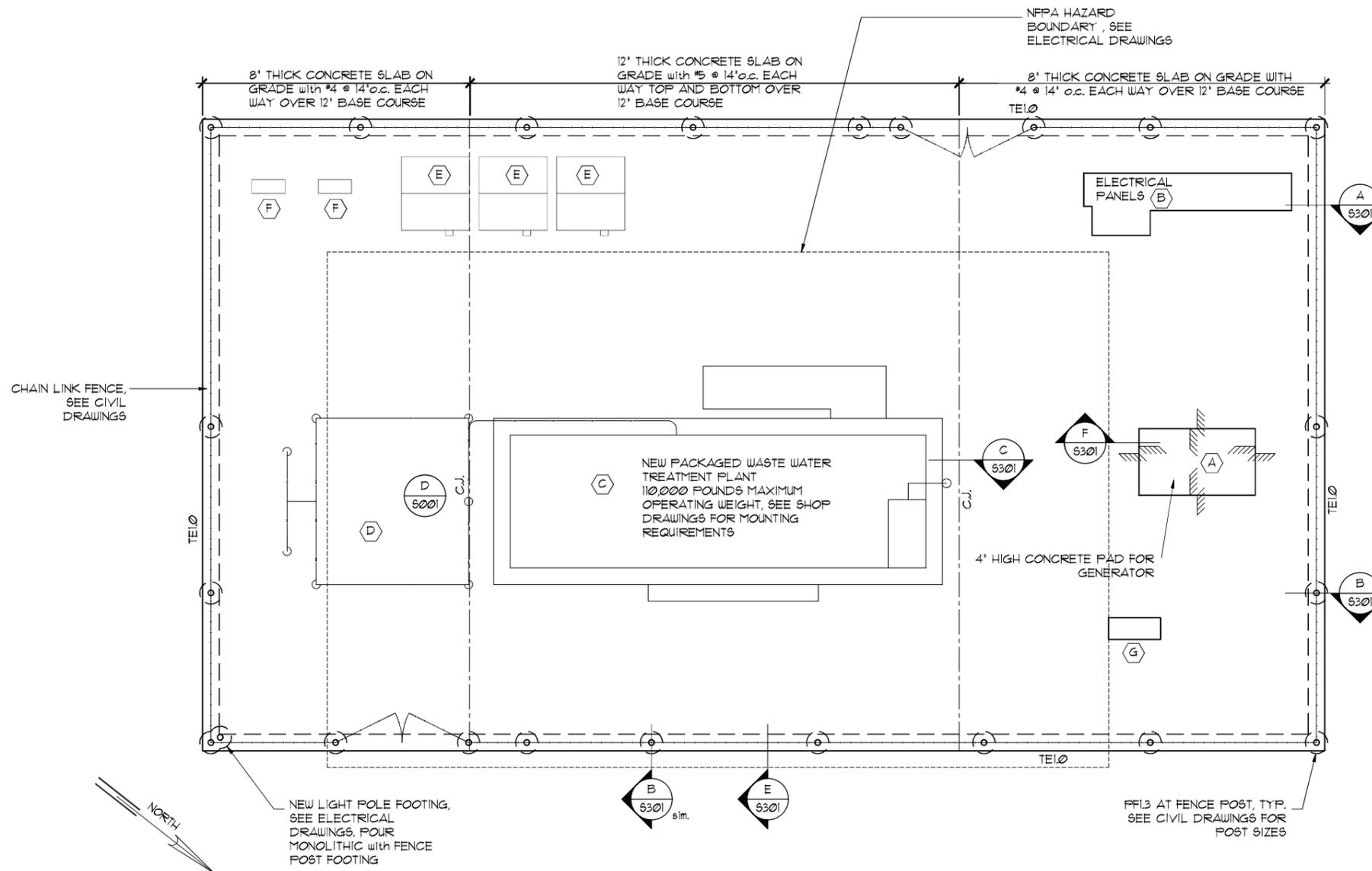
SC: 3/4" = 1'-0"

D
5001

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STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS					
GENERAL NOTES AND TYPICAL DETAILS					
TANIMURA & ASSOCIATES, INC.					
DESIGNED:	AL	SUBMITTED:	BEI		
DRAWN:	AL	DATE:			
CHECKED:	AL	SCALE:	AS SHOWN		
APPROVED:					DRAWING NO.
CHIEF ENGINEER					S001
	DATE				

Adrian Lee
SIGNATURE
LICENSE EXP: 4/30/24



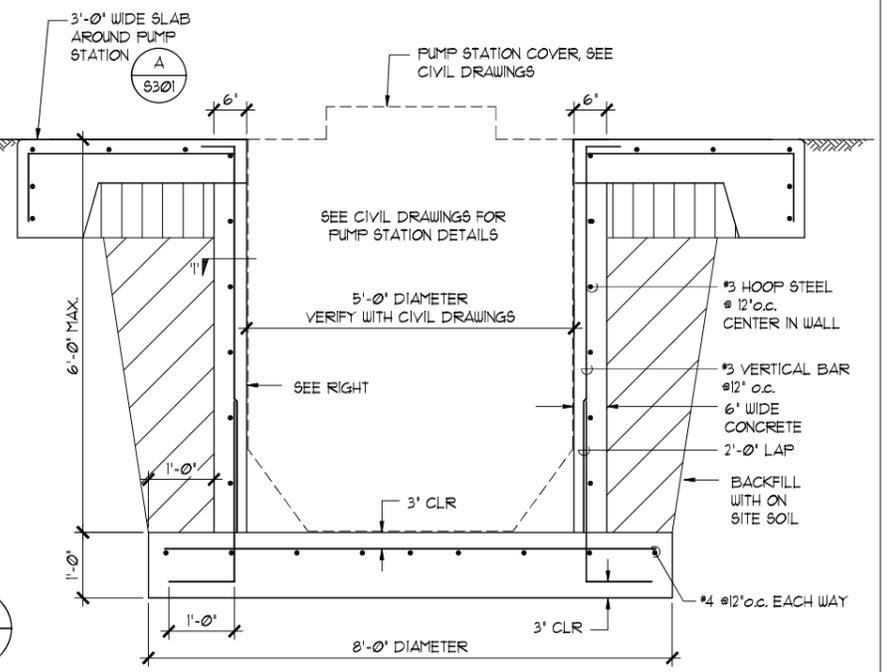
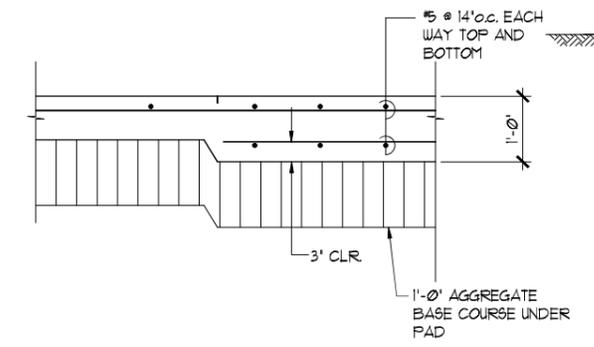
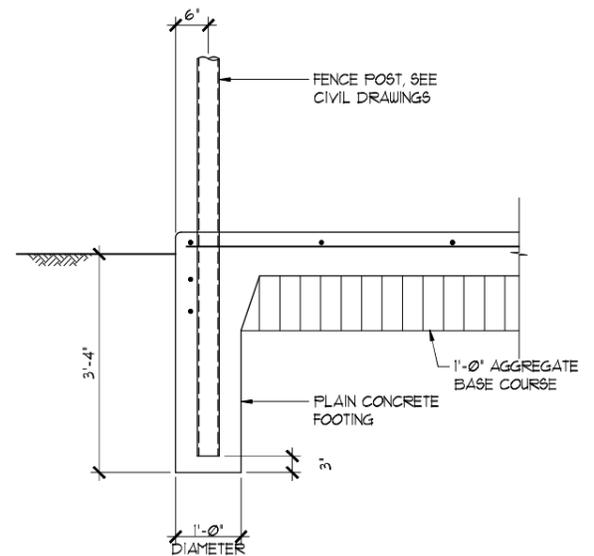
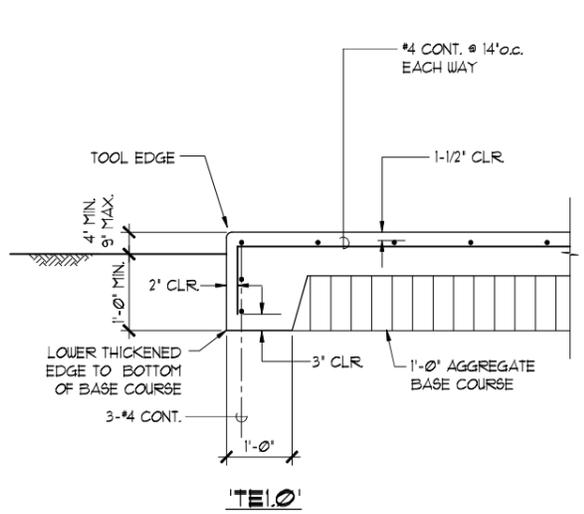


EQUIPMENT LIST			
EQUIPMENT MARK	DESCRIPTION	MAX. WEIGHT	ANCHORING REQUIREMENTS
A	GENERATOR ENCLOSURE, AND TANK WITH FUEL	9,535 LBS	1/2" Ø EPOXY ANCHOR @ 4' EMBED AT EACH CORNER
B	ELECTRICAL PANELS	200 LBS	-
C	PACKAGED WASTEWATER TREATMENT PLANT	110,000 LBS	SEE SHOP DRAWINGS FOR ANCHORING REQUIREMENTS
D	TROJAN UV 04AL20 REACTOR	230 LBS	SEE MANUFACTURER FOR ANCHORING REQUIREMENTS
E	BLOWER	395 LBS	-
F	UV CONTROL PANEL	-	
G	WWTP CONTROL PANEL	200 LBS	

WASTE WATER TREATMENT PLANT FOUNDATION PLAN
 SC: 1/4"=1'-0"



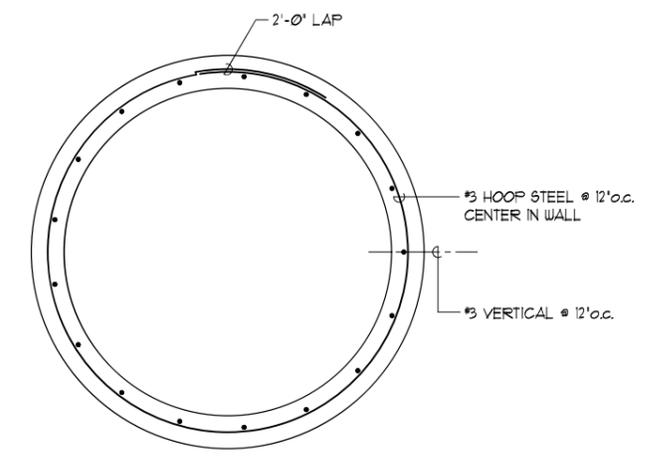
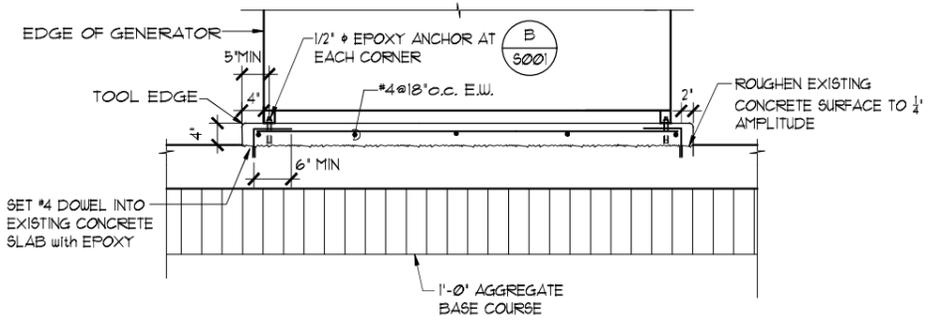
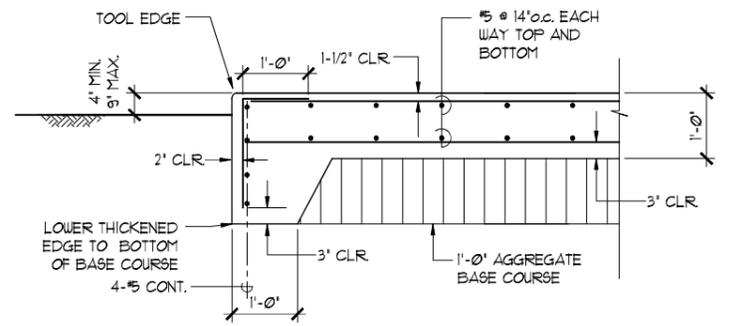
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 ADRIAN C. M. LEE LICENSE EXP: 4/30/24		STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS WASTE WATER FOUNDATION PLAN			
TANIMURA & ASSOCIATES, INC.					
DESIGNED:	AL	SUBMITTED:	BEI		
DRAWN:	AL	DATE:			
CHECKED:	AL	SCALE:	AS SHOWN		
APPROVED:					DRAWING NO.
CHIEF ENGINEER					S101
					DATE



THICKENED SLAB EDGE TEI.0 **A**
 SC: 3/4"=1'-0"
 S301

THICKENED SLAB EDGE TEI.0 with FENCE POST FOOTING **B**
 SC: 3/4"=1'-0"
 S301

WASTE WATER TREATMENT PLANT EQUIPMENT PAD **C**
 SC: 3/4"=1'-0"
 S301



SLAB EDGE AT EQUIPMENT PAD **E**
 SC: 3/4"=1'-0"
 S301

MECHANICAL PAD **F**
 SC: 3/4"=1'-0"
 S301

PUMP STATION SECTION **D**
 SC: 3/4"=1'-0"
 S301

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FOUNDATION DETAILS					
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APPROVED:					DRAWING NO.
CHIEF ENGINEER					S301
					DATE



SITE ELECTRICAL SYMBOLS

- NEW POLE
 - EXISTING WOOD POLE
 - GUY ANCHOR
 - HANDHOLE OR PULLBOX
 - SINGLE ARM LIGHT POLE AND CONCRETE BASE
 - BC BARE COPPER
 - JP JOINT POLE
 - UON UNLESS OTHERWISE NOTED
 - WP WEATHERPROOF
 - ⊕ GROUND ROD, 3/4" x 10'
 - G— GROUND WIRE #3/0 BARE COPPER WITH 24" COVER
 - UNDERGROUND DUCTLINE
 - CONDUIT & WIRING CONCEALED WITHIN CONCRETE STRUCTURE
 - EXPOSED CONDUIT PVC COATED GRS & WIRING
 - DUCTLINE, STUB-OUT 5'-0" FROM EDGE OF SIDEWALK OR AS INDICATED ON PLAN. PROVIDE CONCRETE STUB-OUT MARKER.
- OH/P/P12/S/N/T/V/G — OVERHEAD UTILITY LINES
- ↑ GUY
 - ↑ CATV
 - ↑ TELEPHONE
 - ↑ NEUTRAL
 - ↑ SECONDARY ELECTRIC
 - ↑ PRIMARY 12KV
 - ↑ PRIMARY ELECTRIC
 - ↑ OH — OVERHEAD (NEW)
 - ↑ eOH — OVERHEAD (EXISTING)
- ◇ 1 → NOTE INDICATOR
 - 2 E 4 (A) DUCT SECTION INDICATOR

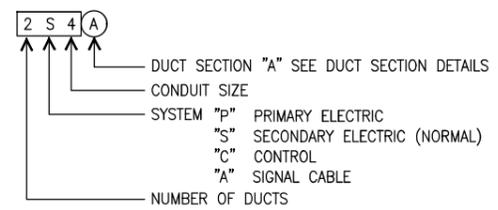
ELECTRICAL SYMBOLS

- ⌘ BARRED LETTER IN OR ADJACENT TO LTG FIXTURE SYMBOL INDICATES FIXTURE TYPE
 - ⌘ PANELBOARD, 6'-6" TO TOP
 - ⌘ UTILITY METER
 - ⌘ SINGLE RECEPTACLE, NEMA 5-20R, 125V, +18" AFF UON
 - ⌘ DUPLEX RECEPTACLE, NEMA 5-20R, 125V, +18" AFF UON
 - ⌘ QUADRUPLEX GFI RECEPTACLE, NEMA 5-20R
 - ⌘ DUPLEX RECEPTACLE w/ GFCI PROTECTION, NEMA 5-20R, 125V, +18" AFF UON
 - ⌘ LARGE JUNCTION BOX, N4X SIZE AS INDICATED
 - ⌘ SMALL JUNCTION (OUTLET) BOX
 - ⌘ SMALL JUNCTION (OUTLET) BOX, WALL MOUNTED
 - ⌘ DISCONNECT SWITCH, HEAVY DUTY, HP-RATED, SIZE AS INDICATED, +5'-6" TO TOP UON
 - ⌘ HAND SWITCH OR PUSH BUTTON STATION — SEE P & ID FOR TYPE
 - ⌘ RELAY
 - ⌘ TIME SWITCH
 - ⌘ EQUIPMENT CONNECTION
 - ⌘ GENERATOR CONNECTION
 - ⌘ MOTOR CONNECTION
 - ⌘ SINGLE POLE SWITCH, 20A, 120/277V, M=MANUAL MOTOR SWITCH, P=PILOT, K=KEY OPERATED, +48" AFF
 - ⌘ MOTION/LIGHT SENSOR FOR EXTERIOR LOCATIONS 200 DEG MIN SENSING ZONE WITH SENSITIVITY AND TIME ADJUSTMENT, WATT STOPPER E200 SERIES OR EQUIVALENT 1000W/120V
 - ⌘ CARD READER UNIT, WALL MOUNTED
 - ⌘ DOOR MAGNETIC SWITCH
 - ⌘ CONDUIT SEAL, CLASS 1 DIV 2
- AFF ABOVE FINISHED FLOOR
 - ATS AUTOMATIC TRANSFER SWITCH
 - CO CONDUIT ONLY
 - ENCL ENCLOSURE
 - EX EXPLOSION PROOF
 - GFP GROUND FAULT PROTECTION
 - SPD SURGE PROTECTION DEVICE
 - SS 316 STAINLESS STEEL
 - TC TELEPHONE CABINET
 - UON UNLESS OTHERWISE NOTED
 - WP WEATHERPROOF
- CONDUIT UP
 - CONDUIT DOWN
 - CONDUIT & WIRING IN WALL OR CEILING
 - CONDUIT & WIRING BELOW REFERENCED PLANE
 - CONDUIT & WIRING EXPOSED
 - HOMERUN TO APPLICABLE PANEL OR CABINET
 - CONDUIT TO CABLE TRAY ADAPTER WITH BUSHING AND GROUND
 - ~ FLEXIBLE CONDUIT
- MINIMUM CONDUIT SIZE SHALL BE 3/4".
 ANY CIRCUIT W/ NO FURTHER DESIGNATION INDICATES A TWO (2) WIRE CIRCUIT. CIRCUITS W/ ADDITIONAL WIRES ARE INDICATED AS FOLLOWS: ~~---~~ 3 WIRES, ~~----~~ 4 WIRES, ETC. MINIMUM CONDUCTOR SIZE SHALL BE #12. ALTHOUGH NOT INDICATED A SEPARATE GREEN GROUND CONDUCTOR SIZED PER THE N.E.C. SHALL BE INSTALLED IN ALL BRANCH CIRCUIT CONDUITS.

GENERAL NOTES

1. PRIOR TO STARTING WORK, NOTIFY THE UTILITY COMPANIES IN WRITING WHEN WORK WILL START, AND PROVIDE THEM WITH A CONSTRUCTION SCHEDULE. NOTIFY THE COUNTY OF HONOLULU IF THE UTILITY COMPANY REQUIREMENTS DIFFER FROM WHAT IS SHOWN ON THESE DRAWINGS PRIOR TO STARTING NEW WORK.
2. ALL ENCLOSURES AT EXTERIOR LOCATIONS SHALL BE STAINLESS STEEL TYPE 316.
3. ALL EXTERIOR ELECTRICAL EQUIPMENT, STRUCTURAL FRAMING, AND EXPOSED CONDUIT SHALL BE PAINTED WITH 2-COATS OF TWO-PART EPOXY PRIMER AND 2 FINISH COATS OF URETHANE ENAMEL MARINE GRADE PAINT. NON-METALLIC ENCLOSURES SHALL NOT DETERIORATE IN SUNLIGHT.
4. WIRING METHODS:
 - a. USE PVC40 IN CONCRETE JACKET FOR UNDERGROUND INSTALLATIONS. USE PVC80 FOR HECO PRIMARY RISER CONDUITS. USE RIGID 316 STAINLESS STEEL CONDUITS FOR ALL NON-HECO CONDUITS INSTALLED ABOVE GRADE. CONVERT PVC CONDUIT TO RIGID 316 STAINLESS STEEL CONDUIT 12" BEFORE EMERGENCE ABOVE GRADE. PAINT STEEL CONDUITS THAT ARE EMBEDDED IN CONCRETE AND UP TO 6" BEYOND EMERGENCE ABOVE GRADE WITH 2 COATS OF ASPHALTIC BASED PAINT OR ELECTRICAL TAPE, HALF-LAPPED.
5. DO NOT COMBINE MORE THAN 6 CURRENT CARRYING POWER CONDUCTORS (#12 & #10) IN A CONDUIT.
6. CONTROL AND SIGNAL WIRING SHALL BE PROVIDED ACCORDING TO THESE DRAWINGS AND AS INDICATED BY MANUFACTURER'S SHOP DRAWINGS FOR VARIOUS EQUIPMENT AND SYSTEMS. ADJUST CONDUIT SIZES AND QUANTITIES, WIRE COUNTS, WIRE TYPE, AND SIZE TO SUIT MANUFACTURER'S SHOP DRAWINGS.
7. MOUNTING FRAMES, FASTENERS, CONCRETE EXPANSION ANCHORS, NUTS, BOLTS AND OTHER HARDWARE SHALL BE STAINLESS STEEL TYPE 316.
8. DEMOLISH EXISTING EQUIPMENT INCLUDING RELATED CONDUIT AND WIRING AS INDICATED ON THE ONE-LINE DIAGRAM. UNDERGROUND CONDUITS MAY BE ABANDONED IN PLACE; REMOVE WIRING. PROVIDE CLOSURES FOR OPENINGS IN ENCLOSURES THAT RESULT FROM DEMOLITION. RESTORE ALL SURFACES AFFECTED BY DEMOLITION TO MATCH THE SURROUNDING AREAS.

DUCT DESIGNATION



CITY AND COUNTY OF HONOLULU
 REVISED ORDINANCE CHAPTER 32,
 HONOLULU COUNTY CODE 1990, AS AMENDED

TO THE BEST OF MY KNOWLEDGE, THIS PROJECT'S DESIGN SUBSTANTIALLY CONFORMS TO THE BUILDING ENERGY CONSERVATION CODE FOR:

____ BUILDING COMPONENT SYSTEMS
 ELECTRICAL COMPONENT SYSTEMS
 ____ MECHANICAL COMPONENT SYSTEMS

Signature: R. C. KATAHARA Date: 12/22/2022
 Name: R. C. KATAHARA
 Title: PRINCIPAL
 License No.: 3181-E

BUILDING EFFICIENCY STANDARDS

EXTERIOR LIGHTING POWER ALLOWANCE 0.5 KW INSTALLED 0.208 KW

USAGE CATEGORY	GROSS CONDITIONED (LIGHTED) FLOOR AREA (FT ²)	LPD (W/FT ²)	MILPA (W)
EXTERIOR ZONE 1	N.A.	x	N.A. = 500.00

PANEL "A"

VOLTAGE: 208Y/120V, 3 PH, 4W MAIN BKR: 3P125A
 BUS: COPPER TYPE: BOLT-ON
 BUS RATING: 200A MOUNT: SURFACE
 AIC: 10,000A ENCLOSURE: NEMA 4X

EQUIPMENT GROUND BUS: YES
 ISOLATED GROUND BUS: NO
 FEED THRU LUGS: NO
 U.L. LISTED AS SERVICE ENTRANCE EQUIPMENT: NO

KVA	DESCRIPTION: L-LIGHTS R-RECEPTACLE, S-SPARE PFB-PROV FOR FUTURE CB			CKT BKR	CKT NO	CKT NO	CKT BKR	DESCRIPTION: L-LIGHTS R-RECEPTACLE, S-SPARE PFB-PROV FOR FUTURE CB			
	A	B	C					A	B	C	
8.0				3P80A	1	2	3P30A				3.0
8.0					3	4					3.0
0.5				1P20A	7	8	1P20A				1.2
				1P20A	9	10	1P20A				1.5
0.8				2P20A	11	12	1P20A				1.0
0.2				1P20A	15	16					0.8
				1P20A	17	18	1P20A				
				1P20A	19	20	1P20A				
				1P	21	22	1P	PFB			
				1P	23	24	1P	PFB			
9.3	8.2	8.8		SUBTOTALS							5.0 5.3 4.0

NOTES:
 1) * - PROVIDE BREAKER WITH PADLOCKING DEVICE
 2) ** - PROVIDE DEDICATED NEUTRAL
 3) + - PROVIDE ISOLATED GND CONDUCTOR OR W/BRANCH WIRING
 4) ++ - PROVIDE WITH GFCI TYPE BREAKER

HANDHOLE SCHEDULE

- 4 2' x 4' HECO PULLBOX
- 23 24" x 36" ELECTRICAL HANDHOLE
- 29 30" x 30" ELECTRICAL HANDHOLE
- 403 24" x 36" CONTROL HANDHOLE

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

STATE OF HAWAII
 DEPARTMENT OF LAND AND NATURAL RESOURCES
 DIVISION OF BOATING AND OCEAN RECREATION

HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS

ELECTRICAL SYMBOLS, NOTES & PANEL SCHDULE

BILLS ENGINEERING, INC.

DESIGNED: MN
 DRAWN: MKE
 CHECKED: PKU
 APPROVED: P. K. KATAHARA
 CHIEF ENGINEER

DATE: 12/22/2022

SUBMITTED: BEI
 DATE: _____
 SCALE: AS SHOWN
 DATE: _____

DRAWING NO. **E001**

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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 CUSTOMER INSTALLATIONS 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 ENCR OACH 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 ENCR OACHMENT 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 INSTALLATIONS DEPARTMENT AT 543-7070 FOR ASSISTANCE IN IDENTIFYING AND SAFEGUARDING OVERHEAD POWER LINES.

6. POLE BRACING

CONTRACTOR SHALL NOT EXCAVATE WITHIN 10 FEET FROM HAWAIIAN ELECTRIC'S UTILITY POLES OR ANY ANCHOR SYSTEM SUPPORTING THE UTILITY POLE. IF CONTRACTOR MUST EXCAVATE CLOSER THAN 10 FEET FROM A UTILITY POLE OR ITS ANCHOR SYSTEM, 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 SUBMIT ITS BRACING CALCULATIONS AND DRAWINGS, PREPARED AND STAMPED BY A LICENSED STRUCTURAL ENGINEER, TO HAWAIIAN ELECTRIC'S CUSTOMER INSTALLATIONS DEPARTMENT (543-7070) FOR REVIEW. HAWAIIAN ELECTRIC REQUIRES A MINIMUM OF TEN (10) WORKING DAYS TO CONDUCT THE REVIEW OF CONTRACTOR'S SUBMITTAL. 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 REVIEW AND APPROVAL OF ANY CONTRACTOR SUBMITTALS INCLUDING ITS WORK PROCEDURE SHALL NOT RELIEVE CONTRACTOR FROM ANY LIABILITY RESULTING FROM CONTRACTOR'S EXCAVATION NEAR OR AROUND HAWAIIAN ELECTRIC'S UTILITY POLES.

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 INSTALLATIONS DEPARTMENT 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:

- ARRANGING FOR HAWAIIAN ELECTRIC STANDBY PERSONNEL TO OBSERVE WORK AT CONTRACTOR'S COST.
- 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.
- PROPERLY SUPPORTING EXISTING STRUCTURES OR FACILITIES WITH BEAMS, STRUTS, UNDER-PINNINGS, OR OTHER NECESSARY METHODS TO FULLY PROTECT IT FROM DAMAGE.
- 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 INSTALLATIONS DEPARTMENT AT 543-7070 A MINIMUM OF TWO (2) 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:

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"	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"	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

NOTES:

- WHERE SPACE IS AVAILABLE, PARALLEL CLEARANCE TO OTHER UTILITIES, OR FOREIGN STRUCTURES OTHER THAN COMMUNICATION OR TRAFFIC SIGNAL SHALL BE 36".
- 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.
- ALL FUEL PIPELINE CROSSINGS SHALL BE REVIEWED AND APPROVED BY THE COMPANY THAT OWNS AND MAINTAINS IT.
- 5 FEET CLEAR TO WATER MAINS 16" AND LARGER.
- FOR SITUATIONS WITH 0" MINIMUM SEPARATION, A 6" SEPARATION IS RECOMMENDED.
- 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.

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REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS HEC0 NOTES - A BILLS ENGINEERING, INC.					
		DESIGNED: MN DRAWN: MKE CHECKED: PKU APPROVED: <i>PC Katakura</i> CHIEF ENGINEER			
		SUBMITTED: BEI DATE: SCALE: AS SHOWN		DRAWING NO. E002	
			DATE		

GUIDELINES FOR MINIMUM VERTICAL (CROSSING) CLEARANCES 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	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

NOTES:

- 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.
- ALL FUEL PIPELINE CROSSINGS SHALL BE REVIEWED AND APPROVED BY THE COMPANY THAT OWNS AND MAINTAINS IT.
- FOR SITUATIONS WITH 0" MINIMUM SEPARATION, A 6" SEPARATION IS RECOMMENDED.
- 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.

ADDITIONAL NOTES WHEN WORK INVOLVES CONSTRUCTION OF HEC₀ FACILITIES

- 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.
- AUTHORITY
ALL CONSTRUCTION, RESTORATION WORK, AND INSPECTION SHALL BE SUBJECT TO WHICHEVER GOVERNMENTAL AGENCY HAS AUTHORITY OVER THE WORK.
- 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.
- 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 DIVISION AT 543-4248 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 DIVISION AT 543-4248 AT LEAST TEN (10) WORKING DAYS IN ADVANCE.
- 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.
- 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.
- JOINT POLE REMOVAL
THE LAST JOINT POLE OCCUPANT OFF THE POLES SHALL REMOVE THE POLES.
- 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.

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REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED



R.C. KATAHARA
 LICENSED PROFESSIONAL ENGINEER
 No. 3181-E
 HAWAII, U.S.A.
 WK ENGINEERS, LTD.
 LICENSE EXPIRATION DATE: 4/30/24
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

R.C. KATAHARA
 12/22/2022

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF BOATING AND OCEAN RECREATION

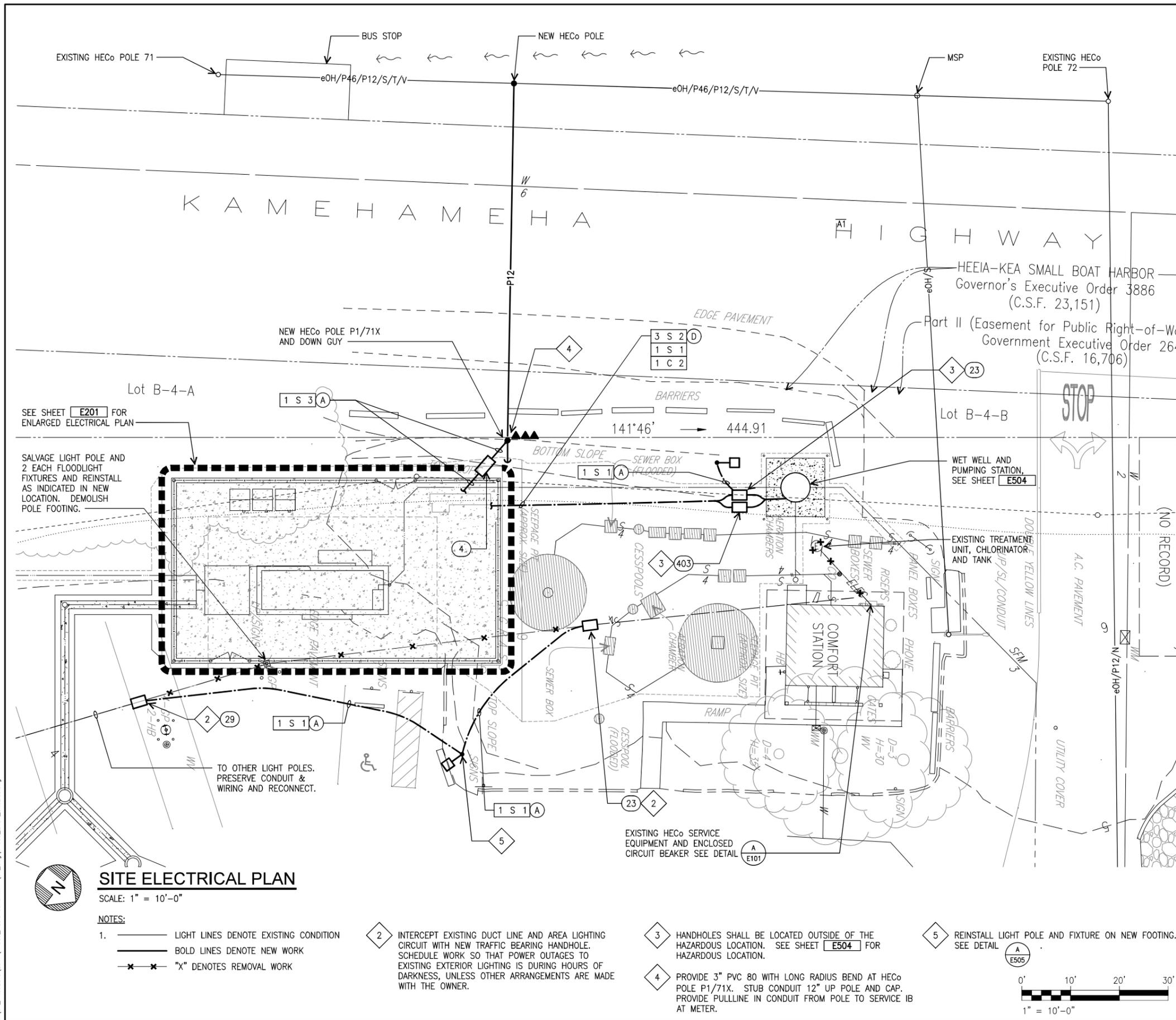
HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS

HEC₀ NOTES - B

BILLS ENGINEERING, INC.

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DRAWN: MKE	DATE:
CHECKED: PKU	SCALE: AS SHOWN
APPROVED:	DRAWING NO.
CHIEF ENGINEER	DATE

E003



EXISTING SERVICE EQUIPMENT AT COMFORT STATION

A
E101

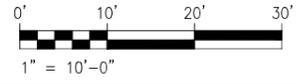
- NOT TO SCALE
- NOTES:
1. LIGHT LINES DENOTE EXISTING CONDITION
"X" DENOTES REMOVAL WORK
 2. PROVIDE CLOSURES IN EQUIPMENT ENCLOSURES THAT RESULT FROM REMOVAL WORK. PAINT TO MATCH EXISTING ENCLOSURE.

SITE ELECTRICAL PLAN

SCALE: 1" = 10'-0"

NOTES:

1. LIGHT LINES DENOTE EXISTING CONDITION
BOLD LINES DENOTE NEW WORK
"X" DENOTES REMOVAL WORK
2. INTERCEPT EXISTING DUCT LINE AND AREA LIGHTING CIRCUIT WITH NEW TRAFFIC BEARING HANDHOLE. SCHEDULE WORK SO THAT POWER OUTAGES TO EXISTING EXTERIOR LIGHTING IS DURING HOURS OF DARKNESS, UNLESS OTHER ARRANGEMENTS ARE MADE WITH THE OWNER.
3. HANDHOLES SHALL BE LOCATED OUTSIDE OF THE HAZARDOUS LOCATION. SEE SHEET E504 FOR HAZARDOUS LOCATION.
4. PROVIDE 3" PVC 80 WITH LONG RADIUS BEND AT HECO POLE P1/71X. STUB CONDUIT 12" UP POLE AND CAP. PROVIDE PULLLINE IN CONDUIT FROM POLE TO SERVICE IB AT METER.
5. REINSTALL LIGHT POLE AND FIXTURE ON NEW FOOTING. SEE DETAIL E505



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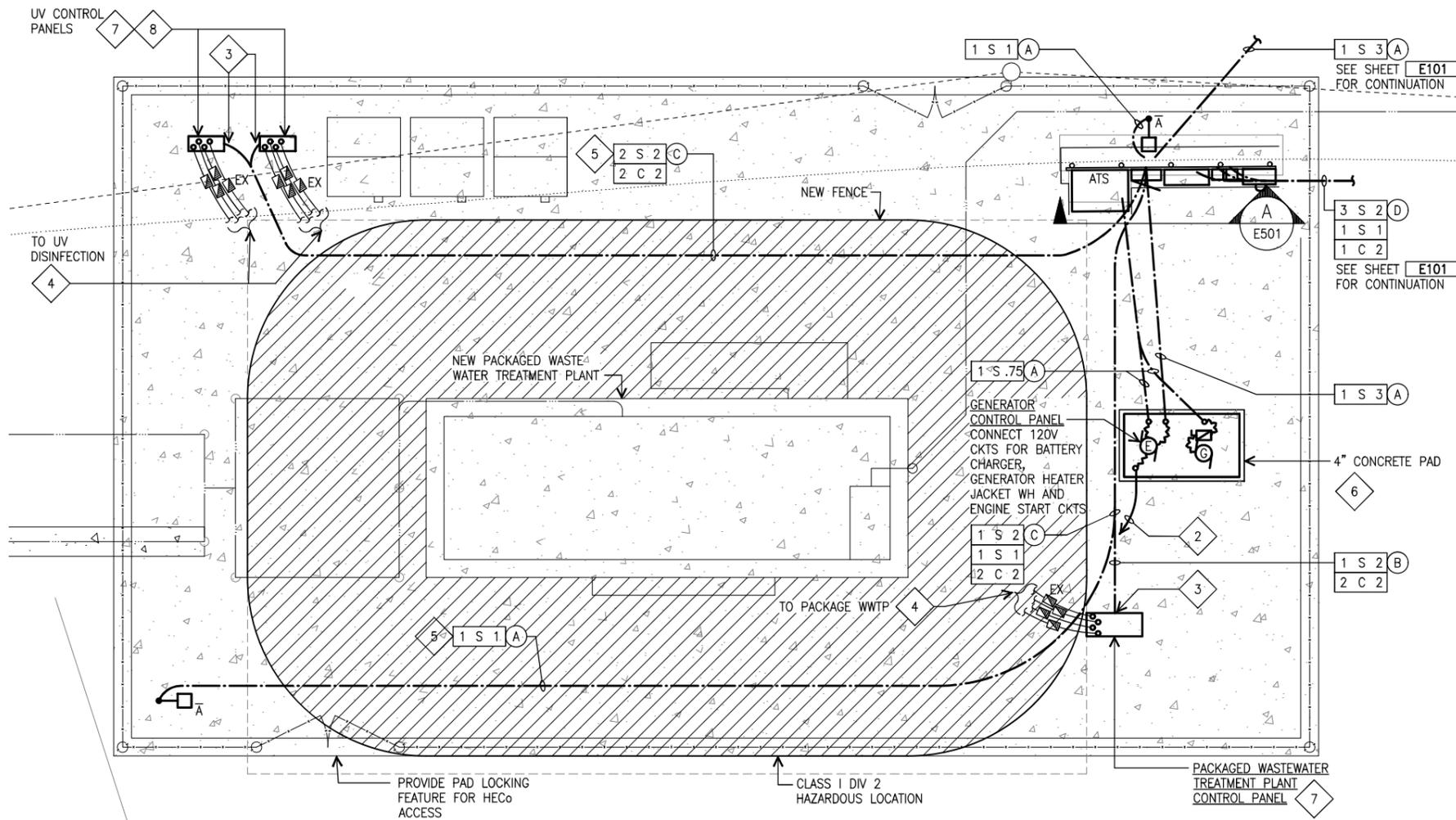
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF BOATING AND OCEAN RECREATION

HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS

SITE ELECTRICAL PLAN

BILLS ENGINEERING, INC.

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CHECKED: PKU	SCALE: AS SHOWN
APPROVED:	DRAWING NO. E101
CHIEF ENGINEER	DATE

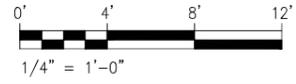


ENLARGED ELECTRICAL PLAN

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

NOTES:

- 1. LIGHT LINES DENOTE EXISTING CONDITION
- BOLD LINES DENOTE NEW WORK
- HATCHING INDICATES HAZARDOUS LOCATION CLASS 1, DIVISION 2
- 2. GENERATOR TROUBLE AND ALARM CONTROL AND WIRING TO CELL MODEM IN PUMP CONTROL PANEL. SIZE CONDUIT AND WIRE PER MANUFACTURERS INSTRUCTION.
- 3. COMPLETELY SEAL CONDUIT WITH DUCT SEAL.
- 4. CONDUIT, WIRE AND CLASS 1 HAZARDOUS LOCATION CONDUIT SEALING FITTINGS PROVIDED BY OTHERS.
- 5. COMPLY WITH NEC 501.10 WIRING METHODS FOR CONDUIT PASSING THROUGH CLASSIFIED LOCATIONS.
- 6. ADJUST SIZE OF CONCRETE PAD TO SUIT THE EQUIPMENT PROVIDED.
- 7. EQUIPMENT FURNISHED AND INSTALLED BY OTHER.
- 8. FURNISH AND INSTALL EQUIPMENT PEDESTAL, SEE DETAIL B E501



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RC KATAHARA
LICENSED PROFESSIONAL ENGINEER
No. 3181-E
HAWAII, U.S.A.

MR. ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/24
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PCK
12/22/22

STATE OF HAWAII
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HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS

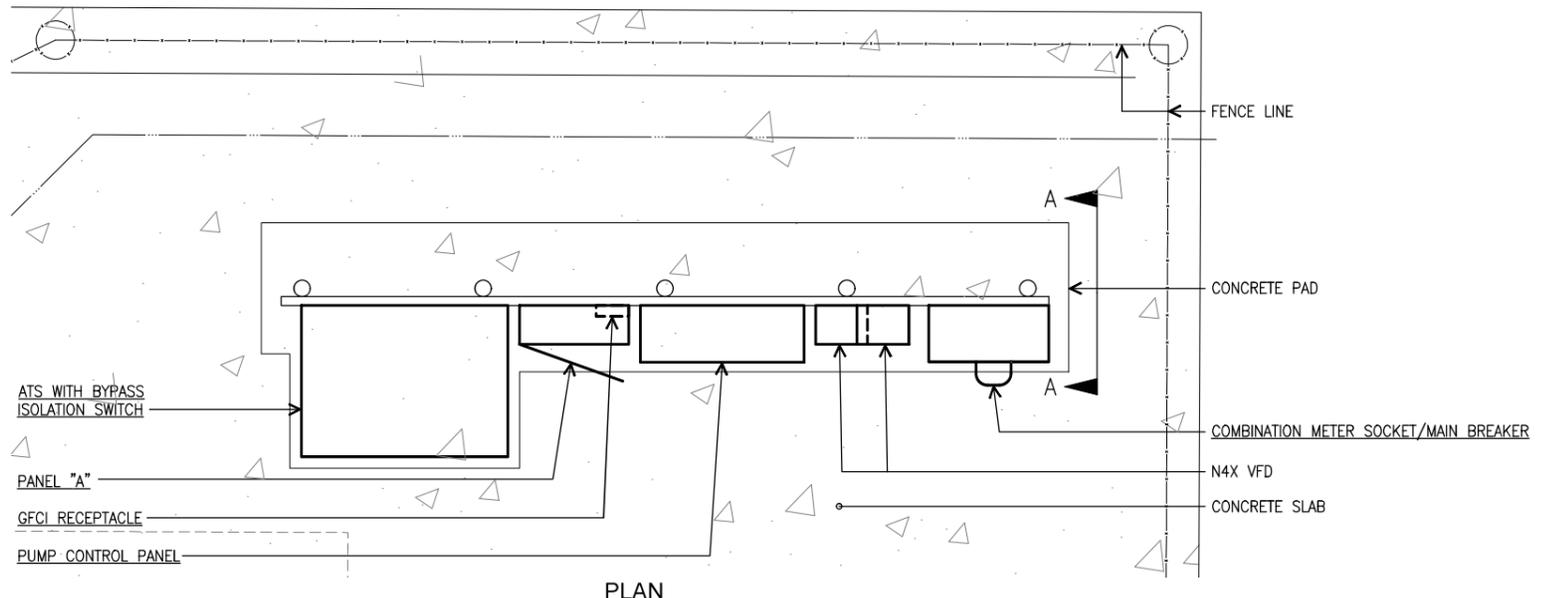
ENLARGED ELECTRICAL PLAN

BILLS ENGINEERING, INC.

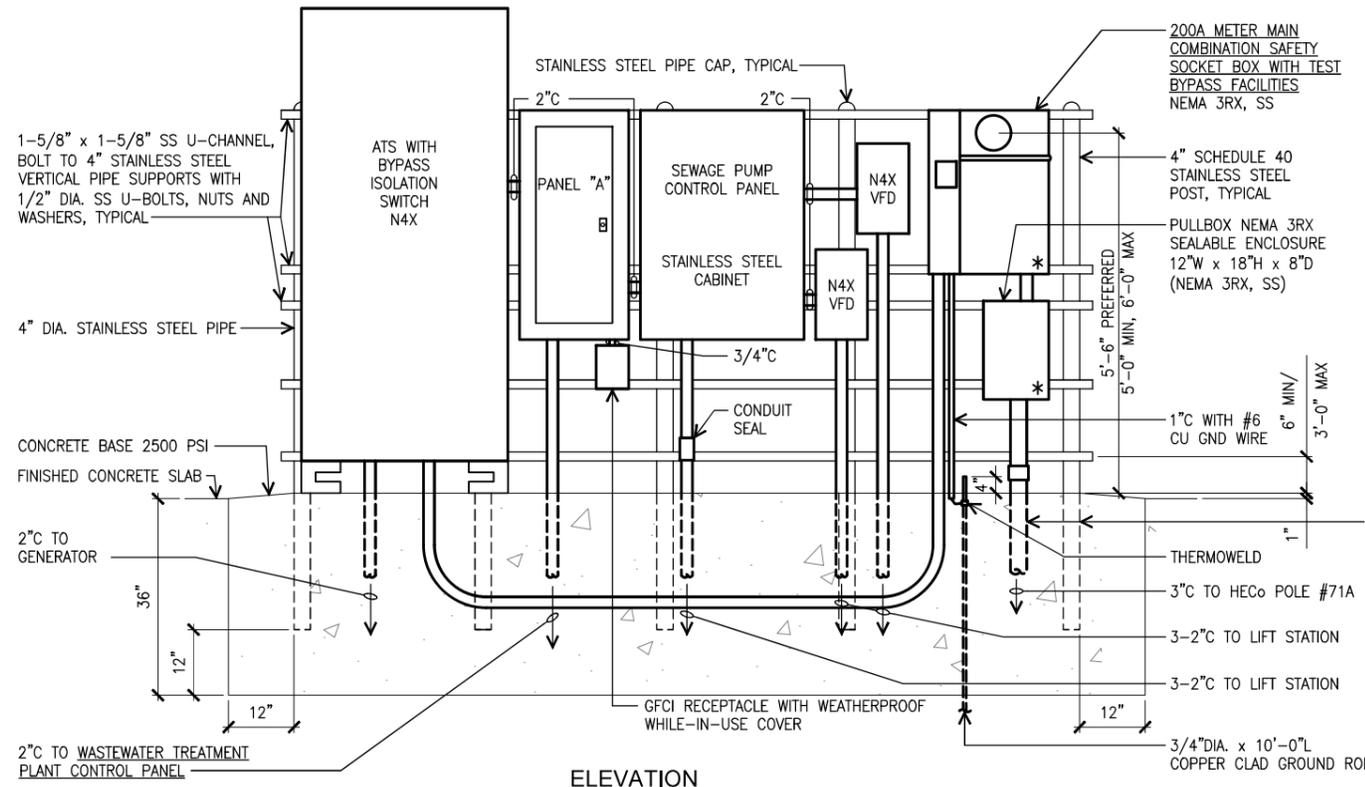
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DRAWN: MKE	DATE:
CHECKED: PKU	SCALE: AS SHOWN
APPROVED:	DRAWING NO. E201

CHIEF ENGINEER _____ DATE _____

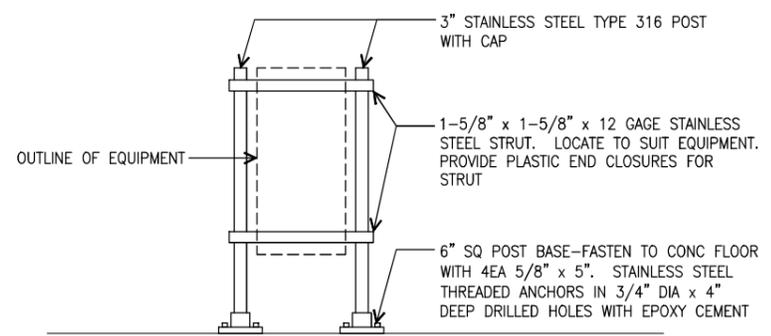
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PLAN



ELEVATION

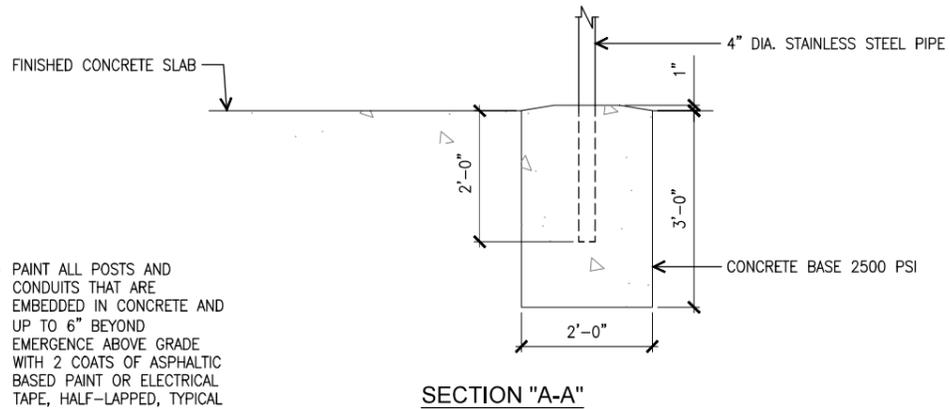


B EQUIPMENT MOUNTING DETAIL

E501 NTS

NOTES:

1. ALL HARDWARE INCLUDING STRUT SHALL BE STAINLESS STEEL TYPE 316.
2. PAINT WITH PRIME & 2 FINISH COATS OF MARINE GRADE PAINT.
3. ADJUST FRAME DIMENSIONS TO SUIT EQUIPMENT.
4. ADJUST HEIGHT OF FRAME SUCH THAT UV CONTROL PANELS ARE +5'-0" FROM FINISHED FLOOR TO TOP OF ENCLOSURE.



SECTION "A-A"

A METER PEDESTAL FOR UNDERGROUND SERVICE

E501

SCALE: NOT TO SCALE

NOTES:

1. ALL FASTENING BOLTS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL.
2. * - HECO SEALABLE.
3. SERVICE EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH HECO ESIM REQUIREMENTS.
4. PROVIDE A MINIMUM OF 4 FEET OF CLEAR AND LEVEL WORKSPACE CLEARANCE IN FRONT OF METERING AND SERVICE EQUIPMENT.
5. PROVIDE PLASTIC METER SOCKET COVER AND BAND FOR ALL BLANK METER SOCKETS. LABEL PLASTIC COVER WITH CONTRACTOR'S NAME AND NUMBER SO COVER CAN BE RETURNED AFTER METER INSTALLATION.

6. PROVIDE A PERMANENT PHENOLIC NAMEPLATE (BLACK WITH WHITE LETTERS) FOR ALL METER SOCKETS TO IDENTIFY THE ADDRESS, UNIT, SPACE, AREA OR LOAD SERVED (E.G. "PARKING LOT").
7. THE GROUNDING ELECTRODE CONDUCTOR SHALL NOT PASS THROUGH HECO'S SEALABLE SECTIONS OR COMPARTMENTS.
8. ALL ELECTRICAL EQUIPMENT SHALL BE 3RX OR N4X.
9. ADJUST PEDESTAL TO SUIT THE EQUIPMENT PROVIDED.
10. ALL ELECTRICAL EQUIPMENT, EXPOSED CONDUIT, AND STRUCTURAL FRAMING SHALL BE PAINTED WITH 2-COATS OF TWO-PART EXPOXY PRIMER AND 2 FINISH COATS OF URETHANE ENAMEL MARINE GRADE PAINT.

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R.C. KATAHARA
12/22/2022

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF BOATING AND OCEAN RECREATION

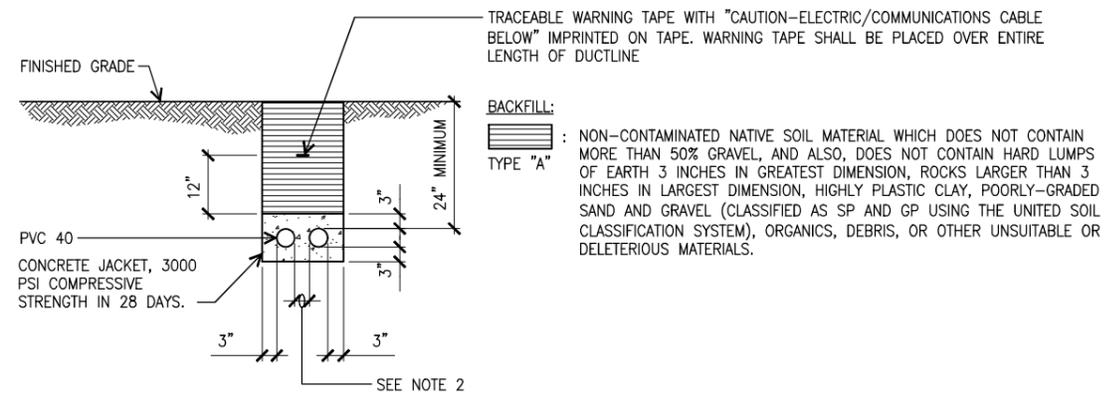
HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS

METER DETAILS

BILLS ENGINEERING, INC.

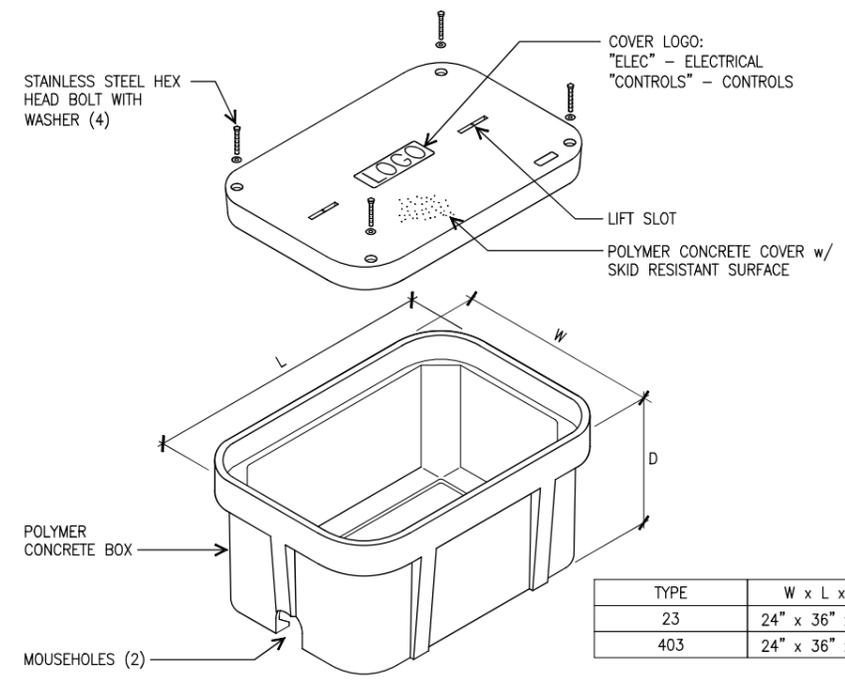
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CHIEF ENGINEER	DATE

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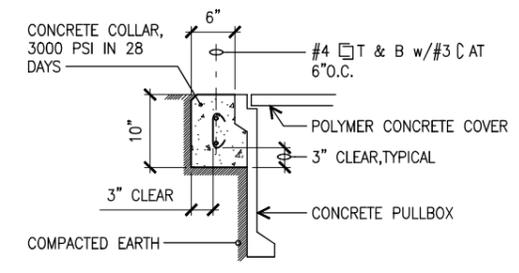
1 TYPICAL DUCT SECTION (CONCRETE ENCASED)
E502 NOT TO SCALE DUCT-100

- NOTES:
- ELECTRICAL AND TELEPHONE DUCTS SIMILAR.
 - PROVIDE 2" SEPARATION BETWEEN DUCTS OF SAME SYSTEM AND 3" BETWEEN DUCTS OF DIFFERENT SYSTEMS.
 - WHERE TRENCH ENCOUNTERS EXISTING CONCRETE OR ASPHALT CONCRETE, SURFACE SHALL BE SAWCUT, BACKFILL, COMPACT AND PATCH SURFACE TO MATCH ADJACENT AREA. SEE TRENCH RESTORATION DETAIL.
 - SEE DUCT SECTION DETAILS FOR CONDUIT ARRANGEMENT.

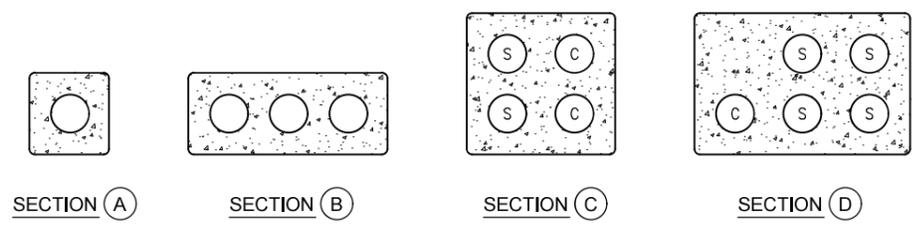


2 LARGE POLYMER CONCRETE PULLBOX DETAIL
E502 NOT TO SCALE HH_PB-002

- NOTES:
- PULLBOX ASSEMBLY SHALL HAVE A 20,800 LB. DESIGN LOAD (16,000 LB. WHEEL LOAD TIMES 1.3 IMPACT FACTOR) RATING IN ACCORDANCE WITH ASTM C857 A-16 VEHICLE AND PEDESTRIAN LOADING.
 - BOX AND BASE SHALL NOT CONTAIN STEEL REINFORCING.
 - PULLBOX SHALL BE SET ON COMPACTED GRANULAR FILL. PROVIDE BUILD-UP BRICKS WITH MORTAR AS NECESSARY TO ACCOMMODATE DUCTLINE ENTRIES.
 - PROVIDE CONCRETE COLLAR RING SURROUNDING PULLBOX, SEE **3** E502
 - BOXES SHALL BE MANUFACTURED BY ARMORCAST OR EQUIVALENT. EQUIVALENT MUST BE SUBMITTED FOR APPROVAL PRIOR TO BIDDING.



3 CONCRETE COLLAR RING
E502 NOT TO SCALE



DUCT SECTION DETAILS
NOT TO SCALE

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R.C. KATAHARA
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF BOATING AND OCEAN RECREATION

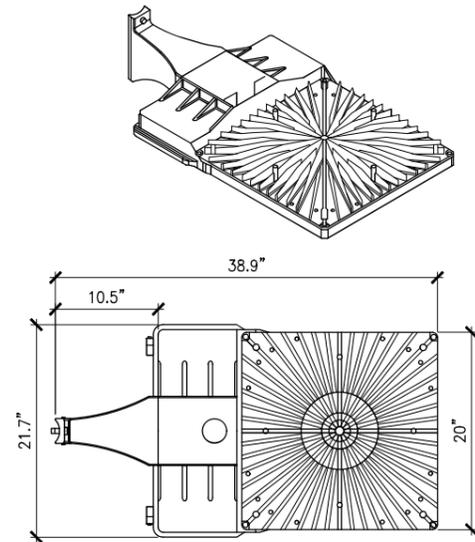
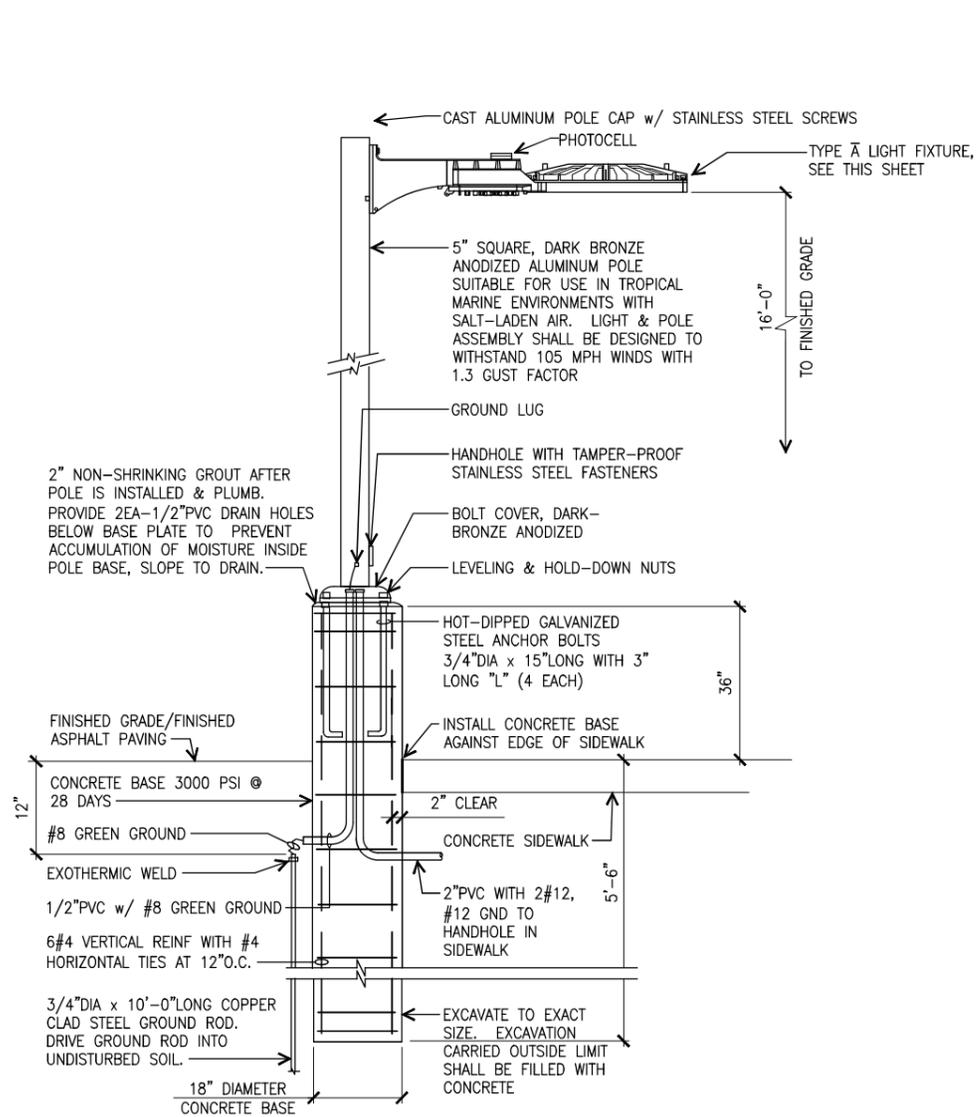
HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS

DUCT SECTION DETAILS

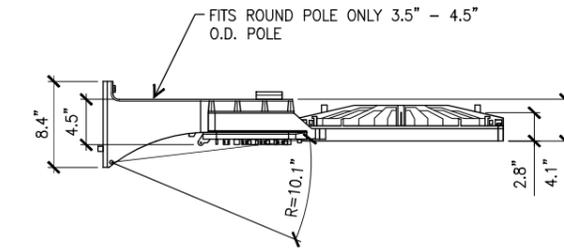
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DESIGNED: MN	SUBMITTED: BEI
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CHECKED: PKU	SCALE: AS SHOWN
APPROVED:	DRAWING NO. E502
CHIEF ENGINEER	DATE

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TOP VIEW



SIDE VIEW

TYPE	A	AT
MOUNT	POLE MOUNTED, +16' AFG	
HOUSING	DIE CAST ALUMINUM, DARK BRONZE FINISH SUITABLE FOR USE IN TROPICAL MARINE ENVIRONMENTS WITH SALT-LADEN AIR	
LENS	7,800 INITIAL LUMENS, 4000K, 104 WATTS	
PHOTOMETRICS	TYPE 3	
NOTES	<ol style="list-style-type: none"> 120V OPERATION INTEGRAL PHOTOCELL INTEGRAL FUSING 	<ol style="list-style-type: none"> 120V OPERATION INTEGRAL PHOTOCELL INTEGRAL FUSING MOTION SENSOR

1 AREA LIGHT DETAIL

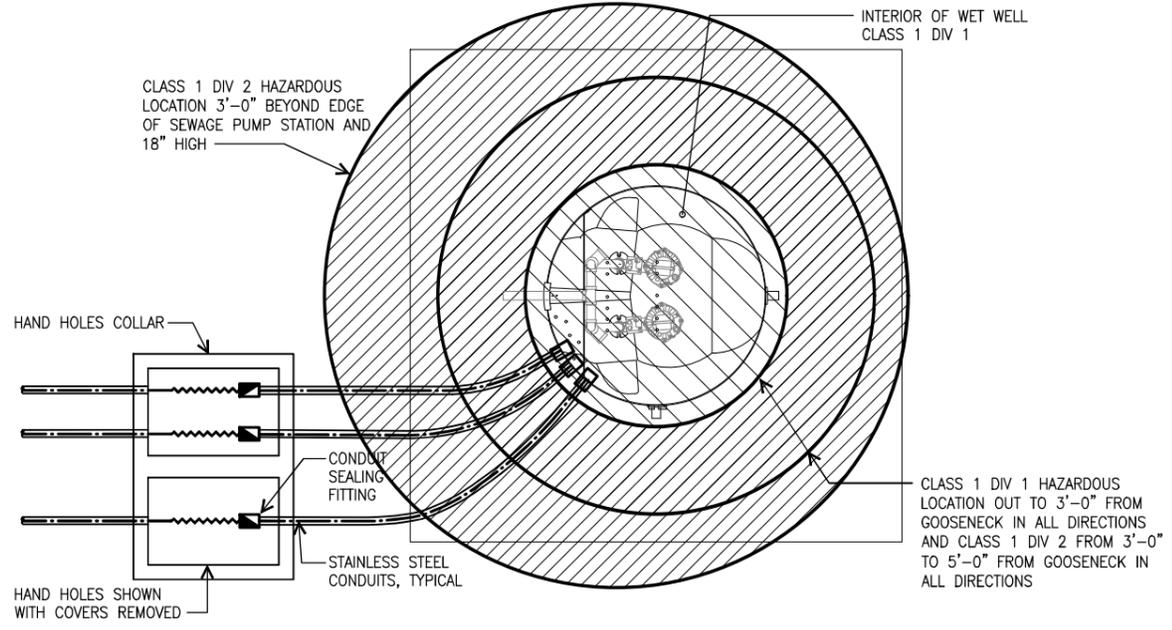
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NOT TO SCALE

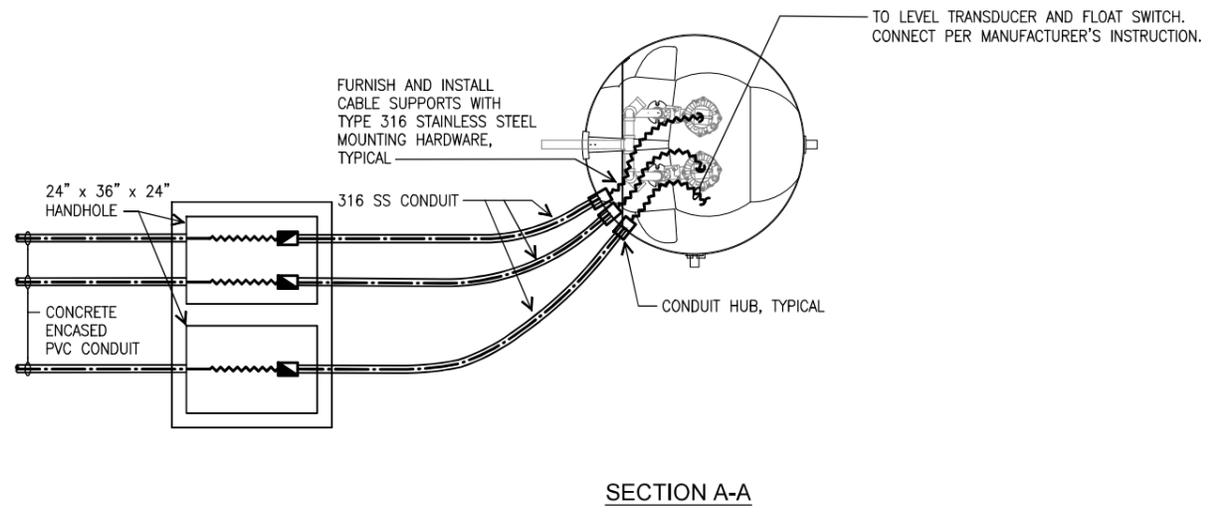
NOTES:

1. AREA LIGHTS SHALL PROVIDE MINIMUM 0.75FC WITH MAXIMUM 3.0 AVG:MIN UNIFORMITY RATIO ON THE CONCRETE SIDEWALK.
2. ALL EXTERIOR LIGHT FIXTURES SHALL BE DESIGNED/INSTALLED TO PREVENT DIRECT ILLUMINATION ONTO ADJACENT LOTS, STREETS, AND/OR RIGHT-OF-WAYS.

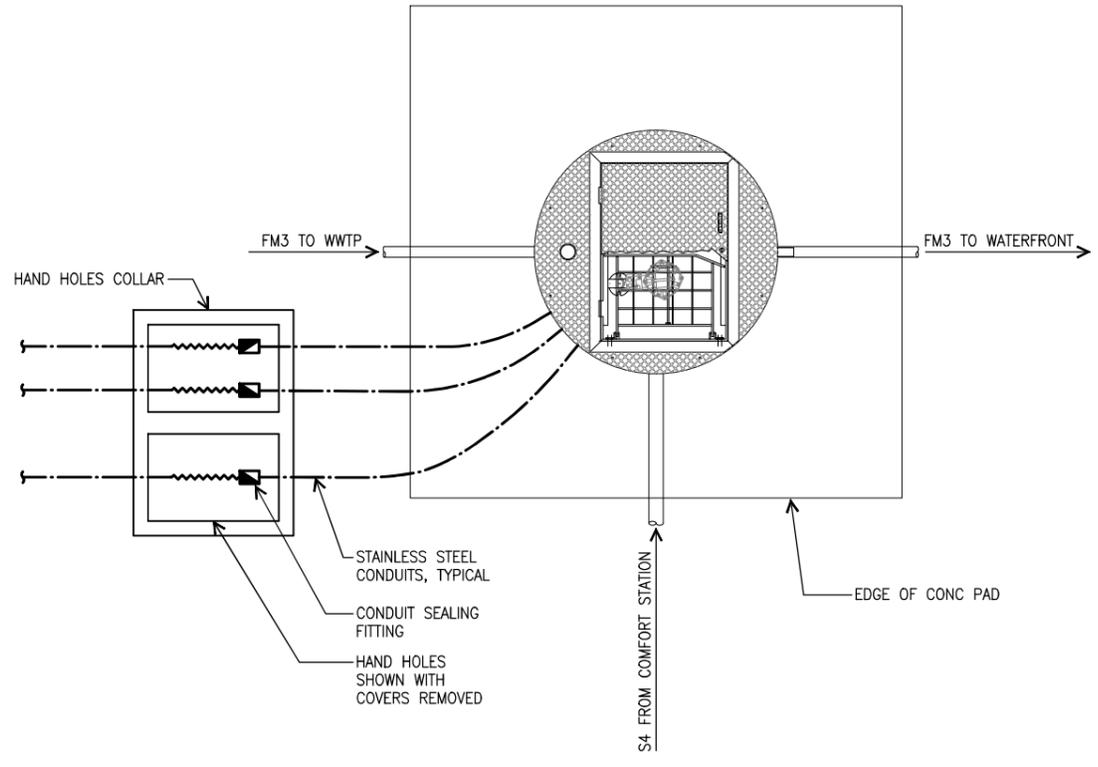
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<p>STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION</p> <p>HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS</p> <p>AREA LIGHT DETAIL</p> <p>BILLS ENGINEERING, INC.</p>					
		<p>DESIGNED: MN SUBMITTED: BEI</p> <p>DRAWN: MKE DATE:</p> <p>CHECKED: PKU SCALE: AS SHOWN</p> <p>APPROVED: <i>P.C. KATAHARA 12/22/22</i></p>			
CHIEF ENGINEER			DATE		E503



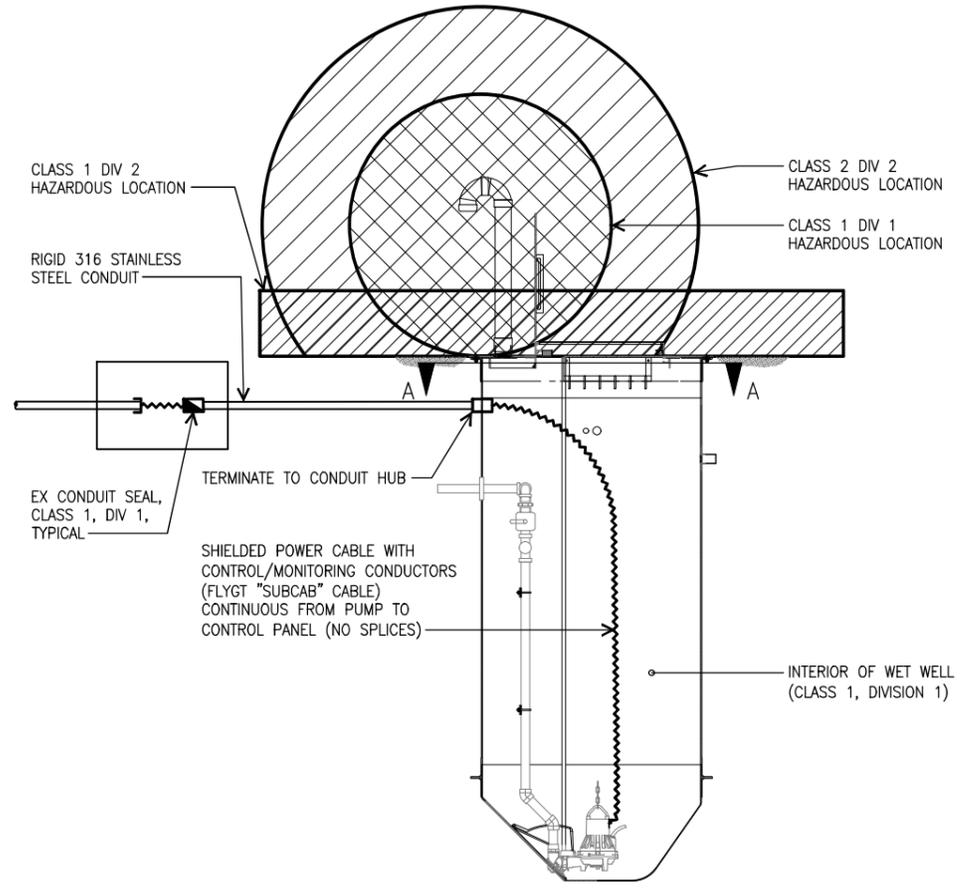
HAZARDOUS LOCATION PLAN



SECTION A-A



PLAN VIEW



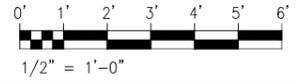
ELEVATION

WET WELL DETAIL

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

NOTES:

1. CONDUIT, CABLE AND SUPPORTS ARE TYPICAL FOR 2-PUMPS.



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STATE OF HAWAII
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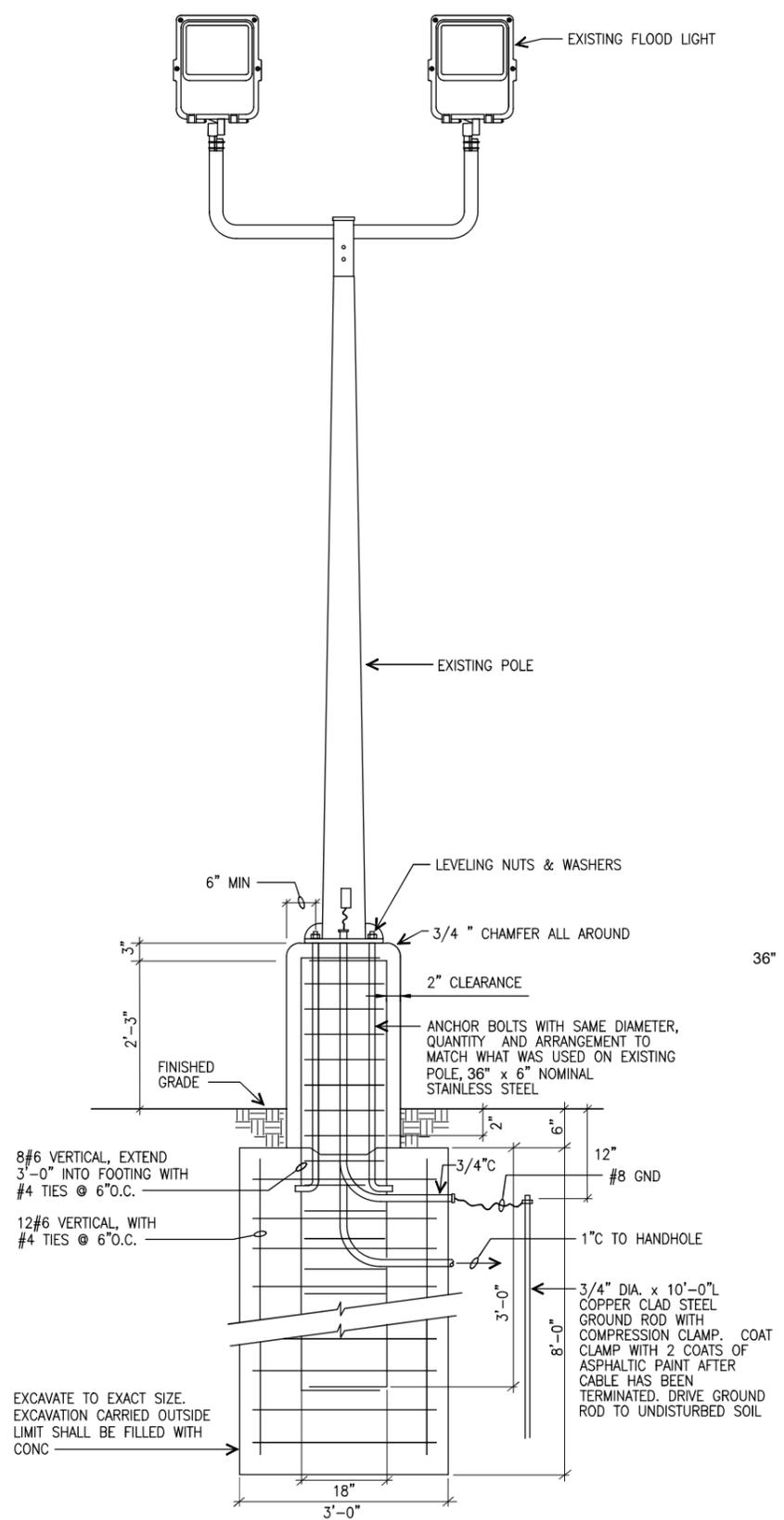
HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS

WET WELL DETAIL

BILLS ENGINEERING, INC.

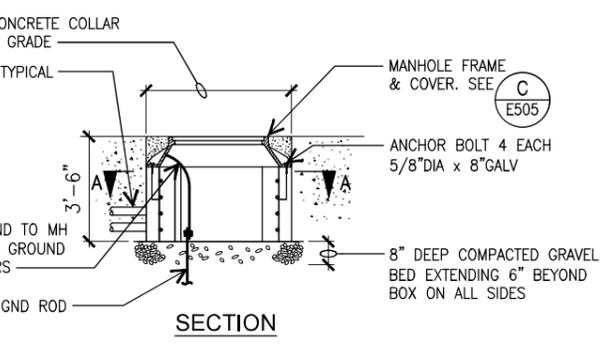
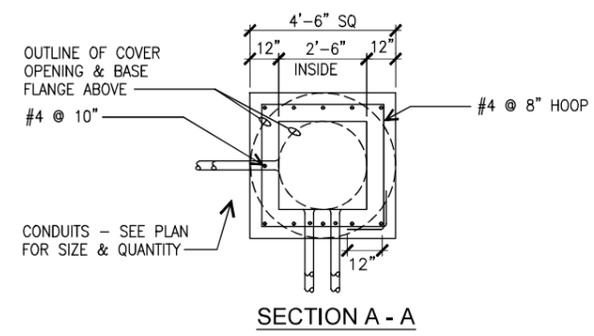
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CHIEF ENGINEER	DATE

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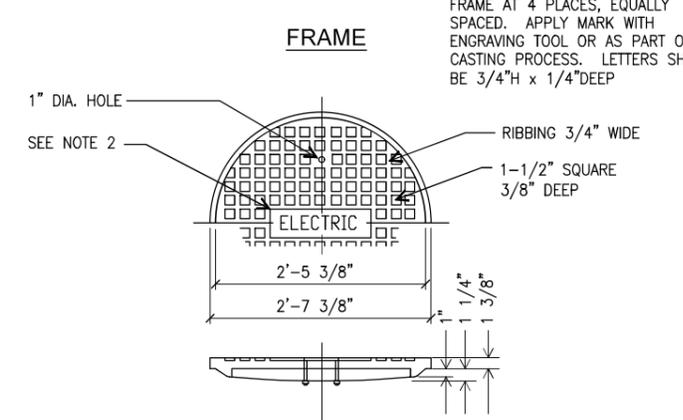
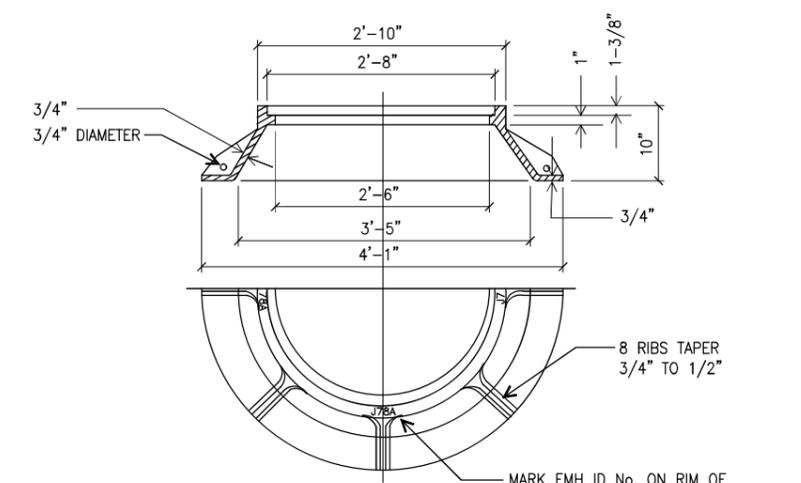


A AREA LIGHT MOUNTING DETAIL
E505 NOT TO SCALE

- NOTES:
1. REINSTALL POLE ON NEW POLE FOOTING.
 2. CONTRACTOR SHALL MATCH THE BOLT CIRCLE TO THE EXISTING POLE.



B HANDHOLE DETAIL (29)
E505 NOT TO SCALE

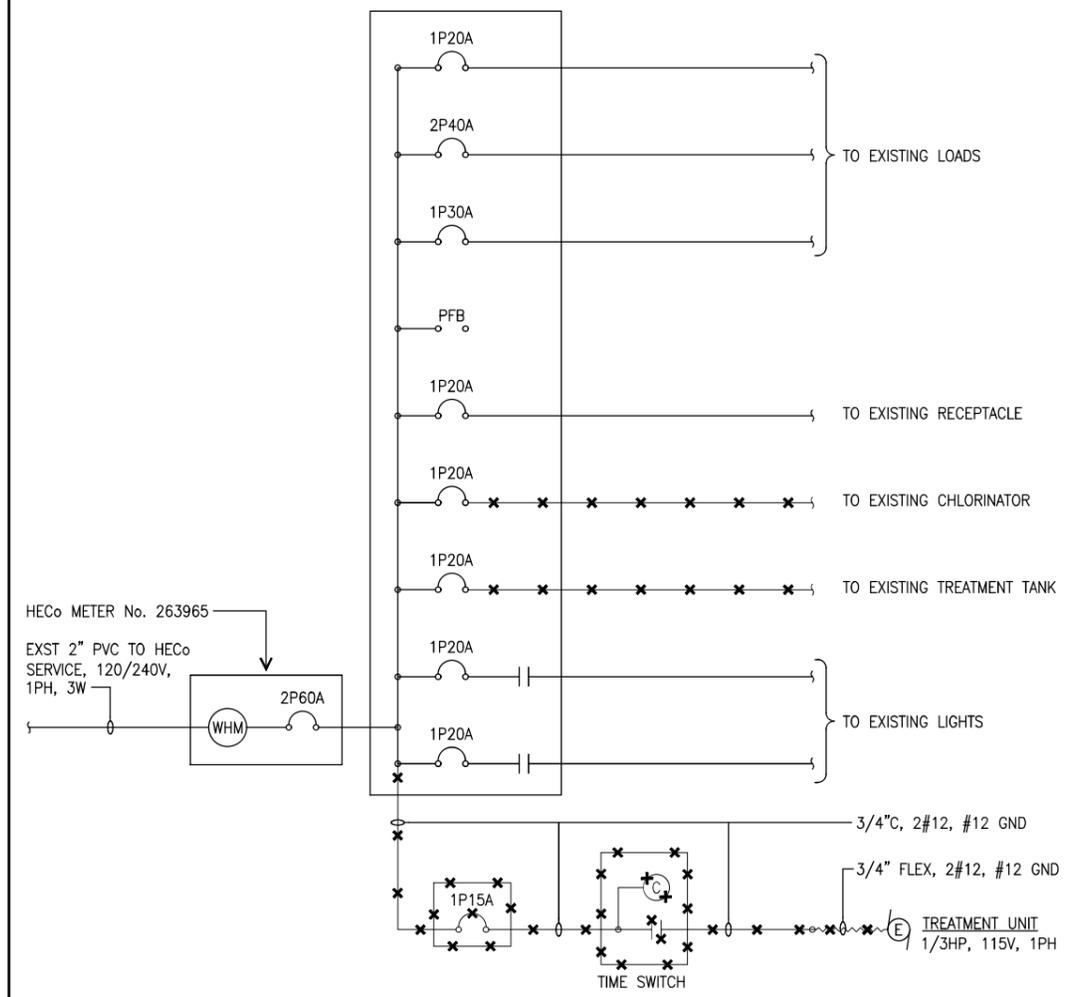


C MANHOLE HARDWARE
E505 NOT TO SCALE

- NOTES:
1. MANHOLE FRAMES & COVERS SHALL BE RATED FOR H20 WHEEL LOADS IN ACCORDANCE WITH AASHTO HB.12.
 2. LETTER BLOCKS 1-1/4" WIDE, 2" HIGH LETTERS, 3/8" WIDE.

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<p>STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION</p> <p>HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS</p> <p>AREA LIGHT MOUNTING DETAIL</p> <p>BILLS ENGINEERING, INC.</p>					
<p>DESIGNED: MN</p> <p>DRAWN: MKE</p> <p>CHECKED: PKU</p> <p>APPROVED: <i>PKU</i></p> <p>CHIEF ENGINEER</p>			<p>SUBMITTED: BEI</p> <p>DATE:</p> <p>SCALE: AS SHOWN</p> <p>DRAWING NO. E505</p>		

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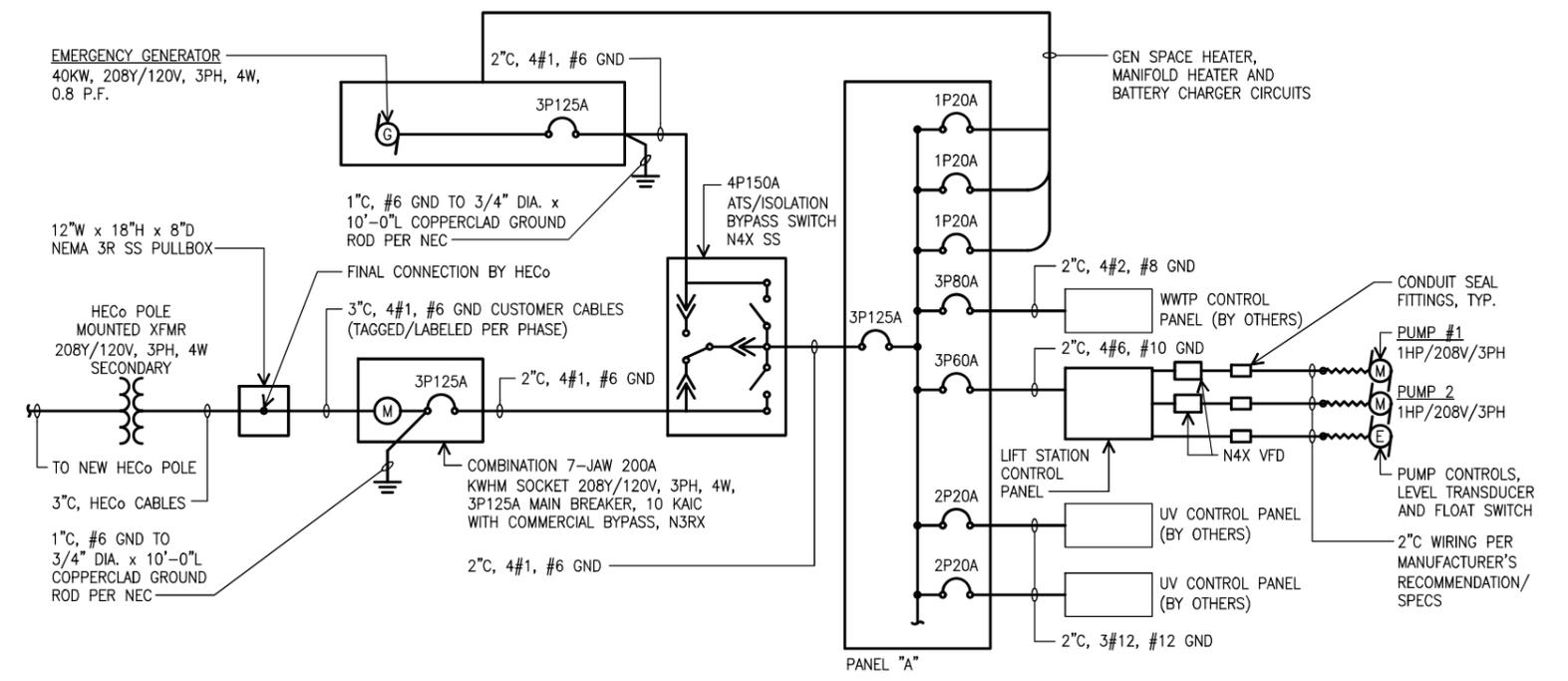


EXISTING COMFORT STATION ONE-LINE DIAGRAM

NO SCALE

NOTES:

1. LIGHT LINES DENOTE EXISTING CONDITION
2. "X" DENOTES REMOVAL WORK
3. DEMOLISH ALL CONDUIT AND WIRING FOR EXISTING TREATMENT PLANT.



NEW PACKAGED WWTP ONE-LINE DIAGRAM

NO SCALE

NOTES:

1. LIGHT LINES DENOTE WORK DONE BY OTHERS
2. BOLD LINES DENOTE NEW WORK
3. ALL ELECTRICAL EQUIPMENT SHALL BE N3RX OR N4X.

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STATE OF HAWAII
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 HEEIA KEA SMALL BOAT HARBOR WASTEWATER TREATMENT SYSTEM IMPROVEMENTS
 ONE-LINE DIAGRAMS
 BILLS ENGINEERING, INC.

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APPROVED:	DATE: 12/22/2022
CHIEF ENGINEER	DATE

E601