HO'OLEHUA WATER SYSTEM IMPROVEMENTS
PACKAGE 1 – HO'OLEHUA
IFB-18-HHL-008

PLANS

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

CONSTRUCTION PLANS FOR

HOOLEHUA WATER SYSTEM IMPROVEMENTS

SITES NO. 1, 3, 4, 5, 6, & 7

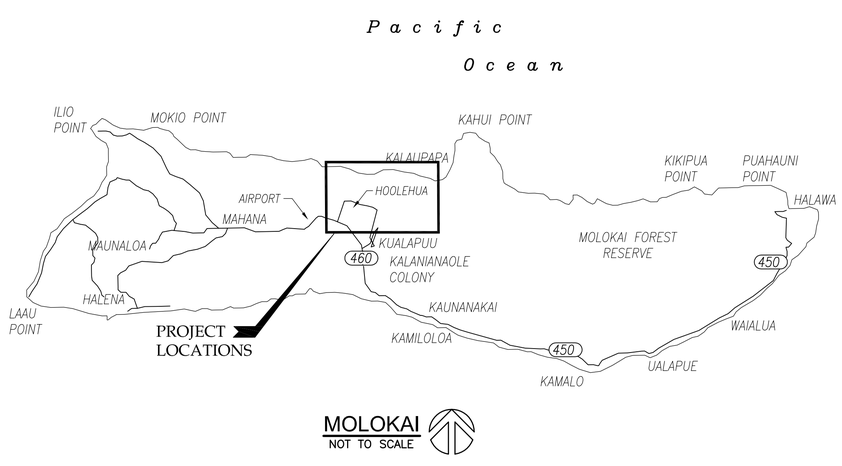
HOOLEHUA, MOLOKAI, HAWAII

TAX MAP KEYS: (2)5-2-002:999, (2)5-2-004:999, (2)5-2-005:999, (2)-5-2-006:063, 999, (2)5-2-007:028, 029, 030, 055, 076, 090, 999 (2)5-2-010:002, 003, 007 (2)5-2-012:004, 999, (2)5-2-013:010, 020, (2)5-2-021:999, (2)5-2-023:009, (2)5-2-024:999, (2)5-2-025:999

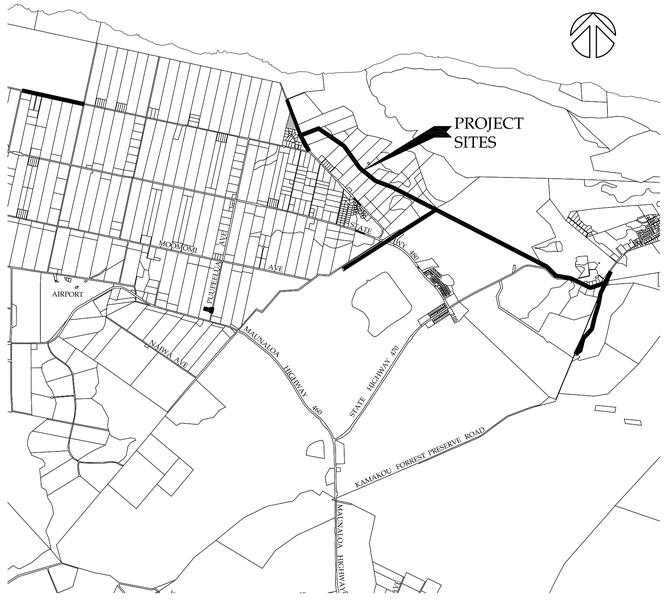
PREPARED BY:

111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

LOCATION MAP



VICINITY MAP



APPROVALS

CHAIRMAN, HAWAIIAN HOMES COMMISSION — DATE
STATE OF HAWAII

DIRECTOR, DEPARTMENT OF PUBLIC WORKS — DATE
COUNTY OF MAUI
(FOR WORK WITHIN COUNTY RIGHT-OF-WAY ONLY)

CHIEF, HIGHWAYS DIVISION — DATE
DEPARTMENT OF TRANSPORTATION, STATE OF HAWAII
(APPROVAL GRANTED FOR WORK WITHIN STATE RIGHT-OF-WAY ONLY,
ID _-__-__, LETTER OF APPROVAL NO. HWY-T -_____, DATED __/__/__)

CHIEF, ENVIRONMENTAL MANAGEMENT DIVISION — DATE
STATE DEPARTMENT OF HEALTH

DEPARTMENT OF WATER SUPPLY — DATE
COUNTY OF MAUI

DWG. NO.
T001
SHEET 1 OF 146

FILE	POCKET	FOLDER	NO.

DRAWING INDEX

SHT NO.	DWG NO.	DESCRIPTION
CIVIL		
		GENERAL SHEETS
1	T001	TITLE SHEET, LOCATION AND VICINITY MAP
2	T002	DRAWING INDEX, ABBREVIATIONS, AND LEGEND
3	T003	NOTES 1
4	T004	NOTES 2
5	T006	GENERAL PLAN
6	T007	STANDARD DETAILS 1
7	T008	STANDARD DETAILS 2
8	T009	TYPICAL TRAFFIC CONTROL PLAN
		SITE 1
9	C100	GENERAL PLAN
10	C101	SITE AND UTILITY PLAN 1
11	C102	SITE AND UTILITY PLAN 2
12	C103	GRADING PLAN 1
13	C104	GRADING PLAN 2
14	C105	EROSION CONTROL PLAN
15	C106	WATER TANK ACCESS ROAD 1 PROFILE
16	C107	TYPICAL SECTIONS
17	C108	WL PROFILES
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18	C300	GENERAL PLAN
19	C301	EROSION CONTROL PLAN
20	C302	2 – 3.5 MG RESERVOIR SITE AND UTILITY PLAN
21	C303	PLAN AND PROFILE 0+00 TO 8+00
22	C304	PLAN AND PROFILE 0+800 TO 16+00
23	C305	PLAN AND PROFILE 16+00 TO 25+00
24	C306	PLAN AND PROFILE 25+00 TO 33+00
25	C307	PLAN AND PROFILE 33+00 TO 41+00
26	C308	PLAN AND PROFILE 41+00 TO 49+00
27	C309	PLAN AND PROFILE 49+00 TO 57+00
28	C310	PLAN AND PROFILE 57+00 TO 66+00
29	C311	PLAN AND PROFILE 66+00 TO 74+00
30	C312	PLAN AND PROFILE 74+00 TO 82+00
31	C313	PLAN AND PROFILE 82+00 TO 90+00
32	C314	PLAN AND PROFILE 90+00 TO 98+00
33	C315	PLAN AND PROFILE 98+00 TO 106+00
34	C316	PLAN AND PROFILE 106+00 TO 114+00
35	C317	PLAN AND PROFILE 114+00 TO 122+49
36	C318	KAULUWAI 1.0 MG RESERVOIR SITE AND UTILITY PLAN
37	C319	2 – 3.5 MG RESERVOIR SITE DETAILS
		SITE 4
38	C400	GENERAL PLAN
39	C401	EROSION CONTROL PLAN
40	C402	TYPICAL SECTIONS
41	C403	PLAN AND PROFILE 0+00 TO 10+00
42	C404	PLAN AND PROFILE 10+00 TO 20+00
43	C405	PLAN AND PROFILE 20+00 TO 30+00
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46	C408	PLAN AND PROFILE 45+00 TO END
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47	C500	GENERAL PLAN
48	C501	EROSION CONTROL PLAN
49	C502	PLAN AND PROFILE 0+00 TO 8+00
50	C503	PLAN AND PROFILE 8+00 TO 16+00
51	C504	PLAN AND PROFILE 16+00 TO 25+00
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55	C601	SITE AND UTILITY PLAN
56	C602	EROSION CONTROL PLAN
57	C603	TYPICAL SECTIONS AND DETAILS
58	C603	PLAN AND PROFILE 0+00 TO 8+00
59	C604	PLAN AND PROFILE 8+00 TO 16+00
60	C605	PLAN AND PROFILE 16+00 TO 24+00
61	C606	PLAN AND PROFILE 24+00 TO 32+00
62	C607	PLAN AND PROFILE 32+00 TO END
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63	C700	GENERAL PLAN
64	C701	MAINTENANCE BUILDING SITE PLAN
65	C702	EROSION CONTROL PLAN
66	C703	FARRINGTON AVE PRV REPLACEMENT SITE PLAN
67	C704	LAHI PALI AVE PRV REPLACMENT SITE PLAN
68	C705	ARV REPLACEMENT PLAN
69	C710	DETAILS 1
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71	T-101	PROJECT INFORMATION CODES AND CODE DIAGRAMS
72	T-102	PROJECT INFORMATION CODES AND CODE DIAGRAMS, SYMBOLS, ABBREVIATIONS AND NOTES
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76	A-201	ENLARGED PLAN, INTERIOR ELEVATIONS, SECTIONS
77	A-301	EXTERIOR ELEVATIONS
78	A-401	BUILDING SECTIONS
79	A-601	PARTITION TYPES, FIXTURE MOUNTING HEIGHTS, MISCELLANEOUS DETAILS
80	A-701	DOOR SCHEDULE, DOOR DETAILS, WINDOW SCHEDULE, WINDOW DETAILS, FINISH SCHEDULE AND LEGEND
81	A-702	COLOR AND MATERIAL FINISH SCHEDULE, ROOM FINISH SCHEDULE
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83	ST101	NOTES AND TYPICAL DETAILS
84	ST102	TYPICAL DETAILS
85	ST201	FLOOR AND ROOF PLANS
86	ST202	FOUNDATION PLANS
87	ST203	ROOF SLAB REINFORCING PLANS
88	ST301	SECTIONS AND DETAILS
89	ST302	CONCRETE ROOF BEAM DETAILS
90	ST401	SECTIONS AND DETAILS
91	ST402	DETAILS
92	ST403	DETAILS
		SITE 3
93	SW001	GENERAL NOTES AND TYPICAL DETAILS
94	SW201	RETAINING WALL PLAN AND TYPICAL DETAILS
95	SW202	RETAINING WALL PROFILE
96	SW301	RETAINING WALL SECTIONS
		SITE 4
97	SR001	GENERAL NOTES AND TYPICAL DETAILS
98	SR201	PLAN VIEW – GROUND LEVEL
99	SR202	PLAN VIEW – ROOF LEVEL
100	SR301	DETAILS
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101	SB001	GENERAL NOTES
102	SB101	TYPICAL DETAILS
103	SB201	FOUNDATION PLAN
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115	M-2	BOOSTER PUMP DEMOLITION AND REPLACEMENT ELEVATIONS
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117	M720	VENTILATION FLOOR PLANS
118	M730	MECHANICAL SECTIONS
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121	E-003	MISCELLANEOUS ELECTRICAL DETAILS I
122	E-004	MISCELLANEOUS ELECTRICAL DETAILS II
123	E-005	DUCT SECTION DETAILS AND REQUIREMENTS
124	E-101	SITE 1 ELECTRICAL PLAN
125	E-102	BOOSTER PUMP AND WELL PUMP NO. 2 ELECTRICAL PLAN
126	E-103	WELL PUMP NO. 1 ELECTRICAL PLAN
127	E-104	MCC AND STEP-UP TRANSFORMER ELECTRICAL PLAN
128	E-105	ABOVE GROUND STORAGE TANK, SERVICE SWITCHBOARD, AND GENERATOR ELECTRICAL PLAN
129	E-106	ONE-LINE DIAGRAM-DEMO
130	E-107	ONE-LINE DIAGRAM-NEW
131	E-108	ONE-LINE DIAGRAM SCHEDULE
132	E-109	MOTOR CONTROL CENTER DETAILS
133	E-110	SITE NO. 1 WELL PUMP CONTROL DIAGRAMS
134	E-111	SITE NO. 1 BOOSTER PUMP CONTROL DIAGRAMS
135	E-112	SITE NO. 1 RESERVOIR LEVEL VALVE CONTROLS
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137	E-001	GENERAL NOTES AND ELECTRICAL SYMBOLS
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140	E-004	DUCT SECTION DETAILS AND REQUIREMENTS
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142	E-102	VEHICLE/EQUIPMENT STORAGE ELECTRICAL PLAN
143	E-103	PIPE FITTING WORKSPACE ELECTRICAL PLAN
144	E-104	VEHICLE/EQUIPMENT STORAGE LIGHTING PLAN
145	E-105	PIPE FITTING WORKPLACE LIGHTING PLAN
146	E-106	ELECTRICAL EQUIPMENT ELEVATIONS AND ONE-LINE DIAGRAM

LEGEND

- PROPERTY LINE
- LOT LINE
- EASEMENT
- LIMITS OF GRADING
- O/H — EXISTING OVERHEAD ELECTRIC LINE
- W8 — EXISTING WATER LINE
- D18 — EXISTING DRAINLINE
- S6 — EXISTING SEWER LINE
- W8 — NEW WATER LINE
- D18 — NEW DRAIN LINE
- S6 — NEW SEWER LINE
- F — NEW FUEL LINE
- 90 — EXISTING CONTOUR
- 100 — PROPOSED CONTOUR
- EXISTING DRAINAGE FLOW
- PROPOSED TEMPORARY DRAINAGE FLOW
- GRADE ADJUSTMENT/RETAINING WALL
- CONCRETE PAVEMENT
- GRAVEL
- NEW STORM DRAIN INLET
- NEW CONCRETE BEAM
- CLOSED GATE VALVE
- OPEN GATE VALVE
- MANHOLE
- BACKFLOW PREVENTER ASSEMBLY
- 1/32 BEND
- 1/16 BEND
- 1/8 BEND
- 1/4 BEND
- TEE
- CROSS
- REDUCER
- FIRE HYDRANT
- PRESSURE REDUCING VALVE
- AIR RELIEF VALVE
- CONCRETE BLOCK
- SLEEVE
- CUT AND PLUG
- SEWER CLEANOUT
- CHAIN LINK/WIRE FENCE
- GUARD RAIL
- CATTLE GATE

ABBREVIATIONS

∠	ANGLE	MAX	MAXIMUM
A	AREA	MECH	MECHANICAL
AC	ASPHALT CONCRETE OR ACRE	MEP	MECHANICAL, ELECTRICAL AND PLUMBING
ACS	ACRES		
A/C	AIR CONDITIONING	MB	MAILBOX OR METER BOX
APPROX	APPROXIMATE	MH	MANHOLE
ARCH	ARCHITECTURAL	MIN	MINIMUM
ARV	AIR RELEASE VALVE	MON	MONUMENT
ATT	AT&T CABLE	M/N	METER NUMBER
AVE	AVENUE	NO.	NUMBER
℄	BASELINE	NON-POT	NON-POTABLE
BC	BOTTOM OF CURB	O.C.	ON CENTER
BFP	BACK FLOW PREVENTER ASSEMBLY	OH, O/H	OVERHEAD
BLDG	BUILDING	PAVT	PAVEMENT
BOT	BOTTOM	PC	POINT OF CURVATURE
BW	BOTTOM OF WALL	PCC	POINT OF COMPOUND CURVE
C&C	CITY AND COUNTY	PERF	PERFORATED
℄	CENTERLINE	PI	POINT OF INTERSECTION
C	CHORD	PIVC	POINT OF INTERSECTION ON VERTICAL CURVE
CATV	CABLE TELEVISION		
CB	CATCH BASIN	PL, ℄	PROPERTY LINE
CHWS	CHILL WATER SERVICE	PM	PARKING METER
CHWR	CHILL WATER RETURN	POC	POINT ON CURVE
CF	CURB FACE	POT	POTABLE
A.L.	CHAIN LINK	PP	POWER POLE
CMU	CONCRETE MASONRY UNIT	PRC	POINT OF REVERSE CURVE
CO	CLEAN OUT	PRV	PRESSURE REDUCING VALVE
COL	COLUMN	PSL	PEDESTRIAN SIGNAL LIGHT
COMM	COMMUNICATION	PT	POINT OF TANGENCY
CONC	CONCRETE	PVC	POLYVINYL CHLORIDE OR POINT OF VERTICAL CURVE
CONN	CONNECTION		
CRM	CONCRETE RUBBLE MASONRY	PVI	POINT OF VERTICAL INTERSECTION
CW	COLD WATER	PVT	POINT OF VERTICAL TANGENCY
COTG	CLEAN OUT TO GRADE	R	RADIUS
D	DIAMETER, DEPTH OR DRAIN	REF, REFL	REFLECTOR
DI	DRAIN INLET	ROW, R/W	RIGHT-OF-WAY
DIA, ø	DIAMETER	S	SEWER, SLOPE OR SPREAD
DCV	DETECTOR CHECK VALVE	SC	SIGNAL CORPS
DEFL	DEFLECTION	SCH 40	SCHEDULE 40
DET	DETAIL	SCH 80	SCHEDULE 80
DMH	DRAIN MANHOLE	SCMH	SIGNAL CORPS MANHOLE
D.P.P	DEPT OF PLANNING AND PERMITTING	SDMH	STORM DRAIN MANHOLE
DS	DOWNSPOUT	SF	SQUARE FOOT, SQUARE FEET
DSP	DRY STAND PIPE	SL	STREET LIGHT
DHHL	DEPARTMENT OF HAWAIIAN HOME LANDS	SLB	STREET LIGHT BOX
DWGS	DRAWINGS	SMH	SEWER MANHOLE
DWS	DEPARTMENT OF WATER SUPPLY	SPR	SPRINKLER
DWY	DRIVEWAY	ST	STREET
E,ELEC	ELECTRIC	STA	STATION
ELEV, EL	ELEVATION	STD	STANDARD
EG	EXISTING GROUND	STRUCT	STRUCTURAL
EOP	EDGE OF PAVEMENT	SW, S/W	SIDEWALK
EP	ELECTRICAL POLE	TC	TOP OF CURB
EX, EXIST, (E)	EXISTING	TDC	TOP OF DROPCURB
FA	FIRE ALARM	T	TANGENT OR TELEPHONE
FDC	FIRE DEPT CONNECTION	TEL	TELEPHONE
FG	FINISH GRADE	TG	TOP OF GRATE
FH	FIRE HYDRANT	THRU	THROUGH
FL	FLOW LINE	TMK	TAX MAP KEY
FM	FORCE MAIN	TP	TOP OF PIPE
FS	FINISH SURFACE	TRC	TOP OF ROLLED CURB
FT	FEET	TS	TOP OF STEM
G	GAS	TSL	TRAFFIC SIGNAL LIGHT
GB	GRADE BREAK	TSLB	TRAFFIC SIGNAL LIGHT BOX
GI	GRATED INLET	TV	TOP OF VALVE
GMH	GAS MANHOLE	TW	TOP OF WALL
GND	GROUND	TYP	TYPICAL
GP	GUARD POST/GUY POLE/GATE POST	UP	UTILITY POLE
GV	GATE VALVE	UP/SL	UTILITY POLE WITH STREET LIGHT
GW	GUY WIRE		
H, HT	HEIGHT	VAR	VARIES OR VARIABLE
HB	HOSE BIBB	VB	VALVE BOX
HECO	HAWAIIAN ELECTRIC COMPANY	W	WATER
HDPE	HIGH DENSITY POLYETHYLENE	WL	WATER LINE
HP	HIGH POINT	WM	WATER METER
HW	HOT WATER	WMB	WATER METER BOX
ICV	IRRIGATION CONTROL VALVE	WMH	WATER MANHOLE
INV	INVERT	WSE	WATER SERVICE ELEVATION
IRR	IRRIGATION	WV	WATER VALVE
JTS	JOINT TRUNKING SYSTEM	X-WALK	CROSSWALK
JKT	JACKET		
L	LENGTH OR LENGTH OF CURVE		
LID	LOW IMPACT DEVELOPMENT		
LP	LAMP OR LIGHT POLE		
LPT	LOW POINT		

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
T002
SHEET 2 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITES 1 AND 3-7 HOOLEHUA WATER SYSTEM
JOB NO.

DRAWING INDEX, ABBREVIATIONS, AND LEGEND

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.

GENERAL NOTES

1. LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE BASED ON AVAILABLE "AS-BUILT" OF RECORD CONSTRUCTION PLANS AND ARE APPROXIMATE ONLY AND THEIR ACCURACY IS NOT GUARANTEED.
2. EXISTING CONTOURS AND FEATURES ARE BASED ON "TOPOGRAPHIC SURVEY MAP MOLOKAI DHHL WATERLINE IMPROVEMENTS" PREPARED BY CONTROL POINT SURVEYING INC. DATED APRIL 12, 2017, AS AMENDED
3. ELEVATIONS SHOWN WERE ESTABLISHED ONSITE USING GPS OBSERVATIONS AND ARE BASED HORIZONTAL DATUM: NAD 83 HI ZONE 2 STATE PLANE COORDINATES, U.S. FEET.
4. EXISTING GRADES SHALL BE VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH GRADING WORK. SHOULD ANY DISCREPANCIES BE DISCOVERED IN THE EXISTING GRADES OR DIMENSIONS GIVEN ON THE PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER BEFORE PROCEEDING ANY FURTHER WITH THE WORK, OTHERWISE HE WILL BE HELD RESPONSIBLE FOR ANY COST INVOLVED IN THE CORRECTION OF CONSTRUCTION PLACED DUE TO SUCH DISCREPANCIES.
5. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF EXISTING UTILITIES WITHIN PROJECT LIMITS BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR DAMAGES DUE TO THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UNDERGROUND UTILITIES.
6. THE CONTRACTOR SHALL REPORT ANY INCONSISTENCIES WITH THE PROPOSED PLAN TO THE OWNER'S REPRESENTATIVE AND SHALL DEMOLISH, REMOVE, OR RELOCATE ALL EXISTING UTILITIES, IMPROVEMENTS, ETC. INCONSISTENT WITH THE PROPOSED PLAN AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND AT THE CONTRACTOR'S EXPENSE.
7. THE LATEST REVISIONS OF THE "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION," SEPTEMBER 1984 AND THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," 2005 SHALL BE INCLUDED AS PART OF THESE CONSTRUCTION PLANS. THE CONTRACTOR SHALL OBTAIN THE LATEST REVISIONS BEFORE COMMENCING CONSTRUCTION.
8. SHOULD HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS AND MOUNDS, OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF CHARCOAL OR SHELLS BE ENCOUNTERED DURING CONSTRUCTION WORK, WORK SHALL CEASE IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION (PH: 243-1285 OR 243-4640), WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND MITIGATION MEASURES, IF NECESSARY.
9. PURSUANT TO CHAPTER 6E OF THE HAWAII REVISED STATUTES, ALL CONTRACTORS SHALL ENSURE THAT IN THE EVENT THAT ANY HUMAN SKELETAL REMAINS ARE INADVERTENTLY DISCOVERED DURING CONSTRUCTION, THE REMAINS SHALL NOT BE MOVED AND ANY ACTIVITY IN THE IMMEDIATE AREA THAT COULD DAMAGE THE REMAINS OR THE POTENTIAL HISTORIC SITE SHALL CEASE AND THE DEPARTMENT OF LAND AND NATURAL RESOURCES' HISTORIC PRESERVATION DIVISION (PH: 243-1285 OR 243-4640), THE APPROPRIATE MEDICAL EXAMINER OR CORONER, AND THE POLICE DEPARTMENT (TELEPHONE: 244-6400), SHALL BE CONTACTED. ALL LESSEES USING EXISTING DIRT ROADS TO ACCESS THEIR PROPERTY SHALL CONTINUE TO BE PROVIDED ACCESS TO THEIR PROPERTY AT ALL TIMES DURING CONSTRUCTION ACTIVITIES BY THE CONTRACTOR.

DEPARTMENT OF PUBLIC WORKS NOTES

1. THE CONTRACTOR SHALL ALLOW FOUR WEEKS TO OBTAIN A GRADING PERMIT FROM THE DEVELOPMENT SERVICES ADMINISTRATION PRIOR TO COMMENCEMENT OF ANY CLEARING AND GRUBBING. A SATISFACTORY DRAINAGE AND EROSION CONTROL PLAN SHALL BE SUBMITTED IN THE EVENT THE GRUBBING AREA EXCEEDS ONE ACRE OR THE PROPOSED CUT OR FILL IS GREATER THAN 15 FEET IN HEIGHT. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL BEST MANAGEMENT PRACTICE MEASURES.
2. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, AND OTHER PROTECTIVE DEVICES FOR THE PROTECTION, SAFETY AND CONVENIENCE OF THE PUBLIC AND IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAY, 2003 EDITION WITH REVISION No. 1 INCORPORATED, DATED NOVEMBER 2004". THE CONTRACTOR SHALL PREPARE AND OBTAIN NECESSARY APPROVALS OF TRAFFIC CONTROL PLANS IF REQUIRED BY THE DEVELOPMENT SERVICES ADMINISTRATION.
3. STANDARD DETAIL DRAWINGS OF THE DEPARTMENT OF PUBLIC WORKS AND THE HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION (1994) SHALL BE INCLUDED AS PART OF THE CONSTRUCTION PLANS.
4. ALL CONSTRUCTION WORK SHALL STRICTLY CONFORM TO THE APPLICABLE SECTIONS OF THE 2005 HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND THE SEPTEMBER 1984 "STANDARD DETAILS" FOR PUBLIC WORKS CONSTRUCTION OF THE DEPARTMENT OF PUBLIC WORKS, AS AMENDED.
5. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH AND COUNTY GRADING ORDINANCE.
6. THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION ORDERED BY THE DIRECTOR OF PUBLIC WORKS SHALL BE PAID BY THE CONTRACTOR.

ARCHAEOLOGICAL NOTE

IN THE EVENT THAT ANY HISTORICAL RESOURCES, INCLUDING HUMAN SKELETAL REMAINS, STRUCTURAL REMAINS, CULTURAL DEPOSITS, OR LAVA TUBES ARE IDENTIFIED DURING CONSTRUCTION ACTIVITIES, CEASE WORK IN THE IMMEDIATE VICINITY OF THE FIND, PROTECT THE FIND FROM DISTURBANCE, AND CONTACT THE STATE HISTORIC PRESERVATION DIVISION AT (808) 243-1285.

PUBLIC HEALTH, SAFETY AND CONVENIENCE NOTES

1. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND COUNTY LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY.
2. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH. THE COUNTY MAY REQUIRE SUPPLEMENTARY MEASURES AS NECESSARY.
3. 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.

NOTES FOR CONSTRUCTION WITHIN STATE HIGHWAYS RIGHT-OF-WAY

1. THE CONTRACTOR SHALL OBTAIN A PERMIT TO PERFORM WORK UPON STATE HIGHWAYS FROM THE STATE HIGHWAYS' DISTRICT ENGINEER, AT 650 PALAPALA DRIVE, KAHULUI, MAUI, PRIOR TO COMMENCEMENT OF WORK WITHIN THE STATE'S HIGHWAY RIGHT-OF-WAY.
2. CONSTRUCTION AND RESTORATION OF ALL EXISTING HIGHWAY FACILITIES WITHIN THE STATE'S RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE CURRENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND THE SPECIFICATIONS FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS, OF THE STATE HIGHWAYS DIVISION.
3. WORK MAY BE PERFORMED ONLY BETWEEN THE HOURS OF 8:30 A.M. AND 3:00 P.M., MONDAY THROUGH FRIDAY, EXCEPT HOLIDAYS, UNLESS OTHERWISE PERMITTED BY THE DISTRICT ENGINEER.

   DURING WORK HOURS, ONLY ONE LANE OF TRAFFIC SHALL BE CLOSED, UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT ENGINEER. ALL LANE CLOSURES MUST BE APPROVED BY HDOT FIFTEEN (15) WORKING DAYS IN ADVANCE. ALL LANE CLOSURES AND DETOURS SHALL REQUIRE ADVISORY SIGNS AND AN ADVERTISEMENT PER SECTION 645.03 OF THE STANDARD SPECIFICATIONS.

   AT CERTAIN LOCATIONS, "NO LANE CLOSURE" WILL BE ALLOWED DURING THE "BACK TO SCHOOL JAM", THANKSGIVING WEEKEND, CHRISTMAS / NEW YEAR PERIOD AND AT OTHER TIMES AS DIRECTED BY THE HIGHWAYS DIVISION.
4. 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 PUBLIC TRAFFIC. ALL SUCH PROTECTIVE FACILITIES AND PRECAUTIONS TO BE TAKEN SHALL CONFORM WITH THE "ADMINISTRATIVE RULES OF HAWAII GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORKSITES ON OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS", ADOPTED BY THE DIRECTOR OF TRANSPORTATION, AND THE CURRENT U.S. FEDERAL HIGHWAYS ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, PART VI- STANDARDS AND GUIDES FOR TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY AND INCIDENT MANAGEMENT OPERATIONS". IF LANE CLOSURES ARE REQUIRED DURING CONSTRUCTION, A TRAFFIC CONTROL PLAN SHALL BE INCORPORATED INTO THE CONSTRUCTION PLANS AND MUST BE APPROVED BY THE DIVISION PRIOR TO THE ISSUANCE OF THE PERMIT.
5. THE MINIMUM PAVEMENT STRUCTURE SHALL CONSIST OF:
   A. RESIDENTIAL DRIVEWAYS, ON MINOR HIGHWAYS:
      (1) 2-1/2" HOT MIX ASPHALT (HMA) PAVEMENT (MIX IV), 8" AGGREGATE BASE COURSE OR 2-1/2" HMA PAVEMENT AND 8" HMA BASE COURSE OR HMA PAVEMENT.
      (2) 4" CLASS "A" CONCRETE REINFORCED WITH 6" x 6" - W2.9 x W2.9 WIRE MESH ON 12" AGGREGATE SUBBASE, IF DEEMED NECESSARY BY THE ENGINEER.
   B. COMMERCIAL DRIVEWAYS, SIDE ROADS, AND UTILITY INSTALLATIONS ON MINOR HIGHWAYS
      (1) 4" HMA PAVEMENT (MIX IV), 8" AGGREGATE BASE COURSE AND 12" SUBBASE, OR 4" HMA PAVEMENT (MIX IV) AND 8" HMA BASE COURSE OR HMA PAVEMENT.
      (2) 6" OF CLASS "A" CONCRETE REINFORCED WITH 6" x 6" - W2.9 x W2.9 WIRE MESH ON 12" AGGREGATE SUBBASE, IF DEEMED NECESSARY BY THE ENGINEER.
   C. CHANNELIZED INTERSECTIONS AND UTILITY INSTALLATIONS ON MAJOR HIGHWAYS

      4" HMA PAVEMENT (MIX IV), 8" HMA PAVEMENT BASE COURSE AND 12" AGGREGATE SUBBASE, OR 4" ASPHALT CONCRETE (MIX IV) AND 12" ASPHALT CONCRETE BASE COURSE OR ASPHALT CONCRETE, OR MATCH EXISTING PAVEMENT STRUCTURE, WHICHEVER IS GREATER.
6. NO MATERIAL AND/OR EQUIPMENT SHALL BE STOCKPILED OR OTHERWISE STORED WITHIN HIGHWAY RIGHT-OF-WAY EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE DISTRICT ENGINEER.
7. COMPACTION TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE SPECIFICATIONS FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS, AS FOLLOWS:
   A. SUBBASE: ONE (1) COMPACTION TEST PER LIFT PER 200 LINEAL FEET OF ROADWAY.
   B. BASE COURSE: ONE (1) COMPACTION TEST PER LIFT PER 200 LINEAL FEET PF ROADWAY.
   C. ONE (1) COMPACTION TEST PER LIFT PER 300 LINEAL FEET OF TRENCH.
   D. A COPY OF THE TEST RESULTS SHALL BE SUBMITTED TO THE DISTRICT ENGINEER.
8. PRIOR TO COMMENCING TRENCH EXCAVATION WORK, THE CONTRACTOR SHALL TAKE A PROFILE ALONG THE CENTERLINE OF PROPOSED UTILITY TRENCH. THIS INFORMATION SHALL BE USED IN THE VERIFICATION OF RESTORING THE ROADWAY TO ITS ORIGINAL CONDITION. A COPY OF THE THE PROFILE SHALL BE SUBMITTED TO THE DISTRICT ENGINEER.
9. THE CONTRACTOR SHALL PROVIDE ADEQUATE AND SAFE NON-SKID BRIDGING MATERIAL, INCLUDING SHORING, OVER TRENCHES IN PAVEMENT AREAS. THE BRIDGING SHALL BE ABLE TO SUPPORT ALL TYPES OF VEHICULAR TRAFFIC. BRIDGING MATERIALS SHALL NOT BE USED ON HIGH SPEED ROADWAYS, WHICH ARE ROADS WITH A DESIGN SPEED OF 50 MPH OR HIGHER. SMOOTH RIDING CONNECTION BETWEEN ROADWAY SURFACES AND BRIDGING MATERIAL SHALL BE PROVIDED. SHOULD COMPLAINTS BE RECEIVED DUE TO NOISE GENERATING FRO THIS WORK, THE CONTRACTOR SHALL IMMEDIATELY ADDRESS THOSE COMPLAINTS.
10. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE THE USE AND DURATION OF USE OF STEEL PLATES. THE STATE MAY REQUIRE THE BACKFILLING AND PATCHES OF TRENCHES DUE TO THE EXCESSIVE USAGE OF STEEL PLATES.
11. UNLESS OTHERWISE NOTED, NO TRENCH SHALL BE OPENED MORE THAN 300 FEET IN ADVANCE OF INSTALLED AND TESTED PIPELINE AND/OR DUCTLINE.
12. EXISTING DRAINAGE SYSTEMS SHALL BE FUNCTIONAL AT ALL TIMES.
13. THE CONTRACTOR SHALL EXERCISE CARE TO MINIMIZE DAMAGES TO EXISTING HIGHWAY IMPROVEMENTS. ALL DAMAGES SHALL BE REPAIRED BY THE CONTRACTOR, AT HIS EXPENSE, TO THE SATISFACTION OF THE DISTRICT ENGINEER.
14. APPROVAL OF PERMIT CONSTRUCTION PLANS SHALL BE VALID FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF NOTIFICATION OF APPROVAL TO THE APPLICANT. IN THE EVENT CONSTRUCTION DOES NOT COMMENCE WITHIN THIS ONE-YEAR PERIOD, THE APPLICANT WILL BE REQUIRED TO RESUBMIT THE CONSTRUCTION PLANS FOR DIVISION'S REVIEW AND REAPPROVAL.
15. ALL REGULATORY, GUIDE, AND CONSTRUCTION SIGNS AND BARRICADES SHALL HAVE A HIGH-INTENSITY REFLECTIVE BACKGROUND.
16. THE CONTRACTOR SHALL INFORM THE STATE HIGHWAYS' PERMIT OFFICE (PH: 873-3535) AT LEAST TWO (2) DAYS PRIOR TO CLOSING ANY LANES.
17. DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTIES USING THESE RIGHTS-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY.
18. WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN A SAFE AND PASSABLE CONDITION, OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGES BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED.
19. THE CONTRACTOR SHALL REFERENCE TO THE SATISFACTION OF THE DISTRICT ENGINEER, ALL EXISTING TRAFFIC SIGNS, POSTS, AND PAVEMENT MARKINGS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL REPLACE OR REPAIR ALL TRAFFIC SIGNS, POSTS, AND PAVEMENT MARKINGS DISTURBED BY HIS ACTIVITIES, AT HIS EXPENSE, UNLESS DIRECTED OTHERWISE BY THE DISTRICT ENGINEER OR HIS REPRESENTATIVE.
20. THE PERMIT TO PERFORM WORK UPON STATE HIGHWAY MAY BE REVOKED BECAUSE OF DEFAULT IN ANY OF THE FOLLOWING, BUT NOT LIMITED TO, CONDITIONS:
    a. WORK PERFORMED BEFORE OR AFTER PERMITTED HOURS.
    b. FAILURE TO MAINTAIN ROADWAY SURFACES IN A SMOOTH AND SAFE CONDITION.
    c. FAILURE TO CLEAN UP CONSTRUCTION DEBRIS GENERATED FROM PROJECT WORK.
    d. FAILURE TO PROVIDE PROPER TRAFFIC CONTROL.
    e. FAILURE TO REPLACE DAMAGED PAVEMENT MARKINGS AND SIGNS.
    f. FAILURE TO MAINTAIN HIGHWAY LIGHTS AND TRAFFIC SIGNAL SYSTEMS.
    g. FAILURE TO ADDRESS PUBLIC COMPLAINTS TO THE SATISFACTION OF THE DISTRICT ENGINEER.
21. THE CONTRACTOR SHALL NOTIFY THE STATE HIGHWAYS PERMIT OFFICE (873-3535) AT LEAST TWO WORKING DAYS PRIOR TO PERFORMING ANY TRENCH RESTORATION WORK. THIS WORK SHALL INCLUDE ANY BACKFILLING AND COMPACTING OF TRENCH MATERIAL; ANY PLACING AND COMPACTING OF BASE COURSE MATERIAL; AND ANY PAVING OPERATIONS. ANY TRENCH RESTORATION WORK PREFORMED BY THE CONTRACTOR THAT IS NOT WITNESSED BY A STATE REPRESENTATIVE WILL BE REQUIRES TO BE REMOVED AND RESTORED WITH A STATE REPRESENTATIVE PRESENT. ALL RESTORATION WORK WILL BE AT THE CONTRACTOR'S EXPENSE.
22. TEMPORARY COLD MIX TRENCH PATCHES WILL BE PERMITTED IN ANY GIVEN AREA FOR A MAXIMUM DURATION OF TWO WEEKS, AND SHALL BE A MINIMUM OF 2 INCHES THICK. ALL TEMPORARY PATCHES SHALL BE PLACED OVER PROPERLY PLACED AND COMPACTED BACKFILL AND BASE COURSE LAYERS. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY PATCHES AND TO MAKE REPAIRS TO UNSATISFACTORY PATCHES WITHIN 24 HOURS.
23. THE CONTRACTOR WILL MAKE EVERY EFFORT TO MINIMIZE THE USE AND THE DURATION OF USE OF STEEL PLATES. THE STATE MAY REQUIRE THE BACKFILLING AND PATCHES OF TRENCHES DUE TO THE EXCESSIVE USAGE OF STEEL PLATES.
24. PLASTIC MARKING TAPE. PROVIDE PLASTIC MARKING TAPE THAT IS ACID AND ALKALI RESISTANT POLYETHYLENE FILM 6 INCHES WIDE WITH MINIMUM THICKNESS OF 0.004 INCH. PROVIDE APE WITH MINIMUM STRENGTH OF 1750 PSI LENGTHWISE AND 1500 PSI CROSSWISE. MANUFACTURE TAPE WITH INTEGRAL WIRES, FOIL BACKING OR OTHER MEANS TO ENABLE DETECTION BY METAL DETECTOR WHEN THE TAPE IS BURIED UP TO 3 FEET DEEP. MANUFACTURE TAPE SPECIFICALLY FOR MARKING AND LOCATING UNDERGROUND UTILITIES. PROVIDE THE METALLIC CORE OF THE TAPE ENCSED IN A PROTECTIVE JACKET OR PROVIDED WITH OTHER MEANS TO PROTECT IT FROM CORROSION. CONFIRM TO THE FOLLOWING TAPE COLOR AND BEAR A CONTINUOUS PRINTED INSCRIPTION DESCRIBING THE SPECIFIC UTILITY.

RED:	ELECTRIC
YELLOW:	GAS, OIL, DANGEROUS MATERIALS
ORANGE:	TELEPHONE, TELEGRAPH, TELEVISION, POLICE, AND FIRE COMMUNICATIONS
BLUE:	WATER SYSTEMS
GREEN:	SEWER SYSTEM

28. THE CONTRACTOR SHALL PROVIDE THE DISTRICT ENGINEER WITH AS-BUILT PLANS UPON COMPLETION OF THE WORK DONE IN THE STATE RIGHT-OF-WAY. THIS SHALL BE DONE PRIOR TO THE DEPARTMENT'S RELEASE OF THE PERFORMANCE BOND.

MINIMUM BEST MANAGEMENT PRACTICES

1. DRAINAGE:
   HANDLE DRAINAGE TO CONTROL EROSION, PREVENT DAMAGE TO DOWNSTREAM PROPERTIES AND RETURN WATERS TO THE NATURAL DRAINAGE COURSE IN A MANNER WHICH MINIMIZES SEDIMENTATION OR OTHER POLLUTION TO THE MAXIMUM EXTENT PRACTICABLE.
2. DUST CONTROL:
   CONTROL DUST EMISSIONS TO THE MAXIMUM EXTENT PRACTICABLE THROUGH BMPS SUCH AS WATER SPRINKLING, DUST FENCES, LIMITING AREA OF DISTURBANCE AND TIMELY GRASSING OF FINISHED AREAS.
3. VEGETATION:
   RETAIN NATURAL VEGETATION, ESPECIALLY GRASSES, WHENEVER FEASIBLE. AVOID STORAGE OF GRUBBED MATERIAL NEAR WATER COURSES.
4. EROSION CONTROL:
   STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MEASURES SUCH AS VEGETATION, RUNOFF DIVERSION, CHECK DAMS, MULCHING, BLANKETS, BONDED FIBER MATRICES AND VEHICLE WHEEL WASH FACILITIES.
5. SEDIMENT CONTROL:
   CAPTURE SEDIMENT TRANSPORTED IN RUNOFF TO MINIMIZE THE SEDIMENT FROM LEAVING THE SITE WITH METHODS SUCH AS SEDIMENT BASINS, SEDIMENT TRAPS, SILT FENCES, SAND BAGS, AND VEGETATED FILTER STRIPS.
6. MATERIAL AND WASTE MANAGEMENT:
   PROPERLY STORE TOXIC MATERIALS AND PREVENT THE DISCHARGE OF POLLUTANTS ASSOCIATED WITH CONSTRUCTION MATERIALS.
7. TIMING OF CONTROL MEASURE IMPLEMENTATION:
   TIMING OF CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE APPROVED EROSION CONTROL PLAN. DISTURBED AREAS OF CONSTRUCTION SITES THAT WILL NOT BE RE-DISTURBED FOR TWENTY-ONE (21) DAYS OR MORE WILL BE STABILIZED (GRASSED OR GRAVELED) BY NO LATER THAN THE FOURTEENTH (14TH) DAY AFTER THE LAST DISTURBANCE.

GRADING NOTES

1. FINISH SPOT ELEVATIONS AND FINISH CONTOURS, AS SHOWN ON PLAN REPRESENTS FINISH GRADING. THE SITE WORK CONTRACTOR SHALL COORDINATE WITH THE GEOTECHNICAL ENGINEER THE LOCATION AND DEPTH OF TOPSOIL THE FINISH SUBGRADE SHALL REFLECT THE FINISH GRADE LESS SPECIFIED TOPSOIL DEPTH.
2. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN THE MEASURES OF THE BEST MANAGEMENT PRACTICE (BMP) PLAN. ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS CONTAINED IN THE PUBLIC HEALTH REGULATIONS, STATE DEPARTMENT OF HEALTH, ON WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS.
3. THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS, AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE STATE DEPARTMENT OF HEALTH SHALL BE PAYABLE BY THE CONTRACTOR.
4. THE CONTRACTOR, AT HIS EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE OF DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.
5. CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE SITE. THE CONTRACTOR SHALL INFORM THE ENGINEER OF THE LOCATION OF DISPOSAL SITES. THE DISPOSAL SITE MUST ALSO FULFILL REQUIREMENTS OF THE GRADING ORDINANCES.
6. THE CONTRACTOR SHALL NOT DEMOLISH OR CLEAR ANY STRUCTURE, SITE OR VACANT LOT WITHOUT FIRST ASCERTAINING THE PRESENCE OR ABSENCE OF RODENTS WHICH MAY ENDANGER THE PUBLIC HEALTH BY DISPERSAL FROM SUCH PREMISES. SHOULD SUCH INSPECTION REVEAL THE PRESENCE OF SUCH RODENTS, THE CONTRACTOR SHALL ERADICATE SUCH RODENTS BEFORE DEMOLISHING OR CLEARING SAID STRUCTURE, SITE OR VACANT LOT.
7. THE FOLLOWING MEASURES SHALL BE TAKEN TO CONTROL DUST AND EROSION DURING THE SITE DEVELOPMENT PERIOD:
   A. MINIMIZE TIME OF CONSTRUCTION.
   B. RETAIN EXISTING GROUND COVER UNTIL THE LATEST DATE TO COMPLETE CONSTRUCTION.
   C. CONSTRUCT REMAINING PERMANENT EROSION AND DRAINAGE CONTROL FEATURES AS EARLY AS POSSIBLE.
   D. USE TEMPORARY AREA SPRINKLERS IN NON-ACTIVE CONSTRUCTION AREAS WHEN GROUND COVER IS REMOVED.
   E. STATION WATER TRUCK ON-SITE DURING CONSTRUCTION PERIOD TO PROVIDE FOR IMMEDIATE SPRINKLING, AS NEEDED, IN ACTIVE CONSTRUCTION AREAS (WEEKENDS AND HOLIDAYS INCLUDED).
   F. USE TEMPORARY BERMS AND CUT-OFF DITCHES, WHERE NEEDED, FOR CONTROL OF EROSION. IMPLEMENT AND MAINTAIN THE MEASURES OF THE BMP PLAN.
   G. GRADED AREAS SHALL BE THOROUGHLY WATERED AFTER CONSTRUCTION ACTIVITY HAS CEASED FOR THE DAY AND ON WEEKENDS.
   H. ALL CUT AND FILL SLOPES SHALL BE SODDED OR PLANTED IMMEDIATELY AFTER GRADING WORK HAS BEEN COMPLETED.

COMPACTION REQUIREMENTS

1. TESTING OF MATERIALS SHALL BE CONDUCTED BY AN APPROVED INDEPENDENT TESTING AGENCY IN ACCORDANCE WITH ASTM STANDARD METHODS OR AS SPECIFIED BY THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION, AS FOLLOWS:
   A. EMBANKMENT/SELECT BORROW AND SUBGRADE MATERIALS: ONE (1) COMPACTION TEST PER 600 SQUARE YARDS PER LIFT;
   B. AGGREGATE SUBBASE COURSE: ONE (1) COMPACTION TEST PER 400 SQUARE YARDS; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER LIFT PER PROJECT;
   C. AGGREGATE BASE COURSE: ONE (1) COMPACTION TEST PER 300 SQUARE YARDS PER LIFT OF MATERIAL; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER PROJECT;
   D. ASPHALT CONCRETE PAVEMENT OR ASPHALT TREATED BASE COURSE; THREE (3) A.C. CORES FOR THICKNESS AND DENSITY TESTS PER PROJECT;
   E. TRENCH BACKFILL MATERIAL: ONE (1) TEST FOR EACH 300 LINEAL FEET OF TRENCH PER LIFT OF MATERIAL.
2. CONTRACTOR SHALL SUBMIT ALL TESTING REPORTS INCLUDING RESULTS TO THE COUNTY'S INSPECTION AGENCY FOR REVIEW AND APPROVAL PRIOR TO COUNTY'S ACCEPTANCE OF WORK.
3. THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE COUNTY OF ANY TESTING FAILURES AND CORRECT EACH FAILURE PRIOR TO PROCEEDING TO THE NEXT PHASE OF CONSTRUCTION.

EROSION CONTROL NOTES

1. DURING CONSTRUCTION, PREVENTIVE MEASURES SHALL BE USED TO CONTROL FORESEEABLE DUST, EROSION OR SEDIMENTATION PROBLEMS WHICH MAY ARISE AS WORK PROGRESSES.
2. FUGITIVE DUST AND SOLID WASTE DISPOSAL DURING GRUBBING AND GRADING ACTIVITIES SHALL MEET THE REQUIREMENTS OF STATE OF HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60, AIR POLLUTION CONTROL AND CHAPTER 56, SOLID WASTE MANAGEMENT CONTROL.
3. ALL AREAS WHICH ARE AT FINAL GRADE SHALL BE IMMEDIATELY HYDROMULCHED AND SEEDED WITH NATIVE AKIAKI GRASS AT A RATE OF 5 POUNDS PER 1000 SQUARE FEET OR PERMINENTLY LANDSCAPED.
4. REGRASS ALL EXPOSED AREAS.

   EFFECTIVE AUGUST 10, 1998, THE MAUI COUNTY CODE GRADING ORDINANCE HAS BEEN REVISED. ALL GROUND DISTURBING ACTIVITIES IN MAUI COUNTY WILL NOW BE MORE CLOSELY MONITORED. ALL GRADING, GRUBBING, STOCKPILING, EXCAVATIONS ETC., SHALL PROVIDE MEASURES TO THE MAXIMUM EXTENT POSSIBLE TO PREVENT DAMAGE TO THE ENVIRONMENT BY CONTAINING POLLUTANTS, INCLUDING SEDIMENT, DUST, AND OTHER CONTAMINANTS FROM DISCHARGING OFF A CONSTRUCTION SITE.

THEREFORE, CONTRACTOR SHALL CONTROL DUST AND OTHER SEDIMENT FROM THE PROJECT SITE, EVEN WHEN A GRADING PERMIT IS NOT REQUIRED.

A GRADING PERMIT WILL BE REQUIRED IF ANY OF THE FOLLOWING APPLY TO THE PROPOSED CONSTRUCTION:

A. THE GENERAL DRAINAGE PATTERNS ARE TO BE ALTERED.
B. THE EXCAVATION, FILL OR STOCKPILING IS MORE THAN 100 CY OF MATERIAL (50 CY IN SPECIAL MANAGEMENT AREA).
C. THE EXISTING GROUND ELEVATION IS TO BE CHANGED BY MORE THAN 4 FEET AT ANY LOCATION (2 FEET IN SPECIAL MANAGEMENT AREAS).
D. AN AREA LARGER THAN 1 ACRE IS TO BE GRUBBED (CLEARED).

A GRADING PERMIT WILL NOT BE REQUIRED FOR EXCAVATION AND BACKFILL FOR STRUCTURES THAT HAVE BEEN ISSUED A BUILDING PERMIT OR FOR CESSPOOLS AND SEPTIC TANKS AUTHORIZED BY THE STATE DEPARMENT OF HEALTH.

FOR MORE DETAILED INFORMATION, REFER TO THE MAUI COUNTY CODE CHAPTER 20.08, "SOIL EROSION AND SEDIMENT CONTROL".

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS FOR PERMIT PROJECTS WITHIN STATE HIGHWAY RIGHT-OF-WAY

1. THE CONTRACTOR SHALL OBTAIN AND COMPLY WITH THE "NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS FOR OAHU DISTRICT PERMIT PROJECTS". THIS IS AVAILABLE AT THE OAHU DISTRUCT OFFICE AT 727 KAKOI STREET (PH. 831-6793). DUE TO POTENTIAL COST IMPACTS, THE CONTRACTOR NEEDS TO BE AWARE OF THESE REQUIREMENTS.
2. THE CONTRACTOR SHALL COMPLETE AND SUBMIT A CONTRACTOR'S CERTIFICATION OF NPDES COMPLIANCE, INCLUDING COMPLETION OF THE BEST MANAGEMENT PRACTICE (BMP) CHECKLIST AND SUBMITTAL OF A WRITTEN BMP PLAN AND DRAWINGS, PRIOR TO ISSUANCE OF THE PERMIT TO PERFORM WORK UPON STATE HIGHWAYS. DUE TO POTENTIAL TIME IMPACTS ON REVIEWING BMPS, THE CONTRACTOR NEEDS TO ALLOW ENOUGH TIME FOR THE APPROVAL PROCESS.
3. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE HIGHWAYS DIVISION'S "CONSTRUCTION BEST MANAGEMENT PRACTICES FIELD MANUAL" IN DEVELOPING, INSTALLING AND MAINTAINING THE BEST MANAGEMENT PRACTICES (BMPS) FOR THE PROJECT.
4. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE CITY AND COUNTY OF HONOLULU'S "RULES FOR SOIL EROSION STANDARDS AND GUIDELINES" FOR THE PROJECT.

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITES 1 AND 3-7 HOOLEHUA WATER SYSTEM
JOB NO.

NOTES 1

DESIGNED BY: PLM
CHECKED BY: PTM
DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
T003
SHEET 3 OF 146

FILE	POCKET	FOLDER	NO.

WATER SYSTEM

1. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF WATER SUPPLY (DWS), IN WRITING, ONE (1) WEEK PRIOR TO COMMENCEMENT OF WORK.

2. ALL MATERIALS USED AND METHOD OF CONSTRUCTION OF WATER SYSTEM FACILITIES SHALL BE IN ACCORDANCE WITH THE LATEST REVISIONS OF DWS STANDARDS. CONTRACTOR SHALL OBTAIN THE LATEST REVISIONS OF THE DWS STANDARD DETAILS BEFORE COMMENCING CONSTRUCTION.

3. ALL WATER SYSTEM WORK SHALL BE PERFORMED BY CONTRACTORS POSSESSING VALID STATE OF HAWAII CONTRACTOR'S LICENSES, REGARDLESS OF THE VALUE OF THE WORK.

4. THE EXACT DEPTH AND LOCATION OF EXISTING WATERLINES, SERVICE LATERALS AND OTHER UTILITIES ARE NOT KNOWN. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE SAME PRIOR TO TRENCHING FOR THE NEW WATERLINE. THE COST OF LOWERING, RELOCATING OR ADJUSTING EXISTING WATERLINES, SERVICE LATERALS AND OTHER UTILITIES SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE NEW WATERLINE, UNLESS NOTED OTHERWISE, AND WILL NOT BE PAID FOR SEPARATELY.

5. CONCRETE FOR REACTION BLOCKS AND ANCHOR BLOCKS SHALL BE DWS CLASS 2500.

6. THE MAXIMUM DISTANCE BETWEEN VALVE NUT AND TOP OF VALVE MANHOLE COVER SHALL BE THREE (3) FEET.

7. THE CONTRACTOR SHALL SUBMIT A MATERIALS LIST TO DWS FOR APPROVAL PRIOR TO CONSTRUCTION.

8. CONNECTION TO DWS SYSTEM:

   A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL NECESSARY FITTINGS AND OTHER MATERIALS AND EQUIPMENT REQUIRED FOR THE HOOK-UP. HE SHALL VERIFY THE EXACT LOCATION, DEPTH, TYPE, AND CONDITION OF THE EXISTING LINE BEFORE ORDERING MATERIALS FOR THE HOOK-UP. HE SHALL, HOWEVER, CHECK WITH DWS BEFORE EXCAVATING FOR VERIFICATION PURPOSES.

   B. WHENEVER FEASIBLE, MECHANICAL JOINT FITTINGS SHALL BE USED FOR BURIED APPLICATIONS, AND FLANGED JOINT FITTINGS SHALL BE USED FOR EXPOSED APPLICATIONS.

   C. AUTHORIZED DWS PERSONNEL MAY BE REQUIRED TO MAKE THE FINAL CONNECTION TO THE EXISTING LINE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED BY DWS FOR SAID WORK, INCLUDING THE COST OF PRESSURE TESTING AND DISINFECTION.

   D. IF THE DWS PROVIDES ONLY INSPECTION AND SUPERVISING OPERATORS, AND DOES NOT PROVIDE PERSONNEL FOR THE ACTUAL CONNECTION, THE CONTRACTOR SHALL PROVIDE ALL PIPEFITTERS AND LABORS TO MAKE THE CONNECTION.

   E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIAL, EQUIPMENT AND LABOR FOR TRENCH EXCAVATION, BACKFILLING, CLEANING AND CHLORINATION, PAVING, AND OTHER WORK NECESSARY TO COMPLETE THE HOOK-UP, AS DIRECTED BY AND TO THE SATISFACTION OF DWS.

9. MINIMUM COVER OVER WATER MAIN, 6" DIAMETER OR LARGER, SHALL BE 3'-0". MINIMUM COVER FOR 4" DIAMETER SHALL BE 2'-6". MINIMUM COVER FOR DIAMETERS LESS THAN 4" SHALL BE 1'-6".

10. BOLTS FOR EXPOSED FLANGED DUCTILE IRON PIPE JOINTS SHALL BE EITHER SILICON BRONZE BOLTS AND NUTS OR 316 STAINLESS STEEL BOLTING WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SEIZE SHALL NOT BE USED. T-BOLTS FOR DUCTILE IRON MECHANICAL JOINT (MJ) PIPE AND FITTING CONNECTIONS IN UNDERGROUND SITUATIONS SHALL BE ONE OF THE FOLLOWING SYSTEMS:

    A. 316 STAINLESS STEEL T-BOLTS WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SEIZE SHALL NOT BE USED.

    B. COR-TEN T-BOLTS AND NUTS WITH HIGH GRADE ZINC SACRIFICIAL ANODES, EQUIVALENT TO "DURATRON" SACRIFICIAL "SAC-NUT" MODULES, INSTALLED ON THE NUTS FOR ALL STANDARD COR-TEN T-BOLTS.

    C. COR-TEN T-BOLTS AND NUTS BOTH FACTORY COATED WITH TRIPAC 2000 BLUE COATING SYSTEM BY "TRIPAC FASTENERS".

11. ALL BURIED METALS SHALL BE WRAPPED WITH POLY-WRAP. FOR ALL BURIED INSTALLATIONS OF DUCTILE IRON PIPE AND FITTINGS, POLY-WRAP IS REQUIRED EXCEPT WITHIN CONCRETE JACKETS.

12. LUBRICATE HYDRANT NOZZLE THREADS WITH NON-TOXIC GREASE.

13. THE CONTRACTOR SHALL PAINT AND NUMBER THE FIRE HYDRANT. NUMBERING TO BE FURNISHED BY DWS.

14. WATER MAINS AND APPURTENANCES SHALL BE SUBJECT TO HYDROSTATIC TESTING IN ACCORDANCE WITH THE LATEST REVISION OF AWWA C600, UNDER THE "HYDROSTATIC TESTING" SECTION, TO A PRESSURE OF AT LEAST 1.5 TIMES THE WORKING PRESSURE. UNLESS OTHERWISE STATED IN THE CONSTRUCTION DOCUMENTS OR LIMITED BY THE PRESSURE RATING OF EQUIPMENT, THE PRESSURE TEST AND LEAKAGE TEST SHALL BE PERFORMED AT 225 POUNDS PER SQUARE INCH PRESSURE.

15. THE DEVELOPER SHALL SUBMIT A COST LIST ALONG WITH AN AFFIDAVIT FOR THE WATER SYSTEM PRIOR TO ACCEPTANCE.

16. THE CONTRACTOR SHALL SUBMIT TWO SETS OF RECORD DRAWINGS VIA A CONSULTANT PRIOR TO ACCEPTANCE OF THE WATER SYSTEM. AN ELECTRONIC IMAGE FILE IN TIFF FORMAT SHALL BE PROVIDED TO THE DWS FOR ALL PROJECTS.

ADDITIONAL WATER SYSTEM NOTES

WATER SERVICE LATERAL CONNECTIONS:

1. THE CONTRACTOR SHALL FURNISH ALL MATERIAL, EQUIPMENT, AND LABOR FOR RE-CONNECTION OF CONSUMER'S PIPE TO NEW SERVICE LATERAL WITH COPPER PIPING AT THE CONTRACTOR'S EXPENSE. THE SIZE OF COPPER PIPE AND FITTINGS SHALL BE DETERMINED BY DWS OR AS SPECIFIED ON PLANS. THE USE OF PLASTIC MATERIALS IS PROHIBITED.

   A. ALL WATER METER INSTALLATIONS/RELOCATIONS SHALL BE COORDINATED WITH DWS PERSONNEL. ONLY DWS PERSONNEL IS AUTHORIZED TO REMOVE AND RELOCATE WATER METER.

   B. IF CONSUMER'S PIPE IS COPPER OR PVC, USE BRONZE PACK JOINT COUPLING. IF CONSUMER'S PIPE IS ANY OTHER MATERIAL, USE APPROPRIATE DI-ELECTRIC COUPLING.

   C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING WATER SERVICE TO CONSUMERS AT ALL TIMES. IF WATER SERVICE DISRUPTION IS NECESSARY, THE CONTRACTOR SHALL COORDINATE ALL DISRUPTIONS OF SERVICE WITH CONSUMERS.

2. THE CONTRACTOR SHALL FURNISH AND INSTALL DUCTILE IRON NIPPLES WHETHER OR NOT SPECIFIED ON THE CONSTRUCTION PLANS FOR COMPLETE INSTALLATION OF THE WATERLINE AT THE CONTRACTOR'S EXPENSE.

3. THE CONTRACTOR SHALL FURNISH TEMPORARY CLEANOUTS WHEN NECESSARY TO TEST, FLUSH, AND CHLORINATE THE WATERLINE AT THE CONTRACTOR'S EXPENSE.

4. THE CONTRACTOR SHALL CONCRETE PLUG ALL OPEN ENDS OF ABANDONED WATERLINES AT THE CONTRACTOR'S EXPENSE, WHETHER OR NOT SHOWN ON THE CONSTRUCTION PLANS.

5. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL PORTIONS OF ABANDONED WATERLINES THAT ARE EXPOSED OR WITHIN 12-INCHES OF THE GROUND SURFACE AT THE CONTRACTOR'S EXPENSE.

6. THE CONTRACTOR SHALL ADJUST TO FINISHED PAVEMENT GRADES, ALL EXISTING VALVE BOXES AND MANHOLES, INCLUDING FRAME AND COVERS FOR ALL UTILITIES (I.E., WATER, SEWER, DRAIN, ETC.) AFFECTED BY PAVEMENT RESTORATION AT THE CONTRACTOR'S EXPENSE, WHETHER SHOWN OR NOT SHOWN ON THE CONSTRUCTION PLANS.

7. THE CONTRACTOR SHALL RESTORE ALL ROAD IMPROVEMENTS, DISTURBED OR DAMAGED DURING CONSTRUCTION IN ACCORDANCE WITH THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION, 1994," AS AMENDED, TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS AND WASTE MANAGEMENT. ROAD IMPROVEMENTS INCLUDE, BUT ARE NOT LIMITED TO, PAVEMENT, PAVEMENT MARKERS, STRIPING, SPEED HUMPS.

8. THE CONTRACTOR SHALL MAINTAIN FOUR FEET OF CLEARANCE WHEN TRENCHING OR EXCAVATING NEAR ANY UTILITY POLES. CONSTRUCTION EQUIPMENT SHALL SHALL MAINTAIN A TEN FOOT RADIAL CLEARANCE AROUND ANY OVERHEAD CONDUCTOR.

9. THE CONTRACTOR SHALL ADEQUATELY BRACE UTILITY POLES DURING TRENCHING AND BACKFILLING OPERATIONS. AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED 72 HOURS IN ADVANCE OF WORK NEAR UTILITY POLES.

PUBLIC HEALTH, SAFETY AND ENVIRONMENTAL NOTES

1. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH, SAFETY AND ENVIRONMENTAL QUALITY.

2. 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.

3. 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 DEPARTMENT OF HEALTH. THE CITY SHALL REQUIRE SUPPLEMENTARY MEASURES AS REQUIRED.

4. 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 WELL AS CHAPTER 14 OF THE REVISED ORDINANCES OF HONOLULU 1990, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.

5. THE CONTRACTOR'S ATTENTION IS DIRECTED TO HAWAII ADMINISTRATIVE RULES, TITLE 11, 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 (586-4700).

CHLORINATION OF WATER SYSTEMS

1. WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD FOR DISINFECTING WATER MAINS, ANSI/AWWA C651-99, SECTION 4.4.3, CONTINUOUS FEED METHOD.

2. THE STORAGE TANK SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD FOR DISINFECTING WATER STORAGE FACILITIES, ANSI/AWWA C652-92, SECTION 4.1, CHLORINATION METHOD 1.

3. LIQUID CHLORINE OR CALCIUM HYPOCHLORITE THAT HAS BEEN TESTED AND CERTIFIED AS MEETING THE SPECIFICATIONS OF ANSI/NSF STANDARD 60, DRINKING WATER TREATMENT CHEMICALS-HEALTH EFFECTS, SHALL BE USED FOR THE CHLORINATION OF THE WATER MAINS AND STORAGE TANK.

4. PRIOR TO CHLORINATION, THE WATER MAINS AND STORAGE TANK SHALL BE THOROUGHLY FLUSHED.

5. THE INTERIOR SURFACES OF THE WATER MAINS AND STORAGE TANK SHALL BE EXPOSED TO THE CHLORINATING SOLUTION, BY COMPLETELY FILLING THE MAIN TO REMOVE ALL AIR POCKETS, FOR A MINIMUM OF 24 HOURS AND THE FREE CHLORINE RESIDUAL SHALL NOT BE LESS THAN 10 PPM AFTER SUCH TIME.

6. SHOULD CALCIUM HYPOCHLORITE BE USED, NO SOLID AND/OR UNDISSOLVED PORTION OF THE COMPOUND SHALL BE INTRODUCED INTO ANY SECTION OF THE WATER MAINS AND STORAGE TANK TO BE CHLORINATED.

7. AT THE END OF THE 24 HOUR DISINFECTION PERIOD, REPRESENTATIVE SAMPLES SHALL BE TAKEN AND ANALYZED TO ASSURE A FREE CHLORINE RESIDUAL OF AT LEAST 10 PPM.

8. SHOULD THE FREE CHLORINE RESIDUAL RESULTS INDICATE ADEQUATE CHLORINATION, THE WATER MAINS AND STORAGE TANK SHALL BE THOROUGHLY FLUSHED AND FILLED WITH WATER FROM THE EXISTING SYSTEM AND AGAIN TESTED FOR FREE CHLORINE RESIDUAL. THE FLUSHING SHALL BE CONSIDERED ADEQUATE IF THE FREE CHLORINE RESIDUAL TEST RESULTS INDICATE THAT THE WATER IN THE WATER MAINS AND STORAGE TANK HAS A COMPARABLE CHLORINE RESIDUAL AS THE WATER IN THE EXISTING SYSTEM.

1.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF CHLORINATED WATER TO SAFEGUARD PUBLIC HEALTH AND ENVIRONMENT IN ACCORDANCE WITH APPLICABLE STATE DEPARTMENT OF HEALTH REQUIREMENTS. A NEUTRALIZING CHEMICAL SHALL BE APPLIED TO THE WATER TO BE WASTED TO THOROUGHLY NEUTRALIZE THE CHLORINE RESIDUAL REMAINING IN THE WATER IN ACCORDANCE WITH AWWA C651-99, SECTION 4.5.2, AND APPENDIX C.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH, PRIOR TO THE START OF CONSTRUCTION FOR THE DISPOSAL OF WATER USED FOR HYDROTESTING AND CHLORINATION.

11. FOLLOWING THE ACCEPTABLE FLUSHING OF THE WATER MAINS AND STORAGE TANK, TWO CONSECUTIVE SETS OF ACCEPTABLE SAMPLES, TAKEN AT LEAST 24 HOURS APART FROM REPRESENTATIVE POINTS, SHALL BE SUBJECTED TO MICROBIOLOGICAL TESTS (TOTAL AND FECAL COLIFORM). FOR WATERLINES, AT LEAST ONE SET OF SAMPLES SHALL BE COLLECTED FROM EVERY 1,200 FEET OF THE NEW WATER MAIN, PLUS ONE FROM THE END OF THE LINE AND AT LEAST ONE SET FROM EACH BRANCH. FOR THE STORAGE TANK, THE SAMPLE SHALL BE COLLECTED FROM THE TANK'S EFFLUENT LINE SAMPLE TAP. POSITIVE OR INVALID TEST RESULTS WILL NOT BE ACCEPTABLE AND THE PROCESS WILL BE REPEATED.

12. ALL MEASUREMENTS FOR CHLORINE RESIDUAL SHALL BE ANALYZED USING E.P.A. APPROVED METHODS FOR DRINKING WATER.

13. ALL MICROBIOLOGICAL TEST SHALL BE PERFORMED BY A LABORATORY APPROVED BY THE DEPARTMENT OF HEALTH, STATE OF HAWAII.

14. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ALL OF THE FOREGOING.

15. SEE ANSI/AWWA C651-99, SECTION 4.3.6 FOR SWABBING CHLORINATION PROCEDURES.

1.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEMS (NPDES) AND OTHER AUTHORIZATIONS

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 OPERATION ARE REQUIRED TO COMPLY WITH STATE WATER QUALITY STANDARDS (HAWAII ADMINISTRATIVE RULES, CHAPTER 11- 54). BEST MANAGEMENT PRACTICES SHALL BE USED TO MINIMIZE OR PREVENT THE DISCHARGE OF SEDIMENT, DEBRIS, AND OTHER POLLUTANTS TO STATE WATERS. PERMIT COVERAGE IS AVAILABLE FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT: http://health.hawaii.gov/cwb/

THE GENERAL CONTRACTOR/DEVELOPER/OWNER IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL, STATE, OR LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

OTHER

1. ALL MATERIALS (PIPE, PIPE LUBRICANTS, PAINTS, SEALANTS, FORM OIL, CONCRETE ADMIXTURES, ETC.) IN DIRECT CONTACT WITH THE POTABLE WATER SHALL HAVE NATIONAL SANITATION FOUNDATIONS (NSF) APPROVALS. THE CONTRACTOR SHALL SUBMIT THESE APPROVALS TO THE OWNER/ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ITS APPLICATION.

WASTEWATER NOTES

1. ALL WASTEWATER LINES AND APPURTENANCES SHALL CONFORM TO THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, DATED SEPTEMBER 1984, OF THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF MAUI.

2. ALL SEWERLINE AND APPURTENANCES SHALL FOLLOW THE DESIGN STANDARDS OF THE WASTEWATER RECLAMATION DIVISION, CITY AND COUNTY OF HONOLULU, VOLUMES 1 & 2, DATED JULY 1993 AND JULY 1984 RESPECTIVELY, UNLESS OTHERWISE NOTED.

3. BEFORE CONSTRUCTION COMMENCES, THE CONTRACTOR SHALL SCHEDULE AND DOCUMENT A PRE-CONSTRUCTION MEETING WITH ALL AGENCIES HAVING UTILITIES AFFECTED BY THE WORK.

4. THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, WASTEWATER RECLAMATION DIVISION, HAS THE RIGHT TO STOP CONSTRUCTION, SHOULD ANY WORK BE FOUND CONTRARY TO THE APPROVED PLANS AND SPECIFICATIONS, OR DETRIMENTAL TO THE PUBLIC INTEREST.

5. ALL EXISTING WASTEWATER LINES, WHETHER OR NOT SHOWN ON THE PLANS, IF DAMAGED DURING CONSTRUCTION, SHALL BE REPAIRED BY THE CONTRACTOR AND THE CONTRACTOR SHALL PAY ALL EXPENSES.

6. THE CONTRACTOR SHALL NOTIFY THE WASTEWATER RECLAMATION DIVISION ONE (1) WEEK PRIOR TO CONNECTION TO ANY EXISTING WASTEWATER LINES.

7. SHOULD THE CONTRACTOR EXCAVATE BEYOND THE TRENCH PAY-WIDTH, AS SPECIFIED IN THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, DATED SEPTEMBER 1984, AND SUCH ACTION RESULTS IN A GREATER LOAD TO THE PIPE, THE CONTRACTOR SHALL PROVIDE, AT THE CONTRACTOR'S EXPENSE, A HIGHER CLASS OF BEDDING MATERIAL THAT WILL WITHSTAND THE ADDED LOAD.

8. WASTEWATER LATERALS SHALL BE SIX (6) INCHES IN DIAMETER AT A MINIMUM OF 2% SLOPE, UNLESS APPROVED OTHERWISE.

9. AN ADVANCE RISER CONNECTION SHALL BE INSTALLED AT EACH NEW WASTEWATER LATERAL.

10. WHERE THE CLEARANCE BETWEEN A WASTEWATER LINE AND A NEW OR EXISTING UTILITY LINE IS EIGHTEEN (18) INCHES OR LESS, THE WASTEWATER LINE SHALL BE CONCRETE JACKETED IN ACCORDANCE WITH THE STANDARD DETAILS OF PUBLIC WORKS CONSTRUCTION, DATED SEPTEMBER 1984.

11. WHEN THE WASTEWATER MAINS ARE OF A DIFFERENT MATERIAL THAN THE LATERALS, THE CONTRACTOR SHALL INSTALL APPROVED ADAPTERS.

12. ALL BACKFILL FOR WASTEWATER TRENCHES SHALL BE COMPACTED IN ONE (1) FOOT LIFTS TO A MINIMUM OF 95% OF ITS MAXIMUM DENSITY.

13. WHERE CONSTRUCTION IS TO BE DONE IN PHASES OR INCREMENTS, EACH PHASE OR INCREMENT SHALL BE APPROVED BY WASTEWATER RECLAMATION DIVISION BEFORE THE NEXT PHASE OR INCREMENT IS STARTED.

14. ALL WASTEWATER MAINS SHALL PASS A MANDREL TEST AS A CONDITION OF ACCEPTANCE 30 DAYS AFTER COMPLETION AND BACKFILL. THE MANDREL DIAMETER SHALL BE 95% OR MORE OF THE INSIDE DIAMETER OF THE PIPE BEING TESTED. A CERTIFICATION LETTER FROM THE CONTRACTOR, SIGNED BY THE DSA INSPECTOR, WILL BE FORWARDED TO THE WASTEWATER RECLAMATION DIVISION.

15. PRIOR TO INSPECTION BY CLOSED CIRCUIT TELEVISION (CCTV), ALL WASTEWATER LINES INSTALLED, INCLUDING LATERALS, SHALL BE FLUSHED WITH WATER AND ANY ACCUMULATED CONSTRUCTION DEBRIS AND OTHER FOREIGN MATERIALS SHALL BE REMOVED.

16. "AS-BUILT" DRAWINGS SHALL BE SUBMITTED AS A CONDITION FOR THE FINAL ACCEPTANCE OF THE PROJECT. IF MAIN TRANSMISSION LINES WILL BE DEDICATED TO THE COUNTY, THE CONTRACTOR SHALL ALSO SUBMIT GIS SHAPE FILE LAYER FILES (SHAPEFILE DATA IN NAD83 STATE PLANE ZONE 2 METERS) TO THE WASTEWATER RECLAMATION DIVISION.

17. ALL MAIN WASTEWATER LINES WHICH WILL BE DEDICATED TO THE COUNTY OF MAUI SHALL BE INSPECTED BY CCTV IN STRICT ACCORDANCE WITH DEPARTMENT OF PUBLIC WORKS CCTV POLICY, EFFECTIVE DATE JULY 15, 2001. FINAL ACCEPTANCE OF THE SYSTEM SHALL BE CONTINGENT UPON THE PASSING OF ALL REQUIREMENTS OF THIS POLICY. CCTV RESULTS SHOULD BE SUBMITTED ON DVD PER MEMO DATED OCTOBER 1,2006.

18. ANY CONNECTION MADE UNDER THE WATER TABLE WILL REQUIRE CCTV AT HIGH TIDE TO DETERMINE WATER TIGHTNESS, IN ACCORDANCE WITH DEPARTMENT OF PUBLIC WORKS CCTV POLICY, EFFECTIVE DATE JULY 15, 2001. FINAL ACCEPTANCE OF THE SYSTEM SHALL BE CONTINGENT UPON THE PASSING OF ALL REQUIREMENTS OF THIS POLICY.

19. CONTRACTOR MUST HAVE A SITE SPECIFIC SPILL PREVENTION PLAN (SSSPP) APPROVED BY WWRD PRIOR TO SEWER LINE CONSTRUCTION AND/OR SEWER LATERAL CONNECTION TO EXISTING FACILITIES, OR ANY WORK WITHIN FIVE (5) FEET OF WASTEWATER SYSTEM IMPROVEMENTS.

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
T004
SHEET 4 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITES 1 AND 3-7 HOOLEHUA WATER SYSTEM
JOB NO.

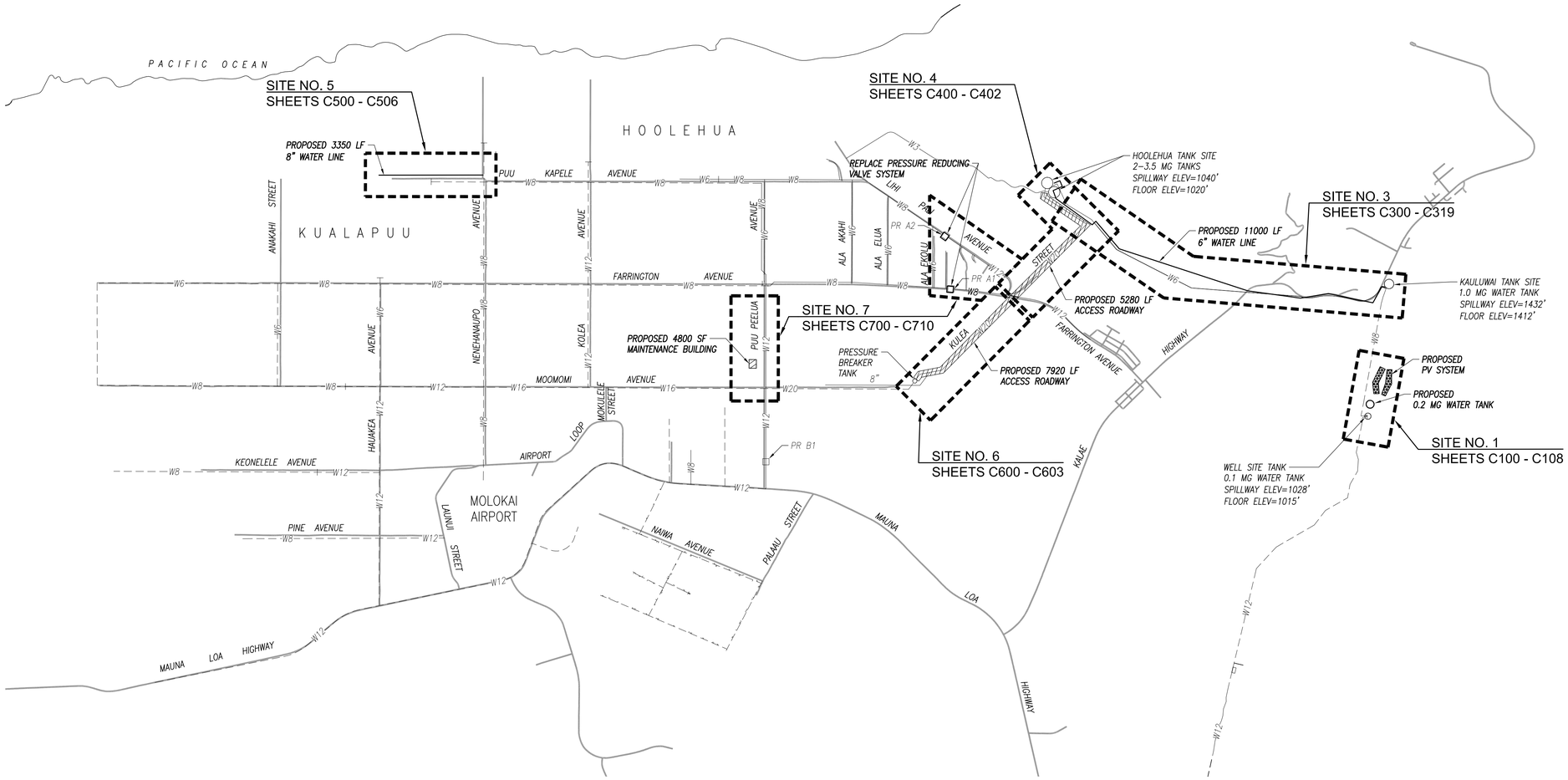
NOTES 2

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



GENERAL PLAN

2000 0 2000 4000

SCALE IN FEET

LEGEND

- W8 — EXISTING LOW PRESSURE WATER LINE
- W8 — EXISTING HIGH PRESSURE WATER LINE
- EXISTING ROAD
- PROJECT SITE

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITES 1 AND 3-7 HOOLEHUA WATER SYSTEM
JOB NO.

GENERAL PLAN
HOOLEHUA WATER SYSTEM

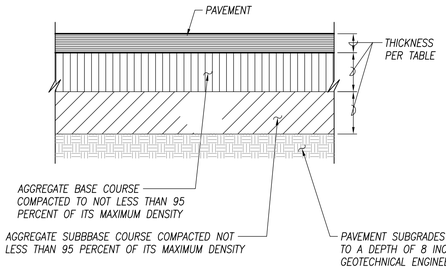
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
T005
SHEET 5 OF 146

FILE	POCKET	FOLDER	NO.



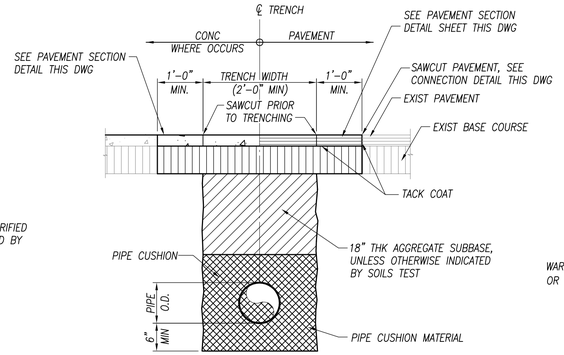
FLEXIBLE PAVEMENT

MATERIAL	ACCESS ROADS	WATER TANK PERIMETER ROADS	STATE HWYS
ASPHALT PAVEMENT	3"	2"	4"
AGGREGATE BASE COURSE	6"	6"	8"
AGGREGATE SUBBASE COURSE	12"	12"	12"

NOTES:

1. UNLESS SPECIFIED OTHERWISE, ALL CONSTRUCTION SHALL BE PURSUANT TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AS REVISED BY THE CITY AND COUNTY OF MAUI. SEE ENGINEERING AND POLICY MEMORANDUM NO. CEB-1-12, DATED OCTOBER 12, 2012, TITLED "AMENDING THE STANDARD SPECIFICATIONS ON ASPHALT TREATED BASE, ASPHALT SURFACE TREATMENT, AND ASPHALT CONCRETE PAVEMENT."
2. SEE PLAN FOR PAVEMENT TYPE LOCATIONS.

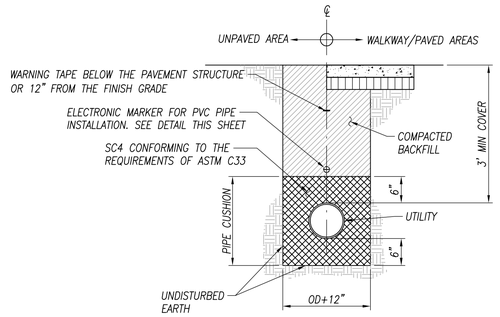
FLEXIBLE PAVEMENT SECTION
NOT TO SCALE



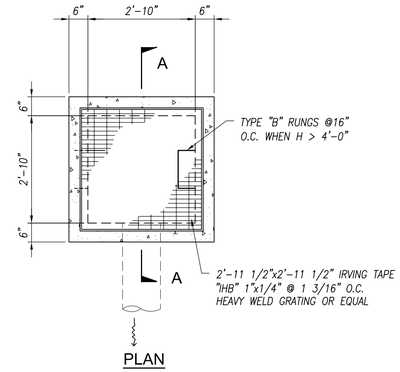
NOTES:

1. PAVEMENT STRUCTURES, INCLUDING A.C. PAVEMENT, CONCETE PAVEMENT, BASE COURSE AND SUBBASE, SHALL BE EQUAL TO OR BETTER IN THICKNESS AND QUALITY.
2. ROADWAY SHALL BE PAVED TO THE TRENCH WIDTH PLUS AN ADDITIONAL ONE FOOT ON EACH SIDE OF THE TRENCH.
3. THE ROADWAY SHALL BE PAVED AN ADDITIONAL TWO FEET IN LENGTH AT EACH END OF THE TRENCH.
4. ALL DISTURBED PAVEMENT MARKINGS SHALL BE REPLACED AND ALL REQUIRED UTILITY ADJUSTMENTS SUCH AS MANHOLE COVERS, ETC., SHALL BE DONE BY THE CONTRACTOR.

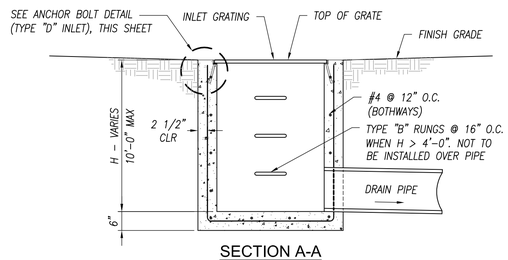
TYPICAL TRENCH RESTORATION
NOT TO SCALE



WATER TRENCH DETAIL
NOT TO SCALE

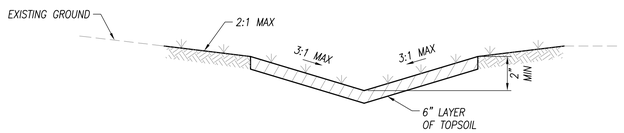


PLAN

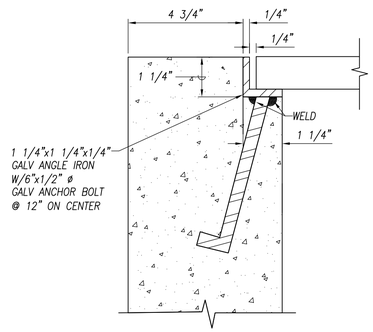


SECTION A-A

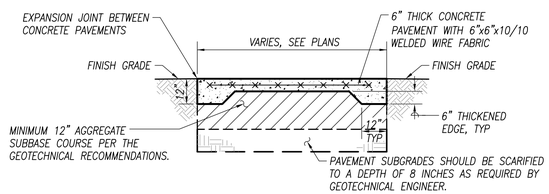
DRAIN INLET
NOT TO SCALE



VEGETATED SWALE (PRIVATE)
NOT TO SCALE

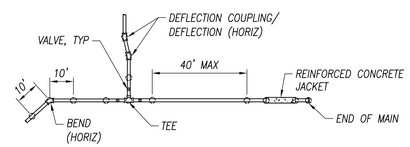


TYPE "D" INLET ANCHOR BOLT
NOT TO SCALE

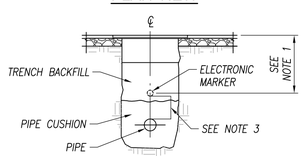


AC PAVEMENT CONNECTION
NOT TO SCALE

NOTE:
○ ELECTRONIC MARKER



PLAN VIEW



SECTION VIEW

NOTES:

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

ELECTRONIC MARKER INSTALLATION
NOT TO SCALE

NOTE:

1. ALL CONCRETE PAVEMENT (PRIVATE) SHALL BE CONSTRUCTED PURSUANT TO "SECTION 37 – PORTLAND CEMENT CONCRETE PAVEMENT" OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. THICKENED PAVEMENT EDGES SHALL BE PLACED ADJACENT TO UNPAVED AREAS AND SHOULD BE EMBEDDED AT LEAST 12 INCHES BELOW THE LOWEST ADJACENT GRADE.

VEHICULAR CONCRETE PAVEMENT
NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITES 1 AND 3-7 HOOLEHUA WATER SYSTEM
JOB NO.

STANDARD DETAILS 1

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
T006
SHEET 6 OF 146

FILE	POCKET	FOLDER	NO.

NATIONAL POLLUTANT DISCHARGE ELIMINATION AND BEST MANAGEMENT PRACTICE (BMP) NOTES:

1. PERIMETER RUNOFF CONTROL
   A. 12" ϕ FILTER SOCKS: CONTRACTOR TO INSTALL PERPENDICULAR TO THE DIRECTION OF FLOW AND ALONG THE DOWNHILL SIDE OF THE OPEN GRADING AREAS. LOCATION SHALL BE ADJUSTED DURING THE GRADING OPERATIONS. TEMPORARY SILT FENCE MAY BE USED IN LIEU OF FILTER SOCK AT CONTRACTOR'S DISCRETION.

2. STABILIZATION CONTROL
   A. TEMPORARY – ALL SLOPES AND EXPOSED AREAS SHALL BE IMMEDIATELY MULCHED OR PLANTED WHEN FINAL GRADES ARE ESTABLISHED OR WHEN GRADING WORK WILL BE DELAYED FOR MORE THAN TWO WEEKS AND BEFORE THE REMOVAL OF THE PROJECT'S TEMPORARY BMP.

   B. PERMANENT – ALL SLOPES AND EXPOSED AREAS SHALL BE LANDSCAPED WHEN FINAL GRADES ARE ESTABLISHED.

3. STABILIZED CONSTRUCTION ENTRANCE FOR INGRESS/EGRESS WITH AMOCO SERIES 2000 GEOTEXTILE FABRIC OR APPROVED EQUAL, 20' x 50' x 8" THICK, 1" TO 3" COARSE AGGREGATE OR LARGER (7" MAX.)

4. THE CONTRACTOR SHALL ENSURE THAT ALL TIRES OF CONSTRUCTION VEHICLES ARE SUFFICIENTLY CLEANED OFF SO THAT DIRT OR DEBRIS IS NOT TRACKED OFF THE CONSTRUCTION SITE. WASHING OFF TIRES WITH WATER WILL NOT BE ACCEPTABLE UNLESS RUNOFF IS CONTAINED AND DOES NOT ENTER THE STORM DRAIN SYSTEM OR ONTO THE PUBLIC RIGHT-OF-WAY.

5. TEMPORARY EROSION CONTROLS SHALL BE IN PLACE PRIOR TO ANY GRADING OR GRUBBING WORK.

6. MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES AS REQUIRED THROUGHOUT DURATION OF PROJECT.

7. BMP PROVIDED HEREIN ARE MINIMUM REQUIREMENTS. CONTRACTOR SHALL USE DISCRETION WHETHER ADDITIONAL BMP MEASURES ARE NECESSARY FOR CONTROLLING SEDIMENT RUNOFF FROM THE PROJECT SITE.

8. EROSION CONTROL MEASURES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

9. FILTER SOCKS, SILT FENCES, AND TEMPORARY CONSTRUCTION ENTRANCES WILL REMAIN IN-PLACE UNTIL PERMANENT BMP ARE INSTALLED. CONTRACTOR SHALL MAINTAIN ALL EXISTING BMP MEASURES AND ENSURE THAT IT REMAINS OPERABLE AT ALL TIMES.

10. THE FINAL LIFT OF EACH DAYS WORK SHALL BE COMPACTED TO PREVENT EROSION OF FILL MATERIAL.

11. THE CONTRACTOR SHALL HAVE A COPY OF CURRENT NPDES AND GRADING PERMIT(S) ON SITE AT ALL TIMES. THE CONTRACTOR SHALL ALSO PROVIDE A COMPLETED BMP CHECKLIST AT TIME OF OBTAINING THE GRADING PERMIT AND MAINTAIN AN UPDATED RECORD OF SITE INSPECTIONS ON SITE THROUGH THE USE OF BMP CHECKLISTS.

12. THE CONTRACTOR SHALL NOT PERFORM EARTHWORK DURING INCLEMENT WEATHER.

13. THE EXISTING PAVED ROADWAYS INCLUDING SIDEWALKS AND GUTTERS SHALL BE CLEANED ON A DAILY BASIS TO BE FREE OF DEBRIS AND SEDIMENT RESULTING FROM THE GRADING OPERATIONS. FLUSHING INTO THE DRAIN STRUCTURES IS PROHIBITED.

14. STOCKPILING CONSTRUCTION MATERIAL IN THE EXISTING ROAD RIGHT-OF-WAY AREA OR ADJACENT LOT(S) ARE PROHIBITED.

15. IF ANY EXPOSED GRADED AREAS THAT ARE NOT BEING WORKED ON OR WHOSE FINAL GRADES HAVE BEEN ESTABLISHED FOR MORE THAN 14 DAYS, THE CONTRACTOR SHALL MULCH THE AREA.

16. AT THE CONCLUSION OF GRADING OPERATIONS AND PRIOR TO PROJECT COMPLETION, ALL DRAINAGE STRUCTURES WITHIN LIMITS OF DISTURBED AREA SHALL BE INSPECTED AND CLEANED OF ACCUMULATED DEBRIS AND SEDIMENT. THE ACCUMULATED SEDIMENT AND DEBRIS SHALL BE REMOVED FROM THE CATCH BASINS (FLUSHING INTO DRAIN STRUCTURES IS PROHIBITED).

17. WASH WATER SHALL NOT DRAIN INTO EXISTING CATCH BASINS.

18. DURING CONSTRUCTION, INLET PROTECTION SHALL BE APPLIED TO ALL DRAIN INLET STRUCTURES IMMEDIATELY FOLLOWING INSTALLATION.

19. THE CONTRACTOR SHALL ADHERE TO ALL OTHER REQUIREMENTS AS DETAILED IN THE STORMWATER POLLUTION PLAN (SWPPP).

20. ALL OTHER REQUIREMENTS PER NPDES FILE NO. HI R10F358.FNL.17.

BEST MANAGEMENT PRACTICES (BMP) NOTES:

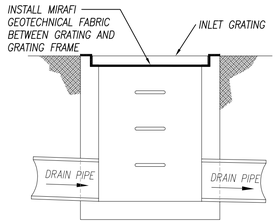
1. REFER TO NPDES AND BMP NOTES AND EROSION CONTROL DETAILS ON SHEET C302.
2. THE BMP FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS AND SHALL BE UPGRADED DURING THE CONSTRUCTION PERIOD AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN RUNOFF DOES NOT LEAVE THE WORK SITE.
3. ALL POINTS OF INGRESS AND EGRESS TO THE SITE SHALL BE PROTECTED WITH A STABILIZED CONSTRUCTION ENTRANCE.
4. PROVIDE INLET FILTER (TRUE DAM ® INLET PROTECTION OR APPROVED EQUAL) FOR ALL CATCH BASIN OPENINGS.
5. DUST CONTROL SHOULD BE APPLIED TO REDUCE DUST EMISSIONS. 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 HAWAII ADMINISTRATIVE RULES: CHAPTER 11-60, "AIR POLLUTION CONTROL".
6. SEDIMENT FENCES OR BARRIERS (FILTER SOCKS) SHALL BE USED DOWN SLOPE OF ALL DISTURBED AREAS AND ALONG THE PERIMETER OF THE PROJECT AREA.
7. ALL STORM DRAIN INLETS ON SITE AND THOSE OFFSITE WHICH MAY RECEIVE RUNOFF FOR THE SITE SHALL USE AN INLET PROTECTION DEVICE.
8. CONSTRUCTION VEHICLES AND/OR EQUIPMENT UTILIZED DURING THE GRADING WORK WILL BE KEPT ONSITE OR LOADED TO A TRAILER TO BE TRANSPORTED OFFSITE.

DUST CONTROL NOTE:

1. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE MEASURES IT WILL TAKE FOR THE CONTROL OF FUGITIVE DUST FROM THE WORK SITE. THE MEASURES MAY INCLUDE BUT NOT BE LIMITED TO THE INSTALLATION OF DUST SCREENS, WATERING OF THE SITE, FILL MATERIAL BEING PLACED, AND DELAYING WORK IN THE WEEK THAT PREVAILING WIND DIRECTION SHOULD SHIFT.

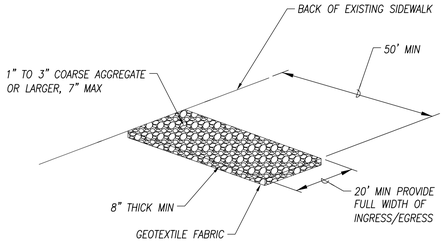
MAINTENANCE NOTE:

1. EROSION CONTROL MEASURES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.



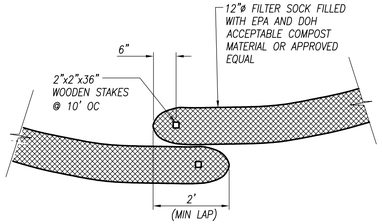
NOTE:
MIRAFI GEOTECHNICAL FABRIC SHALL BE INSTALLED UNDER ALL NEW PRIVATE DRAIN INLET GRATES WITHIN THE PROJECT SITE AND EXISTING DRAIN INLETS SURROUNDING THE PROJECT.

SEDIMENT CONTROL FILTER AT PRIVATE DRAIN INTLET DETAIL
NOT TO SCALE

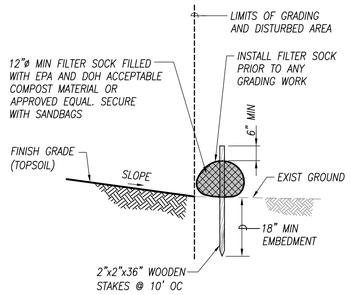


NOTE:
1. ANY SEDIMENT CARRIED FROM THE SITE ONTO THE STREET SHALL BE CLEANED UP IMMEDIATELY.

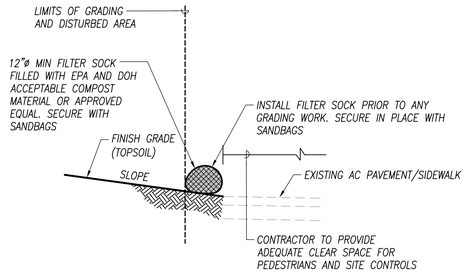
GRAVEL CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE



PLAN



TYPICAL SECTION



SECTION
(ALONG EXISTING SIDEWALK OR AC PAVEMENT)

NOTES:
1. WHEN JOINING TWO SECTIONS OF FILTER SOCK, A MINIMUM OF 2 FEET SHOULD BE MADE SO THAT FILTER SOCK SIT SIDE BY SIDE.
2. CONTRACTOR SHALL REMOVE ANY DEBRIS IN PATH OF FILTER SOCK TO ENSURE GOOD GROUND CONTACT.
3. COMPOST SHALL NOT CONTAIN BIOSOLIDS AND SHOULD BE CONSISTENT WITH EPA GUIDELINES.
4. SHOULD THE FILTER FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE FILTER SOCK STILL BE NECESSARY, THE FILTER SOCK SHALL BE REPLACED PROMPTLY.
5. CONTRACTOR SHALL USE 2"x2"x36 WOODEN STAKES WITH 18" MINIMUM EMBEDMENT AND 6" HEIGHT OVER TOP OF FILTER SOCK @ 10' O.C. IN LIEU OF SAND BAGS TO SECURE SOCKS WHEN INSTALLED ON DIRT OR EARTH.
6. CONTRACTOR TO PROVIDE 4' MINIMUM CLEARANCE AT ALL SIDEWALKS.

FILTER SOCK/FILTRATION TUBE DETAIL
NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
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HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK
JOB NO.

EROSION CONTROL DETAILS

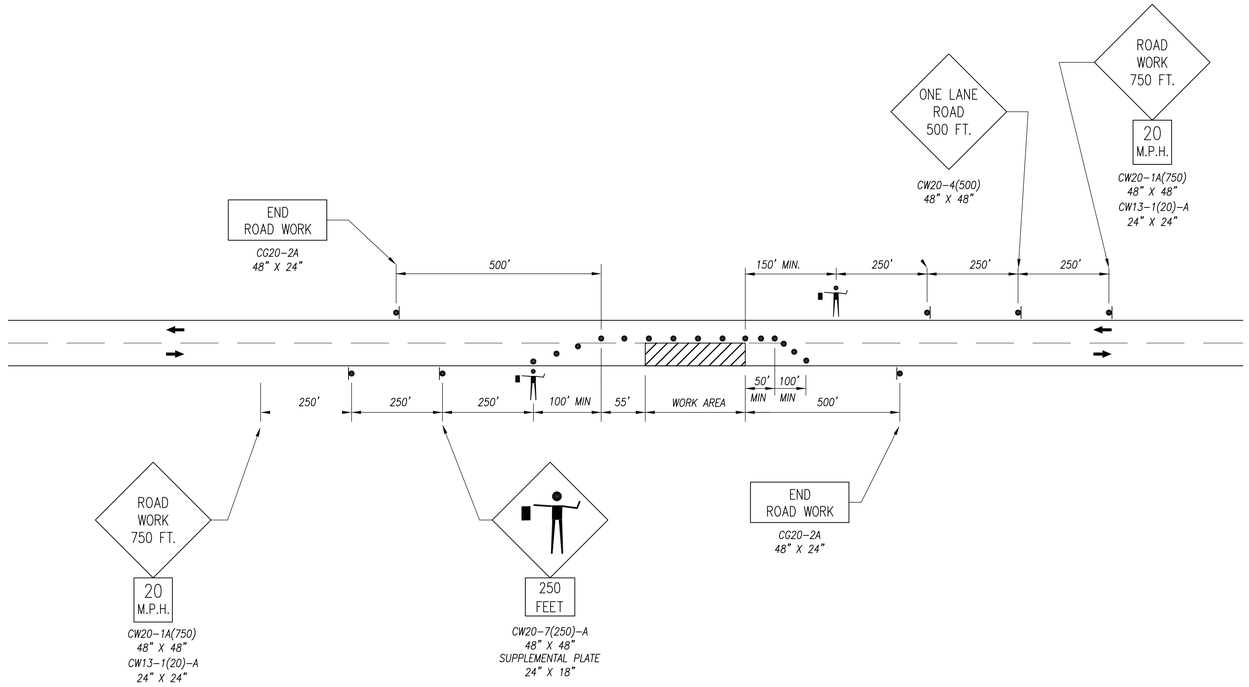
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

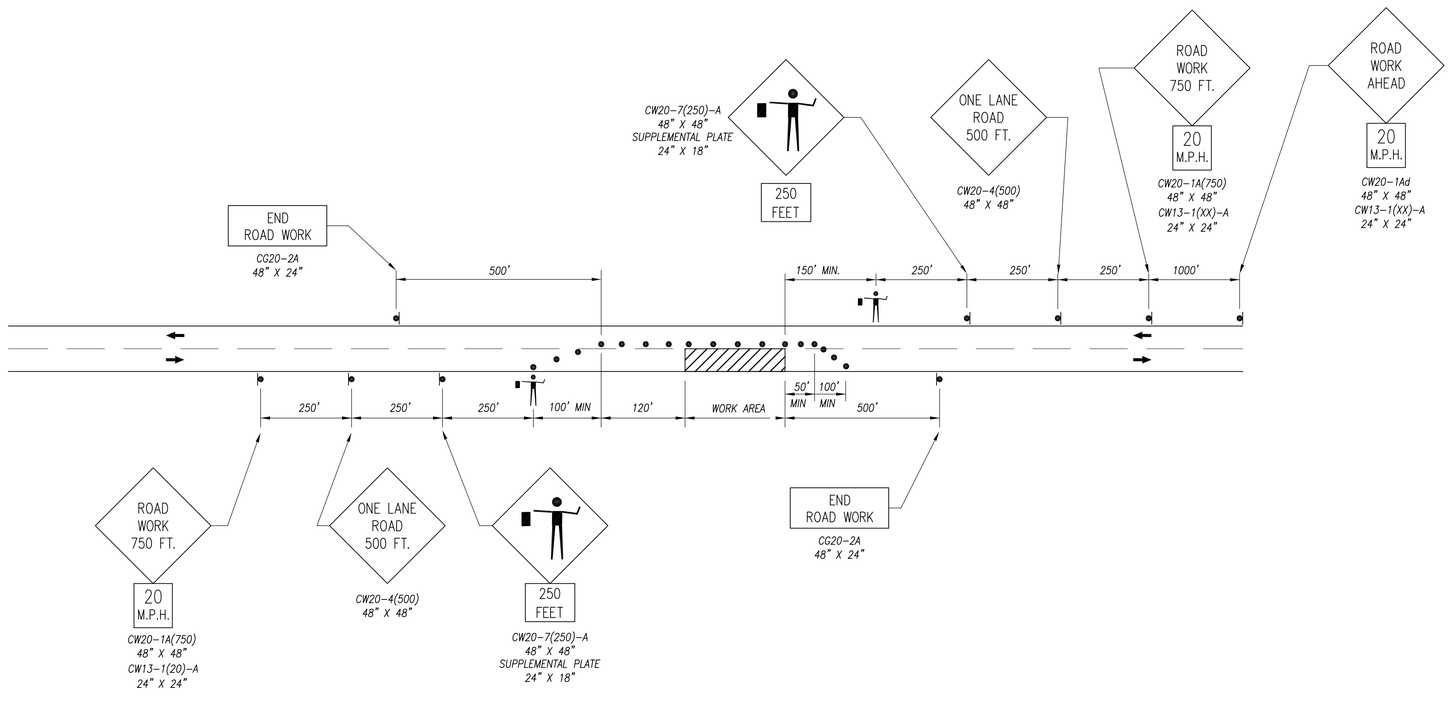
DWG. NO.
T007
SHEET 7 OF 146

FILE	POCKET	FOLDER	NO.



TYPICAL ONE LANE CLOSED FOR 25 MPH

NOT TO SCALE



TYPICAL ONE LANE CLOSED FOR 35 MPH

NOT TO SCALE

LEGEND

- SIGN
- CONE OR DELINEATOR
- DIRECTION OF TRAFFIC
- POLICE OFFICER/ FLAGMAN
- WORK AREA

TRAFFIC CONTROL PLAN NOTES:

1. CONES OR DELINEATORS SHALL BE INSTALLED AT 25' O.C. MAX ON TAPERS.
2. CONES OR DELINEATORS SHALL BE INSTALLED AT 10' O.C. MAX AT ALL OTHER LOCATIONS
3. THE PERMITEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
4. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA IS PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
5. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED.
6. FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
7. ALL TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE.
8. ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
9. THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRELUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E. WHEN SIGNS HAVE MESSAGES ON BOTH FACES).
10. LANE CLOSURE SHALL BE LIMITED TO THE EXTENT OF ACCOMPLISHING EACH DAY'S WORK. AS SOON A EACH DAY'S WORK IS COMPLETED. THE PERMITEE SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC. REMOVAL SHALL BE IN THE REVERSE ORDER OF INSTALLATION. EXISTING FADED OR OBLITERATED PAVEMENT MARKINGS THAT ARE NECESSARY FOR SAFE TRAFFIC FLOW IN THE CONSTRUCTION AREA SHALL BE REPLACED WITH TEMPORARY OR PERMANENT MARKINGS BEFORE OPENING THE ROADWAY TO PUBLIC TRAFFIC EACH DAY.
11. PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS SHALL BE REPLACED UPON COMPLETION OF EACH PHASE OF WORK.
12. DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THE RIGHT-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY. FURTHER, THE PERMITEE SHALL CONTROL TRAFFIC GOING IN AND OUT OF DRIVEWAYS.
13. BUFFER AND TAPER AREAS ON APPROACH TO ANY WORK AREA SHALL BE KEPT CLEAR OF VEHICLES AND EQUIPMENT.
14. "NO PARKING" SIGNS SHALL BE POSTED WITHIN ANY WORK AREA AND FOR THE BUFFER AND TAPER AREAS APPROACHING THE WORK AREA.
15. THE CONTRACTOR SHALL BE FULLY FAMILIAR WITH THE PROJECT SITE, SURROUNDING TRANSPORTATION SYSTEM, AND THE TRAFFIC CONTROL REQUIREMENTS THAT ARE NECESSARY TO CONSTRUCT THE PROJECT COMPLETE IN PLACE AND OPERATIONAL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT THE TRAFFIC CONTROL PLAN FOR THE PROTECTION OF ROAD USERS, WORKERS AND RESPONDERS THROUGH ANY AND ALL PORTIONS OF THE CONSTRUCTION OPERATIONS IN ACCORDANCE WITH THE MUTCD AND HAWAII ADMINISTRATIVE RULES. IN ADDITION, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THE CONTINUOUS AND EXPEDITIOUS OPERATION AND MAINTENANCE OF ALL CONSTRUCTION WARNING SIGNS. BARRICADES, LIGHTS, FLAGGERS, AND OTHER TRAFFIC CONTROL MEASURES AND/OR DEVICES REQUIRED BY THE TRAFFIC CONTROL PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUSLY REVIEWING AND MAINTAINING ALL TRAFFIC CONTROL MEASURES.

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7

JOB NO.

TRAFFIC CONTROL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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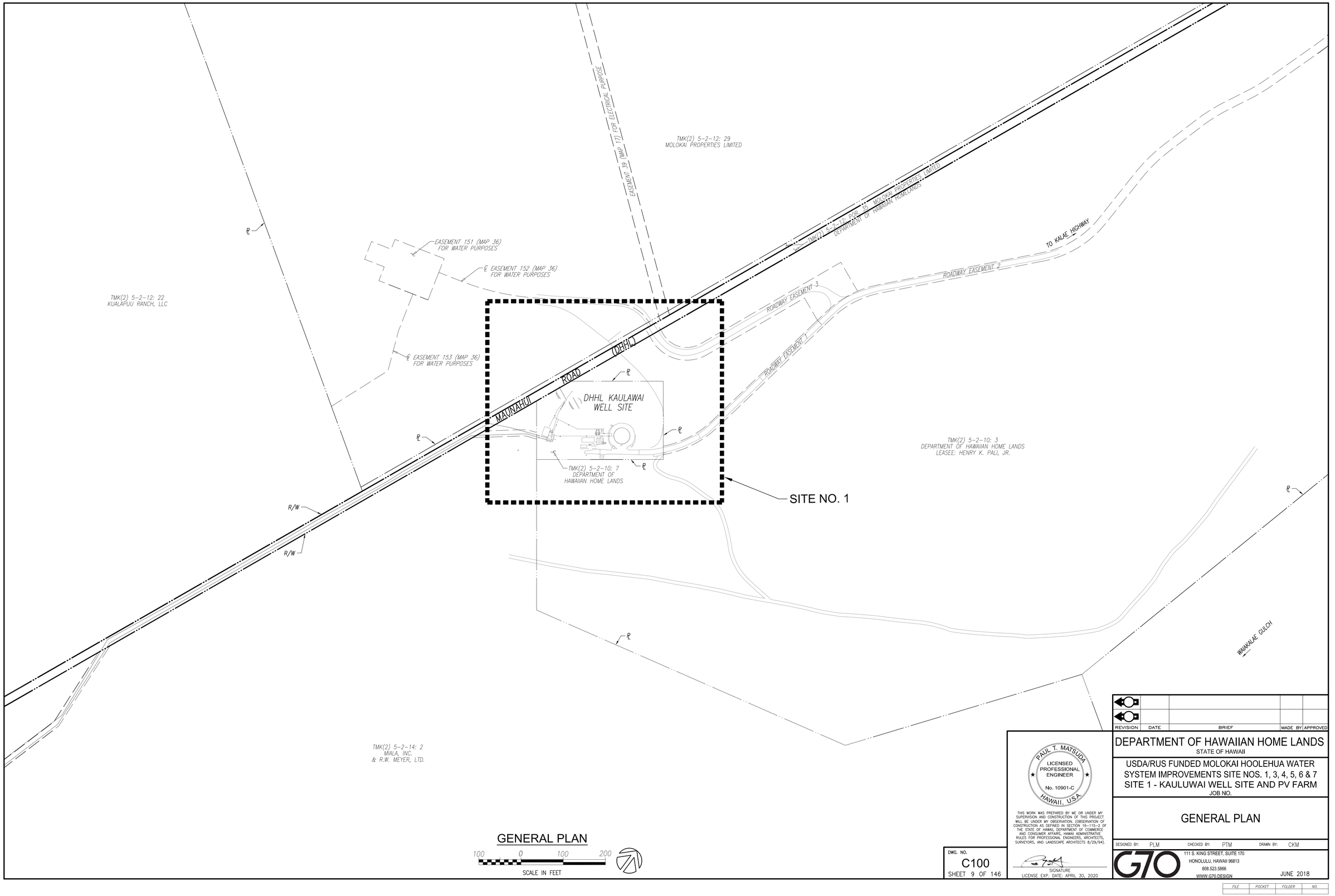
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

DWG. NO.
T008
SHEET 8 OF 146

FILE	POCKET	FOLDER	NO.



GENERAL PLAN

100 0 100 200

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C100
SHEET 9 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE AND PV FARM
JOB NO.

GENERAL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.

0+00 WL "B"
CONNECT TO EXIST 12" DI PIPE AND CUT AND PLUG EXISTING 12" EAST OF CONNECTION
1 – 12" TAPPING TEE
1 – 12" TAPPING VALVE
1 – 12" CAP
1 – 12" SLEEVE, 12" LONG
5 LF OF 12" PIPE
2 – CONCRETE BLOCKS W/ STRUCT STRUTS
TEMP FOR TESTING:
1 – 12" CAP TAPPED FOR 4" IPT
1 – 4" CLEANOUT
1 – CONCRETE BLOCK
CONTRACTOR TO VERIFY EXACT LOCATION AND INVERT IN FIELD PRIOR TO CONNECTION.
SEE SCHEMATIC CONNECTION DIAGRAM THIS DWG

EXISTING 12" WATER MAIN TO SITE 2 0.2 MG KALAMAULA TANK

EXISTING 8" WATER MAIN TO SITE 3 KAULUWAI 1.0 MG RESERVOIR

EXIST 100 HP DEEP WELL PUMP

CUT AND PLUG EXISTING 12" WATER LINE AT CONNECTION
REMOVE EXISTING 12" AFTER SERVICE HAS BEEN TRANSFERRED

EXIST 8" DI PIPE

NEW 1,000 GALLON DIESEL STORAGE TANK AND CONCRETE PAD
SEE MECH DWGS

NEW ABOVE GROUND DIESEL FUEL LINE
SEE MECHANICAL DWGS

EMERGENCY GENERATOR AND FUEL BASE
SEE MECHANICAL DWGS

0+06.50 WL "C"
REMOVE APPROX 11 LF EXISTING 6" DI PIPE
INSTALL:
1 – 6" 1/4 BEND
1 – 6" SLEEVE, 12" LONG
7 LF OF 6" PIPE
1 – CONCRETE BLOCKS W/ STRUCT STRUTS
TEMP FOR TESTING:
1 – 6" CAP TAPPED FOR 2 1/2" IPT
1 – 2" 1/2" CLEANOUT
1 – CONCRETE BLOCK
CONTRACTOR TO VERIFY EXACT LOCATION AND INVERT IN FIELD PRIOR TO CONNECTION
SEE SCHEMATIC CONNECTION DETAIL THIS DWG

REPLACE 2 EXIST 100 HP BOOSTER PUMP MOTORS IN PLACE
SEE MECHANICAL DWGS

0+00 WL "C"
CONNECT TO EXIST 12" DI PIPE
1 – 12"x6" TAPPING TEE
1 – 6" TAPPING VALVE
1 – 6" SLEEVE, 12" LONG
1 – CONCRETE BLOCK W/ STRUCT STRUCTS
CONTRACTOR TO VERIFY EXACT LOCATION AND INVERT IN FIELD PRIOR TO CONNECTION
SEE SCHEMATIC CONNECTION DETAIL THIS DWG

EXIST 12" DI PIPE

EXIST 200HP DEEP WELL PUMP

0+00 WL "A"
CONNECT TO EXIST 12" DI PIPE AT TANK
1 – 12" TAPPING TEE
1 – 12" TAPPING VALVE
1 – VALVE BOX
16 LF 12" PIPE
1 – 12" SLEEVE, 12" LONG
1 – CONCRETE BLOCK W/ STRUCT STRUTS
CONTRACTOR TO VERIFY EXACT LOCATION AND INVERT IN FIELD PRIOR TO CONNECTION
SEE SCHEMATIC CONNECTION DETAIL THIS DWG

CUT AND PLUG

ABANDON 16 LF EXISTING 6" DI PIPE

INSTALL NEW 12" INSERTION VALVE

TANK FF=1015 (REC.)
=1016.7 (TOPO)
TANK HT. = +16'
WATER LEVEL = +14.5'
(RECORD)

REMOVE EXIST TEE
CONNECT EXISTING 12" WL TO NEW 12" TEE AT 0+00 WL "A"
1 – 12" SLEEVE, 12" LONG
5 LF 12" PIPE

PROVIDE SMOOTH-RIDING CONNECTION TO EXISTING AC PAVEMENT
SEE DETAIL DWG T006

0+10 WL "A"
1 – 12" 1/16 BEND
1 – CONCRETE BLOCK

WL "A"
NEW 12" PIPE

0+36 WL "A"
1 – 12" 1/16 BEND
1 – CONCRETE BLOCK

0+42.52 WL "A"
=1+66.55 WL "B"
1 – 12" TEE
1 – 12" GATE VALVE
1 – VALVE BOXES
1 – CONCRETE BLOCK

NEW 12" DI PIPE

NEW ASPHALT PAVEMENT

2+20 WL "B"
1 – 12" 1/32 BEND
1 – CONCRETE BLOCK

2+54.60 WL "B"
CONNECT TO NEW 0.2 MG RESERVOIR
1 – 12" GATE VALVE
1 – VALVE BOX
INV=1011.1
SEE MECHANICAL AND STRUCTURAL DWGS

TANK FF=1016.7
(PROPOSED – MATCH EXIST. TANK)
TOP FTG=1016.0
EOP=1015.8
SEE STRUCTURAL DWGS

NEW CONCRETE DRIVEWAY
SEE DWG C102

0+14 WL "B"
1–12" 1/4 BEND
1–CONC BLK

STA 269
HUB
ELEV 1006.54

CONNECT NEW FENCE TO EXISTING CHAIN LINK FENCE

REMOVE 180 LF EXISTING CHAIN LINK FENCE AND GATE

NEW 6' CHAIN LINK FENCE
SEE STD DETAIL R-19

0+83 WL "B"
1 – 12" 1/32 BEND
1 – CONCRETE BLOCK

WL "B"
NEW 12" PIPE

EDGE OF PAVEMENT

NEW ASPHALT PAVEMENT

DEMOLISH EXISTING AC PAVEMENT AND INSTALL NEW ACCESS ROAD
SEE PAVEMENT SECTION DETAIL DWG T006

TEMP BENCHMARK
STA 268
"V" CUT
ELEV 1012.82

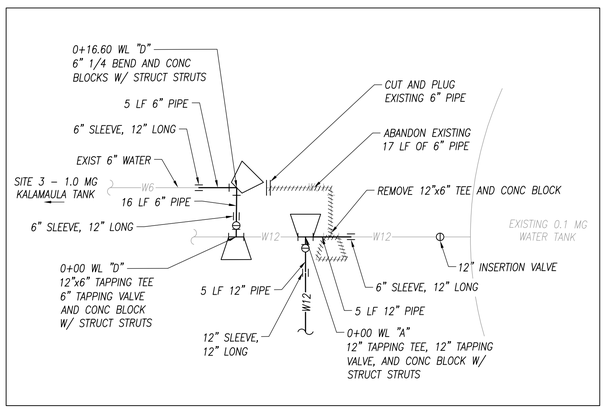
EXISTING STORAGE SHED TO REMAIN

PROPOSED EASEMENT FOR NEW WATER TANK
SEE DWG C102

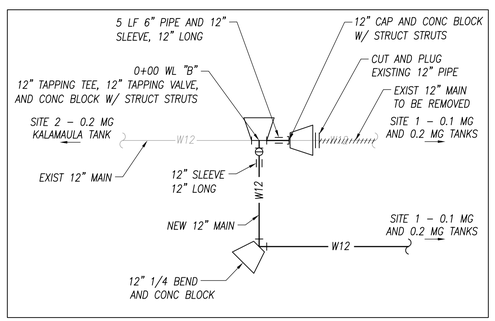
TMK(2) 5-2-14: 2
MIALA, INC.
& R.W. MEYER, LTD.

TMK(2) 5-2-10: 7
DEPARTMENT OF HAWAIIAN HOME LANDS

TMK(2) 5-2-10: 3
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: HENRY K. PALI, JR.



CONNECTIONS 0+00 WL "A" AND 0+00 WL "C"
NOT TO SCALE



CONNECTION 0+00 WL "B"
NOT TO SCALE

SITE AND UTILITY PLAN 1
10 5 0 10 20
SCALE IN FEET

DWG. NO.
C101
SHEET 10 OF 146

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION, (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
JOB NO.

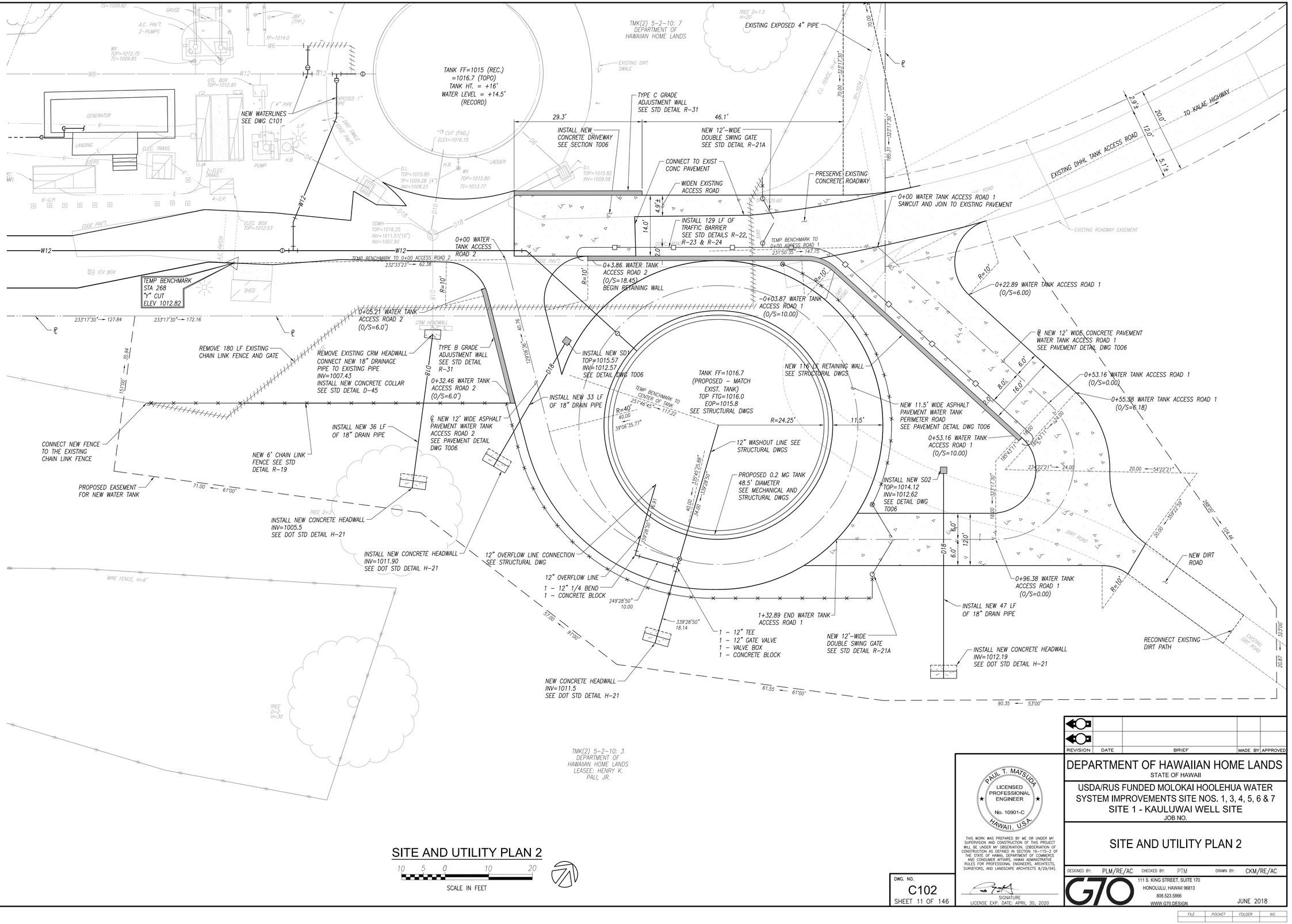
SITE AND UTILITY PLAN 1

DESIGNED BY: PLM/RE/AC CHECKED BY: PTM DRAWN BY: CKM/RE/AC

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



SITE AND UTILITY PLAN 2

10 5 0 10 20

SCALE IN FEET

DWG. NO.
C102
SHEET 11 OF 146

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
JOB NO.

SITE AND UTILITY PLAN 2

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM/RE/AC CHECKED BY: PTM DRAWN BY: CKM/RE/AC

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
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JUNE 2018

FILE	POCKET	FOLDER	NO.

INSTALL NEW WATERLINE "C" SEE DWG C101

INSTALL NEW WATERLINE "A" SEE DWG C101

EXISTING KAULUWAI 0.1 MG TANK
FF=1015 (REC.)
=1016.7 (TOPO)
TANK HT. = +16'
WATER LEVEL = +14.5'
(RECORD)

EXISTING DRAIN INLET
TOP=1015.82
INV=1009.58

LIMIT OF GRADING

PROPOSED EASEMENT FOR NEW WATER TANK SEE DWG C102

TANK FF=1016.7
(PROPOSED – MATCH EXIST. TANK)
TOP FTG=1016.0
EOP=1015.8

SITE 1 EARTHWORK SUMMARY

* AREA OF DISTURBANCE	18,317 SQ FT (0.42 ACRES)
WATER TANK FOOT PRINT AREA	2,165 SQ FT (0.05 ACRES)
GRADED AREA	18,317 SQ FT (0.42 ACRES)

* INCLUDING, BUT NOT LIMITED TO, EXCAVATION, GRADING, EQUIPMENT STAGING AND STORAGE AREAS, AS DEFINED BY THE STATE OF HAWAII, DEPARTMENT OF HEALTH CLEAN WATER BRANCH GUIDELINES FOR NOTICE OF INTENT, FORM G.

EXCAVATION = 1,080 CY
EMBANKMENT = 330 CY

GRADING PLAN 1

10 5 0 10 20
SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

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STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
JOB NO.

GRADING PLAN 1

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

PAUL T. MATSUDA
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SIGNATURE
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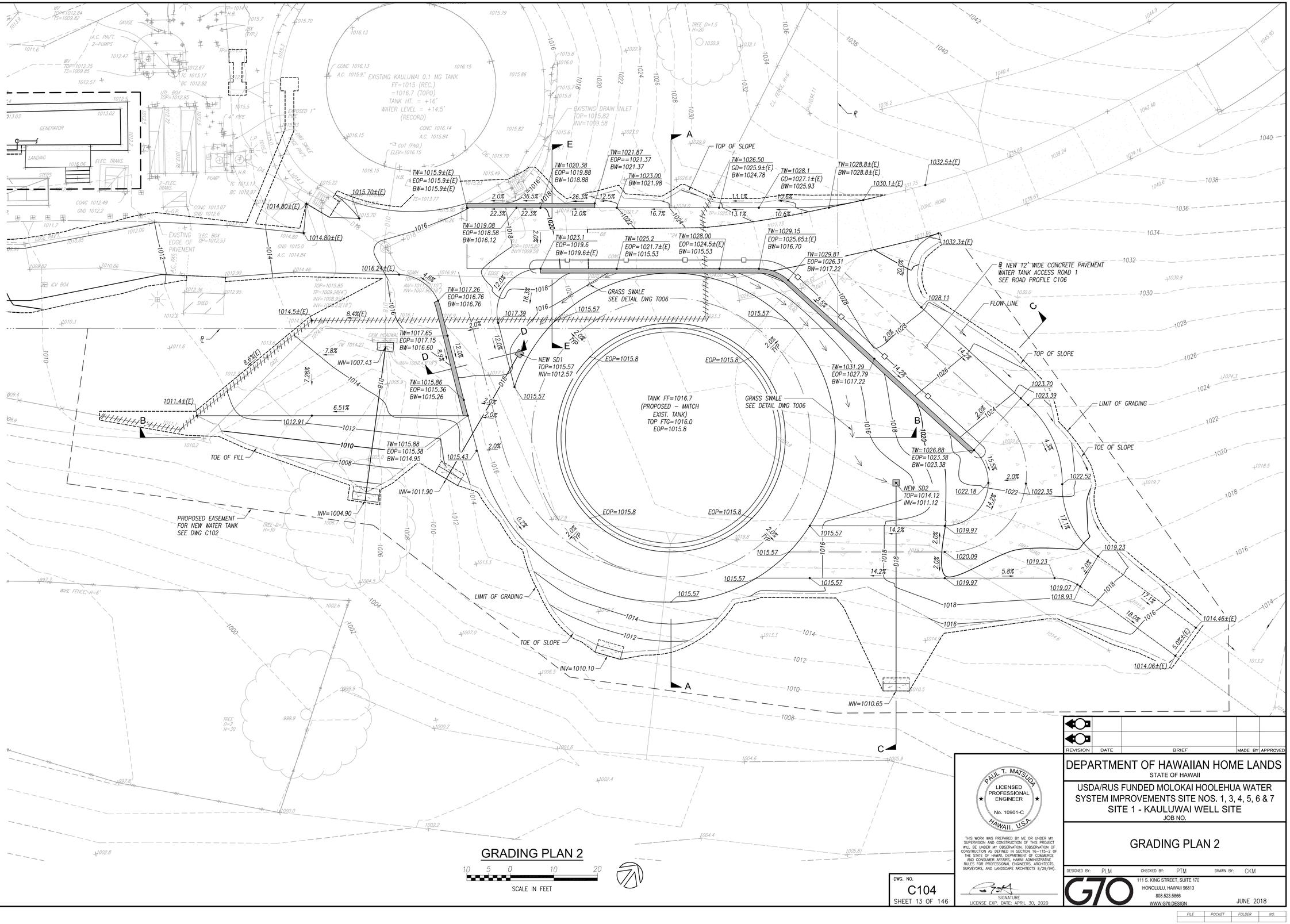
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C103
SHEET 12 OF 146

FILE	POCKET	FOLDER	NO.



GRADING PLAN 2

10 5 0 10 20

SCALE IN FEET

DWG. NO.
C104
SHEET 13 OF 146

REVISION	DATE	BRIEF	MADE BY	APPROVED

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
JOB NO.

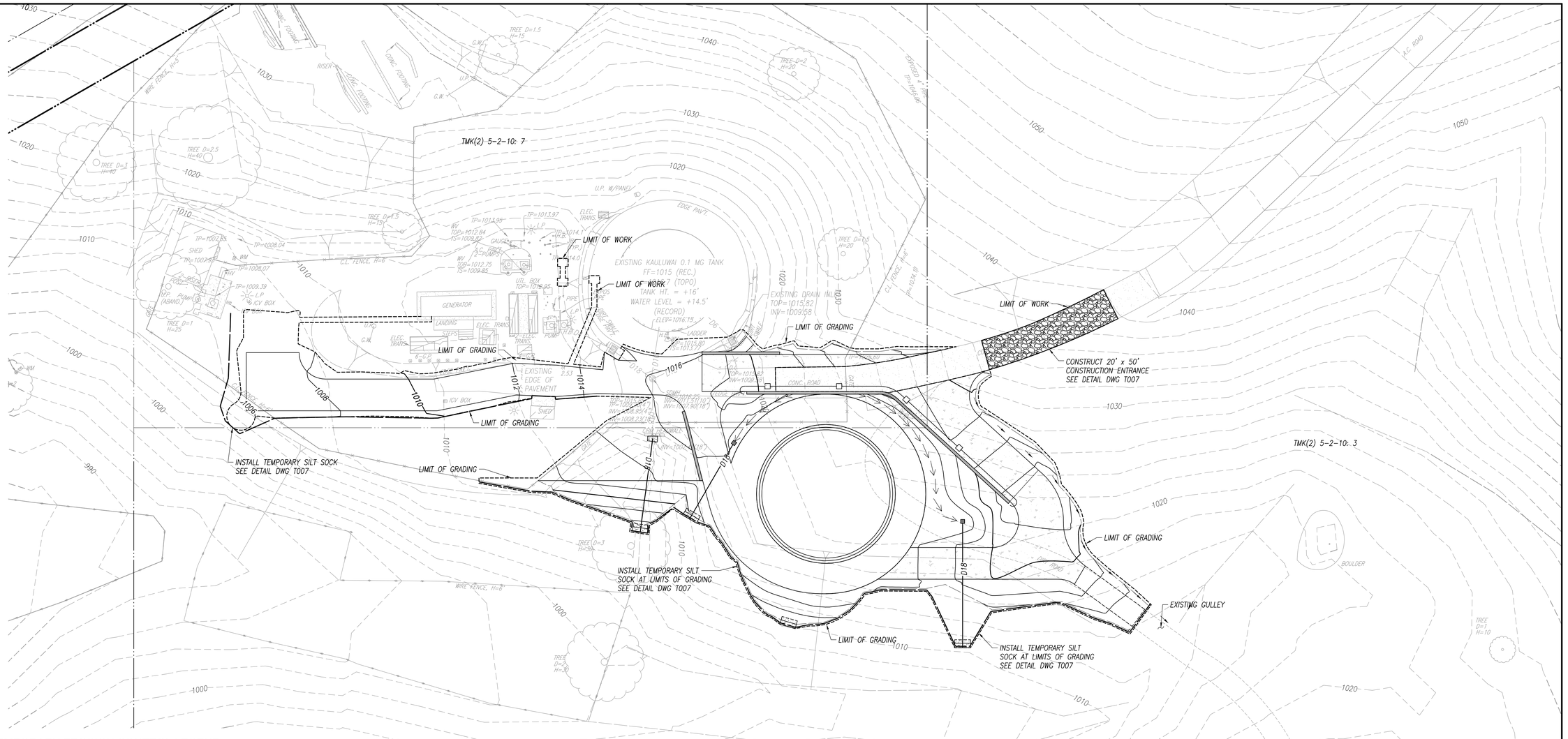
GRADING PLAN 2

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



TEMPORARY EROSION CONTROL LEGEND

- PROPERTY LINE
- LOT LINE
- LIMITS OF GRADING
- W8 — EXISTING WATER LINE
- D18 — EXISTING DRAINLINE
- D18 — NEW DRAIN LINE
- 90 — EXISTING CONTOUR
- 100 — PROPOSED CONTOUR
- EXISTING DRAINAGE FLOW
- PROPOSED TEMPORARY DRAINAGE FLOW
- ROCK CONSTRUCTION ACCESS FOR INGRESS/EGRESS
- TEMPORARY SILT SOCKS
- TEMPORARY MIRAFI GEOTECHNICAL FABRIC FOR GRATED INLETS

EROSION CONTROL PLAN

20 10 0 20 40

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
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SIGNATURE

LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C105
SHEET 14 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
JOB NO.

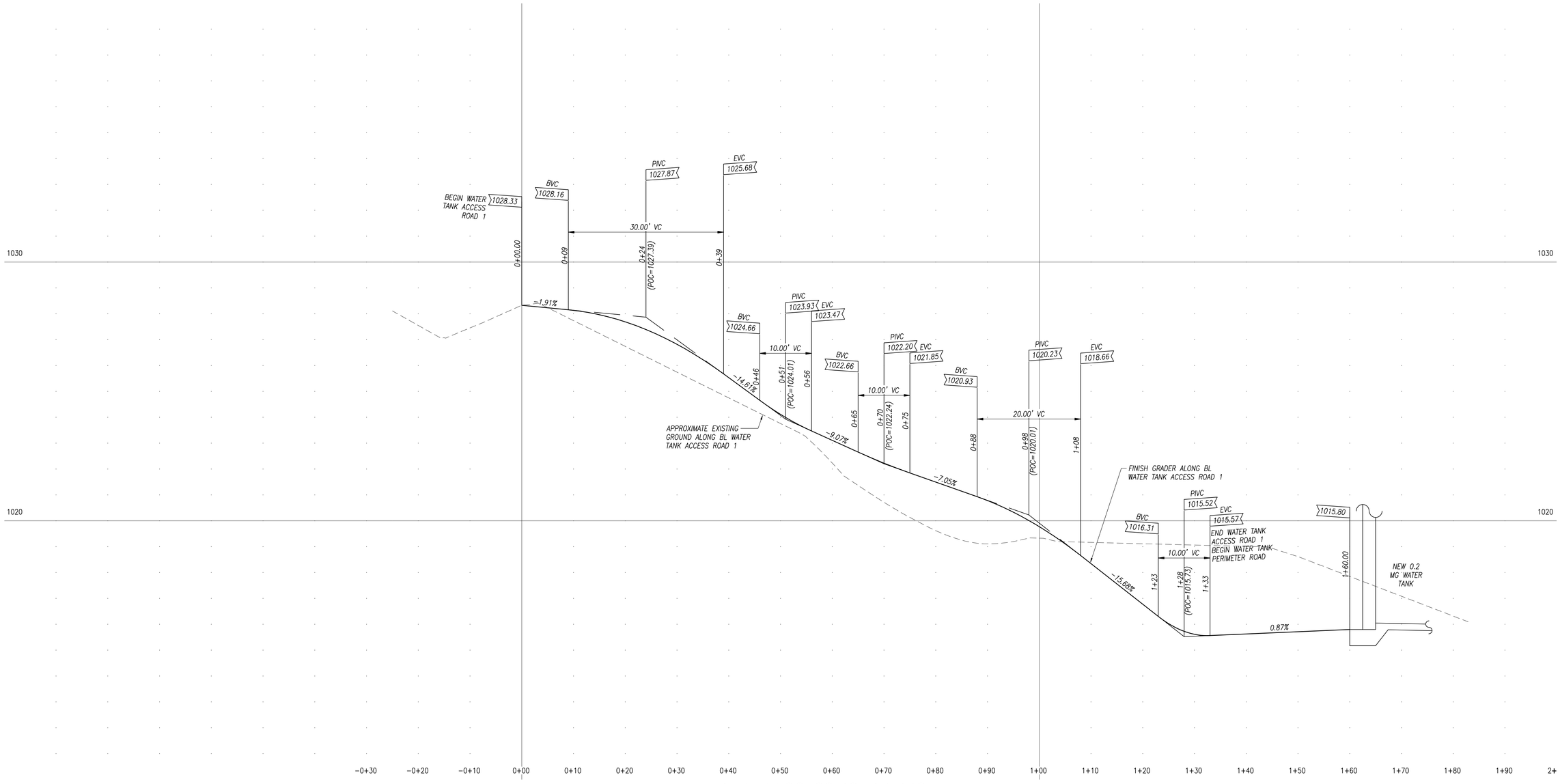
EROSION CONTROL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



WATER TANK ACCESS ROAD 1 PROFILE

HORIZ 20 10 0 20 40
VERT 8 0 8 16
SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

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No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C106
SHEET 15 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
JOB NO.

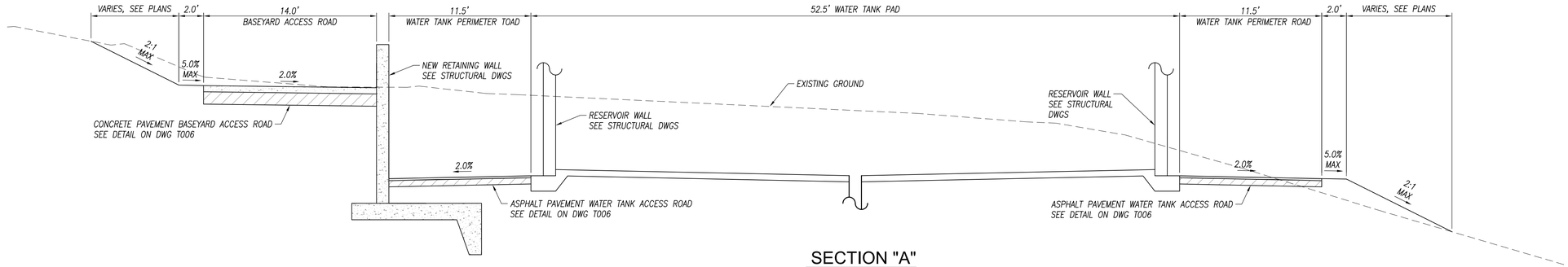
WATER TANK ACCESS ROAD 1 PROFILE

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

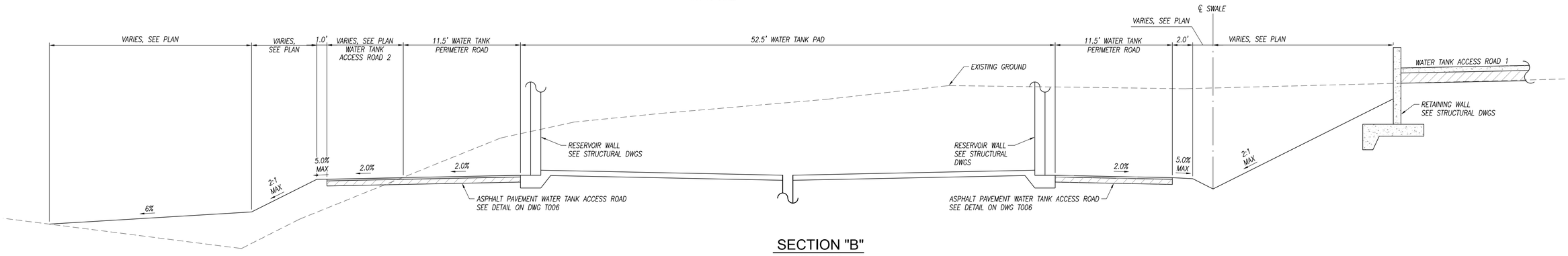
JUNE 2018

FILE	POCKET	FOLDER	NO.



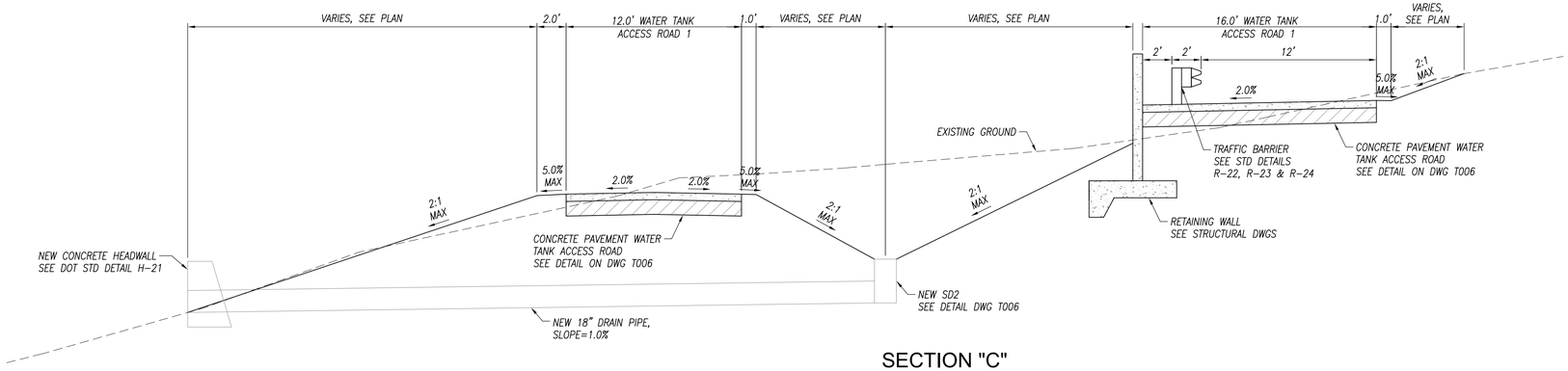
SECTION "A"

NOT TO SCALE



SECTION "B"

NOT TO SCALE



SECTION "C"

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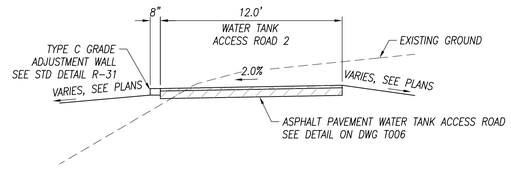
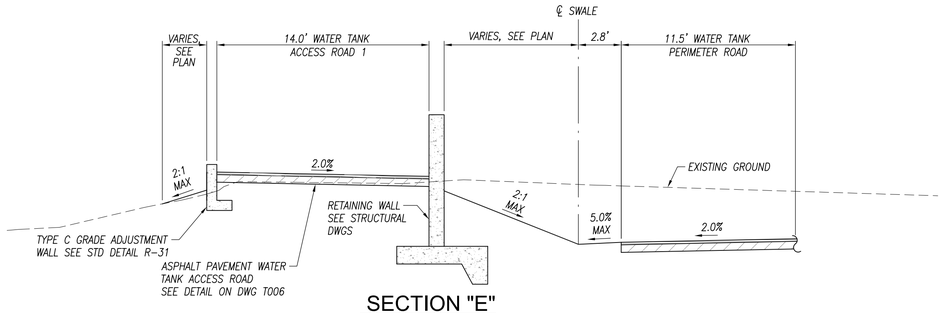


SECTION "D"

NOT TO SCALE



SECTION "E"

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
JOB NO.

TYPICAL SECTIONS

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

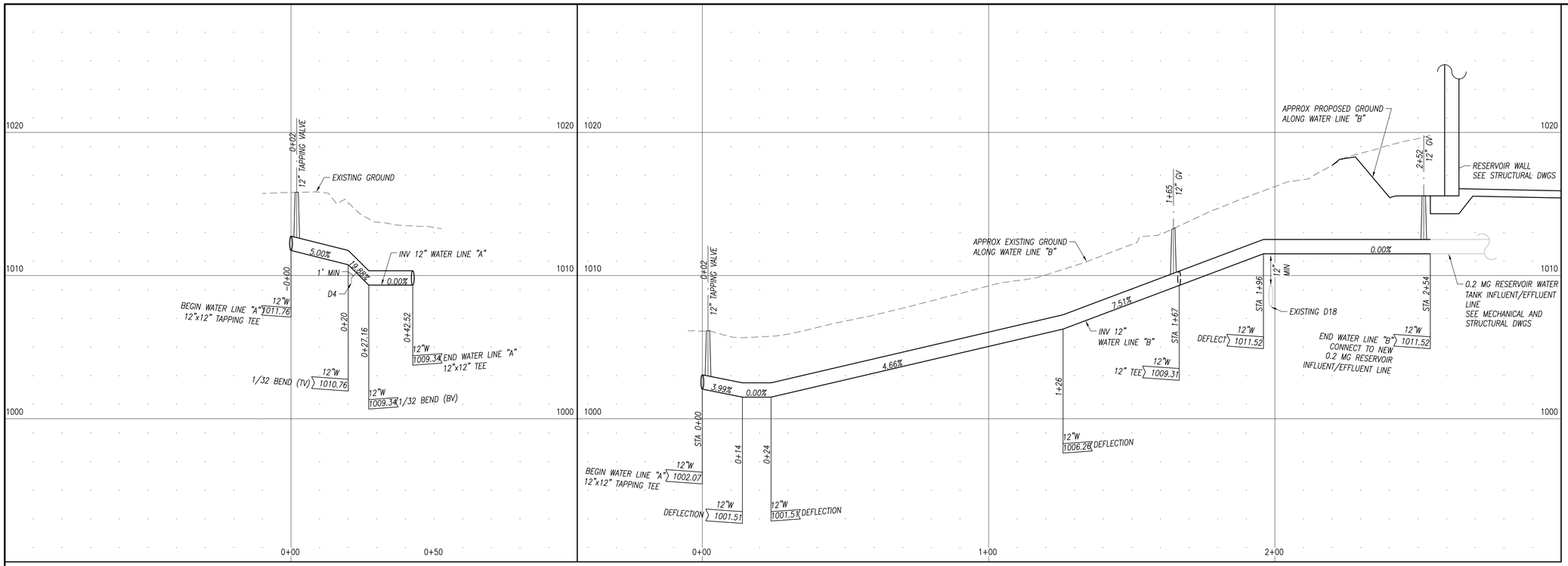
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

DWG. NO.
C107
SHEET 16 OF 146

FILE	POCKET	FOLDER	NO.



WL "A" PROFILE

HORIZ 20 10 0 20 40
VERT 4 0 4 8
SCALE IN FEET

WL "B" PROFILE

HORIZ 20 10 0 20 40
VERT 4 0 4 8
SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
JOB NO.

WL PROFILES

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
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HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

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GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C108
SHEET 17 OF 146

FILE	POCKET	FOLDER	NO.

HOOLEHUA 7.0 MG TANK SITE

KAULUWAI 1.0 MG RESERVOIR

SITE NO. 3

6" TRANSMISSION MAIN

EASEMENT 8 (MAP R) FOR WATERLINE PURPOSE

TMK: (2) 5-2-7: 90
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: JAMES LINDSAY

TMK: (2) 5-2-7: 79
DEPARTMENT OF HAWAIIAN HOME LANDS

TMK: (2) 5-2-7: 30
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: BRETT WAIPA

TMK: (2) 5-2-7: 29
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: MELODY-LYNN L. ALCON

TMK: (2) 5-2-7: 55
DEPARTMENT OF HAWAIIAN HOME LANDS

TMK: (2) 5-2-7: 77
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: MOLLY TENGAN

TMK: (2) 5-2-7: 76
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: MALIA FORBES GREANEY

TMK: (2) 5-2-13: 10
KUALAPUU RANCH 3, LLC

TMK(2) 5-2-13: 16
MOLOKAI PROPERTIES LIMITED
HAWAIIAN TELCOM, INC.

TMK(2) 5-2-13: POR. 21
MOLOKAI PROPERTIES LIMITED

TMK(2) 5-2-14: 2
MALA, INC.
& R.W. MEYER, LTD.

ACCESS EASEMENT D

EASEMENT 7 (MAP 4)

TMK(2) 5-2-13: 32
WENDELL WORTH DAVENPORT, JR.
& WENDELL W DAVENPORT, JR.
ETAL

TMK(2) 5-2-13: 31
JEFFREY S. LEFEBVRE
& DIANA P. LEFEBVRE

TMK(2) 5-2-13: 28
STACI KANOELANI GONZALES

TMK(2) 5-2-13: 17
JAMES G. TEMPLE
& KIMBERLY L. TEMPLE

TMK(2) 5-2-13: POR. 21
MOLOKAI PROPERTIES LIMITED

TMK(2) 5-2-13: 1
ALAN COOKE KAY
& HAROLD T KAY, JR.

TMK(2) 5-2-10: 2
DEPARTMENT OF HAWAIIAN HOME LANDS

TMK(2) 5-2-12: 35
MOLOKAI PROPERTIES LIMITED

TMK(2) 5-2-13: 30
D R KUHN
& G LOPEZ-KUHN
REVOCABLE JOINT TRUST

TMK(2) 5-2-12: 34
DEWITT JONES TRUST
& DON SOUERS
& THERESA SOUERS

TMK(2) 5-2-13: 29
STEPHEN ROBERT
KERR TRUST

6 EASEMENT 6 (MAP 4) 25 FT WIDE FOR POWERLINE PURPOSES

TMK(2) 5-2-12: 33
DEWITT JONES TRUST DTD

TMK(2) 5-2-12: 32
CATHERINE SUMMERS
COOKE TRUST

TMK(2) 5-2-12: 31
ALAN COOKE KAY
& DIANE FIFE KAY
& FRANCES K. BROSSY TRUST
& FREDERIC A. BROSSY, JR. TRUSTS

TMK(2) 5-2-12: 30
RICHARD COOKE III/ BRONWYN JOINT TRUST

TMK(2) 5-2-12: 24
CATHY ANNE BARBER
MANAGEMENT TRUST

AHL PL (OHHL)

W6

GENERAL PLAN

400 0 400 800

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C300
SHEET 18 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

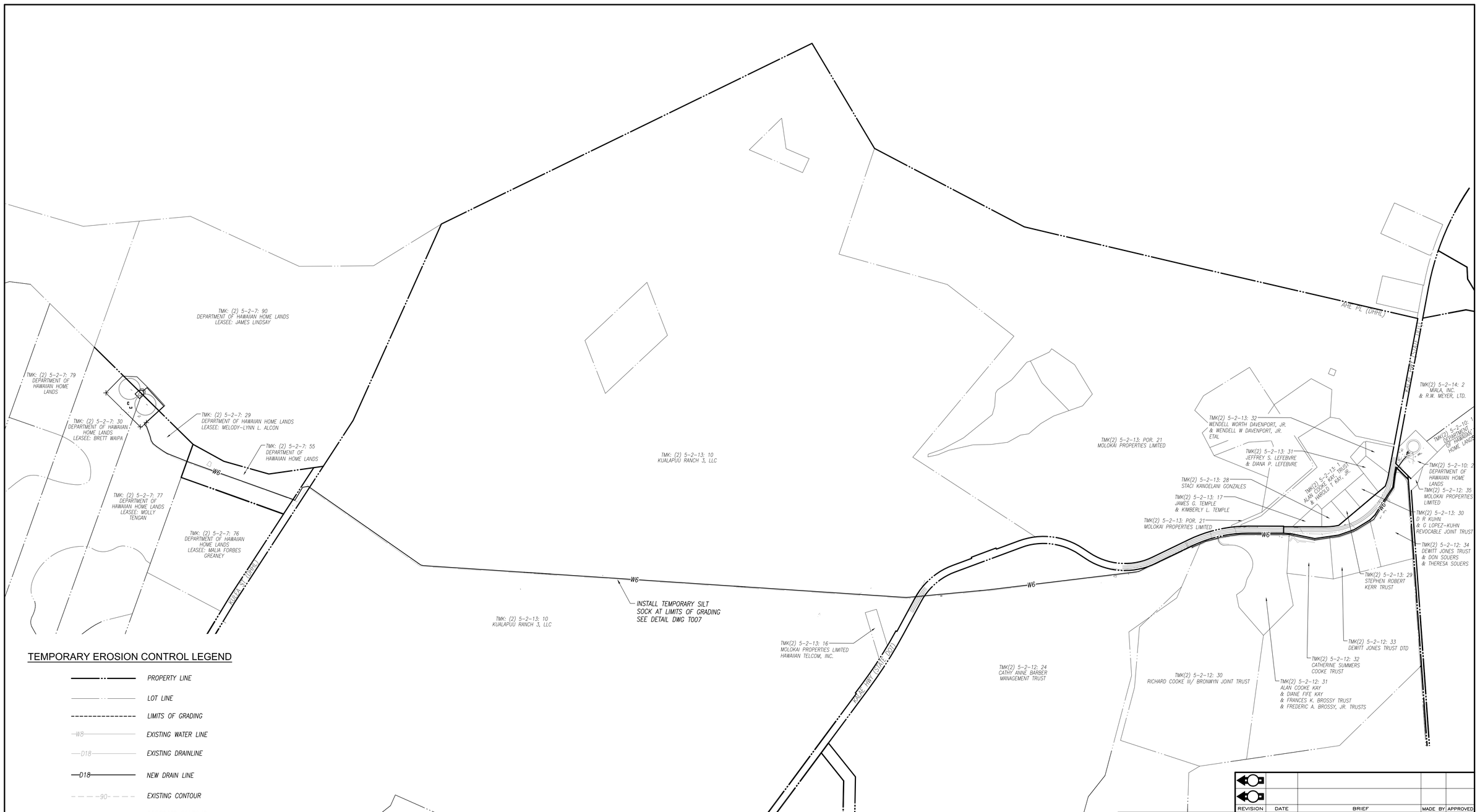
GENERAL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



TEMPORARY EROSION CONTROL LEGEND

- PROPERTY LINE
- LOT LINE
- LIMITS OF GRADING
- W8 — EXISTING WATER LINE
- D18 — EXISTING DRAINLINE
- D18 — NEW DRAIN LINE
- 90 — EXISTING CONTOUR
- 100 — PROPOSED CONTOUR
- EXISTING DRAINAGE FLOW
- PROPOSED TEMPORARY DRAINAGE FLOW
- ROCK CONSTRUCTION ACCESS FOR INGRESS/EGRESS
- TEMPORARY SILT SOCKS
- TEMPORARY MIRAFI GEOTECHNICAL FABRIC FOR GRATED INLETS

EROSION CONTROL PLAN

400 0 400 800

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C301
SHEET 19 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

EROSION CONTROL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
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JUNE 2018

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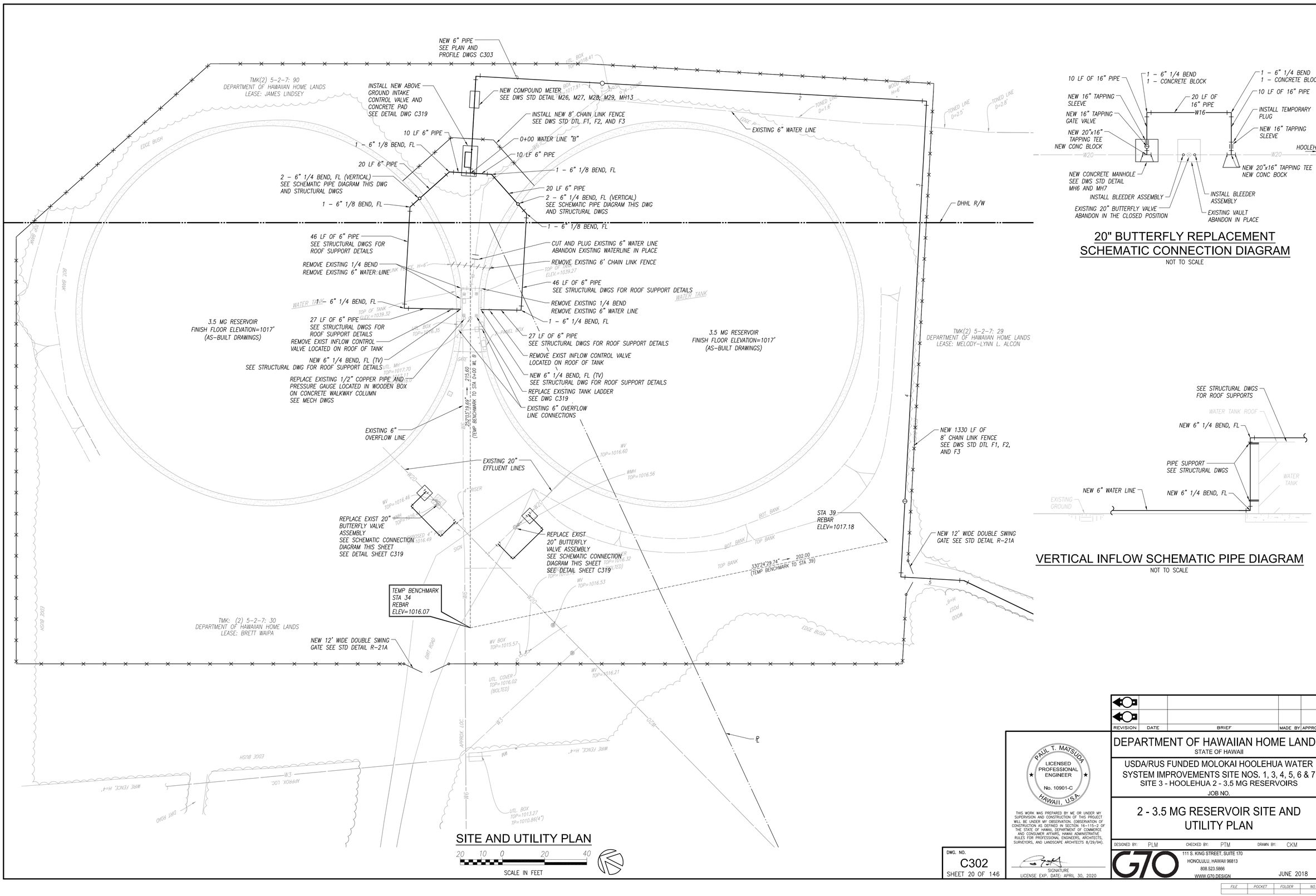


20" BUTTERFLY REPLACEMENT SCHEMATIC CONNECTION DIAGRAM

NOT TO SCALE

VERTICAL INFLOW SCHEMATIC PIPE DIAGRAM

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

2 - 3.5 MG RESERVOIR SITE AND UTILITY PLAN

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

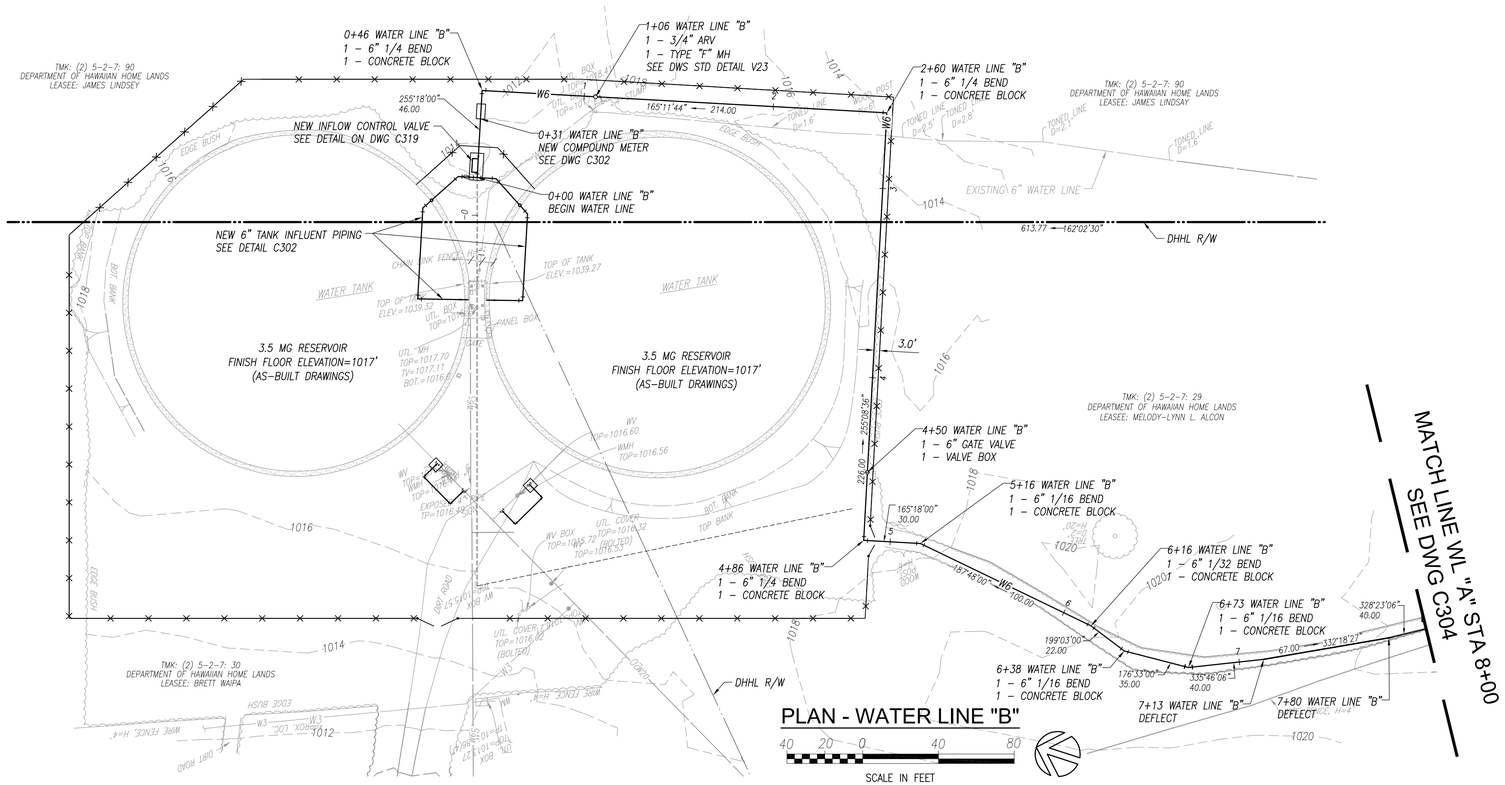
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

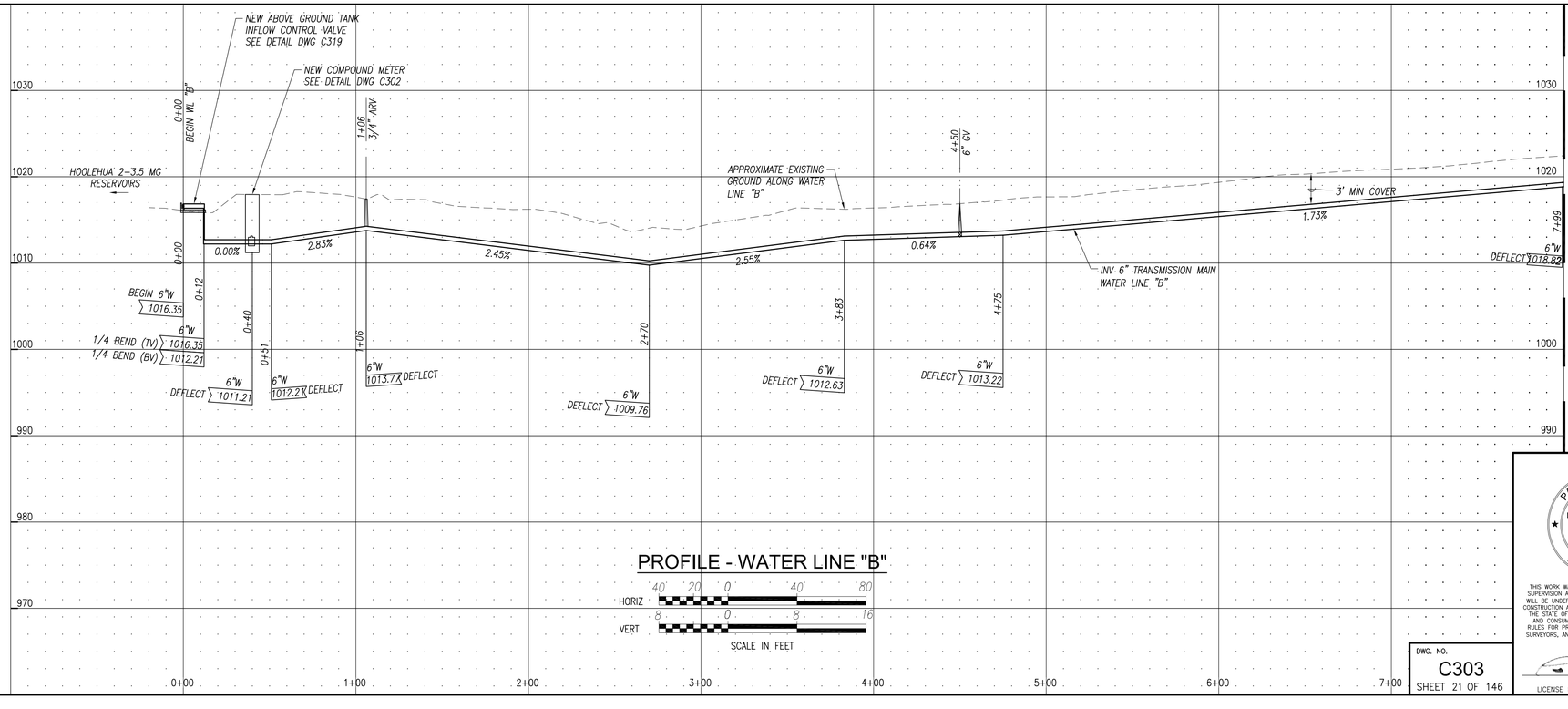
G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C302
SHEET 20 OF 146

FILE	POCKET	FOLDER	NO.





REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 0+00 TO 8+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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111 S. KING STREET, SUITE 170
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808.523.5866
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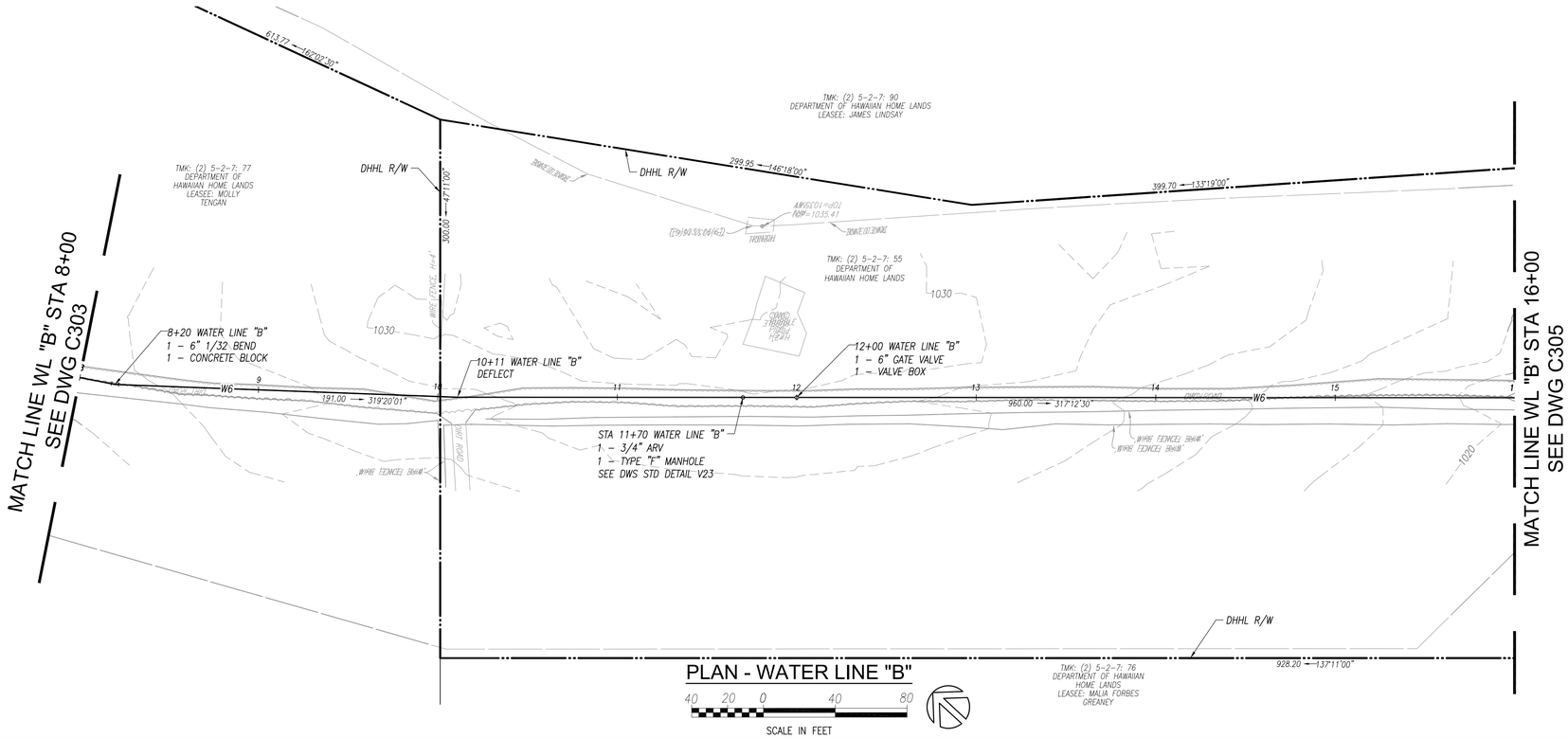
JUNE 2018

DWG. NO.
C303
SHEET 21 OF 146

FILE	POCKET	FOLDER	NO.



REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 8+00 TO 16+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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111 S. KING STREET, SUITE 170
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808.523.5866
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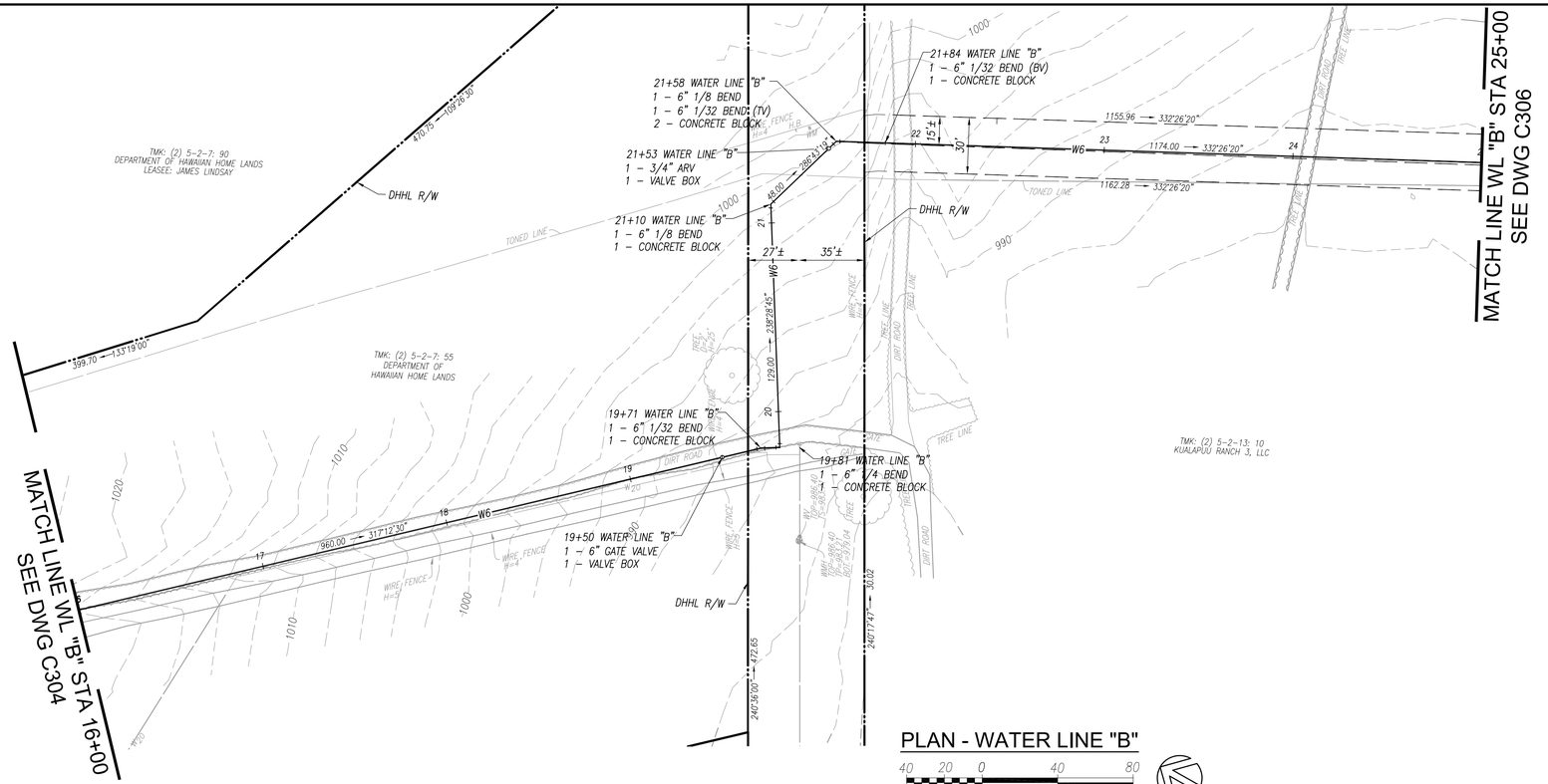
JUNE 2018

DWG. NO.
C304
SHEET 22 OF 146

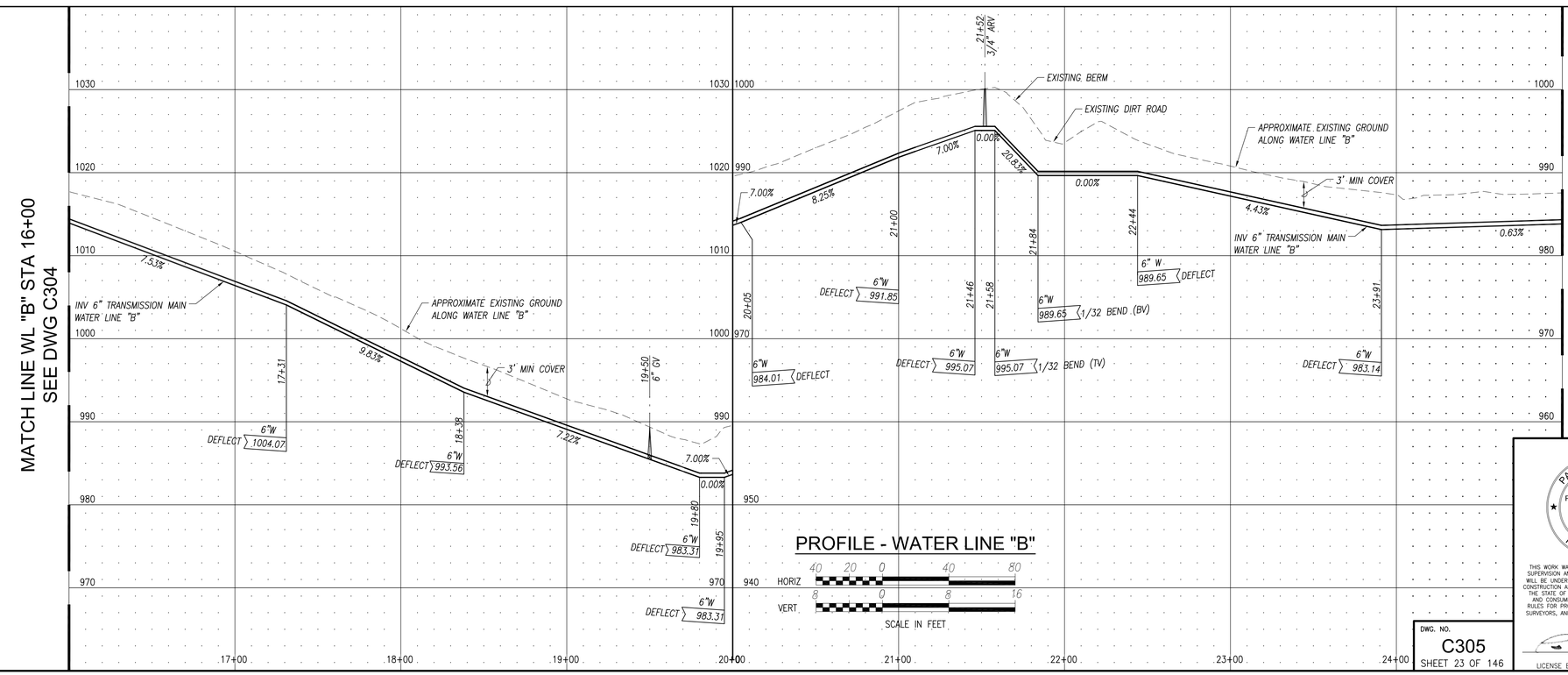
FILE	POCKET	FOLDER	NO.



PLAN - WATER LINE "B"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "B"

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C305
SHEET 23 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 16+00 TO 25+00

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
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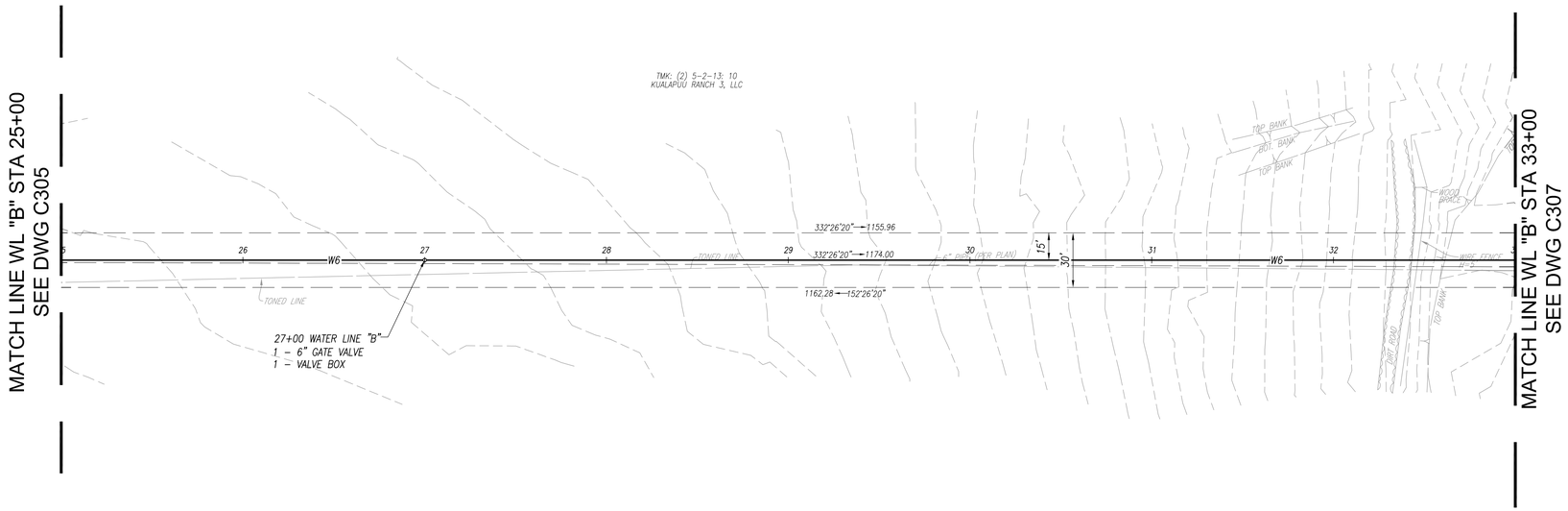
JUNE 2018

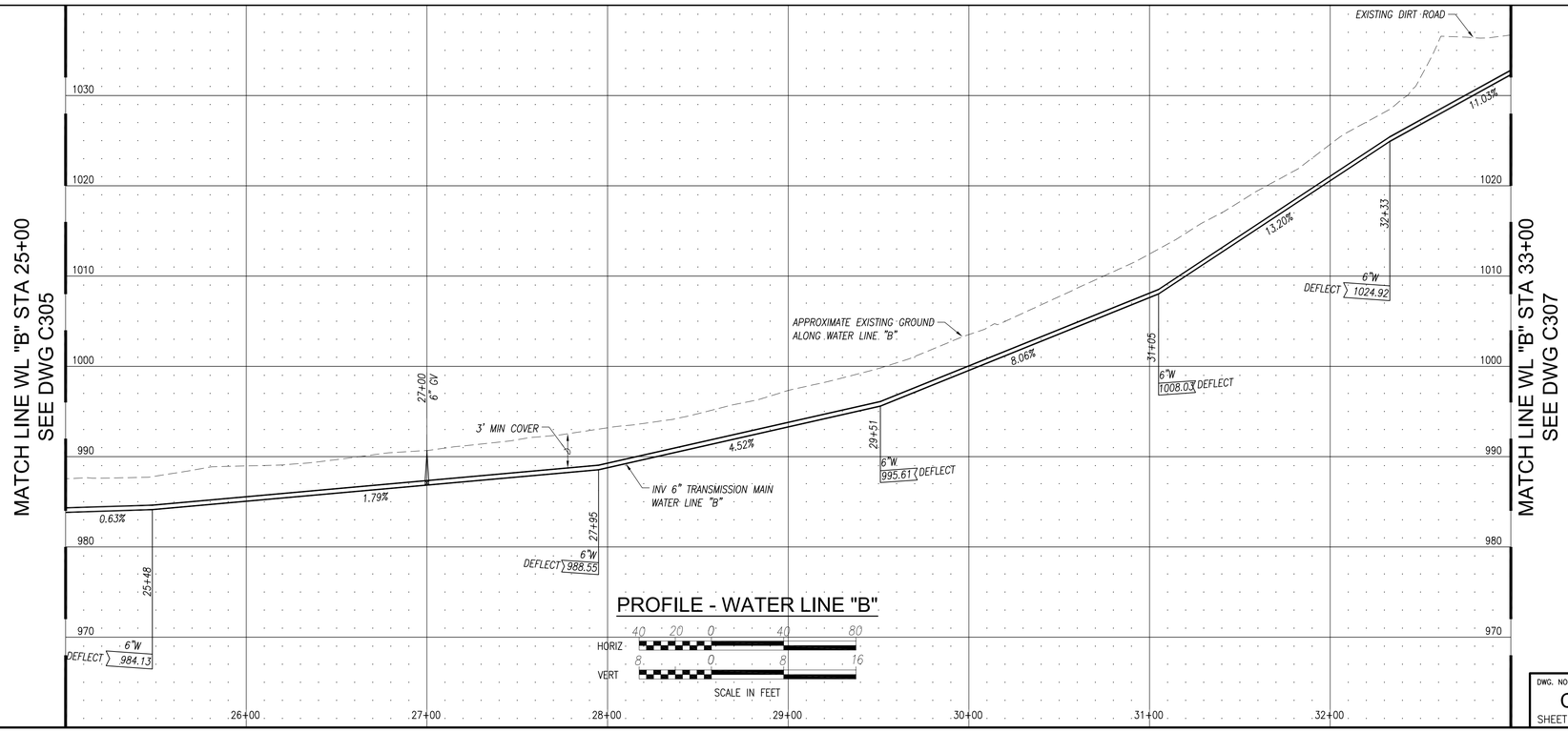
FILE	POCKET	FOLDER	NO.



PLAN - WATER LINE "B"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "B"

40 20 0 40 80

HORIZ

8 0 8 16

VERT

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS

JOB NO.

PLAN AND PROFILE
WATER LINE "B" 25+00 TO 33+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
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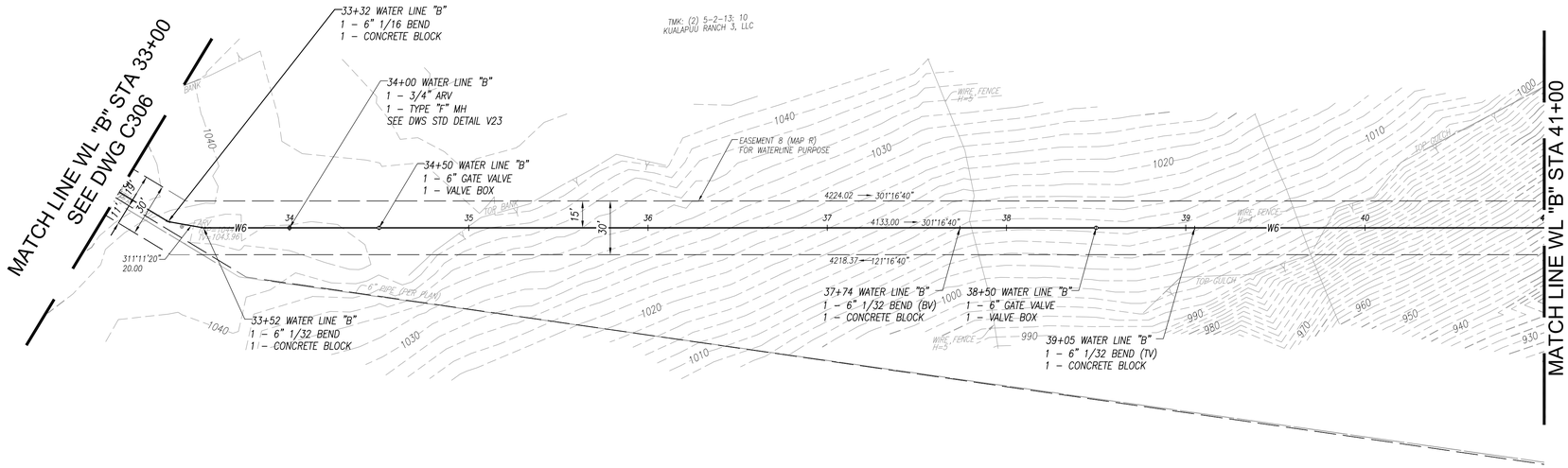
JUNE 2018

DWG. NO.
C306
SHEET 24 OF 146

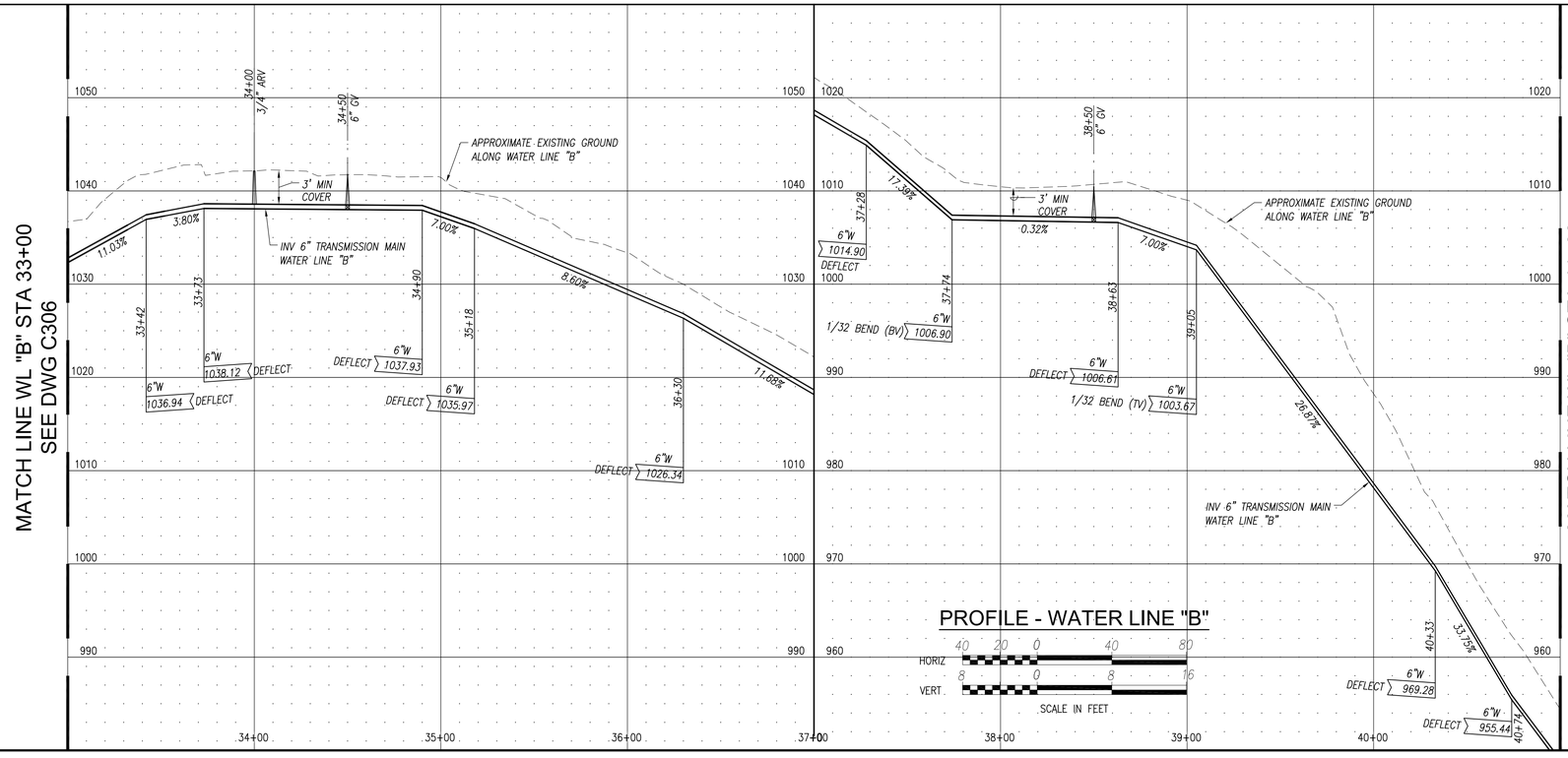
FILE	POCKET	FOLDER	NO.



PLAN - WATER LINE "B"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "B"

40 20 0 40 80

HORIZ

8 0 8 16

VERT

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
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No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 33+00 TO 41+00

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

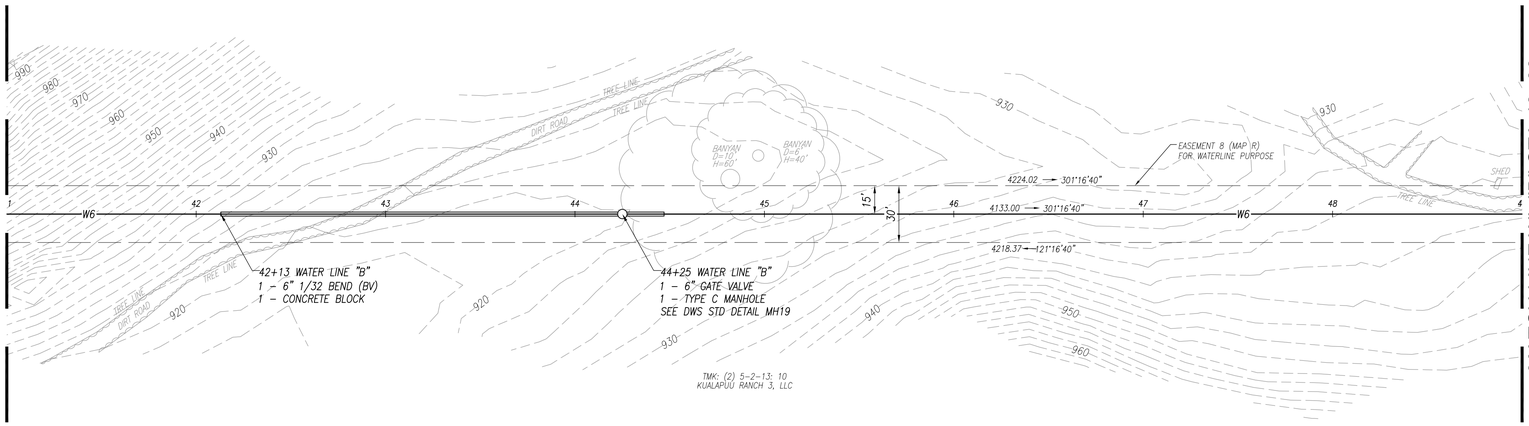
JUNE 2018

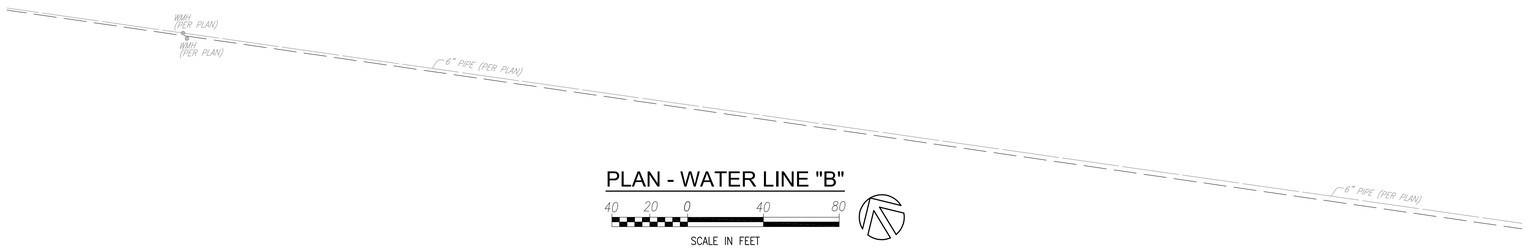
DWG. NO.
C307
SHEET 25 OF 146

FILE	POCKET	FOLDER	NO.

MATCH LINE WL "B" STA 41+00
SEE DWG C307

MATCH LINE WL "B" STA 49+00
SEE DWG C309

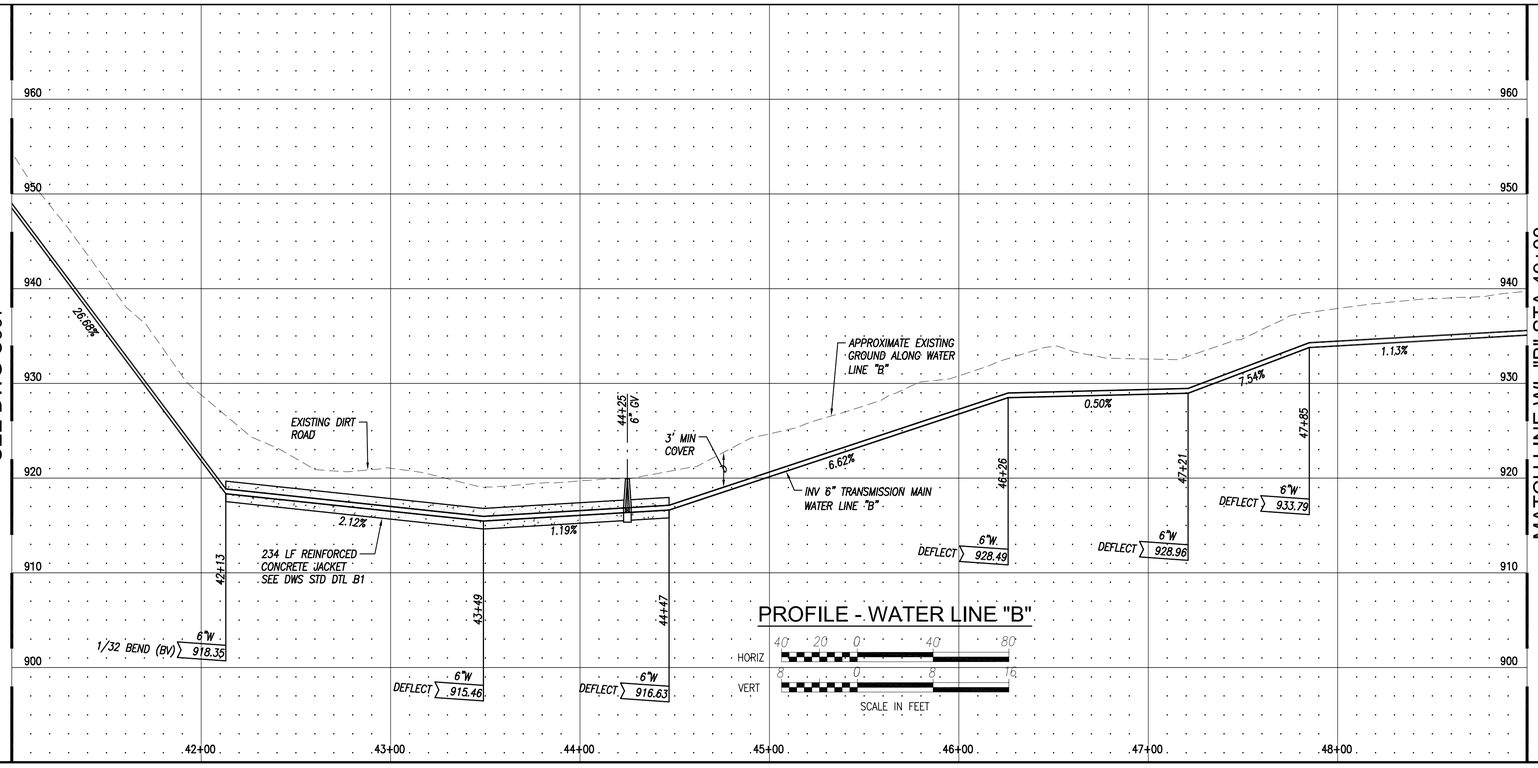




PLAN - WATER LINE "B"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "B"

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 41+00 TO 49+00

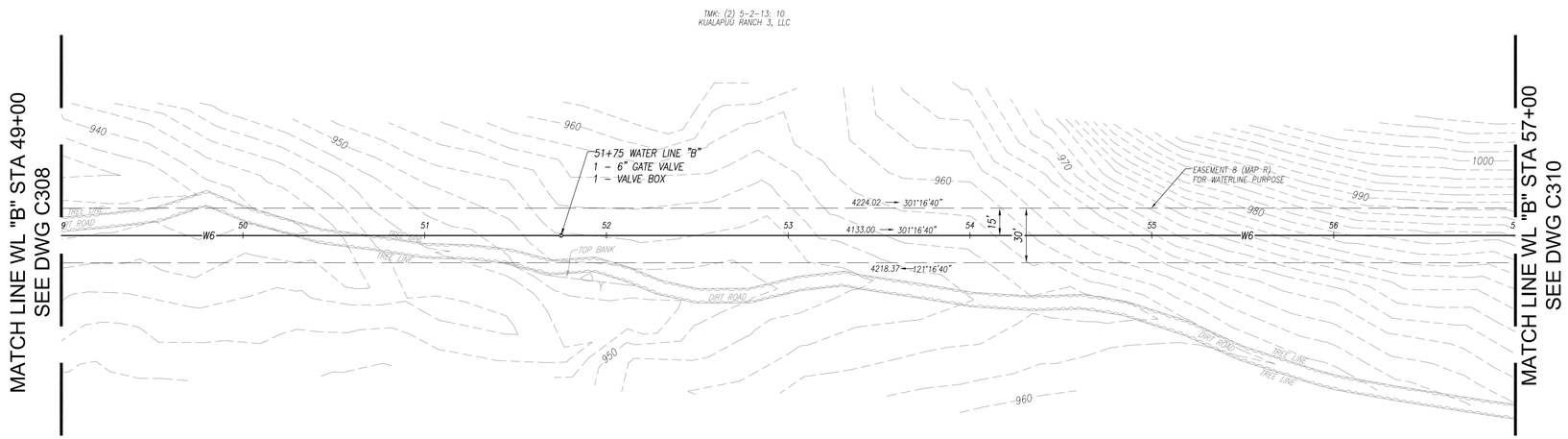
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

DWG. NO.
C308
SHEET 26 OF 146

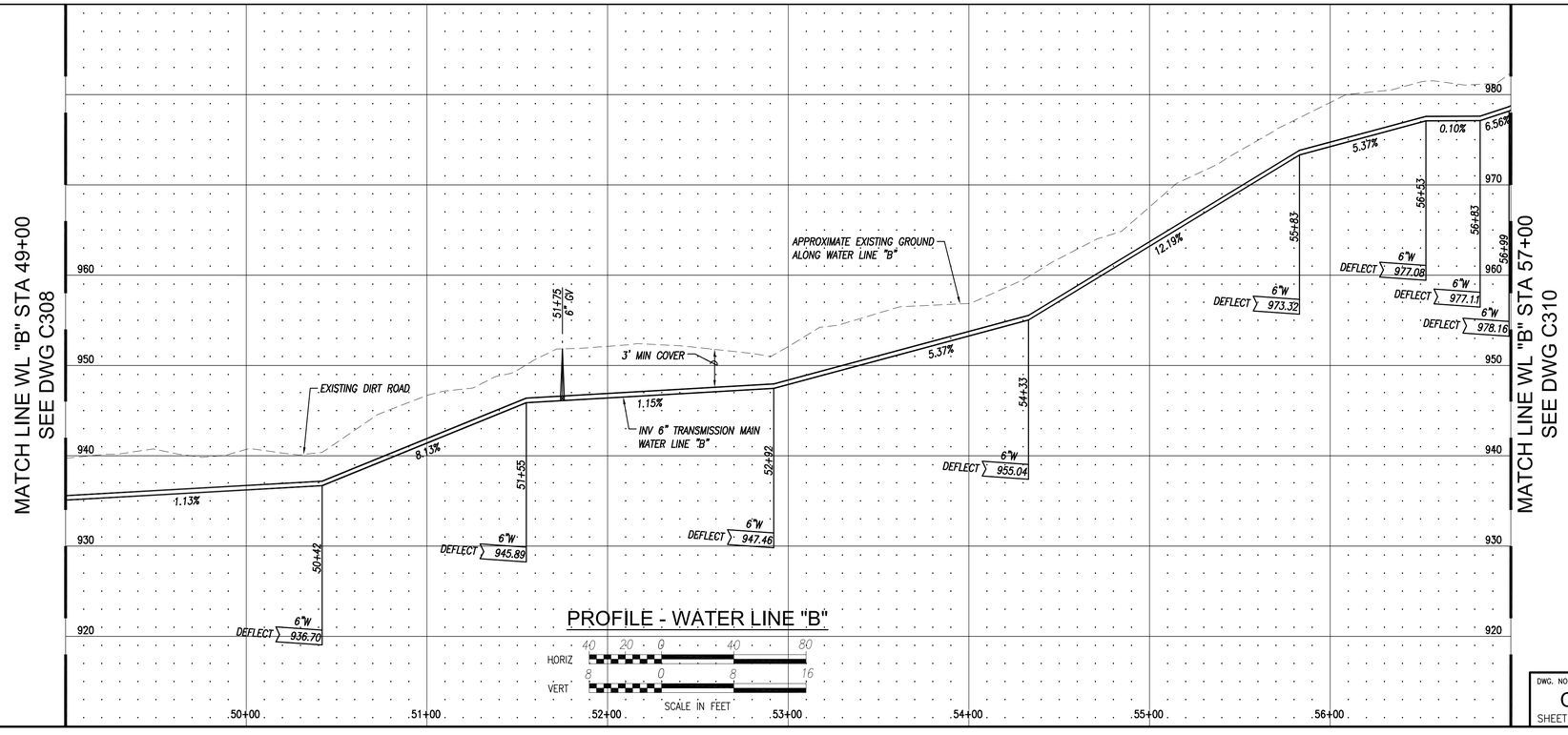
FILE	POCKET	FOLDER	NO.



PLAN - WATER LINE "B"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "B"

40 20 0 40 80

HORIZ

8 0 8 16

VERT

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 49+00 TO 57+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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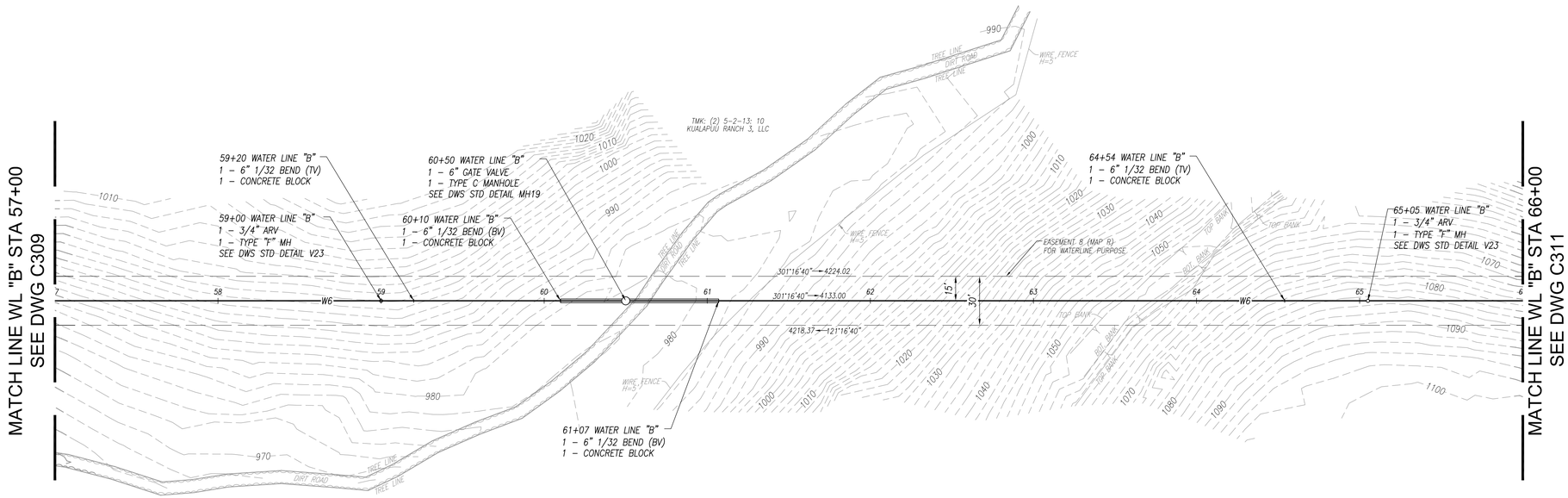
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

DWG. NO.
C309
SHEET 27 OF 146

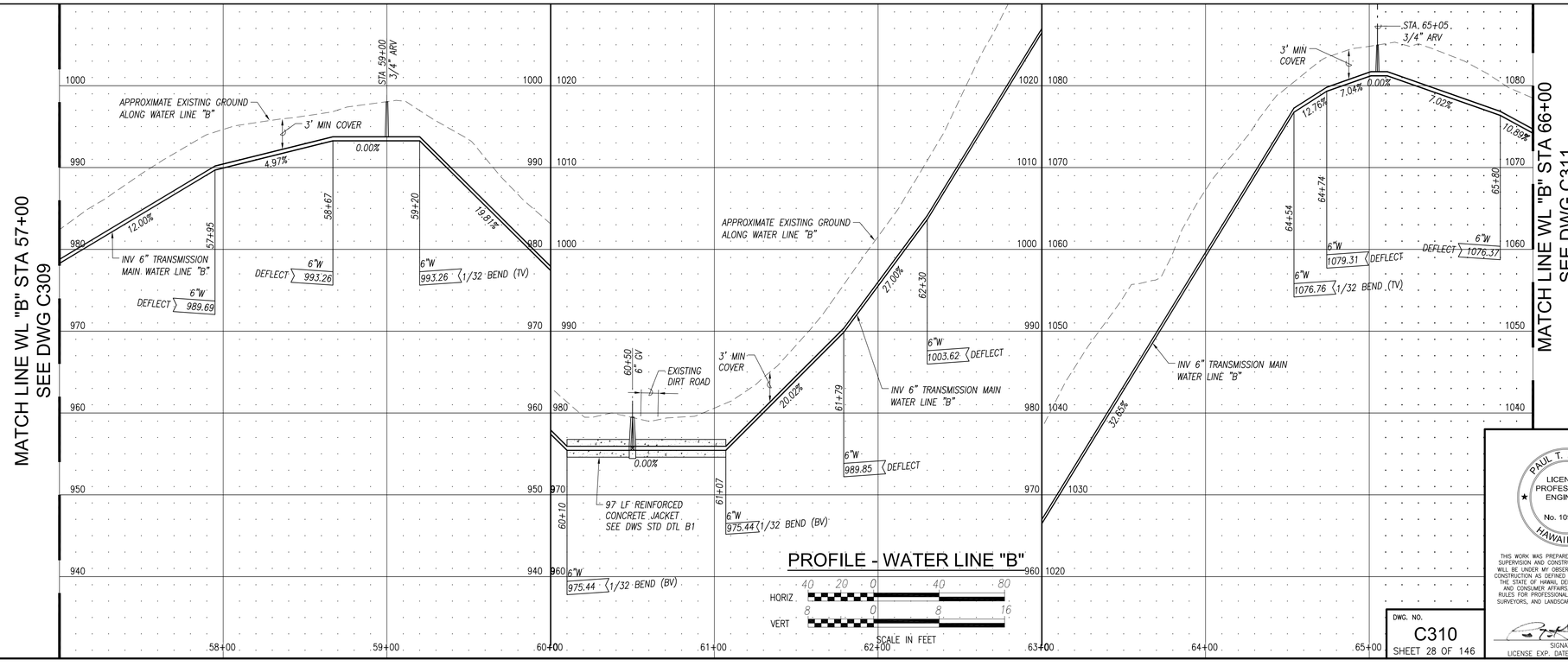
FILE	POCKET	FOLDER	NO.



PLAN - WATER LINE "B"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "B"

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C310
SHEET 28 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 57+00 TO 66+00

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
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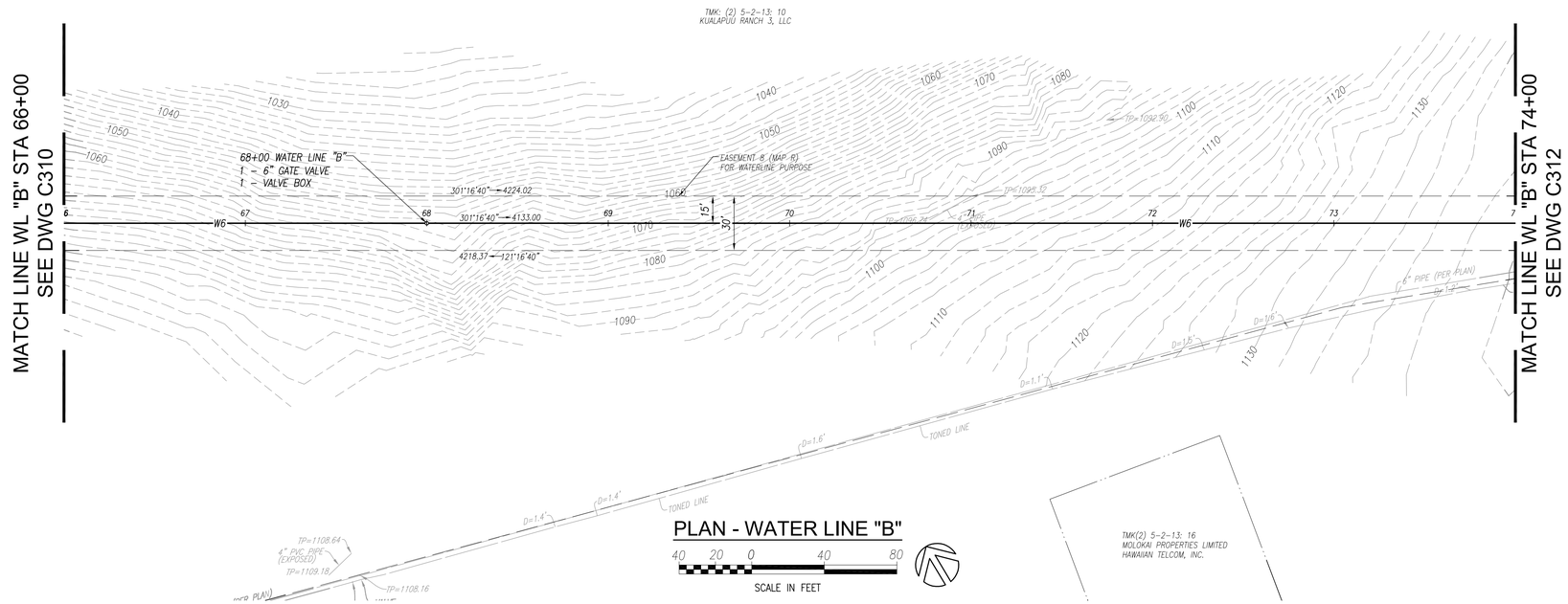
JUNE 2018

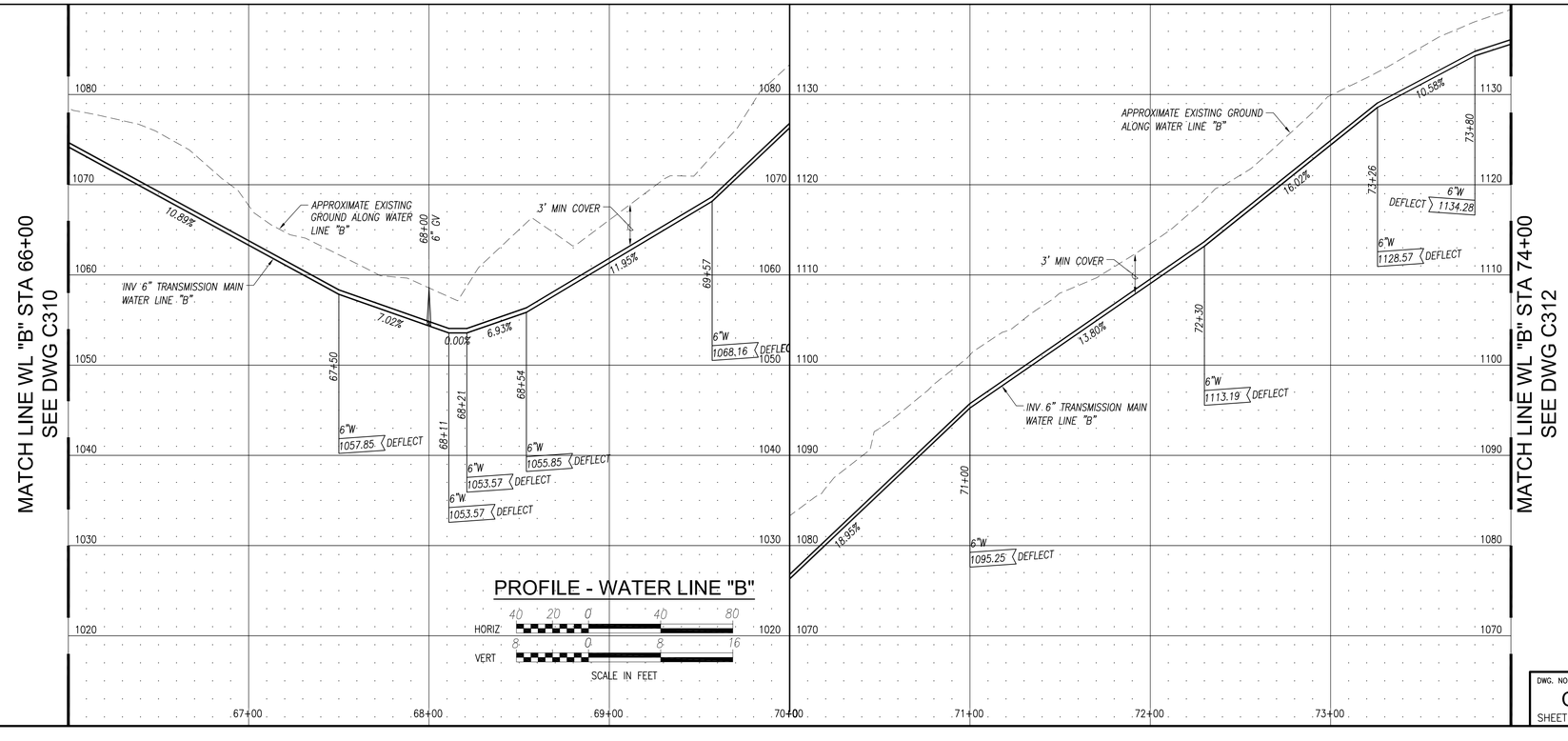
FILE	POCKET	FOLDER	NO.



PLAN - WATER LINE "B"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "B"

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 66+00 TO 74+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
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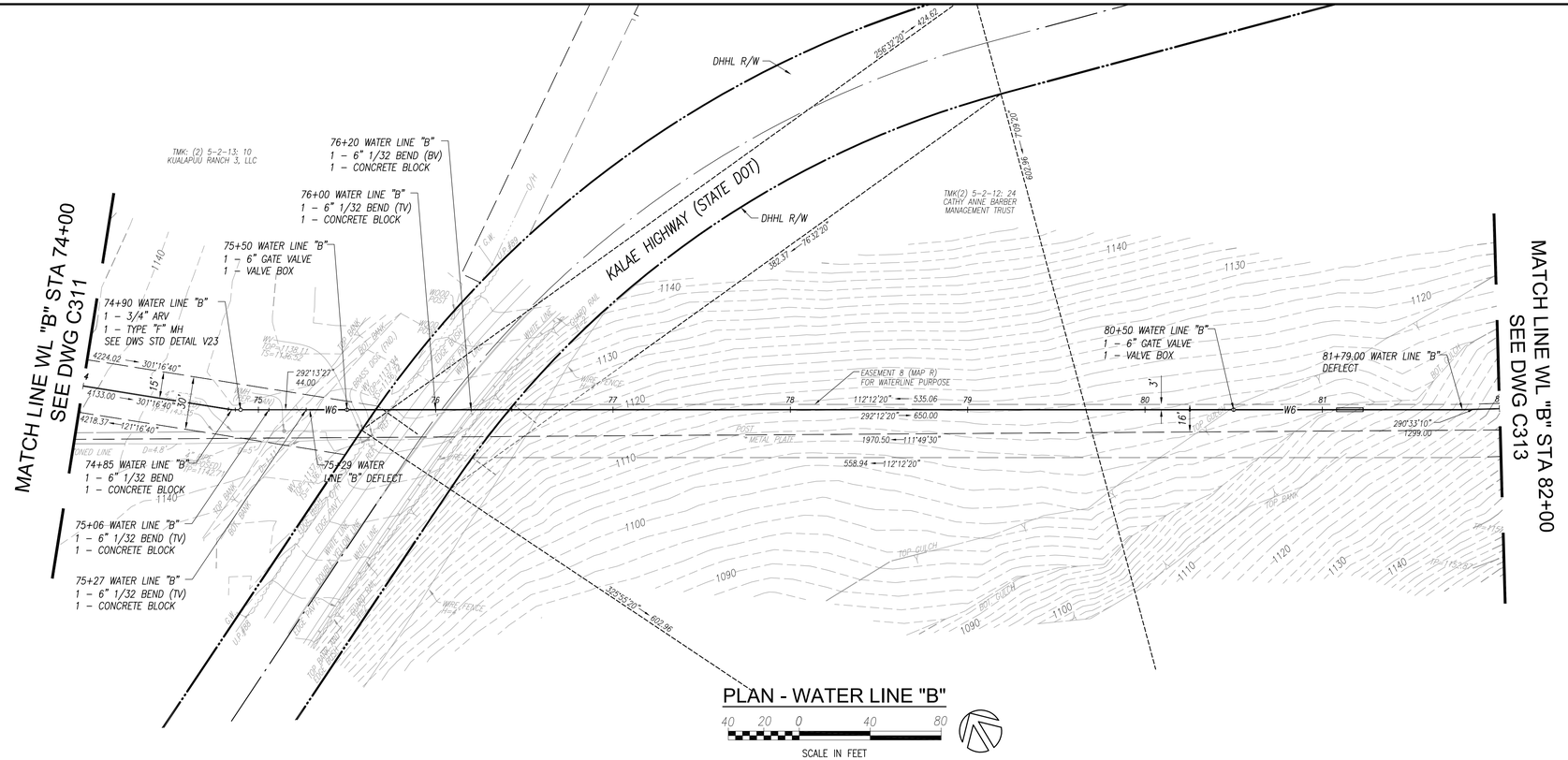
JUNE 2018

DWG. NO.
C311
SHEET 29 OF 146

FILE	POCKET	FOLDER	NO.



REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 74+00 TO 82+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
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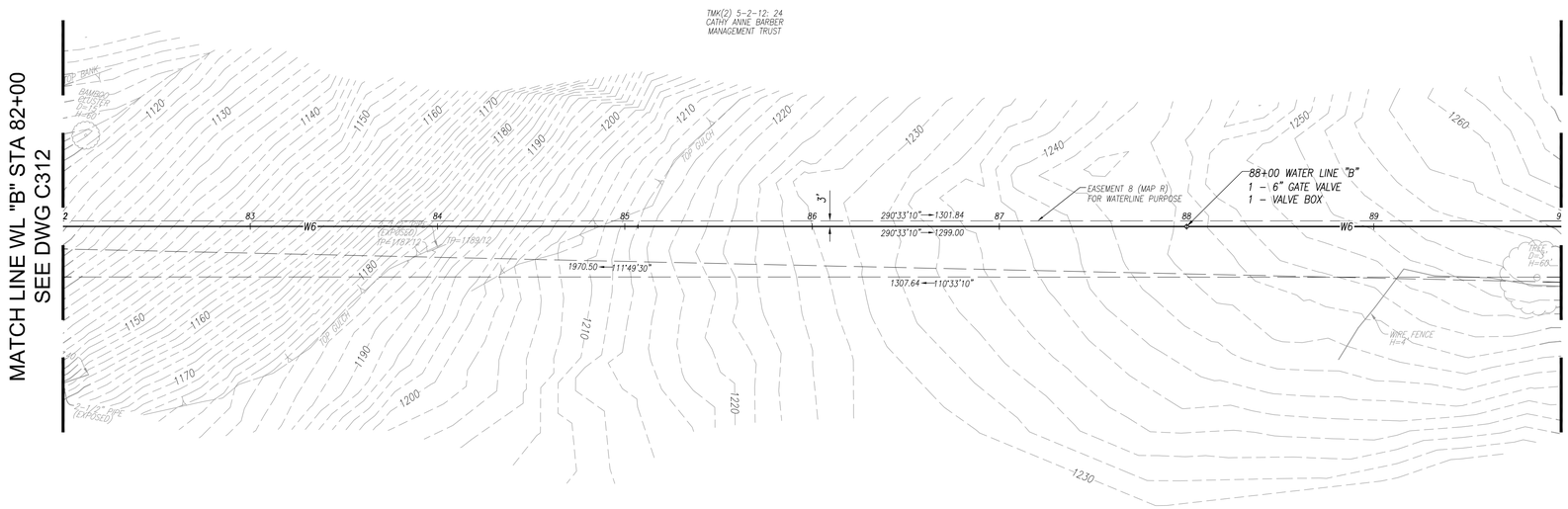
JUNE 2018

DWG. NO.
C312
SHEET 30 OF 146

FILE	POCKET	FOLDER	NO.

MATCH LINE WL "B" STA 82+00
SEE DWG C312



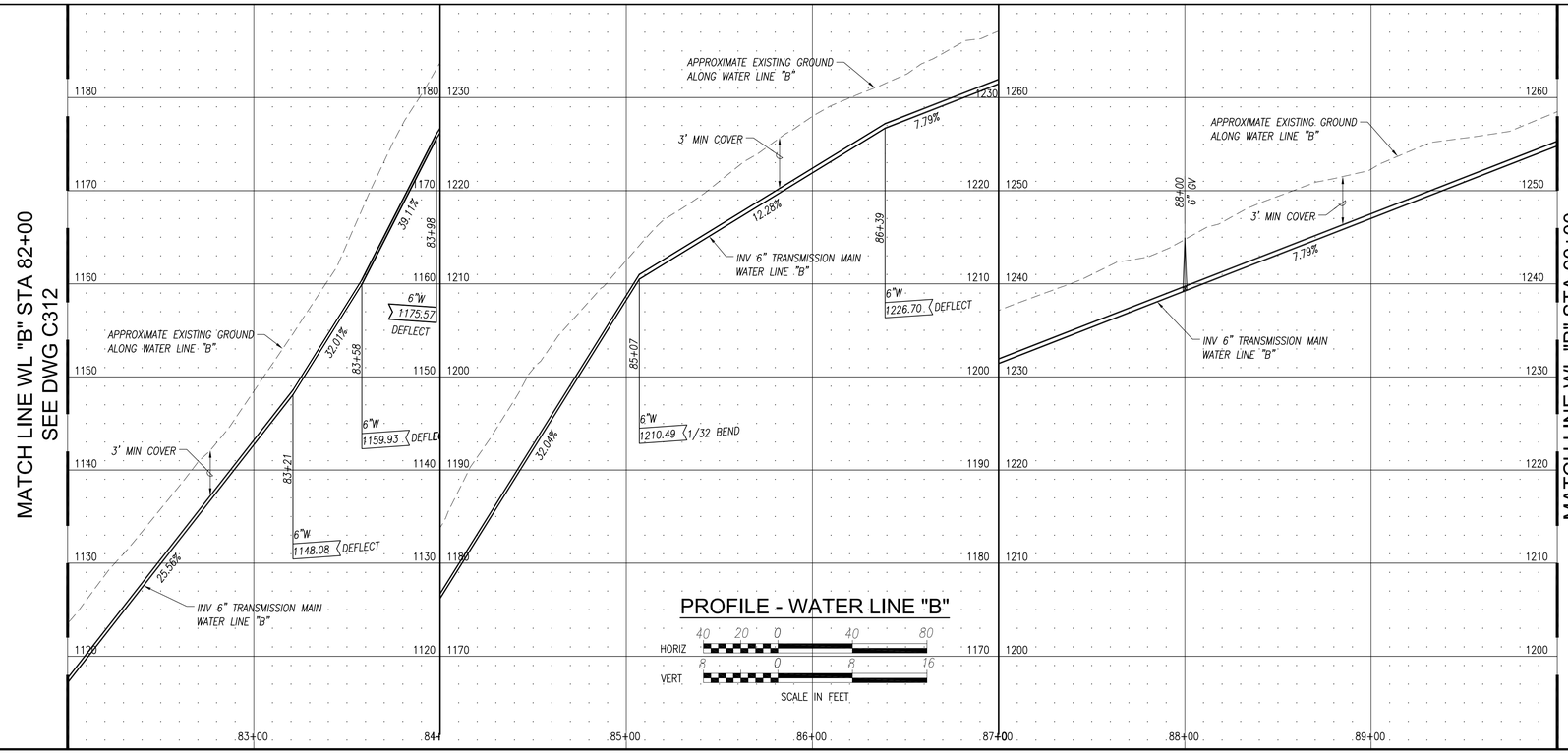
PLAN - WATER LINE "B"

40 20 0 40 80

SCALE IN FEET

MATCH LINE WL "B" STA 90+00
SEE DWG C314

MATCH LINE WL "B" STA 82+00
SEE DWG C312



PROFILE - WATER LINE "B"

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 82+00 TO 90+00

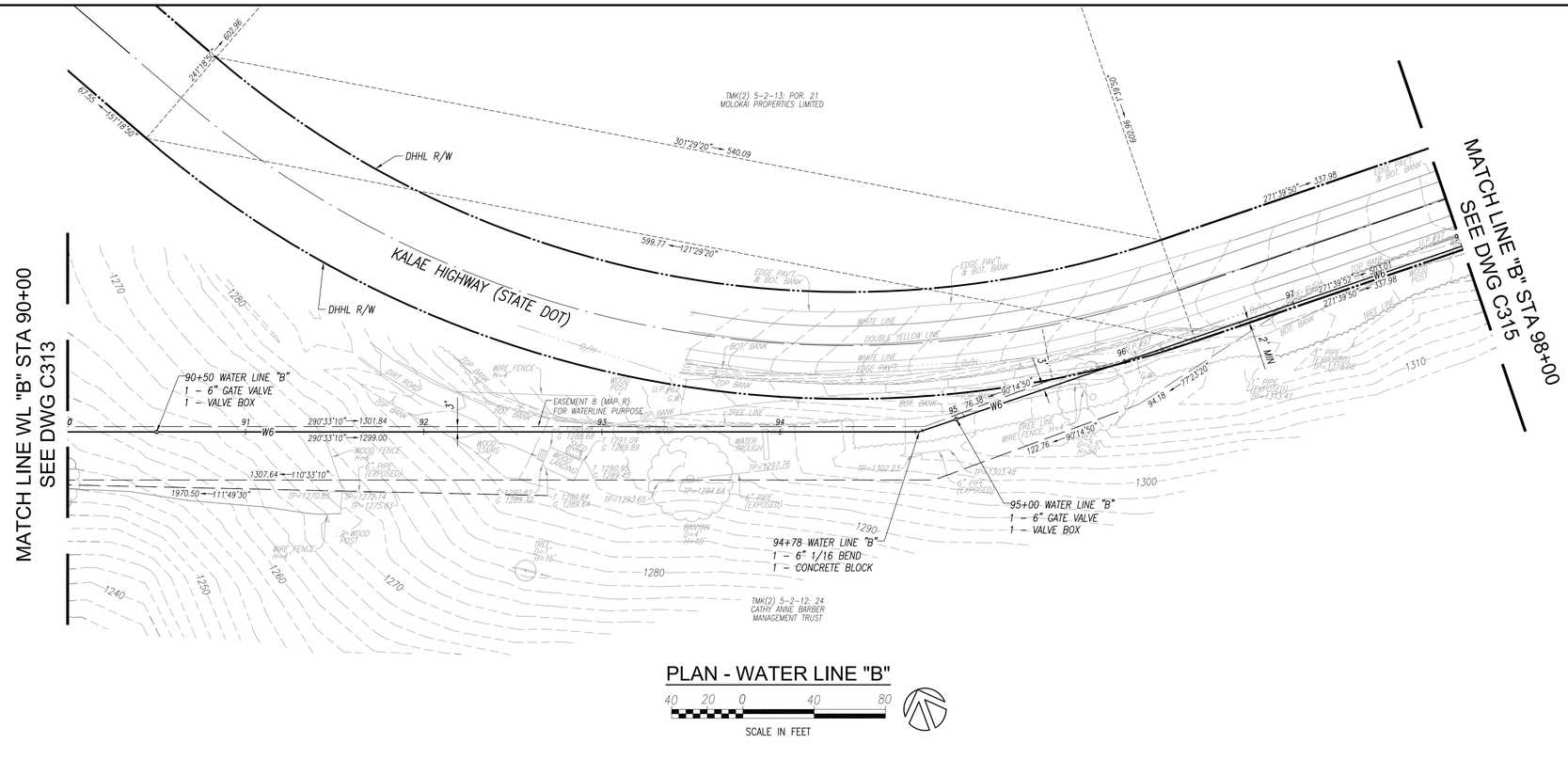
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

DWG. NO.
C313
SHEET 31 OF 146

FILE	POCKET	FOLDER	NO.



PLAN - WATER LINE "B"

PROFILE - WATER LINE "B"

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER
SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 90+00 TO 98+00

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16–115–2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

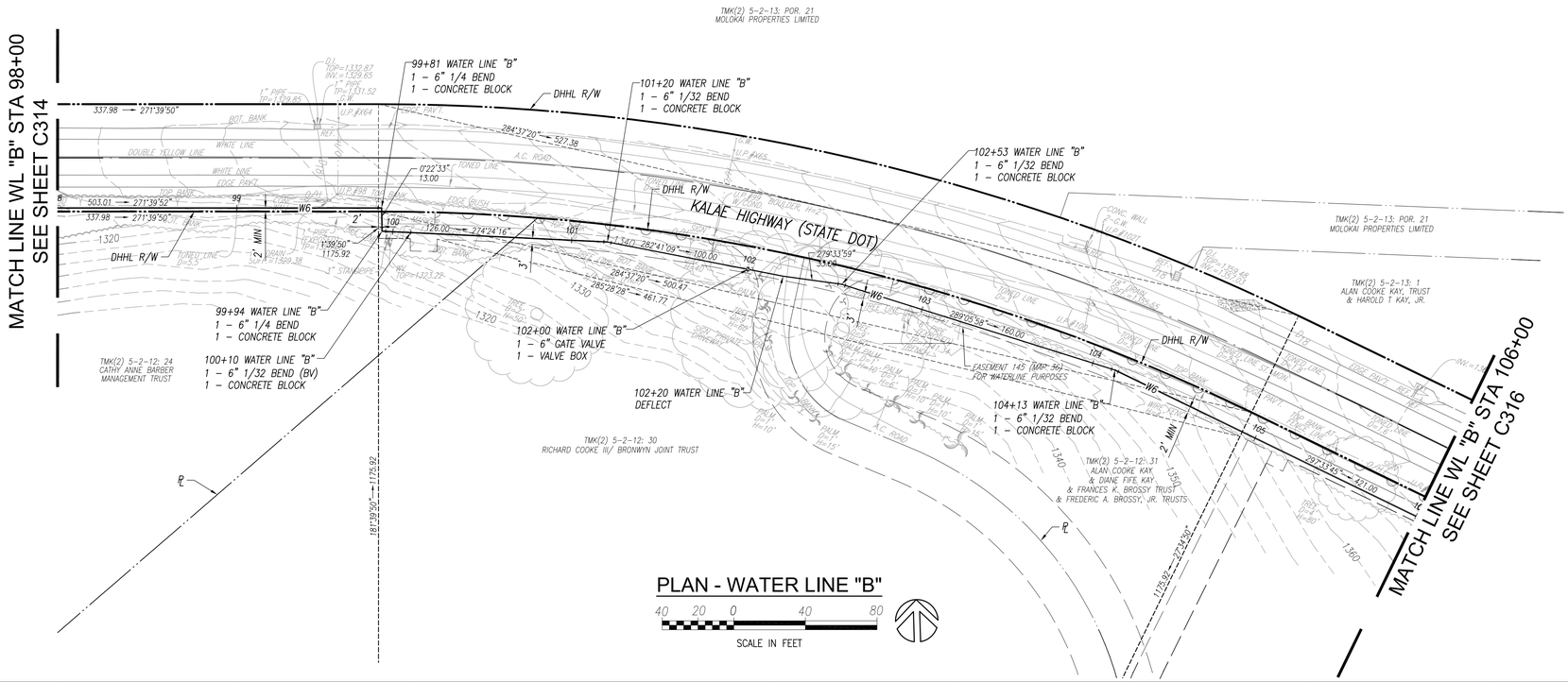
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

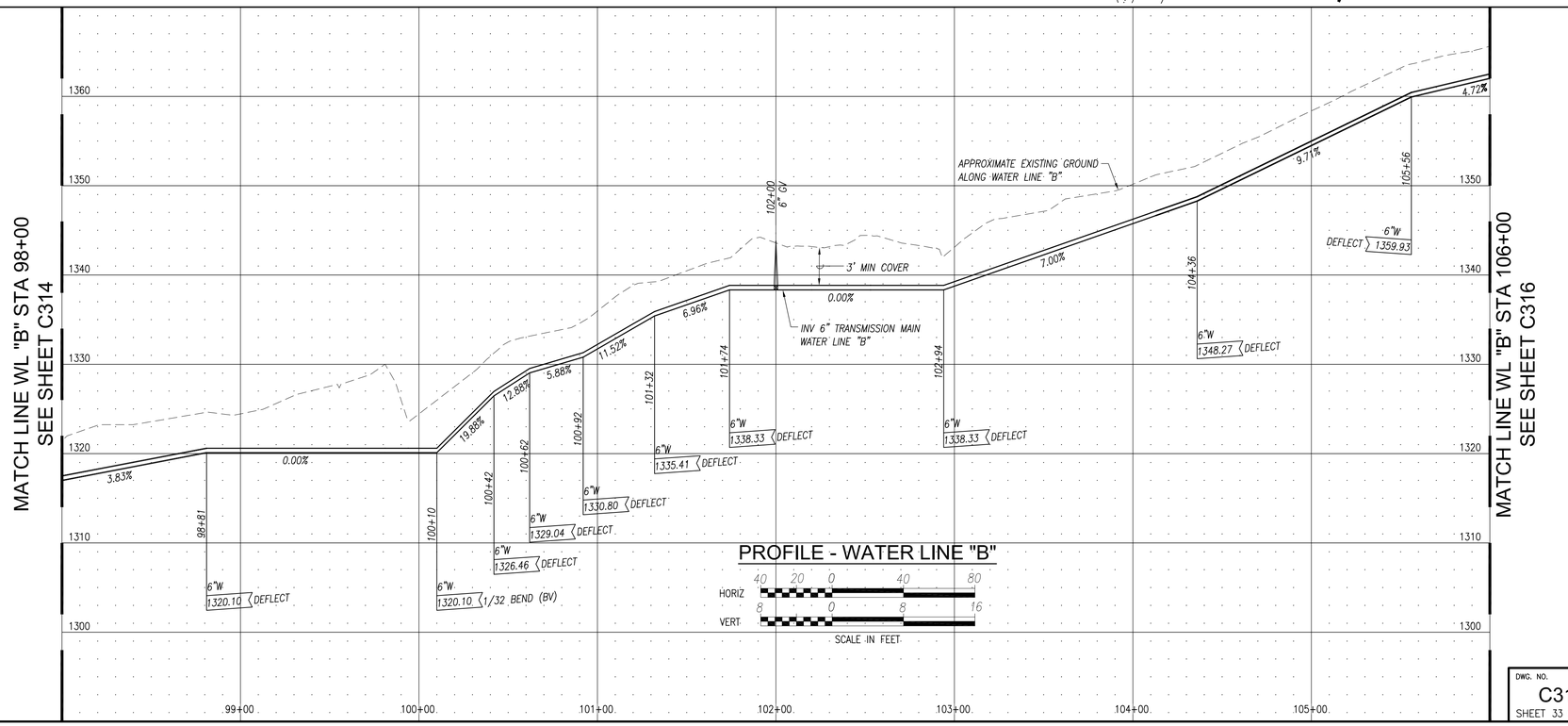
G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C314
SHEET 32 OF 146

FILE	POCKET	FOLDER	NO.





REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 98+00 TO 106+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

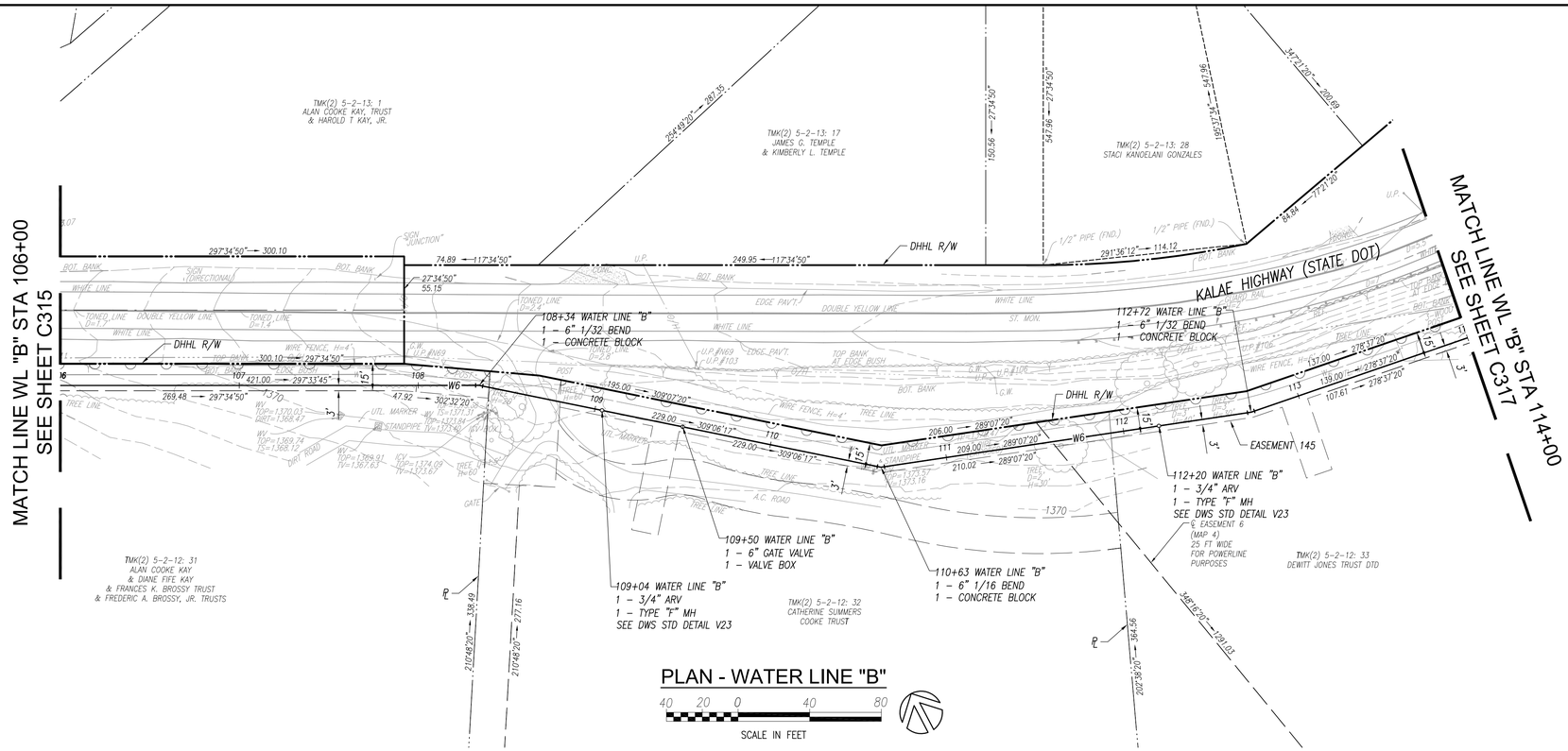
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C315
SHEET 33 OF 146

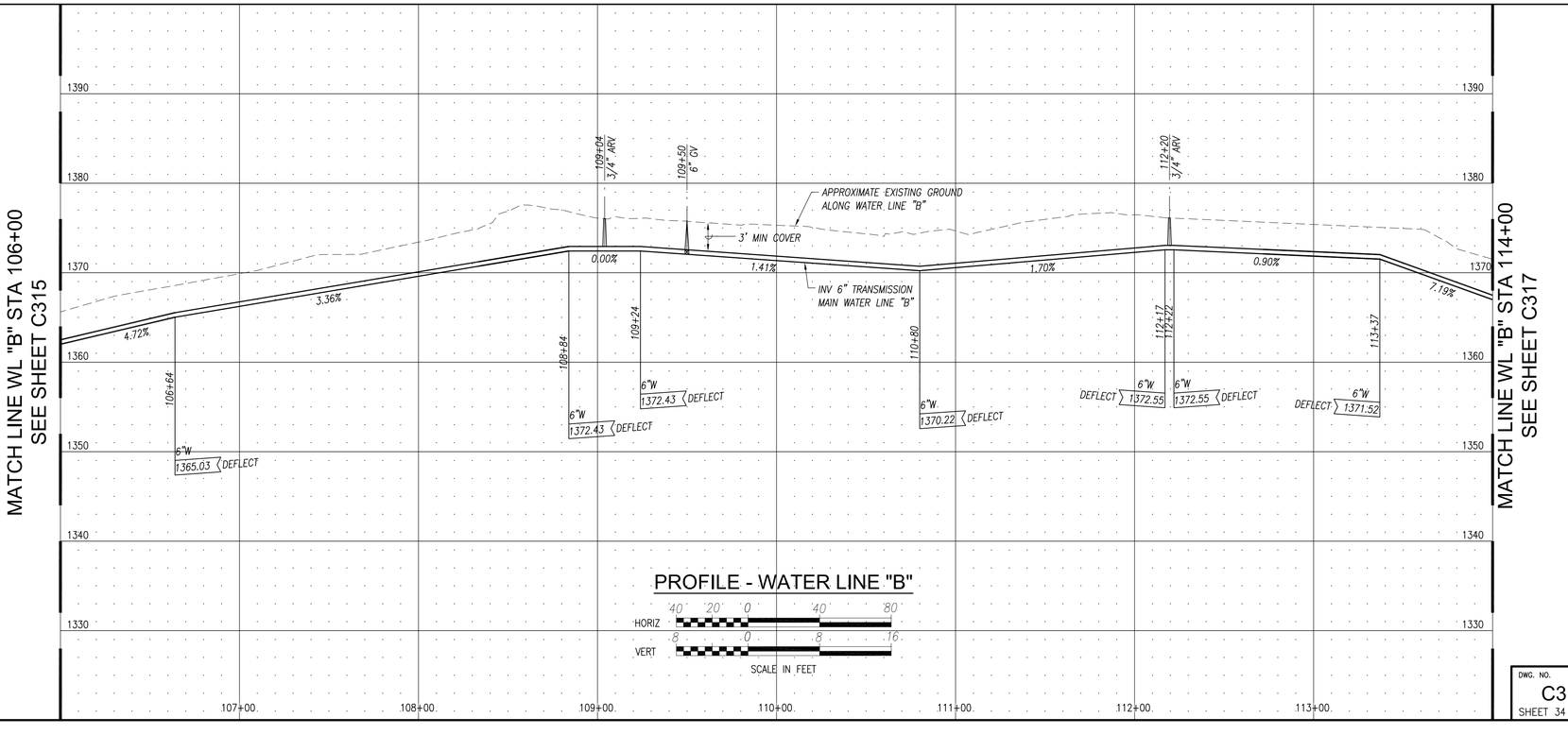
FILE	POCKET	FOLDER	NO.



PLAN - WATER LINE "B"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "B"

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION, (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C316
SHEET 34 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

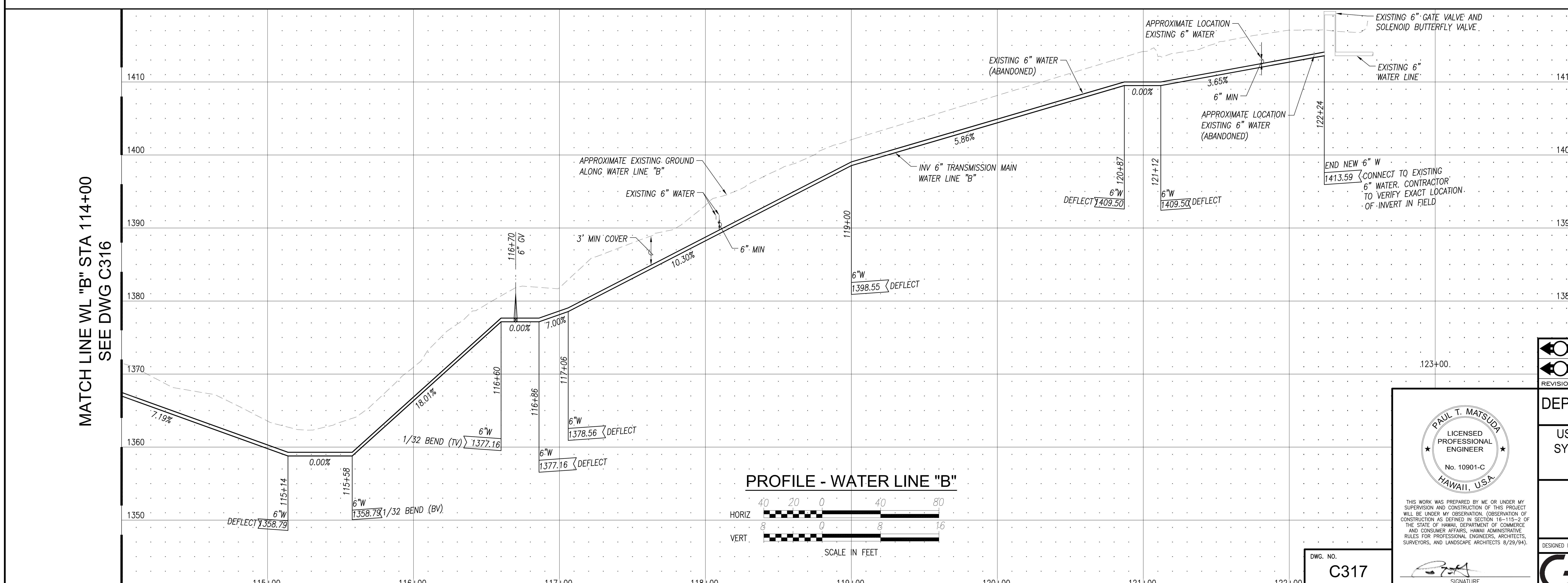
PLAN AND PROFILE
WATER LINE "B" 106+00 TO 114+00

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

PLAN AND PROFILE
WATER LINE "B" 114+00 TO 122+49

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

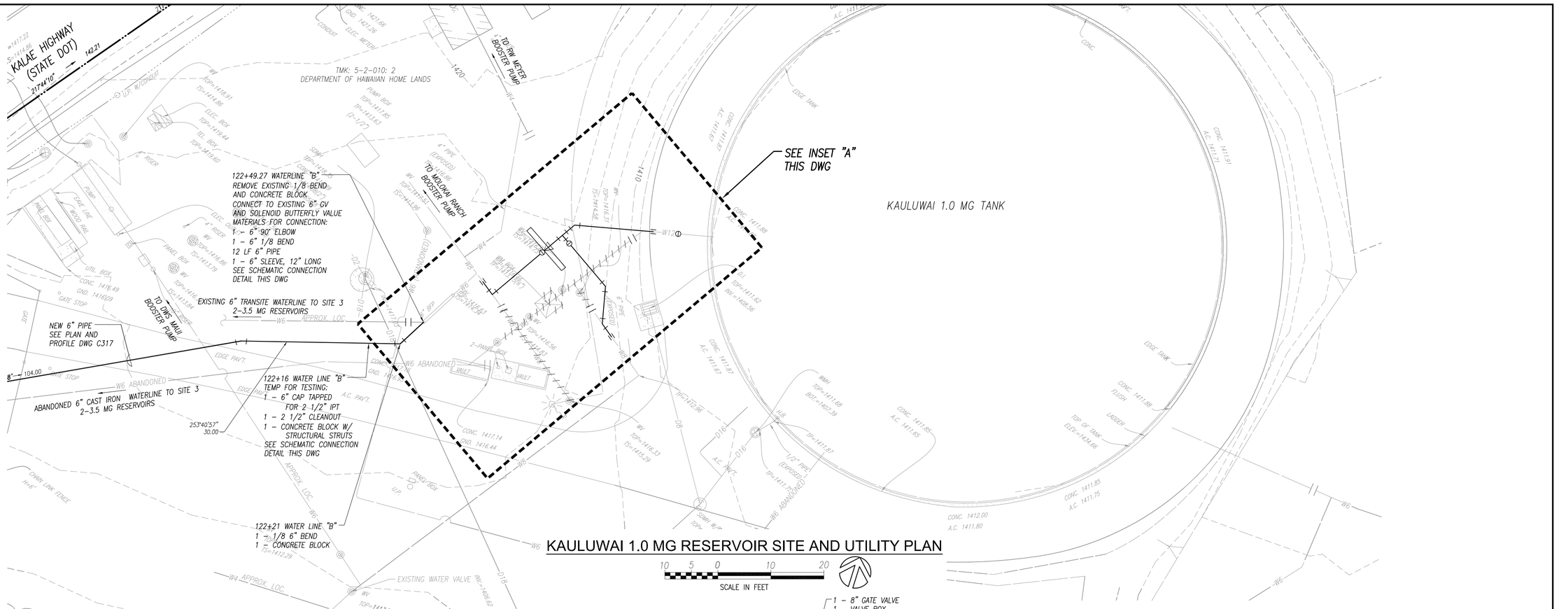
G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

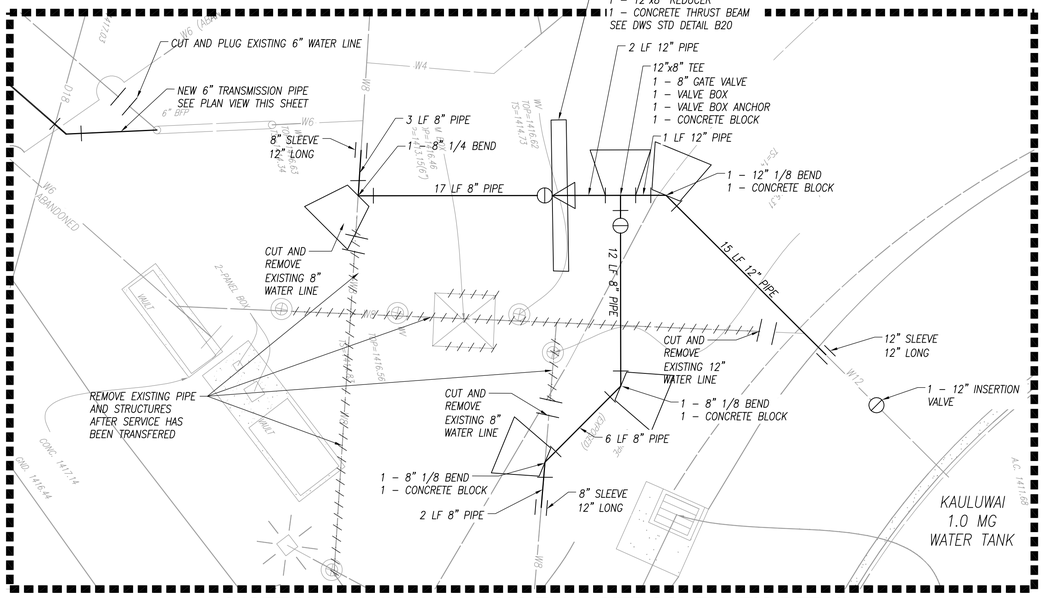
JUNE 2018

DWG. NO.
C317
SHEET 35 OF 146

FILE | POCKET | FOLDER | NO.

KAULUWAI 1.0 MG RESERVOIR SITE AND UTILITY PLAN





INSET "A" - KAULUWAI 1.0 MG TANK SITE SCHEMATIC DETAIL

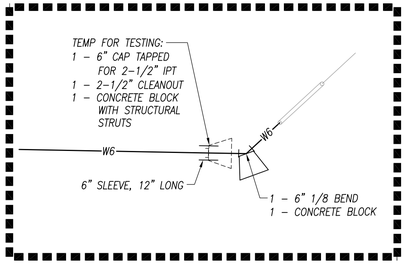
5 0 5 10

SCALE IN FEET

1 – 8" GATE VALVE
1 – VALVE BOX
1 – VALVE BOX ANCHOR
1 – 12"x8" REDUCER
11 – CONCRETE THRUST BEAM
SEE DWS STD DETAIL B20

10 5 0 10 20

SCALE IN FEET



SCHEMATIC CONNECTION DIAGRAM AT 122+16 WATER LINE "B"

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

KAULUWAI 1.0 MG RESERVOIR SITE AND UTILITY PLAN

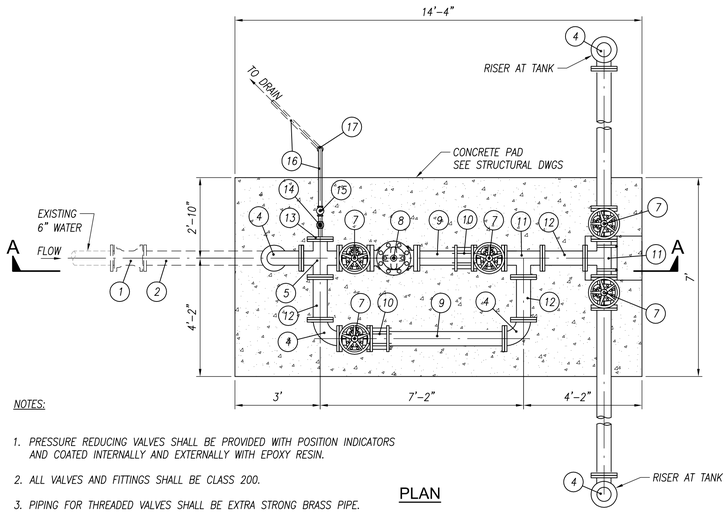
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

DWG. NO. C318
SHEET 36 OF 146

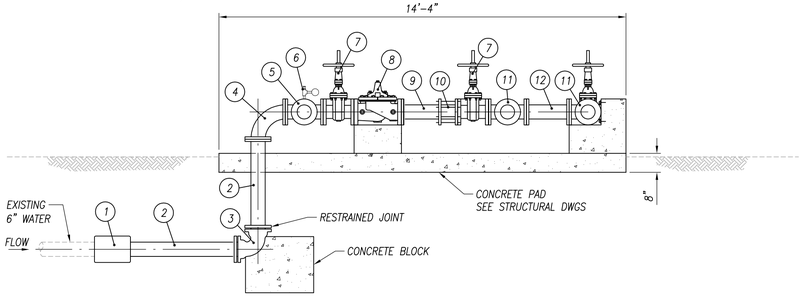
FILE	POCKET	FOLDER	NO.



NOTES:

1. PRESSURE REDUCING VALVES SHALL BE PROVIDED WITH POSITION INDICATORS AND COATED INTERNALLY AND EXTERNALLY WITH EPOXY RESIN.
2. ALL VALVES AND FITTINGS SHALL BE CLASS 200.
3. PIPING FOR THREADED VALVES SHALL BE EXTRA STRONG BRASS PIPE.
4. CONCRETE SHALL BE DWS 3500
5. REINFORCING BARS SHALL BE A615, GRADE 60.

PLAN

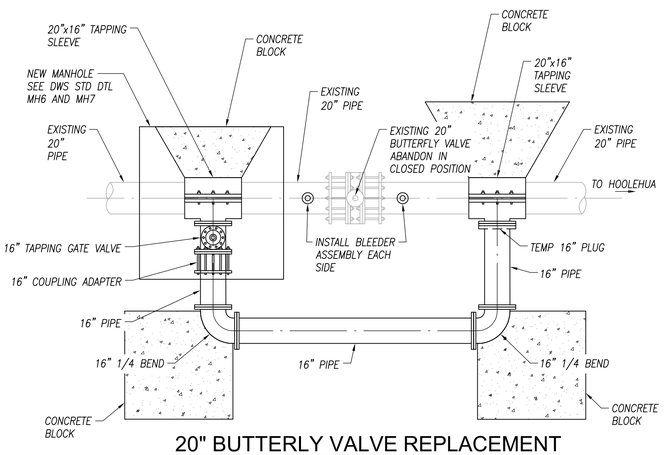


SECTION A-A

TANK INFLOW CONTROL VALVE

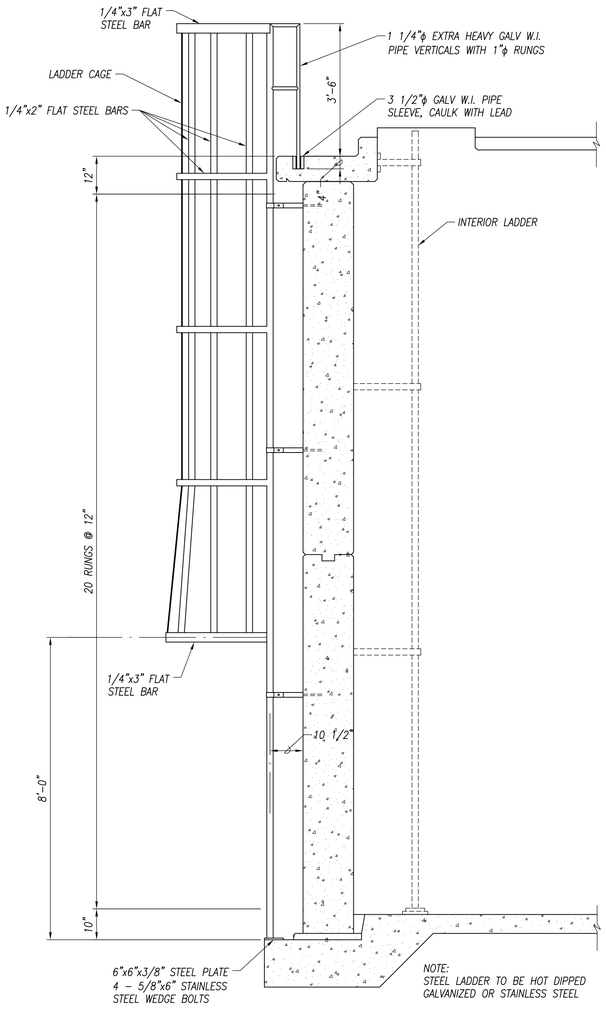
3/8" = 1'-0"

MATERIALS LIST	
1	6" SLEEVE, 12" LONG
2	6" DI PIPE, CUT TO FIT
3	6" 1/4 BEND, MJ
4	6" 1/4 BEND, FE
5	6" CROSS TAPPED WITH 3/4" IPT AND 3/4" BALL COCK
6	PRESSURE GAGE AND AIR RELIEF WITH 3/4" IPT TAP
7	6" GATE VALVE, FE
8	6" FLOW CONTROL VALVE, CLA-VAL MODEL NO 124-18, FE
9	6" DI PIPE, FE x PE
10	6" FLANGED COUPLING ADAPTER
11	6" TEE, FE
12	6" SPOOL PIECE, 18" LONG
13	6" BLIND FLANGE TAPPED WITH 1 1/2" IPT
14	1 1/2" GATE VALVE, SE
15	1 1/2" PRESSURE RELIEF VALVE, SE
16	1 1/2" PIPE
17	1 1/2" 90° BEND, THREADED, TOP AND BOTTOM



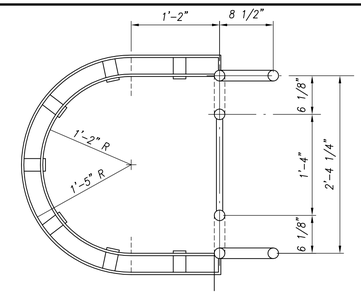
20" BUTTERLY VALVE REPLACEMENT

NOT TO SCALE



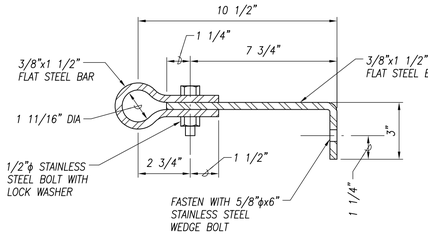
EXTERIOR LADDER DETAIL

1/2" = 1'-0"



PLAN - EXTERIOR LADDER

1" = 1'-0"



EXTERIOR LADDER SUPPORT

3" = 1'-0"

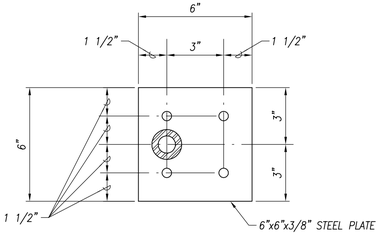


PLATE DETAIL

3" = 1'-0"

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 3 - HOOLEHUA 2 - 3.5 MG RESERVOIRS
JOB NO.

2 - 3.5 MG RESERVOIR SITE DETAILS

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C319
SHEET 37 OF 146

FILE	POCKET	FOLDER	NO.

TMK: (2) 5-2-7: 79
DEPARTMENT OF HAWAIIAN HOME LANDS

TMK: (2) 5-2-7: 30
DEPARTMENT OF HAWAIIAN
HOME LANDS
LEASEE: BRETT WAIPA

HOOLEHUA TANK SITE
2-3.5 MG TANKS
SPILLWAY ELEV=1040'
FLOOR ELEV=1020'

TMK: (2) 5-2-7: 29
DEPARTMENT OF HAWAIIAN
HOME LANDS
LEASEE: MELODY-LYNN L. ALCON

TMK: (2) 5-2-7: 30
DEPARTMENT OF HAWAIIAN
HOME LANDS
LEASEE: BRETT WAIPA

TMK: (2) 5-2-7: 90
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: JAMES LINDSAY

TMK: (2) 5-2-7: 78
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: BRETT WAIPA

TMK: (2) 5-2-7: 77
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: MOLLY TENGAN

TMK: (2) 5-2-7: 76
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: MALIA FORBES GREANEY

TMK: (2) 5-2-7: 75
DEPARTMENT OF HAWAIIAN HOME LANDS

EASEMENT B (MAP 4)
FOR WATERLINE PURPOSE

SITE NO. 4

PROPOSED 5280 LF
ACCESS ROADWAY

UHI PALI AVENUE (OHHL)

TMK: (2) 5-2-15: 1
STATE OF HAWAII
MOLOKAI HIGH SCHOOL

TMK: (2) 5-2-7: 28
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: MALIA FORBES GREANEY

TMK: (2) 5-2-7: 13
DEPARTMENT OF HAWAIIAN
HOME LANDS
LEASEE: RAY H.K. WALLACE

TMK: (2) 5-2-13: 10
KUALAPUU RANCH 3, LLC

FARRINGTON AVENUE (STATE DOT)

TMK: (2) 5-2-7: 1
STATE OF HAWAII
DEPARTMENT OF EDUCATION

TMK: (2) 5-2-13: 20
RUSSELL ALLAN DECOITE
& LYNN PUALANI DECOITE

KULEA STREET (OHHL)

TMK: (2) 5-2-7: 93
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: JAMIE F. MAIOHO

TMK: (2) 5-2-12: 04
MONSANTO HAWAII PRODUCTION CO, LLC
LEASEE: MONSANTO COMPANY

GENERAL PLAN

200 0 200 400
SCALE IN FEET

SITE 4 EARTHWORK SUMMARY

* AREA OF DISTURBANCE 86,363 SQ FT (1.98 ACRES)

GRADED AREA 86,363 SQ FT (1.98 ACRES)

* INCLUDING, BUT NOT LIMITED TO, EXCAVATION, GRADING, EQUIPMENT STAGING AND STORAGE AREAS, AS DEFINED BY THE STATE OF HAWAII, DEPARTMENT OF HEALTH CLEAN WATER BRANCH GUIDELINES FOR NOTICE OF INTENT, FORM G.

EXCAVATION = 630 CY
EMBANKMENT = 420 CY

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - 2-3.5 MG TANK SITE IMPROVEMENTS AND ACCESS ROADWAY
JOB NO.

GENERAL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

DWG. NO.
C400
SHEET 38 OF 146

FILE	POCKET	FOLDER	NO.

TEMPORARY EROSION CONTROL LEGEND

- PROPERTY LINE
- LOT LINE
- LIMITS OF GRADING
- W8 — EXISTING WATER LINE
- D18 — EXISTING DRAINLINE
- D18 — NEW DRAIN LINE
- 90 — EXISTING CONTOUR
- 100 — PROPOSED CONTOUR
- EXISTING DRAINAGE FLOW
- PROPOSED TEMPORARY DRAINAGE FLOW
- ROCK CONSTRUCTION ACCESS FOR INGRESS/EGRESS
- TEMPORARY SILT SOCKS
- TEMPORARY MIRAFI GEOTECHNICAL FABRIC FOR GRATED INLETS

TMK: (2) 5-2-7: 79
DEPARTMENT OF HAWAIIAN HOME LANDS

HOOLEHUA TANK SITE
2-3.5 MG TANKS
SPILLWAY ELEV=1040'
FLOOR ELEV=1020'

TMK: (2) 5-2-7: 30
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: BRETT WAIPA

INSTALL TEMPORARY SILT SOCK AT LIMITS OF GRADING SEE DETAIL DWG T007

INSTALL TEMPORARY SILT SOCK AT LIMITS OF GRADING SEE DETAIL DWG T007

TMK: (2) 5-2-7: 30
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: BRETT WAIPA

TMK: (2) 5-2-7: 29
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: MELODY LYNN L. ALCON

TMK: (2) 5-2-7: 90
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: JAMES LINDSAY

TMK: (2) 5-2-7: 78
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: BRETT WAIPA

TMK: (2) 5-2-7: 77
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: MOLLY TENGAN

INSTALL TEMPORARY SILT SOCK AT LIMITS OF GRADING SEE DETAIL DWG T007

TMK: (2) 5-2-7: 58
DEPARTMENT OF HAWAIIAN HOME LANDS

TMK: (2) 5-2-7: 76
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: MALIA FORBES GREANEY

UHU PALI AVENUE (DHHL)

TMK: (2) 5-2-15: 1
STATE OF HAWAII
MOLOKAI HIGH SCHOOL

INSTALL TEMPORARY SILT SOCK AT LIMITS OF GRADING SEE DETAIL DWG T007

TMK: (2) 5-2-7: 28
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: MALIA FORBES GREANEY

TMK: (2) 5-2-13: 10
KUALAPUU RANCH 3, LLC

CONSTRUCT 20' x 50' CONSTRUCTION ENTRANCE SEE DETAIL DWG T007

FARRINGTON AVENUE (STATE DOT)

TMK: (2) 5-2-7: 13
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: RAY H.K. WALLACE

TMK: (2) 5-2-7: 1
STATE OF HAWAII
DEPARTMENT OF EDUCATION

TMK: (2) 5-2-13: 20
RUSSELL ALLAN DECOITE & LYNN PUALANI DECOITE

TMK: (2) 5-2-7: 93
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: JAMIE F. MAIOHO

KULEA STREET (DHHL)

TMK: (2) 5-2-12: 04
MONSANTO HAWAII PRODUCTION CO, LLC
LEASEE: MONSANTO COMPANY

EROSION CONTROL PLAN

200 0 200 400
SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DWG. NO.
C401
SHEET 39 OF 146

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - 2-3.5 MG TANK SITE IMPROVEMENTS AND ACCESS ROADWAY
JOB NO.

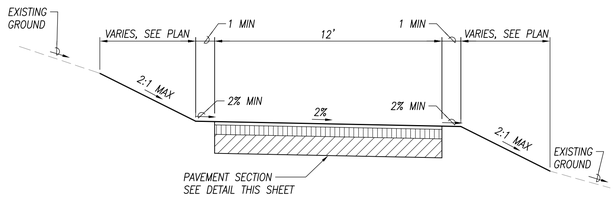
EROSION CONTROL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

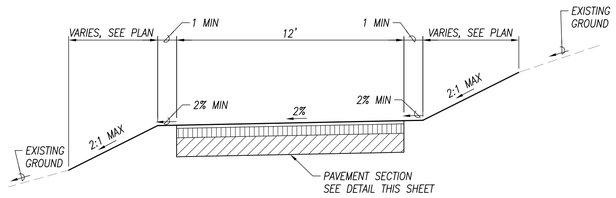
FILE	POCKET	FOLDER	NO.



0+00 TO 3+08

SECTION D-D

NOT TO SCALE



3+08 TO 51+75

SECTION E-E

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA 2-3.5 MG RESERVOIR
JOB NO.

TYPICAL SECTIONS

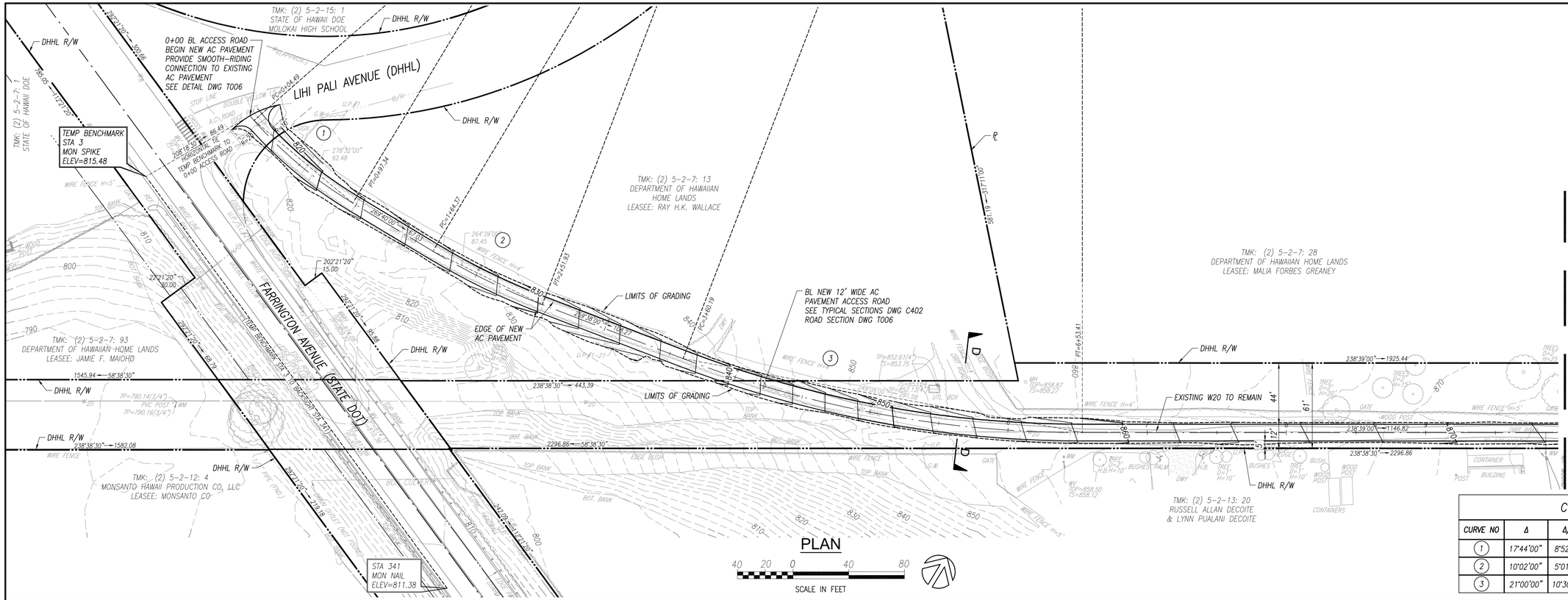
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

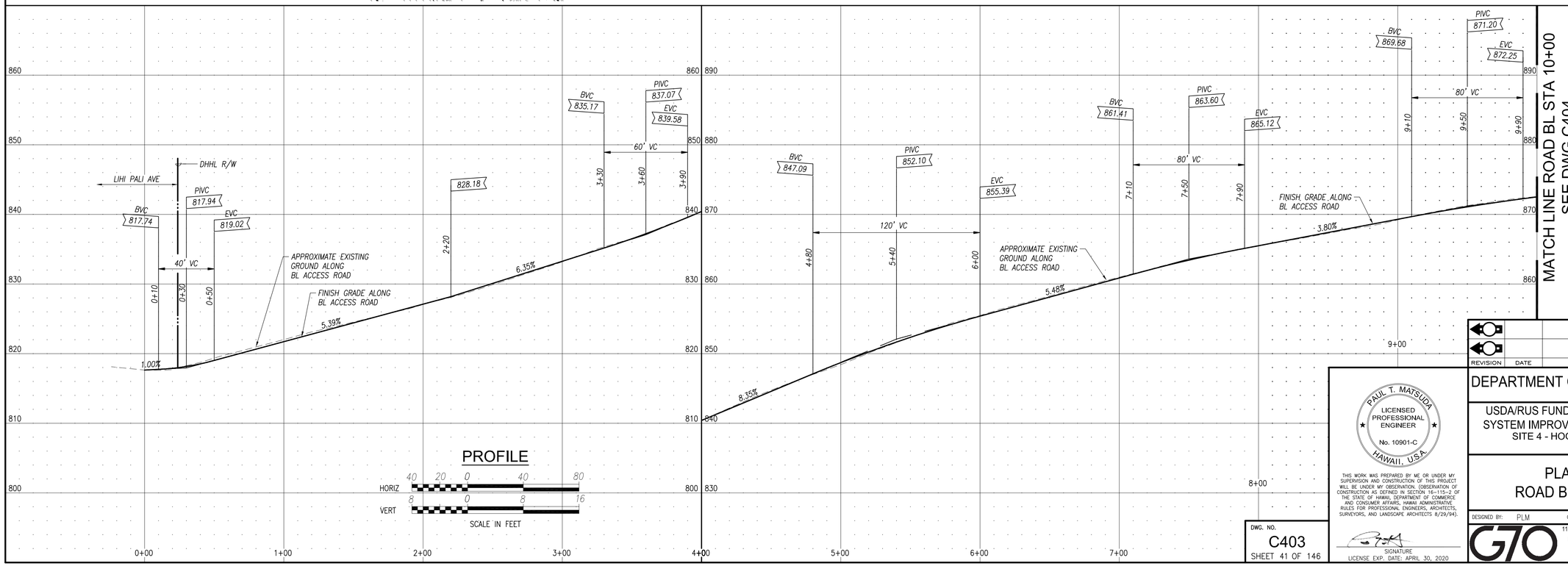
JUNE 2018

DWG. NO.
C402
SHEET 40 OF 146

FILE	POCKET	FOLDER	NO.



CURVE TABLE						
CURVE NO	Δ	Δ/2	R	T	C	Lc
1	17°44'00"	8°52'00"	300.00'	46.80	92.48'	92.85'
2	10°02'00"	5°01'00"	500.00'	43.89	87.45'	87.56'
3	21°00'00"	10°30'00"	800.00'	148.27	291.58'	293.22'



MATCH LINE ROAD BL STA 10+00
SEE DWG C404

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA 2-3.5 MG RESERVOIR
JOB NO.

PLAN AND PROFILE
ROAD BL STA 0+00 TO 10+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

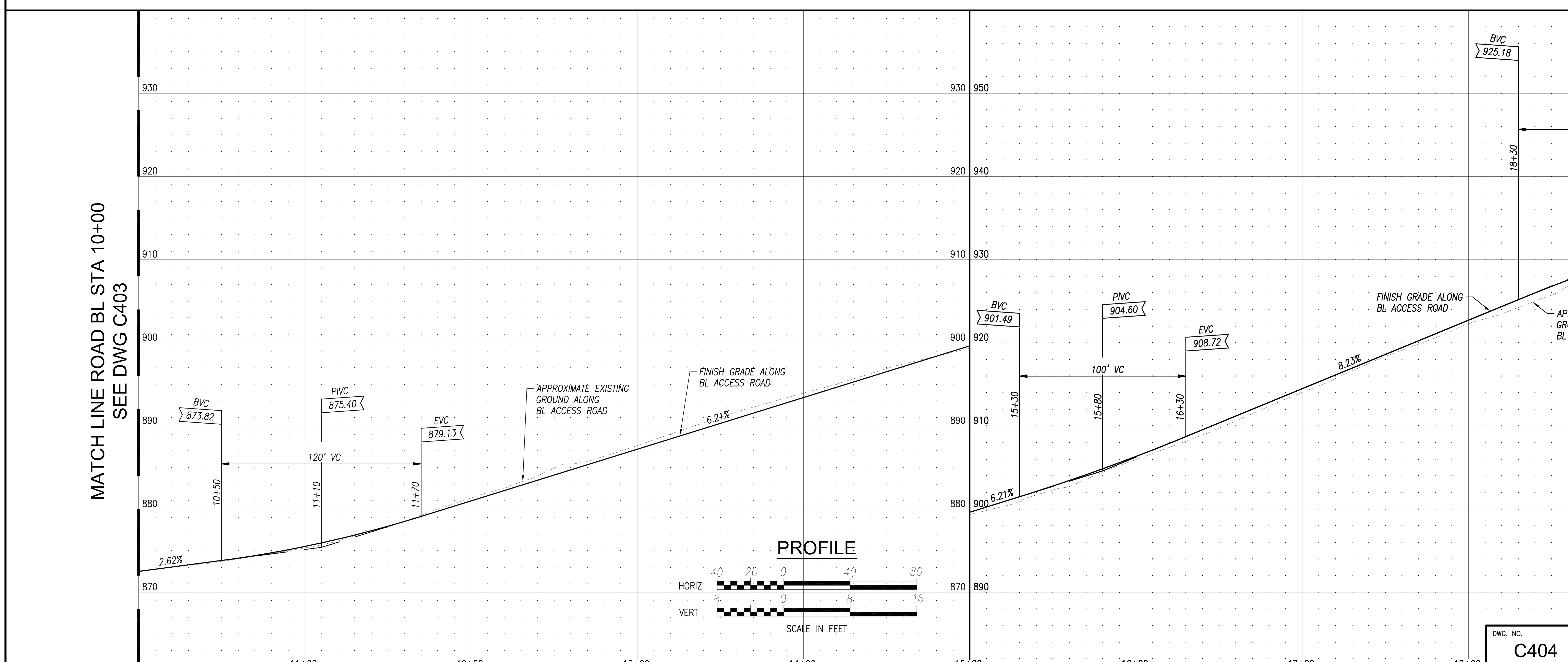
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C403
SHEET 41 OF 146

FILE	POCKET	FOLDER	NO.



REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA 2-3.5 MG RESERVOIR

JOB NO.

PLAN AND PROFILE
ROAD BL STA 10+00 TO 20+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

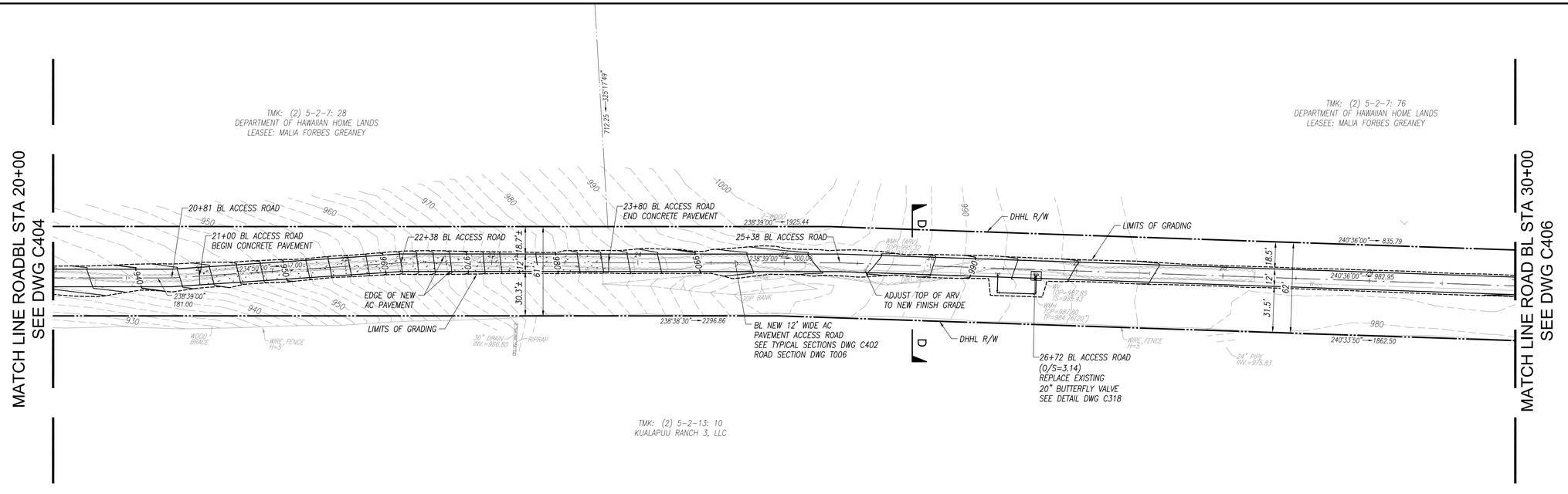
G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO. C404

SHEET 42 OF 146

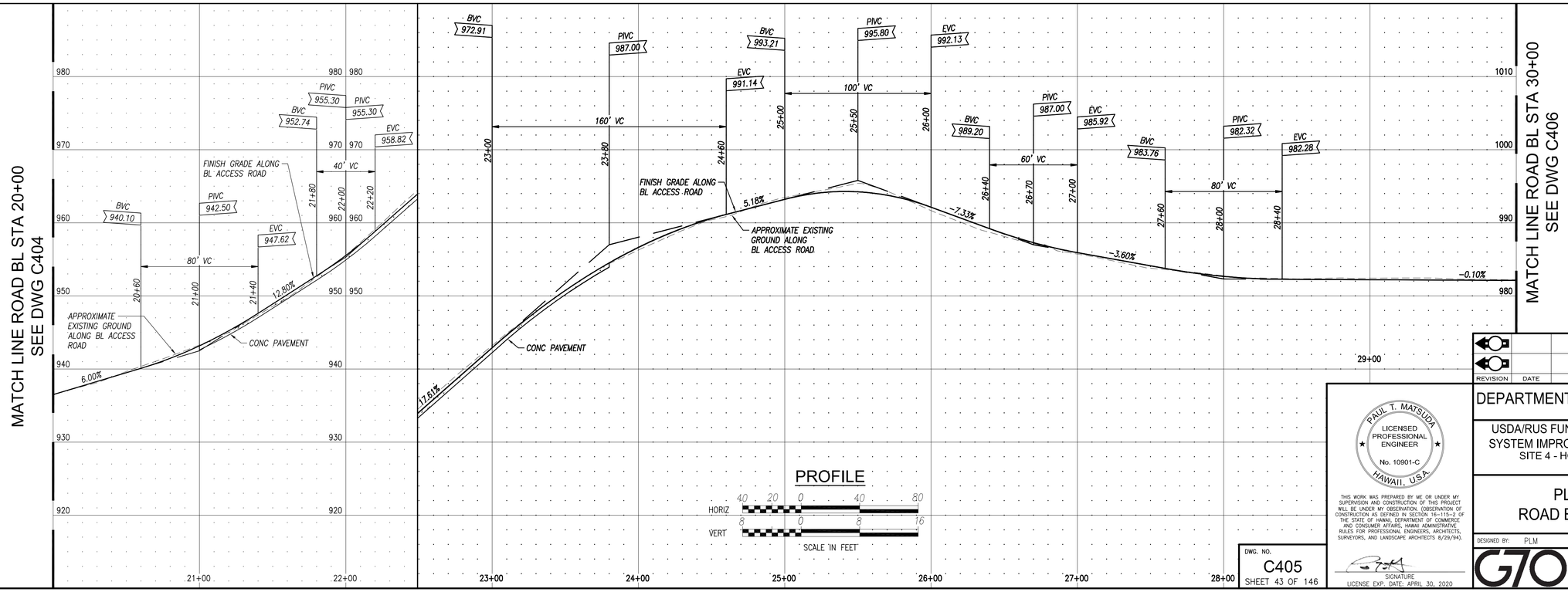
FILE | POCKET | FOLDER | NO.



PLAN

40 20 0 40 80

SCALE IN FEET



PROFILE

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
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No. 10901-C
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SIGNATURE

LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C405
SHEET 43 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA 2-3.5 MG RESERVOIR
JOB NO.

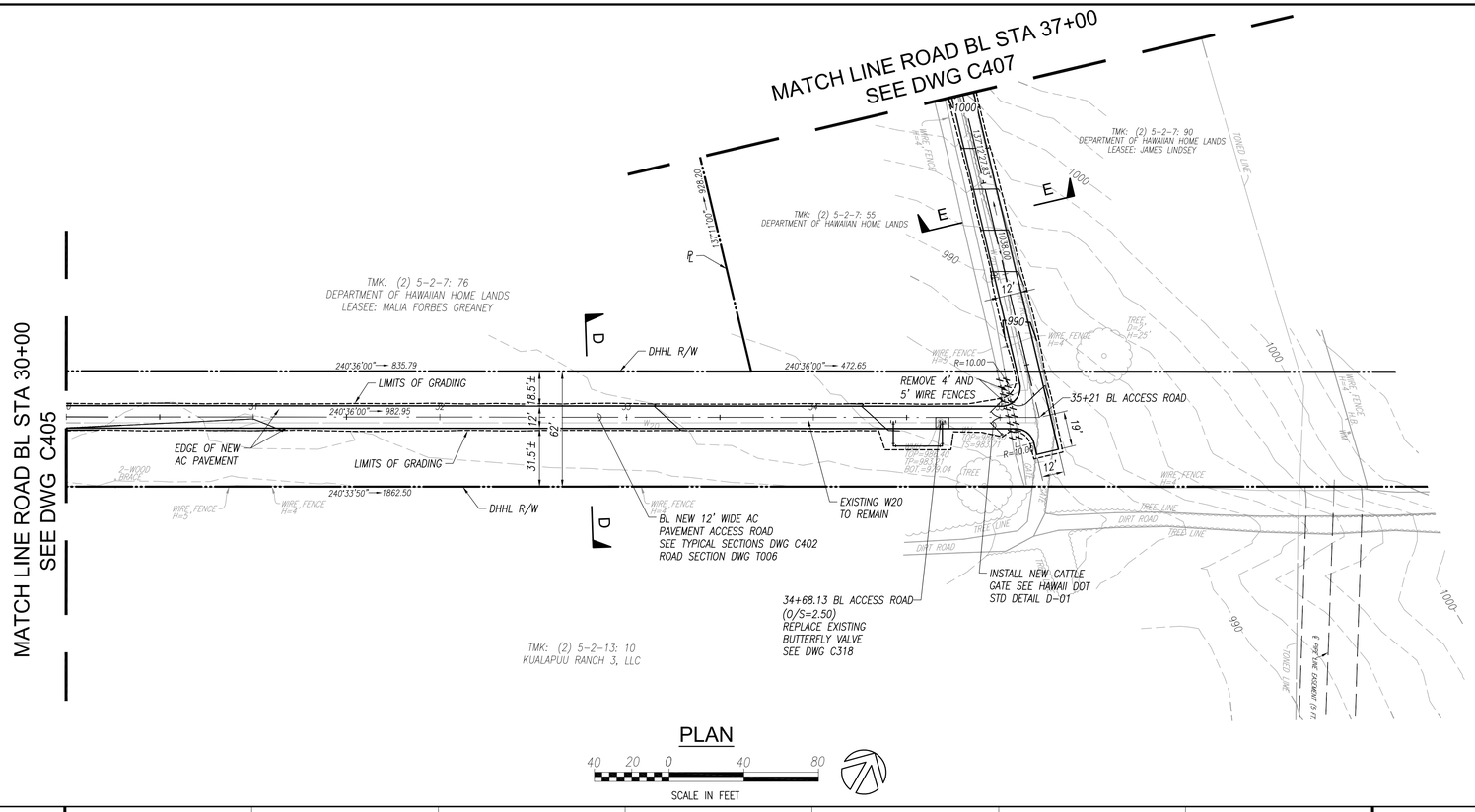
PLAN AND PROFILE
ROAD BL STA 20+00 TO 30+00

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

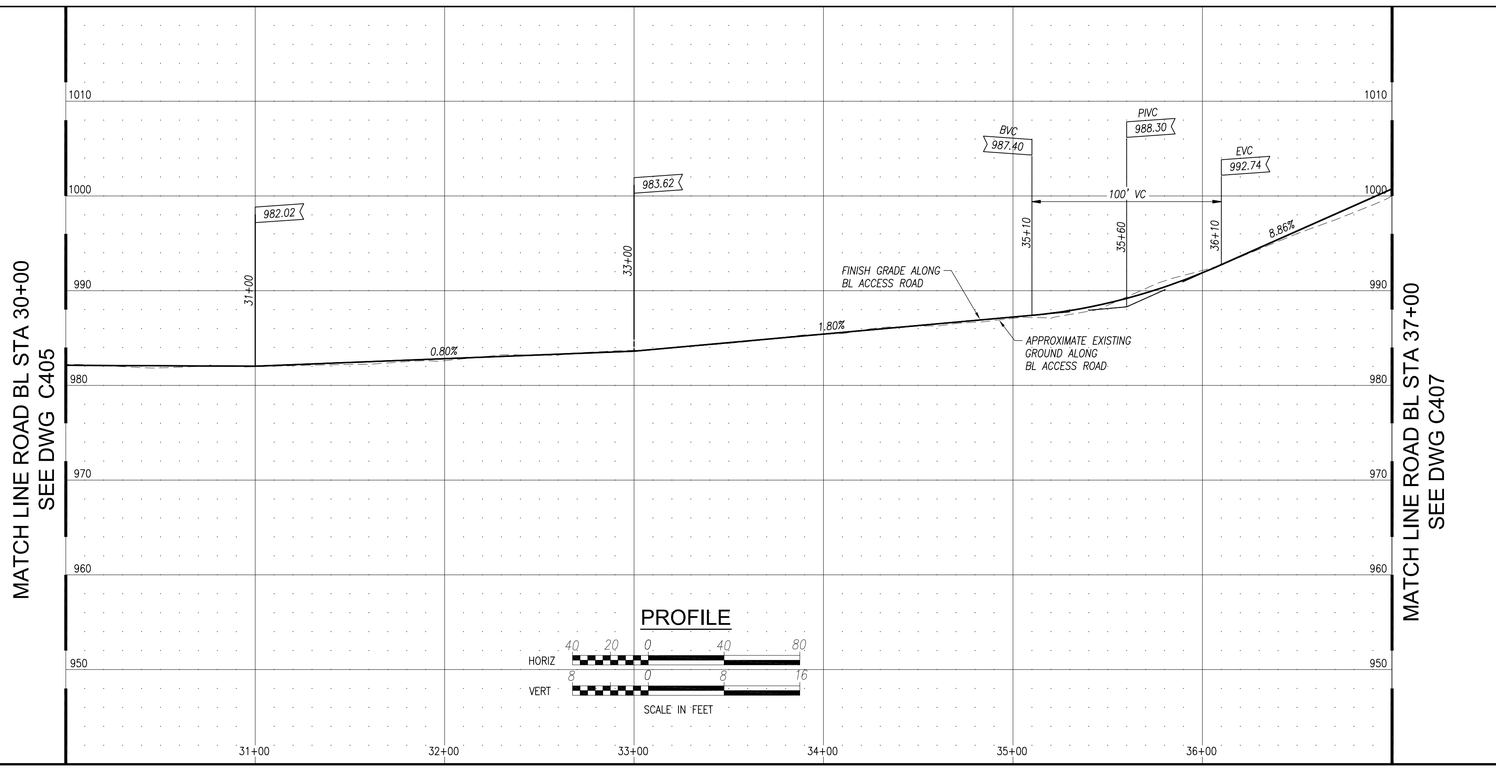
FILE	POCKET	FOLDER	NO.



PLAN

40 20 0 40 80

SCALE IN FEET



PROFILE

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA 2-3.5 MG RESERVOIR
JOB NO.

PLAN AND PROFILE
ROAD BL STA 30+00 TO 37+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C406
SHEET 44 OF 146

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
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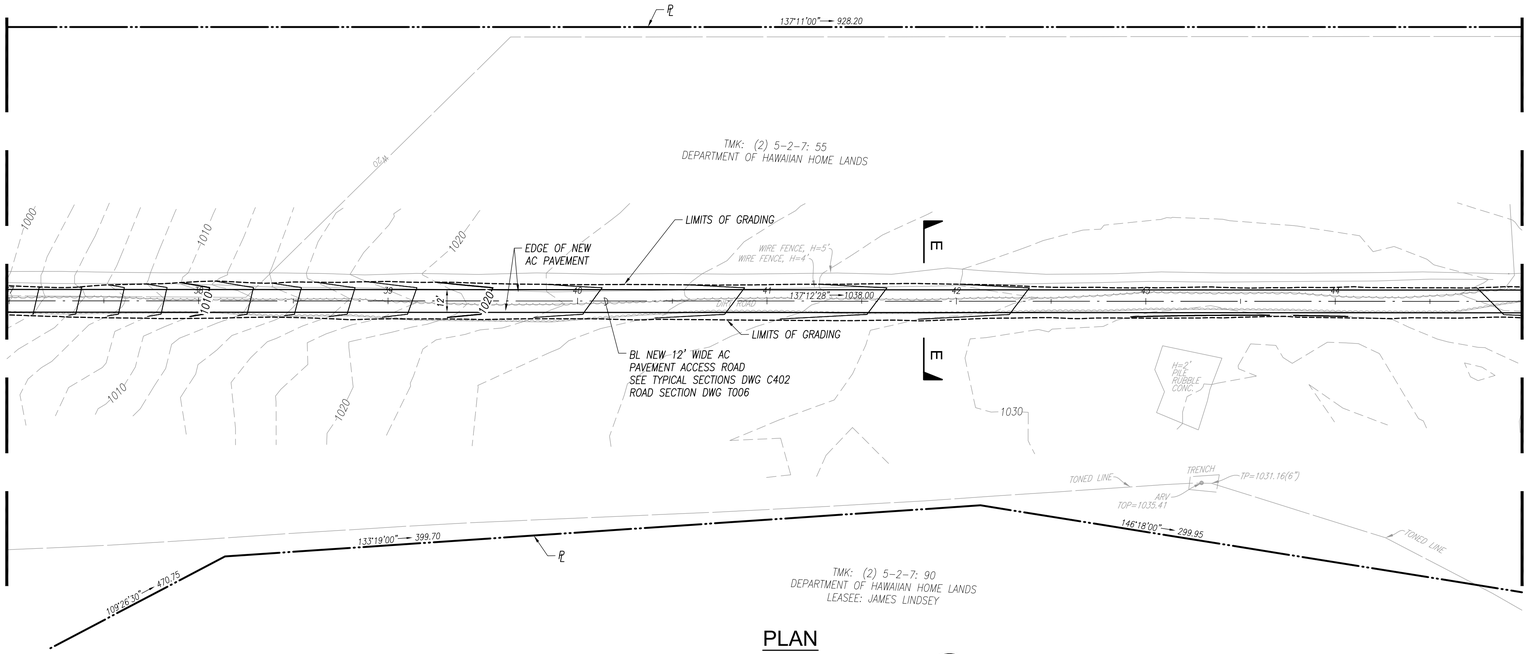
JUNE 2018

FILE	POCKET	FOLDER	NO.

MATCH LINE ROAD BL STA 37+00
SEE DWG C406

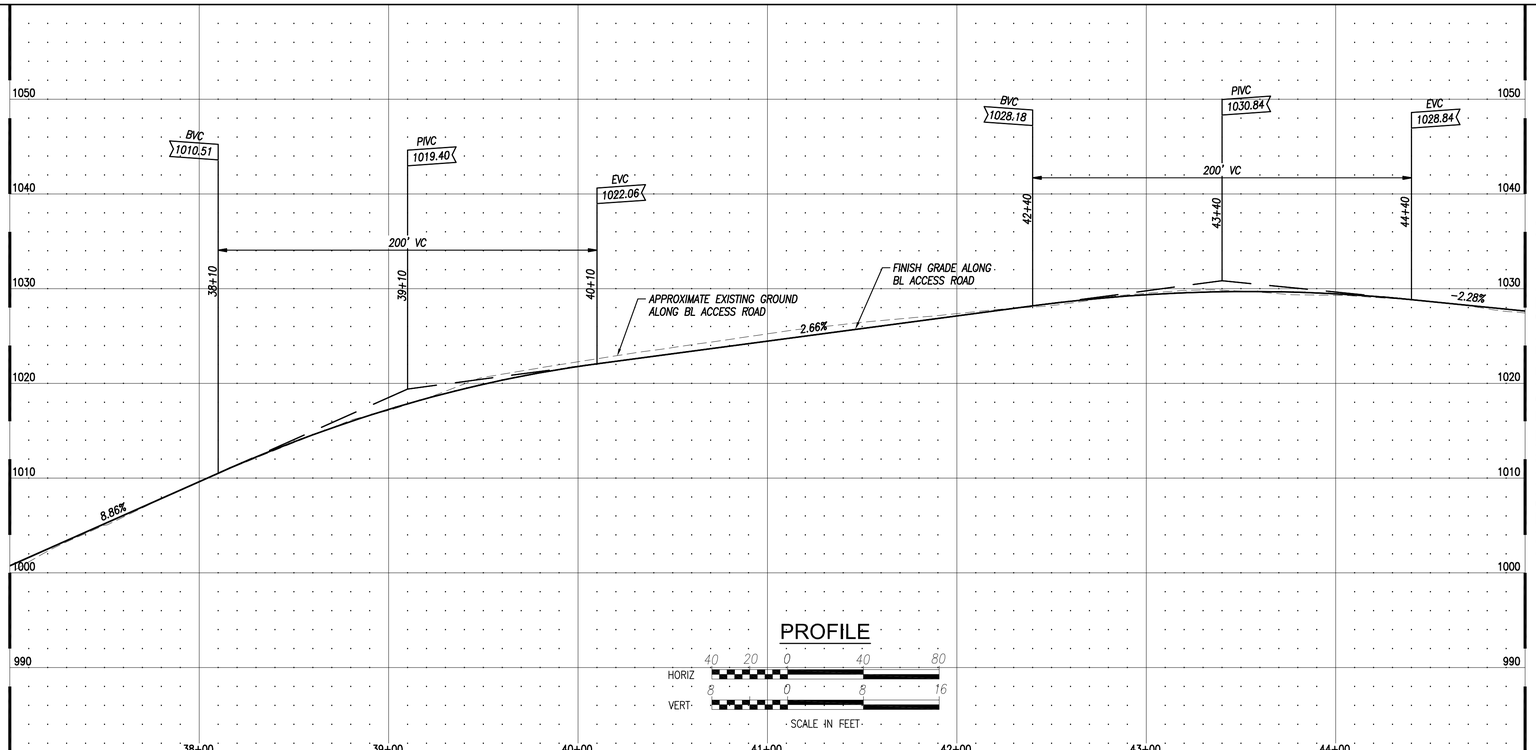
MATCH LINE ROAD BL STA 45+00
SEE DWG C408



PLAN

40 20 0 40 80

SCALE IN FEET



PROFILE

40 20 0 40 80

HORIZ

8 0 8 16

VERT

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA 2-3.5 MG RESERVOIR
JOB NO.

PLAN AND PROFILE
ROAD BL STA 37+00 TO 45+00

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No. 10901-C
HAWAII, U.S.A.

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LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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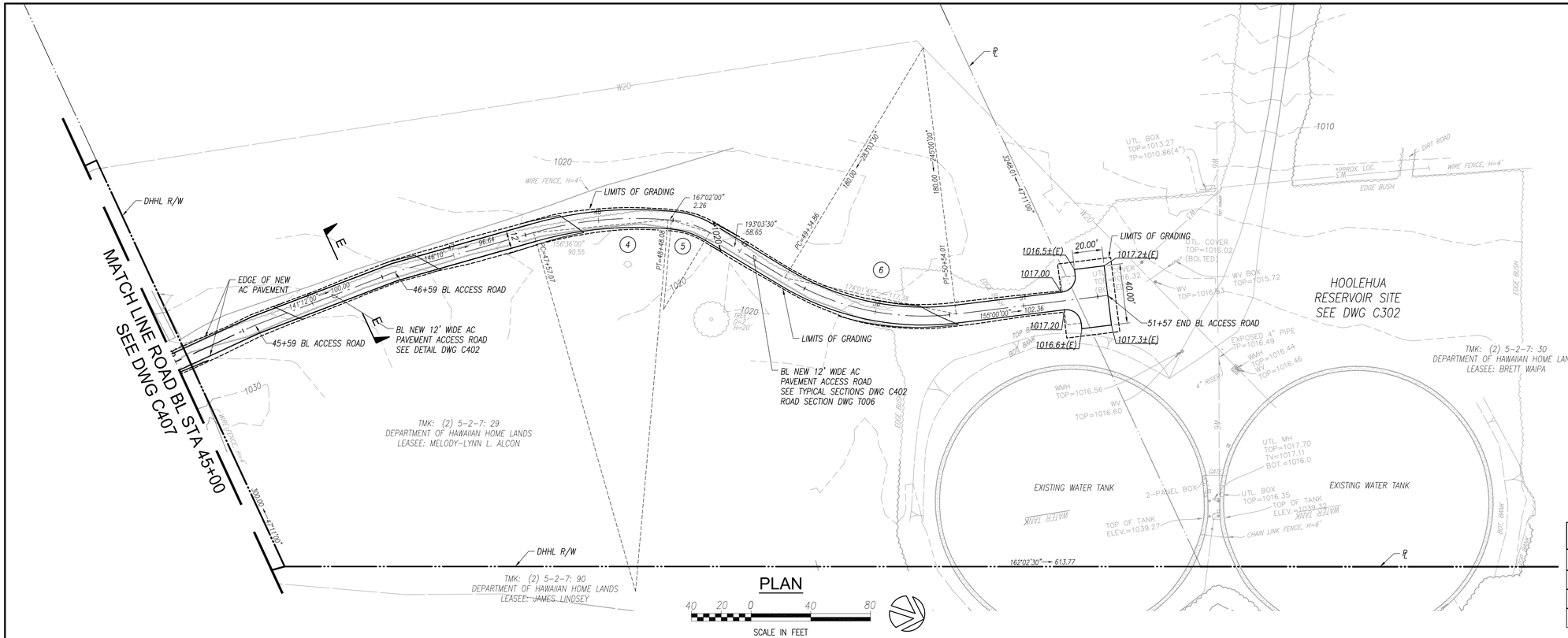
JUNE 2018

DWG. NO.
C407
SHEET 45 OF 146

FILE	POCKET	FOLDER	NO.

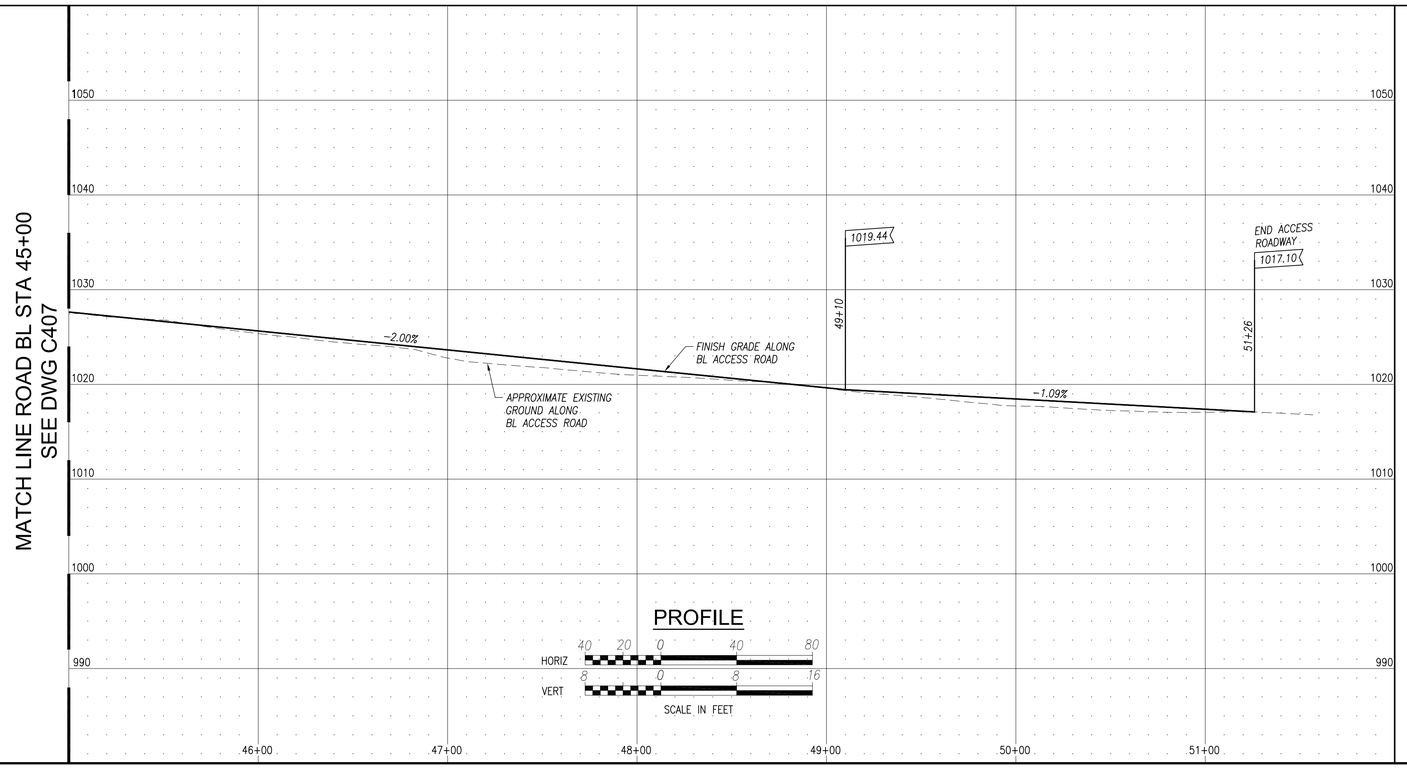


PLAN

40 20 0 40 80

SCALE IN FEET

CURVE TABLE						
CURVE NO	Δ	Δ/2	R	T	C	Lc
4	20°52'00"	10°26'00"	250.00'	46.03	90.55'	91.05'
5	26°01'30"	13°00'45"	60.00'	13.87	27.02'	27.25'
6	38°03'30"	19°01'45"	180.00'	62.08	117.38'	119.56'



PROFILE

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

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SIGNATURE

LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C408
SHEET 46 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA 2-3.5 MG RESERVOIR
JOB NO.

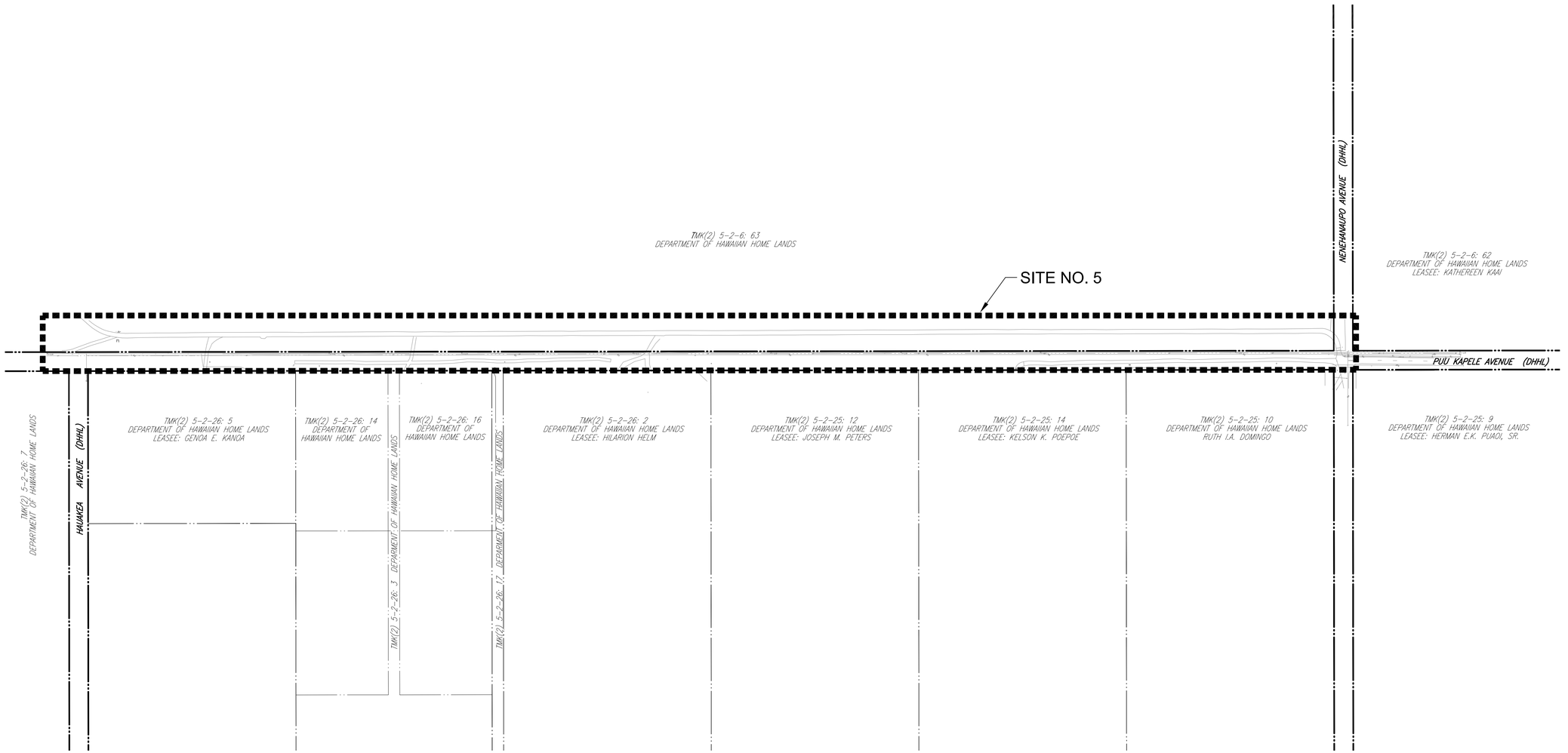
PLAN AND PROFILE
ROAD BL STA 45+00 TO END
ROAD BL 45+00 TO END

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



GENERAL PLAN

150 0 150 300

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE

LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C500
SHEET 47 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 5 - PUU KAPELE AVENUE IMPROVEMENTS
JOB NO.

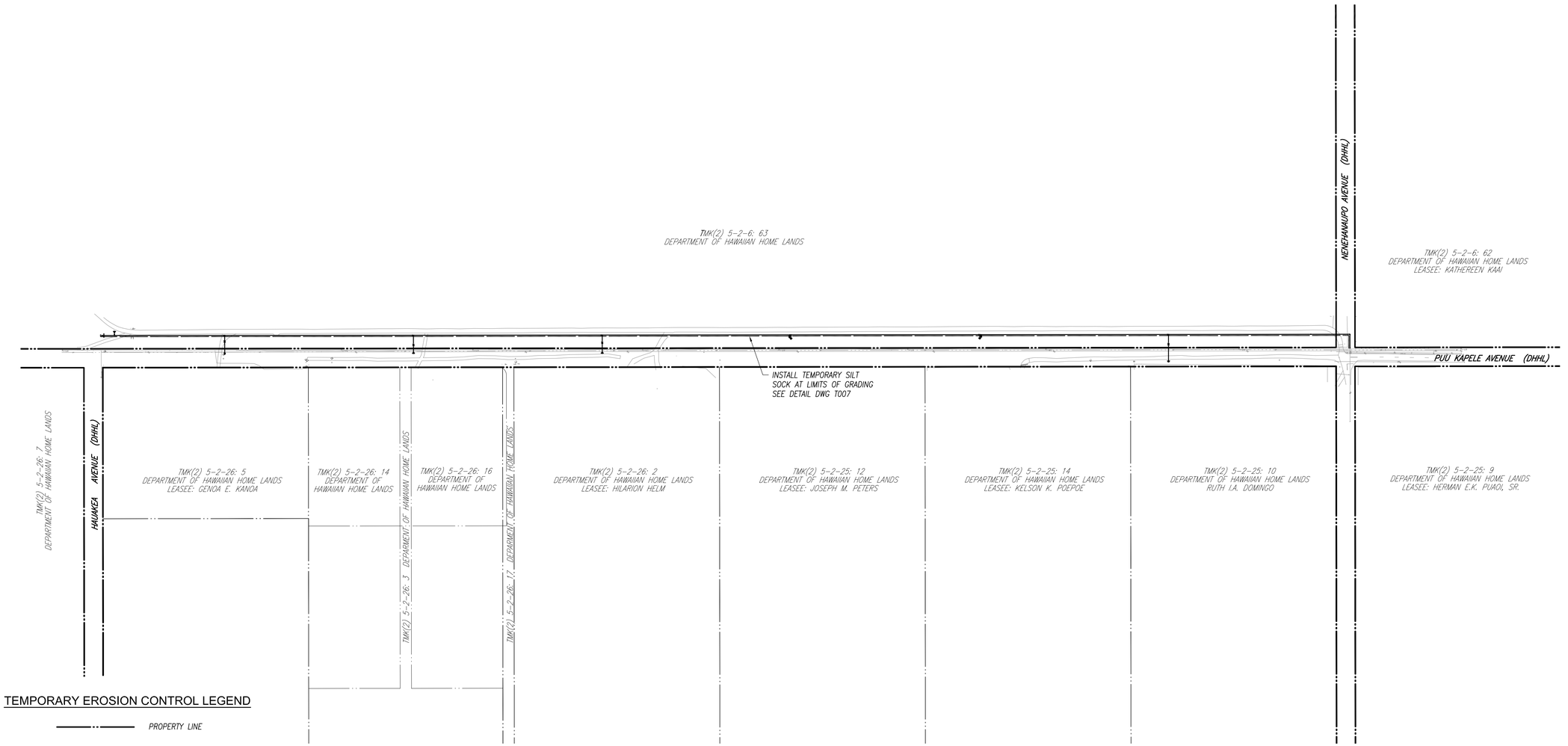
GENERAL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



TEMPORARY EROSION CONTROL LEGEND

- PROPERTY LINE
- LOT LINE
- LIMITS OF GRADING
- W8 — EXISTING WATER LINE
- D18 — EXISTING DRAINLINE
- D18 — NEW DRAIN LINE
- 90 — EXISTING CONTOUR
- 100 — PROPOSED CONTOUR
- EXISTING DRAINAGE FLOW
- PROPOSED TEMPORARY DRAINAGE FLOW
- ROCK CONSTRUCTION ACCESS FOR INGRESS/EGRESS
- TEMPORARY SILT SOCKS
- TEMPORARY MIRAFI GEOTECHNICAL FABRIC FOR GRATED INLETS

EROSION CONTROL PLAN

150 0 150 300

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

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STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 5 - PUU KAPELE AVENUE IMPROVEMENTS
JOB NO.

EROSION CONTROL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
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JUNE 2018

DWG. NO.
C501
SHEET 48 OF 146

FILE	POCKET	FOLDER	NO.

SERVICE LATERAL CONNECTION SCHEDULE

		EXISTING					NEW		
ID NO.	TMK	PREMISE ID NUMBER	BWS MTR NUMBER ON RECORD	BOX TYPE	MTR SIZE	LAT SIZE	CU RECON/ TYPE BOX	LATERAL TYPE BOX	COMMENTS
1	(2)5-2-006: XXX								
2	(2)5-2-028: 005								
3	(2)5-2-028: 005								
4	(2)5-2-026: 014								
5	(2)5-2-026: 014								

0+00 WATER LINE "C"
BEGIN NEW 8" WATER LINE
1 – 8" GATE VALVE, 150 LBS
1 – VALVE BOX
1 – VALVE MARKER
1 – GATE VALVE ANCHOR BLOCK
1 – CONCRETE BEAM WITH REVERSE BELL
TEMP FOR TESTING:
1 – 8" CAP TAPPED FOR 2 1/2" IPT
1 – 2 1/2" CLEANOUT
1 – CONCRETE BLOCK
SEE DWS STD DETAILS B14–B16, B18, V13 AND V18

0+34 WATER LINE "C"
FH CONNECTION
1 – 8"x6" TEE
1 – 6" GATE VALVE, 150 LBS
1 – 6" SLIDING VALVE BOX WITH CONCRETE SLAB
1 – FH (HT=5.0')
1 – HYDRANT EXTENSION
10 LF 6" PVC PIPE, DR 14
1 – FH MARKER
1 – FH CONC SLAB W/ REFLECTOR POSTS
1 – TYPE DB PAVEMENT MARKER
2 – CONCRETE BLOCKS
SEE DWS STD DETAILS FH6, FH8, FH9 AND V12

3+26 WATER LINE "C"
FH CONNECTION
1 – 8"x6" TEE
1 – 8" GATE VALVE, 150 LBS
1 – VALVE BOX
1 – 6" GATE VALVE, 150 LBS
1 – 6" SLIDING VALVE BOX WITH CONCRETE SLAB
1 – FH (HT=5.0')
1 – HYDRANT EXTENSION
48 LF 6" PVC PIPE, DR 14
1 – FH MARKER
1 – FH CONC SLAB W/ REFLECTOR POSTS
1 – TYPE DB PAVEMENT MARKER
2 – CONCRETE BLOCKS
SEE DWS STD DETAILS FH6, FH8, FH9 AND V12

TMK(2) 5-2-6: 63
DEPARTMENT OF HAWAIIAN HOME LANDS

NEW 8" WATER LINE "C"

DHHL R/W

PUU KAPELE AVENUE (DHHL)

283°11'00" — 3164.00

4950.50 — 16°11'00"

283°11'00" — 3267.00

CUT AND PLUG EXISTING LATERAL AFTER TRANSFER OF SERVICE

CUT AND PLUG EXISTING LATERALS AFTER TRANSFER OF SERVICE

CUT AND PLUG EXISTING LATERAL AFTER TRANSFER OF SERVICE

DHHL R/W

DHHL R/W

DHHL R/W

HAUAKEA AVENUE (DHHL)

TMK(2) 5-2-26: 7
DEPARTMENT OF HAWAIIAN HOME LANDS

TMK(2) 5-2-26: 5
DEPARTMENT OF HAWAIIAN HOME LANDS
LEASEE: GENOA E. KANOA

TMK(2) 5-2-26: 14
DEPARTMENT OF HAWAIIAN HOME LANDS

TMK(2) 5-2-26: 3
DEPARTMENT OF HAWAIIAN HOME LANDS

MATCH LINE WL "C" 8+00
SEE DWG C503

PLAN - WATER LINE "C"

40 20 0 40 80
SCALE IN FEET

APPROX. EXISTING GROUND ALONG WATER LINE "C"

4.20%

6.13%

5.35%

3' MIN COVER

INV 8" WATER LINE "C"

0+03 8" GV

0+06 CONC BEAM

0+00 BEGIN 8"W 389.30'

2+20 8"W 401.08' DEFLECT

3+23 8" GV

3+26 FH CONNECTION

7+33 8"W 432.54' DEFLECT

MATCH LINE WL "C" 8+00
SEE DWG C503

PROFILE - WATER LINE "C"

HORIZ 40 20 0 40 80
VERT 8 0 8 16
SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 5 - PUU KAPELE AVENUE IMPROVEMENTS
JOB NO.

PLAN AND PROFILE
WATER LINE "C" 0+00 TO 8+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: ADC

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

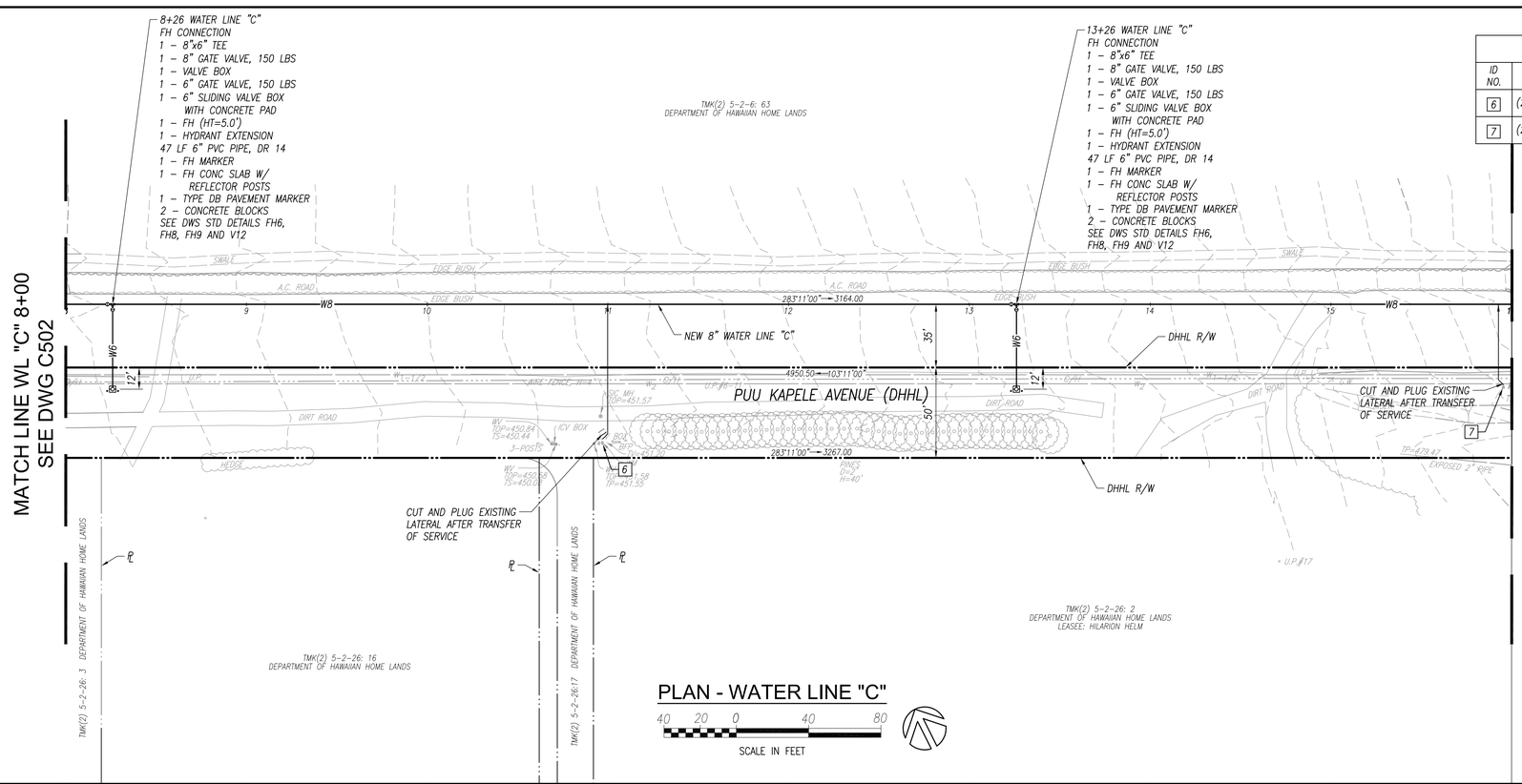
JUNE 2018

DWG. NO.
C502
SHEET 49 OF 146

FILE	POCKET	FOLDER	NO.

SERVICE LATERAL CONNECTION SCHEDULE

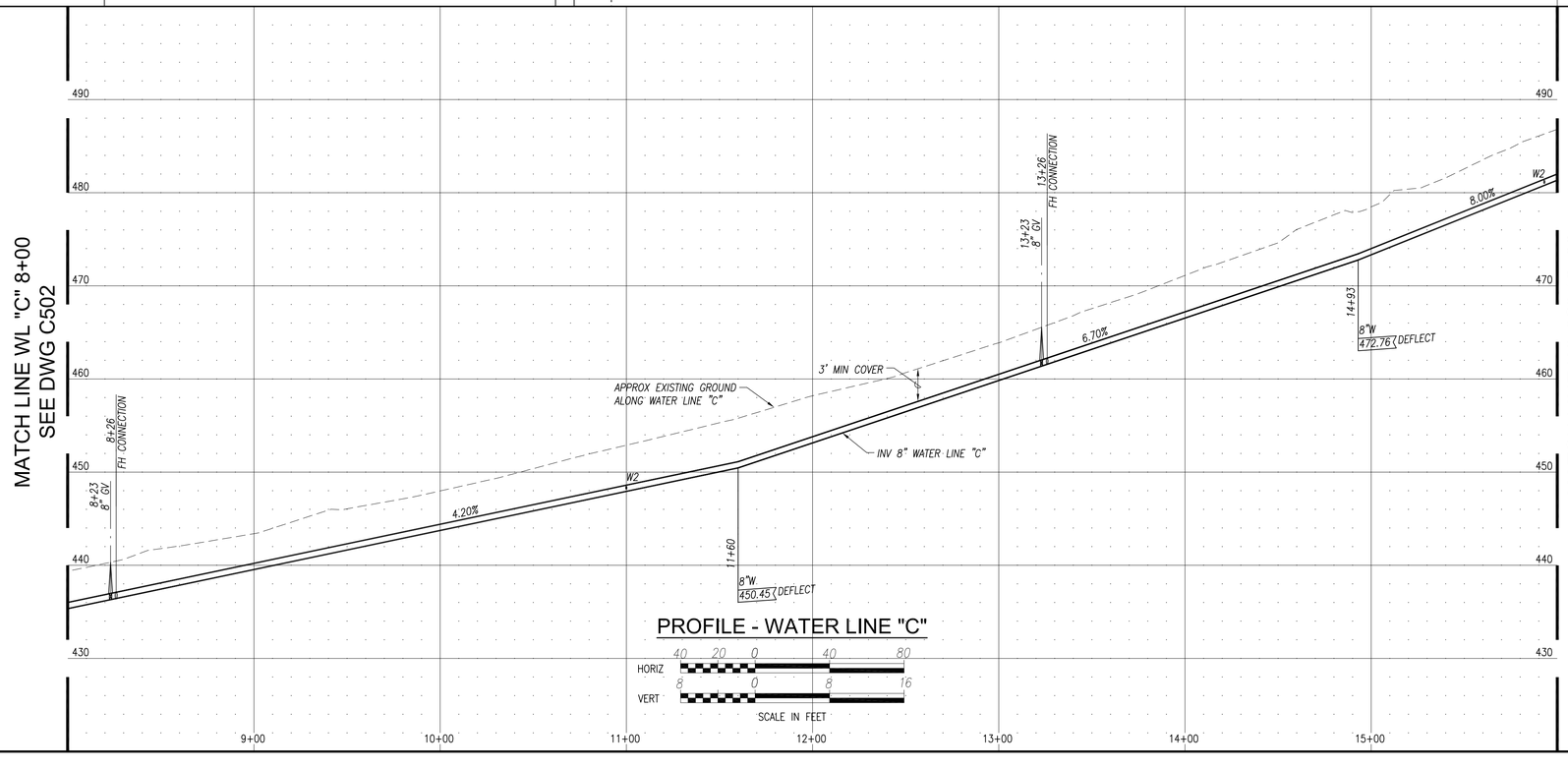
		EXISTING					NEW		
ID NO.	TMK	PREMISE ID NUMBER	BWS MTR NUMBER ON RECORD	BOX TYPE	MTR SIZE	LAT SIZE	CU RECON/ TYPE BOX	LATERAL TYPE BOX	COMMENTS
6	(2)5-2-026: 017								
7	(2)5-2-026: 002								



PLAN - WATER LINE "C"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "C"

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 5 - PUU KAPELE AVENUE IMPROVEMENTS
JOB NO.

PLAN AND PROFILE
WATER LINE "C" 8+00 TO 16+00

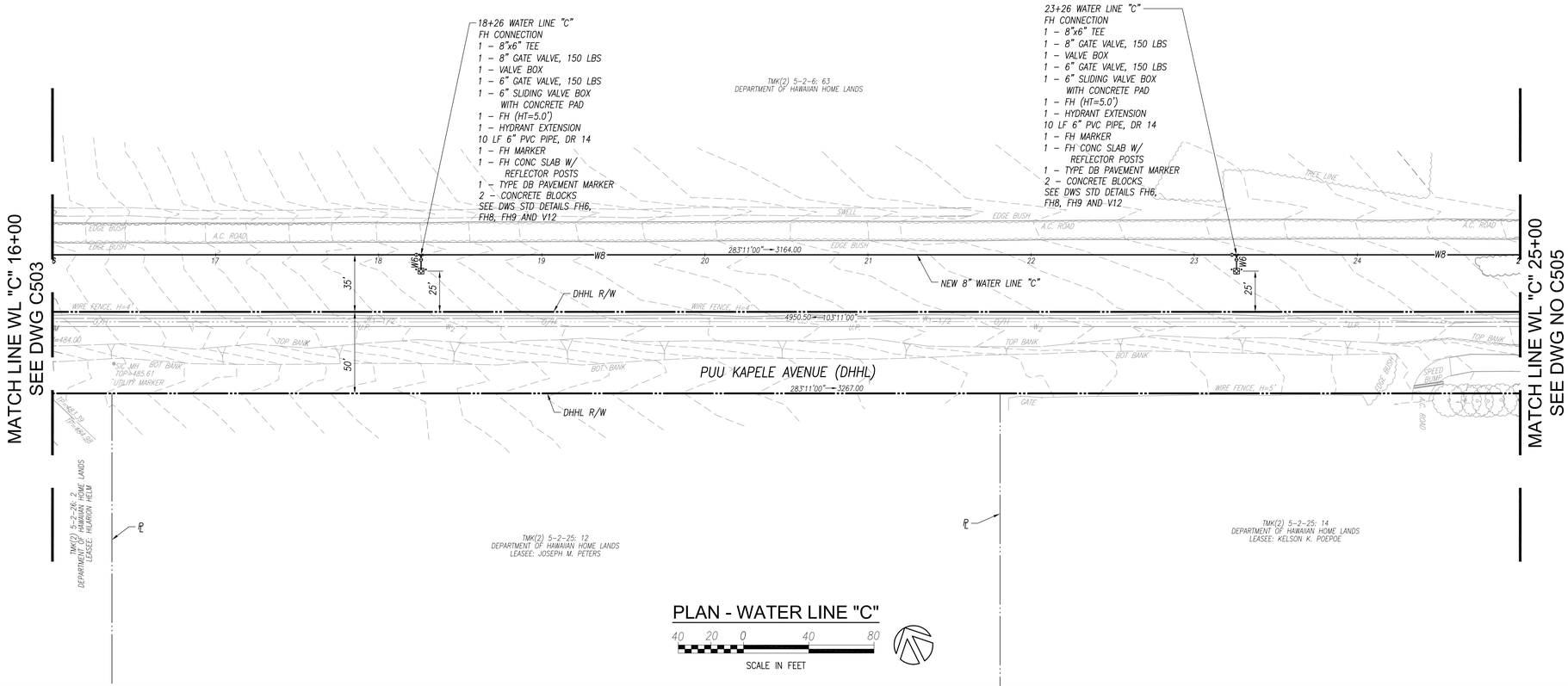
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: ADC

111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C503
SHEET 50 OF 146

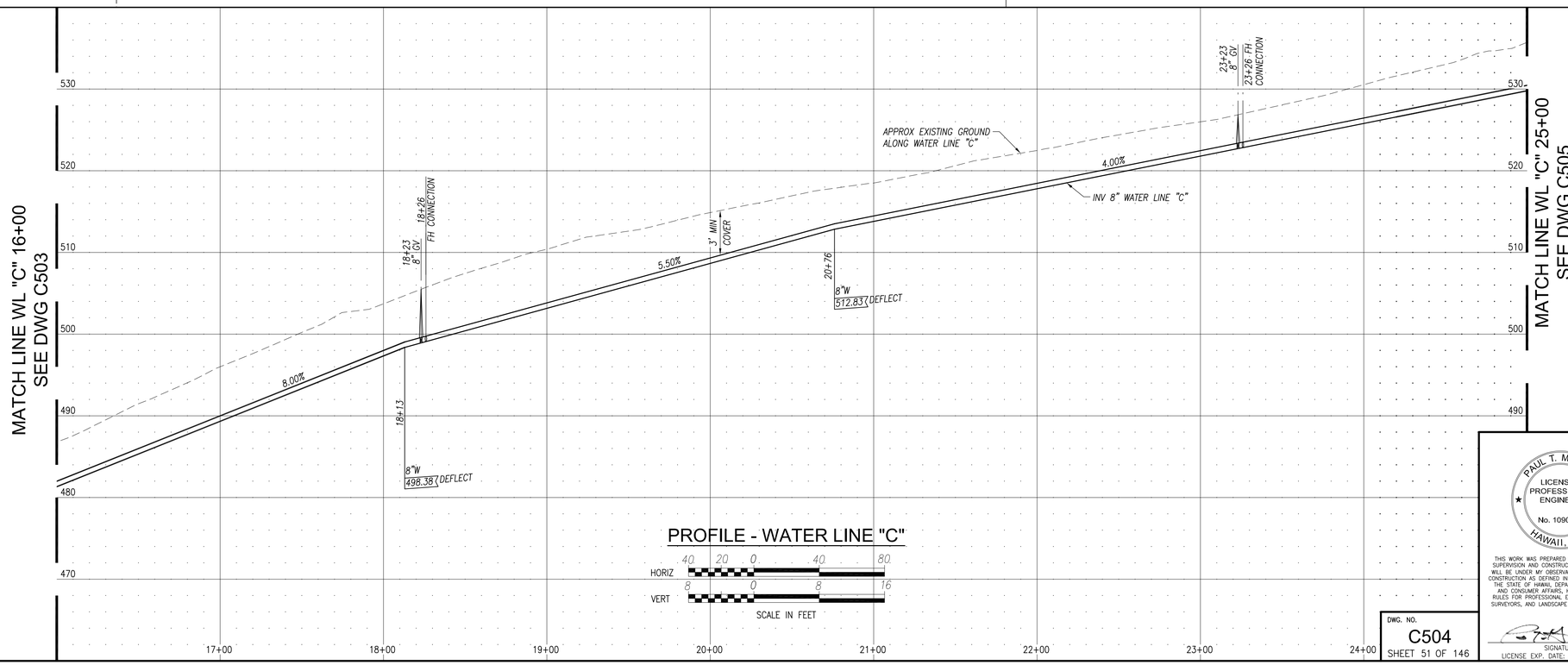
FILE	POCKET	FOLDER	NO.



PLAN - WATER LINE "C"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "C"

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

DWG. NO.
C504
SHEET 51 OF 146

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 5 - PUU KAPELE AVENUE IMPROVEMENTS
JOB NO.

PLAN AND PROFILE
WATER LINE "C" 16+00 TO 25+00

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: ADC

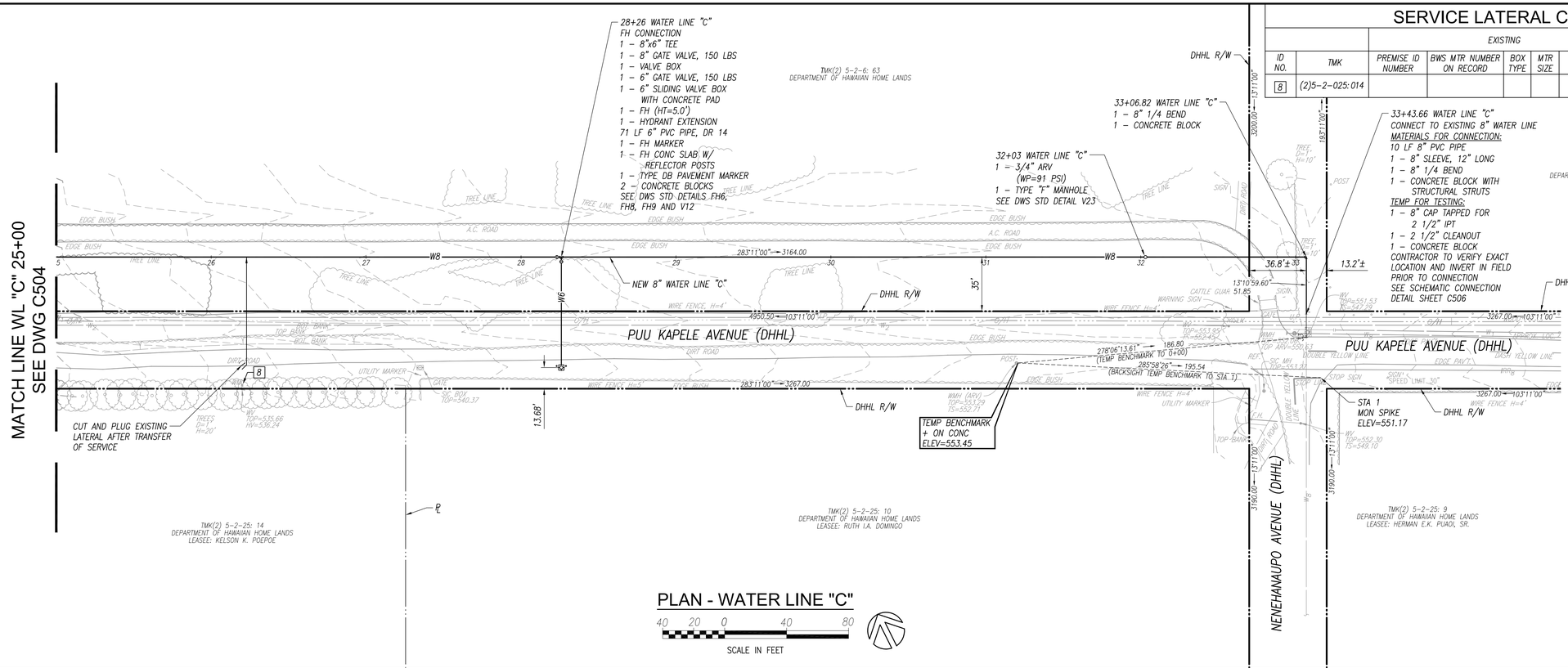
G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.

SERVICE LATERAL CONNECTION SCHEDULE

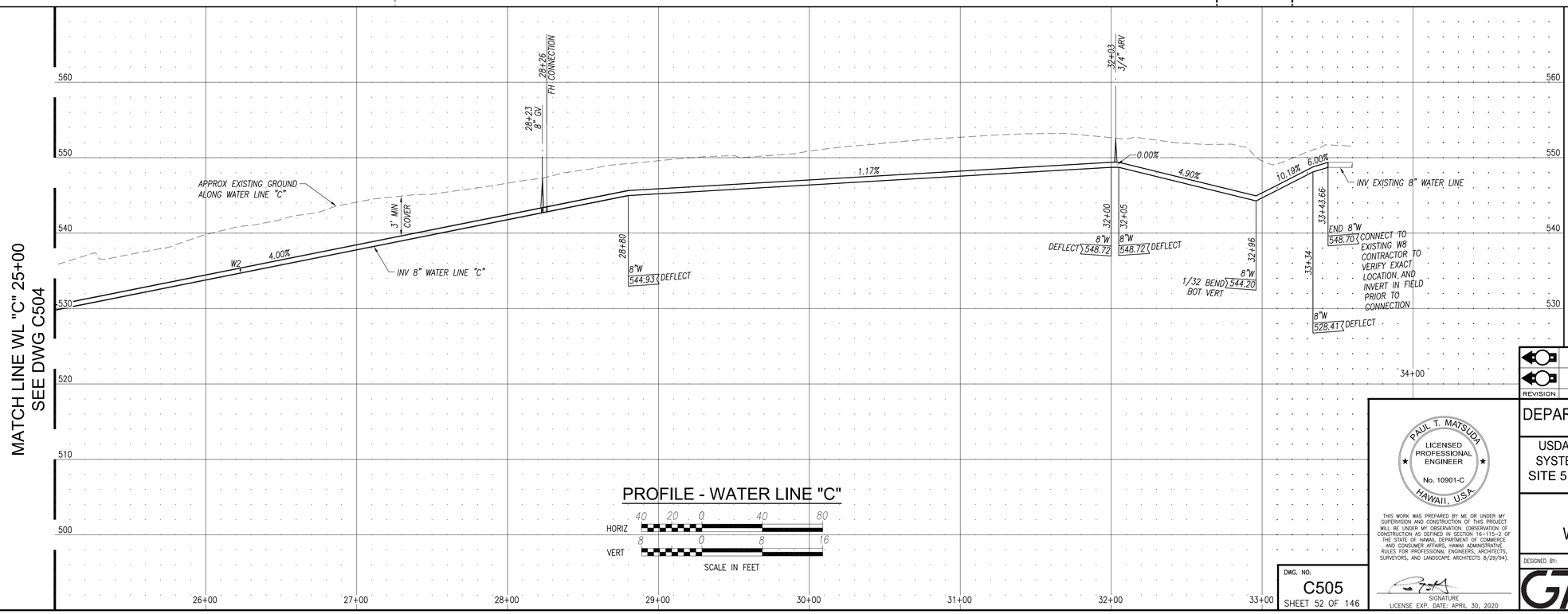
ID NO.	TMK	EXISTING: PREMISE ID NUMBER	EXISTING: BWS MTR NUMBER ON RECORD	EXISTING: BOX TYPE	EXISTING: MTR SIZE	EXISTING: LAT SIZE	NEW: CU RECON/ TYPE BOX	NEW: LATERAL TYPE BOX	NEW: COMMENTS
8	(2)5-2-025:014								



PLAN - WATER LINE "C"

40 20 0 40 80

SCALE IN FEET



PROFILE - WATER LINE "C"

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 5 - PUU KAPELE AVENUE IMPROVEMENTS
JOB NO.

PLAN AND PROFILE
WATER LINE "C" 25+00 TO END

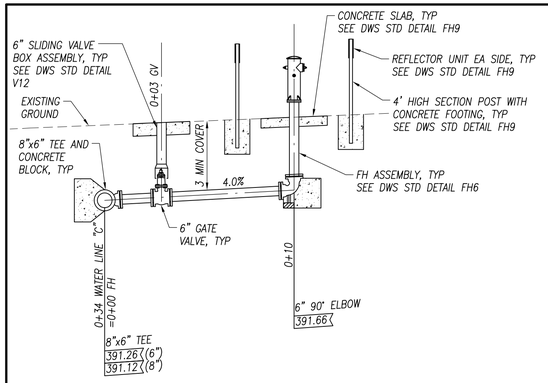
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: ADC

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

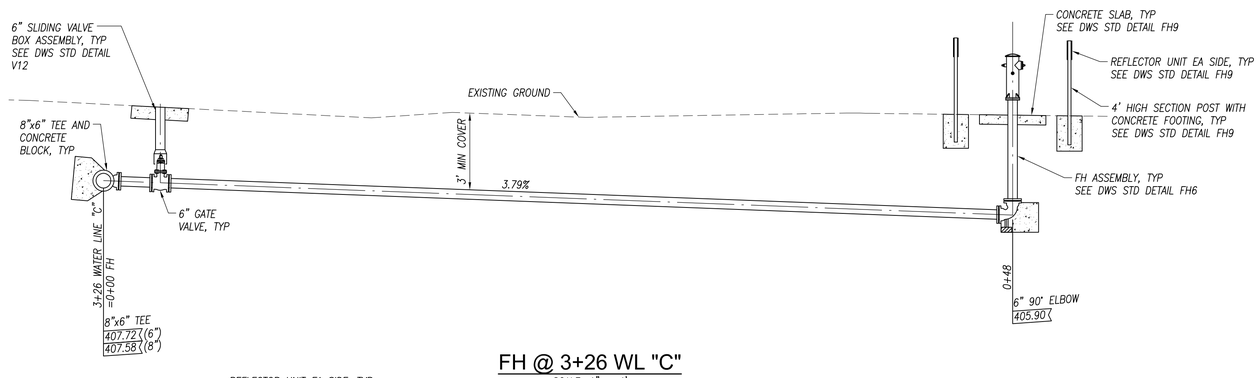
JUNE 2018

DWG. NO. C505
SHEET 52 OF 146

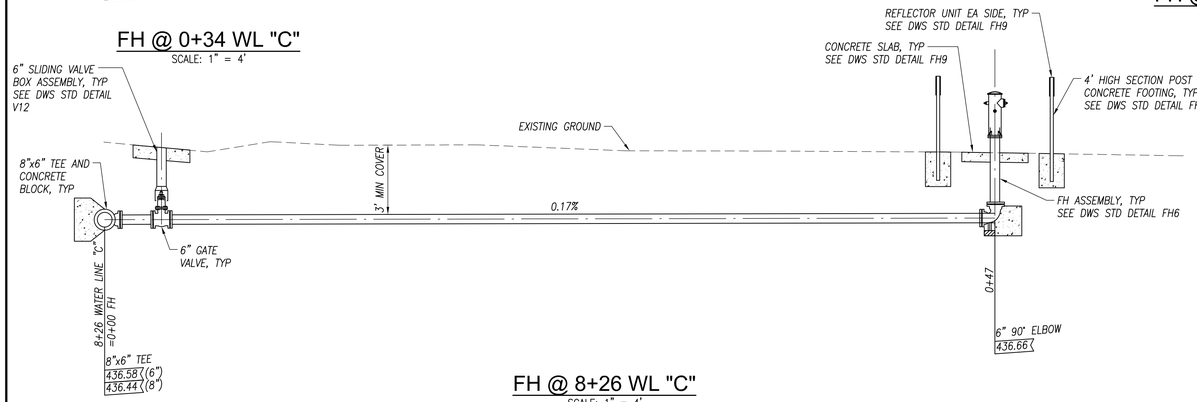
FILE	POCKET	FOLDER	NO.



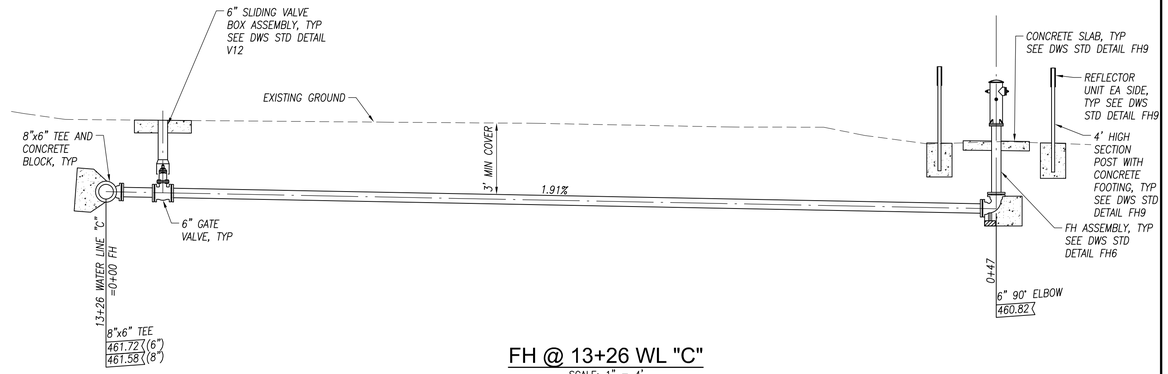
FH @ 0+34 WL "C"
SCALE: 1" = 4'



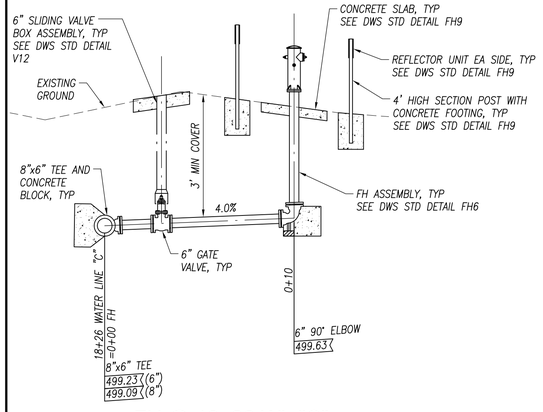
FH @ 3+26 WL "C"
SCALE: 1" = 4'



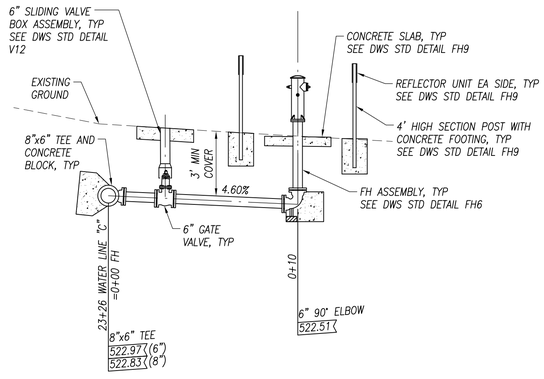
FH @ 8+26 WL "C"
SCALE: 1" = 4'



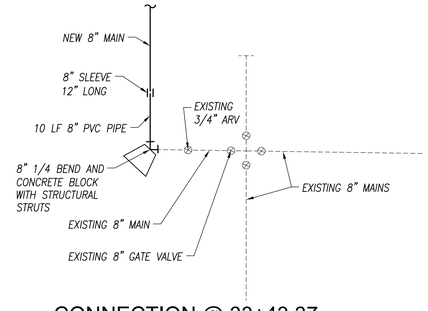
FH @ 13+26 WL "C"
SCALE: 1" = 4'



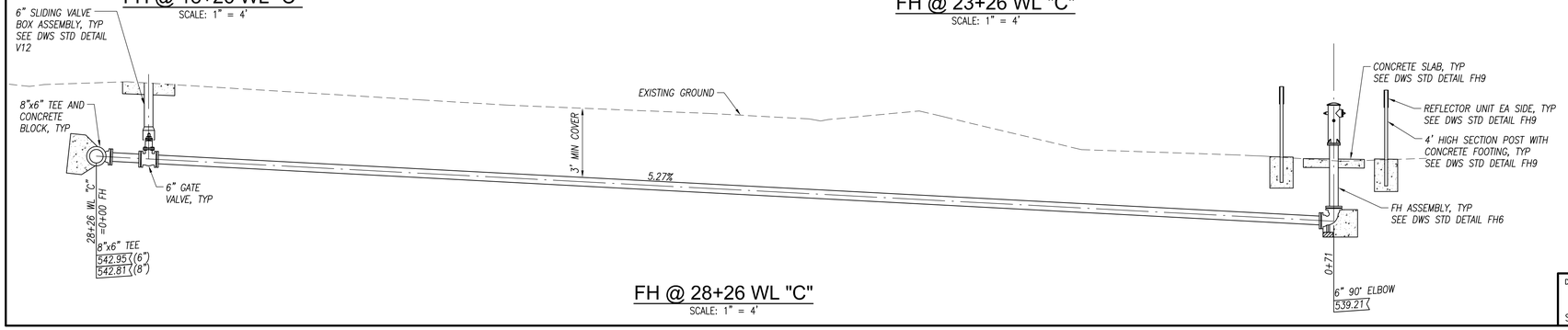
FH @ 18+26 WL "C"
SCALE: 1" = 4'



FH @ 23+26 WL "C"
SCALE: 1" = 4'



CONNECTION @ 33+43.37
PUU KAPELE AVENUE
NOT TO SCALE



FH @ 28+26 WL "C"
SCALE: 1" = 4'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 5 - PUU KAPELE AVENUE IMPROVEMENTS
JOB NO.

CONNECTION DETAILS AND FH PROFILES

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: ADC

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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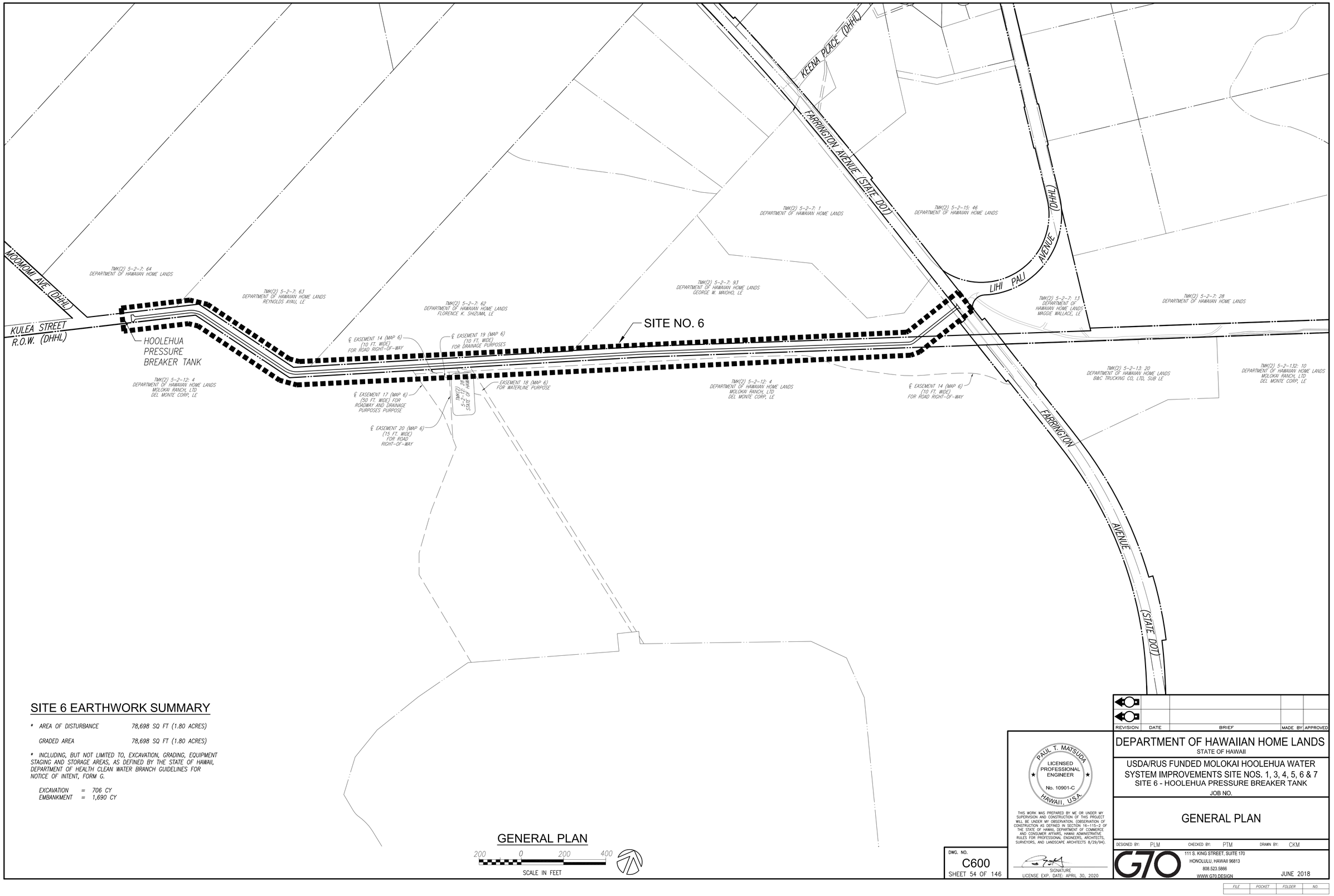
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C506
SHEET 53 OF 146

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



SITE 6 EARTHWORK SUMMARY

*	AREA OF DISTURBANCE	78,698 SQ FT (1.80 ACRES)
	GRADED AREA	78,698 SQ FT (1.80 ACRES)

* INCLUDING, BUT NOT LIMITED TO, EXCAVATION, GRADING, EQUIPMENT STAGING AND STORAGE AREAS, AS DEFINED BY THE STATE OF HAWAII, DEPARTMENT OF HEALTH CLEAN WATER BRANCH GUIDELINES FOR NOTICE OF INTENT, FORM G.

EXCAVATION = 706 CY
EMBANKMENT = 1,690 CY

GENERAL PLAN

200 0 200 400

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C600
SHEET 54 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK
JOB NO.

GENERAL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.

KULEA STREET R.O.W.

TMK(2) 5-2-7: 64
DEPARTMENT OF HAWAIIAN HOME LANDS

DHHL R/W

EXISTING FENCE AND GATE TO REMAIN

748.1±(E)

749.9±(E)

12'

R=10'

749.17

749.41

LIMITS OF GRADING

EDGE OF NEW AC PAVEMENT

BL NEW ACCESS ROAD
SEE DWG C604

HOOLEHUA PRESSURE BREAKER TANK

2-PANEL BOX

2-RISER

H.B.

CONC. WALL

CONC. PAD

GATE

EDGE BUSH

TOP GULCH

TREES
D=1'
H=40'

TREE
D=2'
H=20'

TREES
D=1'
H=20'

TREES
D=1'
H=15'

DMH TOP=743.71
TP=740.31
BOT.=738.99

WV
TOP=747.14
TS=743.59

WV
TOP=746.98
TS=742.98

WMH
TOP=747.00
TP=742.72

WMH
TOP=743.31
TP=748.08

WV
TOP=748.06
TS=743.67

WMH
TOP=748.77
TP=744.23

WV
TOP=748.72
TS=745.18

WV BOX
TOP=750.08
TP=743.91

20"UNDERWATER TANK
TOP TANK=765.44
CONC.=747.70

TMK(2) 5-2-12: 4
DEPARTMENT OF HAWAIIAN HOME LANDS
MOLOKAI RANCH, LTD
DEL MONTE CORP, LE

SITE AND UTILITY PLAN
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK

10 5 0 10 20
SCALE IN FEET

DWG. NO.
C601
SHEET 55 OF 146

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7

JOB NO.

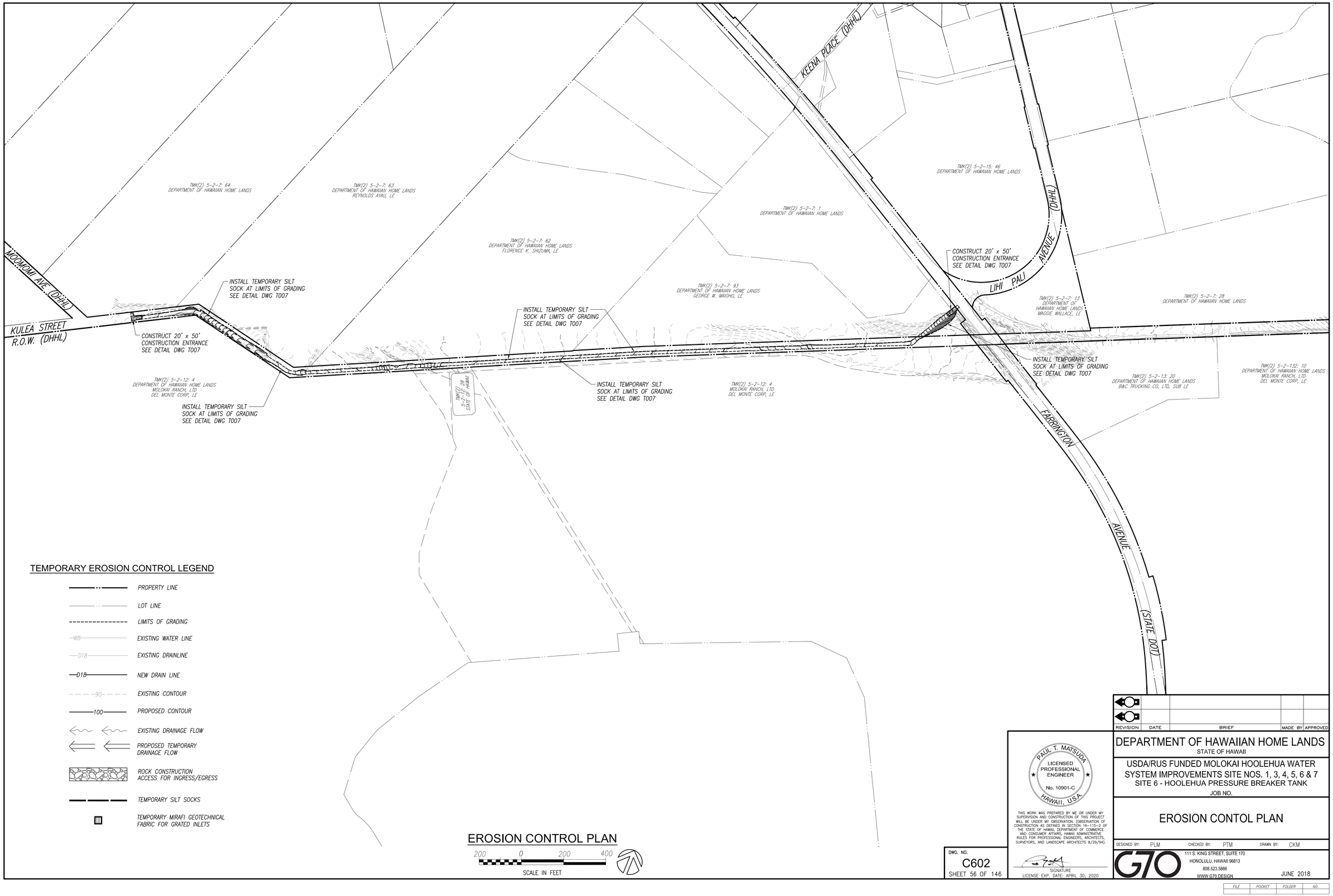
SITE AND UTILITY PLAN
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



TEMPORARY EROSION CONTROL LEGEND

- PROPERTY LINE
- LOT LINE
- LIMITS OF GRADING
- W8 — EXISTING WATER LINE
- D18 — EXISTING DRAINLINE
- D18 — NEW DRAIN LINE
- 90 — EXISTING CONTOUR
- 100 — PROPOSED CONTOUR
- EXISTING DRAINAGE FLOW
- PROPOSED TEMPORARY DRAINAGE FLOW
- ROCK CONSTRUCTION ACCESS FOR INGRESS/EGRESS
- TEMPORARY SILT SOCKS
- TEMPORARY MIRAFI GEOTECHNICAL FABRIC FOR GRATED INLETS

EROSION CONTROL PLAN

200 0 200 400

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK

JOB NO.

EROSION CONTOL PLAN

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

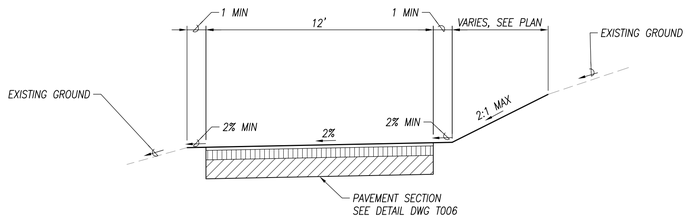
DWG. NO.
C602
SHEET 56 OF 146

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

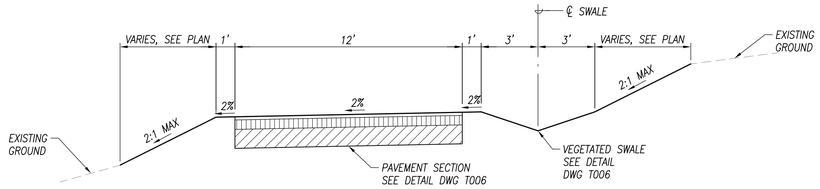
FILE	POCKET	FOLDER	NO.



0+00 TO 3+00 & 7+00 TO 40+66

SECTION A-A

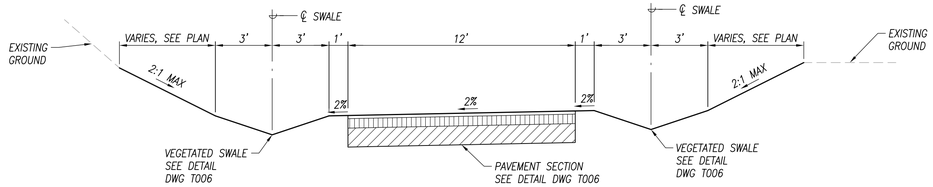
NOT TO SCALE



3+00 TO 3+25

SECTION B-B

NOT TO SCALE



3+25 TO 7+00

SECTION C-C

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE

LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK
JOB NO.

TYPICAL SECTIONS AND DETAILS

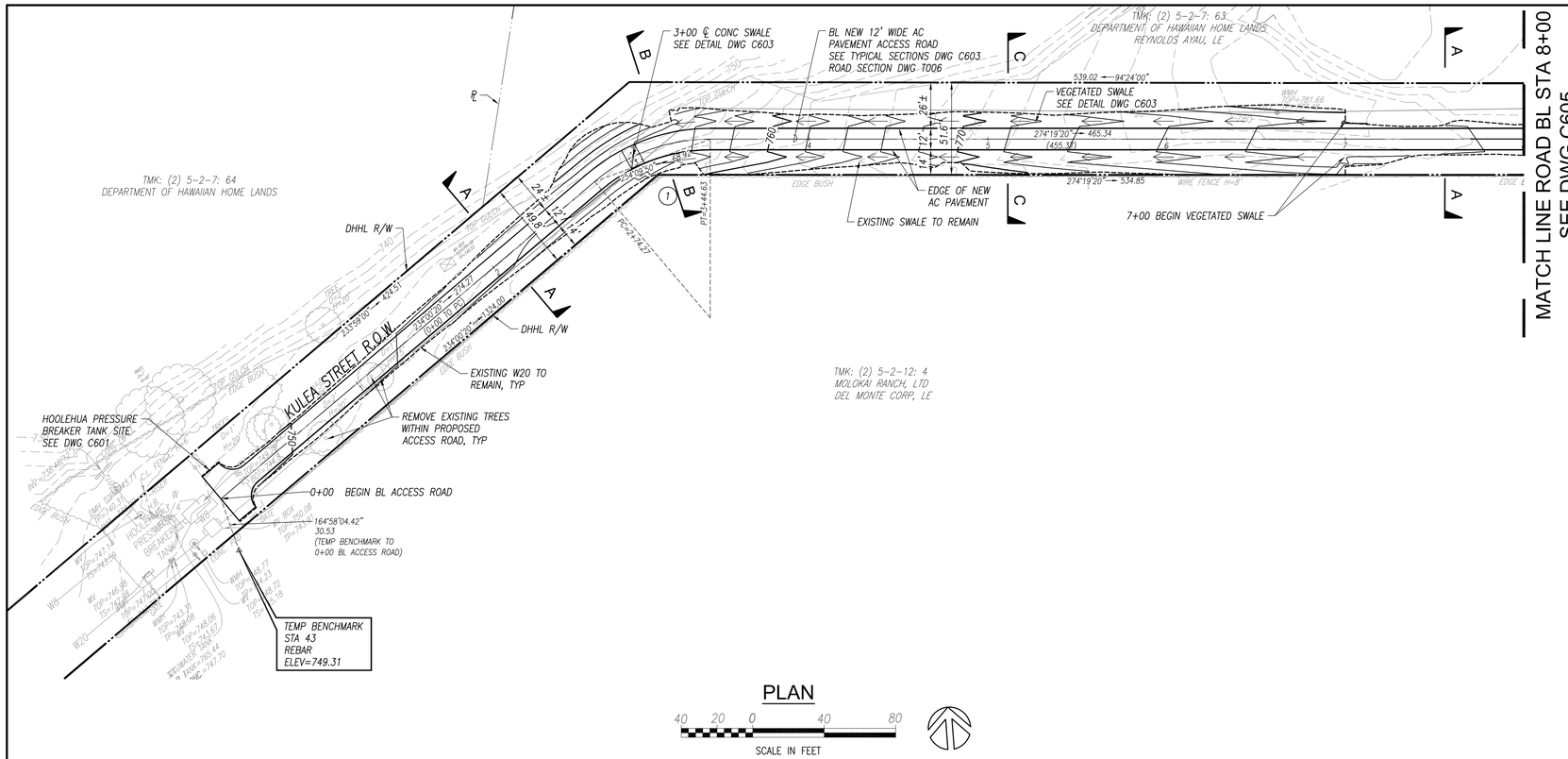
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C603
SHEET 57 OF 146

FILE	POCKET	FOLDER	NO.

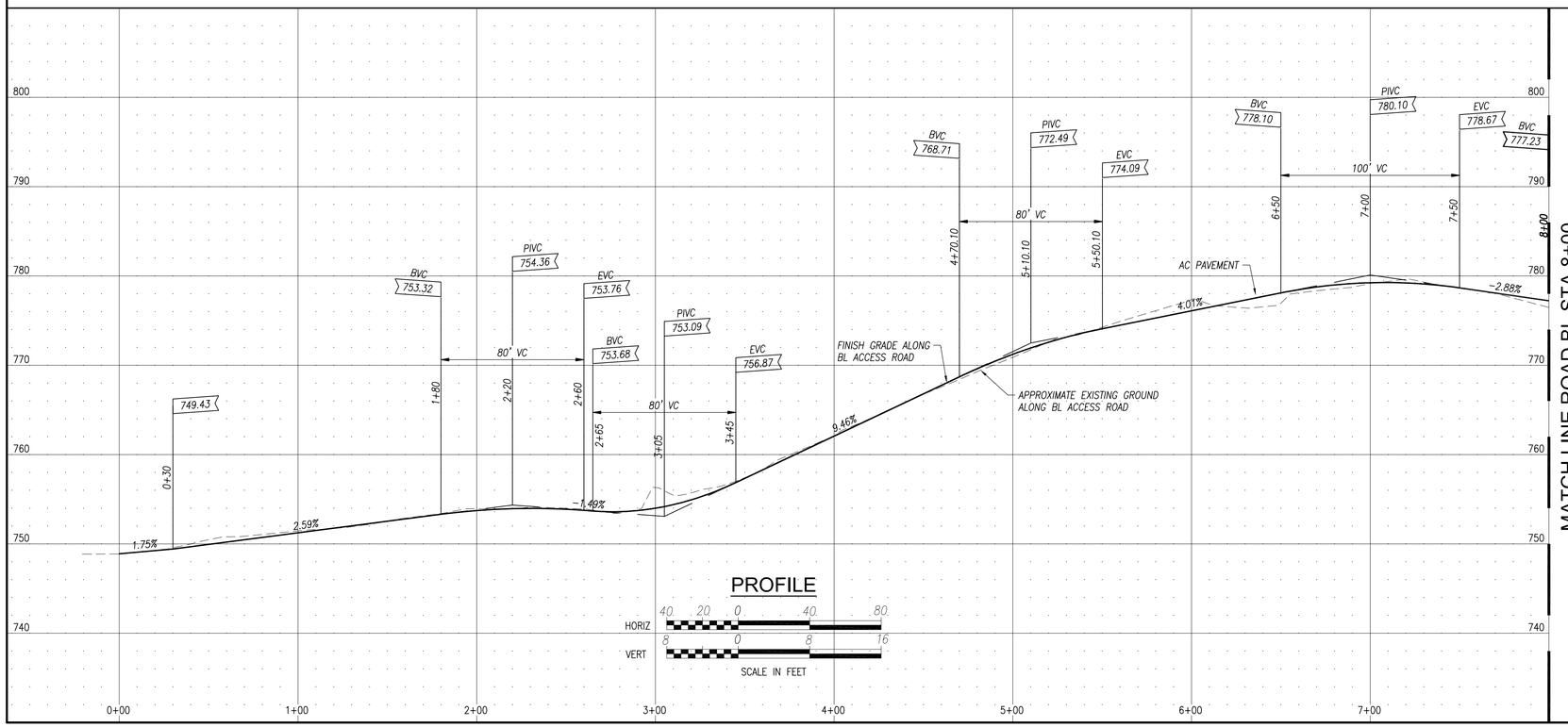


PLAN

40 20 0 40 80

SCALE IN FEET

ROAD BL CURVE TABLE						
CURVE NO	Δ	Δ/2	R	T	C	Lc
①	40°19'00"	20°09'30"	100.00'	36.71	68.92'	70.37'



PROFILE

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

MATCH LINE ROAD BL STA 8+00
SEE DWG C605

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK
JOB NO.

PLAN AND PROFILE - ACCESS ROAD
BL STA 0+00 TO 8+00

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

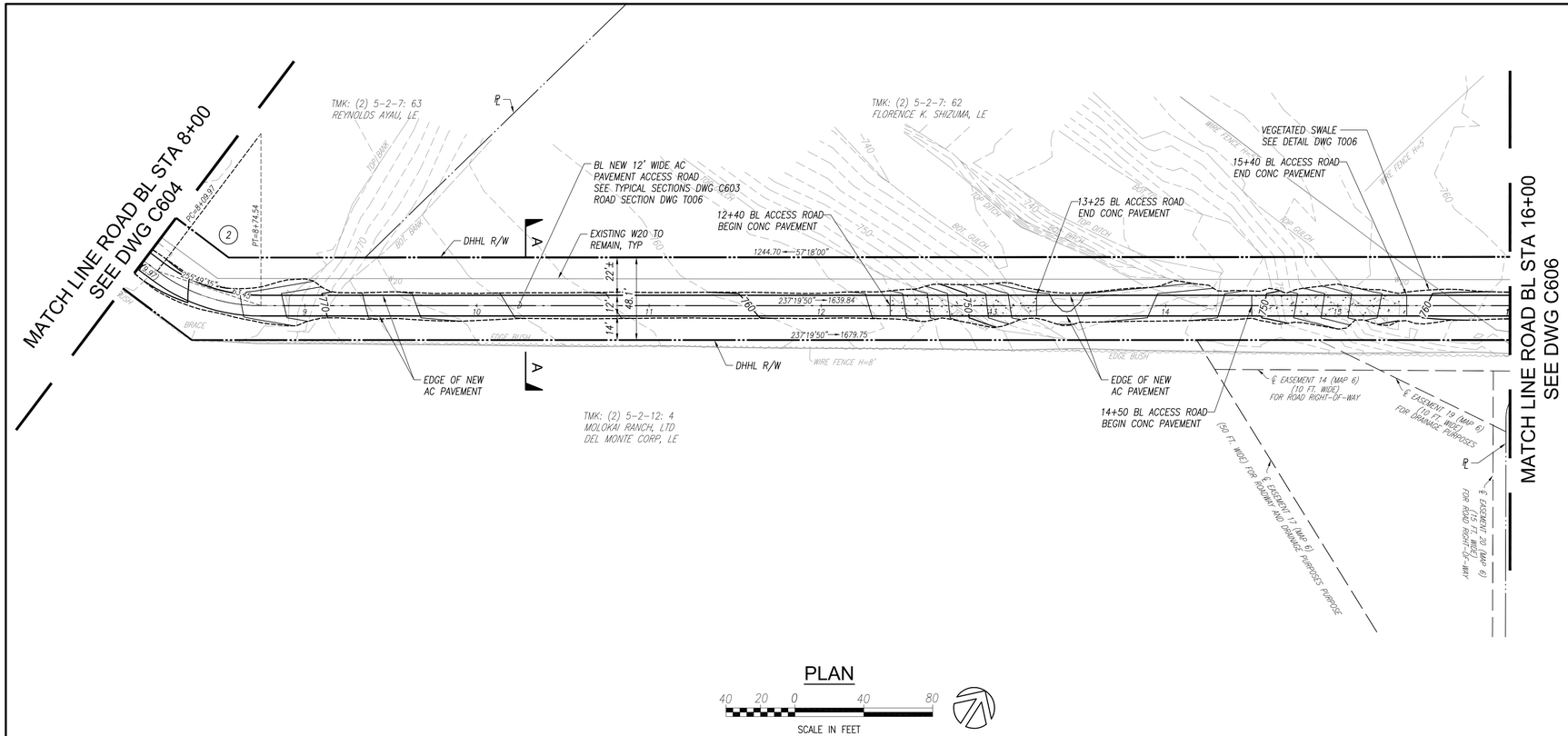
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C604
SHEET 58 OF 146

FILE	POCKET	FOLDER	NO.

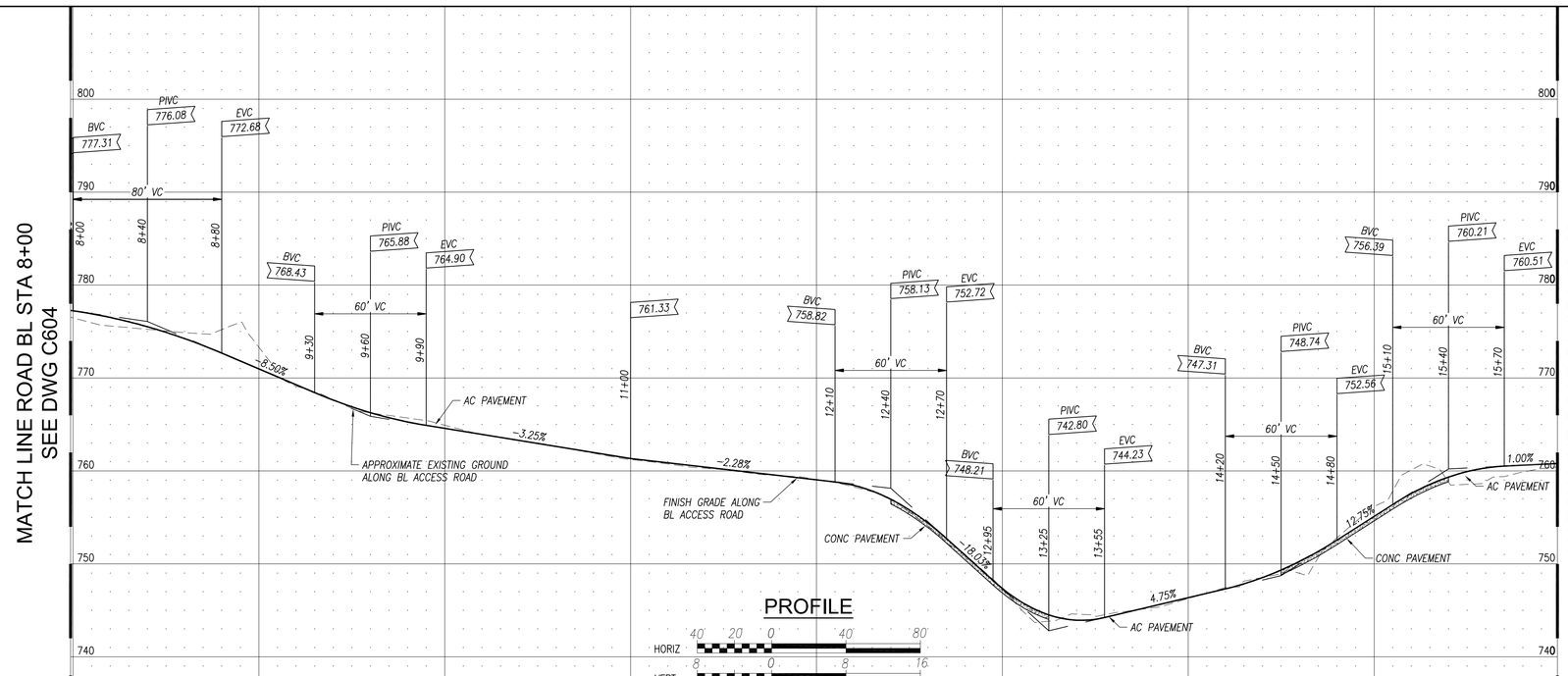


PLAN

40 20 0 40 80

SCALE IN FEET

ROAD BL CURVE TABLE						
CURVE NO	Δ	Δ/2	R	T	C	Lc
(2)	36°59'30"	18°29'45"	100.00'	33.45	63.45'	64.56'



PROFILE

HORIZ 40 20 0 40 80

VERT 8 0 8 16

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK
JOB NO.

PLAN AND PROFILE - ACCESS ROAD
BL STA 8+00 TO 16+00

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

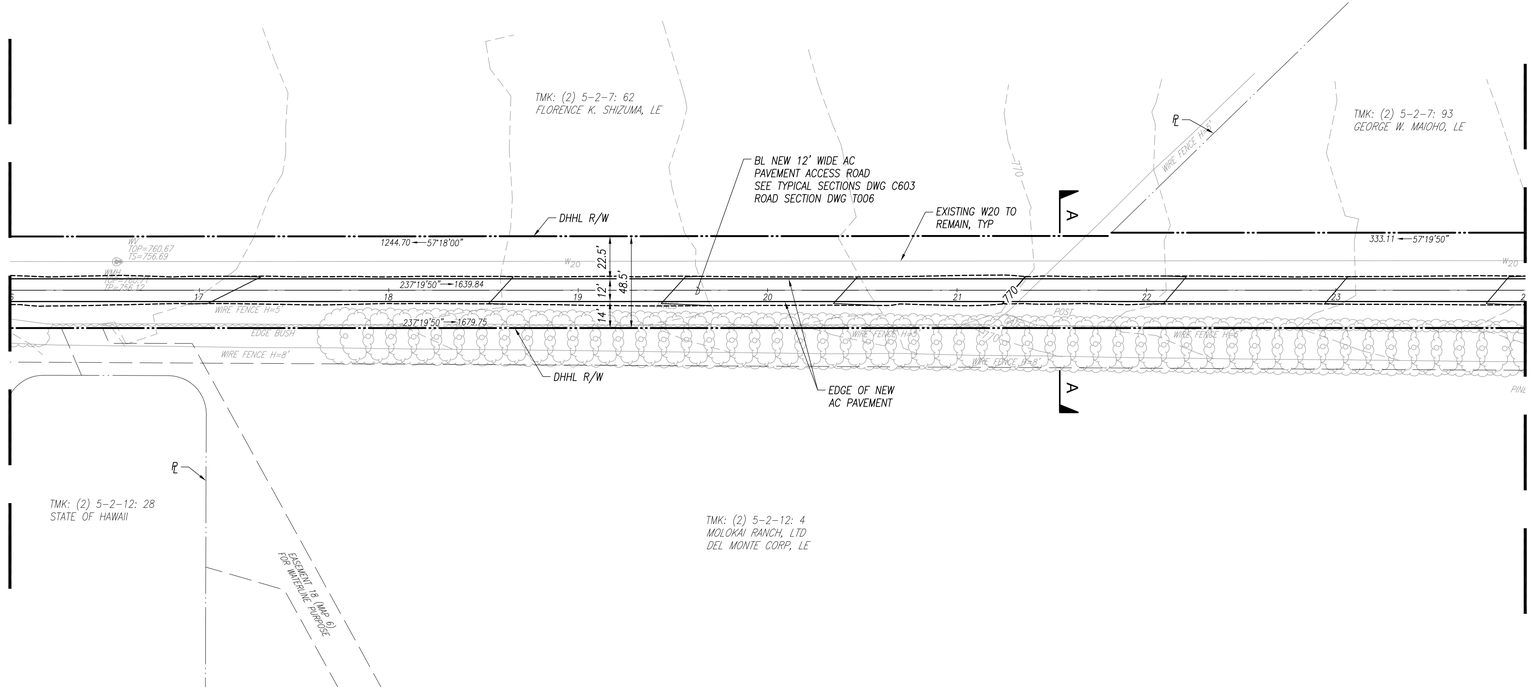
DWG. NO.
C605
SHEET 59 OF 146

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.

MATCH LINE ROAD BL STA 6+00
SEE DWG C605

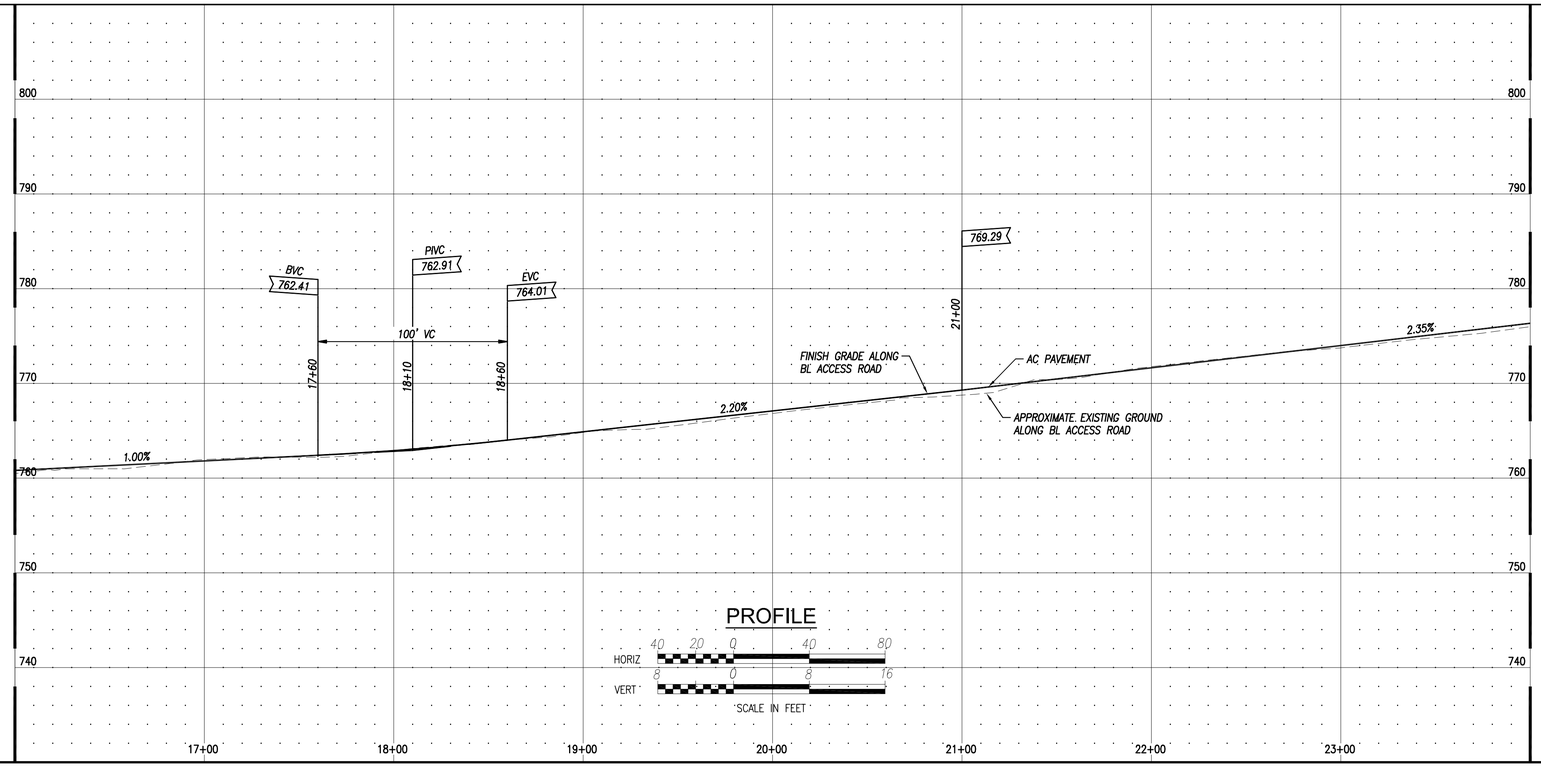


MATCH LINE ROAD BL STA 24+00
SEE DWG C607

PLAN

40 20 0 40 80
SCALE IN FEET

MATCH LINE ROAD BL STA 16+00
SEE DWG C605



PROFILE

HORIZ 40 20 0 40 80
VERT 8 0 8 16
SCALE IN FEET

MATCH LINE ROAD BL STA 24+00
SEE DWG C607

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK
JOB NO.

PLAN AND PROFILE - ACCESS ROAD
BL STA 16+00 TO 24+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

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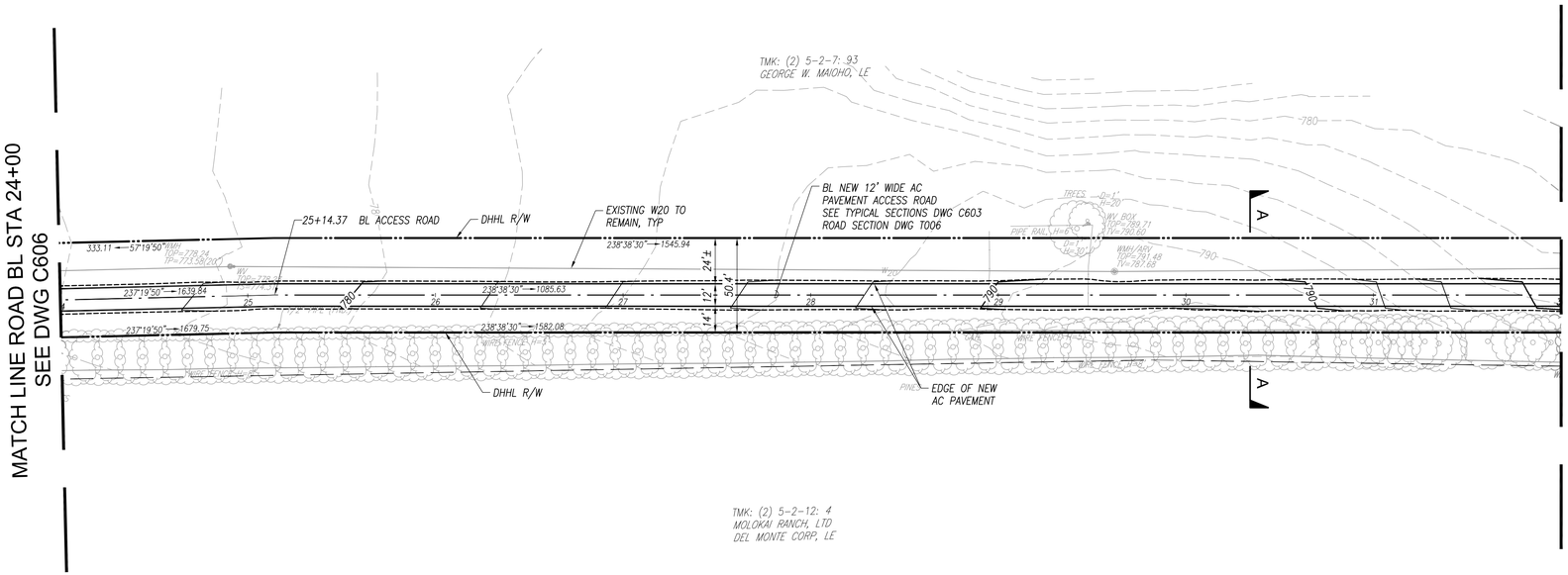
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

DWG. NO.
C606
SHEET 60 OF 146

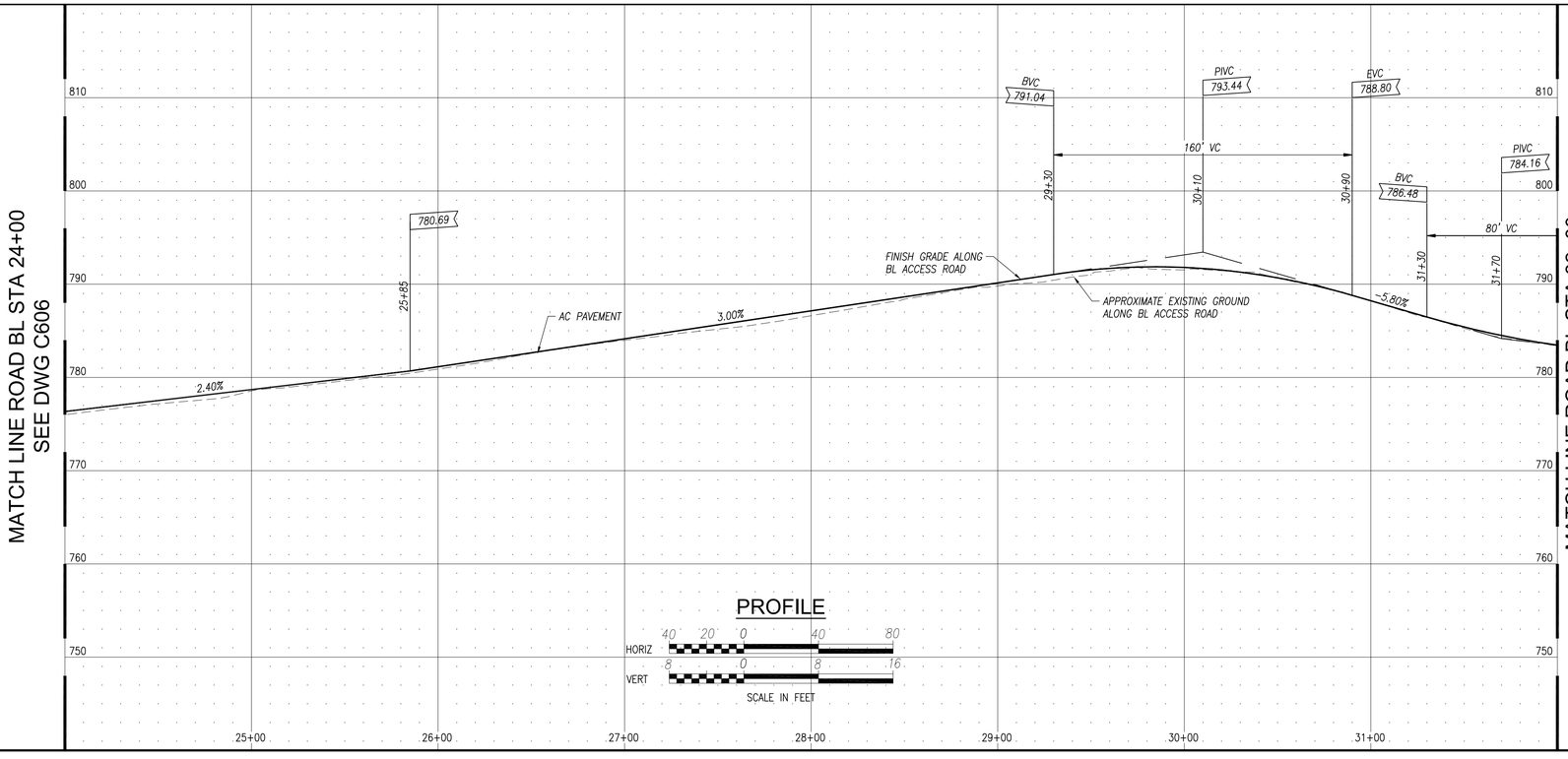
FILE	POCKET	FOLDER	NO.



PLAN

40 20 0 40 80

SCALE IN FEET



PROFILE

40 20 0 40 80

HORIZ

8 0 8 16

VERT

SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK
JOB NO.

PLAN AND PROFILE - ACCESS ROAD
BL STA 24+00 TO 32+00

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

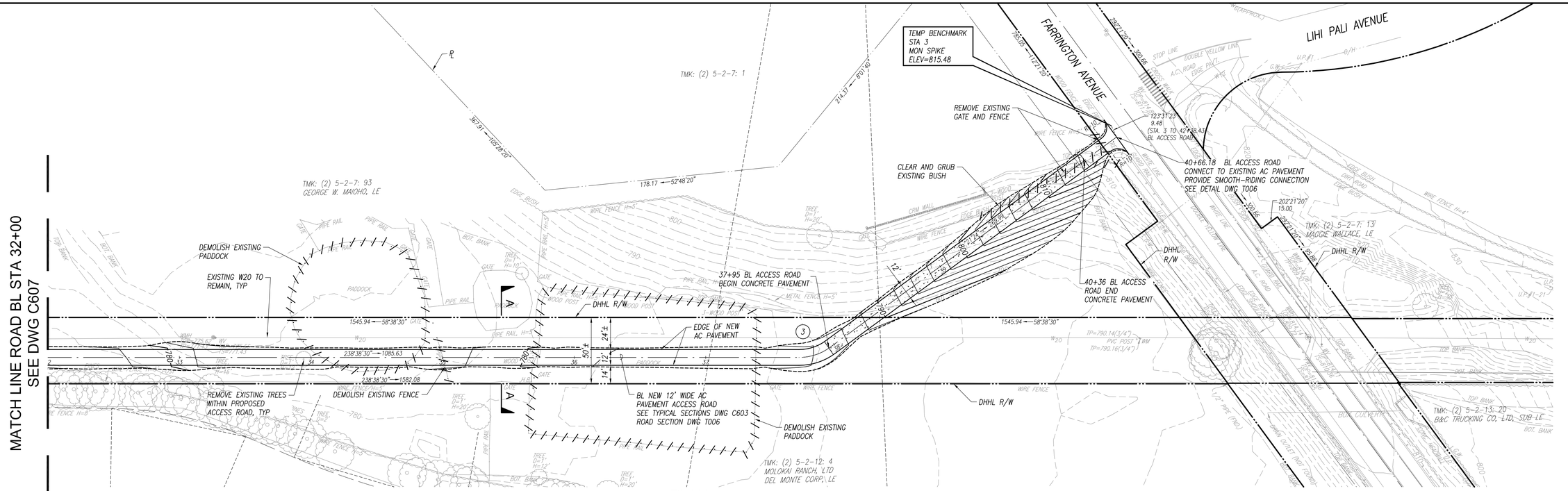
DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

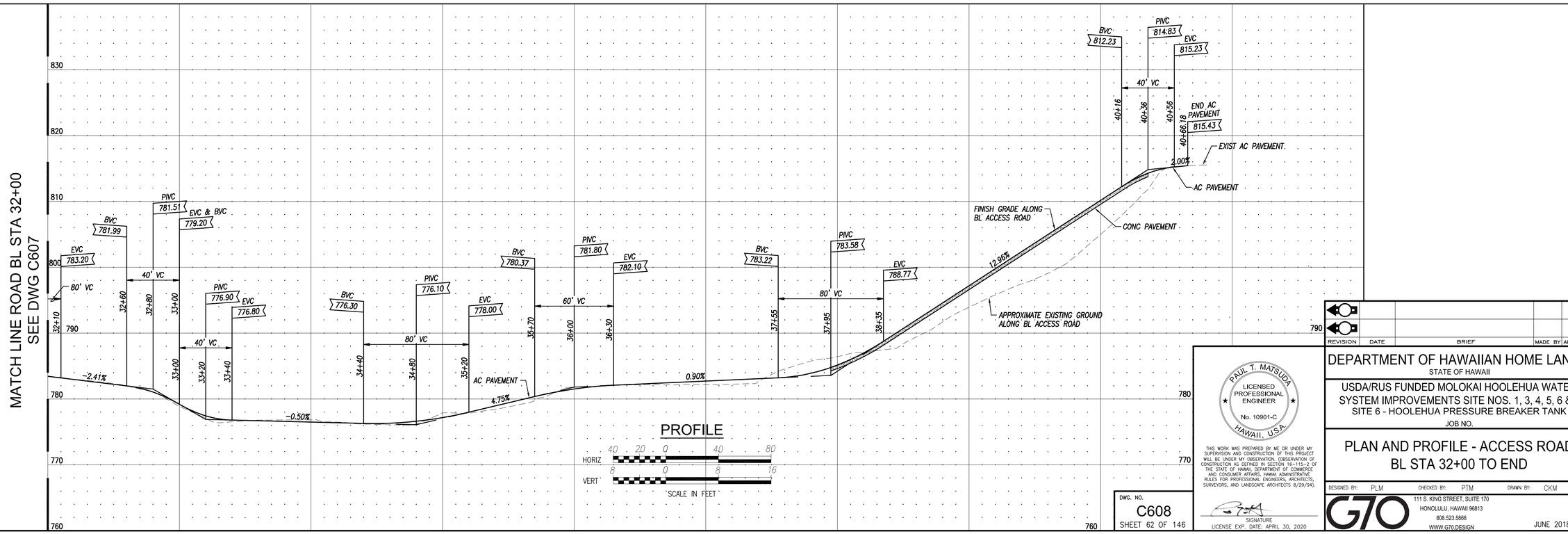
JUNE 2018

DWG. NO.
C607
SHEET 61 OF 146

FILE	POCKET	FOLDER	NO.



ROAD BL CURVE TABLE						
CURVE NO	Δ	Δ/2	R	T	C	Lc
③	36°17'06"	18°08'33"	40.00'	13.11	24.91'	25.33'



REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C608
SHEET 62 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 6 - HOOLEHUA PRESSURE BREAKER TANK
JOB NO.

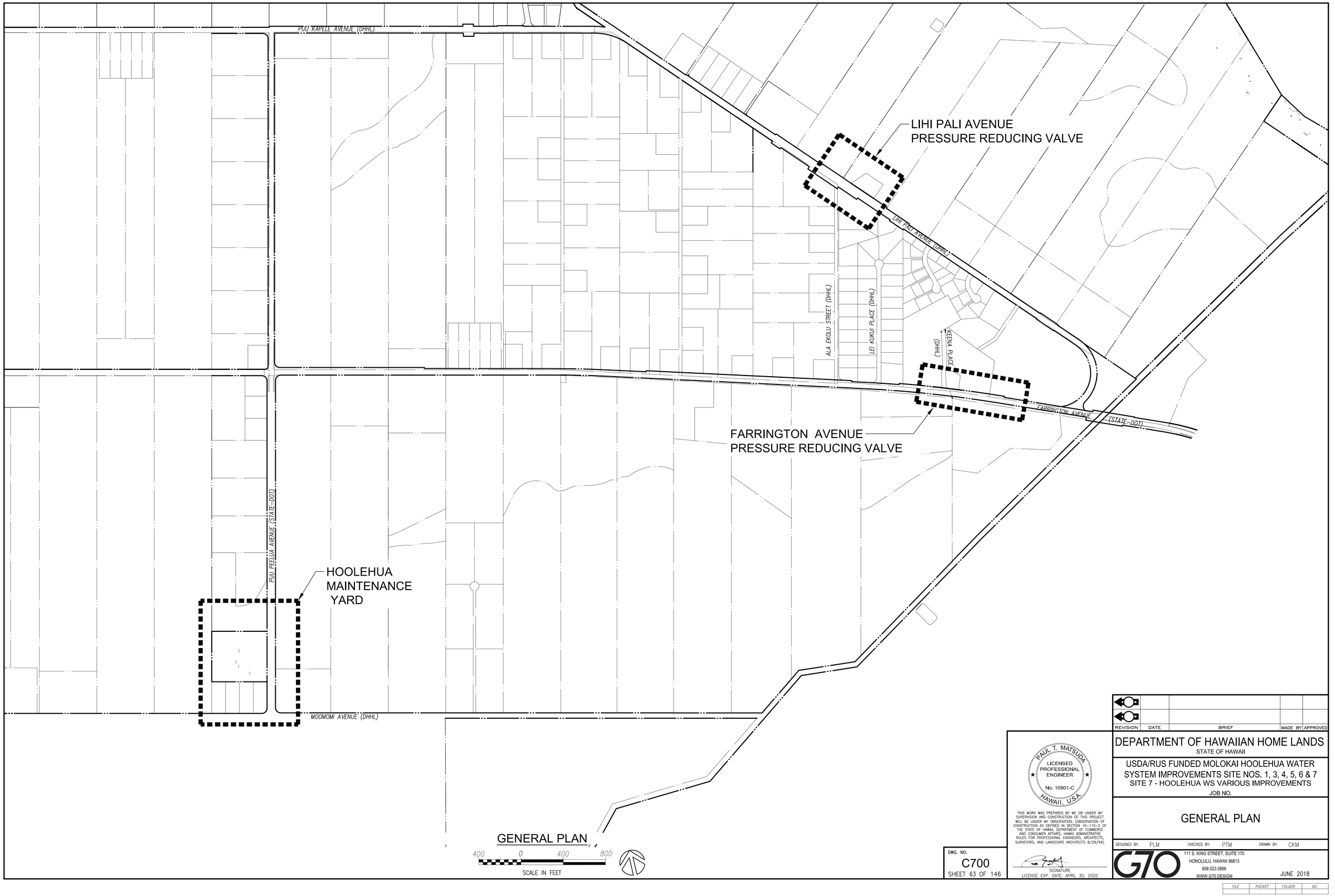
PLAN AND PROFILE - ACCESS ROAD BL STA 32+00 TO END

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C700
SHEET 63 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA WS VARIOUS IMPROVEMENTS
JOB NO.

GENERAL PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.

HOOLEHUA WS MAINTENANCE BUILDING																	
	USERS	AVG DAILY FLOW	TOTAL FLOW	MIN. REQ. SEPTIC TANK SIZE	DESIGN SEPTIC TANK CAPACITY	EQUIVALENT BEDROOM UNITS	DESIGN EQUIVALENT BEDROOM UNITS	PERC RATE (ACTUAL)	PERC RATE (DESIGN)	ABSORPTION AREA	REQ. ABSORPTION AREA	DESIGN ABSORPTION AREA	INFILTRATOR WIDTH	INFILTRATOR LENGTH	NO. OF TRENCHES	LENGTH OF TRENCH	NOTES
		GAL/DAY	GAL	GAL	GAL			MIN/IN	MIN/IN	SF/BDRM	SF	SF	IN	LF		LF	
DESIGN																	
AVG DAILY USE	5	25	125	156.25	200	0.6	1.0	25.3	26.0	100	62.50	100	36	33	1	30	
MAX USE	10	15	150	187.50	200	0.8	1.0	25.3	26.0	100	75.00	100	36	33	1	30	

TMK(2) 5-2-23: 12
DEPARTMENT OF HAWAIIAN HOME LANDS
CHARLOTTE L.M. SEALES

TMK(2) 5-2-23: 9
DEPARTMENT OF HAWAIIAN HOME LANDS

TMK(2) 5-2-23: 11
DEPARTMENT OF HAWAIIAN HOME LANDS
DAVID NUI AQUINO

TMK(2) 5-2-23: 10
DEPARTMENT OF HAWAIIAN HOME LANDS
MOSES Jr. PHILIPS

TMK(2) 5-2-23: 8
DEPARTMENT OF HAWAIIAN HOME LANDS

PROPOSED 5800 SF MAINTENANCE BUILDING

REMOVE EXISTING CHAIN LINK FENCE

0+00 SL "A"
POC SEE MECH DWGS

0+05 SL "A"
1 – 6" 1/8 BEND

0+19 SL "A"
1 – 6" 1/8 BEND

0+44 SL "A"
1 – COTG
TOP=595.15
INV=593.65

0+94 SL "A"
1 – 6" 1/8 BEND

1+24 SL "A"
SMH #1
TOP=596.82
INV=

NEW JENSEN PRECAST CONCRETE SEWER SEPTIC TANK (MODEL HJ1000ST)

NEW DISTRIBUTION BOX

PROPOSED LEECH FIELD

NEW 20' WIDE AC DRIVEWAY

EXISTING GRAVEL DRIVEWAY

EXISTING WATER METER

STA 282
IRON PIN
ELEV=601.56

TEMP BENCHMARK TO BUILDING CORNER
127°00'00" — 330.00

TEMP BENCHMARK TO BACKSIGHT
188°13'48" — 317.20

TEMP BENCHMARK
STA 281
MAG NAIL WITH SHINER
ELEV 598.78

CONNECT TO EXISTING AC PAVEMENT
PROVIDE SMOOTH-RIDING TRANSITION
SEE DETAIL DWG T006

SITE PLAN

20 10 0 20 40
SCALE IN FEET

DWG. NO.
C701
SHEET 64 OF 146

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA WS MAINTENANCE YARD
JOB NO.

MAINTENANCE BUILDING
SITE PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.

TMK(2) 5-2-23: 9
DEPARTMENT OF HAWAIIAN HOME LANDS

TMK(2) 5-2-23: 12
DEPARTMENT OF HAWAIIAN HOME LANDS
CHARLOTTE L.M. SEALES

TMK(2) 5-2-23: 11
DEPARTMENT OF HAWAIIAN HOME LANDS
DAVID NUI AQUINO

TMK(2) 5-2-23: 10
DEPARTMENT OF HAWAIIAN HOME LANDS
MOSES Jr. PHILLIPS

TMK(2) 5-2-23: 8
DEPARTMENT OF HAWAIIAN HOME LANDS

PROPOSED 5800 SF MAINTENANCE BUILDING

INSTALL TEMPORARY SILT SOCK ALONG FENCE SEE DETAIL DWG T007

CONSTRUCT 20' x 50' CONSTRUCTION ENTRANCE SEE DETAIL DWG T007

PUU PEELUA AVENUE (DHHL)

EROSION CONTROL PLAN

20 10 0 20 40

SCALE IN FEET

TEMPORARY EROSION CONTROL LEGEND

- PROPERTY LINE
- LOT LINE
- LIMITS OF GRADING
- EXISTING WATER LINE
- D18 — EXISTING DRAINLINE
- D18 — NEW DRAIN LINE
- —90— EXISTING CONTOUR
- 100 — PROPOSED CONTOUR
- EXISTING DRAINAGE FLOW
- PROPOSED TEMPORARY DRAINAGE FLOW
- ROCK CONSTRUCTION ACCESS FOR INGRESS/EGRESS
- TEMPORARY SILT SOCKS
- TEMPORARY MIRAFI GEOTECHNICAL FABRIC FOR GRATED INLETS

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA WS MAINTENANCE YARD
JOB NO.

EROSION CONTROL PLAN

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

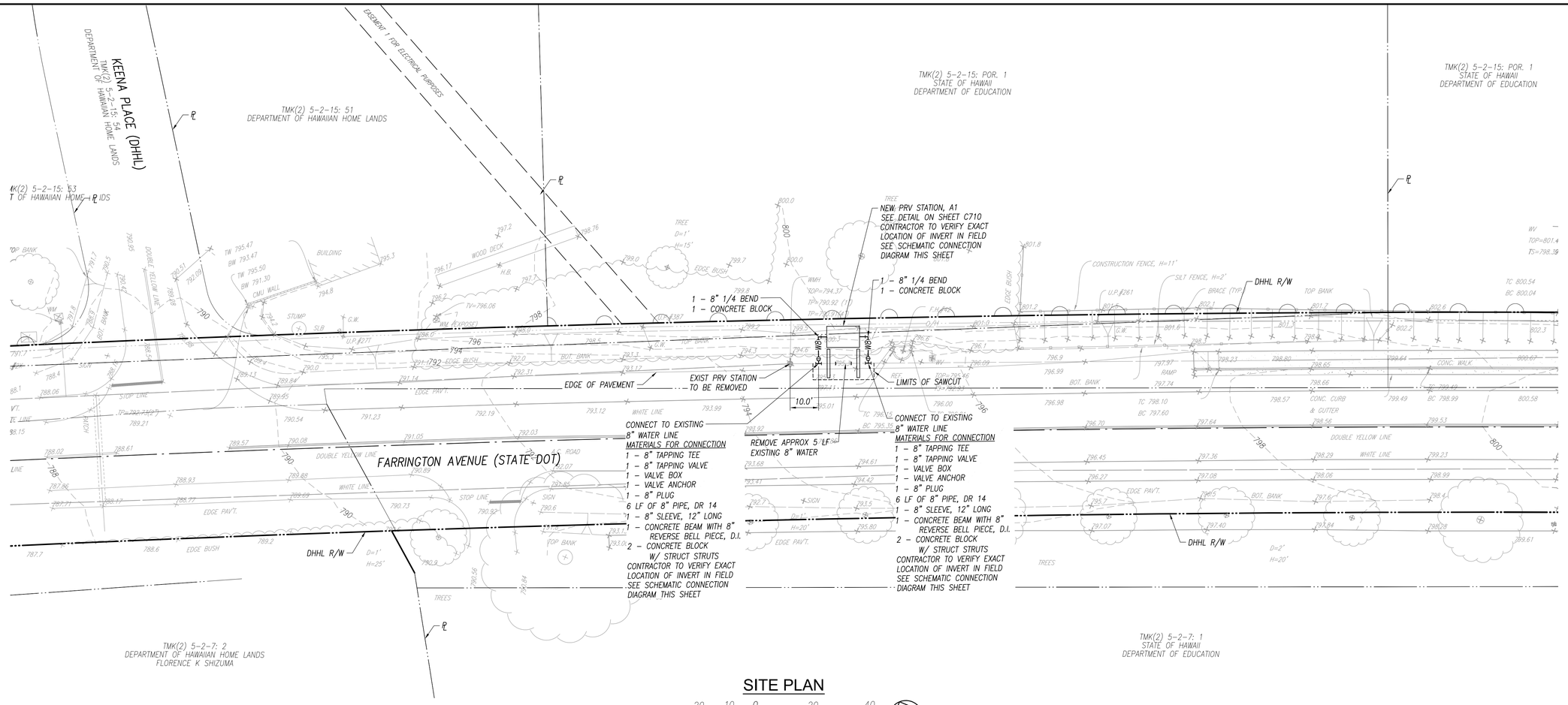
DWG. NO.
C702
SHEET 65 OF 146

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

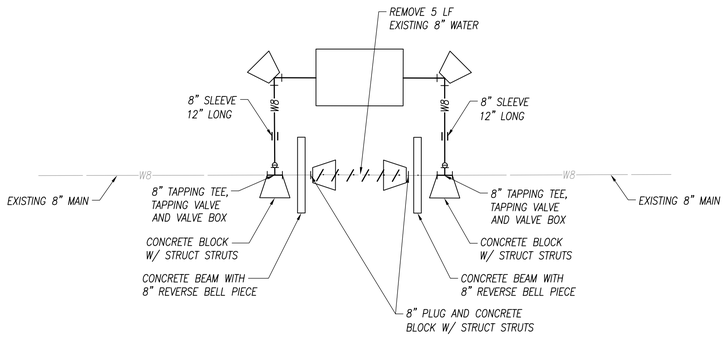
FILE	POCKET	FOLDER	NO.



SITE PLAN

20 10 0 20 40

SCALE IN FEET



CONNECTION DIAGRAM

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7

SITE 7 - REPLACE EXIST PRV STATIONS FARRINGTON AVE

JOB NO.

FARRINGTON AVE PRV REPLACEMENT SITE PLAN

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

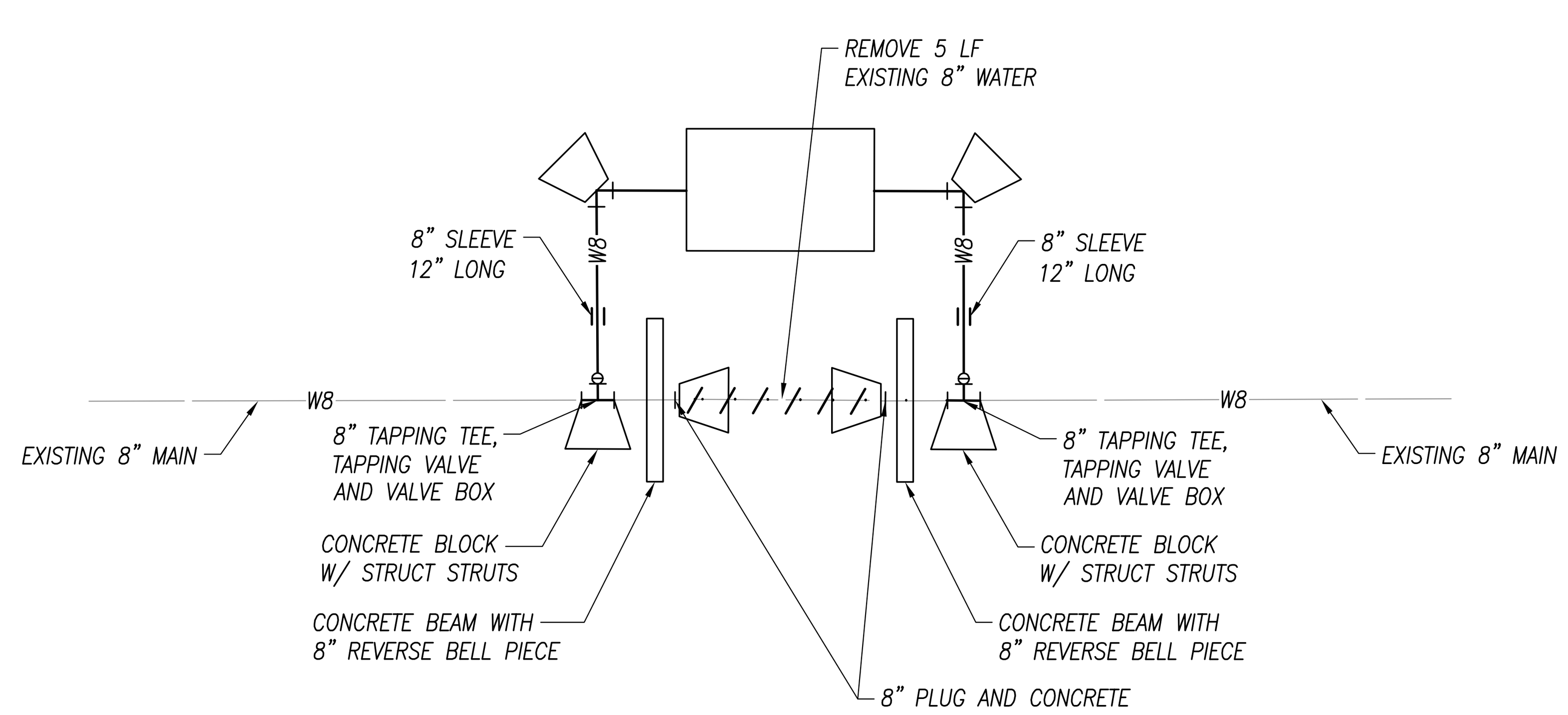
G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO.
C703
SHEET 66 OF 146

FILE	POCKET	FOLDER	NO.

TMK(2) 5-2-7: 35
DEPARTMENT OF HAWAIIAN HOME LANDS
FRANCIS K NAEOLE
TMK(2) 5-2-7: 59
DEPARTMENT OF HAWAIIAN HOME LANDS
FRANK FRANCIS Jr. KEOHO
TMK(2) 5-2-7: 46
DEPARTMENT OF HAWAIIAN HOME LANDS
TMK(2) 5-2-7: 59
DEPARTMENT OF HAWAIIAN HOME LANDS
FRANK FRANCIS Jr. KEOHO
DHHL R/W
317°02'40" 736.32
NEW PRV STATION, A2
SEE DETAIL ON DWG C710
CONTRACTOR TO VERIFY EXACT
LOCATION OF INVERT IN FIELD
SEE SCHEMATIC CONNECTION
DIAGRAM THIS SHEET
1 – 8" 1/4 BEND
1 – CONCRETE BLOCK
1 – 8" 1/4 BEND
1 – CONCRETE BLOCK
EDGE OF PAVEMENT
EXIST PRV STATION
TO BE REMOVED
W3(APPROX. LOC.)
LIHI PALI AVENUE (DHHL)
CONNECT TO EXISTING
8" WATER LINE
MATERIALS FOR CONNECTION
1 – 8" TAPPING TEE
1 – 8" TAPPING VALVE
1 – VALVE BOX
1 – VALVE ANCHOR
1 – 8" PLUG
6 LF OF 8" PIPE, DR 14
1 – 8" SLEEVE, 12" LONG
1 – CONCRETE BEAM WITH 8" REVERSE BELL PIECE, D.I.
2 – CONCRETE BLOCK W/ STRUCT STRUTS
CONTRACTOR TO VERIFY EXACT
LOCATION OF INVERT IN FIELD
SEE SCHEMATIC CONNECTION
DIAGRAM THIS SHEET
REMOVE APPROX
5 LF EXISTING
8" WATER
CONNECT TO EXISTING
8" WATER LINE
MATERIALS FOR CONNECTION
1 – 8" TAPPING TEE
1 – 8" TAPPING VALVE
1 – VALVE BOX
1 – VALVE ANCHOR
1 – 8" PLUG
6 LF OF 8" PIPE, DR 14
1 – 8" SLEEVE, 12" LONG
1 – CONCRETE BEAM WITH 8" REVERSE BELL PIECE, D.I.
2 – CONCRETE BLOCK W/ STRUCT STRUTS
CONTRACTOR TO VERIFY EXACT
LOCATION OF INVERT IN FIELD
SEE SCHEMATIC CONNECTION
DIAGRAM THIS SHEET
137°02'40" 209.64
137°02'40" 232.81
47°02'40" 15.00
137°02'40" 304.17
DHHL R/W
TMK(2) 5-2-15: 14
DEPARTMENT OF
HAWAIIAN HOME LANDS
WILLIAM M W BUCHANAN
TMK(2) 5-2-15: 48
DEPARTMENT OF HAWAIIAN HOME LANDS
DENNIS K. M. N. KEANINI
ALA EKOLU STREET (DHHL)
NOTE:
CONTRACTOR MAY ISOLATE PRV AND CUT IN REPLACEMENT IF IT IS DETERMINED THAT WORK WILL NOT AFFECT ANY EXISTING SERVICES.
SITE PLAN
20 10 0 20 40
SCALE IN FEET



REMOVE 5 LF
EXISTING 8" WATER
8" SLEEVE
12" LONG
8" SLEEVE
12" LONG
W8
EXISTING 8" MAIN
EXISTING 8" MAIN
8" TAPPING TEE, TAPPING VALVE AND VALVE BOX
8" TAPPING TEE, TAPPING VALVE AND VALVE BOX
CONCRETE BLOCK W/ STRUCT STRUTS
CONCRETE BLOCK W/ STRUCT STRUTS
CONCRETE BEAM WITH 8" REVERSE BELL PIECE
CONCRETE BEAM WITH 8" REVERSE BELL PIECE
8" PLUG AND CONCRETE BLOCK W/ STRUCT STRUTS

CONNECTION DIAGRAM

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7

SITE 7 - REPLACE EXIST PRV STATION ON LIHI PALI AVE

JOB NO.

LAHI PALI AVE PRV
REPLACEENT SITE PLAN

PAUL T. MATSUDA · LICENSED PROFESSIONAL ENGINEER · No. 10901-C · HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE

LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70

111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

DWG. NO. C704

FILE POCKET FOLDER NO.

ARV REPLACEMENT PLAN

600 0 600 1200

SCALE IN FEET

NOTE:

REPLACE AIR RELIEF VALVES (ARV), SEE DWS STD DETAILS V4 AND V23.

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE

LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C705
SHEET 68 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - REPLACE EXIST ARV STATIONS

JOB NO.

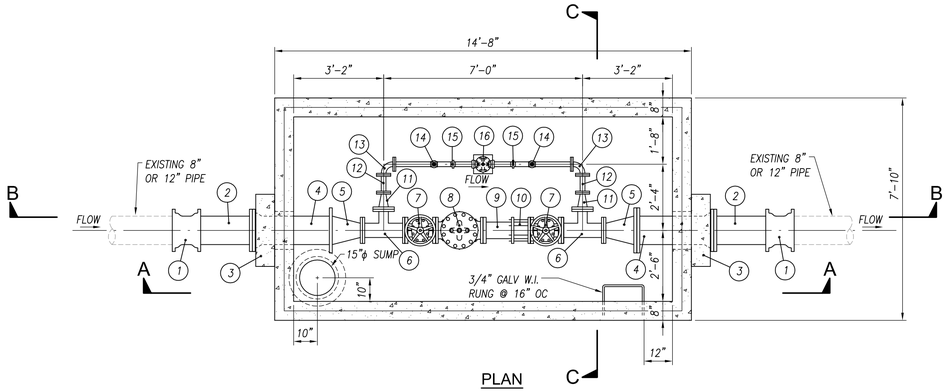
ARV REPLACEMENT PLAN

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

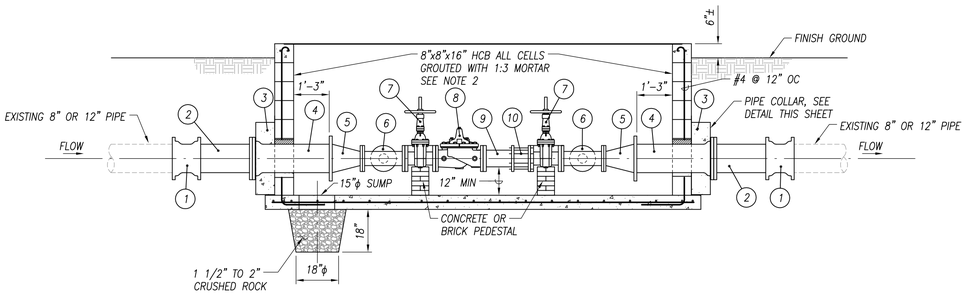
G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

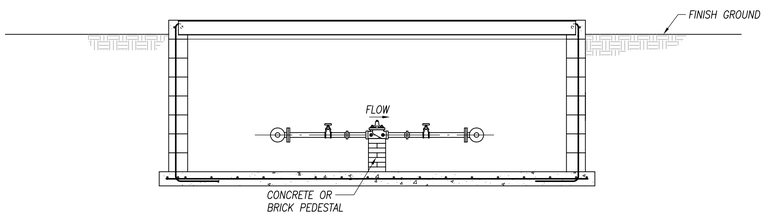
FILE	POCKET	FOLDER	NO.



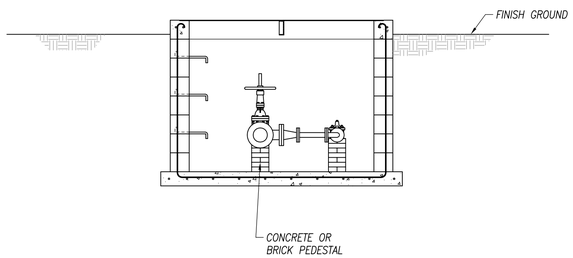
PLAN



SECTION A-A



SECTION B-B



SECTION C-C

MATERIALS LIST	
1	8" OR 12" SLEEVE, 12" LONG, MJ
2	8" OR 12" NIPPLE, 24" LONG, PE x PE
3	THRUST RESTRAINING COLLAR
4	8" OR 12" NIPPLE, FE x MJ
5	8"x6" OR 12"x6" REDUCER, FE
6	6"x4" TEE, FE
7	6" GATE VALVE, FE
8	6" PRESSURE REDUCING VALVE, FE
9	6" SPOOL PIECE, FE x PE
10	6" FLANGED ADAPTER WITH LOCK PINS
11	4"x2" REDUCER, FE
12	2" SPOOL PIECE, 12" LONG, FE
13	2" 90° BEND
14	2" GATE VALVE, SE
15	2" UNION
16	2" PRESSURE REDUCING VALVE, SE

NOTES:

1. SEE STRUCTURAL DRAWINGS FOR VAULT DETAILS
2. BYPASS METER SHALL BE RADIO READ TYPE MANUFACTURED BY BADGER METER INC., OR OTHER AS REQUIRED BY DWS.

PR STATION VALVE REPLACEMENT
STATIONS "A1" AND "A2"

NOT TO SCALE

DWG. NO.
C710
SHEET 69 OF 146

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7

JOB NO.

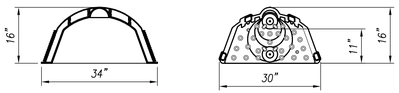
DETAILS 1

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

G70
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.G70.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.



CHAMBER END VIEW

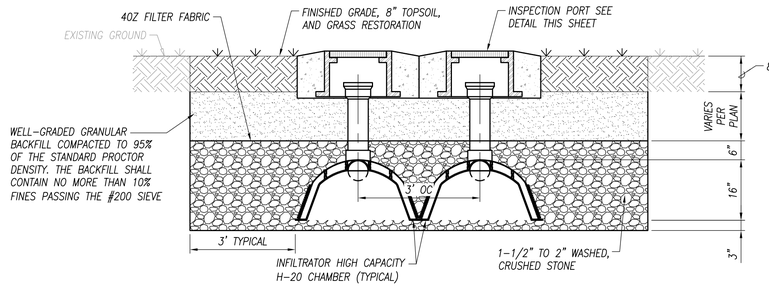
NOT TO SCALE

CHAMBER END PLATE

NOT TO SCALE

CHAMBER SPECIFICATIONS

SIZE (W x L x H) .... 34" x 75" x 16"
STORAGE CAPACITY .... 110 GAL/14.3 CY. FT.
WEIGHT .... 38 LBS
LOUVERED SIDEWALL HEIGHT .... 10"



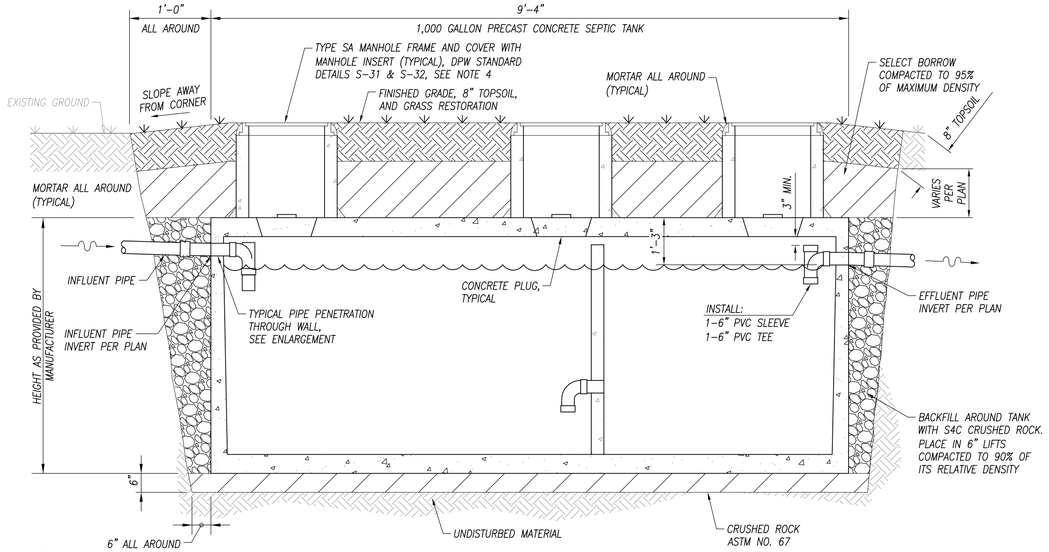
HIGH CAPACITY INFILTRATOR H-20 CHAMBER TYPICAL CROSS SECTION

NOT TO SCALE

NOTES:
1. FOR TRAFFIC LOADING APPLICATIONS PLEASE CONTACT INFILTRATOR SYSTEMS TECHNICAL SERVICES DEPARTMENT FOR CURRENT DESIGN AND INSTALLATION SPECIFICATIONS.

SEPTIC TANK OPERATION AND MAINTENANCE NOTES

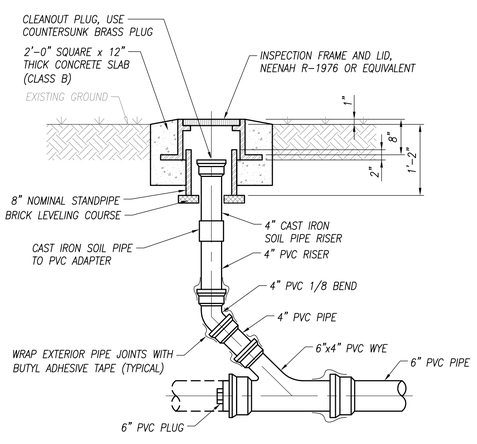
1. SEPTIC TANKS SHALL BE INSPECTED A MINIMUM OF ONE TIME A YEAR. INSPECTION INVOLVES OPENING THE ACCESS COVER AND CHECKING IF EITHER THE SLUDGE OR SCUM LEVEL IS NEAR THE TOP OF OUTLET TEE.
2. THE SEPTIC TANK SHALL BE CLEANED IF EITHER: A. THE BOTTOM OF THE FLOATING SCUM MAT IS WITHIN THREE (3) INCHES OF THE BOTTOM OF THE OUTLET TEE; OR B. THE TOP OF THE SLUDGE LAYER COMES WITHIN SIX (6) INCHES OF THE BOTTOM OF THE OUTLET TEE.
3. CLEANING THE SEPTIC TANK SHALL CONSIST OF PUMPING OF THE CONTENTS INTO A TANK TRUCK AND HAULING IT TO A STATE HEALTH DEPARTMENT APPROVED POINT OF DISPOSAL. THE SEPTIC TANK SHALL NOT BE WASHED OR DISINFECTED AFTER PUMPING. A THREE INCH DEPTH OF RESIDUAL SLUDGE SHALL BE LEFT IN THE TANK FOR SEEDING PURPOSES.
4. THE INTERIOR OF THE SEPTIC TANK IS A CONFINED SPACE ENVIRONMENT. PERSONNEL SHALL NOT ENTER THE CONFINES OF THE SEPTIC TANK UNLESS PROPER SAFETY PROCEDURES ARE FOLLOWED. THERE IS POTENTIAL EXPLOSION AND/OR ASPHYXIATION (DEATH) HAZARD DUE TO PRESENCE OF GASES.
5. CHEMICAL OR BIOLOGICAL ADDITIVES, ENZYMES AND DISINFECTANTS DO NOT IMPROVE THE OPERATION OF SEPTIC TANKS AND ARE NOT RECOMMENDED. ORDINARY HOUSEHOLD CHEMICALS IN SMALL QUANTITIES WILL NOT ADVERSELY AFFECT THE OPERATION OF THE SEPTIC TANK. DO NOT ALLOW THE INTRODUCTION OF FATS, GREASE, GASOLINE OR OTHER PETROLEUM PRODUCTS, SOLVENTS, PAINT, PAINT THINNER, PESTICIDES, ANTIFREEZE, OR OTHER POISONOUS MATERIAL INTO THE SYSTEM.
6. BULKY OR STRINGY MATERIALS SUCH AS PAPER TOWELS, NEWSPAPER, WRAPPING PAPER, RAGS, DISPOSABLE DIAPERS, SANITARY NAPKINS, TAMPONS, PLASTIC, STICKS, ETC. SHALL NOT BE FLUSHED INTO THE SEPTIC TANK. THESE MATERIALS DO NOT EASILY DECOMPOSE AND WILL RESULT IN CLOGGING OF THE PLUMBING AND DISPOSAL SYSTEM.
7. IMPROPER OPERATION AND MAINTENANCE OF THE SEPTIC TANK WILL CLOG THE SYSTEM PIPING AND ADJACENT SOIL. THIS WILL RESULT IN PREMATURE FAILURE OF THE ABSORPTION BED DISPOSAL SYSTEM. FAILURE OF THE DISPOSAL SYSTEM WILL CAUSE OVERFLOWS AND FLOODING OF THE AREA IN PROXIMITY TO THE DISPOSAL SYSTEM. IF FAILURE OCCURS, COMPLETE REPLACEMENT OF THE DISPOSAL SYSTEM WILL BE REQUIRED.
8. THE SEPTIC TANK CONTAINS A FILTER ON THE OUTLET THAT MUST BE CLEANED WHEN THE TANK IS CLEANED. THIS FILTER IS INSTALLED TO INCREASE THE LIFE OF THE SEPTIC SYSTEM AND SHOULD NOT BE REMOVED.
9. MINIMIZING THE USE OF GARBAGE DISPOSERS AND PRACTICING WATER CONSERVATION WILL INCREASE THE USEFUL LIFE OF THE SEPTIC SYSTEM. IT IS ALSO RECOMMENDED THAT THE MAJOR WATER USING FIXTURES AND APPLIANCES NOT BE OPERATED AT THE SAME TIME (E.G. DISHWASHER, ETC.).
10. DISTRIBUTION BOXES SHALL BE CLEANED TO REMOVE SOLID MATERIAL A MINIMUM OF ONE TIME PER YEAR.



NOTES:
1. TANK SHALL BE WATERTIGHT, NON-BUOYANT AND RATED FOR H-20 TRAFFIC LOADING. PROVIDE ANTI-FLOTATION ANCHOR.
2. TANK SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF CHAPTER 62, "WASTEWATER SYSTEMS", OF TITLE 11, ADMINISTRATIVE RULES OF THE STATE DEPARTMENT OF HEALTH.
3. INTERIOR OF THE SEPTIC TANK AND MANHOLE RISERS SHALL BE COATED WITH A BITUMASTIC SEALANT.
4. ACCESS HOLE SHALL BE NO LARGER THAN 18-INCHES, THE CONTRACTOR SHALL PROVIDE EITHER A SAFETY COVER OVER THE INTERIOR ACCESS HOLE OR A BOLTED SECURITY MANHOLE COVER.

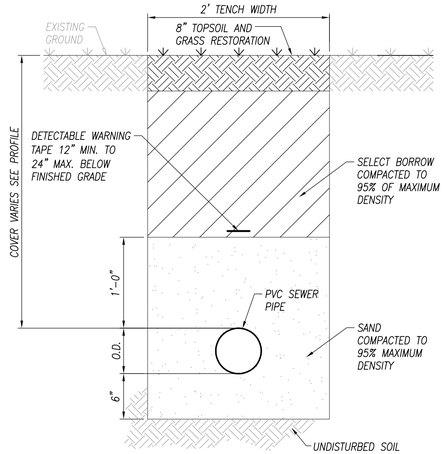
SEPTIC TANK DETAIL

NOT TO SCALE



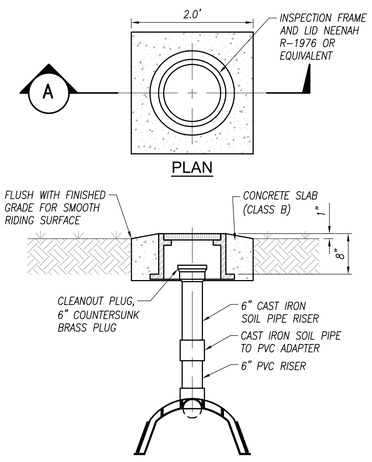
CLEANOUT TO GRADE DETAIL

NOT TO SCALE



SEWER TRENCH DETAIL

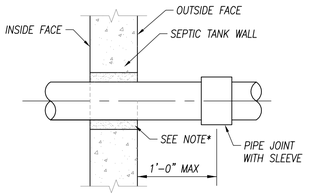
NOT TO SCALE



SECTION "A"

INSPECTION PORT DETAIL

NOT TO SCALE

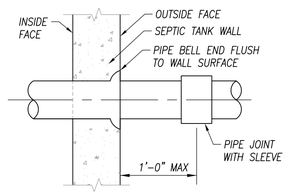


NOTE*

CORE DRILL HOLE (PIPE DIAMETER + 2 1/2"), CLEAN, INSTALL PIPE, AND FILL ANNULAR SPACE WITH NON-SHRINKING GROUT.

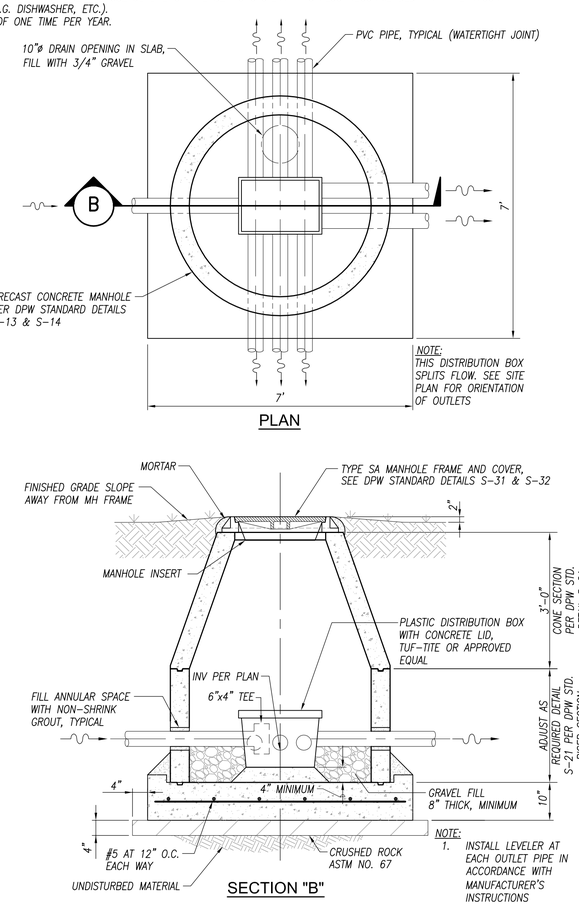
OPTION NO. 1: FIELD INSTALL

NOT TO SCALE



OPTION NO. 2: CAST-IN-PLACE

NOT TO SCALE



SECTION "B"

DISTRIBUTION BOX III DETAIL

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA
LICENSED PROFESSIONAL ENGINEER
No. 10901-C
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
C711
SHEET 70 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7

JOB NO.

DETAILS 2

DESIGNED BY: PLM CHECKED BY: PTM DRAWN BY: CKM

GTO
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
808.523.5866
WWW.GTO.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7

SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

DESIGN DEVELOPMENT SUBMITTAL

TMK#:

PROJECT TEAM

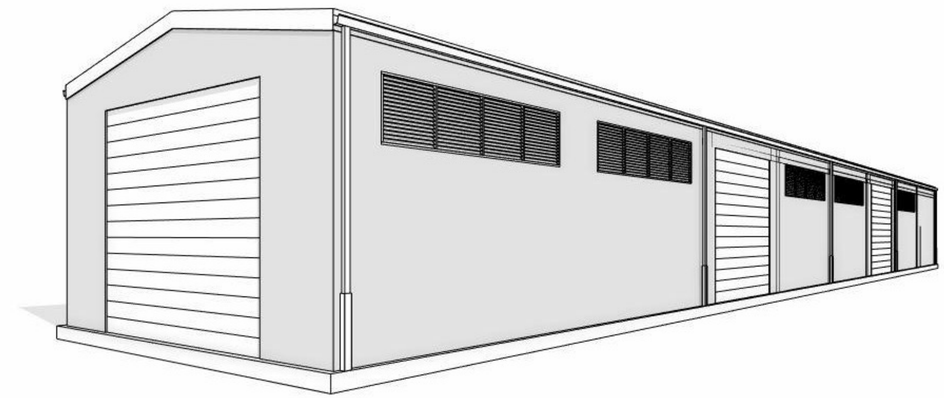
OWNER/CLIENT:

CIVIL/ARCHITECT:
G70
111 S. KING STREET SUITE 170
HONOLULU, HAWAII 96813

STRUCTURAL ENGINEER:
TANIMURA & ASSOCIATES INC
925 BETHEL ST # 309, HONOLULU, HI 96813

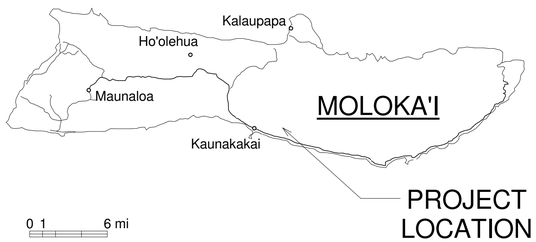
MECHANICAL ENGINEER:
RANDOLPH H MURAYAMA & ASSOCIATES
1267 YOUNG ST, HONOLULU, HI 96814

ELECTRICAL ENGINEER:
ALBERT CHONG ASSOCIATES INC
1117 KAPAHULU AVE, HONOLULU, HI 96816



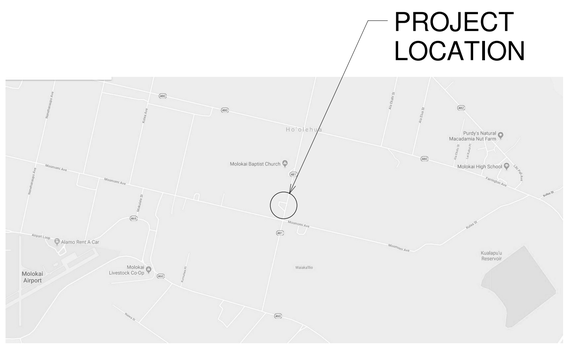
INDEX TO DRAWINGS

LOCATION MAP



MOLOKA'I, HAWAII

VICINITY MAP



ACKNOWLEDGEMENTS

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

PROJECT INFORMATION CODES & CODE DIAGRAMS

DESIGNED BY: JS CHECKED BY: RO DRAWN BY: G70

04-23-18

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
T-101
SHEET 71 OF 146

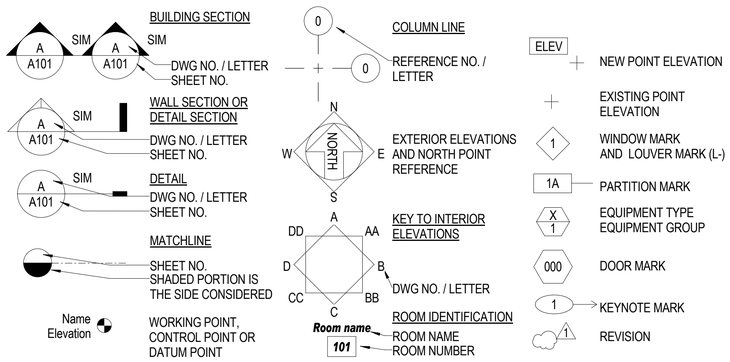
FILE	POCKET	FOLDER	NO.

5/26/2018 4:44:35 PM

ABBREVIATIONS

&	AND	DW	DISH WASHER	JAL	ALOUSIE	REBAR	REINFORCING BAR
	ANGLE	DWG	DRAWING	JAN	JANITOR	REC	RECESSED
@	AT	DWR	DRAWER	JB	JUNCTION BOX	REF	REFERENCE
	CENTER LINE			JC	JANITOR'S CLOSET	REINF	REINFORCED OR REINFORCING
	DIAMETER	E	EAST	JST	JOIST	REQD	REQUIRED
		EA	EACH				
'	FOOT; FEET	EC	ELASTOMERIC COATING	JT	JOINT	RESIL	RESILIENT
"	INCH	EFS	EXTERIOR FINISH			REV	REVISED, REVISION OR REVERSED
%	PERCENT	EIFS	EXTERIOR INSULATION & FINISH SYSTEM	KIT	KITCHEN	RF	ROOF, RESILIENT FLOOR
	PERPENDICULAR					RFG	ROOFING
#	POUND OR NUMBER	EJ	EXPANSION JOINT	L	LENGTH OR LONG	RGH	ROUGH
		EL	ELEVATION	LAB	LABORATORY		
A/C	AIR CONDITIONING	ELEC	ELECTRICAL	LAM	LAMINATE OR LAMINATED	RGTR	REGISTER
AB	ANCHOR BOLT	ELEV	ELEVATOR	LAV	LAVATORY	RH	ROBE HOOK, RIGHT HAND
ABBREV	ABBREVIATION	ENCL	ENCLOSURE	LDG	LANDING	RM	ROOM
ABV	ABOVE					RND	ROUND
AC	ASPHALT CONCRETE	EPS	EXPANDED POLYSTYRENE	LF	LINEAR FOOT	RO	ROUGH OPENING
		EQ	EQUAL	LH	LEFT HAND		
ACT	ACOUSTICAL TILE	EQPT	EQUIPMENT	LOC	LOCATION	RWC	RAIN WATER CONDUCTOR
ACOUS	ACOUSTICAL	EXP	EXPANSION	LT	LIGHT	RWD	REDWOOD
AD	AREA DRAIN	EWC	ELEC. WATER COOLER	LP	LOW POINT	RWL	RAIN WATER LEADER
ADD	ADDITIVE, ADDENDUM						
ADJ	ADJUSTABLE	EXIST	EXISTING	LVR	LOUVER	S	SOUTH
		EXT	EXTERIOR			SA	SINGLE ACTING
ADJA	ADJACENT			MAR	MARBLE	SAFB	SOUND ATTENUATION
AFF	ABOVE FINISH FLOOR	FA	FIRE ALARM	MAX	MAXIMUM		FIRE BLANKET
AGGR	AGGREGATE	FAB	FABRICATE	MAT	MATERIAL		
AHU	AIR HANDLING UNIT	FAEM	FLUID APPLIED ELASTOMERIC MEMBRANE	MC	MEDICINE CABINET	SB	SPLASH BLOCK
AL/ALUM	ALUMINUM	FB	FLAT BAR	MECH	MECHANICAL	SC	SCALE OR SOLID CORE
		FCU	FAN COIL UNIT				
ALT	ALTERNATE			MEMB	MEMBRANE	SCD	SEAT COVER DISPENSER
ANOD	ANODIZED	FD	FLOOR DRAIN	MET/MTL	METAL	SCHED	SCHEDULE
AP	ACCESS PANEL	FDN	FOUNDATION	MFR	MANUFACTURER	SCP	SCUPPER
APPROX	APPROXIMATE	FE	FIRE EXTINGUISHER	MH	MANHOLE OR MOP HOLDER	SD	SOAP DISPENSER OR
ARCH	ARCHITECTURAL	FEC-S	FIRE EXTINGUISHER CABINET-SURFACE	MIN	MINIMUM		SMOKE DETECTOR
		FEC-SR	FIRE EXTINGUISHER CABINET-SEMI RECESSED				
BD	BOARD			MIRR	MIRROR	SEC	SECTION
BLDG	BUILDING	FEC-R	FIRE EXTINGUISHER CABINET-RECESSED	MISC	MISCELLANEOUS		
BLKG	BLOCKING	FF	FINISH FLOOR	MLDG	MOLDING	SEP	SEPARATION
BLVD	BOULEVARD	FF&E	FURNITURE, FIXTURE & EQUIPMENT	MR	MOISTURE RESISTANT	SF	SQUARE FOOT
BM	BEAM	FIN	FINISH	MO	MASONRY OPENING	SH	SHELF
		FIX	FIXTURE			SHR	SHOWER
BOH	BACK OF HOUSE			MS	MOP SINK	SHT	SHEET
BOT	BOTTOM	FLR	FLOOR	MTD	MOUNTED		
BRKT	BRACKET	FLASHG	FLASHING	MTG	MOUNTING	SHTG	SHEATHING
BS	BOTH SIDES	FLDG	FOLDING	MUL	MULLION	SIM	SIMILAR
BTWN	BETWEEN	FLUOR	FLUORESCENT	MUN	MUNTIN	SL	SLOPE
		FOC	FACE OF CONCRETE			SLDG	SLIDING
BUR	BUILT-UP ROOFING			NIC	NOT IN CONTRACT	SLNT	SEALANT
		FOF	FACE OF FINISH	NOM	NOMINAL		
CAB	CABINET	FOM	FACE OF MASONRY	NTS	NOT TO SCALE	SM	SHEET METAL
CB	CATCH BASIN	FOS	FACE OF STUDS, SLAB OR STRUCTURE			SND	SANITARY NAPKIN DIPOSAL
CEM	CEMENT	FR	FRAME	OA	OVERALL	SP	SOLID PHENOLIC
CEM PLAS	CEMENT PLASTER	FS	FULL SIZE OF FLOOR SINK	OC	ON CENTER	SPEC	SPECIFICATION
CER	CERAMIC			OD	OUTSIDE DIAMETER	SQ	SQUARE
		FT	FOOT OR FEET	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED		
CG	CORNER GUARD	FTG	FOOTING	OFD	OVERFLOW DRAIN	SS	SERVICE SINK
CI	CAST IRON	FURR	FURRING			SST	STAINLESS STEEL
CIP	CAST IN PLACE	FUT	FUTURE	OFF	OFFICE	ST	STONE
CJ	CONSTRUCTION OR CONTROL JOINT			OFOI	OWNER FURNISHED OWNER INSTALLED	STD	STANDARD
CLG	CEILING	GA	GAUGE	OH	OVERHANG	STL	STEEL
		GALV	GALVANIZED	OI	OWNER INSTALLED		
CLO	CLOSET	GB	GRAB BAR	OPNG	OPENING	STN	STAIN
CLR	CLEAR	GFRC	GLASS FIBER REINFORCED CONCRETE			STOR	STORAGE
CMU	CONCRETE MASONRY UNITS	GI	GALVANIZED IRON	OPP	OPPOSITE	STRL	STRUCTURAL
CNTR	COUNTER			OVHD	OVERHEAD	STRUC	STRUCTURE
COL	COLUMN	GL	GLASS			SUSP	SUSPENDED
		GLU-LAM	GLUE LAMINATED	PC	PIECE		
CONC	CONCRETE	GND	GROUND	PD	PLANTER DRAIN	SYM	SYMMETRICAL
COND	CONDITION	GR	GRADE	PERIM	PERIMETER	SYS	SYSTEM
CONN	CONNECTION	GYP	GYPSUM	PL	PLATE OR PROPERTY LINE	SW	SWITCH
CONSTR	CONSTRUCTION			PLAM	PLASTIC LAMINATE		
CONT	CONTINUOUS	H	HIGH OR HEIGHT			T	TREAD
		HB	HOSE BIBB	PLAS	PLASTER	TB	TOWEL BAR
CONTR	CONTRACTOR	HC	HOLLOW CORE	PLBG	PLUMBING	TD	TRENCH DRAIN
COP	COPPER	HD	HEAD	PLYWD	PLYWOOD	TEMP	TEMPERED
CORR	CORRIDOR	HDCP	HANDICAPPED	PNL	PANEL	THK	THICK
CPT	CARPET			PR	PAIR		
CT	CERAMIC TILE	HDWD	HARDWOOD			THR	THRESHOLD
		HDWE	HARDWARE	PREFAB	PREFABRICATE	TP	TOILET PARTITION
CTR	CENTER	HT	HEIGHT	PREP	PREPARATION	TSC-TTD	TOILET SEAT COVER -
CTSK	COUNTERSINK	HM	HOLLOW METAL	PROP	PROPERTY		TOILET TISSUE DISPENSER
CW	COLD WATER	HORIZ	HORIZONTAL	PT	PAINT, POINT		
					PAPER TOWEL DISPENSER AND RECEPTACLE	TPH	TOILET PAPER HOLDER
DA	DOUBLE ACTING	HR	HOUR OR HANDRAIL	PTDR		TW	TOP OF WALL
DBL	DOUBLE	HS	HAND SINK		PARTITION	TYP	TYPICAL
DD	DECK DRAIN	HP	HIGH POINT	PTN	POURED IN PLACE		
DECOR	DECORATIVE	HVAC	HEATING, VENTILATION, AIR CONDITIONING		POST INDICATE VALVE	UON	UNLESS OTHERWISE NOTED
DEMO	DEMOLITION			PVP	POLYVINYL CHLORIDE	UR	URINAL
		ID	INSIDE DIAMETER	PIV	PAVEMENT		
DEPT	DEPARTMENT	IN	INCH	PVC		VCT	VINYL COMPOSITION TILE
DET	DETAIL	INCL	INCLUSIVE, INCLUDED OR INCLUDING	PVMT	QUARRY TILE	VERT	VERTICAL
DF	DRINKING FOUNTAIN	INSUL	INSULATION			VIF	VERIFY IN FIELD
DIA	DIAMETER	INT	INTERIOR	QT	RISER, RADIUS		
DIM	DIMENSION				RADIUS	W/	WITH
		INTEG	INTEGRATED	R	RESILIENT BASE	WC	WATER CLOSET
DISP	DISPENSER	INFO	INFORMATION	RAD	RAIN CHAIN	WD	WOOD
DN	DOWN	INV	INVERT	RB	ROOF DRAIN	WDW	WINDOW
DR	DOOR			RC		WH	WALL HYDRANT
DS	DOWNSPOUT			RD			
						WJ	WALL JOINT
						W/O	WITHOUT
						WP	WATERPROOF
						WR	WATER RESISTANT
						WT	WEIGHT
						WHL	WEEP HOLE

SYMBOLS



GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE HONOLULU INCLUDING ALL AMENDMENTS AND AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG), FIRE DEPARTMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS AND THE BEST TRADE PRACTICES.
2. ALL WORK SHALL CONFORM TO SEISMIC REQUIREMENTS OF SEISMIC ZONE XX. (SEE STRL DWGS)
3. TOP OF ARCHITECTURAL FINISH FLOOR @ 0.00 ELEVATION = XXXX BASED ON U.S. COAST AND GEODETIC SURVEY. ALTERNATIVE: [REFER TO CIVIL DRAWINGS FOR ARCHITECTURAL FINISH FLOOR ELEVATION]
4. THE CONTRACTOR SHALL FULLY EXECUTE ALL CONDITIONS OF THE CONTRACT, INCLUDING THE REQUIREMENTS OF THE GENERAL CONDITIONS (AIA DOCUMENT A201).
5. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FILE ALL REQUIRED CERTIFICATES OF INSURANCE WITH THE DEPARTMENT BUILDINGS, OBTAIN ALL REQUIRED PERMITS, AND PAY ALL FEES REQUIRED BY GOVERNING LOCAL AGENCIES.
6. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD PRIOR TO COMMENCING WORK, AND SHALL REPORT ANY CONDITIONS OF DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS REQUIRING MODIFICATIONS BEFORE PROCEEDING WITH WORK TO THE ARCHITECT.
7. MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER CONSTRUCTION OF ANY PART OF THE WORK SHALL BE INCLUDED AS IF THEY WERE INDICATED IN THE DRAWINGS AND SPECIFICATIONS.
8. THE CONTRACTOR SHALL COORDINATE ALL WORK PROCEDURES WITH REQUIREMENTS OF LOCAL AUTHORITIES AND/OR BUILDING MANAGEMENT.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL CONDITIONS AND MATERIALS WITHIN THE PROPOSED CONSTRUCTION AREA. THE CONTRACTOR SHALL DESIGN AND INSTALL ADEQUATE SHORING AND BRACING FOR ALL STRUCTURAL OR REMOVAL TASKS. THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR ANY DAMAGE OR INJURIES CAUSED BY OR DURING THE EXECUTION OF THE WORK.
10. THE CONTRACTOR SHALL LAYOUT HIS OWN WORK, AND SHALL PROVIDE ALL DIMENSIONS REQUIRED FOR OTHER TRADES (PLUMBING, ELECTRICAL, ETC.).
11. THE CONTRACTOR SHALL REPORT TO THE ARCHITECT ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS THAT REQUIRE MODIFICATIONS BEFORE PROCEEDING WITH WORK.
12. THE CONTRACTOR SHALL COOPERATE WITH OWNER'S [FF&E, SECURITY, DATA, ETC.] CONTRACTORS FOR SCHEDULING, ACCESS, AND/OR INSTALLATION OF ALL ASSOCIATIVE EQUIPMENT WITHIN THE WORK AREA.
13. PLUMBING AND ELECTRICAL WORK SHALL BE PERFORMED BY PERSONS LICENSED IN THEIR TRADES, WHO SHALL ARRANGE FOR AND OBTAIN INSPECTIONS AND SIGN-OFFS.
14. THE CONTRACTOR SHALL DO ALL CUTTING, PATCHING, REPAIRING AS REQUIRED TO PERFORM ALL OF THE WORK INDICATED ON THE DRAWINGS, AND ALL OTHER WORK THAT MAY BE REQUIRED TO COMPLETE THE JOB.
15. THE CONTRACTOR, UPON COMPLETION OF THE WORK, SHALL APPLY FOR CERTIFICATE OF OCCUPANCY, AND SHALL ARRANGE FOR DEPARTMENT OF BUILDINGS INSPECTIONS AND SIGN-OFFS REQUIRED TO OBTAIN THE CERTIFICATE OF OCCUPANCY.
16. REFER TO CIVIL, LANDSCAPE, STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS. FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS AND SYMBOLS LEGENDS; ALL NOTES ARE TO BE REVIEWED AND APPLIED TO RELATED BUILDING COMPONENTS.
17. NOTES APPEAR ON VARIOUS SHEETS FOR DIFFERENT SYSTEMS AND MATERIAL. SHEETS ARE TO BE REVIEWED AND NOTES ON ANY ONE SHEET ARE TO BE APPLIED TO RELATED SYSTEMS AND MATERIALS DEPICTED ON OTHER DRAWINGS.
18. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO THOSE THAT ARE WHERE SPECIFIED DIMENSIONS, DETAILS OR DESIGN INTENT CANNOT BE DETERMINED; CONSULT THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

CONSTRUCTION NOTES

UNLESS OTHERWISE NOTED OR INDICATED DIMENSIONS ON THE PLANS SHALL BE FROM CENTERLINE OF THE COLUMN, GRIDLINE, OR FACE OF STRUCTURE/STUD.

ALL EXTERIOR OPENINGS SHALL BE FLASHED IN SUCH A WAY AS TO MAKE THEM WEATHERPROOF.

FLOOR SURFACES SHALL BE SLIP RESISTANT MEETING THE MINIMUM STATIC COEFFICIENT OF 0.6 FOR FLOORS AND 0.8 FOR RAMPS AS REQUIRED BY ADAAG.

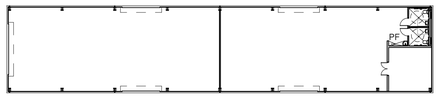
EXTERIOR PENESTRATION AND PENESTRATION ENCLOSING CONDITIONED SPACE SHALL BE WEATHERSTRIPPED OR OTHERWISE TIGHTLY SEALED TO MINIMIZE AIR LEAKAGE.

EXTERIOR DOORS AND DOORS ENCLOSING CONDITIONED SPACE SHALL MINIMIZE AIR LEAKAGE AROUND THEIR PERIMETER WHEN IN A CLOSED POSITION.
SEAL OR ASTRAGAL SHALL BE PROVIDED AT HEAD, SILL, AND JAMBS. MEETING PORTIONS OF SECTIONAL, BI-PARTING, OR DOUBLE DOORS SHALL BE PROVIDED WITH A WEATHER TIGHT ASTRAGAL OR SEAL.

WHERE MULTIPLE SWITCHES OR RECEPTACLES ARE LOCATED IN NEAR VICINITY, THE CONTRACTOR SHALL GANG SWITCHES OR RECEPTACLES UP TO THE MAXIMUM WIDTH AVAILABLE FOR FACE PLATES.

ALL SWITCHES AND/OR RECEPTACLES MOUNTED ABOVE COUNTERS SHALL BE INSTALLED SO THAT LENGTH OF FACE PLATE IS ORIENTED HORIZONTALLY.

CODE DIAGRAM



CODE - FLOOR PLAN

USE & OCCUPANCY CALSSIFICATION: S-1 & S-2
TYPE OF CONSTRUCTION: TYPE V (NON-SPRINKLERED)
PROPOSED BUILDING AREA: 5,850 SF
HEIGHT: 1 STORY/20 FEET
PROVIDE NON-COMBUSTIBLE CONSTRUCTION

PROJECT INFORMATION

GENERAL

LOT SIZE:

EXISTING FLOOR AREA: 8400SF
EXISTING PARAMETER: 380'-0"
TOTAL PARAMETER:> 30'-0"
OPEN = 275'-0"

TAX MAP KEY

2-1-058: 131 AND 2-1-058: 127

SCOPE OF WORK

CONVERSION OF EXISTING NED SHED INTO TRAINING FACILITY, ENCLOSE EXISTING ONE-STORY STRUCTURE & ADD NEW MEZZANINE.

REFERENCE CODES

BUILDING CODE: (OAHU/MAUI/HAWAII/KAUAI) COUNTY CODE - INTERNATIONAL BUILDING CODE 2006

ACCESSIBILITY: AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES

ENERGY CODE: (OAHU/MAUI/HAWAII/KAUAI) MODEL ENERGY CODE

ZONING

(OAHU/MAUI/HAWAII/KAUAI) COUNTY CODE: REVISED ORDINACNCE OF HONOLULU 1990 (ROH)
ZONING CODE: HCDA KAKAAKO MAKAI RULES

MINIMUM LOT AREA:
MINIMUM LOT WIDTH:

REQUIRED YARDS
FRONT:
SIDE/REAR:

MAXIMUM HEIGHT: 45'
EXISTING HEIGHT:26'
PROPOSED HEIGHT: NO CHANGES IN HEIGHT

MAUI COUNTY ZONING ORDINANCE
OFF STREET LOADING ZONE REQUIRED

CLUBHOUSE (1 STALL: 200 SF): 32 STALLS

SANITARY FACILITIES
ALLOWABLE MINIMUM SANITARY FACILITIES PER UNIFORM PLUMBING CODE (1991,1997)

BUILDING CODE NOTES

OCCUPANCY: OCCUPANCY A-3 - TRAINING AND SKILLED DEVELOPMENT NOT WITHIN A SCHOOL

CONSTRUCTION TYPE: V-B NON-SPRINKLERED

PROPOSED BUILDING AREA: 6,342 SF
BASE ALLOWABLE BUILDING AREA (TABLE 503): 6,000 SF

SECTION 506.2 FRONTAGE INCREASE
274'-0" / 380'-0" = 0.724 = 0.72
0.72 - 0.25 = 0.47 = 47% BONUS

TOTAL ALLOWABLE AREA
6,000 S.F. X 1.47 = 8,820 S.F. EXCEEDS PROPOSED BUILDING AREA

MAX HEIGHT: 26'

MAX STORIES: 1-STORY

FLOOD ZONE: AE 10'
CURRENT ELEVATION: FINISH FLOOR 7.70', FLOOD PROTECTION PROVIDED TO 10'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

PROJECT INFORMATION CODES AND CODE DIAGRAMS, SYMBOLS, ABBREVIATIONS & NOTES

DESIGNED BY: JS CHECKED BY: RO DRAWN BY: GTO

04-23-18

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LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
T-102
SHEET 72 OF 146

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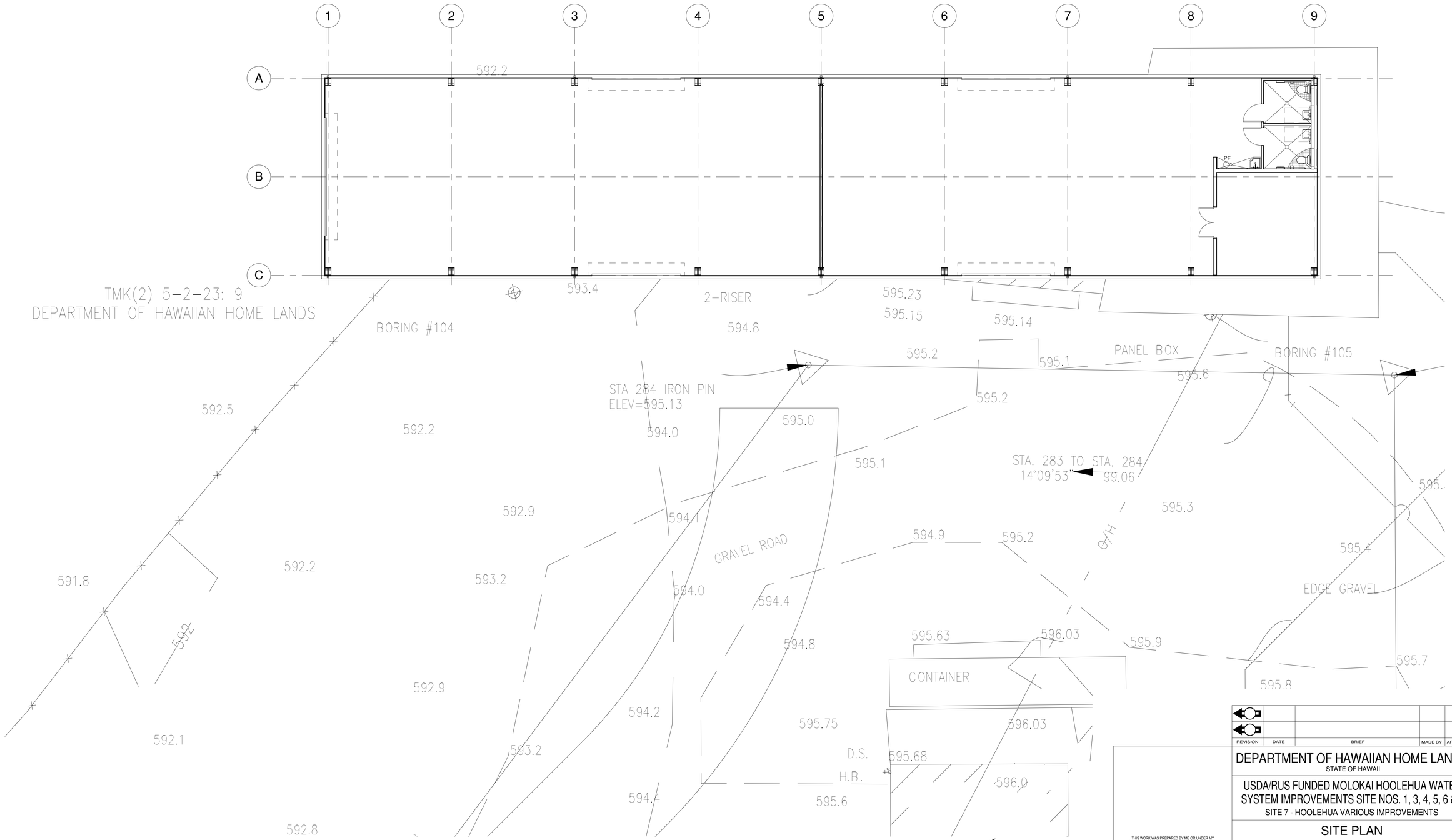

1 SITE PLAN
SCALE: 1/8" = 1'-0"

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

SITE PLAN

DESIGNED BY: JS CHECKED BY: RO DRAWN BY: G70

04-23-18

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DWG. NO.
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SHEET 73 OF 146

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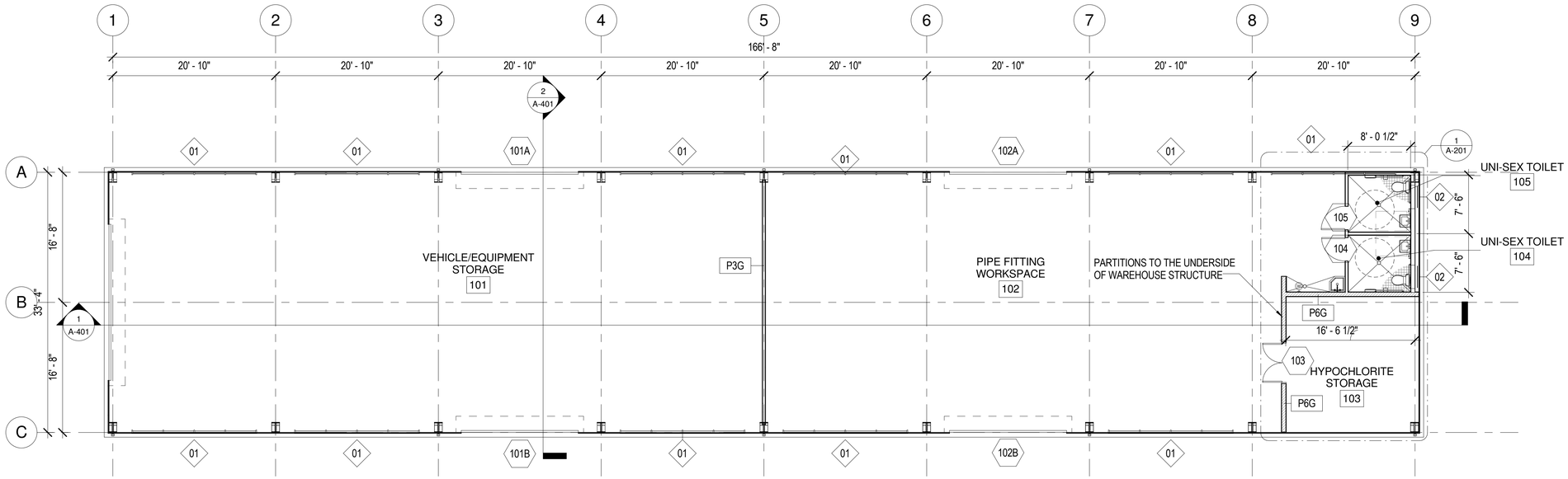
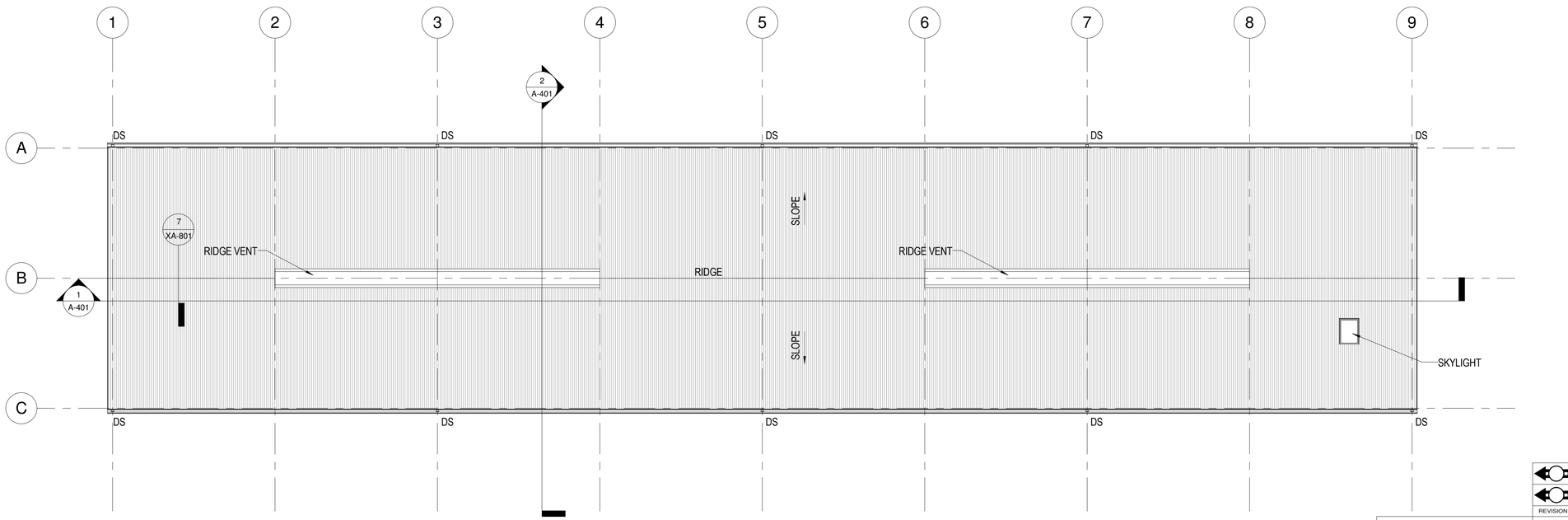
5/26/2018 4:44:28 PM

Name	Area
HYPOCHLORITE STORAGE	296 SF
UNI-SEX TOILET	58 SF
UNI-SEX TOILET	58 SF
PIPE FITTING WORKSPACE	2325 SF
VEHICLE/EQUIPMENT STORAGE	2788 SF
	5525 SF



1 FLOOR PLAN

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



2 ROOF PLAN

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

0' 8' 16' 32'

N W E S NORTH

DWG. NO. A-101

SHEET 74 OF 146

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

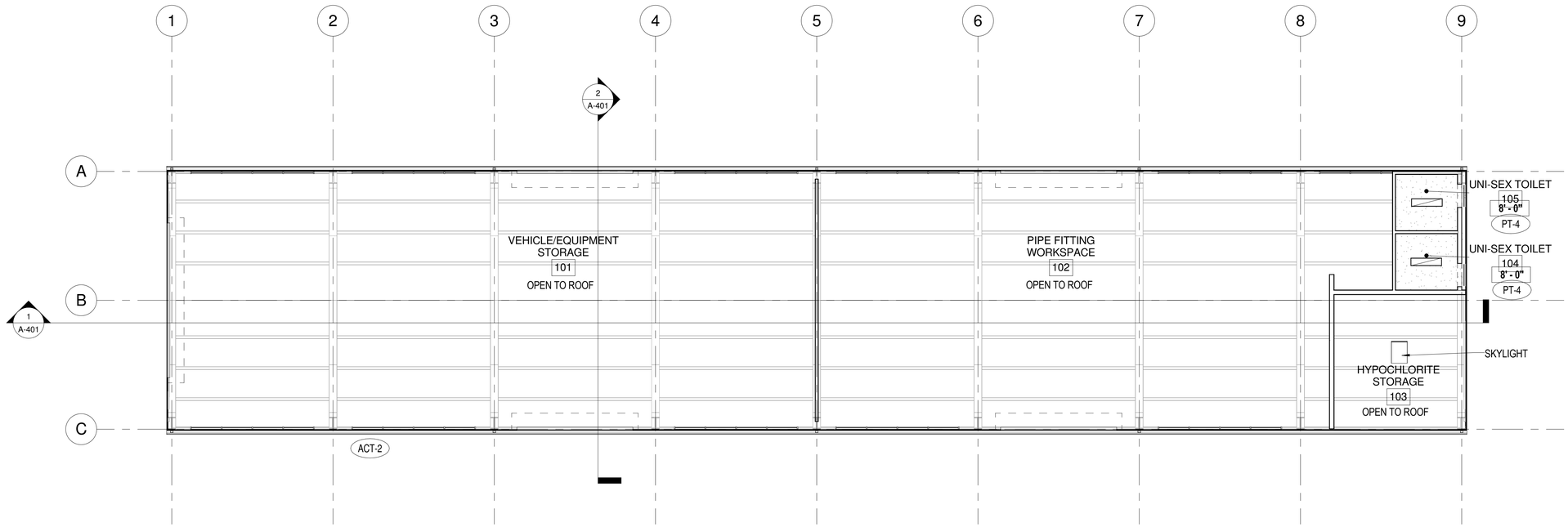
FLOOR PLAN

DESIGNED BY: JS CHECKED BY: RO DRAWN BY: G70

04-23-18

FILE	POCKET	FOLDER	NO.

5/26/2018 4:44:29 PM



1 REFLECTED CEILING PLAN

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

LEGEND

- ACT-1 — 24" x 48" SUSPENDED ACOUSTICAL TILES
- ACT-2 WASHABLE — 24" x 48" SUSPENDED ACOUSTICAL TILES WHERE NOTED
- PTD GYP BD — 1 LAYER
- EXTERIOR SOFFIT BD
- 2 X 4 RECESSED LAY-IN LIGHT FIXTURE
- 2 X 2 RECESSED LAY-IN LIGHT FIXTURE
- TRACK LIGHT FIXTURE
- LINEAR PENDANT FIXTURE
- 1 X 4 RECESSED FLUORESCENT
- 6" RECESSED DOWNLIGHT
- 6" RECESSED WALL WASHER
- 4" DOWNLIGHT
- DECORATIVE SCONCE
- 2 X 2 DIFFUSER
- LINEAR SLOT DIFFUSER

0' 8' 16' 32'

N W E S NORTH

DWG. NO. A-102

SHEET 75 OF 146

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SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

REFLECTED CEILING PLAN

DESIGNED BY: JS CHECKED BY: RO DRAWN BY: G70

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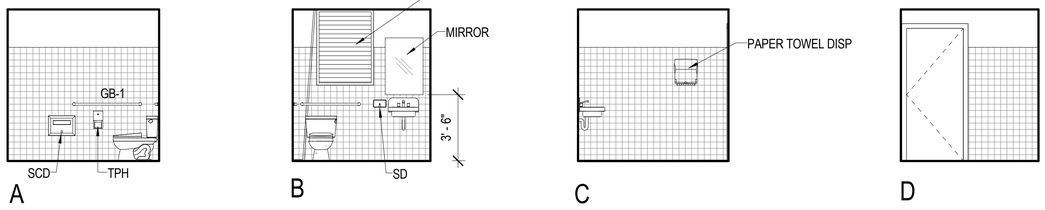
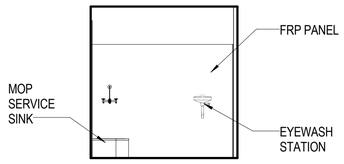


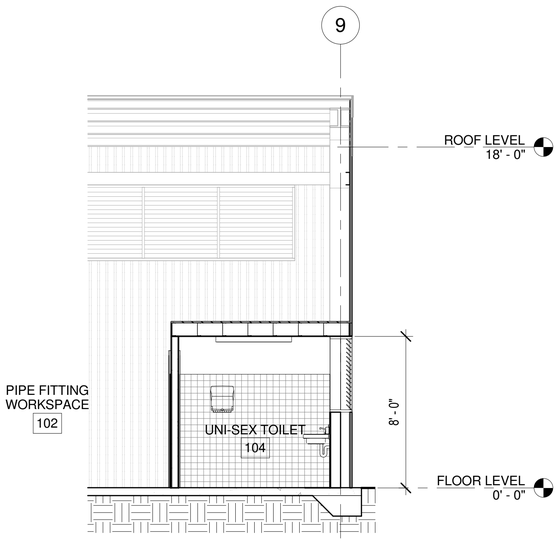
2 UNI-SEX TOILET 105

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



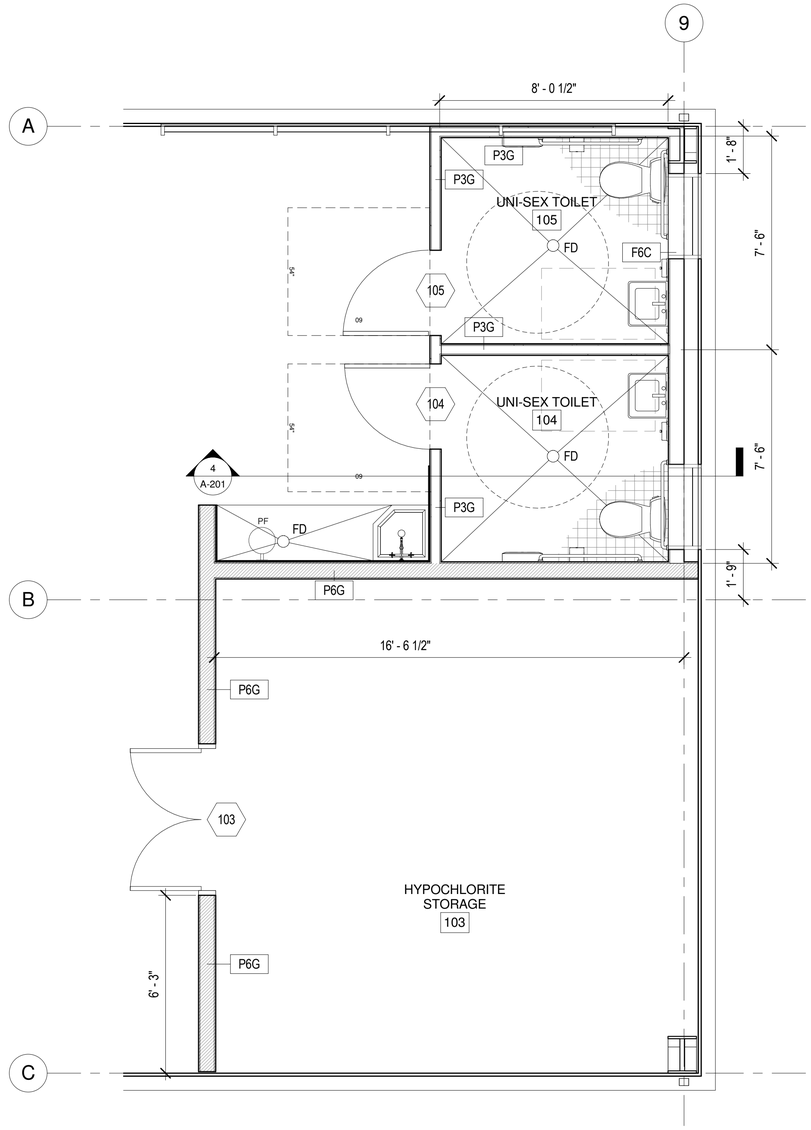
3 EYEWASH STATION

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



4 SECTION AT UNI-SEX TOILET

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



1 ENLARGED PLAN

SCALE: 3/8" = 1'-0"

REVISION	DATE	BRIEF	MADE BY	APPROVED

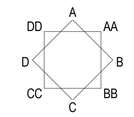
DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

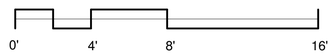
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

ENLARGED PLAN, INTERIOR ELEVATIONS, SECTIONS

DESIGNED BY: JS CHECKED BY: RO DRAWN BY: G70

04-23-18





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DWG. NO.
A-201
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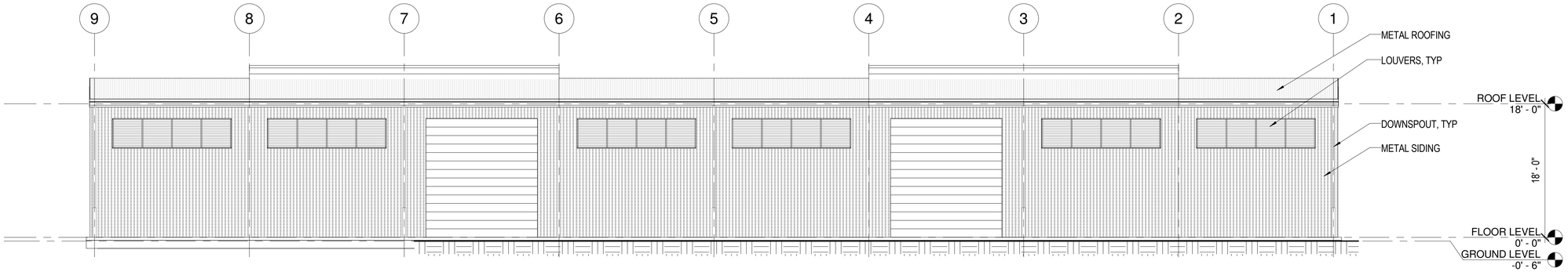
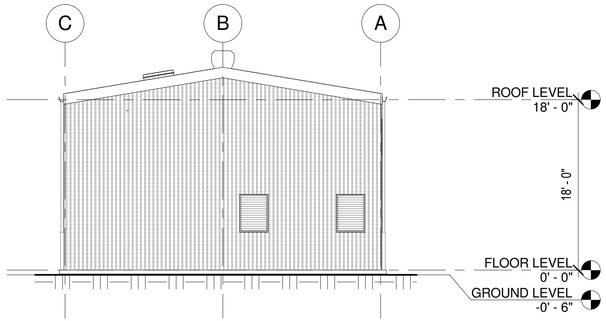
FILE	POCKET	FOLDER	NO.

5/26/2018 4:44:31 PM



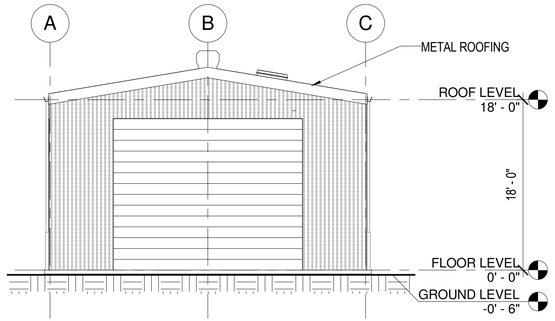
1 NORTH ELEVATION

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



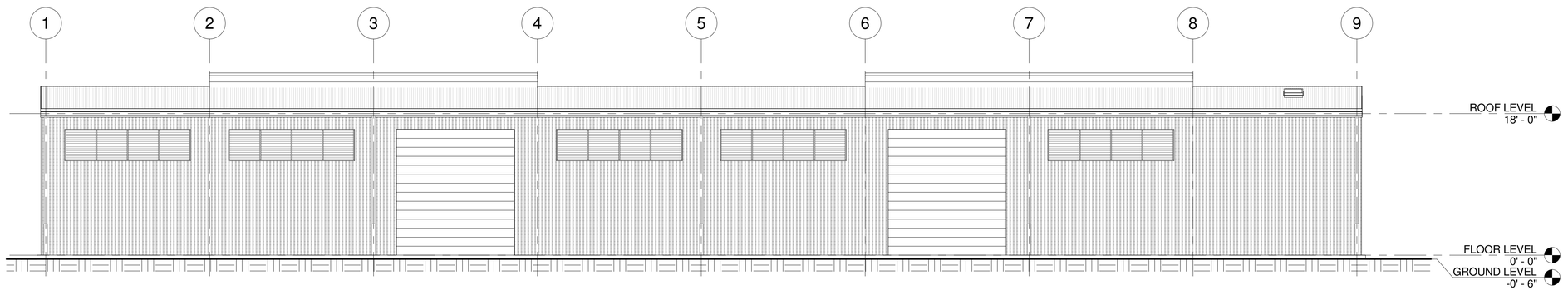
2 EAST ELEVATION

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



3 WEST ELEVATION

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



4 SOUTH ELEVATION

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

0' 8' 16' 32'

REVISION	DATE	BRIEF	MADE BY	APPROVED

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STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

EXTERIOR ELEVATIONS

DESIGNED BY: JS CHECKED BY: RO DRAWN BY: G70

04-23-18

DWG. NO.
A-301
SHEET 77 OF 146

FILE	POCKET	FOLDER	NO.

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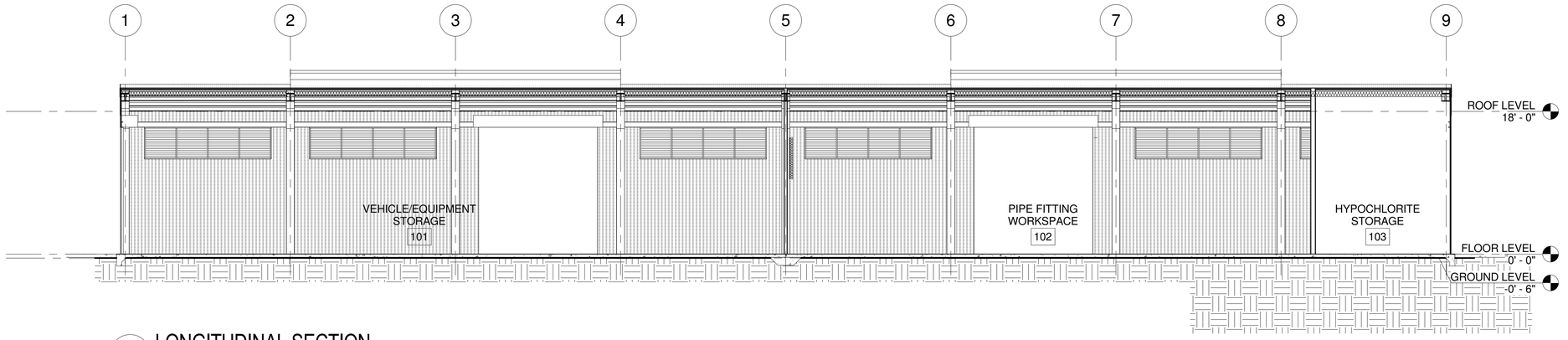
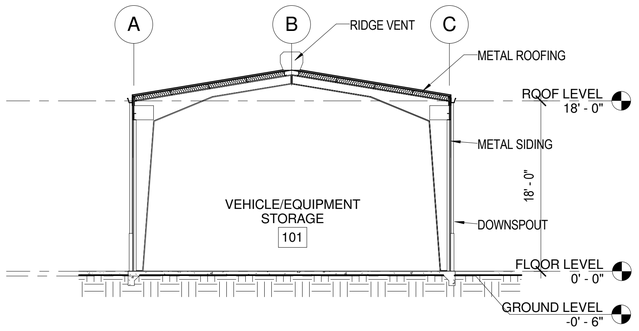


1 LONGITUDINAL SECTION

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



2 CROSS SECTION

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

0' 8' 16' 32'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

BUILDING SECTIONS

DESIGNED BY: JS CHECKED BY: RO DRAWN BY: G70

04-23-18

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

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DWG. NO.
A-401
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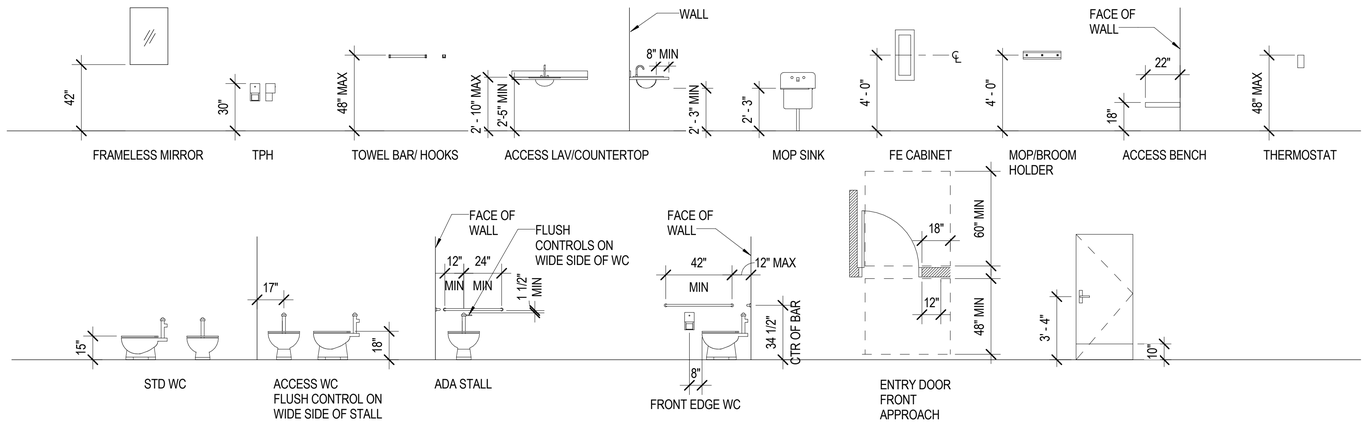
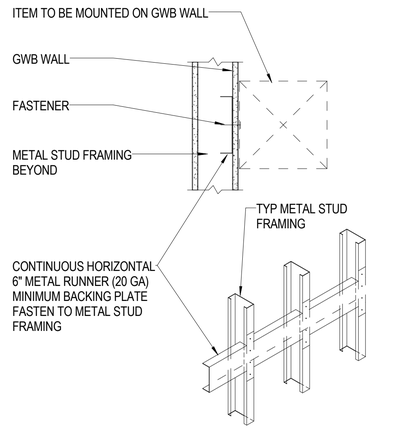


1 ADA STANDARDS/FIXTURE MOUNTING HEIGHTS

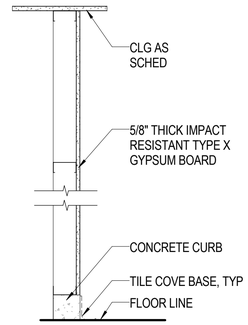
SCALE: 1/4" = 1'-0"



4 BACKING PLATE DETAIL

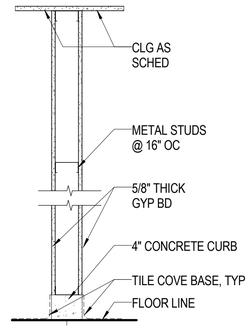
SCALE: 1 1/2" = 1'-0"

PARTITION TYPES



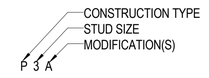
F6

FURRED CONDITIONS: VERIFY AND PROVIDE DEPTH FOR PLUMBING, STRUCTURAL AND/OR ELECTRICAL ELEMENT



P3G, P6G

LEGEND:



NOTE: BLANK INDICATES NO FIRE RATING

CONSTRUCTION TYPE

F- FURRING
P- BASIC PARTITION

STUD SIZE CODE
3 - 3 5/8" MET STUDS
6 - 6" MET STUDS

NOTE: BLANK INDICATES NO MODIFICATIONS

MODIFIERS
A - ACOUSTIC INSULATION
G - FULL HT GYP BD, BOTH SIDES

GENERAL NOTES:

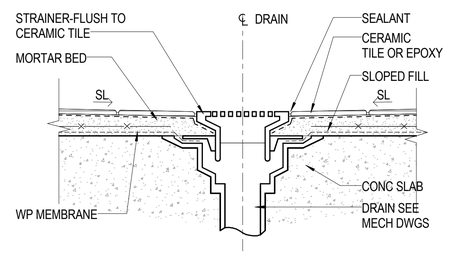
1. ALL GYPSUM BOARD : 5/8" THICK IMPACT RESISTANT TYPE X.

2. ALL PARTITIONS TO BE OF NON- COMBUSTIBLE CONSTRUCTION. . .

3. FOR ALL FIRE RATED PARTITIONS, THE FOLLOWING NOTES SHOULD APPLY:

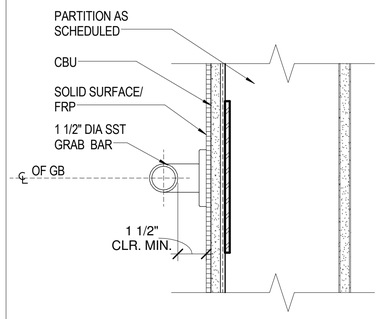
A. ANY WALL OUTLETS FOR DATA, VOICE, VIDEO, POWER OR OTHER UTILITIES SHOULD BE SEPARATED BY AT LEAST ONE STUD CAVITY HORIZONTALLY TO AVOID BACK-TO-BACK OUTLETS.

B. ELEC. PANEL BOARDS, FEC, EYE WASH, ETC SHALL BE WRAPPED WITH FIRE RESISTIVE MATERIAL TO MAINTAIN FIRE RESISTIVE CONSTRUCTION.



3 FLOOR DRAIN

SCALE: 3" = 1'-0"



2 GRAB BAR

SCALE: 3" = 1'-0"

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

PARTITION TYPES, FIXTURE MOUNTING HEIGHTS, MISCELLANEOUS DETAILS

DESIGNED BY: JS CHECKED BY: RO DRAWN BY: GTO

04-23-18

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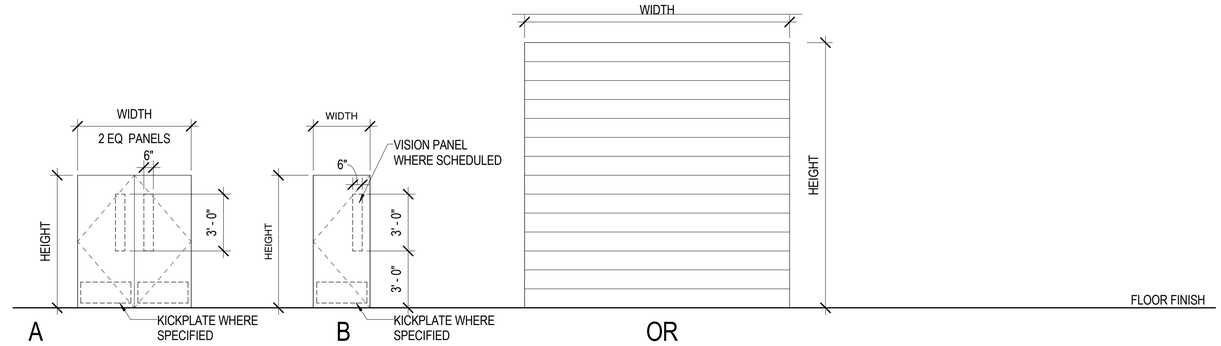
DOOR SCHEDULE

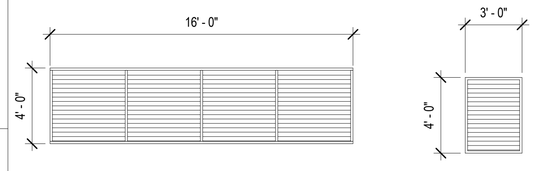
DOOR SCHEDULE												
MARK	WIDTH	HEIGHT	THICKNESS	DOOR TYPE	CONSTRUCTION	FINISH	HARDWARE GROUPS	FRAME MATERIAL	DET #/A-701 HEAD	DET #/A-701 JAMB	DET #/A-701 THRESHOLD	NOTE
101A	15' - 0"	16' - 0"	0' - 3"	OR								
101B	15' - 0"	16' - 0"	0' - 3"	OR								
102A	15' - 0"	16' - 0"	0' - 3"	OR								
102B	15' - 0"	16' - 0"	0' - 3"	OR								
103	5' - 0"	7' - 0"	0' - 1 3/4"	A2	FRP							
104	3' - 0"	7' - 0"	0' - 1 3/4"	B	WP	WP	007	MP	3	3	4	DOOR LOUVER
105	3' - 0"	7' - 0"	0' - 1 3/4"	B	WP	WP	007	MP	3	3	4	DOOR LOUVER
123	20' - 0"	16' - 0"	0' - 3"	OR								

DOOR TYPES



WINDOW TYPES

FOR WINDOW/LOUVER (SIM.) DETAILS SEE 4&5/A-802



L1
WITH INSECT SCREEN

L2
WITH INSECT SCREEN

DOOR REFERENCE NOTES

DOOR SCHEDULE HEADINGS WITH "( )" NUMBER IN PARENTHESIS CORRESPOND TO REFERENCE NOTES BELOW.

1. DOOR TYPES
OD - OVERHEAD COILING DOOR
F - FLUSH
FL - FLUSH W/ LOUVER
FV - FLUSH W/ VISION

2. DOOR CONSTRUCTION & FINISH:
FF - FACTORY FINISH
FRP - FIBERGLASS ON METAL-INSULATED CORE
HM - HOLLOW METAL, METAL PAINTED
WP - WOOD, PAINTED

3. FRAME CONSTRUCTION & FINISH:
SEE INTERIOR DRAWINGS FOR FINISH DESIGNATIONS.

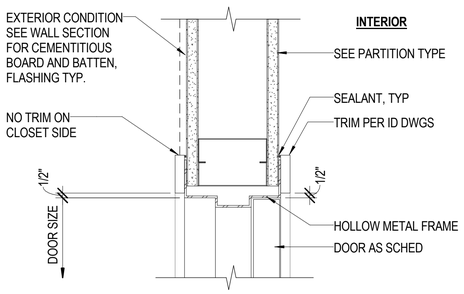
MP - METAL PAINTED

4. GLASS TYPES/LOUVER TYPES:

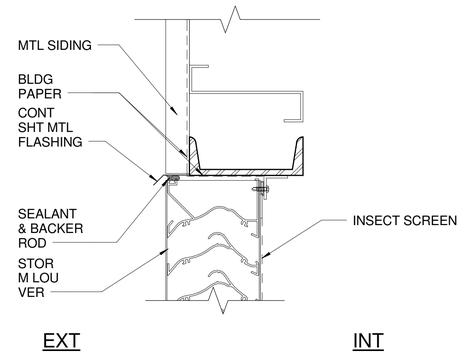
GLASS TYPES:
ALL GLASS SHALL BE AS SCHEDULED

TG - TEMPERED GLASS

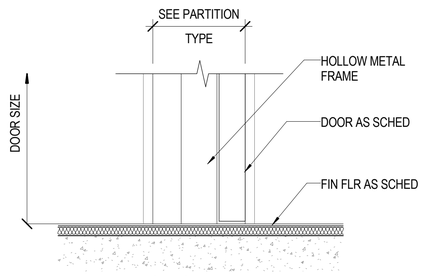
DOOR & LOUVER DETAILS



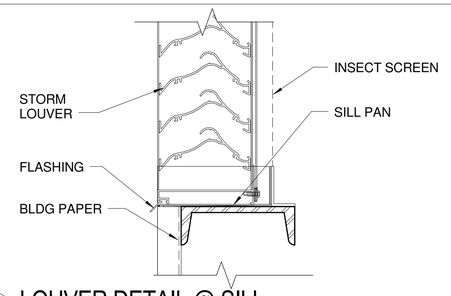
3 INT JAMB (HEAD SIM)
SCALE: 3" = 1'-0"



1 LOUVER DETAIL HEAD/JAMB (SIM)
SCALE: 3" = 1'-0"



4 INT DR THRESHOLD
SCALE: 3" = 1'-0"



2 LOUVER DETAIL @ SILL
SCALE: 3" = 1'-0"

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

DOOR SCHEDULE, DOOR DETAILS, WINDOW SCHEDULE, WINDOW DETAILS, FINISH SCHEDULE AND LEGEND

DESIGNED BY: JS CHECK DRAWN BY: G70

04-23-18

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COLOR AND MATERIAL FINISH SCHEDULE

MARK	MATERIAL DESCRIPTION	MATERIAL MANUFACTURER	MATERIAL NAME	MATERIAL SIZE	MATERIAL NO/COLOR	MATERIAL FINISH	MATERIAL LOCATION USED/REMARKS
EXTERIOR FINISHES							
EXPT-1	EXTERIOR PAINT-WALLS	BENJAMIN MOORE	PAINT		BEIGE SUPREME	EGG SHELL	WALLS
EXPT-2	EXTERIOR PAINT-TRIM	BENJAMIN MOORE	PAINT		GOLDEN YELLOW	EGG SHELL	
EXPT-3	EXTERIOR PAINT-WINDOW/DOOR TRIM	BENJAMIN MOORE	PAINT		OCHER	EGG SHELL	
FLOORING							
CPT	CARPET TILE	SHAW	PATCRAFT	24" X 24"	BIG SPLASH MODULAR	202	OFFICE
CT-1	CERAMIC TILE-FLOORS	DAL TILE	KEYSTONES	1"X1" MESH			COVE BASE
SC	SEALED CONCRETE	-	-		-		PROVIDE SEALER
WALLS							
CT-2	CERAMIC TILE-WALLS	DAL TILE	KEYSTONES	4" X 4"			ACCENT STRIP
FRP	FIBERGLASS REIFORCED PLASTIC	MARLITE	INDURO	PANEL	4143 NEUTRAL GLACE		KITCHEN WALLS
GT-3	BATROOM WALLS	MAIPEI COMMERCIAL	GRAY				PROVIDE SEALER
PT-1	PAINT-WALLS	BENJAMIN MOORE	PAINT	-		EGG SHELL	WALLS
PT-2	PAINT-CEILING	BENJAMIN MOORE	PAINT	-		EGG SHELL	CEILING
PT-3	PAINT-CEILING BATHROOMS	BENJAMIN MOORE	PAINT	-		SEMI-GLOSS	CEILING-BATHROOMS
PT-4	PAINT-DOORS/FRAMES	BENJAMIN MOORE	PAINT	-		SEMI-GLOSS	DOORS/FRAMES
PT-5	PAINT-TRIM	BENJAMIN MOORE	PAINT	-		SEMI-GLOSS	TRIM

NOTE: ALL MANUFACTUERS LISTED ARE ALLOWED TO BE SUBSTITUTED WITH EQUAL MATERIAL OR BETTER

ROOM FINISH SCHEDULE

ROOM NO.	ROOM NAME/DESCRIPTION	FLOOR	BASE	WALL	CEILING
101	VEHICLE/EQUIPMENT STORAGE	SC	-	PT-1	PT-2
102	PIPE FITTING WORKSPACE	SC	-	PT-1	PT-2
103	HYPOCHLORITE STORAGE	SC	RB-3	FRP	PT-2
104	UNI-SEX TOILET	CT-1/GT-1	CT-1/GT-1	CT-2/GT-3	PT-3
105	UNI-SEX TOILET	CT-1/GT-1	CT-1/GT-1	CT-2/GT-3	PT-3

NOTE: SCHEDULED FINISHES EXTEND INTO CLOSETS WITHIN ROOMS

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STATE OF HAWAII

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SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

COLOR AND MATERIAL FINISH SCHEDULE, ROOM FINISH SCHEDULE

DESIGNED BY: Designer CHECKED BY: Checker DRAWN BY: Author

04-23-18

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GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE BUILDING CODE THE COUNTY OF MAUI (LATEST).

2. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE 2002 WATER SYSTEM STANDARDS.

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. CIVIL PLANS ARE CONSIDERED A PART OF THE STRUCTURAL DESIGN DRAWINGS AND ARE TO BE USED TO DEFINE DETAIL CONFIGURATIONS INCLUDING, BUT NOT LIMITED TO RELATIVE LOCATION OF MEMBERS, ELEVATIONS, LOCATION OF ALL OPENINGS, ETC.

7. SEE CIVIL DRAWINGS FOR FINISH FLOOR ELEVATION, ETC.

8. 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 ENGINEER.

9. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.

10. 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 ORDINANCES.

11. ALL ERECTION PROCEDURES SHALL CONFORM TO OSHA STANDARDS. ANY DEVIATION MUST BE APPROVED BY OSHA PRIOR TO ERECTION.

12. THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO PROPERLY ALIGN THE STRUCTURE.

13. SHOP DRAWINGS REQUIRED BY THE SPECIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.

14. ALL REQUESTS BY THE CONTRACTOR TO CHANGE WHAT IS SHOWN IN THE CONTRACT DOCUMENTS MUST BE SUBMITTED IN WRITING TO THE ENGINEER FOR REVIEW AND APPROVAL.

FOUNDATION

1. FOUNDATION DESIGN IS BASED ON GEOTECHNICAL ENGINEERING EXPLORATION REPORT TITLED 'GEOTECHNICAL ENGINEERING EXPLORATION - SITE NO. 1 AND SITE NO. 7 - DHHL MOLOKAI PROJECTS - ISLAND OF MOLOKAI, HAWAII - W.O. 7470-00' PREPARED BY GEOLABS, INC. AND DATED AUGUST 15, 2017. THIS REPORT SHALL BE MADE PART OF THESE DRAWINGS BY REFERENCE. A COPY OF THIS GEOTECHNICAL REPORT SHALL BE KEPT ON SITE DURING CONSTRUCTION.

2. THE AREA BELOW THE WATER TANK FOOTPRINT AND TWO FEET BEYOND THE EDGE OF THE WATER TANK SHALL BE OVEREXCAVATED A MINIMUM OF TWO FEET BELOW THE 12" THICK LAYER OF AGGREGATE SUBBASE AND BACKFILLED WITH STRUCTURAL FILL COMPACTED TO A MINIMUM OF 95 PERCENT RELATIVE COMPACTION. THIS TWO FEET OVEREXCAVATION SHALL BE FURTHER EVALUATED BY THE PROJECT GEOTECHNICAL ENGINEER BASED ON THE ACTUAL EXPOSED SUBGRADE CONDITIONS DURING CONSTRUCTION.

3. THE FOOTINGS AND SLAB ON GRADE SHALL BEAR ON 12" THICK LAYER OF AGGREGATE SUBBASE OVER RECOMPACTED ON-SITE SOILS OR NEW COMPACTED FILL MATERIAL. THIS AGGREGATE SUBBASE SHALL EXTEND A MINIMUM OF TWO FEET BEYOND THE EDGES OF THE TANK.

4. REFER TO GEOTECHNICAL REPORT FOR REQUIREMENTS OF STRUCTURAL FILL. STRUCTURAL FILL SHALL BE APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER BEFORE TRANSPORTING THE FILL TO THE SITE.

5. ALL FOOTINGS SHALL BE BOTTOMED A MINIMUM OF 24" BELOW THE LOWEST ADJACENT GRADE. FOOTINGS SHALL BE EMBEDDED TO PROVIDE A MINIMUM HORIZONTAL SETBACK OF 6 FEET MEASURED FROM THE OUTSIDE EDGE OF BOTTOM OF FOOTING TO THE SLOPE FACE.

6. ALL WATER, MUD AND DEBRIS SHALL BE REMOVED FROM THE BOTTOM OF FOOTING EXCAVATIONS PRIOR TO THE PLACEMENT OF CONCRETE.

7. THE BOTTOM OF ALL FOOTING TRENCHES SHALL BE OBSERVED BY A REPRESENTATIVE OF GEOLABS TO CONFIRM BEARING CONDITIONS AND REQUIRED EMBEDMENT DEPTHS PRIOR TO PLACING REINFORCING STEEL OR CONCRETE.

PROBING AND GROUTING

1. SUB SURFACE CAVITIES AND/ OR VOIDS ARE COMMONLY FOUND IN BASALTIC LAVA FORMATIONS. TO MITIGATE THE EFFECTS OF THESE VOIDS A SYSTEM OF PROBING AND GROUTING SHALL BE IMPLEMENTED AT ALL WALL AND SPOT FOOTINGS TO DETECT THE PRESENCE OF SUBSURFACE VOIDS.

2. 3 INCH MINIMUM DIAMETER PROBE HOLES SHALL BE DRILLED ALONG THE PERIMETER WALL FOOTINGS AT MAXIMUM SPACING OF 10 FEET ON CENTER AND BELOW THE CENTER OF EACH SPOT FOOTING. THE PROBES SHALL EXTEND TO A MINIMUM DEPTH OF 10 FEET BELOW THE BOTTOM OF FOOTINGS

3. IF SUBSURFACE VOIDS ARE ENCOUNTERED OR SUSPECTED THE CONTRACTOR SHALL DRILL ADDITIONAL PROBES AS DIRECTED BY THE PROJECT GEOTECHNICAL ENGINEER TO DETERMINE THE EXTENT OF THE SUBSURFACE VOID.

4. SUBSURFACE VOIDS AND PROBE HOLES SHALL BE FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH A SLUMP BETWEEN 6 TO 9 INCHES OR SAND-CEMENT GROUT WITH A SLUMP BETWEEN 6 TO 9 INCHES. CONTRACTOR SHALL PROVIDE A UNIT PRICE FOR PROBING AND GROUTING IN HIS BID.

5. PROBING AND GROUTING OPERATIONS SHALL BE CONDUCTED UNDER THE OBSERVATION OF A GEOLABS REPRESENTATIVE TO ALLOW FOR ADDITIONAL RECOMMENDATIONS IF CHANGED CONDITIONS ARE OBSERVED.

6. IMPLEMENTATION OF THE FOUNDATION PROBING AND GROUTING OPERATION SHALL BE FURTHER EVALULATED BY THE PROJECT GEOTECHNICAL ENGINEER AFTER COMPLETION OF A SITE SPECIFIC EXPLORATION PROGRAM BY THE CONTRACTOR AT THE WATER TANK LOCATION.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ACI 318-05.

2. ALL MIXES FOR CONCRETE WALLS, SLABS/ FOUNDATION, COLUMNS AND ROOF SLAB SHALL CONTAIN 64 OZ. OF MASTERLIFE SRA 035 PER CUBIC YARD OF CONCRETE (REDUCES CONCRETE SHRINKAGE) AND MASTERLIFE 300D (INTEGRAL WATERPROOFING ADMIXTURE) AT A RATE OF 2% OF CEMENT MASS .

3. ALL CONCRETE UNLESS OTHERWISE NOTED SHALL BE NORMAL WEIGHT HARD ROCK TYPE (150 #/CUFT.). AGGREGATES SHALL CONFORM TO ASTM C-33. MAXIMUM WATER-CEMENT RATIO SHALL NOT EXCEED 0.55.

4. UNLESS OTHERWISE NOTED, CONCRETE SHALL BE AS FOLLOWS:

ITEM	CLASS
FOOTING	DW3500
FLOOR SLAB AND PIPE JACKETS	DW3500
COLUMN	DW4000
WALL	DW4000
ROOF SLAB	DW4000

THE BOTTOM 4 1/2" WALL AND FIRST 4 1/2" ABOVE THE HORIZONTAL CONSTRUCTION JOINT SHALL BE CLASS DW3000M CONCRETE.

5. ONE SET OF FIELD SAMPLES OF EACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN NOT LESS THAN ONCE A DAY, NOR LESS THAN ONCE FOR EACH 50 CUBIC YARDS, NOR LESS THAN ONCE FOR EACH 2000 SQUARE FEET OF SURFACE AREA FOR SLABS OR WALLS. ONE SET OF FIELD SAMPLES SHALL CONSIST OF 3 TEST CYLINDERS AND ONE SLUMP TEST. TEST CYLINDERS SHALL BE MADE AND CURED IN ACCORDANCE WITH ASTM C 31 AND TESTED IN ACCORDANCE WITH ASTM C 39. SLUMP TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM C143.

6. CONCRETE SHALL BE PLACED INTO ITS FINAL POSITION WITHIN 90 MINUTES AFTER THE INTRODUCTION OF THE MIXING WATER TO THE CEMENT AND AGGREGATES PER ASTM C 94. AFTER 90 MINUTES HAS ELAPSED, THE SPECIAL INSPECTOR SHALL HAVE THE RIGHT TO REJECT THE CONCRETE BATCH. AFTER 150 MINUTES HAS ELAPSED, NO CONCRETE SHALL BE PLACED.

7. PIPES OTHER THAN ELECTRICAL CONDUITS SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE EXCEPT WHERE SPECIFICALLY APPROVED.

8. CONCRETE SHALL BE MAINTAINED IN A MOIST CONDITION FOR A MINIMUM OF FIVE (5) DAYS AFTER PLACEMENT. ALTERNATE METHODS WILL BE APPROVED IF SATISFACTORY PERFORMANCE CAN BE ASSURED.

9. UNLESS OTHERWISE INDICATED, SLABS AND BEAMS SHALL BE SHORED 28 DAYS AFTER POURING OR UNTIL THEY HAVE ATTAINED THEIR SPECIFIED DESIGN STRENGTH. NO CONSTRUCTION LOADS EXCEEDING 60% OF THE DESIGN LIVE LOADS SHALL BE SUPPORTED ON ANY UNSHORED PORTION OF THE STRUCTURE.

10. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" UNLESS NOTED OTHERWISE.

11. FORMS FOR SLABS AND BEAMS SHALL BE PRECAMBERED L/240 FOR CANTILEVERS AND L/480 FOR OTHER SPANS WHERE 'L' IS EQUAL TO THE SPAN.

12. ALL INSERTS, ANCHOR BOLTS, PLATES AND OTHER ITEMS EMBEDDED IN CONCRETE SHALL BE GALVANIZED UNLESS OTHERWISE NOTED.

13. VERIFY LOCATIONS AND DIMENSIONS OF SLOTS, ANCHORS, DUCTS, ETC., BEFORE POURING CONCRETE.

14. REINFORCEMENT, ANCHOR BOLTS, REGLETS, DOWELS AND ALL OTHER EMBEDDED ITEMS SHALL BE POSITIVELY SECURED BEFORE POURING.

15. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER PLACEMENT OF ALL INSERTS, ANCHOR BOLTS, PLATES, REGLETS, ETC.

16. LOCATIONS OF ALL VERTICAL CONSTRUCTION JOINTS IN SLABS, OR COLUMNS SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

17. HORIZONTAL CONSTRUCTION JOINTS SHALL BE RAKED CLEAN AND LAITANCE REMOVED BEFORE NEXT POUR.

18. VERTICAL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED AND WETTED BEFORE POUR.

19. SAWED CONCRETE CONTROL JOINTS FOR SLABS ON GRADE AS SHOWN ON THE DRAWINGS SHALL BE CUT AS SOON AS POSSIBLE AFTER FINISHING WITHOUT POPPING THE AGGREGATE BUT NOT MORE THAN 8 HOURS AFTER FINISHING.

20. WHEN NEW CONCRETE IS POURED AGAINST EXISTING CONCRETE, THE EXISTING CONTACT SURFACE SHALL BE CLEANED AND ROUGHENED. IMMEDIATELY PRIOR TO PLACING THE NEW CONCRETE, AN APPROVED BONDING AGENT SHALL BE APPLIED TO THE CONTACT SURFACE.

21. WHEN REBARS OR THREADED RODS ARE DRILLED AND GROUTED IN PLACE USE SIMPSON EPOXY-TIE ADHESIVE. HOLE DIAMETER SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS. HOLES SHALL BE BRUSHED AND AIR BLOWN TO REMOVE LOOSE PARTICLES. MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT TO SUPERVISE INSTALLATION OF FIRST BAR OR ROD.

REINFORCING STEEL

1. ALL REINFORCING STEEL EXCEPT TIES, STIRRUPS AND WELDED BARS SHALL CONFORM TO ASTM A615 GRADE 60. TIES AND STIRRUPS SHALL CONFORM TO ASTM A615 GRADE 40. IN GENERAL WELDED BARS SHALL BE ASTM A615 GRADE 40. THE ENGINEER SHALL APPROVE ALL BARS TO BE WELDED.

2. UNLESS OTHERWISE NOTED, SPLICES, LAPS, DOWEL EXTENSIONS AND EMBEDMENTS SHALL BE 45 BAR DIAMETERS MINIMUM.

3. ALL REINFORCING BARS MARKED CONTINUOUS (CONT.) ON THE PLANS SHALL BE LAPPED 45 BAR DIAMETERS MINIMUM.

4. BENDS NOT DIMENSIONED SHALL BE STANDARD HOOKS.

5. STAGGER ALL SPLICES WHERE POSSIBLE. WALL CIRCUMFRENTIAL REINFORCING SPLICES SHALL BE STAGGERED HORIZONTALLY NOT LESS THAN THREE FEET. SPLICES IN A VERTICAL ARRAY SHALL NOT BE CLOSER THAN EVERY THIRD REBAR.

6. WELD SPLICE SHALL BE CAPABLE OF DEVELOPING 125% OF THE SPECIFIED YIELD STRENGTH OF THE BAR IN TENSION.

7. ALL WELDING OF REINFORCING SHALL CONFORM TO 'STRUCTURAL WELDING CODE - REINFORCING STEEL' (AWS D1.4).

8. WELDED WIRE FABRIC SHALL BE GALVANIZED AND CONFORM TO ASTM A-185.

9. LAP OUTERMOST CROSS WIRES OF EACH SHEET OF WELDED WIRE FABRIC ONE SPACING OF CROSS WIRES PLUS 2" MINIMUM.

10. REBARS SHALL BE SUPPORTED ON METAL 'CHAIRS', BENT AND PLACED AS PER 'MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES' ACI 315 (LATEST).

11. 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"

12. AT TIME CONCRETE IS PLACED, REINFORCING SHALL BE FREE FROM MUD, OIL, LAITANCE OR OTHER COATINGS ADVERSELY AFFECTING BOND CAPACITY.

13. BEFORE THE POUR THE GENERAL CONTRACTOR SHALL INSPECT THE PLACED REINFORCING TO INSURE CONFORMANCE TO THE DRAWINGS. ALL DISCREPANCIES SHALL BE CORRECTED PRIOR TO POURING.

METAL FRAMES AND COVERS

1. METAL FRAMES AND COVERS SHALL BE STAINLESS STEEL. ANCHOR BOLTS WELDED TO STAINLESS STEEL FRAMES SHALL BE STAINLESS STEEL.

RESERVOIR

1. ALL INTERSECTION AND SPLICES OF RUBBER WATERSTOPS SHALL BE JOINED BY VULCANIZATION OR OTHER APPROVED MEANS TO FORM A WATERTIGHT CONNECTION.

2. ONCE THE RESERVOIR FLOOR IS POURED, 6' +/- OF WATER SHALL BE MAINTAINED IN THE RESERVOIR FOR THE REMAINDER OF THE PROJECT.

3. ALL EXTERIOR RESERVOIR SURFACES SHALL BE PAINTED. ALL INTERIOR RESERVOIR WALL, COLUMNS AND FLOOR SURFACES SHALL BE COATED WITH A NSF APPROVED PAINT AS SPECIFIED IN THE WATER SYSTEM STANDARDS. COLOR SELECTION BY DWS.

FILE: Hoolehua WSI – New 0.2 MG Tank Structural.dwg
DATE REV.: 29/05/2018

ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

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Adrian Lee

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DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
NEW 0.2 MG RESERVOIR

GENERAL NOTES

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 Phone (808) 536-7922 email alee@tanimuraeng.com
Honolulu, Hawaii 96813 Fax: (808) 537-9922

MAY 2018

DESIGN CRITERIA

1. CODES: 2012 INTERNATIONAL BUILDING CODE
ACI 318-11 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
WATER SYSTEM STANDARDS STATE OF HAWAII 2002
ACI 350.3 SEISMIC DESIGN OF LIQUID CONTAINING CONCRETE STRUCTURES

2. FOUNDATION DESIGN CRITERIA

ALLOWABLE BEARING PRESSURE	3,000 PSF
PASSIVE RESISTANCE PRESSURE	350 PCF
COEFFICIENT OF FRICTION	0.5

3. SEISMIC LATERAL FORCES

SITE CLASS	D
RISK CATEGORY	IV
ESSENTIAL FACILITIES	
SEISMIC DESIGN CATEGORY	D
SEISMIC IMPORTANCE FACTOR	1.5
MAPPED SPECTRAL RESPONSE	
S_s	0.785
S_1	0.204
S_{DS}	0.617
S_{D1}	0.272
RESPONSE MODIFICATION FACTOR	8.0
SPECIAL REINFORCED CONCRETE MOMENT FRAME	

4. WIND FORCES

BASIC WIND SPEED	145
ULTIMATE 3 SECOND GUST	
WIND DIRECTIONALITY FACTOR K_d	0.80
WIND TOPOGRAPHIC FACTOR K_{zt}	1.7
EXPOSURE	C

5. LIVE LOADS

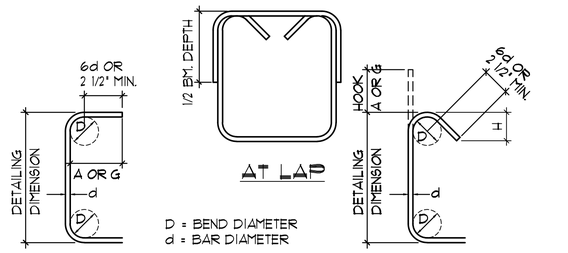
ROOF	20 PSF

SPECIAL INSPECTION

1. ITEMS REQUIRING SPECIAL INSPECTION:
REINFORCING STEEL
CONCRETE (2006 IBC TABLE 1704.4)
EPOXY DOWELS (CONTINUOUS)

2. NOTIFY SPECIAL INSPECTOR 4 WORKING DAYS PRIOR TO NEED OF INSPECTION SERVICES.

3. THE CONTRACTOR SHALL BE FAMILIAR with THE SPECIAL INSPECTION REQUIREMENTS INCLUDING THE IDENTITY AND CONTACT INFORMATION OF THE SPECIAL INSPECTOR RESPONSIBLE FOR EACH REQUIREMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE SPECIAL INSPECTOR IN A TIMELY MANNER. IF SPECIAL INSPECTIONS ARE NOT DONE THE CERTIFICATE OF OCCUPANCY MAY NOT BE ISSUED BY THE COUNTY.



AT 90 DEGREE BENDS AT 135 DEGREE BENDS

BAR SIZE	D	90 DEGREE HOOK: HOOK A OR G	135 DEGREE HOOK: HOOK A OR G	135 DEGREE HOOK: H APPROX.
#3	1 1/2"	4"	6"	2 1/4"
#4	2"	4 1/2"	8"	3"
#5	2 1/2"	6"	10"	3 3/4"

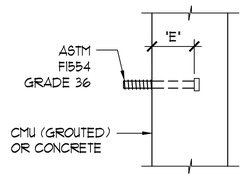
NOTE:

1. 135 DEGREE COLUMN TIE HOOKS MAY NOT BE BENT TO LESS THAN DIAMETER OF COLUMN VERTICAL BAR ENCLOSED IN HOOK.
2. THIS DETAIL SHALL APPLY TO GRADE 40, 50 & 60.
3. ALL BARS SHALL BE BENT COLD.

TYP. STIRRUP & TIE DETAIL

NOT TO SCALE — D / ST101

BOLT SIZE	MINIMUM EMBEDMENT 'E'
1/2"ø	4"
5/8"ø	4"
3/4"ø	5"
7/8"ø	6"
1"ø	7"



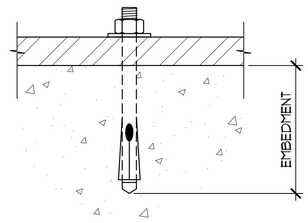
NOTE:

1. GROUT ALL CELLS W/ A.B. (ANCHOR BOLTS) FULL HEIGHT.
2. UNLESS NOTED OTHERWISE THESE ANCHOR BOLT DETAILS SHALL APPLY

TYP. ANCHOR BOLT DET.

SC: 3/4" = 1'-0" — A / ST102

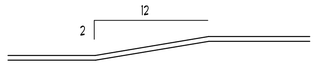
ANCHOR DIAMETER	HOLE DIAMETER	MINIMUM EMBEDMENT
1/2"	1/2"	4"
5/8"	5/8"	4"
3/4"	3/4"	4"



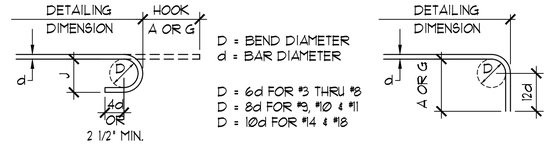
NOTES:
A. PRE APPROVAL FOR DYNABOLT SLEEVE ANCHOR MANUFACTURED BY ITW RAMSET/REDHEAD.
B. ANCHOR SHALL BE INSTALLED IN CONCRETE OR SOLID GROUT MASONRY.
C. ANCHOR ARE TYPE A304 STAINLESS STEEL UNLESS NOTED OTHERWISE.
D. DRILL HOLE WITH CARBIDE TIPPED HAMMER DRILL BITS COMPLYING TO ANSI B212.15-1994.

SLEEVE ANCHOR DETAIL

NOT TO SCALE — B / ST101



TYP. BAR OFFSET



AT 180 DEGREE BENDS AT 90 DEGREE BENDS

BAR SIZE	DIMENSION OF STD. 180 DEGREE HOOKS, ALL GRADES: A OR G	J	D	DIMENSION OF STD. 90 DEGREE HOOKS, ALL GRADES: A OR G	D
#3	5"	3"	2 1/4"	6"	2 1/4"
#4	6"	4"	3"	8"	3"
#5	7"	5"	3 3/4"	10"	3 3/4"
#6	8"	6"	4 1/2"	12"	4 1/2"
#7	10"	7"	5 1/4"	14"	5 1/4"
#8	11"	8"	6"	16"	6"
#9	15"	11 1/4"	9"	19"	9"
#10	17"	12 3/4"	10 1/4"	22"	10 1/4"
#11	19"	14 1/4"	11 1/4"	24"	11 1/4"
#14	26"	20 1/2"	17"	31"	17"
#18	35"	27"	22 3/4"	41"	22 3/4"

NOTE:

1. WHEN AVAILABLE DEPTH IS LIMITED, #3 THRU #11 GRADE 40 BARS HAVING 180 DEGREE HOOKS MAY BE BENT WITH D = 5d AND CORRESPONDINGLY SMALLER A AND J DIMENSIONS.
2. ALL BARS SHALL BE BENT COLD.

TYP. REBAR BENDING DETAIL

NOT TO SCALE — C / ST101

0' 1' 2' 3' 4'
3/4" = 1'-0"

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Adrian Lee

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DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
NEW 0.2 MG RESERVOIR

NOTES AND TYPICAL DETAILS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

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CONSULTING STRUCTURAL ENGINEERS
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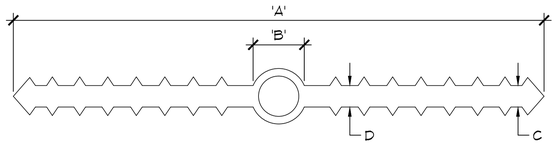
MAY 2018

FILE: Hoolehua WSI - New 0.2 MG Tank Structural.dwg
DATE REV.: 29/05/2018



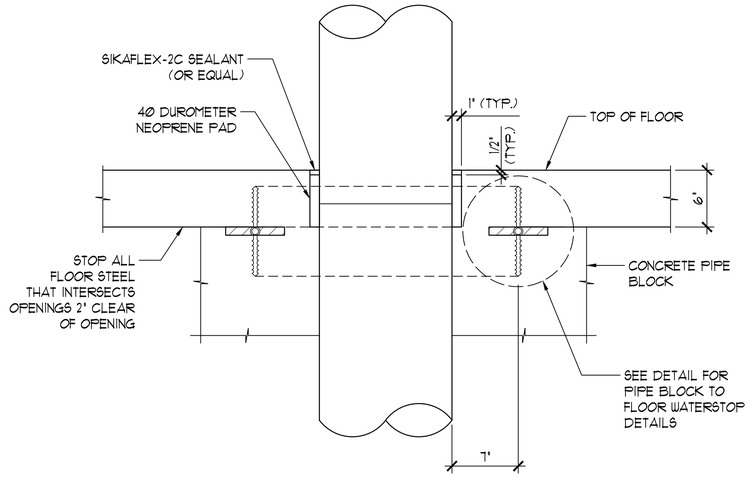
LOCATION	A	B	C	D	VINYLEX	GREEN-STREAK
FLOOR TO PIPE BLOCKS	6'	7/6' OR 1'	3/8'	3/8'	RB6-36H	732

WATER STOP NOTES:
1. ALL SPLICES SHALL BE MADE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

WATERSTOP SCHEDULE

NTS

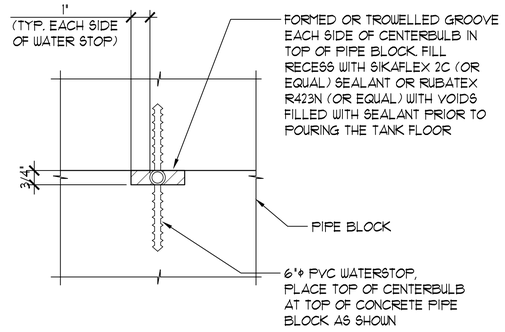
A
ST102



TYPICAL PIPE ENTRANCE THROUGH FLOOR DETAILS

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

B
ST102



PIPE BLOCK TO FLOOR WATERSTOP DETAIL

SC: 3"=1'-0"

0' 6" 1' 2'
1 1/2" = 1'-0"

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DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
NEW 0.2 MG RESERVOIR

TYPICAL DETAILS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

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CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 Phone (808) 536-7922 email alee@tanimuraeng.com
Honolulu, Hawaii 96813 Fax: (808) 537-4022

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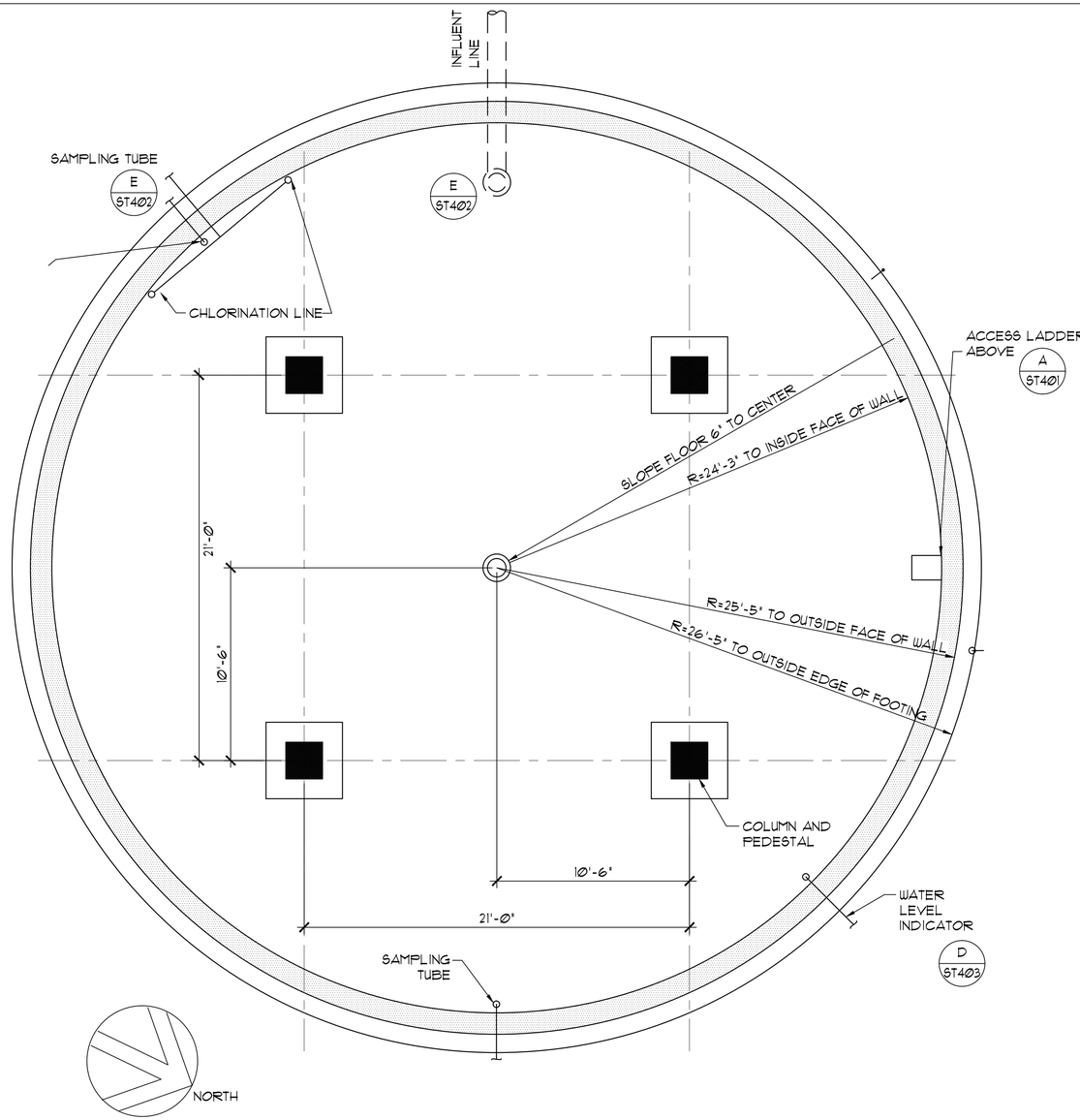
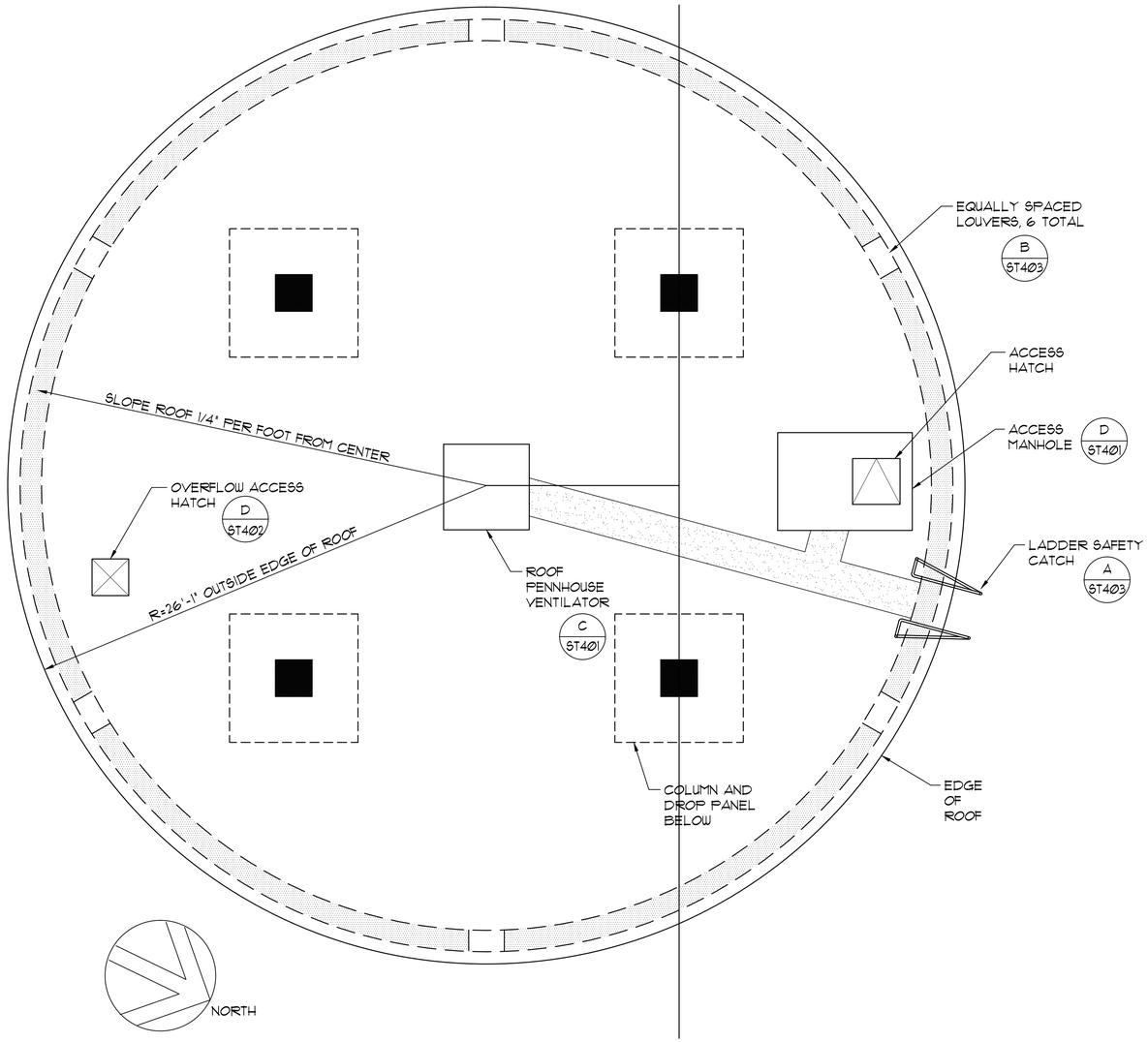


FLOOR PLAN

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



ROOF PLAN

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

0' 2' 4' 8' 12'
1/4" = 1'-0"

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SITE 1 - KAULUWAI WELL SITE
NEW 0.2 MG RESERVOIR

FLOOR AND ROOF PLANS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

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CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 Phone (808) 536-7928 email alee@tanimuraeng.com
Honolulu, Hawaii 96813 Fax (808) 537-4032

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FILE: Hoolehua WSI - New 0.2 MG Tank Structural.dwg
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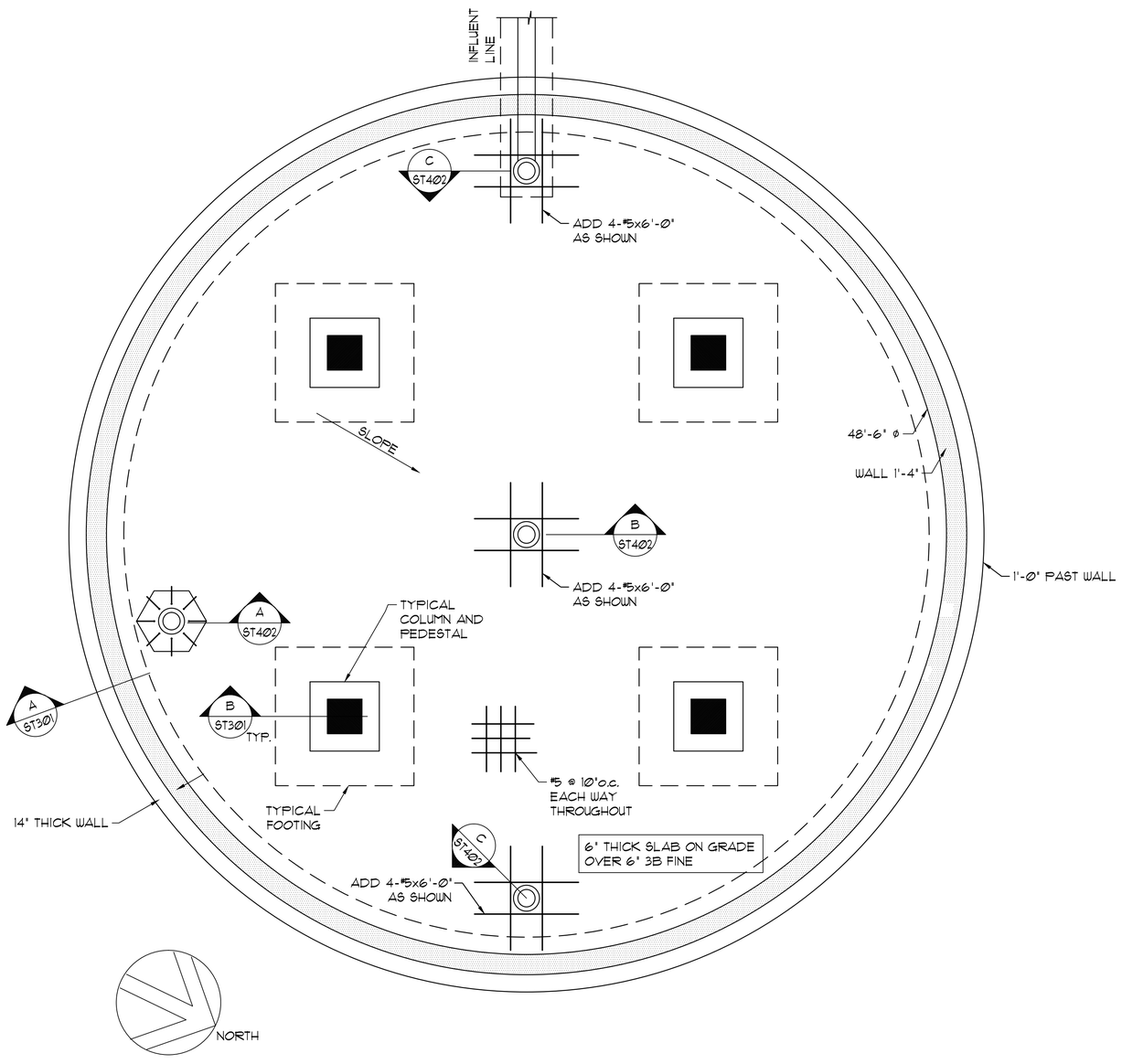

FOUNDATION PLAN

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

0' 2' 4' 8' 12'

1/4" = 1'-0"

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ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

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SITE 1 - KAULUWAI WELL SITE
NEW 0.2 MG RESERVOIR

FOUNDATION PLANS

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925 Bethel Street, Suite 309 Phone (808) 536-7928 email alee@taniurseng.com
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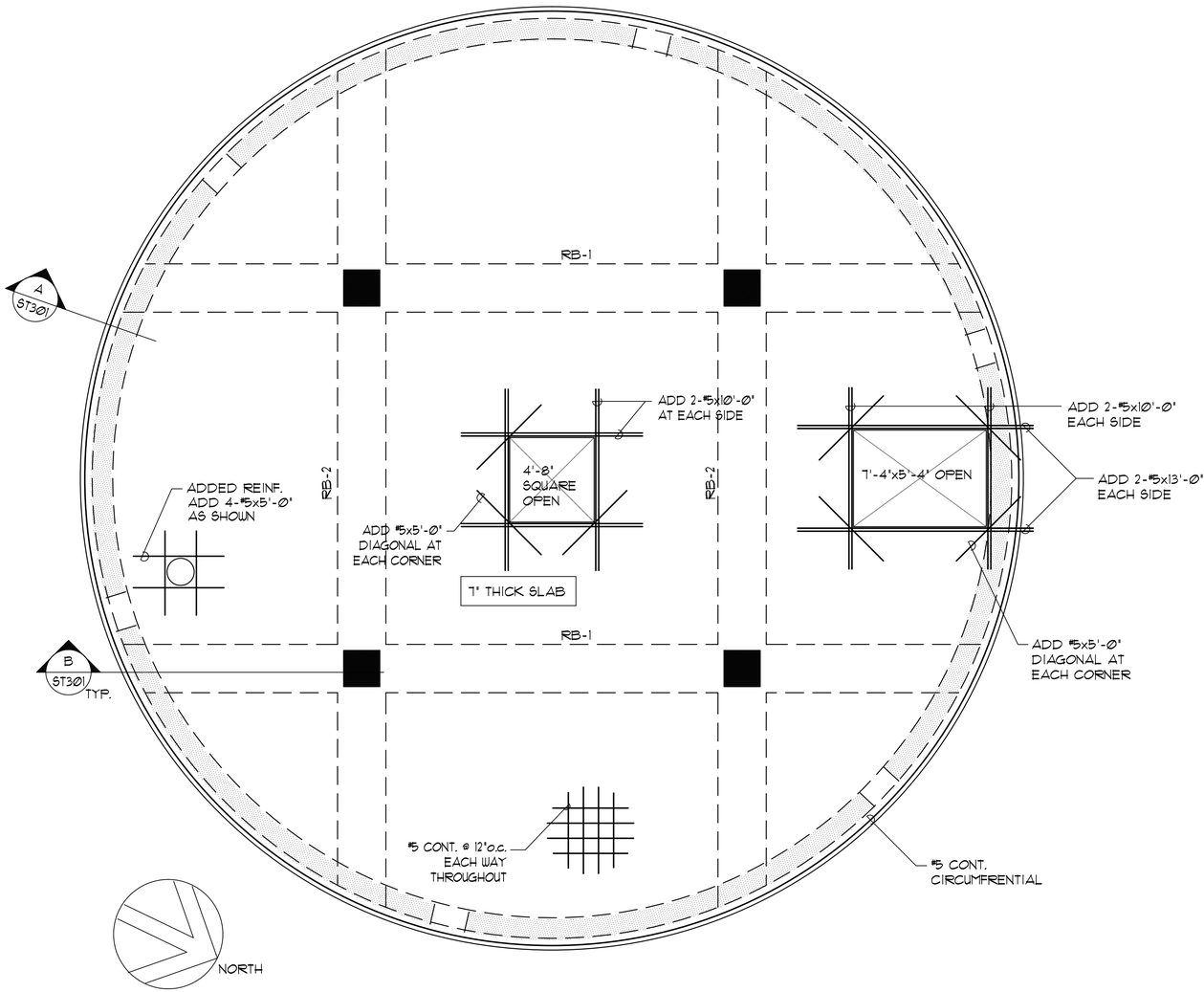
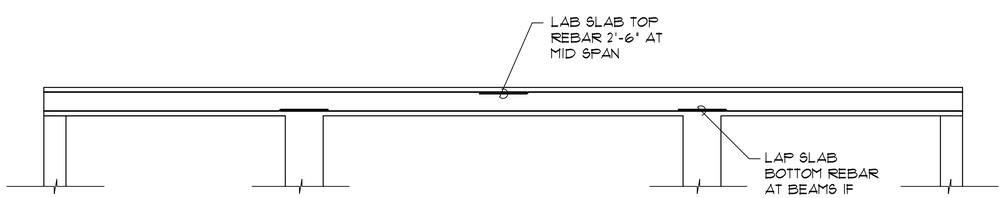


NOTE: LAP SPLICE BOTTOM REBARS AT CONCRETE BEAMS

ROOF SLAB - TOP AND BOTTOM REINFORCING

SC: 1/4"=1'-Ø"

A
ST203



TYPICAL SLAB SECTION

SC: 1/4"=1'-Ø"

B
ST203

0' 2' 4' 8' 12'
1/4" = 1'-0"

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LICENSED
PROFESSIONAL
ENGINEER
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HAWAII, U.S.A.

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DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
NEW 0.2 MG RESERVOIR

ROOF SLAB REINFORCING PLANS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

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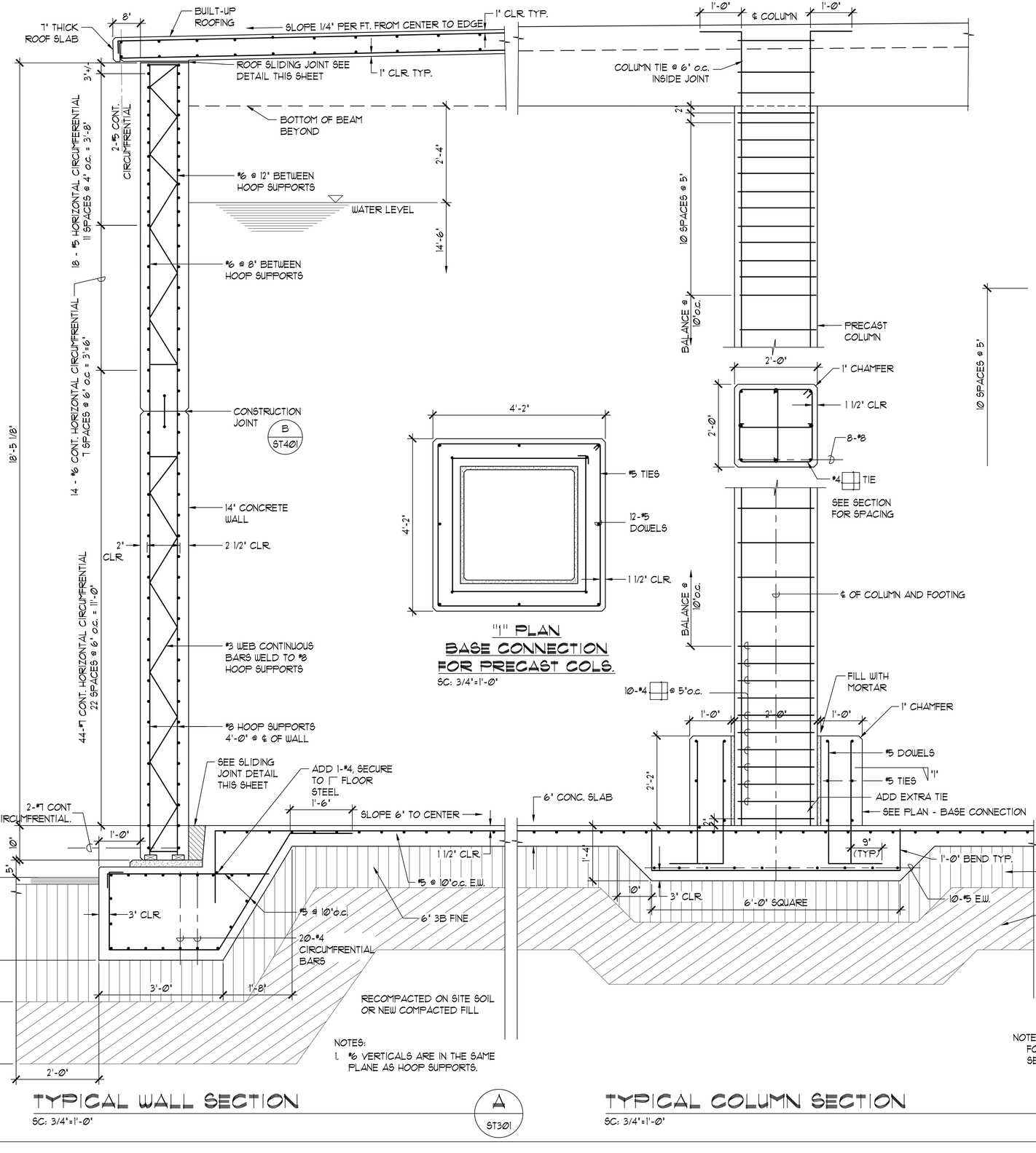
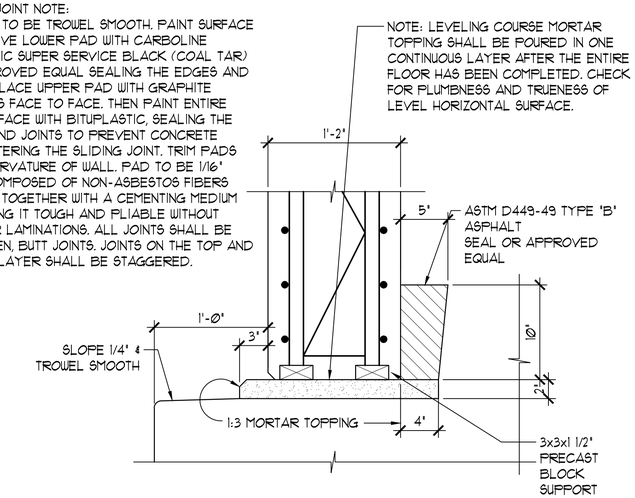


SLIDING JOINT NOTE:
SURFACE TO BE TROWEL SMOOTH. PAINT SURFACE TO RECEIVE LOWER PAD WITH CARBOLINE BITUMASTIC SUPER SERVICE BLACK (COAL TAR) OR APPROVED EQUAL SEALING THE EDGES AND JOINTS. PLACE UPPER PAD WITH GRAPHITE SURFACES FACE TO FACE. THEN PAINT ENTIRE PAD SURFACE WITH BITUPLASTIC, SEALING THE EDGES AND JOINTS TO PREVENT CONCRETE FROM ENTERING THE SLIDING JOINT. TRIM PADS TO FIT CURVATURE OF WALL. PAD TO BE 1/16" THICK, COMPOSED OF NON-ASBESTOS FIBERS BONDED TOGETHER WITH A CEMENTING MEDIUM RENDERING IT TOUGH AND PLIABLE WITHOUT PLIES OR LAMINATIONS. ALL JOINTS SHALL BE TRUE, EVEN, BUTT JOINTS. JOINTS ON THE TOP AND BOTTOM LAYER SHALL BE STAGGERED.



SLIDING JOINT DETAIL

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

C ST301

ROOF SLIDING JOINT

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

D ST301

0' 1' 2' 3' 4'
3/4" = 1'-0"

0' 6" 1' 2'
1 1/2" = 1'-0"

ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

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Adrian Lee

DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
NEW 0.2 MG RESERVOIR

SECTIONS AND DETAILS

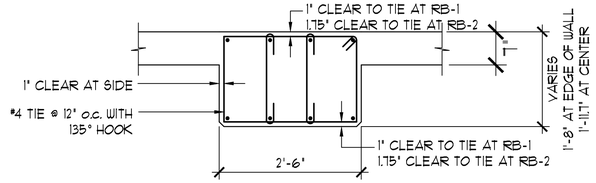
DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 Phone (808) 536-7900 email alee@tanimuraeng.com
Honolulu, Hawaii 96813 Fax: (808) 537-9082

MAY 2018

ST301
88 OF 146

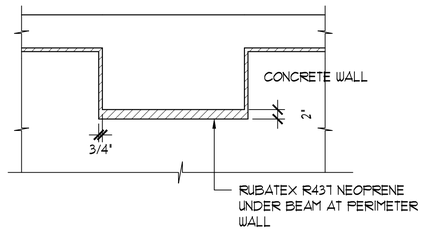
FILE: Hoolehua WSI – New 0.2 MG Tank Structural.dwg
DATE REV.: 29/05/2018



NOTE: CLEAR DISTANCES AT BEAM ARE TO TIES

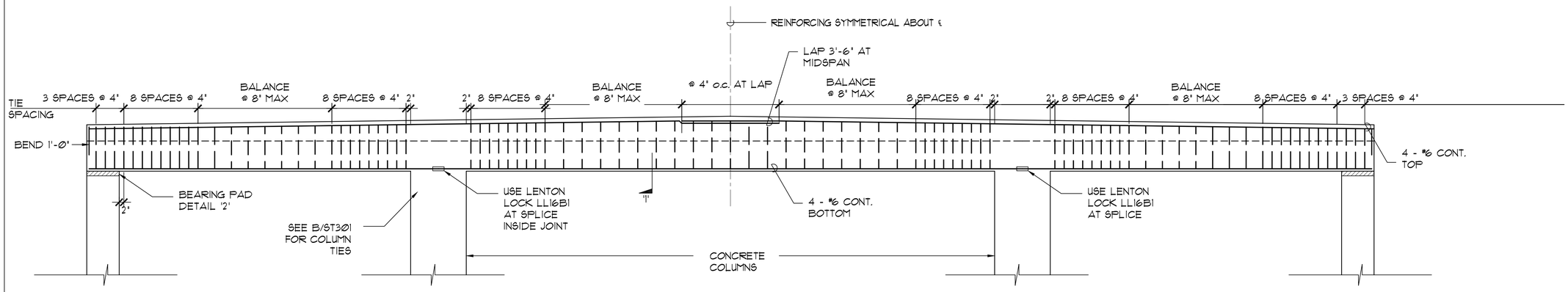
'1' SECTION - RB-1, RB-2

SC: 3/4"=1'-Ø"



'2' SECTION - CONCRETE BEAM AT WALL

SC: 3/4"=1'-Ø"



CONCRETE BEAM RB-1, RB-2 ELEVATION

SC: 1/2"=1'-Ø"

ST302

0' 1' 2' 3' 4' 5' 6'
1/2" = 1'-0"

0' 1' 2' 3' 4'
3/4" = 1'-0"

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LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

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DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
NEW 0.2 MG RESERVOIR

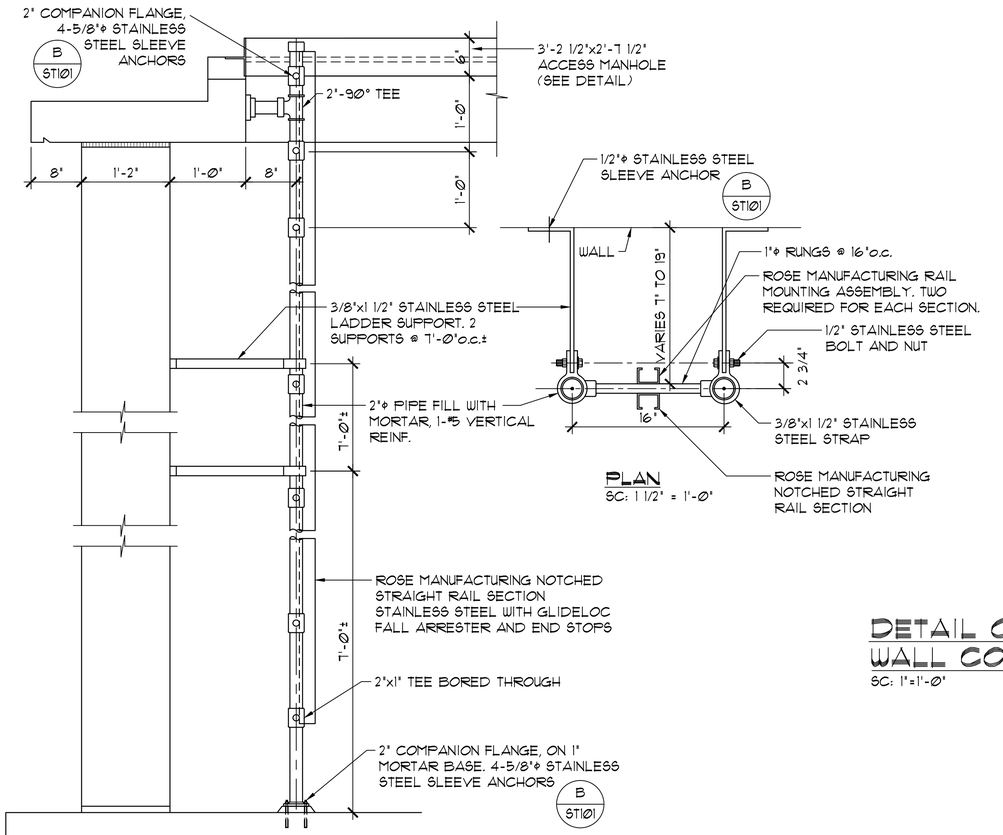
CONCRETE ROOF BEAM DETAILS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

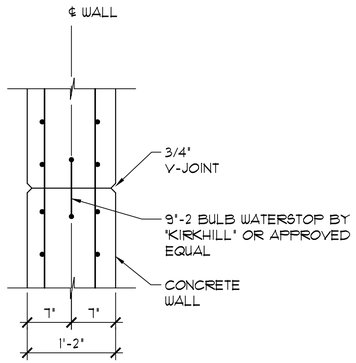
TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 Phone (808) 536-7928 email alee@tanimuraeng.com
Honolulu, Hawaii 96813 Fax: (808) 537-9022

MAY 2018

FILE: Hoolehua WSI - New 0.2 MG Tank Structural.dwg
DATE REV.: 29/05/2018



PLAN
SC: 1 1/2" = 1'-0"



DETAIL OF HORIZONTAL WALL CONSTRUCTION JOINT

C ST401

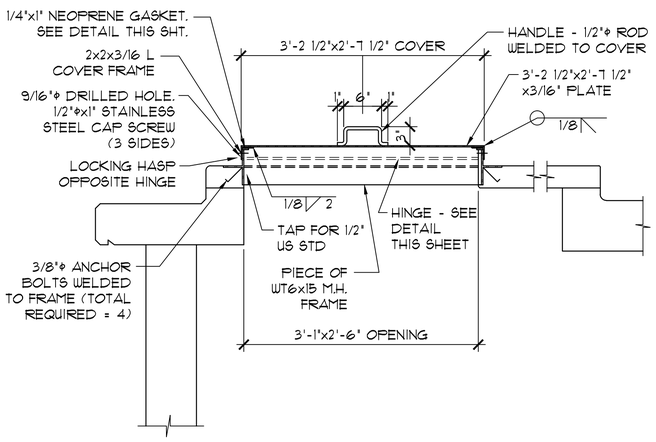
SC: 1"=1'-0"

NOTE: 1. INTERIOR ACCESS LADDER SHALL BE TYPE 316 STAINLESS STEEL.
2. FULL BODY HARNESS WITH CHEST D-RINGS AND CARABINER (NIC) REQUIRED FOR USE WITH FALL ARRESTER.

ELEVATION OF INTERIOR LADDER

A ST401

SC: 1"=1'-0"

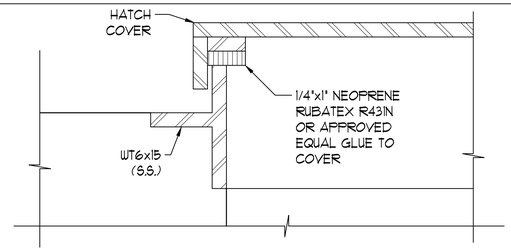


* ALL STEEL TO BE STAINLESS.

ACCESS MANHOLE FRAME DETAIL

B ST401

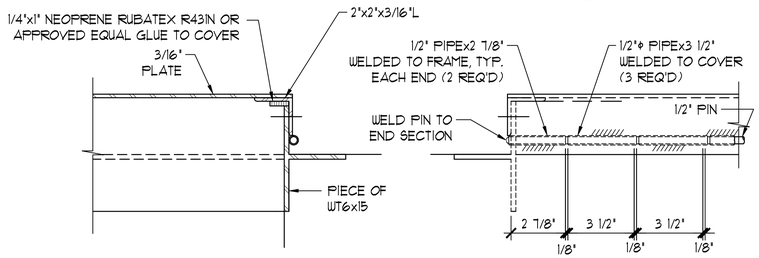
SC: 1"=1'-0"



GASKET DETAIL AT OVERFLOW & ACCESS M.H.S.

E ST401

SC: 3" = 1'-0"



SECTION

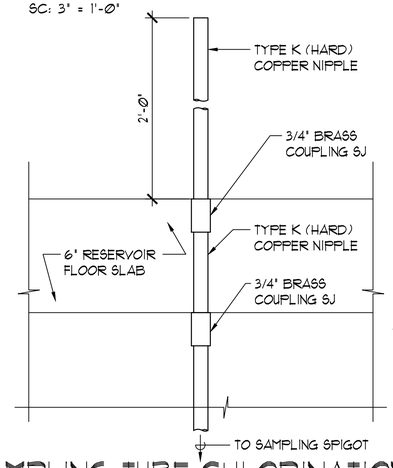
ELEVATION

* ALL STEEL TO BE STAINLESS.

MANHOLE HINGE DETAIL

F ST401

SC: 3" = 1'-0"

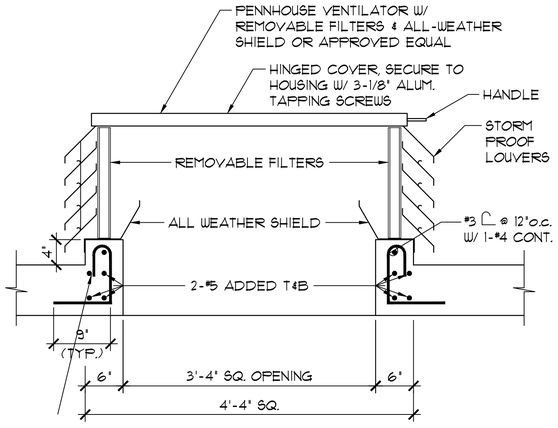


NOTES: 1. NIPPLES & FITTINGS SHALL BE BRONZE OR BRASS.
2. ISOLATE ALL BRASS OR BRONZE FITTINGS FROM REINFORCING STEEL.
3. CHLORINATION LINE SIMILAR EXCEPT USE PVC SCHEDULE 80.

SAMPLING TUBE CHLORINATION LINE DETAIL

G ST401

SC: 3" = 1'-0"



SECTION "B-B"

NOTES:
1. THE AIR FILTER SHALL MEET THE FOLLOWING STANDARD. AIR FILTER INSTITUTE TEST ON 20"x20" PANELS 1" THICK.

PAD POROSITY	= 10 PORES/LIN. IN.
RESISTANCE TO 800 CFM AIR	= 0.08 INCHES OF WATER
AVERAGE EFFICIENCY	= 63%
DUST CAPACITY AT 0.5 INCHES WATER RESISTANCE	= 364 GRAMS

2. AK 500 FILTER FOAM-DRY 10PP.P.I.-1" THICK DISTRIBUTED BY HAWAIIAN AIR FILTER INC. OR APPROVED EQUAL.

ROOF VENTILATOR SECTION

D ST401

SC: 1"=1'-0"

0' 6" 1' 2' 3'
1" = 1'-0"

0' 3" 6" 1'
3" = 1'-0"

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HAWAII, U.S.A.

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DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
NEW 0.2 MG RESERVOIR

SECTIONS AND DETAILS

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Honolulu, Hawaii 96813 Fax: (808) 537-9692

MAY 2018

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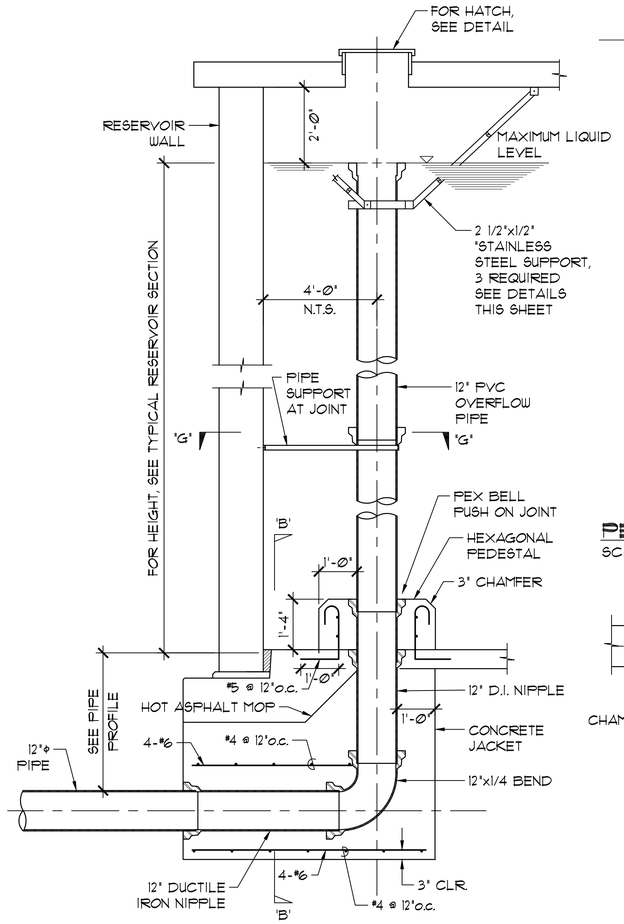
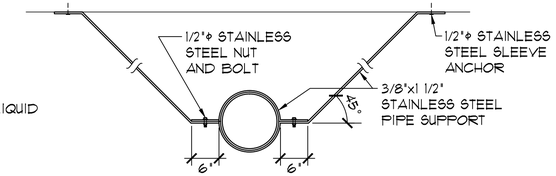
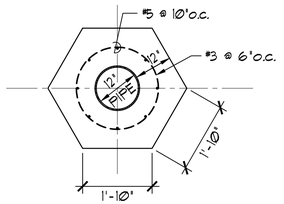
DATE REV.: 29/05/2018





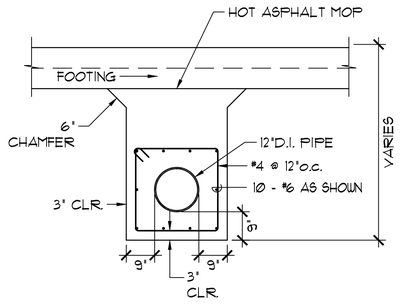
PLAN "G-G" - OVERFLOW PIPE SUPPORT AT PIPE JOINT

NTS



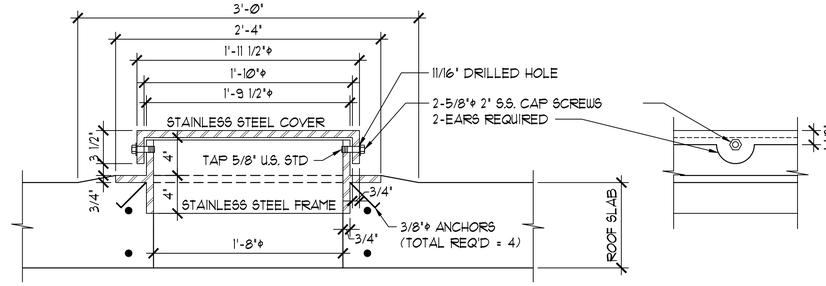
PEDESTAL FOR 12" OVERFLOW

SC: 1/2"=1'-Ø"



SECTION "B-B"

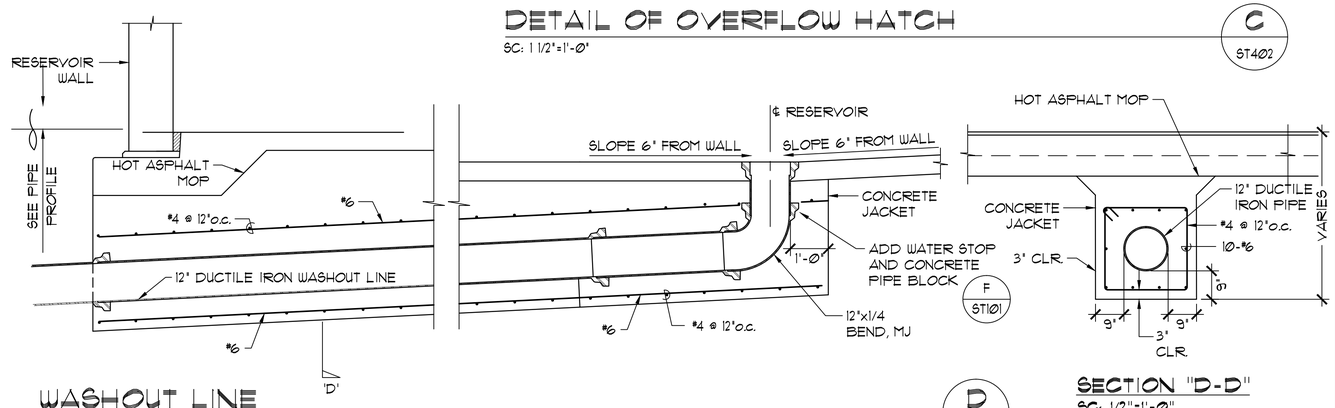
SC: 1/2"=1'-Ø"



DETAIL OF OVERFLOW HATCH

SC: 1 1/2"=1'-Ø"

C ST402



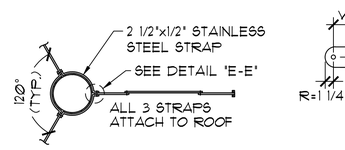
WASHOUT LINE

SC: 1/2"=1'-Ø"

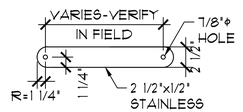
D ST402

SECTION "D-D"

SC: 1/2"=1'-Ø"

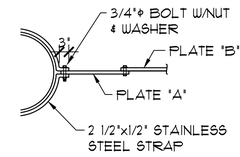


PLAN

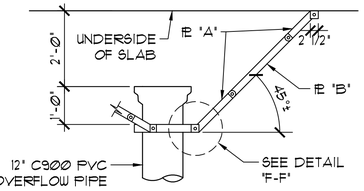


℄ "A" DETAIL

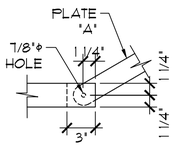
NOTE: ALL BOLTS, NUTS, WASHERS AND ANCHOR BOLTS FOR OVERFLOW PIPE SHALL BE AISI 302 STAINLESS STEEL OR APPROVED EQUAL.



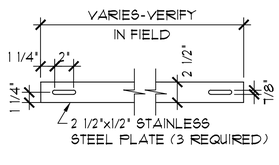
DETAIL "E-E"



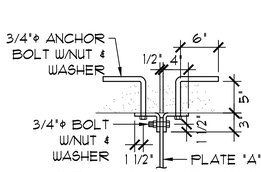
ELEV.



DETAIL "F-F"



℄ "B" DETAIL



CEILING ANCHOR

OVERFLOW PIPE SUPPORT DETAILS

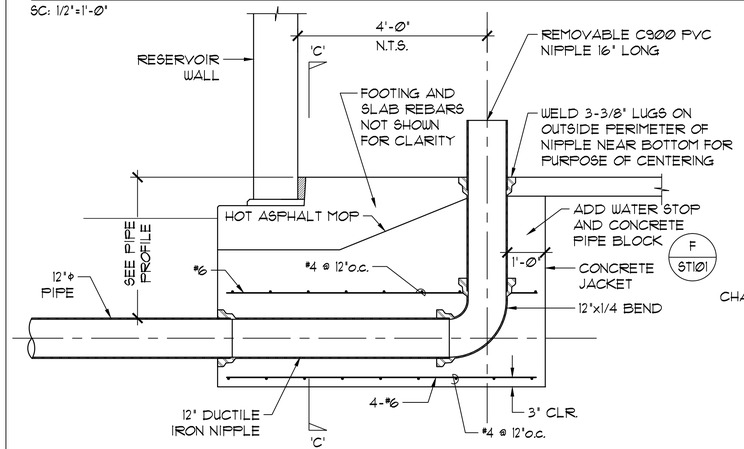
N.T.S.

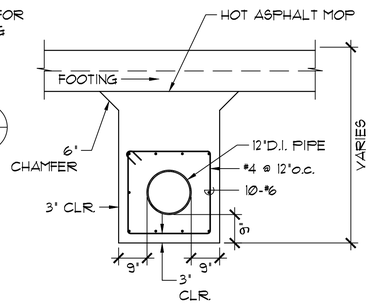
E ST402

DETAIL OF OVERFLOW

SC: 1/2"=1'-Ø"

A ST402





SECTION "C-C"

SC: 1/2"=1'-Ø"

INFLUENT/EFFLUENT LINE

SC: 1/2"=1'-Ø"

B ST402

0' 1' 2' 3' 4' 5' 6'
1/2" = 1'-0"

0' 6" 1' 2'
1 1/2" = 1'-0"

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ST402
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NEW 0.2 MG RESERVOIR

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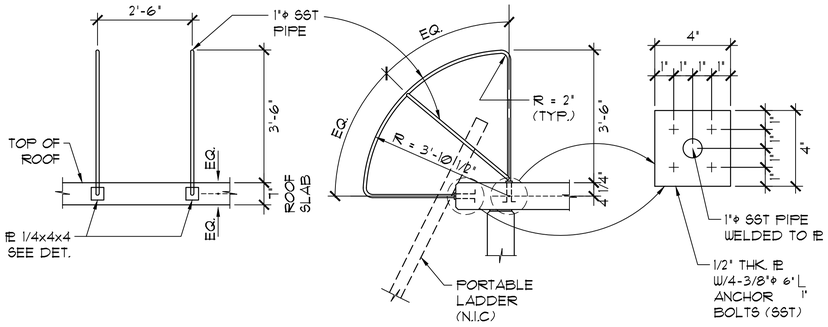
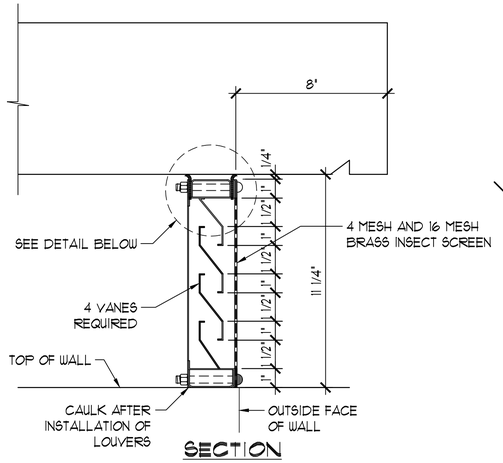


ELEVATION SECTION

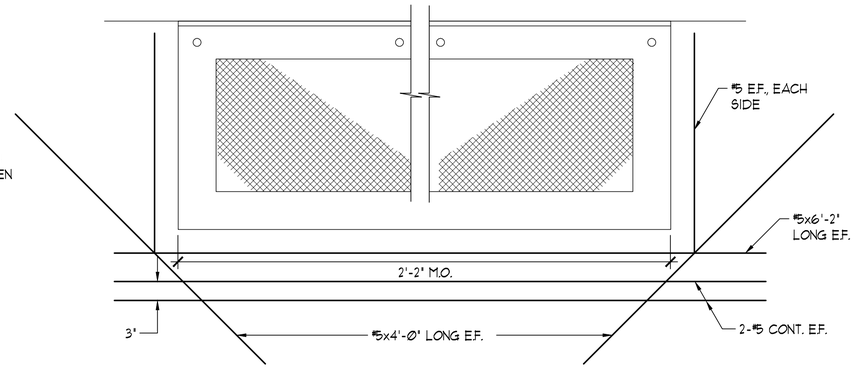
LADDER SAFETY CATCH DETAILS

N.T.S.

A ST403



SECTION

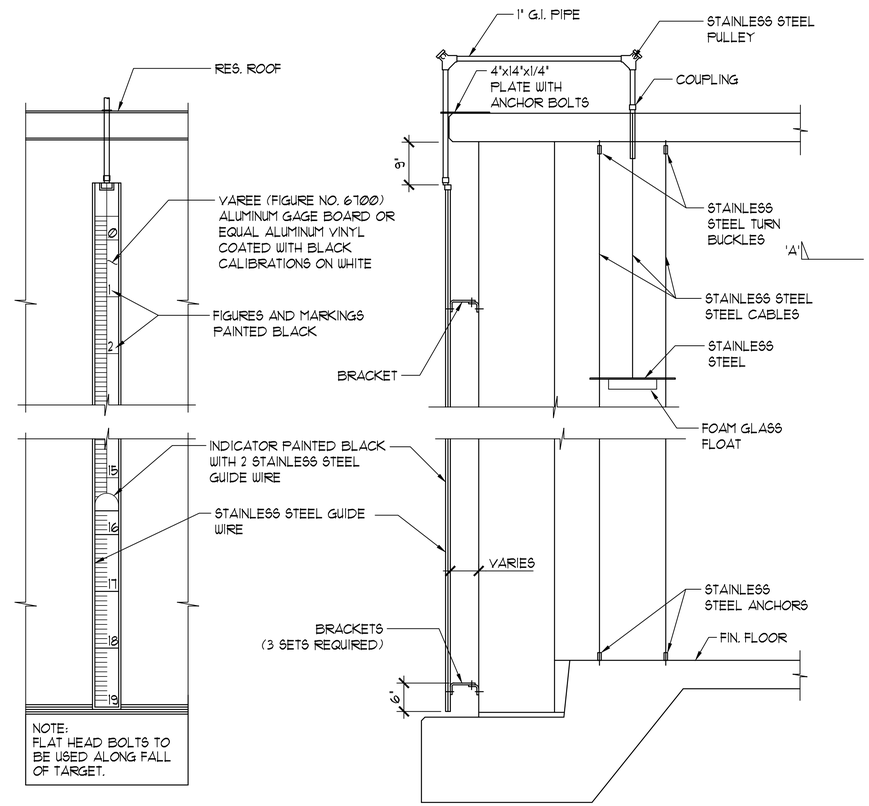


ELEVATION

LOUVER DETAILS

N.T.S.

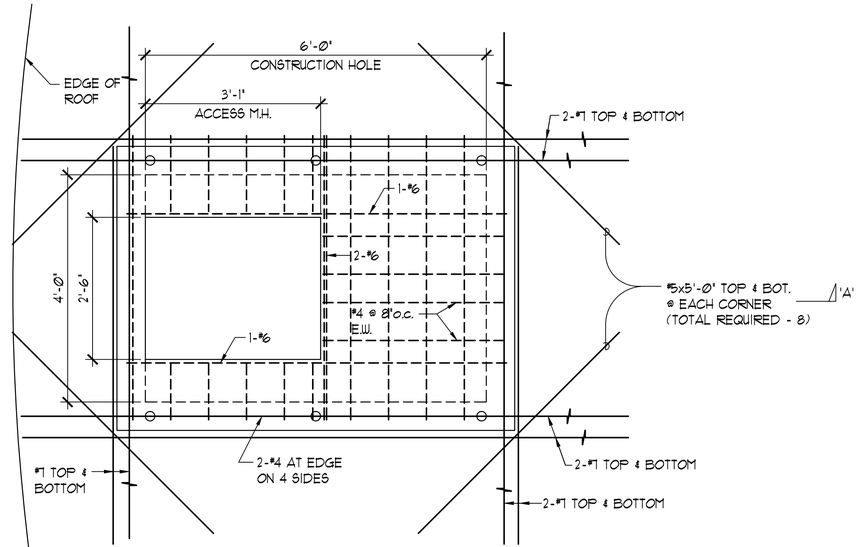
B ST403



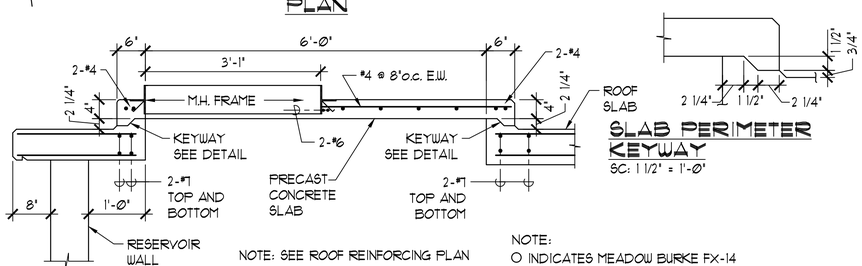
WATER LEVEL INDICATOR

SC: 3/4"=1'-Ø"

C ST403



PLAN



NOTE: SEE ROOF REINFORCING PLAN

SECTION "A-A"

' ALL STEEL TO BE STAINLESS.

ACCESS HATCH

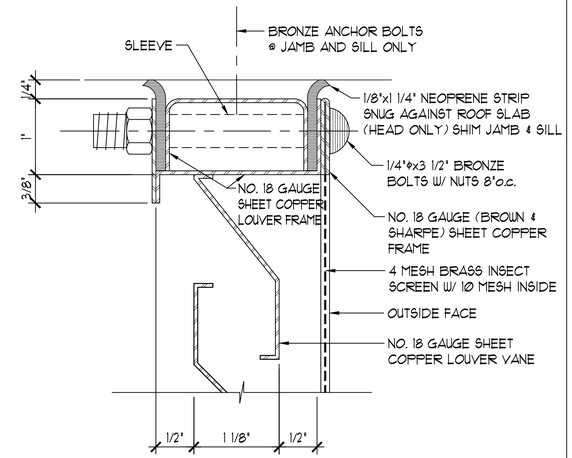
SC: 3/4"=1'-Ø"

D ST403

SLAB PERIMETER KEYWAY

SC: 1 1/2" = 1'-Ø"

NOTE:
O INDICATES MEADOW BURKE FX-14 STAINLESS STEEL FERRULE INSERT FOR USE WITH 3/4"ø BOLT AND LIFTING DEVICE (6 TOTAL), COVER INSERT WITH PLASTIC CAP



HEAD & JAMB SIMILAR DETAIL

N.T.S.

E ST403

0' 1' 2' 3' 4'
3/4" = 1'-0"

ADRIAN C.M. LEE LICENSED PROFESSIONAL ENGINEER No. 9164-S HAWAII, U.S.A.

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SITE 1 - KAULUWAI WELL SITE
NEW 0.2 MG RESERVOIR

DETAILS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 Phone (808) 536-7928 email alee@tanimuraeng.com
Honolulu, Hawaii 96813 Fax: (808) 537-9022

MAY 2018

ST403
92 OF 146

FILE: Hoolehua WSI - New 0.2 MG Tank Structural.dwg
DATE REV.: 29/05/2018

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE 2006 INTERNATIONAL BUILDING CODE AS AMENDED BY COUNTY OF MAUI

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

9. ALL ERECTION PROCEDURES SHALL CONFORM TO OSHA STANDARDS. ANY DEVIATION MUST BE APPROVED BY OSHA

10. THE CONTRACTOR SHALL NOTIFY TANIMURA & ASSOCIATES (PH. 536-7692) AND THE SPECIAL INSPECTOR FOUR (4) WORKING DAYS PRIOR TO POURING CONCRETE OR GROUTING.

FOUNDATION

1. FOUNDATION DESIGN IS BASED ON GEOTECHNICAL ENGINEERING EXPLORATION REPORT TITLED "SITE NO. 1 AND SITE NO. 7 - DHHL MOLOKAI PROJECTS - ISLAND OF MOLOKAI, HAWAII - W.O. 7470-00 - AUGUST 15, 2017" PREPARED BY GEOLABS, INC. THIS REPORT SHALL BE MADE PART OF THESE DRAWINGS BY REFERENCE. A COPY OF THIS GEOTECHNICAL REPORT SHALL BE KEPT ON SITE DURING CONSTRUCTION.

2. THE RETAINING WALL FOOTINGS SHALL BE ON DIRECTLY ON RECOMPACTED ON-SITE SOIL AND/OR NEW COMPACTED FILL MATERIAL. IF DIFFERING SUBGRADE MATERIALS ARE ENCOUNTERED AT THE FOOTING SUBGRADE LEVEL (I.E. HARD BASALT ROCK AND STIFF CLAYEY SOILS) THE BASALT ROCK FORMATION SHALL BE OVEREXCAVATED A MINIMUM OF ONE FOOT AND THE OVEREXCAVATION SHALL BE BACKFILLED WITH COMPACTED STRUCTURAL FILL.

3. FILLS AND ONSITE SOILS SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT RELATIVE COMPACTION.

3. BACKFILL BEHIND THE RETAINING WALL SHALL BE ON-SITE SOILS OR SELECT GRANULAR FILL MATERIAL. BACKFILL SHALL BE COMPACTED TO BETWEEN 90 AND 95 PERCENT RELATIVE COMPACTION. BACKFILL SHALL NOT BE OVER COMPACTED.

4. ALL FOOTINGS SHALL BE BOTTOMED A MINIMUM OF 24" BELOW THE LOWEST ADJACENT GRADE AND A MINIMUM HORIZONTAL DISTANCE OF 6 FEET SHALL BE MAINTAINED BETWEEN THE BOTTOM EDGE OF FOOTING AND THE FACE OF SLOPE.

5. ALL WATER, MUD AND DEBRIS SHALL BE REMOVED FROM THE BOTTOM OF FOOTING EXCAVATIONS PRIOR TO THE PLACEMENT OF CONCRETE.

6. BOTTOM OF ALL FOOTING TRENCHES SHALL BE LEVEL AND STEPPED ACCORDING TO THE WALL PROFILE AND STEP FOOTING TYPICAL DETAIL. SLOPED FOOTING TRENCHES ARE NOT ALLOWED.

RETAINING WALLS

1. FINISHED GRADING BEHIND THE WALL SHALL BE DESIGNED TO MINIMIZE SURFACE WATER RUNOFF FROM ENTERING THE BACKFILL AREA.

2. 4 INCH DIAMETER WEEP HOLES SHALL BE PLACED NEAR THE BOTTOM OF RETAINING WALLS SPACED AT A MAXIMUM OF 8 FEET ON CENTER. A 1-FOOT THICK CONTINUOUS LAYER OF CRUSHED GRAVEL WRAPPED IN GEOTEXTILE FILTER FABRIC SUCH AS MIRAFI 140N OR SIMILAR SHALL BE PLACED ABOVE THE PIPE AND DIRECTLY BEHIND THE WALL. THE CRUSHED GRAVEL SHALL BE CONTINUOUS BETWEEN WEEP HOLES.

3. A 4 INCH DIAMETER CONTINUOUS PERFORATED DRAIN PIPE (PERFORATIONS FACED DOWN) SLOPED TO DAYLIGHT MAY BE USED IN PLACE OF THE WEEPHOLES. AT LEAST ONE OUTLET SHALL BE PROVIDED FOR EVERY 50 FEET OF PIPE.

4. DRAIN ROCK SHALL CONFORM TO THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING BY DRY WEIGHT
1-1/2 INCH	90 - 100
3/4 INCH	50 - 100
NO. 4	0 - 50
NO. 200	0 - 5

STANDARD SIZE AGGREGATES NO. 6, 57 AND 67 AND 1-1/2 INCH FILTER MATERIALS SHOULD SATISFY THIS GRADATION REQUIREMENT.

5. WATERPROOFING SHALL BE APPLIED AT THE WALL/ FOOTING CONSTRUCTION JOINT. FLASHING COMPOUND SHALL EXTEND 6 INCHES BEYOND EITHER SIDE OF THE JOINT.

6. BACKFILL SHALL NOT BE PLACED BEHIND CONCRETE MASONRY WALLS BEFORE 21 DAYS AFTER GROUTING THE WALL OR UNTIL THE GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1875 PSI. BACKFILL SHALL NOT BE PLACE BEHIND CONCRETE WALLS UNTIL THE CONCRETE HAS ATTAINED THE 28 DAY DESIGN STRENGTH. COMPRESSIVE TEST CYLINDERS MADE DURING THE CONCRETE POUR SHALL BE TESTED TO DETERMINE THE CONCRETE STRENGTH.

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
FOOTING	3,000 PSI	1"
STEM WALL	3,000 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, DOWEL 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.

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"

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, DOWELS AND ALL OTHER EMBEDDED ITEMS SHALL BE POSITIVELY SECURED BEFORE POURING.

DESIGN CRITERIA

1. CODES: 2006 INTERNATIONAL BUILDING CODE
2012 AASHTO LRFD BRIDE DESIGN SPECIFICATIONS
2005 ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
2002 ACI 530-02 BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES

CONCRETE
f'c = 3,000 PSI
Fy = 60,000 PSI
CONCRETE MASONRY
f'm = 1,900 PSI
Fs = 24,000 PSI

2. FOUNDATION DESIGN CRITERIA

ALLOWABLE BEARING PRESSURE	3,000 PSF
LEVEL BACKFILL	
ACTIVE PRESSURE	40 PCF
PASSIVE RESISTANCE PRESSURE	350 PCF
COEFFICIENT OF FRICTION	0.35

VEHICLE LIVE LOAD SURCHARGE PER AASHTO

DYNAMIC LATERAL EARTH PRESSURE ASSUMING WALL MOVEMENT OF 2.5 INCHES, PE = 4.9xH SQUARED PER GEOTECHNICAL ENGINEERING REPORT

3. SEISMIC LATERAL FORCES

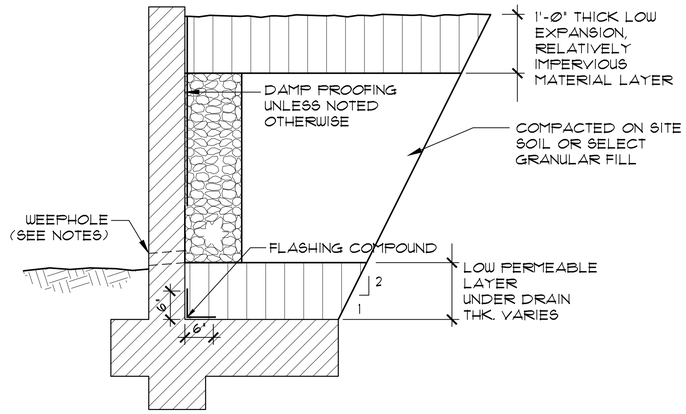
SITE CLASS	D
RISK CATEGORY	IV
ESSENTIAL FACILITIES	
SEISMIC DESIGN CATEGORY	D
MAPPED SPECTRAL RESPONSE	
Ss	0.806
S1	0.210
SDS	0.634
SD1	0.277

SPECIAL INSPECTION

1. ITEMS REQUIRING SPECIAL INSPECTION:
REINFORCING STEEL (PERIODIC)
CONCRETE (2006 IBC TABLE 1704.4)

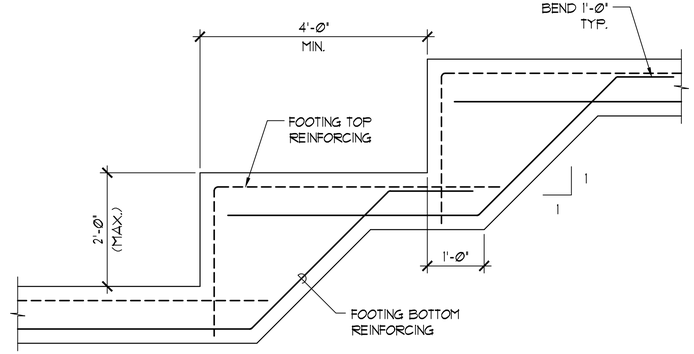
2. NOTIFY SPECIAL INSPECTOR 4 WORKING DAYS PRIOR TO NEED OF INSPECTION SERVICES.

3. THE CONTRACTOR SHALL BE FAMILIAR with THE SPECIAL INSPECTION REQUIREMENTS INCLUDING THE IDENTITY AND CONTACT INFORMATION OF THE SPECIAL INSPECTOR RESPONSIBLE FOR EACH REQUIREMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE SPECIAL INSPECTOR IN A TIMELY MANNER IF SPECIAL INSPECTIONS ARE NOT DONE THE CERTIFICATE OF OCCUPANCY MAY NOT BE ISSUED BY THE COUNTY.



TYP. RETAINING WALL DET. — A / SW001

NO SCALE



TYP. STEPPED FTG. — B / SW002

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

0' 1' 2' 3' 4'

3/4" = 1'-0"

ADRIAN C.M. LEE — LICENSED PROFESSIONAL ENGINEER No. 9164-S — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

Adrian Lee

DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
NEW RETAINING WALL

GEN. NOTES & TYP. DETAILS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

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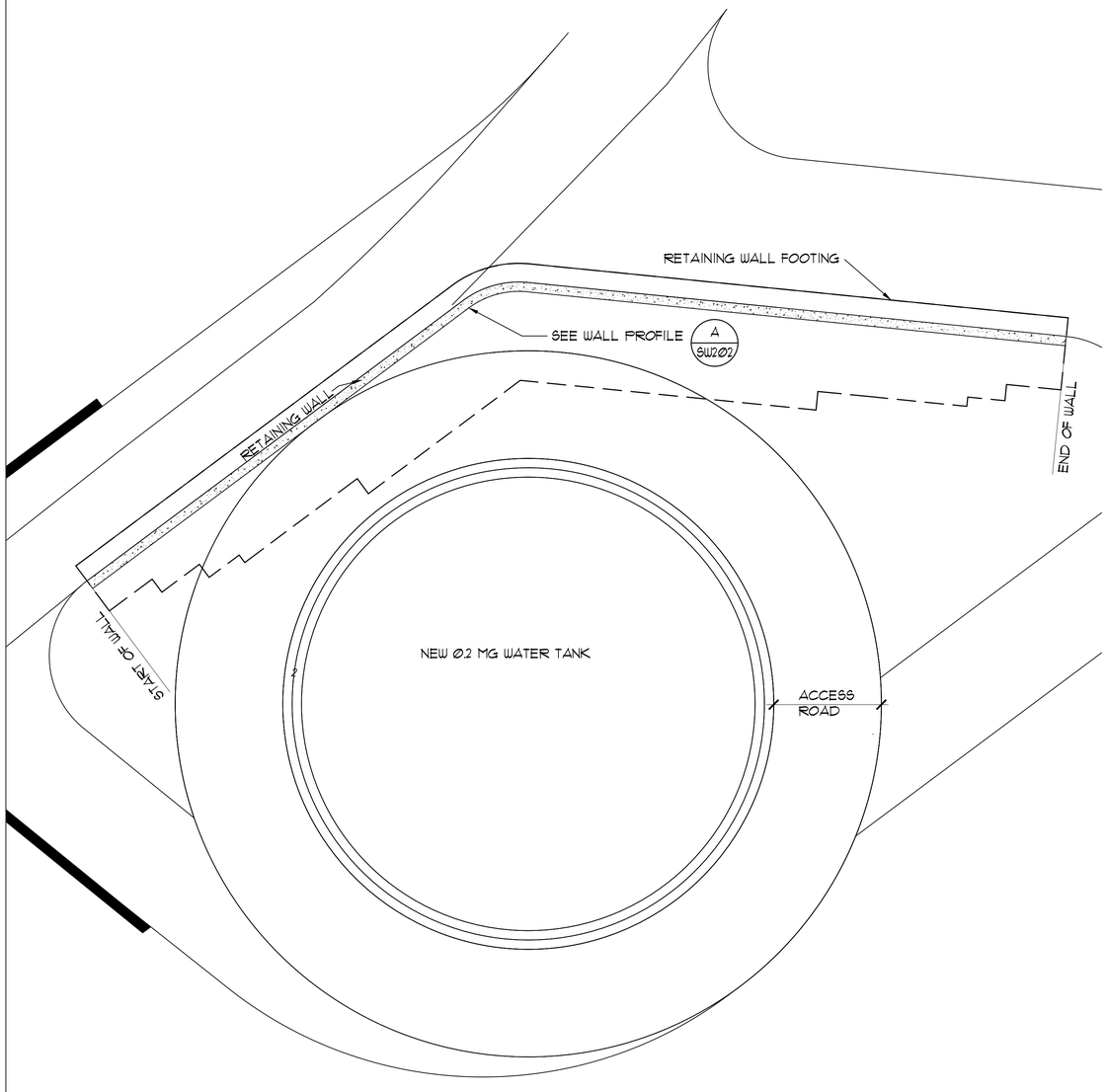
FEB 2018

SW001
93 OF 146

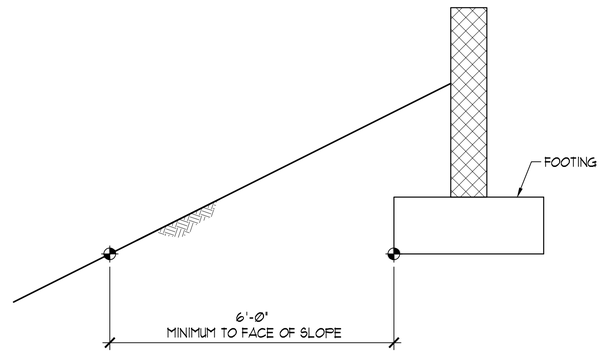
FILE: Site 1 Kauluwai Retaining Wall Structural.dwg
DATE REV.: 20/02/2018



RETAINING WALL - PLAN VIEW

SC: 1/8"=1'-0"

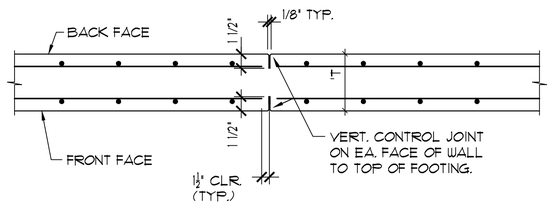
1 SW201



TYPICAL FOOTING SETBACK AT SLOPE

NOT TO SCALE

A SW201



COND. AT CONCRETE WALL JOINT

TYP. JOINT DETAILS (PLAN AT WALL)

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

B SW201

0' 1' 2' 3' 4'
3/4" = 1'-0"

0' 4' 8' 16' 24'
1/8" = 1'-0"

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SITE 1 - KAULUWAI WELL SITE
NEW RETAINING WALL

RETAINING WALL PLAN AND TYPICAL DETAILS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

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SW201
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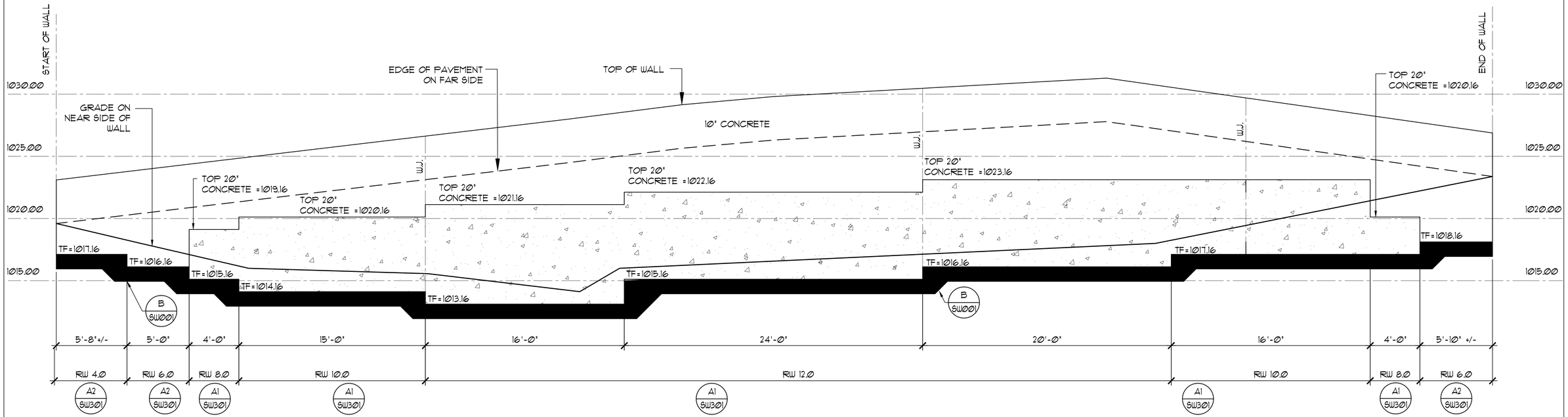
FILE: Site 1 Kauluwai Retaining Wall Structural.dwg
DATE REV.: 20/02/2018



NOTE:
1. TF INDICATES TOP OF FOOTING

RETAINING WALL PROFILE (VIEWED FROM RESERVOIR SIDE)

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

A SW202

0' 2' 4' 8' 12'
1/4" = 1'-0"

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RETAINING WALL PROFILE

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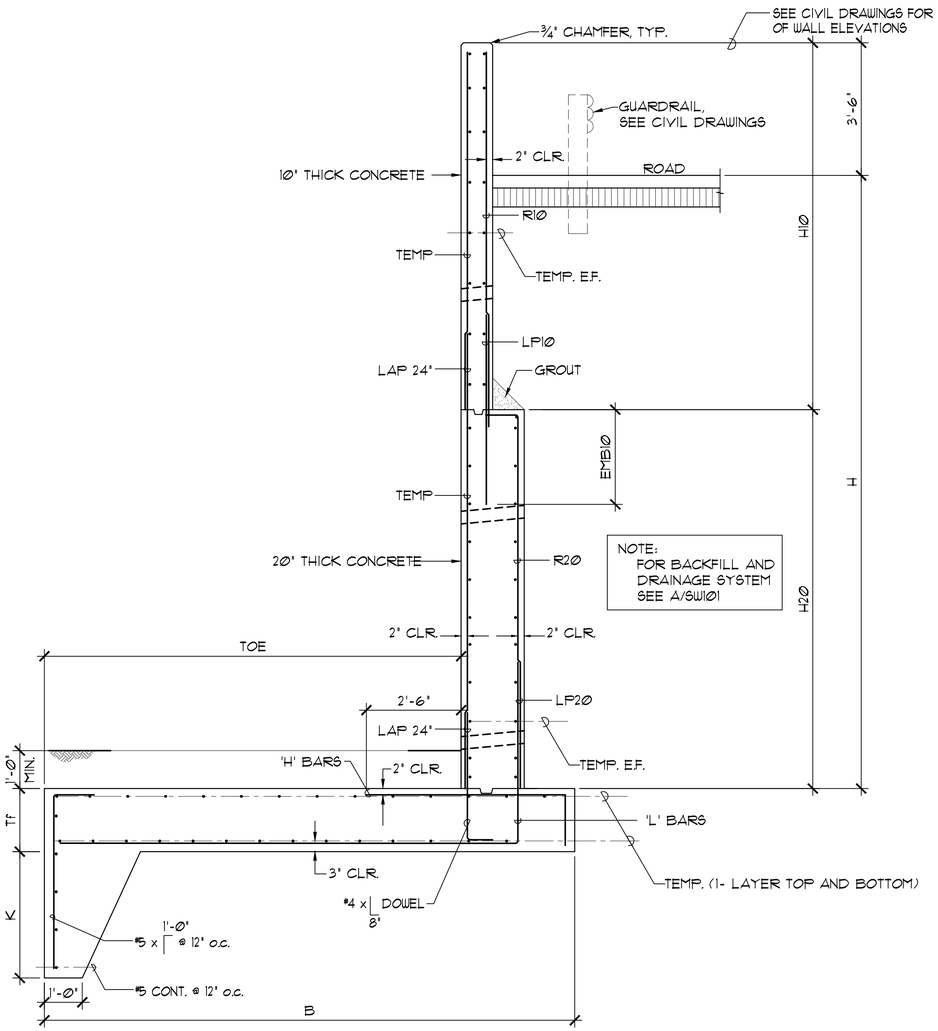
FEB 2018

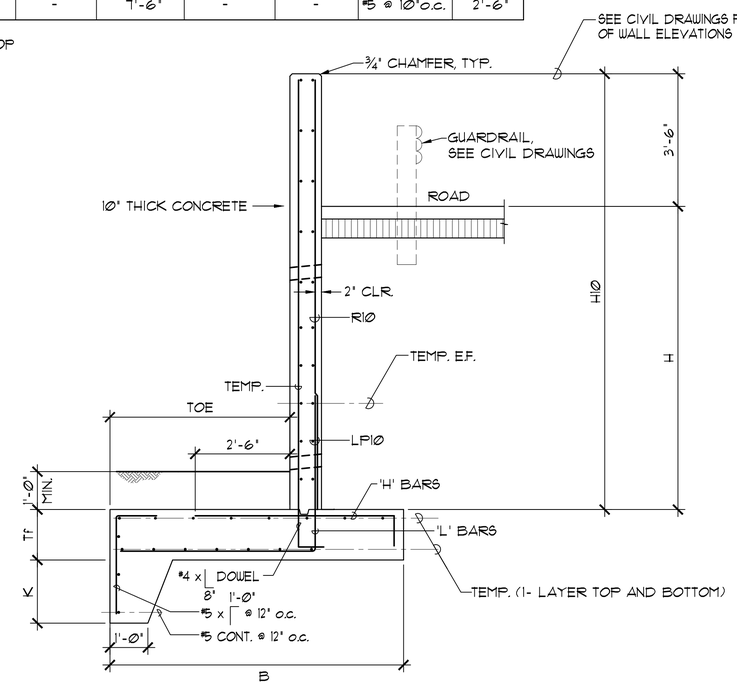
FILE: Site 1 Kauluwai Retaining Wall Structural.dwg
DATE REV.: 20/02/2018

RETAINING WALL SCHEDULE

	'H'	'B'	'TOE'	K	'tf'	'H' bars	'L' bars	H2Ø	R2Ø	LP2Ø	H1Ø	D1Ø	EMB1Ø	R1Ø	LP1Ø
RW-12	≤ 12'-0"	12'-6"	9'-6"	3'-4"	1'-8"	#5 @ 12'o.c.	#6 @ 6'o.c.	7'-0"	#6 @ 10'o.c.	3'-0"	7'-6"	#5 @ 10'o.c.	2'-6"	#5 @ 10'o.c.	2'-6"
RW-10	≤ 10'-0"	10'-6"	7'-6"	2'-10"	1'-4"	#5 @ 12'o.c.	#5 @ 6'o.c.	6'-0"	#5 @ 6'o.c.	2'-6"	7'-6"	#5 @ 10'o.c.	2'-6"	#5 @ 10'o.c.	2'-6"
RW-8	≤ 8'-0"	9'-6"	6'-6"	2'-4"	1'-4"	#5 @ 12'o.c.	#5 @ 6'o.c.	3'-0"	EXTEND 'L' BAR TO TOP OF STEM	-	8'-6"	#5 @ 8'o.c.	2'-6"	#5 @ 8'o.c.	2'-6"
RW-6	≤ 6'-0"	7'-9"	4'-9"	1'-8"	1'-4"	#5 @ 12'o.c.	#6 @ 6'o.c.	-	-	-	9'-6"	-	2'-6"	#5 @ 10'o.c.	2'-6"
RW-4	≤ 4'-0"	6'-0"	3'-0"	1'-4"	1'-2"	#5 @ 12'o.c.	#5 @ 10'o.c.	-	-	-	7'-6"	-	-	#5 @ 10'o.c.	2'-6"



'1' 8'-Ø" ≤ H ≤ 12'-Ø"



'2' 4'-Ø" ≤ H ≤ 6'-Ø"

SLAB/WALL TEMP REINF. STEEL SCHEDULE (ALL REBARS CONTINUOUS)		
THICKNESS	'TEMP' 1-LAYER	'TEMP E.F.' 2-LAYER
20"	#6@12"o.c.	#4@10"o.c. AT WALL
16"	#5@10"o.c.	-
14"	#5@12"o.c.	-
10"	-	#4@18"o.c. AT WALL

0' 1' 2' 3' 4' 5' 6'
1/2" = 1'-0"

RETAINING WALL SECTIONS AND SCHEDULES

SC: 1/2" = 1'-Ø"

SW3Ø1

FILE: Site 1 Kauluwai Retaining Wall Structural.dwg
DATE REV.: 20/02/2018

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SITE 1 - KAULUWAI WELL SITE
NEW RETAINING WALL

RETAINING WALL SECTIONS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

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925 Bethel Street, Suite 309 Phone (808) 536-7928 email alee@tanimuraeng.com
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FEB 2018

SW301
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GENERAL NOTES

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9. ALL ERECTION PROCEDURES SHALL CONFORM TO OSHA STANDARDS. ANY DEVIATION MUST BE APPROVED BY OSHA

10. THE CONTRACTOR SHALL NOTIFY TANIMURA & ASSOCIATES (PH. 536-7692) 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).

STRUCTURAL STEEL

1. ALL STRUCTURAL WIDE FLANGE SHAPES SHALL CONFORM TO ASTM A992. STEEL PIPES AND STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B. CHANNELS, ANGLES, PLATES, BARS AND MISCELLANEOUS STEEL SHAPES SHALL CONFORM TO ASTM A-36. FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE A.I.S.C. SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, LATEST EDITION. SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION.

2. ALL BOLTS SHALL CONFORM TO ASTM A307.

3. WELDING: ALL WELDING IS TO COMPLY WITH A.W.S. SPECIFICATIONS AND IS TO BE DONE BY CERTIFIED WELDERS. ALL WELDING IS TO BE DONE BY ELECTRIC ARC PROCESS AND SHALL BE PERFORMED WITH APPROVED ELECTRODES AS REQUIRED BY I.B.C. WELDS ARE DESIGNED AT FULL STRESS AND MUST BE DONE IN THE SHOP OF A LICENSED FABRICATOR.

4. ALL WELDS NOT SHOWN SHALL BE FULL PENETRATION WELDS CAPABLE OF DEVELOPING THE FULL STRENGTH OF THE CONNECTING MEMBERS.

5. THE CONTRACTOR SHALL DETAIL ALL MEMBERS AND CONNECTIONS NOT SHOWN AND SHALL SUBMIT THEM TO THE ENGINEER FOR REVIEW AND APPROVAL. COST OF THESE MEMBERS AND CONNECTIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE.

6. GALVANIZE ALL STRUCTURAL STEEL SHAPES, PLATES, BOLTS AND ACCESSORIES EXPOSED TO WEATHER. OTHER SHAPES, PLATES AND ACCESSORIES SHALL BE SHOP PRIMED WITH A RUST INHIBITING PRIMER EXCEPT MEMBERS TO RECEIVE SPRAYED-ON FIREPROOFING.

CONCRETE REPAIR NOTES

1. REMOVE ALL DETERIORATED CONCRETE UNTIL ONLY SOUND CONCRETE REMAINS.

2. WHERE REINFORCING IS EXPOSED, CHIP CONCRETE AROUND THE BAR SUCH THAT THERE IS A MINIMUM OF ONE INCH BETWEEN THE BAR AND THE SURROUNDING CONCRETE.

3. CLEAN EXPOSED REINFORCING TO BARE METAL.

4. PERIMETER OF ALL SPALLED AREAS SHALL BE PROVIDED WITH AN EDGE CHIPPED OR SAW CUT ONE INCH MINIMUM DEEP INTO THE EXISTING CONCRETE.

5. THE CONTACT SURFACE SHALL BE ROUGHENED TO APPROXIMATELY 1/4 INCH OF DEPTH. AN APPROPRIATE PROCESS SHALL BE SELECTED SUCH THAT NO COARSE AGGREGATE IS ALLOWED TO BE POLISHED OR ROUNDED. THE CONTACT SURFACE SHALL NOT BE LIMITED TO THE DAMAGED CHIPPED OUT AREA BUT SHALL INCLUDE ALL EXISTING CONCRETE SURFACES TO RECEIVE NEW CONCRETE.

6. IMMEDIATELY PRIOR TO PLACING CONCRETE, AN APPROVED BONDING AGENT SHALL BE APPLIED TO THE PREPARED CONCRETE CONTACT SURFACE.

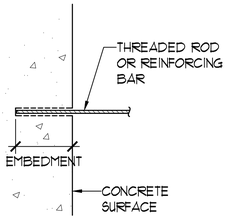
9. NEW CONCRETE SHALL BE NORMAL WEIGHT ACRYLIC MODIFIED MIX HAVING A MINIMUM COMPRESSIVE STRENGTH OF 6,000 PSI AT 28 DAYS AND A MAXIMUM AGGREGATE SIZE OF 3/4 INCH.

DESIGN CRITERIA

1. CODES: 2006 INTERNATIONAL BUILDING CODE

SPECIAL INSPECTION

SPECIAL INSPECTION NOT REQUIRED



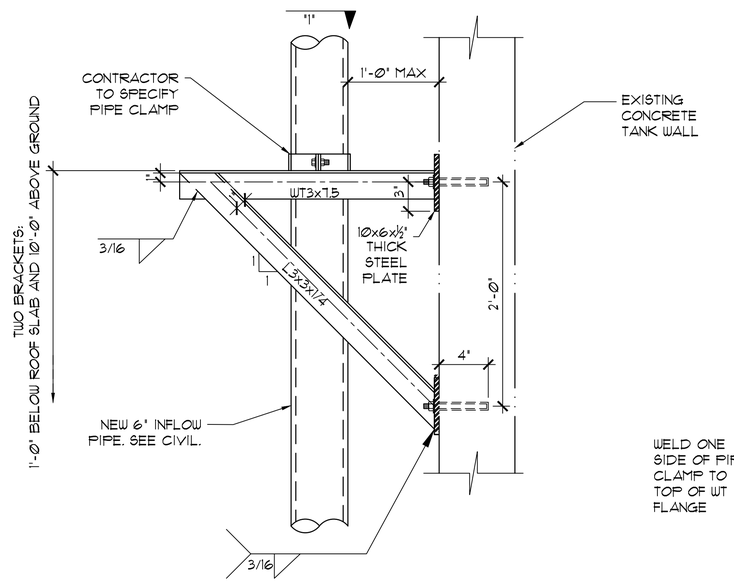
THREADED ROD (REBAR	DRILL BIT DIAMETER	MINIMUM EMBEDMENT
1/2"ϕ (#4)	5/8"	6"
5/8"ϕ (#5)	3/4"	6"
3/4"ϕ (#6)	7/8"	7"
7/8"ϕ (#7)	1"	8"

NOTES:
A. PRE APPROVAL FOR SIMPSON STRONG TIE ET EPOXY TIE ADHESIVE. ALL SUBSTITUTION REQUEST SHALL BE SUBMITTED WITH CURRENT ICBO REPORT TO ENGINEER FOR REVIEW AND APPROVAL.
B. THREADED ROD SHALL BE ASTM A307. REINFORCING BAR SHALL BE ASTM A615 GRADE 60.
C. PRE DRILL HOLE WITH DRILL BIT COMPLYING WITH ANSI B212.15-1994.
D. CLEAN HOLE WITH OIL FREE COMPRESSED AIR AND NYLON BRUSH.
E. FILL HOLE HALF FULL WITH ADHESIVE THEN INSERT ANCHOR TO BOTTOM OF HOLE AND TWIST CLOCKWISE TO ENSURE ADHESIVE COVERS ANCHOR SURFACE. ADHESIVE MUST BE LEVEL WITH CONCRETE SURFACE AFTER INSERTION OF ANCHOR.

EPOXY ANCHOR DETAIL

NO SCALE

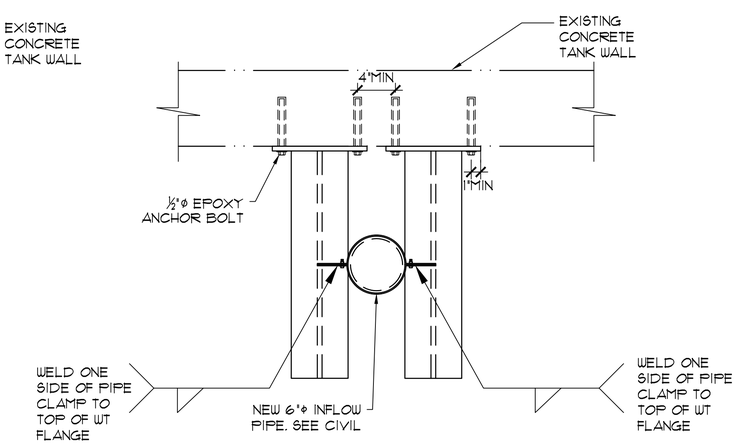
A
SR001



INFLOW SUPPORT DETAIL

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

B
SR001



"I" INFLOW SUPPORT PLAN VIEW

0' 6" 1' 2'
1 1/2" = 1'-0"

ADRIAN C. M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

Adrian Lee
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

SR001
97 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA TWO 3.5 MG RESERVOIRS

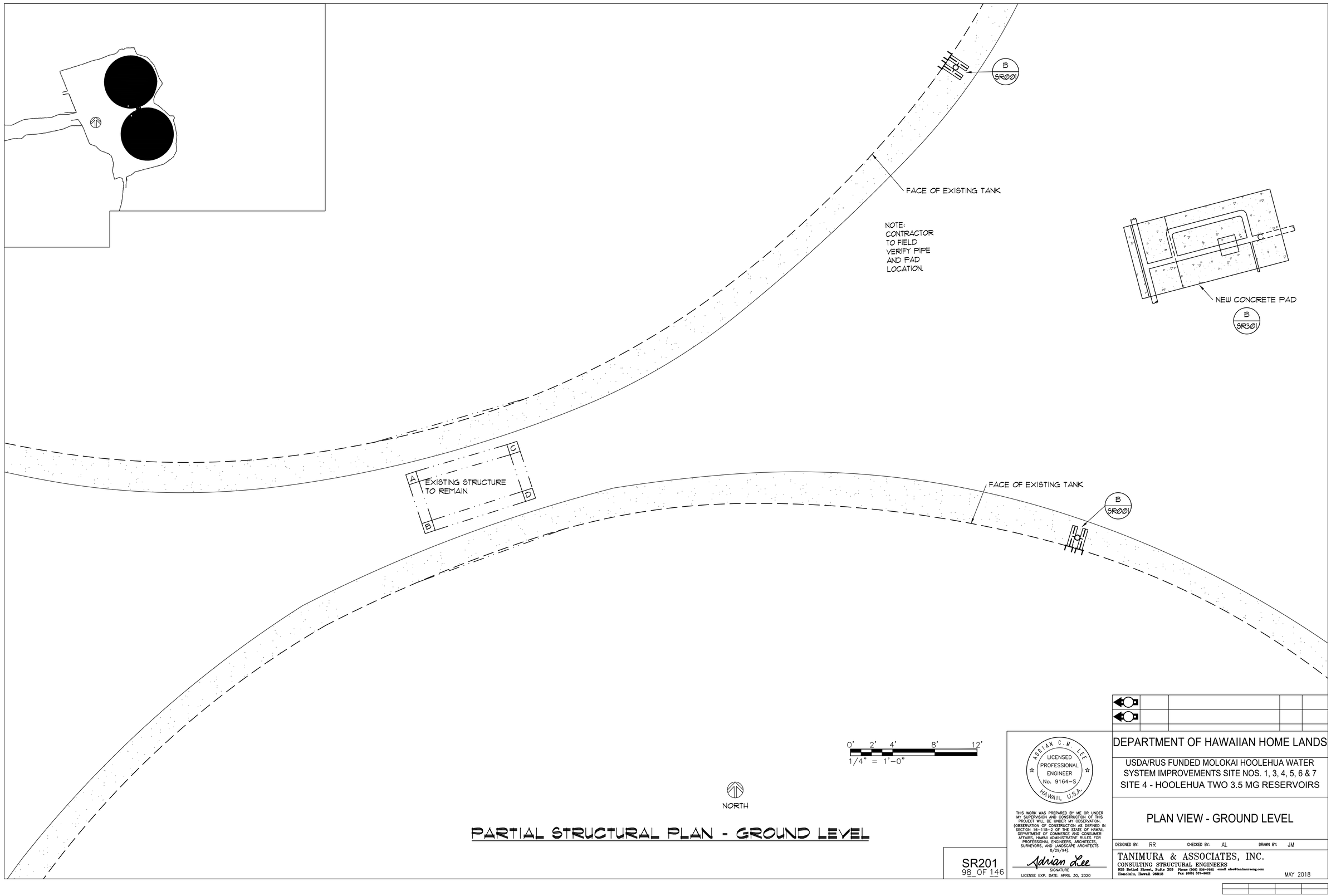
GENERAL NOTES & TYP. DETAILS

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 Phone (808) 536-7692 email alee@tanimuraeng.com
Honolulu, Hawaii 96813 Fax: (808) 537-6022

MAY 2018

FILE: Site 4 Hoolehua 2 3.5 MG Tank base Repairs Structural.dwg
DATE REV.: 31/05/2018



PARTIAL STRUCTURAL PLAN - GROUND LEVEL

ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

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Adrian Lee
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

SR201
98 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA TWO 3.5 MG RESERVOIRS

PLAN VIEW - GROUND LEVEL

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
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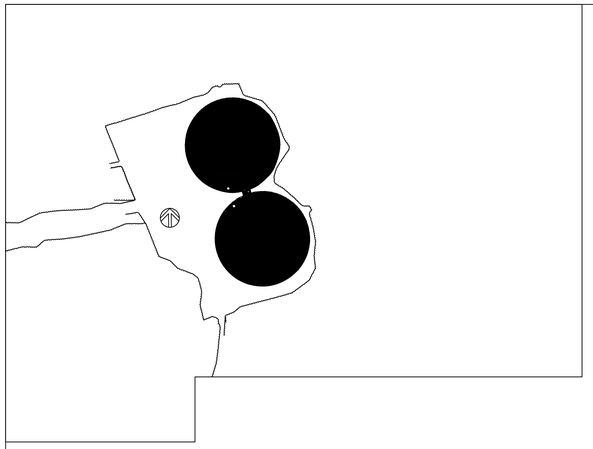
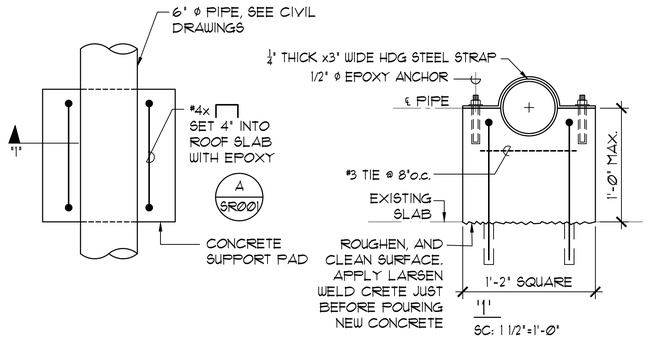
925 Bethel Street, Suite 309 Phone (808) 536-7080 email alee@tanimuraeng.com
Honolulu, Hawaii 96813 Fax (808) 537-4082

MAY 2018

FILE: Site 4 Hoolehua 2 3.5 MG Tank base Repairs Structural.dwg
DATE REV.: 31/05/2018

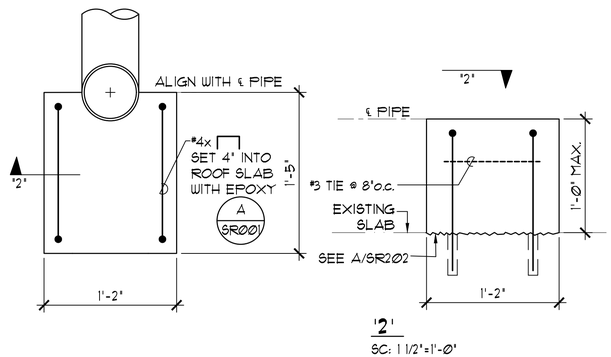




PLAN - PIPE SUPPORT DETAIL

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

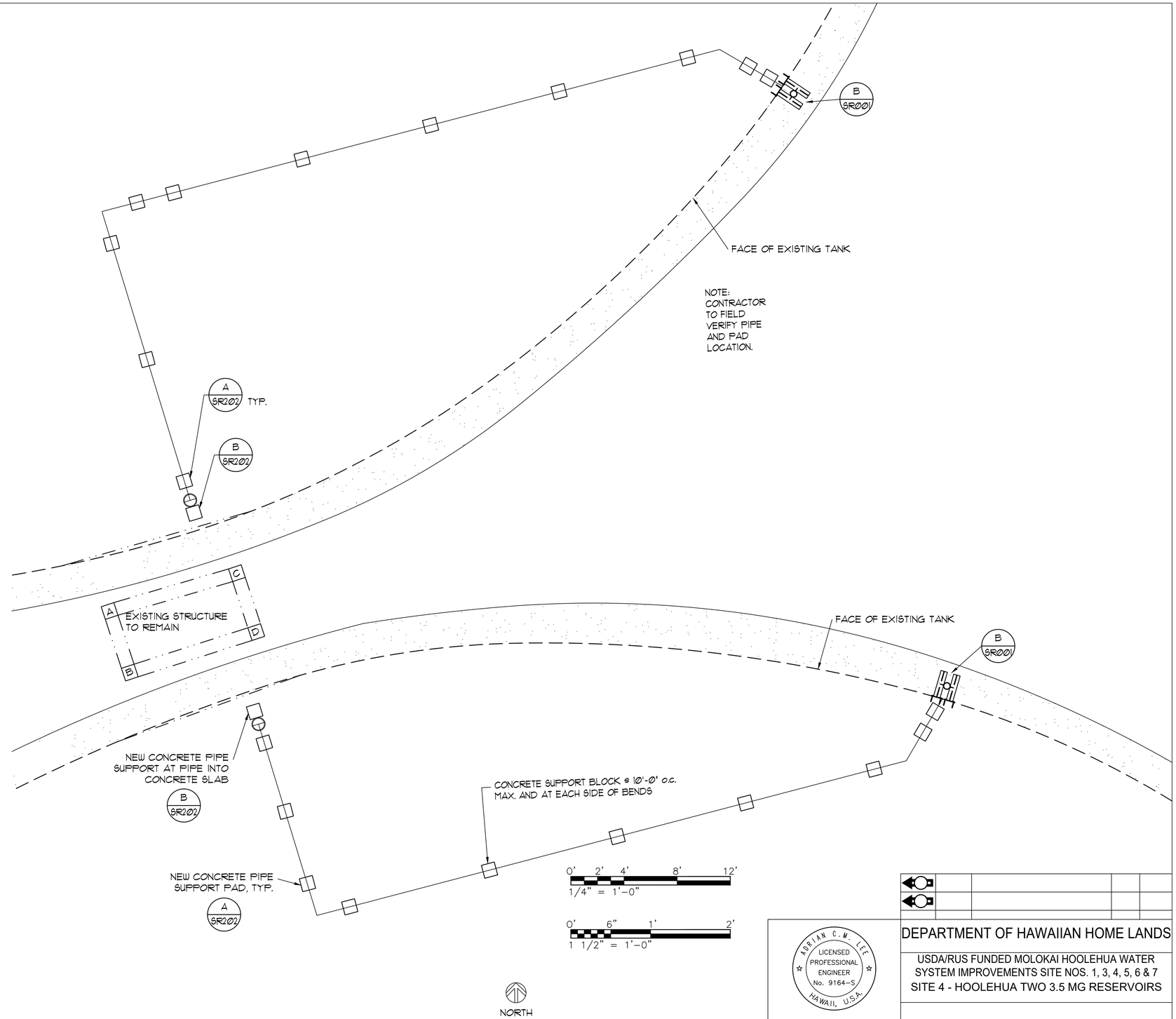
A SR202



PLAN - PIPE SUPPORT AT PIPE INTO ROOF

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

B SR202



PARTIAL STRUCTURAL PLAN - TOP OF ROOF LEVEL

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

SR202
99 OF 146

ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
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HAWAII, U.S.A.

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Adrian Lee
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA TWO 3.5 MG RESERVOIRS

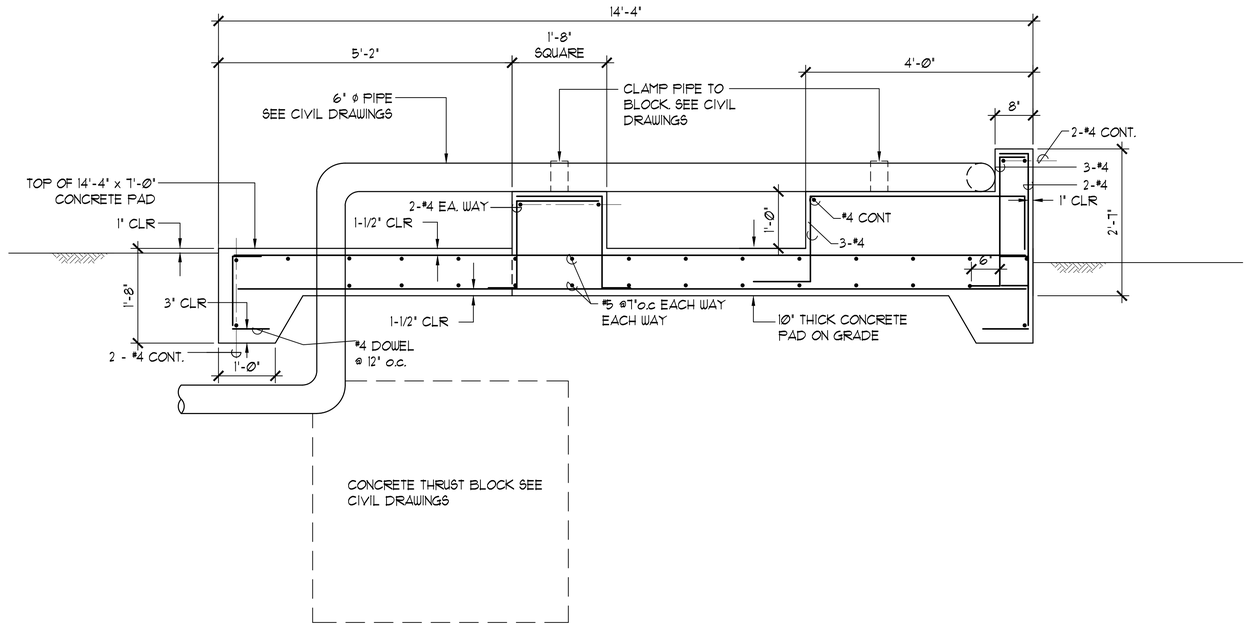
PLAN VIEW - ROOF LEVEL

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 300 Phone (808) 536-7986 email alee@tanimuraeng.com
Honolulu, Hawaii 96813 Fax: (808) 537-9022

MAY 2018

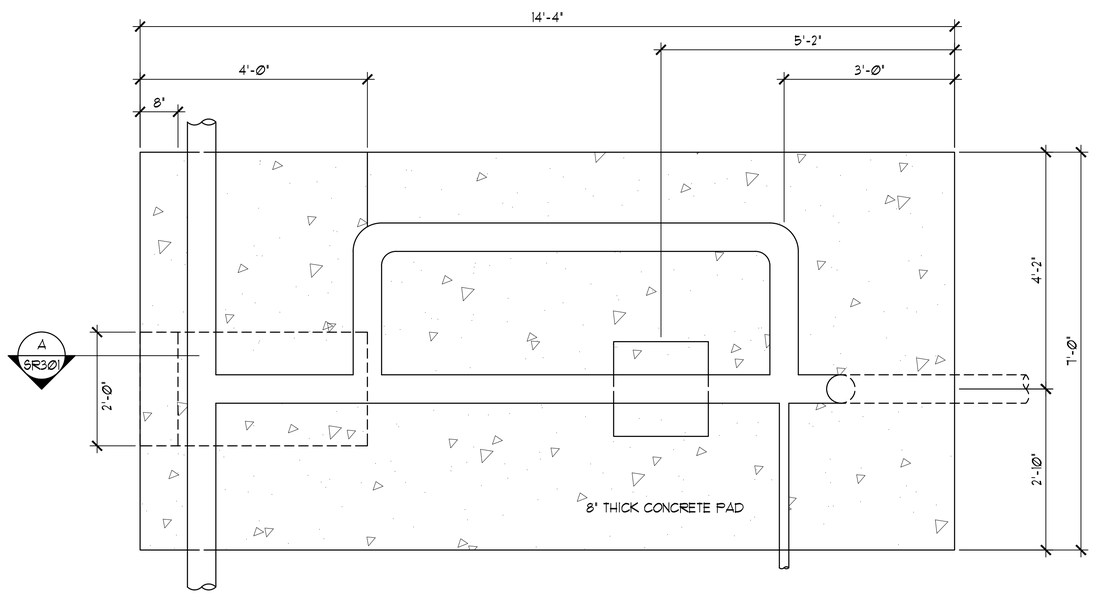
FILE: Site 4 Hoolehua 2 3.5 MG Tank base Repairs Structural.dwg
DATE REV.: 31/05/2018



SECTION AT CONCRETE PAD

SCALE: 3/4" = 1'-Ø"

A
SR301



CONCRETE PAD - PLAN

SCALE: 3/4" = 1'-Ø"

B
SR301

0' 1' 2' 3' 4'
3/4" = 1'-0"

SR301
100 OF 146

ADRIAN C.M. LEE
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USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 4 - HOOLEHUA TWO 3.5 MG RESERVOIRS

DETAILS

DESIGNED BY: RR CHECKED BY: AL DRAWN BY: JM

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CONSULTING STRUCTURAL ENGINEERS
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Honolulu, Hawaii 96813 Fax: (808) 537-4022

MAY 2018

FILE: Site 4 Hoolehua 2 3.5 MG Tank base Repairs Structural.dwg
DATE REV.: 31/05/2018

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE 2006 INTERNATIONAL BUILDING CODE AS AMENDED BY COUNTY OF MAUI

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

9. ALL ERECTION PROCEDURES SHALL CONFORM TO OSHA STANDARDS. ANY DEVIATION MUST BE APPROVED BY OSHA

10. THE CONTRACTOR SHALL NOTIFY TANIMURA & ASSOCIATES (PH. 536-7692) AND THE SPECIAL INSPECTOR FOUR (4) WORKING DAYS PRIOR TO POURING CONCRETE OR GROUTING.

FOUNDATION

1. FOUNDATION DESIGN IS BASED ON GEOTECHNICAL ENGINEERING EXPLORATION REPORT TITLED "SITE NO. 1 AND SITE NO. 7 - DHHL MOLOKAI PROJECTS - ISLAND OF MOLOKAI, HAWAII - W.O. 7410-00 - AUGUST 15, 2017" PREPARED BY GEOLABS, INC. THIS REPORT SHALL BE MADE PART OF THESE DRAWINGS BY REFERENCE. A COPY OF THIS GEOTECHNICAL REPORT SHALL BE KEPT ON SITE DURING CONSTRUCTION.

2. THE BUILDING FOUNDATIONS SHALL BEAR ON THE RECOMPACTED ON-SITE SOIL AND/ OR NEW COMPACTED FILL MATERIAL. SEE GEOTECHNICAL ENGINEERING REPORT FOR COMPACTION REQUIREMENTS.

3. THE SLAB ON GRADE SHALL BE PLACED OVER A MINIMUM 12 INCH LAYER OF AGGREGATE SUB BASE MATERIAL.

4. THE SURFACE LAYER OF SOIL EXHIBIT SLIGHT SHRINK/ SWELL POTENTIAL. TO MITIGATE THE EFFECTS OF SHRINK/ SWELL THE SUBGRADE SOILS SHALL BE PROPERLY PREPARED PRIOR TO FILL PLACEMENT.

5. THE BOTTOM OF FOOTINGS SHALL BE EMBEDDED A MINIMUM OF 18 INCHES BELOW THE LOWEST ADJACENT FINISHED GRADES.M

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
FOOTING	3,000 PSI	1"
STEM WALL	3,000 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, DOWEL 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.

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"

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, DOWELS AND ALL OTHER EMBEDDED ITEMS SHALL BE POSITIVELY SECURED BEFORE POURING.

STRUCTURAL STEEL

1. ALL STRUCTURAL WIDE FLANGE SHAPES SHALL CONFORM TO ASTM A992. STEEL PIPES AND STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B. CHANNELS, ANGLES, PLATES, BARS AND MISCELLANEOUS STEEL SHAPES SHALL CONFORM TO ASTM A-36. FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE A.I.S.C. SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, LATEST EDITION. SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION.

2. ALL BOLTS SHALL CONFORM TO ASTM A307.

3. WELDING: ALL WELDING IS TO COMPLY WITH A.W.S. SPECIFICATIONS AND IS TO BE DONE BY CERTIFIED WELDERS. ALL WELDING IS TO BE DONE BY ELECTRIC ARC PROCESS AND SHALL BE PERFORMED WITH APPROVED ELECTRODES AS REQUIRED BY IBC. WELDS ARE DESIGNED AT FULL STRESS AND MUST BE DONE IN THE SHOP OF A LICENSED FABRICATOR.

4. ALL WELDS NOT SHOWN SHALL BE FULL PENETRATION WELDS CAPABLE OF DEVELOPING THE FULL STRENGTH OF THE CONNECTING MEMBERS.

5. THE CONTRACTOR SHALL DETAIL ALL MEMBERS AND CONNECTIONS NOT SHOWN AND SHALL SUBMIT THEM TO THE ARCHITECT FOR REVIEW. COST OF THESE MEMBERS AND CONNECTIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE.

6. HOT DIP GALVANIZE ALL STRUCTURAL STEEL SHAPES, PLATES, BOLTS AND ACCESSORIES.

7. 1" OF NON-SHRINK GROUT SHALL BE USED UNDER ALL COLUMN BASE PLATES.

COLD-FORMED METAL FRAMING:

1. MEMBER REFERENCES: ALL MEMBERS NOTED ON THE DRAWINGS ARE DESIGNATED BY 2004 AISI STANDARD FOR COLD FORMED STEEL FRAMING - GENERAL PROVISIONS. ALL COLD-FORMED MEMBERS FOR THIS PROJECT SHALL CONFORM TO THE AISI "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STRUCTURAL MEMBERS", 1996 EDITION.

2. ALL MEMBERS SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM A653 STRUCTURAL QUALITY SHEET STEEL. MEMBERS 54 MILS AND THICKER SHALL BE GRADE 50 KSI. MEMBERS LESS THAN
54 MILS THICK SHALL BE GRADE 33 KSI.

3. ALL MEMBERS SHALL BE HAVE A MINIMUM PROTECTIVE COATING EQUAL TO G90 GALVANIZED FINISH.

4. ALL SCREWED FASTENERS SHALL BE STANDARD THREADED, SELF DRILLING FASTENERS. USE APPROPRIATE THREADS AND HEADS FOR THEIR INTENDED USE. UNLESS NOTED OTHERWISE, ALL SCREWS NOTED ON DRAWINGS MAY BE No. 8, No. 10 OR No. 12. IN GENERAL USE NO. 12 SCREWS FOR THICK GAUGE MATERIAL.

5. WELDED CONNECTIONS: ALL WELDED CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE "STRUCTURAL WELDING CODE - SHEET STEEL" (ANSI/AWS D1.3-89) AS PUBLISHED BY THE AMERICAN WELDING SOCIETY. ALL WELDS SHALL BE DONE BY CERTIFIED WELDERS AND SHALL BE SHOP WELDS. WELDERS SHALL BE QUALIFIED FOR EACH TYPE OF WELD USED ON THE PROJECT. PAINT ALL WELDS WITH A ZINC RICH PRIMER AFTER MAKING WELD.

6. CONTRACTOR SHALL NOT ENLARGE NOR MODIFY PREPUNCHED HOLES. NO OTHER HOLES ARE ALLOWED IN JOIST UNLESS SPECIFICALLY APPROVED BY THE ENGINEER. EDGE OF PREPUNCHED HOLES SHALL BE A MINIMUM OF 8 INCHES AWAY FROM SUPPORT.

PRE-ENGINEERED METAL BUILDING

1. ALL WORK SHALL CONFORM TO THE METAL BUILDING MANUFACTURER'S ASSOCIATION CODES, 2006 IBC, ASCE 7-05 AND CRITERIA NOTED HEREIN OR IN THE OTHER CONTRACT DOCUMENTS.

2. SHOP DRAWINGS, CALCULATIONS AND OTHER SUBMITTALS SHALL BE SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF HAWAII AND SUBMITTED TO THE ARCHITECT FOR APPROVAL.

3. PROVIDE AND INSTALL ANCHOR BOLT STEEL TEMPLATES FOR COLUMN ANCHOR BOLTS PRIOR TO CONCRETE POUR.

4. WHEN COMPUTING WIND UPLIFT, THE ACTUAL DEAD LOAD SHALL BE USED WHEN IT IS LESS THAN THE SPECIFIED DEAD LOAD.

5. A MINIMUM OF 1" OF NON-SHRINK LEVELING GROUT SHALL BE USED UNDER ALL COLUMN BASE PLATES. BUILDING MANUFACTURER SHALL ENSURE THAT ANCHOR BOLT PROJECTION ABOVE THE SLAB ACCOUNTS FOR THE GROUT.

6. PEMB ON DRAWINGS INDICATE PRE-ENGINEERED METAL BUILDING MANUFACTURER.

7. RIGID FRAME FOOTINGS ARE SHOWN FOR COMPLETENESS. THE FOOTING LENGTH, WIDTH, THICKNESS, REINFORCING AND ANCHOR BOLT EMBEDMENT WILL BE DESIGNED BY THE STRUCTURAL ENGINEER OF RECORD AFTER THE PEMB SUBMITS THE FRAME REACTIONS FOR REVIEW AND APPROVAL. FRAME REACTIONS SHALL BE LISTED BY LOAD CASE, USING UNFACTORED LOADS. MAXIMUM VERTICAL AND HORIZONTAL REACTIONS SHALL BE CLEARLY NOTED. THE CONTRACTOR SHALL TREAT THE FOOTING DESIGN AS A VARIABLE QUANTITY BECAUSE THE FOOTING SIZES AND REINFORCING MAY CHANGE FROM WHAT IS SHOWN.

8. RIGID FRAMES SHALL BE DESIGNED TO LIMIT DRIFT TO H/200. THE WIND LOADS USED IN THE CALCULATION OF DRIFT SHALL BE BASED ON A 10 YEAR MEAN RECURRENCE INTERVAL WHICH IS ABOUT 65 PERCENT OF THE ASCE 7 DESIGN LOADS WHICH IS BASED ON A 50 YEAR MEAN RECURRENCE INTERVAL.

9. THE RIGID FRAME DESIGNER SHALL BE RESPONSIBLE FOR DESIGNING THE SUPER STRUCTURE (RIGID FRAME, PORTAL FRAME, PURLINS, EAVE CHANNELS, FASCIA, CROSS BRACING, SAG RODS, STRUTS TO BRACE EXISTING CMU WALL, ETC.) ABOVE THE FOUNDATION IN ADDITION TO THE SIZE AND QUANTITY OF ALL ANCHOR BOLTS.THE RIGID FRAME DESIGNER SHALL BE HIRED AND PAID FOR BY THE CONTRACTOR. THE COST OF THE WORK FOR THE PEMB DESIGN SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

DESIGN CRITERIA

1. CODES: 2006 INTERNATIONAL BUILDING CODE
2005 ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

CONCRETE
f'c = 3,000 PSI
Fy = 60,000 PSI

2. FOUNDATION DESIGN CRITERIA

ALLOWABLE BEARING PRESSURE	3,000 PSF
LEVEL BACKFILL	
ACTIVE PRESSURE	40 PCF
PASSIVE RESISTANCE PRESSURE	350 PCF
COEFFICIENT OF FRICTION	0.35

3. SEISMIC LATERAL FORCES

SITE CLASS	D
OCCUPANCY CATEGORY	II
SEISMIC DESIGN CATEGORY	D
MAPPED SPECTRAL RESPONSE	
Ss	0.806
S1	0.210
SDS	0.634
SD1	0.277

4. LATERAL WIND FORCES

WIND	
BASIC WIND SPEED	
(3 SECOND GUST)	105 MPH
WIND IMPORTANCE FACTOR I	1.00
WIND EXPOSURE	B
Kzt TOPOGRAPHIC FACTOR	1.3
Kd	0.80

SPECIAL INSPECTION

1. ITEMS REQUIRING SPECIAL INSPECTION:
REINFORCING STEEL (PERIODIC)
CONCRETE (2006 IBC TABLE 1704.4)
BOLTS IN CONCRETE (2006 IBC TABLE 1704.4)
HIGH STRENGTH BOLTING (AS REQ'D BY PEMB)

2. NOTIFY SPECIAL INSPECTOR 4 WORKING DAYS PRIOR TO NEED OF INSPECTION SERVICES.

3. THE CONTRACTOR SHALL BE FAMILIAR with THE SPECIAL INSPECTION REQUIREMENTS INCLUDING THE IDENTITY AND CONTACT INFORMATION OF THE SPECIAL INSPECTOR RESPONSIBLE FOR EACH REQUIREMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE SPECIAL INSPECTOR IN A TIMELY MANNER. IF SPECIAL INSPECTIONS ARE NOT DONE THE CERTIFICATE OF OCCUPANCY MAY NOT BE ISSUED BY THE COUNTY.

REVISION	DATE	BRIEF	MADE BY	APPROVED

ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Adrian Lee
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - NEW MAINTENANCE YARD BUILDING

GENERAL NOTES

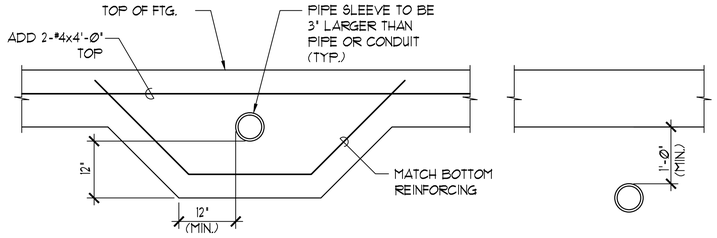
DESIGNED BY:	AL	CHECKED BY:	AL	DRAWN BY:	JM

JUNE 2018

DWG. NO.
S□001
SHEET 101 OF 146

35□ SCHEMATIC DESIGN

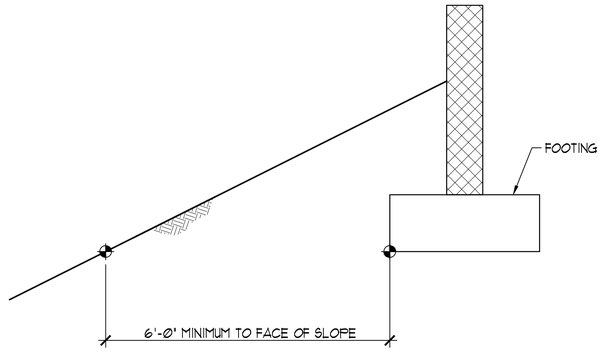
FILE	POCKET	FOLDER	NO.



COND. THRU FTG. COND. BELOW FTG.

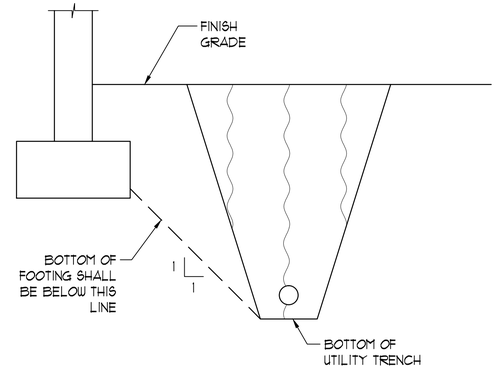
TYPICAL PIPES & CONDUITS AT FOOTING DETAIL — A / SB101

SC: 3/4" = 1'-Ø"



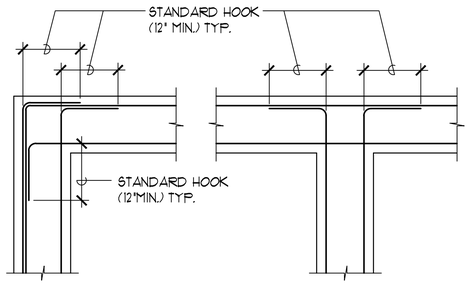
TYP FOOTING SETBACK AT SLOPE — B / SB101

NOT TO SCALE



FOOTING ADJACENT TO UTILITY TRENCH — C / SB101

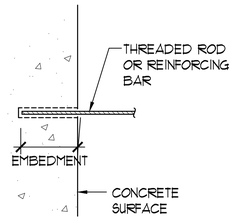
NO SCALE



COND. AT CORNER COND. AT INTERSECTION

TYP. REINFORCING PLAN FOR CONC. FOOTINGS — D / SB101

NOT TO SCALE



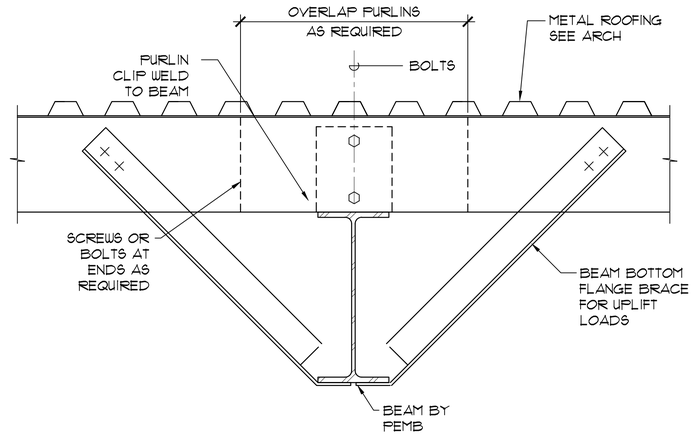
THREADED ROD (REBAR)	DRILL BIT DIAMETER	MINIMUM EMBEDMENT
1/2"ø (#4)	5/8"	6"
5/8"ø (#5)	3/4"	6"
3/4"ø (#6)	7/8"	7"
7/8"ø (#7)	1"	8"

NOTES:

A. PRE APPROVAL FOR SIMPSON STRONG TIE SET-XP EPOXY TIE ADHESIVE. ALL SUBSTITUTION REQUEST SHALL BE SUBMITTED WITH CURRENT ICBO REPORT TO ENGINEER FOR REVIEW AND APPROVAL.
B. THREADED ROD SHALL BE ASTM A307. REINFORCING BAR SHALL BE ASTM A615 GRADE 60.
C. PRE DRILL HOLE WITH DRILL BIT COMPLYING WITH ANSI B212.15-1994.
D. CLEAN HOLE WITH OIL FREE COMPRESSED AIR AND NYLON BRUSH.
E. FILL HOLE HALF FULL WITH ADHESIVE THEN INSERT ANCHOR TO BOTTOM OF HOLE AND TWIST CLOCKWISE TO ENSURE ADHESIVE COVERS ANCHOR SURFACE. ADHESIVE MUST BE LEVEL WITH CONCRETE SURFACE AFTER INSERTION OF ANCHOR.

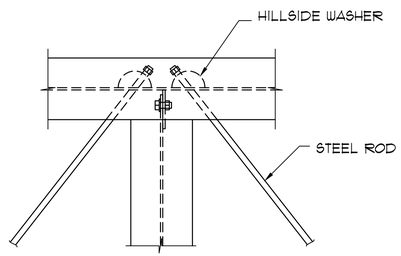
EPOXY ANCHOR DETAIL — E / SB101

NO SCALE



RIGID FRAME BOTTOM FLANGE BRACE — F / SB101

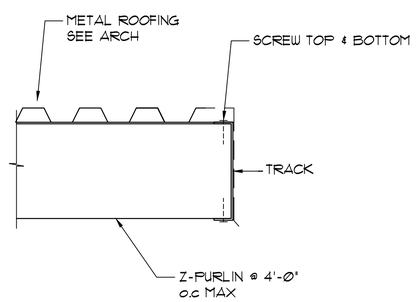
SC: 1 1/2"=1'-Ø"



INSTALL RODS AS CLOSE TO THE BEAM TOP FLANGE AS POSSIBLE.

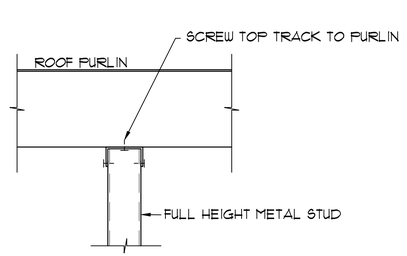
ROD BRACING DETAIL — G / SB101

SC: 1 1/2"=1'-Ø"



FASCIA CHANNEL DETAIL AT END OF PURLIN — H / SB101

SC: 1 1/2"=1'-Ø"



CONNECTION DETAIL — J / SB101

SC: 1 1/2"=1'-Ø"

0' 1' 2' 3' 4'
3/4" = 1'-0"

0' 6" 1' 2'
1 1/2" = 1'-0"

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - NEW MAINTENANCE YARD BUILDING

TYPICAL DETAILS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

JUNE 2018

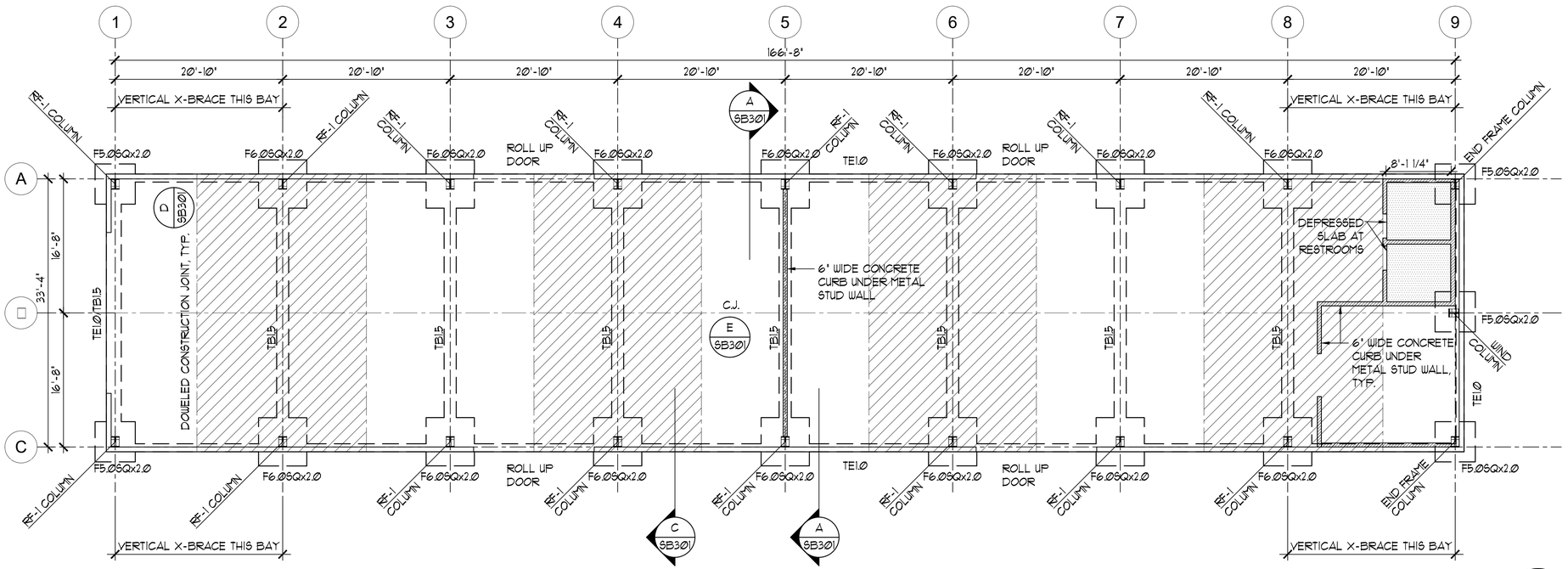
ADRIAN C.M. LEE — LICENSED PROFESSIONAL ENGINEER — No. 9164-S — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO. S□101
SHEET 102 OF 146

35□ SCHEMATIC DESIGN

FILE	POCKET	FOLDER	NO.

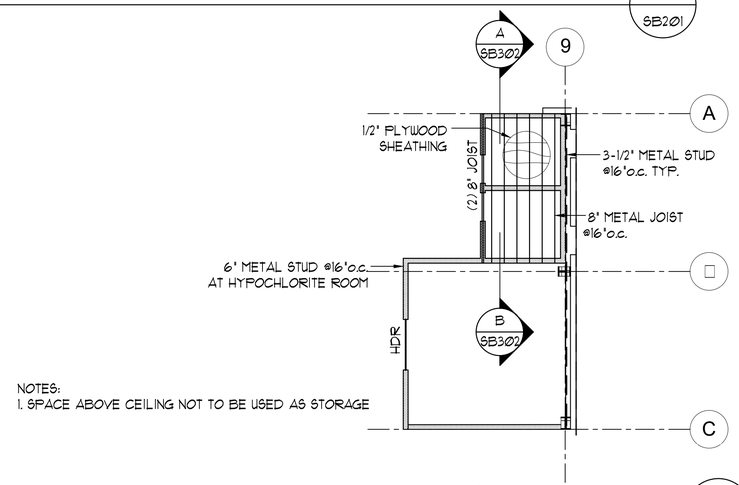


FOUNDATION PLAN

SC: 1/8"=1'-0"

NOTES:

1. INTERIOR SLAB ON GRADE IS 6" THICK CONCRETE with REBAR @ 24'o.c. EACH WAY OVER 12" OF AGGREGATE SUB BASE.
2. HATCH AREAS INDICATE CLOSURE STRIP. POUR 7 DAYS MINIMUM AFTER COMPLETION OF ADJACENT SLAB STRIP.
3. SHADED AREA INDICATES 3" DEPRESS SLAB.
4. INDICATES CONCRETE CURB UNDER WALL AT INTERIOR OF BUILDING.



NOTES:
1. SPACE ABOVE CEILING NOT TO BE USED AS STORAGE

CEILING PLAN AT BATHROOMS

SC: 1/8"=1'-0"

A SB201

B SB201

0' 4' 8' 16' 24'
1/8" = 1'-0"

REVISION	DATE	BRIEF	MADE BY	APPROVED

ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Adrian Lee
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - NEW MAINTENANCE YARD BUILDING

FOUNDATION PLAN

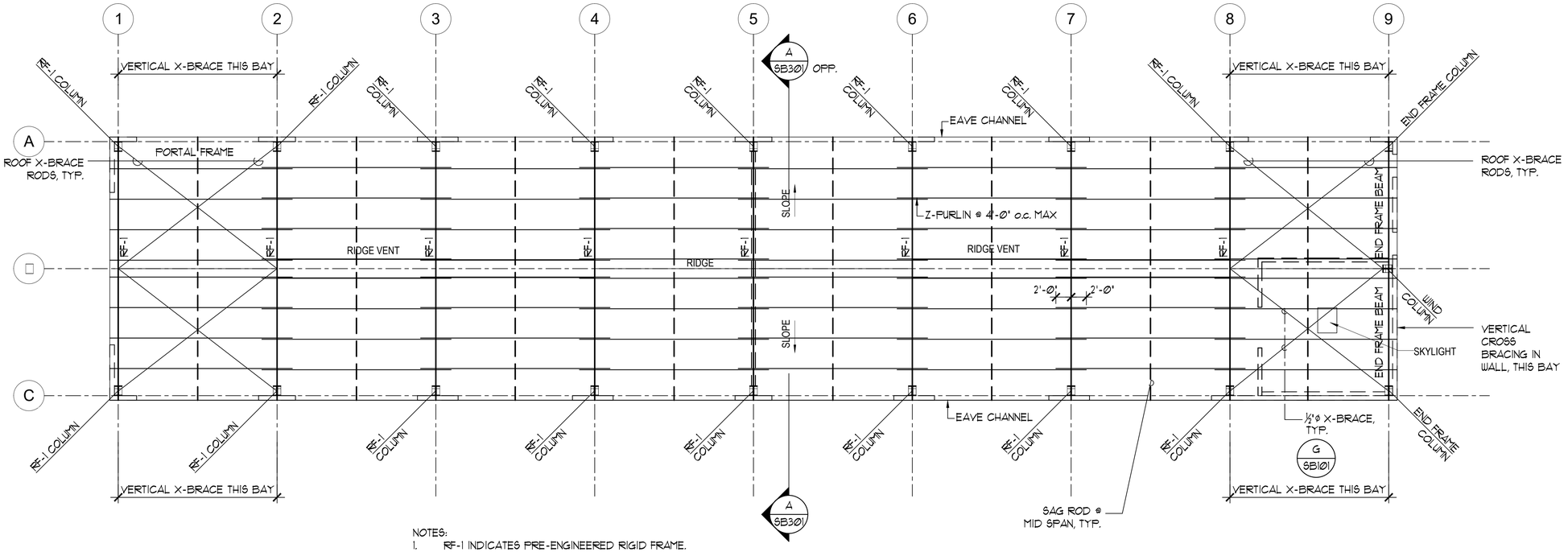
DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

JUNE 2018

DWG. NO. S□201
SHEET 103 OF 146

35□ SCHEMATIC DESIGN

FILE	POCKET	FOLDER	NO.



NOTES:
1. RF-1 INDICATES PRE-ENGINEERED RIGID FRAME.
2. SEE PRE ENGINEERED BUILDING NOTE ON SHEET S-001

ROOF FRAMING PLAN

SC: 1/8"=1'-0"

A SB202

0' 4' 8' 16' 24'
1/8" = 1'-0"

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - NEW MAINTENANCE YARD BUILDING

ROOF FRAMING PLAN

ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Adrian Lee
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

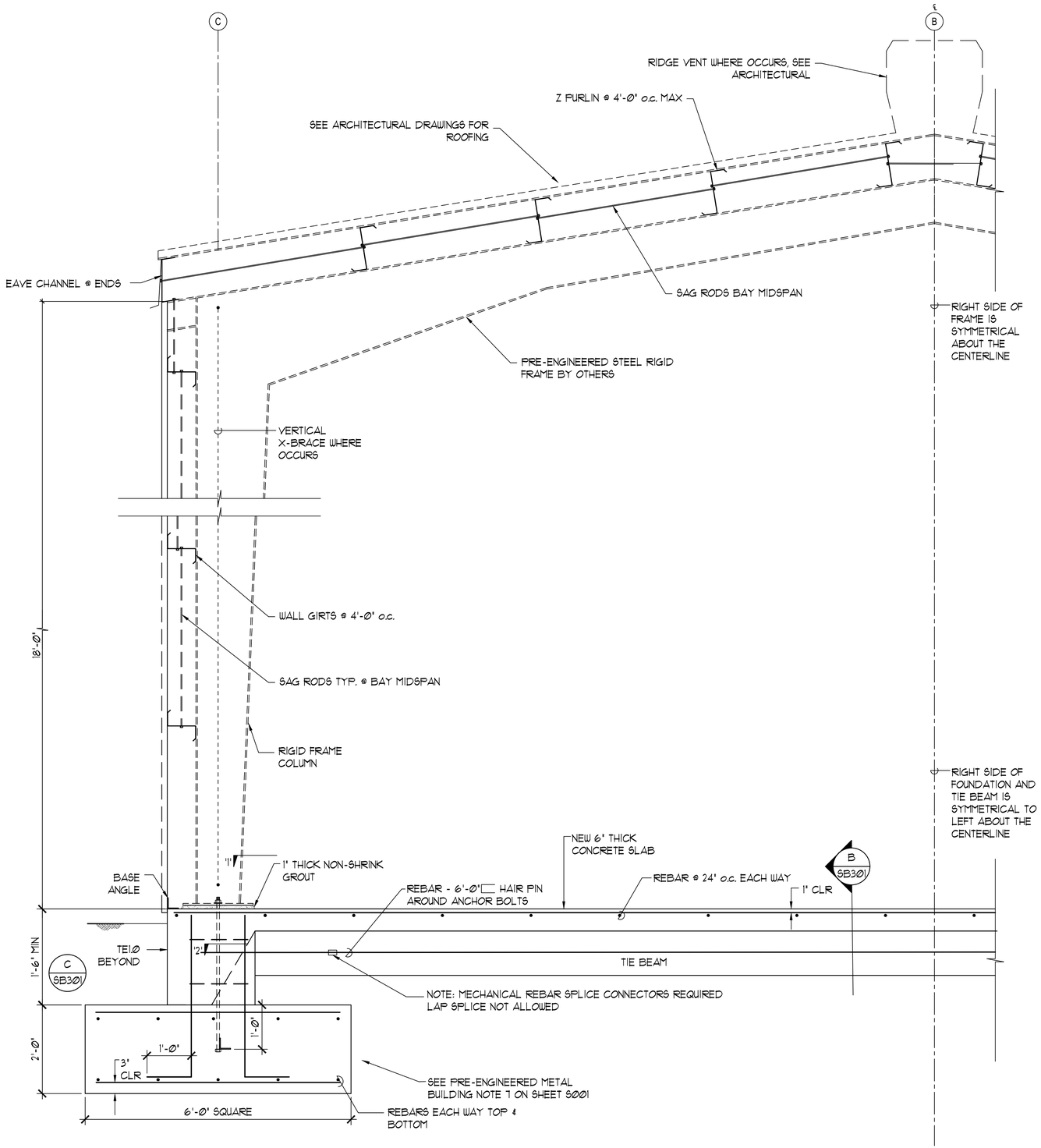
DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

JUNE 2018

DWG. NO. S□202
SHEET 104 OF 146

35□ SCHEMATIC DESIGN

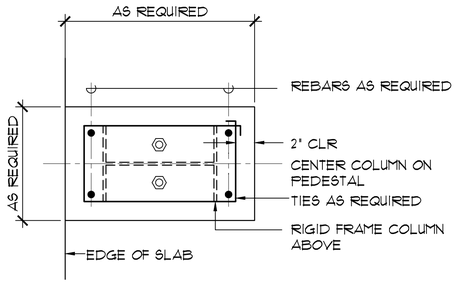
FILE	POCKET	FOLDER	NO.



SECTION AT RIGID FRAME

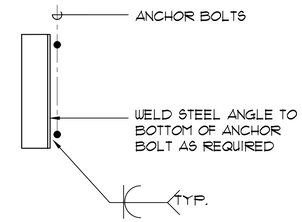
SC: 3/4"=1'-Ø"

A SB301



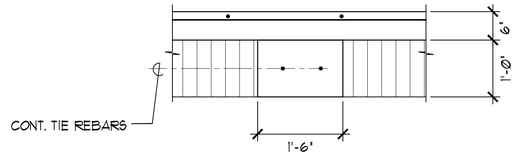
'1' PLAN PEDESTAL

SC: 1 1/2"=1'-Ø"



'2' PLAN ANCHOR BOLTS

SC: 1 1/2"=1'-Ø"

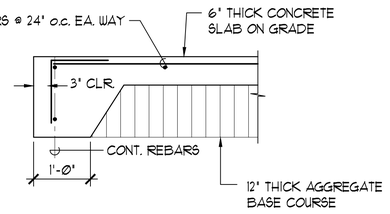


LAP SPLICE NOT ALLOWED USE MECHANICAL REBAR SPLICE CONNECTORS

TIE BEAM DETAIL

SC: 3/4"=1'-Ø"

B SB301

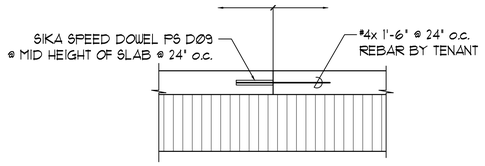


TEI.Ø SLAB EDGE

SC: 3/4"=1'-Ø"

C SB301

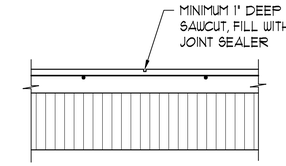
FIRST CONCRETE POUR SECOND CONCRETE POUR



DOWELED CONSTRUCTION JOINT

SC: 3/4" = 1'-Ø"

D SB301



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

SC: 3/4" = 1'-Ø"

E SB301

0' 1' 2' 3' 4'
3/4" = 1'-0"

0' 6" 1' 2'
1 1/2" = 1'-0"

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - NEW MAINTENANCE YARD BUILDING

SECTION AND DETAILS

ADRIAN C.M. LEE — LICENSED PROFESSIONAL ENGINEER No. 9164-S — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Adrian Lee
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

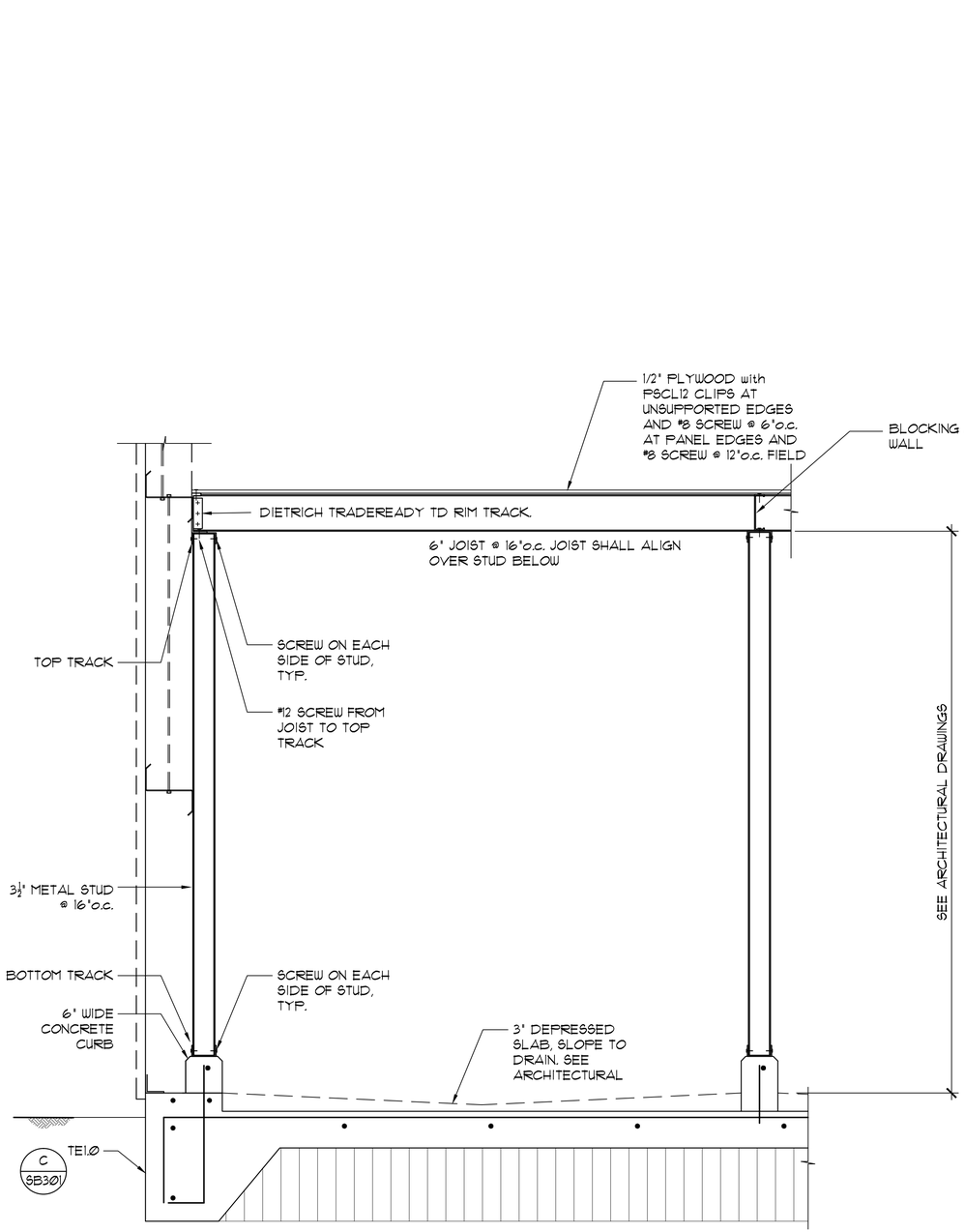
DESIGNED BY: AL CHECKED BY: AL DRAWN BY: CM

JUNE 2018

DWG. NO. S□301
SHEET 105 OF 146

35□ SCHEMATIC DESIGN

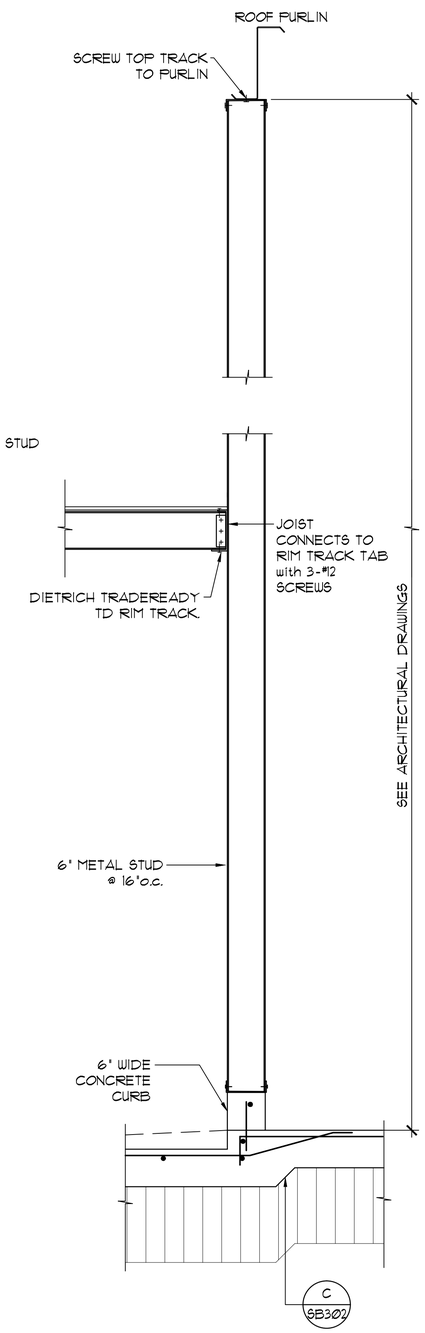
FILE	POCKET	FOLDER	NO.



SECTION THROUGH RESTROOM

SC: 1"=1'-0"

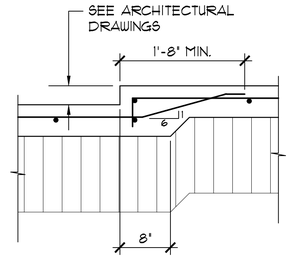
A
SB302



SECTION THROUGH HYPOCHLORITE STORAGE ROOM

SC: 1"=1'-0"

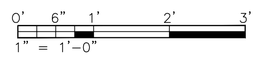
B
SB302



DEPRESSED SLAB

SC: 1" = 1'-0"

C
SB302



REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - NEW MAINTENANCE YARD BUILDING

SECTIONS

ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

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Adrian Lee
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY:	AL	CHECKED BY:	AL	DRAWN BY:	JM

JUNE 2018

DWG. NO.
S□302
SHEET 106 OF 146

35□ SCHEMATIC DESIGN

FILE	POCKET	FOLDER	NO.

VAULT STRUCTURE NOTES

1. ALL WORK SHALL CONFORM TO THE 'STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION' (LATEST).

2. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH & A MAXIMUM WATER TO CEMENT RATIO AS FOLLOWS:

	STRENGTH	W/C RATIO
VAULT	4,000 PSI	0.48

3. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60.

4. MINIMUM COVER IN INCHES FOR REBARS FOR CAST-IN-PLACE AND PRECAST CONCRETE EXCEPT AS NOTED:

CONCRETE CAST AGAINST EARTH (C.I.P.)	3"
FORMED CONCRETE EXPOSED TO EARTH OR WEATHER	2"

5. UNLESS OTHERWISE NOTED, SPLICES, LAPS, DOWEL EXTENSIONS AND EMBEDMENTS SHALL BE 48 BAR DIAMETERS MINIMUM.

6. ALL REINFORCING BARS MARKED 'CONT.' OR 'TEMP.' SHALL BE LAPPED 40 BAR DIAMETERS MINIMUM.

7. STAGGER ALL SPLICES WHERE POSSIBLE.

8. REBARS SHALL BE SUPPORTED, BENT AND PLACED AS PER 'MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES' ACI 315 (LATEST).

9. AT TIME CONCRETE IS PLACED, REINFORCING SHALL BE FREE FROM MUD, OIL, LAITANCE OR OTHER SUBSTANCES ADVERSELY AFFECTING BOND CAPACITY.

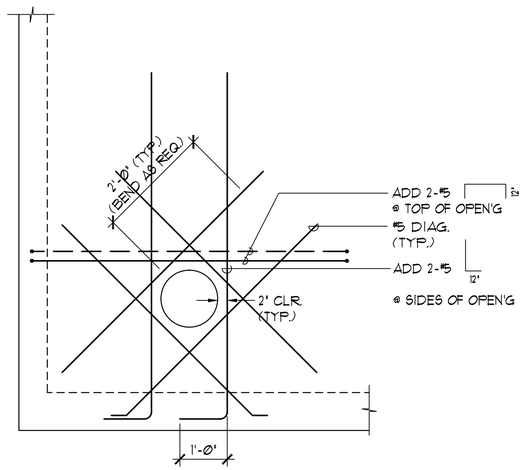
10. FOR REINFORCING NOT SHOWN ON THE PLANS, FOLLOW LATEST APPROVED VERSION OF THE "STANDARD DETAILS FOR PUBLIC WORK CONSTRUCTION" (STANDARD DETAILS).

11. REINFORCEMENT, ANCHOR BOLTS, DOWELS AND ALL OTHER EMBEDDED ITEMS SHALL BE POSITIVELY SECURED BEFORE POURING.

DESIGN CRITERIA

1. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SIXTH EDITION 2012:

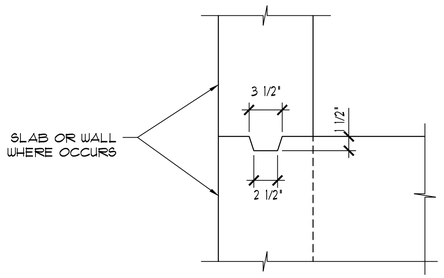
LIVE LOAD: 250 PSF (IN NON-TRAFFIC AREAS)
60 PCF ACTIVE PRESSURE (TOP RESTRAINED)
LIVE LOAD SURCHARGE PER AASHTO



ELEVATION

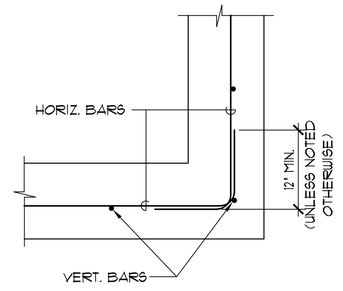
TYP. ADDED REINF. AT PIPES FOR C.I.P. VAULTS — A / SV001

N.T.S.



TYPICAL KEY DETAIL — B / SV001

N.T.S.



PLAN - TYP. CORNER REINFORCEMENT LAPPING — C / SV001

N.T.S.

FILE: Hoolehua WSI - New two Underground Vaults s.dwg
DATE REV.: 08/05/2018

SV001
SHEET 107 OF 146

ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

Adrian Lee
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS

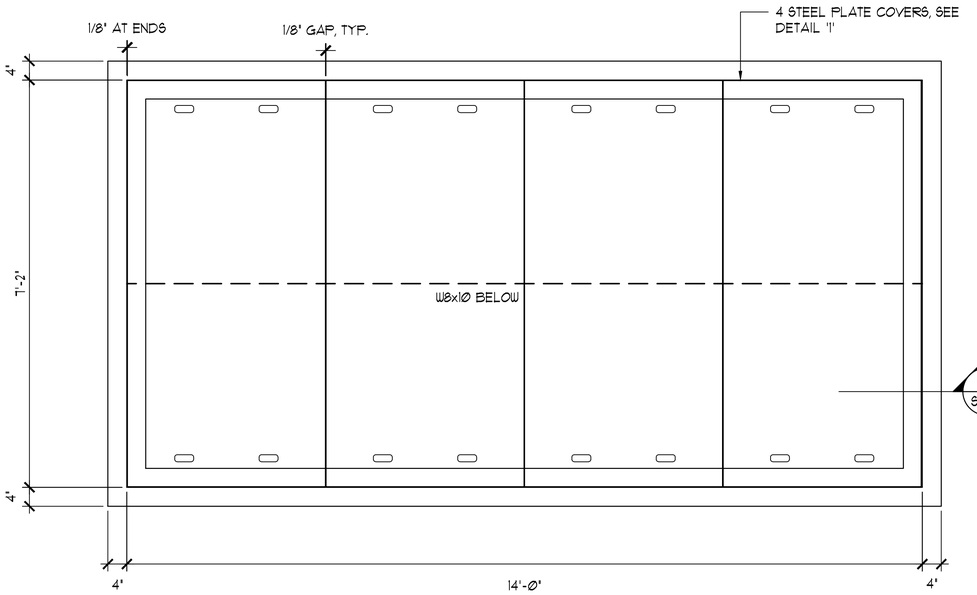
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
TWO NEW UNDERGROUND VAULTS

GENERAL NOTES & TYP. DETAILS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 Phone (808) 536-7928 email alee@tanimuraeng.com
Honolulu, Hawaii 96813 Fax: (808) 537-4022

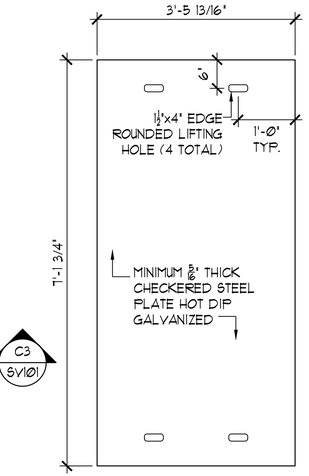
MAY 2018



PLAN - TOP COVER

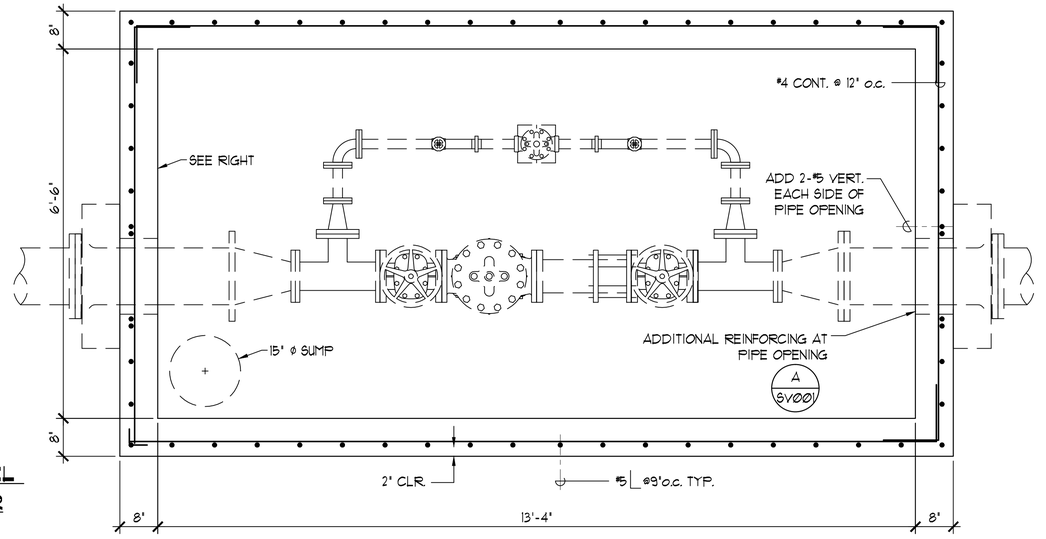
SC: 3/4"=1'-0"

A SV101



'1' PLAN - TYPICAL STEEL PLATE COVER

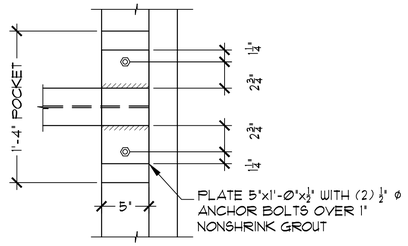
SC: 3/4"=1'-0"



PLAN

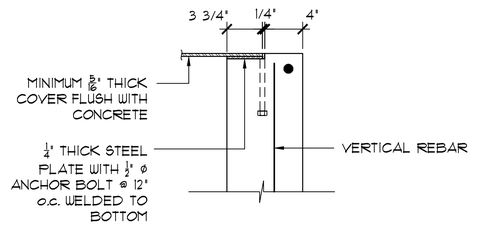
SC: 3/4"=1'-0"

B SV101



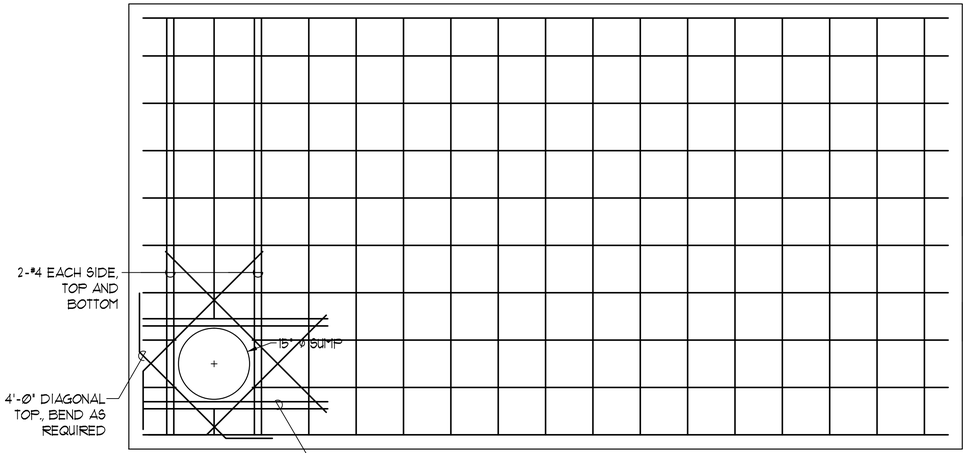
'2' PLAN - BEAM SEAT

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



'3' TOP OF WALL AWAY FROM BEAM

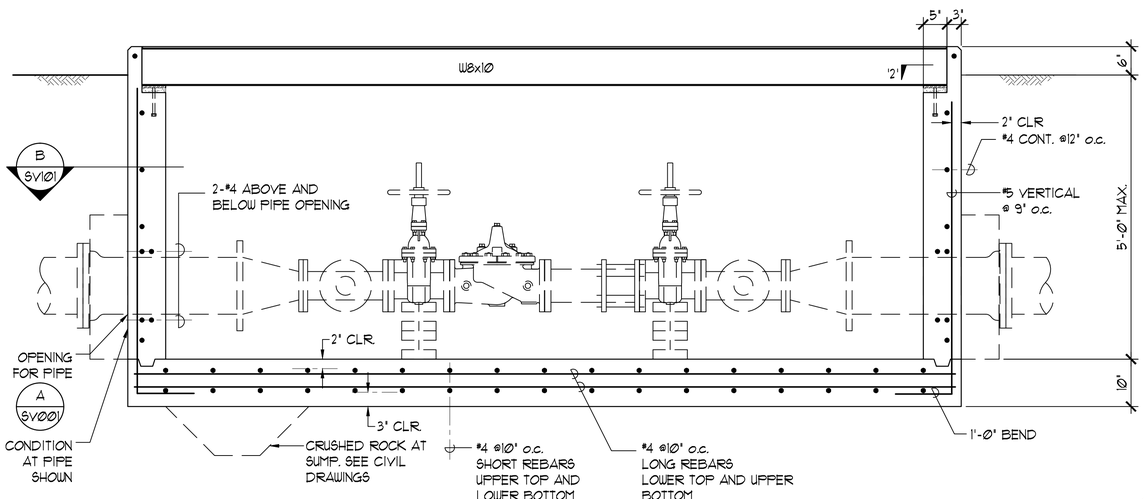
SC: 1 1/2"=1'-0"



PLAN - INVERT SLAB

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

D SV101



SECTION

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

C SV101

0' 1' 2' 3' 4'
3/4" = 1'-0"

0' 6" 1' 2'
1 1/2" = 1'-0"

ADRIAN C.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 9164-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

Adrian Lee
SIGNATURE

LICENSE EXP. DATE: APRIL 30, 2020

SV101
SHEET 108 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7 TWO NEW UNDERGROUND VAULTS

VAULT A1 AND A2 PLANS & SECTIONS

DESIGNED BY: AL CHECKED BY: AL DRAWN BY: JM

TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 300 Phone (808) 536-7020 email alee@taninuraeng.com
Honolulu, Hawaii 96813 Fax: (808) 597-9022

MAY 2018

FILE: Hoolehua WSI - New two Underground Vaults s.dwg
DATE REV.: 08/05/2018

MECHANICAL LEGEND

SYMBOLS	ABBR.	DESCRIPTION
		EXISTING TO REMAIN
		NEW MECHANICAL\PLUMBING WORK
	(E)	EXISTING
	(N)	NEW
		EXISTING TO BE REMOVED
	FOS	FUEL OIL SUPPLY
	FOR	FUEL OIL RETURN
	TYP.	TYPICAL
	POC	POINT OF CONNECTION

GENERAL NOTES:

1. THE ENTIRE INSTALLATION SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE COUNTY OF MAUI'S BUILDING CODE (IBC 2006), ENERGY CODE (IECC 2006), FIRE CODE (UFC, 2012), AND ALL AGENCIES HAVING JURISDICTION.

2. DRAWINGS INDICATE THE GENERAL ARRANGEMENT AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL FIELD CONDITIONS PERMIT. REASONABLE MODIFICATIONS TO SUIT JOB CONDITIONS SHALL NOT CONSTITUTE A BASIS FOR ADDITIONAL COMPENSATION.

3. PROMPTLY NOTIFY AND COORDINATE WITH THE CONTRACTING OFFICER OF DISCREPANCIES OR MAJOR DEVIATIONS FROM THE PLANS DUE TO UNFORESEEN OR VARYING FIELD CONDITIONS WHICH PREVENT HIM FROM FULFILLING THE TERMS OF THE CONTRACT.

4. VERIFY ALL CONDITIONS AND DIMENSIONS RELATED TO THE PROJECT BEFORE COMMENCING WITH THE REQUIRED WORK.

5. OBTAIN AND PAY FOR ALL PERMITS, FEES, CERTIFICATES, AND INSPECTIONS.

6. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT, INCLUDING CUTTING AND PATCHING AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM. ALL MATERIALS SHALL BE NEW, FREE FROM DEFECTS, AND CONFORM TO CODE.

7. PATCH ALL SURFACES EXPOSED FROM CUTTING AND/OR REMOVAL WORK. PATCHING SHALL MATCH THE FINISH OF THE ADJACENT SURFACES.

8. ALL WORK INDICATED SHALL BE NEW WORK, UNLESS OTHERWISE INDICATED "EXISTING".

9. ALL ITEMS AND MATERIALS TO BE REMOVED SHALL BE DONE IN SUCH A MANNER AS TO PREVENT DAMAGE TO ITEMS AND MATERIALS TO REMAIN. ALL SUCH DAMAGES SHALL BE SATISFACTORILY REPAIRED AT NO ADDITIONAL COST TO THE OWNER.

10. ALL WASTE MATERIALS SHALL BE PROMPTLY REMOVED AND DISPOSED.

11. IMMEDIATELY CLEANUP AND NOTIFY THE STATE OF ANY FUEL OR HAZARDOUS MATERIAL SPILLS.

FILE: Site01_MechLgndNtesSchdls.dwg
DATE REV.: 30/05/2018

IF THIS SHEET IS LESS THAN 34"x22", IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

DWG. NO.
M110
SHEET 109 OF 146

TYSON T. TOYAMA
LICENSED PROFESSIONAL ENGINEER
10226-M
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

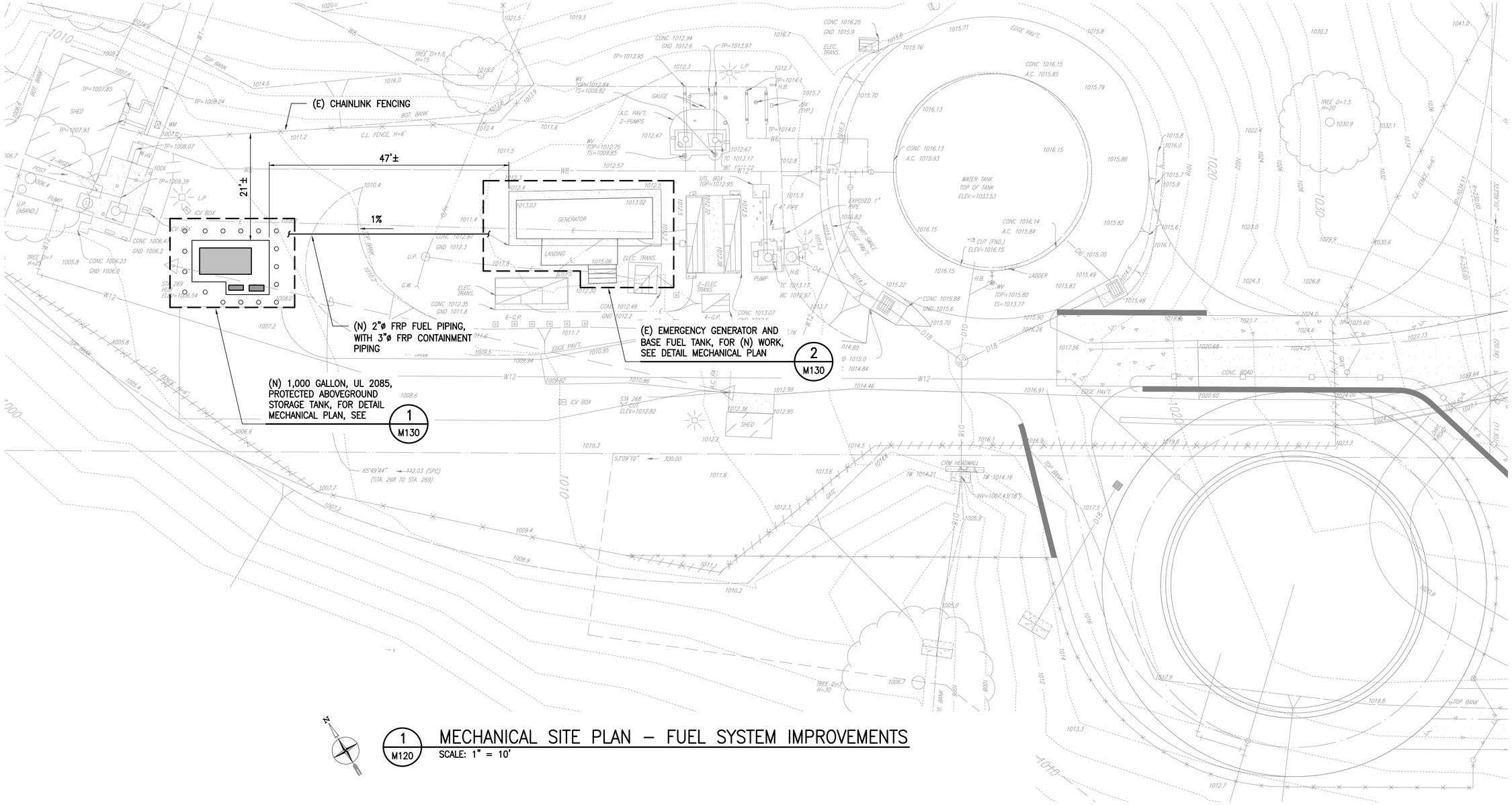
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
□O□ NO.

MECHANICAL LEGEND AND NOTES

DESIGNED BY: RN CHECKED BY: TNT DRAWN BY: RP, LS

Okahara and Associates, Inc.
200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

FILE	POCKET	FOLDER	NO.



1 M120 MECHANICAL SITE PLAN – FUEL SYSTEM IMPROVEMENTS

SCALE: 1" = 10'

GRAPHIC SCALE:

SCALE: 1" = 10'

10' 0 10' 20'

IF THIS SHEET IS LESS THAN 34"x22", IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

REVISION	DATE	BRIEF	MADE BY	APPROVED

TYSON T. TOYAMA
LICENSED PROFESSIONAL ENGINEER
10226-M
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO. M120
SHEET 10 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
□O□ NO.

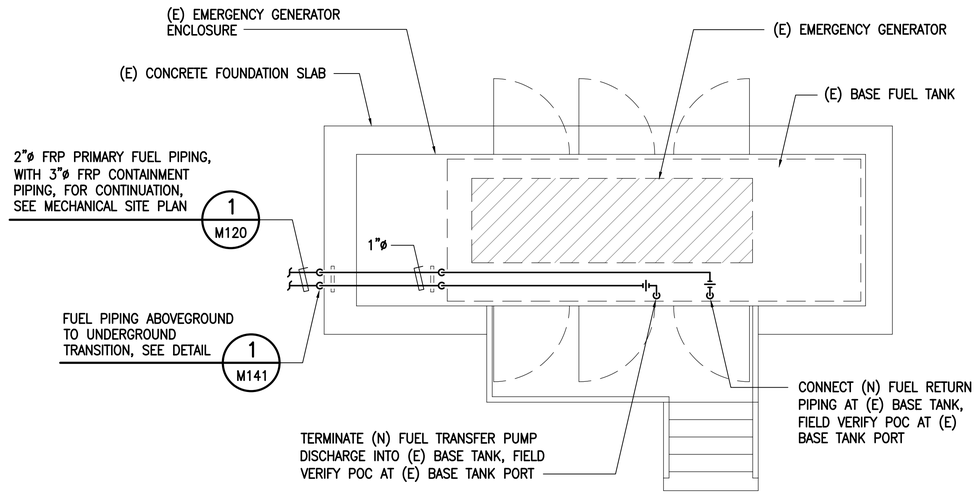
MECHANICAL SITE PLAN FUEL SYSTEM IMPROVEMENTS

DESIGNED BY: RL CHECKED BY: TTT DRAWN BY: RL

Okahara and Associates, Inc.
200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

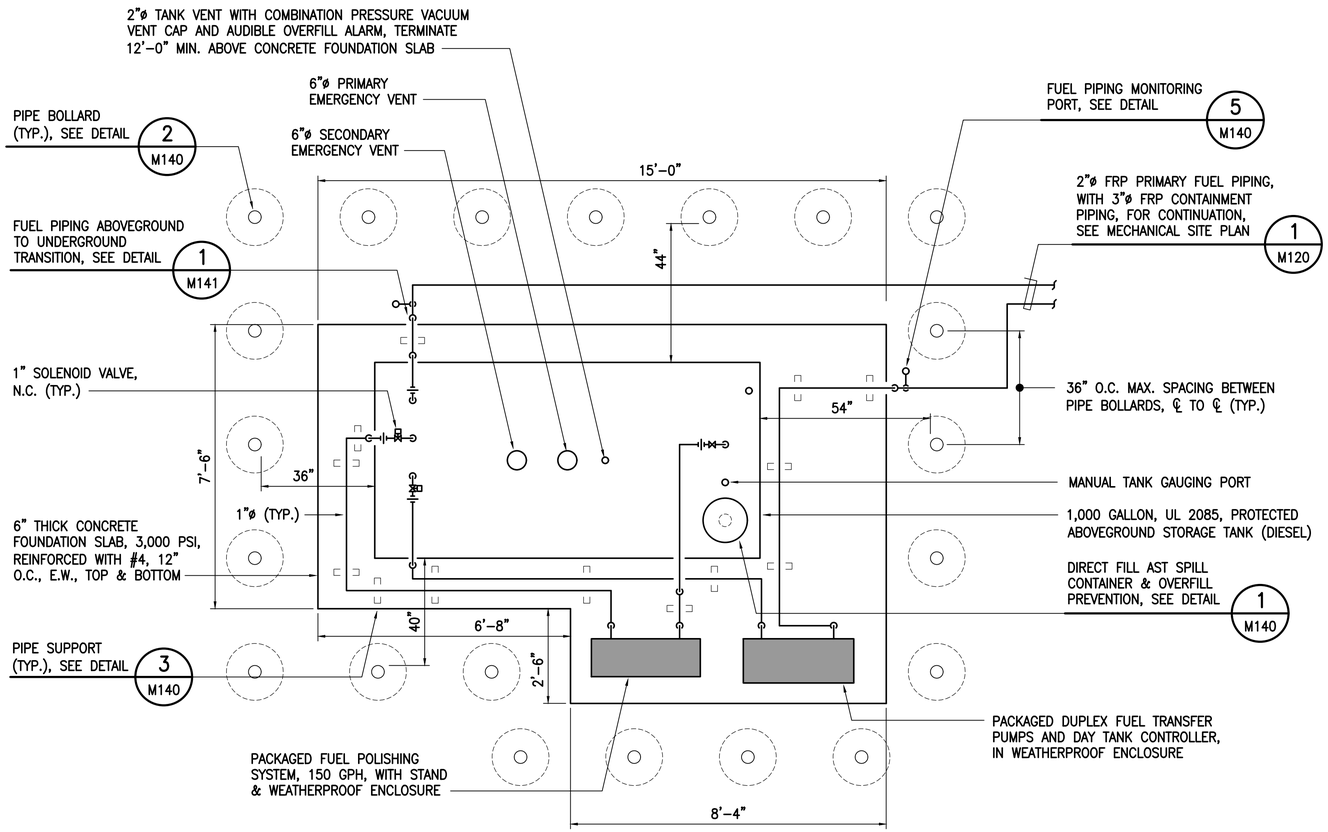
FILE	POCKET	FOLDER	NO.

FILE: Site01_MechSitePlan.dwg
DATE REV.: 01/06/2018



2 M130 EXISTING GENERATOR – NEW PIPING DETAIL PLAN

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



1 M130 TANK AND PIPING DETAIL PLAN

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

NOTE: SPACING BETWEEN PIPE BOLLARD AND TANK IS MEASURED FROM THE FACE OF BOLLARD TO TANK SURFACE

GRAPHIC SCALE:

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

2' 1' 0 2' 4'

GRAPHIC SCALE:

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

4' 2' 0 4' 8'

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DWG. NO. M130
SHEET 11 OF 146

TYSON T. TOYAMA
LICENSED PROFESSIONAL ENGINEER
10226-M
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP.: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

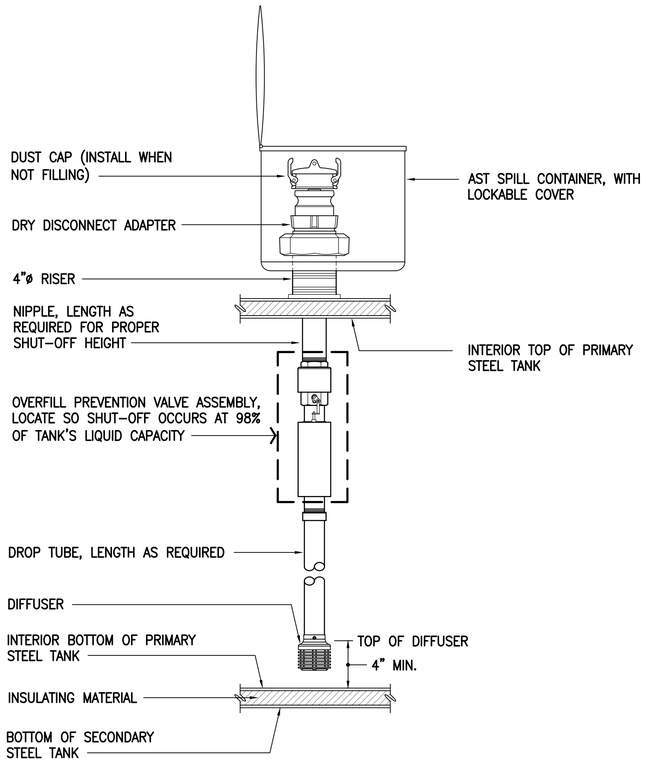
DETAIL MECHANICAL PLAN

DESIGNED BY: RN CHECKED BY: TNT DRAWN BY: RP, LS

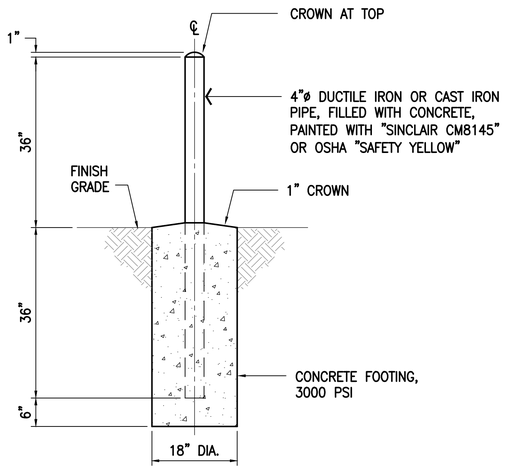
Okahara and Associates, Inc.
200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

FILE: Site01_MechDtlPinSecs.dwg
DATE REV.: 01/06/2018

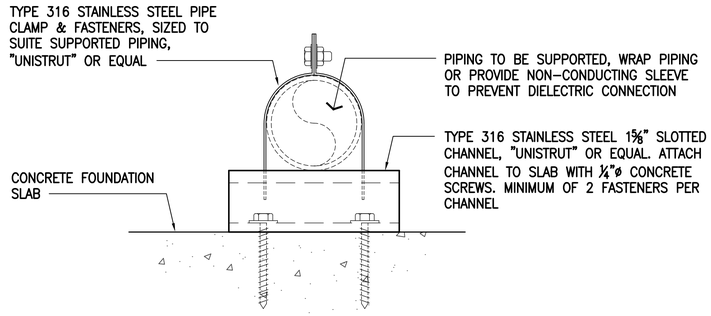
FILE	POCKET	FOLDER	NO.



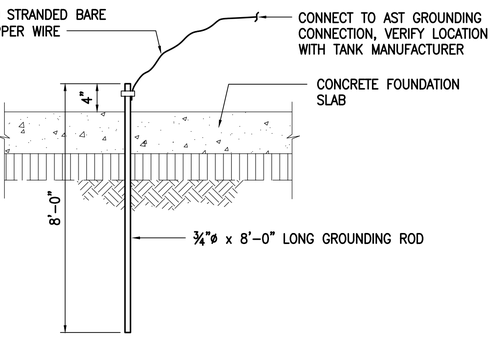
1 M140 OVERFILL PREVENTION AND SPILL CONTAINMENT DETAIL
NOT TO SCALE



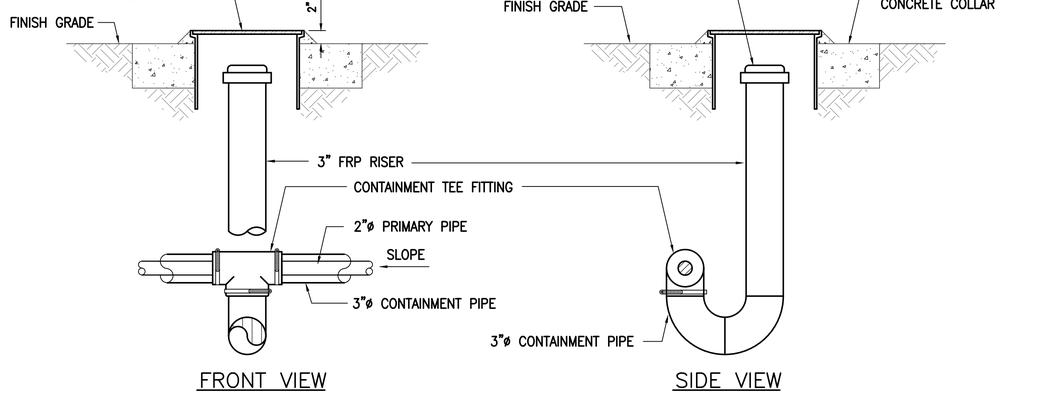
2 M140 PIPE BOLLARD DETAIL
NOT TO SCALE



3 M140 PIPING SUPPORT DETAIL
NOT TO SCALE



4 M140 GROUND WIRE INSTALLATION DETAIL
NOT TO SCALE



5 M140 FUEL PIPING MONITORING PORT DETAIL
NOT TO SCALE

IF THIS SHEET IS LESS THAN 34"x22", IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

DWG. NO. M140
SHEET 12 OF 146

TYSON T. TOYAMA
LICENSED PROFESSIONAL ENGINEER
10226-M
HAWAII, U.S.A.

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Tyson T. Toyama
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

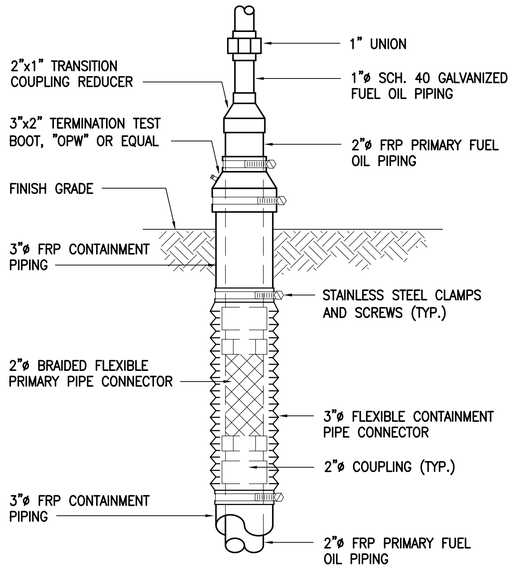
MECHANICAL DETAILS

DESIGNED BY: RN CHECKED BY: TNT DRAWN BY: SE, LS

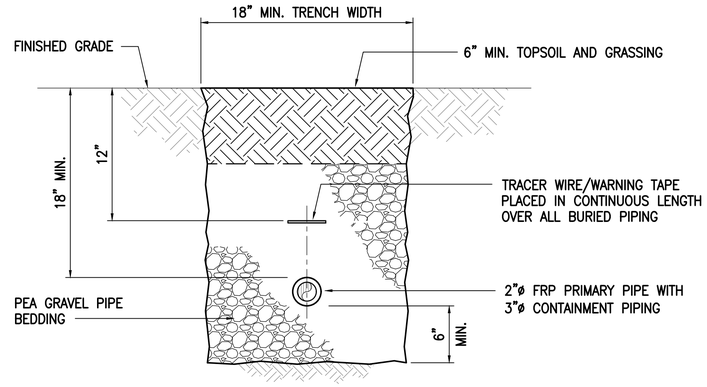
Okahara and Associates, Inc.
200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

FILE: Site01_MechDetails.dwg
DATE REV.: 01/06/2018

FILE	POCKET	FOLDER	NO.



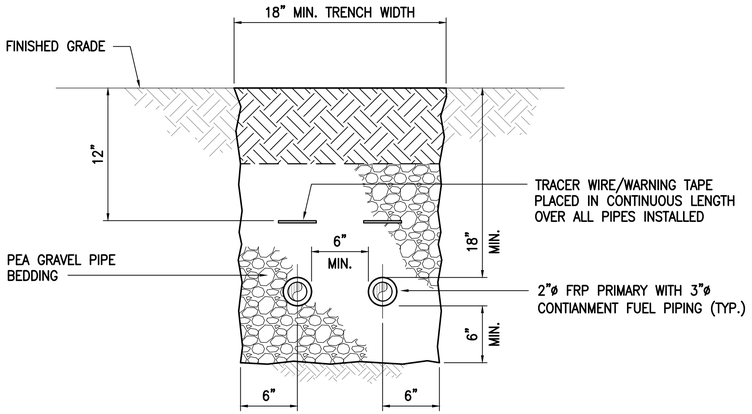
1 M141 FUEL PIPIING TRANSITION DETAIL
NOT TO SCALE



NOTES:

1. FABRICATE PIPE RUNS AT GRADE AND INSTALL IN THE COMPACTED PRE-GRADED BED. AFTER MAKING NECESSARY CONNECTIONS OF RUNS, BRANCHES, OR FITTINGS WHICH MUST BE COMPLETED IN THE TRENCH, REGRADE AND COMPACT PIPE BEDDING UNDER THESE CONNECTIONS.
2. UNLESS OTHERWISE SPECIFIED, THE FUEL PIPING SHALL BE SLOPED ⅛" PER FOOT (1%) IN THE DIRECTIONS INDICATED OIN THE DRAWINGS.

2 M141 TYPICAL SINGLE FUEL PIPING TRENCH DETAIL
NOT TO SCALE



NOTES:

1. FABRICATE PIPE RUNS AT GRADE AND INSTALL IN THE COMPACTED PRE-GRADED BED. AFTER MAKING NECESSARY CONNECTIONS OF RUNS, BRANCHES, OR FITTINGS WHICH MUST BE COMPLETED IN THE TRENCH, REGRADE AND COMPACT PIPE BEDDING UNDER THESE CONNECTIONS.
2. UNLESS OTHERWISE SPECIFIED, THE FUEL PIPING SHALL BE SLOPED ⅛" PER FOOT (1%) IN THE DIRECTIONS INDICATED OIN THE DRAWINGS.

3 M141 TYPICAL DUAL FUEL PIPE TRENCH DETAIL
NOT TO SCALE

IF THIS SHEET IS LESS THAN 34"x22", IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

DWG. NO. M141
SHEET 13 OF 146

TYSON T. TOYAMA
LICENSED PROFESSIONAL ENGINEER
10226-M
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

MECHANICAL DETAILS

DESIGNED BY: RN | CHECKED BY: TNT | DRAWN BY: RP, LS

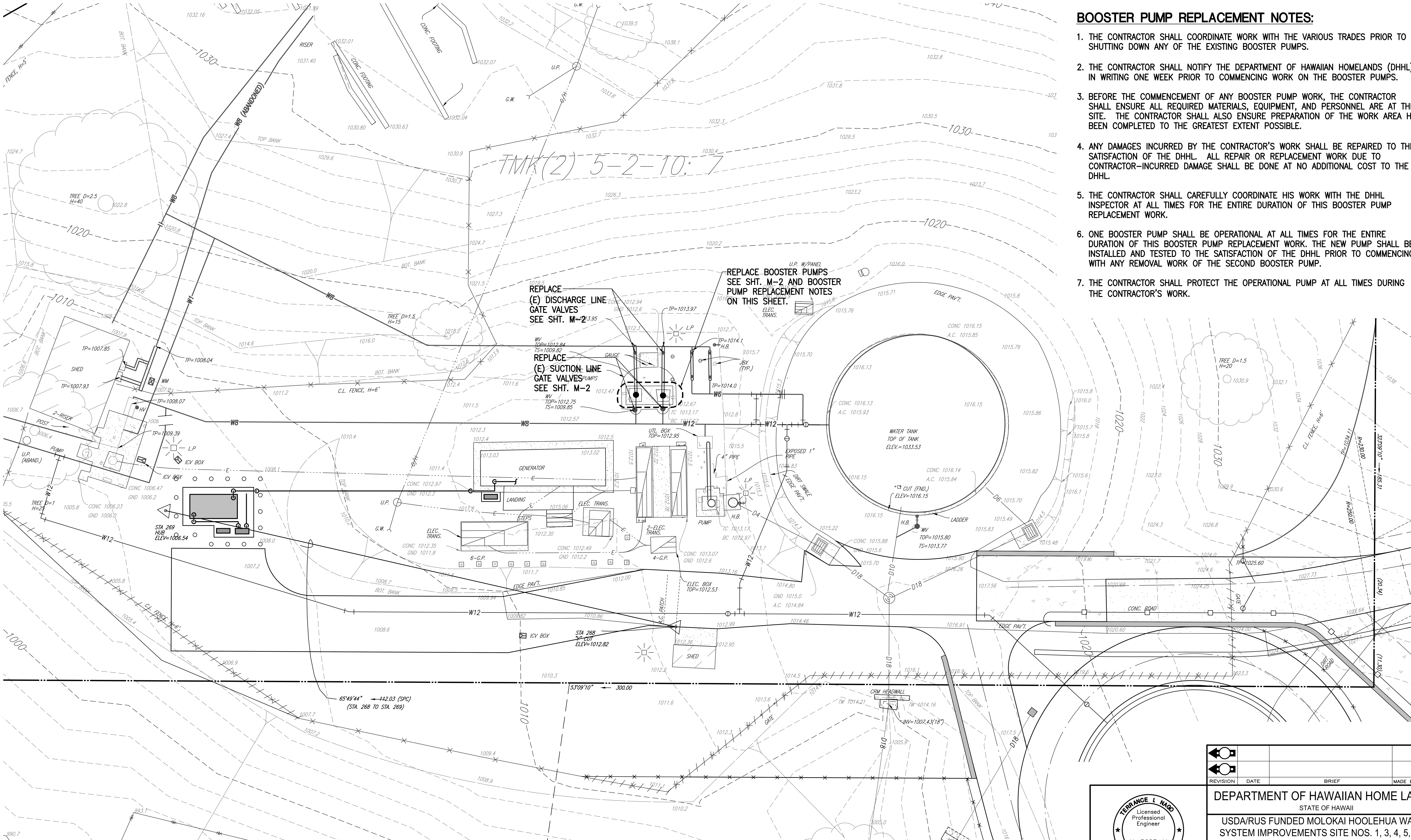
Okahara and Associates, Inc.
200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

FILE	POCKET	FOLDER	NO.

FILE: Site01_MechDetails.dwg
DATE REV.: 01/06/2018

BOOSTER PUMP REPLACEMENT NOTES:

1. THE CONTRACTOR SHALL COORDINATE WORK WITH THE VARIOUS TRADES PRIOR TO SHUTTING DOWN ANY OF THE EXISTING BOOSTER PUMPS.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF HAWAIIAN HOMELANDS (DHHL) IN WRITING ONE WEEK PRIOR TO COMMENCING WORK ON THE BOOSTER PUMPS.
3. BEFORE THE COMMENCEMENT OF ANY BOOSTER PUMP WORK, THE CONTRACTOR SHALL ENSURE ALL REQUIRED MATERIALS, EQUIPMENT, AND PERSONNEL ARE AT THE SITE. THE CONTRACTOR SHALL ALSO ENSURE PREPARATION OF THE WORK AREA HAS BEEN COMPLETED TO THE GREATEST EXTENT POSSIBLE.
4. ANY DAMAGES INCURRED BY THE CONTRACTOR'S WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE DHHL. ALL REPAIR OR REPLACEMENT WORK DUE TO CONTRACTOR-INCURRED DAMAGE SHALL BE DONE AT NO ADDITIONAL COST TO THE DHHL.
5. THE CONTRACTOR SHALL CAREFULLY COORDINATE HIS WORK WITH THE DHHL INSPECTOR AT ALL TIMES FOR THE ENTIRE DURATION OF THIS BOOSTER PUMP REPLACEMENT WORK.
6. ONE BOOSTER PUMP SHALL BE OPERATIONAL AT ALL TIMES FOR THE ENTIRE DURATION OF THIS BOOSTER PUMP REPLACEMENT WORK. THE NEW PUMP SHALL BE INSTALLED AND TESTED TO THE SATISFACTION OF THE DHHL PRIOR TO COMMENCING WITH ANY REMOVAL WORK OF THE SECOND BOOSTER PUMP.
7. THE CONTRACTOR SHALL PROTECT THE OPERATIONAL PUMP AT ALL TIMES DURING THE CONTRACTOR'S WORK.



GRAPHIC SCALE:

SCALE: 1" = 10'

10' 5' 0 10' 20'

MECHANICAL SITE PLAN - BOOSTER PUMP REPLACEMENT

SCALE: 1"=10'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7

SITE 1 - KAULUWAI WELL SITE

JOB NO.

MECHANICAL SITE PLAN FOR BOOSTER PUMP REPLACEMENT

DESIGNED BY: TN CHECKED BY: TN DRAWN BY: SP, LS

TERRANCE L NAGO Licensed Professional Engineer No.5683-M HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE

LICENSE EXP. DATE: APRIL 30, 2020

Okahara and Associates, Inc.
200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

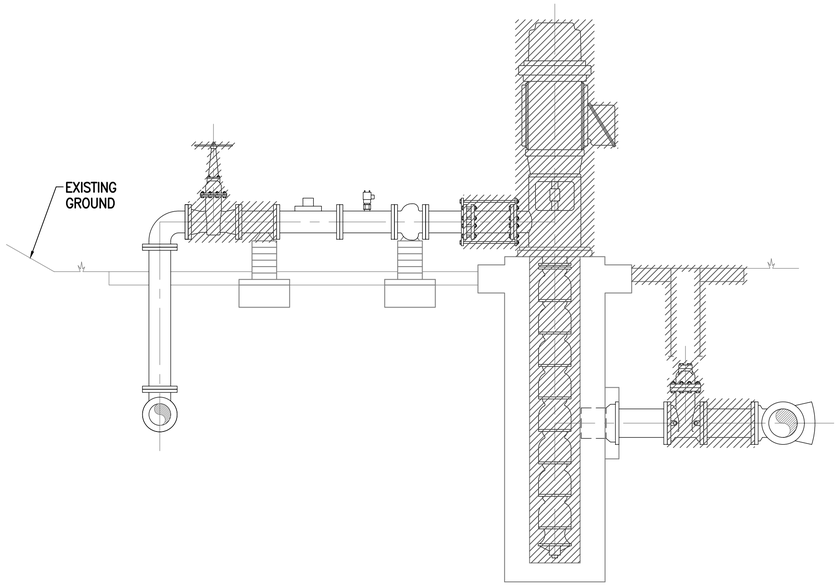
SITE 1 - KAULUWAI WELL SITE

DWG. NO. M-1

SHEET 114 OF 146

FILE	POCKET	FOLDER	NO.

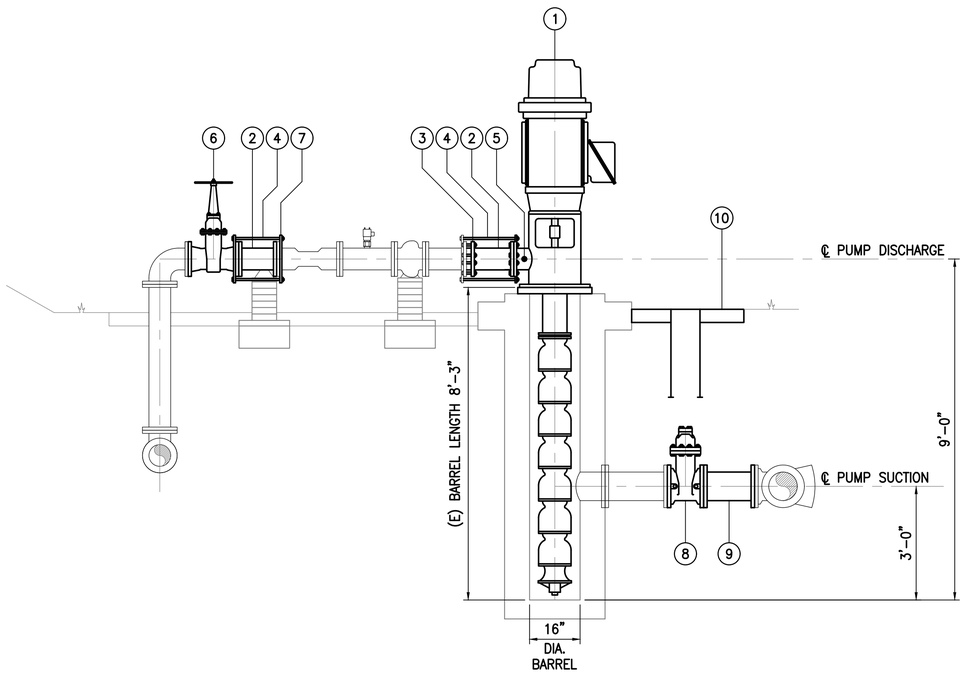
FILE: Site-C-Site-Plan.dwg
DATE REV.: 24/05/2018



PUMP & PIPING DEMOLITION - ELEVATION
SCALE: ½"=1'-0"

DEMOLITION NOTES:

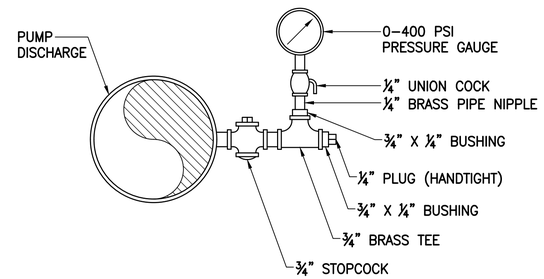
1. THIS DRAWING SHOWS ONLY THE EXTENT OF MECHANICAL DEMOLITION WORK REQUIRED FOR THE EXISTING BOOSTER PUMP. DEMOLITION WORK FOR STRUCTURAL, ADDITIONAL MECHANICAL, ELECTRICAL, AND OTHERS ARE REQUIRED, AS WELL. THE CONTRACTOR SHALL REFER TO THOSE DRAWINGS FOR THE EXTENT OF DEMOLITION WORK REQUIRED FOR THIS PROJECT. THE CONTRACTOR SHALL ALSO BE AWARE OF THE WORK SEQUENCE, WATER SHUT OFF TIME REQUIREMENTS, AND WORK SCHEDULE, AND PERFORM HIS DEMOLITION WORK ACCORDINGLY.
2. THE CONTRACTOR SHALL COORDINATE THE DEMOLITION WORK WITH HIS VARIOUS TRADES AND WITH THE DHHL INSPECTOR.
3. TWO EXISTING BOOSTER PUMPS ARE TO BE DEMOLISHED. HOWEVER, ONE PUMP SHALL BE OPERATIONAL AT ALL TIMES, WHETHER IT IS AN EXISTING PUMP OR A NEW PUMP.
4. ISOLATE THE PUMP TO BE REMOVED BY CLOSING THE NEAREST EXISTING GATE VALVES ON THE SUCTION LINE AND DISCHARGE LINE.
5. THE CONTRACTOR SHALL SHUT OFF THE POWER SUPPLY TO THE PUMP AND DISCONNECT THE NECESSARY WIRES AT THE PUMP MOTOR.
6. THE PUMP AND ANY PIPE COMPONENT SHOWN TO BE REMOVED SHALL BE REMOVED FROM THE SITE.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER HANDLING AND DISPOSAL OF WASTE GENERATED BY THIS DEMOLITION WORK. THE DISPOSAL SITE SHALL BE AT AN APPROVED LOCATION MEETING ALL FEDERAL, STATE, AND CITY LAWS AND REGULATIONS FOR THE TYPES AND QUANTITIES OF WASTE DEPOSITED.



PUMP & PIPING REPLACEMENT - ELEVATION
SCALE: ½"=1'-0"

MATERIAL LIST - BOOSTER PUMP REPLACEMENT

ITEM	DESCRIPTION
1	VERTICAL TURBINE BOOSTER PUMP, GOULDS, MODEL VIC-FLTM, SIZE: 12WALC, 7-STAGES, 540 GPM @ 473 FT. TDH; 100 HP, WP1, PREMIUM-EFFICIENCY MOTOR, 1800 RPM, 460V, 3 PHASE, 60 HZ, 1.15 SF.
2	6" PIPE ADAPTER, FE x PE, CLASS 250, CUT TO FIT.
3	6" EBAA SERIES 1006 "E-Z FLANGE" DUCTILE IRON FLANGE ADAPTER.
4	HARNESS RESTRAINT: FOUR 3/4" TYPE 316 THREADED ROD WITH NECESSARY HARNESS LUGS.
5	PRESSURE GAUGE ASSEMBLY. SEE DETAIL ON THIS SHEET.
6	6" RESILIENT WEDGE GATE VALVE, F.E., CLASS 250 FLANGES, NRS, WITH HANDWHEEL.
7	FORD 6" SERIES 420 EXTRA HEAVY ADAPTER FLANGE FOR D.I. PIPE, WITH SET SCREWS AND STAINLESS STEEL NUTS AND BOLTS.
8	8" RESILIENT WEDGE GATE VALVE, M.J.
9	8" D.I. PIPE NIPPLE, CUT TO FIT.
10	VALVE BOX FOR GATE VALVE, SEE DWS STANDARD DETAIL V12.



PRESSURE GAUGE DETAIL
NOT TO SCALE

NOTES:

1. THE CONTRACTOR SHALL VERIFY DIMENSIONS OF EXISTING SUCTION BARREL.
2. MATCH CENTERLINE OF EXISTING PUMP DISCHARGE PIPING. DO NOT FORCE CONNECTIONS TO CLOSE AT EXISTING PIPE FLANGE AND PUMP DISCHARGE FLANGE.
3. BOLT PATTERN OF PUMP DISCHARGE HEAD SHALL MATCH BOLT PATTERN OF EXISTING BARREL FLANGE. OTHERWISE AN ADAPTER PLATE SHALL BE PROVIDED.

GRAPHIC SCALE:

SCALE: 1/2" = 1'-0"
2' 1' 6" 0 1 2 3 4

REVISION	DATE	BRIEF	MADE BY	APPROVED

TERRANCE L. MIZO
Licensed Professional Engineer
No.5683-M
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE
JOB NO.

BOOSTER PUMP DEMOLITION AND REPLACEMENT ELEVATIONS

DESIGNED BY: TN CHECKED BY: TN DRAWN BY: SP, LS

Okahara and Associates, Inc.
200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

SITE 1 - KAULUWAI WELL SITE

DWG. NO. M-2
SHEET 115 OF 146

FILE	POCKET	FOLDER	NO.

FILE: Sht-C-Mech-Piping-Plan.dwg
DATE REV.: 25/05/2018

MECHANICAL LEGEND

SYMBOLS	ABBR.	DESCRIPTION
		EXISTING TO REMAIN
		NEW MECHANICAL\PLUMBING WORK
	(E)	EXISTING
	(N)	NEW
— — —	S OR W	SOIL OR WASTE, BELOW FLOOR
———	S OR W	SOIL OR WASTE, ABOVE FLOOR
- - - - - - - -	V	SANITARY VENT
——-——-	CW	COLD WATER
	VTR	VENT THRU ROOF
—⏀ OR —|	CO	CLEANOUT, WCO–WALL, FCO–FLOOR, COTG–GRADE
—|—	POC	POINT OF CONNECTION
22x12		DUCT: 1ST FIGURE – SIDE SHOWN, 2ND FIGURE – SIDE NOT SHOWN
		DUCT SECTION – SUPPLY OR OUTDOOR AIR
		DUCT SECTION – RETURN OR EXHAUST AIR
	ER	EXHAUST REGISTER
		SUPPLY – DIRECTION OF FLOW
		EXHAUST – DIRECTION OF FLOW
	(FE)	FIRE EXTINGUISHER AND CABINET
	CFM	CUBIC FEET PER MINUTE
	TYP.	TYPICAL

COUNTY OF MAUI
MAUI COUNTY CODE, CHAPTER 16.16A ENERGY CODE

I certify that this project's design substantially conforms to the Energy Code.

S□□□□r□: Tyson T Toyama D□□: 05–29–18
N□□ □: TYSON T. TOYAMA
T□□: PRO□ECT ENGINEER
L□□□□□ N□: 10226-M

GENERAL NOTES:

1. THE ENTIRE INSTALLATION SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE COUNTY OF MAUI'S BUILDING CODE (IBC 2006), PLUMBING CODE (UPC 2006), ENERGY CODE (IECC 2006), FIRE CODE (NFPA 1, 2012), NATIONAL ELECTRICAL CODE (2008), AND ALL AGENCIES HAVING JURISDICTION.
2. DRAWINGS INDICATE THE GENERAL ARRANGEMENT AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL FIELD CONDITIONS PERMIT. REASONABLE MODIFICATIONS TO SUIT JOB CONDITIONS SHALL NOT CONSTITUTE A BASIS FOR ADDITIONAL COMPENSATION.
3. PROMPTLY NOTIFY AND COORDINATE WITH THE CONTRACTING OFFICER ANY DISCREPANCIES OR MAJOR DEVIATIONS FROM THE PLANS DUE TO UNFORESEEN OR VARYING FIELD CONDITIONS WHICH PREVENT THE TERMS OF THE CONTRACT FROM BEING FULFILLED. COORDINATE THE WORK AMONG THE VARIOUS TRADES AS NECESSARY TO AVOID CONFLICTS AND TO ENSURE THE INSTALLATION OF WORK WITHIN THE AVAILABLE SPACE.
4. OBTAIN AND PAY FOR ALL APPLICABLE PERMITS, FEES, CERTIFICATES, AND INSPECTIONS.
5. VERIFY ALL CONDITIONS AND DIMENSIONS RELATING TO THE PROJECT BEFORE ORDERING MATERIALS, OR COMMENCING WITH THE REQUIRED WORK.
6. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT, INCLUDING CUTTING AND PATCHING, AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM. ALL MATERIALS SHALL BE NEW, FREE FROM DEFECTS, AND CONFORM TO CODE.
7. PATCH ALL SURFACES EXPOSED FROM CUTTING AND/OR REMOVAL WORK. PATCHING SHALL MATCH THE FINISH AND QUALITY OF ADJACENT SURFACES TO THE SATISFACTION OF THE ENGINEER.
8. ALL WORK INDICATED SHALL BE NEW WORK UNLESS OTHERWISE INDICATED "EXISTING".
9. ALL WASTE MATERIALS SHALL BE PROMPTLY REMOVED AND DISPOSED OF AT AN OFF–SITE LOCATION.
10. PROVIDE TEMPORARY ACCESSIBLE ROUTES AROUND CONSTRUCTION IN ACCORDANCE WITH "ADAAG 402".

PLUMBING FIXTURE SCHEDULE

SYMBOL	FIXTURE	TYPE	PIPE SIZE W	PIPE SIZE V	PIPE SIZE CW	PIPE SIZE HW	GAL. PER FLUSH	GPM	REMARKS
WC 1	WATER CLOSET, ACCESSIBLE	FLOOR MOUNTED, FLUSH TANK, ELONGATED BOWL, WHITE	4"	2"	½"	–	1.6	–	SEE ARCH. DWGS. FOR MOUNTING HEIGHT
L 1	LAVATORY, ACCESSIBLE	WALL HUNG, VITREOUS CHINA, WHITE, CONCEALED FIXTURE SUPPORT	2"	1½"	½"	–	–	2.5	SEE ARCH. DWGS. FOR MOUNTING HEIGHT
MS 1	MOP SINK	FLOOR MOUNTED, CORNER SERVICE SINK, ENAMELED CAST IRON	3"	2"	¾"	–	–	2.5	PROVIDE FAUCET WITH INTEGRAL VACUUM BREAKER
EEW 1	EMERGENCY EYE WASH	WALL MOUNTED, STAINLESS STEEL, BARRIER FREE	2	1½"	½"	–	–	–	
FD 1	FLOOR DRAIN	CAST IRON, BRONZE FACE PLATE	2"	2"	–	–	–	–	PROVIDE WITH TRAP PRIMER CONNECTION
HB 1	HOSE BIBB, INTERIOR	CHROME PLATED BRASS, INTEGRAL VACUUM BREAKER	–	–	½'	–	–	–	PROVIDE WITH CONCEALED STOP
HB 2	HOSE BIBB, EXTERIOR	ROUGH BRASS, INTEGRAL VACUUM BREAKER	–	–	¾"	–	–	–	PROVIDE WITH STOP COCK

CEILING FAN SCHEDULE

SYMBOL	DESCRIPTION	ELECTRICAL VOLTS	ELECTRICAL PHASE	ELECTRICAL AMPS (HIGH)	OPER. WEIGHT (LBS)	REMARKS
CF 1	56" BLADE SWEEP, CEILING MOUNTED CIRCULATION FAN, 3 BLADES, LOOSE WIRE, VARIABLE SPEED, WHITE, HIGH PERFORMANCE, STEEL FAN BLADES	120	1	0.90	18	DESIGN BASED ON "CANARM, MODEL CP–56, PROVIDE WITH SAFETY CABLE & FAN MANUFACTURER'S FAN SPEED CONTROLS

EXHAUST FAN SCHEDULE

SYMBOL	AREA SERVED	AIR FLOW (CFM)	STATIC PRESSURE (IN.)	SPEED (RPM)	DRIVE	ELECTRICAL VOLTS	ELECTRICAL PHASE	ELECTRICAL WATTS	ELECTRICAL HP	OPER. WEIGHT (LBS)	REMARKS
EF 1	UNISEX TOILET (RM. 104)	250	0.375	1,050	DIRECT	115	1	96	–	42	DESIGN BASED ON "GREENHECK, MODEL CSP–A290". PROVIDE ROOF CAP, "GREENHECK MODEL RJ–6x9", WITH BUILT–IN BIRDSCREEN & DAMPER. INTERLOCK FAN OPERATION WITH RESTROOM LIGHT SWITCH.
EF 2	UNISEX TOILET (RM. 105)	250	0.375	1,050	DIRECT	115	1	96	–	42	DESIGN BASED ON "GREENHECK, MODEL CSP–A290". PROVIDE ROOF CAP, "GREENHECK MODEL RJ–6x9", WITH BUILT–IN BIRDSCREEN & DAMPER. INTERLOCK FAN OPERATION WITH RESTROOM LIGHT SWITCH.
EF 3	HYPOCHLORITE STORAGE (RM. 103)	960	0.500	1,725	DIRECT	115	1	–	0.25	45	DESIGN BASED ON "GREENHECK, MODEL G–099–A".

PLUMBING NOTES:

1. VERIFY LOCATIONS, SIZES, AND INVERT ELEVATIONS OF ALL EXISTING WATER AND SEWER LINES PRIOR TO COMMENCEMENT OF ANY NEW PLUMBING WORK UNDER THIS CONTRACT.
2. COPPER LINES SHALL BE PROTECTED AGAINST ELECTROLYTIC ACTION WITH DIELECTRIC UNIONS AT CONNECTIONS TO DISSIMILAR METAL, OR WRAPPED WITH TWO LAYERS OF PLASTIC TAPE WHERE LINES CONTACT FERROUS METALS.
3. PIPING SHALL BE INSPECTED INSIDE AND OUT FOR INTERIOR OBSTRUCTIONS AND BURRS BEFORE INSTALLATION. NEW DRAIN PIPING SHALL BE SLOPED AS REQUIRED BY THE PLUMBING CODE.
4. VERIFY THE PRESENCE AND LOCATION OF ALL EXISTING UTILITIES IN THE PROJECT AREA PRIOR TO THE CUTTING OF SLABS OR EXCAVATION OF TRENCHES. EXISTING ELECTRICAL, TELEPHONE, CONDUITS, AND WIRES ARE NOT SHOWN ON THE PLUMBING PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF DAMAGED UTILITIES.

DEPARTMENT OF HEALTH NOTE

THE AIR CONDITIONING AND VENTILATION SYSTEM SHALL COMPLY WITH TITLE 11, ADMINISTRATIVE RULES, DEPARTMENT OF HEALTH, CHAPTER 39, AIR CONDITIONING AND VENTILATING REQUIREMENTS.

IF THIS SHEET IS LESS THAN 34"x22", IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

DWG. NO. M710
SHEET 16 OF 146

TYSON T. TOYAMA
LICENSED PROFESSIONAL ENGINEER
10226-M
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16–115–2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

Tyson T Toyama
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS
□O□ NO.

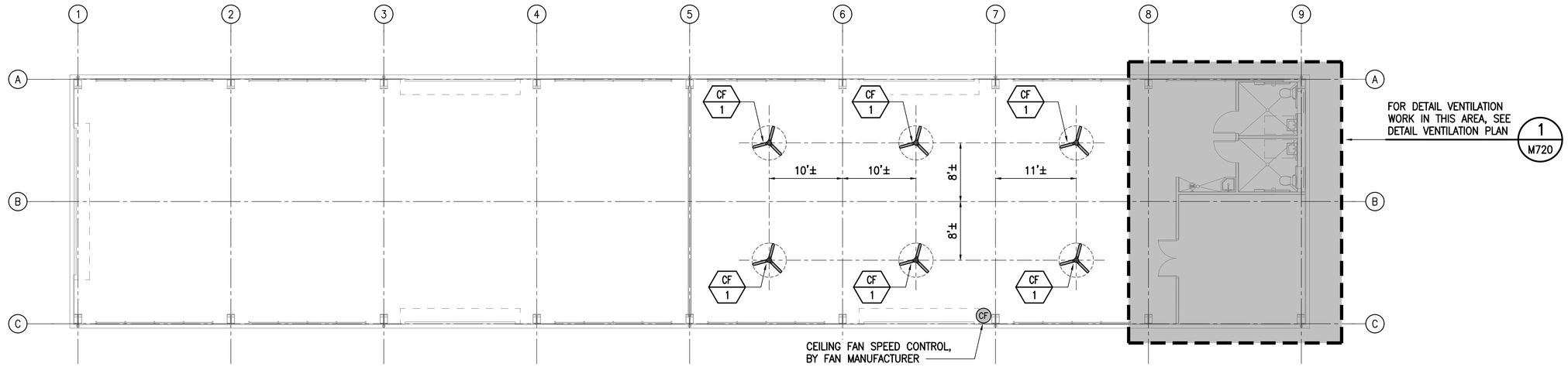
MECHANICAL LEGEND, NOTES AND SCHEDULES

DESIGNED BY: RL CHECKED BY: TTT DRAWN BY: RL

Okahara and Associates, Inc.
200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

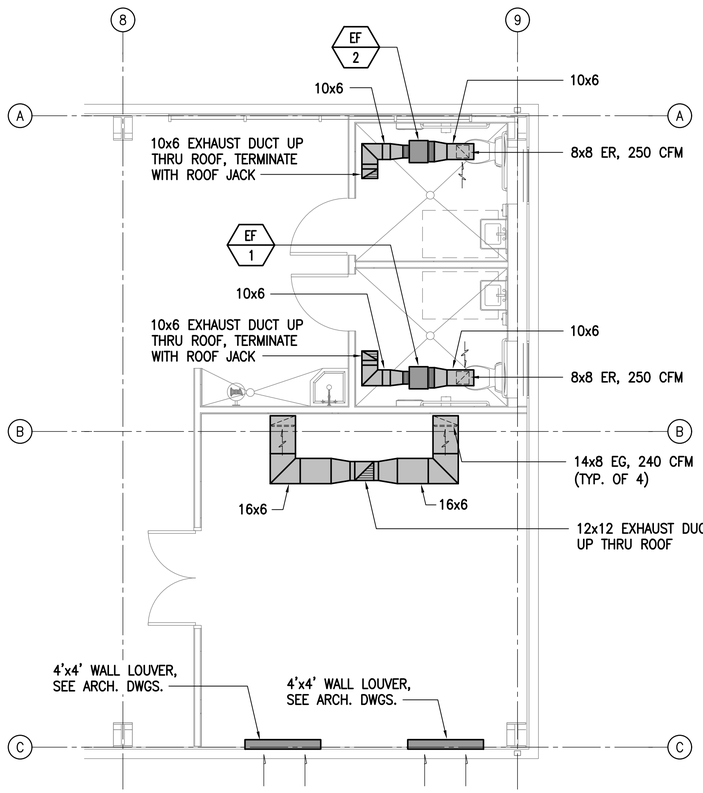
FILE	POCKET	FOLDER	NO.

FILE: Site07_MechLgndNtesSch.dwg
DATE REV.: 29/05/2018



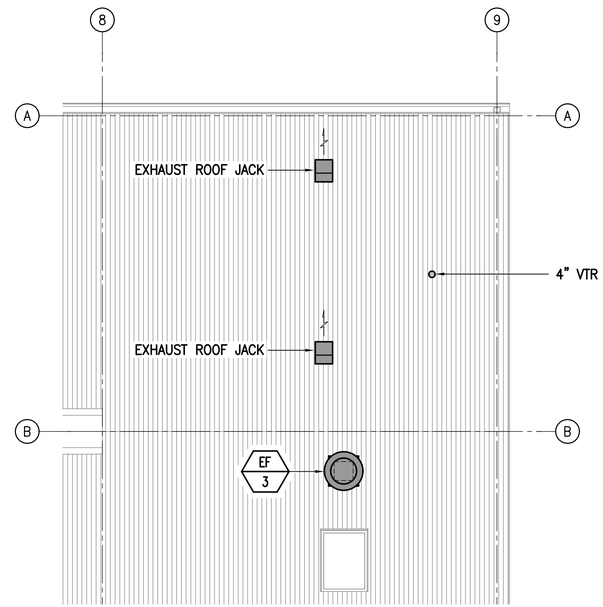
N

3 / M720 VENTILATION FLOOR PLAN
SCALE: 1/8" = 1'-0"



N

1 / M720 DETAIL VENTILATION FLOOR PLAN
SCALE: 1/4" = 1'-0"



N

2 / M720 DETAIL VENTILATION ROOF PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE:
8' 4' 0 8' 16'
SCALE: 1/8" = 1'-0"

GRAPHIC SCALE:
4' 2' 0 4' 8'
SCALE: 1/4" = 1'-0"

IF THIS SHEET IS LESS THAN 34"x22", IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

DWG. NO. M720
SHEET 117 OF 146

TYSON T. TOYAMA
LICENSED PROFESSIONAL ENGINEER
10226-M
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP., DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

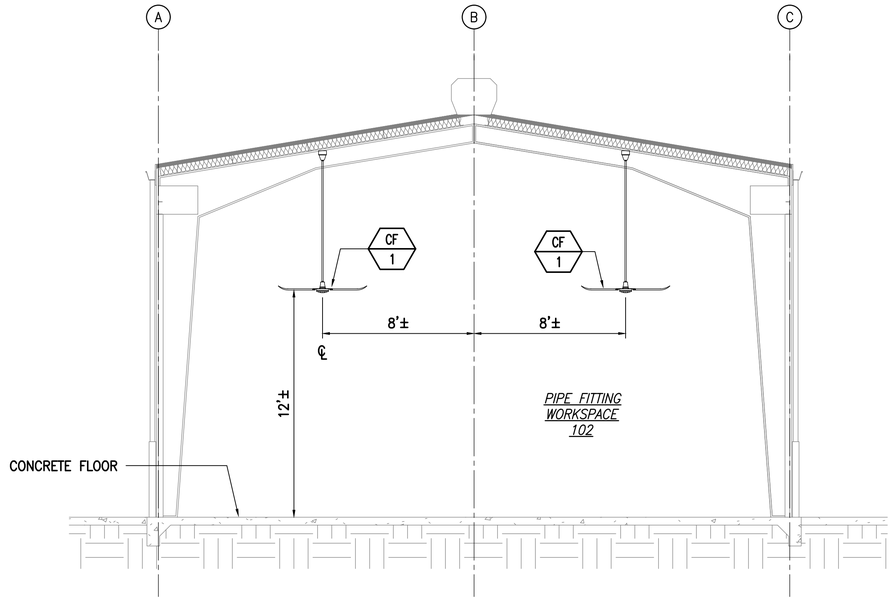
VENTILATION FLOOR PLANS

DESIGNED BY: RL CHECKED BY: TTT DRAWN BY: RL

Okahara and Associates, Inc.
200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

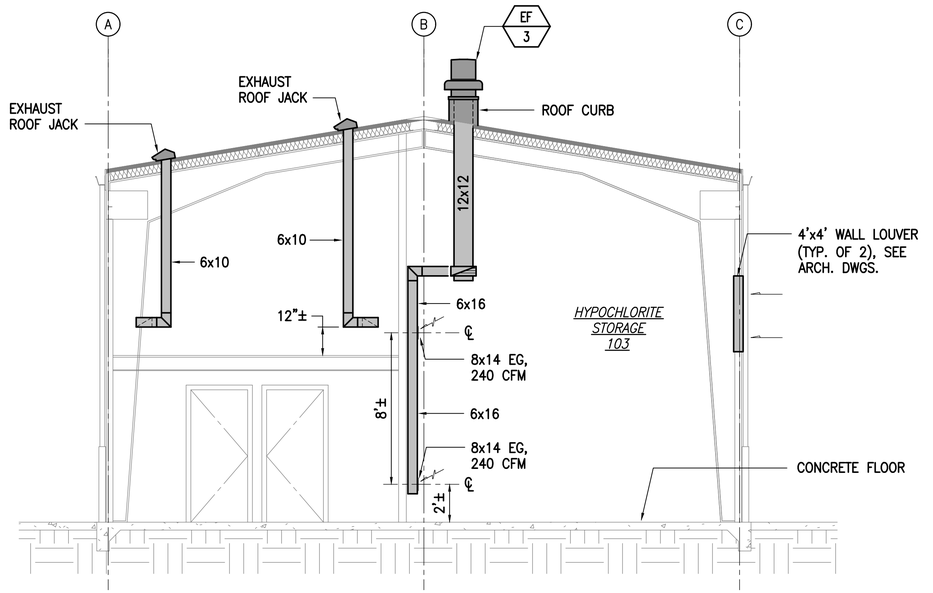
FILE	POCKET	FOLDER	NO.

FILE: Site07_MechPlmbFirPlns.dwg
DATE REV.: 29/05/2018



A M730 MECHANICAL SECTION – PIPE FITTING WORKSPACE

SCALE: 1/4" = 1'–0"



B M730 MECHANICAL SECTION – HYPOCHLORITE STORAGE

SCALE: 1/4" = 1'–0"

GRAPHIC SCALE:

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

4' 2' 0 4' 8'

IF THIS SHEET IS LESS THAN 34"x22", IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

DWG. NO. M730
SHEET 118 OF 146

TYSON T. TOYAMA
LICENSED PROFESSIONAL ENGINEER
10226-M
HAWAII, U.S.A.

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DEPARTMENT OF HAWAIIAN HOME LANDS

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

MECHANICAL SECTIONS

DESIGNED BY: RL CHECKED BY: TTT DRAWN BY: RL

Okahara and Associates, Inc.
200 KOMOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

FILE	POCKET	FOLDER	NO.

FILE: Site07_MechSections.dwg
DATE REV.: 30/05/2018

GENERAL NOTES:

1. PLANS DO NOT INDICATE COMPLETE EXISTING ELECTRICAL CONDITIONS. CONTRACTOR SHALL VISIT JOBSITE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AND EXTENT OF DEMOLITION AND NEW WORK PRIOR TO THE START OF CONSTRUCTION.
2. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL VISIT JOBSITE AND REPORT ANY DISCREPANCIES AND/OR DIFFERENCE IN DRAWINGS, WITH RESPECT TO EXISTING CONDITIONS, TO THE ENGINEER.
3. CONTRACTOR SHALL RESOLVE ALL DISCREPANCIES AND QUESTIONS PRIOR TO THE START OF WORK. NO EXTRA PAYMENT SHALL BE ALLOWED ON ACCOUNT OF WORK MADE NECESSARY BY CONTRACTOR'S FAILURE TO VISIT THE SITE AND/OR FAILURE TO RESOLVE DISCREPANCIES AND QUESTIONS.
5. BEFORE ANY ELECTRICAL WIRING IS CUT, CONTRACTOR SHALL VERIFY USAGE OF WIRING TO ENSURE THAT REQUIRED SERVICES ARE NOT DISCONTINUED.
6. REMOVE ALL EXISTING EXPOSED CONDUIT AND WIRES NOT TO REMAIN IN SERVICE; CONCEALED RACEWAYS NO LONGER REQUIRED SHALL BE CUT, CAPPED AND ABANDONED IN PLACE WITH ALL WIRES REMOVED.
7. PROVIDE METAL SEALS FOR ALL ABANDONED RACEWAY OPENINGS IN BOXES, CABINETS, AND EQUIPMENT ENCLOSURES; SEALS SHALL RETAIN NEMA RATING OF REMAINING BOXES, CABINETS, AND EQUIPMENT ENCLOSURES.
8. RETURN ALL SALVAGEABLE APPARATUS, AS DETERMINED BY DHHL OR ITS REPRESENTATIVES, TO A SITE DESIGNATED BY DHHL OR ITS REPRESENTATIVES, AT NO ADDITIONAL COST TO DHHL. DISPOSE OF ALL UNWANTED MATERIALS.
9. PRIOR TO PENETRATING OR DISTURBING ANY SURFACES IDENTIFIED AS CONTAINING HAZARDOUS MATERIALS, HAVE SURFACE/MATERIAL ABATED OR TREATED SO AS NOT TO CONTAMINATE SPACE OR AREA. REFER TO HAZARDOUS MATERIAL HANDLING REQUIREMENTS.

GENERAL CONSTRUCTION NOTES:

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

ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
$a	LT. SW., 1P, CONTROLLING OUTLET(S) "a", MTD. +48"
	DUPLEX RECEPTACLE, NEMA 5-15R, 120V, MTD. +18" OR AS NOTED
	SINGLE RECEPTACLE, NEMA 5-20R, 120V, MTD. +18" OR AS NOTED
	DUPLEX RECEPTACLE, WITH GROUND FAULT CIRCUIT INTERRUPTER, NEMA 5-20R, 120V, MTD. +18" OR AS NOTED
	ELECTRICAL PANELBOARD
(J)	JUNCTION BOX, CEIL. MTD., 4-11/16" NOM.
(J)	JUNCTION BOX, WALL MTD., 4-11/16" NOM.
	JUNCTION BOX MTD. ON CHANNEL SUPPORT, SEE DETAIL 2/E-003
	DUPLEX RECEPTACLE, WITH GROUND FAULT CIRCUIT INTERRUPTER, NEMA 5-20R, 120V, CHANNEL MOUNTED, IN WEATHERPROOF HOUSING, SEE DETAIL 3/E-003
(M/H)	MOTOR AND HEATER CONNECTION
(M)	MOTOR CONNECTION
(E)	EQUIPMENT CONNECTION
(FS)	FLOW SWITCH CONNECTION
(FT)	FLOW TRANSMITTER CONNECTION
(SV)	SOLENOID VALVE CONNECTION
(HDPS)	HIGH DISCHARGE PRESSURE SWITCH CONNECTION
(PCV)	PUMP CONTROL VALVE CONNECTION
(LS)	LIMIT SWITCH CONNECTION
$	ELECTRICAL EQUIPMENT DISCONNECT SWITCH, 1 OR 2 POLE
	DISCONNECT SWITCH, HP RATED
MCC	DENOTES "MOTOR CONTROL CENTER"
SPD	DENOTES "SURGE PROTECTIVE DEVICE"
WP	DENOTES "WEATHERPROOF"
SS	DENOTES "TYPE 316 STAINLESS STEEL"

SYMBOL	DESCRIPTION
	FLEXIBLE CONDUIT, LIQUIDTIGHT
	CONDUIT OR DUCTLINE BELOW REF. FL. OR GROUND
	EXPOSED CONDUIT
	EXISTING DUCTLINE
A (1-4E) S (1-1C)	ELECTRIC/SIGNAL DUCTLINE WITH DESIGNATORS; ITEMS IN CIRCLE INDICATES DUCT SECTION TYPE, WITH DUCT COMPLEMENTS NOTED BELOW (TYPE "A" DUCT INDICATED WITH 1-4"E DUCT, AND TYPE "S" DUCT WITH 1-1"C DUCT; E=ELECTRIC, T=TELEPHONE, C=CONTROLS, I=INSTRUMENTATION); SEE SHEET E-005 FOR DUCT SECTION DETAILS
-e-oh-	EXISTING OVERHEAD UTILITY LINES
	2' X 4' HAWAIIAN TELCOM PULLBOX PER HAWAIIAN TELCOM REQUIREMENTS AND APPROVAL
	3' X 5' ELECTRIC PULLBOX SIMILAR TO MECO STANDARD PULLBOX REQUIREMENTS
	2' X 4' ELECTRIC PULLBOX SIMILAR TO MECO STANDARD PULLBOX REQUIREMENTS
	2' X 4' INSTRUMENTATION PULLBOX SIMILAR TO HAWAIIAN TELCOM STANDARD PULLBOX REQUIREMENTS WITH "INSTRUMENTATION" INSCRIBED ON COVER
	12" X 20" WATER METER TYPE PRECAST CONCRETE PULLBOX, WITH STEEL COVER AND WITH "POWER" INSCRIBED ON COVER
	12" X 20" WATER METER TYPE PRECAST CONCRETE PULLBOX, WITH STEEL COVER AND WITH "CONTROLS" INSCRIBED ON COVER
	12" X 20" WATER METER TYPE PRECAST CONCRETE PULLBOX, WITH STEEL COVER AND WITH "INSTRUMENTATION" INSCRIBED ON COVER
	EXISTING PULLBOX OR HANDHOLE, SEE PLANS FOR DESIGNATION

NOTE:

PROVIDE GREEN GROUND CONDUCTOR IN ALL NEW BRANCH AND FEEDER CIRCUITS INCLUDING LIGHT SWITCHING LEGS, SIZED PER NEC TABLE 250.122. ALL CONDUCTORS #12 AWG MINIMUM.

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

GENERAL NOTES AND ELECTRICAL SYMBOLS

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018

DWG. NO. E-001
SHEET 119 OF 146

SITE NO. 7
HOOLEHUA
VARIOUS
IMPROVEMENTS

SITE NO. 1
ELECTRICAL PLAN,
SEE 1/E-101

OVERALL ELECTRICAL SITE PLAN

SCALE: 1"=700'

NORTH

700' 350' 0 700' 1400' 2100'

SCALE: 1"=700'

GRAPHIC SCALE

DWG. NO. E-002
SHEET 120 OF 146

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

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STATE OF HAWAII

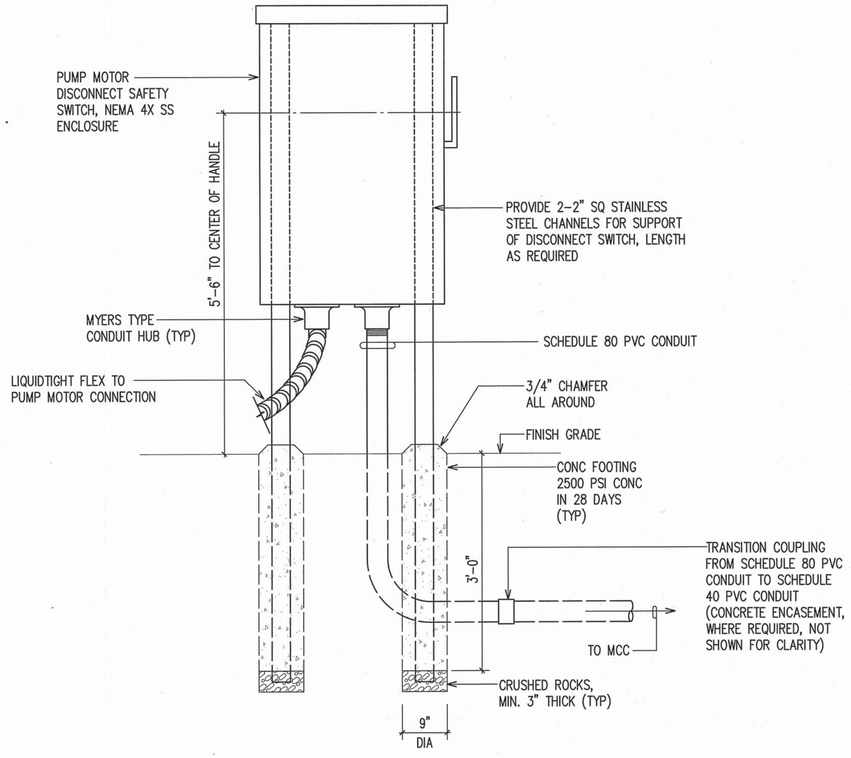
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

OVERALL ELECTRICAL SITE PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

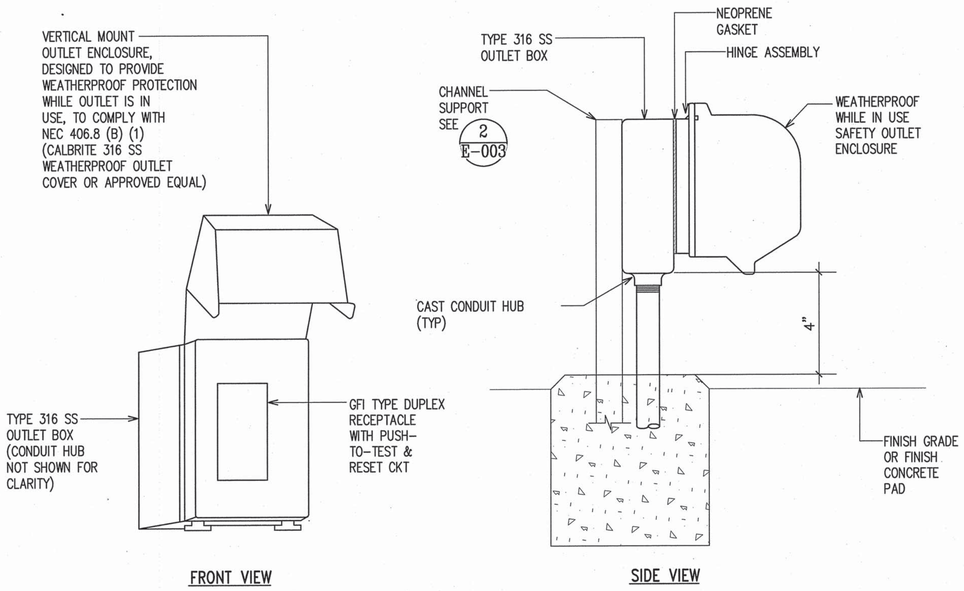
Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018



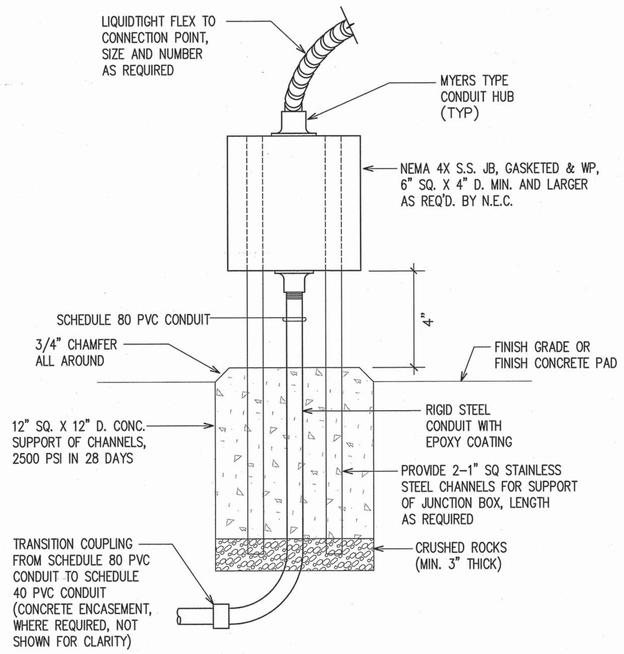
1 E-003 NOT TO SCALE

PUMP MOTOR DISCONNECT SWITCH MOUNTING DETAIL



3 E-003 NOT TO SCALE

WEATHERPROOF RECEPTACLE AND COVER DETAIL



NOTE:
1. ALL MOUNTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.

2 E-003 NOT TO SCALE

CHANNEL MOUNTED JUNCTION BOX DETAIL

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

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LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.
E-003
SHEET 121 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

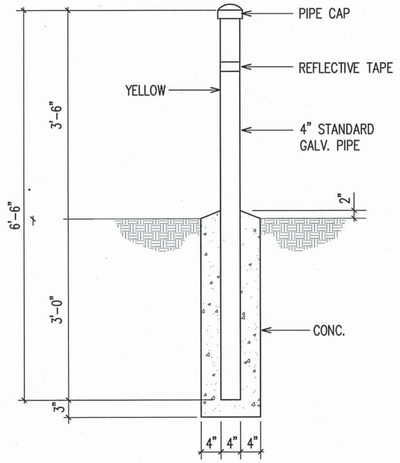
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

MISCELLANEOUS ELECTRICAL DETAILS I

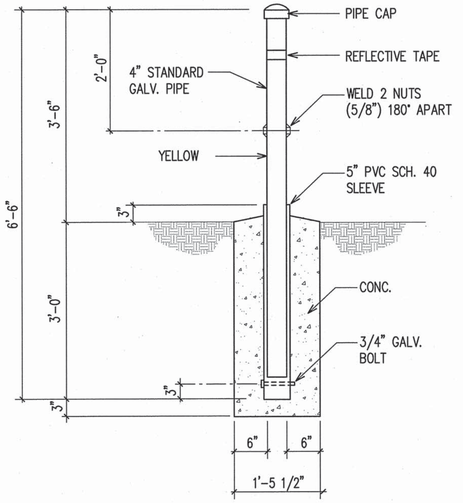
DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018



1 E-004 STATIONARY STANCHION



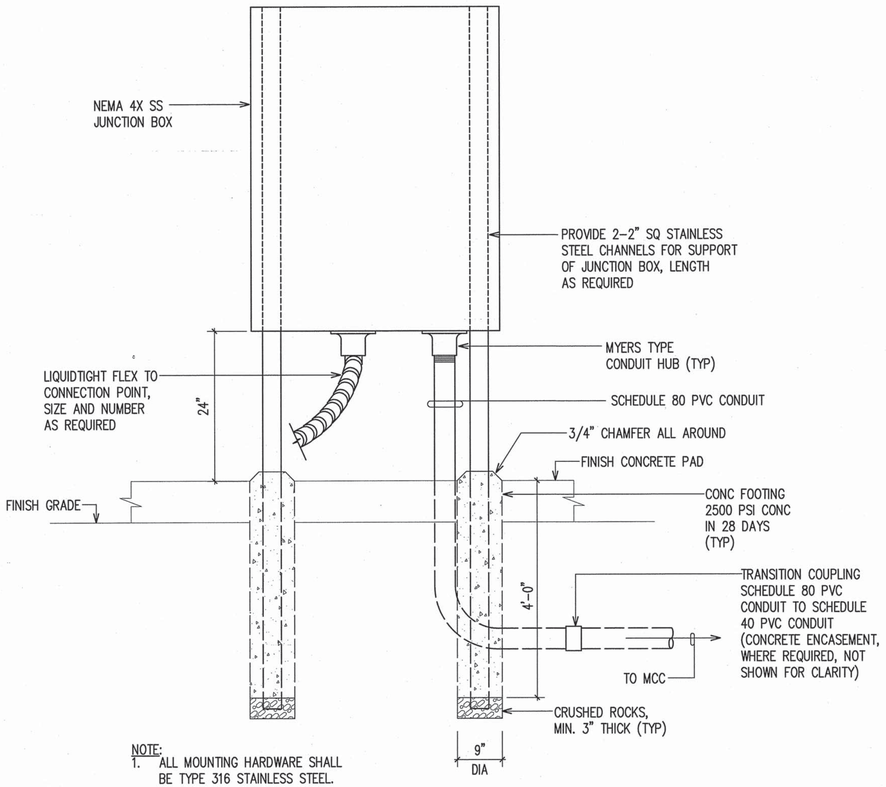
2 E-004 REMOVABLE STANCHION

STANCHION NOTES:

1. STANCHIONS SHALL CONFORM TO ASTM A43.
2. WELDED NUTS ARE FOR INSERTING BOLTS TO ACT AS HANDLES FOR LIFTING REMOVABLE STANCHIONS. TWO BOLTS SHALL BE PROVIDED AND USED TO INSTALL ALL STANCHIONS. BOLTS TO BE REMOVED AFTER INSTALLATION AND TURNED OVER TO OWNER.
3. STANCHIONS SHALL BE PAINTED YELLOW PER ANSI SPEC Z535.1 TO COMPLY WITH OSHA 1910.144 FOR COLOR CODING.
4. A 2" WIDE STRIP OF REFLECTIVE TAPE SHALL BE PLACED 6" BELOW THE TOP OF STANCHION.

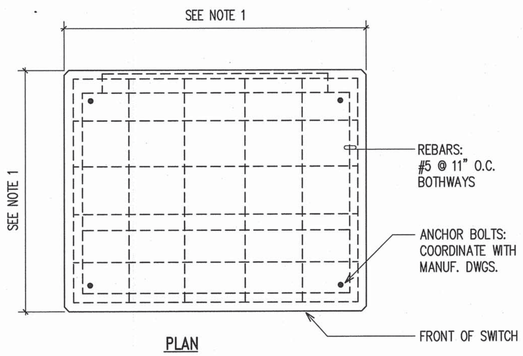
TYPICAL PROTECTIVE STANCHION DETAILS

NOT TO SCALE

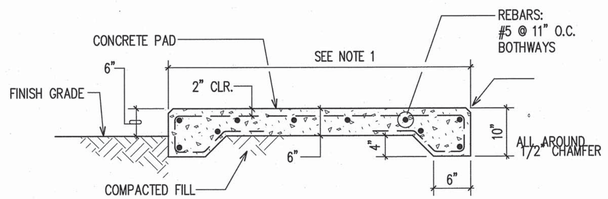


NOTE:
1. ALL MOUNTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.

3 E-004 LARGE JUNCTION BOX MOUNTING DETAIL
NOT TO SCALE



PLAN



LONGITUDINAL SECTION

NOTES:

1. COORDINATE OVERALL PAD DIMENSIONS WITH EQUIPMENT BEING PROVIDED & ADJUST ACCORDINGLY. ALLOW 4" CLEARANCE FROM SIDE OF EQUIPMENT TO EDGE OF PAD.
2. PROVIDE CONDUIT STUB-UPS AS REQUIRED.
3. CONSTRUCTION OF CONCRETE PAD FOR TRANSFORMER SHALL BE SIMILAR.

4 E-004 TYPICAL LOAD INTERRUPTER DISCONNECT SWITCH CONCRETE PAD DETAIL
NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

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LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

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STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

MISCELLANEOUS ELECTRICAL DETAILS II

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)841-0577 Fax: (808)945-2646

JUNE 2018

DWG. NO. E-004
SHEET 122 OF 146

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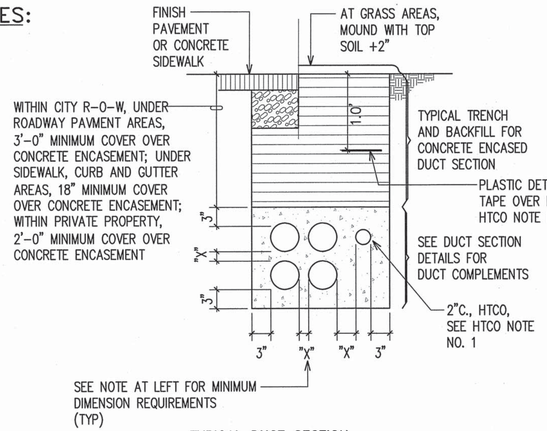
DUCT SECTION BACKFILL NOTES:

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

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

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

CONCRETE – 3" ENCASEMENT, 3000 psi COMPRESSIVE STRENGTH @ 28 DAYS.



TYPICAL DUCT SECTION

DESIGNATION DESCRIPTIONS

ELEC = UTILITY CO. PRIMARY OR SECONDARY ELECTRIC
TEL = UTILITY CO. TELEPHONE
PWR = PRIMARY OR SECONDARY ELECTRIC
CTL = CONTROL
SIG = INSTRUMENTATION OR ANTENNA CABLE

MINIMUM "X" DIMENSION
DUCT SEPARATION REQUIREMENTS

ELEC – ELEC = 1 1/2"

ELEC – TEL = 3"

TEL – TEL = 1 1/2"

ELEC – CTL/SIG = 3"

TEL – CTL/SIG = 1 1/2"

PWR – CTL/SIG = 3"

ELEC – PWR = 1 1/2"

TEL – PWR = 3"

PWR – PWR = 1 1/2"

CTL/SIG – CTL/SIG = 1 1/2"

MINIMUM OF 3" CONCRETE ENCASEMENT AROUND DUCTBANK

WHERE DUCTLINE CROSSES OVER WATER LINE, PROVIDE THE FOLLOWING:

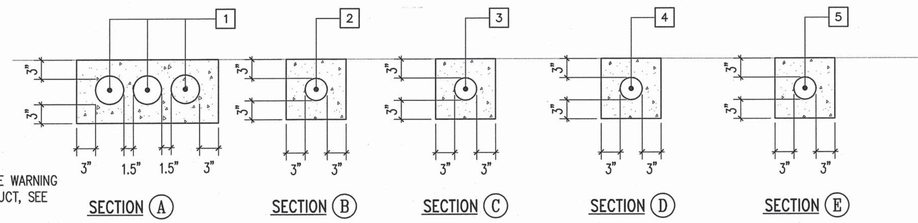
6" MINIMUM SEPARATION BETWEEN DUCTLINES AND WATER LINE.

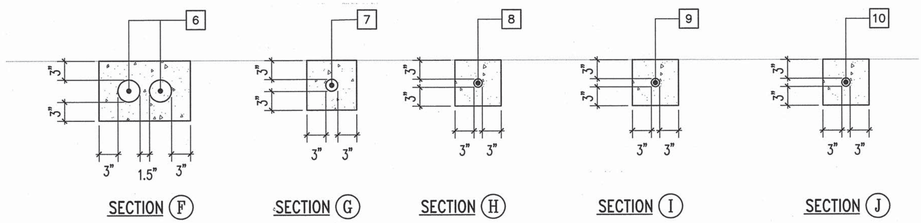
PROVIDE CONCRETE JACKET AROUND DUCTLINES.

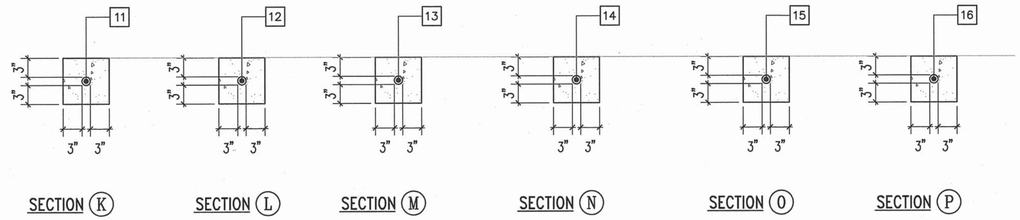
PROVIDE ONLY TYPE "B" BACKFILL AROUND WATER LINE.

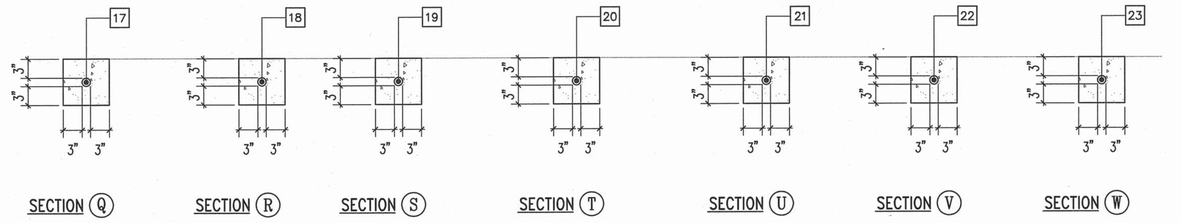
HAWAIIAN TELCOM (HTCO) DUCTLINE NOTES:

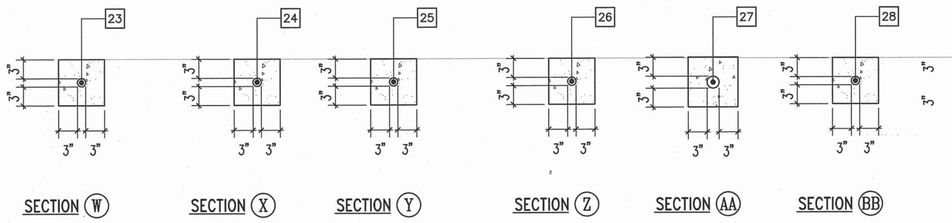
1. CONTRACTOR SHALL PLACE NEPTCO WP 1800P MULETAPE, OR APPROVED EQUAL, IN EACH DUCT THROUGHOUT ITS ENTIRE LENGTH WITH PROTRUSIONS OF 2 FEET IN MANHOLES AND HANDHOLES AT EACH END, AND 1 FOOT IN PULLBOXES. MULETAPE IS RATED FOR 1800 LB PULL AND HAS FOOTAGE MARKINGS FOR MEASURING DUCT LENGTHS.
2. CONTRACTOR SHALL PLACE 4-MIL ORANGE COLORED PLASTIC WARNING TAPE, NOT LESS THAN 6" WIDE, ENTIRE LENGTH OF TRENCH FOR ALL UNDERGROUND INSTALLATIONS. TAPE SHOULD READ "WARNING-STOP DIGGING-CALL HTCO, COMMUNICATIONS CABLE BURIED BELOW, FAILURE TO COMPLY COULD RESULT IN LEGAL ACTION".











DUCT AND WIRE SCHEDULE

NO.	DUCT SIZE	WIRE SIZE	DESTINATION OR USE
1	4"	PC	MAIN FEEDER FROM EXISTING SERVICE SWITCHBOARD
2	3"	SEE ONE-LINE DIAGRAM	POWER TO BOOSTER PUMP NO. 1 FROM MCC
3	3"	SEE ONE-LINE DIAGRAM	POWER TO BOOSTER PUMP NO. 2 FROM MCC
4	3"	SEE ONE-LINE DIAGRAM	POWER TO STEP UP TRANSFORMER FROM MCC
5	3"	SEE ONE-LINE DIAGRAM	POWER TO WELL PUMP NO. 1 FROM MCC
6	3"	SEE ONE-LINE DIAGRAM	POWER TO WELL PUMP NO. 2 FROM MCC INSTRUMENTATION
7	1 1/2"	28#12, 1#12 GND (6#12 SPARES)	CONTROLS TO CONTROLS PULLBOX AT BOOSTER AND WELL PUMP NO. 2 LOCATION FROM MCC
8	1"	12#12, 1#12 GND (4#12 SPARES)	CONTROLS TO BOOSTER PUMP FROM MCC
9	1"	8#12, 1#12 GND (4#12 SPARES)	CONTROLS TO BOOSTER PUMP NO. 2 FROM MCC
10	1"	4#12, 1#12 GND (2#12 SPARES)	CONTROLS TO BOOSTER PUMP NO. 1 FROM MCC
11	1"	2#12, 1#12 GND	CONTROLS TO SOLENOID VALVE CONNECTION
12	1"	12#12, 1#12 GND (2#12 SPARES)	CONTROLS TO WELL PUMP NO. 2
13	1"	2#12 , 1#12 GND	CHLORINATOR SOLENOID VALVE CONNECTION
14	1"	6#12, 1#12 GND (2#12 SPARES)	CONTROLS TO WELL PUMP NO. 1
15	1"	1-2/C#14 TWISTED, SHIELDED CABLES W/ GND	FLOW TRANSMITTER TO INSTRUMENTATION PULLBOX AT BOOSTER PUMP NO. 1
16	1"	2-2/C#14 TWISTED, SHIELDED CABLES W/ GND	FLOW TRANSMITTER TO INSTRUMENTATION PULLBOX AT BOOSTER PUMP NO. 2
17	1"	1-2/C#14 TWISTED, SHIELDED CABLES W/ GND	FLOW TRANSMITTER TO INSTRUMENTATION PULLBOX AT WELL PUMP NO. 1
18	1"	3-2/C#14 TWISTED, SHIELDED CABLES W/ GND	INSTRUMENTATION FROM PULLBOX TO EXISTING SCADA CABINET
19	1"	1-2/C#14 TWISTED, SHIELDED CABLES W/ GND	FLOW TRANSMITTER TO SCADA CABINET AT WELL PUMP NO. 2
20	1"	4#12 , 1#12 GND	POWER TO BOOSTER AND WELL PUMP NO. 2 LOCATION FROM MCC
21	1"	2#12 , 1#12 GND	POWER TO OUTDOOR RECEPTACLE
22	1"	2#12 , 1#12 GND	POWER TO GENERAL SITE LIGHTING
23	1"	4#12 , 1#12 GND	POWER TO WELL PUMP NO. 1 LOCATION FROM MCC
24	1"	2#12 , 1#12 GND	POWER TO ABOVEGROUND FUEL STORAGE TANK
25	1"	6#12 , 1#12 GND	POWER TO EXISTING GENERATOR AND NEW FUEL
26	1"	2#12 , 1#12 GND	POWER TO EXISTING GENERATOR CIRCUITS AND NEW FUEL POLISHING PANEL
27	1 1/2"	48#12 , 1#12 GND (6#12 SPARES)	CONTROLS TO SCADA CABINET
28	1"	2#12 , 1#12 GND	POWER TO SCADA CABINET
29			
30			

NOTES:
1. ALL CONCRETE ENCASED DUCTS SHALL BE SCHEDULE 40 PVC.
2. PC INDICATED PROVIDE PULLCORD.

DUCT SECTION DETAILS AND REQUIREMENTS

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

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STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

DUCT SECTION DETAILS AND REQUIREMENTS

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018

DWG. NO. E-005
SHEET 123 OF 146

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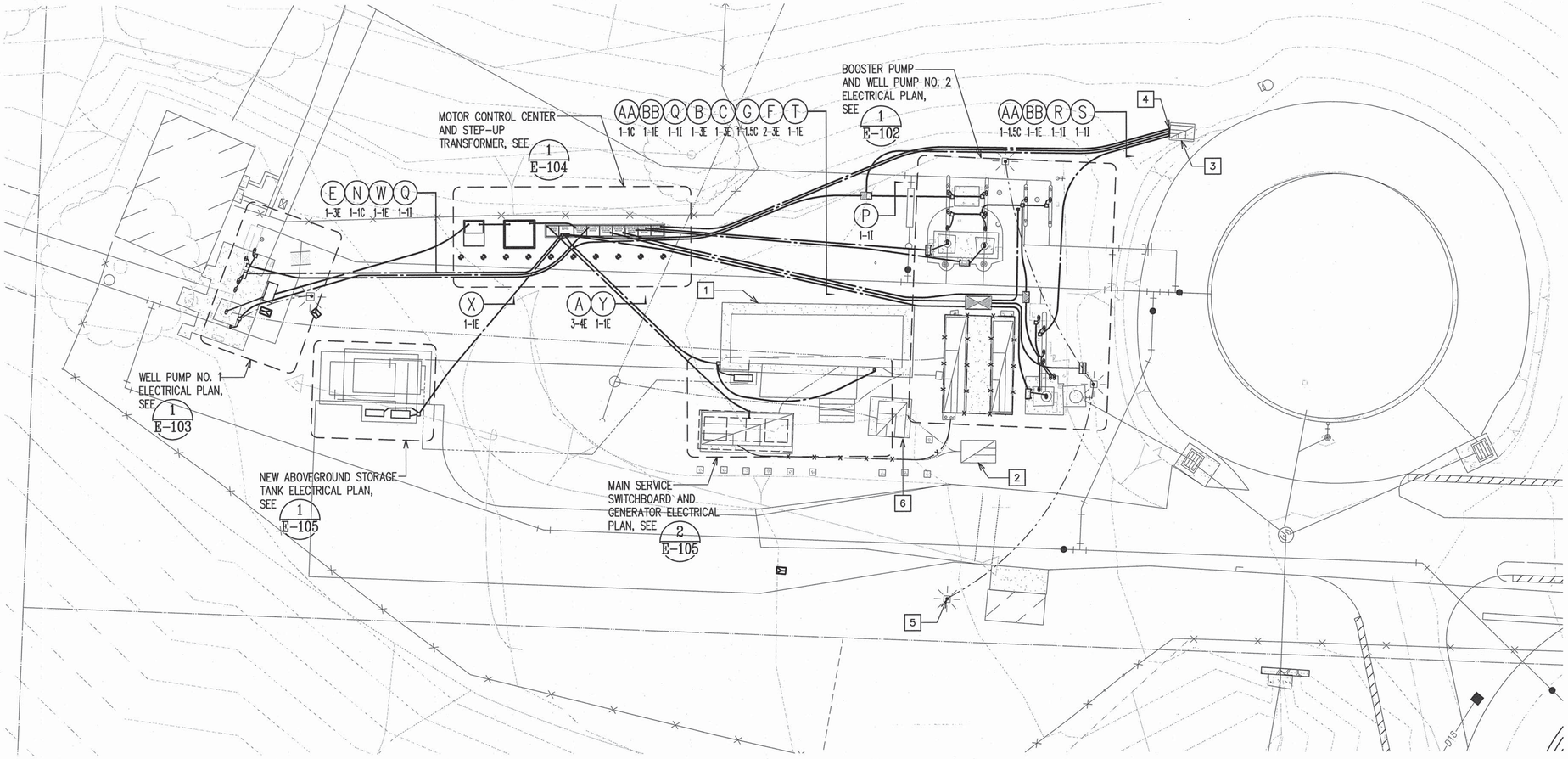

1 E-101 SITE 1 ELECTRICAL PLAN

SCALE: 1"=10'

NORTH

NOTES:

1. EXISTING 660KW GENERATOR.
2. EXISTING MECO 3'X5' HANDHOLE.
3. EXISTING SCADA CABINET.
4. STUB CONDUIT INTO EXISTING SCADA CABINET WITH NEW CONDUIT BODY; HEIGHT AS REQUIRED.
5. EXISTING AREA LIGHT
6. EXISTING MECO PADMOUNTED TRANSFORMER.
7. REMOVE ALL EQUIPMENT AND CONDUCTORS AS INDICATED. EMPTY DUCTLINES SHALL BE CAPPED AND ABANDONED IN PLACE.

REVISION	DATE	BRIEF	MADE BY	APPROVED

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DWG. NO. E-101
SHEET 124 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

SITE 1 ELECTRICAL PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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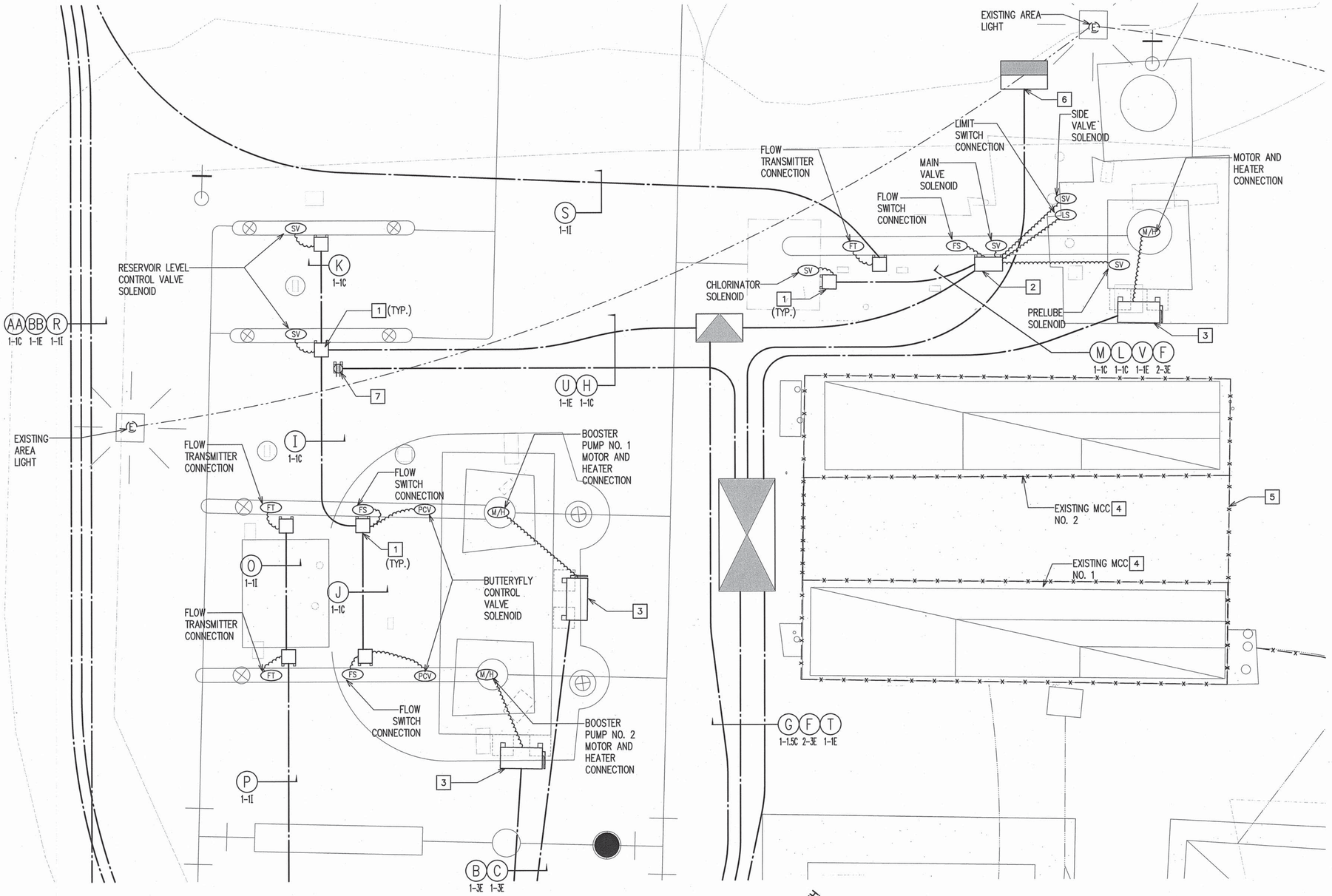

BOOSTER PUMP AND WELL PUMP NO. 2 ELECTRICAL PLAN

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

NORTH

NOTES:

1. 6"SQ X 6"D CHANNEL MOUNTED JUNCTION BOX, SEE SHEET 2/E-003.
2. 12"W X 18"H X 6"D NEMA 4XSS CHANNEL MOUNTED JUNCTION BOX, SEE DETAIL 3/E-004.
3. CHANNEL MOUNTED SAFETY DISCONNECT SWITCH, SEE DETAIL 1/E-003.
4. REMOVE ALL EQUIPMENT AND CONDUCTORS AS INDICATED. EMPTY DUCTLINES SHALL BE CAPPED AND ABANDONED IN PLACE
5. REMOVE EXISTING CONCRETE PAD FOR EXISTING MCC.
6. INTERCEPT EXISTING GENERAL LIGHTING BRANCH CIRCUIT WITH NEW PULLBOX.
7. CHANNEL MOUNTED 316 STAINLESS STEEL WEATHERPROOF RECEPTACLE, SEE DETAIL ON SHEET 3/E-003.

2' 1' 0 2' 4' 6'

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

GRAPHIC SCALE

DWG. NO. E-102

SHEET 125 OF 146

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BOOSTER PUMP AND WELL PUMP NO. 2 ELECTRICAL PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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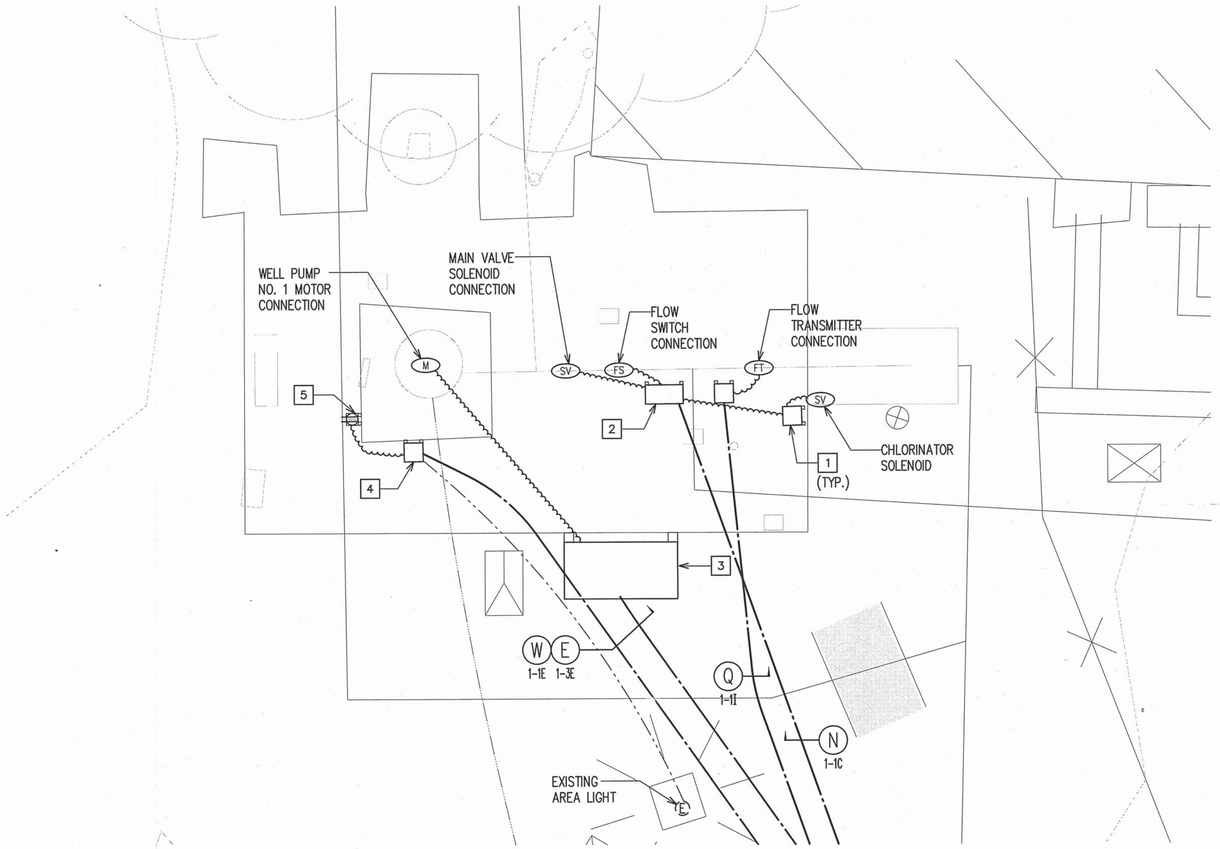

1 / E-103 WELL PUMP NO. 1 ELECTRICAL PLAN

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

NORTH

NOTES:

1. 6"SQ X 6"D CHANNEL MOUNTED JUNCTION BOX, SEE SHEET 2/E-003.
2. 12"W X 18"H X 6"D NEMA 4XSS CHANNEL MOUNTED JUNCTION BOX, SEE DETAIL 2/E-003.
3. 36"SQ X 18"D ME,A 4XSS JUNCTION BOX. JUNCTION BOX TO BE MOUNTED WITH BOTTOM OF BOX +24" ABOVE THE PUMP CONCRETE PAD. PROVIDE LARGE WEATHER PROTECTED SIGN, MOUNTED ON JUNCTION BOX, LABELED "DANGER-2300 VOLTS! GROUND ALL LEADS BEFORE DISCONNECTING". SIZE OF LETTERING SHALL BE 2" HIGH FOR "DANGER-2300 VOLTS!" AND A MINIMUM OF 3/4" HIGH FOR REMAINING LETTERS. SEE DETAIL 3/E-004.
4. INTERCEPT EXISTING BRANCH CIRCUIT WITH NEW CHANNEL MOUNTED JUNCTION BOX.
5. CHANNEL MOUNTED 316 STAINLESS STEEL WEATHERPROOF RECEPTACLE, SEE DETAIL ON SHEET 3/E-003.

2' 1' 0 2' 4' 6'

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

GRAPHIC SCALE

DWG. NO. E-103

SHEET 120 OF 146

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WELL PUMP NO. 1 ELECTRICAL PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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JUNE 2018

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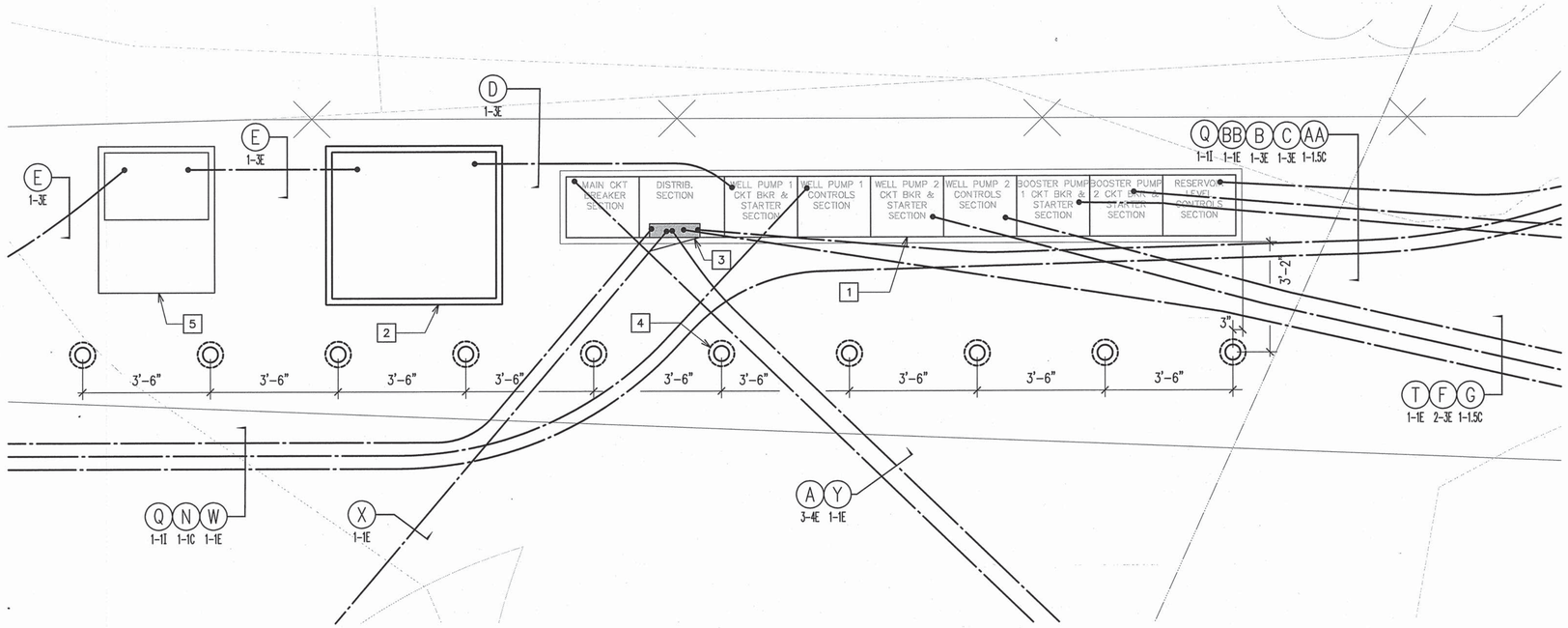

1 MCC AND STEP-UP TRANSFORMER ELECTRICAL PLAN
E-104 SCALE: 1/2"=1'-0"

NOTES:

1. FRONT OF NEW MCC, SEE SHEET E-109.
2. FRONT OF NEW STEP-UP TRANSFORMER.
3. PANEL A.
4. REMOVABLE PROTECTIVE STANCHION. SEE DETAIL 2/E-004.
5. FRONT OF PADMOUNTED LOAD INTERRUPTER SWITCH, SEE DETAIL 4/E-004.

NEW PANEL "A": 50 A MAIN BREAKER, 208Y/120 VOLTS, 3-PHASE, 4-WIRE, 10,000 A.I.C. INDUSTRIAL-BOLTED TYPE, MOUNTED IN MCC

CKT. NO.	USE: L-LTS, R-RECEP, PFB-PROVISION FUTURE BKR., S-SPARE, F-FAN, W-WARMER	BREAKER POLE	BREAKER AMPS	WIRE SIZE	KVA ON BUSSES PHASE A	PHASE B	PHASE C	WIRE SIZE	BREAKER POLE	BREAKER AMPS	USE: L-LTS, R-RECEP, PFB-PROVISION FUTURE BKR., S-SPARE, F-FAN, W-WARMER	CKT. NO.
1	R-OUTDOOR	1	20	12	0.4			12	1	20	AREA LIGHTING	2
3	R-OUTDOOR	1	20	12		0.4		12	1	20	AREA LIGHTING	4
5,7	GENERATOR CIRCUITS	2	40	12			1.0	12	1	20	WELL PUMP TEST CKT	6
	-				1.0			12	1	20	BOOSTER PUMP TEST CKT	8
9	MCC STRIP HEATER	1	20	12		1.0		12	1	20	FUEL POLISHING PANEL 1	10
11	SCADA CABINET	1	20	12			1.0	12	1	20	FUEL POLISHING PANEL 2	12
13	BP-1 MOTOR HEATER	1	20	12	1.0				1	20	WELL PUMP 2 MOTOR HEATER	14
15	BP-2 MOTOR HEATER	1	20	12 *		1.0			1	20	S	16
17	S	1	20				0.5		1	20	S	18
19	PFB				0.0						PFB	20
21	PFB					0.0					PFB	22
23	PFB						0.0				PFB	24
	CONNECTED LOAD PER PHASE				5.4	3.7	4.2					
	DEMAND LOAD PER PHASE				3.8	2.6	2.9					

*CONTRACTOR TO VERIFY EXISTING LOADS TO BE RECONNECTED

TOTAL CONNECTED LOAD (KVA)	13.3
DEMAND FACTOR	70%
TOTAL DEMAND LOAD (KVA)	9.3
HIGH LEG (AMPS)	31.5

2' 1' 0 2' 4' 6'
SCALE: 1/2"=1'-0"
GRAPHIC SCALE

DWG. NO. E-104
SHEET 127 OF 146

KRAIG K. OTANI LICENSED PROFESSIONAL ENGINEER No. 14288-E HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

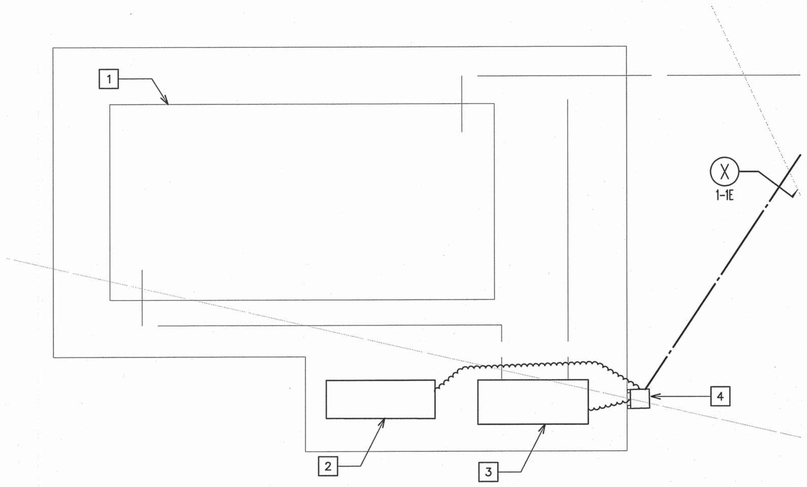
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

MCC AND STEP-UP TRANSFORMER ELECTRICAL PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018



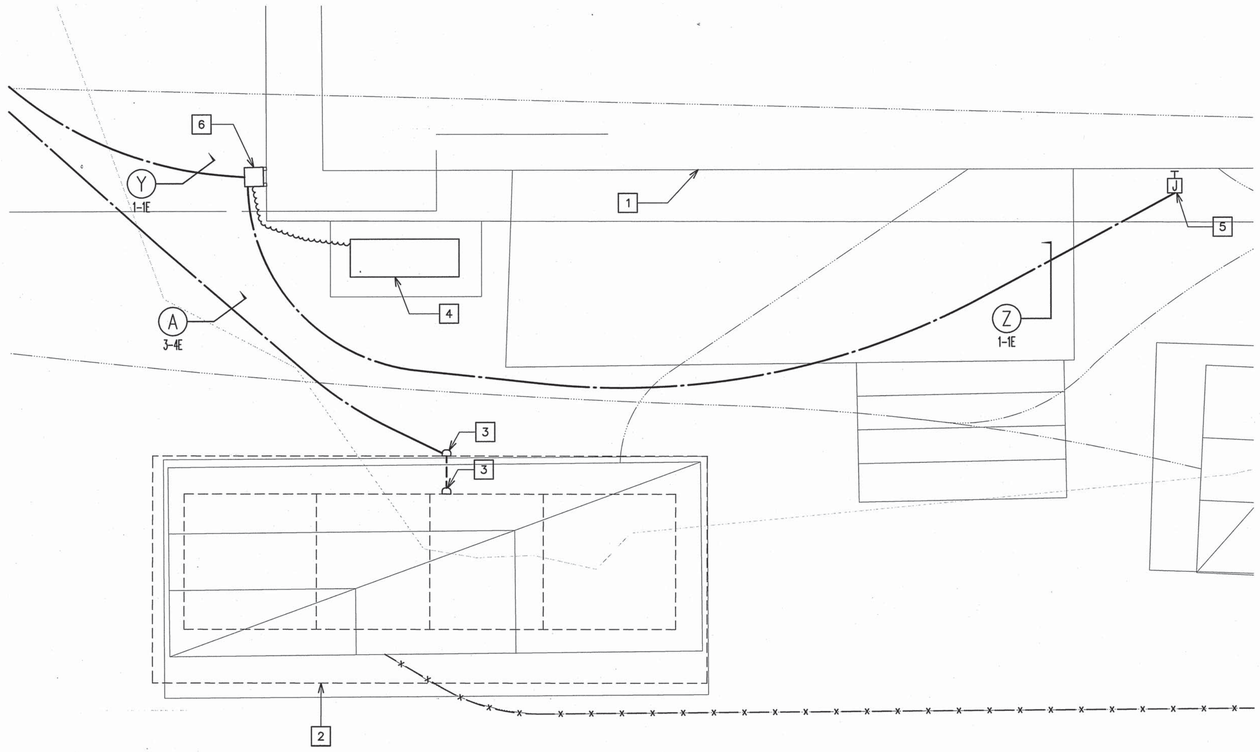
1/E-105 ABOVE GROUND FUEL TANK ELECTRICAL PLAN

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

NORTH

NOTES:

1. NEW ABOVE GROUND STORAGE TANK. SEE MECHANICAL PLANS FOR DETAILS.
2. NEW PACKAGED FUEL POLISHING SYSTEM, SEE MECHANICAL PLANS FOR DETAILS.
3. NEW PACKAGED DUPLEX FUEL TRANSFER PUMP AND DAY TANK CONTROLLER. SEE MECHANICAL PLANS FOR DETAILS
4. 6"SQ X 6"D CHANNEL MOUNTED JUNCTION BOX, SEE SHEET 2/E-003.



2/E-105 EXISTING GENERATOR AND SWITCHBOARD ELECTRICAL PLAN

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

NORTH

NOTES:

1. FRONT OF EXISTING 660KW GENERATOR
2. FRONT OF EXISTING MAIN SERVICE SWITCHBOARD.
3. STUB INTO EXISTING MAIN SERVICE SWITCHBOARD FOR NEW MCC FEEDERS WITH CONDUIT BODY; HEIGHT AS REQUIRED.
4. NEW PACKAGED FUEL POLISHING SYSTEM, SEE MECHANICAL PLANS FOR DETAILS.
5. RECONNECT TO EXISTING JUNCTION BOX FOR EXISTING GENERATOR CIRCUITS.
6. 6"SQ X 6"D CHANNEL MOUNTED JUNCTION BOX, SEE SHEET 2/E-003.

2' 1' 0 2' 4' 6'

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

GRAPHIC SCALE

DWG. NO. E-105

SHEET 120 OF 146

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

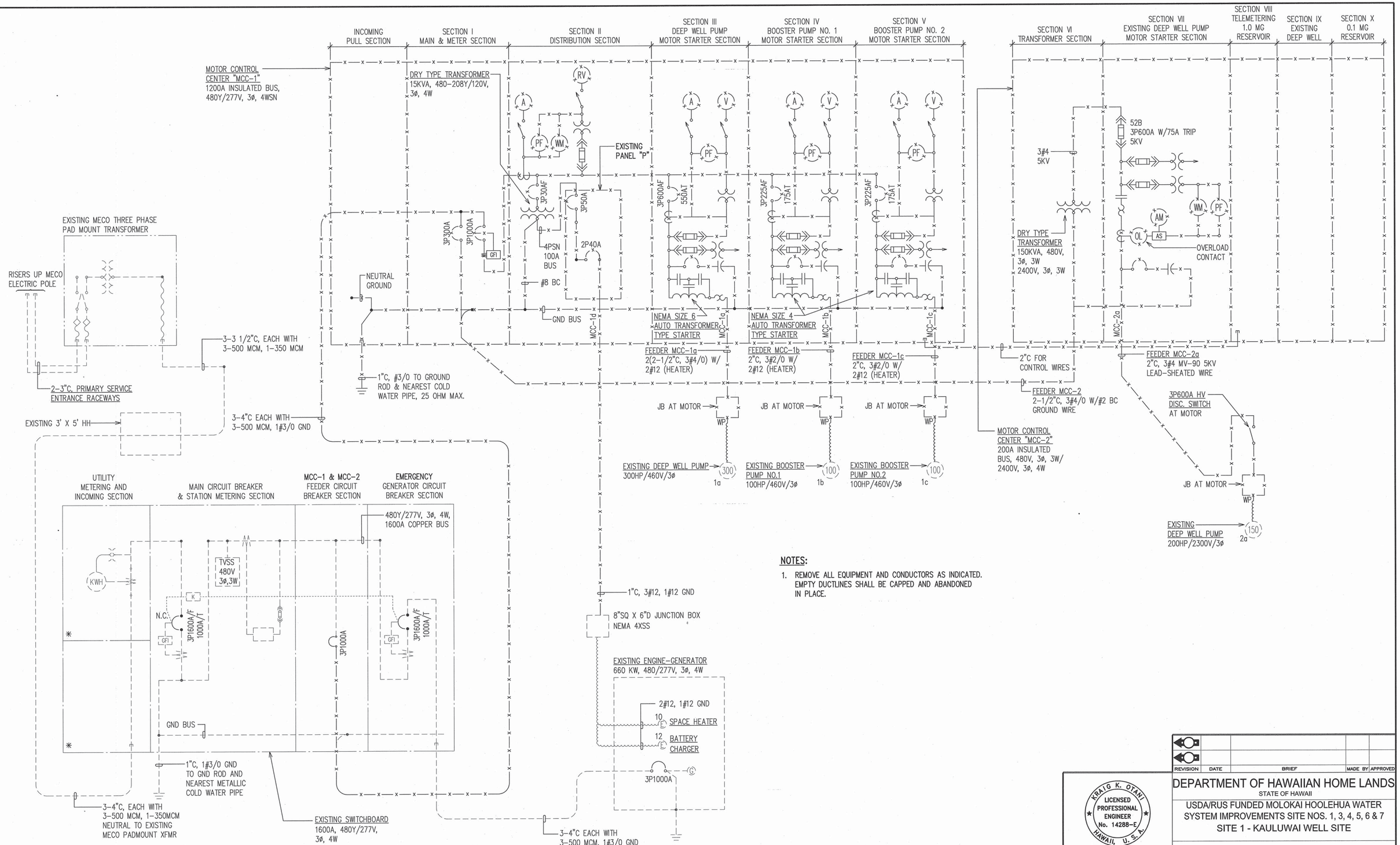
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

ABOVE GROUND STORAGE TANK, SERVICE SWITCHBOARD, AND GENERATOR ELECTRICAL PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2046

JUNE 2018



NOTES:

1. REMOVE ALL EQUIPMENT AND CONDUCTORS AS INDICATED. EMPTY DUCTLINES SHALL BE CAPPED AND ABANDONED IN PLACE.

1 E-009 ONE LINE DIAGRAM-DEMO N.T.S.

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

ONE-LINE DIAGRAM-DEMO

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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DWG. NO. E-106
SHEET 129 OF 146

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018

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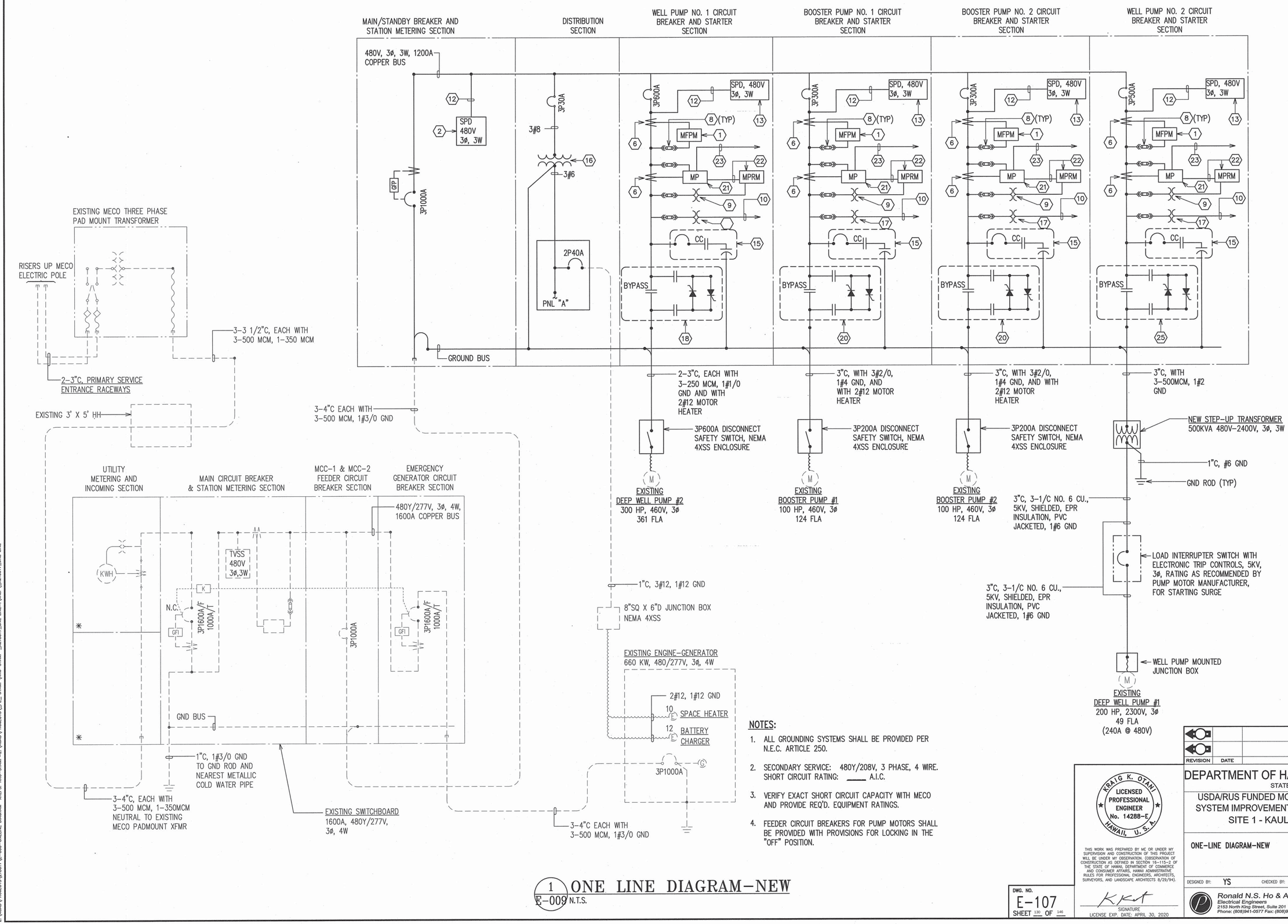

1 ONE LINE DIAGRAM-NEW
E-009 N.T.S.

NOTES:

1. ALL GROUNDING SYSTEMS SHALL BE PROVIDED PER N.E.C. ARTICLE 250.
2. SECONDARY SERVICE: 480Y/208V, 3 PHASE, 4 WIRE. SHORT CIRCUIT RATING: ____ A.I.C.
3. VERIFY EXACT SHORT CIRCUIT CAPACITY WITH MECO AND PROVIDE REQ'D. EQUIPMENT RATINGS.
4. FEEDER CIRCUIT BREAKERS FOR PUMP MOTORS SHALL BE PROVIDED WITH PROVISIONS FOR LOCKING IN THE "OFF" POSITION.

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

ONE-LINE DIAGRAM-NEW

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

KRAIG K. OTANI LICENSED PROFESSIONAL ENGINEER No. 14288-E HAWAII, U.S.A.

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DWG. NO. E-107
SHEET 130 OF 146

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018

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SCHEDULE OF INSTRUMENTS

KEY ON PLAN	DESCRIPTION
1	THREE PHASE DIGITAL MULTIFUNCTION POWER MONITOR
2	MAIN ELECTRICAL SERVICE SURGE PROTECTION DEVICE, 480V, 3ø, 3W (SEE SPECS)
3	
4	TERMINAL CABINET FOR FUTURE GENERATOR CABLE CONNECTION
5	
6	CURRENT TRANSFORMER, 600V, 600:5
7	
8	FUSE HOLDER WITH FUSE, 600V, SIZE BY MANUFACTURER
9	CONTROL TRANSFORMER, 600V FOR 208–120V, KVA AS REQ'D
10	TO CONTROL CIRCUIT
11	
12	3#14, FURNISHED AS PART OF SURGE PROTECTON DEVICE AS SHORT AS POSSIBLE (MAX. LENGTH 30")
13	BRANCH FEEDER SURGE PROTECTION DEVICE, 480V, 3ø, 3W (SEE SPECS)
14	
15	CAPACITOR AND CAPACITOR BREAKER PER PUMP MOTOR MANUFACTURER'S RECOMMENDATIONS, INCLUDING ISOLATION CONTACTOR (CC) TO REMOVE CAPACITORS FROM SYSTEM
16	DRY–TYPE TRANSFORMER, 15 KVA, 480–208Y/120V, 3 PHASE, 4 WIRE, 80°C RISE.
17	CONTROL TRANSFORMER, 600V FOR 480–120V, 2–1KVA
18	300 HP MOTOR STARTER, SOLID–STATE TYPE WITH BYPASS CONTACTOR, AND SCR ISOLATION CONTACTORS WITH SOLID STATE OVERLOAD HEATERS SELECTED TO MATCH MOTOR NAMEPLATE RATING AT 480V, 3 PHASE
19	P.T.'S BY MECO, OBTAIN REQUIREMENTS & APPROVAL FROM MECO
20	100 HP MOTOR STARTER, SOLID–STATE TYPE WITH BYPASS CONTACTOR, AND SCR ISOLATION CONTACTORS WITH SOLID STATE OVERLOAD HEATERS SELECTED TO MATCH MOTOR NAMEPLATE RATING AT 480V, 3 PHASE
21	THREE PHASE MOTOR PROTECTOR, SYMCOM, INC. MOTOR SAVER MODEL 777KW SERIES WITH MODBUS INTERFACE
22	THREE PHASE MOTOR PROTECTOR REMOTE MANAGER, SYMCOM, INC. MODEL RM–2000 SERIES, WITH REQUIRED RS485MS–2W SERIAL INTERFACE FOR CONNECTING TO MODEL 777KW MOTOR PROTECTOR
23	TYPE RS485 NETWORK CABLE FOR INPUT INTO SCADA SYSTEM
24	C.T.'S BY MECO, OBTAIN REQUIREMENTS & APPROVAL FROM MECO
25	200 HP MOTOR STARTER, SOLID–STATE TYPE WITH BYPASS CONTACTOR, AND SCR ISOLATION CONTACTORS WITH SOLID STATE OVERLOAD HEATERS SELECTED TO MATCH MOTOR NAMEPLATE RATING AT 480V, 3 PHASE

1 ONE LINE DIAGRAM SCHEDULE
E–108 N.T.S.

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI
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STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

ONE LINE DIAGRAM SCHEDULE

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018

DWG. NO. E–108
SHEET 131 OF 146

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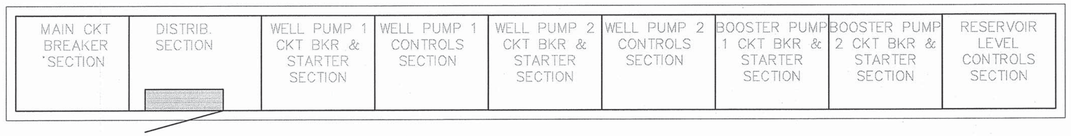
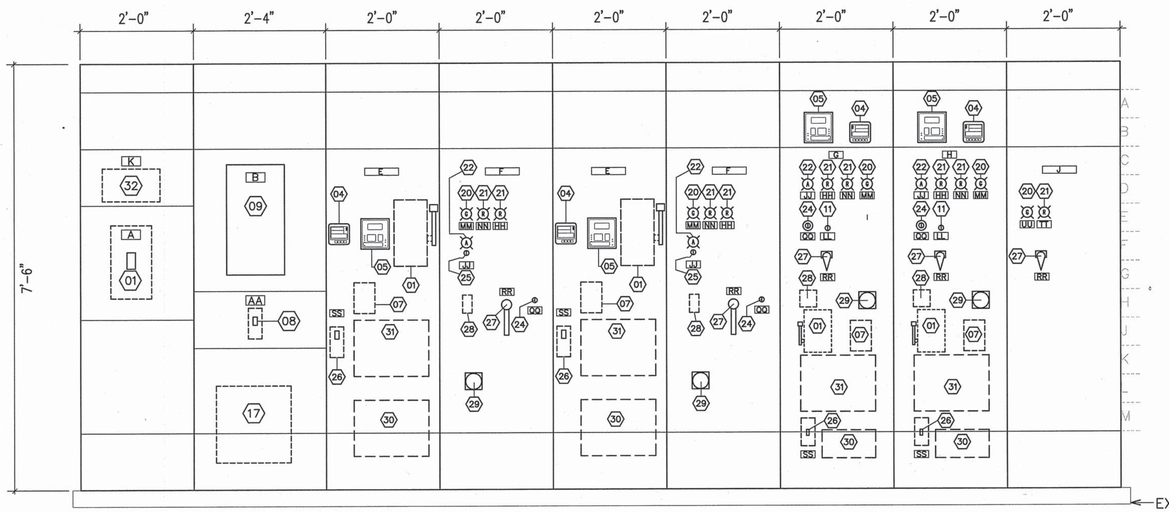


PLAN



EXISTING 3 1/2" HIGH CONCRETE PAD, WITH 2" CLEAR AROUND EQUIPMENT

ELEVATION

MCC NOTES:

1. MOTOR CONTROLLERS SHALL HAVE PROVISIONS FOR LOCKING IN THE "OFF" POSITION.
2. ALL SWITCHES MOUNTED ON FRONT PANEL OF MCC SHALL BE MOUNTED NO HIGHER THAN 70" ABOVE FINISH FLOOR. THE EMERGENCY STOP PUSHBUTTON SWITCH SHALL BE MOUNTED NO HIGHER THAN 60" ABOVE FINISH FLOOR.
3. MCC SHALL BE PROVIDED WITH REQUIRED SPACE HEATERS, AND WIRED TO CIRCUIT A-9.
4. MCC SHALL BE BOLTED TO CONCRETE PAD AS APPROPRIATE.
5. ENTIRE MOTOR CONTROL CENTER SHALL BE CONSTRUCTED ACCORDING TO UL 845. ENCLOSURE SHALL BE RATED NEMA 3R 316SS.

1 MOTOR CONTROL CENTER DETAILS
E-109 NOT TO SCALE

MCC COMPONENTS

ITEM	DESCRIPTION
01	CIRCUIT BREAKER (480V)
02	
03	NIGHT LIGHT TIME SWITCH
04	DIGITAL MULTI-FUNCTION POWER MONITOR
05	MOTOR PROTECTOR REMOTE MANAGER
06	
07	BRANCH FEEDER SPD (480V)
08	TRANSFORMER CIRCUIT BREAKER
09	PANEL "A"
10	
11	TROUBLE RESET PUSHBUTTON
12	
13	
14	BLUE LED LIGHT
15	AUTO-DIALER
16	
17	DRY TYPE TRANSFORMER
18	
19	
20	GREEN LED LIGHT
21	RED LED LIGHT
22	AMBER LED LIGHT
23	
24	EMERGENCY STOP PUSHBUTTON
25	
26	CAPACITOR CIRCUIT BREAKER
27	SELECTOR SW. (HAND-OFF-REMOTE) PISTOL
	GRIP
28	TEST/NORMAL SWITCH
29	RUNNING TIME METER
30	CAPACITOR
31	SOLID STATE SOFT STARTER
32	MAIN SERVICE SPD (480V)
33	
34	
35	
36	

MCC NAMEPLATES

ITEM	DESCRIPTION
A	MAIN CIRCUIT BREAKER
B	PANEL "A"
C	WELL PUMP NO. 1 STARTER
D	WELL PUMP NO. 1 CONTROLS
E	WELL PUMP NO. 2 STARTER
F	WELL PUMP NO. 2 CONTROLS
G	BOOSTER PUMP NO. 1 STARTER AND CONTROLS
H	BOOSTER PUMP NO. 2 STARTER AND CONTROLS
J	RESERVOIR LEVEL VALVE CONTROLS
K	SURGE PROTECTIVE DEVICE
L	
M	
N	
P	
Q	
R	
S	
T	
U	
V	
W	
X	
Y	
Z	

ABOVE NAMEPLATES TO BE 9" x 2 1/4" x 1/8" DILECTO WITH 5/8" WHITE LETTERING & BEVELED EDGES

MCC NAMEPLATES

ITEM	DESCRIPTION
AA	TRANSFORMER CIRCUIT BREAKER
BB	
CC	
DD	
EE	
FF	
GG	
HH	MAIN LINE FLOW
JJ	ALARM-NO FLOW
KK	ON FLOAT CONTROL
LL	TROUBLE RESET
MM	MOTOR STOPPED
NN	MOTOR RUNNING
PP	HIGH DISCHARGE PRESSURE
QQ	EMERGENCY STOP & RESET
RR	HAND-OFF-AUTO
SS	CAPACITOR CIRCUIT BREAKER
TT	RESERVOIR LEVEL VALVE OPEN
UU	RESERVOIR LEVEL VALVE CLOSE

ABOVE NAMEPLATES TO BE 4" x 2" x 1/8" DILECTO WITH 1/4" WHITE LETTERING & BEVELED EDGES

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO. E-109
SHEET 132 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

MOTOR CONTROL CENTER DETAILS

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018

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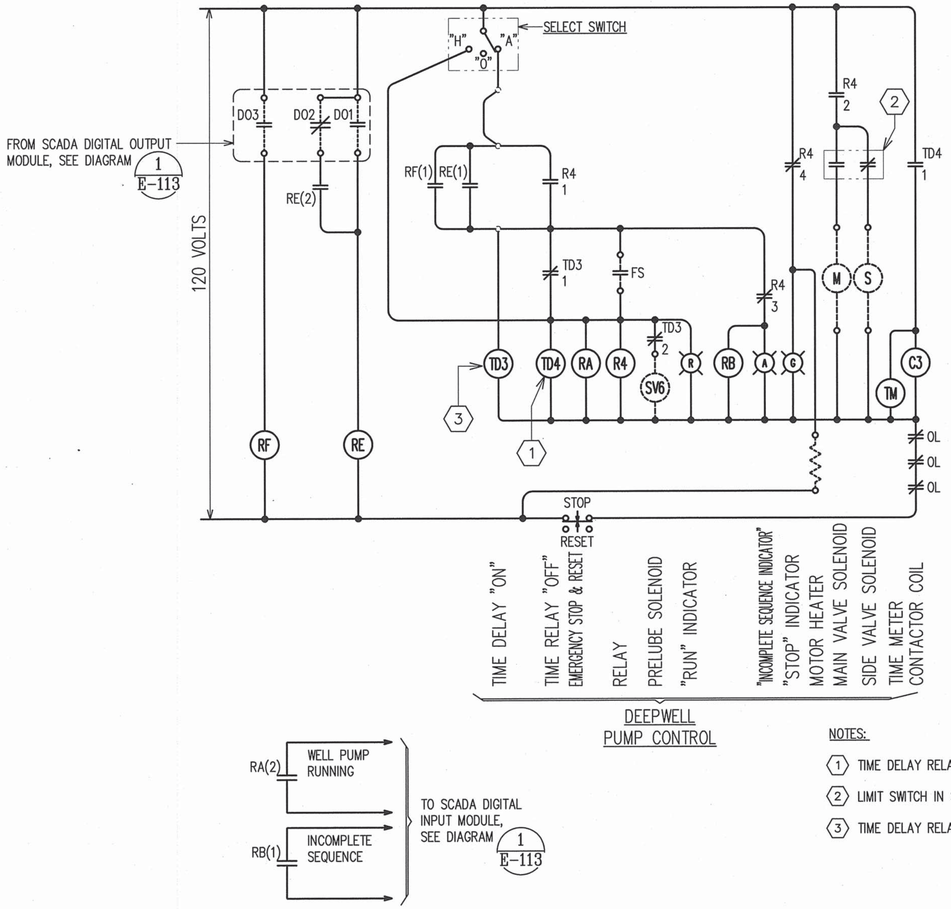
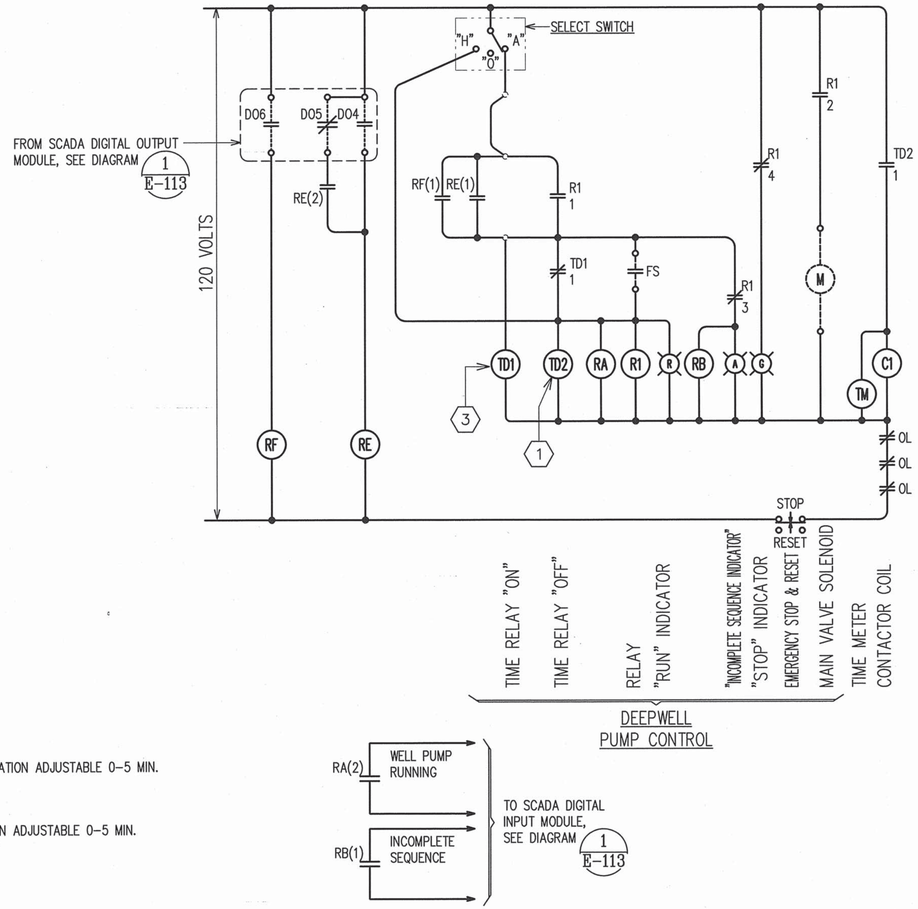


NOTES:

1. TIME DELAY RELAY ON DE-ENERGIZATION ADJUSTABLE 0-5 MIN.
2. LIMIT SWITCH IN SIDE VALVE.
3. TIME DELAY RELAY ON ENERGIZATION ADJUSTABLE 0-5 MIN.

1 E-110 SITE NO. 1 WELL PUMP NO. 1 CONTROLS



2 E-110 SITE NO. 1 WELL PUMP NO. 2 CONTROLS

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DWG. NO. E-110
SHEET 133 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
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USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

SITE NO. 1 WELL PUMP CONTROL DIAGRAMS

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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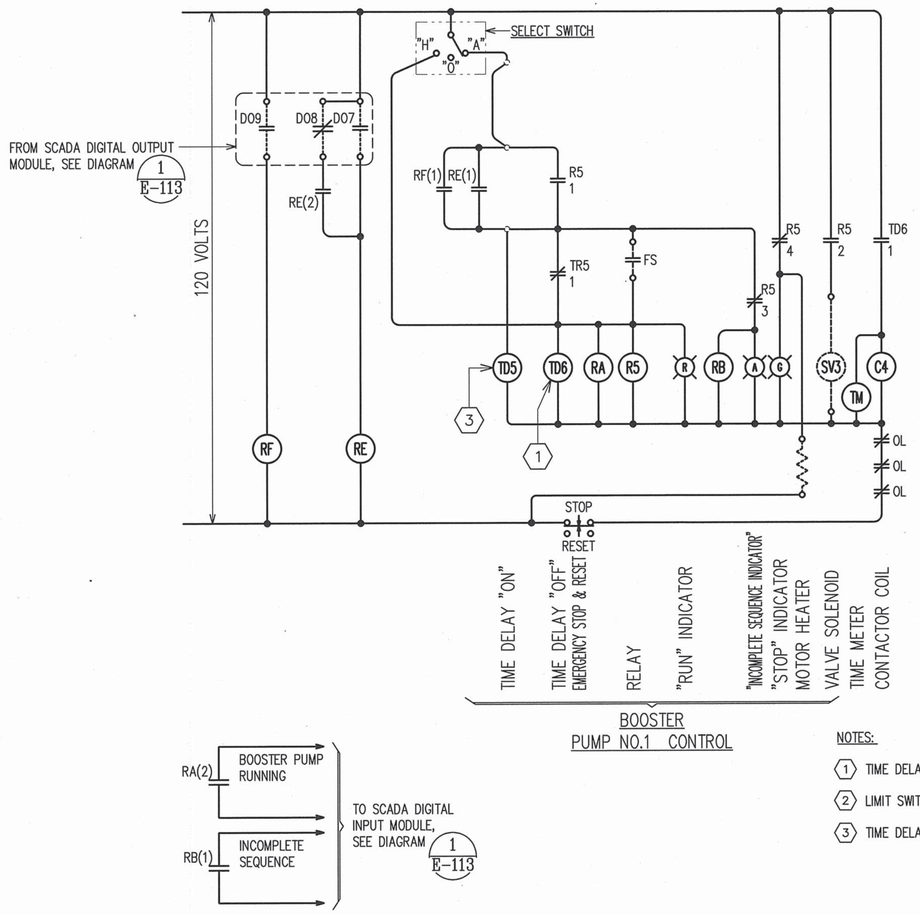
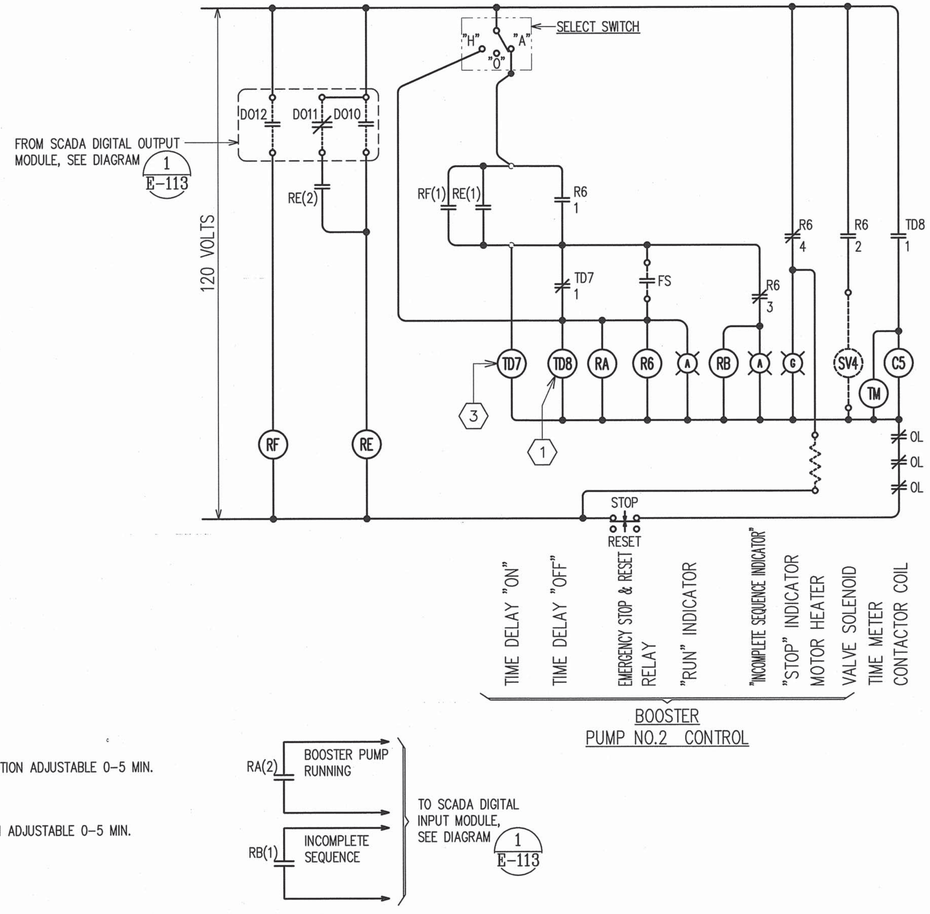


NOTES:

1. TIME DELAY RELAY ON DE-ENERGIZATION ADJUSTABLE 0-5 MIN.
2. LIMIT SWITCH IN SIDE VALVE.
3. TIME DELAY RELAY ON ENERGIZATION ADJUSTABLE 0-5 MIN.

1 E-111 SITE NO. 1 BOOSTER PUMP NO. 1 CONTROLS



2 E-111 SITE NO. 1 BOOSTER PUMP NO. 2 CONTROLS

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

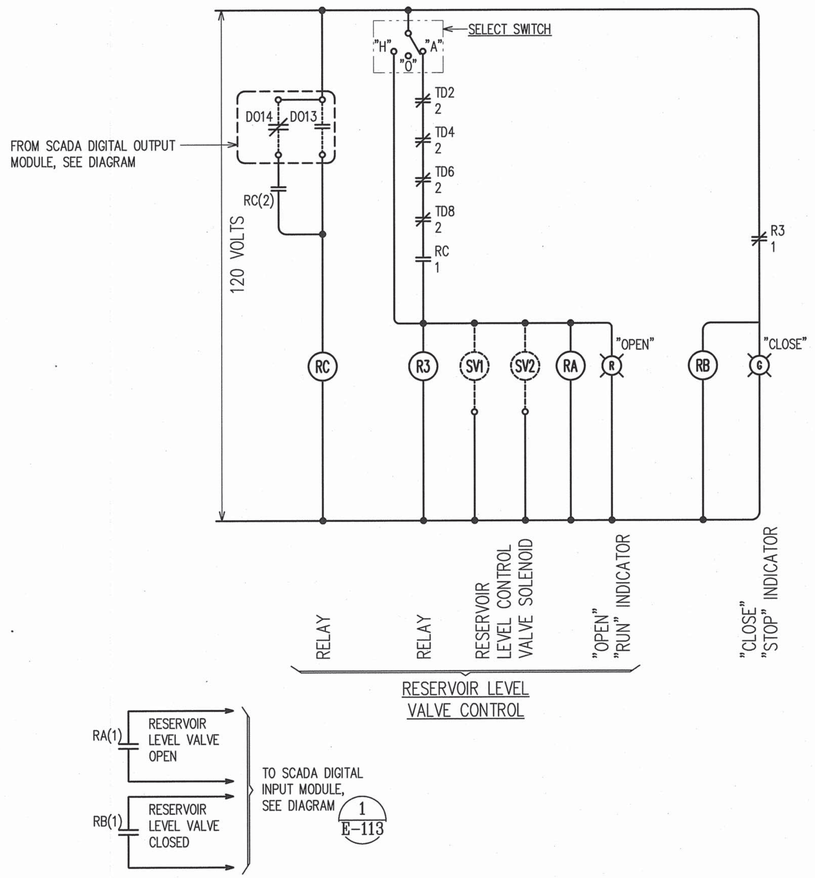
SITE NO. 1 BOOSTER PUMP CONTROL DIAGRAMS

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

DWG. NO. E-111
SHEET 134 OF 146

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018



1 / E-112 SITE NO. 1 RESERVOIR LEVEL VALVE CONTROLS

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

SITE NO. 1 RESERVOIR LEVEL VALVE CONTROLS

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

KRAIG K. OTANI
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No. 14288-E
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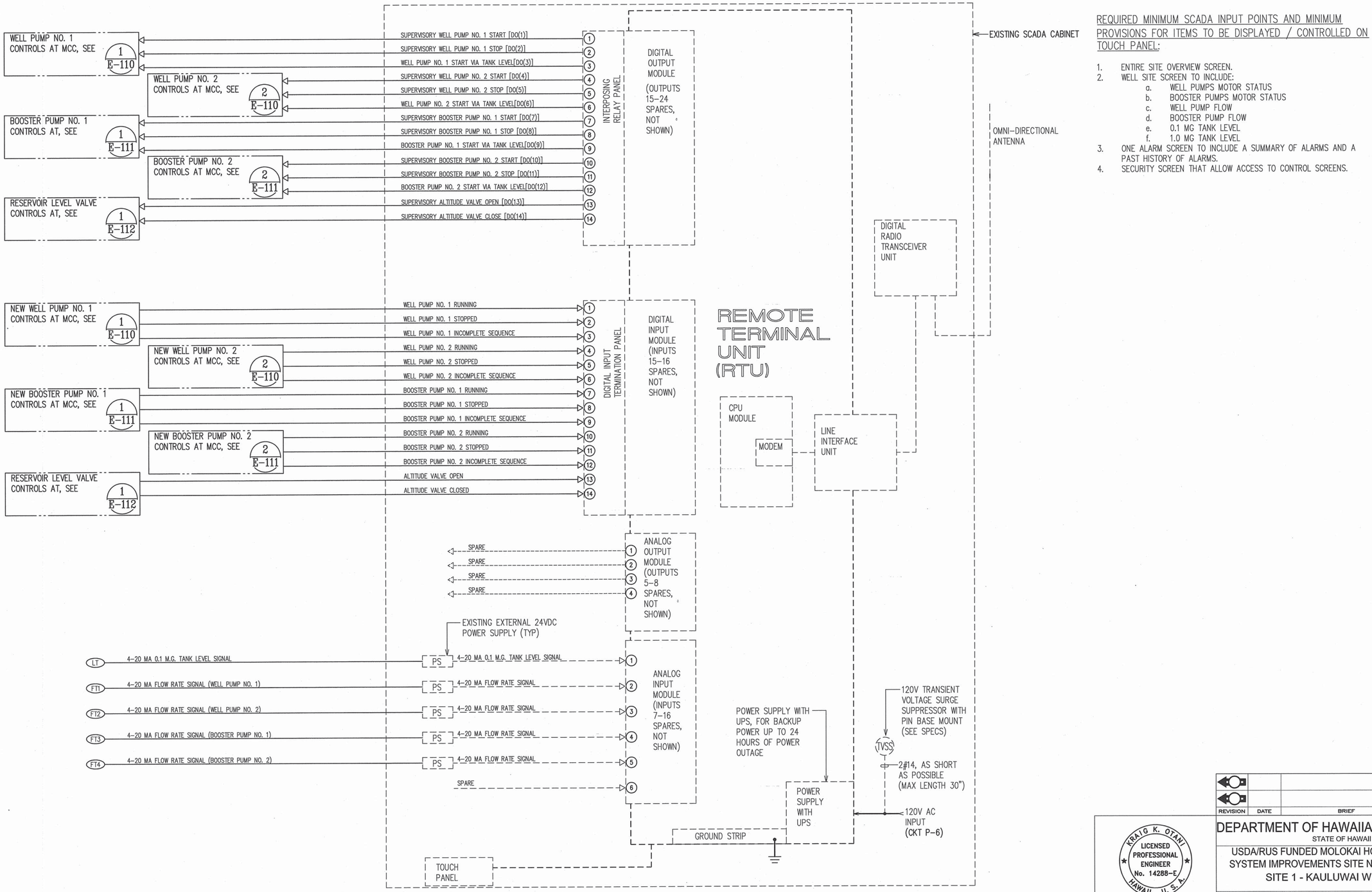
DWG. NO. E-112
SHEET 135 OF 146



1 E-113 MOLOKAI WATER SYSTEM SITE NO. 1 SCADA DIAGRAM WITH MODIFICATIONS

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

1. ENTIRE SITE OVERVIEW SCREEN.
2. WELL SITE SCREEN TO INCLUDE:
   a. WELL PUMPS MOTOR STATUS
   b. BOOSTER PUMPS MOTOR STATUS
   c. WELL PUMP FLOW
   d. BOOSTER PUMP FLOW
   e. 0.1 MG TANK LEVEL
   f. 1.0 MG TANK LEVEL
3. ONE ALARM SCREEN TO INCLUDE A SUMMARY OF ALARMS AND A PAST HISTORY OF ALARMS.
4. SECURITY SCREEN THAT ALLOW ACCESS TO CONTROL SCREENS.

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 1 - KAULUWAI WELL SITE

SITE NO. 1 SCADA DIAGRAM

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

KRAIG K. OTANI LICENSED PROFESSIONAL ENGINEER No. 14288-E HAWAII, U.S.A.

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LICENSE EXP. DATE: APRIL 30, 2020

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JUNE 2018

DWG. NO. E-113
SHEET 136 OF 146

LAST_EDIT
Z:\CAD\PROJECTS\21807\E-000-ONELINE DIAGRAM XREFS: KKO-STAMP-Z:\CAD\PROJECTS_PE_ STAMP\KKO-STAMP _3218017_ONE LINE=\\XREF_3218017_ONE LINE

GENERAL NOTES:

1. PLANS DO NOT INDICATE COMPLETE EXISTING ELECTRICAL CONDITIONS. CONTRACTOR SHALL VISIT JOBSITE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AND EXTENT OF DEMOLITION AND NEW WORK PRIOR TO THE START OF CONSTRUCTION.
2. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL VISIT JOBSITE AND REPORT ANY DISCREPANCIES AND/OR DIFFERENCE IN DRAWINGS, WITH RESPECT TO EXISTING CONDITIONS, TO THE ENGINEER.
3. CONTRACTOR SHALL RESOLVE ALL DISCREPANCIES AND QUESTIONS PRIOR TO THE START OF WORK. NO EXTRA PAYMENT SHALL BE ALLOWED ON ACCOUNT OF WORK MADE NECESSARY BY CONTRACTOR'S FAILURE TO VISIT THE SITE AND/OR FAILURE TO RESOLVE DISCREPANCIES AND QUESTIONS.
5. BEFORE ANY ELECTRICAL WIRING IS CUT, CONTRACTOR SHALL VERIFY USAGE OF WIRING TO ENSURE THAT REQUIRED SERVICES ARE NOT DISCONTINUED.
6. REMOVE ALL EXISTING EXPOSED CONDUIT AND WIRES NOT TO REMAIN IN SERVICE; CONCEALED RACEWAYS NO LONGER REQUIRED SHALL BE CUT, CAPPED AND ABANDONED IN PLACE WITH ALL WIRES REMOVED.
7. PROVIDE METAL SEALS FOR ALL ABANDONED RACEWAY OPENINGS IN BOXES, CABINETS, AND EQUIPMENT ENCLOSURES; SEALS SHALL RETAIN NEMA RATING OF REMAINING BOXES, CABINETS, AND EQUIPMENT ENCLOSURES.
8. RETURN ALL SALVAGEABLE APPARATUS, AS DETERMINED BY DHHL OR ITS REPRESENTATIVES, TO A SITE DESIGNATED BY DHHL OR ITS REPRESENTATIVES, AT NO ADDITIONAL COST TO DHHL. DISPOSE OF ALL UNWANTED MATERIALS.
9. PRIOR TO PENETRATING OR DISTURBING ANY SURFACES IDENTIFIED AS CONTAINING HAZARDOUS MATERIALS, HAVE SURFACE/MATERIAL ABATED OR TREATED SO AS NOT TO CONTAMINATE SPACE OR AREA. REFER TO HAZARDOUS MATERIAL HANDLING REQUIREMENTS.

GENERAL CONSTRUCTION NOTES:

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

ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
	LED LIGHT, PENDANT MTD.
	LED LIGHT, CEIL. MTD.
	LED LIGHT, WALL MTD.
A-2/32	LIGHT FIXTURE DESIGNATOR, INDICATES TYPE "A" WITH 2-32 WATT LAMPS
$a	LT. SW., 1P, CONTROLLING OUTLET(S) "a", MTD. +48"
	DUPLEX RECEPTACLE, NEMA 5-15R, 120V, MTD. +18" OR AS NOTED
	SINGLE RECEPTACLE, NEMA 5-20R, 120V, MTD. +18" OR AS NOTED
	DUPLEX RECEPTACLE, WITH GROUND FAULT CIRCUIT INTERRUPTER, NEMA 5-20R, 120V, MTD. +18" OR AS NOTED
	ELECTRICAL PANELBOARD
J	JUNCTION BOX, CEIL. MTD., 4-11/16" NOM.
J	JUNCTION BOX, WALL MTD., 4-11/16" NOM.
M	MOTOR CONNECTION
E	EQUIPMENT CONNECTION
$	ELECTRICAL EQUIPMENT DISCONNECT SWITCH, 1 OR 2 POLE
	DISCONNECT SWITCH, HP RATED
WP	DENOTES "WEATHERPROOF"
SS	DENOTES "TYPE 316 STAINLESS STEEL"

SYMBOL	DESCRIPTION
	FLEXIBLE CONDUIT, LIQUIDTIGHT
	CONDUIT OR DUCTLINE BELOW REF. FL. OR GROUND
	EXPOSED CONDUIT
	EXISTING DUCTLINE
A S (1-4E, 1-1C)	ELECTRIC/SIGNAL DUCTLINE WITH DESIGNATORS; ITEMS IN CIRCLE INDICATES DUCT SECTION TYPE, WITH DUCT COMPLEMENTS NOTED BELOW (TYPE "A" DUCT INDICATED WITH 1-4"E DUCT, AND TYPE "S" DUCT WITH 1-1"C DUCT; E=ELECTRIC, T=TELEPHONE, C=CONTROLS, I=INSTRUMENTATION); SEE SHEET E-004 FOR DUCT SECTION DETAILS
e-oh	EXISTING OVERHEAD UTILITY LINES
	2' X 4' HAWAIIAN TELCOM PULLBOX PER HAWAIIAN TELCOM REQUIREMENTS AND APPROVAL
	3' X 5' ELECTRIC PULLBOX SIMILAR TO MECO STANDARD PULLBOX REQUIREMENTS
	EXISTING PULLBOX OR HANDHOLE, SEE PLANS FOR DESIGNATION

NOTE:

PROVIDE GREEN GROUND CONDUCTOR IN ALL NEW BRANCH AND FEEDER CIRCUITS INCLUDING LIGHT SWITCHING LEGS, SIZED PER NEC TABLE 250.122. ALL CONDUCTORS #12 AWG MINIMUM.

COUNTY OF MAUI

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

____ BUILDING COMPONENT SYSTEMS
X ELECTRICAL COMPONENT SYSTEMS
____ MECHANICAL COMPONENT SYSTEMS

SIGNATURE: KKO DATE: 6/1/18
NAME: Kraig K. Otani
TITLE: PROJECT MANAGER
LICENSE NO.: 14288-E

BUILDING ENERGY CONSERVATION CODE

EXTERIOR LIGHTING POWER ALLOWANCE 1760W INSTALLED 110W
INTERIOR LIGHTING POWER ALLOWANCE 4464W INSTALLED 2866W
CALCULATIONS: SEPARATE X ON DRAWINGS ____ (CHECK ONE)

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI LICENSED PROFESSIONAL ENGINEER No. 14288-E HAWAII, U.S.A.

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KKO
SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO. E-001
SHEET 137 OF 146

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

GENERAL NOTES AND ELECTRICAL SYMBOLS

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018

LAST EDIT:
Z:\CAD\PROJECTS\21801\E-001-GEN NOTES AND ELEC SYM XREFS: _X21801-SYMBOLS=_\XREF_X21801-SYMBOLS KKO-STAMP=Z:\CAD\PROJECTS_FE_ STAMP\KKO-STAMP

SANDWICH ISLES COMMUNICATIONS' CONSTRUCTION NOTES
DECEMBER 9, 2016

GENERAL:

ALL WORK SHALL BE IN STRICT ACCORDANCE WITH SPECIFICATIONS AND REQUIREMENTS OF THE RURAL UTILITIES SERVICES (RUS) AND SANDWICH ISLES COMMUNICATIONS (SIC), WHICH COMPLIES WITH ALL APPLICABLE CITY, COUNTY, STATE AND FEDERAL REQUIREMENTS.

ALL MATERIALS USED MUST BE APPROVED AND (OR) ACCEPTED BY SANDWICH ISLES COMMUNICATIONS, INC..

CONTRACTOR MAY REFER TO THE RUS WEBSITE (HTTP://WWW.RURDEV.USDA.GOV/RUSTELECOMPROGRAMS.HTML) FOR REGULATIONS, BULLETINS, FORMS, ETC.

CONTACT THE HAWAII ONE CALL CENTER AT (866) 423-7287 FOR LOCATING EXISTING UNDERGROUND FACILITIES PRIOR TO BEGINNING ANY EXCAVATION.

THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL LICENSES AND PERMITS AND SHALL GIVE ALL NOTICES NECESSARY FOR PROSECUTION OF THE WORK.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WORK SCHEDULES WITH ALL UTILITY COMPANIES, COUNTY, OR STATE AGENCIES REQUIRED FOR THIS PROJECT. THIS IS TO INCLUDE COORDINATION OF ANY INSPECTION AND SPECIFICATIONS BY THOSE UTILITY COMPANIES, COUNTY, OR STATE AGENCIES.

THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS RELATING TO THIS PROJECT BEFORE COMMENCING THE REQUIRED WORK.

THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES AND/OR CONDITIONS WHICH WOULD PREVENT HIM FROM FULFILLING THE TERMS OF THIS CONTRACT.

ALL SIC PULLBOXES THAT THE CONTRACTOR ENTERS FOR INSTALLATION OF FACILITIES MUST BE CLEARED OF STANDING WATER AND DEBRIS. CONTRACTOR SHALL ORGANIZE EXISTING CABLE FACILITIES, TO INCLUDE ADDING CABLE RACKS AND TYING DOWN EXISTING CABLE, IN ORDER TO ACCOMMODATE NEW FACILITIES BEING PLACED. CLEANING AND ORGANIZING OF PULLBOXES SHALL BE DONE TO THE SATISFACTION OF THE PROJECT MANAGER.

THE CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS TO THE OWNER AT COMPLETION OF THE PROJECT. AS-BUILT DRAWINGS REFER TO DOCUMENTS MAINTAINED AND ANNOTATED BY THE CONTRACTOR DURING CONSTRUCTION AND INCLUDE ANY CHANGES OR NEW INFORMATION FOUND OR ADDED THROUGHOUT CONSTRUCTION OF THE PROJECT.

CONDUITS:

1. ALL UNDERGROUND PVC CONDUITS, SWEEPS, COUPLINGS, ADAPTERS AND BELL ENDS SHALL BE SCHEDULE 40, UNLESS OTHERWISE SPECIFIED.

2. ALL HIGH DENSITY POLYETHYLENE CONDUITS SHALL BE SDR 11. TYPICAL 3-PACK UNIT INCLUDES THREE 1.5-INCH SDR 11 RATED CONDUITS IN THE COLORS OF BLACK, RED, AND ORANGE, UNLESS OTHERWISE SPECIFIED. ALL CONDUITS TO BE PRESSURE TESTED AT 120 PSI. FUSION SPLICING OF THE CONDUIT SHALL BE ACCEPTABLE ONLY WHEN PULLING JOINTS THROUGH BORES. ALL COUPLINGS SHALL BE DOUBLE "E-LOC" MANUFACTURED BY ETOC SPECIALTY PRODUCTS, INC.

3. MAIN CONDUIT RUNS, EXCEPT RISER CONDUITS, SHALL BE CONSTRUCTED WITH MINIMUM 6-FOOT RADIUS CURVES, UNLESS OTHERWISE APPROVED BY THE PROJECT MANAGER.

4. AFTER THE CONDUITS ARE INSTALLED, A ROUND SOLID MANDREL NOT LESS THAN 12-INCHES IN LENGTH AND HAVING A DIAMETER OF 1/4-INCH LESS THAN THE INSIDE DIAMETER OF THE CONDUIT SHALL BE PULLED THROUGH EACH CONDUIT. THE SIC PROJECT MANAGER SHALL BE PRESENT DURING ALL MANDREL TESTING. SUFFIXES LISTED IN RUS 515B FOR CONDUITS ARE APPLICABLE.

5. INSTALL MULETAPE IN ALL PVC CONDUITS TWO (2) INCH DIAMETER AND LARGER. THE NEPTCO MULETAPE (OR APPROVED EQUAL) IS AVAILABLE IN 3,000FT., 6,500FT., AND 10,000FT. REELS FROM WESTINGHOUSE ELECTRIC SUPPLY COMPANY (WESCO), THE NEPTCO MULETAPE IS PRE-LUBRICATED AND PRINTED WITH SEQUENTIAL FOOTAGE MARKINGS. PVC CONDUITS WITH A DIAMETER OF 1.5-INCH OR LESS SHALL HAVE A POLY-LINE (P-LINE) INSTALLED. ALL DUCTS SHALL BE SEALED AFTER MULETAPE/P-LINE HAS BEEN INSTALLED, FOLLOWING THE SPECIFICATIONS BELOW.

6. ALL CONDUITS AND DUCTS SHALL BE PROPERLY SEALED USING COMMSCOPE, JACKMOON DUCT SEALS, APPLICABLE BUSHING SLEEVES AND BLANK DUCT PLUGS. THE CONDUIT DIAMETER, INSIDE DIAMETER AND CABLE SIZE(S) SHALL BE TAKEN INTO CONSIDERATION WHEN ORDERING AND INSTALLING "JACKMOON" DUCT SEALS.

   COMMSCOPE JACKMOON SEALS SHALL BE:
   2-INCH CONDUIT: TRIPLEX DUCT SEALS, SERIES 70
   3-INCH CONDUIT: TRIPLEX DUCT SEALS, SERIES 136
   3.5-INCH AND LARGER CONDUIT: QUADPLEX DUCT SEALS, SERIES 136

   ALL OTHER DUCTS SHALL HAVE COMMSCOPE, BLANK JACKMOON PLUGS TO KEEP THEM FREE OF WATER AND DEBRIS.

7. CONDUIT STUBS FROM HANDHOLES TO INDIVIDUAL RESIDENTIAL LOTS SHALL BE SCHEDULE 40 PVC, 1-INCH DIAMETER AND EXTENDED 5-FEET BEYOND PROPERTY LINE. CAP AND SEAL END AND MARK LOCATIONS WITH ABOVE GROUND MARKER.

8. ALL CONDUITS SHALL ENTER MANHOLES AT A 90 DEGREE ANGLE AND SHALL EXTEND INTO THE MANHOLE AS FOLLOWS: CONDUITS DESIGNATED FOR FIBER SHALL EXTEND 12-INCHES INTO THE MANHOLE. ALL OTHER CONDUITS SHALL BE FLUSH WITH THE INSIDE WALL AND INCLUDE BELL ENDS. ANY EXCEPTIONS SHALL ONLY BE PERMITTED WHEN SPECIFIED BY THE PROJECT MANAGER.

9. ALL CONDUITS ENTERING MANHOLES OR HANDHOLES SHALL BE GROUTED BETWEEN THE CONDUITS AND SIDEWALL, INSIDE AND OUT. ALL CONDUITS WILL ENTER THE MANHOLES AND HANDHOLES ON THE PROPERTY SIDE AT ALL TIMES UNLESS OTHERWISE SPECIFIED BY THE PROJECT MANAGER.

10. BACKFILL AND COMPACTION FOR DUCTLINE TRENCHES, MANHOLES AND HANDHOLES, SHALL BE IN ACCORDANCE WITH:

    A. STATE HIGHWAY DEPARTMENT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION WITH LATEST AMENDMENTS, IF CONSTRUCTION IS LOCATED UNDER A STATE STREET OR ROAD, OR LOCATED IN PRIVATE PROPERTY.

    B. THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION, DATED 1994, OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, WITH LATEST AMENDMENTS; COUNTY OF KAUAI, MAUI, OR HAWAII, AS THE CASE MAY BE, IF CONSTRUCTION IS LOCATED UNDER COUNTY STREETS AND ROADS.

11. BACKFILLING SHALL BE SUBJECT TO THE APPROVAL OF THE SIC PROJECT MANAGER, THE AUTHORIZED REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION, STATE OF HAWAII AND/OR DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, COUNTY OF KAUAI, MAUI OR HAWAII, AS THE CASE MAY BE.

12. A THIRD PARTY GEOTECHNICAL ENGINEER, LICENSED AND INSURED IN THE STATE OF HAWAII, MUST CERTIFY THAT THE EXCAVATED AREA MEETS THE GOVERNING AGENCIES AND/OR OWNERS STANDARDS FOR BACKFILL AND COMPACTION.

13. EXCAVATED MATERIAL MAY BE REUSED AS BACKFILL, PROVIDING THAT IT CONFORMS TO REQUIREMENTS OF TYPE "TA" AND TYPE "TB" BACKFILL, AS REQUIRED WITHIN THE STANDARD SPECIFICATIONS. A WRITTEN SOILS REPORT OF CONFORMANCE BY A LICENSED THIRD PARTY GEOTECHNICAL ENGINEER IS NEEDED PRIOR TO BACKFILL USING THE EXCAVATED MATERIAL.

    A. TYPE A BACKFILL IS DEFINED AS BEACH SAND, EARTH OR EARTH AND GRAVEL. MAXIMUM PARTICLE SIZE SHALL BE 1-INCH AND MIXTURE SHALL NOT CONTAIN MORE THAN 20% BY VOLUME OF ROCK PARTICLES.

    B. TYPE B BACKFILL IS DEFINED AS BEACH SAND, EARTH OR EARTH AND GRAVEL. MAXIMUM PARTICLE SIZE SHALL BE 1/2-INCH AND MIXTURE SHALL NOT CONTAIN MORE THAN 20% BY VOLUME OF ROCK PARTICLES.

14. ALL CONDUIT RUNS SHALL HAVE A 3-INCH NON-METALLIC WARNING TAPE PLACED 12-INCHES ABOVE THE CONDUIT RUN. THE TAPE SHALL READ "CAUTION BURIED FIBER OPTIC CABLE BELOW".

MANHOLES AND HANDHOLES:

1. ALL MANHOLES SHALL HAVE HS20-44 TRAFFIC LOADING COVERS (UNLESS OTHERWISE NOTED). HANDHOLES SHALL HAVE 20K TRAFFIC LOAD RATED COVERS.

2. ALL MANHOLE AND HANDHOLE COVERS SHALL HAVE COVER LOGO TO READ "SIC".

3. ALL MANHOLE AND HANDHOLE COVER BOLTS SHALL BE STAINLESS STEEL 3/4-INCH PENTAHEAD, UNLESS OTHERWISE NOTED.

4. ALL MANHOLES AND HANDHOLES ARE SPECIFIED AS FOLLOWS:

    A. UM35 AND UM46 MANHOLE - CONSISTS OF A REINFORCED CONCRETE MANHOLE WITH CAST IRON LID AND RISERS (IF REQUIRED). ALL MANHOLES ARE UNDER MASTER PURCHASE AGREEMENT WITH HAWAII PRECAST, INC. LOCATED IN CAPTAIN COOK, HAWAII (808-326-7730).

    B. UH35 AND UH46 HANDHOLE - CONSISTS OF A REINFORCED CONCRETE HANDHOLE WITH TRAFFIC RATED HINGED COVERS (UH35) OR SIX TRAFFIC RATED SLIP-NOT COVERS (UH46) AND RISERS (IF REQUIRED). ALL HANDHOLES ARE UNDER MASTER PURCHASE AGREEMENT WITH HAWAII PRECAST, INC. LOCATED IN CAPTAIN COOK, HAWAII (808-326-7730).

    C. UHC30X48X33 HANDHOLE (PULLBOX) - CONSISTS OF A TWO-TIER ARMORCAST POLYMER CONCRETE BOX & COVER ASSEMBLY. PART NUMBER (A0001430TA-SIC4).

    D. UHC13X24X30 HANDHOLE (PULLBOX) - CONSISTS OF AN ARMORCAST POLYMER CONCRETE BOX & COVER ASSEMBLY. PART NUMBER (A0001946TA-SIC1).

5. ALL MANHOLES AND HANDHOLES TO BE ORDERED WITH ALL HARDWARE, INCLUDING CABLE RACKS, STEPS AND LOCKS.

6. SET MANHOLE OR HANDHOLE ON A LEVEL AREA, IN THE BOTTOM OF THE EXCAVATION, ON A 4-INCH LAYER OF CRUSHED ROCK, FOR DRAINAGE PURPOSES.

7. THE BASE OF ALL MANHOLES AND HANDHOLES WILL BE PLACED LEVEL. SOME MANHOLES HAVE ADJUSTABLE FRAMES. ALL VOIDS CREATED DURING INSTALLATION MUST BE FILLED WITH MORTAR MIX OR CONCRETE. THIS IS ESPECIALLY TRUE FOR MANHOLES AND HANDHOLES SET IN ROADWAYS.

8. BEFORE BACKFILLING AND COMPACTING, MAKE SURE COVERS ARE IN PLACE AND SECURE. LAYER 6-INCHES TO 8-INCHES OF BACKFILL MATERIAL AROUND THE MANHOLE OR HANDHOLE. TAMP EACH INDIVIDUAL LAYER OF BACKFILL MATERIAL. CONTINUE THE LAYERING AND "TAMPING" UNTIL FINAL GRADE IS ACHIEVED.

9. THE TOPS OF ALL MANHOLES AND HANDHOLES SHALL BE FLUSH TO GRADE IN PAVED AREAS OR 1-INCH ABOVE FINISH GRADE IN NON-PAVED AREAS, UNLESS OTHERWISE SPECIFIED BY PROJECT MANAGER.

10. PROVIDE A 5/8-INCH DIAMETER X 8-FOOT COPPER CLAD GROUND ROD AT HANDHOLES AND MANHOLES AS SPECIFIED ON THE DRAWINGS OR AS DIRECTED BY THE PROJECT MANAGER.

11. FIELD MODIFICATIONS ARE ACCOMPLISHED BY USING A FINE TOOTHED SAW. RACKS OR OTHER EQUIPMENT MAY BE SECURED TO THE SIDE OF THE VAULT BY USE OF TOGGLE BOLTS, MOLLY BOLTS, ETC. AND MUST BE APPROVED BY THE PROJECT MANAGER.

SIC CONSTRUCTION NOTES
UTILITY POLE INSTALLATION:

1. ALL AERIAL WORK SHALL BE IN STRICT ACCORDANCE WITH SPECIFICATIONS AND REQUIREMENTS OF THE RURAL UTILITIES SERVICES (RUS) BULLETIN 1753F-152.

2. UTILITY POLES SHALL BE PRESERVED UTILIZING THE PENTACHLOROPHENOL (PENTA) TYPE TREATMENT.

3. UTILITY POLES SHALL BE TERMITE PROTECTED UTILIZING TERMIMESH POLESOCK'S OR EQUIVALENT. POLESOCK'S SHALL EXTEND NO MORE THAN EIGHT INCHES ABOVE GROUND AND BE SECURED WITH STAINLESS STRAPPING. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.

4. THE POLE HOLE SHALL BE OF SUFFICIENT DIAMETER TO PERMIT THE POLE TO SETTLE FREELY TO THE BOTTOM OF THE HOLE WITHOUT TRIMMING THE BUTT AND STILL HAVE SUFFICIENT SPACE BETWEEN THE POLE AND THE SIDE OF THE HOLE TO PERMIT PROPER TAMPING OF THE BACKFILL AT EVERY POINT AROUND THE POLE, AND THROUGHOUT THE ENTIRE DEPTH OF THE HOLE.

5. THE POLE HOLE SHALL NOT EXCEED TWO TIMES THE DIAMETER OF THE POLES BUTT DIAMETER.

6. BACKFILL SHALL BE THOROUGHLY TAMPED THE FULL DEPTH OF THE POLE HOLE. EARTH MUST BE BANKED AROUND THE POLE TO A MINIMUM HEIGHT OF SIX INCHES ABOVE GROUND LEVEL.

7. POLES SHALL BE SET PLUMB EXCEPT AT CORNERS WHERE THEY SHALL BE SET AND RAKED AGAINST THE LOAD SO THAT THE POLE TOP WILL BE IN LINE AFTER THE LOAD IS APPLIED. THE RAKE POLE SHALL NOT EXCEED SIX INCHES FOR EACH TEN FEET OF POLE LENGTH AFTER THE CONDUCTORS ARE INSTALLED AT THE REQUIRED TENSION. DEADEND SHALL BE SET SO AS TO BE PLUMB AND IN LINE AFTER THE LOAD IS APPLIED.

8. POLE LIGHTNING PROTECTION SHALL BE A #6 AWG BARE COPPER WIRE IN ACCORDANCE WITH SIC/RUS CONSTRUCTION PRACTICES.

9. SUSPENSION STRAND / HARDWARE SHALL BE CLASS C GALVANIZED STEEL UTILITY GRADE FOR CORROSION AREAS.

10. GUY GUARDS, YELLOW IN COLOR SHALL BE PLACED ON ALL DOWN GUYS.

REVISION	DATE	BRIEF	MADE BY	APPROVED

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

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SIGNATURE
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

SIC NOTES

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018

DWG. NO. E-002
SHEET 138 OF 146

OVERALL ELECTRICAL SITE PLAN

SCALE: 1"=700'

NORTH

700' 350' 0 700' 1400' 2100'

SCALE: 1"=700'

GRAPHIC SCALE

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SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

OVERALL ELECTRICAL SITE PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

DWG. NO. E-003
SHEET 139 OF 146

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JUNE 2018

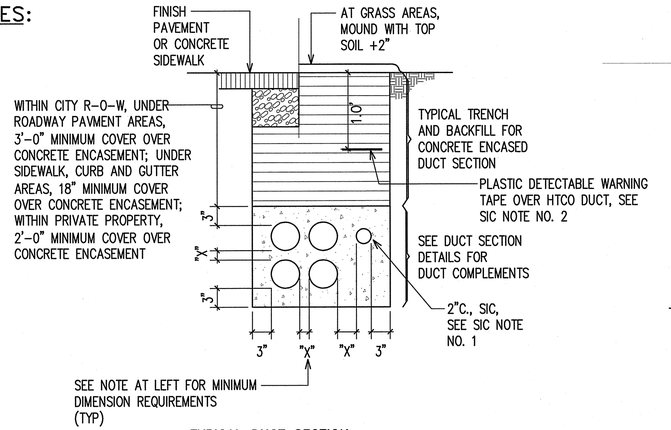
DUCT SECTION BACKFILL NOTES:

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

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

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

CONCRETE – 3" ENCASEMENT, 3000 psi COMPRESSIVE STRENGTH @ 28 DAYS.



TYPICAL DUCT SECTION

DESIGNATION DESCRIPTIONS

ELEC = UTILITY CO. PRIMARY OR SECONDARY ELECTRIC
TEL = UTILITY CO. TELEPHONE
PWR = PRIMARY OR SECONDARY ELECTRIC
CTL = CONTROL
SIG = INSTRUMENTATION OR ANTENNA CABLE

MINIMUM "X" DIMENSION
DUCT SEPARATION REQUIREMENTS

ELEC – ELEC = 1 1/2"

ELEC – TEL = 3"

TEL – TEL = 1 1/2"

ELEC – CTL/SIG = 3"

TEL – CTL/SIG = 1 1/2"

PWR – CTL/SIG = 3"

ELEC – PWR = 1 1/2"

TEL – PWR = 3"

PWR – PWR = 1 1/2"

CTL/SIG – CTL/SIG = 1 1/2"

MINIMUM OF 3" CONCRETE ENCASEMENT AROUND DUCTBANK

WHERE DUCTLINE CROSSES OVER WATER LINE, PROVIDE THE FOLLOWING:

6" MINIMUM SEPARATION BETWEEN DUCTLINES AND WATER LINE.

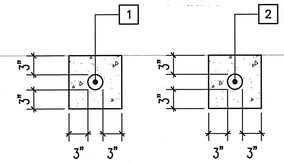
PROVIDE CONCRETE JACKET AROUND DUCTLINES.

PROVIDE ONLY TYPE "B" BACKFILL AROUND WATER LINE.

SANDWICH ISLES COMMUNICATION (SIC) DUCTLINE NOTES:

1. CONTRACTOR SHALL PLACE NEPTCO WP 1800P MULETAPE, OR APPROVED EQUAL, IN EACH DUCT THROUGHOUT ITS ENTIRE LENGTH WITH PROTRUSIONS OF 2 FEET IN MANHOLES AND HANDHOLES AT EACH END, AND 1 FOOT IN PULLBOXES. MULETAPE IS RATED FOR 1800 LB PULL AND HAS FOOTAGE MARKINGS FOR MEASURING DUCT LENGTHS.

2. CONTRACTOR SHALL PLACE 4-MIL ORANGE COLORED PLASTIC WARNING TAPE, NOT LESS THAN 6" WIDE, ENTIRE LENGTH OF TRENCH FOR ALL UNDERGROUND INSTALLATIONS. TAPE SHOULD READ "WARNING-STOP DIGGING-CALL SIC, COMMUNICATIONS CABLE BURIED BELOW, FAILURE TO COMPLY COULD RESULT IN LEGAL ACTION".



SECTION (A) SECTION (B)

DUCT SECTION DETAILS AND REQUIREMENTS

NOT TO SCALE

DUCT AND WIRE SCHEDULE

NO.	DUCT SIZE	WIRE SIZE	DESTINATION OR USE
1	2"	SEE ONE-LINE DIAGRAM	MECO POWER TO NEW MAINTENANCE BUILDING
2	2"	PC	SIC DUCTLINES TO NEW MAINTENANCE BUILDING

NOTES:
1. ALL CONCRETE ENCASED DUCTS SHALL BE SCHEDULE 40 PVC.
2. PC INDICATED PROVIDE PULLCORD.

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SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

DUCT SECTION DETAILS AND REQUIREMENTS

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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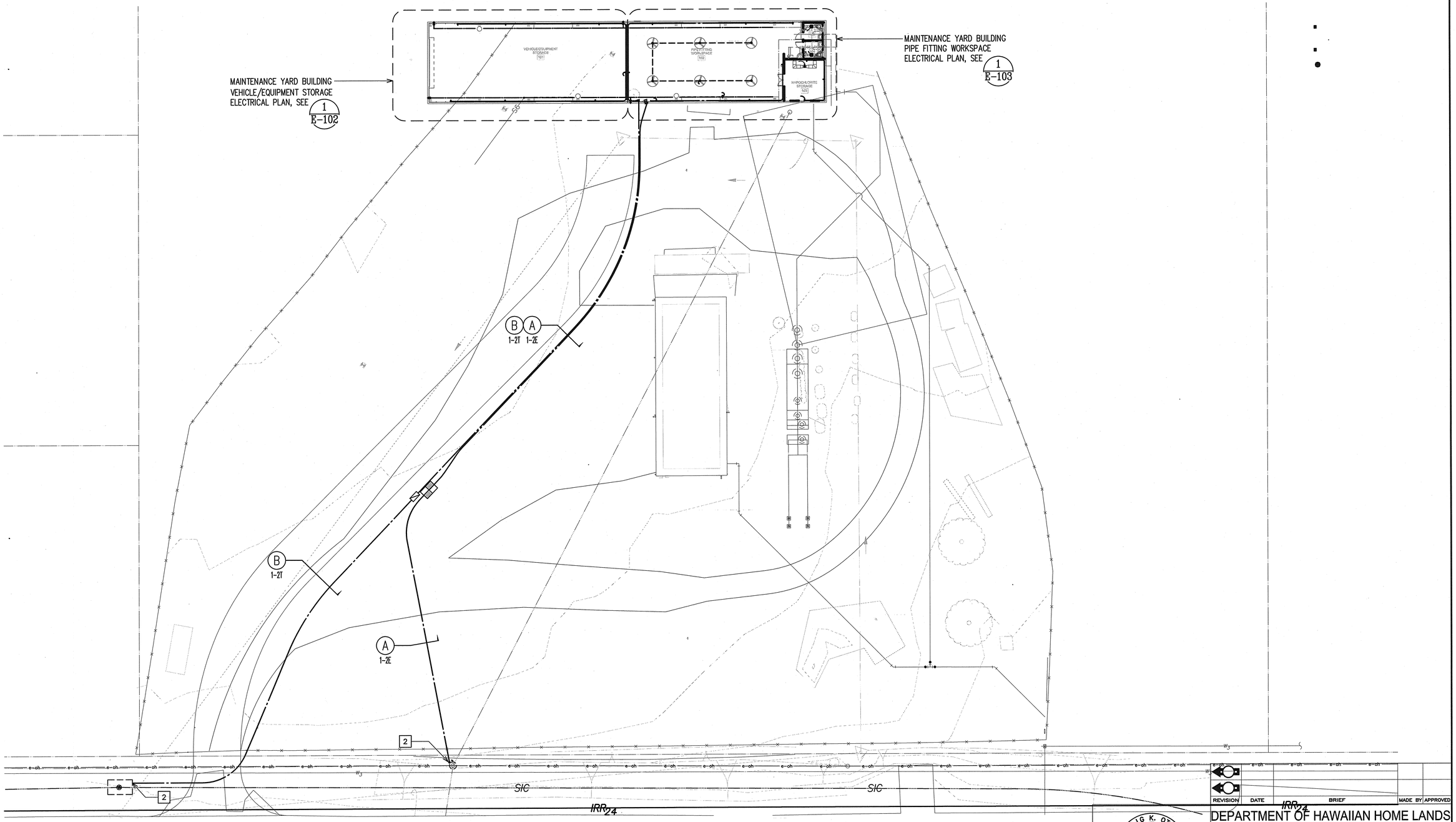
JUNE 2018

DWG. NO. E-004
SHEET 140 OF 146

LAST_EDIT: Z:\VOA0\PROJECTS\218017\E-604-DUCT SECTION DETAILS XREFS: _X218017-DUCT SECTIONS=_XREF_X218017-DUCT SECTIONS XKO-STAMP=Z:\VOA0\PROJECTS_PE_ STAMP\XKO-STAMP



1 E-101 SITE 7 ELECTRICAL PLAN SCALE: 1"=20'

NOTES:

1. BREAK AND PATCH EXISTING SIC MANHOLE FOR NEW TELECOMMUNICATIONS CIRCUIT TO NEW MAINTENANCE YARD BUILDING.
2. LONG RADIUS BEND CONDUIT RISER UP POLE PER MECO REQUIREMENTS AND APPROVAL.
3. PROPOSED POLE TOP TRANSFORMER (BY MECO).

20' 10' 0 20' 40' 60'

SCALE: 1"=20'

GRAPHIC SCALE

DWG. NO. E-101

SHEET 141 OF 146

KRAIG K. OTANI LICENSED PROFESSIONAL ENGINEER No. 14288-E HAWAII, U.S.A.

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SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

SITE 7 ELECTRICAL PLAN

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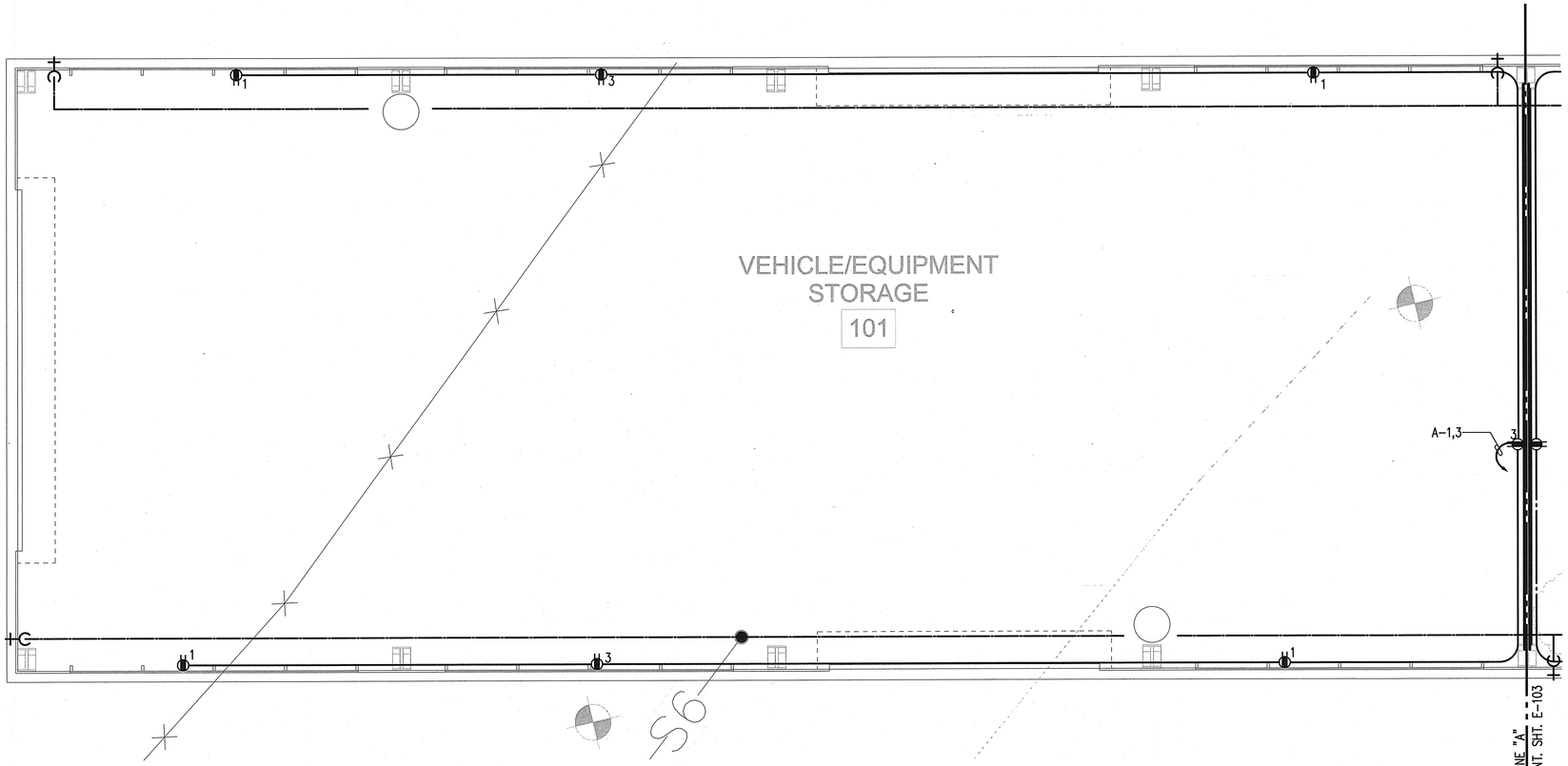

1 VEHICLE/EQUIPMENT STORAGE ELECTRICAL PLAN
E-102 SCALE: 1/4"=1'-0"

NORTH

4' 2' 0 4' 8' 12'

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

GRAPHIC SCALE

DWG. NO. E-102
SHEET 142 OF 146

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SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

VEHICLE/EQUIPMENT STORAGE ELECTRICAL PLAN

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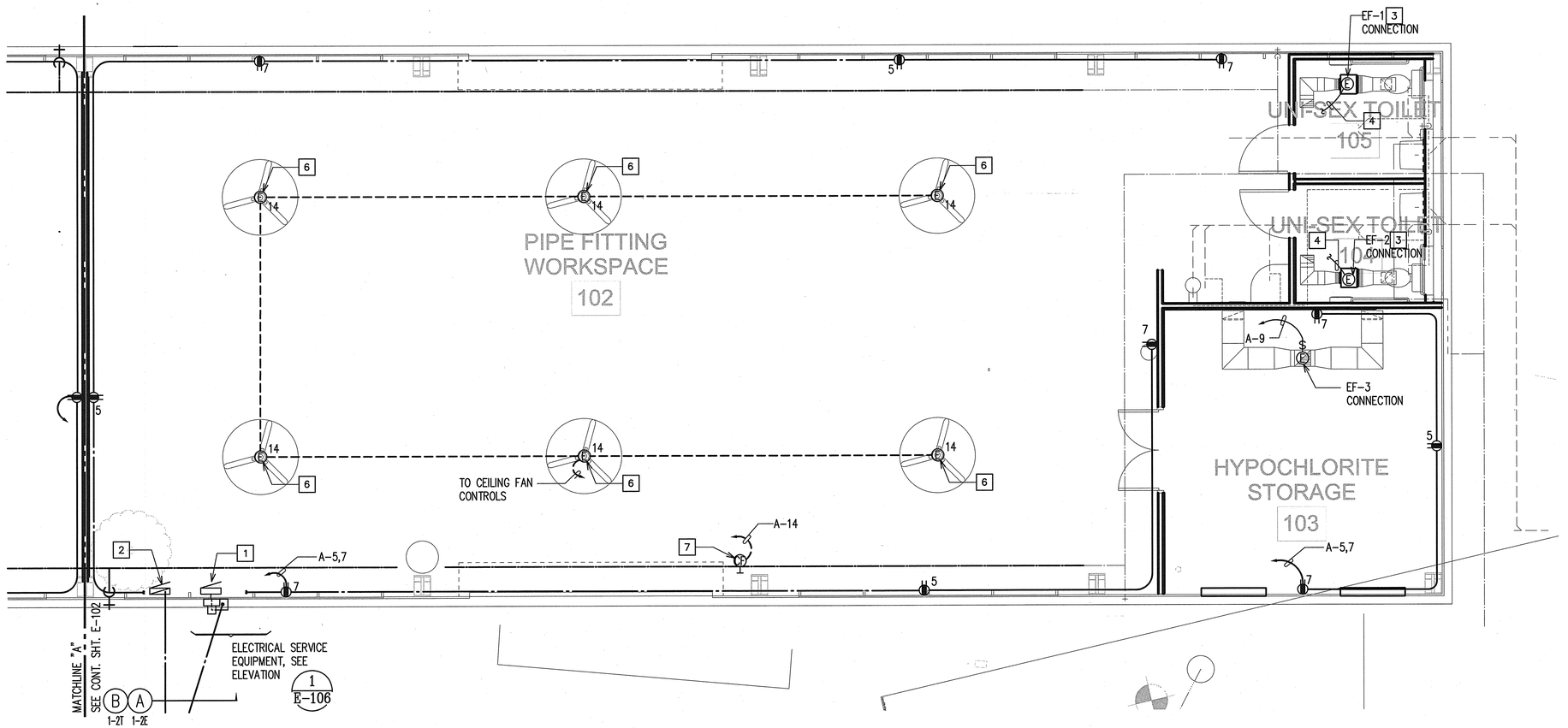

1 PIPE FITTING WORKSPACE ELECTRICAL PLAN

1 E-103 SCALE: 1/4"=1'-0"

NOTES:

1. NEW PANEL A
2. NEW TELEPHONE CABINET, SEE ELEVATION ON SHEET E-106.
3. EXHAUST FAN INTERLOCK WITH LIGHT SWITCH.
4. SEE CONTINUATION ON SHEET E-105.
5. CONTRACTOR TO PROVIDE DISCONNECT TOGGLE SWITCH.
6. CEILING FAN CONNECTION
7. CEILING FAN CONTROLS PROVIDED BY MECHANICAL.

NEW PANEL "A": 100 A MAIN LUGS ONLY; 240 / 120 VOLTS, 1-PHASE, 3-WIRE; 10000 * A.I.C. INDUSTRIAL-BOLTED TYPE, FLUSH MOUNTED

CKT. NO.	USE: L-LTS, R-RECEP, PFB-PROVISION FUTURE BKR., S-SPARE, F-FAN, W-WARMER	BREAKER POLE	BREAKER AMPS	WIRE SIZE	KVA ON BUSSES L1		KVA ON BUSSES L2		WIRE SIZE	BREAKER POLE	BREAKER AMPS	USE: L-LTS, R-RECEP, PFB-PROVISION FUTURE BKR., S-SPARE, F-FAN, W-WARMER	CKT. NO.
1	R-STORAGE	1	20	12	0.8	1.2			12	1	20	L-STORAGE	2
3	R-STORAGE	1	20	12			0.6	1.2	12	1	20	L-STORAGE	4
5	R-WORKSPACE	1	20	12	1.0	1.2			12	1	20	L-WORKPLACE	6
7	R-WORKSPACE	1	20	12			1.2	1.0	12	1	20	L-WORKPLACE	8
9	EF-3	1	20	12	0.8	0.6			12	1	20	L-BATHROOM	10
11	S	1	20	12			0.5	0.5	12	1	20	L-EXTERIOR	12
13	S	1	20	12	0.5	0.8			12	1	20	CEILING FANS	14
15	PFB						0.5	0.5		1	20	S	16
17	PFB				0.0	0.0						PFB	18
19	PFB						0.0	0.0				PFB	20
	CONNECTED LOAD PER PHASE				2.7		4.2						
	DEMAND LOAD PER PHASE				2.2		3.4						

(*) NEW LOAD ON EXISTING CIRCUIT BREAKER

TOTAL CONNECTED LOAD (KVA)	6.9
DEMAND FACTOR	80%
TOTAL DEMAND LOAD (KVA)	5.5
HIGH LEG (AMPS)	28.0

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

GRAPHIC SCALE

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SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

PIPE FITTING WORKSPACE
ELECTRICAL PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

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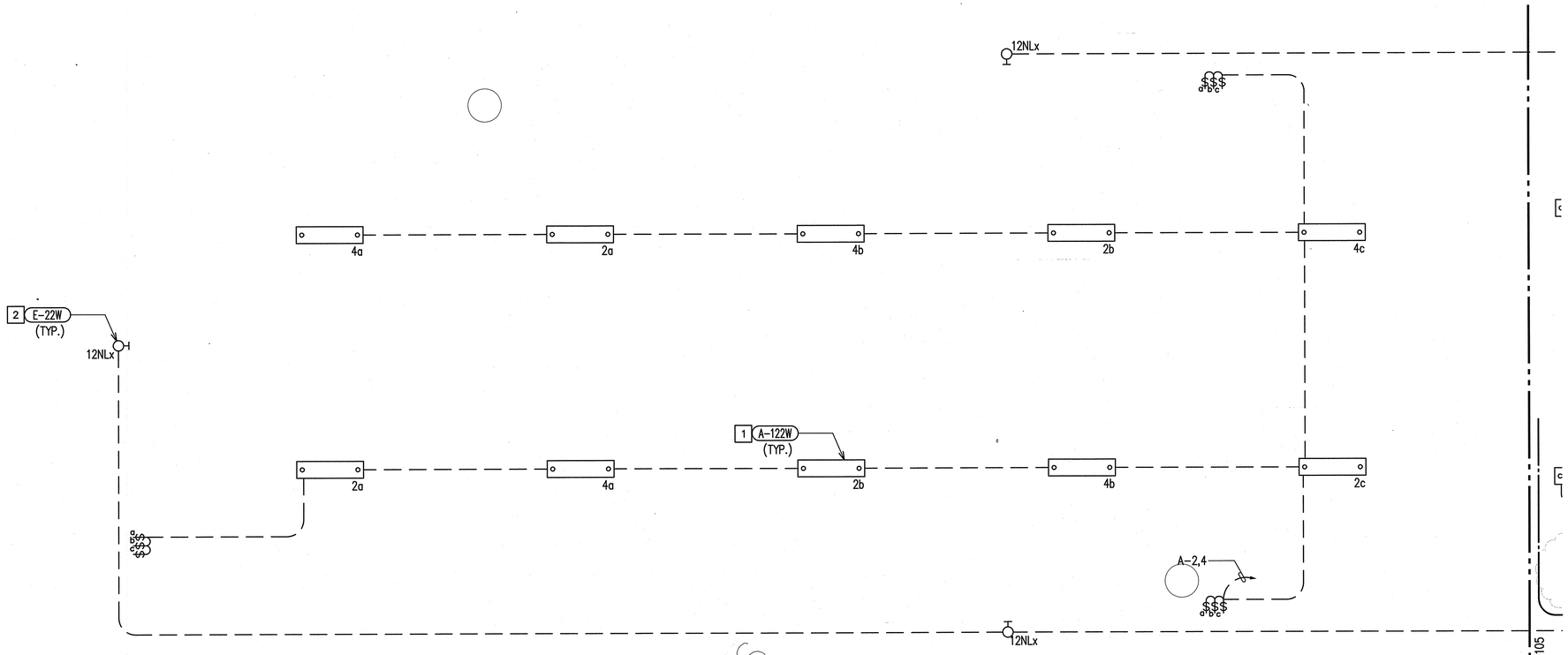
JUNE 2018

DWG. NO. E-103
SHEET 143 OF 146



1 VEHICLE/EQUIPMENT STORAGE LIGHTING PLAN

E-104 SCALE: 1/4"=1'-0"

NORTH

LIGHT FIXTURE SCHEDULE

TYPE	LAMP/ WATTS	DESCRIPTION	MANUFACTURER OR APPROVED EQUAL
A	122W LED 4000'K	15" X 52" PENDANT MOUNTED LUMINAIRE, FIBERGLASS HOUSING, GASKETED, ACRYLIC LENS, HIGH GLOSS BAKED WHITE ENAMEL FINISH, MEDIUM LUMEN, 120V LED DRIVER	COLUMBIA LXEW SERIES, OR APPROVED EQUAL
B	178W LED 4000'K	15" X 52" PENDANT MOUNTED LUMINAIRE, FIBERGLASS HOUSING, GASKETED, ACRYLIC LENS, HIGH GLOSS BAKED WHITE ENAMEL FINISH, HIGH LUMEN, 120V LED DRIVER	COLUMBIA LXEW SERIES OR APPROVED EQUAL
C	92W LED 4000'K	6" X 4' PENDANT MOUNTED LUMINAIRE, FIBERGLASS HOUSING, GASKETED, ACRYLIC LENS, HIGH REFLECTIVE BAKED ENAMEL FINISH, EXTRA HIGH LUMEN, 120V LED DRIVER	COLUMBIA LXEM SERIES OR APPROVED EQUAL
D	19W LED 4000'K	4" X 4' SURFACE MOUNTED LUMINAIRE, COLD-GAUGE STEEL HOUSING, FROSTED ACRYLIC LENS, HIGH REFLECTIVE BAKED ENAMEL, LOW WATT, 120V LED DRIVER	COLUMBIA LCL SERIES OR APPROVED EQUAL
E	22W LED 3000'K	8.22"H X 5.25"H X 4.81"D SURFACE MOUNTED LUMINAIRE, DIE-CAST ALUMINUM HOUSING, FULL CUT-OFF, UL LISTED FOR WET LOCATIONS, POWER PAINT FINISH, 120V LED DRIVER	HUBBELL LNC-9L OR APPROVED EQUAL

NOTES:

1. LIGHT FIXTURES TO BE MOUNTED AT 16' AFF.
2. LIGHT FIXTURES TO BE MOUNTED 12' AFF.

4' 2' 0 4' 8' 12'

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

GRAPHIC SCALE

DWG. NO. E-104

SHEET 144 OF 146

REVISION	DATE	BRIEF	MADE BY	APPROVED

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SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

VEHICLE/EQUIPMENT STORAGE LIGHTING PLAN

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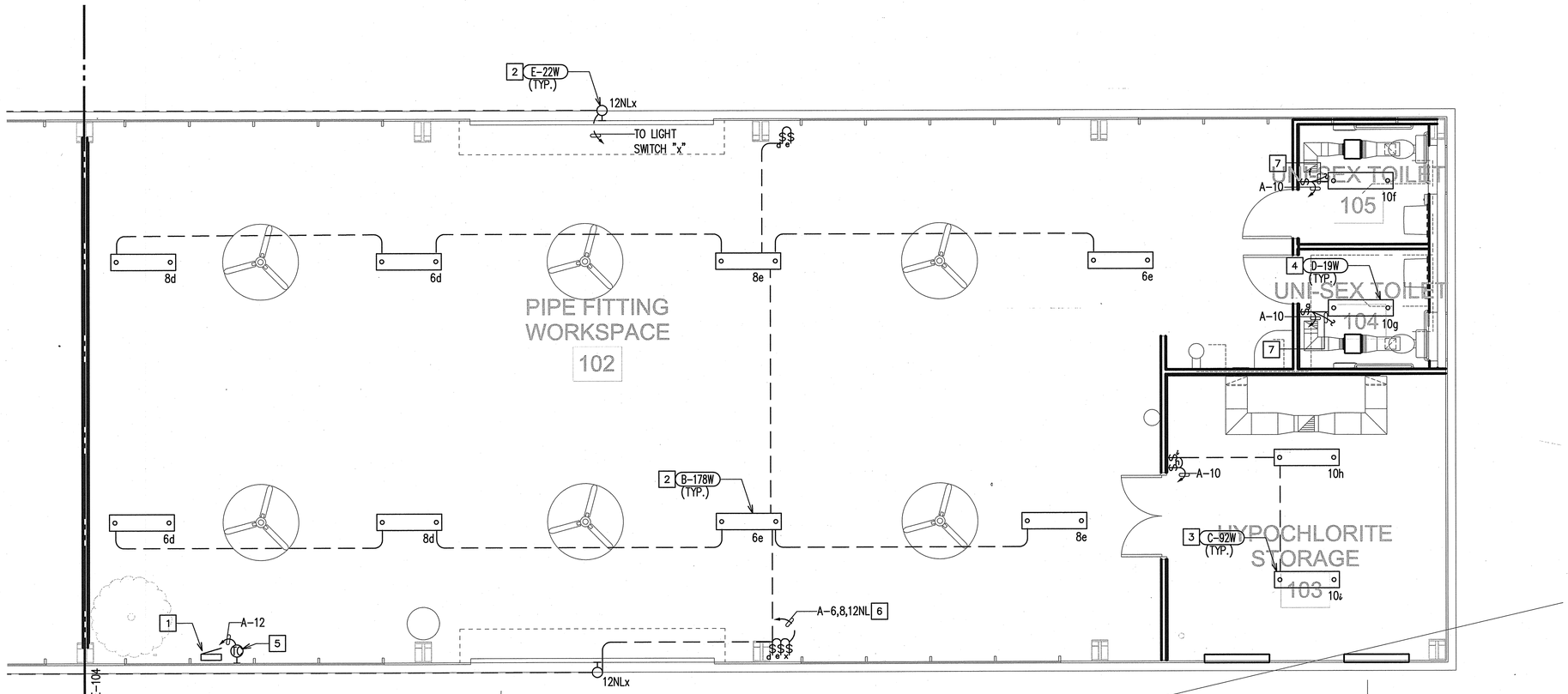
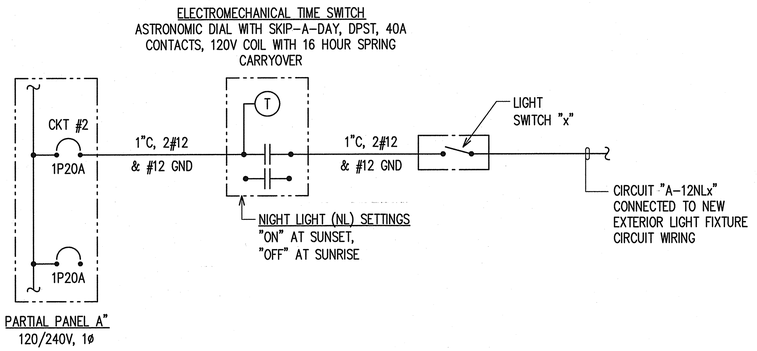


1 PIPE FITTING WORKSPACE LIGHTING PLAN
E-105 SCALE: 1/4"=1'-0"

LIGHT FIXTURE SCHEDULE

TYPE	LAMP/ WATTS	DESCRIPTION	MANUFACTURER OR APPROVED EQUAL
A	122W LED 4000'K	15" X 52" PENDANT MOUNTED LUMINAIRE, FIBERGLASS HOUSING, GASKETED, ACRYLIC LENS, HIGH GLOSS BAKED WHITE ENAMEL FINISH, MEDIUM LUMEN, 120V LED DRIVER	COLUMBIA LXEW SERIES, OR APPROVED EQUAL
B	178W LED 4000'K	15" X 52" PENDANT MOUNTED LUMINAIRE, FIBERGLASS HOUSING, GASKETED, ACRYLIC LENS, HIGH GLOSS BAKED WHITE ENAMEL FINISH, HIGH LUMEN, 120V LED DRIVER	COLUMBIA LXEW SERIES OR APPROVED EQUAL
C	92W LED 4000'K	6" X 4' PENDANT MOUNTED LUMINAIRE, FIBERGLASS HOUSING, GASKETED, ACRYLIC LENS, HIGH REFLECTIVE BAKED ENAMEL FINISH, EXTRA HIGH LUMEN, 120V LED DRIVER	COLUMBIA LXEM SERIES OR APPROVED EQUAL
D	19W LED 4000'K	4" X 4' SURFACE MOUNTED LUMINAIRE, COLD-GAUGE STEEL HOUSING, FROSTED ACRYLIC LENS, HIGH REFLECTIVE BAKED ENAMEL, LOW WATT, 120V LED DRIVER	COLUMBIA LCL SERIES OR APPROVED EQUAL
E	22W LED 3000'K	8.22"H X 5.25"H X 4.81"D SURFACE MOUNTED LUMINAIRE, DIE-CAST ALUMINUM HOUSING, FULL CUT-OFF, UL LISTED FOR WET LOCATIONS, POWER PAINT FINISH, 120V LED DRIVER	HUBBELL LNC-9L OR APPROVED EQUAL



2 NIGHT LIGHT CONTROL DIAGRAM
E-705

NOTES:

1. NEW PANEL A.
2. LIGHT FIXTURES TO BE MOUNTED AT 12' AFF.
3. LIGHT FIXTURES TO BE MOUNTED AT 16' AFF.
4. LIGHT FIXTURES TO BE MOUNTED AT 8' AFF.
5. TIME CLOCK.
6. CONNECT EXTERIOR LIGHT FIXTURE BRANCH CIRCUIT TO NEW TIME CLOCK.
7. SEE CONTINUATION ON SHEET E-103

4' 2' 0 4' 8' 12'

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

GRAPHIC SCALE

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STATE OF HAWAII

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SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

PIPE FITTING WORKPLACE LIGHTING PLAN

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

KRAIG K. OTANI LICENSED PROFESSIONAL ENGINEER No. 14288-E HAWAII, U.S.A.

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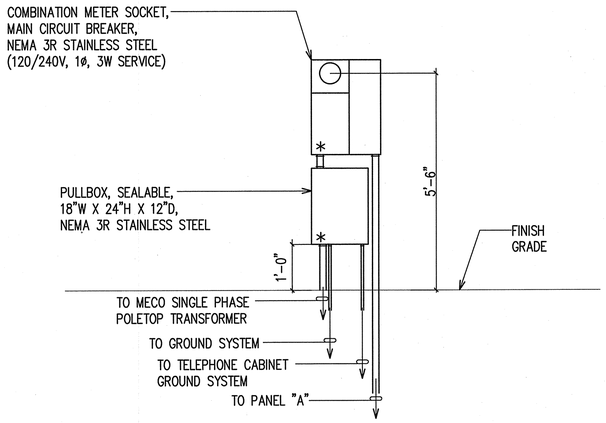
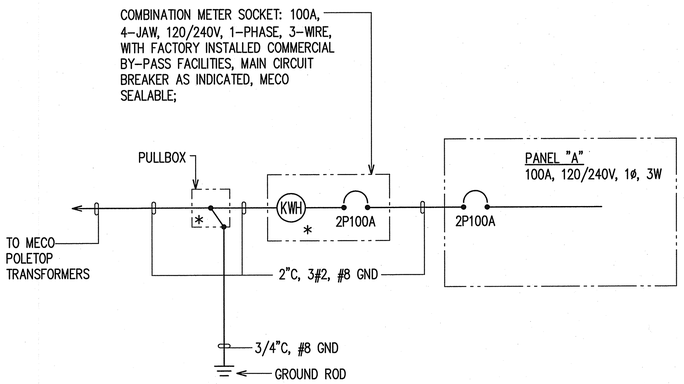
DWG. NO. E-105
SHEET 145 OF 146



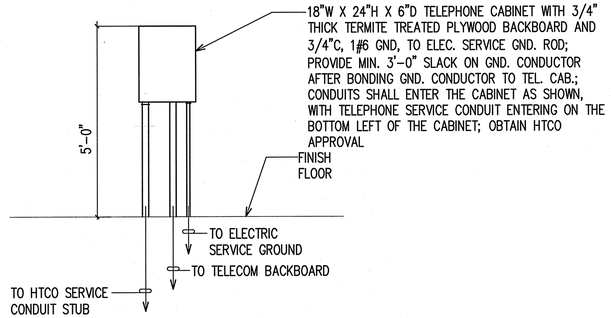
NOTES:

1. "*" INDICATES PROVISION FOR MECO SEALS.
2. CONTRACTOR SHALL OBTAIN MECO SHOP DRAWING APPROVAL FOR PULLBOX AND METER SOCKETS.
3. GROUND AND BOND PER NEC.
4. PROVIDE A MINIMUM OF 4 FEET CLEAR AND LEVEL WORKSPACE CLEARANCE IN FRONT OF METERING AND SERVICE EQUIPMENT.
5. PROVIDE PHENOLIC ENGRAVED PERMANENT IDENTIFICATION LABELS FOR ALL METER SOCKETS TO IDENTIFY THE UNIT OR SPACE SERVED.
6. AT TIME OF INSTALLATION, PROVIDE AND INSTALL METER SOCKET COVERS (PLASTIC) AND BANDS FOR ALL BLANK METER SOCKETS. IDENTIFY COVERS SO COVERS CAN BE RETURNED.

1 ELECTRICAL EQUIPMENT ELEVATION
E-106 SCALE: 1/2"=1'-0"



3 ONE-LINE DIAGRAM
E-106 NOT TO SCALE



2 TELEPHONE CABINET ELEVATION
E-106 SCALE: 1/2"=1'-0"

2' 1' 0 2' 4' 6'

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

GRAPHIC SCALE

DWG. NO. E-106
SHEET 146 OF 146

KRAIG K. OTANI
LICENSED PROFESSIONAL ENGINEER
No. 14288-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE

LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NOS. 1, 3, 4, 5, 6 & 7
SITE 7 - HOOLEHUA VARIOUS IMPROVEMENTS

ELECTRICAL EQUIPMENT ELEVATIONS
AND ONE-LINE DIAGRAM

DESIGNED BY: YS CHECKED BY: KKO DRAWN BY: YS

Ronald N.S. Ho & Associates, Inc.
Electrical Engineers
2153 North King Street, Suite 201 Honolulu, Hawaii 96819
Phone: (808)941-0577 Fax: (808)945-2646

JUNE 2018