

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

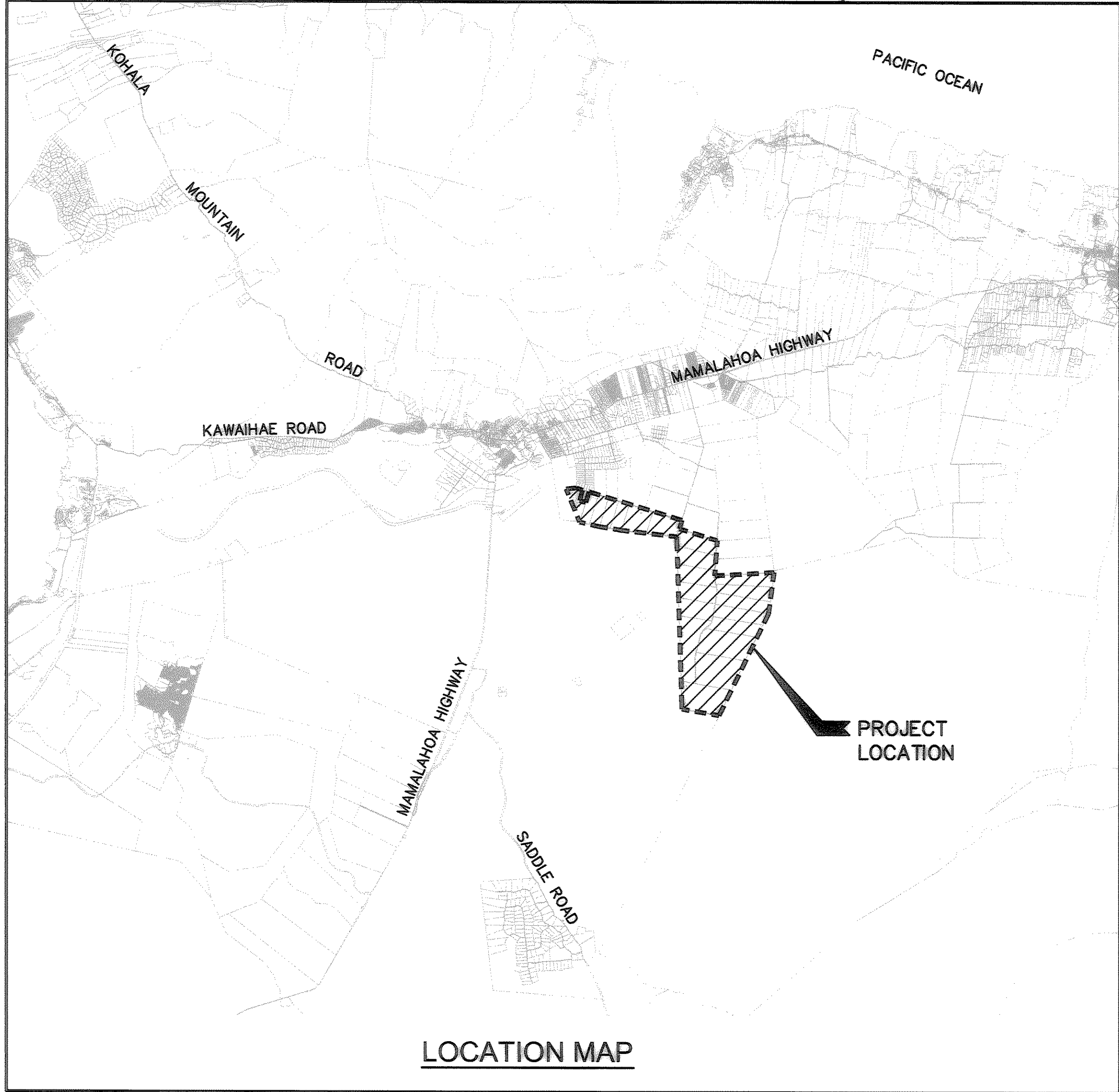
PUUKAPU

HYBRID WATER SYSTEM

WAIMEA, SOUTH KOHALA, HAWAII

IFB-09-HHL-008
TAX MAP KEY : (3) 6-4-01: 32-38, 41-45, 51, 53, and 54

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.
3049 UALENA ST., SUITE 500
HONOLULU, HAWAII 96817



APPROVED BY:

6/4/09
DATE

CHAIRMAN, HAWAIIAN HOMES COMMISSION
STATE OF HAWAII

DIRECTOR, PLANNING DEPARTMENT
COUNTY OF HAWAII

DATE

CHIEF, ENVIRONMENTAL MANAGEMENT DIVISION
DEPARTMENT OF HEALTH, STATE OF HAWAII

DATE

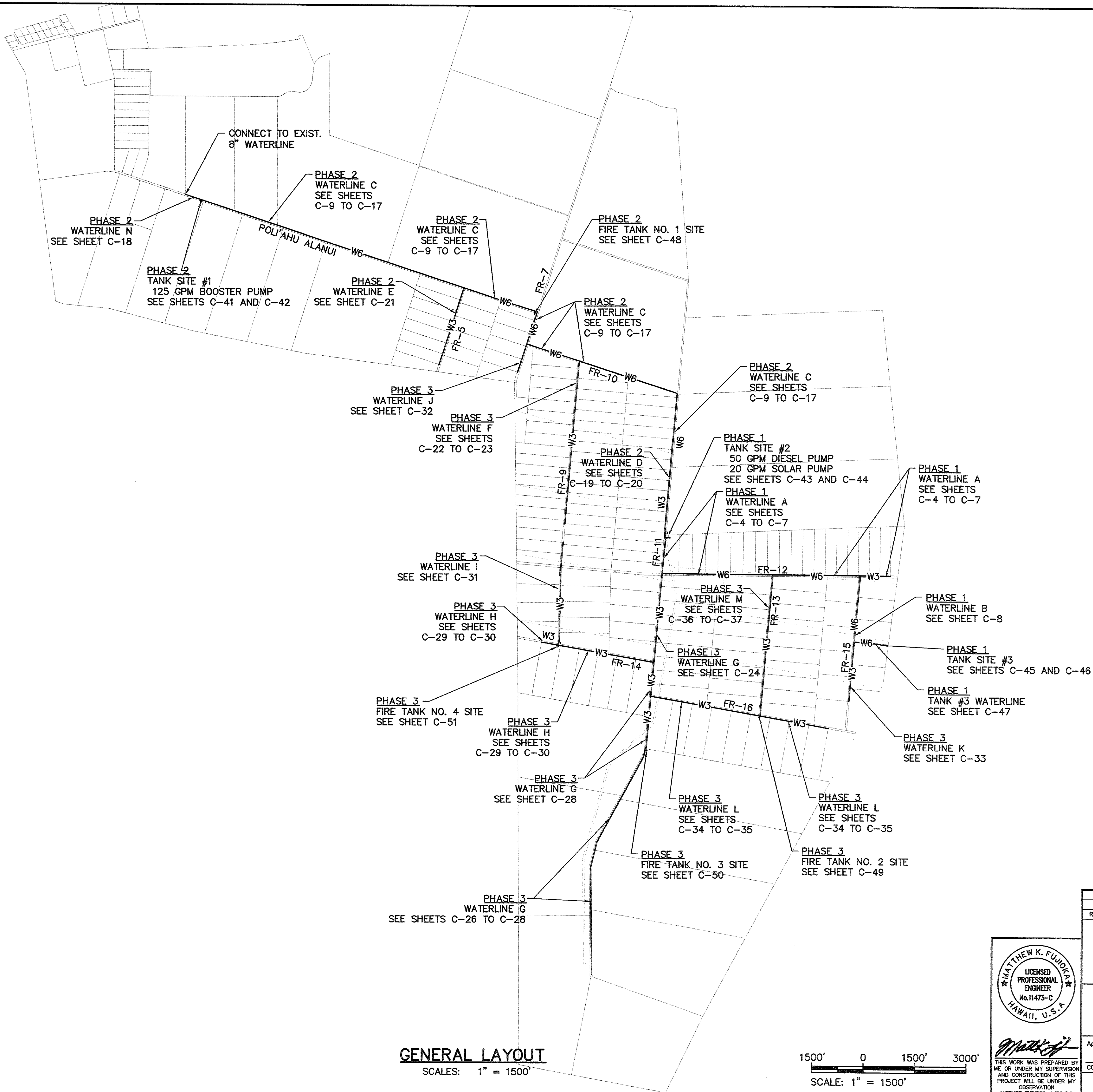
SANDWICH ISLES COMMUNICATION, INC.

DATE

INDEX TO DRAWINGS		
SHEET NO.	DWG NO.	DESCRIPTION
1	T-1	TITLE SHEET, ISLAND MAP, LOCATION MAP, INDEX TO DRAWINGS
2	C-1	GENERAL LAYOUT
3	C-2	GENERAL NOTES
4	C-3	TYPICAL SECTIONS
5-8	C-4 TO C-7	PHASE 1 WATERLINE A PLAN & PROFILE
9	C-8	PHASE 1 WATERLINE B PLAN & PROFILE
10-18	C-9 TO C-17	PHASE 2 WATERLINE C PLAN & PROFILE
19	C-18	PHASE 2 WATERLINE N PLAN & PROFILE
20-21	C-19 TO C-20	PHASE 2 WATERLINE D PLAN & PROFILE
22	C-21	PHASE 3 WATERLINE E PLAN & PROFILE
23-24	C-22 TO C-23	PHASE 3 WATERLINE F PLAN & PROFILE
25-29	C-24 TO C-28	PHASE 3 WATERLINE G PLAN & PROFILE
30-31	C-29 TO C-30	PHASE 3 WATERLINE H PLAN & PROFILE
32	C-31	PHASE 3 WATERLINE I PLAN & PROFILE
33	C-32	PHASE 3 WATERLINE J PLAN & PROFILE
34	C-33	PHASE 3 WATERLINE K PLAN & PROFILE
35-36	C-34 TO C-35	PHASE 3 WATERLINE L PLAN & PROFILE
37-38	C-36 TO C-37	PHASE 3 WATERLINE M PLAN & PROFILE
39	C-38	WATER DETAILS
40	C-39	DRYWELL DETAILS
40-42	C-40 TO C41	TANK #1 SITE PLAN & GRADING PLAN
43-44	C-42 TO C-43	TANK #2 SITE PLAN & GRADING PLAN
45-46	C-44 TO C-45	TANK #3 SITE PLAN & GRADING PLAN
47	C-46	TANK #3 ACCESS ROAD
48	C-47	FIRE TANK NO. 1 SITE PLAN
49	C-48	FIRE TANK NO. 2 SITE PLAN
50	C-49	FIRE TANK NO. 3 SITE PLAN
51	C-50	FIRE TANK NO. 4 SITE PLAN
52	C-51	FENCE & GATE DETAILS
53-54	C-52 TO C-53	MISCELLANEOUS DETAILS
55-59	M-1 TO M-5	MECHANICAL PLANS
60-70	E-1 TO E-11	ELECTRICAL PLANS

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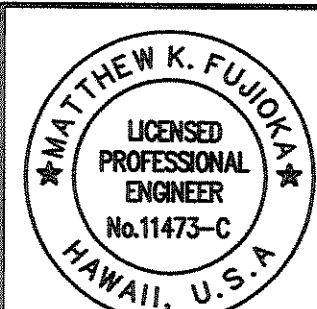
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Plotted on: 6/16/2009



TRUE NORTH
SCALE: 1" = 1500'

GENERAL LAYOUT
SCALE: 1" = 1500'

1500' 0 1500' 3000'
SCALE: 1" = 1500'



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION
AND CONSTRUCTION OF THIS
PROJECT WILL BE UNDER MY
OBSERVATION
LICENSE EXPIRES 4/30/10

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
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GENERAL LAYOUT			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSION AND EXISTING CONDITIONS AND SHALL NOTIFY THE CONTRACTING OFFICER IN WRITING, OF ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND EXISTING CONDITIONS PRIOR TO COMMENCING THE WORK. COMMENCEMENT OF WORK SHALL INDICATE THE CONTRACTOR'S ACCEPTANCE OF EXISTING CONDITIONS.
2. ALL ITEMS AND MATERIALS SHOWN ON THE DRAWINGS ARE NEW UNLESS OTHERWISE NOTED.
3. THE CONTRACTOR SHALL OBSERVE, COMPLY WITH, AND ACCOMPLISH ALL WORK IN STRICT ACCORDANCE WITH ALL THE LATEST LOCAL, STATE AND FEDERAL LAWS, REGULATIONS AND STANDARDS HAVING JURISDICTION OVER THIS PROJECT FOR THE PROTECTION OF PUBLIC HEALTH, SAFETY AND ENVIRONMENTAL QUALITY.
4. ALL WORK SHALL CONFORM TO THE UNIFORM BUILDING CODE (UBC) 1997 OR THE LATEST EDITION, AS AMENDED AND ADOPTED BY THE COUNTY OF HAWAII.
5. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES, WHETHER SHOWN ON THE DRAWINGS OR NOT, AND SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF THESE ITEMS IN THE EVENT OF DAMAGE DUE TO HIS CONSTRUCTION PRACTICES. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE RESPECTIVE UTILITY COMPANIES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM THE PERFORMANCE OF HIS WORK UNDER THIS CONTRACT. ANY AND ALL DAMAGES SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE CONTRACTING OFFICER. PATCH AND FINISH ALL DAMAGED SURFACES OR AS DIRECTED BY THE CONTRACTING OFFICER.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING BARRIERS AROUND THE CONSTRUCTION AREA AND SAFE DETOUR ROUTES FOR PEDESTRIANS, AS PER THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) 4.1.1(4).
8. THE CONTRACTOR SHALL RE-CONTOUR EXISTING GRADES AS NECESSARY TO CREATE PROPERLY FUNCTIONING SWALES, TRENCH DRAINS, SIDEWALK TRENCH OR PIPE DRAINS FOR CLEAR INLETS AND OUTLETS TO "DAYLIGHT".
9. ALL CONSTRUCTION SHALL BE FULLY ACCESSIBLE AND COMPLY WITH THE ADAAG REQUIREMENTS, SECTION 4.1.1(3).
10. CONSTRUCTION LAYOUT SHALL BE DONE BY A LICENSED CIVIL ENGINEER OR LICENSED SURVEYOR.

PUBLIC HEALTH, SAFETY AND CONVENIENCE NOTES

1. 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 IF REQUIRED.
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'S ATTENTION IS DIRECTED TO CHAPTER 46 PUBLIC HEALTH REGULATIONS DEPARTMENT OF HEALTH, STATE OF HAWAII, "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 PUBLIC 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).

CONSTRUCTION NOTES

1. ALL APPLICABLE CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1986, AND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984, AS AMENDED, OF THE DEPARTMENTS OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, AND THE COUNTIES OF KAUAI, MAUI, AND HAWAII.
2. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES, APPURTENANCES AND STRUCTURES AS SHOWN ON THESE DRAWINGS WERE COMPILED FROM RECORD DRAWINGS PROVIDED BY UTILITY AND GOVERNMENT AGENCIES AND FROM THE ENGINEER'S MEASUREMENTS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR ALL DAMAGES TO THE EXISTING UTILITIES. THE CONTRACTOR SHALL NOT ASSUME THAT WHERE NO UTILITIES ARE SHOWN, THAT NONE EXIST.
3. THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND LICENSES, PAY ALL CHARGES, FEES AND TAXES, GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK AS DRAWN AND SPECIFIED.
4. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
5. THE CONTRACTOR SHALL PROVIDE ACCESS TO AND FROM DRIVEWAYS AND PUBLIC STREETS AT ALL TIMES EXCEPT AS NOTED ON THE PLANS.
6. WHEN TRENCH EXCAVATION IS ADJACENT TO OR UNDER EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS AND SETTLEMENT AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDER-PINNING TO FULLY PROTECT THEM FROM DAMAGE.
7. BACKFILL UNDER EXISTING STRUCTURES OR FACILITIES SHALL BE SANDY OR GRANULAR MATERIAL COMPLETELY PLACED AS SOON AS THE PIPE IS LAID AND TESTED. THE BACKFILL MATERIAL SHALL BE RAMMED WITH PROPER TOOLS UNTIL COMPACTED TO 90 TO 95 PERCENT OF ITS MAXIMUM DENSITY.
8. VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER.
9. THE CONTRACTOR SHALL NOTIFY ALL AGENCIES TO VERIFY THE ACTUAL LOCATIONS OF ALL UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATION. THE CONTRACTOR SHALL COORDINATE ALL WORK.
10. THE CONTRACTOR SHALL RESTORE TO THEIR ORIGINAL CONDITION ALL IMPROVEMENTS DAMAGED AS A RESULT OF THE CONSTRUCTION, INCLUDING PAVEMENTS, EMBANKMENTS, CURBS, SIGNS, LANDSCAPING, STRUCTURES, UTILITIES, WALLS, FENCES, ETC. UNLESS PROVIDED FOR SPECIFICALLY IN THE PROPOSAL, DEMOLITION AND RESTORATION OF EXISTING ITEMS SHALL BE INCIDENTAL AND INCLUDED WITHIN THE AMOUNT PAID FOR UNCLASSIFIED TRENCH EXCAVATION.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING/RECONSTRUCTING ALL CONCRETE CURBS AND GUTTERS, AND SIDEWALKS DAMAGED DURING CONSTRUCTION.
12. 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 II, CHAPTER 54, "WATER QUALITY STANDARDS" AND TITLE II, CHAPTER 55, "WATER POLLUTION CONTROL". BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.
13. NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW INTO EXISTING CITY DRAINAGE SYSTEMS, OR ADJOINING PROPERTIES, STREETS OR NATURAL WATER COURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.

GRADING NOTES

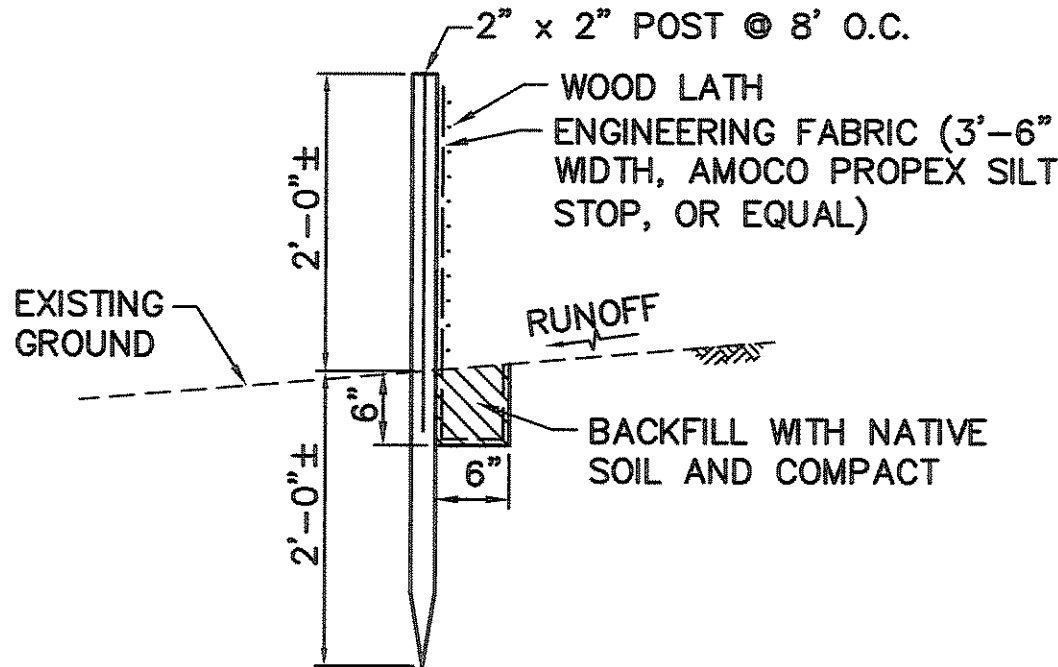
1. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
2. ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATERS FROM DAMAGING THE CUT FACE OF AN EXCAVATION OR THE SLOPED SURFACES OF A FILL. FURTHERMORE, ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE.
3. FILLS ON SLOPES STEEPER THAN 5:1 SHALL BE KEYED.
4. THE LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE GRADING WORK.
5. WHERE APPLICABLE AND FEASIBLE THE MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTH MOVING PHASE OF THE GRADING IS INITIATED.
6. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.
7. TEMPORARY EROSION CONTROL PROCEDURES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO APPLICATION FOR GRADING PERMIT.
8. IF THE GRADING WORK INVOLVES CONTAMINATED SOIL, THEN ALL GRADING WORK SHALL BE DONE IN CONFORMANCE WITH APPLICABLE STATE AND FEDERAL REQUIREMENTS.
9. NON-COMPLIANCE TO ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHALL COMMENCE IMMEDIATELY. ALL COSTS INCURRED SHALL BE BILLED TO THE VIOLATOR. FURTHERMORE, VIOLATORS SHALL BE SUBJECTED TO ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES.

EROSION / TEMPORARY DUST CONTROL NOTES

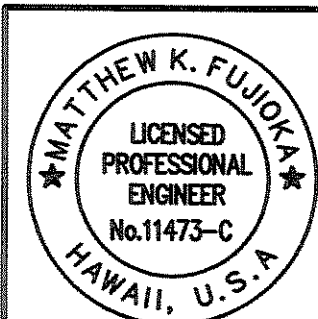
1. DURING CONSTRUCTION, PREVENTIVE MEASURES SHALL BE USED TO CONTROL FORESEEABLE DUST, EROSION OR SEDIMENTATION PROBLEMS WHICH MAY ARISE AS THE JOB PROGRESSES.
2. DRAINAGE SYSTEMS AS SHOWN ON THE CONSTRUCTION PLANS SHALL BE CONSTRUCTED AS EARLY AS PRACTICABLY POSSIBLE.
3. ALL FILL, SUBBASE AND BASE MATERIAL PLACED WITHIN THE ROAD PAVEMENT PRISM SHALL BE SUBSTANTIALLY COMPACTED BY THE END OF THE DAY.
4. THE CONTRACTOR SHALL CONDUCT HIS GRADING OPERATIONS SO THAT EXCAVATION, EMBANKMENT AND IMPORTED MATERIAL SHALL BE DAMPENED WITH WATER DURING HIS GRADING OPERATIONS AT ALL TIMES.
5. WATER TRUCK AND/OR TEMPORARY SPRINKLERS SHALL BE AVAILABLE ON THE JOB SITE AT ALL TIMES TO ENSURE BARE EARTH DOES NOT CREATE A DUST PROBLEM.

WATER NOTES

1. ALL MATERIAL AND CONSTRUCTION OF WATER SYSTEM FACILITIES AND APPURTENANCES UP TO THE 4" MASTER METER SHALL BE IN ACCORDANCE WITH THE COUNTY OF HAWAII'S "WATER SYSTEM STANDARDS", DATED 2002, AND ALL SUBSEQUENT AMENDMENTS AND ADDITIONS, UNLESS OTHERWISE SPECIFIED.
2. CONTRACTOR SHALL VERIFY ALL CONDITIONS AT PROJECT SITE INCLUDING EXISTING STRUCTURES AND SITE CONDITIONS BEFORE COMMENCING WORK AND NOTIFY THE ENGINEER OF ANY CONFLICTS IN THE DRAWINGS AND SPECIFICATIONS.
3. CONTRACTOR SHALL VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO START OF CONSTRUCTION. THE CONTRACTORS SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCY OR CONFLICT FOUND IN THE FIELD PRIOR TO OR DURING THE COURSE OF CONSTRUCTION AND SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE DISCREPANCY OR CONFLICT IS RESOLVED. DIMENSIONS SHOWN ARE TYPICALLY TO THE WALL FINISH, UNLESS INDICATED OTHERWISE.
4. COORDINATE ALL OPERATIONS WITH THE DHHL WEST HAWAII SUPERVISOR FOR MATERIAL STORAGE, DELIVERY ACCESS TO AND FROM WORK SITE, SPECIAL NOISY OPERATIONS, TIMING OF WORK, SEQUENCE OF OPERATIONS, INTERRUPTION OF MECHANICAL AND ELECTRICAL UTILITIES, ETC. REFER TO THE SPECIFICATIONS FOR ANY WORK PHASING REQUIREMENTS.
5. EXISTING AREAS DAMAGED AS A RESULT OF WORK DONE UNDER THIS CONTRACT SHALL BE REPAIRED AND FINISHED TO MATCH THE ADJACENT FINISHES.
6. COORDINATE CONTRACTOR MOBILIZATION SCHEDULE, STORAGE, EQUIPMENT, AND ACCESS TO THE SITE WITH THE DHHL WEST HAWAII SUPERVISOR.
7. VERIFY LOCATIONS OF ALL UTILITY LINES, CONDUITS, SURFACE OR SUB-SURFACE STRUCTURES, ETC. OF ANY NATURE THAT MAY BE AFFECTED BY THE WORK BEFORE STARTING WORK.
8. CONTRACTOR SHALL, AT ALL TIME, DURING THE COURSE OF WORK, KEEP THE CONSTRUCTION AREA, THE OWNER'S PREMISES, INCLUDING STREETS, ACCESS ROAD, AND OTHER AREAS USED BY THE CONTRACTOR CLEAN AND FREE FROM ACCUMULATION OF WASTE MATERIALS AND RUBBISH.
9. CONTRACTOR SHALL PROTECT NEW AND EXISTING WORK, EQUIPMENT, MATERIALS AND FINISHES. DAMAGED ITEMS SHALL BE REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR.
10. AT THE COMPLETION OF THE WORK, ALL SURPLUS MATERIALS AND DEBRIS SHALL BE REMOVED FROM THE RESERVOIR PREMISES AND THOROUGHLY CLEANED UP TO THE SATISFACTION OF THE ENGINEER AND DHHL WEST HAWAII SUPERVISOR.
11. PAYMENT FOR ITEMS OF WORK SPECIFIED IN THE DRAWINGS, SPECIAL PROVISIONS AND SPECIFICATIONS FOR WHICH PAYMENT IS NOT SPECIFIED SHALL NOT BE MADE DIRECTLY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS ITEMS IN THE PROPOSAL AND NO ADDITIONAL PAYMENT SHALL BE MADE.

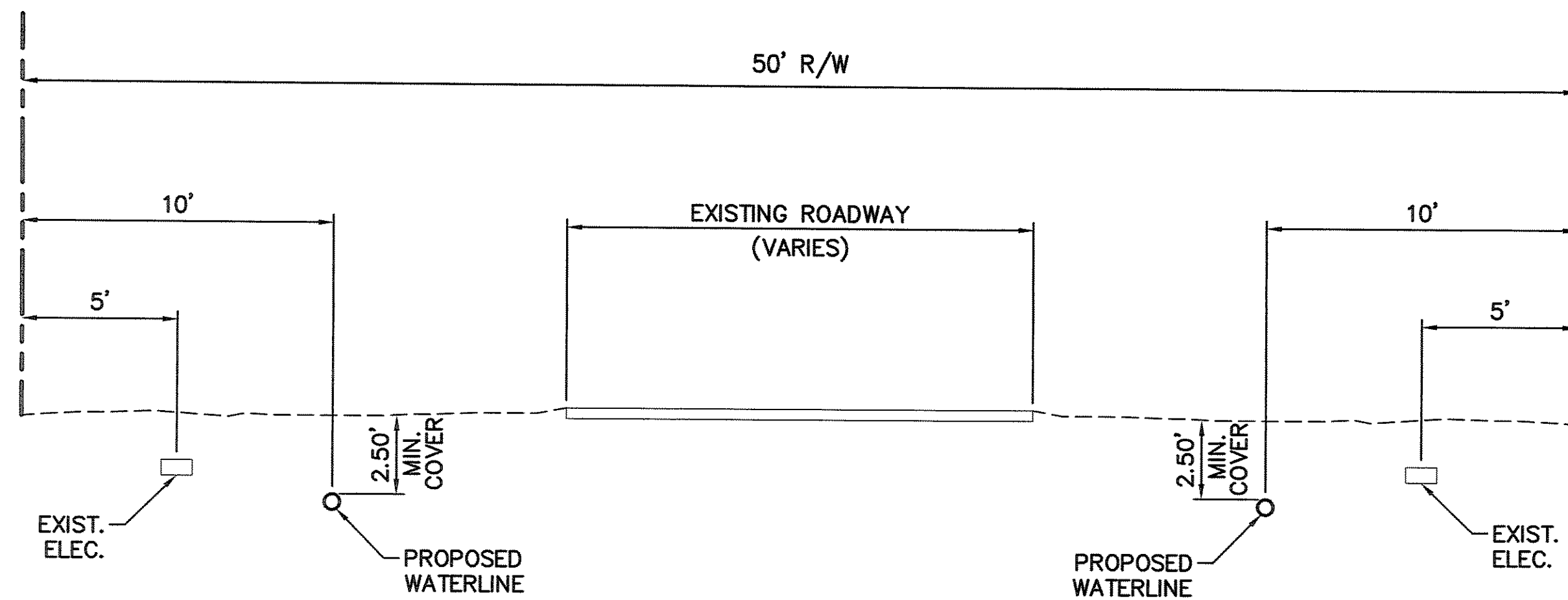


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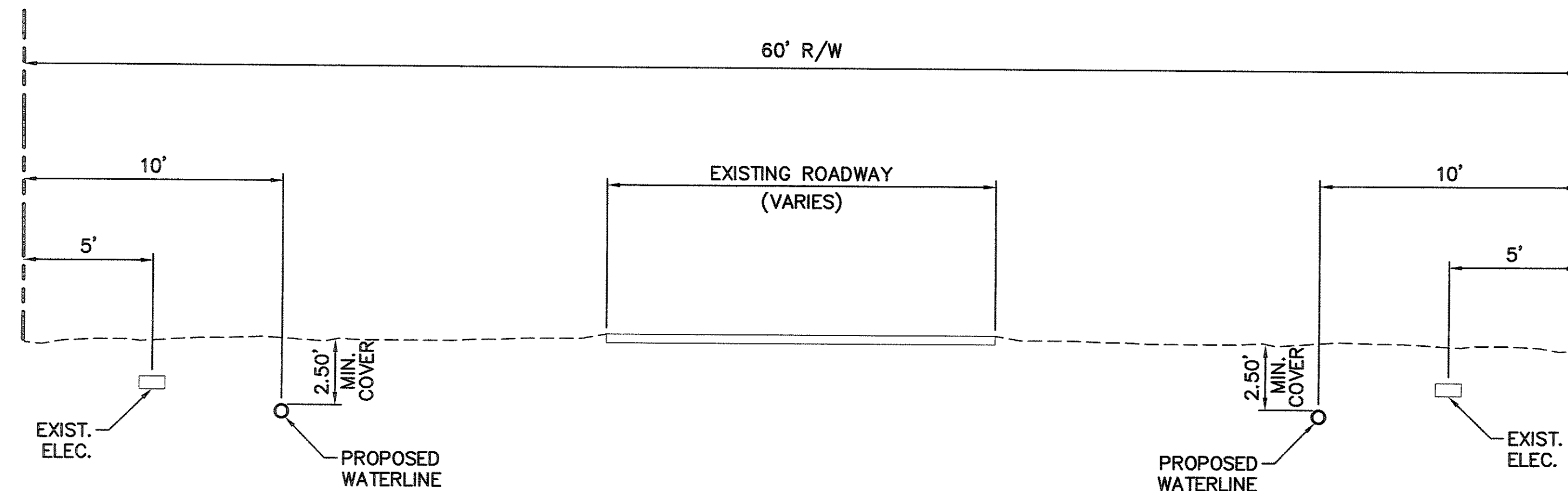


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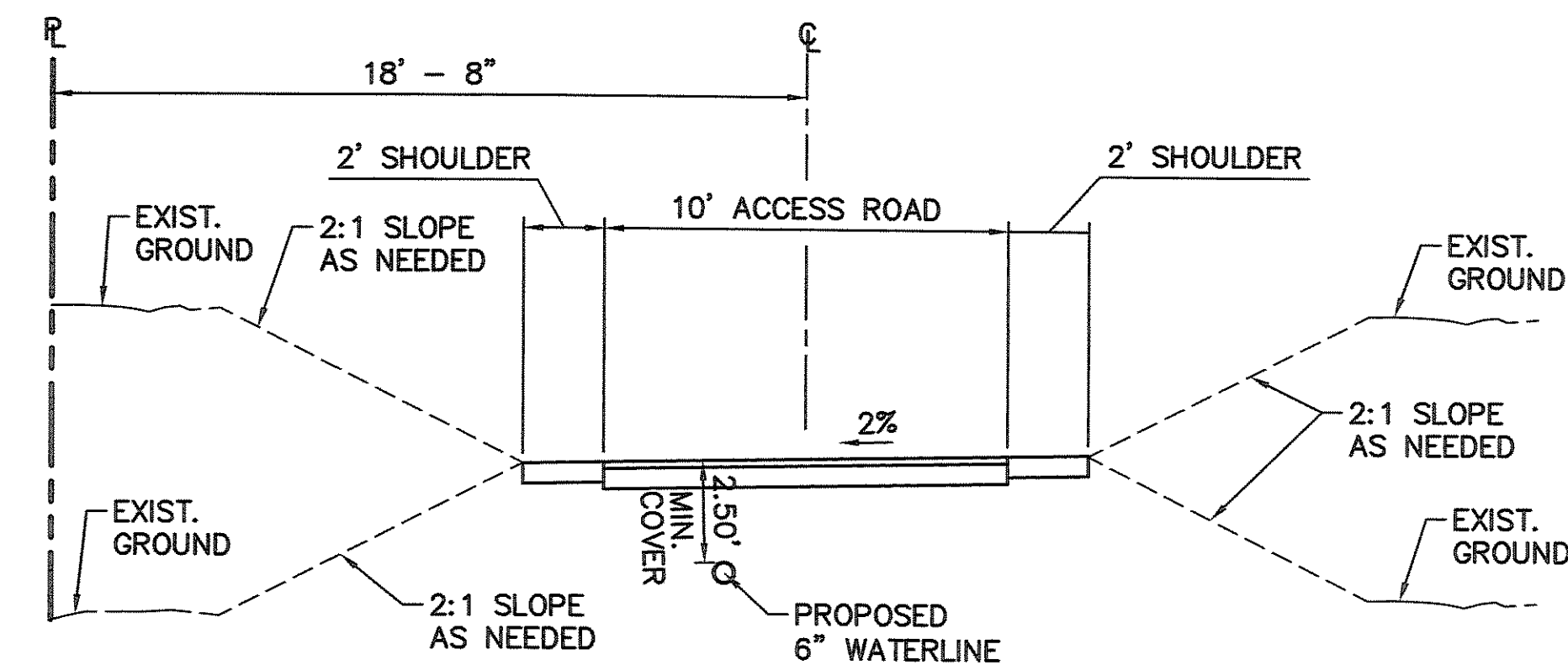
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GENERAL NOTES			
Approved:			
COUNTY ENGINEER, DPW, COUNTY OF HAWAII		DATE	
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.



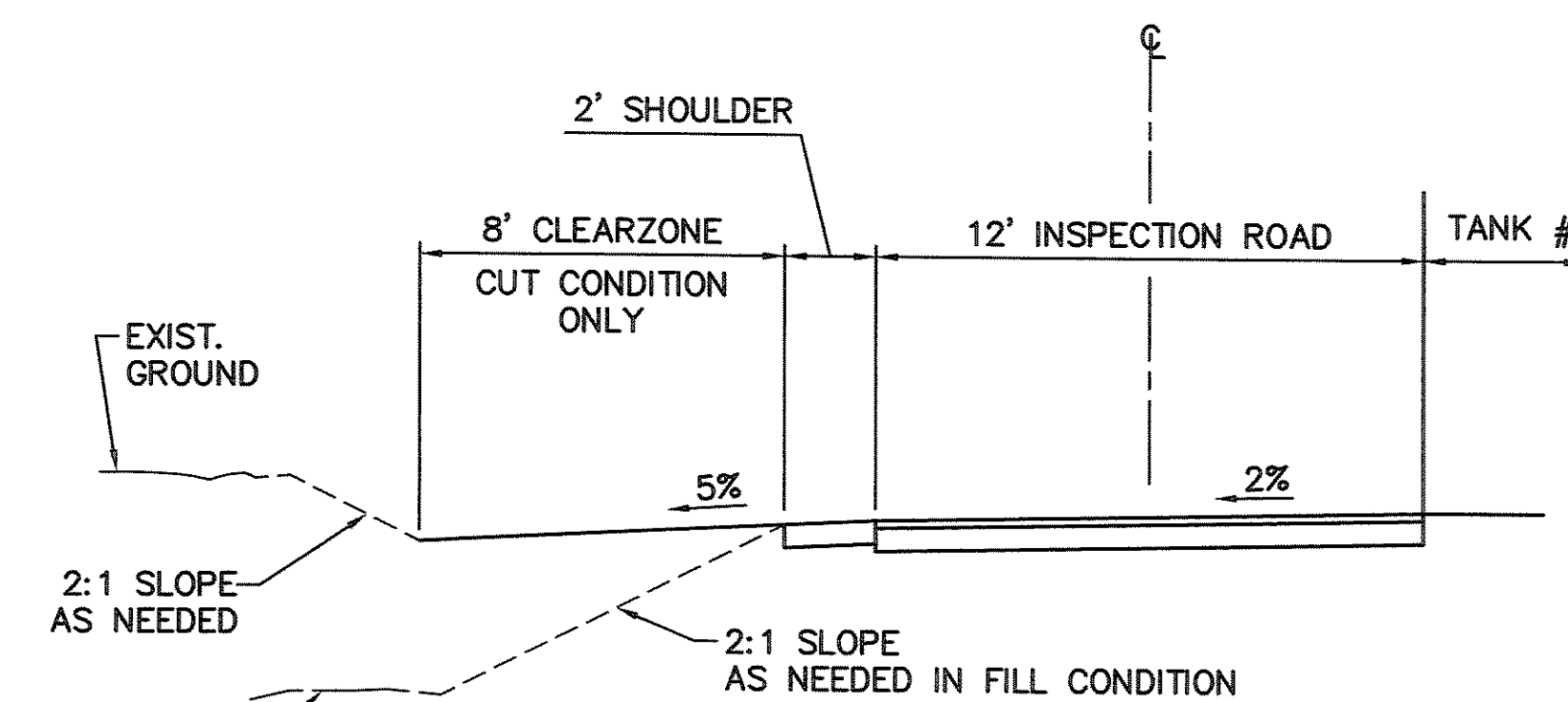
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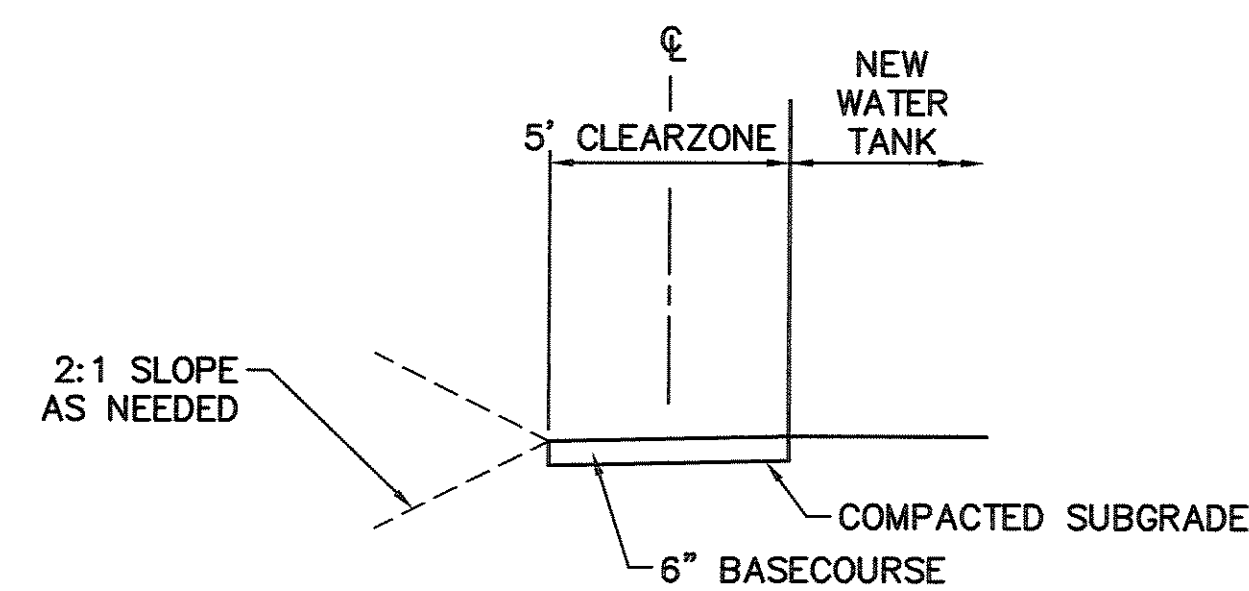
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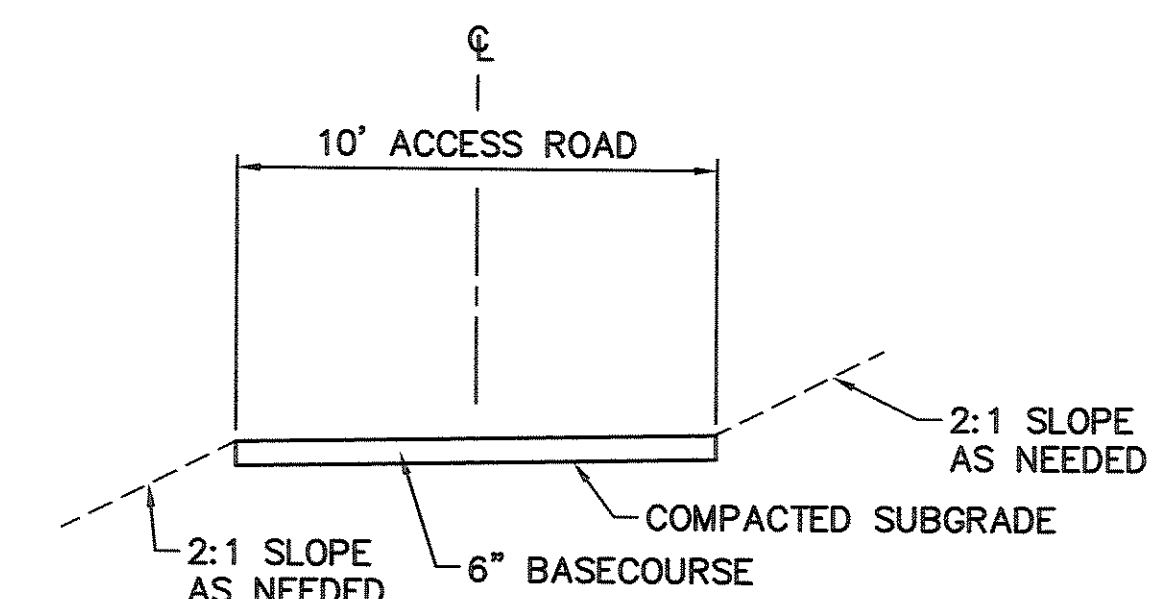
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TANK #3 INSPECTION ROAD



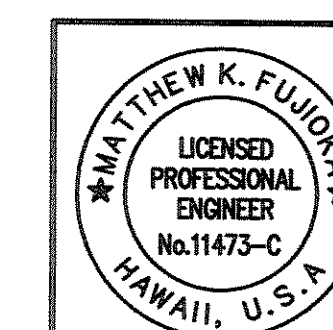
CLEARZONE SECTION



TYPICAL ACCESS ROAD

TYPICAL SECTIONS

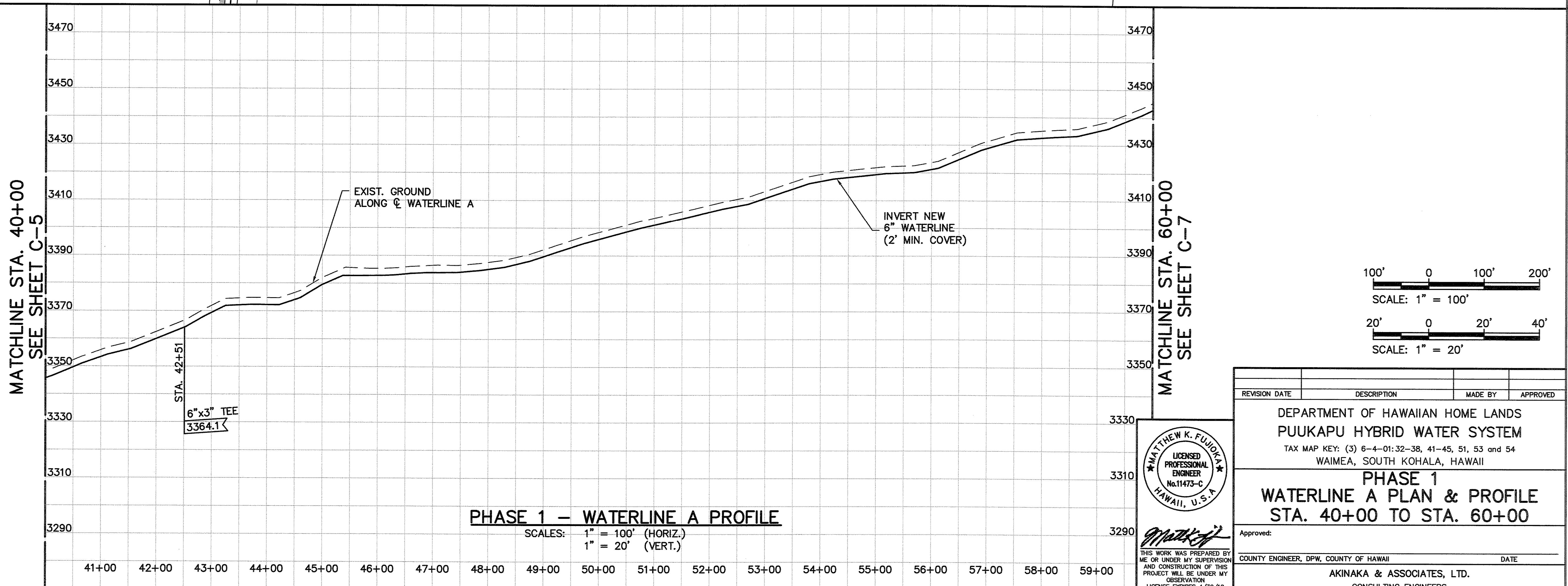
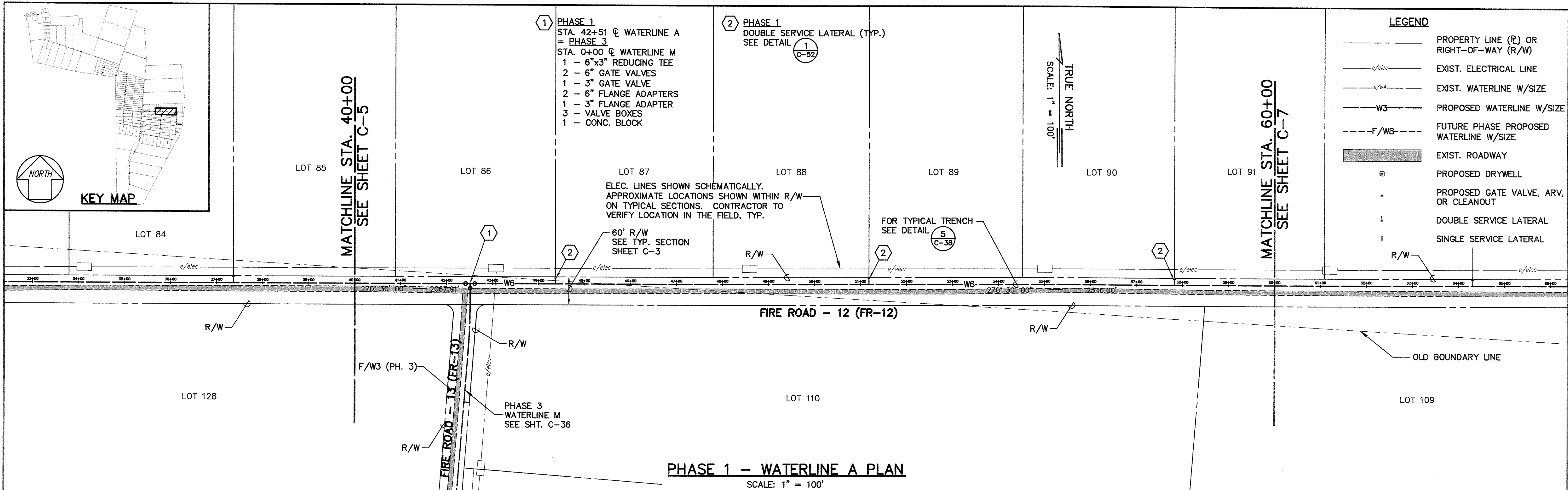
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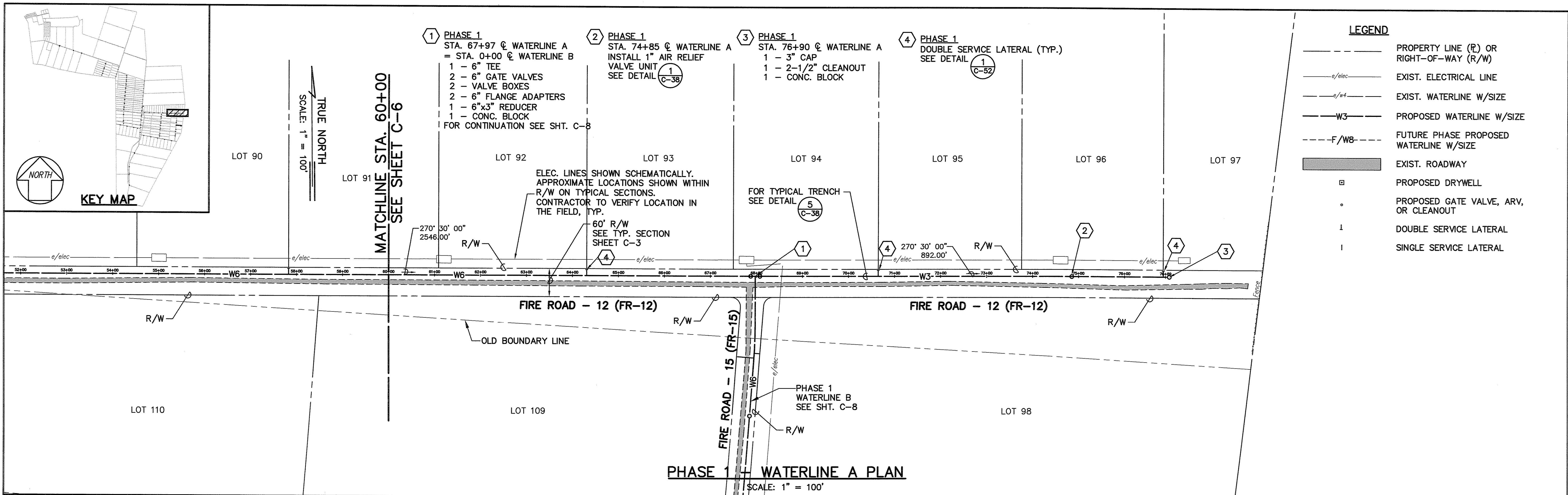
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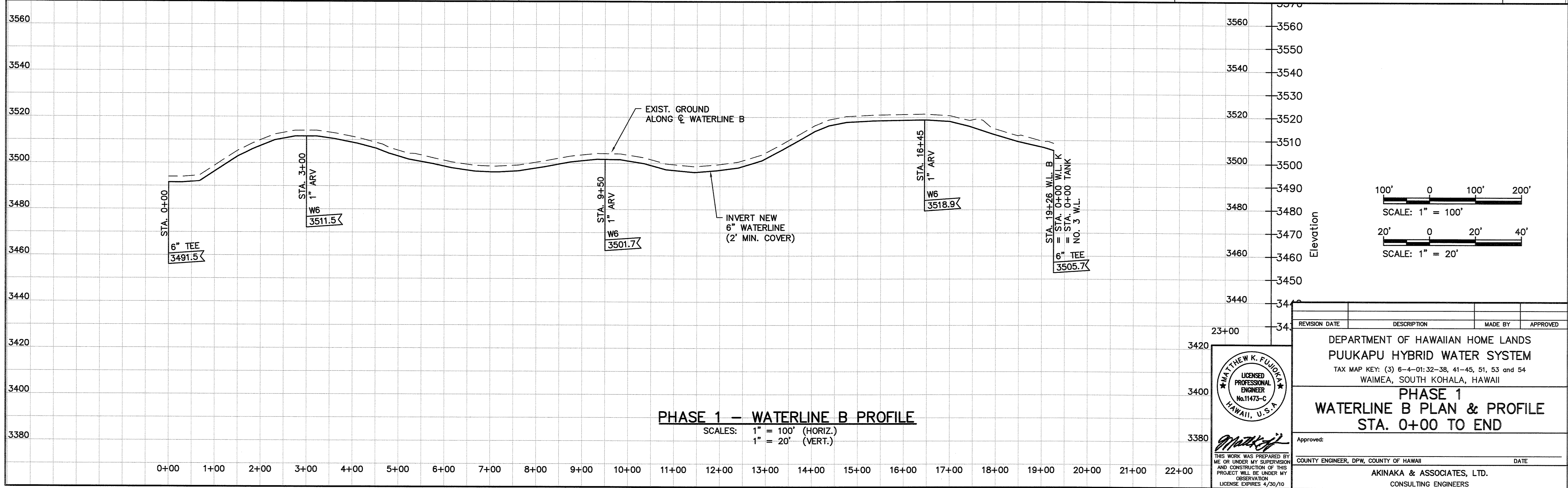
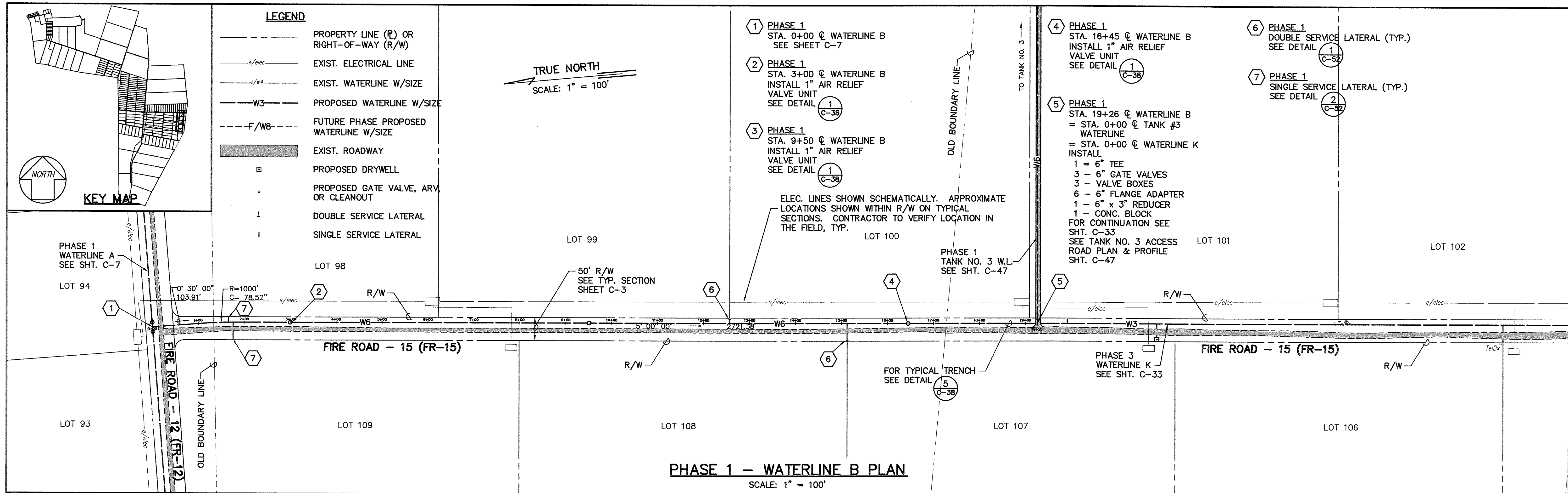
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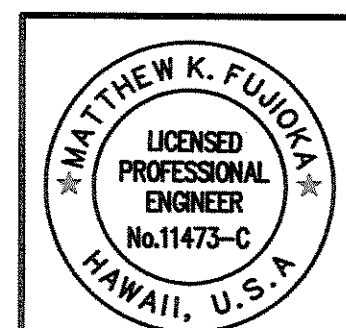
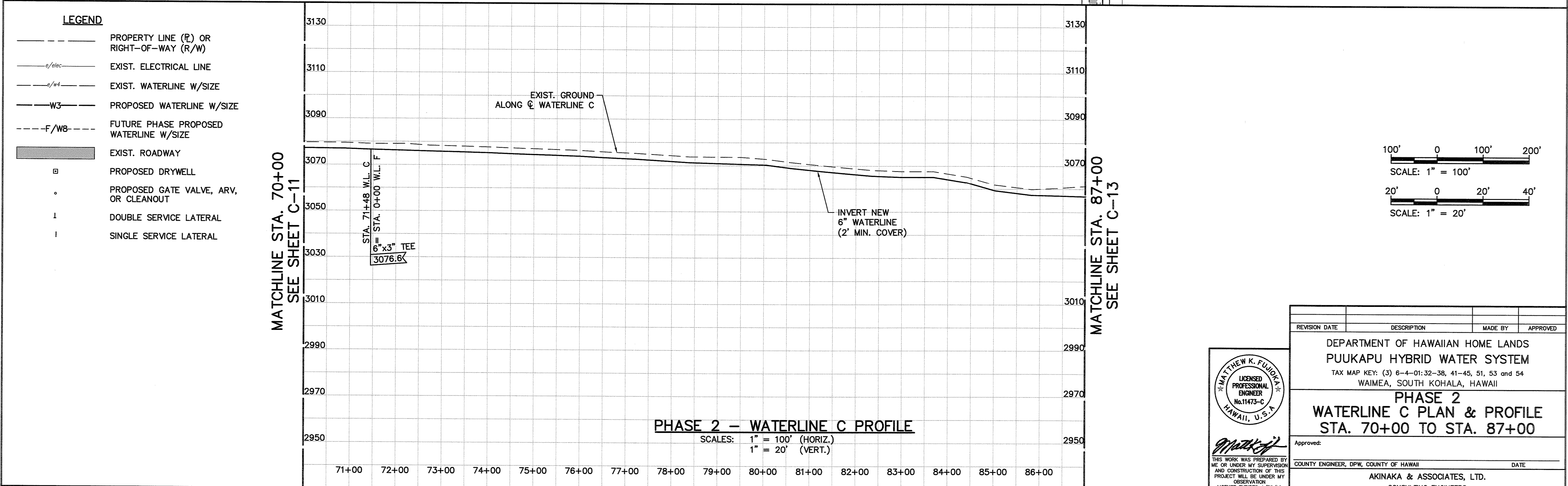
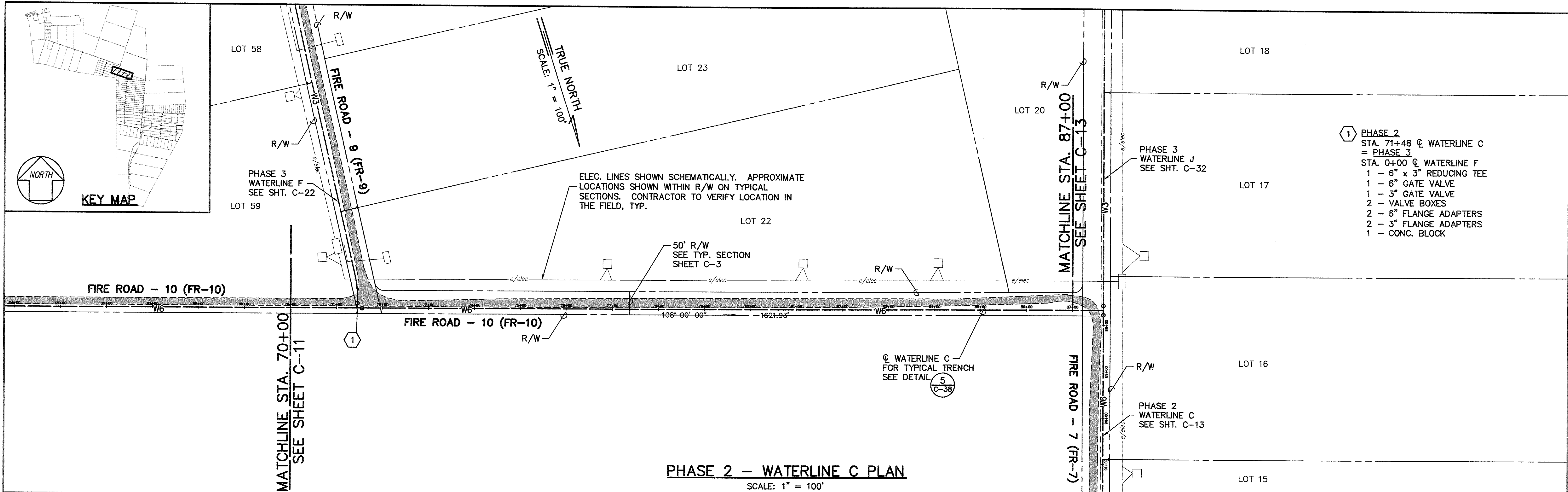


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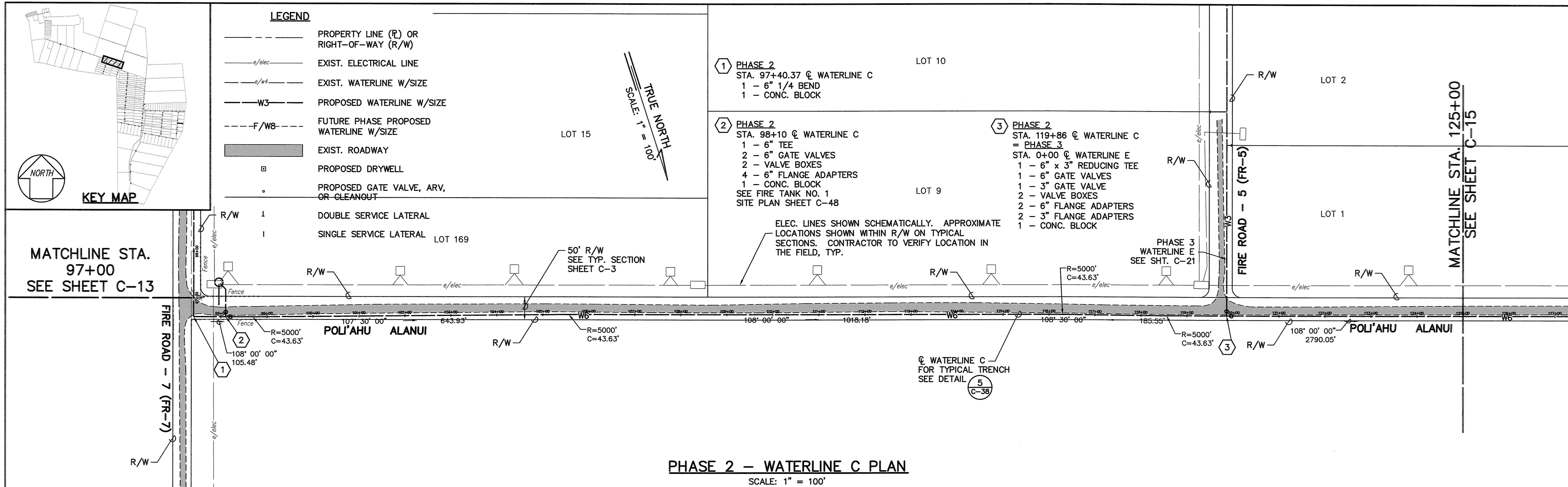
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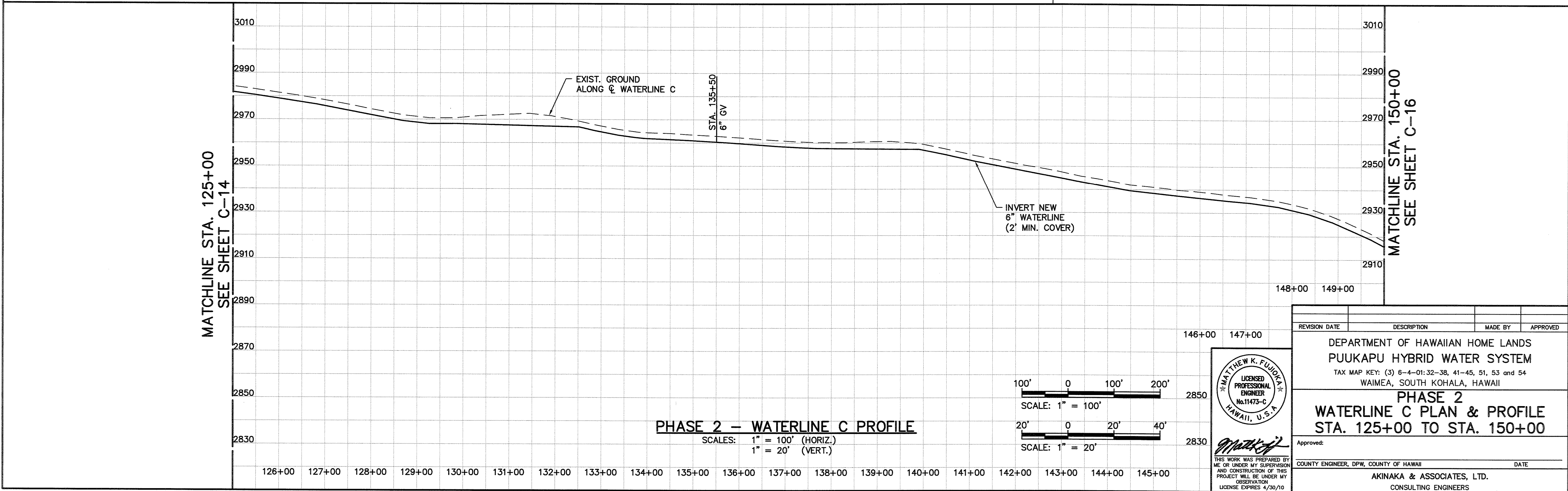
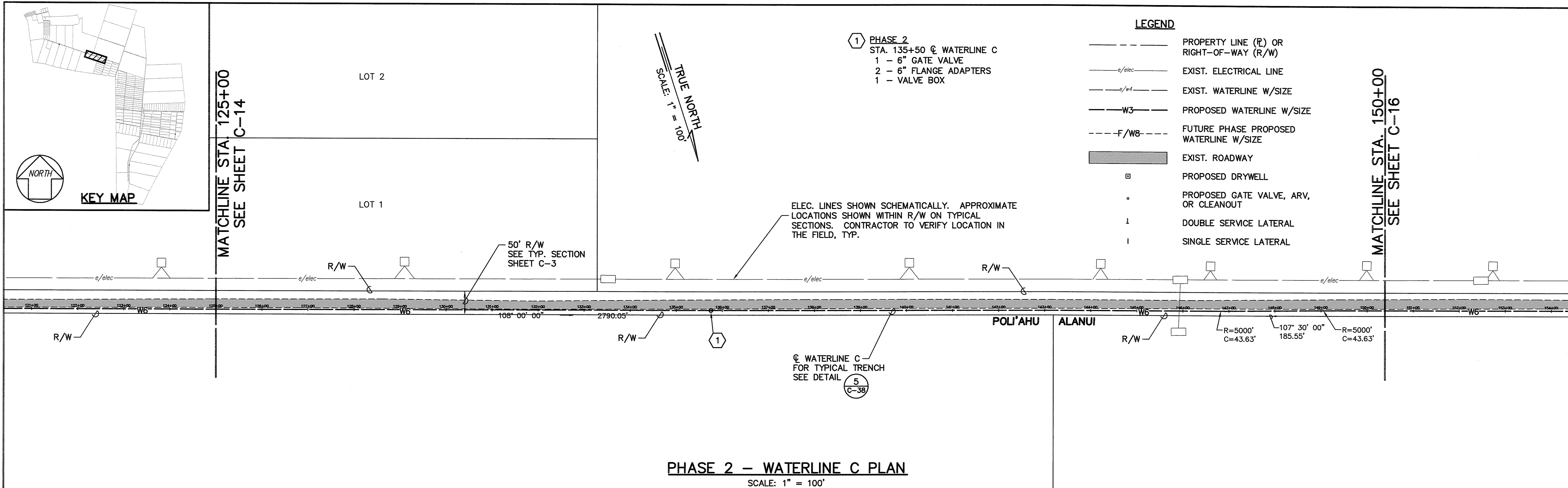
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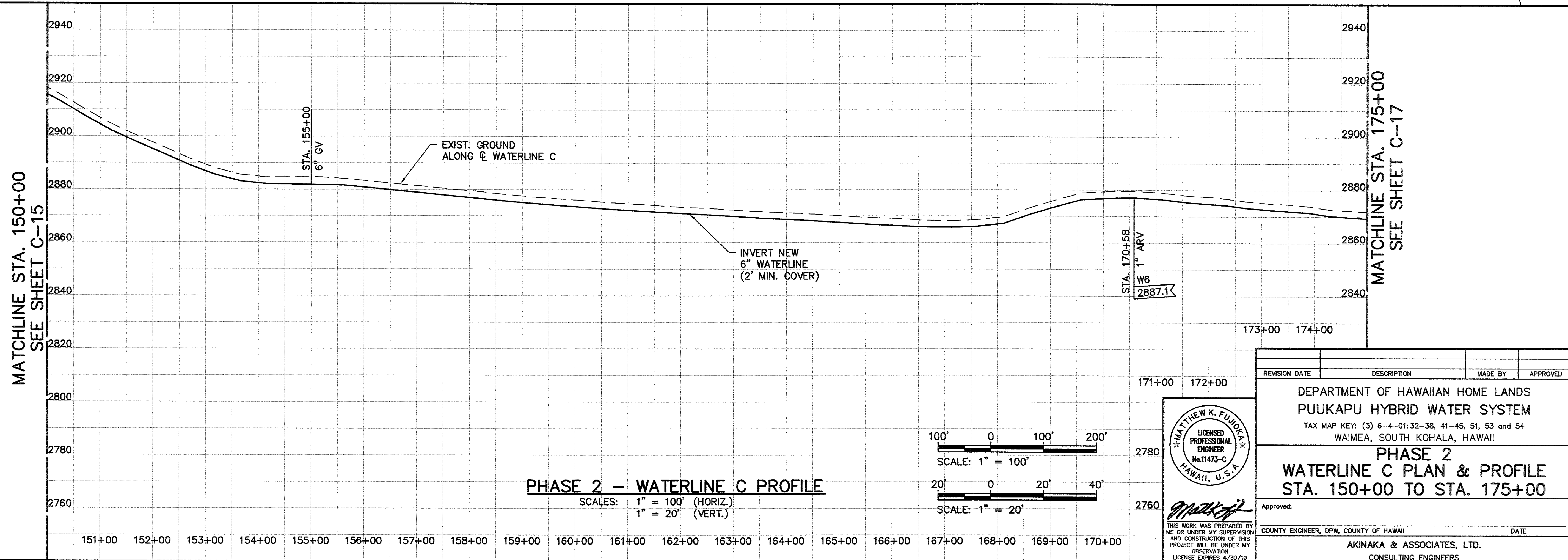
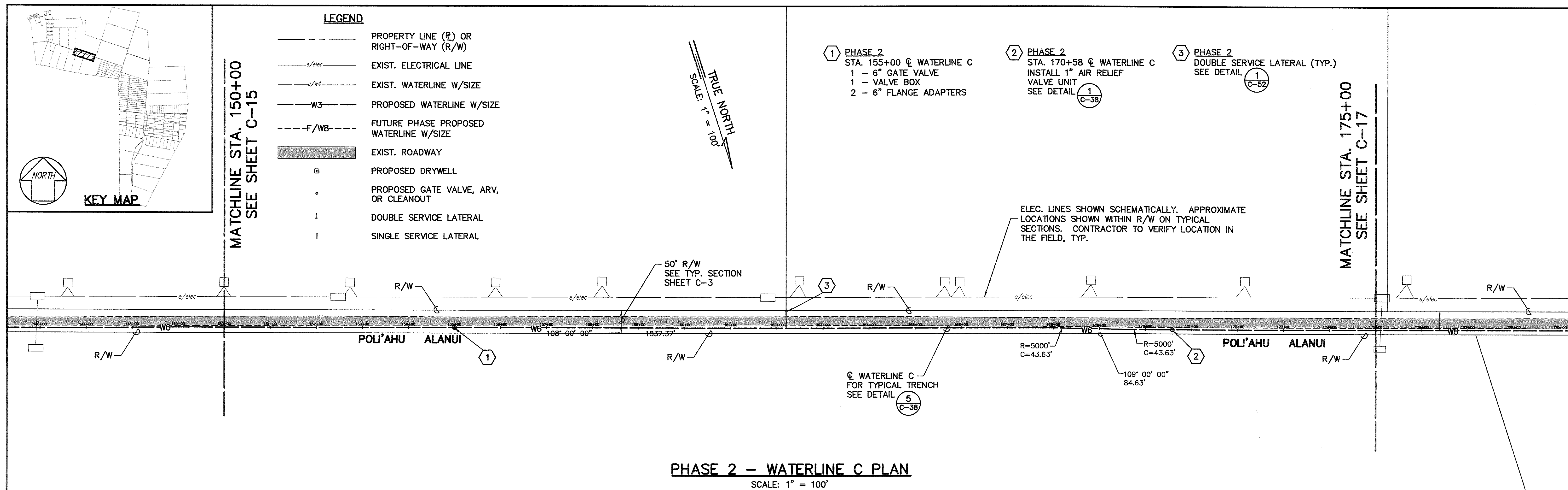
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DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII				
PHASE 2 WATERLINE C PLAN & PROFILE STA. 70+00 TO STA. 87+00				
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII				
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS				
DATE _____				

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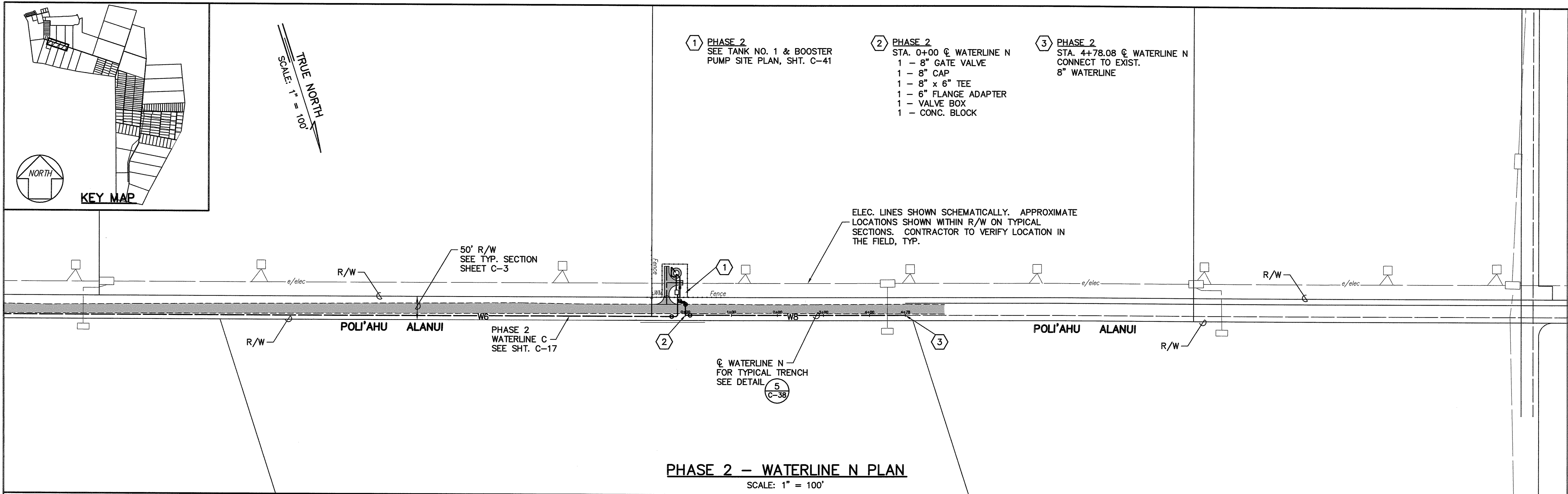
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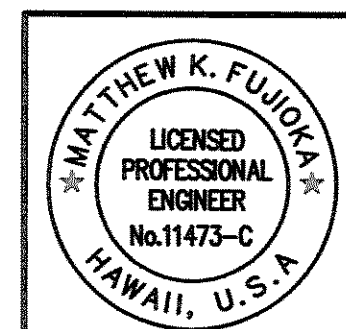
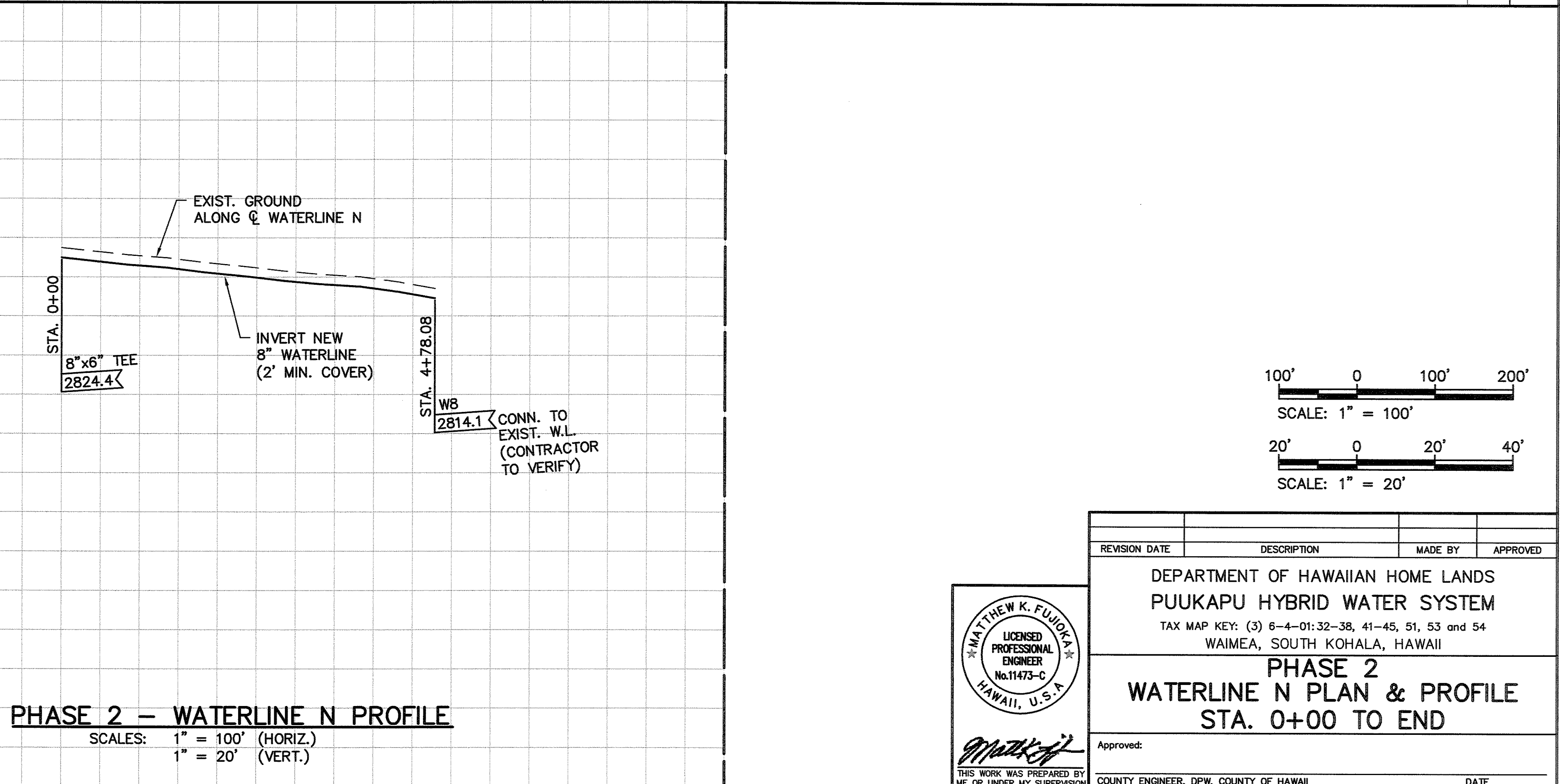




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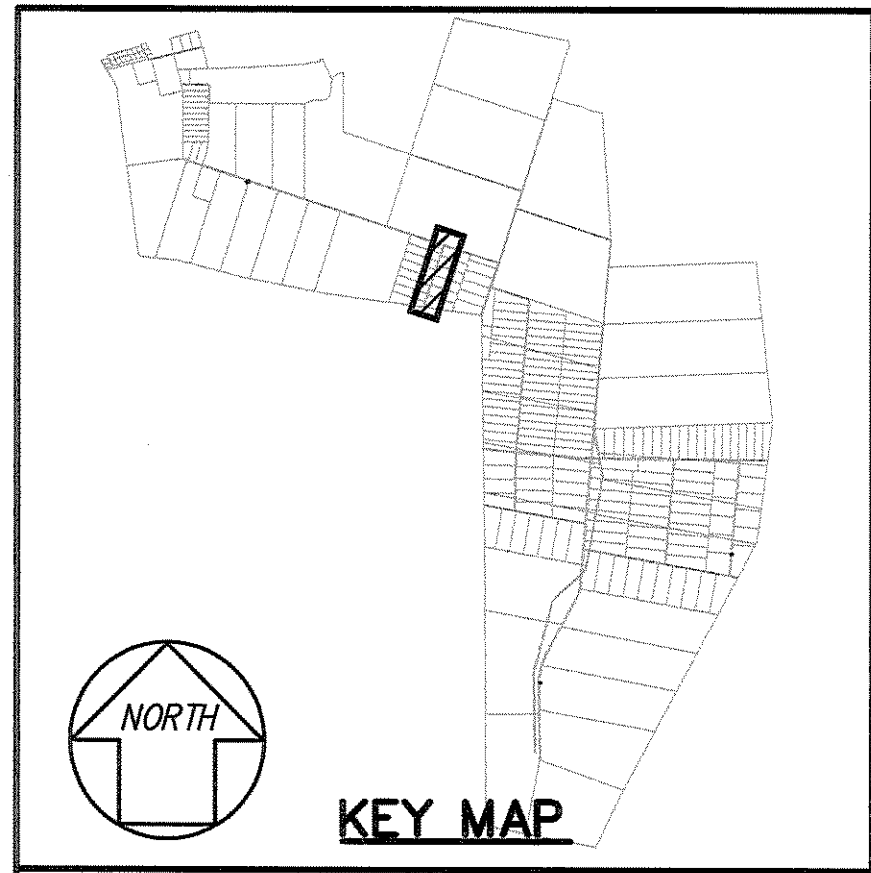


- LEGEND**
- PROPERTY LINE (R) OR
RIGHT-OF-WAY (R/W)
 - EXIST. ELECTRICAL LINE
 - EXIST. WATERLINE W/SIZE
 - PROPOSED WATERLINE W/SIZE
 - FUTURE PHASE PROPOSED
WATERLINE W/SIZE
 - EXIST. ROADWAY
 - PROPOSED DRYWELL
 - PROPOSED GATE VALVE, ARV,
OR CLEANOUT
 - DOUBLE SERVICE LATERAL
 - SINGLE SERVICE LATERAL

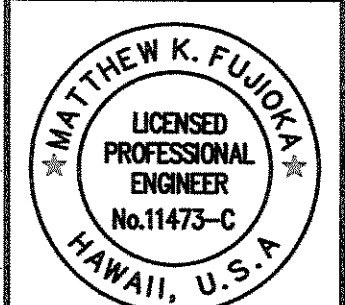
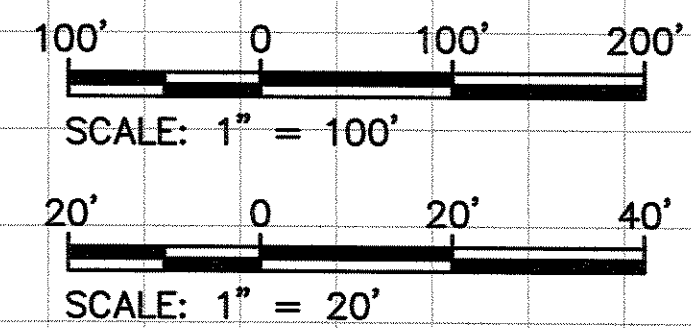
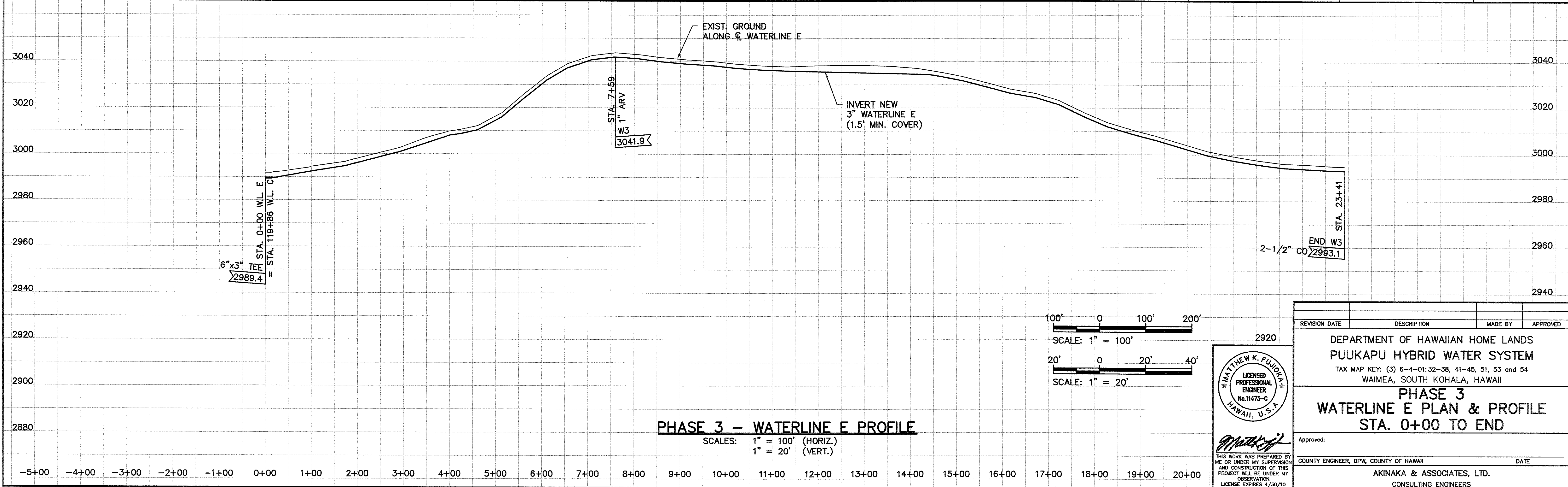
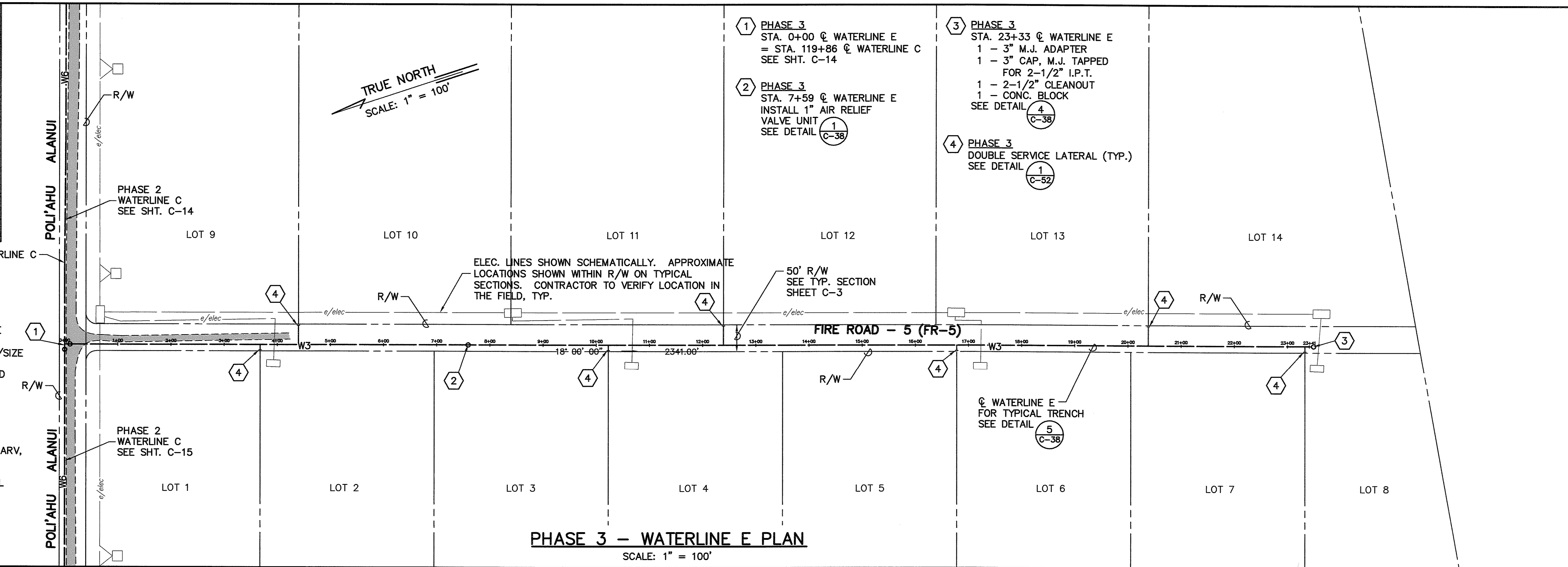


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LICENSE EXPIRES 4/30/10

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
	DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII		
	PHASE 2 WATERLINE N PLAN & PROFILE STA. 0+00 TO END		
	Approved:		
	COUNTY ENGINEER, DPW, COUNTY OF HAWAII		DATE
	AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS		
	FILE	POCKET	FOLDER NO.

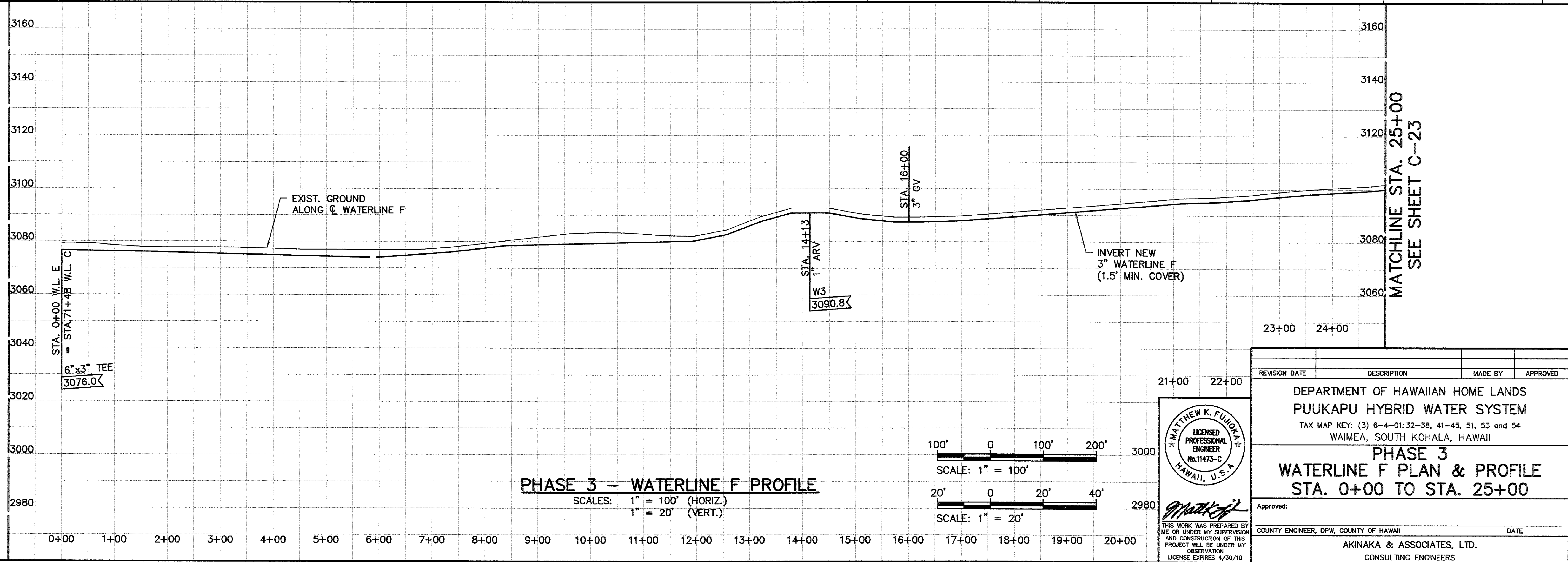
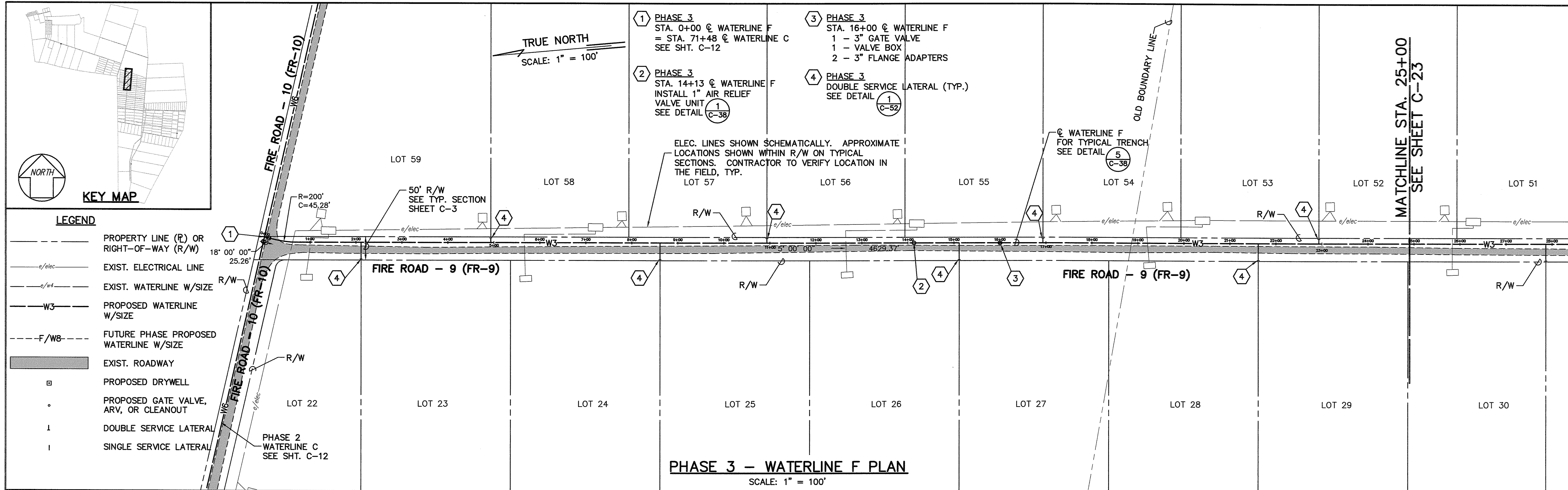


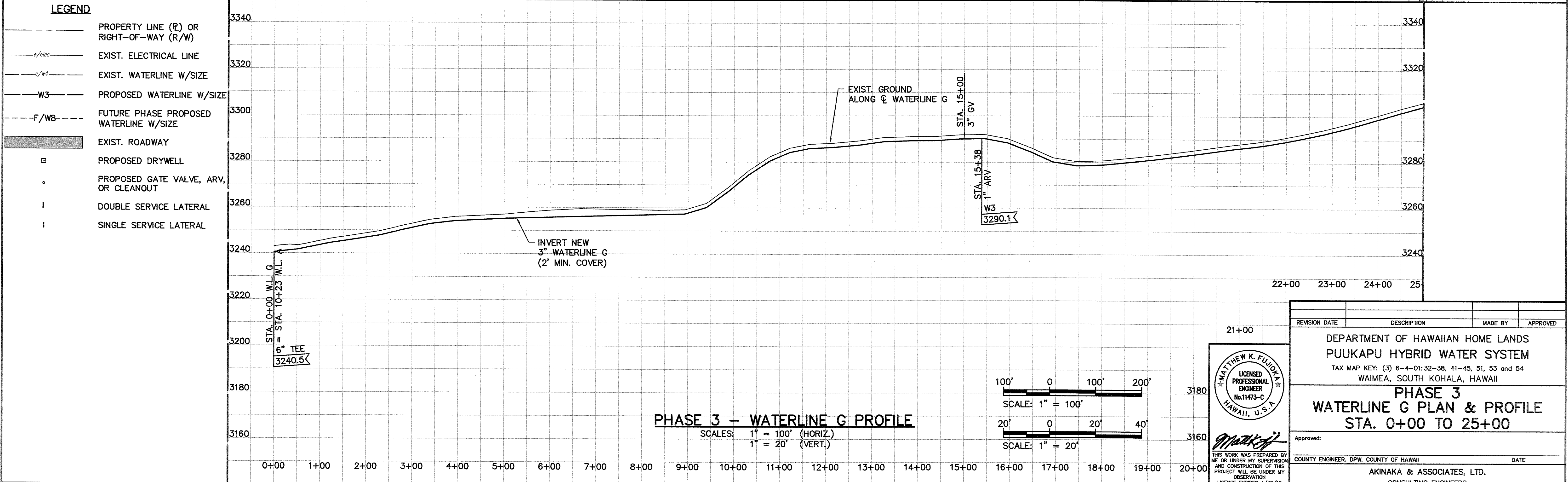
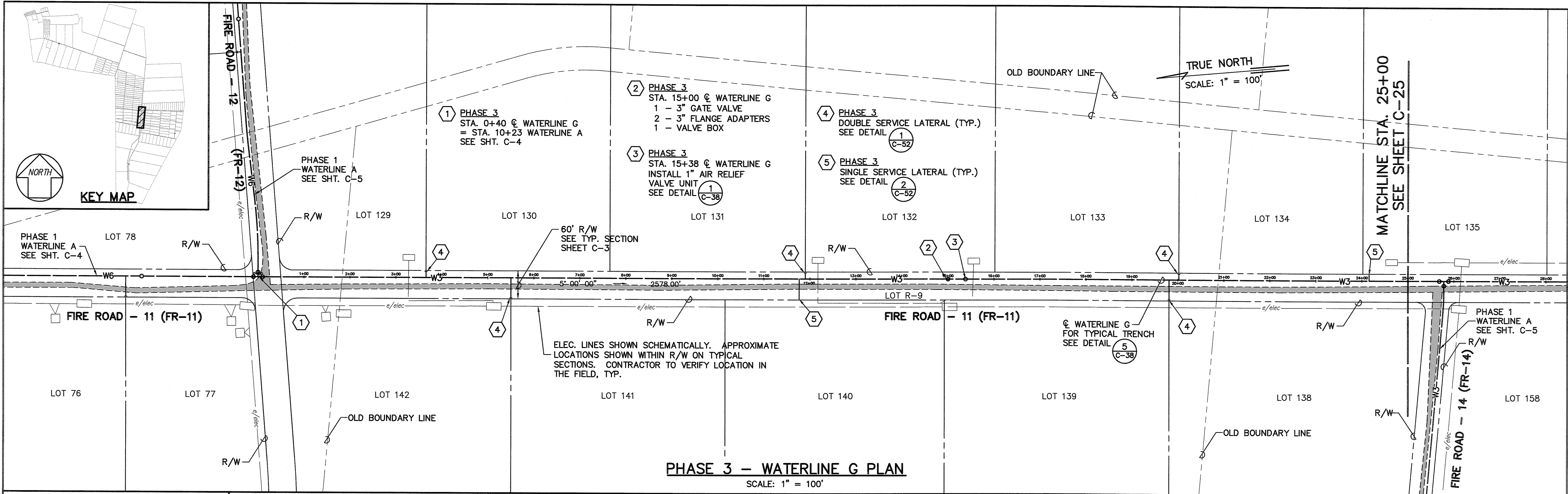
- LEGEND**
- PROPERTY LINE (P) OR RIGHT-OF-WAY (R/W)
 - EXIST. ELECTRICAL LINE
 - EXIST. WATERLINE W/SIZE
 - PROPOSED WATERLINE W/SIZE
 - FUTURE PHASE PROPOSED WATERLINE W/SIZE
 - EXIST. ROADWAY
 - PROPOSED DRYWELL
 - PROPOSED GATE VALVE, ARV, OR CLEANOUT
 - DOUBLE SERVICE LATERAL
 - SINGLE SERVICE LATERAL



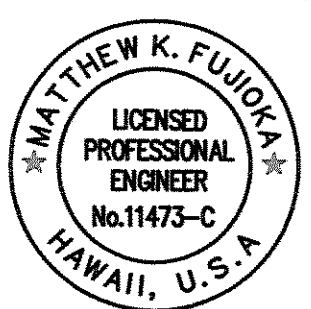
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
PHASE 3 WATERLINE E PLAN & PROFILE STA. 0+00 TO END			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____ AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

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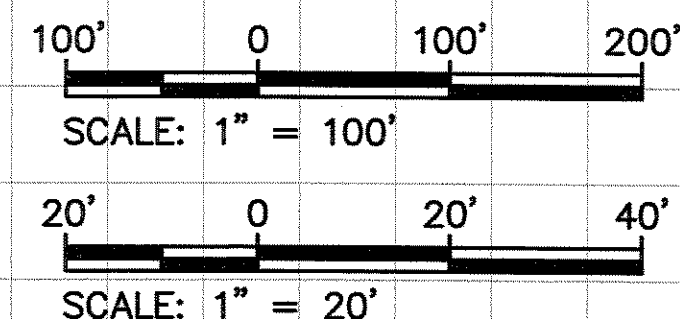
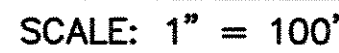




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Last Saved: 6/15/2009
Plotted on: 6/15/2009
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REVISION DATE	DESCRIPTION	MADE BY	APPROVED
	DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII		
	PHASE 3 WATERLINE G PLAN & PROFILE STA. 0+00 TO 25+00		
	Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII		DATE
	AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS		



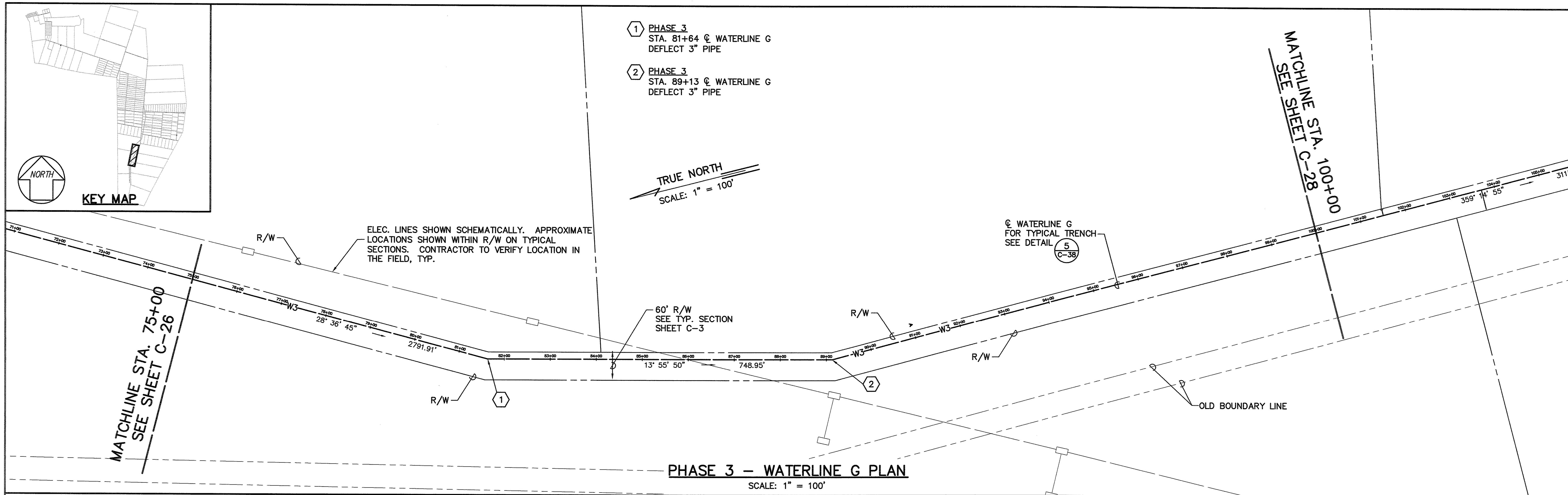
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CONSULTING ENGINEERS



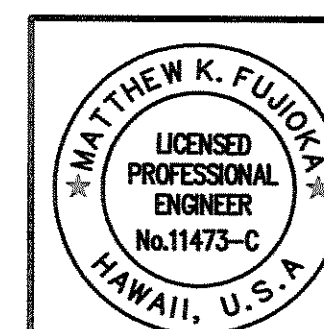
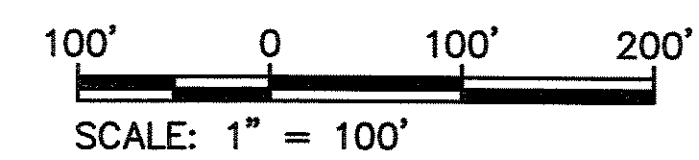
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LEGEND

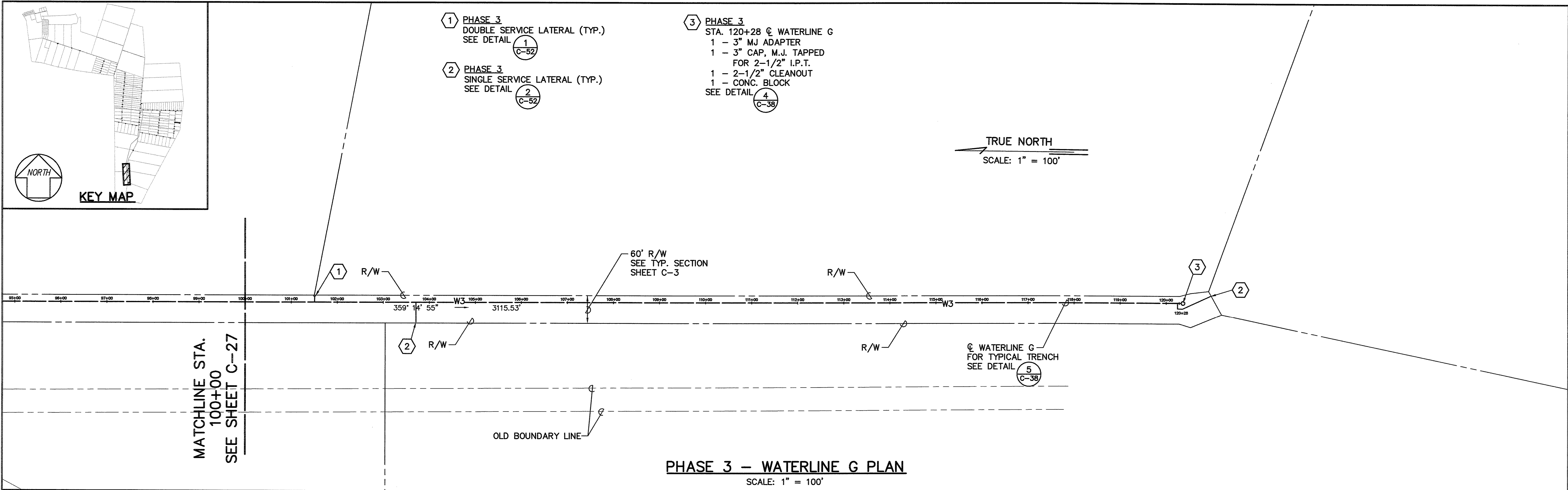
---	PROPERTY LINE (P) OR RIGHT-OF-WAY (R/W)
-e/elec-	EXIST. ELECTRICAL LINE
-e/w4-	EXIST. WATERLINE W/SIZE
-W3-	PROPOSED WATERLINE W/SIZE
-F/W8-	FUTURE PHASE PROPOSED WATERLINE W/SIZE
█	EXIST. ROADWAY
□	PROPOSED DRYWELL
○	PROPOSED GATE VALVE, ARV, OR CLEANOUT
1	DOUBLE SERVICE LATERAL
1	SINGLE SERVICE LATERAL



Approved: *Matthew K. Fujika*
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LICENSE EXPIRES 4/30/10

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
PHASE 3 WATERLINE G PLAN STA. 75+00 TO 100+00			
Approved: _____		DATE _____	
COUNTY ENGINEER, DPW, COUNTY OF HAWAII		AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS	
FILE	POCKET	FOLDER	NO.

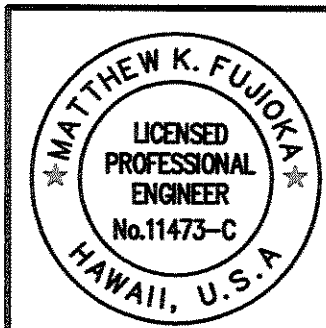
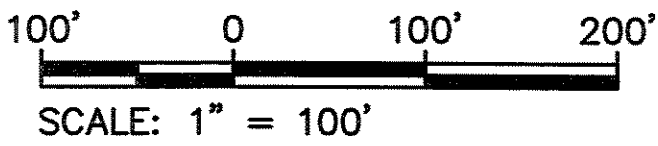
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PHASE 3 - WATERLINE G PLAN
SCALE: 1" = 100'

LEGEND

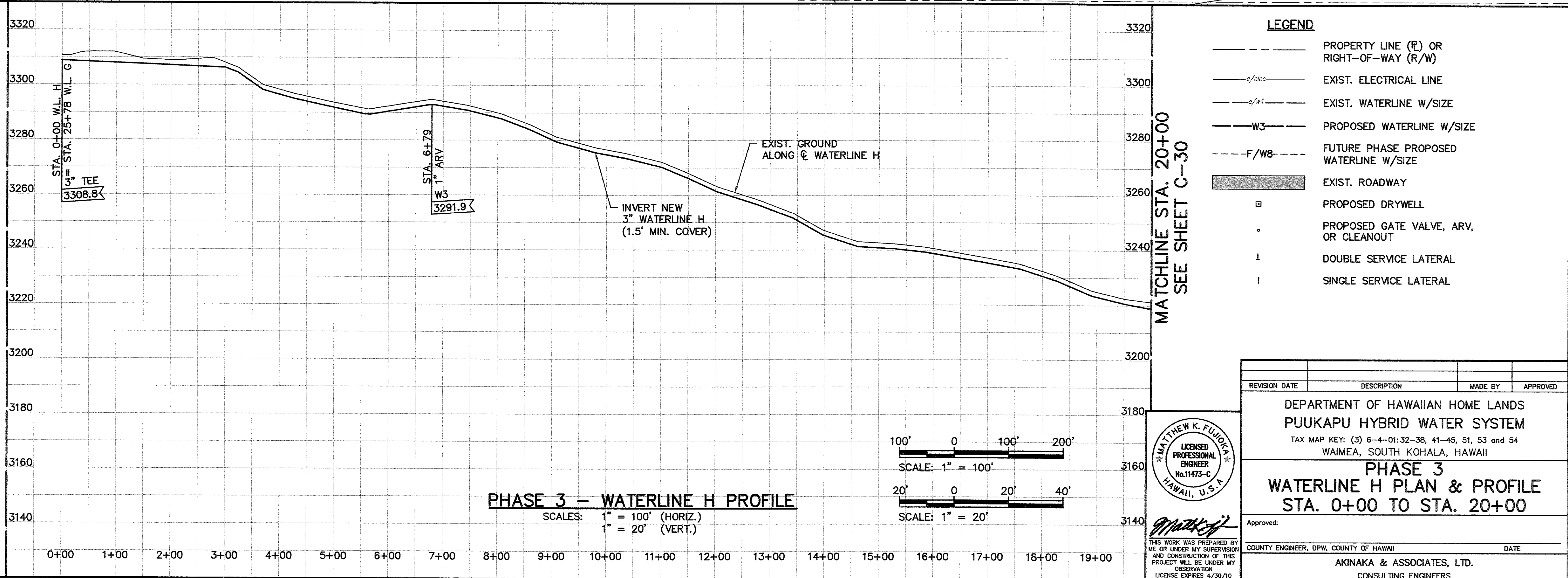
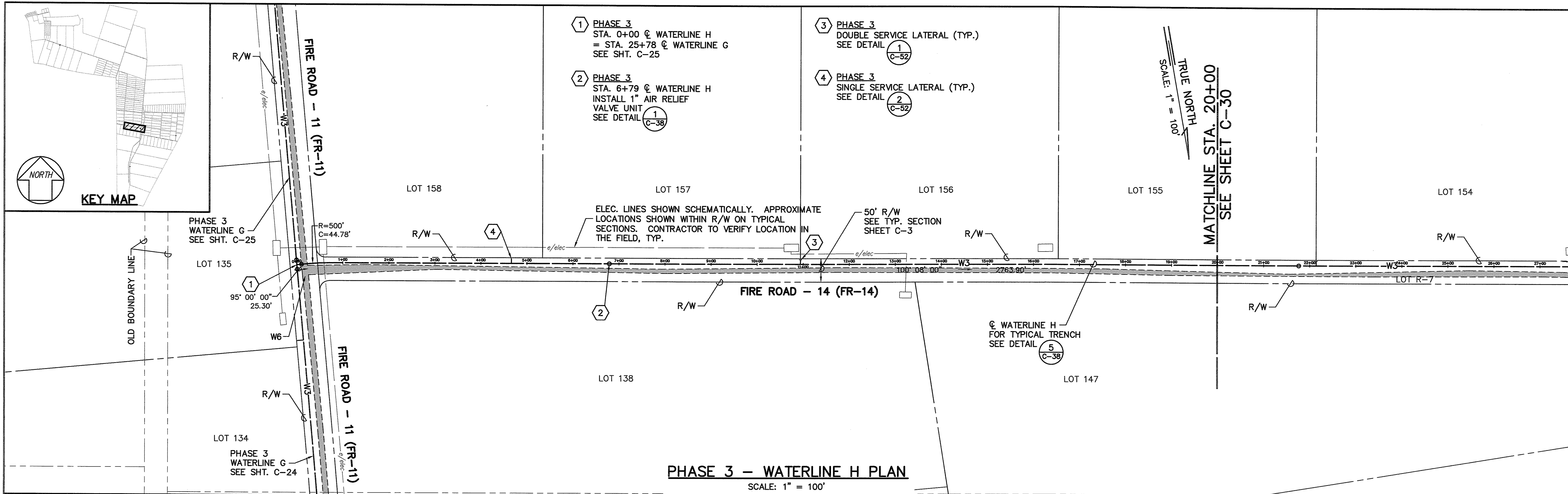
- P () --- PROPERTY LINE (P) OR RIGHT-OF-WAY (R/W)
- e/elec --- EXIST. ELECTRICAL LINE
- w/w4 --- EXIST. WATERLINE W/SIZE
- W3 --- PROPOSED WATERLINE W/SIZE
- F/W8 --- FUTURE PHASE PROPOSED WATERLINE W/SIZE
- EXIST. ROADWAY
- PROPOSED DRYWELL
- PROPOSED GATE VALVE, ARV, OR CLEANOUT
- 1 DOUBLE SERVICE LATERAL
- 1 SINGLE SERVICE LATERAL



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LICENSE EXPIRES: 4/30/10

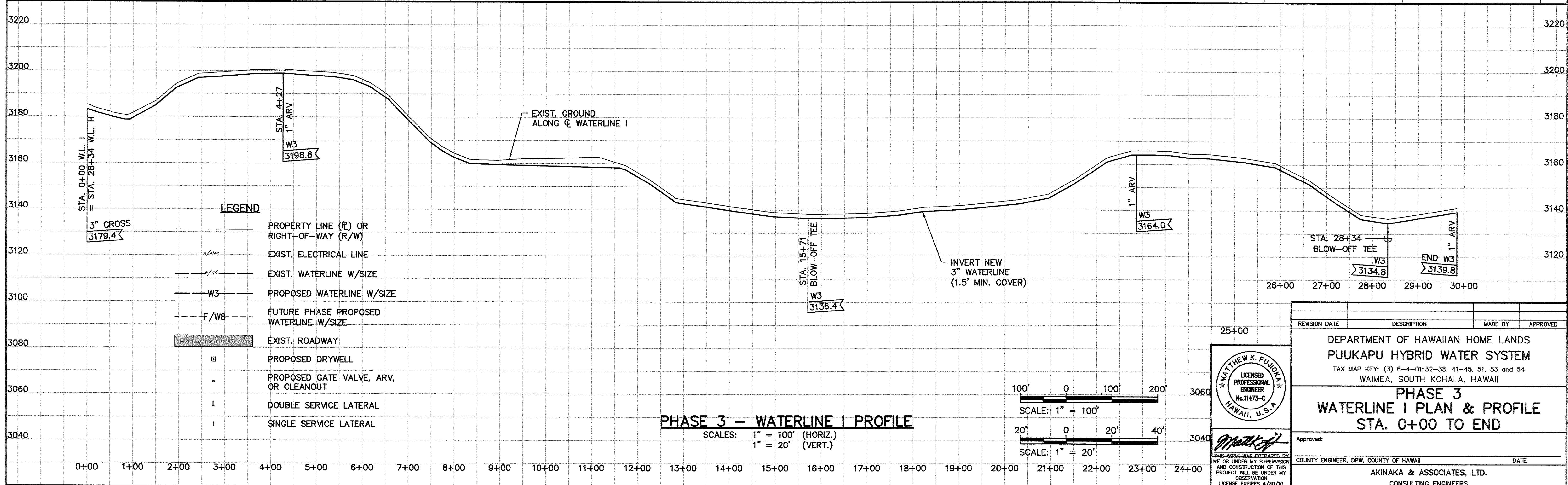
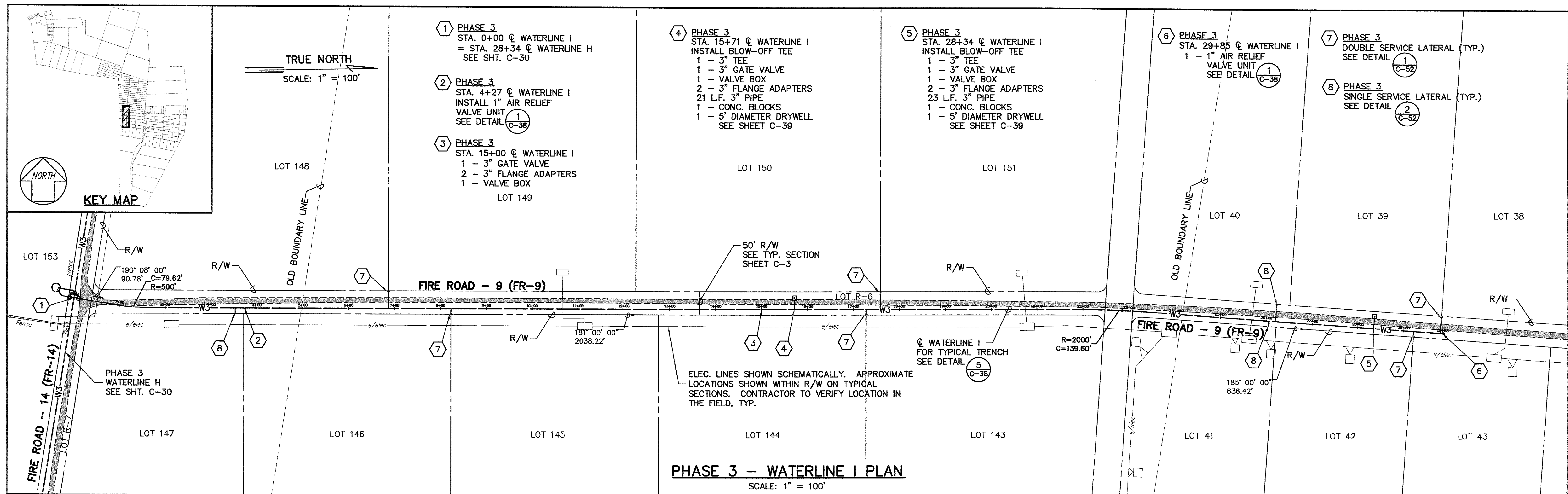
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
PHASE 3 WATERLINE G PLAN STA. 100+00 TO END			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

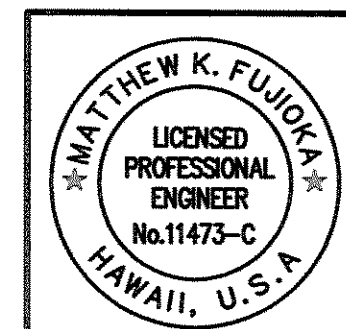
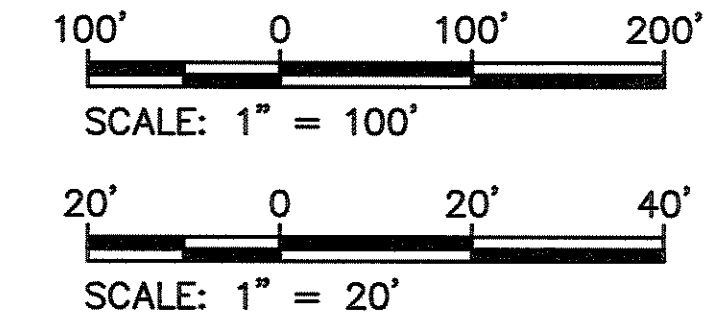
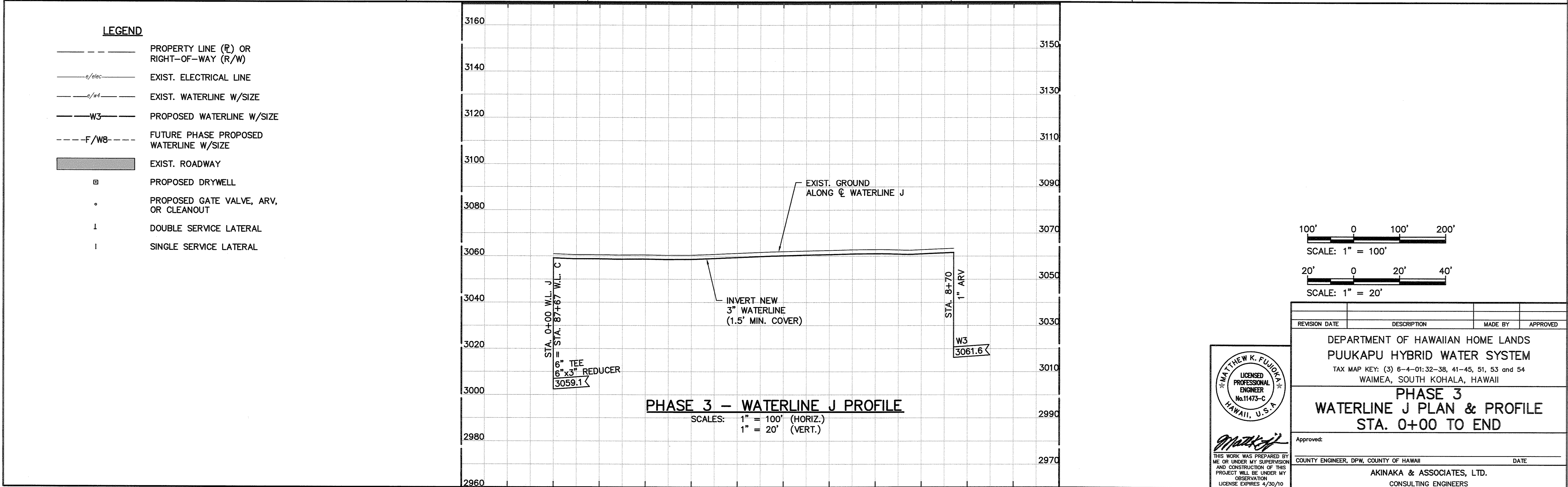
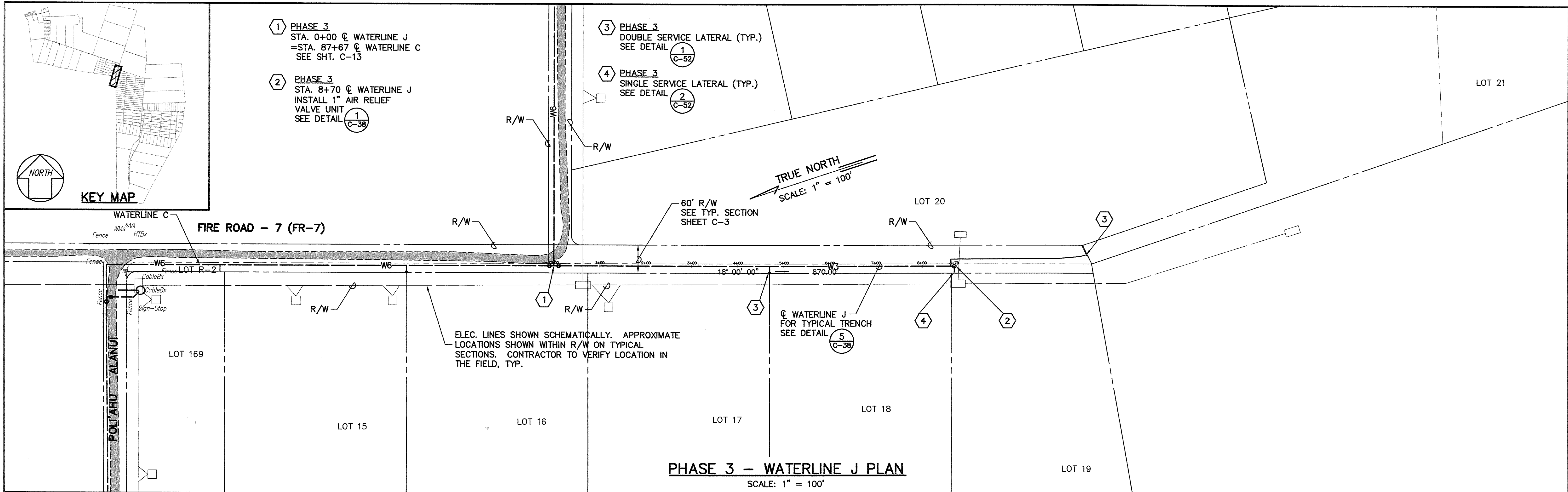
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Plotted on: 6/15/2009

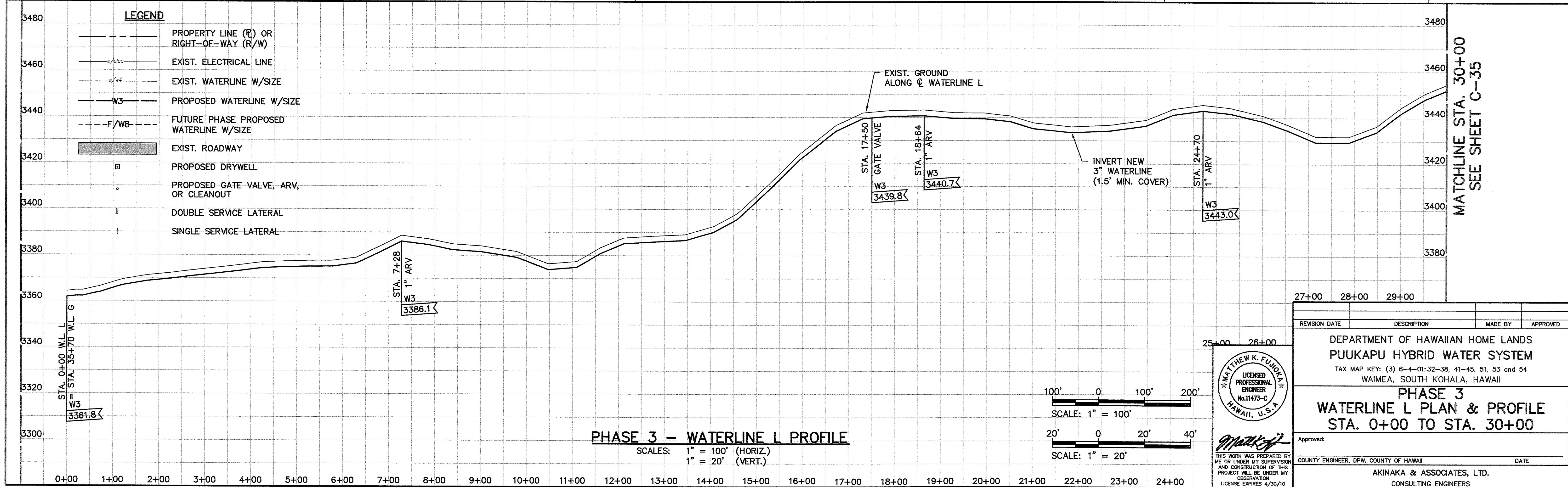
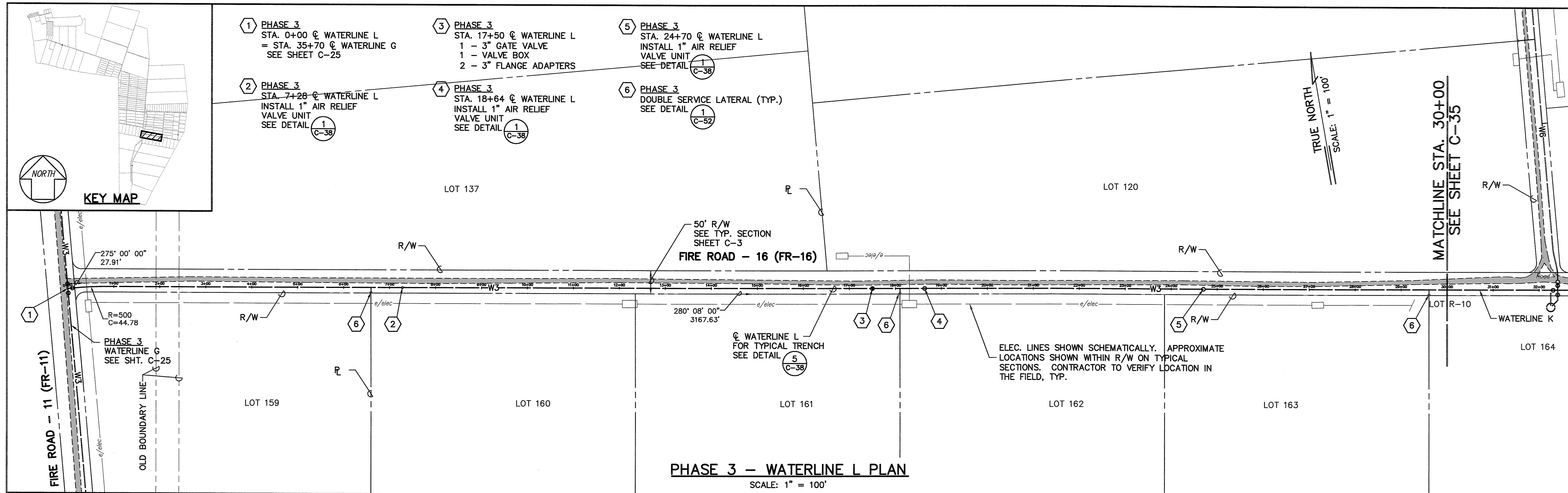
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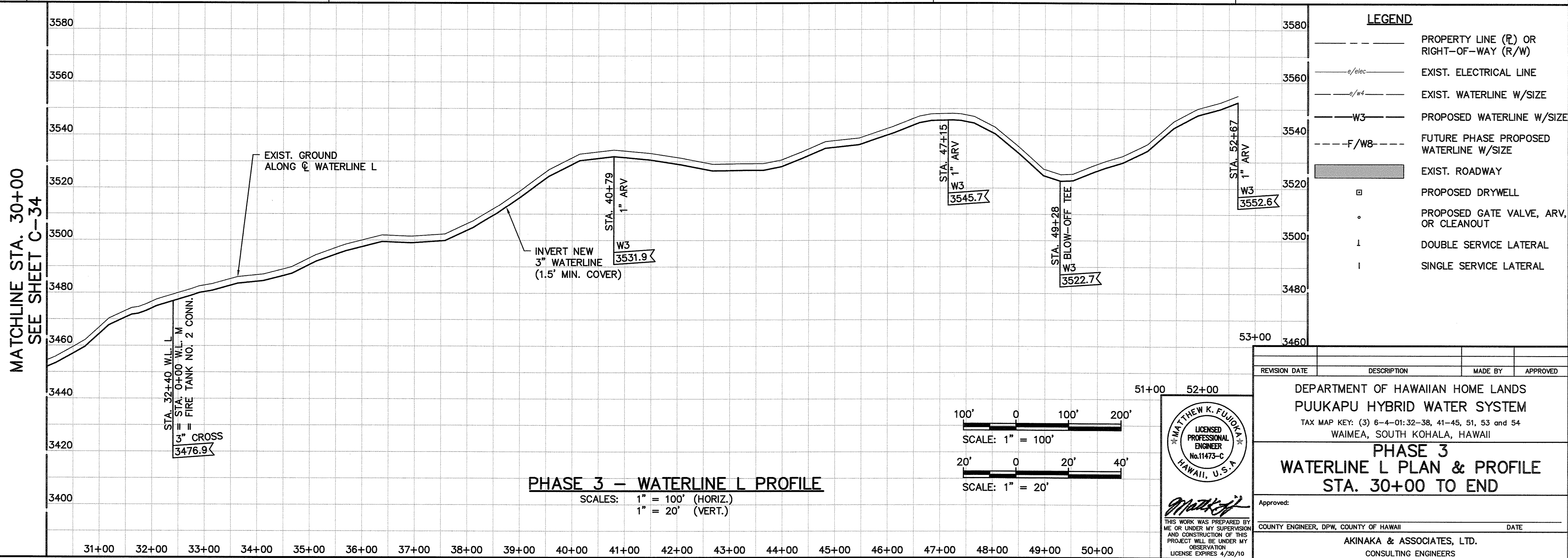
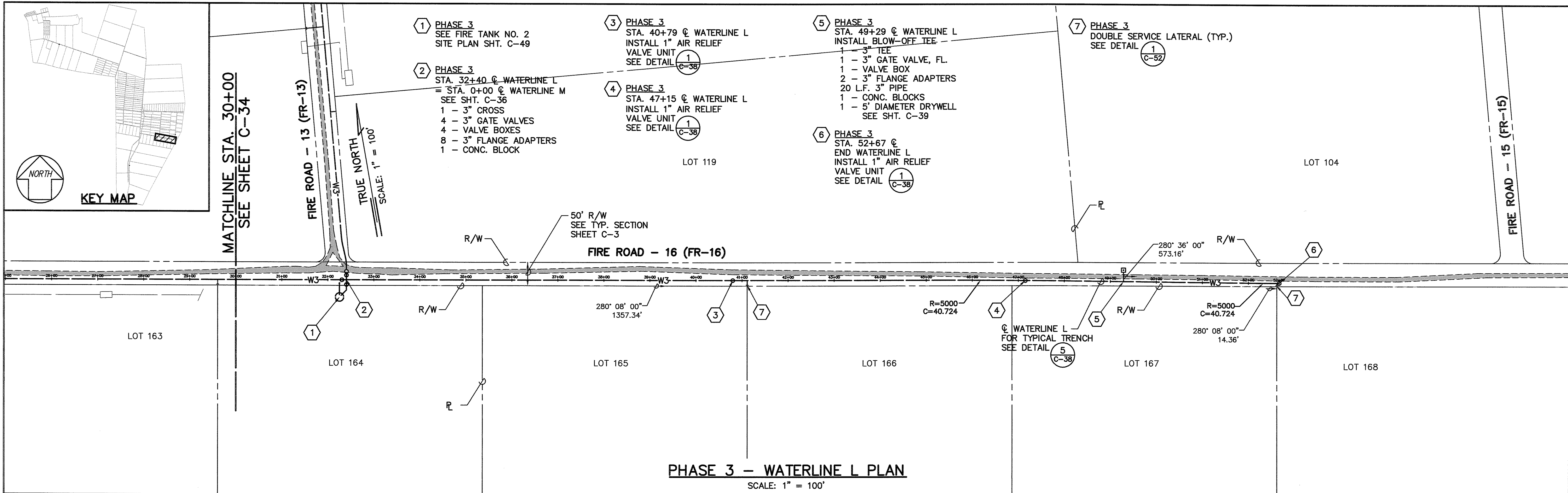


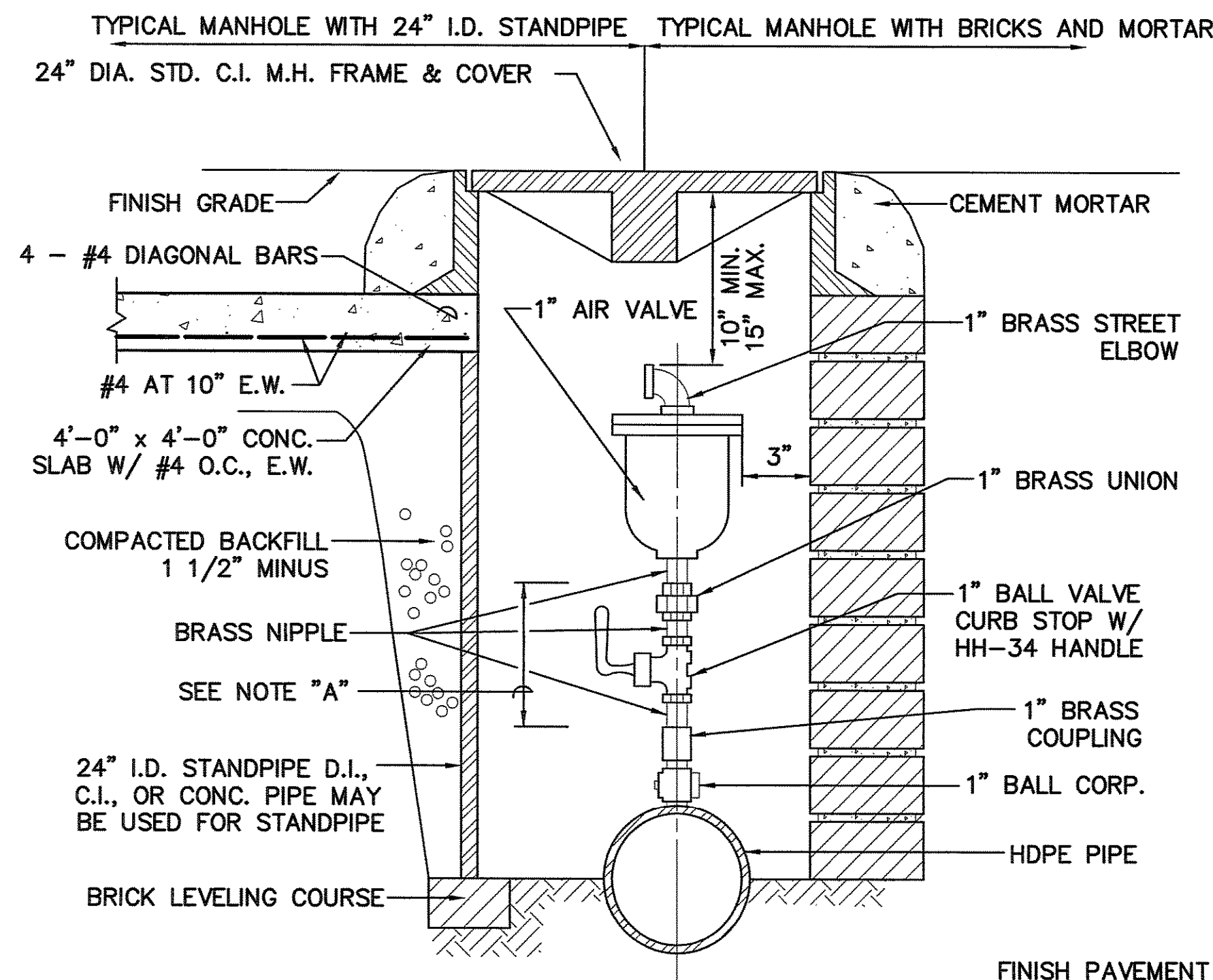
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
PHASE 3 WATERLINE J PLAN & PROFILE STA. 0+00 TO END			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII			
DATE: _____ AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

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Last Saved: 6/13/2009
Plotted on: 6/15/2009
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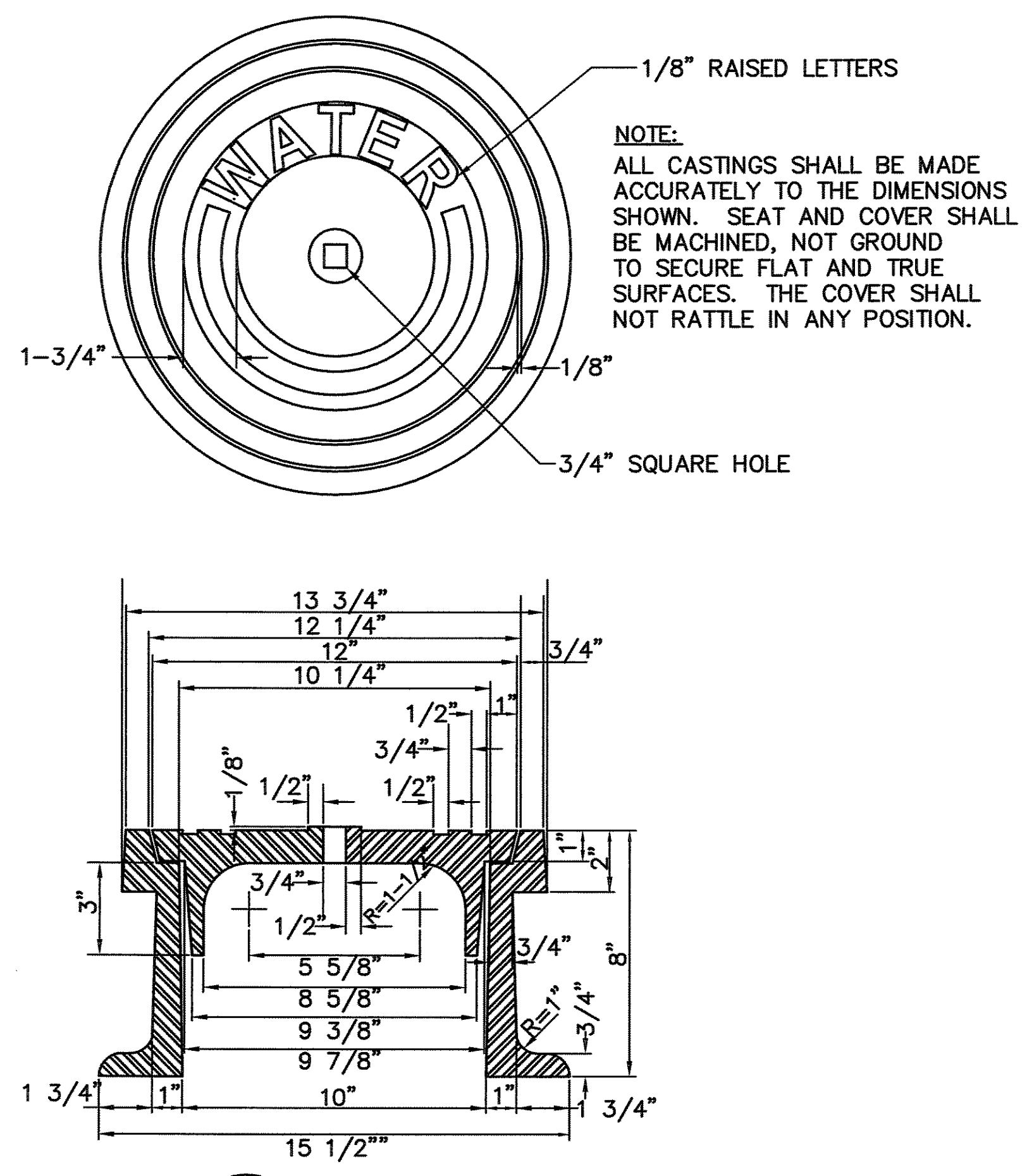
NOTES:

A. ELIMINATE CURB STOP AND COUPLING WHERE PIPE BURY (TOP OF PIPE TO FINISH GRADE) IS LESS THAN 30 INCHES. CONNECT UNION TO BALL CORP. AND ADJUST OVERALL HEIGHT ACCORDINGLY W/ BRASS NIPPLE (CUT TO FIT).

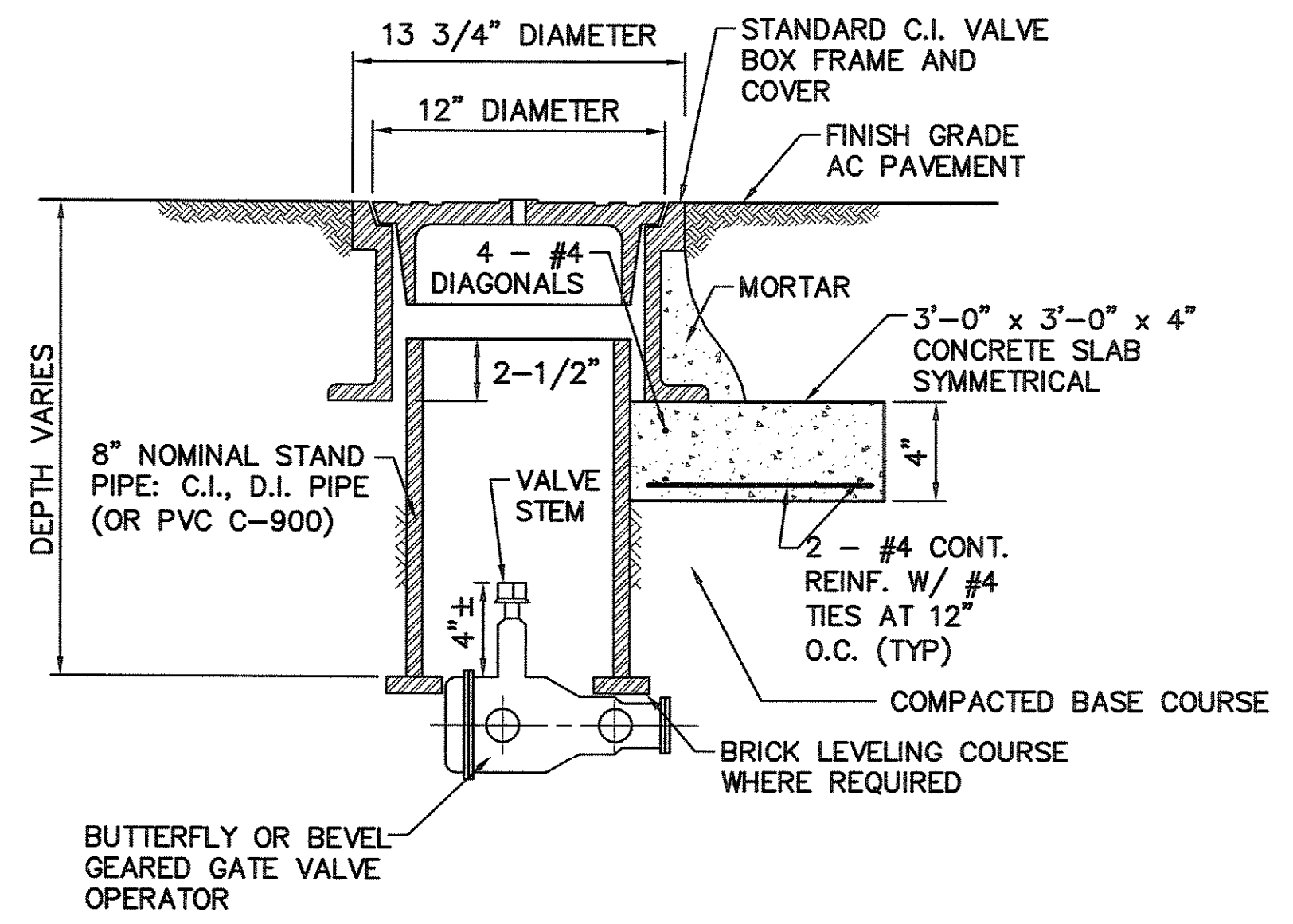
B. FOR INSTALLATION WITHIN PAVED AREAS SEE DETAIL AT RIGHT.

MANHOLE INSTALLATION WITHIN PAVED AREAS

1 1" AIR VALVE UNIT DETAIL
C-38 NOT TO SCALE



2 CAST IRON FRAME & COVER
C-38 NOT TO SCALE

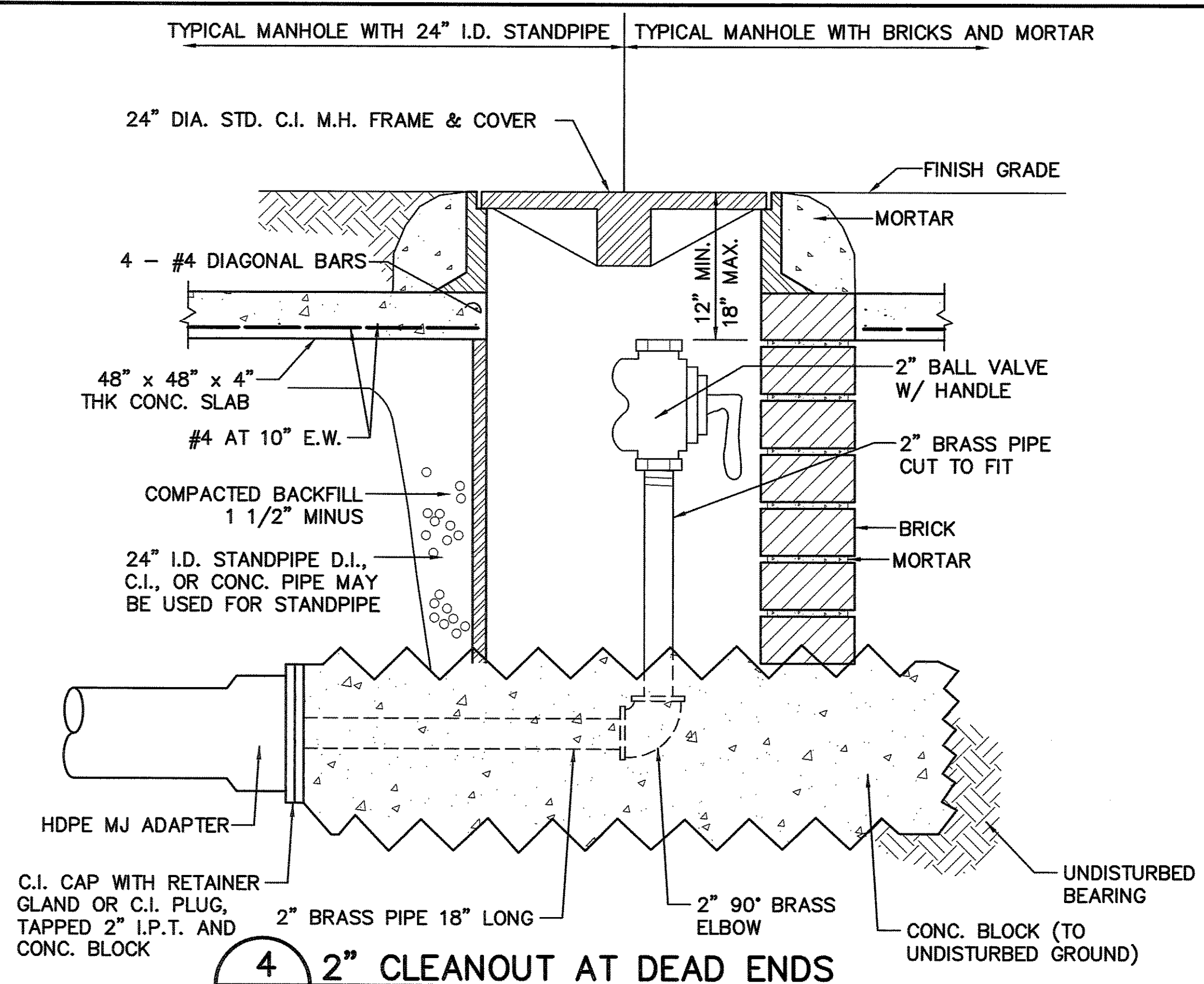


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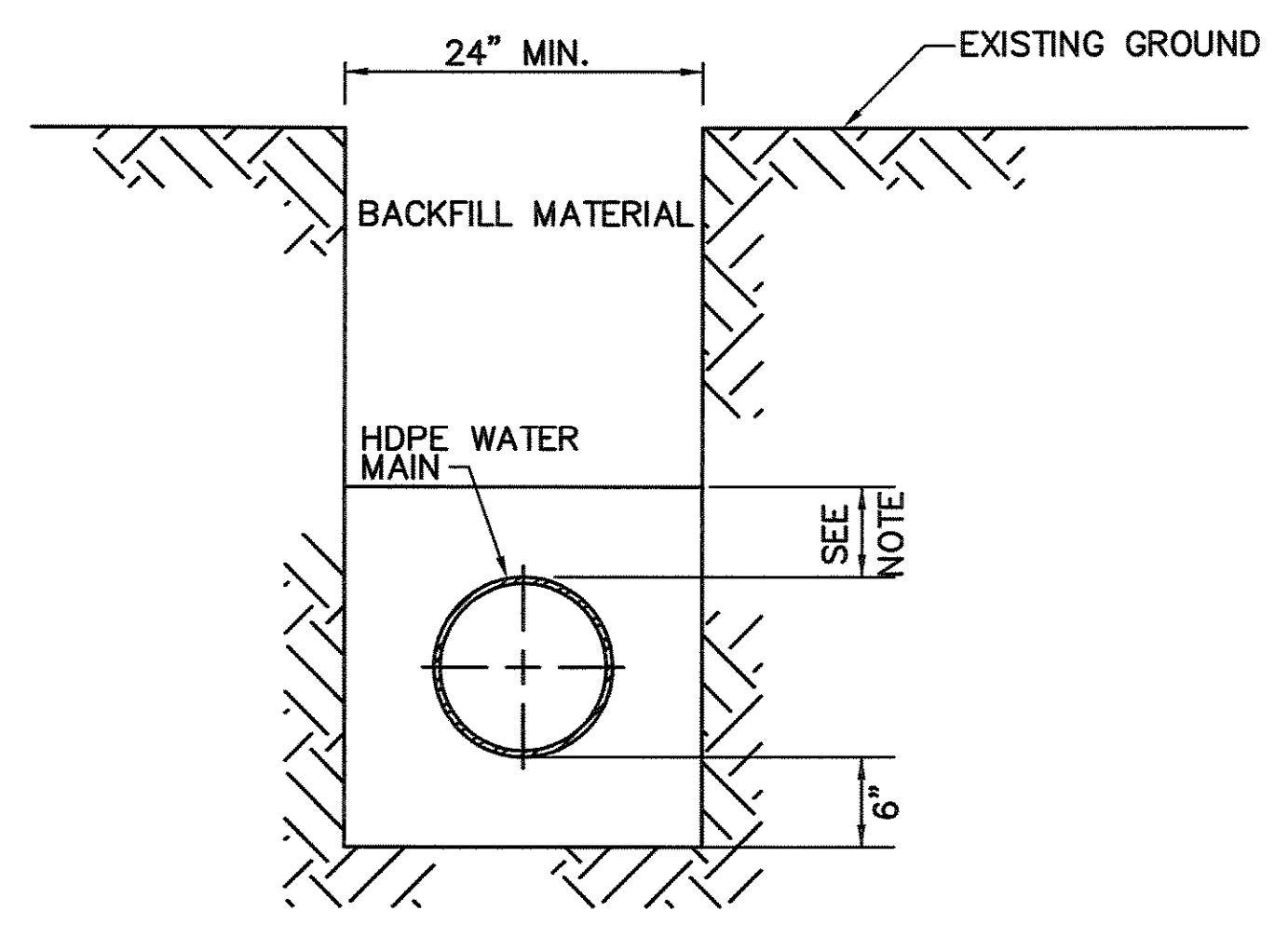
1. THE LIMIT OF PIPE CUSION BACKFILL AROUND THE VALVE SHALL BE THE TRENCH WIDTH X 4 FEET ON EACH SIDE OF VALVE AND FILL TO 8" BELOW FINISH GRADE.

2. CONCRETE SHALL BE DWS 2500.

3 12" VALVE BOX INSTALLATION
C-38 NOT TO SCALE



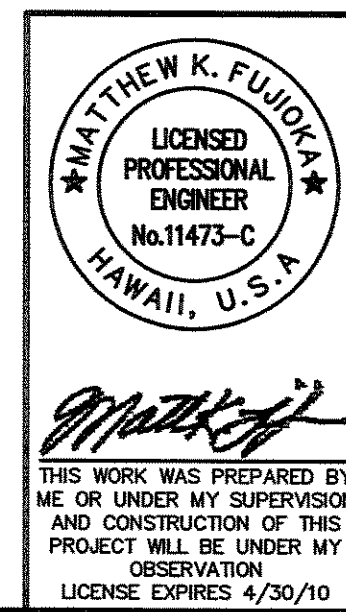
4 2" CLEANOUT AT DEAD ENDS
C-38 NOT TO SCALE



NOTE:

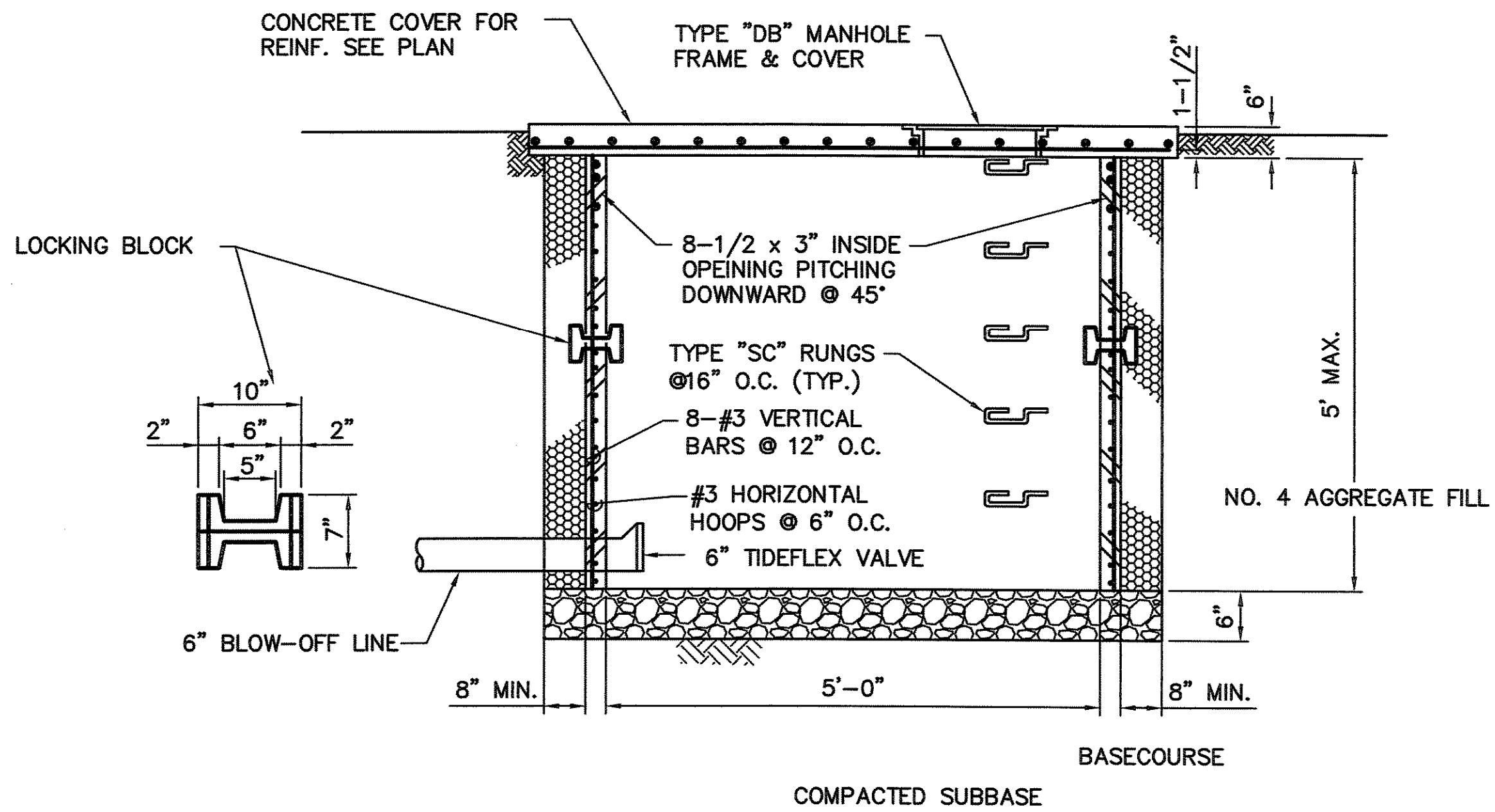
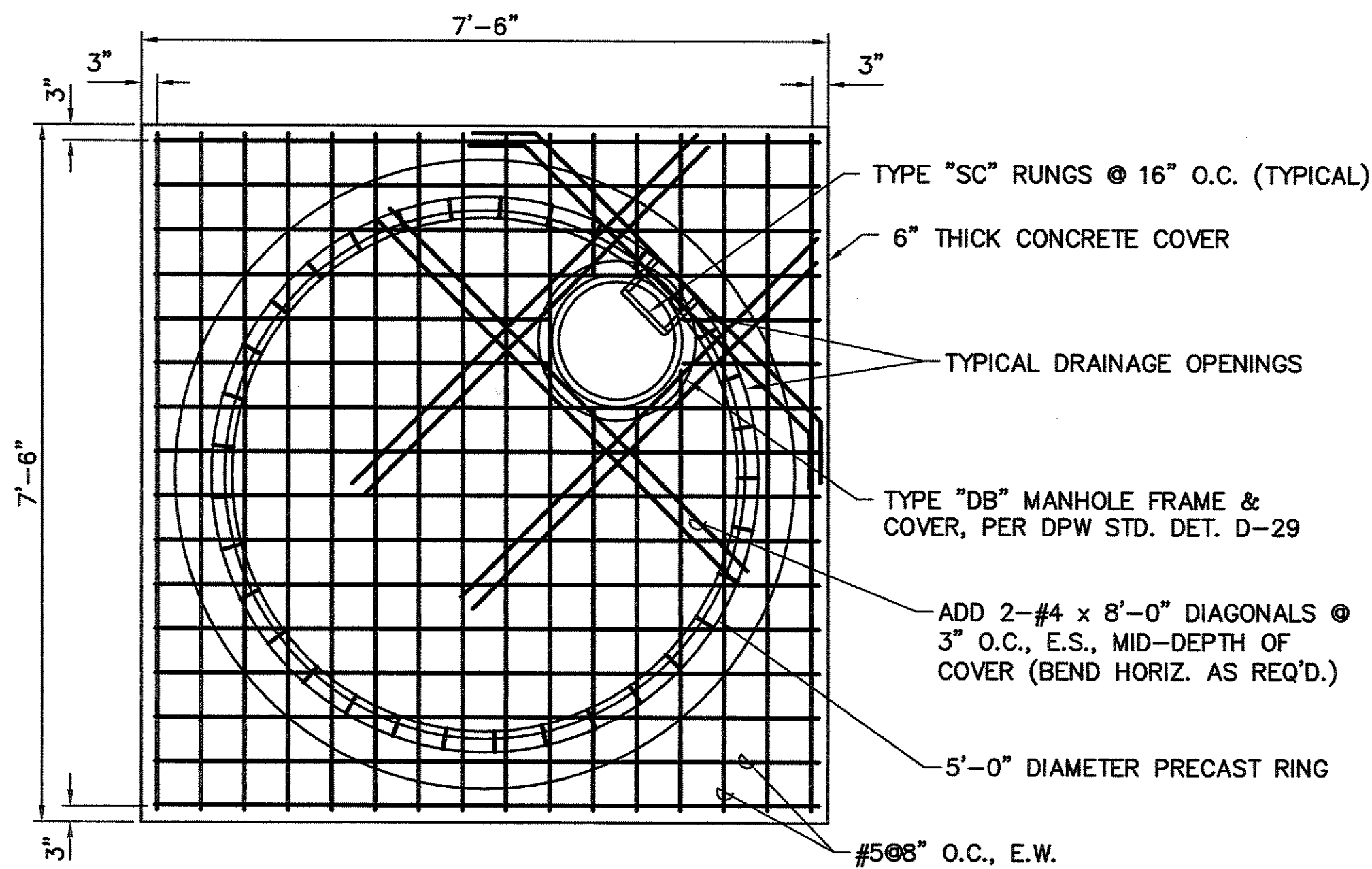
1. 12" OF CUSHION MATERIAL FOR PIPES 16" OR LARGER. 6" CUSHION MATERIAL FOR PIPES 12" OR SMALLER AT LOCATIONS WHERE INVERT IS ABOVE 4-FOOT ELEVATION.

5 WATERLINE TRENCH DETAILS
C-38 NOT TO SCALE

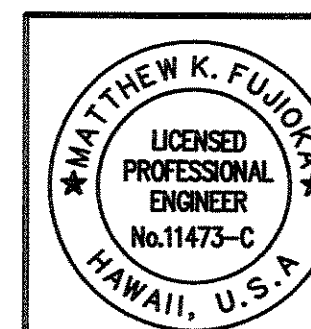


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DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
WATER DETAILS			
Approved: _____			
COUNTY ENGINEER, DPW, COUNTY OF HAWAII		DATE _____	
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			

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Last Saved: 6/15/2009
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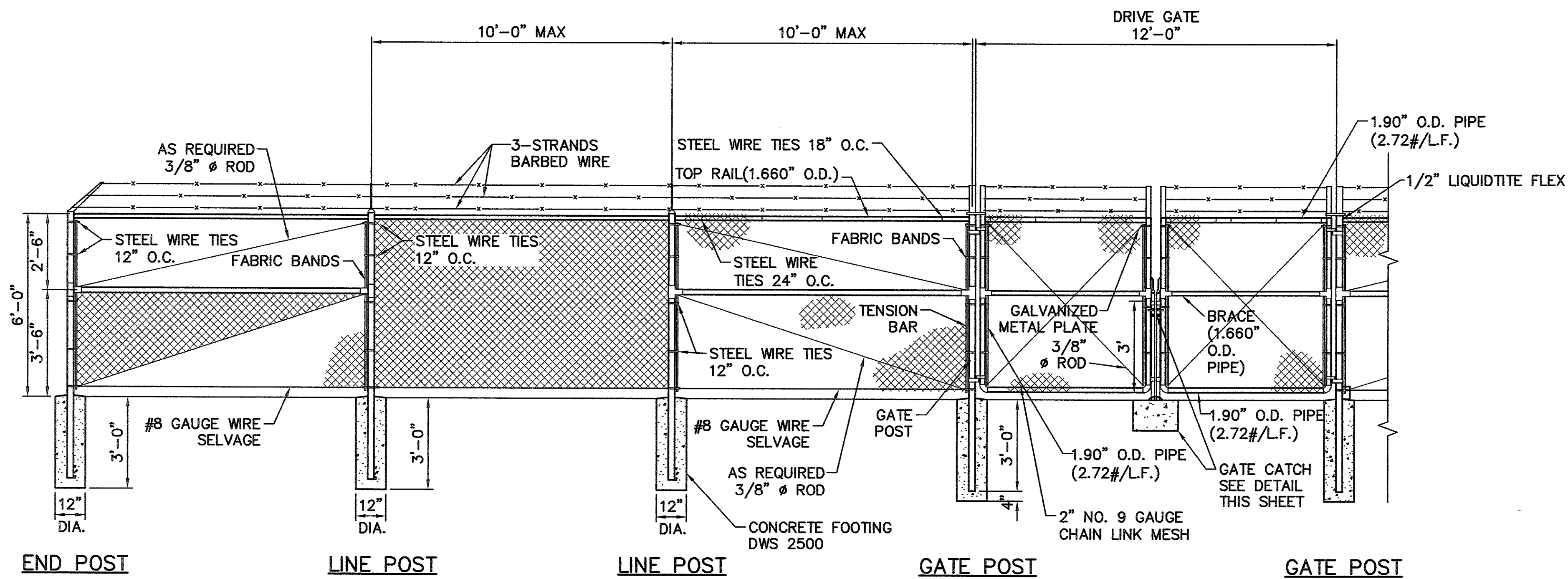


DRYWELL DETAILS
SCALE: NOT TO SCALE



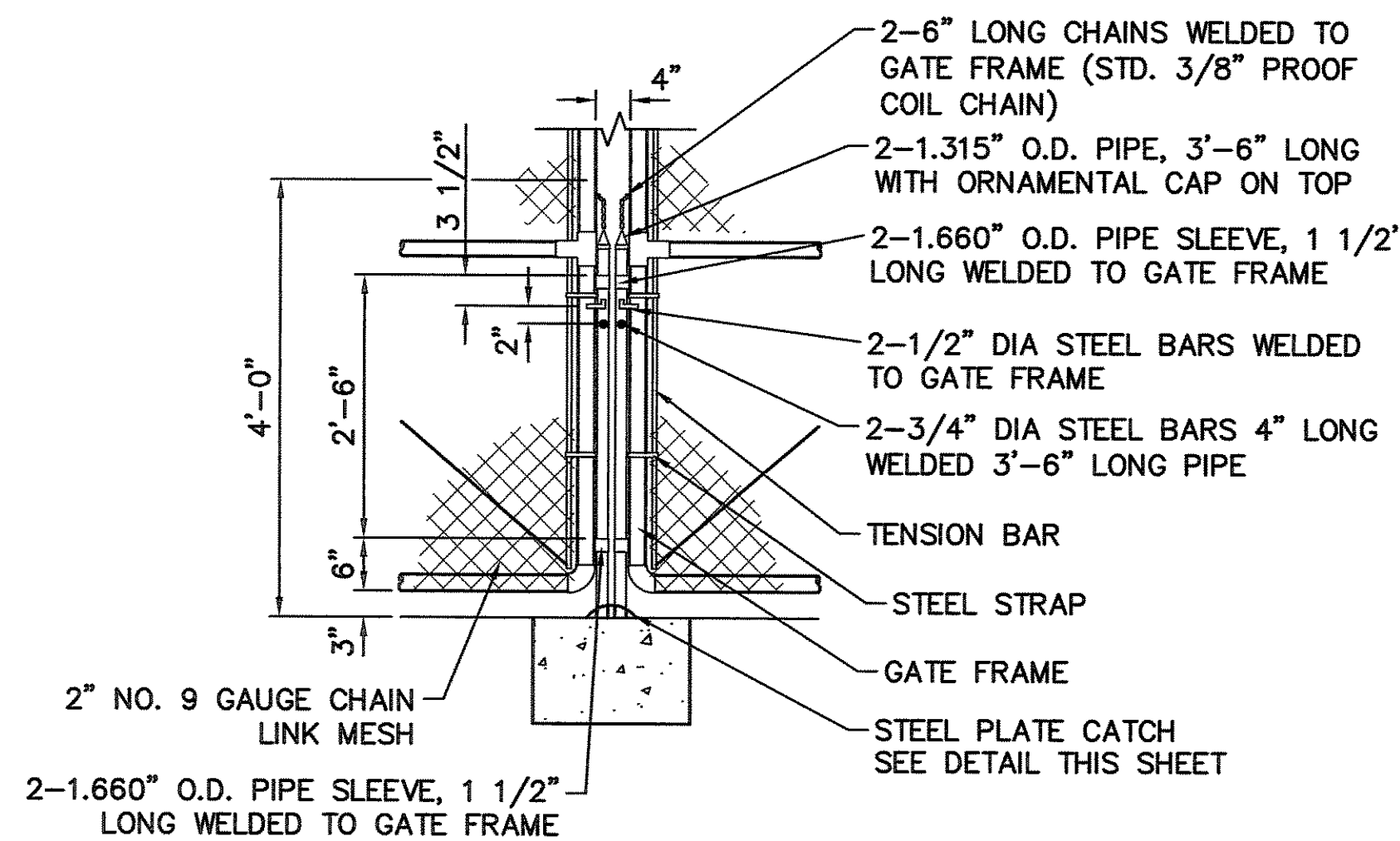
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION
LICENSE EXPIRES 4/30/10

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
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DRYWELL DETAILS			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
DATE _____			

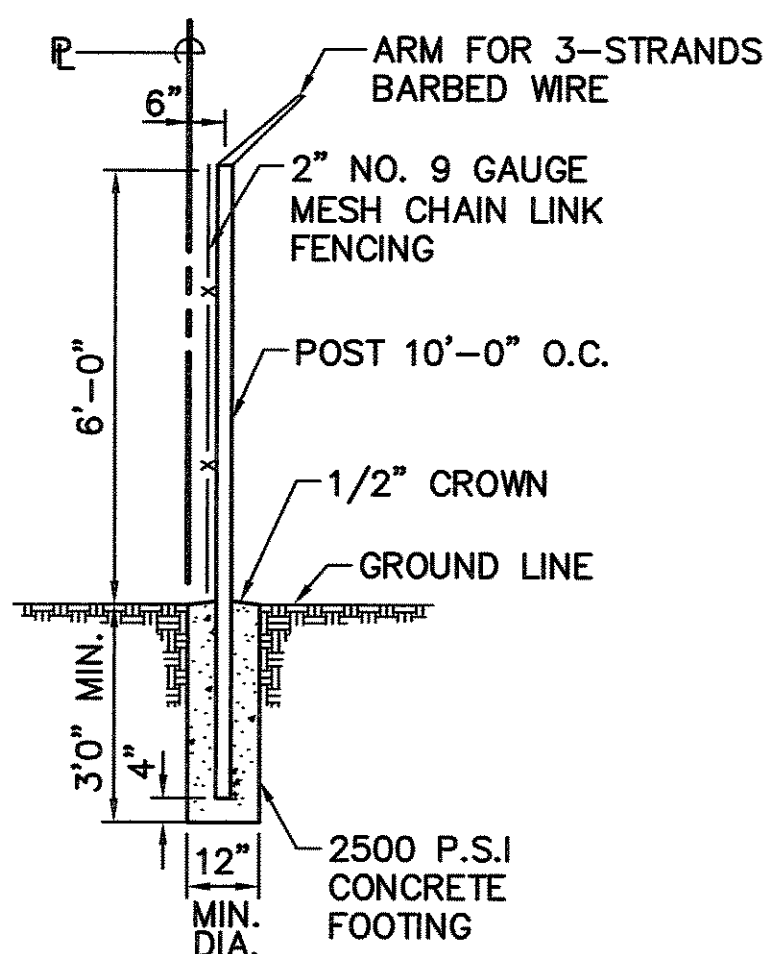


DRIVE GATE DETAIL

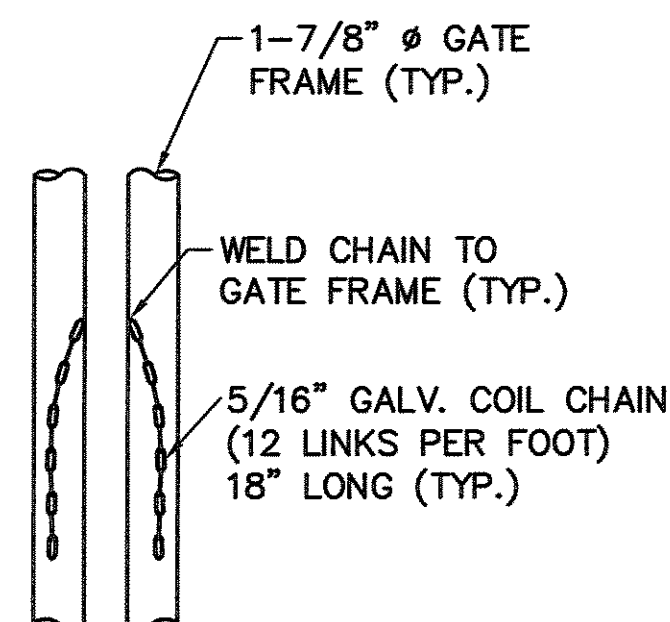
SCALE: 3/8" = 1'-0"



DETAIL AT CATCH JOINT



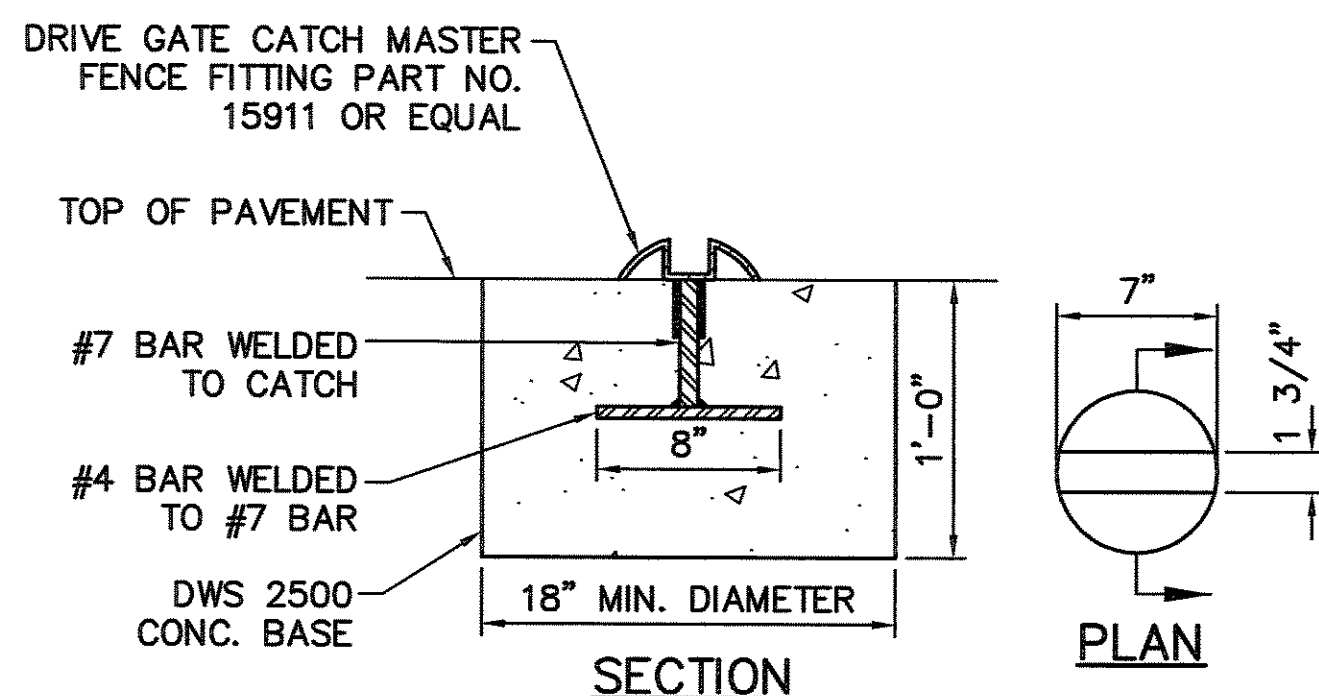
SECTION



CHAIN LOCK DETAIL

NOT TO SCALE

- NOTES:
1. PROVIDE 2 GATE STOPS, SIMILAR IN CONSTRUCTION AS GATE CATCH FOR DRIVE GATES WHEN FULLY OPEN.
 2. ALL MATERIALS SHALL BE HOT-DIPPED GALVANIZED UNLESS SPECIFIED OTHERWISE.



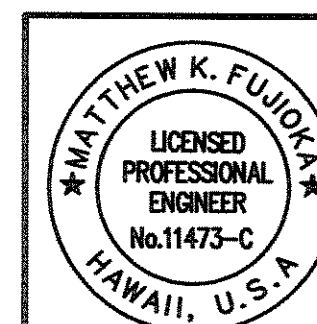
GATE CATCH DETAIL

NOT TO SCALE

FENCE & GATE DETAILS

SCALE AS SHOWN

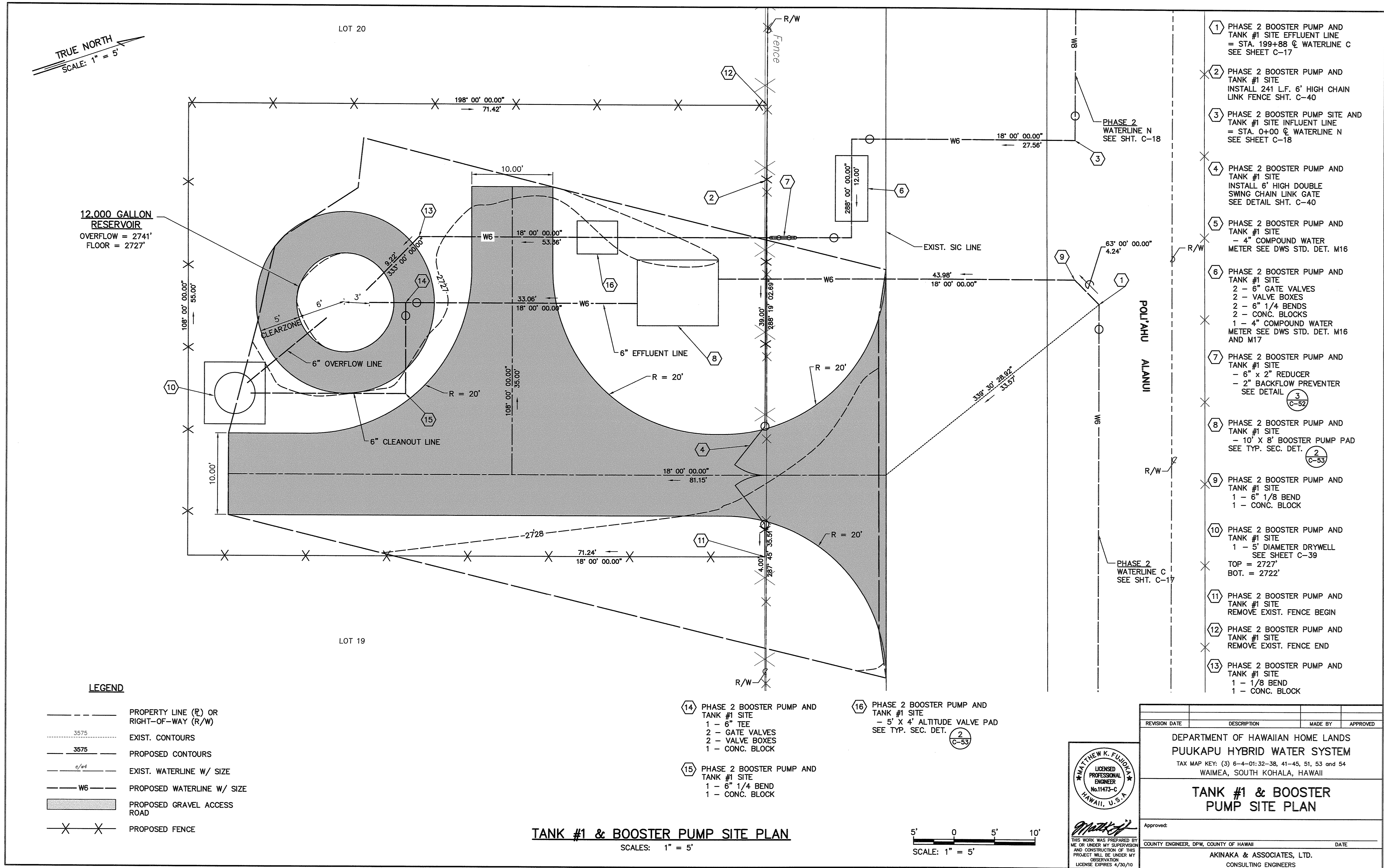
2' 0 2' 4'
SCALE: 3/8" = 1'-0"



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FENCE & GATE DETAILS			
Approved: _____			
COUNTY ENGINEER, DPW, COUNTY OF HAWAII			DATE
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			

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Last Saved: 6/15/2009
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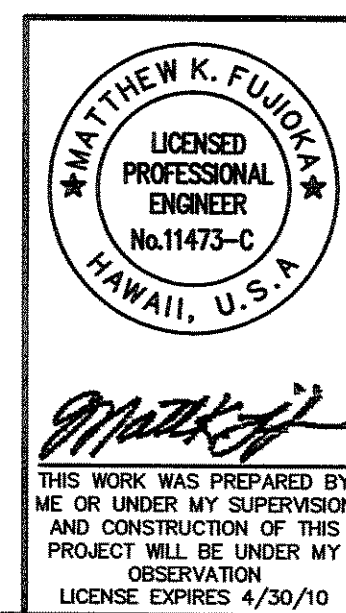
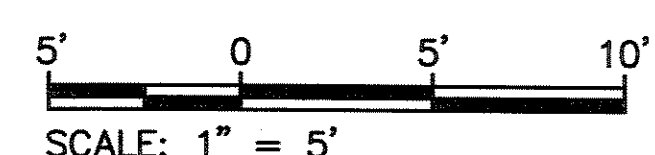


- 1 PHASE 2 BOOSTER PUMP AND TANK #1 SITE EFFLUENT LINE = STA. 199+88 @ WATERLINE C SEE SHEET C-17
- 2 PHASE 2 BOOSTER PUMP AND TANK #1 SITE INSTALL 241 L.F. 6' HIGH CHAIN LINK FENCE SHT. C-40
- 3 PHASE 2 BOOSTER PUMP SITE AND TANK #1 SITE INFLUENT LINE = STA. 0+00 @ WATERLINE N SEE SHEET C-18
- 4 PHASE 2 BOOSTER PUMP AND TANK #1 SITE INSTALL 6' HIGH DOUBLE SWING CHAIN LINK GATE SEE DETAIL SHT. C-40
- 5 PHASE 2 BOOSTER PUMP AND TANK #1 SITE - 4" COMPOUND WATER METER SEE DWS STD. DET. M16
- 6 PHASE 2 BOOSTER PUMP AND TANK #1 SITE 2 - 6" GATE VALVES 2 - VALVE BOXES 2 - 6" 1/4 BENDS 2 - CONC. BLOCKS 1 - 4" COMPOUND WATER METER SEE DWS STD. DET. M16 AND M17
- 7 PHASE 2 BOOSTER PUMP AND TANK #1 SITE - 6" x 2" REDUCER - 2" BACKFLOW PREVENTER SEE DETAIL C-52
- 8 PHASE 2 BOOSTER PUMP AND TANK #1 SITE - 10' x 8' BOOSTER PUMP PAD SEE TYP. SEC. DET. C-53
- 9 PHASE 2 BOOSTER PUMP AND TANK #1 SITE 1 - 6" 1/8 BEND 1 - CONC. BLOCK
- 10 PHASE 2 BOOSTER PUMP AND TANK #1 SITE 1 - 5' DIAMETER DRYWELL SEE SHEET C-39 TOP = 2727' BOT. = 2722'
- 11 PHASE 2 BOOSTER PUMP AND TANK #1 SITE REMOVE EXIST. FENCE BEGIN
- 12 PHASE 2 BOOSTER PUMP AND TANK #1 SITE REMOVE EXIST. FENCE END
- 13 PHASE 2 BOOSTER PUMP AND TANK #1 SITE 1 - 1/8 BEND 1 - CONC. BLOCK

- LEGEND**
- PROPERTY LINE (P) OR RIGHT-OF-WAY (R/W)
 - 3575 EXIST. CONTOURS
 - 3575 PROPOSED CONTOURS
 - 6/16 EXIST. WATERLINE W/ SIZE
 - W6 PROPOSED WATERLINE W/ SIZE
 - PROPOSED GRAVEL ACCESS ROAD
 - PROPOSED FENCE

TANK #1 & BOOSTER PUMP SITE PLAN
SCALE: 1" = 5'

- 14 PHASE 2 BOOSTER PUMP AND TANK #1 SITE 1 - 6" TEE 2 - GATE VALVES 2 - VALVE BOXES 1 - CONC. BLOCK
- 15 PHASE 2 BOOSTER PUMP AND TANK #1 SITE 1 - 6" 1/4 BEND 1 - CONC. BLOCK
- 16 PHASE 2 BOOSTER PUMP AND TANK #1 SITE - 5' x 4' ALTITUDE VALVE PAD SEE TYP. SEC. DET. C-53



REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TANK #1 & BOOSTER PUMP SITE PLAN			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

TRUE NORTH
SCALE: 1" = 10'

LEGEND

- PROPERTY LINE (P) OR RIGHT-OF-WAY (R/W)
- EXIST. CONTOURS
- PROPOSED CONTOURS
- EXIST. WATERLINE W/ SIZE
- PROPOSED WATERLINE W/ SIZE
- PROPOSED GRAVEL ACCESS ROAD
- PROPOSED FENCE

- 1 PHASE 1 BOOSTER PUMP AND TANK #2 SITE
EFFLUENT LINE
= STA. 0+00 @ WATERLINE D
SEE SHEET C-19
- 2 PHASE 1 BOOSTER PUMP AND TANK #2 SITE
EFFLUENT LINE TO TANK #3
= STA. 0+00 @ WATERLINE A
SEE SHEET C-4
- 3 PHASE 1 BOOSTER PUMP AND TANK #2 SITE
INFLUENT LINE
= STA. 0+00 @ WATERLINE C
SEE SHEET C-9
- 4 PHASE 1 BOOSTER PUMP AND TANK #2 SITE
INSTALL 379 L.F. 6' HIGH CHAIN LINK FENCE SEE DETAIL SHT. C-40
- 5 PHASE 1 BOOSTER PUMP AND TANK #2 SITE
INFLUENT TO BOOSTER PUMP
1 - 6" 1/8 BEND
1 - CONC. BLOCK
- 6 PHASE 1 BOOSTER PUMP AND TANK #2 SITE
EFFLUENT FROM BOOSTER PUMP
1 - 6" 1/8 BEND
1 - CONC. BLOCK
- 7 PHASE 1 BOOSTER PUMP AND TANK #2 SITE
EFFLUENT FROM BOOSTER PUMP
1 - 6" 45' BEND
1 - CONC. BLOCK
- 8 PHASE 1 BOOSTER PUMP AND TANK #2 SITE
INSTALL 6' HIGH DOUBLE SWING CHAIN LINK GATE SEE DETAIL SHT. C-40
- 9 PHASE 1 BOOSTER PUMP AND TANK #2 SITE
1 - 5' DIAMETER DRYWELL
SEE SHEET C-39
TOP = 3244'
BOT. = 3239'

59,000 GALLON RESERVOIR
OVERFLOW = 3258'
FLOOR = 3244'

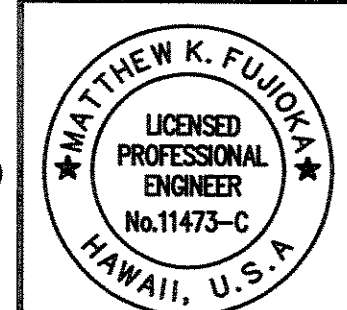
TANK #2
6" OVERFLOW LINE

TANK #2
6" CLEANOUT LINE

TANK #2 & BOOSTER PUMP SITE PLAN

SCALE: 1" = 10'

10' 0 10' 20'
SCALE: 1" = 10'



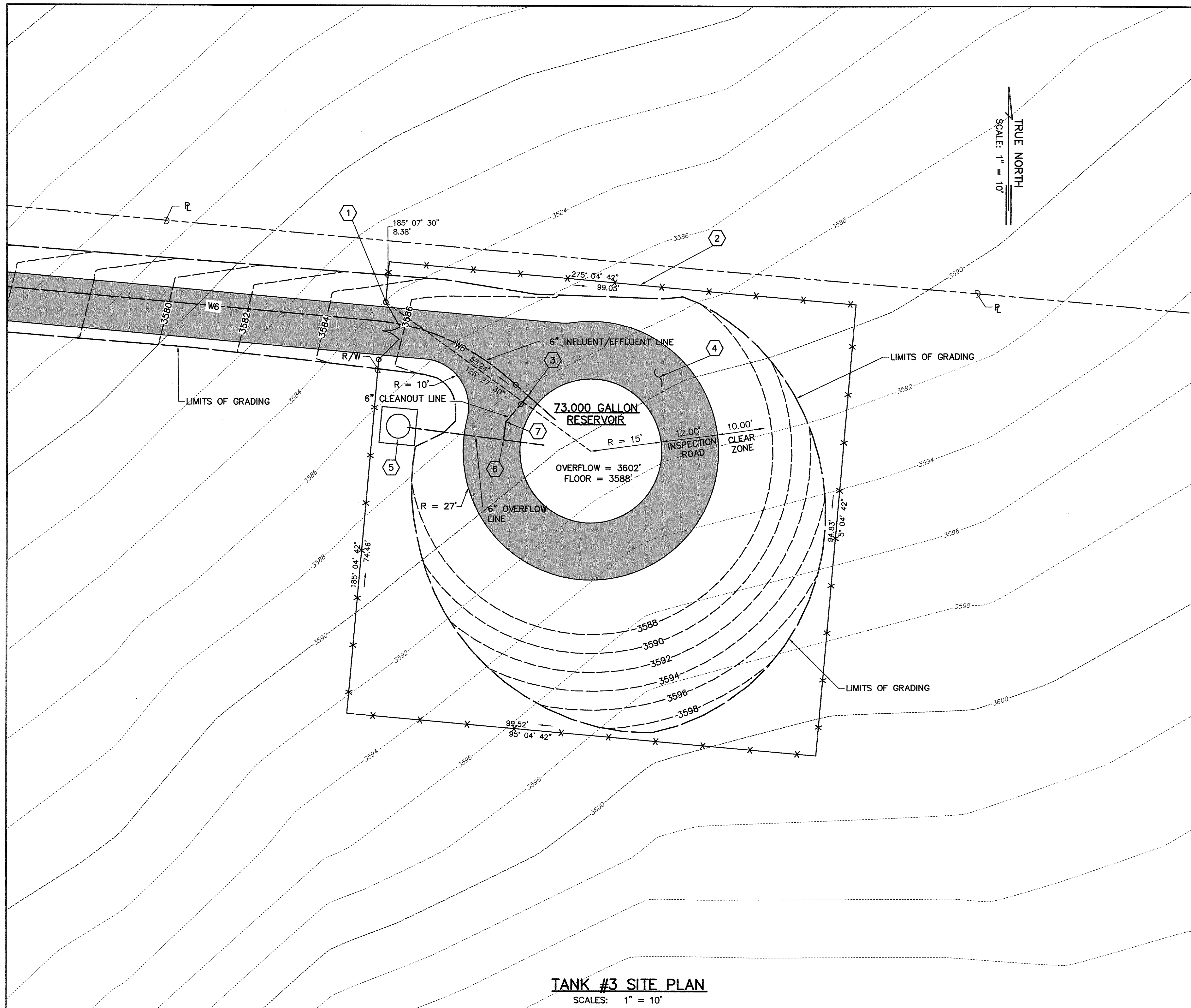
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REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TANK #2 & BOOSTER PUMP SITE PLAN			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

BRASS DISK
N -15343.50
E 7876.39
ELEV. = 3245.17'

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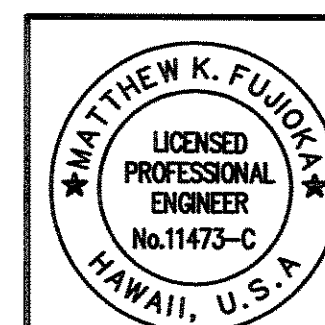
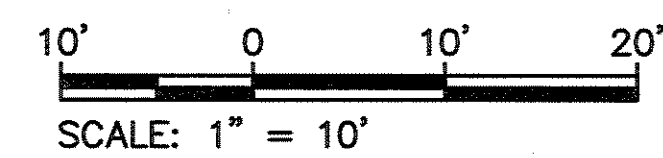
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- 1 PHASE 1 TANK #3 SITE
INSTALL 12' WIDE 6' HIGH DOUBLE
SWING CHAIN LINK GATE
SEE DETAIL SHT. C-40
- 2 PHASE 1 TANK #3 SITE
INSTALL 377 L.F. OF 6' HIGH
CHAIN LINK FENCE
SEE DETAIL SHT. C-40
- 3 PHASE 1 TANK #3 SITE
1 - 6" TEE
2 - 6" GATE VALVES
2 - VALVE BOXES
1 - CONC. BLOCK
- 4 PHASE 1 TANK #3 SITE
INSPECTION ROAD SEE TYPICAL
SECTION SHT. C-3
- 5 PHASE 1 BOOSTER PUMP AND
TANK #3 SITE
1 - 5' DIAMETER DRYWELL
SEE SHEET C-39
TOP = 3586'
BOT. = 3581'
- 6 PHASE 1 BOOSTER PUMP AND
TANK #3 SITE
1 - 6" TEE
1 - CONC. BLOCK
- 7 PHASE 1 BOOSTER PUMP AND
TANK #3 SITE
1 - 6" 1/16 BEND
1 - CONC. BLOCK

LEGEND

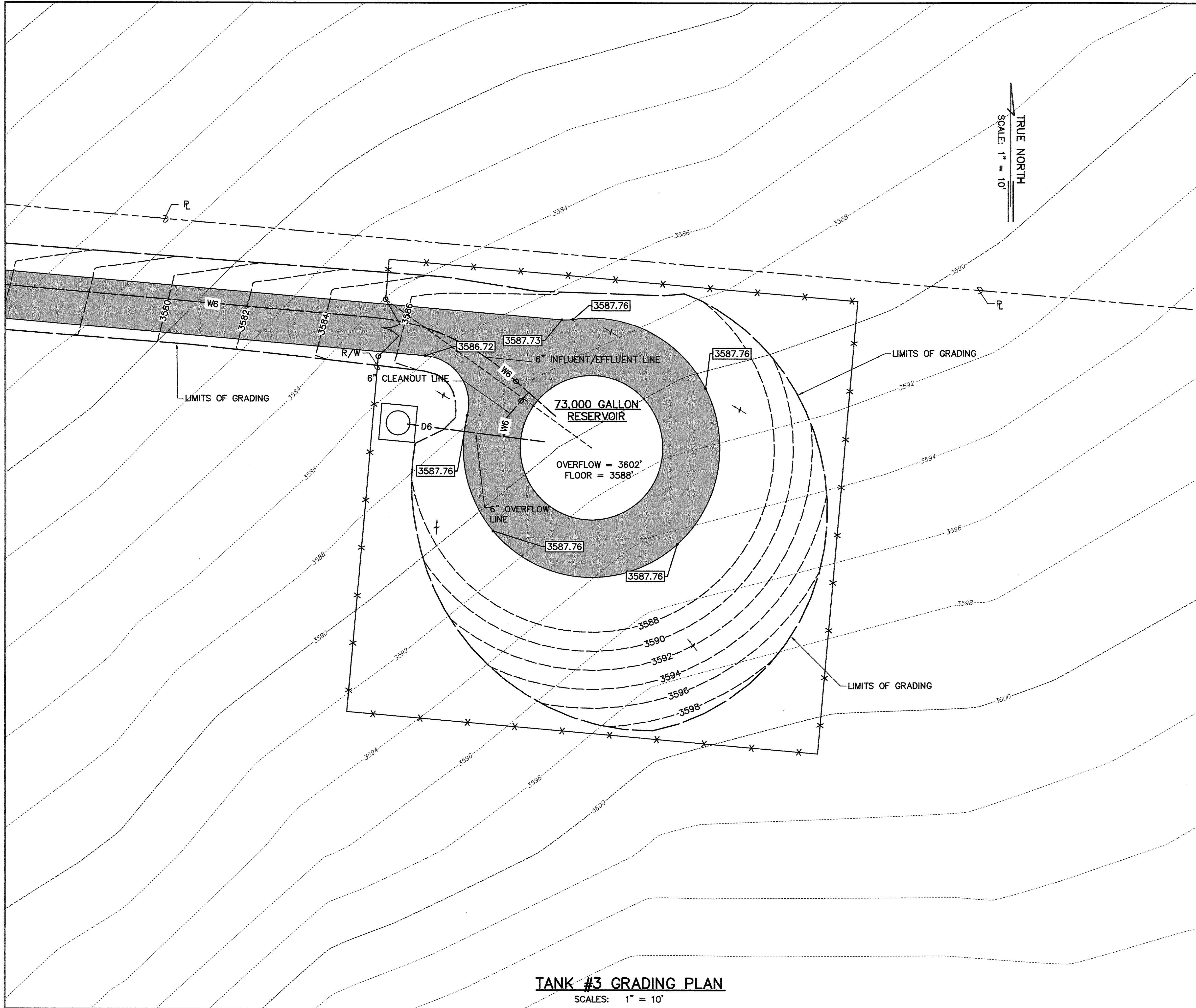
- PROPERTY LINE (P) OR
RIGHT-OF-WAY (R/W)
- 3575 --- EXIST. CONTOURS
- 3575 --- PROPOSED CONTOURS
- W6 --- PROPOSED WATERLINE W/ SIZE
- PROPOSED ACCESS ROAD
- PROPOSED FENCE



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DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TANK #3 SITE PLAN			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
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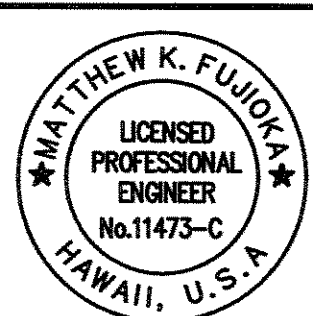


LEGEND

- PROPERTY LINE (R) OR RIGHT-OF-WAY (R/W)
- EXIST. CONTOURS
- PROPOSED CONTOURS
- W6 --- PROPOSED WATERLINE W/ SIZE
- PROPOSED ACCESS ROAD
- PROPOSED FENCE
- FLOW ARROWS

10' 0 10' 20'
SCALE: 1" = 10'

TANK #3 GRADING PLAN
SCALE: 1" = 10'

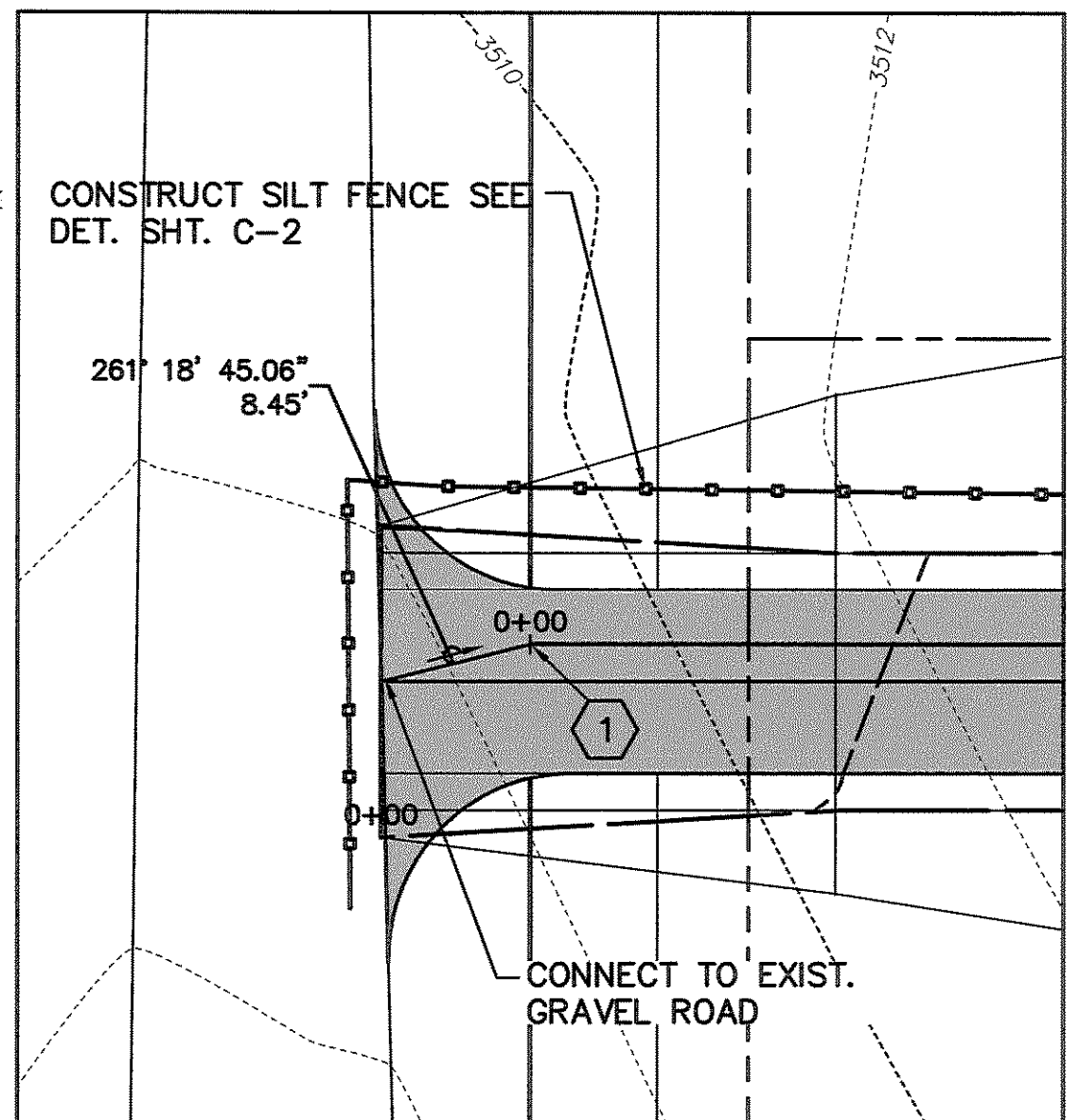
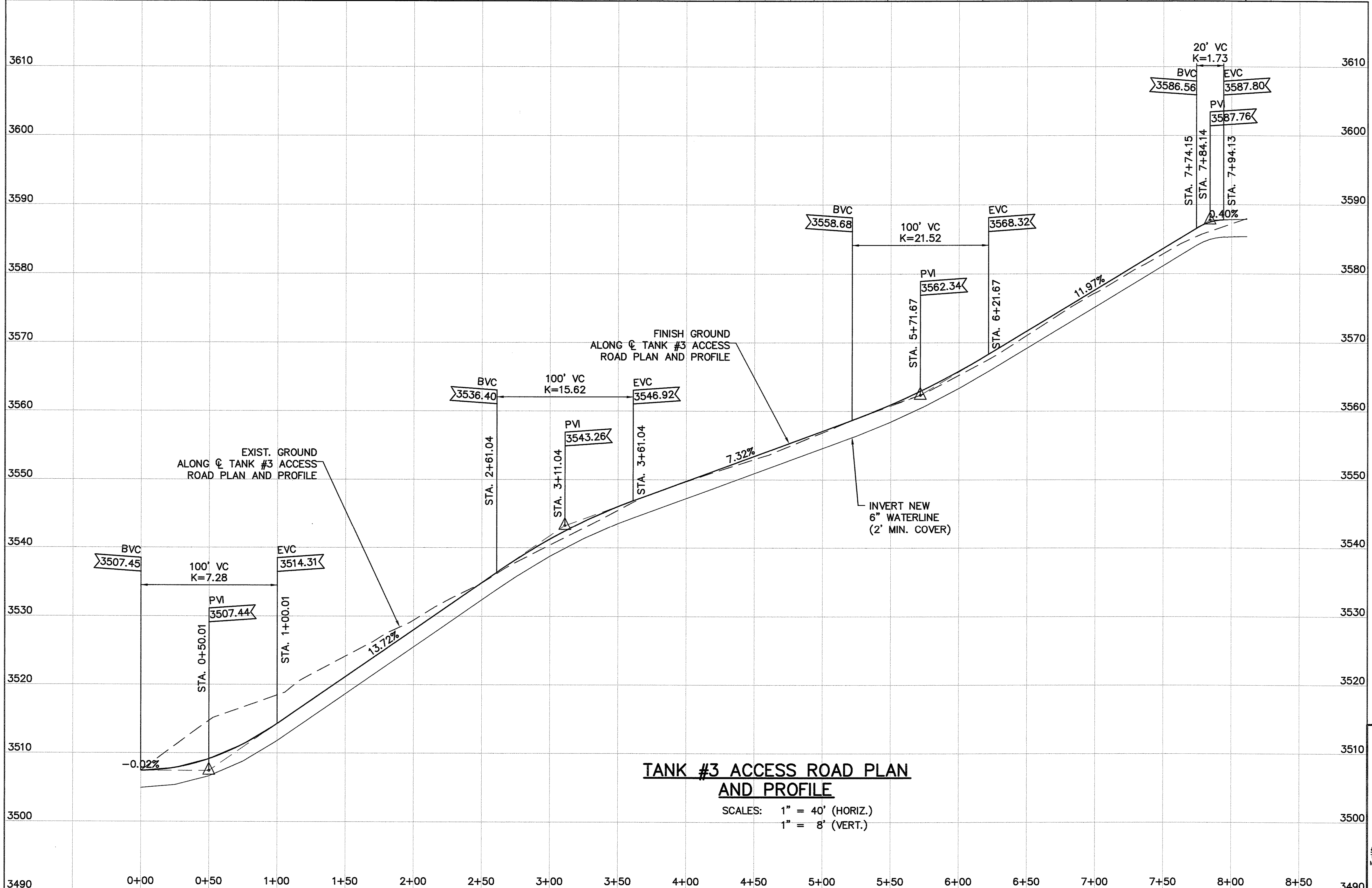
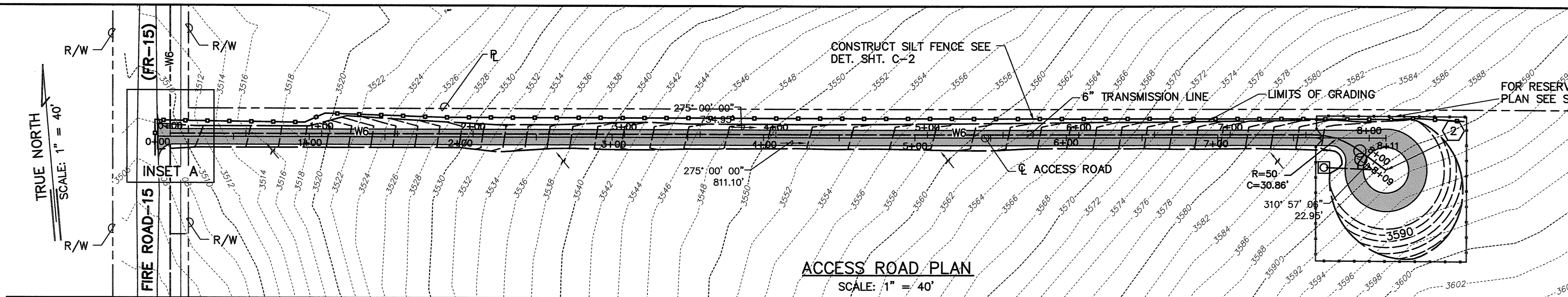


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TANK #3 GRADING PLAN			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
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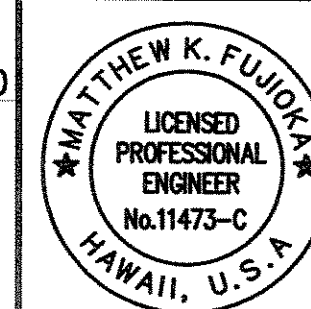
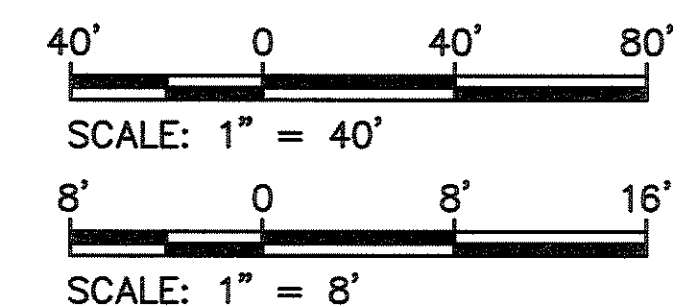
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- 1 PHASE 1 TANK SITE #3
STA. 0+00 TANK #3 WATERLINE
= STA. 19+26.12 WATERLINE B
= STA. 0+00 WATERLINE K
SEE SHEET C-8
- 2 PHASE 1 TANK SITE #3
STA. 8+09.28 TANK #3 WATERLINE
= STA. 8+11 O/S 21.34' R
TANK #3 ACCESS ROAD

LEGEND

- PROPERTY LINE (P) OR
RIGHT-OF-WAY (R/W)
- EXIST. CONTOURS
- PROPOSED CONTOURS
- EXIST. WATERLINE W/ SIZE
- W6 PROPOSED WATERLINE W/ SIZE
- PROPOSED ACCESS ROAD
- PROPOSED FENCE
- FLOW ARROW

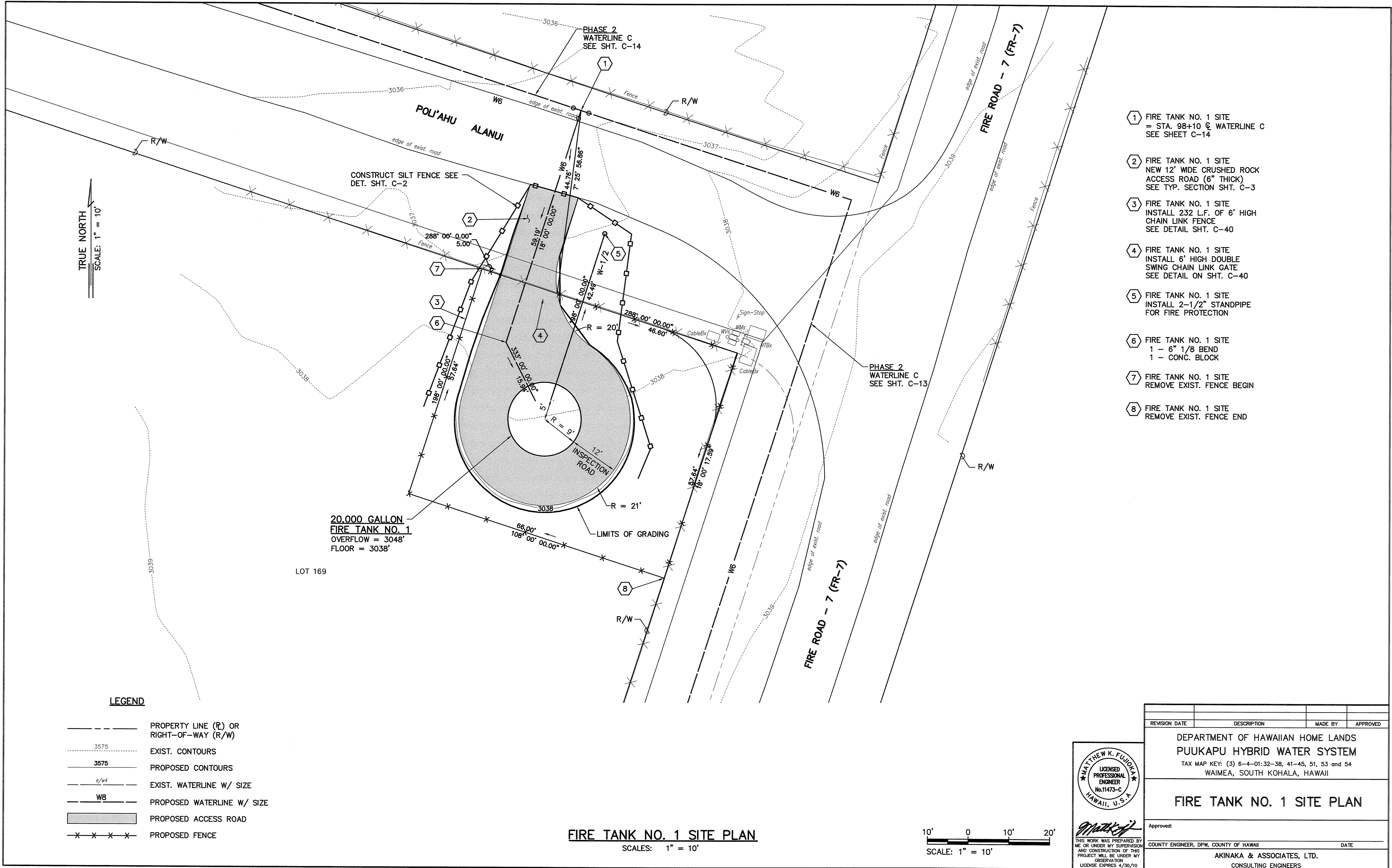


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TANK #3 ACCESS ROAD PLAN AND PROFILE			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII			
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- 1 FIRE TANK NO. 1 SITE
= STA. 98+10 @ WATERLINE C
SEE SHEET C-14
- 2 FIRE TANK NO. 1 SITE
NEW 12' WIDE CRUSHED ROCK
ACCESS ROAD (6" THICK)
SEE TYP. SECTION SHT. C-3
- 3 FIRE TANK NO. 1 SITE
INSTALL 232 L.F. OF 6' HIGH
CHAIN LINK FENCE
SEE DETAIL SHT. C-40
- 4 FIRE TANK NO. 1 SITE
INSTALL 6' HIGH DOUBLE
SWING CHAIN LINK GATE
SEE DETAIL ON SHT. C-40
- 5 FIRE TANK NO. 1 SITE
INSTALL 2-1/2" STANDPIPE
FOR FIRE PROTECTION
- 6 FIRE TANK NO. 1 SITE
1 - 6" 1/8 BEND
1 - CONC. BLOCK
- 7 FIRE TANK NO. 1 SITE
REMOVE EXIST. FENCE BEGIN
- 8 FIRE TANK NO. 1 SITE
REMOVE EXIST. FENCE END

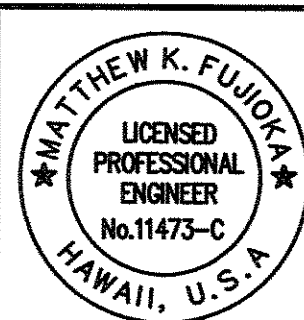
LEGEND

- PROPERTY LINE (P) OR
RIGHT-OF-WAY (R/W)
- 3575 EXIST. CONTOURS
- 3575 PROPOSED CONTOURS
- e/w4 EXIST. WATERLINE W/ SIZE
- W8 PROPOSED WATERLINE W/ SIZE
- PROPOSED ACCESS ROAD
- PROPOSED FENCE

FIRE TANK NO. 1 SITE PLAN

SCALE: 1" = 10'

10' 0 10' 20'
SCALE: 1" = 10'



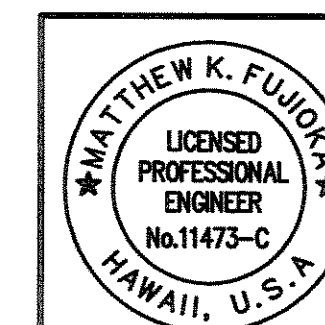
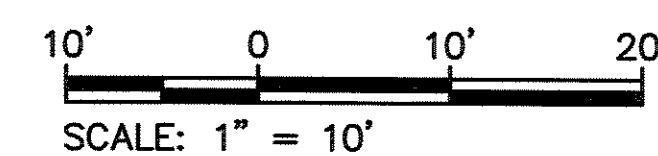
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FIRE TANK NO. 1 SITE PLAN			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
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LEGEND	
	PROPERTY LINE (P) OR RIGHT-OF-WAY (R/W)
	EXIST. CONTOURS
	PROPOSED CONTOURS
	EXIST. WATERLINE W/ SIZE
	PROPOSED WATERLINE W/ SIZE
	PROPOSED ACCESS ROAD
	PROPOSED FENCE

FIRE TANK NO. 2 SITE PLAN
SCALE: 1" = 10'



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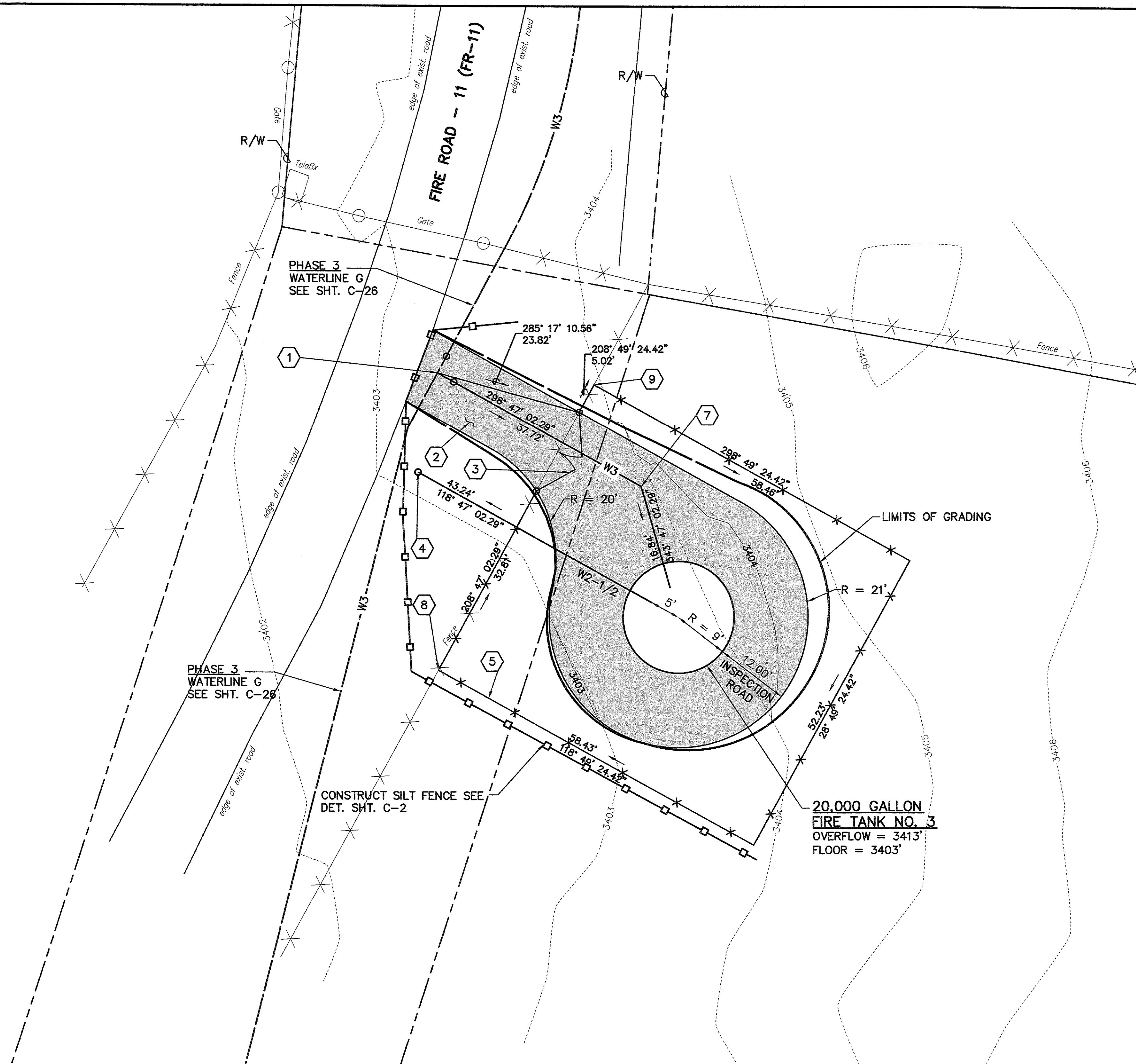
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DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
FIRE TANK NO. 2 SITE PLAN			
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AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

- 1 FIRE TANK NO. 2 SITE
= STA. 41+44.31 @ WATERLINE L
SEE SHEET C-35
- 2 FIRE TANK NO. 2 SITE
NEW 12' WIDE CRUSHED ROCK
ACCESS ROAD (6" THICK)
SEE TYP. SECTION SHT. C-3
- 3 FIRE TANK NO. 2 SITE
INSTALL 2-1/2" STANDPIPE
FOR FIRE PROTECTION
- 4 FIRE TANK NO. 2 SITE
1 - 6" 1/8 BEND
1 - CONC. BLOCK
- 5 FIRE TANK NO. 2 SITE
INSTALL 196 L.F. 6' HIGH
CHAIN LINK FENCE
SEE DETAIL SHT. C-40
- 6 FIRE TANK NO. 2 SITE
INSTALL 18' WIDE 6' HIGH DOUBLE
SWING CHAIN LINK FENCE
SEE DETAIL SHT. C-40

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TRUE NORTH



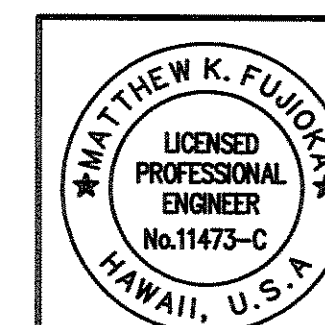
- 1 CONNECT TO FIRE TANK NO. 3 SITE
= STA. 51+18 @ WATERLINE G
SEE SHEET C-26
- 2 FIRE TANK NO. 3 SITE
NEW 12' WIDE CRUSHED ROCK
ACCESS ROAD (6" THICK)
SEE TYP. SECTION SHT. C-3
- 3 FIRE TANK NO. 3 SITE
INSTALL 14' WIDE 6' HIGH DOUBLE
SWING CHAIN LINK FENCE
SEE DETAIL SHT. C-40
- 4 FIRE TANK NO. 3 SITE
INSTALL 2-1/2" STANDPIPE
FOR FIRE PROTECTION
- 5 FIRE TANK NO. 3 SITE
INSTALL 207 L.F. 6' HIGH
CHAIN LINK FENCE
SEE DETAIL SHT. C-40
- 6 FIRE TANK NO. 3
= STA. 51+33 @ 54' LT. WATERLINE G
SEE SHEET C-25
- 7 FIRE TANK NO. 3 SITE
1 - 6" 1/8 BEND
1 - CONC. BLOCK
- 8 FIRE TANK NO. 3 SITE
REMOVE EXIST. FENCE BEGIN
- 9 FIRE TANK NO. 3 SITE
REMOVE EXIST. FENCE END

LEGEND

- PROPERTY LINE (P) OR
RIGHT-OF-WAY (R/W)
- 3575 EXIST. CONTOURS
- 3575 PROPOSED CONTOURS
- e/w4 EXIST. WATERLINE W/ SIZE
- W8 PROPOSED WATERLINE W/ SIZE
- PROPOSED ACCESS ROAD
- X-X- PROPOSED FENCE

FIRE TANK NO. 3 SITE PLAN
SCALE: 1" = 10'

10' 0 10' 20'
SCALE: 1" = 10'



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FIRE TANK NO. 3 SITE PLAN			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
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TRUE NORTH
SCALE: 1" = 10'

- 1 CONNECTION TO FIRE TANK NO. 4 SITE
STA. 28+34 @ WATERLINE H
= STA. 0+00 @ WATERLINE I
SEE SHEET C-30
- 2 FIRE TANK NO. 4 SITE
NEW 12' WIDE CRUSHED ROCK
ACCESS ROAD (6" THICK)
SEE TYP. SECTION SHT. C-3
- 3 FIRE TANK NO. 4 SITE
INSTALL 14' WIDE 6' HIGH DOUBLE
SWING CHAIN LINK GATE
SEE DETAIL SHT. C-40
- 4 FIRE TANK NO. 4 SITE
INSTALL 2-1/2" STANDPIPE
FOR FIRE PROTECTION
- 5 FIRE TANK NO. 4 SITE
INSTALL 202 L.F. 6' HIGH
CHAIN LINK FENCE
SEE DETAIL SHT. C-40
- 6 FIRE TANK NO. 4
STA. 28+49 O/S 42' LT. @ WATERLINE H
- 7 FIRE TANK NO. 4
REMOVE EXIST. FENCE BEGIN
- 8 FIRE TANK NO. 4
REMOVE EXIST. FENCE END

LEGEND

- PROPERTY LINE (P) OR
RIGHT-OF-WAY (R/W)
- 3575 --- EXIST. CONTOURS
- 3575 --- PROPOSED CONTOURS
- e/w4 --- EXIST. WATERLINE W/ SIZE
- W8 --- PROPOSED WATERLINE W/ SIZE
- PROPOSED ACCESS ROAD
- X --- PROPOSED FENCE

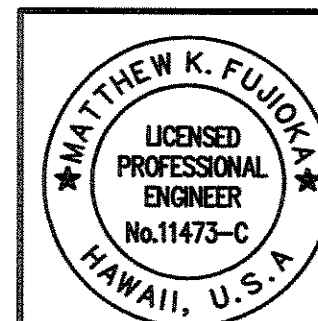
20,000 GALLON
FIRE TANK NO. 4
OVERFLOW = 3186'
FLOOR = 3176'

CONSTRUCT SILT FENCE SEE
DET. SHT. C-2

FIRE TANK NO. 4 SITE PLAN

SCALE: 1" = 10'

10' 0 10' 20'
SCALE: 1" = 10'



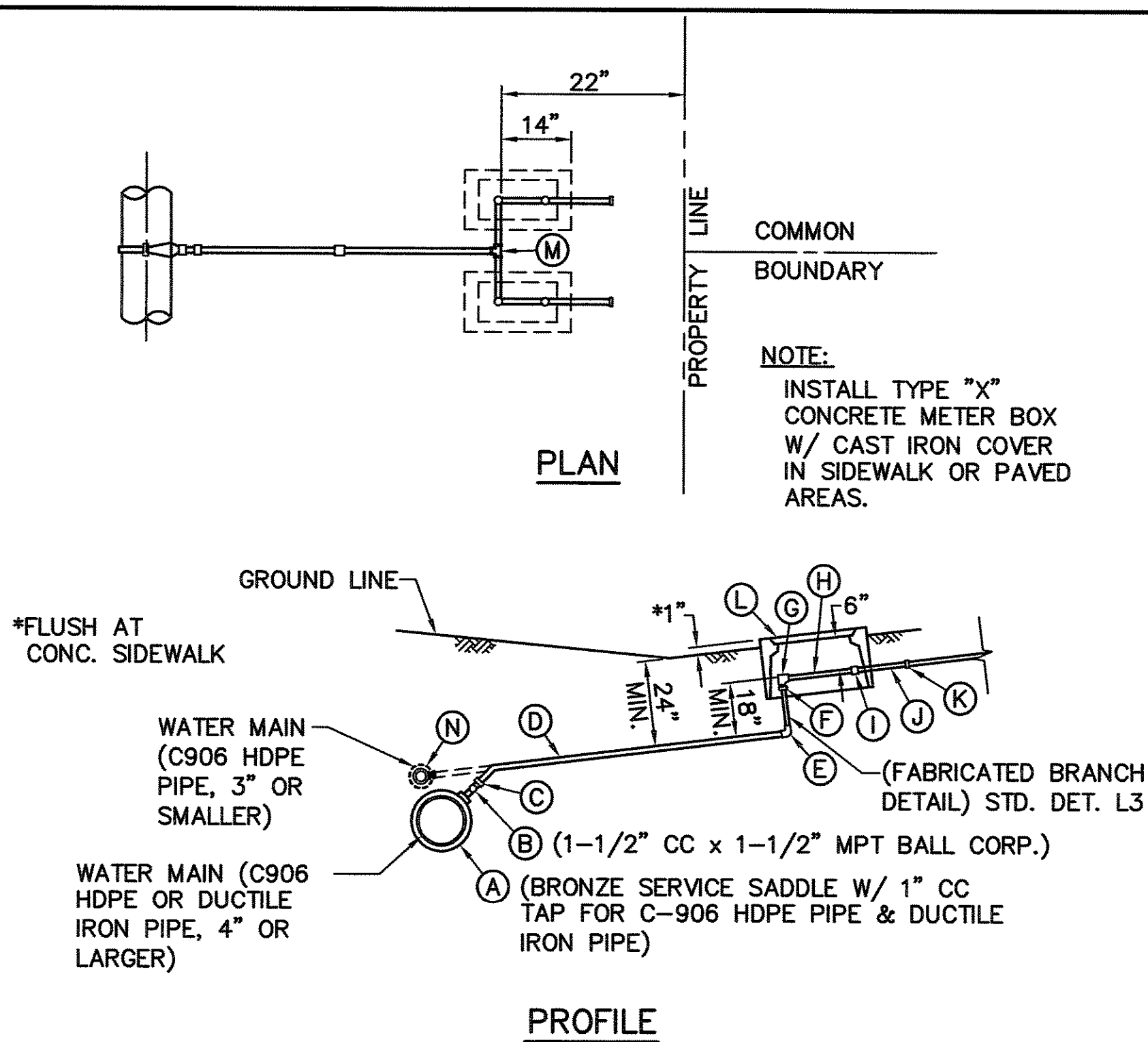
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FIRE TANK NO. 4 SITE PLAN			
Approved:		DATE	
COUNTY ENGINEER, DPW, COUNTY OF HAWAII			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

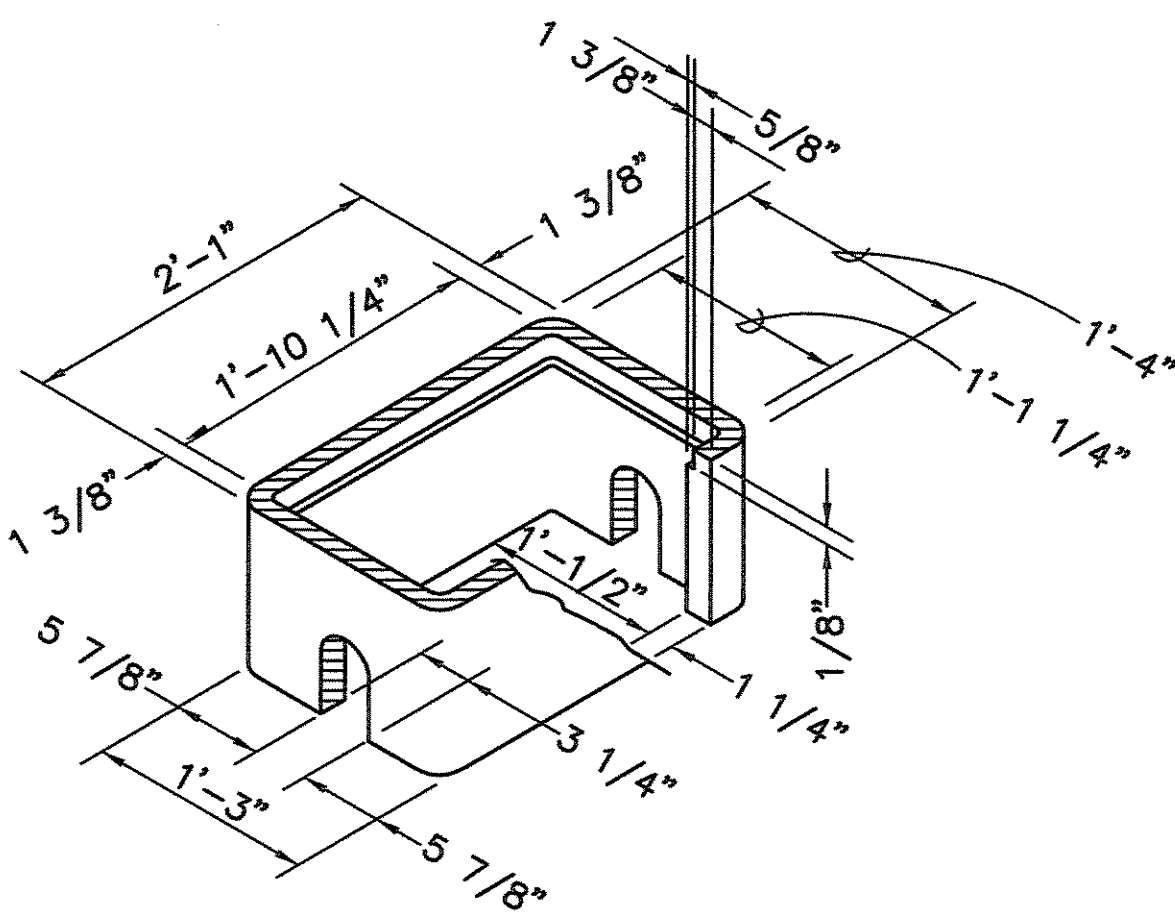
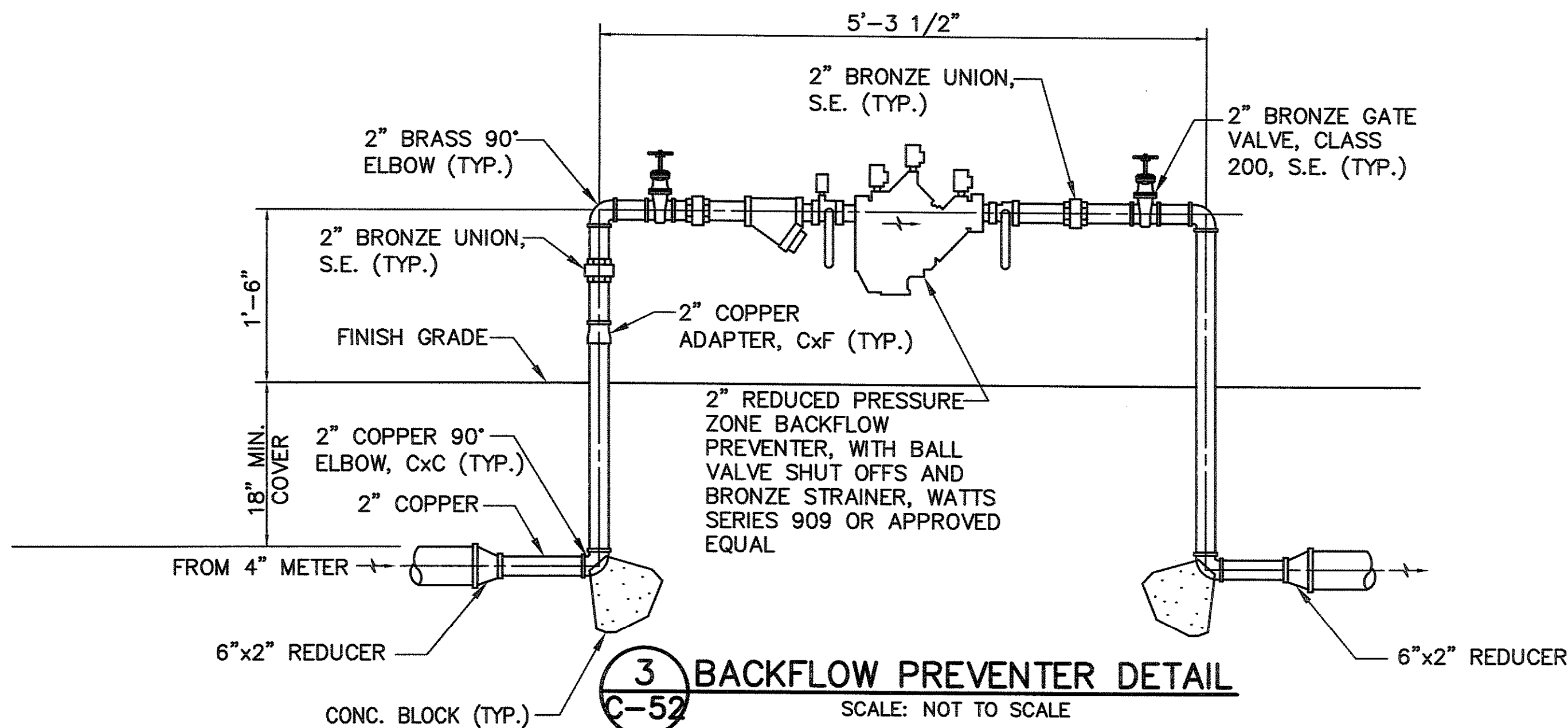
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SCHEDULE OF FITTINGS		
ITEM	DESCRIPTION	DOUBLE SERVICE
A	BRONZE SERVICE SADDLE W/ 1-1/2" CC TAP FOR C-900 PVC PIPE & DUCTILE IRON PIPE	1
B	1-1/2" CC x 1-1/2" MPT BALL CORPORATION	1
C	PACK JOINT COUPLING (FORD C14-66 OR APPROVED EQUAL)	1
D	1-1/2" COPPER TUBE, TYPE "K" SOFT	2
E	1" 90° COPPER ELBOW, S x S	2
F	1" COPPER MALE ADAPTER, S x T (WHEN CONNECTING TO 3" OR SMALLER PVC PIPE)	2
G	ANGLE VALVE, 1" FEMALE IPT INLET x 3/4" METER COUPLING NUT OUTLET (FORD BA13-342W OR APPROVED EQUAL)	2
H	METER SPACER, SUPPLIED BY DEPT. OF WATER & INSTALLED BY CONTRACTOR	2
I	BALL VALVE W/ HANDLE, 3/4" METER COUPLING NUT INLET x 1" FEMALE IPT OUTLET (FORD B13-342 W/ HT-34 HANDLE OR APPROVED EQUAL)	2
J	LINESETTER, 1" COPPER TUBE, TYPE "K" SOFT, 12" LONG (SEE STD. DET. L3)	2
K	1" PLASTIC THREAD PROTECTOR	2
L	TYPE "B" CONCRETE METER BOX WITH CAST IRON COVER	2
M	1" x 1" x 1-1/2" COPPER TEE, S x S x S	1
N	TEE W/ 1-1/2" BUSHING (WHEN CONNECTING TO 3" OR SMALLER PIPE)	1

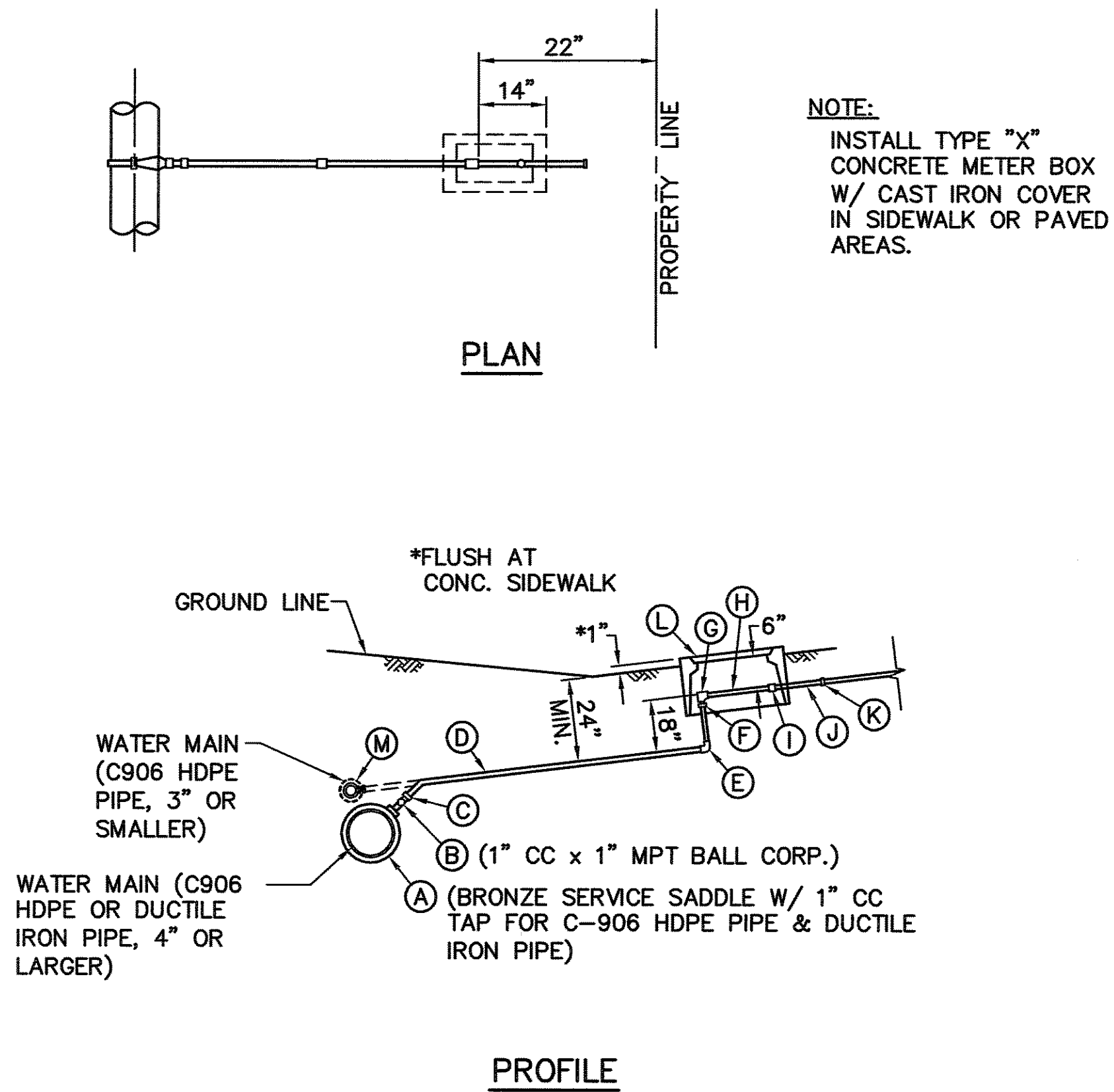


1 DOUBLE SERVICE LATERAL
C-52 NOT TO SCALE

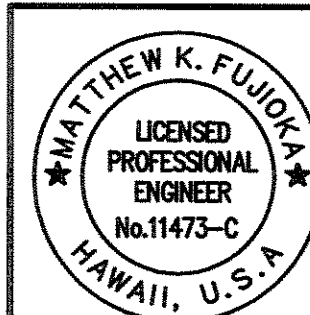


4 PRECAST CONCRETE METER BOX AND COVER
C-52 NOT TO SCALE

SCHEDULE OF FITTINGS		
ITEM	DESCRIPTION	SINGLE SERVICE
A	BRONZE SERVICE SADDLE W/ 1" CC TAP FOR C-900 PVC PIPE & DUCTILE IRON PIPE	1
B	1" CC x 1" MPT BALL CORPORATION	1
C	PACK JOINT COUPLINGS (FORD C14-44 OR APPROVED EQUAL)	1
D	1" COPPER TUBE, TYPE "K" SOFT	1
E	1" 90° COPPER ELBOW, S x S	1
F	1" COPPER MALE ADAPTER, S x T (WHEN CONNECTING TO 3" OR SMALLER PVC PIPE)	1
G	ANGLE VALVE, 1" FEMALE IPT INLET x 3/4" METER COUPLING NUT OUTLET (FORD BA13-342W OR APPROVED EQUAL)	1
H	METER SPACER, SUPPLIED BY DEPT. OF WATER & INSTALLED BY CONTRACTOR	1
I	BALL VALVE W/ HANDLE, 3/4" METER COUPLING NUT INLET x 1" FEMALE IPT OUTLET (FORD B13-342 W/ HT-34 HANDLE OR APPROVED EQUAL)	1
J	LINESETTER, 1" COPPER TUBE, TYPE "K" SOFT, 12" LONG (SEE STD. DET. L3)	1
K	1" PLASTIC THREAD PROTECTOR	1
L	TYPE "B" CONCRETE METER BOX W/ CAST IRON COVER	1
M	TEE W/ 1" BUSHING (WHEN CONNECTING TO 3" OR SMALLER PIPE)	1



2 SINGLE SERVICE LATERAL
C-52 NOT TO SCALE



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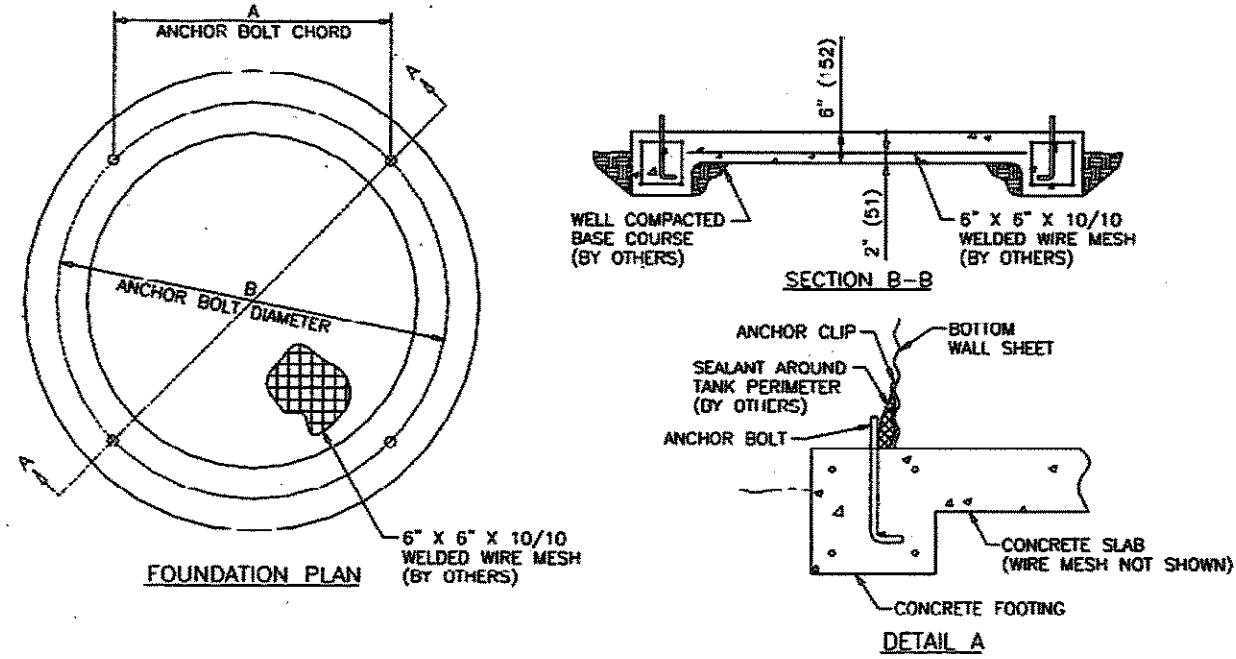
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
MISCELLANEOUS DETAILS			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

G:\DHHL06-01\Acad\DHHL061046.dwg

Last Save by: CKM
Last Saved: 6/16/2009
Plotted on: 6/16/2009



WATER STORAGE TANK FLAT FOUNDATION PLAN



TANK DIA.	QTY. OF ANCHOR BOLTS	A	B	C	TANK DIA.	QTY. OF ANCHOR BOLTS	A	B	C
6'	4	4'-3 11/16"	6'-3 15/16"	3'-2"	30'	20	4'-8 11/16"	30'-2 7/16"	15'-1 1/8"
7'	6	4'-7 7/8"	7'-3 3/8"	4'-2 7/8"	33'	22	4'-8 11/16"	33'-2 1/4"	16'-7 1/8"
12'	8	4'-8 7/16"	12'-3 9/16"	6'-1 3/8"	36'	24	4'-8 5/8"	36'-2"	18'-1"
15'	10	4'-8 5/8"	15'-3 3/8"	7'-2 5/8"	39'	26	4'-8 5/8"	39'-1 13/16"	19'-4 15/16"
18'	12	4'-8 3/4"	18'-3 3/16"	8'-1 3/8"	42'	28	4'-8 3/8"	42'-1 3/8"	21'-13/16"
21'	14	4'-8 3/4"	21'-3"	10'-2 1/2"	48'	32	4'-8 9/16"	48'-1 1/4"	24'-1/8"
24'	16	4'-8 3/4"	24'-3 13/16"	12'-1 3/8"	60'	40	4'-8 1/2"	60'-3/2"	30'-1/4"
27'	18	4'-8 11/16"	27'-3 3/8"	13'-2 3/8"					

GENERAL CONCRETE NOTES:

1. Site must be 95% compacted soil back-fill or undisturbed soil. Site must be free from standing water and well drained.
2. Soil around footing ring must be uniform. (Not fine sand)
3. Foundation design is based on uniform soil bearing capacity of 2000 L.B. per square foot. Concrete compressive strength at 28 days shall be 2500 psi.
4. Reinforcing steel-standard deformed bars Fy = 40,000 psi.
5. Add (1) pound to rebar requirements for each end lap. Lap bars 15".
6. These are general concrete foundation requirements, and should be evaluated with respect to each site. Consult with a local engineer if site is questionable.
7. Foundation should be poured smooth for proper weather seal and bin anchorage.

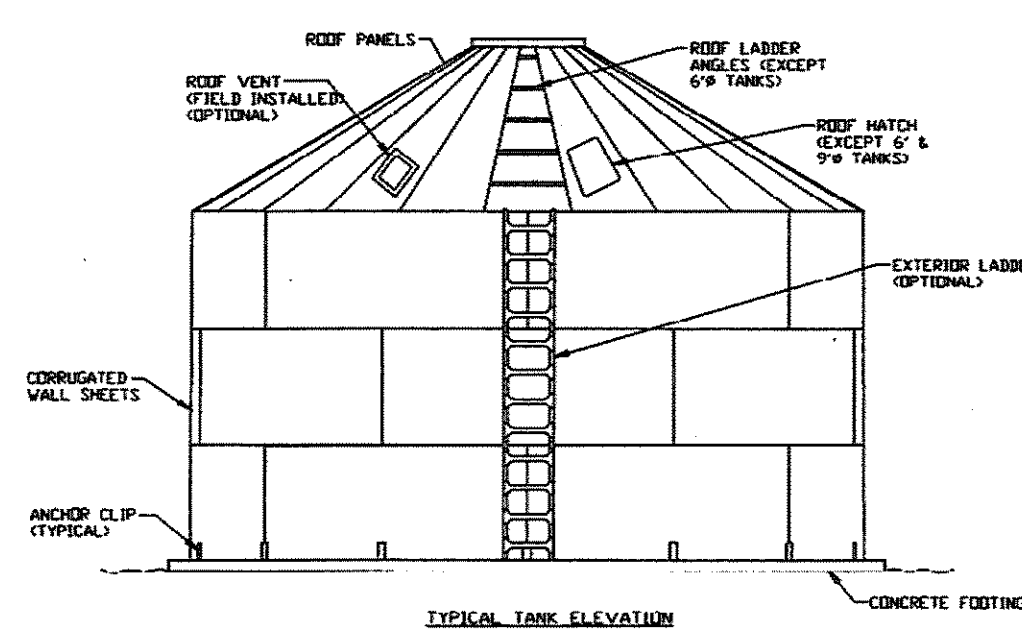
ADDITIONAL NOTES:

1. Chart above has concrete and reinforcing bar quantities for the foundation illustrated. Top of foundation is 4" above grade.
2. Anchor bolts are 5/8" x 12" A307 with 3" threaded length.

PAGE 3



WATER STORAGE TANK SPECIFICATIONS

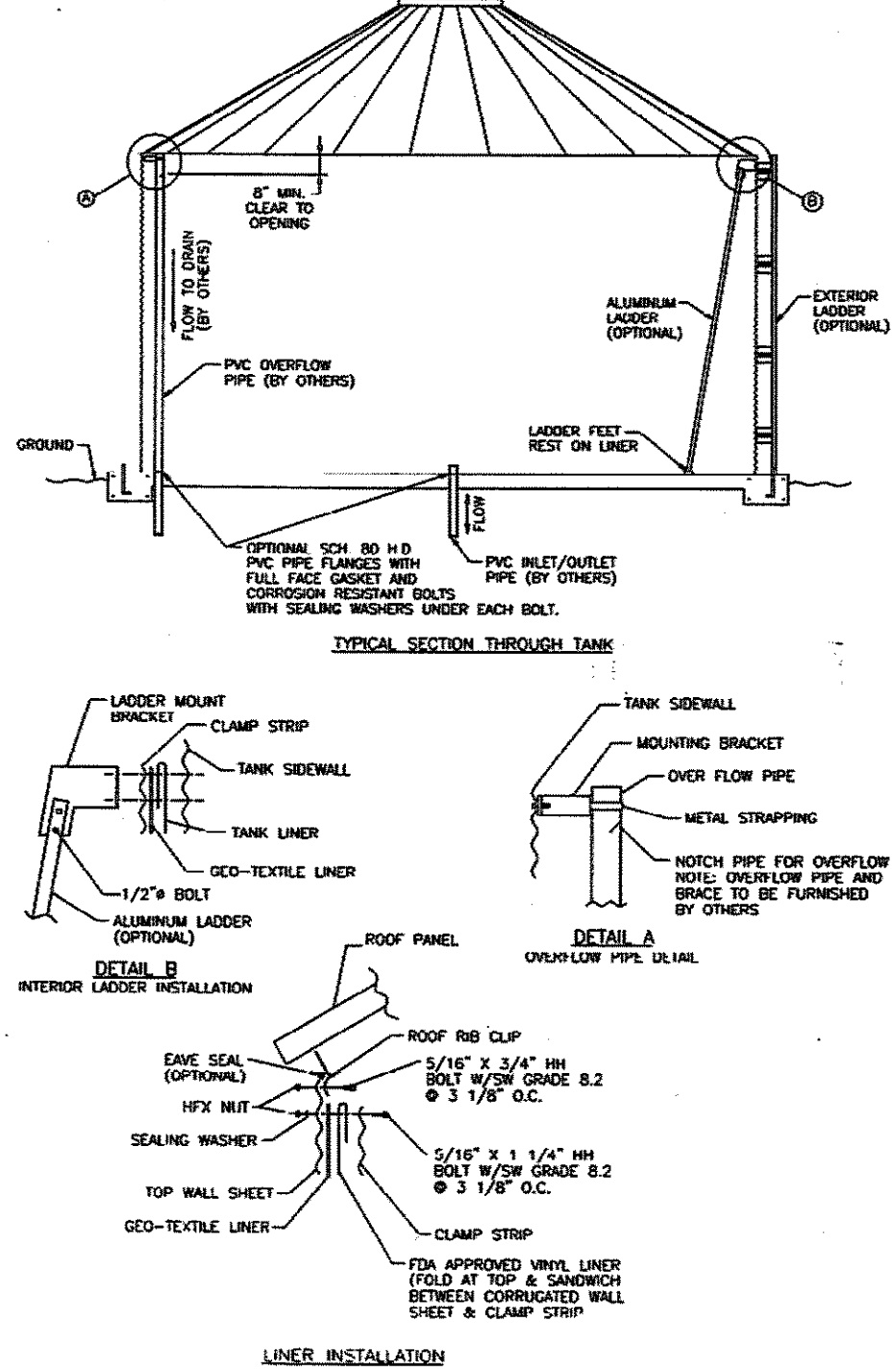


MODEL NO.	DIA.	EAVE HEIGHT	CAPACITY TO EAVE (GAL)	WALL SHEET GAUGES	MODEL NO.	DIA.	EAVE HEIGHT	CAPACITY TO EAVE (GAL)	WALL SHEET GAUGES
601	3"	7"	600	20	2401	3"	7"	10,700	20
602	7"	7"	1,400	20-20	2402	7"	7"	22,600	20-18
603	10"	9"	2,100	20-20-20	2403	10"	9"	34,500	20-18-17
604	14"	9"	2,900	20-20-20-20	2404	14"	9"	46,500	20-18-17-14
901	3"	7"	1,500	20	2701	3"	7"	13,500	20
902	7"	7"	3,100	20-20	2702	7"	7"	28,600	20-18
903	10"	9"	4,900	20-20-20	2703	10"	9"	43,700	20-18-14
904	14"	9"	6,500	20-20-20-20	2704	14"	9"	58,800	20-18-14-12
1201	3"	7"	2,600	20	3001	3"	7"	16,700	20
1202	7"	7"	5,600	20-20	3002	7"	7"	35,300	20-18
1203	10"	9"	8,600	20-20-18	3003	10"	9"	54,000	20-18-13
1204	14"	9"	11,600	20-20-18-18	3004	14"	9"	72,600	20-18-15-13
1501	3"	7"	4,100	20	3301	3"	7"	20,200	18
1502	7"	7"	8,800	20-20	3302	7"	7"	42,700	18-17
1503	10"	9"	13,300	20-20-18	3303	10"	9"	63,500	18-17-13
1504	14"	9"	18,100	20-20-18-17	3304	14"	9"	87,000	18-17-15-11
1801	3"	7"	6,000	20	3601	3"	7"	24,100	18
1802	7"	7"	12,700	20-20	3602	7"	7"	50,500	18-17
1803	10"	9"	19,400	20-20-18	3603	10"	9"	77,800	18-17-14
1804	14"	9"	26,100	20-20-18-17	3604	14"	9"	104,600	18-17-14-12
2101	3"	7"	8,300	20					
2102	7"	7"	17,300	20-18					
2103	10"	9"	26,400	20-18-17					
2104	14"	9"	35,600	20-18-17-13					

PAGE 5



WATER STORAGE TANK SPECIFICATIONS



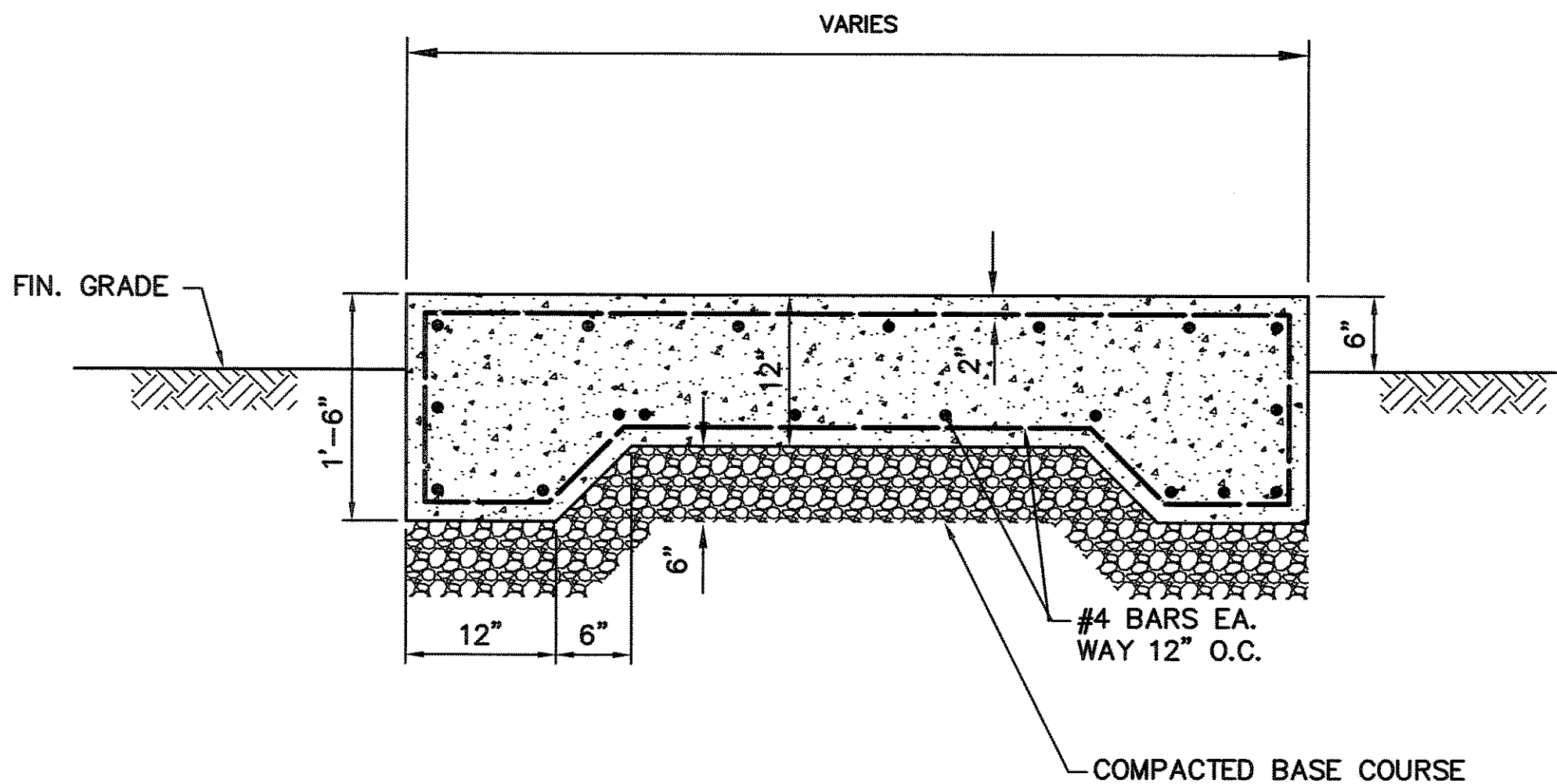
PAGE 6

NOTES:

1. DETAILS SHOWN ABOVE ARE EXCERPTS FROM THE INSTALLATION INSTRUCTIONS FOR SCAFCO WATER STORAGE SYSTEMS.
2. PREFABRICATED TANK COMPONENTS DO NOT INCLUDE THE REINFORCED CONCRETE FOUNDATION OR THE PIPE INLETS/OUTLETS THROUGH THE TANK FLOOR.

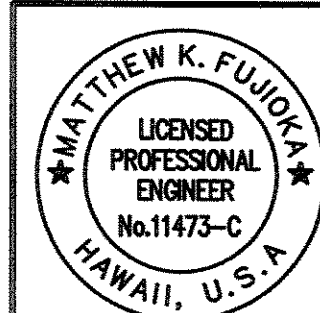
1 PREFABRICATED WATER STORAGE TANK

SCALE: NOT TO SCALE



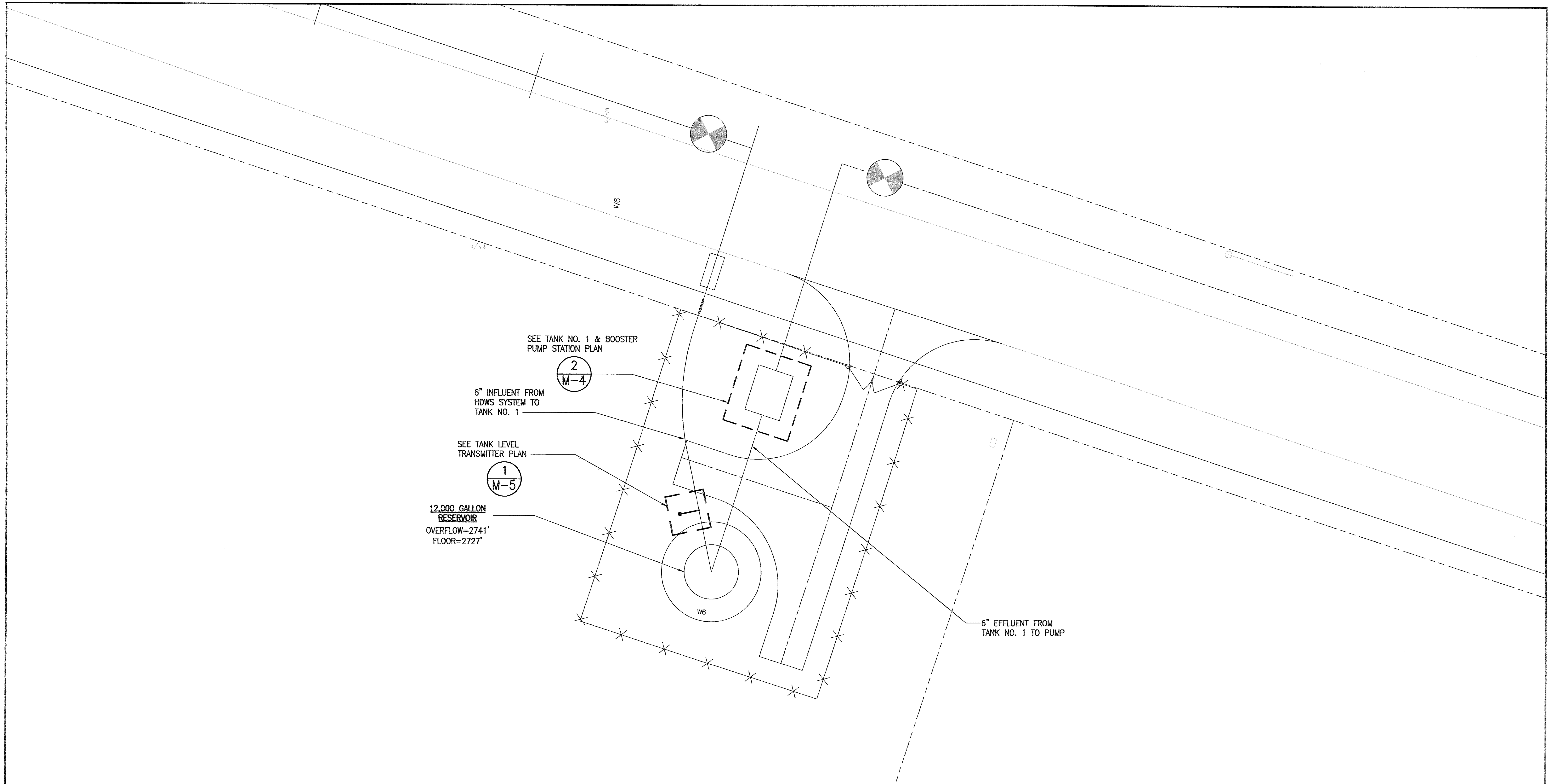
2 TYPICAL CONCRETE PAD SECTION

SCALE: NOT TO SCALE



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DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
MISCELLANEOUS DETAILS			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.



SEE TANK NO. 1 & BOOSTER
PUMP STATION PLAN

2
M-4

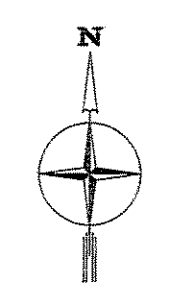
6" INFLUENT FROM
HDWS SYSTEM TO
TANK NO. 1

SEE TANK LEVEL
TRANSMITTER PLAN

1
M-5

12,000 GALLON
RESERVOIR
OVERFLOW=2741'
FLOOR=2727'

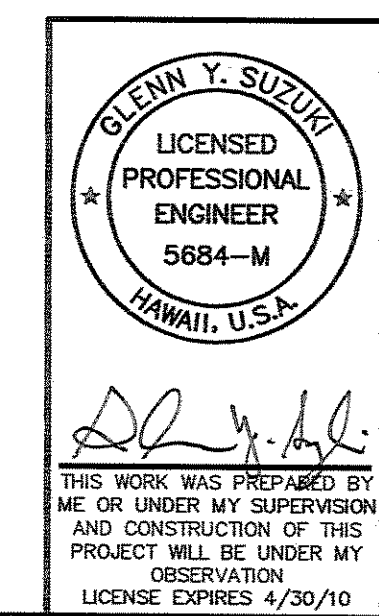
6" EFFLUENT FROM
TANK NO. 1 TO PUMP



1
M-1

TANK NO. 1 & BOOSTER PUMP STATION PLAN

SCALE: 1" = 10'



REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51,53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TANK NO. 1 & BOOSTER PUMP STATION PLAN			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII			
DATE _____ AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			

TRUE NORTH
SCALE: 1" = 10'

Tank

Solar Panel
Wall

Tank

Wall

R/W

Gate

TelBx

Gravel Road

R/W

CableBx

TVBx

W3

FIRE ROAD - 11 (FR-11)

W6

R/W

W6

W6s

2-Syphon

R/W

W6

W6

W6s

W6

W6

W6

Fence

Hui Tank

W6s

Fence

SEE TANK NO. 2 & BOOSTER
PUMP STATION PLAN

1
M-4

SEE TANK LEVEL
TRANSMITTER PLAN

1
M-5

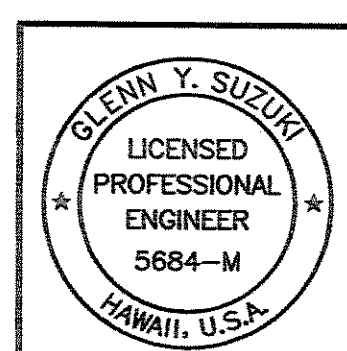
59,000 GALLON RESERVOIR
OVERFLOW = 3258'
FLOOR = 3244'



1
M-2

TANK NO. 2 & BOOSTER PUMP STATION PLAN

SCALE: 1" = 10'

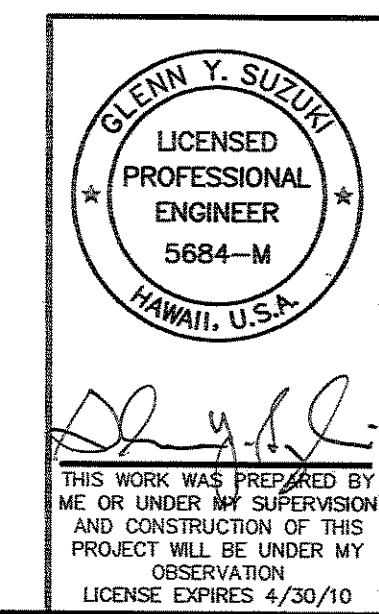
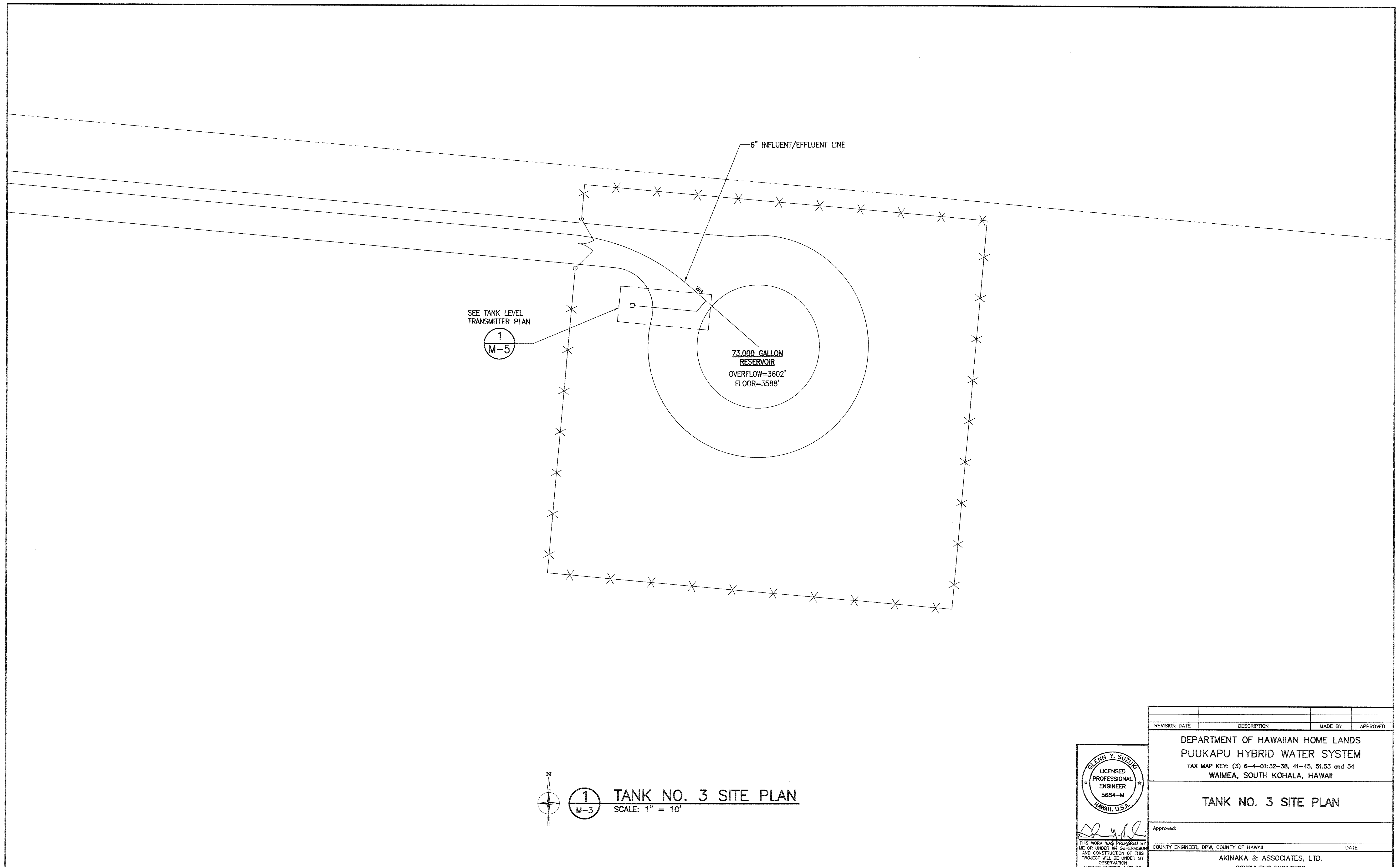


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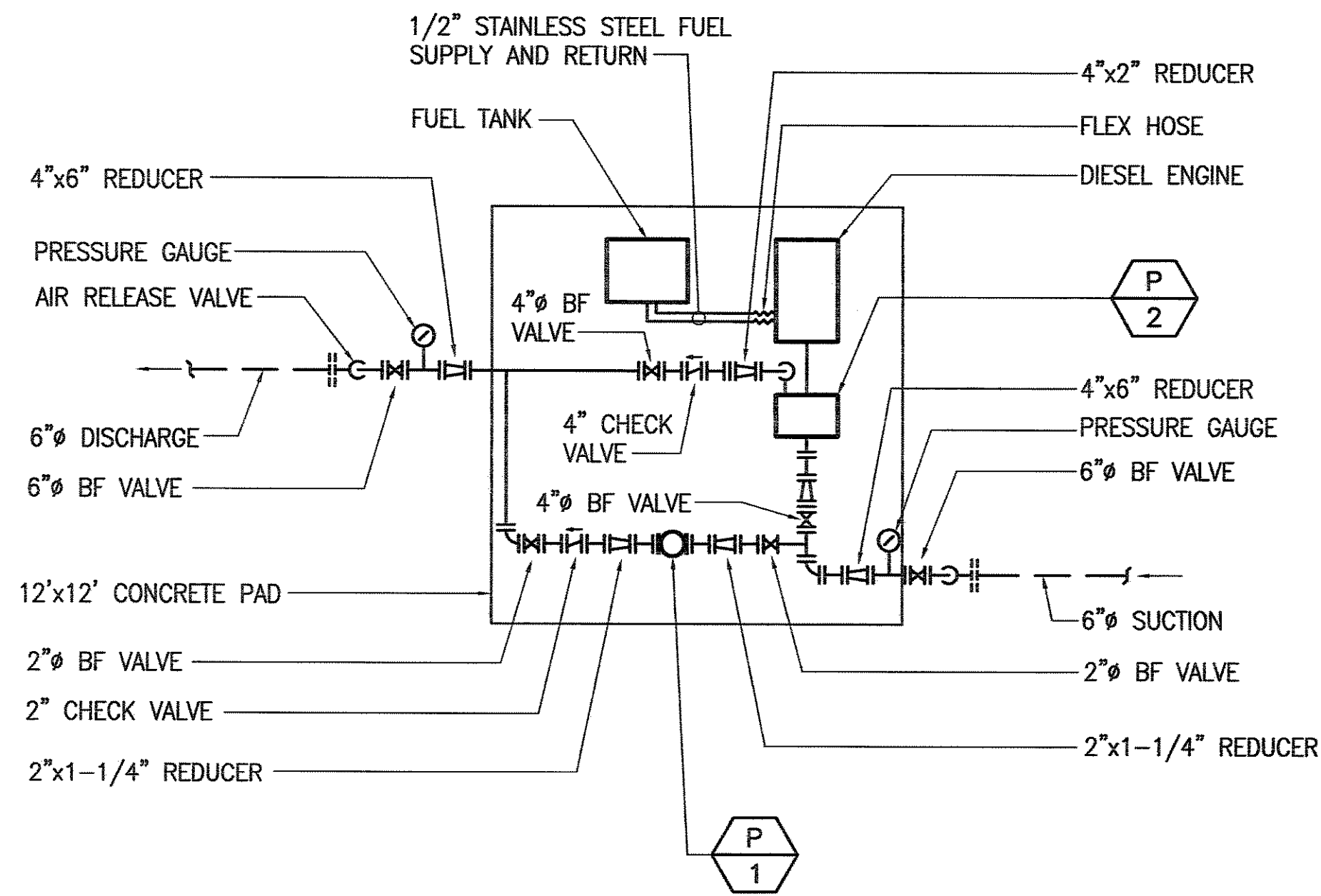
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51,53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TANK NO. 2 & BOOSTER PUMP STATION PLAN			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

M-2

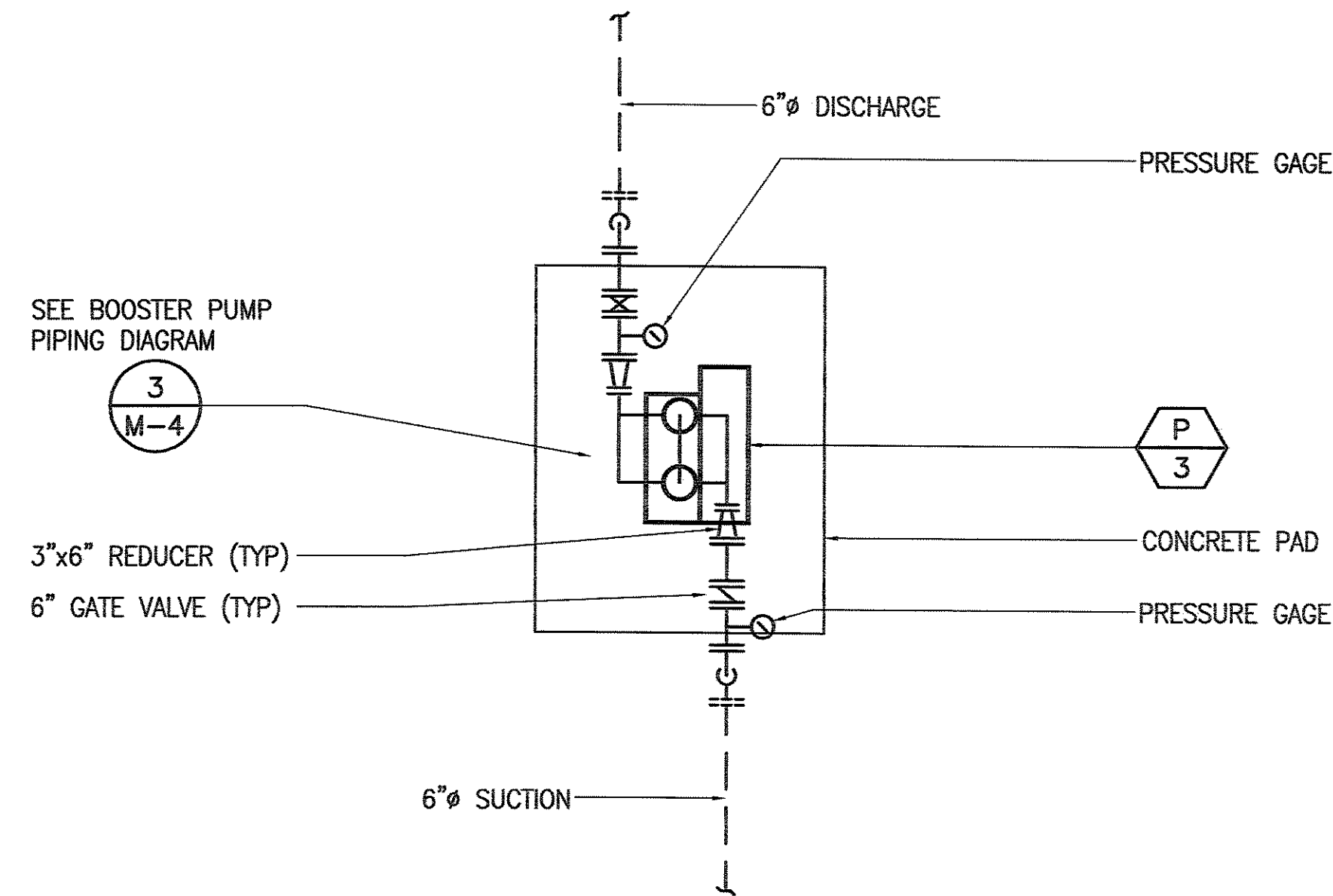
SHEET 56 OF 70 SHEETS



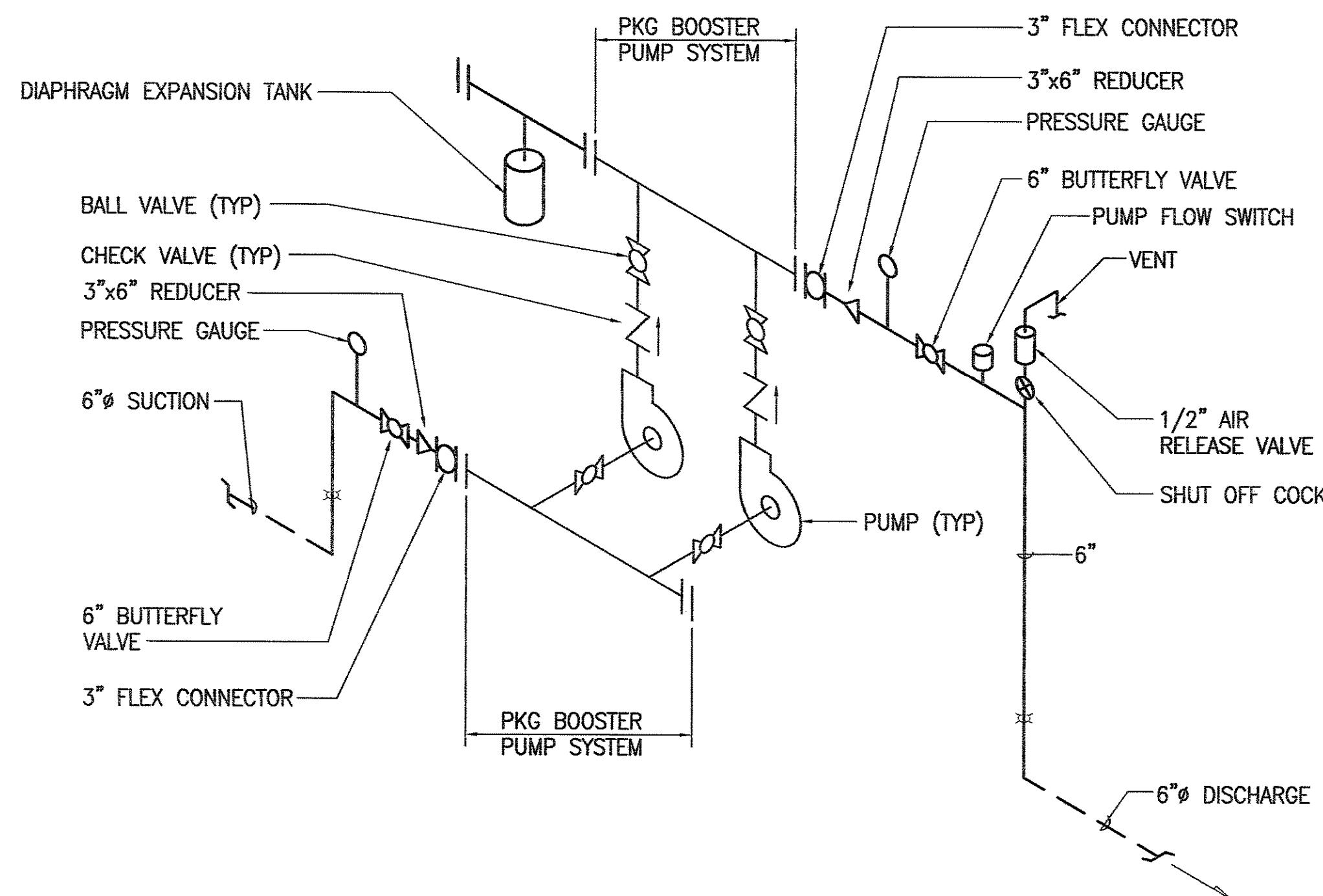
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01: 32-38, 41-45, 51,53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TANK NO. 3 SITE PLAN			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.



1 TANK NO. 2 & BOOSTER PUMP STATION PLAN
SCALE: 1/4" = 1'-0"

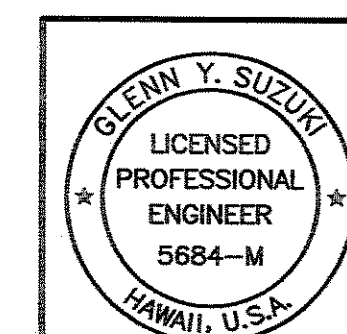


2 TANK NO. 1 & BOOSTER PUMP STATION PLAN
SCALE: 1/4" = 1'-0"



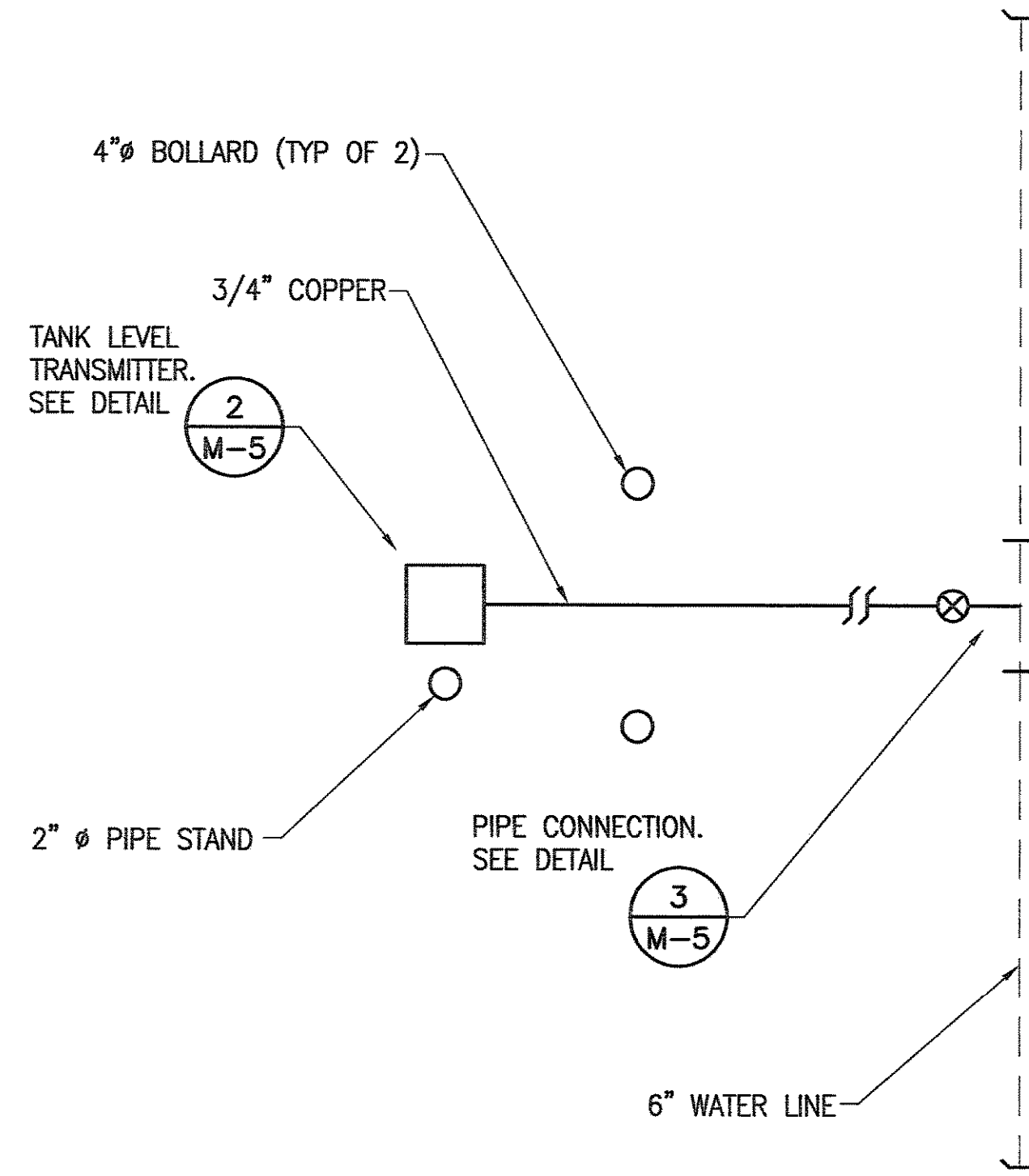
3 BOOSTER PUMP PIPING DIAGRAM
NOT TO SCALE

PUMP SCHEDULE									
SYMBOL	QTY	TYPE	SERVICE	GPM	TOTAL HEAD IN FT.	RPM	ELECTRICAL		REMARKS
							HP	VOLTAGE	
P 1	1-EA	PHOTOVOLTAIC POWERED VERTICAL MULTISTAGE CENTRIFUGAL	BOOSTER	20	370	3500	5	208/3/60	GOULDS MODEL 1SVB1JL9
P 2	1-EA	DIESEL DRIVEN HORIZONTAL SPLIT CASE CENTRIFUGAL	BOOSTER	50	370	3000	10	208/3/60	MTH PUMPS MODEL 153L
P 3	1-EA	SKID MOUNTED DUPLEX, CENTRIFUGAL	BOOSTER	125	560	3500	20	208/3/60	GOULD MODEL 4SV2FOK46M1

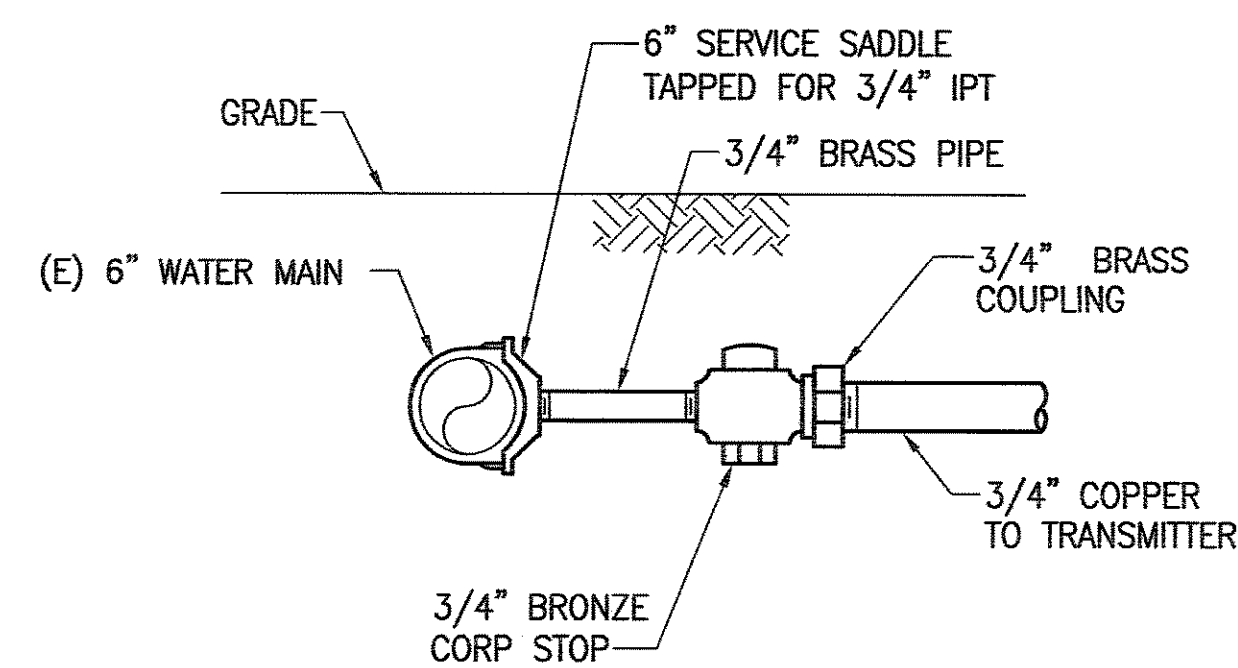


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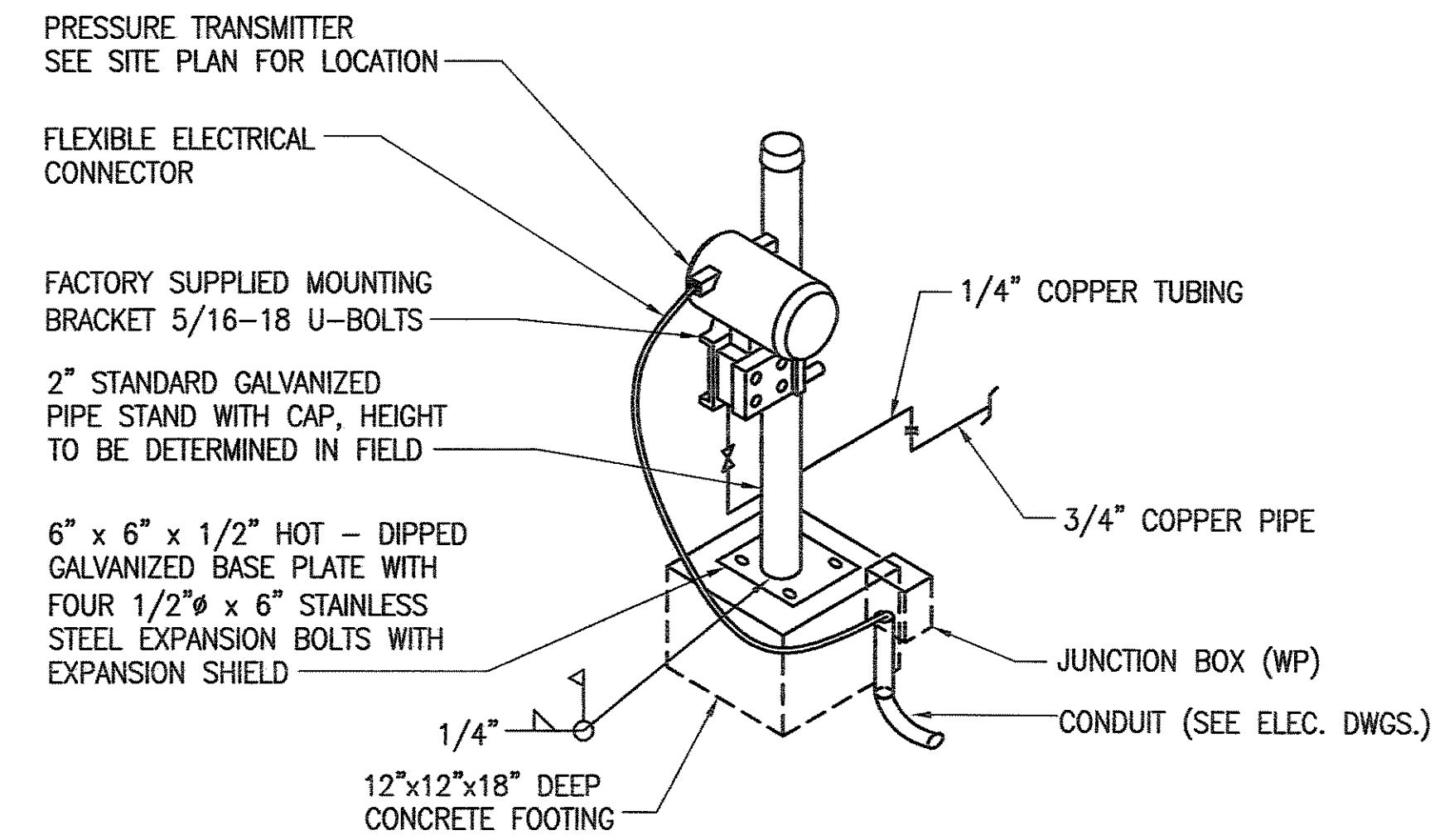
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51,53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
PHASE 1 AND PHASE 2 BOOSTER PUMP PLAN			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			



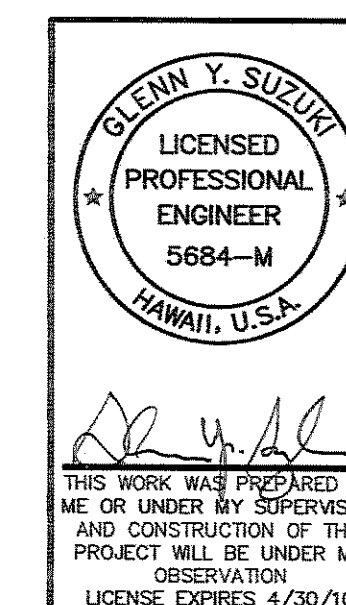
1 TANK LEVEL TRANSMITTER PLAN
SCALE: 1/4" = 1'-0"



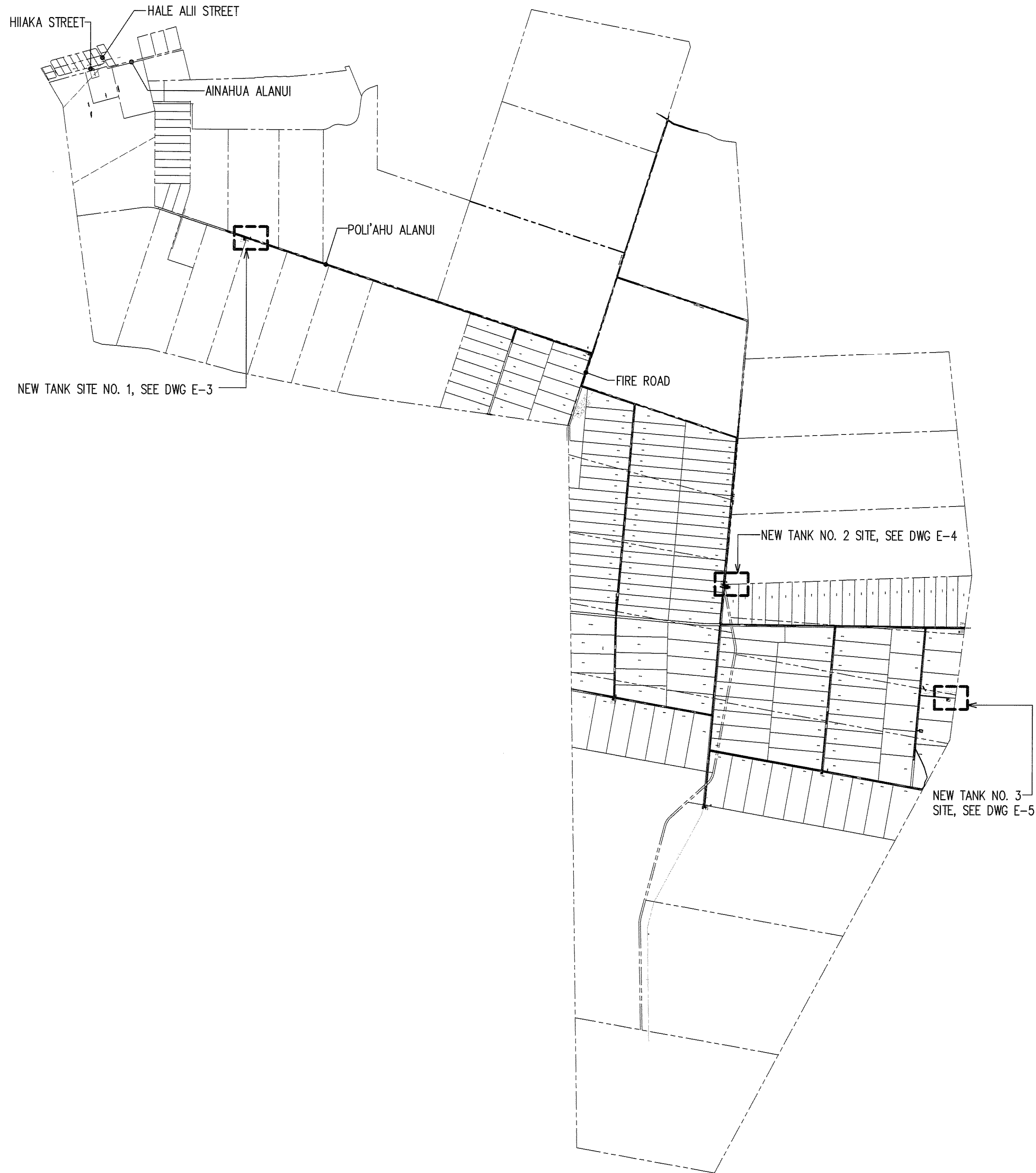
3 PIPE CONNECTION DETAIL
NOT TO SCALE



2 TANK LEVEL TRANSMITTER DETAIL
NOT TO SCALE



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MECHANICAL DETAILS			
Approved:			
COUNTY ENGINEER, DPW, COUNTY OF HAWAII		DATE	
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			



ABBREVIATIONS

A	AMPERES	NO	NUMBER
AF	AMP FRAME	NOM	NOMINAL
AFF/AFG	ABOVE FINISHED FLOOR/GRADE		
ARCH	ARCHITECT	OC	OVER CURRENT
AT	AMP TRIP		
AVG	AVERAGE	PFB	PROVISIONS FOR FUTURE CIRCUIT BREAKERS
		PH	PHASE
BATT	BATTERY	PNL	PANEL
BKR	BREAKER	PROVS	PROVISIONS
BLDG	BUILDING	PSI	POUNDS PER SQUARE INCH
BTM	BOTTOM		
		REQ/REQ'D	REQUIRE/REQUIRED
C	CONDUIT	REQM'T	REQUIREMENT
CAB	CABINET	RM	ROOM
CKT	CIRCUIT		
CTR	CENTER	SCHED	SCHEDULE
		SHT	SHEET
D	DIMENSIONAL DEPTH	SPECS	SPECIFICATIONS
DET	DETAIL	SQ	SQUARE
DIA	DIAMETER	S.S.	STAINLESS STEEL (TYPE 316)
DIAG	DIAGRAM	STD	STANDARD
DISC	DISCONNECT	SW/SWBD	SWITCH/SWITCHBOARD
DWG/DWGS	DRAWING/DRAWINGS		
		TBD	TO BE DETERMINED
EM/EMERG	EMERGENCY	TYP	TYPICAL
ENCL	ENCLOSURE		
EQ	EQUAL	UON	UNLESS OTHERWISE NOTED
EXIST	EXISTING	USPC	UNIVERSAL SOLAR PUMP CONTROLLER
		V	VOLTS
FDR	FEEDER		
FIN	FINISH	W	WIRE/WATT/DIMENSIONAL WIDTH
FLR	FLOOR	w/	WITH
		WP	WEATHERPROOF-RATED
GND/GND'G	GROUND/GROUNDING	+48" AFF	FORTY-EIGHT INCHES ABOVE FINISH FLOOR
GR	GRADE	Ø	PHASE
GRC	GALVANIZED RIGID CONDUIT	∠	CENTER-LINE
H	DIMENSIONAL HEIGHT		
HP	HORSEPOWER		
JB/J-BOX	JUNCTION BOX		
KAIC	KILOAMPERES INTERRUPTING CAPACITY		
KVA	KILOVOLT AMPERES		
KW	KILO-WATT		
KWH	KILO-WATT HOUR		
L	DIMENSIONAL LENGTH/LONG		
MAX	MAXIMUM		
MECH	MECHANICAL		
MIN	MINIMUM		
MTD/MTG	MOUNTED/MOUNTING		

ELECTRICAL SYMBOLS

SYMBOL		DESCRIPTION
EXISTING	NEW	
		DISCONNECT SWITCH, FUSIBLE UON, HEAVY-DUTY, HP-RATED CHANNEL MOUNTED UON, SEE DETAIL ON DWG E-9
		JUNCTION BOX, SMALL - SIZED PER NEC 314.16, WALL MOUNTED UON
		ELECTRICAL CONNECTION, MOTOR
		ELECTRICAL CONNECTION, PRESSURE TRANSMITTER
		FLEXIBLE CONDUIT, LIQUIDTIGHT IN DAMP OR WET LOCATIONS
		ELECTRIC/SIGNAL DUCTLINE WITH DESIGNATORS; ITEMS IN CIRCLE INDICATES DUCT SECTION TYPE, WITH DUCT COMPLEMENTS NOTED BELOW (TYPE "A" DUCT INDICATED WITH 1-2"E DUCTS, AND TYPE "I" DUCT WITH 1-1"C DUCT; E=ELECTRIC, C=CONTROLS, I=INSTRUMENTATION); SEE DWG E-2 FOR DUCT SECTION DETAILS
		NOTE INDICATOR, NOTE NUMBER 1 REFERENCED, ALL OTHERS SIMILAR, SEE NOTES ON RESPECTIVE SHEETS
		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 "INSTRUMENTATION" INSCRIBED ON COVER
		12" X 20" WATER METER TYPE PRECAST CONCRETE PULLBOX, WITH STEEL COVER AND WITH "CONTROLS" INSCRIBED ON COVER
		DUPLEX RECEPTACLE, WITH GROUND FAULT CIRCUIT INTERRUPTER, NEMA 5-20R, 120V, CHANNEL MOUNTED, IN WEATHERPROOF HOUSING, SEE DETAIL D/E-9
		JUNCTION BOX MTD. ON CHANNEL SUPPORT, SEE DETAIL B/E-9

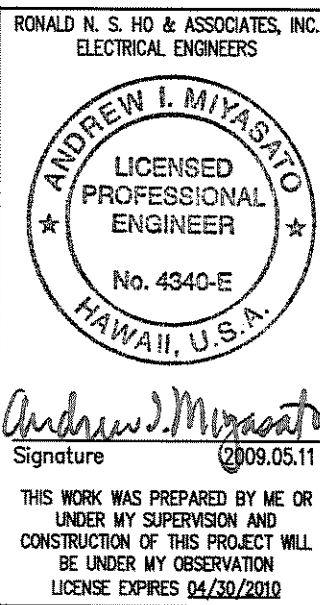
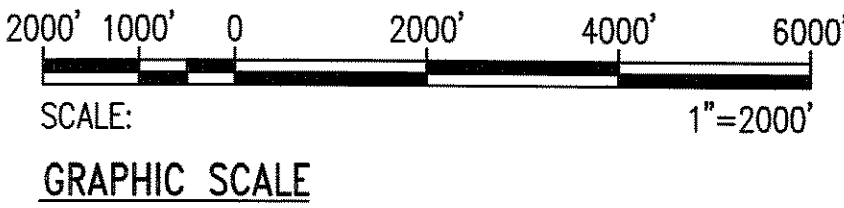
NOTES: 1. NO HASH MARKS ON CONDUIT INDICATE 2 WIRES; INDICATES 3- WIRES; INDICATES 4 WIRES; ETC. EQUIPMENT GROUNDING WIRE IS NOT INCLUDED IN COUNT, BUT SHALL BE PROVIDED PER NEC 250.122.

2. ALL WORK SHOWN ON ALL DRAWINGS SHALL BE NEW UNLESS OTHERWISE INDICATED.

3. "X" THROUGH SYMBOL INDICATES ITEM TO BE REMOVED OR AS NOTED.

OVERALL ELECTRICAL SITE PLAN

SCALE: 1"=2000'



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DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII				
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____				
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS				
FILE	POCKET	FOLDER	NO.	

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.

DESIGNATION DESCRIPTIONS

ELEC = PRIMARY OR SECONDARY ELECTRIC
CTL = CONTROL
SIG = INSTRUMENTATION OR ANTENNA CABLE

MINIMUM "X" DIMENSION

DUCT SEPARATION REQUIREMENTS

ELEC - ELEC = 1 1/2"

ELEC - CTL/SIG = 3"

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

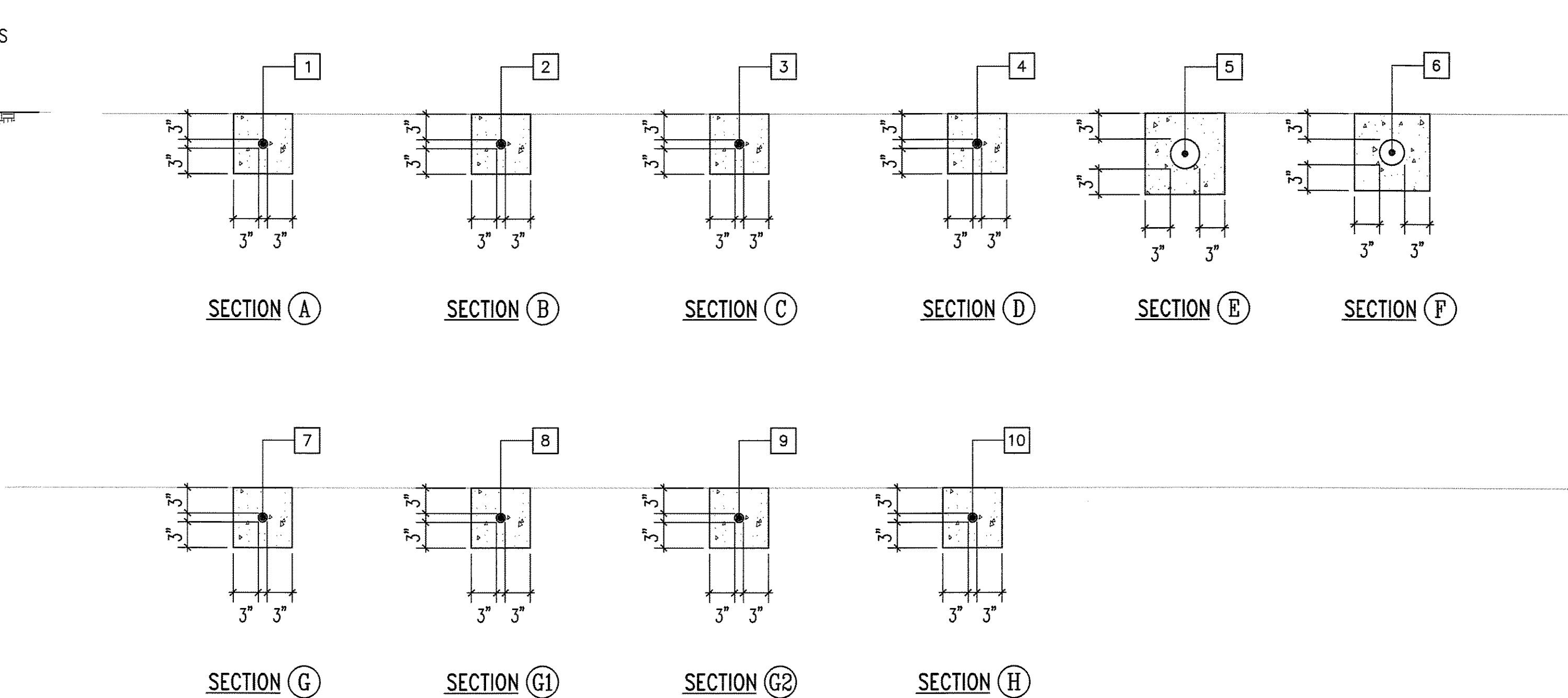
MINIMUM OF 3" CONCRETE
ENCASEMENT AROUND
DUCTBANK

TYPICAL TRENCH
AND BACKFILL FOR
CONCRETE ENCASED
DUCT SECTION

SEE DUCT SECTION
DETAILS FOR
DUCT COMPLEMENTS

SEE NOTE AT LEFT FOR MINIMUM
DIMENSION REQUIREMENTS (TYP)

TYPICAL DUCT SECTION



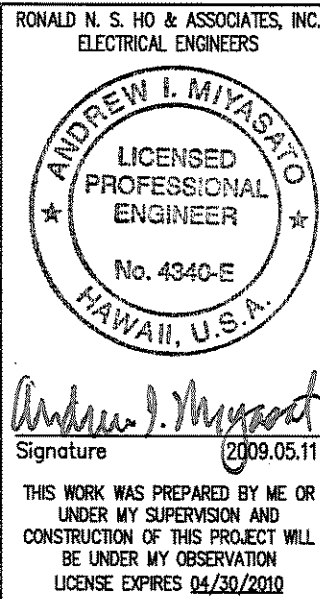
DUCT AND WIRE SCHEDULE

NO.	DUCT SIZE	WIRE SIZE	DESTINATION OR USE
1	1"	1-2/G#14 TWISTED, SHIELDED CABLE W/GND	INSTRUMENTATION CIRCUIT FROM TANK LEVEL TRANSMITTER TO LIMIT VALUE SWITCH
2	1"	3#10, 1#10 GND	UNIVERSAL SOLAR PUMP CONTROLLER TO SOLAR BOOSTER PUMP "P-1"
3	1"	4#14, 1#14 GND CONTROLS	TELEMETRY SYSTEM TO REMOTE SWITCH INPUT AT THE UNIVERSAL SOLAR PUMP CONTROLLER
4	1"	4#14, 1#14 GND CONTROLS	TELEMETRY SYSTEM TO DIESEL DRIVEN BOOSTER PUMP "P-2" CONTROL PANEL
5	3"	3#5/0	HELCO SERVICE POLE TO ELECTRICAL SERVICE EQUIPMENT
6	2.5"	3#5/0, 1#6 GND	FEEDER TO PACKAGED DUPLEX BOOSTER PUMP "P-3" CONTROL PANEL
7	1"	2#12, 1#12 GND	120V CIRCUITS TO DUPLEX RECEPTACLE OUTLET AND 24VDC POWER SUPPLY
8	1"	2#12, 1#12 GND	120V CIRCUIT TO DUPLEX RECEPTACLE OUTLET
9	1"	2#12, 1#12 GND	120V CIRCUIT TO 24VDC POWER SUPPLY
10	1"	6#14, 1#14 GND CONTROLS	TELEMETRY SYSTEM TO PACKAGED DUPLEX BOOSTER PUMP "P-3" CONTROL PANEL

- NOTES:
- ALL CONCRETE ENCASED DUCTS SHALL BE SCHEDULE 40 PVC.
 - ALL DIRECT BURIED DUCTS SHALL BE SCHEDULE 80 PVC.
 - PC INDICATES PROVIDE PULLCORD.

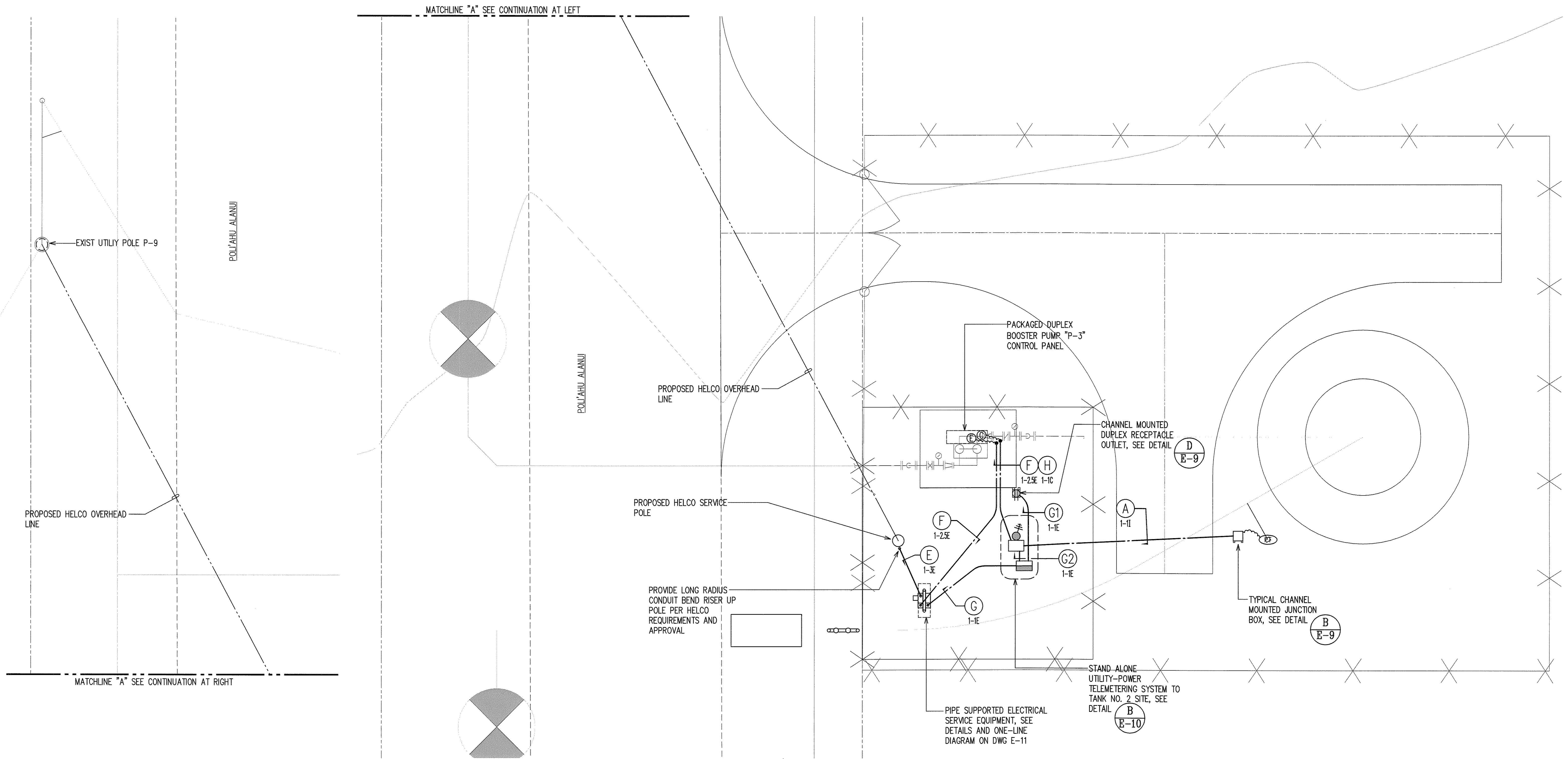
DUCT SECTION DETAILS AND REQUIREMENTS

NOT TO SCALE

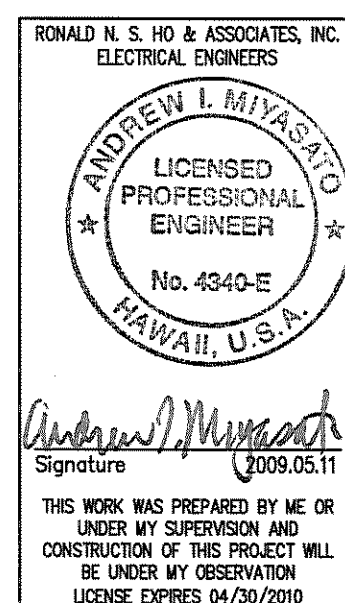
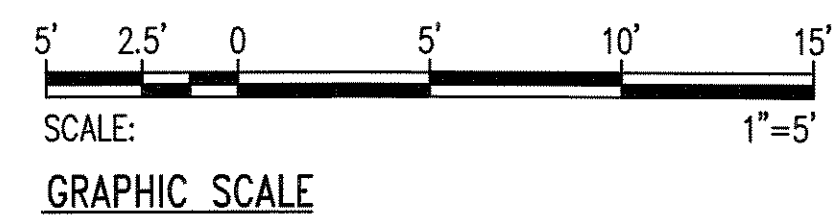


REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
DUCT SECTION DETAILS AND REQUIREMENTS			
Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			

FILE	POCKET	FOLDER	NO.



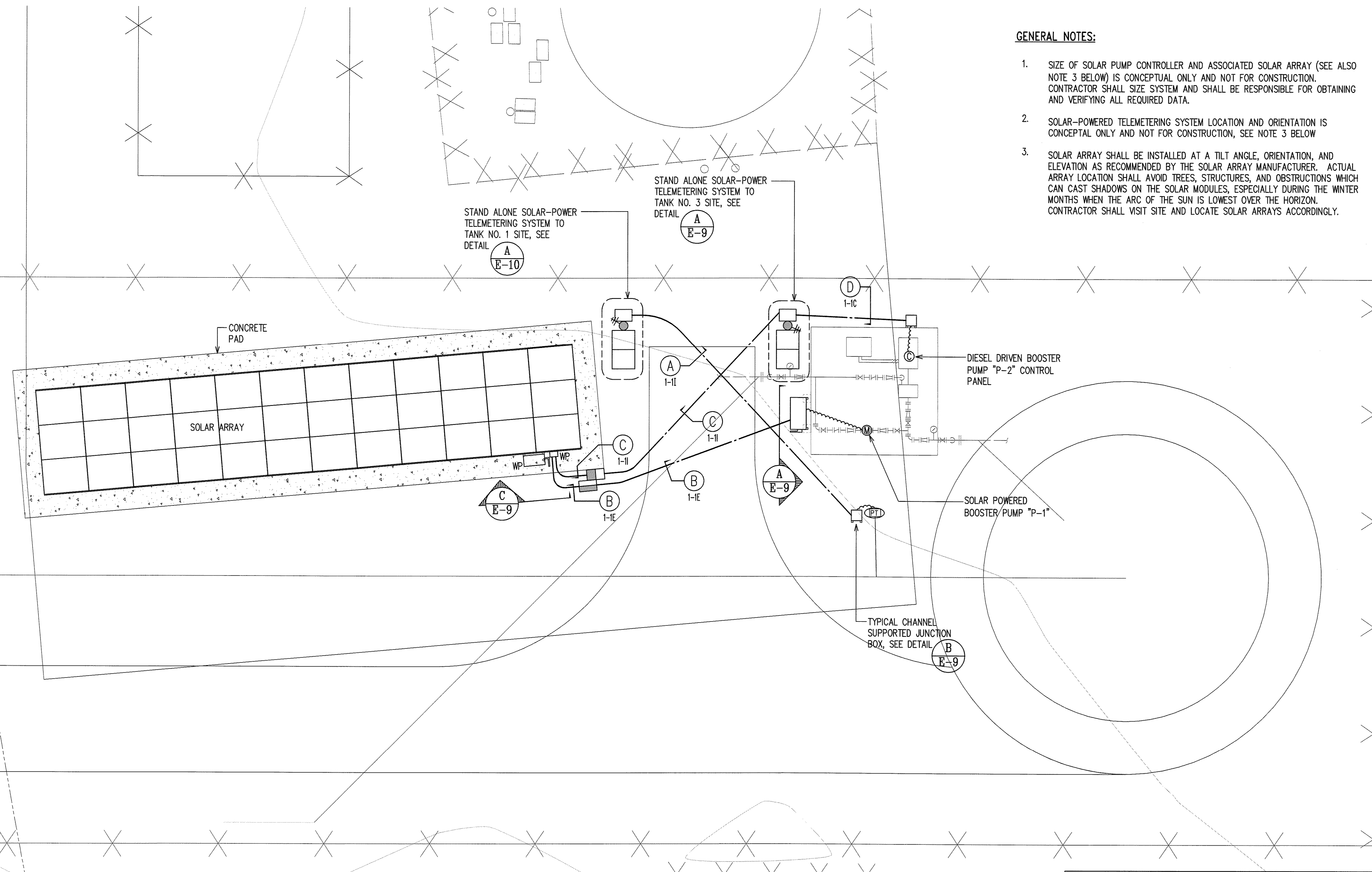
1 TANK NO. 1 AND BOOSTER PUMP STATION ELECTRICAL SITE PLAN
E-3 SCALE: 1"=5'



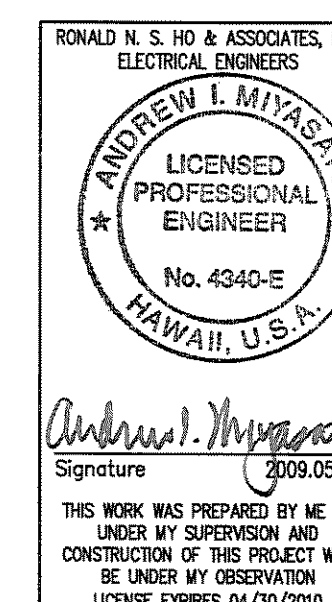
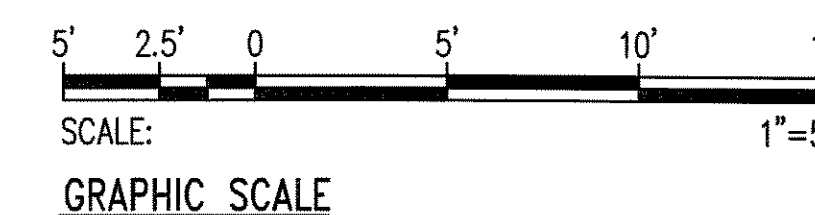
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TANK NO. 1 AND BOOSTER PUMP STATION ELECTRICAL SITE PLAN			
Approved: _____ DATE _____			
COUNTY ENGINEER, DPW, COUNTY OF HAWAII			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

GENERAL NOTES:

1. SIZE OF SOLAR PUMP CONTROLLER AND ASSOCIATED SOLAR ARRAY (SEE ALSO NOTE 3 BELOW) IS CONCEPTUAL ONLY AND NOT FOR CONSTRUCTION. CONTRACTOR SHALL SIZE SYSTEM AND SHALL BE RESPONSIBLE FOR OBTAINING AND VERIFYING ALL REQUIRED DATA.
2. SOLAR-POWERED TELEMETERING SYSTEM LOCATION AND ORIENTATION IS CONCEPTAL ONLY AND NOT FOR CONSTRUCTION, SEE NOTE 3 BELOW
3. SOLAR ARRAY SHALL BE INSTALLED AT A TILT ANGLE, ORIENTATION, AND ELEVATION AS RECOMMENDED BY THE SOLAR ARRAY MANUFACTURER. ACTUAL ARRAY LOCATION SHALL AVOID TREES, STRUCTURES, AND OBSTRUCTIONS WHICH CAN CAST SHADOWS ON THE SOLAR MODULES, ESPECIALLY DURING THE WINTER MONTHS WHEN THE ARC OF THE SUN IS LOWEST OVER THE HORIZON. CONTRACTOR SHALL VISIT SITE AND LOCATE SOLAR ARRAYS ACCORDINGLY.



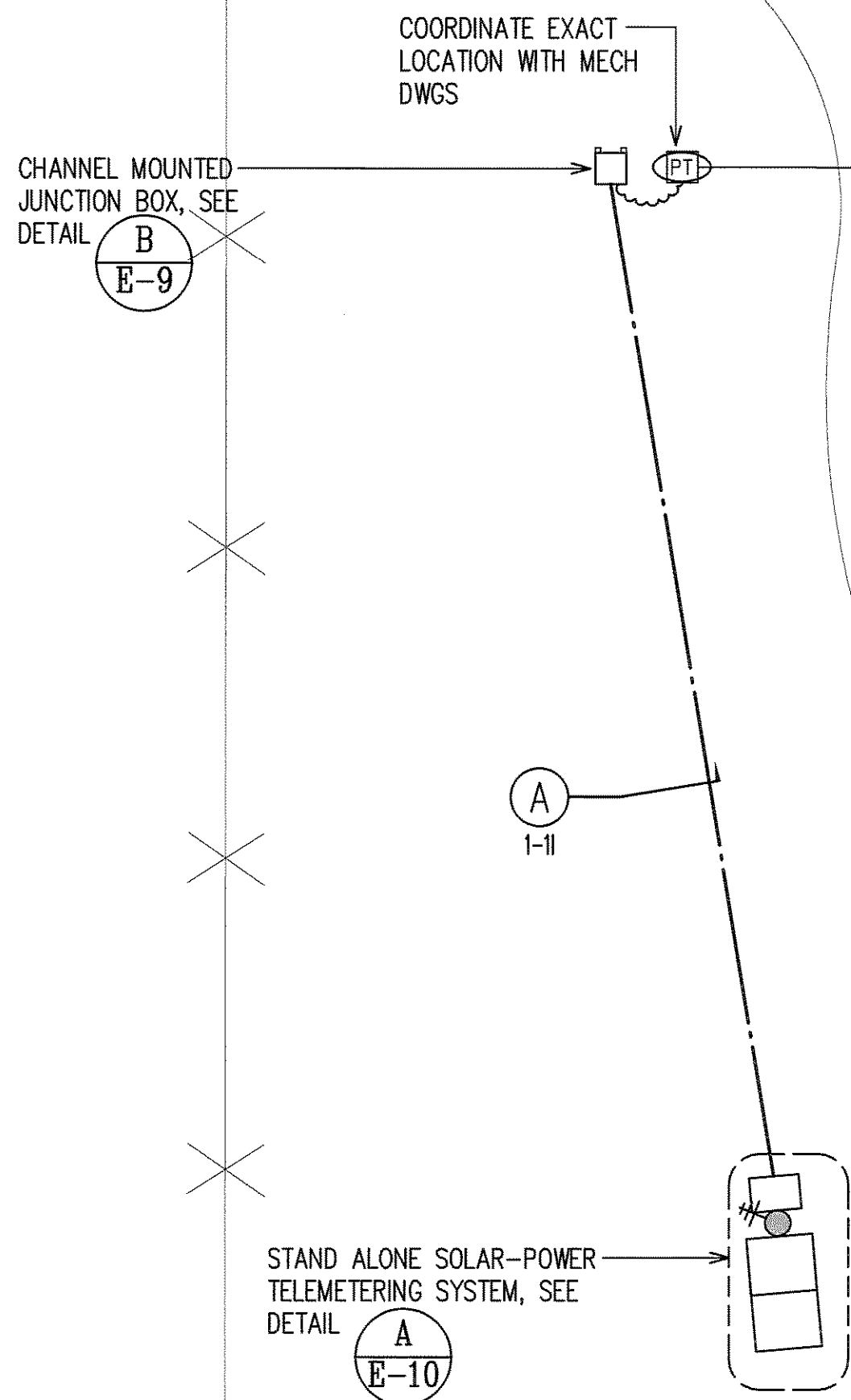
1 BOOSTER PUMP STATION SITE PLAN E-4 SCALE: 1"=5'



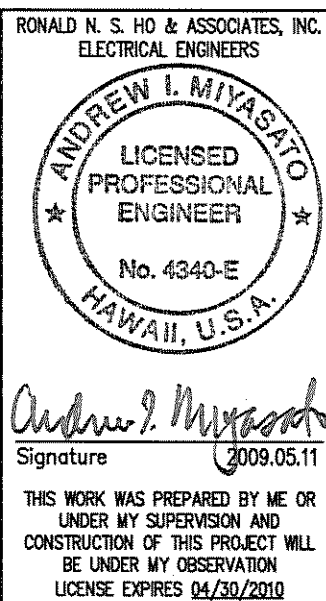
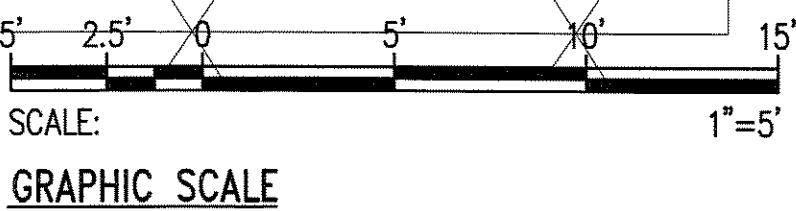
REVISION	DATE	DESCRIPTION	MADE BY	APPROVED
<p>DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII</p>				
<p>TANK NO. 2 AND BOOSTER PUMP STATION ELECTRICAL SITE PLAN</p>				
<p>Approved: _____ DATE _____</p> <p>COUNTY ENGINEER, DPW, COUNTY OF HAWAII</p>				
<p>AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS</p>				

GENERAL NOTES:

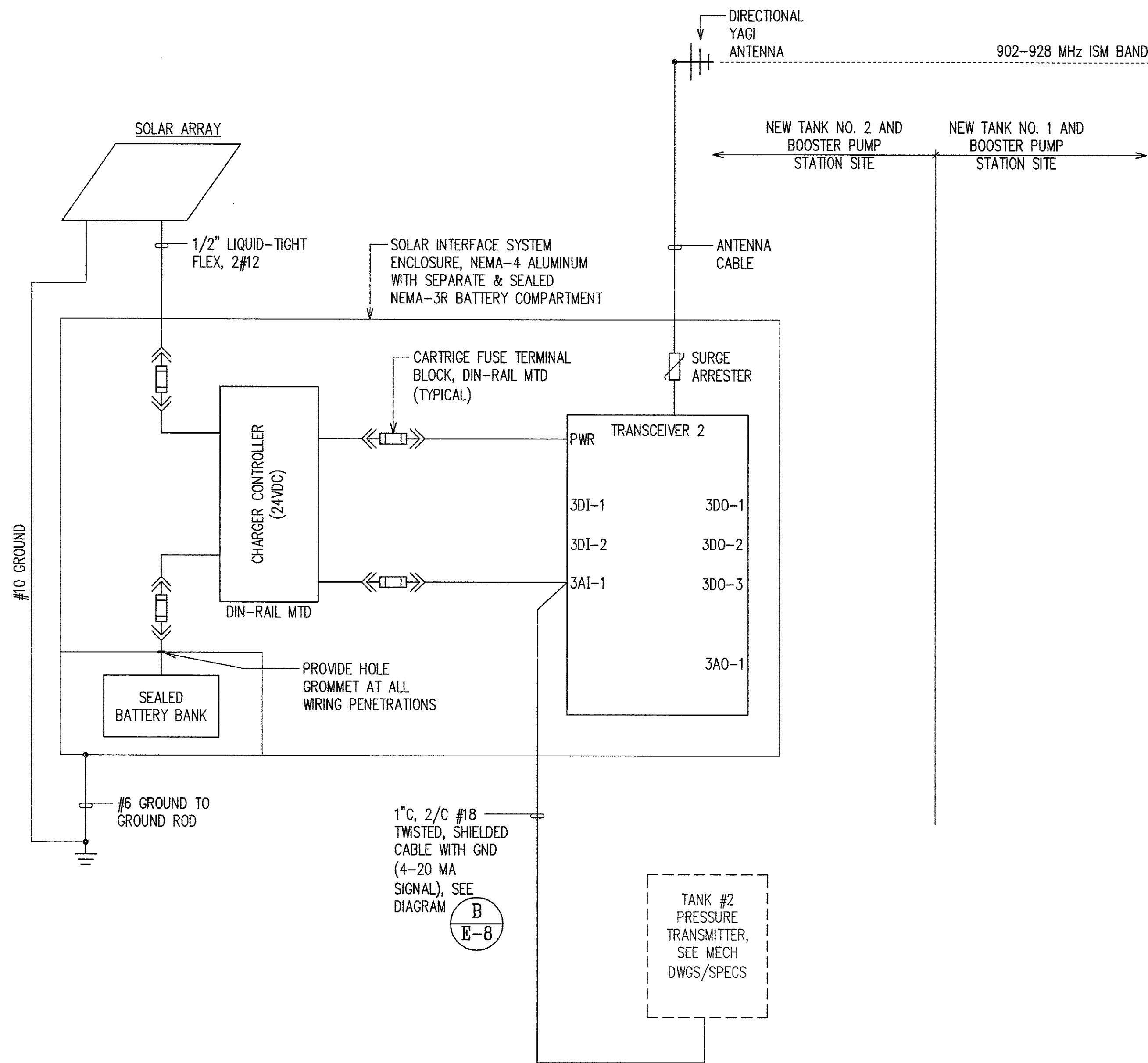
1. SOLAR-POWERED TELEMETERING SYSTEM LOCATION AND ORIENTATION IS CONCEPTAL ONLY AND NOT FOR CONSTRUCTION, SEE NOTE 2 BELOW
2. SOLAR ARRAY SHALL BE INSTALLED AT A TILT ANGLE, ORIENTATION, AND ELEVATION AS RECOMMENDED BY THE SOLAR ARRAY MANUFACTURER. ACTUAL ARRAY LOCATION SHALL AVOID TREES, STRUCTURES, AND OBSTRUCTIONS WHICH CAN CAST SHADOWS ON THE SOLAR MODULES, ESPECIALLY DURING THE WINTER MONTHS WHEN THE ARC OF THE SUN IS LOWEST OVER THE HORIZON. CONTRACTOR SHALL VISIT SITE AND LOCATE SOLAR ARRAYS ACCORDINGLY.



1
E-5 TANK NO. 3 ELECTRICAL SITE PLAN
SCALE: 1"=5'



REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TANK NO. 3 ELECTRICAL SITE PLAN			
Approved: _____			
COUNTY ENGINEER, DPW, COUNTY OF HAWAII _____ DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

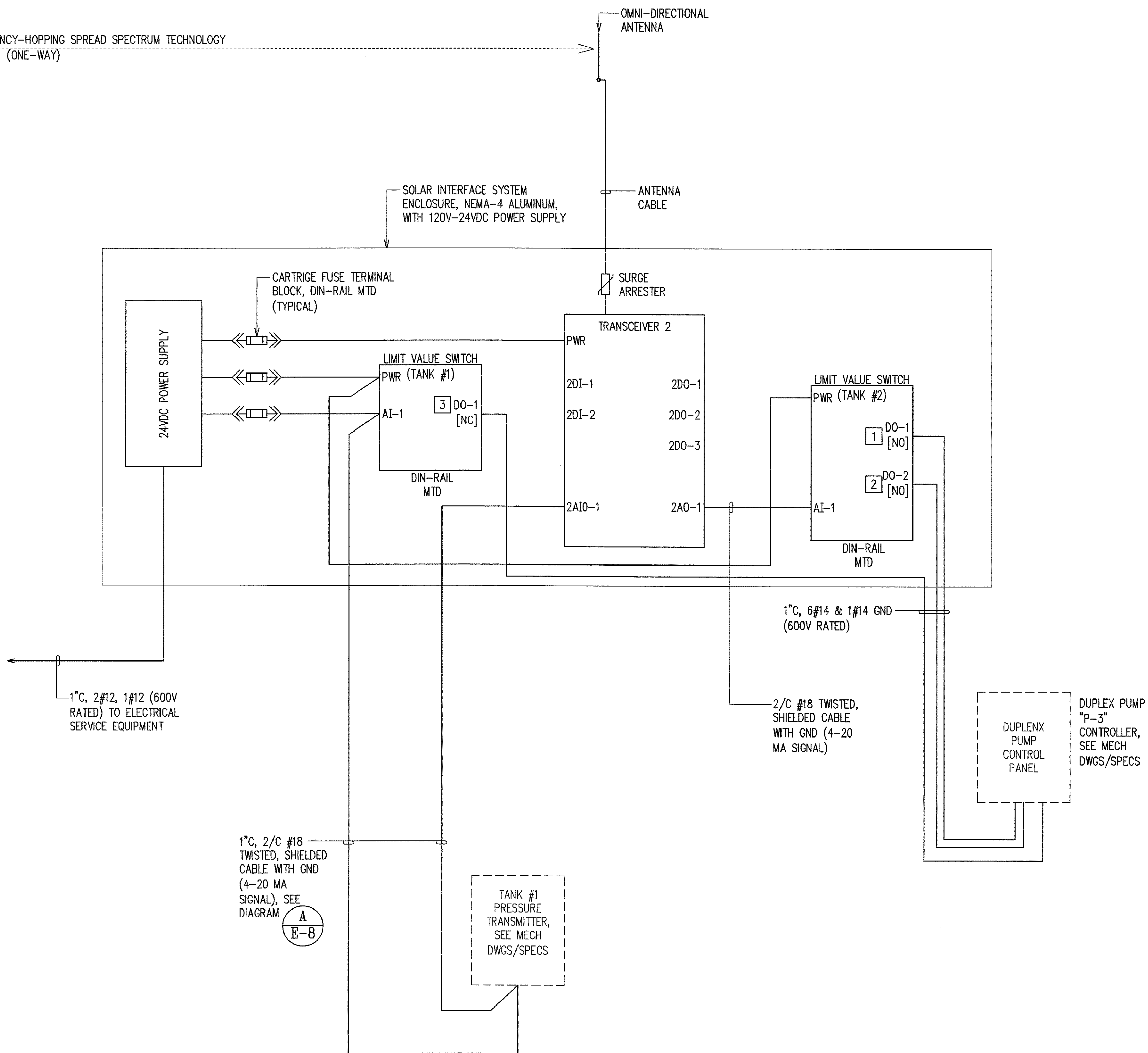


KEY NOTES:

- 1 DENOTES "SET DUPLEX LEAD PUMP ON/OFF LEVELS: PUMP ON (CONTACT CLOSSES) AT TANK NO. 2 8- FEET LEVEL, ADJUSTABLE; AND PUMP OFF (CONTACT OPENS) AT TANK NO. 2 FULL LEVEL (10- FEET HEIGHT), ADJUSTABLE".
- 2 DENOTES "SET DUPLEX LAG PUMP ON/OFF LEVELS: PUMP ON (CONTACT CLOSSES) AT TANK NO. 2 6- FEET LEVEL, ADJUSTABLE; AND PUMP OFF (CONTACT OPENS) AT TANK NO. 2 FULL LEVEL (10- FEET HEIGHT), ADJUSTABLE".
- 3 DENOTES "LOCKOUT ALL BOOSTER PUMPS DUE TO TANK NO. 1 LOW WATER LEVEL".

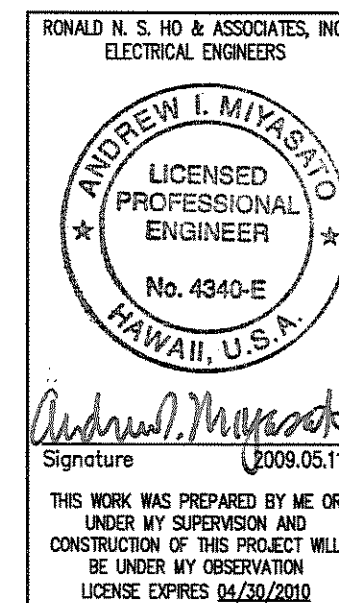
A
E-6

TELEMETERING DIAGRAM BETWEEN TANK NO. 1 AND TANK NO. 2 SITES

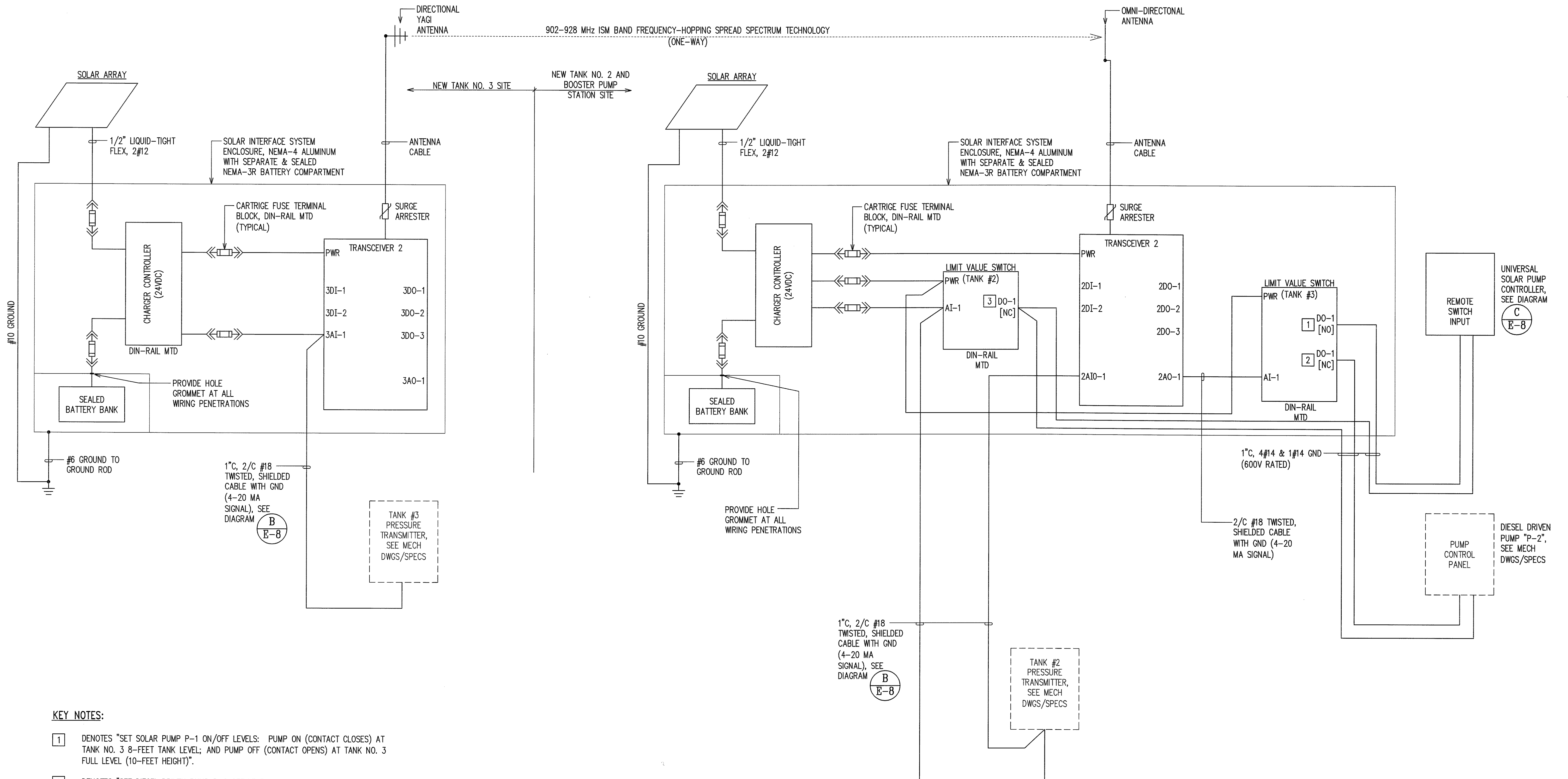


GENERAL NOTES:

1. 76,000 GALLON TANK SPILLWAY ELEVATION = 3,685 FEET.
2. NOT USED.



REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TANK 1 SITE TO TANK 2 SITE TELEMETERING DIAGRAM			
Approved: _____			
COUNTY ENGINEER, DPW, COUNTY OF HAWAII		DATE _____	
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			



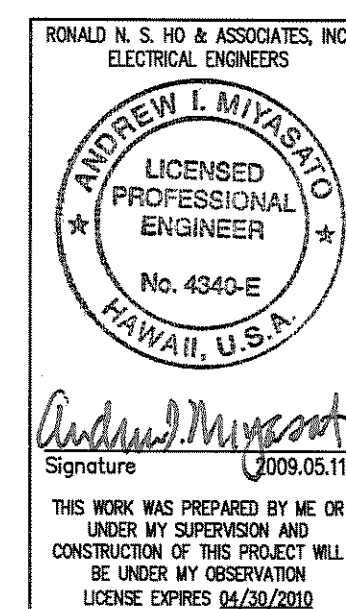
KEY NOTES:

- 1 DENOTES "SET SOLAR PUMP P-1 ON/OFF LEVELS: PUMP ON (CONTACT CLOSES) AT TANK NO. 3 8-FEET TANK LEVEL; AND PUMP OFF (CONTACT OPENS) AT TANK NO. 3 FULL LEVEL (10-FEET HEIGHT)".
- 2 DENOTES "SET DIESEL DRIVEN PUMP P-2 OFF LEVEL: PUMP TO BE TURNED ON MANUALLY AND AUTOMATICALLY TURNED OFF (CONTACT OPEN) AT TANK NO. 3 FULL LEVEL (10-FEET HEIGHT)".
- 3 DENOTES "LOCKOUT ALL BOOSTER PUMPS DUE TO TANK NO. 2 LOW WATER LEVEL".

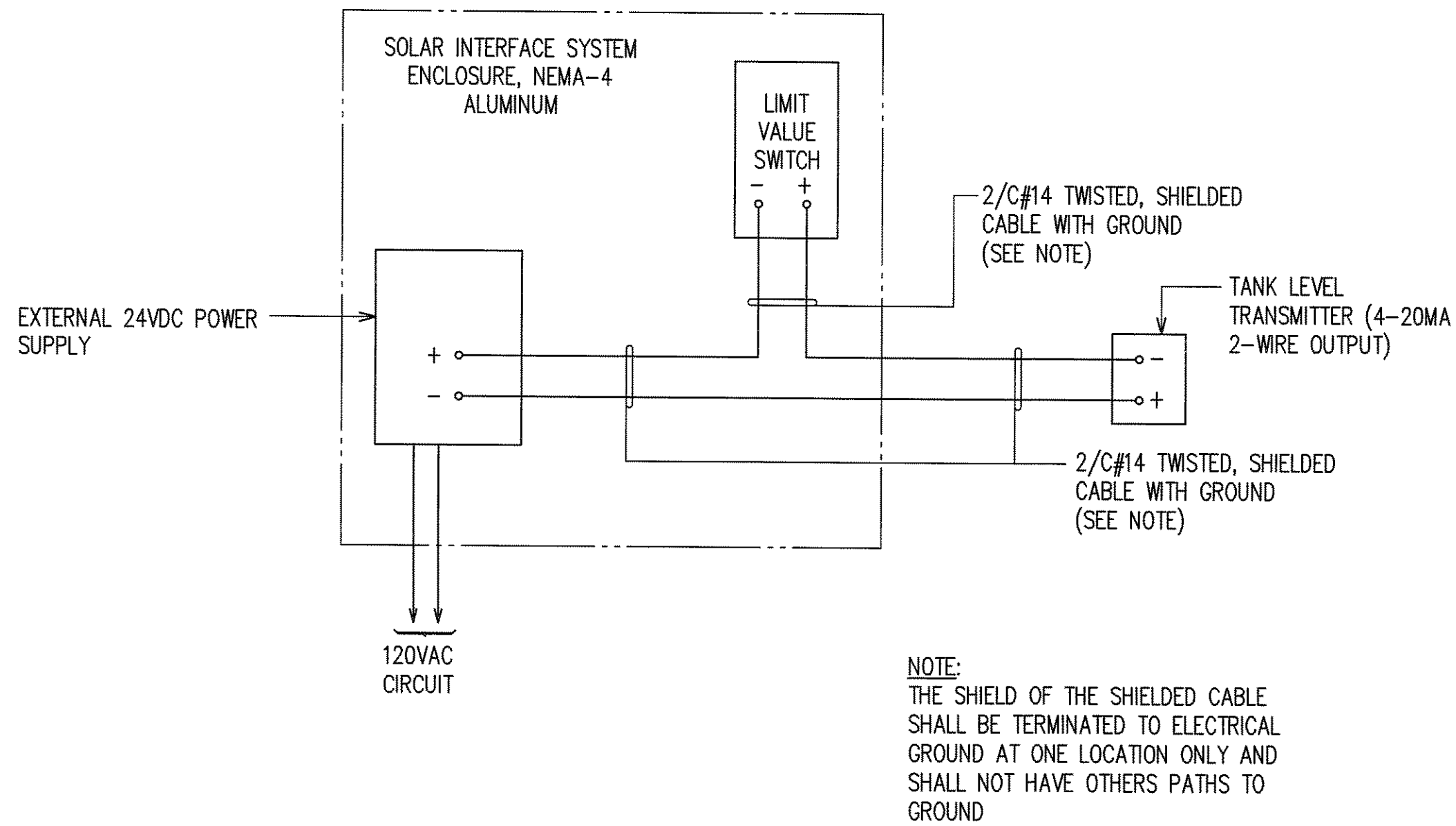
GENERAL NOTES:

1. 76,000 GALLON TANK SPILLWAY ELEVATION = 3,685 FEET.
2. NOT USED.

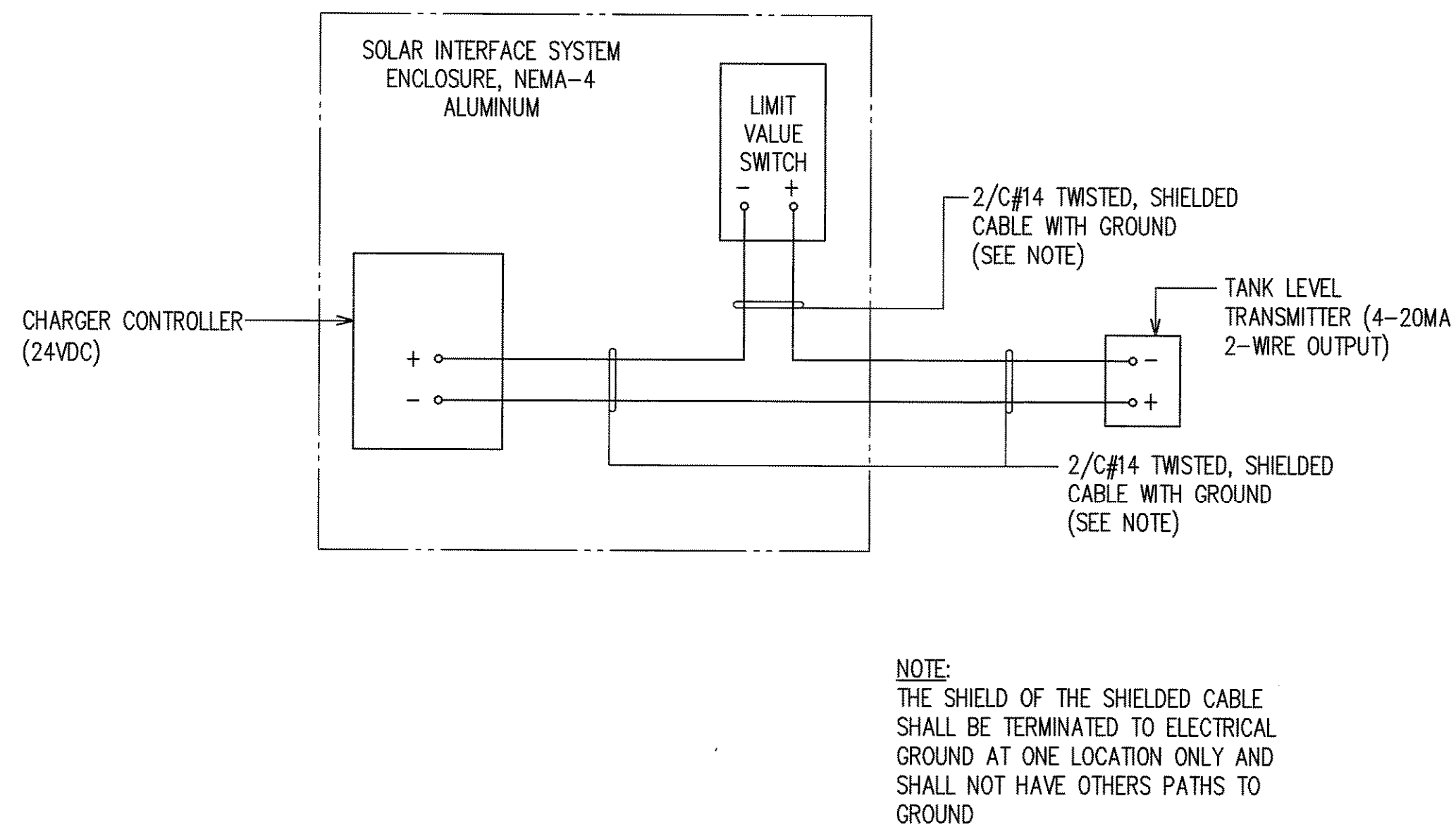
A **E-7** **TELEMETERING DIAGRAM BETWEEN TANK NO. 2 AND TANK NO. 3 SITES**



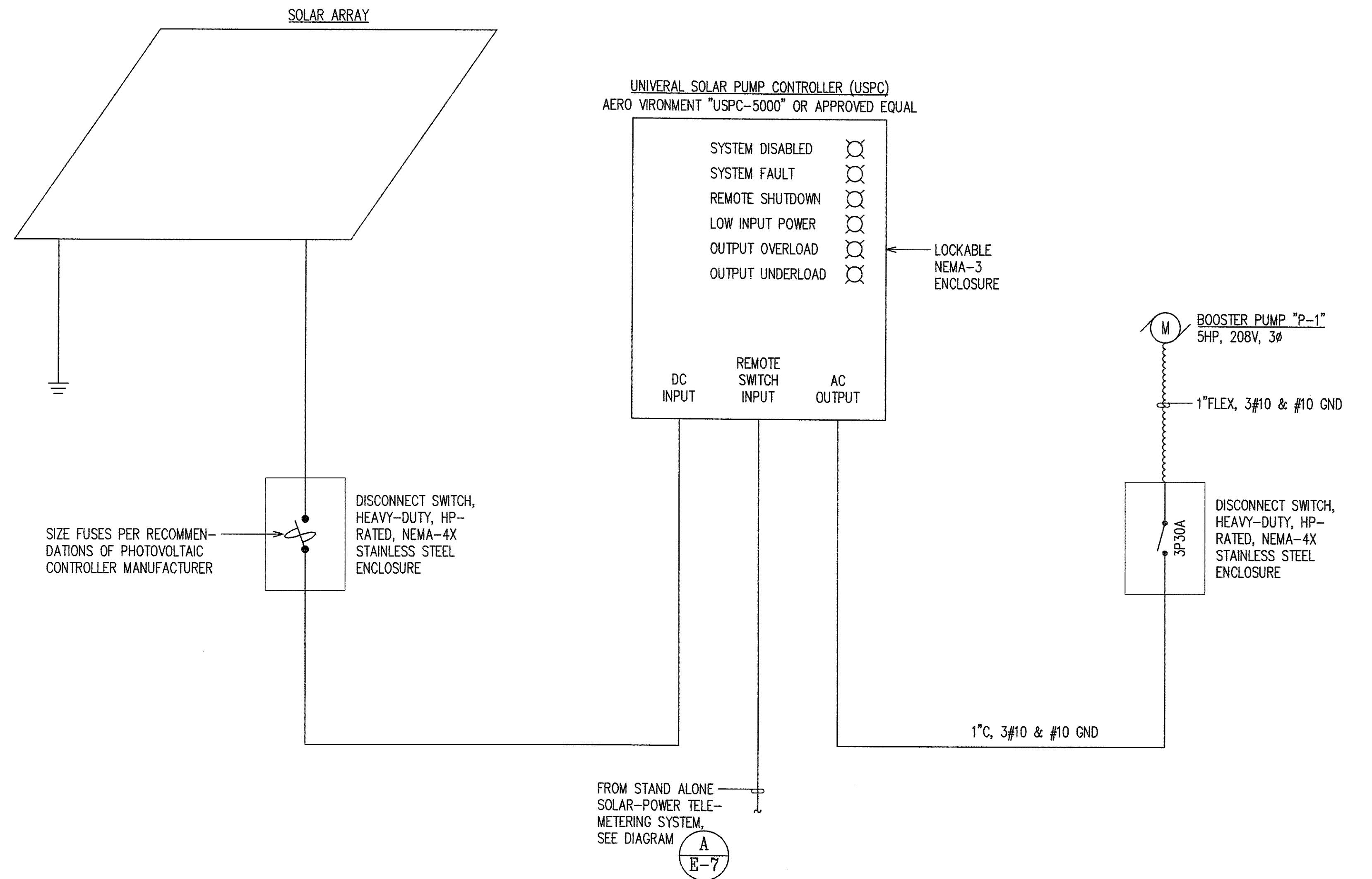
REVISION	DATE	DESCRIPTION	MADE BY	APPROVED
<p>DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII</p>				
<p>SOLAR-POWERED TELEMETERING DIAGRAM</p>				
<p>Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE _____</p>				
<p>AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS</p>				



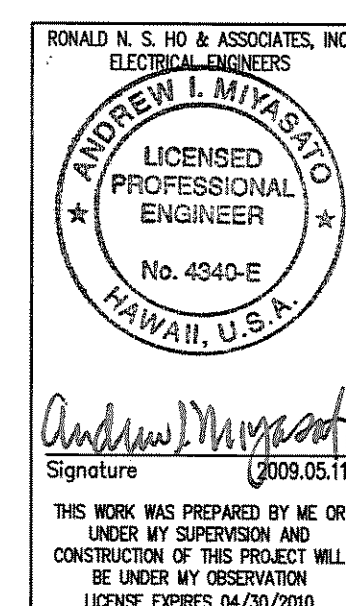
A
E-8 TANK WATER LEVEL SIGNAL INSTRUMENTATION DIAGRAM
TANK SITE NO. 1



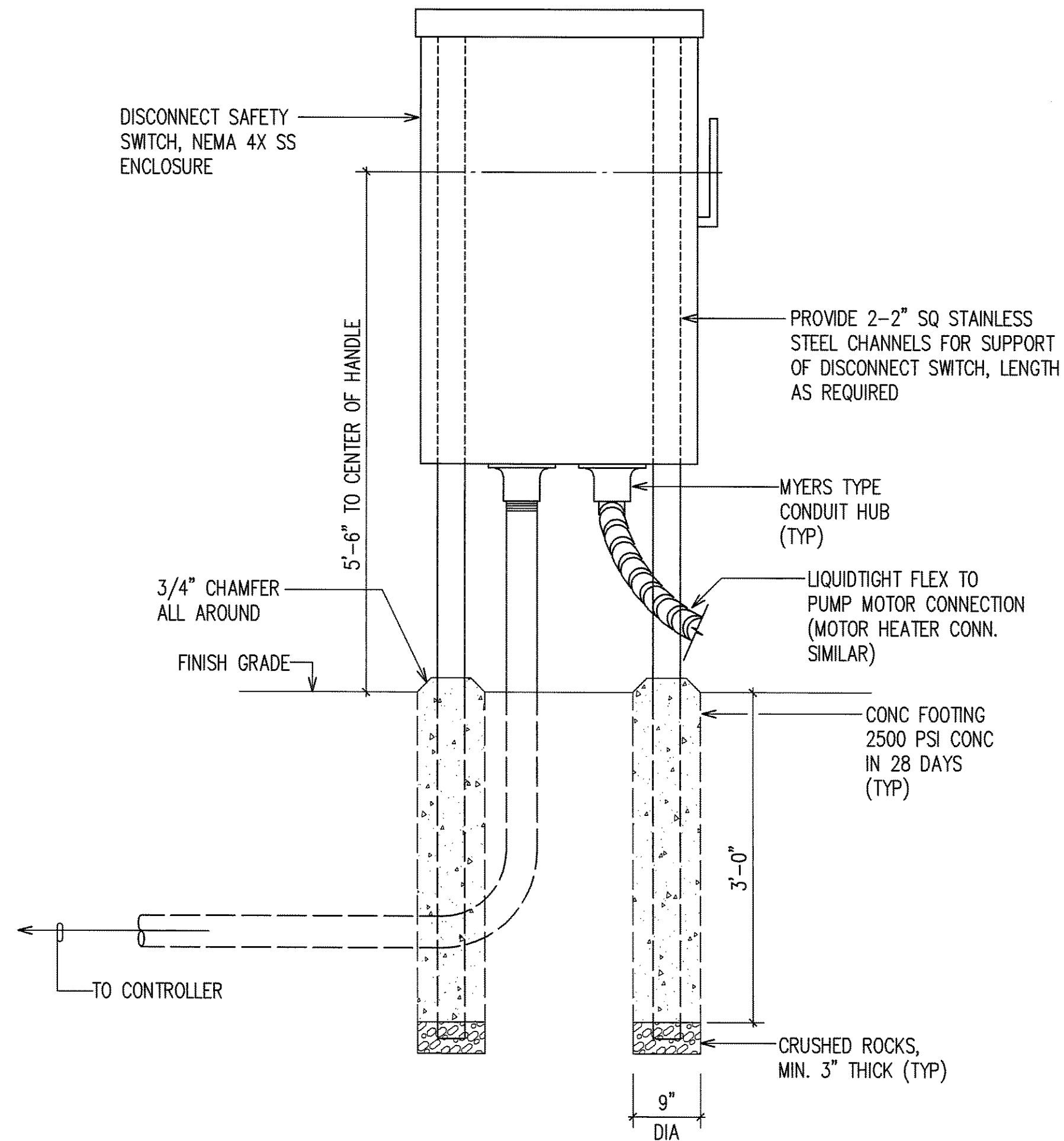
B
E-8 TANK WATER LEVEL SIGNAL INSTRUMENTATION DIAGRAM
TYPICAL AT TANK SITE NOS. 2 AND 3



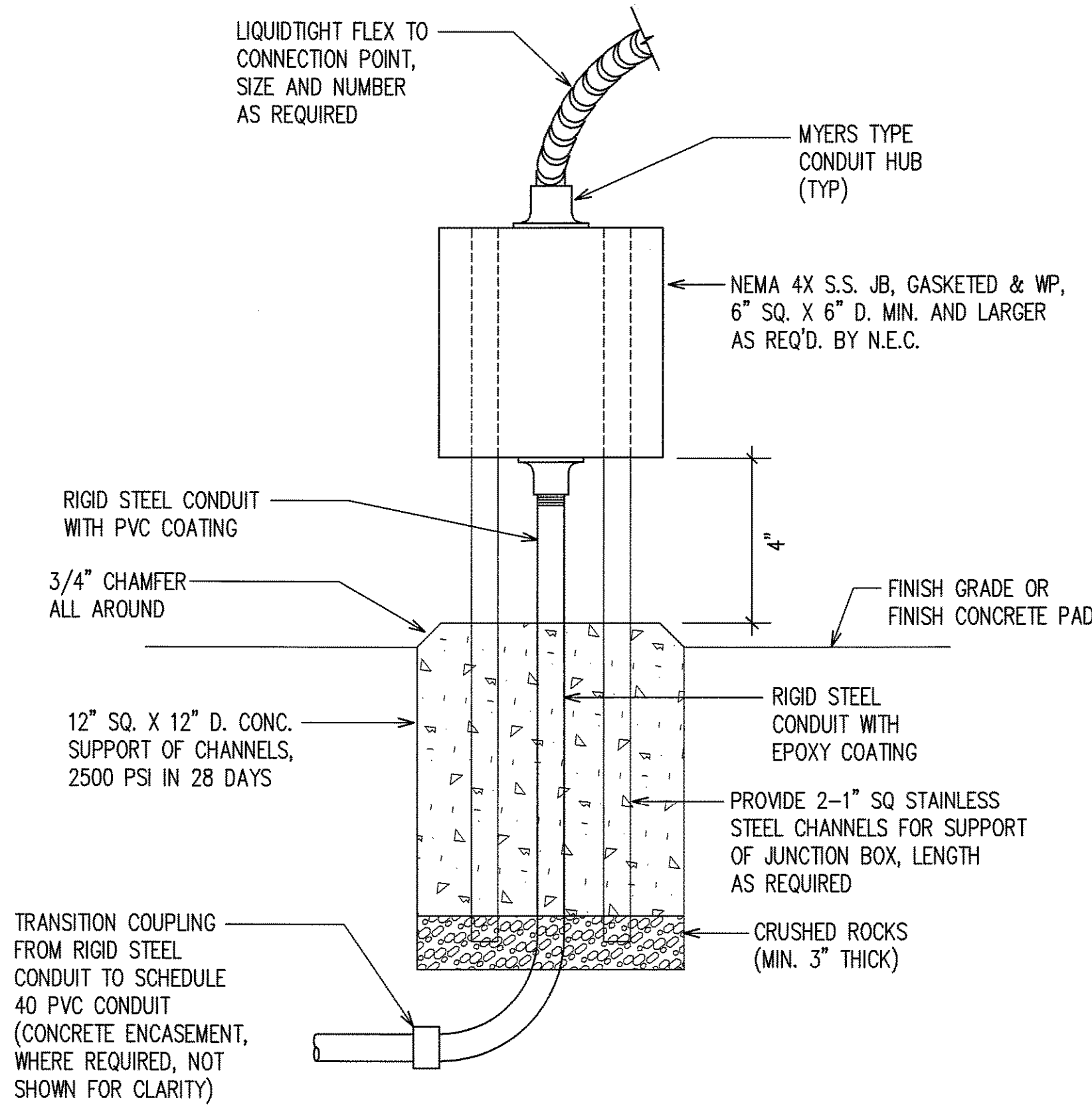
C
E-8 SOLAR-POWERED PUMP WIRING DIAGRAM
(TANK NO. 2 SITE AND BOOSTER PUMP STATION SITE)



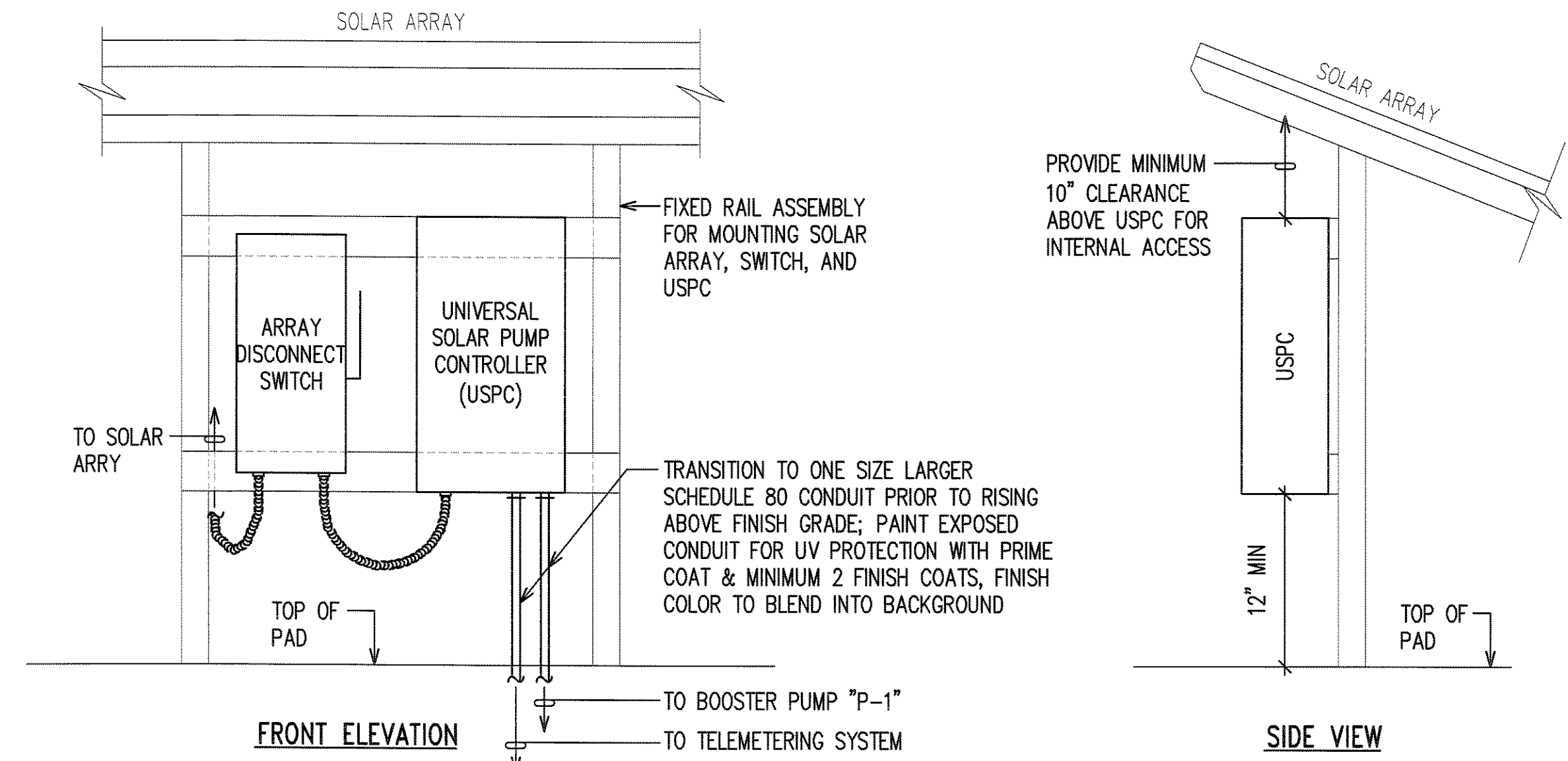
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TYPICAL INSTRUMENTATION WIRING DIAGRAMS			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			



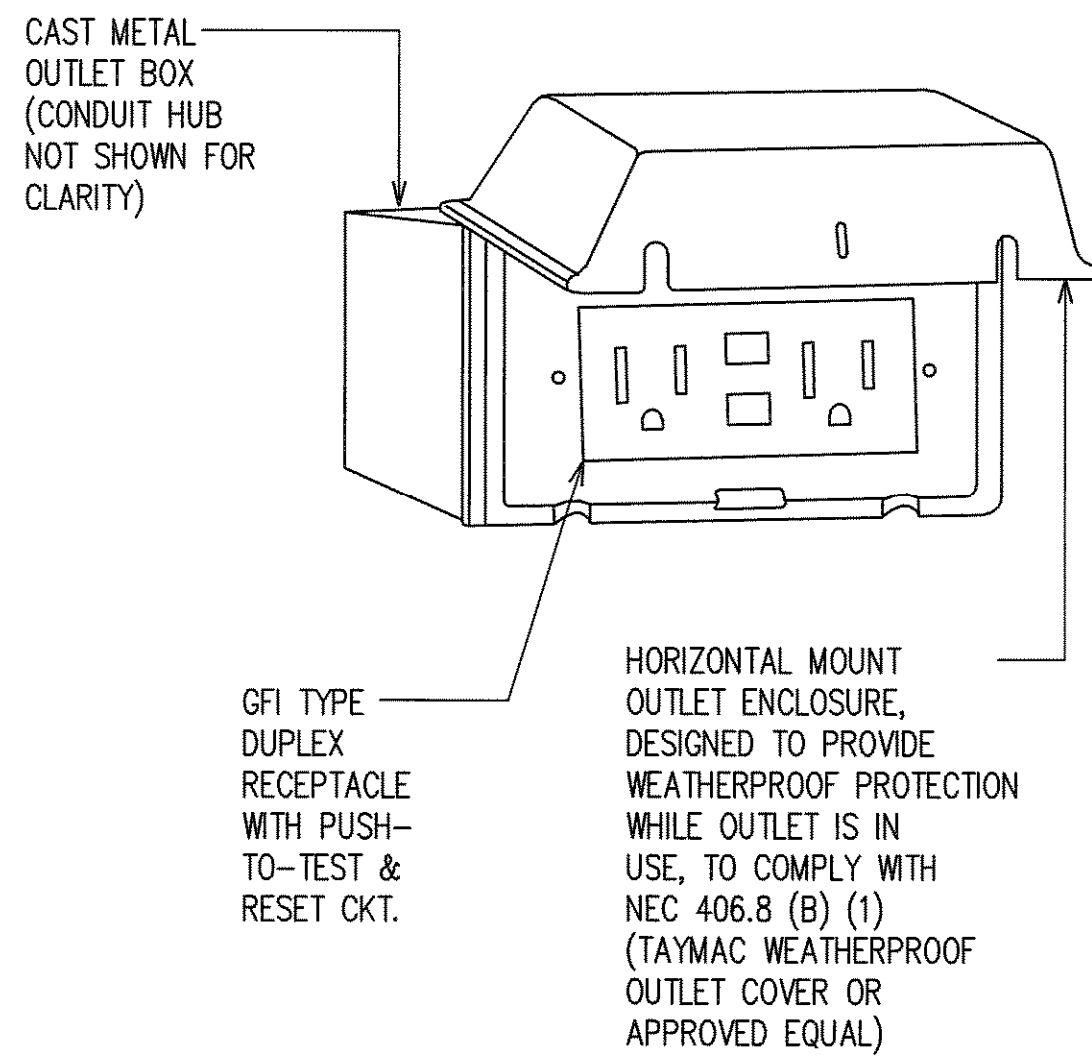
A DISCONNECT SWITCH MOUNTING DETAIL
E-9 NOT TO SCALE



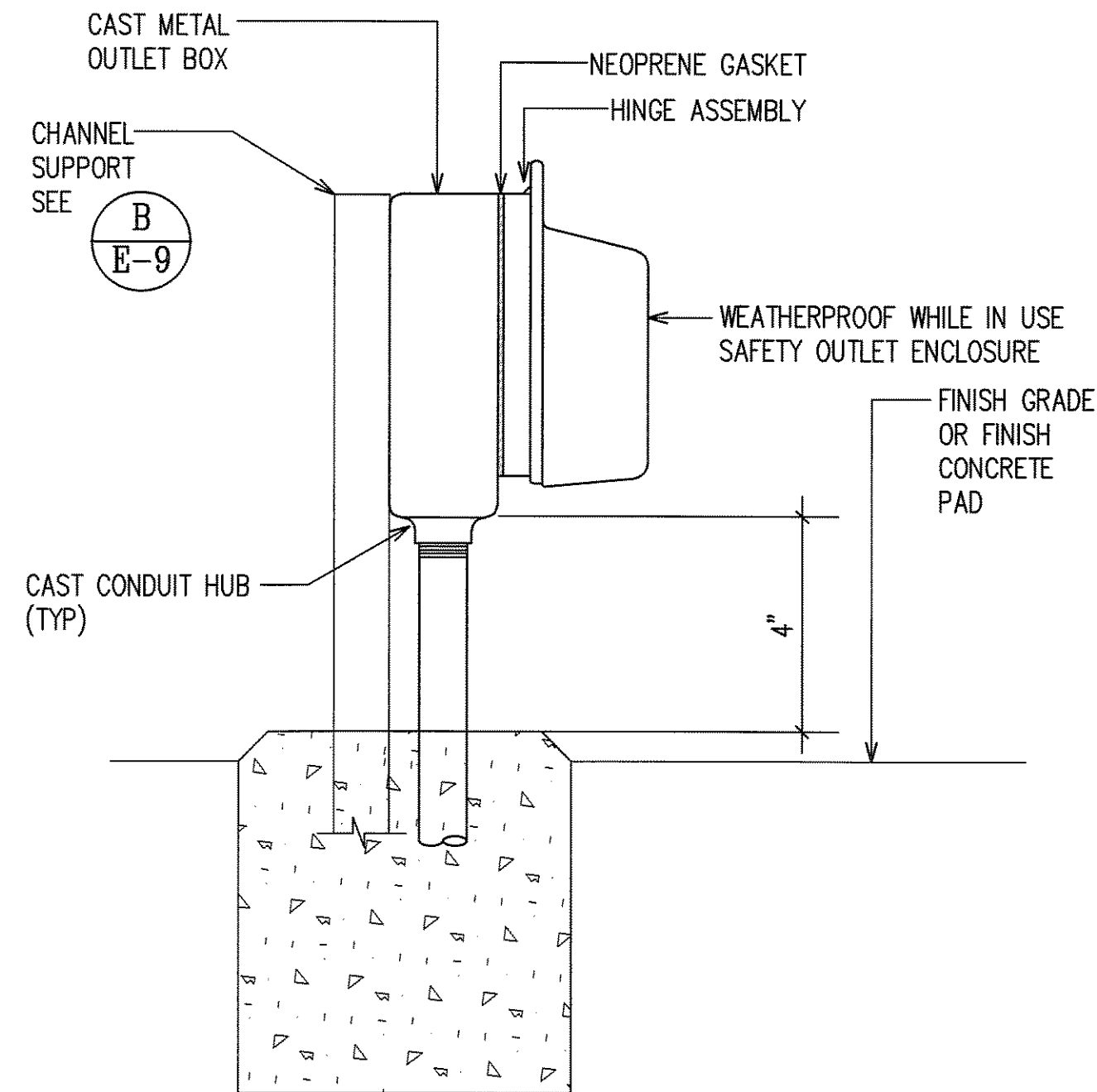
B CHANNEL SUPPORTED JUNCTION BOX DETAIL
E-9 NOT TO SCALE



C PUMP CONTROLLER AND SWITCH MOUNTING DETAIL
E-9 NOT TO SCALE



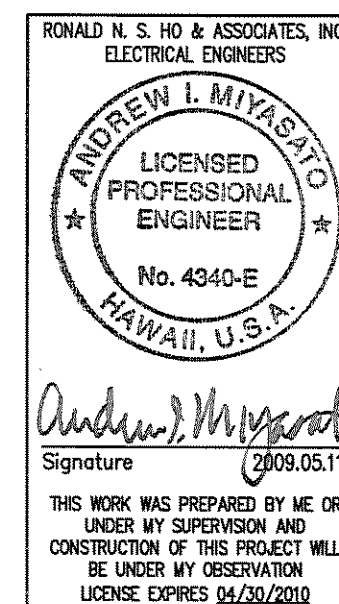
FRONT VIEW



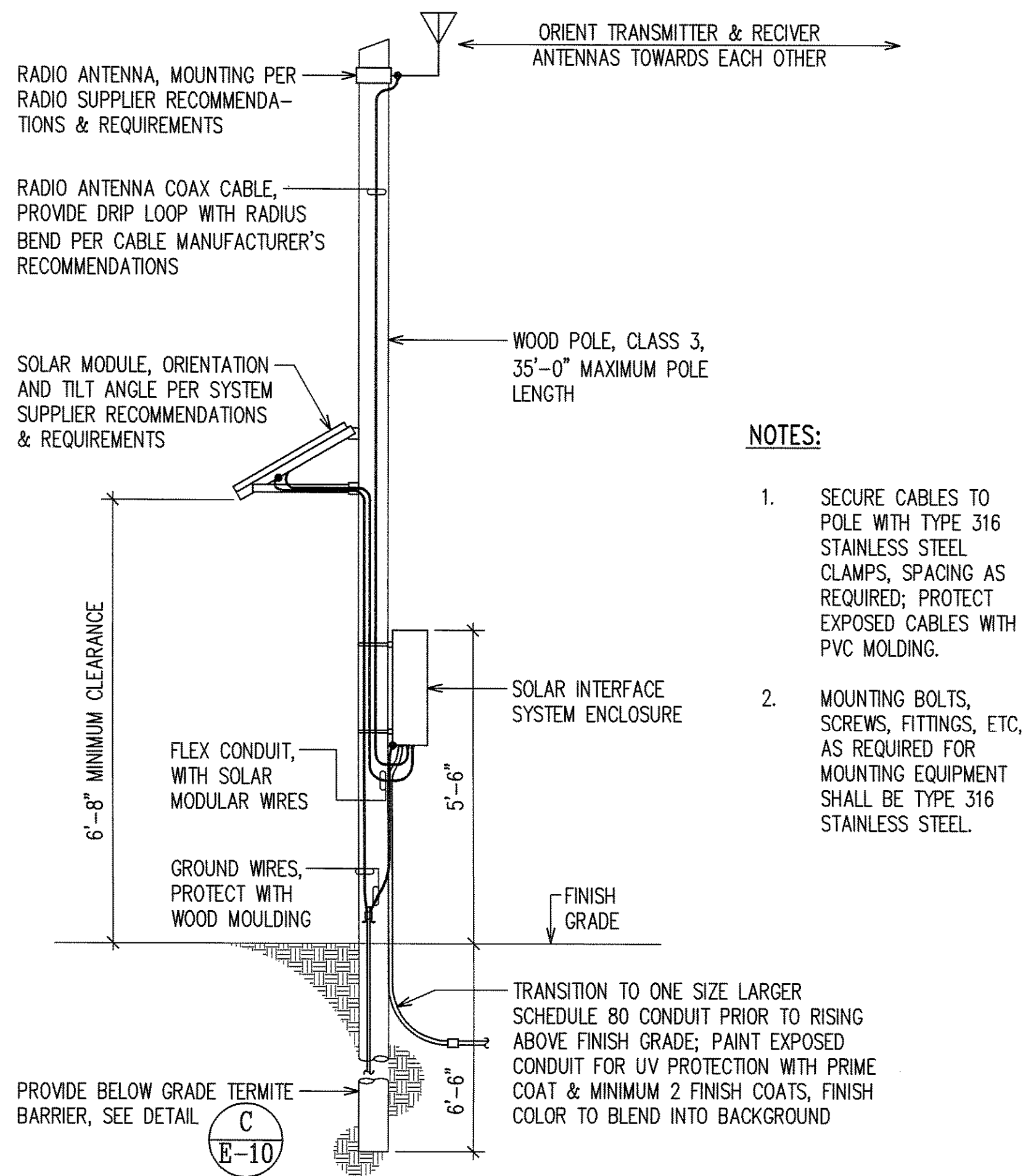
SIDE VIEW

NOTE:
1. ALL MOUNTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.

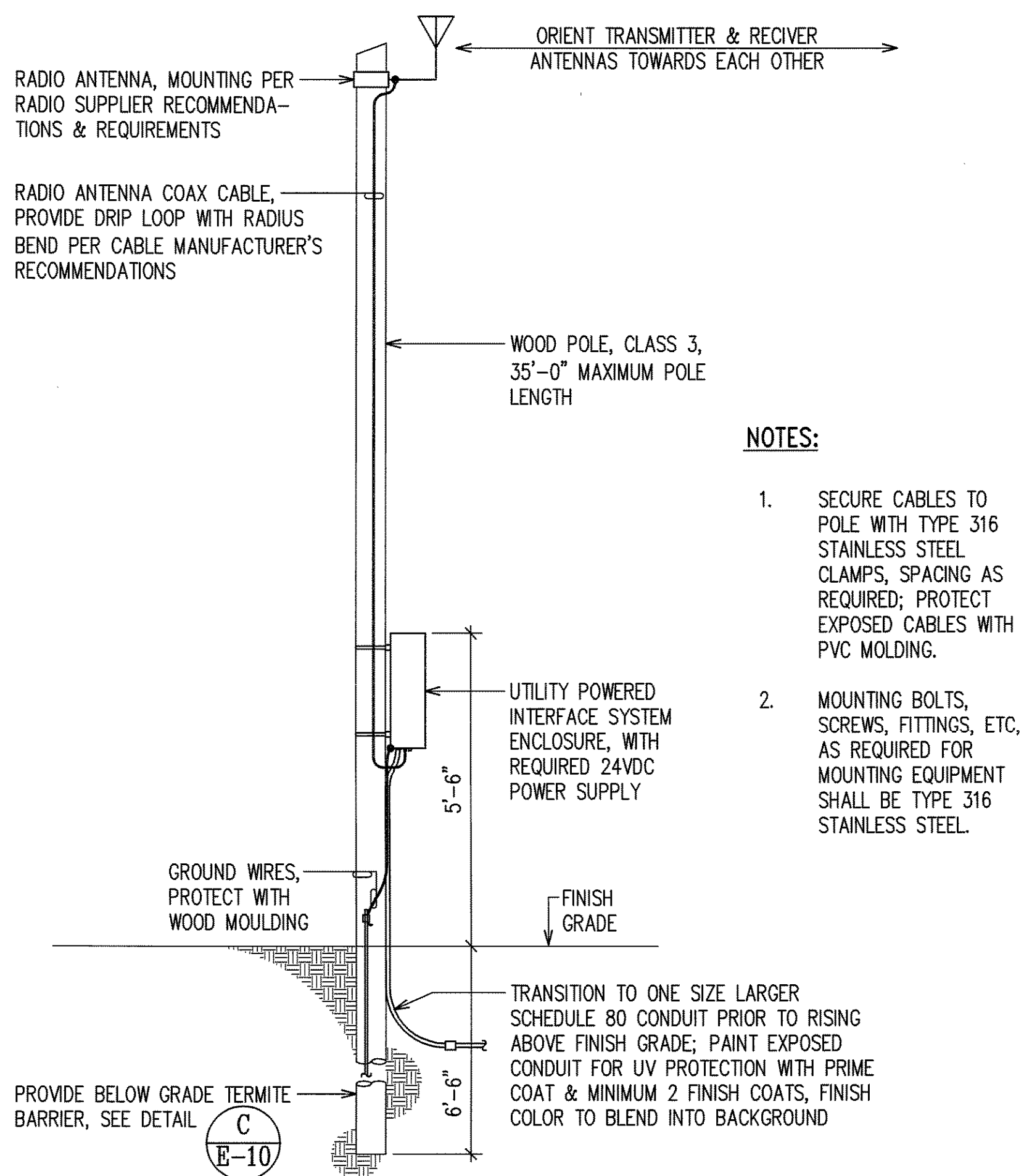
D WEATHERPROOF RECEPTACLE DETAIL
E-9 NOT TO SCALE



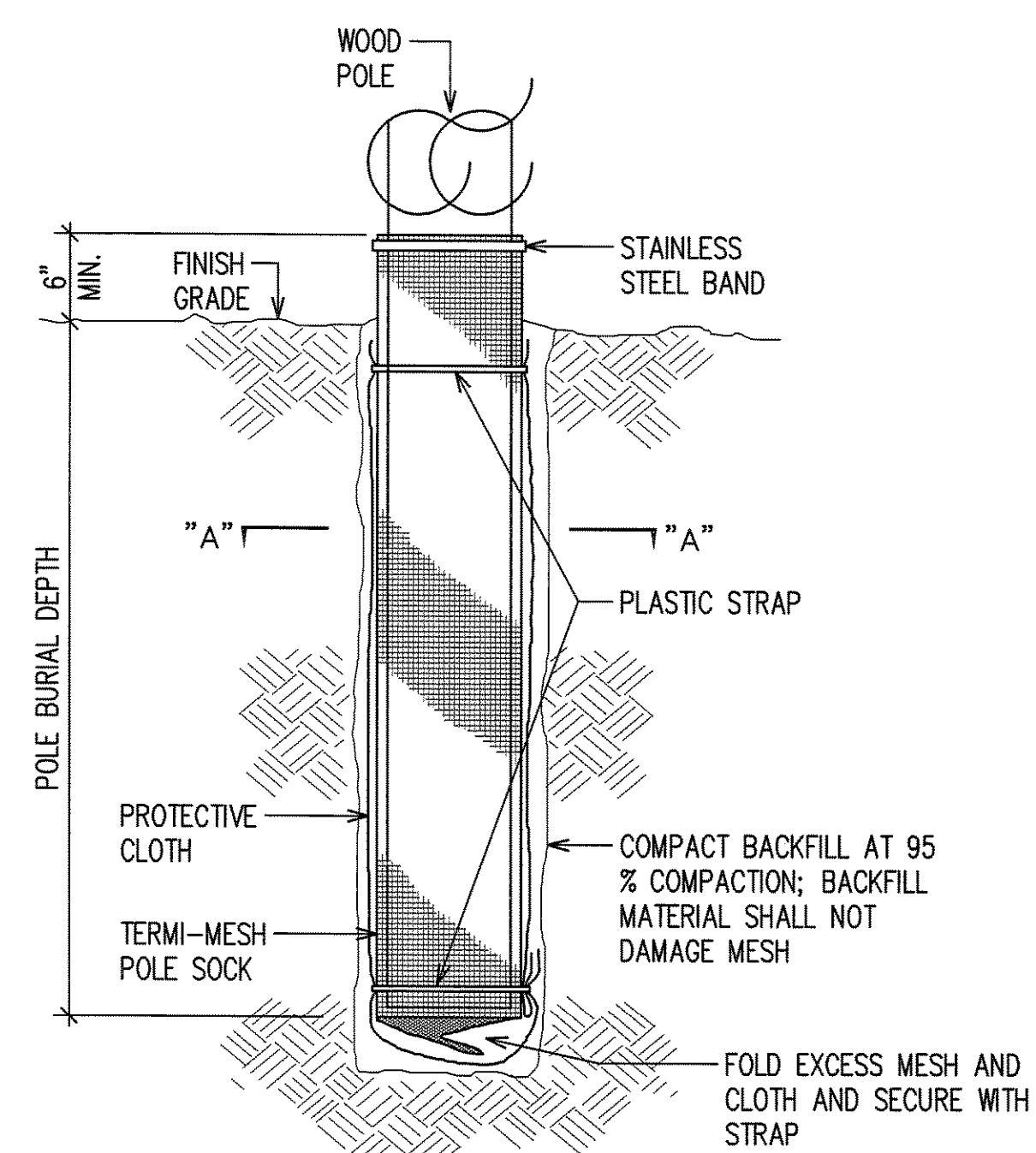
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
TYPICAL INSTRUMENTATION WIRING DIAGRAMS			
Approved: _____			
COUNTY ENGINEER, DPW, COUNTY OF HAWAII _____ DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.



A
E-10 **STAND ALONE SOLAR-POWER TELEMETERING SYSTEM MOUNTING DETAIL**
NOT TO SCALE



B
E-10 **UTILITY-POWER TELEMETERING SYSTEM MOUNTING DETAIL**
NOT TO SCALE

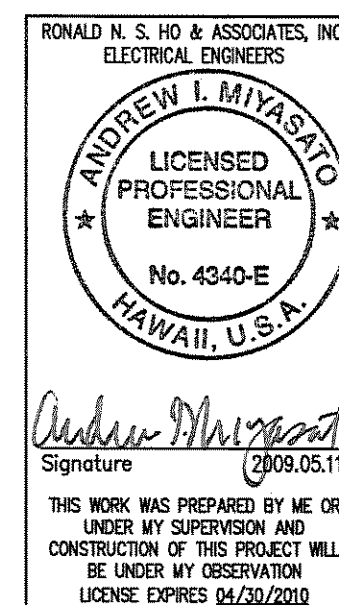


TYPICAL BARRIER INSTALLATION

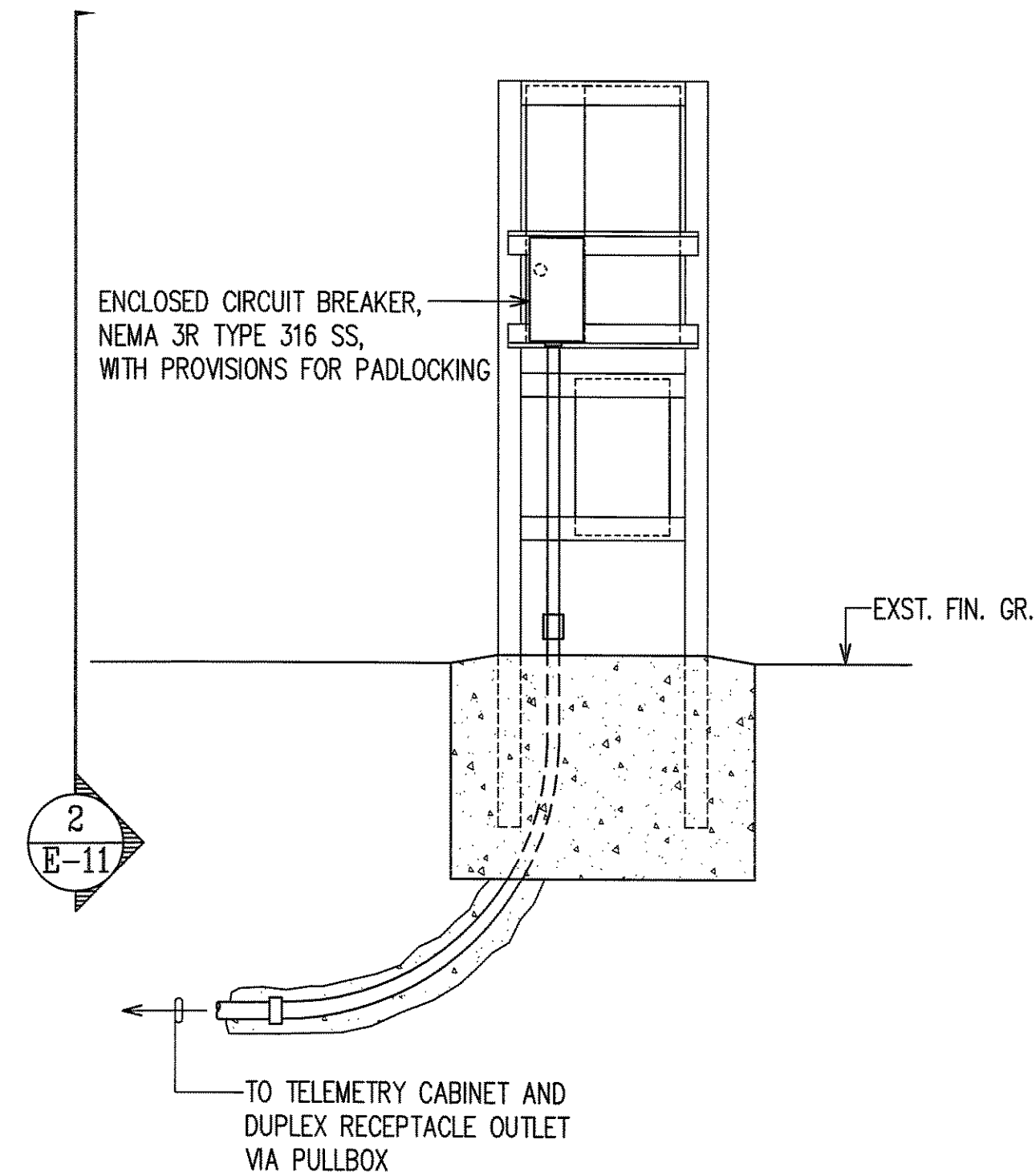
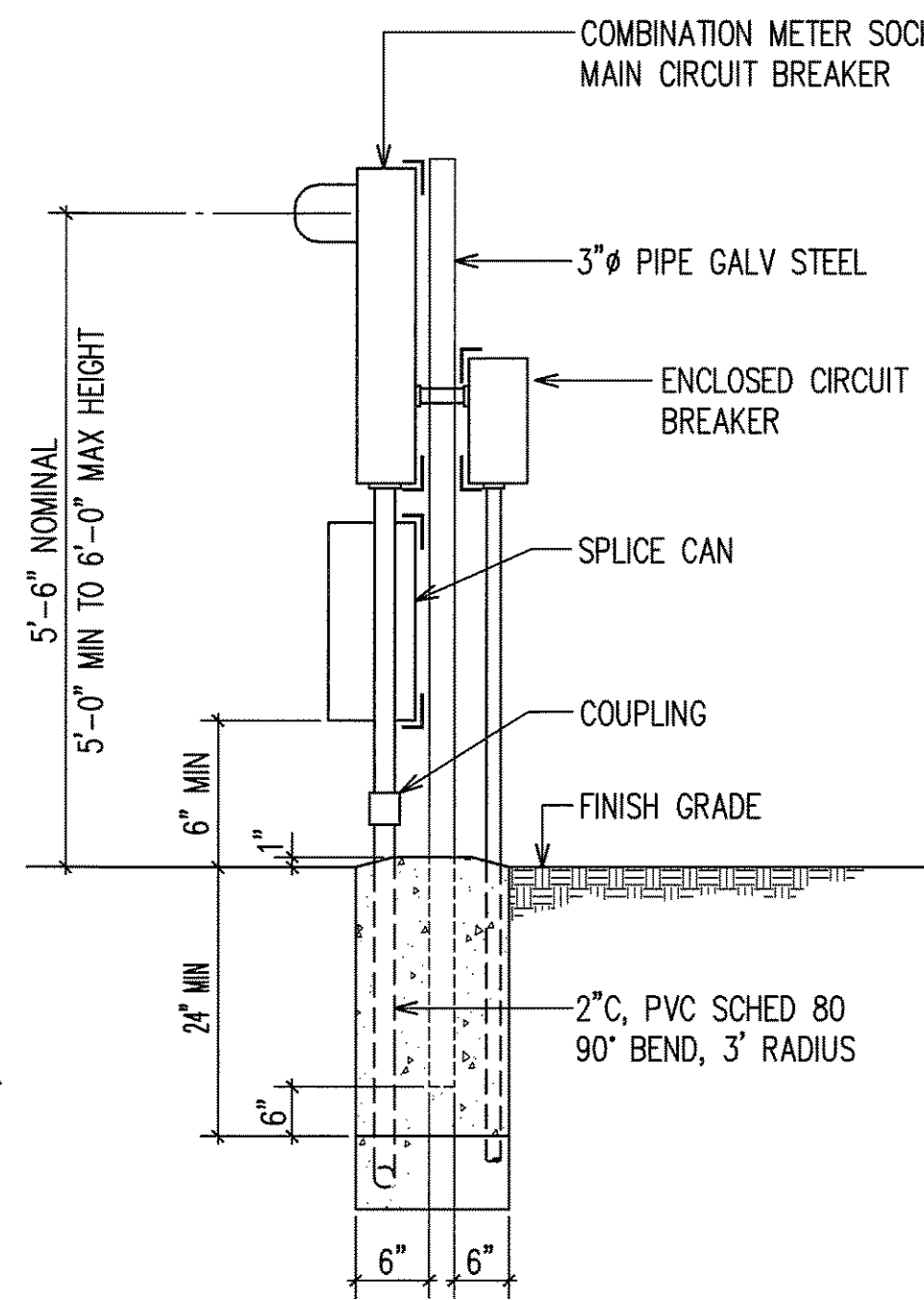
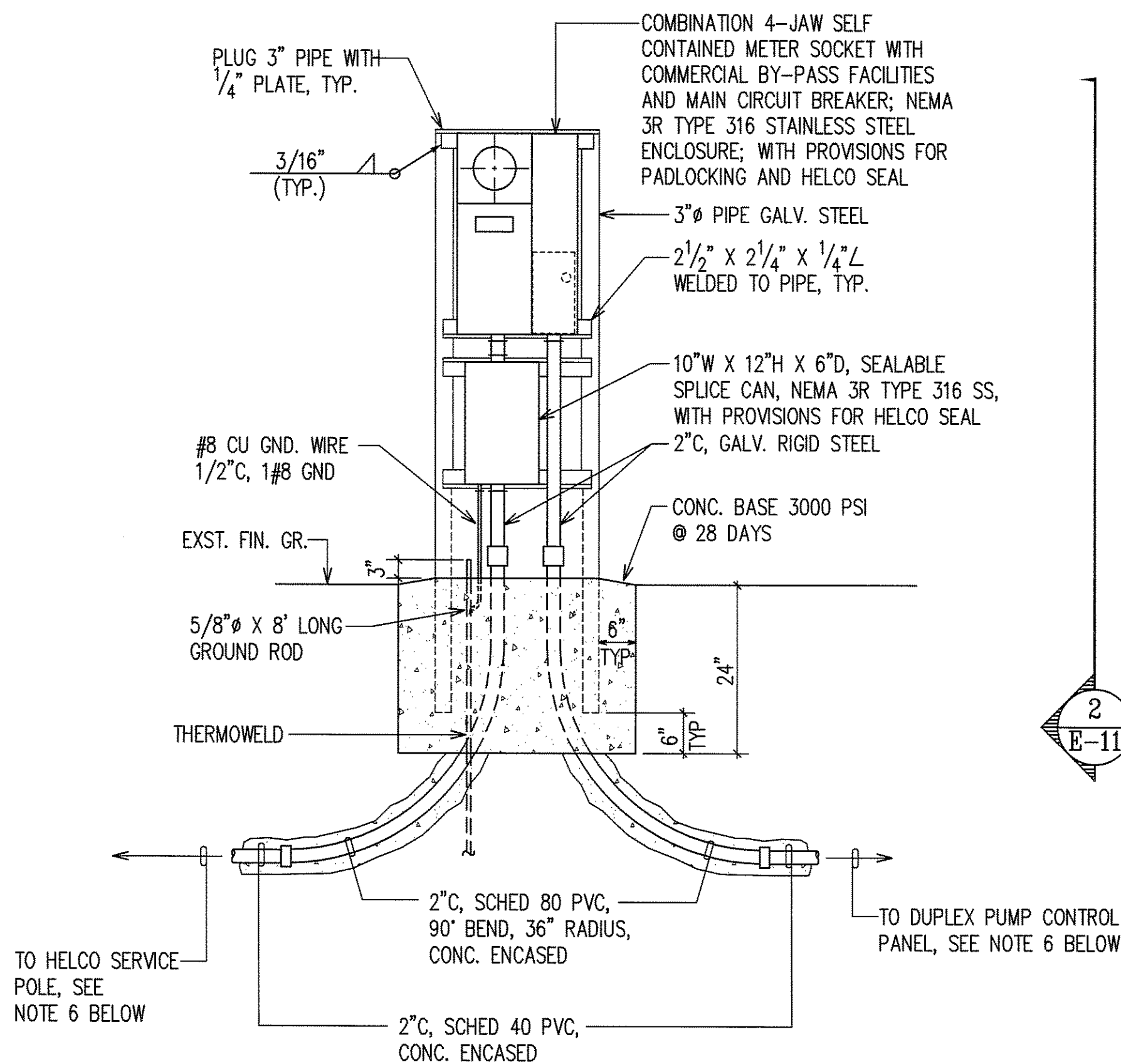
GENERAL NOTES:

1. TERMI-MESH IS A PHYSICAL BARRIER SYSTEM THAT PREVENTS GROUND TERMITES FROM ATTACKING WOOD POLES BELOW GRADE. CAREFULL INSTALLATION IS ESSENTIAL TO INSURE EFFECTIVE TERMITE PROTECTION.
2. TERMI-MESH IS A PREFORMED STAINLESS STEEL MESH SOCK THAT IS INSTALLED OVER THE BUTT OF THE POLE. THE SOCK IS TIGHTLY SECURED TO THE POLE WITH ALL EXCESS MESH FOLDED OVER TO PREVENT TERMITES FROM PENETRATING THROUGH VOIDS OR CHECKS IN THE WOOD. THE SOCK COVERS THE BUTT OF THE POLE UP TO MINIMUM 6 INCHES ABOVE GRADE TO PREVENT TERMITES FROM FORMING MUD TUNNELS OVER THE BARRIER.
3. INSTALLATION OF GROUND ROD, CONDUIT RISERS, WIRING, AND MOUNTING HARDWARE & FASTENERS SHALL NOT PENETRATE OR COMPROMISE BARRIER SYSTEM.

C
E-10 **TERMITE BARRIER INSTALLATION DETAIL**
NOT TO SCALE



REVISION DATE	DESCRIPTION	MADE BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII			
MISCELLANEOUS ELECTRICAL DETAILS II			
Approved: _____			
COUNTY ENGINEER, DPW, COUNTY OF HAWAII _____ DATE _____			
AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS			
FILE	POCKET	FOLDER	NO.

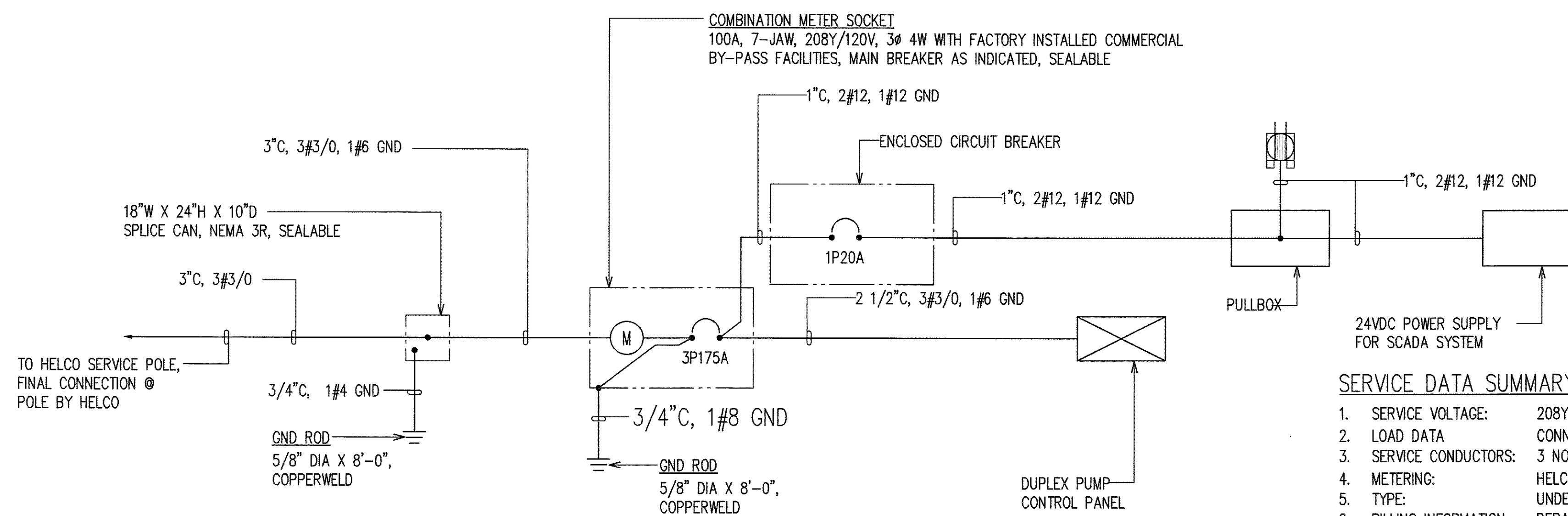


NOTES:

1. CONTRACTOR SHALL MAKE ALL ELECTRICAL CONNECTION TO DUPLEX PUMP CONTROL PANEL.
2. ALL CONDUITS TO CONTAIN A POLYOLEFIN PULL LINE. (JET LINE CAT #232 OR EQUIV).
3. PEDESTAL SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
4. ALL FASTENING BOLTS, NUTS & WASHERS SHALL BE STAINLESS STEEL. PROVIDE ONE COAT SHOP PRIMER & TWO COATS OF ACRYLIC ENAMEL FINISH, COLOR TO MATCH CONTROLLER CABINET.
5. PROVIDE 4 FT CLEARANCE IN FRONT OF METER.
6. SEE SITE PLAN FOR EXACT ORIENTATION OF CONDUIT RUNS TO HELCO SECONDARY SERVICE AND DUPLEX BOOSTER PUMP CONTROL PANEL.

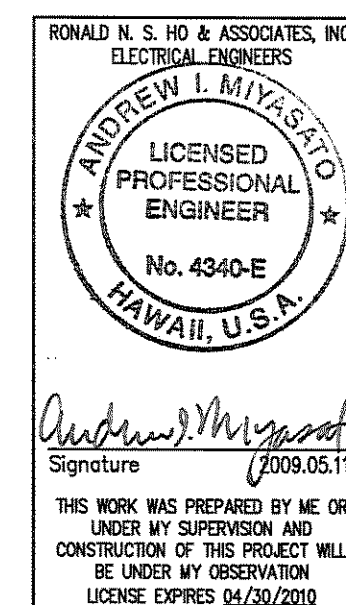
A TANK SITE NO. 1 METER INSTALLATION DETAILS

E-11 NOT TO SCALE



SERVICE DATA SUMMARY NOTES:

1. SERVICE VOLTAGE: 208Y/120V, 3-PHASE, 4-WIRE
2. LOAD DATA: CONNECTED: 25 KVA; ESTIMATED DEMAND: 24.1 KVA
3. SERVICE CONDUCTORS: 3 NO. 1
4. METERING: HELCO METER STANDARD B-8; RATE SCHEDULE "G"
5. TYPE: UNDERGROUND
6. BILLING INFORMATION: DEPARTMENT OF HAWAIIAN HOME LANDS
WEST OAHU DISTRICT OFFICE
64-756 MAMALAHOA HIGHWAY
KAMUELA HI 96743
ATTN: MR. JIM DUPONT



REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<p>DEPARTMENT OF HAWAIIAN HOME LANDS PUUKAPU HYBRID WATER SYSTEM TAX MAP KEY: (3) 6-4-01:32-38, 41-45, 51, 53 and 54 WAIMEA, SOUTH KOHALA, HAWAII</p>			
<p>TANK SITE NO. 1 ELECTRICAL SERVICE DETAILS</p>			
<p>Approved: _____ COUNTY ENGINEER, DPW, COUNTY OF HAWAII DATE: _____</p>			
<p>AKINAKA & ASSOCIATES, LTD. CONSULTING ENGINEERS</p>			
FILE	POCKET	FOLDER	NO.