HAWAII ARMY NATIONAL GUARD NATIONAL GUARD TRAINING CENTER

STATEMENT OF WORK:

THE PROJECT IS LOCATED AT THE KEAUKAHA MILITARY RESERVATION NEAR HILO, HAWAII. THE PROJECT SITE IS AT THE SOUTHEAST LIMITS OF THE MILITARY RESERVATION, APPROXIMATELY 7250 FEET ALONG PUNA TRAIL SOUTHEAST OF THE CANTONMENT AREA. THE PROJECT CONSISTS OF GRADING, DRAINAGE, AND SITE PREPARATION TO CONSTRUCT A MILITARY FACILITY CONTAINING A BAFFLED 25 METER ZERO RANGE.

LEGAL OWNER: STATE OF HAWAI'I

LESSEE/TENANT: ARMY NATIONAL GUARD, HAWAI'I



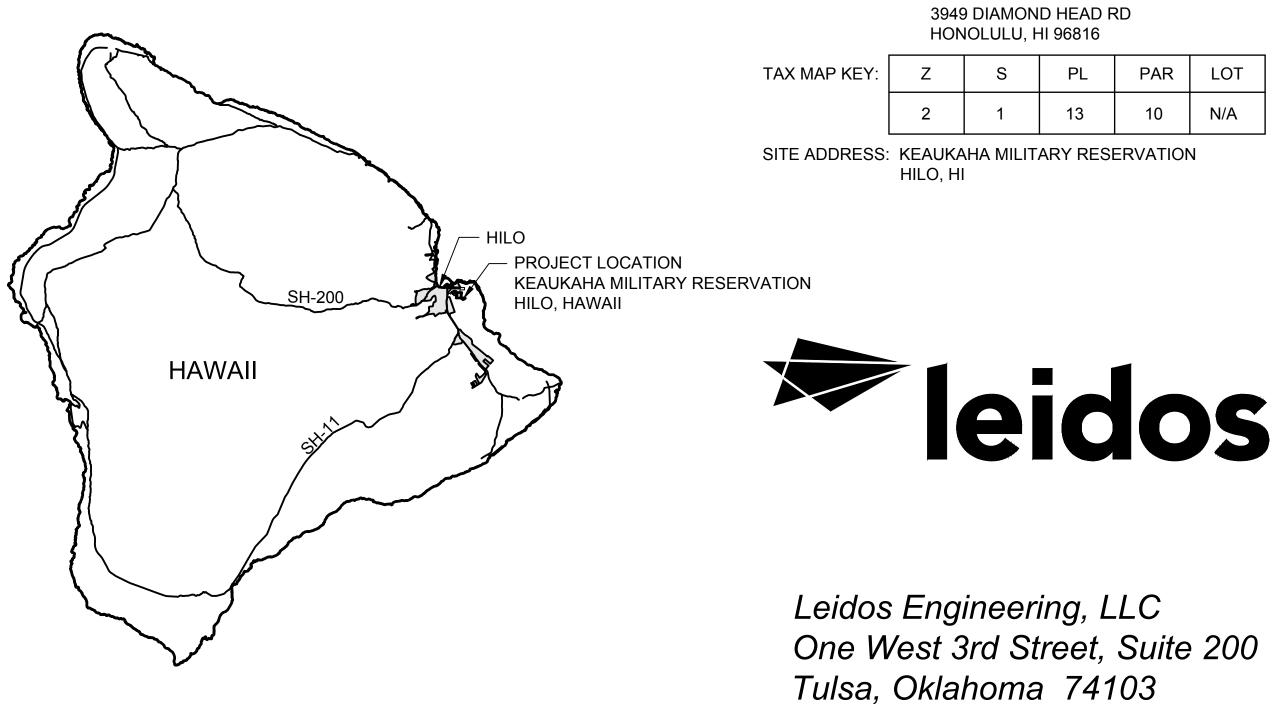
25 METER FULLY CONTAINED SDZ RANGE

KEAUKAHA MILITARY RESERVATION

HILO, HAWAII

APRIL 11, 2014

PROJECT NUMBER 15120001 STATE JOB NO. CA-1410



GENERAL NOTES:

- CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS FROM APPROPRIATE GOVERNMENT AGENCIES. BUILDING PERMIT A2014-BH00078 HAS BEEN REVIEWED AND APPROVED BY THE COUNTY OF HAWAII PENDING PICKUP AND PAYMENT OF PERMIT FEE BY THE CONTRACTOR.
- 2. CONTRACTOR SHALL PREPARE, SUBMIT, OBTAIN, AND PAY FOR NPDES PERMITS AFTER CONSTRUCTION CONTRACT HAS BEEN EXECUTED.
- 3. CONTRACTOR SHALL SECURE AND PAY FOR ON-SITE ARCHAEOLOGIST TO MONITOR SITE DURING EXCAVATION AND SHALL INCLUDE THE COST OF THE PREPARATION OF THE FINAL REPORT IN HIS BID.
- 4. ALL 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, OF THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII, AND INCLUDING SUPPLEMENTS AND AMENDMENTS MADE THERETO.
- TOPOGRAPHIC SURVEY WORK COMPLETED BY THE INDEPENDENT HAWAII SURVEYORS, LLC DATED JANUARY 22, 2013.
- 6. ALL COORDINATES AND AZIMUTHS ARE REFERRED TO GOVERMENT TRIANGULATION STATION "HALAI 2." ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL.
- 7. ALL ELEVATIONS AND DISTANCES SHOWN ON PLANS ARE IN FEET.
- 8. FOR BENCH MARK, SEE SHEET C-100.
- 9. DIMENSIONS TAKE PRECEDENCE OVER SCALE.
- 10. WORK INCIDENTAL TO THE CONTRACT AND NECESSARY TO COMPLETE THE PROJECT, ALTHOUGH NOT SPECIFICALLY REFERRED TO ON THE CONTRACT DOCUMENTS, SHALL BE FURNISHED AND PERFORMED BY THE CONTRACTOR.
- 11. ALL EXISTING UTILITY LOCATIONS SHOWN ON PLANS AND PROFILES ARE BASED ON AVAILABLE SOURCES. THE CONTRACTOR SHALL VERIFY PRIOR TO ITS CONSTRUCTION, THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, AND SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF SAME IN THE EVENT OF DAMAGE DUE TO HIS CONSTRUCTION PRACTICES. BEFORE DISRUPTING SERVICE OF ANY UTILITY, THE CONTRACTOR SHALL CONTACT AND COORDINATE ITS WORK WITH THE RESPONSIBLE UTILITY AUTHORITY.
- 12. THE CONTRACTOR AGREES THAT IT SHALL ASSUME SOLE AND COMLETE RESPONSIBILITY FOR THE JOB SITE CONDITION DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY; AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT. EXCEPTING FOR LIABILITY ARISING FORM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
- 13. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR UTILITIES SUCH AS ELECTRICITY, WATER, ETC REQUIRED FOR ITS OPERATION AND ALL COSTS SHALL BE BORNE BY THE CONTRACTOR.
- 14. THE CONTRACTOR SHALL CONDUCT ALL TESTS REQUESTED BY THE ENGINEER AND BE RESPONSIBLE FOR EXPENSES INCURRED IN CONDUCTING THESE TESTS.
- 15. IF DIMENSIONAL ERRORS OR CONFLICTS OCCUR, THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AND THE ENGINEER SHALL WAIT FOR CLARIFICATION BEFORE RESUMING OR COMMENCING WORK ON THE DISCREPANCY ITEM.
- 16. THE CONTRACTOR SHALL COORDINATE THE STORAGE OF ITS MATERIAL AND EQUIPMENT WITH THE OWNER'S REPRESENTATIVE.
- 17. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS," AND TO THE SATISFACTION OF THE ENGINEER
- 18. THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER "AS-BUILT" DRAWINGS OF ALL STRUCTURES UPON COMPLETION OR WORK.
- 19. THE CONTRACTOR SHALL PROTECT ALL EXISTING PAVEMENT FROM DAMAGE DUE TO ITS CONSTRUCTION PRACTICES. IN THE EVENT OF DAMAGE, THE CONTRACTOR SHALL CONTACT AND COORDINATE ITS WORK WITH THE RESPONSIBLE AUTHORITY.
- 20. THE ENGINEER RESERVES THE RIGHT TO MAKE CHANGES TO THE DRAINAGE SYSTEM AS SUCH CHANGES ARE FOUND TO BE NECESSARY AS THE LAND IS CLEARED AND CONSTRUCTION PROGRESSES.

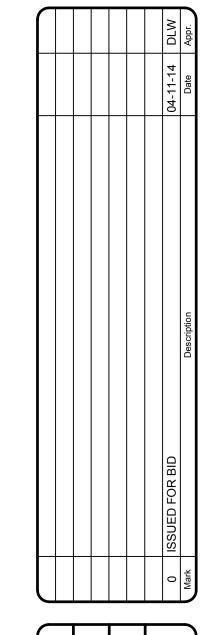
ENVIRONMENTAL COMPLIANCE CONDITIONS:

- PRIOR TO START OF RANGE ACTIVITIES, CONTRACTOR SHALL SUBMIT TO HIARNG-ENV A HAZARDOUS MATERIAL INVENTORY LOG OF CHEMICAL PRODUCTS TO BE USED IN THE PROJECT, AND PROVIDE AN UPDATE NO LATER THAN 31 JANUARY OF EACH CALENDAR YEAR. THE LOG SHALL INCLUDE THE PRODUCT NAME AND MANUFACTURER ID NUMBER, CONTAINER SIZE, AMOUNT USED, THE MAXIMUM NUMBER OF CONTAINERS TO BE STORED ON SITE AT ANY GIVEN DAY DURING THE PROJECT. MATERIAL SAFETY DATA SHEETS (MSDSs) SHALL BE PROVIDED OR MADE AVAILABLE TO THE COR AND HIARNG-ENV UPON REQUEST.
- 2. PRIOR TO START OF RANGE ACTIVITIES, CONTRACTOR SHALL PROVIDE TO HIARNG-ENV AN ESTIMATE OF THE MAXIMUM AMOUNT OF HAZARDOUS WASTE EXPECTED TO BE GENERATED PER MONTH, AND THE TOTAL AMOUNT ANTICIPATED TO BE STORED ON SITE AT ANY GIVEN TIME. ALL WASTE WILL BE STORED IN A SECURED AREA PENDING REMOVAL FOR DISPOSAL, WITH SIGNAGE INDICATING CONTACT INFORMATION AND SHALL BE MANAGED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
- CONTRACTOR SHALL PROVIDE COPIES OF ALL WASTE DISPOSAL DOCUMENTATION (INCLUDING ANY REQUIRED LAB ANALYSIS, WASTE PROFILES, AND ANY OTHER SUPPORTING DOCUMENTATION) TO THE CORE AND HIARNG-ENV, ALONG WITH DRAFT COPIES OF THE WASTE MANIFESTS FOR REVIEW PRIOR TO WASTE SHIPMENT OFF SITE FOR DISPOSAL. IF CONTRACTOR UTILIZES A HIARNG EPA ID NUMBER FOR WASTE DISPOSAL, MANIFESTS WILL ONLY BE SIGNED BY INDIVIDUALS AUTHORIZED BY HIARNG-ENV.
- HIARNG-ENV APPROVAL IS REQUIRED FOR ANY FUELING OPERATIONS BEING CONDUCTED ON SITE, WHICH WILL BE CONDUCTED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS.
- HIARNG-ENV APPROVAL IS REQUIRED FOR ANY ABOVE-GROUND STORAGE TANK STAGED ON SITE. FOR STORAGE OF OIL EXCEEDING THE EPA THRESHOLD OF 1,320 GALLONS SHELL CAPACITY OF OIL IN CONTAINERS 55 GALLONS OR GREATER CONTRACTOR IS RESPONSIBLE FOR PREPARING A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN IN ACCORDANCE WITH 40 CFR 112.
- 6. CONTRACTOR SHALL USE PROTECTIVE MEASURES, E.G., SECONDARY CONTAINMENT, SPILL KITS, ETC., FOR ON-SITE CHEMICALS, EQUIPMENT AND VEHICLES TO PREVENT SPILLS AND LEAKS INTO THE ENVIRONMENT AND ENSURE ONLY RAINWATER ENTERS ON-SITE UICs, STORM DRAINS, SWALES, STREAMS, AND OTHER PATHS TO NAVIGABLE WATERS.
- CONTRACTOR SHALL REPORT SPILLS IMMEDIATELY TO THE COR AND HIARNG-ENV. CONTRACTOR SHALL IMMEDIATELY CLEAN UP ALL SPILLS IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL GUIDELINES AND TO THE SATISFACTION OF HIARNG-ENV. CONTRACTOR SHALL MAINTAIN ADEQUATE SPILL SUPPLIES COMMENSURATE WITH THE POTENTIAL FOR SPILLS, AND WILL CONTRACT OUT SPILL CLEANUP BEYOND THEIR CAPABILITIES. CONTRACTOR SHALL ACCOMPLISH ALL REGULARTORY VERBAL AND WRITTEN NOTIFICATIONS TO THE STATE EMERGENCY RESPONSE COMMISSION, LOCAL EMERGENCY PLANNING COMMITTEE (LEPC), NATIONAL RESPONSE CENTER (NRC), ENVIRONMENTAL PROTECTION AGENCY (EPA), AS APPLICABLE, AND PROVIDE HIARNG-ENV COPIES OF ALL SPILL REPORTS.
- 8. CONTRACTOR, IN COORDINATION WITH HIARNG-ENV, IS RESPONSIBLE FOR OBTAINING ANY AND ALL REQUIRED ENVIRONMENTAL PERMITS, E.G. CONSTRUCTION RELATED SURFACE DISCHARGE PERMITS, COUNTY REQUIRED INDUSTRIAL WASTEWATER DISCHARGE PERMITS, MINOR (POLLUTION SOURCE AIR PERMITS, ETC FOR AND CONTRACT RELATED WORK.

SOLID WASTE CONSTRUCTION NOTES:

- 1. UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER HANDLING, STORAGE AND/OR DISPOSAL OF ALL WASTE GENERATED BY THIS CONSTRUCTION, INCLUDING GRUBBING AND EXCESS EXCAVATED MATERIAL ANY MATERIAL BROUGHT TO THE COUNTY LANDFILLS WILL BE SUBJECTED TO THE INSTITUTED TIPPING FEES. WITH NO EXCEPTIONS OR EXEMPTIONS.
- 2. ALL WASTES GENERATED BY CONSTRUCTION, INCLUDING GRUBBING, DEMOLITION AND EXCESS EXCAVATION MATERIAL MAY BE BROUGHT TO THE WEST HAWAII OR THE HILO LANDFILL. THE CONTRACTOR SHALL CHECK WITH THE SOLID WASTE DIVISION FOR DISCLOSURE OF THE CURRENT LANDFILL FEE AND CONSIDERATION OF THAT FEE SHALL BE INCLUDED IN THE CONTRACTOR'S BID SUM.
- 3. CONSTRUCTION. DEMOLITION AND GRUBBING MATERIAL SHALL NOT BE DEPOSITED AT ANY OF THE COUNTY TRANSFER STATIONS, BUT SHALL BE TRANSPORTED FOR DISPOSAL TO EITHER THE WEST HAWAII OR HILO LANDFILL.
- 4. ASBESTOS MATERIAL MUST BE SEPARATED, DOUBLE BAGGED AND LANDFILLED IN ACCORDANCE WITH REGULATIONS OF THE SOLID WASTE DIVISION, DEPARTMENT OF PUBLIC WORKS. INFORMATION MAY BE OBTAINED BY CALLING THE DIVISION AT (808) 961-8339 BETWEEN 7:00 A.M. AND 4:00 P.M. MONDAY THROUGH FRIDAY.





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	Leidos Engineering LLC Reviewed by: One West 3rd Street, Suite 200	Reviewed by: DLW		Drawing code:
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	74103	SAIC		2223-G-002

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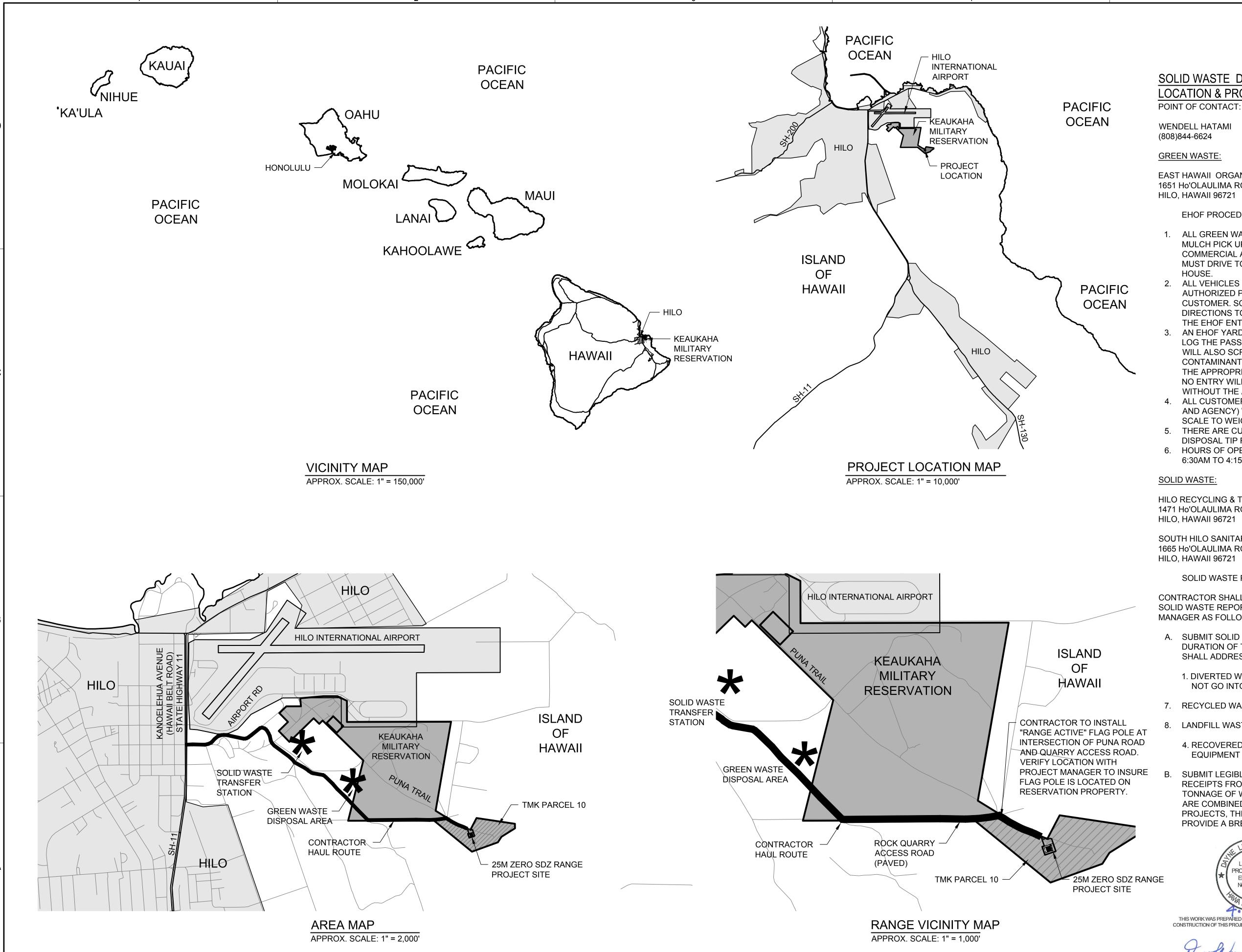
Sheet 2 of 43

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION: CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. Expiration Date of the License

LICENSED

PROFESSIONAL ENGINEER

No. 15489-C





SOLID WASTE DISPOSAL **LOCATION & PROCEDURES:**

WENDELL HATAMI

EAST HAWAII ORGANICS FACILITY (EHOF) 1651 Ho'OLAULIMA ROAD HILO, HAWAII 96721

EHOF PROCEDURES:

- 1. ALL GREEN WASTE DROP-OFF AND MULCH PICK UP CUSTOMERS (RESIDENTIAL, COMMERCIAL AND AGENCY) TO THE EHOF MUST DRIVE TO THE SORT STATION SCALE
- 2. ALL VEHICLES WILL BE WEIGHED AND AN AUTHORIZED PASS WILL BE GIVEN TO EACH CUSTOMER. SCALE ATTENDANTS WILL BE DIRECTIONS TO CUSTOMERS TO DRIVE TO THE EHOF ENTRANCE.
- 3. AN EHOF YARD MANAGER WILL RECIEVE AND LOG THE PASS FROM THE CUSTOMER. THEY WILL ALSO SCREEN ALL INCOMING LOADS FOR CONTAMINANTS AND DIRECT VEHICLES TO THE APPROPRIATE AREA WITHIN THE EHOF. NO ENTRY WILL BE GRANTED TO CUSTOMERS WITHOUT THE AUTHORIZED PASS.
- 4. ALL CUSTOMERS (RESIDENTIAL, COMMERCIAL AND AGENCY) WILL NEED TO RETURN TO THE SCALE TO WEIGH OUT.
- 5. THERE ARE CURRENTLY NO GREEN WASTE DISPOSAL TIP FEES
- 6. HOURS OF OPERATION FOR THE EHOF IS 6:30AM TO 4:15PM.

SOLID WASTE:

HILO RECYCLING & TRANSFER STATION 1471 Ho'OLAULIMA ROAD

SOUTH HILO SANITARY LANDFILL SCALEHOUSE: 1665 Ho'OLAULIMA ROAD

SOLID WASTE PROCEDURES:

CONTRACTOR SHALL BE REQUIRED TO SUBMIT SOLID WASTE REPORTS TO THE HIARNG PROJECT MANAGER AS FOLLOWS:

- A. SUBMIT SOLID WASTE REPORTS FOR THE DURATION OF THE PROJECT. THE REPORTS SHALL ADDRESS:
 - 1. DIVERTED WASTE (I.E. WASTE THAT DOES NOT GO INTO THE LANDFILL.
- 7. RECYCLED WASTE
- 8. LANDFILL WASTE
- 4. RECOVERED WASTE (I.E. FREON FROM AC **EQUIPMENT AND REFRIGERATOR.)**
- SUBMIT LEGIBLE COPIES OF DUMP TICKET RECEIPTS FROM VENDOR, SHOWING TONNAGE OF WASTE. IF WASTE PRODUCTS ARE COMBINED TOGETHER WITH OTHER PROJECTS, THE CONTRACTOR SHALL PROVIDE A BREAKDOWN PER PROJECT.



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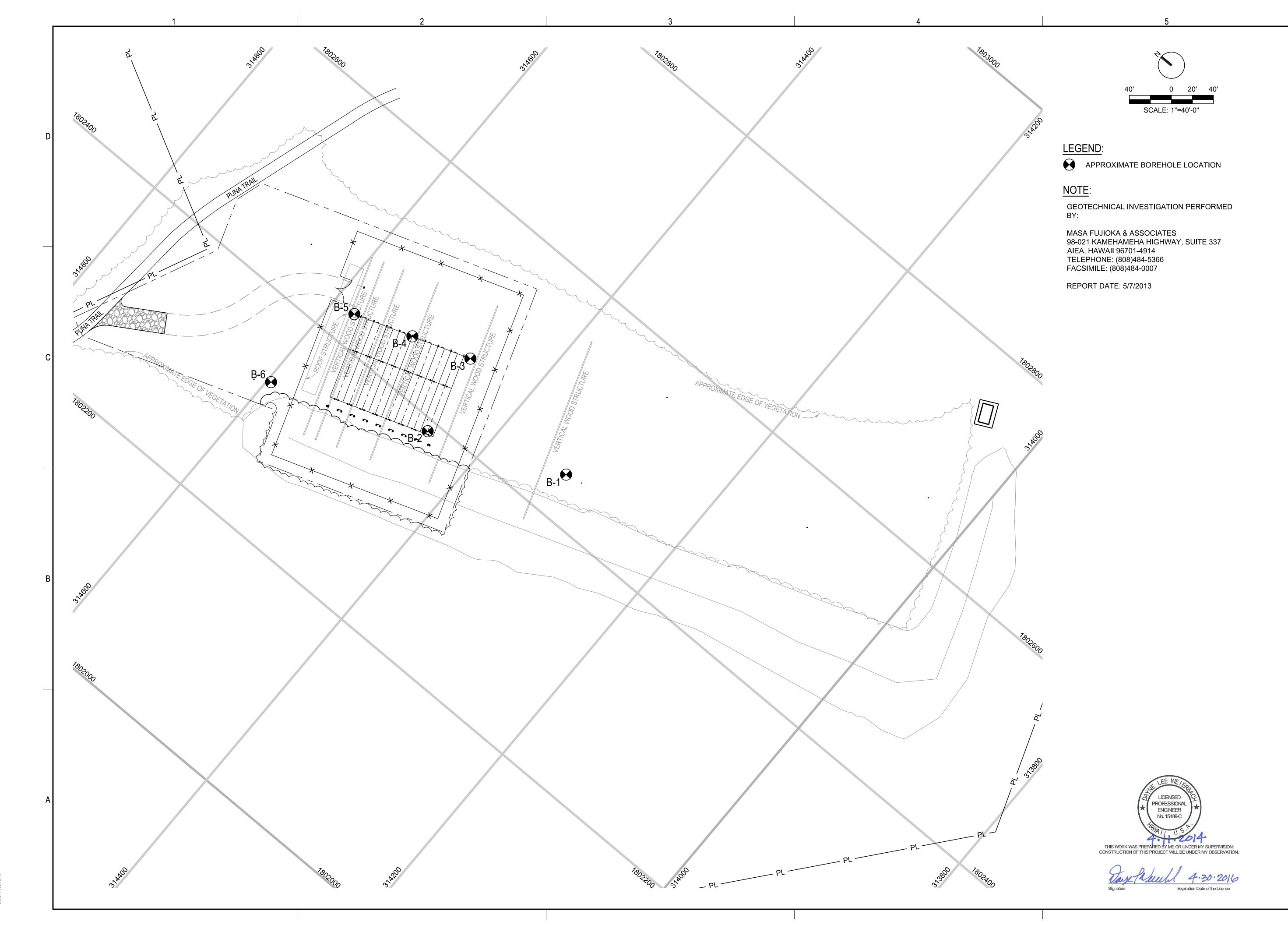


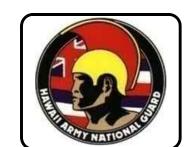
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Sheet 4 of 43

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98-0	21 Kameha	meha Hi	ghway	#337	HIARNG	Baffled Range y National Guard	Job Nur	nber: 12555-002
		awaii 96° 484-536				y National Guard), Hawaii Island	Location	n: 19° 41' 53.7"N, 155° 01' 44.4"W
Driller:	GeoTek		373			Drilling	Date: 2013	April 11
Drill Me	thod: Mobi	le B-59 l	Rig; HC	Core Pipe		Started:	1052	100
Sample	Method: 1.	5" SPT		22		Finished:	1256	
Borehol	le Diameter	: 2.5" ID) 1	Water Level : I	N/A	Logged By: ECL		Checked By: MRF
Sample #	Blows / Foot Recovery	RQD	Depth (Ft)	USCS	Mater Surface: Sho	ial Description		Test Results
B1-1	62%	35%	4 - 6 - 10-	SP Rx	(3"), mois: Highly we moist, sm Becomes large vesi Becomes Becomes Becomes	athered, dk grey basa all vesicles moderately hard, colo cles and some olivine moderately weathered slightly weathered, ha	ult, very soft, ors to lt grey w crystals	

02 , 155° 01' 44.9"W
155° 01' 44.9"W
RF
esults

Mas 98	-021 K	amehar Aiea, Ha	neha H	lighway‡ 3701	ciates #337	HIARNG Hawaii Arm	r ing: B-3 Baffled Range y National Guard , Hawaii Island		Figure: Job Nu Locatio	mber:	12555-002 241' 55.2"N, 155° 01' 43.9"V
Drille	r: Geo	200	404-55	00		11.000 to 2000 on	Drilling	D	ate: 201		The Control of the Co
Drill P	/lethoc	l: Mobil	e B-59	Rig; HQ	Core Pipe		Started:	1452	2	70	
Samp	le Met	hod:		100	707		Finished:	1545	5		
Borel	nole Di	ameter	: 2.5" II	D W	Vater Level :	N/A	Logged By: ECL			Chec	ked By: MRF
Sample #	Blows / Foot	Recovery	RQD	Depth (Ft)	USCS	Mater Surface: Sho	ial Description rt grass				Test Results
		90%	74%	0		Dk brn silt Dk grey be slightly we Grades fe weathered	y clayey sand w/ gra asalt, hard, many sm athered, w/ olivine wer, larger vesicles,	all ve	sicles,	ss	
		100%	87%	8 —	***	Colors dk	grey				
				- 10—	zz		reddish grey on fract minated 10' bgs	ure p	lanes		
				- - 12— - - -		No ground	lwater encountered				

Mas 98-	021 Ka	amehar liea, Ha	(A & meha H awaii 96 484-53	lighway 3701	sociates /#337	HIARNG Hawaii Arm	oring: B-4 Baffled Range ny National Guard o, Hawaii Island	Figure: Job Nun Location	nber:	12555-002 ° 41' 56.0"N, 155° 01' 44.5"V
Driller	: Geo1	Гек					Drilling	Date: 2013	April	12
Drill M	ethod	: Mobil	e B- 59	Rig; H	Q Core Pipe		Started:	705		
Sampl	e Meti	nod: Sl	novel	3-4	***		Finished:	0821		
Boreh	ole Di	ameter	: 2.5" II	D	Water Level : N	I/A	Logged By: ECL		Chec	cked By: MRF
Sample #	Blows / Foot	Recovery	RQD	Depth (Ft)	USCS	Mater	rial Description ort grass			Test Results
B-4		79%	100%	0 Panal und encountered 2 4 6 8 8 10 12	GW RX	Well grades room Med. grey olivine crystal Grades has grey Grades de Grades	led basalt gravel w/ dk its y basalt w/ many small ystals, slightly weather ard, fewer, larger vesic	vesicles and ed, soft		Gradation

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Ma 98	sa F 8-021 K	Aiea, H	Ka & meha H awaii 9 484-53	6701	ociates #337	HIARNG Hawaii Arm	ring: B-5 Baffled Range by National Guard b, Hawaii Island		Figure: Job Num Location	nber:	12555-002 41' 56.1"N, 155° 01' 44.	6"W
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Drill	Method	d: Mobi	le B-59	Rig; H	Q Core Pipe		Started:	083	02-5	· 10 20 20 20 20 20 20 20 20 20 20 20 20 20		
	ple Met			□ □ □	3		Finished:	092	2			
Bore	hole Di	iameter	r: 2.5" I	D 1	Water Level :	N/A	Logged By: EC	:L	1	Check	ed By: MRF	
Sample #	Blows / Foot	Recovery	RQD	Depth (Ft)		Mater	ial Description		'		Test Results	
(i)	ă	Œ			USCS	Surface: Sho	rt grass					
				VT not encountered	Rx	small vesi Grades sl	v basalt, moderatel; icles, dk brn colorir ightly weathered w vstals, colors lt grey	ng v/ few w		y		
		80%	73%	© 2 - 4 -		Grades de	enser (fewer, large	r vesicl	les)			
						Grades de	enser					
		1000/		6 -		Colors bro	ownish rust on frac	ture fac	ces			
		100%	100%	8 -	- 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2							
				10-			minated 10' bgs dwater encountere	d				
				12-								
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Masa I 98-021	Aiea, H	Ka & meha H awaii 96 484-536	701	ociates #337	HIARNG Hawaii Arm	ring: B-6 Baffled Range y National Guard o, Hawaii Island	Figure: Job Nur Location	nber:	12555-002 9° 41' 56.5"N, 155° 01' 45.4"V
Driller: Ge	200000000000000000000000000000000000000					Drilling	Date: 2013	April	12
Drill Metho	d: Mobi	le B-59	Rig; HC	Core Pipe		Started: 09	930		
Sample Me	thod:					Finished: 10	010		
Borehole [Diameter	: 2.5" II	ט ע	Vater Level : I	N/A	Logged By: ECL		Che	cked By: MRF
Sample # Blows / Foot	Recovery	RQD	Depth (Ft)	USCS	Mater Surface: Sho	ial Description rt grass			Test Results
	100%	73%	4 - 4 - 10- 12-	Rx	brn rust in hard Becomes olivine cry Grades de less weath Grades de	enser (fewer, large vesi hered, colors It grey enser	vesicles, med d, w/ few		



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	Checked by:	XXX				
Date: 04-11-2014	Design file no.	255223000	Drawing code:		File name:	2223-B-151

KEAUKAHA MILITARY RESERVATION 25 METER FULLY CONTAINED SDZ RANGE BORING LOGS SHEET

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B-151 Sheet 5 of 43

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GENERAL NOTE

CIVIL LEGEND F.G. **FINISH GRADE EXISTING** NEW **EXISTING** PERIM. PERIMETER @ FDN AREA INLET FOUNDATION A.I. PC POINT OF CURVATURE — 1016 — — 1016 **—** INDEX CONTOUR **FES** AB **ANCHOR BOLT** FLARED END SECTION PCC POINT OF CONCENTRIC CIRCLE FF ABV AB0VE FINISH FLOOR POINT OF INTERSECTION FΗ ACC ACCESS FIRE HYDRANT POB POINT OF BEGINNING CONTOUR ADAREA DRAIN FL FLOW LINE POE POINT OF ENDING FΜ ADJ **ADJACENT** FRUITLESS MULBERRY PT POINT OF TANGENCY 1016.25 **SPOT ELEVATION** AGGREGATE FLR AGG FLOOR **PROJ** PROJECT FT. FEET ALUMINUM AL, ALUM. PRV PRESSURE REGULATING VALVE FTG. ALTERNATE FOOTING PSF ALT POUNDS PER SQUARE FOOT DIRECTION OF DRAINAGE $\bigcirc \mathsf{FP}$ **APPROX APPROXIMATE** PSI POUNDS PER SQUARE INCH **ASPH** ASPHALT PVC POLYVINYL-CHLORIDE STORM DRAIN AUTO **AUTOMATIC PVMT PAVEMENT** G AVG **AVERAGE** ROOF DRAIN Q GAS OR GUTTER GND or GRND QΤ **QUARRY TILE** GROUND — DSD— DOWNSPOUT DRAIN **GOVT** QTY SURFACE **GOVERNMENT** QUANTITY B.M. **BENCH MARK** GP **GUARDPOST (BOLLARD) BOUNDARY** BNDY GPM **GALLONS PER MINUTE** WATER LINE **BITUMINOUS** BIT GR GRADE / GRANITE BASELINE BL **RIGHT OF WAY** R/W CONCRETE **GRTG** GRATING **ABANDONED** BLD. BUILDING RAD or R RADIUS GT GROUT WATER LINE BLK BLOCK **RCB** REINFORCED CONCRETE BOX RIPRAP BOTTOM BOTT. RCP REINFORCED CONCRETE PIPE FIRE LINE BRG BEARING RD or R.D. ROOF DRAIN or ROAD PROPOSED STRUCTURE H.PT. **HIGH POINT** REF REFERENCE NATURAL GAS LINE **REINF** HB HOSE BIB REINFORCEMENT HC HANDICAPPED REQ'D REQUIRED CND CONDUIT **ABANDONED HDRL** RET HANDRAIL **RETAINING** CAST IN PLACE C.I.P **GAS LINE** HORIZ. HORIZONTAL RND ROUND C.J. CONSTRUCTION JOINT HP **HORSEPOWER** PERMANENT COLLECTION RO **ROUGH OPENING** C.O. CLEANOUT SANITARY SEWER PCC-XX CHANNEL NUMBER XX HR HOUR ROP **ROCK OUTLET PROTECTION** C.R.L. CONSTRUCTION REFERENCE LINE HT **HEIGHT** CB CATCH BASIN ABANDONED PDC-XX HW HOT WATER CC or C to C CENTER TO CENTER SAN SEWER LINE SOUTH **CHDPE** CORR. HIGH DENSITY POLYETHYLENE PERMANENT SILT TRAP **SAW JOINT** S.J. PST-XX CIGP CAST IRON GUTTER PLATE **ELECTRIC** NUMBER XX SCHED **SCHEDULE** CIRCLE CIR I.D. INSIDE DIAMETER STORM DRAIN SD RIPRAP INFLOW CJ CONTROL JOINT IN INCH (RRIP-XX SDS **SUB DRAIN** LIMITS OF CLEARING CL CENTER LINE **INCL** INCLUDE **SECT** SECTION CMP CORRUGATED METAL PIPE INFO INFORMATION SCE-XX LIMITS OF CONSTRUCTION/ SHEET SHT CMU **CONCRETE MASONRY UNITS** INV. INVERT or INVERTER ENTRANCE NUMBER XX LIMITS OF DISTURBANCE SIMILAR SIM COL COLUMN **SPEC SPECIFICATIONS** COMP COMPRESSIBLE SF-XX WATER METER SPD STANDARD PROCTOR DENSITY CONC. CONCRETE JCT JUNCTION SQ SQUARE CONT CONTINUOUS **ROOF DRAIN OUTLET** RDO-XX JT JOINT SQ.FT. **SQUARE FEET** COR CORNER **COMMUNICATION MANHOLE** NUMBER XX **SANITARY SEWER** SS CSMT CASEMENT ST STREET RD-XX CTR CENTER STA **STATION ELECTRIC MANHOLE** CUBIC CU LBS. POUNDS STD **STANDARD** CULV. CULVERT LF LINEAL FEET **→** XXX STL **STEEL** NUMBER XX CW **COLD WATER** LG LENGTH (SS)SANITARY SEWER MANHOLE STR **STRUCTURE** CY CUBIC YARD LIN LINEAR LONG. LONGITUDINAL LP LOW POINT or LIGHT POLE DMH STORM DRAINAGE MANHOLE TAN. **TANGENT** D LT.WT LIGHT WEIGHT TC **TOP OF CURB** LTG LIGHTING DATUM TEL **TELEPHONE AREA INLET** M DBL DOUBLE **TEMP TEMPERATURE** DEG DEGREE TG TOP OF GRATE MAXIMUM MAX FIRE HYDRANT W/VALVE & BOX DEMO **DEMOLISH / DEMOLITION THRU** THROUGH MECH. **MECHANICAL** DET DETAIL TOC TOP OF CONCRETE MET. METAL DOMESTIC HOT WATER DHW **TOPO TOPOGRAPHY MFGR** MANUFACTURER VALVE AND VALVE BOX DIAMETER DIA TOS TOP OF STEEL MH **MANHOLE** DIM DIMENSION TP TOP OF PAVEMENT MIN MINIMUM DIP DUCTILE IRON PIPE TR TOP OF RIM **BORE HOLE** MJ **MECHANICAL JOINT** DN. DOWN TYP **TYPICAL** MPD MODIFIED PROCTOR DENSITY DR DOOR MPH MILES PER HOUR POST INDICATOR VALVE DTL DETAIL UNO **UNLESS NOTED OTHERWISE** DWG DRAWING UT UTILITY **DWLS DOWELS** NORTH TEMPORARY BENCHMARK NORMALLY CLOSED N.C. N.O. NORMALLY OPEN V.C. **VERTICAL CURVE CONTROL POINT** N.R. **EAST** NOT REQUIRED **VERT VERTICAL** NO. E.W. **EACH WAY** NUMBER EΑ EACH \circ CO \circ CO CLEANOUT O EJ **EXPANSION JOINT** EL or ELEV. **ELEVATION** WITH OC ON CENTER ELEC. ELECTRIC or ELECTRICAL ¤ LP LIGHT POLE W/O **WITHOUT OCEW** ON CENTER EACH WAY ENCL. **ENCLOSURE** WP WEATHERPROOF OD **OUTSIDE DIAMETER EQUIP EQUIPMENT** WT **OPNG** WEIGHT OPENING PP PP **POWER POLE** EST **ESTIMATE** WWF OPP WELDED WIRE FABRIC OPPOSITE EW **EACH WAY** ORD OVERFLOW ROOF DRAIN EXC **EXCAVATE** OZ. OUNCES **EXTERIOR SIGN EXIST EXISTING** EXT **EXTERIOR** TRANSFORMER XFMR **BOLLARD** YD YARD

NEW	
— c <u>—</u>	BURIED COMMUNICATIONS
	FLARED END SECTION
	HEADWALL
○ FP	FLAG POLE
\boxtimes	ELEC. TRANSFORMER

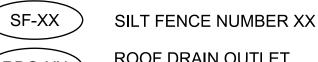
12" AGGREGATE

8" AGGREGATE SURFACE

ROCK OUTLET PROTECTION OR RIPRAP INLET PROTECTION

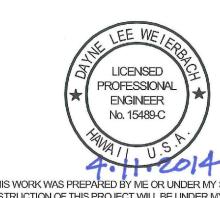
PERMANENT DIVERSION **CHANNEL NUMBER XX**

PROTECTION NUMBER XX STABILIZED CONSTRUCTION



ROOF DRAIN NUMBER XX

COORDINATE POINT



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



Sheet reference number: C-001 Sheet 6 of 43

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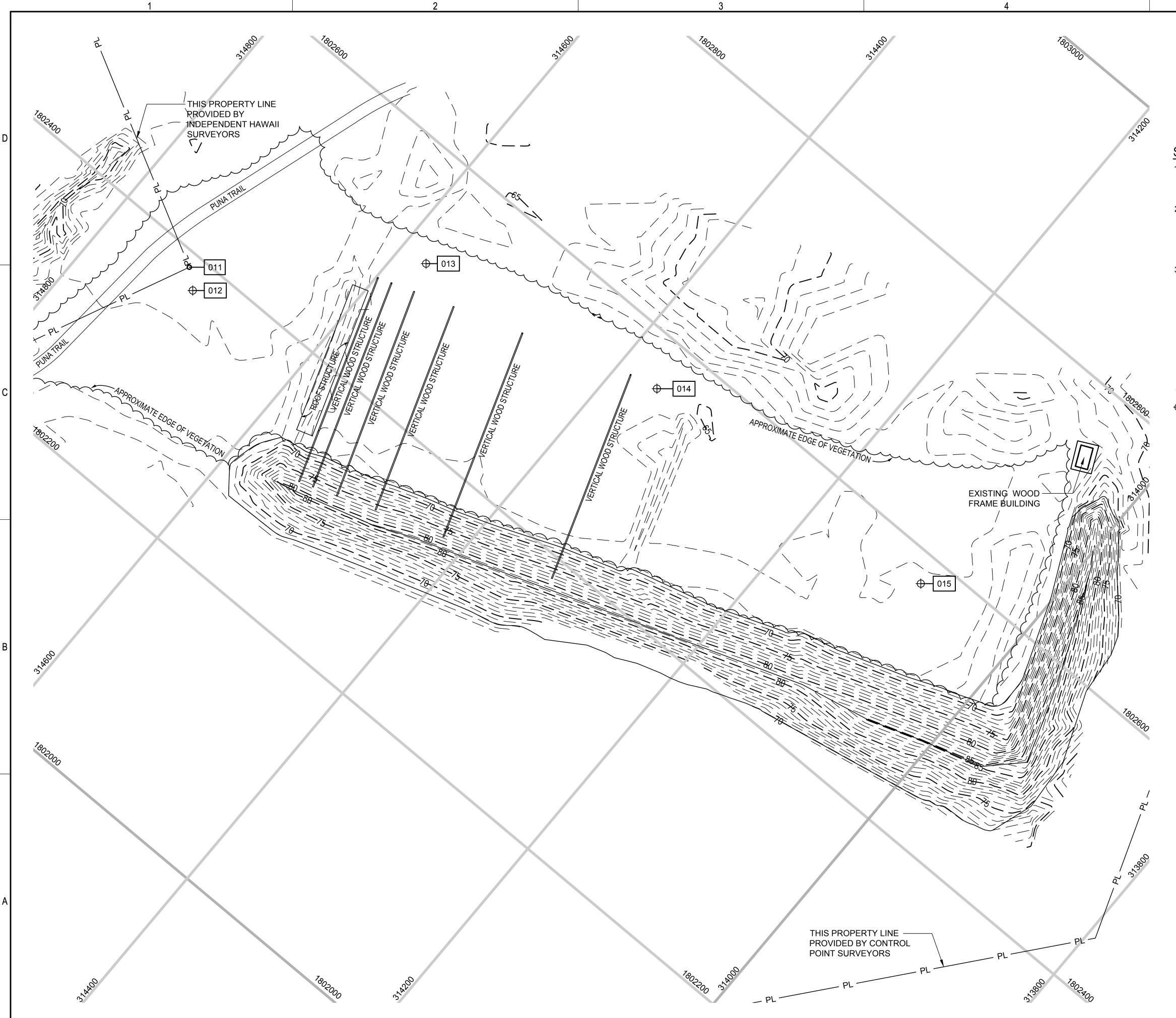
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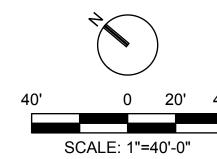
ABBREVIATIONS LEGEND

CIVIL

GUARD

1. TOP AND TOE OF SLOPE ARE APPROXIMATE AND HAVE BEEN SHOWN FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL VERIFY LOCATION IN FIELD AND SHALL ADJUST LIMITS AS NECESSARY TO COMPLETE THE INSTALLATION AS GENERALLY INDICATED ON THESE DOCUMENTS. THIS WORK SHALL BE PERFORMED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.





SURVEY NOTES: 1. THE FEATURES SHOWN HEREON WERE LOCATED BY AN ACTUAL FIELD SURVEY COMPLETED ON JANUARY

2. CONTROL WAS ESTABLISHED BY GPS AND BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83), ZONE 1, MEASURED IN US FEET. HORIZONTAL CONTROL REFERS TO COORDINATES FROM GOVERNMENT TRIANGULATION STATION "HALAI 2".

3. SURVEY CONDUCTED BY THE INDEPENDENT HAWAII SURVEYORS, LLC AND WERE SIGNED AND SEALED BY NIELS CHRISTENSEN, LICENSE NUMBER 9077.

GENERAL NOTES:

22, 2013.

1. SEE SHEETS C-151 AND C-152 FOR COORDINATE INFORMATION

LEGEND:

SURVEY CONTROL POINT - REFER TO SHEET C-151 FOR ADDITIONAL INFORMATION

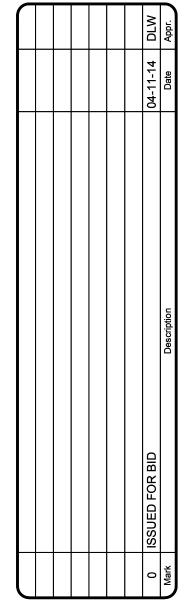
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			04-11-14 DLW	Date	
			ISSUED FOR BID	Description	
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ARMY NATIONAL GUARD HAWAII Leidos Engineering LLC Suite 200 Tulsa, Oklahoma Z4103 SAIC Designed by: Checked by: Checked by: Abbuilted by: Suite 200 Tulsa, Oklahoma Submitted by: SAIC	Date: 04-11-2014		255223000	Drawing code:	File name:	2223-C-011
ARMY NATIONAL GUARD HAWAII Leidos Engineering LLC Reviewed by: One West 3rd Street, Suite 200 Suite 200 Tulsa, Oklahoma T4103 SAIC		Checked by:	JBB			
ARMY NATIONAL GUARD HAWAII Leidos Engineering LLC One West 3rd Street, Suite 200 Tulsa, Oklahoma 74103	Designed by: JBB	Drawn by:	RNW	Reviewed by: DLW	Submitted by:	SAIC
ARMY NATIONA HAWAI	T GUARD			Leidos Engineering LLC One West 3rd Street, Suite 200	Tulsa, Oklahoma	74103
	ARMY NATIONA	HAWAII			ハウラ	

Sheet reference number: Sheet 7 of 43







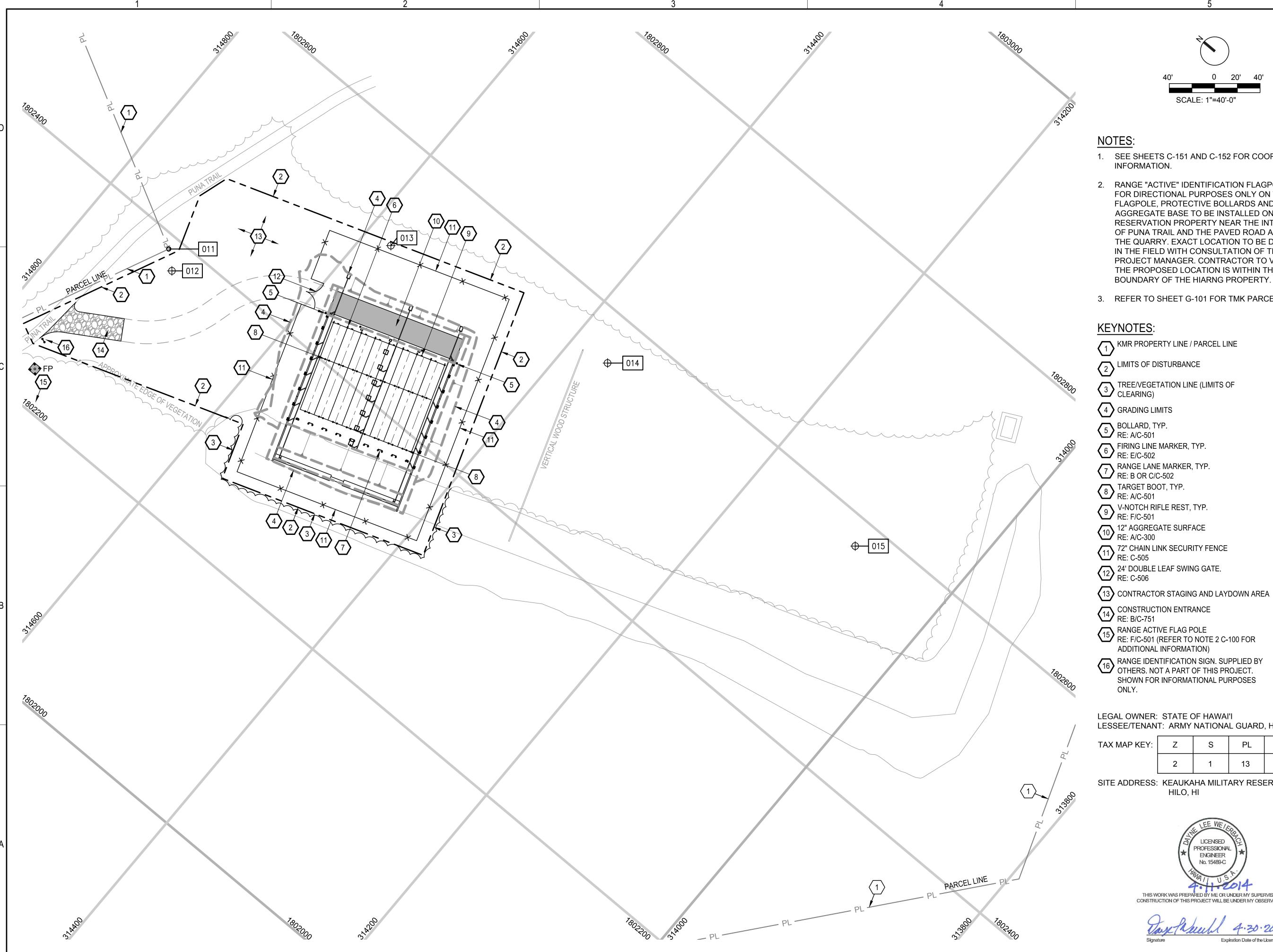
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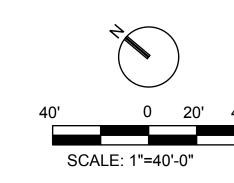
LICENSED PROFESSIONAL

ENGINEER

Sheet reference number: C-051

Sheet 8 of 43





- 1. SEE SHEETS C-151 AND C-152 FOR COORDINATE INFORMATION.
- 2. RANGE "ACTIVE" IDENTIFICATION FLAGPOLE. SHOWN FOR DIRECTIONAL PURPOSES ONLY ON THIS SHEET. FLAGPOLE, PROTECTIVE BOLLARDS AND AGGREGATE BASE TO BE INSTALLED ON RESERVATION PROPERTY NEAR THE INTERSECTION OF PUNA TRAIL AND THE PAVED ROAD ACCESSING THE QUARRY. EXACT LOCATION TO BE DETERMINED IN THE FIELD WITH CONSULTATION OF THE HIARNG PROJECT MANAGER. CONTRACTOR TO VERIFY THAT THE PROPOSED LOCATION IS WITHIN THE PROPERTY BOUNDARY OF THE HIARNG PROPERTY.
- 3. REFER TO SHEET G-101 FOR TMK PARCEL 10.

KEYNOTES:

(1) KMR PROPERTY LINE / PARCEL LINE

2 LIMITS OF DISTURBANCE

TREE/VEGETATION LINE (LIMITS OF CLEARING)

4 GRADING LIMITS

BOLLARD, TYP. RE: A/C-501

6 FIRING LINE MARKER, TYP. RE: E/C-502

RANGE LANE MARKER, TYP. RE: B OR C/C-502

TARGET BOOT, TYP. RE: A/C-501

9 V-NOTCH RIFLE REST, TYP. RE: F/C-501

10 12" AGGREGATE SURFACE RE: A/C-300

72" CHAIN LINK SECURITY FENCE RE: C-505

24' DOUBLE LEAF SWING GATE. RE: C-506

CONSTRUCTION ENTRANCE RE: B/C-751

RANGE ACTIVE FLAG POLE
RE: F/C-501 (REFER TO NOTE 2 C-100 FOR

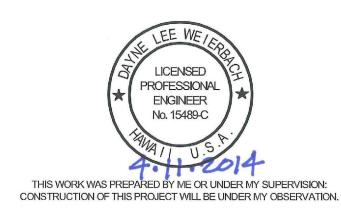
RANGE IDENTIFICATION SIGN. SUPPLIED BY OTHERS. NOT A PART OF THIS PROJECT. SHOWN FOR INFORMATIONAL PURPOSES ONLY.

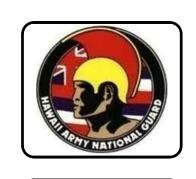
LEGAL OWNER: STATE OF HAWAI'I LESSEE/TENANT: ARMY NATIONAL GUARD, HAWAI'I

TAX MAP KEY

ΞY:	Z	S	PL	PAR	LOT
	2	1	13	10	N/A

SITE ADDRESS: KEAUKAHA MILITARY RESERVATION HILO, HI

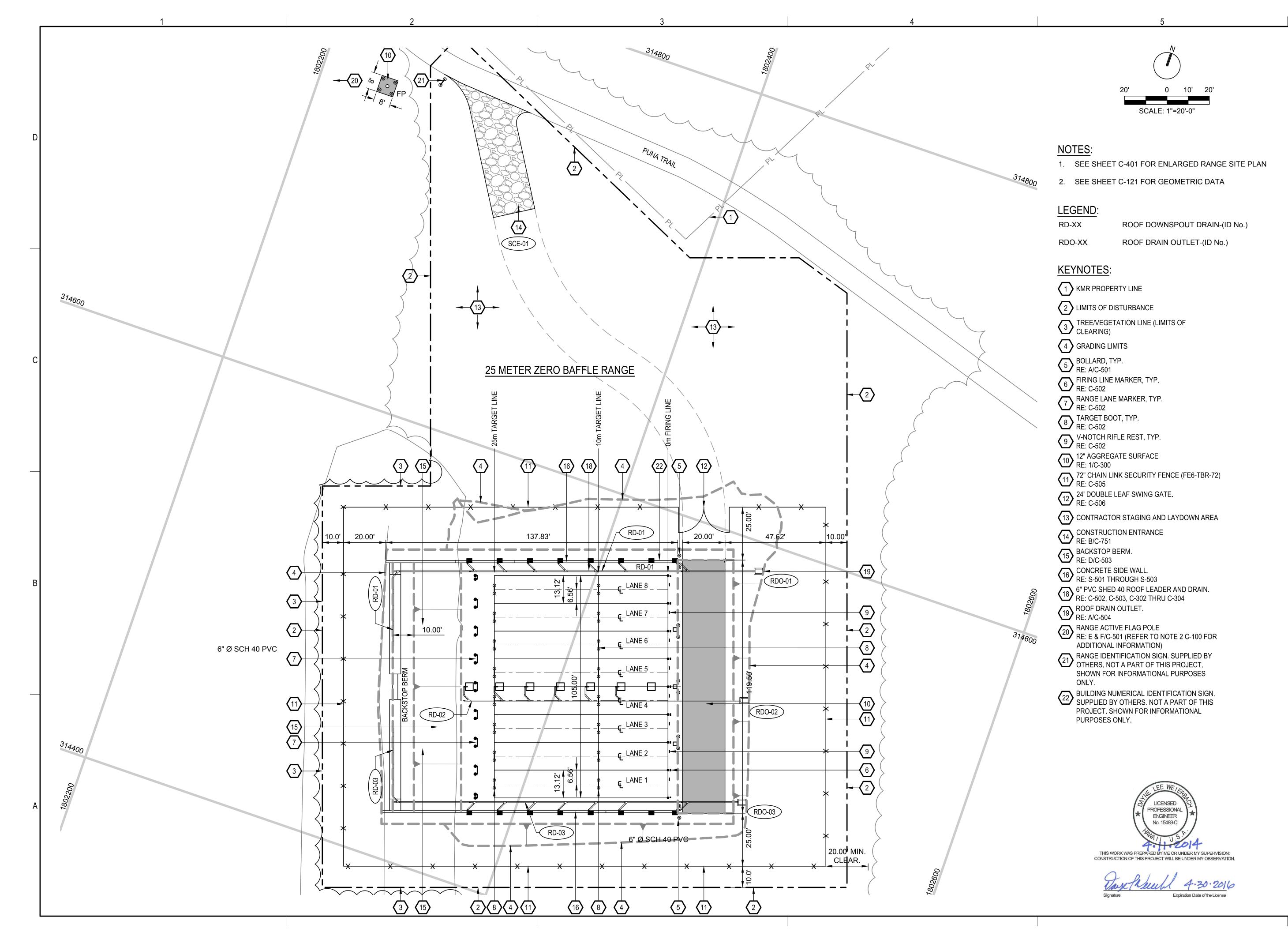




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HAWAII		Drawn by:	Checked by:	Design file no.
		-	JBB	2552223000
	Leidos Engineering LLC Reviewed by: One West 3rd Street, Suite 200	Reviewed by: DLW		Drawing code:
7 2 2 1	Tulsa, Oklahoma 74103	Submitted by: SAIC		File name: 2223-C-100

Sheet reference number: C-100 Sheet 9 of 43



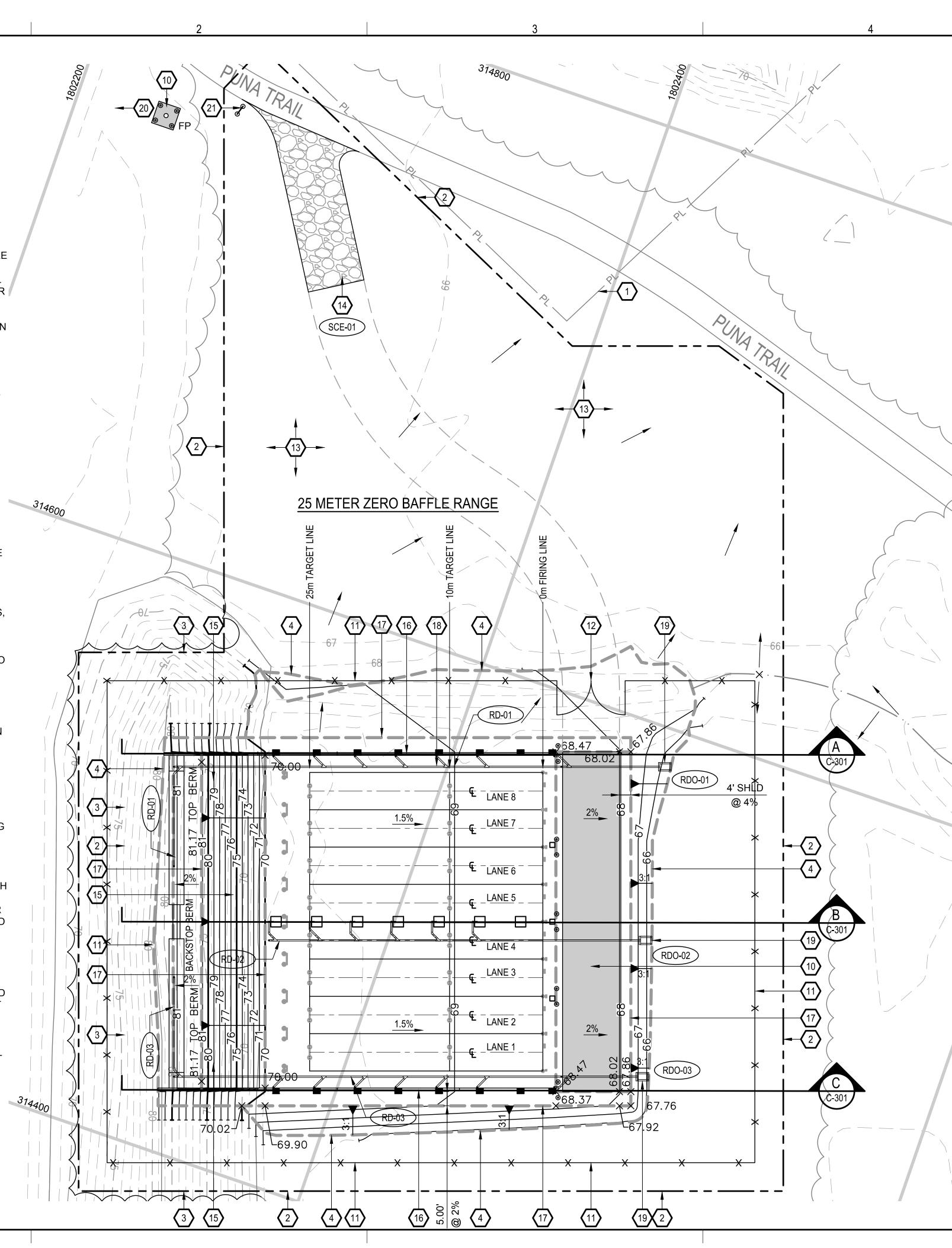
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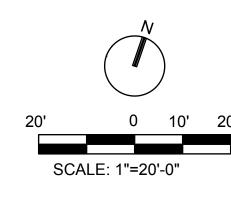
NATIONA	NATIONAL GUARD	Designed by: JBB		Date: 04-11-2014
HAWAII		Drawn by:	Checked by:	Design file no.
		RNW	JBB	2552223000
7	Leidos Engineering LLC Reviewed by: One West 3rd Street, DLW	Reviewed by: DLW		Drawing code:
700	Tulsa, Oklahoma	Submitted by:		File name:
	74103	SAIC		2223-C-101

SITE PLAN
SHEET SERVELLY
STEEN SDZ RANG
STEEN SDZ RANG
SHEET 1

Sheet reference number:

C-101Sheet 10 of 43





1. SEE SHEET C-402 FOR ENLARGED RANGE GRADING

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH

"STANDARD DETAILS FOR PUBLIC WORKS

THE COUNTY OF HAWAI'I DEPARTMENT OF PUBLIC

WORKS "STANDARD SPECIFICATIONS FOR PUBLIC

WORKS CONSTRUCTION," SEPTEMBER 1986, AND

CONSTRUCTION," SEPTEMBER 1984, AND INCLUDING

SUPPLEMENTS AND AMENDMENTS MADE THERETO.

2. SEE SHEET C-121 FOR GEOMETRIC DATA

NOTES:

PLAN

KEYNOTES:

(1) KMR PROPERTY LINE

4 GRADING LIMITS

(2) LIMITS OF DISTURBANCE

12" AGGREGATE SURFACE RE: A/C-300

24' DOUBLE LEAF SWING GATE. RE: C-506

CONSTRUCTION ENTRANCE RE: B/C-751

CONCRETE SIDE WALL.
RE: S-501 THROUGH S-503

ROOF DRAIN OUTLET.
RE: A/C-504

RANGE ACTIVE FLAG POLE

ADDITIONAL INFORMATION)

15 BACKSTOP BERM. RE: D/C-300

(17) GRADE BREAK

ONLY.

TREE/VEGETATION LINE (LIMITS OF CLEARING)

72" CHAIN LINK SECURITY FENCE (FE6-TBR-72) RE: C-505

(13) CONTRACTOR STAGING AND LAYDOWN AREA

6" PVC SHED 40 ROOF LEADER AND DRAIN. RE: C-302 THRU C-304 & C-503 THRU C-504

RE: F/C-501 (REFER TO NOTE 2 C-100 FOR

OTHERS. NOT A PART OF THIS PROJECT.

RANGE IDENTIFICATION SIGN. SUPPLIED BY

SHOWN FOR INFORMATIONAL PURPOSES

LICENSED

PROFESSIONAL

ENGINEER

No. 15489-C

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

DRAINAGE NOTE:



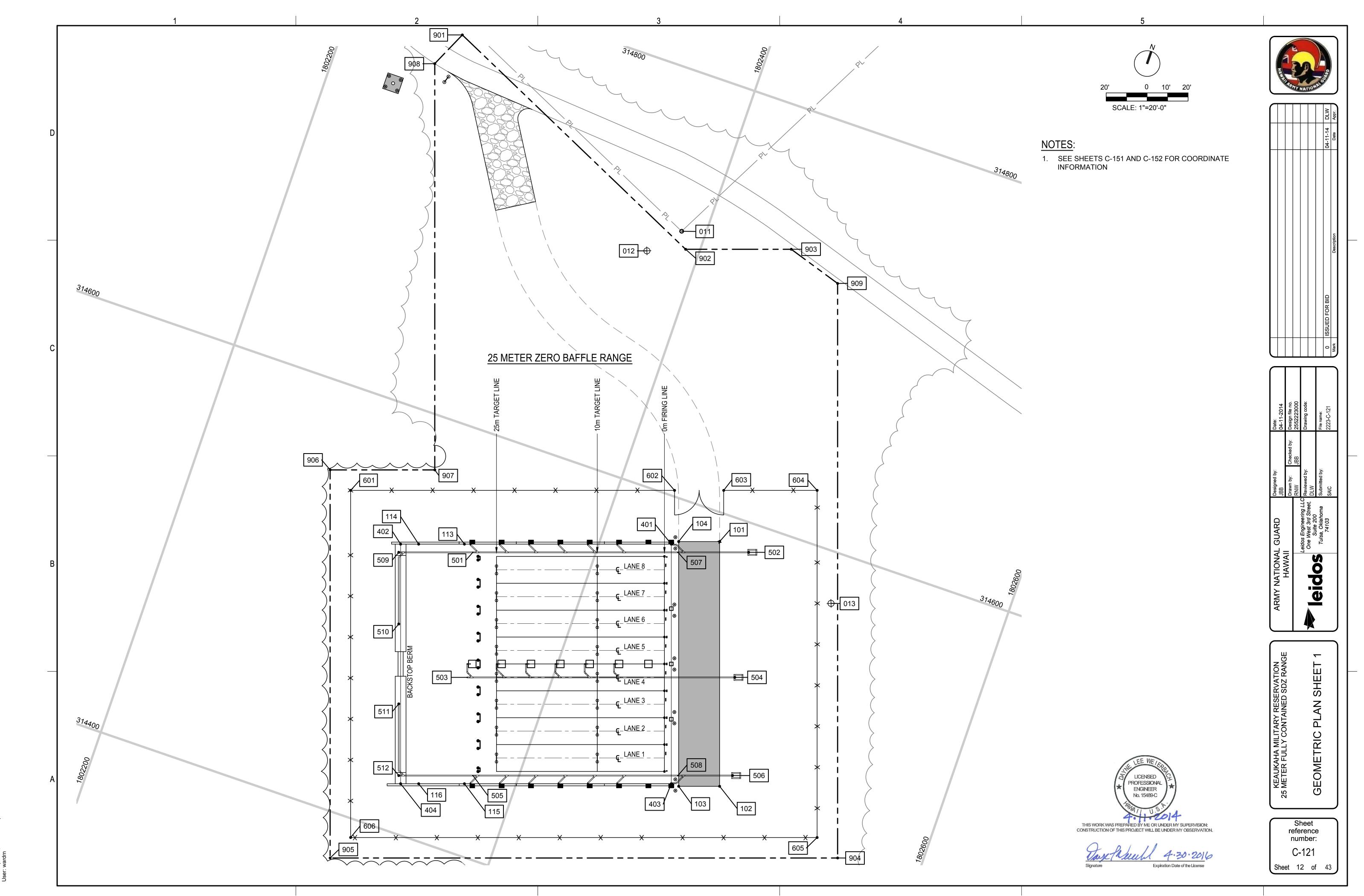
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ARMY NATIONAL GUARD Designed by: JBB Date: 04-11-2014 HAWAII Drawn by: BB Checked by: Drawing rile no. Drawing code: Drawing code: DLW Leidos Engineering LLC One West 3rd Street, Suite 200 Reviewed by: DLW Drawing code: DLW Suite 200 Tulsa, Oklahoma Submitted by: Submitted by: Stalc File name: Stalc					
Leidos Engineering LLC Reviewed by: Suife 200 Tulsa, Oklahoma 74103 Checked by: BB AB Suife 200 Tulsa, Oklahoma Sulmitted by: SAIC	ARMY NATIONA	L GUARD	Designed by: JBB		Date: 04-11-2014
Evidos Engineering LLC Reviewed by: One West 3rd Street, DLW Suite 200 Tulsa, Oklahoma Submitted by: 74103 SAIC	HAWAI		.yc	Checked by:	Design file no.
Leidos Engineering LLC One West 3rd Street, Suife 200 Tulsa, Oklahoma 74103 SAIC			RNW	JBB	2552223000
Tulsa, Oklahoma Submitted by: 74103 SAIC	_	Leidos Engineering LLC One West 3rd Street, Suite 200	Reviewed by: DLW		Drawing code:
OAIC	7000		Submitted by:		File name: 2223_C-111
			SAIC		111-0-0-777

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Sheet reference number:

Sheet 11 of 43



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	SUR	VEY CONTRO	DL POINT CO	ORDINATE TABLE
COORDINATE POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
011	314723.64	1802388.55	N/A	PIPE FOUND - PROPERTY BOUNDARY CORNER
012	314709.08	1802375.62	65.58	ROUND SPIKE
013	314575.58	1802516.67	65.43	CG SPIKE
014	314362.82	1802560.19	65.25	CG SPIKE
015	314092.01	1802576.89	66.16	MAGNETIC NAIL AND WASHER

	SITE FEATURES COORDINATE TABLE						
COORDINATE NORTHING EASTING DESCRIPTION							
101	314586.41	1802455.41	NORTHEAST CORNER ACCESS DRIVE				
102	314473.42	1802494.32	SOUTHEAST CORNER ACCESS DRIVE				
103	314466.91	1802475.41	SOUTHWEST CORNER ACCESS DRIVE				
104	314579.90	1802436.50	NORTHWEST CORNER ACCESS DRIVE				

	CONCRETE CONTAINMENT WALL COORDINATE TABLE						
COORDINATE POINT	NORTHING	EASTING	DESCRIPTION				
401	314577.54	1802433.50	INTERSECTION OF STRUCTURAL GRID LINES A AND 1				
402	314534.51	1802308.54	INTERSECTION OF STRUCTURAL GRID LINES J AND 1				
403	314466.92	1802471.59	INTERSECTION OF STRUCTURAL GRID LINES A AND 5				
404	314423.89	1802346.63	INTERSECTION OF STRUCTURAL GRID LINES J AND 5				

	STORM DRAINAGE INFRASTRUCTURE COORDINATE TABLE						
COORDINATE POINT	NORTHING	EASTING	DESCRIPTION				
501	314542.22	1802343.21	€ FLOW-THRU CLEANOUT				
502	314586.07	1802470.55	COORDINATE POINT OF DRAIN LINE OUTLET				
503	314483.58	1802360.45	€ FLOW-THRU CLEANOUT				
504	314526.13	1802484.03	COORDINATE POINT OF DRAIN LINE OUTLET				
505	314439.16	1802378.70	€ FLOW-THRU CLEANOUT				
506	314480.44	1802498.58	COORDINATE POINT OF DRAIN LINE OUTLET				
507	314574.82	1802437.86	€ FLOW-THRU CLEANOUT				
508	314471.58	1802473.35	€ FLOW-THRU CLEANOUT				
509	314530.43	1802308.97	DOWNSPOUT CONNECTION AT TOP OF BACKSTOP BERM				
510	314497.34	1802320.37	DOWNSPOUT CONNECTION AT TOP OF BACKSTOP BERM				
511	314460.47	1802333.06	DOWNSPOUT CONNECTION AT TOP OF BACKSTOP BERM				
512	314427.37	1802344.46	DOWNSPOUT CONNECTION AT TOP OF BACKSTOP BERM				

	STORM DRAINAGE INFRASTRUCTURE COORDINATE TABLE						
COORDINATE POINT	NORTHING	EASTING	DESCRIPTION				
601	314551.39	1802276.90	CORNER SECURITY FENCE				
602	314602.89	1802426.47	GATE POST				
603	314610.70	1802449.16	GATE POST				
604	314625.55	1802492.30	CORNER SECURITY FENCE				
605	314465.29	1802547.48	CORNER SECURITY FENCE				
606	314391.12	1802332.09	CORNER SECURITY FENCE				

PRO	PROJECT BOUNDARY/LIMITS OF DISTURBANCE COORDINATE TABLE						
COORDINATE POINT	NORTHING	EASTING	DESCRIPTION				
901	314779.42	1802256.09	CORNER PROJECT BOUNDARY				
902	314715.95	1802393.24	CORNER PROJECT BOUNDARY				
903	314732.75	1802442.04	CORNER PROJECT BOUNDARY				
904	314459.09	1802560.19	CORNER PROJECT BOUNDARY				
905	314378.41	1802325.89	CORNER PROJECT BOUNDARY				
906	314557.59	1802264.19	CORNER PROJECT BOUNDARY				
907	314574.22	1802312.50	CORNER PROJECT BOUNDARY				
908	314761.77	1802247.92	CORNER PROJECT BOUNDARY				
909	314724.33	1802468.86	CORNER PROJECT BOUNDARY				



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			04-11-14	Date
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GEOMETRIC DATA SHEET 1 OF 2

KEAUKAHA MILITARY RESERVATION 25 METER FULLY CONTAINED SDZ RANGE

Sheet reference number:

C-151 Sheet 13 of 43

LICENSED PROFESSIONAL ENGINEER No. 15489-C THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION: CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

_•	25 METER ZERO RANGE FIRING LINE LANE MARKER LOCATIONS								
MARKER/LANE DESCRIPTION	CIVIL DETAIL	NORTHING	EASTING						
SINGLE FIRING LINE LANE MARKER LANE 1	E/C-502	314471.51	1802466.49						
DOUBLE FIRING LINE LANE MARKER LANE EDGE 1 AND 2	E/C-502	314483.92	1802462.22						
DOUBLE FIRING LINE LANE MARKER LANE EDGE 2 AND 3	E/C-502	314496.33	1802457.94						
DOUBLE FIRING LINE LANE MARKER LANE EDGE 3 AND 4	E/C-502	314508.74	1802453.67						
DOUBLE FIRING LINE LANE MARKER LANE EDGE 4 AND 5	E/C-502	314521.15	1802449.40						
DOUBLE FIRING LINE LANE MARKER LANE EDGE 5 AND 6	E/C-502	314533.56	1802445.12						
DOUBLE FIRING LINE LANE MARKER LANE EDGE 6 AND 7	E/C-502	314545.97	1802440.85						
DOUBLE FIRING LINE LANE MARKER LANE EDGE 7 AND 8	E/C-502	314558.38	1802436.58						
SINGLE FIRING LINE LANE MARKER LANE 8	E/C-502	314570.78	1802432.31						

25 METER ZERO RANGE RANGE LANE MARKER LOCATIONS							
MARKER/LANE DESCRIPTION	CIVIL DETAIL	COORDINATE POINT	NORTHING	EASTING			
SINGLE	D/C 502	CP-1	314441.87	1802380.43			
RANGE LANE MARKER LANE 1	B/C-502	CP-2	314443.49	1802379.87			
DOUBLE RANGE LANE MARKER	C/C-502	CP-1	314452.53	1802376.76			
LANE EDGE 1 AND 2	C/C-502	CP-2	314456.04	1802375.55			
DOUBLE RANGE LANE MARKER	C/C-502	CP-1	314464.94	1802372.48			
LANE EDGE 2 AND 3	C/C-302	CP-2	314468.45	1802371.28			
DOUBLE RANGE LANE MARKER	C/C-502	CP-1	314477.35	1802368.21			
LANE EDGE 3 AND 4	C/C-302	CP-2	314480.86	1802367.00			
DOUBLE RANGE LANE MARKER	C/C-502	CP-1	314489.76	1802363.94			
LANE EDGE 4 AND 5	0/0 302	CP-2	314493.27	1802362.73			
DOUBLE RANGE LANE MARKER	C/C-502	CP-1	314502.17	1802359.66			
LANE EDGE 5 AND 6	C/C-302	CP-2	314505.68	1802358.46			
DOUBLE RANGE LANE MARKER	C/C-502	CP-1	314514.58	1802355.39			
LANE EDGE 6 AND 7	C/C-502	CP-2	314518.09	1802354.18			
DOUBLE RANGE LANE MARKER	C/C-502	CP-1	314526.99	1802351.12			
LANE EDGE 7 AND 8	0,0-302	CP-2	314530.50	1802349.91			
SINGLE RANGE LANE MARKER	B/C-502	CP-1	314539.54	1802346.80			
LANE 8	D/O-302	CP-2	314541.15	1802346.24			

MARKER/LANE DESCRIPTION	CIVIL DETAIL	COORDINATE POINT	NORTHING	EASTING
SINGLE	D/C 502	CP-1	314441.87	1802380.43
RANGE LANE MARKER LANE 1	B/C-502	CP-2	314443.49	1802379.87
DOUBLE RANGE LANE MARKER	C/C-502	CP-1	314452.53	1802376.76
LANE EDGE 1 AND 2	C/C-502	CP-2	314456.04	1802375.55
DOUBLE RANGE LANE MARKER	C/C-502	CP-1	314464.94	1802372.48
LANE EDGE 2 AND 3	C/C-502	CP-2	314468.45	1802371.28
DOUBLE	C/C 502	CP-1	314477.35	1802368.21
RANGE LANE MARKER LANE EDGE 3 AND 4	C/C-502	CP-2	314480.86	1802367.00
DOUBLE	C/C-502	CP-1	314489.76	1802363.94
RANGE LANE MARKER LANE EDGE 4 AND 5		CP-2	314493.27	1802362.73
DOUBLE	212 - 22	CP-1	314502.17	1802359.66
RANGE LANE MARKER LANE EDGE 5 AND 6	C/C-502	CP-2	314505.68	1802358.46
DOUBLE	0/0 500	CP-1	314514.58	1802355.39
RANGE LANE MARKER LANE EDGE 6 AND 7	C/C-502	CP-2	314518.09	1802354.18
DOUBLE	C/C 502	CP-1	314526.99	1802351.12
RANGE LANE MARKER LANE EDGE 7 AND 8	C/C-502	CP-2	314530.50	1802349.91
SINGLE	D/C 500	CP-1	314539.54	1802346.80
RANGE LANE MARKER LANE 8	B/C-502	CP-2	314541.15	1802346.24

		25 METER	ZERO RANGE - FIRE LINE START								
			(5.56/7.62mm)								
LANE	CIVIL DETAIL	10 M	ETER TARGET LINE		25 M	ETER TARGET LINE					
		NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION				
		314465.28	1802433.93		314449.25	1802387.40					
1	C-502	314468.78	1802432.73	69.03	314452.76	1802386.20	69.76				
0	0.500	314477.69	1802429.66	00.00	314461.66	1802383.13	00.70				
2	C-502	314481.19	1802428.45	69.03	314465.17	1802381.92	69.76				
2	0.500	314490.10	1802425.39	00.00	314474.07	1802378.86	60.76				
3	C-502	314493.60	1802424.18	69.03	314477.58	1802377.65	69.76				
4	0.500	314502.51	1802421.12	60.03	314486.48	1802374.58	69.76				
4	C-502	314506.01	1802419.91	69.03	314489.99	1802373.38					
E	C 503	314514.92	1802416.84	60.03	314499.01	1802370.27	60.76				
5	C-502	314518.42	1802415.64	69.03	314502.52	1802369.06	69.76				
6	C 503	314527.33	1802412.57	60.03	314511.30	1802366.04	60.76				
6	C-502	314530.83	1802411.36	69.03	314514.81	1802364.83	69.76				
7	C 503	314539.74	1802408.30	60.03	314523.71	1802361.76	60.76				
,	C-502	314543.24	1802407.09	69.03	314527.22	1802360.56	69.76				
0	C 502	314552.15	1802404.02	60.03	314536.12	1802357.49	60.76				
8	C-502	314555.65	1802402.82	69.03	314539.63	1802356.28	69.76				

	25M ZERO RANGE V-NOTCH RIFLE REST LOCATIONS							
LANE	CIVIL DETAIL	NORTHING	EASTING	ELEVATION				
1	F/C-502	314480.02·	1802464.23	68.53				
2	F/C-502	314492.43·	1802459.95	68.53				
3	F/C-502	314504.84	1802455.68	68.53				
4	F/C-502	314517.25·	1802451.41	68.53				
5	F/C-502	314529.66·	1802447.13	68.53				
6	F/C-502	314542.07·	1802442.86	68.53				
7	F/C-502	314554.48·	1802438.59	68.53				
8	F/C-502	314566.89·	1802434.31	68.53				



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				MTG	Appr.
				04-11-14	Date
				0 ISSUED FOR BID	Description
				٦	Mark

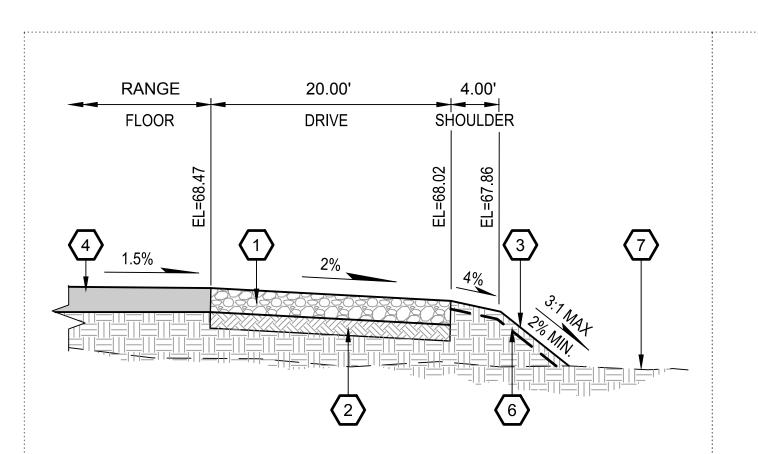
KEAUKAHA MILITARY RESERVATION 25 METER FULLY CONTAINED SDZ RANGE GEOMETRIC DATA SHEET 2 OF 2

Sheet reference number: C-152

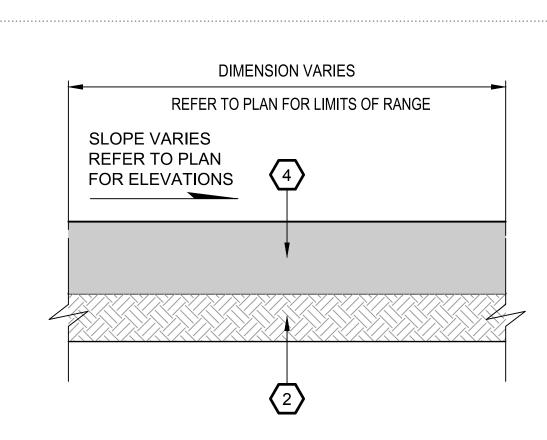
Sheet 14 of 43

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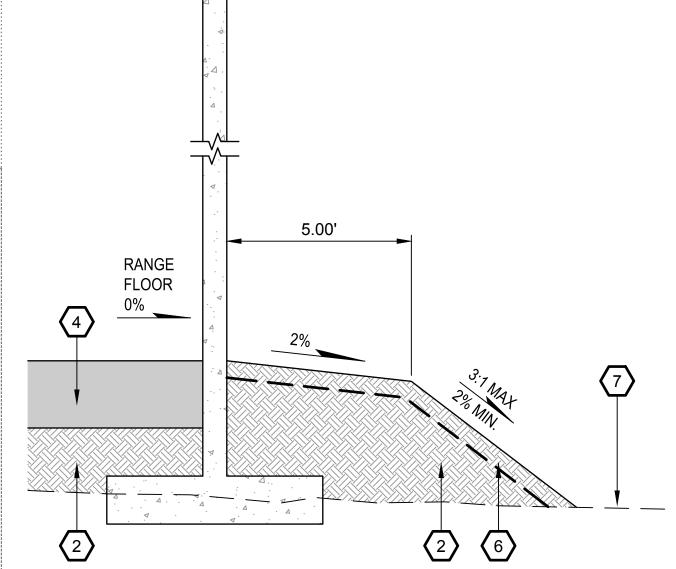
LICENSED PROFESSIONAL ENGINEER No. 15489-C



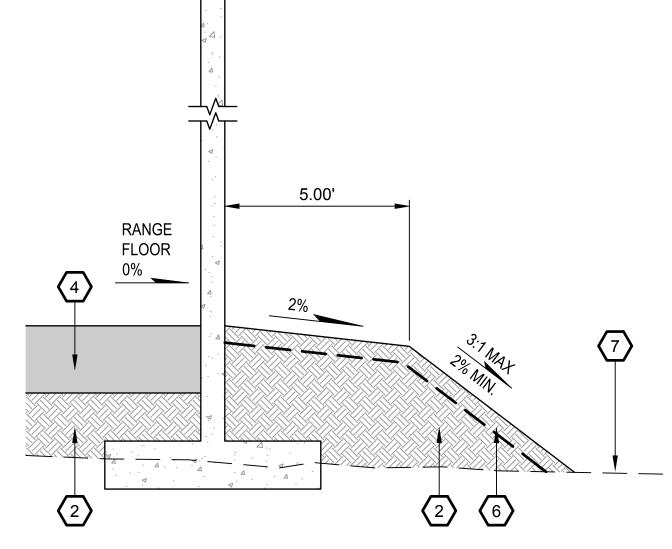
ACCESS DRIVE TYPICAL SECTION C-300 NOT TO SCALE

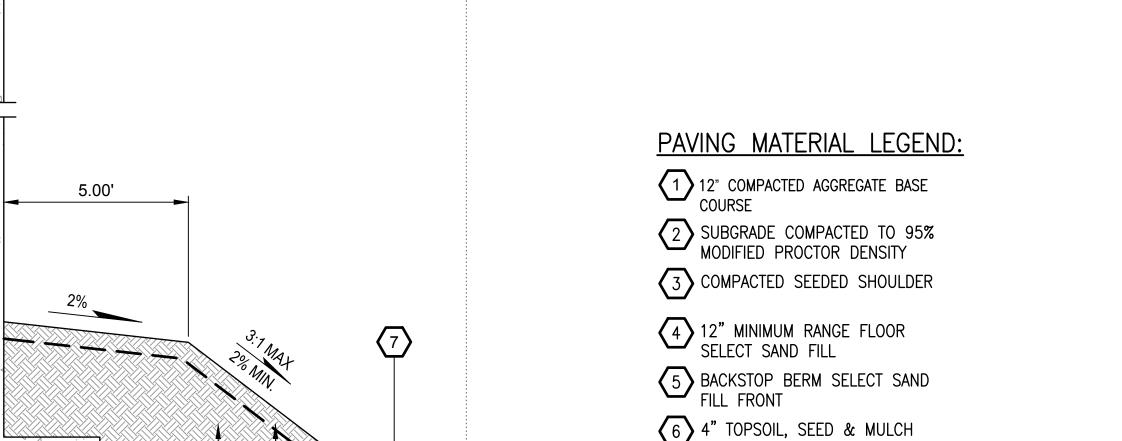


RANGE FLOOR SURFACING SECTION NOT TO SCALE

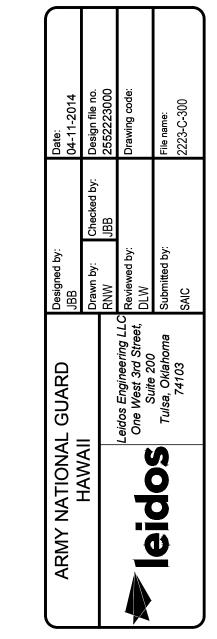


SIDE WALL TYPICAL FINAL GRADING SECTION NOT TO SCALE

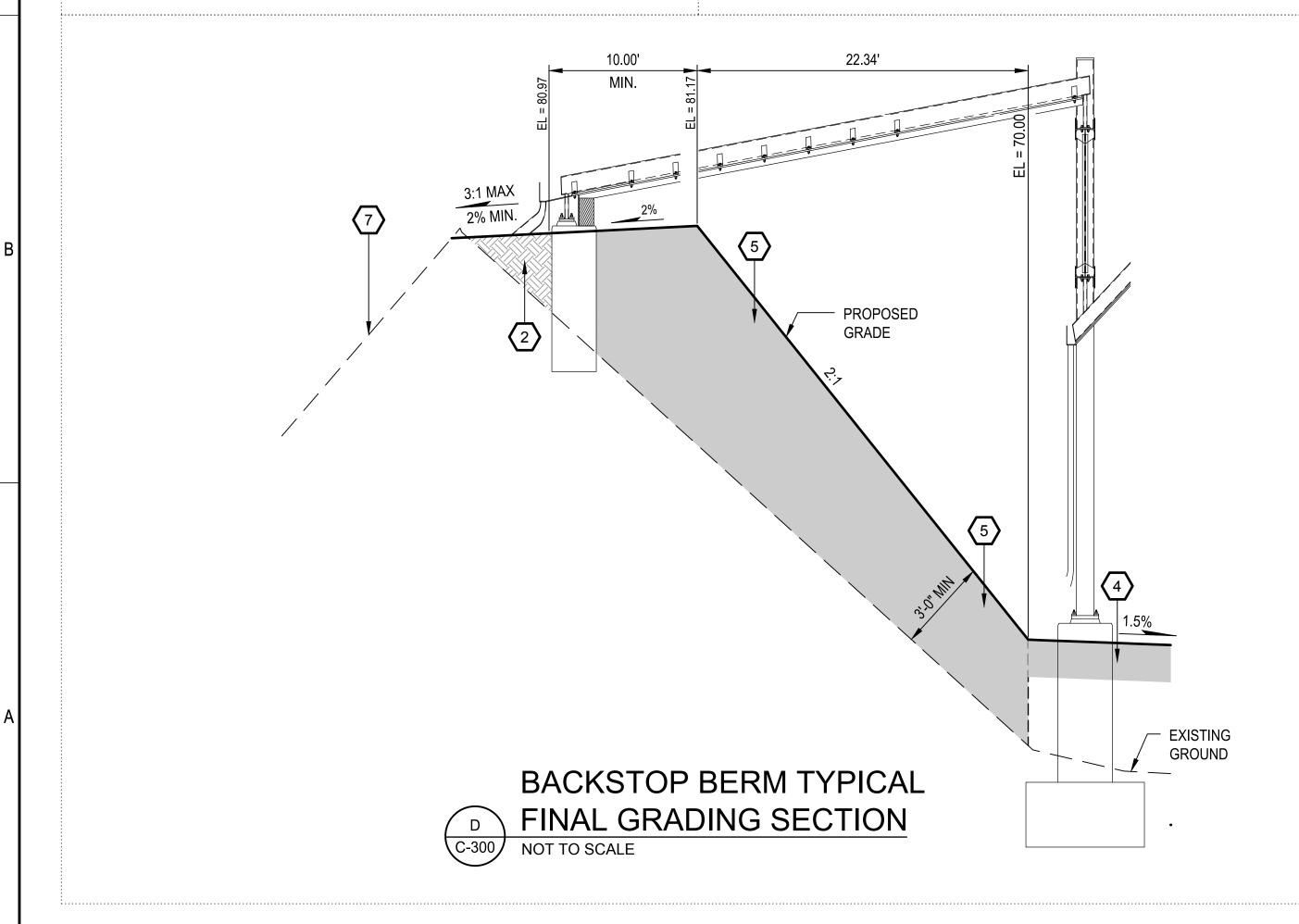


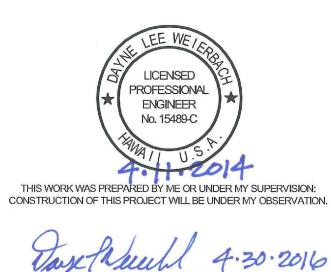


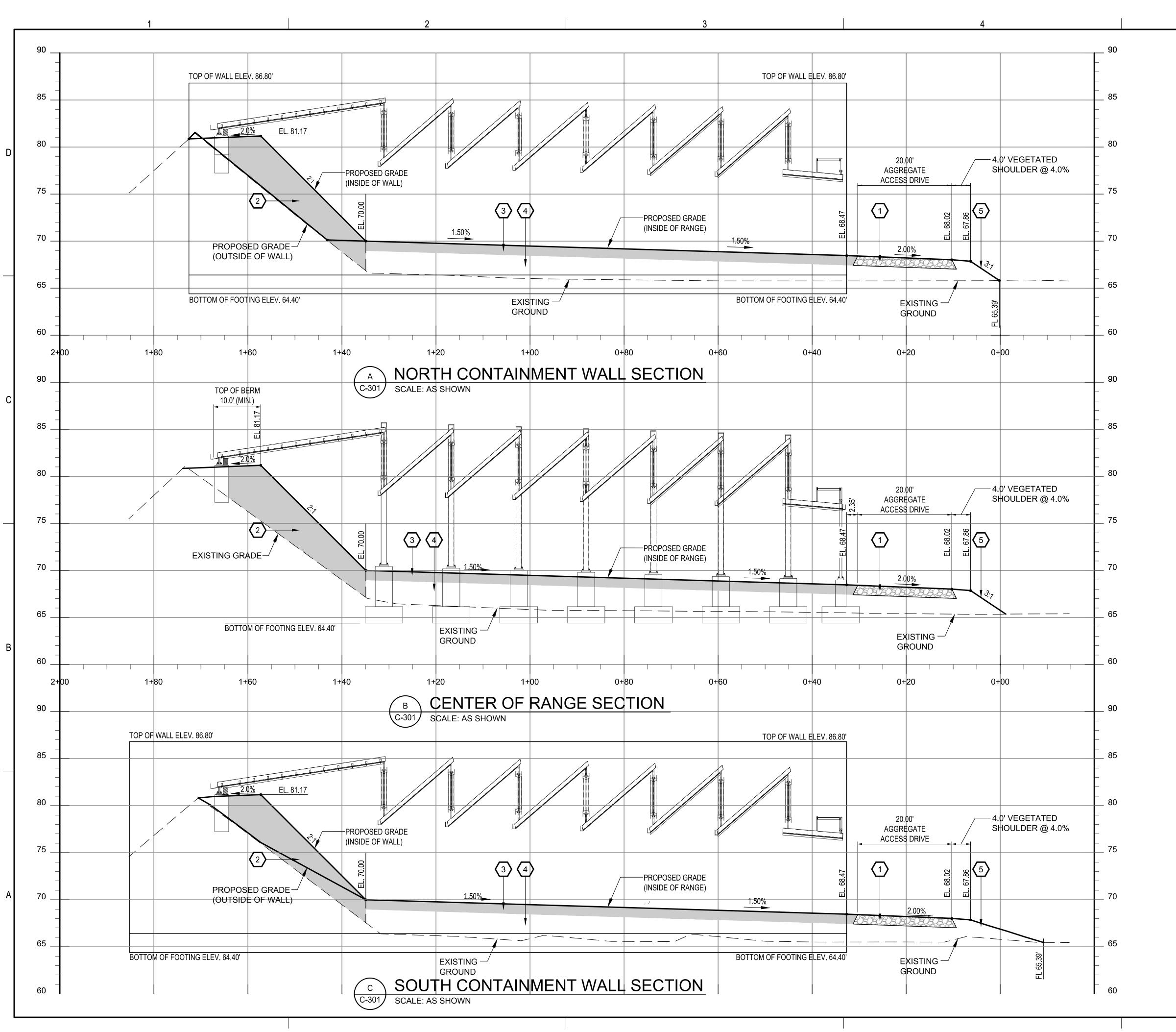
7 EXISTING GROUND



reference number: C-300







HORIZONTAL 1"=10' VERTICAL 1"=5' SCALE:

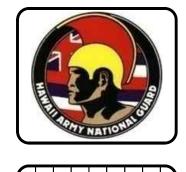
KEYNOTES:

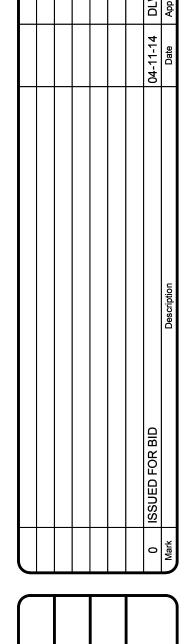
- 12" AGGREGATE BASE COURSE RE: A/C-300
- BACK STOP SELECT SAND FILL MINIMUM OF 3'-0" DEEP AS MEASURED PERPENDICULAR TO BACKSTOP BERM SLOPE RE: D/C-300
- 12" RANGE FLOOR SELECT SAND FILL RE: B/C-300

LICENSED

PROFESSIONAL **ENGINEER**

- SUBGRADE COMPACTED TO 95% MODIFIED PROCTOR DENSITY
- 5 SEEDED SHOULDER



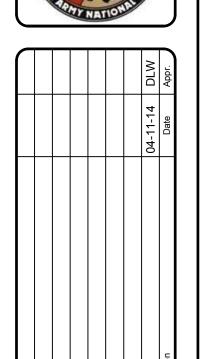


Date: 04-11-2014	Design file no.	255223000	Drawing code:	File name:	2223-C-301
by:	Checked by:	JBB	by:	l by:	
Designed by: JBB	Drawn by:	RNW	Reviewed DLW	Submitted by:	SAIC
IL GUARD			Leidos Engineering LLC Reviewed by: One West 3rd Street, DLW	Tuls	74103
ARMY NATIONAL GUARD	HAWAII			ハロコリ	

Sheet reference number: C-301 Sheet 16 of 43

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80 ROOF DRAIN CLEANOUT RE: D/C-504 GRADE **- 75** 75 4.0' VEGETATED SHOULDER @ 4.0% EXISTING — GROUND → 4" 26 GA GALV. STEEL → DOWNSPOUT (TYP) RE: C-509, S-501 & S-502 AGGREGATE ACCESS DRIVE 70 **- 70** PROPOSED 6" PVC SCH 40 DRAIN @1.5% — EXISTING GROUND 6" PVC SCH 40 DRAIN @1.89% 65 EXISTING — GROUND 1+00 0+00 1+20 0+60 0+20 1+60 2+00 1+80 1+40 0+80 0+40



ARMY NATIONAL GUARD	L GUARD	Designed by: JBB		Date: 04-11-2014
HAWAII		Drawn by:	Checked by:	Design file no
		RNW	JBB	2552233000
7	Leidos Engineering LLC Reviewed by: One West 3rd Street, DLW	Reviewed by: DLW		Drawing code
ハンフリ	Tulsa, Oklahoma	Submitted by:		File name:
	74103	SAIC		2223-C-302

KEAUKAHA MILITARY RESERVATION
25 METER FULLY CONTAINED SDZ RANGE
ROOF DRAIN PROFILE SHEET 1

PROFESSIONAL ENGINEER

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Sheet reference number:

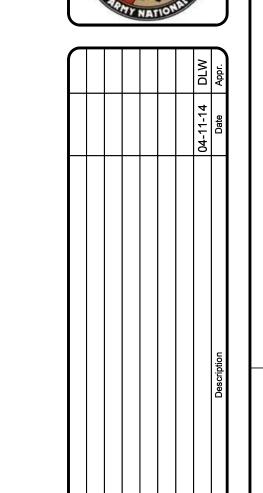
C-302
Sheet 17 of 43

ROOF DRAIN PROFILE
"RD-01" (NORTHERN LINE)

C-302 SCALE: HORIZONTAL 1"=10'
VERTICAL 1"=2.5'

80 GRADE ROOF DRAIN CLEANOL RE: D/C-504 75 - 75 → 4" 26 GA GALV. STEEL DOWNSPOUT (TYP)

RE: C-509, S-501 & S-502 -4.0' VEGETATED SHOULDER @ 4.0% EXISTING -20.0' AGGREGATE GROUND ACCESS DRIVE PROPOSED GRADE 70 **- 70** 6" PVC SCH 40 DRAIN @1.5% -EXISTING GROUND 1+80 1+20 1+00 0+60 0+20 0+00 1+60 1+40 0+80 0+40 2+00



. GUARD	IAWAII Draw	RNW	Leidos Engineering LLC Reviewed by: One West 3rd Street, DLW	ma	74103 SAIC	
Designed by: JBB	by:	/ JBB	ewed by:	Submitted by:		
Date: 04-11-2014		255223000	Drawing code:	File name:	2223-C-303	

KEAUKAHA MILITARY RESERVATION
25 METER FULLY CONTAINED SDZ RANGE
ROOF DRAIN PROFILE SHEET 2

PROFESSIONAL ENGINEER

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Sheet reference number:

C-303

Sheet 18 of 43

ROOF DRAIN PROFILE
"RD-02" (CENTRAL LINE)

C-303

SCALE: HORIZONTAL 1"=10'
VERTICAL 1"=2.5'

80 -PROPOSED GRADE **—** 75 75 4.0' VEGETATED SHOULDER @ 4.0% EXISTING -→ 4" 26 GA GALV. STEEL → DOWNSPOUT (TYP) RE: C-509, S-501 & S-502 GROUND AGGREGATE ACCESS DRIVE **— 70** 70 GRADE 6" PVC SCH 40 DRAIN @1.5% — EXISTING GROUND 6" PVC SCH 40 DRAIN @1.89% 65 EXISTING -GROUND 0+85.33 FL 67.26' 1+80 1+60 1+00 0+80 0+60 0+20 0+00 1+20 2+00 1+40 0+40

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CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

A • 30 • 2016

DLW Appr.

0	ISSUED FOR BID	04-11-14 DLW	MTG
Mark	Description	Date	Appr.

ARMY NATIONAL GUARD JBB HAWAII Drawn by: Checked I			Leidos Engineering LLC Reviewed by: One West 3rd Street, DLW	ulsa, Oklahoma Submitted by:	SAIC
	Checked by:	JBB			
Date: 04-11-2014	Design file no.	255223000	Drawing code:	File name:	2223-C-304

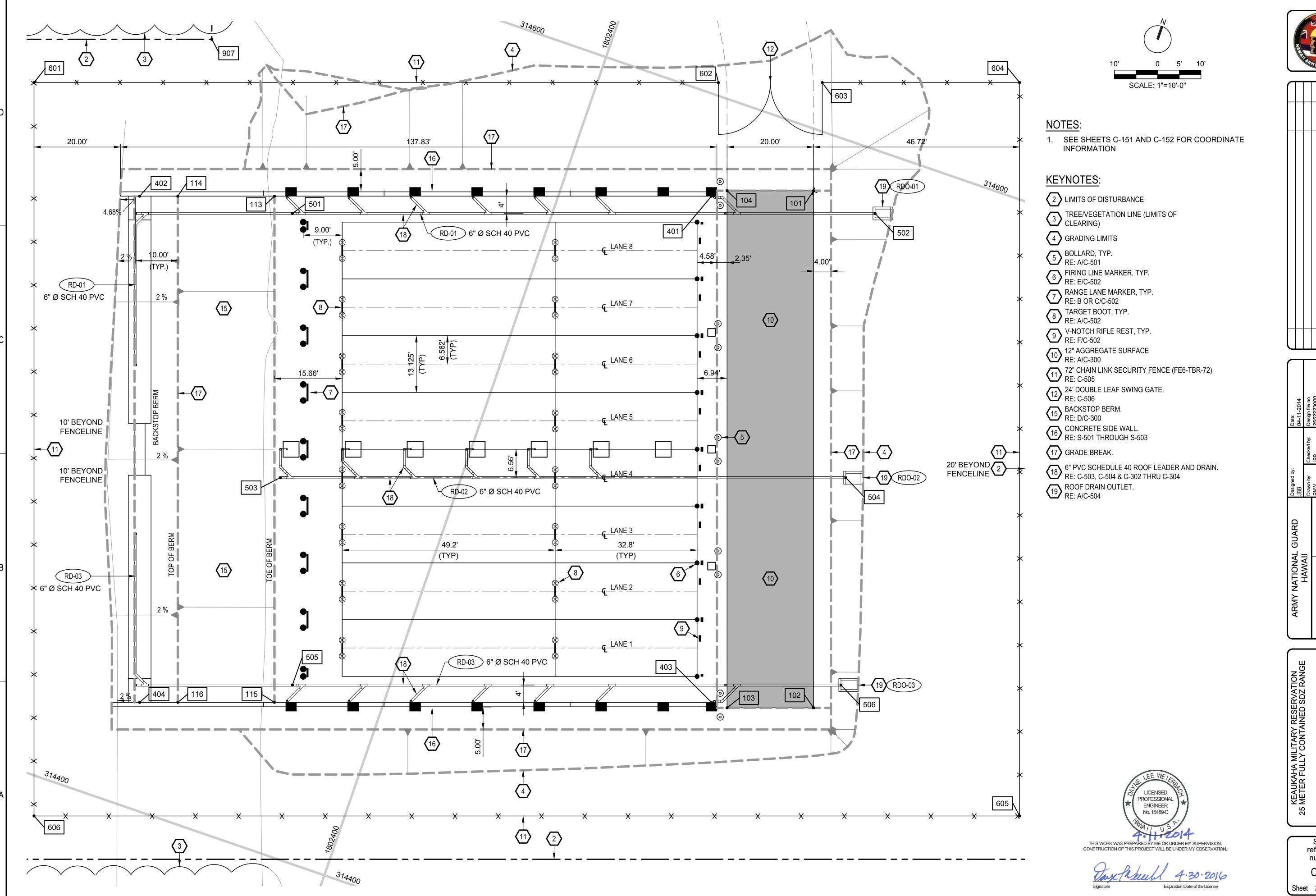
KEAUKAHA MILITARY RESERVATION
25 METER FULLY CONTAINED SDZ RANGE
ROOF DRAIN PROFILE SHEET 3

Sheet reference number:
C-304
Sheet 19 of 43

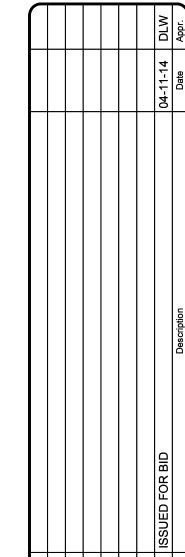
ROOF DRAIN PROFILE
"RD-03" (SOUTHERN LINE)

C-304

SCALE: HORIZONTAL 1"=10'
VERTICAL 1"=2.5'



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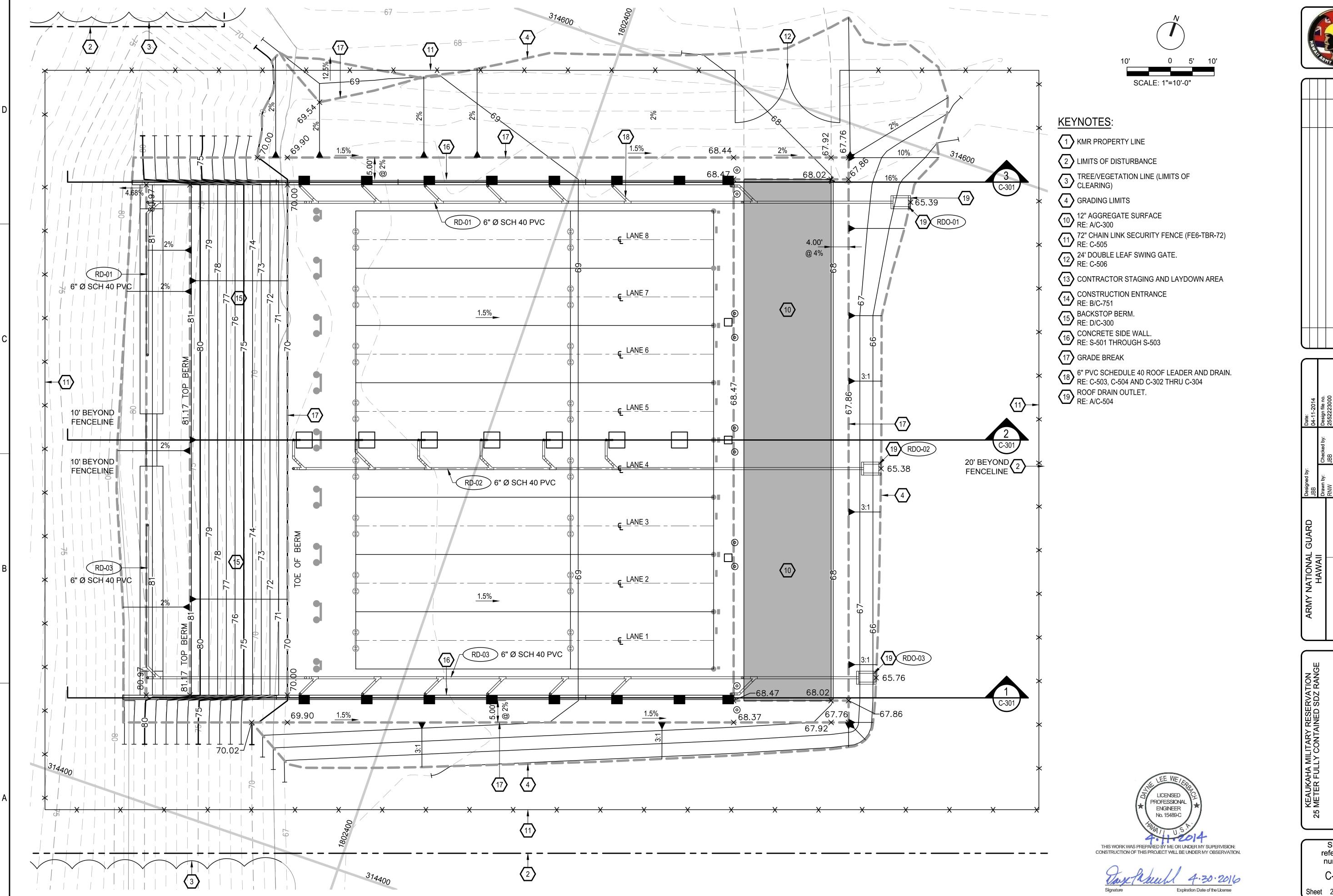


	HAWAII		7	NOD IN	
מאאס			Leidos Engineering LLC Reviewed by: One West 3rd Street, DLW	Tulsa, Oklahoma	74103
JBB	Drawn by:	RNW	Reviewed by: DLW	Submitted by:	SAIC
	Checked by:	JBB			
04-11-2014	Design file no.	255223000	Drawing code:	File name:	2223-C-401

25 METER FULLY CONTAINED SDZ RANGE
ENLARGED RANGE SITE PLAN

Sheet reference number: C-401

Sheet 20 of 43

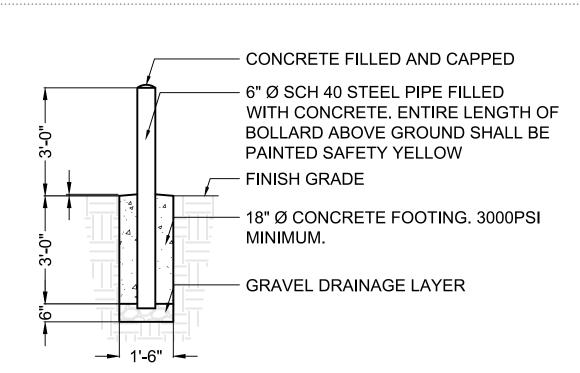


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GRADING ARGED RANGE PLAN

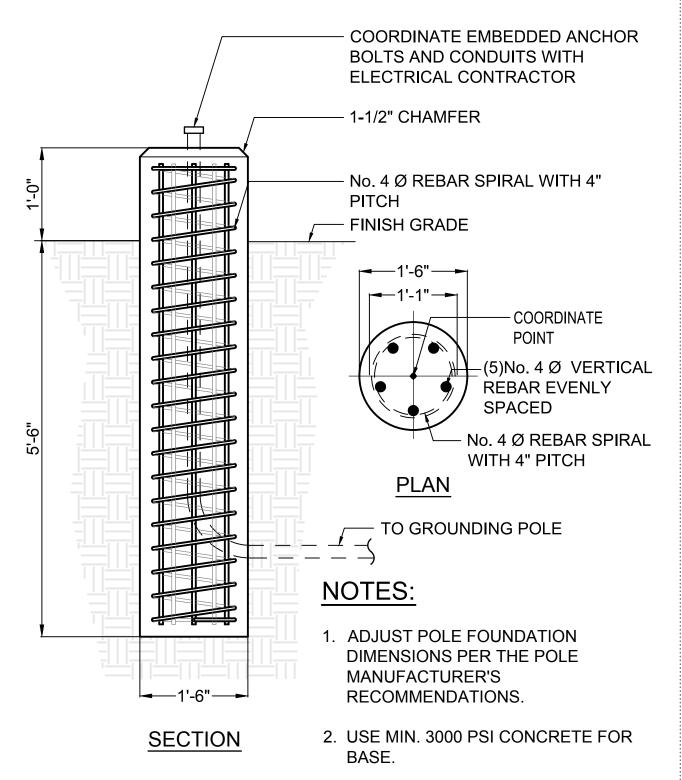
Sheet reference number: C-402

Sheet 21 of 43

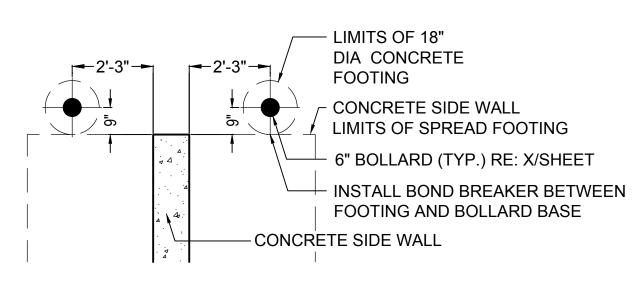




C-501



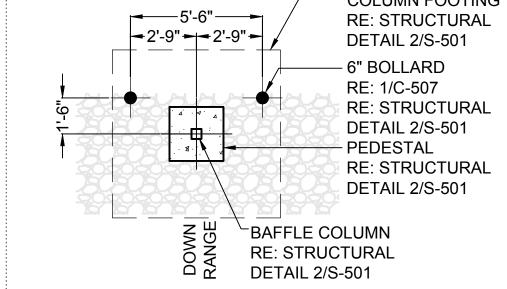




BOLLARD PLACEMENT AT SIDEWALL DETAIL

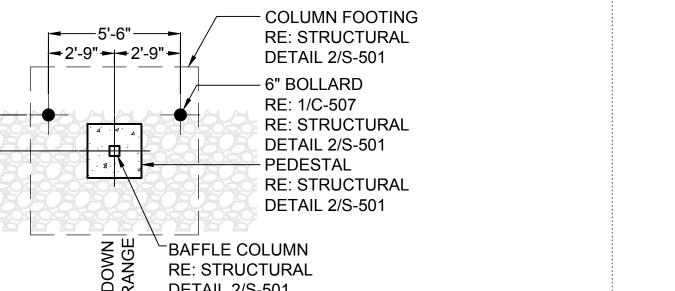
FURNISH AND INSTALL SOLAR-POWERED LED

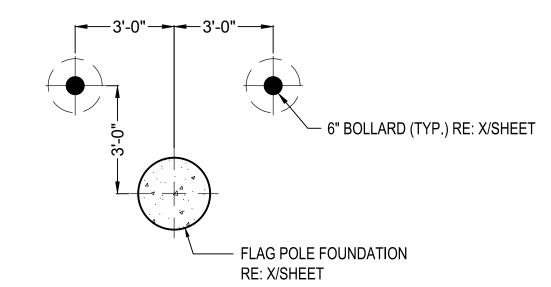
SCALE: 3/8" = 1'0"



LUMINAIRE REQUIREMENTS

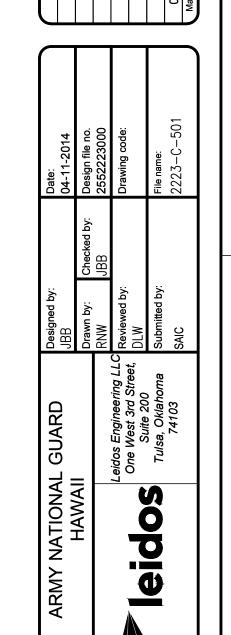
PIPE BOLLARD PLACEMENT AT BAFFLE COLUMN DETAIL C-501 SCALE: ½" = 1'-0"





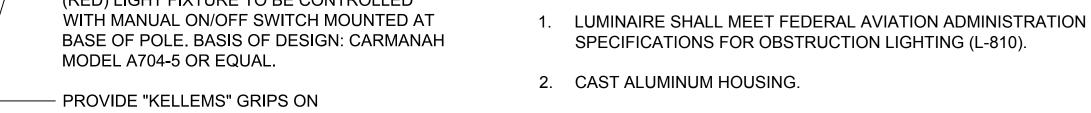
BOLLARD PLACEMENT AT FLAG POLE DETAIL





DETAIL RANGE

Sheet reference number: C - 501Sheet 22 of 43

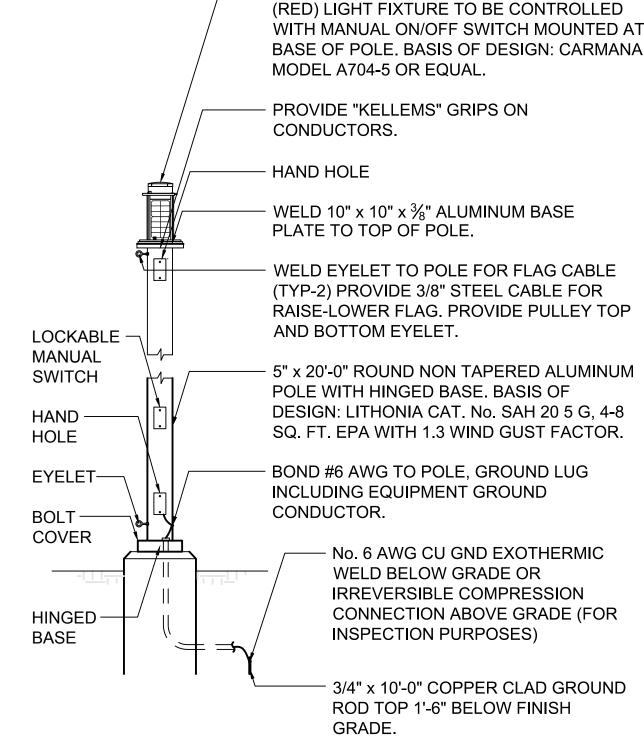


ONE PIECE 360° RED HEAT RESISTANT GLASS FRESNEL GLOBE PROVIDE TOGGLE TYPE LATCHES AND CLAMPING TO SECURE GLOBES.

4. PROVIDE SAFETY CHAINS ON GLOBES. MOUNT PHOTO-ELECTRIC CONTROL TO CONTROL LAMPS.

5. MOUNT LUMINAIRE ON 1" RIGID STEEL CONDUIT. PROVIDE JUNCTION BOX AND MOUNTING PLATE AT BASE UNLESS INDICATED OTHERWISE.

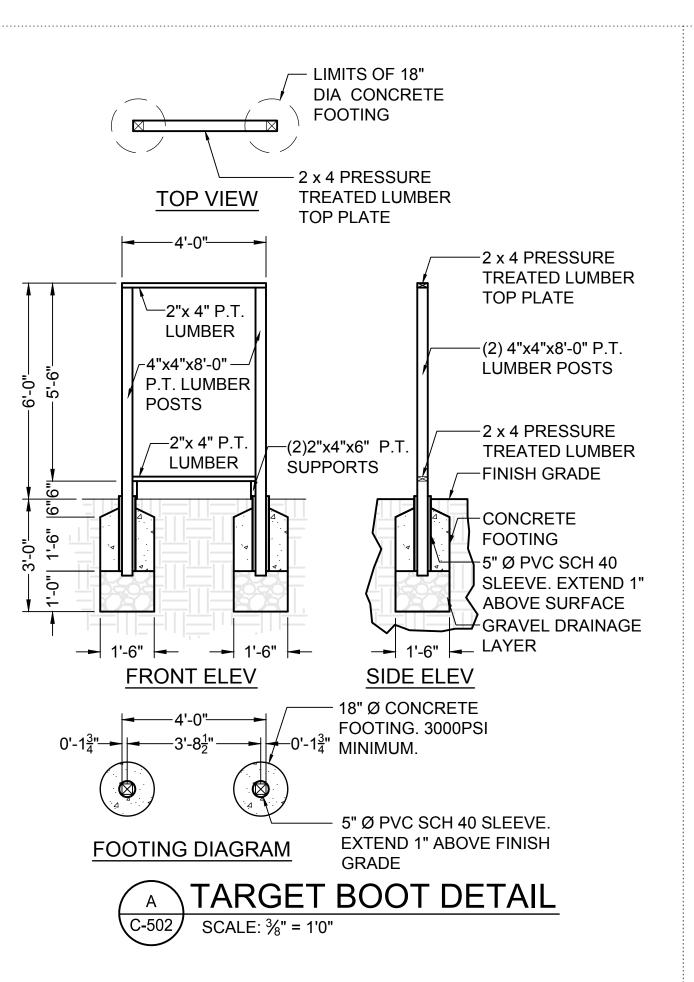
6. PROVIDE INTERNAL GREEN GROUNDING SCREW.

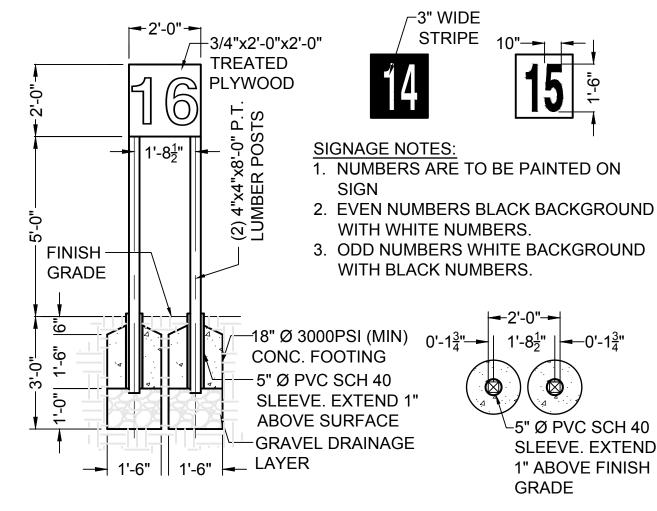


RANGE ACTIVE (HOT) FLAG POLE DETAIL

> PROFESSIONAL **ENGINEER** THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION:

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FOOTING DIAGRAM FRONT ELEV NOTES:

ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS NOTED

SCH 40 PVC SLEEVE SHALL PROTRUDE INTO GRADED CRUSHED

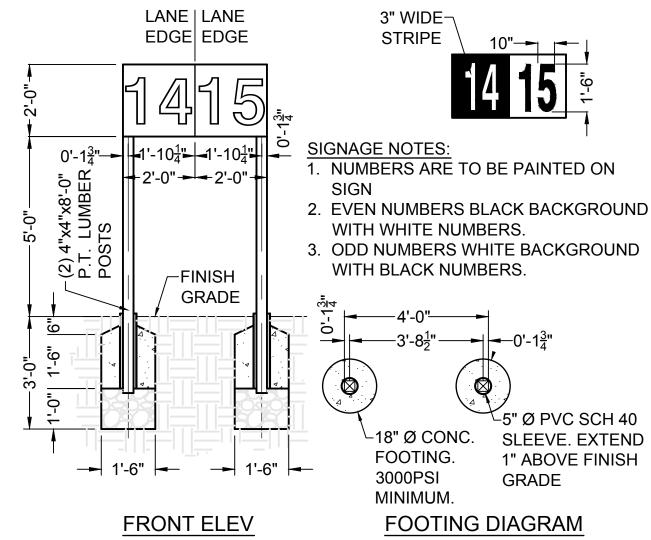
- OTHERWISE.
- AGGREGATE TO ALLOW DRAINAGE FROM POST AND SLEEVE.

SCREWS STAGGERED AT 6" O.C.

EXTEND SCH 40 PVC SLEEVE 1" ABOVE FINISH GRADE.

PLYWOOD SIGN SHALL BE FASTENED WITH 2" GALVANIZED DECK

SINGLE LANE RANGE MARKER DETAIL SCALE: 3/8" = 1'0"



NOTES:

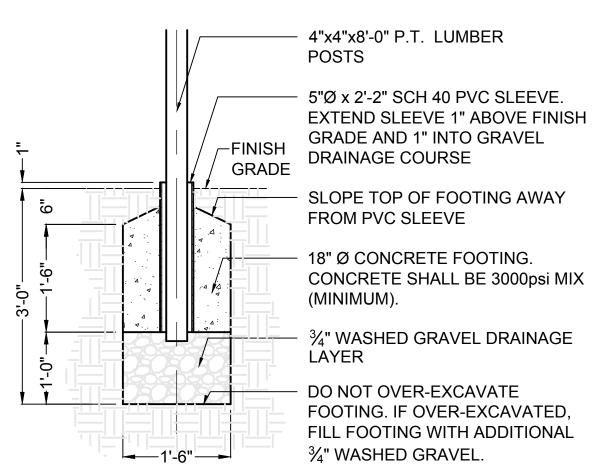
C-502

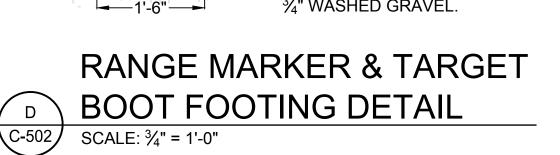
SCALE: 3/4" = 1'-0"

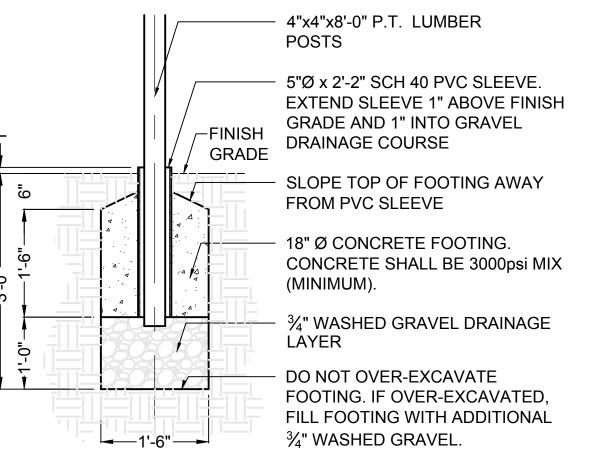
- ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS NOTED OTHERWISE.
- SCH 40 PVC SLEEVE SHALL PROTRUDE INTO GRADED CRUSHED AGGREGATE TO ALLOW DRAINAGE FROM POST AND SLEEVE.
- EXTEND SCH 40 PVC SLEEVE 1" ABOVE FINISH GRADE.
- PLYWOOD SIGN SHALL BE FASTENED WITH 2" GALVANIZED DECK SCREWS STAGGERED AT 6" O.C.

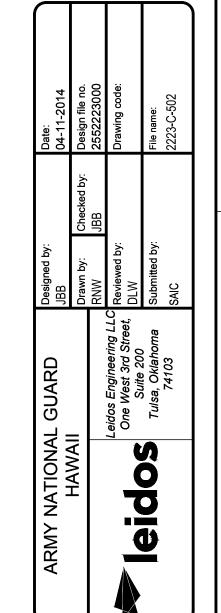
DOUBLE LANE



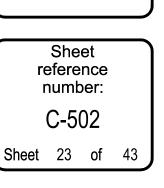


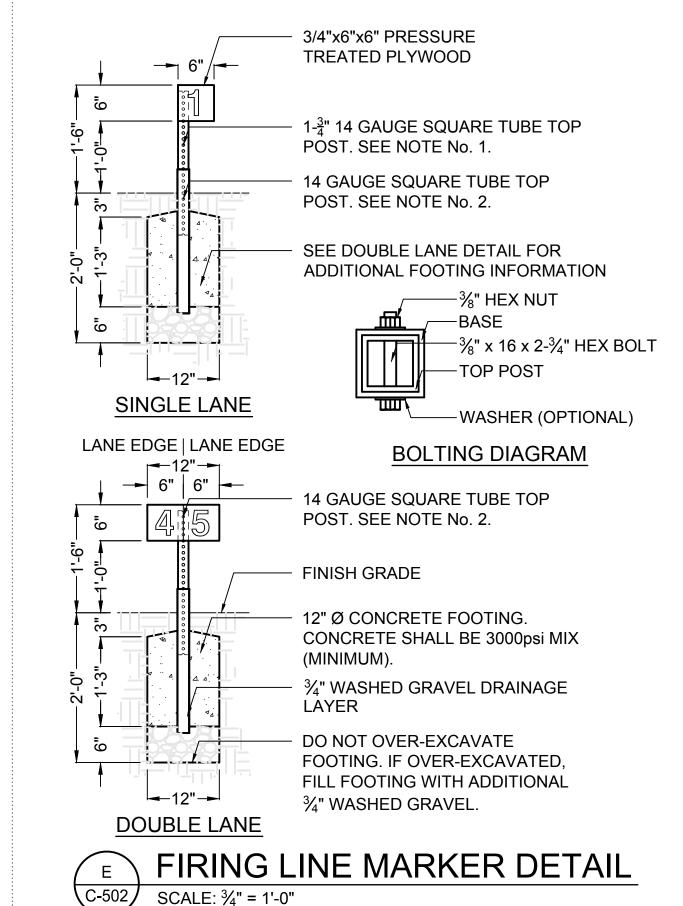


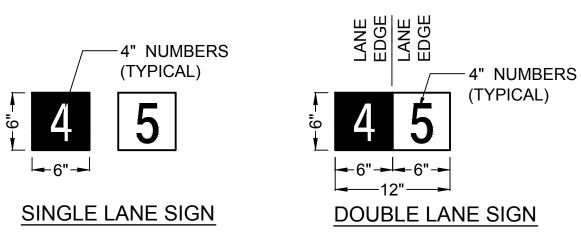










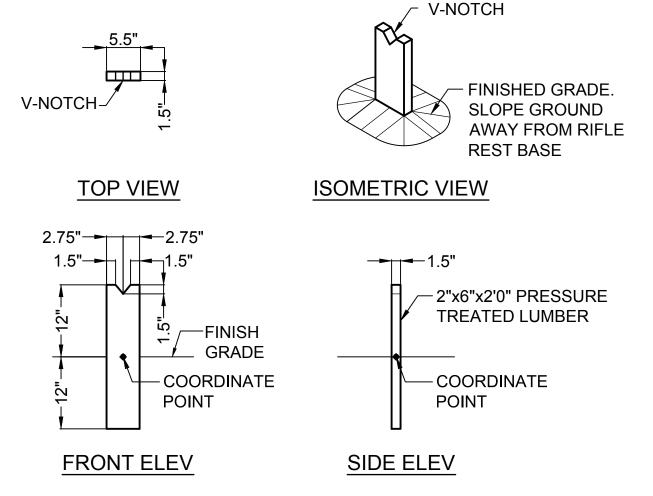


SIGNAGE NOTES:

- 1. NUMBERS ARE TO BE PAINTED ON SIGN.
- 2. EVEN NUMBERS BLACK BACKGROUND WITH WHITE NUMBERS.
- 3. ODD NUMBERS WHITE BACKGROUND WITH BLACK NUMBERS.

NOTES:

- SIGN POST AND ANCHOR TUBES SHALL BE HOT ROLLED CARBON SHEET STEEL, STRUCTURAL QUALITY, ASTM A570-79. THE FINISH SHALL BE IN-LINE, HOT-DIP GALVANIZED ZINC COATING PER ASHTO M-120, FOLLOWED BY A CHROMATE CONVERSION COATING AND A CLEAR ORGANIC EXTERIOR COATING. POST SHALL HAVE $\frac{7}{16}$ " DIAMETER HOLES OR PERFORATED HOLES SPACED 1" ON CENTER ALONG THE CENTER LINE OF EACH OF THE FOUR SIDES.
- ANCHOR TUBES SHALL BE ONE SIZE LARGER THAN POST A MINIMUM OF 24" LONG WITH A MAXIMUM OF 4" EXTENDING ABOVE THE FINISH GRADE. THE BASE OF THE ANCHOR TUBE SHALL EXTEND A MINIMUM OF 1" INTO THE GRAVEL DRAINAGE LAYER.
- THE UPPER SIGN POST SHALL TELESCOPE INSIDE THE ANCHOR TUBE APPROXIMATELY 8" TO 12".
- SECURE SIGNS TO TOP POST WITH (2) %"-16 x 3" HOT-DIPPED GALVANIZED, GRADE A, CARRIAGE BOLTS WITH WASHER AND



V-NOTCH RIFLE REST DETAIL

LICENSED

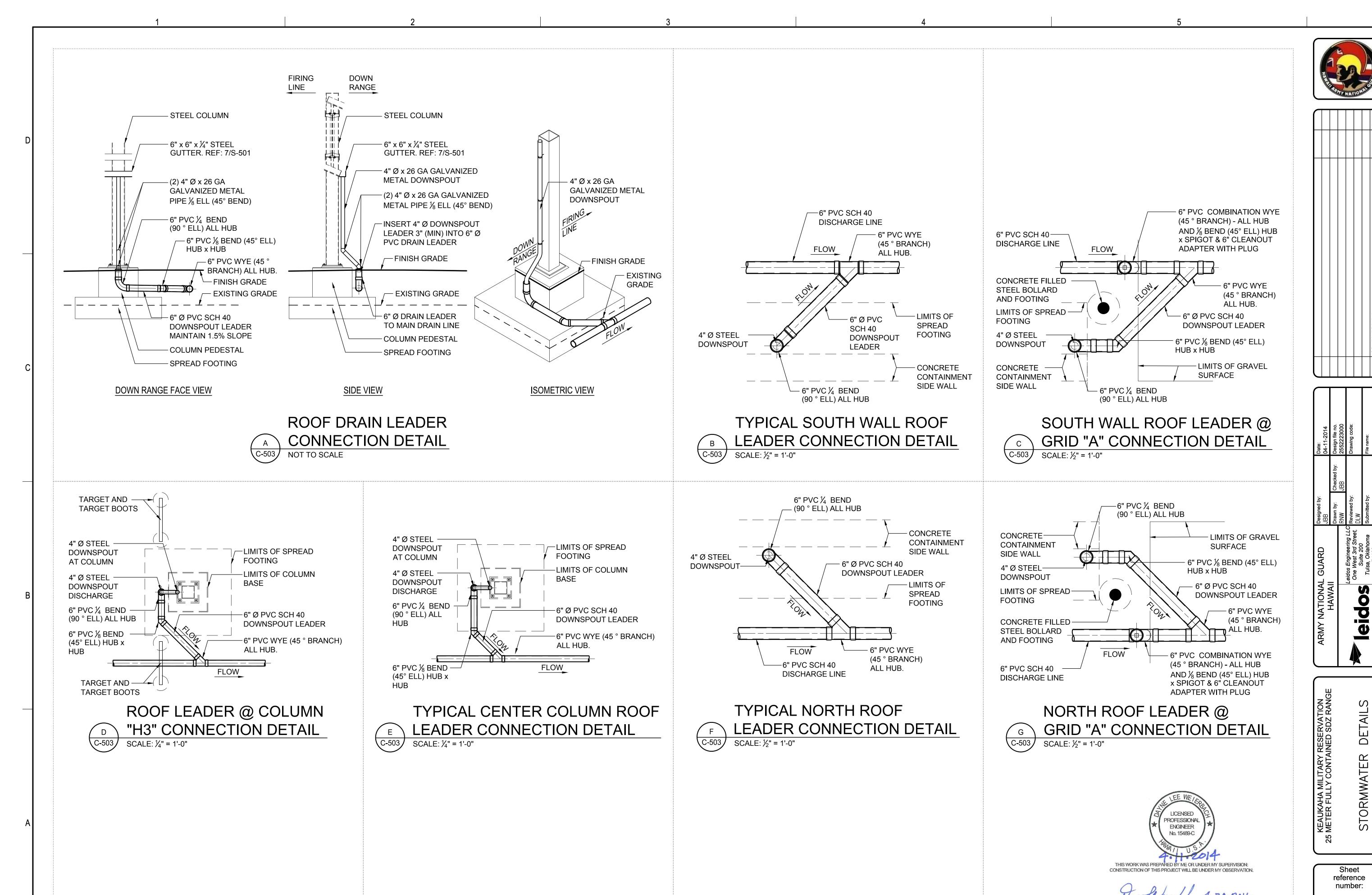
PROFESSIONAL

ENGINEER

No. 15489-C

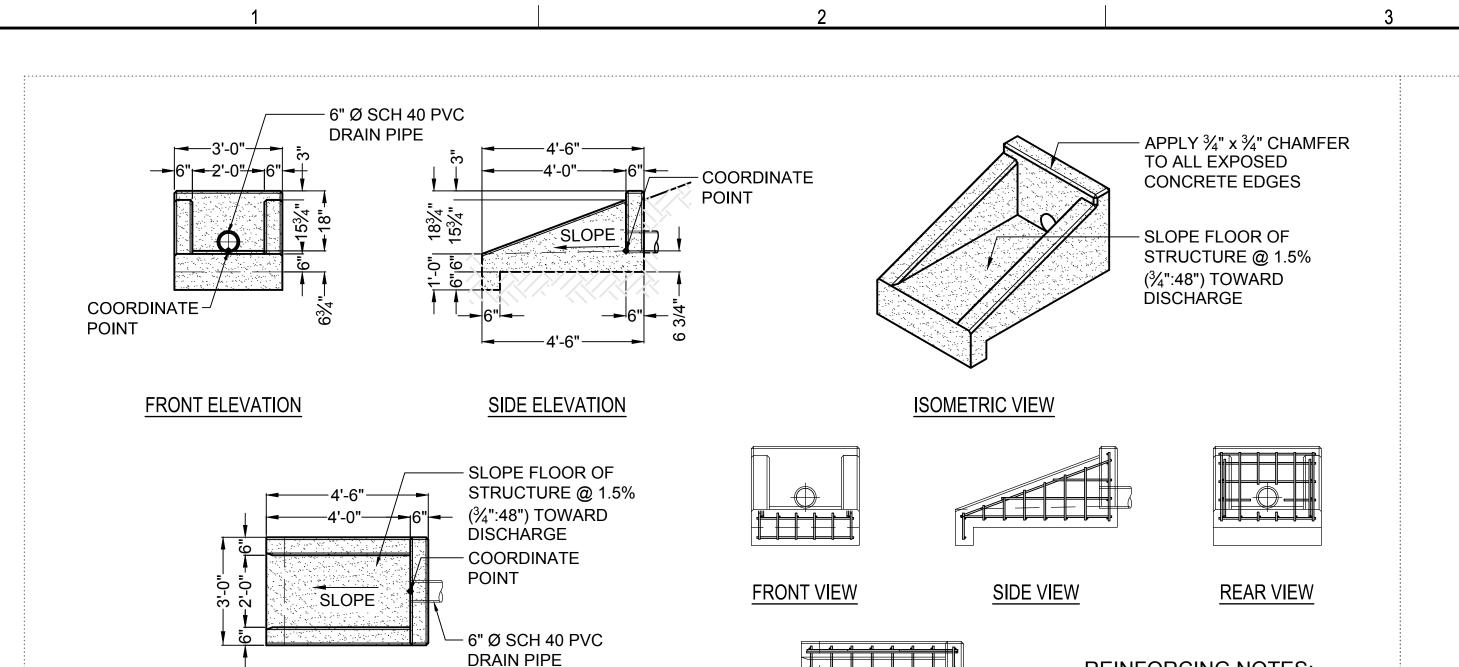
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION: CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

File name: P:\ECI\1650-TUL\C Date: April 18, 2014 - 1:12pm User: wardm



File name: P:\ECI\1650—TUL\CI Date: April 18, 2014 — 1:12pm User: wardrn

C - 503Sheet 24 of 43



PLAN VIEW

REINFORCING STEEL PLACEMENT

-18" Ø x 12" PVC SLEEVE. EXTEND RIM 1" ABOVE FINISH GRADE -6" Ø PVC CLEANOUT FINISH-ADAPTER WITH CAP **GRADE** -FILL VOID SPACE BETWEEN CLEAN-OUT AND SLEEVE WITH AGGREGATE -6" PVC SCH 40 DISCHARGE LINE

-18" Ø x 12" PVC SLEEVE. EXTEND RIM 1" ABOVE FINISH GRADE -6" Ø PVC CLEANOUT FINISH-ADAPTER WITH CAP GRADE -FILL VOID SPACE BETWEEN CLEAN-OUT AND SLEEVE WITH AGGREGATE FLOW -6" PVC SCH 40 DISCHARGE LINE

DOWN RANGE FLOW-

DETAILS STORMWATER

Sheet reference number: C - 504Sheet 25 of 43

2. MINIMUM CONCRETE STRENGTH SHALL BE 4000psi @28 DAYS. DIAGRAM DRAIN LINE OUTLET DETAIL

TERMINAL (DOWN RANGE) **CLEAN-OUT DETAIL**

SCALE: ½" = 1'-0"

- 12" LAYER SELECT SAND FILL (DOWN

REINFORCING NOTES:

MAINTAIN 2" MINIMUM **CLEARANCE FROM STEEL**

2. ALL STEEL SHALL BE ½" Ø

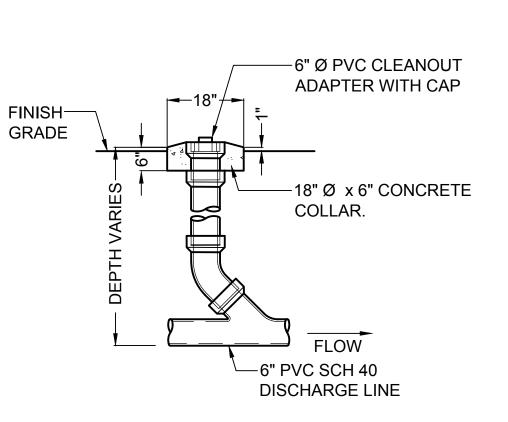
DEFORMED RE-BAR

PLACE RE-BAR 6"± O.C.

TIE ALL JOINTS

BOTH WAYS

TO CONCRETE SURFACE.



PLAN VIEW

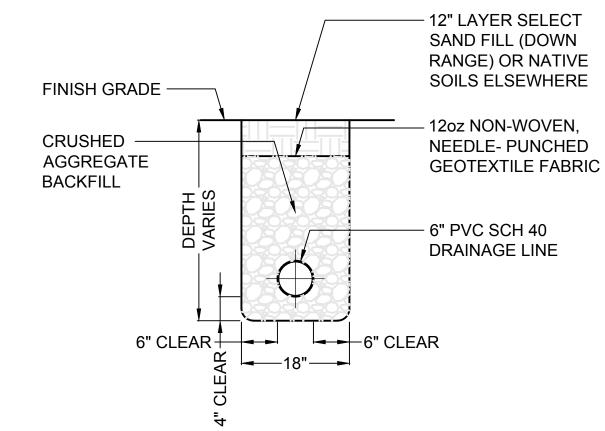
CONTRACTOR MAY ELECT TO INSTALL PRE-CAST CONCRETE

STRUCTURE RATHER THAN CAST IN PLACE. PRE-CAST

STRUCTURE SHALL BE DESIGNED TO WITHSTAND 400psi

NOTES:

WHEEL LOAD.



FLOW-THRU **CLEAN-OUT DETAIL** STORMWATER DISCHARGE LINE BEDDING DETAIL

C-504 SCALE: 3/4" = 1'-0"

SCALE: ½" = 1'-0"

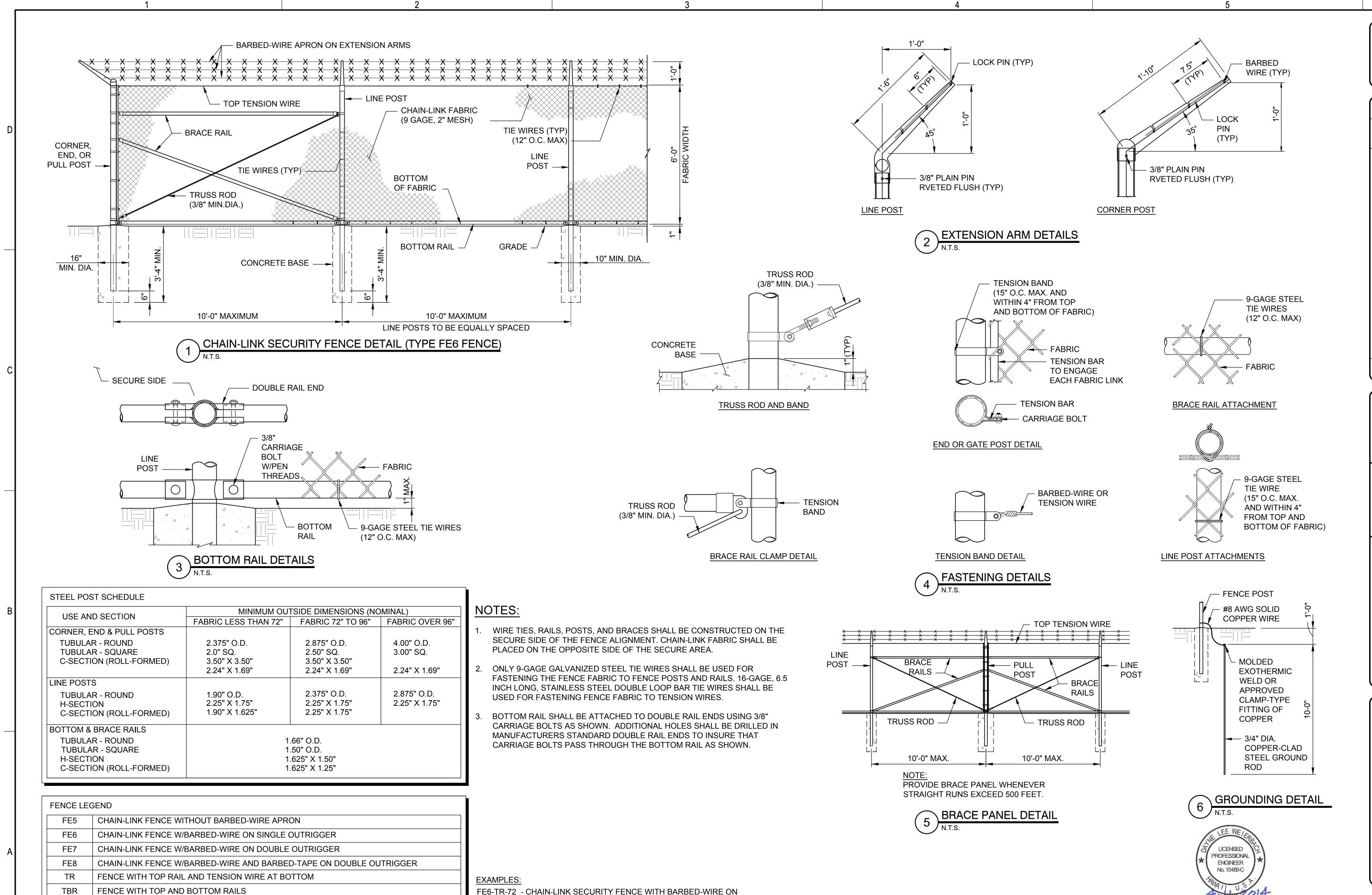
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION: CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

LICENSED PROFESSIONAL **ENGINEER**

File name: P:\ECI\1650—TUL\CN Date: April 18, 2014 — 1:12pm User: wardrn

C-504

THRU CLEAN-OUT DETAIL C-504 SCALE: ½" = 1'-0"



SINGLE OUTRIGGER, TOP RAIL, AND 72 INCH FABRIC WIDTH.

FE5-TWB-48 - CHAIN-LINK SECURITY FENCE WITH NO APRON,

FABRIC WIDTH.

TOP AND BOTTOM TENSION WIRE, AND 48 INCH

File name: P:\ECI\1650-TUL\C Date: April 18, 2014 - 1:12pm User: wardm

TWB

TWBR

TENSION WIRE TOP AND BOTTOM

FENCE WITH TOP TENSION WIRE AND BOTTOM RAIL

FINAL NUMBER IS FABRIC WIDTH IN INCHES

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION:

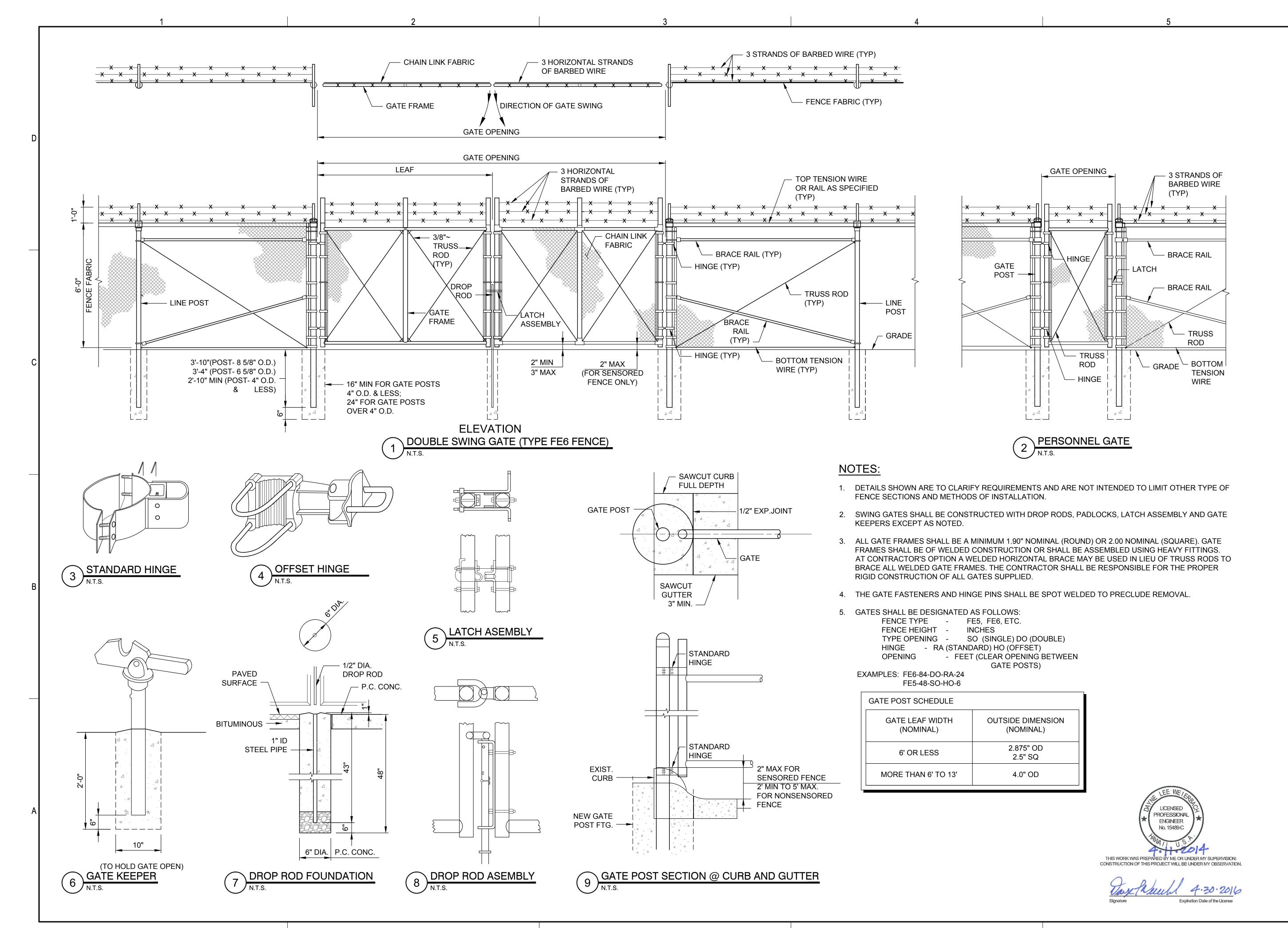
CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

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FENCE

C-505 Sheet 26 of 43



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 ARMY NATIONAL GUARD
 Designed by: JBB
 Date: O4-11-2014

 HAWAII
 Drawn by: RNW
 Checked by: JBB
 Design file no. 255223000

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 Design file no. 255223000

 Checked by: RNW
 Design file no. 255223000

 Suite 200
 DLW

 Tulsa, Oklahoma
 Submitted by: 2223-C-506

 74103
 SAIC

CHAIN LINK GATE DETAILS

Sheet reference number:

C-506
Sheet 27 of 43

STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS:

THE PROJECT IS LOCATED AT THE KEAUKAHA MILITARY RESERVATION NEAR HILO, HAWAII. THE PROJECT SITE IS AT THE SOUTHEAST LIMITS OF THE MILITARY RESERVATION, APPROXIMATELY 7250 FEET ALONG PUNA TRAIL SOUTHEAST OF THE CANTONMENT AREA.

PROJECT DESCRIPTION:

THE PROJECT CONSISTS OF GRADING, DRAINAGE, AND SITE PREPARATION TO CONSTRUCT A MILITARY FACILITY CONTAINING A BAFFLED 25 METER ZERO

PROJECT OWNER AND OPERATOR:

USP&FO-HAWAII **USPFO WAREHOUSE** 91-1179 ENTERPRISE AVENUE **BUILDING 117** KAPOLEI, HI 96707-2150

SUGGESTED SEQUENCE OF EROSION CONTROL **ACTIVITIES:**

- 1. INSTALL STABILIZED CONSTRUCTION ENTRANCES (SCE) AT LOCATIONS SHOWN ON THE PLANS
- 2. INSTALL SILT FENCE PERIMETER CONTROLS
- 3. INSTALL SIDE WALLS
- 4. GRADE REMAINDER OF PROJECT AREAS
- 5. ONCE RANGE BAFFLES AND RANGE FEATURES ARE IN PLACE, STABILIZE REMAINDER OF OPEN AREAS
- 6. ONCE ALL AREAS ARE STABILIZED REMOVE SILT FENCE AND SCE'S

SOIL TYPE:

PAHOEHOE LAVA FLOWS

AREA TO BE DISTURBED:

1.5 ACRES

OFFSITE AREA TO BE DISTURBED: (FOR CONTRACTOR USE)

APPROXIMATELY 0.5 ACRES FOR CONTRACTOR USE LAYDOWN AREAS

WEIGHTED RUNOFF COEFFICIENT **BEFORE CONSTRUCTION: 0.35** AFTER CONSTRUCTION: 0.55

NAME OF RECEIVING WATERS:

GENERAL SHEET FLOW TO PACIFIC OCEAN

PROJECT LATITUDE AND LONGITUDE:

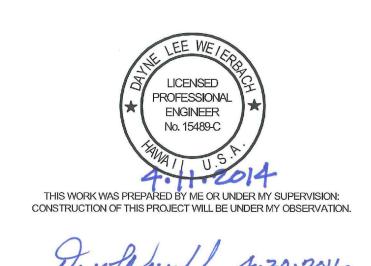
LATITUDE: 19° 41′ 55" N LONGITUDE: 155° 1' 45" W

SOURCE:

USGS 7.5 MINUTE QUADRANGLE MAP - HILO, HAWAII USGS 7.5 MINUTE QUADRANGLE MAP - KEA'AU RANCH, HAWAII

NOTE:

THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE CHARACTERISTICS AND RECEIVING WATERS FOR THIS PROJECT.



EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- **TEMPORARY SEEDING** PERMANENT SODDING, SPRIGGING OR SEEDING
- SOIL RETENTION BLANKET

VEGETATIVE MULCHING

PRESERVATION OF EXISTING VEGETATION

NOTE:

TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 21 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

_	Χ	STABILIZED CONSTRUCTION EXIT
_	Χ	TEMPORARY SILT FENCE
_		TEMPORARY SILT DIKES
_		TEMPORARY BALE BARRIERS
_		DIVERSION, INTERCEPTOR OR PERIMETER DIKES
_		DIVERSION, INTERCEPTOR OR PERIMETER SWALES
_		ROCK FILTER DAMS
_		TEMPORARY SLOPE DRAIN
		PAVED DITCH W/DITCH LINER PROTECTION
		TEMPORARY DIVERSION CHANNELS
		TEMPORARY SEDIMENT BASINS
		TEMPORARY SEDIMENT TRAPS
_		TEMPORARY SEDIMENT FILTERS
_		TEMPORARY SEDIMENT REMOVAL
_		RIPRAP

TEMPORARY BRUSH SEDIMENT BARRIERS

_ TEMPORARY STREAM CROSSINGS

X HAUL ROADS DAMPENED FOR DUST CONTROL

OFFSITE VEHICLE TRACKING:

SANDBAG BERMS

INLET SEDIMENT FILTER

X EXCESS DIRT ON ROAD REMOVED DAILY	
NOTES:	

LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN

EROSION/TEMPORARY DUST CONTROL:

- DURING CONSTRUCTION, PREVENTATIVE 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 PRACTICALLY POSSIBLE.
- 3. ALL FILL, SUBBASE AND BASE MATERIAL, PLACED WITHIN THE PROJECT AREA SHLL BE SUBSTANTIALLY COMPACTED BY THE END OF THE DAY.
- 4. THE CONTRACTOR SHALL CONDUCT ITS GRADING OPERATIONS SO THAT EXCAVATION, EMBANKMENT, AND IMPORTED MATERIAL SHALL BE DAMPENED WITH WATER DURING THE GRADING OPERATIONS AT ALL
- 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.
- FUGITIVE DUST AND SOLID WASTE DISPOSAL DURING GRUBBING AND GRADING ACTIVITIES SHALL MEET REQUIREMENTS OF ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60, AIR POLLUTION CONTROL, AND CHAPTER 58, SOLID WASTE MANAGEMENT CONTROL.

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGE WAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING: MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

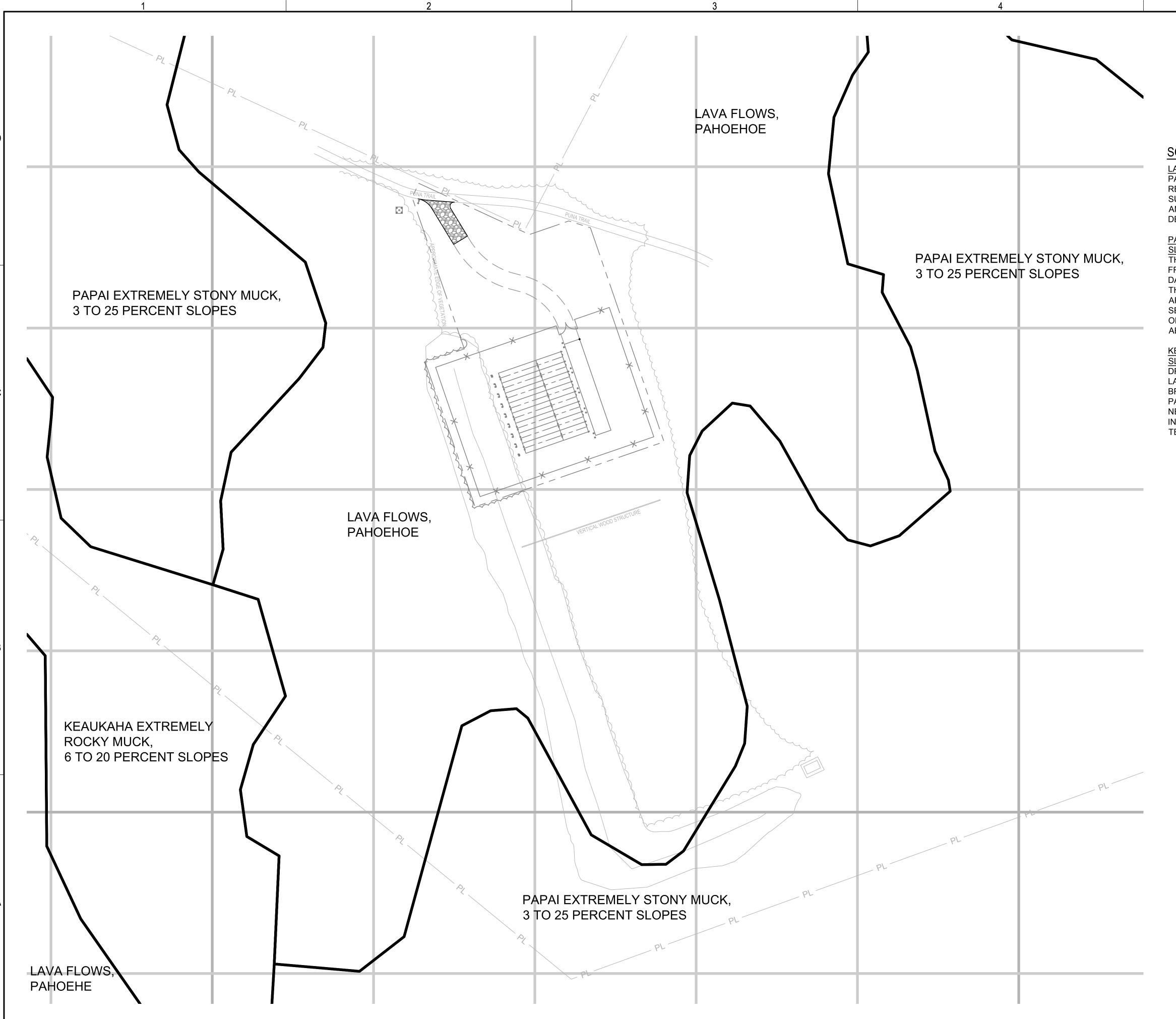
GENERAL NOTES:

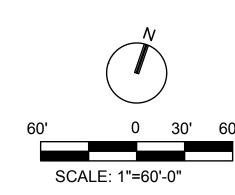
- A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE PREPARED BY THE CONTRACTOR TO COMPLY WITH THE HAWAII POLLUTION DISCHARGE ELIMINATION SYSTEM REGULATIONS. THIS PLAN SHALL BE INITIATED DURING THE CONSTRUCTION PHASE, AND SHALL BE AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORMS THAT NEED TO BE FILED BY THE CONTRACTOR WITH THE HAWAII STATE DEPARTMENT OF HEALTH. ALL NECESSARY FEES SHALL BE PAID FOR BY THE CONTRACTOR. THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION. CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION. THE SWPPP SHALL BE IN ACCORDANCE WITH THE HAWAII NPDES GENERAL PERMIT (CHAPTER 11-55) CONDITION.
- MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY DEMOLITION OR EARTH MOVING WORK IS INITIATED. THESE MEASURES SHALL BE PROPERLY CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
- 3. ALL EROSION CONTROL MEASURES SHALL BE CHECKED AND REPAIRED AS NECESSARY.
- STORM WATER FLOWING TOWARD THE CONSTRUCTION AREA SHALL BE DIVERTED BY USING APPROPRIATE CONTROL MEASURES AS PRACTICAL.
- CONSTRUCT TEMPORARY CONSTRUCTION EGRESS/INGRESS AREA AT LOCATIONS SHOWN ON THIS DRAWING. ALL VEHICLES EXITING THE SITE ARE TO BE WASHED DOWN PRIOR TO EXIT. CONSTRUCTION ENTRANCE AREA MAY BE ADJUSTED TO FIT THE CONTRACTOR'S OPERATIONS.
- 6. CONSTRUCT PERIMETER PROTECTION (SILT FENCE OR COMPOST FILTER SOCK) SEE DETAILS THIS DRAWING.
- 7. AT THE END OF THE GRADING OPERATION AND AT THE COMPLETION OF PROJECT, EXISTING DRAIN INLETS AND DRAIN MANHOLES SURROUNDING THE PROJECT SITE SHALL BE INSPECTED AND ANY ACCUMULATED SEDIMENT AND DEBRIS FOUND IN THE DRAIN INLETS AND DRAIN MANHOLES SHALL BE REMOVED. FLUSHING INTO THE DRAIN INLETS AND DRAIN MANHOLES IS PROHIBITED.
- THE CONTRACTOR SHALL ENSURE THAT EXISTING ROADWAYS USED TO ACCESS THE PROJECT ARE CLEANED OF ALL DEBRIS, TRASH, DIRT, MUD. ETC. AT THE END OF EACH WORK DAY.

GENERAL NOTES (CONT):

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SEWAGE SPILLS CAUSED DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE STATE DEPARTMENT OF HEALTH AND UTILIZE APPROPRIATE SAMPLING AND ANALYZING PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PUBLIC NOTIFICATIONS AND PRESS RELEASES.
- 10. GOOD HOUSEKEEPING BEST MANAGEMENT PRACTICES:
- A. MATERIAL MANAGEMENT PRACTICES SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF. AN EFFORT SHALL BE MADE TO STORE ONLY ENOUGH PRODUCT AS IS REQUIRED TO DO THE JOB.
- B. ALL MATERIALS STORED ONSITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND IF POSSIBLE UNDER A ROOF OR OTHER ENCLOSURE.
- C. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL
- D. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
- E. WHENEVER POSSIBLE, THE ENTIRE CONTAINER CONTENTS WILL BE USED UP PRIOR TO DISPOSAL OF THE CONTAINER.
- F. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED.
- G. THE CONTRACTOR SHALL CONDUCT A DAILY INSPECTION TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ONSITE
- H. CONCRETE TRUCK CHUTE WASH WATER WILL BE DISCHARGED TO A DESIGNATED AREA WHERE COMMINGLING WITH STORM WATER WILL BE PREVENTED BY CUT-OFF DITCH OR PERIMETER BERM. WATER SHALL NOT BE DISCHARGED IN THE DRAINAGE SYSTEM OR WATERS OF THE UNITED STATES. THE CONTRACTOR SHALL CLEAN DISPOSAL SITE AS REQUIRED OR AS REQUESTED BY THE CONTRACTING OFFICER.
- 11. THE FINAL LIFT OF EACH DAY'S WORK SHALL BE COMPACTED TO PREVENT **EROSION OF FILL MATERIAL**
- 12. ANY DIRT OR GRASSED AREA DISTURBED SHALL BE RESTORED BY SEEDED HYDROMULCH. THE GRASS SHALL BE FULLY ESTABLISHED AT COMPLETION OF PROJECT.
- 13. STABILIZATION SHALL BE ACCOMPLISHED BY TEMPORARILY OR PERMANENTLY PROTECTING THE DISTURBED SOIL SURFACE FROM RAINFALL IMPACTS AND RUNOFF WITH PLANTING OR GRAVEL FOR STABILIZATION WITH PLANTING, TEMPORARY IRRIGATION SHALL BE INSTALLED TO FACILITATE GROWTH. DO NOT OVERWATER.
- 14. FERTILIZER AND PESTICIDE APPLICATION SHALL NOT OCCUR DURING HEAVY RAINS. OR IF HEAVY RAINS ARE ANTICIPATED DURING THE WORKDAY.
- 15. ALL CONTROL MEASURES SHALL BE CHECKED AND REPAIRED AS NECESSARY, FOR EXAMPLE, WEEKLY IN DRY PERIODS AND WITHIN TWENTY-FOUR HOURS AFTER ANY RAINFALL OF 0.5 INCHES OR GREATER WITHIN A 24-HOUR PERIOD, DURING PROLONGED RAINFAIL DAILY CHECKING IS NECESSARY. THE CONTRACTOR SHALL MAINTAIN RECORDS OF CHECKS AND REPAIRS.
- 16. IF HEAVY RAINS ARE PROJECTED DURING A WORKDAY, ALL CONTROL STRUCTURES SHALL BE INSPECTED IMMEDIATELY AND REINFORCED AS NECESSARY.
- 17. THE CONTRACTOR SHALL MAINTAIN RECORDS OF THE DURATION AND ESTIMATED VOLUME OF STORM WATER DISCHARGE(S).
- 18. A SPECIFIC INDIVIDUAL SHALL BE DESIGNATED TO BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS ON THE PROJECT SITE.
- 19. CONTRACTORS AND SUBCONTRACTORS SHALL BE TRAINED ON THE BEST MANAGEMENT PRACTICES.
- 20. SANITARY AND SEPTIC WASTES SHALL BE COLLECTED FROM ON-SITE FACILITIES ON A REGULAR BASIS BY A LICENSED HAULER, SANITARY AND SEPTIC FACILITIES SHALL NOT BE LOCATED NEAR WATERCOURSES
- 21. DUST CONTROL WITH WATER SPRAY (BY TRUCK OR TEMPORARY SPRINKLERS) SHALL BE INSTALLED AS NEEDED. DO NOT OVERWATER.
- 21. PERIMETER PROTECTION SHALL BE CLEARED OF SILT IMMEDIATELY FOLLOWING THE END OF ANY RAINFALL THAT CAUSES SILT BUILDUP.
- 22. LOCATE STOCKPILES, INCLUDING WASTE AND SOIL, MATERIALS, CONCRETE WASH, AND TIRE WASH AWAY FROM CONCENTRATED DRAINAGE FLOWS, DRAINAGE SWALES AND INLETS.









SOILS NOTES:

LAVA FLOWS, PAHOEHOE - THIS UNIT CONSISTS OF PAHOEHOE TYPE LAVA FLOWS. THE FLOWS ARE RELATIVELY SMOOTH AND HAVE A ROPEY GLAZED SURFACE. A LITTLE EARTHY MATERIAL MAY BE IN CRACKS AND SHELTERED POCKETS. THE FLOWS ARE VIRTUALLY DEVOID OF VEGETATION, EXCEPT FOR LICHENS.

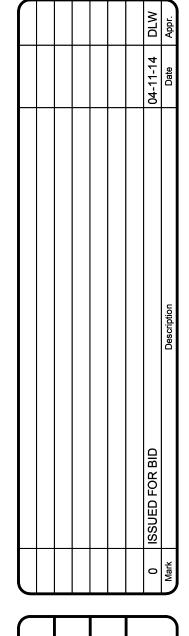
PAPAI EXTREMELY STONY MUCK, 3 TO 25 PERCENT
SLOPES - THE PAPAI SERIES CONSISTS OF WELL DRAINED,
THIN EXTREMELY STONY ORGANIC SOILS OVER
FRAGMENTAL AA LAVA. THE SURFACE LAYER IS VERY
DARK BROWN EXTREMELY STONY MUCK ABOUT 8 INCHES
THICK. IT IS UNDERLAIN BY FRAGMENTAL AA LAVA. THEY
ARE ON UPLANDS AT AN ELEVATION RANGING FROM NEAR
SEA LEVEL TO 1000 FEET. THEY RECEIVE 90 TO 150 INCHES
OF RAINFALL ANNUALLY. THEIR SOIL TEMPERATURE IS
ABOUT 73 DEGREES F°.

KEAUKAHA EXTREMELY ROCKY MUCK, 6 TO 20 PERCENT SLOPES - THE KEAUKAHA SERIES CONSISTS OF WELL DRAINED, THIN ORGANIC SOILS OVERLYING PAHOEHOE LAVA BEDROCK. THE SURFACE LAYER IS VERY DARK BROWN MUCK ABOUT 8 INCHES THICK. IT IS UNDERLAIN BY PAHOEHOE LAVA BEDROCK. ELEVATION RANGES FROM NEAR SEA LEVEL TO 1000 FEET. THEY RECEIVE 90 TO 150 INCHES OF RAINFALL ANNUALLY. THEIR MEAN ANNUAL TEMPERATURE IS BETWEEN 72 AND 74 DEGREES F°.

PROFESSIONAL

ENGINEER

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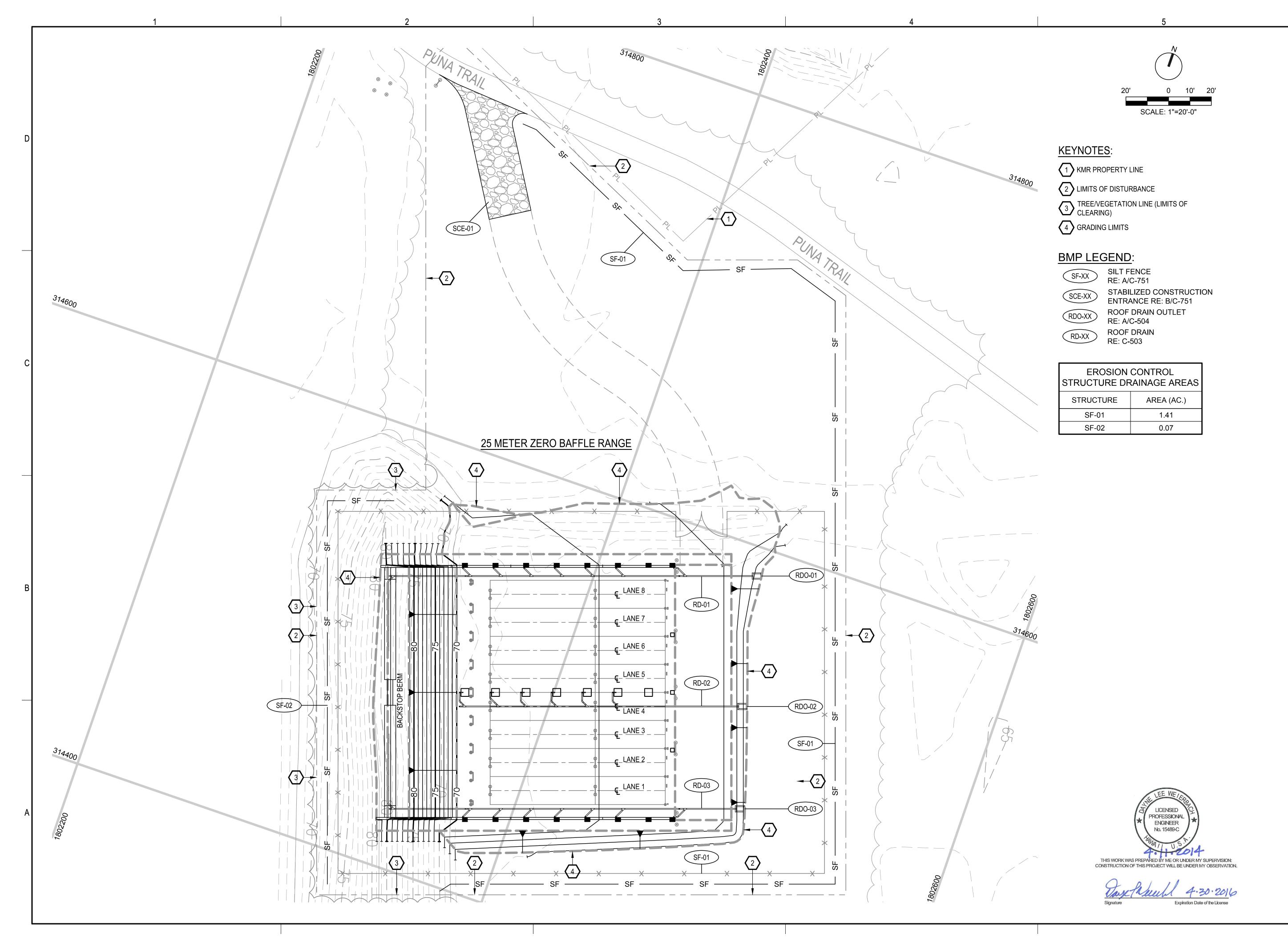


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KEAUKAHA MILITARY RESERVATION
25 METER FULLY CONTAINED SDZ RANGE
SOILS MAP

Sheet reference number: C-701

Sheet 29 of 43



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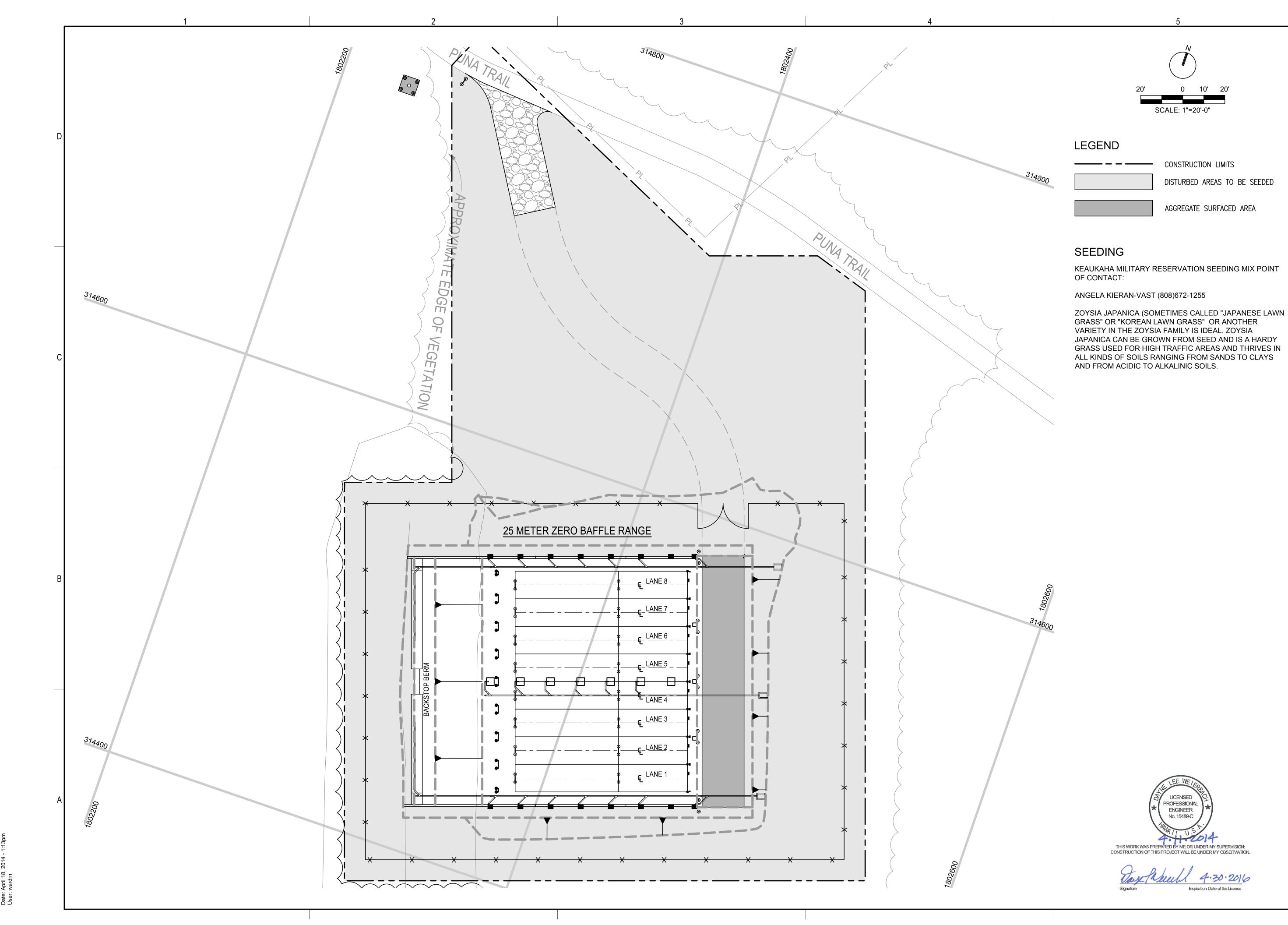
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KEAUKAHA MILITARY RESERVATION
METER FULLY CONTAINED SDZ RANGE
EROSION AND SEDIMENT
CONTROL PLAN SHEET 1

Sheet reference number:

C-711
Sheet 30 of 43





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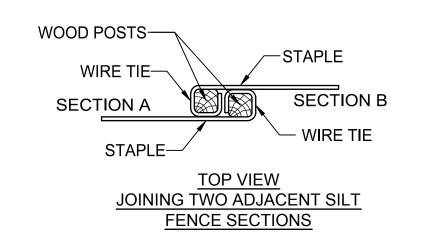
SEEDING AND SODDING PLAN
SEEDING AND SODDING PLAN

Sheet reference number:

C-721
Sheet 31 of 43

FILTER FABRIC ATTACH SECURELY - SUPPORT WIRE TO UPSTREAM SIDE OF POST COMPACTED NATIVE-· 2"x2" WOOD OR STEEL SOIL BACKFILL OR T-POST 18" DEEP (MIN) **GRAVEL** 24" ABOVE GRADE (MIN) RUNOFF

CROSS SECTION



BEST MANAGEMENT PRACTICES (BMP'S)

POLLUTION THROUGH STORM RUNOFF IS INTENSIFIED AT CONSTRUCTION SITES DUE TO THE REMOVAL OF THE NATURAL GROUND COVER OF THE SITE AS WELL AS THE INTRODUCTION OF HAZARDOUS CHEMICALS AND WASTES TO THE AREA. MEASURES ARE REQUIRED BOTH DURING CONSTRUCTION AND AFTER THE COMPLETION OF CONSTRUCTION TO STABILIZE THE SITE. STABILIZATION OF THE SITE DURING CONSTRUCTION ACTIVITIES CONSISTS OF THE INSTALLATION OF TEMPORARY OR PERMANENT MEASURES TO PREVENT EROSION OR TO INTERCEPT SEDIMENT PRIOR TO IT LEAVING THE SITE. THIS CAN BE ACCOMPLISHED THROUGH THE USE OF GROUND COVER MULCHING, PAVING, SILT FENCES, AND SEDIMENT BASINS ALONG WITH CONSTRUCTION METHODS TO REDUCE THE DISTURBED AREAS OF CONSTRUCTION.

CONSTRUCTION SPECIFICATIONS

- FENCE POSTS SHALL BE A MINIMUM OF 5'-0" LONG DRIVEN 24" MINIMUM INTO THE GROUND. STEEL POSTS WILL BE STANDARD T OR U SECTION WEIGHTING NOT LESS THAN 1.00 POUND PER LINEAR FOOT.
- GEOTEXTILE SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES AT TOP AND MID-SECTION AND SHALL MEET THE DEFINED FILTER FABRIC SPECIFICATIONS.
- WHERE ENDS OF GEOTEXTILE FABRIC COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND WIRE TIED TO PREVENT SEDIMENT BYPASS.
- SILT FENCE SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND MAINTAINED WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHED 50% OF THE FABRIC HEIGHT.

MANNER OF CONSTRUCTION

PLACE THE BOTTOM 1FT OF FABRIC IN 8-INCH DEEP TRENCH LAPPING TOWARD THE UPSLOPE SIDE

50' MINIMUM-

MOUNTABLE BERM-

(6" MIN.)

GEOTEXTILE CLASS 'C' -

MINIMUM 6" OF 2"-3"

AGGREGATE OVER

OF STRUCTURE

LENGTH AND WIDTH

OR BETTER

EXISTING —

GROUND

EXISTING —

-EARTH FILL

-INSTALL DRAINAGE

PIPE IF NECESSARY

PAVEMENT

ROCK SURFACE TO REMAIN UPON

COMPLETION OF THE PROJECT.

MANNER OF CONSTRUCTION (CONT.)

- BACKFILL WITH COMPACTED EARTH OR GRAVEL AS SHOWN. TO REDUCE MAINTENANCE, EXCAVATE A SHALLOW SEDIMENT STORAGE AREA ON UP SLOPE SIDE OF FENCE WHERE SEDIMENTATION IS EXPECTED.
- PROVIDE GOOD ACCESS TO DEPOSITION AREAS FOR CLEAN-OUT AND MAINTENANCE.
- DO NOT INSTALL SEDIMENT FENCE ACROSS INTERMITTENT OR PERMANENT STREAMS, CHANNELS, OR ANY LOCATION WHERE CONCENTRATED FLOW IS ANTICIPATED.

INSPECTIONS

POLLUTANTS

INSPECTIONS SHALL BE PERFORMED EVERY SEVEN (7) DAYS OR AFTER OF A RAINFALL EVENT OF 0.5 INCHES OR GREATER

MAJOR ITEMS TO BE OBSERVED DURING INSPECTIONS INCLUDE

LOCATION OF DISCHARGES OF SEDIMENT OR OTHER

LOCATION OF BEST MANAGEMENT PRACTICES (BMP'S) THAT ARE IN NEED OF MAINTENANCE

LOCATION OF BMP'S WHICH ARE NOT PERFORMING, FAILED TO OPERATE, OR WERE INADEQUATE

LOCATIONS WHERE ADDITIONAL BMP'S ARE NEEDED.

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- 2. WIDTH 20' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS
- 12oz NON-WOVEN, NEEDLE PUNCHED, GEOTEXTILE FABRIC SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO
- STONE CRUSHED AGGREGATE (CLASS "A" STONE) SHALL BE PLACED AT LEAST 8" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.
- SURFACE WATER ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT (TGCE/E) SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE, PIPE INSTALLED THROUGH THE STABILIZED TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT (TGCE/E) SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. PIPE HAS TO BE SIZED ACCORDING TO THE DRAINAGE. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY A PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 6" MINIMUM WILL BE REQUIRED.
- LOCATION A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT (TGCE/E) SHALL BE LOCATED AT EVERY TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT (TGCE/E).

CONSTRUCTION NOTES:

- LENGTH MINIMUM OF 50'
- PLACING STONE.

POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST

FILTER FABRIC SPECIFICATIONS

NOT TO SCALE

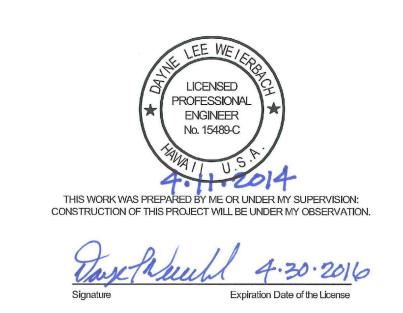
SILT FENCE SHALL BE CONSTRUCTED OF A WOVEN, POLYPROPYLENE, POLYESTER OR POLYMIDE MATERIAL THAT SHALL BE RESISTENT TO ULTRA- VIOLET DEGRADATION AND ROT. THE EDGES OF THE WOVEN FABRIC SHALL BE SEALED OR SELVAGED TO PREVENT RAVELING. THE FABRIC HALL EXHIBIT THE FOLLOWING PHYSICAL PROPERTIES WHEN SAMPLED AND TESTED USING THE SPECIFIED METHODS.

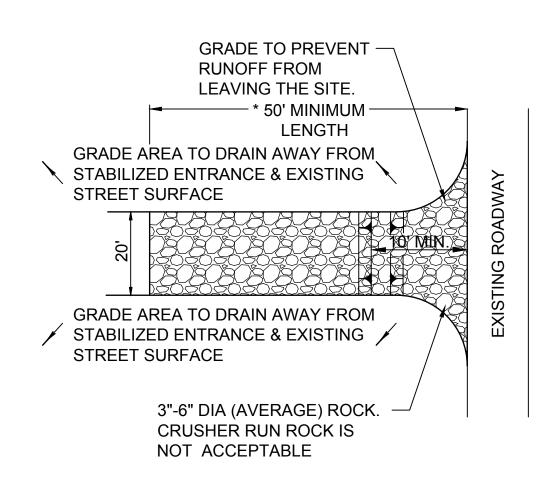
FENCE) INSTALLATION DETAIL

PROPERTY		TEST ME	THODS	VALUES
GRAB TENSILE		ASTM D	-4632	100 LB. (MIN.)
ELONGATION (@ YIELD	ASTM D	-4632	10-40% (MAX.)
TRAPEZOID TE	AR	ASTM D	-4533	50 LB. (MIN.)
UV RESISTANO	E	ASTM D	-4355	80% (MIN.)
APPARENT OP	ENING SIZE	ASTM D	-4751	20-50 US SIEVE
PERMITIVITY 1	/SEC	ASTM D	-4491	O.1 (MIN.)

PREFABRICATED FENCE SYSTEMS MAY BE USED PROVIDED THEY MEET ALL THE MATERIAL REQUIREMENTS.

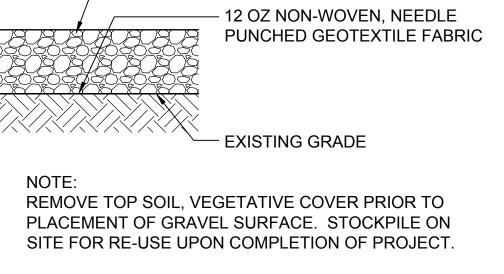
EROSION CONTROL MEASURES SHALL REMAIN UNTIL A STAND OF VEGETATIVE GROUND COVER OF 70% OR GREATER COVERAGE IS ESTABLISHED.





CURBLESS ROADWAY PLAN VIEW

GRAVEL CONSTRUCTION ENTRANCE/EXIT DETAIL C-751 NOT TO SCALE



SECTION - A

Sheet reference number: C-751

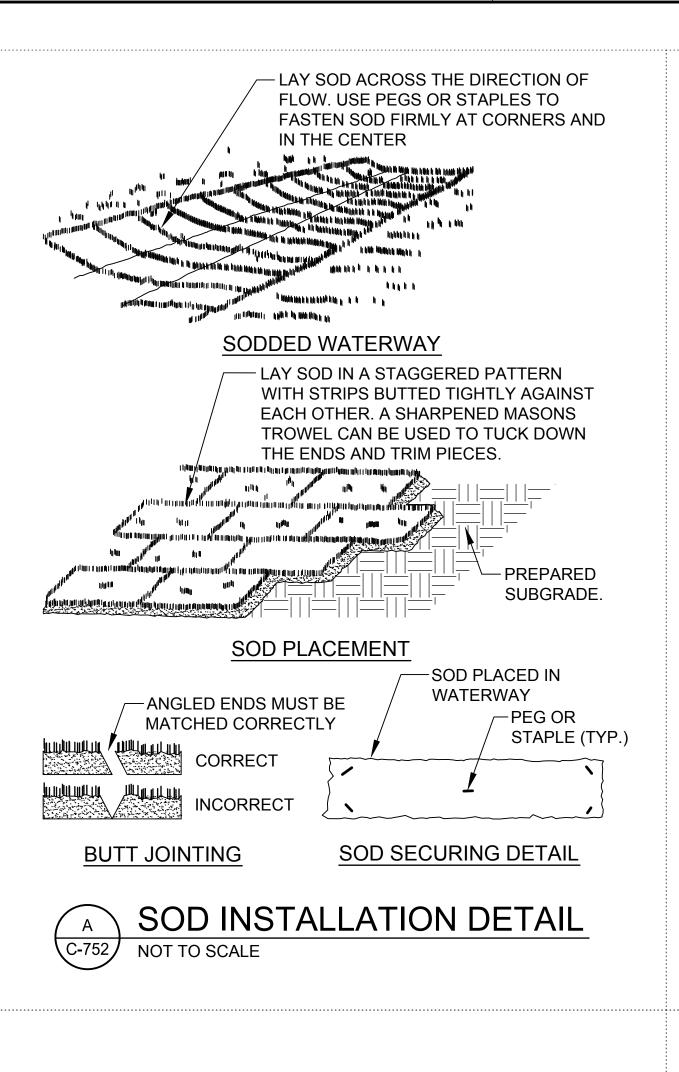
DIMENT S SHEET

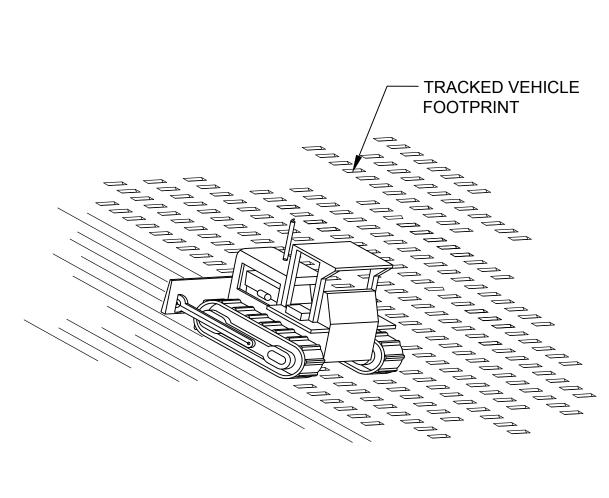
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AND SE

EROSION, CONTROL D

Sheet 32 of 43

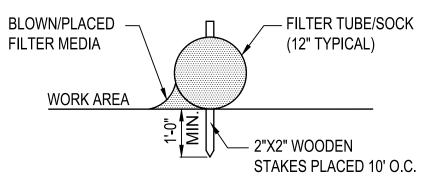




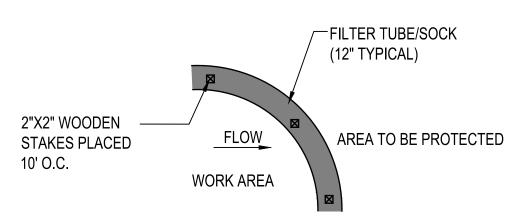
CONSTRUCTION NOTES

TRACK DISTURBED AREAS PERPENDICULAR TO THE NATURAL CONTOUR TO PROVIDE GROOVES TO CAPTURE SEED, RAINFALL AND SLOW RUNOFF.

SURFACE ROUGHENING DETAIL



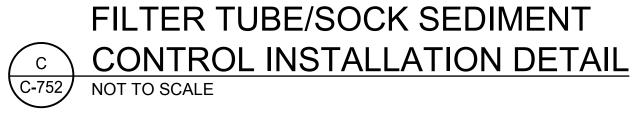
CROSS SECTION

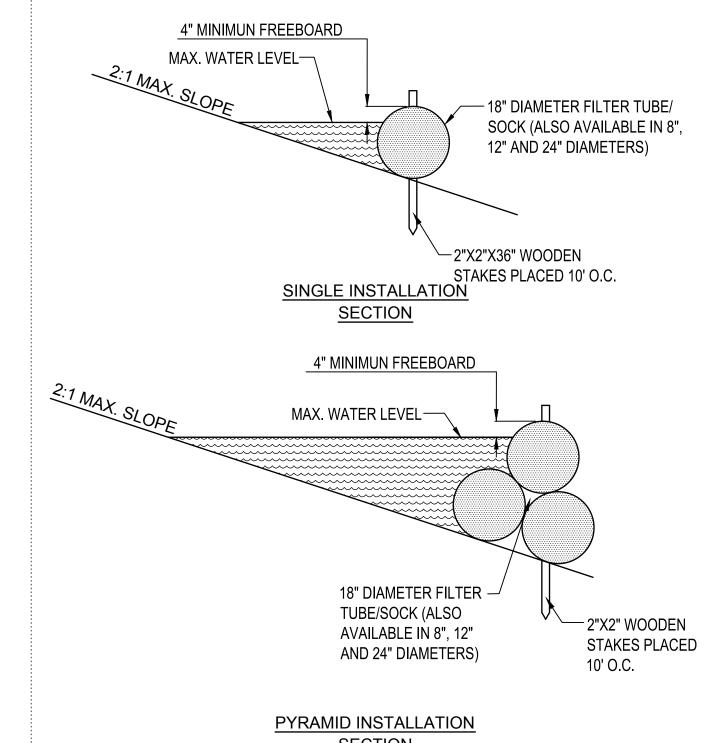


PLAN VIEW

NOTES:

- ALL MATERIAL TO MEET FILTER TUBE/SOCK SPECIFICATIONS.
- COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.
- MAY TAKE THE PLACE OF SILT FENCE AT THE DISCRETION OF THE CONTRACTOR WITH THE APPROVAL FROM THE ENGINEER.
- WHERE FILTER TUBES/SOCKS ARE LOCATED ON PAVED AREAS, SECURE FILTER TUBE/SOCK PLACEMENT WITH SAND BAGS.
- FILTER TUBE/SOCK MAY BE USED IN LIEW OF SILT FENCE AT THE DISCRETION OF THE CONTRACTOR

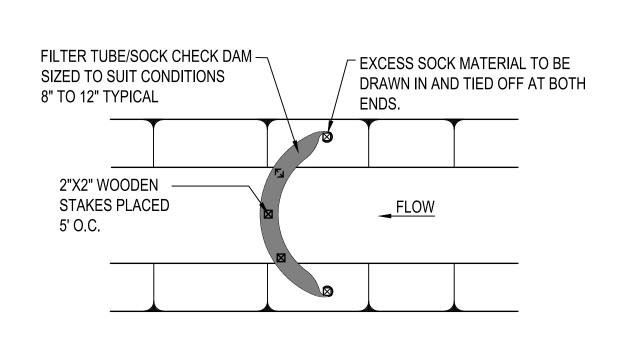




SECTION

C-752

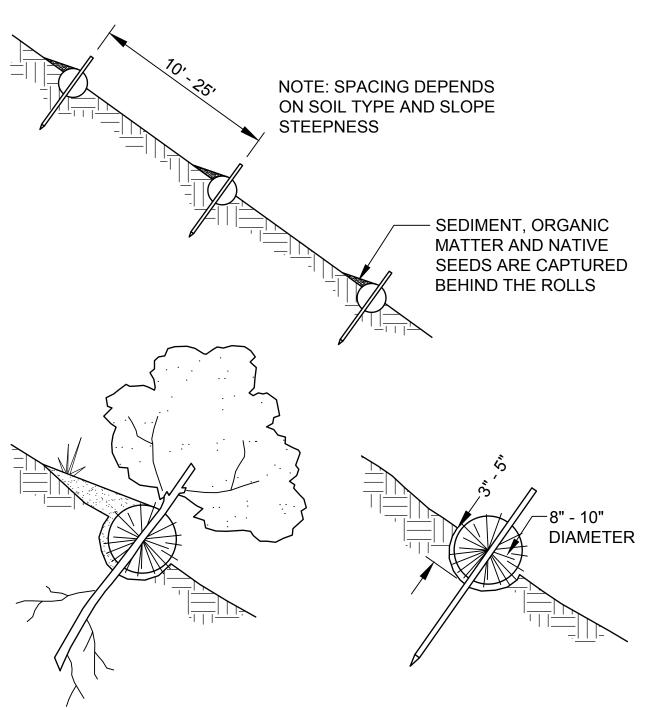
FILTER TUBE/SOCK CHECK DAM SECTION DETAIL



NOTES:

- ALL MATERIAL TO MEET FILTER TUBE/SOCK SPECIFICATIONS\
- CHECK DAM SHOULD BE USED IN AREAS THAT DRAIN 10 ACRES OR
- SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS BEEN REACHED 1/2 THE HEIGHT OF THE CHECK DAM.
- CHECK DAM CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.

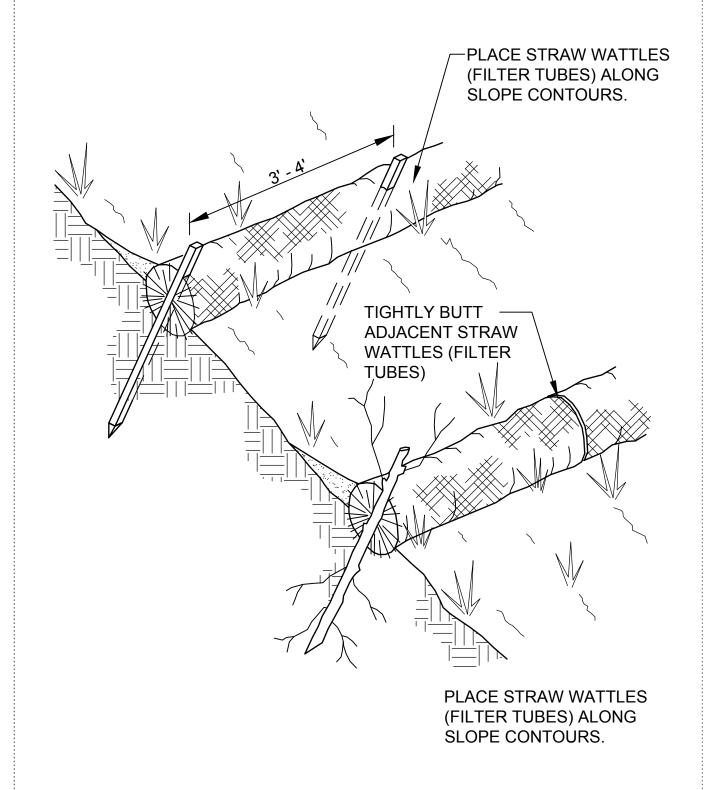


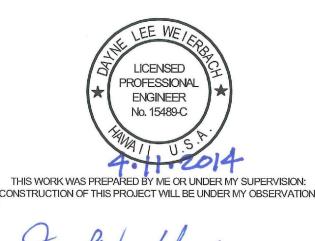


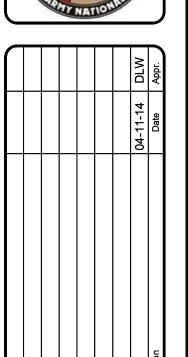
LIVE STAKE

1"x1" STAKE

STRAW WATTLE **INSTALLATION DETAIL** NOT TO SCALE







Sheet reference number: C-752 Sheet 33 of 43

LOCATION

SHED ROOF

BAFFLED ROOF--

ROOF SNOW LOADS IN ACCORDANCE WITH ASCE 7-05 AND 2009 IBC. FLAT ROOF SNOW LOAD----

SNOW EXPOSURE FACTOR-----SNOW LOAD IMPORTANCE FACTOR-----THERMAL FACTOR---

LATERAL LOADS:

A. WIND LOAD IN ACCORDANCE WITH HAWAII STATE BUILDING CODE AND AMENDMENTS, ASCE 7-05. BASIC WIND SPEED----100 Mph IMPORTANCE FACTOR-----1.0

EXPOSURE CATEGORY-----INTERNAL PRESSURE COEFF.-----+/- 0.55 (BAFFLES)

B. SEISMIC DESIGN PARAMETERS IN ACCORDANCE WITH ASCE 7-05

SIT	E SPECIFIC
S s	1.500 g 0.600 g 1.00 g
S DI	0.52 g I D C
SEISMIC IMPORTANCE FACTOR	1.0 2.50 1.50 0.400 0.667

OVERALL NOTES

- SHOP DRAWINGS SHALL BE ORIGINAL DRAWINGS, PREPARED BY CONTRACTOR, SUBCONTRACTOR, SUPPLIER OR DISTRIBUTOR. REPRODUCTION, OF ANY KIND, OF STRUCTURAL CONTRACT DOCUMENTS AS ERECTION PLANS OR DETAILS WILL NOT BE PERMITTED AND WILL BE REJECTED WITHOUT REVIEW.
- 2. CONSTRUCTION DOCUMENTS CONSIST OF THESE DRAWINGS AND A SEPARATE BOOK OF SPECIFICATIONS. THE DRAWINGS AND SPECIFICATIONS ARE COMPLIMENTARY, NEITHER IS MEANT TO STAND ALONE FOR ANY PORTION OF THE WORK DESCRIBED HEREIN. ANY CONFLICT BETWEEN DRAWINGS AND SPECIFICATIONS SHALL BE REPORTED IMMEDIATELY TO THE CONTRACTING OFFICER.
- 3. SUBSTITUTION OF EXPANSION OR DRILLED AND GROUTED-IN ANCHORS FOR EMBEDDED ANCHORS SHOWN ON THE DRAWINGS SHALL NOT BE PERMITTED.
- THE STRUCTURE SHALL NOT BE CONSIDERED TO BE STABLE DURING CONSTRUCTION UNTIL ALL ELEMENTS ARE IN PLACE AND CONNECTED. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY CONSTRUCTION BRACING REQUIRED.
- 5. SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS, SLEEVES, CURBS, PADS, INSERTS, ETC. NOT SHOWN ON STRUCTURAL DRAWINGS. BEFORE FABRICATION OF MATERIALS, COORDINATE WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL SERIES OF DRAWINGS AND SPECIFICATIONS AND PROVIDE ALL MISCELLANEOUS AND STRUCTURAL ITEMS INDICATED OR REQUIRED TO COMPLETE THE WORK.

FOUNDATION DESIGN NOTES

- 1. FOUNDATION INFORMATION IS BASED ON REQUIREMENTS CONTAINED IN SOILS REPORT BY MASA FUJIOKA & ASSOCIATES (MFA). DATED MAY 07, 2013. THIS REPORT IS INCLUDED IN THE PROJECT SPECIFICATIONS.
- 2. DESIGN BEARING PRESSURE (NET) = 2500 PSF FOR STRIP/WALL AND COLUMN FOOTINGS.
- 3. SPACING OF JOINTS SHALL BE AS SHOWN ON THE FOUNDATION PLANS.
- 4. ALL EXPOSED CONCRETE SHALL BE CHAMFERED 3/4" ON ALL EXPOSED CORNERS.

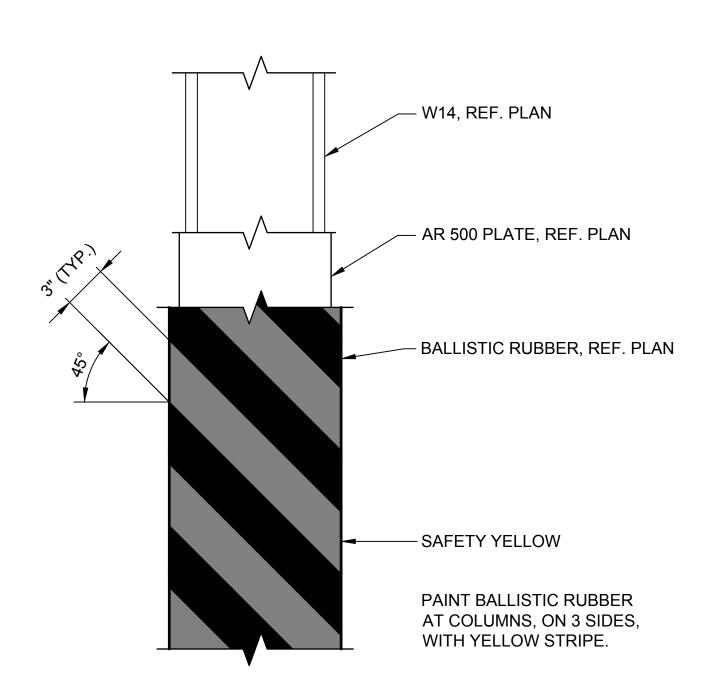
TABLE A - REINFORCEMENT TENSION LAPS AND EMBEDMENT

fy = 60000 psi (420 MPa), f'c = 3000 psi (21 MPa)

		EMBEDMI	EMBEDMENT AND CL		ASS A LAP (in)		CLASS B LAP (in)				
BAR SIZE	BAR DIA.	TOP	BAR	OTHER BARS		TOP BAR		OTHER BARS			
SIZL	(in)	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2		
3	.375	22	32	17	25	28	42	22	32		
4	.500	29	43	22	33	37	56	29	43		
5	.625	36	54	28	41	47	74	36	54		
6	.750	43	64	33	50	56	84	43	64		
7	.875	63	94	48	72	81	122	63	94		
8	1.000	72	107	55	82	93	139	72	107		
9	1.125	81	121	62	93	105	157	81	121		
10	1.250	91	136	70	105	118	177	91	136		
11	1.375	101	151	78	116	131	196	101	151		

NOTES:

- 1. TABLE "A" PRESENTS LENGTHS OF TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS BASED ON ACI 318-08, SECTION 12.2.2.
- 2. CLASS "A" LAP LENGTHS APPLY WHEN BAR LAPS ARE STAGGERED TO LAP HALF THE BARS AT THE SAME LOCATION.
- 3. CLASS "B" LAP LENGTHS APPLY WHEN ALL BARS ARE SPLICED AT THE SAME LOCATION.
- 4. CASE 1 LENGTHS APPLY TO BEAMS AND COLUMNS WITH CONCRETE COVER EQUAL OR GREATER THAN THE BAR DIAMETER, CLEAR BAR SPACING EQUAL OR GREATER THAN THE BAR DIAMETER AND WITH STIRRUPS OR TIES NOT LESS THAN THE CODE MINIMUM THROUGHOUT THE LENGTH IN THE TABLE AND FOR OTHER ELEMENTS WITH CONCRETE COVER EQUAL OR GREATER THAN THE BAR DIAMETER AND CLEAR SPACING EQUAL OR GREATER THAN TWO TIMES THE BAR DIAMETER.
- 5. CASE 2 LENGTHS APPLY TO BEAMS AND COLUMNS WITH CONCRETE COVER LESS THAN THE BAR DIAMETER AND CLEAR BAR SPACING LESS THAN THE BAR DIAMETER AND FOR OTHER ELEMENTS WITH CONCRETE COVER LESS THAN THE BAR DIAMETER AND CLEAR BAR SPACING LESS THAN TWO TIMES THE BAR DIAMETER.
- 6. TOP BARS ARE HORIZONTAL REINFORCEMENT PLACED SO THAT MORE THAN 12" OF CONCRETE IS CAST BELOW THE REINFORCEMENT.
- 7. MULTIPLY LENGTHS SHOWN BY 0.87 FOR 4000 psi AND 5000 psi CONCRETE.
- 8. MULTIPLY LENGTHS SHOWN BY 1.3 FOR LIGHTWEIGHT AGGREGATE CONCRETE
- 9. MULTIPLY LENGTHS SHOWN BY 1.2 FOR EPOXY COATED BARS. FOR BARS WITH COVER LESS THAN 3db OR CLEAR SPACING LESS THAN 6db, USE 1.5.



COLUMN PAINTING DETAIL

CONCRETE NOTES

- 1. ALL CONCRETE SHALL BE NORMAL WEIGHT AND HAVE A SPECIFIED COMPRESSIVE STRENGTH OF 4000 psi AT 28 DAYS, UNLESS OTHERWISE NOTED.
- 2. CONCRETE REINFORCEMENT SHALL CONFORM WITH ASTM A615/615M, GRADE 60.
- 3. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS APPROVED BY THE CONTRACTING OFFICER.
- 4. REINFORCEMENT LAP SPLICES AND EMBEDMENT LENGTHS SHALL CONFORM TO TABLE A, CLASS B LENGTHS AS SHOWN ON SHEET S-001 UNLESS NOTED OTHERWISE.
- 5. REINFORCEMENT DETAILING AND PLACEMENT SHALL CONFORM TO ACI 318 AND ACI 315.
- 6. ALL ANCHOR RODS SHALL BE SET WITH TEMPLATES.
- 7. ALL REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED, IN ACCORDANCE WITH ACI **DETAILING MANUAL (SP-66-04)**
- 8. ALL REINFORCING SHALL BE SUPPORTED IN FORMS, SPACED WITH NECESSARY ACCESSORIES AND SHALL BE SECURELY WIRED TOGETHER, AN ACCORDANCE WITH CRSI "MANUAL OF STANDARD PRACTICE" (28TH EDITION, 2009).
- MINIMUM CONCRETE COVER, UNLESS NOTED OTHERWISE.

1. WALLS , SLABS

A. UNFORMED SURFACE IN CONTACT WITH THE GROUND.

3 IN. 1 1/2 IN.

B. FORMED SURFACES EXPOSED TO EARTH OR WEATHER. C. FORMED SURFACES NOT EXPOSED TO EARTH OR WEATHER.

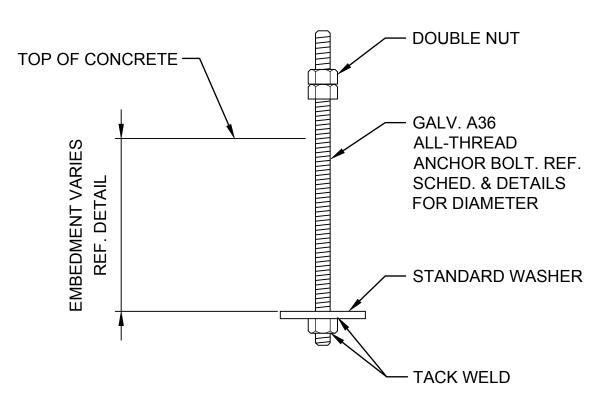
3/4" IN.

1 1/2" IN.

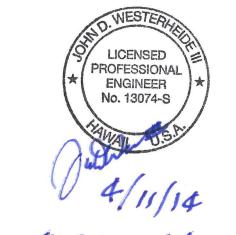
2. ALL OTHER ELEMENTS

STEEL FRAMING NOTES

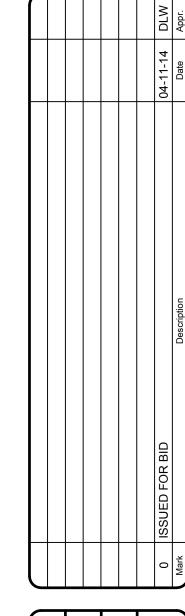
- STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC 360-05 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", INCLUDING "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES."
- UNLESS OTHERWISE SPECIFIED, STEEL BUILDING MEMBERS SHALL BE: W-SHAPES ASTM A992. M-, S-, AND CHANNEL SHAPES ASTM A36. SQUARE, RECTANGULAR & ROUND HSS SHAPES ASTM A500 GRADE B. ANGLES AND MISCELLANEOUS STEEL ASTM A36
- ALL SHEAR CONNECTIONS NOT DETAILED OR OTHERWISE NOTED SHALL BE STANDARD AISC WELDED OR AISC BOLTED CONNECTIONS AND SHALL HAVE SUFFICIENT CAPACITY TO SUPPORT THE END REACTION EQUAL TO ONE-HALF THE TOTAL UNIFORM LOAD CAPACITY.
- 4. WELDING SHALL CONFORM WITH AWS D1.1 STRUCTURAL WELDING CODE. CONTRACTOR SHALL SELECT WELDING MATERIALS AND PROCEDURES USED FOR WELDING AR500 PLATE TO MINIMIZE LOSS OF MATERIAL HARDNESS.
- 5. ALL BOLTS FOR BEAM CONNECTIONS SHALL BE ASTM A325 WITH A MINIMUM DIAMETER OF 3/4 in AND SHALL INCLUDE LOAD INDICATOR WASHERS, UNLESS OTHERWISE NOTED. ALL BOLTED CONNECTIONS SHALL BE PRETENSIONED TYPE CONNECTIONS WITH A MINIMUM OF TWO BOLTS.

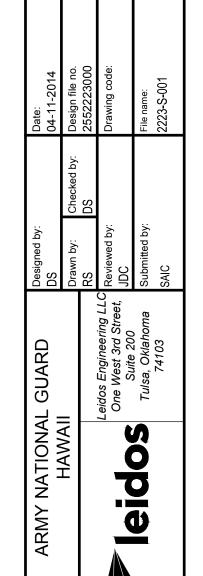












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Sheet reference number: S-001 Sheet 34 of

STATEMENT OF SPECIAL INSPECTIONS

- THE "STATEMENT OF SPECIAL INSPECTIONS" HAS BEEN PREPARED IN ACCORDANCE WITH IBC 2009, SECTION 1705.
- 2. THE GENERAL CONTRACTOR SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS TO PROVIDE "SPECIAL INSPECTIONS" DURING CONSTRUCTION.
- SPECIAL INSPECTIONS SHALL BE PERFORMED IN COORDINATION WITH IBC 2009 SECTION 1704.
- 4. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE TO THE SATISFACTION OF THE CONTRACT OFFICER FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
- 5. THE SPECIAL INSPECTION AGENCY SHALL SUBMIT INSPECTION REPORTS TO THE CONTRACT DURING CONSTRUCTION FOR VERIFICATION, INCLUDING
- FINAL REPORTS IN ACCORDANCE WITH SECTION 1704.1.2 OF THE 2009 IBC.
- 6. THE SPECIAL INSPECTOR SHALL USE THE LATEST ISSUE OF THE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR THE INSPECTION OF THIS STRUCTURE. SHOP FABRICATION DRAWINGS SHALL NOT BE USED FOR INSPECTION PURPOSES.
- 7. THE FOLLOWING TABLES IDENTIFY THE MATERIALS, SYSTEMS AND COMPONENTS WHICH ARE TO HAVE SPECIAL INSPECTION.

TABLE 1704.3 REQUIRED VERIFICATION	N AND INSPE	ECTION OF	STEEL CONSTRUCTION			PECT QUIR	
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCE STANDARD ^a	IBC REFERENCE	YES	NO	N/A
1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WA	SHERS:						
A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	_	X	APPLICABLE ASTM MATERIAL SPECIFICATIONS; AISC 360, SECTION A3.3	-	X		
B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	_	Х	_	_	Х		
2. INSPECTION OF HIGH-STRENGTH BOLTING:							
A. BEARING-TYPE CONNECTIONS.	_	Х	AISC 360, SECTION M2.5	1704.3.3	Х		
B. SLIP-CRITICAL CONNECTIONS.	Х	Х	AISC 360, SECTION M2.5	1704.3.3	Х		
3. MATERIAL VERIFICATION OF STRUCTURAL STEEL:		•					
A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	-	_	ASTM A 6 OR ASTM A 568	1708.4	Х		
B. MANUFACTURERS' CERTIFIED MILL TEST REPORTS	_	_	ASTM A 6 OR ASTM A 568	1708.4	X		
4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS					•		
A. IDENTIFICATION MARKINGS TO CONFORM TO AWS STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	_	_	AISC 360, SECTION A3.5	_	Х		
B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	_	_	_	_	X		
5. INSPECTION OF WELDING:							
1. COMPLETE AND PARTIAL PENETRATION GROOVE WELDS.	X	-	AWS D1.1	1704.3.1	X		
2. MULTIPASS FILLET WELDS.	X	-	AWS D1.1	1704.3.1	Х		
3. SINGLE-PASS FILLET WELDS > 5/16"	X	_	AWS D1.1	1704.3.1	X		
4. SLINGLE-PASS FILLET WELDS < 5/16"	_	X	AWS D1.1	1704.3.1	X		
5. FLOOR AND ROOF DECK WELDS	_	X	AWS D1.3	_			Х
B. REINFORCING STEEL:							
1. VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706.	_	X	AWS D1.4 ACI 318: 3.5.2	_			X
2. REINFORCING STEEL-RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNI ELEMENTS OF SPECIAL REINFORCED CONCRETE SHEAR WALL SHEAR REINFORCEMENT.	ARY X	-	AWS D1.4 ACI 318: 3.5.2	_	X		
3. SHEAR REINFORCEMENT.	Х	-	AWS D1.4 ACI 318: 3.5.2		Х		
4. OTHER REINFORCING STEEL.	_	Х	AWS D1.4 ACI 318: 3.5.2	_	Х		
6. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WI	TH APPROVED (CONSTRUC	TION DOCUMENTS:				
A. DETAILS SUCH AS BRACING AND STIFFENING.	_	Х	_	1704.3.2	X		
B. MEMBER LOCATIONS.	_	Х	-	1704.3.2	Х		
C. APPLICATION OF JOINT DETAILS AT EACH CONNECTION.	_	X	_	1704.3.2	X		

C. APPLICATION OF JOINT DETAILS AT EACH CONNECTION.	_	X	
a. WHERE APPLICABLE, SEE ALSO SECTION 1707.1 SPECIAL INSPECTION	ON FOR SEISMIC	RESISTAN	CE

TABLE 1704.4 REQUIRED VERIFICATION AN	ID INSPECTIO	N OF CON	ICRETE CONSTRUCT	ION	_	PECT QUIR	_
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCE STANDARD ^a	IBC REFERENCE	YES	NO	N/A
 INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT. 	_	X	ACI 318: 3.5, 7.1-7.7	1913.4	Х		
2. INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1704.3, ITEM 5b.	_	-	AWS D1.4 ACI 318: 3.5.2	-			Х
3. INSPECT BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE.	Х	-	-	1911.5	Х		
4. VERIFYING USE OF REQUIRED DESIGN MIX.	_	Х	ACI 318: CH. 4, 5.2-5.4	1904.2.2, 1913.2, 1913.3	Х		
5. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	Х	-	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	1913.10	Х		
6. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	Х	-	ACI 318: 5.9, 5.10	1913.6, 1913.7 1913.8	Х		
7. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	-	Х	ACI 318: 5.11-5.13	1913.9	Х		
8. INSPECTION OF PRESTRESSED CONCRETE:	1						
A. APPLICATION OF PRESTRESSING FORCES.	Х	-	ACI 318: 18.20 ACI 318: 18.18.4	-			Х
B. GROUTING OF BONDED PRESTRESSING TENDONS IN THE SEISMIC-FORCE-RESISTING SYSTEM.	Х	-	ACI 318: 18.20 ACI 318: 18.18.4	-			Х
9. ERECTION OF PRECAST CONCRETE MEMBERS.	-	Х	ACI 318: CH. 16	-			X
10. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS N POSTTENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	-	Х	ACI 318: 6.2	-			Х
11. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		Х	ACI 318: 6.1.1	-	Х		

a. WHERE APPLICABLE, SEE ALSO SECTION 1707.1 SPECIAL INSPECTION FOR SEISMIC RESISTANCE

TABLE 1704.7 REQUIRED VERIFICAT	TION AND INSPECTIC	N OF SOILS	_	PECT QUIR	_
VERIFICATION AND INSPECTION	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED	YES	NO	N/A
1. VERIFY MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	-	X	Х		
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	-	X	Χ		
3. PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS.	-	X	Χ		
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL.	Х	-	Х		
5. PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	-	Х	Х		

- 8. THE FOLLOWING STRUCTURAL SYSTEMS HAVE BEEN IDENTIFIED AS BEING A PART OF THE SEISMIC FORCE RESISTING SYSTEM (SFRS) (IN ACCORDANCE WITH IBC SECTION 1705.3 AND 1707).
- A. FOUNDATION
- CONCRETE
- C. REINF. STEEL
- D. STEEL
- WELDING (REFERENCE STANDARD: AISC 341)
- 9. IN ACCORDANCE WITH IBC 2009 SECTION 1706, EACH CONTRACTOR RESPONSIBLE FOR THE SFRS SHALL SUBMIT A WRITTEN "STATEMENT OF RESPONSIBILITY" TO THE CONTRACT OFFICER AND BUILDING OFFICIAL. THE "STATEMENT OF RESPONSIBILITY" SHALL INCLUDE:
 - A. ACKNOWLEDGMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.
 - B. ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS.
 - C. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF THE REPORTS.
- D. IDENTIFICATION AND QUALIFICATIONS OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION. 10. ACCORDING TO IBC 2009 SECTION 1709, STRUCTURAL OBSERVATIONS ARE NOT REQUIRED.

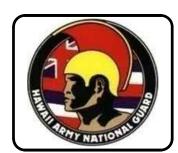
TESTING REQUIREMENTS

- 1. THE OWNERS OR OWNER'S AGENT SHALL EMPLOY ONE OR MORE TESTING AGENCIES TO PROVIDE STRUCTURAL TESTING DURING
- 2. THE TESTING AGENCY SHALL SUBMIT TEST RESULTS TO THE CONTRACT OFFICER DURING CONSTRUCTION FOR VERIFICATION, INCLUDING A FINAL REPORT IN ACCORDANCE WITH SECTION 1704.1.2 OF THE 2009 IBC.
- 3. TABLE 1 (BELOW) IDENTIFIES THE STRUCTURAL TESTS REQUIRED FOR THIS PROJECT.

TABLE 1 - SUMMARY OF RE	EQUIRED STRU	CTURAL TES	STS		_	ESTIN EQUIR	_
TEST	CONTINUOUS	PERIODIC	REFERENCE STANDARD	IBC REFERENCE	YES	NO	N/A
1. CONCRETE				•			
A. CYLINDER COMPRESSION TESTING	_	Х	ASTM C39	SECTION 1905	Х		
B. PRECONSTRUCTION TESTING OF SHOTCRETE	_	Х	-	SECTION 1913			Х
2. MASONRY					•	•	•
A. HOLLOW UNIT BLOCK COMPRESSION TESTS (UNIT STRENGTH METHOD)	_	Х	ASTM C90	SECTION 2105			Х
B. PRISM COMPRESSION TESTS (PRISM TEST METHOD)	_	Х	ASTM C1314	SECTION 2105			Х
3. POST-INSTALLED CONCRETE ANCHORS				•	•		ļ.
A. EXPANSION ANCHORS	_	Х	ICC-ES AC 193	SECTION 1912			Х
B. ADHESIVE ANCHORS	_	Х	ICC-ES AC 193	SECTION 1912			Х

**WHEN DIRECTED BY THE CONTRACT OFFICER TO PROVIDE POST-INSTALLED ANCHORAGES THE FOLLOWING GUIDELINES SHALL BE FOLLOWED:

- 1. A REPRESENTATIVE OF THE ANCHOR MANUFACTURER OR PROJECT SPECIAL INSPECTOR SHALL BE ON SITE TO OVERSEE THE INSTALLATION OF THE FIRST FOUR ANCHORS FOR EACH TYPE OF ANCHOR INSTALLED. THIS MEASURE SHALL BE TAKEN FOR EACH INDIVIDUAL INSTALLER OF THE ANCHORS. THIS SERVICE IS TYPICALLY PROVIDED BY THE LOCAL ANCHOR REPRESENTATIVE AT NO ADDITIONAL COST.
- 2. THE FIRST FOUR ANCHORS SHALL BE TENSION TESTED ONCE INSTALLATION IS COMPLETE FOR 200% OF THE SERVICE LEVEL LOAD CAPACITY AS SPECIFIED BY THE SEOR.



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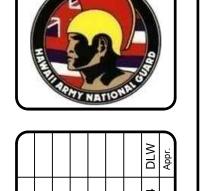
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LICENSED PROFESSIONAL ENGINEER No. 13074-S

> S-002 Sheet 35 of 43

31'-6" 27'-0" 27'-0" 31'-6" REF. 3/S-503 FOR—C3 CONC. COL. REINF. REF. 3/S-503 FOR CONC. COL. REINF. ─FIRING LINE B)-4/S-501 TYP. AT GRID 5 4/S-501 TYP. AT GRID 1 <u>C</u> D E-(G)— REF. 2/S-503 FOR REF. 2/S-503 FOR -CONC. COLUMN CONC. COL. REINF. TYP. @ GRID 1 REINF. TYP. @ GRID 5 H PROVIDE SMOOTH-RUBBED — FINISH AT EACH FACE OF WALL. REF. SPECS FOR ADDITIONAL INFORMATION PROVIDE SMOOTH-RUBBED FINISH AT EACH FACE OF WALL. REF. SPECS FOR ADDITIONAL INFORMATION S-504 52'-6" 52'-6" 12'-0" 25M RANGE FOUNDATION PLAN SCALE: 3/32" = 1'-0" SCALE: 3/32" = 1'-0"



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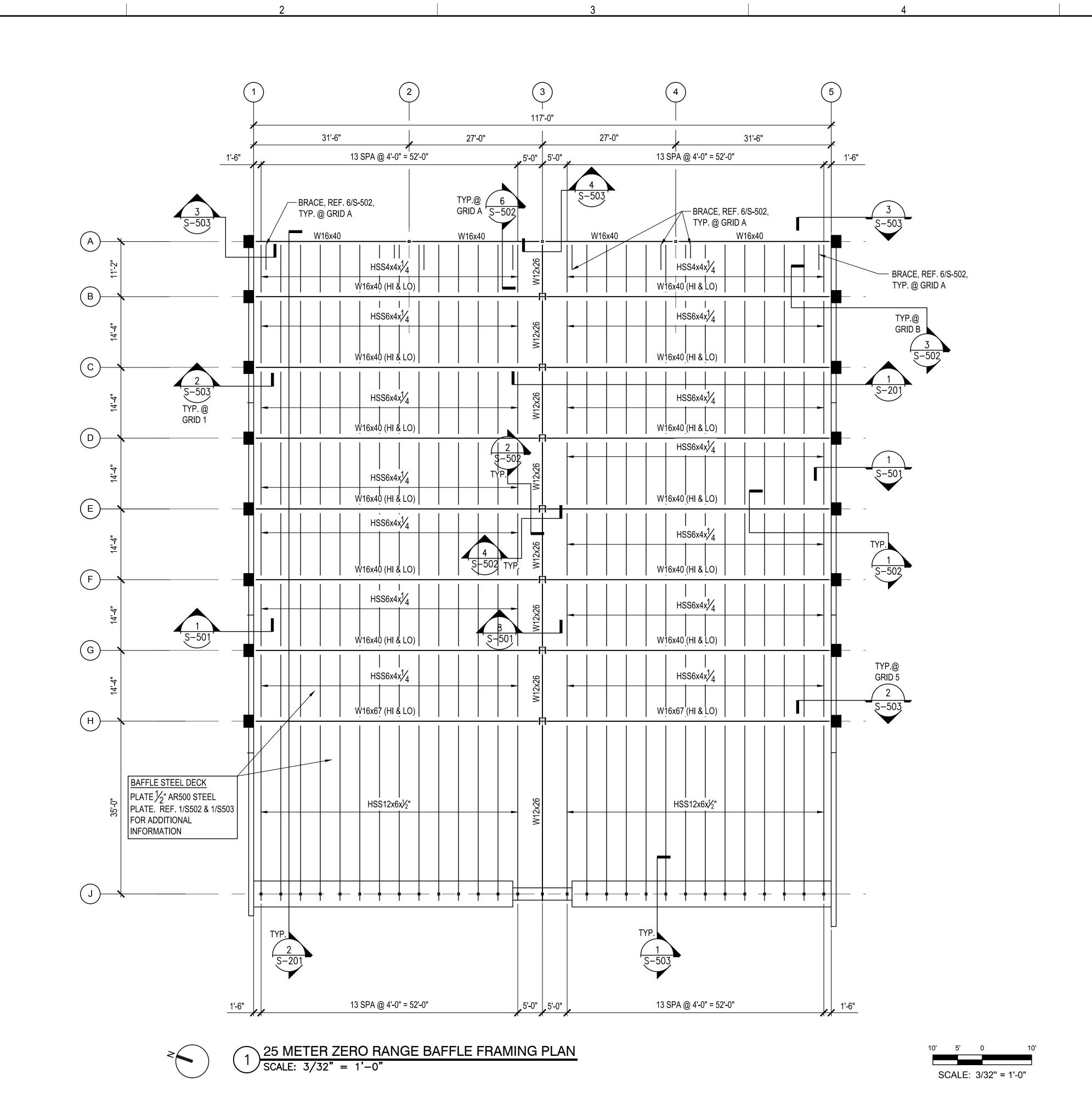
<u>PLAN NOTES:</u>
1. TOP OF CONCRETE PEDESTAL VARIES. REFER TO 2/S-201 AND CIVIL FOR ACTUAL ELEVATION. REFER TO DETAILS FOR TOP OF FOOTING ELEVATION.

- 2. REFER TO SHEET S-001 FOR GENERAL NOTES AND DESIGN CRITERIA.
- 3. REFER TO SHEET S-501 FOR COLUMN AND FOUNDATION SCHEDULES.

LICENSED PROFESSIONAL ENGINEER No. 13074-S

Sheet reference number: S-101

Sheet 36 of 43





PLAN NOTES:

1. REFER TO 2/S-201 FOR TOP OF STEEL ELEVATIONS.

2. REFER TO SHEET S-001 FOR GENERAL NOTES AND

3. PAINT ALL EXPOSED STEEL WITH ANTI-CORROSIVE

LICENSED PROFESSIONAL ENGINEER

No. 13074-S

PAINT. REFER TO SPECIFICATIONS FOR ADDITIONAL

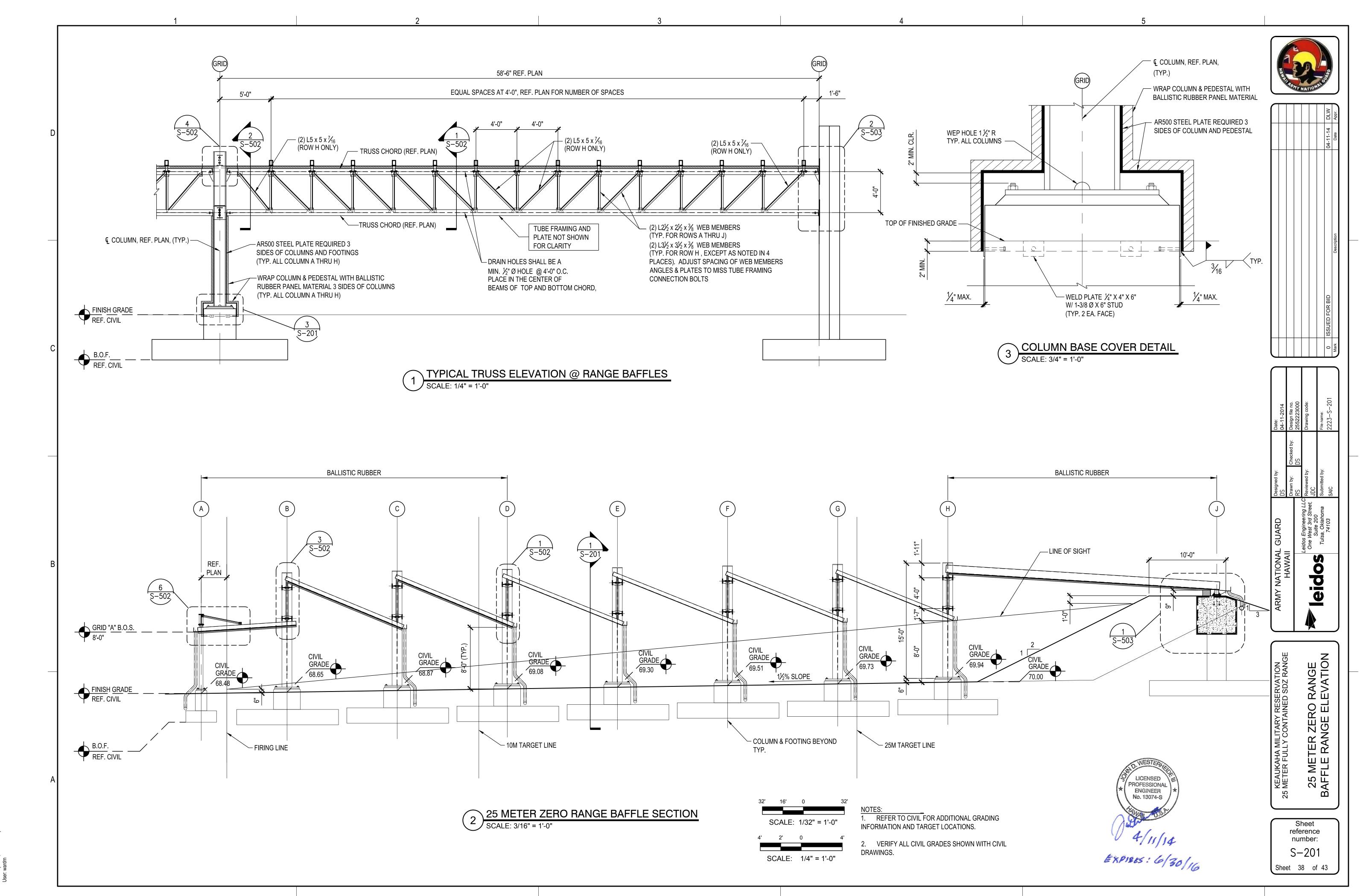
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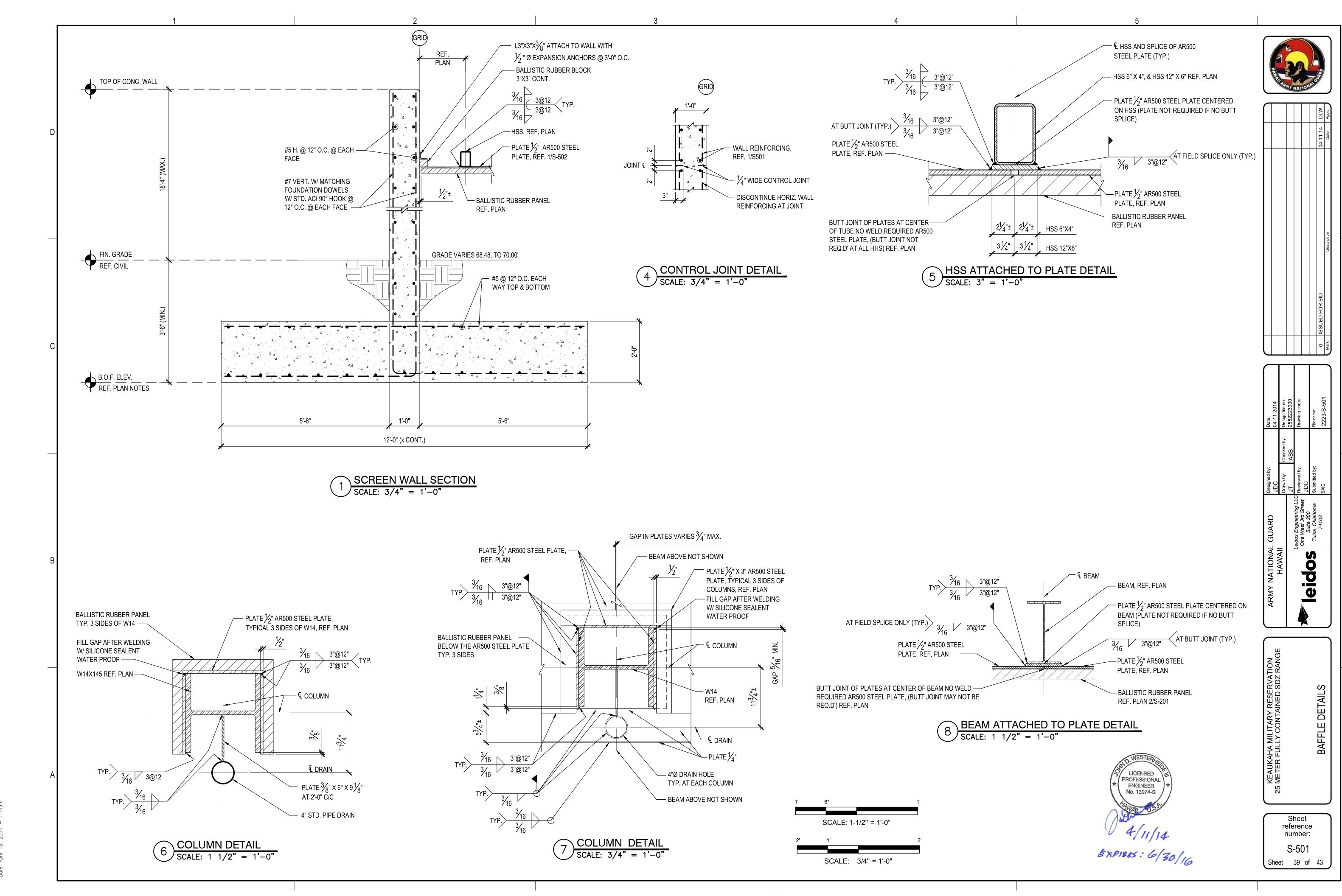
25 METER ZERO RANGE BAFFLE FRANING PLAN

Sheet reference number:

S-102 Sheet 37 of 43

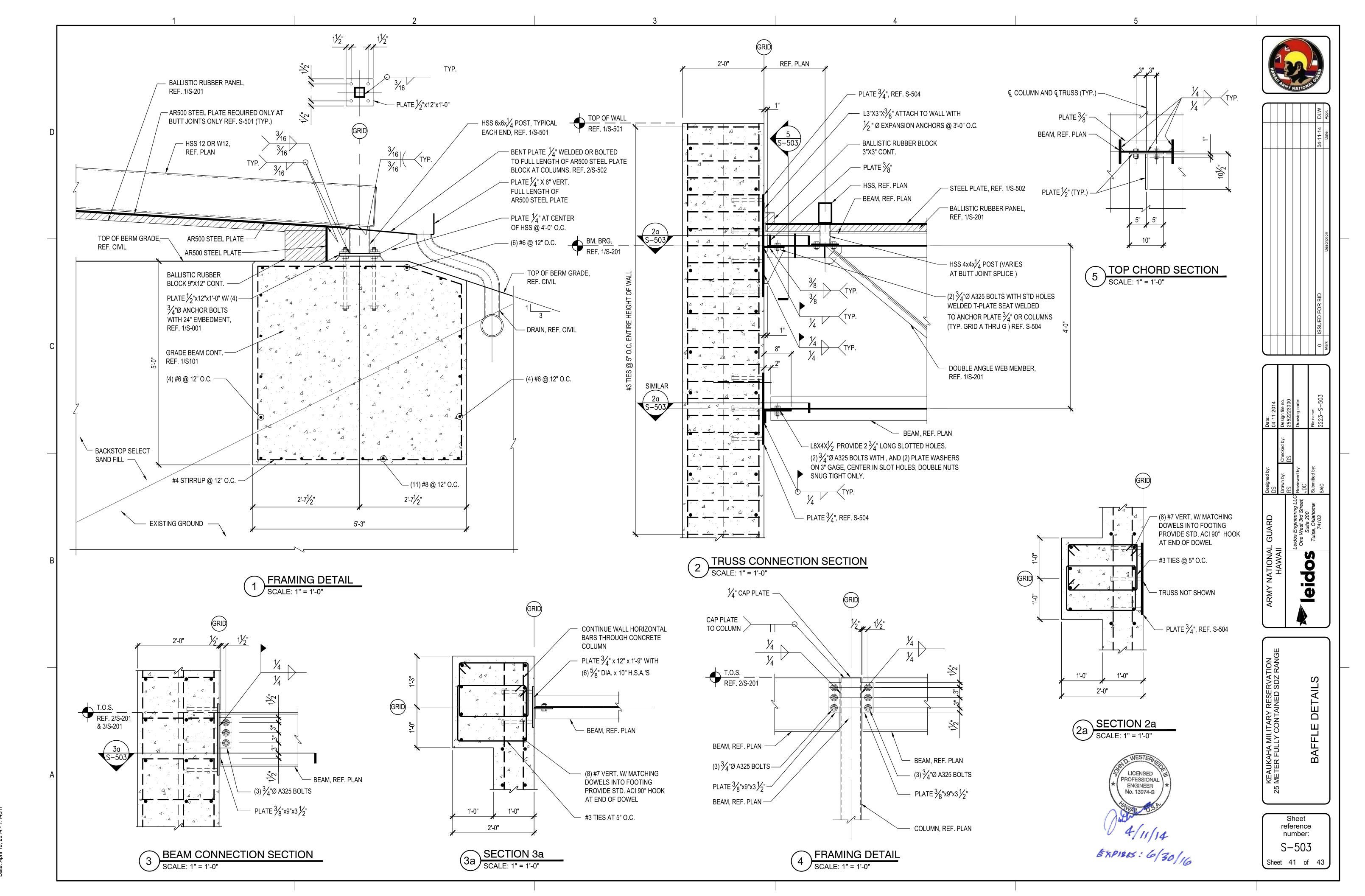


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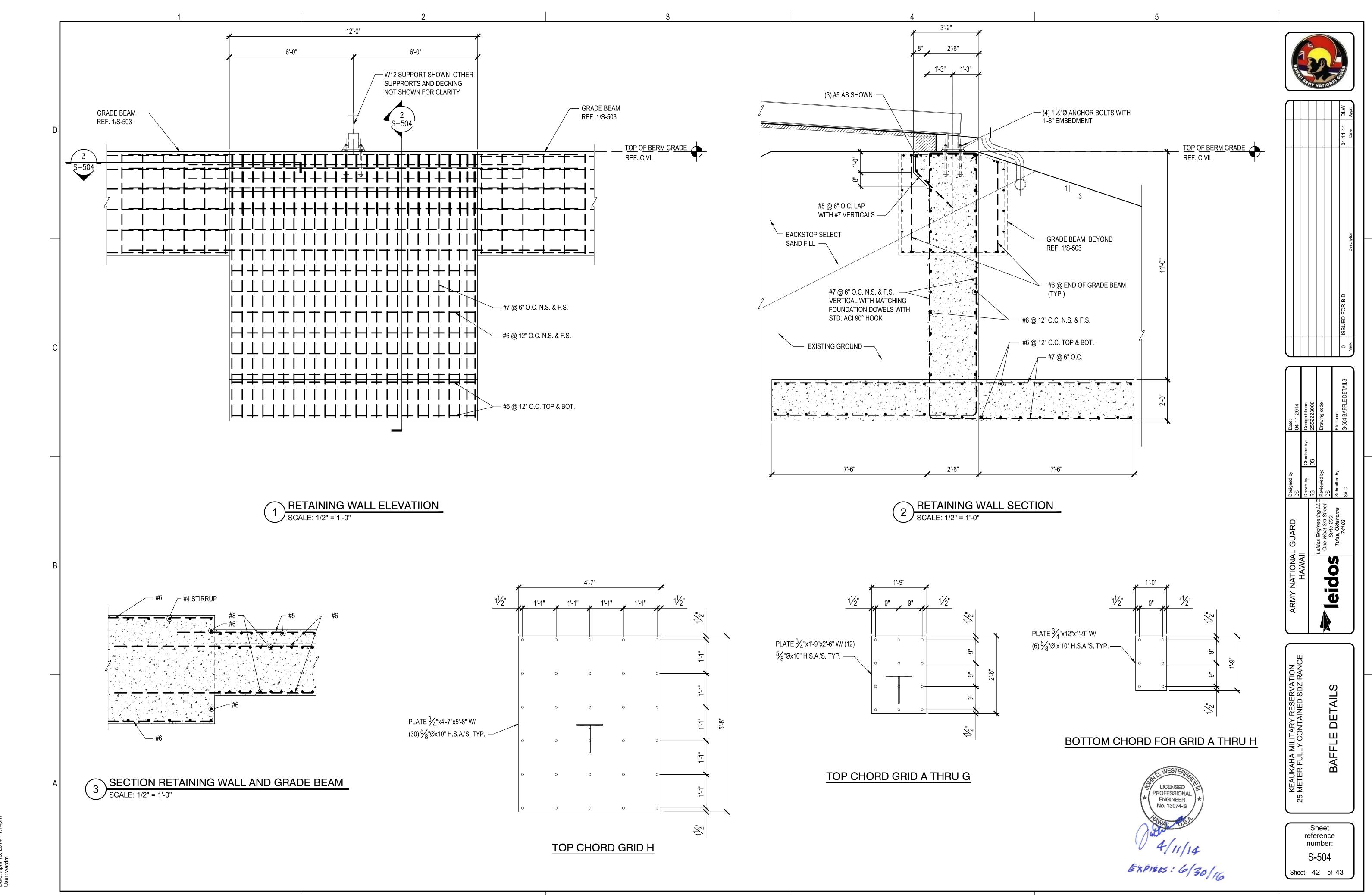


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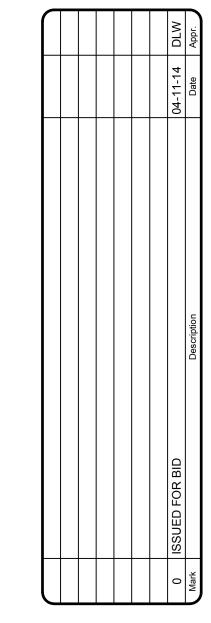
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Sheet 43 of 43

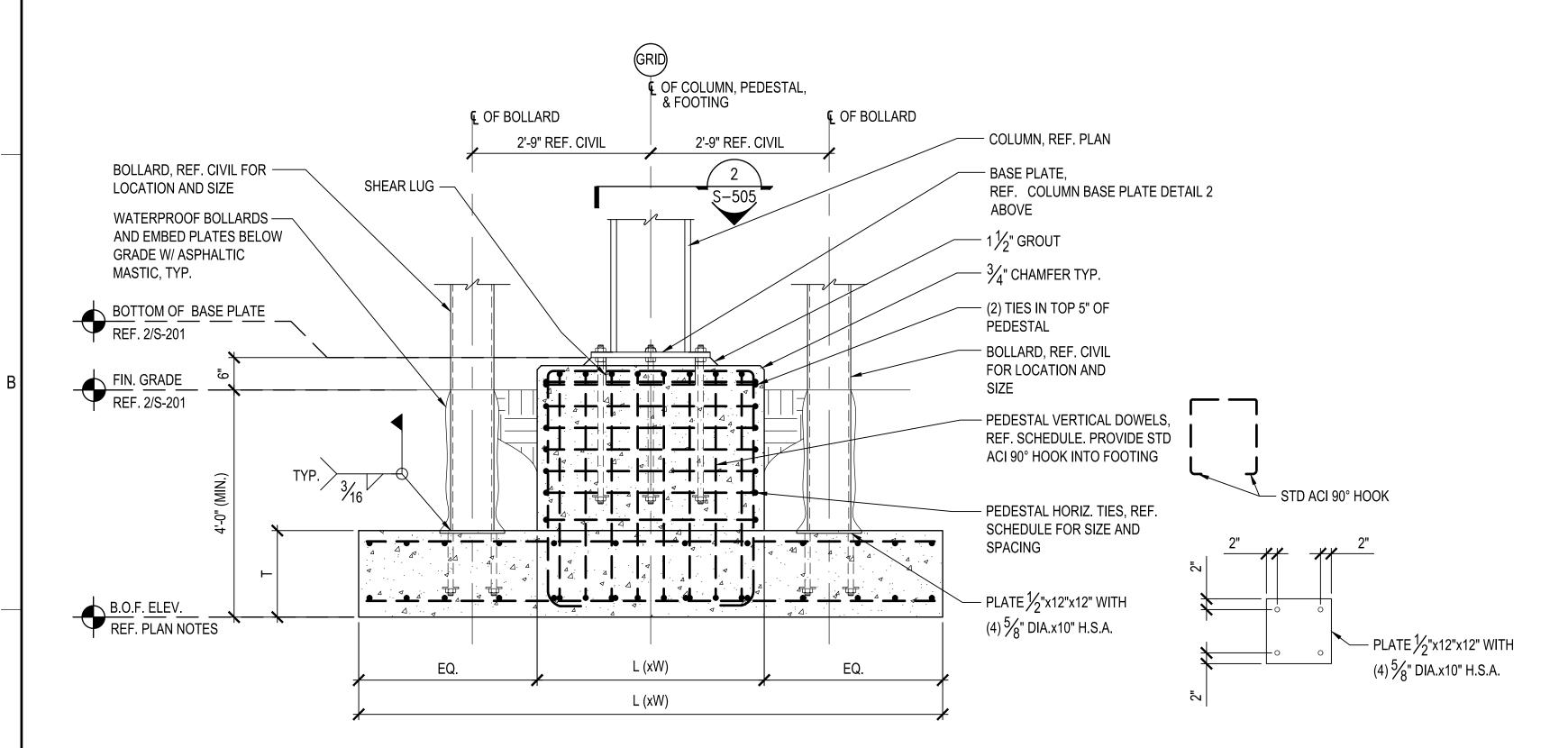
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No. 13074-S

- € OF COLUMN & PEDESTAL CJP, C1 & C2 (W14 ONLY) PEDESTAL, REF. 1/S-505 – BASE PLATE, REF SCHEDULE BELOW $1\frac{1}{2}$ " GROUT -- SHEAR LUGS BOTTOM OF BASE PLATE C1 & C2 (W14 ONLY) WELDED PLATES (TYP.) — — ¶ OF COLUMN & PEDESTAL 3 SIDES PEDSESTAL FOR AR500 STEEL PLATE, REF 3/S-201 ANCHOR BOLT HOLES -CJP, C1 & C2 (W14 ONLY) (TEMPLATE REQUIRED FOR ANCHOR BOLTS)

2 COLUMN BASE PLATE DETAIL
SCALE: 3/4" = 1'-0"

COLUMN MARK	COLUMN SIZE	BASE PLATE SIZE (TxLxW)	ANCHOR BOLTS	EDGE DIST. "A"	NOTES
C1	W14X145	PL 2 ³ / ₄ "x24"x2'-0"	(8) $1\frac{3}{4}$ "Øx2'-0" EMBED	2"	1
C2	W14X145	PL 2 ½"x24"x2'-0"	(8) $1\frac{3}{4}$ "Øx2'-0" EMBED	2"	1
C3	$HSS 6x6x^{1}/_{2}$	PL 1"x14"x1'-2"	(4) $1\frac{1}{2}$ "Øx2'-0" EMBED	2"	1
SHEAR LUG S C1 & C2		PL 1 ½ "x5½"x1'-4½"			



	FOOTING		PEDESTAL		
FOOTING MARK	SIZE (LxWxT)	REINFORCING	SIZE (LxW)	VERT. DOWEL	HORIZ. TIES
F1	13'-3"x13'-3"x2'-0"	(12) #7 EW T&B	3'-6"x3'-6"	(16) #7 SEE NOTE 2	#4 AT 6" O.C.
F2	13-0"x13'-0"x2'-0"	(13) #7 EW T&B	3'-6"x3'-6"	(16) #7 SEE NOTE 2	#5 AT 6" O.C.
F3	7'-0"x7'-0"x1'-6"	(5) #7 EW T&B	1'-8"x1'-8"	(8) #7 SEE NOTE 3	#3 AT 6" O.C.

1. MEASURE ANCHOR BOLT EMBEDMENT FROM TOP OF CONCRETE PEDESTAL. REFER TO S-001 FOR ADDITIONAL INFORMATION.

2. 16 U-SHAPED VERTICAL REBAR, 8 EACH SIDE FOR FOOTING MARKED F1 AND F2.

3. 8 U-SHAPED VERTICAL REBAR, 4 EACH SIDE FOR FOOTING MARKED F3.

1 COLUMN FOOTING SECTION SCALE: 3/4" = 1'-0"