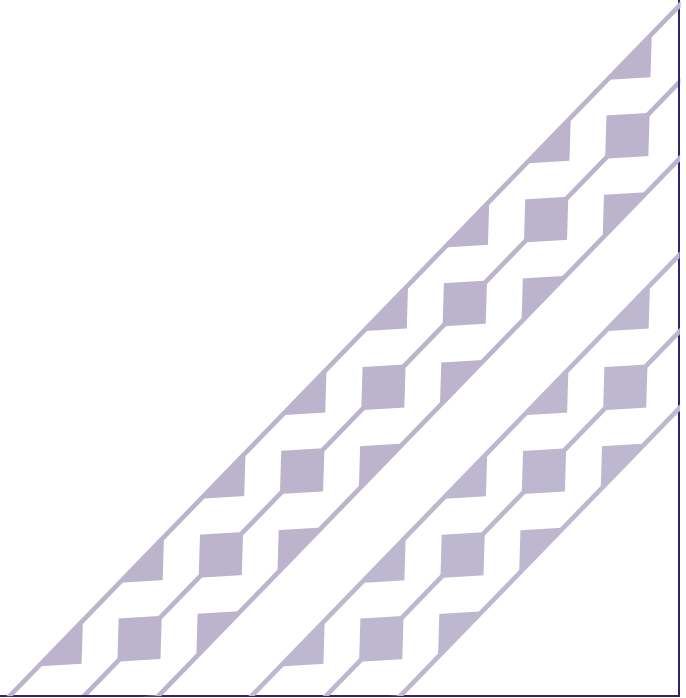


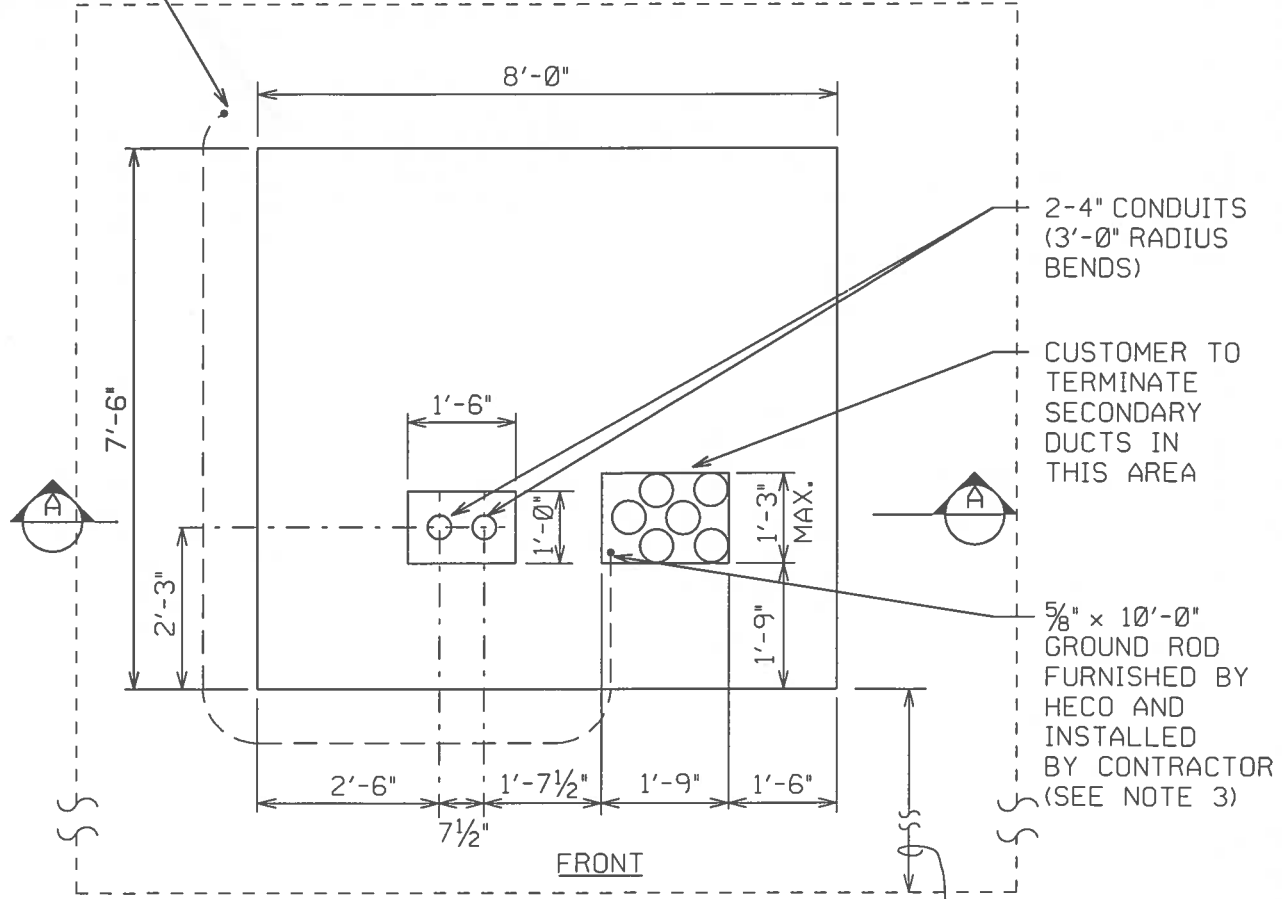
**Hawaiian
Electric**

The information found in this document are general guidelines that may be used to aid in the preparation of your service request proposal. Please be advised that depending on the specific needs and actual conditions of your project, Hawaiian Electric may require your design to comply with different specifications including specifications that include more stringent requirements than those included in these design specification guidelines. For further guidance and clarification on the actual specifications that will apply to your particular project, please refer to instructions issued by Hawaiian Electric's Planner or Engineer who is assigned to your particular (Project/Review Request/...). Additionally, please be advised that Hawaiian Electric reserves the right to require additional modifications to any approved design if it is determined during actual construction that additional modifications must be made to address certain field conditions that were not detected or Hawaiian Electric was unaware of during the design review process.



ADDITIONAL 5/8" x 8'-0"
GROUND ROD (SEE NOTE 3)
TOP OF ROD 12" BELOW
FINAL GRADE

EDGE OF REQUIRED CLEARANCE.
SEE NOTE 7



PLAN

2-4" CONDUITS
(3'-0" RADIUS
BENDS)

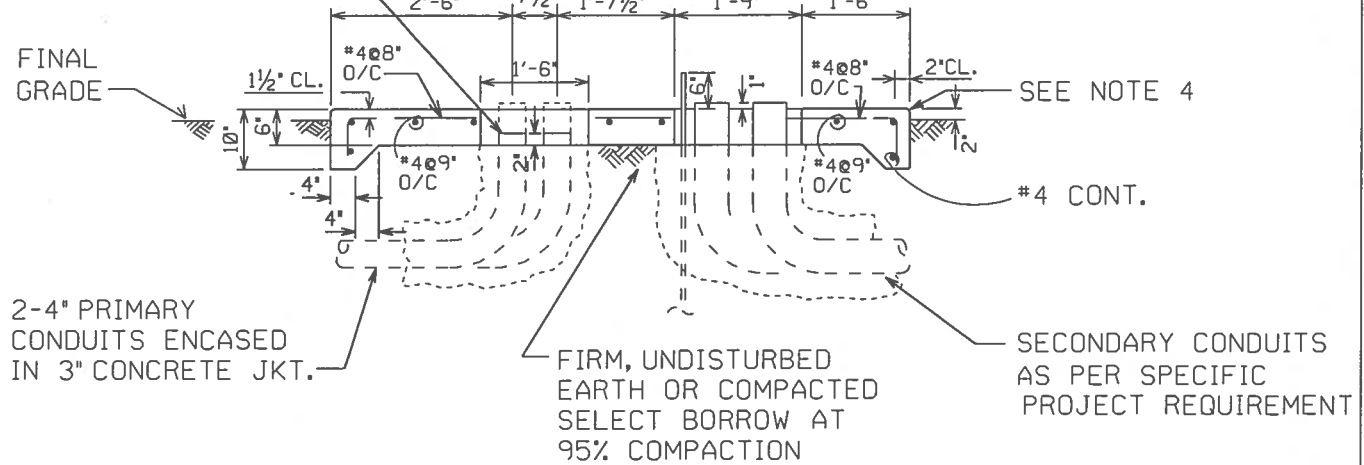
CUSTOMER TO
TERMINATE
SECONDARY
DUCTS IN
THIS AREA

5/8" x 10'-0"
GROUND ROD
FURNISHED BY
HECO AND
INSTALLED
BY CONTRACTOR
(SEE NOTE 3)

MAINTAIN AN 8'-0"
CLEARANCE FROM
FRONT EDGE OF PAD
(SEE NOTE 7)

CUT DOWN PVC
PRIOR TO CONC.
PLACEMENT

FINAL
GRADE



SECTION "A-A"

2-4" PRIMARY
CONDUITS ENCASED
IN 3" CONCRETE JKT.

FIRM, UNDISTURBED
EARTH OR COMPACTED
SELECT BORROW AT
95% COMPACTION

SECONDARY CONDUITS
AS PER SPECIFIC
PROJECT REQUIREMENT

REVISION	DATE	INITIAL	RM	FK	CT	MM	FK	CT	W	M	FK	10-02	10-04	10-04
	12-27-90		RM	FK										
	10-31-99		CT	MM	FK	CT	W	M	FK					
	10-02													

DRAWN	CT	DESIGNED	RM	APPD	NK	TN	ST	REDRAWN	JUNE 1985
SUPERSEDES								ORIGINAL	JUNE 1973
ENGINEERING STANDARD HAWAIIAN ELECTRIC CO. INC.								30-5011	REV 4
								SHEET	1 of 2

CONCRETE PAD FOR 75 - 300 KVA
3 PHASE PADMOUNTED TRANSFORMERS
UG DUCTS & STRUCTURES

NOTES:

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

REVISION
DATE INITIAL
10-04
CJ *with mark*

DRAWN CT	DESIGNED RAN	WTM	APPD	WTM	FK	REDRAWN
SUPERSEDES			CONCRETE PAD FOR 75 - 300 KVA 3 PHASE PADMOUNTED TRANSFORMERS UG DUCTS & STRUCTURES			ORIGINAL JUNE 2002
ENGINEERING STANDARD HAWAIIAN ELECTRIC CO. INC.						30-5011
						REV 1
						SHEET 2 of 2

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