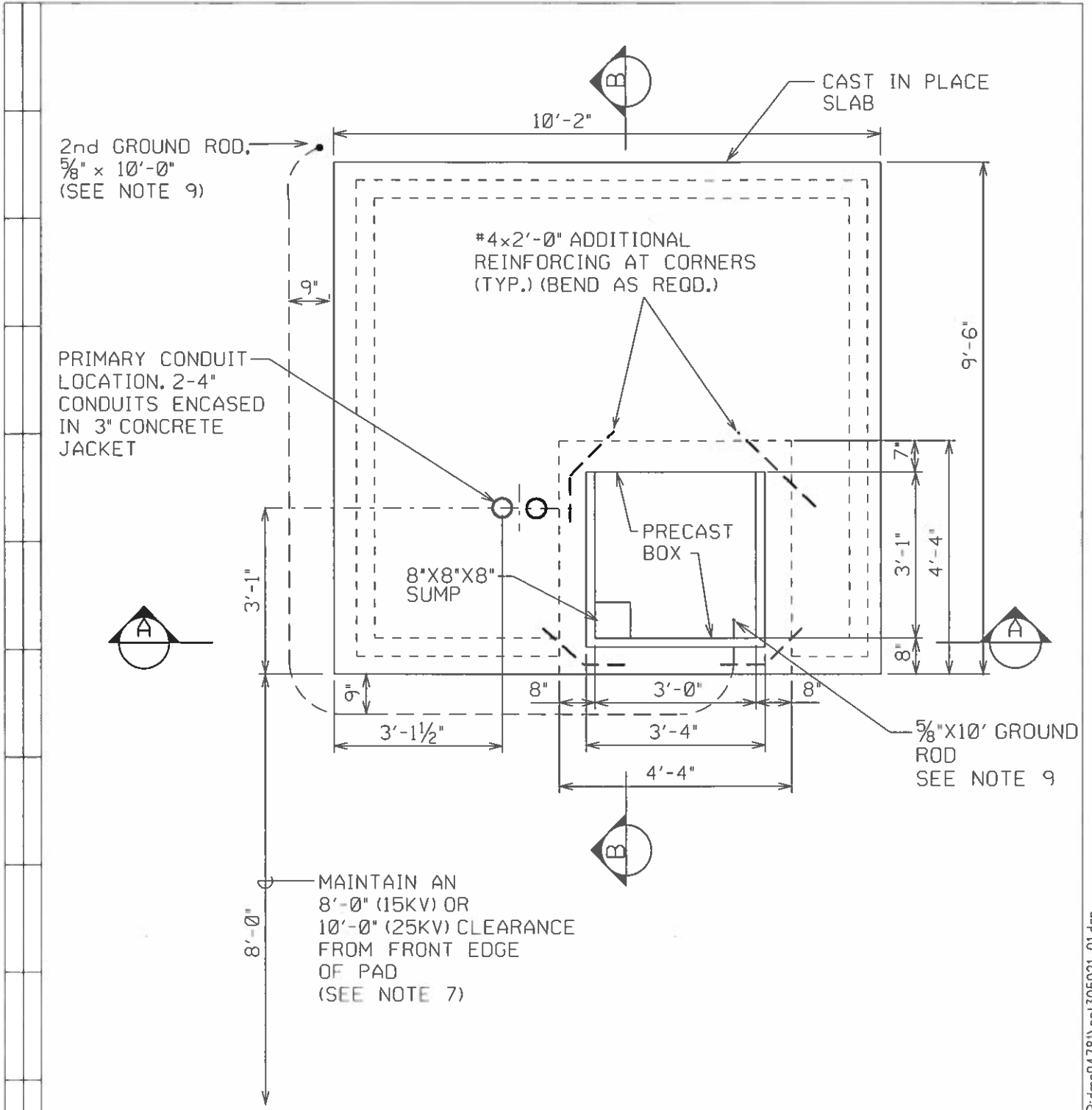




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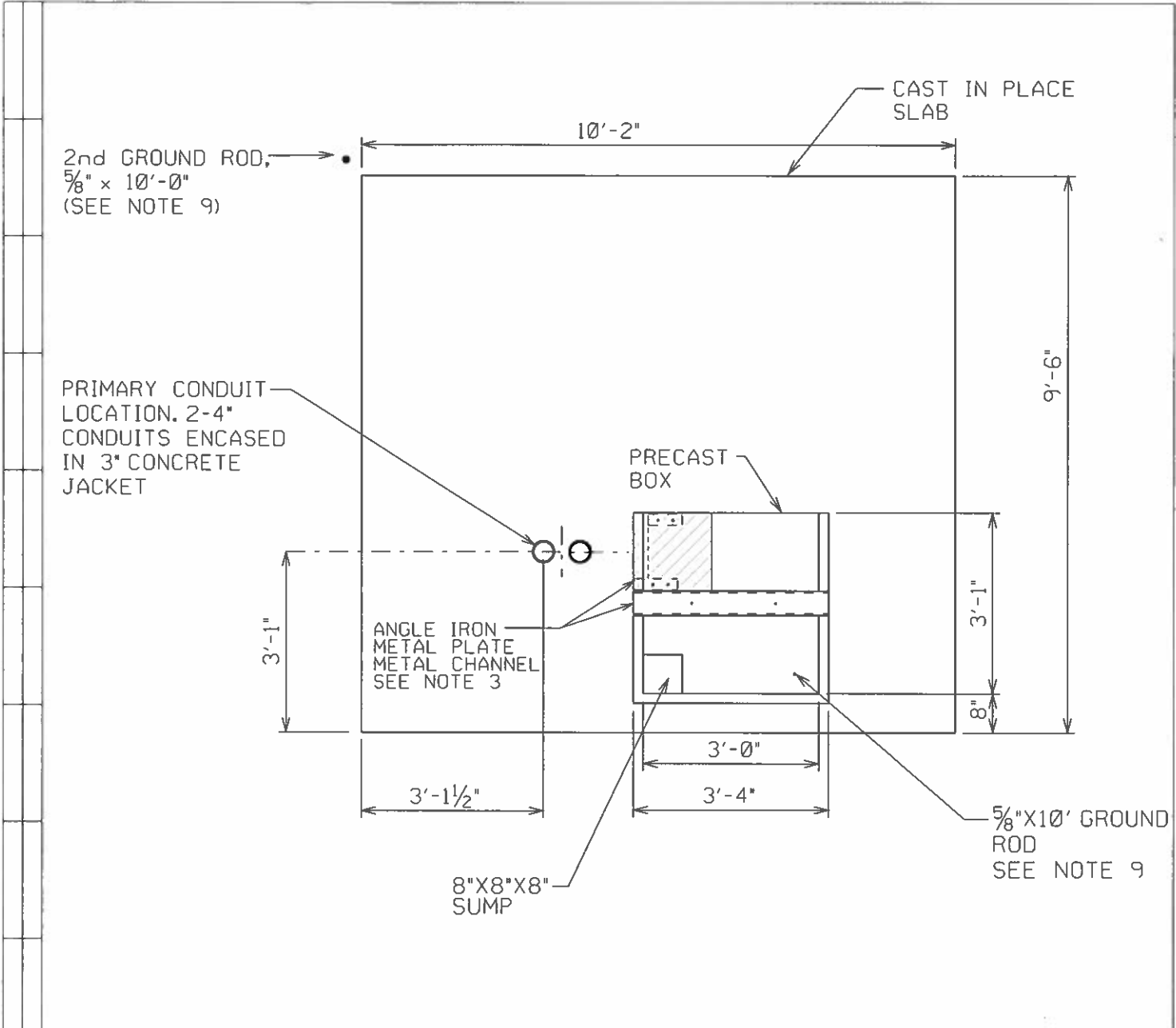
The information found in this document are general guidelines that may be used to aid in the preparation of your service request proposal. Please be advised that depending on the specific needs and actual conditions of your project, Hawaiian Electric may require your design to comply with different specifications 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.





PLAN VIEW

REVISION	DATE	INITIAL			
DRAWN	AP	DESIGNED	HH sm	APPD	HH sm or B W Jayakumar
SUPERSEDES			CONCRETE BOX PAD FOR 1000-1500 KVA 3 PHASE PADMOUNTED TRANSFORMER DUAL FEED CAST-IN-PLACE SLAB + PRECAST BOX UG DUCTS AND STRUCTURES		
ENGINEERING STANDARD HAWAIIAN ELECTRIC CO. INC.			REDRAWN	ORIGINAL	07-2018
			SHEET	1 OF 5	REV 0

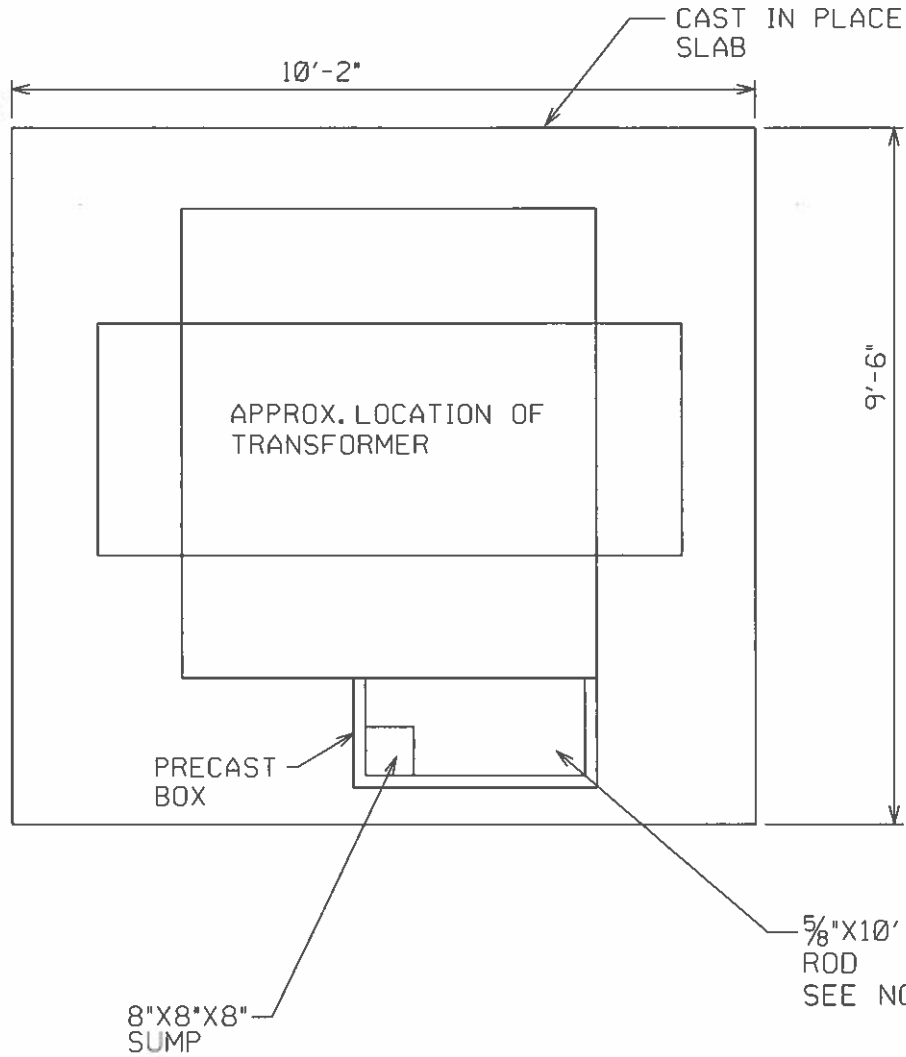


PLAN VIEW:
 METAL PLATE AND METAL CHANNEL
 ON CONCRETE BOX PAD

REVISION	DATE	INITIAL		
DRAWN	AP	DESIGNED	APPD	REDRAWN
SUPERSEDES			CONCRETE BOX PAD FOR 1000-1500 KVA 3 PHASE PADMOUNTED TSFS DUAL FEED CAST-IN-PLACE SLAB + PRECAST BOX UG DUCTS AND STRUCTURES	
ENGINEERING STANDARD HAWAIIAN ELECTRIC CO. INC.			SHEET 2 OF 5	

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2nd GROUND ROD,
5/8" x 10'-0"
(SEE NOTE 9)



PLAN VIEW:
TRANSFORMER ON CONCRETE BOX PAD

DATE
INITIAL

REVISION

DRAWN AP DESIGNED *HH cam* APPD *HH cam* *W. J. ...* REDRAWN

SUPERSEDES

CONCRETE BOX PAD FOR 1000-1500 KVA
3 PHASE PADMOUNTED TSFS DUAL FEED
CAST-IN-PLACE SLAB + PRECAST BOX
UG DUCTS AND STRUCTURES

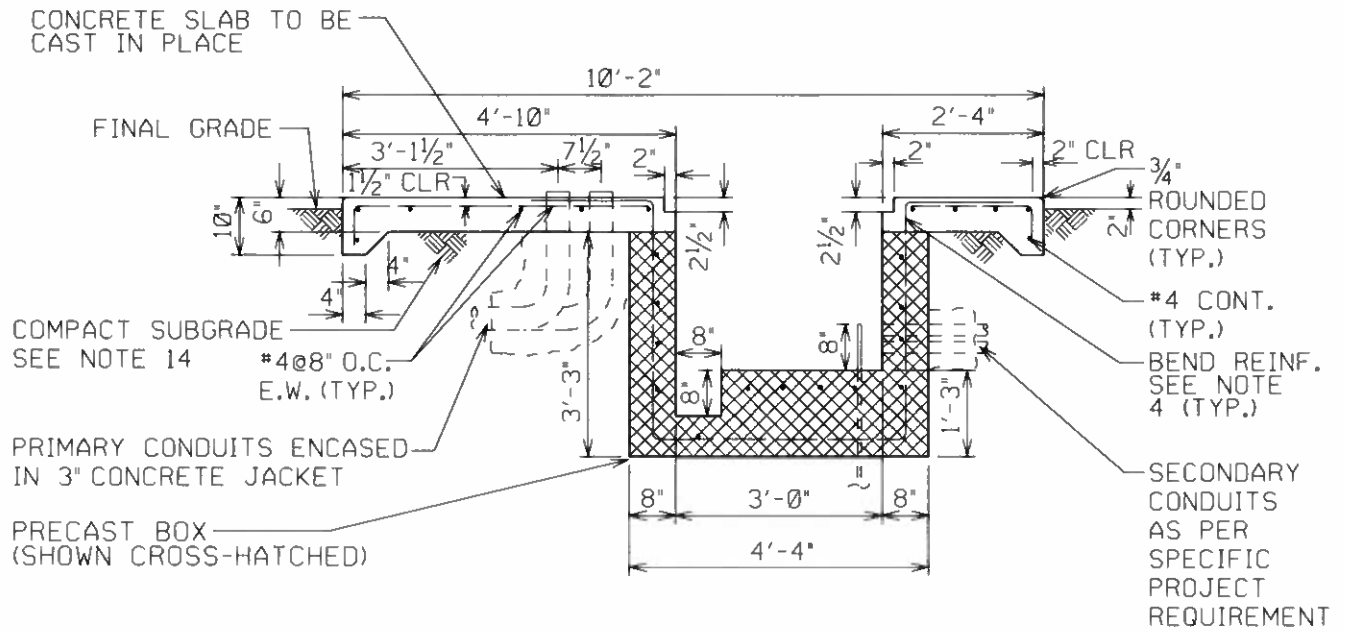
ORIGINAL *07-2018*

30-5021 REV 0

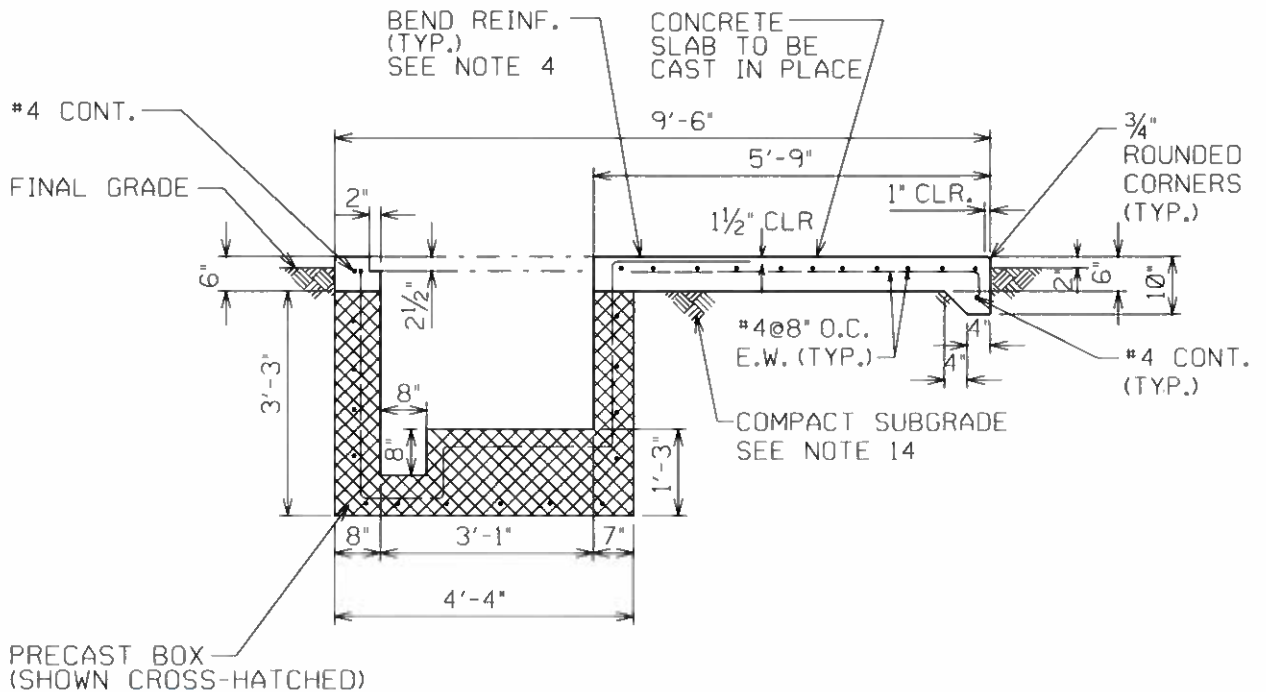
ENGINEERING STANDARD
HAWAIIAN ELECTRIC CO. INC.

SHEET 3 OF 5

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SECTION "A-A"



SECTION "B-B"

DATE
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APPD *HA gm* *W. J. ...*

REDRAWN

SUPERSEDES

CONCRETE BOX PAD FOR 1000-1500 KVA
3 PHASE PADMOUNTED TSES DUAL FEED
CAST-IN-PLACE SLAB + PRECAST BOX
UG DUCTS AND STRUCTURES

ORIGINAL 07-2018

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HAWAIIAN ELECTRIC CO. INC.

SHEET 4 OF 5

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NOTES

1. THIS DESIGN IS FOR PRECAST BOX + CAST-IN-PLACE SLAB.
2. PRECAST BOX AND HANDHOLE COVER (PER HECO UG STD. 30-5023 AND HECO DRAWING 101028, REV. 1 TYPE SW REMOVABLE CONCRETE COVER) WILL BE PROVIDED BY HECO APPROVED PRECASTER.
3. THE FOLLOWING METAL PARTS ARE TO BE PROVIDED BY HECO APPROVED PRECASTER (REFER TO HECO UG STD 30-5024):
 - a. METAL PLATE - 1'-3" x 1'-3"
 - b. ANGLE IRONS - 2-1/2 x 2-1/2 x 1/4 x 7" LONG AND 2-1/2 x 2-1/2 x 1/4 x 9" LONG
 - c. 5" WIDE CHANNEL FABRICATED FROM 2 ANGLE IRONS WELDED TOGETHER (EACH ANGLE IRON 2-1/2 x 2-1/2 x 1/4 x 3'-3/4" LONG)
4. CONCRETE SLAB TO BE CAST-IN-PLACE. TO CONNECT THE PRECAST BOX TO THE CAST-IN-PLACE SLAB, BEND PRECAST BOX VERTICAL WALL REINFORCEMENT DOWN INTO SLAB.
5. ALL ANCHORS SHALL BE GALVANIZED OR STAINLESS STEEL HILTI WEDGE ANCHORS (OR APPROVED EQUIVALENT). THE ANCHORS ARE INTENDED TO ANCHOR THE L2-1/2 x 2-1/2 x 1/4 x 7" LONG ANGLE IRON TO THE CONCRETE. (CONTRACTOR TO SUPPLY ANCHORS)
6. ALL BOLTS SHALL BE 3/8" DIAMETER PER ASTM A307 AND HOT DIPPED GALVANIZED. (CONTRACTOR TO SUPPLY BOLTS)
7. REFER TO STD. 30-5000 FOR LOCATIONS AND CLEARANCES.
8. REFER TO STD 22-2005 FOR 3 PHASE PAD MOUNTED TRANSFORMER REQUIREMENTS.
9. 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 10'-0" GROUND ROD 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 GEATER THAN 67 OHM-METERS. FOR SECOND GROUND ROD, TOP OF ROD SHOULD BE 12" BELOW FINAL GRADE.
10. CONCRETE: 3000 PSI CONCRETE COMPRESSIVE STRENGTH IN 28 DAYS. APPLY CURING COMPOUND IN ACCORDANCE WITH ASTM C309. DO NOT INSTALL TRANSFORMER UNTIL CONCRETE COMPRESSIVE STRENGTH REACHES 1500 PSI MINIMUM OR AFTER 14 DAYS.
11. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A615, GRADE 60
12. 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 SPECIFICIATIONS. ROUND ALL EXPOSED EDGES TO 3/4".
13. MAINTAIN RELATIVELY LEVEL MINIMUM CLEARANCE OF 2'-6" FROM SIDES OF PAD AND 2'-0" FROM BACK OF PAD, AND 8'-0" IN FRONT OF PAD. EXTEND CONCRETE PAD AN ADDITIONAL 8'-0" IN FRONT IF LOCATED IN PLANTING AREA.
14. COMPACT SUBGRADE TO 95% COMPACTION IN ACCORDANCE WITH ASTM D1557.

DATE INITIAL REVISION

DRAWN	AP	DESIGNED <i>HHsm</i>	APPD <i>HHsm wt W. Hagalcaan</i>	REDRAWN
SUPERSEDES			CONCRETE BOX PAD FOR 1000-1500 KVA 3 PHASE PADMOUNTED TSFS DUAL FEED CAST-IN-PLACE SLAB + PRECAST BOX UG DUCTS AND STRUCTURES	ORIGINAL <i>07-2018</i>
ENGINEERING STANDARD HAWAIIAN ELECTRIC CO. INC.				REV 0
				SHEET 5 OF 5

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