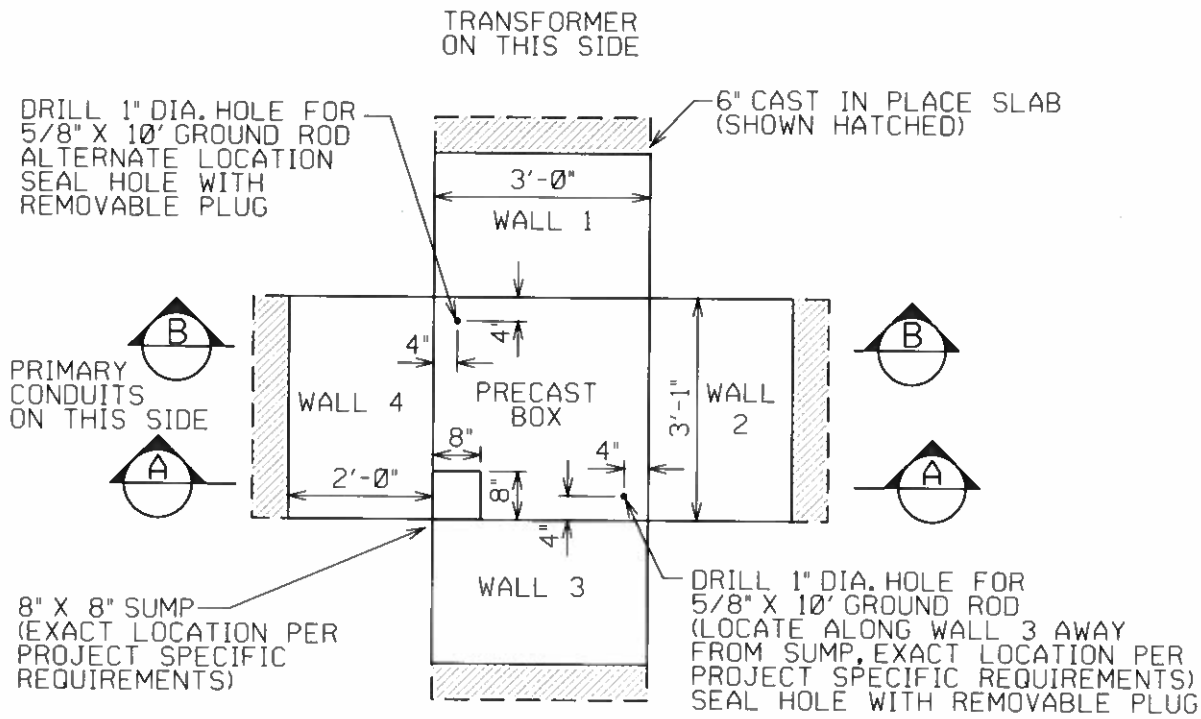


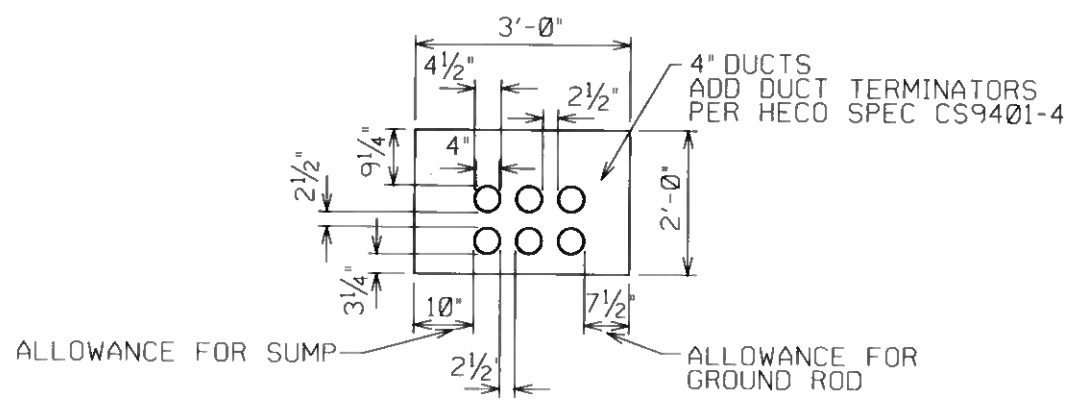
**Hawaiian  
Electric**

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.





OUTLINE FOR BUTTERFLY DETAIL  
(EXACT BUTTERFLY DETAIL PER  
SPECIFIC PROJECT REQUIREMENTS)



MAXIMUM SECONDARY DUCT LAYOUT  
(WALLS 1, 2, 3)

NOTE:  
 AVOID PLACING DUCTS ON WALL 4 SINCE WALL 4 IS THE WALL CLOSEST TO PRIMARY DUCTS.

DATE INITIAL  
 REVISION

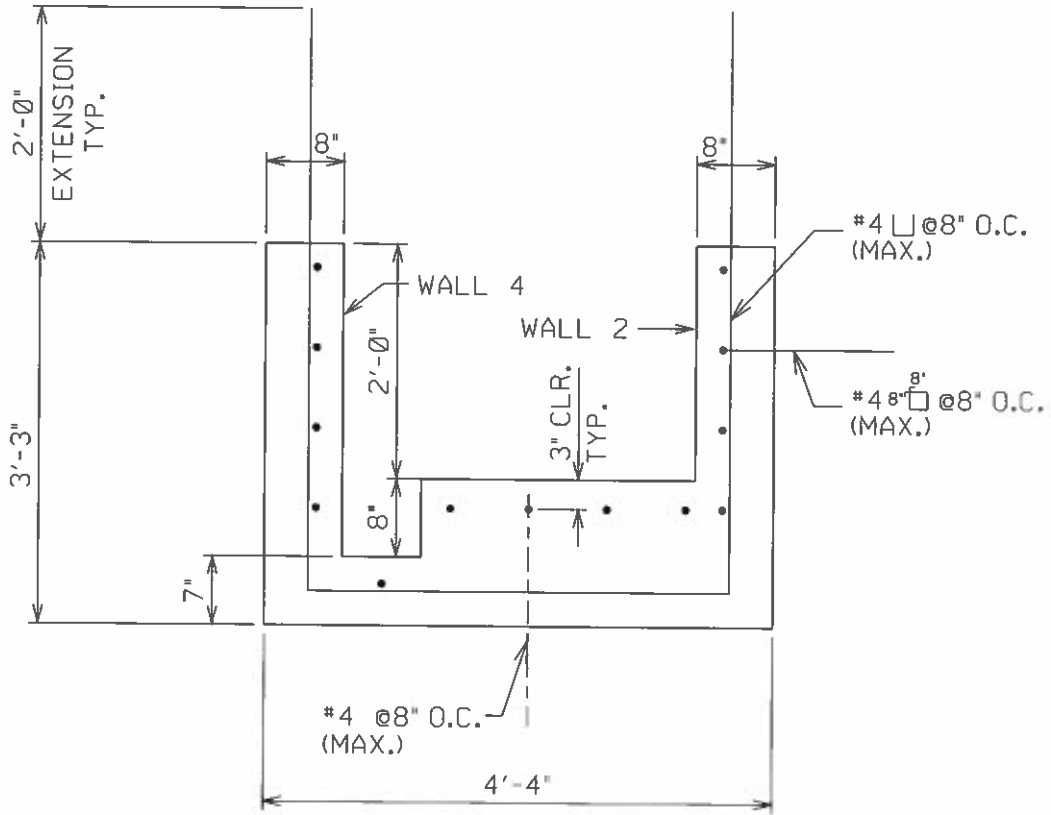
DRAWN AP DESIGNED *HHsm* APPD *HHsm* *W. H. Haganawa* REDRAWN

SUPERSEDES  
 ENGINEERING STANDARD  
 HAWAIIAN ELECTRIC CO. INC.

PRECAST CONCRETE BOX FOR  
 LARGE 3 PHASE PADMOUNTED TSFS  
 (500KVA - 2500KVA TSFS)  
 UG DUCTS & STRUCTURES

ORIGINAL *07-2018*  
 30-5023 REV 0  
 SHEET 1 OF 5

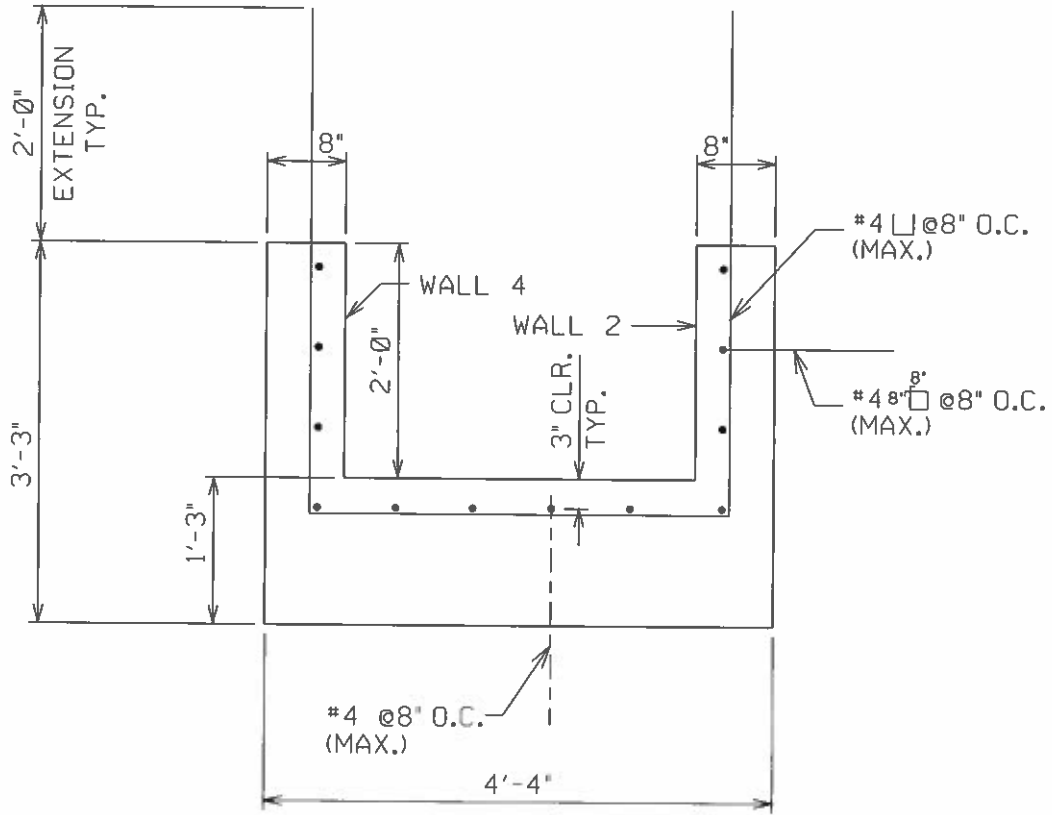
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**SECTION A-A**

**SPECIAL NOTE:**  
 INSTALL WALL REINF.  
 AT  $\phi$  OF WALL

REVISION	DATE	INITIAL	DRAWN	AP	DESIGNED	APPD	REDRAWN
			AP	HH	HH	W. Joyce	
SUPERSEDES			PRECAST CONCRETE BOX FOR LARGE 3 PHASE PADMOUNTED TSFS (500KVA - 2500KVA TSFS) UG DUCTS & STRUCTURES				ORIGINAL 07-2018
ENGINEERING STANDARD HAWAIIAN ELECTRIC CO. INC.							REV 0
			SHEET 2 OF 5				



**SECTION B-B**

**SPECIAL NOTE:**  
 INSTALL WALL REINF.  
 AT  $\phi$  OF WALL

REVISION  
 DATE  
 INITIAL

DRAWN AP DESIGNED *HH Sm* APPD *HH Sm* *B.W. Hayashima* REDRAWN

SUPERSEDES

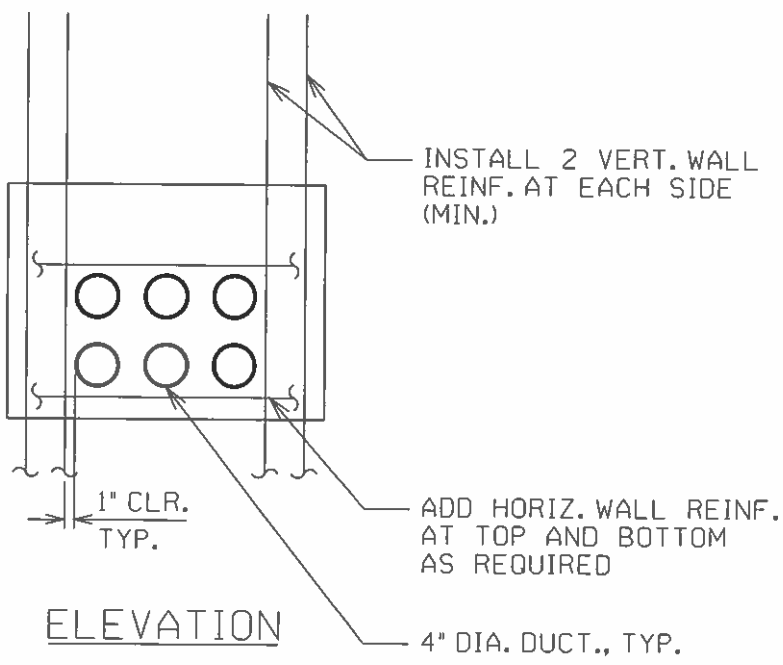
PRECAST CONCRETE BOX FOR  
 LARGE 3 PHASE PADMOUNTED TSFS  
 (500KVA - 2500KVA TSFS)  
 UG DUCTS & STRUCTURES

ORIGINAL *07-2018*

30-5023 REV 0

SHEET 3 OF 5

ENGINEERING STANDARD  
 HAWAIIAN ELECTRIC CO. INC.



ELEVATION

WALL REINF. DETAIL

SPECIAL NOTE:  
 CONDITION AT 3 AND 5-4" DIA.  
 DUCTS SIMILAR.

DATE INITIAL  
 REVISION

DRAWN AP	DESIGNED <i>HA sm</i>	APPD <i>HA sm</i> or <i>W. J. ...</i>	REDRAWN
SUPERSEDES		PRECAST CONCRETE BOX FOR LARGE 3 PHASE PADMOUNTED TSFS (500KVA - 2500KVA TSFS) UG DUCTS & STRUCTURES	ORIGINAL <i>07-2018</i>
ENGINEERING STANDARD HAWAIIAN ELECTRIC CO. INC.			REV Ø
			30-5023
			SHEET 4 OF 5

GENERAL NOTES:

- A. SEE ALSO:
  - 1. SPECIAL NOTES ON DRAWINGS.
- B. VERIFY ALL DIMENSIONS AND CONDITIONS AND REPORT ALL DISCREPANCIES TO THE PROJECT ENGINEER/PLANNER.
- C. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE 2006 INTERNATIONAL BUILDING CODE AND ALL CODES REFERENCED.
- D. DETAILS SHOWN ON DRAWINGS SHALL BE TYPICAL FOR ALL SIMILAR CONDITIONS.
- E. PROJECT ENGINEER/PLANNER TO PROVIDE PROJECT SPECIFIC BUTTERFLY DRAWING INDICATING SECONDARY CONDUIT, SUMP, AND GROUND ROD PLACEMENT.
- F. MAXIMUM OF SIX 4" DUCTS PER WALL FOR WALLS 1, 2, 3.
- G. OBSERVE REQUIRED SPACING AROUND AND BETWEEN SECONDARY DUCTS. SPACING BASED ON UG STD 30-1035, SHEET 8.
- H. DO NOT PLACE SECONDARY DUCTS ON WALL 4 (WALL NEAREST TO PRIMARY DUCTS).

CONCRETE NOTES:

- A. ALL CONCRETE SHALL BE 5,000 PSI WITH A 28 DAY COMPRESSIVE STRENGTH.
- B. USE OF ADMIXTURE AT CONTRACTOR'S OPTION, BUT SUBJECT TO ENGINEER'S APPROVAL.
- C. CONTRACTOR SHALL PROVIDE CURING COMPOUND IN ACCORDANCE WITH ASTM C309.
- D. THE USE OF ANY CALCIUM CHLORIDE IN ANY CONCRETE IS PROHIBITED.

REINFORCING STEEL NOTES:

- A. ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
- B. MINIMUM CONCRETE CLEAR COVER: AS NOTED IN THE SKETCHES.
- C. BAR BENDS, HOOKS, AND OFFSETS SHALL BE IN ACCORDANCE WITH THE ACI RECOMMENDATIONS.

DATE  
INITIAL

REVISION

DRAWN	AP	DESIGNED	HHsm	APPD	HHsm m <i>W. Ayala</i>	REDRAWN	
SUPERSEDES				PRECAST CONCRETE BOX FOR LARGE 3 PHASE PADMOUNTED TSFS (500KVA - 2500KVA TSFS) UG DUCTS & STRUCTURES		ORIGINAL	07-2018
ENGINEERING STANDARD HAWAIIAN ELECTRIC CO. INC.						30-5023	REV 0
						SHEET	5 OF 5