

## **ZG 622 Padvault—7' x 9' (84" x 108"), for Three-Phase 15 kV Pad-Mounted Switchgear**

### **1. Scope**

This specification outlines the minimum requirements for 7' x 9' (84" x 108") vaults for three-phase, 15 kV padmounted equipment. This specification applies to all 7' x 9' (84" x 108") padvaults installed by the company or its contractors, customers, or suppliers.

### **2. Applicable Documents**

The latest revisions of the documents, standards, codes and requirements listed in 2.1, Company Specifications, and 2.2, Codes and Standards, in effect on the date of invitation to bid apply to the extent specified herein.

#### **2.1. Company Specifications**

ZG 301, *General Equipment Base and Enclosure Requirements*

ZG 311, *Concrete Requirements*

ZG 811, *Full Traffic Cover and Frame Assembly*

#### **2.2. Codes and Standards**

ASTM C857 A-16

AASHTO H-20 (for vaults beneath roadways)

ASTM C857 A-8 (for vaults beneath incidental light truck traffic)

### **3. General**

Material and construction requirements stated in this material specification are applicable only to 7' x 9' (84" x 108") padvaults.

### **4. Applicable Stock Item Numbers**

Materials submitted for the following company stock item number is subject to evaluation according to the requirements in this specification:

7999954, PADVAULT, SWITCHGEAR, 84" x 108", TYPE 9 AND 11, 15 KV, DF

### **5. Design and Manufacturing Requirements**

The purpose of a 7' x 9' (84" x 108") vault is to provide an enclosure for cable pulling and padmounted switching.

#### **5.1. Vault Layout**

Figure 1 and Figure 2 show the assembled 7' x 9' (84" x 108") vault layout with dimensions. Unless otherwise approved by company engineering, all dimensions and placement of

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hardware shall conform to those shown in Figure 1 and Figure 2. Vault enclosures shall be constructed to the AASHTO H-20 (full traffic) standard, regardless of the cover type and frame assembly.

## 5.2. Lifting Attachments

Enough lifting attachments shall be provided to ensure safe installation of all pieces at the site.

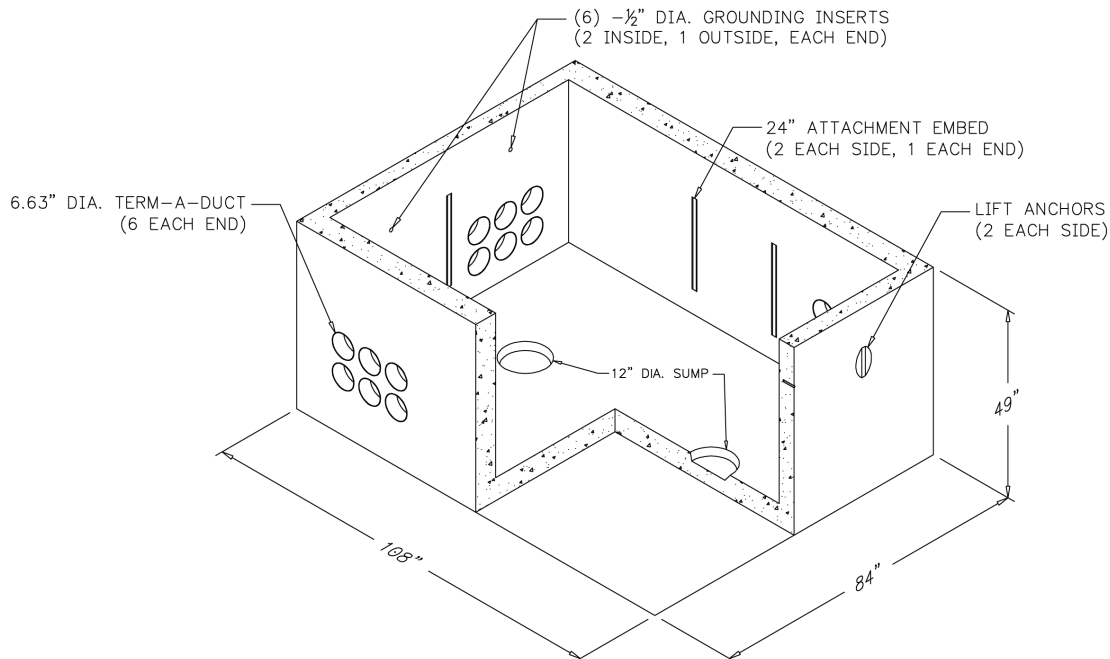
## 5.3. Pulling Attachments

Cable pulling attachments shall be installed opposite each set of Term-A-Duct banks, such that blocks may be attached for a straight cable pull. Pulling attachments shall have a minimum pullout strength of 6000 pounds. Attachments shall allow the attachment of a clevis with a one-inch diameter through-bolt. Pulling attachments may be designed by the manufacturer to meet these requirements. (Pulling irons shall not block the front of the terminal duct entrances.)

## 5.4. Conduit Entrances

The padvault shall be constructed with Term-A-Ducts. The standard conduit entrance locations are as follows, and are also shown in Figure 2.

Each wall: six 6.63-inch entrances



**Figure 1 — 7' x 9' (84" x 108") Vault (Cutaway View)**

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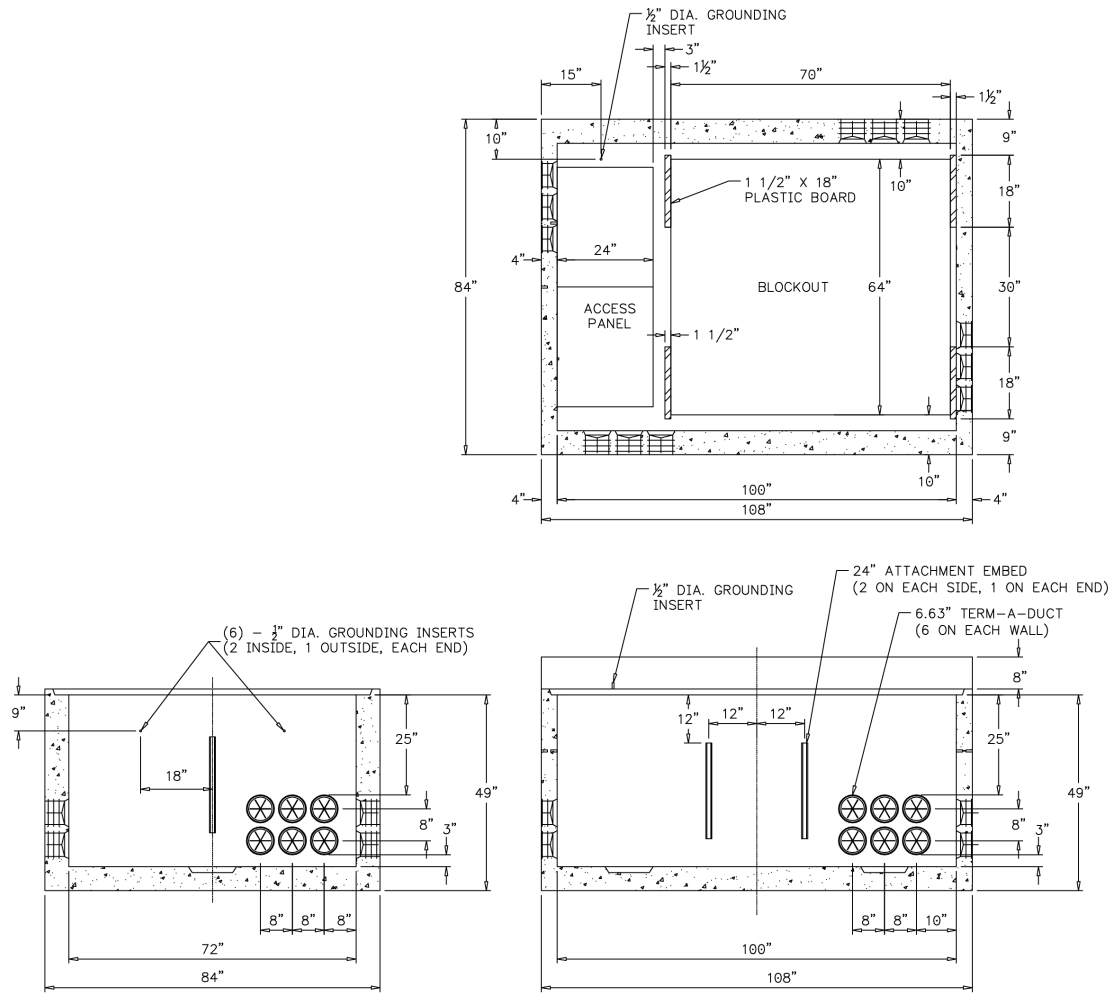


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**Figure 2 — Padvault Enclosure Layout (Top and Side Views)**

### 5.5. Grounding Grid

The vault shall be equipped with an internal, encased electrode in the vault enclosure meeting NESC 094.B.6. The electrode shall be  $\frac{3}{8}$ -inch steel rebar. It shall be encased horizontally and run continuously around vault, and it shall be a minimum of 24-inch from the top of the vault. The grounding system shall attach to “connection” inserts, made of high-bronze alloy, and shall be threaded to 0.5-inch-13UNC. Inserts shall have caps or plugs installed. The padvault shall have seven grounding inserts: one insert on the cover (near the access door), one outside each end wall, and two inside each end wall.

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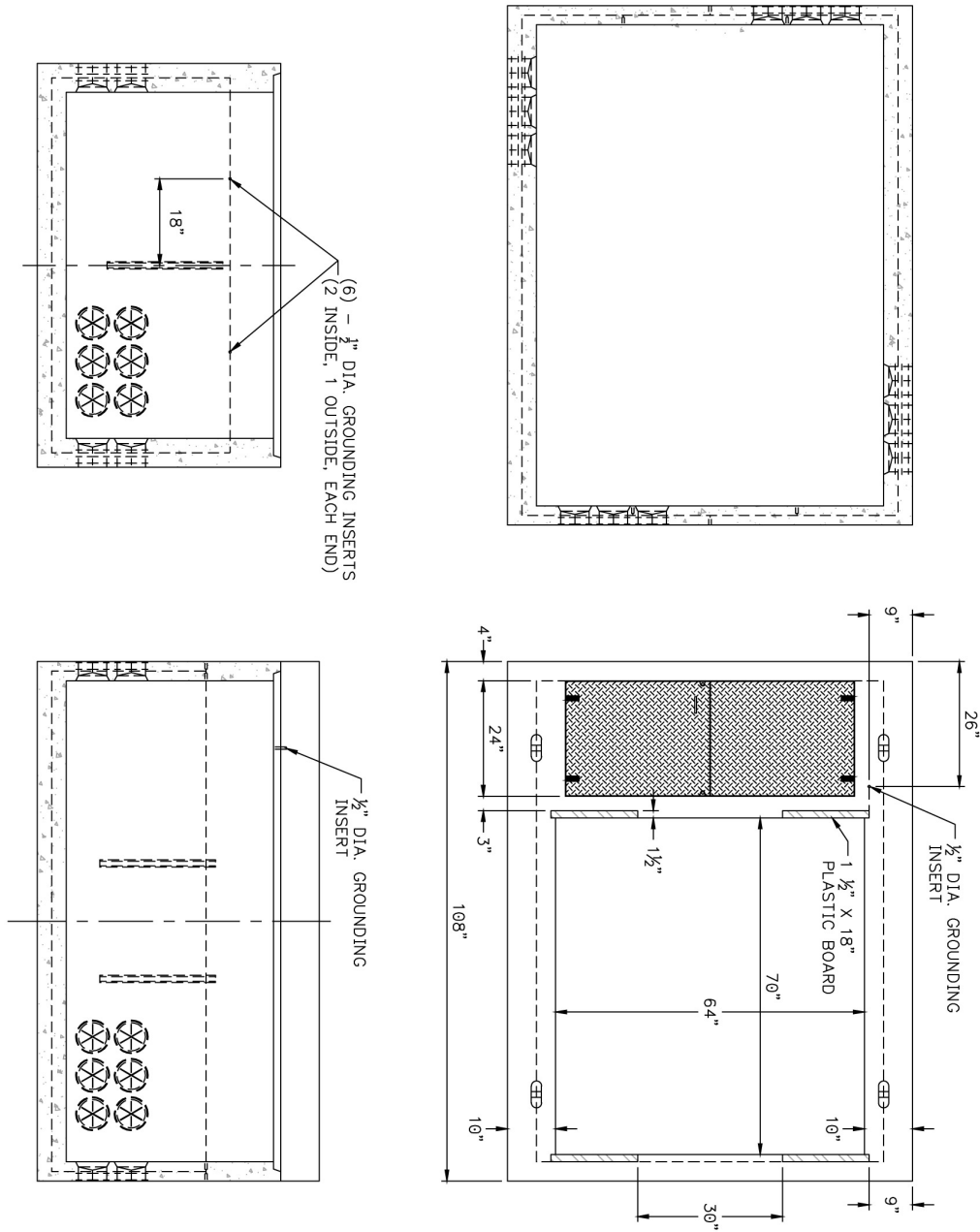
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## 5.6. Attachment Embeds

Attachment embeds shall be galvanized or fiberglass 1-5/8" × 13/16" C-channel or Nox-Crete 1-1/2" Nox-Strut. See the vault specification for length and rotation.



**Figure 3 — Padvault Ground Grid Layout (Top and Side Views)**

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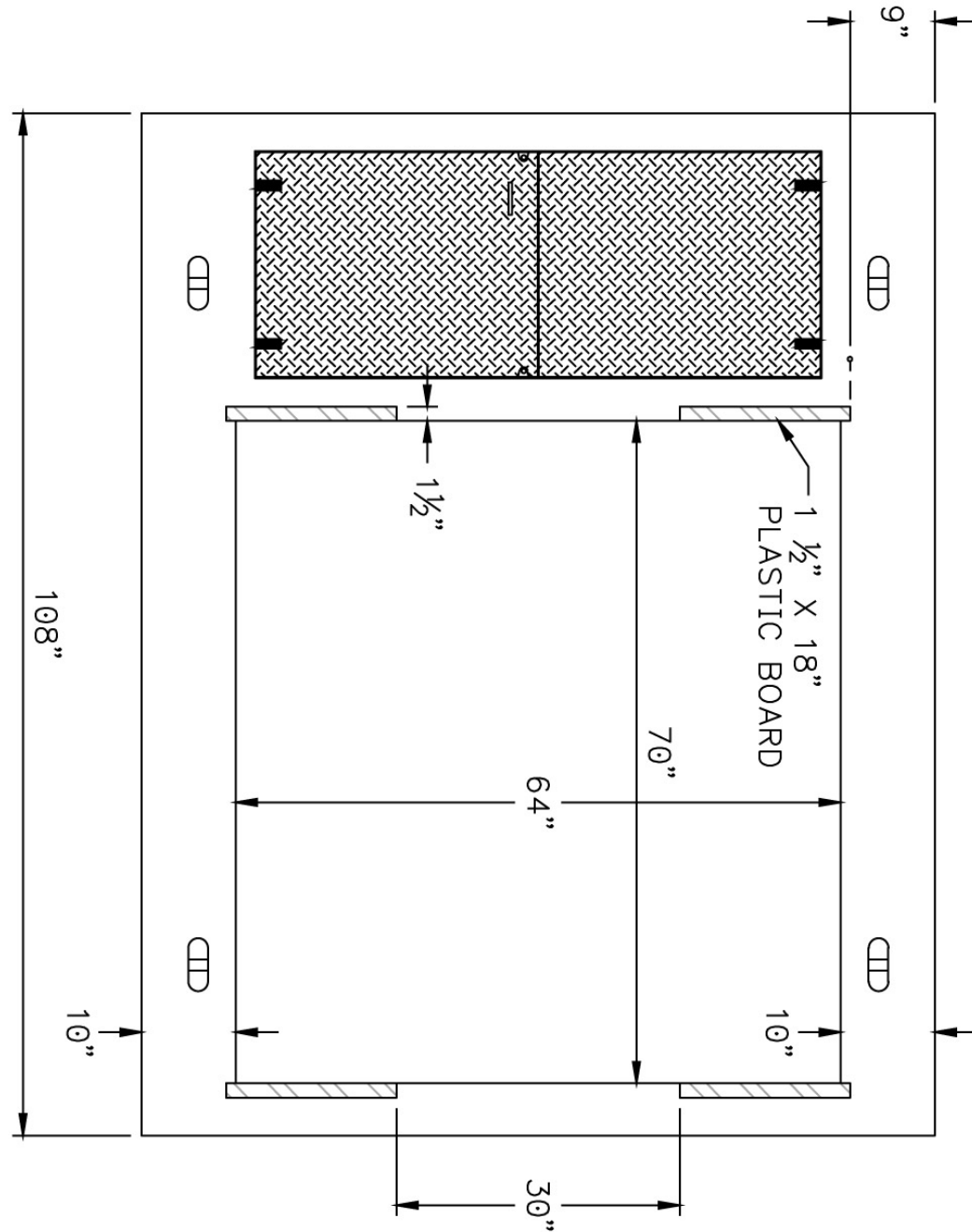
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**Figure 4 — Padvault for 15 kV Switchgear Types 9 and 11 (Top View)**

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## 5.7. Installation

The unit shall be set at the site by the supplier. The contractor is responsible for ensuring that the earth under the vault is compacted and leveled to no more than 2% slope prior to setting the vault. A clean gravel base under the padvault may be necessary in areas where drainage is poor. The interface between the pad and the enclosure shall be sealed using a waterproof substance, such as tar or mastic. The top of the frame should be flush with the final grade in pedestrian areas. The setting depth shall be determined by the local regulatory authority for full-traffic areas.

## 6. Padvault for 15 kV, Three-Phase Switchgear Cabinets

### 6.1. Padvault Layout

See Figure 4 for padvault layout and dimensions particular to installations with 15 kV, three-phase switchgear, types 9 and 11.

### 6.2. Inserts and Mounting Hardware

The supplier shall provide:

- four 2" (or 1-½") x 4" x 18" composite boards for 15 kV three-phase switchgear. Boards shall be case-flush with the top of the padvault lid at the locations specified in Figure 4.

The following hardware to fasten the switchgear to the composite boards shall be provided by the supplier:

- four 1-¼" x 2-½" stainless steel hold-down cleats with ¼" lift and 9/16" x 1-½" holes.

### 6.3. Access Panel

Three-phase padvaults shall be equipped with one access panel, as described in company material specification ZG 811. The access panel size shall not exceed 24" x 60".

## 7. Testing

### 7.1. Test Compliance

Vaults submitted under this specification shall meet all tests and requirements contained in material specifications ZG 301, ZG 311, and this specification. Vaults shall also comply with requirements in applicable national standards.

## 8. Material Specification Issuing Department

The engineering standards and grid modernization department of PacifiCorp published this material specification. This material specification shall be used and duplicated only in support of company projects.