

Padvault — 5' × 7' (56" × 84"), for Three-Phase Sectionalizing Cabinets and Metering Equipment

1 Scope

This specification outlines the minimum requirements for 5' × 7' (56" × 84") vaults to be used for three-phase sectionalizing cabinets and metering equipment. This specification applies to all 5' × 7' (56" × 84") vaults installed by PacifiCorp or its contractors, customers or suppliers.

2 Applicable Documents

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

2.1 PacifiCorp

ZG 301, *General Equipment Base and Enclosure Requirements*

ZG 311, *Concrete Requirements*

ZG 821, *Incidental-Traffic Cover For Padvaults*

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

3.1 Applicability

Material and construction requirements stated in this material specification are applicable only to 5' × 7' (56" × 84") vaults.

3.2 Authorization

This material specification shall not be considered valid unless each page contains the approval signature or initials of the persons named in the title blocks.

4 Applicable Stock Item Numbers

Materials being submitted for the following PacifiCorp stock item numbers are subject to evaluation according to the requirements in this specification.

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Engineer (E. Maleki):
T&D Stds Mgr (J. Jones):

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4.1 Stock Item Numbers

ZG 521 Padvault — Three-Phase Transformer

7992604, PADVAULT, FUSING CABINET, 3-PHASE, 15/25KV, 3-4 POSITION

7992605, PADVAULT, SECTIONALIZING CABINET, 3-PHASE, 15 KV

7992606, PADVAULT, SECTIONALIZING CABINET, 3-PHASE, 25 KV

7992607, PADVAULT, SECTIONALIZING CABINET, 3-PHASE, 35 KV

3090369, VAULT, METERING, 3-PHASE, 200A (refer to Figures 1, 2, & 3)

5 Design and Manufacturing Requirements

The purpose of a 5' × 7' (56" × 84") vault is to provide an enclosure for cable pulling for three-phase transformers, three-phase sectionalizing cabinets, and three-phase fusing cabinets.

5.1 Vault Layout

Figure 1 and Figure 2 show the assembled 5' × 7' (56" × 84") vault layout with dimensions. Unless otherwise approved by PacifiCorp engineering, all dimensions and placement of hardware shall conform to those shown in Figure 1 and Figure 2. Vault enclosures shall be constructed to ASTM C857 A-16, and to the holding strengths of the pulling eyes or irons.

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 in the corners of the vault. 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-DUCT or equivalent conduit entrances compatible with PVC, polyethylene (PE), or fiberglass 90°C-rated electrical-grade conduit. The standard conduit entrance locations are as follows, and are also shown in Figure 2:

Entrances at each end wall: Two 6.63" entrances, two 4.5" entrances, and two 2.38" entrances.

Entrances at each side wall: Eight 4.5" entrances and one 6.63" entrance.

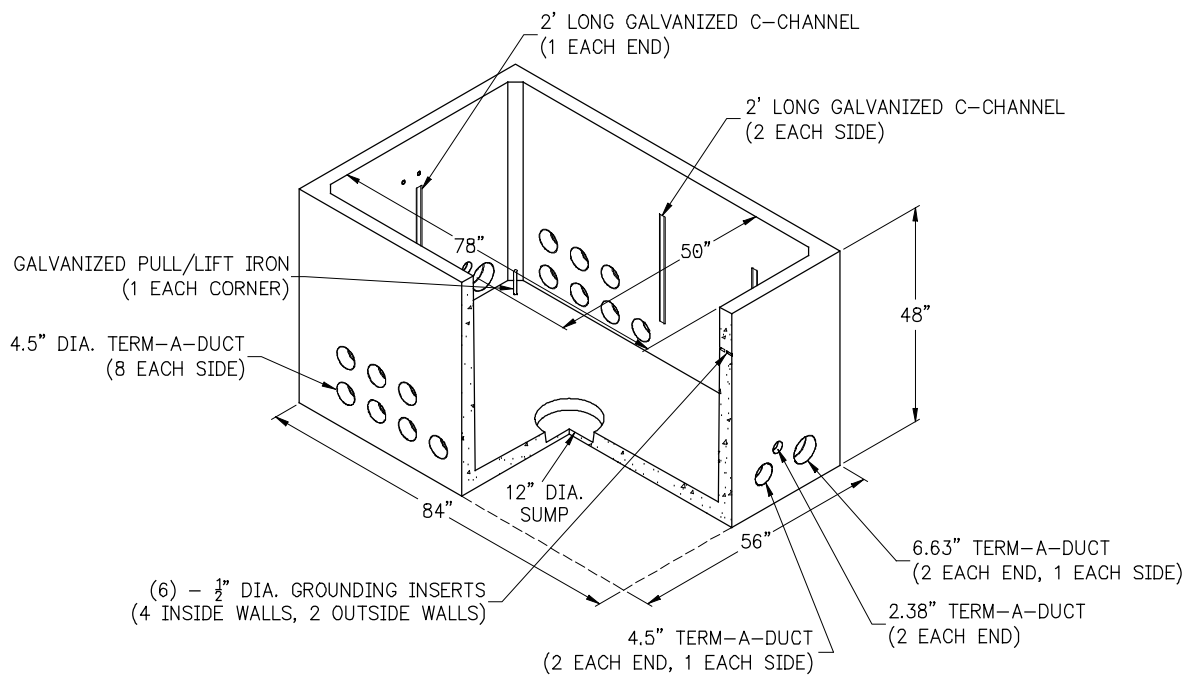


Figure 1—5' x 7' (56" x 84") Vault, Cutaway View

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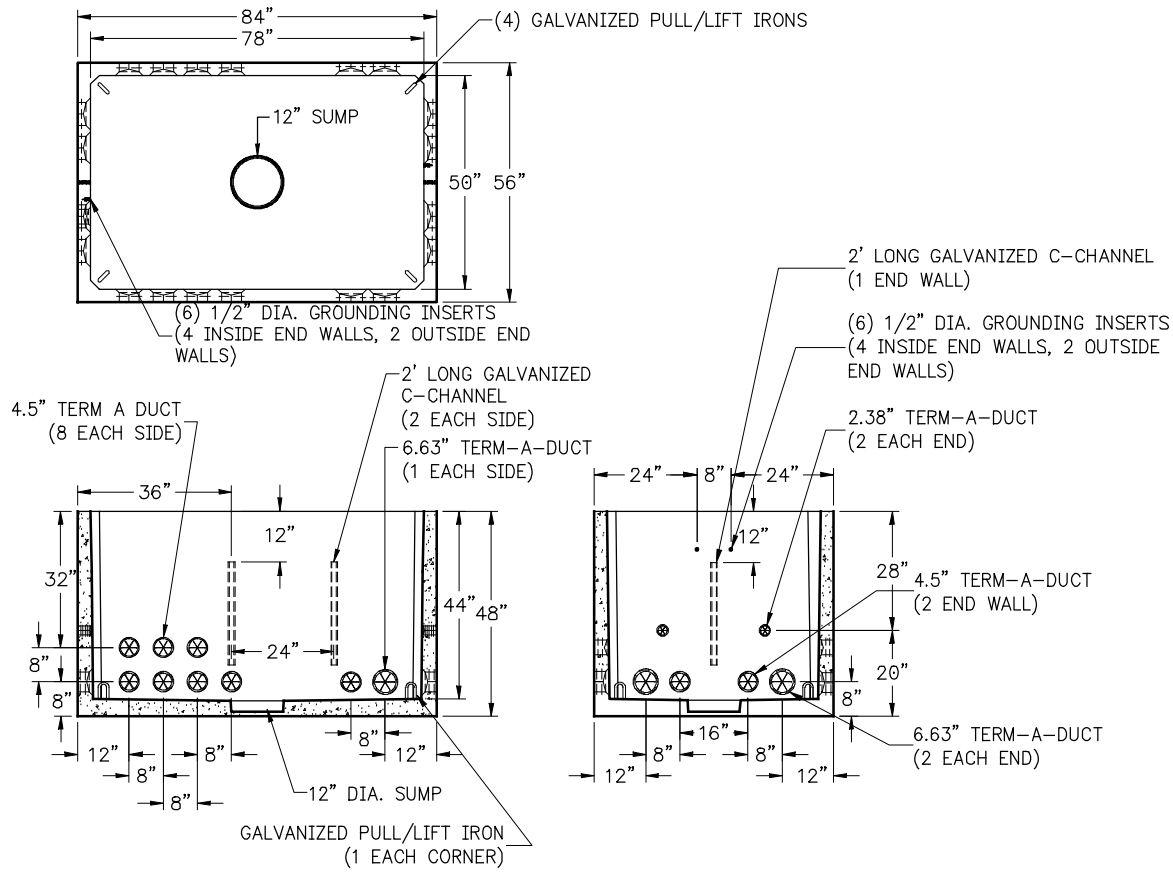


Figure 2—5' x 7' (56'' x 84'') Vault Enclosure Layout

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 $\frac{3}{8}$ " steel rebar. The electrode shall be encased horizontally and run continuously around vault. The vault electrode shall be a minimum of 24" from the top of the vault. The grounding system shall attach to "connection" inserts, made of high-bronze alloy and threaded to 0.5"-13UNC. All inserts shall have caps or plugs installed. All padvaults shall have seven grounding inserts: two on the inside of each end wall, one on the outside of each end wall, and one on the bottom of the cover (near the access door). Refer to Figure 3 for layout details.



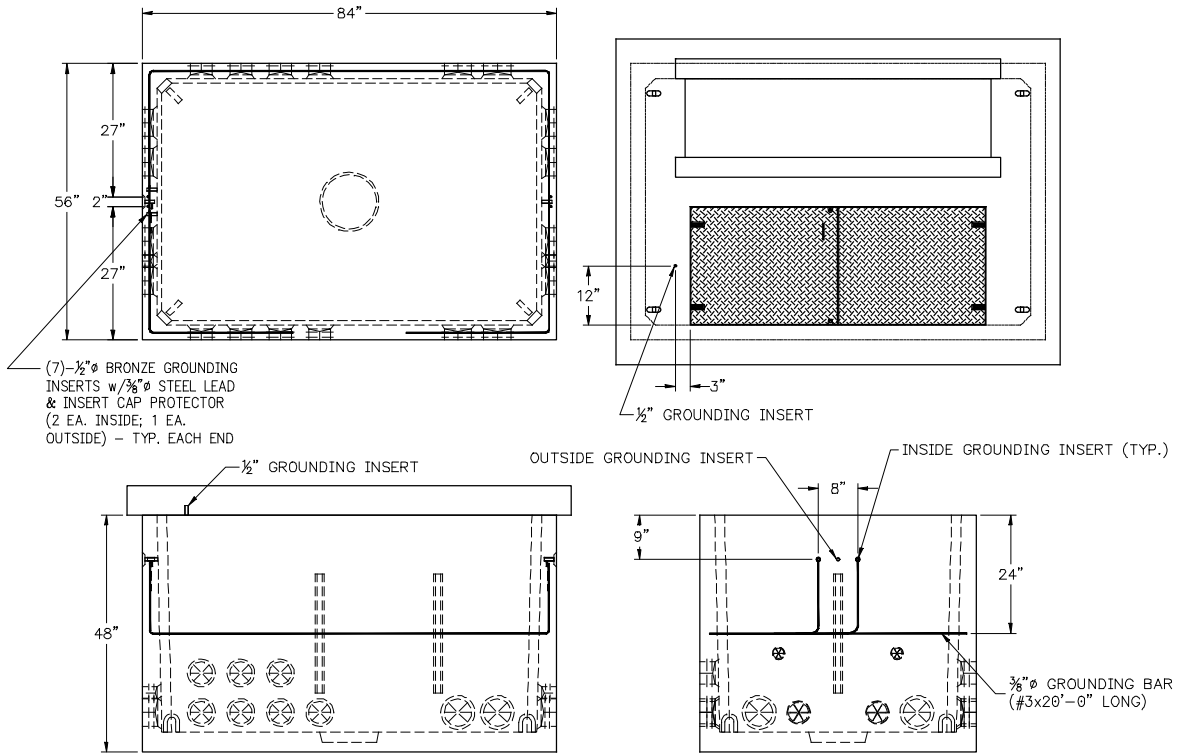


Figure 3—5' x 7' (56" x 84") Vault Ground Grid Layout

5.6 Installation

This unit shall be set at the site by the supplier. The contractor shall be responsible to ensure that all 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 pad/vault 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. Setting depth shall be determined by the local regulatory authority for full-traffic areas.

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6 Padvault for Three-Phase Sectionalizing Cabinets

6.1 Padvault Layout

The 5' × 7' (56" × 84") vault is common for the three voltage classes of sectionalizing cabinets. However, the pads are unique for each voltage (15 kV, 25 kV, and 35 kV). See Figure 4, Figure 5, and Figure 6 for dimensions.

6.2 Inserts and Mounting Hardware

The supplier shall provide:

- Two 2" × 4" × 66" composite boards for a 15 kV three-phase sectionalizing cabinet (padvault SI# 7992605), or
- Two 2" × 4" × 84" composite boards for a 25 kV (padvault SI# 7992606), or a 35 kV three-phase sectionalizing cabinet (padvault SI# 7992607).

Boards shall be case flush with the top of the padvault lid at the locations specified in Figure 4 through Figure 6.

The following hardware to fasten the sectionalizing cabinet to the composite boards shall be provided:

by PacifiCorp:

- Six 1/2" × 2" hot-dip galvanized lag screws (SI# 7992810)
- Six stainless steel Belleville washers

by the supplier:

- Six 1 1/4" × 2 1/2" stainless steel hold-down cleats with 1/4" lift and 9/16" × 1 1/2" holes.

6.3 Access Panel

All three-phase sectionalizing padvaults shall be equipped with one access panel, as described in material specification ZG 821, *Incidental-Traffic Cover For Padvaults*. The access panel size shall not exceed 24" × 60".



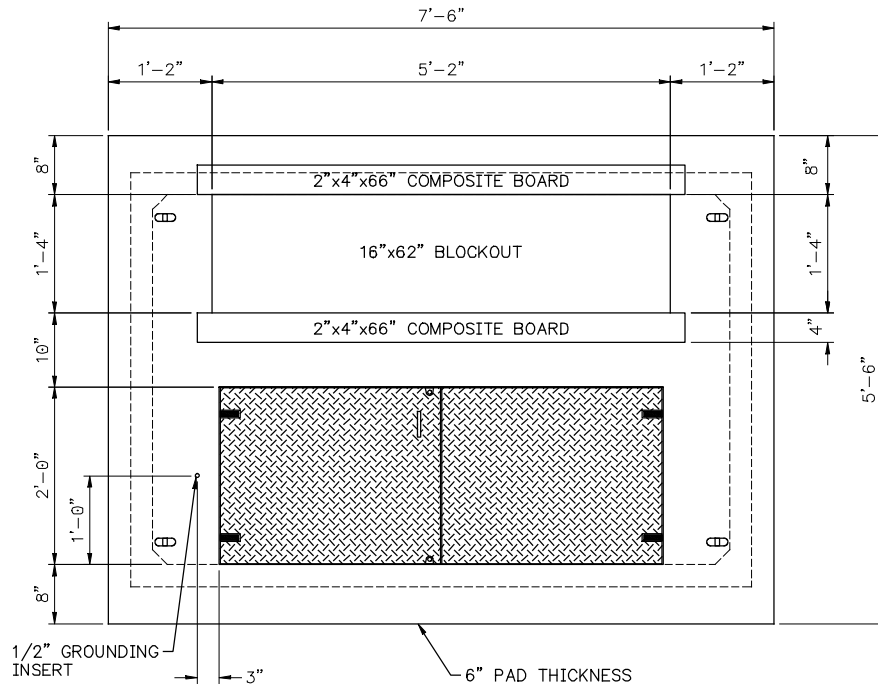


Figure 4—15 kV Three-Phase Sectionalizing Cabinet Pad (SI# 7992605)

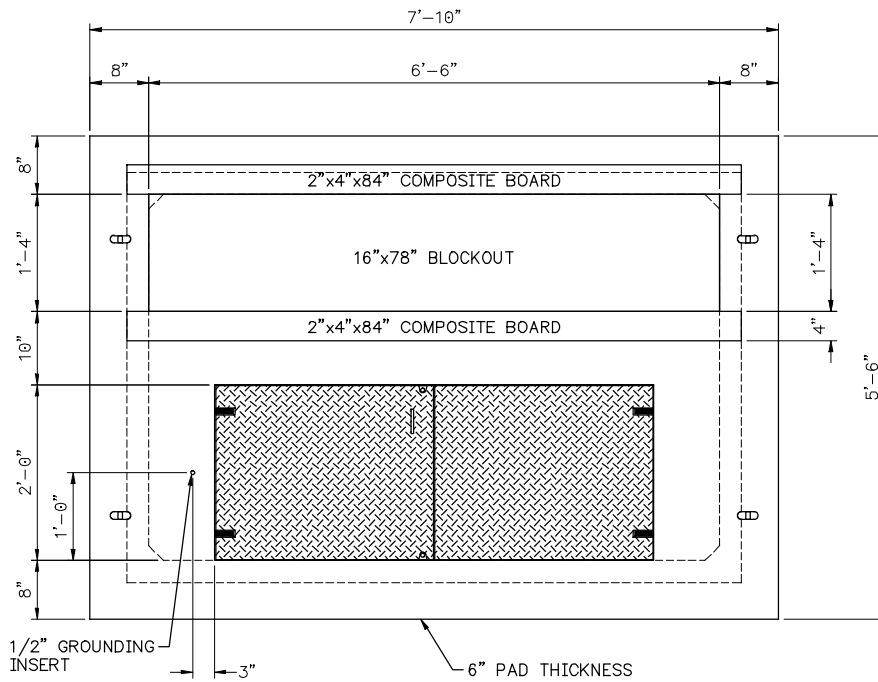


Figure 5—25 kV Three-Phase Sectionalizing Cabinet Pad (SI# 7992606)

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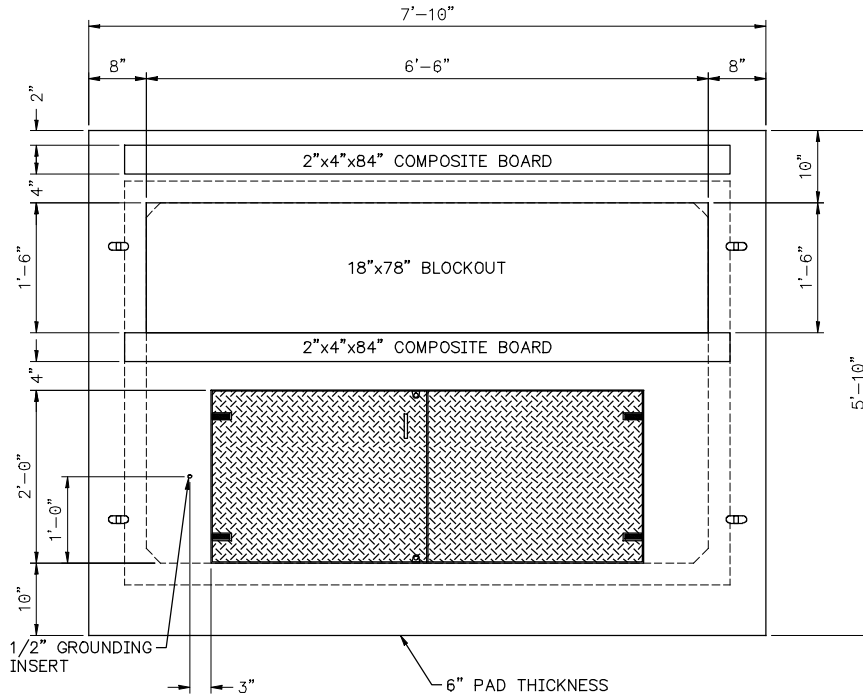


Figure 6—35 kV Three-Phase Sectionalizing Cabinet Pad (SI# 7992607)

7 Testing

7.1 Test Compliance

Vaults submitted under this specification shall meet all tests and requirements contained in material specifications ZG 301, *General Equipment Base and Enclosure Requirements*, ZG 311, *Concrete Requirements*, and this specification. Vaults shall also comply with requirements in applicable national standards.

8 Issuing Department

The engineering publications department of PacifiCorp published this document. Questions regarding editing, revision history and document output may be directed to the lead editor at (503) 813-5293. Technical questions and comments may be directed to Ehsan Maleki, Standards Engineering, (503) 813-7089.

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