

- Material Specification -

UG

1313.00

CHELAN COUNTY
PUBLIC UTILITY DISTRICT
Owned By The People We Serve



T&D UG VAULTS & COVERS
PRECAST CONCRETE
- Self Grounding -

Originator: DSmith

Date: 9/17/2021

Approval: J Mitchell

Date: 9/17/2021

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Revision: **Updated NESC Rule #**

Stds Committee Approval:
APPROVED



Chelan County Public Utility District
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Revised 9/29/2021



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1. SCOPE

The technical provisions of this specification detail the minimum performance criteria and physical requirements for the concrete junction boxes, switch boxes, transformer vaults and covers to be used in the construction of underground electrical systems.

1.1. Third Party Purchases

The technical provisions of this specification apply to those units purchased directly by Chelan PUD and those units sold to third parties for use by Chelan PUD.

2. APPROVAL

All construction drawings used in the manufacturing of the concrete junction boxes, switch boxes, transformer vaults and covers will be reviewed by Chelan PUD before construction/manufacturing begins.

3. STRUCTURAL

Underground distribution concrete junction boxes, switch boxes, transformer vaults and covers of this specification shall meet the following minimum requirements.

3.1. CONCRETE

The concrete used shall have a minimum 28 day compressive strength (f'c) = 6000 PSI.

3.2. REINFORCEMENT

All units shall be reinforced with a minimum grade 60 welded wire fabric and #3 - #8 grade 60 bars.

3.3. DESIGN LOADING

All units shall be constructed for H-20 wheel loads or better with a 30% impact factor.

3.4. UNISTRUTS

Unistruts shall be provided and centered per enclosed applicable Chelan PUD T&D Vault and Cover Standards. The Unistrut size shall be 1 5/8" x 13/16" x 36" minimum length. All Unistrut material shall be hot-dipped galvanized.

4. INTERNALLY GROUNDED VAULTS

Chelan PUD is using internally grounded vaults for junctions, transformer and switch installations. The general requirement will be to bond all internal metallic structures



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together to a bronze insert. This grounding procedure shall meet the provisions of NESC Rule 94B5

4.1. ELECTRODES

Grounding electrodes shall be as shown on attached drawings and:

SPECIFICATION	REBAR
Minimum length	22 feet
Minimum size	# 3 - 3/8"

4.1.1. Installation

- The Electrodes shall be installed as straight as possible.
- The Electrodes shall be encased with a minimum of 1½" of radial concrete.
- The Electrodes shall be a minimum of 2.5' below the top of the vault or junction box.

4.1.2. Ground Insert Connector

Each bronze insert will be tapped for 1/2"-13 bolt, and located 2 inches below the Unistrut and in the middle of two opposite side walls (two inserts per wall, one faces inside the vault the other faces outside the vault) as shown in the attached Standard Drawings. A 3/8-inch steel rod, or similar sized metallic conductor, shall be used to bond the inserts to the structural steel in the concrete. The inserts shall be plugged to prevent contamination from entering.

On multi-sectioned vaults, the inserts shall be vertically aligned. Only the middle section will have the inserts that face inside the vault and outside the vault, all other inserts in these vaults will be placed as shown in the attached standard for that type vault.

4.1.2.1- Bonding to rebar and Wire Mesh

Ground insert connectors shall be electrically bonded to rebar and wire mesh by welded connections in a minimum of two locations



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4.1.2.2 – Labeling of Inserts

Inserts shall be labeled / identified in **Green Paint** as follows:

Section	Label
Base (Section that includes the minimum of 22 ft. of #3 Rebar bonded to insert)	GRND
Cover	BOND
Mid-Section	BOND

The labeling shall be adjacent to the insert. When inserts on covers are oriented downward the label shall be painted on the access opening side closest to the insert location.

5. COVERS

5.1. GROUNDING INSERTS

All covers shall have grounding inserts installed per manufacturer’s and Chelan PUD’s specification. Each insert shall be bonded to the wire mesh used as reinforcement in the cover. The location is shown on the drawings, for each unit, included with this specification.

5.2. METALLIC COVERS

The 36” x 36” cover(s) shall be designed for AASHTO H20 loading, as specified, and shall have two 180-degree flush hinges, lifting handle(s), and concealed locking device(s). A Penta head bolt in a recessed, non-rotating cup is to be part of the required locking device. (See Figure 1, ANSI C57.12.28.1988, for typical installation). The lid shall be manufactured from a skid resistant surface, hot-dipped galvanized steel and be provided with spring-assisted opening and closing requiring a 55-pound maximum effort to open and close it. As an alternate, an aluminum lid may be supplied subject to Chelan PUD’s approval. If supplied, it must meet all the applicable requirements above.

5.3. COVER, TRANSFORMER VAULT

The transformer vault lids shall have blockouts as described in the attached material standard for each type vault.

5.3.1. LOGO “CHELAN PUD”

All covers shall have the logo “**CHELAN PUD**” cast into the concrete structure using minimum two-inch-high letters. The logo is to be legible after 20 years



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exposure and placement such as to be easily noticed by a lay person casually inspecting the structure.

6. LIFTING METHOD

Lifting provisions shall be installed per manufacturer's and Chelan PUD's requirements.

6.1. COVERS

6.1.1. Burke Fittings

All vault covers supplied shall have a Burke fitting placed in each corner of the top according to manufacturer's standards.

6.1.2. Strap Lifting Notch 554 And 575 Vaults Only

All 554 and 575 covers supplied shall have a "Strap Lifting Notch" cast in the vault side of the cover in each corner. The triangular notch shall have three (3) inch sides and be ¼ inch high.

6.1.3. LOWER UNIT

6.1.3.1. 554 And 575 Units

These units shall have two (2) ton Rigging/Lifting fittings placed in each corner per manufacturer's specifications and approved by Chelan PUD.

6.1.3.2. 612 And 810 Units

These units shall have four (4) ton Rigging/Lifting fittings placed in each corner per manufacturer's specifications and approved by Chelan County PUD.

7. ACCESSORIES

Items to be included with each type vault.

7.1. SUMP

A sump shall be provided in the bottom of each vault. The size and placement of the sump shall be as shown in the manufacturer's catalog and approved by Chelan PUD. The bottom of the sump shall be designed such that it can be knocked out if desired.

7.2. KNOCKOUTS

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All units shall have cable knockouts located in each corner of the lower portion according to the manufacturer's standard and Chelan PUD's requirements.

7.3. CABLE PULLING DEVICES

In addition to the Burke Lifting devices, cable pulling irons shall be mounted in each corner and be suitable as anchors for cable pulling operations. Location in each type unit shall be as shown on specification drawings.



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8. APPROVED MANUFACTURERS

Utility Vault P.O. Box 588 Auburn, WA 98071	H2 Precast 4919 Contractors Drive East Wenatchee, WA. 98802
Phone: (800) 892-1538 (253) 839-3500	Phone: (509) 884-6644
Fax: (253) 735-4201	
Email: uvauburn@oldcastleprecast.com	Email: cprewitt@h2precast.com

9. RELATED STANDARDS & DIMENSIONS

Please refer to the **T&D Material Stock Catalog** for this items detail specifications on the district's web site listed below:

[HTTP://WWW.CHELANPUD.ORG/DISTRICT-STANDARDS.HTML](http://www.chelanpud.org/district-standards.html)

These catalog pages are updated when a change is made to the specifications.

Vendors shall utilize these specifications when responding to a request for quote.

- Material Catalog #1313.01 – 554 Vaults, Concrete, Self Grounding
- Material Catalog #1313.02 – 575 Vaults, Concrete, Self Grounding
- Material Catalog #1313.03 – 612 Vaults, Concrete, Self Grounding
- Material Catalog #1313.04 – 810 Vaults, Concrete, Self Grounding
- Material Catalog #1313.05 – 444 Vaults, Concrete
- Material Catalog #1313.06 – 774 Vaults, Concrete, Self Grounding
- Material Catalog #1313.07 – 954 Vaults, Concrete, Self Grounding