



# Customer Requirements Primary Junction Box Installation

July 12, 2022

**C-UG-1500**

## Application

Installation requirements of precast concrete junction box vaults and associated conduit installations. All excavation work required by this standard shall conform to the safety requirements of WAC 296-155 Part N (Excavation, Trenching, and Shoring) and any other applicable regulations.

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## Terms

Term	Definition
Construction Inspector	Representative from Tacoma Power T&D Construction Staff. <b>A pre-construction meeting with the Construction Inspector must happen prior to any construction. Call 253-381-3023.</b>
New Services Engineer	Tacoma Power engineering staff that provide design, cost estimates, and coordination of the commercial project.

## Inspection Requirements

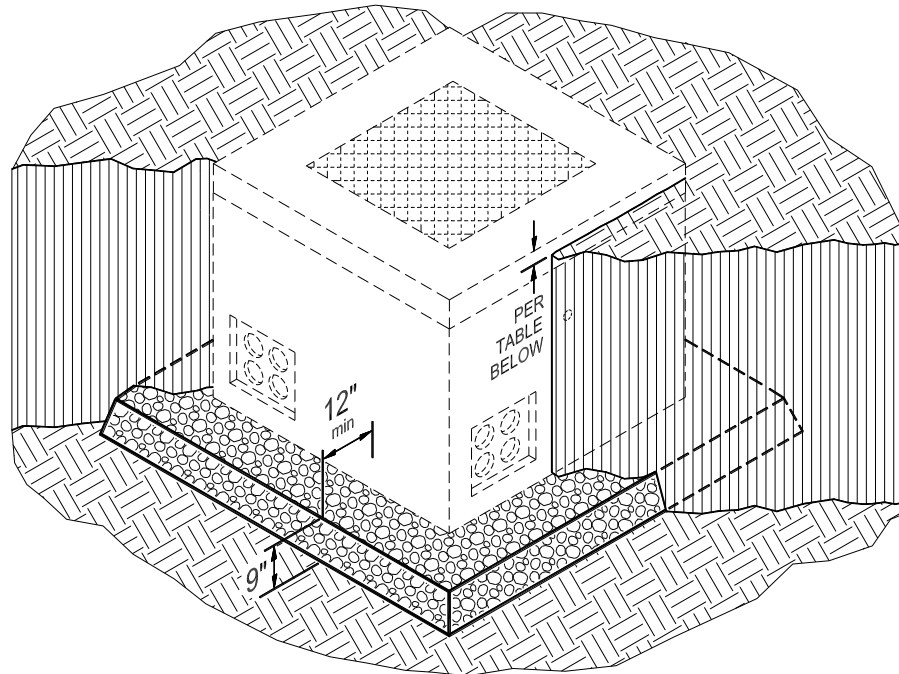
**The Construction Inspector will inspect all electrical contractor construction of primary junction boxes and associated conduit installations.**

## Vault and Cover Requirements

Single Phase	Precast Concrete Vault and Cover	
<b>Max. of 4 Primary (15kV) Cables</b>	Tacoma Power Vault 444 with Junction Box Cover #2	
	Vault	4'-0" x 4'-0" x 3'-6"
	Cover	4'-0" x 4'-0" x 6"
Three Phase	Precast Concrete Vault and Cover	
<b>5 to 12 Primary (15kV) Cables</b>	Tacoma Power Vault 554 with Junction Box Cover #3	
	Vault	4'-8" x 4'-8" x 3'-6" (3'-8" for H30)
	Cover	4'-8" x 4'-8" x 6" (8" for H30)

**Installation of Vault and Cover**

**Figure 1** Vault Foundation and Backfill



**Foundation and Backfill for Vault**

The foundation shall be prepared as follows, as directed by the **Construction Inspector**. See Figure 1.

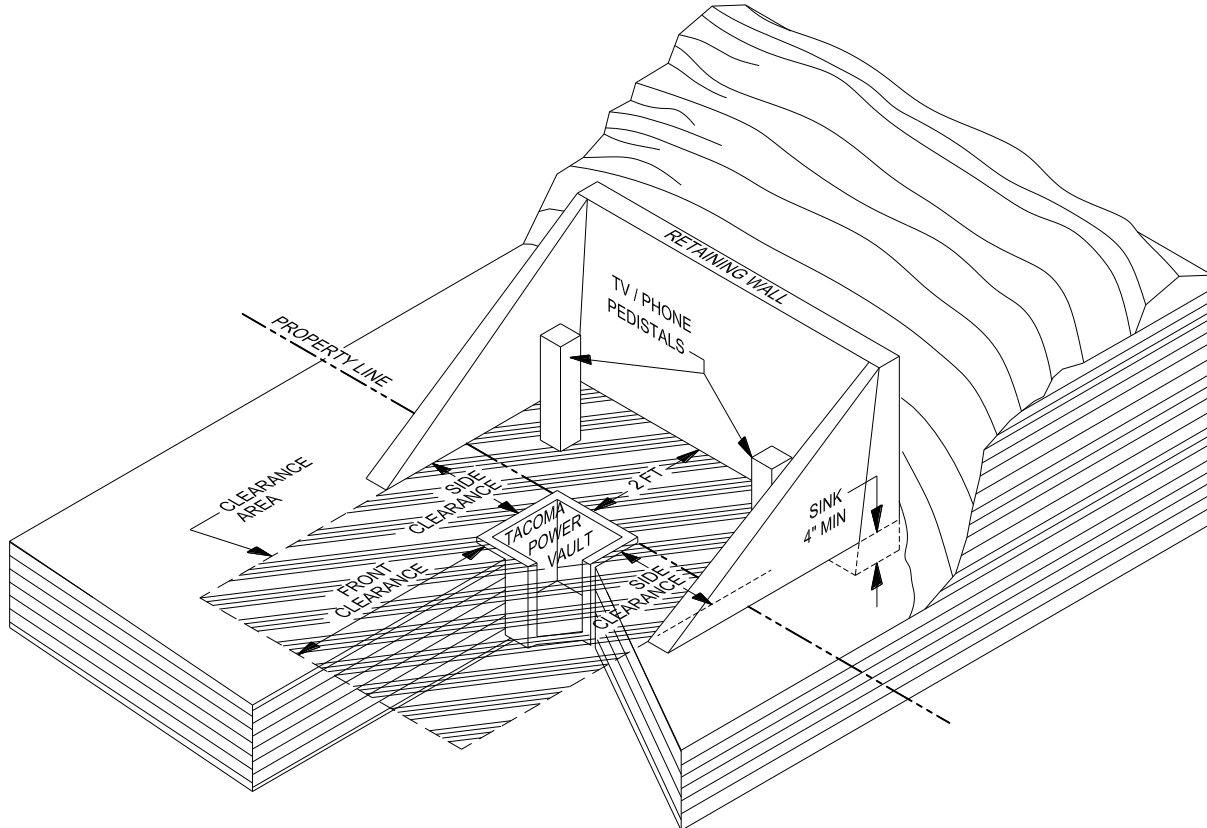
Issue	Action						
Excavation for Vault	The <b>Construction Inspector</b> will direct the excavation requirements.						
Vault Foundation	Vault foundation shall be minimum of 9 inches of 5/8" minus crushed rock, well compacted, extending a minimum of 12 inches beyond the edge of the vault in all directions.						
Backfill Material	Clean fill or better as directed by the <b>Construction Inspector</b> .						
Compaction at Subgrade	Compaction requirements will be determined by the <b>Construction Inspector</b> .						
Final Grade	The elevation difference between the top of the vault cover and final grade shall be:						
	<table border="1"> <thead> <tr> <th data-bbox="724 1755 1013 1795">Type of final surface</th> <th data-bbox="1013 1755 1365 1795">Difference (inches)</th> </tr> </thead> <tbody> <tr> <td data-bbox="724 1795 1013 1843">Landscaped</td> <td data-bbox="1013 1795 1365 1843">6</td> </tr> <tr> <td data-bbox="724 1843 1013 1892">Paved Surface</td> <td data-bbox="1013 1843 1365 1892">flush</td> </tr> </tbody> </table>	Type of final surface	Difference (inches)	Landscaped	6	Paved Surface	flush
	Type of final surface	Difference (inches)					
Landscaped	6						
Paved Surface	flush						

**Installation of Vault and Cover** (continued)

**Figure 2** Sloping Installations

For junction box vaults installed on a slope, the **minimum** dimensions for clearances are:

- Front clearance = **8 feet**
- Side clearance = **8 feet**

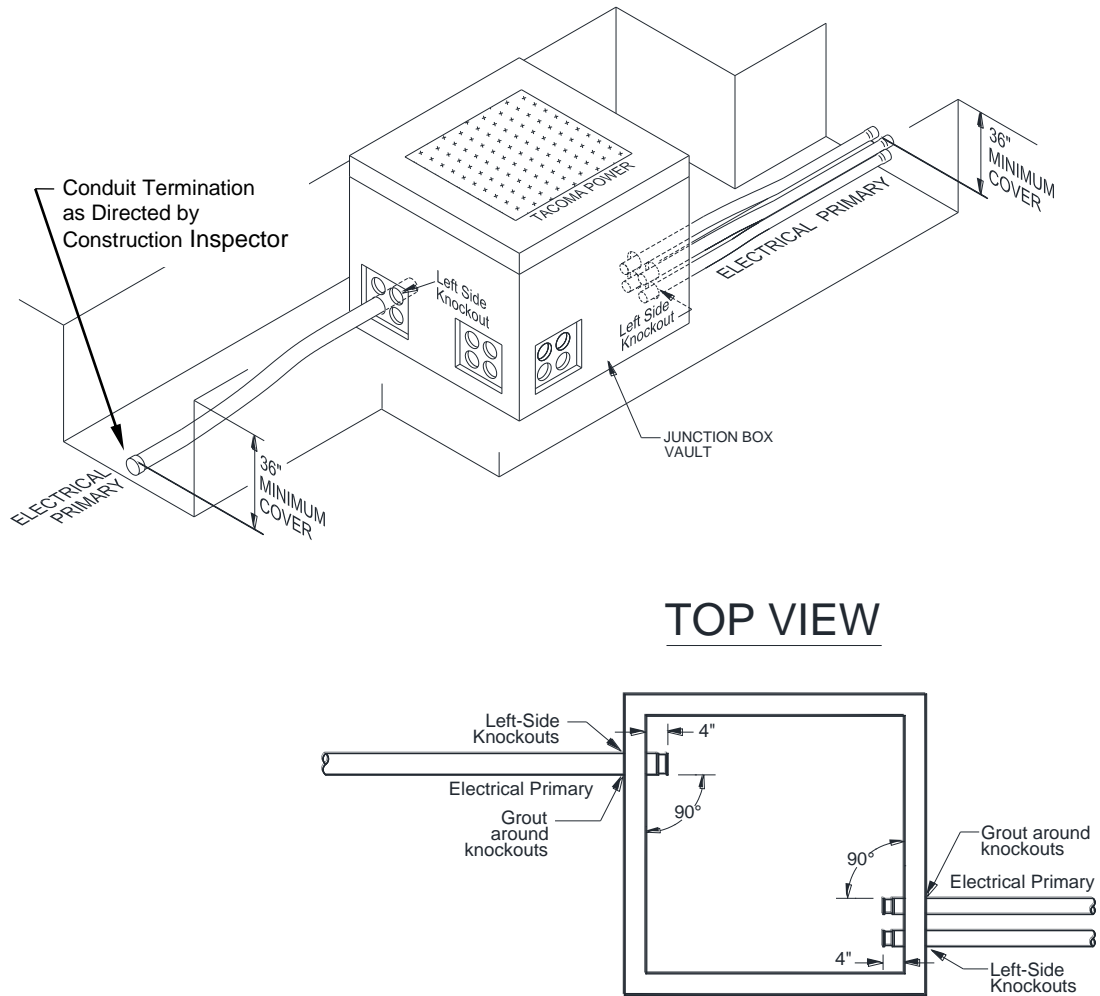


**Construction Notes**

- The junction box vault must be kept clear of any **obstructions**, such as:
  - fences, mail boxes, rockeries, berms, and vegetation.
  - bark, sod, ground cover mulch, and rocks, etc., on any part of the structure.
  - trees and bushes extending into the clearance area.
- Phone and TV pedestals must be installed behind the vault on back corners as shown above.
- The clearance area grade shall be level and a retaining wall shall be provided when required by the Tacoma Power Engineer.
  - A wooden, concrete or rockery wall shall have 1 to 4 maximum allowable slope to the property line.
- Typical structures are located in a utility easement, or on a public right-of-way, **not** on private property.

**Installation of Conduit**

**Figure 3** General Conduit Layout Into Vault



**Trench**

The depth of trench and backfill for primary conduit is listed below:

Issue	Action
Depth	A minimum of 36 inches of cover is required over the primary conduit. With prior approval, exceptions may be granted by the <b>New Services Engineer</b> .
Backfill	The trench shall be backfilled with clean fill or better as directed by the <b>Construction Inspector</b> .



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## Installation of Conduit *(continued)*

**Conduit Size & Type** The conduit shall be installed per the requirements listed below unless otherwise directed by the **New Services Engineer**:

Issue	Action	
Size of Conduit	Single Phase	2.5 inch
	Three Phase	4 inch
Color and Minimum Grade of Acceptable Conduit	Gray, Sch. 40 PVC	

**Conduit Entry** Conduit entering the vault shall consistently enter the **left side** knockouts on all sides. This is for the training of cable in the vault to be in the same direction. The **Construction Inspector** may approve exceptions on a site-by-site basis only. **In any case, all conduit entry into the vault shall allow all cables to be trained in the same clockwise or counter-clockwise direction (see Figure 3).**

**Conduit Terminations** Conduit shall be terminated as detailed below:

Issue	Action
Termination of Conduit <b><i>Inside</i></b> the Vault	The conduit into the junction box vault shall: <ul style="list-style-type: none"> <li>• be perpendicular to the vault wall.</li> <li>• extend 4 inches into the vault.</li> <li>• have bell ends on the conduit ends. Do not glue bell ends.</li> <li>• be sealed into the vault with grout around the knockouts.</li> </ul>
Termination of Conduit "stubs" <b><i>Beyond</i></b> the Vault (when required)	The conduit ends shall: <ul style="list-style-type: none"> <li>• be terminated 5 feet minimum beyond the vault.</li> <li>• install conduit coupling and cap prior to backfill in order to prevent the backfill material from entering the conduit.</li> <li>• be marked with a length of 2.5" Sch. 40 PVC conduit extending vertically a minimum of 4 feet above grade with a "Call Before You Dig" sticker.</li> </ul>