



Customer Requirements Primary Junction Box Installation

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. A pre-construction meeting with the Construction Inspector must happen prior to any construction. Call 253-381-3023. |
| 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.

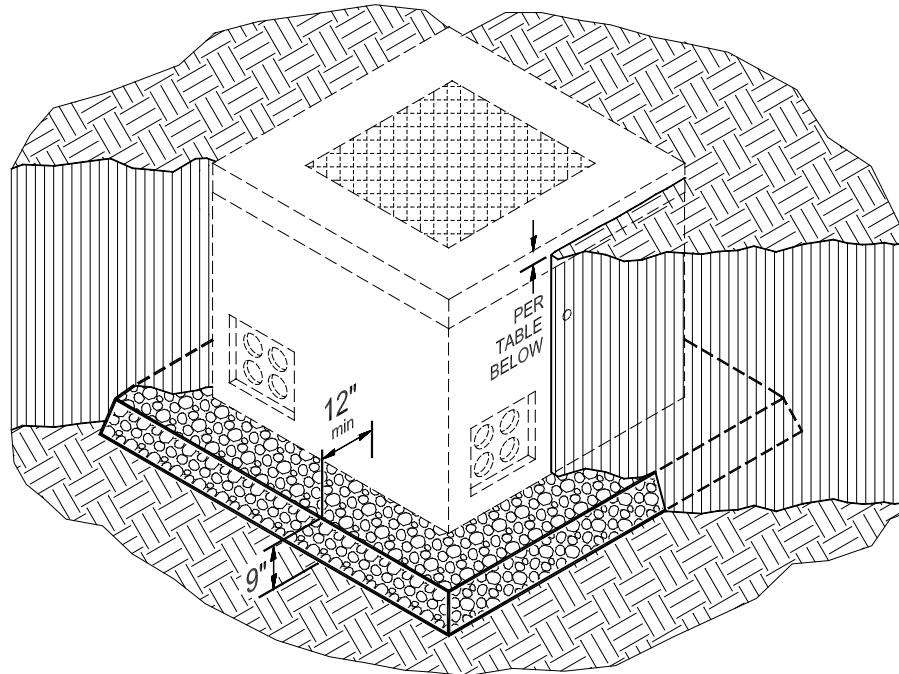
Vault and Cover Requirements

| Single Phase | Precast Concrete Vault and Cover | |
|--|---|-----------------------|
| Max. of 4 Primary (15kV) Cables | 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 | |
| 5 to 12 Primary (15kV) Cables | Tacoma Power Vault 554 with Junction Box Cover #3 | |
| | Vault | 4'-8" x 4'-8" x 3'-6" |
| | Cover | 4'-8" x 4'-8" x 6" |

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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 Construction Inspector 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 Construction Inspector . | | | | | | |
| Compaction at Subgrade | Compaction requirements will be determined by the Construction Inspector . | | | | | | |
| Final Grade | The elevation difference between the top of the vault cover and final grade shall be: | | | | | | |
| | <table border="1"> <thead> <tr> <th>Type of final surface</th> <th>Difference (inches)</th> </tr> </thead> <tbody> <tr> <td>Landscaped</td> <td>6</td> </tr> <tr> <td>Paved Surface</td> <td>flush</td> </tr> </tbody> </table> | Type of final surface | Difference (inches) | Landscaped | 6 | Paved Surface | flush |
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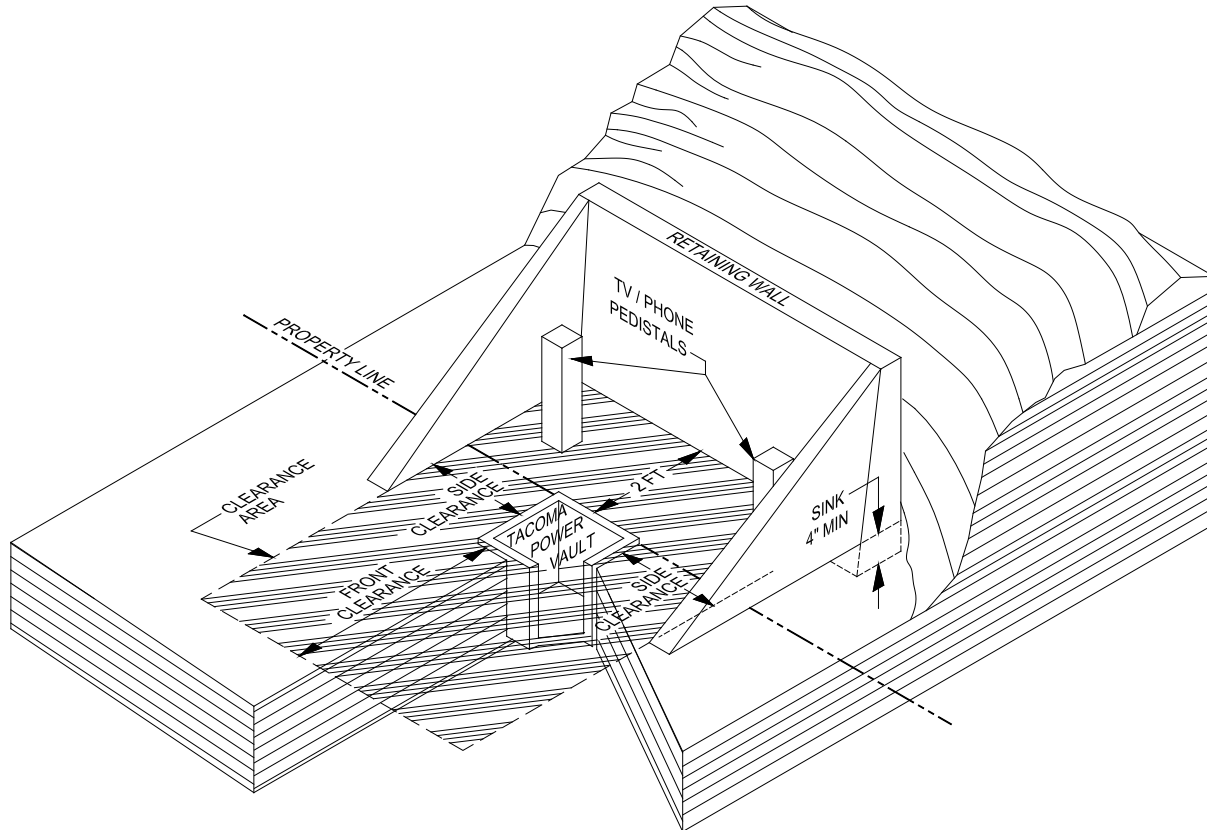
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Installation of Vault and Cover *(continued)*

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

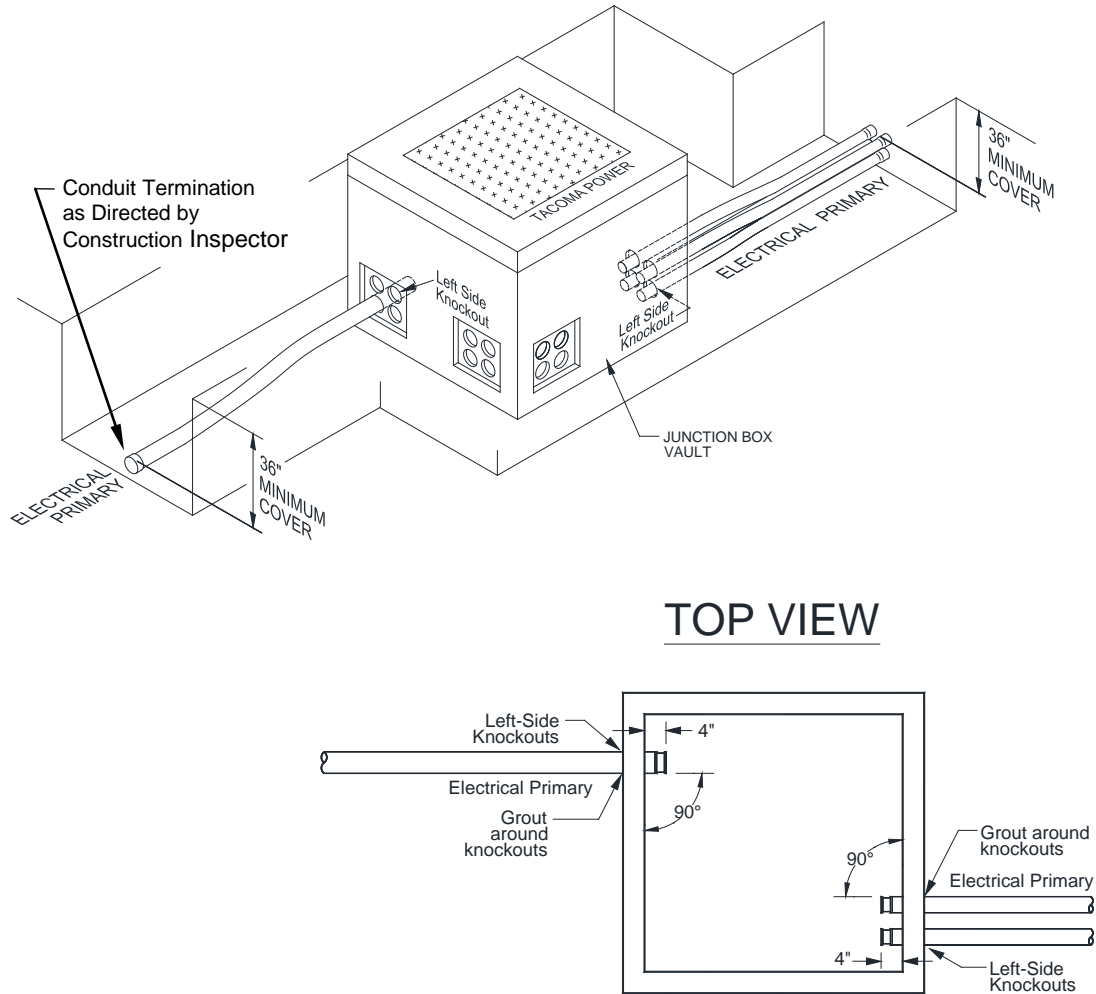
- The junction box vault must be kept clear of any **obstructions**, such as:
 - fences, mail boxes, rockeries, berms, and vegetation.
 - bark, sod, ground cover mulch, and rocks, etc., on any part of the structure.
 - trees and bushes extending into the clearance area.
- Phone and TV pedestals must 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.

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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 New Services Engineer . |
| Backfill | The trench shall be backfilled with clean fill or better as directed by the Construction Inspector . |

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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 <i>Inside</i> the Vault | <p>The conduit into the junction box vault shall:</p> <ul style="list-style-type: none"> • be perpendicular to the vault wall. • extend 4 inches into the vault. • have bell ends on the conduit ends. Do not glue bell ends. • be sealed into the vault with grout around the knockouts. |
| Termination of Conduit "stubs" <i>Beyond</i> the Vault (when required) | <p>The conduit ends shall:</p> <ul style="list-style-type: none"> • be terminated 5 feet minimum beyond the vault. • install conduit coupling and cap prior to backfill in order to prevent the backfill material from entering the conduit. • 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. |