

## **Customer Requirements** **Residential** **Joint Utility Trench**

**C-UG-1300**

### **Application**

This standard describes the excavation and backfill requirements for joint utility trench for residential developments.

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### **Purpose**

The purpose of this standard is to show the excavation requirements of multiple utilities installed within a common trench. The arrangements have been approved by the coordinating utilities within Pierce County.

It is intended that this standard be used in conjunction with standard C-UG-1100 "Customer Requirements, Conduit Installations" when the customer/developer will be installing the electrical conduit and enclosure system for Tacoma Power.

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### Design Requirements

The following process is intended to ensure a coordinated installation of the following utilities within a common trench:

- Power
- Tacoma Power/Rainier Connect (TP/RC)
- Telephone
- CATV
- Natural Gas

Water, sewer, and roof drains are installed within separate trenches outside of the joint utility easement.

### System Design

Detailed engineering drawings of the project shall be submitted to the utilities involved 2 to 3 months prior to installation. Please provide these drawings in the AutoCad 12 or later format with separate layers identified for Tacoma Power.

The information required on the drawings are:

Utilities, with Stub-out Locations	Road and Land Features
<ul style="list-style-type: none"> <li>• Water</li> <li>• Sanitary Sewer</li> <li>• Storm Drain</li> <li>• Storm Water Retention</li> <li>• Roof Drain</li> </ul>	<ul style="list-style-type: none"> <li>• Curb</li> <li>• Road with centerline</li> <li>• Slope</li> <li>• Property &amp; right-of-way lines</li> <li>• Survey monuments</li> <li>• Easements</li> </ul>

### Easements

A **minimum** 10 foot unobstructed easement is required parallel to, and on both sides of, the road right-of-way.

The maximum slope from back to front shall be 2%.

The easement shall be clear of all obstructions of construction including:

- Sidewalks
- Drainage systems
- Dry wells
- Fire hydrants
- Storm systems
- Sewer stubs
- Water meters
- Permanent structures
- Street light poles

### Trenches 48" or Greater in Depth

Trenches that are 48 inches or greater in depth shall meet the requirements of WAC 296-155, Part N, "Excavation, Trenching, and Shoring". Qualified workers shall determine the required safety mitigation methods as allowed by state law. Side sloping of the trench is the most common method of mitigation.

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### Staking Requirements

**Coordination Meeting** A meeting will be required between the developer and the joint utility representative to coordinate the setting of survey stakes, marks and location of road crossings.

#### Stakes

Survey stakes shall include:

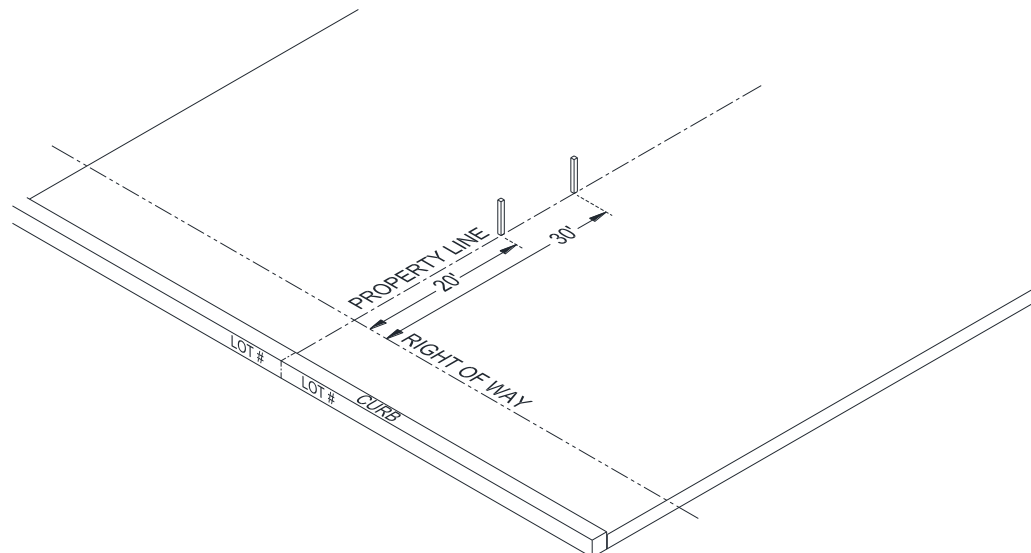
- Lot numbers
- Grade adjustment
- Offset distance
- Radius points at intersections involving road crossings

Additional staking may be required as determined during the coordination meeting.

**Figure 1**

Stake Locations

<b>Before Curbs and Asphalt Base, or Paving</b>	Stakes shall be installed in 20 foot and 30 foot offsets of each lot corner for accurate locating of road crossings. Additional offset stakes may be required by the New Services Engineering Office.
<b>After Curbs and Asphalt Base, or Paving</b>	Lot lines with lot numbers shall be painted on the curb. Also, an arrow shall be painted in the middle of the road that aligns with the property line and the offset stakes. Additional offset stakes may be required by the New Services Engineering Office.



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### Road Crossings

Road crossings will be identified by the joint utilities. They shall be installed prior to paving and curb as identified in the coordination meeting.

#### Depth

- Road crossings must be installed with a minimum of **36 inches of cover**, measured from finished surface grade to top of highest conduit, or in a **minimum 42 inch deep trench**, whichever is deeper.
- The conduit shall be terminated and capped at a point usually 5 feet from the back of road asphalt as shown in Figure 2.
- Any variations in depth of the crossings must be approved by the participating joint trench utilities.

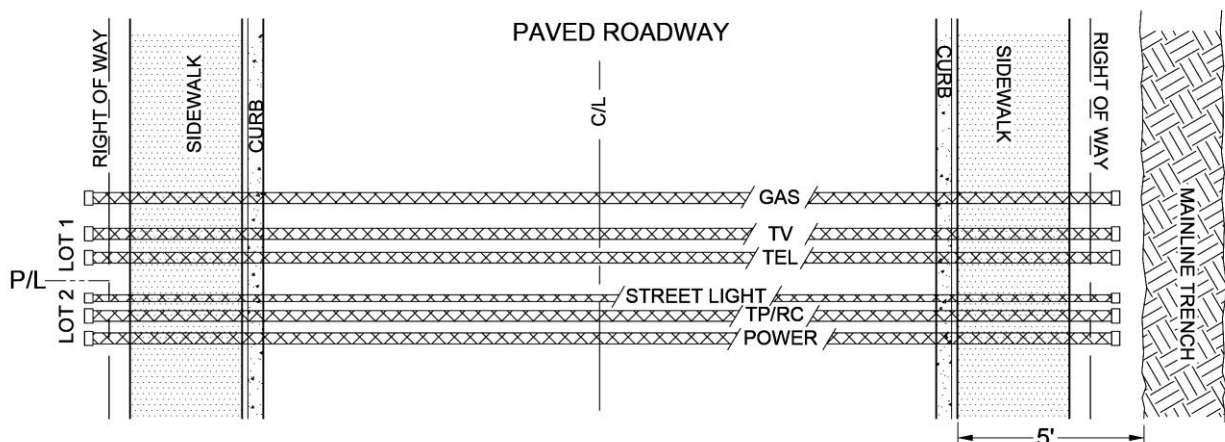
#### Conduit

- All conduit shall be gray, schedule 40 PVC in 2-1/2", 4" or 5", installed per joint utility requirements and capped with approved devices.
- Terminate and cap ends of conduit with plastic pipe caps or plugs, **not tape**.
- Install **one inch (1") minimum** spacers or shims between conduits to allow conduit couplers later.

#### Marking

Both ends of road crossings shall be marked with conduit markers.

**Figure 2** Plan View of Typical Utility Road Crossing

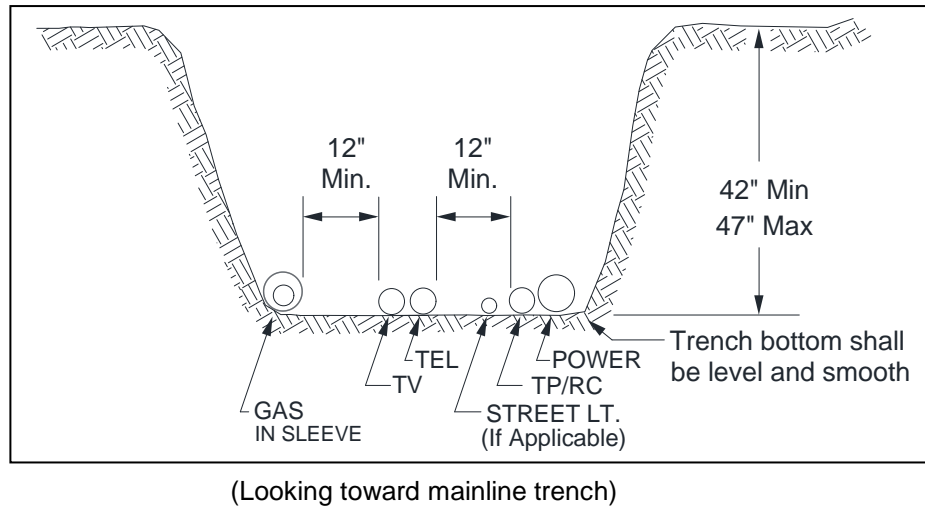


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### **Road Crossings** *(continued)*

**Figure 3** Typical Cross Section View of Utility Road Crossings



### **Joint Trench Requirements**

The following shall be followed in the installation of joint utilities:

#### **Coordination**

- The joint trench utilities will share facility designs in order to achieve the best common design for the project.
- A meeting will be required between the developer and the joint utility representative to coordinate the route of the trench and locations of transformers, junction boxes, and secondary service boxes.

#### **Fire Hydrants and Water Meters**

Fire hydrants and water meters shall maintain a distance from the utility trench as required by the serving water utility and fire department.

#### **Trench Maintenance**

Whoever is providing the trenching shall be responsible for the maintenance of the trench during the installation of the joint utilities. This maintenance will include, but is not limited to:

- removal of any water accumulation in the trench.
- trench depth and width per the standard.

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### **Joint Trench Requirements** *(continued)*

#### **Prior to Excavation**

Trench will be allowed to be opened when the following has occurred:

- All required fees have been paid.
- Any required permits have been obtained.
- All easements have been obtained.
- Curb and asphalt base, or paving, as determined by Joint Utility Group, have been installed.
- Lot lines and lot numbers shall be painted on the curb and center of road.
- Lots graded to within 6 inches of finished grade.
- Sanitary sewer and water stub-outs have been installed when required.

#### **Closing of Trench**

Only after all participating utilities have installed and approved their facilities may the trench be backfilled. This may occur in segments at the approval of the joint utilities.

### **Trench Construction**

Joint utility trenches shall be provided as listed below:

#### **Dimensions**

The trenches shall be of the ***minimum*** dimensions unless approved by Tacoma Power:

<b>Width at bottom</b>	42" minimum, 48" typical
<b>Depth from grade</b>	42" minimum, 47" maximum
<b>Spoils</b>	No closer than 2 feet from edge of trench

#### **Backfill**

- The trench shall be backfilled with native backfill upon approval by the joint utilities. If the native material is determined to be unsuitable, backfill material will need to be imported.
- The backfilling of the trench is to be done with reasonable care so as not to damage the conduit systems and enclosures that were installed.
- Backfill shall also meet the compaction requirements of the applicable permitting agency.

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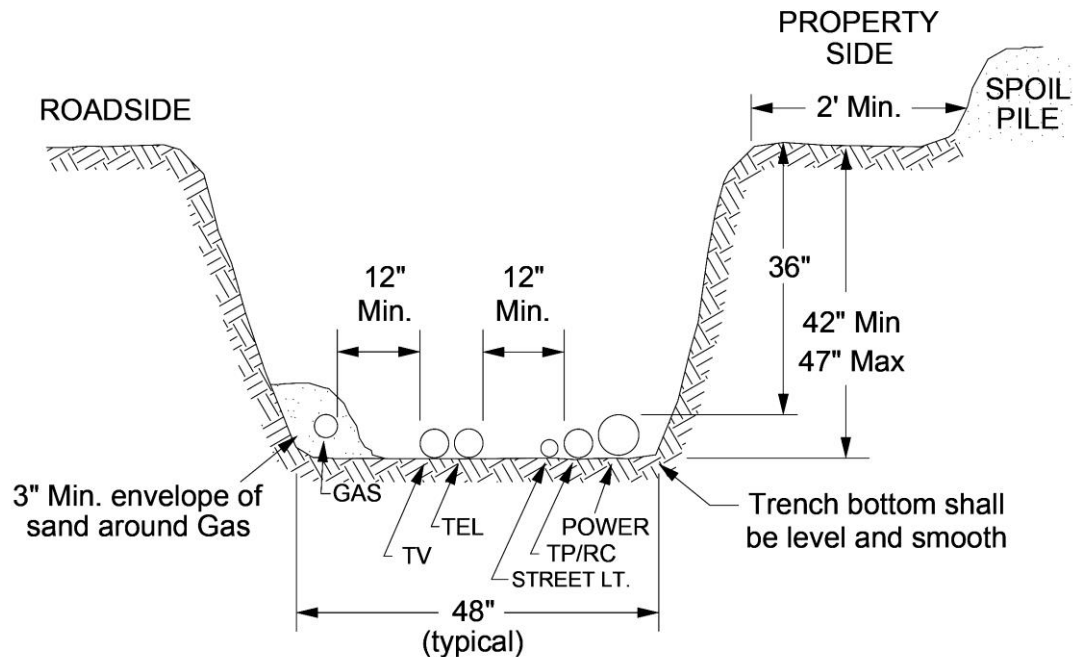
**Trench Construction** *(continued)*

**Sanding**

- As required by the natural gas utility, sanding will be needed in the trench to bed the natural gas line.
- In rocky conditions other joint utility trench partners may require sanding of the trench prior to conduit installation.

**Figure 4**

Typical Trench Cross Section of Mainline Trench



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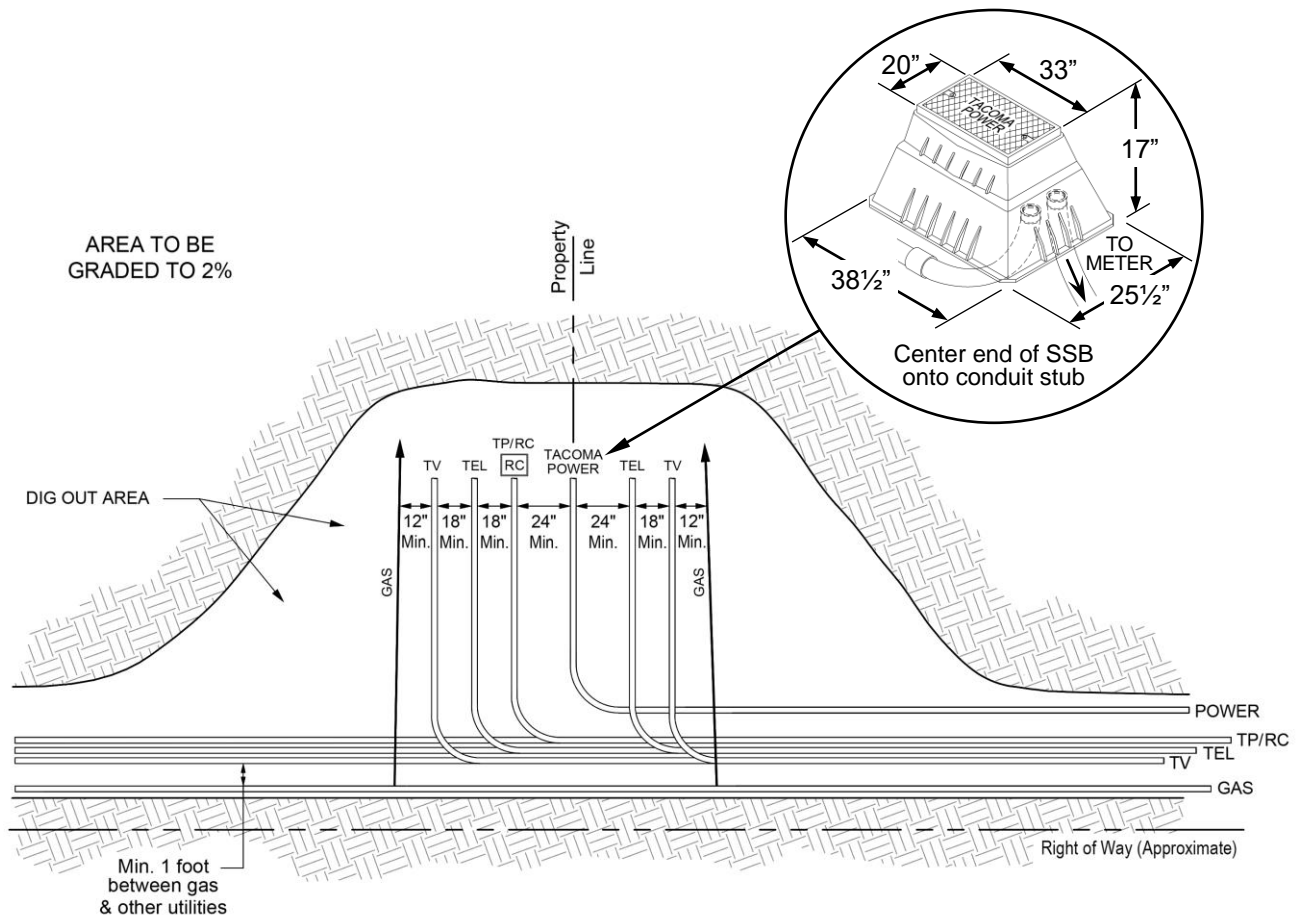
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### Trench Construction *(continued)*

**Figure 5** Services Layout

#### Tacoma Power Secondary Service Box (SSB)

- **All conduits** must be grouped at the **same end** of the SSB.
- Terminate conduit ends two inches (2") above bottom of SSB.
- The top of the SSB cover shall be two inches (2") above final grade.
- SSB's shall not be placed in front of any padmount transformer.



This configuration keeps all the utilities in the same planned relationship, minimizes congestion, and digging up the wrong utility.

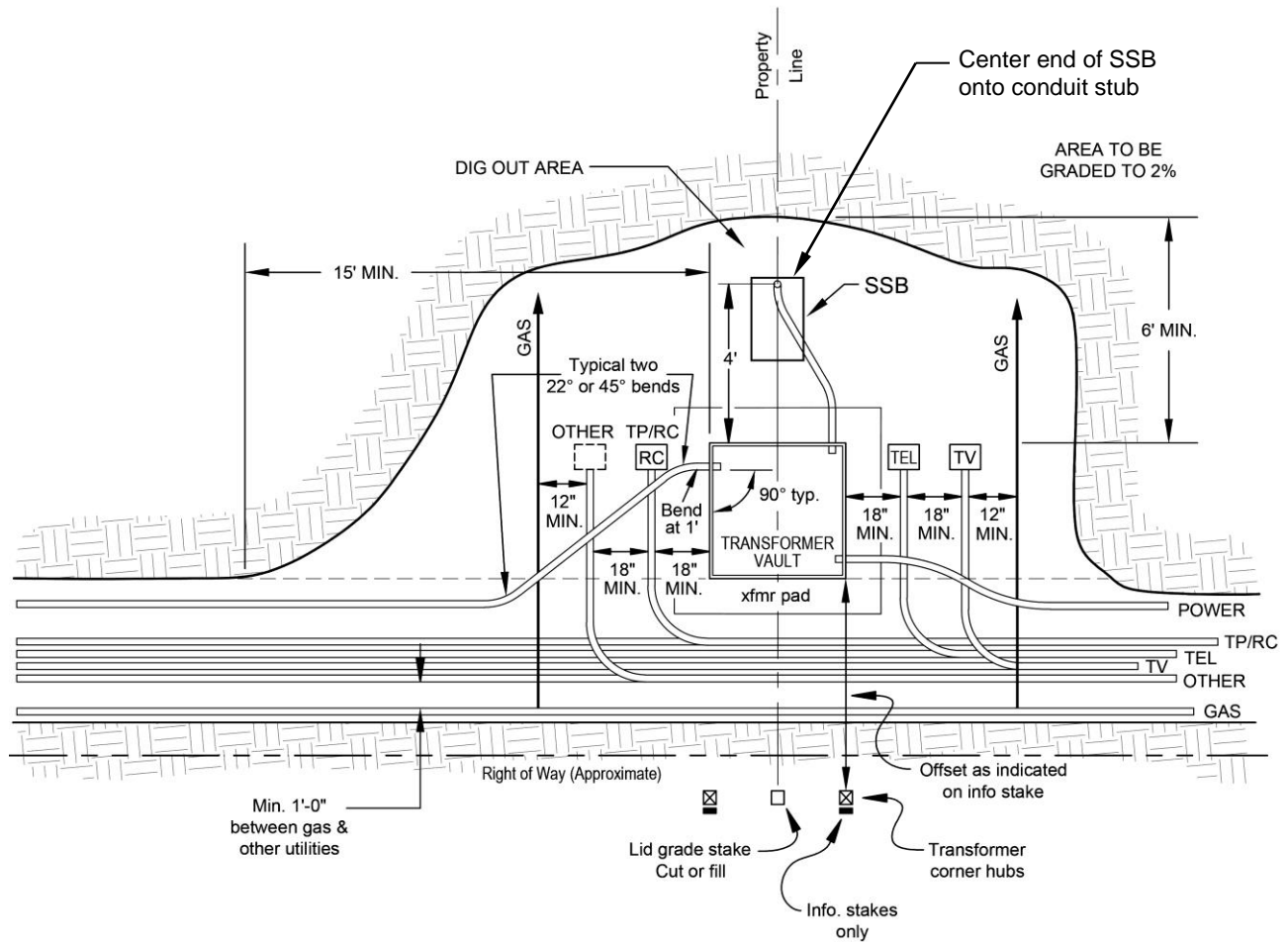


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## Trench Construction *(continued)*

**Figure 6** Transformer Layout (Plan View)



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### Trench Construction *(continued)*

**Figure 7** Transformer/J-Box Vault Layout (Cross Section View)

