Grant County Public Utility District No. 2

Residential Service Workbook

Electric and Fiber Optics for
Single-Family Residential Services
& Construction Temporary Services

August 2024

RESIDENTIAL SERVICE WORKBOOK

Contents

Chapter One – General Information

Introduction

Welcome to Public Utility District No. 2 of Grant County, hereafter referred to as "Grant PUD". Note: *Italicized* words are defined in the Glossary.

This workbook outlines design and construction procedures for new permanent and/or temporary electric service and fiber optic cable for single-family residential structures. It is the customer's responsibility to ensure compliance with the National Electrical Code (*NEC*), Washington Administrative Code (WAC), and any federal, state, or local codes and ordinances that apply to the project. The customer needs to be aware of electrical equipment sizing and provide equipment that will interrupt available fault currents.

The customer, if not knowledgeable in electrical work, should consider hiring a *licensed* contractor to complete the project.

Other workbooks are available with information regarding the installation of electric service/fiber optic cable to permanent multifamily and nonresidential commercial buildings, condominium complexes, apartment buildings, mobile home parks, and irrigation sites. These workbooks are available on the internet website: *grantpud.org*.

Contacting Other Utilities or Agencies

New construction typically involves the installation of telephone, cable television and power cables, as well as natural gas, water, and sewer lines. Local providers now offer high-speed internet, television and telephone via fiber optic cable. Contact local provider(s) to see if the construction site is in a 'fiber ready" area. It is the customer's responsibility to notify each utility or service provider for intended or needed service(s)

Residential Electric Service Availability

Grant PUD offers the following services for single-family residential structures and outbuildings.

Voltage	**Amp Rating**	**Wire Size**	**Typical Use**
120/240	200 Amps	4/0* AWG	Most common size service
120/240	400 Amps	350* kcmil	Large Service
120/240	Over 400 Amps	**	Very Large Service

Table 1. Voltage Ratings

*Grant PUD limits service runs to 250'.

**An *Engineering Technician* shall specify the appropriate secondary conductor size. The customer shall provide accurate site drawings.

Getting Started

Complete the **Service Connection Application** or "SCA" found on our website at grantpud.org. The Application "SCA" will need to be completed for all new service requests or making modifications to existing service requests. "SCA", Once your application is submitted, New Construction Services will assist and coordinate your service requirements with the appropriate Grant PUD personnel.

The Service Connection Application is comprised of six sections:

- Customer Information
- Service Location
- Load Information
- Rights and Obligations
- Site Sketch
- Signature of Legal Land Owner

Customer Billing Information

Include the customer's full name, current mailing address, email address, and appropriate contact phone numbers.

Check the "Yes" box if the customer has had prior service with Grant PUD and enter current billing account number. If you do not have a current billing account number, contact New Construction Services to set up an account.

If your account is set up on autopay, and the total charges are over $25,000, you will need to contact us for payment. If the charges are under $25,000, the amount will be drawn from your account on the next billing cycle.

List any contact person and/or contractor, other than the customer, who is authorized to represent the customer and coordinate construction activities. Include his or her name, email address, and telephone number on the appropriate line.

Service Location

The Service Address is where the new or altered service(s) will be constructed. Complete the service address information.

Include the "Tax Parcel Number(s)" for the property where the service will be constructed. The tax parcel number(s) can be found on the Grant County tax statement or property closing documents (if newly purchased). The tax parcel number is a nine-digit number that is formatted 00-0000-000. The tax parcel number(s) will be used to determine necessary rights-of-way required for construction of the service connection.

Service Request Type and Voltage Information

The Service Request Type and Voltage Information section of the "SCA" should be completed with accurate information. It must be noted if this is a new service or if you are making modifications to existing services. Indicate the square footage for the home and shop (if applicable) along with the Heating, Ventilation, and Air Condition (*HVAC*) load in KW. Fill in the service entrance size in amps. Normally this is either 200 Amps or 400 Amps.

Next list the type of structure, i.e. stick-built home, modular home, mobile home, shop, or pool.

Include any anticipated future or electrical needs such as hot tubs, swimming pools, or outbuildings. This information will allow Grant PUD to adequately size the electrical equipment and provide a cost estimate for the service. Inaccurate information may lead to over-sizing the service, thus increasing installation costs, or under-sizing the service and causing power disturbances later.

For residential service, "Single-Phase 120/240" is recommended for residential service. Normally, three-phase services are for irrigation or commercial applications.

For Commercial and/or Irrigation services, the "Three-Phase 120/208 or 277/480" box may be more appropriate. Refer to Grant PUD's Commercial Service Workbook concerning this type of service.

Depending on the on-site facilities, Grant PUD has the option of constructing the new service either overhead or underground. Check with the local governing body (normally the planning department) to see if an ordinance allows either type of construction. Then check the appropriate box giving the preference of construction. Please refer to the Overhead and/or underground chapters for more information. See Figure 1: "Typical Overhead Construction," and Figure 2: "Typical Underground Construction" to identify overhead and/or underground construction.

Electric Vehicle (EV) Charger

If an EV charger will be included in your new service, select Level 1 or Level 2. EV charging is categorized into three levels based on the power output, charging speed, and the type of current used.

Level 1 – Standard household charging; suitable for overnight charging at home or in a place where vehicles are parked for extended periods. It uses a standard household electrical outlet. 120 volts, 12-16 amps, Power output; 1.2 to 1.9 kW.

Level 2 – Commonly found in homes, workplaces, and public charging stations. Requires a dedicated charging unit and a higher voltage outlet. 240 volts, up to 80 amps (most commonly 30-40 amps) and Power output 3.3 to 19.2 kW.

Level 3 – Primarily used for fast charging in public stations along highways or in urban areas for quick top-ups. It requires specialized equipment and infrastructure.

Construction Temporary Service

If a temporary service is required for construction, the temporary service will be a metered service. Monthly usage charges apply and will be billed monthly. For more information on *temporary services* please refer to Chapter Five: Construction Temporary Services.

Rights and Obligations

When the legal landowner signs the "Service Connection Application", permission is being granted to Grant PUD to construct and maintain the requested facilities. For additional information regarding *permits* and *easements*, refer to Chapter Six, "Right-of-Way".

Site Sketch

In this section, draw a site plan of the construction project. Here are items to follow in preparing the site plan:

- Draw the site plan indicating which direction is north with an arrow in the upper right-hand corner.
- Identify at least two bordering roads.
- Identify any *foreign easement* areas, i.e. irrigation ditch crossing, telephone line, etc. If the service will cross another person's property, identify this easement area and to whom the property belongs.
- Identify any buildings, septic tanks, drain field, sewer lines, water lines, cable TV, etc. that exist on the property.
- Identify existing Grant PUD facilities on the property such as a pole, transformer, *secondary handhole*, or *secondary pedestal*. Show transformer stencil Number "T-XXXXX" if applicable. See page 6 for transformer number location.
- Mark the proposed *meter base* location and proposed transformer location.
- Show route of the underground service and footage.

Summary

The customer completes the Service Connection Application and submits online.

Upon receipt of the "Service Connection Application", the *Engineering Tech* will determine if the work is a simple or if it will require a Line Extension.

If the job is a *simple* request, the Engineering Tech will work with the customer and New Construction Services to process the service request, and bill appropriate fees to the customer's account.

If the job requires a Line Extension an *Engineering Tech* will work with the customer and complete a design for the new service. Grant PUD's lead time will vary due to construction activity within the local areas and the type of *permits* required for rights-of-way.

Quoted Costs

Quoted cost estimates to extend Grant PUD facilities for a new service are valid for ninety (90) days.

Chapter 2 - Overhead Services

General Requirements

This chapter provides the general requirements for an overhead service. The customer is responsible for contacting the local planning department to determine what type of service is permissible.

The following checklist is provided to assist in the installation of an overhead service.

- Determine an acceptable location for the *meter base* (see Chapter Four – Metering in this workbook).
- Determine the location of Grant PUD's nearest pole.
- Determine the distance between your *meter base* and the base of the pole.
- Provide a clear path and adequate clearance, free from aerial obstructions such as trees, towers, buildings, etc., from Grant PUD's pole to the *service mast.*
- Determine if the secondary conductor will cross someone else's property. If so, it will be necessary to obtain an *easement* from the legal property owner. (see Chapter Six – Right of Way).
- If necessary, the *Engineering Tech* will schedule an on-site visit. The *Engineering Tech* will create a design drawing and calculate the construction charges. The customer will be notified of the charges by the Engineering Tech.
- Stake your proposed structure and *meter base* location prior to on-site visit with Grant PUD's *Engineering Tech.*
- Acquire an electrical installation *permit* from Washington State Department of Labor & Industries (L&I).
- Install the electrical service equipment including the *meter base* and *weatherhead*. If there are any questions regarding the installation of the service equipment, Grant PUD suggests consulting the *NEC* and WAC, calling the *state electrical inspector*, or contacting an electrical contractor.
- Install the *service entrance conductors* (leaving 18 inches exposed at the *weatherhead*).
- Verify that the *service mast* height requirements have been met.
- Pay Grant PUD's construction charges.
- Verify that all clearances and accessibility for maintenance and operation of the secondary conductors and meter have been met.
- Have the installation inspected and approved by the *state electrical inspector*.
- It is the customer's responsibility to request the inspection
- Notify New Construction Services that the installation is ready for connection. The *state electrical inspector* no longer notifies Grant PUD when the electrical installation has been approved.
- The *Engineering Tech* will verify that all fees, construction costs are paid, and all *permits* and *easements* have been obtained.
- After verifying all the above criteria has been met, the Customer must call New Construction Services and request that their service be energized, which will include the installation of the meter.

Modifications of Existing Facilities

Additional electrical load requiring modifications to customer and/or Grant PUD facilities shall be brought up to current Grant PUD, *NEC*, WAC, federal, state and regional codes and standards. Grant PUD has the right to connect a service modification, prior to a state electrical inspection, if Grant PUD deems the installation is safe for connection and the State Electrical Permit is posted at the site.

However, if the state electrical inspector finds deficiencies in the installation, he will initiate a request for disconnect. The service will be disconnected until such time as the state electrical inspector approves the installation.

Connection Point

A connection point is defined as the designated point on the Customer's property where their secondary service is connected to Grant PUD's facilities. **Normally, the connection point will be at the weather head.** The *Engineering Technician* will notify the customer if the connection point is not at the weatherhead.

The customer shall provide the *meter base*, *service mast*, *weatherhead*, clamp and insulator, and appropriate mast *guy* (if applicable) and the *service entrance conductors* to 18 inches beyond the *weatherhead*. The *weatherhead* mounted on a pole shall be within six inches of the pole top.

Service Mast Requirements

Mast supports are required when the top of the *service mast* is more than 26 inches above the roof. A mast support is typically a *guy* or a brace which is installed to prevent the weight of the *secondary conductor* from pulling the *service mast* over. Further information regarding *guying* and bracing *service masts* is available in the *NEC* and WAC. See Figure 4: "Typical Overhead Service Installation" for an example of a *service mast guy*.

Clearance Requirements

It is the customer's responsibility to know the required clearances for Grant PUD's secondary conductors and construct the service entrance to maintain these clearances over the life of the service connection. Additional height may be required depending upon the location and type of structure or terrain. If an *Engineering Technician* is assigned to the project, he can assist in the design and clearance requirements for the service connection. Figures 5 and 6 illustrate other minimum clearances that must be maintained.

NOTE: *Secondary conductors* **cannot** pass over hot tubs or swimming pools. A minimum clearance of 15 feet is required for *secondary conductors* passing within 25 feet of a swimming area.

Openings and Gas Meters

A minimum clearance of three feet is required between *secondary conductors* and windows, doors, porches, fire escapes, or similar openings.

A minimum horizontal clearance of three feet (National Fuel Gas Code 54-5.7.2.3) is required between electric service equipment and natural gas metering equipment (see Figure 3).

Manufactured Homes

The overhead service equipment for a manufactured home may be installed one of two ways:

- The customer mounts the service equipment on a Grant PUD installed and Customer-owned meter pole.

- The *meter base* is mounted on the manufactured home and both conditions are met:
  a. The manufacturer installed the *meter base* on the manufactured home when it was constructed and,
  b. The service equipment meets Grant PUD's *meter base* requirements. See Chapter Four – Metering.

The service equipment must meet all applicable NEC, federal, state, and regional codes and be inspected by the state electrical inspector prior to connection. The meter base shall meet Grant PUD requirements listed in Chapter Four – Metering.

Customer Owned Meter Poles

Grant PUD will install a meter pole for a manufactured home at the Customer's expense. The customer is responsible for mounting the service equipment on the pole and obtaining the necessary inspections. See Figures 7 & 7a for an example of a meter pole installation. Grant PUD will assign an *Engineering Technician* to the project to design and coordinate construction.

Chapter 3 - Underground Services

General Requirements

This chapter provides the general requirements for an underground service. The customer is responsible for contacting the local planning department to verify what type of service is permissible, overhead or underground.

The following checklist is provided to assist in the installation of an underground service.

- Determine an acceptable location and ampacity for the *meter base* (see Chapter Four – Metering in this workbook).
- Determine location of nearest connection point to Grant PUD underground facilities.
- Determine if service will cross someone else's property. If so, it will be necessary to obtain an *easement* from the legal property owner. (See Chapter Six – Right-of-Way).
- Complete the "Service Connection Application" with sketch.
- If necessary, an on-site visit will be scheduled with a Grant PUD *Engineering Tech*. The customer will be notified of any charges by the Engineering Technician.
- Stake your proposed structure and *meter base* location prior to on-site visit with Grant PUD's *Engineering Tech.*
- The *Engineering Tech* will determine the connection point.
- Acquire an electrical installation *permit* from Washington State Department of Labor and Industries (L&I).
- Call the Utilities Underground Location Center One-Call number: **811 or 800-424-5555.**
- Dig a trench from the meter location to Grant PUD's facilities. Excavate to the center edge of a *padmount transformer*, *secondary handhole,* or a *secondary pedestal.* If trench is to a pole, excavate to the center directly under the overhead transformer. Verify location and routing of trench with Grant PUD prior to digging. (See Grant PUD Specification No. 10.0008 in the Appendix.)
- Install gray Schedule 40 electrical conduit and orange Schedule 40 fiber conduit. Conduit is required from the connection point to meter base. The electrical conduit size will be 2" for a 200A service and 3" for a 400A service. The orange fiber conduit will be 1" if the fiber service is less than 100' or 2" if the fiber service is 100' or greater. All conduit installed by the Customer shall contain a continuous length of knot-free ¼" polypropylene pull rope or Herculine P1250W ½" polyester pull tape with a two-foot tail at each end, regardless of the length of the run of conduit. **White water pipe or sewer pipe is not acceptable and shall not be energized by Grant PUD.**
- **A total of three 90-degree bends/sweeps or any combination of bends/sweeps not exceeding a total of 270-degrees is allowed per run. This includes the 90-degree sweep at the bottom of the meter base.**
- Install the *meter base* and associated equipment. See Figures 8 & 9 for typical underground installations.
- Pay the applicable construction fees to Grant PUD.
- When all the electrical equipment has been installed, call the *state electrical inspector* for an inspection.
- After your service has been approved by L&I, your trench has been approved for backfilling by Grant PUD, and if you are ready to have your service energized, contact Grant PUD's New Construction

Services and provide your L&I permit number. The electrical inspector will also notify Grant PUD when the service has been approved.

- The *Engineering Tech* will check to see if all *permits* and *easements* have been obtained and construction charges have been paid and then schedule the service connection.
- Verify that all the clearance requirements from Grant PUD equipment, including the meter, will be adequate for installation, construction, maintenance and meter reading. NOTE: A secondary conductor failure may be subject to excavation. Make sure the secondary conductor can be easily reached and excavated.

Access to Grant PUD Facilities

Only Grant PUD authorized and qualified personnel can access transformers, *secondary pedestals (Moped),* and *secondary handholes*. Contact New Construction Services when access is required into Grant PUD's facilities.

Service Equipment Installation Requirements

There are four ways this equipment can be installed:

1. Flush-Mounted
2. Surface-Mounted
3. Post-Mounted
4. Meter Pedestal

See Chapter Four – Metering for additional information.

Contacting Other Utilities or Agencies

New construction typically involves the installation of telephone, cable television and power cables, as well as natural gas, water, and sewer lines. Local providers now offer high-speed internet, television and telephone via fiber optic cable. Contact a local service provider to see if this service is in a 'fiber ready" area. It is the customer's responsibility to notify each utility for service. Provide Grant PUD with a contact and phone number for each utility providing service.

Underground Locates

Forty-eight (48) hours prior to any excavation, it is the excavator's responsibility to call the Utilities Underground Location Center (UULC). The UULC will request a location; the Section, Township, and Range is required in addition to the exact location within the Section. The UULC will ask if the area is staked or marked. There is no charge for this service. A location number will be given to the excavator for their protection and future correspondence with the UULC. To obtain an underground locate, call the UULC One Call at **811 or 800-424-5555**.

A color code for underground locates has been established by the State of Washington.

The color codes are:

- Red .....Electric
- Yellow.....Gas/Oil

- Orange.....Communications
- Blue .....Water
- Green .....Sewer
- White .....Area to be located

Excavation within twenty-four (24) inches on either side of the location markings shall be done by hand. Damage to underground facilities is subject to penalties of up to three times the cost to repair.

Manufactured Home

An underground service to a manufactured home can be installed one of three ways:

- Mobile home pedestal
- Post-mounted *meter base*
- *Meter Base* mounted on the manufactured home, if both of the following conditions are met:
  a. The manufacturer installed the *meter base* on the manufactured home when it was constructed and

  b. The service equipment meets Grant PUD's *meter base* requirements. (See Chapter Four – Metering.)

The service equipment must meet all applicable *NEC*, federal, state, and regional codes and be inspected by the *state electrical inspector* prior to connection. The *meter base* shall meet Grant PUD requirements listed in Chapter Four – Metering.

Modifications of Existing Facilities

Adding electrical load which requires modifications to customer and/or Grant PUD facilities requires that the facilities be brought up to current *NEC*, WAC, federal, state and regional codes and standards. Normally Grant PUD has the right to connect a service modification, prior to a state electrical inspection, if Grant PUD deems the installation is safe for connection and the state electrical *permit* is posted at the site. However, if the *state electrical inspector* finds deficiencies in the installation, he will initiate a request to disconnect service. The service will be disconnected until such a time as the *state electrical inspector* approves the installation.

A connection point will be identified to determine the customer's responsibility for construction and the cost of the system upgrade to facilities.

Chapter Four - Metering

General Information

This chapter covers Grant PUD's requirements for metering equipment furnished and installed by the customer.

The customer is responsible for determining the electrical requirements for the service entrance prior to contacting Grant PUD.

Service Equipment Ampacity Ratings

Grant PUD's metering requirements for single-family residential structures (excluding apartments or condominiums) are based upon the following single-phase service ratings:

Voltage	Ampere Rating
120/240	200 Amp
120/240	400 Amp
120/240	over 400 Amps*

*Single phase services rated over 400 Amps and three phase services are not covered in this workbook. Contact the *Service Expediter* for more information on these types of services.

General Requirements

Meter bases can be mounted as follows:

200 Ampere	400 Ampere
Flush Mounted	
Surface Mounted	
Post Mounted	
Mobile Home Pedestal	

Meter Base Location

The customer shall install the *meter base* outside and in a location allowing Grant PUD access for maintenance, emergency response, and meter reading. The *meter base* shall be mounted on a customer-owned structure. All meter installations are subject to Grant PUD approval.

The customer shall install a post-mounted meter base or a mobile home pedestal such that it faces the road and/or allows for Grant PUD access.

The customer shall install the meter base such that the center of the meter (once installed) shall be between five and six feet above finished grade (*this does not apply to mobile home pedestals*).

For convenience purposes, Grant PUD recommends the *meter base* be installed as close to existing Grant PUD facilities or near a property corner or boundary as possible.

Installing the *meter base* adjacent to a property corner or boundary has several advantages:

- Grant PUD can maintain its facilities without needing access to the customer's property.
- The location will not interfere with any future construction projects such as remodeling, adding on, landscaping, etc.
- The ability to disconnect service quickly in case of and emergency (i.e. fire).

Note: Customers with wells benefit from having a separate circuit from the *meter base* to their well.

Meter Base Clearance Requirements

Grant PUD requires the following clearances around all *meter base* installations. It is the customer's responsibility to provide and maintain these clearances. Refer to Figure 3 for the following:

- A working space of 3 feet wide and 3 feet below ground line is required around the *meter base*. This working space must be kept clear of any obstructions, including landscaping.
- A minimum vertical clearance of 10 inches, measured from the top of the *meter base* to any obstruction, is required.
- A minimum horizontal clearance of 3 feet measured from the edge of the *meter base* to any obstruction including gas meters and/or walls, is required.
- Siding or the finished surface of the structure shall not overlap the cover of a flush mounted *meter base*.

Additional Meter Base Requirements

Customer provided and installed *meter bases* shall meet the following Grant PUD's requirements*:*

- The customer shall provide and install only UL Listed approved 200- or 400-Amp *meter bases.*
- All unused openings shall be tightly sealed from the inside of the *meter base*.
- The *meter base* shall be mounted plumb and securely fastened to the supporting structure.
- The *meter base* shall have a suitable device for sealing.
- Lever by-passes and/or lever releases are unacceptable and shall not be energized.

Service Equipment Grounding Requirements

All *meter bases*, enclosures, and conduit shall be bonded and grounded in accordance with the *NEC* and *WAC*.

Removing and Installing Meters (After the Service is Energized)

Once a service is energized and serving load to the customer, only authorized Grant PUD personnel are allowed to install and remove meters and access *meter base*s.

Any meter base that has been de-energized for more than 12 months will require an L&I inspection prior to being energized by Grant PUD personnel.

The customer or contractor should contact Grant PUD prior to performing any work around or on the *meter base*. Grant PUD can coordinate with the customer to have the service de-energized by a serviceman allowing the customer or contractor access to the *meter base*. Contact New Construction

Services at 509-766-2501 to arrange to de-energize your service. Please provide meter number when requesting de-energizing your service. Please have your meter number or address available.

The customer or contractor shall notify Grant PUD when repairs or modifications have been completed. The customer or contractor should use extreme caution when meters are removed or installed since depending upon the type of service or *meter base*, removal of the meter **does not** necessarily de-energize the customer's service.

Self-Contained 400 Amp *Meter Base*

The *meter base* requirement for a 120/240 Volt, self- contained 400 Amp service is called a "**Class 320**" *meter base*. This *self-contained meter base* does not require current transformers. It can be installed where the continuous current rating is 320 Amps or less.

Note: The continuous current rating is defined as the maximum coincidental current flow at any one time and should not to be confused with the total connected load.

Meter Pedestals

A meter pedestal is a structure that supports the service equipment, normally a *meter base* and a disconnect switch. The customer is responsible for furnishing and installing the meter pedestal if needed for the service. There are two-meter pedestal options:

- Post-mounted
- Factory-built

A post-mounted pedestal consists of a short pole with the *meter base* and disconnect switch mounted on the pole. The factory-built pedestal comes complete with *meter base* and disconnect switch. The requirements for each are shown in Figures 10 and 11.

Chapter Five - Construction Temporary Services

General Information

A *Metered Temporary service* is an electrical service used for construction purposes. It is only available where single phase,120/240-volt power, is adjacent and accessible to the customer installed temporary service panel.

If construction temporary service is unavailable, contact New Construction Services for more information. The customer may need to apply for permanent service.

Metered temporary construction service*:* The customer completes a "Service Connection Application" and includes the required information for a Construction Temporary Service. The customer installs a meter panel adjacent to Grant PUD facilities and obtains an electrical *permit* from Washington State Department of Labor and Industries (L&I). When installation is approved by L&I, the customer contacts Grant PUD's New Construction Services to schedule energizing the service.

Grant PUD charges a one-time fee of $340 (Three hundred and forty dollars) to energize an underground temporary service and $380 (Three hundred and eighty dollars) to energize an overhead temporary service**.** Subsequent usage will be billed at the appropriate rate schedule for up to 18 months. At the end of 18 months, Grant PUD will disconnect and remove the temporary service.

There are underground and overhead connected temporary services. Please refer to the section in this chapter for the type of service being requested.

Temporary Overhead Service

Temporary overhead service is available in Grant PUD's service area where the existing electrical system is overhead construction. A temporary overhead service may be placed within 50 feet of Grant PUD facilities, provided adequate clearances can be maintained.

Temporary Underground Service

Temporary underground service is available in Grant PUD's service area where existing power facilities are installed underground. Underground temporary services need to be installed within 10 feet of a *padmount transformer*, *secondary handhole* or pedestal. The customer provides the trench, conduit, and *conductor* from Grant PUD's facilities to the temporary service. Allow three (3) feet of extra conductor for makeup to a *secondary handhole* or pedestal and ten (10) feet extra if run to a *padmount transformer*.

Chapter Six - Right of Way

General Information

This chapter covers Grant PUD's requirements and the Customer's responsibilities for land use requirements, rights-of-way, permits and associated fees (Appendix B).

An *Engineering Tech* will be assigned to any Line Extension project that requires additional rights-of-way and/or *permits.*

Land Use Requirements

The customer shall comply with the following land use requirements for both the electric system and the fiber optic system.

- **Compliance with other Agencies:**
  The Customer will be required to comply with all applicable jurisdictional agencies, state, county, and local statutes. These shall include, but not necessarily be limited to, the County Unified Development Code, International Building Code, Urban Growth Management Area development standards, and regulations requiring certain minimum improvements.

- **Provide Copies to Grant PUD:**
  The customer shall provide Grant PUD with executed copies of any and all required agency developmental approvals, i.e. approved building site plan.

- **Property Corners:** Property corners that are disturbed shall be replaced by a Licensed Surveyor at the owner's expense. Property corners shall not be driven deeper than 18 inches below final grade in order to protect buried facilities.

Easements for Rights-of-Way

The customer shall complete the "Service Connection Agreement" with the names of legal landowners, property description(s), and sketches showing all property boundaries that the service connection will affect.

The customer is required to obtain the property owner's signature on the "Service Connection Application" in order for Grant PUD to install facilities on the property.

Grant PUD will determine if additional *easements* for rights-of-way are required. Grant PUD will prepare all *easements* on Grant PUD *easement* templates and the Customer shall obtain all property owners' signatures. **Grant PUD's cost for preparing the *easement(s)* for rights-of- way will be a flat fee of $100.00 (one hundred Dollars) per *easement*.** The assigned *Engineering Tech* will advise the customer of the required fees.

Once the *easement(s)* for rights-of-way are signed by the property owner(s) and notarized in the presence of a Notary Public, return them to Grant PUD: Attention; Lands Department – Distribution Right-of-Way. Grant PUD will record the *easement(s)* at the respective Auditor's Office of the appropriate county, i.e. Grant, Lincoln, Adams, Douglas, etc.

Public Agency *Permits/Licenses* for Rights-of-Way

Grant PUD will obtain the required *permits/licenses* from public agencies or entities (WSDOT, BLM, WDNR, Railroads, Cities, etc.).

The customer shall pay for any or all *permits/licenses,* including but not limited to, Washington State Department of Transportation, United States Bureau of Reclamation, Bureau of Land Management, Department of Natural Resources, Railroad, and other *permits/licenses* as may be required along with any required professional surveys.

City *Permits* may be required if Grant PUD's *electrical conductors or fiber optic cables* are constructed within city limits. A minimum of two weeks is required to obtain *permit*(s). The City of Quincy is the only municipality that charges a fee. Their fees are based on distance and type of disturbance.

Grant County Road *Permits* are required whenever Grant PUD's electrical *conductors or fiber optic cables* are within a county road right-of-way. Grant County charges a minimum of $100 (subject to change) for the costs of the permit. A minimum of two weeks is required to obtain *permit(s).*

Lincoln County Road *Permits* are required if Grant PUD's *electrical conductors or fiber optic cables are* within a county road. The cost varies from $75 to $150 and is subject to change. A minimum of four weeks is required to obtain the *permit(s).*

Columbia Basin Irrigation District *Permits* are required if Grant PUD's *electrical* conductors or fiber optic cables are within an irrigation district waterway. These *permits* will be obtained by Grant PUD from the appropriate irrigation district (i.e. South, Quincy, or East Columbia Basin Irrigation Districts.) A minimum of four weeks is required to obtain *permit(s).* East Columbia Basin Irrigation District charges a $200 easement filing fee.

Washington State Department of Transportation (WSDOT) *Permits* are required if Grant PUD's *electrical conductors or fiber optic cables* cross a state highway or parallel a state highway within their right-of-way and *easement*. There is a fee for this *permit,* usually ranging in cost from $150 to $500. A minimum of four to six months is required to obtain the *permit(s).*

Washington Department of Natural Resources (WDNR) *Easements* are required if Grant PUD's *electrical conductors or fiber optic cables* cross WDNR property. To obtain this *permit* a professional survey is required. The Customer is responsible for acquiring a WDNR approved survey The WDNR charges a minimum of $1,000 (subject to change) for the costs of the *permit.* Upon completion of the survey, the survey and application fee will be submitted to WDNR for processing and approval. A minimum of six months is required to obtain *permit(s).*

WDNR tenants will not be required to obtain a *permit*; however, WDNR must provide written permission approving tenant project and improvements.

Bonneville Power Administration (BPA) *Permits* are required if Grant PUD's *electrical conductors or fiber optic cables* cross under a BPA power line or are in the BPA *easement* area. A minimum of twelve months is required to obtain *permit(s).*

United States Bureau of Reclamation (USBR) *Licenses* or Consent to Use are required if Grant PUD's *electrical conductors or fiber optic cables* cross USBR property. The USBR charges $3,000 (subject to change) and a percentage of Fair Market Value for this license. The customer will be required to pay the USBR work charge deposit prior to work beginning on the *License* or Consent to Use agreement and any additional costs incurred by the USBR. A minimum of eighteen months is required to obtain *a license(s).*

Bureau of Land Management (BLM) Easements are required if Grant PUD's *electrical conductors or fiber optic cables* cross BLM property. To obtain this *permit,* an application and *permit* fee must be submitted to BLM. The

permit processing fee ranges from $175 to $1,156. The BLM charges a minimum of $1,000 (subject to change) for the costs of the permit. A minimum of three months is required to obtain easements.

Railroad Permits are required if Grant PUD's *electrical conductors or fiber optic cables* cross over, under, or run parallel to the railroad track. The minimum cost for a permit from Burlington Northern Santa Fe Railroad is $3,800 and the minimum cost for a permit from Washington Central Railroad is $3,700 (either fee is subject to change). A minimum of four months is required to obtain *permit(s).* Any *license* renewal fees will be charged to the customer.

Chapter Seven - Fiber Optic Cable

Underground Fiber Optic Cable

Grant PUD will furnish and install fiber optic cable in accordance with Grant PUD's "Fiber Optic Customer Service Policies" and build-out schedule, or as amended by Grant PUD. The Customer will supply and install either 1" or 2" orange Schedule 40 PVC conduit depending on the length of the fiber service.

The fiber optic conduit shall be installed, in the customer's supplied trench, from the fiber optic handhole to a location near the electrical meter. Normally, the fiber optic conduit will parallel the electrical service conduit.

If fiber optic service is available, Grant PUD will provide and install fiber optic cable in the customer installed conduit to Grant PUD's supplied residential fiber gateway box (generally located next to *meter base*). **NOTE: Customer supplied fiber optic conduit is for fiber optic cable only. Other companies including telephone and cable TV will not be authorized to utilize this Customer supplied fiber optic conduit.**

Overhead Fiber Optic Cable

If fiber optic service is available, Grant PUD will provide and install fiber optic cable to Grant PUD's residential fiber gateway box (generally located next to *meter base*).

Contacting Other Utilities or Agencies

For fiber optic service, the customer needs to contact a "Service Provider". Service providers offer high-speed internet, television, and telephone via the fiber optic cable connection. It is the customer's responsibility to notify a service provider and request service. Service providers are listed on the Grant PUD website under High-Speed Network in the Customer Service section.

Conduit Size

Trenches over 100 feet in length require two (2) inch orange Schedule 40 conduit.

Fiber Gateway

The Fiber Gateway box will require customer supplied power to operate. The gateway will be plugged into a 120VAC outlet located either inside or outside of the structure onto which it is mounted.

Glossary

Connection Point – The designated point on the Customer's property where their secondary service is connected to Grant PUD's facilities. This would be at the weatherhead for an overhead secondary service and at a secondary termination point(moped(pedestal)/vault/transformer) for an underground secondary service.

Easement – The right to use the land of another.

Engineering Technician or Engineering Tech - A Grant PUD employee that designs construction projects and coordinates construction activities.

Guy or **Guying** - Cables or braces used to relieve the strain of overhead conductors on masts and poles.

HVAC - Heating, Ventilation and Air Conditioning.

License - A license is an authorization to cross another owner's land, it is revocable.

Line Extension Service Request – A Service Connection Application that requires engineering and/or right of way.

Meter Base – An enclosure consisting of meter jaws and connectors for accommodating socket-type meters.

Metered Temporary Service – A metered service panel provided and installed by the customer or his contractor for the purpose of providing power during construction of a premise. The cost of a Metered Temporary Service depends on whether it is an overhead or underground temporary service. The fee will cover the initial connection and energization of the service. The customer is then billed monthly at the appropriate rate schedule for the power used.

Moped – A plastic rounded top above ground secondary junction box which contains electrical equipment or splices.

NEC - National Electric Code

NESC – National Electric Safety Code

Padmount Transformer - An electrical device mounted on a concrete base used to provide the appropriate voltage to serve customers.

Permit - A permit is an authorization to cross another owner's land, it is revocable. Often used by governmental agencies.

Primary Conductor - Electrical high voltage conductor.

Rigid Clevis - A porcelain insulator with mounting bracket used to terminate overhead services.

Secondary Handhole - A box that is flush mounted in the ground which contains electrical equipment or splices.

Secondary Pedestal - A box that is mounted above ground level which contains electrical equipment or splices.

Secondary Conductor – On an overhead service, the electrical conductors from Grant PUD's system to the connection point at the weatherhead. On an underground service, the electrical conductors from

the connection point to the metering equipment. Underground secondary conductors are provided and installed by the Customer, and overhead secondary conductors are installed by Grant PUD.

Self-Contained - In reference to meter bases: an enclosure designed and rated to continuously carry the entire capacity of the service entrance equipment. The maximum self-contained meter base current rating approved by Grant PUD is 400 Amps (also called a single-phase Class 320 A meter).

Service Entrance Conductors - The electrical conductors in an overhead service that extend from the meter socket up through the service mast and extend 18 inches past the weatherhead to the connection point. Service Entrance conductors are provided and installed by the customer.

Service Mast - The conduit above the meter used to provide mechanical protection for the service entrance conductors and to support the service drop from Grant PUD's system.

Simple Service Request - A request for electrical service at a site where required Grant PUD facilities already exist on a customer's property and do not require right-of-way.

Splice - A junction point between two conductors.

State Electrical Inspector - The qualified representative of the State of Washington Department of Labor and Industries, who has been authorized to inspect electrical service installations.

Utility System – The electrical equipment owned or under the control of Grant PUD. "Under the control" means restricted public access by means of lock or seal. This includes the customer owned service entrance and meter base.

Weatherhead - A device installed at the top of the service mast that prevents water from entering the conduit, while allowing access for the service entrance conductors.

Telephone Numbers

Grant County PUD

New Construction Services 766-2501

Customer Service Call Center.....766-2505

Grant PUD Toll Free Number..... 1-800-422-3199

State & County Government

Department of Labor and Industries- 3001 W. Broadway, Moses Lake.....764-6900

Department of Labor and Industries Electrical Inspection (24 hour) Line 764-6966

Building Department - 332 Division West, Ephrata 754-2011

Health District – 1st & C St N.W., Ephrata 754-6060

Health District – 1038 W Ivy Ave #1, Moses Lake.....766-7960

City and Town Government

Town of Coulee City - 501 Main Street West 632-5331

Town of Electric City - 10 Stevens Avenue 633-1510

City of Ephrata - 121 Alder S.W. 754-4601

City of George - 102 Richmond Avenue 785-5081

City of Grand Coulee - 306 Midway Avenue 633-1105

Town of Hartline - Main Street North 639-2606

Town of Krupp (Marlin) - 293 Urquhart Avenue North.....345-2531

City of Mattawa - East 521 Government Road.....932-4037

City of Moses Lake - 321 Balsam Street- Existing Service 766-9214

City of Moses Lake - 321 Balsam Street - New Service 766-9235

City of Quincy - 104 B Southwest.....787-3523

City of Royal City - 445 Camelia Street.....346-2263

City of Warden – 121 S Main Ave.....349-2326

City of Wilson Creek- 254 Railroad Street.....345-2531

Utilities Underground Location Center (UULC).....811

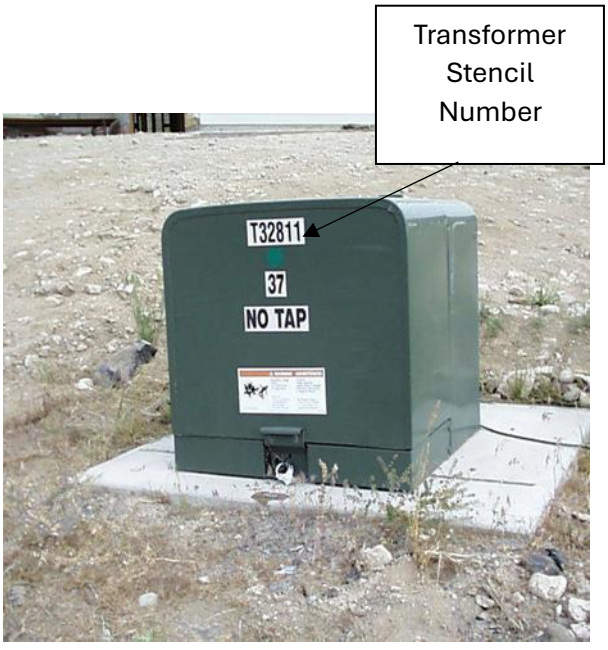
References

The following pages are for reference only. Clearance and other requirements may change with the latest edition of the *NEC*.

Figure 1. Typical Overhead Construction

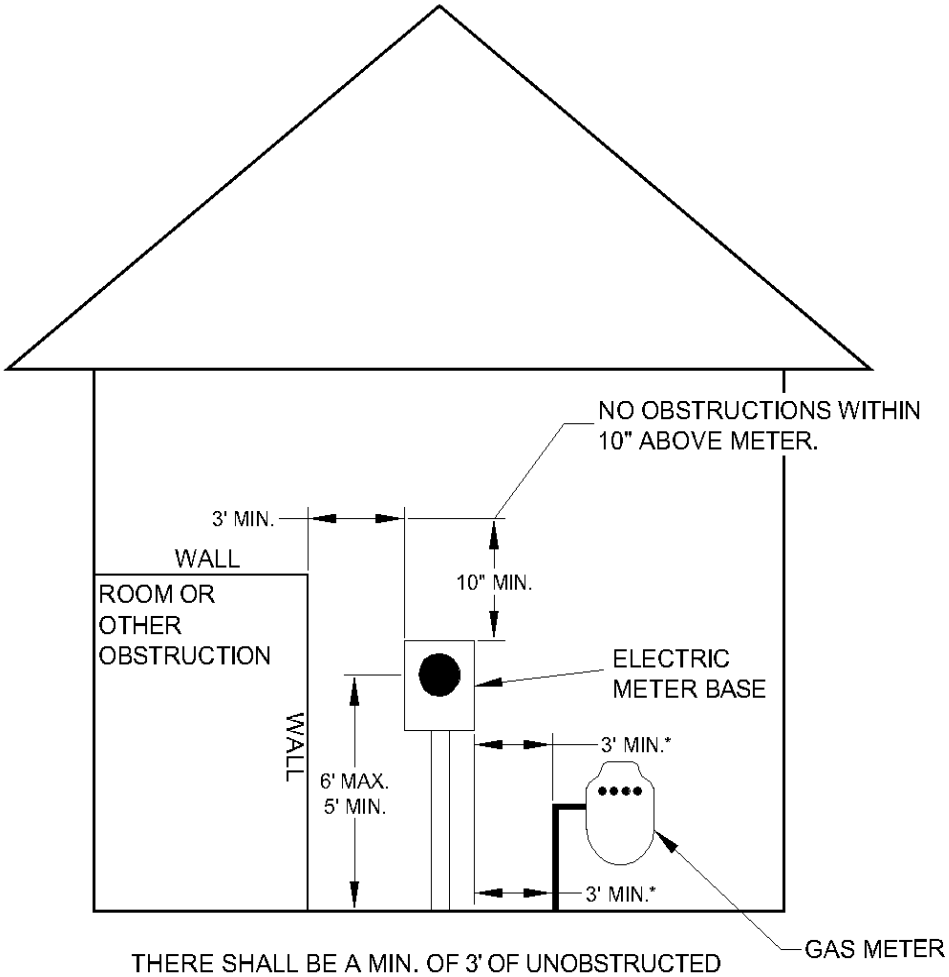
Figure 2. Typical Underground Construction

Secondary Pedestal (Moped)



Padmount Transformer

Figure 3. Working Space Requirements



THERE SHALL BE A MIN. OF 3' OF UNOBSTRUCTED SPACE BETWEEN THE NEAREST METERING EQUIPMENT AND ANY OBSTRUCTION ON SIDES AND IN FRONT OF THE METER

* NATIONAL FUEL GAS CODE 54-5.7.2.3

Figure 4. Typical Overhead Service Installation

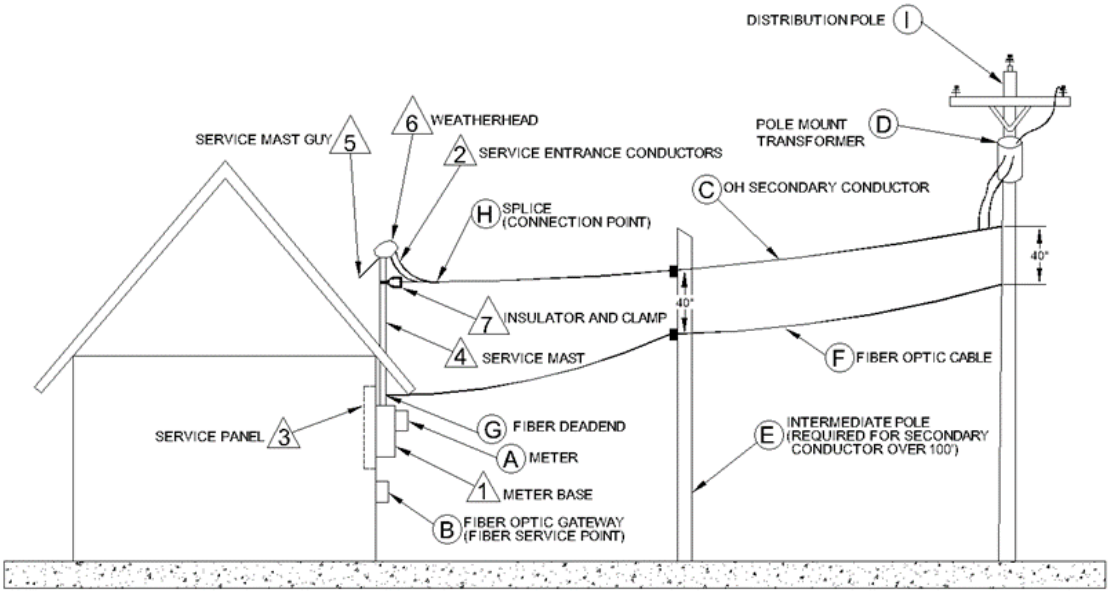


FIGURE 4. TYPICAL OVERHEAD SERVICE INSTALLATION

△ ITEMS PROVIDED AND INSTALLED BY THE CUSTOMER	○ ITEMS OWNED AND INSTALLED BY GRANT COUNTY PUD
1. METER BASE 2. SERVICE ENTRANCE CONDUCTORS 18" WEATHERHEAD - CUSTOMER OWNS 3. SERVICE PANEL 4. SERVICE MAST 5. SERVICE MAST GUY 6. WEATHERHEAD 7. INSULATOR AND CLAMP	A. METER B. FIBER OPTIC GATEWAY (FIBER SERVICE POINT) C. OVERHEAD SECONDARY CONDUCTOR D. POLE MOUNT TRANSFORMER E. INTERMEDIATE POLE(PAID FOR BY CUSTOMER) F. FIBER OPTIC CABLE G. FIBER OPTIC DEADEND H. SPLICE (CONNECTION POINT) I. DISTRIBUTION POLE

REVISED: 02-22-23

Figure 5. Minimum Vertical Clearance From Ground

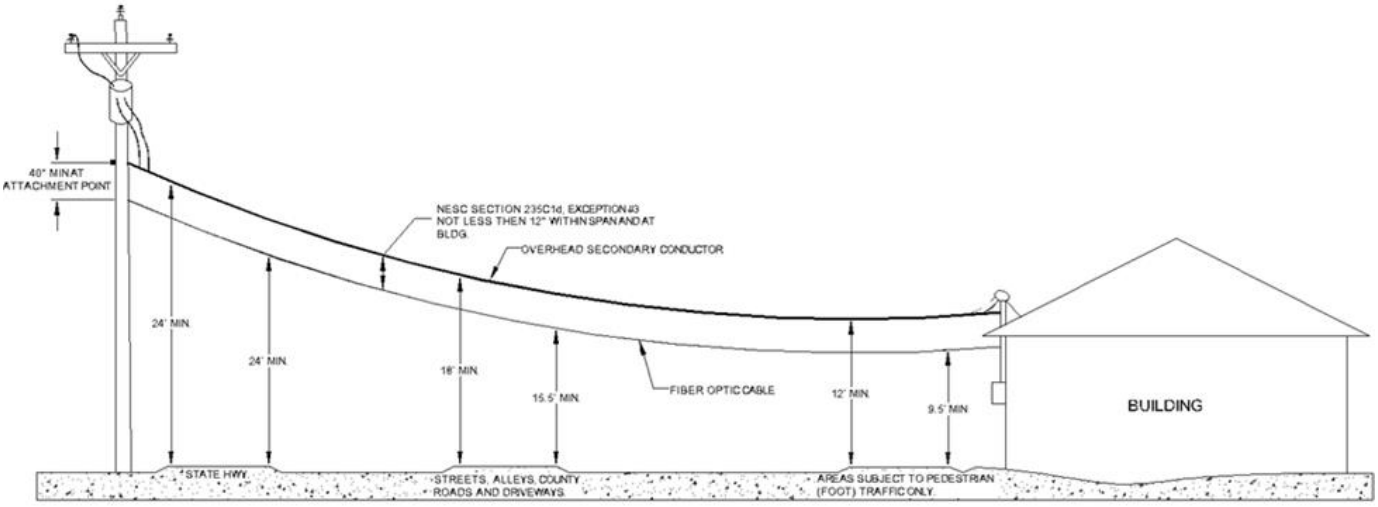
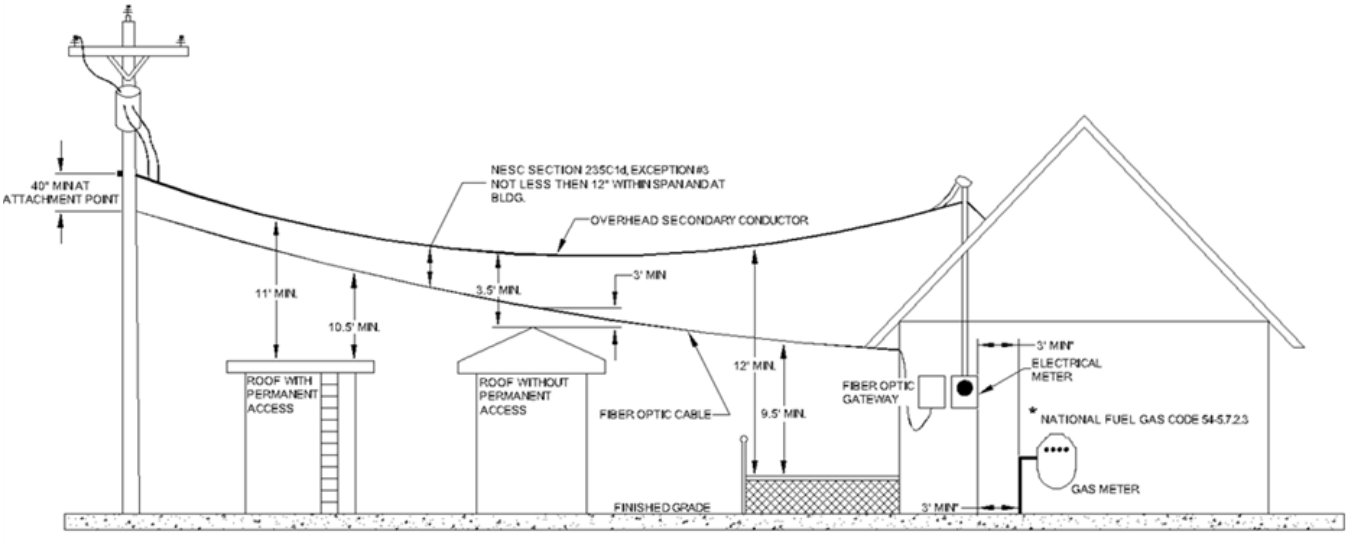


FIGURE 5. MINIMUM VERTICAL CLEARANCE FROM GROUND

REVISED: 02-22-23

Figure 6. Minimum Clearances over Other Structures



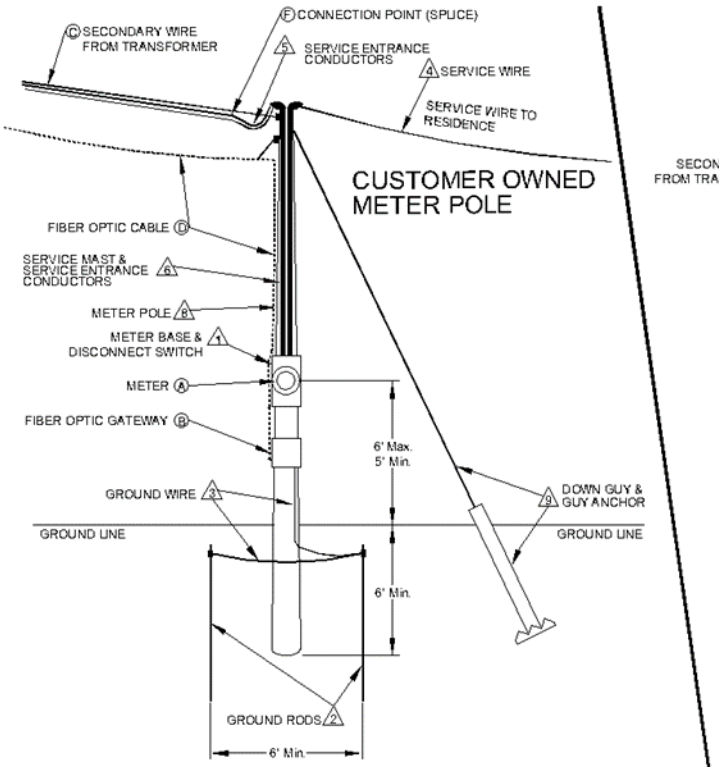
REF. NESC TABLE 234-1 FOR CLEARANCES.

FIGURE 6. MINIMUM CLEARANCES OVER OTHER STRUCTURES.

REVISED: 02-22-23

Revised August 5, 2024

Figure 7. Customer Owned Meter Pole and Figure 7A Detail



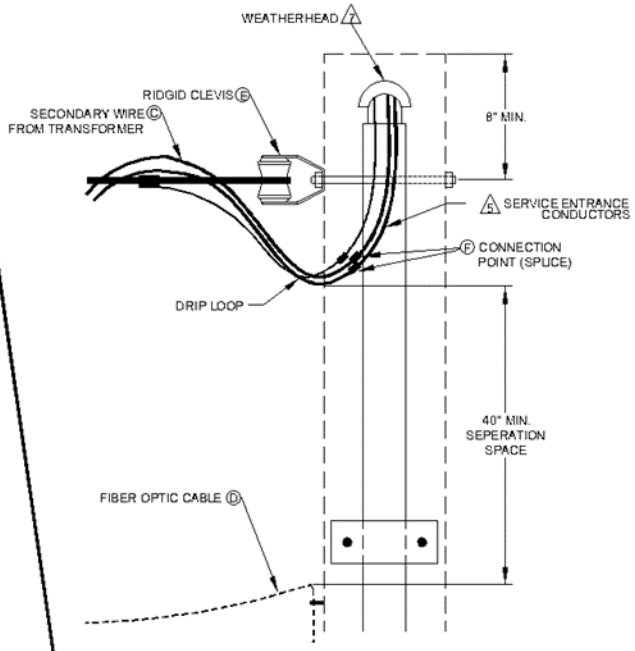


FIGURE 7. CUSTOMER OWNED METER POLE

FIGURE 7A DETAIL

△ ITEMS PROVIDED AND INSTALLED BY THE CUSTOMER

1. METER BASE AND DISCONNECT EQUIPMENT, IF APPLICABLE
2. GROUND RODS (PER NEC AND WAC)
3. GROUND WIRE (PER NEC AND WAC)
4. SERVICE WIRE (CUST. OWN AND MAINTAIN)
5. SERVICE ENTRANCE CONDUCTORS 18 INCHES OUT OF WEATHERHEAD.
6. SERVICE MAST, SERVICE ENTRANCE CONDUCTORS
7. WEATHERHEAD
8. METER POLE (PAID FOR AND OWNED BY CUSTOMER, BUT INSTALLED BY GCPUD).
9. DOWN GUY AND ANCHOR (REQUIRED IF SECONDARY WIRE IS MORE THAN 100')(PAID FOR AND OWNED BY CUSTOMER BUT INSTALLED BY GCPUD)

○ ITEMS OWNED AND INSTALLED BY GRANT COUNTY PUD

- A. METER
- B. RESIDENTIAL GATEWAY
- C. SECONDARY WIRE FROM TRANSFORMER
- D. FIBER OPTIC CABLE
- E. RIDGID CLEVIS
- F. CONNECTION POINT (SPLICE)

REVISED: 03-02-23

Figure 8. Underground Service From Overhead Line and Pole Mount Transformer

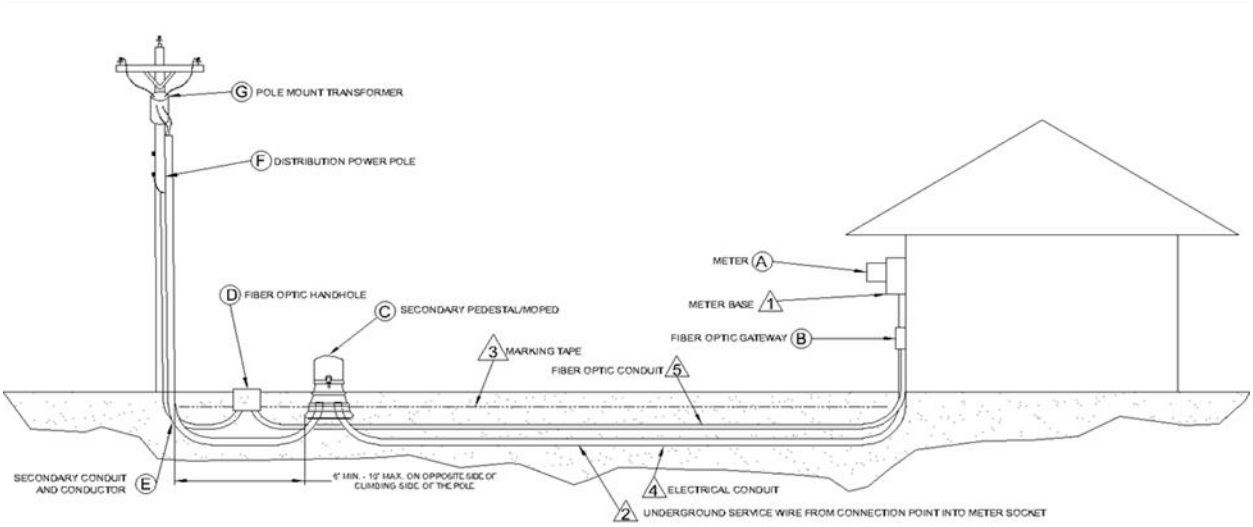


FIGURE 8. UNDERGROUND RESIDENTIAL SERVICE FROM OVERHEAD LINE AND POLE MOUNT TRANSFORMER

△ ITEMS PROVIDED AND INSTALLED BY THE CUSTOMER
1. METER BASE
2. UNDERGROUND SERVICE WIRE FROM CONNECTION POINT INTO METER SOCKET (DISTRICT OWNS CONDUCTOR AFTER SERVICE IS ESTABLISHED)
3. MARKING TAPE
4. ELECTRICAL CONDUIT (DISTRICT OWNS CONDUIT AND CONDUCTOR AFTER SERVICE IS ESTABLISHED)
5. FIBER OPTIC CONDUIT (DISTRICT OWNS CONDUIT AND FIBER OPTIC CABLE AFTER SERVICE IS ESTABLISHED)

○ ITEMS OWNED AND INSTALLED BY GRANT COUNTY PUD
A. METER
B. FIBER OPTIC GATEWAY (FIBER SERVICE POINT)
C. SECONDARY PEDESTAL/MOPED
D. FIBER OPTIC HANDHOLE
E. UNDERGROUND SECONDARY CONDUIT AND CONDUCTOR
F. DISTRIBUTION POWER POLE
G. POLE MOUNT TRANSFORMER

REVISED: 03-20-23

Figure 9. Underground Residential Service from Padmount Transformer

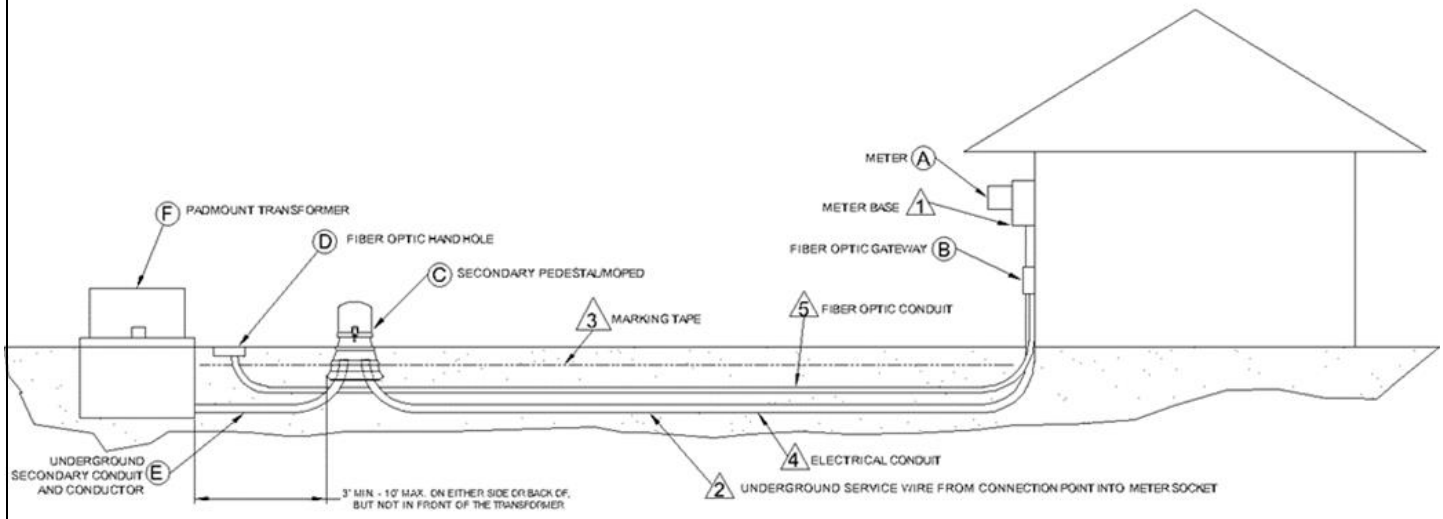


FIGURE 9. UNDERGROUND RESIDENTIAL SERVICE FROM PADMOUNT TRANSFORMER

△ ITEMS PROVIDED AND INSTALLED BY THE CUSTOMER
1. METER BASE
2. UNDERGROUND SERVICE WIRE FROM CONNECTION POINT INTO METER SOCKET (DISTRICT OWNS CONDUCTOR AFTER SERVICE IS ESTABLISHED)
3. MARKING TAPE
4. ELECTRICAL CONDUIT (DISTRICT OWNS CONDUIT AND CONDUCTOR AFTER SERVICE IS ESTABLISHED)
5. FIBER OPTIC CONDUIT (DISTRICT OWNS CONDUIT AND FIBER OPTIC CABLE FTER SERVICE IS ESTABLISHED)

○ ITEMS OWNED AND INSTALLED BY GRANT COUNTY PUD
A. METER
B. FIBER OPTIC GATEWAY (FIBER SERVICE POINT)
C. SECONDARY PEDESTAL/MOPED
D. FIBER OPTIC HANDHOLE
E. UNDERGROUND SECONDARY CONDUIT AND CONDUCTOR
F. PADMOUNT TRANSFORMER

REVISED: 03-20-23

Figure 10. Post Mounted Meter Installation

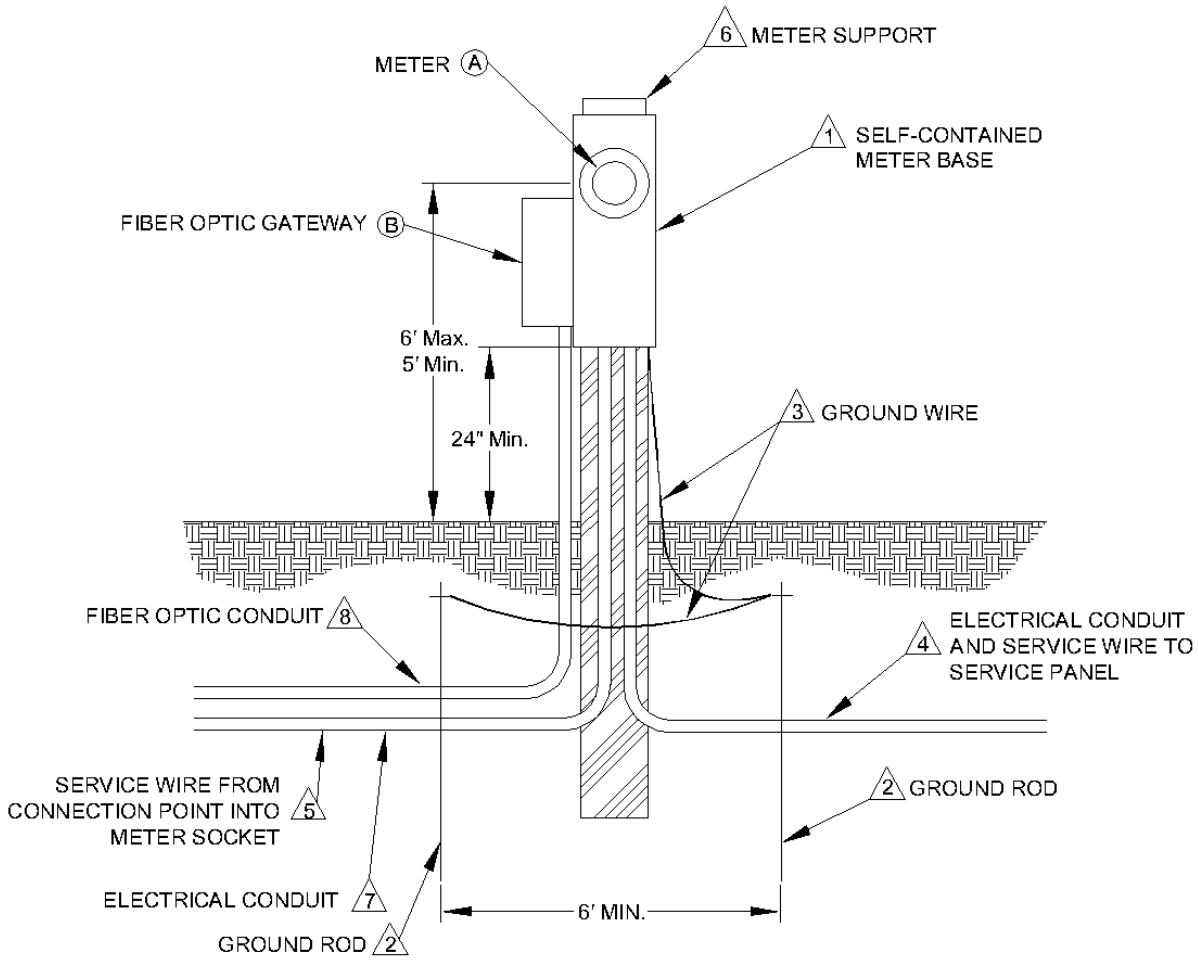


FIGURE 10. POST MOUNTED RESIDENTIAL METER INSTALLATION

△ ITEMS PROVIDED AND INSTALLED BY THE CUSTOMER

1. SELF-CONTAINED METER BASE
2. GROUND RODS (IN ACCORDANCE WITH NEC AND WAC RULES, TWO REQUIRED.)
3. GROUND WIRE (IN ACCORDANCE WITH NES AND WAC RULES)
4. ELECTRICAL CONDUIT AND SERVICE WIRE TO SERVICE PANEL
5. SERVICE WIRE FROM CONNECTION POINT INTO METER SOCKET (DISTRICT OWNS AFTER SERVICE IS ESTABLISHED.)
6. METER SUPPORT, 6" x 6" x 10' MIN. LENGTH FULLY PRESSURE-TREATED POST OR METAL SUPPORT BURIED A MIN. OF 3' DEEP. WHEN ANGLE IRON, CHANNEL IRON OR RIGID PIPE IS USED, IT MUST BE SET IN 6" x 24" x 24" CONCRETE FOOTING.
7. ELECTRICAL CONDUIT - (DISTRICT OWNS CONDUIT AND CONDUCTOR AFTER SERVICE IS ESTABLISHED)
8. FIBER OPTIC CONDUIT - (DISTRICT OWNS CONDUIT AND FIBER OPTIC CABLE AFTER SERVICE IS ESTABLISHED)

○ ITEMS OWNED AND INSTALLED BY GRANT COUNTY PUD

A. METER
B. FIBER OPTIC GATEWAY (FIBER SERVICE POINT)

REVISED: 03-20-23

Figure 11. Manufactured Mobile Home Pedestal with Meter Base Installation

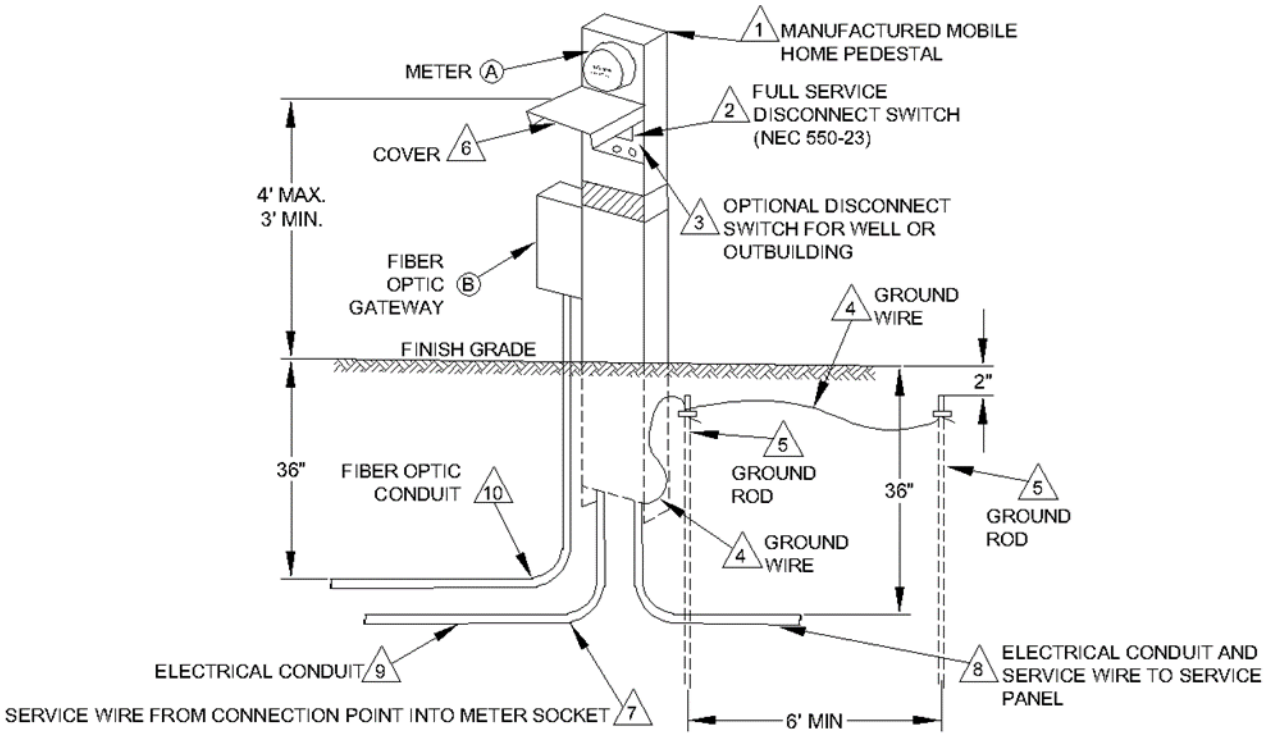


FIGURE 11. MANUFACTURED MOBILE HOME PEDESTAL WITH METER BASE INSTALLATION (FOR INDIVIDUAL SINGLE UNIT ONLY)

△ ITEMS PROVIDED AND INSTALLED BY THE CUSTOMER

1. MANUFACTURED MOBILE HOME PEDESTAL
2. FULL SERVICE DISCONNECT SWITCH (NEC 550-23)
3. OPTIONAL DISCONNECT SWITCH FOR WELL OR OUTBUILDING
4. GROUND WIRE (IN ACCORDANCE WITH NEC AND WAC RULES)
5. GROUND RODS (IN ACCORDANCE WITH NEC AND WAC RULES)
6. COVER
7. SERVICE WIRE FROM CONNECTION POINT INTO METER SOCKET (DISTRICT OWNS AFTER SERVICE IS ESTABLISHED)
8. ELECTRICAL CONDUIT AND SERVICE WIRES TO SERVICE PANEL
9. ELECTRICAL CONDUIT (DISTRICT OWNS CONDUIT AND CONDUCTOR AFTER SERVICE IS ESTABLISHED)(FOR INDIVIDUAL SINGLE UNIT ONLY. DOES NOT APPLY IN MOBILE HOME PARK)
10. FIBER OPTIC CONDUIT (DISTRICT OWNS CONDUIT AND FIBER OPTIC CABLE AFTER SERVICE IS ESTABLISHED

○ ITEMS OWNED AND INSTALLED BY GRANT COUNTY PUD

A. METER
B. FIBER OPTIC GATEWAY (FIBER SERVICE POINT)

REVISED: 03-20-23

APPENDIX - Standard 10.0008 Trench Construction – PVC Conduit

Section Number 10.0008

TRENCH CONSTRUCTION, PVC CONDUIT

1. SCOPE:

This specification covers trenching, trenching location in reference to other utilities, conduit location within the trench, backfill and compaction of backfill.

2. STANDARDS:

This specification includes reference to the following "*The American Society for Testing and Materials International*" (ASTM International) standards.

2.1. Soil Compaction:
ASTM D 698.00a Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort 12,400 ft.-lb/ft cubed.

2.2 Soil Classifications for Backfill:
ASTM D 2487-00 Standard Practice for Classifications of Soils for Engineering Purposes. (Unified Soil Classification System)
ASTM D 2488-00 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)

3. TERMINOLOGY:

3.1. Trench: Excavation for placement of individual conduits or duct systems for electrical and/or communication services.

3.2. Backfill Area: Area of trench backfilled in three zones- 1) Foundation 2) Embedment 3) Final Backfill Zone.

3.2.1. Foundation: Used only where the trench bottom is unstable or a material that does not compact. Additional compacted material may be added to make a secure base.

3.2.2. Embedment: Compacted material placed below, around and above the conduit/duct system to provide support and protection for the conduit/duct system..

3.2.2.a. Bedding: Material placed on the trench bottom or on foundation to provide uniform support and protection for the conduit(s)

2.2.2.b.Conduit Zone: Material placed on either side of the conduit and/or between ducts. This material prevents lateral displacement of the conduit/duct due to live loads or water infiltration.

3.2.2.c.Spring Line Cover: Six inches of material placed above the top of the

PUBLIC UTILITY DISTRICT NO. 2 OF GRANT COUNTY, WASHINGTON				
CONSTRUCTION STANDARDS				
STANDARDS COMMITTEE APPROVAL DATE:	11/07/2002	Title: 10.0008 TRENCH CONSTRUCT PVC, CONDUIT		10.0008
DESIGNER:	AJW			
STANDARDS ENGR:	E WENKE	LAST REV.	07/16/2005	Page 1 of 6

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conduit/duct system. This material provides protection for the conduit duct system from final backfill and/or live loads imposed on the trench.

3.2.3. Final Backfill: Trench area that extends from the top of the 6 inch cover to the top of the trench. Material here is native soil, unless the material contains cobbles or boulders over 4 inches in diameter.

3.3. Spring Line: The top of a single conduit or highest duct in the trench with more than one conduit.

3.4. PVC Conduit: Polyvinylchloride (PVC) conduit used for single conduit runs or duct systems. PVC conduit for electric systems will be grey. PVC conduit for fiber optic system shall be orange.

3.5. Definitions: This standard includes the definitions in ASTM 2487 and 2488, Section 3 "Terminology."

4. BACKFILL MATERIALS:

General: All backfill materials are defined in ASTM 2487 & 2488, Section 3 'Terminology.' All backfill used in any trench shall be organic-free material. This includes organic particles and larger organic debris.

4.1. Foundation Materials:
This material shall be compactible material such as gravel, sand, silt or clay or a mixture of those materials. Nothing larger than 1 inch minus gravel/aggregate shall be used. See ASTM 2487 & 2488, Section 3 "Terminology," 3.1.2 "Gravel" (subsection "fine")

4.2. Embedment Zone Materials:
Material in all three areas, bedding, conduit zone and cover, shall be sand, silt or clay material. Material shall pass a number 40 sieve but does not have to pass a number 200 sieve. Clay or Silt materials are defined as *fine grained top soil or soil free of any gravel, rock or rock chips*. See ASTM 2487 & 2488, Section 3 "Terminology," 3.1.1 "Clay" & 3.1.7 "Silt."
Sand is defined as *fine particles of rock, common reference "blow sand"*. See ASTM 2487 & 2488, Section 3 "Terminology," 3.1.6 "Sand" (subsection "fine")

4.3. Final Backfill Zone Materials
This material can in most cases be native soil/rock excavated from the trench. However if this material contains cobble/boulders larger than 4 inches in diameter it shall not be used.

5. CONSTRUCTION LOCATION/DIMENSIONS:

5.1. Location: The trench shall be within the easement granted to the District. The trench shall not be closer to other utilities than described below.

5.1.1. Water Lines: The electric trench shall be a minimum of 18 inches horizontally from any water line at any elevation.

5.1.2. Gas Lines: The electric trench shall be a minimum of 10 feet horizontally from any gas transmission line and 18 inches horizontally from any gas service line.

5.1.3. Sewer Lines: Where the sewer line is at or above the electric line elevation the horizontal separation shall be a minimum of 24 inches. If the sewer line is at a lower elevation than the electric line the trench shall be a minimum of 36 inches horizontally from the sewer line trench.

5.1.4. Communications: Communication lines, other than the District's fiber optic cable, shall be located no closer to the primary or secondary electric lines than 12 inches. This is a radial measurement of 360 degrees.

5.2. Width:

The minimum width of an electrical trench shall be 24 inches for a single conduit up to 4 inches in diameter. (See Figure # 1 in Section 7 under 7.1 Cross Section Dimension on page 5 of 6.} Trenches for conduit larger than 4 inches in diameter or with more than one conduit shall be determined by the conduit(s) placement in the trench. Minimum trench width shall be 5 times the diameter of a single conduit or 24 inches. (Which ever is larger).

5.3. Depth:

The minimum depth of an electrical service trench shall be 36 inches for primary power, 30 inches for secondary power, and 36 inches for fiber optic cable. This depth shall be measured from the top of the conduit (Conduit Spring Line). The trench must be deep enough to place the foundation (if required) and bedding so the entire diameter of the conduit is below minimum grade. (Exceptions to this must have prior District approval and be installed as shown in this Standard. See Figure # 2 in Section 7 under 7.2 Concrete Encased Conduit on page 6 of 6.)

5.4 Backfill:

5.4.1 Foundation: Foundation where required shall be a minimum of 2 inches of compacted material. Foundation backfill does not need to be continuous provided compaction & cable protection is achieved.

5.4.2 Bedding: Bedding shall be a minimum of 2 inches continuous compacted material and shall be constructed so the conduit is in contact with the bedding at all times.

5.4.3 Conduit Zone: Conduit Zone depth shall be determined by the diameter of the conduit. The conduit zone shall be from the bedding to the spring line of the conduit and shall consist of material compacted along each side of the conduit. The material shall be

installed so there are no voids along the bottom sides of the conduit. Filling these voids shall be accomplished by shovel slicing, water compaction or other standard method.

5.4.4. Six Inch Cover: Cover zone shall be a minimum of 6 inches of compacted material.

5.4.5. Final Back Fill Zone: The final back fill zone shall restore the trenched area to the original contours with compacted native or barrow fill.

6. COMPACTION:

6.1. General Compaction:
All trench materials shall be compacted to 95% compaction. Compaction can be achieved by water, vibration or mechanical means. All material shall be compacted in 6 inch layers or as per ASTM D 698.
See ASTM D 698 for full requirements.

6.2. Zone Required Compaction:

6.2.1. Trench Bottom/Foundation: The trench base shall be compacted if excavated with a back hoe. All rake ridges shall be compacted or removed to undisturbed soil. If full or partial foundation is required it shall be added in minimal lifts and compacted to 95% compaction.

6.2.2. Bedding: The compacted (95%) two inches of bedding shall form a smooth pipe bed for uniform support of the conduit.

6.2.3. Conduit Zone: The compaction of the conduit zone shall be done in a manner that shall not damage or compress the conduit. Compaction shall be a minimum of 95%, as required.

6.2.4. Six Inch Cover: The conduit cover zone shall be in one lift and compacted to 6 inches @ 95% compaction.

6.2.5. Final Backfill: Final backfill requirements shall be determined by the material used and the land use over the trenched area. Compaction shall be a minimum of 95% with lifts that shall not exceed 8 inches regardless of the material employed as backfill.

6.2.5.1. Landscaped Areas: Any landscaped area shall be restored with acceptable top soil or native fill.

6.2.5.2. Parking Lot/Street: Any material and compaction under lots and/or streets shall be determined by the governing agency/owner.

6.2.5.3. Sidewalks/Curbs/Retaining Walls: Native fill shall be replaced with either 5/8 or 3/4 inch minus material that is compacted to full density.

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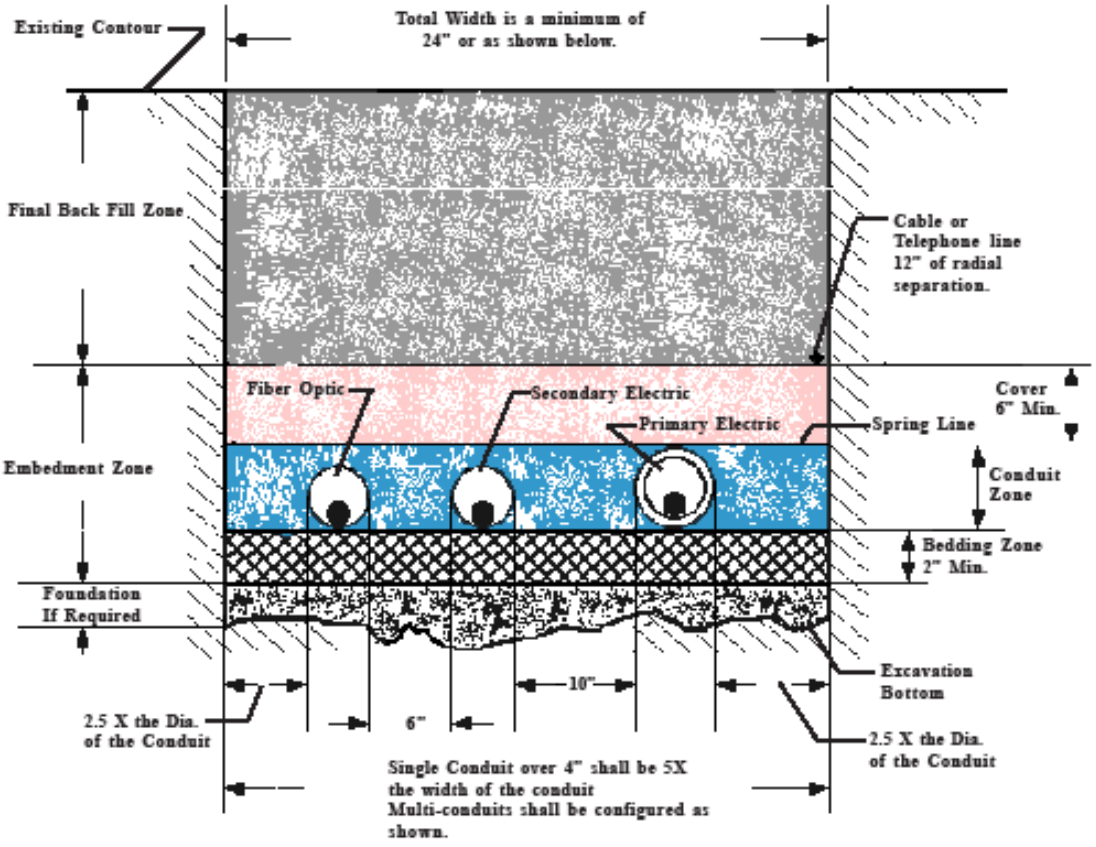
7. DRAWINGS/DIAGRAMS/ILLUSTRATIONS

Figure #1 below is a typical trench layout cross sectional view showing the various zones and minimum reguired dimensions.

Figure #2 on page 6 of 6 is a cross section view of a concrete encased conduit. This method of reduced clearances is acceptable only with approval of District Staff.

7.1 Figure # 1 Cross Section Dimension:



PUBLIC UTILITY DISTRICT NO. 2 OF GRANT COUNTY, WASHINGTON				
CONSTRUCTION STANDARDS				
STANDARDS COMMITTEE APPROVAL DATE:	11/07/2002	Title: 10.0008 TRENCH CONSTRUCT PVC, CONDUIT		10.0008
DESIGNER:	AJW			
STANDARDS ENGR:	E WENKE	LAST REV	07/16/2005	Page 5 of 6

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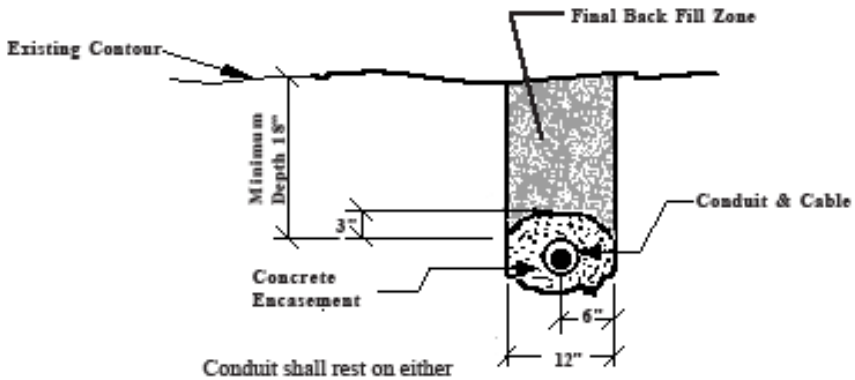
7.2 Figure #2 Concrete Encased Conduit



Conduit shall rest on either concrete or suitable foundation.
Concrete encasement shall be a 4 sack cement mix.

Notes:

1. Gas Transmission Lines require 10 feet of separation.
2. Horizontal Separation: Water/Gas Service lines must be a minimum of 18 inches from electric primary and secondary conductors.
   Secondary conductors must be a minimum of 6 inches from primary conductors
   Sewer shall be separated as per instruction in Section 5.1.3 of this document.
3. Radial Separation TV/Tele-Cable must be a minimum of 12 inches from primary and secondary conductors.
4. The District fiber optic conduit must be a minimum of 6 inches from the electric primary and secondary coductors and have a minimum radial seperation of 12 inches from foreign cable/telephone utilities.

APPENDIX B– Right of Way Schedule

Rights of Way Fee Schedule	Application Fee	Permit/License/ Easement Fee	Annual Fee
City of Quincy Permit – based on permit area	$0.00	Minimum $10.00	None
Grant County Public Works ROW permit	$ 100.00	$0.00	None
Grant County Public Works Approach Permit	$50.00	$0.00	None
Lincoln County Road permit	$75.00 - $150.00	$0.00	None
East Columbia Basin Irrigation District	$0.00	$200.00	None
Quincy Columbia Basin Irrigation District	$0.00	$0.00	$0.00
South Columbia Basin Irrigation District	$0.00	$50.00	$0.00
State of Washington, Department of Transportation (WSDOT) Permit	$150.00-$500.00	$150.00-$500.00	None
State of Washington, Department of Natural Resources (WDNR)	JARPA Fee $250.00	Determined by project-minimum $1,000.00	$0.00
Bonneville Power Administration (BPA)	$0.00	$0.00	$0.00
United States Bureau of Reclamation (USBR) License or Consent to Use	$100.00	Determined by project-minimum $3,000.00	Typical term 20 years
United States, Bureau of Land Management (BLM) License	$175.00- $1,156.00	Determined by project-minimum $1,000.00	As determined
Burlington Northern Santa Fe Railroad (BNSF) License	$2,067.00	$3,800.00 minimum & Insurance $506.00 & Flagging/Inspection $3,050.00	Typical term 20 years
Columbia Basin Railroad (CBRR) License	$2,000.00	$3,700.00 minimum & Required Insurance & Flagging/Inspection $3,050.00	Typical term 20 years
Port of Royal Railroad	$250.00	$1,250.00 Flagging/Inspection	Typical term 20 years
Grant County Easement / IPA Recording Fee	None	$203.50 + $1.00/page	None
Other County Recording Fees	None	Same rate as Grant County	None