RESIDENTIAL
Electric Service Handbook

2015

Building or remodeling a home in Clark County?
This handbook provides information regarding current Clark Public Utilities standards and requirements for installing underground residential electric service.

Clark Public Utilities

CONTACTS

Clark Public Utilities

- Website — www.ClarkPublicUtilities.com
- Email — Construction@ClarkPUD.com
- Construction Services department (To initiate a new service or service upgrade request) — (360) 992-8558
- Operations (For questions on jobs that are inspected, backfilled and ready to be scheduled) — (360) 992-8839
- Customer Service (For general billing questions about existing electric or water accounts) — (360) 992-3000

Other Phone Numbers

"Call Before You Dig" number

- Underground utilities locating service — 811 or 1-800-424-5555

Washington State Department of Labor and Industries

- To obtain an electrical permit — (360) 896-2300
- Questions about a permit or code — (360) 896-2360
- To request an electrical inspection — (360) 896-2350

City of Vancouver

- To obtain an electrical permit — (360) 487-7802
- Questions about a permit or code — (360) 487-7802
- To request an electrical inspection — (360) 619-1200

Please note your job number and the name of your Clark Public Utilities representative for quick reference:

Job number _____

Utility representative name _____

Phone number _____

Clark Public Utilities

Updated January 2015

P.O. Box 8900 • Vancouver, WA • 98668 • 360-992-8558

CONTENTS

CHAPTER 1

Introduction

This handbook is a guide to Clark Public Utilities' requirements for new or altered electric service to permanent single-family residential structures. The following chapters will provide answers to frequently asked questions such as:

- What are the requirements for installing an underground electric service?
- How are existing underground utilities located?
- What is the required depth of an electric service trench?
- What wire type and ***conduit*** are required?
- Where and how is the ***meter base*** installed?

For information on the installation of commercial and multifamily services, call our Construction Services department at (360) 992-8558, or visit our website **www.clarkpublicutilities.com** to view our *Commercial Electric Service Handbook.*

Glossary of terms used in this handbook

Glossary words appear in bold italics throughout the text the first time they occur (e.g., ***conduit*** and ***meter base***). The glossary of terms is located in the appendix at the back of this handbook.

Codes, permits and inspections

This handbook should be used only as a guide. It should not be interpreted to conflict with regulations of the State of Washington or other regulatory bodies having jurisdiction.

It is the customer's responsibility to ensure the project complies with all federal, state and local codes that may apply. All codes, permits and inspections related to a project should be addressed before construction begins.

Electrical service equipment inspection for new service

Prior to Clark Public Utilities connecting the service, the newly installed service equipment requires an electrical inspection from the Department of Labor and Industries or the city with jurisdiction. It is the customer's responsibility to request this inspection with the appropriate agency.

Local inspecting agencies can be contacted at the following numbers:

- Washington State Department of Labor and Industries ..... (360) 896-2350
- City of Vancouver (within Vancouver city limits) ..... (360) 619-1200

How to contact Clark Public Utilities

Located inside the front cover of the handbook is a listing of Clark Public Utilities' contact phone numbers. This list also includes phone numbers for other construction related contacts.

To initiate a request for new service or to ask a question about an existing construction project, call our Construction Services department at (360) 992-8558.

Jobs are scheduled for connection once the project has been inspected and the customer has completed backfilling the trench. Contact the Operations department at (360) 992-8839 for current construction scheduling.

Online applications for service, a copy of this publication, and additional information can be found on the Clark Public Utilities website: **www.clarkpublicutilities.com**.

For general billing questions regarding existing electric or water service accounts, please call our 24-hour customer service line at (360) 992-3000.

CHAPTER 2

Residential Electric Service General Information

Definitions

For the purpose of electric service installation, Clark Public Utilities defines a **single-family residence** as a structure that is:

- Located on a lot zoned for residential use.
- Approved for occupancy as a permanent, single-family residence by the local governing agency or agencies.

A mobile or **manufactured home** is considered a single-family residence if it meets the above criteria, and:

- Is permanently located on a foundation.
- Has all wheels and axles removed.
- Meets all other requirements of a manufactured home placement permit as required by the local governing agency or agencies.

An **outbuilding** is a stand-alone structure that is located on residential property and is ***not*** a living space. Typical outbuildings are barns (agricultural buildings), pump houses, garages, shops and storage sheds. Services to single-family residential use outbuildings are required to satisfy all requirements found in this handbook, the **National Electric Code (NEC)** and at the local inspecting office.

Subdivisions and ***short plats*** with three or more residential building lots require a subdivision design from a Clark Public Utilities approved design firm. Call our Construction Services department at (360) 992-8558 for additional information on subdivisions and short plats.

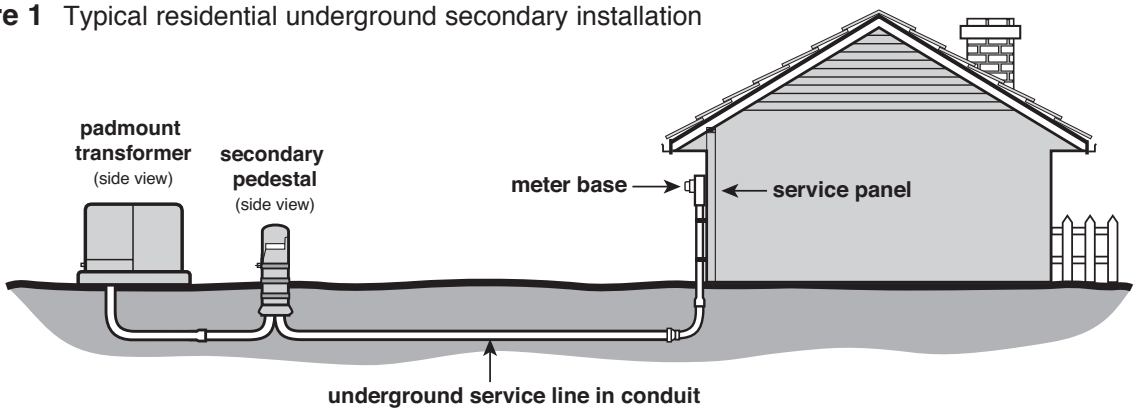
Service installation responsibilities

Installing a new electrical service to a residential structure is a cooperative effort between the customer and Clark Public Utilities in which both share responsibility.

Clark Public Utilities is responsible for:

- Designing an electrical service based on Clark Public Utilities' construction standards that best suits the customer's needs.
- Applying for right-of-way trenching and crossing permits within Clark County unincorporated (see customer responsibilities within city limits), and all crossings of state highways. Fees for these permits will be added to the customer's Clark Public Utilities construction bill.

Figure 1 Typical residential underground secondary installation



- Connecting the inspected and approved service.
- Setting the electric meter in a customer-installed and maintained meter base.

Customer is responsible for:

- Requesting electrical service and establishing an electric account.
- Hiring a utility-approved electrical contractor to supply and install all required primary (high voltage) electrical equipment based on the utility-provided electrical design. See ***Chapter 4, Primary Line Extensions*** for more information.
- Obtaining right-of-way trenching and crossing permits inside any city limits.
- Notifying the underground locating service center and other utilities of the project ***before*** any digging or excavation.
- All trenching related to the installation.
- Installation of secondary service including meter equipment, secondary pedestal (as required), conduit and conductor ***(Figure 1)***.
- Terminating the conductors in the meter base.
- Maintaining electrical equipment safety clearances for both existing and new installations of primary and secondary equipment.
- Obtaining electrical wiring permits and inspections from state or local ***municipalities***.
- Maintaining electrical equipment on the customer (load) side of the meter. See ***Ownership and maintenance responsibilities*** below.
- Keeping the meter base accessible to Clark Public Utilities personnel.

Ownership and maintenance responsibilities

Once the new service passes electrical inspection, is backfilled by the customer and has been energized by the utility, Clark Public Utilities assumes ownership. The utility is then responsible for repairing and maintaining the secondary electric service from the utility ***source*** to the meter.

All electrical equipment and wiring on the customer (load) side of the meter (including service entrance conduit of an underground service, and the ***service mast*** of overhead services) is owned and maintained by the customer. The customer is responsible for facilitating any necessary repairs or changes to the meter base, CT ***enclosure***, weatherhead and electrical panel.

Electrical system types

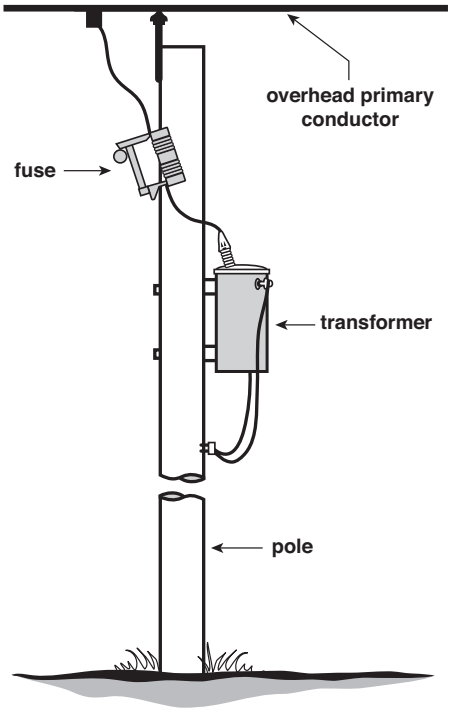
Clark Public Utilities' electrical system consists of both overhead and underground facilities. If the power system is overhead, a series of poles similar to ***Figure 2*** will be visible. If the power system is underground, facilities like those in ***Figure 3*** will be found.

After the initial request for service has been processed, a representative from Clark Public Utilities will advise the customer of the source for the new electric service. This source facility will be one of the following:

- Pole-mounted ***transformer***
- Padmounted transformer
- ***Secondary pedestal***

NOTE: Existing utility poles without transformers may also be a source that requires the installation of an overhead transformer. Costs for additional facilities will be added to the customer's Clark Public Utilities construction bill.

Figure 2 Overhead facilities

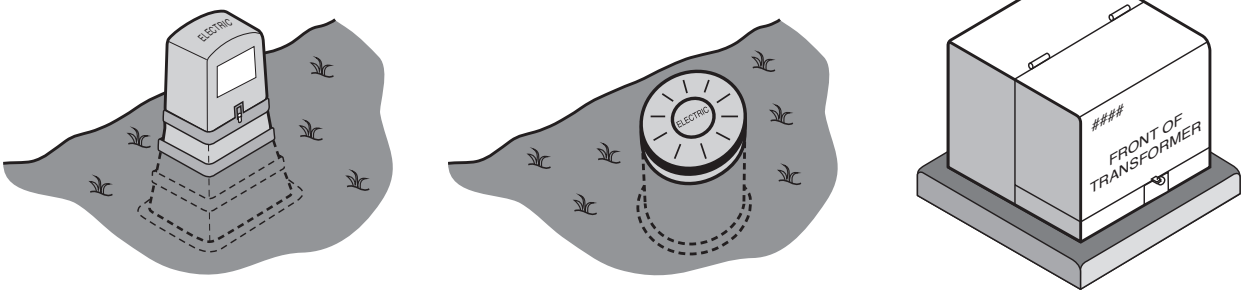


Starting the installation process

Setting up an account

A billing account will be established at the time the customer calls to request new electric service or completes and submits the *New or Altered Electric Service Worksheet* found on page 55 in the appendix of this handbook.

Figure 3 Underground facilities



Construction Services can be reached at (360) 992-8558. The Construction Services representative will ask for billing information and the address for new service. If a job will require a ***temporary service***, the Construction Services representative can discuss the appropriate options. See ***Chapter 6, Temporary Services*** for more information.

The following questions will help determine the best electrical design to suit the customer's needs:

- What is the ***Assessor's Parcel Number (APN)***?
- What type of residential building will this electrical service serve (home, barn, shop, etc.)?
- What is the building's square footage?
- What type of electrical or gas appliances will be installed (furnace, heat pump, air conditioning, water heater, etc.)?
- What size service panel will be installed?
- When will the service be ready for connection?

Service voltage

The utility offers 120/240 volt, 3-wire systems for single-phase residential service. Customers who are interested in a residential three-phase service can contact Clark Public Utilities' Construction Services department at (360) 992-8558 for more information.

Service sizes

Clark Public Utilities offers several service sizes for single-family residential structures and outbuildings. The service size required depends upon the size of the home and the power requirements of the equipment being installed. ***Table 1*** explains the common service sizes.

Service less than 200 amps

Table 1 Common service sizes

Voltage	Ampere Rating	Typical Use
120/240	Less than 200 amps	Common for shops and other outbuildings
120/240	200 amps	Small and medium size homes (most common service size)
120/240	320 or 400 amps	Large or medium size homes with an additional residential structure (shop, barn, etc.)
120/240	Over 400 amps	Very large homes with additional residential structures

A single-family residence may have a service panel that is sized less than 200 amps. In these cases, the utility will provide a design requiring a service line and meter base that is sized to provide up to 200 amps of service.

Selecting a meter base location

The meter base and associated devices (CT enclosure, etc.) must be attached to a permanent fixed structure that contains the load being served (such as a house). This location is to remain accessible to Clark Public Utilities and meet all of the following requirements:

Approved meter base and CT enclosure locations are:

- Outside.
- On the ground floor, with the center of the meter 5 to 6 feet above finished grade (5 feet preferred).
- On the front one-third of the home, closest to normal public access.
- In an area that is ***not*** subject to being fenced-in. Patios, decks, porches, breezeways and backyards are not approved new service locations.

These approved locations allow Clark Public Utilities to:

- Read the meter in a cost-effective manner.
- Maintain the ***metering equipment*** efficiently.
- Disconnect the electrical service quickly in case of emergency.

NOTE: See *Chapter 5, Residential Meter Installation* for more information.

Trenching

The customer is responsible for digging the electric service trench, installing a continuous conduit run and the service conductor (wire). The customer backfills and compacts the trench after required inspections have taken place. The exception is trenching that occurs within public right-of-way or on property not owned by the customer. **Only licensed and bonded contractors, hired by the customer, may perform work within the public right-of-way or on neighboring property.**

For additional trenching information, see *Chapter 3, Underground Secondary Services* and *Chapter 4, Primary Line Extensions*.

Locating and notifying underground utilities

Locating existing underground utilities

State law requires that the customer call the underground utilities locating service at least two full business days (48 hours) before trenching or excavating to install new underground electric service. Customers within Clark County can call the national ***"Call Before You Dig"*** number, 811, or 1-800-424-5555. One call to

the locating service notifies all utilities that locates have been requested.

Underground electric distribution and service lines owned and maintained by Clark Public Utilities will be located. This service is free of charge.

The customer is responsible for facilitating locates of customer-owned underground electric lines installed behind the meter. ***Table 2*** shows the color code for marking the location of each utility.

NOTE: Any digging within 24 inches of location marks must be done by hand.

Table 2 Color codes for locating underground utilities

Color	Underground Service
Red	Electric
Yellow	Gas, Oil, Steam
Orange	Telephone, Cable TV
Blue	Water
Purple	Reclaimed water
Green	Sewer
Pink	Temporary survey marks
White	Proposed excavation

Notifying other utilities about new electric service installations

New construction typically involves the installation of telephone lines, cable television cables, and natural gas lines, as well as electric power cables. It is the customer's responsibility to notify each utility about the intended electric service installation.

Joint use facilities

Joint use describes a group of utilities that share pole space or trenches in an effort to keep installation and maintenance costs lower for the customer.

Overhead joint use

Whenever an existing Clark Public Utilities power pole is replaced or an overhead service is converted to underground and the pole has joint users attached, the pole will be abandoned (left on site) to the remaining joint users on that pole. The utility has no authority to remove or relocate other utilities on the pole. It is the customer's responsibility to contact all joint use utilities for conversion of their services and to coordinate the removal of the pole(s) ***prior*** to the beginning of the project.

Joint use trench

The customer may place telephone or cable television facilities in a trench with electric service conductors, providing the installation meets the requirements of Clark Public Utilities and all other parties sharing the trench. In certain cases, natural gas and water pipes may be installed in a common trench. See ***Chapter 3, Underground Secondary Services*** for additional trenching information.

NOTE: Sewer lines, water mains and storm drainage systems are not allowed in a joint trench with Clark Public Utilities' electric service lines.

Conduit

All new underground electric services to a single-family residence require a continuous run of 3-inch, schedule 40, PVC, gray, electrical conduit from the Clark Public Utilities source to the customer's meter base. Services over 400 amps may require a larger conduit to be installed. A utility representative will advise on the size of conduit required.

Customer-owned electric services on the customer (load) side of the meter fall under the jurisdiction of the Washington State Department of Labor and Industries or the City of Vancouver. Contact the local governing office for additional information on the conduit requirements for customer-owned electric services.

Work clearances around transformers

A minimum of 10 feet of clear, level, working space is required in front of a padmounted transformer, three feet from the back and sides. This allows utility personnel enough room to perform transformer switching (rerouting of high voltage power) and maintenance. Landscaping, fences and other obstructions must not encroach on these ***clearances***.

Additional information about clearances around padmounted equipment and transformer placement can be found in ***Chapter 4, Primary Line Extensions***.

Electrical work on the customer side of the meter

All electrical equipment and wiring on the customer (load) side of the meter (including the service mast of an overhead service) is owned and maintained by the customer. The customer is responsible for facilitating all repairs, upgrades or changes to customer-owned electrical equipment. Utility personnel are not allowed to perform any work on the customer (load) side of the meter base.

The homeowner may request a disconnection of service to allow electrical work inside their meter base or home. It is the customer's responsibility to ensure the project complies with all federal, state and local codes that apply. The local inspection agency requires that the customer obtain an electrical work permit prior to starting the project and that this permit is posted at the job site while the work is being done. All electrical work performed on customer equipment requires an electrical inspection from the inspecting agency with jurisdiction

(Washington State Department of Labor and Industries, or City of Vancouver). When adding load to an existing service the utility will disconnect the service and/or remove the meter allowing the customer or electrical contractor to make the final terminations inside a ***self-contained*** meter base, prior to the electrical inspection. After the work is complete, and has passed inspection, Clark Public Utilities will re-energize the service.

NOTE: Only authorized Clark Public Utilities personnel shall unlock, remove and re-install meters.

Modified services

If an existing service wire has to be removed, relocated or upgraded, the request becomes a "modified service" and requires review by the Engineering department. Charges may be applied for upgrades to services. The Construction Services representative will help determine if the job is a modified service request.

NOTE: Existing overhead services that are to be relocated or upgraded may require conversion to an underground service.

Cost for service

Charges vary depending on the location of existing electrical facilities, the size of service requested and the type of metering required. Following, is a brief description of the charges that may be applied to residential electric service requests. These charges are subject to change. Contact Clark Public Utilities' Construction Services department at (360) 992-8558, email at contruction@clarkpud.com, or visit our website **www.clarkpublicutilities.com** for verification of current charges. Electric service requests on file longer than six months will require updates to existing charges.

System development charge

This charge covers costs incurred by the utility to increase the capacity of the existing Clark Public Utilities electric distribution system. Charges are based on the panel size of the new service, or the added panel capacity of an altered service

Service panel changes and upgrades may also require payment of the system development charge.

Miscellaneous construction charges

New and upgraded services that require an extension of primary facilities or upgrades to existing secondary or primary facilities may have additional charges applied. These charges cover the costs of labor and materials used to modify the utility's existing system when connecting additional services or load. A utility representative will evaluate the job site and advise of any miscellaneous construction charges that may apply.

Residential current transformer (CT) metering charge

Services greater than 400 amps require CT metering. This type of metering system requires prior ***approval*** from a ***Clark Public Utilities representative*** and is available at an additional charge.

Temporary services

Metered temporary service

This type of temporary service is metered and requires an electrical inspection prior to connection by Clark Public Utilities. The customer provides and installs the meter base, conductor and paneling as required by the local governing office. This service can be used for residential, commercial and multifamily applications.

NOTE: Please see ***Chapter 6, Temporary Services***, for more information.

Permits

Clark Public Utilities will process and apply for all right-of-way trenching or crossing permits required for job sites within unincorporated Clark County. Fees for these permits vary depending on the requirements of the job site and will be added to the customer's construction billing. If the job site is within any city limits, it is the customer's responsibility to apply for and secure the required permits.

Visit our website, www.clarkpublicutilities.com, or contact a Clark Public Utilities representative regarding questions about construction fees or to access a listing of current charges.

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CHAPTER 3

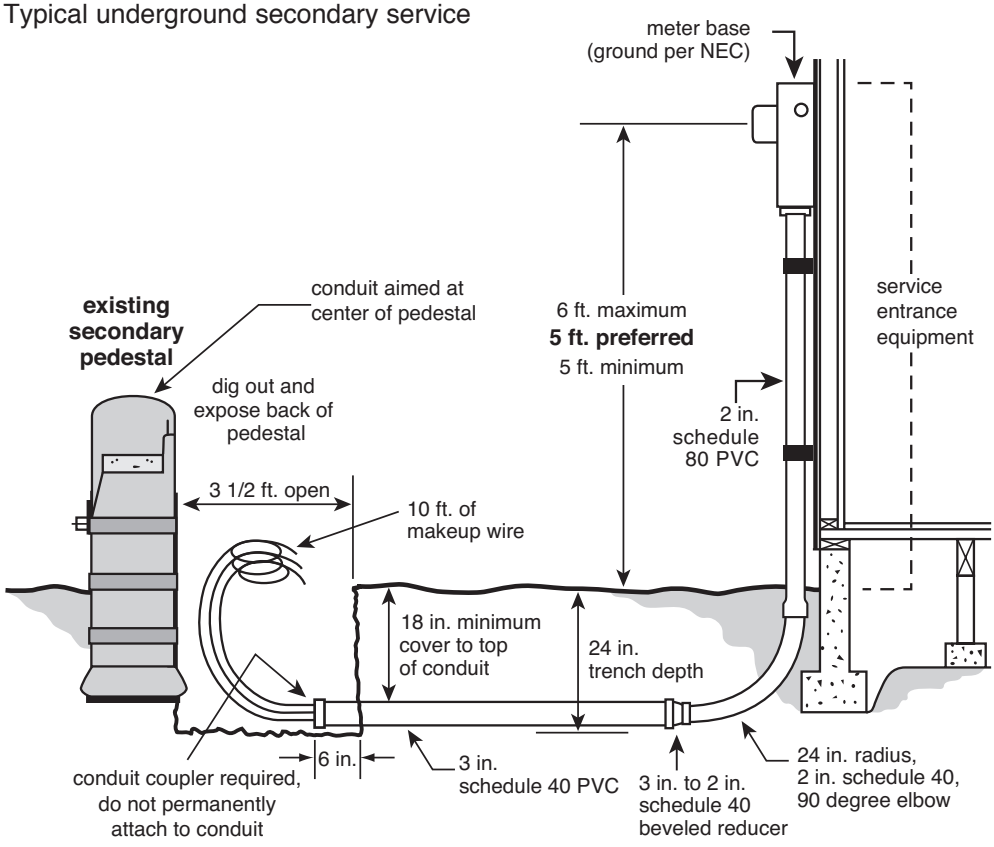
Underground Secondary Services

Preparing for the installation

Typically, an extension of secondary 120/240 volt electrical service is all that is required if less than 200 feet of ***secondary voltage*** wire is needed to connect the meter base to a transformer. For homes with large motor loads such as multiple heat pumps or dryers, air conditioning units, etc., this distance may be less. All single-family residences not located within 200 feet of existing primary require an underground primary line extension to place a transformer closer to the structure. See ***Chapter 4, Primary Line Extensions***, for more information on this type of installation.

The following checklist will assist in preparing a project for the installation of secondary underground electric service. After these items have been completed, Clark Public Utilities will connect the service and set the meter ***(Figure 4)***.

Figure 4 Typical underground secondary service



To obtain new underground electric service, the financially responsible party is asked to:

- ❑ Contact Clark Public Utilities' Construction Services department at (360) 992-8558 to initiate a request for electric service.
- ❑ Provide the following information requested by Construction Services to create a job:
  - Site plan ***(Figure 5)***
  - Assessor's Parcel Number (APN)
  - Existing easement information regarding utilities
  - Square footage of the home or outbuilding
  - Electrical panel size or load information
  - Heating and cooling equipment type and size
- ❑ Obtain an electrical work permit from the Washington Department of Labor and Industries (360) 896-2300 or from the City of Vancouver (360) 487-7802.
- ❑ Call the national "Call Before You Dig" locating service by dialing 811, or 1-800-424-5555 to determine the location of existing underground utilities.
- ❑ Obtain an electric service design from a Clark Public Utilities' representative.
- ❑ Pay any pre-billed utility construction charges.
- ❑ Trench to the utility's source facility as indicated by the utility provided design.
- ❑ Install a continuous conduit run from the Clark Public Utilities source to the customer-owned meter base ***(Figure 4)***.
- ❑ Install the underground service equipment from the service entrance to the appropriate electrical source.
- ❑ Obtain an electrical inspection of the secondary service from the appropriate inspecting body (Department of Labor and Industries or the City of Vancouver).
- ❑ After inspection and approval, backfill the trench leaving 3½ feet open at the transformer or secondary pedestal (6 inches of conduit end exposed, see ***Figure 4***). ***Do not*** cement the conduit coupler on conduit end.

NOTE: The electrical inspector will notify Clark Public Utilities after the service has been approved.

Once Clark Public Utilities has received verification of approval, all of the above items are completed and the customer has completed backfilling the trench, the utility will:

- ▶ Energize all electrical facilities required.
- ▶ Connect underground secondary wire at the source.
- ▶ Set the electric meter at the structure.

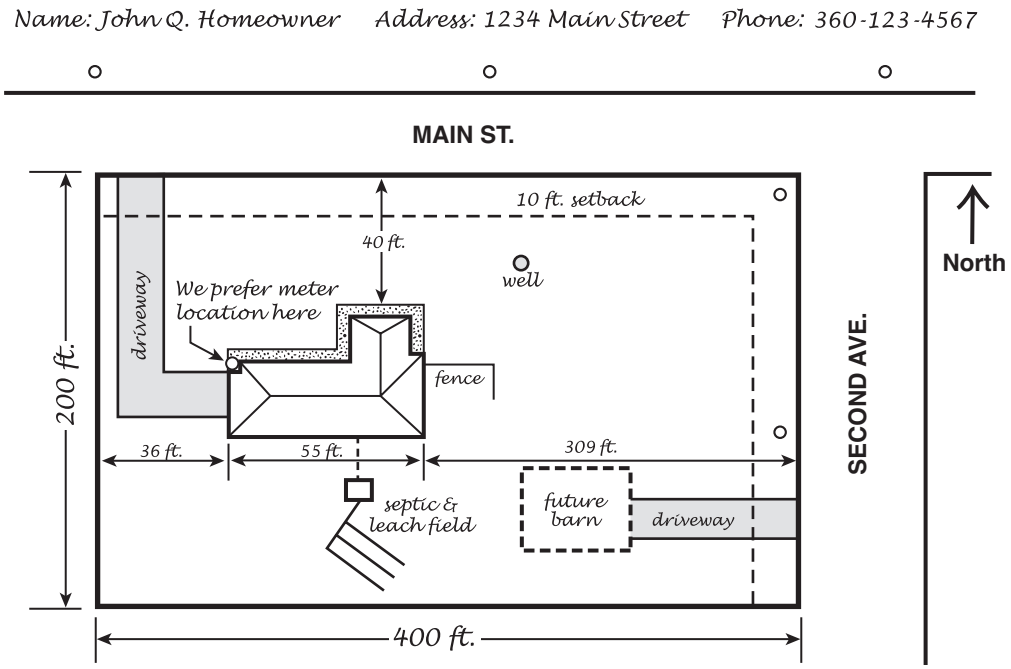
Site plan

Before a utility representative visits the job site, a customer-provided site plan is required ***(Figure 5)***. To ensure the new electric service is located and sized to serve all future needs, the site plan should include the following helpful information:

- Customer name and contact phone number
- Site address
- Drawing of property, shape and dimensions
- Streets and intersection nearest property
- Driveway location
- Residential structure location and dimensions
- Well, septic and leach field locations
- Setbacks and existing easements
- Future buildings
- Existing poles or transformer
- Possible locations of new transformer and meter

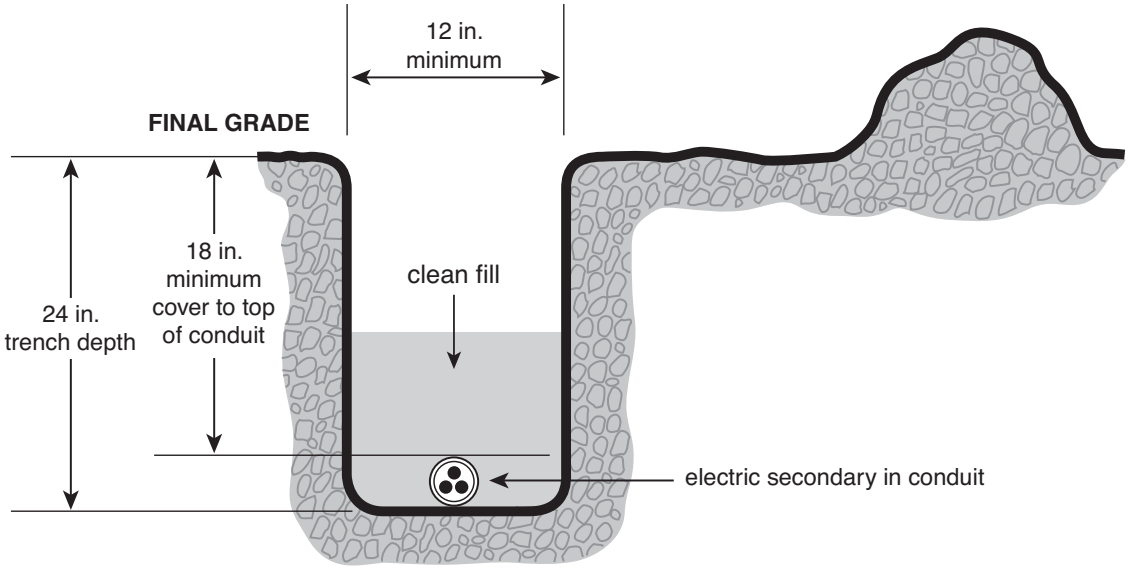
NOTE: Installation of a base rock driveway and staking of the main structure may be required prior to the site visit.

Figure 5 Typical customer-provided site plan



NOTE: Customer to stake property corners, location of house or mobile home, well, septic system and future structures.

Figure 6 Secondary electric service trench detail



Secondary electric service trenches

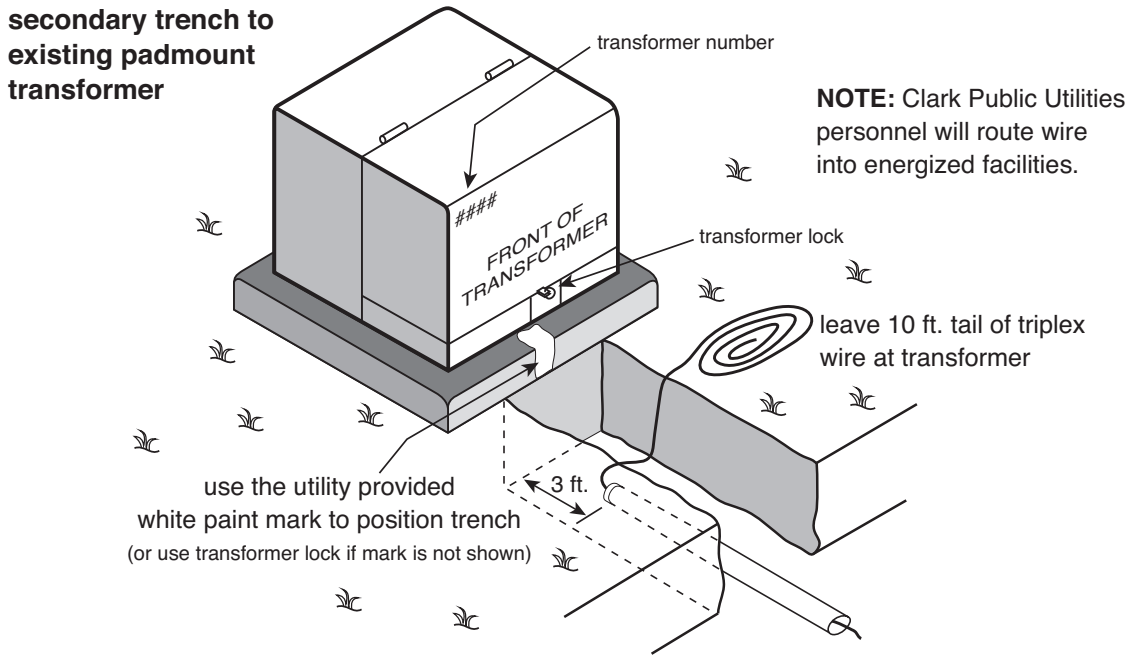
Trench and backfill requirements for secondary electric service

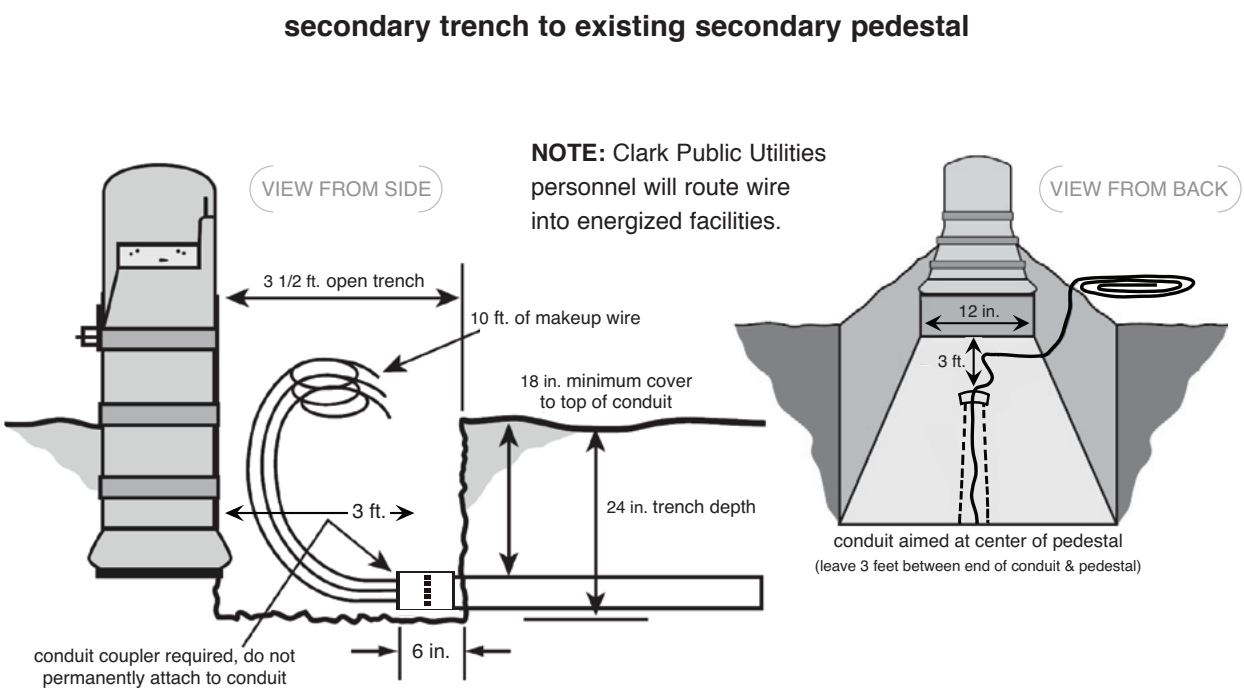
The customer is responsible for all trenching and backfill from the Clark Public Utilities electrical source to the residential service entrance. The exception is trenching that occurs within the public right-of-way or on property not owned by the customer. ***Only licensed and bonded contractors hired by the customer may perform work within the public right-of-way or on neighboring property.***

The following steps are required prior to connection of service:

- Call for underground locates at least two business days prior to any digging or excavation by dialing 811 or 1-800-424-5555.
- Dig secondary voltage electric service trenches 24 inches deep allowing a minimum of 18 inches of cover from the top of the conduit ***(Figure 6)***.
- Ensure the width of the trench is a minimum of 12 inches.
- Dig trench completely up to the edge of Clark Public Utilities' source facility ***(Figure 7)***.
- Dig any trench within two feet of power company facilities by hand.
- Remove construction scrap material or trash of any kind from the trench.
- If soil is rocky, select ***backfill*** or a bed of sand may be required prior to conduit installation.
- Remove all water in electric service trenches prior to inspection by pumping or draining.
- *After* required inspections have taken place, backfill and compact the trench.

Figure 7 Typical secondary trenches to underground utility sources



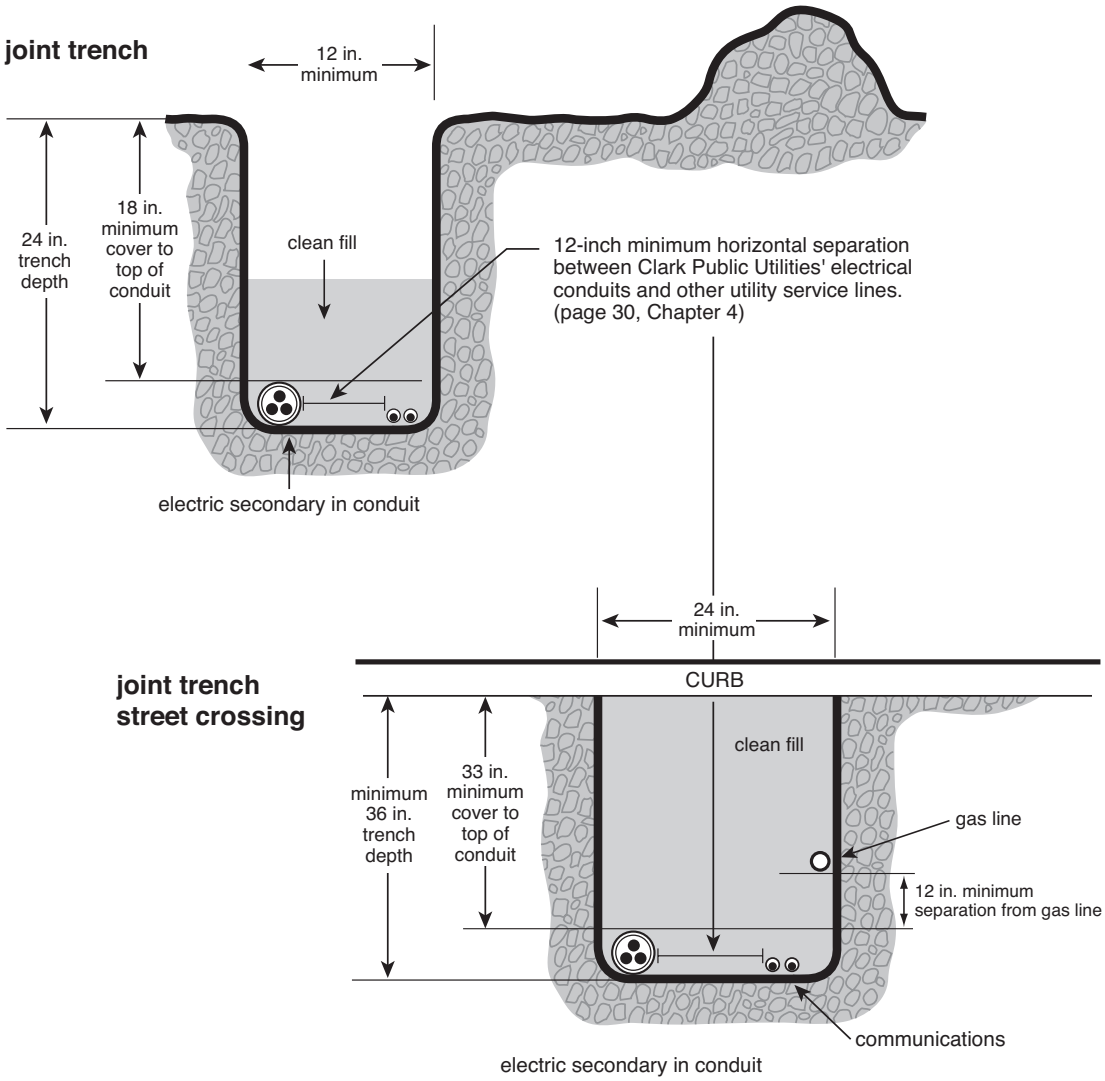


Joint trenches and crossings

Clark Public Utilities will allow a joint use secondary trench or crossing. It is the customer's responsibility to contact the appropriate phone, cable and gas utilities to coordinate the installation of their conduits and lines. The following requirements and minimum clearances from electric facilities ***(Figure 8)*** are necessary when utilizing a shared trench:

- All electrical service cables are in 3-inch, schedule 40, PVC, gray electrical conduit.
- Separation of utilities may be vertical or horizontal.
- Select backfill or controlled density fill (CDF) is used when deemed necessary by a utility representative.
- No construction scrap material or trash of any kind is left in any part of the trench or crossing.

Figure 8 Joint utilities secondary trench and street crossing



- A right-of-way (crossing) permit is secured from Clark County or Washington Department of Transportation (WDOT) for each crossing. Fees for these permits will be added to the customer's construction billing.
- All state and county road crossings shall meet the installation requirements outlined in the right-of-way permit issued by the authority having jurisdiction.

NOTE: Sewer lines, water mains and storm drainage systems are ***not*** allowed in a joint trench with Clark Public Utilities electric service lines.

Customer-installed secondary service conduit

New services to residential structures require a continuous run of conduit from the meter base to the Clark Public Utilities padmounted transformer, secondary pedestal or utility pole.

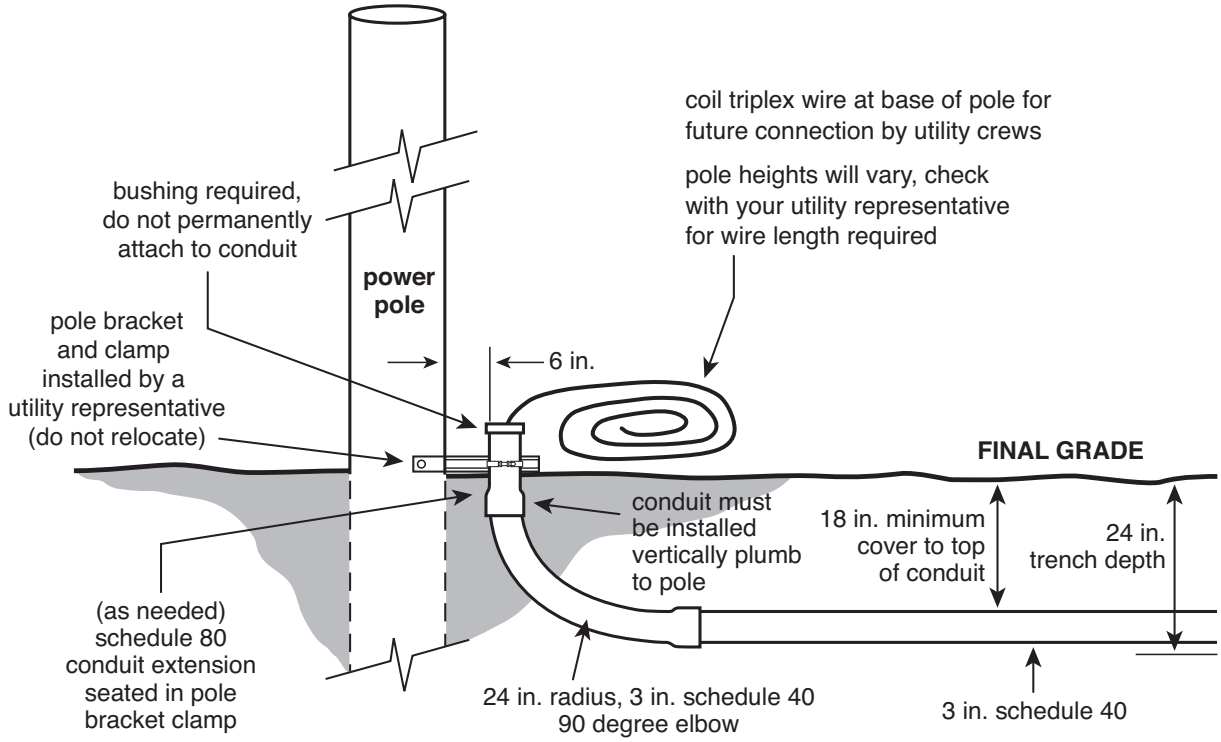
The buried conduit shall be 3 inches in diameter, gray, UL listed, electrical grade, schedule 40, PVC, conduit. ***White water pipe or green 3034/black ABS sewer pipe is not acceptable.***

All customer-installed underground conduit runs require:

- No more than three, 90-degree bends (270 degrees) of which no individual bend is less than a 24-inch radius. This total includes the elbow into the source facility.
- Factory-made elbows for all bends (heat bending conduit is not acceptable).
- Smooth-walled, beveled, conduit reducers as shown in ***Figure 4***.
- PVC cement applied to each joint that has been allowed to cure according to the manufacturer's recommendations prior to backfill.
- Exposed conduit from grade to the base of the customer meter base is 2 inch schedule 80, PVC.
- Parallel runs of conductor installed in separate conduits for each service line.
- Conduit runs stop 3 feet from energized underground facilities with 6 inches of conduit exposed as shown in ***Figures 4 and 7***. The remaining trench, up to the side of the source facility, is to remain open and clear until a utility representative routes the conductor in and makes the final connection.
- A conduit coupler attached to the conduit end but not permanently affixed ***(Figures 4 and 7)***.
- Services to utility poles to be a continuous run of conduit with a 3-inch, 90-degree, 24-inch minimum radius, schedule 40, PVC elbow, seated in the standoff bracket attached at the pole base. See ***Figure 9*** on page 20 of this chapter.

Customer-owned electric services on the customer (load) side of the meter fall under the jurisdiction of the Washington State Department of Labor and Industries or the City of Vancouver. The local inspecting office requires conduit sleeves if these services cross under permanent structures such as a driveway, sidewalk, deck, patio or retaining wall.

Figure 9 Secondary voltage overhead to underground pole bracket installation



NOTE: Trench depths vary; review your utility-provided design for required depth.

Additional trenching and conduit installation tips

The following general tips will help to ensure that projects run as smoothly as possible and may answer additional questions about trenching and installing conduit.

- Dig trenches in straight lines to the greatest extent possible.
- Schedule the trenching so the trench is open for the shortest practical time to avoid creating a public hazard and to minimize the possibility of the trench collapsing due to other construction activity, rain, etc.
- If any conduits, wires or pipes are encountered while digging, leave them covered.
- If rock or other extremely difficult digging is involved, contact your Clark Public Utilities representative to discuss the situation.
- Prior to backfilling, the appropriate jurisdiction will inspect the trench for adequate depth, conduit and cable placement. If corrections are necessary, a second inspection is required after all corrections are completed.
- After backfill, tamp the soil, leaving a slight mound to allow for settling.

When trenching a secondary service line to an energized Clark Public Utilities source, leave the trench, conduit and conductor as follows:

Secondary Pedestal

Trench.....24 inches deep, exposing the back or side of pedestal.

Conduit.....stopped within 3 feet of the pedestal with 6 inches of conduit exposed.

Secondary conductor.....to edge of pedestal leaving a 10-foot tail of wire for connection by utility personnel.

Transformer

Trench.....24 inches deep to white paint mark (provided by utility representative) on transformer pad.

Conduit.....stopped within 3 feet of the transformer pad with 6 inches of conduit exposed.

Secondary conductor.....to transformer leaving a 10-foot tail of wire for connection by utility personnel.

Utility Pole

Trench.....24 inches deep to pole bracket assembly attached at pole base.

Conduit.....continuous from meter base to customer provided 3-inch, schedule 40, PVC, 24-inch minimum radius elbow, seated in pole bracket clamp at base of pole ***(Figure 9)***. Utility personnel will attach the pole bracket assembly at required pole location. Do not relocate the bracket assembly.

Secondary conductor.....a wire tail to pole base, utility personnel will advise wire coil length required (varies based on pole height).

Secondary conductor and service entrance equipment

Secondary conductor specifications

Acceptable residential secondary conductor for utility-maintained services are 4/0 or 350 MCM aluminum, URD, triplex, standard or compressed stranding. The installation of COMPACT wire is ***not*** acceptable and will not be connected or energized by Clark Public Utilities.

Table 3 shows examples of the secondary conductor specified for typical residential installations:

Table 3 Residential underground secondary conductor

Panel Amps	Conductor Type
0 to 200 amps	4/0 aluminum, URD, triplex
201 to 400 amps	350 MCM or (2) 4/0 aluminum, URD, triplex
401 amps and larger	See utility personnel for details

Service entrance equipment

After the meter base location, service line route, and the size of the service have been determined, ***service entrance equipment*** can be installed. The ***exposed*** conduit from final grade to the bottom of the meter base is referred to by the utility as the service entrance conduit and is considered part of the customer-owned and maintained meter base.

Installation requirements

- Service entrance equipment may be installed either flush-mounted or surface-mounted. ***NOTE:*** Flush-mounted service entrance conduit cannot be installed inside a shear wall or within 4 feet of a structure corner ***(Figure 10)***.
- Install the meter base so that the center of the meter will be between 5 and 6 feet, with a preferred height of 5 feet above finished grade.
- The service entrance conduit has a maximum of one, 90-degree bend with a minimum 24-inch radius. ***NOTE:*** The total conduit run is restricted to no more than three, 90-degree bends (270 degrees total) of which no individual bend is less than a 24-inch radius.
- Do not install ***conduit bodies*** (LB joints, condulets) or other devices that allow access to the service conductor in the riser ahead of the meter.
- A ***current transformer (CT)*** enclosure, if required, is mounted on the outside of the structure it serves.

Service entrance conduit size

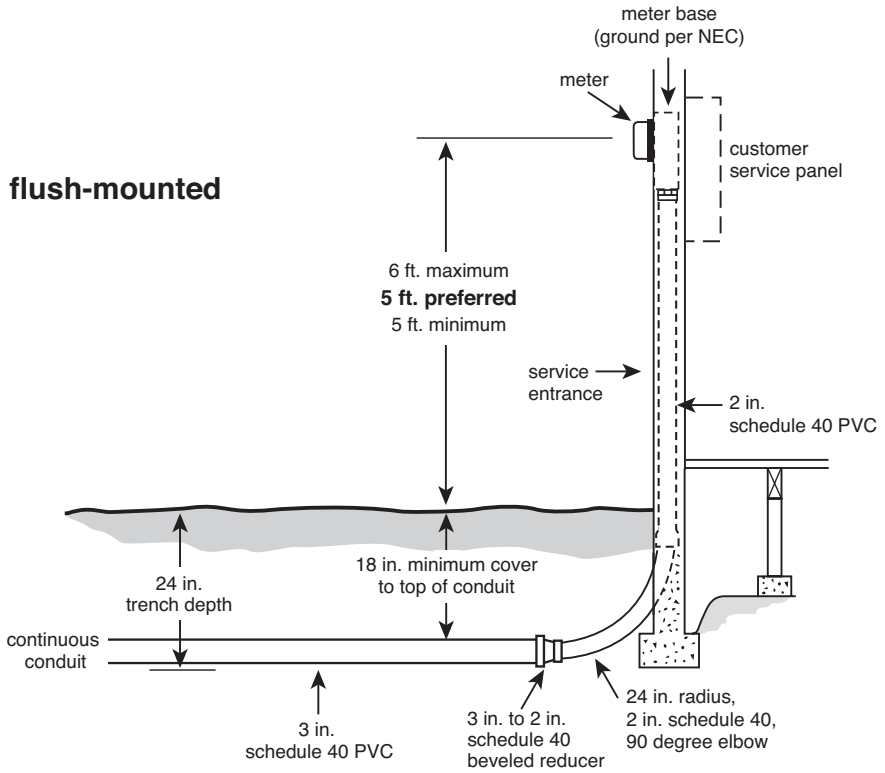
The size of service determines the size of the service entrance conduit installed. ***Table 4*** shows service entrance conduit sizes.

Table 4 Service entrance conduit sizes

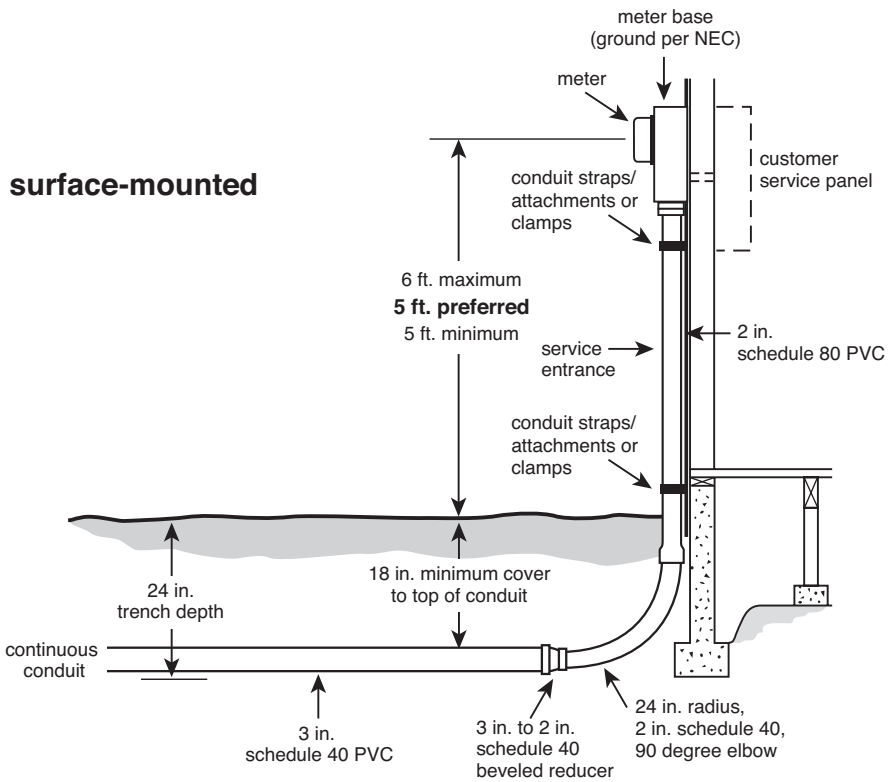
Service Size	Minimum Service Entrance Conduit Requirements
0 to 200 amps	2-inch, gray, schedule 80, PVC
201 to 400 amps (parallel 4/0 service line)	Parallel 2-inch, gray, schedule 80, PVC
201 to 400 amps (350 MCM service line)	3-inch, gray, schedule 80, PVC
Over 400 amps	3-inch, gray, schedule 80, PVC (parallel 3-inch conduits required for parallel runs of service line)

NOTE: Exposed conduit from final grade to the bottom of the meter base is referred to as the service entrance conduit.

Figure 10 Two types of meter bases for residential underground service



NOTE: Flush-mounted service entrance conduit cannot be located in a shear wall or within 4 ft. of a structure corner.



Secondary pedestals

New service installations may require a secondary pedestal set behind a transformer or at the base of a power pole. If required, utility personnel will stake the location of the secondary pedestal and install a pole bracket assembly at the pole base.

The customer is responsible for providing and installing the secondary pedestal and required tagging as shown in ***Figures 11 and 12***.

All secondary pedestal installations require a(n):

- 34-inch deep trench from pole base to the staked pedestal location.
- 36-inch radius long sweep elbow seated in the pole bracket clamp (bell end down, in trench) and a 24-inch short sweep elbow stubbed up inside the center of the pedestal.
- Coil of wire at the base of the pole (length and size of conductor as called out by utility personnel).
- Wire tag zip-tied onto each conductor, (including the neutral) terminated inside the pedestal. See ***Secondary conductor identification tags*** on next page and ***Figure 12*** for additional information.
- Insulating cover installed over each termination block.

Once the new service installation has passed inspection, all pre-billed charges have been paid, and the customer has completed backfill, the utility will energize the equipment and set the meter or temporary service.

Figure 11 Secondary pedestal installation detail

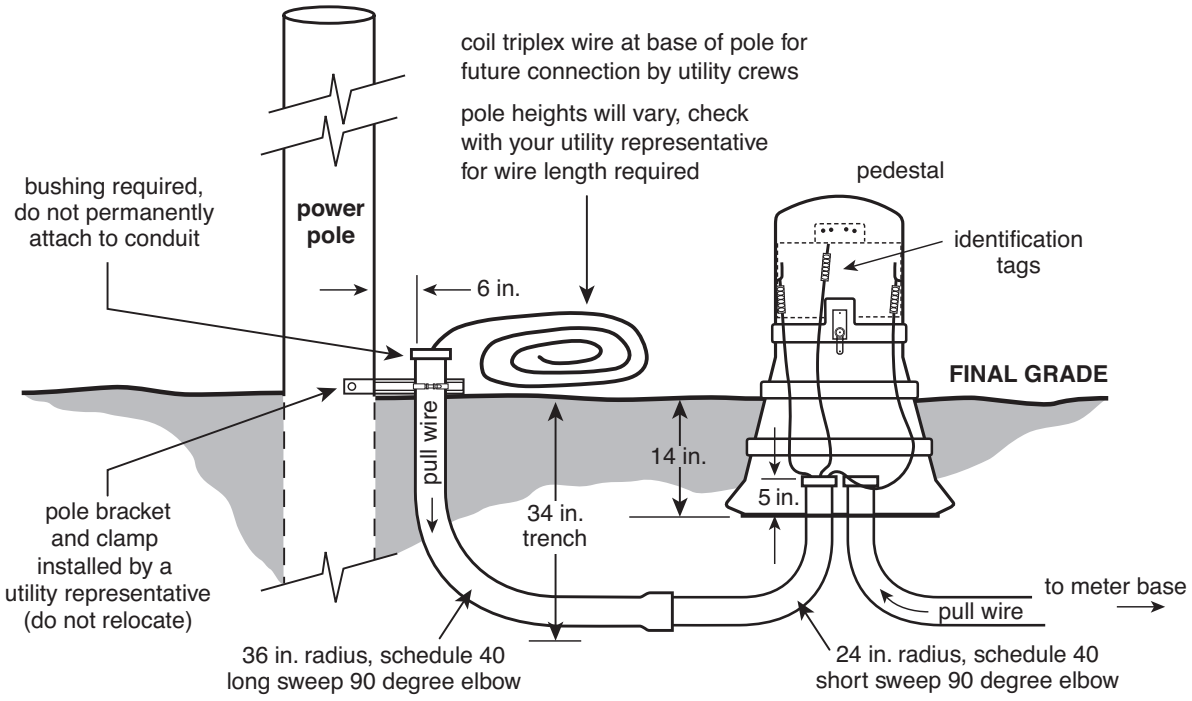
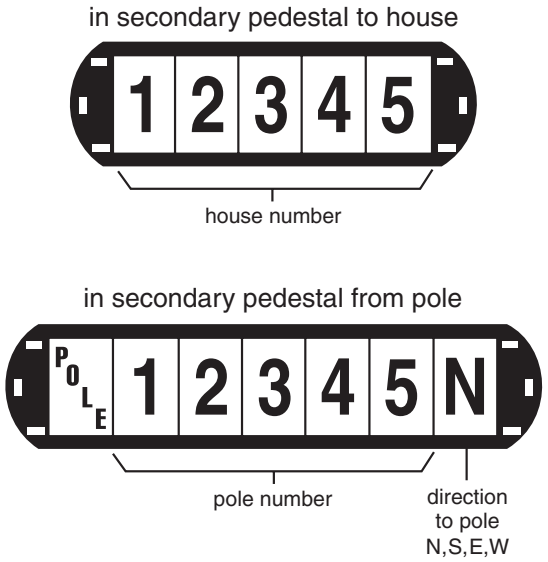


Figure 12 Secondary wire tagging



Secondary conductor identification tags

Clark Public Utilities requires the use of Tech Products brand tag holders with individual characters indicating the source equipment, its location, the equipment number and the address of the residential structure. Character holders installed inside a secondary pedestal fed from a source pole would include the following:

- From pole (or transformer): POLE character, pole number as indicated by utility personnel and direction (N, S, E, W) character.
- To house (or residential structure): House number characters.

NOTE: Wire tags are zip tied onto each conductor (including the neutral) just below the termination block.

Contact a utility representative for a current material suppliers' list and additional information on installation of a secondary pedestal and secondary conductor identification tags.

Permanent underground service for manufactured homes

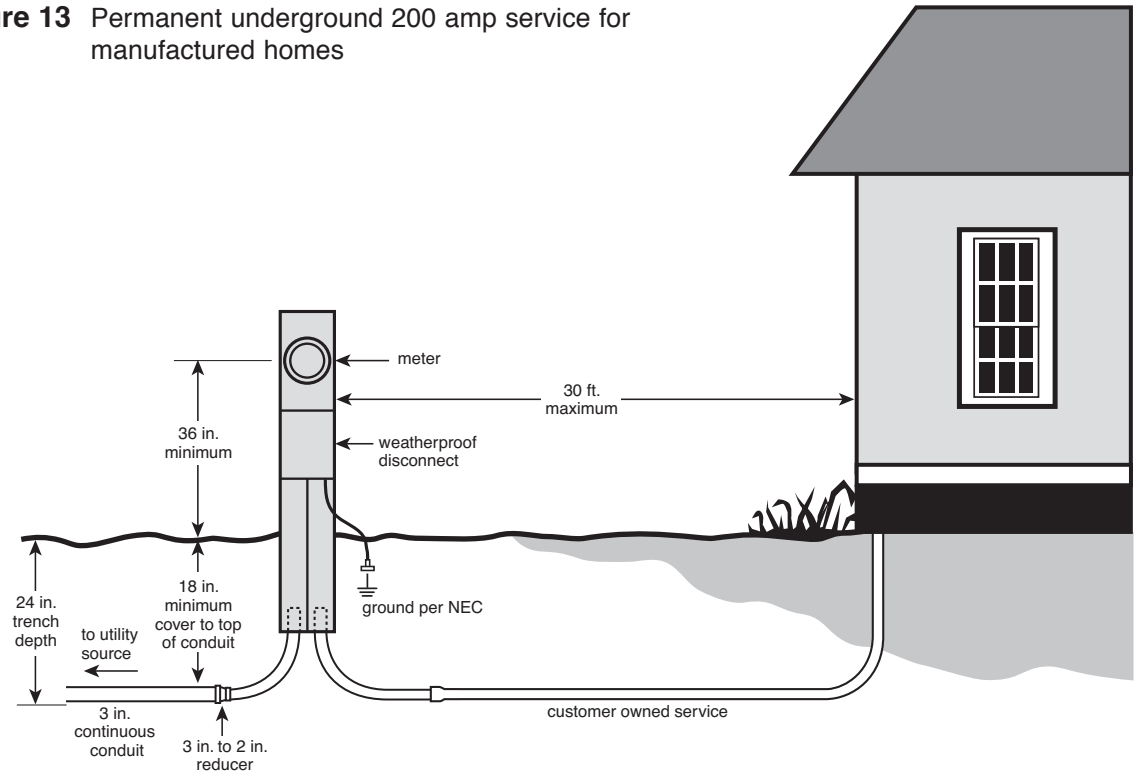
Service equipment installation

Services to manufactured homes are customer-owned and maintained from the service disconnect to the structure. When installing an underground service to a manufactured home, refer to the following general specifications ***and*** contact the local governing body for additional NEC requirements ***(Figure 13)***.

Meter pedestals installed for service to a manufactured home should:

- Have a service main with auxiliary breaker space (the most common size is 200 amps).
- Be located within 30 feet of the manufactured home but not attached to the structure (only factory-installed meter bases can be attached to manufactured homes).
- Have a 4-wire feed behind the meter pedestal (customer/load side) that supplies the manufactured home.

Figure 13 Permanent underground 200 amp service for manufactured homes



Residential leased lighting

Utility-leased area lights are installed by Clark Public Utilities and billed monthly to the customer. The monthly rate covers the capital cost of the equipment, energy used each month and maintenance of the light (re-lamping).

Leased area lights are installed on Clark Public Utilities' power poles located on private property of the requesting customer only. These lights are equipped with photoelectric controls (responding to light and dark) and cannot be manually turned on or off.

Leased lighting installation responsibilities

Customer is responsible for:

- Contacting the Construction Services department to initiate a request for leased lighting.
- Notifying the underground utilities locating service at least two business days prior to any digging or excavation.
- All trenching related to the installation.
- Installation of secondary service including conduit and conductor.
- Providing a 25-foot tail of duplex conductor coiled at the base of the pole.
- Contacting the utility to report lights that are out or not working properly.

Clark Public Utilities is responsible for:

- Providing the lighting service design.
- Installing the riser on the pole.
- Connecting the service inside the utility source (secondary pedestal or transformer).
- Installing a light tag on the pole.
- Re-lamping and maintaining the lighting service.

NOTE: Leased area lights installed at the entrance of a customer's driveway cannot be directed onto city or county roadways.

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CHAPTER 4

Primary Line Extensions

If a new residence's electrical service is not located within 200 feet of existing primary electrical facilities, a primary line extension is required to place a transformer close to the structure. Primary line extensions are underground facilities.

Installation responsibilities

Clark Public Utilities' construction policy requires the customer to hire a utility-approved electrical contractor to provide materials and install underground primary line extensions. A utility representative will provide a current list of Clark Public Utilities approved electrical contractors and a primary line extension design that shows the location of the new high voltage facilities.

The list of approved electrical system installation contractors is also available on the Clark Public Utilities' website at **www.clarkpublicutilities.com**.

NOTE: Only authorized Clark Public Utilities personnel shall unlock and route conduit or wire into energized electrical facilities.

Maintenance responsibilities

Once the primary line extension is energized by the utility, Clark Public Utilities takes over ownership of the high voltage line extension, transformer and secondary electric service to the meter base. The utility is then responsible for repairing and maintaining the electric facilities up to the service entrance equipment.

Inspection and coordination

Clark Public Utilities will send a utility inspector to the job site in response to the approved electrical contractor's request for primary inspections of the trench, conduit, conductor and equipment makeup. Any variances from the approved electrical design require prior approval from a Clark Public Utilities design representative before primary inspections can take place.

NOTE: The approved primary contractor is responsible for calling and requesting all primary inspections.

A primary line extension shall meet the following general requirements:

- All work is subject to the inspection and satisfaction of Clark Public Utilities.
- No work shall be backfilled, covered, or concealed until it has been inspected and approved by Clark Public Utilities' inspector.

- After passing all inspections, complete backfill of trenches is required before the job can be scheduled to test and energize the facilities. The customer is responsible for notifying Clark Public Utilities ***after*** they have completed backfilling the trench.

NOTE: If a primary line extension job includes a new secondary service, a utility representative will inspect the primary service and the local governing office (Washington State Department of Labor and Industries or City of Vancouver) will inspect the secondary service.

Site preparation

The following site requirements must be met before the installation of new residential service can begin:

- Primary design has been completed by Clark Public Utilities.
- The customer has hired an electrical contractor from Clark Public Utilities' current list of approved electrical contractors.
- All required permits have been secured (right-of-way, crossing, etc.).
- The site is at final grade or acceptable sub-grade in the area of construction.
- The trench route is clear of construction materials and any obstructions.

Primary trench

Trench depth and width

The minimum depth of a primary trench is 36 inches. A 42-inch depth is preferred. The maximum trench depth allowed is 48 inches.

The preferred primary trench width is 24 inches unless otherwise approved by utility personnel. The excavator may need to increase the trench width to accommodate other conduits and/or lines installed in a joint use trench. When increasing the trench width, remember to allow a minimum of 12-inch horizontal (side to side) separation between Clark Public Utilities' electrical conduits and other utility service lines.

Figure 14 illustrates the utility's width and depth requirements for residential primary line extension trenches with and without a natural gas service line.

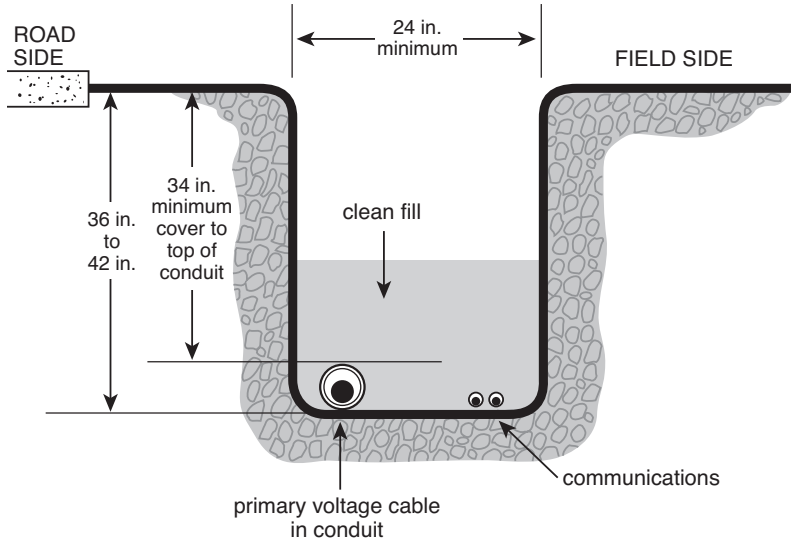
NOTE: Sewer lines, water mains and storm drainage systems are not allowed in a joint trench with Clark Public Utilities' electric service lines.

Trench excavating requirements

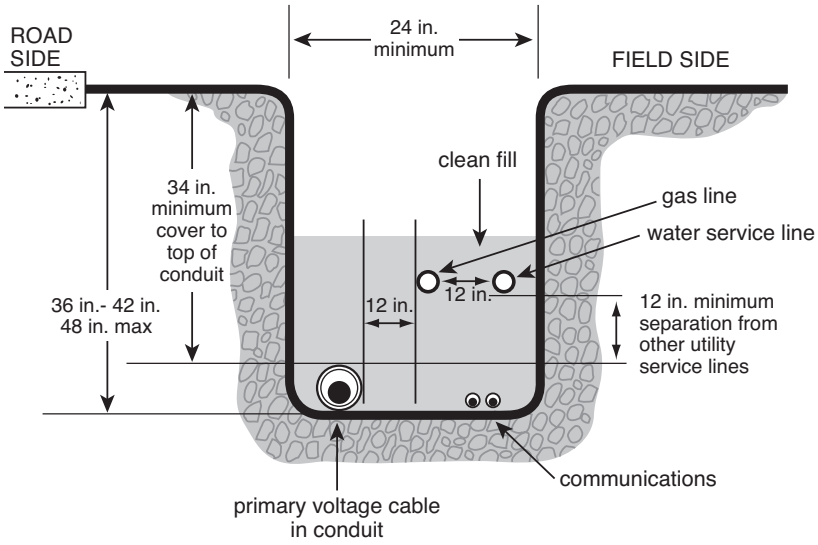
The following trench requirements must be met before primary power conduits can be installed:

Figure 14 Typical utility trenches with primary voltage cable

trench with primary voltage cable (no gas line)



trench with primary voltage cable, gas line and water service line



- Trenching in a public right-of-way or crossing under a public roadway requires a roadway use permit, applied for and issued to Clark Public Utilities by the governing jurisdiction. Fees for this permit will be added to the customer's construction billing. No work in the right-of-way shall be performed until this permit has been secured.
- All state and county road crossings shall meet the installation requirements outlined in the right-of-way permit issued by the authority having jurisdiction and Clark Public Utilities' electrical design.
- A licensed and bonded excavation contractor hired by the customer must perform all work in the road right-of-way and on property that is not owned by the customer.

- Any work in the public right-of-way must meet the erosion and sediment control requirements of the local jurisdiction.
- All electrical trenches shall be excavated according to the trench detail, and Clark Public Utilities' electrical design.
- The trench shall be straight and the bottom smooth, level, and free from rocks, obstructions and sharp objects.
- The customer shall remove all standing water in electric service trenches prior to inspection by pumping or draining.

Primary voltage conduit

Conduit for primary voltage cable is installed by a utility-approved electrical contractor hired by the customer. It is the electrical contractor's responsibility to contact Clark Public Utilities and request the conduit inspection.

The primary voltage conduit shall meet the following specifications:

- 2-inch diameter, or as specified on the electrical design.
- Electrical grade, UL listed, schedule 40, PVC.
- Gray in color.
- Conduit elbows installed as specified on the utility-approved electrical design. Install only manufactured radii. Heat bending conduit is not acceptable.
- No more than three, 90-degree bends (270 degrees total) allowed in the total conduit run. This total includes the elbow into the source facility.
- All conduit joints shall be permanently connected using PVC cement.

Trench and backfill requirements

Clark Public Utilities will not energize electrical facilities until all primary trenches are backfilled by the customer.

The customer is responsible for the following:

- Providing a minimum 4- to 6-inch layer of clean backfill (with rocks no larger than 5/8 inch and no sharp objects) placed above power conduit(s). The remaining trench shall be backfilled with soil that is free of rocks larger than 5 inches and any foreign objects.
- Allowing PVC cement to cure according to manufacturer's recommendations prior to backfill.
- Completing backfill as soon as practical after facilities are placed and inspected.
- Carefully placing backfill to prevent damage or movement of the conduit(s).
- Relocation costs due to change in grade or alignment.

Transformers

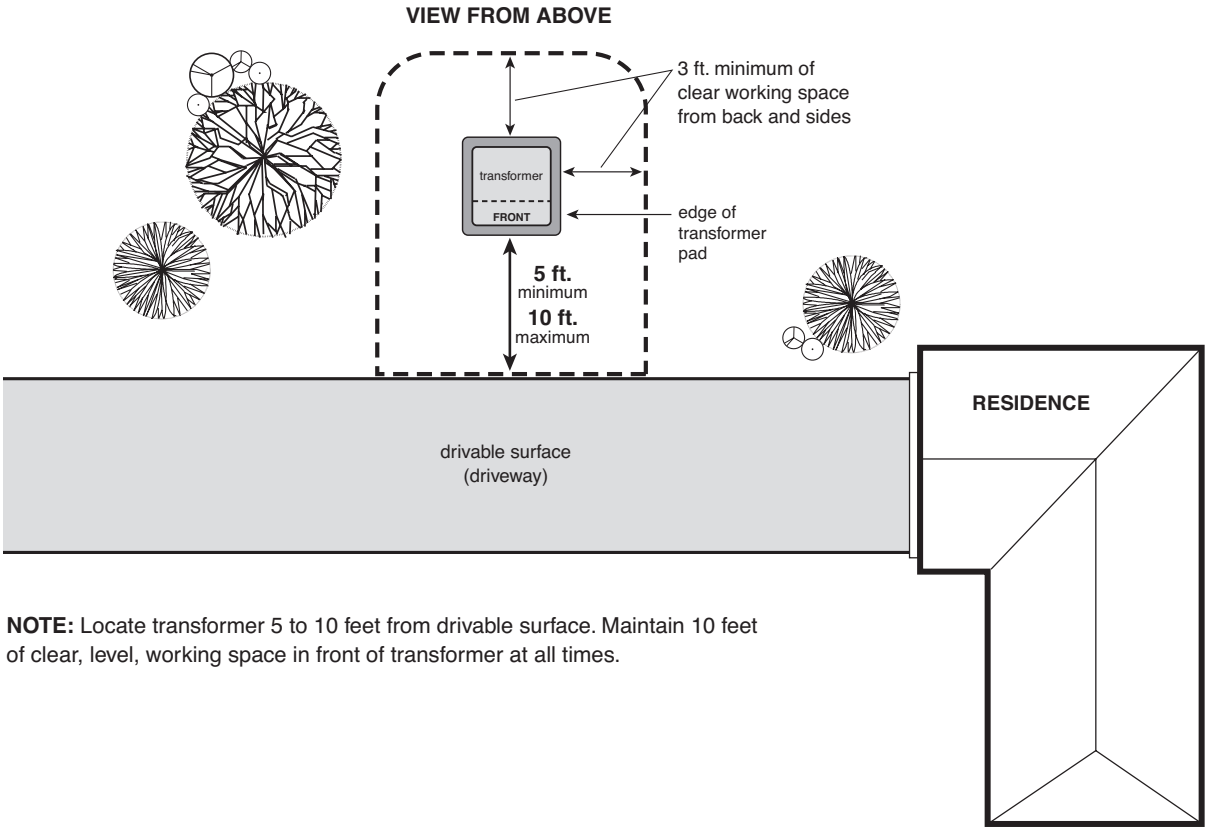
Transformer location and access

Underground electrical facilities must be readily accessible by the utility during construction and for future operation and maintenance. The area around padmounted electrical equipment should remain free from obstructions such as trees, shrubbery, poles, retaining walls, structures, fences, etc.

All transformers and padmounted equipment are to be located:

- Within 10 feet of a drivable surface but not closer than 5 feet.
- With the front of the equipment (door & lock side) facing toward the drivable surface.
- Allowing 10 feet of clearance in front and 3 feet from the back and sides of the equipment ***(Figure 15)***.

Figure 15 Residential padmounted transformer location and access



NOTE: Locate transformer 5 to 10 feet from drivable surface. Maintain 10 feet of clear, level, working space in front of transformer at all times.

Safety clearances around transformers

Clearances from padmount transformers to structures are measured from the nearest metal portion of the transformer to the structure or any overhang. The clearance from a building is 10 feet if the building has combustible walls (including stucco), and 3 feet if the building has non-combustible walls (brick, concrete, steel, or stone) as shown in ***Figure 16***. ***Table 5*** provides additional safety clearances that apply to any oil-filled electrical equipment.

Figure 16 Residential padmounted transformer minimum safety clearances

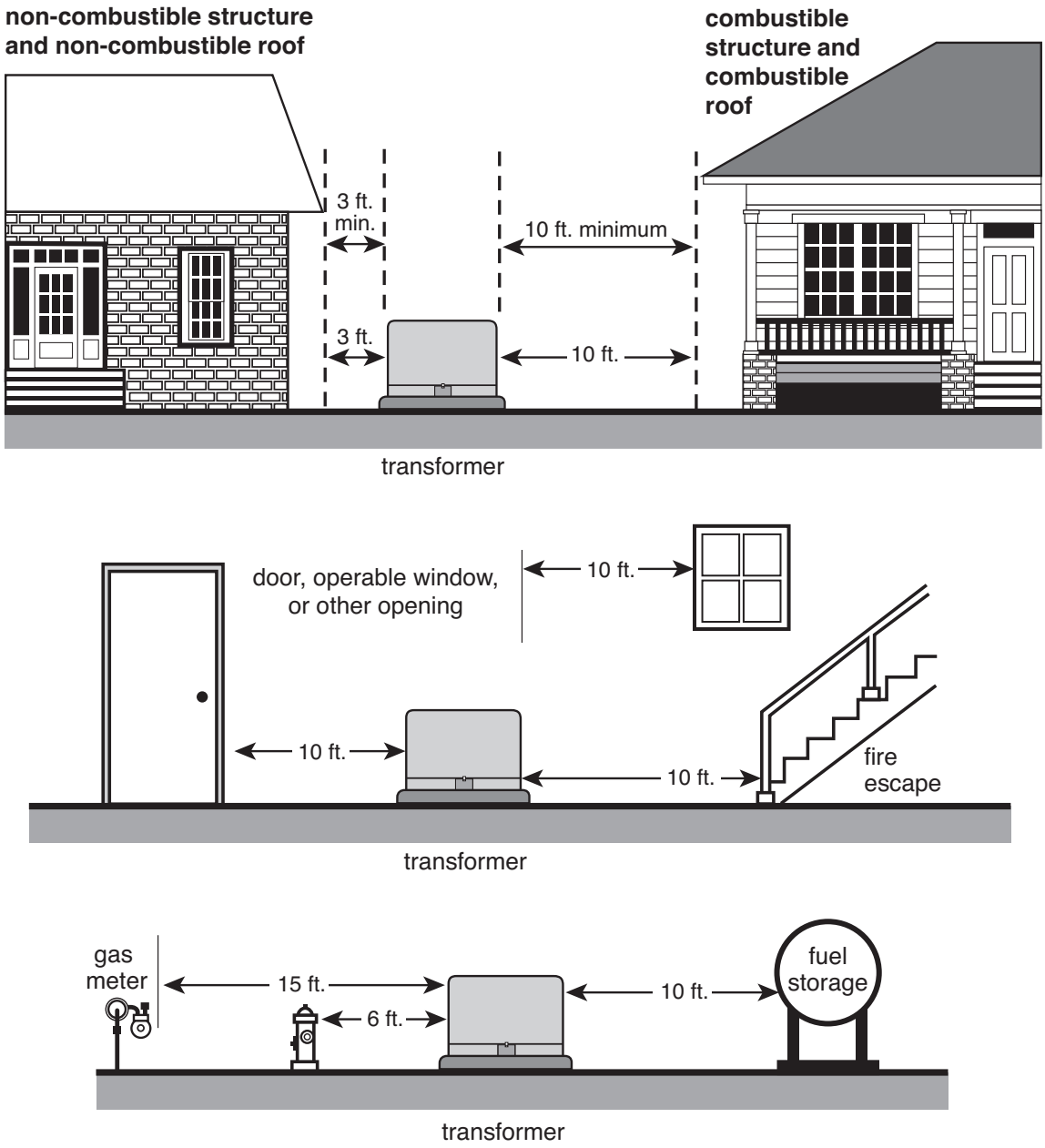


Table 5 Electrical equipment safety clearances

Feature	Clearance distance
Combustible walls or roof	10 feet
Non-combustible walls, (provided the side of the transformer facing the wall does not have doors or windows). Materials that pass UBC standard 2-1 or ASTM E136-79 are considered to be non-combustible	3 feet
Fire sprinkler valves, standpipes and fire hydrants	6 feet
Doors, windows, vents, fire escapes, and other building openings	10 feet
The water's edge of a swimming pool or any body of water	25 feet
Facilities used to store hazardous liquids or gases (e.g. fuel storage tank or fueling points)	10 feet
Gas service meters	15 feet

Guard posts

The installation of ***guard posts*** (bollards) may be required when transformers are exposed to vehicular traffic. It is the customer's responsibility to supply, install and maintain guard posts when required by Clark Public Utilities personnel. See *Figure 17*.

Materials and installation requirements:

- 5-foot by 4-inch galvanized or steel pipe.
- Set each post 24 inches deep.
- Fill posts with concrete.
- Posts set in stable soil are to be surrounded by 6 inches of concrete.
- Unstable soil or sand requires 12 inches of concrete surrounding each post.
- If several guard posts are used, locate them no more than 5 feet apart or as otherwise specified by a Clark Public Utilities' representative.

Hillside barriers

Transformers located on or against sloped terrain may require the use of a hillside barrier to protect the equipment from damage caused by erosion. A Clark Public Utilities' representative will visit the job site and advise when the use of a hillside barrier is required ***(Figure 18)***.

Changes in grade that occur ***after*** the site visit and electrical equipment have been installed may also require a hillside barrier. If the stability of the ground surrounding the transformer is compromised by changes to grade made by the customer, utility personnel will require the installation of a hillside barrier by the customer's approved electrical contractor.

Figure 17 Guard post (bollards) installation for residential transformers

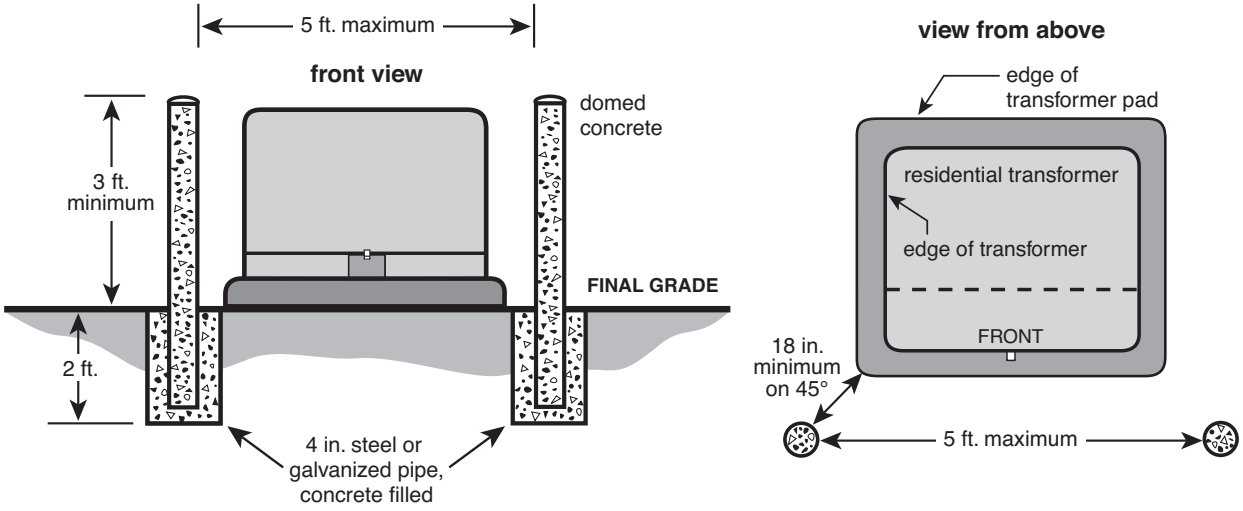
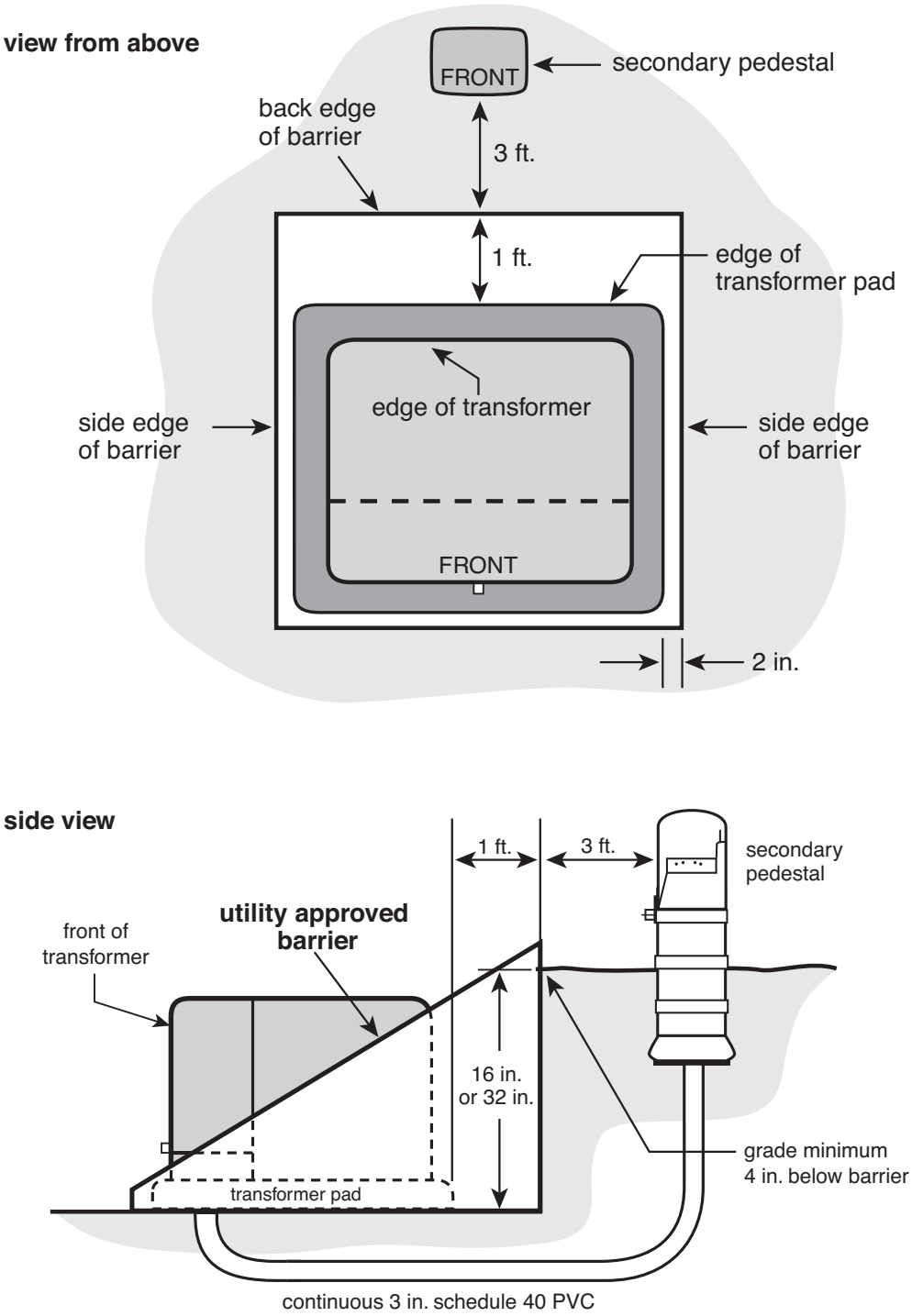


Figure 18 Typical hillside barrier installation



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CHAPTER 5

Residential Meter Installation

This chapter contains information on the metering equipment required for connection of a new residential electric service. Call our Technical Services department at (360) 992-8854 regarding questions about residential electric service metering.

Service rating options

Clark Public Utilities' metering equipment standards for single-family, residential structures (this does not include apartments or condominiums) are based upon the single-phase service ratings listed in the chart at the right.

Voltage	Ampere Rating
120/240	less than 200 amps
120/240	200 amps
120/240	400 amps
120/240	over 400 amps

If a three-phase electric service is being considered, contact Clark Public Utilities' Construction Services department at (360) 992-8558, or visit our website **www.clarkpublicutilities.com** to view our ***Commercial Electric Service Handbook***. Such services require the approval of Clark Public Utilities' Engineering department, and are not covered in this handbook.

Responsibilities

Clark Public Utilities is responsible for:

- Installing the meter, **current transformers (CT)**, if required, and associated CT wiring.
- Unlocking, removing and installing meters.

NOTE: Only authorized and qualified Clark Public Utilities personnel shall unlock, remove and install meters.

Customer is responsible for:

- Providing and installing all service entrance equipment including the meter base and CT enclosure.
- Maintaining required meter equipment safety clearances at all times.
- Providing 24-hour access to meters and associated equipment.

Meter bases

General requirements

The residential meter base that is installed shall meet the following general requirements:

- Rated for exterior use and rain tight.
- ***Underwriters Laboratories (UL)*** rated.
- Have unused openings in the enclosure tightly sealed from the inside of the base.
- Installed level, plumb, and fastened securely to a rigid structure.

NOTE: Specific metering requirements for 200 and 400 amp services and services to outbuildings are listed later in this chapter.

Meter base location

Clark Public Utilities currently requires all meter bases and ***associated equipment*** (CT enclosures, etc.) be attached to the outside of a permanent, fixed structure.

Single-family residences and manufactured homes require meter bases installed in a location that is accessible to Clark Public Utilities. All locations are subject to approval by a Clark Public Utilities representative. Questions regarding meter locations can be addressed by calling our Construction Services department at (360) 992-8558.

Meter bases and CT enclosures are to be located:

- Outside.
- On the ground floor, with the center of the meter 5 to 6 feet above finished grade (5 feet preferred).
- On the front one-third of the home closest to normal public access.
- In an area that is not subject to being fenced-in (patios, decks, breezeways, and backyards are not approved locations).
- If the meter is not located on the building it serves, it may be installed on another structure that is owned by the customer and accessible by Clark Public Utilities personnel. This type of installation requires prior approval from a utility representative.

These locations allow Clark Public Utilities to:

- Read the meter in a cost-effective manner.
- Maintain the meter efficiently.
- Disconnect the electric service in case of emergency.

Do not locate meter bases:

- Where shrubs or landscaping could obstruct access.

- On mobile structures such as a houseboat or manufactured home.
- Above a stairway or window well.
- Outside of bedroom or bathroom windows and doors, to respect customer privacy.

Utility personnel require access to this equipment to perform maintenance. These requirements also apply to meter base installations on outbuildings, garages, pump houses and other structures that do not provide living spaces.

Grounding requirements

All meter bases, enclosures and conduit shall be bonded and grounded in accordance with the NEC and the local governing office.

Clearance requirements for residential meter installations

The following clearances are required around all meter installations.

- The center of the meter is located between 5 to 6 feet above finished grade (5 feet preferred). For factory-built manufactured home meter pedestals, locate the center of the meter at 3 feet.
- A clear working space, 3 feet deep, in front of the meter ***(Figure 19)***. This space is to be kept clear of any obstructions including landscaping, decks, air conditioning units, etc.

Figure 19 Meter base minimum work clearances

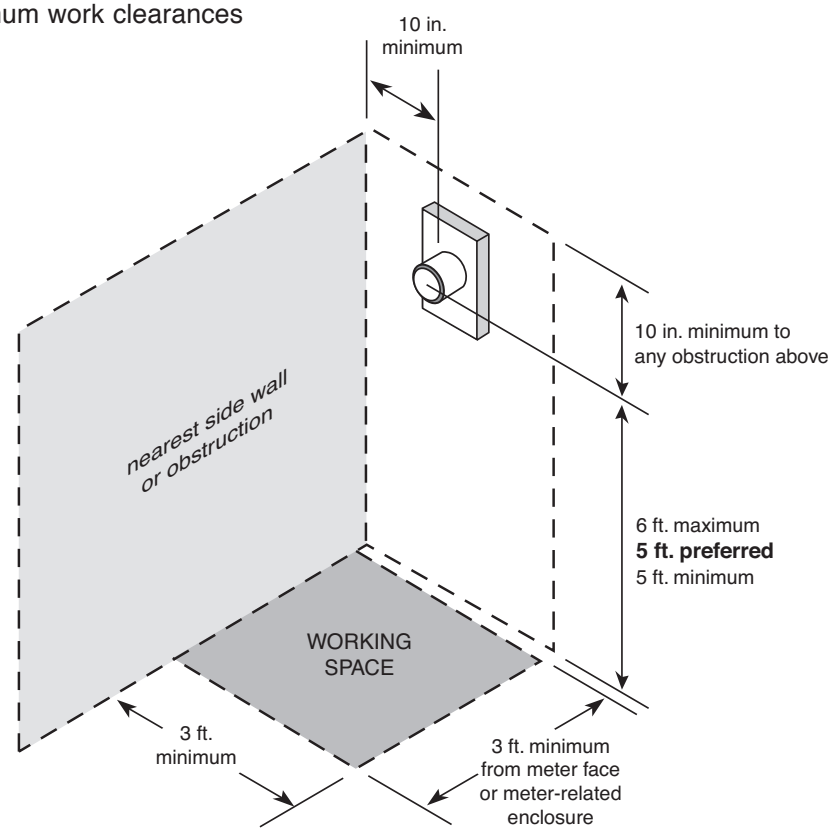
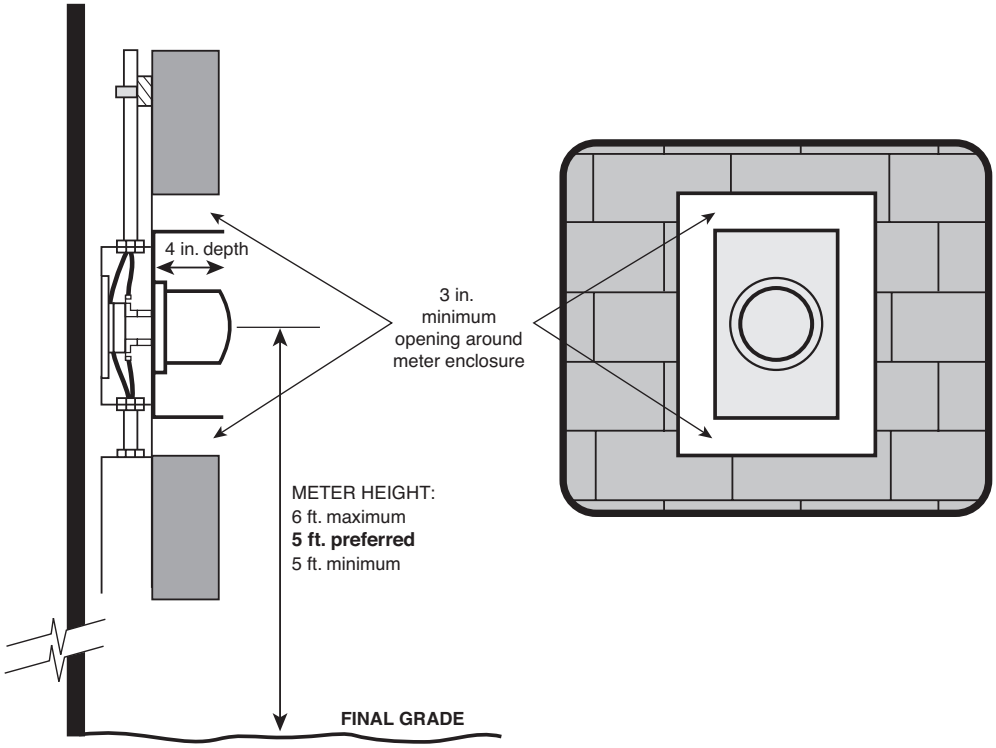


Figure 20 Recessed meter base detail



- A 3-foot horizontal clearance from all parts of a natural gas meter.
- There is a 10-inch minimum horizontal and vertical clearance between the center of the electric meter and any obstruction ***(Figure 19)***.
- If a recessed meter base is installed, a 10-inch radial clearance is required from the center of the meter to the closest portion of the wall.
- If a flush or recessed meter base is installed, the siding or finished surface of the structure shall not overlap the cover of the meter base.
- The opening around a recessed meter base must extend a minimum of 3 inches ***(Figure 20)***.
- Enclosing residential electric meter bases is not acceptable.

200 amp services

Single-family residence

The 120/240 volt, 200 amp service is the most common residential service installed by Clark Public Utilities ***(Figure 21)***. Typically, this size of service is installed to homes with a living area of less than 3,000 square-feet. Depending upon the type of appliances, heating and cooling systems or other equipment (hot tub, jetted tub, etc.) being installed, a larger service may be necessary. It is the customer's responsibility to determine and notify Clark Public Utilities of the electrical requirements based on connected load. Refer to Clark Public Utilities' ***New or Altered Electric Service Worksheet*** on page 55 for information requested to start a job.

In addition to the meter base requirements mentioned earlier in this chapter, meter bases for 200 amp underground services shall:

- Be rated for 120/240 volts and 200 amps.
- Contain four ***meter jaws*** and a connection point for the ***neutral*** conductor.
- Accept 2-inch, PVC, conduit.
- Have lugs (electrical connectors) that are marked to accept 4/0 aluminum conductors.

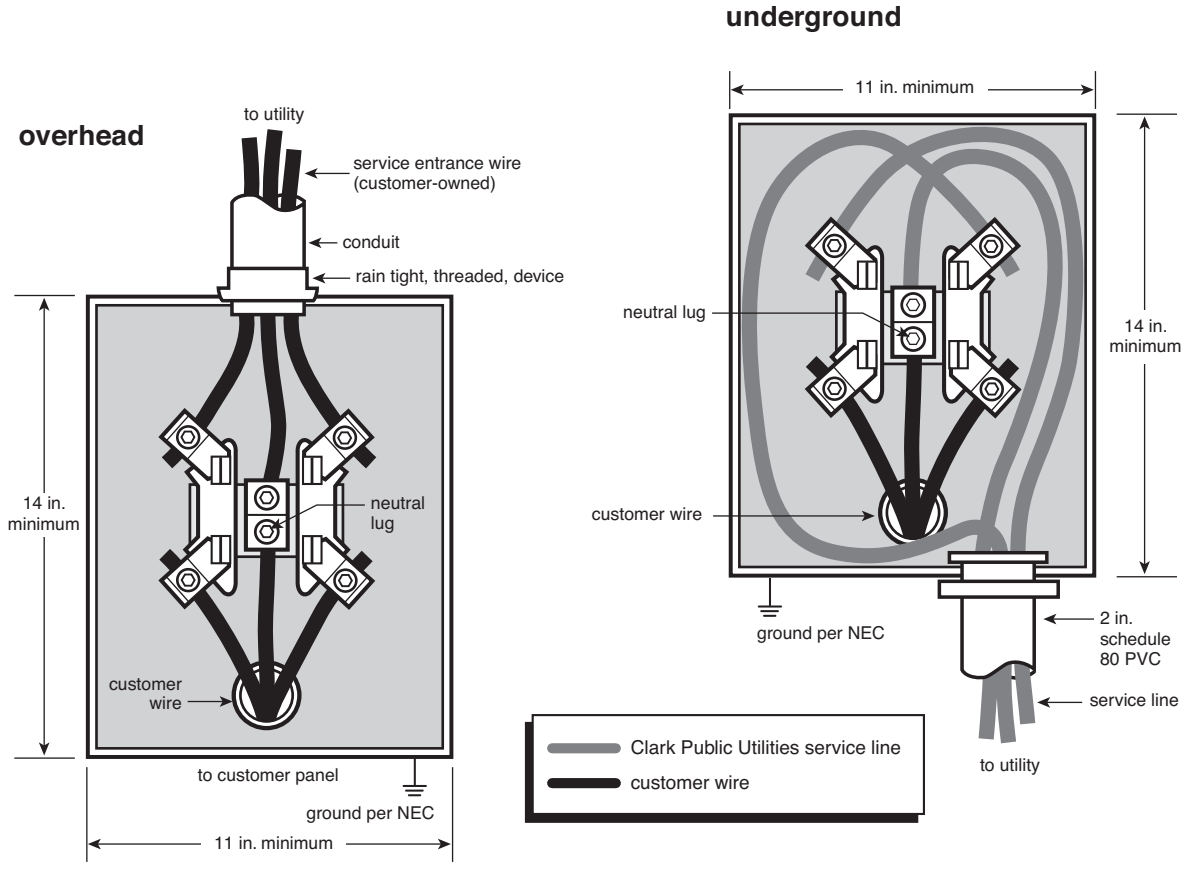
NOTE: Do not route service conductor through the center knockout located on the bottom of the meter base.

Outbuildings

Meter bases for 200 amp (or less) services to residential use outbuildings (such as garages, shops, single-family wells or non-commercial barns) shall meet all the requirements listed in this chapter, the NEC and at the local inspecting office.

If an outbuilding will be used for commercial or multifamily purposes (such as a professional shop, dairy barn, illuminated sign, community security gate, or multifamily/community well) there will be additional requirements. Visit our website **www.clarkpublicutilities.com** to view our ***Commercial Electric Service Handbook*** or contact Clark Public Utilities' Construction Services department at (360) 992-8558 for additional information.

Figure 21 Typical 200 amp residential meter bases



400 amp services

The meter base required for a 120/240 volt, 400 amp service is called a class 320 meter base ***(Figure 22)***. It is larger than the 200 amp meter base but it is still a self-contained metering system. It can be installed on residences where the continuous current rating is 320 amps or less.

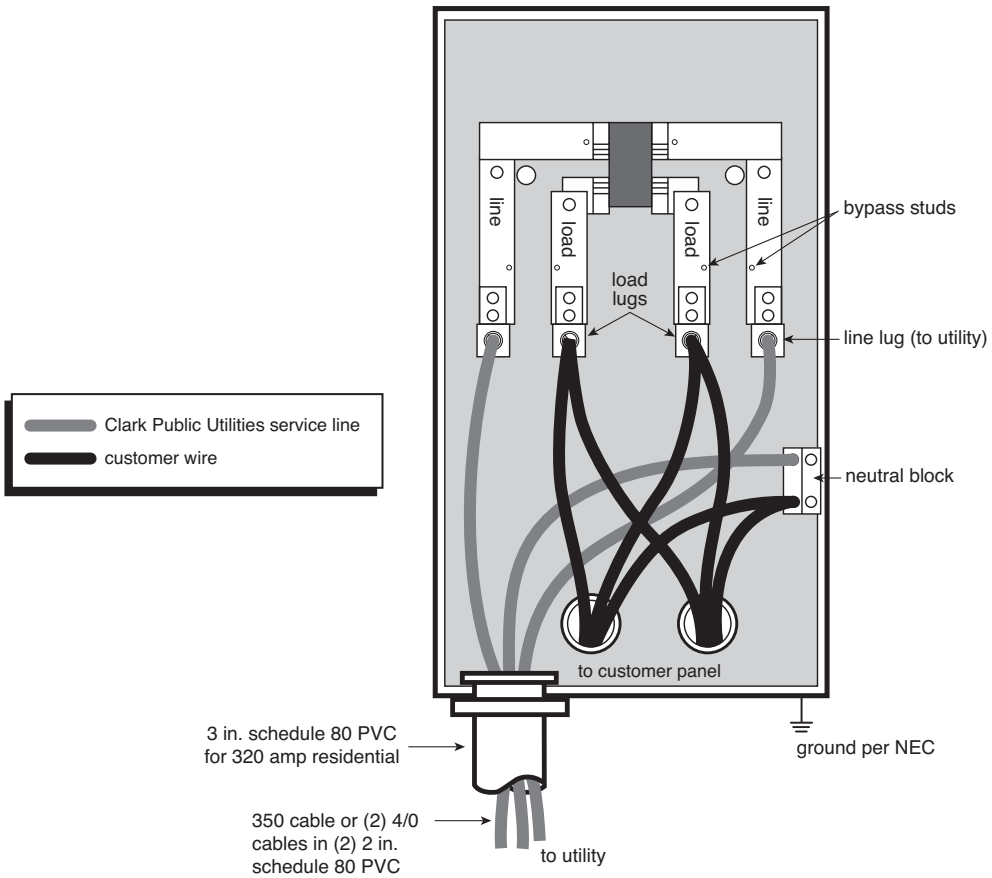
NOTE: If the structure requires more than 320 amps of continuous current, the customer is required to install a CT metered service.

In addition to the meter base requirements listed earlier in this chapter, Class 320 meter bases for 400 amp services require:

- Rating for 120/240 volts and 320 amps continuous current.
- Four meter jaws and one connection point for the neutral conductor.
- A Class 320 ***manual block bypass*** ***(Figure 22)***.

NOTE: Do not route service conductor through the center knockout located on the bottom of the meter base.

Figure 22 Typical underground class 320 amp residential meter base



Services over 400 amps

All 120/240 volt services over 400 amps (320 amps continuous current) require CT metering. CT metered services are available at an additional charge. This service requires a different meter base ***(Figure 23)*** and additional equipment (CT enclosure, conduit, PED connectors, CT mounting bracket, etc.). All CT metering equipment is installed on the outside of the structure. Clark Public Utilities provides and installs the CTs after the service has passed an electrical inspection.

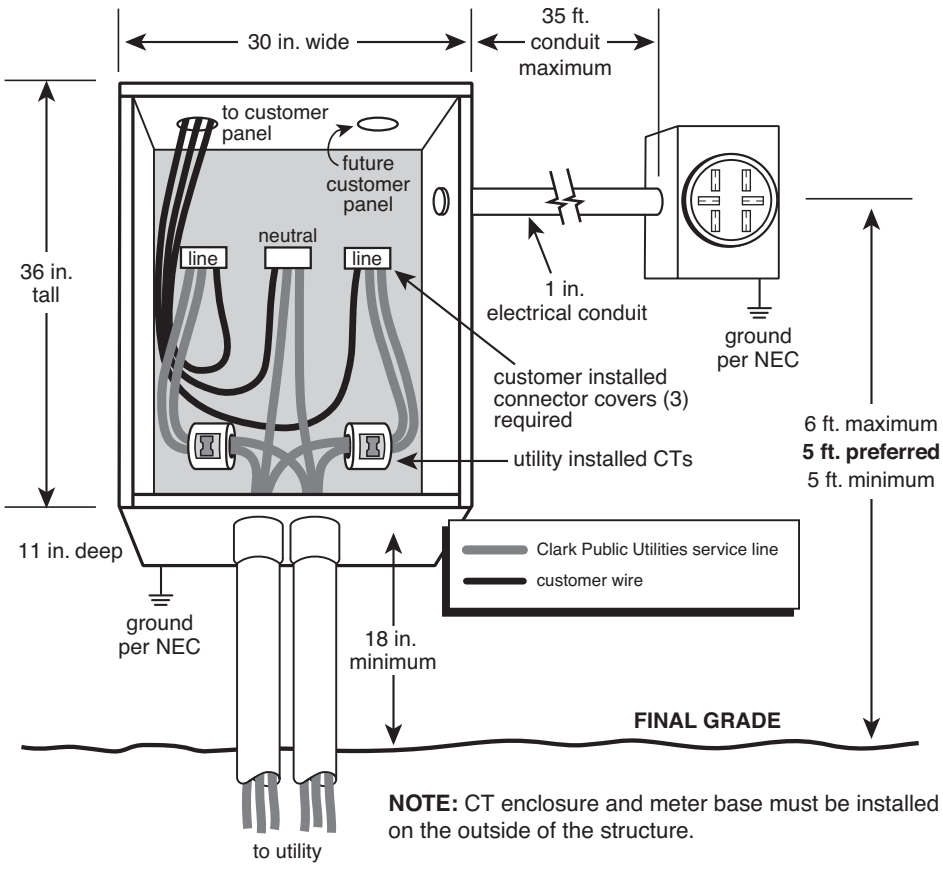
CT enclosure

The meter base and CT enclosure installed shall meet the following general requirements:

- Installed on the outside of the structure.
- For CT services with ***feed through CTs***, the CT enclosure shall have minimum dimensions of 30″ x 36″ x 11″.
- If bar mounted CTs are installed, the CT enclosure shall have minimum dimensions of 30″ x 36″ x 11″ ***and*** a hinged door.

NOTE: A CT enclosure cannot be used as a junction box or bus gutter.

Figure 23 Current transformer (CT) metering for services over 400 amps



Conduit

The conduit between the meter base and CT enclosure is required to be:

- 1-inch electrical conduit.
- Schedule 80, PVC or rigid galvanized.
- A maximum length of 35 feet.
- Continuous, with no conduit bodies (LB joints, condulets, etc.).
- Installed with no more than three 90-degree elbows in the total length.

CT connectors

Feed through CTs require block-style connectors. These connectors are available in two sizes, 4-hole and 6-hole, depending on the number of conductors the service will require. The electrical contractor or customer is responsible for the installation and make up (including an insulating cover) of each connector prior to the electrical inspection.

CT mounting base

Clark Public Utilities currently accepts feed through CTs for residential electric services. ***Bus bar mounting*** CTs are preferred but optional. Call your utility representative for additional information and approval of installing bus bar mounted CTs.

Customer generation metering

Customers interested in generating a portion of their own electricity using renewable resources may be eligible to participate in Clark Public Utilities' Net Metering program.

A generation metering system is made up of two types of meters. A billing (net) meter and a production meter. In general, these two meters record the power provided by the utility to the customer and what the customer generates. The "net" is the difference between the two.

Customers interested in installing a generation metering system are responsible for the following:

- Reviewing the utility's ***Interconnection Standards and Production Metering Agreement***.
- Submitting an ***Application for Interconnection*** to Clark Public Utilities Energy Resources Department, PO Box 8900, Vancouver WA, 98668. A schematic drawing of the proposed generation system and a non-refundable application fee are required at submittal. Clark Public Utilities will review the design and, if necessary, provide an electrical design outlining any distribution system upgrades necessary to support the addition of the customer's generation system.
- Paying for all equipment and costs associated to distribution system upgrades.

- Upon receiving written design approval from Clark Public Utilities, securing an electrical wiring permit from the appropriate inspecting body (Washington State Department of Labor and Industries, or the City of Vancouver).
- Providing and installing all equipment as required by the utility-approved design, this handbook and the National Electric Code.
- Requesting all inspections of service and metering equipment from the appropriate inspecting body.
- After inspection approval, submitting a ***Certificate of Completion*** to the utility.

Once the ***Certificate of Completion*** has been approved, and the customer has completed backfilling the trench, Clark Public Utilities will connect the service and set the meter(s).

Visit our website **www.clarkpublicutilities.com**, or call (360) 992-3354 for additional information on customer generation metering systems.

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CHAPTER 6

Temporary Services

Metered temporary service

A metered temporary service requires an electrical inspection prior to connection by Clark Public Utilities.

The customer is responsible for:

- Providing the meter base, conductor and paneling based on the size of service needed.
- Grounding the service according to the NEC.
- Calling the local governing office and requesting the electrical inspection.

Once the service has passed inspection and the trench is backfilled by the customer, Clark Public Utilities will connect the service and set the meter. The customer will receive a one-time charge for connection of the service and monthly billings for electrical use.

Call our Construction Services department at (360) 992-8558 or contact your Clark Public Utilities representative for current pricing of temporary services.

APPENDIX

Glossary

Approval — Acceptable to the authority having jurisdiction.

Assessor's Parcel Number (APN) — Identifying number assigned by the county assessor's office to each taxable building lot in the county. Also referred to as the tax ID number.

Associated equipment — As related to metering equipment: such as the current transformers, CT wiring and test switches.

Backfill — Native soil or soil brought in from another area, free from sharp objects, rocks, scrap building material, and corrosive material.

Bus bar mounting — Current transformer mounting base recommended for residential CT metered services.

Call Before You Dig — Call 811 or 1-800-424-5555 for the national one call underground utility locating service.

Clark Public Utilities representative — The designated representative responsible for design and coordination of new or upgraded services to utility customers.

Clearance — A set distance between two objects.

Conduit — A listed or approved wireway with a smooth interior surface. Conduit may vary in size or schedule (wall thickness), depending on its usage, in accordance with codes and Clark Public Utilities' specifications.

Conduit bodies — A combination of conduit and an electrical outlet. In the electrical industry may be referred to as a condulet or LB joint.

Current transformers (CT) — A device used to measure the current flow of larger services (401 amps or greater) in conjunction with a low voltage meter.

Enclosure — A sealable cabinet designed for surface or flush mounting, and provided with a frame, mat or trim in which doors or removable covers are hung.

Feed through CTs — Doughnut style current transformers used for residential CT metered services.

Guard post — A bollard or post designed to protect the electrical facility or meter installation from vehicular traffic.

Joint use — A group of utilities that share space on a utility pole or trench.

Manual block bypass — A provision for paralleling the meter circuit, allowing the meter to be removed without interrupting service to the residential customer.

Meter jaw — A spring-loaded receptacle installed inside a meter base, interfacing the terminals of the meter to the source and load conductors of the service.

Meter pedestal — A freestanding structure that supports the metering equipment owned and maintained by the customer.

Meter base — The mounting device consisting of meter jaws, connectors, and enclosure for accommodating socket-type meters.

Metering equipment — Any equipment associated with measuring electrical energy.

Municipality or state inspector — The qualified representative of a city or the State of Washington Department of Labor and Industries, who has been authorized by governmental agencies to inspect.

Neutral — The grounded conductor in a single-phase, 3-wire, or 3-phase, 4-wire system. The service conductor that is at zero potential to ground.

Secondary pedestal — Enclosure installed behind padmounted transformers and at pole bases allowing multiple connections of underground secondary services.

Secondary voltage — The lower voltage, after transformation, used to supply the customer with electrical energy. Normally less than 600 volts.

Self-contained — In reference to meter bases: a device designed and rated to continuously carry the entire capacity of the service entrance equipment through the meter.

Service entrance equipment — Service conduit, conductors, service mast, meter base, enclosures and service disconnect.

Service mast — The conduit attached to the top of the meter base used to intercept and support the overhead service drop.

Short plat — A residential parcel that has been divided into nine or fewer building lots.

Source — Clark Public Utilities' equipment (transformer, pedestal, pole) that supplies the customer's electric service.

Subdivision — A residential parcel that has been divided into 10 or more building lots.

Temporary service — An electrical service providing power to a customer on a temporary basis.

Transformer — Equipment used to reduce (step down) primary voltage to the secondary voltage required to supply the customer.

Underwriters Laboratories (UL) — A nationally recognized test laboratory that lists materials it has tested and accepted.

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Clark Public Utilities New or Altered Electric Service Worksheet

Contact Clark Public Utilities' Construction Services department at **(360) 992-8558**, **Construction@ClarkPUD.com** or return this completed worksheet to initiate a request for new or altered electric service to:
PO Box 8900, Vancouver, WA 98668, or Fax to: 360-992-8823

Inquiry date: _____

Name of financially responsible party: _____

Mailing address: _____

Contact: *Home #* _____ *Mobile #* _____

Email _____

Job site address: _____

Assessor's parcel number: _____

Near address: _____

TYPE OF SERVICE

Residential: ❑ Single-family Residence ❑ Manufactured Home

Outbuilding: ❑ Shop ❑ Barn ❑ Well ❑ Other _____

SERVICE DETAILS

Connected load: _____

Voltage & phase requirements: _____/_____volt _____ phase Panel amps: _____

Feet from power: _____ Square footage of structure: _____ Heat type: _____

Please attach a site plan that includes the following information:

Property shape and dimensions, streets and intersection nearest property, structure and driveway locations, desired meter equipment/transformer locations, well, septic, leach field, existing utilities and utility easements, future buildings planned, load breakdown for each building on the site.

NOTE: Installation of a base rock driveway and staking of the main structure are required prior to a site visit from utility personnel.

Call the Construction Services department, or consult our *Residential Electric Service Handbook* for additional information.

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NOTES:

P.O. Box 8900

Vancouver, WA • 98668

360-992-8558

www.ClarkPublicUtilities.com