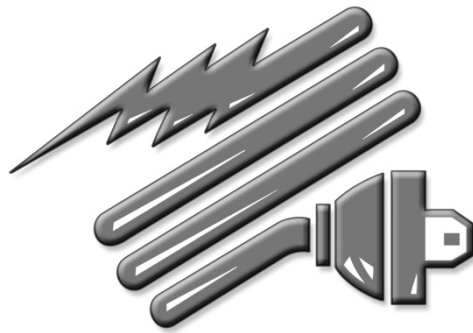


Electric Service Handbook



Revised July 2023

Electric Service Handbook

Contact Information

Telephone (253):

Electrical Inspection Office	502-8277	7:30 am - 4:30 pm
Automated System (IVR)	502-8277	Anytime
New Services Engineering	502-8436	8:00 am - 4:30 pm
Electrical Inspectors	Area Map on Website	7:30 am - 8:30 am
Meter Shop	502-8460	8:00 am - 4:30 pm
Construction Inspector	381-3023	7:00 am - 2:00 pm
Vegetation Management	502-8729	8:00 am - 4:30 pm

Location:

Tacoma Public Utilities
3628 S. 35th Street
Tacoma, Washington 98409-3192

Web Site Address:

<https://www.mytpu.org/building-remodeling/>

Electric Service Handbook

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Electric Service Handbook

Chapter 1

Preface

This handbook is a guide to assist you in acquiring electrical power to your property or residence from Tacoma Power. It presents general specifications and information for new or altered electrical services. Detailed explanation for Tacoma Power's construction standards can be found on our **MYTPU** web site.

For work on existing services, upon request, Tacoma Power will disconnect power to enable you to work on a de-energized service. Caution: Doing live line work on the customer side of the service point can expose workers to electrical shock and the possibility of arc flash injuries and burns. In these situations, the utility equipment does not offer any worker protection.

The Electric Service Handbook does not cover all possible applicable codes. You should also consult the City of Tacoma Electric Code located in the Tacoma Municipal Code **TMC 12.06A**, National Electrical Code (**NEC**), Washington Administrative Code 296-46B **WAC**, Revised Code of Washington 19.28 **RCW**, Electric Utility Service Equipment Requirements Committee **EUSERC**, National Electric Safety Code **NESC**, Tacoma Power Customer Service Policies **TPCSP**, and other standards governing electrical equipment and installations.

General Information

Types of Service

The types of service Tacoma Power provides are **Temporary**, **Residential**, **Commercial**, **Network**, and **Primary**. Information for each type of service is included in each chapter.

Service Availability

Please contact Tacoma Power's New Services Engineering staff at the start of your project. They will determine service location options along with service size available for your project.

Added Loads

If a change to an existing service involves an increase in load, contact New Services Engineering.

Easements

Required easements are necessary before service can be connected and will need to be conveyed to Tacoma Power.

Codes

This handbook shall not be used as a substitute for the current version of the **NEC**, **WAC**, **RCW**, or other applicable codes. It is your responsibility to ensure that your electrical system is installed and maintained in a safe operating condition. Failure to maintain electrical equipment may be cause for the disconnection of service.

Electric Service Handbook

General Information Cont.

Electrical Permit

An electrical permit must be obtained before the start of the electrical installation. The permit may be obtained from the electrical inspection office, or online. When emergency work must be done after regular business hours, a permit is required to be purchased the next regular business day. Please refer to the **TMC 12.06A.210, 12.06A.220 and 12.06A.230.**

Plan Review

A plan review is required for services in excess of 400 amps. Electrical plans must be submitted to the Electrical Inspection office with sufficient time to complete the review before the start of construction. The **approved set of drawings** is required to be on the job site for the Electrical Inspector's use. Additional plan review requirements can be found in the **TMC 12.06A.240.** Plan review instructions are on the MYTPU website.

New Services Application

A New Services Application must be filled out and submitted for new electrical services and load changes. The Application can be found on MYTPU and submitted electronically. The information you provide will help our engineering staff determine if existing facilities are adequate to serve your need or if upgrades are necessary. For projects in the downtown Tacoma network area, refer to the Tacoma Power Downtown Network Area section below.

Fees

Permit fee information is located in **TMC 12.06A.250 and 12.06A.260.** Payment of the permit fee is required with the electrical permit application. No electrical inspection will be performed until the entire permit application process is completed and all fees are paid.

The plan review fee is included in the normal permit fee. Information involving plan review requirements is located in **TMC 12.06A.240.**

The engineering fee amount is provided to you by the New Services Engineer after you have applied for new service and submitted all the required information. All engineering and connection fees must be paid before power will be provided.

Electrical Inspection

Inspection times are generally between 9 a.m. and 3 p.m., Monday through Friday. Inspectors do not provide specific times, but can provide a three hour window in the morning or afternoon. Speak directly with your inspector about the possibility of scheduling between the hours of 7:30 and 8:30 a.m. Specific times for inspections are only accepted for after hour inspections arranged in accordance with **TMC 12.06A.250 D.**

Metering

Metering requirements can be found in Chapter 11, **TMC 12.06A.135,** and T&D Standard **C-MR-0005.** Contact New Services Engineering for metering in excess of 480 volts.

Connection Details

The Electrical Inspector will initiate the order to energize your service after the approval of your installation. Allow 5 to 7 working days for connection of your service.

Electric Service Handbook

General Information Cont.

Locating Underground Utilities

The customer must call the Utilities Underground Location Center (**UULC**) at **811** or **1-800-424-5555** before trenching or excavating two full working days before you dig (**per WAC19.122**). **UULC** will notify all member utilities that locates are required. In areas where utilities are not members it is the customer's responsibility to contact each individual utility. Digging within 24 inches of location marks must be done by hand.

Call before you dig. It is the law! <http://www.callbeforeyoudig.org/washington/>

Color Coding

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

Vegetation Management

Tacoma Power will clear the line 10 feet out from the pole or tap if the service lines pass through trees. The customer must prune the trees to provide a clear 3 foot radius around the service line for the remainder of the line from the pole to the house. The customer is also responsible for regular tree pruning and if necessary tree removal to keep the overhead path clear.

An area 3 feet wide and 3 feet in front of the meter base must be kept clear of bushes and trees. See Tacoma Power Construction Standard **C-UG-8000** Customer Requirements for Underground Systems for underground clearance requirements.

Employee Identification

Tacoma Power employees who are authorized to visit customer's premises carry photo identification that will be shown upon request.

Electric Service Handbook

Chapter 2

Applying for a New Service

Contact Tacoma Power New Services Engineering prior to installing a new electrical service. Tacoma Power's Electric Service Application can be obtained at the New Services Engineering office or online. Applications may be submitted through the online application portal located at www.mypu.org or in person.

Service Availability and Characteristics

Tacoma Power New Services Engineer will determine what voltage is available for your site.

- 120/240 volt, single phase, 3 wire
- 120/208 volt, 3- phase, 4 wire wye
- 277/480 volt, 3- phase, 4 wire wye
- 120/208 volt, 2- phase, 3 wire
- 125/216 volt, (Downtown Network)
- Primary voltages, **Contact New Services Engineering**

Tacoma Power's Downtown Network Area

Tacoma Power's New Services Engineering and Electrical Inspection offices must be contacted regarding all new or modified service installations in the network area. Refer to Tacoma Power Construction Standard **C-SV-4000** for installation requirements. The network voltage is 125/216 volts.

Primary Line Extensions

To serve load when the service is determined to be too far from the existing system, a utility primary line extension will need to be constructed per **Tacoma Power Customer Service Policies**. Contact New Services Engineering for services exceeding 300 feet from the transformer to the meter.

Electric Service Handbook

Chapter 3

Overhead Temporary Service

The customer must supply all temporary power posts or poles and equipment. The temporary service shall be located within 100 feet of Tacoma Power's pole. **Figure 1** shows an example of an overhead temporary service. Proper clearances must be maintained per **NEC Article 230.24B**. The temporary installation and GFCI protection must comply with **NEC Article 590**. Tacoma Power will provide the meter and the overhead service drop 5-7 business days after the electrical and service inspections have been approved and all fees have been paid.

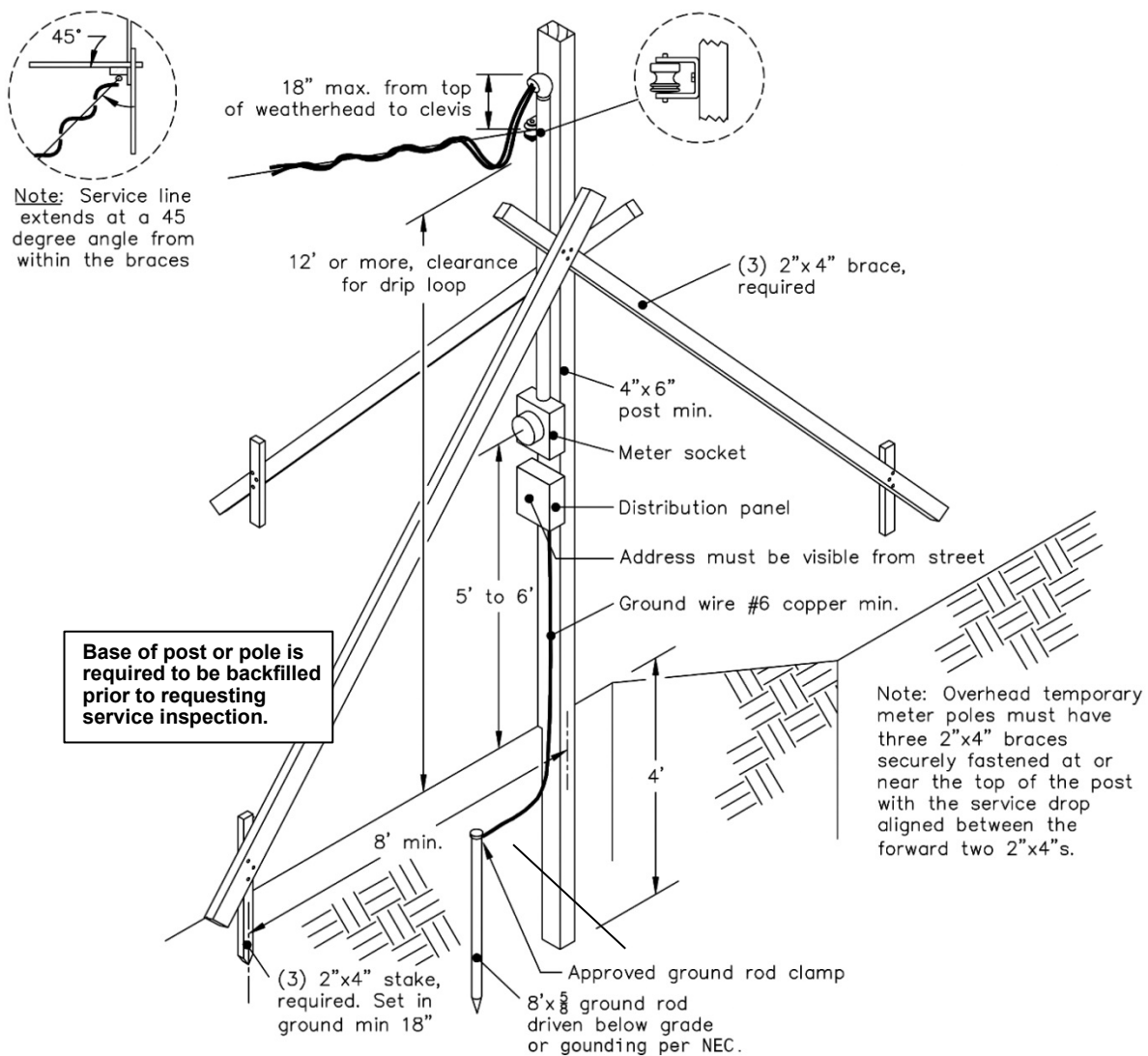


Figure 1

Electric Service Handbook

Chapter 4

Underground Temporary Service

Contact New Services Engineering to determine availability of underground power if there are no overhead lines in the vicinity or if you have a temporary service larger than 200 amps, **Call 811 before you dig**. An example of an underground temporary service is shown in **figure 2** below. Temporary services must be installed so as not to interfere with trenches for the permanent services.

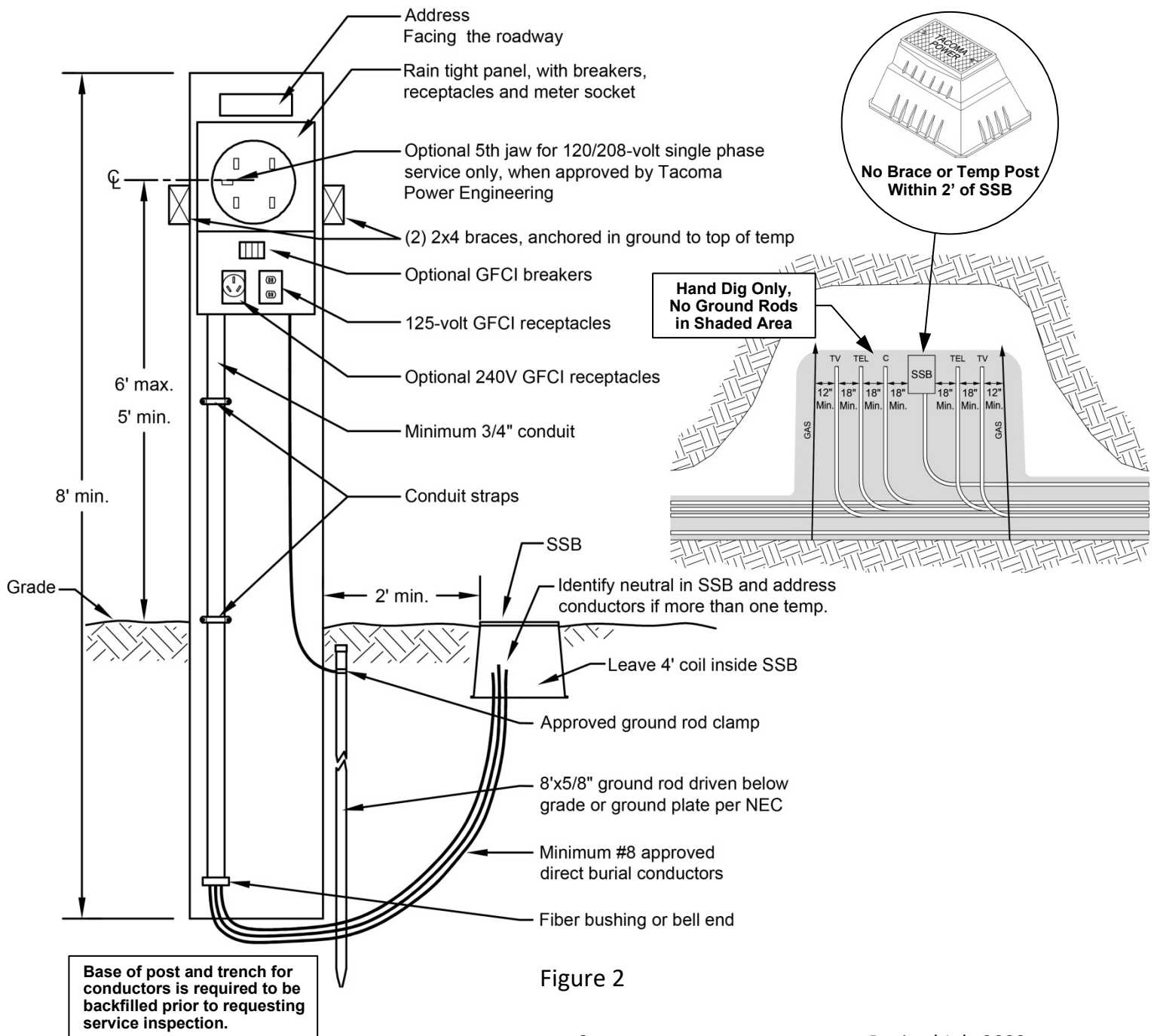


Figure 2

Electric Service Handbook

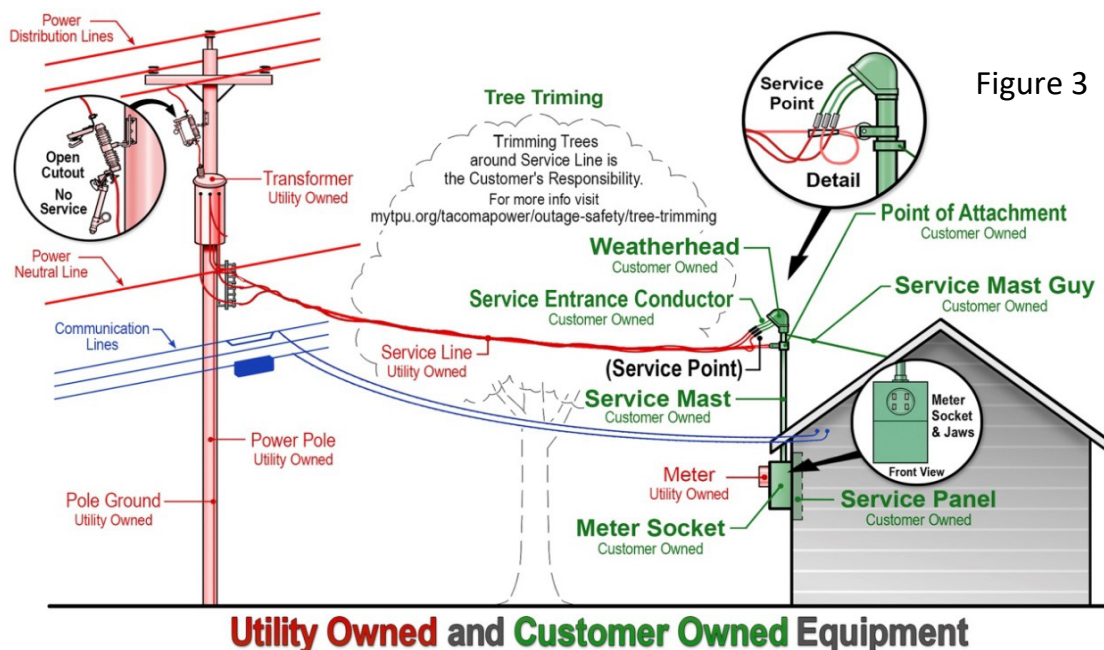
Chapter 5 Overhead Services

Residential

Residential overhead services must comply with **WAC 296-46B-230**. Installation details for the service mast installations are shown in Drawings E-101, 102, and 103. The minimum height of the service point of attachment is 12 feet and the maximum height of service point of attachment will be 18 feet. The weatherhead must be no more than 2 feet above the point of attachment. Any variation to these height requirements must be pre-approved by Electrical Inspection. The remaining clearance requirements are found in the **NEC Article 230**. The maximum service drop length is 100 feet with no back guy or 150 feet with back guy. Services over 100 feet must be approved by New Services Engineering (see *Meter Pole Guying in Ch. 9*). The service line must have clear space between the pole and point of attachment to the structure (see *vegetation management for details*). The metering type and requirements can be found in the Tacoma Power Construction Standard **C-MR-0005** and the Tacoma Power Customer Service Policies. See **figure 4** for other approved attachment points.

Commercial

All overhead commercial services need to be reviewed by Tacoma Power New Services Engineering. The maximum size overhead service is 400 amps unless approved by New Services Engineering. If current transformers are necessary, see Tacoma Power Construction Standard **C-MR-0005**. The same criteria as the **residential** installation apply to commercial except the minimum size service is determined by the load being served and the minimum height of the service point of attachment will be 18 feet. The maximum height of the service point of attachment should be not more than 24 feet. The weatherhead must be no more than 2 feet above the point of attachment. Any variation to these height requirements must be pre-approved by Electrical Inspection. A typical back guyed service is shown in **figure 3**.



Electric Service Handbook

Overhead Services Cont.

Figure 3a

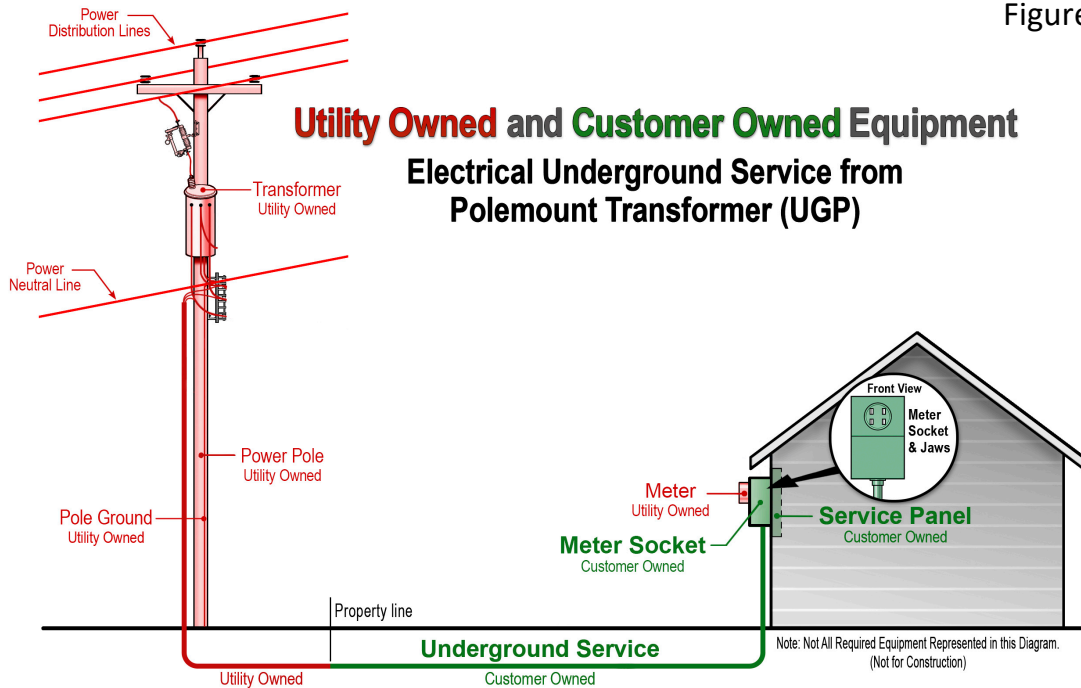
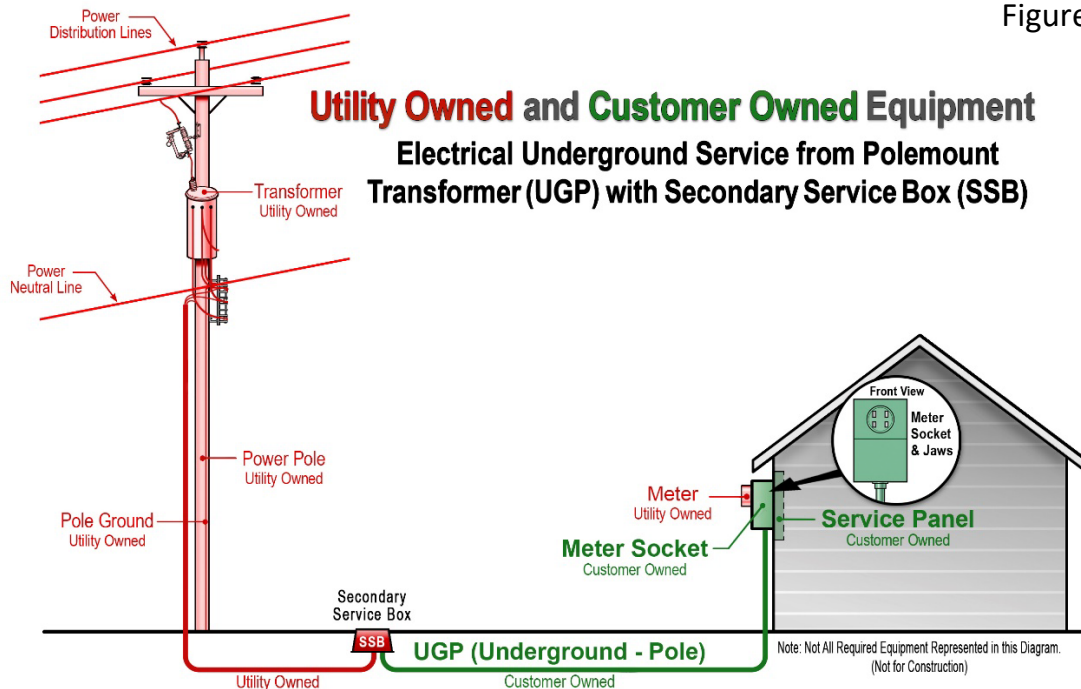


Figure 3b



Electric Service Handbook

Overhead Services Cont.

Figure 3c

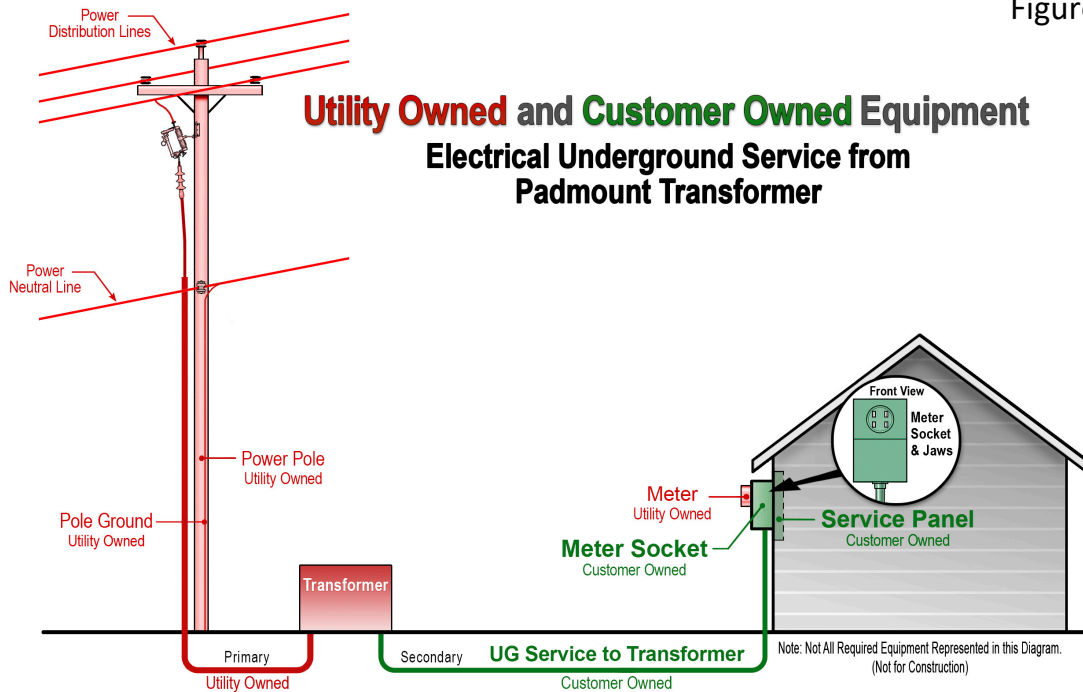
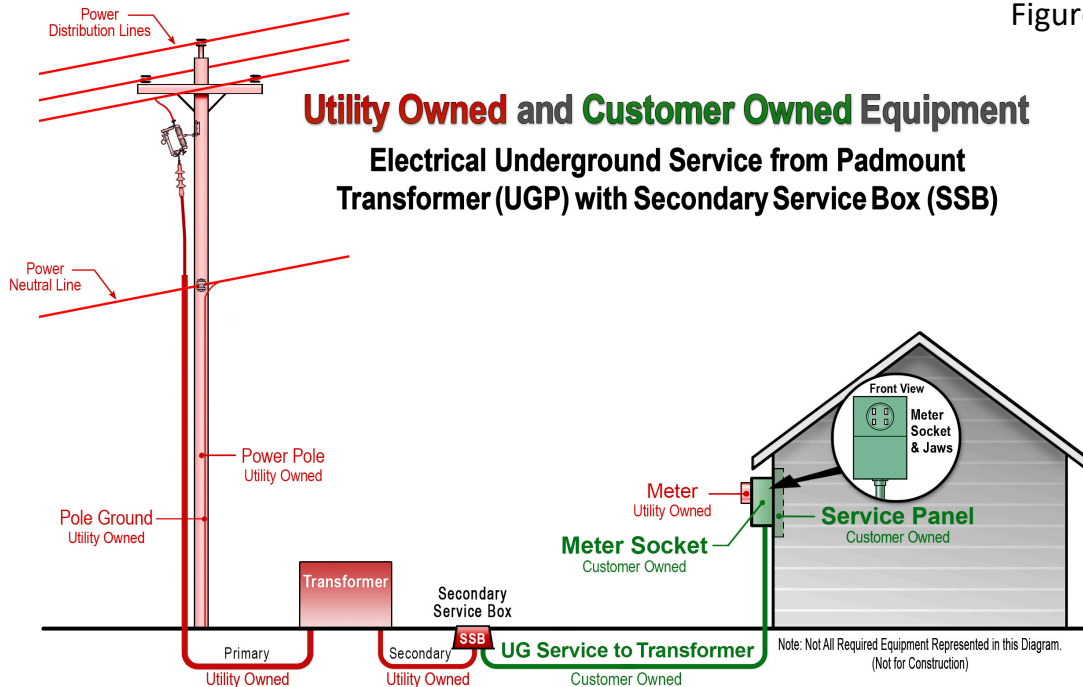
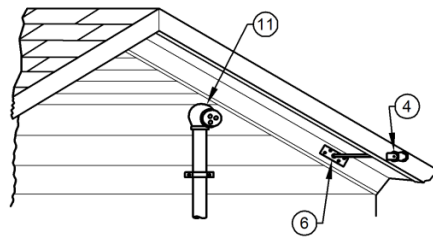


Figure 3d



Electric Service Handbook

Overhead Services Cont.



NOTES:	
1.	5/8" bolt or steel rod, threaded both ends, galvanized, length as required.
2.	flat washer, galvanized.
3.	5/8" nut, galvanized.
4.	Dead end clevis, insulated.
5.	5/16" x 2" lag screws, galvanized.
6.	10 gauge galvanized plate.
7.	Countersink hole in rafter, 1" dia. x 5/8" deep
8.	Pull on dead end clevis should be as nearly as possible in line with bolt. Angle must not exceed 10° vertically or 20° horizontally.
9.	1,000# max. line pull.
10.	This drawing supplements figure 33 and authorizes barge board attachment where appropriate.
11.	Weatherhead should be located above the dead end clevis. (NEC 230-54)

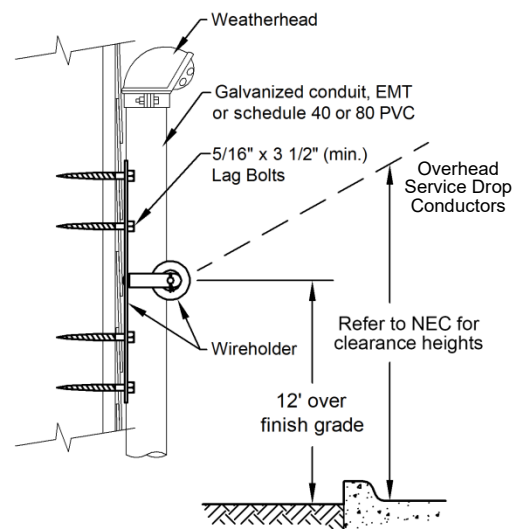
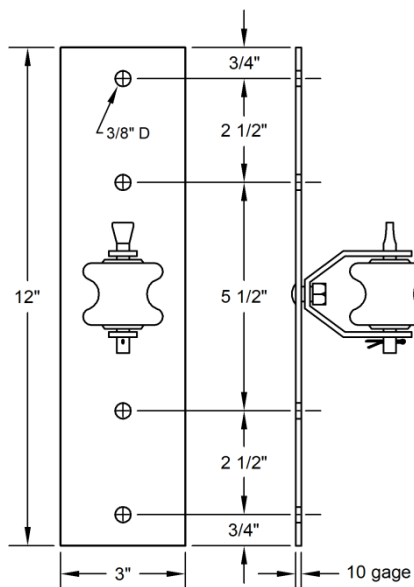
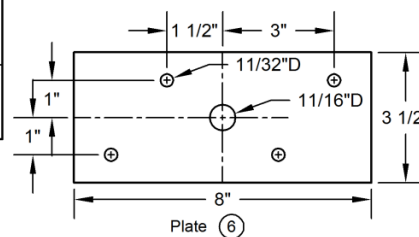
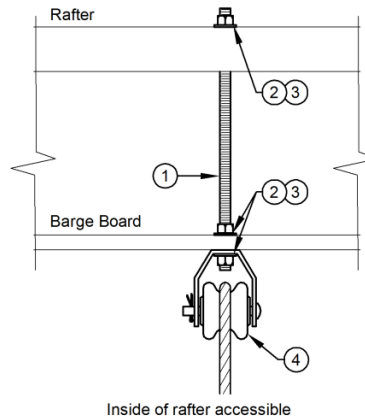
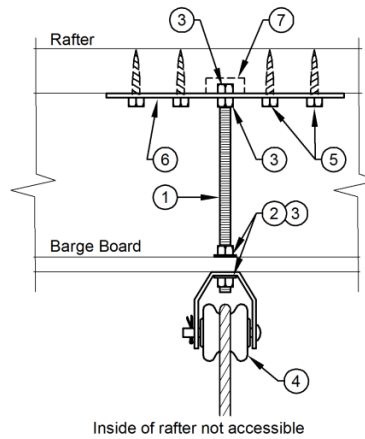


Figure 4

Electric Service Handbook

Chapter 6

Residential Underground Services

The underground Secondary Service Box (**SSB**) may be supplied from either an overhead transformer or pad mount transformer. Call Tacoma Power New Services Engineering for information on the installation of the SSB and riser if no SSB is present. The customer installs continuous schedule 40 gray electrical PVC conduit and secondary conductors from the SSB to the meter socket per Construction Standard **C-SV-1200** and the **NEC**. Minimum coverage for the conduit is 24 inches.

- Contact the Utilities Underground Locate Center (**811**) before digging.
- Trench inspection is required for the conduit installation before the trench is backfilled.
- Trench is required to be backfilled prior to requesting the service inspection.

Chapter 7

Residential Overhead to Underground Conversions

Contact Tacoma Power New Services Engineering before proceeding with overhead to underground conversions.

Install underground conduit and secondary conductors per **Chapter 6** from the SSB location to the meter location at the structure. Request a trench inspection.

After the Electrical Inspector approves the trench and conduit installation, please contact 253-502-8460 to schedule a date for Tacoma Power crews to disconnect power from the existing overhead service. To reduce the amount of time the property is without power, the service disconnect and service inspection should be scheduled after the SSB is installed and associated utility work is complete.

If you need power for construction, install a temporary service per Tacoma Power Construction Standards, or use a generator. Tacoma Power considers temporary connections ahead of the meter to be a power diversion, which could lead to charges per Tacoma Power Customer Service Policies.

Electric Service Handbook

Chapter 8

Commercial Underground Services

Install the primary and secondary conduits per Tacoma Power “For Construction Drawings” and the Tacoma Power Construction Standard **C-SV-3200**. The utility secondary, primary, and vaults are inspected by the Tacoma Power Construction Inspector. Call two days in advance to request an inspection before backfilling. Customer owned and installed electrical systems are inspected by Tacoma Power Electrical Inspection. Schedule your electrical inspection before backfilling.

Commercial electrical service entrance conductors shall have a capacity not less than the rating of the service equipment being supplied. The conduit shall be continuous between the utility and customer equipment and shall be sized per the **NEC**. Services supplied by a pad mount transformer shall meet Tacoma Power Construction Standard **C-UG-1700** for vault installation and **C-UG-8000** for clearance from vegetation. Services supplied underground from pole (**UGP**) shall be installed per Tacoma Power Construction Standard **C-UG-1200** and **C-SV-3200**. All UGP pole service equipment shall be installed on standoff brackets. Contact Tacoma Power New Services Engineering for underground service availability. Services greater than 800 amps shall be installed in a **listed** switchboard and the metering section must meet **EUSERC** standards.

Maximum UGP service size chart:

Phase	Voltage	Max Service
1 or 3	120/240	400 amps
3	120/208	800 amps
3	277/480	400 amps

Service sizes greater than above chart shall be provided by a pad mount transformer. Contact: New Services Engineering for more information.

Electric Service Handbook

Chapter 9

Meter Poles

Meter poles are required when the overall service drop span will exceed 150 feet or underground service is not practical per Tacoma Power New Services Engineering. The distance from Tacoma Power's service pole to the customer meter pole cannot exceed 150 feet and cannot cross adjoining properties without obtaining easements. Service drop lengths over 100 feet must be authorized by New Services Engineering. The customer is responsible for purchasing, installing, and maintaining the meter pole. The meter enclosure must be installed on the meter pole and all pole mounted service equipment shall be installed on standoff brackets, **see Figure 5**. The meter pole must be the first pole connected with conductors from the Tacoma Power's pole. The disconnect location for manufactured homes must comply with **WAC 296-46B** and the **NEC**. Tacoma Power crews must have access to the pole and meter without obstructions.

The meter pole shall be a full length pressure treated wood pole per the **American Wood Preserves Association (AWPA)** standard. The pole must be a minimum of 20 feet long installed with a butt gain marker at 10 feet from the bottom of the pole. Nailing a washer to the pole at this location is acceptable. The table below will assist you in determining the adequate meter pole length and pole setting depth. See **NEC Article 230** for clearance height requirements.

Round poles require a 6 inch minimum top diameter. Square timbers for a service length of less than 100 feet require a 6x6 inch minimum timber and a service length greater than 100 feet require an 8x8 inch minimum timber.

Pole Requirements

IF the meter pole is...	...and the service conductor...	THEN the minimum pole length is...	...and the pole setting depth is...
Within 50' of Tacoma Power's pole...	Does not pass over a driveway or parking area	20'	4'
	Passes over a driveway or parking area	25'	4 ½'
Between 50' and 100' of Tacoma Power's pole...	Does not pass over a driveway or parking area	25'	4 ½'
	Passes over a driveway or parking area	30'	5'
	Crosses over a city or county road or state highway	35'	5 ½'
Between 100' and 150' maximum of Tacoma Power's pole ...	Does not pass over a driveway or parking area	30'	5'
	Passes over a driveway or parking area	35'	5 ½'
	Crosses over a city or county road or state highway	35'	5 ½'

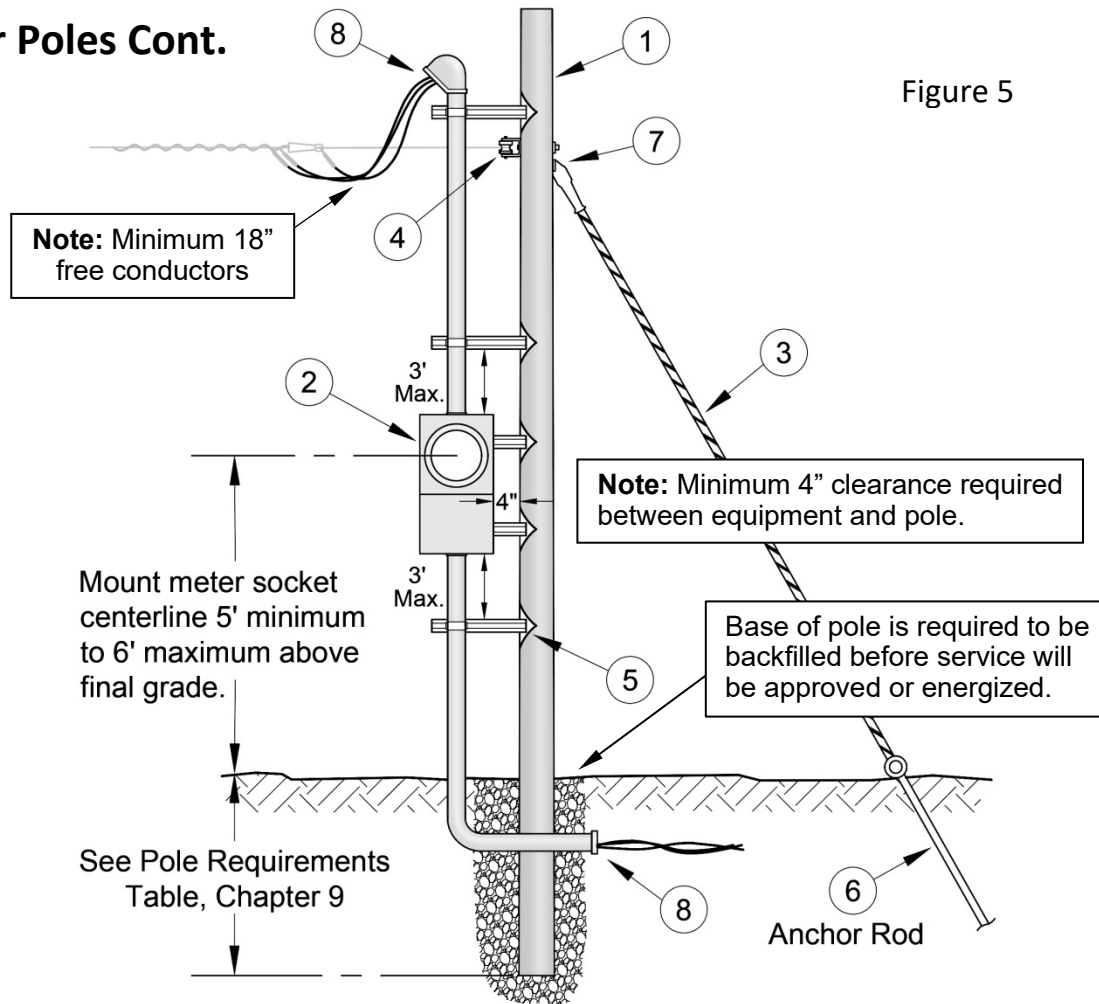
Meter Pole Guying

Meter poles must be guyed per the following table:

Span longer than	Max service conductor size	Max span length
100'	#2 Triplex	150'
80'	#1/0 Triplex	120'
60'	#4/0 Triplex	80'

Electric Service Handbook

Meter Poles Cont.



- 1) Meter pole
- 2) Meter socket and/or other electrical equipment (**Grounded per NEC**) mounted on standoff brackets
- 3) Guy wire (if required), 5/16" minimum
- 4) Insulated clevis
- 5) Standoff bracket
- 6) Anchor rod
 - Anchor rod, ½ inch min. diameter, 6' to 8' long
 - Anchor, any approved type (helix, expanding type, plate, etc.)
 - Anchor to be set a minimum depth of 5' and in line with the service
- 7) Preformed wire grip or wire rope clamps
- 8) Conduit, wire size, and burial depth per NEC.

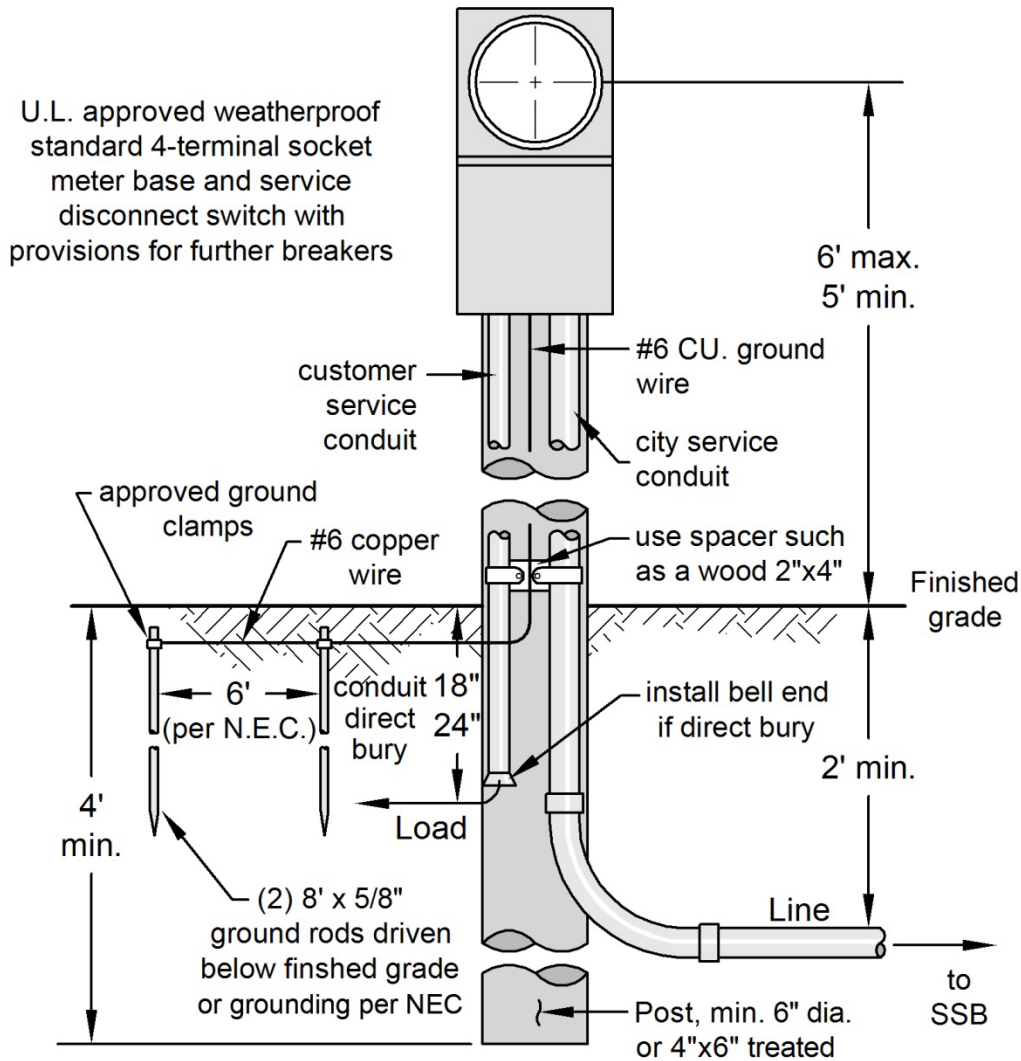
All conduits, metering equipment, and service equipment shall be mounted on standoff brackets when Tacoma Power owns and maintains the overhead conductors at the top of the pole. Approved standoff brackets with two piece galvanized clamps suited to the pipe size and type will be firmly lag bolted to the pole. Meter poles shall be constructed to maintain at least one quarter of the pole for climbing space. Climbing space will be determined by the location of existing conductors, enclosures, attachment hardware, and conduit risers. Refer to **NESC** and **WAC 296-44-21273**.

Electric Service Handbook

Chapter 10

Underground Service to a Meter Post

Figure 6 is an underground meter post that supports the service equipment. This installation may be used to serve a mobile home when installed per **NEC article 550**.



Base of post is required to be backfilled before service will be approved or energized.

Figure 6

Electric Service Handbook

Chapter 11

Meter Heights

Maximum Height

Meters shall not be installed at a height greater than 6 feet from the working surface or grade to the midpoint of the meter.

Minimum Height

Meters shall not be installed at a height below 5 feet from the working surface or grade to the midpoint of meter **except for:**

- **Commercial** multi-metering installed in a vertical configuration shall not be installed below 36 inches from the working surface or grade to the midpoint of the meter.
- **Residential** multi-metering installed in a vertical configuration shall not be installed below 28 inches from the working surface or grade to the midpoint of the meter.
- See T&D Construction Standard C-MR-0005, C-MR-0020 & TMC 12.06A.135 for additional meter height information.

New Construction

Meter must be installed at heights mentioned above. No platforms are permitted.

Existing Construction, Raised Area

- The grade may be raised around the area 36 inches X 36 inches minimum and directly in front of and centered on the meter if material is compacted and no tripping hazard is created.
- Materials shall be suitable for the environment such as treated lumber, galvanized nails, treated screws, concrete, crushed rock, etc.
- Materials not acceptable are untreated wood, regular nails, untreated screws, sand, pea gravel, pallets, debris, non-mortared concrete blocks or bricks, etc.
- Materials used shall be secured in a manner so as not to be easily removable.
- Platforms shall not exceed 12 inches in height and must measure 36 inches X 36 inches directly in front of and centered on the meter.