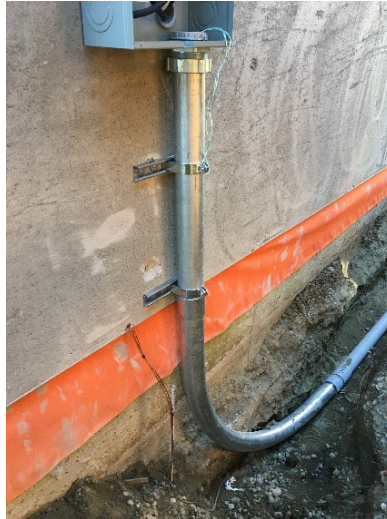


Underground Residential Service Entrances



1. Scope

This standard covers the Seattle City Light (SCL) requirements for the permanent installation of underground residential service entrances, 200 A and 320 A, wall-mount and pedestal, on residential property.

The service entrance includes risers, the meter socket, and the meter enclosure.

Refer to SCL 0224.01 for additional information related to customer requirements for underground secondary service.

Refer to SCL 1554.33 for meter mounting configurations, heights, working space and clearances for outdoor installations.

2. Application

This standard is for use by SCL customers, engineers, electric service representatives, and operations personnel.

3. Requirements

3.1 General

Only one electric service connection shall be allowed per service entrance.

The legal service termination point shall be at the meter enclosure.

SCL shall determine the service point (the point in the ROW where the customer service conduit is terminated).

The customer shall provide and install all service entrance equipment per this standard, the Customer Requirements Package, and the SCL Requirements for Electric Service Connection (RESC).

All new secondary underground services shall be installed in conduit. Direct-buried conductors shall be prohibited.

Any modifications to an existing underground service shall likewise be installed in conduit from the Utility-identified point of service in the Right-of-Way (ROW) to the service termination point on the customer's property. Direct-buried conductors shall be prohibited.

The customer shall meet the requirements for secondary conduit installation per SCL 0224.07.

Services with provisions for alternate power sources shall be designed to eliminate any possibility of back feed into the distribution power system.

The customer is responsible for ensuring against entry of water into the building, into or through service equipment, or other location where the entry of water could be considered a problem.

3.2 Conduit

The customer shall provide and install one 3-inch conduit from the meter enclosure to the service point per SCL 0224.01.

All bends shall have a 36-inch radius.

A pulling handhole shall be required to reduce length of conduit run to 150 feet or less, or to reduce the number of conduit bends to 270° (equivalent to three 90° bends) or fewer.

Mandreling and cleaning of conduit shall be done per SCL U2-11.40/NDK-40. This includes pulling-tape requirements.

See Section 3.6 for steel conduit grounding requirements.

3.3 Meter Equipment, General

Manual bypass meter sockets are encouraged but not required. If a manual bypass is installed, the bypass section shall be accessible to SCL.

Only 200 A and 320 A four-terminal meter bases shall be allowed.

Meters shall be installed only in sockets which are level, plumb, and secured to a structural wall or pedestal.

Meters mounted on concrete or masonry walls shall be fastened by steel expansion anchors or quick bolts.

The addition of customer owned equipment between the socket and utility-owned electric meter shall not be allowed.

Multi-pack meter enclosures shall be permanently labeled with the residential unit served.

3.4 Wall-Mount Meters

Wall-mount meters include both surface-mount and semi-flush-mount types.

For single, 200 A meters, meter enclosure dimensions shall be, at a minimum, 11 in (W) by 14 in (H) by 4-1/2 in (D).

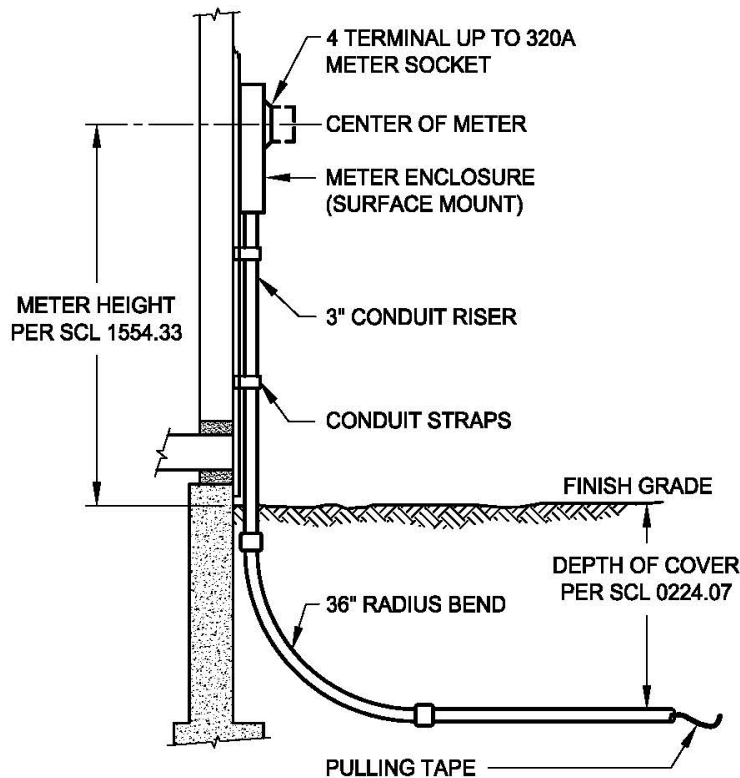
For single 320 A meters, meter enclosure dimensions shall be, at a minimum, 14 in (W) by 32 in (H) by 6 in (D).

3.4.1. Surface-Mount Meters

A minimum of two conduit straps shall be required to secure riser conduit to the structural wall with 1/4-in lag screws or equivalent.

Surface-mount meter service entrances shall be installed as shown in Figure 3.4.1.

Figure 3.4.1. Surface-Mount Meter Installation



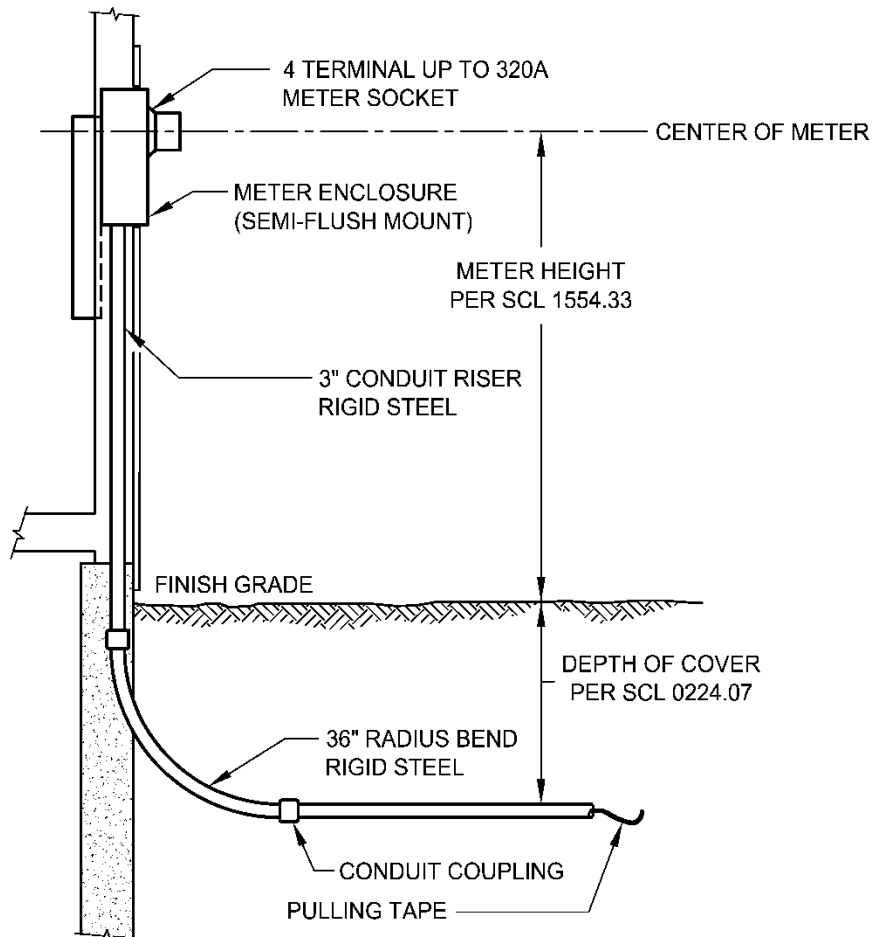
3.4.2. Semi-Flush-Mount Meters

Semi-flush-mount meter service entrances shall be installed as shown in Figure 3.4.2.

Siding or exterior finish shall not contact the meter enclosure or sealing ring.

The riser shall be 3-in rigid steel.

Figure 3.4.2. Semi-Flush-Mount Meter Installation



3.5 Pedestal Mount Meters

Pedestal mount meters consist of a 200 A configuration and a 320 A configuration.

This mounting option is for metering permanent residential loads where the meter location is NOT at the load location or structure. The conductors that run from the meter to the load location shall be installed, owned, and maintained by the property owner.

Conduits straps shall be rigidly fastened to the post support with 1/4-in lag screws or equivalent.

A minimum of 4 inches of concrete shall be poured around the base of the pedestal. The poured concrete shall be crowned and tapered away from the post above finish grade.

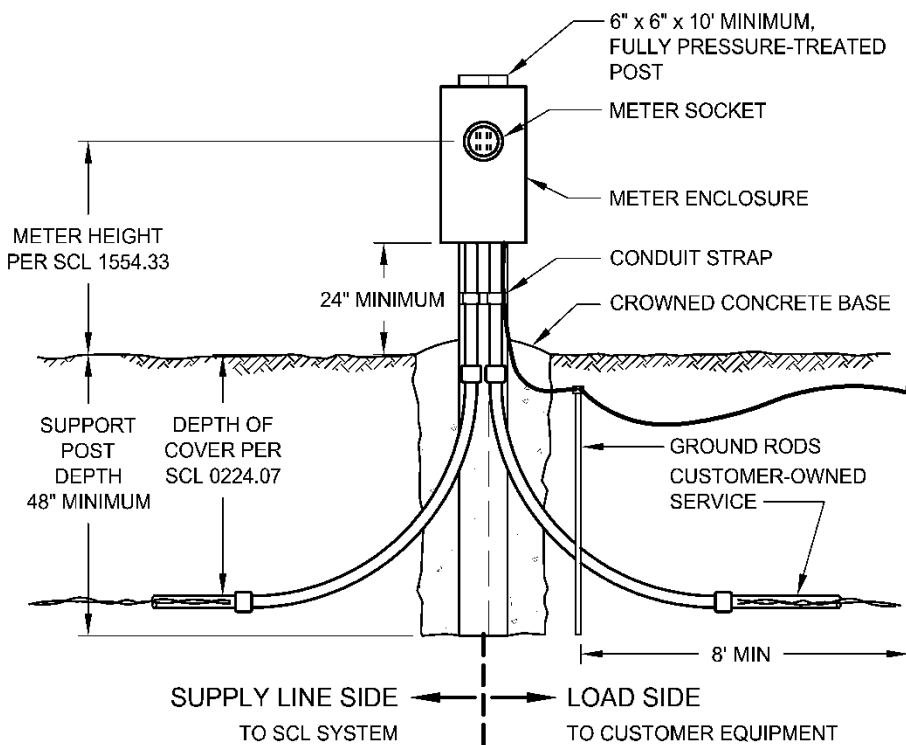
3.5.1. Pedestal-Mount Meters, 200 A

Meters shall be installed as shown in Figure 3.5.1.

The meter enclosure dimensions, shall be, at a minimum, 11 in (W) by 14 in (H) by 4-1/2 in (D).

The meter pedestal at a minimum, shall be a 6 in by 6 in by 10 ft fully pressure-treated wood post in a concrete-poured base.

Figure 3.5.1. Pedestal-Mount Meter, 200 A



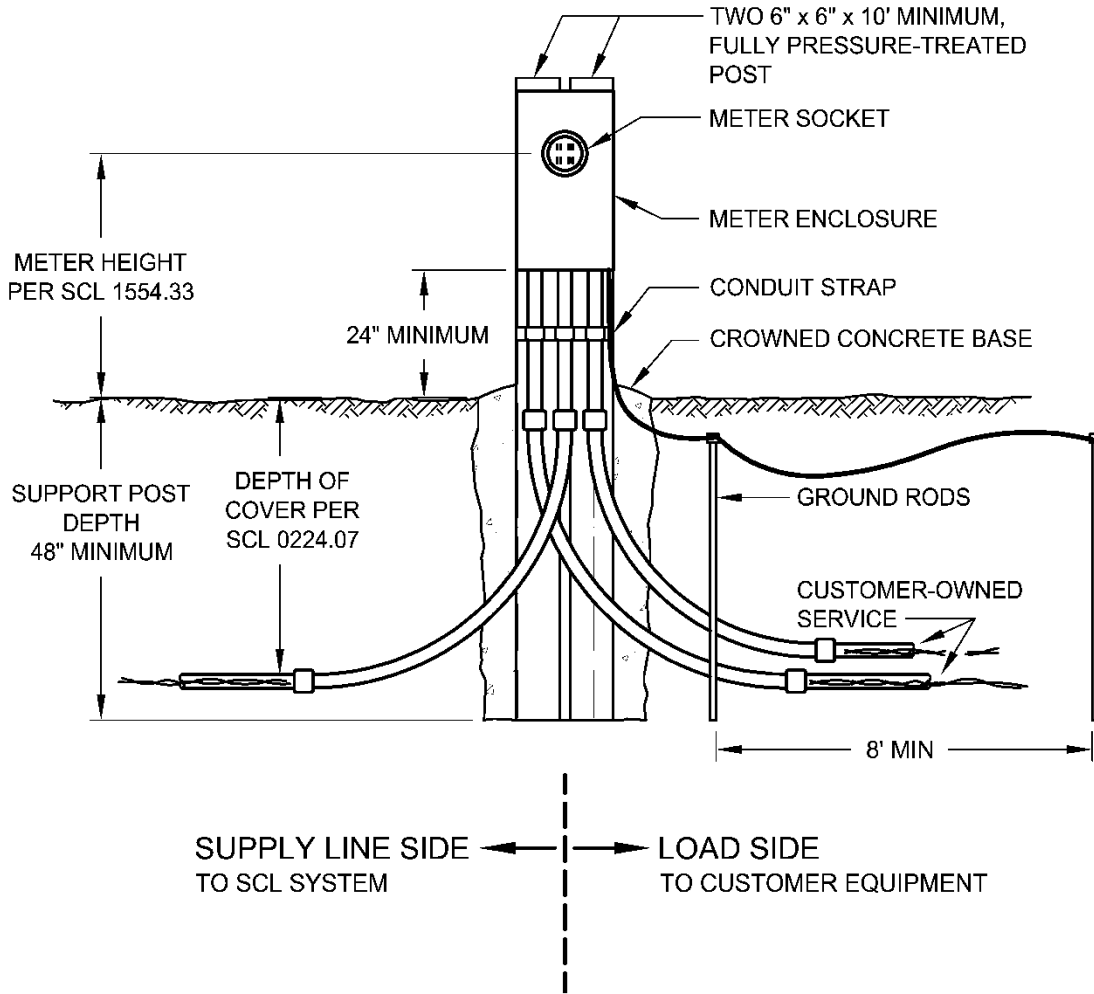
3.5.2. Pedestal-Mount Meter, 320 A Configuration

Pedestal-mount meters for a 320 A configuration shall be installed as shown in Figure 3.5.2.

The meter enclosure dimensions shall be, at a minimum, 14 in (W) by 32 in (H) by 6 in (D).

The meter pedestal, at a minimum, shall consist of two 6 in by 6 in by 10 ft fully pressure-treated, ground contact posts in a concrete-poured base.

Figure 3.5.2. Pedestal-Mount Meter, 320 A



3.6 Wiring, Grounding, and Conduit Termination

For 200 A class sockets, the supply (line side) conduit shall enter through the left or the right knockout at the bottom of the meter enclosure.

The supply (line side) conductors to the meter socket shall be connected to the top terminals. The load conductors shall be connected to the bottom terminals. See Figure 3.5.

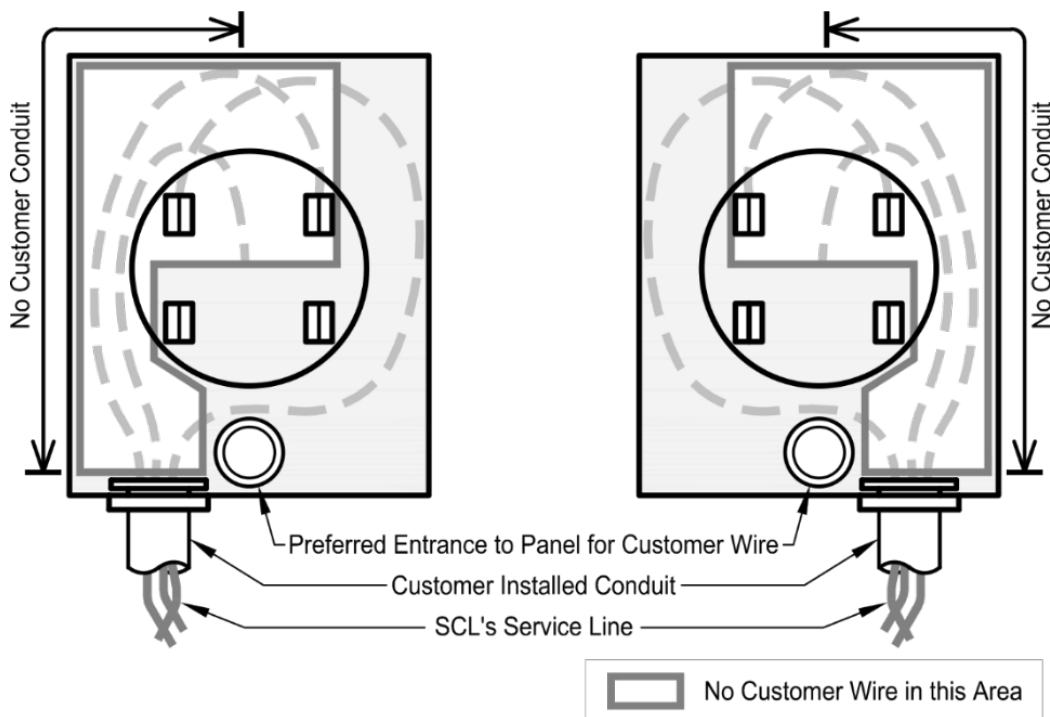
The load side wires shall enter through the side opposite to the supply conductor side and shall not block the path of the supply side conductors.

For 320 A class sockets, the supply conduit shall enter the center knockout at the bottom of the meter enclosure.

The neutral wire shall be grounded in the meter socket.

All meters, sockets, enclosures, and conduit shall be bonded and effectively grounded in accordance with NEC Article 250 and WAC 296-46B-250.

Figure 3.5. Wiring and Conduit Termination into the Enclosure



4. References

NFPA 70; National Electrical Code (NEC); 2011 Edition, National Fire Protection Association, Quincy, MA, 2008

Requirements for Electrical Service Connection (RESC); Seattle City Light, latest reversion

SCL Construction Standard 0224.01; "Customer Requirements for Underground Secondary Service, Looped Radial System"

SCL Construction Standard 0224.07; "Requirements for Secondary Conduit Installation"

SCL Construction Standard 1554.33; "Meter Mounting Configurations, Heights, Working Space, and Clearances, Exterior"

SCL Construction Standard 1561.07; "Customer Requirements for Underground Secondary Service Termination Facilities"

SCL Construction Standard U2-11.40/NDK-40; Mandreling and Cleaning of Ducts"

WAC 296-46B-250; "Wiring and Protection—Grounding and Bonding", Washington Administrative Code

5. Sources

Edwards, Tommy; SCL Electrical Reviewer and subject matter expert for SCL 1561.05

Electric Utility Service Equipment Requirement Committee (EUSERC); "EUSERC Drawing 300", www.euserc.com

National Electrical Safety Code (NESC) C2-2017 Edition; Institute of Electrical and Electronics Engineers (IEEE), 2016

National Electrical Manufacturers Association (NEMA) TC 2-2013; Electrical Polyvinyl Chloride (PVC) Conduit

Neuansourinh, Ponet; SCL Standards Engineer and originator of SCL 1561.05;

Perander, Eivind; SCL North Distribution Supervisor and subject matter expert for 1561.05

SCL Construction Guideline U12-1.3/NMT-10 (canceled); "Meter Location and Conduit Entrance Details for Secondary Underground Residential Service, Class 320 Maximum"

SCL Construction Standard 1553.03; "Meter Base and Socket Configurations"

SCL Work Practice 0035.13; "Voltage Zones"

UL414; "Underwriters Laboratories Standard for Meter Sockets"

WAC 296-45-325; "Working on or Near Exposed Energized Parts"; Washington Administrative Code