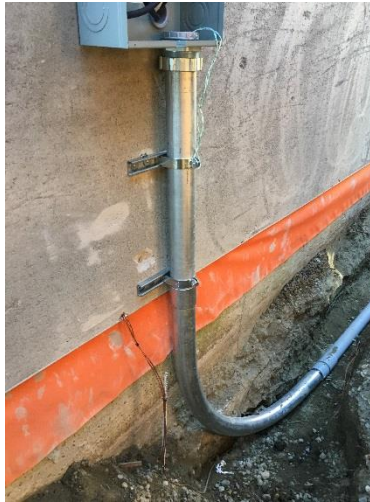


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## Customer Requirements for Underground Residential Service Entrances, Single or Dual Meters



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### 1. Scope

This standard covers Seattle City Light (SCL) requirements for the permanent installation of underground residential service entrances to a single or dual meter, for 200 A and 320 A, on private property.

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

Refer to the SCL "Requirements for Electrical Service Connection" (RESC) for general information and request for underground secondary service.

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

Service termination facilities for three or more meters are outside the scope of this standard. See SCL 1561.07.

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### 2. Application

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

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### 3. Conflict

Where conflict exists between requirements, the following order of precedence shall apply:

1. Project-specific Customer Requirements Package, including the service construction drawing
2. SCL 1561.05 (this standard)
3. Other SCL standards

## **4. Requirements**

### **4.1 General**

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

SCL shall determine the service point (the point in the right-of-way where the customer service conduit is terminated).

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

The customer shall provide and install all service entrance equipment per this standard, the Customer Requirements Package, and the RESC.

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.

Direct buried conductors shall not be allowed.

All service secondary risers into the meter enclosure shall be rigid galvanized steel (RGS).

All conduits shall be 3 inches in diameter.

All 90-degree bends shall have a 36-inch radius.

Where meter location presents a potential for damage, the meter shall be recessed in the wall or protected with bollards to meet the clearance requirement (see Section 4.3).

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 less.

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

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

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

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 stainless or galvanized metal machine screws in lead sleeve, wedge-type expansion anchors or quick bolts.

Dual meter enclosures shall be permanently labeled with the residential unit served.

## 4.2 Mounting Height

Mounting height requirements shall be as shown in Table 4.2.

**Table 4.2. Mounting Height Requirements**

Mounting Type	Height from Final Grade to Center of Meter (ft)	
	Minimum	Maximum
Recessed (wall)	4	6
Surface (wall)	4	6
Pedestal	3	5
Dual meter (wall)	4	6

## 4.3 Clearances

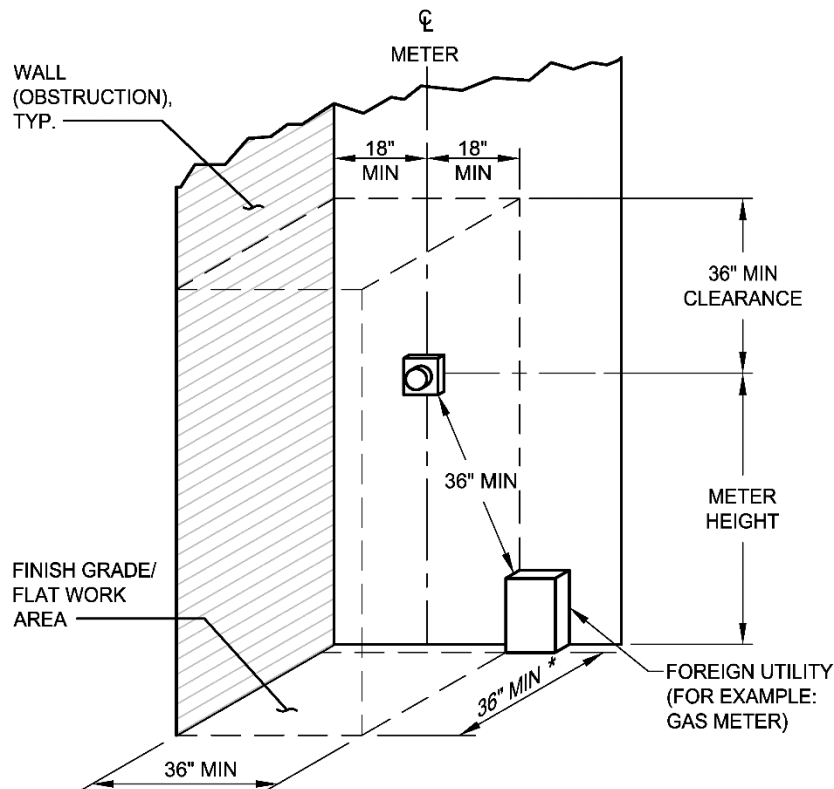
Meters shall have an 18-in minimum clearance on both sides of the meter and a 36-in minimum clearance above the meter (measured from the center). This clearance is required for installation and maintenance.

Meters shall be installed no less than 36 inches from natural gas meters (measured from edge to edge).

Meters shall be installed with no less than 36 inches of working space in front of the meter or metering equipment (measured from the front of the meter glass).

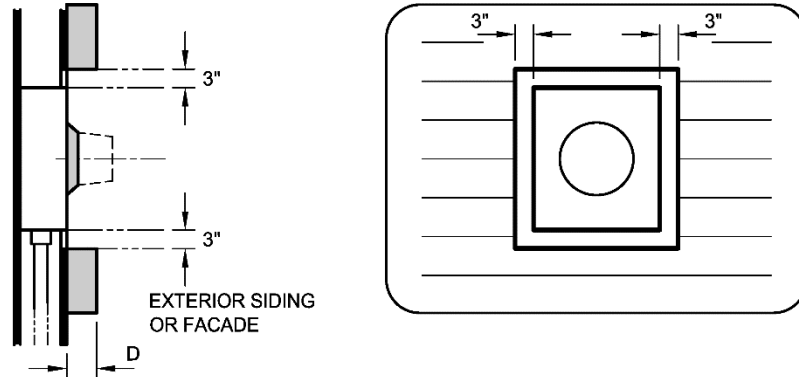
Recessed-mount meter bases shall be similar to those shown in Figure 4.3a with the additional clearances shown in Figure 4.3b.

**Figure 4.3a. Clearance Requirements**



\* FROM FACE OF METER

**Figure 4.3b. Recessed-Mount Meter Additional Clearance Requirements**



**Notes:**

1. The depth (**D**) of the exterior siding or façade shall not exceed 9 inches.
2. All recessed openings shall provide a 3-inch minimum gap around the meter enclosure to the outer wall and façade. The sealing ring shall not contact the wall or façade.

**4.4 Wall-Mount Meters**

Wall-mount meters include both surface-mount and recessed-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).

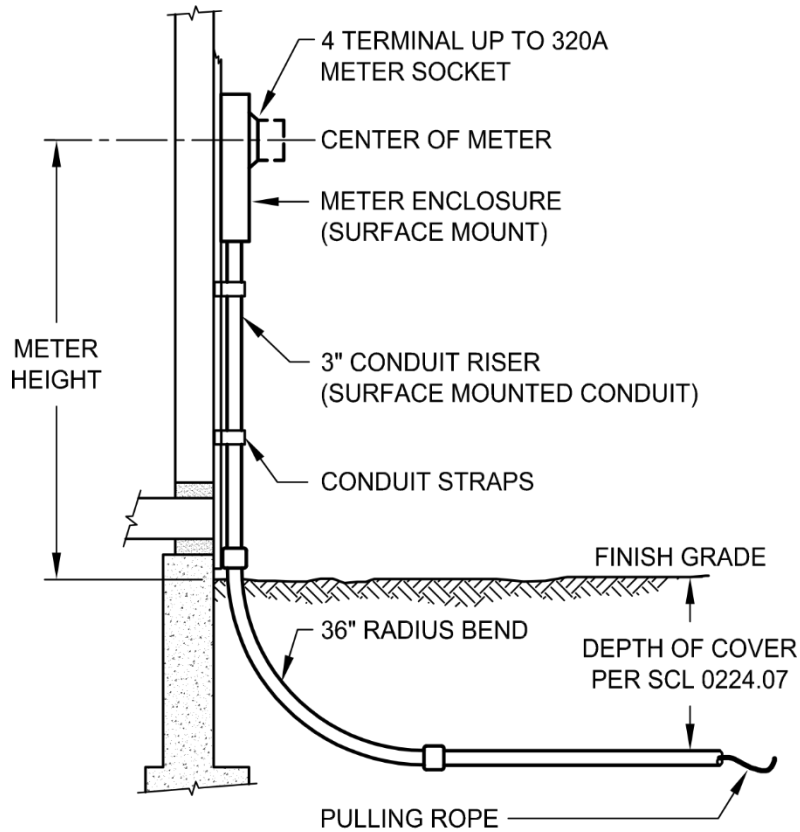
For single 320 A meters, meter enclosure dimensions shall be, at a minimum, 14 in (W) by 32 in (H) by 6 in.

**4.4.1. 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 4.4.1.

**Figure 4.4.1. Surface-Mount Meter Installation**



**Notes:**

1. For meter heights above grade, see Table 4.2.
2. For meter enclosure, conduit, and bends requirements, see Section 4.1.

**4.4.2. Recessed-Mount Meters**

Recessed-mount meter service entrances shall be installed as shown in Figure 4.4.2.

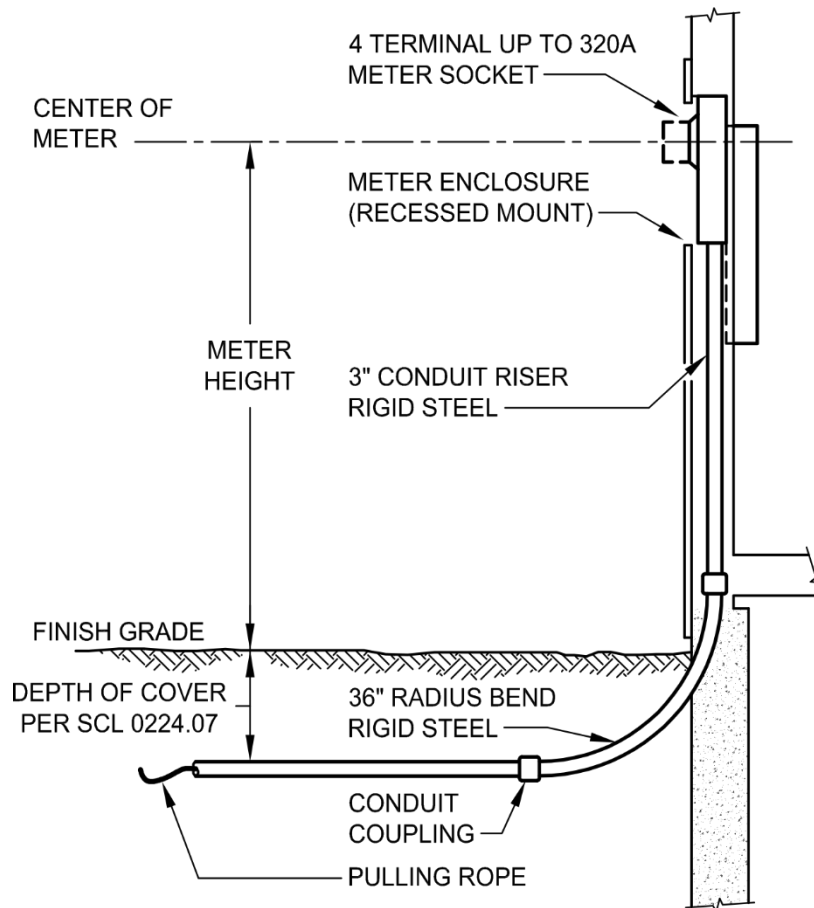
Siding or exterior finish shall not contact the meter enclosure or sealing ring.

The riser shall be 3-in rigid steel.

Recessed-mount meters shall be readily removable.

Recessed-mount meters shall be visible (not hidden, covered, obstructed, camouflaged, or painted).

**Figure 4.4.2. Recessed-Mount Meter Installation**



**Notes:**

1. For mounting heights above grade, see Table 4.2.
2. For meter enclosure, conduit, and bends requirements, see Section 4.1.

**4.5 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 4.5.

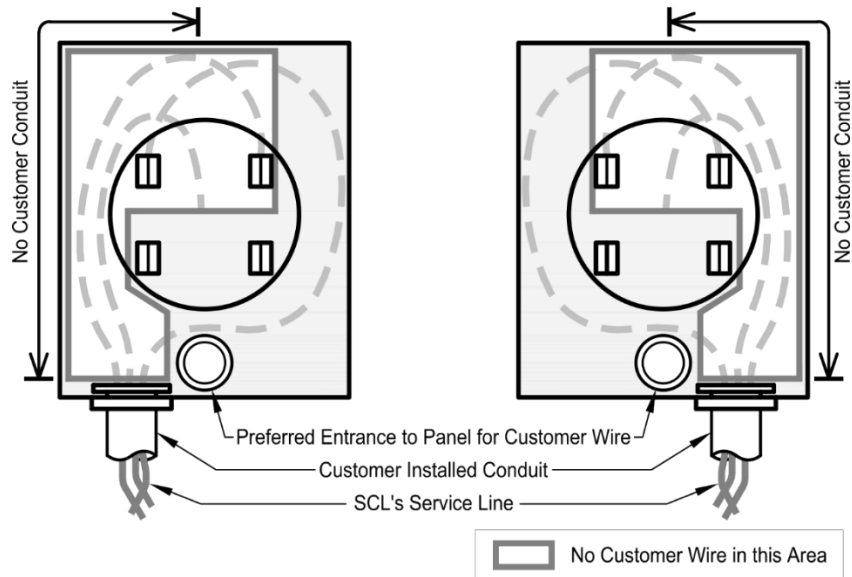
The load side wires shall enter through the side opposite to the supply conductor side and shall not block the path of the supply side conductors.

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 4.5. Wiring and Conduit Termination into the Enclosure**



#### 4.6 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.

See Section 4.3 for clearance requirements.

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 final grade.

##### 4.6.1. Pedestal-Mount Meters, 200 A

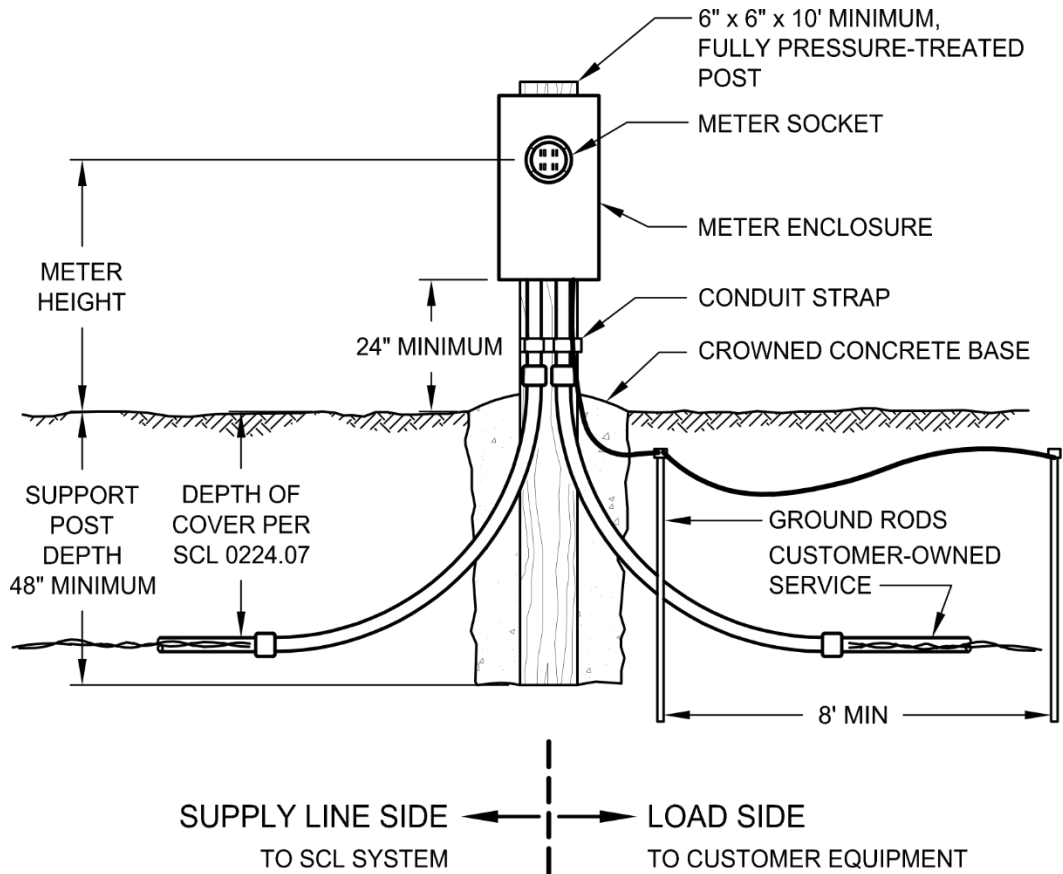
Meters shall be installed as shown in Figure 4.6.1.

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.

The conduit termination shall enter through the left or the right knockout at the bottom of the meter enclosure. See Section 4.5.

**Figure 4.6.1. Pedestal-Mount Meter, 200 A**



**Notes:**

1. For mounting heights above grade, see Table 4.2.
2. For meter enclosure, conduit, and bends requirements, see Section 4.1.



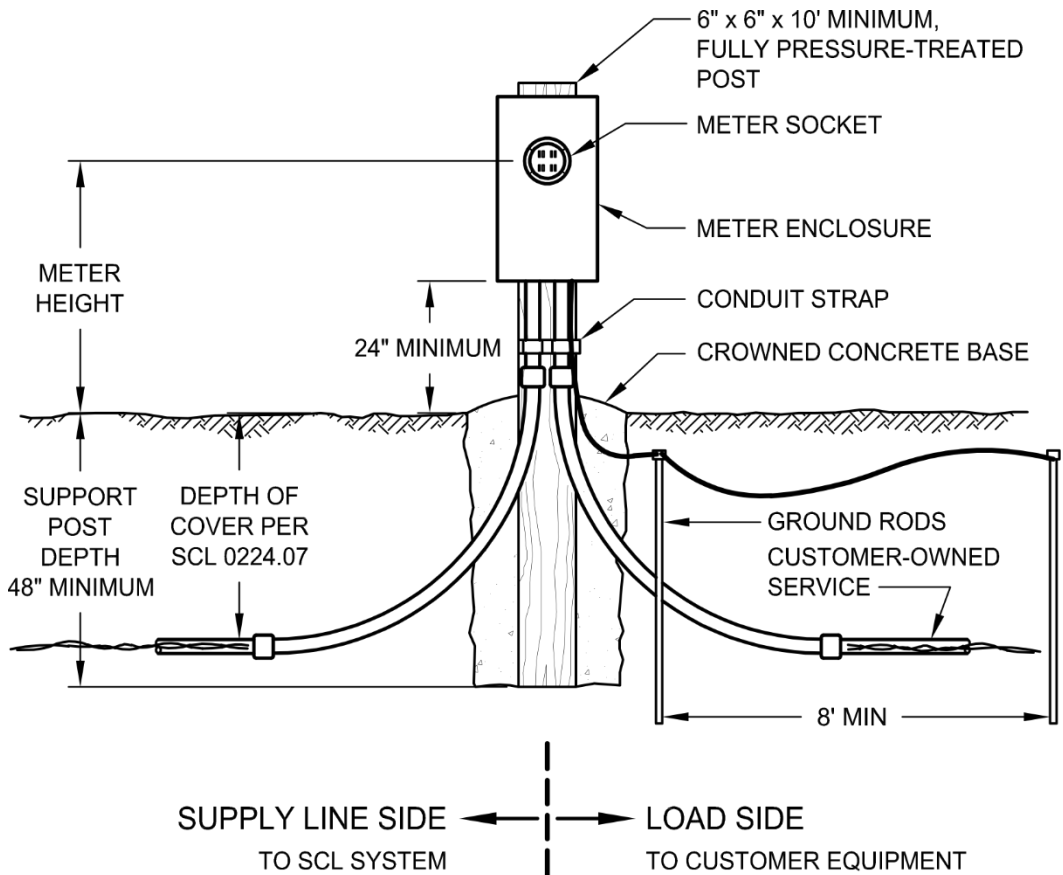
**4.6.2. Pedestal-Mount Meter, 320 A Configuration**

Pedestal-mount meters for a 320 A configuration shall be installed as shown in Figure 4.6.2.

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 4.6.2. Pedestal-Mount Meter, 320 A**



**Notes:**

1. For mounting heights above grade, see Table 4.2.
2. For meter enclosure, conduit, and bends requirements, see Section 4.1.

**5. References**

**NFPA 70;** National Electric 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 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

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## 6. Sources

**Edwards, Tommy**; SCL Electrical Reviewer and subject matter expert for SCL 1561.05; (tommy.edwards@seattle.gov)

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

**National Electrical Safety Code (NESC) C2-2012 Edition**; Institute of Electrical and Electronics Engineers (IEEE), 2011

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

**Neuansourinh, Ponet**; SCL Standards Engineer and originator of SCL 1561.05; (ponet.neuansourinh@seattle.gov)

**Perander, Eivind**; SCL North Distribution Supervisor and subject matter expert for 1561.05 (eivind.perander@seattle.gov)

**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