

POLE ATTACHMENTS, AUTOMATED METER READING AND CELLULAR PHONE ANTENNAS



1. Scope

This standard covers requirements for the installation of antenna structures, antenna feedlines, conduit risers and associated equipment on Seattle City Light (SCL) distribution poles. These antennas and appurtenances include, but are not limited to, those associated with Automated Meter Reading (AMR) communications devices and Distributed Antenna Systems (DAS).

2. Application

This standard provides installation details and requirements for antenna appurtenances on SCL poles and streetlights. This standard is used by SCL crews, customers and contractors.

3. Serving Voltage

3.1 Where single phase service is required, the serving voltage will be 120/240 volts. 120/208 volt, single phase, three wire service will not be provided.

3.2 Where three phase service is required, contact the SCL Customer Service Representative.

3.3 Neutral wire must be clearly marked on the service equipment.

4. Codes and Permits

4.1 All necessary permits shall be obtained by the company owning the antenna. This includes, but is not limited to, City of Seattle street use permits, land use and environmental permits.

4.2 Installation must meet all applicable codes and SCL construction standards. In case of conflict the most stringent requirement will prevail.

4.3 Electrical services associated with installation shall meet all applicable provisions of the latest revision of the National Electrical Code. Services with provision for alternative power sources shall be designed to eliminate any possibility of backfeed into the distribution power system.

<i>standards coordinator</i>	<i>standards supervisor</i>	<i>unit director</i>
 Curtis Lu	 John Shipek	 Darnell Cola

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- 5.1 All metallic parts of the installation on the pole shall be bonded together and grounded.
- 5.2 A copper ground wire, #6 AWG minimum size, shall be installed from the base or feedline connection point of the antenna to a ground rod at the base of the pole. This ground wire shall be located on the same face of the pole and be adjacent to the antenna feedline conduit. The ground wire shall be permanently connected to the ground rod.
- 5.3 Where a SCL neutral conductor exists, the ground wire shall be permanently bonded to the SCL neutral conductor at the neutral conductor level by SCL crews.
- 5.4 A ground rod, 8 feet minimum in length, shall be installed (in addition to any existing SCL grounding electrodes) at the base of the pole. This installation shall meet or exceed the requirements of Construction Guideline D16-2.
- 5.5 The ground wire shall be covered by a protective molding for its entire length on the pole except at the point where it must be exposed for bonding to the SCL neutral.
- 5.6 The SCL and communication ground rods shall be bonded together using copper #6 AWG wire.

6. Conduit Risers

- 6.1 The maximum number of conduits allowed on the pole shall be four 4-inch conduits conforming to the spacing requirements in Construction Guideline U7-10, unless special approval is granted by the pole engineer.
- 6.2 All conduits and/or feed lines shall be mounted on the face of the pole.
- 6.3 All conduits and/or feed lines over 2 inches nominal diameter shall be installed on standoff brackets. A minimum space of 4-1/2 inches (for climbing) shall be maintained between the pole and the closest part of the conduit. The standoff bracket installation shall conform to Construction Guideline U7-10. In particular, the support bracket with brace shown in Section 4 must be used as shown. The standoff brackets used shall be Stock Number 686796 or preapproved equivalent. These brackets may be purchased from SCL Stores at 3613 4th Ave. South.
- 6.4 Conduits shall be gray electrical grade Schedule 40 or 80 PVC.

- 6.5 Conduits between 2 feet below the ground line to 8 feet above the ground line shall meet the requirements of Sections 6.3 and 6.4 above, however, code and/or permit conditions may require a thicker wall conduit or different material.
- 6.6 Polyethylene and CPVC conduits are not acceptable.
- 6.7 Telecommunications conduit shall be fed continuously in the equipment box.

7. Equipment Mounted on Pole

- 7.1 The number of installations and quantity of equipment and antennas will be limited to the space available on the existing or replaced pole. Antenna installations may not be allowed on primary corner poles, poles with transformers, capacitors, primary cable terminations, primary switches or primary metering or other locations where adequate clearance is not available. Only one antenna installation in the primary zone will be allowed on a pole.
- 7.2 No service entrance equipment, including metering, will be allowed on the pole.
- 7.3 Radio or other cabinets will be allowed on the pole only if they comply with the maximum size allowed by Construction Guideline D2-1.3.
- 7.4 Only one antenna related box per pole will be allowed. First come, first served.
- 7.5 The above types of equipment may be pad mounted provided that no equipment is located nearer than ten feet from the pole.
- 7.6 See Section 11 below for required clearances.
- 7.7 Conduit running up to SCL secondary conductors or antenna cables running up to a box shall be on the street side of the pole. All conduit running from the box to the antenna shall be on the face of the pole.
- 7.8 The equipment box shall be clearly marked with the company equipment ID#, the company name, and the emergency contact phone number.
- 7.9 High power transmitting equipment, such as DAS, must be equipped with a disconnect switch.

8. Materials Provided by Antenna Owner:

These materials shall meet or exceed SCL material standards where SCL specifications exist.

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9. Aesthetics:

Antenna installations shall use available stealth technology and shall be made as visually obscure as reasonably possible.

10. Community Notification and Disputes

10.1 It shall be the responsibility of the applicant for the antenna installation to resolve any and all complaints resulting from the installation including complaints relative to increased pole height or impaired view or visibility. The sole exception shall be complaints relating exclusively to SCL facilities.

10.2 All complaints regarding the antenna installation will be referred to the owning company. The owning company shall provide SCL a phone number for reception and resolution of complaints.

11. Clearances for Antenna Units Mounted Between Neutral and Primary

A minimum vertical clearance of 12 inches above the neutral and 36 inches below primary voltage conductors shall be maintained for antenna units mounted between neutral and primary. The minimum horizontal and/or slant clearance of 36 inches shall be maintained between all conductors energized at primary voltage and all parts of the pole mounted unit, antennas and cables. These vertical, slant and horizontal clearances also apply to a cutout door when in the open position. The minimum horizontal clearance from the surface of the pole to the antenna element and/or the pole mounted unit shall be 4-1/2 inches.

12. Installation and Maintenance:

SCL crews will install and maintain all equipment, antennas and feed lines located at or above the level of the power neutral conductor on the pole. Fees for this work are established in the pole agreement contract.

13. Outage Notification:

SCL will make every reasonable effort to notify equipment owners of outages 24 hours in advance when possible. However, SCL reserves the right to disconnect power to installations without prior notice when necessary.

14. References

0093.06; "Bracket, Communications Cable Attachment"; Construction Standard; SCL

D2-1.1; "Attachments on Standard Utility Poles"; Construction Guideline; SCL

D2-1.3; "Cable TV Power Supply Attachments"; Construction Guideline; SCL

D2-1.4 (cancelled); "Automated Meter Reading Antenna Pole Attachments and Cellular Phone Antennas Mounted below Primary Conductors"; Construction Guideline; SCL

D2-3; "Clearances from Structures and Ground"; Construction Guideline; SCL

D9-52; "15/26 kV Distribution Crossarm Details"; Construction Guideline; SCL

D16-2; "Grounding Rod Installation"; Construction Guideline; SCL

Haberman, Douglas; SCL Joint Use Strategic Advisor; subject matter expert for 0095.05 (douglas.haberman@seattle.gov)

IEEE/ANSI C2; "National Electrical Safety Code"; IEEE/ANSI; 2007

Lu, Curtis; SCL Standards Engineer; subject matter expert and originator of 0095.05 (curtis.lu@seattle.gov)

NFPA 70; "National Electrical Code"; NFPA ; 2008

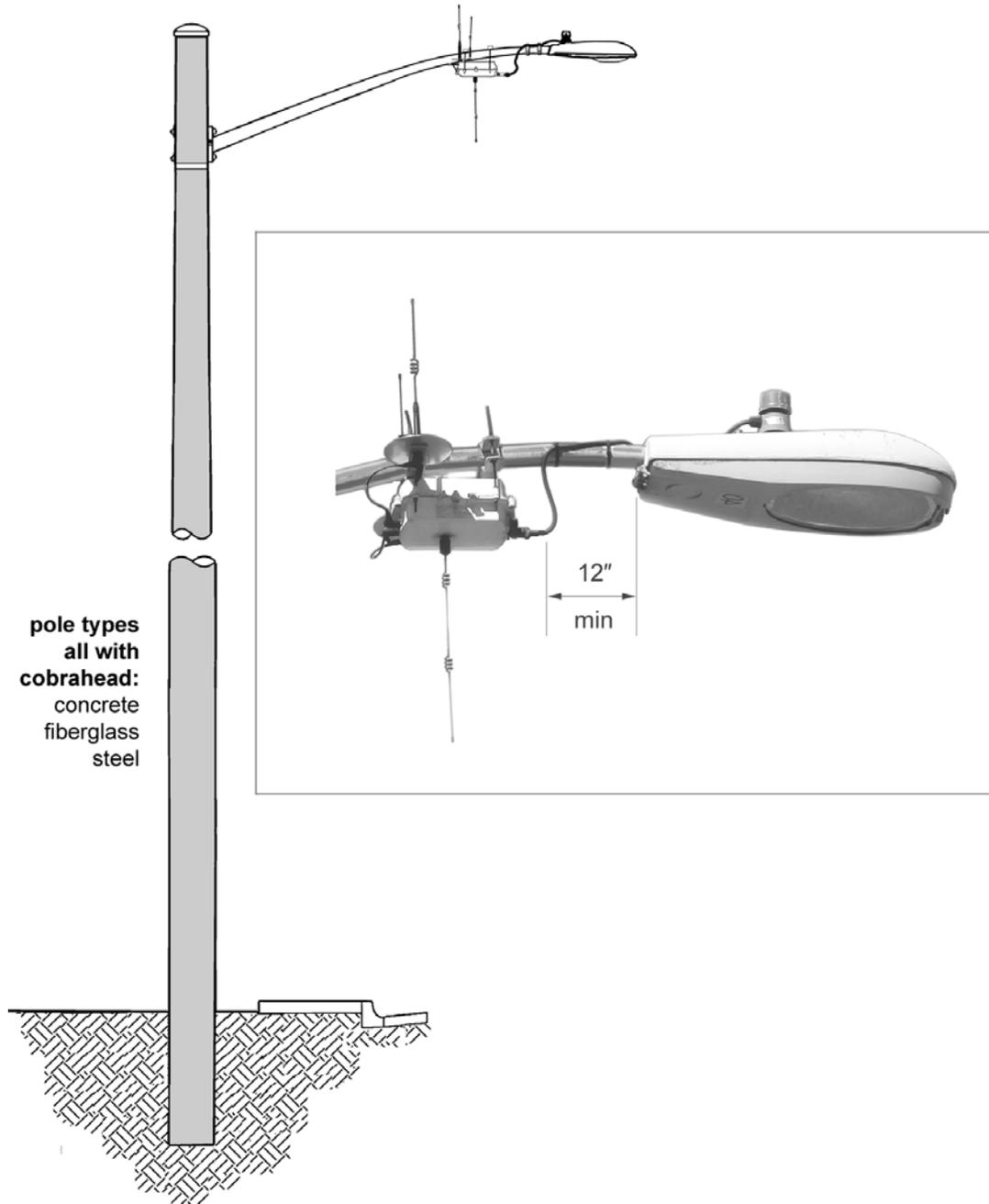
U7-10; "Conduit Risers On Poles"; Construction Guideline; SCL

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15. Mounting Diagrams

15.1 AMR Antenna, Steel Pole Installed



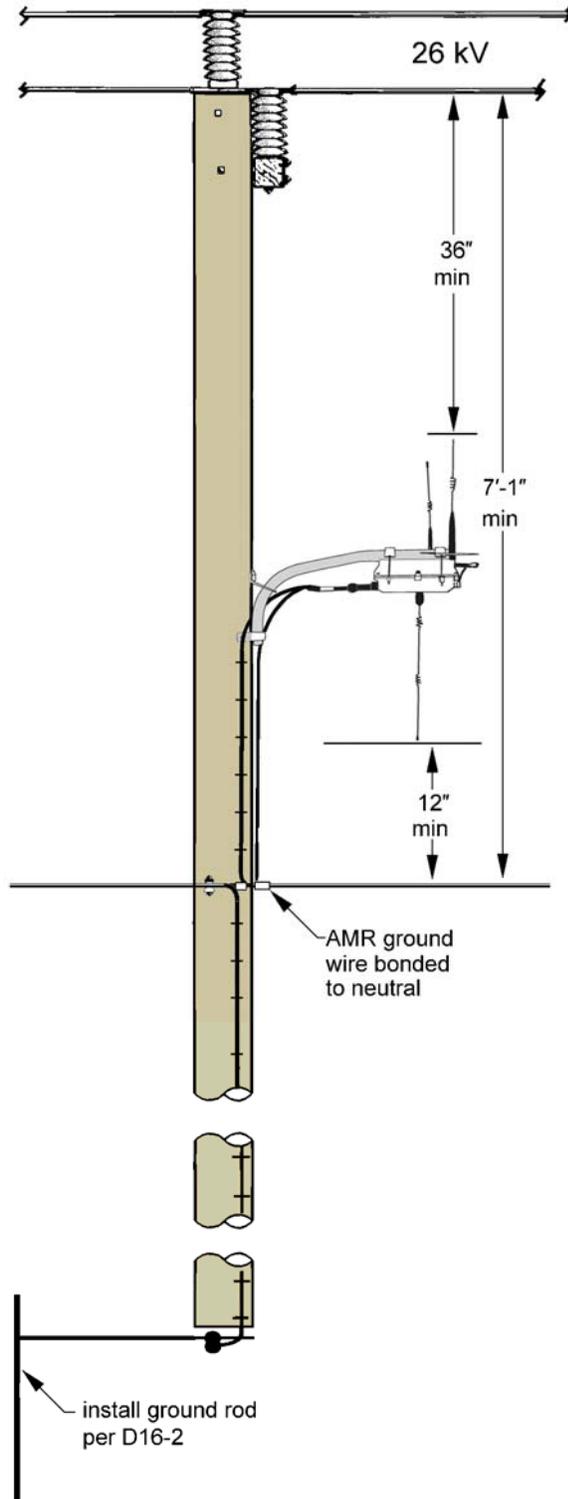
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15. Mounting Diagrams, continued

15.2 Pole Mounted AMR Unit On Wood Pole Above Neutral

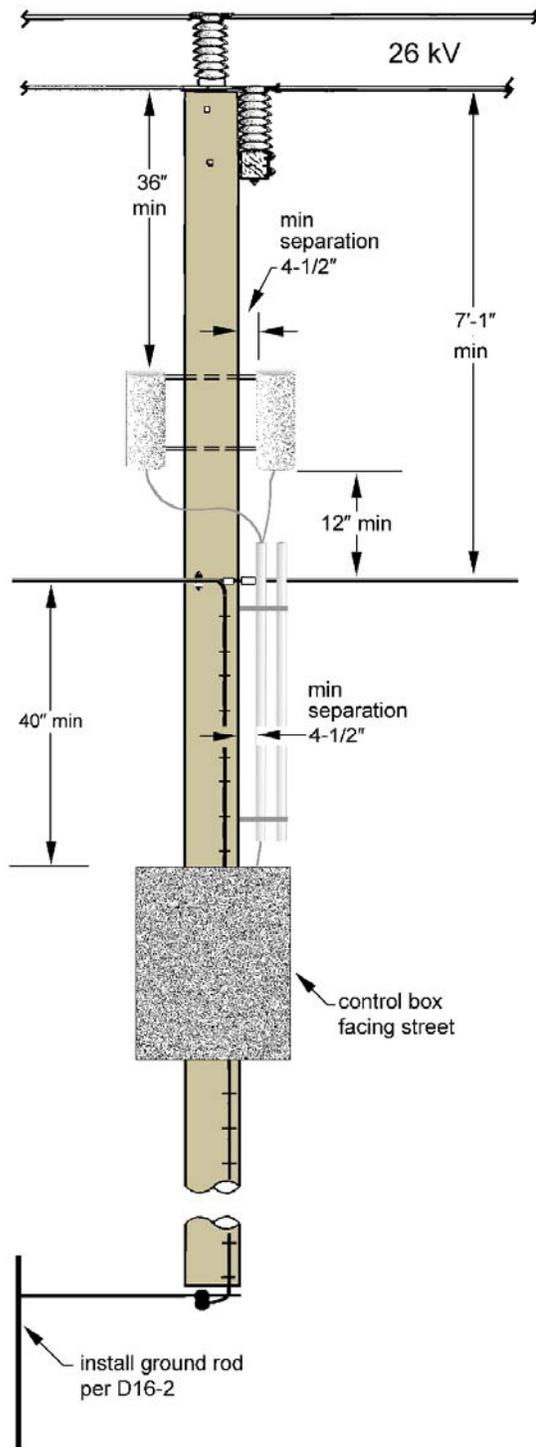


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15. Mounting Diagrams, continued

15.3 Pole Mounted DAS Unit On Wood Pole Above Neutral



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15. Mounting Diagrams, continued

15.4 Master Control Station with Pole Mounted Antenna

