

CONSTRUCTION GUIDELINE**ANTENNA POLE ATTACHMENTS ABOVE PRIMARY CONDUCTORS**

- 1. Scope:** This document covers requirements for the installation of antenna structures, antenna feedlines, conduit risers, and associated equipment on Seattle City Light (SCL) distribution and wood transmission poles.

These antennas and appurtenances include but are not limited to those associated with cellular phone and wireless personal communications devices.

2. Applications

- 2.1 Applications for the antenna and equipment installation shall be made to the SCL Joint Use Unit.
2.2 Applications for electrical service for the installation shall be made to the SCL Commercial Service Representative for the area where the installation will be located.

3. Serving Voltage

- 3.1 Where single phase service is required, the serving voltage will be 120/240 V. 120/208 V single-phase three-wire service will not be provided.
3.2 Where three-phase service is required, contact the SCL Commercial Service Representative.

4. Codes and Permits

- 4.1 All necessary permits shall be obtained by the company owning the antenna.
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 (NEC). In particular, services with provision for alternative power sources shall be designed to eliminate any possibility of backfeed into the commercial power system.
4.4 Federal Aviation Agency (FAA) permits shall be obtained by the applicant for the antenna installation where required.
4.5 All required community notifications, easements, overhangs, and tree trimming must be obtained by the antenna owner from the property owner before construction.

5. Grounding and Bonding

- 5.1 All conductive equipment attached to the pole shall be properly grounded and bonded per the National Electrical Safety Code (NESC) and the NEC. A copper ground wire, #4 AWG minimum size, shall be installed from equipment to the pole ground using an irreversible connection. Where a pole ground does not exist, one shall be installed at the base of the pole. This installation shall meet or exceed the requirements of SCL 0451.01.
5.2 Ground bus bars installed on the poles shall not exceed 12 in and shall be covered and protected.

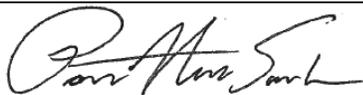
6. Conduit Risers

- 6.1 The maximum number of conduits allowed on the pole shall be:
A. Four 4-in conduits for RF transmission lines. Alternatively, four 6-in conduits may be allowed upon special approval by the responsible Joint Use Engineer.
B. And a conduit 3 inches or smaller for electrical service to either the pole mounted box (shown in the illustrations on pages 4 through 7 of this guideline) or to the padmounted equipment.
C. And a 2 inch or smaller conduit for telephone to the padmounted equipment.

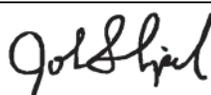
STANDARDS COORDINATOR

STANDARDS SUPERVISOR

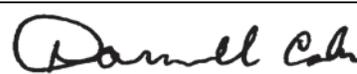
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- 6.2 All conduits and/or feed lines shall be mounted on the face of the pole.
- 6.3 All conduits and/or feed lines over 2 in nominal diameter shall be installed on standoff brackets. The minimum space between the pole and the closest part of the conduit shall be 4-1/2 in (for climbing). The standoff bracket installation shall conform to SCL U7-10/NDK-70.
 - A. Conduit risers and equipment at the base of the structure shall not be readily climbable up to 8 ft above finish grade.
- 6.4 Conduits shall be electrical grade Schedule 40 or rigid steel painted to match the pole.
- 6.5 Conduits between 2 ft below the ground line to 8 ft 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 See SCL U7-10 for installation requirements for conduit risers on poles.

8. Equipment Mounted on Pole

- 8.1 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 will not be allowed on primary corner poles, poles with transformers, capacitors, primary cable terminations, primary switches, or primary metering. More than one rad center may be allowed on a pole, although no more than three antennas may be allowed at a rad center. Only collar mounts are allowed. Goal post mounts are not allowed.
- 8.2 Only one wireless carrier may have equipment on any given pole.
- 8.3 No service entrance equipment will be allowed on the pole.
- 8.4 Radio or other cabinets will be allowed on the pole only if they comply with the maximum size allowed by SCL 0094.01.

Note: The cabinet shown on the illustrations on pages 4 through 7 of this guideline are not necessarily used on every installation. For instance, some installations may use padmount equipment.
- 8.5 Only one pole mounted box per pole will be allowed. See SCL 0094.01.
- 8.6 The above types of equipment may be padmounted provided that no equipment is located closer than 10 ft from the pole.
- 8.7 All proposed equipment mounting shall be reviewed by the SCL Joint Use Unit. Any variance for equipment mounted on the pole (SCL 0094.01) shall require approval from Joint Use. The equipment owner shall be responsible for all mitigation.
- 8.8 The antenna related box (if any) shall be mounted on the street side of the pole and shall be located high enough so that it will not be damaged by passing traffic. See SCL 0094.01.
- 8.9 Conduit running up to SCL secondary conductors or antenna cables running up to a box shall be on the face of the pole. All conduit running from the box to the antenna shall also be on the face of the pole.
- 8.10 Antennas and cabinets shall be painted to match the pole or as required by agreements, the easement, or the permitting agency.

- 9. **Materials Provided by Antenna Owner:** These materials shall meet or exceed SCL specifications where SCL specifications exist. If needed, specialized tools, and training for those tools, shall be provided to SCL as required to assist with antenna installation.

- 10. **Aesthetics:** Antenna installations shall be as aesthetically pleasing as is reasonably possible.

11. Legal Compliance

It shall be the responsibility of the applicant for the antenna installation to comply with all applicable requirements of the Land Use Codes, regulations, and laws of the City of Seattle or of any jurisdiction in which the installation is located. This includes the FAA notification requirement and determination.

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The company owning the antenna installation shall provide the SCL Joint Use Unit with a current phone number for assistance in the repair of storm or third party damage or SCL maintenance.

13. Community Notification and Disputes

The company owning the antenna installation shall provide the SCL Joint Use Unit with a current phone number for referral of citizen inquiries.

14. Clearances

14.1 All antennas, excluding mounting bracket, shall have a minimum clearance of 7 ft 1 in from all conductors energized between 2400 V and 121,000 V.

14.2 All antennas, excluding mounting bracket, shall have a minimum clearance of 11 ft 1 in from all conductors energized over 110,000 V and less than 241,000 V.

15. Installation and Maintenance: SCL or its authorized agent will install and maintain all equipment, antennas and feed lines located at or above the level of the power neutral conductor on the pole at the applicant's expense.

16. References

SCL Construction Standard 0094.01; "Communication Enclosures on SCL Wood Poles"

SCL Construction Standard 0451.01; "Grounding Electrodes for Distribution Poles"

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

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

SCL Construction Guideline U7-10/NDK-70; "Conduit Risers on Poles"

17. Sources

Federal Aviation Regulations, Section 77, "Objects Affecting Navigable Airspace"

IEEE/ANSI C2, "National Electrical Safety Code" (NESC)

NFPA 70, "National Electrical Code" (NEC)

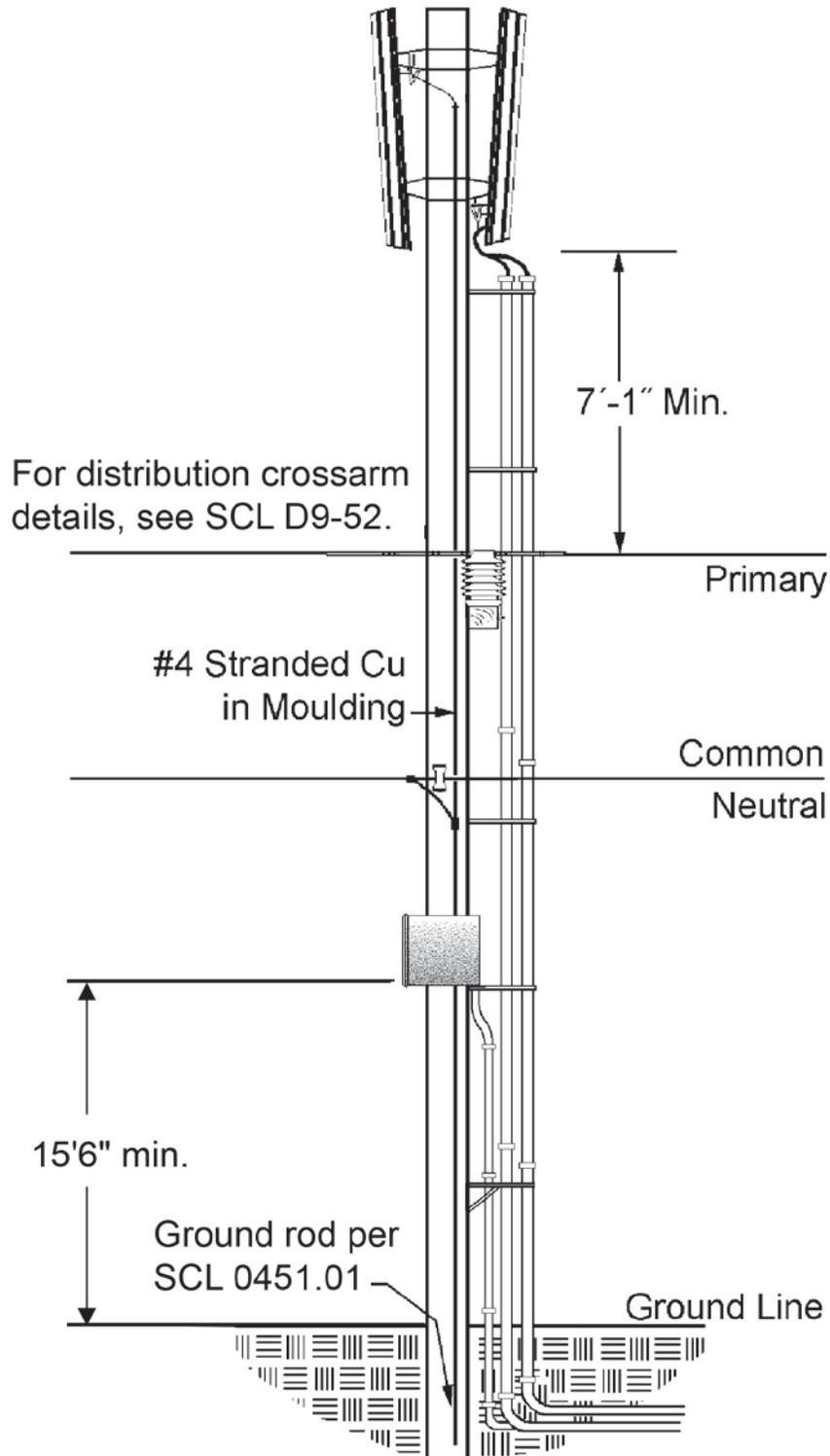
SCL Construction Guideline D2-1.1; "Attachments on Standard Utility Poles" (canceled, replaced by SCL 0093.02)

SCL Construction Guideline D2-1.3; "Cable TV power Supply Attachements" (canceled, replaced by SCL 0094.01)

SCL Construction Guideline D16-2; "Grounding Rod Installation" (canceled, replaced by 0451.01)

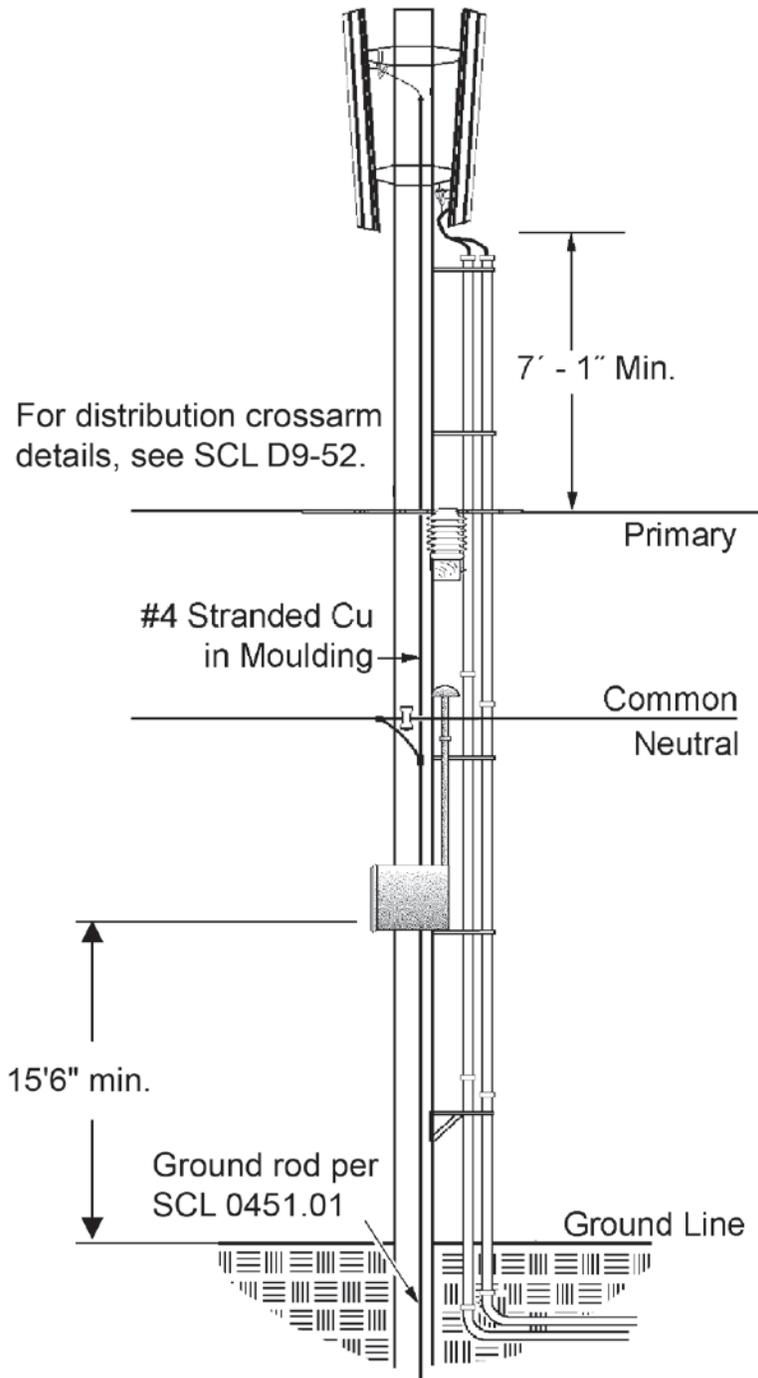
**CELLULAR PHONE AND PERSONAL COMMUNICATIONS SERVICES (PCS)
ANTENNA POLE ATTACHMENTS ABOVE PRIMARY CONDUCTORS**

ON DISTRIBUTION POLE WITH UNDERGROUND SERVICE



**CELLULAR PHONE AND PERSONAL COMMUNICATIONS SERVICES (PCS)
ANTENNA POLE ATTACHMENTS ABOVE PRIMARY CONDUCTORS**

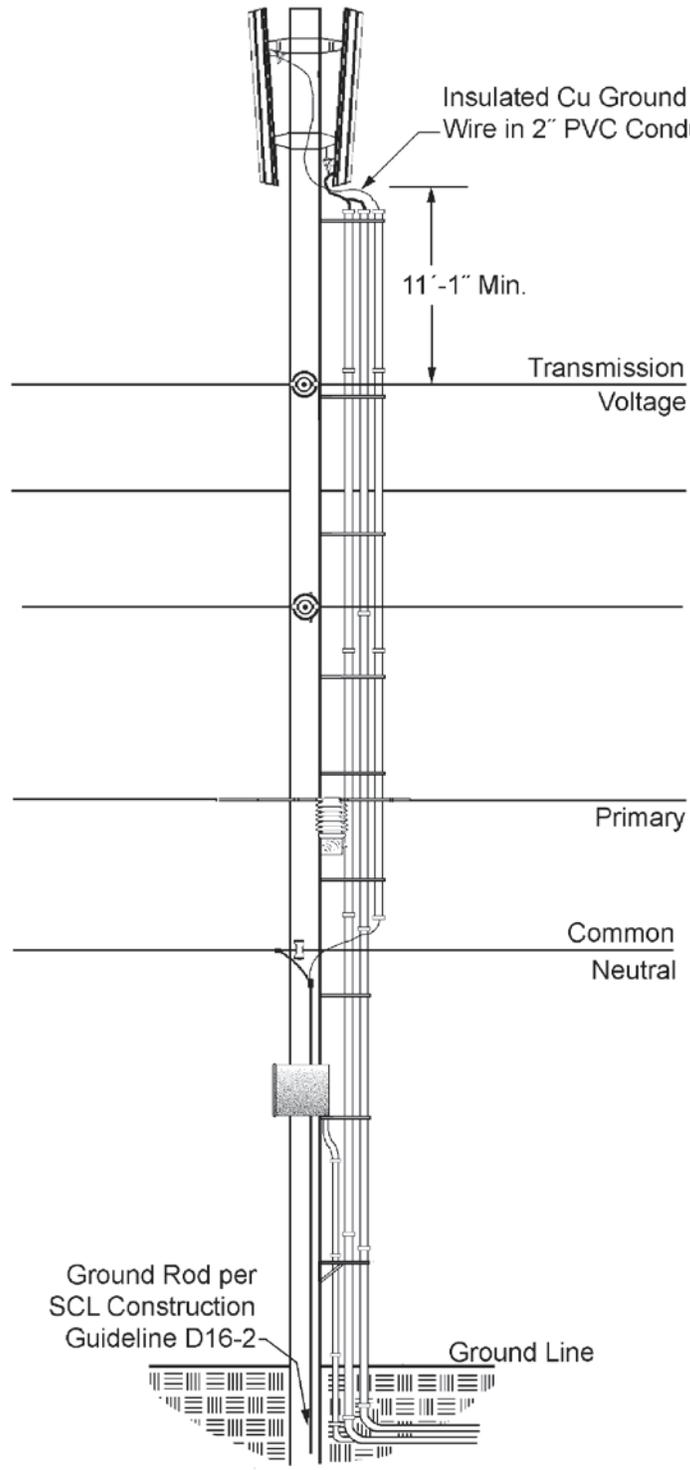
ON DISTRIBUTION POLE WITH OVERHEAD SERVICE



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**CELLULAR PHONE AND PERSONAL COMMUNICATIONS SERVICES (PCS)
ANTENNA POLE ATTACHMENTS ABOVE PRIMARY CONDUCTORS**

ON WOOD TRANSMISSION POLE WITH UNDERGROUND SERVICE

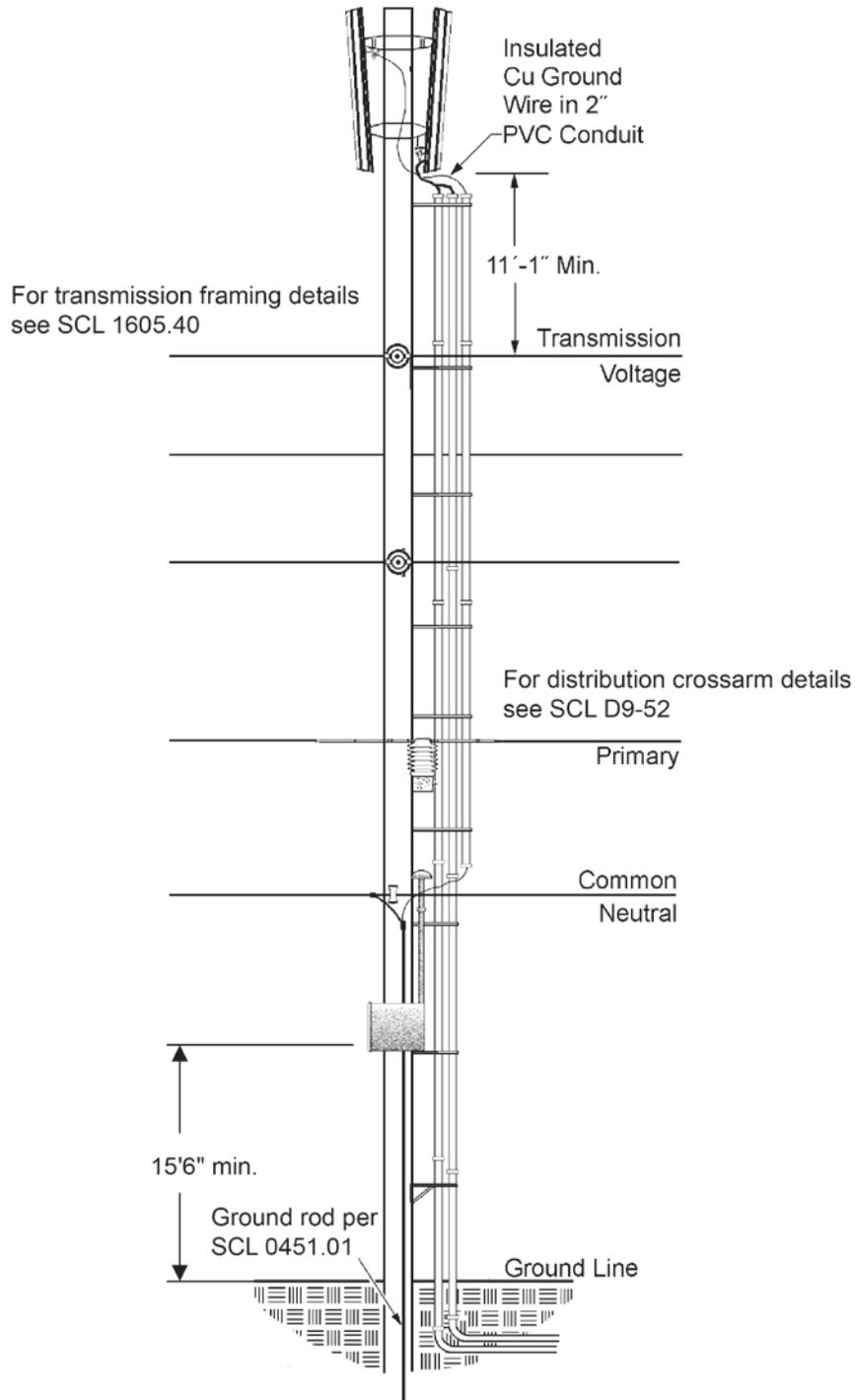


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ON WOOD TRANSMISSION POLE WITH OVERHEAD SERVICE



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