Strand-Mount Antennas, All Except Wi-Fi Hotspot

1. Scope

This standard covers the requirements for the installation of strand-mount antennas (all except Wi-Fi hotspot antennas) adjacent to Seattle City Light (SCL)-owned and co-owned wood poles.

For the installation of strand-mount, Wi-Fi hotspot antennas, see SCL 0095.35.

2. Application

This standard is intended for use by:

- Customers who design installations of strand-mount antennas
- SCL engineers who review and approve strand-mount antenna assembly designs

For additional information, terms and definitions regarding customer requirements for utility pole attachment and related construction standards, see SCL 0093.04.

For any questions regarding the requirements specified in this standard, contact SCL Joint Use Engineering.

For working in the vicinity of wireless communications antennas, see SCL 0095.04.

3. Requirements

3.1 General

Only one strand-mount antenna shall be allowed in each span.

The customer shall ensure the supporting poles are appropriately sized and have sufficient structural strength to accommodate the additional material load per the National Electrical Safety Code (NESC).

Installation shall not be located on poles identified as “bad order.” A “bad order” pole is any pole identified and labeled to be replaced within a year. See SCL 0117.23.

Strand-mount antennas shall not be installed directly below pole-mounted streetlight fixtures, as this may interfere with the intended illumination pattern.

Electric service for all strand-mount antennas shall be fed from a pole-mounted power supply. See SCL 0094.01.

All new installations, upgrades, or modifications of strand-mount antennas capable of any radio frequency (RF) emission shall require:

- A new Non-Ionizing Electromagnetic Radiation (NIER) report to be reviewed and approved by SCL Joint Use. See SCL 0095.06
- A new application, with approved permit, to be reviewed and approved by SCL Joint Use.

3.2 Codes

All electrical service and its equipment to provide power to strand-mount antennas shall meet all applicable National Electrical Code (NEC), including passing inspection by the authority having jurisdiction (AHJ).

3.3 Grounding and Bonding

All conductive parts of the strand-mount antenna assembly shall be bonded together and grounded to the pole ground. See NESC 092C3a and b.

Ground wire shall be copper, #4 AWG minimum.

If no ground rod exists, one shall be installed. This installation shall meet or exceed the requirements of SCL 0451.01.

If multiple ground rods exist, all ground rods shall be bonded together using copper wire, #4 AWG minimum.

3.4 Equipment Mounting

Strand-mount antennas shall be installed as aesthetically as is reasonably possible and with good workmanship principles so as to not interfere with climbing and maintenance of the pole by all parties.

Communications brackets may be used, with SCL Joint Use Engineering approval, to optimize pole attachments. See SCL 0093.06.

If a communications enclosure is needed on the pole, it shall comply with SCL 0094.01.

A service disconnect switch shall be installed for all power supplies for the purpose of powering off all equipment.

The antenna Equipment Power Off (EPO) switch shall be installed with the switch facing, and within reach from, the adjacent pole.

3.5 Identification, Caution, and Notice Tags

The following tags shall be installed at each strand-mount antenna site:

- **An Antenna Owner Identification (ID) tag** shall be installed on either the communications enclosure or on a flat surface mounted to the pole if no communications enclosure exists. The tag shall be clearly visible from the ground and shall contain a unique company equipment ID number and site name per SCL 0093.12. Information shall include working clearance and a 24-hour contact phone number for deactivation notification.
- **An RF Notice tag** shall be strand-mounted on both sides of the strand-mount antenna, outside of the general population stand-off distance, nominal 6 ft from the antenna on the span side and 1 ft from the antenna on the pole side.
- **An RF Caution tag** shall be installed on either the communications enclosure or on a flat surface mounted to the pole if no communications enclosure exists and be clearly visible from the ground. The tag shall be clearly marked and visible from the ground.

Antenna Owner ID, RF Caution, and RF Notice tags shall meet the requirements of SCL 0095.08.

See Figure 3.6 showing tag locations. Note that the figure shows RF Caution and Antenna Owner ID tags placed one above the other; however, each tag can be placed anywhere on the communications enclosure as long as the lowest point of either tag is a minimum 15 ft above ground. In cases where a pole-mounted communications enclosure does not exist, tags shall be installed on the pole at a minimum 15 ft above ground.

3.6 Clearances

Strand-mount antennas shall have a maximum horizontal length of no greater than 3 ft.

There shall be a nominal 3 ft of clearance between the closest component of the strand-mounted equipment and the pole face.

Anywhere in the span, vertical clearances shall be:

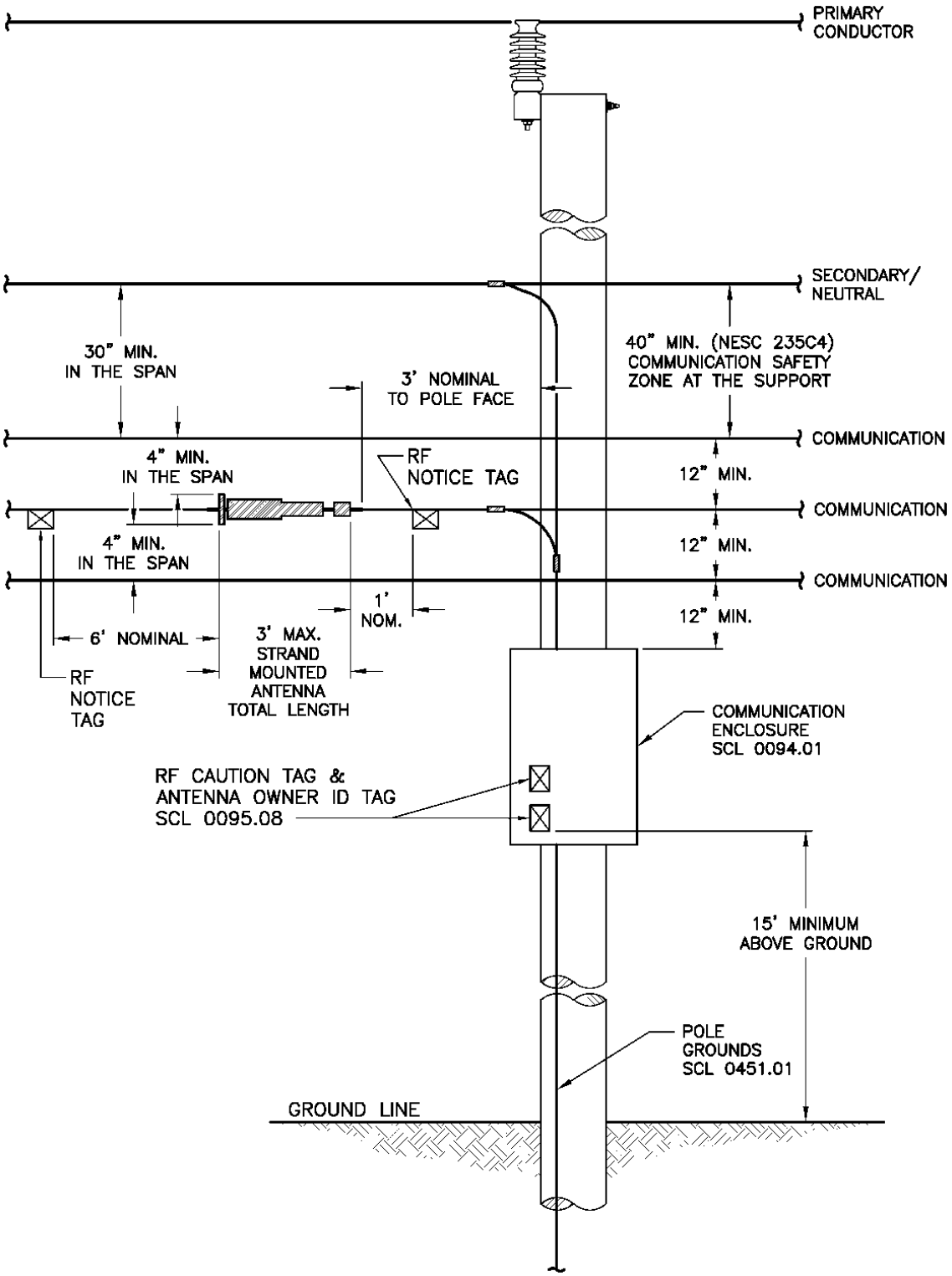
- A minimum of 30 inches from the secondary service or system neutral
- A minimum of 10 ft from the primary conductor (4 kV–26 kV)
- A minimum of 4 inches from any other communications cable, messenger, and strand-mounted equipment. If this clearance cannot be obtained, a written letter of agreement between the parties shall be delivered to the pole owner(s) prior to installation. See NESC 235H.

At the support, vertical clearance shall be:

- A minimum of 12 inches between communications pole attachments, including the communications enclosure.
- A minimum of 40 inches between the secondary service or system neutral to the highest communications pole attachment.

See Figure 3.6.

Figure 3.6. Strand-Mount Antenna Tag Locations and Clearances



3.7 Inspection

SCL reserves the right to inspect all installations at any time and notify customers of unsafe work conditions or construction that is not compliant with SCL standards or NESC requirements.

3.8 Maintenance

Customers shall perform all routine maintenance outside of the supply space, which is defined as the area above the communications worker safety zone.

Maintenance work shall not cause any interruption of SCL's utility or other services. If the work requires encroaching into the supply space, contact SCL for assistance.

4. References

National Electrical Safety Code (NESC), C2-2017 Edition; Institute of Electrical and Electronics Engineers (IEEE) Inc., New York, NY

SCL Construction Standard 0093.04; "Attachments on Wood Poles"

SCL Construction Standard 0093.06; "Communications Bracket Installation"

SCL Construction Standard 0093.12; "Pole Attachments, Identification and Tagging"

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

SCL Construction Standard 0095.06; "Non-Ionizing Electromagnetic Radiation (NIER) Report Requirements"

SCL Construction Standard 0095.08: "Wireless Communications Antenna Tags"

SCL Construction Standard 0095.35; "Strand-Mount Antennas, Wi-Fi Hotspot"

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

SCL Work Practice 0095.04; "Working in the Vicinity of Wireless Communications Antennas"

SCL Work Practice 0117.23; "Wood Pole Condition and Treatment Tag Interpretation"

5. Sources

City of Seattle Standard Specifications for Road, Bridge and Municipal Construction; 2017 edition

Crume, Steve; SCL Joint Use Manager and subject matter expert for 0095.30

Haberman, Douglas; SCL Joint Use Strategic Advisor and subject matter expert for 0095.30

Neuansourinh, Ponet; SCL Standard Engineer, originator, and subject matter expert for 0095.30

NFPA 70, **National Electrical Code (NEC**); 2014