
Collocated Small Wireless Facilities on Metal Streetlight Poles



1. Scope

This standard covers requirements for small wireless facilities collocated on metal streetlight poles served by an underground Seattle City Light (SCL) Looped Radial and Network distribution system.

2. Application

This standard is intended for use by SCL engineers, crews, and customers responsible for designing and installing collocated small wireless facilities on underground-fed metal streetlights.

This collocation construction standard is intended be used in conjunction with SCL 1714.50.

3. Conflict

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

- SCL standards
- City of Seattle Standard Specifications and Plans
- Project-specific drawings
- Other industry standards

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4. Definitions

Authority Having Jurisdiction (AHJ): An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure. Examples: Seattle Department of Construction & Inspections (SDCI), Labor and Industries (L&I), and City of Burien.

Baffle: Physical barrier inside streetlight pole that separates SCL streetlight electric service from customer electric service.

Customer: Any non-SCL party responsible for the application, installation, and ownership of the collocated small wireless facilities.

Festoon outlet: 120 V single-phase, GFCI receptacle outlet.

Luminaire: A complete lighting unit consisting of a light source such as a lamp or lamps, together with the parts designed to position the light source and connect it to the power supply. It may also include parts to protect the light source or the ballast or to distribute the light.

Small wireless facility: A type of wireless attachment where each antenna is no greater than 3 cubic feet in volume, and associated accessory equipment is no greater than 28 feet in volume.

Collocated streetlight system: Includes pole, luminaire, festoon, small wireless facilities, enclosures, disconnects, wiring, etc.

5. Requirements

5.1 Codes, Permits, and Approvals

All necessary permits shall be obtained by the wireless unit owner.

Only one customer shall be allowed per pole location.

Permits and applications for all proposed work, which include installation, modifications, and relocations, shall be reviewed and approved by SCL Streetlight and Joint Use Engineering.

All installations shall meet or exceed all applicable structural and clearance requirements of the latest revision of the National Electrical Safety Code (NESC), as well as SCL construction standards. In case of conflict, the most stringent requirement will prevail.

All electrical service to provide power to the communication equipment shall meet or exceed all requirements of the latest revision of the National Electrical Code (NEC).

A Non-Ionizing Electromagnetic Radiation (NIER) report shall be submitted to the pole owner(s) and retained on file for each equipment type/model. The NIER report shall be endorsed by a Radio Frequency (RF) Professional Engineer (PE) who is licensed in Washington state. The NIER report shall specify minimum approach distances to the general public, as well as to the electrical and communication workers that are not trained for working in an RF environment (uncontrolled) when accessing the pole directly by climbing or aerial lift.

Collocated small wireless facilities antennas are not allowed on the following poles:

- Owned by Seattle Department of Transportation (SDOT)
- Co-owned by King County (KC) Metro
- Globe light luminaire
- Post-top decorative luminaire

5.2 Electric Service Requirements

Electric service for collocated small wireless facilities shall be installed as shown in Figure 5.2 and 5.3a, supplied from the collocated streetlight handhole.

Underground electric service, back to the source, shall meet the requirements of SCL 1714.50 for both Looped Radial and Network system.

Electric service for collocated small wireless facilities will be fused per Section 5.4.

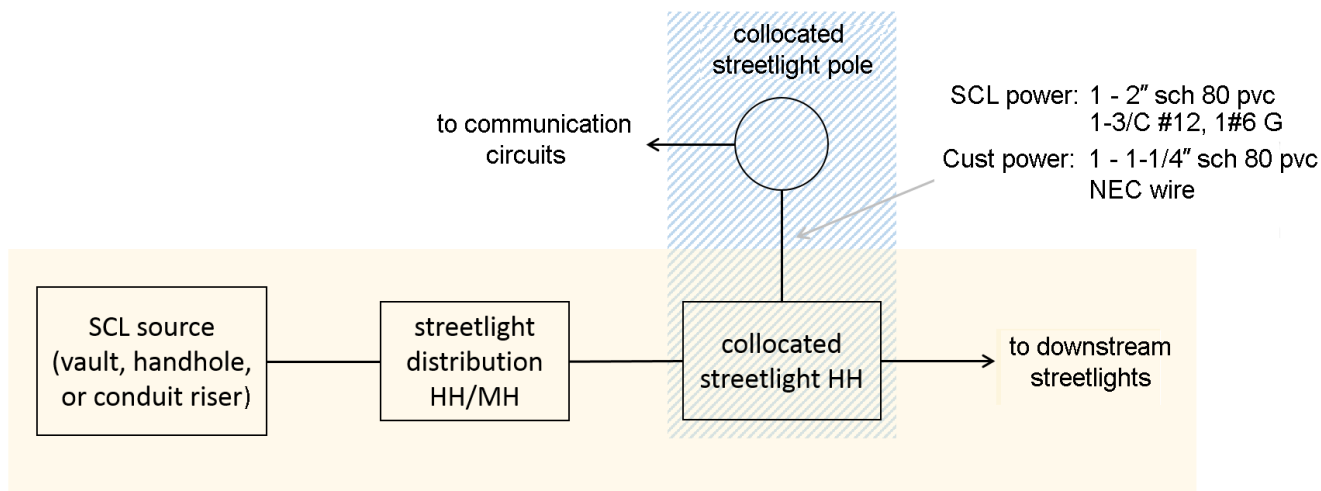
SCL is responsible for the final service connection.

An external disconnect switch shall be required per FCC OET Bulletin 65 and WAC 296-62-09005 to allow the antenna to be de-energized before work can be performed within the area designated by the RF caution signs described in Section 5.7.1. The service disconnect switch shall isolate all electric services including any battery backups.

The external disconnect switch shall be installed a minimum 15'-6" above the finished grade. The preferred location of the external disconnect switch is on the side of the wireless equipment enclosure, if installed. The disconnect switch must be mounted below the minimum distance specified in the NIER report for the general (uncontrolled) population.

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

Figure 5.2 Basic Infrastructure of a Collocated Streetlight System



LEGEND

SCL 1714.50

SCL 0095.60

5.3 Collocated Metal Streetlight Pole

Collocated streetlight poles shall be installed as shown in Figures 5.3a and 5.3b.

Pole height and luminaire shall meet existing SCL requirements.

All collocated poles shall meet the following requirements:

- Pole design shall be approved and stamped by a Washington State licensed Professional Engineer.
- Pole shall have a baffle separating SCL-owned and Customer-owned utilities.
- SCL-owned utilities inside the pole shall be located on the street-side of the baffle.
- Customer-owned utilities inside the pole shall be located on property-side of the baffle.
- Pole anchor-base shall meet existing SCL standards for bolt-circle requirements.
- Pole shall have a minimum 4-position grounding bus inside the pole accessible by the pole handhole.
- Pole shall include a festoon outlet per City of Seattle Standard Plan 563B.
- Pole top shall include a minimum 3-in x 6-in port to facilitate cable pulling.

Any deviations from this standard shall be approved by SCL Streetlight and Joint Use Engineering.

Figure 5.3a. Collocated Small Wireless Facilities Below Streetlight Bracket Arm and Clearance Requirements

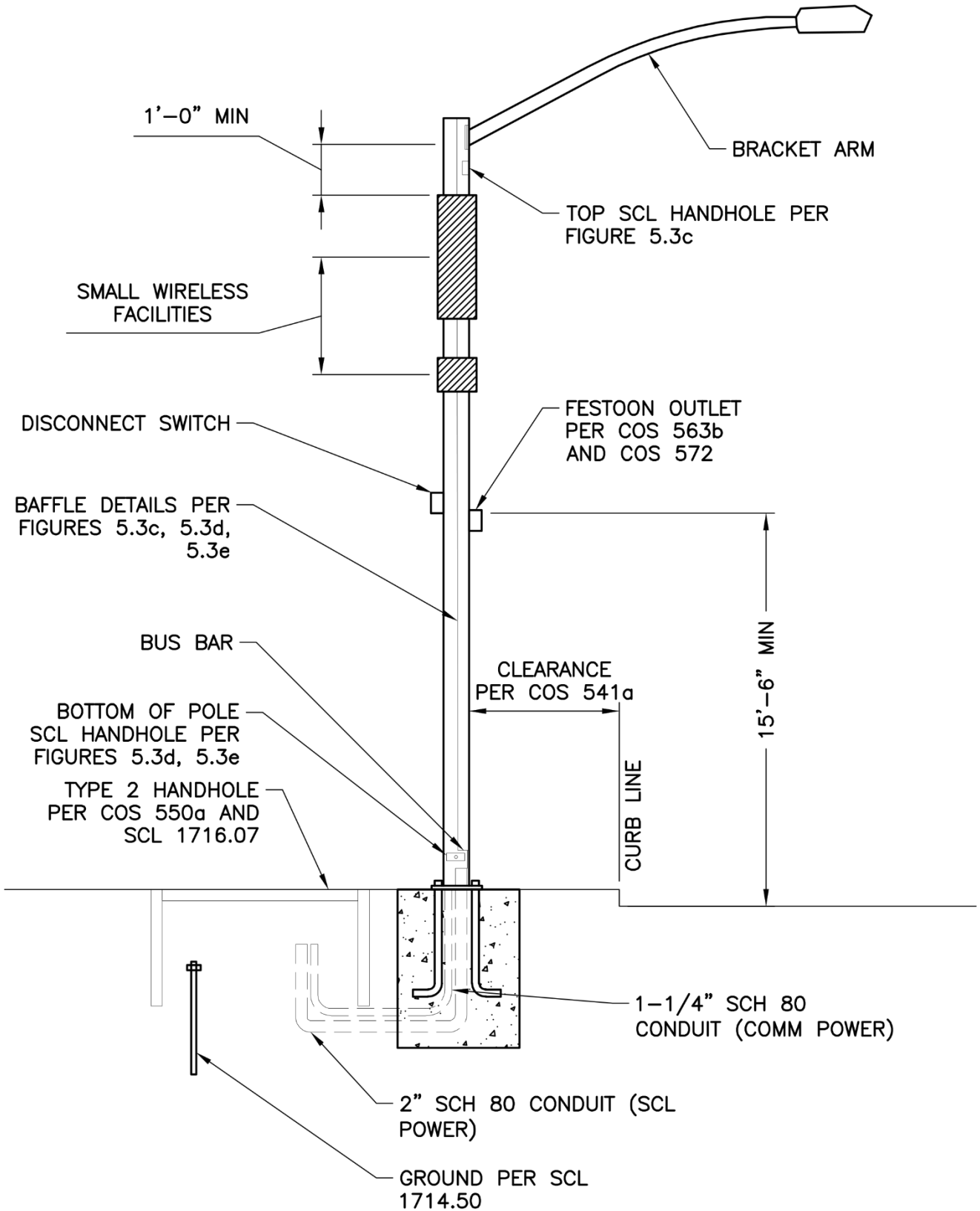


Figure 5.3b. Collocated Small Wireless Facilities Above Streetlight Bracket Arm and Clearance Requirements

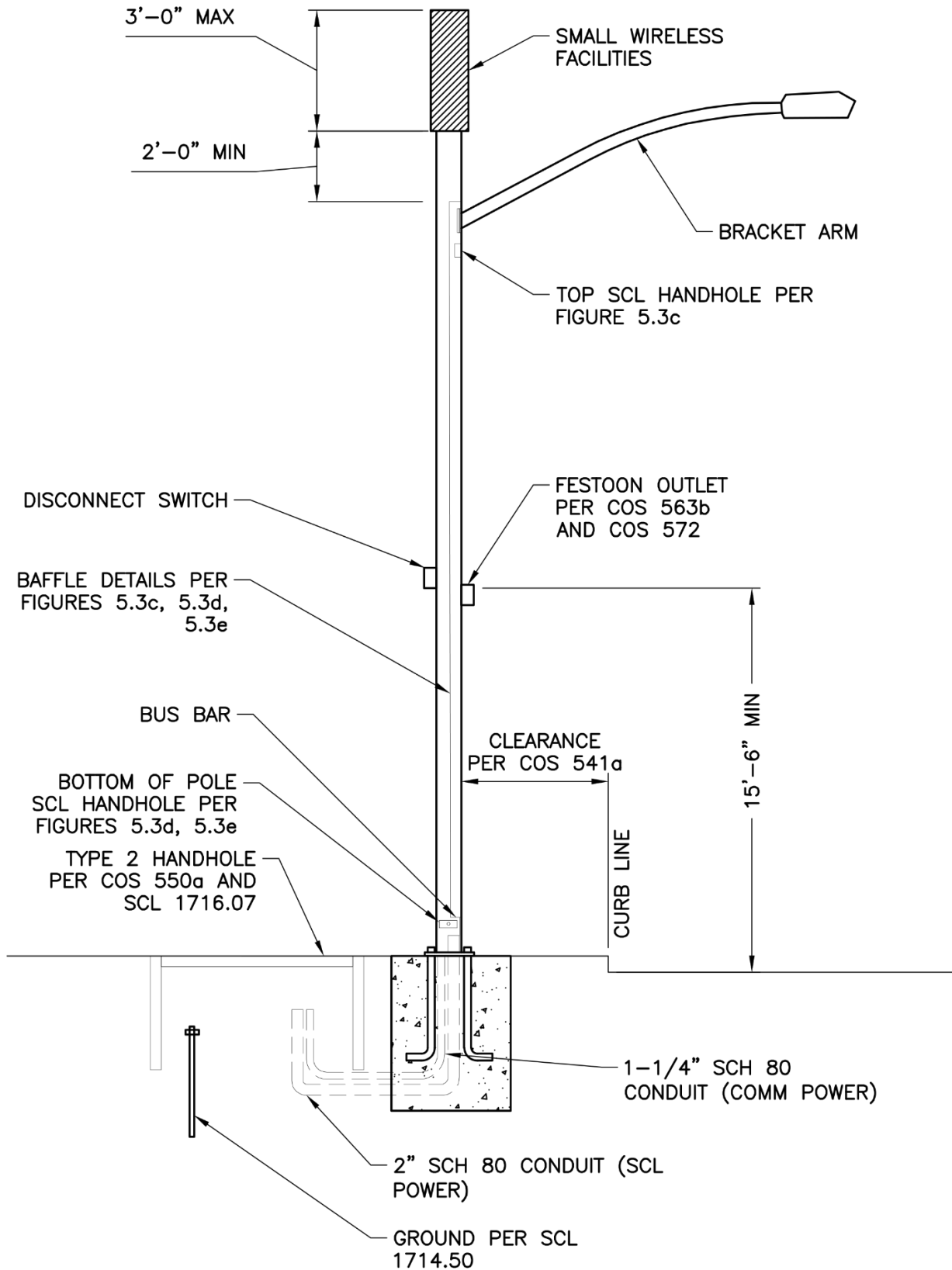


Figure 5.3c. Collocated Small Wireless Facilities Below Streetlight Bracket Arm Pole and Clearance Requirements

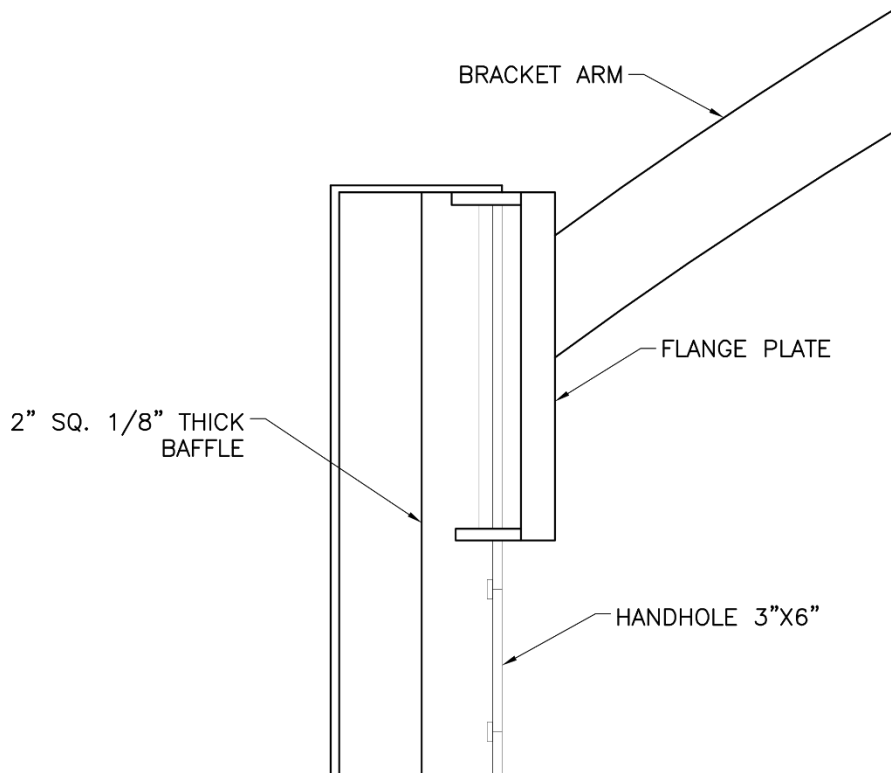


Figure 5.3d. Pole Base Requirements

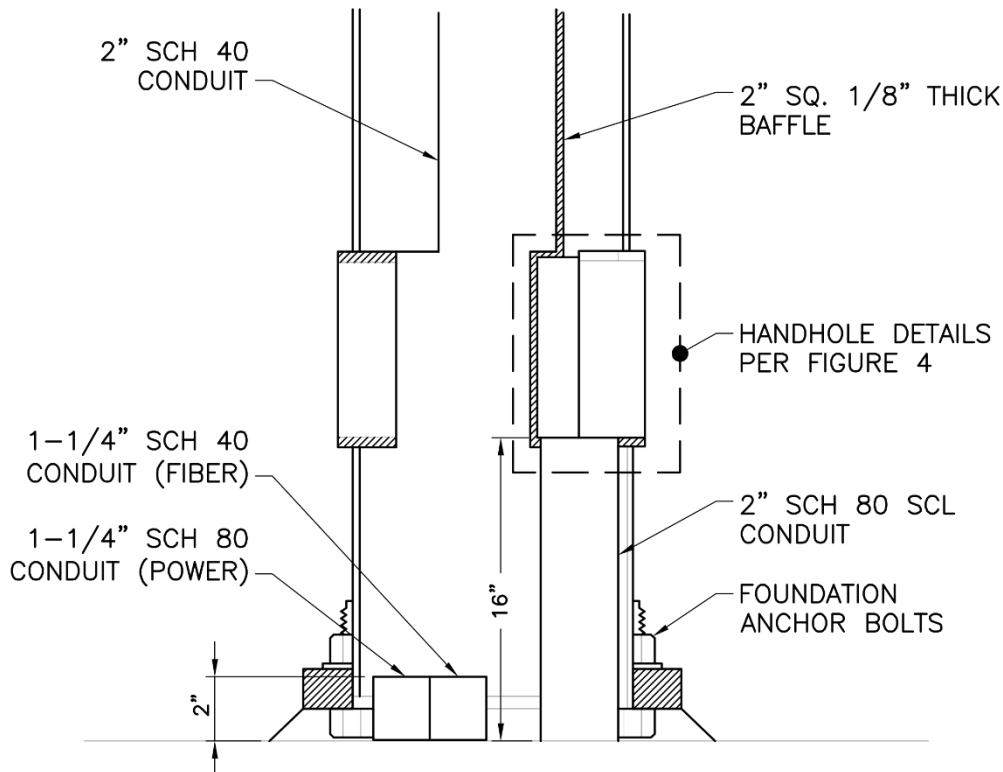
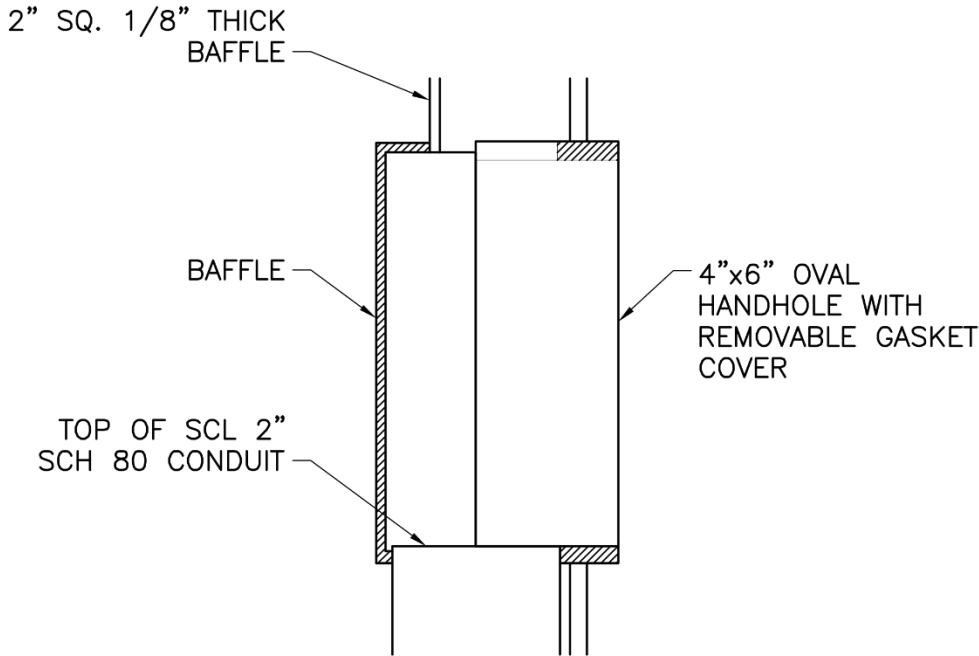


Figure 5.3e. Pole Handhole Details



5.4 Wiring and Fusing

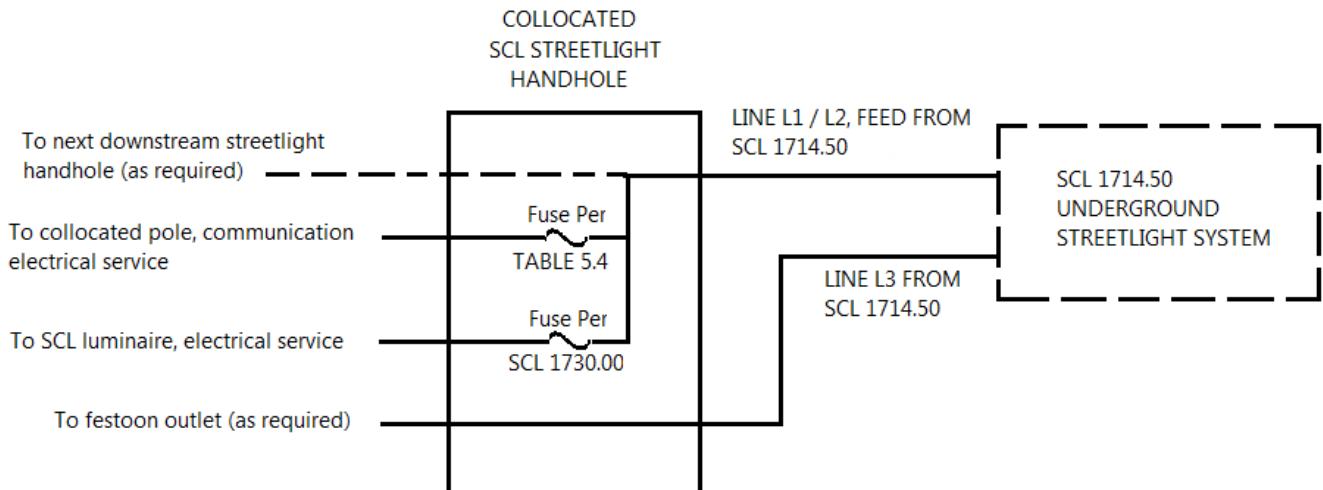
The streetlight wiring system shall meet the requirements of SCL 1714.50.

Wiring for the streetlight handhole feeding collocated streetlight pole shall conform to the requirements of Figure 5.2 and 5.4.

The multiple connector shall have a minimum of four positions and meet the requirements of SCL 6780.46.

Festoon wiring shall meet the requirements of SCL 1714.50.

Figure 5.4. Handhole Wiring



Small wireless facilities electric service wiring shall be fused per Table 5.4.

Table 5.4 Fusing for Small Wireless Facilities Electric Service

	Service Size	Service Voltage	Service Fuse ^a
Network	10 A	Per SCL Engineer	10 A
Looped Radial	10 A	120 VAC	10 A
	20 A	120 VAC	20 A
	30 A	120 VAC	30 A

Note:

a. SCL to provide service fuse. See SCL 6855.55.

5.5 Grounding

Ground wire from handhole to pole grounding bus, at the bottom of the metal pole, shall be minimum #6 AWG green.

All circuits shall be effectively grounded and bonded together, and bonded to the streetlight grounding system to meet the requirements of SCL 1714.50.

5.6 Handholes, Conduits, and Collocated Streetlight Pole Foundation

The collocated streetlight handhole and conduits to the collocated streetlight pole shall meet the requirements of SCL 1716.07 and Figure 5.2.

The collocated streetlight pole foundation shall be cast-in-place and meet the clearance requirement of SCL 0214.00 and the requirements of Table 5.6.

Table 5.6 Collocation Pole Foundation Sizes

Pole Type	Standard Referenced	Bolt Circle Diameter, in
Chief Seattle	26 ft	1716.38
	31 ft	"
Standard	23 ft	City of Seattle Standard Plans for Municipal Construction 543a
	33 ft	"

5.7 Labeling

Streetlight poles shall be labeled with the appropriate 7-digit asset tag. Contact SCL Joint Use or Streetlight Engineering.

Tags shall be required for each collocated streetlight system as described in Section 5.7.1.

5.7.1 Customer Equipment

Tags shall be:

- 5" x 7" in size
- Aluminum, yellow with black lettering, or as approved by SCL Streetlight or Joint Use Engineering
- Located on side of equipment cabinet
- Made of weather and corrosive resistant material
- Clearly visible from the ground

RF notification tags shall be installed on all equipment enclosures. Tags shall contain:

- A unique company equipment ID number per SCL 0093.12
- Site name as approved by SCL Joint Use Engineering
- Working clearance
- A 24-hour contact phone number for deactivation notification

See Figure 5.7.1a.

RF caution tags shall be applied on the equipment enclosure. Tags shall be approved by SCL Joint Use Engineering prior to application. See Figure 5.7.1b.

Figure 5.7.1a. Example of RF Notification Tag for Small Wireless Facility

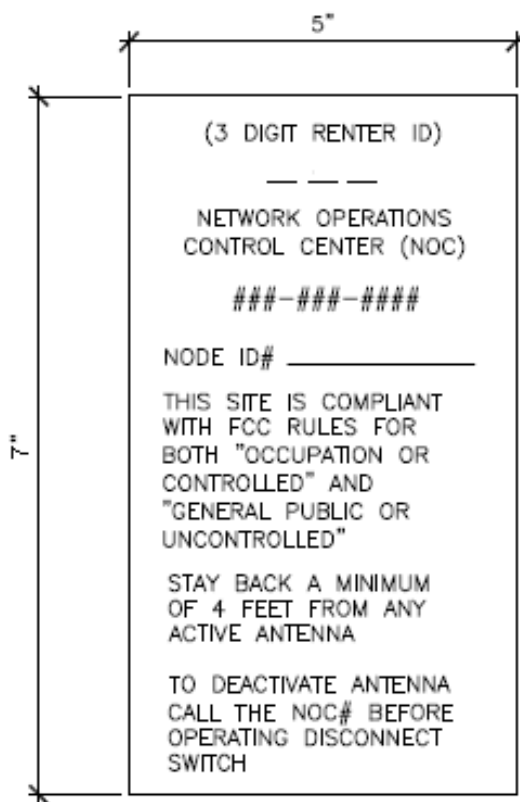
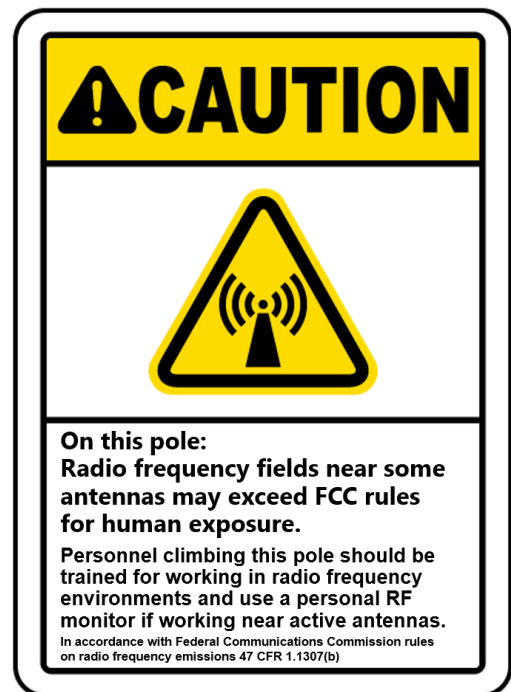


Figure 5.7.1b. Example of RF Caution Tag for Small Wireless Facility



5.7.2 Wire Identification

Streetlight circuits shall be labeled per the requirements of SCL 1714.10.

6. Aesthetics

The equipment shall be placed in the smallest enclosure possible for the intended purpose. Only one cabinet, not including the disconnect, is allowed. The cabinet, minus the disconnect, shall be no greater than 48 inches long by 16 inches wide by 16 inches deep.

Equipment aesthetics and coloring shall meet the requirements of the Authority Having Jurisdiction (AHJ).

7. Inspection Points

Inspection points shall be adhered to for all installation projects. Inspection points are put in place to ensure conformity to SCL requirements. Failure of inspection request may result in additional requirements. Contact Streetlight and Joint Use Engineering for further details.

An inspection by an SCL Electrical Reviewer is required for the following:

- Conduits and #4 AWG ground wire, ground resistance test before cover
- Handholes, before cover
- Conduit mandrel, before wire install
- Grounding and bonding inspection and test
- Handhole and fixture wiring
- Foundations, poles, and fixtures
- Equipment installation and clearances

8. References

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

City of Seattle Standard Plans for Municipal Construction; 2017 Edition, Section 563b

City of Seattle Standard Plans for Municipal Construction; 2017 Edition, Section 572

City of Seattle Standard Plans for Municipal Construction; 2017 Edition, Section 541a

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

NFPA-70; National Electric Code (NEC); National Fire Protection Association, Quincy, MA, 2017

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

SCL Construction Standard 0214.00; "Clearances between SCL Underground Structures and Other Structures"

SCL Construction Standard 1714.10; "Streetlight Circuit Tagging and Identification System"

SCL Construction Standard 1714.50; "Underground Streetlight Systems"

SCL Construction Standard 1716.07; "Streetlight Handhole and Conduit Requirements"

SCL Construction Standard 1730.00; "Streetlight Fusing Schedule, Individual"

SCL Material Standard 6780.46; "Connectors, Underground, Multi-Tap, 600 Volt"

SCL Material Standard 6855.55; "Fuse, Rejection-Type, Fast-Acting, Current-Limiting, 600 V"

9. Sources

Chao, Yaochiem; SCL Joint Use Supervisor and subject matter expert for 0095.60 (yaochiem.chao@seattle.gov)

Kenny, Mariah; SCL Joint Use Engineer and subject matter expert for 0095.60 (mariah.kenny@seattle.gov)

Neuansourinh, Ponet; SCL Standards Engineer and originator for 0095.60 (ponet.neuansourinh@seattle.gov)

Nsiiro, Julius; SCL Streetlight Engineer and subject matter expert for 0095.60
(julius.nsiiro@seattle.gov)

Rice, Morgan; SCL Cable Splicer Journeyman in Charge and subject matter expert for 0095.60

Revised Code of Washington (RCW) 80.36.375; “Personal wireless services—Siting microcells, minor facilities, or a small cell network—Definitions”

Revised Code of Washington (RCW) 35A.11.020; “Powers vested in legislative bodies of non-charter and charter code cities”

Revised Code of Washington (RCW) 35A.47.040; “Franchises and permits—Streets and public ways”

Revised Code of Washington (RCW) 43.21C.0384; “Application of RCW 43.21C.030(2)(c) to wireless services facilities—Reporting requirement—Definitions”