

Requirements for Secondary Conduit Installation



1. Scope

This standard provides the general requirements for the construction and installation of secondary conduits within the Seattle City Light (SCL) service territory. This standard also applies to conduits within SCL easement areas.

Job-specific requirements are not covered in this standard. Refer to the SCL Requirements Letter for job-specific requirements.

2. Application

This standard provides direction to SCL crews, contractors, and customers about where and how to properly install secondary (0–600 V) conduits in the right-of-way and on private property.

For primary (601 V–50,000 V) conduit and duct bank installation, see SCL 0222.02.

Conduits installed in SCL easements shall meet the requirements of conduits in the right-of-way.

For clearances to other underground structures and utilities, see SCL 0214.00.

3. Conflict

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

1. Project-specific Customer Requirements Package, including Service Construction Drawing
2. SCL 0224.07
3. Other SCL standards

4. Requirements

General requirements are shown in Table 4 and figures 4a and 4b.

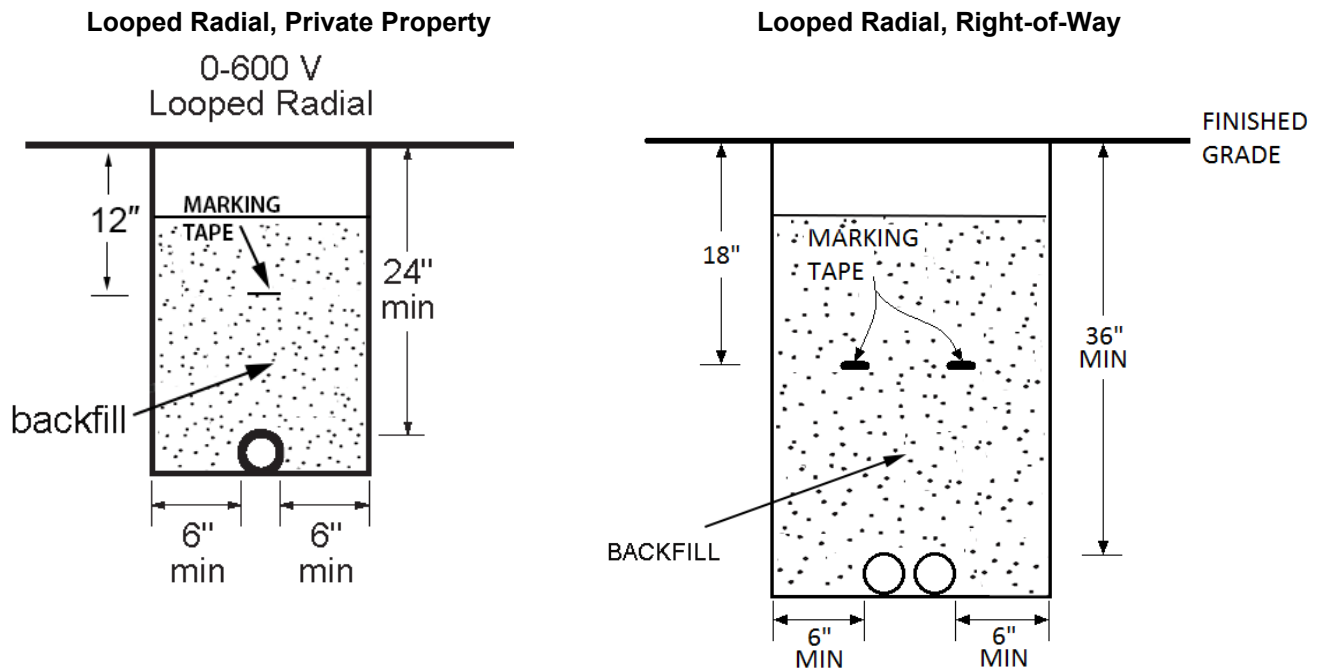
Table 4. General Requirements

Location	Right-of-Way		Private Property	
	Network	Looped Radial	Network	Looped Radial
Area	Network	Looped Radial	Network	Looped Radial
Voltage	0–600 V	0–600 V	0–600 V	0–600 V
Function	System or Service	System or Service	System or Service	System or Service
Cover (minimum)	36 in	36 in	36 in	24 in
No. of conduits (minimum)	2	1 ^a	2	1
Encasement	Yes for 4" and larger	No ^b	Yes for 4" and larger	No ^b
Marking tape	Yes	Yes	Yes	Yes
Backfill to sub-grade	CDF	CDF	CDF	Clean native soil or Type 17

^a A minimum of two conduits are required for street crossings.

^b Encasement is required when installing four or more conduits 4 inches or larger between two facilities or when directed by SCL Engineering.

Figure 4a. General Requirements, Looped Radial Conduits



If four or more conduits are required, install duct bank per SCL 0222.02.

If any conduits in a duct bank require encasement, all conduits shall be encased.

Set screw couplings are only permitted when installed in an encased duct bank.

Duct banks and conduit systems are electrical facilities for power distribution. In order for the electrical system to perform at its full capacity, the following requirements shall be met:

- Systems shall be constructed in a neat and workmanlike manner.
- All joints shall be tightly sealed against water intrusion. For transition joints (steel to PVC, steel to fiberglass) and set screw coupling joints, apply a layer of mastic tape (Stock No. 736470) and a layer of electrical tape (Stock No. 736656) on top.
- All coupling and adapter threads shall be sealed with Oatey Great White pipe joint compound or equal with approval prior to installation.
- All joints shall be properly aligned and square, and have adequate cure time.
- All edges shall be deburred and chamfered to prevent damage to cables. See SCL 7015.05.
- Conduit runs shall be adequately supported so they do not become distorted during encasement or backfill.
- Conduit bends shall be concentric and maintain consistent spacing.
- Set screw couplings shall be encased.

Installations that do not meet these criteria will be rejected

Table 6a. Allowed Conduit Materials

	Schedule 40 PVC (SCL 7015.05)	Rigid Steel (RGS) (SCL 7050.05)	Schedule 80 PVC (SCL 7020.05)
Straight	Yes ^b	Yes	Yes ^a
Bend	No	Yes	Yes ^a

^a For conduits smaller than 4 inches.

^b When installed with rigid galvanized steel (RGS) bends

Table 6b. Minimum Bend Radius

Conduit (in)	Minimum Bend Radius (in)
3	36
4	48
5	60

Note: Bending PVC conduits with heat is not allowed.

Conduits entering an in-building vault or within a building footprint shall be steel.

Conduits exposed under aerial structures (bridges, etc.) shall be steel and effectively grounded.

Conduits installed under, or through, wall or structural sections shall be steel.

Factory and field straight cut ends shall be chamfered throughout the duct run. See SCL 7015.05.

The conduit shall be RGS if there is 10 ft or less between bends (except communication conduits).

Allow two hours minimum to cure conduit adhesive prior to encasement.

6.1 New Conduit Termination

For termination of new conduit into a handhole, see SCL 0231.01.

For termination of new conduit into a conduit riser, see SCL 0224.34.

Conduits shall enter vaults perpendicular to the vault wall no more than 18 inches from the adjacent wall to the farthest edge of the conduit.

6.2 Existing Conduit Termination

For termination of existing conduit into a new handhole or vault, see SCL 0222.06.

7. Trench

The trench shall be excavated with a minimum spacing of 6 inches from the conduit to the closest trench wall.

The bottom of the trench shall be free of debris and fine-graded by hand to remove sharp, embedded rocks and loose stones over 1/2 inches in size. Or, the trench shall be over-excavated and replaced with bedding material to cover protruding rocks and stones by a minimum of 2 inches. The bottom shall be graded even. Bedding material shall be sand.

8. Backfill

For backfill material requirements, See Table 4.

9. Identification

Install two, 3-in-wide, red detectable underground marking tapes over the conduits. See Table 4 and Figures 4a and 4b.

10. Transition

A proper transition is required when transitioning conduits onto private property from conduits in the right-of-way. See SCL 0222.02 for requirements on changes in direction.

11. Inspection

The following items must be inspected by SCL before backfill is installed:

- Conduit trench
- Trench bedding
- Proper conduit installation and adherence to engineering design and SCL standards
- Trench backfill material

After backfill inspection, mandreling shall be performed per U2-11.40 with an Electrical Reviewer. SCL will provide the mandrel.

Inspection points shall be adhered to for all installation projects. Inspection points are put in place to ensure conformity to SCL requirements. Failure of the customer to request an inspection may result in additional requirements. See SCL 0222.02 Section 5 for conduit details. See SCL U2-11.40/NDK-40 for mandreling and cleaning details.

12. References

- SCL Construction Standard 0214.00**; “Clearances between SCL Underground Structures and Other Utility Structures in the Public Right-Of-Way”
- SCL Construction Standard 0222.02**; “Requirements for Primary Conduit and Duct Bank Installation”
- SCL Construction Standard 0224.34**; “Steel Conduit Risers”
- SCL Construction Standard 0231.01**; “Secondary Handhole Installation and Grounding”
- SCL Construction Standard 0222.06**; “Duct Bank Terminations”
- SCL Construction Standard U2-11.40 /NDK-40**; “Mandreling and Cleaning of Ducts and Conduits”
- SCL Material Standard 7015.05**; “Schedule 40 PVC Conduit and Fittings”
- SCL Material Standard 7020.05**; “Schedule 80 PVC Conduit and Elbows”
- SCL Material Standard 7050.05**; “Zinc-Coated Steel Conduit and Fittings”
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13. Sources

- Abbott, Jeremy**; SCL Electrical Reviewer and subject matter expert for 0224.07
- Chao, Yaochiem**; SCL Standards Engineer, originator, and subject matter expert for 0224.07
- Edwards, Tommy**; SCL Electrical Reviewer and subject matter expert for 0224.07
- Perander, Eivind**; SCL North Distribution Supervisor and subject matter expert for 0224.07
- SCL 0224.05** (canceled); “Requirements for Underground Services on Private Property”