CHAPTER 8

Primary & Secondary Services in Network Areas

Seattle City Light has four network service areas: Downtown Seattle, First Hill, University District and the South Lake Union area.

Services to larger buildings, commercial office buildings and apartment buildings often have larger electrical services which are served with primary voltages, meaning the owners provide space and structures for SCL's transformers on their property.

Vaults, pads and handholes shall be furnished by the customers on their property in accordance with SCL requirements and specifications, which will be provided in a service letter after reviewing the customer's plans. This letter and these specifications will be specific to each project. This chapter includes general guidelines, but the customer must contact SCL well in advance of vault design in order to receive the required design specifications.

PRIMARY UNDERGROUND SERVICE IN NETWORK VAULTS: Where the aggregate service entrance capacity exceeds 1,000 amperes at 208Y/120 volts or 600 amperes at 480Y/277 volts, the customer must provide a vault or other suitable facilities on private property for Utility transformer(s) and associated service equipment. Such vault or other facility for Utility transformer(s) must be located on the site being served. The vault requirement for service ampacities over 600 amperes at 480Y/277 volts does not imply that services at 480Y/277 volts are available in the 208Y/120-volt network areas at less than spot network loading, as determined by Seattle City Light (SCL).

ADVANCE NOTICE: It is essential that contractors notify SCL well in advance of designing their buildings as the requirements for a primary service may alter the building design. For instance, SCL may require space not only for the vault, but for a primary switchgear room as well.

INSPECTIONS The specific requirements given in the service letter will be part of Seattle City Light's inspection of the vaults during and after installation. The customer is also required to be aware of and satisfy all applicable building codes for the City of Seattle as well as other cities and county jurisdictions in SCL's service area.

Vault Construction in Network Areas

DIMENSIONS

The dimension of the transformer vault is determined by SCL's engineering group.
The size of the vault is contingent on:

- The size of transformer(s) to be installed. Transformer size is determined by the customer's total electrical load.
- The type of devices used for the secondary connection to the customer's NEC-sized cables or bus bars.
- The working clearance needed around the equipment.

DRY SPACE

Vault interior must remain dry. The customer must prevent water from entering the vault.

VAULT ACCESS

The customer must provide properly supported, unobstructed access from the right-of-way to the vault for SCL equipment-handling machinery. SCL must be able to move electrical equipment in and out of the vault using SCL equipment. In-building vaults shall not be located more than one floor below the building's exterior finished grade. The customer is also responsible for providing sufficient building interior height so SCL can move tall transformers into and out of the vault with the Utility's machinery.

If SCL cannot reach the vault with equipment to install the transformer, the customer may be granted the option of moving the transformers. If this option is allowed, the customer must sign a Seattle City Light "*Equipment Transportation Agreement*".

An *Equipment Transportation Agreement* is a legal document in which the building owner(s) take sole responsibility for moving the transformer(s) into and out of the transformer vault, to a mutually agreed upon location from which SCL is able to deliver or pick up the transformer(s) using our normal transportation methods and equipment.

All Equipment Transportation Agreements will be recorded on the property title at the property owner's expense, as all future owners are obligated to the same terms and conditions of the agreement.

Any damage occurring to the transformer during transportation by the building owner(s) and any additional expense incurred because of said damage shall be paid by the building owner(s).

A copy of the transportation agreement must be kept in the vault. The customer must provide and install a weatherproof enclosure large enough to hold a paper copy of document. It shall be permanently installed in a document enclosure on the vault wall beneath the light switch.

Structure Requirements

The vault walls shall be solid concrete up to eight feet high, minimum. The remainder of the walls shall be solid concrete or concrete-filled masonry units.

Pre-tensioned or post-tensioned concrete: the location of the tension cables must be permanently marked on the concrete's surface. Embedded insets may be required for the following:

— Seismic transformer anchoring in vault floor.
— Steel support channel in vault ceiling.

Equipment hatches are not allowed in the vault's ceiling. Equipment may be lowered through an adjacent shaft as outlined in the following Seattle City Light Construction standards:

0751.00 Construction Requirements, In-Building Transformer Vaults, Network and Looped Radial Systems

0751.60 Concurrent Customer Requirements for In-Building Transformer Vaults, Looped Radial System.

Fire Rating

Walls, ceilings, and floors must have 3-hour fire protection. All penetrations through and joints in the vault floor, walls and ceiling must be sealed to meet a 3-hour fire rating.

Fire Clearance

All vaults and pad-mounted transformers are to be located so as to provide safe access and code clearances from fire escapes, combustible materials, and other hazards, in accordance with the requirements of SCL and the appropriate City, County, or State inspecting authorities. Building owners must make provisions to prevent unwanted debris from accumulating in vaults.

Vault Doors

Must be Class A, 3-hour, fire-rated. Size will be determined by SCL.

Vault doors shall swing out 180 degrees and be equipped with panic bars, pressure plates, or other devices that are normally latched but open under simple pressure. (2006 NESC, Rule 113C). The exit devices must always be locked (storeroom function) and equipped with a cylinder which accepts a Best Universal Lock Company core. The core will be provided and installed by SCL.

Lighting

Vault lighting and outlets will be installed by SCL at the time the electrical equipment is installed. SCL will supply power for the lighting system and power outlets.

Vault Construction Guidelines

For vault guidelines, please see Seattle City Light construction standards:

0751.00 Construction Requirements, In-Building Transformer Vaults, Network and Looped Radial Systems

0751.60 Concurrent Customer Requirements for In-Building Transformer Vaults, Looped Radial System.

VIBRATION AND NOISE LEVELS: The customer is responsible for isolating the transformer vault or pad so that sound and vibration levels satisfy the applicable laws and ordinances of the Washington Administrative Code, the City of Seattle or other applicable jurisdictions, including the customer's own requirements. Further, it is the customer's responsibility to mitigate any magnetic field effects from any customer owned sensitive equipment.

ELEVATORS
Elevator service must be provided to any building level where a transformer vault is located.
NEC-sized Service Entrance in Network Areas

Secondary Underground Service in Network Areas

The aggregate service ampacity shall be limited to 1,000 amperes at 208Y/120 volts, or 600 amperes at 480Y/277 volts, depending on which is available.

Where the service entrance ampacity exceeds 200 amperes at 208Y/120 volts or 100 amperes at 480Y/277 volts, the service must be three-phase, four-wire, and the load must be balanced.

In buildings served from an underground network system, the customer must install the necessary conduit to the Utility-designated point at the property line. SCL will extend this conduit to SCL's service handhole or vault and install service conductors to the point of service connection designated by SCL.

Residential Services to First Hill, South Lake Union & University District Networks

120/240 VOLT, SINGLE.PHASE SERVICE UP TO 225 AMPERES: The customer must provide a concrete pad or space on the premises for our dry-type transformer. The customer must also install service conduit to a point designated by SCL. The transformer space and grounding must be approved by us and must be in compliance with the City of Seattle electrical code. Where 120/240 volt service is available directly from the network system, SCL may not require a transformer pad or space.

208Y/120 VOLT, THREE.PHASE SERVICE, 100.1,000 AMPERES: The customer must supply a transformer vault or space on the premises for our transformer(s), as well as service conduits to the property line as specified by us. The transformer vault must be approved by SCL and must be in compliance with the SCL electrical and building codes.).

480Y/277 VOLT, SINGLE.PHASE SERVICE TO 100 AMPERES: The customer must install service conduit to a Utility designated point on the property line.

480Y/277 VOLT, THREE.PHASE SERVICE: The basic requirements for secondary underground network service apply.

120/240 VOLT, SINGLE.PHASE SERVICE OVER 225 AMPERES: is not available.