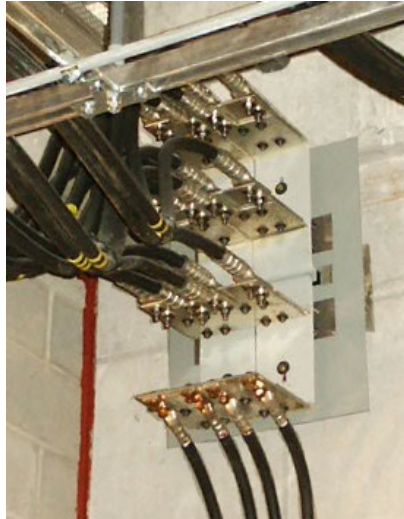

Looped Radial and Network Dry Vault Service Entrance Bus Duct for Underground Primary Service



1. Scope

This standard covers the installation, clearance and equipment requirements for a dry vault service entrance bus duct located in the Seattle City Light (SCL) Looped Radial or Network system.

Dry vaults are those above grade or otherwise not subject to flooding or wet interior conditions.

Minimum vault dimensions are outside the scope of this standard.

2. Application

This standard provides direction to SCL crews and customers about how to design and build the dry vault service entrance bus duct to meet SCL requirements and applicable codes. The goal is to inform the customer of the requirements and available options as well as giving the crews defined requirements to reference.

Standard Coordinator
Brett Hanson

Standards Engineering Supervisor
Brett Hanson

Division Director
Bob Risch

3. Requirements

- 3.1 City Light will determine the number of cable connections per phase and neutral.
- 3.2 The bus shall extend a maximum of 18 inches from the vault wall as shown in Figures 3b and 3e.
- 3.3 The ceiling clearance for the bus shall be a minimum distance of 18 inches from the top of the bus to the ceiling unless otherwise accepted by SCL. This 18-inch clearance must extend for a minimum distance of four feet in front of the bus, away from the wall.
- 3.4 The minimum horizontal distance between two adjacent service entrance buses shall be 3 feet. See Figure 3i. Confirm bus duct height and vault dimensions with SCL Engineer prior to construction. For electrical clearances, see SCL 0751.77. Mount adjacent buses at the same height above finished floor.
- 3.5 The minimum distance between bus phases shall be 8 inches. See Figures 3c and 3e.
- 3.6 Buses or connector plates shall be drilled to accept NEMA two-hole connectors. Each connector space on the plate shall be drilled with two 9/16-in holes, spaced 1-3/4 inches on center. Each connector space shall be offset 2-1/4 inches from adjacent connector spaces. See Figures 3g and 3h.
- 3.7 Each bus shall have a placard identifying the unique load it serves, ampacity, voltage, and phases. Each phase shall also be labeled. The placard shall be red phenolic with white letters 1 in tall minimum and be mounted adjacent to or below each bus. See Figure 3.7.

Figure 3.7. Example Placard for Dry Vault Service Entrance Buses



- 3.8 Customer shall submit a dimensioned sketch of customer service bus duct design, location of service bus, and bus rating to SCL Engineer for review and approval.
- 3.9 The customer shall furnish and install fire stop insulating material per NEC 300.21 requirements for service bus duct installed by the customer. Prior to acceptance of the vault by SCL, the customer shall have the fire protection material inspected and approved by the Authority Having Jurisdiction (AHJ).
- 3.10 The customer shall be responsible for assuring that water never enters the building and service entrance equipment from SCL vaults.
- 3.11 When bus is installed parallel to the floor, the neutral shall be on the bottom. See Figure 3c.

Figure 3a. Bus Bars Parallel to Floor

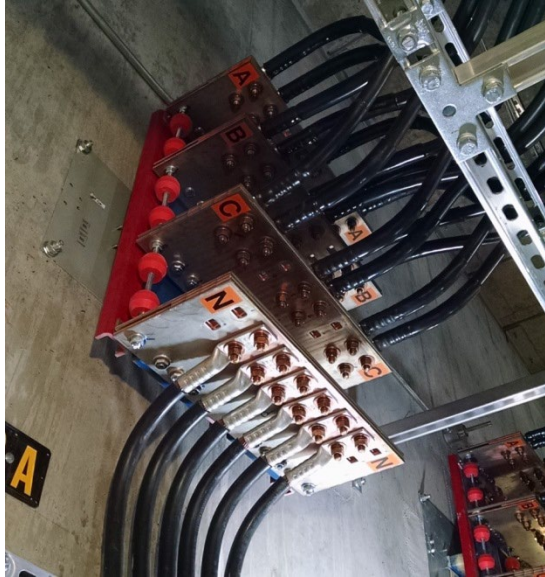


Figure 3b. Bus Bars Parallel to Floor, Plan View (Cables Parallel to Floor)

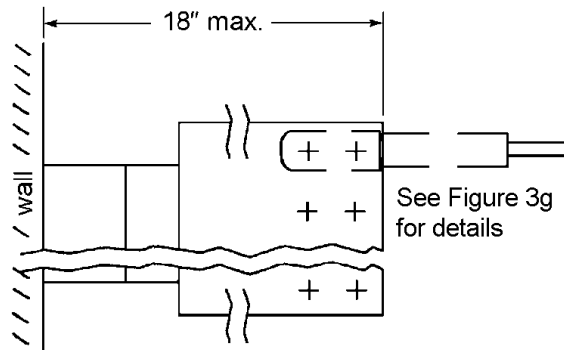


Figure 3c. Bus Bars Parallel to Floor, Elevation View (Cables Parallel to Floor)

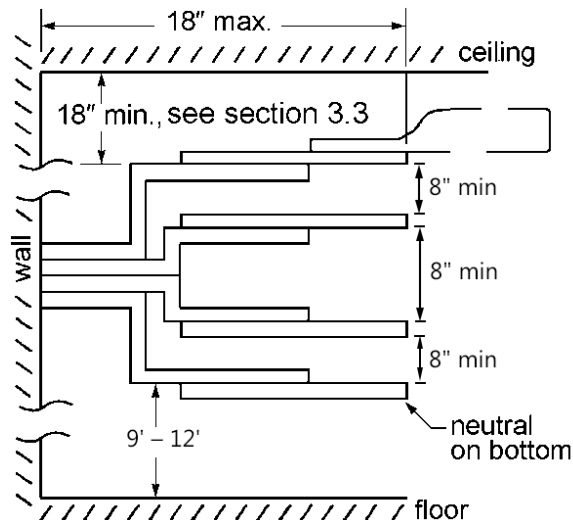


Figure 3d. Bus Bars Perpendicular to Floor

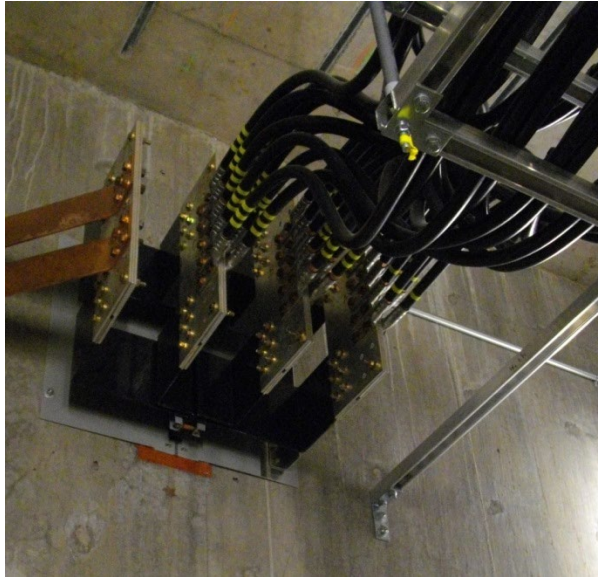


Figure 3e. Bus Bars Perpendicular to Floor, Plan View

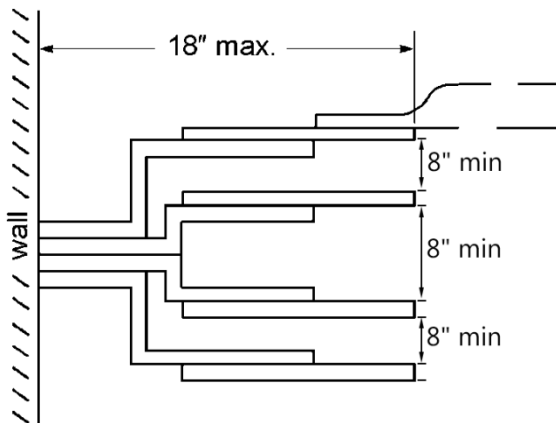


Figure 3f. Bus Bars Perpendicular to Floor, Elevation View (Cables Parallel to Floor)

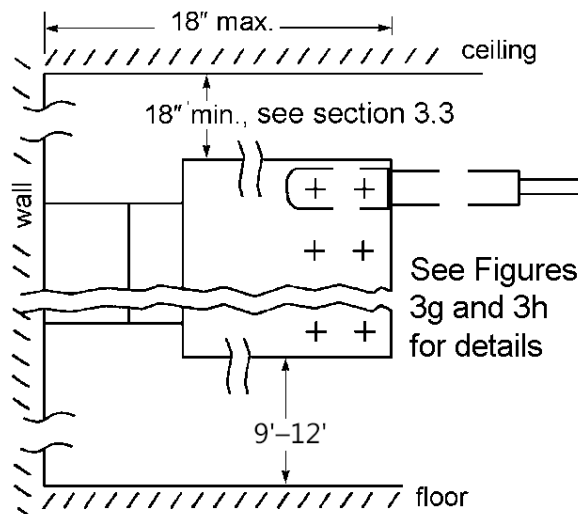


Figure 3g. Hole Spacing, Two-Hole Horizontal Connection

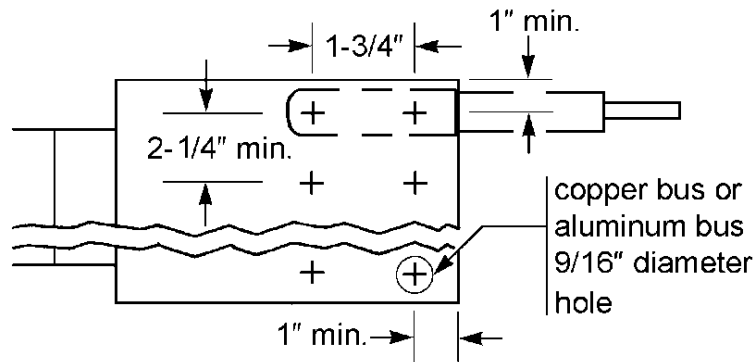


Figure 3h. Hole Spacing, Two-Hole Vertical Connection

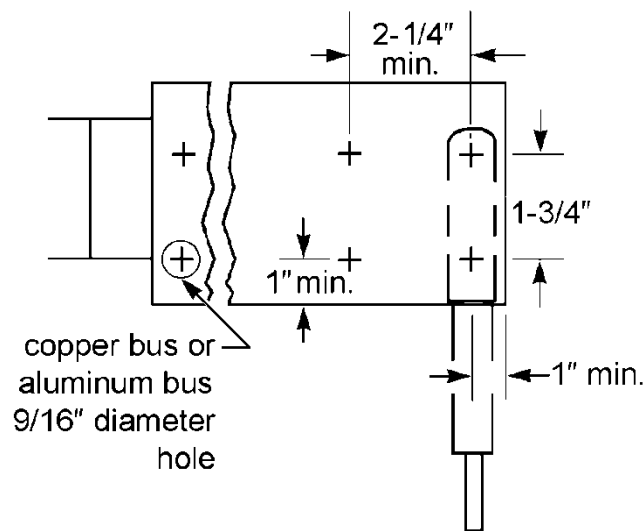
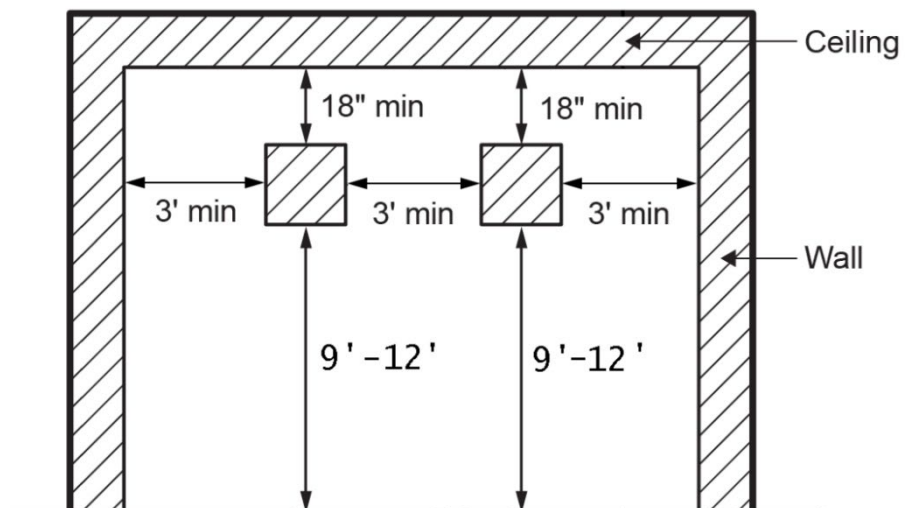


Figure 3i. Adjacent Service Entrance Bus Spacing



4. References

SCL Construction Standard 0751.77, "In-Building Vault Electrical Equipment Clearances"

5. Sources

Abbott, Jeremy; SCL Electrical Reviewer and subject matter expert for 0474.08

Hanson, Brett; SCL Standards Supervisor and subject matter expert for 0474.08

NESC 2011 Section 124; "Guarding Live Parts"; NESC; 2012

NEC 2014 Section 300.21; "Spread of Fire or Products of Combustion"; NEC; 2014

SCL Construction Standard NCB-160 (canceled), "Network Spot or System Dry Vault Service Entrance Bus"

SCL Construction Standard U11-9.1 (canceled), "Bus Extensions and Cable Tap Boxes"