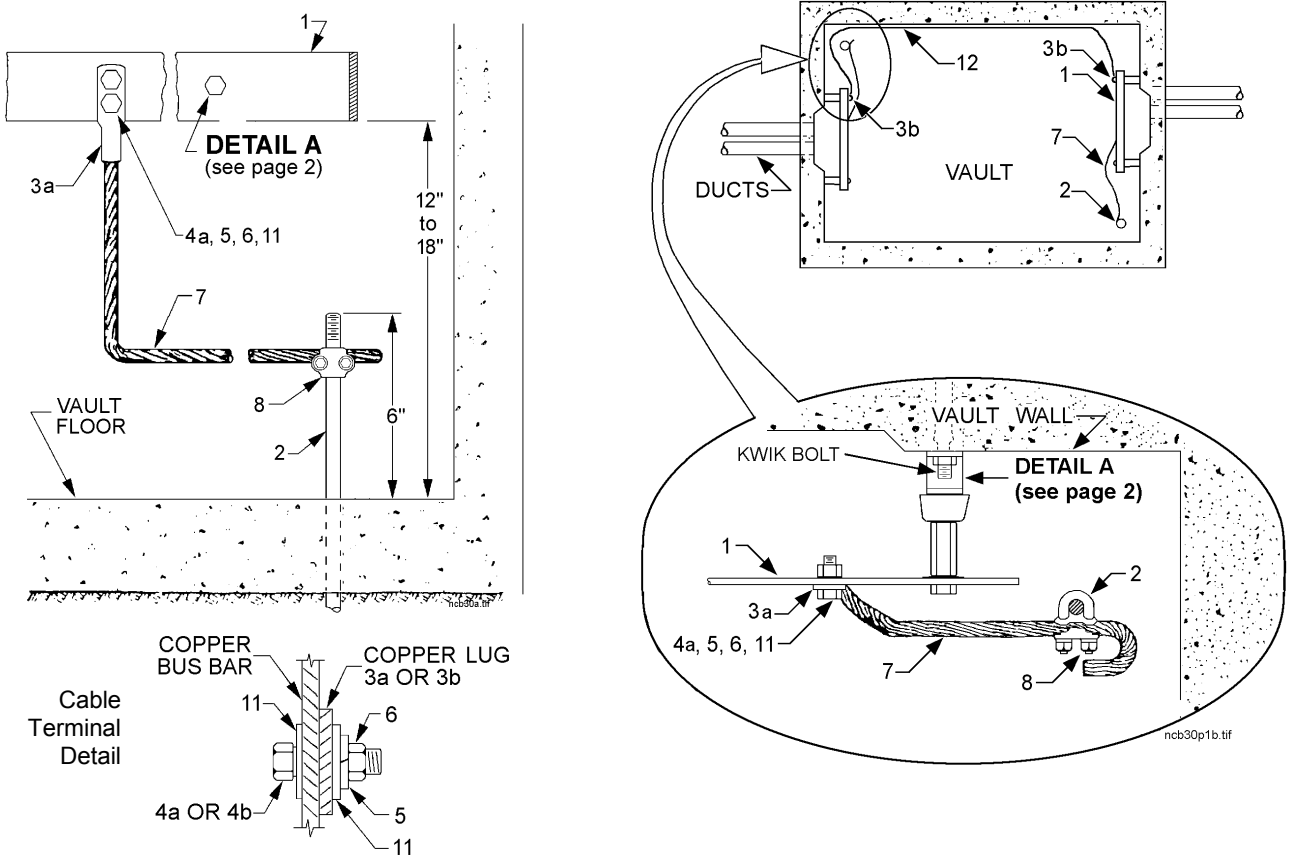


**GROUNDING NETWORK SYSTEM, WET VAULT, NON-TRANSFORMER
ONE OR TWO 48-INCH BUS BARS**

Figure 1



Material List

Item	Quantity	Description	Stock No.
1	as required	BUS BAR, copper, 1/4" thick, 48" long	679760
2	2	ROD, ground, copper clad, 5/8" x 8'	564238E
3a	2	LUG, 250 kcmil copper compression	677083E
3b	2	TERMINAL, bolted cable to flat, 750	676123
4a	4	BOLT, silicon bronze, 1/2" x 1-1/4", bus to 250 lug	784586E
4b	4	BOLT, silicon bronze, 1/2" x 1-1/2", bus to 750 lug	784587E
5	as required	WASHER, lock, silicon bronze, 1/2"	788125E
6	as required	NUT, silicon bronze, 1/2"	783325E
7	as required	WIRE, 250 kcmil, bare stranded copper	610412
8	2	CLAMP, ground, 5/8" - 2/0 to 250	676255
11	8	WASHER, flat, silicon bronze, 1/2"	788026E
12	as required	WIRE, 750 copper, 600 V	613743

standards coordinator <i>Brett Hanson</i> Brett Hanson	standards supervisor <i>John Shipek</i> John Shipek	unit director <i>Pamela S. Johnson</i> Pamela S. Johnson
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CONSTRUCTION STANDARD

Grounding Network System, Wet Vault, Non-Transformer,
One or Two 48-Inch Bus Bars

standard number: **NCB-30**

superseding: January 12, 2011

effective date: February 1, 2011

page: 2 of 2

1. Grounding Electrode:

Two 5/8-inch by eight-foot ground rods shall be driven in opposite corners, as shown (Figure 1), before the concrete is poured (except precast vaults). When installing rods in vaults with limited overhead clearance, two 5/8-inch by five-foot sectional rods may be used in lieu of a 5/8-inch by eight-foot rod. The head of the rod shall protrude approximately six feet above the finished floor. A driving head shall be used to prevent damage to the ground rod threads. Ground rods shall be caulked and grouted to prevent water intrusion.

2. Grounding Electrode Alternate

- 2.1 Obtain approval for alternate from Seattle City Light engineer prior to bid.
- 2.2 Drill two holes into each vault for cable entry. Drill each hole through vault on the same wall that the duct bank enters, above the water table if present.
- 2.3 For each of the two grounding electrodes per vault, furnish and install 50 feet of 250 kcmil bare copper conductor laid approximately straight below the duct bank prior to pour. Provide additional conductor in order to route it from the duct bank, up through drilled hole in vault, and down to common grounding point within vault.

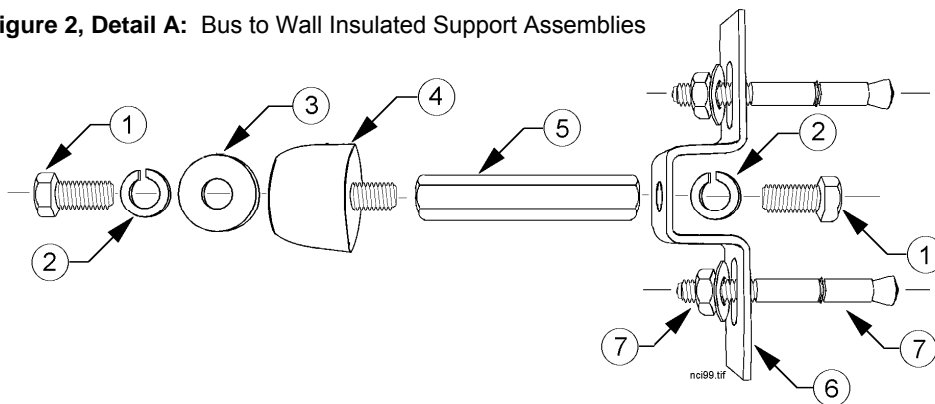
- 2.4 At entry into vault, exothermically weld each conductor to eliminate air gaps between strands. Seal conductor's entry into vault to prevent water intrusion.

3. **Testing of Grounds:** The total resistance of the ground rods shall not exceed 25 ohms. If this requirement is not met with four rods as shown, additional lengths shall be coupled and driven, or additional rods installed.

4. **Ground Bus:** One 1/4-inch by four-inch by forty-eight-inch copper bus bar shall be installed as shown (Figure 1) on the wall near the duct entrance.

A second bus can be installed at the opposite end and the two connected together with 750 kcmil or equivalent copper.

5. **Ground Wire:** 250 kcmil bare stranded copper cable shall be used to connect ground rods to the ground bus. There should be sufficient slack in the cable to prevent damage due to tension or settling. Install 250 kcmil copper system ground if no bus ties are available.

Figure 2, Detail A: Bus to Wall Insulated Support Assemblies**Material List for Bus to Wall Insulated Support Assemblies**

Quantities listed assume four Insulated Support Assemblies will be required per installation.

Item	Quantity	Description	Stock No.
1	8	SCREW, cap, hex head, cad plated, 5/8" - 11 NC x 1"	784885E
2	8	WASHER, lock, galvanized, 5/8"	584260E
3	4	WASHER, flat, 5/8"	585030E
4	4	INSULATOR, phenolic spool, neutral bus support	690880
5	4	NUT, coupling, hex, steel, 5/8" - 11 NC	780050E
6	4	BASE, neutral bus support	690882
7	8	ANCHOR, stainless steel, light duty, stud bolt 1/2" x 2-3/4" (with stud, nut and washer)	780032