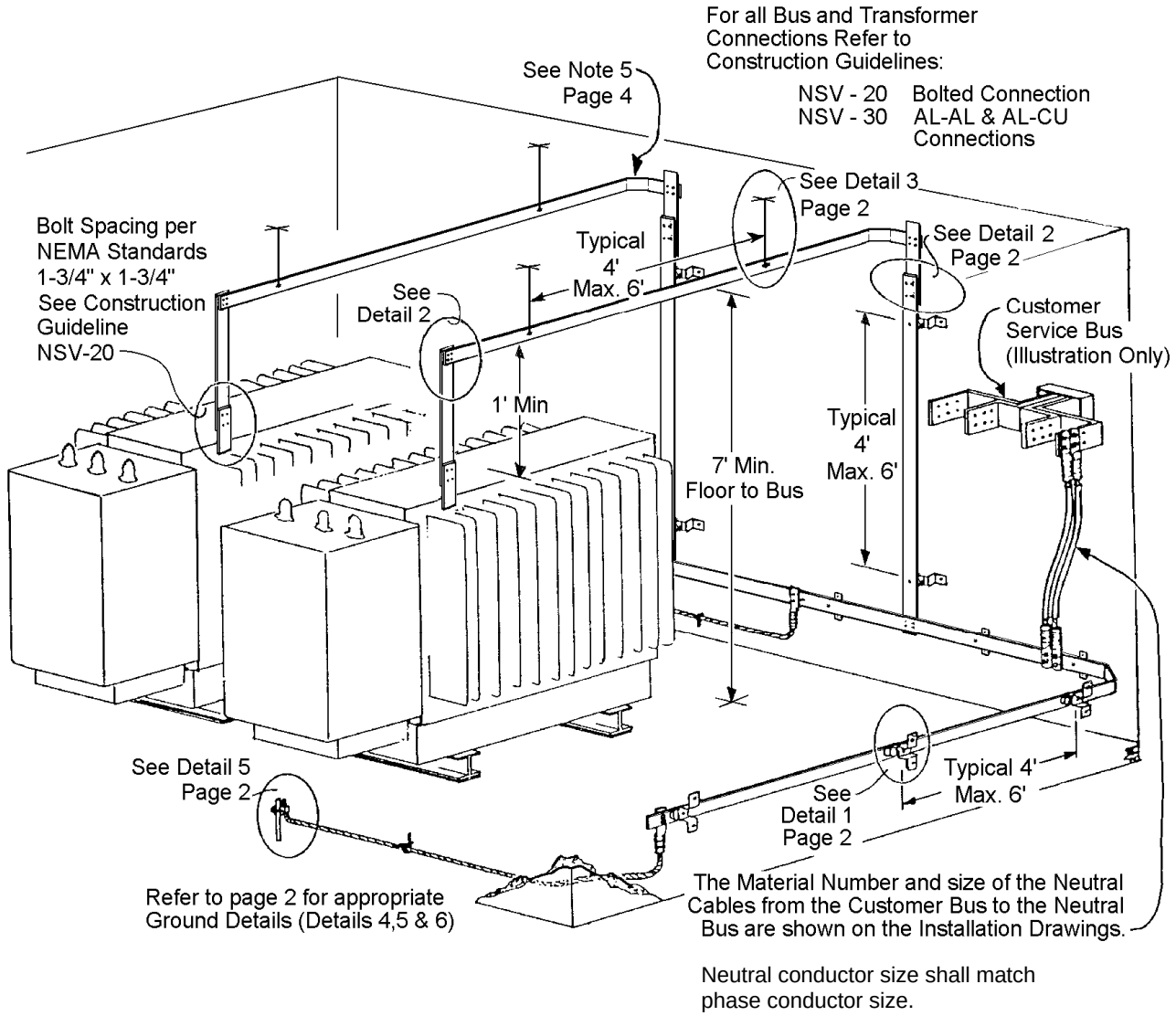
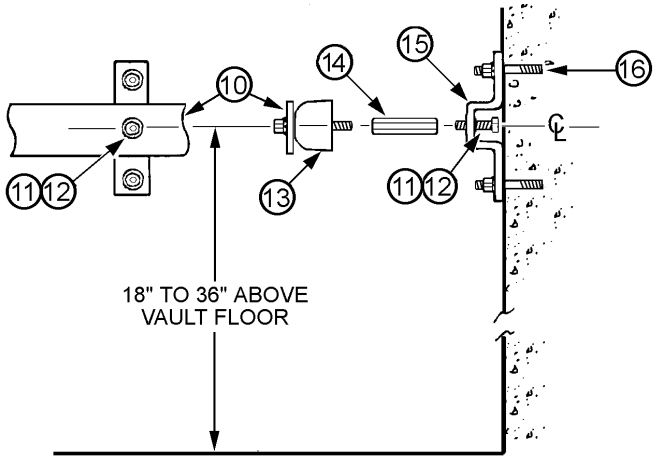
NETWORK SPOT OR SYSTEM MULTI-TRANSFORMER WET OR DRY VAULT INSULATED GROUND/NEUTRAL BUS INSTALLATION



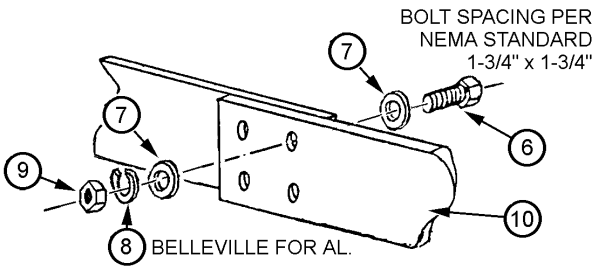
Wet vaults are those vaults located below grade or where otherwise subject to flooding or wet interior conditions. Dry vaults are above grade or are not subject to periodic flooding, such as locations in a customer basement. Dry vault equipment must be out of the rain or drip. Dry vaults may have vent gratings open to the rain.

standards coordinator	*standards supervisor*	*unit director*
Brett Hanson	John Shipek	Darnell Cola

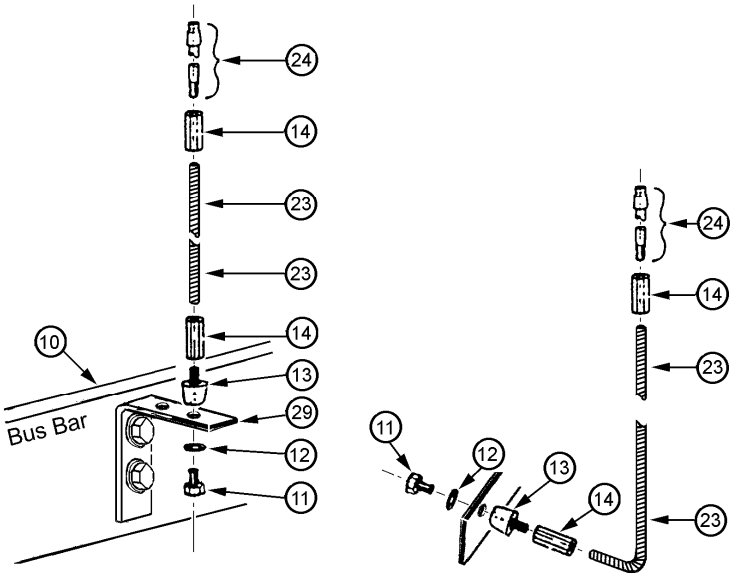
DETAILS



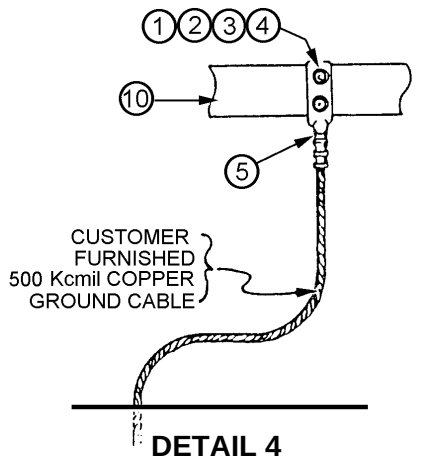
DETAIL 1: BUS BAR MOUNTING TO CONCRETE WALL



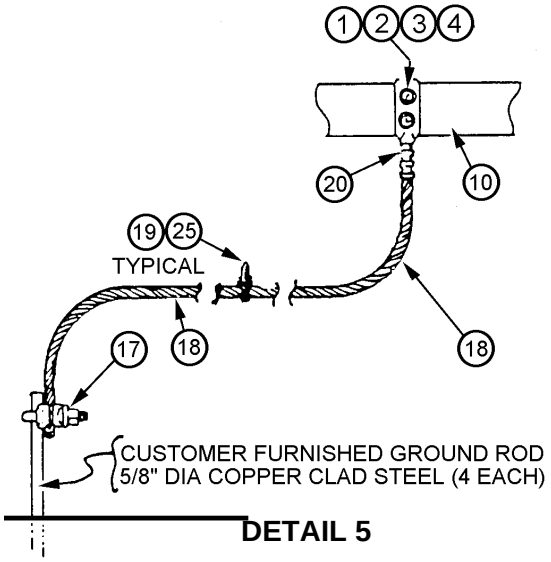
DETAIL 2: BUS BAR CONNECTION



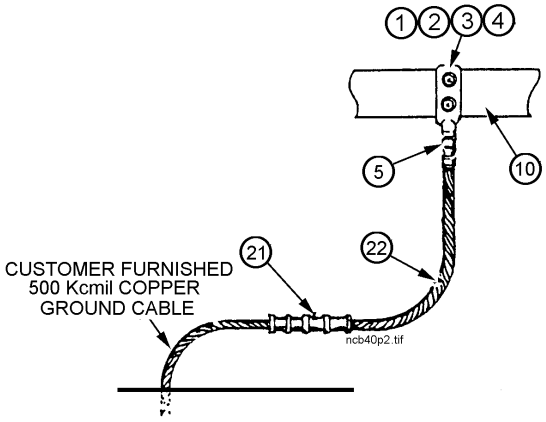
DETAIL 3: BUS BAR ASSEMBLIES



DETAIL 4



DETAIL 5



DETAIL 6

MATERIAL LIST

COPPER BUS

Item	Description	Matl. Std.	Stock No.
1	BOLT, Si-Bronze, 1/2”-13 x 1-1/2”	7845.1	784587E
2	WASHER, Flat, Bronze, 1/2”.	7880.2	788026E
3	WASHER, Lock, Bronze, 1/2”.	7880.2	788125E
4	NUT, Si-Bronze, 1/2”-13	7833.3	783325E
5	TERMINAL, Comp, 500 Cu	6770.7	677091E
6	Same as item 1	7845.1	784587E
7	Same as item 2	7880.2	788026E
8	Same as item 3	7880.2	788125E
9	Same as item 4	7833.3	783325E
10	BUS BAR, Cu., 1/4” x 4”	6300.0	630029
11	SCREW, Hex, Steel, 5/8”-11 x 1”	7847.1	784885E
12	WASHER, Lock, Galv., 5/8”	5842.1	584260E
13	INSULATOR,Neutral Bus Support	6908.0	690880
14	NUT,Coupling,Hex,Steel, 5/8”-11	–	780050E
15	BASE, Neutral Bus Support	6908.2	690882
16	ANCHOR, Stud Bolt, 1/2” x 2-3/4”, SS	7800.9	780032
17	CLAMP, Ground Rod, 5/8” to 250	6762.7	676255
18	WIRE, 250 kcmil Bare Str. Cu.	6103.9	610412
19	BASE, Mounting, Cable Tie	–	735801
20	TERMINAL, Comp., 250 Cu.	6770.7	677083E
21	SLEEVE, Comp., 500 Cu.	6773.8	677367
22	WIRE, 500 kcmil Bare Str. Cu	6103.9	610397
23	ROD, Running Thread, 5/8”-11, (length as required)	–	781000
24	ANCHOR, Concrete Stud, 5/8” x 3-3/4”, SS	7800.9	780141
25	CABLE TIE, Plastic	7358.1	735806E
–	–	–	–
–	–	–	–
–	–	–	–
29	BRACKET, Ground Support	–	666466

ALUMINUM BUS

Item	Description	Matl. Std.	Stock No.
1	BOLT ASSY, Kit, Al., 1/2”-13x2”	7820.0	782051
–	–	–	–
–	–	–	–
–	–	–	–
5	TERMINAL, Comp, 500 Al.	6774.8	651270
6	BOLT, Al. 5/8”-11 x 2”	–	781813
7	WASHER, Flat, Al. 5/8”	–	788254
8	WASHER, Lock, 5/8”Al.	–	788274
9	NUT, Al., 5/8”-11	–	783560
10	BUS BAR, Al., 3/8” x 4”	–	630055
11	SCREW, Hex, Steel, 5/8”-11 X 1”	7847.1	784885E
12	WASHER, Lock, Galv. 5/8”	5842.1	584260E
13	INSULATOR,Neutral Bus Support	6908.0	690880
14	NUT,Coupling,Hex,Steel,5/8”-11	–	780050E
15	BASE, Neutral Bus Support	6908.2	690882
16	ANCHOR, Stud Bolt, 1/2”, SS	7800.9	780032
17	CLAMP, Ground Rod, 5/8” to 250	6762.7	676255
18	WIRE, 250 kcmil Bare Str. Cu.	6103.9	610412
19	BASE, Mounting, Cable Tie	–	735801
20	TERMINAL, Comp., 250 Al.	6774.9	651265
21	SLEEVE, Comp., 500 Cu.	6773.8	677367
22	WIRE, 500 kcmil Bare Str. Cu	6103.9	610397
23	ROD, Running Thread, 5/8”-11, (length as required)	–	781000
24	ANCHOR, Concrete, Stud, 5/8” x 3-3/4”, SS	7800.9	780141
25	CABLE TIE, Plastic	7358.1	735806E
26	INHIBITOR COMPOUND, Oxide	7261.1	726182
27	TERMINAL LUG, Comp., 750 Al. (for 5/8” Bolt)	6774.8	651275
28	BOLT ASSY, 1/2” x 1-3/4” with Belleville Washer	7820.0	782050
29	BRACKET, Ground Support	–	666466

Bus material quantities are to be determined by engineer.

NOTES:

1. Use copper bus in wet vaults. Use either copper or aluminum bus in dry vaults.

2. Wet vaults are those vaults located below grade or where otherwise subject to flooding or wet interior conditions. Dry vaults are above grade or are not subject to periodic flooding, such as locations in a customer basement. Dry vault equipment must be out of the rain or drip. Dry vaults may have vent gratings open to the rain.

3. See installation drawings for location details of neutral bus, cable connections, ground rods, ground cables, and customer service bus.

4. Bus material quantities are to be determined by engineer.

5. Minimum bend radius for both 1/4" copper bus bar and 3/8" aluminum bus bar shall be 3/4". Maximum bend for 1/4" copper bus bar and 3/8" aluminum bus bar shall be 90°.

6. Install supports (item 15) approximately every eight feet of wall mounted bus and around columns and corners as required. Use equal spacing on each straight section.

7. Connect a ground cable to each of the four ground rods or to each of the two customer ground cables.

8. The transformer neutral terminal may vary in location and orientation. Some transformer neutral terminals may have four bolt holes while others may have six bolt holes.

9. Refer to Construction Guidelines NSV-20 and NSV-30 for preparation of contact surfaces, joining techniques and torque values for aluminum bolts. For silicon bronze or steel bolts use 40 ft. lbs. torque for 1/2" diameter bolts and 55 ft. lbs., torque for 5/8" diameter bolts.

10. One 750 kcmil or two 500 kcmil bare copper wires can be substituted for sections of wall mounted copper bus only (see NCB-30). The connection to the transformer neutral(s) shall be made with bus bar. Two 750 kcmil aluminum wires (dry vaults only) or two 500 kcmil bare copper wires can be substituted for sections of wall mounted aluminum bus using an aluminum terminal lug. Make aluminum to copper connections per NSV-20 and NSV-30.

11. Ground cables shall be supported on the wall approximately every three feet.

12. Bus tie switches shall be grounded with 500 kcmil copper for the case ground to neutral bus.

13. A 250 kcmil system ground shall be installed and connected to the ground bus in adjacent vault if no bus ties are present.

14. For grounding details for copper buses, see Guideline NCB-20 for use in dry, wet, or spot transformer vaults. Guideline NCB-30 describes details for wet vault installations of one or two 48" copper buses. For aluminum buses, see Guideline NCB-10 for dry vault transformer grounding details.