
Primary Pole Terminations

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1. Scope

This standard covers the information necessary to install primary pole terminations on wood riser poles on the 26 kV primary distribution system. Requirements for vertical spacing and hardware, and installation instructions to connect the termination assembly to the pole are included.

Riser extensions are covered in SCL 0126.04.

Composite, steel, laminated and other non-wood poles are outside the scope of this standard.

2. Application

This standard provides direction to Seattle City Light (SCL) engineers, crews and contractors for the installation of primary pole terminations on 26 kV distribution poles with primary conductors.

3. Requirements

3.1 General

A single-phase overhead to underground termination shall be constructed as shown in Figure 3.1a.

A three-phase 600 A termination shall be constructed as shown in Figure 3.1b or c.

A three-phase 1200 A termination shall be constructed as shown in Figure 3.1d.

A three-phase wing arm termination shall be constructed as shown in Figure 3.1e.

Wing arms are for temporary installation and maintenance only.

Wing arms are not regular construction and shall only be installed temporarily in locations where a standard crossarm cannot provide adequate clearance to meet code.



Figure 3.1a. Single-Phase Termination Assembly

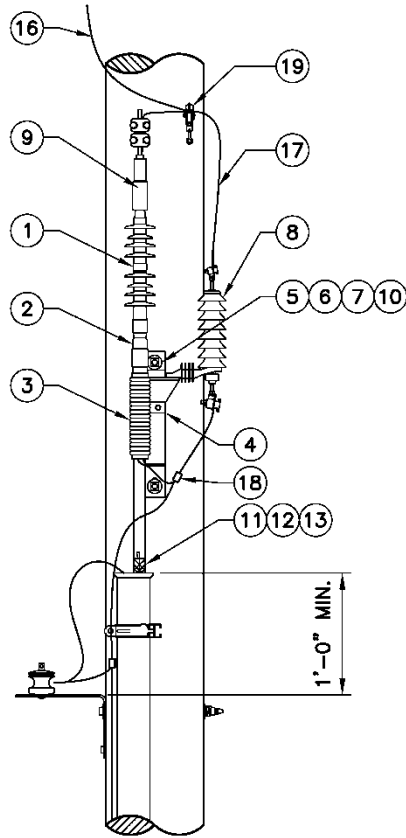


Figure 3.1b. Three-Phase 600 A Termination Assembly

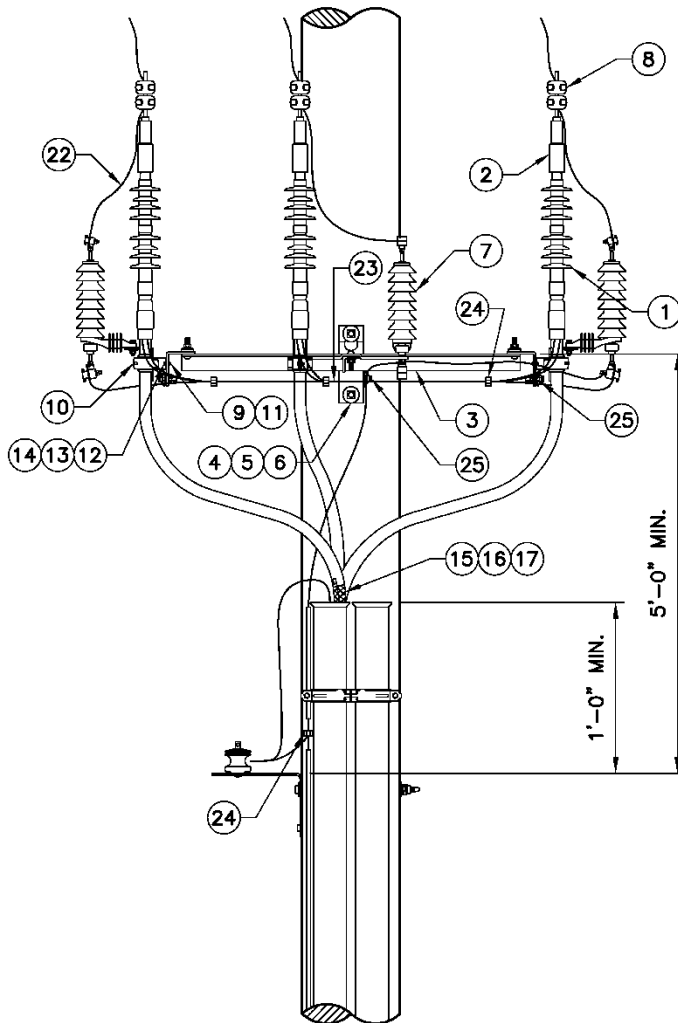


Figure 3.1c. Three-Phase 600 A Termination Assembly for Cutouts

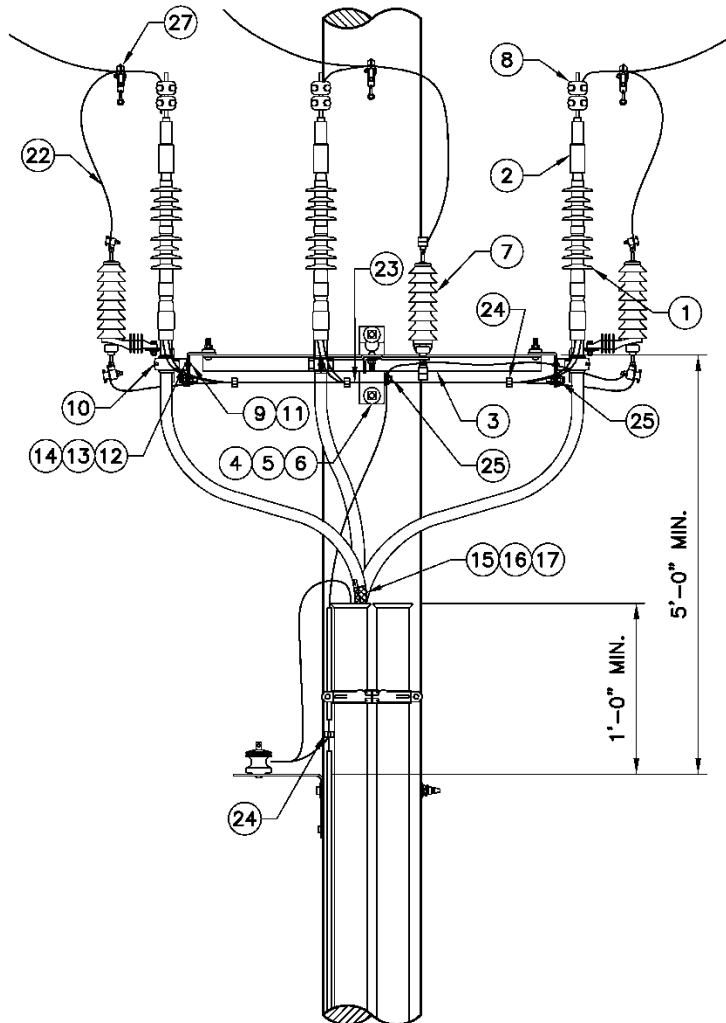


Figure 3.1d. Three-Phase 1200 A Termination Assembly

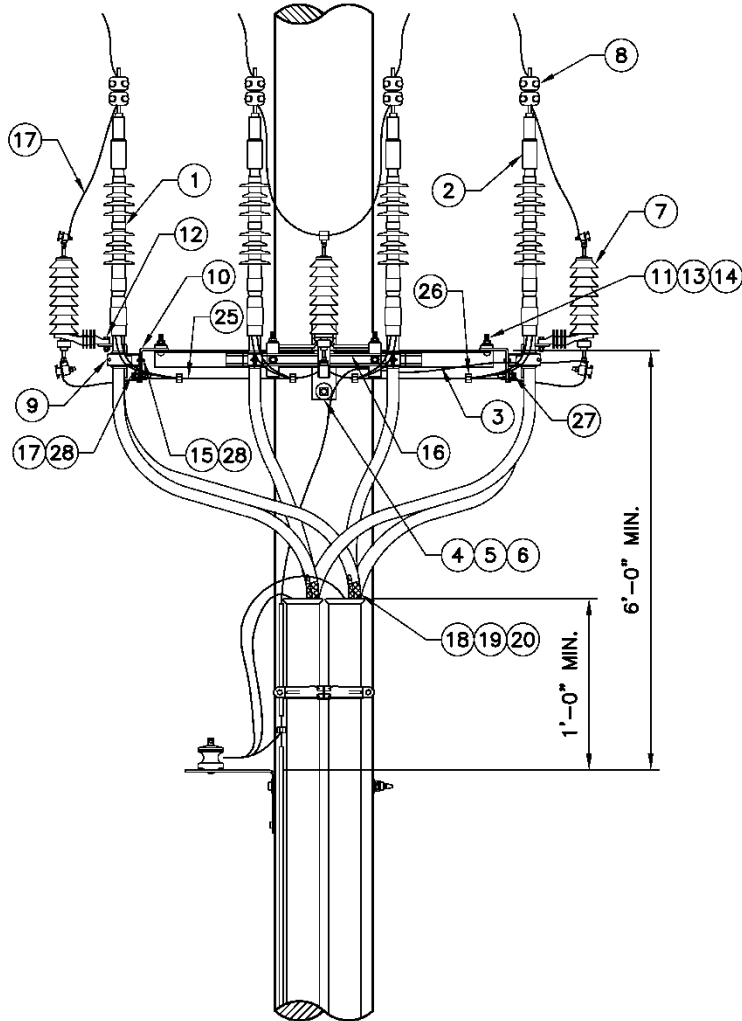
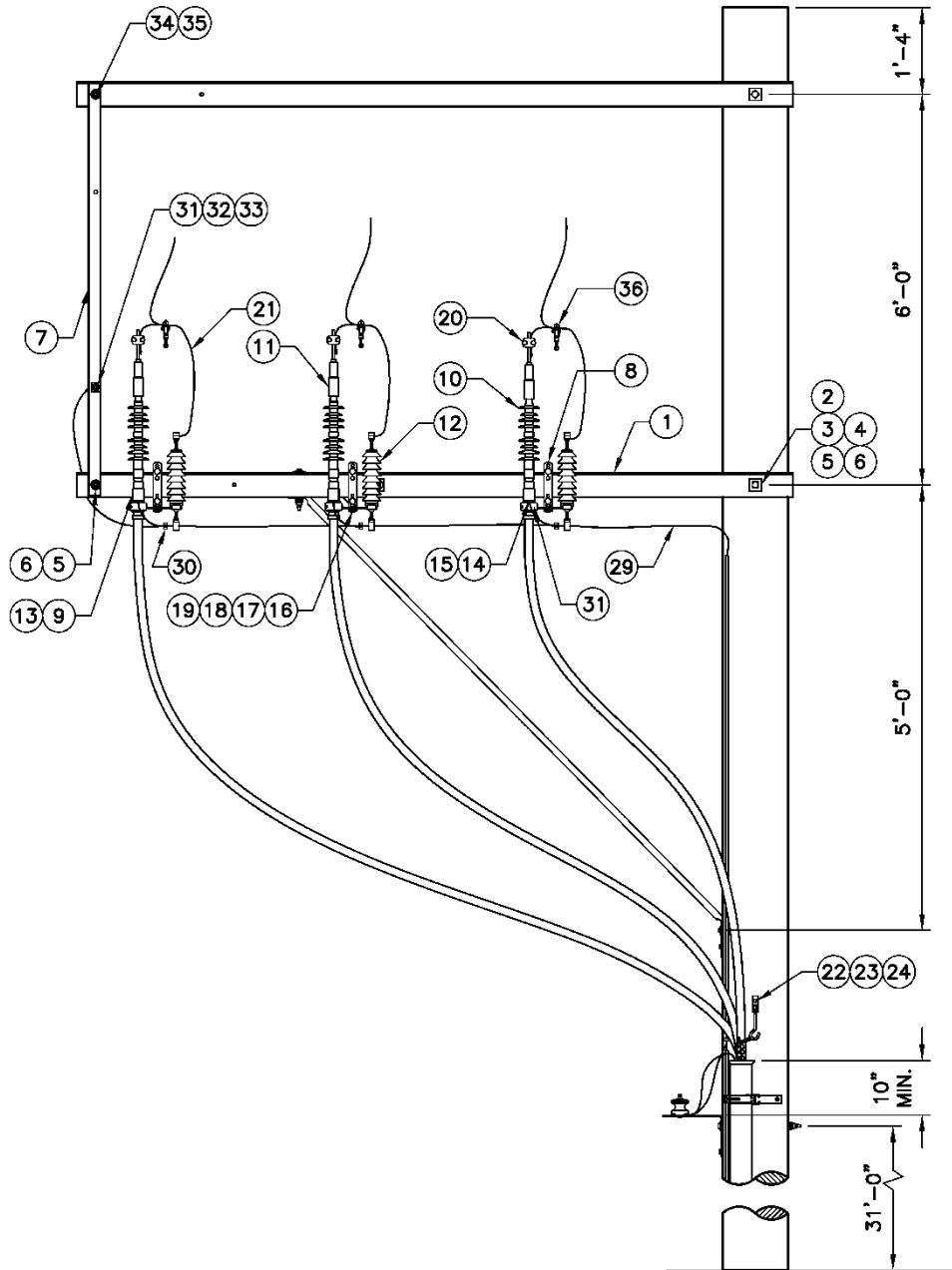


Figure 3.1e. Three-Phase 600 A Box Wing Arm Termination Assembly



3.2 Grounding

A ground ring shall be constructed as shown in figures 3.2a through 3.2g. A single conductor shall be used and shall be supported by bar to cable connectors. The ground conductor shall be connected directly to the arresters.

Figure 3.2a. Single-Phase One-line Grounding Diagram

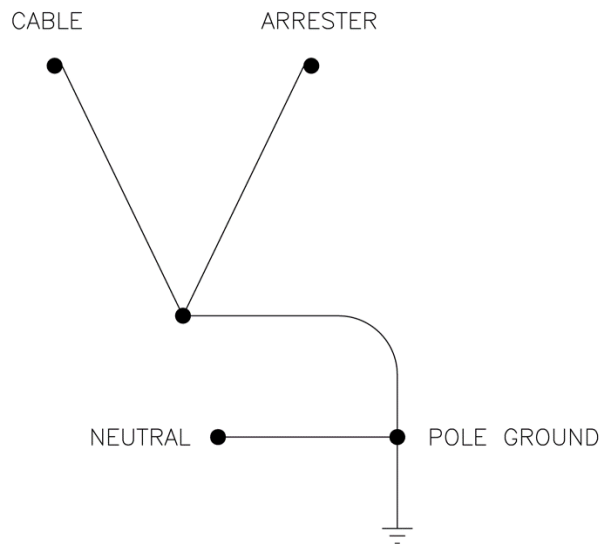


Figure 3.2b. Three-Phase 600 A One-line Grounding Diagram

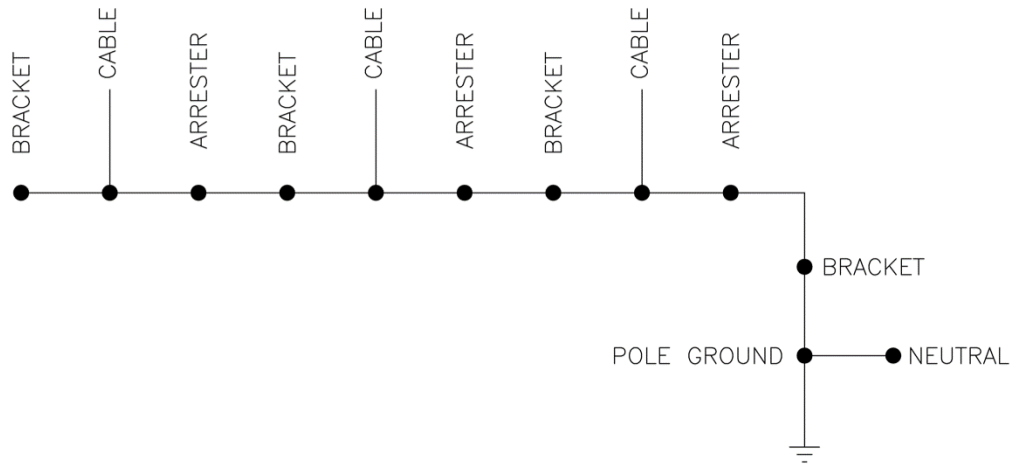


Figure 3.2c. Three-Phase 600 A Termination Grounding

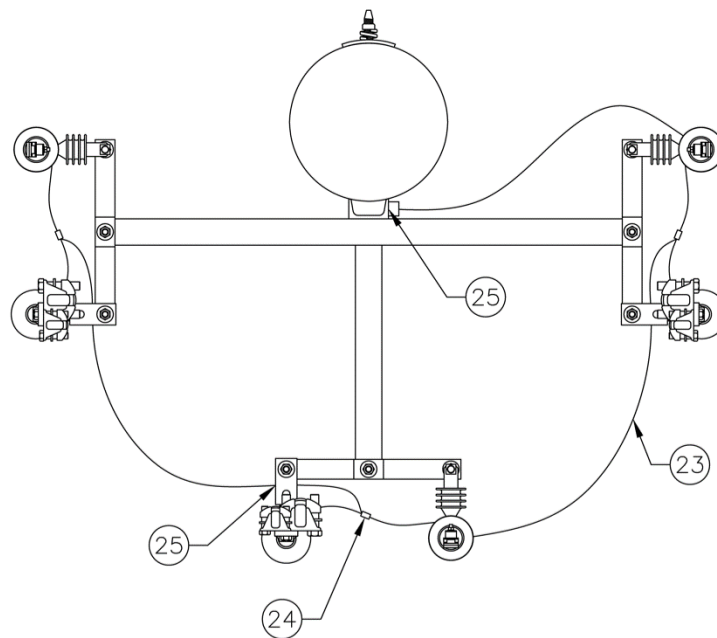


Figure 3.2d. Three-Phase 1200 A One-line Grounding Diagram

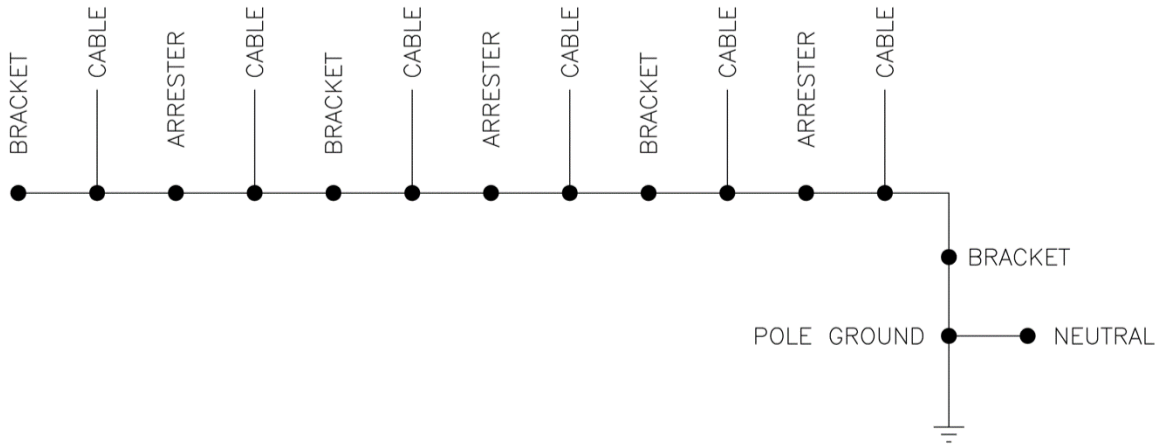


Figure 3.2e. Three-Phase 1200 A Termination Grounding

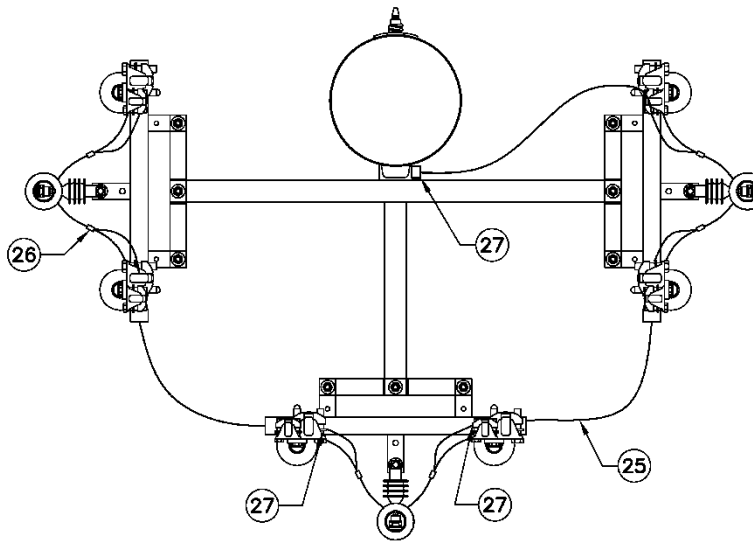


Figure 3.2f. Three-Phase Wing Arm One-line Grounding Diagram

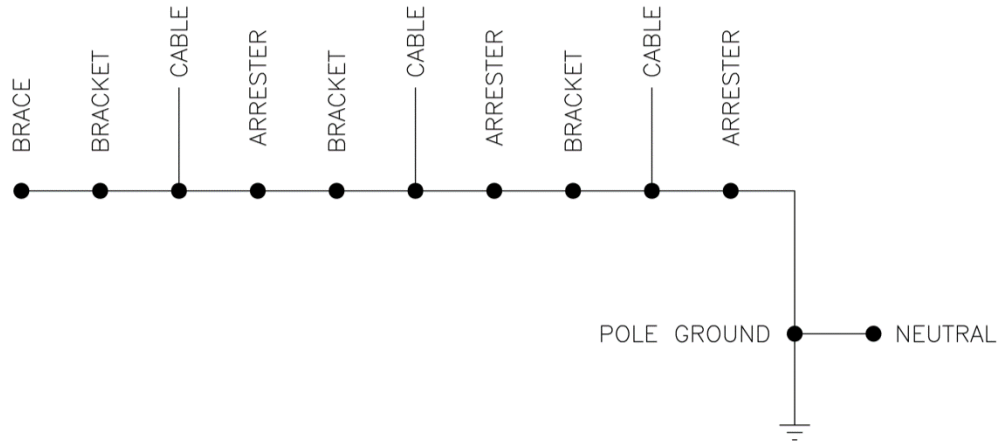
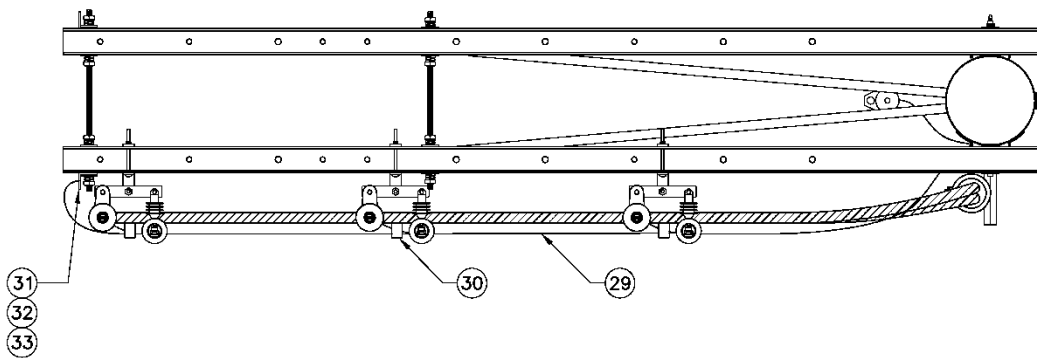


Figure 3.2g. Three-Phase 600 A Wing Arm Termination Grounding



4. Construction Notes

Minimum clearance of jumpers shall be 12 in phase-to-phase and 8 in phase-to-ground.

For general cable preparation procedures before installing the terminations, refer to U5 2.81/NSP-290.

For information on termination materials, refer to U5-26.20/NSP-285.

For steel conduit grounding and labeling, refer to SCL 0224.34.

5. Material Lists

Table 5a. Single-Phase Pole Termination Assembly

Fig	Compatible Unit	ID	Qty
3.1a	Single-Phase Pole Termination Assembly	JTERM-200-1-1/0	
			↓
#	Material Description	ID	
1	Terminator, cold shrink, 1/0 1/C	686532	1
2	Connector, pigtail, 1/0	686056	1
3	Bracket, terminator support	563221	1
4	Bracket, terminator arrester	686830	1
5	Bolt, machine, galvanized, 5/8" x 14"	780846	2
6	Washer, flat, 2-1/4" x 2-1/4"	585135	2
7	Washer, locking, coil spring, 3/4"	584267	2
8	Arrester	012593	1
9	Connector, two-bolt tap 2/0 - 2/0	669379	2
10	Washer, round, galvanized, 1/2"	585025	1
11	Screw, lag, galvanized	785261	1
12	Bracket and J-bolt, cable grip support	780127	1
13	Grip, cable support, single eye, 1" - 1-1/4"	763551	1
16	#2 AWG, poly, MHD	611390	10
17	#4 AWG, bare, SD	610208	20
18	Connector, vise jaw, #4 AWG	012173	4
19	Clamp, hot line tap, 2/0 - #8	580725	1

Table 5b. Materials for 600 A Three-Phase Pole Termination Assemblies

Fig	Compatible Unit	ID	Quantity				
31.b, c	600 A Three-Phase Pole Termination Assembly, 1000 kcmil Cable	JTERM-600-1000					
31.b, c	600 A Three-Phase Pole Termination Assembly, 750 kcmil cable	JTERM-600-750					
31.b, c	600 A Three-Phase Pole Termination Assembly, 500 kcmil cable	JTERM-600-500					
31.b, c	600 A Three-Phase Pole Termination Assembly, 350 kcmil cable	JTERM-600-350					
31.b, c	600 A Three-Phase Pole Termination Assembly, 1/0 kcmil cable	JTERM-200-3-1/0					
#	Material Description	ID					
1	Terminator, cold shrink, 1/0 1/C	686532	3	-	-	-	-
1	Terminator, cold shrink, 350-500 1/C	012125	-	3	3	-	-
1	Terminator, cold shrink, 750-1000 1/C	012126	-	-	-	3	3
2	Connector, pigtail, 1/0	686056	3	-	-	-	-
2	Connector, pigtail, 350 kcmil	650578	-	3	-	-	-
2	Connector, pigtail, 500 kcmil	650579	-	-	3	-	-
2	Connector, pigtail, 750 kcmil	686075	-	-	-	3	-
2	Connector, pigtail, 1000 kcmil	010320	-	-	-	-	3
3	Bracket, terminator Arrester	686835	1	1	1	1	1
4	Bolt, machine, galvanized, 5/8" x 14"	780846	1	1	1	1	1
5	Washer, curved, 4" x 4"	584775	1	1	1	1	1
6	Washer, coil spring lock, 5/8"	584261	1	1	1	1	1
7	Arrester	012593	3	3	3	3	3
8	Two-bolt clamp, 250-350 kcmil	669381	6	-	-	-	-
8	Two-bolt clamp, 400-500 kcmil	669382	-	6	6	6	6
9	Cable support adapter	012465	3	3	3	3	3
10	Cable support heel, 1/0	011961	3	-	-	-	-
10	Cable support heel, 350 kcmil	011962	-	3	-	-	-
10	Cable support heel, 500 kcmil	011963	-	-	3	-	-
10	Cable support heel, 750 kcmil	011964	-	-	-	3	-
10	Cable support heel, 1000 kcmil	012501	-	-	-	-	3
11	L bracket	686466	3	3	3	3	3
12	Bolt, 1/2" x 2"	780796	3	3	3	3	3
13	Washer, round, galvanized, 1/2"	585025	3	3	3	3	3
14	Washer, lock, 1/2"	584255	3	3	3	3	3

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#	Material Description	ID					
15	Screw, lag, galvanized 1/2" x 4"	785261	1	1	1	1	1
16	Bracket and J-bolt, cable grip support	720630	1	1	1	1	1
17	Grip, cable support, 1/0 & 350 kcmil	763547	1	1	-	-	-
17	Grip, cable support, 500 kcmil	763548	-	-	1	-	-
17	Grip, cable support, 750 and 1000 kcmil	763549	-	-	-	1	1
22	#2 AWG, poly, MHD	611390	10	10	10	10	10
23	#2 AWG, bare, SD	610006	40	40	40	40	40
24	Connector, vise jaw, #4 AWG	012173	8	8	8	8	8
25	Clamp connector, single	676674	4	4	4	4	4
26	Washer, flat, copper, 3/8"	788024	4	4	4	4	4
27	Clamp, hot line tap, 2/0 - #8	580725	3	3	3	3	3

Table 5c. Materials for 1200 A Three-Phase Pole Termination Assembly

Fig	Compatible Unit	ID	Quantity	
3.1d	1200 A Three-Phase Pole Termination Assembly, 1000 kcmil Cable	JTERM-1200-1000		
3.1d	1200 A Three-Phase Pole Termination Assembly, 750 kcmil Cable	JTERM-1200-750		
#	Material Description	ID		
1	Terminator, cold shrink 750-1000 1/C	012126	6	6
2	Connector, pigtail, 1000	010320	6	6
3	Bracket, terminator arrester	686835	1	1
4	Bolt, machine, galvanized, 5/8" x 14"	780846	1	1
5	Washer, curved, 4" x 4"	584775	1	1
6	Washer, coil spring lock, 5/8"	584261	1	1
7	Arrester	012593	3	3
8	Clamp, two-bolt, 400-500	669382	6	6
9	Cable support heel, 1000	012501	–	6
9	Cable support heel, 750	011964	6	–
10	L bracket	686466	9	9
11	Bolt, 1/2" x 1-1/2"	780794	9	9
12	Bolt, 1/2" x 2"	780796	3	3
13	Washer, round, galvanized, 1/2"	585025	23	23
14	Washer, lock, 1/2"	584255	12	12
15	Spring nut	723606	3	3
16	Unistrut	723510	60	60
17	#2 AWG, poly, MHD	611390	20	20
18	Screw, lag, galvanized 1/2" x 4"	785261	2	2
19	Bracket and J-bolt, cable grip support	720630	2	2
20	Grip, cable support, 750 and 1000	763549	6	6
25	#2 AWG, bare, HD	610006	40	40
26	Connector, vise jaw, #4 AWG	012173	12	12
27	Clamp connector, single	676674	7	7
28	Washer, flat, copper, 3/8"	788024	7	7

Table 5d. Materials for Three-Phase 600 A Wing Arm Termination Assembly

Fig	Compatible Unit	ID	Quantity				
3.1e	600 A Three-Phase Wing Arm Assembly, 1000 kcmil Cable	JTERM-600-1000W					
3.1e	600 A Three-Phase Wing Arm Assembly, 750 kcmil Cable	JTERM-600-750W					
3.1e	600 A Three-Phase Wing Arm Assembly, 500 kcmil Cable	JTERM-600-500W					
3.1e	600 A Three-Phase Wing Arm Assembly, 350 kcmil Cable	JTERM-600-350W					
3.1e	600 A Three-Phase Wing Arm Assembly, 1/0 kcmil Cable	JTERM-600-1/0W					
#	Material Description	ID	1	2	3	4	5
1	Crossarm, 11-ft wing arm	540209	1	2	2	2	2
2	Bolt, 3/4" x 16"	780877	3	-	-	-	-
3	Washer, curved	584775	1	-	-	-	-
4	Washer, double coil lock	584267	1	2	2	2	2
5	DA bolts 32"	560532	-	3	3	3	3
6	Washer 2-1/4" x 2-1/4"	585135	5	10	10	10	10
7	Brace, crossarm, vertical spacing	563019	1	1	1	1	1
8	Bracket, crossarm cutout	682097	3	3	3	3	3
9	Adapter, arrester and pothead	720638	3	3	3	3	3
10	Terminator, cold shrink #1/0 1/C	686532	3	-	-	-	-
10	Terminator, cold shrink 350-500 1/C	012125	-	3	3	-	-
10	Terminator, cold shrink 750-1000 1/C	012126	-	-	-	3	3
11	Connector, pigtail, 1/0	686056	3	-	-	-	-
11	Connector, pigtail, 350 kcmil	650578	-	3	-	-	-
11	Connector, pigtail, 500 kcmil	650579	-	-	3	-	-
11	Connector, pigtail, 750 kcmil	686075	-	-	-	3	-
11	Connector, pigtail, 1000 kcmil	010320	-	-	-	-	3
12	Arrester	012593	3	3	3	3	3
13	Washer bolt assembly, 2-1/2"	782041	6	-	-	-	-
14	Cable support adapter	012465	3	3	3	3	3
15	Cable support heel, 1/0	011961	3	-	-	-	-
15	Cable support heel, 350 kcmil	011962	-	3	-	-	-
15	Cable support heel, 500 kcmil	011963	-	-	3	-	-
15	Cable support heel, 750 kcmil	011964	-	-	-	3	-
15	Cable support heel, 1000 kcmil	012501	-	-	-	-	3

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#	Material Description	ID					
17	Bolt, 1/2" x 2"	780796	3	3	3	3	3
18	Washer, flat, 1/2"	585025	3	3	3	3	3
19	Washer, lock, 1/2"	584255	3	3	3	3	3
20	Two-bolt clamp, 250-350 kcmil	669381	6	–	–	–	–
20	Two-bolt clamp, 400-500 kcmil	669382	–	6	6	6	6
21	#2 AWG, poly, MHD	611390	10	10	10	10	10
22	Screw, lag, galvanized	785261	1	1	1	1	1
23	Bracket and J-bolt, cable grip support	720630	1	1	1	1	1
24	Grip, cable support, 1/0 & 350 kcmil	763547	1	1	–	–	–
24	Grip, cable support, 500 kcmil	763548	–	–	1	–	–
24	Grip, cable support, 750 kcmil and 1000 kcmil	763549	–	–	–	1	1
29	#2 AWG, bare, HD	610006	40	40	40	40	40
30	Connector, vise jaw, #4 AWG	012173	8	8	8	8	8
31	Clamp connector, single	676674	4	5	5	5	5
32	Washer, flat plain, stainless, 1/2"	788030	1	2	2	2	2
33	Washer, lock, stainless, 1/2"	788160	1	2	2	2	2
34	Bolt, 5/8" x 6"	780836	2	2	2	2	2
35	Washer, split 5/8"	584261	2	2	2	2	2
36	Clamp, hot line tap, 2/0 - #8	580725	3	3	3	3	3

6. References

SCL Construction Standard 0126.04; "Riser Extensions"

SCL Construction Standard 0224.34; "Steel Conduit Risers"

SCL Construction Guideline U5-26.20/NSP-285; "Termination 20kV Cold Shrink"

SCL Construction Standard U5-2.81/NDK-290; "Primary Cable Preparation, General"

7. Sources

Hall, Alan; SCL Electrical Engineer and subject matter expert for 0126.01
 (alan.hall@seattle.gov)

Lu, Curtis; SCL Standards Engineer and originator of 0126.01 (curtis.lu@seattle.gov)