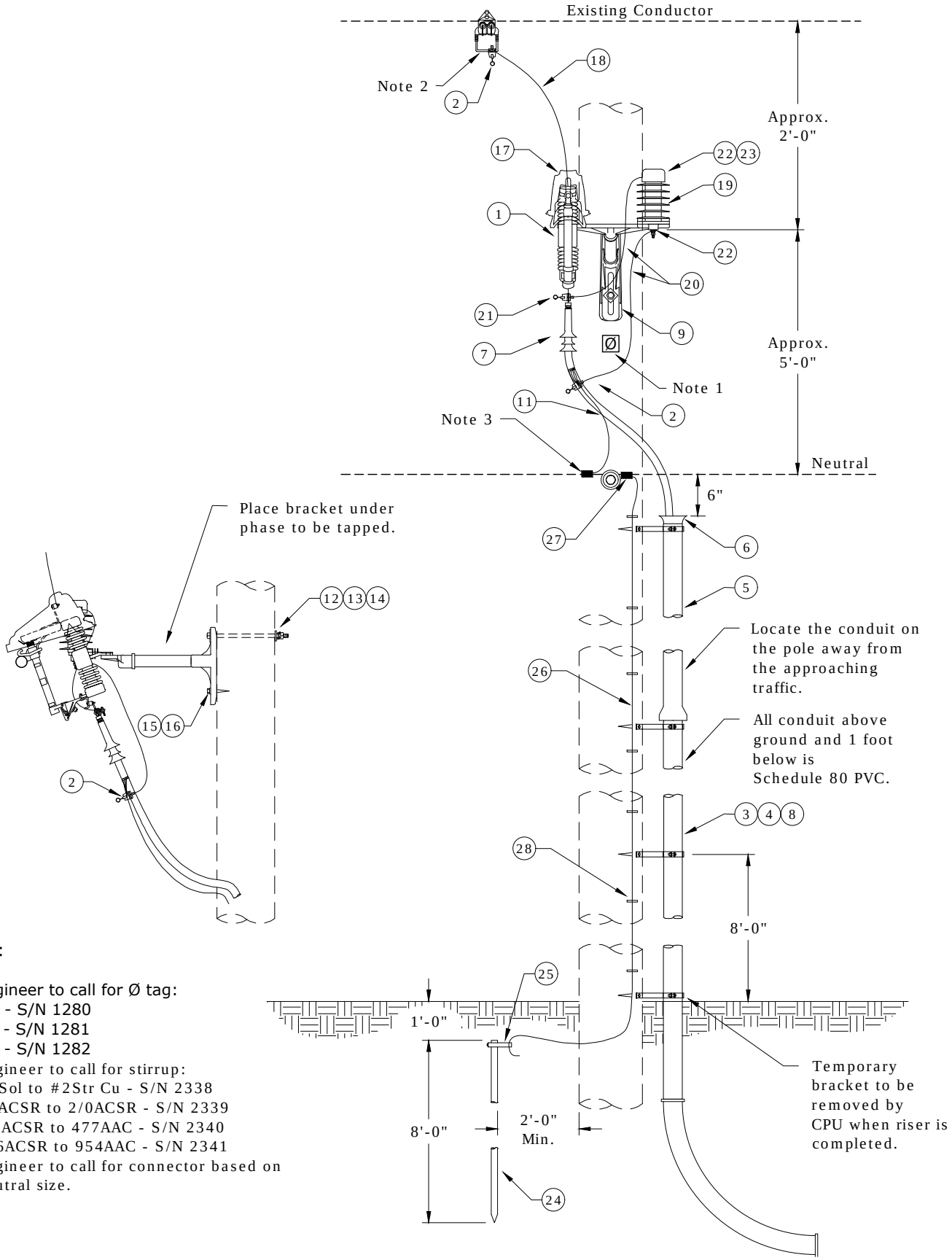
1300
UNDERGROUND RISERS, CABLES AND CONNECTORS

2/11/2025

~	U1	1Ø Primary Riser
~	U1R	1Ø Primary Riser, Reverse Feed
~	U2	2Ø Primary Riser
~	U2R	2Ø Primary Riser, Reverse Feed
~	U3	3Ø Primary Riser
~	U3R	3Ø Primary Riser, Reverse Feed
C	U83,U84	Secondary Overhead to Underground Riser Assembly
~	U8P	Secondary OH to UG Riser Assembly with Secondary Pedestal
~	U9	Riser Bracket Assembly
C	U10	1Ø Primary (U1) & Secondary (U8) Riser Guidelines
~	UB20-UB28	Underground Primary Basic Units
~	UCA1-UCA6	Underground Primary Cable Accessories - 200 Amp
~	UCH-0	Underground Cable Reel Handling
~	UCH-1	Underground Cable Handling and Storage
~	UCP1	Underground Cable Pulling Requirements
~	UEP2	Primary Elbow Assembly 200A w/ Current-Reset Fault Indicator
~	UEP3	Primary Elbow Assembly 200A w/ Voltage-Reset Fault Indicator
~	UFI	Underground Fault Indicators
~	UFI2	Underground Cable Current-Reset Fault Indicators Installation
~	UID2	Underground Conductor Identification Tags

N New Standard
R Redrawn Standard
C Changed Standard
~ No Change



Notes:

1. Engineer to call for Ø tag:
   AØ - S/N 1280
   BØ - S/N 1281
   CØ - S/N 1282
2. Engineer to call for stirrup:
   #6Sol to #2Str Cu - S/N 2338
   #6ACSR to 2/0ACSR - S/N 2339
   1/0ACSR to 477AAC - S/N 2340
   336ACSR to 954AAC - S/N 2341
3. Engineer to call for connector based on neutral size.

Rev. 6 - Corrected drawing and material.

Clark Public Utilities

CONSTRUCTION STANDARDS

SINGLE PHASE
PRIMARY RISER

REVISIONS			
R	DATE	ENGR	OPS
3	12/29/04	LB	AH
4	12/14/09	KJP	
5	10/31/17	CM	DK
6	1/16/19	CM	DK

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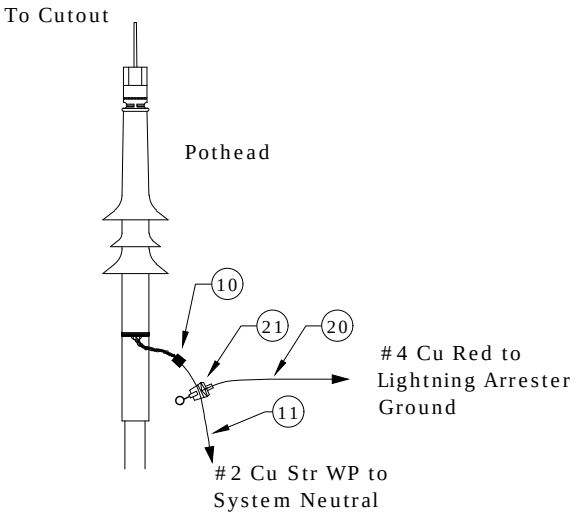

Pothead
Connection Detail

Notes:

4. Connect concentric neutrals to arrester ground using #4 Cu, Red.
5. Make arrester ground terminal-to-concentric neutral jumper as short as possible.

Rev. 6 - Corrected drawing and material.

ITEM NO.	DESCRIPTION	U1 Additional Material QTY.	S/N
1	Cutout, Polymer, Universal, 100A, 16kA Asym.	1	2532
2	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	1✲	283
3	Screw, Lag, 1/2" x 3", Fetter Drive, Drive Point	6	1131
4	Bracket, Standoff Riser, 10 1/2"	3	226
5	Conduit, PVC, 2" X 10', Sch 80	30✲	2205
6	End Bell, 2", Sch 40	1✲	2206
7	Terminator, 15kV, Cold-Shrink JCN & CN, 1/0	1	2214
8	Clamp, Standoff Bracket, Conduit, 2"	3	295
9	Bracket, Arrester/Cutout Mounting, 1ø Fiberglass 18"	1	2537
10	Connector, Crimpet, Cu 2/2 - 2/2 (2C2)	1	455
11	Conductor, Cu #2, 1/C, 7-Str, SD, 600V, HMP	10	393
12	Bolt, Machine, 5/8" x 12", 12,400 lbs. Ultimate Tensile	1	155
13	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
14	Washer, Lock, Spring, Double Coil, Galv. 5/8"	1	2217
15	Screw, Lag, 1/2" x 4 1/2", Twist Drive, Drive Point	1	1132
16	Washer, Flat, Round Galv., 1/2"	1	1394
17	Guard, Wildlife, Cutout, Polymer	1	2928 ✲
18	Conductor, Cu 1/C #2, 7-Str, 600V, Red, THW	3	2513

ITEM NO.	DESCRIPTION	LA2 QTY.	S/N
19	Arrester, Surge, 9kV, MOV, Riser Pole	1	58
20	Conductor, Cu 1/C #4, 7-Str, 600V, Red, THW	7	2512
21	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	2	283
22	Connector, Compression Lug, #4, Cu/Al, One-Hole, Tin-Plated, For Arrester	2	2548
23	Guard, Wildlife, Polymer Arrester	1	2583

ITEM NO.	DESCRIPTION	N1 QTY.	S/N
24	Rod, Ground, 5/8" x 8'	1	1124
25	Clamp, Ground Rod, 5/8", Bronze Small	1	281
26	Conductor, Copper-Clad Steel, #4 Cu Equivalent, Covered	40	1512
27	Connector, Cabelok, Al/Cu, #2-2/0 Run, #6-#1 Tap	1	413
28	Staple, Ground, Barbed, Galv. 1 1/2"	24	2707

Clark Public Utilities

CONSTRUCTION STANDARDS

SINGLE PHASE
PRIMARY RISER

REVISIONS			
R	DATE	ENGR	OPS
3	12/29/04	LB	AH
4	12/14/09	KJP	
5	10/31/17	CM	DK
6	1/16/19	CM	DK

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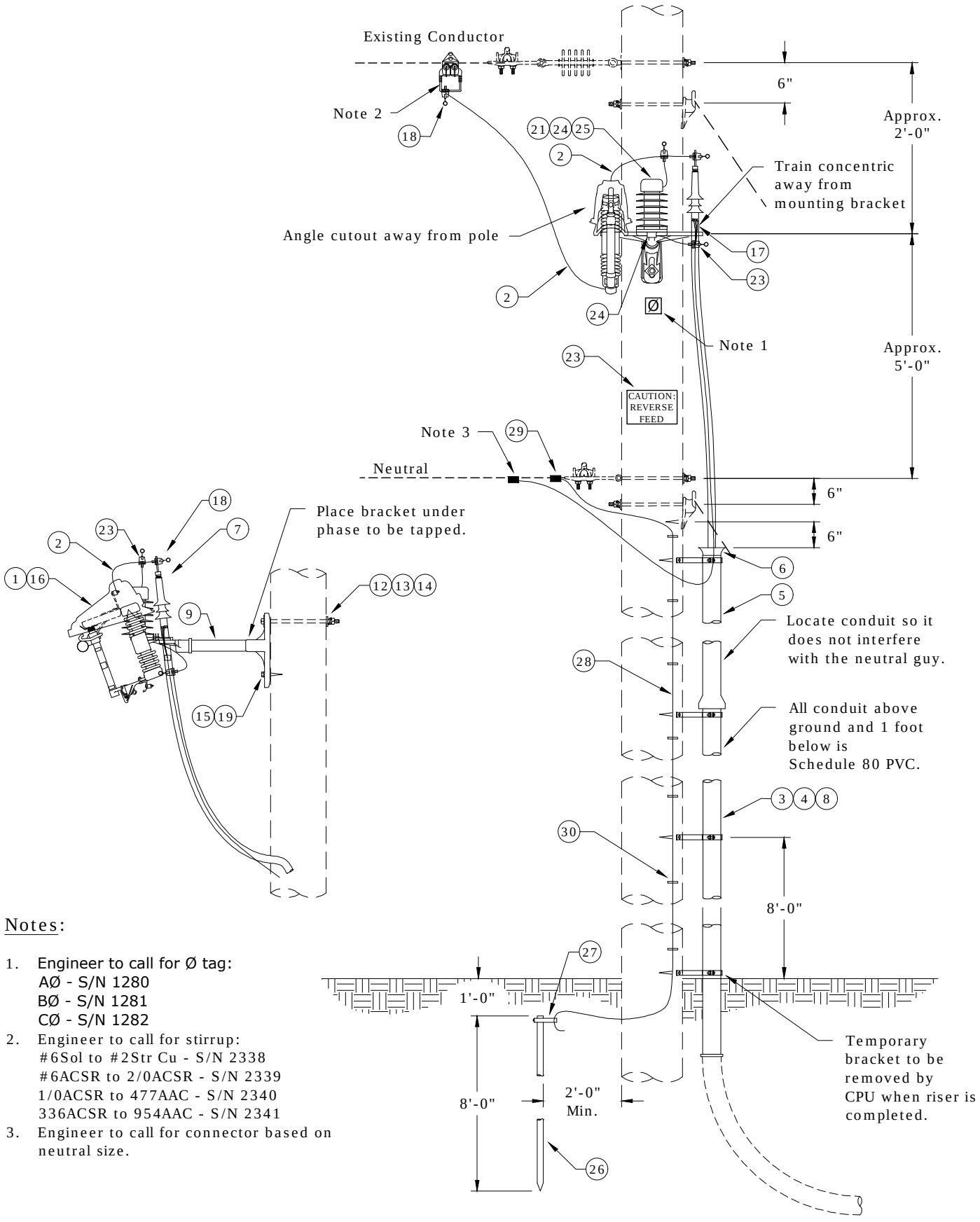

Notes:

1. Engineer to call for Ø tag:
   AØ - S/N 1280
   BØ - S/N 1281
   CØ - S/N 1282
2. Engineer to call for stirrup:
   #6Sol to #2Str Cu - S/N 2338
   #6ACSR to 2/0ACSR - S/N 2339
   1/0ACSR to 477AAC - S/N 2340
   336ACSR to 954AAC - S/N 2341
3. Engineer to call for connector based on neutral size.

Rev. 2 - Moved arrester to middle of bracket, added cutout direction note, and updated materials.

Clark Public Utilities

CONSTRUCTION STANDARDS

SINGLE PHASE
PRIMARY RISER
REVERSE FEED

REVISIONS			
R	DATE	ENGR	OPS
1	10/31/17	CM	DK
2	1/16/19	CM	DK

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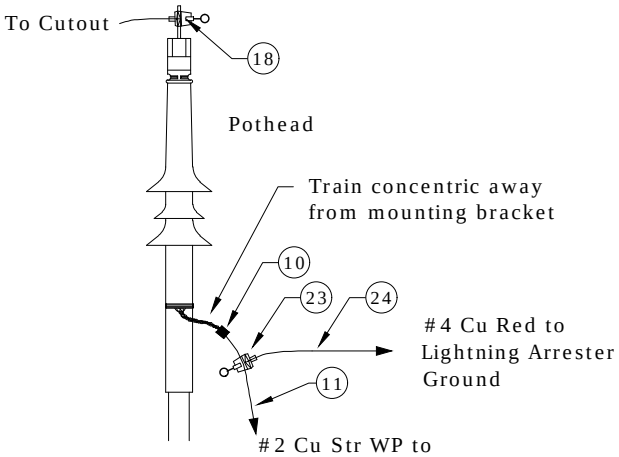
U1R



Notes:

4. Connect concentric neutrals to arrester ground using #4 Cu, Red.
5. Make arrester ground terminal-to-concentric neutral jumper as short as possible.

Rev. 2 - Moved arrester to middle of bracket, added cutout direction note, and updated materials.

ITEM NO.	DESCRIPTION	U1R Additional Material QTY.	S/N
1	Cutout, Polymer, Universal, 100A, 16kA Asym.	1	2532
2	Conductor, Cu 1/C #2, 7 Str, 600V, Red, THW	6	2513
3	Screw, Lag, 1/2" x 3", Fetter Drive, Drive Point	6	1131
4	Bracket, Standoff Riser, 10 1/2"	3	226
5	Conduit, PVC, 2" x 10', Sch 80	30	2205
6	End Bell, 2", Sch 40	1	2206
7	Terminator, 15kV, Cold-Shrink, JCN & CN, 1/0	1	2214
8	Clamp, Standoff Bracket, 2" Conduit	3	295
9	Bracket, Arrester/Cutout Mounting, 1Ø, Fiberglass 18"	1	2537
10	Connector, Crimpet, Cu, 2/2 - 2/2 (2C2)	1	455
11	Conductor, Cu #2, 1/C, 7-Str, SD, 600V, HMP	10	393
12	Bolt, Machine 5/8" x 12", 12,400 lbs. Ultimate Tensile	1	155
13	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
14	Washer, Lock, Spring, Double Coil, Galv. 5/8"	1	2217
15	Screw, Lag 1/2" x 4 1/2", Twist Drive, Drive Point	1	1132
16	Guard, Wildlife, Cutout, Polymer	1	2928
17	Clamp, 2-Bolt, for 1/0 Terminator	1	1858
18	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	2	283
19	Washer, Flat, Round Galv. 1/2"	1	1394
20	Sign, "Caution: Reverse Feed"	1	2719

ITEM NO.	DESCRIPTION	LA2 QTY.	S/N
21	Arrester, Surge, 9kV, MOV, Riser Pole	1	58
22	Conductor, Cu 1/C #4, 7-Str, 600V, Red, THW	7	2512
23	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	2	283
24	Connector, Compression Lug, #4, Cu/Al, One-Hole, Tin-Plated, For Arrester	2	2548
25	Guard, Wildlife, Polymer Arrester	1	2583

ITEM NO.	DESCRIPTION	N1 QTY.	S/N
26	Rod, Ground, 5/8" x 8'	1	1124
27	Clamp, Ground Rod, 5/8", Bronze Small	1	281
28	Conductor, Copper-Clad Steel, #4 Cu Equivalent, Covered	40	1512
29	Connector, Cabelok, Al/Cu, #2-2/0 Run, #6-#1 Tap	1	413
30	Staple, Ground, Barbed, Galvanized, 1 1/2"	24	2707

Clark Public Utilities

CONSTRUCTION STANDARDS

SINGLE PHASE
PRIMARY RISER
REVERSE FEED

REVISIONS			
R	DATE	ENGR	OPS
1	10/31/17	CM	DK
2	1/16/19	CM	DK

PAGE:		CAD FILE:	APP: HWH/MA	SECTION
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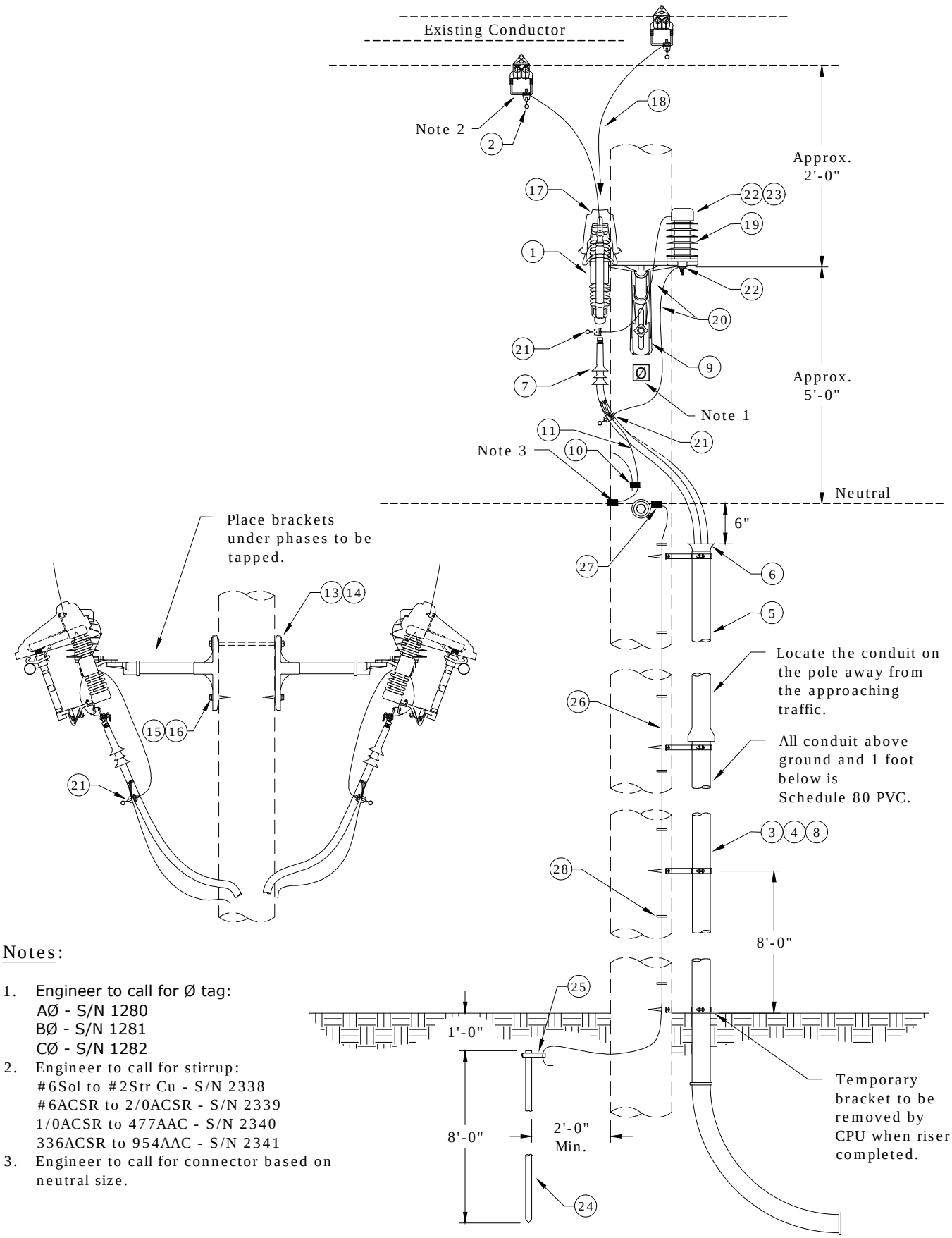

Notes:

1. Engineer to call for Ø tag:
   AØ - S/N 1280
   BØ - S/N 1281
   CØ - S/N 1282
2. Engineer to call for stirrup:
   #6Sol to #2Str Cu - S/N 2338
   #6ACSR to 2/0ACSR - S/N 2339
   1/0ACSR to 477AAC - S/N 2340
   336ACSR to 954AAC - S/N 2341
3. Engineer to call for connector based on neutral size.

Rev. 5 - Corrected drawing and material issue.

Clark Public Utilities

CONSTRUCTION STANDARDS

TWO PHASE
PRIMARY RISER

REVISIONS			
R	DATE	ENGR	OPS
2	12/29/04	LB	AH
3	12/14/09	KJP	
4	10/31/17	CM	DK
5	1/16/19	CM	DK

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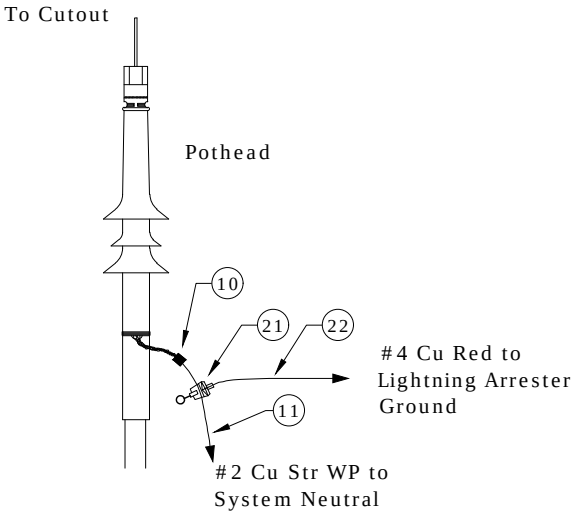
U2



Pothead
Connection Detail

Notes:

4. Connect concentric neutrals to arrester ground using #4 Cu, Red.
5. Make arrester ground terminal-to-concentric neutral jumper as short as possible.

Rev. 5 - Corrected drawing and material.

ITEM NO.	DESCRIPTION	U2 Additional Material QTY.	S/N
1	Cutout, Polymer, Universal, 100A, 16kA Asym.	2	2532
2	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	2✲	283
3	Screw, Lag, 1/2" x 3", Fetter Drive, Drive Point	6	1131
4	Bracket, Standoff Riser, 10 1/2"	3	226
5	Conduit, PVC, 4" X 10', Sch 80	30✲	2203
6	End Bell, 4", Sch 40	1✲	2204
7	Terminator, 15kV, Cold-Shrink JCN & CN, 1/0	2	2214
8	Clamp, Standoff Bracket, Conduit, 4"	3	297
9	Bracket, Arrester/Cutout Mounting, 1ø Fiberglass 18"	2	2537
10	Connector, Crimpet, Cu 2/2 - 2/2 (2C2)	2	455
11	Conductor, Cu #2, 1/C, 7-Str, SD, 600V, HMP	20	393
13	Bolt, Machine, 5/8" x 14", 12,400 lb Ultimate	1	156
14	Washer, Lock, Spring, Double Coil, Galv. 5/8"	1	2217
15	Screw, Lag, 1/2" x 4 1/2", Twist Drive, Drive Point	2	1132
16	Washer, Flat, Round Galv., 1/2"	2	1394
17	Guard, Wildlife, Cutout, Polymer	2	2928 ✲
18	Conductor, Cu 1/C #2, 7-Str, 600V, Red, THW	6	2513

ITEM NO.	DESCRIPTION	LA2(2) QTY.	S/N
19	Arrester, Surge, 9kV, MOV, Riser Pole	2	58
20	Conductor, Cu 1/C #4, 7-Str, 600V, Red, THW	14	2512
21	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	4	283
22	Connector, Compression Lug, #4, Cu/Al, One-Hole, Tin-Plated, For Arrester	4	2548
23	Guard, Wildlife, Polymer Arrester	2	2583

ITEM NO.	DESCRIPTION	N1 QTY.	S/N
24	Rod, Ground, 5/8" x 8'	1	1124
25	Clamp, Ground Rod, 5/8", Bronze Small	1	281
26	Conductor, Copper-Clad Steel, #4 Cu Equivalent, Covered	40	1512
27	Connector, Cabelok, Al/Cu, #2-2/0 Run, #6-#1 Tap	1	413
28	Staple, Ground, Barbed, Galvanized, 1 1/2"	24	2707

Clark Public Utilities

CONSTRUCTION STANDARDS

TWO PHASE
PRIMARY RISER

REVISIONS			
R	DATE	ENGR	OPS
2	12/29/04	LB	AH
3	12/14/09	KJP	
4	10/31/17	CM	DK
5	1/16/19	CM	DK

PAGE:		CAD FILE:	APP: ELM	SECTION
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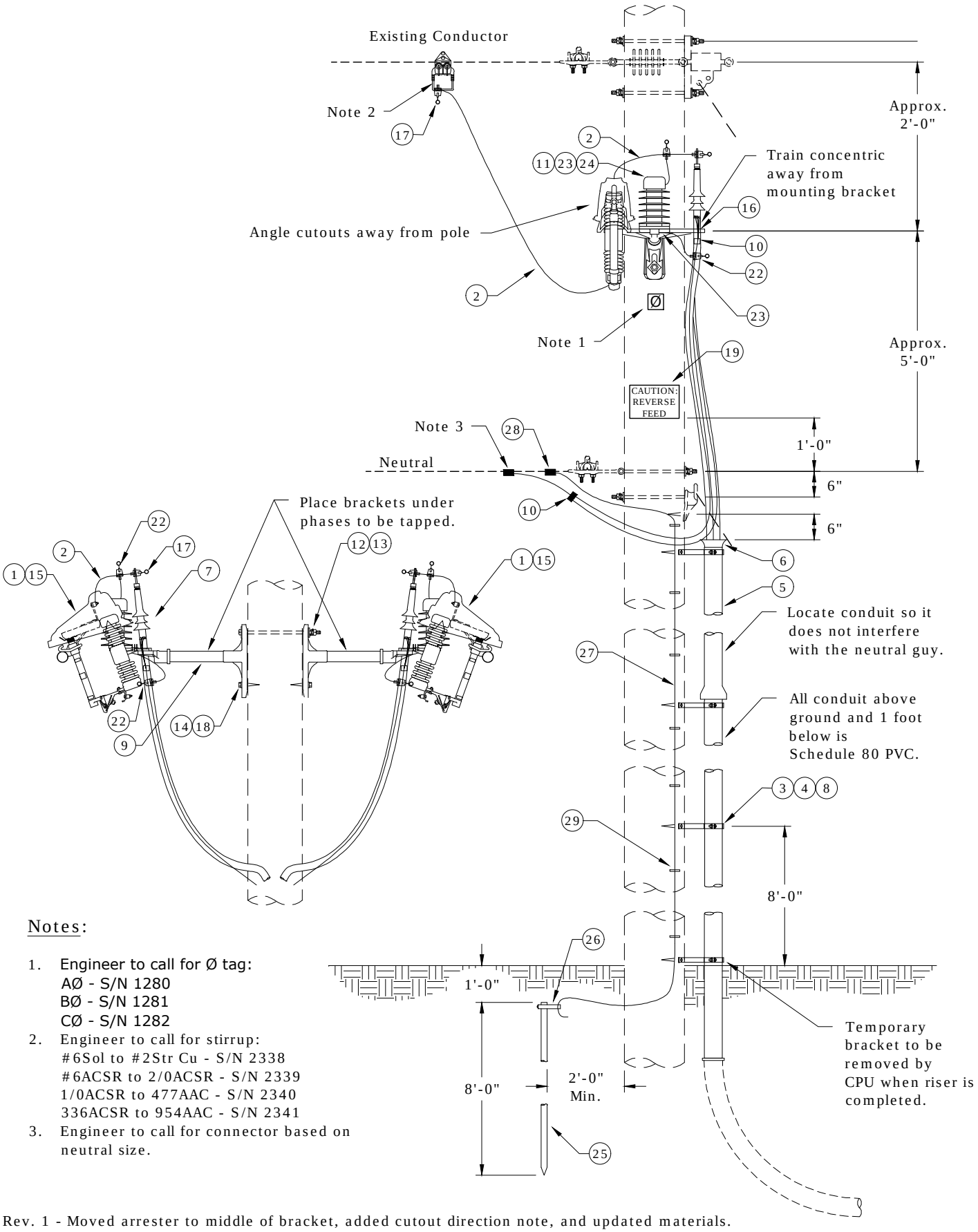


Notes:

1. Engineer to call for Ø tag:
   AØ - S/N 1280
   BØ - S/N 1281
   CØ - S/N 1282
2. Engineer to call for stirrup:
   #6Sol to #2Str Cu - S/N 2338
   #6ACSR to 2/0ACSR - S/N 2339
   1/0ACSR to 477AAC - S/N 2340
   336ACSR to 954AAC - S/N 2341
3. Engineer to call for connector based on neutral size.

Rev. 1 - Moved arrester to middle of bracket, added cutout direction note, and updated materials.

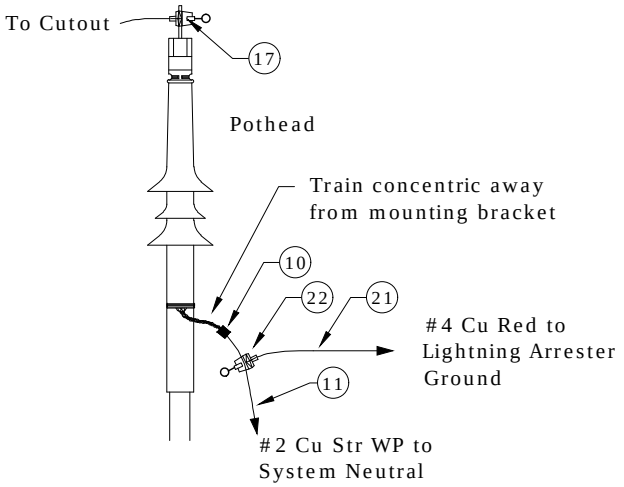
Clark Public Utilities

CONSTRUCTION STANDARDS

TWO PHASE
PRIMARY RISER
REVERSE FEED

REVISIONS			
R	DATE	ENGR	OPS
1	1/16/19	CM	DK

PAGE:		CAD FILE:	APP: CM/DK	SECTION
1 of 2	U2R	U2R	DATE: 10/31/17	1300



Pothead
Connection Detail

Notes:

4. Connect concentric neutrals to arrester ground using #4 Cu, Red.
5. Make arrester ground terminal-to-concentric neutral jumper as short as possible.

Rev. 1 - Moved arrester to middle of bracket, added cutout direction note, and updated materials.

ITEM NO.	DESCRIPTION	U2R Additional Material QTY.	S/N
1	Cutout, Polymer, Universal, 100A, 16kA Asym.	2	2532
2	Conductor, Cu 1/C #2, 7-Str, 600V, Red, THW	12	2513
3	Screw, Lag, 1/2" x 3", Fetter Drive, Drive Point	6	1131
4	Bracket, Standoff Riser, 10 1/2"	3	226
5	Conduit, PVC, 4" x 10', Sch 80	30	2203
6	End Bell, 4", Sch 40	2	2204
7	Terminator, 15kV, Cold-Shrink, JCN & CN, 1/0	2	2214
8	Clamp, Standoff Bracket, 4" Conduit	3	297
9	Bracket, Arrester/Cutout Mounting, 1Ø, Fiberglass 18"	2	2537
10	Connector, Crimpet, Cu, 2/2 - 2/2 (2C2)	4	455
11	Conductor, Cu #2, 1/C, 7-Str, SD, 600V, HMP	20	393
12	Bolt, Machine 5/8" x 14", 12,400 lbs. Ultimate Tensile	1	156
13	Washer, Lock, Spring, Double Coil, Galv. 5/8"	1	2217
14	Screw, Lag 1/2" x 4 1/2", Twist Drive, Drive Point	2	1132
15	Guard, Wildlife, Cutout, Polymer	2	2928
16	Clamp, 2-Bolt, for 1/0 Terminator	2	1858
17	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	4	283
18	Washer, Flat, Round Galv. 1/2"	2	1394
19	Sign, "Caution: Reverse Feed"	1	2719

ITEM NO.	DESCRIPTION	LA2(2) QTY.	S/N
20	Arrester, Surge, 9kV, MOV, Riser Pole	2	58
21	Conductor, Cu 1/C #4, 7-Str, 600V, Red, THW	14	2512
22	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	4	283
23	Connector, Compression Lug, #4, Cu/Al, One-Hole, Tin-Plated, For Arrester	4	2548
24	Guard, Wildlife, Polymer Arrester	2	2583

ITEM NO.	DESCRIPTION	N1 QTY.	S/N
25	Rod, Ground, 5/8" x 8'	1	1124
26	Clamp, Ground Rod, 5/8", Bronze Small	1	281
27	Conductor, Copper-Clad Steel, #4 Cu Equivalent, Covered	40	1512
28	Connector, Cabelok, Al/Cu, #2-2/0 Run, #6-#1 Tap	1	413
29	Staple, Ground, Barbed, Galvanized, 1 1/2"	24	2707

Clark Public Utilities

CONSTRUCTION STANDARDS

TWO PHASE
PRIMARY RISER
REVERSE FEED

REVISIONS			
R	DATE	ENGR	OPS
1	1/16/19	CM	DK

PAGE:		CAD FILE:	APP: CM/DK	SECTION
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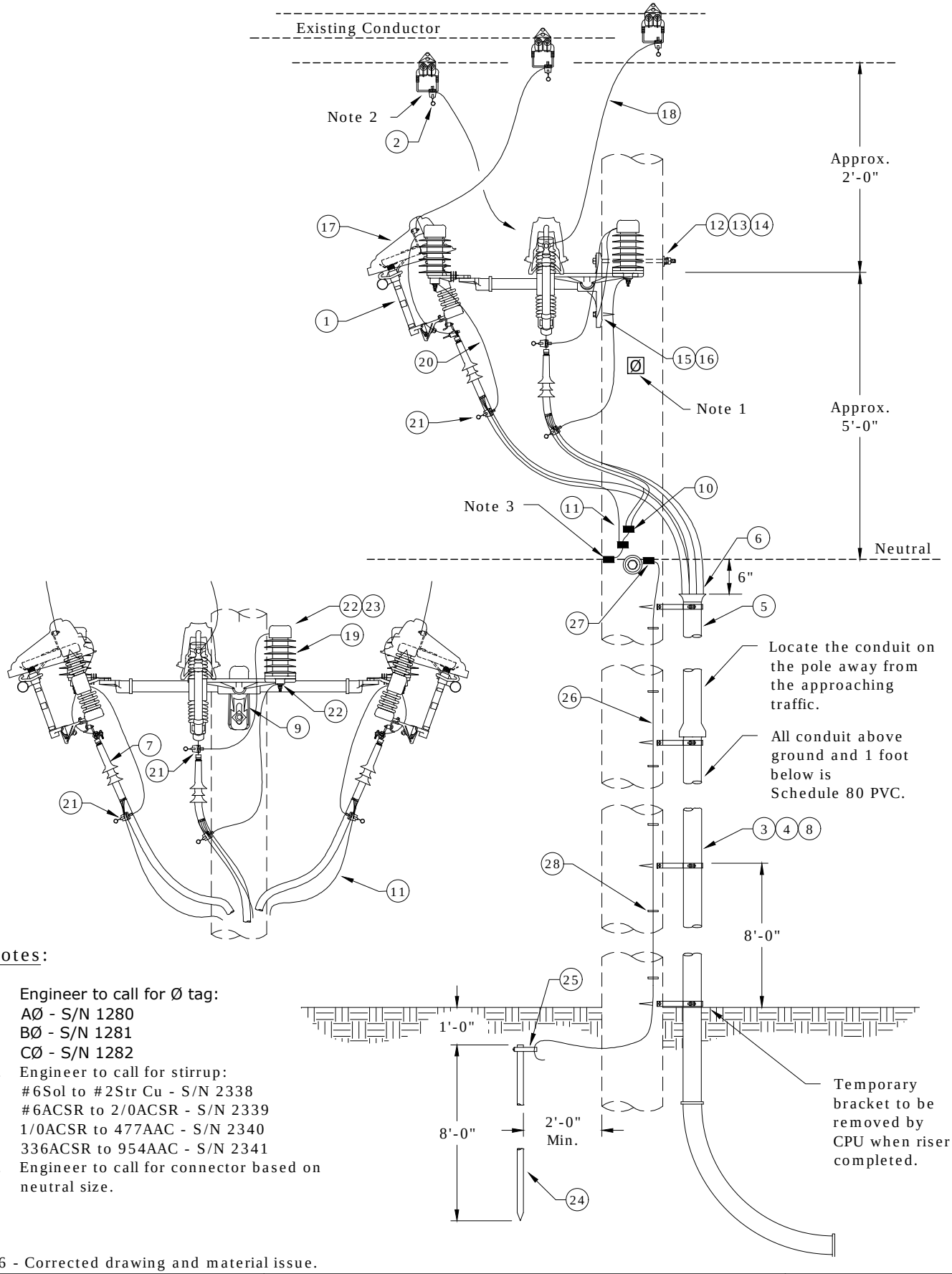

Notes:

1. Engineer to call for Ø tag:
   AØ - S/N 1280
   BØ - S/N 1281
   CØ - S/N 1282
2. Engineer to call for stirrup:
   #6Sol to #2Str Cu - S/N 2338
   #6ACSR to 2/0ACSR - S/N 2339
   1/0ACSR to 477AAC - S/N 2340
   336ACSR to 954AAC - S/N 2341
3. Engineer to call for connector based on neutral size.

Rev. 6 - Corrected drawing and material issue.

Clark Public Utilities

CONSTRUCTION STANDARDS

THREE PHASE
PRIMARY RISER

REVISIONS			
R	DATE	ENGR	OPS
3	12/29/04	LB	AH
4	12/14/09	KJP	
5	10/31/17	CM	DK
6	1/16/19	CM	DK

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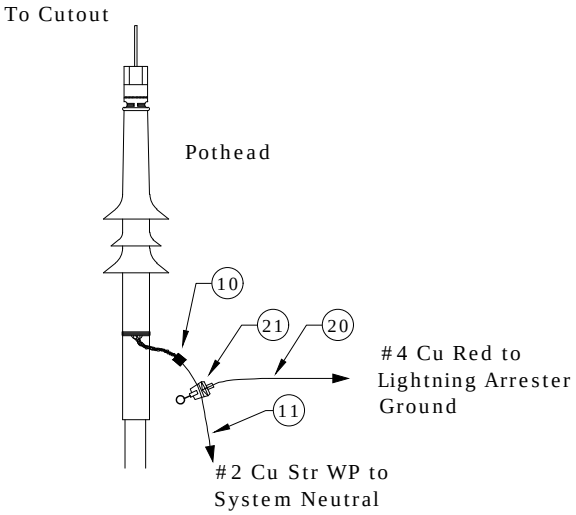
U3



Pothead
Connection Detail

Notes:

4. Connect concentric neutrals to arrester ground using #4 Cu, Red.
5. Make arrester ground terminal-to-concentric neutral jumper as short as possible.

Rev. 6 - Corrected drawing and material issue.

ITEM NO.	DESCRIPTION	U3 Additional Material QTY.	S/N
1	Cutout, Polymer, Universal, 100A, 16kA Asym.	3	2532
2	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	3	283✲
3	Screw, Lag, 1/2" x 3", Fetter Drive, Drive Point	6	1131
4	Bracket, Standoff Riser, 10 1/2"	3	226
5	Conduit, PVC, 4" x 10', Sch 80	30	2203
6	End Bell, 4", Sch 40	1	2204
7	Terminator, 15kV, Cold-Shrink, JCN & CN, 1/0	3	2214
8	Clamp, Standoff Bracket, 4" Conduit	3	297✲
9	Bracket, Arrester/Cutout Mounting, 3Ø Fiberglass 18"	1	2538
10	Connector, Crimpet, Cu 2/2 - 2/2 (2C2)	3	455
11	Conductor, Cu #2, 1/C, 7-Str, SD, 600V, HMP	30	393
12	Bolt, Machine, 5/8" x 12", 12,400 lbs. Ultimate Tensile	1	155
13	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
14	Washer, Lock Spring, Double Coil, Galv. 5/8"	1	2217
15	Screw, Lag, 1/2" x 4 1/2", Twist Drive, Drive Point	1	1132
16	Washer, Flat, Round, Galv., 1/2"	1	1394
17	Guard, Wildlife, Cutout, Polymer	3	2928✲
18	Conductor, Cu 1/C #2, 7 STR, 600V, Red	9	2513

ITEM NO.	DESCRIPTION	LA2(3) QTY.	S/N
19	Arrester, Surge, 9kV, MOV, Riser Pole	3	58
20	Conductor, Cu 1/C #4, 7-Str, 600V, Red, THW	21	2512
21	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	6	283
22	Connector, Compression Lug, #4, Cu/Al, One-Hole, Tin-Plated, For Arrester	6	2548
23	Guard, Wildlife, Polymer Arrester	3	2583

ITEM NO.	DESCRIPTION	N1 QTY.	S/N
24	Rod, Ground, 5/8" x 8'	1	1124
25	Clamp, Ground Rod, 5/8" Bronze Small	1	281
26	Cond, Copper-Clad Steel, #4 Cu Equivalent, Covered	40	1512
27	Connector, Cabelok, Al/Cu, #2-2/0 Run, #6-#1 Tap	1	413
28	Staple, Ground, Barbed, Galvanized, 1 1/2"	24	2707

Clark Public Utilities

CONSTRUCTION STANDARDS

THREE PHASE
PRIMARY RISER

REVISIONS			
R	DATE	ENGR	OPS
3	12/29/04	LB	AH
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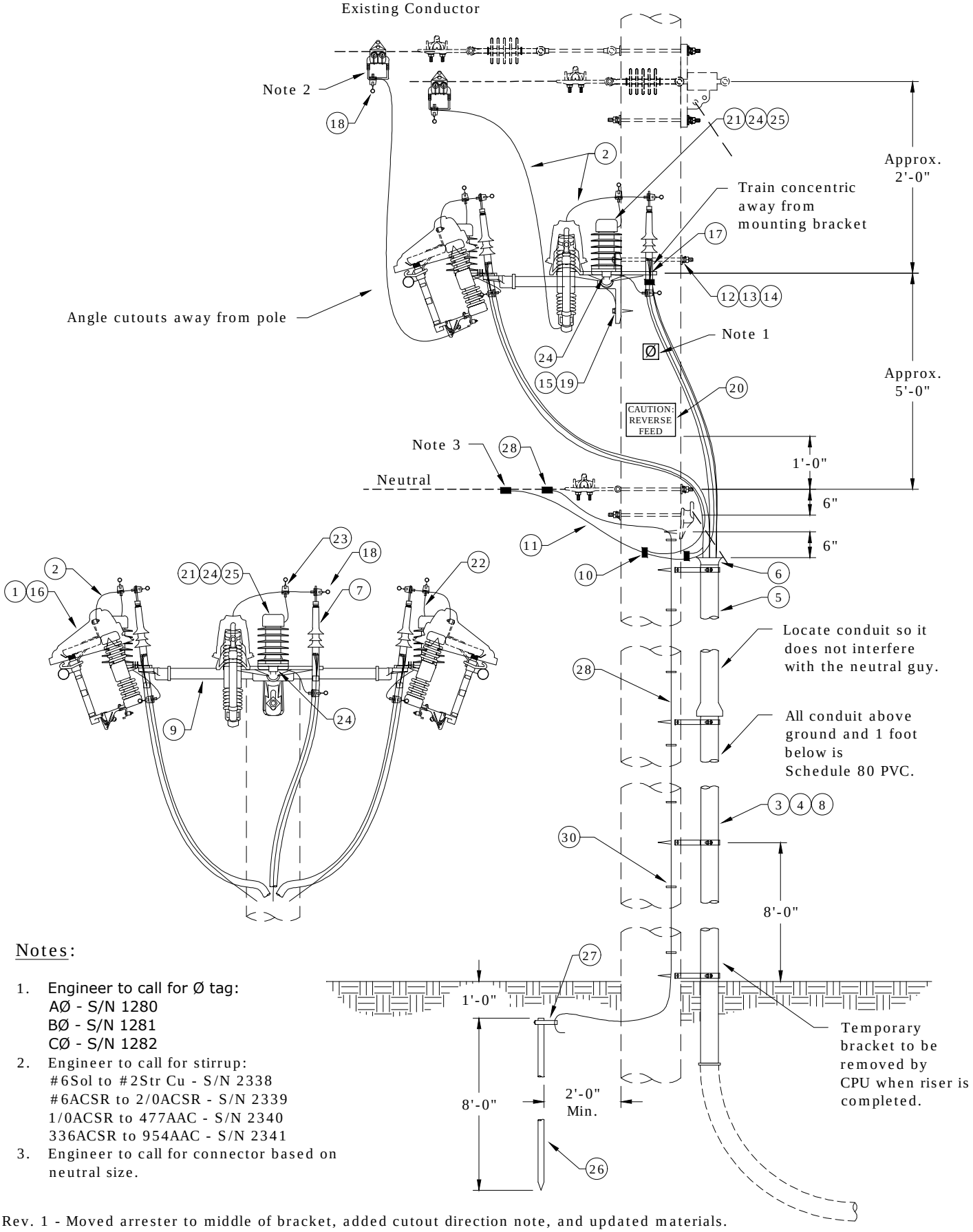
PAGE:		CAD FILE:	APP: ELM	SECTION
2 of 2	U3	U3	DATE: 1/31/80	1300



Notes:

1. Engineer to call for Ø tag:
   AØ - S/N 1280
   BØ - S/N 1281
   CØ - S/N 1282
2. Engineer to call for stirrup:
   #6Sol to #2Str Cu - S/N 2338
   #6ACSR to 2/0ACSR - S/N 2339
   1/0ACSR to 477AAC - S/N 2340
   336ACSR to 954AAC - S/N 2341
3. Engineer to call for connector based on neutral size.

Rev. 1 - Moved arrester to middle of bracket, added cutout direction note, and updated materials.

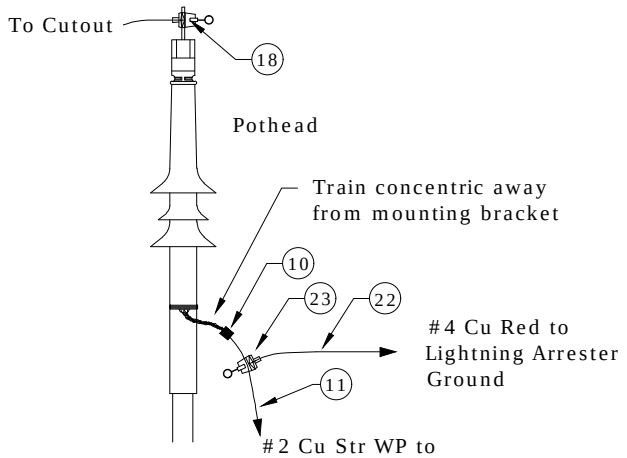
Clark Public Utilities

CONSTRUCTION STANDARDS

THREE PHASE
PRIMARY RISER
REVERSE FEED

REVISIONS			
R	DATE	ENGR	OPS
1	1/16/19	CM	DK

PAGE:		CAD FILE:	APP: CM/DK	SECTION
1 of 2	U3R	U3R	DATE: 10/31/17	1300



Notes:

4. Connect concentric neutrals to arrester ground using #4 Cu, Red.
5. Make arrester ground terminal-to-concentric neutral jumper as short as possible.

Rev. 1 - Moved arrester to middle of bracket, added cutout direction note, and updated materials.

ITEM NO.	DESCRIPTION	U3R Additional Material QTY.	S/N
1	Cutout, Polymer, Universal, 100A, 16kA Asym.	3	2532
2	Conductor, Cu 1/C #2, 7 Str, 600V, Red, THW	18	2513
3	Screw, Lag, 1/2" x 3", Fetter Drive, Drive Point	6	1131
4	Bracket, Standoff Riser, 10 1/2"	3	226
5	Conduit, PVC, 4" x 10', Sch 80	30	2203
6	End Bell, 4", Sch 40	1	2204
7	Terminator, 15kV, Cold-Shrink, JCN & CN, 1/0	3	2214
8	Clamp, Standoff Bracket, 4" Conduit	3	297
9	Bracket, Arrester/Cutout Mounting, 3Ø, Fiberglass 18"	1	2538
10	Connector, Crimpet, Cu, 2/2 - 2/2 (2C2)	5	455
11	Conductor, Cu #2, 1/C, 7-Str, SD, 600V, HMP	30	393
12	Bolt, Machine 5/8" x 12", 12,400 lbs. Ultimate Tensile	1	155
13	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
14	Washer, Lock, Spring, Double Coil, Galv. 5/8"	1	2217
15	Screw, Lag 1/2" x 4 1/2", Twist Drive, Drive Point	1	1132
16	Guard, Wildlife, Cutout, Polymer	3	2928
17	Clamp, 2-Bolt, for 1/0 Terminator	3	1858
18	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	6	283
19	Washer, Flat, Round Galv. 1/2"	1	1394
20	Sign, "Caution: Reverse Feed"	1	2719

ITEM NO.	DESCRIPTION	LA2(3) QTY.	S/N
21	Arrester, Surge, 9kV, MOV, Riser Pole	3	58
22	Conductor, Cu 1/C #4, 7-Str, 600V, Red, THW	21	2512
23	Clamp, Hotline, GP 1520, #8 to 2/0 Str, Cu Only	6	283
24	Connector, Compression Lug, #4, Cu/Al, One-Hole, Tin-Plated, For Arrester	6	2548
25	Guard, Wildlife, Polymer Arrester	3	2583

ITEM NO.	DESCRIPTION	N1 QTY.	S/N
26	Rod, Ground, 5/8" x 8'	1	1124
27	Clamp, Ground Rod, 5/8", Bronze Small	1	281
28	Conductor, Copper-Clad Steel, #4 Cu Equivalent, Covered	40	1512
29	Connector, Cabelok, Al/Cu, #2-2/0 Run, #6-#1 Tap	1	413
30	Staple, Ground, Barbed, Galvanized, 1 1/2"	24	2707

Clark Public Utilities

CONSTRUCTION STANDARDS

THREE PHASE
PRIMARY RISER
REVERSE FEED

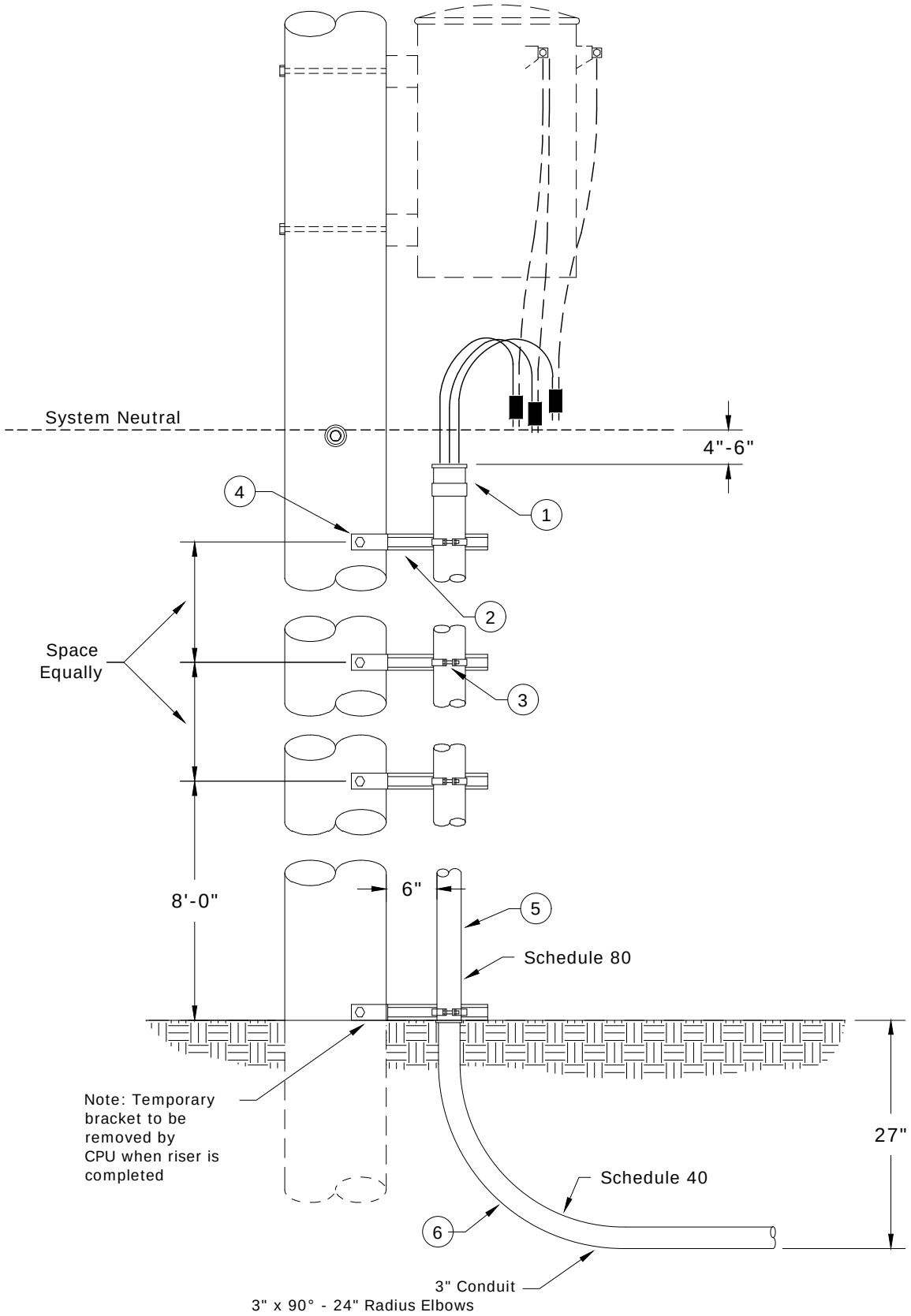
REVISIONS			
R	DATE	ENGR	OPS
1	1/16/19	CM	DK

U3R

CAD FILE: U3R

APP: CM/DK
DATE: 10/31/17

SECTION 1300



Rev 3: Secondary depth corrected for 24" of burial depth per NESC 2023

Clark Public Utilities

CONSTRUCTION STANDARDS

SECONDARY OVERHEAD TO UNDERGROUND RISER ASSEMBLY

REVISIONS			
R	DATE	ENGR	OPS
1	5/30/07	LB	AH
2	6/8/18	KJP	
3	2/11/25	CSB	

PAGE:		CAD FILE:	APP: KJP	SECTION
1 of 2	U83,U84	U83	DATE: 12/29/04	1300

Rev 2: Material corrections.

ITEM NO.	DESCRIPTION	U83	
		QTY.	S/N
1	End Bell, 3", Sch 40	1	2317
2	Bracket, Standoff Riser 10 1/2"	3	226
3	Clamp, Standoff Bracket, 3" Conduit	3	296
4	Screw, Lag 1/2" X 3", Fetter Drive, Drive Point	6	1131
5	Conduit, PVC, 3" x 10', Sch 80	30	2313
6	Elbow, PVC, 3", 90°, 24" Radius, Sch 40	1	2574

ITEM NO.	DESCRIPTION	U84	
		QTY.	S/N
1	End Bell, 4", Sch 40	1	2204
2	Bracket, Standoff Riser 10 1/2"	3	226
3	Clamp, Standoff Bracket, 4" Conduit	3	297
4	Screw, Lag 1/2" X 3", Fetter Drive, Drive Point	6	1131
5	Conduit, PVC, 4" x 10', Sch 80	30	2203
6	Elbow, PVC, 4", 90°, 24" Radius, Sch 40	1	1536

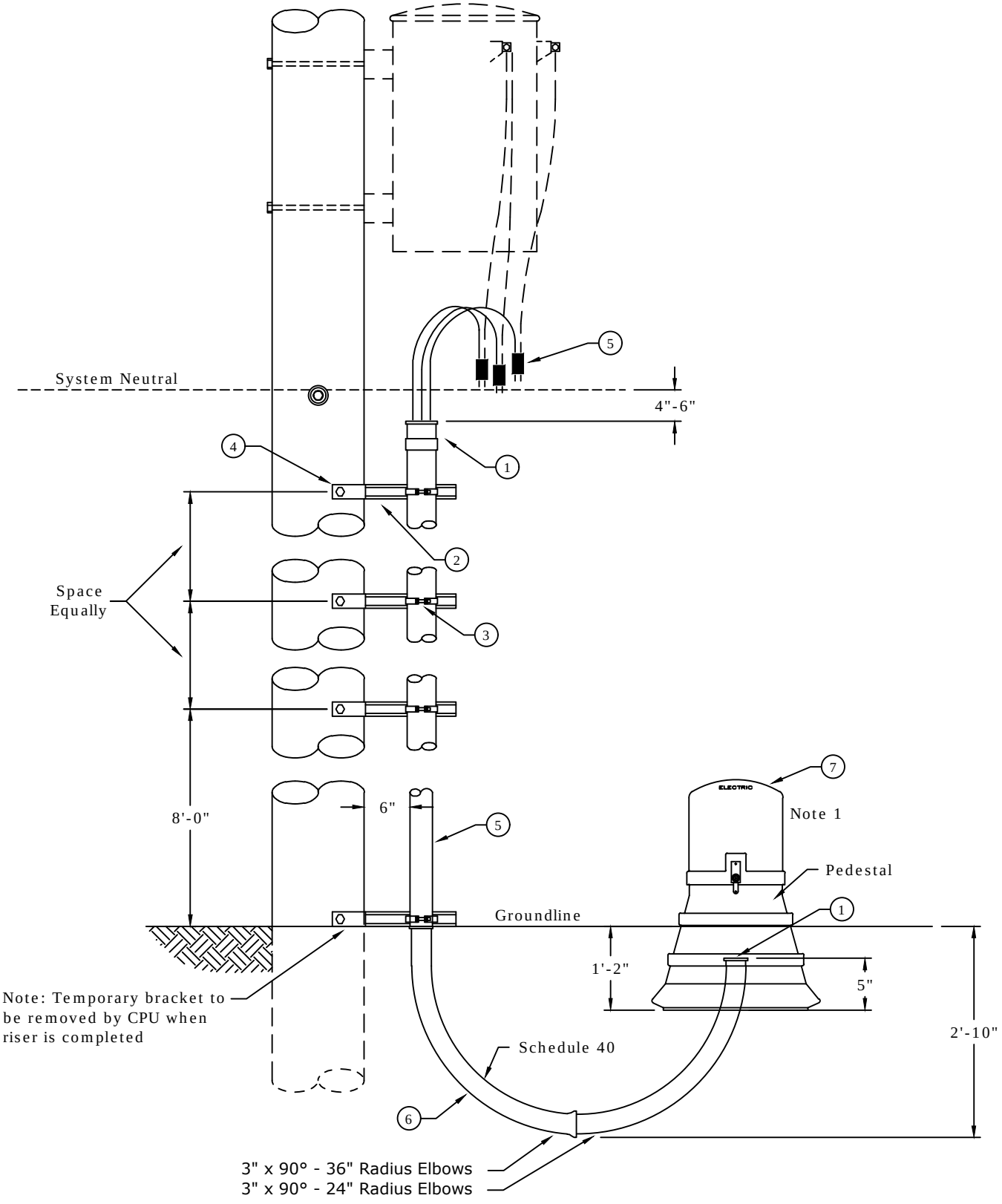
Clark Public Utilities

CONSTRUCTION STANDARDS

SECONDARY OVERHEAD TO
UNDERGROUND RISER ASSEMBLY

REVISIONS			
R	DATE	ENGR	OPS
1	5/30/07	LB	AH
2	6/8/18	KJP	

PAGE:		CAD FILE:	APP: KJP	SECTION
2 of 2	U83,U84	U83	DATE: 12/29/04	1300



Note: Direction of the pedestal will be determined by the CPU Engineer.

Rev 4: Material corrections.

Clark Public Utilities

CONSTRUCTION STANDARDS

SECONDARY OVERHEAD TO
UNDERGROUND RISER ASSEMBLY
W/ SECONDARY PEDESTAL

REVISIONS			
R	DATE	ENGR	OPS
1	4/26/04	LB	AH
2	12/29/04	LB	AH
3	12/14/09	KJP	
4	10/6/14	KJP	

PAGE:		CAD FILE:	APP:	SECTION
1 of 2	U8P	U8P	DATE: 1/80	1300

Rev 4: Material corrections.

ITEM NO.	DESCRIPTION	U8P QTY.	U8P S/N
1	End Bell, 3", Sch. 40	2	2317
2	Bracket, Standoff Riser 10-1/2" U.G.	3	226
3	Clamp, Standoff Bracket, 3"	3	296
4	Screw, Lag 1/2" X 3"	6	1131
5	Connector	3	as req*
6	Conduit, PVC, Sch 80, 3" x 10'	30✡	2313
7	Pedestal, Secondary, Aboveground W/ Connectors and Covers	1	2562
8	350MCM AL Triplex UG Secondary	40	362
9	Elbow, PVC, 3", 90°, 24" Radius, Sch. 40 Straight	1	2713
10	Elbow, PVC, 3", 90°, 36" Radius, Sch. 40	1	1534

Clark Public Utilities

CONSTRUCTION STANDARDS

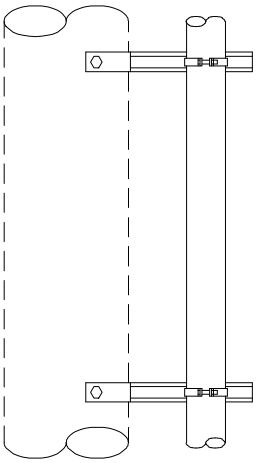
SECONDARY OVERHEAD TO
UNDERGROUND RISER ASSEMBLY
W/ SECONDARY PEDESTAL

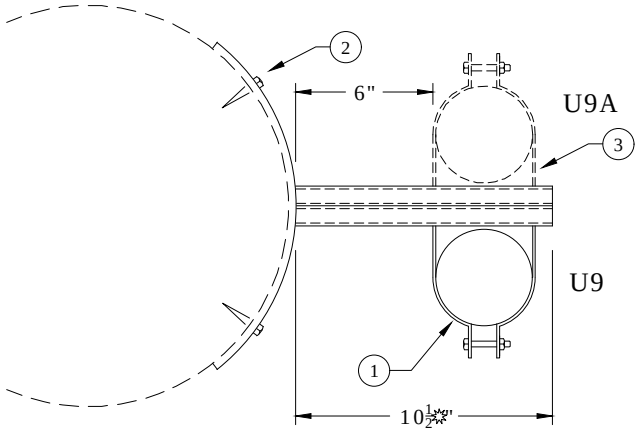
REVISIONS

R	DATE	ENGR	OPS
1	4/26/04	LB	AH
2	12/29/04	LB	AH
3	12/14/09	KJP	
4	10/6/14	KJP	

△

PAGE:		CAD FILE:	APP:	SECTION
2 of 2	U8P	U8P	DATE: 1/80	1300





Rev 3: Corrected drawing and material list to 10 1/2" standoff riser bracket.

ITEM NO.	DESCRIPTION	U9 QTY.	U9 S/N
1	Clamp, Standoff Bracket 4"	2	297
2	Screw, Lag 1/2" x 4-1/2"	4	1132
3	Bracket, Standoff Riser 10-1/2" *	2	226

ITEM NO.	DESCRIPTION	U9A QTY.	U9A S/N
1	Clamp, Standoff Bracket 4"	2	297

ITEM NO.	DESCRIPTION	U9B QTY.	U9B S/N
1	Clamp, Standoff Bracket 2"	2	295
2	Screw, Lag 1/2" x 4-1/2"	4	1132
3	Bracket, Standoff Riser 10-1/2" *	2	226

ITEM NO.	DESCRIPTION	U9C QTY.	U9C S/N
1	Clamp, Standoff Bracket 2"	2	295

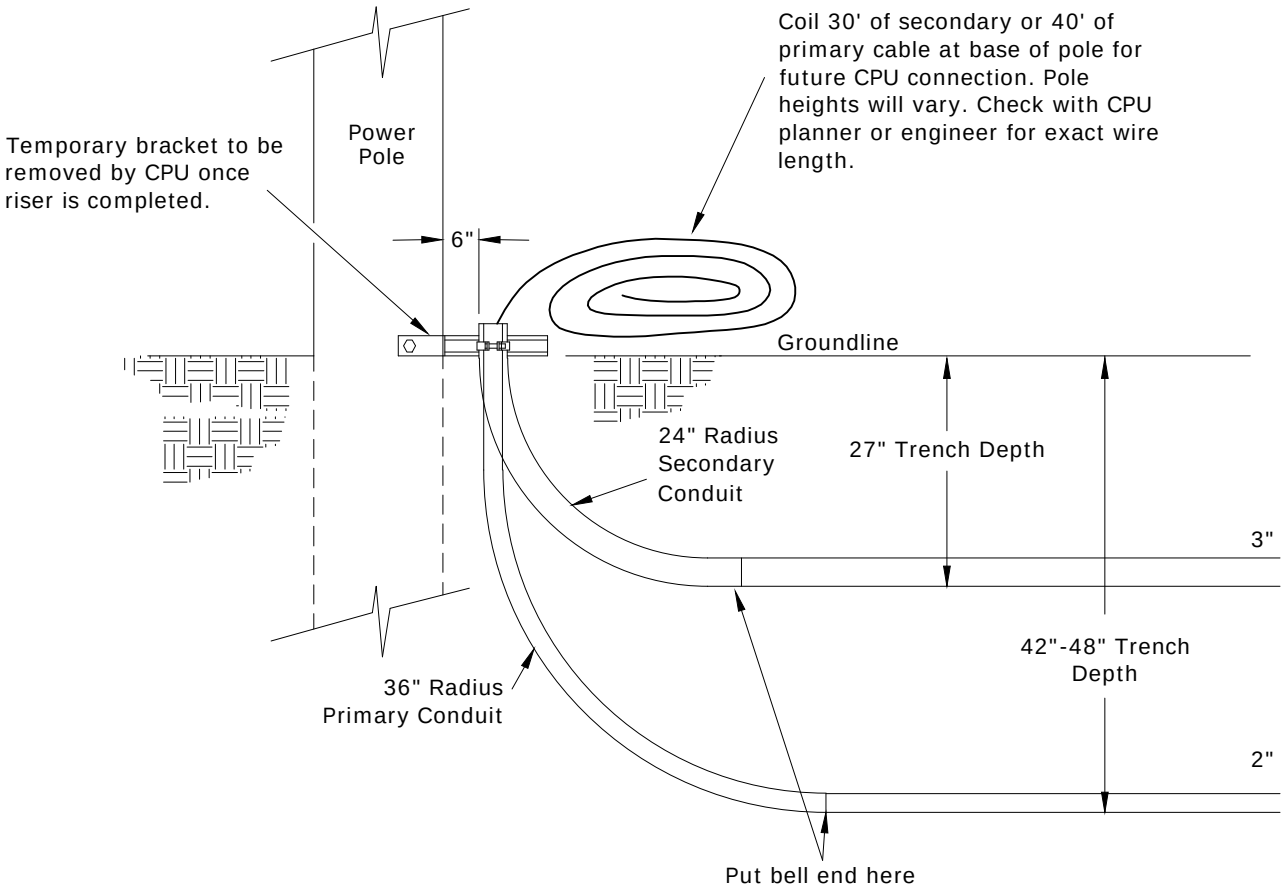
Clark Public Utilities

CONSTRUCTION STANDARDS

RISER BRACKET ASSEMBLY

REVISIONS			
R	DATE	ENGR	OPS
1	2/23/00	HWH	MA
2	7/15/02	JEH	TR
3	12/14/09	KJP	

PAGE:		CAD FILE:	APP:	SECTION
1 of 1	U9	U9	DATE: 2/3/82	1300



Rev. 2 - Corrected secondary trench depth

Clark Public Utilities

CONSTRUCTION STANDARDS

1Ø PRIMARY (U1) & SECONDARY (U8)
RISER GUIDELINES

REVISIONS			
R	DATE	ENGR	OPS
1	12/29/04	LB	AH
2	2/11/25	CM	GM

PAGE:		CAD FILE:	APP:	SECTION
1 of 2	U10	U10	DATE: 8/00	1300

STANDOFF BRACKET PLACEMENT

1) Basic Rule: On poles without anchors or existing clean poles, 1Ø primary and secondary riser brackets should be installed on the "belly button" side of the pole. Typically, a transformer would also be installed on the "belly button" side above the 1Ø primary or secondary riser.

2) For poles with an existing riser, USE the EXISTING brackets that are installed to maintain climbing space.

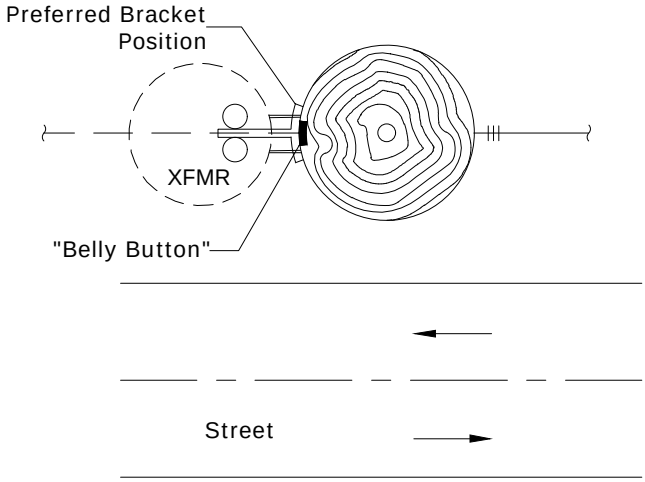
3) On poles with an existing transformer or transformer bank, the bracket should be installed under the transformer or center transformer on a bank away from street side. If the existing transformer is located on the opposite side of the "belly button," place the bracket under the transformer.

4) Standoffs are typically not installed under guy wires no matter where the "belly button" is located.

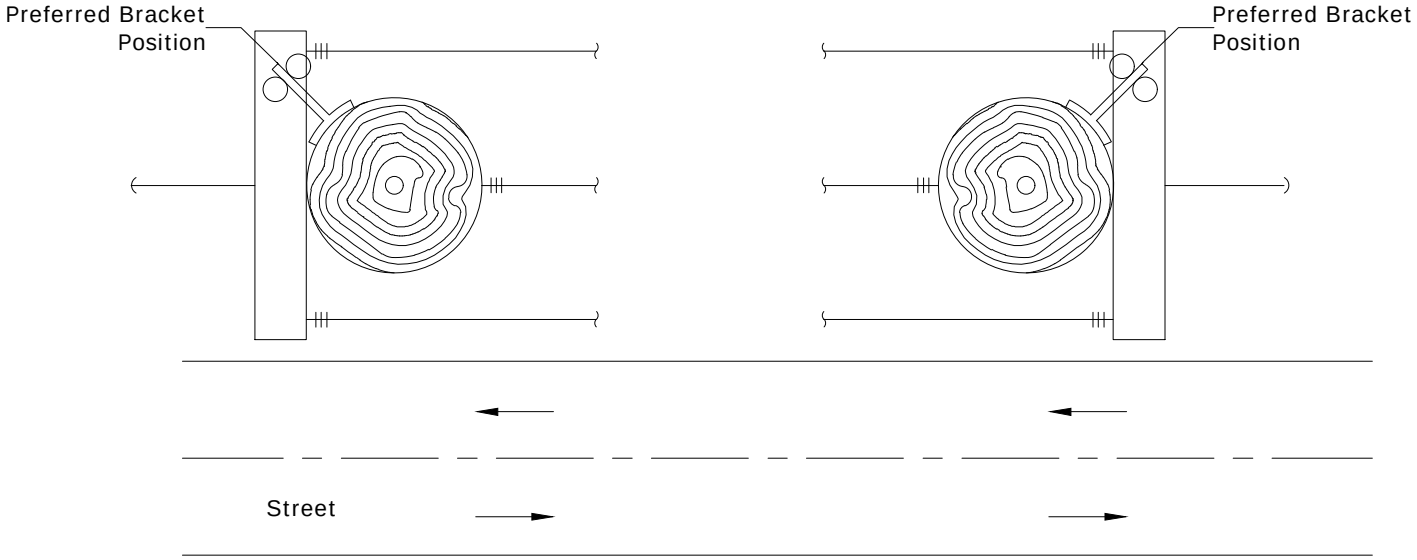
5) Standoffs and risers should be placed to avoid conflict with overhead communication wires and guy wires.

6) Talk to construction reliability inspector or construction superintendent if questions arise on standoff placement.

Tangent Standoff Bracket U1, U3



Deadend Standoff Bracket (U1, U3)



Rev. 2 - Re-designed to remove alternate bracket positions and show deadend configurations. Updated notes 2 & 3 and 6.

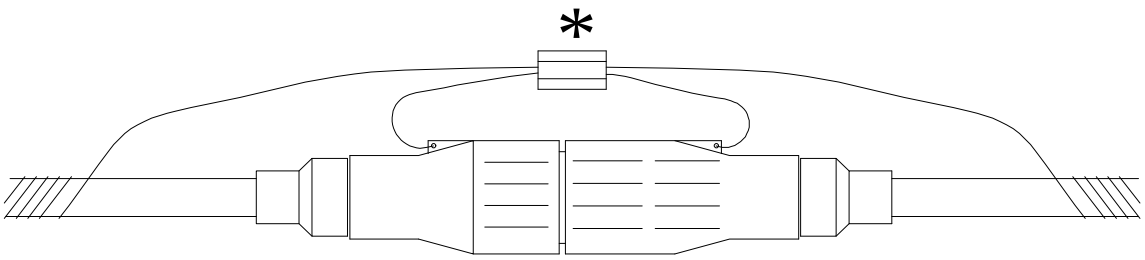
Clark Public Utilities

CONSTRUCTION STANDARDS

1Ø PRIMARY (U1) & SECONDARY (U8)
RISER GUIDELINES

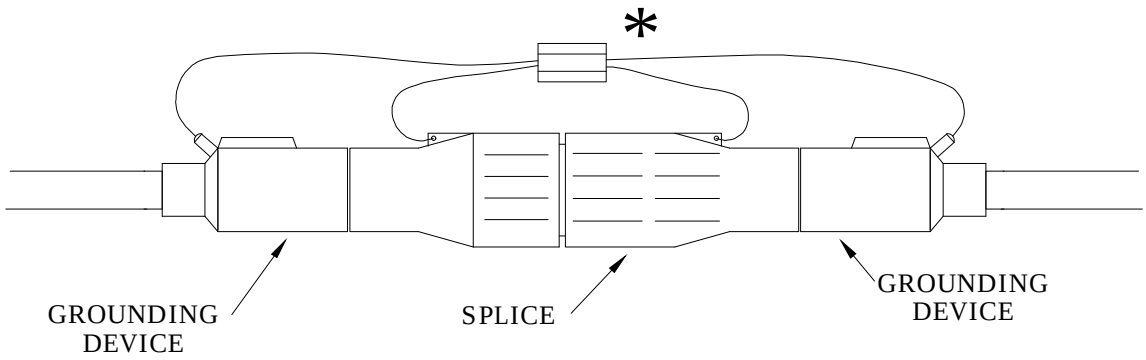
REVISIONS			
R	DATE	ENGR	OPS
1	12/29/04	LB	AH
2	2/11/25	CM	GM

PAGE:		CAD FILE:	APP:	SECTION
2 of 2	U10	U10	DATE: 8/00	1300



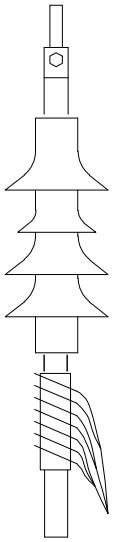
ITEM	MATERIAL DESCRIPTION	S/N
UB20	SPLICE, KIT S 15KV UG 2 AWG	1206

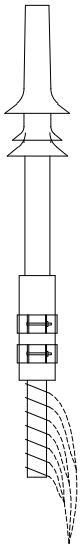
* NOTE: CONST SPEC. NO. UB20 & UB21 INCLUDE CONNECTOR, CRIMPET YC4C4



ITEM	MATERIAL DESCRIPTION	S/N
UB22	SPLICE, KIT S 15KV UG 1000 MCM	1210
UB23	DEVICE, GROUNDING, 1000 MCM (FOR TAPE SHIELD ONLY)	608

* NOTE: CONST SPEC. NO. UB22 & UB23 INCLUDE CONNECTOR, CRIMPET YC4C4





ITEM	MATERIAL DESCRIPTION	S/N
UB22	TERMINATOR, OUTDOOR MOLDED RUBBER, #2, 200A	1305
UB23	TERMINATOR, OUTDOOR MOLDED RUBBER, 1/0, 200A	2214

ITEM	MATERIAL DESCRIPTION	S/N
UB26	TERMINATOR, OUTDOOR BUTYL, 1000 MCM, 600A	2225

Clark Public Utilities

CONSTRUCTION STANDARDS

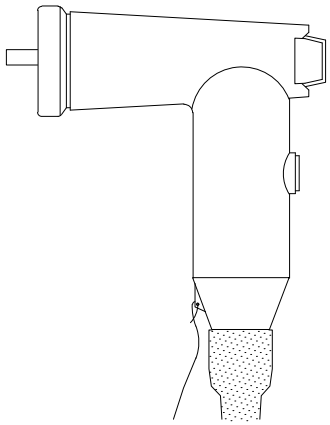
UNDERGROUND PRIMARY
BASIC UNITS

REVISIONS			
R	DATE	ENGR	OPS
0	6/14/02		

0 REDRAWN IN CAD

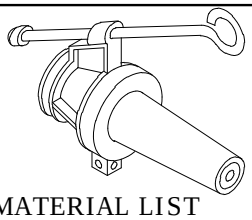
PAGE:	CAD FILE:	APP: ELM	SECTION
1 of 1	UB20-UB26	DATE: 1/31/80	1300

UB20-UB26



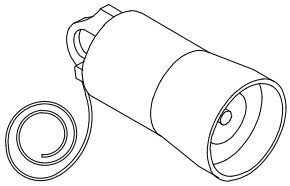
MATERIAL LIST — UCA1,UCA2

ITEM	QTY.	DESCRIPTION	SIN
UCA1	1	TERMINATOR, ELBOW L.B. 1/0 220MIL ONLY	2186
UCA2	1	TERMINATOR, ELBOW L.B. 1/0 OR 2AL EXCEPT 1/0 220MIL ONLY	1312



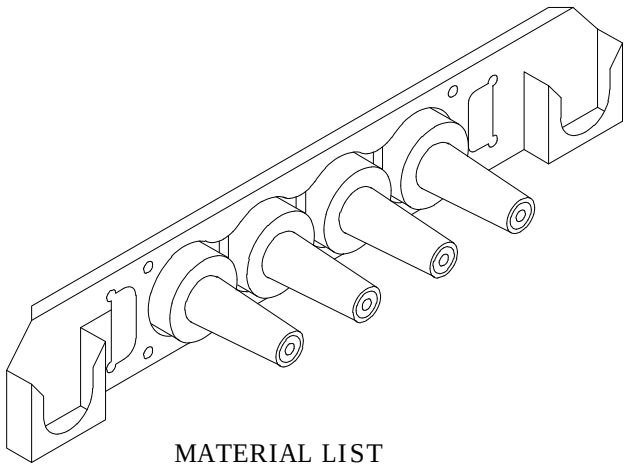
MATERIAL LIST — UCA3

ITEM	QTY.	DESCRIPTION	SIN
UCA3	1	BUSHING, STANDOFF INSUL, 200A	252



MATERIAL LIST — UCA4

ITEM	QTY.	DESCRIPTION	SIN
UCA4	1	CAP, PROTECTIVE GRD. 200A	265



MATERIAL LIST — UCA5,UCA6

ITEM	QTY.	DESCRIPTION	SIN
UCA5	1	MODULE 4 POSITION W/ BRACKET	900
UCA6	1	MODULE 4 POSITION W/O BRACKET	901

Clark Public Utilities

CONSTRUCTION STANDARDS

UNDERGROUND PRIMARY
CABLE ACCESSORIES
200A

REVISIONS

R	DATE	ENGR	OPS
0	2/23/00	HWH	MA
0			

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UCA1-UCA6

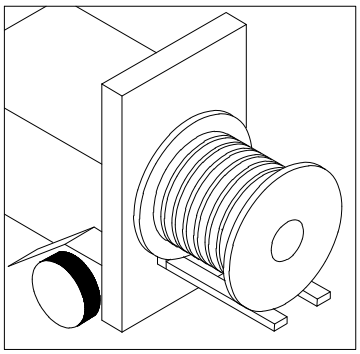
CAD FILE: UCA1

APP:

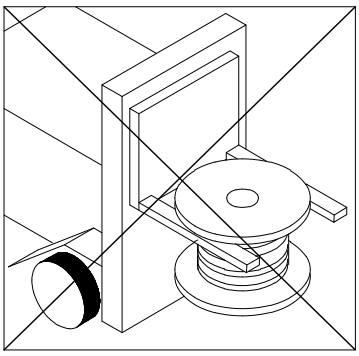
DATE: 9/94

SECTION 1300

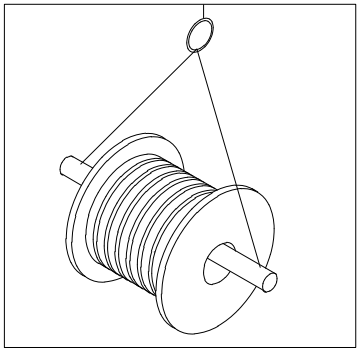
HOW TO HANDLE CABLE REELS



CRADLE BOTH REEL FLANGES BETWEEN FORKS.

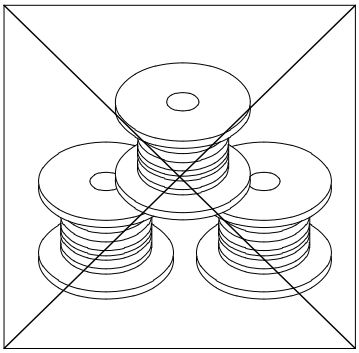


DO NOT LIFT BY TOP FLANGE. CABLE OR REEL WILL BE DAMAGED.

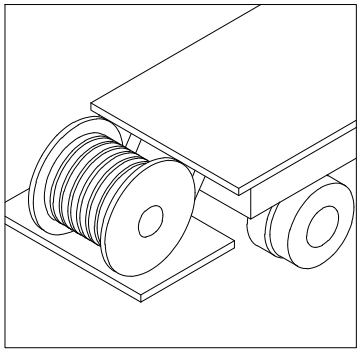


REELS CAN BE HOISTED WITH A SHAFT EXTENDING THROUGH BOTH FLANGES.

← YES

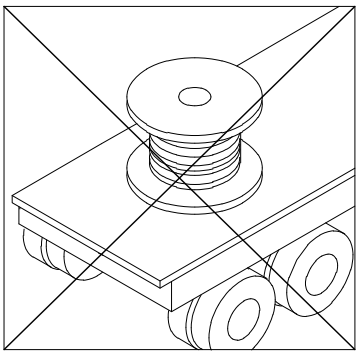


UPENDED HEAVY REELS WILL OFTEN ARRIVE DAMAGED. REFUSE OR RECEIVE SUBJECT TO INSPECTION FOR HIDDEN DAMAGE.

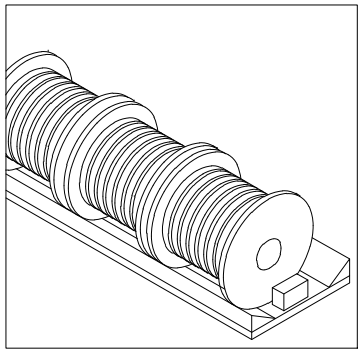


LOWER REELS FROM TRUCK USING HYDRAULIC GATE, HOIST OR FORK LIFT. (LOWER CAREFULLY)

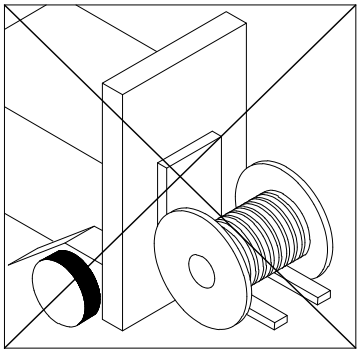
NO →



DO NOT UPEND REELS



ALWAYS LOAD WITH FLANGES ON EDGE AND CHOCK AND BLOCK SECURELY.



NEVER ALLOW FORKS TO TOUCH CABLE SURFACE OR REEL WRAP.

Clark Public Utilities

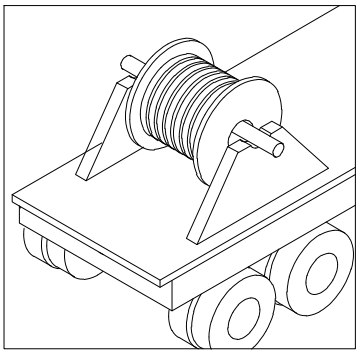
CONSTRUCTION STANDARDS

UNDERGROUND CABLE
REEL HANDLING

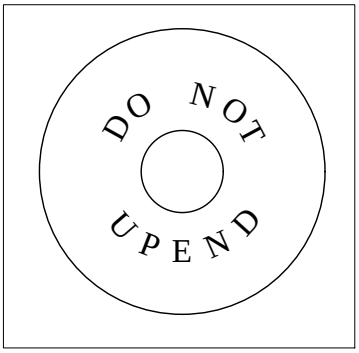
REVISIONS			
R	DATE	ENGR	OPS
0	2/23/00	HWH	MA
0			

PAGE:		CAD FILE:	APP:	SECTION
1 of 2	UCH-0	UCH-0	DATE: 9/94	1300

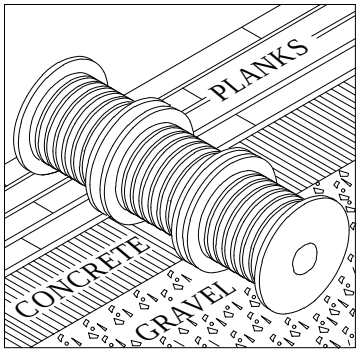
HOW TO HANDLE CABLE REELS



REELS GOING TO JOBS SHALL ALWAYS BE MOUNTED ON A HORIZONTAL AXLE.



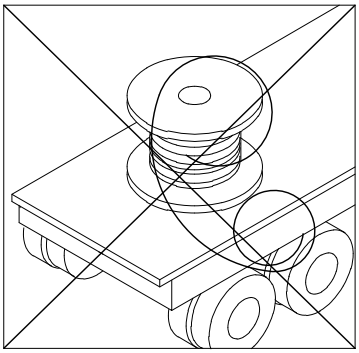
THIS SIGN APPLIES FOR ANY REEL HANDLING. NOT JUST FACTORY DELIVERY.



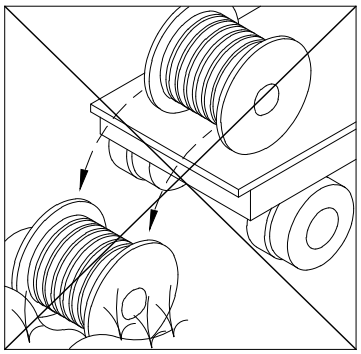
ALWAYS STORE REELS ON A HARD SURFACE.

← YES

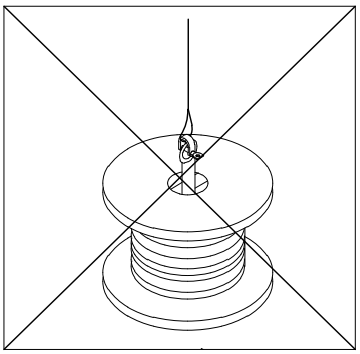
NO →



NEVER REMOVE CABLE FROM A REEL THIS WAY. IT WILL KINK.



NEVER DROP A CABLE REEL FROM ANY HEIGHT WITH EVEN A SMALL AMOUNT OF CABLE ON THE REEL.



NEVER USE A SWIVEL TO REMOVE CABLE FROM A REEL.

Clark Public Utilities

CONSTRUCTION STANDARDS

UNDERGROUND CABLE
REEL HANDLING

REVISIONS			
R	DATE	ENGR	OPS
0	2/23/00	HWH	MA
0			

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MOVEMENT, STORAGE, AND HANDLING OF CABLE

MOVEMENT OF REELS OF CABLE

1. REELS OF CABLE MUST NOT BE DROPPED FROM ANY HEIGHT, PARTICULARLY FROM TRUCKS OR OTHER TRANSPORTING EQUIPMENT.

2. LIFT REELS USING FOLLOWING METHODS:

   A) CRANE OR BOOM TYPE EQUIPMENT--INSERT SHAFT (HEAVY ROD OR PIPE) THROUGH REEL HUBS AND LIFT WITH SLINGS ON SHAFT, PREFERABLY UTILIZING SPREADER OR YOKE TO REDUCE OR AVOID SLING PRESSURE AGAINST REEL HEAD.

   B) FORK LIFT TYPE OF EQUIPMENT MAY BE USED TO MOVE SMALLER, NARROWER WIDTH REELS. FORK TINES SHALL BE PLACED SO THAT LIFT PRESSURE IS ON REEL HEADS, NOT ON CABLE, AND MUST REACH ALL THE WAY ACROSS REELS SO LIFT IS AGAINST BOTH REEL HEADS.

3. REELS MAY BE MOVED SHORT DISTANCES BY ROLLING. REELS SHOULD BE ROLLED IN THE DIRECTION INDICATED BY ARROWS PAINTED ON REEL HEADS. SURFACES OVER WHICH THE REELS ARE TO BE ROLLED SHALL BE FIRM, CLEAR OF DEBRIS, AND ALSO CLEAR OF PROTRUDING STONES, HUMPS, ETC. WHICH MIGHT DAMAGE THE CABLE IF THE REEL STRADDLED THEM.

STORAGE OF REELS OF CABLE

1. CABLE ENDS ARE SEALED PRIOR TO SHIPMENT, IF FACTORY SEALS ARE CUT OFF, NEW SEALS MUST BE APPLIED TO PREVENT MOISTURE ENTRY INTO CABLE.

2. WHENEVER POSSIBLE, THE FACTORY APPLIED PROTECTIVE COVER SHOULD BE LEFT IN PLACE UNTIL REMOVAL IS ABSOLUTELY NECESSARY. ADDITIONAL COVERING SUCH AS TARPAULIN, PLASTIC SHEETING, ETC., MAY BE USED IF CABLE IS TO BE STORED FOR LONG PERIODS OUTDOORS OR IN EXCESSIVELY DIRTY, DUSTY AREAS.

3. STORE REELS OF CABLE ON A FIRM SURFACE, PAVED IF POSSIBLE, OR ON PLANKING TO PREVENT SETTLING INTO SOFT GROUND.

4. THE STORAGE AREAS SHALL HAVE GOOD DRAINAGE.

5. USE FENCING OR OTHER BARRIERS TO PROTECT CABLES AND REELS AGAINST DAMAGE BY VEHICLES OR OTHER EQUIPMENT MOVING ABOUT IN THE STORAGE AREA.

6. NEVER STORE REELS ON END.

HANDLING DURING INSTALLATION

1. COLD WEATHER HANDLING AND PULLING-IN CABLE CAN BE MORE DIFFICULT, DEPENDING ON THE CABLE CONSTRUCTION AND INSTALLATION LOCATION. COLD-INDUCED STIFFNESS OF CABLE MUST BE CONSIDERED ALONG WITH RADIUS AND NUMBER OF BENDS IN THE PROPOSED INSTALLATION RUN.

   IN GENERAL MOST CABLES CAN BE SAFELY HANDLED WITHOUT DAMAGE IF NOT SUBJECTED TO TEMPERATURE LOWER THAN 10°F (-12°C) IN THE 24 HOUR PERIOD PRECEDING PULLING AND BENDING. IF IT IS ANTICIPATED THAT STORE TEMPERATURES WILL BE BELOW THIS LEVEL DURING THE 24 HOUR PRE-PULL PERIOD, ARRANGEMENTS SHOULD BE MADE TO MOVE THE REEL, AVOIDING IMPACT, TO A WARMER AREA. IF NO INDOOR WARMING AREA IS AVAILABLE, A PLASTIC SHEETING-COVERED SHELTER MAY BE CONSTRUCTED AND HEATED. THE REEL SHOULD BE HELD IN THE WARM STORAGE AREA AT A TEMPERATURE OF AT LEAST 60°F (16°C) FOR 24 HOURS TO ENSURE TOTAL WARMUP. APPLY PULLING EYES OR GRIPS WHILE CABLE IS IN THE WARMING AREA, PRIOR TO MOVEMENT OUTDOORS OR UNCOVERING.

2. FACTORY APPLIED SEALS ON CABLE ENDS MAY BE DISRUPTED DURING THE PULLING OPERATIONS AND, THEREFORE, SHOULD BE CHECKED AND REPLACED IF THE CABLES ARE NOT GOING TO BE SPLICED OR TERMINATED RIGHT AFTER PULL-IN. THIS IS ESPECIALLY IMPORTANT FOR UNDERGROUND RUNS WHERE CABLE ENDS MAY BE LEFT IN ENCLOSURES WHICH ARE SUBJECT TO FLOODING.

3. THE CABLES SHOULD BE LAID INTO THE TRENCH BEING CAREFUL NOT TO TWIST OR KINK THEM. CARE SHOULD BE TAKEN NOT TO ABRADE OR IMPACT THE CABLE SURFACE AS IT LEAVES THE PAY-OFF EQUIPMENT AND ENTERS THE TRENCH. OVER-BENDING THE CABLE TO A POINT LESS THAN THE RECOMMENDED MINIMUM BENDING RADIUS ALSO SHALL BE AVOIDED. CABLES CAN BECOME EASILY OVER-BENT AT GUIDE POINTS SUCH AS SMALL SHEAVES OR ROLLERS LOCATED ON THE CABLE LAYING EQUIPMENT.

   AFTER LAYING THE CABLES INTO THE TRENCH, THEY SHOULD BE COVERED WITH A LAYER OF SELECTED BACKFILL TO A LEVEL OF APPROXIMATELY THREE TO FOUR INCHES ABOVE THE CABLES' SURFACES. "SELECTED BACKFILL" IS DEFINED AS EITHER THERMAL SAND OR SAND-CLAY-GRAVEL MIXTURE CONTAINING SOME SMALL STONES NO GREATER IN SIZE THAN ONE-QUARTER TO ONE-HALF INCH ACROSS AT THEIR LARGEST DIMENSION.

FOLLOWING ARE THE MINIMUM REQUIREMENTS FOR ANY CABLE PULL:

1. THE ENTIRE CONDUIT LENGTH INCLUDING BENDS AND RISERS SHALL BE CLEAN AND SMOOTH. THE TOTAL NUMBER OF ANGLES SHALL NOT EXCEED 270° ✲ WITHOUT PRIOR CPU ENGINEERING APPROVAL.

2. THE ENTIRE CONDUIT LENGTH INCLUDING BENDS AND RISERS SHALL BE SECURED IN THE FINAL LOCATION WITH ALL ACCESSORIES FIRMLY ATTACHED.

3. A PULLING TENSION CALCULATION SHALL BE COMPLETED TO ASSURE THAT MAXIMUM TENSION LIMITS WILL NOT BE EXCEEDED. SEE TABLE 1 FOR LIMITS.

4. SUFFICIENT APPROVED CABLE LUBRICANT SHALL BE USED AT THE START OF THE PULL.

5. THE CABLE SHALL NEVER BE BENT TO A RADIUS LESS THAN 12 TIMES THE CABLE DIAMETER. ALL SHEAVES SHALL HAVE A GROOVE DIAMETER OF NOT LESS THAN 24 TIMES THE CABLE DIAMETER.

6. NEVER ALLOW CABLE TENSION AT THE CABLE REELS. THE REELS SHALL BE TURNED BY HAND OR BY A POWER DEVICE SO THAT THE CABLE IS SLACK GOING INTO THE CONDUIT ENTRANCE.

7. LUBRICANT SHALL BE APPLIED TO THE CONDUIT BEFORE THE CABLE ENTERS THE CONDUIT. IT MAY BE POURED IN OR A PLASTIC BAG OF LUBRICANT MAY BE ATTACHED TO THE PULLING LINE AHEAD OF THE CABLE.

8. ALL CABLE ENDS SHALL BE SEALED TO PREVENT THE ENTRY OF MOISTURE OR DIRT.

9. FOR 1000 MCM CABLE, THE PULLING LINE SHALL BE 2500 LB, SEQUENTIALLY-NUMBERED, CONTINUOUS MULE TAPE.

10. CABLE ATTACHMENT MAY BE WITH KELLEMS (CABLE OR BASKET) ✲ GRIP OR CONDUCTOR (PULLING EYE) GRIP WHICHEVER THE PULLING TENSION CALCULATION DICTATES.

11. ALL CONDUIT ENTRANCES AND EXITS SHALL HAVE PROTECTIVE BUSHINGS IN PLACE THAT WILL ASSURE THAT CABLE DAMAGE DOES NOT OCCUR DURING THE PULL. AT RISER LOCATIONS, DO NOT GLUE PROTECTIVE BUSHING TO CONDUIT.

12. CABLE PULLING SPEED SHALL NOT EXCEED 50 FEET PER MINUTE.

13. ALL CABLE ENDS SHALL BE EITHER TERMINATED OR SEALED IMMEDIATELY AFTER THE PULL. NO CABLE ENDS SHALL BE LEFT EXPOSED OVER NIGHT OR DURING INCLEMENT WEATHER.

REV 1 - CORRECTIONS MARKED WITH A ✲.

Clark Public Utilities

CONSTRUCTION STANDARDS

UNDERGROUND CABLE
PULLING REQUIREMENTS

REVISIONS			
R	DATE	ENGR	OPS
0	2/23/00	HWH	MA
1	12/29/04	LB	AH

△0

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14. IT SHALL BE THE RESPONSIBILITY OF THE DESIGNER TO AVOID UNFAVORABLE SIDEWALL PRESSURES. THE SIDEWALL PRESSURES SHALL BE CALCULATED USING THE FOLLOWING EQUATIONS:

(A.) THE SIDEWALL PRESSURE (P) IN GENERAL IS DEFINED AS THE TENSION OUT OF A BEND EXPRESSED IN POUNDS DIVIDED BY THE INSIDE RADIUS OF THE BEND EXPRESSED IN FEET. EQUATIONS 1A AND 1B ARE FOR THE "WORST CASE" CABLE.

EQ 1: $P = \frac{T_o}{r}$ (ONE SINGLE CABLE)

1A: $P = \frac{(3c - 2)}{3} \frac{T_o}{r}$ (TWO OR THREE SINGLE CABLES - CRADLE CONFIGURATION) WHERE $c = 1 + \frac{4}{3}\left(\frac{d}{D - d}\right)^2$

1B: $P = \frac{c\,T_o}{2r}$ (TRIANGULAR CONFIGURATION) WHERE $c = \frac{1}{\sqrt{1 - \left(\frac{d}{D - d}\right)^2}}$

P = SIDEWALL PRESSURE, LBS PER FOOT OF RADIUS
T_o= TENSION (LEAVING THE BEND), POUNDS
c = WEIGHT CORRECTION FACTOR (EQ. 7 AND 8)
r = INSIDE RADIUS OF CONDUIT IN FEET
d = CABLE O.D. IN INCHES
D = CONDUIT I.D. IN INCHES

THE MAXIMUM SIDEWALL PRESSURE SHALL NOT EXCEED 500 LB/FT FOR 1 CABLE OR 1000 LB/FT FOR 2 OR 3 CABLES.

TABLE 1
CABLE PULLING LINE TENSION LIMITS

CABLE	KELLEMS (BASKET) GRIP TENSION (POUNDS)	CONDUCTOR (PULLING EYE) GRIP TENSION (POUNDS)
1 - 1/0 PRIMARY	845 ✲	845
2 - 1/0 PRIMARY	845 ✲	845 ✲
3 - 1/0 PRIMARY	1690 ✲	1690
1 - 1000 MCM PRIMARY	1000	5000 ✲
2 - 1000 MCM PRIMARY	1000 ✲	5000 ✲
3 - 1000 MCM PRIMARY	2000	5000 ✲
4/0 - 4/0 - 2/0 SEC.	3000 ✲	4450
350 - 350 - 4/0 SEC.	3000 ✲	5000 ✲

KELLEMS GRIP IS OVER THE CABLE JACKET. ALSO CALLED "CABLE GRIP" OR "BASKET GRIP." ✲

NOTE: 5000 LB LIMIT DUE TO EQUIPMENT LIMITS.

REV 1: CORRECTIONS MARKED WITH A ✲.

Clark Public Utilities

CONSTRUCTION STANDARDS

UNDERGROUND CABLE
PULLING REQUIREMENTS

REVISIONS			
R	DATE	ENGR	OPS
0	2/23/00	HWH	MA
1	12/29/04	LB	AH
0			

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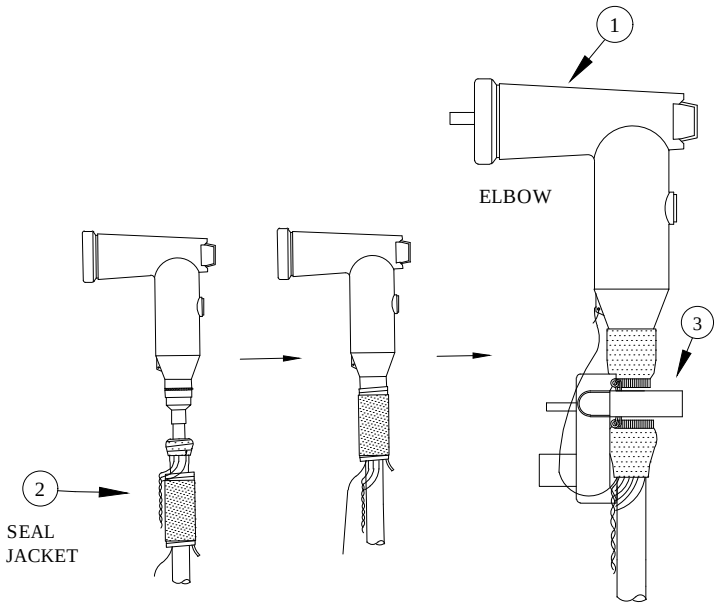
TYPICAL ASSEMBLY



FOR REFERENCE ONLY
OLD INSTALLATIONS WITHOUT VOLTAGE-TEST POINT
NEW INSTALLATIONS HAVE VOLTAGE-TEST POINT

NOTES:
1. INDIVIDUALLY PACKAGED INSTRUCTIONS COME WITH EACH OF THE THREE MOULDED RUBBER COMPONENTS.
2. THE FAULT INDICATOR SHALL BE INSTALLED AS SHOWN. NEUTRAL WIRES MUST BE TRAINED AS SHOWN SO THAT THE FAULT INDICATOR WILL FIT.

Rev 3: Added Current-Reset fault indicator to title and made "Reference Only."

ITEM NO.	DESCRIPTION	UEP2 QTY.	UEP2 S/N
1	Elbow, Loadbreak, 1/0, 200A, 175 MIL	1	1312
2	Kit, Cable Sealing, 15KV, 200A	1	2391
3	Fault Indicator, Current-reset, 400A, 1Ø UG	1	2581

Clark Public Utilities

CONSTRUCTION STANDARDS

PRIMARY ELBOW ASSEMBLY
200A WITH
CURRENT-RESET FAULT INDICATOR

REVISIONS			
R	DATE	ENGR	OPS
0	2/23/00	HWH	MA
1	9/23/04	LB	AH
2	8/2/05	LB	AH
3	4/29/09	CM	AH

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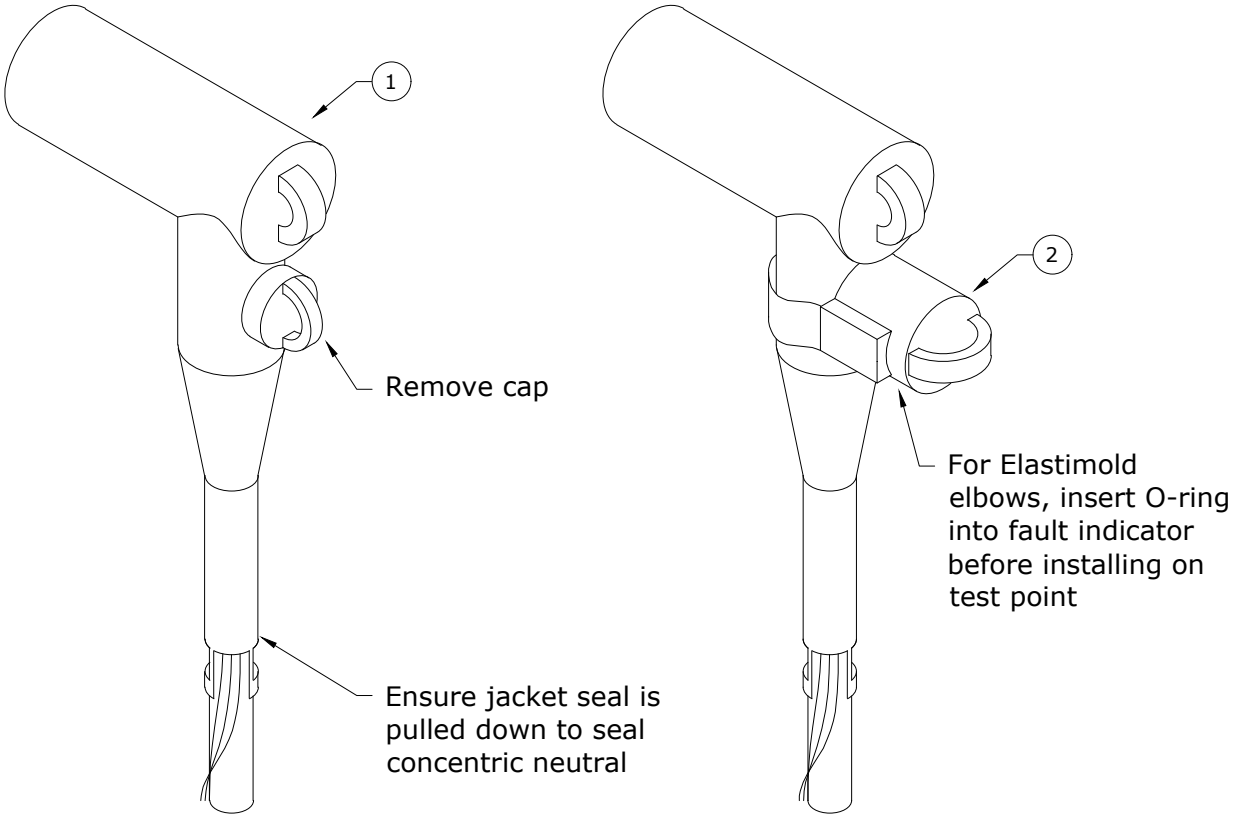

Note: Follow manufacturer's cutbacks and use template provided. Do NOT use a metal tape measure.

Rev. 1 - Changed to elbow with integrated jacket seal.

ITEM NO.	DESCRIPTION	UEP3 QTY.	UEP3 S/N
1	Elbow, 200A, LB, 1/0, 175 & 220 mil, Test Point, 15 kV, Integrated Jacket Seal	1	1312
2	Fault Indicator, Voltage-reset, 400A Trip, 1Ø UG	1	2694

Clark Public Utilities

CONSTRUCTION STANDARDS

PRIMARY ELBOW ASSEMBLY
200A WITH
VOLTAGE-RESET FAULT INDICATOR

REVISIONS			
R	DATE	ENGR	OPS
1	11/19/20	CM	GM

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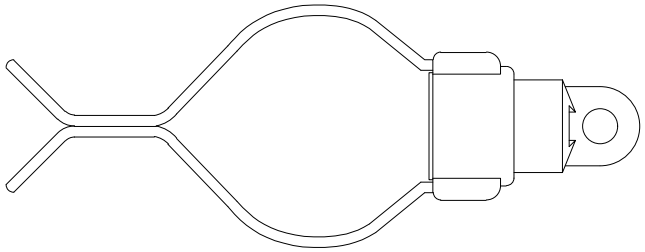
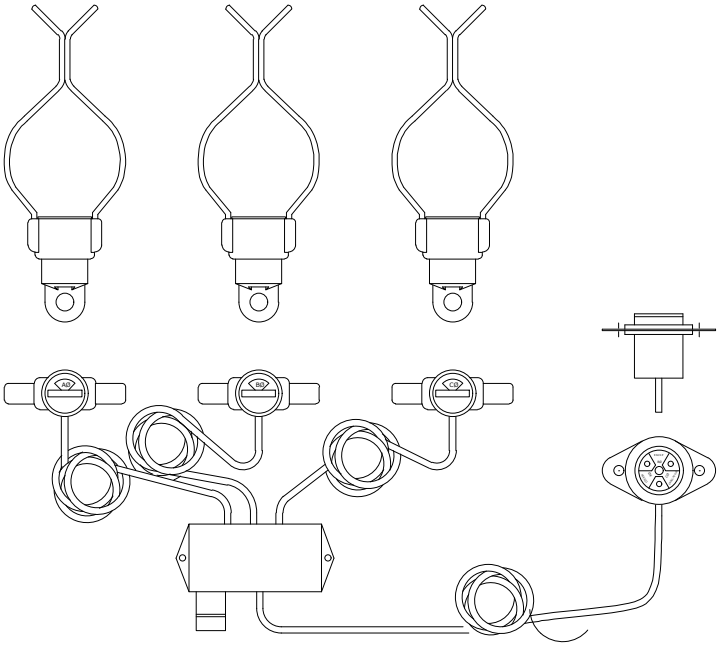
1 of 1	UEP3	UEP3	DATE: 4/29/09	1300



S/N# 2694 - VOLTAGE-RESET FLAG INDICATION
USE: 1Ø AND 3Ø PADMOUNT TRANSFORMERS AND J-BOXES (1/0 CABLE)
TRIP CURRENT: 400A
RESET VOLTAGE AND TIME: 5KV (UP TO 4 MIN.)
SEE: UT21-UT22, UT24-UT28, UT30-UT32, UJ1, UJ3, AND UJM

Note: Elastimold elbows (used for Cable Cure) need the ring adapter provided with the fault indicator.

ITEM NO.	DESCRIPTION	UFIV400	
		QTY.	S/N
1	VOLTAGE-RESET FAULT INDICATOR, 400A TRIP, 1Ø UG	1	2694



S/N# 2695 - VOLTAGE-RESET FLAG AND BLINKING LIGHT INDICATION
USE: SWITCHGEAR (1000 MCM CABLE)
TRIP CURRENT: 800A
RESET VOLTAGE AND TIME: 5KV (UP TO 4 MIN.) REPLACEABLE BATTERY FOR FLASHING LIGHT
SEE: USG1

Note: Elastimold elbows (used for Cable Cure) need the ring adapter provided with the fault indicator.

ITEM NO.	DESCRIPTION	UFIV800	
		QTY.	S/N
1	VOLTAGE-RESET FAULT INDICATOR, 800A TRIP, 3Ø UG SWG	1	2695

REV 3 - ADDED VOLTAGE-RESET FAULT INDICATORS AND CHANGED FROM "UFI1" TO "UFI"

Clark Public Utilities

CONSTRUCTION STANDARDS

UNDERGROUND
FAULT INDICATORS

REVISIONS			
R	DATE	ENGR	OPS
1	2/23/00	HWH	MA
2	9/23/04	LB	AH
3	4/29/09	CM	AH

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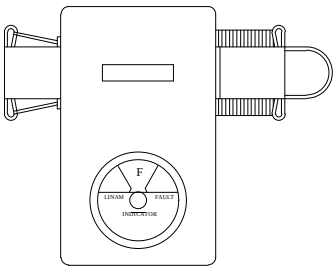
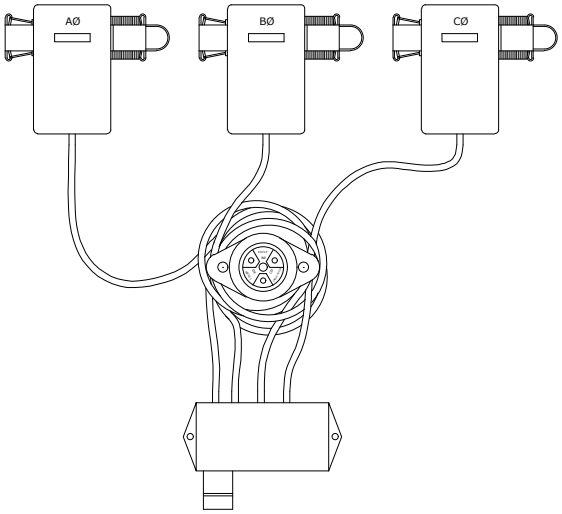


S/N# 2581 - CURRENT RESET-FLAG INDICATION
USE: 1Ø AND 3Ø PADMOUNT TRANSFORMERS AND J-BOXES (1/0 CABLE)
TRIP CURRENT: 400A
RESET CURRENT AND TIME: 1.5A (40 SEC)
SEE: UT21-UT22, UT24-UT28, UT30-UT32, UJ1, UJ3, AND UJM

NOTE: ONLY USE ON ELBOWS WITHOUT A VOLTAGE TEST POINT

ITEM NO.	DESCRIPTION	UFIA400	
		QTY.	S/N
1	INDICATOR, FAULT, CURRENT-RESET, 400A, 1Ø UG	1	2581



S/N# 2463 - CURRENT RESET-FLAG AND FLASHING LIGHT INDICATION
USE: SWITCHGEAR (1000 MCM CABLE)
TRIP CURRENT: 800A
RESET CURRENT AND TIME: 3A (25 SEC)
REPLACEABLE BATTERY FOR FLASHING LIGHT
SEE: USG1

NOTE: ONLY USE ON ELBOWS WITHOUT A VOLTAGE TEST POINT

ITEM NO.	DESCRIPTION	UFIA800	
		QTY.	S/N
1	INDICATOR, FAULT, CURRENT-RESET, 800A, 3Ø	1	2463

REV 3 - ADDED VOLTAGE-RESET FAULT INDICATORS AND CHANGED FROM "UFI1" TO "UFI"

Clark Public Utilities

CONSTRUCTION STANDARDS

UNDERGROUND
FAULT INDICATORS

REVISIONS			
R	DATE	ENGR	OPS
1	2/23/00	HWH	MA
2	9/23/04	LB	AH
3	4/29/09	CM	AH

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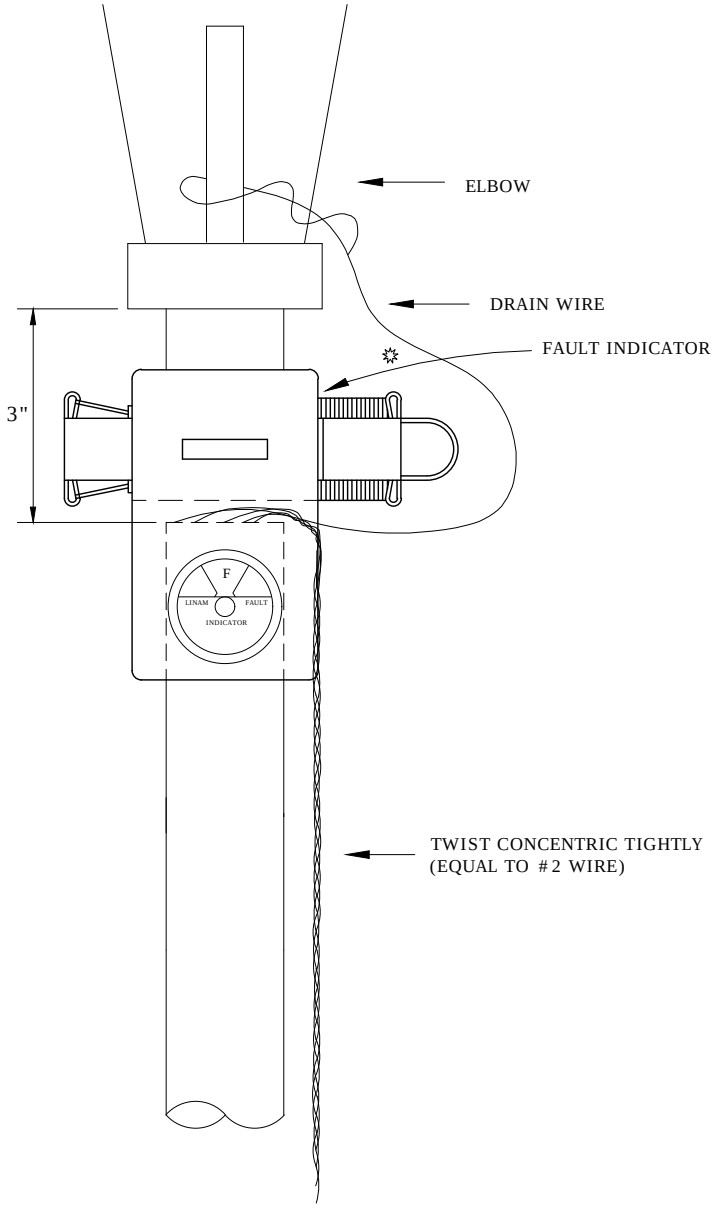

JACKETED
CABLES

NOTES

1. GRAY CLAMP OF FAULT INDICATOR MUST
   BE ABOVE CONCENTRIC NEUTRAL.
   IF NOT, INDICATOR WILL NOT WORK.

2. NEUTRALS MUST BE FORMED AS SHOWN SO
   THAT INDICATOR WILL FIT.

REV 1 - REFLECT JACKETED CABLE - REVISIONS ARE MARKED WITH STAR
REV 2 - CHANGED TO CURRENT-RESET FAULT INDICATOR

Clark Public Utilities

CONSTRUCTION STANDARDS

UNDERGROUND CABLE CURRENT-RESET
FAULT INDICATOR INSTALLATION

REVISIONS			
R	DATE	ENGR	OPS
1	2/23/00	HWH	MA
2	9/23/04	LB	AH

1 REVISIONS MARKED WITH STAR

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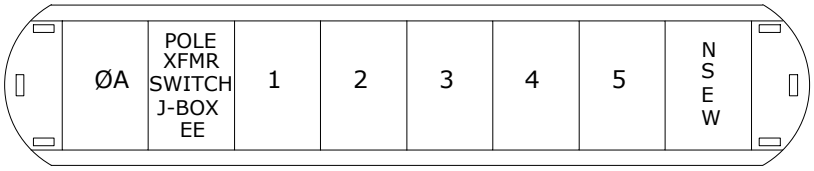
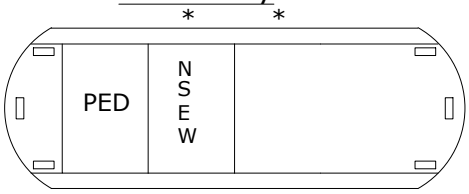
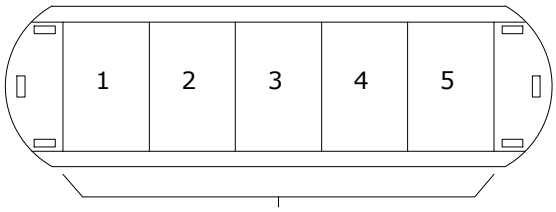
Primary



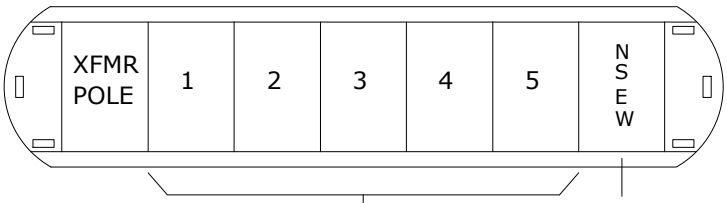
Secondary



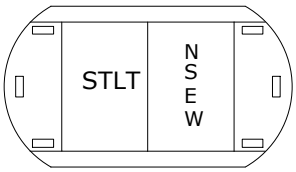
In transformer to secondary pedestal.



In secondary pedestal to house.

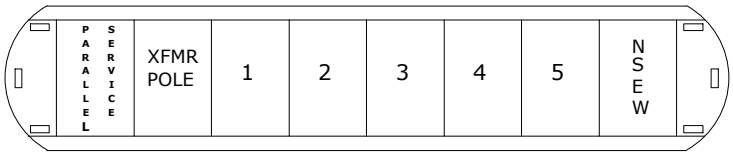


In secondary pedestal from transformer or pole.

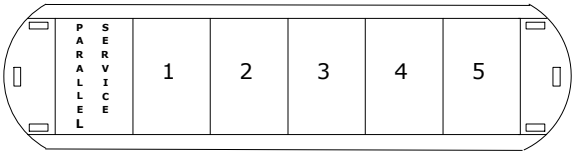


In transformer or pedestal
to streetlight.

Parallel Secondary



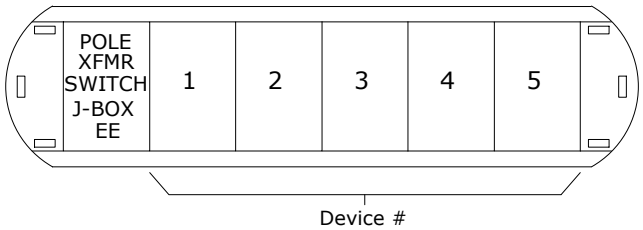
In secondary pedestal from transformer or pole.

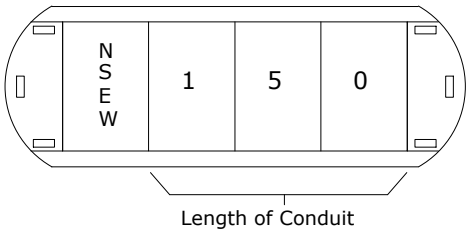


In secondary pedestal to house.

Note: Zip tie ONE tag around each set of parallel cables.

Future Conduits (Normally Will Require Two Tag Holders)





Notes:

1. These tags are for URD primary and secondary cables. Tag all cables.
2. Parallel cables shall have one tag zip tied around both cables.

Rev 4: Added tagging for parallel conductors.

Clark Public Utilities

CONSTRUCTION STANDARDS

UNDERGROUND CONDUCTOR
IDENTIFICATION TAGS

REVISIONS			
R	DATE	ENGR	OPS
1	2/23/00	HWH	MA
2	9/23/04	LB	AH
3	1/16/19	KJP	
4	12/9/22	CRM	GM

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