

200 BASIC UNITS

11/11/2016

C	BR1	22" Multi-purpose Bracket with Clip & Insulator for Slack Span
C	BR3	22" Multi-purpose Bracket with Clip for Tension Span
C	BR10	1000MCM Cable Termination Mounting Bracket
C	CR20A	Single 8' Crossarm - Flat Brace
C	CR21A	Double 8' Crossarm - Flat Braces
C	CR23A	Single Crossarm - Angle Brace
C	CR24A	Double Crossarm - Angle Braces
C	CR26A	Pre-assembled Deadend, 8' & 10', 3-Position - 397 AAC Max Wire
C	CR27B	Pre-assembled Deadend, 10', 4-Position - 397 AAC Max Wire
C	CR28A	Pre-assembled Deadend, 8' & 10', 3-Position - 795 AAC Max Wire
C	CR29B	Pre-assembled Deadend, 10', 4-Position - 795 AAC Max Wire
C	CRA50A	Single Crossarm - Alley Arm
C	CRA52A	Double Crossarm - Alley Arm
C	PR1	Pole-Top Pin - Single Insulator
C	PR2	Pole-Top Pin - Double Insulators
C	PR4	Single Crossarm Pin
C	PR5	Single Crossarm Angle Pin
C	PR19	Double Crossarm Pin
C	PR20	Horizontal Jumper Support
C	PR21	Deadend with Eyebolt
C	PR22	Deadend with Long Eyebolt
C	PR23	Deadend with Extension
C	PR24	Deadend
C	PR25	Deadend with Extension
N	New Standard	
R	Redrawn Standard	
C	Changed Standard	
~	No Change	

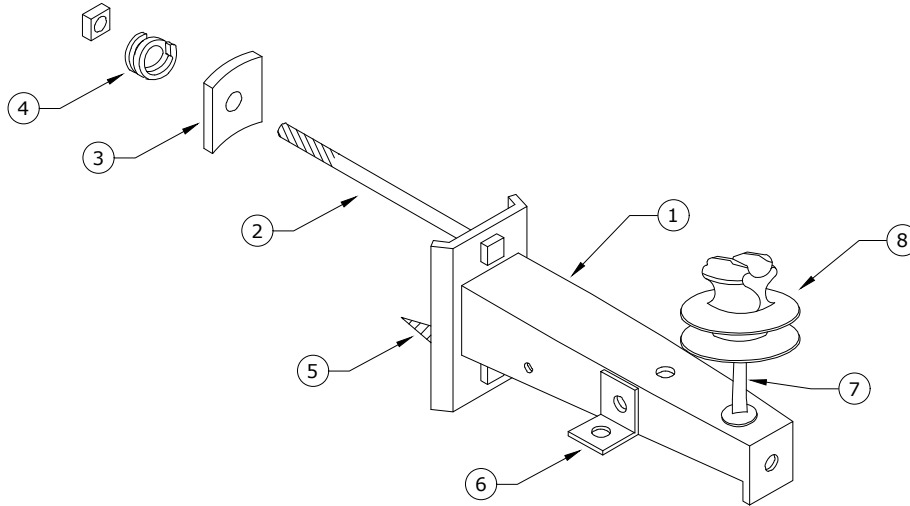
200 (CONTINUED)

BASIC UNITS

11/11/2016

C	PR40	Pole-Top Pin Single Vise-Top Insulator
C	PR41	Pole-Top Pin - Double Vise-Top Insulators
C	PR42	Single Vise-Top Insulator on Crossarm
C	PR43	Double Vise-Top Insulators on Crossarms
C	PR44	Single Angle Vise-Top Insulator on Crossarm
C	PR56	Single Clamp-Top Twiggy Arm 21"
C	PR57	Double Clamp-Top Twiggy Arm 21"
C	PR58	Single Clamp-Top Twiggy Arm 27"
C	PR59	Double Clamp-Top Twiggy Arm 27"
C	PR60	Single Twiggy Arm 18"
N	PR60V	Single Twiggy Arm 18" Vise-Top Insulator
C	PR61	Double Twiggy Arm 18"
N	PR61V	Double Twiggy Arm 18" Vise-Top Insulator
C	PR62	Single Twiggy Arm 24"
N	PR62V	Single Twiggy Arm 24" Vise-Top Insulator
C	PR63	Double Twiggy Arm 24"
N	PR63V	Double Twiggy Arm 24" Vise-Top Insulator
C	S1	Neutral Tangent Spool
C	S2	Neutral Angle Spool
C	S3	Heavy Neutral Angle Spool
C	S4,S4A	Slack Neutral Conductor Deadends
C	S10	Neutral Deadend
C	S11	Neutral Double Deadend
C	S12	Single White Neutral Insulator on Crossarm
C	S13	Double White Neutral Insulators on Crossarms
C	S14	Single Angled White Neutral Insulator on Crossarm

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



PREFORMED TIES	S/N
2/0 ACSR	2242
#2 ACSR	2241

Rev. 7 - Changed to Polymer insulator and updated material list.

ITEM NO.	DESCRIPTION	BR1	
		QTY.	S/N
1	Bracket, Steel, Galv., Multi-purpose, 22"	1	2262
2	Bolt, Machine, 5/8" x 16" Galv., 12,400 lbs Ultimate Tensile	1	157
3	Washer, Square, Curved, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
4	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217
5	Screw, Lag, 1/2" x 4 1/2" Twist Drive, Drive Point *	1	1132
6	Adapter, Steel, Galv., Clip Angle *	1	2248
7	Pin, Insulator, Short Shank 6" Above Arm *	1	2249
8	Insulator, Pin, C Neck, Polymer	1	1968*



CONSTRUCTION STANDARDS
BASIC UNITS
22" MULTI-PURPOSE BRACKET
WITH CLIP AND INSULATOR FOR SLACK SPAN

REVISIONS			
DATE	ENGR	OPS	
12/17/04	LB	AH	4
3/19/07	LB	AH	5
8/25/09	CM	AH	6
12/22/16	CM	DK	7

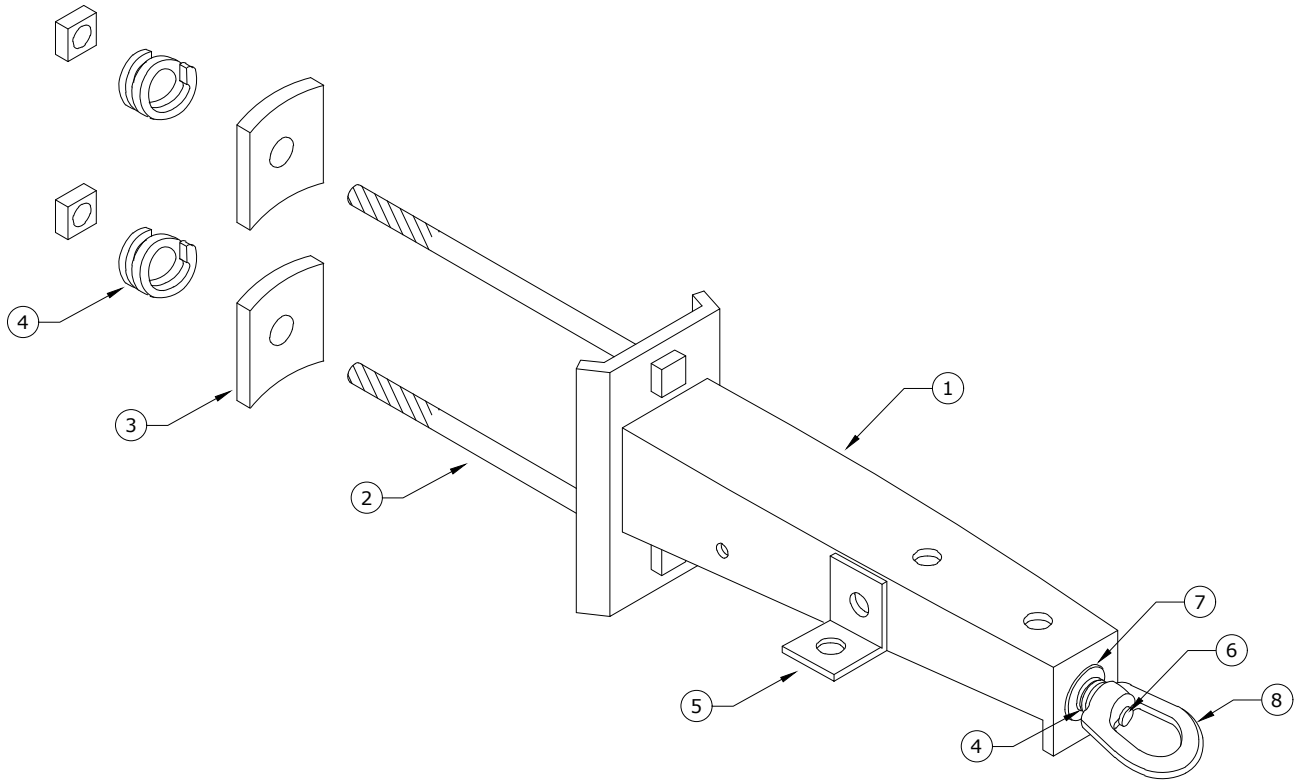
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BR1

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BR1

APP: TRO
DATE: 7/17/96

SECTION
200



22" BRACKET

(MULTI-PURPOSE W/ CUTOUT CLIP)

Note: For tension applications.

Rev. 6 - Corrected material list and drawing.

ITEM NO.	DESCRIPTION	BR3	
		QTY.	S/N
1	Bracket, Steel, Galv., Multipurpose, 22"	1	2262
2	Bolt, Machine, 5/8" x 16" Galv., 12,400 lbs Ultimate Tensile	2 *	157
3	Washer, Square, Curved, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2 *	1392
4	Washer, Lock, Spring, Double Coil, Galv., 5/8"	3 *	2217
5	Adapter, Steel, Galv., Clip Angle *	1	2248
6	Bolt, Machine, 5/8" x 2" Galv., 12,400 lbs Ultimate Tensile	1	149 *
7	Washer, Flat Round Galv. 5/8"	1	1395 *
8	Nut, Eye Oval 5/8" Galv.	1	913



CONSTRUCTION STANDARDS
 BASIC UNITS
 22" MULTI-PURPOSE BRACKET
 WITH CLIP FOR TENSION SPAN

REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
12/17/04	LB	AH	
10/17/08	CM	AH	
11/11/16	KJP		

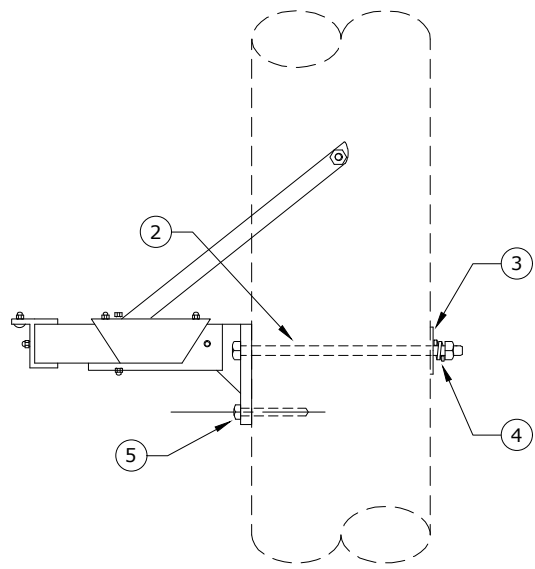
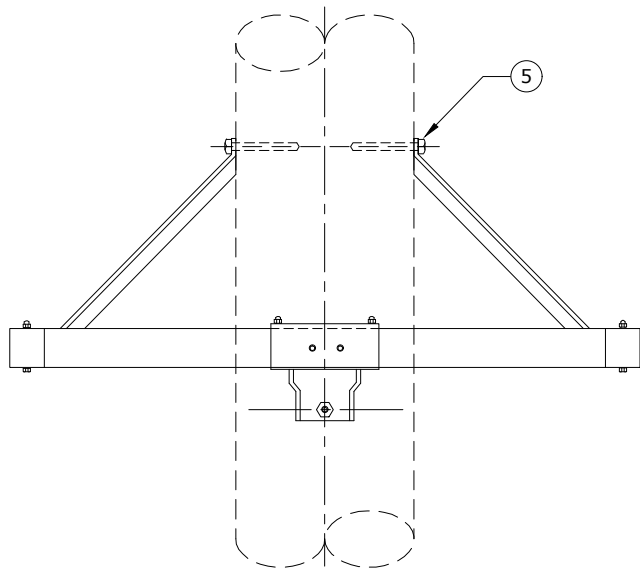
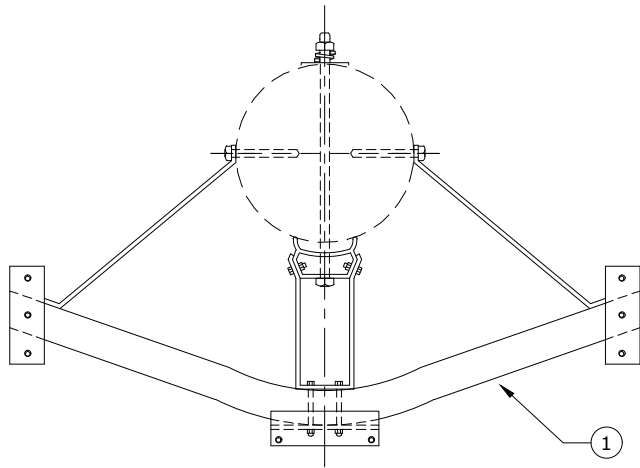
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BR3

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BR3

APP: TRO
DATE: 7/17/96

SECTION
200



Rev. 2 - Changed to 48" bracket.

ITEM NO.	DESCRIPTION	BR10	
		QTY.	S/N
1	Bracket, Terminator Mount, 48", 1000 MCM *	1	2842 *
2	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile *	1	156
3	Washer, Square, Curved, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
4	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	1	2217
5	Screw, Lag, 1/2" x 4 1/2", Twist Drive, Drive Point *	3	1132
6	Support, Cable, 1000 MCM *	3	2229



CONSTRUCTION STANDARDS

BASIC UNITS
1000MCM CABLE TERMINATION
MOUNTING BRACKET

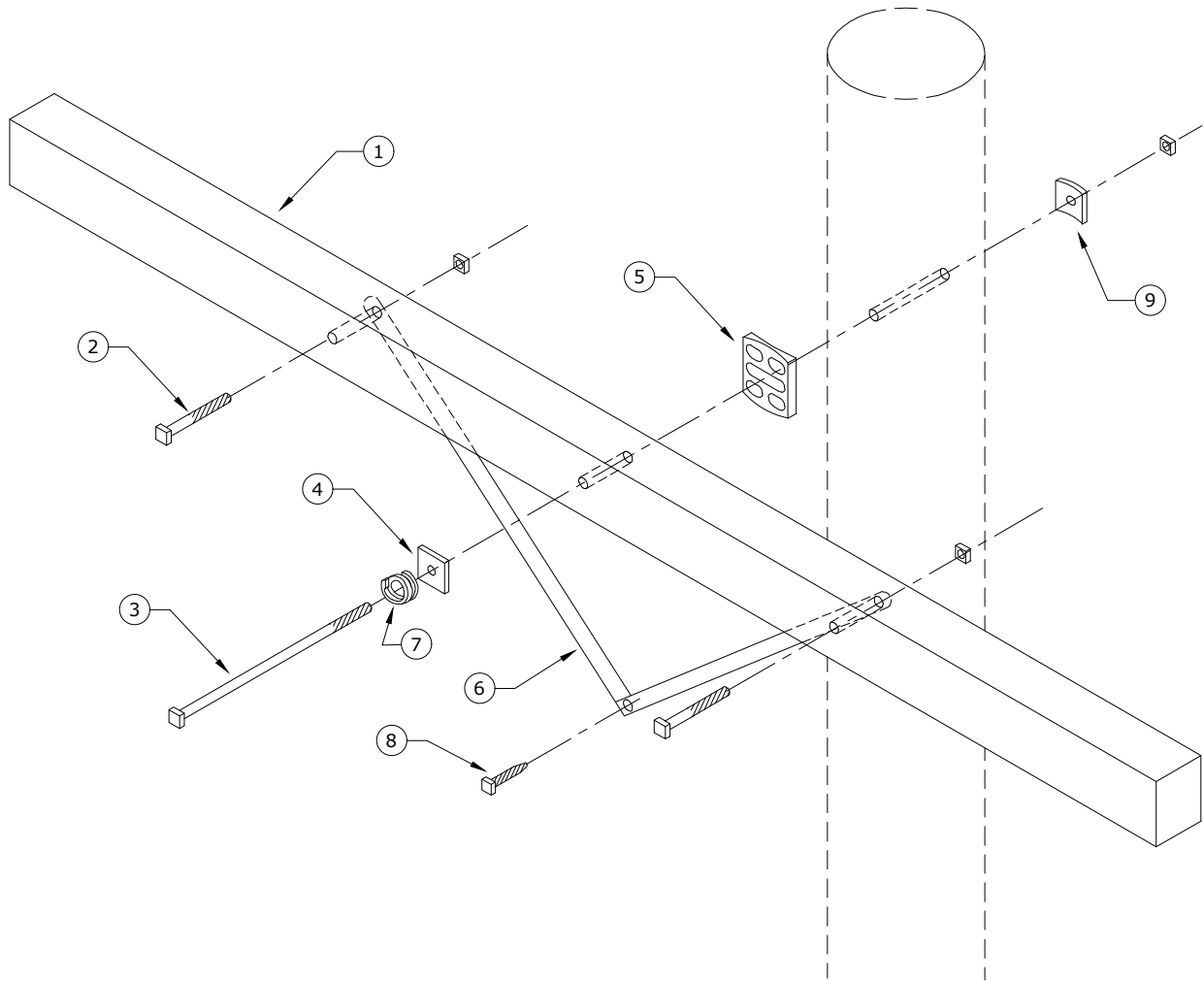
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BR10

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BR10

REVISIONS			
DATE	ENGR	OPS	
10/7/05	LB	AH	
2/22/16	KJP		

APP: TRO	SECTION
DATE: 7/17/96	200



(FLAT BRACE)

Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	CR20A	
		QTY.	S/N
1	Arm, Cross (Distr.), 8' x 3 3/4" x 4 3/4"	1	25
2	Bolt, Carriage, 3/8" x 5", Galv., 4250 lbs Ultimate Tensile *	2	78
3	Bolt, Machine, 5/8" x 16", Galv., 12,400 lbs Ultimate Tensile *	1	157
4	Washer, Square, Flat 5/8", 2 1/4" x 2 1/4"	1	1412
5	Gain, Pole Plastic	1	709
6	Brace, Crossarm 28", Galv. Stl *	2	205
7	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	1	2217
8	Screw, Lag 1/2" x 4 1/2", Twist Drive, Drive Point *	1	1132
9	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392



CONSTRUCTION STANDARDS

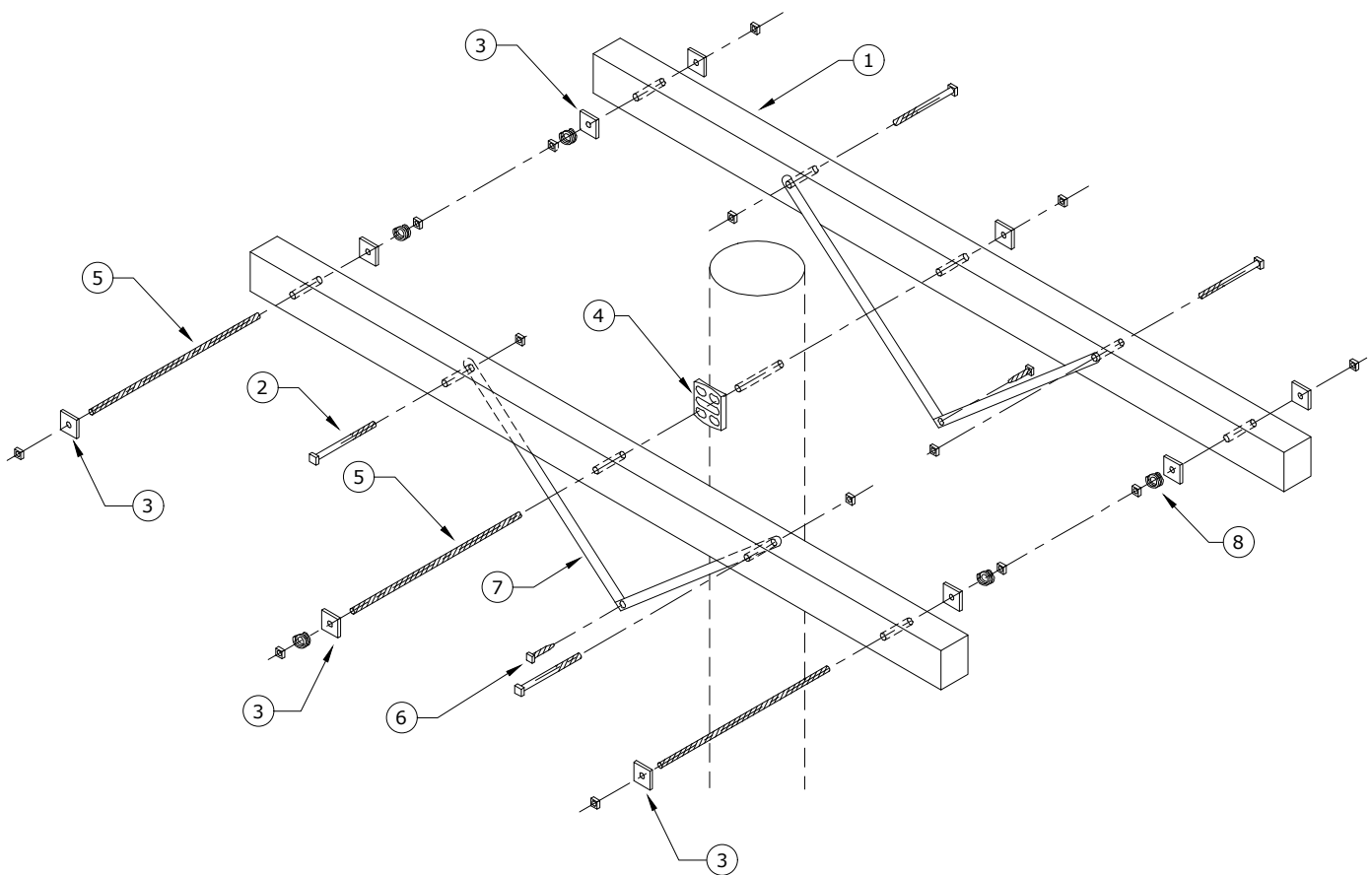
BASIC UNITS
SINGLE 8' CROSSARM
FLAT BRACE

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CR20A

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CR20

REVISIONS											
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3	10/7/05	LB	AH								
4	2/24/16	KJP									
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(FLAT BRACES)

Rev. 5 - Updated material.

ITEM NO.	DESCRIPTION	CR21A	
		QTY.	S/N
1	Arm, Cross (Distr.), 8' x 3 3/4" x 4 3/4"	2	25
2	Bolt, Carriage, 3/8" x 5", Galv., 4,250 lbs Ultimate Tensile *	4	78
3	Washer, Square, Flat 5/8", 2 1/4" x 2 1/4"	10	1412
4	Gain, Pole Plastic	1	709
5	Bolt, Double Arm, 5/8" x 20", Galv., 12,400 lbs Ultimate Tensile *	3	83
6	Screw, Lag 1/2" x 4 1/2", Twist Drive, Drive Point *	2	1132
7	Brace, Crossarm 28", Galv. Stl. *	4	205
8	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	5	2217



CONSTRUCTION STANDARDS

BASIC UNITS
DOUBLE 8' CROSSARM
FLAT BRACES

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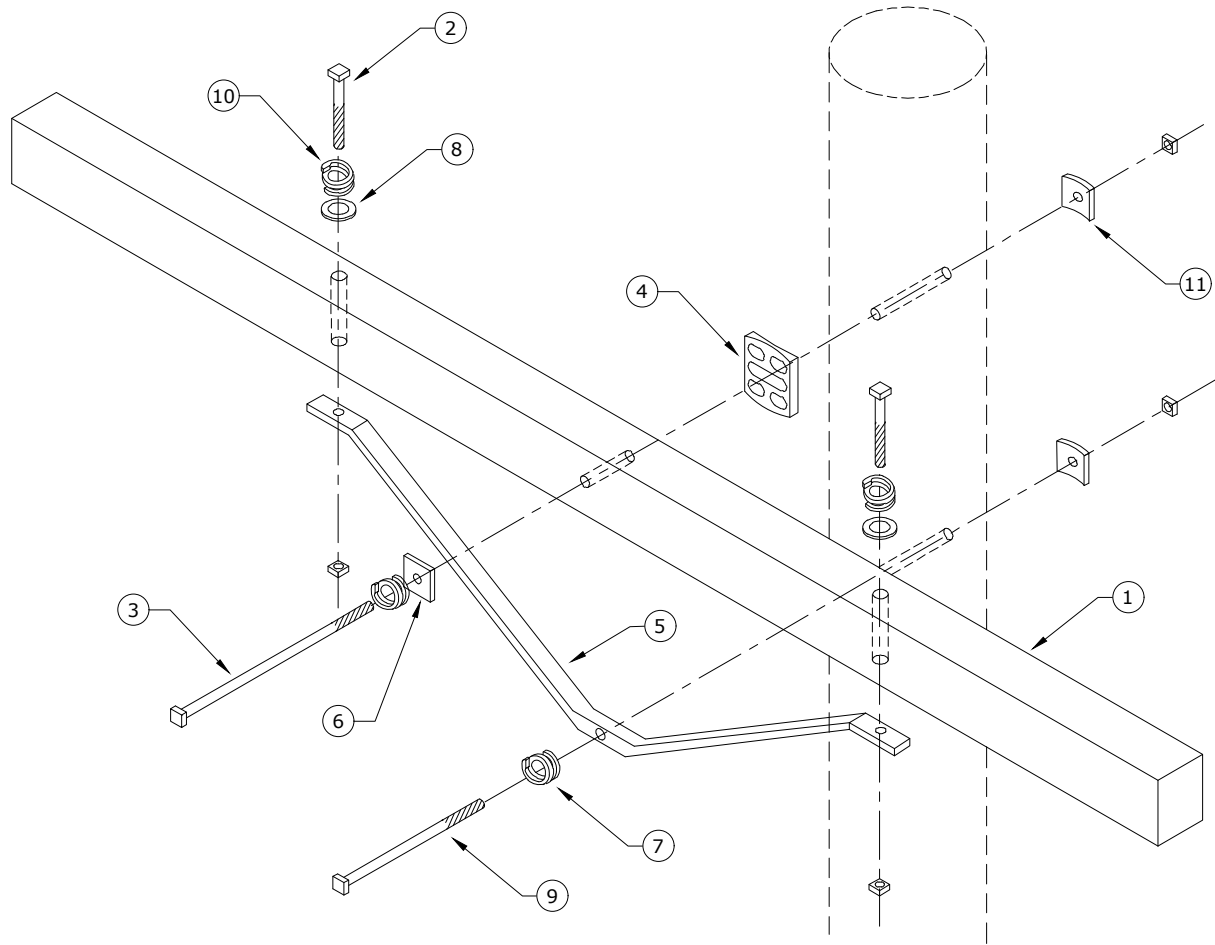
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REVISIONS

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3	3/12/02	JEH	
4	9/19/05	LB	AH
5	2/24/16	KJP	

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(ANGLE BRACE)

Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	8'Arm		10'Arm	
		CR23A		CR23B	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 3 3/4" x 4 3/4"	1	25	1	26
2	Bolt, Machine, 1/2" x 7", Galv., 7800 lbs Ultimate Tensile *	2	143	2	143
3	Bolt, Machine, 5/8" x 16", Galv., 12,400 lbs Ultimate Tensile *	1	157	1	157
4	Gain, Pole Plastic	1	709	1	709
5	Brace, Angle (60" or 72")	1	203	1	204
6	Washer, Square, Flat 5/8", 2 1/4" x 2 1/4"	1	1412	1	1412
7	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	2	2217	2	2217
8	Washer, Flat, Round, Galv., 1/2"	2	1394	2	1394
9	Bolt, Machine, 5/8" x 12", Galv., 12,400 lbs Ultimate Tensile *	1	155	1	155
10	Washer, Lock, Spring, Double Coil, Galv., 1/2" *	2	2216	2	2216
11	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392



CONSTRUCTION STANDARDS

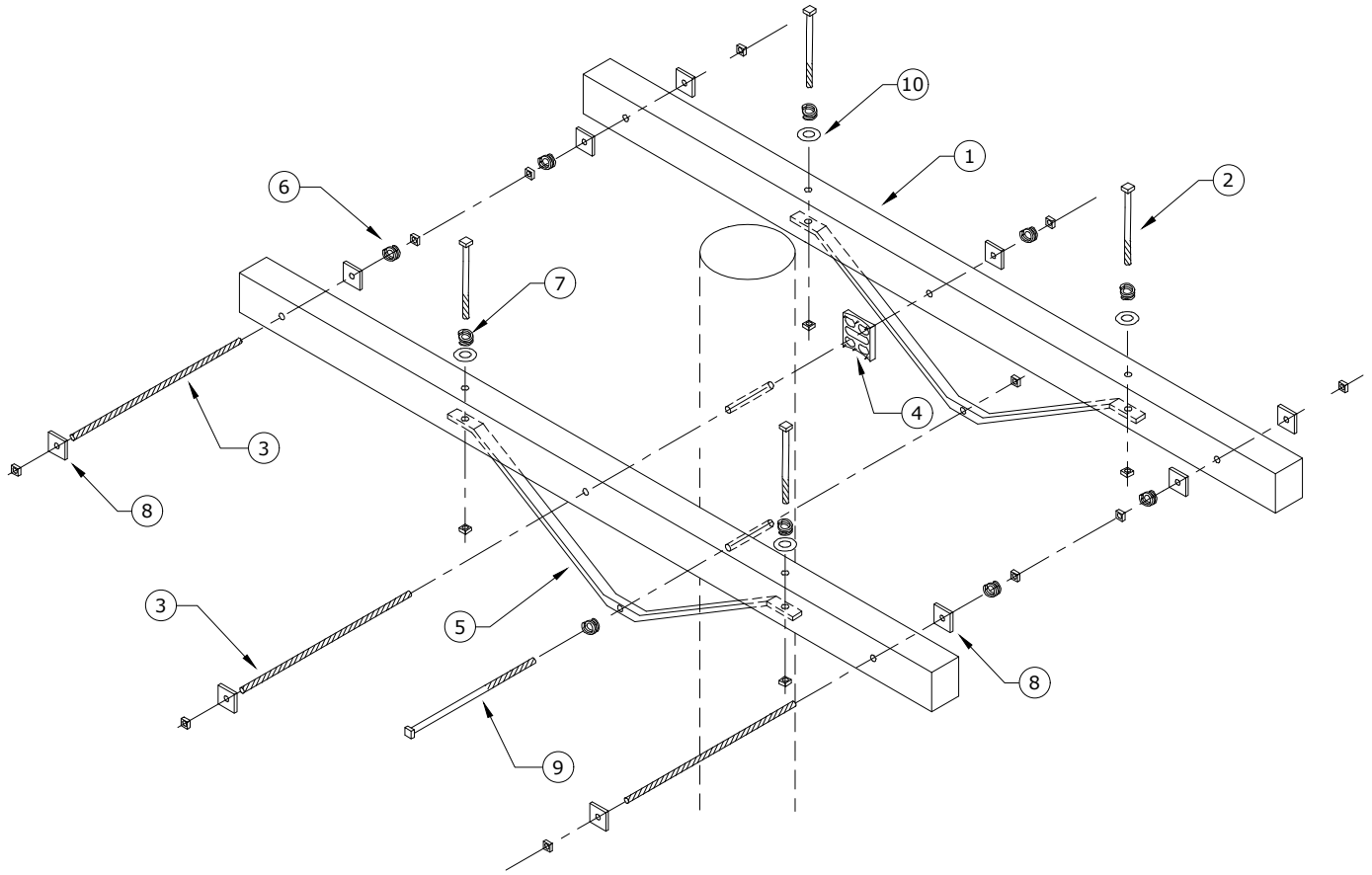
BASIC UNITS
SINGLE CROSSARM
ANGLE BRACE

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CR23A, CR23B

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CR23

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3	10/7/05	LB	AH								
4	2/24/16	KJP									
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(ANGLE BRACES)

Rev. 5 - Updated material.

ITEM NO.	DESCRIPTION	8'Arm CR24A		10'Arm CR24B	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 3 3/4" x 4 3/4"	2	25	2	26
2	Bolt, Machine, 1/2" x 7", Galv., 7800 lbs Ultimate Tensile *	4	143	4	143
3	Bolt, Double, Arm, 5/8" x 20", Galv., 12,400 lbs Ultimate Tensile *	3	83	3	83
4	Gain, Pole Plastic	1	709	1	709
5	Brace, Angle (60" or 72")	2	203	2	204
6	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	6	2217	6	2217
7	Washer, Lock, Spring, Double Coil, Galv., 1/2" *	4	2216	4	2216
8	Washer, Square, Flat 5/8", 2 1/4" x 2 1/4"	10	1412	10	1412
9	Bolt Machine, 5/8" x 12", Galv., 12,400 lbs Ultimate Tensile *	1	155	1	155
10	Washer, Flat, Round, Galv., 1/2"	4	1394	4	1394



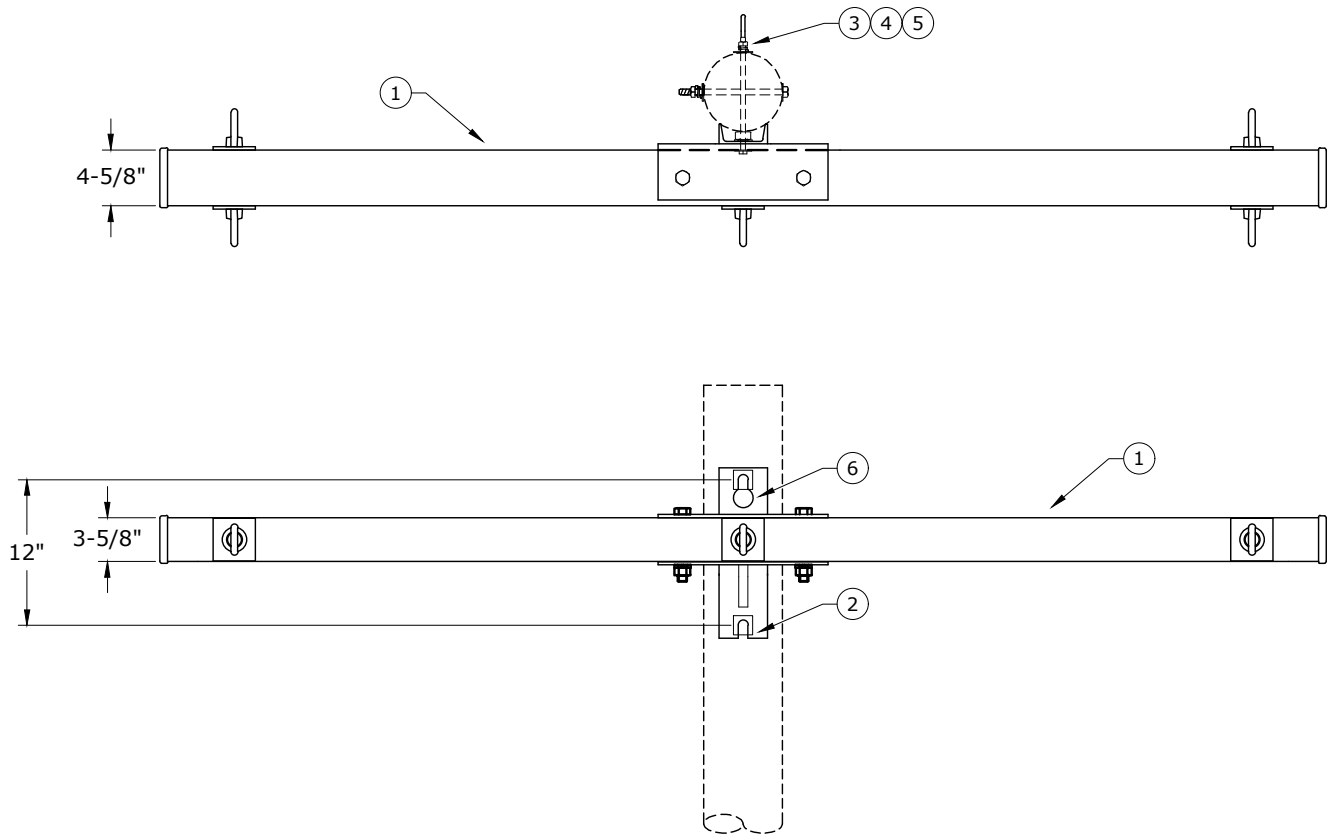
CONSTRUCTION STANDARDS
 BASIC UNITS
 DOUBLE CROSSARM
 ANGLE BRACES

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CR24A,CR24B

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CR24

REVISIONS			
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2	2/23/00	HWH	MA
3	3/12/02	JEH	
4	5/3/06	LB	AH
5	2/24/16	KJP	
△			
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ULTIMATE DEADEND STRENGTH 8' and 10' 3-Position 7,120 lbs/position

Rev. 6 - Updated materials.

ITEM NO.	DESCRIPTION	8'Arm		10'Arm	
		CR26A		CR26B	
		QTY.	S/N	QTY.	S/N
1	Arm, Deadend Assembly, 3-position, 397 Max	1	2508	1	2680
2	Bolt, Machine, 3/4" x 14", Galv., 18,350 lbs Ultimate Tensile *	1	174	1	174
3	Washer, Lock, Spring, Double Coil, Galv., 3/4"	2	2218	2	2218
4	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
5	Nut, Eye Oval 3/4"	1	914	1	914
6	Bolt, Machine, 3/4" x 16", Galv., 18,350 lbs Ultimate Tensile *	1	175	1	175



CONSTRUCTION STANDARDS
 BASIC UNITS, PRE-ASSEMBLED DEADEND
 8' AND 10', 3-POSITION
 397 AAC MAX WIRE

REVISIONS			
DATE	ENGR	OPS	
3/12/02	JEH		
10/18/07	LB	AH	
7/23/10	KJP		
2/24/16	KJP		

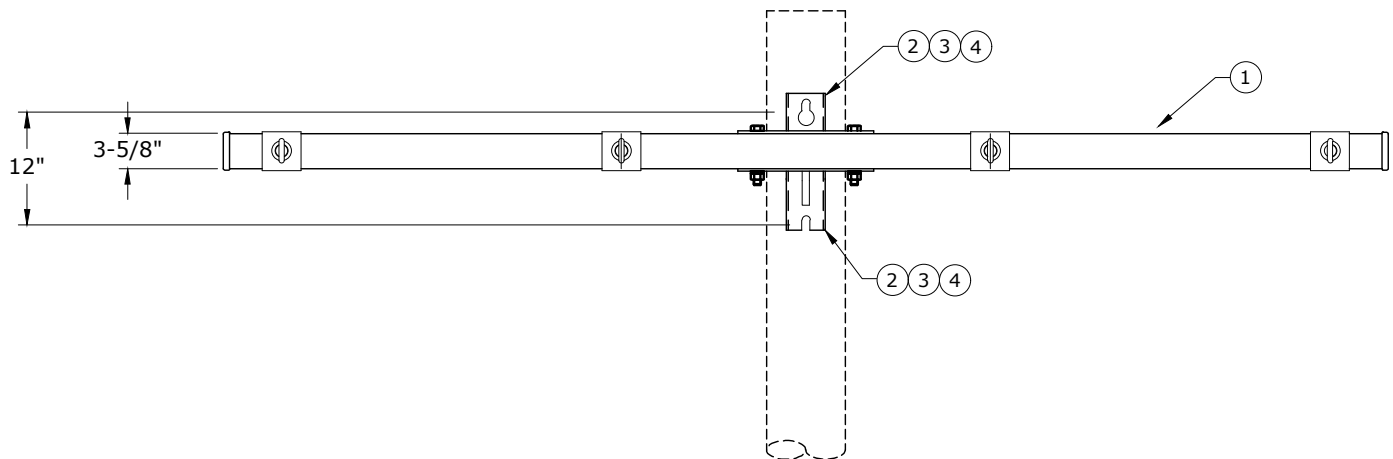
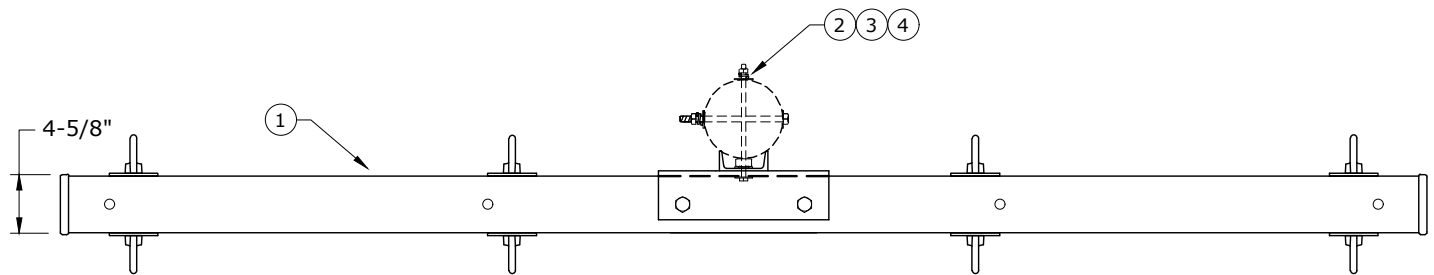
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CR26A, CR26B

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CR26

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SECTION
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ULTIMATE DEADEND STRENGTH 10' 4-Position 13,900 lbs/position

Rev. 6 - Updated materials.

ITEM NO.	DESCRIPTION	CR27B	
		QTY.	S/N
1	Arm, Deadend Assembly, 10', 4-position, 397 Max	1	2555
2	Bolt, Machine, 3/4" x 14", Galv., 18,350 lbs Ultimate Tensile *	2	174
3	Washer, Lock, Spring, Double Coil, Galv., 3/4"	2	2218
4	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392



CONSTRUCTION STANDARDS
 BASIC UNITS
 PRE-ASSEMBLED DEADEND, 10', 4-POSITION
 397 AAC MAX WIRE

REVISIONS			
DATE	ENGR	OPS	
3/12/02	JEH		
10/18/07	LB	AH	
7/23/10	KJP		
2/24/16	KJP		

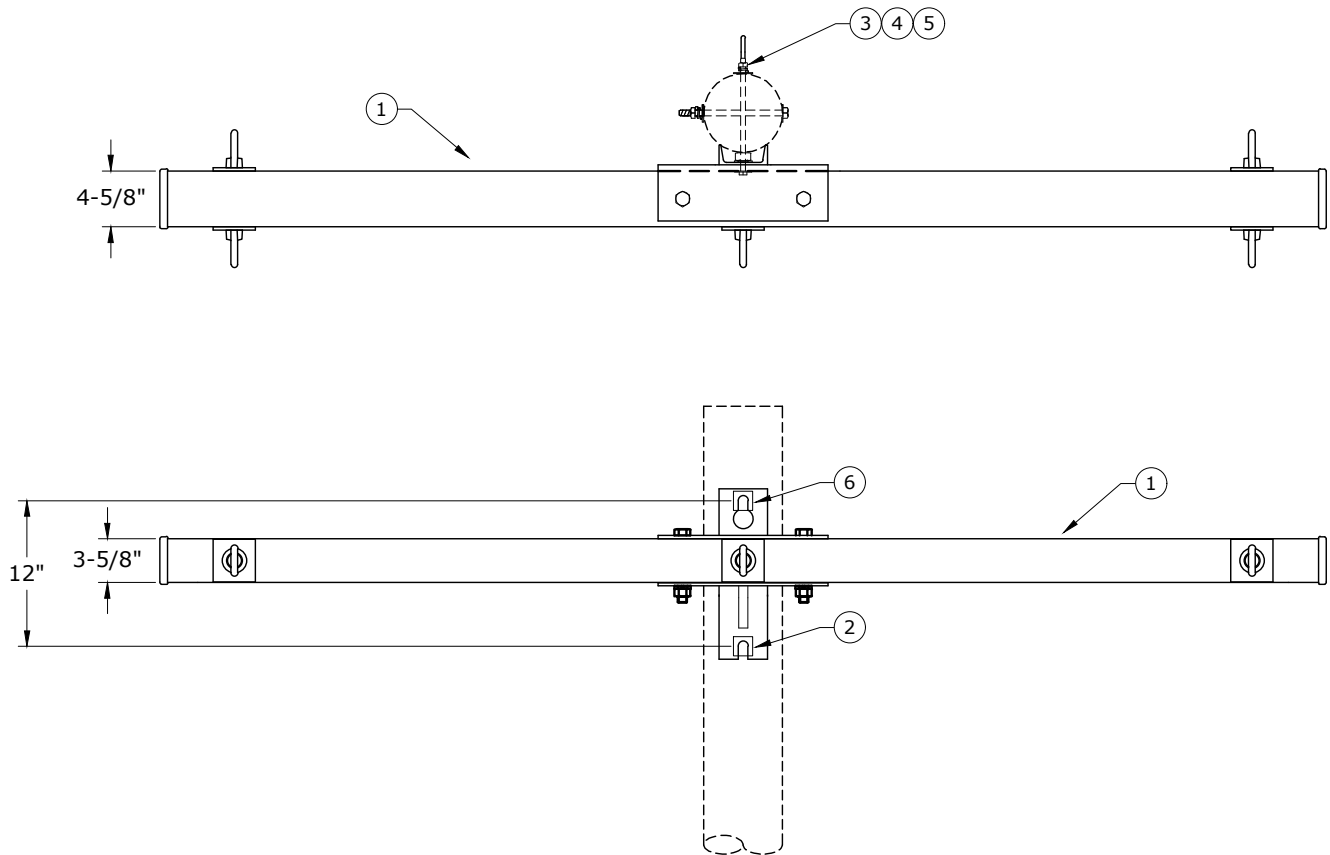
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CR27B

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CR27

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SECTION
200



ULTIMATE DEADEND STRENGTH 8' and 10' 3-Position 13,900 lbs/position

Rev. 2 - Updated materials.

ITEM NO.	DESCRIPTION	8'Arm		10'Arm	
		CR28A		CR28B	
		QTY.	S/N	QTY.	S/N
1	Arm, Deadend Assembly, 3-position, 336 & 795	1	2509	1	2681
2	Bolt, Machine, 3/4" x 14", Galv., 18,350 lbs Ultimate Tensile *	1	174	1	174
3	Washer, Lock, Spring, Double Coil, Galv., 3/4"	2	2218	2	2218
4	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
5	Nut, Eye Oval 3/4", Galv.	1	914	1	914
6	Bolt, Machine, 3/4" x 16", Galv., 18,350 lbs Ultimate Tensile *	1	175	1	175



CONSTRUCTION STANDARDS

BASIC UNITS, PRE-ASSEMBLED DEADEND
8' AND 10', 3-POSITION
795 AAC MAX WIRE

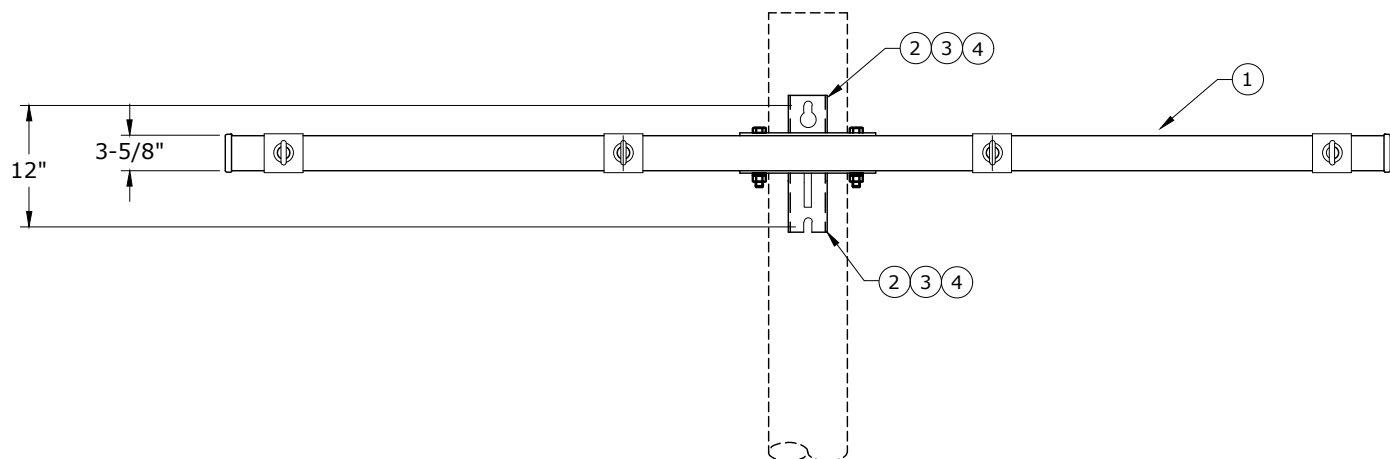
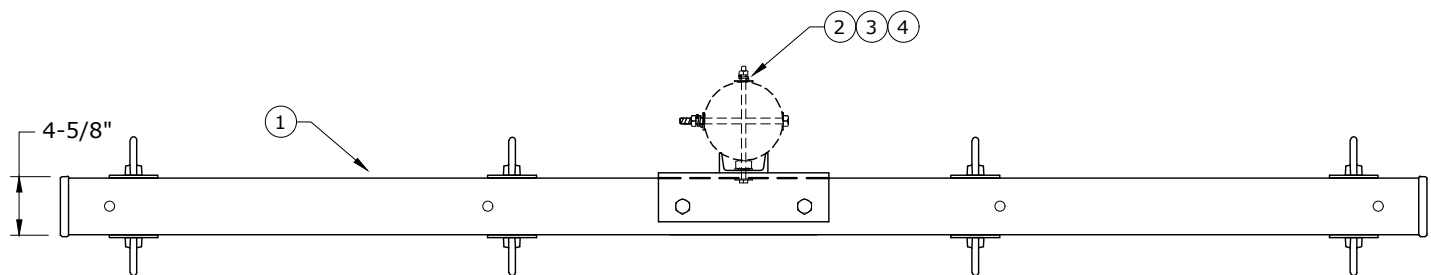
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CR28A, CR28B

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CR28

REVISIONS			
DATE	ENGR	OPS	
7/23/10	KJP		1
2/24/16	KJP		2

APP:	LB/AH	SECTION
DATE:	10/18/07	200



ULTIMATE DEADEND STRENGTH 10' 4-Position 13,900 lbs/position

Rev. 2 - Updated materials.

ITEM NO.	DESCRIPTION	CR29B	
		QTY.	S/N
1	Arm, Deadend Assembly, 10', 4-position, 336 & 795	1	2668
2	Bolt, Machine, 3/4" x 14", Galv., 18,350 lbs Ultimate Tensile *	2	174
3	Washer, Lock, Spring, Double Coil, Galv., 3/4"	2	2218
4	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392



CONSTRUCTION STANDARDS
 BASIC UNITS
 PRE-ASSEMBLED DEADEND, 10', 4-POSITION
 795 AAC MAX WIRE

REVISIONS			
DATE	ENGR	OPS	
7/23/10	KJP		
2/24/16	KJP		

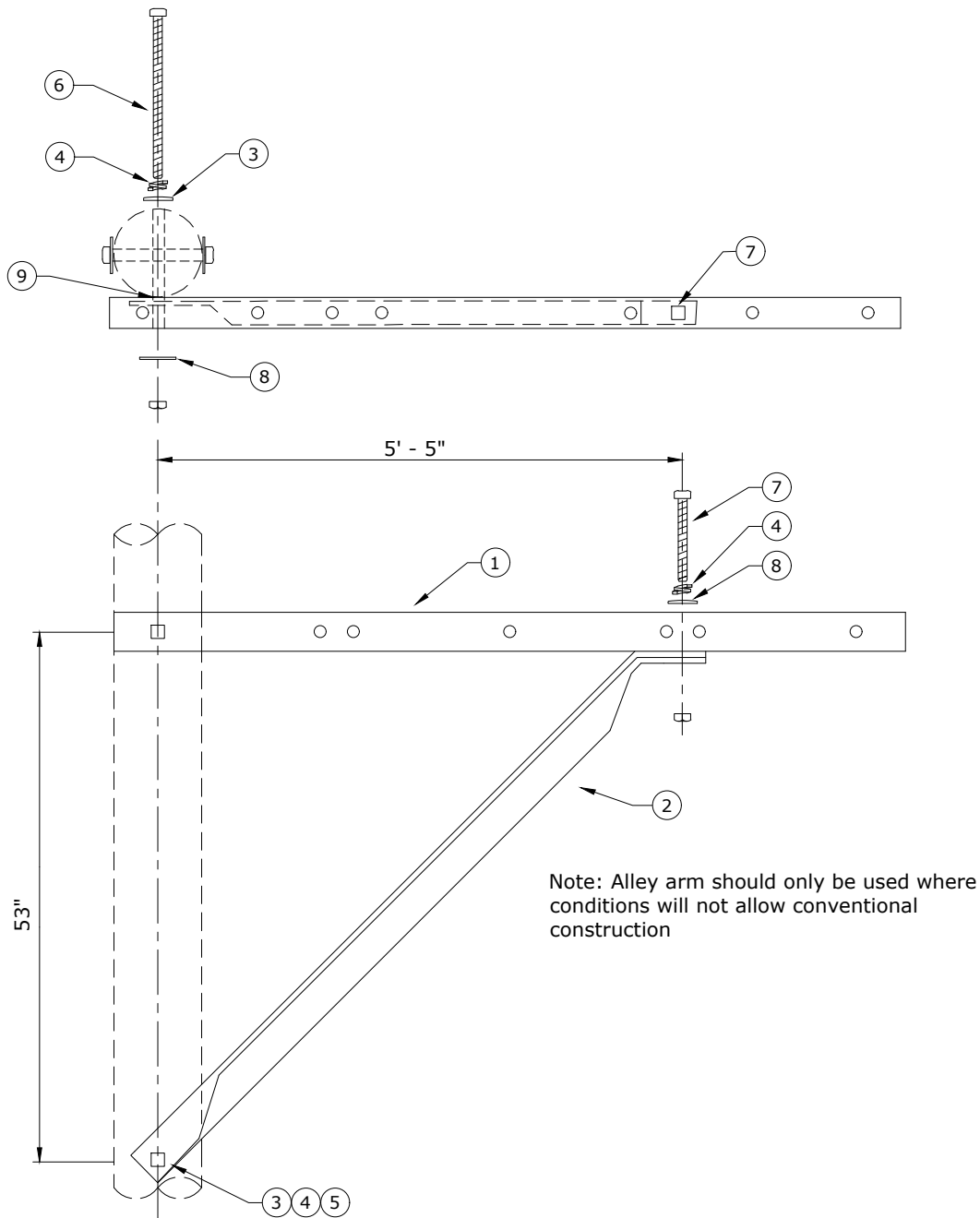
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CR29B

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CR29

APP: LB/AH
DATE: 10/18/07

SECTION
200



Note: Alley arm should only be used where conditions will not allow conventional construction

Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	8' Arm		10' Arm	
		CRA50A		CRA50B	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 3-3/4" x 4-3/4"	1	25	1	26
2	Brace, Alley Arm, (6'-11" or 10'), Galv. Steel *	1	200	1	201
3	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole *	2	1392	2	1392
4	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	3	2217	3	2217
5	Bolt, Machine, 5/8" x 12", Galv., 12,400 lbs Ultimate Tensile *	1	155	1	155
6	Bolt, Machine, 5/8" x 16", Galv., 12,400 lbs Ultimate Tensile *	1	157	1	157
7	Bolt, Machine, 5/8" x 7", Galv., 12,400 lbs Ultimate Tensile *	1	2606	1	2606
8	Washer, Square, Flat, 2 1/4" x 2 1/4" x 5/8"	2	1412	2	1412
9	Gain, Pole Plastic	1	709	1	709



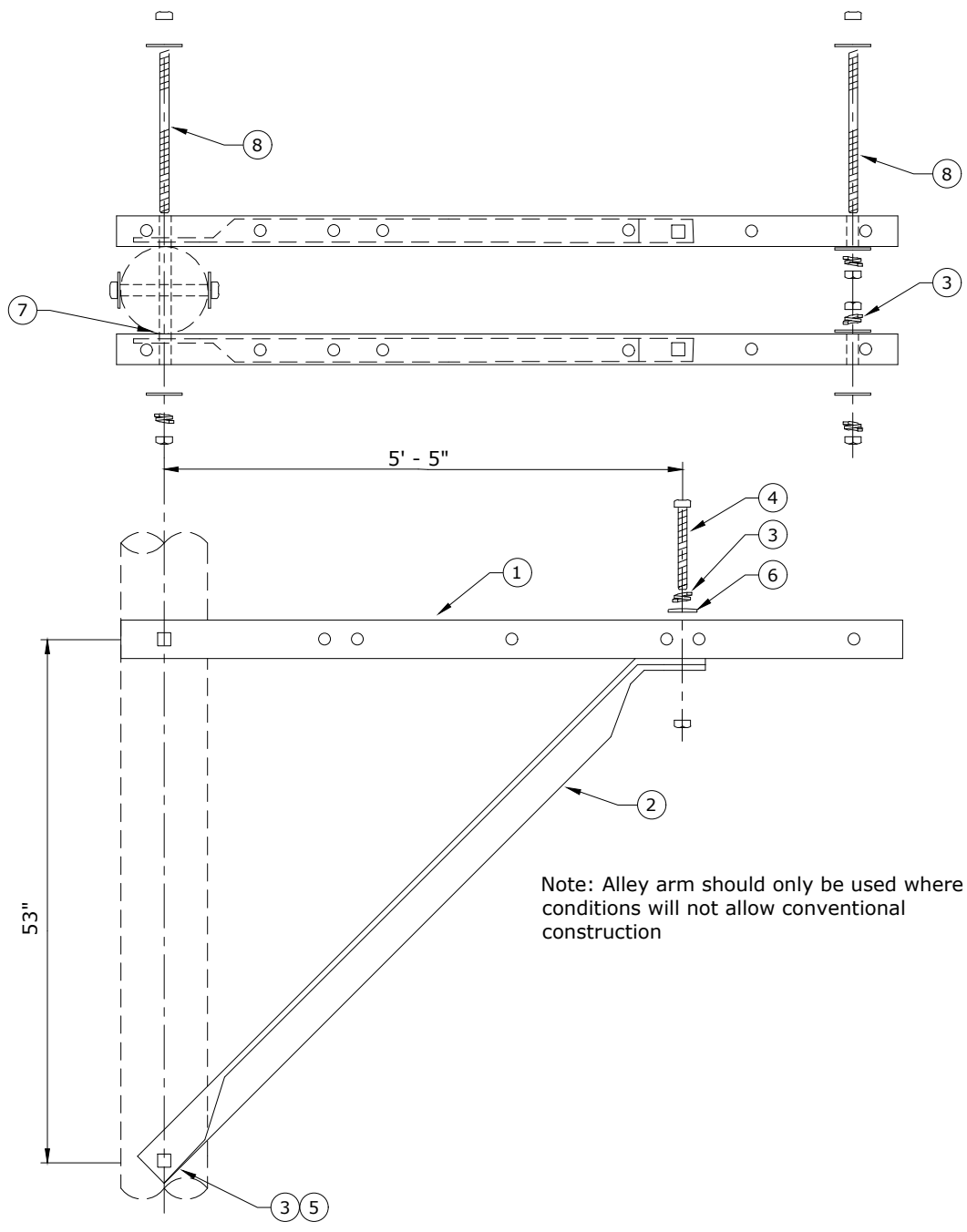
CONSTRUCTION STANDARDS
 BASIC UNITS
 SINGLE CROSSARM
 ALLEY ARM

REVISIONS											
NO.	DATE	ENGR	OPS								
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3	5/3/06	LB	AH								
4	2/24/16	KJP									
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CRA50A, CRA50B

CAD FILE:
CRA50



Note: Alley arm should only be used where conditions will not allow conventional construction

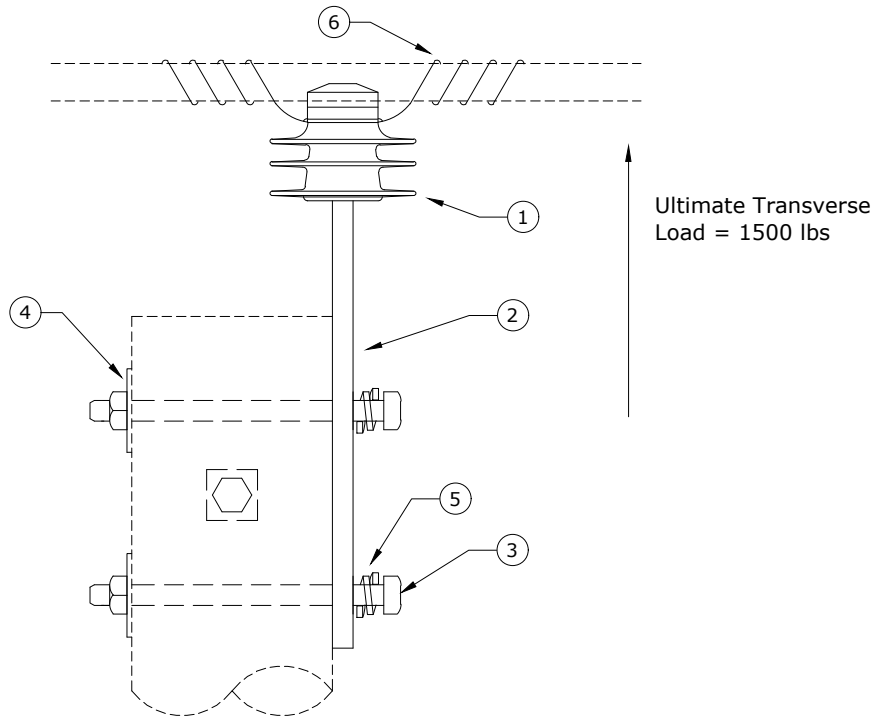
Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	8' Arm		10' Arm	
		CRA52A		CRA52B	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 3-3/4" x 4-3/4"	2	25	2	26
2	Brace, Alley Arm, (6'-11" or 10'), Galv. Steel	2	200	2	201
3	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	6	2217	6	2217
4	Bolt, Machine, 5/8" x 7", Galv., 12,400 lbs Ultimate Tensile *	2	2606	2	2606
5	Bolt, Machine, 5/8" x 12", Galv., 12,400 lbs Ultimate Tensile *	1	155	1	155
6	Washer, Square, Flat, 2 1/4" x 2 1/4" x 5/8"	8 *	1412	8 *	1412
7	Gain, Pole Plastic	1	709	1	709
8	Bolt, Double Arm, 5/8" x 20", Galv., 12,400 lbs Ultimate Tensile *	2	83	2	83



CONSTRUCTION STANDARDS
 BASIC UNITS
 DOUBLE CROSSARM
 ALLEY ARM

REVISIONS			
REV.	DATE	ENGR	OPS
2	2/23/00	HWH	MA
3	5/3/06	LB	AH
4	2/24/16	KJP	
APP: ELM			
DATE: 1/31/80		SECTION 200	



PR1 - for bare wire - use bare tie wire
PR1TREE - for tree wire - use covered tie wire

- Notes:**
1. See Std TI4 - Conductor Tying Guide - Section 400.
 2. Ultimate Transverse Load=1,500 lbs. Ultimate Longitudinal Load=1,200 lbs.

Rev. 5 - Eliminated porcelain insulator and added tie wire notes.

ITEM NO.	DESCRIPTION	PR1TREE		PR1	
		QTY.	S/N	QTY.	S/N
1	Insulator, Pin, C Neck, Polymer	1	1968	1	1968 *
2	Pin, Pole Top	1	962	1	962
3	Bolt, Machine, 5/8" x 12" Galv., 12,400 lbs Ultimate Tensile	2	155	2	155
4	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
5	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
6	Wire, Tie, AL Annealed #4 SD	11*	3012	10	1421



CONSTRUCTION STANDARDS
 BASIC UNITS
 POLE-TOP PIN
 SINGLE INSULATOR

REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
5/3/06	LB	AH	
12/22/16	CM	DK	

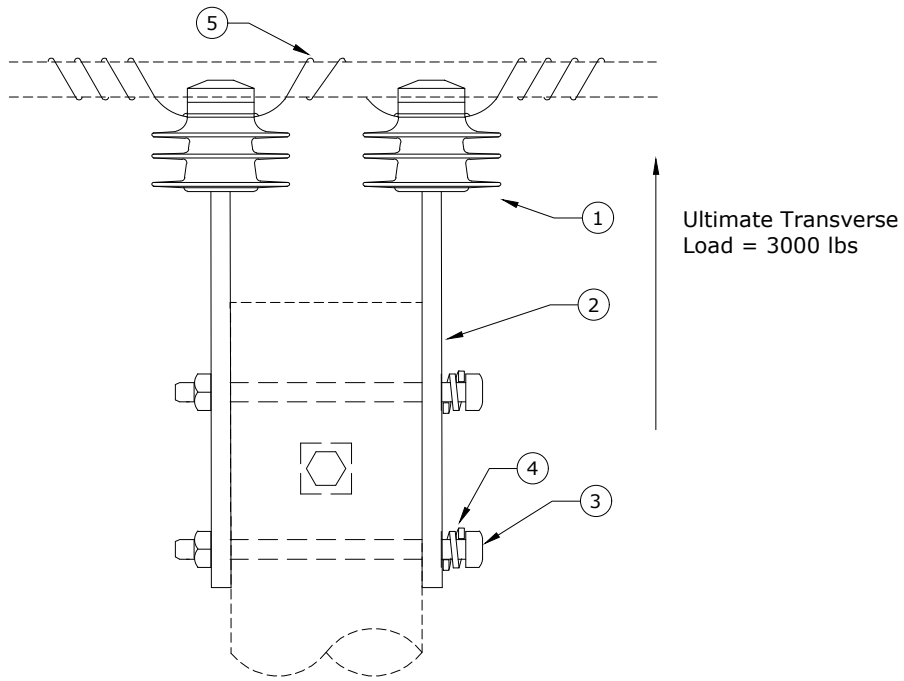
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PR1, PR1TREE

CAD FILE:
PR1

APP: ELM
DATE: 1/31/80

SECTION
200



PR2 - for bare wire - use bare tie wire
PR2TREE - for tree wire - use covered tie wire

- Notes:**
1. See Std T15 - Conductor Tying Guide - Section 400.
 2. Ultimate Transverse Load=3,000 lbs. Ultimate Longitudinal Load=2,400 lbs.

Rev. 5 - Eliminated porcelain insulator and added tie wire notes.

ITEM NO.	DESCRIPTION	PR2TREE		PR2	
		QTY.	S/N	QTY.	S/N
1	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 *
2	Pin, Pole Top	2	962	2	962
3	Bolt, Machine, 5/8" x 14" Galv., 12,400 lbs Ultimate Tensile	2	156	2	156
4	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
5	Wire, Tie, AL Annealed #4 SD	22*	3012	20	1421



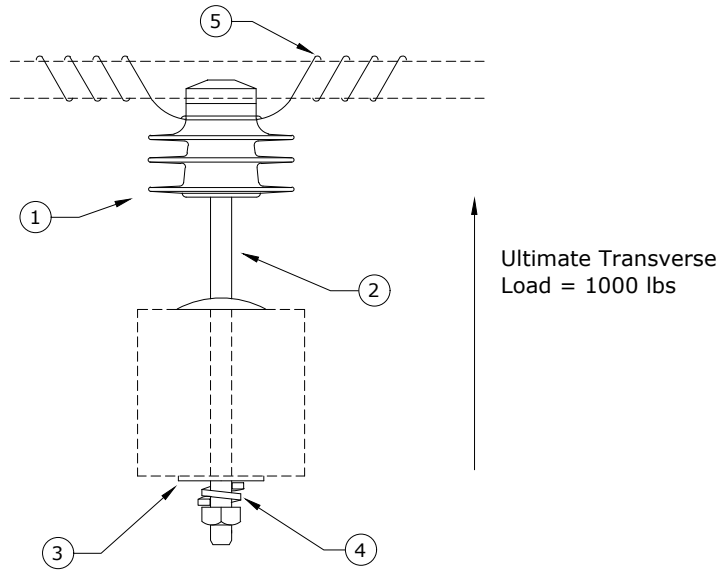
CONSTRUCTION STANDARDS
 BASIC UNITS
 POLE-TOP PIN
 DOUBLE INSULATORS

PAGE:
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PR2, PR2TREE

CAD FILE:
PR2

REVISIONS											
DATE	ENGR	OPS									
2/23/00	HWH	MA									
2/13/06	LB	AH									
12/22/16	CM	DK									
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APP:	ELM	SECTION									
DATE:	1/31/80	200									



PR4 - for bare wire - use bare tie wire
PR4TREE - for tree wire - use covered tie wire

- Notes:**
1. See Std TI4 - Conductor Tying Guide - Section 400.
 2. Ultimate Cantilever Load=1,000 lbs.

Rev. 5 - Eliminated porcelain insulator and added tie wire notes.

ITEM NO.	DESCRIPTION	PR4TREE		PR4	
		QTY.	S/N	QTY.	S/N
1	Insulator, Pin, C Neck, Polymer	1	1968	1	1968 *
2	Pin, Crossarm	1	961	1	961
3	Washer, Square Flat 5/8", 2 1/4" x 2 1/4"	1	1412	1	1412
4	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
5	Wire, Tie, AL Annealed #4 SD	11*	3012	10	1421



CONSTRUCTION STANDARDS
 BASIC UNITS
 SINGLE CROSSARM PIN

REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
5/3/06	LB	AH	
12/22/16	CM	DK	

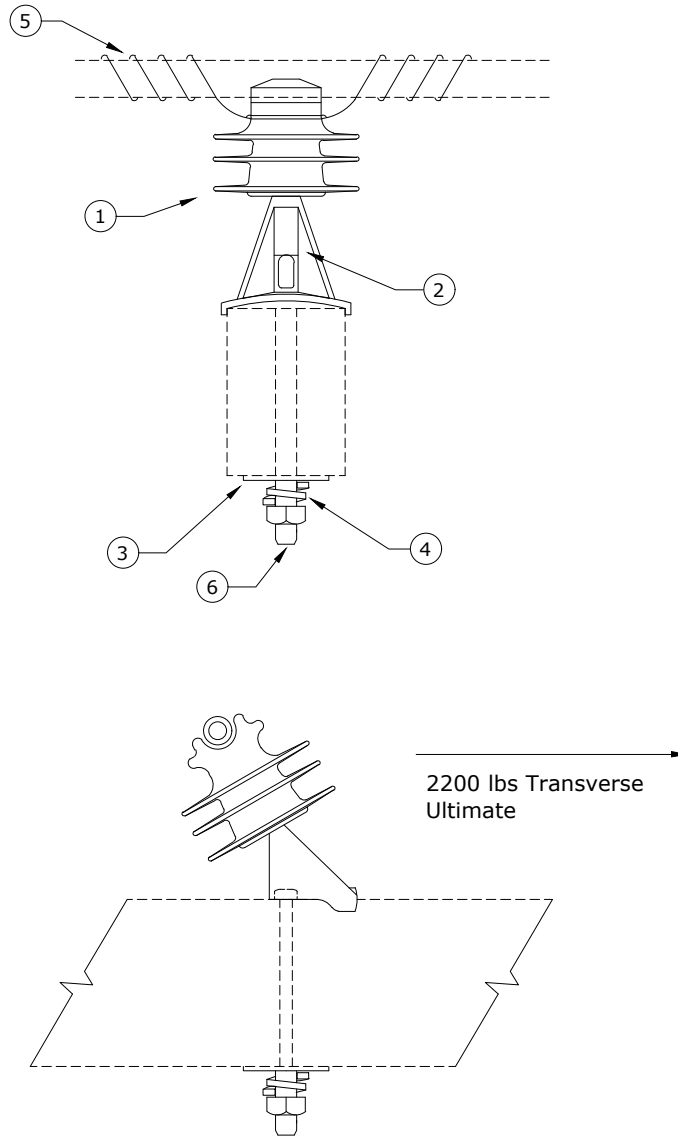
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PR4, PR4TREE

CAD FILE:
PR4

APP: ELM
DATE: 1/31/80

SECTION
200



PR5 - for bare wire - use bare tie wire
PR5TREE - for tree wire - use covered tie wire

Note: See Std T14 - Conductor Tying Guide - Section 400.

Rev. 1 - Eliminated porcelain insulator and added tie wire notes.

ITEM NO.	DESCRIPTION	PR5TREE		PR5	
		QTY.	S/N	QTY.	S/N
1	Insulator, Pin, C Neck, Polymer	1	1968	1	1968 *
2	Pin, Angle, Crossarm	1	2658	1	2658
3	Washer, Square Flat 5/8", 2 1/4" x 2 1/4"	1	1412	1	1412
4	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
5	Wire, Tie, AL Annealed #4 SD	11*	3012	10	1421
6	Bolt, Machine, 5/8" x 7" Galv., 12,400 lbs Ultimate Tensile	1	2606	1	2606 *



CONSTRUCTION STANDARDS
 BASIC UNITS
 SINGLE CROSSARM ANGLE PIN

REVISIONS			
DATE	ENGR	OPS	
12/22/16	CM	DK	

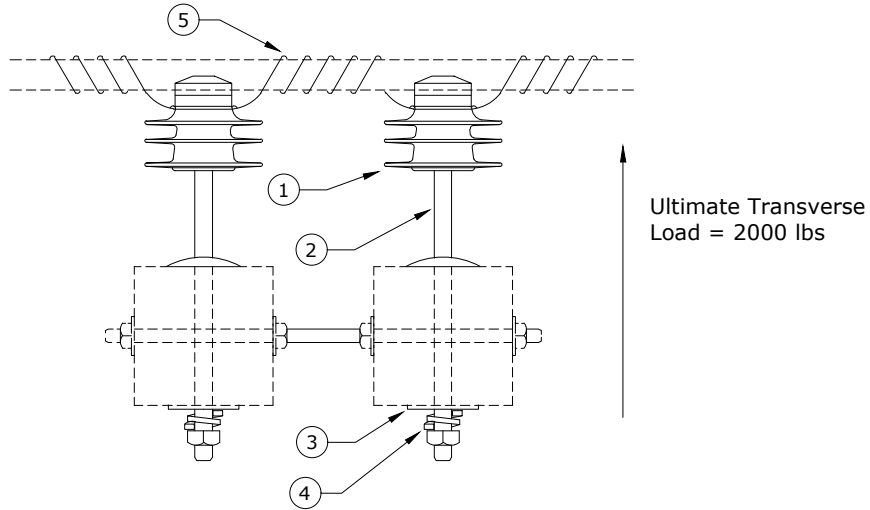
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PR5, PR5TREE

CAD FILE:
PR5

APP: LB/AH
DATE: 5/03/06

SECTION
200



PR19 - for bare wire - use bare tie wire
PR19TREE - for tree wire - use covered tie wire

- Notes:**
1. See Std T15 - Conductor Tying Guide - Section 400.
 2. Ultimate Cantilever Load=2,000 lbs.

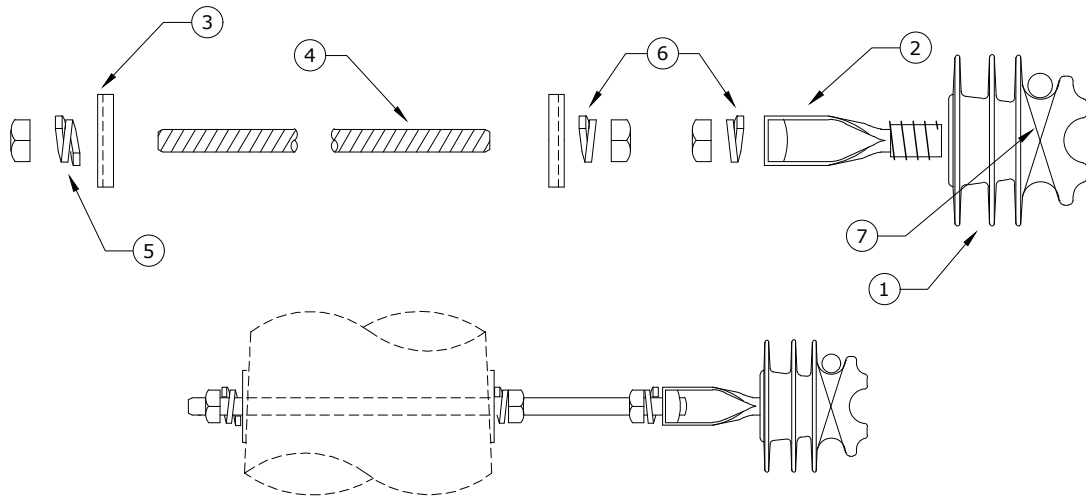
Rev. 5 - Eliminated porcelain insulator and added tie wire notes.

ITEM NO.	DESCRIPTION	PR19TREE		PR19	
		QTY.	S/N	QTY.	S/N
1	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 *
2	Pin, Crossarm	2	961	2	961
3	Washer, Square Flat, 5/8", 2 1/4" x 2 1/4"	2	1412	2	1412
4	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
5	Wire, Tie, AL Annealed #4 SD	22*	3012	20	1421



CONSTRUCTION STANDARDS
 BASIC UNITS
 DOUBLE CROSSARM PIN

REVISIONS			
REV	DATE	ENGR	OPS
3	2/23/00	HWH	MA
4	5/03/06	LB	AH
5	12/22/16	CM	DK
△			
APP:	ELM	SECTION	
DATE:	1/31/80	200	



PR20 - for bare wire- use bare tie wire
PR20TREE - for tree wire- use covered tie wire

Note: See Std TI4 - Section 400 - Conductor Tying Guide.

Rev. 5 - Eliminated porcelain insulator and added tie wire notes.

ITEM NO.	DESCRIPTION	PR20TREE		PR20	
		QTY.	S/N	QTY.	S/N
1	Insulator, Pin, C Neck, Polymer	1	1968	1	1968 *
2	Pin, Adapter	1	959	1	959
3	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
4	Bolt, Double Arm, 5/8" x 16" Galv., 12,400 lbs Ultimate Tensile *	1	81	1	81
5	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
6	Washer, Lock, Spring, Single Coil, Galv., 5/8"	2	1403	2	1403
7	Wire, Tie, AL Annealed #4 SD	11*	3012	10	1421



CONSTRUCTION STANDARDS
 BASIC UNITS
 HORIZONTAL JUMPER SUPPORT

REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
5/3/06	LB	AH	
12/22/16	CM	DK	

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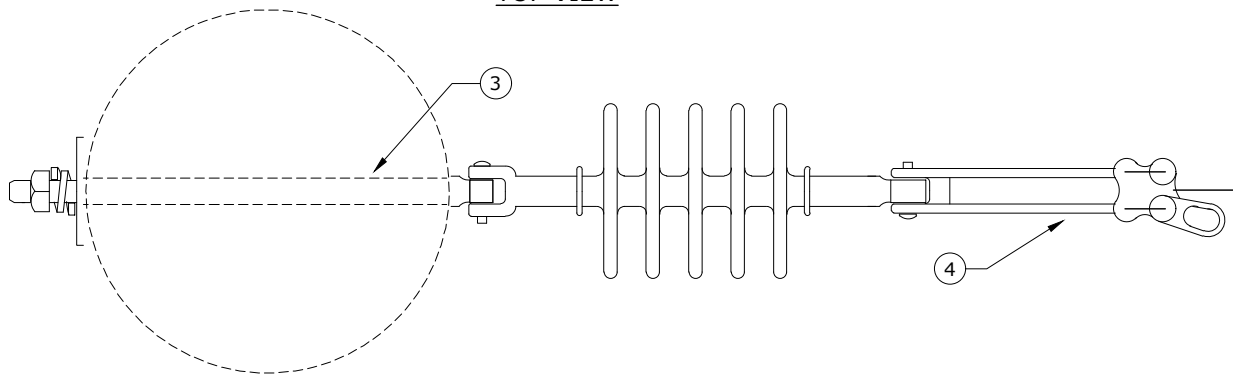
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PR20

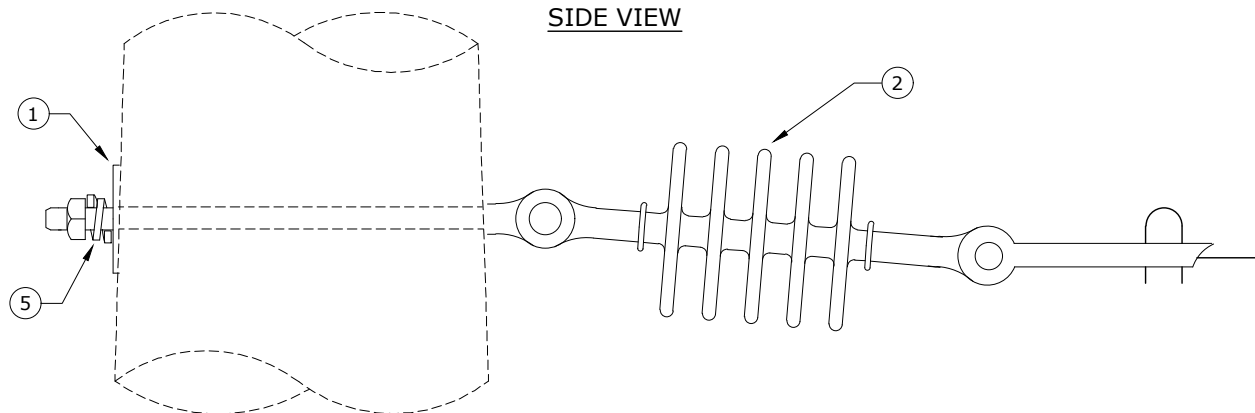
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SECTION
200

TOP VIEW



SIDE VIEW



Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	PR21	
		QTY.	S/N
1	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
2	Insulator, Susp. 15kV Clevis - Tongue, Polymer *	1	1967
3	Bolt, Eye, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile *	1	108
4	Clamp, Strain, Distribution, #2 to 397.5 MCM	1	302
5	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	1	2217



CONSTRUCTION STANDARDS
BASIC UNITS
DEADEND WITH EYEBOLT

REVISIONS			
REV	DATE	ENGR	OPS
2	2/23/00	HWH	MA
3	5/15/06	LB	AH
4	2/24/16	KJP	

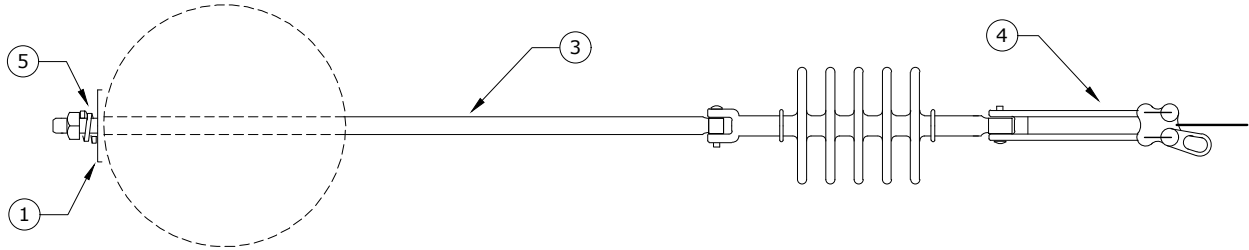
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PR21

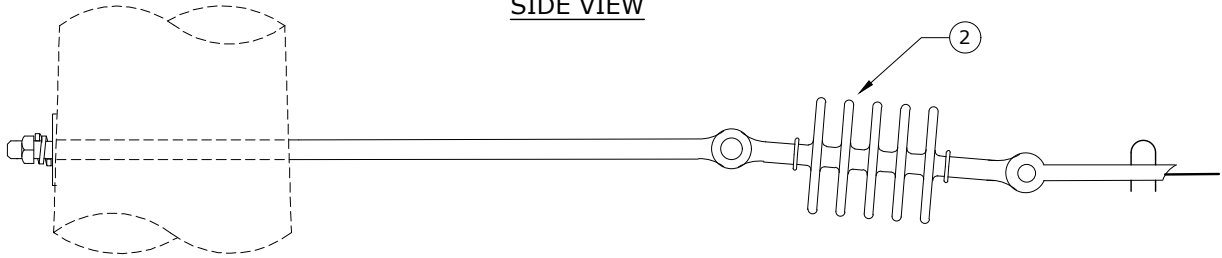
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DATE:	1/31/80	200

TOP VIEW



SIDE VIEW



Rev. 4 - Updated material.

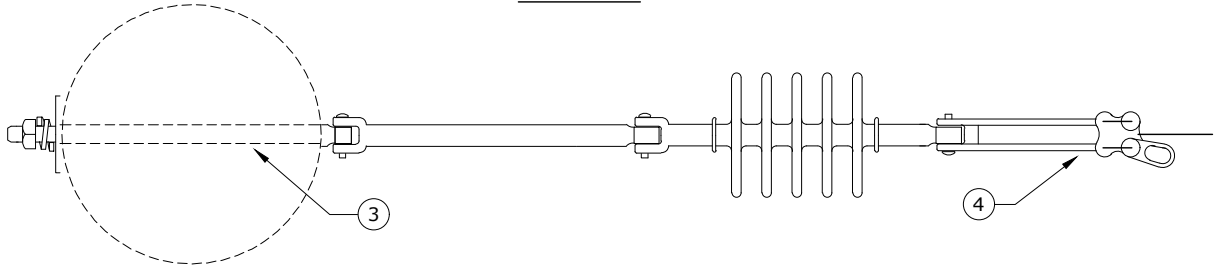
ITEM NO.	DESCRIPTION	PR22	
		QTY.	S/N
1	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
2	Insulator, Susp. 15kV Clevis-Tongue, Polymer *	1	1967
3	Bolt, Eye, 5/8" x 28", Galv., 12,400 lbs Ultimate Tensile *	1	113
4	Clamp, Strain, Distribution, #2 to 397.5 MCM	1	302
5	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	1	2217



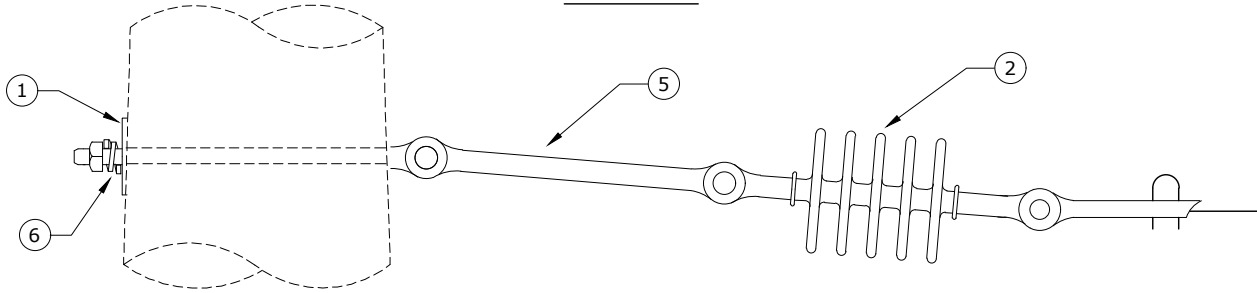
CONSTRUCTION STANDARDS
 BASIC UNITS
 DEADEND WITH
 LONG EYEBOLT

REVISIONS											
DATE	ENGR	OPS									
2/23/00	HWH	MA									
5/15/06	LB	AH									
2/24/16	KJP										
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DATE:	1/31/80	200									

TOP VIEW



SIDE VIEW



Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	PR23	
		QTY.	S/N
1	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
2	Insulator, Susp. 15kV Clevis-Tongue, Polymer *	1	1967
3	Bolt, Eye, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile *	1	108
4	Clamp, Strain, Distribution, #2 to 397.5 MCM	1	302
5	Insulator, Guy Strain, Fiberglass, 20"	1	2909 *
6	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	1	2217



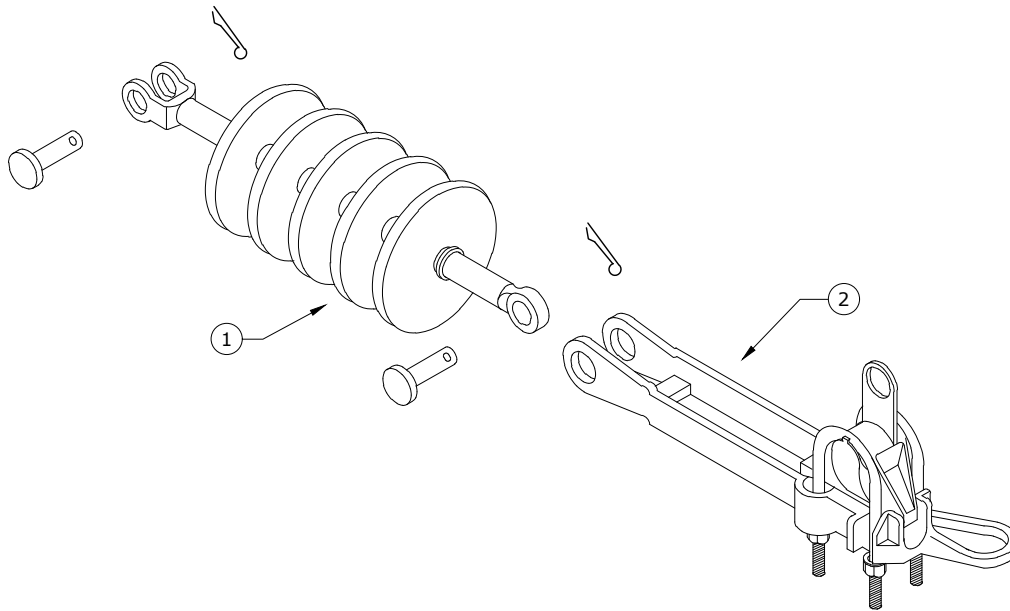
CONSTRUCTION STANDARDS
BASIC UNITS
DEADEND WITH EXTENSION

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PR23

CAD FILE:
PR23

REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
5/15/06	LB	AH	
2/24/16	KJP		
APP: ELM			
DATE: 1/31/80		SECTION 200	



Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	PR24	
		QTY.	S/N
1	Insulator, Susp. 15 kV Clevis-Tongue, Polymer ✱	1	1967
2	Clamp, Strain, Distribution, #2 to 397.5 MCM	1	302



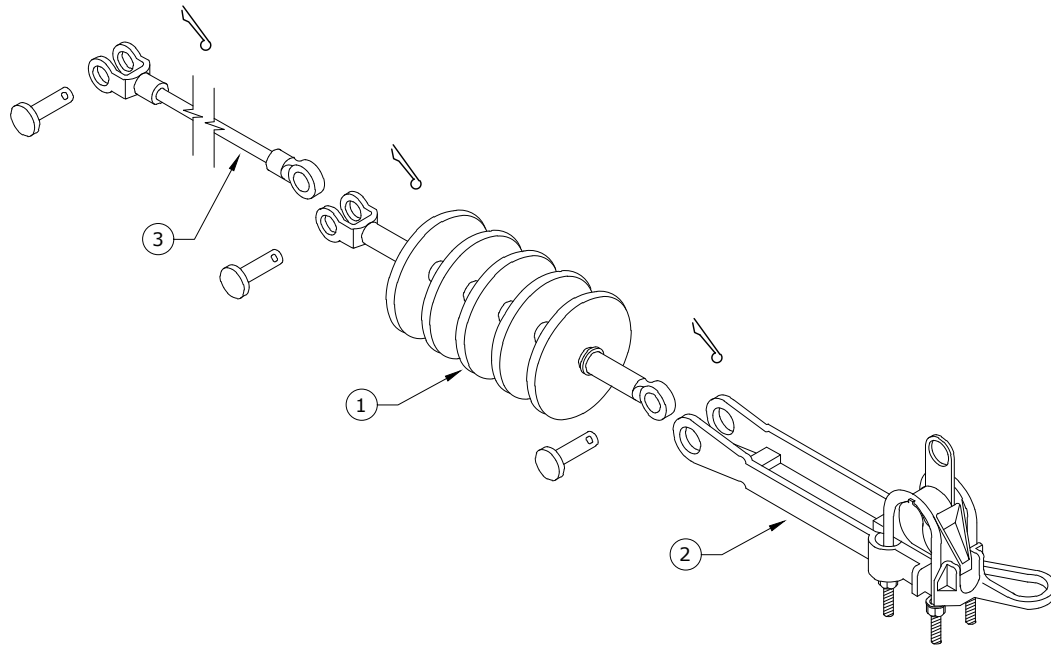
CONSTRUCTION STANDARDS
BASIC UNITS
DEADEND

REVISIONS			
△	DATE	ENGR	OPS
2	2/23/00	HWH	MA
3	5/15/06	LB	AH
4	2/14/16	KJP	
△			
APP:	ELM	SECTION	
DATE:	1/31/80	200	

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PR24

CAD FILE:
PR24



Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	PR25	
		QTY.	S/N
1	Insulator, Susp. 15 kV Clevis-Toungue, Polymer ✱	1	1967
2	Clamp, Strain, Distribution, #2 to 397.5 MCM	1	302
3	Insulator, Guy Strain, Fiberglass, 20"	1	2909 ✱



CONSTRUCTION STANDARDS
BASIC UNITS
DEADEND WITH EXTENSION

REVISIONS			
△	DATE	ENGR	OPS
2	2/23/00	HWH	MA
3	5/15/06	LB	AH
4	2/24/16	KJP	
△			
APP:	ELM	SECTION	
DATE:	1/31/80	200	

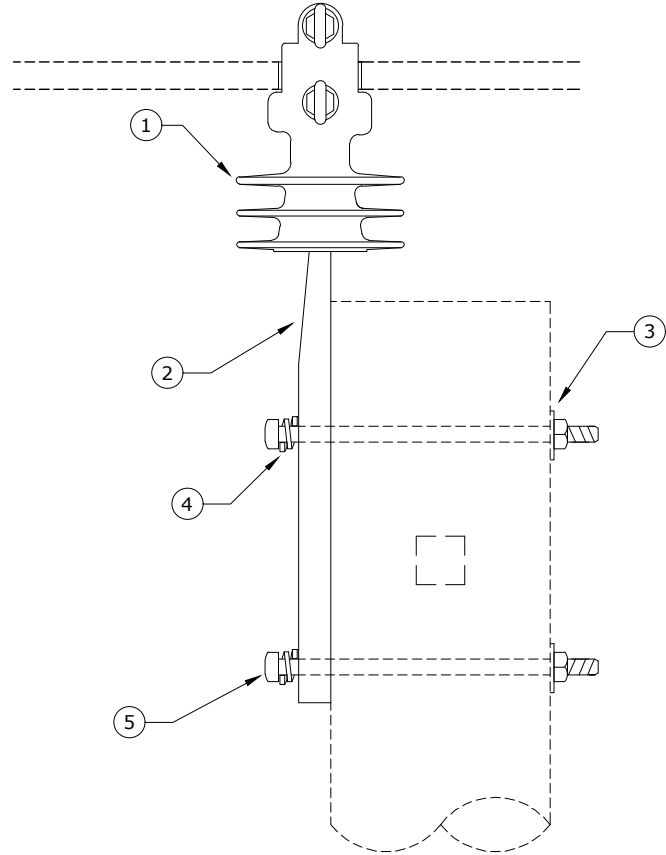
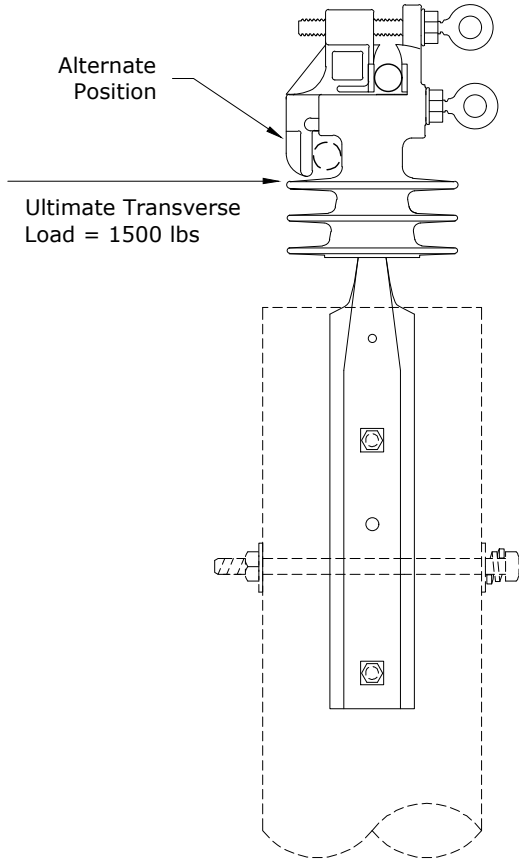
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PR25

CAD FILE:
PR25

Installation:

- 1st tighten the bottom bolt until ring breaks off
- 2nd tighten the top bolt until ring breaks off
- Remove bolts with socket stick
- Do not reuse bolts after rings have broken off



- Notes:**
1. Ultimate transverse load = 1,500 lbs. Ultimate longitudinal load = 1,200 lbs.
 2. Replacement vise-top insulator bolts S/N 2888.

Rev. 6 - Changed insulator to vise-top and updated material issue.

ITEM NO.	DESCRIPTION	PR40	
		QTY.	S/N
1	Insulator, Vise-Top, Polymer ✱	1	2439
2	Pin, Pole Top ✱	1	962
3	Washer, Curved, Square, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392
4	Washer, Lock, Spring, Double Coil, Galv., 5/8" ✱	2	2217
5	Bolt, Machine, 5/8" x 12", Galv., 12,400 lbs. Ultimate Tensile ✱	2	155



CONSTRUCTION STANDARDS

BASIC UNITS
POLE-TOP PIN
SINGLE VISE-TOP INSULATOR

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PR40

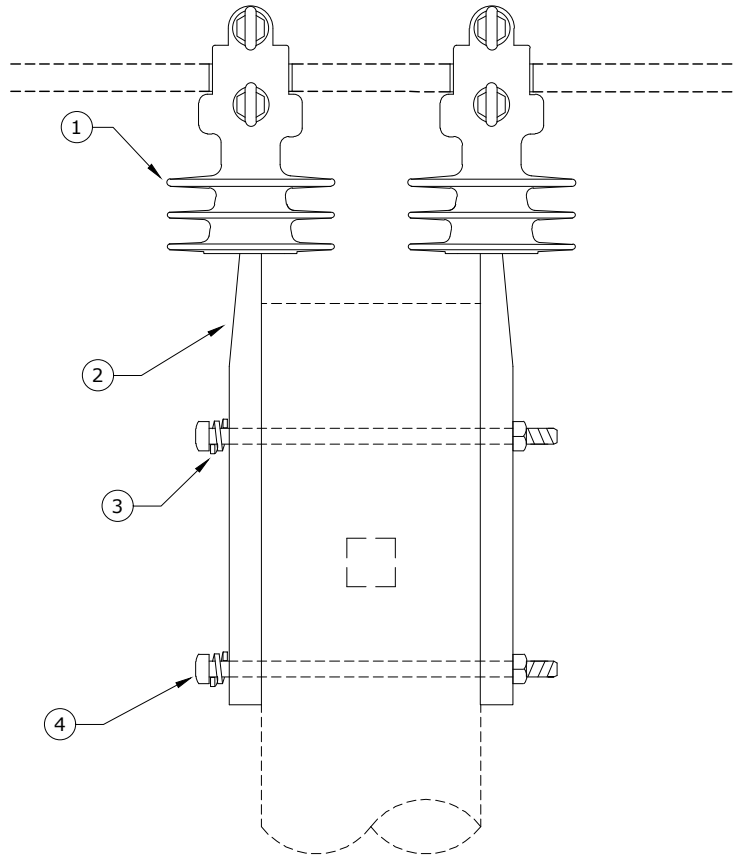
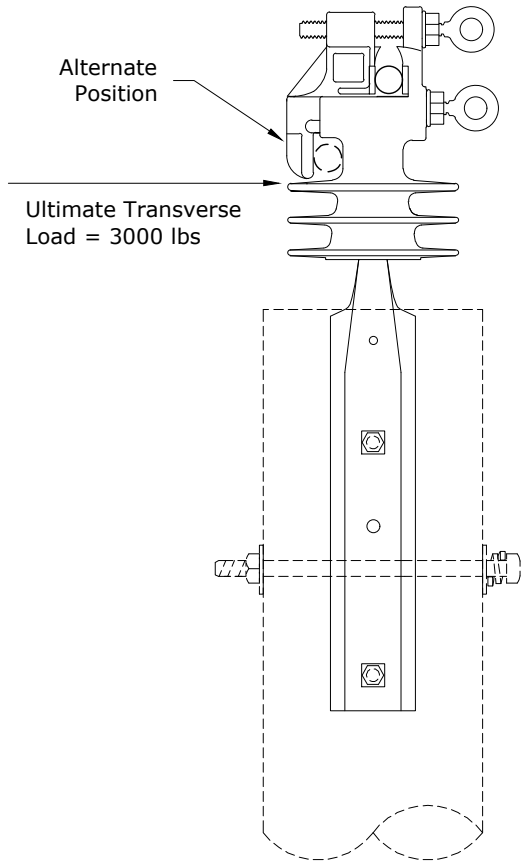
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REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
3/12/02	JEH		
5/15/06	LB	AH	
12/22/16	CM	DK	

APP: ELM	SECTION
DATE: 1/31/80	200

Installation:

- 1st tighten the bottom bolt until ring breaks off
- 2nd tighten the top bolt until ring breaks off
- Remove bolts with socket stick
- Do not reuse bolts after rings have broken off



- Notes:**
1. Ultimate transverse load = 3,000 lbs. Ultimate longitudinal load = 2,400 lbs.
 2. Replacement vise-top insulator bolts S/N 2888.

Rev. 6 - Changed insulator to vise-top and updated material issue.

ITEM NO.	DESCRIPTION	PR41	
		QTY.	S/N
1	Insulator, Vise-Top, Polymer ✱	2	2439
2	Pin, Pole Top ✱	2	962
3	Washer, Lock, Spring, Double Coil, Galv., 5/8" ✱	2	2217
4	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs. Ultimate Tensile ✱	2	156



CONSTRUCTION STANDARDS

BASIC UNITS
POLE-TOP PIN
DOUBLE VISE-TOP INSULATOR

PAGE:
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PR41

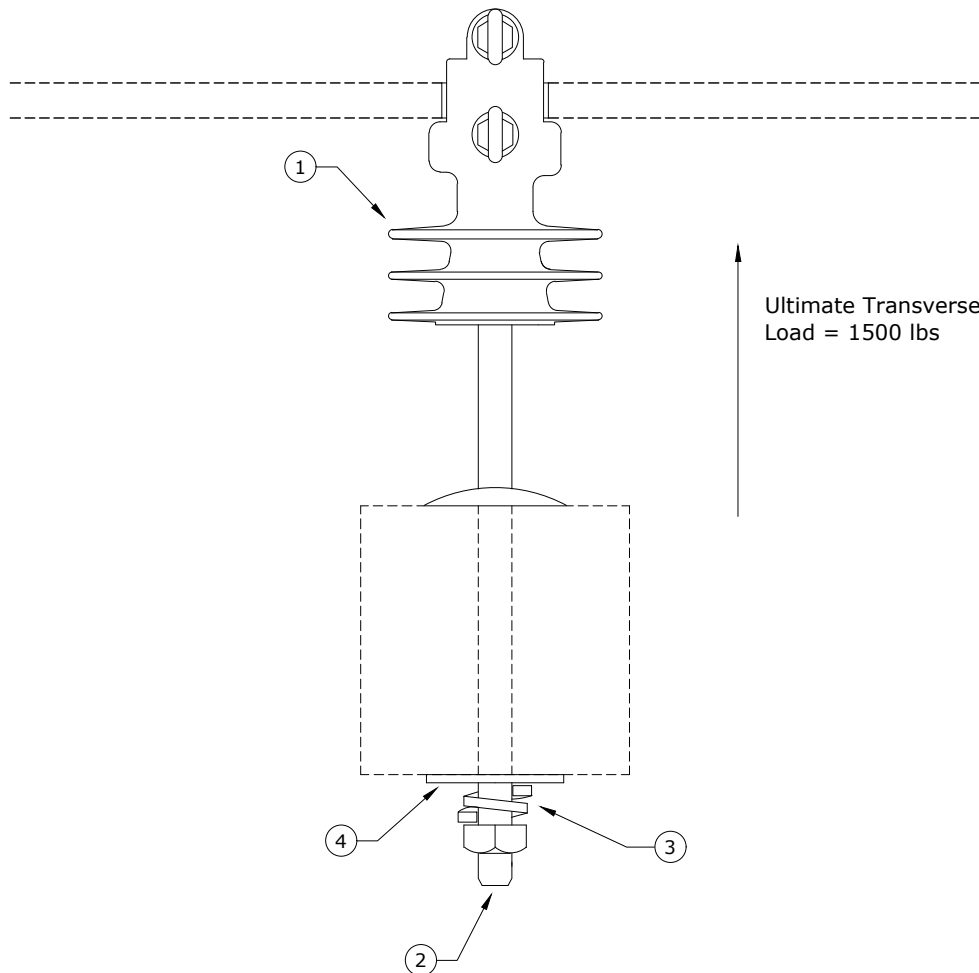
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REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
3/12/02	JEH		
5/15/06	LB	AH	
12/22/16	CM	DK	

APP: ELM	SECTION
DATE: 1/31/80	200

Installation:

- 1st tighten the bottom bolt until ring breaks off
- 2nd tighten the top bolt until ring breaks off
- Remove bolts with socket stick
- Do not reuse bolts after rings have broken off



- Notes:**
1. Ultimate longitudinal load = 1,000 lbs.
 2. Replacement vise-top insulator bolts S/N 2888.

Rev. 5 - Changed insulator to vise-top and updated material issue.

ITEM NO.	DESCRIPTION	PR42	
		QTY.	S/N
1	Insulator, Vise-Top, Polymer *	1	2439
2	Pin, Crossarm *	1	961
3	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	1	2217
4	Washer, Square Flat, 5/8", 2 1/4" x 2 1/4"	1	1412



CONSTRUCTION STANDARDS
 BASIC UNITS
 SINGLE VISE-TOP
 INSULATOR ON CROSSARM

REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
5/15/06	LB	AH	
12/22/16	CM	DK	

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PR42

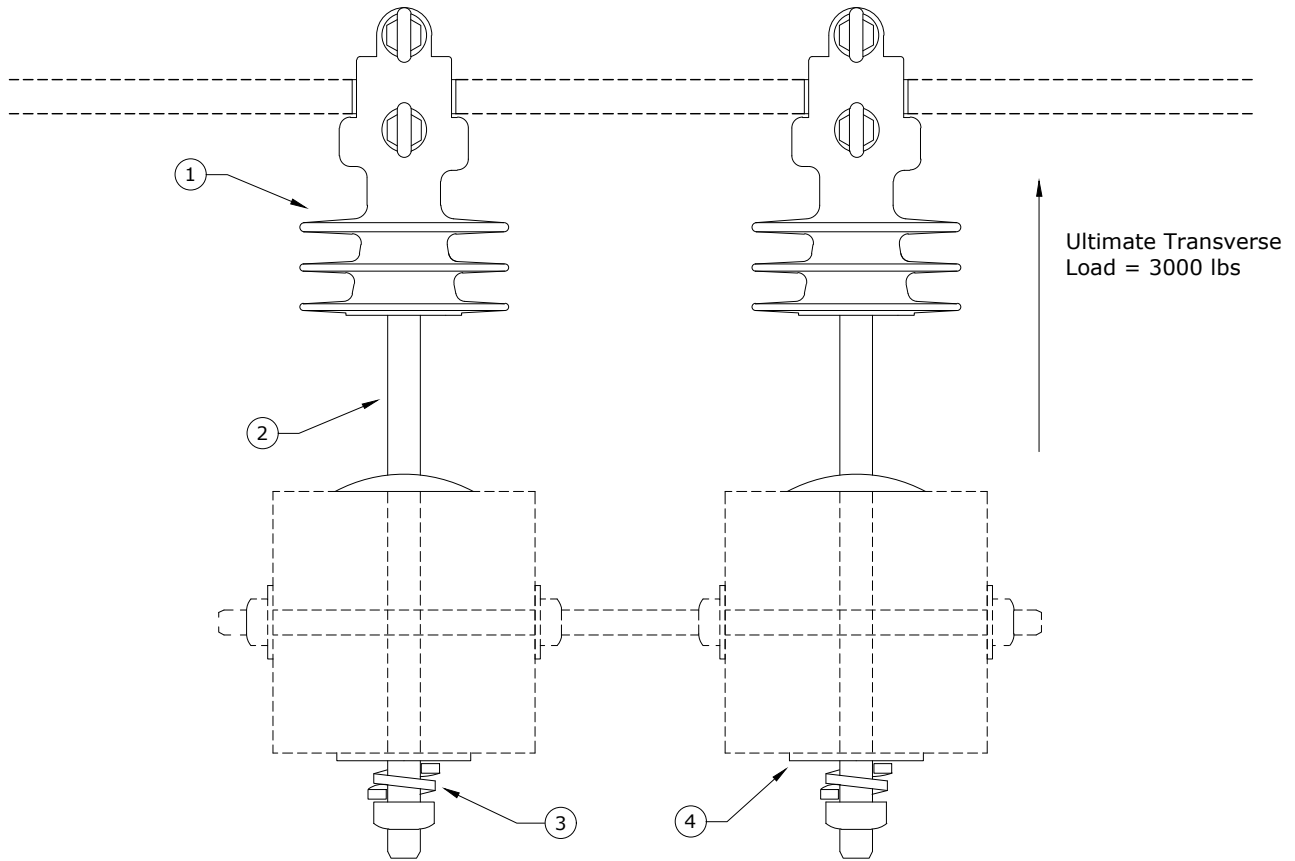
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APP: ELM
DATE: 1/31/80

SECTION
200

Installation:

- 1st tighten the bottom bolt until ring breaks off
- 2nd tighten the top bolt until ring breaks off
- Remove bolts with socket stick
- Do not reuse bolts after rings have broken off



- Notes:**
1. Ultimate longitudinal load = 2,000 lbs.
 2. Replacement vise-top insulator bolts S/N 2888.

Rev. 5 - Changed insulators to vise-top and updated material issue.

ITEM NO.	DESCRIPTION	PR43	
		QTY.	S/N
1	Insulator, Vise-Top, Polymer *	2	2439
2	Pin, Crossarm *	2	961
3	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	2	2217
4	Washer, Square Flat, 5/8", 2 1/4" x 2 1/4"	2	1412

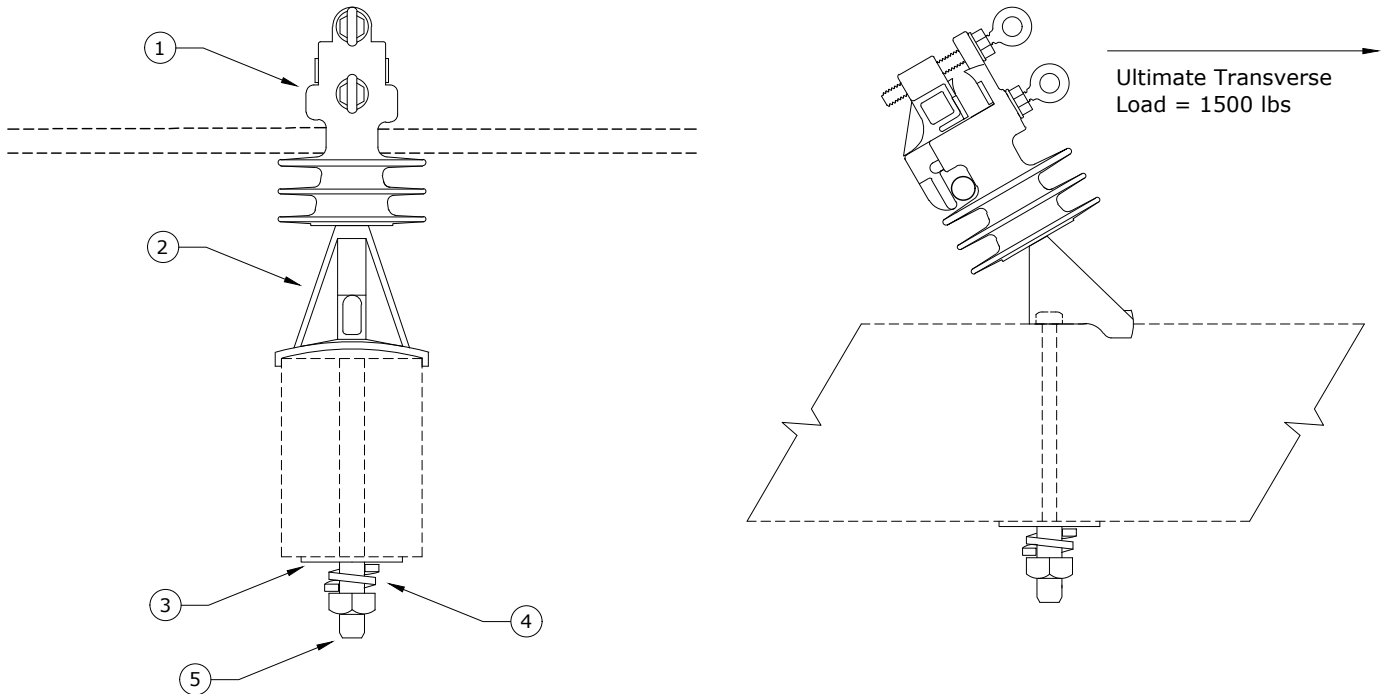


CONSTRUCTION STANDARDS
 BASIC UNITS
 DOUBLE VISE-TOP
 INSULATORS ON CROSSARMS

REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
5/15/06	LB	AH	
12/22/16	CM	DK	
APP: ELM		SECTION	
DATE: 1/31/80		200	

Installation:

- 1st tighten the bottom bolt until ring breaks off
- 2nd tighten the top bolt until ring breaks off
- Remove bolts with socket stick
- Do not reuse bolts after rings have broken off



- Notes:**
1. Ultimate transverse load = 1,500 lbs.
 2. Replacement vise-top insulator bolts S/N 2888.

Rev. 5 - Changed insulator to vise-top and updated material issue.

ITEM NO.	DESCRIPTION	PR44	
		QTY.	S/N
1	Insulator, Vise-Top, Polymer *	1	2439
2	Pin, Angle, Crossarm *	1	2658
3	Washer, Square Flat 5/8", 2 1/4" x 2 1/4"	1	1412
4	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	1	2217
5	Bolt, Machine, 5/8" x 7" Galv., 12,400 lbs. Ultimate Tensile *	1	2606



CONSTRUCTION STANDARDS
 BASIC UNITS
 SINGLE ANGLE VISE-TOP
 INSULATOR ON CROSSARM

REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
5/15/06	LB	AH	
12/22/16	CM	DK	

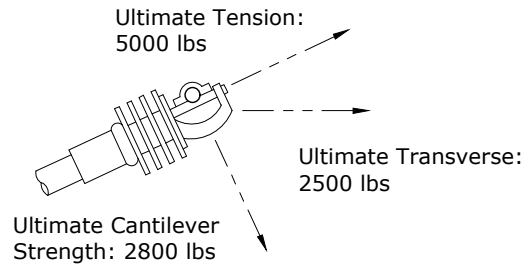
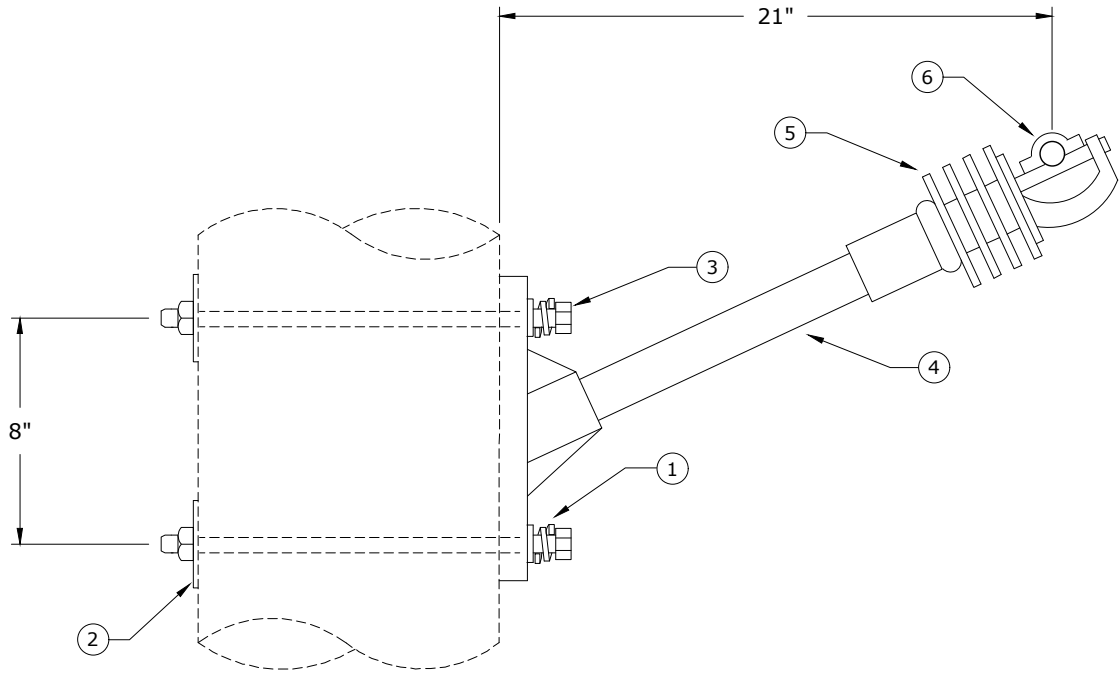
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PR44

CAD FILE:
PR44

APP: ELM
DATE: 1/31/80

SECTION
200



Note: Use only when uplift needs to be considered.

Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	PR56	
		QTY.	S/N
1	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	2	2217
2	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392
3	Bolt, Machine 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile *	2	156
4	Arm, Epoxy 21" 2500 lbs	1	40
5	Insulator, Clamp-Top 15 kV	1	760
6	Clamp, Wire, Insulated, 336 - 795 MCM	1	316



CONSTRUCTION STANDARDS

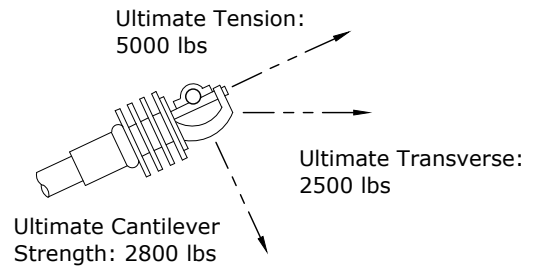
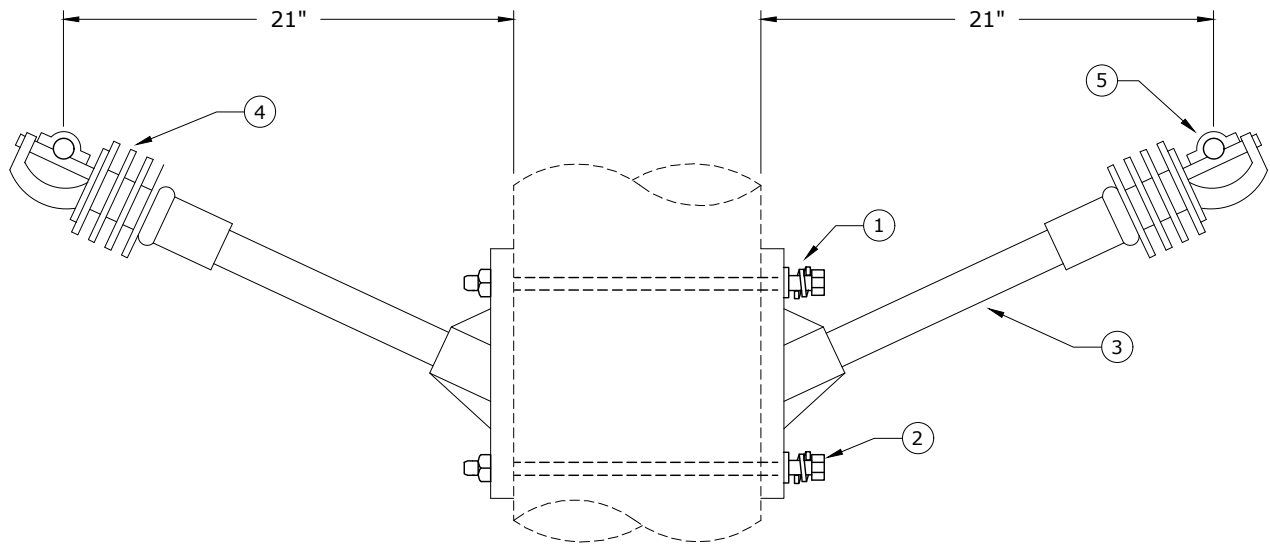
BASIC UNITS
SINGLE CLAMP-TOP
TWIGGY ARM 21"

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1 of 1

PR56

CAD FILE:
PR56

REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
10/7/05	LB	AH	
2/24/16	KJP		
APP: ELM			
DATE: 1/31/80			SECTION 200



Note: Use only when uplift needs to be considered.

Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	PR57	
		QTY.	S/N
1	Washer, Lock Spring Double Coil, Galv., 5/8" ✱	2	2217
2	Bolt, Machine 5/8" x 16", Galv., 12,400 lbs Ultimate Tensile ✱	2	157
3	Arm, Epoxy 21" 2500 lbs	2	40
4	Insulator, Clamp-Top 15 kV	2	760
5	Clamp, Wire, Insulated, 336 - 795 MCM	2	316



CONSTRUCTION STANDARDS

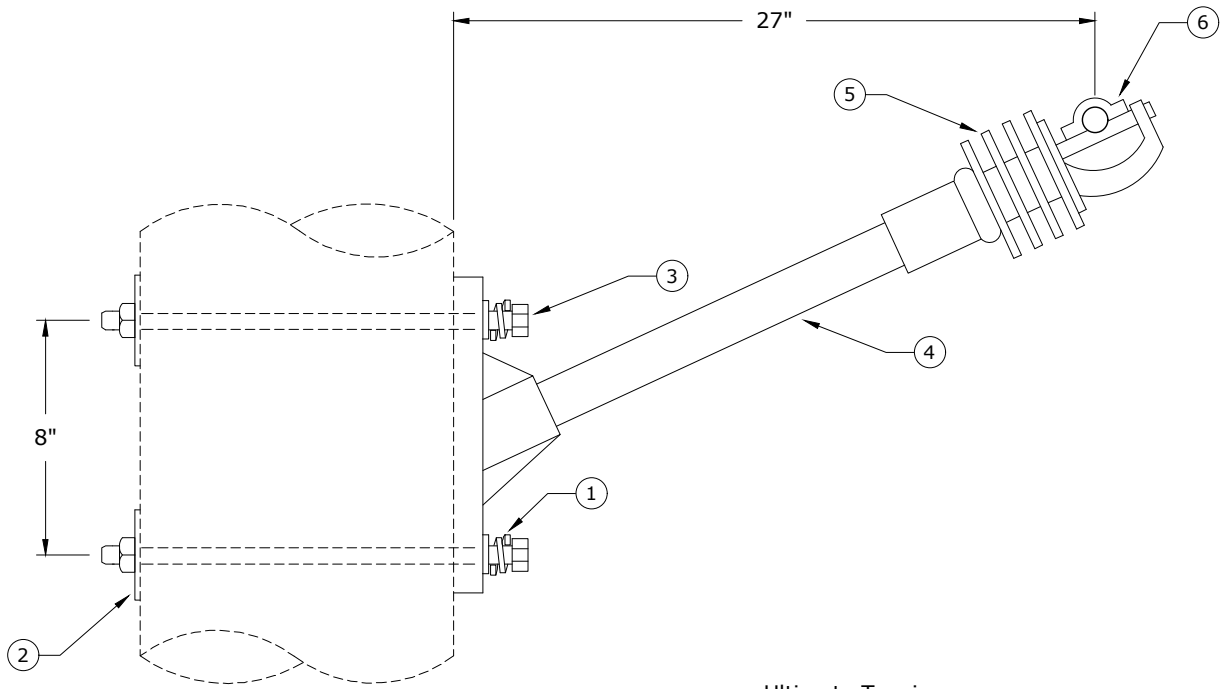
BASIC UNITS
DOUBLE CLAMP-TOP
TWIGGY ARM 21"

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PR57

CAD FILE:
PR57

REVISIONS									
REV	DATE	ENGR	OPS						
2	2/23/00	HWH	MA						
3	10/7/05	LB	AH						
4	2/24/16	KJP							
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APP:	ELM	SECTION							
DATE:	1/31/80	200							



Note: Use only when uplift needs to be considered.

Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	PR58	
		QTY.	S/N
1	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	2	2217
2	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392
3	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile *	2	156
4	Arm, Epoxy 27" 2500 lbs	1	42
5	Insulator, Clamp-Top 15 kV	1	760
6	Clamp, Wire, Insulated, 336 - 795 MCM	1	316



CONSTRUCTION STANDARDS

BASIC UNITS
SINGLE CLAMP-TOP
TWIGGY ARM 27"

PAGE:
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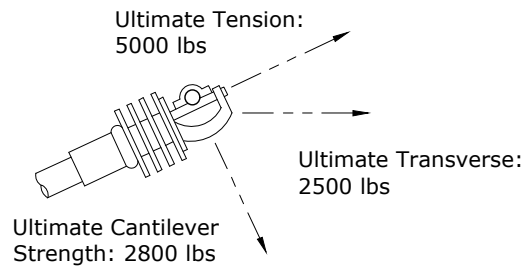
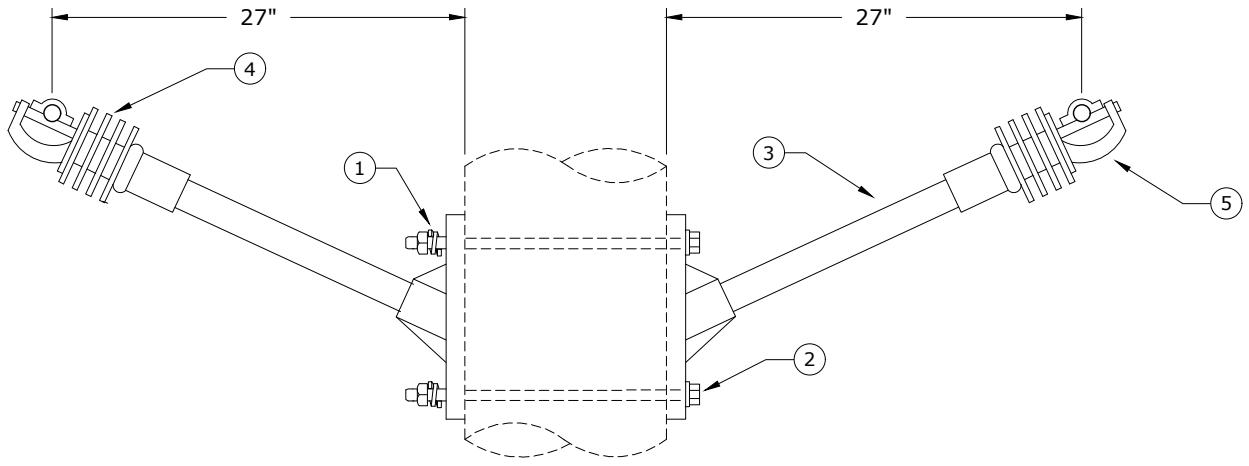
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CAD FILE:
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REVISIONS

REV	DATE	ENGR	OPS
2	2/23/00	HWH	MA
3	10/7/05	LB	AH
4	2/14/16	KJP	

APP: ELM	SECTION
DATE: 1/31/80	200



Note: Use only when uplift needs to be considered.

Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	PR59	
		QTY.	S/N
1	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	2	2217
2	Bolt, Machine, 5/8" x 16", Galv., 12,400 lbs Ultimate Tensile *	2	157 *
3	Arm, Epoxy 27" 2500 lbs	2	42
4	Insulator, Clamp-Top 15 kV	2	760
5	Clamp, Wire, Insulated, 336 - 795 MCM	2	316



CONSTRUCTION STANDARDS

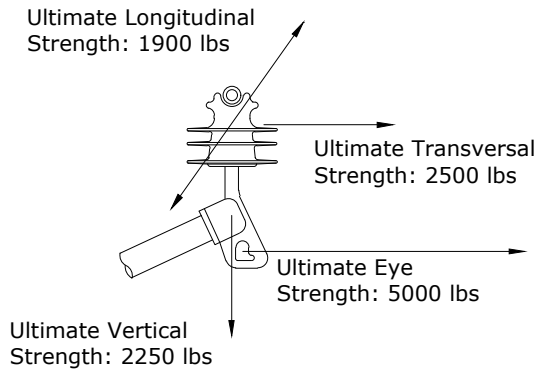
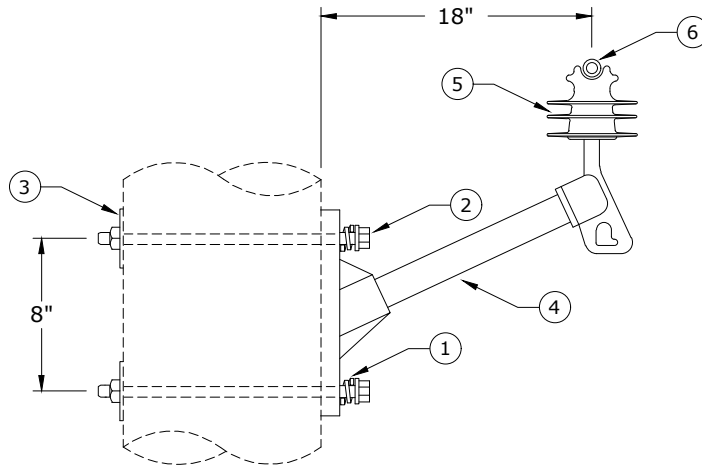
BASIC UNITS
DOUBLE CLAMP-TOP
TWIGGY ARM 27"

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PR59

CAD FILE:
PR59

REVISIONS											
DATE	ENGR	OPS									
2/23/00	HWH	MA									
10/7/05	LB	AH									
2/24/16	KJP										
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APP:	ELM	SECTION									
DATE:	1/31/80	200									



PR60 - for bare wire - use bare tie wire
PR60TREE - for tree wire - use covered tie wire

Note: See Std TI4 - Conductor Tying Guide - Section 400.

Rev. 5 - Eliminated porcelain insulator and added tie wire notes.

ITEM NO.	DESCRIPTION	PR60TREE		PR60	
		QTY.	S/N	QTY.	S/N
1	Washer, Lock, Spring Double Coil, Galv., 5/8"	2	2217	2	2217
2	Bolt, Machine, 5/8" x 16" Galv., 12,400 lbs Ultimate Tensile	2	157	2	157
3	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
4	Arm, Epoxy 18" 2500 lbs	1	2504	1	2504
5	Insulator, Pin C Neck, Polymer	1	1968	1	1968 *
6	Wire, Tie, AL Annealed #4 SD	11*	3012	10	1421



CONSTRUCTION STANDARDS
 BASIC UNITS
 SINGLE TWIGGY ARM 18"

REVISIONS			
DATE	ENGR	OPS	
	REDRAWN	IN CAD	
10/7/05	LB	AH	
12/22/16	CM	DK	

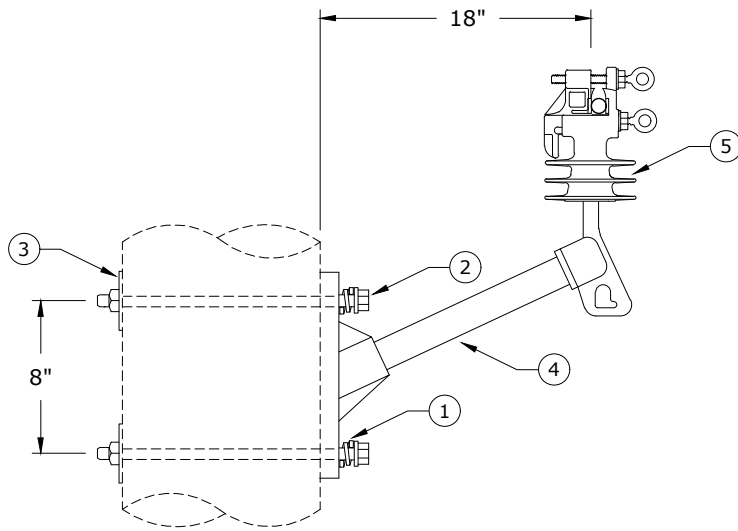
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PR60, PR60TREE

CAD FILE:
PR60

APP:
DATE: 2/16/01

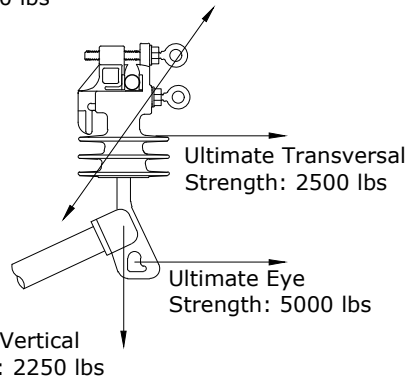
SECTION
200



Installation:

- 1st tighten the bottom bolt until eye breaks off
- 2nd tighten the top bolt until eye breaks off
- Remove bolts with socket stick
- Do not reuse bolts after rings have broken off

Ultimate Longitudinal Strength: 1900 lbs



Note: Replacement vise-top insulator bolts S/N 2888.

ITEM NO.	DESCRIPTION	PR60V	
		QTY.	S/N
1	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217
2	Bolt, Machine, 5/8" x 16" Galv., 12,400 lbs. Ultimate Tensile	2	157
3	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392
4	Arm, Epoxy 18" 2500 lbs	1	2504
5	Insulator, Vise-Top, Polymer	1	2439



CONSTRUCTION STANDARDS

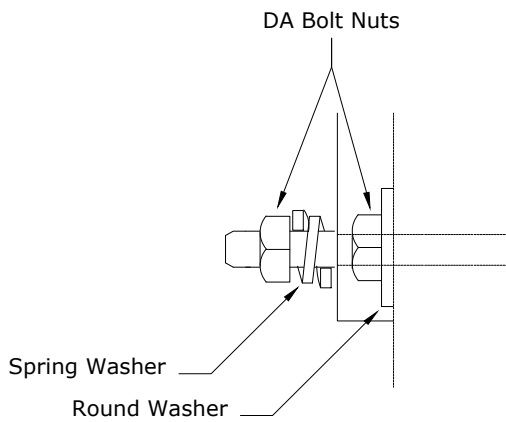
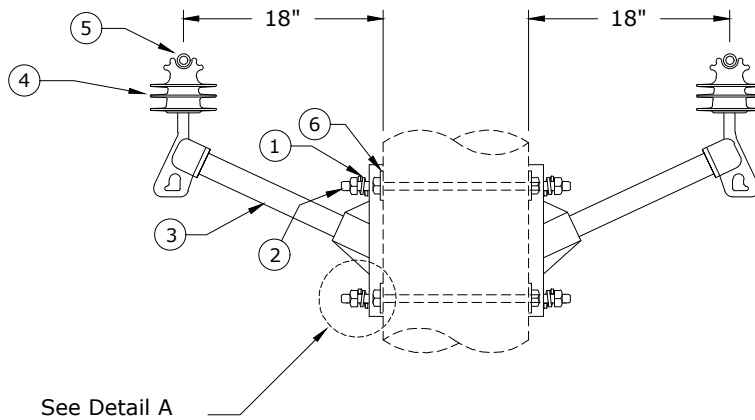
BASIC UNITS
SINGLE TWIGGY ARM 18"
VISE-TOP INSULATOR

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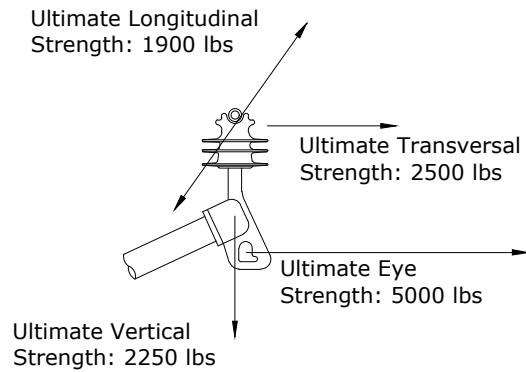
PR60V

CAD FILE:
PR60V

REVISIONS			
△	DATE	ENGR	OPS
△			
APP:	CM/DK	SECTION	
DATE:	12/22/16	200	



Detail A



PR61 - for bare wire - use bare tie wire
PR61TREE - for tree wire - use covered tie wire

Note: See Std TI4 - Conductor Tying Guide - Section 400.

Rev. 5 - Eliminated porcelain insulator, added tie wire notes, and changed machine bolt to DA bolt.

ITEM NO.	DESCRIPTION	PR61TREE		PR61	
		QTY.	S/N	QTY.	S/N
1	Washer, Lock, Spring Double Coil, Galv., 5/8"	4 *	2217	4 *	2217
2	Bolt, Double Arm, 5/8" x 18" Galv, 12,400 lbs Ultimate Tensile	2 *	82 *	2 *	82 *
3	Arm, Epoxy 18" 2500 lbs	2	2504	2	2504
4	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 *
5	Wire, Tie, AL Annealed #4 SD	22 *	3012	20	1421
6	Washer, Flat Round Galv., 5/8"	4	1395	4 *	1395



CONSTRUCTION STANDARDS

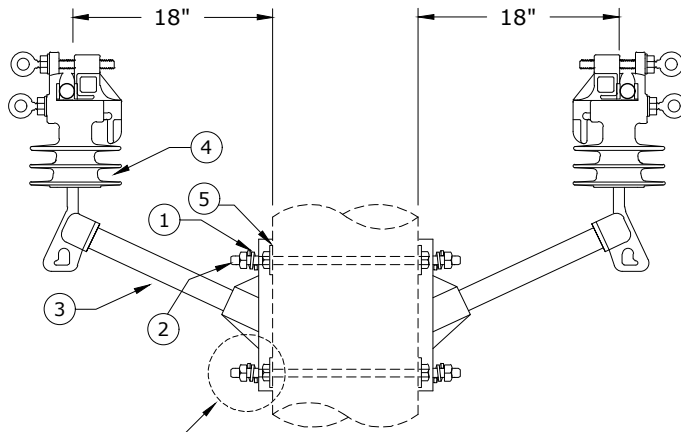
BASIC UNITS
DOUBLE TWIGGY
ARM 18"

PAGE:
1 of 1

PR61,PR61TREE

CAD FILE:
PR61

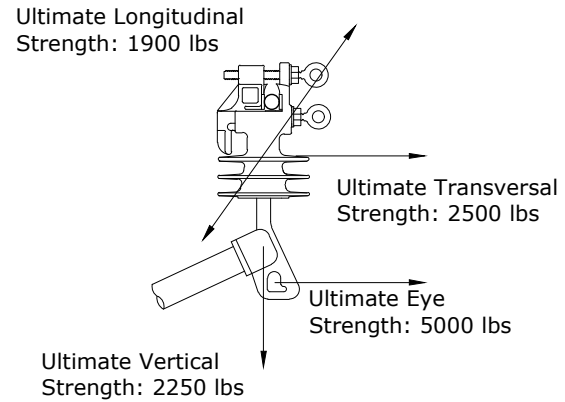
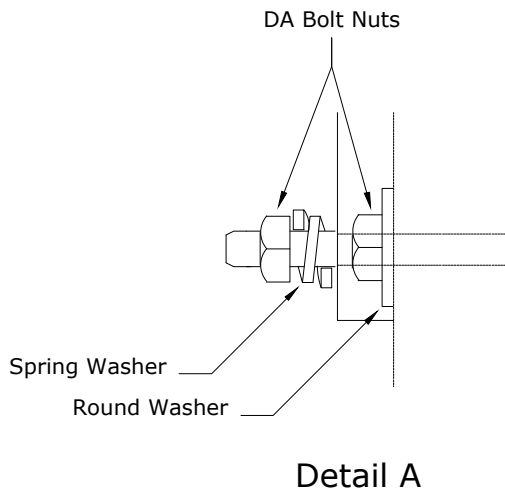
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△	DATE	ENGR	OPS
3		REDRAWN	IN CAD
4	10/7/05	LB	AH
5	12/22/16	CM	DK
△			
APP:		SECTION	
DATE: 2/16/01		200	



See Detail A

Installation:

- 1st tighten the bottom bolt until ring breaks off
- 2nd tighten the top bolt until ring breaks off
- Remove bolts with socket stick
- Do not reuse bolts after rings have broken off



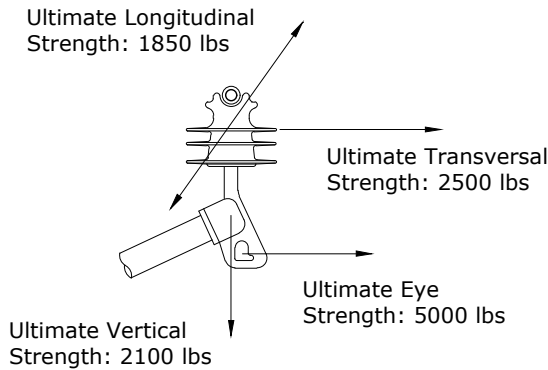
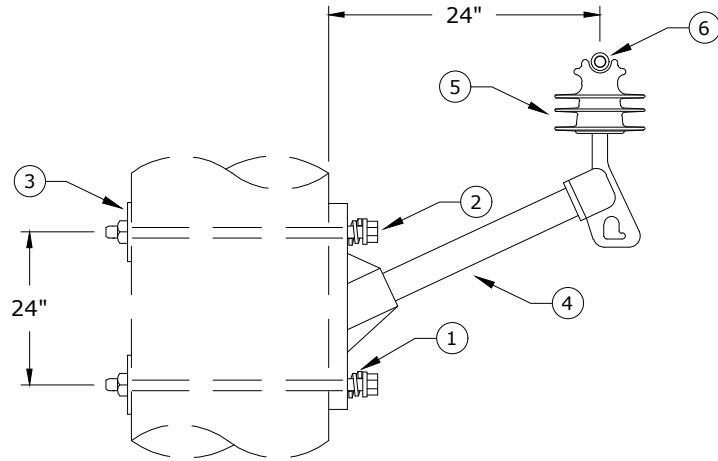
Note: Replacement vise-top insulator bolts S/N 2888.

ITEM NO.	DESCRIPTION	PR61V	
		QTY.	S/N
1	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4	2217
2	Bolt, Double Arm, 5/8" x 18" Galv., 12,400 lbs Ultimate Tensile	2	82
3	Arm, Epoxy 18" 2500 lbs	2	2504
4	Insulator, Vise-Top, Polymer	2	2439
5	Washer, Flat Round Galv., 5/8"	4	1395



CONSTRUCTION STANDARDS
 BASIC UNITS
 DOUBLE TWIGGY ARM 18"
 VISE-TOP INSULATOR

REVISIONS			
DATE	ENGR	OPS	



PR62 - for bare wire - use bare tie wire
PR62TREE - for tree wire - use covered tie wire

Note: See Std TI4 - Conductor Tying Guide - Section 400.

Rev. 1 - Eliminated porcelain insulator and added tie wire notes.

ITEM NO.	DESCRIPTION	PR62TREE		PR62	
		QTY.	S/N	QTY.	S/N
1	Washer, Lock, Spring Double Coil, Galv., 5/8"	2	2217	2	2217
2	Bolt, Machine, 5/8" x 16", Galv., 12,400 lbs Ultimate Tensile	2	157	2	157
3	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
4	Arm, Epoxy 24" 2500 lbs	1	2605	1	2605
5	Insulator, Pin, C Neck, Polymer	1	1968	1	1968 *
6	Wire, Tie, AL Annealed #4 SD	11*	3012	10	1421



CONSTRUCTION STANDARDS
 BASIC UNITS
 SINGLE TWIGGY
 ARM 24"

REVISIONS			
DATE	ENGR	OPS	
12/22/16	CM	DK	

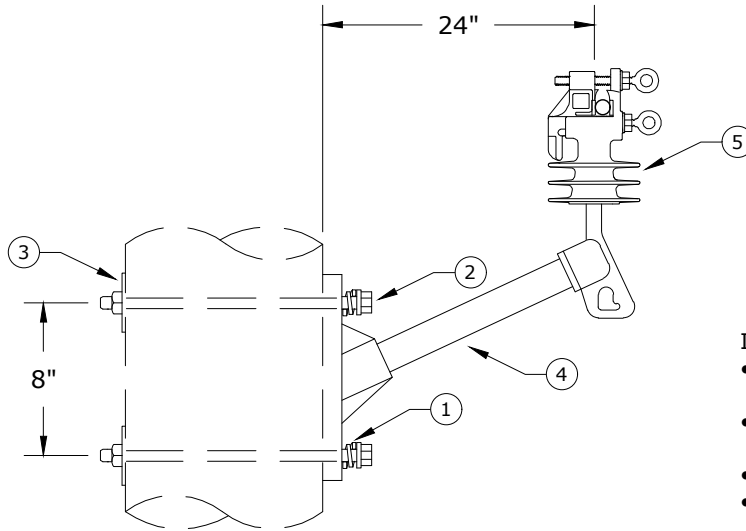
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PR62,PR62TREE

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PR62

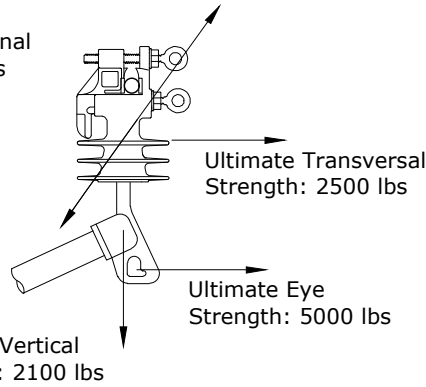
APP: LB/AH
DATE: 10/7/05

SECTION
200



- Installation:
- 1st tighten the bottom bolt until ring breaks off
 - 2nd tighten the top bolt until ring breaks off
 - Remove bolts with socket stick
 - Do not reuse bolts after rings have broken off

Ultimate Longitudinal Strength: 1850 lbs



Note: Replacement visé-top insulator bolts S/N 2888.

ITEM NO.	DESCRIPTION	PR62V	
		QTY.	S/N
1	Washer, Lock, Spring Double Coil, Galv., 5/8"	2	2217
2	Bolt, Machine, 5/8" x 16" Galv., 12,400 lbs Ultimate Tensile	2	157
3	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392
4	Arm, Epoxy 24" 2500 lbs	1	2605
5	Insulator, Visé-Top, Polymer	1	2439



CONSTRUCTION STANDARDS
 BASIC UNITS
 SINGLE TWIGGY ARM 24"
 VISE-TOP INSULATOR

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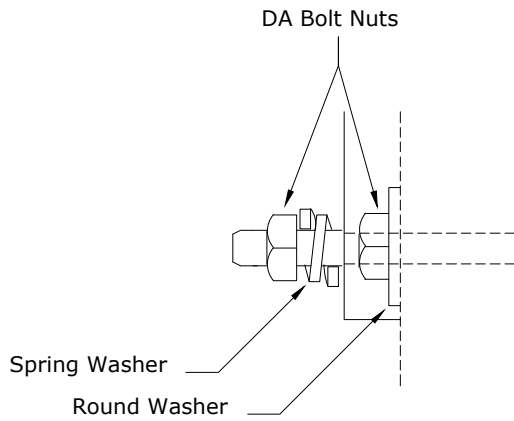
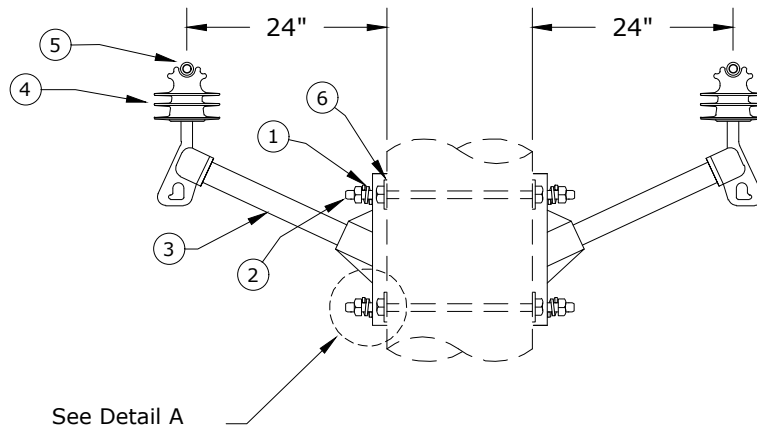
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PR62V

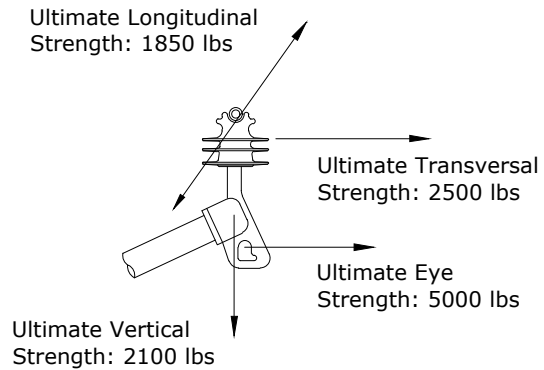
REVISIONS			
DATE	ENGR	OPS	

APP: CM/DK
DATE: 12/22/16

SECTION
200



Detail A



PR63 - for bare wire - use bare tie wire
PR63TREE - for tree wire - use covered tie wire

Note: See Std TI4 - Conductor Tying Guide - Section 400.

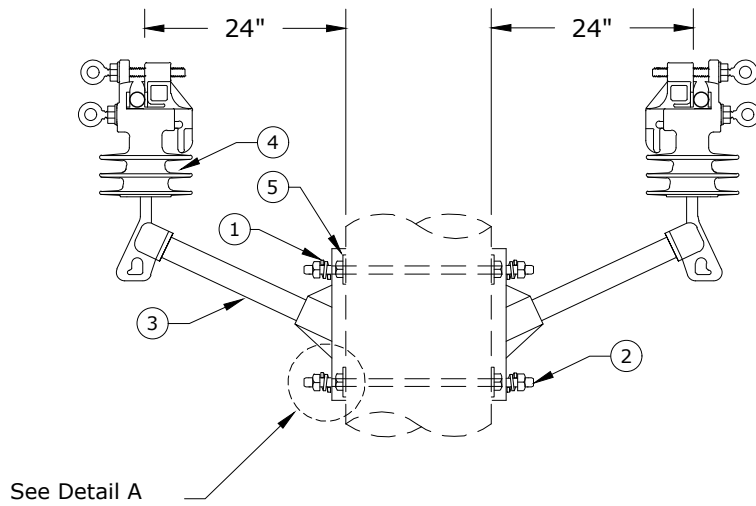
Rev. 1 - Eliminated porcelain insulator, added tie wire notes, and changed machine bolt to DA bolt.

ITEM NO.	DESCRIPTION	PR63TREE		PR63	
		QTY.	S/N	QTY.	S/N
1	Washer, Lock, Spring Double Coil, Galv., 5/8"	4 *	2217	4 *	2217
2	Bolt, Double Arm, 5/8" x 18" Galv., 12,400 lbs Ultimate Tensile	2 *	82 *	2 *	82 *
3	Arm, Epoxy 24" 2500 lbs	2	2605	2	2605
4	Insulator, Pin C Neck, Polymer	2	1968	2	1968 *
5	Wire, Tie, AL Annealed #4 SD	22 *	3012	20	1421
6	Washer, Flat Round Galv., 5/8"	4 *	1395	4 *	1395



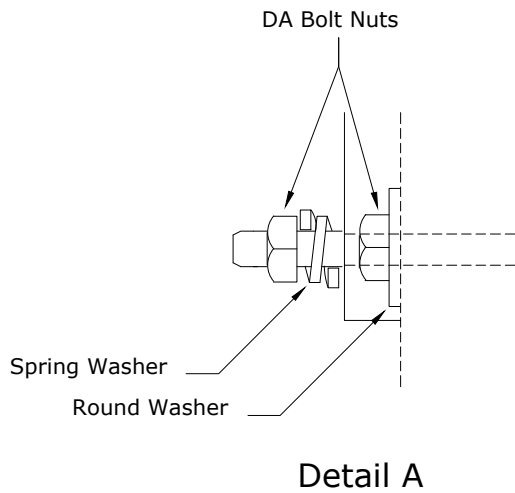
CONSTRUCTION STANDARDS
 BASIC UNITS
 DOUBLE TWIGGY
 ARM 24"

REVISIONS			
DATE	ENGR	OPS	
12/22/16	CM	DK	

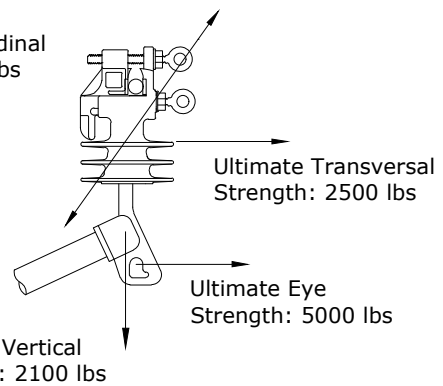


Installation:

- 1st tighten the bottom bolt until ring breaks off
- 2nd tighten the top bolt until ring breaks off
- Remove bolts with socket stick
- Do not reuse bolts after rings have broken off



Ultimate Longitudinal Strength: 1850 lbs



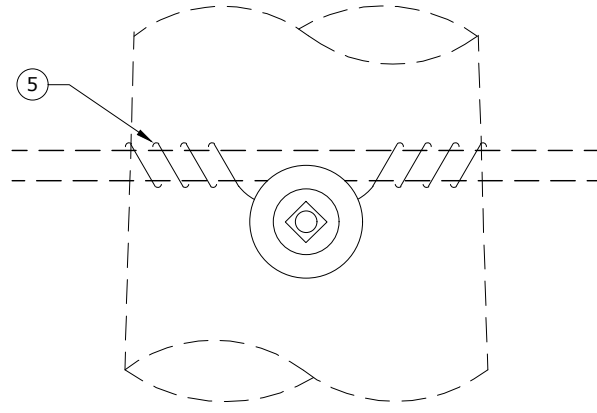
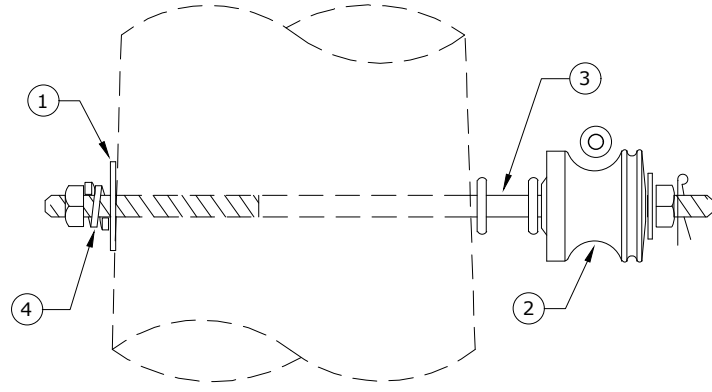
Note: Replacement vise-top insulator bolts S/N 2888.

ITEM NO.	DESCRIPTION	PR63V	
		QTY.	S/N
1	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4	2217
2	Bolt, Double Arm, 5/8" x 18" Galv., 12,400 lbs Ultimate Tensile	2	82
3	Arm, Epoxy 24" 2500 lbs	2	2605
4	Insulator, Vise-Top, Polymer	2	2439
5	Washer, Flat Round Galv., 5/8"	4	1395



CONSTRUCTION STANDARDS
 BASIC UNITS
 DOUBLE TWIGGY ARM 24"
 VISE-TOP INSULATORS

REVISIONS			
DATE	ENGR	OPS	



Note: See Std TI4 - Conductor Tying Guide - Section 400.

Rev. 6 - Updated material.

ITEM NO.	DESCRIPTION	S1	
		QTY.	S/N
1	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
2	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773
3	Bolt, Dble. Upset 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile *	1	1580
4	Washer, Lock, Spring Double Coil, Galv., 5/8" *	1	2217
5	Wire, Tie, AL Annealed #4 SD	10	1421



CONSTRUCTION STANDARDS

BASIC UNITS
NEUTRAL
TANGENT SPOOL

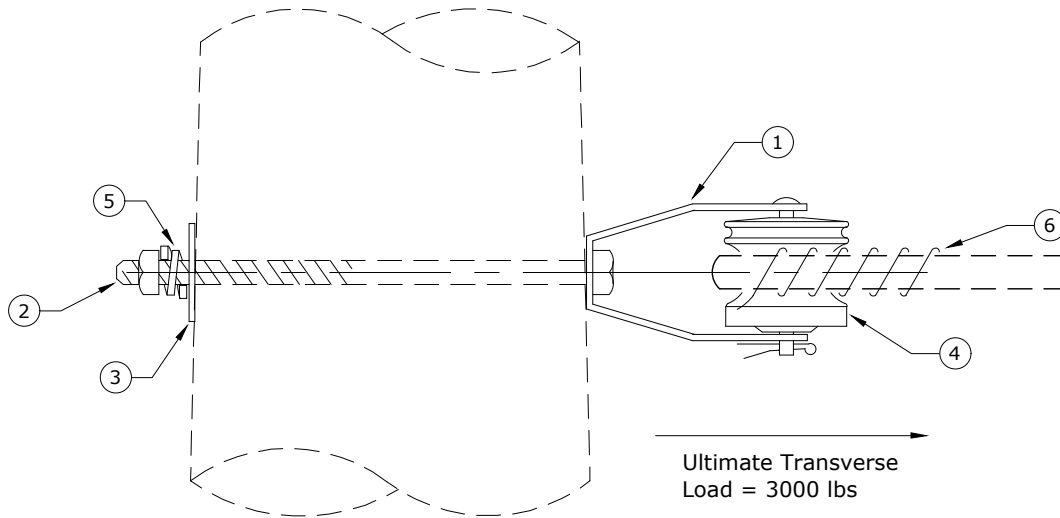
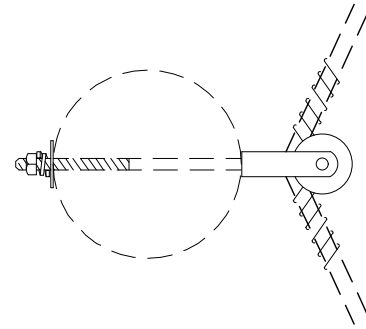
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S1

CAD FILE:
S1

REVISIONS			
REV	DATE	ENGR	OPS
3	2/23/00	HWH	MA
4	8/2/05	LB	AH
5	6/7/06	LB	AH
6	2/24/16	KJP	

APP:	ELM	SECTION
DATE:	1/31/80	200



Rev. 6 - Updated material.

ITEM NO.	DESCRIPTION	S2	
		QTY.	S/N
1	Clevis, D.E. Insulator 1340	1	335
2	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile *	1	156
3	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
4	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773
5	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	1	2217
6	Wire, Tie, AL Annealed #4 SD	10	1421



CONSTRUCTION STANDARDS

BASIC UNITS
NEUTRAL
ANGLE SPOOL

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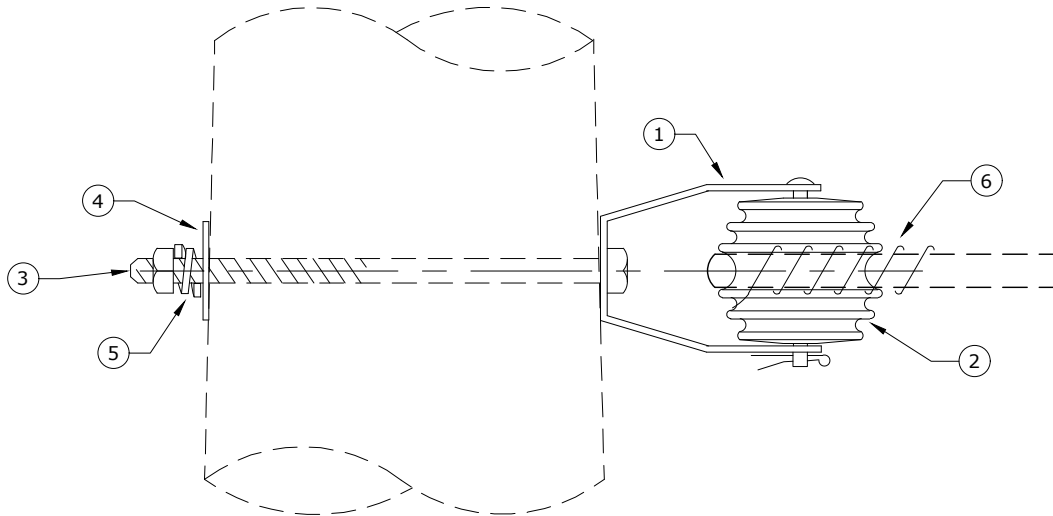
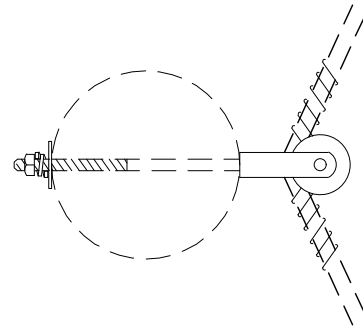
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CAD FILE:
S2

REVISIONS

REV	DATE	ENGR	OPS
3	2/23/00	HWH	MA
4	8/2/05	LB	AH
5	6/7/06	LB	AH
6	2/24/16	KJP	

APP:	ELM	SECTION
DATE:	1/31/80	200



Note: For use with 397 and 795 neutral from 6° to 15° angle.

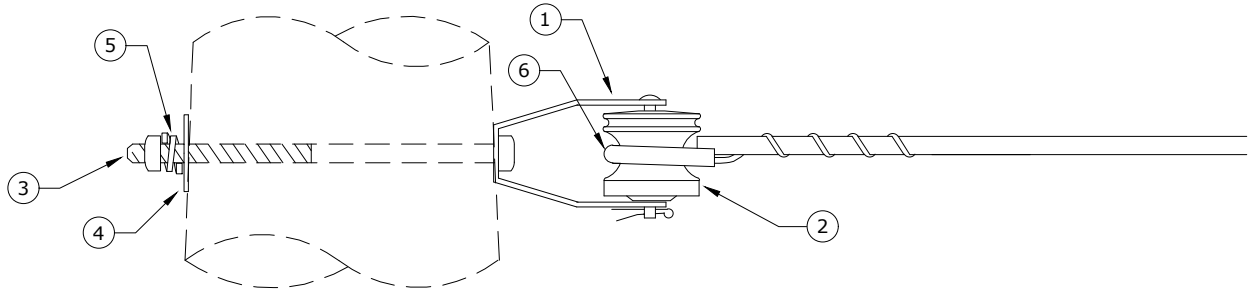
Rev. 1 - Updated material.

ITEM NO.	DESCRIPTION	S3	
		QTY.	S/N
1	Clevis, D.E. Insulator 1344	1	336
2	Insulator, Spool Clevis Large, ANSI 53-5 Class	1	774
3	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile *	1	156
4	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
5	Washer, Lock, Spring, Double Coil, Galv., 5/8" *	1	2217
6	Wire, Tie, AL Annealed #4 SD	10	1421



CONSTRUCTION STANDARDS
BASIC UNITS
HEAVY NEUTRAL
ANGLE SPOOL

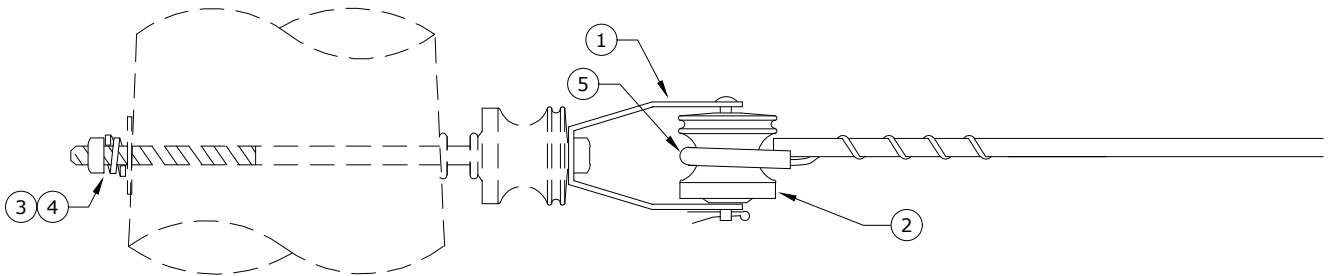
REVISIONS			
DATE	ENGR	OPS	
2/24/16	KJP		



(SPOOL & CLEVIS)

Note: Preformed deadend rated for 1,000 lbs. max tension.

ITEM NO.	DESCRIPTION	S4	
		QTY.	S/N
1	Clevis, D.E. Insulator 1340	1	335
2	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773
3	Bolt, Machine 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile *	1	156
4	Washer, Curved, 3" x 3" X 3/8" Thick x 13/16" Hole	1	1392
5	Washer, Lock Spring, Double Coil, Galv., 5/8" *	1	2217
6	Preformed Slack Span Deadend #2 ACSR	1	2241



(SPOOL & CLEVIS WITH EXISTING S1)

Note: Preformed deadend rated for 1,000 lbs. max tension.

Rev. 5 - Updated material.

ITEM NO.	DESCRIPTION	S4A	
		QTY.	S/N
1	Clevis, D.E. Insulator 1340	1	335
2	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773
3	Washer, Lock, Spring, Single Coil 5/8" Galv.	1	1403
4	Bolt, Double Upset, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile *	1	1580 *
5	Preformed Slack Span Deadend #2 ACSR	1	2241



CONSTRUCTION STANDARDS

BASIC UNITS
SLACK NEUTRAL
CONDUCTOR DEADENDS

PAGE:
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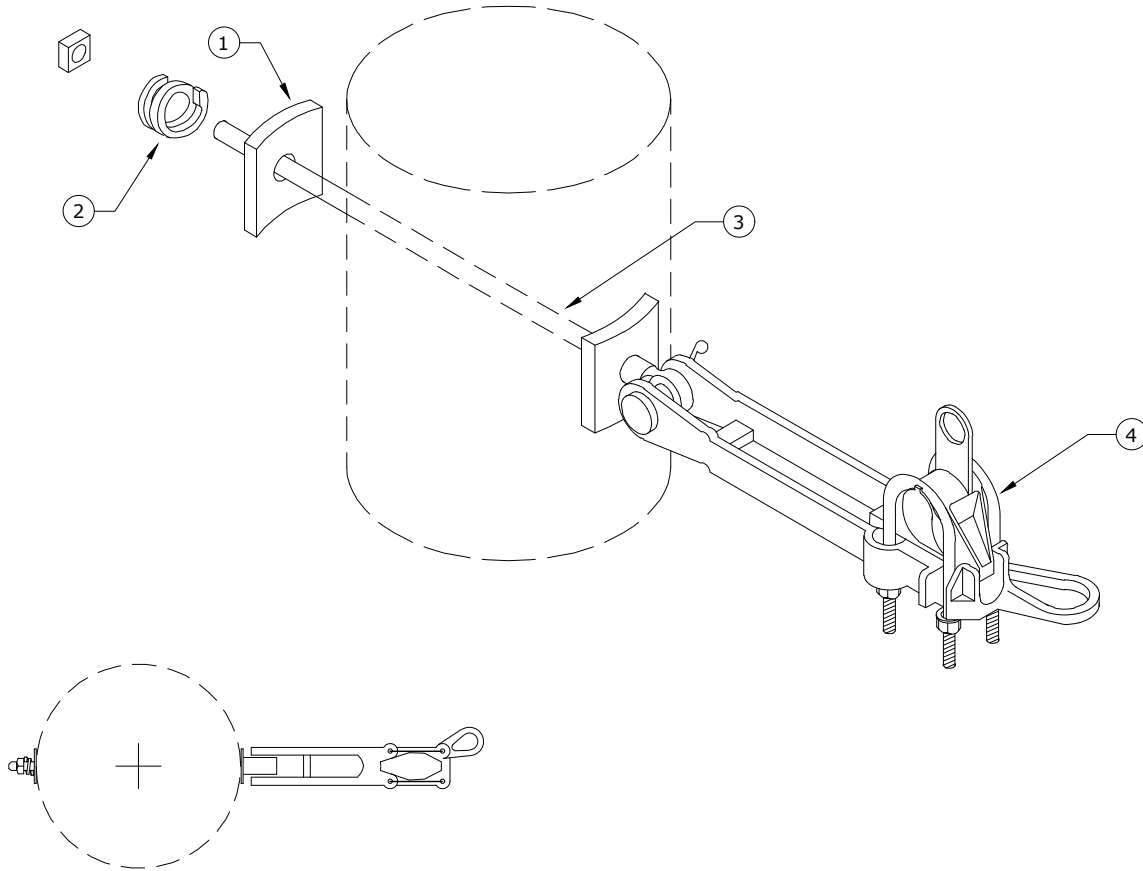
S4, S4A

CAD FILE:
S4

REVISIONS

REV	DATE	ENGR	OPS
2	2/23/00	HWH	MA
3	6/7/06	LB	AH
4	5/31/12	KJP	
5	2/24/16	KJP	

APP:	ELM	SECTION
DATE:	1/31/80	200



Rev. 4 - Updated material.

ITEM NO.	DESCRIPTION	S10	
		QTY.	S/N
1	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392
2	Washer, Lock, Spring, Double Coil, Galv., 5/8" ✱	1	2217
3	Bolt, Eye, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile ✱	1	108
4	Clamp, Strain Distribution, #2 - 397.5 MCM	1	302



CONSTRUCTION STANDARDS
BASIC UNITS
NEUTRAL DEADEND

REVISIONS			
DATE	ENGR	OPS	
2/23/00	HWH	MA	
10/7/05	LB	AH	
2/24/16	KJP		

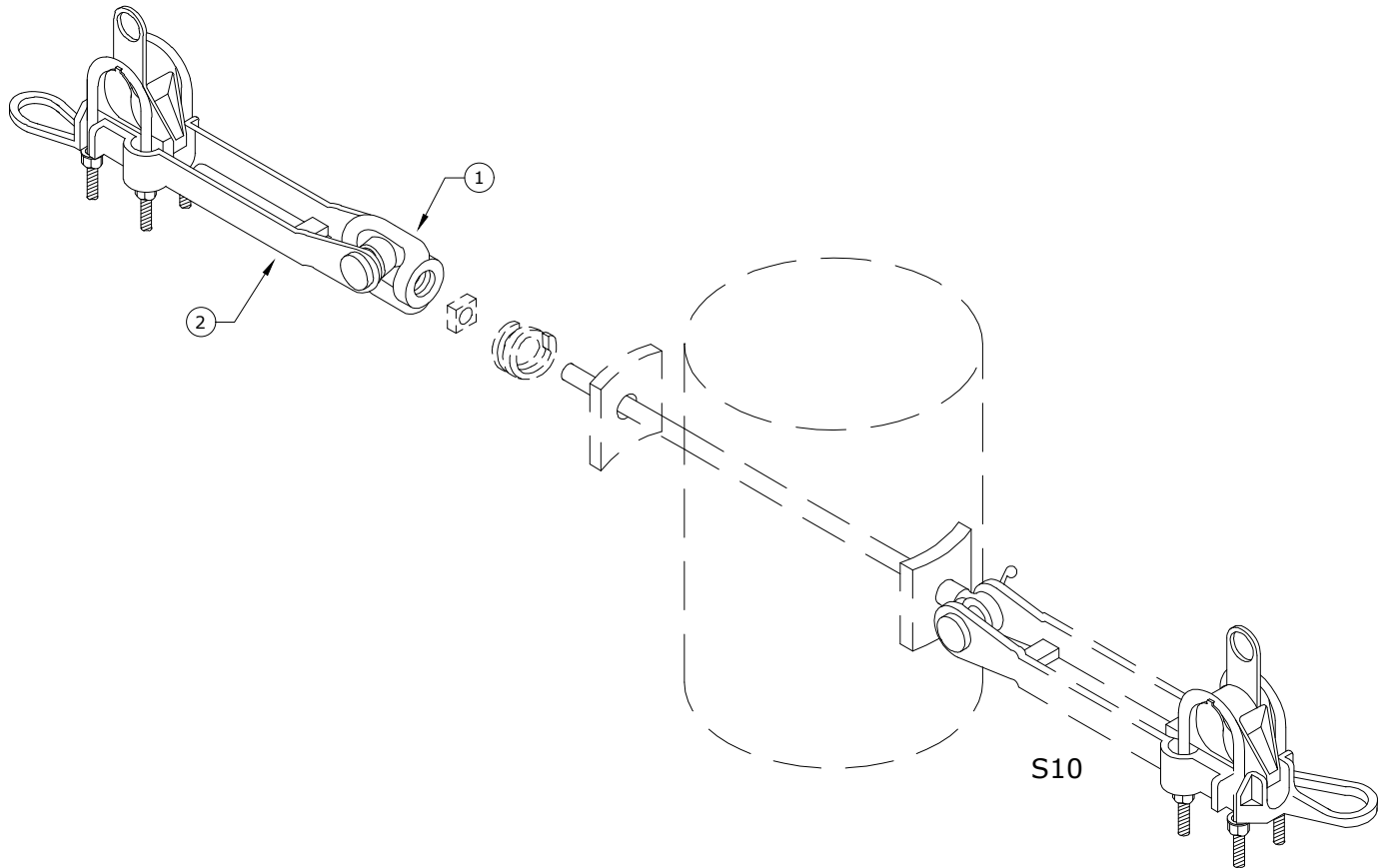
PAGE:
1 of 1

S10

CAD FILE:
S10

APP: ELM
DATE: 1/31/80

SECTION
200



Rev. 4 - Updated material and drawing.

ITEM NO.	DESCRIPTION	S11	
		QTY.	S/N
1	Nut, Eye Oval 5/8" Galv.	1	913
2	Clamp, Strain, Distribution, #2 - 397.5 MCM	1	302



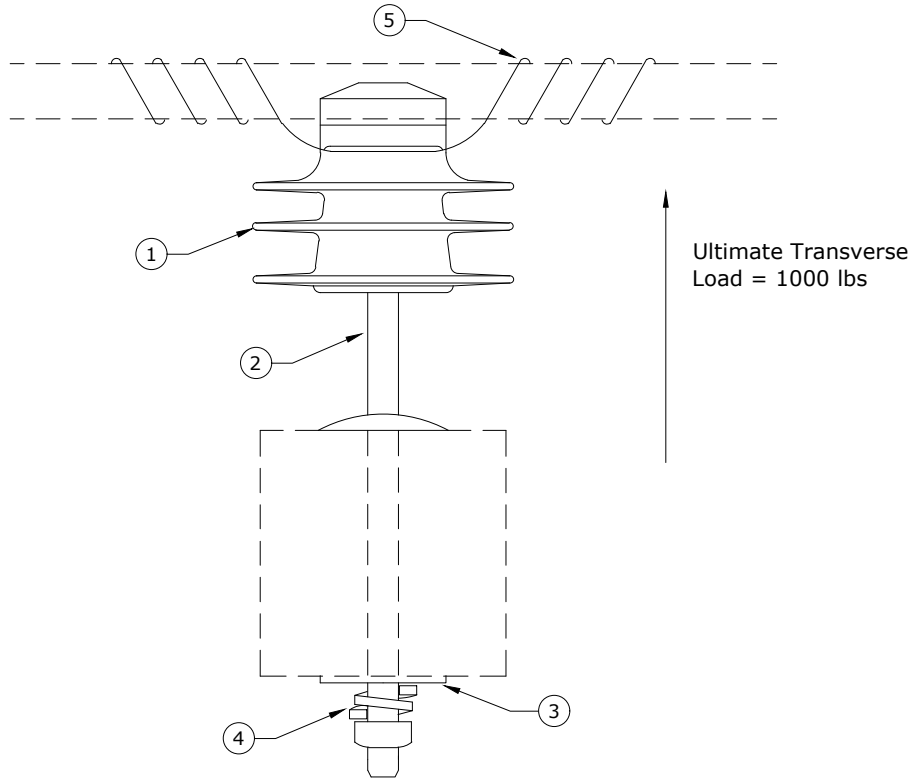
CONSTRUCTION STANDARDS
BASIC UNITS
NEUTRAL DOUBLE DEADEND

REVISIONS			
Δ	DATE	ENGR	OPS
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3	10/7/05	LB	AH
4	2/24/16	KJP	
Δ			
APP:	ELM	SECTION	
DATE:	1/31/80	200	

PAGE:
1 of 1

S11


CAD FILE:
S11

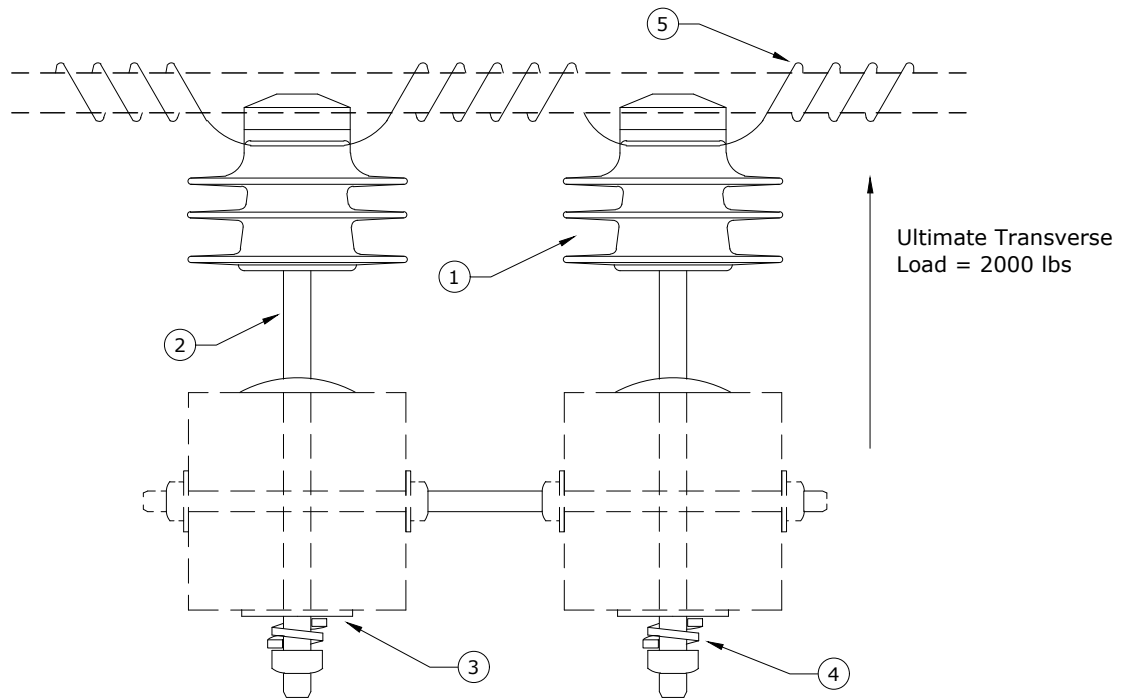


- Notes:**
1. See Std TI4 - Section 400 - Conductor Tying Guide.
 2. Ultimate Cantilever Load=1,000 lbs.

Rev. 5 - Changed to white polymer insulator.

ITEM NO.	DESCRIPTION	S12	
		QTY.	S/N
1	Insulator, Pin, C Neck, White Polymer	1	2656
2	Pin, Crossarm	1	961
3	Washer, Square Flat, 5/8", 2 1/4" x 2 1/4"	1	1412
4	Washer, Lock, Spring Double Coil, Galv., 5/8"	1	2217
5	Wire, Tie, Bare, AL Annealed #4 SD	10	1421

	CONSTRUCTION STANDARDS BASIC UNITS SINGLE WHITE NEUTRAL INSULATOR ON CROSSARM		REVISIONS															
			<table border="1"> <thead> <tr> <th>DATE</th> <th>ENGR</th> <th>OPS</th> </tr> </thead> <tbody> <tr> <td>2/23/00</td> <td>HWH</td> <td>MA</td> </tr> <tr> <td>6/7/06</td> <td>LB</td> <td>AH</td> </tr> <tr> <td>12/22/16</td> <td>CM</td> <td>DK</td> </tr> </tbody> </table>	DATE	ENGR	OPS	2/23/00	HWH	MA	6/7/06	LB	AH	12/22/16	CM	DK			
	DATE	ENGR	OPS															
	2/23/00	HWH	MA															
6/7/06	LB	AH																
12/22/16	CM	DK																
PAGE: 1 of 1	S12	CAD FILE: S12	APP: ELM DATE: 1/31/80	SECTION 200														



- Notes:**
1. See Std TI5 Section 400 - Conductor Tying Guide.
 2. Ultimate Cantilever Load=2,000 lbs.

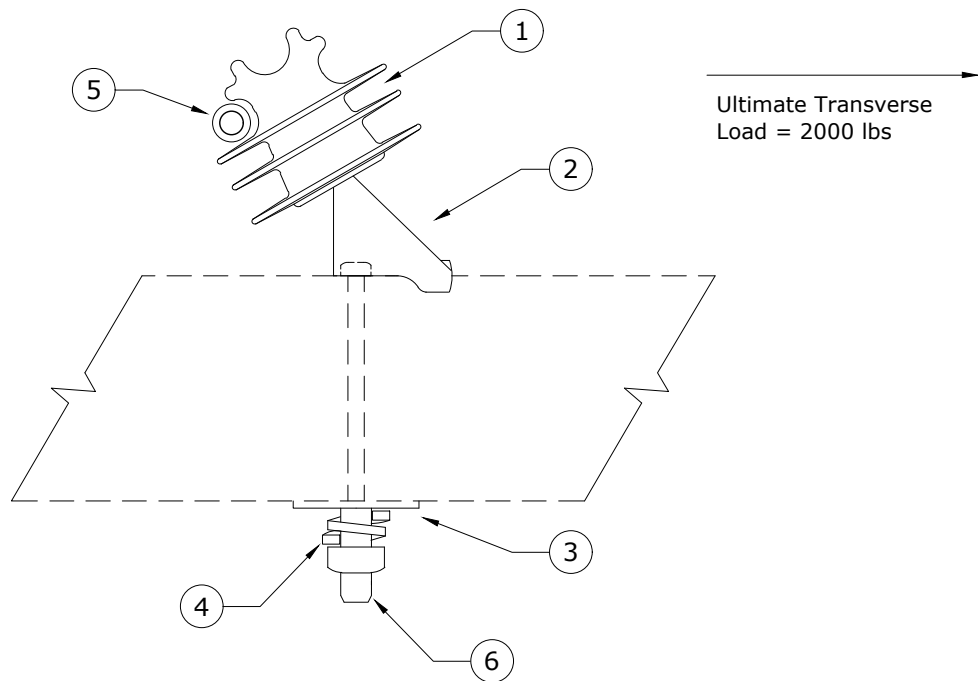
Rev. 5 - Changed to white polymer insulator.

ITEM NO.	DESCRIPTION	S13	
		QTY.	S/N
1	Insulator, Pin, C Neck, White Polymer	2	2656
2	Pin, Crossarm	2	961
3	Washer, Square Flat, 5/8", 2 1/4" x 2 1/4"	2	1412
4	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217
5	Wire, Tie, Bare, AL Annealed #4 SD	20	1421



CONSTRUCTION STANDARDS
 BASIC UNITS
 DOUBLE WHITE NEUTRAL INSULATORS
 ON CROSSARMS

REVISIONS											
DATE	ENGR	OPS									
2/23/00	HWH	MA									
6/7/06	LB	AH									
12/22/16	CM	DK									
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APP:	ELM	SECTION									
DATE:	1/31/80	200									



Note: See Std TI4 - Section 400 - Conductor Tying Guide.

Rev. 1 - Changed to white polymer insulator.

ITEM NO.	DESCRIPTION	S14	
		QTY.	S/N
1	Insulator, Pin, C Neck, White Polymer	1	2656
2	Pin, Angle Crossarm	1	2658
3	Washer, Square Flat, 5/8", 2 1/4" x 2 1/4"	1	1412
4	Washer, Lock, Spring Double Coil, Galv., 5/8"	1	2217
5	Wire, Tie, Bare, AL Annealed #4 SD	10	1421
6	Bolt, Machine, 5/8" x 7" Galv., 12,400 lbs Ultimate Tensile	1	2606 *



CONSTRUCTION STANDARDS
 BASIC UNITS
 SINGLE ANGLED WHITE NEUTRAL INSULATOR
 ON CROSSARM

REVISIONS			
DATE	ENGR	OPS	
12/22/16	CM	DK	