

330

3Ø DISTRIBUTION

UP TO 397MCM AAC

8/9/19

C	C1B, -TREE	3Ø Single 10' Crossarm - 0° to 5°
C	C2B, -TREE	3Ø Double 10' Crossarm - 6° to 15°
C	C3B, -TREE	3Ø Double 10' Crossarm w/ Angle Pins - 16° to 30°
C	C4B, -TREE	3Ø Single 10' Crossarm - High Neutral, 0° to 5°
C	C5B, -TREE	3Ø Double 10' Crossarm - High Neutral, 6° to 15°
C	C6B, -TREE	3Ø Double 10' Crossarm - High Neutral, 16° to 30°
C	C7A, -TREE	3Ø Single 8' Crossarm w/ Pole Top - 0° to 5°
N	C7AVIAN	3Ø Single 10' Crossarm w/ Pole Top - 0° to 5° - Avian Retrofit
C	C8A, -TREE	3Ø Double 8' Crossarm w/ Pole Top - 6° to 15°
N	C8AVIAN	3Ø Double 10' Crossarm w/ Pole Top - 6° to 15° - Avian Retrofit
C	C9A, -TREE	3Ø Double 8' Crossarm w/ Double Pole Top - 16° to 30°
N	C9AVIAN	3Ø Double 10' Crossarm w/Double Pole Top - 16° to 30° - Avian Retrofit
C	C10, -TREE	3Ø Twiggy w/ Pole Top - 0° to 5°
C	C11, -TREE	3Ø Twiggy w/ Pole Top - 6° to 15°
C	C12, -TREE	3Ø Twiggy - 16° to 30°
C	C13, -TREE	3Ø Vertical w/ Pole Top - 0° to 5°
C	C14, -TREE	3Ø Vertical w/ Double Pole Top - 6° to 15°
C	C15, -TREE	3Ø Vertical - 16° to 30°
C	C16, -TREE	3Ø Double Twiggy Circuit - 0° to 5°
C	C17, -TREE	3Ø Double Twiggy Circuit - 6° to 30°
C	C19B, -TREE	3Ø Single 10' Crossarm - Double Circuit - 0° to 5°
C	C20B, -TREE	3Ø Double 10' Crossarm - Double Circuit - 6° to 15°
N	C22, -TREE	3Ø Twiggy Transmission Underbuild - 0° to 5°
N	C23, -TREE	3Ø Twiggy Transmission Underbuild - 6° to 30°

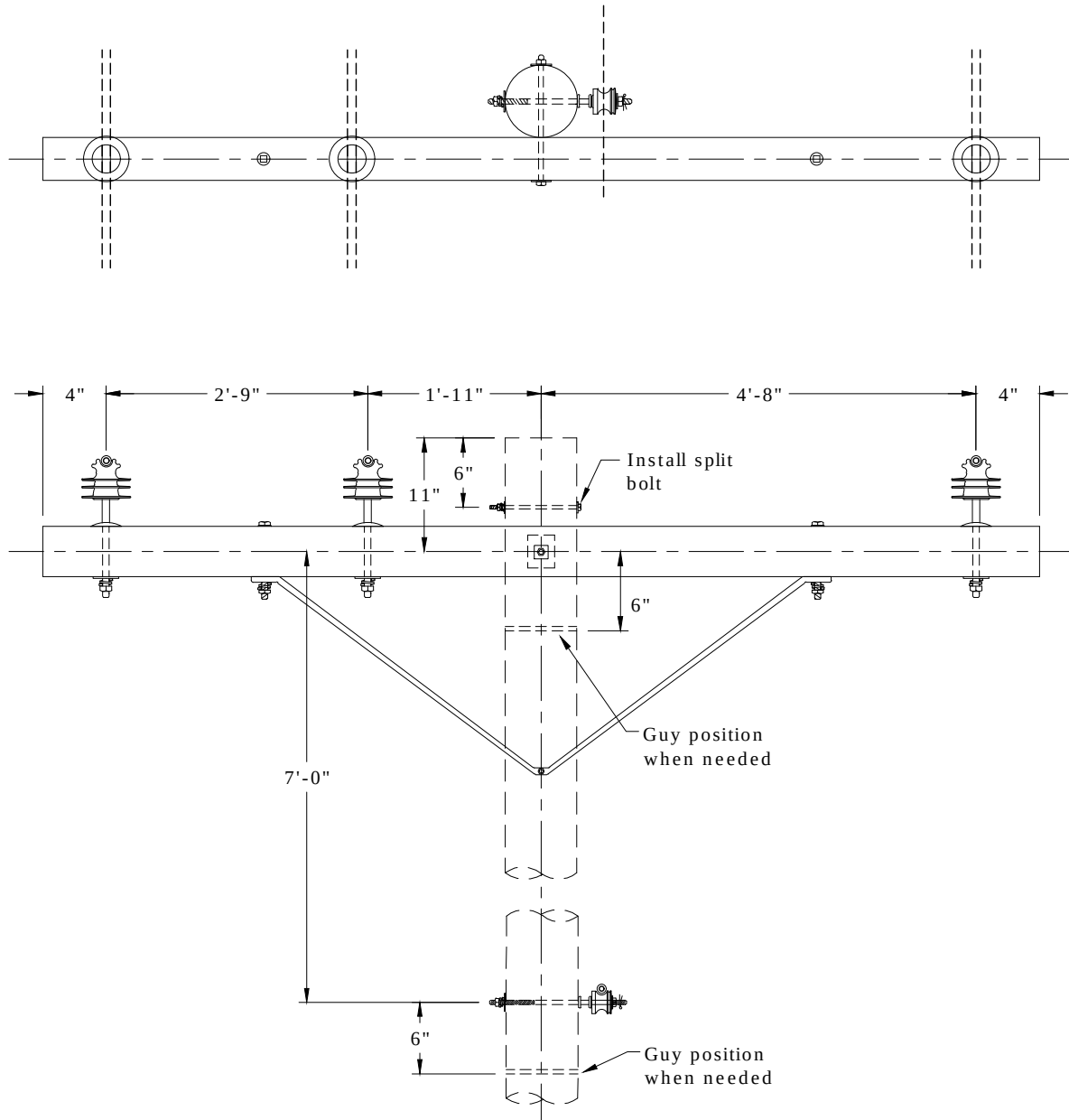
N	New Standard
R	Redrawn Standard
C	Changed Standard
~	No Change

330 (CONTINUED)
3Ø DISTRIBUTION
UP TO 397MCM AAC

8/9/19

- C** C48B 10' Pre-assembled Deadend - High Neutral
- C** C49B, -TREE 10' Pre-assembled Double Deadend - High Neutral
- C** C50A 8' Pre-assembled Deadend
- C** C51A, -TREE 8' Pre-assembled Double Deadend
- C** C52B 10' Pre-assembled Deadend
- C** C53B, -TREE 10' Pre-assembled Double Deadend

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



C1BTREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. Std C7A,C7ATREE is preferred for crossarm construction. Use this standard for underbuild or other special installations.
3. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase.

Rev. 1 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø SINGLE 10' CROSSARM
0° TO 5°
397 AAC MAX WIRE

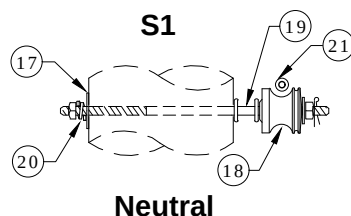
PAGE:
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C1B,C1BTREE

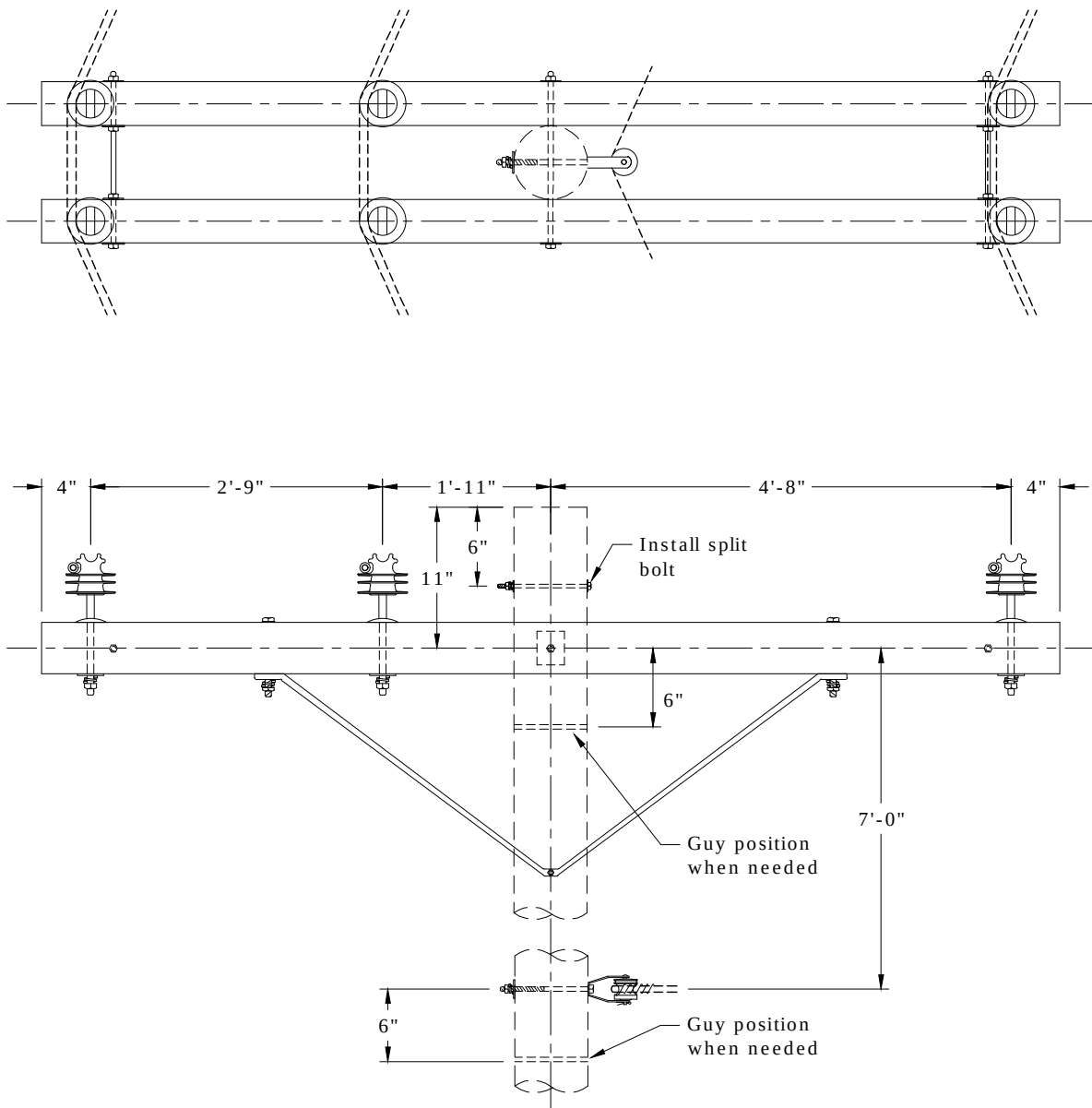
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C1B

REVISIONS

△ R	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP:	LB/AH	SECTION	
DATE:	10/18/07	330	



	CONSTRUCTION STANDARDS			REVISIONS			
	3Ø SINGLE 10' CROSSARM			R	DATE	ENGR	OPS
	0° TO 5°			1	12/4/17	CM	DK
	397 AAC MAX WIRE						
PAGE:	2 of 2	C1B,C1BTREE	CAD FILE:	C1B		SECTION	
				△			
				APP:	LB/AH	DATE:	
				10/18/07	10/18/07		330



C2BTREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. Std C8A,C8ATREE is preferred for crossarm construction. Use this standard for underbuild or other special installations.
3. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase.

Rev. 3 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø DOUBLE 10' CROSSARM
6° TO 15°
397 AAC MAX WIRE

PAGE:
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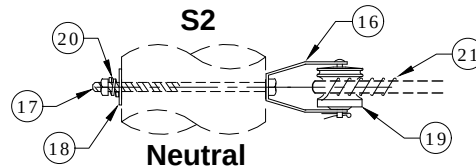
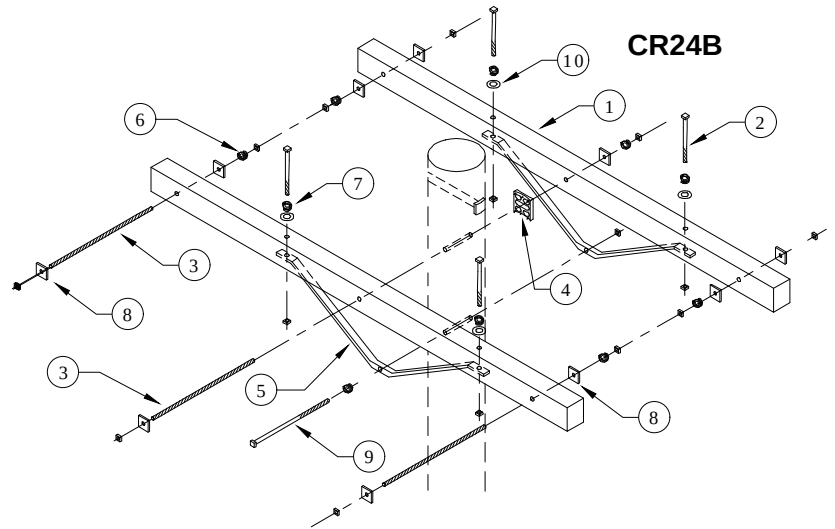
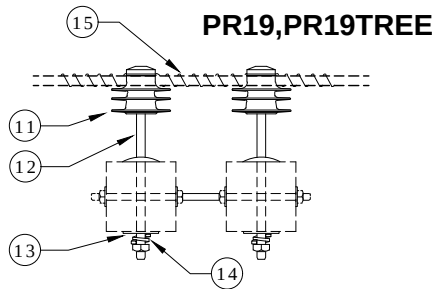
C2B,C2BTREE

CAD FILE:
C2B

REVISIONS

△ R	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	1/21/08	LB	AH
3	12/4/17	CM	DK

△	APP: LB/AH	SECTION
DATE: 10/18/07		330



Rev. 3 - Eliminated porcelain pin insulators and added avian notes.

ITEM NO.	DESCRIPTION	C2BTREE		C2B	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 10' x 3 3/4" x 4 3/4"	2	26	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, 72"	2	204	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
ITEM NO.	DESCRIPTION	PR19TREE(3)		PR19 (3)	
		QTY.	S/N	QTY.	S/N
11	Insulator, Pin, C Neck, Polymer	6	1968	6	1968 *
12	Pin, Crossarm	6	961	6	961
13	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	6	1412	6	1412
14	Washer, Lock, Spring, Double Coil, Galv., 5/8"	6	2217	6	2217
15	Wire, Tie, AL Annealed #4 SD	66*	3012	60	1421
ITEM NO.	DESCRIPTION	S2		S2	
		QTY.	S/N	QTY.	S/N
16	Clevis, D.E. Insulator 1340	1	335	1	335
17	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	156	1	156
18	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
19	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
20	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
21	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS 3Ø DOUBLE 10' CROSSARM 6° TO 15° 397 AAC MAX WIRE

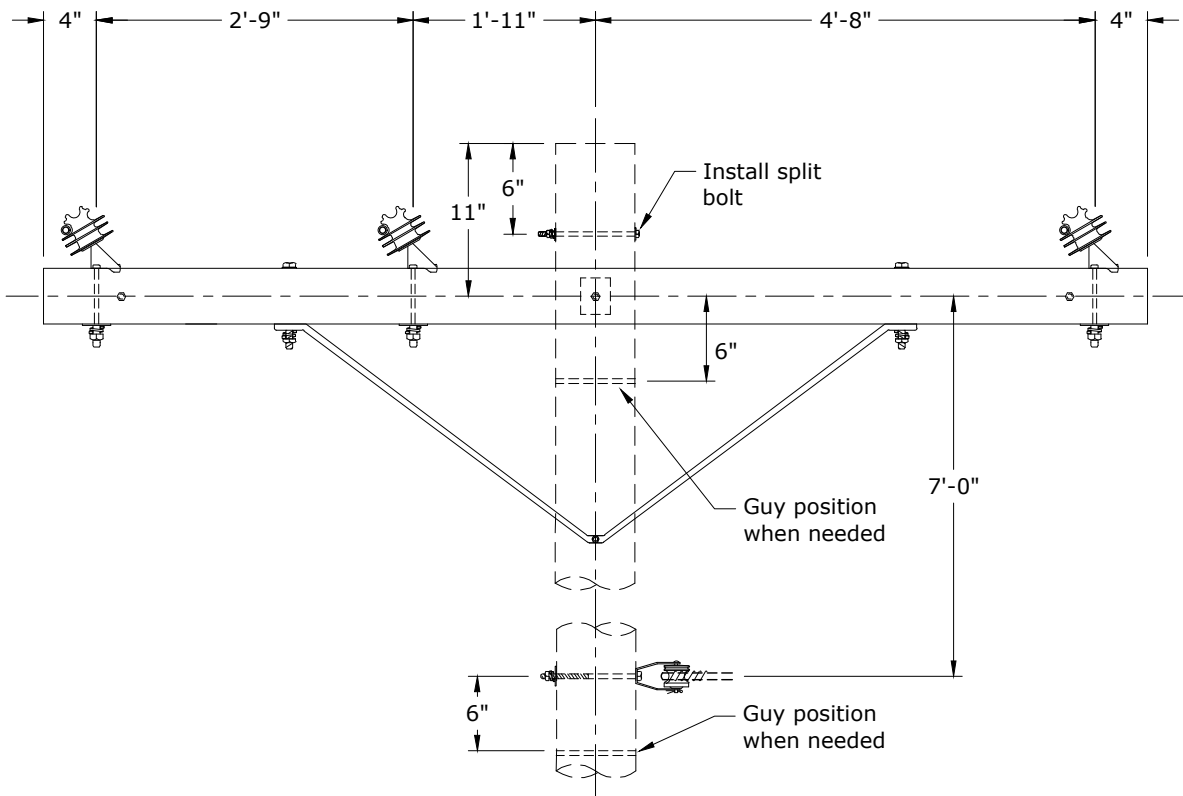
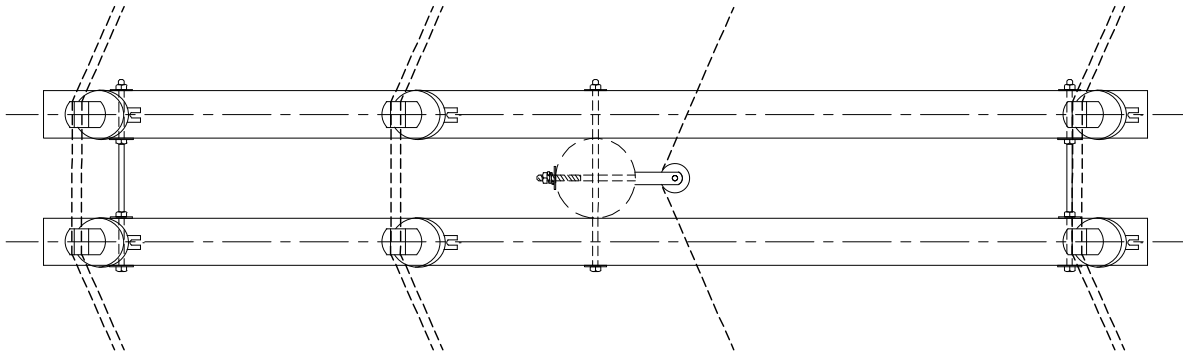
PAGE:
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C2B,C2BTREE

CAD FILE:
C2B

REVISIONS

Δ	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	1/21/08	LB	AH
3	12/4/17	CM	DK
Δ			
APP:	LB/AH	SECTION	
DATE:	10/18/07	330	



C3BTREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. Std C9A,C9ATREE is preferred for crossarm construction. Use this standard for underbuild or other special installations.
3. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase.

Rev. 2 - Moved conductor to side of insulators.



CONSTRUCTION STANDARDS

3Ø DOUBLE 10' CROSSARM W/ ANGLE PINS
16° TO 30°
397 AAC MAX WIRE

PAGE:
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C3B,C3BTREE

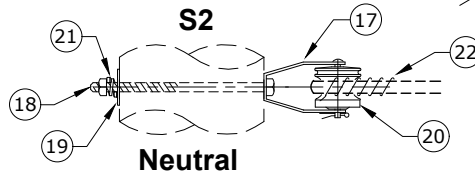
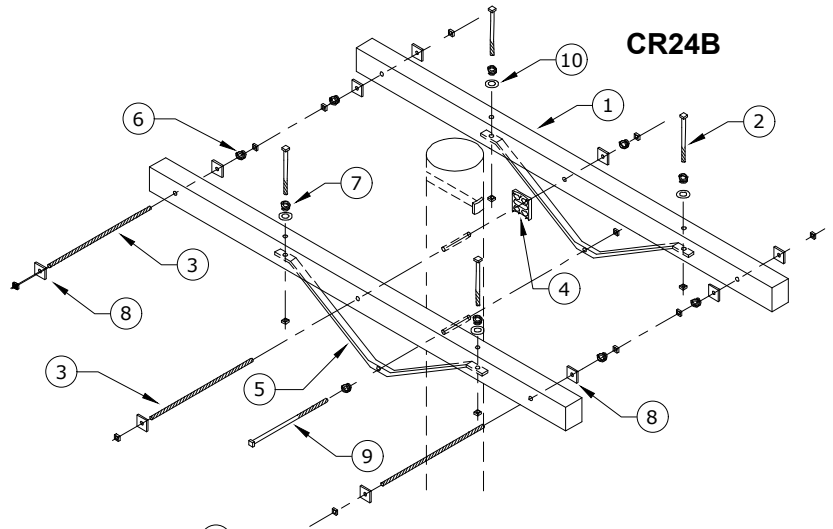
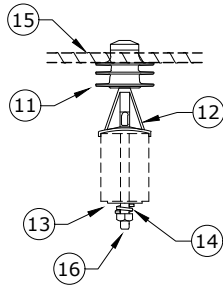
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C3B

REVISIONS

△	DATE	ENGR	OPS
1	12/4/17	CM	DK
2	8/9/19	JDK	

△	APP:	LB/AH	SECTION
	DATE:	10/18/07	330

PR5,PR5TREE



Rev. 2 - Moved conductor to side of insulators.

ITEM NO.	DESCRIPTION	C3BTREE		C3B	
		CR24B		CR24B	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 10' x 3 3/4" x 4 3/4"	2	26	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, 72"	2	204	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
ITEM NO.	DESCRIPTION	PR5TREE(6)		PR5 (6)	
		QTY.	S/N	QTY.	S/N
11	Insulator, Pin, C Neck, Polymer	6	1968	6	1968 *
12	Pin, Angle, Crossarm	6	2658	6	2658
13	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	6	1412	6	1412
14	Washer, Lock, Spring, Double Coil, Galv., 5/8"	6	2217	6	2217
15	Wire, Tie, AL Annealed #4 SD	66*	3012	60	1421
16	Bolt, Machine, 5/8" x 7", Galv., 12,400 lbs Ultimate Tensile	6	2606	6	2606 *
ITEM NO.	DESCRIPTION	S2		S2	
		QTY.	S/N	QTY.	S/N
17	Clevis, D.E. Insulator 1340	1	335	1	335
18	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	156	1	156
19	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
20	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
21	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
22	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS

3Ø DOUBLE 10' CROSSARM W/ ANGLE PINS
16° TO 30°
397 AAC MAX WIRE

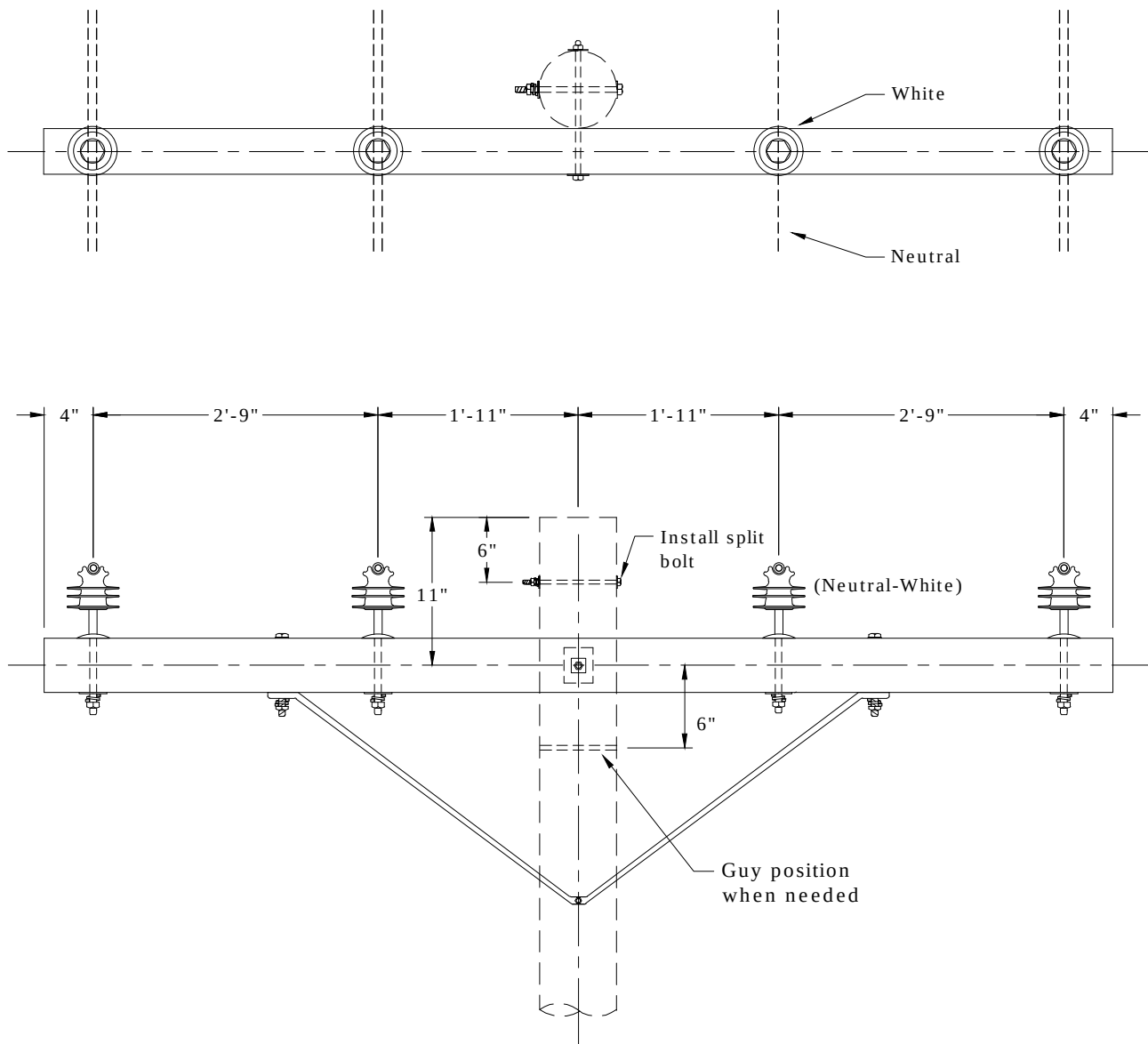
PAGE:
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C3B,C3BTREE

CAD FILE:
C3B

REVISIONS

Δ	DATE	ENGR	OPS
1	12/4/17	CM	DK
2	8/9/19	JDK	
APP: LB/AH SECTION DATE: 10/18/07 330			



C4BTREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. This framing is for clearance limited situations only.
3. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase and neutral.

Rev. 3 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø SINGLE 10' CROSSARM
HIGH NEUTRAL, 0° TO 5°
397 AAC MAX WIRE

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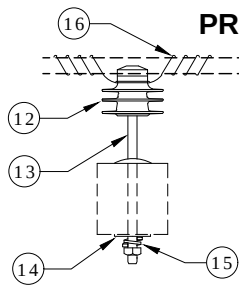
C4B,C4BTREE

CAD FILE:
C4B

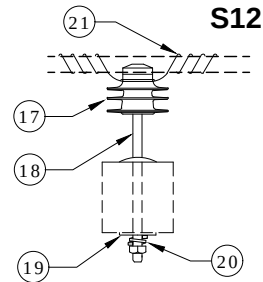
REVISIONS

△	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	10/18/07	LB	AH
3	12/4/17	CM	DK

△	APP: ELM	SECTION
DATE: 1/31/80		330

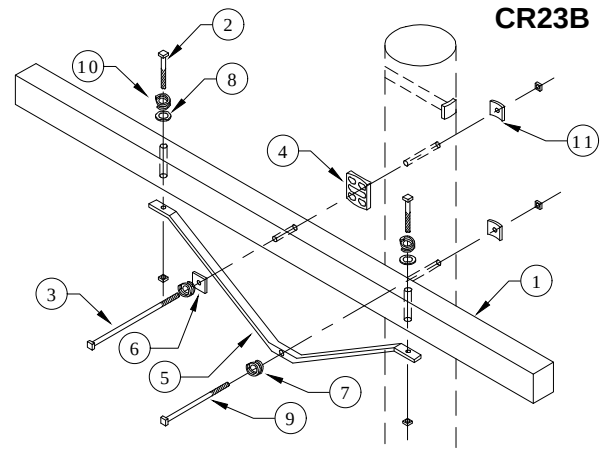


PR4, PR4TREE



S12

Neutral-White



CR23B

Rev. 3 - Eliminated porcelain pin insulators and added avian notes.

ITEM NO.	DESCRIPTION	C4BTREE		C4B	
		CR23B		CR23B	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.) 10' x 3 3/4" x 4 3/4"	1	26	1	26
2	Bolt, Machine, 1/2" x 7", Galv., 7,800 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, 72"	1	204	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
ITEM NO.	DESCRIPTION	PR4TREE (3)		PR4 (3)	
		QTY.	S/N	QTY.	S/N
12	Insulator, Pin, C Neck, Polymer	3	1968	3	1968 *
13	Pin, Crossarm	3	961	3	961
14	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	3	1412	3	1412
15	Washer, Lock, Spring, Double Coil, Galv., 5/8"	3	2217	3	2217
16	Wire, Tie, AL Annealed #4 SD	33 *	3012	30	1421
ITEM NO.	DESCRIPTION	S12		S12	
		QTY.	S/N	QTY.	S/N
17	Insulator, Pin, C Neck, White Polymer	1	2656	1	2656
18	Pin, Crossarm	1	961	1	961
19	Washer, Square Flat, 5/8", 2 1/4" x 2 1/4"	1	1412	1	1412
20	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
21	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS

3Ø SINGLE 10' CROSSARM
HIGH NEUTRAL, 0° TO 5°
397 AAC MAX WIRE

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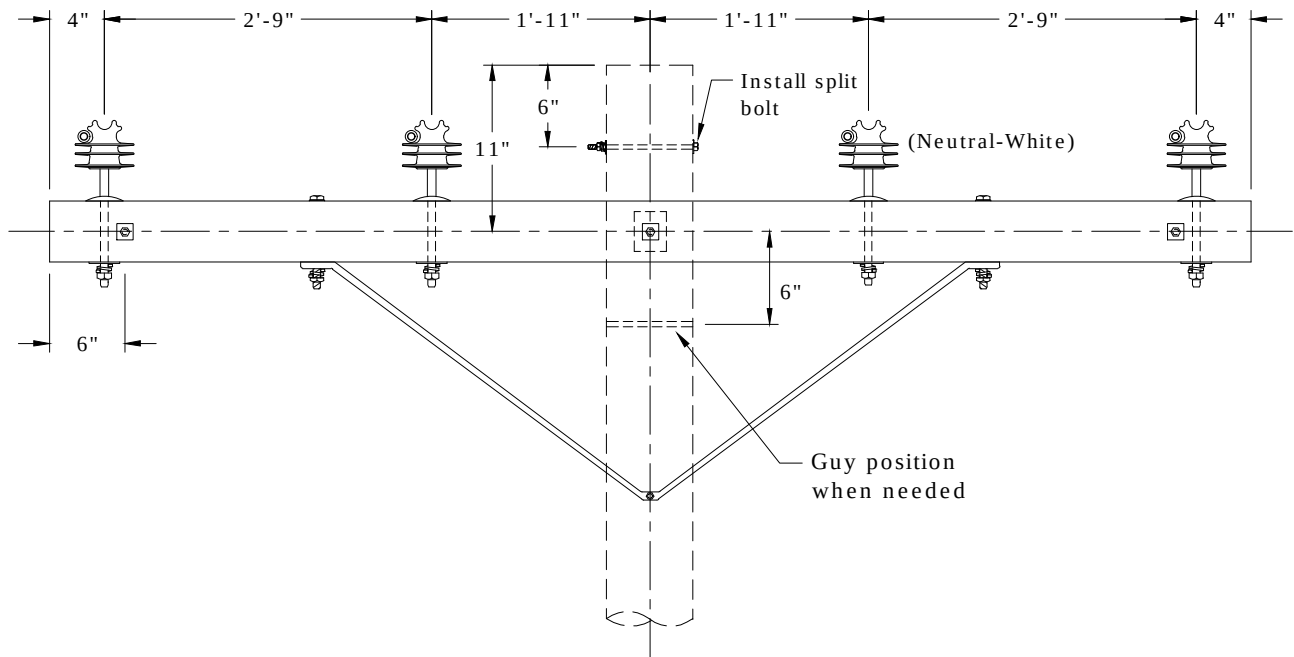
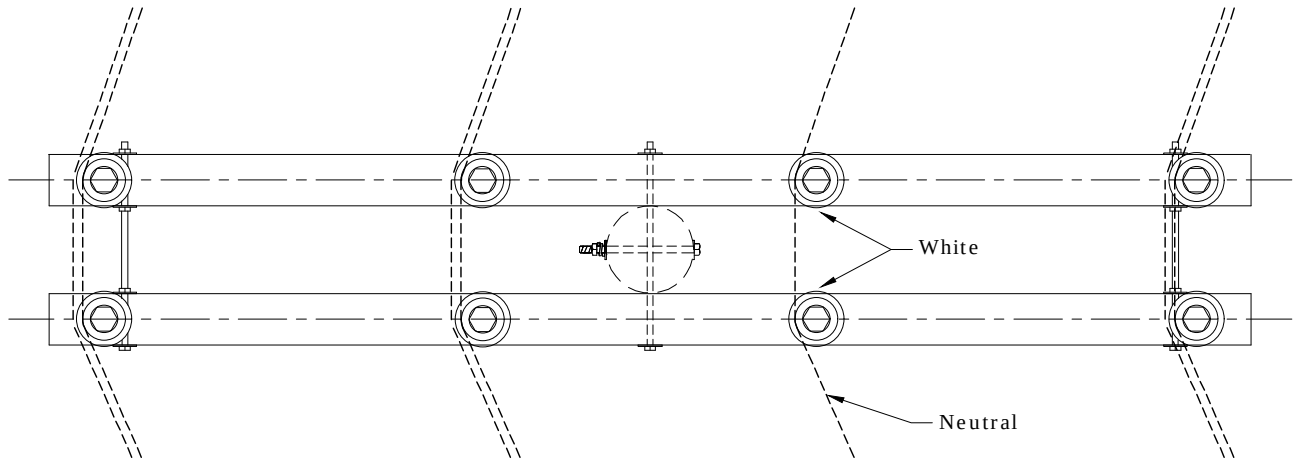
C4B, C4BTREE

CAD FILE:
C4B

REVISIONS

Δ	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	10/18/07	LB	AH
3	12/4/17	CM	DK

APP:	ELM	SECTION
DATE:	1/31/80	330



C5BTREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. This framing is for clearance limited situations only.
3. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase and neutral.

Rev. 3 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø DOUBLE 10' CROSSARM
HIGH NEUTRAL, 6° TO 15°
397 AAC MAX WIRE

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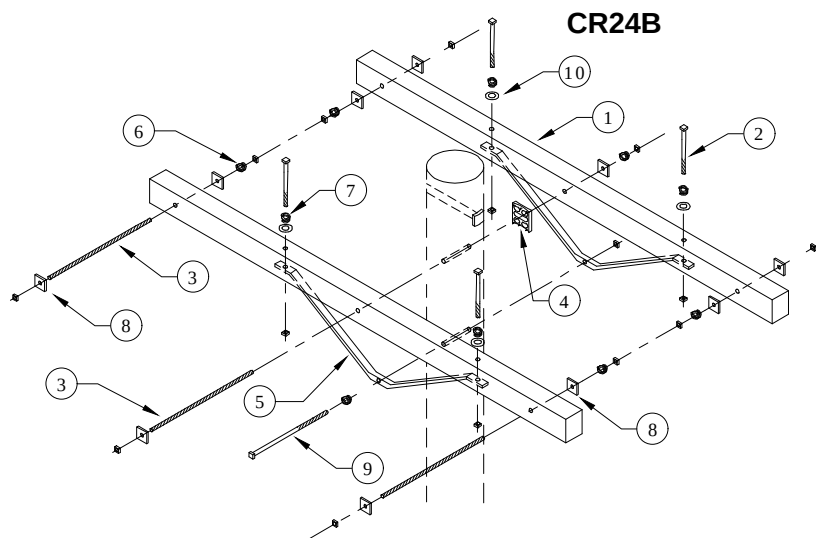
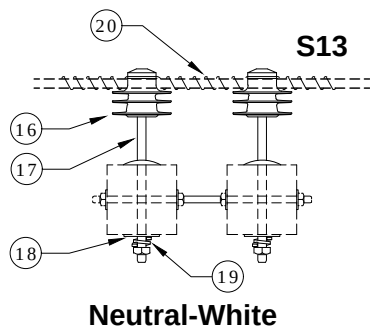
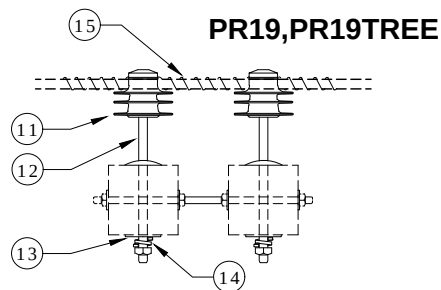
C5B,C5BTREE

CAD FILE:
C5B

REVISIONS

△ R	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	10/18/07	LB	AH
3	12/4/17	CM	DK

△	APP: ELM	SECTION
DATE: 1/31/80		330



Rev. 3 - Eliminated porcelain pin insulators and added avian notes.

ITEM NO.	DESCRIPTION	C5BTREE		C5B	
		CR24B		CR24B	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 10' x 3 3/4" x 4 3/4"	2	26	2	26
2	Bolt, Machine, 1/2" x 7", Galv., 7,800 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, 72"	2	204	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
ITEM NO.	DESCRIPTION	PR19TREE(3)		PR19 (3)	
		QTY.	S/N	QTY.	S/N
11	Insulator, Pin, C Neck, Polymer	6	1968	6	1968 *
12	Pin, Crossarm	6	961	6	961
13	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	6	1412	6	1412
14	Washer, Lock, Spring, Double Coil, Galv., 5/8"	6	2217	6	2217
15	Wire, Tie, AL Annealed #4 SD	66*	3012	60	1421
ITEM NO.	DESCRIPTION	S13		S13	
		QTY.	S/N	QTY.	S/N
16	Insulator, Pin, C Neck, White, Polymer	2	2656	2	2656
17	Pin, Crossarm	2	961	2	961
18	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	2	1412	2	1412
19	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
20	Wire, Tie, AL Annealed #4 SD	20	1421	20	1421



CONSTRUCTION STANDARDS

3Ø DOUBLE 10' CROSSARM
HIGH NEUTRAL, 6° TO 15°
397 AAC MAX WIRE

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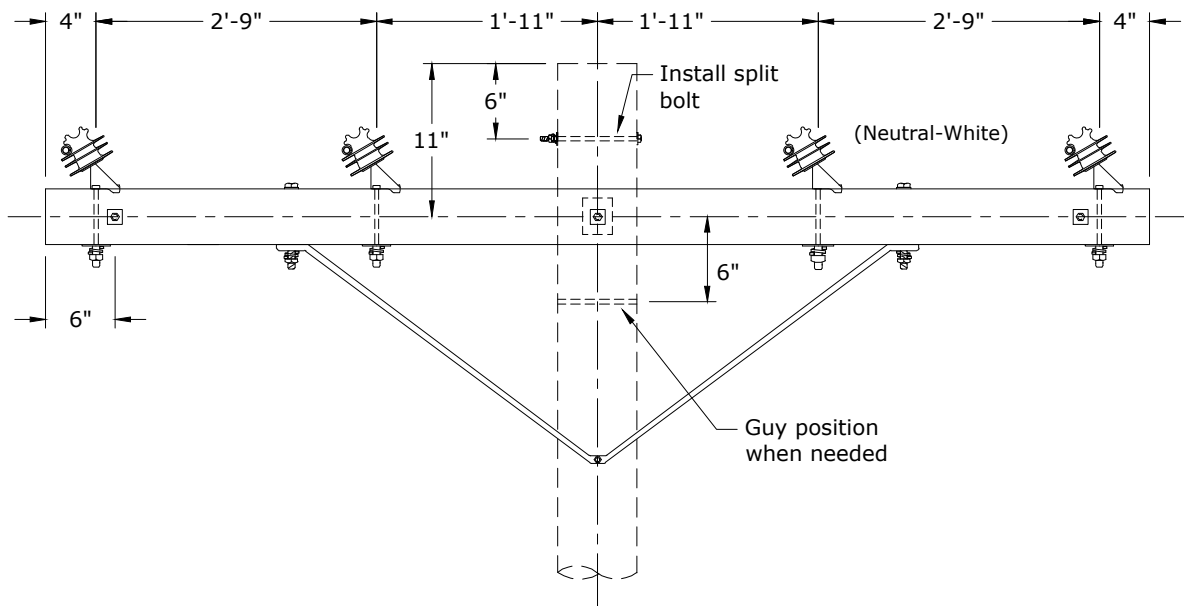
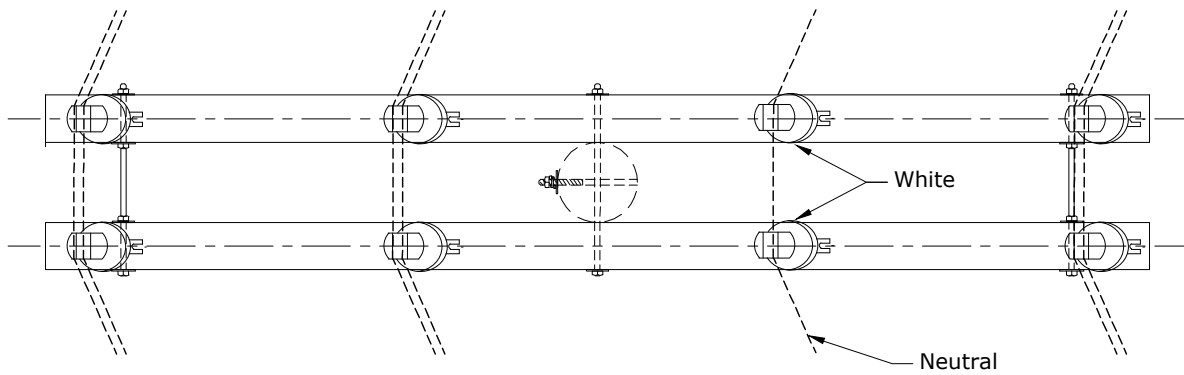
C5B, C5BTREE

CAD FILE:
C5B

REVISIONS

Δ	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	10/18/07	LB	AH
3	12/4/17	CM	DK

APP:	ELM	SECTION
DATE:	1/31/80	330



C6BTREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. This framing is for clearance limited situations only.
3. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase and neutral.

Rev. 2 - Moved conductor to side of insulators.



CONSTRUCTION STANDARDS

3Ø DOUBLE 10' CROSSARM
HIGH NEUTRAL, 16° TO 30°
397 AAC MAX WIRE

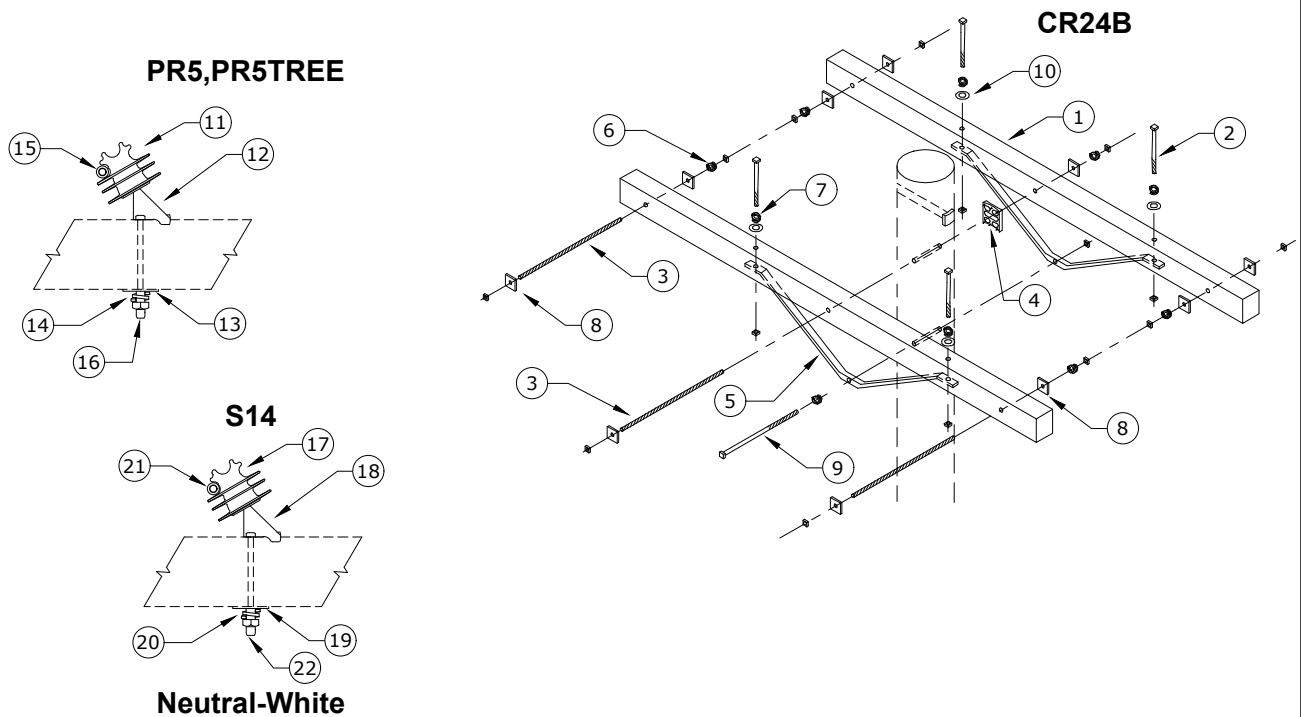
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C6B,C6BTREE

CAD FILE:
C6B

REVISIONS

△ R	DATE	ENGR	OPS
1	12/4/17	CM	DK
2	8/9/19	JDK	
△			
APP:	LB/AH	SECTION	
DATE:	10/18/07	330	



Rev. 2 - Moved conductor to side of insulators.

ITEM NO.	DESCRIPTION	C6BTREE		C6B	
		CR24B		CR24B	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 10' x 3 3/4" x 4 3/4"	2	26	2	26
2	Bolt, Machine, 1/2" x 7", Galv., 7,800 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, 72"	2	204	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
ITEM NO.	DESCRIPTION	PR5TREE(6)		PR5 (6)	
		QTY.	S/N	QTY.	S/N
11	Insulator, Pin, C Neck, Polymer	6	1968	6	1968 *
12	Pin, Angle, Crossarm	6	2658	6	2658
13	Washer, Square Flat, 5/8", 2 1/4" x 2 1/4"	6	1412	6	1412
14	Washer, Lock, Spring, Double Coil, Galv., 5/8"	6	2217	6	2217
15	Wire, Tie, AL Annealed #4 SD	66*	3012	60	1421
16	Bolt, Machine, 5/8" x 7", Galv., 12,400 lbs Ultimate Tensile	6	2606	6	2606 *
ITEM NO.	DESCRIPTION	S14(2)		S14(2)	
		QTY.	S/N	QTY.	S/N
17	Insulator, Pin, C Neck, White, Polymer	2	2656	2	2656
18	Pin, Angle, Crossarm	2	2658	2	2658
19	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	2	1412	2	1412
20	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
21	Wire, Tie, AL Annealed #4 SD	20	1421	20	1421
22	Bolt, Machine, 5/8" x 7", Galv., 12,400 lbs Ultimate Tensile	2	2606	2	2606 *



CONSTRUCTION STANDARDS

3Ø DOUBLE 10' CROSSARM
HIGH NEUTRAL, 16° TO 30°
397 AAC MAX WIRE

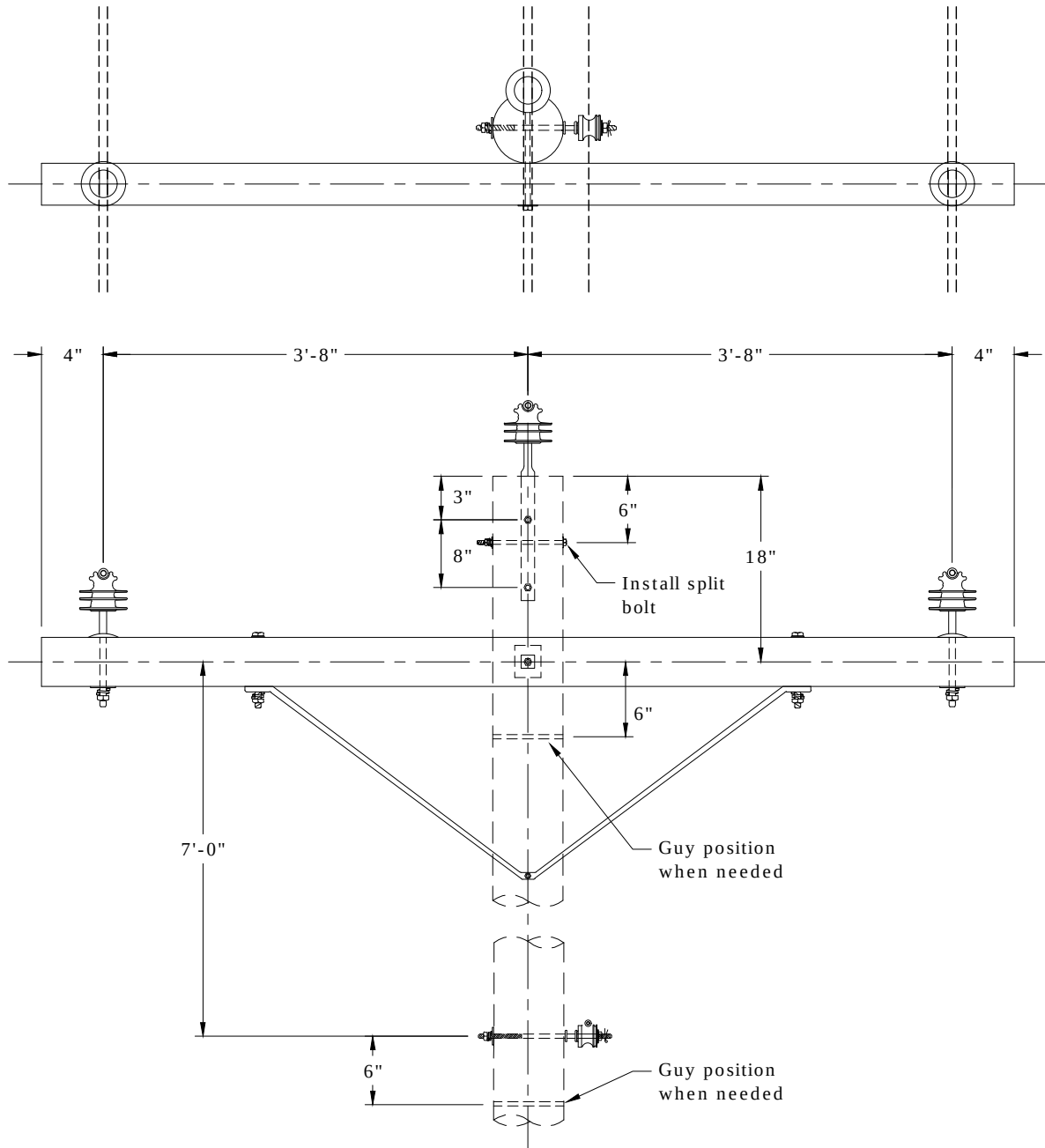
PAGE:
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C6B,C6BTREE

CAD FILE:
C6B

REVISIONS

△	DATE	ENGR	OPS
1	12/4/17	CM	DK
2	8/9/19	JDK	
△			
APP:	LB/AH	SECTION	
DATE:	10/18/07	330	



C7ATREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase.

Rev. 3 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø SINGLE 8' CROSSARM W/ POLE TOP
0° TO 5°
397 AAC MAX WIRE

PAGE:
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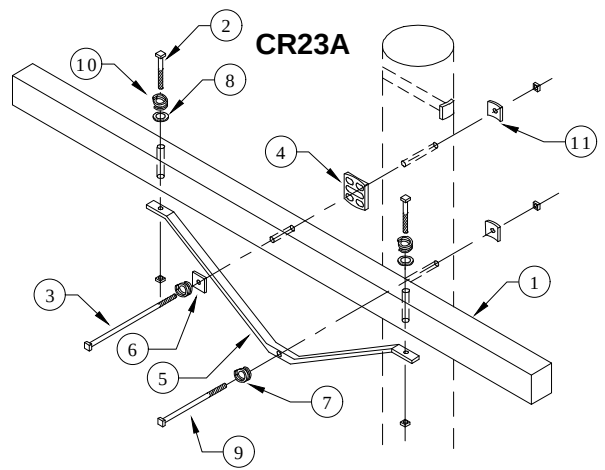
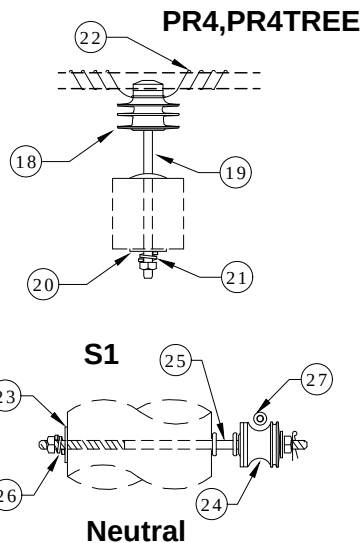
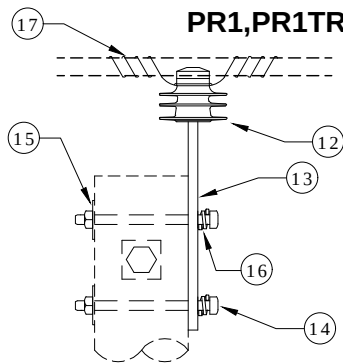
C7A,C7ATREE

CAD FILE:
C7A

REVISIONS

△	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	10/18/07	LB	AH
3	12/4/17	CM	DK

△	APP: ELM	SECTION
DATE: 1/31/80		330



Rev. 3 - Eliminated porcelain pin insulators and added avian notes.

ITEM NO.	DESCRIPTION	C7ATREE		C7A	
		CR23A		CR23A	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 8' x 3 3/4" x 4 3/4"	1	25	1	25
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"	1	203	1	203
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
ITEM NO.	DESCRIPTION	PR1TREE		PR1	
		QTY.	S/N	QTY.	S/N
12	Insulator, Pin, C Neck, Polymer	1	1968	1	1968 *
13	Pin, Pole Top	1	962	1	962
14	Bolt, Machine, 5/8" x 12", Galv., 12,400 lbs Ultimate Tensile	2	155	2	155
15	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
16	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
17	Wire, Tie, AL Annealed #4 SD	11*	3012	10	1421
ITEM NO.	DESCRIPTION	PR4TREE(2)		PR4 (2)	
		QTY.	S/N	QTY.	S/N
18	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 *
19	Pin, Crossarm	2	961	2	961
20	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	2	1412	2	1412
21	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
22	Wire, Tie, AL Annealed #4 SD	22*	3012	20	1421
ITEM NO.	DESCRIPTION	S1		S1	
		QTY.	S/N	QTY.	S/N
23	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
24	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
25	Bolt, Double Upset, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	1580	1	1580
26	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
27	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



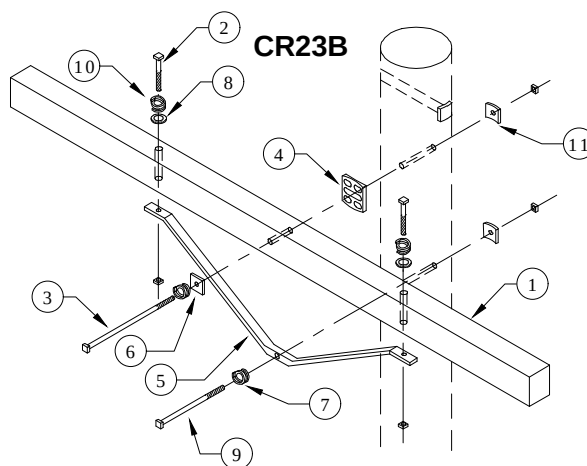
CONSTRUCTION STANDARDS 3Ø SINGLE 8' CROSSARM W/ POLE TOP 0° TO 5° 397 AAC MAX WIRE

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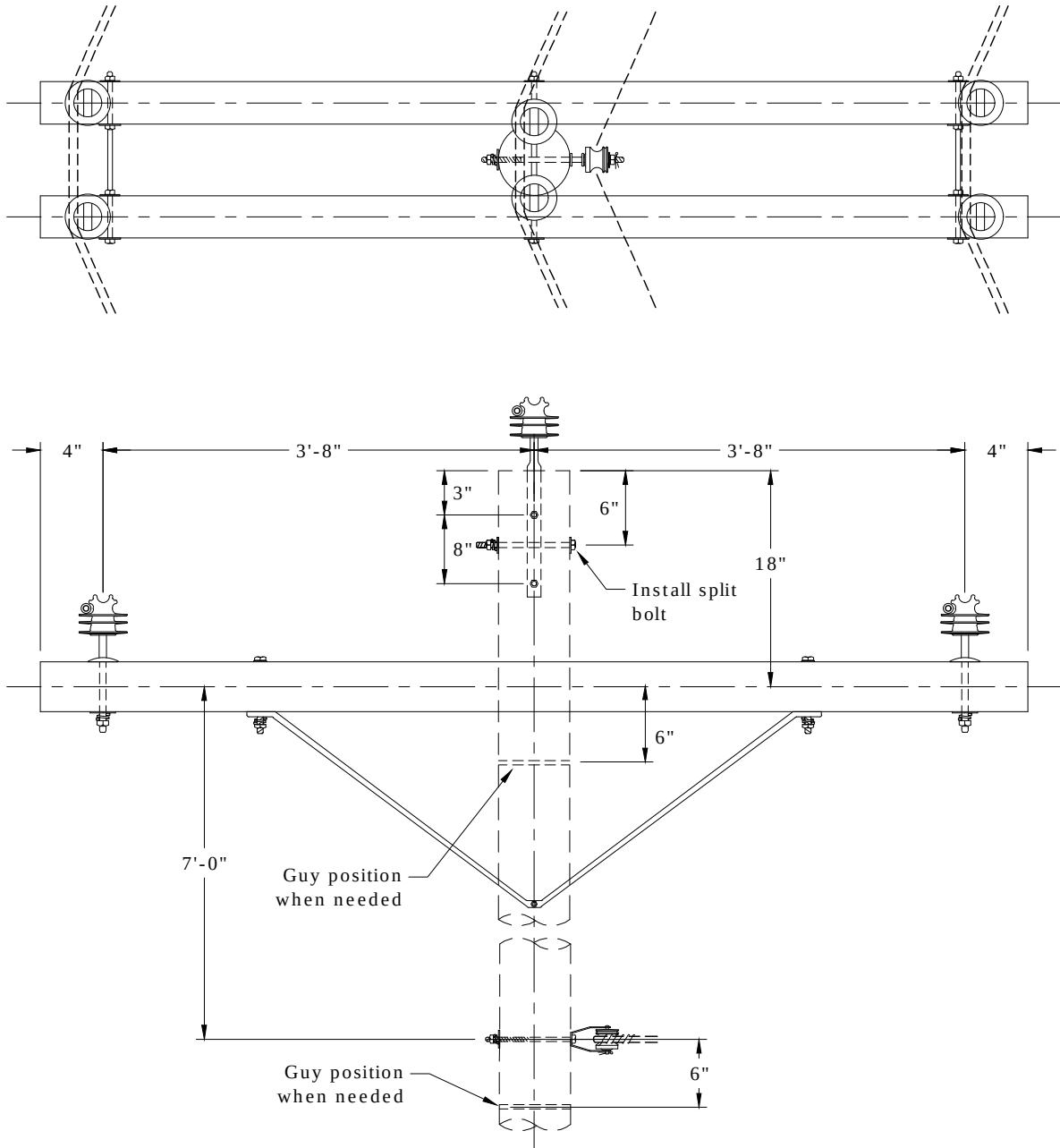
C7A,C7ATREE

CAD FILE:
C7A

REVISIONS			
Δ	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	10/18/07	LB	AH
3	12/4/17	CM	DK
Δ			
APP:	ELM	SECTION	
DATE:	1/31/80	330	



Clark Public Utilities	CONSTRUCTION STANDARDS 3Ø SINGLE 10' CROSSARM W/ POLE TOP 0° TO 5° - FOR AVIAN RETROFIT 397 AAC MAX WIRE			REVISIONS			
				△	DATE	ENGR	OPS
	△						
PAGE: 2 of 2	C7AVIAN		CAD FILE: C7AVIAN	APP: DATE:	CM/DK 12/4/17	SECTION 330	



C8ATREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase.

Rev. 3 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø DOUBLE 8' CROSSARM W/ POLE TOP
6° TO 15°
397 AAC MAX WIRE

PAGE:
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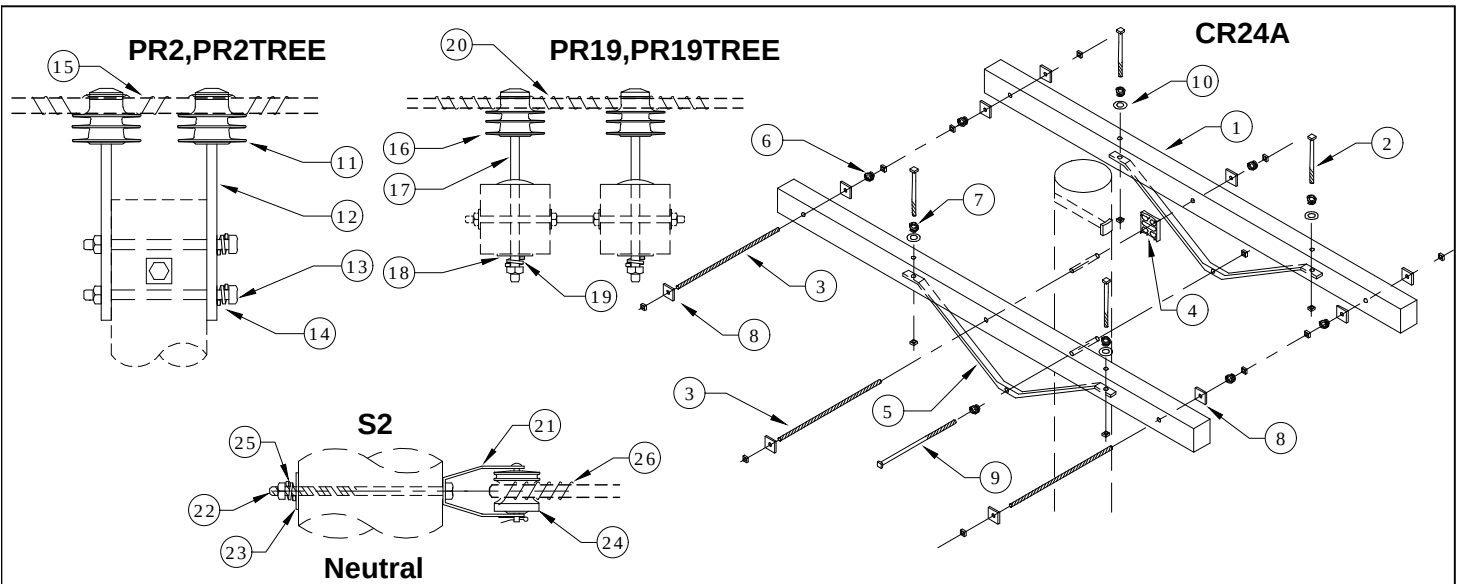
C8A,C8ATREE

CAD FILE:
C8A

REVISIONS

△	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	10/18/07	LB	AH
3	12/4/17	CM	DK

△	APP: ELM	SECTION
DATE: 1/31/80		330



Rev. 3 - Eliminated porcelain pin insulators and added avian notes.

ITEM NO.	DESCRIPTION	C8ATREE		C8A	
		CR24A		CR24A	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 8' x 3 3/4" x 4 3/4"	2	25	2	25
2	Bolt, Machine, 1/2" x 7", Galv., 7,800 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"	2	203	2	203
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
ITEM NO.	DESCRIPTION	PR2TREE		PR2	
		QTY.	S/N	QTY.	S/N
11	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 *
12	Pin, Pole Top	2	962	2	962
13	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	2	156	2	156
14	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
16	Wire, Tie, AL Annealed #4 SD	22*	3012	20	1421
ITEM NO.	DESCRIPTION	PR19TREE(2)		PR19 (2)	
		QTY.	S/N	QTY.	S/N
16	Insulator, Pin, C Neck, Polymer	4	1968	4	1968 *
17	Pin, Crossarm	4	961	4	961
18	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	4	1412	4	1412
19	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4	2217	4	2217
20	Wire, Tie, AL Annealed #4 SD	44*	3012	40	1421
ITEM NO.	DESCRIPTION	S2		S2	
		QTY.	S/N	QTY.	S/N
21	Clevis, D.E. Insulator 1340	1	335	1	335
22	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	156	1	156
23	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
24	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
25	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
26	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS 3Ø DOUBLE 8' CROSSARM W/ POLE TOP 6° TO 15° 397 AAC MAX WIRE

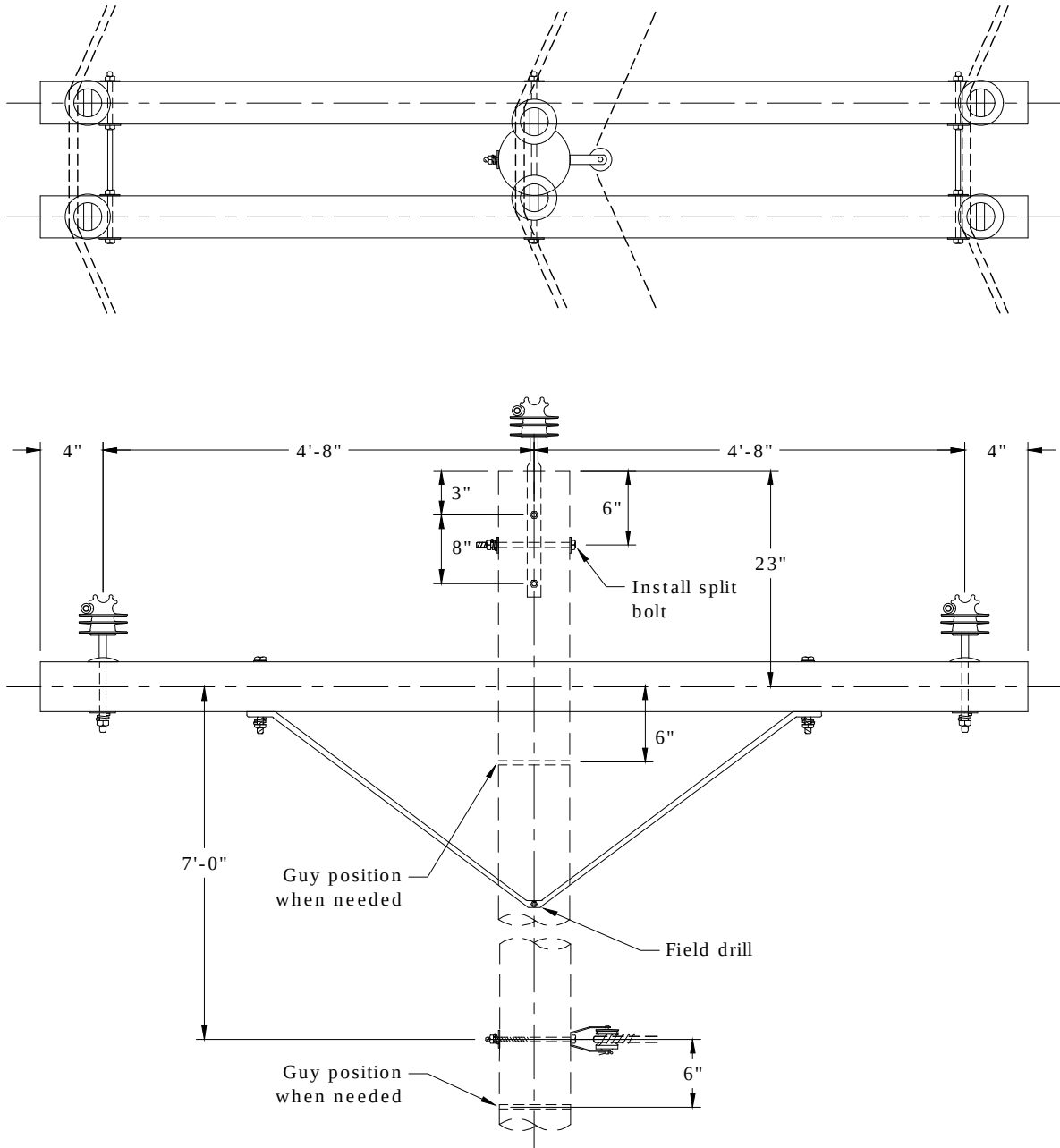
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C8A,C8ATREE

CAD FILE:
C8A

REVISIONS

Δ	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	10/18/07	LB	AH
3	12/4/17	CM	DK
Δ			
APP:	ELM	SECTION	
DATE:	1/31/80	330	



Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. Changing Std C8A to a 10' crossarm and lowering the crossarm 5" makes it avian safe.



CONSTRUCTION STANDARDS

3Ø DOUBLE 10' CROSSARM W/ POLE TOP
6° TO 15° - FOR AVIAN RETROFIT
397 AAC MAX WIRE

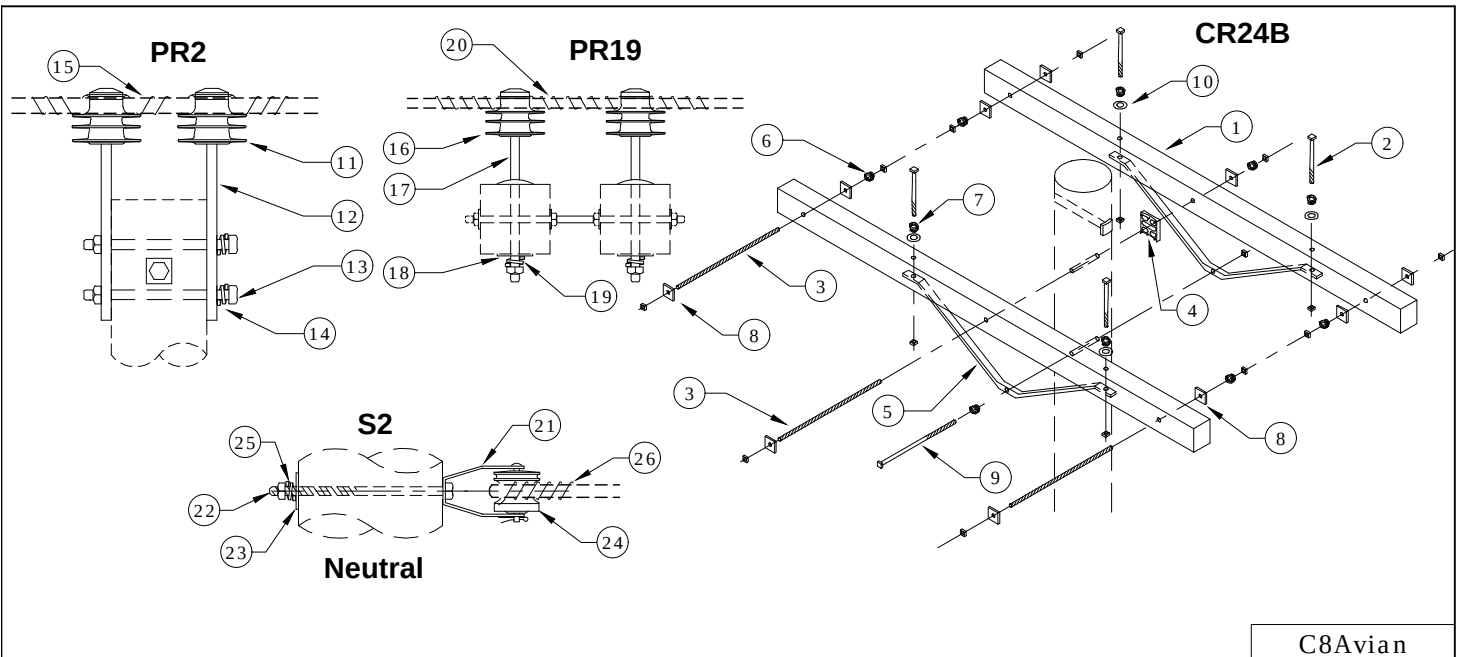
PAGE:
1 of 2

C8AVIAN

CAD FILE:
C8AVIAN

REVISIONS

△	DATE	ENGR	OPS
△			
APP:	CM/DK	SECTION	
DATE:	12/4/17	330	



ITEM NO.	DESCRIPTION	C8Avian CR24B	
		QTY.	S/N
1	Arm, Cross (Distr.), 10' x 3 3/4" x 4 3/4"	2	26
2	Bolt, Machine, 1/2" x 7", Galv., 7,800 lbs Ultimate Tensile	4	143
3	Bolt, Double Arm, 5/8" x 20", Galv., 12,400 lbs Ultimate Tensile	3	83
4	Gain, Pole Plastic	1	709
5	Brace, Angle, 72"	2	204
6	Washer, Lock, Spring, Double Coil, Galv., 5/8"	6	2217
7	Washer, Lock, Spring, Double Coil, Galv., 1/2"	4	2216
8	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	10	1412
9	Bolt, Machine, 5/8" x 12", Galv., 12,400 lbs Ultimate Tensile	1	155
10	Washer, Flat, Round, Galv., 1/2"	4	1394
ITEM NO.	DESCRIPTION	PR2	
		QTY.	S/N
11	Insulator, Pin, C Neck, Polymer	2	1968
12	Pin, Pole Top	2	962
13	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	2	156
14	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217
15	Wire, Tie, AL Annealed #4 SD	20	1421
ITEM NO.	DESCRIPTION	PR19 (2)	
		QTY.	S/N
16	Insulator, Pin, C Neck, Polymer	4	1968
17	Pin, Crossarm	4	961
18	Washer, Square Flat, 5/8", 2 1/4" x 2 1/4"	4	1412
19	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4	2217
20	Wire, Tie, AL Annealed #4 SD	40	1421
ITEM NO.	DESCRIPTION	S2	
		QTY.	S/N
21	Clevis, D.E. Insulator 1340	1	335
22	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	156
23	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392
24	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773
25	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217
26	Wire, Tie, AL Annealed #4 SD	10	1421



CONSTRUCTION STANDARDS

3Ø DOUBLE 10' CROSSARM W/ POLE TOP
6° TO 15° - FOR AVIAN RETROFIT
397 AAC MAX WIRE

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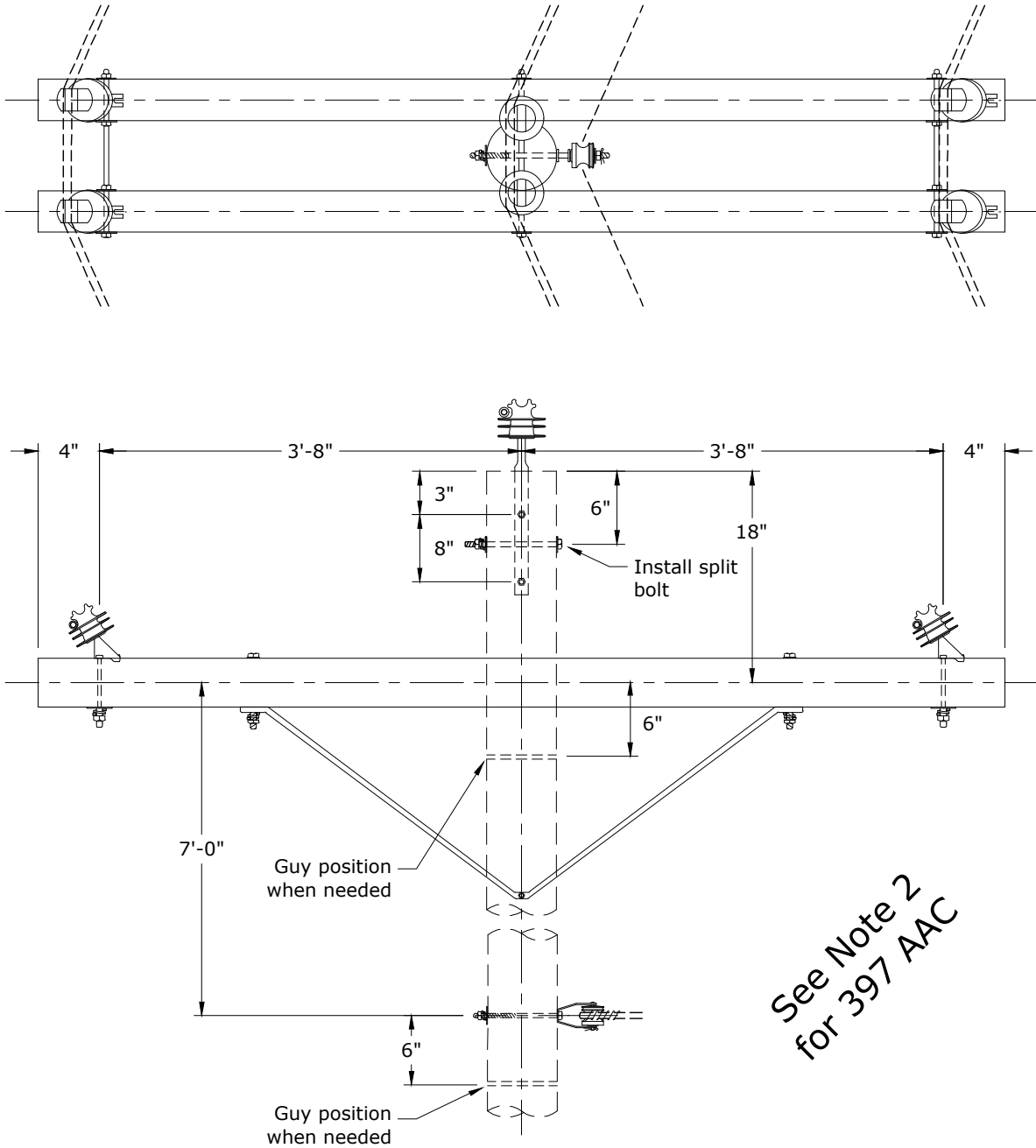
C8AVIAN

CAD FILE:
C8AVIAN

REVISIONS

DATE	ENGR	OPS

APP: CM/DK SECTION
DATE: 12/4/17 330



C9ATREE - Avian Safe

Notes:

1. Maximum line angle calculated for 2/0 at 2,000 lbs. MWT and 250-ft ruling span.
2. For 397 AAC at 16°-30° use Std C3B,C3BTREE.
3. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase.

Rev. 2 - Moved conductor to side of insulators.



CONSTRUCTION STANDARDS

3Ø DOUBLE 8' CROSSARM W/ DOUBLE
POLE TOP - 16° TO 30°
2/0 ACSR MAX WIRE

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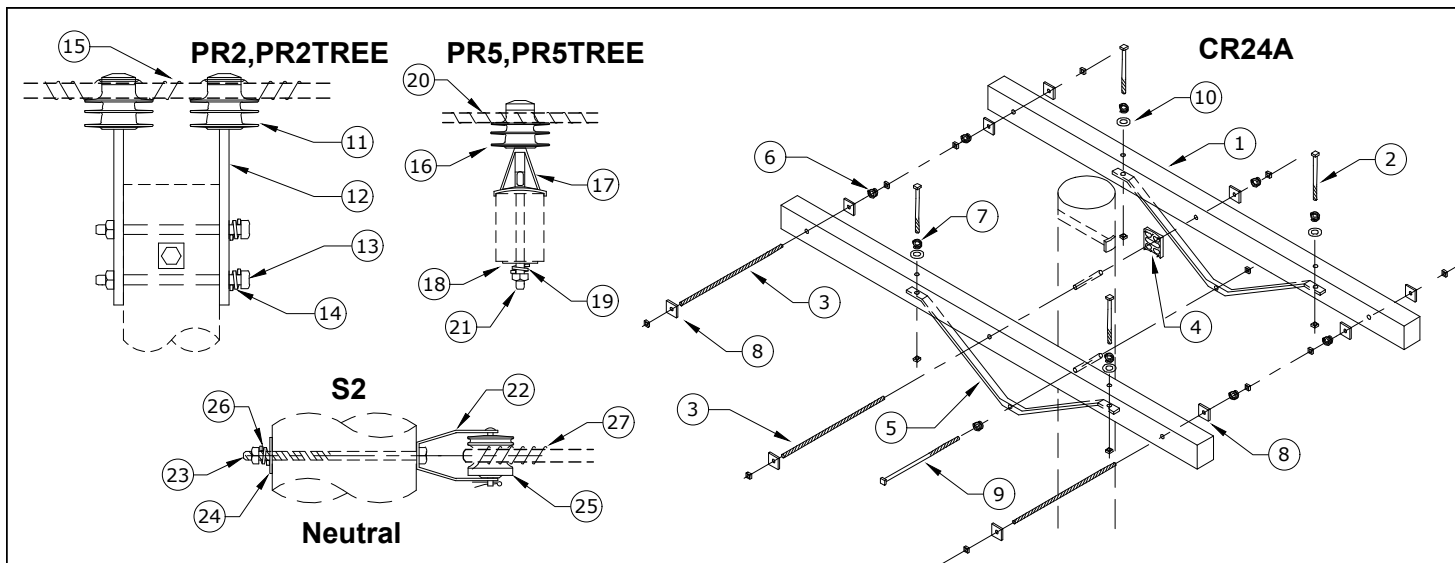
C9A,C9ATREE

CAD FILE:
C9A

REVISIONS

△	DATE	ENGR	OPS
1	12/4/17	CM	DK
2	8/9/19	JDK	

△	APP:	LB/AH	SECTION
	DATE:	10/18/07	330



Rev. 2 - Moved conductor to side of insulators.

ITEM NO.	DESCRIPTION	C9ATREE		C9A	
		CR24A		CR24A	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 8' x 3 3/4" x 4 3/4"	2	25	2	25
2	Bolt, Machine, 1/2" x 7" Galv., 7,800 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"	2	203	2	203
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
ITEM NO.	DESCRIPTION	PR2TREE		PR2	
		QTY.	S/N	QTY.	S/N
11	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 *
12	Pin, Pole Top	2	962	2	962
13	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	2	156	2	156
14	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
15	Wire, Tie, AL Annealed #4 SD	22*	3012	20	1421
ITEM NO.	DESCRIPTION	PR5TREE(4)		PR5(4)	
		QTY.	S/N	QTY.	S/N
16	Insulator, Pin, C Neck, Polymer	4	1968	4	1968 *
17	Pin, Angle, Crossarm	4	2658	4	2658
18	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	4	1412	4	1412
19	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4	2217	4	2217
20	Wire, Tie, AL Annealed #4 SD	44*	3012	40	1421
21	Bolt, Machine, 5/8" x 7", Galv., 12,400 lbs Ultimate Tensile	4	2606	4	2606 *
ITEM NO.	DESCRIPTION	S2		S2	
		QTY.	S/N	QTY.	S/N
22	Clevis, D.E. Insulator 1340	1	335	1	335
23	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	156	1	156
24	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
25	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
26	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
27	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS

3Ø DOUBLE 8' CROSSARM W/ DOUBLE
POLE TOP - 16° TO 30°
2/0 ACSR MAX WIRE

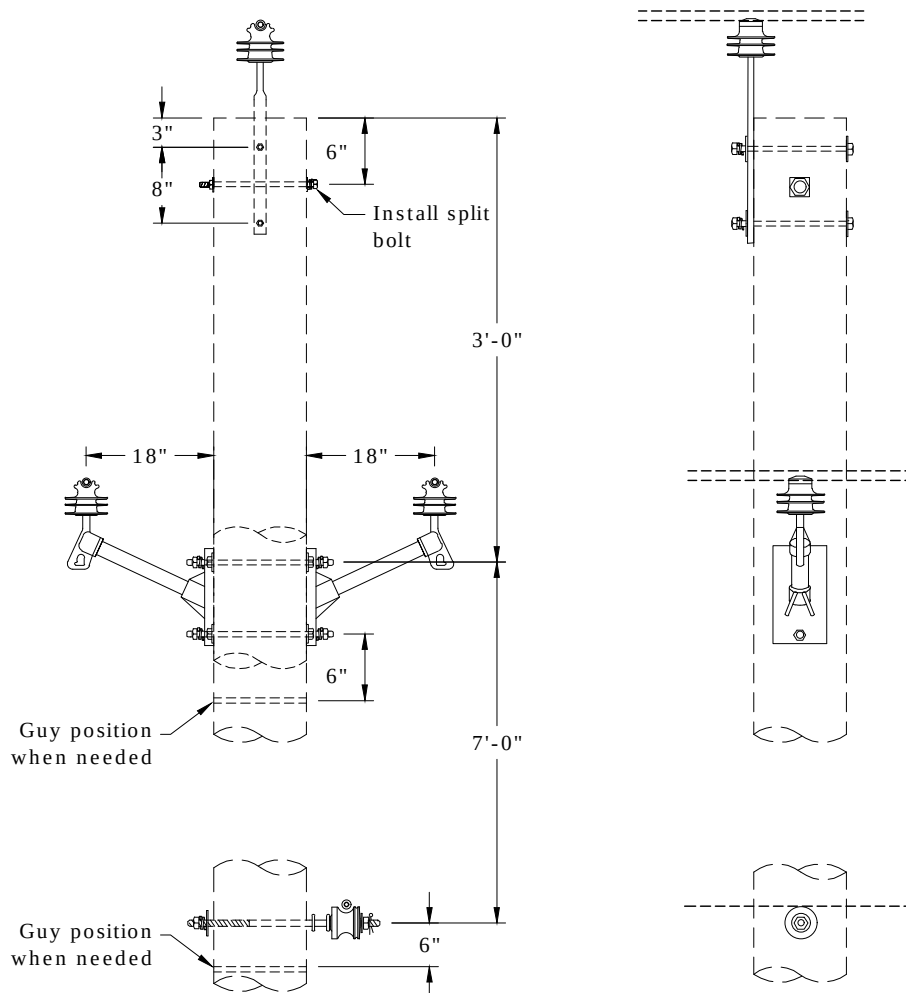
PAGE:
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C9A,C9ATREE

CAD FILE:
C9A

REVISIONS

Δ	DATE	ENGR	OPS
1	12/4/17	CM	DK
2	8/9/19	JDK	
APP: LB/AH SECTION DATE: 10/18/07 330			



C10TREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase and one of the outside phases.

Rev. 3 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø TWIGGY W/ POLE TOP
0° TO 5°
397 AAC MAX WIRE

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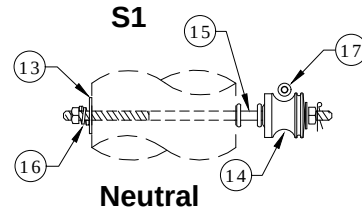
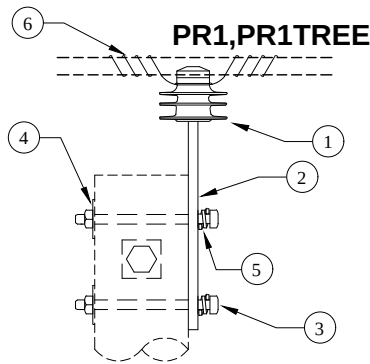
C10,C10TREE

CAD FILE:
C10

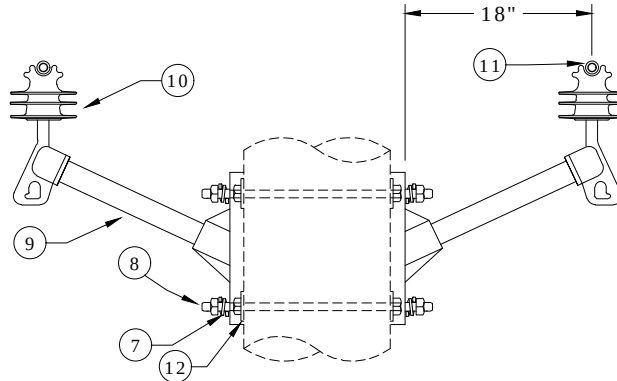
REVISIONS

△	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	10/18/07	LB	AH
3	12/4/17	CM	DK

△	APP: ELM	SECTION
DATE: 1/31/80		330



PR61, PR61TREE



Rev. 3 - Eliminated porcelain pin insulators and added avian notes.

ITEM NO.	DESCRIPTION	C10TREE		C10	
		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
ITEM NO.	DESCRIPTION	PR61TREE		PR61	
		QTY.	S/N	QTY.	S/N
7	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4 *	2217	4 *	2217
8	Bolt, Double Arm, 5/8" x 18", Galv., 12,400 lbs Ultimate Tensile	2 *	82 *	2 *	82 *
9	Arm, Epoxy 18" 2500 lbs	2	2504	2	2504
10	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 *
11	Wire, Tie, AL Annealed #4 SD	22*	3012	20	1421
12	Washer, Flat Round Galv., 5/8"	4 *	1395	4 *	1395
ITEM NO.	DESCRIPTION	S1		S1	
		QTY.	S/N	QTY.	S/N
13	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
14	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
15	Bolt, Double Upset, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	1580	1	1580
16	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
17	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS

3Ø TWIGGY W/ POLE TOP
0° TO 5°
397 AAC MAX WIRE

PAGE:
2 of 2

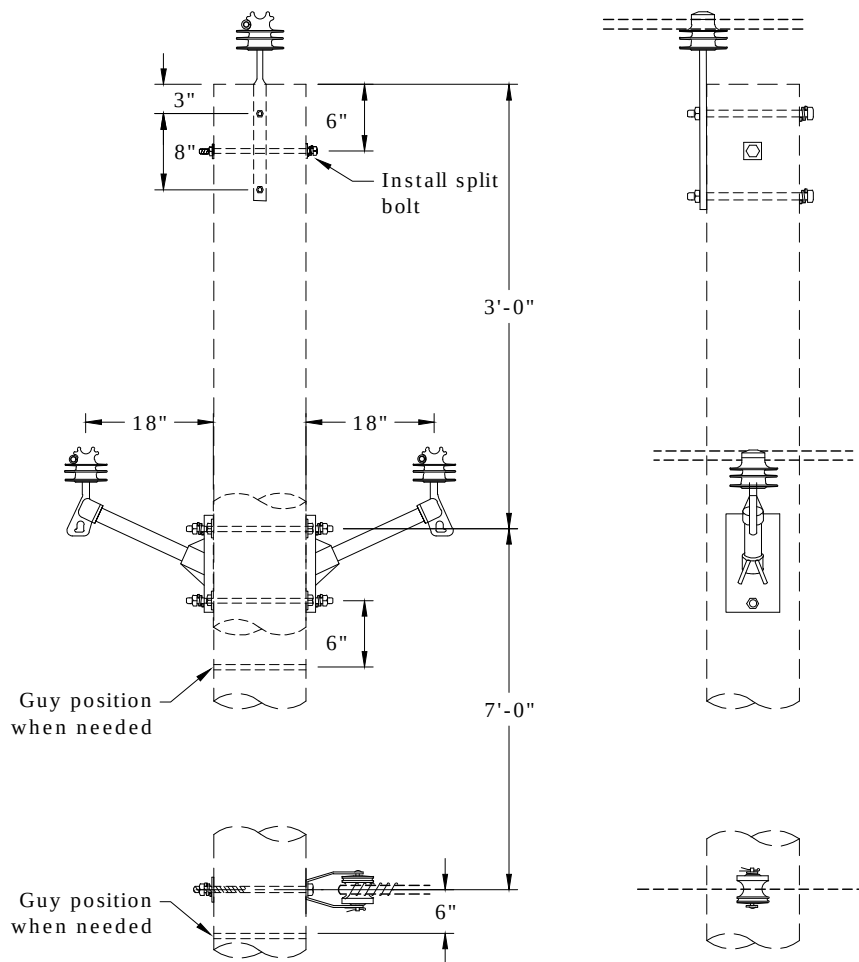
C10,C10TREE

CAD FILE:
C10

REVISIONS

Δ	DATE	ENGR	OPS
1	3/02	REDRAWN	IN CAD
2	10/18/07	LB	AH
3	12/4/17	CM	DK

APP:	ELM	SECTION
DATE:	1/31/80	330



C11TREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase and one of the outside phases.

Rev. 1 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø TWIGGY W/ POLE TOP
6° TO 15°
397 AAC MAX WIRE

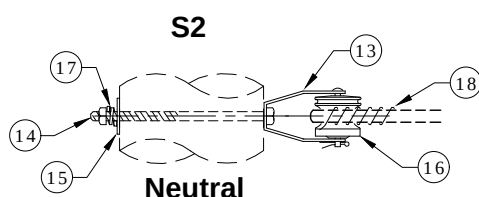
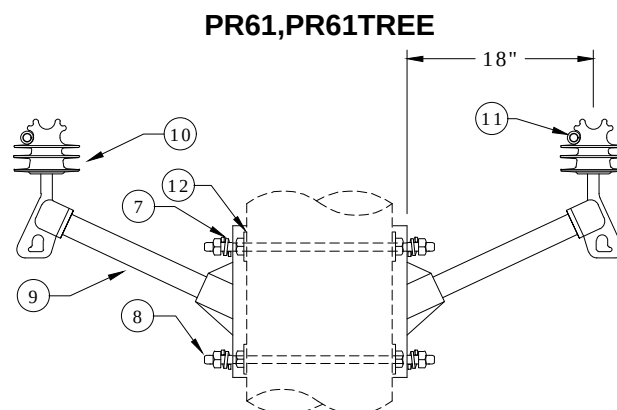
PAGE:
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C11,C11TREE

CAD FILE:
C11

REVISIONS

△	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP:	LB/AH	SECTION	
DATE:	10/18/07	330	



Rev. 1 - Eliminated porcelain pin insulators and added avian notes.		C11TREE		C11	
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
ITEM NO.	DESCRIPTION	PR61TREE		PR61	
		QTY.	S/N	QTY.	S/N
7	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4 ☼	2217	4 ☼	2217
8	Bolt, Double Arm, 5/8" x 18", Galv., 12,400 lbs Ultimate Tensile	2 ☼	82 ☼	2☼	82 ☼
9	Arm, Epoxy 18" 2500 lbs	2	2504	2	2504
10	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 ☼
11	Wire, Tie, AL Annealed #4 SD	22☼	3012	20	1421
12	Washer, Flat Round Galv., 5/8"	4 ☼	1395	4 ☼	1395
ITEM NO.	DESCRIPTION	S2		S2	
		QTY.	S/N	QTY.	S/N
13	Clevis, D.E. Insulator 1340	1	335	1	335
14	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	156	1	156
15	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
16	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
17	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
18	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS

3Ø TWIGGY W/ POLE TOP
6° TO 15°
397 AAC MAX WIRE

PAGE:
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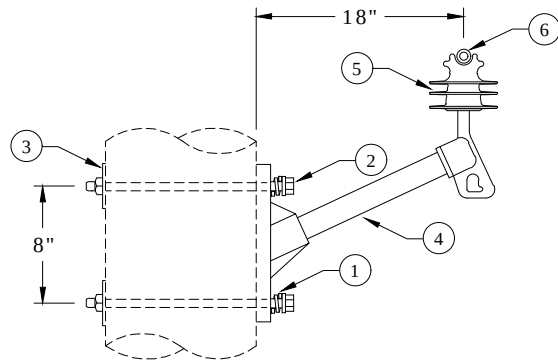
C11,C11TREE

CAD FILE:
C11

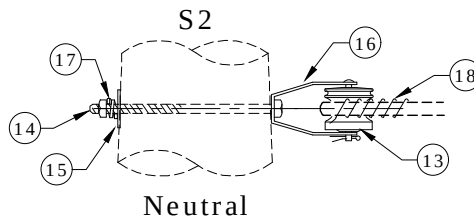
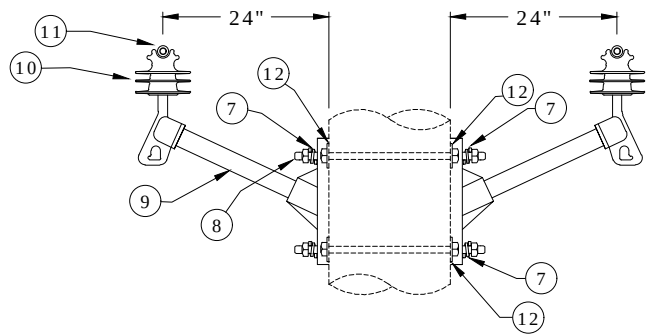
REVISIONS

REVISIONS			
△	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP: LB/AH		SECTION 330	
DATE: 10/18/07			

PR60,PR60TREE



PR63,PR63TREE



Rev. 1 - Eliminated porcelain pin insulators, added avian notes, and changed double pole top to twiggy for angle.

ITEM NO.	DESCRIPTION	C12TREE		C12	
		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
ITEM NO.	DESCRIPTION	PR63TREE		PR63	
		QTY.	S/N	QTY.	S/N
7	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4 *	2217	4 *	2217
8	Bolt, Double Arm, 5/8" x 18", Galv., 12,400 lbs Ultimate Tensile	2 *	82 *	2 *	82 *
9	Arm, Epoxy 24" 2500 lbs	2	2605	2	2605
10	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 *
11	Wire, Tie, AL Annealed #4 SD	22 *	3012	20	1421
12	Washer, Flat Round Galv., 5/8"	4 *	1395	4 *	1395
ITEM NO.	DESCRIPTION	S2		S2	
		QTY.	S/N	QTY.	S/N
13	Clevis, D.E. Insulator 1340	1	335	1	335
14	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	156	1	156
15	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
16	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
17	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
18	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS

3Ø TWIGGY
16° TO 30°
397 AAC MAX WIRE

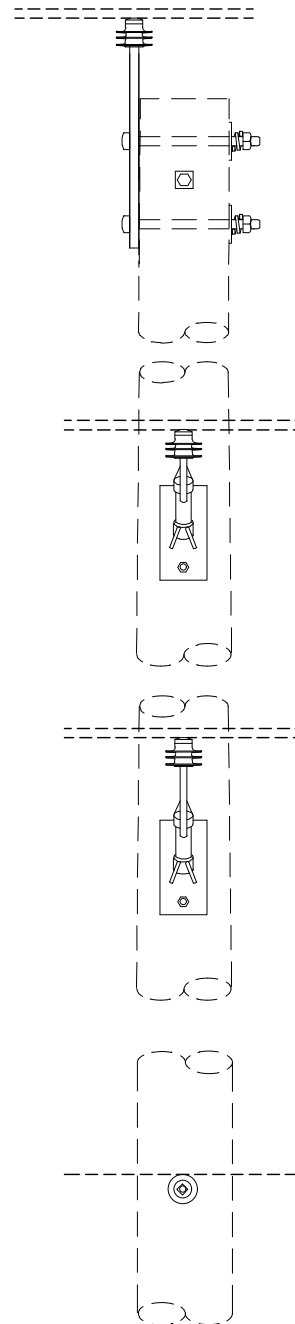
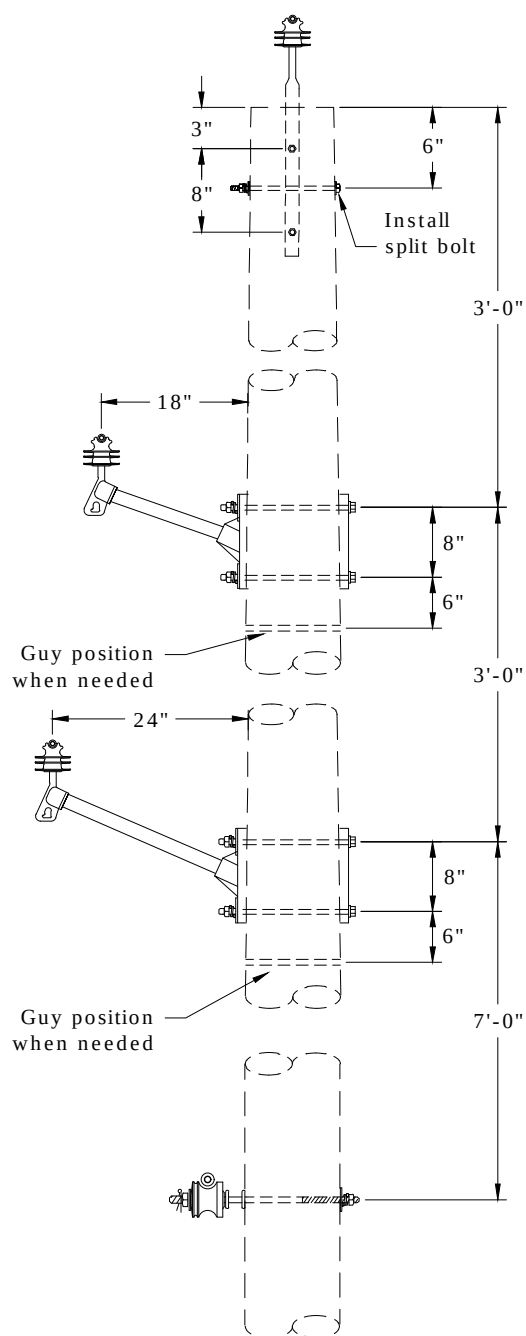
PAGE:
2 of 2

C12,C12TREE

CAD FILE:
C12

REVISIONS

Δ	DATE	ENGR	OPS
1	12/4/17	CM	DK
Δ			
APP:	LB/AH	SECTION	
DATE:	10/18/07	330	



C13TREE - Avian Safe

Notes:

- Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
- See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase.

Rev. 1 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø VERTICAL W/ POLE TOP
0° TO 5°
397 AAC MAX WIRE

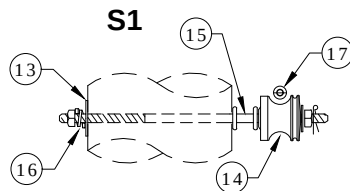
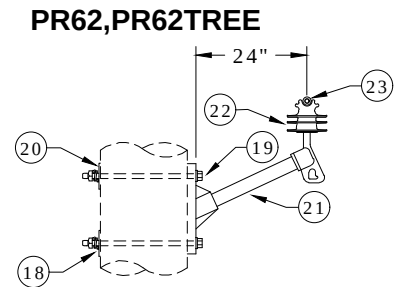
PAGE:
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C13,C13TREE

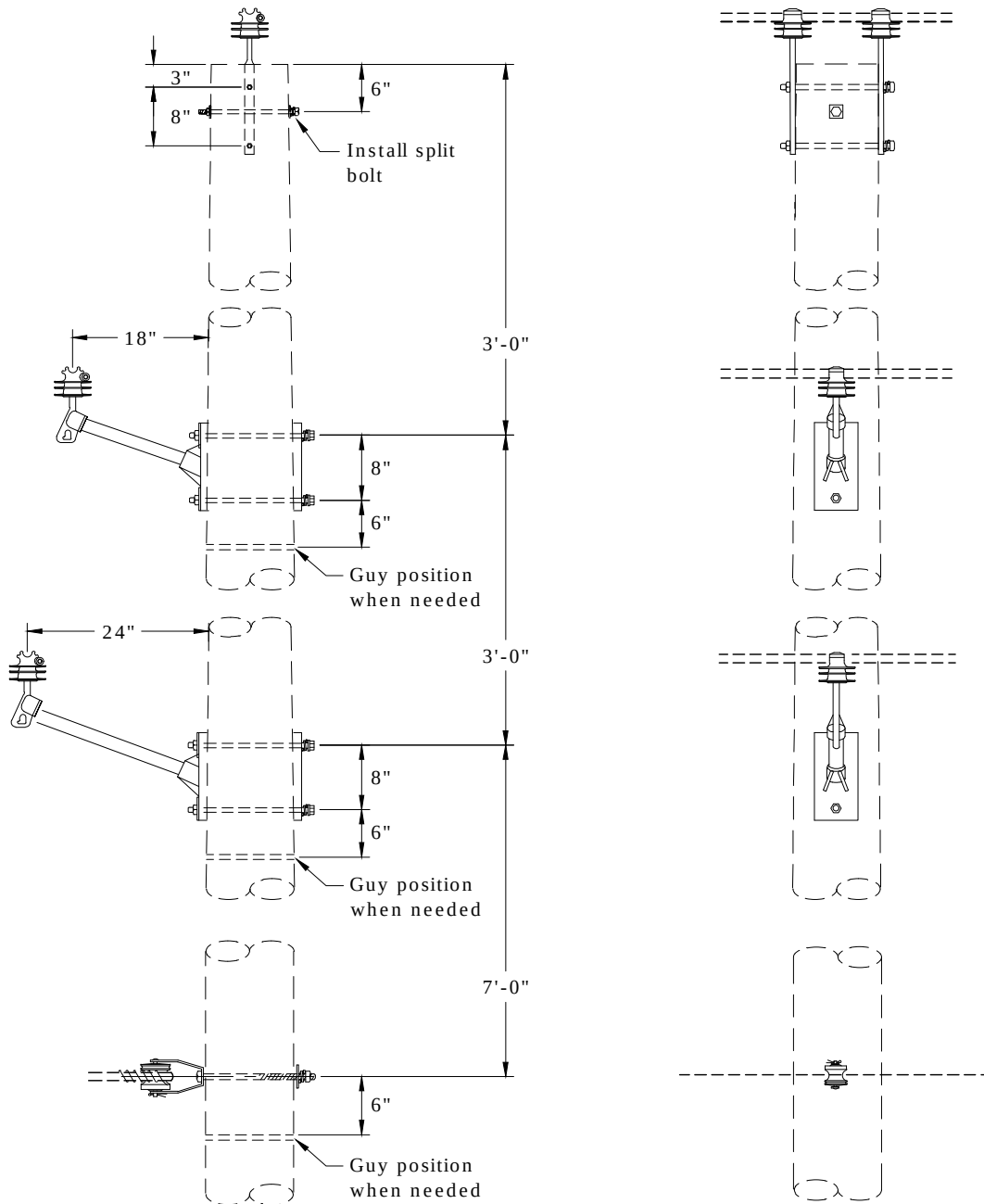
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REVISIONS

△	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP:	LB/AH	SECTION	
DATE:	9/06	330	



	CONSTRUCTION STANDARDS 3Ø VERTICAL W/ POLE TOP 0° TO 5° 397 AAC MAX WIRE			REVISIONS			
				R	DATE	ENGR	OPS
				1	12/4/17	CM	DK
	△						
PAGE: 2 of 2	C13,C13TREE		CAD FILE: C13	APP: LB/AH DATE: 9/06	SECTION 330		



C14TREE - Avian Safe

Notes:

- Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
- See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase.

Rev. 1 - Eliminated porcelain pin insulators, added avian notes, and changed single top to double.



CONSTRUCTION STANDARDS

3Ø VERTICAL W/ DOUBLE POLE TOP
6° TO 15°
397 AAC MAX WIRE

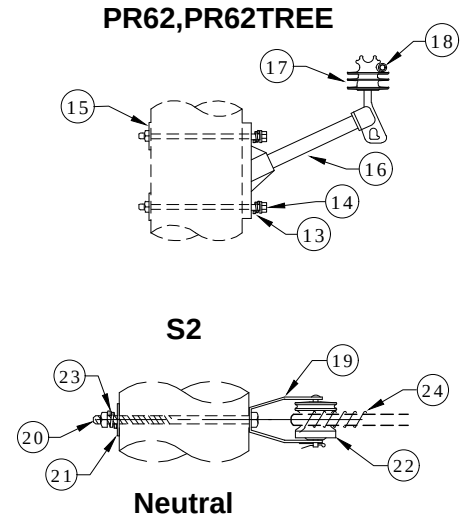
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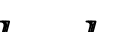
C14,C14TREE

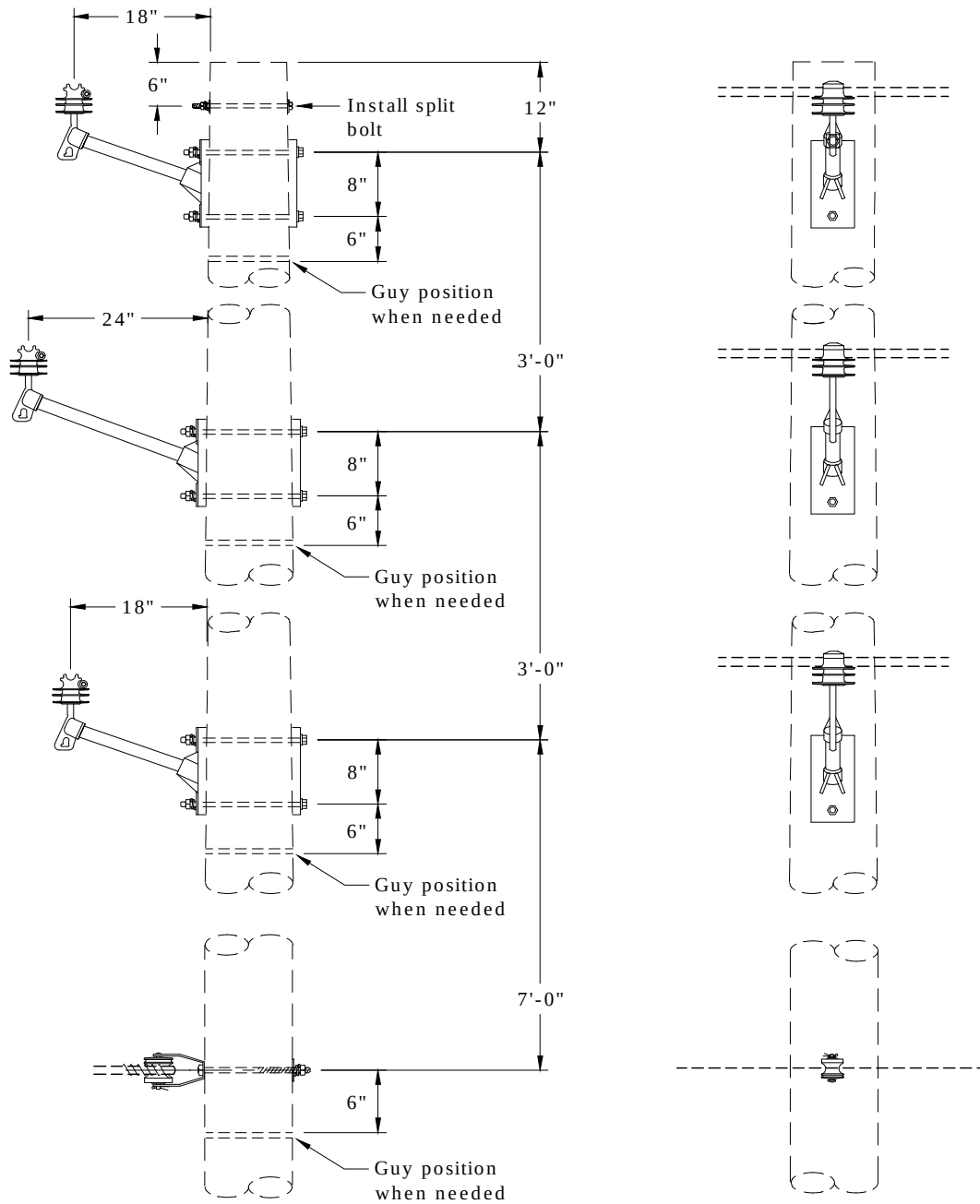
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REVISIONS

△ R	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP:	LB/AH	SECTION	
DATE:	12/19/07	330	



	CONSTRUCTION STANDARDS			REVISIONS			
	3Ø VERTICAL W/ DOUBLE POLE TOP			TR	DATE	ENGR	OPS
	6° TO 15°			1	12/4/17	CM	DK
	397 AAC MAX WIRE						
PAGE:	C14,C14TREE		CAD FILE:		APP: LB/AH		SECTION
2 of 2			C14		DATE: 12/19/07		330



C15TREE - Avian Safe

Notes:

- Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
- See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase.

Rev. 1 - Eliminated porcelain pin insulators, added avian notes, and changed double pole top to twiggy for angle.



CONSTRUCTION STANDARDS

3Ø VERTICAL
16° TO 30°
397 AAC MAX WIRE

PAGE:
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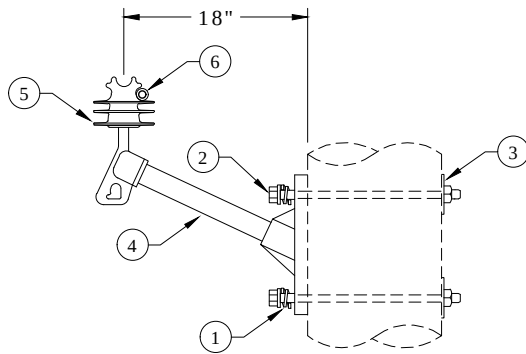
C15,C15TREE

CAD FILE:
C15

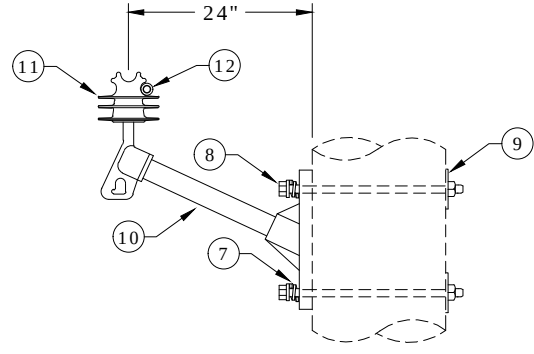
REVISIONS

REVISION	DATE	ENGR	OPS
1	12/4/17	CM	DK
APP: LB/AH			
DATE: 12/19/07			
SECTION			330

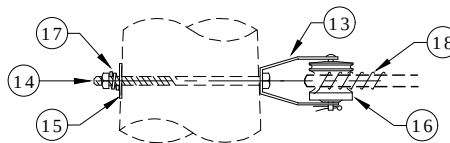
PR60,PR60TREE



PR62,PR62TREE



S2



Neutral

Rev. 1 - Eliminated porcelain pin insulators, added avian notes, and changed double pole top to twiggy for angle.

ITEM NO.	DESCRIPTION	C15TREE		C15	
		PR60TREE(2)		PR60 (2)	
		QTY.	S/N	QTY.	S/N
1	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4	2217	4	2217
2	Bolt, Machine, 5/8" x 16", Galv., 12,400 lbs Ultimate Tensile	4	157	4	157
3	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	4	1392	4	1392
4	Arm, Epoxy 18" 2500 lbs	2	2504	2	2504
5	Insulator, Pin, C Neck, Polymer	2	1968	2	1968*
6	Wire, Tie, AL Annealed #4 SD	22*	3012	20	1421
ITEM NO.	DESCRIPTION	PR62TREE		PR62	
		QTY.	S/N	QTY.	S/N
7	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
8	Bolt, Machine, 5/8" x 16", Galv., 12,400 lbs Ultimate Tensile	2	157	2	157
9	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
10	Arm, Epoxy 24" 2500 lbs	1	2605	1	2605
11	Insulator, Pin, C Neck, Polymer	1	1968	1	1968 *
12	Wire, Tie, AL Annealed #4 SD	11*	3012	10	1421
ITEM NO.	DESCRIPTION	S2		S2	
		QTY.	S/N	QTY.	S/N
13	Clevis, D.E. Insulator 1340	1	335	1	335
14	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	156	1	156
15	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
16	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
17	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
18	Wire, Tie, Bare, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS

3Ø VERTICAL
16° TO 30°
397 AAC MAX WIRE

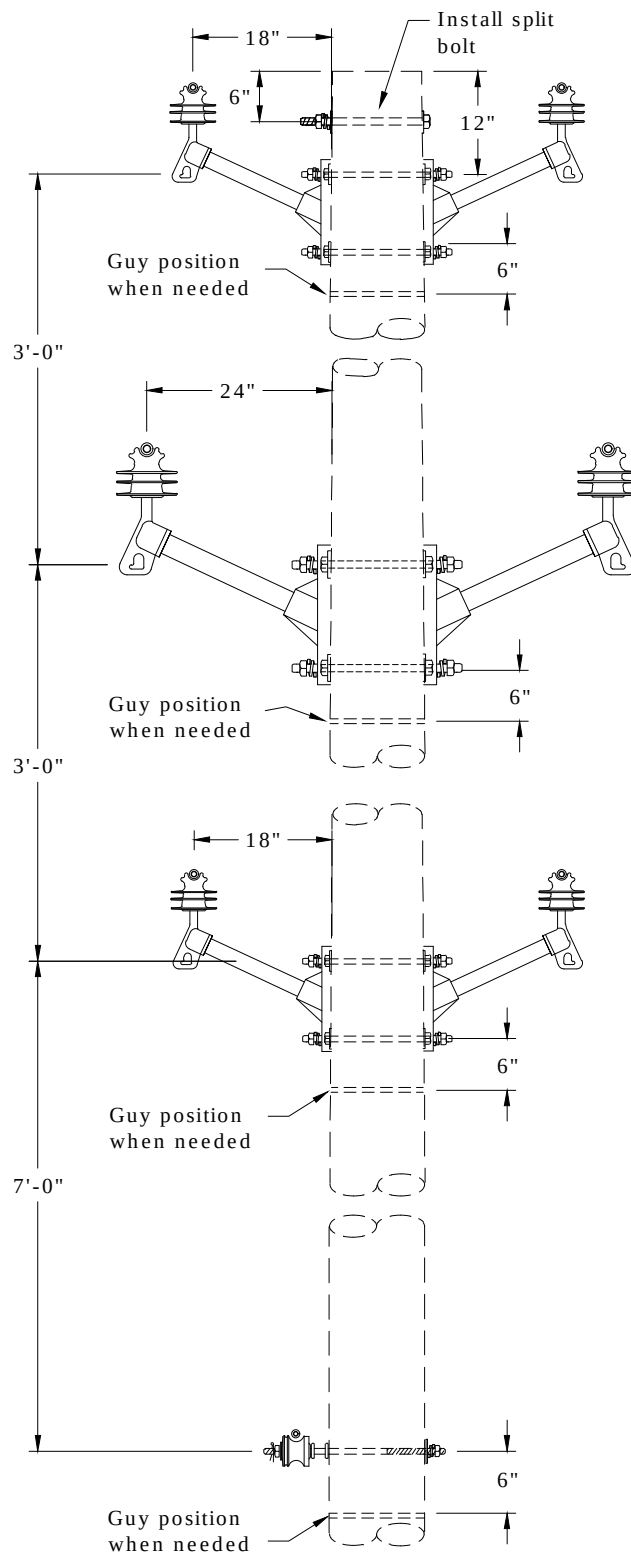
PAGE:
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C15,C15TREE

CAD FILE:
C15

REVISIONS

Δ	DATE	ENGR	OPS
1	12/4/17	CM	DK
Δ			
APP:	LB/AH	SECTION	
DATE:	12/19/07	330	



C16TREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. See Std AC - Avian Covers - Section 400 if needed. Covers required on all three phases on one side of pole and center phase on opposite side.

Rev. 1 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø DOUBLE TWIGGY CIRCUIT
0° TO 5°
397 AAC MAX WIRE

PAGE:
1 of 2

C16,C16TREE

CAD FILE:
C16

REVISIONS

△	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP:	LB/AH	SECTION	
DATE:	12/19/07	330	

S1

Neutral

The diagram shows a cross-section of a neutral gear assembly. A central shaft (13) is shown with a dashed line indicating its axis. The shaft is supported by bearings (15) and (16). A gear (14) is mounted on the shaft, and a pinion (17) is shown meshing with it. The assembly is labeled "S1" and "Neutral".

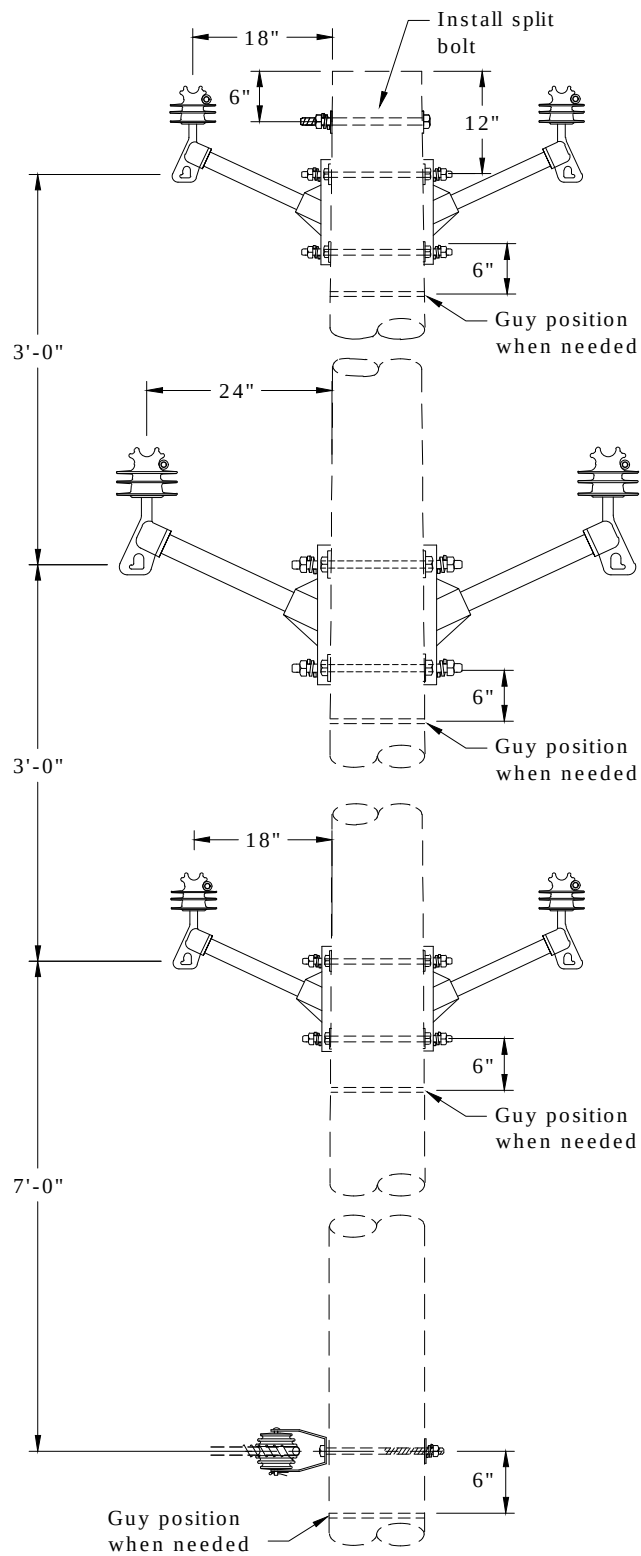
Rev. 1 - Eliminated porcelain pin insulators and added avian notes.		C16TREE		C16	
ITEM NO.	DESCRIPTION	PR61TREE (2)		PR61(2)	
		QTY.	S/N	QTY.	S/N
1	Washer, Lock, Spring Double Coil, Galv., 5/8"	8 ☼	2217	8 ☼	2217
2	Bolt, Double Arm, 5/8" x 18", Galv., 12,400 lbs Ultimate Tensile	4 ☼	82 ☼	4 ☼	82 ☼
3	Arm, Epoxy 18" 2500 lbs	4	2504	4	2504
4	Insulator, Pin, C Neck, Polymer	4	1968	4	1968 ☼
5	Wire, Tie, AL Annealed #4 SD	44 ☼	3012	40	1421
6	Washer, Flat Round Galv., 5/8"	8 ☼	1395	8 ☼	1395
	DESCRIPTION	PR63TREE		PR63	
		QTY.	S/N	QTY.	S/N
7	Washer, Lock, Spring Double Coil, Galv., 5/8"	4 ☼	2217	4 ☼	2217
8	Bolt, Double Arm, 5/8" x 18", Galv., 12,400 lbs Ultimate Tensile	2 ☼	82 ☼	2 ☼	82 ☼
9	Arm, Epoxy 24" 2500 lbs	2	2605	2	2605
10	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 ☼
11	Wire, Tie, AL Annealed #4 SD	22☼	3012	20	1421
12	Washer, Flat Round Galv., 5/8"	4 ☼	1395	4 ☼	1395
ITEM NO.	DESCRIPTION	S1		S1	
		QTY.	S/N	QTY.	S/N
13	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
14	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
15	Bolt, Double Upset, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile☼	1	1580	1	1580
16	Washer, Lock, Spring Double Coil, Galv., 5/8" ☼	1	2217	1	2217
17	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



3Ø DOUBLE TWIGGY CIRCUIT
0° TO 5°
397 AAC MAX WIRE

C16,C16TREE

REVISIONS			
	DATE	ENGR	OPS
1	12/4/17	CM	DK
			
APP: LB/AH		SECTION	
DATE: 12/19/07		330	



C17TREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. See Std AC - Avian Covers - Section 400 if needed. Covers required on all three phases on one side of pole and center phase on opposite side.

Rev. 1 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø DOUBLE TWIGGY CIRCUIT
6° TO 30°
397 AAC MAX WIRE

PAGE:
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C17,C17TREE

CAD FILE:
C17

REVISIONS

△ R	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP:	LB/AH	SECTION	
DATE:	12/19/07	330	

Rev. 1 - Eliminated porcelain pin insulators and added avian notes.

Clark
Public
Utilities



CONSTRUCTION STANDARDS

3Ø DOUBLE TWIGGY CIRCUIT

6° TO 30°

397 AAC MAX WIRE

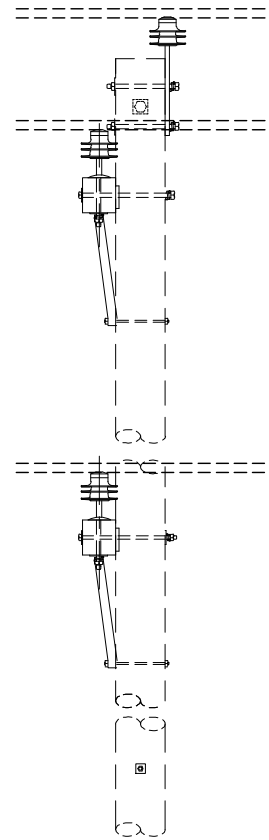
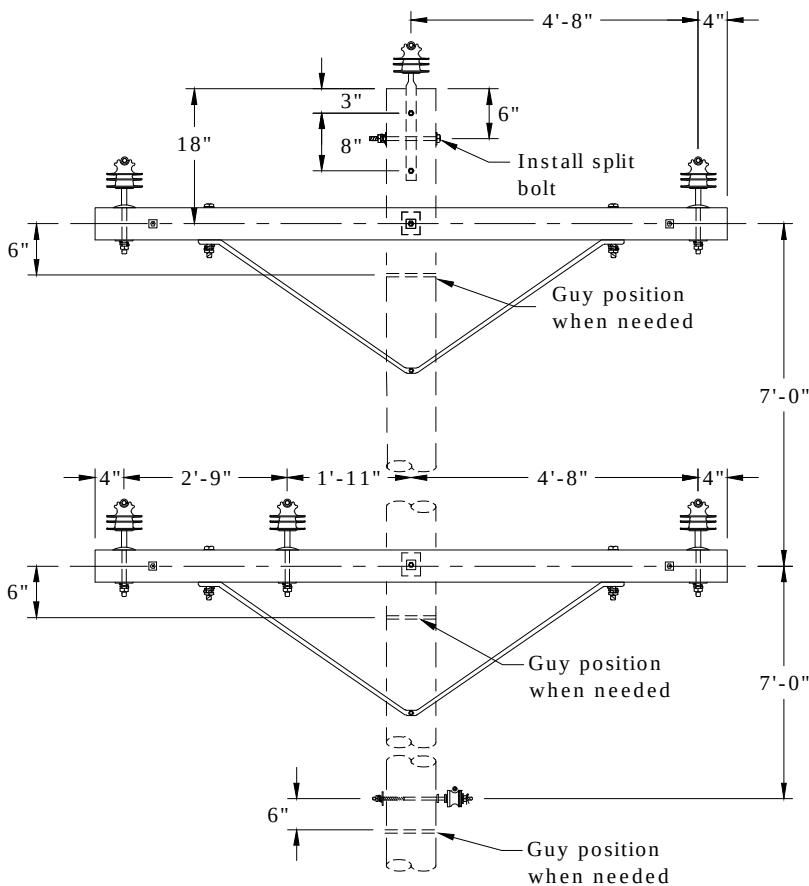
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C17,C17TREE

CAD FILE:
C17

REVISIONS

△ R	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP:	LB/AH	SECTION	
DATE:	12/19/07	330	



C19BTREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phases.

Rev. 1 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø SINGLE 10' CROSSARM
DOUBLE CIRCUIT - 0° TO 5°
397 AAC MAX WIRE

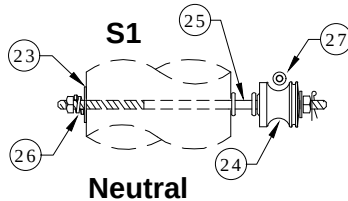
PAGE:
1 of 2

C19B,C19BTREE

CAD FILE:
C19B

REVISIONS

△ R	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP:	LB/AH	SECTION	
DATE:	12/19/07	330	



Rev. 1 - Eliminated porcelain pin insulators and added avian notes.

Rev. 1 - Eliminated porcelain pin insulators and added avian notes.		C19BTREE		C19B	
ITEM NO.	DESCRIPTION	CR23B (2)		CR23B (2)	
		QTY.	S/N	QTY.	S/N
1	Arm, Cross (Distr.), 10' x 3 3/4" x 4 3/4"	2	26	2	26
2	Bolt, Machine, 1/2" x 7", Galv., 7800 lbs Ultimate Tensile	4	143	4	143
3	Bolt, Machine, 5/8" x 16", Galv., 12,400 lbs Ultimate Tensile	2	157	2	157
4	Gain, Pole Plastic	2	709	2	709
5	Brace, Angle, 72"	2	204	2	204
6	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	2	1412	2	1412
7	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4	2217	4	2217
8	Washer, Flat, Round, Galv., 1/2"	4	1394	4	1394
9	Bolt, Machine, 5/8" x 12", Galv., 12,400 lbs Ultimate Tensile	2	155	2	155
10	Washer, Lock, Spring, Double Coil, Galv., 1/2"	4	2216	4	2216
11	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	4	1392	4	1392
ITEM NO.	DESCRIPTION	PR1TREE		PR1	
		QTY.	S/N	QTY.	S/N
12	Insulator, Pin, C Neck, Polymer	1	1968	1	1968 ✱
13	Pin, Pole Top	1	962	1	962
14	Bolt, Machine, 5/8" x 12", Galv., 12,400 lbs Ultimate Tensile	2	155	2	155
15	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
16	Washer, Lock, Spring, Double Coil, Galv., 5/8"	2	2217	2	2217
17	Wire, Tie, AL Annealed #4 SD	11✱	3012	10	1421
ITEM NO.	DESCRIPTION	PR4TREE (5)		PR4 (5)	
		QTY.	S/N	QTY.	S/N
18	Insulator, Pin, C Neck, Polymer	5	1968	5	1968 ✱
19	Pin, Crossarm	5	961	5	961
20	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	5	1412	5	1412
21	Washer, Lock, Spring, Double Coil, Galv., 5/8"	5	2217	5	2217
22	Wire, Tie, AL Annealed #4 SD	55✱	3012	50	1421
ITEM NO.	DESCRIPTION	S1		S1	
		QTY.	S/N	QTY.	S/N
23	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
24	Insulator, Spool Clevis, Small, ANSI 53-2 Class	1	773	1	773
25	Bolt, Double Upset, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	1580	1	1580
26	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
27	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS

3Ø SINGLE 10' CROSSARM
DOUBLE CIRCUIT - 0° TO 5°
397 AAC MAX WIRE

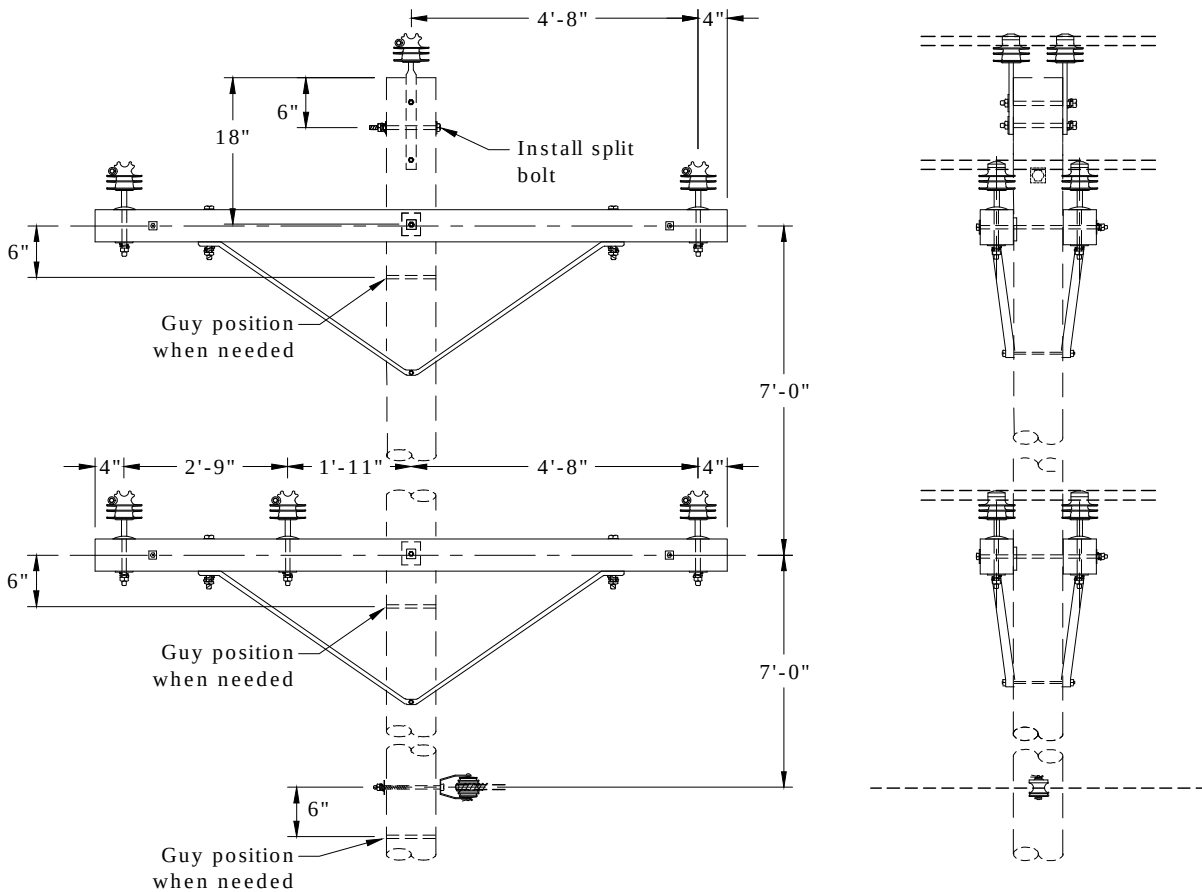
PAGE:
2 of 2

C19B,C19BTREE

CAD FILE:
C19B

REVISIONS

	DATE	ENGR	OPS
1	12/4/17	CM	DK
			
APP: LB/AH		SECTION	
DATE: 12/19/07		330	



C20BTREE - Avian Safe

Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phases.

Rev. 1 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

3Ø DOUBLE 10' CROSSARM
DOUBLE CIRCUIT- 6° TO 15°
397 AAC MAX WIRE

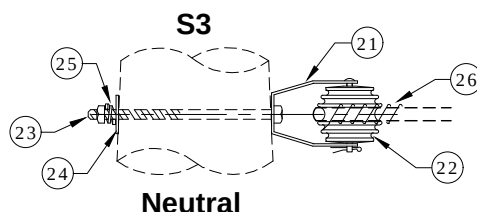
PAGE:
1 of 2

C20B,C20BTREE

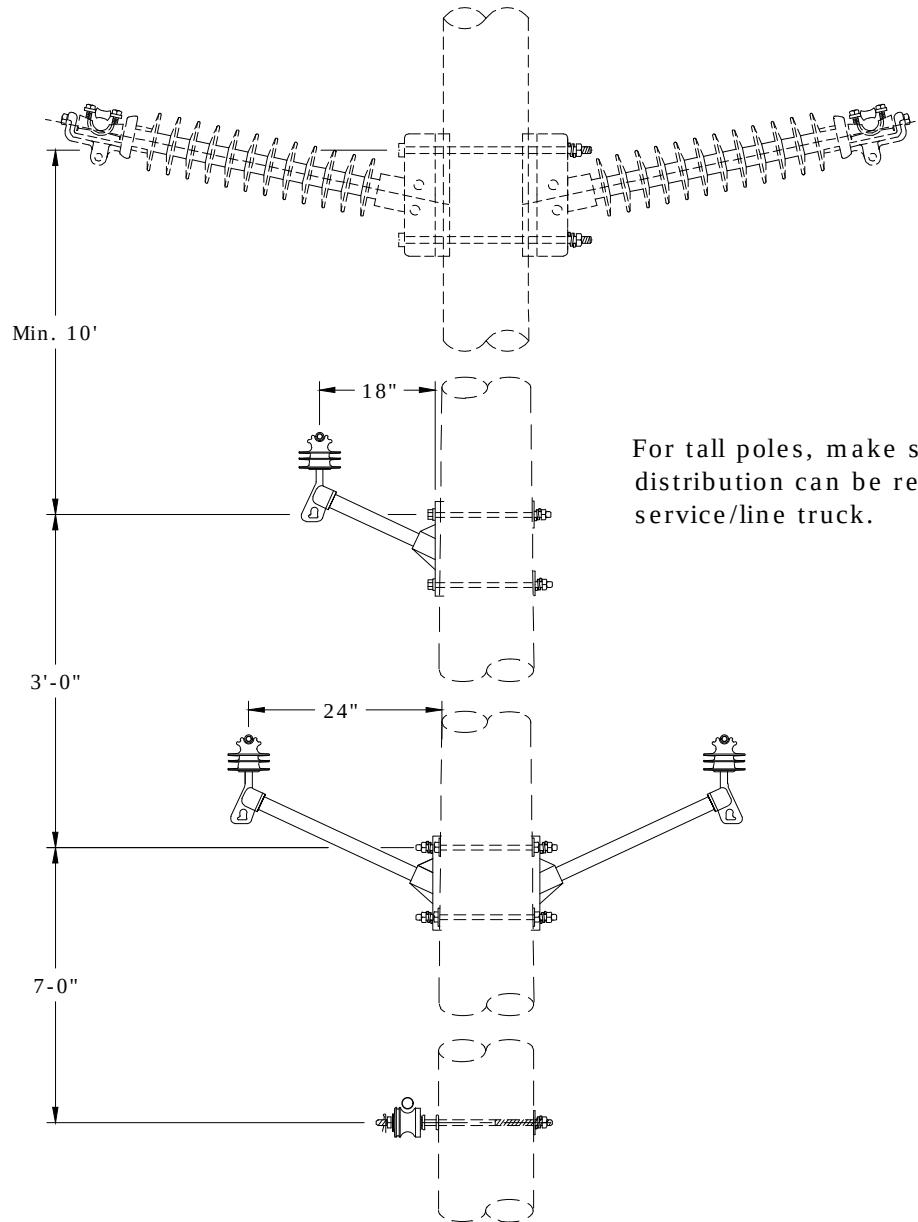
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REVISIONS

△ R	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP:	LB/AH	SECTION	
DATE:	12/19/07	330	



	CONSTRUCTION STANDARDS			REVISIONS				
	3Ø DOUBLE 10' CROSSARM			R	DATE	ENGR	OPS	
	DOUBLE CIRCUIT- 6° TO 15°			1	12/4/17	CM	DK	
	397 AAC MAX WIRE							
PAGE: 2 of 2	C20B,C20BTREE		CAD FILE: C20B		APP: LB/AH		SECTION	
				DATE: 12/19/07		330		



Notes:

1. Maximum line angle calculated for 3,000 lbs. MWT and 250-ft ruling span.
2. See Std AC - Avian Covers - Section 400 if needed. Covers only required on top phase and one of the bottom phases of the distribution.



CONSTRUCTION STANDARDS
 3Ø TWIGGY TRANSMISSION UNDERBUILD
 0° TO 5°
 397 AAC MAX WIRE

PAGE:
1 of 2

C22,C22TREE

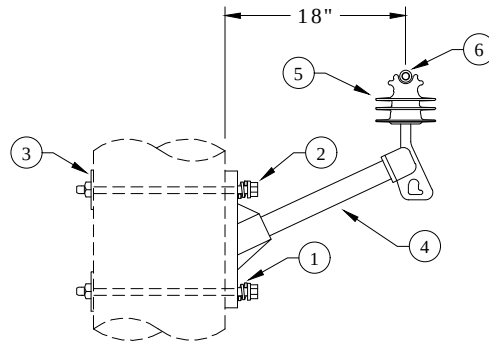
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C22

REVISIONS

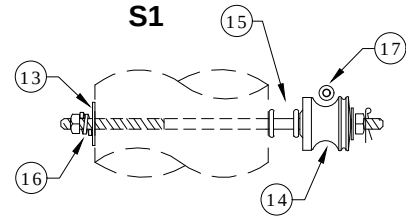
△	DATE	ENGR	OPS

△	APP:	CM/AH	SECTION
	DATE:	12/4/17	330

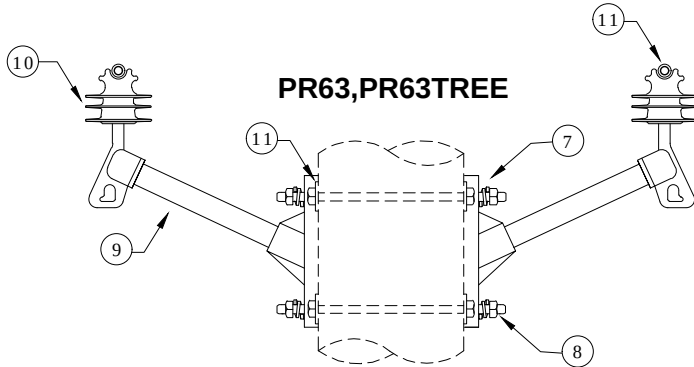
PR60,PR60TREE



S1



PR63,PR63TREE



ITEM NO.	DESCRIPTION	C22TREE		C22	
		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
ITEM NO.	DESCRIPTION	PR63TREE		PR63	
		QTY.	S/N	QTY.	S/N
7	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4 *	2217	4 *	2217
8	Bolt, Double Arm, 5/8" x 18", Galv., 12,400 lbs Ultimate Tensile	2 *	82 *	2 *	82 *
9	Arm, Epoxy 24" 2500 lbs	2	2605	2	2605
10	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 *
11	Wire, Tie, AL Annealed #4 SD	22 *	3012	20	1421
12	Washer, Flat, Round, Galv., 5/8"	4 *	1395	4 *	1395
ITEM NO.	DESCRIPTION	S1		S1	
		QTY.	S/N	QTY.	S/N
13	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
14	Insulator, Spool, Clevis, Small, ANSI 53-2 Class	1	773	1	773
15	Bolt, Double Upset, 5/8" x 14", Galv., 12,400 lbs. Ultimate Tensile	1	1580	1	1580
16	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
17	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS
3Ø TWIGGY TRANSMISSION UNDERBUILD
0° TO 5°
397 AAC MAX WIRE

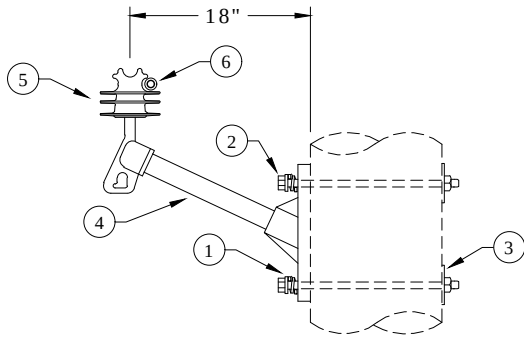
PAGE:
2 of 2

C22,C22TREE

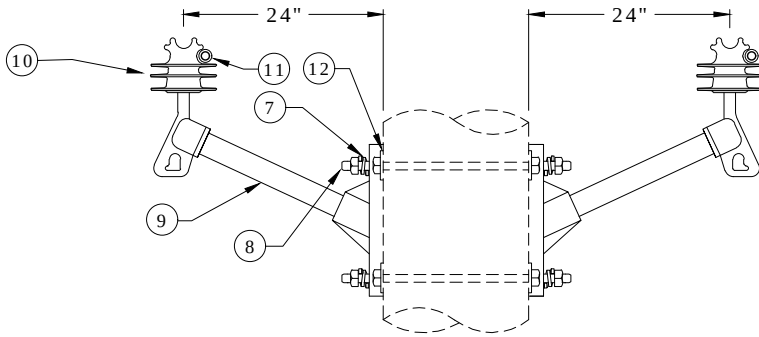
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C22

REVISIONS			
△	DATE	ENGR	OPS
△			
APP:	CM/AH	SECTION	
DATE:	12/4/17	330	

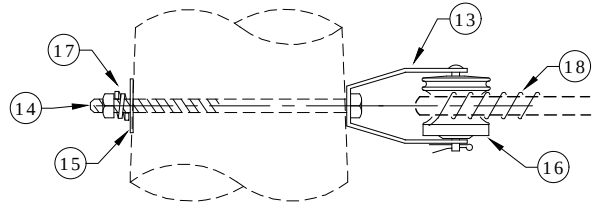
PR60,PR60TREE



PR63,PR63TREE



S2



ITEM NO.	DESCRIPTION	C23TREE		C23	
		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
ITEM NO.	DESCRIPTION	PR63TREE		PR63	
		QTY.	S/N	QTY.	S/N
7	Washer, Lock, Spring, Double Coil, Galv., 5/8"	4 *	2217	4 *	2217
8	Bolt, Double Arm, 5/8" x 18" Galv., 12,400 lbs Ultimate Tensile	2 *	82 *	2 *	82 *
9	Arm, Epoxy 24" 2500 lbs	2	2605	2	2605
10	Insulator, Pin, C Neck, Polymer	2	1968	2	1968 *
11	Wire, Tie, AL Annealed #4 SD	22 *	3012	20	1421
12	Washer, Flat, Round Galv., 5/8"	4 *	1395	4 *	1395
ITEM NO.	DESCRIPTION	S2		S2	
		QTY.	S/N	QTY.	S/N
13	Clevis, D.E. Insulator 1340	1	335	1	335
14	Bolt, Machine, 5/8" x 14", Galv., 12,400 lbs. Ultimate Tensile	1	156	1	156
15	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	1	1392	1	1392
16	Insulator, Spool, Clevis, Small, ANSI 53-2 Class	1	773	1	773
17	Washer, Lock, Spring, Double Coil Galv., 5/8"	1	2217	1	2217
18	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS 3Ø TWIGGY TRANSMISSION UNDERBUILD 6° TO 30° 397 AAC MAX WIRE

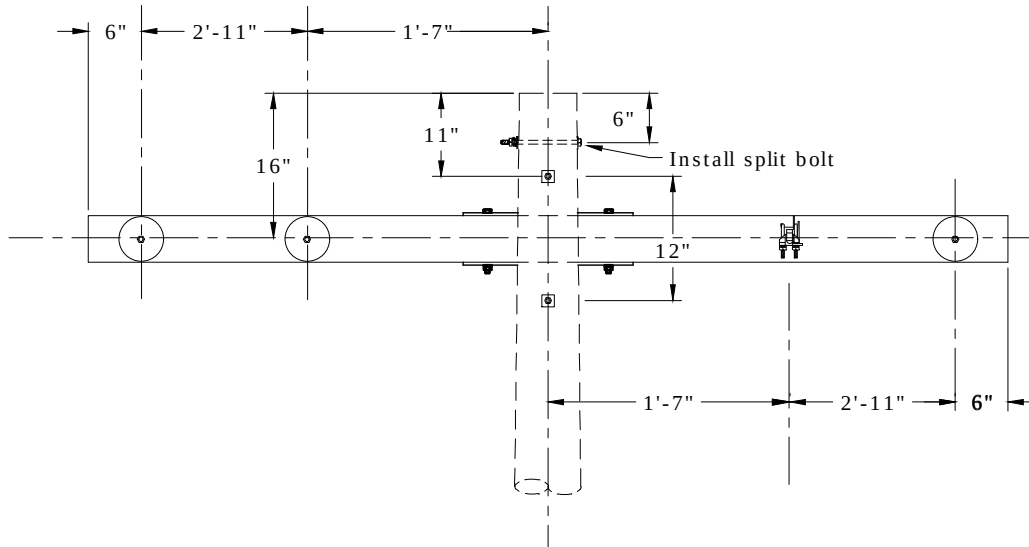
PAGE:
2 of 2

C23,C23TREE

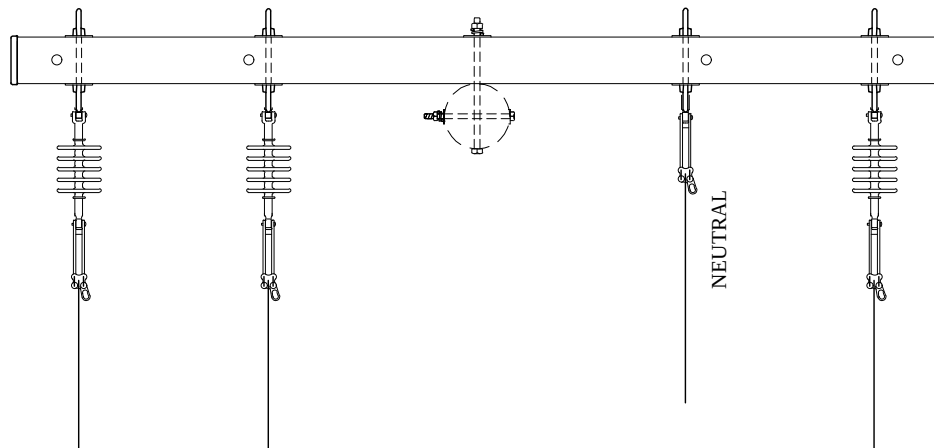
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C23

REVISIONS			
△	DATE	ENGR	OPS
△			
APP:	CM/AH	SECTION	
DATE:	12/4/17	330	

FRONT VIEW



TOP VIEW



Notes:

1. This framing is for clearance limited situations only.
2. See Std AC - Avian Covers - Section 400 if needed. Covers only required on center phase and phase on neutral side.

Rev. 1 - Added avian note.



CONSTRUCTION STANDARDS

10' PRE-ASSEMBLED DEADEND
HIGH NEUTRAL
397 AAC MAX WIRE

PAGE:
1 of 2

C48B

CAD FILE:
C48B

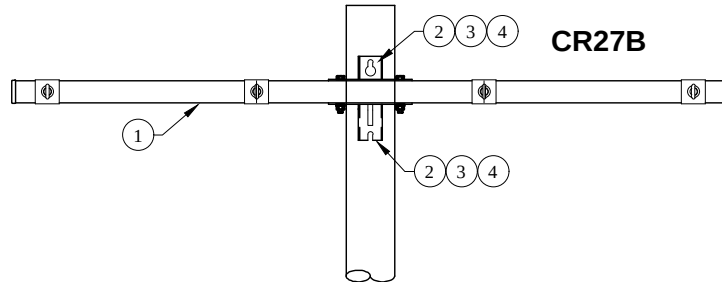
REVISIONS

REVISION	DATE	ENGR	OPS
1	12/4/17	CM	DK

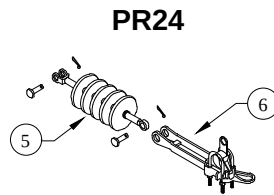


APP: LB/AH
DATE: 12/19/07

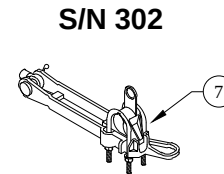
SECTION
330



Back View



Phases



Neutral

Rev. 1 - Added avian note.

ITEM NO.	DESCRIPTION	C48B	
		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
ITEM NO.	DESCRIPTION	PR24 (3)	
		QTY.	S/N
5	Insulator, Suspension, 15 kV Clevis-Tongue, Polymer Type	3	1967
6	Clamp, Strain, Distribution, #2 to 397.5	3	302
ITEM NO.	DESCRIPTION	Additional Material	
		QTY.	S/N
7	Clamp, Strain, Distribution, #2 - 397.5	1	302



CONSTRUCTION STANDARDS

10' PRE-ASSEMBLED DEADEND
HIGH NEUTRAL
397 AAC MAX WIRE

PAGE:
2 of 2

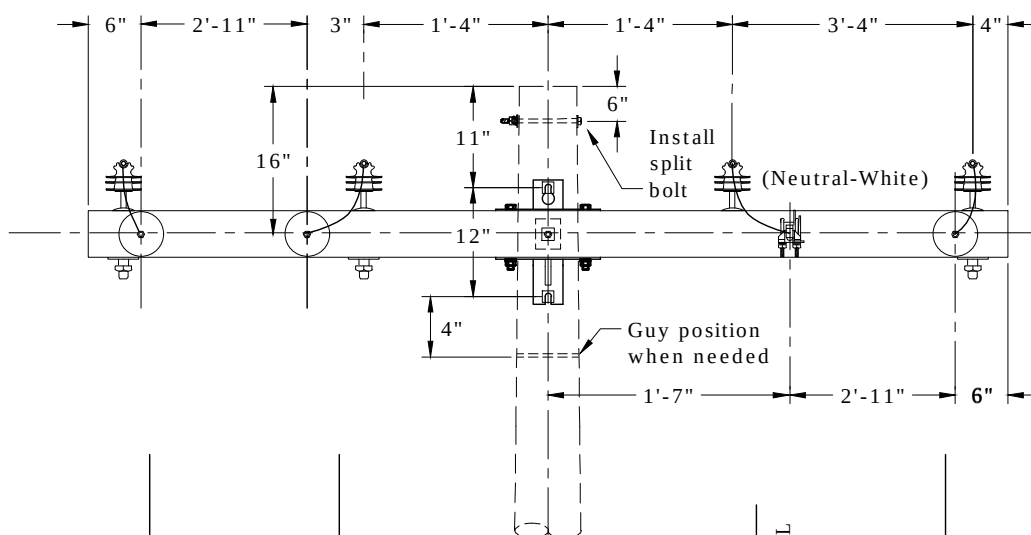
C48B

CAD FILE:
C48B

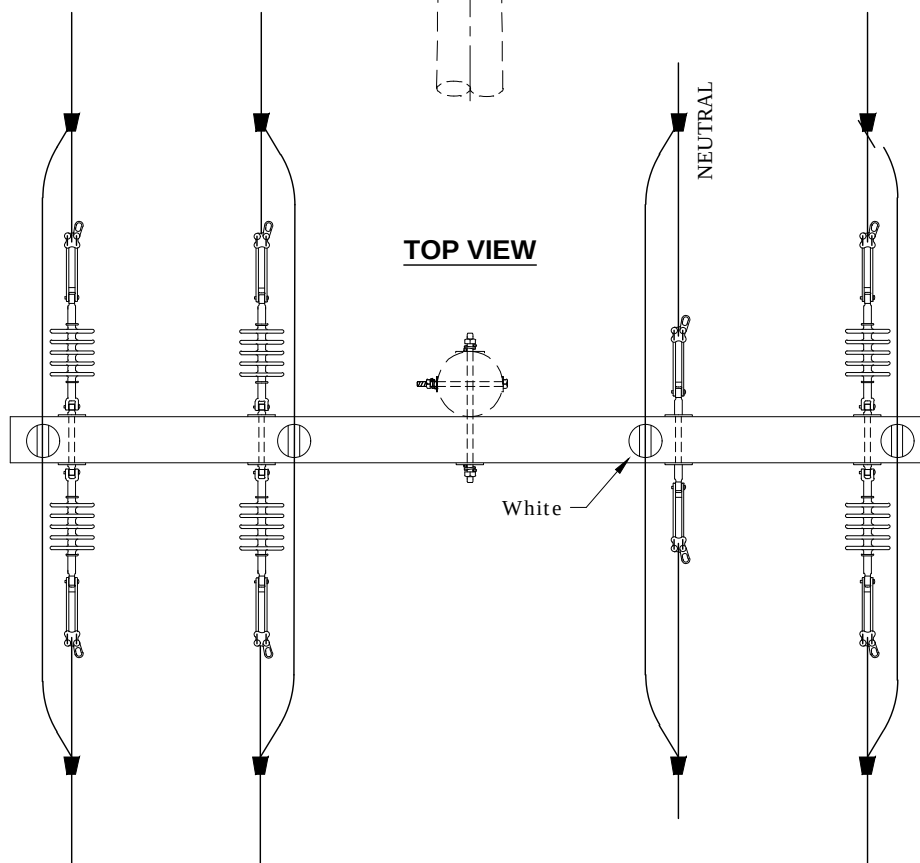
REVISIONS

Δ	DATE	ENGR	OPS
1	12/4/17	CM	DK
Δ			
APP:	LB/AH	SECTION	
DATE:	12/19/07	330	

FRONT VIEW



TOP VIEW



Notes:

1. This framing is for clearance limited situations only.
2. See Std AC - Avian Covers - Section 400 if needed. Covers and tree wire jumpers only required on center phase and phase on neutral side.

Rev. 5 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

10' PRE-ASSEMBLED DOUBLE DEADEND
HIGH NEUTRAL
397 AAC MAX WIRE

PAGE:
1 of 3

C49B,C49BTREE

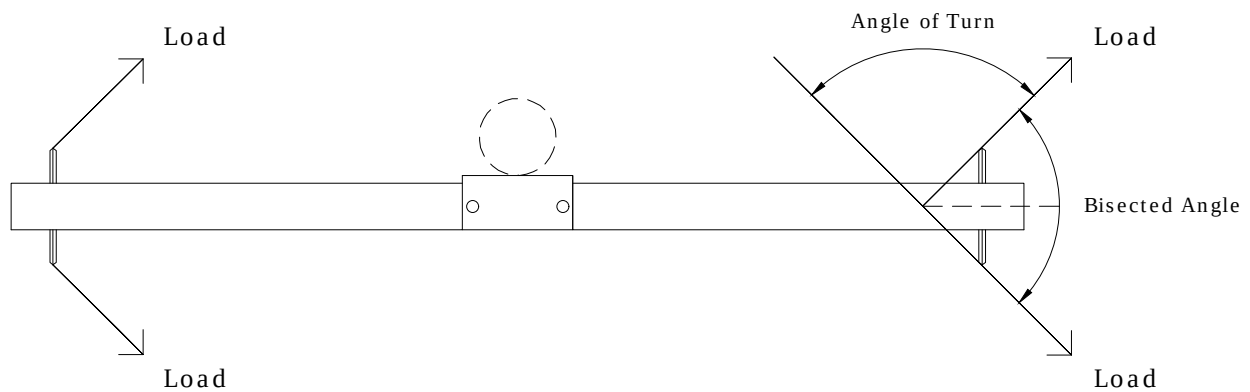
CAD FILE:
C49B

REVISIONS

DATE	ENGR	OPS
3/02	REDRAWN	IN CAD
12/19/07	LB	AH
7/23/10	KJP	
12/4/17	CM	DK

APP:	ELM	SECTION
DATE:	1/31/80	330

DEADEND FOR ANGLED SPANS

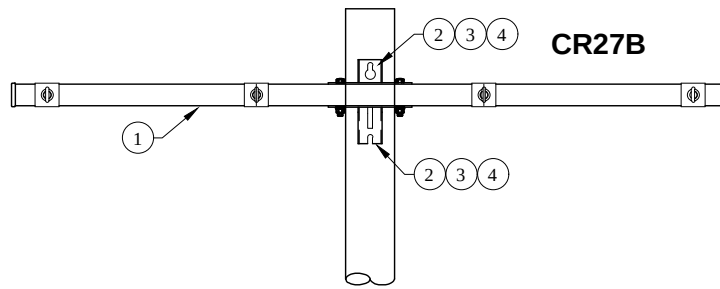


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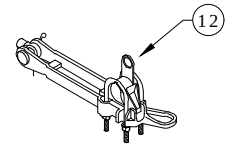
1. Maximum angle with 397 is 60°, limited by the 3/4" machine bolt.
2. Angle must be bisected so that each eye-nut has half the angle.

Rev. 5 - Eliminated porcelain pin insulators and added avian notes.

Clark Public Utilities	CONSTRUCTION STANDARDS			REVISIONS			
	10' PRE-ASSEMBLED DOUBLE DEADEND HIGH NEUTRAL 397 AAC MAX WIRE			△	DATE	ENGR	OPS
				2	3/02	REDRAWN	IN CAD
				3	12/19/07	LB	AH
				4	7/23/10	KJP	
				5	12/4/17	CM	DK
				△			
PAGE: 2 of 3	C49B,C49BTREE	CAD FILE: C49B	APP:	ELM	SECTION 330		
			DATE:	1/31/80			

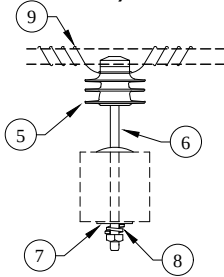


S/N 302

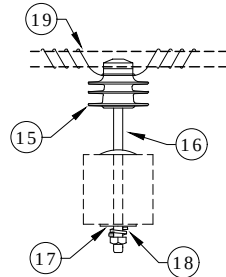


Neutral

PR4,PR4TREE

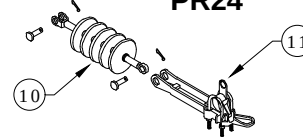


S12



Neutral-White

PR24



Phases

Rev. 5 - Eliminated porcelain pin insulators and added avian notes.

ITEM NO.	DESCRIPTION	C49BTREE		C49B	
		CR27B *		CR27B *	
		QTY.	S/N	QTY.	S/N
1	Arm, Deadend Assembly, 10', 4-position, 397 Max	1	2555	1	2555
2	Bolt, Machine, 3/4" x 14", Galv., 18,350 lbs Ultimate Tensile	2	174	2	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
ITEM NO.	DESCRIPTION	PR4TREE (3)		PR4 (3)	
		QTY.	S/N	QTY.	S/N
5	Insulator, Pin, C Neck, Polymer	3	1968	3	1968 *
6	Pin, Crossarm	3	961	3	961
7	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	3	1412	3	1412
8	Washer, Lock, Spring, Double Coil, Galv., 5/8"	3	2217	3	2217
9	Wire, Tie, AL Annealed #4 SD	33*	3012	30	1421
ITEM NO.	DESCRIPTION	PR24 (6)		PR24 (6)	
		QTY.	S/N	QTY.	S/N
10	Insulator, Suspension, 15 kV Clevis-Tongue, Polymer Type	6	1967	6	1967
11	Clamp, Strain, Distribution, #2 to 397.5	6	302	6	302
ITEM NO.	DESCRIPTION	Additional Material			
		QTY.	S/N	QTY.	S/N
12	Clamp, Strain, Distribution, #2 - 397.5	2	302	2	302
13	Connector, Tap, Wedge, 397 to 397	6	2501	6	2501
14	Connector, Tap, Wedge, 2/0 to 2/0	2	2559	2	2559
ITEM NO.	DESCRIPTION	S12		S12	
		QTY.	S/N	QTY.	S/N
15	Insulator, Pin, C Neck, White, Polymer	1	2656	1	2656
16	Pin, Crossarm	1	961	1	961
17	Washer, Square Flat, 5/8", 2 1/4" x 2 1/4"	1	1412	1	1412
18	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
19	Wire, Tie, AL Annealed #4 SD	10	1421	10	1421



CONSTRUCTION STANDARDS

10' PRE-ASSEMBLED DOUBLE DEADEND
HIGH NEUTRAL
397 AAC MAX WIRE

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C49B,C49BTREE

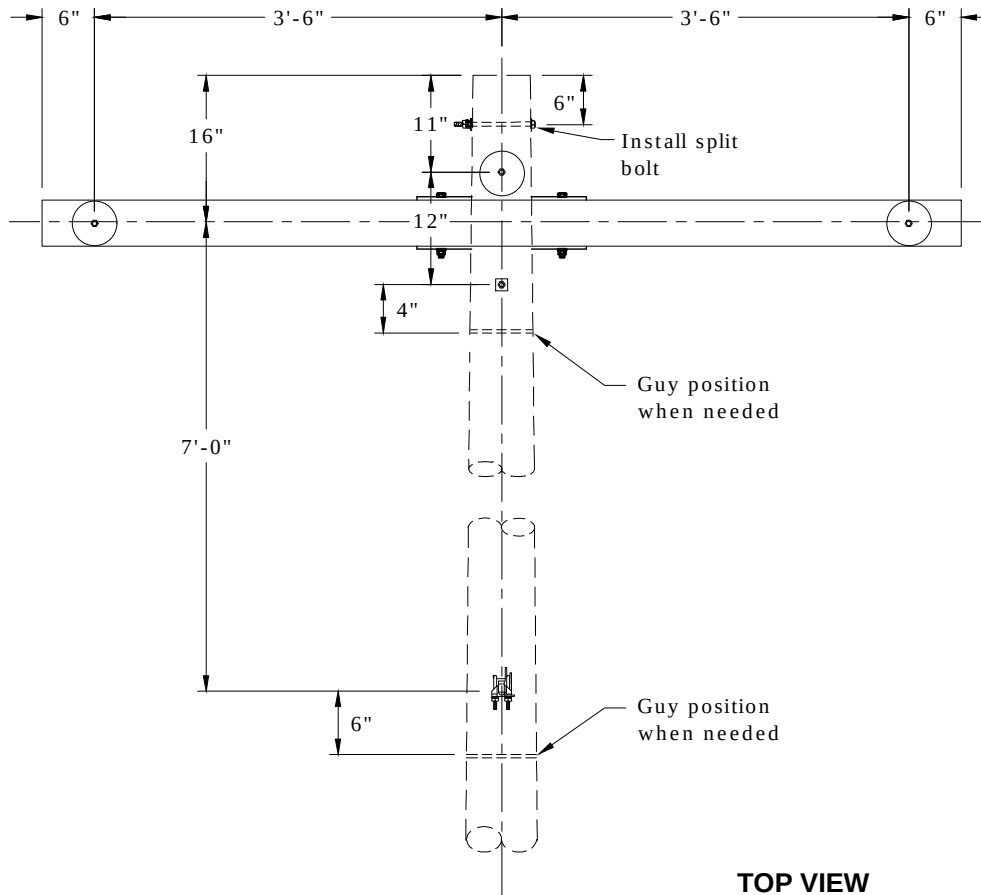
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C49B

REVISIONS

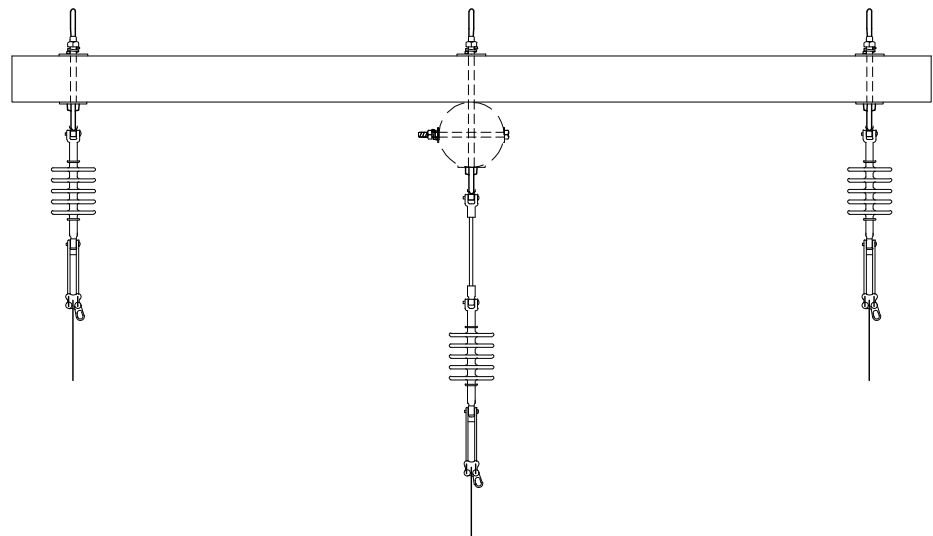
R	DATE	ENGR	OPS
2	3/02	REDRAWN	IN CAD
3	12/19/07	LB	AH
3	7/23/10	KJP	
5	12/4/17	CM	DK

APP:	ELM	SECTION
DATE:	1/31/80	330

FRONT VIEW



TOP VIEW



Avian Safe

Rev. 4 - Added avian note.



CONSTRUCTION STANDARDS

8' PRE-ASSEMBLED DEADEND
397 AAC MAX WIRE

PAGE:
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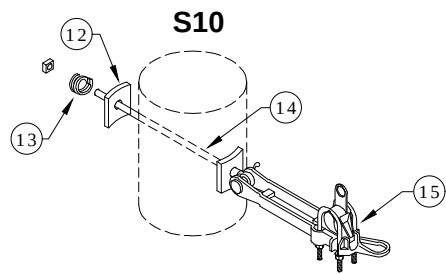
C50A

CAD FILE:
C50A

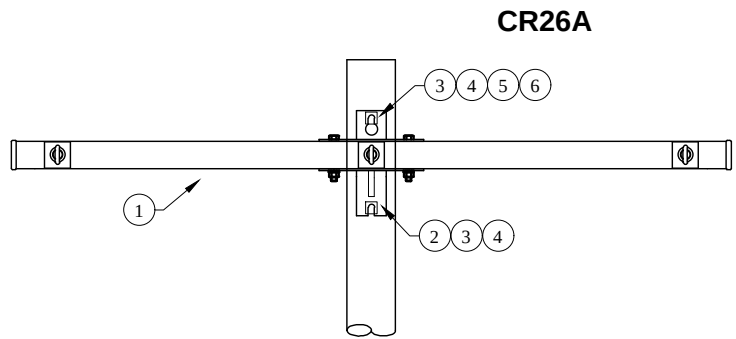
REVISIONS

△	DATE	ENGR	OPS
1	2/11/81	GGW	
2	3/02	REDRAWN	IN CAD
3	12/19/07	LB	AH
4	12/4/17	CM	DK

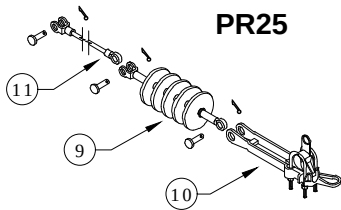
△	APP: ELM	SECTION
DATE: 1/31/80		330



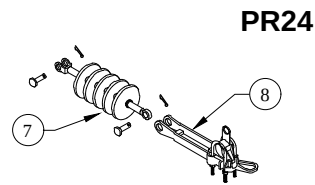
Neutral



Back View



Center Phase



Road & Field Phases

Rev. 4 - Added avian note.

ITEM NO.	DESCRIPTION	C50A	
		CR26A	
		QTY.	S/N
1	Arm, Deadend Assembly, 8', 3-position, 397 Max	1	2508
2	Bolt, Machine, 3/4" x 14", Galv., 18,350 lbs Ultimate Tensile	1	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
5	Nut, Eye Oval 3/4", Galv.	1	914
6	Bolt, Machine, 3/4" x 16", Galv., 18,350 lbs Ultimate Tensile	1	175
ITEM NO.	DESCRIPTION	PR24 (2)	
		QTY.	S/N
7	Insulator, Suspension, 15 kV Clevis-Tongue, Polymer Type	2	1967
8	Clamp, Strain, Distribution, #2 to 397.5	2	302
ITEM NO.	DESCRIPTION	PR25	
		QTY.	S/N
9	Insulator, Suspension, 15 kV Clevis-Tongue, Polymer Type	1	1967
10	Clamp, Strain, Distribution, #2 to 397.5	1	302
11	Insulator, Guy Strain, Fiberglass, 20"	1	2909
ITEM NO.	DESCRIPTION	S10	
		QTY.	S/N
12	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392
13	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217
14	Bolt, Eye, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	108
15	Clamp, Strain, Distribution, #2 - 397.5	1	302



CONSTRUCTION STANDARDS

8' PRE-ASSEMBLED DEADEND
397 AAC MAX WIRE

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C50A

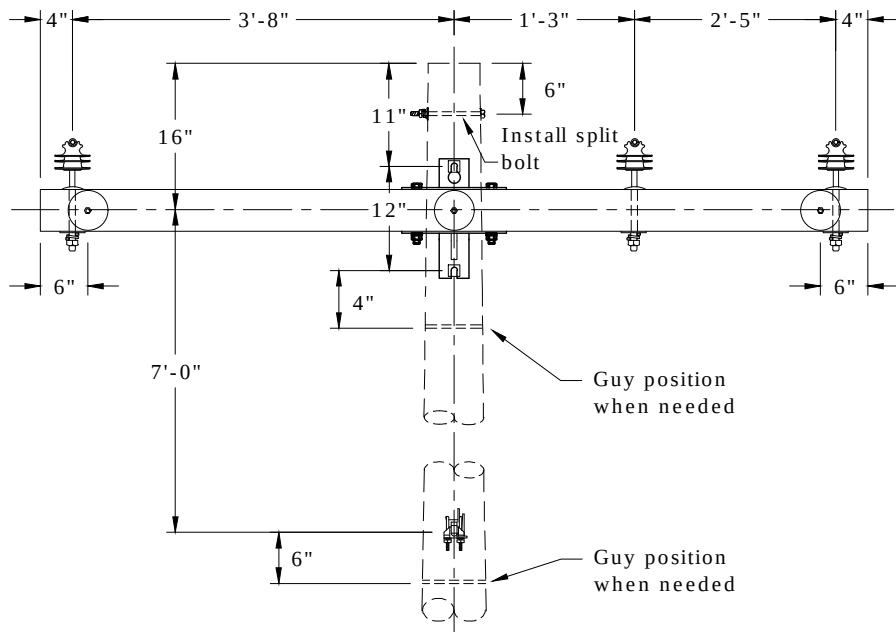
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C50A

REVISIONS

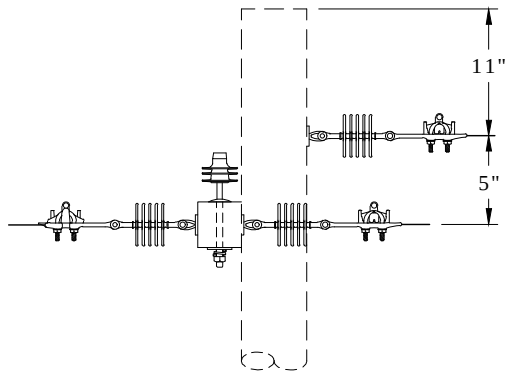
△	DATE	ENGR	OPS
1	2/11/81	GGW	
2	3/02	REDRAWN	IN CAD
3	12/19/07	LB	AH
4	12/4/17	CM	DK

APP:	ELM	SECTION
DATE:	1/31/80	330

FRONT VIEW



SIDE VIEW



Note: See Std AC - Avian Covers - Section 400 if needed. Covers and tree wire jumper only required on center phase.

Rev. 4 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

8' PRE-ASSEMBLED DOUBLE DEADEND
397 AAC MAX WIRE

PAGE:
1 of 4

C51A,C51ATREE

CAD FILE:
C51A

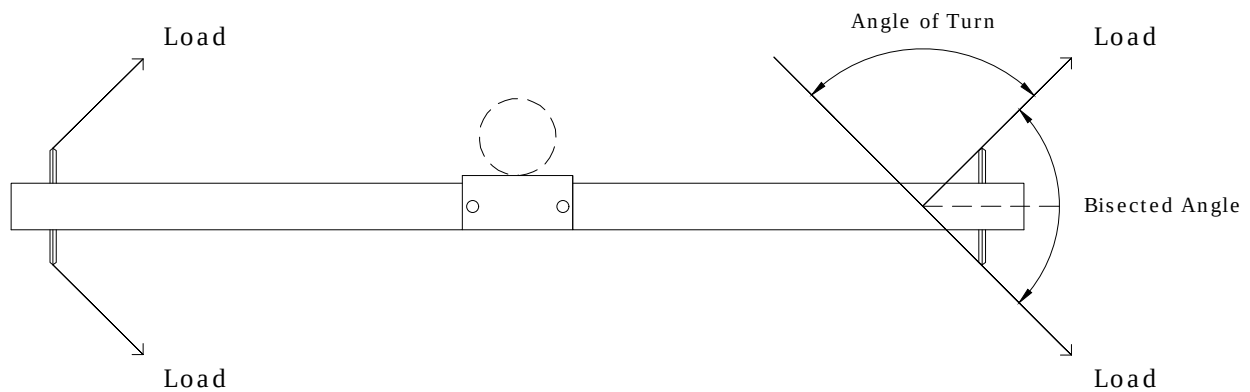
REVISIONS

△R	DATE	ENGR	OPS
1	2/11/81	GGW	
2	3/02	REDRAWN	IN CAD
3	12/19/07	LB	AH
4	12/4/17	CM	DK

APP:	ELM
DATE:	1/31/8

SECTION
330

DEADEND FOR ANGLED SPANS



Notes:

1. Maximum angle with 397 is 60°, limited by the 3/4" machine bolt.
2. Angle must be bisected so that each eye-nut has half the angle.

Rev. 4 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

8' PRE-ASSEMBLED DOUBLE DEADEND
397 AAC MAX WIRE

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C51A,C51ATREE

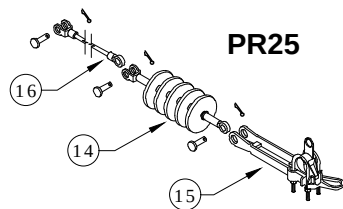
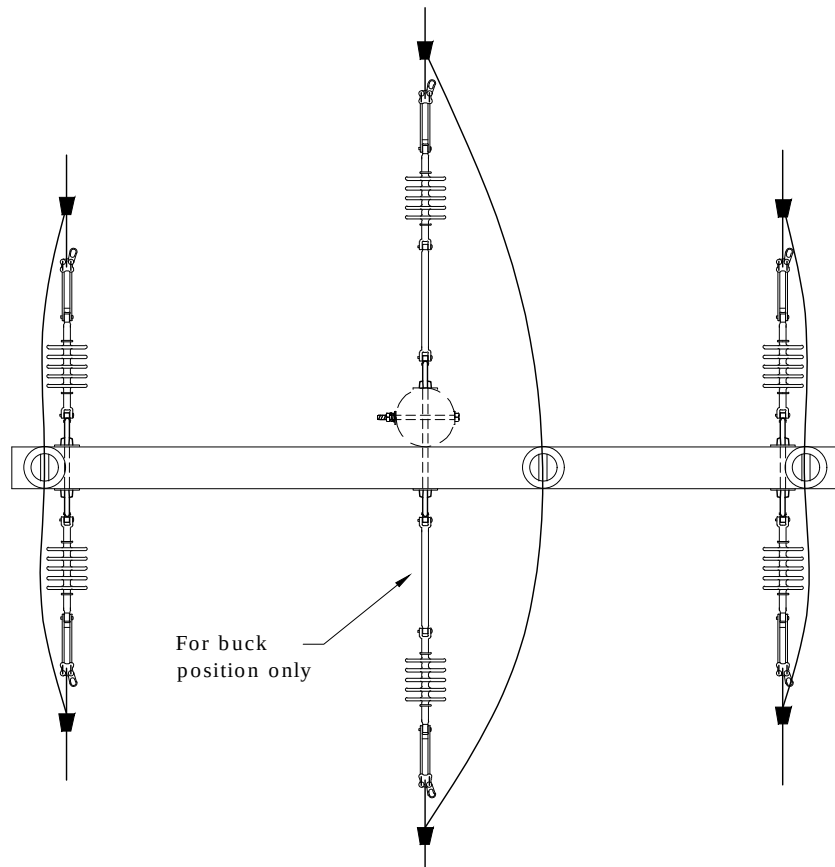
CAD FILE:
C51A

REVISIONS

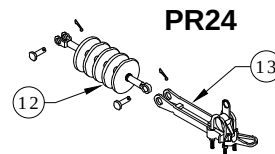
△ R	DATE	ENGR	OPS
1	2/11/81	GGW	
2	3/02	REDRAWN	IN CAD
3	12/19/07	LB	AH
4	12/4/17	CM	DK

△	APP: ELM	SECTION
DATE: 1/31/80		330

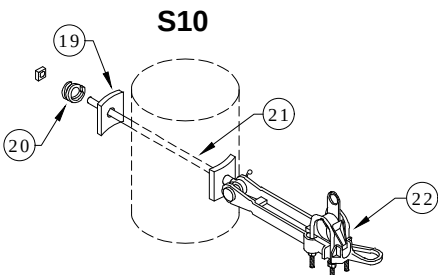
TOP VIEW



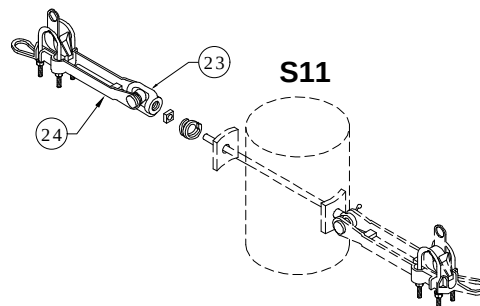
Center Phase



Road & Field Phases



Neutral



Neutral

Rev. 4 - Eliminated porcelain pin insulators and added avian notes.



CONSTRUCTION STANDARDS

8' PRE-ASSEMBLED DOUBLE DEADEND
397 AAC MAX WIRE

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C51A,C51ATREE

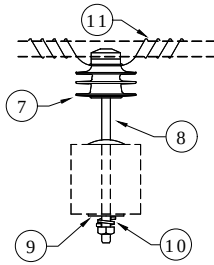
CAD FILE:
C51A

REVISIONS

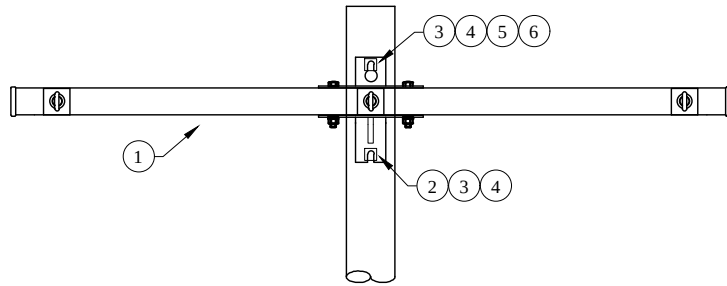
△ R	DATE	ENGR	OPS
1	2/11/81	GGW	
2	3/02	REDRAWN	IN CAD
3	12/19/07	LB	AH
4	12/4/17	CM	DK

APP: ELM	SECTION
DATE: 1/31/80	330

PR4,PR4TREE



CR26A



Front View

Rev. 4 - Eliminated porcelain pin insulators and added avian notes.

ITEM NO.	DESCRIPTION	C51ATREE		C51A	
		CR26A		CR26A	
		QTY.	S/N	QTY.	S/N
1	Arm, Deadend Assembly, 8', 3-position, 397 Max	1	2508	1	2508
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
ITEM NO.	DESCRIPTION	PR4TREE (3)		PR4 (3)	
		QTY.	S/N	QTY.	S/N
7	Insulator, Pin, C Neck, Polymer	3	1968	3	1968 *
8	Pin, Crossarm	3	961	3	961
9	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	3	1412	3	1412
10	Washer, Lock, Spring, Double Coil, Galv., 5/8"	3	2217	3	2217
11	Wire, Tie, AL Annealed #4 SD	33*	3012	30	1421
ITEM NO.	DESCRIPTION	PR24 (4)		PR24 (4)	
		QTY.	S/N	QTY.	S/N
12	Insulator, Suspension, 15 kV Clevis-Tongue, Polymer Type	4	1967	4	1967
13	Clamp, Strain, Distribution, #2 to 397.5	4	302	4	302
ITEM NO.	DESCRIPTION	PR25 (2)		PR25 (2)	
		QTY.	S/N	QTY.	S/N
14	Insulator, Suspension, 15 kV Clevis-Tongue, Polymer Type	2	1967	2	1967
15	Clamp, Strain, Distribution, #2 to 397.5	2	302	2	302
16	Insulator, Guy Strain, Fiberglass 20"	2	2909	2	2909
ITEM NO.	DESCRIPTION	Additional Material			
		QTY.	S/N	QTY.	S/N
17	Connector, Tap, Wedge, 397 to 397	6	2501	6	2501
18	Connector, Tap, Wedge, 2/0 to 2/0	2	2559	2	2559
ITEM NO.	DESCRIPTION	S10		S10	
		QTY.	S/N	QTY.	S/N
19	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
20	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217	1	2217
21	Bolt, Eye, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	108	1	108
22	Clamp, Strain, Distribution, #2 - 397.5	1	302	1	302
ITEM NO.	DESCRIPTION	S11		S11	
		QTY.	S/N	QTY.	S/N
23	Nut, Eye Oval 5/8"	1	913	1	913
24	Clamp, Strain, Distribution, #2 - 397.5	1	302	1	302



CONSTRUCTION STANDARDS

8' PRE-ASSEMBLED DOUBLE DEADEND
397 AAC MAX WIRE

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C51A,C51ATREE

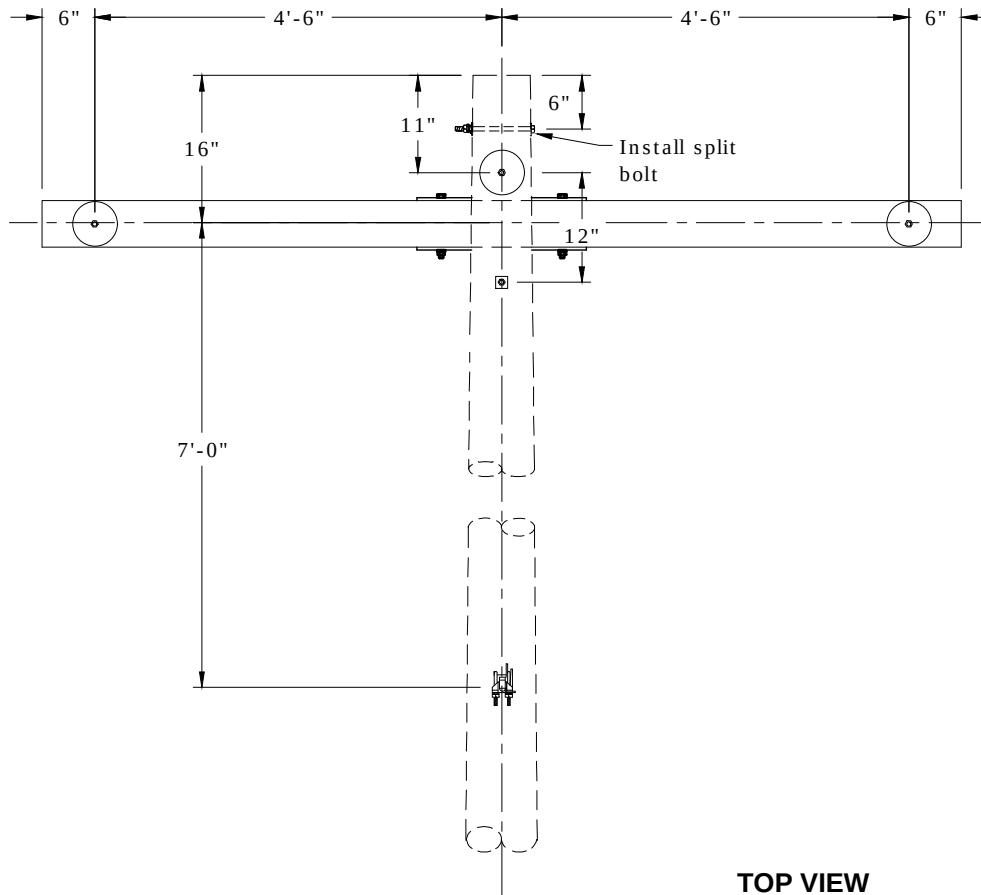
CAD FILE:
C51A

REVISIONS

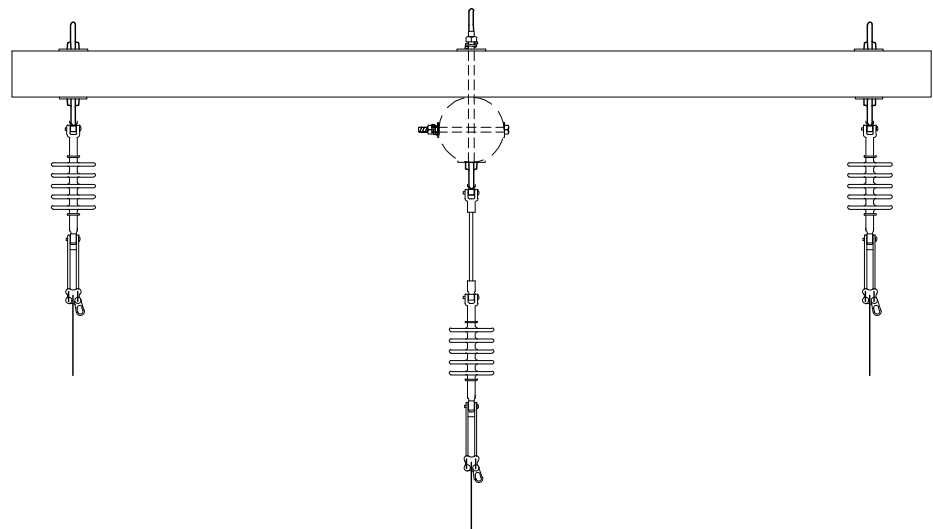
△	DATE	ENGR	OPS
1	2/11/81	GGW	
2	3/02	REDRAWN	IN CAD
3	12/19/07	LB	AH
4	12/4/17	CM	DK

△	APP:	ELM	SECTION
	DATE:	1/31/80	330

FRONT VIEW



TOP VIEW



Avian Safe

Rev. 4 - Added avian note.



CONSTRUCTION STANDARDS

10' PRE-ASSEMBLED DEADEND
397 AAC MAX WIRE

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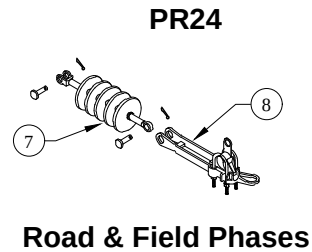
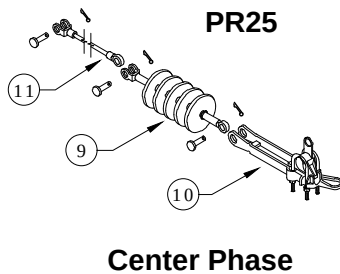
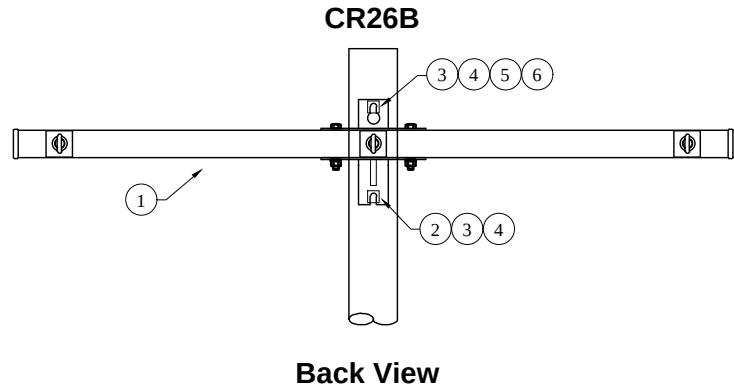
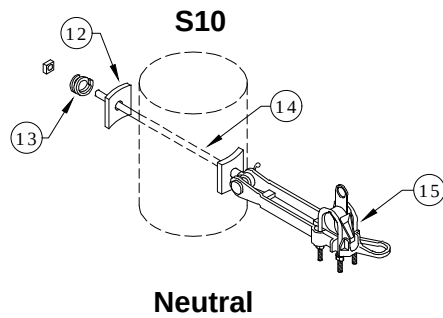
C52B

CAD FILE:
C52B

REVISIONS

△	DATE	ENGR	OPS
1	2/11/81	GGW	
2	3/02	REDRAWN	IN CAD
3	12/19/07	LB	AH
4	12/4/17	CM	DK

△	APP:	ELM	SECTION
	DATE:	1/31/80	330



Rev. 4 - Added avian note.

ITEM NO.	DESCRIPTION	C52B	
		CR26B	
		QTY.	S/N
1	Arm, Deadend Assembly, 3-position, 397 Max	1	2680
2	Bolt, Machine, 3/4" x 14", Galv., 18,350 lbs Ultimate Tensile	1	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
5	Nut, Eye Oval 3/4"	1	914
6	Bolt, Machine, 3/4" x 16", Galv., 18,350 lbs Ultimate Tensile	1	175
ITEM NO.	DESCRIPTION	PR24 (2)	
		QTY.	S/N
7	Insulator, Suspension, 15 KV Clevis-Tongue, Polymer Type	2	1967
8	Clamp, Strain, Distribution, #2 - 397.5	2	302
ITEM NO.	DESCRIPTION	PR25	
		QTY.	S/N
9	Insulator, Suspension, 15 kV Clevis-Tongue, Polymer Type	1	1967
10	Clamp, Strain, Distribution, #2 to 397.5 MCM	1	302
11	Insulator, Guy Strain, Fiberglass, 20"	1	2909
ITEM NO.	DESCRIPTION	S10	
		QTY.	S/N
12	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392
13	Washer, Lock, Spring, Double Coil, Galv., 5/8"	1	2217
14	Bolt, Eye, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	108
15	Clamp, Strain, Distribution, #2 - 397.5 KCM	1	302



CONSTRUCTION STANDARDS 10' PRE-ASSEMBLED DEADEND 397 AAC MAX WIRE

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C52B

CAD FILE:
C52B

REVISIONS

△	DATE	ENGR	OPS
1	2/11/81	GGW	
2	3/02	REDRAWN	IN CAD
3	12/19/07	LB	AH
4	12/4/17	CM	DK

△	APP: ELM	SECTION
DATE: 1/31/80		330

Technical drawing of a 12-inch diameter pile cap. The drawing shows a cross-section of the cap with dimensions in feet and inches. The overall width is 12 feet (4' + 4'-8" + 1'-3" + 3'-5" + 4"). The overall height is 7 feet (16" + 11" + 12" + 4" + 6"). The drawing includes annotations for "Install split bolt" and "Guy position when needed".

Rev. 1 - Eliminated porcelain pin insulators and added avian note.

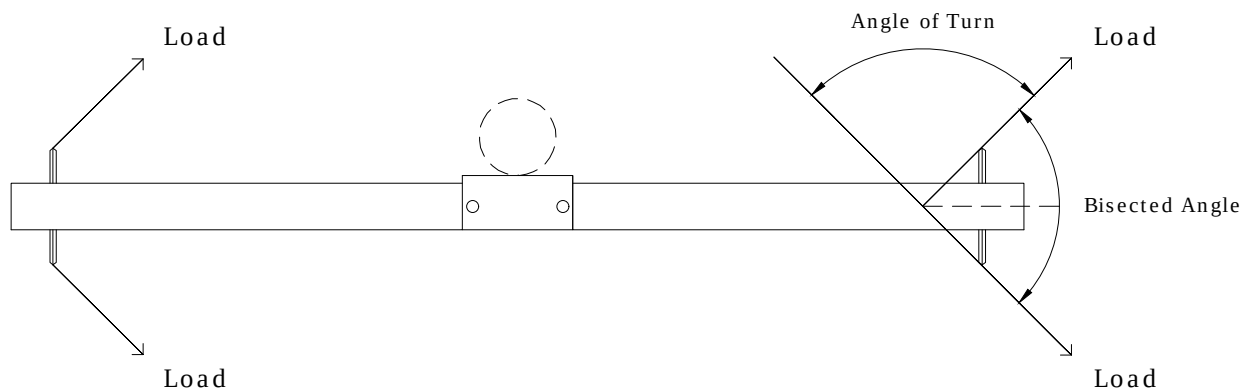


10' PRE-ASSEMBLED DOUBLE DEADEND
397 AAC MAX WIRE

C53B,C53BTREE

REVISIONS			
	DATE	ENGR	OPS
1	12/4/17	CM	DK
			
APP: LB/AH		SECTION	
DATE: 12/19/07		330	

DEADEND FOR ANGLED SPANS

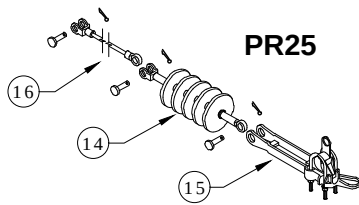


Notes:

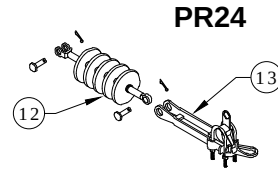
1. Maximum angle with 397 is 60°, limited by the 3/4" machine bolt.
2. Angle must be bisected so that each eye-nut has half the angle.

Rev. 1 - Eliminated porcelain pin insulators and added avian note.

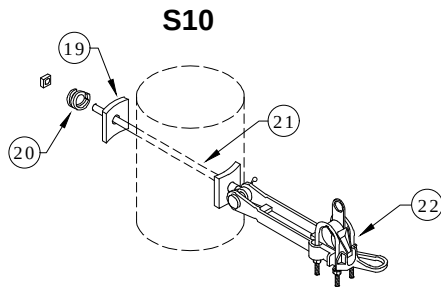
	CONSTRUCTION STANDARDS 10' PRE-ASSEMBLED DOUBLE DEADEND 397 AAC MAX WIRE			REVISIONS			
					DATE	ENGR	OPS
				1	12/4/17	CM	DK
PAGE:			CAD FILE:		APP: LB/AH		
2 of 4			C53B,C53BTREE		DATE: 12/19/07		
					SECTION		
					330		



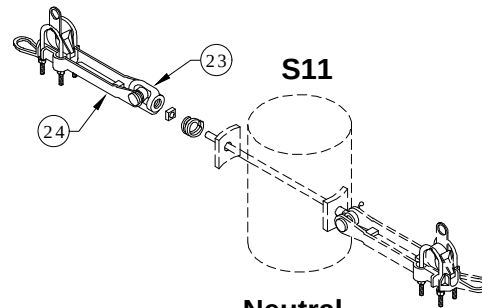
Center Phase



Road & Field Phases

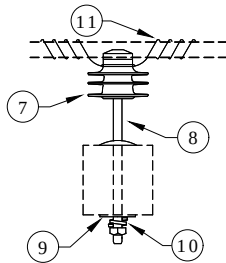


Neutral

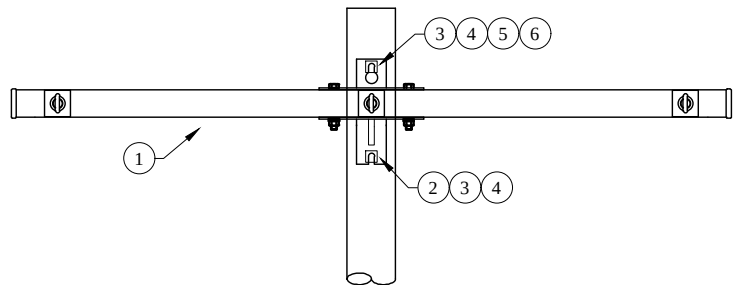


Neutral

PR4,PR4TREE



CR26B



Rev. 1 - Eliminated porcelain pin insulators and added avian note.



CONSTRUCTION STANDARDS 10' PRE-ASSEMBLED DOUBLE DEADEND 397 AAC MAX WIRE

PAGE:
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C53B,C53BTREE

CAD FILE:
C53B

REVISIONS			
△	DATE	ENGR	OPS
1	12/4/17	CM	DK
△			
APP:	LB/AH	SECTION	
DATE:	12/19/07	330	

Rev. 1 - Eliminated porcelain pin insulators and added avian note.

ITEM NO.	DESCRIPTION	C53BTREE		C53B	
		CR26B		CR26B	
		QTY.	S/N	QTY.	S/N
1	Arm, Deadend Assembly, 3-Position, 397 Max	1	2680	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
ITEM NO.	DESCRIPTION	PR4TREE (3)		PR4 (3)	
		QTY.	S/N	QTY.	S/N
7	Insulator, Pin, C Neck, Polymer	3	1968	3	1968
8	Pin, Crossarm	3	961	3	961
9	Washer, Square, Flat, 5/8", 2 1/4" x 2 1/4"	3	1412	3	1412
10	Washer, Lock, Spring, Double Coil, Galv., 5/8"	3	2217	3	2217
11	Wire, Tie, AL Annealed #4 SD	33*	3012	30	1421
ITEM NO.	DESCRIPTION	PR24 (4)		PR24(4)	
		QTY.	S/N	QTY.	S/N
12	Insulator, Suspension, 15 KV Clevis-Tongue, Polymer Type	4	1967	4	1967
13	Clamp, Strain, Distribution, #2 - 397.5	4	302	4	302
ITEM NO.	DESCRIPTION	PR25 (2)		PR25 (2)	
		QTY.	S/N	QTY.	S/N
14	Insulator, Suspension, 15 kV Clevis	2	1967	2	1967
15	Clamp, Strain, Distribution, #2 to 397.5	2	302	2	302
16	Insulator, Guy Strain, Fiberglass, 20"	2	2909	2	2909
ITEM NO.	DESCRIPTION	Additional Material			
		QTY.	S/N	QTY.	S/N
17	Connector, Tap, Wedge, 397 to 397	6	2501	6	2501
18	Connector, Tap, Wedge, 2/0 to 2/0	2	2559	2	2559
ITEM NO.	DESCRIPTION	S10		S10	
		QTY.	S/N	QTY.	S/N
19	Washer, Curved, Square, Cast, 3" x 3" x 3/8" Thick x 13/16" Hole	2	1392	2	1392
20	Washer, Lock, Spring, Double Coil, Galv. 5/8"	1	2217	1	2217
21	Bolt, Eye, 5/8" x 14", Galv., 12,400 lbs Ultimate Tensile	1	108	1	108
22	Clamp, Strain, Distribution, #2 - 397.5	1	302	1	302
ITEM NO.	DESCRIPTION	S11		S11	
		QTY.	S/N	QTY.	S/N
23	Nut, Eye Oval 5/8"	1	913	1	913
24	Clamp, Strain, Distribution, #2 - 397.5	1	302	1	302

	CONSTRUCTION STANDARDS 10' PRE-ASSEMBLED DOUBLE DEADEND 397 AAC MAX WIRE	REVISIONS				
			DATE	ENGR	OPS	
		1	12/4/17	CM	DK	
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		APP: LB/AH DATE: 12/19/07		SECTION 330		