SECTION 17

TRANSMISSION LINES CONSTRUCTION STANDARDS

TRANSMISSIONS STRUCTURE TYPES GENERAL DISCUSSIONS

(1) Type "AP" - This is a tangent structure where the lines are supported on post-type insulators, two insulators on one side of the pole and another on the other side of the pole. This structure is suitable for very small angle between 0 and 5 degrees because of the limited option for guying.

(2) Type "AP1"- This is a tangent structure where the lines are supported on post-type insulators, all three insulators are located on the same side of the pole. This structure is suitable for line angle up to 13 degrees. Guying is required for each phase.

(3) Type "CV" – This is a continuous vertical construction where the lines are supported by suspension insulators. The structure is applicable where the line angle is between 13 and 60 degrees. Guying is required for each phase.

(4) Vertical deadend structures:

Type "DDV"- This is a double deadend structure which is suitable for line angles between 60 and 90 degrees. The lines are supported by suspension insulators. Guying is required for each phase.

Type "DDV-A"- This is a double deadend structure which is suitable for very small line angles between 0 and 5 degrees. The lines are supported by suspension insulators. Guying maybe challenging and can done similar to a "CV" structure.

Type "DE" - Transmission Deadend, line terminated. This structure is applicable in substations or at Riser poles. The lines are supported by suspension insulators. Guying is required for each phase.

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Date: March 15, 2021	TRANSMISSION LINE STANDARDS	
Drawn by: N. Malcolm		
	TRANSMISSION STRUCTURE ANGLES	
Revision #:		
Revision date:	Approved date: March 15, 2021	STANDARD # 17-1
Revised by:	Approved by: N. Malcolm	Page: 1 of 1

TRANSMISSIONS STRUCTURE ANGLES GENERAL DISCUSSIONS

The maximum line angle of each structure is dependent on the curvature of the roadways and the right of way of the transmission lines. The transmission lines are strung with 477 All Aluminum Conductors (AAC) on all structure types.

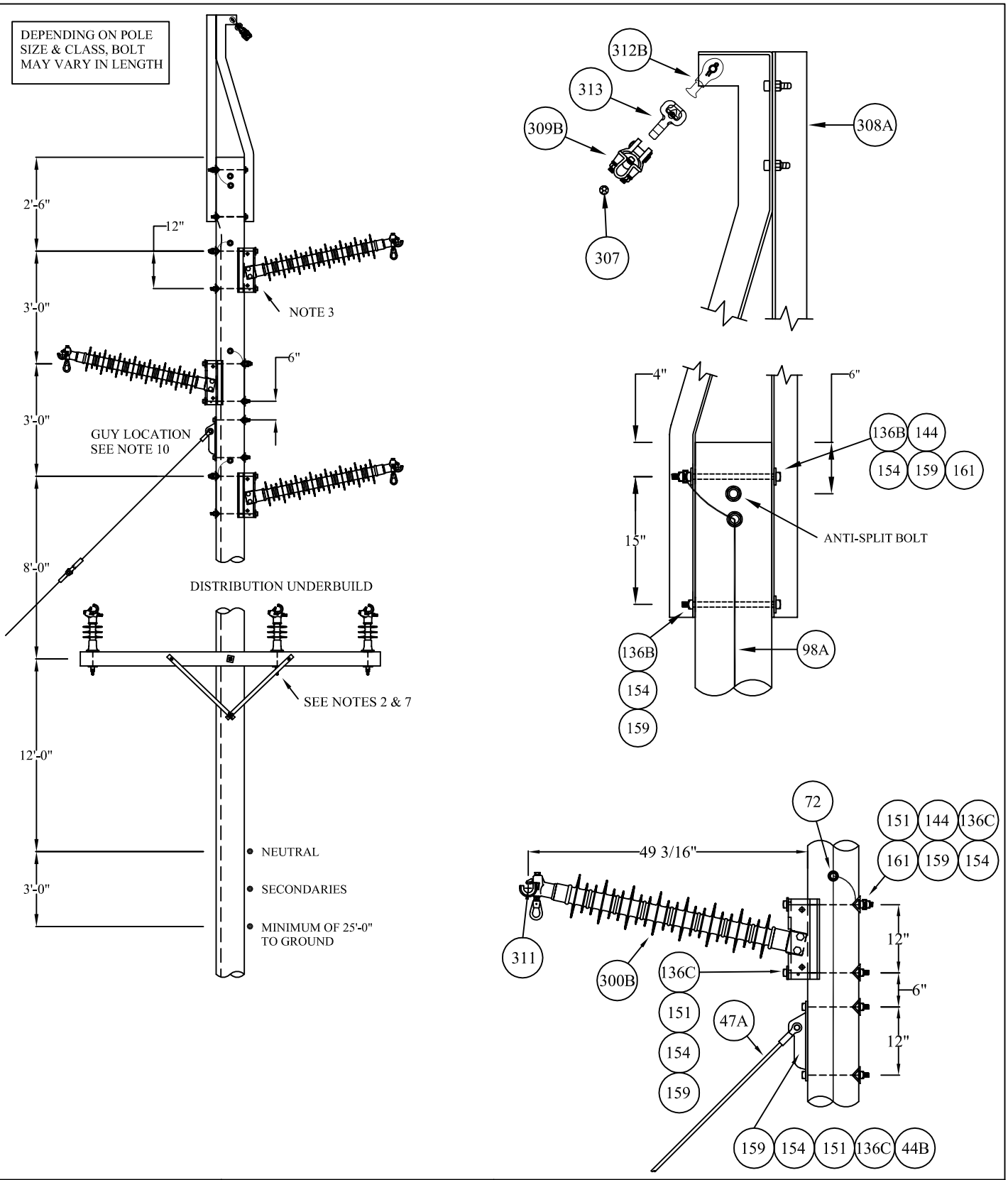
The maximum line angle applicable for each structure type and conductor size is depicted in Table 17-1.

The transmission line structures can accommodate distribution lines underbuild as shown on pages 8-2 and 8-2.

The guying arrangements of the lines are in accordance with Section 6 pages 6-9 to 6-11.

Table 17-1: Maximum line angle and conductor size

MAXIMUM LINE ANGLE PER TRANSMISSION STRUCTURE		
STRUCTURE TYPE	MAXIMUM LINE ANGLE (DEGREES)	CONDUCTOR SIZE
AP	0-5	477 AAC
AP1	0-13	477 AAC
CV	13-60	477 AAC
DDV	60-90	477 AAC
DDV-A	0-5	477 AAC
DE	-	477 AAC



CUC You've got the power 457 North Sound Rd. P.O. Box 38 G.T., Grand Cayman, Cayman Islands, B.W.I. Telephone: (345)-949-5300/5200	Date: Aug. 2009	DISTRIBUTION STANDARDS	
	Drawn by: D. Moore		
		69kV TRANSMISSION STRUCTURE - AP 0-5 DEGREES	
	Revision #: A		
	Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-3
	Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 1 of 2

ITEM NO.	QUANTITY		MATERIAL	STOCK NO.
	Galv.	SS		
44B		1	PLATE - GUY 12"	623-00004
47A		1	INSULATOR, GUY STRAIN, C-C 54"	457-00005
47C		1	INSULATOR, GUY STRAIN, C-TE 54"	457-00002
72		4	CONNECTOR, TFMR GROUND, 8-2	213-00010
98A			WIRE-BARE COPPER, SOFT DRAWN #4 SOL	983-00010
136B		2	BOLT - MACH. 3/4" x 14", SS	098-00062
136C		4	BOLT - MACH. 3/4" x 16", SS	098-00052
136D		4	BOLT - MACH. 3/4" x 18", SS	098-00063
144		4	NUT, SQUARE, 3/4", SS	565-00011
151		8	WASHER - CURVED SQUARE, 3", 13/16" HOLE, SS	973-00018
154		8	WASHER - FLAT, 3/4", 2 1/4" SQ, 13/16" HOLE, SS	973-00015
159		10	WASHER - LOCK, 3/4", SINGLE COIL, SS	973-00017
161		4	CLIP-GROUND WIRE BONDING, 3/4", SS	188-00004
300B		3	INSULATOR, POST TYPE, KLINE KL115ASK4B922	457-00014
307			STATIC WIRE, ALUMOWELD 7#9	983-00012
308A		1	BAYONET, CORNER	056-00003
309B		1	CLAMP, SUSPENSION OVERHEAD STATIC WIRE 7#9, LS-0-N	183-00012
311		3	ROD, ARMOUR ALUM 477 AAC	706-00004
312B		1	CLEVIS, BALL	185-00004
313		1	SOCKET, EYE	185-00008

NOTES:

1. The structure is recommended for angles up to 5 degrees with 477AAC.
2. When underbuild is used, the distribution framing configuration shall be as the standard structure limitation as specified in Standard 8-2.
3. All transmission line insulator brackets shall be tied together (using #4 SDBC) and grounded to the pole ground.
4. A 65' Class 2 pole is required for single circuit underbuild.
   ***NOTE -- Where no distribution is required a 60' Class 1 and 2 pole will be sufficient - based on vertical clearance.
5. A 65' Class 1 or a 70' Class 1 pole is required for double circuit underbuild and secondary.
6. A 75' Class H1 or H2 pole is required for double circuit underbuild, secondary, telecommunication cables and transformers depending on the span length.
7. For double circuit underbuild, the center insulator shall be alternate such that on the lower circuit, the center insulator shall be on the field side, and for the upper circuit, the center insulator shall be on the road side.
8. When underbuild is used, fiberglass guy strain insulator is required where the guy wire crosses the distribution conductor. The clearance between the distribution conductor and the guy shall not be less than 12 inches.
9. Fiberglass guy strain insulators shall be fitted into all transmission guys.
10. This structure does not normally require guying, however, depending on the span length and the soil type, guying may be required.
11. Aircraft warning lights (LED) shall be installed on every transmission line pole.
12. Wooden poles shall require ground wire to be run down the pole, and shall be positioned furthest away from the center insulator on the distribution crossarm. Concrete poles already have the ground wire incorporated.

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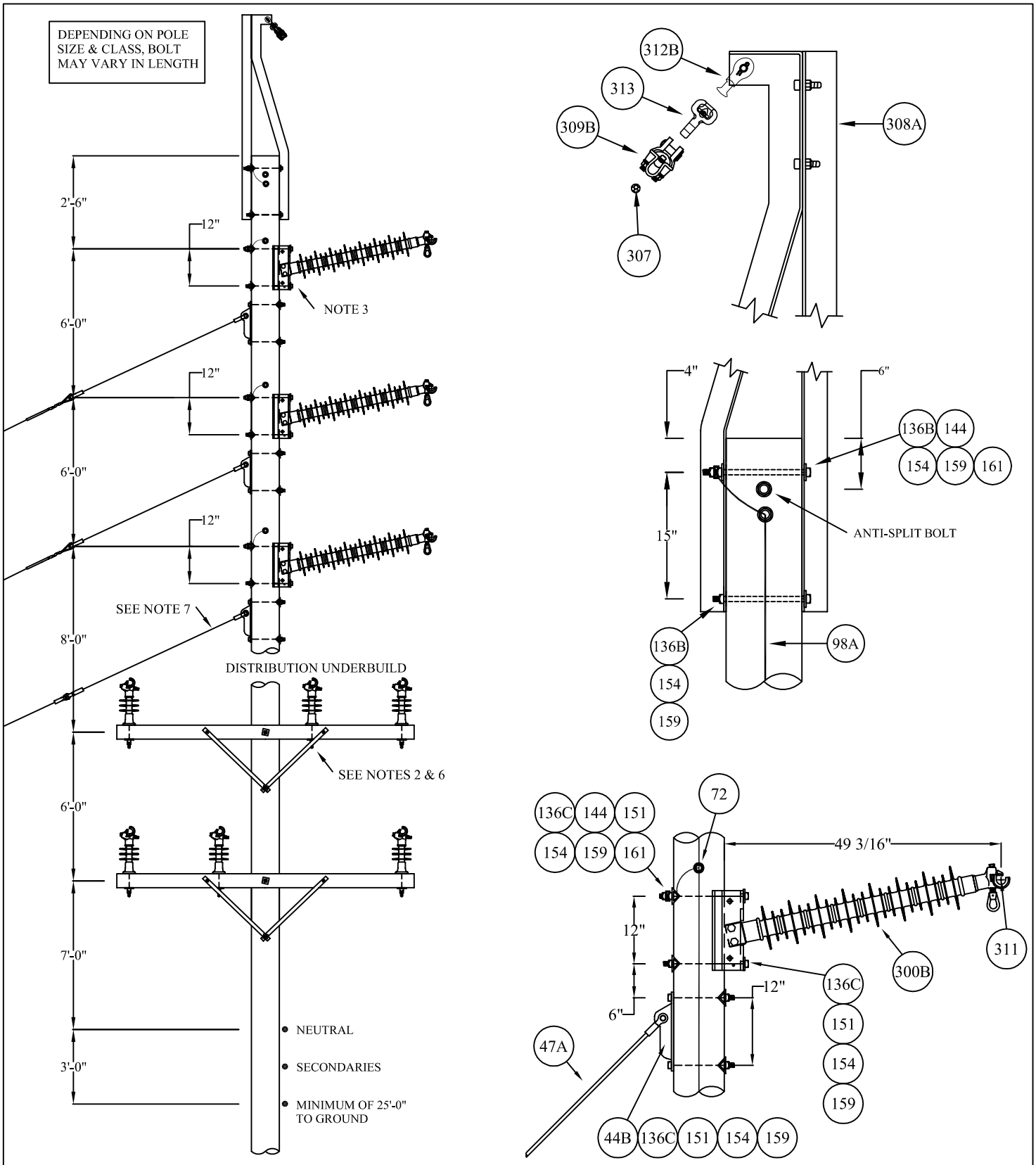
Date: Aug. 2009	DISTRIBUTION STANDARDS		
Drawn by: D. Moore			
	69kV TRANSMISSION STRUCTURE - AP 0-5 DEGREES		
Revision #: A			
Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-3	
Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 2 of 2	



CUC You've got the power 457 North Sound Rd. P.O. Box 38 G.T., Grand Cayman, Cayman Islands, B.W.I. Telephone: (345)-949-5300/5200	Date: Dec. 2012	DISTRIBUTION STANDARDS	
	Drawn by: D. Moore		
		69kV TRANSMISSION STRUCTURE - AP1 0-13 DEGREES	
	Revision #: C		
	Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-4
	Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 1 of 2

ITEM NO.	QUANTITY		MATERIAL	STOCK NO.
	Galv.	SS		
44B		3	PLATE - GUY 12"	623-00004
47A		3	INSULATOR, GUY STRAIN, C-C 54"	457-00005
47C		1	INSULATOR, GUY STRAIN, C-TE 54"	457-00002
72		4	CONNECTOR, TFMR GROUND, 8-2	213-00010
98A			WIRE-BARE COPPER, SOFT DRAWN #4 SOL	983-00010
136B		2	BOLT - MACH. 3/4" x 14", SS	098-00062
136C		4	BOLT - MACH. 3/4" x 16", SS	098-00052
136D		4	BOLT - MACH. 3/4" x 18", SS	098-00063
136E		4	BOLT - MACH. 3/4" x 20", SS	098-00064
144		4	NUT, SQUARE, 3/4", SS	565-00011
151		12	WASHER - CURVED SQUARE, 3", 13/16" HOLE, SS	973-00018
154		16	WASHER - FLAT, 3/4", 2 1/4" SQ, 13/16" HOLE, SS	973-00015
159		14	WASHER - LOCK, 3/4", SINGLE COIL, SS	973-00017
161		4	CLIP-GROUND WIRE BONDING, 3/4", SS	188-00004
300B		3	INSULATOR, POST TYPE, KLINE KL115ASK4B922	457-00014
307			STATIC WIRE, ALUMOWELD 7#9	983-00012
308A		1	BAYONET, CORNER	056-00003
309B		1	CLAMP, SUSPENSION OVERHEAD STATIC WIRE 7#9, LS-0-N	183-00012
311		3	ROD, ARMOUR ALUM 477 AAC	706-00004
312B		1	CLEVIS, BALL	185-00004
313		1	SOCKET, EYE	185-00008

NOTES:

1. The structure can be used on angles up to 13 degrees with 477AAC.
2. When underbuild is used, the distribution framing configuration shall be as the standard structure limitation as specified in Standard 8-2.
3. All transmission line insulator bracket shall be tied together (using #4 SDBC) and grounded to the pole ground.
4. A 65' Class 1 pole is required where no distribution is required and a 70' Class 2 pole is required for single circuit underbuild and secondary.
5. A 75' Class H1 or H2 pole is required for double circuit underbuild, secondary, telecommunication cables and transformers depending on the span length.
6. For double circuit underbuild, the center insulator shall be alternate such that on the lower circuit, the center insulator shall be on the field side, and for the upper circuit, the center insulator shall be on the road side.
7. When underbuild is used, fiberglass guy strain insulator is required where the guy wire crosses the distribution conductor. The clearance between the distribution conductor and the guy shall not be less than 12 inches.
8. Fiberglass guy strain insulators shall be fitted into all transmission guys.
9. Wooden poles shall require ground wire to be run down the pole, and shall be positioned furthest away from the center insulator on the distribution crossarm. Concrete poles already have the ground wire incorporated.

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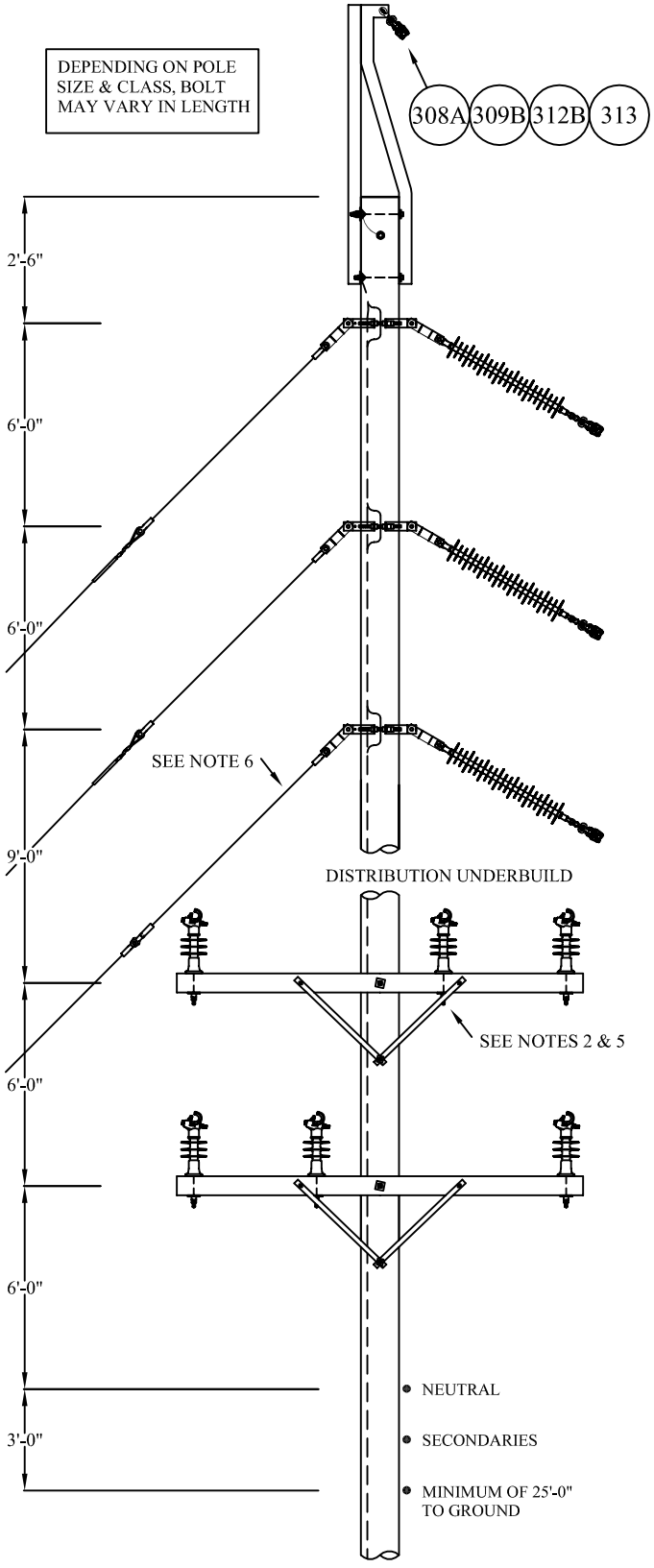
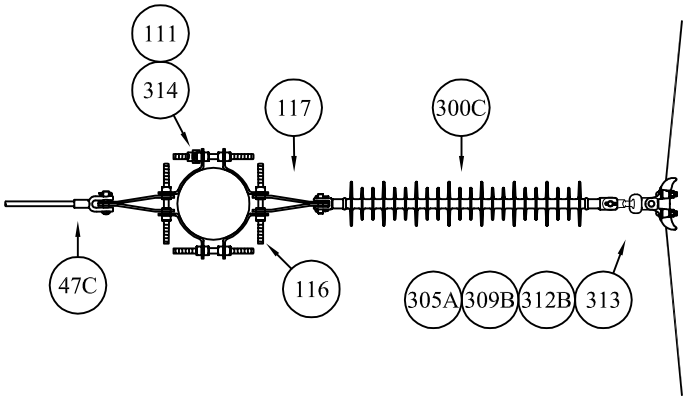
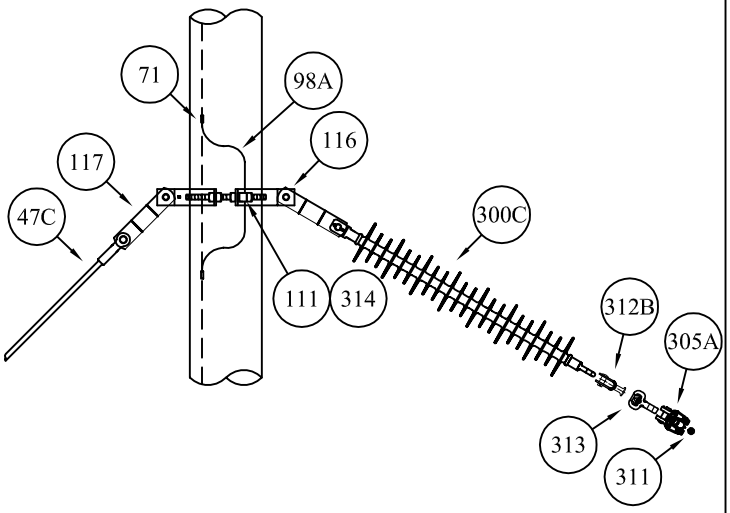
Date: Dec. 2012	DISTRIBUTION STANDARDS		
Drawn by: D. Moore			
	69kV TRANSMISSION STRUCTURE - AP1 0-13 DEGREES		
Revision #: C			
Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-4	
Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 2 of 2	







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Date: Apr. 2009	DISTRIBUTION STANDARDS	
Drawn by: D. Moore		
	69kV TRANSMISSION STRUCTURE - CV 13 DEGREES TO 60 DEGREES	
Revision #: B		
Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-5
Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 1 of 2

ITEM NO.	QUANTITY		MATERIAL	STOCK NO.
	Galv.	SS		
47A		3	INSULATOR, GUY STRAIN, C-C 54"	457-00005
47C		1	INSULATOR, GUY STRAIN, C-TE 54"	457-00002
71		7	CONNECTOR - BARTAP, COPPER, 8-2/0 TMFR GRD	213-00009
98A			WIRE-BARE COPPER, SOFT DRAWN #4 SOL	983-00010
111	3		CLIP-GROUND WIRE BONDING, 3/4", GAL.	188-00001
116	3		BAND - POLE, 4-WAY	047-00001
117	6		LINK-CONNECTING, FOR POLE BAND	503-00002
135E		3	BOLT - MACHINE, 5/8" x 12", SS	098-00039
143		1	NUT - SQUARE, 5/8", SS	565-00009
153		6	WASHER - FLAT SQ., 2 1/4", 11/16" HOLE, SS	973-00009
158		3	WASHER - LOCK, 5/8", SINGLE COIL, SS	973-00010
162		1	CLIP-GROUND WIRE BONDING, 5/8", SS	188-00004
300C		3	INSULATOR, SUSPENSION TYPE, KLINE KL115	457-00013
305A		3	CLAMP - SUSPENSION, ALUM 477, HAS118N	183-00009
307			STATIC WIRE, ALUMOWELD 7#9	983-00012
308A		1	BAYONET, CORNER	056-00003
309B		1	CLAMP, SUSPENSION OVERHEAD STATIC WIRE 7#9 , LS-0-N	183-00012
311		3	ROD, ARMOUR ALUM 477 AAC	706-00004
312B		2	CLEVIS, BALL	185-00004
313		2	SOCKET, EYE	185-00008
314	4		NUT, SQUARE, 3/4", GALV.	565-00003

NOTES:

1. This structure shall be used in line angles from 13 degrees to 60 degrees with 477AAC.
2. When underbuild is used, the distribution framing configuration shall be as the standard structure limitation as specified in Standard 8-2.
3. The pole bands shall be tied together (using #4 SDBC) and connected to the overhead ground wire and the pole ground. See Standard 11-5 for grounding details.
4. A 75' Class H1 or H2 pole is required for double circuit underbuild, secondary, telecommunication cables and transformers depending on the span length.
5. For double circuit underbuild, the center insulator shall be alternate such that on the lower circuit, the center insulator shall be on the field side, and for the upper circuit, the center insulator shall be on the road side.
6. When underbuild is used, fiberglass guy strain insulator is required where the guy wire crosses the distribution conductor. The clearance between the distribution conductor and the guy shall not be less than 12 inches.
7. Guy strain insulators shall be fitted into all transmission guys.
8. Aircraft warning lights (LED) shall be installed on every transmission line pole.
9. Wooden poles shall require ground wire to be run down the pole, and shall be positioned furthest away from the center insulator on the distribution crossarm. Concrete poles already have the ground wire incorporated.

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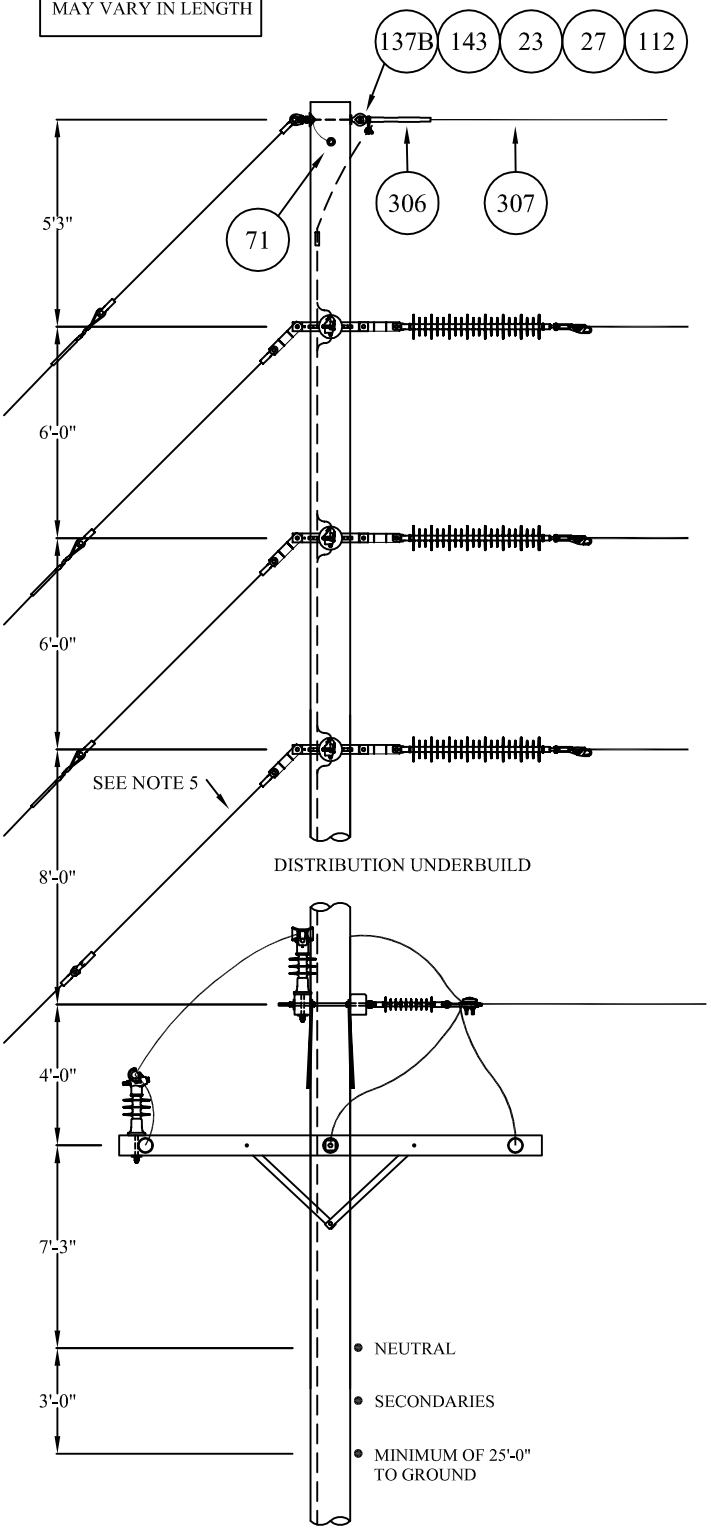
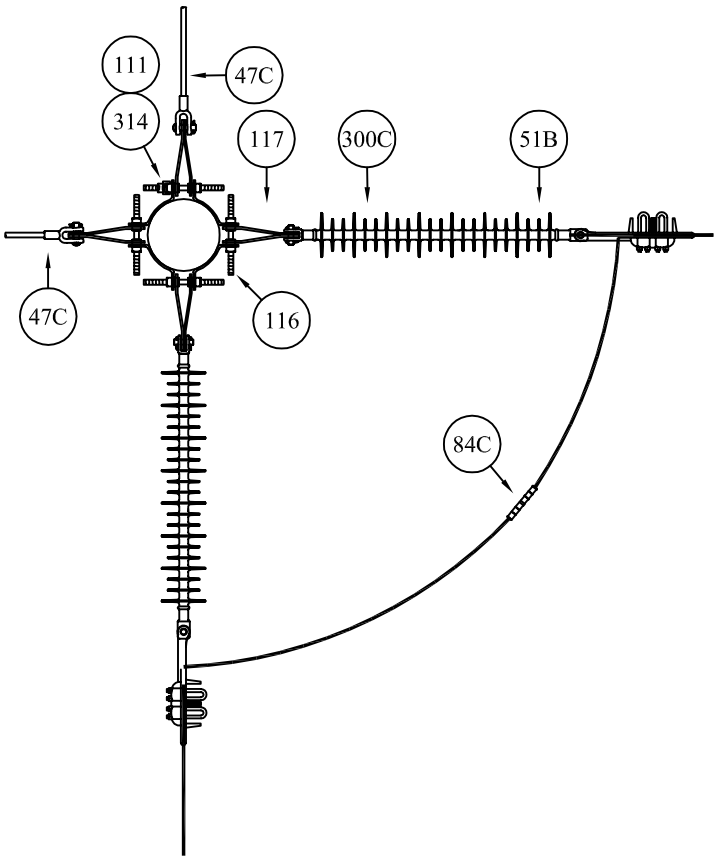
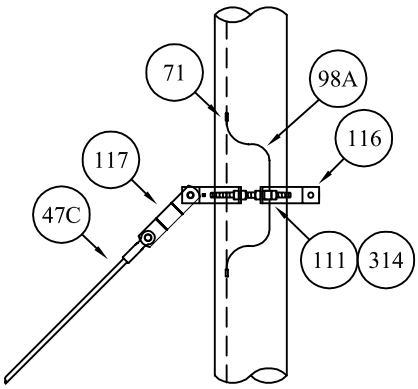
Date: Apr. 2009	DISTRIBUTION STANDARDS		
Drawn by: D. Moore			
	69kV TRANSMISSION STRUCTURE - CV 13 DEGREES TO 60 DEGREES		
Revision #: B			
Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-5	
Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 2 of 2	

DEPENDING ON POLE SIZE & CLASS, BOLT MAY VARY IN LENGTH



DISTRIBUTION UNDERBUILD





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Telephone: (345)-949-5300/5200

Date: Sept. 2012	DISTRIBUTION STANDARDS	
Drawn by: D. Moore		
	69kV TRANSMISSION STRUCTURE - DDV 60-90 DEGREES	
Revision #: C		
Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-6
Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 1 of 2

ITEM NO.	QUANTITY		MATERIAL	STOCK NO.
	Galv.	SS		
47A		8	INSULATOR, GUY STRAIN, C-C 54"	457-00005
47C		2	INSULATOR, GUY STRAIN, C-TE 54"	457-00002
51B		6	CLAMP - ST. LINE DEADEND, ALUM, 4/0-477	183-00003
71		7	CONNECTOR - BARTAP, COPPER, 8-2/0 TMFR GRD	213-00009
84C		3	SLEEVE - JUMPER, ALUM, 477	784-00001
98A			WIRE-BARE COPPER, SOFT DRAWN #4 SOL	983-00010
111	3		CLIP-GROUND WIRE BONDING, 3/4", GAL.	188-00001
116	2		BAND - POLE, 4-WAY	047-00001
117	12		LINK-CONNECTING, FOR POLE BAND	503-00002
137B		2	BOLT - OVAL EYE, 5/8" x 12", SS	098-00047
140		2	NUT - EYE, 5/8", SS	565-00008
143		1	NUT - SQUARE, 5/8", SS	565-00009
153		4	WASHER - FLAT SQ., 2 1/4", 11/16" HOLE, SS	973-00009
162		1	CLIP-GROUND WIRE BONDING, 5/8", SS	188-00004
300C		6	INSULATOR, SUSPENSION TYPE, KLINE KL115	457-00013
306		2	CONNECTOR, BOLTED JUMPER ALUMOWELD FOR STATIC WIRE	274-00016
307			STATIC WIRE, ALUMOWELD 7#9	983-00012
314	3		NUT, SQUARE, 3/4", GALV.	565-00003

NOTES:

1. This structure shall used in line angles 60 to 90 degrees with 477AAC.
2. When underbuild is used, the distribution framing configuration shall be as the standard structure limitation as specified in Standard 8-2.
3. The pole bands shall be tied together (using #4 SDBC) and connected to the overhead ground wire and the pole ground. See Standard 11-5 for grounding details.
4. A 75' Class H1 or H2 pole can only accommodate single circuit underbuild, secondary and telecommunication cables depending on the span length.
5. When underbuild is used, fiberglass guy strain insulator is required where the guy wire crosses the distribution conductor. The clearance between the distribution conductor and the guy shall not be less than 12 inches.
6. Guy strain insulators shall be fitted into all transmission guys.
7. Aircraft warning lights (LED) shall be installed on every transmission line pole.
8. Wooden poles shall require ground wire to be run down the pole, and shall be positioned furthest away from the center insulator on the distribution crossarm. Concrete poles already have the ground wire incorporated.

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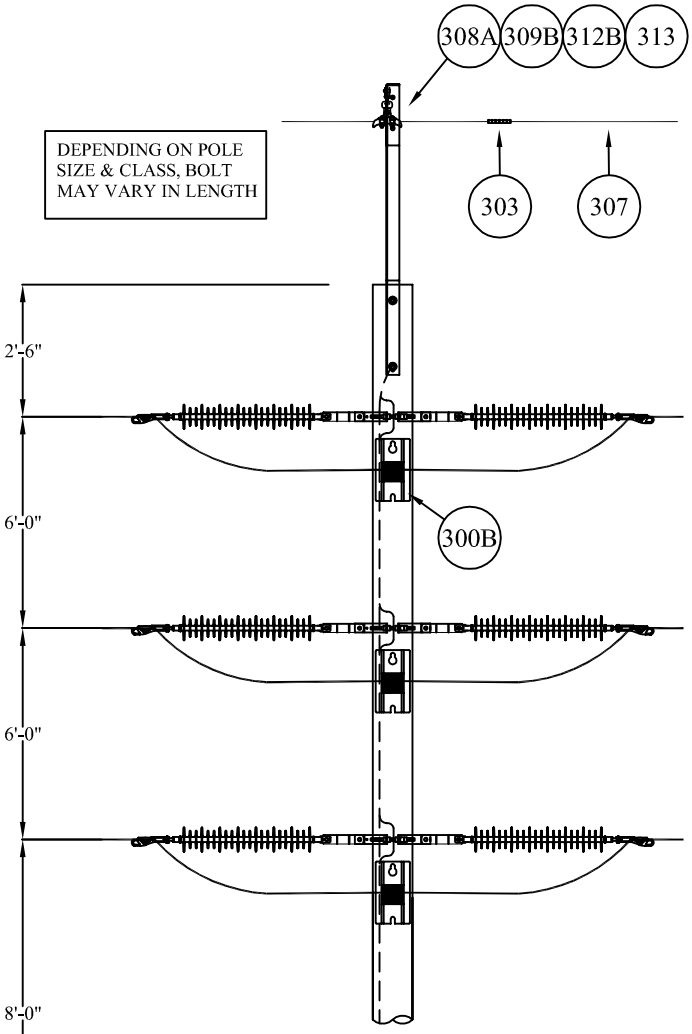
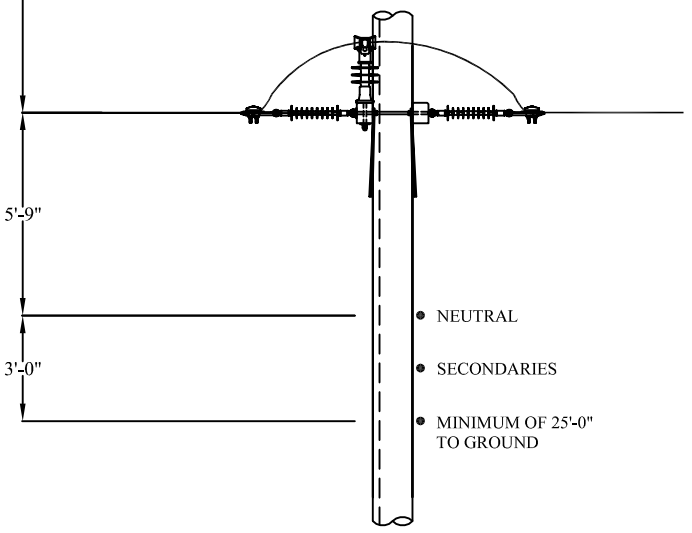
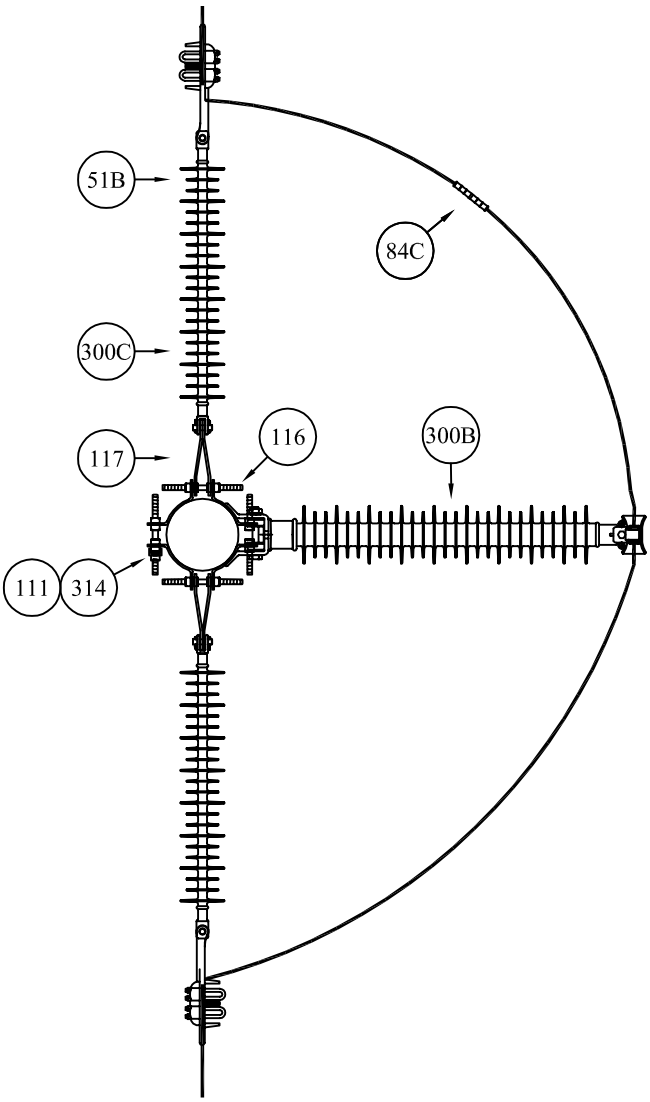
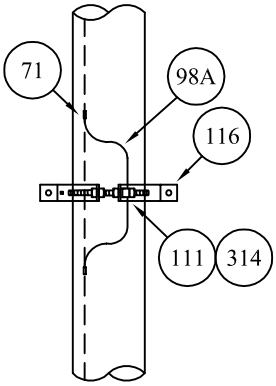
Date: Sept. 2012	DISTRIBUTION STANDARDS		
Drawn by: D. Moore			
	69kV TRANSMISSION STRUCTURE - DDV 60-90 DEGREES		
Revision #: C			
Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-6	
Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 2 of 2	



DISTRIBUTION UNDERBUILD







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Telephone: (345)-949-5300/5200

Date: Oct. 2013	DISTRIBUTION STANDARDS	
Drawn by: D. Moore		
	69kV TRANSMISSION STRUCTURE - DDV-A LESS THAN 5 DEGREES	
Revision #: B		
Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-7
Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 1 of 2

ITEM NO.	QUANTITY		MATERIAL	STOCK NO.
	Galv.	SS		
51B		6	CLAMP - ST. LINE DEADEND, ALUM, 4/0-477	183-00003
71		7	CONNECTOR - BARTAP, COPPER, 8-2/0 TMFR GRD	213-00009
84C		3	SLEEVE - JUMPER, ALUM, 477	784-00001
98A			WIRE-BARE COPPER, SOFT DRAWN #4 SOL	983-00010
111	7		CLIP-GROUND WIRE BONDING, 3/4", GAL.	188-00001
116	3		BAND - POLE, 4-WAY	047-00001
117	6		LINK-CONNECTING, FOR POLE BAND	503-00002
136B		2	BOLT - MACH. 3/4" x 14", SS	098-00062
136C		2	BOLT - MACH. 3/4" x 16", SS	098-00052
136D		2	BOLT - MACH. 3/4" x 18", SS	098-00063
136E		2	BOLT - MACH. 3/4" x 20", SS	098-00064
144		7	NUT, SQUARE, 3/4", SS	565-00011
151		6	WASHER - CURVED SQUARE, 3", 13/16" HOLE, SS	973-00018
154		10	WASHER - FLAT, 3/4", 2 1/4" SQ, 13/16" HOLE, SS	973-00015
159		8	WASHER - LOCK, 3/4", SINGLE COIL, SS	973-00017
161		3	CLIP-GROUND WIRE BONDING, 3/4", SS	188-00004
300B		3	INSULATOR, POST TYPE, KLINE KL115ASK4B922	457-00014
300C		6	INSULATOR, SUSPENSION TYPE, KLINE KL115	457-00013
303			CONNECTOR, COMPRESSION FOR STATIC WIRE P/N:4912.359	783-00011
307			STATIC WIRE, ALUMOWELD 7#9	983-00012
308A		1	BAYONET, CORNER	056-00003
309B		1	CLAMP, SUSPENSION OVERHEAD STATIC WIRE 7#9, LS-0-N	183-00012
312B		1	CLEVIS, BALL	185-00004
313		1	SOCKET, EYE	185-00008
314	4		NUT, SQUARE, 3/4", GALV.	565-00003

NOTES:

1. This structure shall be used in line angles of less than 5 degrees with 477AAC.
2. When underbuild is used, the distribution framing configuration shall be as the standard structure limitation as specified in Standard 8-2.
3. The pole bands shall be tied together (using #4 SDBC) and connected to the overhead ground wire and the pole ground. See Standard 11-5 for grounding details.
4. A 75' Class H1 or H2 pole can only accommodate single circuit underbuild, secondary and telecommunication cables depending on the span length.
5. Aircraft warning lights (LED) shall be installed on every transmission line pole.
6. Wooden poles shall require ground wire to be run down the pole, and shall be positioned furthest away from the center insulator on the distribution crossarm. Concrete poles already have the ground wire incorporated.

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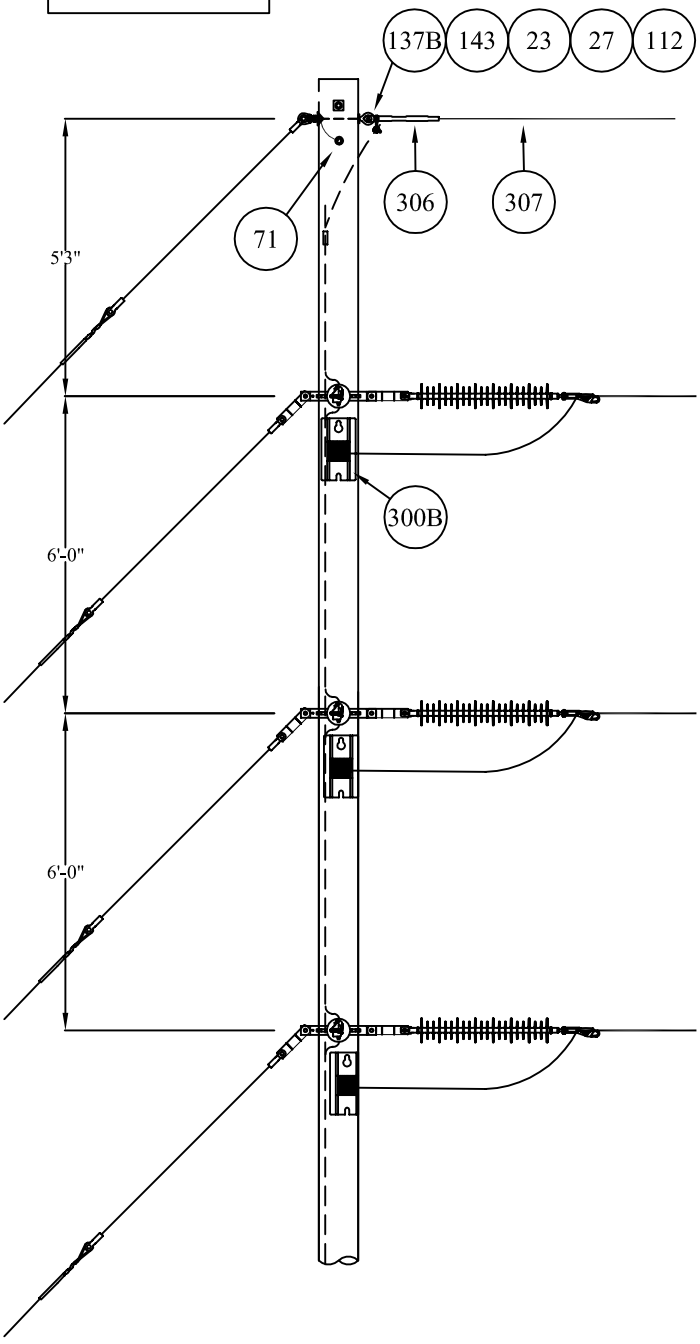
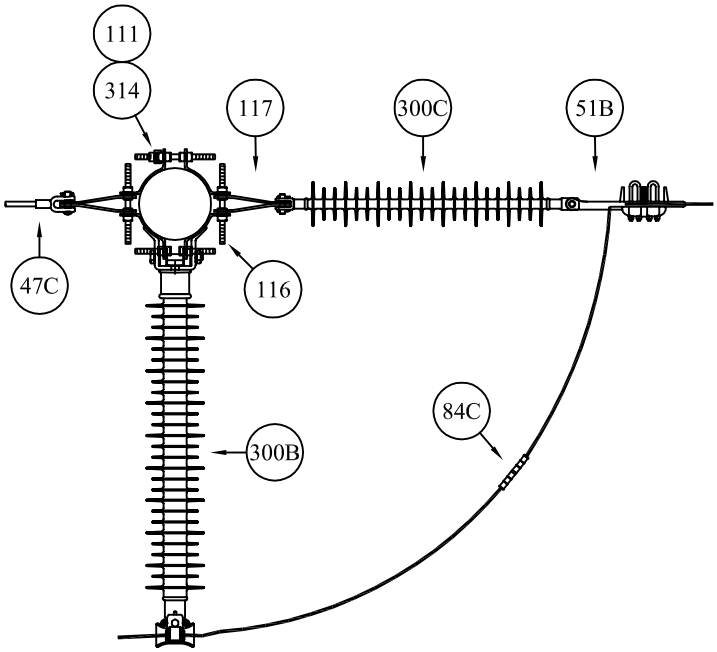
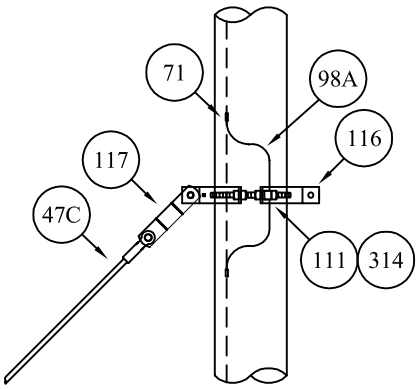
Date: Oct. 2013	DISTRIBUTION STANDARDS		
Drawn by: D. Moore			
	69kV TRANSMISSION STRUCTURE - DDV-A LESS THAN 5 DEGREES		
Revision #: B			
Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-7	
Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 2 of 2	

DEPENDING ON POLE SIZE & CLASS, BOLT MAY VARY IN LENGTH







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Date: Sept. 2012	DISTRIBUTION STANDARDS	
Drawn by: D. Moore		
	69kV TRANSMISSION STRUCTURE - DE DEAD END	
Revision #: B		
Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-8
Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 1 of 2

ITEM NO.	QUANTITY		MATERIAL	STOCK NO.
	Galv.	SS		
47C		4	INSULATOR, GUY STRAIN, C-TE 54"	457-00002
51B		3	CLAMP - ST. LINE DEADEND, ALUM, 4/0-477	183-00003
71		7	CONNECTOR - BARTAP, COPPER, 8-2/0 TMFR GRD	213-00009
84C		3	SLEEVE - JUMPER, ALUM, 477	784-00001
98A			WIRE-BARE COPPER, SOFT DRAWN #4 SOL	983-00010
111	3		CLIP-GROUND WIRE BONDING, 3/4", GAL.	188-00001
116	2		BAND - POLE, 4-WAY	047-00001
117	6		LINK-CONNECTING, FOR POLE BAND	503-00002
135E		1	BOLT - MACHINE, 5/8" x 12", SS	098-00039
137B		2	BOLT - OVAL EYE, 5/8" x 12", SS	098-00047
140		2	NUT - EYE, 5/8", SS	565-00008
143		1	NUT - SQUARE, 5/8", SS	565-00009
153		2	WASHER - FLAT SQ., 2 1/4", 11/16" HOLE, SS	973-00009
162		1	CLIP-GROUND WIRE BONDING, 5/8", SS	188-00004
300B		3	INSULATOR, POST TYPE, KLINE KL115ASK4B922	457-00014
300C		3	INSULATOR, SUSPENSION TYPE, KLINE KL115	457-00013
306		2	CONNECTOR, BOLTED JUMPER ALUMOWELD FOR STATIC WIRE	274-00016
307			STATIC WIRE, ALUMOWELD 7#9	983-00012
314	3		NUT, SQUARE, 3/4", GALV.	565-00003

NOTES:

1. This structure shall be used for transmission deadend with 477AAC in a substation.
2. The pole bands shall be tied together (using #4 SDBC) and connected to the overhead ground wire and the pole ground. See Standard 11-5 for grounding details.
3. A 65' Class 1 pole is required where no distribution is required and a 70' Class 2 pole is required for single circuit underbuild.
4. A 75' Class H1 or H2 pole or concrete pole is required for double circuit underbuild.
5. Guy strain insulators shall be fitted into all transmission guys.
6. Aircraft warning lights (LED) shall be installed on every transmission line pole.
7. Wooden poles shall require ground wire to be run down the pole, and shall be positioned furthest away from the center insulator on the distribution crossarm. Concrete poles already have the ground wire incorporated.

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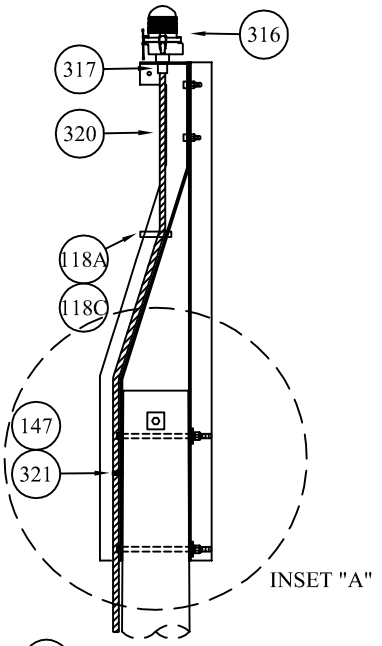
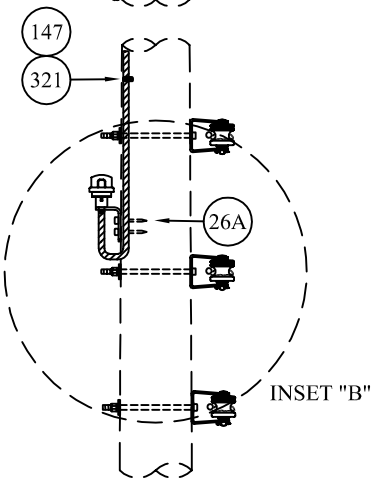
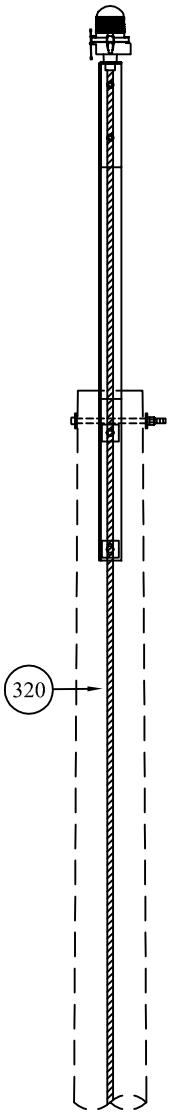
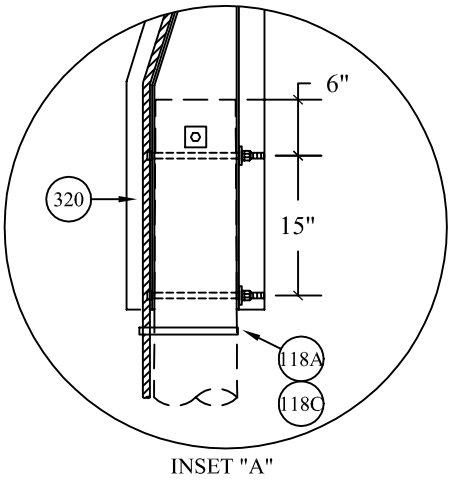
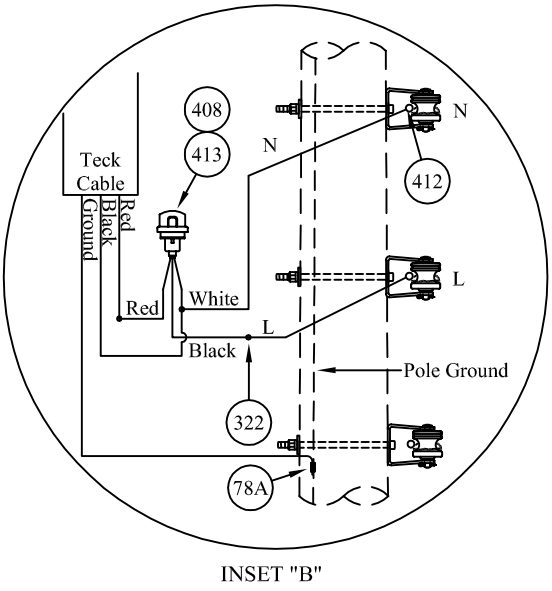
Date: Sept. 2012	DISTRIBUTION STANDARDS		
Drawn by: D. Moore			
	69kV TRANSMISSION STRUCTURE - DE DEAD END		
Revision #: B			
Revision date: March 15, 2021	Approved date: March 15, 2021	STANDARD # 17-8	
Revised by: C. Craig	Approved by: N. Malcolm	Sheet: 2 of 2	











CUC You've got the power 457 North Sound Rd. P.O. Box 38 G.T., Grand Cayman, Cayman Islands, B.W.I. Telephone: (345)-949-5300/5200	Date: March 15, 2021	DISTRIBUTION STANDARDS	
	Drawn by: C. Craig		
		AIRCRAFT WARNING LIGHT	
	Revision #:		
	Revision date:	Approved date: March 15, 2021	STANDARD # 17 - 9
	Revised by:	Approved by: N. Malcolm	Sheet: 1 of 2

ITEM NO.	QUANTITY		MATERIAL	STOCK NO.
	Conc.	Wood		
26A		2	SCREW - LAG, 1/2" x 3", GALV.	744-00001
78A		2	CRIMPIT - CTYPE, COPPER, 6-6	253-00005
118A			POLE, BAND 3/4", SS	047-00003
118C	4		POLE, BAND CLIP 3/4", SS	122-00002
147		5	SCREW, HEX WASHER HEAD, 1 1/4", No. 8, SS	744-00004
316	1	1	LIGHT, LED OBSTRUCTION P/N MKR-LTE1-000	497-00005
317	1	1	CONNECTOR, STAR TECK 3/4" STEX075	213-00028
320			CABLE, TECK 12 AWG 3 CORE P/N 422295	ELE-137-00009
321		5	CLAMP, 1/2" ONE HOLE T&B P/N H-05-1	ELE-183-00002
322	3	3	SPLICE, BUTT PANDUIT P/N BSN10-L	ELE-821-00001
408	1	1	PHOTOCELL ELECTRONIC P/N 6246TF	597-00001
412	1	1	CONNECTOR, INSULATED PIERCING, TYPE EPB TYCO 2832033-1	213-00027
413	1	1	BRACKET, PHOTOCELL RECEPTACLE P/N FPS476-71	108-00008

NOTES:

1. Install aircraft warning light as shown.
2. When the warning light is installed on a concrete pole, select the materials for concrete pole.
3. When the warning light is installed on a wooden pole, select the materials for wood pole.
4. Connect the warning light and photocell as shown in "Inset B".
5. Install pole band or clamp at 10 feet intervals to secure Tech cable to pole.
6. Aircraft warning lights (LED) shall be installed on every transmission line pole.

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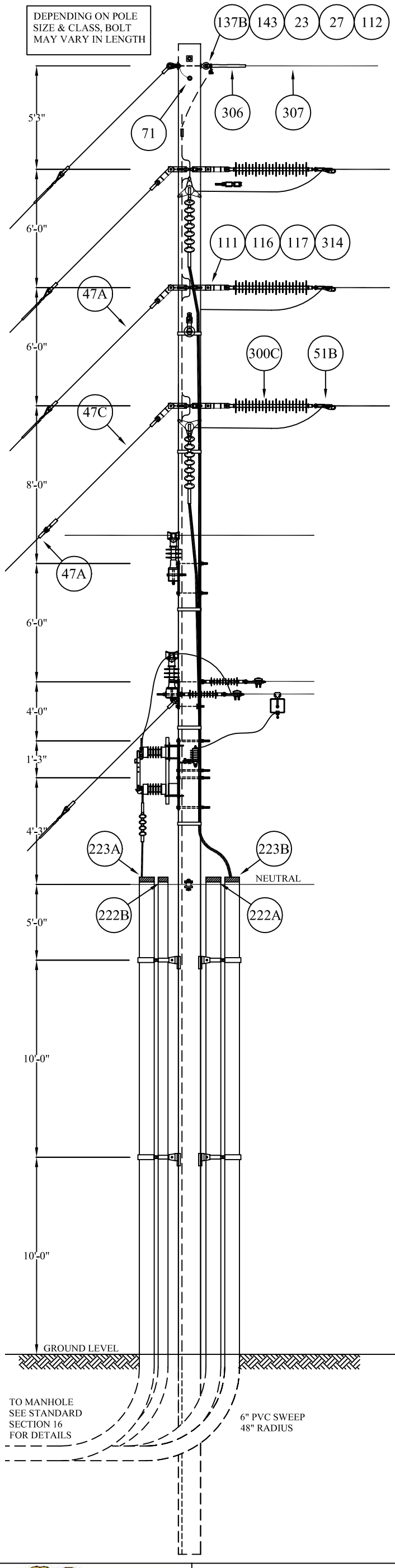
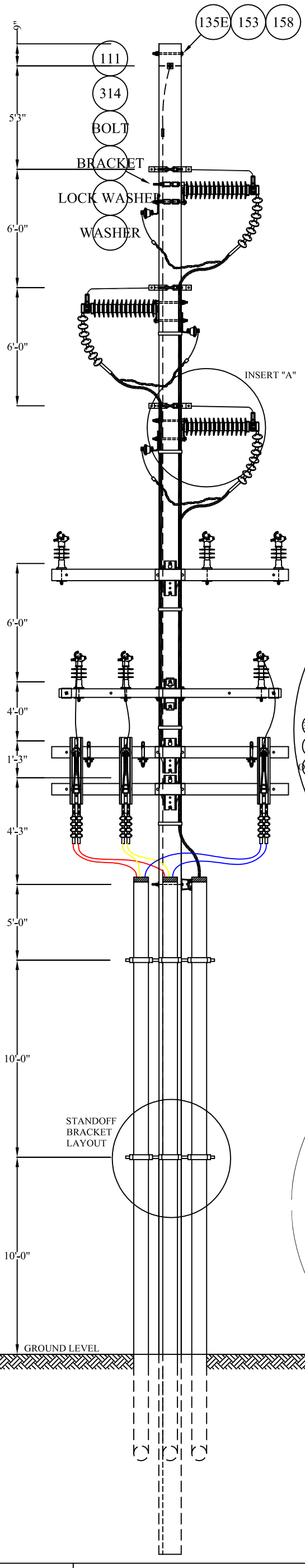
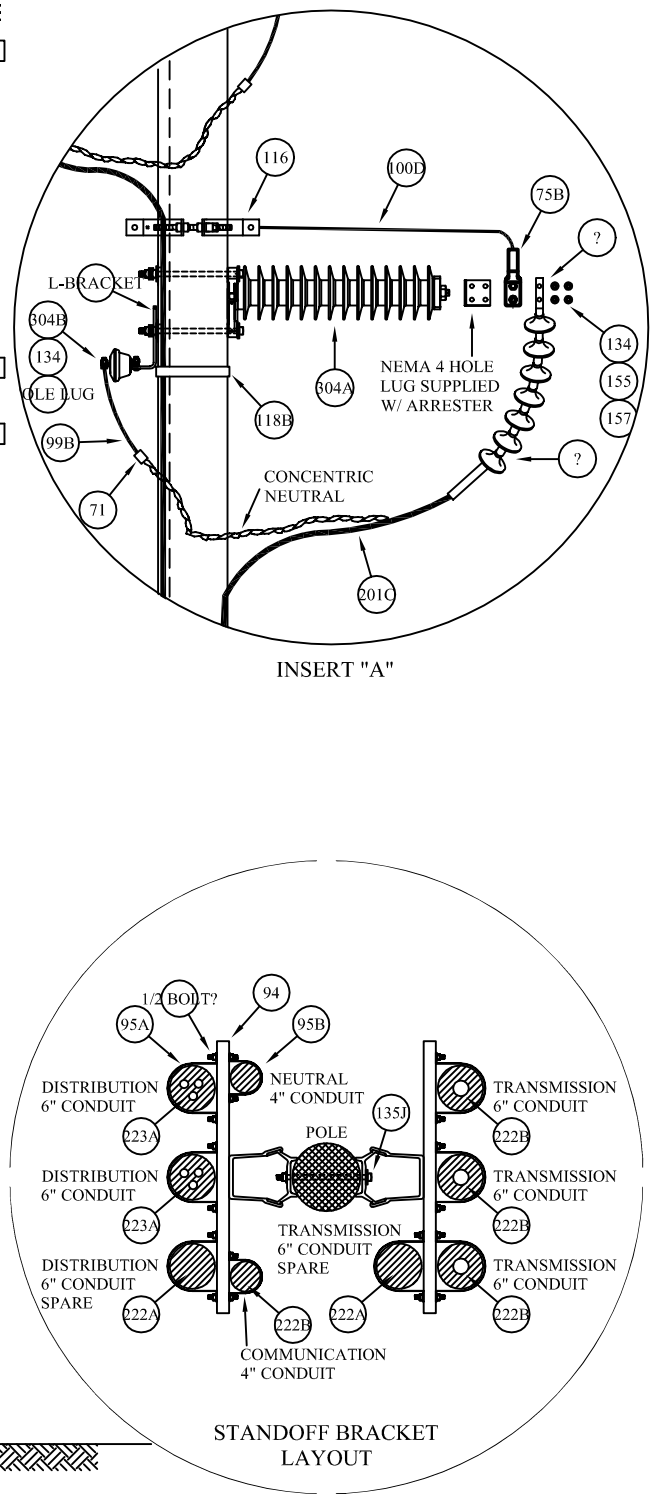
Date: March 15, 2021	DISTRIBUTION STANDARDS	
Drawn by: C. Craig		
	AIRCRAFT WARNING LIGHT	
Revision #:		
Revision date:	Approved date: March 15, 2021	STANDARD # 17 - 9
Revised by:	Approved by: N. Malcolm	Sheet: 2 of 2

DEPENDING ON POLE SIZE & CLASS, BOLT MAY VARY IN LENGTH







INSERT "A"

STANDOFF BRACKET LAYOUT

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Date: November 16, 2020	DISTRIBUTION STANDARDS	
Drawn by: C. Craig		
	69kV TRANSMISSION RISER POLE WITH DISTRIBUTION DOUBLE CIRCUIT	
Revision #:		
Revision date:	Approved date: March 15, 2021	STANDARD # 17-10
Revised by:	Approved by: N. Malcolm	Sheet: 1 of 2

ITEM NO.	QUANTITY		MATERIAL	STOCK NO.
	Galv.	SS		
47A		4	INSULATOR, GUY STRAIN, C-C 54"	457-00005
47C		1	INSULATOR, GUY STRAIN, C-TE 54"	457-00002
51B		3	CLAMP - ST. LINE DEADEND, ALUM, 4/0-477	183-00003
71		10	CONNECTOR - BARTAP, COPPER, 8-2/0 TMFR GRD	213-00009
75B		3	TERMINAL - COMPRESSION PAD, ALUM, 477	879-00001
84C		3	SLEEVE - JUMPER, ALUM, 477	784-00001
94		4	BRACKET - STANDOFF CONDUIT	108-00018
95A		7	STRAP - CONCUIT 6"	835-00004
95B		2	STRAP - CONCUIT 4"	835-00003
98A			WIRE-BARE COPPER, SOFT DRAWN #4 SOL	983-00010
99B			WIRE-INSULATED COPPER, 2/0 STR.	983-00010
100D			CONDUCTOR-BARE ALUM 477 AAC, COSMOS	210-00004
111	6		CLIP-GROUND WIRE BONDING, 3/4", GAL.	188-00001
116	3		BAND - POLE, 4-WAY	047-00001
117	6		LINK-CONNECTING, FOR POLE BAND	503-00002
118B			POLE BAND 1 1/4" SS	047-00002
134		15	BOLT, 1-1/2" WITH NUT, SS	098-00069
135E		1	BOLT - MACHINE, 5/8" x 12", SS	098-00039
135J		2	BOLT - MACHINE, 5/8" x 20", SS	098-00060
137B		1	BOLT - OVAL EYE, 5/8" x 12", SS	098-00047
140		1	NUT - EYE, 5/8", SS	565-00008
143		1	NUT - SQUARE, 5/8", SS	565-00009
153		6	WASHER - FLAT SQ., 2 1/4", 11/16" HOLE, SS	973-00009
155		30	WASHER - FLAT ROUND, 1/2", 9/16" HOLE, SS	973-00014
157		15	WASHER - LOCK, 1/2", SINGLE COIL, SS	973-00019
158		1	WASHER - LOCK, 5/8", SINGLE COIL, SS	973-00010
162		1	CLIP-GROUND WIRE BONDING, 5/8", SS	188-00004
201C		1	CABLE - URD, EPR 1250 MCM CU 69kV	137-00021
222A		2	PLUG, DUCT BLANK 6"	627-00005
222B		2	PLUG, DUCT BLANK 4"	TBD
223A		2	CABLE SEPERATOR - 3 CABLE 6"	TBD
223B		3	CABLE SEPERATOR - 1 CABLE 6"	TBD
300C		3	INSULATOR, SUSPENSION TYPE, KLINE KL115	457-00013
301	3		TERMINATION KIT, 69kV FOR 1250 MCM CABLE	880-00009
304A		3	ARRESTER, 69kV POLYMER, 48kV MCOV	037-00006
304B		3	ARRESTER, CABLE SHEATH, 1.8kV 5kA TYPE MVR1.8	037-00003
306		1	CONNECTOR, BOLTED JUMPER ALUMOWELD FOR STATIC WIRE	274-00016
307			STATIC WIRE, ALUMOWELD 7#9	983-00012
314	6		NUT, SQUARE, 3/4", GALV.	565-00003

NOTES:

1. This structure is recommended for transmission riser pole with single or double circuit underbuild.
2. The pole bands shall be tied together (using #4 SDBC) and connected to the overhead ground wire and the pole ground. See Standard 11-5 for grounding details.
3. For distribution underbuild please see Standard Section 8.
4. For manhole detail please see Standard Section 16.
5. Line and cable sheath surge arresters shall be connected to the pole ground.
6. A 75' Class 1 or 2 pole or concrete pole is required for double circuit underbuild and telecommunication cables.
7. For double circuit underbuild, the center insulator shall be alternate such that on the lower circuit, the center insulator shall be on the field side, and for the upper circuit, the center insulator shall be on the road side.
8. When underbuild is used, fiberglass guy strain insulator is required where the guy wire crosses the distribution conductor. The clearance between the distribution conductor and the guy shall not be less than 12 inches.
9. Fiberglass guy strain insulators shall be fitted into all transmission guys.
10. Wooden poles shall require ground wire to be run down the pole, and shall be positioned furthest away from the center insulator on the distribution crossarm. Concrete poles already have the ground wire incorporated.

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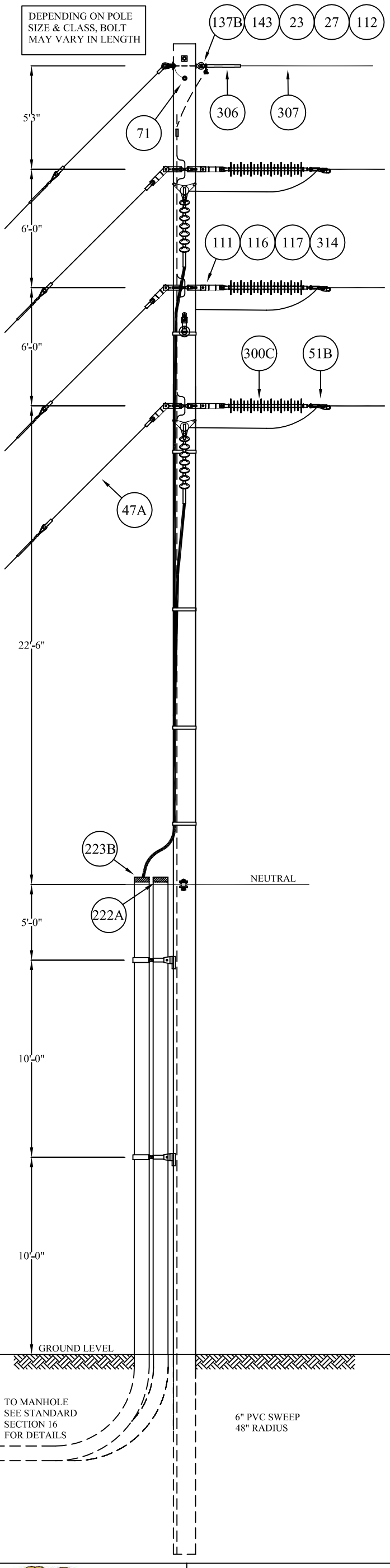
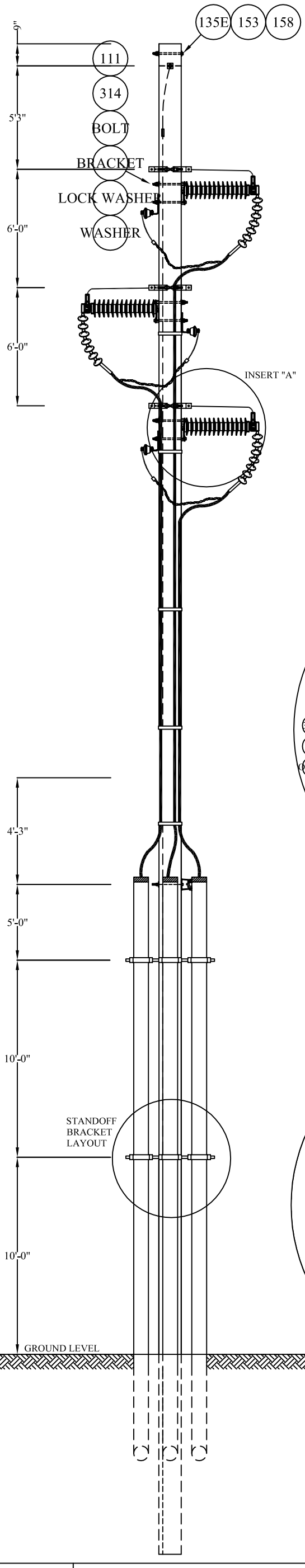
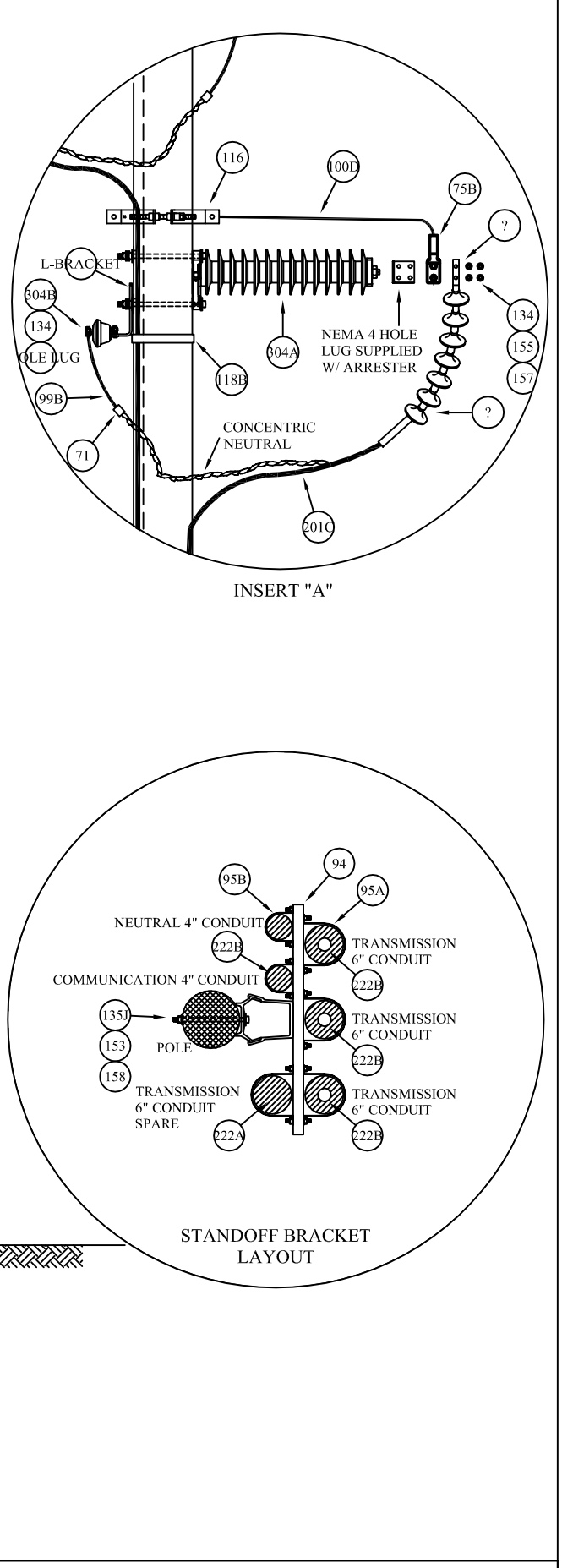
Date: November 16, 2020	DISTRIBUTION STANDARDS		
Drawn by: C. Craig			
	69kV TRANSMISSION RISER POLE WITH DISTRIBUTION DOUBLE CIRCUIT		
Revision #:			
Revision date:	Approved date: March 15, 2021	STANDARD # 17-10	
Revised by:	Approved by: N. Malcolm	Sheet: 2 of 2	

DEPENDING ON POLE SIZE & CLASS, BOLT MAY VARY IN LENGTH







INSERT "A"

STANDOFF BRACKET LAYOUT

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Date: March 1, 2021	DISTRIBUTION STANDARDS	
Drawn by: C. Craig		
	69kV TRANSMISSION RISER POLE	
Revision #:		
Revision date:	Approved date: March 15, 2021	STANDARD # 17-11
Revised by:	Approved by: N. Malcolm	Sheet: 1 of 2

ITEM NO.	QUANTITY		MATERIAL	STOCK NO.
	Galv.	SS		
47A		4	INSULATOR, GUY STRAIN, C-C 54"	457-00005
51B		3	CLAMP - ST. LINE DEADEND, ALUM, 4/0-477	183-00003
71		10	CONNECTOR - BARTAP, COPPER, 8-2/0 TMFR GRD	213-00009
75B		3	TERMINAL - COMPRESSION PAD, ALUM, 477	879-00001
94		2	BRACKET - STANDOFF CONDUIT	108-00018
95A		4	STRAP - CONCUIT 6"	835-00004
95B		2	STRAP - CONCUIT 4"	835-00003
98A			WIRE-BARE COPPER, SOFT DRAWN #4 SOL	983-00010
99B			WIRE-INSULATED COPPER, 2/0 STR.	983-00010
100D			CONDUCTOR-BARE ALUM 477 AAC, COSMOS	210-00004
111	6		CLIP-GROUND WIRE BONDING, 3/4", GAL.	188-00001
116	3		BAND - POLE, 4-WAY	047-00001
117	6		LINK-CONNECTING, FOR POLE BAND	503-00002
118B			POLE BAND 1 1/4" SS	047-00002
134		15	BOLT, 1-1/2" WITH NUT, SS	098-00069
135E		1	BOLT - MACHINE, 5/8" x 12", SS	098-00039
135J		2	BOLT - MACHINE, 5/8" x 20", SS	098-00060
137B		1	BOLT - OVAL EYE, 5/8" x 12", SS	098-00047
140		1	NUT - EYE, 5/8", SS	565-00008
143		1	NUT - SQUARE, 5/8", SS	565-00009
153		6	WASHER - FLAT SQ., 2 1/4", 11/16" HOLE, SS	973-00009
155		30	WASHER - FLAT ROUND, 1/2", 9/16" HOLE, SS	973-00014
157		15	WASHER - LOCK, 1/2", SINGLE COIL, SS	973-00019
158		3	WASHER - LOCK, 5/8", SINGLE COIL, SS	973-00010
162		1	CLIP-GROUND WIRE BONDING, 5/8", SS	188-00004
201C			CABLE - URD, EPR 1250 MCM CU 69kV	137-00021
222A		1	PLUG, DUCT BLANK 6"	627-00005
222B		2	PLUG, DUCT BLANK 4"	TBD
223B		3	CABLE SEPERATOR - 1 CABLE 6"	TBD
300C		3	INSULATOR, SUSPENSION TYPE, KLINE KL115	457-00013
301	3		TERMINATION KIT, 69kV FOR 1250 MCM CABLE	880-00009
304A		3	ARRESTER, 69kV POLYMER, 48kV MCOV	037-00006
304B		3	ARRESTER, CABLE SHEATH, 1.8kV 5kA TYPE MVR1.8	037-00003
306		1	CONNECTOR, BOLTED JUMPER ALUMOWELD FOR STATIC WIRE	274-00016
307			STATIC WIRE, ALUMOWELD 7#9	983-00012
314	6		NUT, SQUARE, 3/4", GALV.	565-00003

NOTES:

1. This structure is recommended for transmission riser pole without distribution underbuild.
2. The pole bands shall be tied together (using #4 SDBC) and connected to the overhead ground wire and the pole ground. See Standard 11-5 for grounding details.
3. For manhole detail please see Standard Section 16.
4. Line and cable sheath surge arresters shall be connected to the pole ground.
5. A 65' Class 1 pole is required where no distribution is required.
6. Fiberglass guy strain insulators shall be fitted into all transmission guys.
7. Wooden poles shall require ground wire to be run down the pole. Concrete poles already have the ground wire incorporated.

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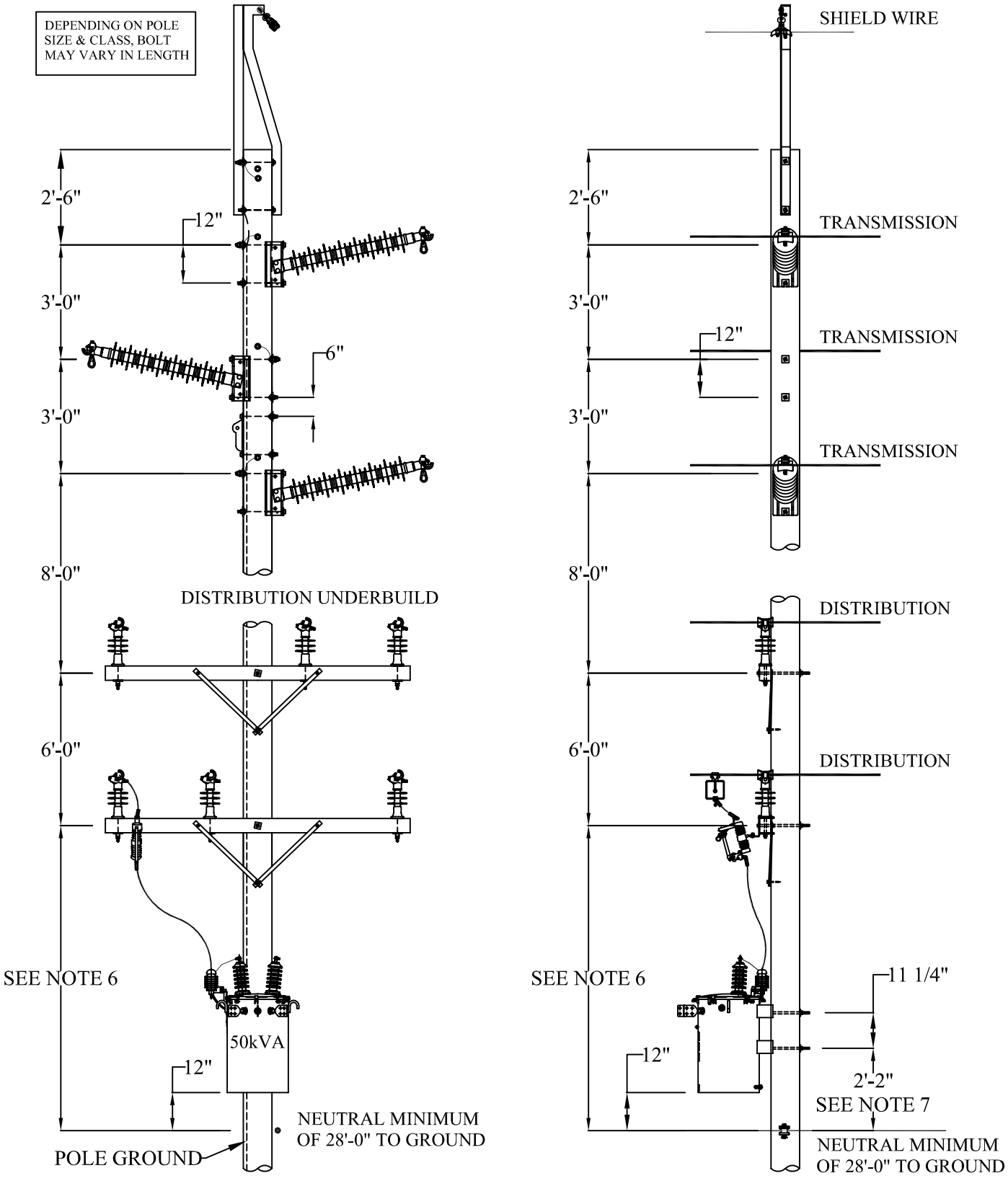
Telephone: (345)-949-5300/5200

Date: March 1, 2021	DISTRIBUTION STANDARDS		
Drawn by: C. Craig			
	69kV TRANSMISSION RISER POLE		
Revision #:			
Revision date:	Approved date: March 15, 2021	STANDARD # 17-11	
Revised by:	Approved by: N. Malcolm	Sheet: 2 of 2	



CUC You've got the power 457 North Sound Rd. P.O. Box 38 G.T., Grand Cayman, Cayman Islands, B.W.I. Telephone: (345)-949-5300/5200	Date: December 7, 2020	DISTRIBUTION STANDARDS	
	Drawn by: C. Craig		
		69kV TRANSMISSION STRUCTURE WITH DISTRIBUTION DOUBLE CIRCUIT WITH TRANSFORMER	
	Revision #:		
	Revision date:	Approved date: March 15, 2021	STANDARD # 17-12
	Revised by:	Approved by: N. Malcolm	Sheet: 1 of 2

NOTES:

1. The transmission framing configuration shall be as the standard structure limitation as specified in Standard 17-2.
2. The distribution double circuit underbuild framing configuration shall be as the standard structure limitation as specified in Standard 8-2.
3. For the distribution 3 phase tap please refer to Standard 8-20.
4. For 69kV Structure "AP", a 70' Class 1 pole is required for double circuit underbuild with transformer(s), secondary and telecommunication cables.
5. For 69kV Structures "AP1" and "CV", a 75' Class H1 or H2 pole is required for double circuit underbuild with transformer(s), secondary and telecommunication cables depending on the span length.
6. For 69kV Structures "AP", "AP1" and "CV" the distance between the lower distribution underbuilt and the neutral shall be 10'-6", 9'-0" and 8'-0" respectively.
7. The transformer shall be installed as shown in the figure. For transformer installation details, please refer to Standard Section 10.
8. On 69kV transmission pole with double circuit, the transformer can only be installed on the upper circuit if the construction is an "AP" Structure. In this case, the distance between the lower distribution underbuild and the neutral shall be 4'-0".
9. For double circuit underbuild, the center insulator shall be alternate such that on the lower circuit, the center insulator shall be on the field side, and for the upper circuit, the center insulator shall be on the road side.
10. When underbuild is used, fiberglass guy strain insulator is required where the guy wire crosses the distribution conductor. The clearance between the distribution conductor and the guy shall not be less than 12 inches.
11. Fiberglass guy strain insulators shall be fitted into all transmission guys.
12. This structure does not normally require guying, however, depending on the span length and the soil type, guying may be required.
13. Aircraft warning lights (LED) shall be installed on every transmission line pole.
14. Wooden poles shall require ground wire to be run down the pole, and shall be positioned furthest away from the center insulator on the distribution crossarm. Concrete poles already have the ground wire incorporated.

CUC
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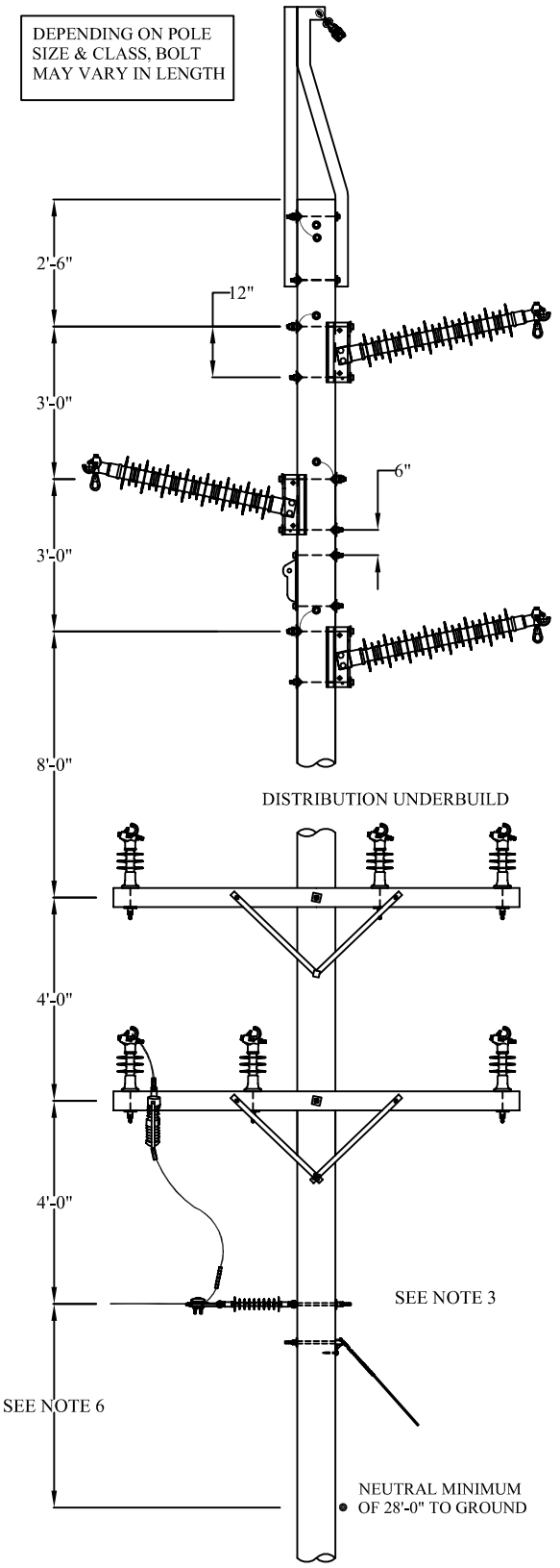
Cayman Islands, B.W.I.
Telephone: (345)-949-5300/5200

Date: December 7, 2020	DISTRIBUTION STANDARDS		
Drawn by: C. Craig			
	69kV TRANSMISSION STRUCTURE WITH DISTRIBUTION DOUBLE CIRCUIT WITH TRANSFORMER		
Revision #:			
Revision date:	Approved date: March 15, 2021	STANDARD # 17-12	
Revised by:	Approved by: N. Malcolm	Sheet: 2 of 2	



NOTES:

1. The transmission framing configuration shall be as the standard structure limitation as specified in Standard 17-2.
2. The distribution double circuit underbuild framing configuration shall be as the standard structure limitation as specified in Standard 8-2.
3. For the distribution 1 phase tap please refer to Standard 8-8.
4. For 69kV Structure "AP", a 70' Class 1 pole is required for double circuit underbuild with 1 phase tap, secondary and telecommunication cables.
5. For 69kV Structures "AP1" and "CV", a 75' Class H1 or H2 pole is required for double circuit underbuild with 1 phase tap, secondary and telecommunication cables depending on the span length.
6. For 69kV Structures "AP", "AP1" and "CV" the distance between the lower distribution underbuilt and the neutral shall be 8'-6", 7'-0" and 6'-0" respectively.
7. For double circuit underbuild, the center insulator shall be alternate such that on the lower circuit, the center insulator shall be on the field side, and for the upper circuit, the center insulator shall be on the road side.
8. When underbuild is used, fiberglass guy strain insulator is required where the guy wire crosses the distribution conductor. The clearance between the distribution conductor and the guy shall not be less than 12 inches.
9. Fiberglass guy strain insulators shall be fitted into all transmission guys.
10. Aircraft warning lights (LED) shall be installed on every transmission line pole.
11. Wooden poles shall require ground wire to be run down the pole, and shall be positioned furthest away from the center insulator on the distribution crossarm. Concrete poles already have the ground wire incorporated.

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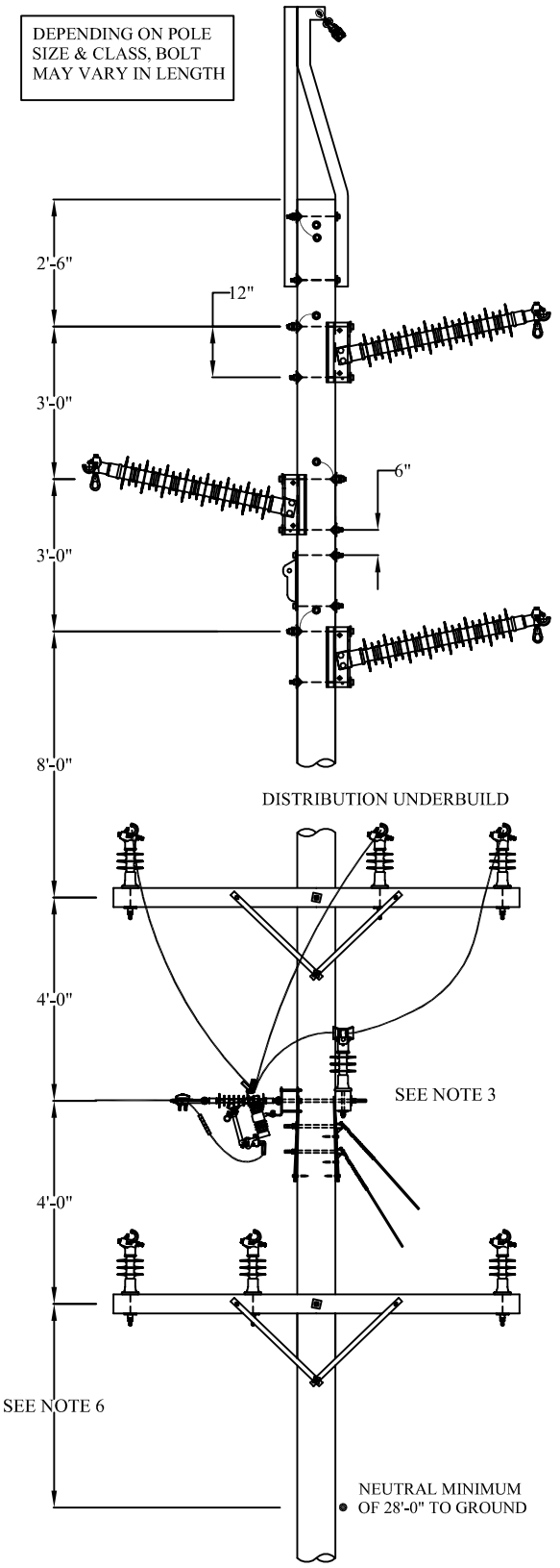
Date: March 1, 2021	DISTRIBUTION STANDARDS	
Drawn by: C. Craig		
	69kV TRANSMISSION STRUCTURE WITH DISTRIBUTION DOUBLE CIRCUIT AND 1 PHASE TAP	
Revision #:		
Revision date:	Approved date: March 15, 2021	STANDARD # 17-13
Revised by:	Approved by: N. Malcolm	Sheet: 1 of 1



NOTES:

1. The transmission framing configuration shall be as the standard structure limitation as specified in Standard 17-2.
2. The distribution double circuit underbuild framing configuration shall be as the standard structure limitation as specified in Standard 8-2.
3. For the distribution 3 phase tap please refer to Standard 8-20.
4. For 69kV Structure "AP", a 70' Class 1 pole is required for double circuit underbuild with 1 phase tap, secondary and telecommunication cables.
5. For 69kV Structures "AP1" and "CV", a 75' Class H1 or H2 pole is required for double circuit underbuild with 3 phase tap, secondary and telecommunication cables depending on the span length.
6. For 69kV Structures "AP", "AP1" and "CV" the distance between the lower distribution underbuilt and the neutral shall be 8'-6", 7'-0" and 6'-0" respectively.
7. For double circuit underbuild, the center insulator shall be alternate such that on the lower circuit, the center insulator shall be on the field side, and for the upper circuit, the center insulator shall be on the road side.
8. When underbuild is used, fiberglass guy strain insulator is required where the guy wire crosses the distribution conductor. The clearance between the distribution conductor and the guy shall not be less than 12 inches.
9. Fiberglass guy strain insulators shall be fitted into all transmission guys.
10. Aircraft warning lights (LED) shall be installed on every transmission line pole.
11. Wooden poles shall require ground wire to be run down the pole, and shall be positioned furthest away from the center insulator on the distribution crossarm. Concrete poles already have the ground wire incorporated.

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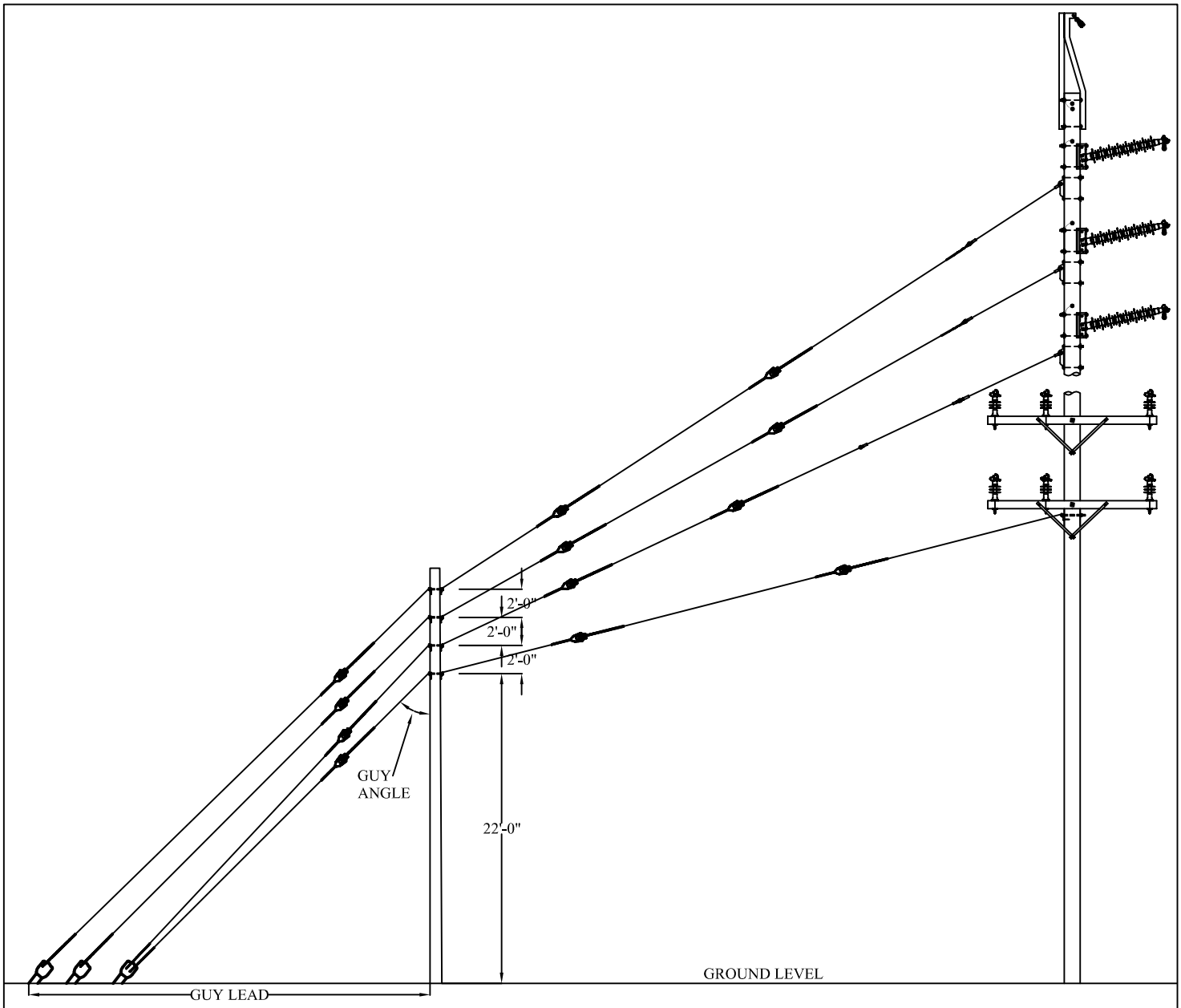
Date: March 1, 2021	DISTRIBUTION STANDARDS	
Drawn by: C. Craig		
	69kV TRANSMISSION STRUCTURE WITH DISTRIBUTION DOUBLE CIRCUIT AND 3 PHASE TAP	
Revision #:		
Revision date:	Approved date: March 15, 2021	STANDARD # 17-14
Revised by:	Approved by: N. Malcolm	Sheet: 1 of 1



NOTES:

1. Install overhead guy as shown.
2. For typical guying arrangement, a minimum of a 35' Class 4 pole shall be sufficient however, to maintain the vertical clearance specified, a taller pole may be required for example for ditches or drains.
3. The guy lead shall be determined using a guy angle of no less than 45 degrees.
4. Guy insulators shall be positioned so as to limit the likelihood of any portion of an anchor guy becoming energized within 8 feet of the ground level in the event that the anchor guy becomes slack or breaks.
5. For guying arrangement, please refer to Standard Section 6.
6. The distribution framing configuration shall be as the standard structure limitation as specified in Standard 8-2.
7. The transmission framing configuration shall be as the standard structure limitation as specified in Standard 17-2.
8. For major road crossing, the height of the guy wire shall be a minimum of 18'-6" or greater above the road.

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Date: March 8, 2021	DISTRIBUTION STANDARDS		
Drawn by: C. Craig			
	69kV TRANSMISSION STRUCTURE OVERHEAD GUY		
Revision #:			
Revision date:	Approved date: March 15, 2021	STANDARD # 17-15	
Revised by:	Approved by: N. Malcolm	Sheet: 1 of 1	