SAGS & TENSIONS

The sags and tensions for all aluminum bare stranded conductors have been calculated using the following limiting conditions:

Conductor Tension Limitations – AAC					
Wind Load (psf.)	**Limiting Condition**	**Temp (°F)**	**%RTS/COND Size**		
			477	**4/0**	**2/0**
9	Initial Load	60	50	50	50
	Initial Unloaded	70	20	25	25
	Final Unloaded	80	15	20	20
30	Extreme Wind Load	80	-	-	-
46	Extreme Wind Load Transmission Lines	80	-	-	-

The rated tensile strength (RTS) for our standard conductor sizes is: 2/0 – 2510 lbs.; 4/0 – 3830 lbs.; 477 – 8360 lbs.

Under these conditions the initial conductor tension for a 200 ft. RULING SPAN, of 477 AAC and a conductor temperature of 100°F is 1090 lbs. and the sag at mid span is 2.05 ft. (24 ½ inches). The tension at 70°F is 1672 lbs. – the tension increases as the temperature decreases.

Sags and tensions are given for INITIAL and FINAL conditions. The initial sags and tensions are used for new conductor; the sags are less for the INITIAL condition than for the FINAL condition and the tensions are greater.

As a conductor is subjected to load or tension it elongates due to the flow of the metal under stress. The stress set up in the material is proportional to the strain (or tension) applied, and if the material returns to its original shape when the stress is removed the deformation is said to be "elastic"; when the stress exceeds the elastic limit the conductor will not return to its original shape and continuing to increase the stress will result in rupture of the material.

The maximum working stress must be determined by test, on samples comparable to shape and size. The ratio of the safe maximum working stress to the ultimate strength ranges from 50% to 60% for many materials but as high as 80% for others – 50% has been chosen as the value for aluminum and the sag and tension data limits the initial loaded tensions to 50% RTS.

When the maximum working stress is applied the material will not resume its original shape when the stress is removed, resulting in a permanent deformation or set.

This condition is termed the working elastic limit. Below this limit the material is said to be elastic and is represented by the final sag and tension conditions.

Conductors can be pre-stressed to obtain the final position by subjecting the conductor to a tension of 50% RTS until all the stretch has dissipated.

When a new conductor is subjected to tension there is also an elongation due to removal of a slight slackness in the individual wires causing them to fit closely together.

However, the NORMAL procedure is to use the INITIAL sags and tension.

The FINAL sags and tensions are to be used in determining conductor clearances or when re-sagging existing conductor.

Initial sag and tension charts for 2/0, 4/0 & 477 AAC bare are tabulated on pages 12-7, 9 and 11; and final sag and tension charts are included on pages 12-8, 10 and 12.

Initial and final sag and tension charts for 477 AAC bare for transmission lines and long spans are tabulated on pages 12-13 and 12-14.

Initial and final sag and tension charts for existing #2 AAC bare are tabulated on pages 12-15 and 16. These charts are for information purposes and not for new installations.

Sag and tension charts for service conductors; #2 AAC triplex, 2/0 AAC triplex, 2/0 AAC quadruplex, 4/0 AAC triplex and 4/0 AAC quadruplex are included on pages 12-17 through 12-26.

Sags for service drops are tabulated on page 12-27.

RULING SPAN CALCULATION

For most lines the span lengths differ therefore we must determine the Ruling Span to determine the sags and tensions. There are two ways to determine the Ruling Span:-

(1) Ruling Span $= \sqrt{\dfrac{\sum (\text{Spans})^3}{\sum (\text{Spans})}}$

(2) Ruling Span = (AVERAGE SPAN) + 2/3 (Longest Span – Average Span)

This second method is called an approximate method.

Assuming a section of line with the following span lengths: 210', 106', 237', 167', 183', & 206'.

From (1) RS $= \sqrt{\dfrac{210^3 + 106^3 + 237^3 + 167^3 + 183^3 + 206^3}{210 + 106 + 237 + 167 + 183 + 206}} = \sqrt{\dfrac{43,291,835}{1109}}$

= 197.6 ft. (say 200 ft.)

From (2) RS = SPAN (AVG) + 2/3 [SPAN (Longest) - SPAN (AVG)]

$$\text{SPAN (AVG)} = \frac{210 + 106 + 237 + 167 + 183 + 206}{6}$$

= 184.4 ft. (say 185 ft.)

SPAN (LONGEST) = 237 ft.

Now RS = 185 + 2/3 (237 – 185)

= 219.6 ft. (say 220 ft.)

For SHORT SPAN construction (less than 250 ft.) this does not constitute much of an error as the difference in sag or tension between 198 & 220 ft. is very small, approx. 4 inches, and since this tends to reduce the tensions slightly it is quite acceptable. This error will have more of an effect on much longer spans, however we will not normally be dealing with long span lengths in Cayman.

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DATE: October 19, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Sags & Tensions**	
DATE:		
	APPROVED BY:	STANDARD NO.
	DATE:	**12-3**

CALCULATING SAG

Now that we have the RULING SPAN (200 ft.) we can now determine the sag for any of the spans in this section of line. For sections of line of ten to fifteen spans or less it will be sufficient to sag the line near the center of the section; let's use the 237 ft. span to sag this section of line.

$$\text{SAG (span)} = \left[\frac{\text{Span Length}}{\text{Ruling Span Length}}\right]^2 \times \text{SAG (ruling span)}$$

$$\text{SAG (237)} = \left[\frac{237}{200}\right]^2 \times \text{SAG (200)}$$

$$= 1.40 \times \text{SAG (200)}$$

The initial sag for a 200 ft. RULING SPAN with a conductor temperature of 90°F is 1.79 ft.

The sag for the 237 ft. span now becomes 1.40 x 1.79 = 2.51 ft. (30 inches). Similarly the sag for the 106 ft. span can be calculated.

$$\text{SAG (237)} = \left[\frac{106}{200}\right]^2 \times 1.79$$

$$= 0.28 \times 1.79$$

$$= 0.50 \text{ ft. (6 inches)}$$

However, it is more practical and accurate to use one of the average or longer spans for sagging.

When sagging a section of line, such as the one we have been dealing with, the tension in the conductor will be the same throughout the six spans; normally between tension deadends. Since the span lengths differ the sag varies in accordance with the span length (or actually the square of the span length), the longer the span the greater the sag which is due to the weight of the conductor.

Stringing blocks (travelers) should always be used for stringing and sagging conductors (other than for one or two spans) as the stringing block will minimize the damage to the conductor while stringing and will allow the conductor tension to equalize more easily when sagging.

The sag for our normal ruling span, of about 200 feet, does not present any clearance problems; therefore it may be advisable to increase the sag somewhat and decrease the tensions.

It is therefore recommended that we use the sag for a 225 ft. ruling span for all ruling spans between 200 ft. and 225 ft., likewise use the sag for a 200 ft. ruling span for all ruling spans between 175 ft. and 200 ft. etc.

It is also recommended that the minimum ruling span sag used, be that for 200 ft. regardless of actual ruling span.

The sag calculation for individual spans will remain the same;

i.e. $\left[\frac{\text{Span}}{\text{Ruling Span}}\right]^2$ **x ruling span sag,**

And assuming a RS = 206 ft. and a span of 235 ft., the initial sag for the 235 ft. span becomes

$$\left[\frac{235}{206}\right]^2 \text{ x } 2.35 = 3.1 \text{ ft. at } 95°F.$$

The initial sag for a 225 ft. ruling span 95°F is 2.35 ft. (Pg. 12-11).

The actual RULING SPAN length and the actual SPAN lengths must always be used in determining the sag for any span length in the line section, regardless of what span length the RULING SPAN SAG is based on. For example, if the ruling span length is 173 ft. the ruling span sag is based on a 200 ft. ruling span length and the sag for individual span lengths is calculated :-

$$\left[\frac{\text{Span}}{173}\right]^2 \text{ x sag (200').}$$

SHORT TAPS

Many of our jobs involve only one, two or three spans and the sagging information will not be included; the conductor size will normally be 2/0 AAC.

Regardless of whether the tap includes, for example, one 220 ft. span, a 220 ft. span plus a 70 ft. span or a 220 ft. span plus a 200 ft. span, the required sag for the 220 ft. span varies only a few inches;

(a) One 220 ft. span; RS = 220 ft., RS sag = 1.78 ft.; **SAG (220') = 1.78 ft.**
(b) One 220 ft. span plus one 70 ft. span; RS = 195 ft., RS sag = 1.44 ft.; **SAG (220') = 1.83 ft.**
(c) One 220 ft. span plus one 200 ft. span; RS = 210 ft., RS sag = 1.78 ft.; **SAG (220') = 1.94 ft.**

Therefore regardless of the individual span lengths, if the longest span length is not more than 225 ft. the sag for this span is approximately 2.0 ft. Since this does not present any conductor clearance problem a 2.0 ft. sag can be used for any tap. The longest span on the tap should be of less than 2.0 ft. in proportion to their length. For taps with a 100 ft. span, or any span length up to 225 ft., a sag of 2.0 ft. may be used.

This will result in reduced tension in the conductor and guys and reduced load on the anchors.

SAGGING CONDUCTOR

There are as number of methods to determine the amount of sag in a span, however the simplest method for the normal distribution span is using sag boards.

This can be done by attaching a board (sight board) to the pole at a distance, below the conductor in the stringing block, equal to the required sag. When a sight board is installed at both ends of the span the conductor can then be adjusted until the bottom of the conductor is located at the line of sight between the two boards.

When sagging longer section of the line, in excess of 10 spans, it is recommended that the line be sagged and left over night, allowing the conductor tensions to equalize throughout its length. The sag should be checked on the following day and adjusted if necessary.

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DRAWN:		
REV.:	**Sags & Tensions**	
DATE:		
	APPROVED BY:	STANDARD NO.
	DATE:	**12-6**

Initial Sag – 2/0 AAC "ASTER"						
Condition	**Temp °F**	**SAG (ft) / Ruling Span (FT)**				
		150	**175**	**200**	**225**	**250**
NO LOAD	70	0.56	0.76	1.00	1.26	1.56
NO LOAD	80	0.65	0.88	1.14	1.44	1.76
NO LOAD	90	0.77	1.03	1.33	1.66	2.01
NO LOAD	95	0.85	1.12	1.44	1.78	2.15
NO LOAD	100	0.93	1.23	1.55	1.91	2.30
NO LOAD	110	1.13	1.46	1.81	2.20	2.61
Heavy Wind Load	60					
Extreme Load	80					

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Initial Tensions – 2/0 AAC "ASTER"						
Condition	**Temp °F**	**Tension (lb) / Ruling Span (FT)**				
		150	**175**	**200**	**225**	**250**
NO LOAD	70	628	627	627	628	628
NO LOAD	80	541	544	547	550	553
NO LOAD	90	456	463	471	478	485
NO LOAD	95	416	426	435	445	454
NO LOAD	100	378	390	402	414	425
NO LOAD	110	311	329	345	360	374
Heavy Wind Load	60	806	828	851	873	895
Extreme Load	80	1085	1165	1240	1310	1377

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DATE: October 15, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Sags & Tensions**	
DATE:	**2/0 AAC Bare Aster**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-7**

Final Sag – 2/0 AAC "ASTER"						
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**				
	°F	**150**	**175**	**200**	**225**	**250**
NO LOAD	70	1.14	1.49	1.87	2.28	2.74
NO LOAD	80	1.38	1.76	2.16	2.60	3.09
NO LOAD	90	1.63	2.03	2.46	2.92	3.43
NO LOAD	95	1.75	2.17	2.61	3.08	3.60
NO LOAD	100	1.87	2.30	2.75	3.24	3.76
NO LOAD	110	2.10	2.55	3.03	3.53	4.08
NO LOAD	120	2.31	2.79	3.29	3.82	4.39
NO LOAD	167	3.17	3.77	4.38	5.01	5.67
NO LOAD	212	3.84	4.53	5.24	5.96	6.71
Heavy Wind Load	60	1.62	2.07	2.55	3.07	3.64
Extreme Load	80	2.91	3.60	4.34	5.11	5.93

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Final Tensions – 2/0 AAC "ASTER"						
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**				
	°F	**150**	**175**	**200**	**225**	**250**
NO LOAD	70	308	322	335	348	357
NO LOAD	80	254	272	289	304	316
NO LOAD	90	216	236	254	271	285
NO LOAD	95	201	221	240	257	272
NO LOAD	100	188	208	227	245	260
NO LOAD	110	168	188	207	224	239
NO LOAD	120	152	172	190	207	223
NO LOAD	167	111	127	143	158	172
NO LOAD	212	92	106	120	133	146
Heavy Wind Load	60	583	621	656	690	719
Extreme Load	80	1009	1109	1204	1294	1377

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REV.:	**Final Sags & Tensions**	
DATE:	**2/0 AAC Bare Aster**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-8**

Initial Sag – 4/0 AAC "OXLIP"								
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**						
	°F	**150**	**175**	**200**	**225**	**250**	**275**	**300**
NO LOAD	70	0.58	0.79	1.03	1.31	1.62	1.96	2.33
NO LOAD	80	0.68	0.92	1.19	1.50	1.84	2.21	2.61
NO LOAD	90	0.81	1.08	1.39	1.73	2.10	2.50	2.93
NO LOAD	95	0.89	1.18	1.50	1.86	2.24	2.66	3.10
NO LOAD	100	0.98	1.29	1.63	2.00	2.40	2.82	3.28
NO LOAD	110	1.19	1.53	1.89	2.29	2.72	3.17	3.65
Heavy Wind Load	60							
Extreme Load	80							

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Initial Tensions – 4/0 AAC "OXLIP"								
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**						
	°F	**150**	**175**	**200**	**225**	**250**	**275**	**300**
NO LOAD	70	958	958	958	958	958	957	957
NO LOAD	80	820	825	831	837	842	848	853
NO LOAD	90	688	700	713	725	737	749	760
NO LOAD	95	626	642	659	675	690	704	718
NO LOAD	100	568	589	609	628	646	663	679
NO LOAD	110	468	496	523	547	570	591	611
Heavy Wind Load	60	1201	1226	1253	1279	1306	1332	1357
Extreme Load	80	1529	1639	1742	1840	1932	2020	2103

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DATE: October 15, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Initial Sags & Tensions**	
DATE:	**4/0 AAC Bare Oxlip**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-9**

Final Sag – 4/0 AAC "OXLIP"								
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**						
	°F	**150**	**175**	**200**	**225**	**250**	**275**	**300**
NO LOAD	70	1.18	1.53	1.91	2.33	2.78	3.27	3.78
NO LOAD	80	1.42	1.80	2.21	2.66	3.13	3.64	4.17
NO LOAD	90	1.67	2.07	2.51	2.98	3.48	4.00	4.55
NO LOAD	95	1.79	2.21	2.66	3.14	3.64	4.18	4.74
NO LOAD	100	1.91	2.34	2.80	3.29	3.81	4.35	4.92
NO LOAD	110	2.13	2.59	3.07	3.59	4.13	4.69	5.28
NO LOAD	120	2.34	2.83	3.34	3.87	4.43	5.02	5.63
NO LOAD	167	3.20	3.80	4.41	5.05	5.71	6.39	7.09
NO LOAD	212	3.87	4.56	5.27	6.00	6.74	7.51	8.29
Heavy Wind Load	60	1.49	1.92	2.38	2.88	3.40	3.96	4.55
Extreme Load	80	2.71	3.36	4.05	4.77	5.53	6.33	7.15

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Final Tensions – 4/0 AAC "OXLIP"								
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**						
	°F	**150**	**175**	**200**	**225**	**250**	**275**	**300**
NO LOAD	70	474	496	517	537	556	573	590
NO LOAD	80	392	421	447	472	494	515	535
NO LOAD	90	334	366	394	421	445	468	490
NO LOAD	95	312	344	373	400	425	448	470
NO LOAD	100	292	324	354	381	407	431	453
NO LOAD	110	261	293	322	350	375	400	422
NO LOAD	120	238	268	297	324	350	374	396
NO LOAD	167	174	200	225	249	272	294	315
NO LOAD	212	144	167	188	210	230	250	270
Heavy Wind Load	60	826	875	921	965	1006	1046	1083
Extreme Load	80	1368	1503	1630	1749	1864	1973	2077

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DATE: October 15, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**4/0 AAC Bare Oxlip**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-10**

Initial Sag – 477 kcmil AAC Cosmos								
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**						
	°F	**150**	**175**	**200**	**225**	**250**	**275**	**300**
NO LOAD	70	0.75	1.02	1.34	1.69	2.09	2.53	3.01
NO LOAD	80	0.89	1.20	1.55	1.94	2.37	2.83	3.34
NO LOAD	90	1.06	1.41	1.79	2.21	2.67	3.16	3.70
NO LOAD	95	1.16	1.52	1.92	2.35	2.82	3.33	3.87
NO LOAD	100	1.27	1.64	2.05	2.50	2.98	3.50	4.05
NO LOAD	110	1.49	1.89	2.32	2.79	3.30	3.84	4.41
Heavy Wind Load	60							
Extreme Load	80							

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 20% RTS

Initial Tensions – 477 kcmil AAC Cosmos								
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**						
	°F	**150**	**175**	**200**	**225**	**250**	**275**	**300**
NO LOAD	70	1672	1672	1672	1672	1672	1672	1672
NO LOAD	80	1411	1428	1445	1462	1477	1491	1504
NO LOAD	90	1181	1217	1250	1282	1311	1337	1362
NO LOAD	95	1081	1125	1166	1204	1238	1270	1299
NO LOAD	100	991	1043	1090	1133	1173	1209	1241
NO LOAD	110	843	906	962	1013	1060	1102	1141
Heavy Wind Load	60	2119	2255	2183	2214	2245	2275	2303
Extreme Load	80	2604	2870	2971	3138	3296	3444	3585

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DATE: October 15, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Initial Sags & Tensions**	
DATE:	**477 AAC Bare Cosmos**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-11**

Final Sag – 477 kcmil AAC Cosmos								
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**						
	°F	**150**	**175**	**200**	**225**	**250**	**275**	**300**
NO LOAD	70	1.46	1.89	2.35	2.86	3.40	3.98	4.59
NO LOAD	80	1.71	2.16	2.64	3.17	3.73	4.32	4.96
NO LOAD	90	1.94	2.41	2.92	3.47	4.05	4.66	5.31
NO LOAD	95	2.06	2.54	3.06	3.61	4.20	4.83	5.48
NO LOAD	100	2.16	2.66	3.19	3.75	4.35	4.99	5.65
NO LOAD	110	2.37	2.89	3.44	4.03	4.65	5.30	5.98
NO LOAD	120	2.57	3.11	3.69	4.29	4.93	5.60	6.30
NO LOAD	167	3.38	4.02	4.70	5.39	6.12	6.87	7.66
NO LOAD	212	4.02	4.75	5.51	6.30	7.10	7.93	8.79
Heavy Wind Load	60	1.53	1.98	2.47	3.00	3.57	4.18	4.82
Extreme Load	80	2.58	3.21	3.87	4.58	5.32	6.10	6.92

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 20% RTS

Final Tensions – 477 kcmil AAC Cosmos								
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**						
	°F	**150**	**175**	**200**	**225**	**250**	**275**	**300**
NO LOAD	70	859	907	951	991	1029	1064	1096
NO LOAD	80	736	794	846	894	938	978	1015
NO LOAD	90	648	709	765	817	864	907	948
NO LOAD	95	612	675	732	784	832	877	918
NO LOAD	100	581	644	701	754	803	848	891
NO LOAD	110	530	592	650	703	752	799	842
NO LOAD	120	489	550	607	660	709	756	800
NO LOAD	167	373	426	477	526	572	616	659
NO LOAD	212	314	361	407	451	493	534	574
Heavy Wind Load	60	1365	1437	1505	1568	1628	1684	1737
Extreme Load	80	2214	2427	2625	2810	2985	3151	3309

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DATE: October 15, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**477 AAC Bare Cosmos**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-12**

Transmission Line – Long Spans								
Initial Sag – 477 kcmil AAC Cosmos								
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**						
	°F	**200**	**250**	**300**	**350**	**400**	**450**	**500**
NO LOAD	70	1.34	2.09	3.01	4.10	5.35	6.77	8.36
NO LOAD	80	1.55	2.37	3.34	4.48	5.78	7.24	8.86
NO LOAD	90	1.79	2.67	3.70	4.88	6.21	7.71	9.36
NO LOAD	95	1.92	2.82	3.87	5.08	6.43	7.94	9.60
NO LOAD	100	2.05	2.98	4.05	5.27	6.65	8.17	9.84
NO LOAD	110	2.32	3.30	4.41	5.67	7.07	8.62	10.32
Heavy Wind Load	60							
Extreme Load	80							

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 20% RTS

Initial Tensions – 477 kcmil AAC Cosmos								
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**						
	°F	**200**	**250**	**300**	**350**	**400**	**450**	**500**
NO LOAD	70	1672	1672	1672	1672	1672	1672	1672
NO LOAD	80	1445	1477	1504	1528	1548	1564	1578
NO LOAD	90	1250	1311	1362	1404	1440	1470	1495
NO LOAD	95	1166	1238	1299	1349	1392	1427	1457
NO LOAD	100	1090	1173	1241	1299	1347	1387	1421
NO LOAD	110	962	1060	1141	1209	1266	1314	1356
Heavy Wind Load	60	2183	2245	2303	2355	2401	2441	2477
Extreme Load	80	3735	4173	4562	4910	5223	5507	5764

Transmission Line – Long Spans								
Final Sag – 477 kcmil AAC Cosmos								
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**						
	°F	**200**	**250**	**300**	**350**	**400**	**450**	**500**
NO LOAD	70	2.35	3.40	4.59	5.93	7.63	9.59	11.75
NO LOAD	80	2.64	3.73	4.96	6.33	8.05	10.03	12.20
NO LOAD	90	2.92	4.05	5.31	6.72	8.46	10.45	12.64
NO LOAD	95	3.06	4.20	5.48	6.90	8.66	10.66	12.86
NO LOAD	100	3.19	4.35	5.65	7.09	8.85	10.86	13.07
NO LOAD	110	3.44	4.65	5.98	7.45	9.24	11.27	13.49
NO LOAD	120	3.69	4.93	6.30	7.80	9.61	11.66	13.90
NO LOAD	167	4.70	6.12	7.66	9.30	11.23	13.37	15.70
NO LOAD	212	5.51	7.10	8.79	10.58	12.62	14.86	17.28
Heavy Wind Load	60	2.47	3.57	4.82	6.22	7.95	9.93	12.11
Extreme Load	80	4.36	5.97	7.73	9.63	11.79	14.16	16.71

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 20% RTS

Final Tensions – 477 kcmil AAC Cosmos								
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**						
	°F	**200**	**250**	**300**	**350**	**400**	**450**	**500**
NO LOAD	70	951	1029	1096	1155	1173	1182	1191
NO LOAD	80	846	938	1015	1083	1112	1131	1147
NO LOAD	90	765	864	948	1021	1059	1085	1108
NO LOAD	95	732	832	918	993	1034	1064	1089
NO LOAD	100	701	803	891	967	1012	1044	1072
NO LOAD	110	650	752	842	920	970	1007	1039
NO LOAD	120	607	709	800	879	932	973	1008
NO LOAD	167	477	572	659	738	799	849	893
NO LOAD	212	407	493	574	649	711	765	812
Heavy Wind Load	60	1505	1628	1737	1833	1874	1899	1922
Extreme Load	80	3522	4025	4479	4895	5223	5507	5764

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DATE: Nov. 12, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**477 AAC Bare Cosmos - Transmission Lines**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-14**

Initial Sag – #2 AAC "IRIS"[1]						
Condition	**Temp °F**	**SAG (ft) / Ruling Span (FT)**				
		150	**175**	**200**	**225**	**250**
NO LOAD	70	0.52	0.70	0.92	1.16	1.44
NO LOAD	80	0.59	0.80	1.05	1.32	1.62
NO LOAD	90	0.69	0.93	1.21	1.51	1.84
NO LOAD	95	0.76	1.01	1.30	1.62	1.97
NO LOAD	100	0.83	1.10	1.41	1.74	2.10
NO LOAD	110	1.01	1.31	1.65	2.01	2.40
Heavy Wind Load	60					
Extreme Load	80					

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Initial Tensions – #2 AAC "IRIS"						
Condition	**Temp °F**	**Tension (lb) / Ruling Span (FT)**				
		150	**175**	**200**	**225**	**250**
NO LOAD	70	337	338	338	337	338
NO LOAD	80	294	295	297	298	299
NO LOAD	90	251	254	257	260	263
NO LOAD	95	230	234	238	242	246
NO LOAD	100	210	215	220	225	230
NO LOAD	110	173	181	188	195	202
Heavy Wind Load	60	451	468	484	500	516
Extreme Load	80	649	697	742	784	824

[1] For information only. Not for new installations.

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DATE: October 15, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Initial Sags & Tensions**	
DATE:	**#2 AAC Bare Iris**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-15**

Final Sag – #2 AAC "IRIS"[1]						
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**				
	°F	**150**	**175**	**200**	**225**	**250**
NO LOAD	70	1.07	1.46	2.06	2.75	3.52
NO LOAD	80	1.31	1.73	2.36	3.07	3.85
NO LOAD	90	1.55	2.00	2.65	3.38	4.17
NO LOAD	95	1.68	2.14	2.80	3.53	4.32
NO LOAD	100	1.80	2.27	2.94	3.67	4.47
NO LOAD	110	2.03	2.52	3.20	3.95	4.76
NO LOAD	120	2.25	2.77	3.46	4.22	5.04
NO LOAD	167	3.12	3.75	4.51	5.34	6.22
NO LOAD	212	3.80	4.52	5.36	6.25	7.19
Heavy Wind Load	60	1.82	2.36	3.04	3.80	4.62
Extreme Load	80	3.24	4.03	4.95	5.93	6.97

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Final Tensions – #2 AAC "IRIS"						
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**				
	°F	**150**	**175**	**200**	**225**	**250**
NO LOAD	70	163	163	151	143	138
NO LOAD	80	134	137	131	128	126
NO LOAD	90	112	119	117	116	116
NO LOAD	95	104	111	111	111	112
NO LOAD	100	97	105	106	107	108
NO LOAD	110	86	94	97	99	102
NO LOAD	120	78	86	90	93	96
NO LOAD	167	56	63	69	74	78
NO LOAD	212	46	53	58	63	68
Heavy Wind Load	60	351	370	375	380	385
Extreme Load	80	638	697	742	784	824

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DATE: October 15, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**#2 AAC Bare Iris**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-16**

Initial Sag – #2 AAC "CLAM"						
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	0.96	1.49	2.15	2.93	3.83
NO LOAD	80	1.05	1.61	2.29	3.09	4.00
NO LOAD	90	1.14	1.73	2.43	3.24	4.17
NO LOAD	95	1.20	1.79	2.50	3.32	4.25
NO LOAD	100	1.25	1.86	2.57	3.40	4.34
NO LOAD	110	1.36	1.98	2.71	3.55	4.50
Heavy Wind Load	60					
Extreme Load	80					

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Initial Tensions – #2 AAC "CLAM"						
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	337	337	338	338	337
NO LOAD	80	308	313	317	321	323
NO LOAD	90	282	291	299	305	310
NO LOAD	95	270	281	290	298	304
NO LOAD	100	258	272	282	291	298
NO LOAD	110	238	254	268	278	287
Heavy Wind Load	60	518	552	582	608	631
Extreme Load	80	852	939	1014	1079	1136

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DATE: October 16, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Initial Sags & Tensions**	
DATE:	**#2 AAC Triplex Clam**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-17**

Final Sag – #2 AAC "CLAM"						
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	1.81	2.84	4.06	5.46	7.06
NO LOAD	80	1.91	2.95	4.18	5.59	7.18
NO LOAD	90	2.02	3.06	4.30	5.71	7.31
NO LOAD	95	2.07	3.12	4.35	5.77	7.37
NO LOAD	100	2.12	3.17	4.41	5.83	7.43
NO LOAD	110	2.22	3.28	4.52	5.95	7.56
NO LOAD	120	2.32	3.38	4.64	6.07	7.68
NO LOAD	167	2.73	3.84	5.13	6.59	8.23
NO LOAD	176	2.80	3.93	5.22	6.69	8.33
Heavy Wind Load	60	2.10	3.17	4.42	5.86	7.47
Extreme Load	80	2.99	4.24	5.67	7.26	9.02

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Final Tensions – #2 AAC "CLAM"						
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	179	178	179	181	184
NO LOAD	80	169	171	174	177	181
NO LOAD	90	160	165	169	174	177
NO LOAD	95	156	162	167	172	176
NO LOAD	100	152	159	165	170	174
NO LOAD	110	146	154	161	167	172
NO LOAD	120	140	149	157	164	169
NO LOAD	167	118	132	142	151	158
NO LOAD	176	115	129	140	149	156
Heavy Wind Load	60	391	406	419	431	442
Extreme Load	80	852	939	1014	1079	1136

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DATE: October 16, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**#2 AAC Triplex Clam**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-18**

Initial Sag – 2/0 AAC "NASSA"						
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	0.92	1.44	2.07	2.82	3.69
NO LOAD	80	1.02	1.56	2.22	2.98	3.86
NO LOAD	90	1.12	1.69	2.36	3.15	4.04
NO LOAD	95	1.17	1.75	2.44	3.23	4.13
NO LOAD	100	1.23	1.82	2.51	3.31	4.22
NO LOAD	110	1.34	1.95	2.66	3.47	4.39
Heavy Wind Load	60					
Extreme Load	80					

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Initial Tensions – 2/0 AAC "NASSA"						
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	627	628	628	628	627
NO LOAD	80	569	579	587	593	599
NO LOAD	90	516	535	550	563	573
NO LOAD	95	492	515	533	548	560
NO LOAD	100	470	496	518	535	549
NO LOAD	110	430	463	489	510	527
Heavy Wind Load	60	894	940	981	1017	1048
Extreme Load	80	1416	1565	1694	1809	1910

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DATE: October 16, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Initial Sags & Tensions**	
DATE:	**2/0 AAC Triplex Nassa**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-19**

Final Sag – 2/0 AAC "NASSA"						
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	1.42	2.24	3.22	4.34	5.61
NO LOAD	80	1.54	2.38	3.36	4.49	5.76
NO LOAD	90	1.66	2.51	3.50	4.64	5.91
NO LOAD	95	1.72	2.57	3.57	4.71	5.99
NO LOAD	100	1.77	2.63	3.64	4.78	6.06
NO LOAD	110	1.89	2.76	3.77	4.92	6.21
NO LOAD	120	1.99	2.87	3.90	5.06	6.35
NO LOAD	167	2.45	3.39	4.46	5.66	6.99
NO LOAD	176	2.54	3.48	4.56	5.77	7.11
Heavy Wind Load	60	1.66	2.52	3.53	4.68	5.97
Extreme Load	80	2.53	3.58	4.76	6.08	7.52

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Final Tensions – 2/0 AAC "NASSA"						
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	407	403	404	408	413
NO LOAD	80	375	380	387	395	402
NO LOAD	90	348	361	372	382	392
NO LOAD	95	337	352	365	377	387
NO LOAD	100	326	343	358	371	382
NO LOAD	110	307	328	346	361	373
NO LOAD	120	290	315	334	351	365
NO LOAD	167	236	267	292	314	332
NO LOAD	176	228	260	286	308	327
Heavy Wind Load	60	725	747	770	790	810
Extreme Load	80	1416	1565	1694	1809	1910

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DATE: October 16, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**2/0 AAC Triplex Nassa**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-20**

Initial Sag – 2/0 AAC "THOROUGHBRED"						
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	0.59	0.93	1.33	1.82	2.37
NO LOAD	80	0.64	1.00	1.43	1.93	2.51
NO LOAD	90	0.69	1.07	1.53	2.06	2.66
NO LOAD	95	0.72	1.11	1.58	2.12	2.73
NO LOAD	100	0.76	1.16	1.63	2.19	2.81
NO LOAD	110	0.82	1.25	1.75	2.32	2.96
Heavy Wind Load	60					
Extreme Load	80					

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Initial Tensions – 2/0 AAC "THOROUGHBRED"						
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	1348	1348	1347	1347	1348
NO LOAD	80	1247	1253	1260	1267	1273
NO LOAD	90	1150	1164	1177	1191	1204
NO LOAD	95	1104	1121	1138	1155	1171
NO LOAD	100	1058	1079	1100	1120	1139
NO LOAD	110	971	1000	1028	1054	1079
Heavy Wind Load	60	1572	1618	1663	1708	1752
Extreme Load	80	2049	2257	2451	2630	2797

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DATE: October 16, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Initial Sags & Tensions**	
DATE:	**2/0 AAC Quadruplex Thoroughbred**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-21**

Final Sag – 2/0 AAC "THOROUGHBRED"						
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	0.86	1.30	1.82	2.41	3.07
NO LOAD	80	0.95	1.42	1.96	2.57	3.25
NO LOAD	90	1.06	1.55	2.11	2.74	3.43
NO LOAD	95	1.11	1.61	2.18	2.82	3.52
NO LOAD	100	1.17	1.68	2.26	2.90	3.61
NO LOAD	110	1.28	1.81	2.41	3.07	3.80
NO LOAD	120	1.39	1.94	2.56	3.24	3.98
NO LOAD	167	1.92	2.55	3.24	3.99	4.80
NO LOAD	176	2.01	2.66	3.37	4.13	4.95
Heavy Wind Load	60	1.14	1.68	2.29	2.98	3.73
Extreme Load	80	2.11	2.93	3.82	4.79	5.84

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Final Tensions – 2/0 AAC "THOROUGHBRED"						
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	930	960	989	1017	1043
NO LOAD	80	838	879	917	953	985
NO LOAD	90	756	808	854	895	932
NO LOAD	95	720	775	825	869	908
NO LOAD	100	686	745	797	844	885
NO LOAD	110	625	690	747	798	843
NO LOAD	120	574	643	703	757	805
NO LOAD	167	417	490	555	614	668
NO LOAD	176	398	470	535	594	647
Heavy Wind Load	60	1239	1316	1389	1456	1518
Extreme Load	80	1886	2122	2340	2540	2728

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DATE: October 16, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**2/0 AAC Quadruplex Thoroughbred**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-22**

Initial Sag – 4/0 AAC "LEPAS"						
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	0.43	0.66	0.96	1.30	1.70
NO LOAD	80	0.46	0.72	1.03	1.40	1.82
NO LOAD	90	0.50	0.78	1.12	1.51	1.95
NO LOAD	95	0.53	0.82	1.16	1.57	2.02
NO LOAD	100	0.55	0.85	1.21	1.63	2.10
NO LOAD	110	0.61	0.93	1.32	1.75	2.25
Heavy Wind Load	60					
Extreme Load	80					

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Initial Tensions – 4/0 AAC "LEPAS"						
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	2140	2140	2140	2140	2140
NO LOAD	80	1970	1977	1983	1991	1998
NO LOAD	90	1805	1818	1833	1848	1864
NO LOAD	95	1725	1742	1761	1780	1800
NO LOAD	100	1646	1667	1690	1714	1738
NO LOAD	110	1493	1524	1556	1589	1621
Heavy Wind Load	60	2411	2453	2498	2544	2592
Extreme Load	80	2786	3033	3269	3492	3704

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DATE: October 16, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Initial Sags & Tensions**	
DATE:	**4/0 AAC Triplex Lepas**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-23**

Final Sag – 4/0 AAC "LEPAS"						
Condition	**Temp**	**SAG (ft) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	0.64	0.98	1.37	1.83	2.34
NO LOAD	80	0.73	1.09	1.52	2.00	2.53
NO LOAD	90	0.83	1.22	1.67	2.17	2.72
NO LOAD	95	0.88	1.29	1.75	2.26	2.82
NO LOAD	100	0.94	1.36	1.83	2.35	2.93
NO LOAD	110	1.06	1.50	2.00	2.54	3.13
NO LOAD	120	1.19	1.65	2.17	2.73	3.33
NO LOAD	167	1.77	2.33	2.93	3.57	4.26
NO LOAD	176	1.88	2.45	3.07	3.73	4.43
Heavy Wind Load	60	0.86	1.28	1.76	2.31	2.90
Extreme Load	80	1.75	2.44	3.20	4.01	4.89

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Final Tensions – 4/0 AAC "LEPAS"						
Condition	**Temp**	**Tension (lb) / Ruling Span (FT)**				
	°F	**100**	**125**	**150**	**175**	**200**
NO LOAD	70	1422	1456	1491	1525	1559
NO LOAD	80	1252	1302	1351	1397	1442
NO LOAD	90	1099	1165	1227	1284	1337
NO LOAD	95	1031	1103	1171	1233	1290
NO LOAD	100	967	1046	1119	1185	1245
NO LOAD	110	856	946	1026	1098	1164
NO LOAD	120	765	861	946	1023	1093
NO LOAD	167	514	611	699	781	856
NO LOAD	176	486	581	668	749	824
Heavy Wind Load	60	1803	1890	1975	2057	2135
Extreme Load	80	2445	2739	3011	3265	3504

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DATE: October 16, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**4/0 AAC Triplex Lepas**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-24**

Initial Sag – 4/0 AAC "WALKING"						
Condition	**Temp °F**	**SAG (ft) / Ruling Span (FT)**				
		100	**125**	**150**	**175**	**200**
NO LOAD	70	0.57	0.89	1.28	1.75	2.28
NO LOAD	80	0.62	0.96	1.38	1.86	2.42
NO LOAD	90	0.67	1.04	1.47	1.98	2.57
NO LOAD	95	0.70	1.08	1.53	2.05	2.64
NO LOAD	100	0.73	1.12	1.58	2.11	2.72
NO LOAD	110	0.80	1.21	1.69	2.25	2.87
Heavy Wind Load	60					
Extreme Load	80					

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Initial Tensions – 4/0 AAC "WALKING"						
Condition	**Temp °F**	**Tension (lb) / Ruling Span (FT)**				
		100	**125**	**150**	**175**	**200**
NO LOAD	70	2140	2140	2140	2140	2140
NO LOAD	80	1979	1989	1999	2009	2019
NO LOAD	90	1824	1844	1865	1886	1906
NO LOAD	95	1749	1775	1801	1827	1852
NO LOAD	100	1675	1707	1739	1770	1800
NO LOAD	110	1536	1579	1622	1664	1702
Heavy Wind Load	60	2423	2467	2513	2559	2603
Extreme Load	80	2894	3156	3402	3632	3847

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DATE: Nov. 24, 2017	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**4/0 AAC Triplex Walking**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-25**

Final Sag – 4/0 AAC "WALKING"						
Condition	**Temp °F**	**SAG (ft) / Ruling Span (FT)**				
		100	**125**	**150**	**175**	**200**
NO LOAD	70	0.83	1.26	1.76	2.33	2.97
NO LOAD	80	0.93	1.38	1.90	2.50	3.16
NO LOAD	90	1.03	1.51	2.05	2.66	3.34
NO LOAD	95	1.08	1.57	2.13	2.75	3.43
NO LOAD	100	1.14	1.64	2.20	2.83	3.53
NO LOAD	110	1.25	1.77	2.36	3.00	3.71
NO LOAD	120	1.37	1.91	2.51	3.17	3.89
NO LOAD	167	1.90	2.52	3.20	3.94	4.73
NO LOAD	176	1.99	2.63	3.33	4.08	4.88
Heavy Wind Load	60	1.01	1.50	2.06	2.70	3.40
Extreme Load	80	1.87	2.62	3.44	4.33	5.28

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Final Tensions – 4/0 AAC "WALKING"						
Condition	**Temp °F**	**Tension (lb) / Ruling Span (FT)**				
		100	**125**	**150**	**175**	**200**
NO LOAD	70	1469	1516	1561	1604	1644
NO LOAD	80	1320	1384	1444	1499	1549
NO LOAD	90	1188	1268	1340	1405	1464
NO LOAD	95	1129	1215	1293	1362	1424
NO LOAD	100	1074	1166	1248	1321	1387
NO LOAD	110	976	1078	1168	1247	1318
NO LOAD	120	893	1002	1097	1181	1256
NO LOAD	167	644	758	860	952	1036
NO LOAD	176	614	726	828	920	1004
Heavy Wind Load	60	1847	1940	2028	2111	2189
Extreme Load	80	2574	2880	3161	3420	3661

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DATE: Nov. 24, 2017	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**4/0 AAC Quadruplex Walking**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-26**

Initial Sag – 4/0 AAC "OLDENBURG"[1]						
Condition	**Temp °F**	**SAG (ft) / Ruling Span (FT)**				
		100	**125**	**150**	**175**	**200**
NO LOAD	70	1.18	1.84	2.65	3.61	4.71
NO LOAD	80	1.27	1.95	2.78	3.75	4.87
NO LOAD	90	1.37	2.07	2.91	3.89	5.02
NO LOAD	95	1.42	2.13	2.98	3.79	5.10
NO LOAD	100	1.47	2.19	3.04	4.04	5.17
NO LOAD	110	1.57	2.30	3.17	4.18	5.32
Heavy Wind Load	60					
Extreme Load	80					

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Initial Tensions – 4/0 AAC "OLDENBURG"						
Condition	**Temp °F**	**Tension (lb) / Ruling Span (FT)**				
		100	**125**	**150**	**175**	**200**
NO LOAD	70	1005	1005	1005	1005	1005
NO LOAD	80	931	946	957	966	973
NO LOAD	90	865	893	914	931	943
NO LOAD	95	835	868	894	914	929
NO LOAD	100	806	845	875	898	916
NO LOAD	110	754	802	839	868	890
Heavy Wind Load	60	1306	1346	1379	1407	1429
Extreme Load	80	2003	2198	2363	2505	2629

[1] For information only. Not for new installations.

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DATE: October 16, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Initial Sags & Tensions**	
DATE:	**4/0 AAC Quadruplex Oldenburg**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-27**

Final Sag – 4/0 AAC "OLDENBURG"[1]						
Condition	**Temp °F**	**SAG (ft) / Ruling Span (FT)**				
		100	**125**	**150**	**175**	**200**
NO LOAD	70	1.78	2.59	3.53	4.60	5.81
NO LOAD	80	1.88	2.71	3.65	4.73	5.96
NO LOAD	90	1.99	2.82	3.78	4.87	6.10
NO LOAD	95	2.04	2.88	3.84	4.94	6.17
NO LOAD	100	2.09	2.93	3.91	5.00	6.24
NO LOAD	110	2.18	3.04	4.03	5.14	6.38
NO LOAD	120	2.28	3.15	4.15	5.26	6.52
NO LOAD	167	2.69	3.63	4.68	5.84	7.14
NO LOAD	176	2.77	3.71	4.77	5.95	7.25
Heavy Wind Load	60	1.87	2.70	3.67	4.76	6.00
Extreme Load	80	2.59	3.60	4.73	5.98	7.36

RULING CONDITION: INITIAL UNLOADED TENSION AT 70°F – 25% RTS

Final Tensions – 4/0 AAC "OLDENBURG"						
Condition	**Temp °F**	**Tension (lb) / Ruling Span (FT)**				
		100	**125**	**150**	**175**	**200**
NO LOAD	70	665	715	756	789	816
NO LOAD	80	628	684	729	766	796
NO LOAD	90	596	656	705	745	777
NO LOAD	95	581	643	693	735	768
NO LOAD	100	567	630	682	725	760
NO LOAD	110	542	608	662	707	743
NO LOAD	120	519	587	643	690	728
NO LOAD	167	440	510	571	622	665
NO LOAD	176	428	499	559	611	655
Heavy Wind Load	60	982	1060	1126	1181	1225
Extreme Load	80	1864	2097	2299	2476	2629

[1] For information only. Not for new installations.

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DATE: October 16, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Final Sags & Tensions**	
DATE:	**4/0 AAC Quadruplex Oldenburg**	
	APPROVED BY:	STANDARD NO.
	DATE:	**12-28**

SAGS-SERVICE DROPS

The sags required for service drops have been tabulated at 90˚F; the temperature has little effect on the sag in service cable between 70˚F and 100˚F. The maximum design tension (under hurricane conditions) used to calculate these sags is also tabulated in the following chart.

SAG (ft) – Service Drops			
Service Drop Length (ft)	**Triplex**		**Quadruplex**
	2	**2/0**	**2/0 and 4/0**
Up to 50	1’6”	2’0”	1’6”
50-60	2’0”	2’6”	2’0”
60-70	3’0”	3’6”	2’9”
70-80	4’0”	4’6”	3’6”
80-90	5’0”	5’6”	4’6”
90-100	6’0”	*	5’6”
Design Tension	400 LBS	500LBS	900 LBS

* Not recommended

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DATE: October 15, 2015	**DISTRIBUTION STANDARDS**	
DRAWN:		
REV.:	**Installation Sags Service Drops**	
DATE:		
	APPROVED BY:	STANDARD NO. **12-29**
	DATE:	