PRIMARIES 07

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Copper – Bare

Conductor Size, Type and Stranding	Cond Code Name	Ameren Stock No.	Over-all Dia. In-ches	Wire Area Sq. In.	Ulti-mate Streng th in "Lbs."	Con-ductor Wt. "LBS/ FT"	Vert. Wt. Of Cond. +1/2" Ice "Lbs./ Ft."	Ho-riz.– 4Lbs Wind on 1/2" Ice "Lbs./ Ft."	Resul-tant Wt. Incl. C=0.30 Heavy Loaded Wt. "Lbs./Ft. "	Major Use (*Stan-dard)
6–Solid Soft Drawn		18–52–019	.162			.079				Gnd Wire
4–Solid Soft Drawn		18–52–020	.204			.126				Tie Wires & Sw Leads
2–Solid Soft Drawn		18–52–025	.258			.201				Tie Wires & Sw Leads
6–Solid Hard Drawn		18–02–010	.162	.02062	1,280	.079	.4908	.3873	.9252	Line Wire
4–Solid Hard Drawn		18–02–017 18–02–072	.204	.03278	1,970	.126	.5639	.4013	.9921	Line Wire
2–Solid Hard Drawn		18–02–020	.258	.05213	3,000	.201	.6725	.4193	1.0925	Line Wire
1/0–7 Str. Hard Drawn		18–02–022	.368	.08286	4,750	.326	.8659	.4560	1.2786	Line Wire
2/0–7 Str. Hard Drawn		18–02–024	.414	.1045	5,926	.410	.9785	.4713	1.3861	Line Wire
4/0–7 Str. Hard Drawn		18–02–027	.522	.1662	9,154	.653	1.2887	.5073	1.6850	Line Wire
350 kcmil–12 Str. H.D.		18–02–064	.710	.2749	15,140	1.081	1.8336	.5700	2.2202	Line Wire

Copper – Polyethylene – Covered

Conductor Size, Type and Stranding	Cond Code Name	Ameren Stock No.	Over-all Dia. In-ches	Wire Area Sq. In.	Ulti-mate Stren gth in "Lbs."	Con-duc-tor Wt. "LBS/ FT"	Vert. Wt. Of Cond. +1/2" Ice "Lbs./ Ft."	Ho-riz.– 4Lbs Wind on 1/2" Ice "Lbs./ Ft."	Resultant Wt. Incl. C=0.30 Heavy Loaded Wt. "Lbs./Ft."	Major Use (*Stan-dard)
6–Solid Hard Drawn		18–01–012	.222	.02062	1,216	.087	.5361	.4073	.09733	Line Wire
4–Solid Hard Drawn		18–01–017	.264	.03278	1,872	.135	.6102	.4213	1.0415	Line Wire
2–Solid Hard Drawn		18–01–020	.348	.05213	2,852	.218	.7455	.4493	1.1704	Line Wire
1/0–7 Str. Hard Drawn		18–01–022	.488	.08286	4,515	.357	.9715	.4960	1.3908	Line Wire
4/0–7 Str. Hard Drawn		18–01–025	.642	.1662	8,696	.696	1.4063	.5473	1.5090	Line Wire
6–Solid Soft Drawn		18–51–021	.230	.02062	763	.087	0.5411	0.4100	0.9790	Gnd Wire
2–7 Str. Soft Drawn		18–51–019	.382	.05213	2,107	.218	0.7666	0.4607	1.1944	Gnd Wire
1/0–7 Str. Soft Drawn		18–51–024	.488	.08286	3,219	.358	.9725	0.4960	1.3917	Trans Lead & Serv
4/0–7 Str. Soft Drawn		18–51–023	.648	.1701	6,456	.716	1.4301	0.5493	1.8430	Trans Lead & Serv
500 kcmil – 37 Str. S.D.		18–51–022 18–51–026	.963	.3927	15,260	1.626	2.5360	0.6543	2.9191	Trans Lead & Serv
750 kcmil – 61 Str. S.D.		18–51–020	1.162	.5890	22,900	2.415	3.4488	0.7207	3.8233	Trans Lead & Serv
4–Solid Soft Drawn		18–51–025	.424	.1780	**		**	**	**	Trans Lead

** Transformer Riser Wire

Copperweld Bare

Conductor Size, Type and Stranding	Cond Code Name	Ameren Stock No.	Over-all Dia. In-ches	Wire Area Sq. In.	Ulti-mate Streng th in "Lbs."	Con-ductor Wt. "LBS/ FT"	Vert. Wt. Of Cond. +1/2" Ice "Lbs./ Ft."	Ho-riz.– 4Lbs Wind on 1/2" Ice "Lbs./ Ft."	Resul-tant Wt. Incl. C=0.30 Heavy Loaded Wt. "Lbs./Ft. "	Major Use (*Stan-dard)
8–Solid High Strength		27–09–094	.1285	.01297	1,660	.0458	.4367	0.3762	0.8764	Services
6–Solid High Strength		27–09–098	.162	.02062	2,433	.0729	.4847	0.3873	0.9204	Services

Copperweld Copper Bare

Conductor Size, Type and Stranding	Cond Code Name	Ameren Stock No.	Over-all Dia. In-ches	Wire Area Sq. In.	Ulti-mate Streng th in "Lbs."	Con-ductor Wt. "LBS/ FT"	Vert. Wt. Of Cond. +1/2" Ice "Lbs./ Ft."	Ho-riz.– 4Lbs Wind on 1/2" Ice "Lbs./ Ft."	Resul-tant Wt. Incl. C=0.30 Heavy Loaded Wt. "Lbs./Ft. "	Major Use (*Stan-dard)
6A–3 Strand C.W.		27–09–082	.230	.02689	2,585	.102	.5561	0.4100	0.9909	Line Wire
4A–3 Strand C.W.		27–09–003	.290	.04276	3,938	.162	.6534	0.4300	1.0822	Line Wire
2A–3 Strand C.W.		27–09–132	.366	.06799	5,876	.257	.7953	.4553	1.216	Line Wire

5 kV Insulated Copper Polyethylene Jacket

Conductor Size, Type and Stranding	Cond Code Name	Ameren Stock No.	Over-all Dia. In-ches	Wire Area Sq. In.	Ulti-mate Stren gth in "Lbs."	Con-duc-tor Wt. "LBS/ FT"	Vert. Wt. Of Cond. +1/2" Ice "Lbs./ Ft."	Ho-riz.– 4Lbs Wind on 1/2" Ice "Lbs./ Ft."	Resul-tant Wt. Incl. C=0.30 Heavy Loaded Wt. "Lbs./Ft. "	Major Use (*Stan-dard)
6–Solid		18–53–011	.65			.27				In Fibre
2–19 Str.		18–53–018	.76			.45				Conduit
1/0 – 19 Str.		18–53–022	.84			.60				& Where
4/0 – 19 Str.		18–53–028	1.030			1.04				Open Wire Is
350 kcmil – 37, 61 Str.		18–53–102	1.25			1.63				Hazard–ous
750 kcmil – 91 Str.		18–07–021	1.64			3.17				

Aluminum – Bare

Conductor Size, Type and Stranding	Cond Code Name	Ameren Stock No.	Over-all Dia. In-ches	Wire Area Sq. In.	Ulti-mate Stren gth in "Lbs."	Con-duc-tor Wt. "LBS/ FT"	Vert. Wt. Of Cond. +1/2" Ice "Lbs./ Ft."	Ho-riz.– 4Lbs Wind on 1/2" Ice "Lbs./ Ft."	Resul-tant Wt. Incl. C=0.30 Heavy Loaded Wt. "Lbs./Ft. "	Major Use (*Stan-dard)
4 Solid		18–55–028	.204			.0384				Tie Wire
4 ACSR 7/1	Swa-nate	18–05–005 18–05–084 18–05–085	.257	.0411	2,360	.0670	.5379	.4190	.9818	Line Wire
2 ACSR 7/1	Spa-rate	18–05–007 18–05–091	.325	.0654	3,640	.1067	.6199	.4417	1.0612	Line Wire
1/0 AAAC 7 Str.	Azusa	18–05–060 18–05–088	.398	.0968	4,460	.1157	.6743	.4660	1.1197	Line Wire**
1/0 ACSR 6/1	Raven	18–05–080	.398	.0968	4,380	.1452	.7038	.4660	1.1441	Line Wire
2/0 ACSR 6/1	Quail	18–05–026	.447	.1219	5,310	.183	.772	.482	1.210	Line Wire
3/0 ACSR 6/1	Pigeon	18–05–010	.502	.1538	6,620	.2309	.8541	.5007	1.2900	Line Wire
4/0 ACSR 6/1	Pen-guin	18–05–011	.563	.1939	8,350	.2911	.9523	.5210	1.3855	Line Wire
110.8 kcmil – ACSR 12/7	Minor-ca	18–05–117	.481	.1378	11,300	.2763	.8865	.4937	1.3147	Static Wire
335.6 kcmil ACSR T–2	Pigeon/ VR	18–05–122	.822	.3076	13,240	.461	1.283	.607	1.719	Line Wire (Gallop)
336.4 kcmil – ACSR 26/7	Linnet	18–05–014	.720	.3072	14,100	.463	1.2218	.5733	1.6496	Line Wire (34kV)
336.4 kcmil ACSR 18/1	Merlin	18–05–120	.684	.2789	8,680	.3653	1.1017	.5613	1.5365	Line Wire (34kV)
477 kcmil ACSR 18/1	Pelican	18–05–035	.814	.3955	11,800	.517	1.334	.605	1.765	Line Wire (34kV)
423.2 kcmil (2) 4/0 6/1 ACSR	T2 Pen-guin	18–05–241	0.922	0.3878	16,700	0.582	1.485	0.641	1.917	Line Wire
556.5 kcmil – AA 19 Str.	Dahlia	18–05–047 18–05–082 18–05–092	.856	.4370	9,750	.5224	1.3658	.6187	1.7994	Line Wire
556.5 kcmil – ACSR 26/7 Str.	Dove	18–05–033	.927	.5083	22,600	.7660	1.6535	.6423	2.0740	Line Wire
795 kcmil – AA 37 Str.	Arbutus	18–05–032	1.026	.6244	13,900	.7463	1.6955	.6753	2.1250	Line Wire
954 kcmil – AA 37 Str.	Magno-lia	18–05–043	1.124	.7495	16,400	.8956	1.9057	.7080	2.3330	Line Wire

Aluminum – Bare (Cont.)

Conductor Size, Type and Stranding	Cond Code Name	Ameren Stock No.	Over-all Dia. In-ches	Wire Area Sq. In.	Ulti-mate Streng th in "Lbs."	Con-duc-tor Wt. "LBS/ FT"	Vert. Wt. Of Cond. +1/2" Ice "Lbs./ Ft."	Ho-riz.– 4Lbs Wind on 1/2" Ice "Lbs./ Ft."	Resul-tant Wt. Incl. C=0.30 Heavy Loaded Wt. "Lbs./Ft. "	Major Use (*Stan-dard)
954 kcmil 45/7 ACSR	Rail	18–05–173	1.165	0.801	25,900	1.076	2.111	0.7217	2.531	Line Wire
3 – #7 Str. AW		27–09–099	.311	.0490	8,621	.1412	.6456	.4370	1.0796	Static Wire**
1113 kcmil (2) 556 (19) AAC	T2 Dahlia	18–05–250	1.401	0.8738	19,500	1.045	2.265	0.8003	2.702	Line Wire
1908 kcmil (2) 45/7 ACSR	T2 Rail	18–05–210	1.907	1.6022	51,800	2.15	3.711	0.969	4.136	Line Wire

**1/0 AAAC is used for static wire. Alumoweld is no longer used for static wire. See 12 00 01 01.

Aluminum Polyethylene Jacket

Conductor Size, Type and Stranding	Cond Code Name	Ameren Stock No.	Over-all Dia. In-ches	Wire Area Sq. In.	Ulti-mate Streng th in "Lbs."	Con-ductor Wt. "LBS/ FT"	Vert. Wt. Of Cond. +1/2" Ice "Lbs./ Ft."	Ho-riz.– 4Lbs Wind on 1/2" Ice "Lbs./ Ft."	Resul-tant Wt. Incl. C=0.30 Heavy Loaded Wt. "Lbs./Ft. "	Major Use (*Stan-dard)
4 ACSR 7/1	Hick-ory	18–05–068	.317	.0411	2,280	.0820	.5912	.4390	1.0364	Line Wire
1/0 AAAC 7 Str.	Oilnut	18–05–067 18–05–090	.518	.0968	4,010	.1660	.7972	.5060	1.2442	Line Wire
4/0 AA 7 Str.	Olive	18–05–059 18–05–087	.632	.1662	3,440	.258	.9261	.5440	1.3740	Second-ary
336.4 kcmil – AA 19 Str.	Ano-na	18–05–052	.766	.2644	5,535	.3880	1.1705	.5887	1.6102	Line Wire
556.5 kcmil – AA 37 Str.	Paw Paw	18–05–053	.993	.4370	8,950	.6350	1.5567	.6643	1.9925	Line Wire

1. **General**

a. Bare wire is the standard conductor for subtransmission and all overhead installations of distribution feeders, 15kV or less. It is to be used for both armless and crossarm construction. This includes both reconductoring and the installation of additional phases where covered wire had been previously installed.

b. Use covered wire for 15kV or less:

1) In extremely heavy tree conditions where excessive trimming permission cannot be obtained or where the beautility of the trees is important to the area.

2) Where climbing or working space on the pole is restricted because of being too close to a building or other obstacle.

2. **Conductor Current Ratings**

Overhead conductor current ratings cover single and twisted pair conductors used in open overhead construction and existing spacer cable installations. Ratings are based on 2 feet per second crosswind, emissivity of 0.5 (for bare conductor; 0.91 for covered) and absorptivity of 0.5 (for bare conductor; 0.95 for covered).

Note: CLPU is Cold Load Pickup.

	Temperatures (ºC)			
Conductor Type	**Conductors**		**Ambient**	
	Normal	**Emergency**		
#6 and #4 COPPER	80	90	**Summer**	40
COPPER (other)	90	100	**Spring/Fall**	10
AAC & AAAC	90	100	**Winter**	–13
ACSR	90	120	**CLPU**	0

SIZE		RATING (AMP)						
STD LINE CONDUCTORS		SN	SE	S/F N	S/F E	W N	W E	CLPU
1/0 AAAC (7)	**Azusa**	252	276	323	341	369	383	361
336 ACSR (18/1)	**Merlin**	511	645	659	759	754	835	795
556 AAC (19)	**Dahlia**	693	763	896	947	1026	1067	1004
954 (45/7) ACSR	**Rail**	981	1255	1273	1476	1460	1625	1548
1272 (45/7) ACSR	**Bittern**	1173	1506	1523	1773	1749	1952	1859

STD T2 LINE CONDUCTORS		SN	SE	S/F N	S/F E	W N	W E	CLPU
4/0 (6/1) ACSR (T2)	**Penguin T2**	535	652	692	767	793	844	804
336 (18/1) ACSR (T2)	**Merlin T2**	820	1048	1063	1233	1219	1357	1292
556 (19) AAC (T2)	**Dahlia T2**	1108	1227	1441	1528	1654	1723	1623
954 (45/7) ACSR (T2)	**Rail T2**	1587	2054	2070	2419	2381	2664	2538

STATIC (SHIELD) WIRES								
110.8 (12/7) ACSR	**Minorca**	234	281	301	330	344	363	346
1/0 AAAC (7)	**Azusa**	252	276	323	341	369	383	361

SIZE		RATING (AMP)						
Non–Std Conductors		SN	SE	S/F N	S/F E	W N	W E	CLPU
6 ACSR (6/1)	Turkey	102	125	130	147	148	161	154
4 ACSR (7/1)	Swanate	135	165	173	194	197	214	203
2 ACSR (6/1)	Sparrow	178	219	229	257	261	282	269
2 ACSR (7/1)	Sparate	178	219	229	257	261	282	269
1/0 ACSR (6/1)	Raven	235	288	302	338	345	372	354
2/0 ACSR (6/1)	Quail	269	329	346	387	395	426	405
3/0 ACSR (6/1)	Pigeon	308	377	396	443	453	488	464
3/0 ACSR (7)	Amherst	337	370	433	458	495	515	485
4/0 ACSR (6/1)	Penguin	353	432	454	507	520	558	532
4/0 AAAC (7)	Alliance	390	428	502	530	574	597	562
134.6 ACSR (12/7)	Leghorn	259	310	333	364	381	401	382
266.8 ACSR (18/1)	Waxwing	441	556	569	654	651	720	685
266.8 ACSR (26/7)	Partridge	450	568	580	667	664	734	699
335.6 ACSR (2–6/1)	T2 Pigeon	474	580	613	683	702	751	715
336.4 ACSR (26/7)	Linnet	520	658	672	774	769	852	811
336.4 ACSR (30/7)	Oriole	526	666	680	784	778	862	821
394.9 AAAC (19)	Canton	526	579	678	718	777	808	761
397.5 ACSR (26/7)	Ibis	578	733	747	862	856	949	903
397.5 ACSR (30/7)	Lark	585	742	756	873	866	961	914
477 (19) AAC	Cosmos	629	692	813	859	931	967	911
477 ACSR (18/1)	Pelican	636	807	822	949	942	1045	995
477 ACSR (26/7)	Hawk	649	824	839	969	961	1067	1016
477 ACSR (30/7)	Hen	657	834	849	981	973	1080	1028
556.5 ACSR (18/1)	Osprey	701	891	907	1048	1039	1153	1098
556.5 ACSR (26/7)	Dove	715	910	926	1069	1061	1178	1122
559.5 ACAR (15/4)	15/4	687	756	888	939	1018	1058	996
636 ACSR (24/7)	Rook	773	985	1001	1158	1147	1275	1214
636 ACSR (26/7)	Grosbeak	778	991	1007	1166	1155	1284	1222
795 ACSR (26/7)	Drake	896	1145	1161	1347	1332	1483	1412
795 ACSR (45/7)	Tern	875	1116	1134	1313	1301	1446	1377
636 AAC (37)	Orchid	754	831	976	1032	1118	1162	1095
795 AAC (37)	Arbutus	867	956	1122	1188	1287	1338	1260
927 ACAR (24/13)		935	1032	1211	1284	1389	1446	1362
954 AAC (37)	Magnolia	970	1071	1258	1333	1443	1502	1414
954 ACSR (54/7)	Cardinal	982	1251	1274	1472	1462	1620	1543
1024.5 ACAR (30/7)		1003	1108	1301	1378	1492	1553	1463
1272 AAC (61)	Narcissus	1156	1279	1501	1592	1723	1795	1690

T–2 ACSR (2 x 3/0)	T2 Pigeon	474	580	613	683	702	751	715
T–2 ACSR (2 x 266.8)	T2 Partridge	720	918	933	1081	1070	1190	1133
T–2 ACSR (2 x 477)	T2 Pelican	1019	1309	1323	1540	1519	1696	1615
T–2 ACSR (2 x 477)	T2 Hawk	1036	1333	1347	1569	1547	1727	1645
T–2 ACSR (2 x 477)	T2 Hen	1046	1346	1360	1585	1562	1744	1662
T–2 AAC (2 x 795)	T2 Arbutus	1402	1554	1826	1939	2098	2187	2060
T–2 AAAC (2 x 3/0)	T2 Amherst	503	554	649	688	744	774	729

Bare Cu								
6 Cu SOL		126	137	161	169	183	190	178
4 Cu SOL		168	183	215	226	245	254	239
4 Cu (7)		171	186	218	230	249	258	243
2 Cu SOL		225	246	288	303	329	341	321
2 Cu (7)		228	250	293	308	334	347	326
1 Cu SOL		261	285	334	352	381	395	372
1 Cu (7)		264	289	339	357	387	401	378
1/0 Cu Sol		299	327	384	404	438	454	428
1/0 Cu (7)		306	335	393	414	448	465	438
2/0 Cu SOL		347	380	446	470	509	528	497
2/0 Cu (7)		356	390	457	482	523	542	511
3/0 Cu SOL		402	440	516	544	590	612	576
3/0 Cu (7)		410	449	527	556	602	625	588
4/0 Cu SOL		465	509	598	630	683	709	667
4/0 Cu (7)		474	520	610	644	698	724	682
250 Cu (19)		528	579	680	718	778	808	760
350 Cu (12)		660	726	851	900	975	1013	954
350 Cu (19)		652	717	841	889	963	1000	942
500 Cu (37)		817	899	1055	1116	1209	1256	1183
750 Cu (61)		1046	1155	1354	1435	1553	1617	1522
800 Cu (37)		1087	1201	1408	1493	1615	1686	1584
1000 Cu (61)		1241	1373	1609	1708	1846	1925	1812

SIZE		RATING (AMP)						
Bare CW–CU		SN	SE	S/F N	S/F E	W N	W E	CLPU
8A		103	113	132	139	151	156	147
6A		135	147	173	181	197	204	184
4A		180	196	230	242	263	272	256
2A		239	261	307	323	351	363	342
2/0 F		349	381	448	471	512	530	499
4/0 E		471	516	607	639	695	719	677
Covered Al								
4 ACSR (7/1)	Hickory	140	153	179	188	205	210	198
1/0 AAAC (7)	Oilnut	230	255	299	320	344	357	337
4/0 AA (7)	Olive	369	409	481	516	554	575	542
336.4 AA (19)	Anona	497	553	650	699	749	779	735
397.5 AA (19)	Moiles	543	606	714	769	824	857	808
556.5 AA (37)	PawPaw	670	749	883	953	1020	1062	1001
Covered Cu								
6 SOL		104	132	134	180	194	201	190
4 SOL		136	174	178	240	258	267	252
2 SOL		230	253	296	315	339	351	331
1/0 (7)		306	338	396	424	455	472	445
4/0 (7)		469	520	611	656	703	731	689
500 (37)		788	882	1038	1121	1199	1249	1178

Insulated Wire – 2400 Volt

	1–3 Conductors in Conduit or Triplexed in Air		Single Conductor in Air	
	Norm	Emer.	Norm	Emer.
6 CU	80	90	96	112
2 CU	140	165	167	195
1/0 CU	185	220	222	260
4/0 CU	290	340	343	400
350 CU	395	465	470	575
500 CU	485	570	589	688
750 CU	600	710	760	889

See Dist. Std. 10 00 01 for proper 4kV lead wire size.

Conductor Installation

Hillside Construction

The sag tables published in the 07 00 07 section of the Construction Standards are primarily intended for use on level or nearly level terrain where the difference in support elevations of the various spans is relatively minor (Say zero to five foot in most cases, with an occasional maximum difference of 10 ft.).

In hillside construction, care must be taken to prevent conductor uplift on poles, crossarms, etc. This condition may be eliminated by increasing conductor sags, span lengths, raising of the lower support, or relocation of the supports. If none of these remedies are feasible, it may be necessary to deadend the conductors on the lower supports or on both structures.

Normally suspension type insulators should be used with wood crossarms or fiberglass standoffs on hillside construction rather than clamp type vertical line post insulators because of the limited amount of rotation available in the suspension clamp. Uplift should also be avoided on suspension type strings to prevent insulator curl and radio interference noise. The insulator swing must be checked at 0° F, 4 psf wind, no ice, INITIAL and 60° F with 6 psf wind, FINAL.

The use of topographic maps, profile plots and conductor sag templates will permit the determination of what will occur throughout the line once the pole elevations and locations are established.

1. General

Sag tables are divided by ruling span per conductor. The ruling spans are “Super Short Span” (100 ft.), “Short Span” (150 ft.), “Medium Span” (200 ft.), “Long Span” (250 ft.), and for larger conductors, “Extra Long Span” (300 ft.), “Super Long Span” (350 ft.).

All sags given for “Initial Sag” are for stringing of new conductors. For a given stringing temperature (Amb. Temp.) the conductor tension is also given.

Conductor integrity can be affected by temperature. For this reason, maximum operating temperature in "Final Sag" tables for all aluminum conductor (AAC) is limited to 212° F, and for aluminum conductor steel reinforced (ACSR) is limited to 248° F.

Sags given for “Final Sag” indicate the maximum sag for a conductor at the particular condition. The National Electrical Safety Code (NESC) requires that maximum sag (for vertical clearance above ground) be checked at:

a. 32° F (0° C) with 1/2” ice, No Wind (FINAL) or 120° F, FINAL, for neutral conductors.

b. Maximum operating design temperature of the line (No Wind).

c. Conductor blowout must be checked at 60° F (16° C) FINAL with 6 psf wind to assure necessary clearance to structures adjacent to the line.

d. Conductor separation between ellipses during galloping must not be less than the 60 Hz flashover distance at FINAL sag of conductor 32° F (0° C) with 1/2” ice and 2 psf wind.

1/0 AWG (7) AAAC "Azusa"

DE Tension = 1,000 Lbs **RBS = 4,460 Lbs**

Super Short Span - Feet

Condition→ / Temp. / Deg. F↓	R.S. Range ②→ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
		Not Recommended					R.S.			Not Recommended			
		50	60	70	80	90	100	110	120	130	140	150	
15º, 1" ice, 4 psf wind		6	9	12	15	20	24	29	35	41	47	54	1,258
15º, 0.8" ice, 4 psf wind		5	7	10	13	17	21	25	30	35	41	47	1,060
0º, 0.5" ice, 4 psf wind + k		4	6	8	11	14	17	20	24	28	33	38	1,000
0		1	1	1	2	2	3	3	4	4	5	6	647
10		1	1	2	2	3	3	4	4	5	6	7	564
20		1	1	2	2	3	4	4	5	6	7	8	485
30		1	2	2	3	3	4	5	6	7	8	9	410
40		1	2	3	3	4	5	6	7	9	10	12	340
50		2	2	3	4	5	6	8	9	11	12	14	278
60º F, 21 psf wind		5	7	9	12	15	19	23	27	32	37	42	563
60º F, 6 psf wind		3	4	6	7	9	11	14	16	19	22	26	302
60º F, 4 psf wind		2	4	5	6	8	10	12	14	17	20	22	267
60		2	3	4	5	6	8	9	11	13	15	17	225
70		2	3	5	6	8	9	11	14	16	19	21	184
80		3	4	6	7	9	11	14	16	19	22	26	153
90		3	5	7	9	11	13	16	19	23	26	30	131
100		4	5	7	10	12	15	18	22	26	30	34	115

Super Short Span - Feet

Condition→ / Temp. / Deg. F↓	Span (Ft)→	FINAL SAG (inches)											Tension Lbs
							R.S.						
		50	60	70	80	90	100	110	120	130	140	150	
-20		1	1	1	1	2	2	3	3	4	4	5	772
0		1	1	2	2	3	3	4	4	5	6	7	554
0º, 0.5" ice, 4 psf wind + k		4	6	8	11	14	17	20	24	28	33	38	1,000
30		2	2	3	4	5	6	8	9	11	13	15	268
32º, 0.5" ice,		4	6	8	11	13	16	20	24	28	32	37	617
32º, 0.5" ice, 2 psf wind		4	6	8	11	14	17	20	24	28	33	38	638
40		2	3	4	5	7	9	10	12	14	17	19	204
50		3	4	5	7	9	11	13	16	18	21	24	162
60		3	5	6	8	10	13	16	19	22	25	29	134
60º F, 6 psf wind		4	5	7	10	12	15	18	22	25	29	34	230
70		4	5	7	10	12	15	18	22	25	29	34	116
80		4	6	8	11	14	17	20	24	29	33	38	103
90		5	7	9	12	15	19	23	27	32	37	42	93
100		5	7	10	13	17	20	25	29	34	40	46	86
120		6	8	11	15	19	23	28	34	40	46	53	75
212		9	12	17	22	28	34	41	49	58	67	77	51

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

1/0 AWG (7) AAAC "Azusa"

DE Tension = 1,200 Lbs

RBS = 4,460 Lbs

Short Span - Feet

Condition→ / Temp. / R.S. Range ②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	100	110	120	130	140	150	160	170	180	190	200	
15º, 1" ice, 4 psf wind	19	23	28	33	38	43	49	56	62	70	77	**1579**
15º, 0.8" ice, 4 psf wind	17	20	24	28	33	38	43	48	54	60	67	**1315**
0º, 0.5" ice, 4 psf wind + k	14	17	20	24	27	32	36	41	45	51	56	**1200**
0	3	3	4	5	5	6	7	8	9	10	11	**649**
10	3	4	4	5	6	7	8	9	10	11	12	**569**
20	4	4	5	6	7	8	9	10	11	13	14	**494**
30	4	5	6	7	8	9	11	12	13	15	16	**424**
40	5	6	7	8	9	11	12	14	16	17	19	**361**
50	6	7	8	10	11	13	15	16	18	21	23	**306**
60º F, 21 psf wind	15	18	21	25	29	33	38	43	48	53	59	**720**
60º F, 6 psf wind	9	11	14	16	18	21	24	27	30	34	38	**369**
60º F, 4 psf wind	8	10	12	14	16	19	21	24	27	30	33	**320**
60	7	8	10	11	13	15	17	19	22	24	27	**261**
70	8	9	11	13	15	18	20	23	25	28	31	**224**
80	9	11	13	15	17	20	23	26	29	32	36	**196**
90	10	12	14	17	20	23	26	29	32	36	40	**174**
100	11	13	16	19	22	25	28	32	36	40	44	**157**

Short Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	100	110	120	130	140	150	160	170	180	190	200	
-20	2	3	3	4	5	5	6	7	8	9	10	**725**
0	3	4	5	6	7	8	9	10	11	12	13	**519**
0º, 0.5" ice, 4 psf wind + k	14	17	20	24	27	32	36	41	45	51	56	**1200**
30	6	8	9	11	12	14	16	18	20	23	25	**280**
32º, 0.5" ice,	13	16	19	22	26	30	34	38	43	48	53	**763**
32º, 0.5" ice, 2 psf wind	14	16	20	23	27	30	35	39	44	49	54	**791**
40	8	9	11	13	15	17	19	22	24	27	30	**232**
50	9	11	13	15	17	20	23	25	29	32	35	**198**
60	10	12	15	17	20	23	26	29	33	36	40	**173**
60º F, 6 psf wind	12	14	17	20	23	26	30	34	38	42	47	**297**
70	11	14	16	19	22	25	29	33	37	41	45	**154**
80	12	15	18	21	24	28	32	36	40	45	50	**140**
90	13	16	19	23	26	30	35	39	44	49	54	**129**
100	15	18	21	25	28	33	37	42	47	52	58	**120**
120	16	20	24	28	32	37	42	47	53	59	65	**106**
212	23	28	34	39	46	52	60	67	76	84	93	**75**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

1/0 AWG (7) AAAC "Azusa"

DE Tension = 1,400 Lbs **RBS = 4,460 Lbs**

Medium Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	
15º, 1" ice, 4 psf wind	36	41	47	52	58	65	71	78	86	93	101	**1877**
15º, 0.8" ice, 4 psf wind	32	36	41	46	51	57	62	69	75	82	89	**1558**
0º, 0.5" ice, 4 psf wind + k	27	31	35	39	43	48	53	58	64	69	75	**1400**
0	6	7	7	8	9	10	11	12	13	15	16	**680**
10	6	7	8	9	10	12	13	14	15	17	18	**603**
20	7	8	9	11	12	13	14	16	17	19	20	**531**
30	8	10	11	12	14	15	17	18	20	22	23	**464**
40	10	11	12	14	16	17	19	21	23	25	27	**404**
50	11	13	14	16	18	20	22	24	26	29	31	**352**
60º F, 21 psf wind	27	31	35	39	44	49	54	59	64	70	76	**872**
60º F, 6 psf wind	18	20	23	25	28	31	35	38	41	45	49	**442**
60º F, 4 psf wind	16	18	20	22	25	28	31	34	37	40	43	**381**
60	13	14	16	18	20	23	25	27	30	32	35	**308**
70	14	16	19	21	23	26	28	31	34	37	40	**272**
80	16	18	21	23	26	29	32	35	38	41	45	**242**
90	18	20	23	26	29	32	35	38	42	46	50	**219**
100	20	22	25	28	32	35	38	42	46	50	55	**200**

Medium Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	
-20	5	6	7	8	9	10	11	12	13	14	15	**720**
0	7	8	10	11	12	13	15	16	17	19	21	**527**
0º, 0.5" ice, 4 psf wind + k	27	31	35	39	43	48	53	58	64	69	75	**1400**
30	12	14	16	18	20	22	24	27	29	32	35	**315**
32º, 0.5" ice,	25	29	32	36	40	45	49	54	59	64	70	**908**
32º, 0.5" ice, 2 psf wind	26	29	33	37	41	45	50	55	60	65	71	**941**
40	14	16	19	21	23	26	28	31	34	37	40	**272**
50	16	19	21	24	26	29	32	35	39	42	46	**239**
60	18	21	24	26	29	33	36	39	43	47	51	**213**
60º F, 6 psf wind	21	24	27	31	34	38	42	46	50	55	59	**365**
70	20	23	26	29	32	36	40	44	48	52	56	**194**
80	22	25	28	32	35	39	43	47	52	56	61	**178**
90	24	27	31	34	38	42	47	51	56	61	66	**165**
100	25	29	33	37	41	45	50	55	60	65	71	**155**
120	28	32	36	41	45	50	56	61	67	73	79	**138**
212	40	45	51	57	64	71	78	86	93	102	110	**99**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

1/0 AWG (7) AAAC "Azusa"

DE Tension = 1,650 Lbs **RBS = 4,460 Lbs**

Long Span - Feet

Condition→ / Temp. / R.S. Range②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	200	**210**	**220**	**230**	**240**	**250**	**260**	**270**	**280**	**290**	**300**	
15º, 1" ice, 4 psf wind	55	61	67	73	80	86	93	101	108	116	124	**2201**
15º, 0.8" ice, 4 psf wind	48	53	58	63	69	75	81	87	94	101	108	**1839**
0º, 0.5" ice, 4 psf wind + k	41	45	49	54	59	64	69	74	80	86	92	**1650**
0	8	9	10	11	12	13	14	15	16	18	19	**831**
10	9	10	11	12	13	15	16	17	18	20	21	**751**
20	10	11	12	14	15	16	17	19	20	22	23	**674**
30	12	13	14	15	17	18	20	21	23	24	26	**601**
40	13	14	16	17	19	20	22	24	26	27	29	**534**
50	15	16	18	20	21	23	25	27	29	31	33	**473**
60º F, 21 psf wind	40	44	48	53	57	62	67	73	78	84	90	**1064**
60º F, 6 psf wind	24	27	29	32	35	38	41	44	48	51	55	**567**
60º F, 4 psf wind	21	23	26	28	31	33	36	39	42	45	48	**499**
60	17	18	20	22	24	26	28	30	33	35	37	**419**
70	19	21	23	25	27	29	32	34	37	39	42	**372**
80	21	23	25	28	30	33	35	38	41	44	47	**333**
90	23	26	28	31	33	36	39	42	45	49	52	**300**
100	26	28	31	34	37	40	43	47	50	54	58	**273**

Long Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	200	**210**	**220**	**230**	**240**	**250**	**260**	**270**	**280**	**290**	**300**	
-20	8	9	10	11	12	13	14	15	16	17	18	**856**
0	11	12	13	14	15	17	18	19	21	22	24	**659**
0º, 0.5" ice, 4 psf wind + k	41	45	49	54	59	64	69	74	80	86	92	**1650**
30	17	18	20	22	24	26	28	30	32	35	37	**422**
32º, 0.5" ice,	37	41	45	49	53	58	62	67	72	78	83	**1097**
32º, 0.5" ice, 2 psf wind	38	42	46	50	54	59	64	69	74	79	85	**1136**
40	19	21	23	25	27	30	32	35	37	40	43	**366**
50	22	24	26	29	31	34	37	39	42	46	49	**321**
60	24	27	29	32	35	38	41	44	48	51	55	**286**
60º F, 6 psf wind	30	33	36	39	43	46	50	54	58	62	67	**468**
70	27	30	33	36	39	42	46	49	53	57	61	**259**
80	29	32	36	39	42	46	50	54	58	62	66	**237**
90	32	35	39	42	46	50	54	58	62	67	72	**219**
100	34	38	41	45	49	53	58	62	67	72	77	**204**
120	39	43	47	51	56	60	65	70	76	81	87	**181**
212	55	61	67	73	79	86	93	100	108	116	124	**127**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

1/0 AWG (7) AAAC "Azusa"

DE Tension = 1,850 Lbs **RBS = 4,460 Lbs**

Extra Long Span - Feet

Condition→ / Temp. / R.S. Range ②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	250	260	270	280	290	300	310	320	330	340	350	
15º, 1" ice, 4 psf wind	77	83	90	96	103	111	118	126	134	142	151	**2470**
15º, 0.8" ice, 4 psf wind	67	72	78	84	90	96	103	109	116	123	131	**2070**
0º, 0.5" ice, 4 psf wind + k	57	61	66	71	76	82	87	93	99	105	111	**1850**
0	12	13	14	15	16	17	18	20	21	22	23	**916**
10	13	14	15	16	17	19	20	21	23	24	25	**835**
20	14	16	17	18	19	21	22	23	25	27	28	**757**
30	16	17	19	20	21	23	24	26	28	29	31	**683**
40	18	19	21	22	24	25	27	29	31	33	35	**615**
50	20	21	23	25	27	28	30	32	34	37	39	**551**
60º F, 21 psf wind	54	59	63	68	73	78	84	89	95	100	106	**1221**
60º F, 6 psf wind	33	35	38	41	44	47	50	54	57	61	64	**660**
60º F, 4 psf wind	28	31	33	36	38	41	44	46	49	52	56	**583**
60	22	24	26	28	30	32	34	36	38	41	43	**494**
70	25	26	29	31	33	35	38	40	43	45	48	**444**
80	27	29	32	34	37	39	42	45	47	50	53	**400**
90	30	32	35	38	40	43	46	49	52	55	59	**363**
100	33	36	38	41	44	47	50	54	57	61	64	**332**

Extra Long Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	250	260	270	280	290	300	310	320	330	340	350	
-20	12	13	14	15	16	17	18	20	21	22	23	**912**
0	15	16	18	19	20	22	23	25	26	28	30	**719**
0º, 0.5" ice, 4 psf wind + k	57	61	66	71	76	82	87	93	99	105	111	**1850**
30	23	24	26	28	30	32	35	37	39	42	44	**484**
32º, 0.5" ice,	51	55	59	64	68	73	78	83	89	94	100	**1245**
32º, 0.5" ice, 2 psf wind	52	56	61	65	70	75	80	85	91	96	102	**1289**
40	26	28	30	32	34	37	39	42	45	47	50	**426**
50	29	31	34	36	39	41	44	47	50	53	56	**378**
60	32	35	37	40	43	46	49	52	56	59	63	**340**
60º F, 6 psf wind	40	43	46	50	53	57	61	65	69	73	78	**545**
70	35	38	41	44	47	51	54	58	61	65	69	**309**
80	38	42	45	48	52	55	59	63	67	71	75	**283**
90	42	45	48	52	56	60	64	68	72	77	81	**262**
100	44	48	52	56	60	64	68	73	77	82	87	**245**
120	50	54	58	63	67	72	77	82	87	92	98	**218**
212	71	77	83	90	96	103	110	117	124	132	140	**153**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

1/0 AWG (7) AAAC "Azusa"

DE Tension = 2,200 Lbs **RBS = 4,460 Lbs**

Super Long Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	
15º, 1" ice, 4 psf wind	96	103	110	117	124	131	139	147	155	163	171	**2841**
15º, 0.8" ice, 4 psf wind	82	87	93	99	105	111	118	125	131	138	146	**2426**
0º, 0.5" ice, 4 psf wind + k	69	74	78	83	88	94	99	105	110	116	122	**2200**
0	12	13	14	15	15	16	17	18	19	20	21	**1309**
10	13	14	15	15	16	17	18	19	21	22	23	**1222**
20	14	15	16	17	18	19	20	21	22	23	24	**1136**
30	15	16	17	18	19	20	21	23	24	25	26	**1051**
40	16	17	18	20	21	22	23	25	26	27	29	**968**
50	18	19	20	21	23	24	25	27	28	30	31	**888**
60º F, 21 psf wind	63	67	71	76	81	85	90	95	101	106	112	**1521**
60º F, 6 psf wind	33	35	37	40	42	45	47	50	53	55	58	**948**
60º F, 4 psf wind	27	29	31	33	35	37	39	41	43	46	48	**880**
60	19	21	22	23	25	26	28	29	31	33	34	**811**
70	21	23	24	26	27	29	31	32	34	36	38	**738**
80	23	25	27	28	30	32	34	36	38	40	42	**669**
90	26	28	29	31	33	35	37	39	41	44	46	**606**
100	29	31	33	35	37	39	41	43	46	48	51	**548**

Super Long Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	
-20	12	13	14	15	16	17	18	19	20	21	22	**1291**
0	14	15	16	17	19	20	21	22	23	24	26	**1080**
0º, 0.5" ice, 4 psf wind + k	69	74	78	83	88	94	99	105	110	116	122	**2200**
30	20	21	23	24	26	27	29	30	32	34	35	**787**
32º, 0.5" ice,	59	63	68	72	76	81	85	90	95	100	105	**1537**
32º, 0.5" ice, 2 psf wind	61	65	69	74	78	83	88	93	98	103	108	**1584**
40	22	24	25	27	29	30	32	34	36	38	40	**700**
50	25	27	29	31	32	34	36	38	40	43	45	**620**
60	28	30	32	34	37	39	41	43	46	48	51	**550**
60º F, 6 psf wind	41	44	46	49	52	56	59	62	65	69	73	**762**
70	32	34	36	39	41	44	46	49	51	54	57	**490**
80	36	38	41	43	46	49	51	54	57	60	63	**439**
90	39	42	45	48	51	54	57	60	63	67	70	**396**
100	43	46	49	52	56	59	62	66	70	73	77	**362**
120	51	54	58	61	65	69	73	77	81	86	90	**309**
212	80	85	91	96	102	108	115	121	128	135	142	**197**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

110.8 kcmil (12/7) ACSR "Minorca"

DE Tension = 1,000 Lbs **RBS = 11,300 Lbs**

Super Short Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
15º, 1" ice, 4 psf wind	6	9	12	15	19	24	29	35	41	47	54	**1423**
15º, 0.8" ice, 4 psf wind	6	8	11	14	18	22	27	32	38	44	50	**1143**
0º, 0.5" ice, 4 psf wind + k	5	7	10	13	16	20	24	29	33	39	45	**1000**
0	3	5	7	9	11	14	17	20	23	27	31	**301**
10	4	5	7	10	12	15	18	22	26	30	34	**275**
20	4	6	8	11	13	16	20	24	28	32	37	**254**
30	4	6	9	11	14	18	21	25	30	35	40	**237**
40	5	7	9	12	15	19	23	27	32	37	42	**222**
50	5	7	10	13	16	20	24	29	33	39	45	**210**
60º F, 21 psf wind	6	8	11	15	19	23	28	34	39	46	52	**572**
60º F, 6 psf wind	5	8	10	14	17	21	26	31	36	42	48	**259**
60º F, 4 psf wind	5	8	10	13	17	21	25	30	35	41	47	**228**
60	5	8	10	13	17	21	25	30	35	41	47	**200**
70	5	8	11	14	18	22	26	31	37	43	49	**191**
80	6	8	11	15	18	23	27	33	38	44	51	**184**
90	6	8	11	15	19	23	28	34	40	46	53	**178**
100	6	9	12	15	19	24	29	35	41	47	54	**173**

Super Short Span - Feet

Condition→	FINAL SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
-20	3	4	6	7	9	11	14	16	19	22	26	**363**
0	4	5	7	9	12	14	17	21	24	28	32	**290**
0º, 0.5" ice, 4 psf wind + k	5	7	10	13	16	20	24	29	33	39	45	**1000**
30	5	7	9	12	15	18	22	26	31	36	41	**229**
32º, 0.5" ice,	5	8	10	13	17	21	25	30	35	41	47	**633**
32º, 0.5" ice, 2 psf wind	5	8	10	14	17	21	26	30	36	41	48	**653**
40	5	7	9	12	16	19	23	28	33	38	43	**216**
50	5	7	10	13	17	20	25	29	34	40	46	**204**
60	5	8	10	14	17	21	26	31	36	42	48	**195**
60º F, 6 psf wind	5	8	11	14	18	22	26	31	37	43	49	**253**
70	6	8	11	14	18	22	27	32	37	43	50	**189**
80	6	8	11	15	18	23	28	33	39	45	51	**183**
90	6	8	12	15	19	24	28	34	40	46	53	**177**
100	6	9	12	15	20	24	29	35	41	47	54	**172**
120	6	9	12	16	21	25	31	37	43	50	57	**163**
248	8	12	16	21	27	33	40	47	56	64	74	**127**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

110.8 kcmil (12/7) ACSR "Minorca"

DE Tension = 1,500 Lbs

RBS = 11,300 Lbs

Short Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
15º, 1" ice, 4 psf wind	17	20	24	28	32	37	42	48	54	60	66	**2064**
15º, 0.8" ice, 4 psf wind	15	18	22	26	30	34	39	44	49	54	60	**1693**
0º, 0.5" ice, 4 psf wind + k	13	16	19	22	26	30	34	38	43	48	53	**1500**
0	7	9	11	13	15	17	19	21	24	27	30	**559**
10	8	10	12	14	16	19	21	24	27	30	33	**502**
20	9	11	13	15	18	21	23	26	30	33	36	**457**
30	10	12	14	17	19	22	25	29	32	36	40	**419**
40	11	13	15	18	21	24	27	31	35	39	43	**388**
50	11	14	17	19	22	26	29	33	37	41	46	**363**
60º F, 21 psf wind	15	18	21	25	29	33	38	43	48	54	59	**899**
60º F, 6 psf wind	13	15	18	21	25	29	32	37	41	46	51	**434**
60º F, 4 psf wind	12	15	18	21	24	28	32	36	40	45	50	**386**
60	12	15	18	21	24	27	31	35	40	44	49	**341**
70	13	16	19	22	25	29	33	37	42	47	52	**322**
80	14	16	20	23	27	31	35	39	44	49	54	**306**
90	14	17	20	24	28	32	36	41	46	51	57	**293**
100	15	18	21	25	29	33	38	42	48	53	59	**284**

Short Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
-20	6	7	9	10	12	14	16	18	20	22	24	**682**
0	8	9	11	13	15	18	20	23	25	28	31	**532**
0º, 0.5" ice, 4 psf wind + k	13	16	19	22	26	30	34	38	43	48	53	**1500**
30	10	13	15	18	20	23	27	30	34	38	42	**400**
32º, 0.5" ice,	13	16	19	23	26	30	34	39	44	49	54	**991**
32º, 0.5" ice, 2 psf wind	14	16	20	23	27	30	35	39	44	49	54	**1020**
40	11	14	16	19	22	25	29	32	36	40	45	**372**
50	12	14	17	20	23	27	31	35	39	43	48	**348**
60	13	15	18	21	25	29	32	37	41	46	51	**327**
60º F, 6 psf wind	13	16	19	22	26	30	34	38	43	47	52	**420**
70	13	16	19	23	26	30	34	39	43	48	53	**312**
80	14	17	20	23	27	31	35	40	45	50	55	**301**
90	14	17	21	24	28	32	37	41	46	52	57	**291**
100	15	18	21	25	29	33	38	43	48	53	59	**282**
120	16	19	23	26	31	35	40	45	51	57	63	**265**
248	21	25	30	35	41	47	53	60	67	75	83	**201**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

110.8 kcmil (12/7) ACSR "Minorca"

DE Tension = 2,000 Lbs **RBS = 11,300 Lbs**

Medium Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
15º, 1" ice, 4 psf wind	29	33	37	41	46	51	56	62	68	74	80	**2677**
15º, 0.8" ice, 4 psf wind	26	29	33	37	41	46	50	55	60	66	71	**2232**
0º, 0.5" ice, 4 psf wind + k	22	25	29	32	36	39	44	48	52	57	62	**2000**
0	10	12	13	15	16	18	20	22	24	26	29	**912**
10	11	13	15	16	18	20	22	25	27	29	32	**820**
20	13	14	16	18	20	22	25	27	30	32	35	**741**
30	14	16	18	20	22	25	27	30	33	36	39	**674**
40	15	17	20	22	24	27	30	33	36	39	42	**617**
50	16	19	21	24	26	29	32	35	39	42	46	**569**
60º F, 21 psf wind	24	27	31	34	38	42	47	51	56	61	66	**1253**
60º F, 6 psf wind	19	22	24	27	30	34	37	41	44	48	53	**654**
60º F, 4 psf wind	18	21	23	26	29	33	36	39	43	47	51	**590**
60	18	20	23	25	28	31	35	38	42	45	49	**529**
70	19	22	24	27	30	34	37	41	44	48	53	**495**
80	20	23	26	29	32	36	39	43	47	51	56	**465**
90	21	24	27	31	34	38	42	46	50	54	59	**440**
100	22	25	29	32	36	40	44	48	53	57	62	**418**

Medium Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
-20	9	10	11	12	14	15	17	19	20	22	24	**1086**
0	11	12	14	16	17	19	21	23	26	28	30	**861**
0º, 0.5" ice, 4 psf wind + k	22	25	29	32	36	39	44	48	52	57	62	**2000**
30	15	17	19	21	24	26	29	32	35	38	41	**632**
32º, 0.5" ice,	22	25	28	31	35	39	43	47	51	56	61	**1374**
32º, 0.5" ice, 2 psf wind	22	25	28	32	35	39	43	47	52	57	61	**1410**
40	16	18	21	23	26	29	32	35	38	41	45	**580**
50	17	20	22	25	28	31	34	38	41	45	49	**536**
60	19	21	24	27	30	33	37	40	44	48	52	**499**
60º F, 6 psf wind	20	23	25	29	32	35	39	43	47	51	55	**625**
70	20	23	26	29	32	36	39	43	47	51	56	**468**
80	21	24	27	30	34	37	41	45	49	54	58	**447**
90	22	25	28	31	35	39	43	47	51	56	60	**430**
100	23	26	29	32	36	40	44	48	53	58	63	**415**
120	24	27	31	35	39	43	47	52	57	62	67	**387**
248	33	38	42	48	53	59	65	71	78	85	92	**284**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

110.8 kcmil (12/7) ACSR "Minorca"

DE Tension = 2,500 Lbs **RBS = 11,300 Lbs**

Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											
Temp. R.S. Range ②→	Not Recommended					R.S.			Not Recommended			Tension
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	Lbs
15º, 1" ice, 4 psf wind	42	46	51	55	60	65	71	76	82	88	94	**3266**
15º, 0.8" ice, 4 psf wind	37	41	45	49	53	58	62	67	72	78	83	**2764**
0º, 0.5" ice, 4 psf wind + k	32	35	38	42	45	49	53	58	62	66	71	**2500**
0	12	14	15	16	18	19	21	23	24	26	28	**1343**
10	14	15	16	18	20	21	23	25	27	29	31	**1225**
20	15	16	18	20	21	23	25	27	29	31	34	**1116**
30	16	18	20	22	24	26	28	30	32	34	37	**1017**
40	18	20	22	24	26	28	30	33	35	38	40	**929**
50	20	22	24	26	28	30	33	36	38	41	44	**851**
60º F, 21 psf wind	32	36	39	43	47	51	55	59	64	68	73	**1637**
60º F, 6 psf wind	24	26	29	31	34	37	40	43	46	50	53	**933**
60º F, 4 psf wind	22	25	27	30	32	35	38	41	44	47	50	**858**
60	21	23	26	28	31	33	36	39	42	45	48	**784**
70	23	25	28	30	33	36	39	42	45	48	51	**727**
80	25	27	30	33	35	38	42	45	48	52	55	**677**
90	26	29	32	35	38	41	44	48	51	55	59	**634**
100	28	31	34	37	40	44	47	51	55	59	63	**597**

Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											
Temp.						R.S.						Tension
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	Lbs
-20	11	12	13	14	16	17	18	20	21	23	24	**1536**
0	13	14	16	17	19	21	22	24	26	28	30	**1264**
0º, 0.5" ice, 4 psf wind + k	32	35	38	42	45	49	53	58	62	66	71	**2500**
30	18	20	21	23	26	28	30	32	35	37	40	**939**
32º, 0.5" ice,	30	33	36	40	43	47	51	55	59	63	67	**1778**
32º, 0.5" ice, 2 psf wind	30	34	37	40	44	48	51	55	60	64	68	**1819**
40	19	21	24	26	28	30	33	35	38	41	44	**856**
50	21	23	26	28	31	33	36	39	42	45	48	**785**
60	23	25	28	30	33	36	39	42	45	48	52	**724**
60º F, 6 psf wind	25	28	30	33	36	39	42	46	49	53	57	**878**
70	25	27	30	33	36	39	42	45	48	52	56	**672**
80	26	29	32	35	38	41	45	48	52	56	60	**628**
90	28	30	33	37	40	43	47	50	54	58	62	**602**
100	29	32	35	38	41	45	49	52	56	61	65	**578**
120	31	34	38	41	45	48	52	57	61	65	70	**536**
248	44	49	53	58	63	69	74	80	86	93	99	**379**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

110.8 kcmil (12/7) ACSR "Minorca"

DE Tension = 3,000 Lbs **RBS = 11,300 Lbs**

Extra Long Span - Feet

Condition→ / Temp. / R.S. Range②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
	250	260	270	280	290	300	310	320	330	340	350	Lbs
15º, 1" ice, 4 psf wind	56	60	65	70	75	80	86	91	97	103	109	**3834**
15º, 0.8" ice, 4 psf wind	49	52	57	61	65	70	75	79	85	90	95	**3289**
0º, 0.5" ice, 4 psf wind + k	41	45	48	52	55	59	63	67	72	76	81	**3000**
0	14	15	17	18	19	21	22	23	25	26	28	**1825**
10	15	17	18	19	21	22	24	25	27	28	30	**1693**
20	17	18	19	21	22	24	25	27	29	31	33	**1565**
30	18	19	21	23	24	26	28	29	31	33	35	**1444**
40	20	21	23	25	26	28	30	32	34	36	38	**1329**
50	21	23	25	27	29	31	33	35	37	39	42	**1223**
60º F, 21 psf wind	41	44	47	51	55	58	62	66	71	75	80	**2050**
60º F, 6 psf wind	27	29	31	34	36	39	41	44	47	50	53	**1283**
60º F, 4 psf wind	25	27	29	31	34	36	38	41	44	46	49	**1203**
60	23	25	27	29	31	33	35	38	40	43	45	**1127**
70	25	27	29	31	34	36	38	41	44	46	49	**1040**
80	27	29	31	34	36	39	42	44	47	50	53	**963**
90	29	31	34	36	39	42	45	48	51	54	57	**896**
100	31	34	36	39	42	45	48	51	54	57	61	**836**

Extra Long Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
	250	260	270	280	290	300	310	320	330	340	350	Lbs
-20	13	14	15	16	17	19	20	21	23	24	25	**2009**
0	15	16	18	19	20	22	23	25	26	28	30	**1708**
0º, 0.5" ice, 4 psf wind + k	41	45	48	52	55	59	63	67	72	76	81	**3000**
30	20	21	23	25	27	28	30	32	34	37	39	**1314**
32º, 0.5" ice,	38	41	44	47	51	54	58	62	66	70	74	**2199**
32º, 0.5" ice, 2 psf wind	39	42	45	48	52	55	59	63	67	71	75	**2244**
40	22	23	25	27	29	31	33	35	38	40	42	**1203**
50	24	26	28	30	32	34	36	39	41	44	46	**1103**
60	26	28	30	32	34	37	39	42	45	47	50	**1014**
60º F, 6 psf wind	29	31	34	36	39	42	45	48	51	54	57	**1183**
70	28	30	32	35	37	40	43	45	48	51	54	**936**
80	30	32	35	38	40	43	46	49	52	55	59	**869**
90	32	35	37	40	43	46	49	52	56	59	63	**815**
100	33	36	39	42	45	48	51	54	58	61	65	**781**
120	36	39	42	45	49	52	55	59	63	67	71	**720**
248	53	58	62	67	72	77	82	87	93	98	104	**489**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

110.8 kcmil (12/7) ACSR "Minorca"

DE Tension = 3,250 Lbs **RBS = 11,300 Lbs**

Super Long Span - Feet

Condition→ / Temp. / R.S. Range②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	300	310	320	330	340	350	360	370	380	390	400	
15º, 1" ice, 4 psf wind	74	79	84	89	94	100	106	112	118	124	131	4184
15º, 0.8" ice, 4 psf wind	64	68	73	78	82	87	92	97	103	108	114	3586
0º, 0.5" ice, 4 psf wind + k	55	58	62	66	70	74	79	83	88	92	97	3250
0	20	21	22	24	25	27	28	30	31	33	35	1914
10	21	22	24	25	27	28	30	32	34	35	37	1787
20	22	24	26	27	29	31	32	34	36	38	40	1663
30	24	26	28	29	31	33	35	37	39	41	43	1545
40	26	28	30	32	34	36	38	40	42	44	46	1434
50	28	30	32	34	36	38	40	43	45	48	50	1331
60º F, 21 psf wind	53	57	60	64	68	72	76	81	85	90	94	2262
60º F, 6 psf wind	35	38	40	43	45	48	51	54	56	59	63	1410
60º F, 4 psf wind	33	35	37	40	42	45	47	50	52	55	58	1321
60	30	32	34	37	39	41	44	46	49	51	54	1236
70	33	35	37	39	42	44	47	49	52	55	58	1150
80	35	37	40	42	45	48	50	53	56	59	62	1073
90	37	40	42	45	48	51	54	57	60	63	66	1004
100	40	42	45	48	51	54	57	60	64	67	71	943

Super Long Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	300	310	320	330	340	350	360	370	380	390	400	
-20	18	19	21	22	23	25	26	28	29	31	32	2062
0	21	22	24	25	27	29	30	32	34	36	37	1773
0º, 0.5" ice, 4 psf wind + k	55	58	62	66	70	74	79	83	88	92	97	3250
30	27	29	30	32	34	36	39	41	43	45	48	1396
32º, 0.5" ice,	50	53	57	60	64	68	72	76	80	84	89	2396
32º, 0.5" ice, 2 psf wind	51	54	58	62	65	69	73	77	82	86	90	2446
40	29	31	33	35	37	39	42	44	47	49	52	1290
50	31	34	36	38	40	43	45	48	50	53	56	1193
60	34	36	38	41	43	46	49	51	54	57	60	1107
60º F, 6 psf wind	38	41	44	46	49	52	55	58	61	65	68	1295
70	36	39	41	44	47	49	52	55	58	61	65	1031
80	39	42	44	47	50	53	56	59	62	66	69	963
90	41	44	47	50	53	56	59	63	66	70	73	908
100	43	46	49	52	55	58	62	65	69	72	76	874
120	46	49	52	56	59	63	66	70	74	78	82	811
248	66	71	76	80	85	90	96	101	107	112	118	564

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 1,300 Lbs **RBS = 8,680 Lbs**

Super Short Span - Feet

Condition→ / Temp. / R.S. Range② →	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
15º, 1" ice, 4 psf wind	6	8	11	15	18	23	27	33	38	44	51	**1737**
15º, 0.8" ice, 4 psf wind	5	8	10	13	17	21	25	30	35	41	47	**1427**
0º, 0.5" ice, 4 psf wind + k	4	6	9	11	14	18	21	26	30	35	40	**1300**
0	3	4	6	7	9	12	14	17	19	23	26	**473**
10	3	5	7	9	11	14	16	20	23	27	31	**404**
20	4	6	8	10	13	15	19	22	26	30	35	**355**
30	4	6	8	11	14	17	21	25	29	34	39	**319**
40	5	7	9	12	15	19	23	27	32	37	42	**291**
50	5	7	10	13	17	20	25	29	34	40	46	**269**
60º F, 21 psf wind	6	9	12	15	20	24	29	35	41	47	54	**778**
60º F, 6 psf wind	6	8	11	14	18	22	27	32	38	44	50	**338**
60º F, 4 psf wind	5	8	11	14	18	22	27	32	37	43	49	**294**
60	5	8	11	14	18	22	26	31	37	43	49	**251**
70	6	8	11	15	19	23	28	33	39	45	52	**237**
80	6	9	12	16	20	24	30	35	41	48	55	**224**
90	6	9	13	16	21	26	31	37	43	50	58	**213**
100	7	10	13	17	22	27	33	39	45	53	60	**204**

Super Short Span - Feet

Condition→ / Temp.	FINAL SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
-20	2	3	4	5	7	8	10	12	14	16	19	**652**
0	3	5	6	8	10	13	15	18	21	25	28	**435**
0º, 0.5" ice, 4 psf wind + k	5	7	9	12	15	18	22	26	31	36	41	**1277**
30	5	7	9	12	15	18	22	26	31	36	41	**303**
32º, 0.5" ice,	5	8	10	13	17	21	25	30	35	41	47	**792**
32º, 0.5" ice, 2 psf wind	5	8	10	13	17	21	25	30	35	41	47	**813**
40	5	7	10	13	16	20	24	28	33	39	44	**279**
50	5	8	10	14	17	21	26	30	36	41	48	**259**
60	6	8	11	14	18	23	27	32	38	44	51	**243**
60º F, 6 psf wind	6	8	11	15	19	23	28	33	39	45	52	**328**
70	6	9	12	15	19	24	29	34	40	47	54	**230**
80	6	9	12	16	20	25	30	36	42	49	56	**218**
90	7	9	13	17	21	26	32	38	44	52	59	**208**
100	7	10	13	18	22	27	33	40	46	54	62	**200**
120	7	10	14	19	24	29	35	42	49	57	65	**189**
248	9	13	17	23	28	35	43	51	59	69	79	**156**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 1,800 Lbs

RBS = 8,680 Lbs

Short Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
15º, 1" ice, 4 psf wind	16	20	24	28	32	37	42	48	53	59	66	2386
15º, 0.8" ice, 4 psf wind	15	18	22	25	29	34	39	43	49	54	60	1988
0º, 0.5" ice, 4 psf wind + k	13	15	18	22	25	29	33	37	41	46	51	1800
0	7	9	11	13	15	17	19	22	24	27	30	732
10	9	10	12	15	17	19	22	25	28	31	35	632
20	10	12	14	17	19	22	25	28	32	35	39	557
30	11	13	16	18	21	25	28	32	35	39	44	500
40	12	15	17	20	24	27	31	35	39	43	48	456
50	13	16	19	22	26	29	33	38	42	47	52	420
60º F, 21 psf wind	16	20	24	28	32	37	42	47	53	59	65	1150
60º F, 6 psf wind	14	17	21	24	28	32	37	42	47	52	58	521
60º F, 4 psf wind	14	17	20	24	28	32	36	41	46	51	57	455
60	14	17	20	24	27	32	36	41	45	51	56	392
70	15	18	22	25	29	34	38	43	48	54	60	368
80	16	19	23	27	31	36	40	46	51	57	63	347
90	17	20	24	28	33	37	43	48	54	60	67	330
100	17	21	25	29	34	39	45	50	57	63	70	315

Short Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
-20	6	7	9	10	12	14	16	18	20	22	25	893
0	9	10	12	14	17	19	22	25	28	31	34	642
0º, 0.5" ice, 4 psf wind + k	13	16	19	22	26	29	33	38	42	47	52	1767
30	12	14	17	20	23	27	31	35	39	43	48	460
32º, 0.5" ice,	14	17	21	24	28	32	37	42	47	52	58	1148
32º, 0.5" ice, 2 psf wind	15	18	21	25	28	33	37	42	47	52	58	1177
40	13	16	19	22	25	29	33	37	42	47	52	424
50	14	17	20	24	27	31	36	40	45	50	56	394
60	15	18	21	25	29	33	38	43	48	54	59	370
60º F, 6 psf wind	15	18	22	26	30	34	39	44	49	55	61	495
70	16	19	23	26	31	35	40	45	51	57	63	349
80	17	20	24	28	32	37	42	48	54	60	66	332
90	17	21	25	29	34	39	44	50	56	63	69	316
100	18	22	26	31	35	41	46	52	59	65	72	303
120	20	24	28	33	38	44	50	57	63	71	78	281
248	24	29	34	40	47	54	61	69	77	86	96	230

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 2,300 Lbs **RBS = 8,680 Lbs**

Medium Span - Feet

Condition →	INITIAL (Stringing) SAG (inches)											
Temp. R.S. Range ② →	Not Recommended					R.S.			Not Recommended			Tension
Deg. F↓ Span (Ft) →	150	160	170	180	190	200	210	220	230	240	250	Lbs
15º, 1" ice, 4 psf wind	29	34	38	42	47	52	58	63	69	76	82	**3002**
15º, 0.8" ice, 4 psf wind	27	30	34	38	43	47	52	57	63	68	74	**2535**
0º, 0.5" ice, 4 psf wind + k	23	26	29	32	36	40	44	48	53	58	63	**2300**
0	12	13	15	17	19	21	23	25	27	30	32	**1064**
10	13	15	17	19	21	24	26	29	31	34	37	**926**
20	15	17	19	22	24	27	30	33	36	39	42	**816**
30	17	19	22	24	27	30	33	36	40	43	47	**729**
40	19	21	24	27	30	33	37	40	44	48	52	**660**
50	20	23	26	29	33	36	40	44	48	52	57	**605**
60º F, 21 psf wind	27	31	35	40	44	49	54	59	65	70	76	**1540**
60º F, 6 psf wind	23	26	30	33	37	41	45	50	54	59	64	**734**
60º F, 4 psf wind	23	26	29	32	36	40	44	48	53	58	63	**646**
60	22	25	28	32	35	39	43	47	52	56	61	**560**
70	24	27	30	34	38	42	46	51	56	60	66	**523**
80	25	29	32	36	40	45	49	54	59	64	70	**491**
90	27	30	34	38	43	47	52	57	62	68	74	**465**
100	28	32	36	40	45	50	55	60	66	72	78	**442**

Medium Span - Feet

Condition →	FINAL (Clearance) SAG (inches)											
Temp.						R.S.						Tension
Deg. F↓ Span (Ft) →	150	160	170	180	190	200	210	220	230	240	250	Lbs
-20	10	12	13	15	16	18	20	22	24	26	28	**1210**
0	14	16	18	20	22	24	27	29	32	35	38	**898**
0º, 0.5" ice, 4 psf wind + k	23	26	29	33	37	41	45	49	54	59	64	**2262**
30	19	22	25	28	31	34	38	41	45	49	53	**643**
32º, 0.5" ice,	25	28	31	35	39	44	48	53	58	63	68	**1518**
32º, 0.5" ice, 2 psf wind	25	28	32	36	40	44	48	53	58	63	69	**1555**
40	21	24	27	30	33	37	41	45	49	53	58	**590**
50	22	26	29	32	36	40	44	48	53	58	62	**548**
60	24	27	31	35	39	43	47	52	56	62	67	**513**
60º F, 6 psf wind	25	28	32	36	40	44	49	54	59	64	69	**679**
70	26	29	33	37	41	45	50	55	60	65	71	**483**
80	27	31	35	39	43	48	53	58	63	69	75	**457**
90	28	32	36	41	45	50	56	61	67	73	79	**435**
100	30	34	38	43	48	53	58	64	70	76	82	**416**
120	32	37	41	46	52	57	63	69	76	82	89	**384**
248	41	46	52	58	65	72	79	87	95	104	113	**305**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 2,800 Lbs **RBS = 8,680 Lbs**

Long Span - Feet

Condition→ / Temp. / R.S. Range② → / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
	200	210	220	230	240	250	260	270	280	290	300	Lbs
15º, 1" ice, 4 psf wind	44	48	53	58	63	68	74	80	86	92	98	**3592**
15º, 0.8" ice, 4 psf wind	39	43	47	52	56	61	66	71	76	82	88	**3071**
0º, 0.5" ice, 4 psf wind + k	33	36	40	44	47	51	56	60	65	69	74	**2800**
0	15	16	18	20	21	23	25	27	29	31	34	**1470**
10	17	19	20	22	24	26	29	31	33	36	38	**1299**
20	19	21	23	25	27	30	32	35	37	40	43	**1151**
30	21	24	26	28	31	33	36	39	42	45	48	**1027**
40	24	26	29	31	34	37	40	43	47	50	53	**924**
50	26	29	32	35	38	41	44	48	51	55	59	**840**
60º F, 21 psf wind	39	43	47	51	56	60	65	70	76	81	87	**1950**
60º F, 6 psf wind	30	34	37	40	44	48	51	55	60	64	68	**988**
60º F, 4 psf wind	29	32	36	39	42	46	50	54	58	62	66	**879**
60	28	31	34	38	41	44	48	52	56	60	64	**772**
70	31	34	37	41	44	48	52	56	60	64	69	**715**
80	33	36	40	43	47	51	56	60	64	69	74	**667**
90	35	39	42	46	50	55	59	64	68	73	79	**627**
100	37	41	45	49	53	58	63	67	73	78	83	**593**

Long Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
	200	210	220	230	240	250	260	270	280	290	300	Lbs
-20	14	15	17	18	20	22	23	25	27	29	31	**1582**
0	18	20	22	24	26	28	31	33	36	38	41	**1205**
0º, 0.5" ice, 4 psf wind + k	33	37	40	44	48	52	56	61	65	70	75	**2766**
30	25	28	31	34	37	40	43	46	50	54	57	**860**
32º, 0.5" ice,	35	38	42	46	50	54	59	63	68	73	78	**1905**
32º, 0.5" ice, 2 psf wind	35	39	42	46	50	55	59	64	69	74	79	**1949**
40	28	31	34	37	40	44	47	51	55	59	63	**787**
50	30	33	37	40	43	47	51	55	59	63	68	**727**
60	32	36	39	43	47	51	55	59	64	68	73	**677**
60º F, 6 psf wind	34	37	41	45	49	53	57	62	67	71	76	**885**
70	35	38	42	46	50	54	58	63	68	73	78	**635**
80	37	40	44	48	53	57	62	67	72	77	82	**600**
90	39	43	47	51	56	60	65	70	76	81	87	**569**
100	40	45	49	54	58	63	68	74	79	85	91	**542**
120	44	49	53	58	63	69	75	80	86	93	99	**498**
248	57	63	70	76	83	90	97	105	113	121	129	**382**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 3,300 Lbs

RBS = 8,680 Lbs

Extra Long Span - Feet

Condition→ / Temp. / R.S. Range ②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	**250**	**260**	**270**	**280**	**290**	**300**	**310**	**320**	**330**	**340**	**350**	**Lbs**
15º, 1" ice, 4 psf wind	59	64	69	74	80	85	91	97	103	109	116	**4158**
15º, 0.8" ice, 4 psf wind	52	56	61	65	70	75	80	85	91	96	102	**3598**
0º, 0.5" ice, 4 psf wind + k	44	47	51	55	59	63	67	72	76	81	86	**3300**
0	18	19	21	22	24	25	27	29	31	33	35	**1941**
10	20	21	23	25	26	28	30	32	34	36	38	**1749**
20	22	24	25	27	29	31	33	36	38	40	43	**1571**
30	24	26	28	30	33	35	37	40	42	45	48	**1410**
40	27	29	31	34	36	39	42	44	47	50	53	**1269**
50	30	32	35	37	40	43	46	49	52	55	58	**1149**
60º F, 21 psf wind	49	53	58	62	66	71	76	81	86	91	97	**2382**
60º F, 6 psf wind	36	39	42	45	49	52	56	59	63	67	71	**1298**
60º F, 4 psf wind	34	37	40	43	46	50	53	56	60	64	67	**1172**
60	33	35	38	41	44	47	50	54	57	60	64	**1047**
70	36	38	42	45	48	51	55	58	62	66	70	**962**
80	38	42	45	48	52	55	59	63	67	71	75	**891**
90	41	45	48	52	56	59	63	68	72	76	81	**830**
100	44	48	51	55	59	63	68	72	77	81	86	**779**

Extra Long Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	**250**	**260**	**270**	**280**	**290**	**300**	**310**	**320**	**330**	**340**	**350**	**Lbs**
-20	17	18	20	21	23	25	26	28	30	32	33	**2002**
0	22	24	25	27	29	31	34	36	38	40	43	**1566**
0º, 0.5" ice, 4 psf wind + k	44	48	51	55	59	63	68	72	77	81	86	**3279**
30	31	33	36	38	41	44	47	50	53	57	60	**1121**
32º, 0.5" ice,	28	30	33	35	38	40	43	46	49	52	55	**2312**
32º, 0.5" ice, 2 psf wind	45	49	53	57	61	65	69	74	79	84	89	**2361**
40	34	36	39	42	45	48	52	55	59	62	66	**1021**
50	37	39	43	46	49	53	56	60	64	68	72	**938**
60	39	43	46	49	53	57	61	65	69	73	77	**869**
60º F, 6 psf wind	42	45	49	53	57	60	65	69	73	78	82	**1118**
70	42	46	49	53	57	61	65	69	73	78	83	**812**
80	45	49	52	56	60	65	69	74	78	83	88	**763**
90	48	51	55	60	64	68	73	78	83	88	93	**721**
100	50	54	58	63	67	72	77	82	87	93	98	**685**
120	55	59	64	69	74	79	84	90	96	102	108	**625**
248	74	80	87	93	100	107	114	122	130	137	146	**481**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 3,800 Lbs **RBS = 8,680 Lbs**

Extra Long Span - Feet

Condition→ / Temp. / R.S. Range ②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	**300**	**310**	**320**	**330**	**340**	**350**	**360**	**370**	**380**	**390**	**400**	**Lbs**
15º, 1" ice, 4 psf wind	75	80	86	91	97	102	108	115	121	127	134	**4703**
15º, 0.8" ice, 4 psf wind	65	70	74	79	84	89	94	100	105	111	116	**4117**
0º, 0.5" ice, 4 psf wind + k	55	58	62	66	70	74	79	83	88	92	97	**3800**
0	20	21	23	24	26	27	29	30	32	34	36	**2460**
10	22	23	25	26	28	30	31	33	35	37	39	**2261**
20	24	25	27	29	31	32	34	36	38	40	42	**2068**
30	26	28	30	32	34	36	38	40	42	44	47	**1883**
40	29	31	33	35	37	39	42	44	46	49	51	**1710**
50	32	34	36	38	41	43	46	48	51	54	56	**1553**
60º F, 21 psf wind	60	64	68	72	77	81	86	91	96	101	106	**2838**
60º F, 6 psf wind	40	43	46	49	52	55	58	61	65	68	72	**1679**
60º F, 4 psf wind	38	40	43	46	48	51	54	57	60	64	67	**1545**
60	35	37	40	42	45	48	50	53	56	59	62	**1413**
70	38	41	43	46	49	52	55	58	61	65	68	**1292**
80	42	44	47	50	53	57	60	63	67	70	74	**1187**
90	45	48	51	54	58	61	65	68	72	76	80	**1097**
100	48	52	55	58	62	66	70	73	78	82	86	**1021**

Extra Long Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	**300**	**310**	**320**	**330**	**340**	**350**	**360**	**370**	**380**	**390**	**400**	**Lbs**
-20	20	21	23	24	26	27	29	30	32	34	36	**2458**
0	25	27	28	30	32	34	36	38	40	42	44	**1975**
0º, 0.5" ice, 4 psf wind + k	55	58	62	66	70	74	79	83	88	92	97	**3800**
30	34	37	39	42	44	47	50	52	55	58	61	**1430**
32º, 0.5" ice,	54	58	62	66	70	74	78	83	87	92	97	**2735**
32º, 0.5" ice, 2 psf wind	55	59	63	67	71	75	79	84	88	93	98	**2790**
40	38	41	43	46	49	52	55	58	61	64	68	**1299**
50	42	44	47	50	53	57	60	63	67	70	74	**1189**
60	45	48	51	54	58	61	65	68	72	76	80	**1096**
60º F, 6 psf wind	49	52	56	59	63	67	70	74	79	83	87	**1381**
70	48	52	55	59	62	66	70	74	78	82	86	**1018**
80	52	55	59	63	67	71	75	79	83	88	92	**952**
90	55	59	63	67	71	75	79	84	88	93	98	**896**
100	58	62	66	71	75	79	84	89	94	98	104	**847**
120	64	69	73	78	83	88	93	98	103	109	114	**767**
248	90	97	103	109	116	123	130	138	145	153	161	**547**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

T2 - (2) 4/0 AWG (6/1) ACSR "Penguin"

DE Tension = 1,000 LBS

RBS =16,700 Lbs

Super Short Span - Feet

Condition→ / Temp. / R.S. Range ②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
15º, 1" ice, 4 psf wind	8	11	15	20	25	31	38	45	53	61	70	1507
15º, 0.8" ice, 4 psf wind	8	11	15	1	25	30	37	44	52	60	69	1206
0º, 0.5" ice, 4 psf wind + k	7	10	14	0	23	29	35	41	48	56	64	1000
0	6	9	13	0	21	26	31	37	44	51	58	338
10	7	10	13	0	22	27	33	39	46	53	61	323
20	7	10	14	0	23	28	34	41	48	56	64	309
30	7	11	14	0	24	29	36	42	50	58	66	297
40	8	11	15	0	25	31	37	44	52	60	69	286
50	8	11	15	0	25	31	38	45	53	62	71	278
60º F, 21 psf wind	8	12	16	0	27	33	40	48	56	65	75	773
60º F, 6 psf wind	8	12	16	0	26	33	39	47	55	64	73	344
60º F, 4 psf wind	8	12	16	0	26	32	39	47	55	64	73	306
60	8	12	16	0	26	32	39	46	55	63	73	271
70	8	12	16	0	27	33	40	48	56	65	75	264
80	8	12	17	0	28	34	41	49	57	67	76	258
90	9	12	17	0	28	35	42	50	59	68	78	253
100	9	13	17	0	28	35	43	51	59	69	79	249

Super Short Span - Feet

Condition→ / Temp.	FINAL SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
-20	6	9	12	16	20	24	30	35	41	48	55	358
0	7	10	13	17	22	27	33	39	46	53	61	324
0º, 0.5" ice, 4 psf wind + k	7	10	14	19	24	29	35	42	49	57	65	986
30	8	11	15	19	25	30	37	44	51	60	68	288
32º, 0.5" ice,	8	11	15	20	25	31	38	45	53	62	71	702
32º, 0.5" ice, 2 psf wind	8	11	15	20	25	31	38	45	53	62	71	718
40	8	11	15	20	25	31	38	45	53	61	70	279
50	8	12	16	21	26	32	39	46	54	63	72	272
60	8	12	16	21	27	33	40	48	56	65	75	265
60º F, 6 psf wind	8	12	16	21	27	33	40	48	56	65	75	336
70	8	12	17	22	27	34	41	49	57	66	76	259
80	9	12	17	22	28	34	42	49	58	67	77	255
90	9	13	17	22	28	35	42	50	59	68	78	252
100	9	13	17	23	29	35	43	51	60	69	79	248
120	9	13	18	23	29	36	44	52	61	71	82	242
248	10	15	20	27	34	42	51	60	71	82	94	210

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

T2 - (2) 4/0 AWG (6/1) ACSR "Penguin"

DE Tension = 2,000 LBS **RBS =16,700 Lbs**

Short Span - Feet

Condition→ / Temp. / R.S. Range ② → / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
	100	110	120	130	140	150	160	170	180	190	200	Lbs
15º, 1" ice, 4 psf wind	17	21	25	29	33	38	44	49	55	62	68	**2752**
15º, 0.8" ice, 4 psf wind	16	19	23	1	32	36	41	47	52	58	64	**2281**
0º, 0.5" ice, 4 psf wind + k	14	17	21	0	28	32	37	41	46	52	57	**2000**
0	11	13	16	0	22	25	28	32	36	40	44	**796**
10	12	15	17	0	24	27	31	35	39	43	48	**729**
20	13	16	19	0	25	29	33	37	42	46	51	**680**
30	14	17	20	0	27	31	35	40	44	49	55	**639**
40	14	17	21	0	28	33	37	42	47	52	58	**604**
50	15	18	22	0	30	34	39	44	49	55	61	**574**
60º F, 21 psf wind	18	21	25	0	35	40	45	51	57	64	71	**1456**
60º F, 6 psf wind	16	20	23	0	32	37	42	47	53	59	65	**686**
60º F, 4 psf wind	16	19	23	0	32	36	41	47	52	58	64	**614**
60	16	19	23	0	31	36	41	46	52	58	64	**547**
70	17	20	24	0	33	38	43	48	54	60	67	**524**
80	17	21	25	0	34	39	45	50	56	63	70	**503**
90	18	22	26	0	35	41	46	52	58	65	72	**485**
100	19	23	27	0	37	42	48	54	61	68	75	**468**

Short Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
	100	110	120	130	140	150	160	170	180	190	200	Lbs
-20	10	12	14	17	19	22	25	28	32	35	39	**891**
0	12	14	17	20	23	27	30	34	39	43	48	**734**
0º, 0.5" ice, 4 psf wind + k	14	17	21	24	28	33	37	42	47	52	58	**1973**
30	15	18	21	25	28	33	37	42	47	52	58	**603**
32º, 0.5" ice,	16	19	23	27	31	36	41	46	52	58	64	**1373**
32º, 0.5" ice, 2 psf wind	16	19	23	27	32	36	41	47	52	58	64	**1401**
40	15	19	22	26	30	34	39	44	50	55	61	**572**
50	16	19	23	27	31	36	41	46	52	58	64	**545**
60	17	20	24	28	33	38	43	49	54	61	67	**521**
60º F, 6 psf wind	17	21	24	29	33	38	44	49	55	61	68	**656**
70	17	21	25	30	34	39	45	51	57	63	70	**500**
80	18	22	26	31	36	41	47	53	59	66	73	**481**
90	19	23	27	31	36	42	48	54	60	67	74	**470**
100	19	23	27	32	37	43	49	55	62	69	76	**460**
120	20	24	28	33	39	45	51	57	64	71	79	**443**
248	24	29	34	40	47	54	61	69	78	86	96	**366**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

T2 - (2) 4/0 AWG (6/1) ACSR "Penguin"

DE Tension = 3,000 Lbs

RBS =16,700 Lbs

Medium Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
15º, 1" ice, 4 psf wind	27	31	35	39	44	48	53	59	64	70	76	**3883**
15º, 0.8" ice, 4 psf wind	25	28	32	36	40	44	49	54	59	64	69	**3310**
0º, 0.5" ice, 4 psf wind + k	21	24	27	31	34	38	42	46	50	55	59	**3000**
0	13	15	17	19	21	23	25	28	30	33	36	**1519**
10	14	16	18	21	23	26	28	31	34	37	40	**1364**
20	16	18	20	23	26	28	31	34	37	41	44	**1236**
30	17	20	22	25	28	31	34	37	41	45	48	**1129**
40	19	22	24	27	30	34	37	41	44	48	53	**1041**
50	20	23	26	29	33	36	40	44	48	52	56	**967**
60º F, 21 psf wind	27	30	34	38	43	47	52	57	63	68	74	**2178**
60º F, 6 psf wind	23	26	29	32	36	40	44	48	53	58	63	**1111**
60º F, 4 psf wind	22	25	28	32	36	39	43	48	52	57	62	**1005**
60	22	25	28	31	35	39	43	47	51	56	60	**905**
70	23	26	30	33	37	41	45	50	54	59	64	**852**
80	24	28	31	35	39	43	48	52	57	62	68	**807**
90	26	29	33	37	41	46	50	55	60	66	71	**767**
100	27	31	35	39	43	48	53	58	63	69	75	**732**

Medium Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
-20	11	13	14	16	18	20	22	24	26	29	31	**1752**
0	14	16	19	21	23	26	28	31	34	37	40	**1360**
0º, 0.5" ice, 4 psf wind + k	21	24	28	31	34	38	42	46	50	55	60	**2988**
30	19	22	25	28	31	34	38	42	45	49	54	**1019**
32º, 0.5" ice,	24	27	30	34	38	42	46	51	55	60	65	**2104**
32º, 0.5" ice, 2 psf wind	24	27	30	34	38	42	46	51	56	61	66	**2142**
40	21	24	27	30	33	37	41	45	49	53	58	**946**
50	22	25	29	32	36	40	44	48	52	57	62	**884**
60	24	27	30	34	38	42	46	51	56	60	66	**832**
60º F, 6 psf wind	24	28	31	35	39	43	48	52	57	62	68	**1033**
70	25	28	32	36	40	44	49	54	59	64	69	**787**
80	26	30	34	38	42	47	51	56	62	67	73	**749**
90	28	31	35	40	44	49	54	59	65	71	77	**715**
100	29	32	37	41	46	51	56	61	67	73	79	**689**
120	30	34	38	43	48	53	58	64	70	76	83	**660**
248	37	42	48	54	60	66	73	80	88	96	104	**528**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

T2 - (2) 4/0 AWG (6/1) ACSR "Penguin"

DE Tension = 4,000 Lbs

RBS = 16,700 Lbs

Long Span - Feet

Condition→ / Temp. / R.S. Range ②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
	200	**210**	**220**	**230**	**240**	**250**	**260**	**270**	**280**	**290**	**300**	**Lbs**
15º, 1" ice, 4 psf wind	38	42	46	50	55	59	64	69	74	80	85	**4958**
15º, 0.8" ice, 4 psf wind	34	38	41	45	49	53	57	62	67	72	77	**4319**
0º, 0.5" ice, 4 psf wind + k	28	31	34	38	41	45	48	52	56	60	64	**4000**
0	14	15	17	18	20	22	24	25	27	29	31	**2505**
10	15	17	19	20	22	24	26	28	30	32	35	**2264**
20	17	19	21	23	25	27	29	31	33	36	38	**2046**
30	19	21	23	25	27	30	32	34	37	40	43	**1851**
40	21	23	25	27	30	32	35	38	41	44	47	**1682**
50	23	25	28	30	33	36	38	41	45	48	51	**1537**
60º F, 21 psf wind	35	38	42	46	50	54	59	63	68	73	78	**2962**
60º F, 6 psf wind	27	29	32	35	38	42	45	49	52	56	60	**1674**
60º F, 4 psf wind	26	28	31	34	37	40	43	47	50	54	58	**1539**
60	25	27	30	33	36	39	42	45	48	52	56	**1413**
70	27	29	32	35	38	42	45	49	52	56	60	**1308**
80	29	32	35	38	41	45	48	52	56	60	64	**1219**
90	31	34	37	40	44	48	52	56	60	64	69	**1143**
100	32	36	39	43	47	51	55	59	64	68	73	**1077**

Long Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
	200	**210**	**220**	**230**	**240**	**250**	**260**	**270**	**280**	**290**	**300**	**Lbs**
-20	12	14	15	16	18	19	21	23	24	26	28	**2824**
0	16	17	19	21	23	25	27	29	31	33	36	**2207**
0º, 0.5" ice, 4 psf wind + k	28	31	34	38	41	45	48	52	56	60	64	**4000**
30	22	24	27	29	32	35	37	40	43	47	50	**1579**
32º, 0.5" ice,	30	34	37	40	44	48	52	56	60	64	69	**2887**
32º, 0.5" ice, 2 psf wind	31	34	37	41	44	48	52	56	60	65	69	**2933**
40	24	27	29	32	35	38	41	44	48	51	55	**1438**
50	26	29	32	35	38	41	45	48	52	56	59	**1321**
60	29	31	35	38	41	45	48	52	56	60	64	**1224**
60º F, 6 psf wind	30	33	36	40	43	47	51	55	59	63	67	**1488**
70	31	34	37	40	44	48	52	56	60	64	69	**1143**
80	33	36	39	43	47	51	55	59	64	68	73	**1074**
90	34	38	42	46	50	54	58	63	67	72	77	**1015**
100	36	40	44	48	52	57	61	66	71	76	82	**964**
120	38	42	47	51	55	60	65	70	75	81	87	**909**
248	49	54	60	65	71	77	83	90	97	104	111	**709**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

T2 - (2) 4/0 AWG (6/1) ACSR "Penguin"

DE Tension = 5,000 Lbs

RBS = 16,700 Lbs

Extra Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											
Temp. R.S. Range ②→	Not Recommended					R.S.			Not Recommended			Tension
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	Lbs
15º, 1" ice, 4 psf wind	49	53	57	61	66	70	75	80	85	90	96	6,001
15º, 0.8" ice, 4 psf wind	43	47	50	54	58	62	66	71	75	80	84	5,320
0º, 0.5" ice, 4 psf wind + k	36	39	42	45	48	51	55	58	62	66	70	5,000
0	15	16	18	19	20	22	23	25	26	28	30	3,589
10	16	18	19	21	22	24	25	27	29	30	32	3,316
20	18	19	21	22	24	26	28	29	31	33	35	3,051
30	20	21	23	24	26	28	30	32	34	36	38	2,797
40	21	23	25	27	29	31	33	35	37	39	42	2,558
50	23	25	27	29	31	34	36	38	41	43	46	2,338
60º F, 21 psf wind	42	46	49	53	57	61	65	69	74	78	83	3,811
60º F, 6 psf wind	29	31	34	36	39	42	44	47	50	53	57	2,414
60º F, 4 psf wind	27	29	32	34	37	39	42	45	47	50	53	2,272
60	26	28	30	32	34	37	39	42	44	47	50	2,139
70	28	30	32	35	37	40	43	46	48	51	55	1,962
80	30	33	35	38	41	44	47	50	53	56	59	1,807
90	33	35	38	41	44	47	50	54	57	60	64	1,672
100	35	38	41	44	47	51	54	57	61	65	69	1,555

Extra Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											
Temp.						R.S.						Tension
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	Lbs
-20	14	15	16	18	19	20	22	23	24	26	27	3,907
0	17	19	20	22	23	25	27	28	30	32	34	3,170
0º, 0.5" ice, 4 psf wind + k	36	39	42	45	48	51	55	58	62	66	70	5,000
30	24	26	28	30	32	34	37	39	42	44	47	2,290
32º, 0.5" ice,	37	40	43	47	50	53	57	61	65	69	73	3,711
32º, 0.5" ice, 2 psf wind	37	40	44	47	50	54	58	61	65	69	73	3,762
40	26	29	31	33	36	38	41	43	46	49	52	2,068
50	29	31	34	36	39	42	45	48	51	54	57	1,880
60	32	34	37	40	43	46	49	52	55	59	62	1,722
60º F, 6 psf wind	34	37	40	43	46	49	53	56	60	63	67	2,034
70	34	37	40	43	46	50	53	56	60	64	67	1,588
80	37	40	43	46	50	53	57	61	64	68	73	1,476
90	40	43	46	50	53	57	61	65	69	73	78	1,381
100	42	46	49	53	57	61	65	69	73	78	82	1,299
120	46	50	54	58	62	66	71	75	80	85	90	1,188
248	60	65	70	75	81	87	93	99	105	111	118	909

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

T2 - (2) 4/0 AWG (6/1) ACSR "Penguin"

DE Tension = 6,000 Lbs **RBS = 16,700 Lbs**

Super Long Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	Lbs
15º, 1" ice, 4 psf wind	60	64	69	73	77	82	87	92	97	102	107	**7019**
15º, 0.8" ice, 4 psf wind	52	56	59	63	67	71	75	80	84	88	93	**6316**
0º, 0.5" ice, 4 psf wind + k	43	46	49	52	55	58	62	65	69	72	76	**6000**
0	17	18	19	20	22	23	24	25	27	28	30	**4693**
10	18	19	20	22	23	24	26	27	29	30	32	**4416**
20	19	20	22	23	24	26	27	29	30	32	34	**4140**
30	20	22	23	25	26	28	29	31	33	34	36	**3866**
40	22	23	25	26	28	30	31	33	35	37	39	**3597**
50	24	25	27	28	30	32	34	36	38	40	42	**3335**
60º F, 21 psf wind	49	52	56	59	63	67	71	75	79	83	87	**4719**
60º F, 6 psf wind	30	32	34	36	39	41	43	46	48	51	54	**3329**
60º F, 4 psf wind	28	30	32	34	36	38	40	42	45	47	49	**3200**
60	25	27	29	31	33	35	37	39	41	43	45	**3083**
70	28	29	31	33	35	38	40	42	44	47	49	**2844**
80	30	32	34	36	39	41	43	46	48	51	53	**2622**
90	33	35	37	39	42	44	47	49	52	55	58	**2419**
100	35	38	40	43	45	48	51	54	56	59	63	**2235**

Super Long Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	Lbs
-20	16	17	18	19	20	21	23	24	25	27	28	**4978**
0	19	20	21	23	24	26	27	29	30	32	33	**4180**
0º, 0.5" ice, 4 psf wind + k	43	46	49	52	55	58	62	65	69	72	76	**6000**
30	25	27	29	30	32	34	36	38	40	42	45	**3131**
32º, 0.5" ice,	43	46	49	52	56	59	62	66	69	73	77	**4573**
32º, 0.5" ice, 2 psf wind	44	47	50	53	56	60	63	67	70	74	78	**4627**
40	28	30	31	33	36	38	40	42	44	47	49	**2837**
50	31	33	35	37	39	42	44	46	49	52	54	**2575**
60	34	36	38	41	43	46	48	51	54	57	60	**2347**
60º F, 6 psf wind	37	40	43	45	48	51	54	57	60	63	66	**2684**
70	37	39	42	44	47	50	53	56	59	62	65	**2149**
80	40	42	45	48	51	54	57	60	64	67	71	**1980**
90	43	46	49	52	55	58	62	65	69	72	76	**1835**
100	46	49	52	56	59	63	66	70	74	78	82	**1712**
120	52	56	59	63	67	71	75	79	83	88	92	**1513**
248	69	74	79	84	89	94	100	105	111	117	123	**1135**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

556.5 kcmil (19) AAC "Dahlia"

DE Tension = 1,000 Lbs **RBS = 9,750 Lbs**

Super Short Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
15º, 1" ice, 4 psf wind	8	11	15	19	25	30	37	44	51	60	68	1481
15º, 0.8" ice, 4 psf wind	7	11	14	19	24	29	36	42	50	58	66	1184
0º, 0.5" ice, 4 psf wind + k	7	10	13	17	22	27	33	39	46	53	61	1000
0	6	9	12	16	20	25	30	36	42	48	56	317
10	7	9	13	17	21	26	32	37	44	51	59	301
20	7	10	13	18	22	27	33	39	46	54	62	287
30	7	10	14	18	23	29	35	41	48	56	64	275
40	7	11	15	19	24	30	36	43	50	58	67	264
50	8	11	15	20	25	31	37	44	52	60	69	255
60º F, 21 psf wind	8	12	16	21	27	33	40	48	56	65	75	720
60º F, 6 psf wind	8	12	16	21	26	32	39	46	54	63	72	317
60º F, 4 psf wind	8	12	16	21	26	32	39	46	54	63	72	280
60	8	11	16	20	26	32	39	46	54	63	72	246
70	8	12	16	21	27	33	40	48	56	65	74	238
80	8	12	17	22	28	34	41	49	57	67	76	231
90	9	13	17	22	28	35	42	50	59	68	79	225
100	9	13	18	23	29	36	43	52	61	70	81	219

Super Short Span - Feet

Condition→ / Temp.	FINAL SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
-20	6	8	11	14	18	22	27	32	38	44	50	350
0	6	9	12	16	20	25	30	36	43	49	57	311
0º, 0.5" ice, 4 psf wind + k	7	10	13	17	22	27	33	39	46	53	61	1000
30	7	10	14	19	23	29	35	42	49	57	65	271
32º, 0.5" ice,	8	11	15	19	24	30	36	43	51	59	68	681
32º, 0.5" ice, 2 psf wind	8	11	15	19	24	30	36	43	51	59	68	698
40	8	11	15	19	24	30	36	43	51	59	68	261
50	8	11	15	20	25	31	38	45	53	61	70	252
60	8	12	16	21	26	32	39	46	55	63	73	243
60º F, 6 psf wind	8	12	16	21	26	32	39	47	55	64	73	313
70	8	12	16	21	27	33	40	48	56	65	75	236
80	9	12	17	22	28	34	42	49	58	67	77	229
90	9	13	17	23	29	35	43	51	60	69	79	223
100	9	13	18	23	29	36	44	52	61	71	82	217
120	10	14	19	24	31	38	46	55	64	75	86	206
212	11	16	22	29	37	46	55	66	77	90	103	172

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

556.5 kcmil (19) AAC "Dahlia"

DE Tension = 2,500 Lbs **RBS = 9,750 Lbs**

Short Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range② →	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
15º, 1" ice, 4 psf wind	15	18	21	25	29	33	37	42	47	53	58	**3081**
15º, 0.8" ice, 4 psf wind	13	16	19	22	26	30	34	38	43	48	53	**2638**
0º, 0.5" ice, 4 psf wind + k	11	13	16	18	21	24	28	31	35	39	43	**2500**
0	5	7	8	9	11	12	14	16	18	20	22	**1424**
10	7	8	9	11	13	15	17	19	21	24	26	**1193**
20	8	9	11	13	15	17	20	22	25	28	31	**1012**
30	9	11	13	15	18	20	23	26	29	32	36	**875**
40	10	12	15	17	20	23	26	29	33	37	41	**772**
50	11	14	16	19	22	25	29	33	37	41	45	**694**
60º F, 21 psf wind	15	18	22	26	30	34	39	44	49	54	60	**1581**
60º F, 6 psf wind	13	16	19	22	25	29	33	37	42	46	51	**788**
60º F, 4 psf wind	13	15	18	21	25	28	32	37	41	46	51	**707**
60	12	15	18	21	24	28	32	36	40	45	49	**632**
70	13	16	19	23	26	30	34	39	44	49	54	**583**
80	14	17	21	24	28	33	37	42	47	52	58	**543**
90	15	19	22	26	30	35	39	44	50	55	61	**510**
100	16	20	23	27	32	37	42	47	53	59	65	**482**

Short Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
-20	4	5	6	7	8	10	11	12	14	15	17	**1826**
0	6	8	9	11	13	15	17	19	21	23	26	**1211**
0º, 0.5" ice, 4 psf wind + k	11	13	16	18	21	25	28	32	35	39	44	**2469**
30	10	12	15	17	20	23	26	30	33	37	41	**760**
32º, 0.5" ice,	13	15	18	22	25	29	33	37	41	46	51	**1599**
32º, 0.5" ice, 2 psf wind	13	16	19	22	25	29	33	37	42	47	52	**1631**
40	12	14	17	19	23	26	29	33	37	42	46	**682**
50	13	15	18	21	25	28	32	37	41	46	51	**621**
60	14	17	20	23	27	31	35	39	44	49	55	**573**
60º F, 6 psf wind	14	17	20	24	27	32	36	41	45	51	56	**724**
70	15	18	21	25	29	33	38	42	48	53	59	**534**
80	16	19	23	26	31	35	40	45	51	56	63	**502**
90	17	20	24	28	32	37	42	48	54	60	66	**475**
100	17	21	25	29	34	39	45	50	56	63	70	**451**
120	19	23	27	32	37	43	49	55	62	69	76	**413**
212	25	31	36	43	50	57	65	73	82	91	101	**311**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

556.5 kcmil (19) AAC "Dahlia"

DE Tension = 3,500 Lbs **RBS = 9,750 Lbs**

Medium Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
15º, 1" ice, 4 psf wind	24	28	31	35	39	43	48	53	57	63	68	**4126**
15º, 0.8" ice, 4 psf wind	22	25	28	31	35	38	42	46	51	55	60	**3629**
0º, 0.5" ice, 4 psf wind + k	17	20	22	25	28	31	34	37	41	44	48	**3500**
0	7	8	9	10	11	13	14	15	17	18	20	**2476**
10	8	9	10	12	13	14	16	17	19	21	23	**2167**
20	9	11	12	14	15	17	18	20	22	24	26	**1880**
30	11	12	14	16	17	19	21	23	26	28	30	**1624**
40	12	14	16	18	20	22	24	27	29	32	35	**1408**
50	14	16	18	21	23	25	28	31	34	37	40	**1231**
60º F, 21 psf wind	23	26	30	33	37	41	45	50	54	59	64	**2312**
60º F, 6 psf wind	18	20	23	25	28	31	34	38	41	45	49	**1299**
60º F, 4 psf wind	17	19	22	24	27	30	33	36	40	43	47	**1192**
60	16	18	21	23	26	29	32	35	38	41	45	**1090**
70	18	21	23	26	29	32	35	39	42	46	50	**978**
80	20	23	25	29	32	35	39	43	47	51	55	**890**
90	22	24	28	31	35	38	42	46	51	55	60	**818**
100	23	26	30	33	37	41	46	50	55	59	65	**759**

Medium Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
-20	7	8	8	10	11	12	13	14	16	17	18	**2650**
0	9	11	12	13	15	17	18	20	22	24	26	**1895**
0º, 0.5" ice, 4 psf wind + k	18	21	24	26	29	33	36	39	43	47	51	**3314**
30	15	17	19	21	24	27	29	32	35	38	41	**1180**
32º, 0.5" ice,	21	24	27	30	33	37	40	44	49	53	57	**2234**
32º, 0.5" ice, 2 psf wind	21	24	27	30	33	37	41	45	49	53	58	**2273**
40	17	19	22	24	27	30	33	36	40	43	47	**1042**
50	19	21	24	27	30	33	37	41	44	48	52	**935**
60	21	24	27	30	33	37	41	45	49	53	58	**852**
60º F, 6 psf wind	22	24	28	31	35	38	42	46	51	55	60	**1058**
70	22	26	29	32	36	40	44	48	53	58	62	**786**
80	24	27	31	35	39	43	47	52	57	62	67	**731**
90	26	29	33	37	41	46	50	55	60	66	71	**686**
100	27	31	35	39	44	48	53	59	64	70	76	**648**
120	30	34	39	43	48	54	59	65	71	77	84	**586**
212	41	47	53	59	66	73	80	88	96	105	114	**431**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

556.5 kcmil (19) AAC "Dahlia"

DE Tension = 4,000 Lbs **RBS = 9,750 Lbs**

Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range ②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	Lbs
15º, 1" ice, 4 psf wind	38	42	46	50	54	59	64	69	74	79	85	**4752**
15º, 0.8" ice, 4 psf wind	33	37	40	44	48	52	56	60	65	70	75	**4195**
0º, 0.5" ice, 4 psf wind + k	27	30	33	36	39	42	46	49	53	57	61	**4000**
0	11	12	13	15	16	17	19	20	22	23	25	**2821**
10	12	14	15	16	18	19	21	23	24	26	28	**2520**
20	14	15	17	19	20	22	24	26	28	30	32	**2234**
30	16	18	19	21	23	25	27	29	31	33	36	**1973**
40	18	20	22	24	26	28	30	33	35	38	40	**1743**
50	20	22	25	27	29	32	34	37	40	43	46	**1546**
60º F, 21 psf wind	34	38	41	45	49	53	58	62	67	72	77	**2787**
60º F, 6 psf wind	25	28	30	33	36	39	42	45	49	52	56	**1624**
60º F, 4 psf wind	24	26	29	31	34	37	40	43	47	50	54	**1500**
60	23	25	27	30	33	35	38	41	44	48	51	**1382**
70	25	28	30	33	36	39	42	46	49	53	57	**1248**
80	28	30	33	36	40	43	47	50	54	58	62	**1138**
90	30	33	36	40	43	47	51	55	59	63	67	**1047**
100	32	36	39	43	46	50	55	59	63	68	73	**972**

Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	Lbs
-20	11	12	14	15	16	18	19	21	22	24	25	**2778**
0	15	17	18	20	22	24	26	28	30	32	34	**2069**
0º, 0.5" ice, 4 psf wind + k	29	32	35	38	41	45	49	52	56	61	65	**3754**
30	23	25	28	30	33	36	38	41	45	48	51	**1381**
32º, 0.5" ice,	31	35	38	42	45	49	53	57	62	66	71	**2609**
32º, 0.5" ice, 2 psf wind	32	35	38	42	46	50	54	58	62	67	71	**2654**
40	25	28	31	34	36	40	43	46	50	53	57	**1238**
50	28	31	34	37	40	44	47	51	55	59	63	**1124**
60	30	33	37	40	44	47	51	55	59	64	68	**1032**
60º F, 6 psf wind	32	35	38	42	46	50	54	58	62	67	72	**1276**
70	33	36	40	43	47	51	55	60	64	69	74	**957**
80	35	39	42	46	50	55	59	64	69	74	79	**895**
90	37	41	45	49	54	58	63	68	73	78	84	**842**
100	39	43	48	52	57	61	66	72	77	83	88	**797**
120	43	48	52	57	62	68	73	79	85	91	97	**725**
212	59	65	71	78	84	92	99	107	115	123	132	**536**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

556.5 kcmil (19) AAC "Dahlia"

DE Tension = 4,500 Lbs **RBS = 9,750 Lbs**

Extra Long Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	Lbs
15º, 1" ice, 4 psf wind	52	57	61	66	71	75	81	86	91	97	103	**5348**
15º, 0.8" ice, 4 psf wind	46	50	53	57	62	66	70	75	80	85	90	**4746**
0º, 0.5" ice, 4 psf wind + k	38	41	44	47	50	54	58	61	65	69	74	**4500**
0	15	16	18	19	21	22	23	25	27	28	30	**3213**
10	17	18	20	21	23	24	26	27	29	31	33	**2916**
20	19	20	22	23	25	27	29	30	32	34	36	**2631**
30	21	22	24	26	28	30	32	34	36	38	41	**2362**
40	23	25	27	29	31	33	35	38	40	43	45	**2117**
50	26	28	30	32	35	37	40	42	45	48	50	**1900**
60º F, 21 psf wind	46	49	53	57	61	66	70	75	79	84	89	**3266**
60º F, 6 psf wind	32	35	37	40	43	46	49	52	56	59	63	**1978**
60º F, 4 psf wind	30	33	35	38	41	44	47	50	53	56	59	**1841**
60	29	31	33	36	38	41	44	47	50	53	56	**1712**
70	32	34	37	40	42	45	49	52	55	58	62	**1552**
80	35	37	40	43	46	50	53	57	60	64	68	**1418**
90	38	41	44	47	50	54	58	61	65	69	74	**1305**
100	40	44	47	51	54	58	62	66	70	75	79	**1211**

Extra Long Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	Lbs
-20	16	18	19	21	22	24	25	27	29	30	32	**2989**
0	21	23	25	27	29	31	33	35	37	39	42	**2300**
0º, 0.5" ice, 4 psf wind + k	40	43	47	50	54	58	62	66	70	74	79	**4212**
30	31	33	36	38	41	44	47	50	53	57	60	**1603**
32º, 0.5" ice,	43	46	50	54	58	62	66	70	75	79	84	**2994**
32º, 0.5" ice, 2 psf wind	43	47	50	54	58	62	66	71	75	80	85	**3044**
40	34	37	39	42	45	49	52	55	59	62	66	**1450**
50	37	40	43	46	50	53	57	61	64	68	73	**1325**
60	40	43	47	50	54	58	62	66	70	74	79	**1223**
60º F, 6 psf wind	42	46	49	53	57	61	65	69	73	78	82	**1504**
70	43	47	50	54	58	62	66	71	75	80	84	**1138**
80	46	50	54	58	62	66	71	75	80	85	90	**1067**
90	49	53	57	61	66	70	75	80	85	90	96	**1006**
100	51	56	60	64	69	74	79	84	90	95	101	**953**
120	57	61	66	71	76	81	87	93	98	105	111	**868**
212	76	83	89	96	103	110	117	125	133	141	150	**644**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

556.5 kcmil (19) AAC "Dahlia"

DE Tension = 4,750 Lbs **RBS = 9,750 Lbs**

Super Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	Lbs
15º, 1" ice, 4 psf wind	70	75	80	85	90	96	101	107	113	119	125	5731
15º, 0.8" ice, 4 psf wind	62	66	70	75	79	84	89	94	99	104	110	5073
0º, 0.5" ice, 4 psf wind + k	51	55	58	62	66	70	74	78	82	86	91	4750
0	22	23	25	26	28	30	31	33	35	37	39	3234
10	24	26	27	29	31	33	34	36	38	40	42	2953
20	26	28	30	32	34	36	38	40	42	44	47	2685
30	29	31	33	35	37	39	42	44	46	49	51	2435
40	32	34	36	39	41	43	46	49	51	54	57	2209
50	35	37	40	42	45	48	51	53	56	59	62	2007
60º F, 21 psf wind	60	64	69	73	78	82	87	92	97	102	107	3554
60º F, 6 psf wind	43	46	49	52	55	58	62	65	69	72	76	2128
60º F, 4 psf wind	41	43	46	49	52	55	59	62	65	69	72	1976
60	39	41	44	47	49	52	55	59	62	65	68	1832
70	42	45	48	51	54	57	60	64	67	71	75	1680
80	45	49	52	55	58	62	66	69	73	77	81	1551
90	49	52	56	59	63	67	70	74	79	83	87	1441
100	52	56	60	63	67	71	75	80	84	89	93	1347

Super Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	Lbs
-20	24	26	28	30	31	33	35	37	39	41	43	2886
0	31	33	35	37	40	42	45	47	50	52	55	2281
0º, 0.5" ice, 4 psf wind + k	54	58	62	66	70	74	78	83	87	92	97	4466
30	42	45	48	51	54	57	61	64	67	71	75	1676
32º, 0.5" ice,	57	61	65	69	74	78	83	87	92	97	102	3221
32º, 0.5" ice, 2 psf wind	58	62	66	70	74	79	83	88	93	98	103	3277
40	46	49	52	55	59	62	66	70	74	77	82	1538
50	50	53	56	60	64	67	71	75	79	84	88	1424
60	53	57	60	64	68	72	77	81	85	90	95	1328
60º F, 6 psf wind	56	59	63	67	72	76	80	85	89	94	99	1637
70	57	60	64	68	73	77	82	86	91	96	101	1246
80	60	64	68	73	77	82	86	91	96	101	107	1176
90	63	67	72	76	81	86	91	96	101	107	112	1116
100	66	71	76	80	85	90	96	101	107	112	118	1063
120	72	77	82	88	93	99	104	110	116	122	129	975
212	96	103	109	116	123	131	138	146	154	162	171	736

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

T2 - (2) 336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 2,000 Lbs **RBS =17,360 Lbs**

Super Short Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**	**130**	**140**	**150**	**Lbs**
15º, 1" ice, 4 psf wind	5	7	10	13	17	21	25	30	35	40	46	**2,564**
15º, 0.8" ice, 4 psf wind	5	7	10	12	16	19	24	28	33	38	44	**2,152**
0º, 0.5" ice, 4 psf wind + k	4	6	8	10	13	16	20	24	28	32	37	**2,000**
0	3	4	6	8	10	12	15	18	21	24	28	**899**
10	4	5	7	9	11	14	17	20	24	28	32	**775**
20	4	6	8	10	13	16	19	23	27	31	36	**686**
30	4	6	9	11	14	18	21	25	30	35	40	**619**
40	5	7	9	12	16	19	23	28	33	38	43	**568**
50	5	7	10	13	17	21	25	30	35	41	47	**527**
60º F, 21 psf wind	6	9	12	15	19	24	29	35	41	47	54	**1,307**
60º F, 6 psf wind	6	8	11	14	18	23	27	32	38	44	51	**614**
60º F, 4 psf wind	6	8	11	14	18	22	27	32	38	44	50	**551**
60	6	8	11	14	18	22	27	32	38	44	50	**493**
70	6	8	12	15	19	24	28	34	40	46	53	**465**
80	6	9	12	16	20	25	30	36	42	49	56	**441**
90	7	9	13	17	21	26	32	37	44	51	59	**421**
100	7	10	13	17	22	27	33	39	46	53	61	**402**

Super Short Span - Feet

Condition→ / Temp.	FINAL SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**	**130**	**140**	**150**	**Lbs**
-20	2	3	4	6	7	9	11	13	15	17	20	**1,226**
0	3	5	6	8	11	13	16	19	22	26	30	**833**
0º, 0.5" ice, 4 psf wind + k	4	6	8	11	14	17	20	24	29	33	38	**1,936**
30	5	7	9	12	15	19	23	27	31	36	42	**590**
32º, 0.5" ice,	5	7	10	13	17	21	25	30	35	40	46	**1,267**
32º, 0.5" ice, 2 psf wind	5	7	10	13	17	21	25	30	35	40	46	**1,290**
40	5	7	10	13	16	20	24	29	34	40	45	**545**
50	5	8	11	14	17	22	26	31	37	42	49	**509**
60	6	8	11	15	19	23	28	33	39	45	52	**478**
60º F, 6 psf wind	6	8	11	15	19	23	28	33	39	45	52	**596**
70	6	9	12	16	20	24	29	35	41	48	55	**453**
80	6	9	12	16	21	25	31	37	43	50	57	**431**
90	7	10	13	17	22	27	32	38	45	52	60	**411**
100	7	10	14	18	23	28	34	40	47	55	63	**394**
120	7	11	14	19	24	29	35	42	49	57	66	**375**
248	9	13	17	23	29	36	43	51	60	70	80	**310**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

T2 - (2) 336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 3,000 Lbs **RBS =17,360 Lbs**

Short Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
15º, 1" ice, 4 psf wind	14	17	20	24	28	32	36	41	46	51	57	3,740
15º, 0.8" ice, 4 psf wind	13	16	19	22	26	29	33	38	42	47	52	3,201
0º, 0.5" ice, 4 psf wind + k	11	13	16	18	21	24	28	31	35	39	44	3,000
0	7	8	10	12	14	16	18	20	22	25	28	1,585
10	8	10	12	14	16	18	21	23	26	29	32	1,355
20	9	11	13	16	18	21	24	27	30	34	37	1,182
30	10	13	15	18	20	23	27	30	34	38	42	1,052
40	12	14	17	19	23	26	29	33	37	42	46	952
50	13	15	18	21	25	28	32	36	41	45	50	873
60º F, 21 psf wind	15	19	22	26	30	35	40	45	50	56	62	2,027
60º F, 6 psf wind	14	17	20	23	27	31	35	40	45	50	55	998
60º F, 4 psf wind	14	17	20	23	27	31	35	40	44	49	55	900
60	14	16	20	23	27	30	35	39	44	49	54	810
70	14	17	21	24	28	33	37	42	47	52	58	757
80	15	19	22	26	30	35	39	44	50	55	61	714
90	16	20	23	27	32	36	42	47	53	59	65	676
100	17	21	25	29	33	38	44	49	55	62	68	644

Short Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
-20	6	7	8	9	11	13	14	16	18	20	22	1,948
0	8	10	11	13	16	18	20	23	26	29	32	1,374
0º, 0.5" ice, 4 psf wind + k	11	14	16	19	22	26	29	33	37	41	45	2,876
30	11	14	16	19	22	26	29	33	37	41	46	958
32º, 0.5" ice,	13	16	19	23	26	30	34	39	43	48	54	1,947
32º, 0.5" ice, 2 psf wind	13	16	19	23	26	30	34	39	44	49	54	1,979
40	12	15	18	21	24	28	32	36	40	45	50	878
50	13	16	19	23	26	30	35	39	44	49	54	814
60	14	17	21	24	28	32	37	42	47	52	58	761
60º F, 6 psf wind	15	18	21	25	29	33	38	42	48	53	59	941
70	15	19	22	26	30	34	39	44	50	55	61	717
80	16	20	23	27	32	36	41	47	52	58	65	301
90	17	21	24	29	33	38	43	49	55	61	68	291
100	18	21	26	30	35	40	45	51	58	64	71	282
120	19	23	28	33	38	43	49	56	62	70	77	265
248	24	29	34	40	46	53	60	68	77	85	95	465

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

T2 - (2) 336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 4,000 Lbs **RBS =17,360 Lbs**

Medium Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
15º, 1" ice, 4 psf wind	24	28	31	35	39	43	48	53	57	63	68	**4,870**
15º, 0.8" ice, 4 psf wind	22	25	29	32	36	40	44	48	52	57	62	**4,239**
0º, 0.5" ice, 4 psf wind + k	18	21	24	26	29	33	36	39	43	47	51	**4,000**
0	10	12	13	15	16	18	20	22	24	26	28	**2,436**
10	12	13	15	17	19	21	23	25	27	30	32	**2,107**
20	13	15	17	19	22	24	26	29	32	34	37	**1,836**
30	15	17	20	22	24	27	30	33	36	39	42	**1,619**
40	17	19	22	24	27	30	33	37	40	44	47	**1,448**
50	19	21	24	27	30	33	37	40	44	48	52	**1,312**
60º F, 21 psf wind	25	29	32	36	41	45	49	54	59	65	70	**2,796**
60º F, 6 psf wind	21	24	27	31	34	38	42	46	50	55	59	**1,459**
60º F, 4 psf wind	21	24	27	30	33	37	41	45	49	53	58	**1,326**
60	21	23	26	30	33	36	40	44	48	53	57	**1,203**
70	22	25	28	32	36	39	43	48	52	57	62	**1,114**
80	24	27	30	34	38	42	46	51	56	61	66	**1,041**
90	25	29	32	36	40	45	49	54	59	64	70	**979**
100	27	30	34	38	43	47	52	57	63	68	74	**926**

Medium Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
-20	9	10	11	13	14	16	17	19	21	23	25	**2,772**
0	12	14	16	17	19	22	24	26	29	31	34	**2,024**
0º, 0.5" ice, 4 psf wind + k	23	26	29	32	36	40	44	48	53	58	63	**3,817**
30	18	20	23	25	28	31	35	38	42	45	49	**1,393**
32º, 0.5" ice,	22	25	28	32	35	39	43	47	52	57	61	**2,661**
32º, 0.5" ice, 2 psf wind	22	25	28	32	36	39	43	48	52	57	62	**2,701**
40	19	22	25	28	31	35	38	42	46	50	54	**1,267**
50	21	24	27	30	34	38	41	45	50	54	59	**1,166**
60	23	26	29	33	36	40	45	49	53	58	63	**1,084**
60º F, 6 psf wind	23	27	30	34	38	42	46	50	55	60	65	**1,328**
70	24	28	31	35	39	43	48	52	57	62	68	**1,015**
80	26	29	33	37	41	46	51	55	61	66	72	**957**
90	27	31	35	39	44	48	53	59	64	70	76	**908**
100	29	32	37	41	46	51	56	61	67	73	79	**865**
120	31	35	40	45	50	55	61	67	73	80	86	**793**
248	40	45	51	57	64	71	78	85	93	102	110	**623**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

T2 - (2) 336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 5,000 Lbs **RBS = 17,360 Lbs**

Long Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	**200**	**210**	**220**	**230**	**240**	**250**	**260**	**270**	**280**	**290**	**300**	**Lbs**
15º, 1" ice, 4 psf wind	35	39	43	47	51	55	60	65	70	75	80	**5,963**
15º, 0.8" ice, 4 psf wind	32	35	38	42	46	50	54	58	62	67	72	**5,265**
0º, 0.5" ice, 4 psf wind + k	26	29	32	35	38	41	44	48	51	55	59	**5,000**
0	13	14	16	17	19	20	22	24	25	27	29	**3,401**
10	15	16	18	19	21	23	25	26	28	31	33	**3,014**
20	16	18	20	22	24	26	28	30	32	35	37	**2,663**
30	19	20	22	25	27	29	31	34	36	39	42	**2,356**
40	21	23	25	28	30	33	35	38	41	44	47	**2,098**
50	23	26	28	31	34	36	39	42	46	49	52	**1,885**
60º F, 21 psf wind	35	38	42	46	50	54	59	63	68	73	78	**3,617**
60º F, 6 psf wind	27	30	33	36	39	43	46	50	53	57	61	**2,025**
60º F, 4 psf wind	26	29	32	35	38	41	45	48	52	56	59	**1,862**
60	26	28	31	34	37	40	43	47	50	54	58	**1,710**
70	28	31	34	37	40	44	47	51	55	59	63	**1,567**
80	30	33	37	40	44	47	51	55	59	64	68	**1,449**
90	32	36	39	43	47	51	55	59	64	68	73	**1,351**
100	35	38	42	46	50	54	58	63	68	73	78	**1,268**

Long Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	**200**	**210**	**220**	**230**	**240**	**250**	**260**	**270**	**280**	**290**	**300**	**Lbs**
-20	12	13	14	16	17	19	20	22	23	25	27	**3,649**
0	16	17	19	21	23	25	27	29	31	33	36	**2,767**
0º, 0.5" ice, 4 psf wind + k	27	30	33	36	39	43	46	50	54	58	62	**4,765**
30	23	25	28	30	33	36	39	42	45	48	52	**1,909**
32º, 0.5" ice,	31	34	37	40	44	48	52	56	60	64	69	**3,409**
32º, 0.5" ice, 2 psf wind	31	34	37	41	44	48	52	56	60	65	69	**3,457**
40	25	28	31	34	37	40	43	46	50	53	57	**1,726**
50	28	31	34	37	40	43	47	51	54	58	63	**1,578**
60	30	33	36	40	43	47	51	55	59	63	68	**1,457**
60º F, 6 psf wind	31	35	38	41	45	49	53	57	61	66	71	**1,763**
70	32	36	39	43	47	51	55	59	63	68	73	**1,357**
80	34	38	42	46	50	54	58	63	68	73	78	**1,273**
90	36	40	44	48	53	57	62	66	72	77	82	**1,201**
100	38	42	47	51	55	60	65	70	75	81	87	**1,140**
120	42	47	51	56	61	66	71	77	83	89	95	**1,039**
248	56	62	68	74	81	88	95	102	110	118	126	**784**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

T2 - (2) 336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 6,000 Lbs **RBS = 17,360 Lbs**

Extra Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	Lbs
15º, 1" ice, 4 psf wind	47	51	55	59	63	68	72	77	82	87	92	**7,024**
15º, 0.8" ice, 4 psf wind	42	45	49	52	56	60	64	68	73	77	82	**6,284**
0º, 0.5" ice, 4 psf wind + k	34	37	40	43	46	49	52	56	59	63	67	**6,000**
0	15	17	18	19	21	22	24	25	27	29	30	**4,432**
10	17	18	20	21	23	24	26	28	30	31	33	**4,025**
20	19	20	22	24	25	27	29	31	33	35	37	**3,632**
30	21	23	24	26	28	30	32	34	37	39	41	**3,264**
40	23	25	27	29	32	34	36	38	41	43	46	**2,928**
50	26	28	30	33	35	37	40	43	45	48	51	**2,632**
60º F, 21 psf wind	44	47	51	55	59	63	67	72	76	81	86	**4,490**
60º F, 6 psf wind	32	34	37	40	43	46	49	52	55	59	62	**2,728**
60º F, 4 psf wind	30	33	35	38	41	43	46	49	53	56	59	**2,546**
60	29	31	34	36	39	42	44	47	50	53	57	**2,377**
70	32	34	37	40	43	46	49	52	55	59	62	**2,160**
80	35	37	40	43	47	50	53	57	60	64	68	**1,979**
90	38	41	44	47	50	54	58	61	65	69	74	**1,827**
100	40	44	47	51	54	58	62	66	70	75	79	**1,700**

Extra Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	Lbs
-20	15	16	17	19	20	22	23	25	26	28	29	**4,565**
0	19	21	22	24	26	27	29	31	33	35	37	**3,586**
0º, 0.5" ice, 4 psf wind + k	36	39	42	45	48	51	55	58	62	66	70	**5,722**
30	27	29	32	34	37	39	42	45	47	50	53	**2,513**
32º, 0.5" ice,	39	42	45	49	52	56	60	64	68	72	76	**4,193**
32º, 0.5" ice, 2 psf wind	39	42	46	49	53	56	60	64	68	72	77	**4,247**
40	30	33	35	38	41	44	47	50	53	56	59	**2,265**
50	33	36	39	42	45	48	51	54	58	61	65	**2,060**
60	36	39	42	45	49	52	56	59	63	67	71	**1,892**
60º F, 6 psf wind	38	41	45	48	51	55	59	63	67	71	75	**2,255**
70	39	42	46	49	53	56	60	64	68	72	77	**1,752**
80	42	45	49	53	56	60	64	69	73	78	82	**1,634**
90	45	48	52	56	60	64	69	73	78	83	88	**1,535**
100	47	51	55	59	64	68	73	77	82	87	93	**1,450**
120	52	57	61	66	70	75	80	86	91	97	102	**1,312**
248	72	78	84	91	97	104	111	119	126	134	142	**949**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

T2 - (2) 336.4 kcmil (18/1) ACSR "Merlin"

DE Tension = 7,000 Lbs **RBS = 17,360 Lbs**

Super Long Span - Feet

Condition→ / Temp. / R.S. Range②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	300	**310**	**320**	**330**	**340**	**350**	**360**	**370**	**380**	**390**	**400**	
15º, 1" ice, 4 psf wind	59	63	67	71	76	80	85	90	95	100	105	**8,059**
15º, 0.8" ice, 4 psf wind	52	55	59	63	66	70	74	79	83	87	92	**7,294**
0º, 0.5" ice, 4 psf wind + k	42	45	48	51	54	57	60	64	67	71	75	**7,000**
0	18	19	20	22	23	24	26	27	29	30	32	**5,501**
10	19	21	22	23	25	26	28	29	31	33	34	**5,098**
20	21	22	24	25	27	29	30	32	34	35	37	**4,697**
30	23	24	26	28	29	31	33	35	37	39	41	**4,302**
40	25	27	29	30	32	34	36	38	40	42	45	**3,923**
50	28	30	31	33	36	38	40	42	44	47	49	**3,564**
60º F, 21 psf wind	52	56	59	63	67	71	75	79	84	88	93	**5,415**
60º F, 6 psf wind	35	37	39	42	45	47	50	53	56	59	62	**3,586**
60º F, 4 psf wind	33	35	37	39	42	44	47	49	52	55	58	**3,403**
60	31	33	35	37	39	42	44	46	49	52	54	**3,235**
70	34	36	38	41	43	46	48	51	54	57	60	**2,940**
80	37	39	42	44	47	50	53	56	59	62	65	**2,681**
90	40	43	46	49	52	55	58	61	64	68	71	**2,457**
100	44	47	50	53	56	59	63	66	70	74	77	**2,266**

Super Long Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	300	**310**	**320**	**330**	**340**	**350**	**360**	**370**	**380**	**390**	**400**	
-20	18	19	20	22	23	24	26	27	29	30	32	**5,513**
0	22	24	25	27	28	30	32	34	35	37	39	**4,465**
0º, 0.5" ice, 4 psf wind + k	44	47	50	53	56	60	63	67	70	74	78	**6,692**
30	31	33	35	37	40	42	44	47	49	52	55	**3,209**
32º, 0.5" ice,	47	50	53	57	60	64	67	71	75	79	83	**5,010**
32º, 0.5" ice, 2 psf wind	47	50	54	57	61	64	68	72	76	80	84	**5,069**
40	34	36	39	41	44	46	49	52	55	58	61	**2,892**
50	38	40	43	45	48	51	54	57	60	63	67	**2,624**
60	41	44	47	50	53	56	59	62	66	69	73	**2,399**
60º F, 6 psf wind	44	47	50	54	57	60	64	67	71	75	79	**2,810**
70	45	48	51	54	57	61	64	68	72	75	79	**2,211**
80	48	51	55	58	62	65	69	73	77	81	85	**2,052**
90	51	55	59	62	66	70	74	78	83	87	92	**1,917**
100	55	58	62	66	70	75	79	83	88	93	97	**1,803**
120	61	65	69	74	78	83	88	93	98	103	108	**1,618**
248	88	94	101	107	113	120	127	134	142	149	157	**1,120**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 1,500 Lbs **RBS = 25,900 Lbs**

Super Short Span - Feet

Condition→ / Temp. / R.S. Range②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	50	60	70	80	90	100	110	120	130	140	150	
15º, 1" ice, 4 psf wind	7	10	14	18	23	28	34	40	47	55	63	**2099**
15º, 0.8" ice, 4 psf wind	7	10	13	18	22	27	33	40	46	54	62	**1729**
0º, 0.5" ice, 4 psf wind + k	6	9	12	16	21	25	31	36	43	50	57	**1500**
0	6	9	12	15	19	24	29	34	40	47	54	**676**
10	6	9	12	16	20	25	30	36	43	49	57	**640**
20	7	10	13	17	21	27	32	38	45	52	60	**609**
30	7	10	14	18	22	28	34	40	47	54	62	**582**
40	7	10	14	18	23	29	35	41	49	56	65	**560**
50	7	11	15	19	24	30	36	43	50	59	67	**541**
60º F, 21 psf wind	8	11	15	20	26	32	38	45	53	62	71	**1098**
60º F, 6 psf wind	8	11	15	20	25	31	37	45	52	61	70	**593**
60º F, 4 psf wind	8	11	15	20	25	31	37	45	52	61	70	**555**
60	8	11	15	20	25	31	37	45	52	61	70	**523**
70	8	11	16	20	26	32	39	46	54	63	72	**507**
80	8	12	16	21	27	33	40	47	56	64	74	**492**
90	8	12	17	22	27	34	41	49	57	66	76	**478**
100	9	12	17	22	28	35	42	50	58	68	78	**467**

Super Short Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL SAG (inches)											Tension Lbs
						R.S.						
	50	60	70	80	90	100	110	120	130	140	150	
-20	5	8	10	13	17	21	25	30	35	41	47	**769**
0	6	9	12	15	19	24	29	34	40	47	54	**676**
0º, 0.5" ice, 4 psf wind + k	6	9	12	16	21	25	31	36	43	50	57	**1498**
30	7	10	14	18	22	28	34	40	47	54	62	**582**
32º, 0.5" ice,	7	10	14	18	23	29	35	41	48	56	65	**1106**
32º, 0.5" ice, 2 psf wind	7	10	14	18	23	29	35	41	48	56	65	**1121**
40	7	10	14	19	23	29	35	42	49	57	65	**560**
50	7	11	15	19	24	30	36	43	50	59	67	**540**
60	8	11	15	20	25	31	37	45	52	61	70	**523**
60º F, 6 psf wind	8	11	15	20	25	31	37	45	52	61	70	**593**
70	8	11	16	20	26	32	39	46	54	63	72	**507**
80	8	12	16	21	27	33	40	47	56	64	74	**492**
90	8	12	17	22	27	34	41	49	57	66	76	**478**
100	9	12	17	22	28	35	42	50	59	68	78	**467**
120	9	13	17	23	29	36	43	51	60	70	80	**454**
248	10	15	20	26	33	41	50	59	70	81	93	**394**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 3,000 Lbs **RBS = 25,900 Lbs**

Short Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	
15º, 1" ice, 4 psf wind	15	18	22	26	30	34	39	44	49	55	61	**3858**
15º, 0.8" ice, 4 psf wind	15	18	21	25	29	33	37	42	47	53	58	**3272**
0º, 0.5" ice, 4 psf wind + k	13	15	18	21	25	28	32	37	41	46	51	**3000**
0	11	13	15	18	21	24	27	30	34	38	42	**1539**
10	12	14	17	20	23	26	30	34	38	42	47	**1391**
20	13	15	18	21	25	28	32	36	41	45	50	**1280**
30	14	16	20	23	27	30	35	39	44	49	54	**1189**
40	15	18	21	25	28	33	37	42	47	52	58	**1115**
50	15	19	22	26	30	35	39	44	50	55	61	**1051**
60º F, 21 psf wind	17	21	25	29	34	39	44	50	56	62	69	**2018**
60º F, 6 psf wind	16	20	24	28	32	37	42	47	53	59	65	**1126**
60º F, 4 psf wind	16	20	23	27	32	37	42	47	53	59	65	**1057**
60	16	20	23	27	32	36	42	47	53	59	65	**997**
70	17	21	24	29	33	38	44	49	55	61	68	**950**
80	18	21	26	30	35	40	45	51	58	64	71	**909**
90	19	22	27	31	36	42	47	53	60	67	74	**873**
100	19	23	28	33	38	43	49	56	62	70	77	**840**

Short Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	
-20	9	10	12	14	17	19	22	25	28	31	34	**1894**
0	11	13	16	18	21	24	28	31	35	39	44	**1487**
0º, 0.5" ice, 4 psf wind + k	13	16	19	22	25	29	33	37	42	47	52	**2938**
30	14	17	20	24	27	31	36	40	45	50	56	**1161**
32º, 0.5" ice,	15	18	22	26	30	34	39	44	49	55	61	**2095**
32º, 0.5" ice, 2 psf wind	15	18	22	26	30	34	39	44	49	55	61	**2122**
40	15	18	21	25	29	33	38	43	48	53	59	**1092**
50	16	19	23	26	31	35	40	45	51	56	63	**1032**
60	16	20	24	28	32	37	42	48	53	59	66	**982**
60º F, 6 psf wind	17	20	24	28	33	37	42	48	54	60	66	**1108**
70	17	21	25	29	34	39	44	50	56	62	69	**937**
80	18	22	26	30	35	40	46	52	58	65	72	**898**
90	19	23	27	32	37	42	48	54	61	68	75	**863**
100	19	23	28	33	38	44	50	56	63	70	78	**832**
120	21	25	30	35	41	47	53	60	67	75	83	**779**
248	25	30	36	42	49	56	64	72	81	90	100	**650**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 4,000 Lbs **RBS = 25,900 Lbs**

Medium Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	
15º, 1" ice, 4 psf wind	26	30	34	38	42	47	51	56	62	67	73	**5053**
15º, 0.8" ice, 4 psf wind	25	28	32	36	40	44	48	53	58	63	69	**4336**
0º, 0.5" ice, 4 psf wind + k	21	24	27	31	34	38	42	46	50	55	59	**4000**
0	17	19	21	24	27	30	33	36	39	43	46	**2180**
10	18	21	24	26	29	33	36	39	43	47	51	**1977**
20	20	23	26	29	32	36	39	43	47	51	56	**1812**
30	22	25	28	31	35	39	42	47	51	55	60	**1678**
40	23	26	30	33	37	41	46	50	55	59	65	**1566**
50	25	28	32	36	40	44	48	53	58	63	69	**1472**
60º F, 21 psf wind	28	32	37	41	46	51	56	61	67	73	79	**2743**
60º F, 6 psf wind	26	30	34	38	42	47	52	57	62	68	73	**1565**
60º F, 4 psf wind	26	30	34	38	42	47	51	56	62	67	73	**1472**
60	26	30	34	38	42	46	51	56	61	67	73	**1392**
70	27	31	35	40	44	49	54	59	65	70	76	**1322**
80	29	33	37	42	46	51	56	62	68	74	80	**1262**
90	30	34	39	43	48	54	59	65	71	77	84	**1208**
100	31	36	40	45	50	56	61	67	74	80	87	**1161**

Medium Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	
-20	15	17	19	21	23	26	29	31	34	37	41	**2491**
0	18	21	23	26	29	32	35	39	43	46	50	**2010**
0º, 0.5" ice, 4 psf wind + k	22	25	29	32	36	39	44	48	52	57	62	**3844**
30	23	26	29	33	37	41	45	49	54	59	64	**1586**
32º, 0.5" ice,	26	29	33	37	41	45	50	55	60	65	71	**2795**
32º, 0.5" ice, 2 psf wind	26	29	33	37	41	45	50	55	60	65	71	**2829**
40	24	28	31	35	39	43	48	52	57	62	68	**1490**
50	26	29	33	37	41	46	51	55	61	66	72	**1408**
60	27	31	35	39	44	48	53	59	64	70	76	**1337**
60º F, 6 psf wind	27	31	35	40	44	49	54	59	65	70	76	**1505**
70	28	32	37	41	46	51	56	61	67	73	79	**1275**
80	30	34	38	43	48	53	58	64	70	76	83	**1221**
90	31	35	40	45	50	55	61	67	73	79	86	**1173**
100	32	37	41	46	52	57	63	69	76	82	89	**1130**
120	34	39	44	50	55	61	68	74	81	88	96	**1055**
248	42	48	54	61	68	75	83	91	99	108	117	**863**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 5,000 Lbs **RBS = 25,900 Lbs**

Long Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	
15º, 1" ice, 4 psf wind	38	42	46	50	55	59	64	69	74	80	85	**6215**
15º, 0.8" ice, 4 psf wind	35	39	43	47	51	55	60	64	69	74	79	**5390**
0º, 0.5" ice, 4 psf wind + k	30	34	37	40	44	48	51	55	60	64	68	**5000**
0	22	24	27	29	32	35	38	40	44	47	50	**2912**
10	24	27	30	32	35	38	41	45	48	51	55	**2640**
20	27	29	32	35	38	42	45	49	52	56	60	**2415**
30	29	32	35	38	42	45	49	53	57	61	65	**2228**
40	31	34	38	41	45	49	53	57	61	66	70	**2072**
50	33	37	40	44	48	52	56	61	65	70	75	**1941**
60º F, 21 psf wind	40	44	48	52	57	62	67	72	78	83	89	**3499**
60º F, 6 psf wind	36	40	43	47	52	56	61	65	70	75	81	**2047**
60º F, 4 psf wind	36	39	43	47	51	56	60	65	70	75	80	**1930**
60	35	39	43	47	51	55	60	64	69	74	79	**1829**
70	37	41	45	49	54	58	63	68	73	78	84	**1732**
80	39	43	47	52	56	61	66	71	77	82	88	**1648**
90	41	45	50	54	59	64	69	75	80	86	92	**1575**
100	43	47	52	57	62	67	72	78	84	90	96	**1509**

Long Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	
-20	20	23	25	27	29	32	35	37	40	43	46	**3161**
0	25	28	30	33	36	39	42	46	49	53	56	**2576**
0º, 0.5" ice, 4 psf wind + k	32	35	39	42	46	50	54	59	63	67	72	**4738**
30	32	35	38	42	46	50	54	58	62	67	71	**2035**
32º, 0.5" ice,	36	40	44	48	52	57	61	66	71	76	81	**3502**
32º, 0.5" ice, 2 psf wind	36	40	44	48	52	57	61	66	71	76	82	**3542**
40	34	37	41	45	49	53	57	62	66	71	76	**1910**
50	36	40	43	47	52	56	61	65	70	75	81	**1803**
60	38	42	46	50	54	59	64	69	74	79	85	**1710**
60º F, 6 psf wind	38	42	46	51	55	60	65	70	75	80	86	**1919**
70	40	44	48	52	57	62	67	72	78	83	89	**1630**
80	41	46	50	55	60	65	70	76	81	87	93	**1559**
90	43	48	52	57	62	68	73	79	85	91	97	**1496**
100	43	47	52	57	62	67	72	78	84	90	96	**1440**
120	48	53	58	64	69	75	81	88	94	101	108	**1343**
248	60	66	73	79	86	94	101	109	118	126	135	**1078**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 6,000 Lbs **RBS = 25,900 Lbs**

Extra Long Span - Feet

Condition→ / Temp. / R.S. Range②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	250	**260**	**270**	**280**	**290**	**300**	**310**	**320**	**330**	**340**	**350**	
15º, 1" ice, 4 psf wind	50	54	58	63	67	72	77	82	87	92	98	**7346**
15º, 0.8" ice, 4 psf wind	46	50	54	58	62	66	71	76	80	85	90	**6435**
0º, 0.5" ice, 4 psf wind + k	40	43	46	50	53	57	61	65	69	73	78	**6000**
0	27	29	32	34	36	39	42	44	47	50	53	**3724**
10	30	32	35	37	40	43	46	49	52	55	58	**3386**
20	33	35	38	41	44	47	50	53	57	60	64	**3097**
30	35	38	41	44	48	51	54	58	62	65	69	**2853**
40	38	41	45	48	51	55	59	63	67	71	75	**2646**
50	41	44	48	51	55	59	63	67	71	76	80	**2470**
60º F, 21 psf wind	51	55	59	63	68	73	78	83	88	93	99	**4287**
60º F, 6 psf wind	45	48	52	56	60	64	68	73	78	82	87	**2581**
60º F, 4 psf wind	44	48	51	55	59	63	68	72	77	81	86	**2441**
60	44	47	51	55	59	63	67	71	76	80	85	**2319**
70	46	50	54	58	62	66	71	76	80	85	90	**2190**
80	49	53	57	61	65	70	75	80	85	90	95	**2077**
90	51	55	59	64	69	73	78	84	89	94	100	**1978**
100	53	58	62	67	72	77	82	88	93	99	105	**1891**

Extra Long Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	250	**260**	**270**	**280**	**290**	**300**	**310**	**320**	**330**	**340**	**350**	
-20	26	28	30	33	35	38	40	43	45	48	51	**3861**
0	32	34	37	40	43	46	49	52	55	59	62	**3176**
0º, 0.5" ice, 4 psf wind + k	42	46	49	53	57	61	65	69	73	78	83	**5629**
30	40	43	47	50	54	58	62	66	70	74	79	**2512**
32º, 0.5" ice,	47	51	55	59	63	68	72	77	82	87	92	**4220**
32º, 0.5" ice, 2 psf wind	47	51	55	59	63	68	72	77	82	87	92	**4267**
40	43	46	50	54	58	62	66	70	75	79	84	**2356**
50	46	50	54	58	62	66	71	76	80	85	90	**2221**
60	48	52	56	60	64	69	74	79	83	89	94	**2105**
60º F, 6 psf wind	49	53	57	61	66	70	75	80	85	90	96	**2355**
70	50	55	59	63	68	73	78	83	88	93	99	**2004**
80	53	57	62	66	71	76	81	86	92	98	103	**1915**
90	55	59	64	69	74	79	85	90	96	102	108	**1835**
100	57	62	67	72	77	82	88	94	100	106	112	**1764**
120	62	67	72	77	83	89	95	101	107	114	121	**1643**
248	78	85	91	98	105	113	120	128	136	145	153	**1293**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 7,500 Lbs

RBS = 25,900 Lbs

Super Long Span - Feet

Condition→ / Temp. / R.S. Range②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	300	310	320	330	340	350	360	370	380	390	400	
15º, 1" ice, 4 psf wind	60	64	68	72	77	81	86	91	96	101	106	**8856**
15º, 0.8" ice, 4 psf wind	54	58	62	66	70	74	78	82	87	92	96	**7900**
0º, 0.5" ice, 4 psf wind + k	46	49	52	55	59	62	66	69	73	77	81	**7500**
0	27	29	31	33	35	37	39	42	44	46	49	**5291**
10	30	32	34	36	39	41	43	46	48	51	53	**4831**
20	33	35	37	40	42	45	47	50	53	56	58	**4412**
30	36	38	41	44	46	49	52	55	58	61	64	**4037**
40	39	42	45	47	50	53	56	60	63	66	70	**3709**
50	42	45	48	51	54	58	61	65	68	72	75	**3425**
60º F, 21 psf wind	57	61	65	69	74	78	83	87	92	97	102	**5436**
60º F, 6 psf wind	47	51	54	57	61	64	68	72	76	80	84	**3488**
60º F, 4 psf wind	46	50	53	56	60	63	67	71	75	79	83	**3323**
60	46	49	52	55	59	62	66	69	73	77	81	**3180**
70	49	52	56	59	63	67	70	74	79	83	87	**2969**
80	52	56	59	63	67	71	75	79	84	88	93	**2787**
90	55	59	63	67	71	75	80	84	89	93	98	**2629**
100	58	62	66	71	75	79	84	89	94	99	104	**2491**

Super Long Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	300	310	320	330	340	350	360	370	380	390	400	
-20	28	30	32	34	36	38	40	42	45	47	49	**5221**
0	34	36	39	41	44	46	49	52	54	57	60	**4283**
0º, 0.5" ice, 4 psf wind + k	49	53	56	60	63	67	71	75	79	83	87	**6944**
30	44	47	50	53	56	60	63	67	70	74	78	**3312**
32º, 0.5" ice,	54	58	62	66	70	74	78	82	87	92	96	**5261**
32º, 0.5" ice, 2 psf wind	54	58	62	66	70	74	78	83	87	92	97	**5314**
40	47	50	54	57	61	64	68	72	76	80	84	**3080**
50	50	54	57	61	65	69	73	77	81	85	90	**2881**
60	54	57	61	65	69	73	77	82	86	91	95	**2711**
60º F, 6 psf wind	55	59	62	66	71	75	79	84	88	93	98	**3009**
70	57	61	64	69	73	77	82	86	91	96	101	**2563**
80	60	64	68	72	77	81	86	91	96	101	106	**2434**
90	63	67	71	76	81	85	90	95	101	106	111	**2320**
100	66	70	75	79	84	89	94	100	105	111	116	**2219**
120	71	76	81	86	91	97	102	108	114	120	126	**2049**
248	94	100	107	113	120	128	135	143	150	158	167	**1554**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

T2 - (2) 556.5 kcmil (19) AAC "Dahlia"

DE Tension = 2,000 Lbs **RBS = 19,500 Lbs**

Super Short Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
15º, 1" ice, 4 psf wind	6	9	12	15	19	24	29	34	40	46	53	**2,654**
15º, 0.8" ice, 4 psf wind	6	8	11	15	19	23	28	33	39	45	52	**2,222**
0º, 0.5" ice, 4 psf wind + k	5	7	10	13	16	20	24	29	34	39	45	**2,000**
0	4	6	9	11	14	18	21	25	30	34	39	**897**
10	5	7	9	12	16	19	23	28	32	38	43	**817**
20	5	7	10	13	17	21	25	30	35	41	47	**755**
30	6	8	11	14	18	22	27	32	38	44	50	**704**
40	6	9	12	15	19	24	29	34	40	47	53	**662**
50	6	9	12	16	20	25	30	36	42	49	56	**626**
60º F, 21 psf wind	7	10	14	18	22	28	34	40	47	54	62	**1,445**
60º F, 6 psf wind	7	10	13	17	21	27	32	38	45	52	60	**712**
60º F, 4 psf wind	7	10	13	17	21	27	32	38	45	52	60	**650**
60	7	10	13	17	21	26	32	38	45	52	59	**595**
70	7	10	14	18	22	28	33	40	47	54	62	**569**
80	7	10	14	18	23	29	35	41	49	56	65	**545**
90	8	11	15	19	24	30	36	43	51	59	68	**525**
100	8	11	15	20	25	31	38	45	53	61	70	**506**

Super Short Span - Feet

Condition→ / Temp.	FINAL SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
-20	4	5	7	9	11	14	17	20	24	28	32	**1,108**
0	5	6	9	12	15	18	22	26	30	35	41	**874**
0º, 0.5" ice, 4 psf wind + k	5	7	10	13	16	20	24	29	34	39	45	**2,000**
30	6	8	11	15	18	23	28	33	39	45	51	**690**
32º, 0.5" ice,	6	9	12	15	20	24	29	35	41	47	54	**1,389**
32º, 0.5" ice, 2 psf wind	6	9	12	15	20	24	29	35	41	47	54	**1,410**
40	6	9	12	15	20	24	29	35	41	47	54	**650**
50	6	9	13	16	21	26	31	37	43	50	58	**616**
60	7	10	13	17	22	27	32	39	45	52	60	**586**
60º F, 6 psf wind	7	10	13	17	22	27	33	39	46	53	61	**702**
70	7	10	14	18	23	28	34	40	47	55	63	**561**
80	7	10	14	19	24	29	35	42	49	57	66	**538**
90	8	11	15	19	25	30	37	44	51	60	68	**518**
100	8	11	15	20	25	31	38	45	53	62	71	**500**
120	8	12	16	22	27	34	41	48	57	66	76	**469**
212	10	15	21	27	34	42	51	60	71	82	94	**376**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

T2 - (2) 556.5 kcmil (19) AAC "Dahlia"

DE Tension = 4,000 Lbs **RBS = 19,500 Lbs**

Short Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
15º, 1" ice, 4 psf wind	13	16	19	22	26	30	34	38	43	48	53	**4,737**
15º, 0.8" ice, 4 psf wind	12	15	18	21	24	28	32	36	40	44	49	**4,130**
0º, 0.5" ice, 4 psf wind + k	10	12	14	17	20	23	26	29	32	36	40	**4,000**
0	6	8	9	11	12	14	16	18	21	23	25	**2,477**
10	7	9	11	13	15	17	19	22	24	27	30	**2,095**
20	9	11	13	15	17	20	22	25	28	31	35	**1,804**
30	10	12	14	17	19	22	25	29	32	36	40	**1,585**
40	11	13	16	19	22	25	28	32	36	40	44	**1,418**
50	12	15	18	21	24	27	31	35	39	44	49	**1,289**
60º F, 21 psf wind	15	18	22	26	30	34	39	44	49	55	61	**2,636**
60º F, 6 psf wind	14	16	20	23	27	30	35	39	44	49	54	**1,397**
60º F, 4 psf wind	13	16	19	23	26	30	34	39	43	48	54	**1,286**
60	13	16	19	22	26	30	34	38	43	48	53	**1,186**
70	14	17	21	24	28	32	36	41	46	51	57	**1,103**
80	15	18	22	26	30	34	39	44	49	55	61	**1,034**
90	16	19	23	27	32	36	41	47	52	58	64	**975**
100	17	21	24	29	33	38	43	49	55	61	68	**925**

Short Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
-20	5	6	7	8	10	11	13	14	16	18	20	**3,198**
0	7	9	11	12	14	16	19	21	24	26	29	**2,151**
0º, 0.5" ice, 4 psf wind + k	10	12	15	17	20	23	26	30	33	37	41	**3,878**
30	11	13	16	19	22	25	28	32	36	40	44	**1,416**
32º, 0.5" ice,	13	16	19	22	25	29	33	37	42	46	51	**2,600**
32º, 0.5" ice, 2 psf wind	13	16	19	22	25	29	33	37	42	47	52	**2,634**
40	12	15	18	21	24	27	31	35	40	44	49	**1,284**
50	13	16	19	22	26	30	34	38	43	48	53	**1,180**
60	14	17	21	24	28	32	37	41	46	52	57	**1,096**
60º F, 6 psf wind	15	18	21	25	29	33	37	42	47	53	58	**1,300**
70	15	19	22	26	30	34	39	44	50	55	61	**1,027**
80	16	20	23	27	32	36	42	47	53	59	65	**969**
90	17	21	25	29	33	38	44	49	55	62	68	**919**
100	18	22	26	30	35	40	46	52	58	65	72	**876**
120	20	24	28	33	38	44	50	56	63	70	78	**805**
212	26	31	37	43	50	58	66	74	83	93	103	**613**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

T2 - (2) 556.5 kcmil (19) AAC "Dahlia"

DE Tension = 5,000 Lbs **RBS = 19,500 Lbs**

Medium Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
15º, 1" ice, 4 psf wind	24	27	31	34	38	42	47	51	56	61	66	**5,937**
15º, 0.8" ice, 4 psf wind	22	25	28	32	35	39	43	47	52	56	61	**5,215**
0º, 0.5" ice, 4 psf wind + k	18	21	23	26	29	32	35	39	42	46	50	**5,000**
0	11	12	14	16	18	19	21	24	26	28	30	**3,220**
10	13	14	16	18	20	22	25	27	30	32	35	**2,792**
20	14	16	19	21	23	26	28	31	34	37	40	**2,443**
30	16	19	21	23	26	29	32	35	38	42	45	**2,165**
40	18	21	23	26	29	32	36	39	43	46	50	**1,946**
50	20	23	26	29	32	35	39	43	47	51	55	**1,771**
60º F, 21 psf wind	26	29	33	37	42	46	51	56	61	66	72	**3,471**
60º F, 6 psf wind	22	25	29	32	36	40	44	48	53	57	62	**1,902**
60º F, 4 psf wind	22	25	28	32	35	39	43	47	52	56	61	**1,758**
60	22	25	28	31	35	39	42	47	51	55	60	**1,629**
70	23	27	30	34	37	42	46	50	55	60	65	**1,513**
80	25	28	32	36	40	44	49	54	59	64	69	**1,416**
90	26	30	34	38	42	47	52	57	62	68	74	**1,335**
100	28	32	36	40	45	50	55	60	66	72	78	**1,265**

Medium Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
-20	10	11	13	14	16	18	20	21	23	26	28	**3,537**
0	14	16	18	20	22	24	27	30	32	35	38	**2,566**
0º, 0.5" ice, 4 psf wind + k	19	22	25	28	31	34	38	42	45	49	54	**4,661**
30	20	22	25	28	31	35	38	42	46	50	54	**1,800**
32º, 0.5" ice,	23	26	30	33	37	41	45	50	54	59	64	**3,266**
32º, 0.5" ice, 2 psf wind	23	26	30	33	37	41	45	50	54	59	64	**3,307**
40	21	24	27	31	34	38	42	46	50	55	59	**1,649**
50	23	26	30	33	37	41	45	50	54	59	64	**1,526**
60	25	28	32	36	40	44	49	53	58	63	69	**1,425**
60º F, 6 psf wind	25	29	32	36	41	45	49	54	59	65	70	**1,685**
70	26	30	34	38	42	47	52	57	62	67	73	**1,341**
80	28	32	36	40	45	50	55	60	66	71	77	**1,269**
90	29	33	38	42	47	52	57	63	69	75	81	**1,207**
100	31	35	39	44	49	54	60	66	72	78	85	**1,152**
120	33	38	43	48	53	59	65	72	78	85	92	**1,062**
212	44	50	56	63	70	77	85	94	102	111	121	**814**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

T2 - (2) 556.5 kcmil (19) AAC "Dahlia"

DE Tension = 6,000 Lbs **RBS = 19,500 Lbs**

Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	Lbs
15º, 1" ice, 4 psf wind	35	39	43	47	51	55	60	65	69	74	80	**7,098**
15º, 0.8" ice, 4 psf wind	32	36	39	43	47	51	55	59	64	68	73	**6,282**
0º, 0.5" ice, 4 psf wind + k	27	29	32	35	38	42	45	49	52	56	60	**6,000**
0	16	17	19	21	22	24	26	28	31	33	35	**4,032**
10	18	19	21	23	25	27	30	32	34	37	40	**3,560**
20	20	22	24	26	29	31	34	36	39	42	45	**3,155**
30	22	25	27	29	32	35	38	41	44	47	50	**2,817**
40	25	27	30	33	36	39	42	45	48	52	56	**2,539**
50	27	30	33	36	39	42	46	49	53	57	61	**2,311**
60º F, 21 psf wind	37	41	45	49	53	58	63	67	73	78	83	**4,323**
60º F, 6 psf wind	31	34	37	41	44	48	52	56	60	65	69	**2,456**
60º F, 4 psf wind	30	33	36	40	43	47	51	55	59	63	68	**2,282**
60	30	33	36	39	43	46	50	54	58	62	67	**2,125**
70	32	35	39	42	46	50	54	58	62	67	72	**1,970**
80	34	38	41	45	49	53	58	62	67	72	77	**1,840**
90	36	40	44	48	52	57	61	66	71	76	82	**1,730**
100	38	42	46	51	55	60	65	70	75	81	86	**1,636**

Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	Lbs
-20	16	17	19	21	22	24	26	28	31	33	35	**4,021**
0	21	23	25	27	30	32	35	38	40	43	46	**3,047**
0º, 0.5" ice, 4 psf wind + k	29	32	35	39	42	46	49	53	57	62	66	**5,474**
30	28	31	34	38	41	44	48	52	56	60	64	**2,210**
32º, 0.5" ice,	34	37	41	45	49	53	57	62	67	71	76	**3,944**
32º, 0.5" ice, 2 psf wind	34	38	41	45	49	53	57	62	67	72	77	**3,993**
40	31	34	37	41	44	48	52	56	61	65	69	**2,034**
50	33	37	40	44	48	52	56	61	65	70	75	**1,890**
60	35	39	43	47	51	55	60	65	70	75	80	**1,769**
60º F, 6 psf wind	36	40	44	48	52	57	61	66	71	76	82	**2,084**
70	38	41	46	50	54	59	64	69	74	79	85	**1,667**
80	40	44	48	53	57	62	67	73	78	84	90	**1,580**
90	42	46	51	55	60	65	71	76	82	88	94	**1,504**
100	44	48	53	58	63	68	74	80	86	92	98	**1,438**
120	47	52	57	63	68	74	80	86	93	100	107	**1,327**
212	62	68	75	82	89	97	104	113	121	130	139	**1,018**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

T2 - (2) 556.5 kcmil (19) AAC "Dahlia"

DE Tension = 7,000 Lbs **RBS = 19,500 Lbs**

Extra Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			Tension
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	Lbs
15º, 1" ice, 4 psf wind	48	52	56	60	64	69	73	78	83	88	94	**8,227**
15º, 0.8" ice, 4 psf wind	43	47	51	54	58	62	67	71	76	80	85	**7,336**
0º, 0.5" ice, 4 psf wind + k	36	39	42	45	48	51	55	59	62	66	70	**7,000**
0	20	22	23	25	27	29	31	33	35	37	39	**4,906**
10	22	24	26	28	30	32	34	36	39	41	44	**4,399**
20	25	27	29	31	33	36	38	41	43	46	49	**3,944**
30	28	30	32	35	37	40	43	45	48	51	54	**3,548**
40	31	33	36	38	41	44	47	50	53	56	60	**3,210**
50	34	36	39	42	45	48	52	55	58	62	66	**2,925**
60º F, 21 psf wind	48	52	56	60	65	69	74	79	84	89	94	**5,197**
60º F, 6 psf wind	39	42	45	48	52	55	59	63	67	71	75	**3,069**
60º F, 4 psf wind	37	40	44	47	50	54	58	61	65	69	73	**2,868**
60	37	39	43	46	49	53	56	60	64	68	72	**2,686**
70	40	43	46	50	53	57	61	65	69	73	77	**2,485**
80	42	46	49	53	57	61	65	69	74	78	83	**2,316**
90	45	49	53	57	61	65	69	74	79	84	89	**2,172**
100	48	52	56	60	64	69	74	79	83	89	94	**2,049**

Extra Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											
Temp.						R.S.						Tension
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	Lbs
-20	21	23	25	27	29	31	33	35	37	39	42	**4,587**
0	27	30	32	34	37	39	42	45	48	51	54	**3,575**
0º, 0.5" ice, 4 psf wind + k	40	43	46	50	53	57	61	65	69	73	78	**6,306**
30	37	40	43	47	50	53	57	61	65	69	73	**2,647**
32º, 0.5" ice,	45	49	53	57	61	65	69	74	79	83	88	**4,637**
32º, 0.5" ice, 2 psf wind	45	49	53	57	61	65	70	74	79	84	89	**4,692**
40	40	43	47	50	54	58	62	66	70	74	79	**2,443**
50	43	47	50	54	58	62	66	71	75	80	85	**2,274**
60	46	50	54	58	62	66	71	75	80	85	90	**2,132**
60º F, 6 psf wind	47	51	55	59	64	68	73	77	82	87	93	**2,502**
70	49	53	57	61	66	70	75	80	85	90	96	**2,011**
80	52	56	60	65	69	74	79	84	90	95	101	**1,906**
90	54	58	63	68	73	78	83	89	94	100	106	**1,815**
100	57	61	66	71	76	81	87	93	99	105	111	**1,735**
120	61	66	72	77	83	88	94	100	107	113	120	**1,601**
212	80	87	93	100	108	115	123	131	140	148	157	**1,228**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

T2 - (2) 556.5 kcmil (19) AAC "Dahlia"

DE Tension = 8,000 Lbs **RBS = 19,500 Lbs**

Super Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	Lbs
15º, 1" ice, 4 psf wind	61	65	69	74	78	83	87	92	97	103	108	**9,324**
15º, 0.8" ice, 4 psf wind	55	58	62	66	70	74	79	83	88	92	97	**8,378**
0º, 0.5" ice, 4 psf wind + k	45	48	51	55	58	61	65	69	72	76	80	**8,000**
0	24	26	27	29	31	33	35	37	39	41	43	**5,836**
10	27	28	30	32	34	36	38	41	43	45	47	**5,304**
20	29	31	33	36	38	40	42	45	47	50	52	**4,811**
30	32	35	37	39	42	44	47	49	52	55	58	**4,364**
40	36	38	41	43	46	48	51	54	57	60	63	**3,968**
50	39	42	44	47	50	53	56	59	63	66	69	**3,623**
60º F, 21 psf wind	59	63	67	72	76	81	85	90	95	100	105	**6,095**
60º F, 6 psf wind	45	48	52	55	58	62	65	69	73	77	81	**3,752**
60º F, 4 psf wind	44	47	50	53	56	60	63	67	70	74	78	**3,529**
60	42	45	48	51	54	58	61	65	68	72	75	**3,327**
70	46	49	52	56	59	63	66	70	74	78	82	**3,074**
80	49	53	56	60	63	67	71	75	79	83	88	**2,858**
90	53	56	60	64	68	72	76	80	85	89	94	**2,673**
100	56	60	64	68	72	76	81	85	90	95	100	**2,514**

Super Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	Lbs
-20	27	29	31	33	35	37	39	41	43	46	48	**5,215**
0	34	36	39	41	44	46	49	52	55	58	60	**4,149**
0º, 0.5" ice, 4 psf wind + k	50	54	57	61	65	69	72	77	81	85	89	**7,153**
30	45	48	52	55	58	62	65	69	73	77	81	**3,115**
32º, 0.5" ice,	56	60	64	68	72	77	81	86	90	95	100	**5,346**
32º, 0.5" ice, 2 psf wind	57	60	64	68	73	77	82	86	91	96	101	**5,408**
40	49	52	56	59	63	67	71	75	79	83	87	**2,880**
50	53	56	60	64	68	72	76	80	84	89	94	**2,683**
60	56	60	64	68	72	76	81	85	90	95	100	**2,516**
60º F, 6 psf wind	58	62	66	70	74	79	83	88	93	98	103	**2,940**
70	60	64	68	72	76	81	86	91	95	101	106	**2,373**
80	63	67	71	76	81	85	90	95	101	106	112	**2,250**
90	66	70	75	80	85	90	95	100	106	111	117	**2,142**
100	69	74	79	84	89	94	99	105	111	117	123	**2,047**
120	75	80	85	91	96	102	108	114	120	127	133	**1,888**
212	98	105	112	119	126	134	141	149	157	166	174	**1,444**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

1272 kcmil (45/7) ACSR "Bittern"

DE Tension = 1,500 Lbs **RBS = 34,100 Lbs**

Super Short Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
15º, 1" ice, 4 psf wind	8	12	16	21	26	32	39	46	54	63	72	**2098**
15º, 0.8" ice, 4 psf wind	8	11	16	20	26	32	38	46	54	62	72	**1749**
0º, 0.5" ice, 4 psf wind + k	8	11	15	19	24	30	36	43	51	59	68	**1500**
0	7	10	14	19	23	29	35	42	49	57	65	**744**
10	8	11	15	19	24	30	36	43	51	59	68	**716**
20	8	11	15	20	25	31	38	45	53	61	70	**691**
30	8	12	16	21	26	32	39	46	54	63	72	**671**
40	8	12	16	21	27	33	40	48	56	65	75	**652**
50	9	12	17	22	28	34	41	49	58	67	77	**634**
60º F, 21 psf wind	9	13	17	23	29	35	43	51	60	69	80	**1171**
60º F, 6 psf wind	9	13	17	22	28	35	42	50	59	68	79	**682**
60º F, 4 psf wind	9	13	17	22	28	35	42	50	59	68	79	**647**
60	9	13	17	22	28	35	42	50	59	68	79	**618**
70	9	13	18	23	29	36	43	51	60	70	80	**603**
80	9	13	18	23	30	37	44	53	62	72	82	**589**
90	9	13	18	24	30	37	45	54	63	73	84	**576**
100	9	14	19	24	31	38	46	55	64	74	85	**569**

Super Short Span - Feet

Condition→	FINAL SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
-20	7	10	13	17	22	27	32	39	45	52	60	**804**
0	7	10	14	19	24	29	35	42	49	57	66	**739**
0º, 0.5" ice, 4 psf wind + k	8	11	15	19	24	30	36	43	51	59	68	**1500**
30	8	12	16	21	26	32	39	47	55	64	73	**667**
32º, 0.5" ice,	8	12	16	21	27	33	40	48	56	65	74	**1178**
32º, 0.5" ice, 2 psf wind	8	12	16	21	27	33	40	48	56	65	74	**1191**
40	8	12	16	21	27	33	40	48	56	65	75	**648**
50	9	12	17	22	28	34	41	49	58	67	77	**631**
60	9	13	17	22	28	35	42	50	59	69	79	**615**
60º F, 6 psf wind	9	13	17	23	28	35	43	51	59	69	79	**678**
70	9	13	18	23	29	36	44	52	61	71	81	**600**
80	9	13	18	24	30	37	44	53	62	72	83	**587**
90	9	13	18	24	30	37	45	54	63	73	84	**576**
100	9	14	19	24	31	38	46	55	64	74	85	**569**
120	10	14	19	25	31	39	47	56	66	76	87	**557**
248	11	16	22	28	36	44	53	63	74	86	99	**492**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

1272 kcmil (45/7) ACSR "Bittern"

DE Tension = 3,000 Lbs **RBS = 34,100 Lbs**

Short Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
15º, 1" ice, 4 psf wind	17	21	25	29	34	39	44	50	56	62	69	**3929**
15º, 0.8" ice, 4 psf wind	17	20	24	28	33	37	43	48	54	60	67	**3341**
0º, 0.5" ice, 4 psf wind + k	15	18	22	25	29	34	38	43	49	54	60	**3000**
0	13	16	19	23	26	30	35	39	44	49	54	**1595**
10	14	17	21	24	28	32	37	42	47	52	58	**1496**
20	15	18	22	26	30	34	39	44	49	55	61	**1413**
30	16	19	23	27	31	36	41	46	52	58	64	**1342**
40	17	20	24	28	33	38	43	49	55	61	67	**1279**
50	18	21	25	30	34	40	45	51	57	64	70	**1224**
60º F, 21 psf wind	19	23	27	32	37	43	49	55	62	69	76	**2168**
60º F, 6 psf wind	18	22	26	31	36	41	47	53	60	66	74	**1292**
60º F, 4 psf wind	18	22	26	31	36	41	47	53	60	66	74	**1229**
60	18	22	26	31	36	41	47	53	59	66	73	**1176**
70	19	23	27	32	37	43	49	55	62	69	76	**1132**
80	20	24	28	33	39	44	51	57	64	71	79	**1093**
90	20	25	29	34	40	46	52	59	66	74	81	**1058**
100	21	25	30	36	41	47	54	61	68	76	84	**1026**

Short Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
-20	12	14	17	20	23	26	30	34	38	42	47	**1832**
0	14	17	20	23	27	31	35	40	45	50	55	**1560**
0º, 0.5" ice, 4 psf wind + k	15	18	22	25	29	34	38	43	49	54	60	**3000**
30	16	20	24	28	32	37	42	47	53	59	65	**1315**
32º, 0.5" ice,	17	21	25	29	34	39	44	50	56	62	69	**2253**
32º, 0.5" ice, 2 psf wind	17	21	25	29	34	39	44	50	56	62	69	**2276**
40	17	21	25	29	34	39	44	50	56	62	69	**1255**
50	18	22	26	30	35	40	46	52	58	65	72	**1202**
60	19	23	27	32	37	42	48	54	60	67	75	**1155**
60º F, 6 psf wind	19	23	27	32	37	42	48	54	61	68	75	**1271**
70	19	23	28	33	38	44	50	56	63	70	77	**1113**
80	20	24	29	34	39	45	51	58	65	72	80	**1075**
90	21	25	30	35	41	47	53	60	67	75	83	**1041**
100	21	26	31	36	42	48	55	62	69	77	86	**1010**
120	22	27	32	38	44	50	57	64	72	80	89	**969**
248	26	32	38	44	51	59	67	76	85	94	105	**827**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

1272 kcmil (45/7) ACSR "Bittern"

DE Tension = 4500 Lbs **RBS = 34,100 Lbs**

Medium Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
15º, 1" ice, 4 psf wind	27	31	35	39	43	48	53	58	63	69	75	5636
15º, 0.8" ice, 4 psf wind	26	29	33	37	41	46	50	55	60	66	71	4879
0º, 0.5" ice, 4 psf wind + k	22	26	29	32	36	40	44	48	53	58	62	4500
0	18	21	24	27	30	33	36	40	43	47	51	2624
10	20	23	26	29	32	36	39	43	47	51	56	2418
20	22	25	28	31	35	38	42	46	51	55	60	2246
30	23	26	30	33	37	41	45	50	54	59	64	2102
40	25	28	31	35	39	44	48	53	58	63	68	1979
50	26	29	33	37	41	46	51	56	61	66	72	1874
60º F, 21 psf wind	29	33	38	42	47	52	57	63	69	75	81	3180
60º F, 6 psf wind	27	31	35	40	44	49	54	59	65	70	76	1950
60º F, 4 psf wind	27	31	35	39	44	49	54	59	64	70	76	1859
60	27	31	35	39	44	48	53	59	64	70	76	1782
70	28	32	37	41	46	51	56	61	67	73	79	1702
80	30	34	38	43	48	53	58	64	70	76	83	1630
90	31	35	40	45	50	55	61	67	73	79	86	1567
100	32	37	41	46	52	57	63	69	76	82	89	1510

Medium Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	Lbs
-20	16	18	21	23	26	29	32	35	38	41	45	2994
0	20	22	25	28	31	35	38	42	46	50	54	2470
0º, 0.5" ice, 4 psf wind + k	23	26	29	33	37	41	45	49	54	58	63	4442
30	24	28	31	35	39	43	48	52	57	62	68	1995
32º, 0.5" ice,	26	30	34	38	42	47	52	57	62	68	73	3307
32º, 0.5" ice, 2 psf wind	26	30	34	38	42	47	52	57	62	68	73	3339
40	26	29	33	37	41	46	50	55	60	66	71	1884
50	27	31	35	39	44	48	53	58	64	69	75	1788
60	28	32	37	41	46	51	56	61	67	73	79	1705
60º F, 6 psf wind	29	33	37	41	46	51	56	62	67	73	80	1870
70	30	34	38	43	48	53	58	64	70	76	83	1632
80	31	35	40	45	50	55	61	67	73	79	86	1567
90	32	37	41	46	52	57	63	69	76	82	89	1509
100	33	38	43	48	53	59	65	72	78	85	92	1457
120	36	40	46	51	57	63	70	76	83	91	99	1366
248	43	48	55	61	68	76	83	91	100	109	118	1143

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

1272 kcmil (45/7) ACSR "Bittern"

DE Tension = 6,000 Lbs **RBS = 34,100 Lbs**

Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	Lbs
15º, 1" ice, 4 psf wind	37	41	45	49	53	58	63	68	73	78	83	**7280**
15º, 0.8" ice, 4 psf wind	35	38	42	46	50	54	59	63	68	73	78	**6396**
0º, 0.5" ice, 4 psf wind + k	30	33	36	40	43	47	51	55	59	63	68	**6000**
0	22	25	27	30	32	35	38	41	44	47	50	**3832**
10	25	27	30	33	35	38	42	45	48	52	55	**3503**
20	27	29	32	35	38	42	45	49	52	56	60	**3225**
30	29	32	35	38	41	45	49	52	56	61	65	**2989**
40	31	34	37	41	44	48	52	56	61	65	69	**2789**
50	33	36	40	43	47	51	56	60	64	69	74	**2619**
60º F, 21 psf wind	39	43	47	52	56	61	66	71	76	82	88	**4243**
60º F, 6 psf wind	35	39	43	47	51	55	60	65	69	74	80	**2689**
60º F, 4 psf wind	35	39	42	46	51	55	59	64	69	74	79	**2571**
60	35	38	42	46	50	54	59	64	68	73	78	**2471**
70	37	41	45	49	53	57	62	67	72	77	83	**2343**
80	39	43	47	51	56	60	65	70	76	81	87	**2232**
90	40	45	49	53	58	63	68	74	79	85	91	**2133**
100	42	46	51	56	61	66	71	77	83	89	95	**2045**

Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension
Temp.						R.S.						
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	Lbs
-20	21	23	25	27	30	32	35	38	40	43	46	**4175**
0	25	28	31	33	36	39	43	46	50	53	57	**3405**
0º, 0.5" ice, 4 psf wind + k	31	34	38	41	45	49	53	57	61	65	70	**5782**
30	32	35	39	42	46	50	54	58	63	67	72	**2694**
32º, 0.5" ice,	36	39	43	47	52	56	60	65	70	75	81	**4331**
32º, 0.5" ice, 2 psf wind	36	40	43	47	52	56	61	65	70	75	81	**4371**
40	34	38	41	45	49	53	58	62	67	72	77	**2529**
50	36	40	44	48	52	56	61	66	71	76	81	**2388**
60	38	42	46	50	55	59	64	69	75	80	86	**2267**
60º F, 6 psf wind	38	42	46	51	55	60	65	70	75	81	86	**2479**
70	40	44	48	53	57	62	67	73	78	84	90	**2161**
80	42	46	50	55	60	65	70	76	82	88	94	**2067**
90	43	48	53	57	63	68	73	79	85	91	98	**1984**
100	45	50	55	60	65	71	76	82	89	95	102	**1910**
120	48	53	59	64	70	76	82	88	95	102	109	**1782**
248	59	65	72	78	85	93	100	108	116	124	133	**1459**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

1272 kcmil (45/7) ACSR "Bittern"

DE Tension = 7,500 Lbs

RBS = 34,100 Lbs

Extra Long Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	Lbs
15º, 1" ice, 4 psf wind	48	51	55	60	64	68	73	78	83	88	93	**8882**
15º, 0.8" ice, 4 psf wind	44	48	51	55	59	63	68	72	77	81	86	**7903**
0º, 0.5" ice, 4 psf wind + k	38	41	44	47	50	54	58	61	65	69	74	**7500**
0	26	28	30	33	35	37	40	42	45	48	51	**5187**
10	28	31	33	36	38	41	44	46	49	52	56	**4746**
20	31	33	36	39	41	44	47	51	54	57	60	**4360**
30	33	36	39	42	45	48	51	55	58	62	65	**4024**
40	36	39	42	45	48	52	55	59	63	67	71	**3735**
50	39	42	45	48	52	56	59	63	67	71	76	**3485**
60º F, 21 psf wind	48	52	56	61	65	69	74	79	84	89	95	**5368**
60º F, 6 psf wind	42	46	49	53	57	61	65	69	73	78	82	**3531**
60º F, 4 psf wind	42	45	49	52	56	60	64	68	72	77	82	**3390**
60	41	45	48	52	55	59	63	67	72	76	81	**3269**
70	44	47	51	55	59	63	67	72	76	81	86	**3082**
80	46	50	54	58	62	66	71	76	80	85	90	**2918**
90	49	52	57	61	65	70	75	79	85	90	95	**2775**
100	51	55	59	64	68	73	78	83	89	94	100	**2648**

Extra Long Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	Lbs
-20	25	27	29	31	34	36	39	41	44	46	49	**5361**
0	31	33	36	39	41	44	47	50	54	57	60	**4380**
0º, 0.5" ice, 4 psf wind + k	40	43	46	50	53	57	61	65	69	74	78	**7080**
30	39	42	46	49	53	56	60	64	68	72	77	**3432**
32º, 0.5" ice,	45	49	53	57	61	65	70	74	79	84	89	**5358**
32º, 0.5" ice, 2 psf wind	45	49	53	57	61	65	70	74	79	84	89	**5405**
40	42	45	49	53	56	60	64	69	73	78	82	**3210**
50	45	48	52	56	60	64	69	73	78	82	87	**3021**
60	47	51	55	59	63	68	72	77	82	87	92	**2858**
60º F, 6 psf wind	48	52	56	60	64	69	73	78	83	88	94	**3115**
70	50	54	58	62	67	71	76	81	86	92	97	**2716**
80	52	56	61	65	70	75	80	85	91	96	102	**2591**
90	54	59	63	68	73	78	84	89	95	100	106	**2481**
100	57	61	66	71	76	81	87	93	99	105	111	**2382**
120	61	66	71	76	82	88	94	100	106	113	119	**2214**
248	76	82	88	95	102	109	117	124	132	140	149	**1779**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

1272 kcmil (45/7) ACSR "Bittern"

DE Tension = 9,000 Lbs **RBS = 34,100 Lbs**

Super Long Span - Feet

Condition→ / Temp. / R.S. Range②→	INITIAL (Stringing) SAG (inches)											Tension
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	Lbs
15º, 1" ice, 4 psf wind	58	62	66	70	75	79	84	88	93	98	103	**10455**
15º, 0.8" ice, 4 psf wind	53	57	60	64	68	72	77	81	85	90	95	**9405**
0º, 0.5" ice, 4 psf wind + k	45	48	51	54	58	61	65	68	72	76	80	**9000**
0	29	31	33	35	37	40	42	44	47	49	52	**6639**
10	32	34	36	38	41	43	46	48	51	53	56	**6117**
20	34	37	39	42	44	47	50	52	55	58	61	**5640**
30	37	40	42	45	48	51	54	57	60	63	66	**5210**
40	40	43	46	49	52	55	58	61	64	68	71	**4828**
50	43	46	49	52	55	59	62	66	69	73	77	**4492**
60º F, 21 psf wind	57	61	65	69	73	77	82	86	91	96	101	**6557**
60º F, 6 psf wind	48	51	54	58	61	65	69	72	76	80	85	**4494**
60º F, 4 psf wind	47	50	53	57	60	64	67	71	75	79	83	**4334**
60	46	49	53	56	59	63	67	70	74	78	82	**4196**
70	49	53	56	60	63	67	71	75	79	83	87	**3938**
80	52	56	59	63	67	71	75	79	84	88	93	**3712**
90	55	59	63	67	71	75	79	84	89	93	98	**3513**
100	58	62	66	70	75	79	84	88	93	98	103	**3337**

Super Long Span - Feet

Condition→ / Temp.	FINAL (Clearance) SAG (inches)											Tension
						R.S.						
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	Lbs
-20	30	32	34	36	38	40	43	45	48	50	53	**6546**
0	36	38	41	44	46	49	52	55	58	61	64	**5391**
0º, 0.5" ice, 4 psf wind + k	48	52	55	59	62	66	70	74	78	82	86	**8352**
30	46	49	52	56	59	63	66	70	74	78	82	**4215**
32º, 0.5" ice,	55	58	62	66	70	74	79	83	88	92	97	**6394**
32º, 0.5" ice, 2 psf wind	55	58	62	66	70	75	79	83	88	93	97	**6446**
40	49	53	56	60	63	67	71	75	79	83	88	**3933**
50	52	56	60	63	67	71	76	80	84	89	93	**3692**
60	56	59	63	67	71	76	80	85	89	94	99	**3484**
60º F, 6 psf wind	57	60	64	68	73	77	82	86	91	96	101	**3783**
70	59	63	67	71	75	80	85	89	94	99	104	**3302**
80	62	66	70	75	79	84	89	94	99	104	110	**3144**
90	65	69	73	78	83	88	93	98	104	109	115	**3003**
100	67	72	77	82	87	92	97	102	108	114	120	**2879**
120	73	78	83	88	93	99	105	111	117	123	129	**2667**
248	92	99	105	112	119	126	133	140	148	156	164	**2105**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

T2 - (2) 954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 2,500 Lbs **RBS = 51,800 Lbs**

Super Short Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											
Temp. R.S. Range ②→	Not Recommended					R.S.			Not Recommended			Tension
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
15º, 1" ice, 4 psf wind	7	10	13	17	22	27	33	39	46	53	61	**3,287**
15º, 0.8" ice, 4 psf wind	7	10	13	17	22	27	32	38	45	52	60	**2,805**
0º, 0.5" ice, 4 psf wind + k	6	9	12	16	20	24	30	35	41	48	55	**2,500**
0	6	8	12	15	19	24	28	34	40	46	53	**1,376**
10	6	9	12	16	20	25	30	36	42	49	56	**1,301**
20	7	9	13	17	21	26	32	38	44	51	59	**1,236**
30	7	10	13	18	22	27	33	39	46	54	62	**1,180**
40	7	10	14	18	23	28	34	41	48	56	64	**1,135**
50	7	11	14	19	24	30	36	43	50	58	66	**1,094**
60º F, 21 psf wind	8	11	15	20	25	31	38	45	53	61	70	**1,922**
60º F, 6 psf wind	8	11	15	20	25	31	37	44	52	60	69	**1,155**
60º F, 4 psf wind	8	11	15	20	25	31	37	44	52	60	69	**1,102**
60	8	11	15	20	25	31	37	44	52	60	69	**1,057**
70	8	11	15	20	26	32	38	45	53	62	71	**1,024**
80	8	12	16	21	26	33	39	47	55	64	73	**994**
90	8	12	16	21	27	33	41	48	57	66	75	**966**
100	9	12	17	22	28	34	42	49	58	67	77	**942**

Super Short Span - Feet

Condition→	FINAL SAG (inches)											
Temp.						R.S.						Tension
Deg. F↓ Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Lbs
-20	5	7	10	13	17	21	25	30	35	40	46	**1,574**
0	6	8	12	15	19	24	28	34	40	46	53	**1,376**
0º, 0.5" ice, 4 psf wind + k	6	9	12	16	20	24	30	35	41	48	55	**2,498**
30	7	10	13	18	22	27	33	39	46	54	62	**1,180**
32º, 0.5" ice,	7	10	14	18	23	28	34	41	48	55	63	**1,947**
32º, 0.5" ice, 2 psf wind	7	10	14	18	23	28	34	41	48	55	63	**1,964**
40	7	10	14	18	23	29	35	41	48	56	64	**1,134**
50	7	11	14	19	24	30	36	43	50	58	66	**1,093**
60	8	11	15	20	25	31	37	44	52	60	69	**1,057**
60º F, 6 psf wind	8	11	15	20	25	31	37	44	52	60	69	**1,154**
70	8	11	15	20	26	32	38	45	53	62	71	**1,024**
80	8	12	16	21	26	33	39	47	55	64	73	**994**
90	8	12	16	21	27	33	41	48	57	66	75	**966**
100	9	12	17	22	28	34	42	49	58	67	77	**941**
120	9	13	17	23	29	35	43	51	60	69	79	**916**
248	10	15	20	26	33	41	50	59	69	80	92	**793**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

T2 - (2) 954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 4,000 Lbs **RBS = 51,800 Lbs**

Short Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			Tension
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
15º, 1" ice, 4 psf wind	17	21	25	29	34	39	44	50	56	62	69	5,168
15º, 0.8" ice, 4 psf wind	17	20	24	28	33	38	43	49	55	61	67	4,448
0º, 0.5" ice, 4 psf wind + k	15	19	22	26	30	34	39	44	50	55	61	4,000
0	14	17	20	24	28	32	36	41	46	51	57	2,274
10	15	18	22	26	30	34	39	44	49	55	61	2,131
20	16	19	23	27	31	36	41	46	52	58	64	2,012
30	17	20	24	28	33	38	43	49	55	61	67	1,916
40	18	21	25	30	35	40	45	51	57	64	71	1,832
50	18	22	26	31	36	41	47	53	60	66	74	1,758
60º F, 21 psf wind	20	24	28	33	38	44	50	57	64	71	79	3,037
60º F, 6 psf wind	19	23	28	32	38	43	49	55	62	69	77	1,845
60º F, 4 psf wind	19	23	28	32	38	43	49	55	62	69	77	1,762
60	19	23	27	32	37	43	49	55	62	69	76	1,692
70	20	24	28	33	39	45	51	57	64	71	79	1,632
80	20	25	29	35	40	46	52	59	66	74	82	1,579
90	21	26	30	36	41	48	54	61	68	76	84	1,530
100	22	26	31	37	43	49	56	63	71	79	87	1,485

Short Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											
Temp.						R.S.						Tension
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	Lbs
-20	12	15	18	21	24	28	31	35	40	44	49	2,626
0	14	17	21	24	28	32	37	41	46	52	57	2,254
0º, 0.5" ice, 4 psf wind + k	15	19	22	26	30	35	40	45	50	56	62	3,960
30	17	21	24	29	33	38	44	49	55	61	68	1,901
32º, 0.5" ice,	18	21	25	30	35	40	45	51	57	64	71	3,094
32º, 0.5" ice, 2 psf wind	18	21	25	30	35	40	45	51	57	64	71	3,120
40	18	21	26	30	35	40	45	51	58	64	71	1,820
50	19	22	27	31	36	42	47	53	60	67	74	1,748
60	19	23	28	32	38	43	49	55	62	69	77	1,683
60º F, 6 psf wind	19	23	28	33	38	43	49	56	62	70	77	1,835
70	20	24	29	34	39	45	51	57	64	72	80	1,625
80	21	25	30	35	40	46	53	59	67	74	82	1,573
90	21	26	31	36	42	48	54	61	69	77	85	1,525
100	22	26	31	37	43	49	56	63	71	79	87	1,481
120	23	28	33	39	45	52	59	67	75	83	92	1,404
248	27	32	39	45	53	60	69	78	87	97	107	1,208

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

T2 - (2) 954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 5,500 Lbs **RBS = 51,800 Lbs**

Medium Span - Feet

Condition→ / Temp. R.S. Range②→ / Deg. F↓ Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	150	160	170	180	190	200	210	220	230	240	250	
15º, 1" ice, 4 psf wind	29	33	37	41	46	51	56	62	67	73	80	**6,986**
15º, 0.8" ice, 4 psf wind	28	32	36	40	45	49	55	60	65	71	77	**6,060**
0º, 0.5" ice, 4 psf wind + k	25	28	32	36	40	45	49	54	59	64	70	**5,500**
0	23	26	29	33	36	40	44	49	53	58	63	**3,203**
10	24	28	31	35	39	43	47	52	57	62	67	**2,997**
20	26	29	33	37	41	46	50	55	60	66	71	**2,830**
30	27	31	35	39	43	48	53	58	64	69	75	**2,685**
40	28	32	37	41	46	51	56	61	67	73	79	**2,559**
50	30	34	38	43	48	53	58	64	70	76	83	**2,449**
60º F, 21 psf wind	32	37	41	46	52	57	63	69	76	83	90	**4,165**
60º F, 6 psf wind	31	35	40	45	50	55	61	67	73	80	86	**2,559**
60º F, 4 psf wind	31	35	40	45	50	55	61	67	73	79	86	**2,446**
60	31	35	40	45	50	55	61	67	73	79	86	**2,350**
70	32	37	41	46	52	57	63	69	76	82	89	**2,263**
80	33	38	43	48	53	59	65	72	78	85	92	**2,184**
90	34	39	44	50	55	61	67	74	81	88	96	**2,112**
100	36	40	46	51	57	63	70	77	84	91	99	**2,047**

Medium Span - Feet

Condition→ / Temp. / Deg. F↓ Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	150	160	170	180	190	200	210	220	230	240	250	
-20	20	23	26	29	32	36	40	44	48	52	56	**3,590**
0	24	27	30	34	38	42	46	51	55	60	65	**3,082**
0º, 0.5" ice, 4 psf wind + k	26	29	33	37	41	46	50	55	60	66	71	**5,346**
30	28	32	36	40	45	49	55	60	65	71	77	**2,611**
32º, 0.5" ice,	29	33	38	42	47	52	58	63	69	75	82	**4,196**
32º, 0.5" ice, 2 psf wind	29	33	38	42	47	52	58	63	69	75	82	**4,229**
40	29	33	37	42	47	52	57	63	69	75	81	**2,495**
50	30	35	39	44	49	54	60	65	71	78	84	**2,393**
60	32	36	41	45	51	56	62	68	74	81	88	**2,302**
60º F, 6 psf wind	32	36	41	46	51	56	62	68	75	81	88	**2,506**
70	33	37	42	47	53	58	64	70	77	84	91	**2,220**
80	34	39	44	49	54	60	66	73	80	87	94	**2,146**
90	35	40	45	50	56	62	69	75	82	90	97	**2,079**
100	36	41	46	52	58	64	71	78	85	92	100	**2,017**
120	38	43	49	55	61	68	75	82	90	98	106	**1,908**
248	45	51	58	65	73	80	89	97	106	116	126	**1,612**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

T2 - (2) 954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 7,000 Lbs **RBS = 51,800 Lbs**

Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											
Temp. R.S. Range②→	Not Recommended					R.S.			Not Recommended			Tension
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	Lbs
15º, 1" ice, 4 psf wind	41	45	49	54	58	63	69	74	79	85	91	**8,764**
15º, 0.8" ice, 4 psf wind	39	43	47	52	56	61	66	71	77	82	88	**7,658**
0º, 0.5" ice, 4 psf wind + k	35	39	42	46	50	55	59	64	68	73	79	**7,000**
0	31	34	37	41	44	48	52	56	60	65	69	**4,198**
10	33	36	40	43	47	51	56	60	64	69	74	**3,928**
20	35	39	42	46	50	55	59	64	68	73	79	**3,698**
30	37	41	45	49	53	58	62	67	72	78	83	**3,500**
40	39	43	47	51	56	61	66	71	76	82	87	**3,328**
50	41	45	49	54	59	64	69	74	80	86	92	**3,177**
60º F, 21 psf wind	45	50	54	59	65	70	76	82	88	94	101	**5,316**
60º F, 6 psf wind	43	47	52	57	62	67	72	78	84	90	96	**3,307**
60º F, 4 psf wind	43	47	52	56	61	67	72	78	84	90	96	**3,164**
60	42	47	51	56	61	66	72	77	83	89	96	**3,043**
70	44	49	54	59	64	69	75	81	87	93	100	**2,924**
80	46	51	56	61	66	72	78	84	90	97	103	**2,817**
90	48	52	58	63	68	74	80	87	93	100	107	**2,721**
100	49	54	59	65	71	77	83	90	96	103	111	**2,633**

Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											
Temp.						R.S.						Tension
Deg. F↓ Span (Ft)→	200	210	220	230	240	250	260	270	280	290	300	Lbs
-20	28	31	34	38	41	45	48	52	56	60	64	**4,526**
0	33	36	40	43	47	51	56	60	64	69	74	**3,932**
0º, 0.5" ice, 4 psf wind + k	37	40	44	48	53	57	62	67	72	77	82	**6,698**
30	39	43	47	51	56	61	66	71	76	82	87	**3,333**
32º, 0.5" ice,	41	46	50	55	60	65	70	75	81	87	93	**5,291**
32º, 0.5" ice, 2 psf wind	41	46	50	55	60	65	70	76	81	87	93	**5,331**
40	41	45	49	54	59	63	69	74	80	85	91	**3,182**
50	42	47	51	56	61	66	72	77	83	89	95	**3,049**
60	44	49	53	58	63	69	75	80	86	93	99	**2,931**
60º F, 6 psf wind	44	49	54	59	64	69	75	81	87	93	100	**3,187**
70	46	50	55	61	66	72	77	83	90	96	103	**2,824**
80	47	52	57	63	68	74	80	86	93	100	107	**2,728**
90	49	54	59	65	71	77	83	89	96	103	110	**2,641**
100	51	56	61	67	73	79	85	92	99	106	114	**2,561**
120	53	59	65	71	77	84	90	97	105	112	120	**2,420**
248	64	71	78	85	93	101	109	117	126	135	145	**2,012**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

T2 - (2) 954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 9,000 Lbs **RBS = 51,800 Lbs**

Extra Long Span - Feet

Condition→ / Temp. / R.S. Range②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	250	260	270	280	290	300	310	320	330	340	350	
15º, 1" ice, 4 psf wind	51	55	59	64	68	73	78	83	88	94	99	**10,956**
15º, 0.8" ice, 4 psf wind	48	52	56	61	65	69	74	79	84	89	95	**9,687**
0º, 0.5" ice, 4 psf wind + k	43	46	50	53	57	61	65	70	74	79	83	**9,000**
0	35	38	41	44	47	51	54	58	61	65	69	**5,734**
10	38	41	44	48	51	55	58	62	66	70	74	**5,317**
20	41	44	47	51	55	59	63	67	71	75	80	**4,963**
30	43	47	51	54	58	62	67	71	76	80	85	**4,659**
40	46	50	54	58	62	66	71	75	80	85	90	**4,398**
50	48	52	56	61	65	70	74	79	84	90	95	**4,171**
60º F, 21 psf wind	55	60	64	69	74	79	85	90	96	102	108	**6,765**
60º F, 6 psf wind	51	56	60	64	69	74	79	84	89	95	101	**4,302**
60º F, 4 psf wind	51	55	60	64	69	74	79	84	89	94	100	**4,123**
60	51	55	59	64	68	73	78	83	89	94	100	**3,972**
70	53	58	62	67	72	77	82	87	93	98	104	**3,796**
80	56	60	65	70	75	80	85	91	97	103	109	**3,640**
90	58	62	67	72	78	83	89	94	100	107	113	**3,500**
100	60	65	70	75	81	86	92	98	104	111	117	**3,374**

Extra Long Span - Feet

Condition→ / Temp. / Deg. F↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	250	260	270	280	290	300	310	320	330	340	350	
-20	34	36	39	42	45	48	52	55	59	62	66	**6,007**
0	39	42	46	49	53	56	60	64	68	72	77	**5,150**
0º, 0.5" ice, 4 psf wind + k	45	49	53	57	61	65	70	74	79	84	89	**8,440**
30	47	51	55	59	63	68	72	77	82	87	92	**4,290**
32º, 0.5" ice,	51	56	60	64	69	74	79	84	90	95	101	**6,664**
32º, 0.5" ice, 2 psf wind	52	56	60	65	69	74	79	84	90	95	101	**6,712**
40	50	54	58	62	67	71	76	81	86	92	97	**4,078**
50	52	56	61	65	70	75	80	85	90	96	102	**3,891**
60	54	59	63	68	73	78	83	89	94	100	106	**3,725**
60º F, 6 psf wind	55	59	64	69	74	79	84	90	95	101	107	**4,041**
70	56	61	66	71	76	81	87	92	98	104	111	**3,578**
80	59	63	68	73	79	84	90	96	102	108	115	**3,446**
90	61	66	71	76	82	87	93	100	106	112	119	**3,326**
100	63	68	73	79	85	90	97	103	109	116	123	**3,218**
120	67	72	78	84	90	96	103	109	116	123	131	**3,028**
248	82	89	96	103	111	119	127	135	144	152	162	**2,455**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

T2 - (2) 954.0 kcmil (45/7) ACSR "Rail"

DE Tension = 12,000 Lbs **RBS = 51,800 Lbs**

Super Long Span - Feet

Condition→	INITIAL (Stringing) SAG (inches)											
Temp. R.S. Range ②→	Not Recommended					R.S.			Not Recommended			Tension
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	Lbs
15º, 1" ice, 4 psf wind	57	61	65	69	74	78	83	87	92	97	102	**13,929**
15º, 0.8" ice, 4 psf wind	54	57	61	65	69	73	77	82	86	91	95	**12,556**
0º, 0.5" ice, 4 psf wind + k	46	49	52	55	59	62	66	70	74	77	82	**12,000**
0	34	36	38	41	43	46	49	51	54	57	60	**8,594**
10	37	39	42	45	47	50	53	56	59	62	66	**7,877**
20	40	43	46	48	51	54	58	61	64	68	71	**7,249**
30	43	46	49	52	56	59	62	66	69	73	77	**6,705**
40	47	50	53	56	60	63	67	71	75	79	83	**6,237**
50	50	53	57	60	64	68	72	76	80	84	89	**5,833**
60º F, 21 psf wind	61	65	69	73	78	83	87	92	97	103	108	**8,854**
60º F, 6 psf wind	54	58	61	65	69	73	78	82	87	91	96	**5,893**
60º F, 4 psf wind	53	57	61	65	69	73	77	81	86	90	95	**5,671**
60	53	57	60	64	68	72	76	81	85	90	94	**5,483**
70	56	60	64	68	72	76	81	85	90	95	100	**5,180**
80	59	63	67	72	76	81	85	90	95	100	105	**4,914**
90	62	66	71	75	80	84	89	94	100	105	110	**4,681**
100	65	69	74	79	83	88	94	99	104	110	116	**4,474**

Super Long Span - Feet

Condition→	FINAL (Clearance) SAG (inches)											
Temp.						R.S.						Tension
Deg. F↓ Span (Ft)→	300	310	320	330	340	350	360	370	380	390	400	Lbs
-20	34	36	38	41	43	46	49	51	54	57	60	**8,608**
0	40	43	46	49	52	55	58	61	65	68	72	**7,201**
0º, 0.5" ice, 4 psf wind + k	50	54	57	61	65	68	72	76	81	85	89	**10,953**
30	50	54	57	61	65	68	72	76	81	85	89	**5,782**
32º, 0.5" ice,	57	61	65	69	74	78	83	87	92	97	102	**8,602**
32º, 0.5" ice, 2 psf wind	57	61	65	69	74	78	83	87	92	97	102	**8,660**
40	53	57	61	65	69	73	77	81	86	90	95	**5,438**
50	57	60	64	68	73	77	81	86	91	96	100	**5,140**
60	60	64	68	72	77	81	86	91	96	101	106	**4,880**
60º F, 6 psf wind	60	64	69	73	78	82	87	92	97	102	107	**5,269**
70	63	67	71	76	80	85	90	95	100	106	111	**4,651**
80	65	70	74	79	84	89	94	99	105	110	116	**4,449**
90	68	73	78	82	88	93	98	104	109	115	121	**4,268**
100	71	76	81	86	91	96	102	108	114	120	126	**4,107**
120	76	81	86	92	98	103	109	116	122	128	135	**3,828**
248	98	104	111	118	126	133	141	149	157	165	174	**2,981**

NOTES:
1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

The below table provides the tension to be strung at 50 feet ruling span for all application on distribution circuit and sub-transmission line. The unguyed (self-sustain) wood pole is covered in DCS **02 20 04 01**.

Conductor	Tension [Lbs]							
	DE	Initial (Stringing)			Final (Clearance)			
		30° F	60° F	90° F	0° F	60° F	212° F	248° F
1/0 AWG (7) AAAC "Azusa"	175	18	17	17	19	17	14	-
110.8 kcmil (12/7) ACSR "Minorca"	207	43	42	41	45	42	-	37
336.4 kcmil (18/1) ACSR "Merlin"	243	56	54	52	58	54	-	48
T2 - (2) 4/0 AWG (6/1) ACSR "Penguin"	293	87	84	82	90	83	-	75
556.5 kcmil (19) AAC "Dahlia"	285	80	77	74	83	77	65	-
T2 - (2) 336.4 kcmil (18/1) ACSR "Merlin"	342	111	107	105	115	107	-	96
954.0 kcmil (45/7) ACSR "Rail"	403	165	158	154	172	158	-	141
T2 - (2) 556.5 kcmil (19) AAC "Dahlia"	425	160	154	148	167	160	130	-
1272 kcmil (45/7) ACSR "Bittern"	462	213	206	202	222	206	-	186
T2 - (2) 954.0 kcmil (45/7) ACSR "Rail"	627	318	307	302	332	307	-	277

The below tables shows the sags to which conductors are to be strung and clearances to be verified.

Condition→	INITIAL (Stringing) SAG [inches]										
Temp. R.S. Range ②→	Not Recommended					**R.S.**			Not Recommended		
Deg. F↓ Span (Ft)→	**0**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
0º, 0.5" ice, 4 psf wind + k	0	1	4	9	15	24	34	46	61	77	95
0	0	1	4	8	15	24	34	46	60	76	94
30	0	1	4	9	16	25	36	49	64	81	100
60	0	1	4	9	17	26	37	51	66	84	103
90	0	1	4	10	17	27	38	52	68	86	106
100	0	1	4	10	17	27	39	52	69	87	107

Condition→	FINAL SAG [inches]										
Temp.						**R.S.**			①	①	①
Deg. F↓ Span (Ft)→	**0**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
0	0	1	4	8	15	24	34	46	60	76	94
30	0	1	4	9	16	25	36	49	64	81	100
32º, 0.5" ice,	0	1	4	9	16	25	36	49	65	82	101
60	0	1	4	9	17	26	37	51	67	84	104
90	0	1	4	10	17	27	38	52	68	86	106
100	0	1	4	10	17	27	38	52	68	86	107
120	0	1	4	10	17	27	39	53	69	87	108
212	0	1	5	11	19	30	43	58	76	96	118
248	0	1	5	11	19	30	43	59	77	98	120

Note:

1. Horizontal configuration is not recommended on span length greater than 75 feet.
2. Ruling span range is for initial line design between 25′ to 74′ for conductor sag accuracy.

ADSS Sag and Tension

	Stock #	Diameter	MRCL	Weight	Weight ½" Ice–4psf Wind K=0.30	Weight 1" ice
DNA–28144 48–count ADSS	16–16–274	0.528"	2960	0.093 lbs/ft	1.192 lbs/ft	1.993 lbs/ft

100' Span

Temperature	Ice	Wind	Sag (ft)	Tension (lbs)
0°	½"	4psf + k	1.0	1615
32°F	1"	0	1.7	1675
60°F	0	0	0.1	1482

200' Span

Temperature	Ice	Wind	Sag (ft)	Tension (lbs)
0°	½"	4psf + k	3.8	1759
32°F	1"	0	5.4	1974
60°F	0	0	0.1	1482

300' Span

Temperature	Ice	Wind	Sag (ft)	Tension (lbs)
0°	½"	4psf + k	7.5	1934
32°F	1"	0	10.3	2285
60°F	0	0	0.9	1481

400' Span

Temperature	Ice	Wind	Sag (ft)	Tension (lbs)
0°	½"	4psf + k	12	2117
32°F	1"	0	16	2585
60°F	0	0	1.5	1479

500' Span

Temperature	Ice	Wind	Sag (ft)	Tension (lbs)
0°	½"	4psf + k	17	2299
32°F	1"	0	22.4	2871
60°F	0	0	2.35	1478

DNO–11706 OPGW Slack Spans

DE Tension = 250 Lbs **RBS = 19,837 Lbs**

Slack Span – 50 Feet

Condition→		Sag (Inches)					
Temp.	R.S. Range ②→			R.S.			Tension
Deg. F↓	Span (Ft)→	30	40	50	60	70	Lbs
15º, 1" ice, 4 psf wind		14	18	22	26	31	**413**
0º, 0.5" ice, 4 psf wind + k		13	17	21	25	30	**250**
0		13	17	21	25	30	**63**
30		14	17	22	26	31	**61**
60		14	18	22	27	32	**59**
90		15	19	23	28	33	**57**

DE Tension = 500 Lbs

Slack Span – 100 Feet

Condition→		Sag (Inches)					
Temp.	R.S. Range ②→			R.S.			Tension
Deg. F↓	Span (Ft)→	80	90	100	110	120	Lbs
15º, 1" ice, 4 psf wind		28	35	44	53	63	**819**
0º, 0.5" ice, 4 psf wind + k		27	34	42	51	61	**500**
0		26	33	41	50	59	**128**
30		26	33	41	50	59	**123**
60		28	36	44	53	64	**119**
90		29	37	46	55	66	**115**

DNO–11706 OPGW

DE Tension = 1.900 Lbs **RBS = 19,800 Lbs**

Super Short Span – Feet

Condition→ / Temp. / R.S. Range ②→ / Deg. F↓ / Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Tension Lbs
	INITIAL (Stringing) SAG (inches)											
	Not Recommended					R.S.			Not Recommended			
15º, 1" ice, 4 psf wind	4	6	8	10	13	16	19	23	27	32	36	**2,242**
15º, 0.8" ice, 4 psf wind	3	5	7	9	11	14	17	20	24	27	31	**1,961**
0º, 0.5" ice, 4 psf wind + k	3	4	5	7	9	11	13	16	19	22	25	**1,933**
0	1	1	2	2	3	4	5	6	6	8	9	**1,469**
10	1	2	2	3	3	4	5	6	7	8	10	**1,297**
20	1	2	2	3	4	5	6	7	8	10	11	**1,133**
30	1	2	3	4	5	6	7	8	10	11	13	**979**
40	2	2	3	4	5	7	8	10	11	13	15	**840**
50	2	3	4	5	6	8	9	11	13	15	18	**720**
60º F, 21 psf wind	3	5	7	9	11	14	16	20	23	27	31	**1,066**
60º F, 6 psf wind	2	4	5	6	8	10	12	14	17	19	22	**688**
60º F, 4 psf wind	2	3	5	6	8	9	11	14	16	19	21	**653**
60	2	3	4	6	7	9	11	13	15	18	20	**621**
70	3	4	5	7	8	10	12	15	17	20	23	**543**
80	3	4	6	8	10	12	14	17	20	23	26	**481**
90	3	5	6	8	11	13	16	19	22	26	29	**432**
100	4	5	7	9	12	14	17	21	24	28	32	**394**

Super Short Span – Feet

Condition→ / Temp. / Deg. F ↓ / Span (Ft)→	50	60	70	80	90	100	110	120	130	140	150	Tension Lbs
	FINAL (Clearance) SAG (inches)											
						R.S.						
–20	1	1	2	2	3	3	4	5	5	6	7	**1,756**
0	1	2	2	3	3	4	5	6	7	8	9	**1,346**
0º, 0.5" ice, 4 psf wind + k	3	4	6	7	9	11	14	16	19	22	25	**1,900**
30	2	2	3	4	6	7	8	10	12	13	15	**824**
32º, 0.5" ice	3	4	6	8	10	12	14	17	20	23	27	**1,264**
32º, 0.5" ice, 2 psf wind	3	4	6	8	10	12	15	17	20	24	27	**1,285**
40	2	3	4	5	7	8	10	12	14	16	18	**696**
50	2	3	5	6	8	9	11	14	16	19	21	**595**
60	3	4	5	7	9	11	13	16	18	21	25	**518**
60º F, 6 psf wind	3	4	6	7	9	12	14	17	19	23	26	**591**
70	3	4	6	8	10	12	15	18	21	24	28	**459**
80	3	5	7	9	11	14	16	20	23	27	31	**414**
90	4	5	7	10	12	15	18	21	25	29	33	**378**
100	4	6	8	10	13	16	19	23	27	32	36	**349**
120	5	7	9	12	15	18	22	26	31	36	41	**306**
248	7	11	15	19	24	30	36	43	50	58	67	**190**

Notes:

1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 75' to 124' for conductor sag accuracy.

DNO–11706 OPGW

DE Tension = 2,200 Lbs **RBS = 19,800 Lbs**

Short Span – Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension Lbs
Temp. R.S. Range ②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	
15º, 1" ice, 4 psf wind	13	16	19	22	26	29	33	38	42	47	52	**2,754**
15º, 0.8" ice, 4 psf wind	12	14	17	19	23	26	29	33	37	42	46	**2,374**
0º, 0.5" ice, 4 psf wind + k	9	11	14	16	19	21	24	27	31	34	38	**2,248**
0	4	5	5	6	7	8	10	11	12	13	15	**1,507**
10	4	5	6	7	8	9	11	12	13	15	17	**1,350**
20	5	6	7	8	9	11	12	14	15	17	19	**1,204**
30	5	6	8	9	10	12	14	15	17	19	21	**1,070**
40	6	7	9	10	12	13	15	17	19	21	24	**952**
50	7	8	10	11	13	15	17	19	21	24	26	**849**
60º F, 21 psf wind	11	13	15	18	21	24	27	31	35	39	43	**1,352**
60º F, 6 psf wind	8	10	12	14	16	18	20	23	26	29	32	**852**
60º F, 4 psf wind	8	9	11	13	15	17	20	22	25	28	31	**805**
60	7	9	11	12	14	17	19	21	24	27	29	**762**
70	8	10	12	14	16	18	21	24	26	29	33	**690**
80	9	11	13	15	18	20	23	26	29	32	36	**630**
90	10	12	14	16	19	22	25	28	31	35	39	**580**
100	10	13	15	18	20	24	27	30	34	38	42	**538**

Short Span – Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension Lbs
Temp.						R.S.						
Deg. F ↓ Span (Ft)→	100	110	120	130	140	150	160	170	180	190	200	
–20	3	4	5	6	6	7	8	10	11	12	13	**1,694**
0	4	5	6	7	8	10	11	12	14	15	17	**1,327**
0º, 0.5" ice, 4 psf wind + k	10	12	14	16	19	22	25	28	31	35	39	**2,200**
30	6	8	9	11	12	14	16	18	20	23	25	**899**
32º, 0.5" ice	10	12	14	17	19	22	25	29	32	36	39	**1,524**
32º, 0.5" ice, 2 psf wind	10	12	14	17	20	22	26	29	32	36	40	**1,552**
40	7	9	10	12	14	16	18	20	23	25	28	**798**
50	8	10	11	13	15	18	20	23	26	28	32	**715**
60	9	11	13	15	17	20	22	25	28	31	35	**647**
60º F, 6 psf wind	9	11	13	16	18	21	23	27	30	33	37	**742**
70	9	11	14	16	19	21	24	27	31	34	38	**592**
80	10	12	15	17	20	23	26	30	33	37	41	**547**
90	11	13	16	19	22	25	28	32	36	40	44	**510**
100	12	14	17	20	23	27	30	34	38	43	47	**478**
120	13	16	19	22	26	30	34	38	43	48	53	**428**
248	20	24	29	34	40	45	52	58	65	73	81	**279**

Notes:

1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 125' to 174' for conductor sag accuracy.

DNO–11706 OPGW

DE Tension = 2,500 Lbs **RBS = 19,800 Lbs**

Medium Span – Feet

Condition→ / Temp. / R.S Range ②→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	
15º, 1" ice, 4 psf wind	25	29	32	36	40	45	49	54	59	64	70	**3,227**
15º, 0.8" ice, 4 psf wind	22	25	29	32	36	39	44	48	52	57	62	**2,762**
0º, 0.5" ice, 4 psf wind + k	19	21	24	27	30	33	37	40	44	48	52	**2,560**
0	8	9	10	12	13	14	16	17	19	21	22	**1,578**
10	9	10	11	13	14	16	17	19	21	23	25	**1,435**
20	10	11	12	14	16	17	19	21	23	25	27	**1,302**
30	11	12	14	15	17	19	21	23	25	27	30	**1,181**
40	12	13	15	17	19	21	23	25	28	30	33	**1,074**
50	13	15	17	19	21	23	25	28	30	33	36	**980**
60º F, 21 psf wind	20	23	26	29	32	36	40	43	47	52	56	**1,615**
60º F, 6 psf wind	15	17	20	22	24	27	30	33	36	39	42	**1,008**
60º F, 4 psf wind	15	17	19	21	24	26	29	32	34	37	41	**950**
60	14	16	18	20	23	25	28	30	33	36	39	**899**
70	15	17	20	22	24	27	30	33	36	39	42	**829**
80	16	19	21	24	26	29	32	35	39	42	46	**769**
90	18	20	23	25	28	31	35	38	42	45	49	**717**
100	19	21	24	27	30	33	37	41	44	48	52	**673**

Medium Span – Feet

Condition→ / Temp. /	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
Deg. F ↓ Span (Ft)→	150	160	170	180	190	200	210	220	230	240	250	
–20	7	9	10	11	12	13	15	16	18	19	21	**1,687**
0	9	11	12	13	15	17	18	20	22	24	26	**1,362**
0º, 0.5" ice, 4 psf wind + k	19	22	25	28	31	34	38	41	45	49	53	**2,500**
30	13	14	16	18	20	23	25	27	30	32	35	**995**
32º, 0.5" ice	19	22	25	28	31	34	37	41	45	49	53	**1,771**
32º, 0.5" ice, 2 psf wind	19	22	25	28	31	34	38	42	45	49	54	**1,805**
40	14	16	18	20	22	25	27	30	33	36	39	**906**
50	15	17	20	22	24	27	30	33	36	39	42	**831**
60	16	19	21	24	26	29	32	35	39	42	46	**768**
60º F, 6 psf wind	17	20	22	25	28	31	34	37	41	44	48	**883**
70	18	20	23	25	28	31	35	38	42	45	49	**715**
80	19	22	24	27	30	34	37	41	44	48	53	**669**
90	20	23	26	29	32	36	39	43	47	51	56	**630**
100	21	24	27	31	34	38	42	46	50	54	59	**597**
120	23	27	30	34	38	42	46	50	55	60	65	**541**
248	35	40	45	50	56	62	68	75	82	89	97	**364**

Notes:

1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 175' to 224' for conductor sag accuracy.

DNO–11706 OPGW

DE Tension = 2,800 Lbs **RBS = 19,800 Lbs**

Long Span – Feet

Condition→ / Temp. / R.S. Range ②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	200	210	220	230	240	250	260	270	280	290	300	
15º, 1" ice, 4 psf wind	39	43	47	52	57	61	66	72	77	83	88	**3,679**
15º, 0.8" ice, 4 psf wind	35	38	42	46	50	54	59	63	68	73	78	**3,138**
0º, 0.5" ice, 4 psf wind + k	30	33	36	39	43	46	50	54	58	62	67	**2,871**
0	13	15	16	18	19	21	23	24	26	28	30	**1,683**
10	15	16	18	19	21	23	25	26	28	31	33	**1,548**
20	16	17	19	21	23	25	27	29	31	33	36	**1,424**
30	17	19	21	23	25	27	29	31	34	36	39	**1,310**
40	19	21	23	25	27	29	32	34	37	39	42	**1,208**
50	20	22	24	27	29	31	34	37	39	42	45	**1,118**
60º F, 21 psf wind	31	34	38	41	45	48	52	57	61	65	70	**1,870**
60º F, 6 psf wind	23	26	28	31	34	36	39	43	46	49	53	**1,165**
60º F, 4 psf wind	23	25	27	30	32	35	38	41	44	47	51	**1,098**
60	22	24	26	29	31	34	37	39	42	46	49	**1,038**
70	23	26	28	31	34	36	39	42	46	49	52	**968**
80	25	27	30	33	36	39	42	45	49	52	56	**906**
90	26	29	32	35	38	41	45	48	52	56	59	**853**
100	28	31	34	37	40	44	47	51	55	59	63	**805**

Long Span – Feet

Condition→ / Temp. / Deg. F ↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	200	210	220	230	240	250	260	270	280	290	300	
–20	13	14	16	17	19	20	22	24	25	27	29	**1,731**
0	16	17	19	21	23	24	26	29	31	33	35	**1,437**
0º, 0.5" ice, 4 psf wind + k	30	34	37	40	44	48	52	56	60	64	69	**2,800**
30	20	22	25	27	29	32	34	37	40	43	46	**1,105**
32º, 0.5" ice	30	33	36	40	43	47	50	54	59	63	67	**2,013**
32º, 0.5" ice, 2 psf wind	30	33	37	40	43	47	51	55	59	63	68	**2,053**
40	22	24	27	29	32	34	37	40	43	46	50	**1,022**
50	24	26	29	31	34	37	40	43	47	50	53	**950**
60	25	28	31	34	36	40	43	46	50	53	57	**888**
60º F, 6 psf wind	27	29	32	35	38	42	45	49	52	56	60	**1,021**
70	27	30	33	36	39	42	46	49	53	57	61	**835**
80	29	31	35	38	41	45	48	52	56	60	64	**788**
90	30	33	36	40	43	47	51	55	59	63	68	**747**
100	32	35	38	42	46	49	53	58	62	67	71	**711**
120	35	38	42	46	50	54	58	63	68	73	78	**651**
248	50	55	61	67	72	79	85	92	99	106	113	**448**

Notes:

1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 225' to 274' for conductor sag accuracy.

DNO–11706 OPGW

DE Tension = 3,100 Lbs **RBS = 19,800 Lbs**

Extra Long Span – Feet

Condition→	INITIAL (Stringing) SAG (inches)											Tension Lbs
Temp. R.S. Range ②→	Not Recommended					R.S.			Not Recommended			
Deg. F↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	
15º, 1" ice, 4 psf wind	55	59	64	69	74	79	84	90	95	101	107	**4,117**
15º, 0.8" ice, 4 psf wind	49	53	57	61	65	70	75	80	85	90	95	**3,506**
0º, 0.5" ice, 4 psf wind + k	42	45	49	53	56	60	64	69	73	78	82	**3,183**
0	19	21	23	24	26	28	30	32	34	36	38	**1,815**
10	21	23	24	26	28	30	32	34	36	39	41	**1,685**
20	23	24	26	28	30	32	35	37	39	42	44	**1,565**
30	24	26	28	30	33	35	37	40	42	45	47	**1,455**
40	26	28	30	33	35	37	40	43	45	48	51	**1,354**
50	28	30	32	35	37	40	43	46	48	51	55	**1,264**
60º F, 21 psf wind	43	46	50	54	57	61	66	70	74	79	84	**2,121**
60º F, 6 psf wind	32	35	37	40	43	46	49	52	56	59	63	**1,326**
60º F, 4 psf wind	31	33	36	39	41	44	47	51	54	57	60	**1,251**
60	30	32	35	37	40	43	46	49	52	55	58	**1,183**
70	32	34	37	40	43	46	49	52	55	59	62	**1,112**
80	34	36	39	42	45	48	52	55	59	62	66	**1,048**
90	36	38	41	45	48	51	55	58	62	66	70	**991**
100	37	40	44	47	50	54	58	61	65	69	73	**940**

Extra Long Span – Feet

Condition→	FINAL (Clearance) SAG (inches)											Tension Lbs
Temp.						R.S.						
Deg. F ↓ Span (Ft)→	250	260	270	280	290	300	310	320	330	340	350	
–20	19	21	23	24	26	28	30	32	34	36	38	**1,812**
0	23	25	27	29	31	33	35	37	40	42	45	**1,538**
0º, 0.5" ice, 4 psf wind + k	43	47	50	54	58	62	66	70	75	80	84	**3,100**
30	29	31	34	36	39	41	44	47	50	53	56	**1,224**
32º, 0.5" ice	42	45	49	52	56	60	64	68	73	77	82	**2,254**
32º, 0.5" ice, 2 psf wind	42	46	49	53	57	61	65	69	73	78	83	**2,299**
40	31	33	36	39	41	44	47	50	54	57	60	**1,143**
50	33	36	38	41	44	47	50	54	57	61	64	**1,072**
60	35	38	41	44	47	50	54	57	61	64	68	**1,010**
60º F, 6 psf wind	37	40	43	46	49	53	56	60	64	68	72	**1,160**
70	37	40	43	46	50	53	57	60	64	68	72	**955**
80	39	42	45	49	52	56	60	64	68	72	76	**907**
90	41	44	48	51	55	59	63	67	71	75	80	**864**
100	43	46	50	54	57	61	66	70	74	79	84	**826**
120	46	50	54	58	62	67	71	76	81	86	91	**761**
248	66	72	77	83	89	95	102	108	115	122	130	**533**

Notes:

1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 275' to 324' for conductor sag accuracy.

DNO–11706 OPGW

DE Tension = 3,400 Lbs **RBS = 19,800 Lbs**

Super Long Span – Feet

Condition→ / Temp. / R.S. Range ②→ / Deg. F↓ / Span (Ft)→	INITIAL (Stringing) SAG (inches)											Tension Lbs
	Not Recommended					R.S.			Not Recommended			
	300	**310**	**320**	**330**	**340**	**350**	**360**	**370**	**380**	**390**	**400**	
15º, 1" ice, 4 psf wind	72	76	81	87	92	97	103	109	115	121	127	**4,544**
15º, 0.8" ice, 4 psf wind	64	68	72	77	82	87	92	97	102	107	113	**3,869**
0º, 0.5" ice, 4 psf wind + k	55	59	62	66	71	75	79	84	88	93	98	**3,496**
0	26	27	29	31	33	35	37	39	41	44	46	**1,968**
10	28	29	31	33	35	37	40	42	44	46	49	**1,841**
20	29	31	34	36	38	40	42	45	47	50	52	**1,722**
30	31	34	36	38	40	43	45	48	50	53	56	**1,612**
40	34	36	38	41	43	46	48	51	54	57	60	**1,511**
50	36	38	41	43	46	49	51	54	57	60	63	**1,420**
60º F, 21 psf wind	55	59	62	66	71	75	79	84	88	93	98	**2,374**
60º F, 6 psf wind	41	44	47	49	53	56	59	62	66	69	73	**1,495**
60º F, 4 psf wind	39	42	45	48	51	54	57	60	63	67	70	**1,412**
60	38	40	43	46	49	52	55	58	61	64	67	**1,337**
70	40	43	46	49	52	55	58	61	64	68	71	**1,262**
80	42	45	48	51	54	58	61	65	68	72	75	**1,195**
90	45	48	51	54	57	61	64	68	72	76	79	**1,134**
100	47	50	53	57	60	64	68	71	75	79	83	**1,080**

Super Long Span – Feet

Condition→ / Temp. / Deg. F ↓ / Span (Ft)→	FINAL (Clearance) SAG (inches)											Tension Lbs
						R.S.						
	300	**310**	**320**	**330**	**340**	**350**	**360**	**370**	**380**	**390**	**400**	
–20	26	28	30	32	34	36	38	40	42	45	47	**1,920**
0	31	33	35	37	39	42	44	47	49	52	54	**1,657**
0º, 0.5" ice, 4 psf wind + k	57	60	64	68	73	77	81	86	91	96	100	**3,400**
30	37	40	43	45	48	51	54	57	60	63	67	**1,351**
32º, 0.5" ice	54	58	62	66	70	74	78	83	87	92	97	**2,495**
32º, 0.5" ice, 2 psf wind	55	59	62	66	70	75	79	83	88	93	97	**2,545**
40	40	43	45	48	51	54	57	61	64	67	71	**1,270**
50	42	45	48	51	54	58	61	64	68	72	75	**1,198**
60	45	48	51	54	57	61	64	68	72	76	79	**1,135**
60º F, 6 psf wind	47	50	53	57	60	64	68	71	75	79	84	**1,302**
70	47	50	53	57	60	64	68	71	75	79	84	**1,078**
80	49	53	56	60	63	67	71	75	79	83	88	**1,027**
90	52	55	59	63	66	70	74	79	83	87	92	**982**
100	54	58	61	65	69	73	78	82	86	91	96	**941**
120	58	62	66	70	75	79	84	89	93	98	103	**871**
248	82	88	94	100	106	112	118	125	132	139	146	**617**

Notes:

1. See comments in front of section for conditions including wind and ice.
2. Ruling span range is for initial line design between 325' to 374' for conductor sag accuracy.

Line Guards and Armor Rods

Preformed line guards and armor rods shall be used to protect ACSR, AAAC, and AAC conductors from damage at an insulator or in suspension or angle clamps as indicated below. Armor rods and line guards do not need to be installed when preformed ties are used. Therefore, performed ties should be used in all possible applications.

The following guidelines shall apply:

1. **Line Guards** shall be used:
   A) In all hand tied applications where the conductor spans are under 300' in length (on both sides of the pin insulator).
2. **Armor Rods** shall be used:
   A) In all hand tied applications where the conductor spans exceed 300' in length (on either side of the pin insulator).
   B) In all clamp top post insulators and suspension clamps where the conductor spans exceed 300' in length (on either side of the insulator).

Line guards and armor rods may be used as patch rods to restore full conductivity and strength. They can be used if not more than 25% of the strands in the outer layer of the conductor have been damaged, and if the length of the damaged portion is not too great to prohibit their use.

Taps onto preformed line guards and armor rods (with a hot line clamp) are acceptable. However, they should not be installed for the sole purpose of making a tap. A stirrup clamp should be used for this application.

The following size **Line Guards** are available:

Wire Size		Rod O.D. (Inches)	No. Rods Per Set	Length (Inches)	Color Code	Ameren Stock No.
*6	Solid Cu.	0.102	7	19	Green	1759076
4 ACSR	7/1 Str.	0.121	8	19	Orange	1759032
2 ACSR	7/1 Str.	0.121	9	21	Red	1759033
1/0 ACSR	6/1 Str.	0.121	12	25	Yellow	1759034
3/0 ACSR	6/1 Str.	0.121	14	29	Orange	1759035
336.4 ACSR	18/1 Str.	0.146	15	35	Blue	1759036
336.4 ACSR	26/7 Str.	0.146	16	37	Green	1759044
477 ACSR	18/1 Str.	0.146	18	41	Purple	1759037
556.5 AAC	19 Str.	0.146	19	41	Blue	1759071
795 AAC	37 Str.	0.182	18	47	Brown	1759084
954 AAC	37 Str.	0.250	15	49	Orange	1759059
954 ACSR	45/7 Str.	0.250	15	51	Purple	1759104

*These Copperweld line guards shall be used to protect #6 copper conductors on 2.4/4.16kV circuits that are being converted to 7.2/12.47kV operation. They shall be installed at the time of conversion. These guards shall not be installed hot on circuits energized at 12kV.

The following size **Armor Rods** are available:

Wire Size		Rod O.D. (Inches)	No. Rods Per Set	Length Single	Length Double	Color Code	Ameren Stock No. Single	Ameren Stock No. Double
3 #7 A.W.	3 Str.	0.114	10	46	–	Black	1759085	–
4 ACSR	7/1 Str.	0.146	7	40	–	Orange	1759020	–
2 ACSR	7/1 Str.	0.146	9	44	–	Red	1759021	–
1/0 ACSR	6/1 Str.	0.167	9	52	64	Yellow	1759022	1759025
3/0 ACSR	6/1 Str.	0.167	11	56	68	Orange	1759023	1759026
336.4 ACSR	18/1 Str.	0.204	12	68	–	Blue	1759040	–
336.4 ACSR	26/7 Str.	0.204	12	72	–	Green	1759028	–
477 ACSR	18/1 Str.	0.250	11	76	–	Purple	1759058	–
556.5 AAC	19 Str.	0.250	12	70	–	Blue	1759061	–

Wire	Stock No.	Weight	Automatic Splices	Compression Sleeves		Presses and Dies		Nico Press
Stock No's. Maj. and Min.			17–60 (2)	17–60		86–11		85–36
		Lbs./Ft.		Full Tension	Jumper or Loop	12 Ton Hand or Power Press 87–29–006	60 Ton Power Hyd. Press 84–06–002	
#4 ACSR – Bare	18 05 005	.0674	332	258	–	–	–	112
#4 ACSR – Poly	18 05 068	.1475	332	258		–	–	112
#1/0 AAAC – Bare	18 05 060	.1140	328	260	–	–	–	112
#1/0 AAAC – Poly	18 05 067	.1660	328	260	–	–	–	112
#1/0 ACSR – 6/1 Bare	18 05 113	.1452	340	260	–	–	–	112
110.8 ACSR –12/7 Bare	18 05 117	.2763	–	389	–	–	–	–
336.4 Kcmil ACSR –18/1 Bare	18 05 036	.3653	333	254	209	139	–	–
336.4Kcmil AA – 19 Str. Poly.	18 05 052	.388		170	209	037 (3)	–	–
556.5 Kcmil – 19 Str. AA Bare	18 05 047	.5224	327		196	131	–	–
556.5 Kcmil – 37 Str. AA–Poly.	18 05 053	.632	327		196	131	–	–
795 Kcmil 37 Str. AA – Bare	18 05 032	.7463	335	286	287	–	169	–
954 Kcmil 37 Str. AA – Bare	18 05 043	.8955		185	291	–	169	–
3 #7 Alumoweld (1)	27 09 099	.141		272	–	134	–	–

1. Use 1/0 AAAC or 110.8 (12/7) ACSR for new static wire construction.
2. OK to use automatic splices on full tension spans but not in slack spans. Use bolted connectors or compression sleeves on highway or river crossings.
3. This die for full tension sleeves only. All other dies work on both full tension and loop sleeves for a given conductor.

Wire	Stock No. 18 05	Deadends			Angle Clamps	Armor Rod	Line Guard (5)	Stirrup Clamp	Hot Line Clamp
Stock No's. Maj. and Min.			23–78	23–18		17–59	17–59	17–62	17–62
			Auto-matic (3)	Straight		Sgle Double Length			
#4 ACSR – Bare	005	–	365	294	17 02 016	020 –	032	166	088 (6)
#4ACSR – Poly	068	–	365	294	17 02 016	– –	–	166	088 (6)
#1/0 AAAC – Bare	060	–	362	294	23 18 040 (4)	022 025	034	166	088 (6)
#1/0 AAAC – Poly	067	–	362	294	17 02 016	– –	–	166	088
110.8 ACSR –12/7 Bare	117	–	–	397	23 78 401	–	127	166	183
336.4 Kcmil ACSR –18/1 Bare	036	–	–	292	23 18 264 (4)	040 –	036	167	112 (5)
336.4Kcmil AA – 19 Str. Poly.	052	–	–	292	23 18 040 (4)	– –	–	167	088 (6)
556.5 Kcmil – 19 Str. AA Bare	047	–	–	292	23 18 302 (4)	061 –	071	167	
556.5 Kcmil – 37 Str. AA–Poly.	053	–	–	292	23 18 040 (4)	– –	–	167	–
795 Kcmil 37 Str. AA – Bare	032	–	–	292	23 18 302 (4)	– –	084	167	143 (7)
954 Kcmil 37 Str. AA – Bare	043	–	–	368	23 18 302 (4)	– –	059	167	143 (7)
	27 09			23 68					
3 #7 Alumoweld (1)	099	–	–	325 (2)	17 02 016	– –	085	–	

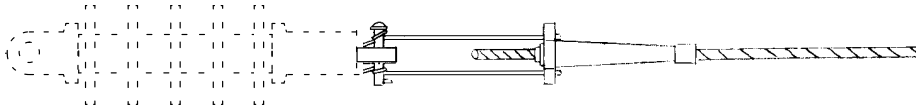
1. Use 1/0 AAAC or 110.8 (12/7) ACSR for new static wire construction.
2. Preformed grip.
3. Do NOT use automatic deadends on low tension spans, slack spans, or highway and river crossings. For these applications use bolted deadends.
4. Suitable for suspension construction also.
5. May be used for repairing conductor where less than 25% of strands are damaged.
6. For use with stirrup clamps
7. For use over bare conductor
8. For use over armor.

Wire	Stock No.	Weight	Automatic Splices	Compression Sleeves		Presses and Dies		Nico Press
Stock No's. Maj. and Min.			17–63	17–60		86–11		85–36
		Lbs./Ft.		Full Tension	Jumper or Loop	12 Ton Hand or Power Press 87–29–006	60 Ton Power Hyd. Press 84–06–002	
#6 Bare Cu.	18 02 010	.029	038					095
#6 Poly Cu.	18 01 012	.112	038	006 (1)				095
#4 Bare Cu.	18 02 017	.126	040					
#4 Poly Cu.	18 01 017	.164	040	103 (1)				128
#2 Bare Cu.	18 02 020	.201	080					
#2 Poly Cu.	18 01 020	.260	080	104 (1)				128
#1/0 Bare Cu.	18 02 022	.326	044					
#1/0 Poly Cu.	18 01 022	.424	044	121 (1)	207	106		
#4/0 Bare Cu.	18 02 027	.653	046					
#4/0 Poly Cu.	18 01 025	.800	046	123 (1)	155	107		
350 kcmil Bare Cu.	18 02 064	1.091		124		108		
#8 Sol. C.W.	27 09 094	.046		163				095–128
#3/0 ACSR	18 05 010		17–60–337	253	203	138(2)–109(3)		
266.5 kcmil 18/1 ACSR	18 05 039	.2397	17–60–338	AL 203 (1) ST 204		AL 176 ST 175		
336.4 kcmil 26/7 ACSR	18 05 014	.4624		AL 565 ST 133		AL 113 ST 114		
477 kcmil 18/1 ACSR	18 05 035	.518		AL 169 ST 134	179	AL 115 ST 110		

1. Do not use automatic splices on low tension or slack spans, only on full tension. Do not use automatic splices on highway or railroad crossings. Use compression splices instead.
2. Die for full tension splice only.
3. Die for loop splice only.

Wire	Stock No.	Deadends			Angle Clamp	Armor Rod (4)	Line Guard (4)	Stirrup Clamp	Hot Line Clamp
Stock No's. Maj. and Min.	18–	23–78	23–18	23–78		17–59	17–59	17–62	23–78
		Automatic (1)	Straight	Quad-rant or Snail					
#6 Bare Cu.	02 010								
#6 Poly Cu.	01 012	375	394		17 02 016			165	183 (5)
#4 Bare Cu.	02 017								
#4 Poly Cu.	01 017	374	394		17 02 016			165	183 (5)
#2 Bare Cu.	02 030								
#2 Poly Cu.	01 020	373	394		17 02 016			165	183 (5)
#1/0 Bare Cu.	02 022	–							
#1/0 Poly Cu.	01 022	–	395	290 (2)	17 02 016	079		165	183 (5)
#4/0 Bare Cu.	02 027	–							183 (5)
#4/0 Poly Cu.	01 025	–	395		17 62 006 (3)	046 (2)		153	
350 kcmil Bare Cu.	02 064	–		050 (2)	17 62 006 (3)				
#8 Sol. C.W.	27 09 094	17 60 199	(Offset Sleeve)						
									17–62
#3/0 ACSR	05 010	–	292	–	23 18 040 (3)	S.L. 023 D.L. 026	035	167	088 (6)
266.8 kcmil 18/1 ACSR	05 039	–	292		23 18 040 (3)	038		167	112 (6)
336.4 kcmil 26/7 ACSR	05 014	–	292		23 18 264 (3)	040	044	167	112 (6)
477 kcmil 18/1 ACSR	05 035	–	292		23 18 264 (3)	058	037	167	112 (6)

1. Do NOT use automatic deadends on low tension spans, slack spans, or highway and river crossings. For these applications use bolted deadends.
2. Use with tensions over 4000 lbs.
3. Suitable for suspension construction also.
4. Preformed line guards and patch rods preferred for repairing conductors.
5. For use with stirrup clamp.
6. For use over bare conductor

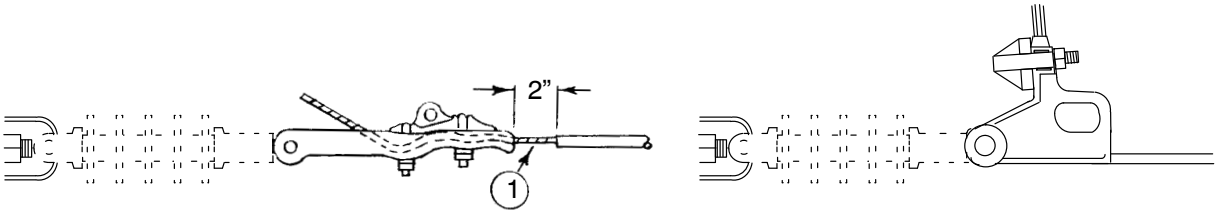


Automatic Type

Stnd. / Stk. No.	Description	New / Maint.	DOJM Code
23 78 365	Clamp, Deadend, Auto, #4 ACSR	N	DEA4A
23 78 364	Clamp, Deadend, Auto, #2 ACSR	N	DEA2A
23 78 362	Clamp, Deadend, Auto, 1/0 AAAC	N	DEA10A
23 78 375	Clamp, Deadend, Auto, #6 CU	M	DEA6C
23 78 374	Clamp, Deadend, Auto, #4 CU	M	DEA4C
23 78 373	Clamp, Deadend, Auto, #2 CU	M	DEA2C

NOTES:

1. The wire shall be fed completely through the automatic deadend chuck. The jaws of the deadend shall be set by applying a sharp heavy pull on the line conductor. Do not strike deadend body to set the deadend chuck.
2. Do NOT use automatic deadends on low tension spans, slack spans, or highway and river crossings. For these applications use bolted deadends.



STYLE A STYLE B

Stnd. / Stk. No.	Description	New / Maint	DOJM Code	Style
23 18 394	Clamp, Deadend, 3 #7 A.W.	M	DEC37AW	A
23 18 394	Clamp, Deadend, #6 CU	M	DEC6C	A
23 18 394	Clamp, Deadend, #4 CU	M	DEC4C	A
23 18 394	Clamp, Deadend, #2 CU	M	DEC2C	A
23 18 394	Clamp, Deadend, #1/0 CU	M	DEC10C	A
23 18 395	Clamp, Deadend, #4/0 CU	M	DEC40C	A
23 18 395	Clamp, Deadend, 350 CU	M	DEC350C	A
23 18 395	Clamp, Deadend, 500 CU	M	DEC500C	A
23 18 399	Clamp, Deadend, 750 CU	M	DEC750C	A
23 18 399	Clamp, Deadend, 1000 CU	M	DEC1000C	A
23 18 394	Clamp, Deadend, 6A CWC	M	DEC6AC	A
23 18 394	Clamp, Deadend, 4A CWC	M	DEC4AC	A
23 18 394	Clamp, Deadend, 2A CWC	M	DEC2AC	A
23 18 400	Clamp, Deadend, #4 ACSR	M	DEC4A	B
23 18 400	Clamp, Deadend, #2 ACSR	M	DEC2A	B
23 18 400	Clamp, Deadend, 1/0 ACSR or 1/0 AAAC	N	DEC10A	B
23 18 292	Clamp, Deadend, 3/0 ACSR	N	DEC30A	A
23 18 292	Clamp, Deadend, 4/0 ACSR	N	DEC40A	A
23 18 292	Clamp, Deadend, 110 ACSR	N	DEC110A	A
23 18 404	Clamp, Deadend, 335.6 ACSR T–2	N	DEC335T2	B
23 18 404	Clamp, Deadend, 432–2 ACSR T–2	N	DEC432T2	B
23 18 292	Clamp, Deadend, 336 ACSR	N	DEC336A	A
23 18 292	Clamp, Deadend, 477 ACSR	N	DEC477A	A
23 18 292	Clamp, Deadend, 556 AA	N	DEC556A	A
23 18 368	Clamp, Deadend, 795 AA	N	DEC795A	A
23 18 368	Clamp, Deadend, 954 AA	N	DEC954A	A

NOTE:

1. On covered conductors remove insulation to this point. Tape according to Dist. Std. 07 00 27 00.

FOR THE ELIMINATION OF KNOWN GALLOPING CONDUCTORS

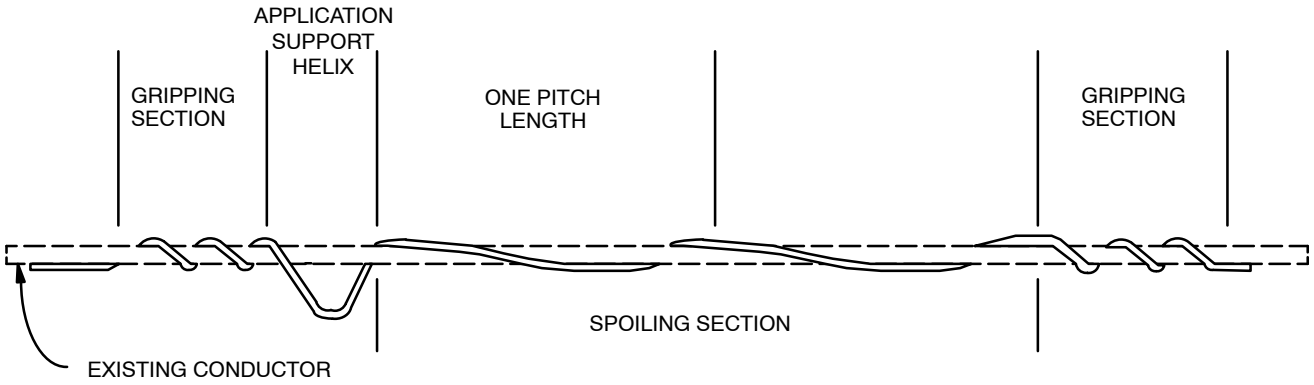


FIGURE 1

AIR FLOW SPOILER (AFS)

TABLE 1

SPAN LENGTH (FT)	SPOILERS / SPAN	SPAN LENGTH (FT)	SPOILERS / SPAN
< 120	2	451 – 500	9
121 – 180	3	501 – 550	10
181 – 240	4	551 – 600	11
241 – 300	5	601 – 650	12
301 – 350	6	651 – 700	13
351 – 400	7	701 – 750	14
401 – 450	8	751 – 800	15

STND. / STK. NO.	DESCRIPTION 07 00 14 **	01	02	03	04	05	06
17 63 181	Spoiler, Airflow 1/0 AAAC 7 STR or 1/0 ACSR 6/1	⁎					
17 63 240	Spoiler, Airflow 3/0, 4/0, or 110.8 ACSR						⁎
17 63 182	Spoiler, Airflow 336.4 ACSR 18/1		⁎				
17 63 183	Spoiler, Airflow 556.5 AA 19 STR			⁎			
17 63 184	Spoiler, Airflow 795 (37) AAC, 954 (37) AAC or 954 (45/7) ACSR				⁎		
296	OPERATION CODE	⁎	⁎	⁎	⁎	⁎	⁎

⁎ USE APPROPRIATE QUANTITIES FOR SPAN LENGTH PER TABLE 1

NOTES:

1. Leave 15’ between each AFS.

2. Each AFS is approximately 15’ in length.

3. For a span requiring an EVEN number of AFS, install per Figure 2.

4. For a span requiring an ODD number of AFS, install per Figure 3.

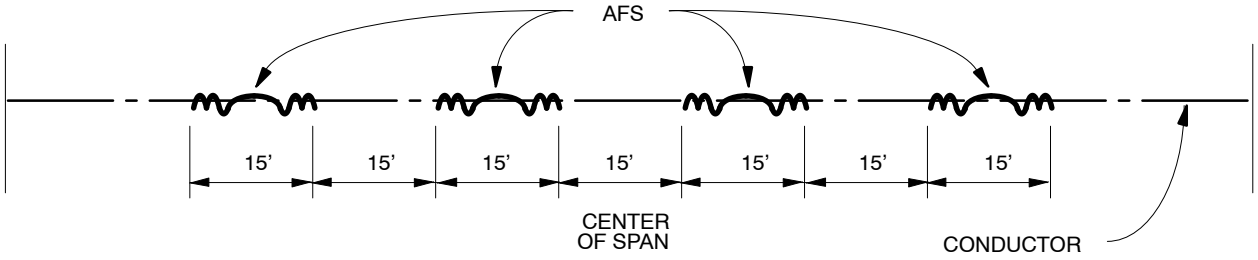


FIGURE 2

EVEN NUMBER OF AFS

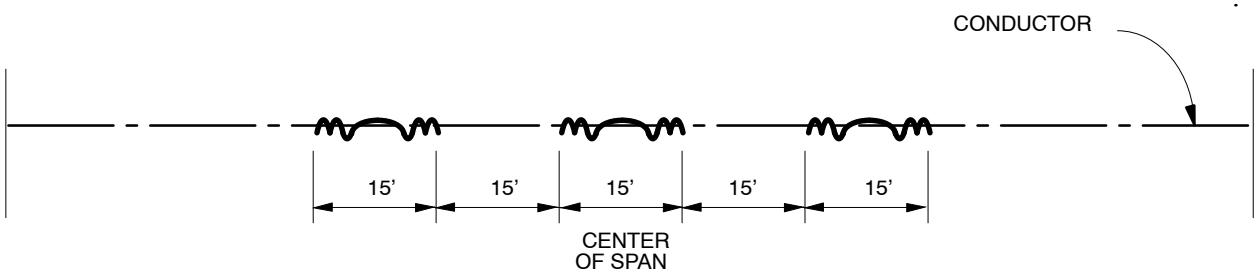
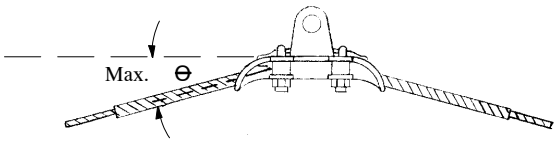


FIGURE 3

ODD NUMBER OF AFS



Max. θ = 30°
UP TO 477 ACSR

Max. θ = 22.5°
FOR 556 AND LARGER

Note:

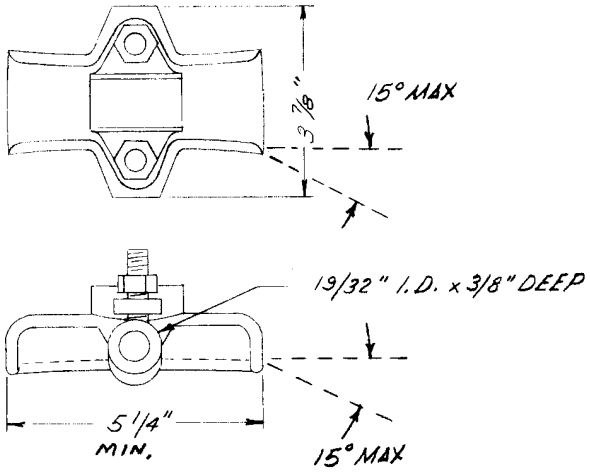
1. Armor rods not required for spans 300' and shorter.

SPANS 300' AND SHORTER

Stk. No.	Description	DOJM Code
23 78 417	Clamp, Susp., #2 CU	SC2C
23 78 417	Clamp, Susp., #1/0 CU	SC10C
23 78 417	Clamp, Susp., #2/0 CU	SC20C
23 78 417	Clamp, Susp., #4/0 CU	SC40C
23 78 417	Clamp, Susp., #6A CWC	SC6AC
23 78 417	Clamp, Susp., #4A CWC	SC4AC
23 78 417	Clamp, Susp., #2A CWC	SC2AC
23 18 342	Clamp, Susp., #4 ACSR	SC4A
23 18 342	Clamp, Susp., #2 ACSR	SC2A
23 18 342	Clamp, Susp., 3/0 ACSR	SC30A
23 18 342	Clamp, Susp., 4/0 ACSR	SC40A
23 78 414	Clamp, Susp., 335.6 ACSR T–2	SC335T2
23 78 402	Clamp, Susp., 477 ACSR	SC477A
23 18 302	Clamp, Susp., 795 AA	SC795A
23 78 417	Clamp, Susp., 3–#7 AW	SC37AW

SPANS GREATER THAN 300'

Stk. No.	Description	DOJM Code
23 18 342	Clamp, Susp. #4 ACSR	SC4AR
17 59 020	Rod, Armor, #4 ACSR	
23 18 342	Clamp, Susp. #2 ACSR	SC2AR
17 59 021	Rod, Armor, #2 ACSR	
23 78 402	Clamp, Susp. 3/0 ACSR	SC30AR
17 59 023	Rod, Armor, 3/0 ACSR	
23 18 372	Clamp, Susp. 4/0 ACSR	SC40AR
17 59 039	Rod, Armor, 4/0 ACSR	
23 18 302	Clamp, Susp. 477 ACSR	SC477AR
17 59 058	Rod, Armor, 477 ACSR	
23 18 302	Clamp, Susp. 795 AA	SC795AR
17 59 068	Rod, Armor 795AA	



Notes:

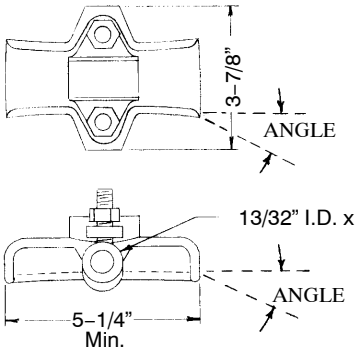
1. This trunnion to be used if line angle is less than or equal to 5 degrees.
2. Armor rods not required for spans 300' and shorter.

Spans 300' and Shorter

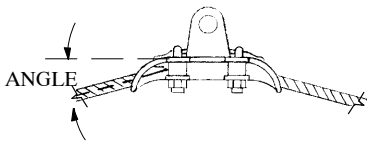
Stk. No.	Description	DOJM Codes
23 78 331	Clamp, Trunnion, 795 AA	TC795A

Spans Greater Than 300'

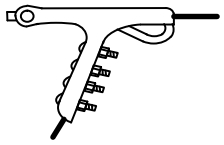
Stk. No.	Description	DOJM Codes
23 78 330	Clamp, Trunnion, 795 AA	TC795AR
17 59 068	Rod, Armor, 795 AA	



TRUNNION



SUSPENSION



DEADEND

Configurations	Tangent / Angle				Deadend	
	Span ≤ 300'		Span > 300'		All Spans	
Description	**Stk. No.**	**DOJM**	**Stk. No.**	**DOJM**	**Stk. No.**	**DOJM**
TRUNNION						
Clamp, Trunnion, 1/0 AAAC	23 78 401	TC10A	23 78 401	TC10AR		
Rod, Armor, 1/0 AAAC			17 59 022			
Clamp, Trunnion, 556 AA	23 78 331	TC556A	23 78 332	TC556AR		
Rod, Armor, 556 AAC			17 59 061			
Clamp, Trunnion, 954 ACSR	23 78 332	TC954A	23 78 330	TC954ARS		
Rod, Armor, 954 ACSR			17 59 125			
SUSPENSION						
Clamp, Suspension, 1/0 AAAC	23 18 342	SC10A	23 78 402	SC10AR		
Rod, Armor, 1/0 AAAC			17 59 022			
Clamp, Suspension, 110.8 ACSR	23 18 342	SC110A	23 78 311	SC110AR		
Rod, Armor, 110.8 ACSR			17 59 164			
Clamp, Suspension, 556 AA	23 18 372	SC556A	23 18 302	SC556AR		
Rod, Armor, 556 AA			17 59 061			
Clamp, Suspension, 954 ACSR	23 18 302	SC954A	23 18 396	SC954ARS		
Rod, Armor, 954 ACSR			17 59 125			
Clamp, Suspension, T2, 4/0 ACSR	23 78 455					
Clamp, Suspension, T2, 336 ACSR	23 78 456					
Clamp, Suspension, T2, 556 AAC	17 02 176					
Clamp, Suspension, T2, 954 ACSR	23 78 451					
DEADEND						
Clamp, Deadend, 1/0 AAAC					23 68 529	DEC10AS
Clamp, Deadend, 110 ACSR					23 68 529	DEC110AS
Clamp, Deadend, 556 AA					23 18 405	DEC556AS
Clamp, Deadend, 954 ACSR					23 18 436	DEC954AS
Clamp, Deadend, T2, 4/0					23 18 404	
Clamp, Deadend, T2, 336, 556					23 18 406	
Clamp, Deadend, T2, 954 (x2)					23 18 436	

General

Hot line clamps shall be used to make connections on lines rated over 5000 volts phase to phase where the connection must be made ”hot” or where it is likely that the connection will have to be disconnected and reconnected with some degree of frequency. **Avoid the use of hot line clamps where currents exceed 250 amps** (i.e. 1/0 AAAC taps maximum), except with T–2 conductors.

Bronze hot line clamps shall be installed on aluminum stirrup clamps. Aluminum hot line clamps shall be installed on line conductors protected with *existing* armor rod or line guard. (Do not install additional rods or guards; use a new stirrup clamp). However, aluminum and bronze hot line clamps shall be connected directly to unprotected line conductors of like material (Al. to Al. or Cu. to Cu.) **when making no load taps**. This includes switches and lightning arresters.

INSTALLATION OF HOT LINE CLAMPS AND STIRRUP CLAMPS

a. Use the proper size and type clamps as shown in the following tables.

b. Install the hot line clamps over armor rods where present (keeping the clamps at least one loop (or pitch) length in from the end of the rods), or onto bails of stirrup clamps.

c. Where possible clean copper surfaces with emery cloth or by scraping and aluminum surfaces by wire brushing.

d. Apply corrosion resisting lubricant, 31 59 058 – BT.

e. Stirrup clamps in combination with hot line clamps are acceptable for use on conductors 1/0 and smaller.

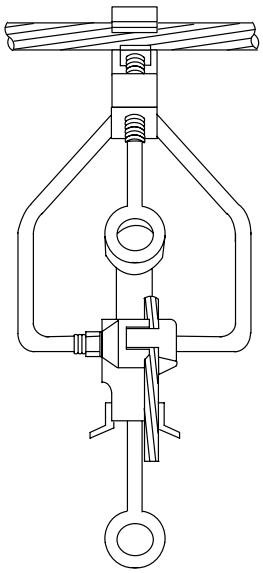
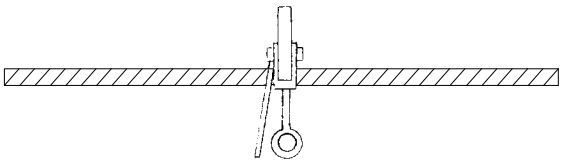


TABLE 1. Clamp on stirrup

Stk. No.	Description	DOJM Code
17 62 165	Clamp, Stirrup, #6 Cu	STC6C
23 78 394	Clamp, Hot Line, Cu.	
17 62 165	Clamp, Stirrup, #4 Cu	STC4C
23 78 394	Clamp, Hot Line,Cu.	
17 62 165	Clamp, Stirrup, #2 Cu	STC2C
23 78 394	Clamp, Hot Line, Cu.	
17 62 165	Clamp, Stirrup, 1/0 Cu	STC10C
23 78 394	Clamp, Hot Line, Cu.	
17 62 153	Clamp, Stirrup, 4/0 Cu	STC40C
23 78 394	Clamp, Hot Line, Cu.	
17 62 153	Clamp, Stirrup, 350 Cu	STC350C
23 78 394	Clamp, Hot Line, Cu.	
17 62 153	Clamp, Stirrup, 500 Cu	STC500C
23 78 394	Clamp, Hot Line, Cu.	
17 62 166	Clamp, Stirrup, #4 Al.	STC4A
23 78 394	Clamp, Hot Line, Cu.	
17 62 166	Clamp, Stirrup, #2 Al.	STC2A
23 78 394	Clamp, Hot Line, Cu.	
17 62 166	Clamp, Stirrup, 1/0 Al.	STC10A
23 78 394	Clamp, Hot Line, Cu.	
17 62 166	Clamp, Stirrup, 2/0 ACSR	STC20A
23 78 394	Clamp, Hot Line, Cu.	
17 62 166	Clamp, Stirrup, 3/0 ACSR	STC30A
23 78 394	Clamp, Hot Line, Cu.	
17 62 166	Clamp, Stirrup, 4/0 ACSR	STC40A
23 78 394	Clamp, Hot Line, Cu.	
17 62 186	Clamp, Stirrup, 335.6 ACSR T–2	STC335T2
23 78 394	Clamp, Hot Line, Cu.	
17 62 186	Clamp, Stirrup, 336 ACSR	STC336A
23 78 394	Clamp, Hot Line, Cu.	
17 62 186	Clamp, Stirrup, 477 ACSR	STC477A
23 78 394	Clamp, Hot Line, Cu.	
17 62 186	Clamp, Stirrup, 556 AA	STC556A
23 78 394	Clamp, Hot Line, Cu.	
17 62 167	Clamp, Stirrup, 795 AA	STC795A
23 78 394	Clamp, Hot Line, Cu.	
17 62 167	Clamp, Stirrup, 954 AA	STC954A
23 78 394	Clamp, Hot Line, Cu.	



FOR NO LOAD TAPS –
FUSED SWITCHES AND
LIGHTNING ARRESTORS

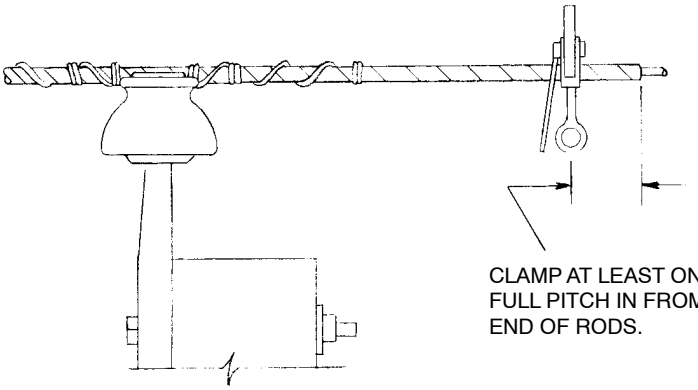


TABLE 2. Clamp on bare conductor

Stk. No.	Description	DOJM Code
23 78 394	Clamp, Hot Line, #6 Cu, BARE	HLC6C
23 78 394	Clamp, Hot Line, #4 Cu, BARE	HLC4C
23 78 394	Clamp, Hot Line, #2 Cu, BARE	HLC2C
23 78 394	Clamp, Hot Line, 1/0 Cu, BARE	HLC10C
23 78 183	Clamp, Hot Line, 4/0 Cu, BARE	HLC40C
23 78 183	Clamp, Hot Line, 350 Cu, BARE	HLC350C
17 62 088	Clamp, Hot Line, #4 ACSR, BARE	HLC4A
17 62 088	Clamp, Hot Line, #2 ACSR, BARE	HLC2A
17 62 088	Clamp, Hot Line, 1/0 AL, BARE	HLC10A
17 62 088	Clamp, Hot Line, 2/0 ACSR, BARE	HLC20A
17 62 088	Clamp, Hot Line, 3/0 ACSR, BARE	HLC30A
17 62 088	Clamp, Hot Line, 4/0 ACSR, BARE	HLC40A
17 62 190	Clamp, Hot Line, 335.6 ACSR T–2	HLC335T2
17 62 088	Clamp, Hot Line, 336 ACSR, BARE	HLC336A
17 62 112	Clamp, Hot Line, 477 ACSR, BARE	HLC477A
17 62 112	Clamp, Hot Line, 556 AA, BARE	HLC556A
17 62 143	Clamp, Hot Line, 795 AA, BARE	HLC795A
17 62 143	Clamp, Hot Line, 954 AA, BARE OR 954 ACSR, BARE	HLC954A

TABLE 3. Clamp on conductor with existing armor rods.

Stk. No.	Description	DOJM Code
17 62 088	Clamp, Hot Line, #4 ACSR, w/Armor	HLC4AR
17 62 088	Clamp, Hot Line, #2 ACSR, w/ Armor	HLC2AR
17 62 088	Clamp, Hot Line, 1/0 AL, w/Armor	HLC10AR
17 62 088	Clamp, Hot Line, 2/0 ACSR, w/Armor	HLC20AR
17 62 088	Clamp, Hot Line, 3/0 ACSR, w/Armor	HLC30AR
17 62 143	Clamp, Hot Line, 4/0 ACSR, w/Armor	HLC40AR
17 62 143	Clamp, Hot Line, 336 ACSR, w/Armor	HLC336AR
17 62 143	Clamp, Hot Line, 477 ACSR, w/Armor	HLC477AR
17 62 143	Clamp, Hot Line, 556 AA, w/Armor	HLC556AR

Connectors

This section covers the various connectors to be used in making copper to copper, aluminum to aluminum, and aluminum to copper connections. Each connector shall be used only on the types and ranges of conductors for which it is shown.

a. **Copper to Copper Connectors**

The following sizes of split bolt and two bolt connectors shall be standard for use in making copper to copper conductor connections.

Stock No.	Type of Connector	Conductor Range		Alternative options to Split Bolt	DOJM Code
		Main	Tap	Vice connectors	
17 54 001	Split Bolt	10 Str	12 Sol	–	SB1
17 54 002	Split Bolt	8 Str	10 Sol	–	SB8
17 54 003	Split Bolt	6 Sol	10 sol	–	SB6
17 54 004	Split Bolt	4 Sol	8 Sol	17 54 962	SB4
17 54 005	Split Bolt	2 Sol	6 Sol	17 04 251	SB2
17 54 182	Split Bolt	2 Str	4 Sol		SB2ST
17 54 145	Two Bolt	4 AWG – 1/0	8 AWG – 1/0	17 04 252	TB10
17 54 139	Two Bolt	3 AWG – 2/0	8 AWG – 2/0		TB20
17 54 140	Two Bolt	1 AWG – 4/0	8 AWG – 4/0	–	TB40
17 54 132	Two Bolt	2/0 – 350	8 AWG – 350	–	TB350
17 54 141	Two Bolt	3/0 – 500	8 AWG – 500	–	TB500
17 54 142	Two Bolt	500 – 1000	8 AWG – 1000	–	TB1000

b. **Aluminum to Aluminum And Aluminum to Copper Connectors**

The parallel groove clamps listed below are acceptable means of making aluminum to aluminum or aluminum to copper conductor connections within the types and ranges of conductors specified for each. In no instance shall these connectors be used for making copper to copper connections. When making aluminum to copper connections the copper wire should be on the low side to prevent soluble copper salts from eroding the aluminum connector.

Parallel Groove Clamps

Stock No.	Conductor Range				DOJM Code
	Main (ACSR & AA)		Tap (ACSR, AA, & CU)		
	ACSR	AWG & CM	ACSR	AWG & CM	
17 51 032	6 – 1/0	6 sol – 1/0 str	6 – 1/0	6 sol – 1/0 str	PGSS
17 51 137	1/0 – 336.4	1/0 str – 350 kcmil	6 – 1/0	6 sol – 1/0 str	PGSM
17 51 138	1/0 – 336.4	1/0 str – 350 kcmil	1/0 – 336.4	1/0 str – 350 kcmil	PGMM
17 51 139	336.4 – 795	397.5 – 954 kcmil	6 – 2/0	6 sol – 2/0 str	PGSL
17 51 136	397.5 – 795	400 – 1000 kcmil	3/0 – 397.5	3/0 str – 350 kcmil	PGML
17 51 135	397.5 – 795	400 – 1000 kcmil	397.5 – 795	400 – 1000 kcmil	PGLL

Notes:

1. Where there is a choice of clamps available for a specific connection, the smallest clamp shall be selected.
2. A Service Entrance Clamp, Stock No. 17 51 146 (not listed above) shall be used for connecting #6 ACSR Duplex cable to #10 Cu Pole & Bracket Cable.

c. **Applications**

The following shall be used to select both the line (A) and tap (B) connectors when making a tap, connecting a loop (over or around), or connecting a switch. The table below also indicates the copper lead wire to be used. However, this must be selected with the appropriate DOJM code indicated in Standard 07 00 80 (bare conductor) or Standard 07 00 81 (covered conductor).

Where a small tap to a large line combination has no connector shown (such as a 1/0 AAAC tap from a 954 AA line), use the next larger lead wire. For example: use a 4/0 cu. rather than 1/0 cu. for 1/0 AAAC to 954 AA).

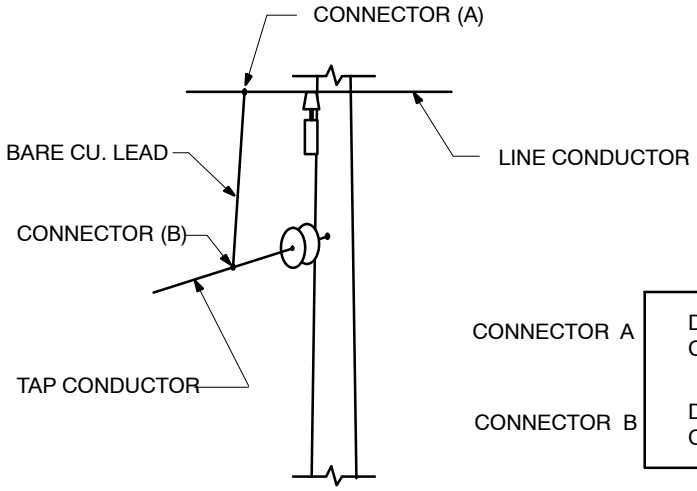


TABLE KEY

CONNECTOR A	DOJM CODE	STOCK NUMBER
CONNECTOR B	DOJM CODE	STOCK NUMBER

Wire Size Tap Conductor	Wire Size Bare S.D. Cu. Lead	Wire Size – Line Conductor						
		954 AA	795 AA	556 AA	477 ACSR	336 ACSR	1/0 AAAC or 1/0 ACSR	4 ACSR
4 ACSR Bare or Poly	4			PGSL 1751139 PGSS 1751032	PGSL 1751139 PGSS 1751032	PGSM 1751137 PGSS 1751032	PGSS 1751032 PGSS 1751032	PGSS 1751032 PGSS 1751032
1/0 AAAC, ACSR Bare or Poly	1/0			PGSL 1751139 PGSS 1751032	PGSL 1751139 PGSS 1751032	PGSM 1751137 PGSS 1751032	PGSS 1751032 PGSS 1751032	PGSS 1751032 PGSS 1751032
336 ACSR Bare or Poly	350	PGML 1751136 PGMM 1751138	PGML 1751136 PGMM 1751138	PGML 1751136 PGMM 1751138	PGML 1751136 PGMM 1751138	PGMM 1751138 PGMM 1751138		
477 ACSR Bare or Poly	350	PGML 1751136 PGML 1751136	PGML 1751136 PGML 1751136	PGML 1751136 PGML 1751136	PGML 1751136 PGML 1751136	PGMM 1751138 PGML 1751136		
556 AA Bare or Poly	350	PGML 1751136 PGML 1751136	PGML 1751136 PGML 1751136	PGML 1751136 PGML 1751136	PGML 1751136 PGML 1751136			
795 AA Bare or Poly	500	PGLL 1751135 PGLL 1751135	PGLL 1751135 PGLL 1751135	PGLL 1751135 PGLL 1751135				
954 AA Bare or Poly	750	PGLL 1751135 PGLL 1751135	PGLL 1751135 PGLL 1751135					
6 Cu. Bare or Poly	4			PGSL 1751139 SB4 1754004	PGSL 1751139 SB4 1754004	PGSM 1751137 SB4 1754004	PGSS 1751032 SB4 1754004	PGSS 1751032 SB4 1754004
4 Cu. Bare or Poly	4			PGSL 1751139 SB4 1754004	PGSL 1751139 SB4 1754004	PSGM 1751137 SB4 1754004	PGSS 1751032 SB4 1754004	PGSS 1751032 SB4 1754004
2 Cu. Bare or Poly	2			PGSL 1751139 SB2 1754005	PGSL 1751139 SB2 1754005	PGSM 1751137 SB2 1754005	PGSS 1751032 SB2 1754005	PGSS 1751032 SB2 1754005
1/0 Cu. Bare or Poly	1/0			PGML 1751136 TB10 1754145	PGML 1751136 TB10 1754145	PGSM 1751137 TB10 1754145	PGSS 1751032 TB10 1754145	PGSS 1751032 TB10 1754145
4/0 Cu. Bare or Poly	4/0	PGML 1751136 TB40 1754140	PGML 1751136 TB40 1754140	PGML 1751136 TB40 1754140	PGML 1751136 TB40 1754140	PGMM 1751138 TB40 1754140	PGSM 1751137 TB40 1754140	
350 Cu. Bare or Poly	350	PGML 1751136 TB350 1754132	PGML 1751136 TB350 1754132	PGML 1751136 TB350 1754132	PGML 1751136 TB350 1754132	PGMM 1751138 TB350 1754132		
500 Cu. Bare or Poly	500	PGLL 1751135 TB500 1754141	PGLL 1751135 TB500 1754141	PGLL 1751135 TB500 1754141	PGLL 1751135 TB500 1754141			

1. **Use of Rubber Tape**

There are two standard types of rubber tape as follows:

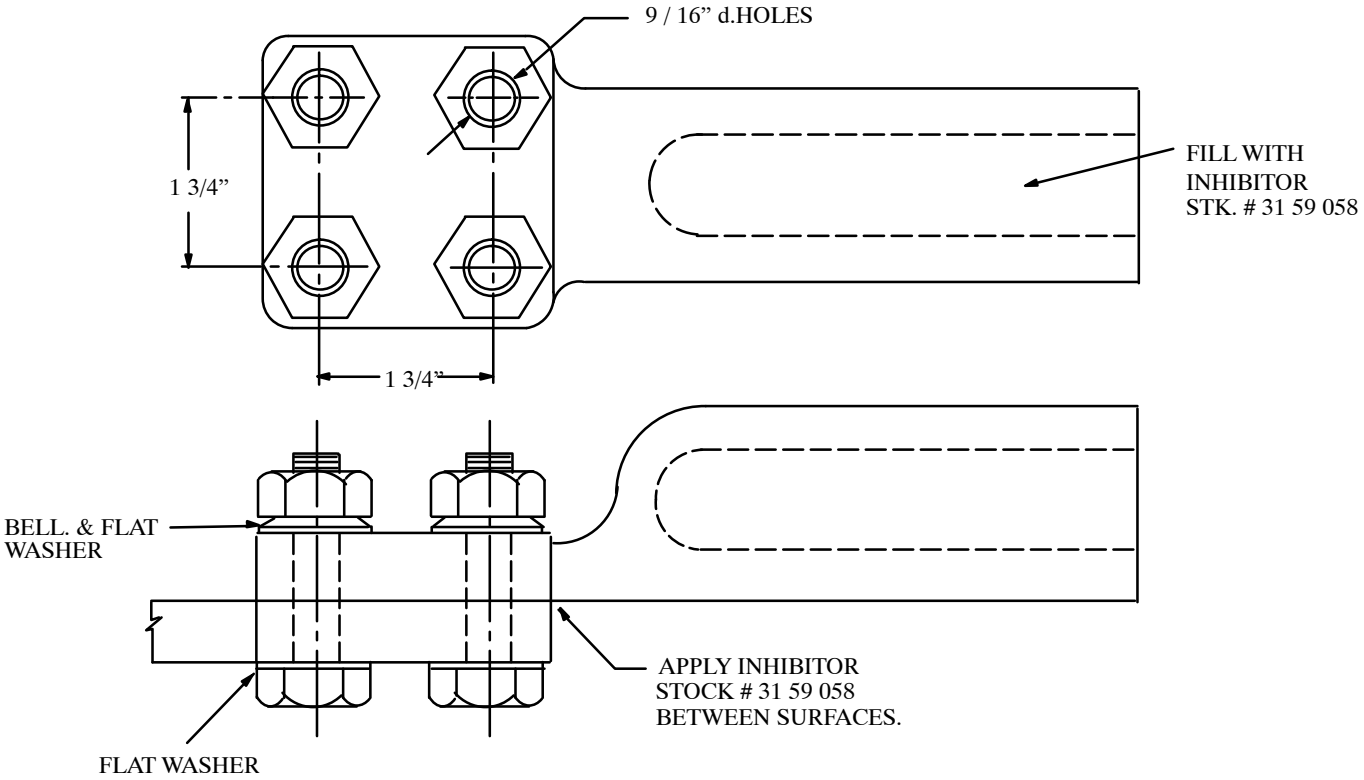
Rubber Base – Stock #25 53 080 used for voltages of 1000 volts or less between phases. Its normal application is with rubber insulated wire. Use two layers half lapped and cover with same amount of friction tape.

Oil Base – Stock #25 53 070 (1" wide) or #25 53 074 (1–1/2" wide) used for voltages of 1000 volts or more between phases. This tape is normally used with rubber insulated wire such as primary leads to transformers and for cable joints and terminals. Specific instructions for the use of this tape accompany standards on splices, joints, terminals, etc.

2. **Use of Friction Tape**

Friction tape Stock #25 53 003 (3/4" wide) or #25 53 027 (1–1/2" wide) shall be used to cover taps, splices, etc., within the climbing and working spaces on Overhead Construction 5kV and below where weatherproof conductors are used. Apply two layers half lapped.

Tape will not adhere to corrosion resisting lubricant, therefore on aluminum taps it will be necessary to wipe the excess lubricant from the connection before taping. The tape must be securely anchored to the polyethylene jacket before taping over the coated connection.



1. Install with 12 Ton Press and Burndy die.
2. Install with 60 Ton Press and Alcoa die.

Stk. No.	Description	DOJM Code*	Die	Note
17 55 311	Lug, Connecting, 1/0 ACSR, 2 Hole	CL10A	B74AH–10AH	1
17 55 315	Lug, Connecting, 335.5 ACSR T–2, 2 Hole	CL335T2	B75AH	1
17 55 318	Lug, Connecting, 336 ACSR, 2 Hole	CL336A	B76AH	1
17 55 324	Lug, Connecting, 477 ACSR, 2 Hole	CL477A	24AH	2
17 55 327	Lug, Connecting, 556 AA, 2 Hole	CL556A2H	24AH	2
17 55 192	Lug, Connecting, 556 AA, 4 Hole	CL556A	U317	1
17 55 193	Lug, Connecting, 795 AA, 4 Hole	CL795A	30AH	2
17 55 194	Lug, Connecting, 795 ACSR, 45/7, 4 Hole	CL795AC	30AH	2
17 55 211	Lug, Connecting, 954 AA, 4 Hole	CL954A	30AH	2

*****DOJM codes include stainless steel bolts (1/2" x 2", Stock No. 21 56 078), flat washers (1/2" ss, Stock No. 12 56 053) and Belleville washers (1/2" ss, Stock No. 12 56 052). See Dist. Std. 59 52 00 43 for procedures on installation of Belleville washers.

Preformed Ties

The preferred method of attaching aluminum conductors under tension to pin type or post type insulators on lines up thru 34kV is with preformed ties. Preformed top, side, double top, and double sided ties are available for the following conductors listed in Table I below. Pads, when supplied with these ties must be used to insure a proper fit between the tie and conductor. On covered conductors these ties are to be installed over the insulation.

TABLE KEY

DOJM CODE
STOCK NO.

TABLE I – Preformed Ties

Nominal Conductors	Top Tie	Side Tie	Dbl. Top Tie	Dbl. Side Tie	Post Top Tie	Color Code
#4 ACSR, Bare	TT4A 23–68–347	ST4A 23–68–360	DTT4A 23–68–384	DST4A 23–68–396		Orange
#4 ACSR, Poly Covered #2 ACSR, Bare	TT4P TT2A 23–68–345	ST2A 23–68–359	DTT2A 23–68–386	DST2A 23–68–393		Red
1/0 AAAC, Bare 1/0 ACSR, Bare	TT10A 23–68–350	ST10A 23–68–337	DTT10A 23–68–385	DST10A 23–68–376	PTT10A 23–68–399	Yellow
1/0 AAAC, Poly Covered 3/0 AAAC, Bare 3/0 ACSR, Bare 110.8 ACSR, Bare	TT10P TT30A TT110A 23–68–351	ST10P ST30A ST110A 23–68–339				Orange
2/0 ACSR, Bare	TT20A 23–68–387					Blue
#4 ACSR, Tree Wire 4/0 ACSR, Bare	TT4T TT40A 23–68–390	ST4T ST40A 23–68–331	DTT4T DTT40A 23–68–383	DST4T DST40A 23–68–392		Red
1/0 AAAC, Tree Wire 336.4 ACSR, Bare	TT10T TT336A 23–68–343	ST10T ST336A 23–68–332	DTT10T DTT336A 23–68–395	DST10T DST336A 23–68–391	PTT10T PTT336A 23–68–362	Brown
335.6 ACSR T–2	TT335T2 23–68–491	ST335T2 23–68–338	DTT335T2 23–68–494	DST335T2 23–68–375		Red or Blue
477 ACSR, Bare	TT477A 23–68–491	ST477A 23–68–492	DTT477A 23–68–494	DST477A 23–68–493		Red
556.5 AAC, Bare	TT556A 23–68–344	ST556A 23–68–338	DTT556A 23–68–374	DST556A 23–68–375	PTT556A 23–68–348	Blue
336.4 ACSR, Tree Wire 556 AAC, Poly Covered	TT336T TT556P 23–68–354	ST336T ST556P 23–68–333				Green
795 AAC, Bare					PTT795A 23–68–349	Green
954 AAC, Bare				DST954A 23–68–379	PTT954A 23–68–356	Yellow

Conventional Hand Ties

Conventional hand ties are to be used only for those conductors on lines up thru 34kV for which preformed ties are not specified, such as copper conductors, slack–span installations, and miscellaneous wire sizes and types which may be encountered on existing lines. Table II below specifies the correct tie wire for each type of conductor.

TABLE II – Hand Ties

Type Conductor	Tie Wire	Stock No.	Unit	Top Tie	Side Tie	Dbl. Side Tie
Aluminum – AA, AAAC, ACSR Bare or Covered[2]	#4 Al., Bare	18–55–028	Ft.	10	10	16
Copper–Bare, CW or CWC #6 thru 500 kcmil	#6 Cu, Bare, S.D. or #8 Cu, Bare, S.D.	18–52–019 18–52–068	Ft.	10	10	16
Copper–Bare, CW or CWC #6 thru 500 kcmil	#6 Cu, Bare, S.D., 42" UE Only	18–52–009	Ea	1	1	2
Copper – Covered[3]						
#6 thru #2	#4 Cu, Poly, SD, SOL.	18–51–025	Ft.	5	5	10
#6 thru #2	#4 Al, Poly, 42" MO Only	18–55–040	Ea	1	1	2
1/0 thru 500 kcmil	#6 Cu, Poly, SD, SOL.	18–51–021	Ft	5	5	10

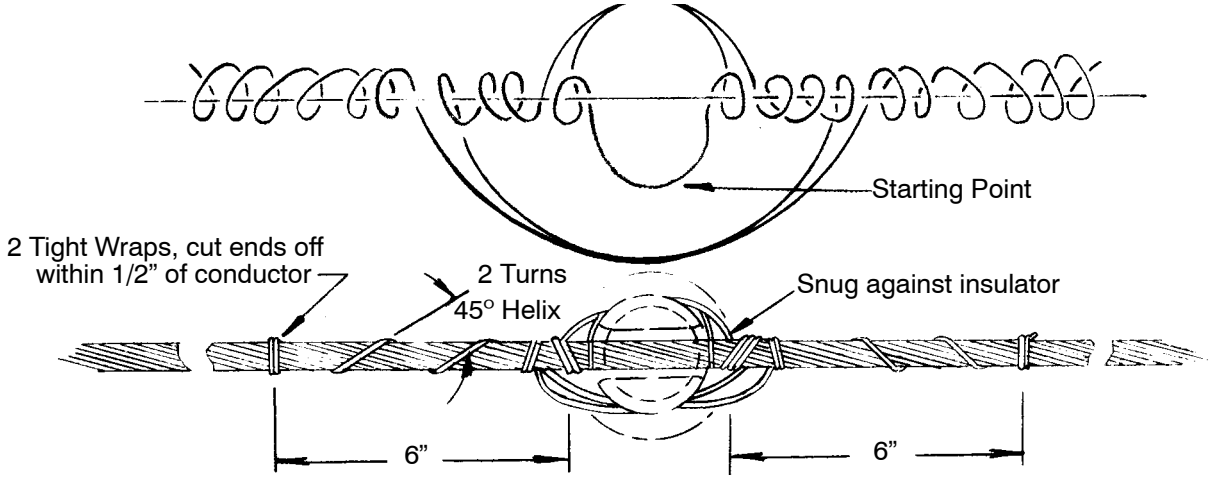
1. Armor Rods or Line Guards are required for all bare aluminum hand ties.

Conductor	Armor Rod Stk. No.	Unit
#4 ACSR	17–59–020	Set
1/0 AAAC	17–59–022	Set
336.4 ACSR	17–59–040	Set
556.5 AA	17–59–071	Set

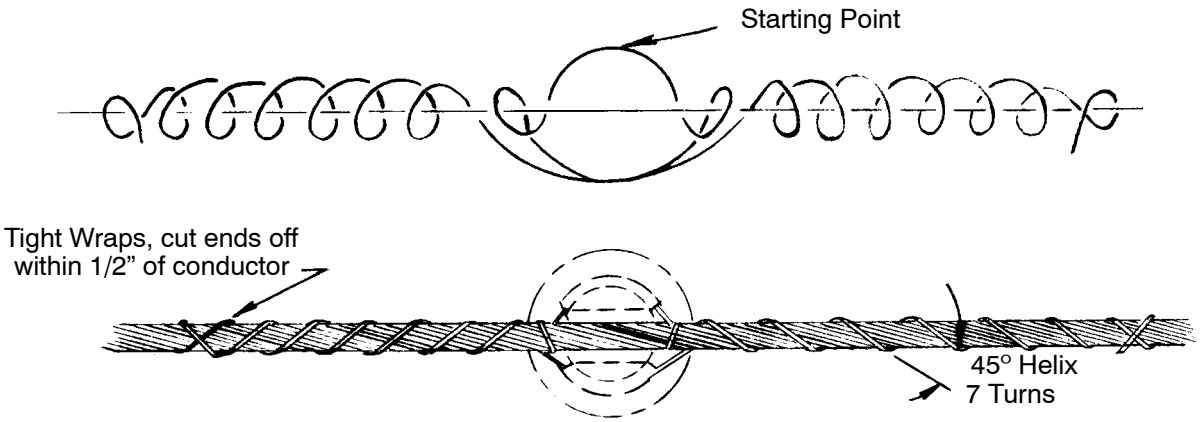
2. On aluminum conductor make the tie as snug and tight as possible by hand up to the last two turns (buttons), then use pliers to continuously cinch these last two buttons. Use the flat face of the plier against the conductor and avoid nicking the tie wire by using a continuous cinch rather than a bite.
3. The cottonbraid or polyethylene covering on covered copper conductor converted to 7.2 kV or higher must be removed at all insulator ties to a point 6" beyond the ends of the tie wires. The conductor shall then be tied in as if a bare copper conductor.

(CONVENTIONAL HAND TOP TIES)

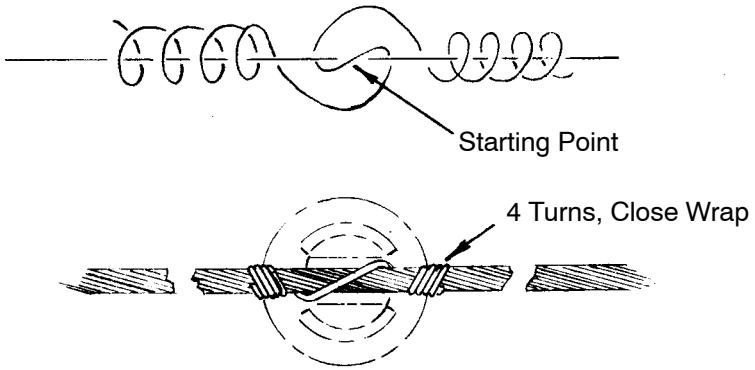
Top Tie for Aluminum Conductor – Bare or Covered



Top Tie for Bare Copper Conductor

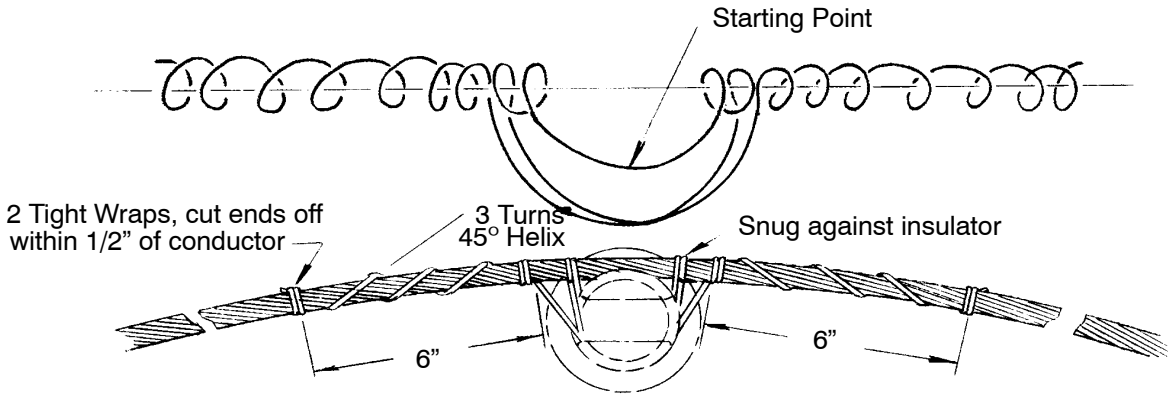


Top Tie for Covered Copper Conductor – 4kV



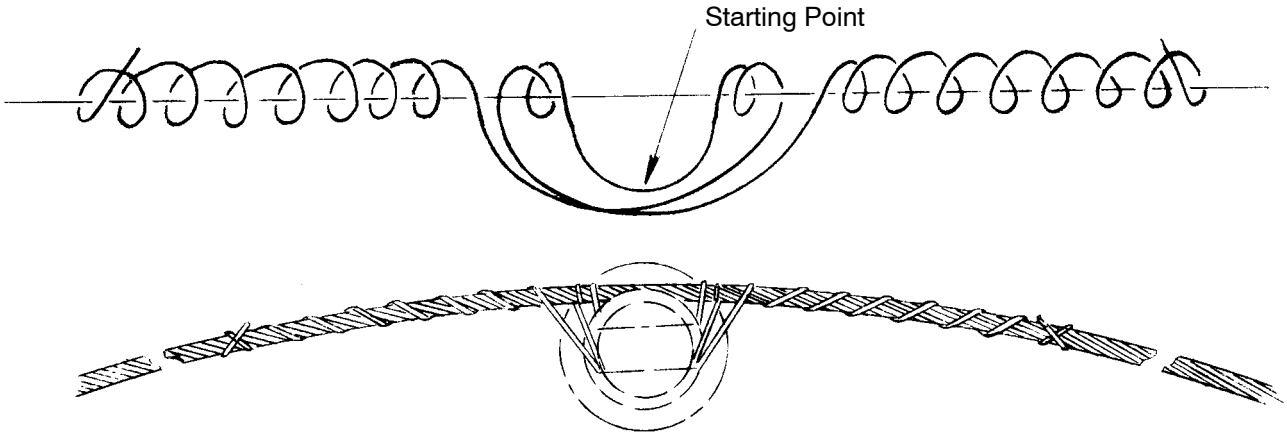
(CONVENTIONAL HAND SIDE TIES)

SideTie for Aluminum Conductor – Bare or Covered



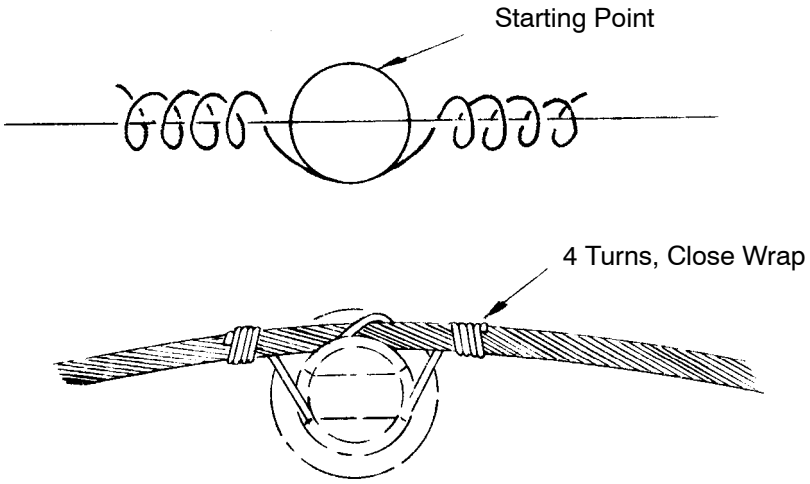
Double Ties: Make Two Single Ties – Reduce spiral length between insulators as necessary.

Side Tie for Bare Copper Conductor



Double Ties: Make Two Single Ties – Reduce spiral length between insulators as necessary.

Side Tie for Covered Copper Conductor – 4kV

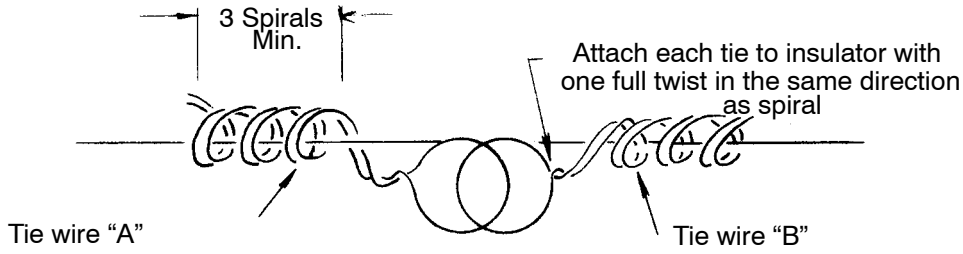


Double Ties: Make two single ties.

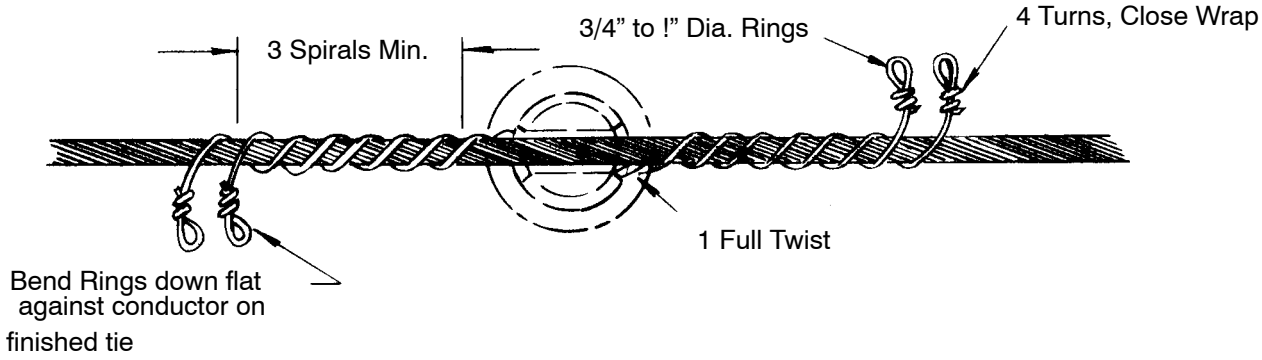
(Live Line Ties)

For Use on Bare Aluminum or Copper Conductors

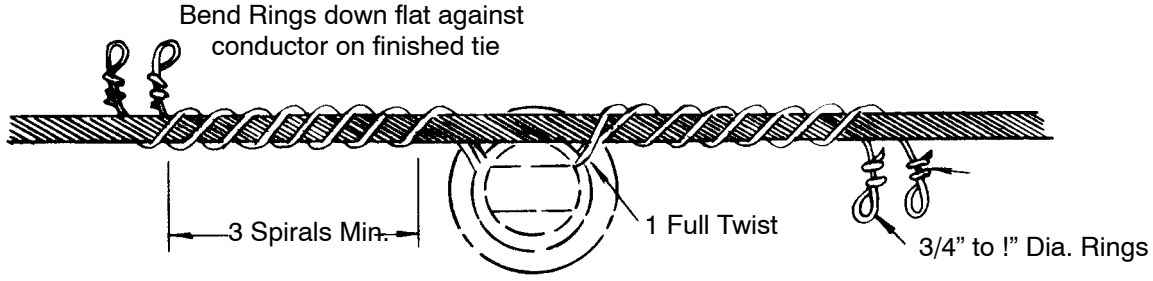
This same tie may be used as either a Hot Tap Tie or Hot Side Tie as Shown Below.



Live Line Tying Schematic

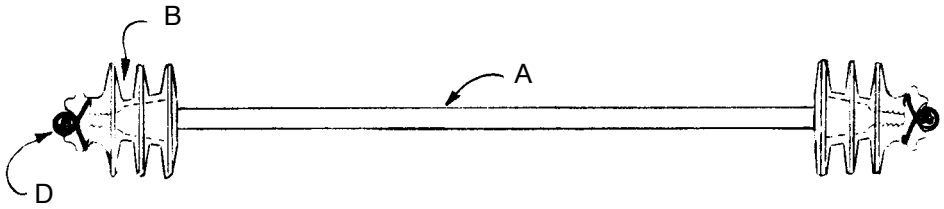


Completed Top Tie



Completed Side Tie

Double Ties: Same as single tie except that only one tie is installed on each insulator.



NOTES:

1. Spacers are to be used at known problem locations to prevent phases from coming in contact with each other.
2. Rod lengths are selected based on the normal separation between phases.
3. Conductors may be hand–tied to the insulators in either the top or side groove with the top groove position preferred.

	Stnd. / Stk. No.	**Description 07 0045 ****	**01**	**02**	**03**	**04**
			12kV		**34kV**	
A	23 17 290	Spacer – Rod, 36”	1		1	
	23 17 278	Spacer – Rod, 48”		1		1
B	25 05 069	Insulator – 12kV, Synthetic	2	2		
	25 05 080	Insulator – 34kV, Synthetic			2	2
C	23 62 125	Adapter – thrd 1” to 1–3/8”			2	2
D	18 55 028	Wire – Tie, Al, #4 AWG	20	20	20	20

Tap or Line Conductor	**Lead – S.D. Bare Copper or AA**			**Lead – Poly Covered S.D. Cu or AA**	
	Size	**Stock No.**	**DOJM Codes**	Stock No.[3]	DOJM Codes
4 ACSR Bare	4 Cu	18 52 020	LW4A	18 51 025	PLW4A
1/0 AAAC, ACSR, Bare	1/0 Cu	18 52 026	LW10A	18 51 024	PLW10A
336.4 ACSR Bare	350 Cu	18 52 023	LW336A	18 51 052	PLW336A
477 ACSR Bare	350 Cu	18 52 023	LW477A	18 51 052	PLW477A
556.5 AA Bare	350 Cu	18 52 023	LW556A	18 51 052	PLW556A
[2]795 AA Bare	795 Al	18 05 032	LW795A	2	2
[2]954 AA, ACSR, Bare	954 Al	18 05 043	LW954A	2	2
4 ACSR Poly.	4 Cu	18 52 020	LW4P	18 51 025	PLW4P
1/0 AAAC Poly.	1/0 Cu	18 52 026	LW10P	18 51 024	PLW10P
336.4 AA Poly.	4/0 Cu	18 52 024	LW336P	18 51 052	PLW336P
556.5 AA Poly.	350 Cu	18 52 023	LW556P	18 51 052	PLW556P
#6 Cu. Bare	4 Cu	18 52 020	LW6C	18 51 025	PLW6C
#4 Cu. Bare	4 Cu	18 52 020	LW4C	18 51 025	PLW4C
#2 Cu. Bare	2 Cu	18 52 025	LW2C	18 51 019	PLW2C
#1/0 Cu. Bare	1/0 Cu	18 52 026	LW10C	18 51 024	PLW10C
#4/0 Cu. Bare	4/0 Cu	18 52 024	LW40C	18 51 023	PLW40C
350 Cu. Bare	350 Cu	18 52 023	LW350C	18 51 052	PLW350C
500 Cu. Bare	500 Cu	18 52 021	LW500C	18 51 022	PLW500C
#6 Cu. Poly	4 Cu	18 51 020	LW6W	18 51 025	PLW6W
#4 Cu. Poly	4 Cu	18 51 020	LW4W	18 51 025	PLW4W
#2 Cu. Poly	2 Cu	18 52 025	LW2W	18 51 019	PLW2W
#1/0 Cu. Poly	1/0 Cu	18 52 026	LW10W	18 51 024	PLW10W
#4/0 Cu. Poly	4/0 Cu	18 52 024	LW40W	18 51 023	PLW40W
500 Cu. Poly	500 Cu	18 51 021	LW500W	18 51 022	PLW500W

NOTES:

1. Lead size is based on current capacity of tap for tap standards and of line for line sectionalizing. Line conductor (of equal size) may be used.
2. Applicable to 34.5kV air break switches. Use Stock No. 23 17 425 conductor cover.
3. Poly covered leads are to be used for jumpers to prevent wildlife outages.

Tap or Line Conductor	Lead – 2400 V. Insulated Copper [3]		
	Size	**Stock No.**	**DOJM Code**
4 ACSR Bare	2	18 53 018	ILW4A
1/0 AAAC, ACSR Bare	4/0	18 53 028	ILW10A
336.4 ACSR Bare	350(2)	18 53 102	ILW336A
477 ACSR Bare	350(2)	18 53 102	ILW477A
556.5 AA Bare	350(2)	18 53 102	ILW556A
4 ACSR Poly.	2	18 53 018	ILW4P
1/0 AAAC Poly.	1/0	18 53 022	ILW10P
336.4 AA Poly.	350	18 53 102	ILW336P
556.5 AA Poly.	350(2)	18 53 102	ILW556P
#6 Cu. Bare	2	18 53 018	ILW6C
#4 Cu. Bare	2	18 53 018	ILW4C
#2 Cu. Bare	1/0	18 53 022	ILW2C
#1/0 Cu. Bare	4/0	18 53 028	ILW10C
#4/0 Cu. Bare	350	18 53 102	ILW40C
350 Cu. Bare	350(2)	18 53 102	ILW350C
500 Cu. Bare	350(2)	18 53 102	ILW500C
#6 Cu. Poly	2	18 53 018	ILW6W
#4 Cu. Poly	2	18 53 018	ILW4W
#2 Cu. Poly	1/0	18 53 022	ILW2W
#1/0 Cu. Poly	4/0	18 53 028	ILW1/0W
#4/0 Cu. Poly	350	18 53 102	ILW4/0W
350 Cu. Poly	350(2)	18 53 102	ILW350W
500 Cu. Poly	350(2)	18 53 102	ILW500W

NOTES:

1. Lead size is based on current capacity of tap for tap standards and of line for line sectionalizing.
2. The 350 kcmil maximum size of the 2400kV lead has the same emergency rating as the highest rated substation exit cable. A larger size is not needed.
3. The lead wires on this standard are for use on 2.4/4.16kV installations. For higher voltage installations refer to DCS **07 00 80 00**.

Spacer Cable – Phase Conductors

Conductor Size, Type and Stranding	Ameren Stock No.	Voltage Rating	Over-all Dia. Inches	Con-ductor Dia. Inches	Con-ductor Wt. "Lbs./ Ft."	Vert. Wt. Of Cond. +1/2" Ice "Lbs./ Ft."	Horiz.– 4Lbs Wind on 1/2" Ice "Lbs./ Ft."	Major Use
1/0 Al. 7 Str. – Compact	18–53–113	5kV	.508	.336	.788	.778	.503	Line Wire ①
1/0 Al. 7 Str. – Compact	18–07–331	15kV	.638	.336	.909	.909	.546	Line Wire ①
1/0 Al. 7 Str. – Compressed	18–07–300	15kV	.688	.376	.213	– –	– –	Line Wire ②
3/0 Al. 7 Str. – Compressed	18–07–301	15kV	.764	.452	.323	– –	– –	Line Wire ②
350 MCM Al. 19 Str. – Compressed	18–07–345	5kV	.849	.679	1.276	1.276	.616	Line Wire ①
477 MCM Al. 19 Str. – Compact	18–07–346	5kV	.892	.722	1.415	1.415	.631	Line Wire ①
350 MCM Al. 19 Str. – Compressed	18–07–302	15kV	.999	.687	.515	– –	– –	Line Wire ②
477 MCM Al. 19 Str. – Compact	11–1337 ④	15kV	1.022	.722	1.579	1.579	.674	Line Wire ①
477 MCM Al. 19 Str. – Compact	18–07–347	15kV	1.062	.722	.662	– –	– –	Line Wire ③
500 MCM Al. 35 Str. – Compressed	18–07–303	15kV	1.089	.777	.646	– –	– –	Line Wire ②
795 MCM Al. 37 Str. – Compact	18–07–351	5kV	1.102	.932	1.890	1.890	.701	Line Wire ①
795 MCM Al. 37 Str. – Compact	18–07–352	15kV	1.232	.932	2.089	2.089	.744	Line Wire ①

NOTES

1. Legacy IP Conductor – For removal only.
2. Legacy CILCO Conductor – For removal only.
3. Ameren Standard Conductor – For all new installations.
4. This Legacy IP conductor no longer has Ameren stock number. It has been merged with the new Hendrix 477 Compact conductor in EMPRV.

Spacer Cable – Messenger

Conductor Size, Type and Stranding	Ameren Stock No.	Voltage Rating	Over-all Dia. Inches	Ultimate Strength in "Lbs"	Con-ductor Wt. "Lbs./ Ft."	Vert. Wt. Of Cond. +1/2" Ice "Lbs./ Ft."	Horiz.–4Lbs Wind on 1/2" Ice "Lbs./ Ft."	Major Use
3/8" – 7 Str. C.W.	18–53–113	5 &15kV	.385	11,440	.3239	––	––	Messenger ②
3/8" – 7 Str. C.W.	18–53–113	5 &15kV	.385	13,896	.324	.874	.462	Messenger ①
7#7 Alumoweld	27–09–122	5 &15kV	.433	19,060	.330	.910	.478	Messenger ①
1/2" – 7 Str. C.W.	42–5140 ④	5 &15kV	.486	16,890	.515	– –	– –	Messenger ②
052 AWA – 7 Str.	27–59–081	5 &15kV	.486	17,120	.346	––	––	Messenger ③

NOTES

1. Legacy IP Conductor – For removal only.
2. Legacy CILCO Conductor – For removal only.
3. Ameren Standard Conductor – For all new installations.
4. This Legacy CILCO messenger was made obsolete prior to converting it to an Ameren stock number. 1/2" CW messenger was typically only installed with 500 MCM Al. Conductor.

1. General

a. Bare wire is the standard conductor for overhead installations of distribution facilities of 15kV or less. Bare Wire should be the first choice for any installation of overhead distribution including Spacer Cable reconductor/rebuilds.

b. Spacer cable should not be installed in Operating Centers where spacer cable is not already installed. It would require spacer cable specific material to be stocked in the storeroom.

c. Spacer cable is a viable alternative when clearance is an issue such as:

i. Inadequate horizontal clearance to buildings or structures.
- The compact design of spacer cable offers more clearance from obstacles then open-wire.
- 2017 NESC Table 234-1, Footnote 2 allows the horizontal clearance to be reduced by 2ft. when spacer cable is installed.

ii. Inadequate ROW exists and obtaining additional ROW is cost and/or time prohibitive.

iii. Tree trimming requirements would be too extensive to satisfy homeowners.

2. General Installation Practices

a. Maintain 2 ft. rule:

i. Stagger taps and other areas where the covering has been removed to provide a minimum of 2 ft. of horizontal separation between the opening and other openings or ground points.

ii. Install Line Duc over the messenger anywhere the cable covering is stripped to maintain the required 2 ft. of horizontal separations.

b. Lightning protection:

i. Ground the messenger at every pole.

ii. Install lightning arresters where:
- The covering has been removed.
- At all equipment locations.
- At transitions to open wire.

iii. Note that arresters are not required if the covering has been reinsulated.

iv. There are no minimum amount of lightning arresters per mile. Arrresters only need to be installed as indicated above.

c. Spacers & Insulators:

i. Install a spacer with an anti-sway bracket at every tangent pole.

ii. Install spacers every 25 to 33 feet as evenly spaced as possible between tangent poles.

iii. Install spacers about 40 feet from dead-end structure to avoid stress at the first spacer.

iv. Replace porcelain spacers with poly spacers (stk # 23 67 334) when working on a pole.

v. Dead-end messenger and connector using preformed grips when available. See DCS **07 20 11 00.**

3. Conductor Current Ratings

Ampacity Ratings in Amps

Conductor Type	Stock number	Voltage Rating	Summer		Winter	
			Normal	Emergency	Normal	Emergency
1/0 Al. 7 Str. – Compact	_ _ ①	5kV	200	262	327	365
1/0 Al. 7 Str. – Compact	18 07 331 ①	15kV	188	257	322	359
1/0 Al. 7 Str. – Compressed	18 07 300 ②	15kV	188	261	327	365
3/0 Al. 7 Str. – Compressed	18 07 301 ②	15kV	249	347	434	485
350 MCM Al. 19 Str. – Compressed	18 07 345 ①	5kV	401	564	701	788
350 MCM Al. 19 Str. – Compressed	18 07 302 ②	15kV	388	548	684	768
477 MCM Al. 19 Str. – Compact	18 07 346 ①	5kV	477	673	837	941
477 MCM Al. 19 Str. Compact	18 07 347 ③	15kV	461	654	816	917
500 MCM Al. 35 Str. – Compressed	18 07 303 ②	15kV	481	685	854	961
795 MCM Al. 37 Str. – Compact	18 07 351 ①	5kV	649	928	1151	1300
795 MCM Al. 37 Str. – Compact	18 07 352 ①	15kV	627	900	1120	1263

Notes:

1. Legacy IP Conductor – For reference only
2. Legacy CILCO Conductor – For reference only
3. Ameren Standard Conductor – For all new installations
4. This Legacy IP Round conductor no longer has an Ameren Stock number. It has merged with the new Hendrix 477 Compact conductor in EMPRV.
5. Ampacity values are based on the following ambient temperatures: Summer Normal/Emergency at 40°C and Winter Normal/Emergency at –13°C.

1. **General**

The procedure for installing and sagging spacer cable is much different than bare wire conductor. The steps are:

a. Pull in the messenger and tension it using a dynamometer.
b. Pull in the conductors using (PBR–3) Roll–By Stringing Blocks.
c. Tension the conductors while still in the String Blocks.
d. Remove the Stringing Block and install spacers.

The information needed to install new cable is shown below in the ”Initial Sag” section. Consult the *Hendrix Spacer Cable Installation Guide* for more details.

The conductors can be pulled through angles up to 90°, for pulling lengths up to 5,000 ft., as long as the maximum pulling tension does not exceed 4,000 lbs.

After the spacers have been installed, you have a spacer cable system that can be modeled as a whole. The sag of this system is shown below in the ”Final Sag” section. This information can be used for pole selection and checking clearances.

The Final Sag Tables have been organized by ruling span lengths per messenger and conductor types. The ruling spans are ”Super Short Span” (100 ft.), ”Short Span” (150 ft.), ”Medium Span” (200 ft.), ”Long Span” (250 ft.) and ”Extra Long Span” (300 ft.).

Sags given for ”Final Sag” indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

The National Electric Safety Code (NESC) requires that maximum sag (for vertical clearance above ground) be checked at:

a. 32° F (0° C) with 1/2” ice, No wind (Final) or 120° F, FINAL
b. Maximum operating design temperature of the line (No Wind)

Other items to consider are:

a. Conductor Blowout must be checked at 60° F (16° C) FINAL with 6 psf wind to assure necessary clearance to structures adjacent to the line.
b. Note that spacer cable systems do not gallop thus they do not need to be modeled for galloping.

2. Initial Sag

The messenger wire supports the three conductors and can also be used as the system neutral. The Hendrix 052AWA is the only messenger to be used for new construction.

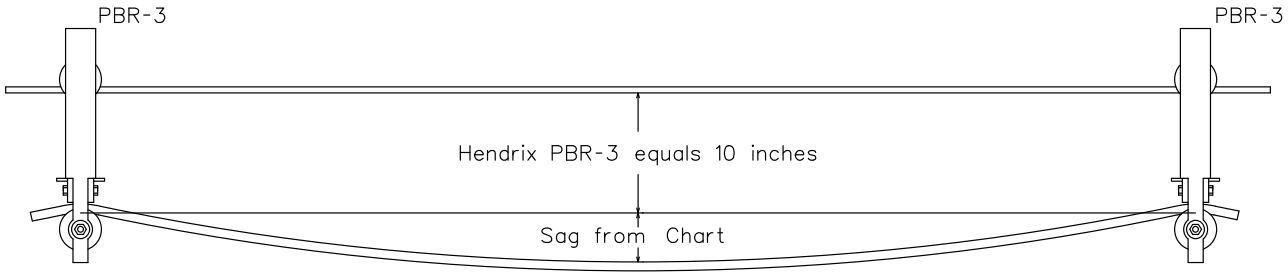
The messenger wire is pulled in and tensioned to the initial tensions shown below, prior to conductor installation.

Initial Tension Table for052 AWA Messenger for All Span Lengths						
Ambient Temperature during installations (°F)	0	20	40	60	80	100
Tension (lbs.) – All Span Lengths	3,400	3,000	2,600	2,300	2,000	1,700

The values shown above are 300 lbs. above the final desired tension to compensate for the loss of tension which occurs when dead–ending (catching off) the messenger and "settling in"

Once the messenger has been properly tensioned, the conductors can be installed and tensioned to the sag shown below.

Conductor Sag Table – 477 kcmil Al, 19 Strand, Compact Hendrix Conductor					
Ambient Temperature during installations (°F)	10–29	30–49	50–69	70–89	90–109
Sag between roll–by blocks (in) as shown in the illustration below	3	4	5	6	7



3. **Final Sag**

052 AWA Messenger with 477 Al, 19 Strand, Compact Conductor

DE Tension = 4,912 Lbs

Super Short Span

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)											Tension Lbs
						R.S.						
	50	60	70	80	90	100	110	120	130	140	150	
–20	3	4	5	7	8	10	12	14	16	19	21	3845
0	3	4	6	15	9	11	13	15	18	20	23	3548
0°, 0.5" ice, 4 psf wind + k	6	9	12	15	18	21	24	28	32	35	39	4912
30	4	5	7	9	11	13	15	18	20	23	26	3206
32°,0.5" ice	7	9	12	15	18	21	25	28	32	36	39	4527
32°,0.5" ice, 2 psf wind	7	9	12	15	18	21	25	28	32	36	40	4574
40	4	5	7	9	11	13	16	18	21	24	27	3077
50	4	6	8	10	12	14	17	19	22	25	28	2954
60	4	6	8	10	12	15	17	20	23	26	29	2835
60°F, 6 psf wind	5	7	9	12	14	17	19	22	25	28	32	3104
70	5	7	9	11	13	16	18	21	24	27	30	2721
80	5	7	9	11	14	16	19	22	25	28	31	2612
90	6	8	10	12	15	17	20	23	25	28	32	2509
100	6	8	10	13	15	18	21	23	26	29	33	2411
120	7	9	12	14	17	19	22	25	28	31	35	2231

DE Tension = 5,873 Lbs

Short Span

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)											Tension Lbs
						R.S.						
	100	110	120	130	140	150	160	170	180	190	200	
–20	10	12	14	16	19	21	24	27	30	33	36	3807
0	11	13	15	18	20	23	26	29	32	35	38	3531
0°, 0.5" ice, 4 psf wind + k	21	24	28	32	35	39	43	48	52	56	61	5873
30	13	15	18	20	23	26	29	32	35	38	42	3161
32°,0.5" ice	21	25	28	32	36	39	43	48	52	56	60	5161
32°,0.5" ice, 2 psf wind	21	25	28	32	36	40	44	48	52	57	61	5228
40	13	16	18	21	24	27	30	33	36	39	43	3050
50	14	17	19	22	25	28	31	34	37	40	44	2945
60	15	17	20	23	26	29	32	35	38	42	45	2846
60°F, 6 psf wind	17	19	22	25	28	32	35	38	42	45	49	3249
70	16	18	21	24	27	30	33	36	39	43	46	2753
80	16	19	22	25	28	31	34	37	40	44	47	2665
90	17	20	23	25	28	32	35	38	42	45	49	2582
100	18	21	23	26	29	33	36	39	43	46	50	2504
120	19	22	25	28	31	35	38	41	45	48	52	2361

Note:

1. Sags given indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

052 AWA Messenger with 477 Al, 19 Strand, Compact Conductor

DE Tension = 6,749 Lbs

Medium Span

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)											Tension Lbs
						R.S.						
	150	160	170	180	190	200	210	220	230	240	250	
–20	21	24	27	30	33	36	39	42	46	49	53	4049
0	23	26	29	32	35	38	41	45	48	52	55	3812
0°, 0.5" ice, 4 psf wind + k	39	43	48	52	56	61	66	70	75	80	85	6749
30	26	29	32	35	38	42	45	48	52	56	60	3495
32°,0.5" ice	39	43	48	52	56	60	65	70	74	79	84	5972
32°,0.5" ice, 2 psf wind	40	44	48	52	57	61	66	70	75	80	85	6054
40	27	30	33	36	39	43	46	50	53	57	61	3399
50	28	31	34	37	40	44	47	51	55	58	62	3308
60	29	32	35	38	42	45	49	52	56	60	64	3220
60°F, 6 psf wind	32	35	38	42	45	49	53	57	61	65	69	3714
70	30	33	36	39	43	46	50	54	57	61	65	3137
80	31	34	37	40	44	47	51	55	59	63	66	3058
90	32	35	38	42	45	49	52	56	60	64	68	2983
100	33	36	39	43	46	50	54	57	61	65	69	2912
120	35	38	41	45	48	52	56	60	64	68	72	2779

DE Tension = 7,557 Lbs

Long Span

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)											Tension Lbs
						R.S.						
	200	210	220	230	240	250	260	270	280	290	300	
–20	36	39	42	46	49	53	56	60	64	68	72	4304
0	38	41	45	48	52	55	59	63	67	71	75	4095
0°, 0.5" ice, 4 psf wind + k	61	66	70	75	80	85	90	95	101	106	111	7557
30	42	45	48	52	56	60	63	67	71	75	79	3813
32°,0.5" ice	60	65	70	74	79	84	89	94	99	105	110	6715
32°,0.5" ice, 2 psf wind	61	66	70	75	80	85	90	95	100	105	111	6811
40	43	46	50	53	57	61	65	69	73	77	81	3726
50	44	47	51	55	58	62	66	70	74	78	83	3644
60	45	49	52	56	60	64	68	72	76	80	84	3564
60°F, 6 psf wind	49	53	57	61	65	69	73	77	82	86	91	4139
70	46	50	54	57	61	65	69	73	77	81	86	3488
80	47	51	55	59	63	66	70	75	79	83	87	3415
90	49	52	56	60	64	68	72	76	80	84	89	3346
100	50	54	57	61	65	69	73	78	82	86	90	3279
120	52	56	60	64	68	72	76	80	85	89	93	3153

Note:

1. Sags given indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

NOTE: The following conductors are installed in LEGACY IP – This information is **FOR MAINTENANCE USE ONLY**

Final Sags and Tensions
3/8" EHS Copperweld Messenger

1/0 SAC 5kV Spacer Cable – MAINTENANCE USE ONLY

Condition→ / Temp. / Deg. F↓ Span (Ft)→	FINAL SAG (inches)				
			R.S.		
	100	**150**	**200**	**250**	**300**
0°	4	12	19	28	44
0°, 0.5" ice, 4 psf wind + k	19	35	55	74	98
60°F	7	15	25	38	54
120°F	10	19	30	47	63
Heavy Loading Tension (Lbs)	4000	4650	5300	5900	6420

477 SAC 5kV Spacer Cable – MAINTENANCE USE ONLY

Condition→ / Temp. / Deg. F↓ Span (Ft)→	FINAL SAG (inches)				
			R.S.		
	100	**150**	**200**	**250**	**300**
0°	11	22	36	53	72
0°, 0.5" ice, 4 psf wind + k	23	42	66	74	121
60°F	13	26	42	60	80
120°F	18	29	48	67	88
Heavy Loading Tension (Lbs)	4600	5600	6400	7150	7950

795 SAC 5kV Spacer Cable – MAINTENANCE USE ONLY

Condition→ / Temp. / Deg. F↓ Span (Ft)→	FINAL SAG (inches)			
			R.S.	
	100	**150**	**200**	**250**
0°	14	29	45	68
0°, 0.5" ice, 4 psf wind + k	26	48	76	104
60°F	17	33	51	73
120°F	20	37	56	79
Heavy Loading Tension (Lbs)	5100	6200	6900	8050

Note:

1. Sags given indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

NOTE: The following conductors are installed in LEGACY IP – This information is **FOR MAINTENANCE USE ONLY**

Final Sags and Tensions
7#7 Alumoweld Messenger

1/0 SAC 5kV Spacer Cable – MAINTENANCE USE ONLY

Condition→ / Temp. / Deg. F↓ Span (Ft)→	FINAL SAG (inches)				
			R.S.		
	100	**150**	**200**	**250**	**300**
0°	4	10	18	28	40
0°, 0.5" ice, 4 psf wind + k	18	34	54	75	99
60°F	7	15	24	37	51
120°F	11	21	32	48	63
Heavy Loading Tension (Lbs)	4360	5190	5880	6550	7225

477 SAC 5kV Spacer Cable – MAINTENANCE USE ONLY

Condition→ / Temp. / Deg. F↓ Span (Ft)→	FINAL SAG (inches)				
			R.S.		
	100	**150**	**200**	**250**	**300**
0°	10	22	35	51	69
0°, 0.5" ice, 4 psf wind + k	22	41	63	88	115
60°F	13	27	41	59	78
120°F	17	32	48	66	86
Heavy Loading Tension (Lbs)	5030	6100	7000	7925	8700

795 SAC 5kV Spacer Cable – MAINTENANCE USE ONLY

Condition→ / Temp. / Deg. F↓ Span (Ft)→	FINAL SAG (inches)				
			R.S.		
	100	**150**	**200**	**250**	**300**
0°	10	22	35	51	69
0°, 0.5" ice, 4 psf wind + k	22	41	63	88	115
60°F	13	27	41	59	78
120°F	17	32	48	66	86
Heavy Loading Tension (Lbs)	5450	6450	7730	8560	9650

Note:

1. Sags given indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

NOTE: The following conductors are installed in LEGACY IP – This information is **FOR MAINTENANCE USE ONLY**

Final Sags and Tensions
3/8" EHS Copperweld Messenger

1/0 SAC 15kV Spacer Cable – MAINTENANCE USE ONLY

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)				
			R.S.		
	100	**150**	**200**	**250**	**300**
0°	6	14	25	37	51
0°, 0.5" ice, 4 psf wind + k	20	38	57	75	115
60°F	9	19	30	45	64
120°F	12	23	36	55	72
Heavy Loading Tension (Lbs)	4100	4800	5540	6220	6700

477 SAC 15kV Spacer Cable – MAINTENANCE USE ONLY

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)				
			R.S.		
	100	**150**	**200**	**250**	**300**
0°	11	24	39	57	78
0°, 0.5" ice, 4 psf wind + k	24	46	69	98	137
60°F	14	28	45	64	85
120°F	18	32	51	71	89
Heavy Loading Tension (Lbs)	4880	5800	6800	7600	8300

Note:

1. Sags given indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

NOTE: The following conductors are installed in LEGACY IP – This information is **FOR MAINTENANCE USE ONLY**

Final Sags and Tensions
7#7 Alumoweld Messenger

1/0 15kV Spacer Cable – MAINTENANCE USE ONLY

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)				
			R.S.		
	100	**150**	**200**	**250**	**300**
0°	5	11	18	28	40
0°, 0.5" ice, 4 psf wind + k	16	31	49	69	90
30°	6	12	21	32	45
32°,0.5" ice	16	30	47	65	86
32°,0.5" ice, 2 psf wind	16	30	47	66	87
60°F	7	15	25	36	50
60°F, 4 psf wind	9	18	29	42	56
60°F, 6 psf wind	10	20	32	46	61
90°F	9	18	29	41	55
120°F	11	21	33	46	61
167°F	15	27	39	54	69
Heavy Loading Tension (Lbs)	4219	4935	5604	6228	6813

477 SAC 15kV Spacer Cable – MAINTENANCE USE ONLY

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)				
			R.S.		
	100	**150**	**200**	**250**	**300**
0°	10	21	34	49	67
0°, 0.5" ice, 4 psf wind + k	20	38	58	81	107
30°	11	23	37	53	71
32°,0.5" ice	20	37	57	80	104
32°,0.5" ice, 2 psf wind	20	38	58	80	105
60°F	13	40	40	57	75
60°F, 4 psf wind	14	27	42	59	78
60°F, 6 psf wind	15	29	44	62	82
90°F	15	43	43	60	79
120°F	17	46	46	64	83
167°F	20	51	51	70	90
Heavy Loading Tension (Lbs)	4859	5829	6715	7532	8294

Note:

1. Sags given indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

NOTE: The following conductors are installed in LEGACY IP – This information is **FOR MAINTENANCE USE ONLY**

795 SAC 15kV Spacer Cable – MAINTENANCE USE ONLY

Condition→	FINAL SAG (inches)				
Temp.			**R.S.**		
Deg. F↓ Span (Ft)→	**100**	**150**	**200**	**250**	**300**
0°	14	27	43	61	82
0°, 0.5" ice, 4 psf wind + k	23	42	64	89	117
30°	15	29	46	65	85
32°,0.5" ice	23	42	64	88	115
32°,0.5" ice, 2 psf wind	23	42	64	89	116
60°F	17	31	48	68	89
60°F, 4 psf wind	17	32	50	70	92
60°F, 6 psf wind	18	34	52	72	95
90°F	18	34	51	71	93
120°F	20	36	54	74	96
167°F	23	39	59	79	102
Heavy Loading Tension (Lbs)	5324	6463	7493	8440	9320

Note:

1. Sags given indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

NOTE: The following conductors are installed in LEGACY CILCO – This information is **FOR MAINTENANCE USE ONLY**

Final Sags and Tensions
3/8" Copperweld Messenger
1/0 15kV Spacer Cable – MAINTENANCE USE ONLY

DE Tension = 4,495 Lbs

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches) 100	110	120	130	140	R.S. 150	160	170	180	190	200	Tension Lbs
–20	5	6	8	9	11	12	14	16	18	20	22	2916
0	6	7	8	10	12	13	15	17	19	21	23	2671
0°, 0.5" ice, 4 psf wind + k	18	22	25	28	32	36	39	43	47	52	56	4495
30	6	8	10	12	13	15	17	19	22	24	26	2326
32°,0.5" ice	18	21	24	27	31	34	38	41	45	49	53	3848
32°,0.5" ice, 2 psf wind	18	21	24	28	31	35	38	42	46	50	54	3921
40	7	9	10	12	14	16	18	20	23	25	27	2218
50	8	9	11	13	15	17	19	21	24	26	29	2114
60	8	10	12	13	15	18	20	22	24	27	30	2015
60°F, 6 psf wind	11	13	15	18	20	23	26	28	32	34	37	2377
70	9	10	12	14	16	18	21	23	26	28	31	1921
80	9	11	13	15	17	19	22	24	27	29	32	1831
90	10	12	14	16	18	20	23	25	28	30	33	1747
100	10	12	14	17	19	21	24	26	29	32	34	1667
120	12	14	16	18	21	23	26	28	31	34	37	1523

3/8" Copperweld Messenger
3/0 15kV Spacer Cable – MAINTENANCE USE ONLY

DE Tension = 4,677 Lbs

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches) 100	110	120	130	140	R.S. 150	160	170	180	190	200	Tension Lbs
–20	7	8	10	12	13	15	17	20	22	24	37	3019
0	8	9	11	13	15	17	19	21	24	26	29	2793
0°, 0.5" ice, 4 psf wind + k	20	23	26	30	34	37	42	46	50	54	59	4677
30	9	10	12	14	16	19	21	24	26	29	32	2479
32°,0.5" ice	19	22	26	29	33	36	40	44	48	52	57	4057
32°,0.5" ice, 2 psf wind	19	23	26	29	33	37	41	45	49	53	57	4125
40	9	11	13	15	17	20	22	25	27	30	33	2382
50	10	12	14	16	18	20	23	25	28	31	34	2289
60	10	12	14	16	19	21	24	26	29	32	35	2200
60°F, 6 psf wind	13	15	18	20	23	26	28	31	35	38	41	2541
70	11	13	15	17	19	22	25	27	30	33	36	2115
80	11	13	15	18	20	23	26	28	31	34	37	2034
90	12	14	16	19	21	24	26	29	32	35	38	1957
100	12	15	17	19	22	25	27	30	33	36	39	1885
120	13	16	19	21	24	27	29	32	35	39	42	1752

Note:

1. Sags given indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

NOTE: The following conductors are installed in LEGACY CILCO – This information is **FOR MAINTENANCE USE ONLY**

3/8" Copperweld Messenger
350 MCM 15kV Spacer Cable – MAINTENANCE USE ONLY

DE Tension = 5,072 Lbs

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)											Tension Lbs
						R.S.						
	100	110	120	130	140	150	160	170	180	190	200	
–20	9	11	13	16	18	21	23	26	29	32	35	3212
0	10	12	15	17	19	22	25	27	30	34	37	3015
0°, 0.5" ice, 4 psf wind + k	22	25	29	33	37	41	46	50	55	60	64	5072
30	12	14	16	19	21	24	27	30	33	36	40	2743
32°,0.5" ice	22	25	29	33	36	40	45	49	54	58	63	4483
32°,0.5" ice, 2 psf wind	22	25	29	33	37	41	45	50	54	59	63	4547
40	12	14	17	19	22	25	28	31	34	37	41	2659
50	13	15	17	20	23	26	29	32	35	38	42	2578
60	13	15	18	21	23	26	29	33	36	39	43	2501
60°F, 6 psf wind	16	18	21	24	27	30	34	37	41	44	48	2876
70	14	16	19	21	24	27	30	33	37	40	44	2427
80	14	17	19	22	25	28	31	34	38	41	45	2356
90	15	17	20	23	26	29	32	35	39	42	46	2288
100	15	18	21	24	27	30	33	36	40	43	47	2224
120	17	19	22	25	28	31	35	38	42	45	49	2104

1/2" Copperweld Messenger
500 MCM 15kV Spacer Cable – MAINTENANCE USE ONLY

DE Tension = 6,710 Lbs

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)							Tension Lbs
					R.S.			
	110	120	130	140	150	160	170	
–20	10	12	14	16	18	20	23	4742
0	11	13	15	17	19	22	24	4412
0°, 0.5" ice, 4 psf wind + k	21	25	28	32	35	39	43	6710
30	12	15	17	19	22	24	27	3958
32°,0.5" ice	22	25	28	32	35	39	43	5945
32°,0.5" ice, 2 psf wind	22	25	28	32	36	39	43	6012
40	13	15	18	20	22	25	28	3818
50	14	16	18	21	23	26	29	3685
60	14	17	19	21	24	27	30	3557
60°F, 6 psf wind	16	19	21	24	27	30	33	3950
70	15	17	20	22	25	28	31	3436
80	16	18	20	23	26	29	32	3320
90	16	19	21	24	27	30	33	3211
100	17	19	22	25	28	30	33	3107
120	18	21	24	27	29	32	36	2916

Note:

1. Sags given indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

NOTE: The following conductors are installed in LEGACY CILCO – This information is **FOR MAINTENANCE USE ONLY**

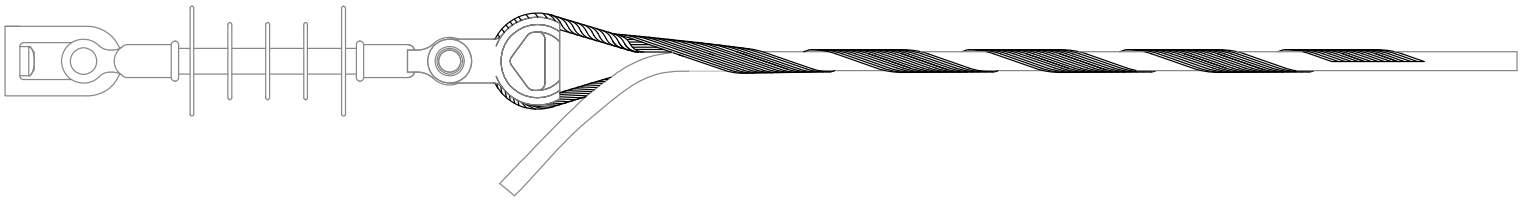
1/2" Copperweld Messenger
500 MCM 15kV Spacer Cable – MAINTENANCE USE ONLY

DE Tension = 7,907 Lbs

Condition→ / Temp. Deg. F↓ Span (Ft)→	FINAL SAG (inches)							Tension Lbs
				R.S.				
	170	180	190	200	210	220	230	
–20	21	23	26	28	31	34	37	5354
0	22	25	27	30	33	36	39	5043
0°, 0.5" ice, 4 psf wind + k	41	45	49	53	57	62	66	7907
30	25	27	30	33	36	39	42	4613
32°,0.5" ice	41	45	49	53	57	61	65	7065
32°,0.5" ice, 2 psf wind	41	45	49	53	57	62	66	7147
40	26	28	31	34	37	40	43	4479
50	27	29	32	35	38	41	44	4351
60	27	30	33	36	39	42	45	4227
60°F, 6 psf wind	31	34	37	40	44	47	51	4708
70	28	31	34	37	40	43	47	4109
80	29	32	35	38	41	45	48	3995
90	30	33	36	39	42	46	49	3886
100	31	34	37	40	44	47	50	3782
120	33	36	39	42	46	49	53	3588

Note:

1. Sags given indicate the **sag of the messenger** with the weight of the entire spacer cable system (Messenger, conductors, and spacers) at the particular condition. The distance from the messenger to the lowest conductor at the maximum conductor sag, 20 inches, must be added to the messenger sag for final sag of the conductor.

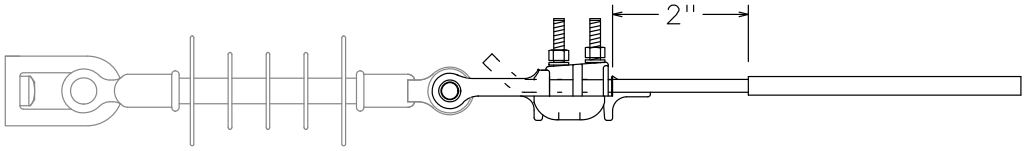


Preformed Type – Phase Conductors

Stnd. / Stk. No.	Description 07 20 11 00	New / Maint	Legacy Co.
17 69 064	Deadend, Preformed, 1/0 5kV	M	IP
23 78 433	Deadend, Preformed, 1/0 15kV	M	IP
23 78 433	Deadend, Preformed, 1/0 15kV	M	CILCO
17 69 061	Deadend, Preformed, 350 MCM 5kV	M	IP
17 69 058	Deadend, Preformed, 350 MCM 15kV	M	CILCO
17 69 060	Deadend, Preformed, 477 MCM 5kV	M	IP
23 68 701	Deadend, Preformed, 477 MCM 15kV	N	IP & New Installs
17 69 058	Deadend, Preformed, 500 MCM 15kV	M	CILCO
17 69 058	Deadend, Preformed, 795 MCM 5kV	M	IP
17 69 062	Deadend, Preformed, 795 MCM 15kV	M	IP

Preformed Type – Messenger

Stnd. / Stk. No.	Description 07 20 11 00	New / Maint	Legacy Co.
23 68 543	Deadend, Preformed, 7#7 Alumoweld	M	IP
23 68 277	Deadend, Preformed, 1/2" CW	M	CILCO
17 69 061	Deadend, Preformed, 052 AWA	N	New Installs



Clamp Type – Phase Conductors – **LIMITED USE and MAINTENENCE ONLY**

Stnd. / Stk. No.	Description 07 20 11 00	New / Maint	Legacy Co.
23 18 397	Clamp, Deadend, 1/0 Al. 15kV	M	CILCO
23 18 397	Clamp, Deadend, 3/0 Al. 15kV	M	CILCO
23 18 292	Clamp, Deadend, 350 MCM Al. 15kV	M	CILCO
23 18 292	Clamp, Deadend, 500 MCM Al. 15kV	M	CILCO

Clamp Type – Messenger – **LIMITED USE and MAINTENENCE ONLY**

Stnd. / Stk. No.	Description 07 20 11 00	New / Maint	Legacy Co.
23 18 394	Clamp, Deadend, 3/8" CW	M	CILCO
23 18 395	Clamp, Deadend, 1/2" CW	M	CILCO

General

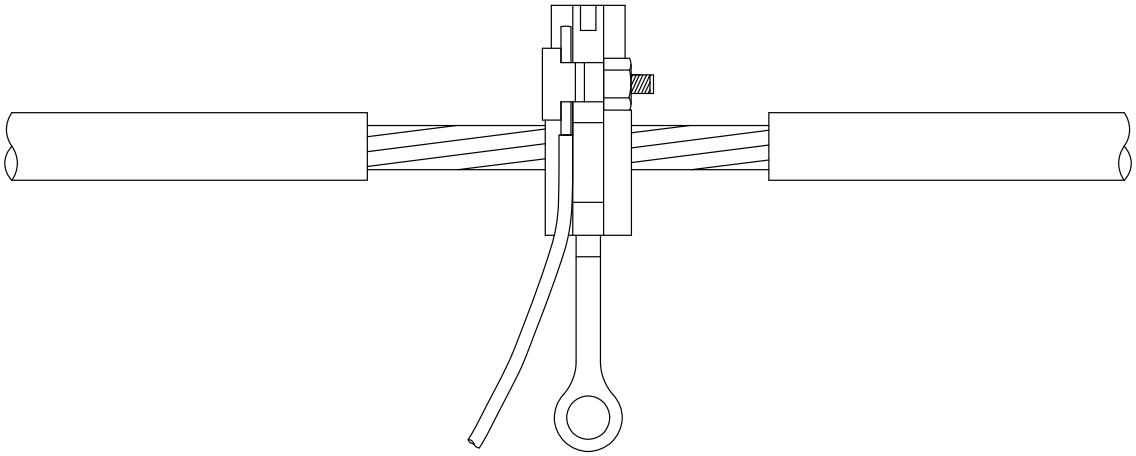
Hot line clamps shall be used to make connections on lines rated over 5000 volts phase to phase where the connection must be made ”hot” or where it is likely that the connection will have to be disconnected and reconnected with some degree of frequency. **Avoid the use of hot line clamps where currents exceed 250 amps**

Aluminum hot line clamps shall be connected directly to unprotected aluminum line conductors of like material **when making no load taps**. This includes switches and lightning arresters.

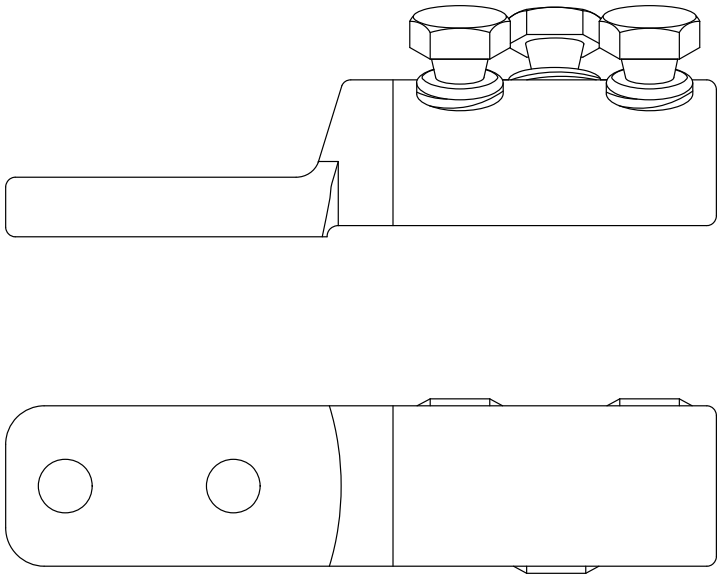
INSTALLATION OF HOT LINE CLAMPS

a. Use the proper size and type clamps as shown in the following tables.

b. Apply corrosion resisting lubricant, 31 59 058 – BT.



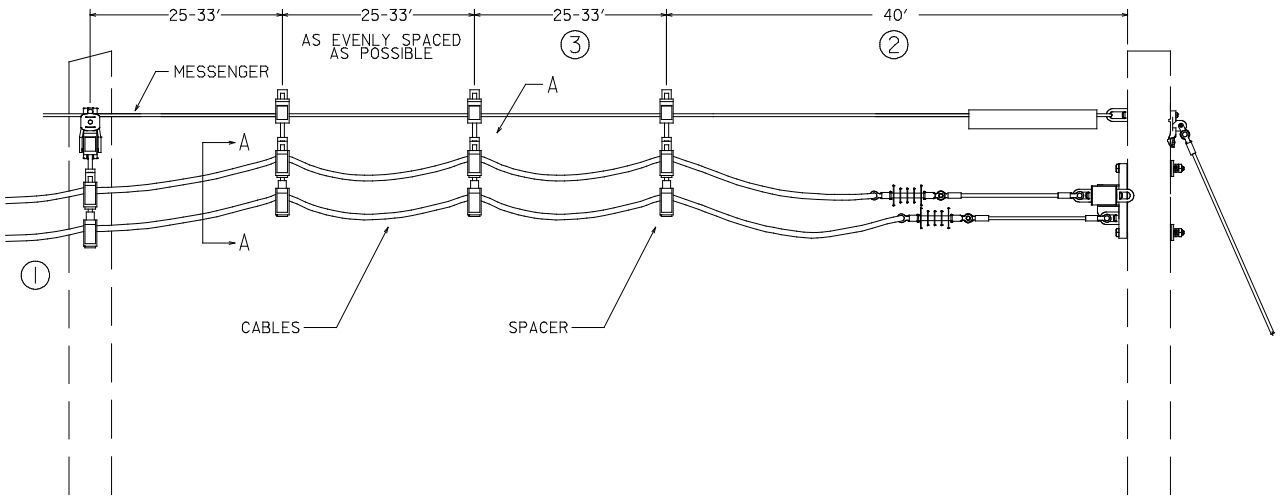
Stnd. / Stk. No.	Description 07 20 21 00
17 62 088	Clamp, Hot Line, 1/0 Al. – Spacer Cable
17 62 088	Clamp, Hot Line, 3/0 Al. – Spacer Cable
17 62 088	Clamp, Hot Line, 350 MCM Al. – Spacer Cable
17 62 088	Clamp, Hot Line, 477 MCM Al. – Spacer Cable
17 62 112	Clamp, Hot Line, 500 MCM Al. – Spacer Cable
17 62 112	Clamp, Hot Line, 795 MCM Al. – Spacer Cable

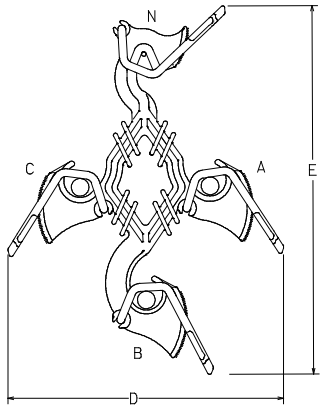


Stnd. / Stk. No.	Description 07 20 30 00
17 55 804	Lug, Connecting, Shear Bolt, 350 MCM Al. 19 Str. – 5kV
17 55 804	Lug, Connecting, Shear Bolt, 477 MCM Al. 19 Str. Round – 5kV
17 55 804	Lug, Connecting, Shear Bolt, 350 MCM Al. 19 Str. – 15kV
17 55 804	Lug, Connecting, Shear Bolt, 477 MCM Al. 19 Str. Round – 15kV
17 55 804	Lug, Connecting, Shear Bolt, 477 MCM Al. 19 Str. Compact – 15kV
17 55 804	Lug, Connecting, Shear Bolt, 500 MCM Al. 35 Str. – 15kV
17 55 804	Lug, Connecting, Shear Bolt, 795 MCM Al. 37 Str. – 5kV
17 55 804	Lug, Connecting, Shear Bolt, 795 MCM Al. 37 Str. – 15kV

Notes

1. For spacer cable conductor sizes 1/0 and 3/0, there are no lugs available. A PG clamp shall be used to connect a short poly covered copper lead wire to the spacer cable that could then be terminated into the device.





Detail A-A

Dim. (in)		Conductor Spacing (in)			Min. Leakage Distance (in)	Messenger Range	Cable Range (in)	Max. System Voltage (KV)	Short Circuit Rating (kA)	Weight (lbs)
D	E	AN	AC	BC						
161/2	23 1/2	8 1/2	8	8	10 3/4	.375-.750	.438-2.00	15	13.5	2.5

		Stnd. / Stk. No.	**Description** **07 20 45 01**	
	A	23 67 334	Spacer, High Density Polyethylene	1

NOTES

1. When replacing an existing pole built to the old standard with spacers three foot on either side of the pole, remove these two spacers as long as the next spacer is less than 33 feet away on either side.
2. Install spacers about 40 ft. From dead-end structures.
3. Install spacers every 25-33 FT as evenly spaced as possible.

General

Maintaining the proper conductor clearance is one of the most important steps to insuring reliable operation of spacer cable. This can be achieved either by separation or insulation. There must be 2 ft. of horizontal separation between any two exposed primary conductors or between exposed primary conductors and ground points. If this clearance cannot be achieved, the vertical spacing must revert back to that of bare wire conductor. For this reason, properly staggering the openings, covering openings, and installation of Line Duc (a covering to insulate the messenger) is vital for achieving the desired reliability. This proper staggering of openings is detailed in the construction standards for each configuration.

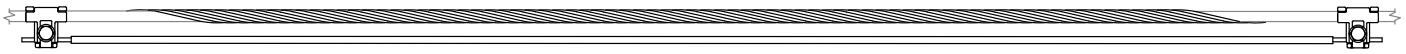
This standard will address the methods and materials for:

a. Messenger Splices
b. Installing Line Duc
c. Conductor Splices & Coverings
   - •Splice kits
   - •Covering openings with tape
   - •Covering taps with Line Duc

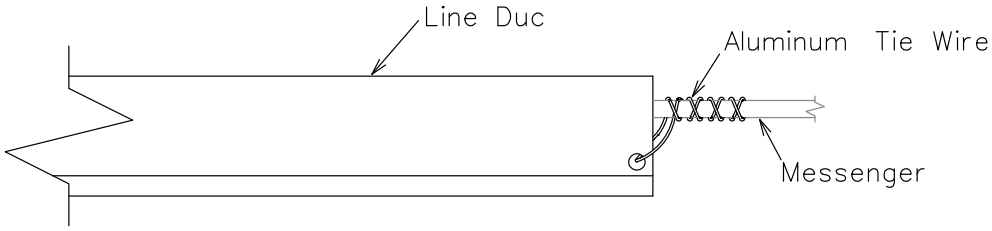
Messenger Splices

Stnd. / Stk. No.	**Description** **07 20 85 00**
17 63 300	Splice, NM, 55 in. Long, Preformed, 7#6 AWA or 052 AWA
17 63 299	Splice, NM, 38 in. Long, Preformed, 7#8 AWA or 252 AWA
17 60 582	Connector, Splice, Automatic, 7#7 AWA
17 60 165	Sleeve, Conductor, 3/8” Copperweld
17 60 235	Sleeve, Conductor, 1/2” Copperweld

Once the messenger has been repaired, install a #2 copper jumper wire to restore full electrical conductivity.



Installing Line Duc



Hendrix Line Duc must be installed on the messenger above a tap, or any other open point, to avoid outages. All taps should be a minimum of 2'–0" horizontal separation from ground points, splices, spacers, brackets, etc. When installing multiple taps, they should be offset from each other by a minimum of 2'–0". Secure one end of the Line Duc with aluminum tie wire as shown in the above drawing.

Conductor Splices & Coverings

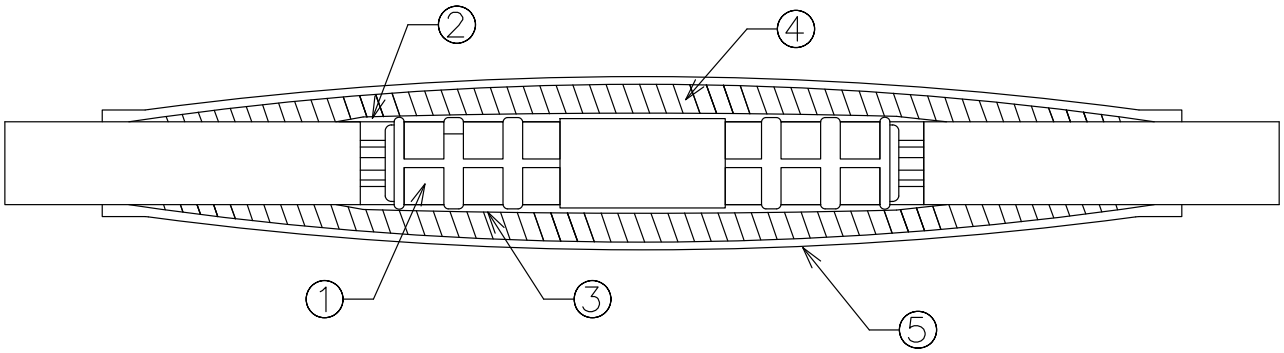
Stk. No.	Conductor Size	Legacy Co.	Description 07 20 85 00
17 60 731	1/0 Al. 7 Str.	IP	Sleeve, Compression, 1/0 Spacer Cable
17 55 782			Splice, Cold Shrink, 1/0 AWG – 3/0 AWG, Poly
17 60 462	1/0 Al. 7 Str.	CILCO	Sleeve, Compression, 1/0 Spacer Cable
17 55 782			Splice, Cold Shrink, 1/0 AWG – 3/0 AWG, Poly
17 60 584	3/0 Al. 7 Str.	CILCO	Sleeve, Compression, 3/0 Spacer Cable
17 55 782			Splice, Cold Shrink, 1/0 AWG – 3/0 AWG, Poly
17 60 209	350 MCM Al. 19 Str.	IP	Sleeve, Compression, 350 MCM Spacer Cable
17 55 783			Splice, Cold Shrink, 4/0 AWG – 266.8 KCMIL
17 60 654	477 MCM Al. 19 Str.–Round	IP	Sleeve, Compression, 397.5 KCMIL – 500 KCMIL
17 55 791			Splice, Cold Shrink, 336.4 KCMIL – 477 KCMIL
17 60 650	350 MCM Al. 19 Str.	CILCO	Sleeve, Compression, 350 KCMIL
17 55 791			Splice, Cold Shrink, 336.4 KCMIL – 477 KCMIL
17 60 650	477 MCM Al. 19 Str.–Compact	New Installs	Sleeve, Compression, 477 MCM Compact Spacer Cable
17 55 791			Splice, Cold Shrink, 336.4 KCMIL – 477 KCMIL
17 60 653	477 MCM Al. 19 Str.–Round to 477 MCM Al. 19 Str.–Compact	IP & New Installs	Sleeve, Compression, 477 Compact to 477 Round
17 55 791			Splice, Cold Shrink, 336.4 KCMIL – 477 KCMIL
17 60 572	500 MCM Al. 35 Str.	CILCO	Sleeve, Compression, 500 MCM Spacer Cable
17 55 791			Splice, Cold Shrink, 336.4 KCMIL – 477 KCMIL
17 60 694	795 MCM Al. 37 Str.	IP	Sleeve, Compression, 795 MCM Spacer Cable
17 55 784			Splice, Cold Shrink, 795 MCM Spacer Cable

Covering openings with tape

Step 1
If the conductor has a semiconducting layer, Install one half−lapped layer of semiconducting tape, 25 53 076. This step is omitted if the conductor doesn't have a semiconducting layer.

Step 2
Install half−lapped layers of filler tape, 25 53 123, to match the thickness of the original conductor installation.

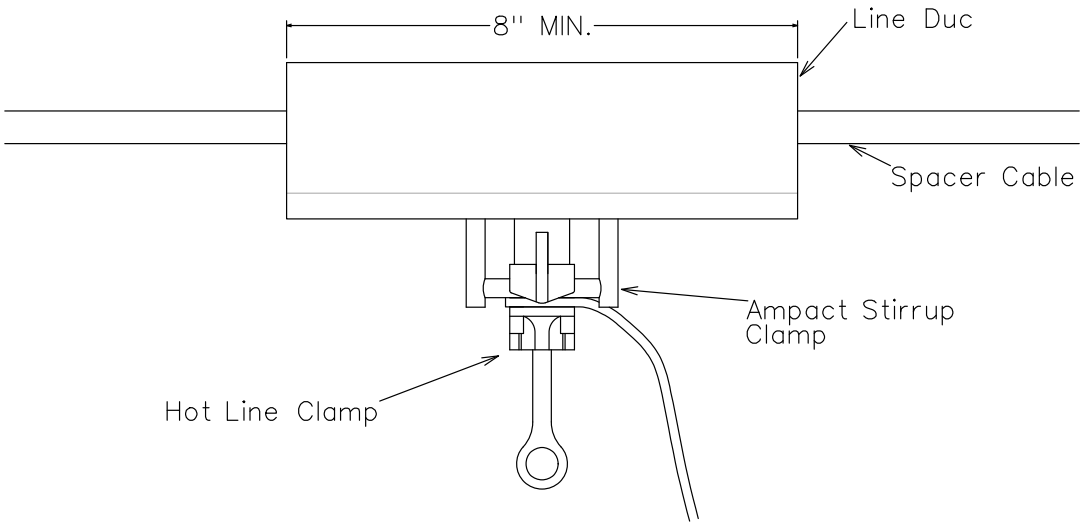
Step 3
Install three half−lapped layers of tape, 25 53 077.



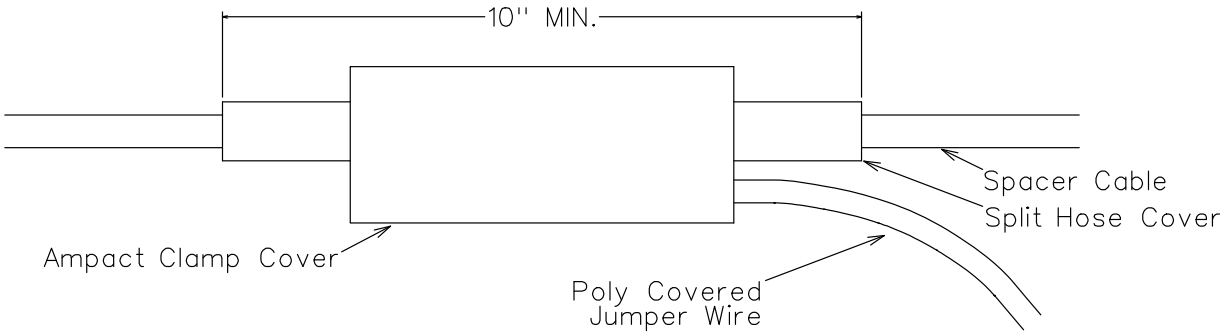
1. Partial Tension Compression Sleeve
2. Strips – 3M Insulating Mastic
3. Roll – 3M Semi−conducting Tape
4. 3M Rubber Mastic Tape
5. 3M Cold Shrink Silicone Splice (Length of tube is approximately 22")

Covering taps with Line Duc

On poles where uncovered Ampact style stirrup clamps that do not have the required 2 feet separation are installed on spacer cable, Jumbo Line Duc (69 58 293) may be used to cover the stirrup clamp to reduce the possibility of phase to phase or phase to ground wildlife contact. This should be used as a maintenance practice only. Line Duc may need to be heated or stretched to fit cover the stirrup clamp. The Line Duc will NOT fit over the new style hot line clamps. If the pole is getting replaced, then the taps should be re–installed with the appropriate 2 feet spacing as identified in the standard.



On poles where uncovered Ampact style connectors are used to connect jumpers on spacer cable, an Ampact cover (stk# 40 79 742) and split hose (stk# 71 25 214) may be used to reduce the possibility of phase to phase or phase to ground wildlife contact. This should be used as a maintenance practice only. If the pole is getting replaced, then the jumpers should be re–installed with the appropriate and connectors with covers shall be used as identified in the standard.



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