Southwire®

C7® OVERHEAD CONDUCTOR BROCHURE

SOUTHWIRE.COM

INNOVATION STARTS AT THE CORE

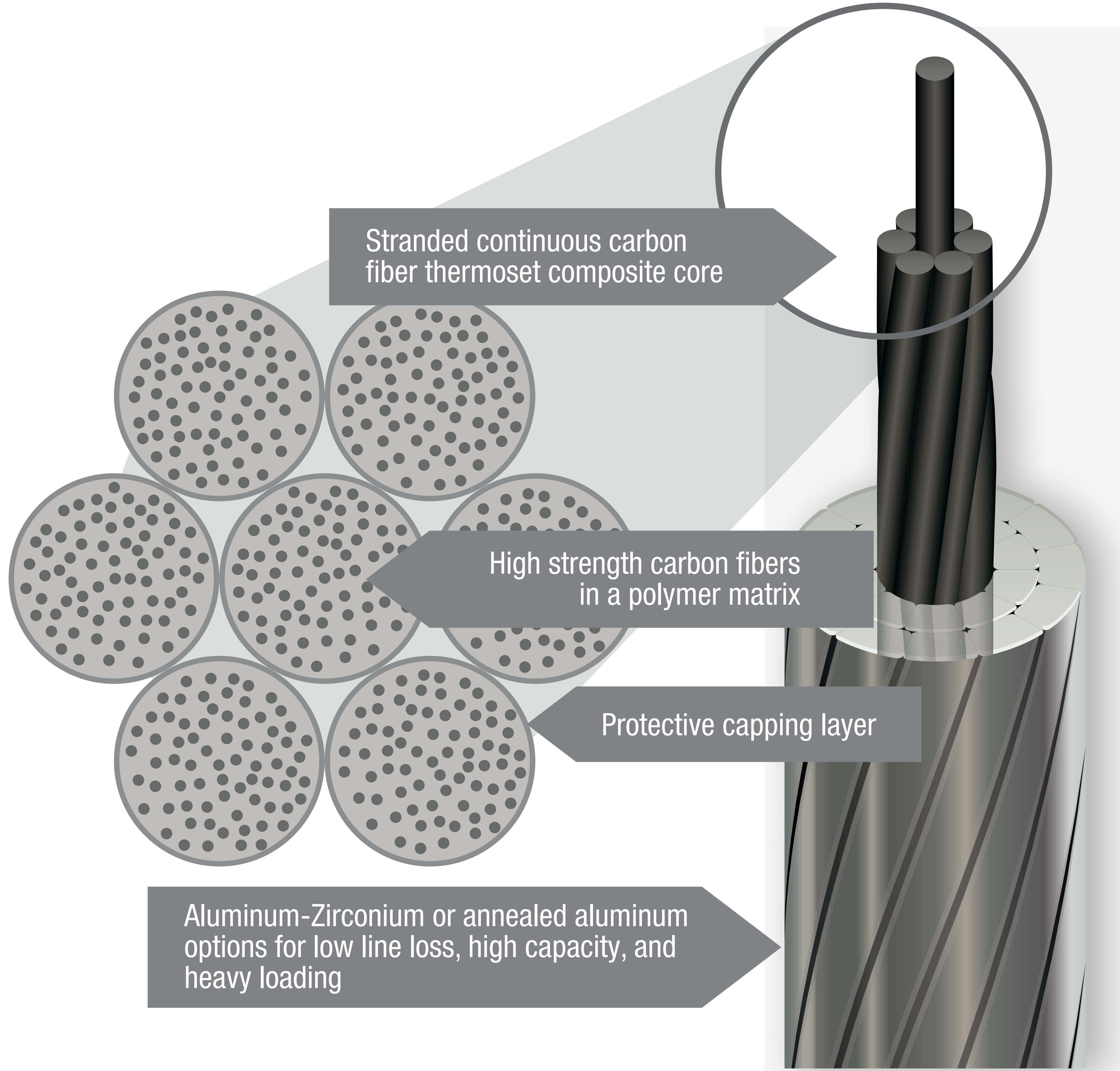
Lighter, Stronger, Tougher.
Southwire is revolutionizing the industry with its innovative C7® Overhead Conductor. With its unique stranded construction, Southwire's C7® Overhead Conductor is the most durable, rugged, and reliable composite core conductor on the market - and the only composite core conductor developed by a conductor manufacturer with full knowledge of utility needs and practices.

INTRODUCING C7®
OVERHEAD CONDUCTOR

- **Minimal Thermal Expansion** – minimal sag increase at high power transfer
- **Stranded Core** – no single point of failure
- **Flexible** – robust, installs like traditional conductor
- **Less Sag** – for lines with clearance or structure limitations
- **Easy Installation** – uses traditional methods and familiar hardware
- **Designs For All Loading Conditions** – light loading to heavy ice loading
- **Trapezoidal Wire (TW) or Round Wire Available**
- **Aluminum-Zirconium (Al-Zr) or Annealed Aluminum (1350-0 Temper)**

New Lines:
Reduce new line costs by saving on structures and foundations. Cross challenging terrain or reduce the visual profile in sensitive areas. Build for the future with high capacity, low sag lines.

Reconductoring:
Double the capacity of existing ACSR lines. Light conductor weight and low sag allow use of existing structures and ROW, even for lines previously designed with all-aluminum or aluminum alloy (AAC, AAAC, ACAR) conductors.



PERFORMANCE ADVANTAGES

Proven Robust Materials

- Matrix materials have been used in demanding environments for over 50 years
- Resists harsh chemicals, high temperatures, and corrosion
- Resistant to abrasion and high-tension fatigue

Low Sag

- Minimal sag increase at high temperature
- For lines with clearance or structure limitations
- Reduce land requirements, structure size and height, and foundation costs
- Overcome objections to high-visual-profile lines
- Capacity for future system rating increases without sag increase consideration

Stranded Core

- Multi-strand, NO single-point of failure like single-rod designs
- More flexible than single-rod core designs
- Increased tolerance for bending

Suitable for Extreme Weather Loading

- Al-Zr option bolsters carbon fiber to carry heavy ice and wind loads with low sag

Increase Capacity

- Double the capacity of same-diameter ACSR round-wire conductor
- 180°C continuous, 200°C emergency ratings are material property based
- No losses due to core magnetization

Conventional Installation & Inspection

- Uses standard work practices and traditional hardware
- Same stringing blocks and installation equipment as ACSS

CASE STUDY:
RECONDUCTORING

C7® Overhead Conductor Solves Erosion Issue:
A utility in the U.S. was planning to reconductor an existing 138 kV transmission line in a residential area to address encroaching erosion at a nearby river. To prevent issues related to river bank erosion near a structure, the utility was planning to move the structure further inland. The move would increase the river crossing span by approximately 550 feet, to 1,840 feet. The existing conductor was 795.0 kcmil 26/7 ACSR "Drake". The conductor solution was required to maintain existing clearances (design considerations limited sag to 40 feet) while also maintaining existing ampacity and tensions. The design considered NESC "Heavy" loading with an additional Extreme Ice/Wind load.

C7® Overhead Conductor was pinpointed early on for its high-temperature, low-sag properties and its corrosion resistance. The proposed solution utilized a 7-strand carbon fiber thermoset core with trapezoidal-shaped annealed aluminum strands. Due to its high conductivity and high temperature rating, the C7® overhead conductor solution, 477.0 kcmil Type 23 Capitol Reef/ACCS/TW/C7-TS, required 40% less aluminum to maintain the existing rating. The high strength of the carbon fiber composite core also allowed for a 16% smaller core to be used.

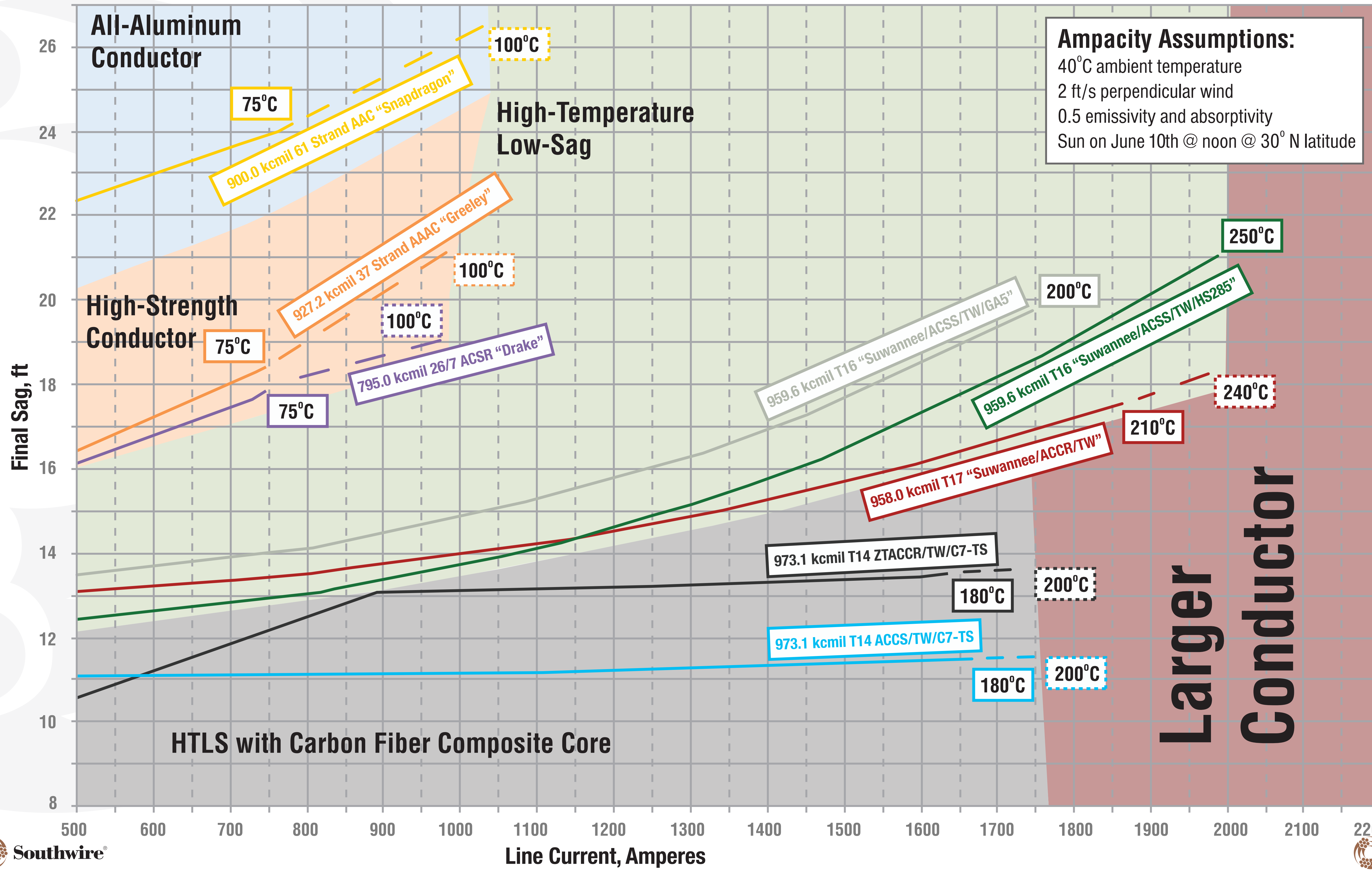
Showing Up and Showing Out:
Using the C7® overhead conductor solution, the sag in the 1,840-ft span decreased by 66% compared to the existing Drake. Conductor weight also decreased by 53%.

Conductor Type	Size kcmil	Stranding/ Type No.	Outside Diameter in	Weight lb/ft	RBS lb	Evaluation Results					
						Max Tension		Loaded Weight lb/ft	Cond. Temp. °C	Current A	Final Sag ft
						lb	%RBS				
ACSR*	795.0	26/7	1.108	1.093	31,500	12,480	40%	2.963	100	994	98.01
ACCS/TW/C7-TS	477.0	23	0.818	0.511	29,100	12,027	41%	2.128	180	1049	33.59

*Sag-tension results assume movement of the structure and use of existing Drake

COMPARING THE ALTERNATIVES

Conductor Performance Map, 1.108" OD, 800-ft RS, NESC "Medium", NESC Tension Limits



Shaped Wire Concentric-Lay-Stranded Compact Aluminum Conductor, Composite Supported (ACCS/TW/C7®-TS)

Code Word	Conductor Size, kcmil	Type No.	Cross-Sectional Area, in²		Layers of Al-Zr	Stranding		Diameter		Weight/1000 feet		
			Al-Zr	Total		No. of Al-Zr Strands	C7 Strands, in	C7 Core, in	Complete Conductor, in	Al-Zr, lb	C7, lb	Total, lb
Fundy/TW	203.2	43	0.1596	0.2280	1	8	7 x 0.1115	0.3346	**0.585**	194.2	48.2	242.4
Shenandoah/TW	266.8	21	0.2095	0.2533	1	8	7 x 0.0892	0.2677	0.608	255.0	30.9	285.8
Olympic/TW	325.0	17	0.2553	0.2990	2	20	7 x 0.0892	0.2677	0.671	309.2	30.9	340.1
Wrangell/TW	336.4	17	0.2642	0.3080	2	20	7 x 0.0892	0.2677	0.681	320.1	30.9	351.0
Badlands/TW	336.4	22	0.2642	0.3218	2	20	7 x 0.1024	0.3071	0.685	320.1	40.6	360.7
Andes/TW	397.5	14	0.3122	0.3560	2	18	7 x 0.0892	0.2677	0.710	378.1	30.9	408.9
Joshua Tree/TW	397.5	16	0.3122	0.3627	2	18	7 x 0.0958	0.2874	0.718	373.5	35.6	409.1
Sequoia/TW	397.5	22	0.3122	0.3806	2	18	7 x 0.1115	0.3346	0.738	378.1	48.2	426.3
Rogers/TW	477.0	13	0.3746	0.4251	2	18	7 x 0.0958	0.2874	0.778	447.4	35.6	483.3
Yosemite/TW	477.0	15	0.3746	0.4322	2	18	7 x 0.1024	0.3071	0.787	453.7	40.6	494.3
Capitol Reef/TW	477.0	23	0.3746	0.4601	2	20	7 x 0.1247	0.3740	**0.820**	450.4	60.2	510.6
Tortugas/TW	636.0	10	0.4995	0.5500	2	20	7 x 0.0958	0.2874	0.880	596.7	35.6	632.3
Yellowstone/TW	636.0	12	0.4995	0.5571	2	16	7 x 0.1024	0.3071	0.887	605.4	40.6	646.0
Glacier/TW	636.0	15	0.4995	0.5762	2	20	7 x 0.1181	0.3543	0.905	605.2	54.1	659.2
Carlsbad/TW	636.0	22	0.4995	0.6100	2	20	7 x 0.1417	0.4252	0.937	605.2	77.8	683.0
Congaree/TW	641.7	11	0.5040	0.5616	2	16	7 x 0.1024	0.3071	**0.890**	610.8	40.6	651.4
Vinson/TW	714.0	10	0.5608	0.6184	2	16	7 x 0.1024	0.3071	0.933	669.9	40.6	710.5
Kilimanjaro/TW	795.0	7	0.6244	0.6682	2	20	7 x 0.0892	0.2677	0.962	745.1	30.9	776.0
Alps/TW	795.0	9	0.6244	0.6820	2	20	7 x 0.1024	0.3071	0.974	756.5	40.6	797.1
Wind Cave/TW	795.0	12	0.6244	0.7011	2	20	7 x 0.1181	0.3543	0.990	756.5	54.1	810.5
Denali/TW	795.0	16	0.6244	0.7268	2	20	7 x 0.1365	0.4094	1.010	747.0	72.2	819.2
Rocky/TW	795.0	22	0.6244	0.7607	2	24	7 x 0.1575	0.4724	1.044	756.3	96.1	852.4
Crater Lake/TW	954.0	7	0.7493	0.7997	3	34	7 x 0.0958	0.2874	1.058	898.6	35.6	934.1
Grand Canyon/TW	954.0	10	0.7493	0.8260	3	34	7 x 0.1181	0.3543	1.072	899.4	54.1	953.5
Fuji/TW	954.0	12	0.7493	0.8421	2	20	7 x 0.1299	0.3898	1.077	907.8	65.4	973.2
Jasper/TW	954.0	16	0.7493	0.8680	2	22	7 x 0.1470	0.4409	1.104	896.4	83.7	980.1
Arches/TW	954.0	20	0.7493	0.8972	2	20	7 x 0.1640	0.4921	**1.126**	907.8	104.3	1012.0
Everglades/TW	973.1	14	0.7643	0.8747	2	20	7 x 0.1417	0.4252	**1.108**	925.9	77.8	1003.8
Big Bend/TW	1033.5	5	0.8117	0.8555	3	34	7 x 0.0892	0.2677	1.093	972.5	30.9	1003.4
Lassen/TW	1033.5	7	0.8117	0.8693	3	34	7 x 0.1024	0.3071	1.103	973.4	40.6	1014.0
Tahoe/TW	1033.5	11	0.8117	0.8972	3	34	7 x 0.1247	0.3740	1.118	980.9	60.2	1041.2
Samoa/TW	1033.5	13	0.8117	0.9141	2	22	7 x 0.1365	0.4094	1.130	970.1	72.2	1042.3
Cook/TW	1113.0	5	0.8741	0.9179	3	30	7 x 0.0892	0.2677	1.125	1047.3	30.9	1078.2
Blanc/TW	1113.0	7	0.8741	0.9318	3	34	7 x 0.1024	0.3071	1.139	1048.3	40.6	1088.9
Niagara/TW	1113.0	10	0.8741	0.9596	3	34	7 x 0.1247	0.3740	1.155	1049.3	60.2	1109.6
Gannett/TW	1113.0	13	0.8741	0.9846	3	38	7 x 0.1417	0.4252	1.181	1050.9	77.8	1128.7
Washington/TW	1192.5	5	0.9366	0.9804	3	34	7 x 0.0892	0.2677	1.166	1122.1	30.9	1153.0
Elbert/TW	1192.5	7	0.9366	1.0050	3	34	7 x 0.1115	0.3346	1.184	1123.2	48.2	1171.4
Kings Canyon/TW	1192.5	10	0.9366	1.0294	3	34	7 x 0.1299	0.3898	1.203	1124.3	65.4	1189.7
Acadia/TW	1192.5	13	0.9366	1.0554	3	38	7 x 0.1470	0.4409	1.223	1125.9	83.7	1209.7
Redwood/TW	1233.6	7	0.9689	1.0373	3	38	7 x 0.1115	0.3346	1.206	1161.9	48.2	1210.1
Mesa Verde/TW	1233.6	10	0.9689	1.0617	3	38	7 x 0.1299	0.3898	1.221	1163.0	65.4	1228.5
Biscayne/TW	1233.6	13	0.9689	1.0963	3	38	7 x 0.1522	0.4567	**1.245**	1164.7	89.8	1254.5
Saguaro/TW	1272.0	5	0.9990	1.0495	3	38	7 x 0.0958	0.2874	1.211	1196.9	35.6	1232.5
Sierra Nevada/TW	1272.0	7	0.9990	1.0674	3	38	7 x 0.1115	0.3346	1.224	1198.1	48.2	1246.3
Eldorado/TW	1272.0	10	0.9990	1.1014	3	38	7 x 0.1365	0.4094	1.244	1199.3	72.2	1271.4
Voyageurs/TW	1272.0	13	0.9990	1.1264	3	39	7 x 0.1522	0.4567	1.259	1201.0	89.8	1290.8
Cascades/TW	1351.5	7	1.0615	1.1382	3	38	7 x 0.1181	0.3543	1.264	1273.0	54.1	1327.0
Banff/TW	1351.5	10	1.0615	1.1639	3	42	7 x 0.1365	0.4094	1.278	1274.2	72.2	1346.4
Elbrus/TW	1351.5	13	1.0615	1.1978	3	42	7 x 0.1575	0.4724	1.299	1276.1	96.1	1372.2
Bryce Canyon/TW	1590.0	7	1.2488	1.3342	3	36	7 x 0.1247	0.3740	1.357	1497.6	60.2	1557.8
Adirondack/TW	1590.0	10	1.2488	1.3762	3	38	7 x 0.1522	0.4567	1.386	1499.1	89.8	1588.9
Zion/TW	1590.0	12	1.2488	1.3967	3	42	7 x 0.1640	0.4921	**1.405**	1509.4	104.3	1613.7
Teton/TW	1780.0	5	1.3980	1.4747	3	38	7 x 0.1181	0.3543	1.422	1674.9	54.1	1729.0
Everest/TW	1780.0	8	1.3980	1.5084	3	38	7 x 0.1417	0.4252	1.441	1674.1	77.8	1751.9
Katmai/TW	1780.0	10	1.3980	1.5344	3	38	7 x 0.1575	0.4724	1.463	1678.2	96.1	1774.3

Notes: (1) The final design of a TW conductor is contingent upon several factors such as: layer diameter, wire width, and wire thickness. This may result in a slight variation in the number of wires, number of layers, and outside diameter from that shown in the table.
(2) Resistance and ampacity based on an aluminum conductivity of 63% IACS at 20°C.

RBS, lb	Resistance				GMR, ft	Reactance @ 1 ft Spacing 60 Hz		Ampacity		Type No.	Conductor Size, kcmil	Code Word
	dc @ 20°C, Ω/mile	ac–60 Hz @ 25°C, Ω/mile	ac–60 Hz @ 180°C, Ω/mile	ac–60 Hz @ 200°C, Ω/mile		Inductive Xa, Ω/mile	Capacitive X'a, MΩ-mile	@ 180°C, A	@ 200°C, A			
22,100	0.4445	0.4539	0.7402	0.7771	0.0205	0.4719	0.1102	644	677	43	203.2	Fundy/TW
15,000	0.3387	0.3461	0.5642	0.5924	0.0204	0.4724	0.1090	746	784	21	266.8	Shenandoah/TW
15,400	0.2769	0.2831	0.4614	0.4844	0.0231	0.4572	0.1061	851	894	17	325.0	Olympic/TW
15,500	0.2675	0.2736	0.4458	0.4680	0.0234	0.4558	0.1057	869	914	17	336.4	Wrangell/TW
19,700	0.2675	0.2735	0.4456	0.4679	0.0239	0.4530	0.1055	871	916	22	336.4	Badlands/TW
15,900	0.2263	0.2317	0.3772	0.3960	0.0238	0.4537	0.1044	957	1006	14	397.5	Andes/TW
17,900	0.2235	0.2288	0.3726	0.3912	0.0243	0.4513	0.1041	966	1016	16	397.5	Joshua Tree/TW
23,400	0.2262	0.2315	0.3771	0.3958	0.0254	0.4457	0.1033	969	1019	22	397.5	Sequoia/TW
18,400	0.1861	0.1908	0.3104	0.3259	0.0260	0.4429	0.1017	1085	1141	13	477.0	Rogers/TW
20,600	0.1886	0.1933	0.3145	0.3301	0.0265	0.4406	0.1014	1082	1138	15	477.0	Yosemite/TW
29,100	0.1872	0.1917	0.3120	0.3276	0.0287	0.4308	0.1002	1100	1157	23	477.0	Capitol Reef/TW
19,400	0.1395	0.1437	0.2331	0.2447	0.0295	0.4276	0.0981	1300	1369	10	636.0	Tortugas/TW
21,600	0.1415	0.1457	0.2364	0.2482	0.0297	0.4268	0.0978	1294	1363	12	636.0	Yellowstone/TW
27,400	0.1415	0.1455	0.2362	0.2480	0.0310	0.4214	0.0972	1303	1372	15	636.0	Glacier/TW
36,900	0.1415	0.1452	0.2361	0.2478	0.0328	0.4147	0.0962	1318	1388	22	636.0	Carlsbad/TW
21,600	0.1403	0.1444	0.2344	0.2460	0.0298	0.4264	0.0977	1302	1371	11	641.7	Congaree/TW
22,100	0.1243	0.1283	0.2078	0.2181	0.0311	0.4213	0.0963	1403	1477	10	714.0	Vinson/TW
18,400	0.1115	0.1156	0.1868	0.1961	0.0316	0.4191	0.0954	1493	1574	7	795.0	Kilimanjaro/TW
22,600	0.1132	0.1172	0.1895	0.1989	0.0325	0.4158	0.0950	1489	1568	9	795.0	Alps/TW
28,400	0.1132	0.1170	0.1894	0.1988	0.0335	0.4119	0.0946	1497	1577	12	795.0	Wind Cave/TW
36,200	0.1118	0.1153	0.1869	0.1961	0.0348	0.4075	0.0940	1516	1598	16	795.0	Denali/TW
45,600	0.1132	0.1165	0.1891	0.1984	0.0367	0.4010	0.0930	1523	1605	22	795.0	Rocky/TW
21,300	0.0934	0.0975	0.1569	0.1646	0.0343	0.4091	0.0926	1679	1770	7	954.0	Crater Lake/TW
29,300	0.0935	0.0973	0.1568	0.1645	0.0356	0.4047	0.0922	1686	1778	10	954.0	Grand Canyon/TW
34,300	0.0943	0.0980	0.1581	0.1659	0.0365	0.4015	0.0921	1682	1773	12	954.0	Fuji/TW
41,400	0.0931	0.0966	0.1560	0.1637	0.0376	0.3983	0.0913	1706	1799	16	954.0	Jasper/TW
50,100	0.0943	0.0976	0.1579	0.1657	0.0393	0.3928	0.0907	1707	1800	20	954.0	Arches/TW
39,000	0.0925	0.0960	0.1550	0.1626	0.0379	0.3971	0.0912	1714	1808	14	973.1	Everglades/TW
19,800	0.0861	0.0904	0.1450	0.1521	0.0351	0.4064	0.0916	1765	1861	5	1033.5	Big Bend/TW
24,000	0.0862	0.0903	0.1450	0.1521	0.0359	0.4037	0.0914	1770	1866	7	1033.5	Lassen/TW
32,500	0.0869	0.0907	0.1459	0.1530	0.0372	0.3995	0.0910	1772	1869	11	1033.5	Tahoe/TW
37,800	0.0859	0.0895	0.1442	0.1513	0.0378	0.3973	0.0906	1788	1886	13	1033.5	Samoa/TW
20,200	0.0800	0.0844	0.1349	0.1415	0.0355	0.4051	0.0908	1846	1948	5	1113.0	Cook/TW
24,500	0.0800	0.0843	0.1349	0.1415	0.0370	0.4002	0.0904	1854	1955	7	1113.0	Blanc/TW
32,900	0.0801	0.0840	0.1348	0.1414	0.0383	0.3960	0.0900	1862	1965	10	1113.0	Niagara/TW
39,800	0.0802	0.0839	0.1348	0.1415	0.0400	0.3907	0.0893	1875	1978	13	1113.0	Gannett/TW
20,700	0.0746	0.0792	0.1262	0.1323	0.0372	0.3994	0.0897	1931	2037	5	1192.5	Washington/TW
28,200	0.0747	0.0789	0.1261	0.1322	0.0386	0.3949	0.0893	1941	2048	7	1192.5	Elbert/TW
35,700	0.0748	0.0787	0.1260	0.1321	0.0398	0.3910	0.0888	1951	2059	10	1192.5	Kings Canyon/TW
42,700	0.0749	0.0786	0.1260	0.1322	0.0414	0.3865	0.0883	1962	2070	13	1192.5	Acadia/TW
28,500	0.0722	0.0765	0.1220	0.1279	0.0395	0.3922	0.0887	1985	2095	7	1233.6	Redwood/TW
35,900	0.0723	0.0763	0.1219	0.1279	0.0407	0.3886	0.0883	1993	2104	10	1233.6	Mesa Verde/TW
45,600	0.0724	0.0760	0.1219	0.1278	0.0422	0.3840	0.0878	2006	2117	13	1233.6	Biscayne/TW
23,300	0.0700	0.0745	0.1185	0.1242	0.0390	0.3938	0.0886	2017	2129	5	1272.0	Saguaro/TW
28,700	0.0700	0.0744	0.1184	0.1242	0.0400	0.3906	0.0883	2024	2136	7	1272.0	Sierra Nevada/TW
39,100	0.0701	0.0740	0.1183	0.1240	0.0416	0.3859	0.0878	2036	2149	10	1272.0	Eldorado/TW
45,800	0.0702	0.0739	0.1183	0.1241	0.0429	0.3820	0.0874	2043	2157	13	1272.0	Voyageurs/TW
31,800	0.0659	0.0703	0.1116	0.1170	0.0414	0.3863	0.0873	2106	2224	7	1351.5	Cascades/TW
39,600	0.0660	0.0700	0.1116	0.1170	0.0429	0.3820	0.0870	2114	2232	10	1351.5	Banff/TW
49,000	0.0661	0.0698	0.1115	0.1169	0.0443	0.3781	0.0865	2126	2244	13	1351.5	Elbrus/TW
35,900	0.0560	0.0607	0.0955	0.1001	0.0437	0.3799	0.0852	2329	2461	7	1590.0	Bryce Canyon/TW
47,800	0.0561	0.0603	0.0953	0.0999	0.0463	0.3727	0.0846	2348	2480	10	1590.0	Adirondack/TW
53,900	0.0565	0.0605	0.0958	0.1004	0.0477	0.3692	0.0842	2352	2485	12	1590.0	Zion/TW
34,400	0.0500	0.0552	0.0859	0.0899	0.0460	0.3737	0.0838	2493	2636	5	1780.0	Teton/TW
43,900	0.0500	0.0547	0.0856	0.0896	0.0475	0.3697	0.0834	2509	2652	8	1780.0	Everest/TW
51,600	0.0501	0.0546	0.0856	0.0897	0.0488	0.3665	0.0830	2521	2665	10	1780.0	Katmai/TW

Notes: (3) Ampacity based on 25°C ambient temperature, 2 ft/s perpendicular wind, 0.5 emissivity, 0.5 absorptivity, 60 Hz, clear atmosphere, sea level, 30° N. latitude, N-S line azimuth, noon on June 10th.

Shaped Wire Concentric-Lay-Stranded Compact Thermal-Resistant Aluminum Conductor, Composite Reinforced (ZTACCR/TW/C7®-TS)

Code Word	Conductor Size, kcmil	Type No.	Cross-Sectional Area, in²		Layers of Al-Zr	Stranding		Diameter		Weight/1000 feet		
			Al-Zr	Total		No. of Al-Zr Strands	C7 Strands, in	C7 Core, in	Complete Conductor, in	Al-Zr, lb	C7, lb	Total, lb
Fundy/TW	203.2	43	0.1596	0.2280	1	8	7 x 0.1115	0.3346	**0.585**	193.2	48.2	241.4
Shenandoah/TW	266.8	21	0.2095	0.2533	1	8	7 x 0.0892	0.2677	0.608	253.7	30.9	284.5
Olympic/TW	325.0	17	0.2553	0.2990	2	20	7 x 0.0892	0.2677	0.671	307.7	30.9	338.5
Wrangell/TW	336.4	17	0.2642	0.3080	2	20	7 x 0.0892	0.2677	0.681	318.5	30.9	349.3
Badlands/TW	336.4	22	0.2642	0.3218	2	20	7 x 0.1024	0.3071	0.685	318.5	40.6	359.1
Andes/TW	397.5	14	0.3122	0.3560	2	18	7 x 0.0892	0.2677	0.710	376.1	30.9	407.0
Joshua Tree/TW	397.5	16	0.3122	0.3627	2	18	7 x 0.0958	0.2874	0.718	371.6	35.6	407.1
Sequoia/TW	397.5	22	0.3122	0.3806	2	18	7 x 0.1115	0.3346	0.738	376.1	48.2	424.3
Rogers/TW	477.0	13	0.3746	0.4251	2	18	7 x 0.0958	0.2874	0.778	445.5	35.6	481.0
Yosemite/TW	477.0	15	0.3746	0.4322	2	18	7 x 0.1024	0.3071	0.787	451.3	40.6	491.9
Capitol Reef/TW	477.0	23	0.3746	0.4601	2	20	7 x 0.1247	0.3740	**0.820**	448.1	60.2	508.3
Tortugas/TW	636.0	10	0.4995	0.5500	2	20	7 x 0.0958	0.2874	0.880	593.6	35.6	629.2
Yellowstone/TW	636.0	12	0.4995	0.5571	2	16	7 x 0.1024	0.3071	0.887	602.2	40.6	642.8
Glacier/TW	636.0	15	0.4995	0.5762	2	20	7 x 0.1181	0.3543	0.905	602.1	54.1	656.1
Carlsbad/TW	636.0	22	0.4995	0.6100	2	20	7 x 0.1417	0.4252	0.937	602.1	77.8	679.9
Congaree/TW	641.7	11	0.5040	0.5616	2	16	7 x 0.1024	0.3071	**0.890**	607.6	40.6	648.2
Vinson/TW	714.0	10	0.5608	0.6184	2	16	7 x 0.1024	0.3071	0.933	666.4	40.6	707.0
Kilimanjaro/TW	795.0	7	0.6244	0.6682	2	20	7 x 0.0892	0.2677	0.962	741.3	30.9	772.2
Alps/TW	795.0	9	0.6244	0.6820	2	20	7 x 0.1024	0.3071	0.974	752.6	40.6	793.2
Wind Cave/TW	795.0	12	0.6244	0.7011	2	20	7 x 0.1181	0.3543	0.990	752.6	54.1	806.6
Denali/TW	795.0	16	0.6244	0.7268	2	20	7 x 0.1365	0.4094	1.010	743.1	72.2	815.3
Rocky/TW	795.0	22	0.6244	0.7607	2	24	7 x 0.1575	0.4724	1.044	752.4	96.1	848.5
Crater Lake/TW	954.0	7	0.7493	0.7997	3	34	7 x 0.0958	0.2874	1.058	894.0	35.6	929.5
Grand Canyon/TW	954.0	10	0.7493	0.8260	3	34	7 x 0.1181	0.3543	1.072	894.8	54.1	948.9
Fuji/TW	954.0	12	0.7493	0.8421	2	20	7 x 0.1299	0.3898	1.077	903.1	65.4	968.5
Jasper/TW	954.0	16	0.7493	0.8680	2	22	7 x 0.1470	0.4409	1.104	891.8	83.7	975.5
Arches/TW	954.0	20	0.7493	0.8972	2	20	7 x 0.1640	0.4921	**1.126**	903.1	104.3	1007.4
Everglades/TW	973.1	14	0.7643	0.8747	2	20	7 x 0.1417	0.4252	**1.108**	921.2	77.8	999.0
Big Bend/TW	1033.5	5	0.8117	0.8555	3	34	7 x 0.0892	0.2677	1.093	967.5	30.9	998.4
Lassen/TW	1033.5	7	0.8117	0.8693	3	34	7 x 0.1024	0.3071	1.103	968.5	40.6	1009.1
Tahoe/TW	1033.5	11	0.8117	0.8972	3	34	7 x 0.1247	0.3740	1.118	975.9	60.2	1036.1
Samoa/TW	1033.5	13	0.8117	0.9141	2	22	7 x 0.1365	0.4094	1.130	965.1	72.2	1037.3
Cook/TW	1113.0	5	0.8741	0.9179	3	30	7 x 0.0892	0.2677	1.125	1041.9	30.9	1072.8
Blanc/TW	1113.0	7	0.8741	0.9318	3	34	7 x 0.1024	0.3071	1.139	1042.9	40.6	1083.5
Niagara/TW	1113.0	10	0.8741	0.9596	3	34	7 x 0.1247	0.3740	1.155	1044.0	60.2	1104.2
Gannett/TW	1113.0	13	0.8741	0.9846	3	38	7 x 0.1417	0.4252	1.181	1045.5	77.8	1123.3
Washington/TW	1192.5	5	0.9366	0.9804	3	34	7 x 0.0892	0.2677	1.166	1116.4	30.9	1147.2
Elbert/TW	1192.5	7	0.9366	1.0050	3	34	7 x 0.1115	0.3346	1.184	1117.4	48.2	1165.7
Kings Canyon/TW	1192.5	10	0.9366	1.0294	3	34	7 x 0.1299	0.3898	1.203	1118.5	65.4	1183.9
Acadia/TW	1192.5	13	0.9366	1.0554	3	38	7 x 0.1470	0.4409	1.223	1120.2	83.7	1203.9
Redwood/TW	1233.6	7	0.9689	1.0373	3	38	7 x 0.1115	0.3346	1.206	1156.0	48.2	1204.2
Mesa Verde/TW	1233.6	10	0.9689	1.0617	3	38	7 x 0.1299	0.3898	1.221	1157.1	65.4	1222.5
Biscayne/TW	1233.6	13	0.9689	1.0963	3	38	7 x 0.1522	0.4567	**1.245**	1158.8	89.8	1248.6
Saguaro/TW	1272.0	5	0.9990	1.0495	3	38	7 x 0.0958	0.2874	1.211	1190.8	35.6	1226.3
Sierra Nevada/TW	1272.0	7	0.9990	1.0674	3	38	7 x 0.1115	0.3346	1.224	1191.9	48.2	1240.2
Eldorado/TW	1272.0	10	0.9990	1.1014	3	38	7 x 0.1365	0.4094	1.244	1193.1	72.2	1265.3
Voyageurs/TW	1272.0	13	0.9990	1.1264	3	39	7 x 0.1522	0.4567	1.259	1194.8	89.8	1284.6
Cascades/TW	1351.5	7	1.0615	1.1382	3	38	7 x 0.1181	0.3543	1.264	1266.4	54.1	1320.5
Banff/TW	1351.5	10	1.0615	1.1639	3	42	7 x 0.1365	0.4094	1.278	1267.7	72.2	1339.8
Elbrus/TW	1351.5	13	1.0615	1.1978	3	42	7 x 0.1575	0.4724	1.299	1269.5	96.1	1365.6
Bryce Canyon/TW	1590.0	7	1.2488	1.3342	3	36	7 x 0.1247	0.3740	1.357	1489.9	60.2	1550.2
Adirondack/TW	1590.0	10	1.2488	1.3762	3	38	7 x 0.1522	0.4567	1.386	1491.4	89.8	1581.2
Zion/TW	1590.0	12	1.2488	1.3967	3	42	7 x 0.1640	0.4921	**1.405**	1501.7	104.3	1606.0
Teton/TW	1780.0	5	1.3980	1.4747	3	38	7 x 0.1181	0.3543	1.422	1666.3	54.1	1720.4
Everest/TW	1780.0	8	1.3980	1.5084	3	38	7 x 0.1417	0.4252	1.441	1665.5	77.8	1743.4
Katmai/TW	1780.0	10	1.3980	1.5344	3	38	7 x 0.1575	0.4724	1.463	1669.6	96.1	1765.7

Notes: (1) The final design of a TW conductor is contingent upon several factors such as: layer diameter, wire width, and wire thickness. This may result in a slight variation in the number of wires, number of layers, and outside diameter from that shown in the table.
(2) Resistance and ampacity based on an aluminum-zirconium alloy conductivity of 60% IACS at 20°C.

RBS, lb	Resistance				GMR, ft	Reactance @ 1 ft Spacing 60 Hz		Ampacity		Type No.	Conductor Size, kcmil	Code Word
	dc @ 20°C, Ω/mile	ac–60 Hz @ 25°C, Ω/mile	ac–60 Hz @ 180°C, Ω/mile	ac–60 Hz @ 200°C, Ω/mile		Inductive Xa, Ω/mile	Capacitive X'a, MΩ-mile	@ 180°C, A	@ 200°C, A			
21,600	0.4666	0.4761	0.7650	0.8023	0.0205	0.4719	0.1102	634	666	43	203.2	Fundy/TW
18,000	0.3555	0.3630	0.5831	0.6115	0.0204	0.4724	0.1090	734	772	21	266.8	Shenandoah/TW
19,200	0.2906	0.2969	0.4768	0.5000	0.0231	0.4572	0.1061	837	880	17	325.0	Olympic/TW
19,200	0.2808	0.2869	0.4607	0.4831	0.0234	0.4558	0.1057	855	899	17	336.4	Wrangell/TW
23,400	0.2807	0.2868	0.4606	0.4830	0.0239	0.4530	0.1055	857	901	22	336.4	Badlands/TW
20,300	0.2375	0.2429	0.3899	0.4088	0.0238	0.4537	0.1044	941	990	14	397.5	Andes/TW
22,300	0.2346	0.2399	0.3851	0.4038	0.0243	0.4513	0.1041	950	1000	16	397.5	Joshua Tree/TW
27,800	0.2375	0.2427	0.3897	0.4086	0.0254	0.4457	0.1033	953	1003	22	397.5	Sequoia/TW
23,600	0.1953	0.2001	0.3208	0.3364	0.0260	0.4429	0.1017	1067	1123	13	477.0	Rogers/TW
25,700	0.1979	0.2026	0.3250	0.3408	0.0265	0.4406	0.1014	1064	1120	15	477.0	Yosemite/TW
34,200	0.1965	0.2010	0.3225	0.3382	0.0287	0.4308	0.1002	1082	1139	23	477.0	Capitol Reef/TW
26,300	0.1464	0.1506	0.2409	0.2526	0.0295	0.4276	0.0981	1279	1348	10	636.0	Tortugas/TW
28,200	0.1486	0.1527	0.2443	0.2562	0.0297	0.4268	0.0978	1273	1342	12	636.0	Yellowstone/TW
34,300	0.1485	0.1525	0.2441	0.2560	0.0310	0.4214	0.0972	1282	1351	15	636.0	Glacier/TW
41,300	0.1485	0.1523	0.2440	0.2558	0.0328	0.4147	0.0962	1296	1366	22	636.0	Carlsbad/TW
28,300	0.1472	0.1513	0.2422	0.2539	0.0298	0.4264	0.0977	1280	1349	11	641.7	Congaree/TW
29,500	0.1304	0.1344	0.2148	0.2251	0.0311	0.4213	0.0963	1380	1454	10	714.0	Vinson/TW
26,700	0.1170	0.1211	0.1930	0.2023	0.0316	0.4191	0.0954	1469	1549	7	795.0	Kilimanjaro/TW
30,900	0.1188	0.1227	0.1958	0.2053	0.0325	0.4158	0.0950	1464	1544	9	795.0	Alps/TW
36,700	0.1188	0.1226	0.1957	0.2051	0.0335	0.4119	0.0946	1472	1552	12	795.0	Wind Cave/TW
44,500	0.1173	0.1209	0.1931	0.2024	0.0348	0.4075	0.0940	1492	1573	16	795.0	Denali/TW
51,200	0.1188	0.1221	0.1954	0.2048	0.0367	0.4010	0.0930	1498	1580	22	795.0	Rocky/TW
31,400	0.0980	0.1021	0.1621	0.1698	0.0343	0.4091	0.0926	1652	1743	7	954.0	Crater Lake/TW
39,400	0.0981	0.1019	0.1620	0.1698	0.0356	0.4047	0.0922	1659	1750	10	954.0	Grand Canyon/TW
44,300	0.0990	0.1026	0.1634	0.1712	0.0365	0.4015	0.0921	1655	1746	12	954.0	Fuji/TW
48,700	0.0978	0.1012	0.1612	0.1690	0.0376	0.3983	0.0913	1679	1771	16	954.0	Jasper/TW
56,800	0.0990	0.1022	0.1631	0.1710	0.0393	0.3928	0.0907	1679	1772	20	954.0	Arches/TW
46,800	0.0971	0.1005	0.1601	0.1678	0.0379	0.3971	0.0912	1686	1779	14	973.1	Everglades/TW
30,700	0.0904	0.0946	0.1497	0.1569	0.0351	0.4064	0.0916	1736	1832	5	1033.5	Big Bend/TW
34,900	0.0905	0.0945	0.1498	0.1569	0.0359	0.4037	0.0914	1741	1837	7	1033.5	Lassen/TW
43,400	0.0912	0.0949	0.1507	0.1579	0.0372	0.3995	0.0910	1743	1840	11	1033.5	Tahoe/TW
48,600	0.0902	0.0937	0.1490	0.1561	0.0378	0.3973	0.0906	1759	1857	13	1033.5	Samoa/TW
31,600	0.0839	0.0882	0.1393	0.1459	0.0355	0.4051	0.0908	1817	1918	5	1113.0	Cook/TW
36,200	0.0840	0.0881	0.1393	0.1460	0.0370	0.4002	0.0904	1824	1925	7	1113.0	Blanc/TW
44,700	0.0841	0.0879	0.1392	0.1459	0.0383	0.3960	0.0900	1833	1934	10	1113.0	Niagara/TW
49,100	0.0842	0.0878	0.1393	0.1460	0.0400	0.3907	0.0893	1845	1948	13	1113.0	Gannett/TW
32,900	0.0783	0.0828	0.1303	0.1365	0.0372	0.3994	0.0897	1900	2006	5	1192.5	Washington/TW
40,400	0.0784	0.0825	0.1302	0.1364	0.0386	0.3949	0.0893	1910	2017	7	1192.5	Elbert/TW
47,900	0.0785	0.0823	0.1301	0.1363	0.0398	0.3910	0.0888	1920	2027	10	1192.5	Kings Canyon/TW
52,800	0.0786	0.0822	0.1302	0.1364	0.0414	0.3865	0.0883	1930	2038	13	1192.5	Acadia/TW
41,600	0.0758	0.0800	0.1260	0.1320	0.0395	0.3922	0.0887	1953	2062	7	1233.6	Redwood/TW
49,000	0.0759	0.0798	0.1259	0.1319	0.0407	0.3886	0.0883	1961	2071	10	1233.6	Mesa Verde/TW
55,800	0.0760	0.0796	0.1259	0.1319	0.0422	0.3840	0.0878	1974	2084	13	1233.6	Biscayne/TW
36,700	0.0734	0.0779	0.1223	0.1281	0.0390	0.3938	0.0886	1985	2096	5	1272.0	Saguaro/TW
42,200	0.0735	0.0777	0.1223	0.1281	0.0400	0.3906	0.0883	1992	2103	7	1272.0	Sierra Nevada/TW
52,600	0.0736	0.0774	0.1222	0.1280	0.0416	0.3859	0.0878	2003	2115	10	1272.0	Eldorado/TW
56,500	0.0737	0.0773	0.1222	0.1280	0.0429	0.3820	0.0874	2011	2123	13	1272.0	Voyageurs/TW
45,600	0.0692	0.0734	0.1153	0.1207	0.0414	0.3863	0.0873	2073	2189	7	1351.5	Cascades/TW
53,900	0.0693	0.0732	0.1152	0.1207	0.0429	0.3820	0.0870	2081	2198	10	1351.5	Banff/TW
60,300	0.0694	0.0730	0.1152	0.1206	0.0443	0.3781	0.0865	2092	2210	13	1351.5	Elbrus/TW
52,200	0.0588	0.0634	0.0986	0.1032	0.0437	0.3799	0.0852	2293	2423	7	1590.0	Bryce Canyon/TW
61,200	0.0589	0.0630	0.0984	0.1030	0.0463	0.3727	0.0846	2311	2443	10	1590.0	Adirondack/TW
66,900	0.0593	0.0632	0.0989	0.1036	0.0477	0.3692	0.0842	2314	2447	12	1590.0	Zion/TW
52,600	0.0525	0.0575	0.0886	0.0927	0.0460	0.3737	0.0838	2455	2597	5	1780.0	Teton/TW
59,700	0.0525	0.0571	0.0883	0.0924	0.0475	0.3697	0.0834	2470	2612	8	1780.0	Everest/TW
66,800	0.0526	0.0569	0.0883	0.0924	0.0488	0.3665	0.0830	2481	2624	10	1780.0	Katmai/TW

Notes: (3) Ampacity based on 25°C ambient temperature, 2 ft/s perpendicular wind, 0.5 emissivity, 0.5 absorptivity, 60 Hz, clear atmosphere, sea level, 30° N. latitude, N-S line azimuth, noon on June 10th.

Southwire®

C7® OVERHEAD CONDUCTOR BROCHURE

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