



Designation: **B857—18** **B857 – 22**

## Standard Specification for Shaped Wire Compact Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Supported (ACSS/TW)<sup>1</sup>

This standard is issued under the fixed designation B857; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This specification covers shaped wire compact concentric-lay-stranded aluminum conductors, steel supported (ACSS/TW) for use as overhead electrical conductors (see Explanatory [Note 1](#)).

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.2.1 *Exceptions*—For conductor sizes designated by AWG or kcmil sizes, the requirements in SI units are numerically converted from the corresponding requirements in inch-pound units. For conductor sizes designated by SI units only, the requirements are stated or derived in SI units. For density, resistivity, and temperature, the values stated in SI units are to be regarded as standard.

1.3 ACSS/TW is designed to increase the aluminum area for a given diameter of conductor by the use of trapezoidal shaped wires (TW), or to reduce the diameter for a given area of aluminum. The conductors consist of a central core of round steel wire(s) surrounded by two or more layers of trapezoidal aluminum 1350-0 wires. Different strandings of the same size of conductor are identified by type, which is the approximate ratio of steel area to aluminum area expressed in percent (see [Table 1](#) [Table 1](#), [Table 2](#) [Table 2](#) and [Table 3](#) [Table 3](#)). For the purpose of this specification, the sizes listed in [Table 1](#) [Table 1](#) and [Table 2](#) [Table 2](#) are tabulated on the basis of the finished conductor having an area or outside diameter equal to that of specified sizes of standard ACSR, ACSS, and ACSR/TW so as to facilitate conductor selection.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

2.1 The following documents of the issue in effect on date of material purchase form part of this specification to the extent referenced herein:

2.2 *ASTM Standards:*<sup>2</sup>

[B232/B232M Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Reinforced \(ACSR\)](#)  
[B263B263/B263M Test Method for Determination of Cross-Sectional Area of Stranded Conductors](#)

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee B01 on Electrical Conductors and is the direct responsibility of Subcommittee B01.07 on Conductors of Light Metals.

Current edition approved March 1, 2018Dec. 1, 2022. Published March 2018January 2023. Originally approved in 1995. Last previous edition approved in 20142018 as B857—14-B857—18. DOI: 10.1520/B0857-18.10.1520/B0857-22.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

TABLE 1 Construction Requirements for Shaped Wire Compact Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Supported<sup>A</sup>

NOTE 1—Sized to have area equal aluminum cross-sectional area to an ACSR or ACSS, Class AA conductor.

ACSS/TW Conductor Size	ACSS/TW Conductor Type	Size and Stranding of ACSS with Equal Aluminum Cross-Sectional Area			Code Word <sup>B</sup>	Stranding	Number of Aluminum Wires	Aluminum Stranding	Number of Layers	Number of Wires	Steel Core Stranding	Individual Strand Wire Diameter, in.	Nominal Mass ACSS/TW	ACSS/TW Conductor Rated Strength (by type of steel core wire)					Nominal Outside Diameter
		cmil	cmil	cmil										GA2 / MA2 KIPS	GA3 / MA3 KIPS	GA4 / MA4 KIPS	GA5 / MA5 KIPS	AW2 KIPS	
266.8	16	Partridge/ACSS/TW	266.8	267	18	2	7	0.0788	349	8.90	9.70	10.8	11.4	8.40	8.90	0.58			
336.4	23	Oriole/ACSS/TW	336.4	307	17	2	7	0.1059	526	14.8	16.3	18.2	19.1	14.2	14.8	0.69			
477.0	13	Flicker/ACSS/TW	477.0	247	18	2	7	0.0940	612	13.0	14.2	15.7	16.4	12.5	13.0	0.78			
477.0	16	Hawk/ACSS/TW	477.0	267	18	2	7	0.1053	655	15.6	17.1	18.9	19.8	14.9	15.6	0.79			
477.0	23	Hen/ACSS/TW	477.0	307	17	2	7	0.1261	746	21.0	22.7	25.4	26.7	20.1	20.5	0.83			
556.5	13	Parakeet/ACSS/TW	556.5	247	18	2	7	0.1138	714	15.2	16.6	18.3	19.1	14.6	15.2	0.84			
556.5	16	Dove/ACSS/TW	556.5	267	20	2	7	0.1085	764	18.2	19.9	22.1	23.1	17.5	18.2	0.85			
636.0	13	Rook/ACSS/TW	636.0	247	18	2	7	0.1216	818	17.3	19.0	20.9	21.9	16.7	17.3	0.89			
795.0	7	Grosbeak/ACSS/TW	795.0	267	17	2	7	0.1088	873	20.7	22.4	24.8	26.0	19.9	20.3	0.91			
795.0	7	Term/ACSS/TW	795.0	457	17	2	7	0.0886	891	14.2	15.2	16.6	17.5	13.5	14.2	0.96			
795.0	10	Puffin <sup>D</sup> /ACSS/TW	795.0	227	18	2	7	0.1108 <sup>D</sup>	974	18.9	20.6	22.6	23.7	18.3	18.9	0.98			
795.0	13	Condori/ACSS/TW	795.0	547	20	2	7	0.1213	1020	21.7	23.3	25.7	26.9	20.9	21.3	0.99			
795.0	16	Drake/ACSS/TW	795.0	267	20	2	7	0.1360	1091	25.9	28.0	31.0	32.5	24.4	25.4	1.01			
795.0	23	Mallard/ACSS/TW	795.0	30/19	22	2	19	0.0977	1234	34.3	37.9	42.1	44.3	32.9	34.3	1.05			
954.0	5	Phoenix/ACSS/TW	954.0	427	30	3	7	0.0837	1028	14.2	15.2	16.3	17.1	13.6	14.2	1.06			
954.0	7	Rail/ACSS/TW	954.0	457	32	3	7	0.0971	1074	16.7	18.0	19.6	20.4	16.2	16.7	1.05			
954.0	13	Cardinal/ACSS/TW	954.0	547	20	2	7	0.1329	1227	26.0	28.0	30.9	32.3	24.6	25.5	1.08			
1033.5	5	Snowbird/ACSS/TW	1033.5	427	30	3	7	0.0871	1114	15.4	16.4	17.7	18.5	14.8	15.4	1.09			
1033.5	7	Ortolan/ACSS/TW	1033.5	457	32	3	7	0.1010	1163	18.1	19.5	21.2	22.0	17.6	18.1	1.10			
1033.5	13	Curlew/ACSS/TW	1033.5	547	21	7	7	0.1383	1326	28.2	30.3	33.4	35.0	26.1	27.7	1.13			
1113.0	5	Avocet/ACSS/TW	1113.0	427	30	3	7	0.0904	1199	16.3	17.5	18.8	19.5	15.9	16.3	1.13			
1113.0	7	Bluejay/ACSS/TW	1113.0	457	33	3	7	0.1049	1253	19.5	21.0	22.9	23.8	18.9	19.5	1.14			
1113.0	13	Finch/ACSS/TW	1113.0	54/19	38	3	19	0.0862	1427	30.4	33.2	36.5	38.7	28.8	30.4	1.19			
1192.5	5	Oxbird/ACSS/TW	1192.5	427	30	3	7	0.0936	1285	17.5	18.7	20.2	20.9	17.0	17.5	1.17			
1192.5	7	Bunting/ACSS/TW	1192.5	457	33	3	19	0.1085	1342	20.9	22.5	24.5	25.5	20.3	20.9	1.18			
1192.5	13	Grackle/ACSS/TW	1192.5	54/19	38	3	19	0.0892	1529	32.6	35.5	39.1	41.5	30.8	32.6	1.22			
1272.0	5	Scissortail/ACSS/TW	1272.0	427	30	3	7	0.0967	1371	18.7	20.0	21.5	22.3	18.2	18.7	1.20			
1272.0	7	Blitern/ACSS/TW	1272.0	457	35	3	7	0.1121	1432	22.3	24.0	26.1	27.2	21.6	22.3	1.22			
1272.0	13	Pheasant/ACSS/TW	1272.0	54/19	39	3	19	0.0921	1630	34.1	37.3	41.1	43.0	32.8	34.1	1.26			
1351.5	7	Dipper/ACSS/TW	1351.5	457	35	3	7	0.1155	1521	23.7	25.5	27.7	28.8	23.0	23.7	1.26			
1351.5	13	Martin/ACSS/TW	1351.5	54/19	39	3	19	0.0949	1732	36.2	39.6	43.6	45.6	34.9	36.2	1.30			
1431.0	7	Bobolink/ACSS/TW	1431.0	457	36	3	7	0.1189	1611	25.1	27.0	29.4	30.5	24.3	25.1	1.29			
1431.0	13	Plover/ACSS/TW	1431.0	54/19	39	3	19	0.0977	1834	38.4	41.9	46.2	48.3	36.9	38.4	1.34			
1590.0	7	Lapwing/ACSS/TW	1590.0	457	36	3	7	0.1253	1790	27.9	29.6	32.2	33.5	27.0	27.5	1.36			
1590.0	13	Falcon/ACSS/TW	1590.0	54/19	42	3	19	0.1030	2038	42.6	46.6	51.3	53.7	41.1	42.6	1.41			
1780.0	8	Chukar/ACSS/TW	1780.0	84/19	37	3	19	0.0874	2061	35.3	38.2	41.6	43.9	33.6	35.3	1.45			
2156.0	8	Bluebird/ACSS/TW	2156.0	84/19	64	4	19	0.0961	2512	42.1	45.5	49.6	51.7	40.7	42.1	1.61			

<sup>A</sup> Conversion factors:

1 cmil = 5.067E-04 mm      1 kmil = 0.5067<sup>2</sup> (0.0005067-mm<sup>2</sup>)

1 lb = 2.54E+01 mm (25.4 mm)      1 in. = 25.4 mm

1 lb/4000ft = 1.488 kg/1000 ft = 1.4882 kg/km

1 ft = 3.048E-01 m (0.3048 m)      1 ft = 0.3048 m

1 lb = 0.4536 kg

1 lb = 4.536E-01 kg

(0.4536 kg)      1 kip

1 lb = 4.448E-03 kN (0.004448 kN) = 1000 lbf = 4.448 kN

<sup>B</sup> Code Words shown in this column are obtained from Specification B1006. They are provided for information only.

<sup>C</sup> See Explanatory Note 43.

<sup>D</sup> For 795 kcmil Type 10 (Puffin ACSS TW) conductor the indicated 0.1108 in. steel wire size does not correspond with the concentric round wire 795 kcmil 22/7 Puffin ACSS conductor. The round wire construction utilizes a 0.1056 in. diameter steel core wire. The industry accepted dimension for the Puffin ACSS TW steel wire is 0.1108 in. Technically this renders the construction as a Type 11 conductor. The conductor mass, rated strength and diameter values correspond to the 0.1108 in. diameter steel core.

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[ASTM B857-22](#)

<https://standards.iteh.ai/catalog/standards/sist/a731174-bac1-4120-b4d1-35b40963972f/astm-b857-22>

**TABLE 2 Construction Requirements for Shaped Wire Compact Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Supported<sup>A</sup>**

NOTE 1—Sized to have a diameter equal to a concentric round ACSR or ACSS, Class AA conductor.

ACSS/TW Conductor Size	Code Word <sup>B</sup>	Size and Stranding of ACSS with Equal Overall Conductor Diameter		Number of Aluminum Wires	Aluminum Stranding	Steel Core Stranding	Nominal Mass ACSS/TW lb/1000 ft	ACSS/TW Conductor Rated Strength (by type of steel core wire)					Nominal Outside Diameter in.		
		kcmil	Stranding					Number of Wires	Individual Strand Wire Diameter, in.	GAX Core	GA2/MA2 KIPS	GA3/MA3 KIPS		GA4/MA4 KIPS	GA5/MA5 KIPS
571.7	13	Mohawk/ACSS/TW	477.0	24/7	18	2	734	15.6	17.1	18.8	19.7	15.0	15.6	18.4	0.85
565.3	16	Calumet/ACSS/TW	477.0	26/7	20	2	776	18.4	20.2	22.4	23.5	17.7	18.4	18.4	0.86
666.6	13	Mystic/ACSS/TW	556.5	24/7	20	2	856	18.2	19.9	21.9	22.9	17.5	18.2	17.5	0.91
664.8	16	Oswego/ACSS/TW	556.5	26/7	20	2	913	21.7	23.4	26.0	27.2	20.9	21.3	20.9	0.93
768.2	13	Maumee/ACSS/TW	636.0	24/7	20	2	987	21.0	23.0	25.3	26.5	20.2	21.0	20.2	0.98
762.8	16	Wabash/ACSS/TW	636.0	26/7	20	2	1047	24.9	26.8	29.7	31.2	23.4	24.4	24.4	0.99
957.2	7	Kettie/ACSS/TW	795.0	45/7	32	3	1078	16.8	18.1	19.7	20.4	16.3	16.8	16.8	1.06
946.7	10	Fraser/ACSS/TW	795.0	22/7	35	3	1154	21.1	22.9	25.1	26.2	20.3	21.1	20.3	1.08
966.2	13	Columbia/ACSS/TW	795.0	54/7	21	2	1338	26.4	28.3	31.3	32.8	24.9	25.9	24.9	1.09
959.6	16	Suwannee/ACSS/TW	795.0	26/7	22	2	1493	30.7	33.1	36.8	38.6	28.2	30.0	30.0	1.11
1080.0	7	...	900.0	45/7	20	2	1211	18.9	20.4	22.2	23.1	18.4	18.9	18.9	1.13
1168.1	5	Cheyenne/ACSS/TW	954.0	42/7	30	3	1259	17.2	18.3	19.7	20.4	16.7	17.1	17.1	1.16
1158.0	7	Genesee/ACSS/TW	954.0	45/7	33	3	1307	20.5	22.1	24.0	25.0	19.9	20.5	20.5	1.17
1158.4	13	Hudson/ACSS/TW	954.0	54/7	25	2	1488	31.1	33.5	37.0	38.8	28.7	30.5	28.7	1.20
1272.0	5	Catawba/ACSS/TW	1033.5	42/7	30	3	1371	18.7	20.0	21.5	22.3	18.2	18.7	18.7	1.20
1257.1	7	Nelson/ACSS/TW	1033.5	45/7	35	3	1416	22.1	23.8	25.8	26.9	21.4	22.1	22.1	1.21
1233.6	13	Yukon/ACSS/TW	1033.5	54/7	38	3	1584	33.2	36.3	40.0	41.9	32.0	33.2	33.2	1.25
1372.5	5	Truckee/ACSS/TW	1113.0	42/7	30	3	1479	20.2	21.5	23.2	24.0	19.6	20.2	20.2	1.25
1359.7	7	Mackenzie/ACSS/TW	1113.0	45/7	36	3	1531	23.9	25.7	27.9	29.0	23.1	23.8	23.8	1.26
1334.6	13	Thames/ACSS/TW	1113.0	54/7	39	3	1711	35.8	39.1	43.1	45.1	34.5	35.8	35.8	1.29
1467.8	5	St. Croix/ACSS/TW	1192.5	42/7	33	3	1583	21.6	23.1	24.9	25.8	21.0	21.6	21.6	1.29
1455.3	7	Miramichi/ACSS/TW	1192.5	45/7	36	3	1639	25.6	27.1	29.5	30.7	24.8	25.2	25.2	1.30
1433.6	13	Merrimack/ACSS/TW	1192.5	54/7	39	3	1838	38.4	42.0	46.3	48.4	37.0	38.4	38.4	1.34
1569.0	5	Platte/ACSS/TW	1272.0	42/7	33	3	1691	23.1	24.6	26.5	27.5	22.4	23.1	23.1	1.33
1557.4	7	Potomac/ACSS/TW	1272.0	45/7	36	3	1754	27.3	29.0	31.6	32.8	26.5	26.9	26.9	1.35
1533.3	13	Rio Grande/ACSS/TW	1272.0	54/7	39	3	1966	41.2	45.0	49.6	51.9	39.6	41.2	41.2	1.38
1657.4	7	Schuykill/ACSS/TW	1351.5	45/7	36	3	1866	29.1	30.9	33.6	34.9	28.2	28.6	28.6	1.39
1622.0	13	Pecos/ACSS/TW	1351.5	54/7	39	3	2105	45.0	49.3	54.3	56.9	43.3	45.0	45.0	1.42
1758.6	7	Pee Dee/ACSS/TW	1431.0	45/7	37	3	1980	30.9	32.8	35.7	37.1	29.4	30.4	30.4	1.43
1730.6	13	James/ACSS/TW	1431.0	54/7	39	3	2219	46.4	50.8	55.9	58.5	44.7	46.4	46.4	1.47
1949.6	7	Athabaska/ACSS/TW	1590.0	45/7	42	3	2197	34.3	36.5	39.3	40.8	31.7	33.5	33.5	1.50
1926.9	13	Cumberland/ACSS/TW	1590.0	54/7	42	3	2469	51.6	56.4	62.2	65.0	49.7	51.6	51.6	1.55
2153.8	8	Powder/ACSS/TW	1780.0	84/19	64	4	2510	42.1	45.5	49.6	51.7	40.7	42.1	42.1	1.60
2627.3	8	Santee/ACSS/TW	2156.0	84/19	64	4	3063	51.3	55.6	60.6	63.1	49.7	51.3	51.3	1.76

<sup>A</sup> Conversion factors:

- 1 emil = 5.067E-04 mm      1 kcmil = 0.5067<sup>2</sup> (0.0005067<sup>2</sup> mm<sup>2</sup>)
- 1 lb = 2.54E+01 mm (25.4 mm)      1 in. = 25.4 mm
- 1 lb/1000 ft = 1.4882 kg/km
- 1 ft = 3.048E-01 m (0.3048 m)
- 1 lb = 4.536E-01 kg (0.4536 kg)
- 1 kN = 2.248E+02 N (224.8 N)
- 1 kip = 4.448E+03 N (4448 N)
- 1 kip = 1000 lbf = 4.448 kN

<sup>B</sup> Code Words shown in this column are obtained from Specification B1006. They are provided for information only.

<sup>C</sup> See Explanatory Note 43.

**TABLE 3 Comparison of ACSS/TW With Equivalent Stranding of ACSR<sup>A</sup> and ACSS<sup>B</sup>**

ACSS/TW Type Number <sup>C</sup>	Conventional ACSR and ACSS Stranding <sup>D</sup>
5	42/7
7	45/7
8	84/19
10	22/7
13	54/7
13	24/7
16	26/7
23	30/7
23	30/19

<sup>A</sup> The equivalent stranding is that stranding of conventional ACSR that has the same area of aluminum and steel as a given ACSS/TW type.

<sup>B</sup> The equivalent stranding is that stranding of conventional ACSS that has the same area of aluminum and steel as a given ACSS/TW type.

<sup>C</sup> ACSS/TW type number is the approximate ratio of the steel area to the aluminum area in percent.

<sup>D</sup> See Specifications [B549B232/B232M](#) and [B856](#).

[B354](#) Terminology Relating to Uninsulated Metallic Electrical Conductors

[B498/B498M](#) Specification for Zinc-Coated (Galvanized) Steel Core Wire for Use in Overhead Electrical Conductors

[B500/B500M](#) Specification for Metallic Coated or Aluminum Clad Stranded Steel Core for Use in Overhead Electrical Conductors

[B502B502/B502M](#) Specification for Aluminum-Clad Steel Core Wire for Use in Overhead Electrical Aluminum Conductors

~~[B549](#) Specification for Concentric-Lay-Stranded Aluminum Conductors, Aluminum-Clad Steel Reinforced for Use in Overhead Electrical Conductors~~

~~[B606B606/B606M](#) Specification for High-Strength Zinc-Coated (Galvanized) Steel Core Wire for Aluminum and Aluminum-Alloy Conductors, Steel Reinforced~~

[B609/B609M](#) Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes

[B802/B802M](#) Specification for Zinc-5 % Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Aluminum Conductors, Steel Reinforced (ACSR)

~~[B803B803/B803M](#) Specification for High-Strength Zinc-5 % Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Use in Overhead Electrical Conductors~~

[B856](#) Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Supported (ACSS)

~~[B957B957/B957M](#) Specification for Extra-High-Strength and Ultra-High-Strength Zinc-Coated (Galvanized) Steel Core Wire for Overhead Electrical Conductors~~

~~[B958B958/B958M](#) Specification for Extra-High-Strength and Ultra-High-Strength Class A Zinc-5% Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Use in Overhead Electrical Conductors~~

[B1006](#) Specification for Electrical Overhead Conductor Code Word Names

[E29](#) Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

[E527](#) Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)

2.3 *Other Standards:*

[NBS Handbook 100](#) — Copper Wire Tables of the National Bureau of Standards<sup>3</sup>

[Aluminum Association Publication 50](#) Code Words for Overhead Aluminum Electrical Conductors<sup>4</sup>

### 3. Terminology

3.1 *Definitions*—For definitions of terms relating to conductors, also refer to definitions found in Specification [B354](#).

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *aluminum-clad*—aluminum bonded.

3.2.2 *galvanized*—zinc coated.

3.2.3 *Zn-5Al-MM*—zinc-5 % aluminum-mischmetal alloy coated.

3.3 *Abbreviations:*

<sup>3</sup> Available from National Technical Information Service (NTIS), 5301 Shawnee Rd., Alexandria, VA 22312, <http://www.ntis.gov>.

<sup>4</sup> Available from Aluminum Association, Inc., 1525 Wilson Blvd., Suite 600, Arlington, VA 22209, <http://www.aluminum.org>.

3.3.1 *ACSS/TW*—shaped wire aluminum conductor, steel supported.

3.3.2 *ACSS/TW/AW2*—~~supported with~~ ACSS using regular strength aluminum-clad core wires in accordance with Specification ~~B502~~B502/B502M.

3.3.3 *ACSS/TW/AW3*—~~supported with~~ ACSS using high-strength aluminum-clad core wires in accordance with Specification ~~B502~~B502/B502M.

3.3.4 *ACSS/TW/GA2*—ACSS using Class A zinc-coated regular strength steel core wires in accordance with Specification ~~B498~~B498/B498M.

3.3.5 *ACSS/TW/GA3*—ACSS using Class A zinc-coated high-strength steel core wires in accordance with Specification ~~B606~~B606/B606M.

3.3.6 *ACSS/TW/GA4*—ACSS using Class A zinc-coated extra-high-strength steel core wires in accordance with Specification ~~B957~~B957/B957M.

3.3.7 *ACSS/TW/GA5*—ACSS using Class A zinc-coated ultra-high-strength steel core wires in accordance with Specification ~~B957~~B957/B957M.

3.3.8 *ACSS/TW/GC2*—ACSS using Class C zinc-coated regular strength steel core wires in accordance with Specification ~~B498~~B498/B498M.

3.3.9 *ACSS/TW/MA2*—ACSS using Class A Zn-5A1-MM coated regular strength steel core wires in accordance with Specification ~~B802~~B802/B802M.

3.3.10 *ACSS/TW/MA3*—ACSS using Class A Zn-5A1-MM coated ~~high-strength~~ high-strength steel core wires in accordance with Specification ~~B803~~B803/B803M.

3.3.11 *ACSS/TW/MA4*—ACSS using Class A Zn-5A1-MM coated extra-high-strength steel core wires in accordance with Specification ~~B958~~B958/B958M.

3.3.12 *ACSS/TW/MA5*—ACSS using Class A Zn-5A1-MM coated ultra-high-strength steel core wires in accordance with Specification ~~B958~~B958/B958M.

#### 4. Ordering Information

4.1 Orders for material under this specification shall include the following information:

4.1.1 Quantity of each size,

4.1.2 Conductor size, kcmil area and diameter,

4.1.3 Conductor type and number of wires, aluminum and steel, ([Table 1](#) and [Table 2](#)),

4.1.4 Type of steel core wire and class (if applicable) of coating (see [5.2](#)),

4.1.5 Direction of lay of outer layer of aluminum wires if other than right-hand (see [7.77.6](#)),

4.1.6 Special tension test, if desired (see [14.3](#)),

4.1.7 Package size and type (see [16.1](#)),

4.1.8 Special package markings, if required (see [16.4](#)),

4.1.9 Heavy wood lagging, if required (see 16.3), and

4.1.10 Place of inspection (see Section 15).

## 5. Requirement for Wires

5.1 After stranding, the trapezoidal aluminum wires (see Definitions B354) shall conform to the requirements of O Temper in accordance with Specification B609/B609M except for shape and diameter tolerance requirements. The tensile strength and elongation requirements of trapezoidal wires shall be the same as for round wires of equal area. The area tolerances for trapezoidal wires shall be such that the finished conductor conforms to Section 13. The elongation shall not be less than 20 % after stranding.

5.2 Before stranding, the steel core wire shall meet the requirements of Specifications B498/B498M, B502/B502M, B606/B606M, B802/B802M, B803/B803M, B957/B957M, or B958/B958M whichever is applicable.

5.3 The stranded steel core shall meet the requirements of Specification B500/B500M or B549, as applicable.

## 6. Joints

6.1 Electric-butt welds, cold-pressure welds, and electric-butt, cold upset welds in the finished individual aluminum wires composing the conductor may be made during the stranding process. No weld shall occur within 50 ft (15 m) of a weld in the same wire or in any other wire of the completed conductor (see Explanatory Note 2).

6.2 There shall be no joints of any kind made in the finished coated steel wires.

## 7. Lay

7.1 The preferred length of lay of the outside layer of aluminum wires of shaped wire compact aluminum conductors, steel supported, having a stranded steel core and having multiple layers of aluminum wires is 11 times the outside diameter of the conductor but the lay shall not be less than 10 nor more than 13 times that diameter (see Explanatory Note 3) layer.

7.2 The preferred length of lay of the layer immediately beneath the outside layer of aluminum wires is 13 times the outside diameter of such layer, but the lay shall be neither shall not be less than 10 nor more than 16 times that diameter the outside diameter of that layer.

7.3 The length of lay of the inner layers of aluminum wires shall not be neither less than 10 nor more than 17 times the outside diameter of such that layer.

7.4 The lay length of the 6-wire layer of a 7, 19, or 37 wire stranded core shall be neither less than 16 nor more than 26 times the outside diameter of the 6-wire layer. (Outside diameter is three times normal core wire diameter.)

7.4 The lay length of the 12-wire layer of a 19 or 37 wire stranded core shall be neither less than 14 nor more than 22 times the outside diameter of the 12-wire layer. (Outside diameter is five times normal core wire diameter.) In a conductor having multiple layers of aluminum wires, the length of lay of any aluminum layer shall not be less than the length of lay of the aluminum layer immediately beneath it.

7.5 The lay length of the 18-wire layer of a 37-wire stranded core shall be not less than 14 or more than 20 times the outside diameter of the 18-wire layer. (Outsidelay of the various layers of steel wire shall conform to the requirements of Specification B500/B500M diameter is seven times nominal wire diameter.)

7.6 The direction of lay of the outside layer of aluminum wires shall be right hand unless otherwise specified in the purchase order.

7.7 The direction of lay of the aluminum and steel wires shall be reversed in successive layers.