

INSULATED CABLE ENGINEERS ASSOCIATION

GUIDE FOR SELECTING

AERIAL CABLE MESSENGERS

AND

LASHING WIRES

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INSULATED CABLE ENGINEERS ASSOCIATION, Inc.

**ICEA GUIDE FOR SELECTING
AERIAL CABLE MESSENGERS
AND
LASHING WIRES**

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FOREWORD

This guide publication for Selecting Aerial Cable Messengers, ICEA P-79-561, was developed by the Insulated Cable Engineers Association, Inc. (ICEA)

ICEA standards and guides are adopted in the public interest and are designed to eliminate misunderstanding between the manufacturer and the user and to assist the user in selecting and obtaining the proper product for his particular need. Existence of an ICEA standard or guide does not in any respect preclude the manufacture or use of products not conforming to the standard or guide. The user of this Guide is cautioned to observe any health or safety regulations and rules relative to the manufacture and use of cable made in conformity with this Guide.

Request for interpretation of this Guide must be submitted in writing to the Insulated Cable Engineers Association, Inc. P.O. Box P, South Yarmouth, Massachusetts 02664. An official written interpretation will be provided. Suggestions for improvements gained in the use of this Guide will be welcomed by the Association.

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PART 1

GENERAL1.1 SCOPE:

This guide has been prepared to facilitate the selection of messengers and lashing wires for both field and factory-assembled self-supporting aerial cables.

The cables used for attachment to the messenger shall be suitable for the service and shall be manufactured and tested in accordance with the applicable ICEA Standards and installed in accordance with the applicable provisions of the National Electrical Code (NFPA-70) and/or the National Electrical Safety Code/ANSI Standards Publication No. C2.

This Guide does not cover all possible messenger configurations. Reference should be made to other publications for service drop and neutral supported applications.

1.2 UNITS:

In this guide, units are expressed in the English system. To convert from an English unit to the appropriate metric unit, multiply the value of the English unit by the appropriate number from the following table:

<u>From</u>	<u>To</u>	<u>Multiplier</u>
inches (in.)	millimeters (mm)	25.4
ohms per 1000 feet (Ω /1000')	milliohms per meter (m Ω /m)	3.28
square inch (sq. in.)	square millimeter (mm ²)	645
thousand circular mils (kcmil)	square millimeter (mm ²)	0.5067
pounds per square inch (psi)	kilopascals (kPa)	6.89
pounds tension or force per inch (1 lb./in.)	newtons per meter (N/m)	175

1.3 REFERENCES:

See Appendix A for a complete list of referenced standards by title and date.

MESSENGERS AND LASHING WIRES2.1 MESSENGER SELECTION:

The type of messenger chosen for a particular installation normally depends upon three major factors:

- (a) Adequate tensile strength
- (b) Chemical and mechanical stability
- (c) Electrical characteristics

As the strength member of the aerial cable assembly, the messenger supports the conductors and acts as a shield against falling tree limbs. In some installations, the messenger may also serve as a neutral or grounded conductor. Operating as a system neutral, a properly selected messenger can offer good conductivity for protection against lightning and surge currents.

Special applications such as installations near chemical or paper manufacturing plants, oil refineries or seacoast locations may require messengers and lashing wires of more corrosion resistant metals such as Class C coated galvanized steel or stainless steel. Lashing wires may also be covered for additional physical protection.

2.2 MESSENGER CHARACTERISTICS:

In accordance with the referenced ASTM Standards, the physical and electrical properties of six widely used messenger types and constructions are detailed in Tables 1 through 4.

2.3 MESSENGER AND LASHING WIRE SIZES

Tables 5 and 6 present suggested messenger and lashing wire sizes based upon the total weight of the completed cable assembly.

2.4 LASHING WIRE LAY LENGTHS:

The maximum recommended lashing wire lay lengths are listed below:

	<u>Lay Length, Inches</u>
Multiplexed and Parallel Assemblies	10.0*
Reverse Twist Cable	10.0**

* Binder tape or lashing wire

** Lashing wire only - suggest a maximum of 5.0 ± 0.5 " if a binder tape is used.

SPAN LENGTHS3.1 RECOMMENDED MAXIMUM SPAN LENGTHS:

Tables 7 through 12 present the recommended maximum permissible span lengths allowed based on the aerial cable assembly weight. These data presume:

- (a) A heavy loading district
- (b) A maximum sag at 60⁰F of 1.667% of the span length
- (c) A maximum tension at 60⁰F of not more than 30% of the messenger minimum breaking strength.
- (d) A maximum tension under loading at 0⁰F of not more than 50% of the messenger breaking strength.