



SECTION 1061

ELECTRICAL CONDUCTORS

1061.1 General. This specification covers electrical conductors and associated material for use on highway construction projects. Contractor furnished equipment that will become the property of the Commission shall be of new stock unless stated otherwise in the contract documents. Electrical conductors and associated equipment shall be in accordance with applicable requirements of ICEA, IMSA, NEMA, EIA, NEC, NFPA and regulations of the National Board of Fire Underwriters and shall meet the approval of the engineer.

1061.2 Conductors. Except as noted, all conductors shall be soft drawn, Class B or C stranded copper wire in accordance with NEMA WC70/ICEA A-95-658. Solid conductors may be used only for grounding where connected to a ground rod.

1061.3 High Voltage Power Cable. The voltage rating for high voltage power cable supplying primary electrical power shall be 5 KV for primary voltages less than 5,000 volts, and 15 KV for voltages of 5,000 volts and greater. The specific type of cable shall be as recommended and approved by the utility company or municipality supplying power.

1061.4 Low Voltage Power Cable. Low voltage power cable shall be 600-volt, single conductor cable and thermoplastic or thermosetting cross-linked polyethylene insulated. All cable shall be plainly marked on the outside with the manufacturer's name and identification in accordance with industry practice. Insulation type shall be THHN/THWN-2 or XHHW-2. Average thickness of insulation shall be no less than specified in the following table, with a minimum thickness of 90 percent thereof.

Size (AWG or kcmil)	Thickness, Mils THHN/THWN-2)
14-12	15
10	20
8-6	30
4-2	40
1-4/0	50
250-500	60
501-1000	70
Size (AWG or kcmil)	Thickness, Mils THHN/XHHW-2)
14-10	30
8-2	45
1-4/0	55
213-500	65
501-1000	80

1061.5 Cable-Conduit. Cable-conduit shall consist of one to four low voltage power cables with an insulated sized electrical neutral and a bare safety ground, factory installed in black polyethylene conduit intended for direct burial. The conduit shall be plainly marked on the outside with manufacturer's name and identification in accordance with industry practice and

shall be in accordance with ASTM D 3485. Cable-conduit shall be accompanied by the manufacturer's certification stating the conduit is in accordance with the requirements of this specification.

1061.6 Pole and Bracket Cable. Pole and bracket cable located in the lighting or signal pole that supplies electrical power to highway lighting shall consist of two single conductors. Wire size shall be No. 10 AWG in accordance with the requirements of low voltage power cable. Insulation type shall be THHN/THWN-2 or XHHW-2. Average insulation shall be in accordance with [Sec 1061.4](#).

1061.7 Multi-Conductor Cable. Multi-conductor cable for traffic signals shall be No. 16 AWG, rated at 600 volts. The cable shall be in accordance with IMSA Specification No. 19-1 or No. 20-1.

1061.8 Induction Loop Detector Cable. Induction loop detector cable shall be single-conductor No. 14 AWG wire, with Type XHHW insulation, marked as such, rated at 600 volts. The cable shall be in accordance with IMSA Specification No. 51-7.

1061.9 Loop Detector Lead-In Cable. Lead-in cable used between the loop detector and the controller shall be two-conductor, twisted, shielded No. 14 AWG wire rated at 600 volts. The cable shall be in accordance with IMSA Specification No. 50-2.

1061.10 Certification. All cables and conductors shall be accompanied by certification from the supplier indicating: (1) the supplier is familiar with the requirements of these specifications and, (2) cable furnished was from a lot manufactured by (manufacturer's name) whose test results are in accordance with these specifications.