

SECTION 260519 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. This Section specifies the conductors and cabling for buildings and structures electrical systems under 600 volts. Wiring for fire alarm and communication systems is specified in their respective sections.
 - 2. Provide all labor, materials, and equipment as necessary to complete all work as indicated on the drawings, and as specified herein.
- B. Related Sections include the following:
 - 1. Applicable sections of Division 26 - Electrical

1.3 SUBMITTALS

- A. Tray cable.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70, “National Electrical Code”
- C. Furnish wire and cable that has been manufactured and factory tested in accordance with ASTM, ANSI, IPCEA, and NEMA.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. All wiring, branch circuits and feeders, 600 volts and below, shall be stranded copper, type THW, THWN, or THHN sized as indicated on the drawing. Aluminum conductors can be used for feeders above 150 amps.
- B. Feeder phase identification from left to right or front to back facing front of equipment shall be one of the following:

Phase A	Phase B	Phase C	Neutral	System
X	Y	Z	N	Any voltage
BLACK	RED	BLUE	WHITE	120/208 volt feeders
BROWN	ORANGE	YELLOW	GRAY	277/480 volt feeders

- C. In general, all branch circuit wiring shall be 600 volt type THHN or THWN, minimum wire size number 12 AWG, except where noted otherwise. Branch circuits 100 feet or longer shall be minimum size number 10 wire AWG.
- D. 120 volt control circuits may be number 14 AWG wire.
- E. Neutral conductor insulation color for emergency and “X” panel circuits shall be as noted above with a red tracer.
- F. Cable types MC, MI, NM, NMC, or NMS shall not be used unless specifically noted on the drawings or in the specifications.

2.2 TRAY CABLE

- A. Tray cable shall be three conductor with ground, size as shown on the drawings, UL listed TC for cable tray installation, and comprised of the following:
 - 1. Class B stranded, tinned, annealed copper conductors, each insulated with flame-retardant ethylene propylene rubber (EPR) rated for 90 deg C operation. Each insulated conductor shall be individually identified by color coding to differentiate one phase from the other.
 - 2. The three insulated conductors shall be cabled together with non-hygroscopic, flame-retardant fillers, a bare copper ground conductor with an overall binder tape applied.

3. A flame-retardant chlorinated polyethylene (CPE) jacket shall be applied over the cable assembly.

Use the following paragraph when single conductor tray cable is used.

- B. All new single conductor tray cable shall be covered with 3M Scotch 77 arc and fire proofing tape 2 inches wide. Apply two layers of tape, half lapped and wound in opposite directions
- C. Cable shall be manufactured by General Cable, Kerite, or Okonite.

2.3 WIRING CONNECTIONS

- A. Taps and splices in all feeder and branch circuit conductors larger than no. 8 AWG shall be made with approved solderless, pressure type bolted connectors. Splices in conductors no. 8 AWG and smaller may be made with preinsulated Scotchlock or Ideal Wing-Nut spring tension connectors.
- B. Termination of motor leads to branch circuit conductors shall be made with Burndy Clear UNITAP inspectable insulated multiple tap connectors sized for the conductors being terminated.

PART 3 - EXECUTION

3.1 CONDUCTORS

- A. All wiring shall be installed in rigid galvanized conduit, intermediate metal conduit (I.M.C.), flexible conduit, electrical metallic tubing (E.M.T.) or other approved raceway.
- B. Pulling compounds shall be compatible with the cable being installed in accordance cable manufacturers recommendations.
- C. A shared neutral between branch circuits shall not be used for single phase, phase-to-neutral loads at either 120 volts or 277 volts.
- D. Neutral conductors in junction boxes, pull boxes, outlet boxes, etc. shall be identified with the associated phase conductor circuit number.

3.2 TRAY CABLE

- A. In other than horizontal runs where side rails do not provide adequate containment of the cables, cable shall be fastened securely to transverse members of the tray.

END OF SECTION 260519