SECTION 26 05 19
LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

SECTION 26 05 19

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

THE CONTRACTOR IS REFERRED TO THE INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS, NYCHA CONTRACTS; THE SPECIAL NOTICE TO CONTRACTORS; THE FORM OF PROPOSAL; THE FORM OF BID BOND; DIVISION 01 - GENERAL REQUIREMENTS OF THE CONTRACT SPECIFICATIONS; THE CONTRACT DRAWINGS AND ALL AMENDMENTS AND ADDENDA THERETO; ALL OF WHICH GOVERN THE WORK OF THIS SECTION.

1.02 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).

B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2023.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. NFPA 70B - Recommended Practice for Electrical Equipment Maintenance; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.

F. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

G. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.

H. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

1.01 SECTION INCLUDES

A. Single conductor building wire.

B. Wiring connectors.

1.02 RELATED REQUIREMENTS

A. Section 20 05 33.13 – Conduit for Electrical Systems

1.03 1.03 REFERENCE STANDARD

A. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

B. Coordination:

1. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.

1.04 SUBMITTALS

A. See Section 01 33 00 for submittal procedures.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.

B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

2.02 CONDUCTOR AND CABLE MANUFACTURERS

A. Cerro Wire LLC: www.cerrowire.com.

B. Encore Wire Corporation: www.encorewire.com.

C. Southwire Company: www.southwire.com.

2.03 ALL CONDUCTORS AND CABLES GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70B. Provide products listed, classified, and labeled as suitable for the purpose intended.

B. Provide new conductors and cables manufactured not more than one year prior to installation.

C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

D. Conductor Material:
   1. Provide copper conductors only. Aluminum conductors are not acceptable. Conductor sizes indicated are based on copper.
   2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8 unless otherwise indicated.

E. Minimum Conductor Size: 12 AWG.
   1. Branch Circuits: 12 AWG.
   2. Control Circuits: As per manufacturers’ recommendation.

F. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

G. Conductor Color Coding:
   1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
   2. Color Coding Method: Integrally colored insulation.
   3. Color Code:
      a. 208Y/120 V, 3 Phase, 4 Wire System: Sequence shall match utility and existing building systems.
         1) Phase A: Blue.
         2) Phase B: Red.
         3) Phase C: Black.
         4) Neutral/Grounded: White.
      b. Equipment Ground, All Systems: Green.
      c. For control circuits, comply with manufacturer's recommended color code.
         1) 2.04 SINGLE CONDUCTOR BUILDING WIR

H. Description: Single conductor insulated wire.

I. Conductor Stranding:
   1. Branch Circuits:
      a. Size 10 AWG and Smaller: Solid.
      b. Size 8 AWG and Larger: Stranded.
   2. Control Circuits: Stranded.

J. Insulation Voltage Rating: 600 V.

K. Insulation:
   1. Copper Building Wire: Type THHN/THWN-2.

2.04 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Wiring Connectors for Splices and Taps:
   1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors, push-in wire connectors, mechanical connectors, or compression connectors.

C. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees Fahrenheit for standard applications and 302 degrees Fahrenheit for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.

2.05 WIRING ACCESSORIES

A. Electrical Tape:
   1. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees Fahrenheit.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that work likely to damage wire and cable has been completed.

B. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Installation in Raceway:
   1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
   2. Pull all conductors and cables together into raceway at same time.
   3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
   4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

C. Secure and support conductors and cables in accordance with NFPA 70

D. Install conductors with a minimum of 12 inches of slack at each outlet.

E. Neatly train and bundle conductors inside boxes.

F. Make wiring connections using specified wiring connectors.
   1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies.
   2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
   3. Do not remove conductor strands to facilitate insertion into connector.
   4. Clean contact surfaces on conductors and connectors to remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.

G. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with conductivity, insulation, and mechanical strength at least equivalent to un-spliced conductors.
   1. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
      b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
   2. Wet Locations: Use heat shrink tubing.

H. Insulate ends of spare conductors using vinyl insulating electrical tape.

I. Install firestopping to preserve fire resistance rating.

J. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

END OF SECTION 26 05 19 26 05 19