

SECTION 16123

BUILDING WIRE AND CABLE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Building wire and cable.
- B. Underground feeder and branch circuit cable.
- C. Service entrance cable.
- D. Armored cable.
- E. Metal clad cable.
- F. Wiring connectors and connections.

1.2 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code/California Electrical Code.

1.3 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Provide for each cable assembly type.
- C. Test Reports: Indicate procedures and values obtained.
- D. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors.
- E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum ten years documented experience.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. or testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown.

1.6 FIELD SAMPLES

- A. Provide under provisions of Division 1.
- B. Submit two lengths, each 18 inches of cable assembly from each reel.
- C. Select each length to include complete set of manufacturer markings.
- D. Attach tag indicating cable size and application information.

1.7 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on drawings.
- B. Conductor sizes are based on copper.
- C. Aluminum conductors shall not be used.
- D. Wire and cable routing shown on drawings is approximate unless dimensioned. Route wire and cable as required to meet project conditions.
- E. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.8 COORDINATION

- A. Coordinate Work under provisions of Division 1
- B. Determine required separation between cable and other work.
- C. Determine cable routing to avoid interference with other work.

PART 2 PRODUCTS

2.1 BUILDING WIRE AND CABLE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI/NFPA 70; Type THHN/THWN insulation for feeders and branch circuits.

2.2 UNDERGROUND FEEDER AND BRANCH CIRCUIT CABLE

- A. Description: ANSI/NFPA 70, Type UF.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation Temperature Rating: 90 degrees C.

2.3 WIRING CONNECTORS

- A. Solderless Pressure Connectors:
- B. Spring Wire Connectors:
- C. Compression Connectors:

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.

3.2 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.3 WIRING METHODS

- A. Concealed Dry Interior Locations: Use only building wire, Type THHN/THWN in raceway.
- B. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN in raceway.
- C. Above Accessible Ceilings: Use only building wire, Type THHN/THWN in raceway.
- D. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN in raceway.
- E. Exterior Locations: Use only building wire, Type THHN/THWN insulation in raceway.
- F. Use wiring methods indicated on drawings.

3.4 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Use solid conductor for feeders and branch circuits 10 AWG and smaller.
- C. Use stranded conductors for control circuits.
- D. Use conductor not smaller than 12 AWG for power and lighting circuits.
- E. Use conductor not smaller than 16 AWG for control circuits.
- F. Use 10 AWG conductors for 20 ampere, 120-volt branch circuits longer than 75 feet.
- G. Use 10 AWG conductors for 20 ampere, 277-volt branch circuits longer than 200 feet.
- H. Pull all conductors into raceway at same time.
- I. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- J. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- K. Clean conductor surfaces before installing lugs and connectors.
- L. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- M. Use high compression type connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- N. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.

- O. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Identify wire and cable under provisions of Section 16195.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.

3.6 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Division 1.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- D. Verify continuity of each branch circuit conductor.

END OF SECTION