DIVISION 16 - ELECTRICAL

Section 16120 - Wire and Cable

Introduction

All wire to be in conduit UNLESS APPROVED BY UA Electrical Inspector or Electrical Engineer.

Design is to make conduit system available for use in future.

Maximum of three circuits in each conduit for all new installations. Remodels may have six.

Where more than one 20 amp circuit is installed in a conduit with a common neutral, size neutral conductor to #10.

Part 1 – General

- Wiring of different system voltages shall be in separate raceways separated gutter compartments required.
- Wiring color coding to be as indicated under Section 16195.
- Grounding and grounded conductors to be identified at all visible points.
- In order to provide for future wiring when calculating box fill maximum fill shall be 70% of code fill requirements.
- All power and lighting conduits shall contain a ground conductor sized per NEC 250-95.
- All wire shall be new.
- All wire removed from conduit shall be discarded.

Part 2 - Products

- 600 volt insulation minimum on all cables unless specified otherwise.
- All wiring to be minimum #12 AWG stranded copper conductors. Only exception is for fire alarm circuits where #14 solid copper conductors shall be used.
- All wire is to be new and brought to the job site in unopened packages.
- Use THHN/THWN for all sizes between #12 and #4 AWG. Use XHHW-2 for all sizes #2 and larger. Do not use #3.
- Control cabling for instrumentation shall be twisted shielded pair No. 18 ga. Minimum copper conductors with overall foil shield where used for 4 to 20ma or 1 to 10 volt control signals. For 120 volt control signals use minimum of No. 14 ga. Stranded copper.
- For wire sizes #6 and smaller as appropriate for the devices, wiring may be connected using wire nut type of wiring connectors. Twist wires together before applying wire nut. *Interior of nuts shall be metallic. Submit samples for approval.*
- Joints in cables #6 and larger shall be made with solderless connectors. Either compression type connectors or split bolt connectors and a combination of rubber and plastic “Scotch 33” type of tape shall be used.

- Connections at terminal strips shall be made using either compression type of terminals or a ring or spade connector must be installed on the wire before connecting to a screw terminal. Wrapping stranded wire at a screw terminal is not permitted.

- *Suitcase type connectors are disapproved.*

Part 3 - Execution

- Wire shall be color coded throughout its length. Wires #8 and smaller shall be color coded using colored insulation. Wires #6 and larger shall be identified with multiple rings or spirals of color coding tape at each box or piece of equipment.

- Use fire alarm manufacturers standard color coding for fire alarm circuits.

- Conduit system shall be complete prior to pulling in wires.

- Use only UL approved wire lubricant. No grease or silicon which could damage the insulation of the cable shall be used.

- Any run of conduit which does not permit conductors to be pulled in readily shall be condemned and replaced to the satisfaction of the Engineer.

- When pulling in cables for feeders use power operated pulling equipment only where specifically approved by Engineer.

- Protect wires at all locations where exiting from conduits.

- Carefully cable all wires in panelboards, gutters, and wireways. Use tie wraps where needed.

- Do not use tape to cable wires either for pulling into conduits, or for cabling in panels, gutters, or wireways.

- Do not combine systems of various voltages or circuits from separate sources in the same conduit system.

    - Exceptions

        - Readily identifiable low voltage conductors for lighting system control may be run in the same conduit as the power conductors for a terminal drop to a light switch or to a single light fixture.
        - Motor control wires (not including control wiring for a VFD) may be installed in the same conduit as the power wiring if they can be installed without damaging the smaller wiring.

End of Section 16120