

BUILDING WIRE AND CABLE

DESIGN GUIDELINES

1. Summary:
 - a. This section provides guidelines and standards for:
 - Building Wire
 - Low Voltage Cable
 - Medium Voltage Cable
2. Design
 - a. All conductors shall be stranded copper.
 - b. Minimum conductor size:
 - Power and Lighting Circuits: #12 AWG
 - Control Circuits: #18 AWG
 - c. THHN/THWN insulation shall be used on service entrance, feeders, branch circuits and class 1 control circuits (600V and below).
 - d. EPR insulation – PVC jacket, Shielded, 133% Insulation Level shall be use on medium voltage cable.
 - e. All new or reused medium voltage cable shall be tested by Low Frequency testing procedures before installation or reuse.
 - f. Refer to Conduits, Fittings and Boxes for permitted uses of MC cable.
 - g. All electrical circuits will be pulled with dedicated neutrals. The neutral conductor shall be numbered and identified with the associated phase conductor at the panel board as well as all junction boxes.
 - h. Any electrical wiring that is connected to the emergency generator shall be in its own conduit system. Do not combine with normal power. This includes legally-required and optional standby.
 - i. All old conduit and wiring serving lighting, receptacles and other devices to be demolished shall be removed and disposed of. Existing homeruns that meet the requirements of these specifications may be retained for reuse.
 - j. Feeder conduits that are to be reused shall be upgraded to THHN/THWN and have neutral and ground wires installed (Or as instructed by owner).
3. Wire Color Coding

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480/277V

<u>Phase</u>	<u>Color</u>
A	Brown
B	Orange
C	Yellow
Neutral	Gray
Ground	Green

208/120V & Medium Voltage

<u>Phase</u>	<u>Color</u>
A	Black
B	Red
C	Blue
Neutral	White
Ground	Green

277 Volt – The colors used for switch legs on 277V lighting circuits shall be the color of the phase conductor that provides power to that circuit with purple being used for travelers on 3-way and 4-way switches. Also, the phase conductor shall be labeled at each switch with its designated branch circuit number.

120 Volt – The colors used for switch legs on 120V lighting circuits shall be the color of the phase conductor that provides power to that circuit, with purple being used for travelers on 3-way and 4-way switches. Also, the phase conductor shall be labeled at each switch with its designated branch circuit number.

4. Related Sections
 - a. Conduits, Fittings and Boxes
 - b. Identifications of Electrical Systems

EQUIPMENT and PRODUCT REQUIREMENTS

1. Wire Connectors:
 - a. All branch circuit connections shall be made utilizing twist-on wire connectors (wire-nut) or equal.
 - b. Conductors shall not be spliced with “pinch connectors” or “butt splices”.
 - c. Push-in style wire connectors (WAGO Pushwire, Ideal In-Sure Push-in, etc.) are NOT allowed.
 - d. Wiring to fixtures shall be “hard-wired” (no “plug-in” type, i.e. Reloc, Holoflex, or other modular wiring system).
2. MC Cable:
 - a. MC Cable shall be steel or aluminum.

END OF SECTION