

**GENERAL:**

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The scope of this document is to provide requirements for low voltage (600 volts and below) electrical power conductors and cables.

**DESIGN GUIDELINES:**

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1. All conductors shall be copper.
2. Dedicated neutral conductors shall be used for all single phase loads unless approved in writing by the project manager.
3. All neutral conductors will be a minimum of full size. Designer will evaluate the need for oversized neutral conductors.
4. Circuits that are dedicated to power pre-wired equipment such as office furniture partitions that require multiple branch circuits may use shared neutrals if the following conditions are met.
  - 4.1. Line to neutral voltage is 120 volts (nominal).
  - 4.2. The neutral conductor is oversized (#10 AWG minimum for a 20 amp circuit).
  - 4.3. The pre-wired equipments have oversized neutral conductors (#10 AWG minimum for a 20 amp circuit).
5. Minimum Conductor size is #12 AWG.
6. Minimum Insulation rating is 90°C.
7. Conductor Rating:
  - 7.1. For 100 amps and below: Conductor shall be rated per the 60°C table.
  - 7.2. For over 100 amps: Conductor shall be rated per the 75°C table.
8. MC Cable is allowed in the following locations for 20 amp circuits:
  - 8.1. In dry locations
  - 8.2. Above ceiling suspended ceilings
  - 8.3. In walls with cavities between and through structural members
  - 8.4. In cable trays
  - 8.5. Lighting fixture whips
9. MC Cable shall not be permitted in the following locations:
  - 9.1. MU Health Care Facilities, except as instructed in the MUHC Planning, Design and Construction Guidelines (see [Appendix for UM Health Care Facilities](#))
  - 9.2. Where subject to physical damage
  - 9.3. In damp and wet locations
  - 9.4. Underground
  - 9.5. In masonry or concrete walls

- 9.6. Where exposed to corrosive fumes or vapors
- 9.7. Embedded in plaster finish
- 9.8. Sleeved through conduits
- 9.9. Where exposed to physical touch and visual sight
  - 9.9.1. Exceptions
    - 9.9.1.1. Mechanical and electrical rooms above 7'.
    - 9.9.1.2. Drops to suspended lighting when painted to match ceiling above.

10. MC Cable installation requirements are as follows:

- 10.1. Installed per NFPA 70
- 10.2. Installed with listed fittings permissible by the manufacturer
- 10.3. Homeruns from power source to areas served shall be prohibited
  - 10.3.1. Conduits shall be run from the source of power to an accessible above ceiling J-box, receptacle, switch or other device within room or area to be served
  - 10.3.2. MC lengths shall be limited to 50'
- 10.4. Anti-short bushings to be used at terminations
- 10.5. Cable with 0-10 volt conductors is permissible for lighting
- 10.6. Lighting is allowed to be daisy chained with full sized MC cable
  - 10.6.1. No more than two MC cables terminated per light fixture

**NOT PERMITTED:**

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- 1. No aluminum conductors shall be used.

Pre-wired systems such as type AC (armored cable) and type NM (nonmetallic-sheathed cable) shall not be used

**REFERENCES:**

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260519 LV Electrical Power – MC Diagram