

**(K) Wiring Methods and Materials.** Wiring methods and materials shall comply with the following:

- (1) Unless modified elsewhere in this article, wiring methods and materials for power distribution shall comply with Chapter 3. Wiring shall be suitable for its use and installation and shall be listed and labeled.

*Exception: This requirement shall not apply to wiring that is part of listed and labeled equipment.*

- (2) The following wiring methods shall not be permitted:
  - a. Integrated gas spacer cable: Type IGS (Article 326)
  - b. Concealed knob-and-tube wiring (Article 394)
  - c. Messenger-supported wiring (Article 396)
  - d. Open wiring on insulators (Article 398)
  - e. Outdoor overhead conductors over 600 volts (Article 395)
- (3) Wiring in areas under a raised floor that are constructed and used for ventilation as described in 645.5(E) shall be permitted to use the wiring methods described in 645.5(E) if the conditions of 645.4 are met.
- (4) Installation of wiring for remote-control, signaling, and power-limited circuits shall comply with Part II of Article 725.
- (5) Installation of optical fiber cables shall comply with Part V of Article 770.
- (6) Alternate wiring methods as permitted by Article 645 shall be permitted for MDCs, provided that all of the conditions of 645.4 are met.

**(L) Service Equipment.** For an MDC that is designed such that it can be powered from a separate electrical service, the service equipment for control and protection of services and their installation shall comply with Parts I, V, VI, and VII of Article 230. The service equipment and their arrangement and installation shall permit the installation of the service-entrance conductors in accordance with Parts I and IV of Article 230. Service equipment shall be listed and labeled and marked as being suitable for use as service equipment.

**(M) Disconnecting Means.** An approved means shall be provided to disconnect power to all electronic equipment in the MDC in accordance with 645.10. There shall also be a similar approved means to disconnect the power to all dedicated HVAC systems serving the MDC that shall cause all required fire/smoke dampers to close.

**Δ 646.4 Applicable Requirements.** All MDCs shall be listed and labeled and comply with 646.3(M) and 646.5 through 646.9 or comply with this article.

*Informational Note: See UL Subject 2755, Outline of Investigation for Modular Data Centers, for information on listing requirements for MDCs.*

An MDC must be listed and labeled. An evaluation of the equipment, installed wiring, lighting, and work space is conducted as part of the listing. Any field-installed wiring — including supply circuits and data circuits — is required to comply with the appropriate NEC® article.

**Δ 646.5 Nameplate Data.** A permanent nameplate shall be attached to each equipment enclosure of an MDC and shall be plainly visible after installation. The nameplate shall include the following information, as applicable:

- (1) Supply voltage, number of phases, frequency, and full-load current. The full-load current shown on the nameplate shall not be less than the sum of the full-load currents required for all motors and other equipment that may be in operation at the same time under normal conditions of use. Where unusual type loads, duty cycles, and so forth, require oversized conductors or permit reduced-size conductors, the required capacity shall be included in the marked full-load current. Where more than one incoming supply circuit is to be provided, the nameplate shall state the preceding information for each circuit. For listed equipment, the full-load current shown on the nameplate shall be permitted to be the maximum, measured, 15-minute, average full-load current.

*Informational Note No. 1: See 430.22(E) and 430.26 for duty cycle requirements.*

- (2) For MDCs powered by a separate service, the short-circuit current rating of the service equipment provided as part of the MDC.

*Informational Note No. 2: This rating may be part of the service equipment marking.*

- (3) For MDCs powered by a separate service, if the required service as determined by Parts III and IV of Article 220 is less than the rating of the service panel used, the required service shall be included on the nameplate. As an alternative to the feeder and service load calculations required by Parts III and IV of Article 220, feeder and service load calculations for new, future, or existing loads shall be permitted to be used if performed by qualified persons under engineering supervision.

*Informational Note No. 3: Branch circuits supplying ITE loads are assumed to be loaded not less than 80 percent of the branch-circuit rating with a 100 percent duty cycle.*

- (4) Electrical diagram number(s) or the number of the index to the electrical drawings.
- (5) For MDC equipment enclosures that are not powered by a separate service, feeder, or branch circuit, a reference to the powering equipment.
- (6) Manufacturer's name or trademark.

## 646.6 Supply Conductors and Overcurrent Protection.

A permanent nameplate is required on each enclosure to indicate the required supply and the full-load current. The full-load