(2) Physically protected using an approved method, such that the conductor assembly is flame retardant and suitable for a temperature of not less than 200°C (392°F).

(B) Traveling Cables. Traveling cables used as flexible connections between the elevator or dumbwaiter car or counterweight and the raceway shall be of the types of elevator cable listed in Table 400.4 or other approved types.

(C) Other Wiring. All conductors in raceways shall have flame-retardant insulation.

Conductors shall be Type MTW, TF, TFF, TFN, TFFN, THHN, THW, THWN, TW, XHHW, hoistway cable, or any other conductor with insulation designated as flame retardant. Shielded conductors shall be permitted if such conductors are insulated for the maximum nominal circuit voltage applied to any conductor within the cable or raceway system.

(D) Insulation. All conductors shall have an insulation voltage rating equal to at least the maximum nominal circuit voltage applied to any conductor within the enclosure, cable, or raceway. Insulations and outer coverings that are marked for limited smoke and are so listed shall be permitted.

620.12 Minimum Size of Conductors. The minimum size of conductors, other than conductors that form an integral part of control equipment, shall be in accordance with 620.12(A) and (B).

(A) Traveling Cables.

(1) Lighting Circuits. For lighting circuits, 14 AWG copper, 20 AWG copper or larger conductors shall be permitted in parallel, provided the ampacity is equivalent to at least that of 14 AWG copper.

Section 310.10(G) provides the conditions under which conductors can be installed in parallel for power and lighting circuits. One of those conditions stipulates that the minimum size for parallel conductors is 1/0 AWG. In high-rise structures, the length of the elevator traveling cables makes it hard to maintain an acceptable level of voltage drop for equipment on or within the car. To require compliance with the 310.10(G) requirements for parallel conductors would result in exceptionally large traveling cables.

Section 620.12(A)(1) amends these general requirements for parallel conductors and permits 20 AWG and larger conductors to be installed in parallel for lighting circuits, provided that the combined ampacity of the paralleled conductors is not less than that of a 14 AWG copper conductor (e.g., 15 amperes for 60°C). This requirement is unique to Article 620 and is an example of the structure of the *NEC* as set forth in 90.3.

N **(2) Class 2 and Communications Circuits.** Communications cables used for Class 2 or communications circuits shall have a current limit equal to or greater than the current required to power the powered Class 2 or communications device. Communications cables shall comply with 800.179. The minimum conductor size for communications circuits shall be 24 AWG.

(3) Other Circuits. For other circuits, the minimum size conductor shall be 20 AWG copper.

N **(4) Paralleled Conductors.** Where ampacity requirements or voltage drop conditions in a traveling cable circuit prevent the use of a single conductor of AWG 14 or smaller, conductors shall be permitted in parallel in compliance with all the following:

(1) Each conductor shall be no smaller than 20 AWG copper.
(2) The paralleled conductors shall be the same type and have the same ampacity rating.
(3) No more than 3 conductors shall be paralleled.
(4) The overcurrent protection shall be such that the ampacity of each individual conductor will not be exceeded if one of the parallel conductors becomes inadvertently disconnected.

(B) Other Wiring. 24 AWG copper. Smaller size listed conductors shall be permitted.

With the extensive use of electronics with lower currents, conductors smaller than 24 AWG are permitted by 620.12(B), provided that they are listed and have the necessary strength and durability for the conditions to which they will be exposed. One application is the shielded cables interconnecting various microprocessors in an elevator distributed control system.

Δ **620.13 Feeder and Branch-Circuit Conductors.** Conductors shall have an ampacity in accordance with 620.13(A) through (D). With generator field control, the conductor ampacity shall be based on the nameplate current rating of the driving motor of the motor-generator set that supplies power to the elevator motor.

Informational Note No. 1: The heating of conductors depends on root-mean-square current values, which, with generator field control, are reflected by the nameplate current rating of the motor-generator driving motor rather than by the rating of the elevator motor, which represents actual but short-time and intermittent full-load current values.

Informational Note No. 2: See Informational Note Figure 620.13.

(A) Conductors Supplying Single Motor. Conductors supplying a single motor shall have an ampacity not less than the percentage of motor nameplate current determined from 430.22(A) and (E).

Informational Note: Some elevator motor currents, or those motor currents of similar function, exceed the motor nameplate value. Heating of the motor and conductors is dependent on the root-mean square (rms) current value and the length of operation time. Because this motor application is inherently intermittent duty, conductors are sized for duty cycle service as shown in Table 430.22(E).

(B) Conductors Supplying a Single Motor Controller. Conductors supplying a single motor controller shall have an ampacity not less than the motor controller nameplate current rating, plus all other connected loads. Motor controller nameplate current ratings shall be permitted to be derived based on the rms value of the motor current using an intermittent duty cycle and other control system loads, if present.