527 CMR 12.00: 2002 MASSACHUSETTS ELECTRICAL CODE
(AMENDMENTS)

The 2002 Massachusetts Electrical Code (527 CMR 12.00) of the Board of Fire Prevention Regulations shall be the 2002 National Electrical Code modified as follows:

Delete Article 80 and insert the following provisions ahead of the body of the Code:

Rule 1. All installations, repairs and maintenance of electrical wiring and electrical fixtures used for light, heat, power, signaling and communications purposes in buildings and structures subject to the provisions of M.G.L. c. 143 shall be reasonably safe to persons and property.

Rule 2. Conformity of installations, repairs, and maintenance of electrical wiring and electrical fixtures used for light, heat, power, signaling and communications with applicable regulations set forth in the Code, which is hereby filed with the Secretary of the Commonwealth shall be considered as complying with these requirements.

Rule 3. Additions or modifications to an existing installation shall be made in accordance with this Code without bringing the remaining part of the installation into compliance with the requirements of this Code. The installation shall not create a violation of this Code, nor shall it increase the magnitude of an existing violation.

Rule 4. Where an actual hazard exists, the owner of the property shall be notified in writing by the authority enforcing this Code. (See M.G.L. c. 166, §§ 32 and 33, for enforcement authority.)

Rule 5. References are made in this code to other standards. Those standards, where duly adopted by law or regulation, may be enforced by the appropriate official. They are not considered part of this Code and they are not enforceable under M.G.L. c. 143 § 3L.

Rule 6. The approving authority may be guided in his approval of specific items of equipment and materials contemplated by the Code, by proof that such equipment and materials have been tested and conform to suitable recognized industry standards.

Rule 7. 527 CMR 12.00 shall be effective on all installations for which a permit has been granted subsequent to December 31, 2001.

Rule 8. In accordance with the provisions of M.G.L. c. 143 § 3L, the permit application form to provide notice of installation of wiring shall be uniform throughout the Commonwealth, and applications shall be filed on the prescribed form.

Rule 9. Installations covered by 527 CMR 12.00 shall also comply with M.G.L. c. 141.

Rule 10. Electrical installations shall not be concealed or covered from view until inspected by the inspector of wires within and not more than 24 hours for exterior excavations nor more than 72 hours for interior installations after proper notice to the inspector, Saturdays, Sundays, and holidays excluded.

90.4. Revise the first paragraph to read as follows:

> **90.4 Enforcement.** This Code shall be used by the authority enforcing the Code and exercising legal jurisdiction over electrical installations. The authority having jurisdiction of enforcement of the Code shall accept listed and labeled equipment or materials where used or installed in accordance with instructions included with the listing or labeling. The authority shall have the responsibility for deciding upon the approval of unlisted or unlabeled equipment and materials, and for granting the special permission contemplated in a number of the rules.

90.6. Revise to read as follows:

> **90.6 Interpretations and Appeals**. To promote uniformity of interpretation and application of the provisions of this Code, interpretations may be requested from the Board of Fire Prevention Regulations. Requests for interpretation shall be in the form of a question that can receive a "Yes" or "No" answer. This in no way supersedes the right of any individual who is aggrieved by the decision of an Inspector of Wires to appeal from that decision to the Board of Electricians' Appeals in accordance with M.G.L. c. 143 §3P. The Board of Fire Prevention Regulations shall, upon the request of the Board of Electricians' Appeals, render interpretations to the Board of Electricians' Appeals.
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> It is customary to revise this Code periodically to conform with developments in the art and the result of experience, and the current edition of the Code shall always be used.

90.10. Add new section numbered 90.10 to read:

> **90.10. References to Commonwealth of Massachusetts Codes, Regulations, and Laws.** References are included in Appendix A for Building Codes, Elevator Regulations, Plumbing and Fuel Gas Code, Board of Fire Prevention Regulations, Division of Industrial Safety, State Sanitary Code, Architectural Barriers Regulations, Permit Applications, and Chapters of the General Laws. See Appendix A.

Article 100, Structure. Revise the definition to read as follows:

> A combination of materials assembled at a fixed location to give support or shelter.

110.14(A). Delete the last sentence of the first paragraph and insert the following two sentences in its place:

> Connection by means of wire binding screws or studs and nuts having upturned lugs or equivalent shall be permitted for 10 AWG or smaller solid conductors. Where stranded conductors are terminated on and not looped through such terminals, the terminals shall be identified for such use, or the strands at the terminals shall be made solid.

110.26(A)(1). Add a fourth paragraph (d) as follows:

(d) Adequate Accessibility. By special permission, smaller spaces may be permitted where it is judged that the particular arrangement of the installation will provide adequate accessibility.

200.6(D). Revise Section 200-6(d) to read as follows:

(D) Grounded Conductors of Different Systems. Where conductors of different systems are installed in the same raceway, box, auxiliary gutter, or other types of enclosures, each grounded conductor shall have an outer covering similar to 200.6(A) or (B), and shall be identified by system. Where the identification is by color, white shall be used on systems not exceeding 150 volts to ground, and gray shall be used for systems exceeding 150 volts to ground. Where additional systems are present, each other system grounded conductor shall have an outer covering of white with an identifiable colored stripe other than green running along the insulation, or other and different means of identification as allowed by 200.6(A) or (B).

200.7(C)(2). Revise the last sentence to read as follows:

In these applications reidentification of the conductor with white or gray insulation or with three continuous white stripes shall not be required.

210.8(B). Add a fourth item to the list as follows:

(4) Outdoors, where installed as required by 210.63.

210.12. Revise (B) and add a fine print note and a new (C) as follows:

(B) Dwelling Unit Bedrooms. All 15- and 20-ampere 120-volt single-phase branch circuits that supply dwelling unit bedrooms shall be protected by an arc-fault circuit interrupter (AFCI) listed to provide protection for the entire branch circuit.

FPN: Where installed as the first device on a branch circuit, some receptacles are listed as providing AFCI protection for the entire branch circuit.

(C) Overcurrent Device Replacements. Where panelboards are replaced that contain one or more circuits requiring AFCI protection by this or other sections of the Code, AFCI protection shall be provided for such circuits.

210.25. Add an exception as follows:

Exception: Branch circuits supplying lighting outlets in common areas on the same floor as a dwelling unit in a new or existing two-family or an existing three-family building shall be permitted to be supplied from equipment that supplies one or more of those dwelling units.

210.52. Revise the second sentence to read as follows:

> The receptacles required by this section shall be in addition to any receptacle that is part of a luminaire (lighting fixture) or appliance, or that is controlled by a wall switch in accordance with 210.70(A)(1) Exception No. 1, or that is located within cabinets or cupboards, or that is located over 1.7 m (5½ feet) above the floor.

220.3(A). Revise the listed items in Table 220.3(A) as follows:

Type of Occupancy	Unit Load Volt-Amperes per Square Meter	Unit Load Volt-Amperes per Square Foot
Banks	28[b] (reduced from 39)	2½[b] (reduced from 3½)
Garages—commercial (storage)	3 (reduced from 6)	¼ (reduced from ½)
Office Buildings	33[b] (reduced from 39)	3[b] (reduced from 3½)
Warehouses (storage)	6 (increased from 3)	½ (increased from ¼)

225.30(E). Revise to read as follows:

> **(E) Documented Switching Procedures.** Additional feeders or branch circuits shall be permitted to supply large capacity multibuilding industrial or institutional installations under single management where documented safe switching procedures are established and maintained for disconnection.

225.32. Revise by adding the following sentence:

> Where the branch circuit or feeder disconnecting means is installed outside a building or structure, it shall be attached to or within 3 m (10 ft) of the building or structure served.

225.32 Exception No. 1. Revise to read as follows:

> **Exception No. 1:** For large capacity multibuilding industrial or institutional installations under single management where documented safe switching procedures are established and maintained for disconnection, and where the disconnection is monitored by qualified individuals, the disconnecting means shall be permitted to be located elsewhere on the premises.

230.40. Amend Exception No. 1 to read:

> **Exception No. 1:** By special permission, where there is no available space for service equipment accessible to all the occupants, buildings with more than one occupancy shall be permitted to have one set of service entrance conductors run to each occupancy or to a group of occupancies.

230.70(A)(1). Revise to read as follows:

(1) Readily Accessible Location. The service disconnecting means shall be installed at a readily accessible location either outside and attached to or within 3 m (10 ft) of the building or structure served, or inside nearest the point of entrance of the service conductors.

230.70(D). Add a new 230.70(D) as follows:

(D) Meter Disconnects. Where the serving utility requires a disconnecting means for its metering equipment, the meter disconnect(s) shall be permitted to be classified as equipment connected on the supply side of the service disconnect provided the installation complies with 230.70(D)(1) through 230.70(D)(4).

(1) Service Disconnect Provided. A separate disconnecting means that complies with Part V of Article 230 shall be installed, and shall be located as provided in 230.70(A)(1).

(2) Rating. A meter disconnect shall be capable of interrupting the load served.

(3) Marking. A meter disconnect shall be legibly field marked on its exterior in a manner suitable for the environment substantially as follows:

METER DISCONNECT
NOT SERVICE EQUIPMENT

(4) Grounding. A meter disconnect shall be grounded. The grounding connections shall be permitted to be in accordance with 250.142(A)(1).

(5) Service Equipment. A properly qualified, located, marked, and wired service disconnect shall be permitted to be installed ahead of metering equipment in lieu of a meter disconnect.

230.72(C). Add a second exception as follows:

Exception No. 2: In a multiple occupancy building where each occupant has grouped, readily accessible means to disconnect all ungrounded conductors within that occupancy with no more than six motions of the hand, the service disconnecting means shall be permitted to be accessible to authorized management personnel only.

240.24(B). Add a third exception as follows:

Exception No. 3: In a multiple occupancy building where each occupant has grouped, readily accessible means to disconnect all ungrounded conductors within that occupancy with no more than six motions of the hand, the overcurrent devices protecting the source of supply to that occupancy shall be permitted to be accessible to authorized management personnel only.

250.30(A)(2)(b). Revise to read as follows:

> **(b) Multiple Separately Derived Systems.** Where more than one separately derived system is connected to a common grounding electrode conductor as provided in 250.30(A)(3), the common grounding electrode conductor shall not be smaller than 3/0 AWG copper or 250 kcmil aluminum.

250.32(A). Revise the Exception to read as follows:

> **Exception:** A grounding electrode at a separate building or structure shall not be required where no branch circuits originate at that building or structure. The branch circuit(s) shall include an equipment grounding conductor for grounding the noncurrent-carrying parts of all equipment.

P-37A **250.52(A)(3).** Add a fine print note as follows:

> FPN: These electrodes, where available due to the footings not yet having been poured, are usually far lower in impedance than rod, pipe, or plate electrodes.

250.130(C). Delete this subsection.

300.4(D). Delete this subsection.

300.5(A). Add a fine print note to this subsection as follows:

> FPN: Cables suitable for direct burial are often sleeved in various raceways for design reasons. If such cable is installed with sufficient cover for direct burial, then the characteristics of that raceway need not be evaluated. Other rules of this Code that apply to raceways generally may apply. See 300.5(H).

300.11(A). Revise this subsection as follows:

> I. Delete the third sentence in 300.11(A) which reads: “Support wires and associated fittings that provide secure support and that are installed in addition to the ceiling grid support wires shall be permitted as the sole support.”
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> II. Revise 300.11(A)(2) to read as follows:
> **(2) Nonfire-Rated Assemblies.** Branch-circuit wiring associated with equipment that is located within, supported by, or secured to a suspended ceiling that is not an integral portion of a fire-rated floor/ceiling or roof/ceiling assembly shall be permitted to be supported by the ceiling support wires.
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> III. Delete 300.11(A)(2) Exception.

300.17. Add a second paragraph as follows:

Where different raceway wiring methods are joined together without a pull point at the transition, there shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, e.g., conduit bodies and boxes.

300.37. Insert the following sentence following the first sentence:

Where rigid nonmetallic conduit is used, it shall be Schedule 80 or it shall be suitably encased in not less than 50 mm (2 in.) of concrete.

310.8(D). Add an exception as follows:

Exception: For drip loops installed to comply with 230.54(F), or for similar drip loops formed in branch-circuit or feeder conductors, conductors extending not more than 900 mm (3 ft) from a cable sheath or from a raceway shall not be required to be sunlight resistant.

310.12(C). Add a second paragraph, exception, and fine print note as follows:

Ungrounded system conductors of electric light and power circuits shall be identified by phase or line, and by system where more than one voltage system is present in the building. The identification shall be visible at every splice and termination in the wiring system. The method of identification of each conductor, whether by color coding, marking tape, tagging, or other equally effective means, shall be permanently posted at each switchboard and panelboard in the building.

Exception: Identification shall be permitted to be omitted on ungrounded conductors in multiconductor cables where only one voltage system is present at the point of splice or termination.

(FPN): An example of color coding is:
120/240 volt, single-phase, three-wire: Black, Red
120/208 volt, three-phase, four-wire: Black, Red, Blue
277/480 volt, three-phase, four-wire: Brown, Orange, Yellow

Table 310.15(B)(2)(a)**.** Revise as follows:

Number of Current-Carrying Conductors	**Percent of Values in Tables 310.16 through 310.19, as Adjusted for Ambient Temperature if Necessary**
4 through 6	80
7 through 24	70
25 through 42	60
43 and above	50

FPN: Overheating may occur where continuous, fully loaded conductor diversity is less than 50 percent and the number of current-carrying conductors exceeds nine. See 310.10.

310.15(B)(2)(a)**.** Revise Exception No. 5 to read as follows:

> **Exception No. 5:** Derating factors shall not apply where 30 or fewer current-carrying conductors occupy no more than 20 percent of the interior cross sectional area of Cellular Concrete Floor Raceways, Article 372; Cellular Metal Floor Raceways, Article 374; and Underfloor Raceways, Article 390.

334.10(3)**.** Add an exception as follows:

> **Exception:** Type NM, Type NMC, and Type NMS cables shall be permitted to be used in one and two-family dwellings, multi-family dwellings and other structures of Type I and II construction, provided that where such dwellings or structures exceed three floors above grade Type NM, NMC and Type NMS cables shall not be permitted to leave the floor or dwelling unit from which the cables originated.

334.12(1)**.** Revise to read as follows:

> In dropped or suspended ceilings in other than one- and two-family and multifamily dwellings, unless run so as to closely follow the surface of framing members, running boards, or the equivalent, or unless connected to luminaires (lighting fixtures) in accordance with 334.30(B)(2).

334.17. Revise to read as follows:

> **334.17 Through or Parallel to Framing Members.** Types NM, NMC, or NMS cable shall comply with 300.4 where installed through studs, joists, rafters, and similar members. Grommets or bushings shall be used in metal studs as required in 300.4(B)(1), shall remain in place during the wall finishing process, shall cover the complete opening, and shall be listed for the purpose of cable protection.
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> In both exposed and concealed locations, where the cable is installed parallel to framing members, such as joists, rafters, or studs, the cable shall be secured so that the nearest outside surface of the cable is not less than 19 mm (¾ in.) from the nearest edge of the framing member where nails or screws are likely to penetrate. Where this distance cannot be maintained, the cable shall be protected from penetration by nails or screws by a steel plate, sleeve, or equivalent at least 1.6 mm ($^{1}/_{16}$ in.) thick.
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> **Exception:** For concealed work in finished buildings, or finished panels for prefabricated buildings where such supporting is impracticable, it shall be permitted to fish the cable between access points.

334.30. Revise 334.30 as follows [(A), (B), and (C) unchanged from the NEC]:

> **334.30 Securing and Supporting.** Nonmetallic-sheathed cable shall be secured by staples, cable ties, straps, or similar fittings so designed and installed as to not damage the cable. Where staples are used for cable sizes smaller than three 8 AWG conductors, they shall be of the insulated type, or listed noninsulated staples driven by staple guns shall be permitted. Cable shall be secured in place at intervals not exceeding 1.4 m (4½ ft) and within 300 mm (12 in.) from every cabinet, box, or fitting. For other than within 300 mm (12 in.) of a cable termination at a cabinet, box, or fitting, cables passing through successive holes in adjacent framing members no more than 600 mm (24 in.) apart shall be considered to be secured.

334.80. Revise to read as follows:

> **334.80 Ampacity.** Type NM, NMC, and NMS cable shall have conductors rated at 90°C (194°F). Where installed in thermal insulation, the ampacity of conductors shall be that of 60°C (140°F) conductors. The ampacity of Types NM, NMC, and NMS cable installed in cable tray shall be determined in accordance with 392.11.

338.10(B)(4)(a)**.** Delete the phrase "excluding 334.80", identify the existing fine print note as FPN No. 1, and add a second fine print note as follows:

> FPN No. 2: This section includes service entrance cables with a round configuration commonly known as SER cable. The interior installation of this cable is governed by the same rules as apply to nonmetallic sheathed cable.

344.6. Add an exception as follows:

> **Exception:** Rigid metal conduit made from stainless steel or from nonferrous metals other than aluminum shall be permitted to be approved.

352.12. Add a new (G) to read as follows:

> **(G) High-Rise Buildings.** Where used in buildings more than 21 m (70 ft) above mean grade, rigid nonmetallic conduit shall not be used unless the building is protected by an approved fire sprinkler system(s) installed on all floors as a complete system, or the conduit is concealed behind a thermal barrier as described in 362.10(2) or 362.10(5), or the conduit is encased in not less than 50 mm (2 in.) of concrete.

352.44. Revise to read as follows:

> **352.44 Expansion Fittings.** Expansion fittings for rigid nonmetallic conduit shall be provided to compensate for thermal expansion and contraction where the length change will exceed, in accordance with Tables 352.44(A) and (B), 3 mm ($^1/_8$ in) at securely mounted items such as boxes, cabinets, elbows, or other conduit terminations.

368.6. Revise as follows:

368.6 Installation Requirements.

(A) Through Walls and Floors. It shall be permissible to extend unbroken lengths of busways through dry walls. It shall be permissible to extend busways vertically through dry floors if totally enclosed (unventilated) where passing through and for a minimum distance of 1.8 m (6 ft) above the floor to provide adequate protection from physical damage.

FPN: See 300.21, Spread of Fire or Products of Combustion.

(B) Protection from Liquids, Moisture and Other Contaminants. Busway shall be protected from liquids, moisture, and other contaminants or corrosion which may result in electrical failure.

(1) During Construction. Indoor busways shall be protected from moisture during storage as well as during or after installation. Special consideration shall be given to riser busways to protect them from moisture from uncompleted roofs, walls, etc.

Outdoor busways shall be treated the same as indoor busways until after busway is properly installed, as it is not weather resistant until completely and properly installed.

Busway shall have the exposed ends of uncompleted runs protected to prevent accidental contamination during the construction period.

(2) Protection from Snow Buildup. Outdoor busway shall be mounted in such a manner as to prevent snow or ice buildup forcing water into the busway through weep holes. This may require that consideration be given to horizontal snow or ice buildup or drifting of snow.

(3) Curbing. One hundred mm (4 in.) high minimum curbs shall be installed around all floor openings for riser busways to prevent floor level liquids from entering the opening.

(4) Protection from Falling Liquids. Slant shields, drip pans, or other approved protective shields shall be installed to protect indoor busway in locations where there is a possibility of water spillage or dripping condensate from roof drains, water pipes, and the like.

(5) Tests Prior to Energizing. Busway system joint tightness and joint resistance, phasing, and insulation resistance shall be verified by test prior to energizing the system for the first time. A written record of these tests shall be made available to the authority having jurisdiction.

368.8(B)(2). Revise the rule and the exception to read as follows:

(2) The length of the cord or cable from a busway plug-in device to a suitable tension take-up support device shall not exceed 2.5 m (8 ft).

Exception: By special permission in industrial establishments only, where the conditions of maintenance and supervision ensure that only qualified persons will service the installation, flexible cord suitable for hard usage or extra hard usage or bus drop cable shall be permitted to extend horizontally greater lengths than 2.5 m (8 ft) where the longer length is essential for periodic repositioning of equipment. The flexible cord or bus drop cable shall be supported at intervals not to exceed 2.5 m (8 ft), and suitable tension take-up device(s) shall be installed at the end of the horizontal run to relieve strain in both the horizontal and vertical directions.

400.5. Revise the table following the first paragraph to read as follows:

Number of Current-Carrying Conductors	Percent of Values in Tables 400-5A and 400-5B
4 through 6	80
7 through 24	70
25 through 42	60
43 and above	50

FPN: Overheating may occur where continuous, fully loaded conductor diversity is less than 50 percent and the number of current-carrying conductors exceeds nine. See 310.10.

400.8(4)**.** Revise the existing exception as follows:

Exception: Flexible cord and cable shall be permitted to be installed in accordance with 368.8(B). For other applications, where the length of the cord from the supply termination to a suitable tension take-up device is limited to 2.5 m (8 ft), flexible cord shall be permitted to have one connection to the building surface.

400.8(6)**.** Add an exception as follows:

Exception: Flexible cord shall be permitted to be installed in raceways where its calculated ampacity has been further derated by a factor of 0.8, or where its ampacity has been calculated under 310.15(C).

410.16(C). Add a second paragraph as follows:

In addition to, or in lieu of, the mechanical fastening means, electric luminaires (fixtures) containing ballasts, other than simple fluorescent reactance ballasts, shall be supported directly to the building structure by wire, chain, or threaded rod of sufficient strength to carry the luminaire (fixture). Fluorescent luminaires (fixtures) shall be supported at each end of a diagonal axis of the luminaire (fixture).

511.1. Revise the parenthetical note to read as follows:

"(including, but not limited to, passenger automobiles, buses, trucks, tractors, and motor boats)"

511.12. Revise and add an exception as follows:

511.12. Ground-Fault Circuit-Interrupter for Personnel. All 125-volt single-phase 15- and 20-ampere receptacles installed in areas where electrical diagnostic equipment, electrical hand tools, portable lighting equipment, or portable appliances are to be used shall have ground-fault circuit-interrupter protection for personnel.

Exception: Where an individual branch circuit supplies a single receptacle that is located and identified for the specific use of computerized diagnostic equipment, it shall be permitted to omit the ground-fault circuit-interrupter protection for personnel.

517.3. Insert the following new section:

517.3 Application of Other Articles. The requirements in Article 700 shall apply to emergency systems covered in this article except as modified in 517.30(B) and 517.41(B).

517.13(A). Add an exception as follows:

Exception: Wiring that is used to supply or control luminaires (lighting fixtures) more than 2.3 m (7½ ft) above the floor in a patient care area shall be permitted to utilize any of the wiring methods recognized in Chapter 3 of this Code provided all of the following conditions are met:

(a) No portion of the wiring installed in accordance with this exception and located at or below the 2.3 m (7½ ft) level is exposed;

(b) No outlet(s) supplied by such wiring is (are) located at or below the 2.3 m (7½ ft) level in any patient care area; and

(c) No control point(s) supplied by such wiring is (are) located in any patient vicinity.

517.13(B) Exception No. 2. Revise to read as follows:

Exception No. 2: Luminaires (lighting fixtures) more than 2.3 m (7½ ft) above the floor in a patient care area and switches located outside of a patient vicinity shall be permitted to utilize any of the types of equipment grounding conductors included in 250.118, and any of the wiring methods otherwise permitted for the location by Chapter 3 of this Code.

550.2 Manufactured Home, FPN No. 2. Add the following sentence:

Manufactured housing that is not designed to be transportable on running gear, and that is not produced under regulations that expressly cover such housing, is classified under Article 545.

680.7. Insert a fine print note ahead of 680.7(A) as follows:

FPN: Unlisted swimming pool pump motors for permanently installed pools may be supplied with undersized cords, cords of excessive length, cord connectors on outdoor applications that are unsuitable for wet locations, and other violations of this Code. The fact that a manufacturer may supply them in this form is not intended to excuse compliance with the rules of this Code.

Listed storable swimming pool pump motors with long factory-supplied cords are prominently marked as such and are not covered in Part II of Article 680. They are not intended for use with permanently installed pools and they need not be bonded where used as intended. See 680.31.

680.22(A)(5). Revise the first sentence to read as follows:

All 15- and 20-ampere, single-phase, 125-volt receptacles located within 6.0 m (20 ft) of the inside walls of a pool shall be protected by a ground-fault circuit interrupter.

680.25(B)(2). Revise the last sentence to read as follows:

Where installed in other than existing feeders covered in 680.25(A) Exception, a separate equipment grounding conductor shall be an insulated conductor.

680.26(B)(1). Add a fine print note as follows:

FPN: For this purpose, prior editions of the Massachusetts Electrical Code have required 8 AWG or larger bare solid copper conductors run in the pour around the perimeter of the pool below the water line, and through the pour at other locations such that no point, measured through the pour, is more than 4.5 m (15 ft) from a bonding conductor.

680.58. Add a new section in Part V of Article 680 as follows:

680.58 GFCI Protection for Adjacent Receptacle Outlets. All 15- or 20-ampere single-phase 125-volt receptacles located within 6.0 m (20 ft) of a fountain shall be provided with GFCI protection.

695.3. Insert a fine print note ahead of 695.3(A) as follows:

FPN: NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection, provides information on the characteristics of reliable power sources in Appendix A, item A-6.2.3.

700-9(D). Revise to read as follows:

(D) Fire Separation: Emergency system feeders, wiring to elevator machine rooms including the cab lighting disconnecting means, and wiring to fire pumps shall comply with 700.9(D)(1) and (2).

(1) Equipment. All required emergency systems generation and distribution equipment shall be located in 2-hour fire resistive rated rooms, closets or shafts. Equipment, conduit, piping, or ductwork alien to the emergency system shall not be located within these rooms, closets, or shafts.

Exception: Equipment for feeder circuits (including transfer switches, transformers, panelboards, etc.) for legally required standby purposes in compliance with the provisions of Article 701, or for the equipment system of a hospital as covered in 517.30(B)(3) and 517.34, or for the critical branch of a nursing home as covered in 517.43, shall be permitted in the same room. Nonemergency equipment shall be installed sufficiently remote from emergency equipment that a failure within one will be unlikely to damage the other.

(2) Wiring. All portions of emergency system feeders located outside of rooms, closets, or shafts required by 700.9(D)(1) shall be enclosed within 2-hour fire resistive rated enclosures or be part of an assembly that has a 2-hour fire resistive rating.

FPN: Available methods for achieving the required fire resistance rating may include electric circuit protective systems, thermal barrier systems for electrical system components, listed fire-rated assemblies, and cables listed to maintain circuit integrity where installed in accordance with applicable listing requirements. Further details may be found in directories of building materials published by qualified testing laboratories.

Exception to 700.9(D)(1) and (2): In buildings or structures less than 21 m (70 ft) in height, or for new emergency feeders or equipment in existing buildings, alternative methods of protection may be accepted by the authority having jurisdiction where it is assured that equivalent objectives can be achieved.

FPN: Many techniques intended to prevent the deflection of steel members at high temperatures will not materially increase the survival time of circuits in electric raceways.

700.12. Add an exception after the first paragraph as follows:

Exception: A fire pump shall be permitted to use a connection ahead of the service disconnecting means in accordance with 695.3(A)(1).

700.12. Revise the fourth paragraph to read as follows:

Equipment for sources of power as described in 700.12(A) through (D) shall comply with 700.9(D)(1) of this Code where circuit(s) covered in 700.9(D) are supplied.

700.12(E). Delete the second sentence of the second paragraph which reads:

Flexible cord- and plug-connection shall be permitted provided that the cord does not exceed 900 mm (3 ft) in length.

701.11(F). Delete the second sentence of the second paragraph which reads:

Flexible cord- and plug-connection shall be permitted provided that the cord does not exceed 900 mm (3 ft) in length.

725.23. Designate the existing exception as Exception No. 1 and add a second exception as follows:

Exception No. 2: Conductors qualifying under the provisions of 725.27(C) shall be protected by overcurrent devices rated or set not over 5 amperes for 20 AWG and larger conductors, and not over 3 amperes for 22 AWG conductors.

725-27. Add a new subsection (C) as follows:

(C) Instrumentation Tray Cable, Type ITC. Class 1 control circuits other than those covered in 725.8(A) shall be permitted to be wired using multiconductor factory-assembled cables containing two or more conductors with insulation rated for 300 volts, cabled with or without grounding conductor(s), and enclosed in a nonmetallic sheath. The cables shall be permitted to be shielded, and a metallic sheath or armor shall be permitted to be applied over the nonmetallic jacket.

(1) Uses Permitted. Type ITC cable shall be permitted to be used in industrial establishments where the conditions of maintenance and supervision assure that only qualified persons will service the installation. The cable shall be provided with additional protection and support as follows:

(1) In cable trays.

(2) In raceways.

(3) In hazardous locations as permitted in 501.4, 502.4, 504.20, 504.30, 504.80, and 505.15.

(4) As open wiring where enclosed in a smooth metallic sheath, continuous corrugated metallic sheath, or interlocking tape armor applied over the nonmetallic sheath in accordance with this section. The cable shall be supported and secured at intervals not exceeding 1.8 m (6 ft).

(5) As open wiring without a metallic sheath or armor between cable tray and equipment in lengths not to exceed 15 m (50 ft), where the cable is supported and protected against physical damage using mechanical protection, such as struts, angles, or channels. The cable shall be supported and secured at intervals not exceeding 1.8 m (6 ft).

(6) As open wiring between cable tray and equipment in lengths not to exceed 15 m (50 ft), where the cable complies with the crush and impact requirements of Type MC cable and is identified for such use. The cable shall be supported and secured at intervals not exceeding 1.8 m (6 ft).

(7) As aerial cable on a messenger.

(8) Direct buried where identified for the use.

(9) Under raised floors in rooms containing industrial process control equipment and rack rooms where arranged to prevent damage to the cable.

(10) Under raised floors in information technology equipment rooms in accordance with 645.5(D)(5)(c).

(2) Uses Not Permitted. Type ITC cable shall not be installed for circuits operating at more than 150 volts nominal, or more than 5.0 amperes. Type ITC cable shall only be run with other cables if the articles governing such other cables contemplate routing Type ITC cable with such other cables, and only to the extent permitted in those articles. Type ITC cable shall not be installed with power, lighting, or other nonpower limited circuits.

Exception No. 1: Type ITC cable shall be permitted to terminate within enclosures where the conductors are permanently and effectively separated from other nonpower limited conductors in accordance with the requirements for the separation of Class 2 and Class 3 circuits from nonpower limited circuits in 725.55(B), 725.55(C), 725.55(D), or 725.55(E). For the purposes of applying 725.55(D)(2)a. only, the insulation on Type ITC cables shall be assumed to be equivalent to Class 3 insulation.

Exception No. 2: Type ITC cable shall be permitted to be installed with power, lighting, or other nonpower limited circuits where otherwise permitted for Class 1 circuits by this article, and in addition where a smooth metallic sheath, welded and corrugated metallic sheath, or interlocking metallic tape armor is applied over the nonmetallic jacket.

(3) Construction. The insulated conductors of Type ITC cable shall be in sizes 22 AWG through 12 AWG. The conductor material shall be copper or thermocouple alloy. The cable shall be listed as being resistant to the spread of fire. The outer jacket shall be sunlight and moisture resistant. Where a smooth metallic sheath, continuous corrugated metallic sheath, or interlocking tape armor is applied over the nonmetallic sheath, an overall nonmetallic jacket shall not be required.

(4) Marking. Type ITC cable shall be marked in accordance with 310.11(A)(2), (3), (4), and (5). Voltage ratings shall not be marked on the cable.

(5) Bends. Bends in Type ITC cable shall be made so as to not damage the cable.

Article 727. Delete this article. Where a provision of the National Electrical Code refers to requirements for overcurrent protection for Type ITC cable, said provision shall apply to 725.23 Exception No. 2 of this Code. Where a provision of the National Electrical Code refers to other requirements for Type ITC cable, said provision shall apply to 725.27(C) of this Code.

APPENDIX A†
780 CMR: MASSACHUSETTS STATE BUILDING CODE
6th Edition with changes and corrections up to 3/1/98

780 CMR: CHAPTER 13 ENERGY CONSERVATION*

**Note: For energy conservation provisions for low-rise residential occupancies, see Building Code Appendix J complete.*

780 CMR: CHAPTER 36 ONE AND TWO FAMILY DWELLINGS

DIVISION OF INDUSTRIAL SAFETY

454 CMR 10.00 Construction Industry Rules and Regulations
Part 17
Tunnels and Shafts, Caissons, Cofferdams, and Compressed Air
10.175 Tunnels and Shafts
Section 12 Electrical Equipment
10.178 Compressed Air
Section 11 Electricity

ELEVATOR REGULATIONS

524 CMR 15.00 through 35.00

BOARD OF STATE EXAMINERS OF PLUMBERS AND GAS FITTERS

248 CMR 6.00: NATIONAL FUEL GAS CODE (NFPA 54)

5.4.3(d): Proper permanent lighting shall be provided at the roof access. The switch for such lighting shall be located inside the building near the access means leading to the roof.

BOARD OF FIRE PREVENTION REGULATIONS

527 CMR 4.00: Oil Burning Equipment
4.04: Oil Burners, Light Fuel Oil Type
(3) Oil Burner Controls
(4) Electric Wiring and Equipment

527 CMR 5.00: Operation and maintenance of buildings or other structures used as garages, service stations and the related storage, keeping and use of gasoline or other motor fuel.
5.07 Dispensing Equipment
(2) Heat activated shutoff switch
(5) Emergency pump shutoff switches/circuit breakers

527 CMR 15.00: Keeping, handling and transportation of flammable and combustible liquids, and the disposition of crude petroleum or any of its products in harbors or other waters of the Commonwealth.
15.09 General Provisions [Marinas]
(1) a, b, c. Equipment ratings, emergency shutoffs, permitted wiring locations

105 CMR 410: MINIMUM STANDARDS OF FITNESS FOR HUMAN HABITATION (STATE SANITARY CODE, CHAPTER II)

410.250: Habitable Rooms Other than Kitchen—Natural Light and Electrical Outlets
410.251: Kitchen Lighting and Electrical Outlets
410.252: Bathroom Lighting and Electrical Outlets
410.253: Light Fixtures Other than in Habitable Rooms or Kitchens
410.254: Light in Passageways, Hallways, and Stairways
410.255: Amperage
410.256: Temporary Wiring
410.258: Exemption of Dwellings More than 600 Feet from Electrical Service
410.280: Natural and Mechanical Ventilation
410.281: Ventilation Shut-off
410.354: Metering of Electricity and Gas
410.483: Auxiliary Emergency Lighting Systems and Exit Signs

521 CMR: ARCHITECTURAL ACCESS BOARD

39.3 HEIGHT

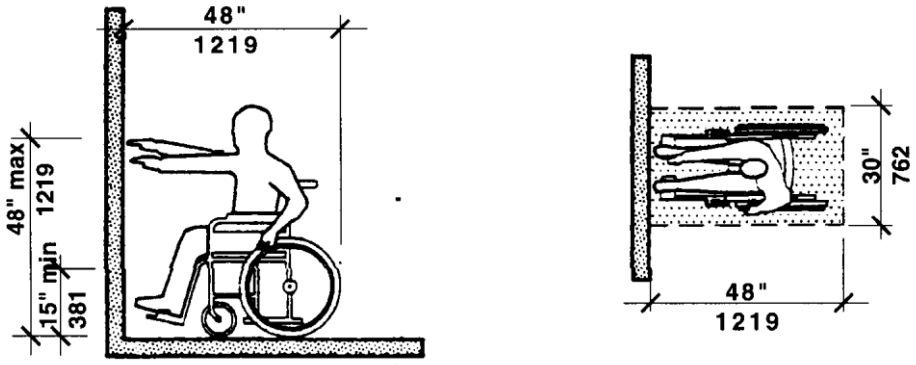
The highest operable part of controls, dispensers, receptacles, and other operable equipment shall be placed within at least one of the reach ranges specified in 521 CMR 6.5, Forward Reach and 521 CMR 6.6, Side Reach.

39.3.1 Electrical and communications system receptacles on walls shall be mounted between 15 inches (15" = 381mm) and 48 inches (48" = 1219mm) above the floor, measured at the centerline of the lowest receptacle.

Exception: These requirements do not apply where the use of special equipment dictates otherwise or where electrical and communications systems receptacles are not normally intended for use by building occupants.

39.4 LOCATION

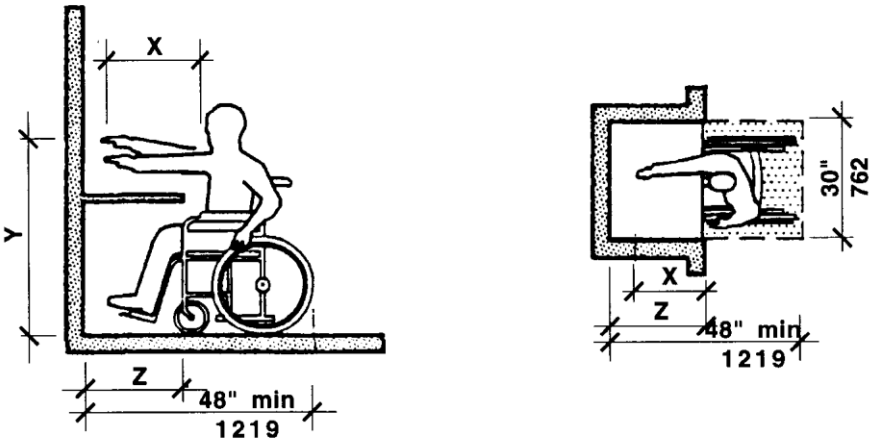
All such controls shall be located at least 18 inches (18" = 457mm) from an interior corner.



High Forward Reach Limit
Figure 6k

6.5 FORWARD REACH

If the *clear floor space* only allows forward approach to an object, the maximum high forward reach allowed shall be 48 inches (48" = 1219mm) (**See Fig. 6k**). The minimum low forward reach is 15 inches (15" = 381mm). If the high forward reach is over an obstruction, reach and clearances shall be as shown in **Fig. 6l**.

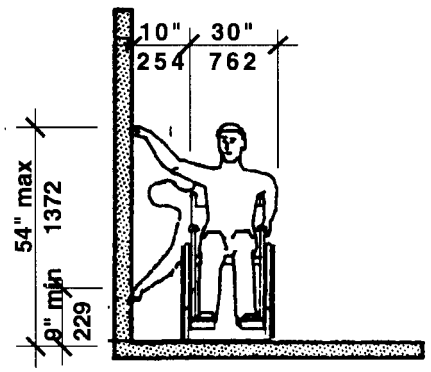


NOTE: X shall be less than or equal to 25" (635 mm). Z shall be greater than X. When X is less than 20" (508 mm), then Y shall be 48" (1219 mm) max. When X is 20" to 25" (508 to 635 mm), then Y shall be 44" (1118 mm) max.

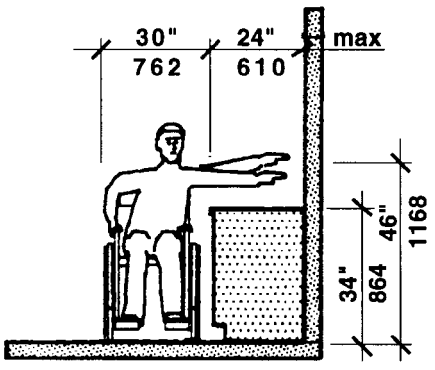
Maximum Forward Reach over an Obstruction
Figure 6l

6.6 SIDE REACH

If the *clear floor space* allows parallel approach by a person in a wheelchair, the maximum high side reach allowed shall be 54 inches (54" = 1372mm) and the low side reach shall be no less than nine inches (9" = 229mm) above the floor (**See Fig. 6m**). If the side reach is over an obstruction, reach and clearances shall be as shown in **Fig. 6n**.



High and Low Side Reach
Figure 6m



Maximum Side Reach over Obstruction
Figure 6n

†General Footnote to Appendix A: *The provisions of the regulations cited in this appendix are noted to assist the users of this Code in properly considering various electrical design constraints of other building systems. They are generally unenforceable by an Inspector of Wires. See Rule 5 of this Code.*

REGULATORY AUTHORITY

527 CMR 12.00: M.G.L. c. 22, § 14; c. 143, § 3L; c. 148, § 10