

527 CMR: BOARD OF FIRE PREVENTION REGULATIONS

527 CMR 12.00: MASSACHUSETTS ELECTRICAL CODE  
(AMENDMENTS)

The Massachusetts Electrical Code (527 CMR 12.00) of the Board of Fire Prevention Regulations (BFPR) shall be the 2023 National Electrical Code (NEC), as published by the National Fire Protection Association (NFPA) as NFPA 70 in the form released by vote of the NFPA Standards Council on August 12, 2022, including all modifications made by the BFPR and duly promulgated from time to time in the Code of Massachusetts Regulations. Amendments made by NFPA subsequent to this date have no force or effect until and unless reviewed and promulgated by the BFPR.

Informational Note: The NFPA releases Tentative Interim Amendments (TIAs) from time to time to its standards, including the NEC. True to their title, these changes are tentative, they are of an interim nature, and they amend (in this case) the electrical code. They have not been processed through the NFPA normal standards making process. As of the 2020 NEC cycle, these amendments, subsequent to their release, will appear in all renditions of the NEC, both print and electronic, in a form that makes them visually indistinguishable from unamended text.

The NEC version adopted in Massachusetts will be that found in the first printing in book form, and that rendition will include TIAs adopted by the Standards Council at its August 10<sup>th</sup> - 12<sup>th</sup> 2022 meeting, but no others. Users of this code are advised to consult the front matter on the first page of the NEC for a list of TIAs issued by NFPA, organized by location and specified dates of issuance. In addition, the inside front cover now includes a clear designation of the printing and the TIAs (by number only) that are included. Specific information for each will be found on the NFPA website. The NEC version in effect in Massachusetts will usually vary, increasingly over time, from the version amended by NFPA depending on the timing of BFPR actions subsequent to initial promulgation.

NFPA also issues advisories of errata. These reflect errors in printing, and bring the published version of their standards, including the NEC, into agreement with the actual results of the standards development process. Because the legally enforceable standard is the form as developed through that process, errata are considered to be effective as of the original issuance of the standard, and therefore are considered effective in Massachusetts as of the date of the original promulgation of this code.

Insert the following provisions ahead of the body of the Code:

- Rule 1. All installations, repairs, maintenance, and removal 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, maintenance, and removal 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. The notification shall contain specifications of the actual hazard that exists, together with a reference to the rule of this Code that is now in violation. (*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. For Massachusetts Building Code references, *see* Appendix A.
- 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.

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Rule 7. 527 CMR 12.00 shall be effective on all installations for which a permit has been granted subsequent to February 28, 2023.

Rule 8. In accordance with the provisions of M.G.L. c. 143 § 3L, the permit application form to provide written notice of installation of wiring shall be uniform throughout the Commonwealth, and applications shall be filed on the prescribed form. Electronic transmittals of this form shall be permitted when done in accordance with the Uniform Electronic Transactions Act (M.G.L. c. 110G). After a permit application has been accepted by an Inspector of Wires appointed pursuant to M.G.L. c. 166, § 32, an electrical permit shall be issued to the person, firm or corporation stated on the permit application. Such entity shall be responsible for the notification of completion of the work as required in M.G.L. c. 143, § 3L.

Permits shall be limited as to the time of ongoing construction activity, and may be deemed by the Inspector of Wires abandoned and invalid if he or she has determined that the authorized work has not commenced or has not progressed during the preceding 12-month period. Upon written application, an extension of time for completion of work shall be permitted for reasonable cause. A permit shall be terminated upon the written request of either the owner or the installing entity stated on the permit application.

Rule 9. Installations, repairs, maintenance, or removals covered by 527 CMR 12.00 shall also comply with M.G.L. c. 141.

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

Rule 11. Electrical installations that appear incompatible with GFCI protection as covered in 210.8 Exception of this Code, regardless of the code requirements in effect at the time when the permit as described in Rule 8 was issued, or when the installation was completed, shall be inspected by a qualified person. The inspection shall review all field elements of the branch-circuit equipment grounding return path, and the quality of any field-accessible cord connections if applicable. The inspection shall be documented, subject to audit by the Inspector of Wires, and inspected by him or her as deemed necessary. Installations of listed equipment that, under normal operating conditions, are found to be incompatible with GFCI protective devices as made available by the manufacturer of the circuit protection currently installed shall be excused from providing GFCI protection. If not connected to an individual branch circuit, incompatible equipment shall be directly wired or connected to a single receptacle, and the circuit shall be arranged so required GFCI protection is retained for the remaining outlets. The inspection documentation required by this rule shall constitute the notice required in Rule 8 and no additional notice shall be required for corrections applied accordingly. The location and the date of this determination shall be forwarded to the Department of Fire Services for inclusion in a central registry of such allowances. The report shall also include the appliance manufacturer and model, together with the identity of the GFCI protective device. This rule shall expire on January 1, 2026.

90.2(D)(5). Delete (d) and revise (c) to read as follows:

(c) Are located in legally established easements, rights-of-way, or by other agreements either designated by or recognized by the public service commissions, utility commissions, or other regulatory agencies having jurisdiction for such installations.

Informational Note: Wiring systems that are maintained by utilities and that operate under this exclusion from coverage by the Massachusetts Electrical Code include, regardless of ownership, luminaires for street and area lighting directly connected to such systems.

12.00: continued

90.4. Revise 90.4 by replacing 90.4(A) and 90.4(B) as follows; Sections 90.4(C) and 90.4(D) remain unchanged from the NEC:

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 and 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.

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, Fire Safety Code, Permit Applications, and Chapters of the General Laws. *See* Appendix A.

Article 100. Coordination, Selective (Selective Coordination). Revise this definition to read as follows:

Localization of an overcurrent condition to restrict outages to the circuit or equipment affected for fault current events that extend beyond 0.1 second, and accomplished by the selection and installation of overcurrent protective devices and their ratings or settings for the range of available overcurrents under such conditions, whether originating from overload, ground-fault, or short circuit, and for the full range of overcurrent protective device opening times applicable to such events.

Article 100. Manufactured Home, Informational Note 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 covered under Article 545.

Article 100, Occupiable Space. Insert the following definition:

A room or enclosed space designed for human occupancy in which individuals congregate for amusement, educational or similar purposes or in which occupants are engaged for labor, and which is equipped with means of egress and light and ventilation facilities.

12.00: continued

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, or conductors with Class B stranding. Where Class C stranded conductors are terminated on and not looped through such terminals, the uninsulated strands shall be completely enclosed within the termination, or the strands at the terminals shall be made solid.

110.24. Insert an additional informational note as follows:

Informational Note No. 3. The marking required in this section is useful in determining compliance with 110.9, but must be understood as transitory and requiring reconfirmation prior to the performance of additional electrical work. This and numerous other locations in the NEC require field markings of the available fault current. A major component of this current is usually that contributed by the utility through the service. The utility contribution is inherently dynamic in value, particularly on the medium voltage portions of their distributions. Without notice, automatic line sectionalizing can transfer a service from the tail end of one circuit to the head end of an adjacent circuit, with a significant increase in available fault current. In addition, there are numerous sources of on-site contributions to available fault current.

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.

210.8. Insert the following exception after the first paragraph:

Exception: Permanently connected equipment and cord-and-plug connected stationary equipment that is listed, but incompatible with GFCI protective devices as made available by the manufacturer of the circuit protection currently installed, shall be permitted to omit such protection provided it is installed and inspected in accordance with the provisions of Rule 11 of this Code. This exception shall expire on January 1, 2026.

Revise the second paragraph to read as follows:

For the purposes of this section, when determining distance from receptacles the distance shall be measured as the shortest path the supply cord of equipment connected to the receptacle would follow without piercing a floor, wall, ceiling, fixed barrier, or without passing through a cabinet door opening, doorway, or window.

210.8(A)(8). Revise to read as follows:

(8) Sinks - where receptacles are installed within 1.8 m (6 ft) from the top inside edge of the bowl of the sink, or where located within a cabinet supporting a sink.

210.8(B)(7) Revise to read as follows:

(7) Sinks - where receptacles are installed within 1.8 m (6 ft) from the top inside edge of the bowl of the sink, or where located within a cabinet supporting a sink.

210.8(F). Delete this requirement.

210.12(B). Replace the parent text and list items with the following:

All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets or devices installed in dwelling units shall be protected by any of the means described in 210.12(A)(1) through (A)(6).

12.00: continued

320.80(A). Delete the last sentence of the first paragraph, which reads: "The 90°C (194°F) rating shall be permitted to be used for ampacity adjustment and correction calculations; however, the ampacity shall not exceed that for a 60°C (140°F) rated conductor."

334.10. Insert an exception to follow (3) to read as follows:

Exception to (2) and (3): For buildings or structures required to be of Type I or Type II construction, Type NM, or Type NMC cables shall be permitted to be used, provided that where so applied in buildings or structures exceeding three stories above grade, circuits run in Type NM or NMC cable shall not leave the floor or dwelling unit from which the circuits originate. Cables shall be installed within walls, floors, or ceilings that provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies.

334.12(A)(2). Revise to read as follows:

(2) 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 or other pieces of electrical equipment in accordance with 334.30(B)(2).

334.17. Revise to read as follows:

334.17 Through or Parallel to Framing Members and Furring Strips. Types NM, and NMC 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.

In both exposed and concealed locations, where the cable is installed parallel to framing members, such as joists, rafters, or studs, or is installed parallel to furring strips, 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 or furring strip 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. A listed and marked steel plate less than 1.6 mm (1/16 in.) thick that provides equal or better protection against nail or screw penetration shall be permitted for this purpose.

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. The cable length between the cable entry and the closest cable support shall not exceed 450 mm (18 in.) 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. Where the cable is run diagonally behind strapping of a nominal 19 mm (¾-in.) thickness it shall be considered supported, secured, and in compliance with 334.17 where it is not pulled taut. 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.

Sections of cable protected from physical damage by raceway shall not be required to be secured within the raceway.

12.00: continued

334.80. Delete the second paragraph and revise the first paragraph to read as follows:

334.80 Ampacity. Type NM, and NMC cables 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, and NMC cables installed in cable tray shall be determined in accordance with 392.80.

338.10(B)(4). Insert an informational note as follows:

Informational Note: 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.

338.10(B)(4)(a)(3). Revise to read as follows:

Where installed in thermal insulation, the ampacity shall be in accordance with the 60°C (140°F) conductor temperature rating. The maximum conductor temperature rating shall be permitted to be used for ampacity adjustment and correction purposes, if the final derated ampacity does not exceed that for a 60°C (140°F) rated conductor.

344.6. Add an exception as follows:

Exception: Rigid metal conduit made from nonferrous metals other than aluminum shall be permitted to be approved.

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

(F) 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.

368.8. Insert a new Section 368.8 in Part I of Article 368 as follows:

368.8 Tests Prior to Energizing. Busway system joint tightness, phasing, and insulation resistance shall be verified by test prior to energizing the system for the first time. Joint resistance shall be evaluated by a qualified person using equipment identified for the specific function. A written record of these tests shall be made available to the authority having jurisdiction.

368.14. Insert a new Section 368.14 in Part II of Article 368 as follows:

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

(A) 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.

(B) 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.

12.00: continued

(C) 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.

368.56(B). Revise the rule in list item (2) and the exception to (B)(2) 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 to (B)(2): 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.

372.23. Revise this section to read as follows:

372.23 Ampacity of Conductors. The ampacity adjustment factors in 310.15(C)(1) shall not apply where 30 or fewer current-carrying conductors occupy no more than 20% of the interior cross-sectional area of cellular concrete floor raceways.

374.23. Revise this section to read as follows:

374.23 Ampacity of Conductors. The ampacity adjustment factors in 310.15(C)(1) shall not apply where 30 or fewer current-carrying conductors occupy no more than 20% of the interior cross-sectional area of cellular metal floor raceways.

390.23. Revise this section to read as follows:

390.23 Ampacity of Conductors. The ampacity adjustment factors in 310.15(C)(1) shall not apply where 30 or fewer current-carrying conductors occupy no more than 20% of the interior cross-sectional area of underfloor raceways.

400.5. Revise Table 400.5(A)(3) to read as follows:

Number of Conductors	Percent of Values in Tables 400.5(A)(1) and 400.5(A)(2)
4 through 6	80
7 through 24	70
25 through 42	60
43 and above	50

Informational Note: Overheating may occur where continuous, fully loaded conductor diversity is less than 50% and the number of current-carrying conductors exceeds nine. See 310.14(A)(3).

400.12(4). Revise the existing exception as follows:

Exception to (4): Flexible cord and cable shall be permitted to be installed in accordance with 368.56(B) and 590.4. 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.

12.00: continued

400.17. Revise the second paragraph to read as follows:

Flexible cords and cables shall be permitted to be installed in raceways not longer than 15 m (50 ft) in length where required to protect the flexible cord or cable from physical damage. The ampacity of the conductors within a raceway shall be adjusted in accordance with Table 400.5(A)(3) based on the total number of current-carrying conductors within the raceway, and then further derated by a factor of 0.8, or the ampacity shall be calculated in accordance with 310.14(B). The raceway shall be exposed over its entire length.

406.4(D)(3). Delete the exception.

406.9(C). Replace the entire content with the following sentence: "Receptacles shall not be installed within or directly over a bathtub or shower stall."

410.16(D). Revise items (1) through (4) to read as follows:

(1) 300 mm (12 in.) for surface-mounted incandescent luminaires with a completely enclosed light source, or for LED luminaires not covered in (2) following, that are installed on the wall above the door or on the ceiling.

(2) 150 mm (6 in.) for surface-mounted fluorescent luminaires, or for surface-mounted LED luminaires that are factory wired with their drivers, and that are installed on the wall above the door or on the ceiling.

(3) 150 mm (6 in.) for recessed incandescent luminaires, or for LED luminaires not covered in (4) following, with a completely enclosed light source, and that are installed in the wall or the ceiling.

(4) 150 mm (6 in.) for recessed fluorescent luminaires, or for recessed LED luminaires that are factory wired with their drivers, and that are installed in the wall or the ceiling.

410.36(B). Add a second paragraph as follows:

In addition to, or *lieu* of, the mechanical fastening means, luminaires equaling or exceeding 1.8 kg (4 lb) shall be directly supported to the building structure or to approved intermediate supports rigidly secured to the building structure. The luminaire support shall be by wire, chain, or threaded rod of sufficient strength to carry the luminaire. Luminaires equal to or greater than 600 mm (2 ft), nominal, on a side shall be supported at each end of a diagonal axis regardless of weight.

440.14. Insert a second informational note as follows:

Informational Note No. 2: Article 440 generally only applies to equipment that incorporates hermetic refrigerant motor-compressors. *See* also 430.109(B) for specific provisions governing the disconnecting requirements for such equipment, wherever located, that uses a motor that is 1/8 hp or less.

517.13. Delete the Exception.

517.26. Delete (2), which would otherwise read: "Section 700.10(D) shall not apply."

680.4. Delete this requirement.

680.8. Insert an informational note ahead of 680.8(A) as follows:

Informational Note: Unlisted swimming pool pump motors have been observed in the field as having been supplied by their manufacturer 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 does not excuse compliance with the rules of this Code.