527 CMR 12.00: MASSACHUSETTS ELECTRICAL CODE (AMENDMENTS)

The Massachusetts Electrical Code (527 CMR 12.00) of the Board of Fire Prevention Regulations shall be the *2014 National Electrical Code*, (National Fire Prevention Association) NFPA-70 (2014 Edition), modified as follows:

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. 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 or her 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, 2013.

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. 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 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.

12.00: continued

90.2(B)(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.

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.

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, 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 or located 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.

110.24. Delete this requirement.

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. Add a new 210.8(E) to read as follows:

(E) Measurements. For the purposes of this section, when determining distances from receptacles the distance shall be measured as the shortest path the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, doorway, window or other opening or other effective barrier.

12.00: continued

210.21(B). Insert a new fifth paragraph as follows:

(5) Receptacles on Individual Branch Circuits. A receptacle outlet installed to comply with a requirement for an individual branch circuit shall contain a single receptacle, or a multiple receptacle if, and then only to the extent that, the supplied equipment includes multiple supply cord connections.

210.25(B). 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(A)(2)(1). Revise to read as follows:

Any space 600 mm (2 ft) or more in width (including space measured around corners) and unbroken along the floor line by doorways, fireplaces and similar openings.

210.52(A)(4). Delete 210.52(A)(4) in its entirety.

210.70(D). Insert an additional lettered subsection (D) to 210.70 as follows:

(D) GFCI Protection of Lighting Outlets in All Occupancies. The operation of a single GFCI device shall not deenergize all lighting outlets in a given area.

220.12. Revise the listed items in Table 220.12 as follows:

	Unit Load	
Type of Occupancy	Volt-Amperes per Square Meter	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 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.

230.70(A)(1). Add the following sentence at the end of this paragraph:

Where the location of the service disconnecting means is outside of and not attached to the building or structure served, a feeder disconnect shall be installed either inside or outside of the building or structure in compliance with the provisions of 225.32.

12.00: continued

230.82(6). Revise to read as follows:

(6) Solar photovoltaic systems, fuel cell systems, wind electric systems, or interconnected electric power production sources.

250.130(C). Delete this subsection.

300.4(D). Delete this subsection.

300.5(A). Add an informational note to this subsection as follows:

Informational Note: 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).

300.5(D). Revise to read as follows:

(D) Protection from Damage. Direct-buried conductors and cables shall be protected from damage in accordance with 300.5(D)(1) through 300.5(D)(4). Buried raceways enclosing service conductors shall additionally meet the requirement in 300.5(D)(3).

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."

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.

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° 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.

300.50. In Note 3 to Table 300.50, insert the words "or institutional" after the word "industrial".

310.15(B)(3)(a). Delete the fourth itemized adjustment provision.

12.00: continued

310.15(B)(3)(a). Revise Table 310.15(B)(3)(a) to read as follows:

Number of Conductors[1]	Percent of Values in Tables 310.15(B)(16) through 310.15(B)(19), as Adjusted for Ambient Temperature if Necessary
4 through 6	80
7 through 24	70
25 through 42	60
43 and above	50

[1]Number of Conductors is the total number of conductors in the raceway or cable, including spare conductors. The count shall be adjusted in accordance with 310.15(B)(5) and (6), and shall not include conductors that are connected to electrical components but that cannot be simultaneously energized.

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* 310.15(A)(3).

320.80(A). Delete the last sentence, 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. Amend (3) and insert an exception to read as follows:

(3) Other Structures Permitted to Be of Types III, IV, and V Construction. 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.

Exception to (2) and (3): For buildings or structures required to be of Type I or Type II construction, Type NM, Type NMC, and Type NMS 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, NMC, or NMS cable shall not leave the floor or dwelling unit from which the circuits originate.

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, 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.

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.

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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. 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.

334.80. Delete the second paragraph and revise the first paragraph 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). Add a third informational note as follows:

Informational Note No. 3: 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 (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 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.

368.14. 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*.

12.00: continued

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.

(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.

372.17. Revise this section to read as follows:

372.17 Ampacity of Conductors. The ampacity adjustment factors in 310.15(B)(3)(a) 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.

374.17. Revise this section to read as follows:

374.17 Ampacity of Conductors. The ampacity adjustment factors in 310.15(B)(3)(a) 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.

390.17. Revise this section to read as follows:

390.17 Ampacity of Conductors. The ampacity adjustment factors in 310.15(B)(3)(a) 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%t and the number of current-carrying conductors exceeds nine. *See* 310.15(A)(3).

12.00: continued

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

Exception to (4): 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.

400.14. 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 310.15(C). The raceway shall be exposed over its entire length.

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

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

In addition to, or in *lieu* of, the mechanical fastening means, electric luminaires 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. Fluorescent luminaires shall be supported at each end of a diagonal axis of the luminaire.

445.20. Revise to read as follows:

445.20 Ground-fault Circuit Interrupter Protection for Receptacles on 15 kW or Smaller Portable Generators. All 125-volt, single-phase, 15-and 20-ampere receptacle outlets that are a part of a 15-kW or smaller portable generator either shall have ground-fault circuit-interrupter protection for personnel integral to the generator or receptacle or shall not be available for use when the 125/250-volt locking-type receptacle is in use. If the generator was manufactured or remanufactured prior to January 1, 2015, listed cord sets or devices incorporating listed ground-fault circuit-interrupter protection for personnel identified for portable use shall be permitted. If the generator does not have a 125/250-volt locking-type receptacle, this requirement shall not apply.

517.13(B)(1). Delete Exception No. 2 to (3).

525.23. Insert parent text after the section title and before 525.23(A) as follows:

Where GFCI protection is provided through the use of GFCI receptacles, and the branch-circuits supplying the receptacles are wired using flexible cord, the receptacles shall be identified for portable use.

550.2 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 classified under Article 545.

680.7. Insert an informational note ahead of 680.7(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.

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 manufactured for use with permanently installed pools and they need not be bonded where used as intended. *See* 680.31.

12.00: continued

690.12(5). Revise to read as follows:

(5) Equipment that performs the rapid shutdown shall be listed and identified. This provision shall be enforced as of January 1, 2017. In *lieu* of a comprehensive listing prior to this enforcement date, the individual components shall be listed as to their specific circuit functions, and the system as installed shall be performance tested in the presence of the authority having jurisdiction.

690.41(2). Revise to read as follows:

Grounded 2-wire systems shall have one conductor grounded or be resistively grounded, and the system shall comply with 690.5.

695.3. Insert an informational note ahead of 695.3(A) as follows:

Informational Note: NFPA 20-2013, Standard for the Installation of Stationary Pumps for Fire Protection, provides information on the characteristics of reliable power sources in *Appendix A*, item A-9.3.2.

700.10. Make the following two revisions:

I. Revise (D) to read as follows: Emergency systems shall meet the additional requirements in (D)(1) through (D)(4).

II. Revise (D)(1) by deleting (1) and renumber the remaining numbers accordingly.

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

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

701.12(G). 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.

705.12. Insert a fourth condition in 705.12(C) as follows:

(4) If the interconnection occurs in a switchboard or a panelboard that is fed simultaneously by a primary source(s) of electricity, and where this distribution equipment is capable of supplying multiple branch circuits or feeders or both, the interconnecting provisions for the interconnected electric power production source shall comply with 705.12(D) with the term "interconnected power production source" assumed to replace the term "inverter" as applicable.

REGULATORY AUTHORITY

527 CMR 12.00: M.G.L. c. 143, § 3L.

(PAGES 147 THROUGH 152 ARE RESERVED FOR FUTURE USE.)