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### 780 CMR 51.00: MASSACHUSETTS RESIDENTIAL CODE

### CHAPTER 1: SCOPE AND ADMINISTRATION (Unique to Massachusetts)

Chapter 1 Delete in its entirety, and replace with the following:

### PART 1 – SCOPE AND APPLICATION

#### **SECTION 101 GENERAL**

**R101.1 Adoption and Title**. The Board of Building Regulations and Standards ("BBRS") adopts and incorporates by reference the *International Residential Code*, 2015 ("IBC"), as periodically amended by errata, the following chapters, as well as 110.R1 through 115AA. These, together with modifications as set forth, shall collectively comprise 780 CMR 51.00: *Massachusetts Residential Code*, otherwise known as the Massachusetts State Building Code, Ninth Edition, Residential Volume.

**R101.2 Scope**. 780 CMR shall be the building code for all towns, cities, state agencies or authorities in accordance with M.G.L. c. 143, §§ 93 through 100. 780 CMR, and other referenced specialized codes as applicable, shall apply to:

- 1. the construction, reconstruction, alteration, repair, demolition, removal, inspection, issuance and revocation of permits or licenses, installation of equipment; of detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories above grade plane in height and their accessory structures not more than three stories above grade plane, and other buildings as described in 780 CMR;
- 2. the rehabilitation and maintenance of existing buildings;
- 3. the standards or requirements for materials to be used in connection therewith, including but not limited to provisions for safety, ingress and egress, energy conservation and sanitary conditions, and fire prevention practices;
- 4. other powers and duties found in M.G.L. c. 143, §§ 93 through 100, but not listed herein; and
- 5. Owner-occupied lodging houses with five or fewer guestrooms.

**R101.3 Intent**. The purpose of 780 CMR is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards attributed to the built environment, and to provide safety to fire fighters and emergency responders during emergency operations.

**R101.4 Referenced Codes**. Referenced codes include the specialized codes of M.G.L. c. 143, § 96 and other codes and regulations listed in sections 101.4.1 through 101.4.12 and shall be considered part of 780 CMR to the prescribed extent of each such reference. Work regulated by the specialized codes of M.G.L. c. 143, § 96 shall be designed, installed and inspected by individuals authorized to do so in accordance with the specialized codes. However, the impact of work regulated by the specialized codes of M.G.L. c. 143, § 96 and other codes and regulations on work governed by 780 CMR and within the jurisdiction of the building official, shall be subject to inspection by the building official.

**R101.4.1 Gas and Fossil Fuel Burning Appliances**. Reference to the International Fuel Gas Code shall be considered reference to 248 CMR: *Board of State Examiners of Plumbers and Gas Fitters*. Gas fired appliances are governed 248 CMR. Oil fired appliances are governed by 527 CMR 4.00: *Oil Burning Equipment*.

**R101.4.2 Mechanical**. The provisions of the International Mechanical Code ("IMC") shall apply to all mechanical systems except for that which is defined as sheet metal work by M.G.L. c. 112, § 237.

**R101.4.3 Plumbing**. Reference to the International Plumbing Code shall be considered reference to 248 CMR: *Board of State Examiners of Plumbers and Gas Fitters*.

**R101.4.4 Property Maintenance**. Reference to the International Property Maintenance Code shall be considered reference to 780 CMR and within the jurisdiction of the building official.

**R101.4.5 Fire Prevention**. Reference to sections of the International Fire Code ("IFC") for fire prevention requirements shall be considered reference to 527 CMR: *Board of Fire Prevention Regulations*. The fire official enforces the provisions of 527 CMR. Reference to sections of the IFC for building code requirements are adopted, except that retroactive requirements of the IFC are not adopted. The building official enforces 780 CMR and all adopted IFC requirements.

The following statute is enforced by the head of the fire department, and shall be appealed through the automatic sprinkler appeals board:

M.G.L c. 148, § 26H (if adopted through local option): lodging or boarding houses with six or more persons boarding or lodging

The following statute is enforced by the head of the fire department, and shall be appealed through a court of competent jurisdiction:

M.G.L. c. 148, § 26I (if adopted through local option): certain multiple dwelling units

**R101.4.6 Energy**. Chapter 11: *Energy Efficiency* of 780 CMR 51.00: *Massachusetts Residential Code* shall apply to all matters governing the design and construction of buildings for energy efficiency.

**R101.4.7 Architectural Access**. Any reference in 780 CMR to accessibility shall be considered reference to 521 CMR: *Architectural Access Board*. 521 CMR is enforced by the building official.

**R101.4.8 Environmental Protection**. See 310 CMR: Department of Environmental *Protection* and 314 CMR: Division of Water Pollution Control.

**R101.4.9 Elevators**. Any reference in 780 CMR to elevators shall be considered reference to 524 CMR: *Board of Elevator Regulations*.

**R101.4.10 Electrical**. Any reference in 780 CMR to the International Electrical Code shall be considered reference to 527 CMR 12.00: *Massachusetts Electrical Code (Amendments)*.

**R101.4.11 International Residential Code**. Any reference in 780 CMR to the International Residential Code shall be considered reference to 780 CMR 51.00 through 120.00.

**R101.4.12 Residential Contracting**. Residential contracting, as defined by section 80 of Chapter 27 of the Acts of 2009, is also regulated by M.G.L. c. 142A and 201 CMR 18.00. For information including, but not limited to registrations, renewals, and filing of complaints against a Home Improvement Contractor ("HIC"), interested persons are directed to contact the Office of Consumer Affairs and Business Regulation, which administers the program.

**R101.5 BBRS Advisory Committees**. BBRS technical advisory committees support requests from and by the BBRS as it deems necessary in accordance with M.G.L. c. 143. Titles and membership of these technical advisory committees may be viewed at <a href="http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/">http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/</a>. These technical advisory committees with their respective composition listed:

Energy Advisory Committee ("EAC") One Division of Professional Licensure staff One Department of Energy Resources staff One mechanical engineer (with HVAC expertise) One architect One utility company designee One building envelope expert One lighting controls expert One building official One IAQ/filtration expert One high performance housing expert One ASHRAE 62.1, 62.2, and 90.1 expert

#### Fire Protection Fire Prevention Committee ("FPFP")

One Division of Professional Licensure staff One Department of Fire Services staff Boston Fire Department Commissioner or designee Two fire protection engineers One fire chief representative One building official representative One architect representative One residential contractor representative (for topics related to the residential volume) One general contractor representative (for topics related to the base volume) One sprinkler contractor One fire alarm contractor

#### **Property Maintenance Advisory Committee ("PMAC")**

One Division of Professional Licensure staff One Department of Public Health staff One Department of Housing and Community Development staff One Department of Fire Services staff One building official representative One health officer representative One residential property management representative One commercial property management representative One low-income tenant representative One architect representative One Housing Court representative

#### **Chapter 34 (Existing Buildings) Committee**

One Division of Professional Licensure staff One Department of Fire Services staff EAC Chair or designee FPFP Chair or designee SAC Chair or designee One building official representative One general contractor representative One mechanical engineer One fire prevention Officer One code consultant (with existing buildings expertise) One architect

NOTE: For the purposes of the composition of the BBRS's Chapter 34 technical advisory committee, a code consultant shall be any person with specific expertise applying, and interpreting 780 CMR. Said person shall have at least five years of

documented experience applying and interpreting the base and residential provisions of 780 CMR in a professional setting. A code consultant shall be duly licensed, or certified, as one or more of the following: architect, professional engineer, engineer-in-training, building official, fire prevention officer, or construction supervisor.

#### **Structural Advisory Committee ("SAC")**

One Division of Professional Licensure staff One architect representative (with structural expertise) One building official representative One structural engineer (with seismic expertise) One structural engineer (with ASCE 7 expertise) Six structural engineers (in addition to the two listed above)

#### **Geotechnical Advisory Committee ("GAC")**

One Division of Professional Licensure staff One building official representative Nine geotechnical engineers

#### **SECTION 102 APPLICABILITY**

**Concurrency Period**. Applications for building permits and related construction and other documents filed through January 1, 2018, may comply either with 780 CMR effective October 20, 2017, or with the Eighth Edition version of 780 CMR in effect immediately prior to amendment, but not a mix of both. After January 1, 2018, concurrency with the Eighth Edition ends, and all applications for building permits and related construction and other documents shall comply with 780 CMR as amended effective October 20, 2017 only.

**R102.1 General**. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of 780 CMR specify different materials, methods of construction or other requirements, the most restrictive shall govern.

EXCEPTION: Where enforcement of a provision of 780 CMR would violate the conditions of a listing or manufacturer's instructions, the conditions of the listing and manufacturer's instructions shall apply.

**R102.2 Other Laws**. The provisions of 780 CMR do not purport to override or nullify any provision of state or federal law. The Massachusetts General Laws and the Code of Massachusetts Regulations are often referenced throughout 780 CMR. It is the code user's responsibility to determine all applicable laws and regulations relevant to 780 CMR or any portion thereof.

**R102.2.1 DDS Facilities**. Additional building features required by the Massachusetts Department of Developmental Services ("DDS") do not change the classification of residences operated or licensed by DDS as dwellings subject to 780 CMR.

**R102.2.2 Municipal Bylaws or Ordinances**. 780 CMR applies state-wide. When municipal bylaws and ordinances conflict with 780 CMR, 780 CMR shall govern unless the bylaws or ordinances were promulgated in accordance with M.G.L. c. 143, § 98.

**R102.3** Application of References. References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of 780 CMR 51.00: *Massachusetts Residential Code*.

**R102.4 Referenced Codes and Standards**. The codes and standards referenced in 780 CMR shall be considered part of the requirements of 780 CMR to the prescribed extent of each such reference. Where differences occur between provisions of 780 CMR and referenced codes and standards, 780 CMR shall apply.

**R102.5 Partial Invalidity**. In the event that any part or provision of 780 CMR is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

**R102.6 Existing Structures**. The legal occupancy of any structure existing on the date of adoption of 780 CMR shall be permitted to continue without change, except as is specifically covered in 780 CMR or as deemed necessary by the building official for the general safety and welfare of the public.

**R102.6.1 Laws in Effect**. Unless specifically provided otherwise in 780 CMR, and narrow to the provisions of 780 CMR, any existing building or structure shall meet and shall be presumed to meet the provisions of the applicable laws, codes, rules or regulations, bylaws or ordinances in effect at the time such building or structure was constructed or altered and shall be allowed to continue to be occupied pursuant to its use and occupancy, provided that the building or structure shall be maintained by the owner in accordance with 780 CMR.

**R102.6.2 Laws Not in Use**. In cases where applicable codes, rules or regulations, bylaws or ordinances were not in use at the time of such construction or alteration, the building or structure shall be maintained by the owner in accordance with 780 CMR.

**R102.6.3 Less Stringent**. In cases where the provisions of 780 CMR are less stringent than the applicable codes, rules or regulations, bylaws or ordinances at the time of such construction or substantial alteration, the applicable provisions of 780 CMR shall apply, providing such application can be reasonably demonstrated not to result in danger to the public, as determined by the building official.

**R102.6.4 Existing Means of Egress, Lighting and Ventilation**. The building official may cite any of the following conditions in writing as a violation and order the abatement within a time frame deemed necessary by the building official to make the building environment safe, healthy, or otherwise comply with 780 CMR:

- a. Inadequate number of means of egress;
- b. Egress components with insufficient width or so arranged to be inadequate, including signage and lighting; and
- c. Inadequate lighting and ventilation.

Where full compliance for means of egress, lighting and ventilation are not practical, the building official may accept compliance alternatives, engineering, or other evaluations that adequately address the deficiency.

**R102.7 Moved Structures**. Buildings or structures moved into or within the jurisdiction of the Commonwealth shall comply with the provisions of Appendix J to 780 CMR 51.00: *Massachusetts Residential Code*, provided that any new system shall comply as far as practicable with the requirements for new structures and provided further that the siting and fire separation distance comply with the requirements for new structures.

**R102.8 Maintenance of Existing Buildings and Structures**. All buildings and structures and all parts thereof, both existing and new, and all systems and equipment therein which are regulated by 780 CMR shall be maintained in a safe, operable and sanitary condition. All service equipment, means of egress, devices and safeguards which are required in a building or structure, or which were required by a previous statute in a building or structure, when erected, altered or repaired, shall be maintained in good working order.

**R102.8.1 Owner Responsibility**. The owner shall be responsible for compliance with the provisions of 780 CMR.

### PART 2 - ADMINISTRATION AND ENFORCEMENT

#### **SECTION 103 ENFORCEMENT**

**R103.1 Municipal and State Enforcement**. Reference to the Department of Building Safety shall be considered reference to the building official. 780 CMR shall be enforced by the building official, and in accordance with M.G.L. c. 143, §§ 3, 3A, 3Y, and 3Z and M.G.L. c. 22, the building official shall include the building commissioner or inspector of buildings, local inspector, and state building inspector.

#### SECTION 104 DUTIES AND POWERS OF BUILDING OFFICIAL

**R104.1 General**. The building official is hereby authorized and directed to enforce the provisions of 780 CMR in accordance with M.G.L. c. 143, §§ 3 and 3A. The state inspector of the Division of Professional Licensure, Office of Public Safety and

Inspections, shall enforce 780 CMR as to any building or structure within any city or town that is owned in whole or in part by the Commonwealth or any departments, commissions, agencies, or authorities of the Commonwealth.

**R104.2** Applications and Permits. The building official shall receive applications, review construction documents and issue permits for the erection, and alteration, demolition and moving of buildings and structures, inspect the premises for which such permits have been issued and enforce compliance with the provisions of 780 CMR.

**R104.3 Notices and Orders**. The building official shall issue all necessary notices or orders to ensure compliance with 780 CMR.

**R104.4 Inspections**. The building official shall make all of the required inspections, or the building official shall have the authority to accept reports of inspection by approved agencies or individuals. Reports of such inspections shall be in writing and be certified by a responsible officer of such approved agency or by the responsible individual. The building official is authorized to engage such expert opinion as deemed necessary to report upon unusual technical issues that arise, subject to the approval of the appointing authority.

**R104.4.1 Coordination of Inspections**. Whenever in the enforcement of 780 CMR, or another code or ordinance, the responsibility of more than one enforcement official is involved, it shall be the duty of the enforcement officials involved to coordinate their inspections and administrative orders as fully as practicable so that the owners and occupants of the building or structure shall not be subjected to visits by numerous inspectors or multiple or conflicting orders. Whenever an enforcement official observes an apparent or actual violation not within the official's authority, the official shall report the findings to the official having jurisdiction.

**R104.5 Identification**. The building official shall carry proper identification when inspecting structures or premises in the performance of duties under 780 CMR.

**R104.6 Right of Entry**. Where it is necessary to make an inspection to enforce the provisions of 780 CMR, or where the building official has reasonable cause to believe that there exists in a structure or upon a premises a condition which is contrary to or in violation of 780 CMR which makes the structure or premises unsafe, dangerous or hazardous, the building official is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by 780 CMR, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises is unoccupied, the building official shall first make a reasonable effort to locate the owner or other person having charge or control of the structure or premises and request entry. If entry is refused, the building official shall have recourse to the remedies provided by law to secure entry. See M.G.L. c. 143, §§ 6 and 50.

**R104.7 Department Records**. The building official shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for retention of public records.

**R104.8 Liability**. All claims of liability relative to building officials shall be governed by M.G.L. c. 258.

**R104.9** Approved Materials and Equipment. Materials, equipment and devices approved by the building official shall be constructed and installed in accordance with such approval.

**R104.9.1 Used Materials and Equipment**. The use of used materials which meet the requirements of 780 CMR for new materials is permitted. Used equipment and devices shall not be reused unless approved by the building official.

**R104.10 Modifications**. Wherever there are practical difficulties involved in carrying out the provisions of 780 CMR, the building official shall have the authority to grant modifications for individual cases, upon application of the owner or owner's representative, provided the building official shall first find that special individual reason makes the strict letter of 780 CMR impractical and the modification is in compliance with the intent and purpose of 780 CMR and that such modification does not lessen health, accessibility, life and fire safety, or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the building official.

**R104.10.1 Flood Hazard Areas**. The building official shall not grant modifications to any provision related to flood hazard areas as established by 780 CMR without the granting of a variance by the Building Code Appeals Board.

**R104.11** Alternative Materials, Design and Methods of Construction and Equipment. The provisions of 780 CMR are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by 780 CMR, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of 780 CMR, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in 780 CMR in quality, strength, effectiveness, fire resistance, durability and safety.

**R104.11.1 Research Reports**. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in 780 CMR, shall consist of valid research reports from approved sources.

**R104.11.2 Tests**. Whenever there is insufficient evidence of compliance with the provisions of 780 CMR, or evidence that a material or method does not conform to the requirements of 780 CMR, or in order to substantiate claims for alternative

materials or methods, the building official shall have the authority to require tests as evidence of compliance to be made at no expense to the enforcement authority. Test methods shall be as specified in 780 CMR or by other recognized test standards. In the absence of recognized and accepted test methods, the building official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the building official for the period required for retention of public records.

**R104.12 Matters Not Provided For**. In recognition of the inherent difficulty of drafting a functional code that contemplates every situation that may arise in the area of building safety, this section provides the building official, the Building Code Appeals Board, or the BBRS itself, with reasonable discretion to ensure that all life safety issues that may arise in the enforcement of 780 CMR may be appropriately addressed. Matters not specifically provided for in 780 CMR regarding structural, egress, fire, energy, sanitary or other requirements essential to occupant safety shall be determined by the building official or, in the case of an appeal, the Building Code Appeals Board. The details of action granting modifications shall be recorded and entered in the files of the building official. For highly specialized buildings and structures that conform to unique code requirements or nationally recognized standards not required in 780 CMR, registered design professionals shall provide sufficient information to the building official to support their approval.

#### **SECTION 105 PERMITS**

**R105.1 Required**. It shall be unlawful to construct, reconstruct, alter, repair, remove or demolish a building or structure; or to change the use or occupancy of a building or structure; or to install or alter any equipment for which provision is made or the installation of which is regulated by 780 CMR without first filing an application with the building official and obtaining the required permit.

**R105.2 Work Exempt from Permit**. Except for activities which may require a permit pursuant to other laws, and the specialized codes of M.G.L. c. 143, § 96, a building permit is not required for the following activities:

- 1. One-story detached accessory structures, provided that the floor area does not exceed 200 ft<sup>2</sup> (18.58 m<sup>2</sup>).
- 2. Fences not over seven feet (2,134 mm) high.
- 3. Retaining walls that are not over four feet (1,219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.
- 4. Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons (18,927 L) and the ratio of height to diameter or width does not exceed 2 to 1.
- 5. Sidewalks and driveways.
- 6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
- 7. Prefabricated swimming pools that are less than 24 inches (610 mm) deep.

- 8. Swings and other playground equipment. Refer to 521 CMR for accessibility requirements as applicable.
- 9. Window awnings supported by an exterior wall that do not project more than 54 inches (1,372 mm) from the exterior wall and do not require additional support.
- 10. Decks not exceeding 200 ft<sup>2</sup> (18.58 m<sup>2</sup>) in area, that are not more than 30 inches (762 mm) above grade at any point, that are not attached to a dwelling, and that do not serve the exit door required by section R311.4.
- 11. Greenhouses covered exclusively with plastic film. This exemption does not apply if the greenhouse is to be used for large assemblies of people or uses other than normally expected for this purpose.

**R105.2.1 Emergency Repairs**. Where replacements and repairs governed by 780 CMR must be performed in an emergency situation, the permit application shall be submitted within the next working business day to the building official.

NOTE: Pursuant to the terms of the specialized codes of M.G.L. c. 143, § 96, this exemption might not apply to emergency repairs conducted under those specialized codes.

**R105.2.2 Repairs**. Application or notice to the building official is not required for ordinary repairs to structures. A permit is required for work including but not limited to: the substantial cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or load-bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements or mechanical systems or other work affecting public health or general safety under the authority of 780 CMR.

**R105.3 Application for Permit**. To obtain a permit, the owner or authorized agent shall file a permit application on a form furnished by the building official for that purpose. Standard application forms, along with application forms that some municipalities use, can be found at <u>http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/</u>. Such applications shall:

- 1. Identify and describe the work to be covered by the permit for which application is made.
- 2. Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work.
- 3. Indicate the use and occupancy for which the proposed work is intended. If the work involves a care facility or residence licensed by a state agency, indicate the agency name and appropriate licensing regulation on the permit. For example: Department of Developmental Services, 115 CMR.
- 4. Be accompanied by construction documents and other information as required in section 107. Construction documents shall list any additional building features required by a Massachusetts state agency for its facilities that go beyond the requirements in 780 CMR.

- 5. State the valuation of the proposed work. The building official has authority to request from the applicant a detailed substantiation of the valuation.
- 6. Be signed by the owner or authorized agent.
- 7. Give such other data and information as required by the building official in accordance with 780 CMR.
- 8. If applicable, include the registration number and information of home improvement contractors or subcontractors for residential contracting services, in accordance with M.G.L. c. 142A, §§ 9(a) and 13.

**R105.3.1 Action on Application**. The building official shall examine or cause to be examined applications for permits and amendments, and shall issue or deny the permit, within 30 days of filing. If the application or the construction documents do not conform to the requirements of 780 CMR and all pertinent laws under the building official's jurisdiction, the building official shall deny such application in writing, stating the reasons therefore. The building official's signature shall be attached to every permit.

The following requirements, where applicable, shall be satisfied before a building permit is issued:

- 1. Zoning: in accordance with M.G.L. c. 40A or St. 1956, c. 665.
- 2. Railroad Right-of-way: in accordance with M.G.L. c. 40, § 54A.
- 3. Water Supply: in accordance with M.G.L. c. 40, § 54;
- 4. Debris Removal: in accordance with M.G.L. c. 40, § 54
- 5. Workers Compensation Insurance: in accordance with M.G.L. c. 152, § 25C(6).
- 6. Hazards to Air Navigation: in accordance with M.G.L. c. 90, § 35B.
- 7. Construction in coastal dunes, in accordance with flood construction requirements of 780 CMR.

R105.3.1.1 Determination of Substantially Improved or Substantially Damaged Existing Buildings in Flood Hazard Areas. For applications for reconstruction, rehabilitation, addition, alteration, repair or other improvement of existing buildings or structures located in a flood hazard area as established by section 322.1.1, the building official shall examine or cause to be examined the construction documents and shall make a determination with regard to the value of the proposed work. For buildings that have sustained damage of any origin, the value of the proposed work shall include the cost to repair the building or structure to its pre-damaged condition. If the building official finds that the value of proposed work equals or exceeds 50% of the market value of the building or structure before the damage has occurred or the improvement is started, the proposed work is a substantial improvement or restoration of substantial damage and the building official shall require existing portions of the entire building or structure to meet the requirements of section R322. For the purpose of this determination, a substantial improvement shall mean any repair, reconstruction, rehabilitation, addition or improvement of a building or

structure, the cost of which equals or exceeds 50% of the market value of the building or structure before the improvement or repair is started. Where the building or structure has sustained substantial damage, repairs necessary to restore the building or structure to its pre-damaged condition shall be considered substantial improvements regardless of the actual repair work performed. The term shall not include either of the following:

- 1. Improvements to a building or structure that are required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to ensure safe living conditions.
- 2. Any alteration of a historic building or structure, provided that the alteration will not preclude the continued designation as a historic building or structure. For the purposes of this exclusion, a historic building shall be any of the following:
  - 2.1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places.
  - 2.2. Determined by the Secretary of the U.S. Department of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district.
  - 2.3. Designated as historic under a state or local historic preservation program that is approved by the U.S. Department of the Interior.

**R105.3.1.1.1 Determination of Substantial Repair of a Foundation**. When work to repair or replace a foundation results in the repair or replacement of a portion of the foundation with a perimeter along the base of the foundation that equals or exceeds 50% of the perimeter of the base of the foundation measured in linear feet, or repair or replacement of 50% of the piles, columns or piers of a pile, column or pier supported foundation, the building official shall determine it to be substantial repair of a foundation. Applications determined by the building official to constitute substantial repair of a foundation shall require all existing portions of the entire building or structure to meet the requirements of section R322.

**R105.3.2 Time Limitation of Application**. An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued; except that the building official is authorized to grant one or more extensions of time for additional periods not exceeding 90 days each. The extension shall be requested in writing and justifiable cause demonstrated.

**R105.4 Validity of Permit**. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of 780 CMR or of any other law or ordinance. Permits presuming to give authority to violate or cancel the provisions of 780 CMR or other laws or ordinances shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the building official from requiring the correction of errors in the construction documents and other data. The building official is also authorized to prevent occupancy or use of a structure where in violation of 780 CMR or of any other laws or ordinances.

**R105.5 Expiration**. Every permit issued shall become invalid unless the work on the site authorized by such permit is commenced within 180 days after its issuance, or if the work authorized on the site by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing prior to the permit expiration date and justifiable cause demonstrated.

**R105.6 Suspension or Revocation**. The building official is authorized to suspend or revoke a permit issued under the provisions of 780 CMR wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of 780 CMR.

**R105.7 Placement of Permit**. The permit or copy shall be kept on the site of the work until the completion of the project.

**R105.8** Notice of Start. The building official may require to be notified at least one business day before the start of work.

R105.9 Reserved

### SECTION 106 Reserved

### SECTION 107 CONSTRUCTION DOCUMENTS

**R107.1 Submittal Documents**. Submittal documents consisting of construction documents, and other data shall be submitted in two or more sets with each application for a permit. Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional. Plans and specifications for work requiring a registered design professional shall bear a seal and signature of the responsible registered design professional in accordance with M.G.L. c. 143, § 54A. See also <u>www.mass.gov/dpl</u> for policy on electronic seal and signature for certain registered design professionals. Professional engineering services shall be required for activities which are deemed to constitute the practice of engineering as defined in M.G.L. c. 112, § 81D, except as provided in M.G.L. c. 54A and any legally required profession or as provided in M.G.L. c. 112, § 81R. Where work is performed by licensed trades people pursuant to M.G.L. c. 112, § 81R, plans and specifications

prepared to document that work shall not be required to bear the seal or signature of a registered design professional.

EXCEPTION: The building official is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that review of construction documents is not necessary to obtain compliance with 780 CMR.

**R107.1.1 Information on Construction Documents**. Construction documents shall be drawn upon suitable material. Electronic media documents are permitted to be submitted where approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of 780 CMR and relevant laws, ordinances, rules and regulations, as determined by the building official.

**R107.1.2 Manufacturer's Installation Instructions**. Manufacturer's installation instructions, as required by 780 CMR, shall be available on the job site at the time of inspection.

**R107.1.3 Information on Braced Wall Design**. For buildings and structures utilizing braced wall design, and where required by the building official, braced wall lines shall be identified on the construction documents. Pertinent information including, but not limited to, bracing methods, location and length of braced wall panels and foundation requirements of braced wall panels at top and bottom shall be provided.

**R107.1.4 Information for Construction in Flood Hazard Areas**. For buildings and structures located in whole or in part in flood hazard areas as established by Table R301.2(1), construction documents shall include:

- 1. Delineation of flood hazard areas, floodway boundaries and flood zones and the design flood elevation, as appropriate.
- 2. The elevation of the proposed lowest floor, including basement; in areas of shallow flooding (AO Zones), the height of the proposed lowest floor, including basement, above the highest adjacent grade.
- 3. The elevation of the bottom of the lowest horizontal structural member in coastal high hazard areas (V Zone).
- 4. If design flood elevations are not included on the community's Flood Insurance Rate Map ("FIRM"), the building official and the applicant shall obtain and reasonably utilize any design flood elevation and floodway data available from other sources.

**R107.1.5 Manufactured Buildings and Modular Homes**. Document submittal shall be as follows:

- 1. Site specific plans and specifications.
- 2. Plan Identification Number Assignment Form with BBRS number. This is to confirm plans have been approved by the Office and shall include a stamp approval and signature.
- 3. Plans shall be stamped on every page by a third party inspection agency.
- 4. Every page showing calculations by a registered design professional shall be provided with their stamp and signature.
- 5. Energy compliance certificate.
- 6. Set manuals are required to be on site at time of project set and shall be specific to the project.

EXCEPTION: If all connection details are provided on the plans then the set manual is not required.

7. Set crew information shall accompany the plan submittal package with approved certification from manufacturer.

**R107.1.6 Townhouse Buildings Greater Than 35,000 ft.**<sup>3</sup>. Such buildings require registered design professional services in accordance with 780 CMR 107.6: *Construction Control.* 

**R107.2** Site Plan or Plot Plan. The construction documents submitted with the application for permit shall be accompanied by a site plan showing the size and location of new construction and existing structures on the site and distances from lot lines. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The building official is authorized to waive or modify the requirement for a site plan where the application for permit is for alteration or repair or where otherwise warranted.

**R107.3 Examination of Documents**. The building official shall examine or cause to be examined construction documents for code compliance.

**R107.3.1** Approval of Construction Documents. Where the building official issues a permit, the construction documents shall be approved in writing or by a stamp that states "REVIEWED FOR CODE COMPLIANCE." One set of construction documents so reviewed shall be retained by the building official, and one set shall be returned to the applicant, shall be kept at the site of work, and shall be open to inspection by the building official or a duly authorized representative. If the construction documents contain fire protection and/or detection requirements one set will be required for fire department review.

**R107.3.2 Previous Approvals**. 780 CMR shall not require changes in the construction documents, construction or designated occupancy of a structure for which a lawful permit has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of 780 CMR and has not been abandoned.

**R107.3.3 Phased Approval**. The building official is authorized to issue a permit for the construction of foundations or any other part of a building or structure before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of 780 CMR. The holder of such permit for the foundation or other parts of a building or structure shall proceed at the holder's own risk with the building operation and without assurance that a permit for the entire structure will be granted.

**R107.3.4 Fire Department Review**. For permits that include fire protection systems work construction documents shall be filed with the building official who shall cause them to be filed with the head of the local fire department for review. The fire department shall have ten working days after receiving the documents to complete its review. Upon the fire department's written request, the building official may grant one or more extensions up to a total review period maximum of 30 days. If the fire department review is not received within the allowed time frame the building official may upon review deem the documents in compliance with 780 CMR. If the head of the local fire department believes such construction documents to be noncompliant with 780 CMR or reference standards, he or she shall notify the building official in writing citing relevant sections of noncompliance with 780 CMR or the section of the referenced standards. See M.G.L. c. 148, § 28A.

**R107.4 Amended Construction Documents**. Work shall be installed in accordance with the approved construction documents, and any changes made during construction that are not in compliance with the approved construction documents shall be resubmitted for approval as an amended set of construction documents.

**R107.5 Retention of Construction Documents**. One set of approved construction documents shall be retained by the building official in accordance with M.G.L. c. 66, § 8.

#### SECTION 108 TEMPORARY STRUCTURES AND USES

**R108.1 General**. The building official is authorized to issue a permit for temporary structures and temporary uses. Such permits shall be limited as to time of service, but shall not be permitted for more than 180 days. The building official is authorized to grant extensions for demonstrated cause. See 780 CMR 31.00.

**R108.2 Conformance**. Temporary structures and uses shall conform to the structural strength, fire safety, means of egress, accessibility, light, ventilation and sanitary requirements of 780 CMR as necessary to ensure public health, safety and general welfare.

**R108.3 Fire Department Review**. Temporary structures and uses shall be approved by the building official in consultation with the head of the local fire department.

**R108.4 Termination of Approval**. The building official is authorized to terminate for cause and with written notice such permit for a temporary structure or use and to order the temporary structure or use to be discontinued.

**R108.5 State of Emergency**. Upon declaration by the governor of a state of emergency under St. 1950. c. 639, or of an emergency detrimental to the public health under M.G.L. c. 17, § 2A, a building or space within a building may be used as a temporary emergency use for purposes of housing and/or caring for persons in accordance with procedures established for such purpose as contained in 780 CMR 31.00.

#### **SECTION 109 FEES**

**R109.1 Payment of Fees**. A permit shall not be valid until the fees prescribed by law have been paid, nor shall an amendment to a permit be released until the additional fee, if any, has been paid in the amount established by the applicable governing authority.

**R109.2 Schedule of Permit Fees.** For state building permit fees, see 801 CMR 4.02: *Fees for Licenses, Permits, and Services to be Charged by State Agencies.* For municipal building permit fees, refer to the municipality.

**R109.3 Building Permit Valuations**. The applicant for a permit shall provide an estimated value of project cost at time of application. If, in the opinion of the building official, the valuation is underestimated on the application, the permit shall be denied, unless the applicant can show detailed estimates to meet the approval of the building official. Final building permit valuation shall be set by the building official.

**R109.4 Work Commencing Before Building Permit Issued**. Any person who commences any work on a building or structure governed by 780 CMR before obtaining the necessary building permit shall be in violation of 780 CMR and subject to penalties. See section 114.

EXCEPTION: Emergency repairs as found in section 105.2.1.

**R109.5 Related Fees**. Payment of the building permit fee shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

#### SECTION 110 INSPECTIONS

**R110.1 General**. Construction or work for which a permit is required shall be subject to inspection by the building official and such construction or work shall remain accessible and exposed for inspection purposes until approved. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of 780 CMR or of other laws or ordinances . Inspections presuming to give authority to violate or cancel the provisions of 780 CMR or of other laws or ordinances the work to remain accessible and exposed for inspection purposes and that all work shall be conducted, installed, protected

and completed in a workmanlike and acceptable manner so as to secure the results intended by 780 CMR. Neither the building official nor the applicable enforcement authority shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

**R110.2 Preliminary Inspection**. Before issuing a permit, the building official is authorized to examine or cause to be examined buildings, structures and sites for which an application has been filed.

**R110.3 Required Inspections**. The building official shall conduct inspections during construction at intervals sufficient to ensure compliance with the provisions of 780 CMR which may include inspections set forth in sections 110.3.1 through 110.3.10. The building official shall inform the applicant of the required points of inspection at the time of permit issuance. The building official may designate specific inspection points in the course of construction that require the contractor or builder to give the building official one business day notice prior to the time when those inspections need to be performed. The building official shall make the inspections within two business days after notification.

**R110.3.1 Foundation Inspection**. Inspection of the foundation shall be made after poles or piers are set or trenches or basement areas are excavated and any required forms erected and any required reinforcing steel is in place and supported prior to the placing of concrete. The foundation inspection shall include excavations for thickened slabs intended for the support of bearing walls, partitions, structural supports, or equipment and special requirements for wood foundations.

**R110.3.2 Plumbing, Mechanical, Gas and Electrical Systems Inspection**. Rough inspection of plumbing, mechanical, gas and electrical systems shall be made prior to covering or concealment, before fixtures or appliances are set or installed, and prior to framing inspection.

EXCEPTION: Backfilling of ground-source heat pump loop systems tested in accordance with section M2105.1 prior to inspection shall be permitted.

**R110.3.3 Floodplain Inspections**. For construction in flood hazard areas as established by Table R301.2(1), upon placement of the lowest floor, including basement, and prior to further vertical construction, the building official shall require submission of documentation, prepared and sealed by a registered design professional, of the elevation of the lowest floor, including basement, required in section R322.

**R110.3.4 Frame and Masonry Inspection**. Inspection of framing and masonry construction shall be made after the roof, masonry, framing, firestopping, draftstopping and bracing are in place and after the plumbing, mechanical and electrical rough inspections are approved.

**R110.3.5 Other Inspections**. In addition to inspections in sections 110.3.1 through 110.3.4, the building official shall have the authority to make or require any other inspections to ascertain compliance with 780 CMR and other laws enforced by the building official.

**R110.3.5.1** Fire-resistance-rated Construction Inspection. Where fire-resistance-rated construction is required between dwelling units or due to location on property, the building official shall require an inspection of such construction after lathing or gypsum board or gypsum panel products are in place, but before any plaster is applied, or before board or panel joints and fasteners are taped and finished.

**R110.3.6 Final Inspection**. Final inspection shall be made after the permitted work is complete and prior to occupancy.

**R110.3.6.1 Elevation Documentation**. If located in a flood hazard area, the documentation of elevations required in section R322.1.10 shall be submitted to the building official prior to the final inspection.

**R110.4 Inspection Agencies**. The building official is authorized to accept reports of approved inspection agencies, provided such agencies satisfy the requirements as to qualifications and reliability.

**R110.5 Inspection Requests**. It shall be the duty of the holder of the building permit or their duly authorized agent to notify the building official when work is ready for inspection. It shall be the duty of the permit holder to provide access to and means for inspections of such work that are required by 780 CMR. The building official may require the permit holder or his or her representative or the licensed construction supervisor to attend these inspections.

**R110.6 Approval Required**. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or his or her agent wherein the same fails to comply with 780 CMR. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the building official.

#### SECTION 111 CERTIFICATE OF OCCUPANCY

**R111.1 Use and Occupancy**. No building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made, until the building commissioner, inspector of buildings, or when applicable, the state inspector, has issued a certificate of occupancy therefore as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of 780 CMR or of other laws or ordinances. Conformance to

all applicable specialized codes of M.G.L. c. 143, § 96, and submittal of a certificate of compliance for Title V, if applicable in accordance with 310 CMR 15.00, are requirements of the issuance of the certificate of use and occupancy.

EXCEPTION: Certificates of occupancy are not required for work exempt from permits under section 105.2 or for alterations which do not require a change to the occupancy.

**R111.1.1 Buildings or Structures Hereafter Altered**. A building or structure, in whole or in part, altered to change from one use group to another, to a different use within the same use group, the maximum live load capacity, or the occupancy load capacity shall not be occupied or used until the certificate shall have been issued certifying that the work has been completed in accordance with the provisions of the approved permits and of the applicable codes for which permit is required.

**R111.1.2 Massachusetts Licensed Care Facilities**. Certificate of occupancy inspections for Massachusetts licensed care facilities, including, inspection of special building features required by the licensing agency, shall be limited to verifying compliance with the provisions of 780 CMR.

**R111.2 Certificate Issued**. After the building official inspects the building or structure and finds no violations of the provisions of 780 CMR or other laws that are enforced by the building official, the building official/inspector of buildings or state building inspector shall issue a certificate of occupancy that contains the following:

- 1. The building permit number.
- 2. The address of the structure.
- 3. (Reserved).
- 4. A description of that portion of the structure for which the certificate is issued.
- 5. A statement that the described portion of the structure has been inspected for compliance with the requirements of 780 CMR for the occupancy and division of occupancy and the use for which the proposed occupancy is classified.
- 6. The name of the building commissioner or inspector of buildings or state inspector.
- 7. The edition of the code under which the permit was issued.
- 8. If an automatic sprinkler system is provided, whether the sprinkler system is required.
- 9. Any special stipulations and conditions of the building permit.
- 10. If the facility is licensed by a state agency, the name of the agency and the name and number of any relevant Code of Massachusetts Regulations that apply regarding building features.

**R111.3 Temporary Occupancy**. The building official is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the permit, provided that such portion or portions shall be occupied safely. The building official shall set a time period, not to exceed 180 days, during which the temporary certificate of

occupancy is valid. Upon written request from the permit holder, the building official may extend the temporary occupancy permit for additional 30 day periods or a period at the discretion of the building official.

**R111.4 Revocation**. The building official is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of 780 CMR wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of 780 CMR.

## SECTION 112 SERVICE UTILITIES Reserved

## **SECTION 113 APPEALS**

**R113.1 General**. Appeals of orders, decisions, determinations and failures to act made by any state or local agency or any person or state or local agency charged with the administration or enforcement of the state building code or any of its rules and regulations, except the specialized codes of M.G.L. c. 143, § 96, relative to the application and interpretation of 780 CMR shall be addressed by the Building Code Appeals Board in accordance with M.G.L. c. 143, § 100. An application to file an appeal may be found at <a href="http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/">http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/</a>.

### R113.2 Limitations on Authority. Reserved

### R113.3 Qualifications. Reserved

**R113.4 Local and Regional Boards of Appeals**. If a city, region or town had not duly established by ordinance or bylaw or otherwise a local or regional building code board of appeals prior to January 1, 1975, said city, region or town may establish a local or regional board of appeals in accordance with section 113, referred to as the local board of appeals, consisting of not less than three nor more than five members appointed by the chief administrative officer of the city, region or town. Any appeal originating in a city or town that has a local board shall be heard by the local board before being heard by the state Building Code Appeals Board.

**R113.4.1 Review**. Any person, including the Building Code Appeals Board, aggrieved by a decision of the local board of appeals, whether or not a previous party to the decision, or any municipal officer or official board of the municipality, may, not later than 45 days after the mailing of the decision of the local board, apply to the Building Code Appeals Board for a hearing de novo, in accordance with section 113. All local appeal decisions are to be reviewed by the BBRS and are to be summarized in a manner acceptable to the BBRS. Forms and other information pertaining to this review process are found at <u>http://www.mass.gov/ocabr/government/ocaagencies/dpl-lp/opsi/</u>.

**R113.4.2 Qualifications of Local Board Members**. Each member of a local board of appeals established under M.G.L. c. 143, § 100 shall have had at least five years' experience in the construction, alteration, repair and maintenance of building and building codes. At least one member shall be a registered structural or civil professional engineer and one member a licensed registered architect.

**R113.4.3 Chairman of Local or Regional Board**. The board shall select one of its members to serve as chairman and a detailed record of all proceedings shall be kept on file in the building department.

**R113.4.4 Absence of Members**. During the absence of a member of a local board of appeals for reason of disability or disqualification, the chief administrative officer of the city, region or town shall designate a substitute who shall meet the qualifications as outlined in section 113.

### **SECTION 114 VIOLATIONS**

**R114.1 Unlawful Acts**. It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, move, remove, demolish, occupy or change the use or occupancy of any building, structure or equipment regulated by 780 CMR, or cause same to be done, in conflict with or in violation of any of the provisions of 780 CMR.

**R114.2** Notice of Violation. The building official is authorized to serve a notice of violation or order on the person responsible for the erection, construction, alteration, extension, repair, moving, removal, demolition or occupancy of a building or structure in violation of the provisions of 780 CMR, or in violation of a permit or certificate issued under the provisions of 780 CMR. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

**R114.2.1 Notice Service and Content**. Every notice or order authorized pursuant to 114.2 shall be in writing and shall be served on the person responsible:

- 1. Personally, by any person authorized by the building official;
- 2. By any person authorized to serve civil process by leaving a copy of the order or notice at the responsible party's last and usual place of business or abode;
- 3. By sending the party responsible or his or her agent authorized to accept service of process in the Commonwealth a copy of the order by registered or certified mail return receipt requested, if he or she is within the Commonwealth; or
- 4. If the responsible party's last and usual place of business or abode is unknown, by posting a copy of this order or notice in a conspicuous place on or about the premises in violation and by publishing it for at least three out of five consecutive days in one or more newspapers of general circulation wherein the building or premises affected is situated.

**R114.3 Enforcement**. Violations to 780 CMR shall be enforced in accordance with the applicable provisions of M.G.L. c. 143, M.G.L. c. 148, and M.G.L. c. 148A.

**R114.4 Violation Penalties**. Any person who violates a provision of 780 CMR or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure, or makes a change of use in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of 780 CMR, shall be subject to penalties as prescribed by M.G.L. c. 143,  $\S$  94(a).

### SECTION 115 STOP WORK ORDER

**R115.1** Authority. Whenever the building official finds any work regulated by 780 CMR being performed in a manner either contrary to the provisions of 780 CMR or dangerous or unsafe, the building official is authorized to issue a stop work order.

**R115.2 Issuance**. The initial stop work order may be verbal, but shall be in writing within 48 hours and shall cite the time and date of the verbal order and be given to the owner of the property involved, or to the owner's agent, or to the person doing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order, and the conditions under which the cited work will be permitted to resume.

**R115.3 Unlawful Continuance**. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be subject to penalties as prescribed by M.G.L. c. 143, § 94(a). Each day during which a violation exists shall constitute a separate offense.

#### SECTION 116 UNSAFE STRUCTURES AND EQUIPMENT

**R116.1 General**. The provisions of this section are established by and work in conjunction with the requirements of M.G.L. c. 143, §§ 6 through 12.

**R116.2 Standards for Making Buildings Safe or Secure**. Any owner of a building who has been notified that said building shall be made safe or secure under section 116, shall:

- 1. Remove all materials determined by the head of the fire department or building official to be dangerous in case of fire.
- 2. Secure all floors accessible from grade utilizing one of the following methods so long as such method is approved by the head of the fire department and building official in writing:
  - a. Secure all window and door openings in accordance with the U.S. Fire Administration, National Arson Prevention Initiative Board Up Procedures found here: <u>http://www.interfire.org/pdf/USFA%20Board%20Up.pdf</u> continuously until such time as the building is reoccupied;

- b. Provide 24 hour watchman services, continuously until such time as the building is reoccupied; or
- c. Provide a monitored intruder alarm system at the perimeter of all floors accessible from grade, continuously until such time as the building is reoccupied.

Said owner, as the case may be, shall notify the building official that the approved method chosen to secure the building has been incorporated. Said owner shall allow the building official to enter the building for an inspection to ascertain that the building is secured and made safe. Said owner shall allow the head of the fire department to enter the building. The building official shall be supplied with records of maintenance and operation if the provisions of section 116.2 items 2b. or 2c. are used.

- 3. Maintain any existing fire alarms or sprinkler systems unless written permission is obtained from the head of the fire department in accordance with M.G.L. c. 148, § 27A to shut off or disconnect said alarms or systems.
- 4. Maintain utilities unless written permission is obtained from the building official to disconnect said utilities. Permission to disconnect utilities shall not be granted if it will result in inadequate heat to prevent freezing of an automatic sprinkler system or inadequate utilities to maintain any other protection systems.
- 5. The requirements of section 116.2 items 1. through 4. do not prevent a building official from ordering or taking expeditious, temporary security measures in emergency situations pending the completion of the requirements of section 116.2 items 1. through 4.

For the purposes of section R116, an "emergency situation" shall be defined as: an unexpected incident, which by its very nature may present a threat to public safety personnel who may be required to affect a rescue effort or conduct fire extinguishment operations.

Upon refusal or neglect of said owner to comply with such notice, any building official acting under the authority of M.G.L. c. 143, §§ 6 through 12, shall enforce section R116.2 item 2a. or other equivalent procedure approved by the head of the fire department, continuously until such time as the building is reoccupied.

Any building which has been made to conform to the provisions of section 116.2 during vacancy may be reoccupied under its last permitted use and occupancy classification, provided that any systems which were disconnected or shut down during the period of vacancy are restored to fully functional condition and subject to section 105 and M.G.L. c. 40A. The local building official shall be notified in writing prior to re-occupancy. If said building is changed in use or occupancy or otherwise renovated or altered it shall be subject to the applicable provisions of 780 CMR 34.00: *Existing Building Code*.

**116.3 Marking or Identifying Certain Buildings That Are Especially Unsafe in the Case of Fire**. Any building official who determines that a building is especially unsafe in case of fire under section 116 shall notify the head of the fire department about the

existence of said building. The building official, in cooperation with the head of the fire department, shall cause said building to be marked in accordance with the marking requirements in 527 CMR 10.00: *Fire Prevention, General Provisions*.

### **CHAPTER 2: DEFINITIONS**

R202 Add and/or revise definitions to read as follows:

**BASIC WIND SPEED**. Three-second gust speed at 33 feet (10,058 mm) above the ground in Exposure C (see section R301.2.1) as given in Table R301.2(4).

**BUILDING OFFICIAL**. The building commissioner/inspector of buildings, local inspector or state building inspector charged with the administration and enforcement of 780 CMR in accordance with M.G.L. c. 143, §§ 3 and 3A.

**COASTAL DUNE**. A coastal wetland resource area subject to the construction requirements of section R322.4.

**COASTAL WETLAND RESOURCE AREA**. Any coastal wetland resource area subject to protection under the Wetlands Protection Act, M.G.L. c. 131, § 40, and the Wetlands Protection Act Regulations, 310 CMR 10.21 through 10.35. Coastal wetland resource areas include barrier beaches, coastal beaches, coastal dunes, rocky intertidal shores, tidal flats, land subject to 100 year coastal storm flowage, coastal banks, land containing shellfish, lands subject to tidal action, and lands under an estuary, salt pond or certain streams, ponds, rivers, lakes or creeks within the coastal zone that are anadromous/catadromous fish runs. Coastal wetland resources are shown on a map entitled "Map of Coastal Wetland Resources For Building Officials." Once a coastal wetland resource is identified, coastal dunes within that resource are delineated in accordance with guidance provided on the map.

**ELECTRIC VEHICLE SERVICE EQUIPMENT (EVSE) Level -2 (220 - 240V)**. Equipment expressly designed for the safe charging of battery electric and plug-in hybrid electric vehicles.

JURISDICTION. The Board of Building Regulations and Standards.

**LODGING HOUSE**. A one-family dwelling with five or fewer guest rooms where one or more occupants are primarily permanent in nature and compensation is provided for the guest rooms. A building licensed as a "lodging house" in accordance with M.G.L. c. 140, §§ 22 through 31 shall comply with 780 CMR requirements according to its appropriate use and occupancy classification.

**NATIVE LUMBER**. Native lumber is wood processed in the Commonwealth of Massachusetts by a mill registered in accordance with 780 CMR 110.R4: *Registration of Native Lumber Producers*. Such wood is ungraded but is stamped or certified in accordance with the requirements of 780 CMR 110.R4. For the purpose of this definition, native lumber shall be restricted to the use in one- and two-story dwellings, barns, sheds, agricultural and accessory buildings and other structures when permitted by 780 CMR 110.R4.

**OFFICIAL INTERPRETATION**. A written interpretation made by the BBRS, under authority of M.G.L. c. 143, § 94(e), or by the Building Code Appeals Board under authority of M.G.L. c. 143, § 100, of any provision of 780 CMR, or its referenced standards, except the specialized codes.

**REGISTERED DESIGN PROFESSIONAL**. An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the Commonwealth.

**SPECIALIZED CODES.** Codes, rules or regulations pertaining to building construction, reconstruction, alteration, repair or demolition promulgated by and under the authority of various boards authorized by the general court. See M.G.L. c. 143, § 96.

**STATE BUILDING INSPECTOR**. An "inspector" as described in M.G.L. c. 143, § 3A.

**WINDBORNE DEBRIS REGION**. Areas within hurricane-prone regions located in accordance with one of the following:

- 1. Within one mile (1.61 km) of the coastal mean high water line where the nominal design wind speed, V<sub>asd</sub>, is 130 mph (58 m/s) or greater.
- 2. In areas where the nominal design wind speed,  $V_{asd}$ , is 140 mph (63.6 m/s) or greater.

NOTE: Values of  $V_{ult}$  are found in Table R301.2(4). To convert  $V_{ult}$  to  $V_{asd}$ , refer to Table R301.2.1.3.

### **CHAPTER 3: BUILDING PLANNING**

**R301.1.1** Add item 4 below item 3 as follows:

4. American Forest and Paper Association ("AF&PA") *Prescriptive Residential Wood Deck Construction Guide* (DCA6).

R301.1.4 Add subsection as follows:

**R301.1.4 Townhouse Buildings Greater than 35,000 ft<sup>3</sup>**. Such buildings shall require registered design professional services in accordance with section 107.6 Construction Control.

**R301.2** Revise section, and add Table R301.2(1) as follows:

**R301.2 Climatic and Geographic Design Criteria**. Buildings shall be constructed in accordance with the provisions of 780 CMR 51.00: *Massachusetts Residential Code* as limited by the provisions of this section. See Table R301.2(1).

Ground Snow Load		Table R301.2(4)
	Speed	Table R301.2(4)
	Topographic effects	No
Wind Design	Special Wind Regions	No
wind Design	Windborne debris zone	Any area within a windborne debris region, as defined in Chapter 2 of 780 CMR 51.00: <i>Massachusetts Residential Code</i>
Seismic Design Category		No
	Weathering	Severe
Subject to Damage From	Frost line depth	48 inches. For shallow foundations, see R403.3(2).
	Termite	See Figure R301.2(6).
Winter Design Temperature		Dry bulb
Ice Barrier Underlayment Required		For roofing, see R905.2.7.
Flood Hazards		See section 322.
Air Freezing Index		For shallow foundations, see R403.3(2).
Mean Annual		See
Temperature		https://www.ncdc.noaa.gov/sotc/global/201607

Table R301.2(1) CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA

R301.2.1.1 Review subsection as follows:

**R301.2.1.1 Wind Limitations and Wind Design Required**. The wind provisions of 780 CMR 51.00: *Massachusetts Residential Code* shall not apply to the design of buildings where the ultimate wind speed, Vult, is 140 mph or greater. See Table R301.2(4) for wind speeds by city or town.

### **EXCEPTIONS**:

1. For concrete construction, the wind provisions of 780 CMR 51.00: *Massachusetts Residential Code* shall apply in accordance with the limitations of sections R404 and R608.

2. For structural insulated panels, the wind provisions of 780 CMR 51.00: *Massachusetts Residential Code* shall apply in accordance with the limitations of section R610.

3. For cold-formed steel light-frame construction, the wind provisions of 780 CMR 51.00: *Massachusetts Residential Code* shall apply in accordance with the limitations of sections R505, R603 and R804.

In regions where wind design is required, the design of buildings for wind loads shall be in accordance with one or more of the following methods:

- 1. AF&PA Wood Frame Construction Manual ("WFCM") or its Guide to Wood Construction in High Wind Areas for One- and Two-Family Dwellings, 110 mph Exposure B. A Commonwealth of Massachusetts version of the checklist can be used in place of the checklist at the end of the guide and is found at <a href="http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/">http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/</a>.
- 2. ICC Standard for Residential Construction in High-Wind Regions (ICC 600).
- 3. ASCE Minimum Design Loads for Buildings and Other Structures (ASCE 7).
- 4. AISI Standard for Cold-Formed Steel Framing—Prescriptive Method For Oneand Two-Family Dwellings (AISI S230).
- 5. International Building Code.

The elements of design not addressed by the methods in section R301.2.1.1 1. through 5. shall be in accordance with the provisions of 780 CMR.

Where ASCE 7 or the International Building Code is used for the design of the building, the wind speed map and exposure category requirements as specified in ASCE 7 and the International Building Code shall be used.

 Table R301.2(4) Add table as follows:

TABLE R301.2(4) SNOW LOADS AND WIND SPEEDS

	SNOW LOADS		
City/Town	Ground Snow Load, P <sub>g</sub> (psf)	Minimum Flat Roof Snow Load, Pr <sup>1</sup> (psf)	Basic Wind Speed, V <sub>ult</sub> (mph)
Abington	35	30	132
Acton	50	35	124

	SNOW LOADS		
City/Town	Ground Snow Load, Pg (psf)	Minimum Flat Roof Snow Load, Pf <sup>1</sup> (psf)	Basic Wind Speed, V <sub>ult</sub> (mph)
Acushnet	30	30	138
Adams <sup>2</sup>	60	40	115
Agawam	35	35	120
Alford <sup>2</sup>	40	40	115
Amesbury	50	30	123
Amherst	40	35	118
Andover	50	30	124
Aquinnah (Gay Head)	25	25	140
Arlington	40	30	127
Ashburnham	60	35	118
Ashby	60	35	119
Ashfield	50	40	115
Ashland	40	35	127
Athol	60	35	117
Attleboro	35	30	132
Auburn	50	35	125
Avon	35	35	131
Ayer	50	35	122
Barnstable	30	25	140
Barre	50	35	120
Becket <sup>2</sup>	60	40	115
Bedford	50	30	125
Belchertown	40	35	119
Bellingham	40	35	129
Belmont	40	30	127
Berkley	30	30	135
Berlin	50	35	124
Bernardston	60	35	115
Beverly	50	30	127
Billerica	50	30	124
Blackstone	40	35	129
Blandford	50	40	116
Bolton	50	35	123
Boston	40	30	128
Bourne	30	25	139
Boxborough	50	35	123
Boxford	50	30	125
Boylston	50	35	123

	SNOW LOADS			
City/Town	Ground Snow Load, Pg (psf)	Minimum Flat Roof Snow Load, Pr <sup>1</sup> (psf)	Basic Wind Speed, V <sub>ult</sub> (mph)	
Braintree	35	30	131	
Brewster	25	25	140	
Bridgewater	30	30	134	
Brimfield	40	35	123	
Brockton	35	30	132	
Brookfield	50	35	122	
Brookline	40	30	128	
Buckland <sup>2</sup>	60	40	115	
Burlington	50	30	125	
Cambridge	40	30	128	
Canton	40	35	130	
Carlisle	50	30	124	
Carver	30	30	136	
Charlemont <sup>2</sup>	60	40	115	
Charlton	50	35	124	
Chatham	25	25	140	
Chelmsford	50	30	123	
Chelsea	40	30	128	
Cheshire <sup>2</sup>	60	40	115	
Chester	60	40	115	
Chesterfield	50	40	115	
Chicopee	35	35	119	
Chilmark	25	25	140	
Clarksburg <sup>2</sup>	60	40	115	
Clinton	50	35	123	
Cohasset	35	30	131	
Colrain <sup>2</sup>	60	40	115	
Concord	50	35	125	
Conway	50	40	115	
Cummington <sup>2</sup>	60	40	115	
Dalton <sup>2</sup>	60	40	115	
Danvers	50	30	126	
Dartmouth	30	30	139	
Dedham	40	35	129	
Deerfield	50	35	115	
Dennis	30	25	140	
Dighton	30	30	135	
Douglas	40	35	127	

	SNOW LOADS		
City/Town	Ground Snow Load, Pg (psf)	Minimum Flat Roof Snow Load, Pf <sup>1</sup> (psf)	Basic Wind Speed, V <sub>ult</sub> (mph)
Dover	40	35	128
Dracut	50	30	122
Dudley	50	35	126
Dunstable	50	35	121
Duxbury	30	30	135
E. Bridgewater	35	30	133
E. Brookfield	50	35	122
E. Longmeadow	35	35	121
Eastham	25	25	140
Easthampton	40	35	117
Easton	35	30	132
Edgartown	25	25	140
Egremont <sup>2</sup>	40	40	115
Erving	50	35	116
Essex	50	30	127
Everett	40	30	128
Fairhaven	30	30	139
Fall River	30	30	137
Falmouth	30	25	140
Fitchburg	60	35	120
Florida <sup>2</sup>	60	40	115
Foxborough	35	35	131
Framingham	40	35	127
Franklin	40	35	129
Freetown	30	30	137
Gardner	60	35	119
Georgetown	50	30	124
Gill	50	35	115
Gloucester	50	30	128
Goshen	50	40	115
Gosnold	30	25	140
Grafton	50	35	126
Granby	35	35	119
Granville	50	40	117
Great Barrington <sup>2</sup>	50	40	115
Greenfield	50	35	115
Groton	60	35	121
Groveland	50	30	123

	SNOW LOADS			
City/Town	Ground Snow Load, Pg (psf)	Minimum Flat Roof Snow Load, Pr <sup>1</sup> (psf)	Basic Wind Speed, V <sub>ult</sub> (mph)	
Hadley	40	35	117	
Halifax	30	30	134	
Hamilton	50	30	126	
Hampden	35	35	122	
Hancock <sup>2</sup>	50	40	115	
Hanover	35	30	133	
Hanson	35	30	133	
Hardwick	50	35	120	
Harvard	50	35	123	
Harwich	25	25	140	
Hatfield	40	35	117	
Haverhill	50	30	123	
Hawley <sup>2</sup>	60	40	115	
Heath <sup>2</sup>	60	40	115	
Hingham	35	30	131	
Hinsdale <sup>2</sup>	60	40	115	
Holbrook	35	30	131	
Holden	50	35	122	
Holland	40	35	124	
Holliston	40	35	128	
Holyoke	35	35	118	
Hopedale	40	35	128	
Hopkinton	40	35	127	
Hubbardston	50	35	120	
Hudson	50	35	124	
Hull	35	30	130	
Huntington	50	40	116	
Ipswich	50	30	126	
Kingston	30	30	135	
Lakeville	30	30	136	
Lancaster	50	35	122	
Lanesborough <sup>2</sup>	50	40	115	
Lawrence	50	30	123	
Lee <sup>2</sup>	50	40	115	
Leicester	50	35	123	
Lenox <sup>2</sup>	50	40	115	
Leominster	60	35	121	
Leverett	40	35	117	

	SNOW LOAD		
City/Town	Ground Snow Load, Pg (psf)	Minimum Flat Roof Snow Load, Pr <sup>1</sup> (psf)	Basic Wind Speed, Vult (mph)
Lexington	40	30	126
Leyden <sup>2</sup>	60	40	115
Lincoln	40	35	126
Littleton	50	35	123
Longmeadow	35	35	120
Lowell	50	30	123
Ludlow	35	35	120
Lunenburg	60	35	120
Lynn	40	30	128
Lynnfield	50	30	126
Malden	40	30	127
Manchester	50	30	128
Mansfield	35	30	131
Marblehead	40	30	128
Marion	30	30	139
Marlborough	50	35	125
Marshfield	35	30	134
Mashpee	30	25	140
Mattapoisett	30	30	139
Maynard	50	35	124
Medfield	40	35	129
Medford	40	30	127
Medway	40	35	129
Melrose	40	30	127
Mendon	40	35	128
Merrimac	50	30	123
Methuen	50	30	122
Middleborough	30	30	135
Middlefield	60	40	115
Middleton	50	30	125
Milford	40	35	128
Millbury	50	35	125
Millis	40	35	129
Millville	40	35	129
Milton	40	30	130
Monroe <sup>2</sup>	60	40	115
Monson	40	35	122
Montague	50	35	116

	SNOW LOAD		
City/Town	Ground Snow Load, Pg (psf)	Minimum Flat Roof Snow Load, Pr <sup>1</sup> (psf)	Basic Wind Speed, V <sub>ult</sub> (mph)
Monterey	50	40	116
Montgomery	40	40	117
Mount Washington <sup>2</sup>	40	40	115
Nahant	40	30	128
Nantucket	25	25	140
Natick	40	35	127
Needham	40	35	128
New Ashford <sup>2</sup>	50	40	115
New Bedford	30	30	139
New Braintree	50	35	121
New Marlborough	50	40	115
New Salem	50	35	117
Newbury	50	30	125
Newburyport	50	30	124
Newton	40	30	127
Norfolk	40	35	129
North Adams <sup>2</sup>	60	40	115
North Andover	50	30	123
North Attleborough	35	30	131
North Brookfield	50	35	122
North Reading	50	30	125
Northampton	40	35	117
Northborough	50	35	124
Northbridge	40	35	127
Northfield	60	35	115
Norton	35	30	133
Norwell	35	30	133
Norwood	40	35	129
Oak Bluffs	25	25	140
Oakham	50	35	121
Orange	60	35	117
Orleans	25	25	140
Otis	50	40	115
Oxford	50	35	125
Palmer	40	35	121
Paxton	50	35	122
Peabody	50	30	127
Pelham	40	35	118

	SNOW LOAD		
City/Town	Ground Snow Load, Pg (psf)	Minimum Flat Roof Snow Load, Pr <sup>1</sup> (psf)	Basic Wind Speed, Vult (mph)
Pembroke	30	30	134
Pepperell	60	35	120
Peru <sup>2</sup>	60	40	115
Petersham	50	35	118
Phillipston	60	35	118
Pittsfield <sup>2</sup>	50	40	115
Plainfield <sup>2</sup>	60	40	115
Plainville	40	35	131
Plymouth	30	30	136
Plympton	30	30	135
Princeton	50	35	121
Provincetown	25	25	138
Quincy	40	30	130
Randolph	35	30	131
Raynham	35	30	134
Reading	50	30	126
Rehoboth	35	30	134
Revere	40	30	128
Richmond <sup>2</sup>	50	40	115
Rochester	30	30	138
Rockland	35	30	132
Rockport	50	30	128
Rowe <sup>2</sup>	60	40	115
Rowley	50	30	125
Royalston	60	35	116
Russell	40	40	116
Rutland	50	35	121
Salem	50	30	127
Salisbury	50	30	124
Sandisfield	50	40	115
Sandwich	30	25	139
Saugus	40	30	127
Savoy <sup>2</sup>	60	40	115
Scituate	35	30	133
Seekonk	35	30	134
Sharon	35	35	130
Sheffield <sup>2</sup>	40	40	115
Shelburne	50	40	115

	SNOW LOAD		
City/Town	Ground Snow Load, Pg (psf)	Minimum Flat Roof Snow Load, Pr <sup>1</sup> (psf)	Basic Wind Speed, Vult (mph)
Sherborn	40	35	127
Shirley	60	35	121
Shrewsbury	50	35	124
Shutesbury	40	35	117
Somerset	30	30	136
Somerville	40	30	127
South Hadley	35	35	118
Southampton	40	35	117
Southborough	40	35	125
Southbridge	40	35	125
Southwick	40	35	118
Spencer	50	35	123
Springfield	35	35	120
Sterling	50	35	122
Stockbridge <sup>2</sup>	50	40	115
Stoneham	40	30	126
Stoughton	35	35	131
Stow	50	35	124
Sturbridge	40	35	124
Sudbury	40	35	125
Sunderland	40	35	116
Sutton	50	35	126
Swampscott	40	30	128
Swansea	30	30	136
Taunton	35	30	134
Templeton	60	35	118
Tewksbury	50	30	124
Tisbury	25	25	140
Tolland	50	40	115
Topsfield	50	30	125
Townsend	60	35	119
Truro	25	25	139
Tyngsborough	50	30	121
Tyringham <sup>2</sup>	50	40	115
Upton	40	35	127
Uxbridge	40	35	128
Wakefield	50	30	126
Wales	40	35	123

	SNOW LOAD		
City/Town	Ground Snow Load, Pg (psf)	Minimum Flat Roof Snow Load, Pr <sup>1</sup> (psf)	Basic Wind Speed, Vult (mph)
Walpole	40	35	130
Waltham	40	30	127
Ware	40	35	120
Wareham	30	30	138
Warren	40	35	121
Warwick	60	35	115
Washington <sup>2</sup>	60	40	115
Watertown	40	30	127
Wayland	40	35	126
Webster	50	35	126
Wellesley	40	35	127
Wellfleet	25	25	140
Wendell	50	35	117
Wenham	50	30	126
W. Boylston	50	35	123
W. Bridgewater	35	30	133
W. Brookfield	40	35	122
W. Newbury	50	30	123
W. Springfield	35	35	119
W. Stockbridge <sup>2</sup>	40	40	115
W. Tisbury	25	25	140
Westborough	50	35	125
Westfield	40	35	118
Westford	50	35	123
Westhampton	50	40	116
Westminster	60	35	120
Weston	40	35	126
Westport	30	30	139
Westwood	40	35	129
Weymouth	35	30	131
Whately	50	35	116
Whitman	35	30	133
Wilbraham	35	35	121
Williamsburg	50	40	116
Williamstown <sup>2</sup>	50	40	115
Wilmington	50	30	125
Winchendon	60	35	117
Winchester	40	30	126

	SNOW LOAD	SNOW LOADS		
City/Town	Ground Snow Load, Pg (psf)	Minimum Flat Roof Snow Load, Pr <sup>1</sup> (psf)	Basic Wind Speed, V <sub>ult</sub> (mph)	
Windsor <sup>2</sup>	60	40	115	
Winthrop	40	30	129	
Woburn	50	30	126	
Worcester	50	35	124	
Worthington	60	40	115	
Wrentham	40	35	130	
Yarmouth	30	25	140	

NOTE 1: The design flat roof snow load shall be the larger of the calculated flat roof snow load using  $P_g$  or the value of  $P_f^{1}$  listed in this table.

NOTE 2: Special Wind Region. Local conditions may cause higher wind speeds than the tabulated values. See ASCE/SEI 7.

R301.2.2 Reserved

**R301.2.4** Revise subsection as follows:

**R301.2.4 Floodplain Construction**. Buildings and structures constructed in whole or in part in flood hazard areas (including AO or V Zones) or coastal dunes as established in section R322.1.1, and substantial improvement and restoration of substantial damage of buildings and structures in flood hazard areas or coastal dunes, shall be designed and constructed in accordance with section R322. Buildings and structures that are located in more than one flood hazard area or coastal dune shall comply with the most restrictive provisions of all those flood hazard areas and coastal dunes. Buildings and structures located in whole or in part in identified floodways shall be designed and constructed in accordance with ASCE 24.

#### R301.2.4.1 Reserved

#### SECTION R302 FIRE-RESISTANT CONSTRUCTION

**R302.1** Revise the section as follows, while retaining all exceptions:

**R302.1 Exterior Walls**. Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); or dwellings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13D shall comply with Table R302.1(2).

 Table R302.1(2) Revise footnote a. as follows:

a. For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13D, the fire separation distance for nonrated exterior walls and rated projections shall be permitted to be reduced to zero feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is six feet or more in width on the opposite side of the property line.

**R302.2** Revise items 1 and 2 as follows:

1. Where a fire sprinkler system in accordance with NFPA 13, 13R, or 13D is provided, the common wall shall be not less than a one-hour fire-resistance-rated wall assembly tested in accordance with ASTM E 119 or UL 263.

2. Where a fire sprinkler system in accordance with NFPA 13, 13R, or 13D is not provided, the common wall shall be not less than a two-hour fire-resistance-rated fire wall assembly tested in accordance with ASTM E119 or UL 263.

 Table R302.6 Revise table as follows:

IABLE R302.6 DWELLING-GARAGE SEPARATION				
Separation	MATERIAL			
Separation	Sprinklered	Not-Sprinklered		
From the residence and attics	Not less than <sup>1</sup> / <sub>2</sub> -inch gypsum board, or equivalent, applied to the garage side	Not less than 5/8-inch Type X gypsum board, or equivalent, applied to the garage side		
From habitable rooms above the garage	Not less than 5/8-inch Type X gypsum board, or equivalent	Not less than 5/8-inch Type X gypsum board, or equivalent		
Structure(s) supporting floor/ceiling assemblies used for separation required by this section	Not less than <sup>1</sup> / <sub>2</sub> -inch gypsum board, or equivalent	Not less than 5/8-inch Type X gypsum board, or equivalent		
Garages located less than three feet from a dwelling unit on the same lot	Not less than <sup>1</sup> / <sub>2</sub> -inch gypsum board, or equivalent, applied to the interior side of exterior walls that are within this area	Not less than 5/8-inch Type X gypsum board, or equivalent, applied to the interior side of exterior walls that are within this area		

 TABLE R302.6 DWELLING-GARAGE SEPARATION

NOTE: For SI, one inch = 25.4 mm; one foot = 304.8 mm.

**R302.13** Revise exception 1 as follows:

1. Floor assemblies located directly over a space protected by an automatic sprinkler system in accordance with NFPA 13, 13R, or 13D, or other approved equivalent sprinkler system.

R302.14 Revise as follows:

**Combustible Insulation Clearance**: Combustible insulation shall be separated not less than three inches (76 mm) from recessed luminaires, fan motors, knob and tube wiring, and other heat-producing devices.

**R303.3** Replace entire section as follows:

**R303.3 Bathrooms**. Mechanical ventilation in accordance with section M1507 is required for all bathrooms with a shower or bathtub and rooms with a toilet.

**R305.1** Revise section as follows:

**R305.1 Minimum Height**. Habitable space and hallways shall have a ceiling height of not less than seven feet (2,134 mm). Bathrooms, toilet rooms, laundry rooms and habitable space in basements shall have a ceiling height of not less than six feet, eight inches (2,032 mm).

NOTE: Exceptions are retained.

**R308.1** Add the following language at the end of the section:

See also M.G.L. c. 143, §§ 3T, 3U, and 3V.

**R309.3** Revise section as follows:

**R309.3 Flood Hazard Areas and Coastal Dunes**. For buildings located in flood hazard areas or coastal dunes, as established by section R322.1.1. garage floors shall be:

- 1. Elevated to or above the design flood elevation as determined in accordance with section R322.2; or
- 2. Located below the design flood elevation provided that the floors are at or above grade on not less than one side, are used solely for parking, building access or storage, meet the requirements of section R322.2 and are otherwise constructed in accordance with 780 CMR 51.00: *Massachusetts Residential Code*.

**R309.5** Revise section as follows:

**R309.5 Fire Sprinklers**. Private garages shall be protected by fire sprinklers where the garage wall has been designed based on Table R302.1(2), footnote a. Sprinklers in garages shall be connected to an automatic sprinkler system that complies with NFPA 13, 13R, or 13D. Garage sprinklers shall be residential sprinklers or quick-response sprinklers, designed to provide a density of 0.05 gpm/ft<sup>2</sup>. Garage doors shall not be considered obstructions with respect to sprinkler placement.

#### R310.2.1 Revise subsection as follows:

**R310.2.1 Minimum Opening Area**. Emergency and escape rescue openings shall have a net clear opening of not less than 5.7 ft<sup>2</sup> (0.530 m<sup>2</sup>). The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. The net clear height opening shall be not less than 24 inches (610 mm) and the net clear width shall be not less than 20 inches (508 mm).

## **EXCEPTIONS:**

1. Grade floor or below grade openings shall have a net clear opening of not less than five  $ft^2$  (0.465 m<sup>2</sup>).

2. Single-hung and/or double hung windows shall have a minimum net clear opening of  $3.3 \text{ ft}^2 (0.31\text{m}^2)$ . In such cases, the minimum net clear opening dimensions shall be 20 inches (508 mm) by 24 inches (610 mm) in either direction.

## R311.1 through R311.2.1 Revise sections and subsection as follows:

**R311.1 Means of Egress**. Dwelling units shall be provided with a primary and secondary means of egress in accordance with this section. Each means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the egress doors. The primary means of egress shall not require travel through a garage but the secondary means of egress may. The required egress doors shall open directly into a public way or to a yard or court that opens to a public way.

## NOTES:

1. In multi-level dwellings, including but not limited to townhouses, split-level and raised ranch style layouts, the two separate egress doors may be located on different levels.

2. Where site topography prevents direct access at two remote locations to grade from the normal level of entry, the two separate egress doors may be located on different levels.

**R311.2 Egress Door**. A primary and secondary egress door shall be provided for each dwelling unit and shall be as remote as possible from each other. The primary egress door shall be side-hinged, and shall provide a clear width of not less than 32 inches (813 mm) where measured between the face of the door and the stop, with the door open 90° (1.57 rad). The secondary egress door shall be side-hinged or sliding, and shall provide a clear width of not less than 28 inches (711 mm) where measured between the face of the door and the stop, with the door open 90° (1.57 rad). The stop, with the door open 90° (1.57 rad). The clear height of side-hinged door openings shall be not less than 78 inches (1,981 mm) in height measured from the top of the threshold to the bottom of the stop. Sliding door clear width may be slightly less than 28 inches (711 mm) to conform to industry fabrication standards. Other doors shall not be required to comply with these minimum dimensions. Egress doors shall be capable of

being readily opened from inside the dwelling without the use of a key or special knowledge or effort.

**R311.2.1 Interior Doors**. All doors providing access to habitable rooms shall have a minimum nominal width of 30 inches (762 mm) and a minimum nominal height of six feet, six inches (1,981 mm).

**EXCEPTIONS:** 

- 1. Doors providing access to bathrooms are permitted to be 28 inches (711 mm) in nominal width.
- 2. Doors providing access to bathrooms in existing buildings are permitted to be 24 inches (610 mm) in nominal width.

R311.7.5.1 through R311.7.5.2.1 Revise subsections as follows:

**R311.7.5.1 Risers**. The riser height shall be not more than  $8\frac{1}{4}$  inches (210 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than  $30^{\circ}$  (0.51 rad) from the vertical. Open risers are permitted provided that the openings located more than 30 inches (762 mm), as measured vertically, to the floor or grade below do not permit the passage of a four-inch-diameter (102-mm) sphere.

**EXCEPTIONS**:

- 1. The opening between adjacent treads is not limited on spiral stairways.
- 2. The riser height of spiral stairways shall be in accordance with section R311.7.10.1.

**R311.7.5.2 Treads**. The tread depth shall be not less than nine inches (229 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

**R311.7.5.2.1 Winder Treads**. Winder treads shall have a minimum tread depth equal to the tread depth of the straight run portion of the stairs measured as above at a point 12 inches from the side where the treads are narrower. Winder treads shall have a minimum tread depth of three inches at any point. Within any flight of stairs, the greatest winder tread depth at the 12-inch walk line shall not exceed the smallest by more than 3/8 inch.

**R313.1.1** Revise the section as follows:

**R313.1.1 Design and Installation**. Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with NFPA 13, NFPA 13R, or NFPA 13D, as applicable:

- 1. A townhouse building with an aggregate area of 12,000 ft<sup>2</sup>, or more, shall be provided with an NFPA 13 system.
- 2. A townhouse building with an aggregate area of less than 12,000 ft<sup>2</sup> shall be permitted to use a NFPA 13R system.

EXCEPTION: A three-unit townhouse building with an aggregate area less than 12,000 ft<sup>2</sup> shall be permitted to use a NFPA 13D system.

For the purposes of this section, the aggregate area shall be the combined area of all stories of the building and firewalls shall not be considered to create separate buildings. Aggregate area shall include garage areas, basement areas, and finished attic areas. Unfinished attic areas shall not be included in the aggregate area.

R313.2 through R313.2.1 Revise section and subsection as follows:

**R313.2 One- and Two-family Dwellings Automatic Fire Systems**. One- and two-family dwellings used as a lodging house shall be equipped with an automatic sprinkler system installed in accordance with NFPA 13D. Only one- and two-family dwellings having an aggregate area greater than 14,400 ft<sup>2</sup> shall have fire sprinklers installed in accordance with NFPA 13D. Aggregate area for the purpose of this section shall include basements but not garages and unfinished attics.

EXCEPTION: An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings having an aggregate area greater than 14,400 ft<sup>2</sup> that are not already provided with an automatic residential sprinkler system.

**R313.2.1 Design and Installation**. Automatic residential fire sprinkler systems shall be designed and installed in accordance with NFPA 13D.

**R314.1.1** Revise subsection as follows:

**R314.1.1 Listings**. Smoke alarms shall be the photoelectric type listed in accordance with UL 217 or UL 268. Combination smoke and carbon monoxide alarms shall be listed in accordance with UL 217 and UL 2034.

**R314.2.2** Revise the subsection as follows:

## R314.2.2 Alterations, Repairs and Additions. See Appendix J.

**R314.3** Revise the section as follows:

R314.3 Location. Smoke alarms shall be installed in the following locations:

- 1. In each sleeping room.
- 2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
- 3. On each additional story of the dwelling, including basements and habitable attics and not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
- 4. Smoke alarms shall be installed not less than three feet (914 mm) horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by section R314.3.
- 5. For each  $1,000 \text{ ft}^2$  of area or part thereof.
- 6. Near all stairs.

## R314.3.1 Reserved

**R314.4** Add the following wording to the end of the exception:

and unless one or more bedrooms are being added or created.

**R314.5** Revise the section as follows:

**R314.5 Combination Alarms**. Combination smoke and carbon monoxide ("CO") alarms shall be permitted to be used in lieu of smoke alarms and shall be interconnected such that fire alarm signals have precedence over CO alarms in accordance with the requirements of NFPA 720.

- **R314.6** Delete Exception 2.
- **R314.7.4** Revise the subsection as follows:

**R314.7.4 Combination Detectors**. Combination smoke and carbon monoxide detectors shall be permitted to be installed in fire alarm systems in lieu of smoke detectors, provided that they are listed in accordance with UL 268 and UL 2075. The fire alarm control panel battery shall serve as the source of secondary power for wireless systems.

R314.8 through R314.9 Add sections and subsections as follows:

**R314.8 Heat Detector**. A single heat detector listed for the ambient environment shall be installed in:

- 1. Any garage attached to or under the dwelling (detached garages do not require a heat detector).
- 2. A new garage attached to an existing dwelling. If the existing house contains a fire detection system that is compatible with the garage heat detector, then the

detector shall be interconnected to that system. Where the existing fire detection system is not compatible with the garage heat detector, the garage heat detector shall be connected to an alarm (audible occupant notification), or compatible heat detector with an alarm, located in the dwelling and within 20 feet (6,096 mm) of the nearest door to the garage from the dwelling. An alarm is not required in the garage, either integral with or separate from the heat detector.

**R314.8.1 Heat Detector Placement**. For flat-finished ceilings, the heat detector shall be placed on or near the center of the garage ceiling. For sloped ceilings having a rise to run of greater than one foot in eight feet (305 mm in 2,438 mm), the heat detector shall be placed in the approximate center of the vaulted ceiling but no closer than four inches (102 mm) to any wall. Heat detection shall be listed in accordance with UL 521 or UL 539.

**R314.9** Common Areas. In all buildings which are not protected with sprinklers, each unit shall have additional interconnected smoke detectors on the stairway side of all doors leading to common interior stairways. If there is a common basement, a separate interconnected system of smoke detectors, including smoke detectors on the stairway side of all doors leading to interior stairways, shall be provided to serve the basement level only.

**R315.1** Revise the section as follows:

**R315.1 General**. Carbon monoxide alarms shall comply with section R315, 248 CMR, NFPA 720, and the manufacturer's instructions. Any required carbon monoxide detection shall be interconnected.

**R315.1.1** Revise the subsection as follows:

**R315.1.1 Listings**. Carbon monoxide alarms shall be listed in accordance with UL 2034 and UL 2075. Combination carbon monoxide and smoke alarms shall be listed in accordance with UL 2034 and UL 217.

**R315.2.2** Revise the subsection as follows:

## R315.2.2 Alterations, Repairs and Additions. See Appendix J.

**R315.3** Revise the section as follows:

**R315.3 Location**. Carbon monoxide alarms in dwelling units shall be outside of each separate sleeping area within ten feet of the bedrooms. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be installed within the bedroom. At least one alarm shall be installed on each story of a dwelling unit, including basements and cellars but not in crawl spaces and uninhabitable attics.

**R315.4** Revise the section as follows:

**R315.4 Combination Alarms**. Combination carbon monoxide and smoke alarms (in compliance with section 314) shall be permitted to be used in lieu of carbon monoxide alarms, located as in R315.3, provided they are compatible and the smoke alarms take precedence.

R315.5 Revise the section as follows:

**R315.5 Power Source**. Carbon monoxide alarms and combination alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and, where primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for over current protection. Alarms may also be part of a low voltage or wireless system with standby power from monitored batteries in accordance with NFPA 72.

EXCEPTION: Carbon monoxide alarms shall be permitted to be battery operated where installed in buildings without commercial power.

**R319.1** Replace the section as follows:

**R319.1 Address Identification**. See M.G.L. c. 148, § 59 and applicable provisions of 527 CMR.

**R320.1** Replace the section as follows:

**R320.1 Scope**. For townhouses, see 521 CMR.

R320.1.1 Delete subsection.

R321.1 through R321.3 Revise the sections as follows:

**R321.1 Elevators**. Where provided, passenger elevators, limited-use and limited-application elevators or private residence elevators shall comply with 524 CMR.

R321.2 Platform Lifts. Where provided, platform lifts shall comply with 524 CMR.

**R321.3** Accessibility. Elevators or platform lifts that are part of an accessible route required by 780 CMR 11.00 shall comply with 524 CMR.

**R322.1** Replace the section as follows:

**R322.1 General**. Buildings and structures constructed in whole or in part in flood hazard areas and coastal dunes, and substantial improvement and restoration of substantial damage of buildings and structures in those areas shall be designed and constructed in

accordance with the provisions contained in this section. Buildings and structures located in more than one flood hazard area and coastal dunes shall comply with the most restrictive provisions. Buildings and structures located in whole or in part in identified floodways shall be designed and constructed in accordance with ASCE 24. See section R105.3.1.1 for substantial improvements and damage and see section R309 for garage requirements. Flood hazard areas include the following:

- 1. AO zones, where shallow flooding exists without waves;
- 2. A zones; and
- 3. V zones, where high velocity wave action exists and wave heights are greater than or equal to three feet.

**R322.1.1** Replace the subsection as follows:

**R322.1.1 Base Flood Elevation, Flood Maps, Delineations and Definitions**. For base flood elevation and mapping resources see the following:

- 1. Flood hazard areas and base flood elevations are identified on a community's current effective Flood Insurance Rate Map ("FIRM") or Flood Hazard Boundary Map ("FHBM"), whichever is applicable, and further defined in the current effective Flood Insurance Study ("FIS") where applicable.
- 2. Floodways are delineated on a community's current effective FIRM or Flood Boundary & Floodway Map, whichever is applicable, and further defined in the current effective FIS.
- 3. If a community has received a preliminary FIRM and FIS from FEMA, and has been issued a Letter of Final Determination ("LFD") from FEMA, the community shall use the preliminary FIRM and FIS to determine applicable flood zones, base flood elevations and floodways as of the date of the LFD.
- 4. Coastal wetlands resource areas are defined on the "Map of Coastal Wetland Resources for Building Officials."

**R322.1.4** Revise the subsection as follows:

**R322.1.4 Establishing the Design Flood Elevation**. The design flood elevation in Massachusetts shall be as follows:

- 1. For AO Zones, the design flood elevation shall be the elevation of the highest adjacent grade plus the flood depth specified on the FIRM plus one foot or the elevation of the highest adjacent grade plus three feet if no flood depth is specified. See section R322.2 for requirements.
- 2. For A Zones, the design flood elevation shall be the base flood elevation plus one foot. See section R322.2 for requirements.
- 3. For V Zones, the design flood elevation shall be the base flood elevation plus two feet. See section R322.3 for requirements.
- 4. For coastal dunes, see section R322.4 for requirements.

#### R322.1.4.2 Reserved

#### **R322.1.5** Revise the subsection as follows:

**R322.1.5 Lowest Floor and Basement**. The lowest floor shall be the lowest floor of the lowest enclosed area, including basement, and excluding any unfinished flood-resistant enclosure that is useable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the building or structure in violation of this section. A basement is the portion of a building, including crawl spaces, having its floor below exterior grade on all sides. This definition of "basement" is limited in application to the provisions of section R322.

#### **R322.1.6** Revise the subsection as follows:

**R322.1.6 Protection of Mechanical, Plumbing and Electrical Systems**. Electrical systems, equipment and components; heating, ventilating, air conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall be located at or above the elevation required in section R322.2, R322.3 or R322.4. If replaced as part of a substantial improvement, electrical systems, equipment and components; heating, ventilating, air conditioning and plumbing appliances and plumbing fixtures; duct systems; and other service equipment and components; heating, ventilating, air conditioning and plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall meet the requirements of this section. Systems, fixtures, and equipment and components shall not be mounted on or penetrate through walls intended to break away under flood loads.

EXCEPTION: Locating electrical systems, equipment and components; heating, ventilating, air conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment only within flood hazard areas including A and AO Zones is permitted below the elevation required in section R322.2 provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation in accordance with ASCE 24. Electrical wiring systems are permitted to be located below the required elevation provided that they conform to the provisions of the electrical part of 780 CMR 51.00: *Massachusetts Residential Code* for wet locations.

#### R322.1.7 Reserved

#### R322.1.9 Revise the subsection as follows:

**R322.1.9 Manufactured Homes**. The bottom of the frame of new and replacement manufactured homes on foundations that conform to the requirements of section R322.2 or R322.3 and R322.4, as applicable, shall be elevated to or above the elevations specified in section R322.2 (flood hazard areas including AO and A Zones) or R322.3 in coastal high-hazard areas (V Zones) and R322.4 in coastal dunes. The anchor and tiedown requirements of the applicable state or federal requirements shall apply. The

foundation and anchorage of manufactured homes to be located in identified floodways shall be designed and constructed in accordance with ASCE 24.

**R322.1.10** Revise the subsection as follows:

**R322.1.10** As-built Elevation Documentation. A registered design professional shall prepare and seal documentation for submittal of the elevations specified in section R322.2, R322.3 or R322.4.

**R322.1.11** Add the following subsection as follows:

**R322.1.11** Construction Documents. The construction documents shall include documentation that is prepared and sealed by a registered design professional that the design and methods of construction to be used meet the applicable criteria of this section.

**R322.2** Revise the section as follows:

**R322.2 Flood Hazard Areas (Including A and AO Zones)**. Buildings and structures constructed in whole or in part in A and AO Zones shall be designed and constructed in accordance with sections R322.2.1 through R322.2.3.

R322.2.1 Revise subsection as follows:

### **R322.2.1** Elevation Requirements.

- 1. Buildings and structures in A Zones, shall have the lowest floors elevated to or above the design flood elevation.
- 2. In AO Zones buildings and structures shall have the lowest floor (including basement) elevated to a height of not less than the design flood elevation.
- 3. Basement floors that are below grade on all sides shall be elevated to or above design flood elevation.

**R322.2.2** Revise the subsection as follows:

**R322.2.2 Enclosed Area Below Design Flood Elevation**. Enclosed areas, including crawl spaces, that are below the design flood elevation and are not basements shall:

- 1. Be used solely for parking of vehicles, building access or storage.
- 2. Be provided with flood openings that meet the following criteria and are installed in accordance with section R322.2.2.1:
  - 2.1. The total net area of openings shall be not less than one in<sup>2</sup> (645 mm<sup>2</sup>) for each ft<sup>2</sup> (0.093 m<sup>2</sup>) of enclosed area where the enclosed area is measured on the exterior of the enclosure walls, or the openings shall be designed as engineered openings and the construction documents shall include a statement by a registered design professional that the design of the

openings will provide for equalization of hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwaters as specified in section 2.6.2.2 of ASCE 24.

2.2. Openings shall be not less than three inches (76 mm) in any direction in the plane of the wall.

**R322.2.2.1** Revise the subsection as follows:

**R322.2.1 Installation of Openings**. The walls of enclosed areas shall have openings installed such that:

- 1. There shall be not less than two openings on different sides of each enclosed area; if a building has more than one enclosed area below the design flood elevation, each area shall have openings on exterior walls.
- 2. The bottom of each opening shall be not more than one foot (305 mm) above the higher of the final interior grade or floor and the finished existing exterior grade immediately under each opening.
- 3. Openings shall be permitted to be installed in doors and windows; doors and windows without installed openings do not meet the requirements of this section.

R322.3 through R322.3.7 Revise the section and subsections as follows:

**R322.3** Coastal High-hazard Areas (Including V Zones). Buildings and structures constructed in whole or in part in V Zones shall be designed and constructed in accordance with sections R322.3.1 through R322.3.6.

**R322.3.1 Location and Site Preparation**. New buildings and buildings that are determined to be substantially improved pursuant to section R105.3.1.1 shall be located landward of the reach of mean high tide.

## **R322.3.2** Elevation Requirements.

- 1. Buildings and structures shall be elevated so that the bottom of the lowest portion of horizontal structural members supporting the lowest floor, with the exception of pilings, pile caps, columns, grade beams and bracing, is elevated to the design flood elevation.
- 2. Basement floors that are below grade on all sides are prohibited.
- 3. The use of fill for structural support is prohibited.
- 4. Minor grading, and the placement of minor quantities of fill, shall be permitted for landscaping and for drainage purposes under and around buildings and for support of parking slabs, pool decks, patios and walkways. Fill is prohibited unless such fill is constructed and/or placed to avoid diversion of water and waves toward any building or structure.
- 5. Walls and partitions enclosing areas below the design flood elevation shall meet the requirements of sections R322.3.4 and R322.3.5.

6. For lateral additions in V Zones that are not a substantial improvement, only the addition shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor with the exception of pilings, pile caps, columns, grade beams and bracing, is located at an elevation that is at least the design flood elevation.

**R322.3.3 Foundations**. Buildings and structures erected in coastal high-hazard areas and shall be supported on pilings or columns and shall be adequately anchored to such pilings or columns. The space below the elevated building shall be either free of obstruction or, if enclosed with walls, the walls shall meet the requirements of section R322.3.4. Pilings shall have adequate soil penetrations to resist the combined wave and wind loads (lateral and uplift). Water-loading values used shall be those associated with the design flood. Wind-loading values shall be those required by 780 CMR 51.00: Massachusetts Residential Code. Pile embedment shall include consideration of decreased resistance capacity caused by scour of soil strata surrounding the piling. Pile systems design and installation shall be certified in accordance with section R322.3.6. Spread footing, mat, raft or other foundations that support columns shall not be permitted where soil investigations that are required in accordance with section R401.4 indicate that soil material under the spread footing, mat, raft or other foundation is subject to scour or erosion from wave-velocity flow conditions. If permitted, spread footing, mat, raft or other foundations that support columns shall be designed in accordance with ASCE 24. Slabs, pools, pool decks and walkways shall be located and constructed to be structurally independent of buildings and structures and their foundations to prevent transfer of flood loads to the buildings and structures during conditions of flooding, scour or erosion from wave-velocity flow conditions, unless the buildings and structures and their foundations are designed to resist the additional flood load.

**R322.3.4 Walls Below Design Flood Elevation**. Walls and partitions are permitted below the elevated floor, provided that such walls and partitions are not part of the structural support of the building or structure and:

- 1. Electrical, mechanical and plumbing system components are not to be mounted on or penetrate through walls that are designed to break away under flood loads; and
- 2. Are constructed with insect screening or open lattice; or
- 3. Are designed to break away or collapse without causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system. Such walls, framing and connections shall have a resistance of not less than ten lbs. per ft<sup>2</sup> (479 Pa) and not more than 20 lbs. per ft<sup>2</sup> (958 Pa) as determined using allowable stress design; or
- 4. Where wind loading values of 780 CMR 51.00: *Massachusetts Residential Code* exceed 20 lbs. per ft<sup>2</sup> (958 Pa), the construction documents shall include documentation prepared and sealed by a registered design professional that:

- 4.1 The walls and partitions below the design flood elevation have been designed to collapse from a water load less than that which would occur during the base flood.
- 4.2 The elevated portion of the building and supporting foundation system have been designed to withstand the effects of wind and flood loads acting simultaneously on structural and nonstructural building components. Water-loading values used shall be those associated with the design flood. Wind-loading values shall be those required by 780 CMR 51.00: *Massachusetts Residential Code*; or
- 5. Walls intended to break away under flood loads as specified in Item 3 or 4 have flood openings that meet the criteria in section R322.2.2, Item 2.

## R322.3.6 Construction Documents. Reserved

R322.4 through R322.4.6 Add the section and subsections as follows:

**R322.4 Coastal Dunes**. Buildings or structures constructed in whole or in part in coastal dunes shall be designed and constructed in accordance with sections R322.4.1 through R322.4.6.

**R322.4.1 Construction Documents**. For buildings and structures, including new or replacement manufactured homes, lateral additions, foundations that are replaced in total or repaired so as to constitute substantial repair of a foundation, or substantial repair or improvement of a building or structure that has incurred substantial damage as a result of flooding and/or storms, proposed on a parcel of land that is located wholly or partially within a coastal wetland resource area shown on the map entitled "Map of Coastal Wetland Resources For Building Officials," the building official shall require submission of one of the construction documents specified in section R322.4.1 (a) through (d) along with a notarized statement by the applicant that the order, determination or notice is in effect and is not the subject of any administrative appeals before the Department of Environmental Protection or the Division of Administrative Law Appeals. No building permit shall be issued unless and until a construction document that conforms to the requirements of this section is submitted.

- (a) An order of conditions establishing the boundaries of all coastal wetland resource areas in a plan referenced in and accompanying the order. The order shall determine whether the coastal wetland resource areas are significant to any of the interests identified in the Wetlands Protection Act, M.G.L. c. 131, § 40 including the interests of flood control and storm damage prevention. If the order indicates that the proposed construction work is located within a coastal dune that is significant to the interests of flood control and/or storm damage prevention, the order of conditions shall allow the proposed construction.
- (b) An order of resource area delineation stating that the proposed construction work is outside the boundaries of all coastal wetland resource areas as shown on a plan referenced in and accompanying the order.

- (c) A determination of applicability stating that the proposed construction work is outside the boundaries of all coastal wetland resource areas as shown on a plan referenced in and accompanying the determination or will not fill, dredge or alter a coastal wetland resource area.
- (d) A notice of non-significance evidencing that the proposed construction work is within a coastal wetland resource area as shown on a plan referenced in and accompanying the notice and stating that the coastal wetland resource area is not significant to any of the interests identified in M.G.L. c. 131, § 40: Removal, Fill, Dredging or Altering of Land Bordering Waters (the Wetlands Protection Act).

**R322.4.2 Structural Elevation**. The elevation of the bottom of the lowest horizontal structural member, as required by the lowest floor elevation inspection in subsection R109.1.3, shall be submitted.

**R322.4.3** Additional Documentation. Documentation for buildings located in more than one zone shall meet the requirements of all zones.

**R322.4.4 Elevation Requirements**. For new buildings and structures, new foundations, replacement or substantial repair of a foundation, or repair of a substantially damaged structure where damage is the result of a storm or flooding the entire structure shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor is located at the elevation required by the order of conditions of the local conservation commission in accordance with the Wetlands Protection Act, M.G.L. c. 131, § 40: Removal, Fill, Dredging or Altering Land Bordering Waters (the Wetland Protection Act) and Wetlands Protection Regulations, 310 CMR 10.21 through 10.35: *Additional Regulations for Coastal Wetlands*. For lateral additions that are not a substantial improvement, only the addition shall be elevated so that the elevation required by the order of the lowest floor is located at the elevation soft the lowest floor is located at the elevation soft the lowest floor soft the lowest horizontal structural member of the lowest floor is located at the elevation shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor is located at the elevation required by the order of conditions of the local conservation commission in accordance with M.G.L. c. 131, § 40 and Wetlands Protection Regulations, 310 CMR 10.21 through 10.21 through 10.35.

**R322.4.5 Foundations**. Foundations for work meeting the elevation requirements of section R322 shall consist of open pilings without footings to allow the movement of the dune.

EXCEPTION: Where surface or subsurface conditions consist of non-erodible soil that prevents the use of pile foundations, spread footings or mat foundations may be permitted. Such foundations shall be anchored to prevent sliding, uplift or overturning of the footing and the non-erodible soil it is attached to and be designed to withstand any combination of loads. No other use of alternate materials, design and methods of construction and equipment as described in R104.11 is permitted.

**R322.4.6 Enclosed Areas Below Design Flood Elevation**. Enclosures are not permitted below the lowest horizontal structural member of the lowest floor.

R342.3 Delete the words "International Fire Code" at the end of the sentence.

**R324.3** Replace the section as follows:

**R324.3 Photovoltaic Systems**. Photovoltaic systems shall be designed and installed in accordance all governing loading conditions, fire protection, energy conservation and weatherization requirements dictated by 780 CMR 51.00: *Massachusetts Residential Code* and the electrical requirements of 527 CMR and those of the manufacturer.

R324.4 through R324.7 Delete all sections and associated subsections.

**R326.1** Revise the section as follows:

**R326.1 General**. The design and construction of pools and spas shall comply with the International Swimming Pool and Spa Code and the following notes:

## NOTES:

1. Public and semi-public outdoor in-ground swimming pool enclosures shall conform to the requirements of M.G.L. c. 140, § 206.

2. Also see 521 CMR 19.00: Recreational Facilities.

3. Also see 105 CMR 430.00: *Minimum Standards for Recreational Camps for Children* (State Sanitary Code, Chapter IV) and 435.00: *Minimum Standards for Swimming Pools* (State Sanitary Code: Chapter V) as such regulate swimming pool requirements.

4. Installation of electrical wiring and electrical devices shall be in accordance with 527 CMR.

5. Installation of gas-fired pool heaters shall be in accordance with the Board of State Examiners of Plumber and Gas Fitters regulations at 248 CMR.

### **CHAPTER 4: FOUNDATIONS**

**R401.3** Revise the section as follows:

**R401.3 Drainage**. Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection that does not create a hazard. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of six inches (152 mm) within the first ten feet (3,048 mm). Temporary and finished grading shall not direct nor create flooding or damage to adjacent property during or after completion of construction.

**R401.4.1** Revise the subsection as follows:

**R401.4.1 Geotechnical Evaluation**. In lieu of a complete geotechnical evaluation, the load-bearing values in Table R401.4.1 or 780 CMR Table 1806.2a shall be assumed.

**R403.1** Revise the section as follows:

**R403.1 General**. All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings, crushed stone footings, wood foundations, or other approved structural systems which shall be of sufficient design to accommodate all loads according to section R301 and to transmit the resulting loads to the soil within the limitations as determined from the character of the soil. Footings shall be supported on undisturbed natural soils, compacted fill not more than 12 inches (305 mm) in depth, provided that the fill is adequately compacted using appropriate mechanical means, or engineered fill. Concrete footing shall be designed and constructed in accordance with the provisions of section R403 or in accordance with ACI 332.

**R403.1.6** Revise the subsection as follows:

**R403.1.6 Foundation Anchorage**. Wood sill plates and wood walls supported directly on continuous foundations shall be anchored to the foundation in accordance with this section Cold-formed steel framing shall be anchored directly to the foundation or fastened to wood sill plates anchored to the foundation. Anchorage of cold-formed steel framing and sill plates supporting cold-formed steel framing shall be in accordance with this section and section R505.3.1 or R603.3.1. Wood sole plates at all exterior walls on monolithic slabs, wood sole plates of braced wall panels at building interiors on monolithic slabs and all wood sill plates shall be anchored to the foundation with minimum <sup>1</sup>/<sub>2</sub>-inch diameter (12.7 mm) A 307 or other applicable steel anchor bolts spaced a maximum of six feet (1,829 mm) on center or approved anchors or anchor straps spaced as required to provide equivalent anchorage to <sup>1</sup>/<sub>2</sub>-inch-diameter (12.7 mm) anchor bolts, installed in accordance with the manufacturer's instructions. Bolts shall extend a minimum of seven inches (178 mm) into concrete or grouted cells of concrete masonry units. The bolts shall be located in the middle third of the width of the plate. A nut and washer shall be tightened on each anchor bolt. There shall be a minimum of two bolts per plate section with one bolt located not more than 12 inches (305 mm) or less than seven

bolt diameters from each end of the plate section. Interior bearing wall sole plates on monolithic slab foundation that are not part of a braced wall panel shall be positively anchored with approved fasteners. Sill plates and sole plates shall be protected against decay and termites where required by sections R317 and R318.

**R404.1.7** Revise the subsection as follows:

**R404.1.7 Backfill Placement**. Backfill shall not be placed against the wall until the wall has sufficient strength and has been anchored to the floor above, or has been sufficiently braced to prevent damage by the backfill. Backfill material shall be free draining and free of organic materials, construction debris, cobbles and boulders, shall be placed in lifts not exceeding 12 inches and shall be mechanically compacted. Foundation walls shall be properly braced prior to the setting of a manufactured building.

**R406.2.1** Add subsection as follows:

**R406.2.1 Through-wall Formwork Ties**. Through-wall formwork ties shall be removed from both faces of the foundation walls which enclose basements, cellars, below-grade garages or any space having the potential to be converted to useable or occupied space. Remaining holes shall be patched with hydraulic cement.

**R408.7** Delete the exception.

## **CHAPTER 5: FLOORS**

**R502.3** Revise the section as follows:

**R502.3 Allowable Joist Spans**. Spans for floor joists shall be in accordance with Tables R502.3.1(1) and R502.3.1(2). For other grades and species and for other loading conditions, refer to the AWC STJR or the American Wood Council ("AWC") Maximum Span Calculator for Wood Joists & Rafters found at: http://www.awc.org/calculators/span/calc/timbercalcstyle.asp

**R502.11.1** Revise the subsection as follows:

**R502.11.1 Design**. Wood trusses shall be designed in accordance with approved engineering practice. The design and manufacture of metal-plate-connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered design professional.

**R506.1.1** Add the subsection as follows:

**R506.1.1 Control Joints**. Slabs shall be constructed with control joints having a depth of at least one quarter of the slab thickness but not less than one inch (25 mm). Joints shall be spaced at intervals not greater than 30 feet (9,144 mm) in each direction. Control joints shall be placed at locations where the slab width or length changes.

EXCEPTION: Control joints may be omitted when the slab is reinforced in accordance with Table R506.1.1. Reinforcement shall be placed at the mid-depth of the slab or two inches (51 mm) from the top of slabs greater than four inches (102 mm) in thickness.

<b>Table R506.1.1</b>							
MAXIN	MAXIMUM DIMENSION OF SLAB OR						
DISTANCE BETWEEN CONTROL JOINTS (ft)					NTS (ft)	WWF WIRE	WWF WIRE SIZE
Slab Thickness (in.)						SPACING (in.)	<b>DESIGNATION (in.)</b>
3.5	4.0	4.5	5.0	5.5	6.0		
42	36	32	29	26	24	6 x 6	W1.4 x W1.4
59	52	46	42	38	35	6 x 6	W2.0 x W2.0
86	75	67	60	55	50	6 x 6	W2.9 x W2.9

# **CHAPTER 6: WALL CONSTRUCTION**

R602.10 Add an exception as follows:

EXCEPTION: Unconditioned single story rooms of areas less than 600  $\rm ft^2$  thermally isolated from conditioned space.

## **CHAPTER 7: WALL COVERING**

**R702.3.5.2** Add subsection as follows:

**702.3.5.2 Ceiling Attachment**. Only designs or methods that use mechanical fasteners in accordance with Table R702.3.5 shall be used for attaching gypsum board to ceilings in buildings governed by 780 CMR 51.00: *Massachusetts Residential Code* including manufactured buildings. Alternative designs, such as using adhesive only, are not permitted.

## **CHAPTER 8: ROOF-CEILING CONSTRUCTION**

R802.5 and R802.5 Revise the sections as follows:

**R802.4** Allowable Ceiling Joist Spans. Spans for ceiling joists shall be in accordance with Tables R802.4(1) and R802.4(2). For other grades and species and for other loading conditions, refer to the AWC STJR or utilize the American Wood Council ("AWC") Maximum Span Calculator for Wood Joists & Rafters found at http://www.awc.org/calculators/span/calc/timbercalcstyle.asp.

**R802.5** Allowable Rafter Spans. Spans for rafters shall be in accordance with Tables R802.5.1(1) through R802.5.1(8). For other grades and species and for other loading conditions, refer to the AWC STJR. The span of each rafter shall be measured along the horizontal projection of the rafter or utilize the AWC Maximum Span Calculator for Wood Joists & Rafters at http://www.awc.org/calculators/span/calc/timbercalcstyle.asp.

## **CHAPTER 9: ROOF ASSEMBLIES**

**R901.1** Revise the section as follows:

**R901.1 Scope**. The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies. In roofing and reroofing, the energy conservation requirements of Chapter 11 of 780 CMR 51.00: *Massachusetts Residential Code* shall also be satisfied.

**R905.1** Revise the section as follows:

**R905.1 Roof Covering Application**. Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions. Unless otherwise specified in this section, roof coverings shall be installed to resist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R301.2(3). Where there is a discrepancy between the requirements of this section and the manufacturer's printed instructions or code evaluation report, the manufacturer's printed instructions or code evaluation report shall govern.

R905.16 Reserved

**R906.1** Revise the section as follows:

**R906.1 General**. The use of above-deck thermal insulation shall be permitted provided such insulation is covered with an approved roof covering and complies with FM 4450 or UL 1256. In roofing and reroofing, the energy conservation requirements of Chapter 11 of 780 CMR 51.00: *Massachusetts Residential Code* shall also be satisfied.

#### R907.1 through R907.5 Reserved

R909.1 through R909.3 Reserved

## **CHAPTER 10: CHIMNEYS AND FIREPLACES**

**R1001.1** Revise the section as follows:

**R1001.1 General**. Masonry fireplaces shall be constructed in accordance with this section and the applicable provisions of Chapters 3 and 4 of 780 CMR 51.00: *Massachusetts Residential Code*. Chimneys shall be structurally sound, durable, smoke tight and capable of conveying flue gases to the exterior safely.

## **CHAPTER 11: ENERGY EFFICIENCY**

N1100.1 Add the following sections as follows:

**1100.1** Adoption. Buildings shall be designed and constructed in accordance with the *International Energy Conservation Code*-2015 ("IECC"), as amended by Chapter 11 of 780 CMR 51.00: *Massachusetts Residential Code*.

**N1101.1** (R401.1) Revise the section as follows:

**N1101.1 (R401.1) Scope**. This chapter regulates the energy efficiency for the design and construction of buildings regulated by 780 CMR. Municipalities which have adopted the Stretch Energy Code shall use the energy efficiency requirements of 780 CMR 110 Appendix AA.

N1101.6 (R202) Add and/or revise the following defined terms:

**CLEAN BIOMASS STOVE**. Wood- or pellet-fired stoves that are EPA certified; and have a particulate matter emissions rating of no more than 3.5 g/hr for non-catalytic wood and pellet stoves; or 2.0 g/hr for catalytic wood and pellet stoves.

**CLEAN BIOMASS HEATING SYSTEMS**. Wood-pellet fired central boilers and furnaces where the equipment has a thermal efficiency rating of 80% (higher heating value) or greater; and a particulate matter emissions rating of no more than 0.15 lb/MMBtu PM heat output.

N1101.13 (R401.13) Revise the section as follows:

N1101.13 (R401.2) Compliance. Projects shall comply with one of the following:

- 1. Sections N1101.14 (R401.3) through N1104 (R404).
- 2. Section N1105 (R405) and the provisions of sections N1101.14 (R401.3) through N1104 (R404) labeled "Mandatory."
- 3. An energy rating index ("ERI") approach, or approved alternative energy performance rating method in section N1106 (R406) and the provisions of sections N1101.14 (R401.3) through N1104 (R404) labeled "Mandatory." Qualifying approaches under N1106 (R406) include the following:
  - a. Certified RESNET HERS rating with Massachusetts amendments.
  - b. Certified Energy Star Homes, Version 3.1.
  - c. Certified Passivehaus performance method.

N1101.14 (R401.3) Add the following to the end of the paragraph:

The Certificate shall list the final HERS index score when applicable.

Table N1102.1.2 (R402.1.2) Revise the table as follows:

Climate Zone 5 and Marine 4 Fenestration U Factor shall be "0.30."

Table N1102.1.4 (R402.1.4) Revise the table as follows:

Climate Zone 5 and Marine 4 Fenestration U Factor shall be "0.30."

**N1102.1.5.1** (R402.1.5.1) Add the subsection as follows:

**N1102.1.5.1 (R402.1.5.1) Approved Software for Total UA Alternative**: The following software is approved for demonstrating Total UA compliance:

- 1. REScheck Version 4.6.4 or later, available at <u>http://www.energycodes.gov/rescheck</u>
- 2. REScheck-Web available at https://energycode.pnl.gov/REScheckWeb/

N1103.3.3 (R403.3.3) Add the following paragraph before the exception:

Post-construction or rough-in testing and verification shall be done by a HERS Rater, HERS Rating Field Inspector, or an applicable BPI Certified Professional.

N1103.6 (R403.6) Replace the section as follows:

**N1103.6 (R403.6) Mechanical Ventilation (Mandatory)**. Each dwelling unit of a residential building shall be provided with continuously operating exhaust, supply or balanced mechanical ventilation that has been site verified to meet a minimum airflow per:

- 1. Energy Star Homes' Version 3.1;
- 2. ASHRAE 62.2-2013; or
- 3. the following formula for one- and two-family dwellings and townhouses of three or less stories above grade plane:

 $Q = .03 \text{ x CFA} + 7.5 \text{ x } (N_{br} + 1) - 0.052 \text{ x } Q_{50} \text{ x S x WSF}$ 

Where: CFA is the conditioned floor area in ft<sup>2</sup>

N<sub>br</sub> is the number of bedrooms

Q<sub>50</sub> is the verified blower door air leakage rate in cfm measured at 50 Pascals

S is the building height factor determined by this table:

stories above grade plane	1	2	3
S	1.00	1.32	1.55

WSF is the shielded weather factor as determined by this table:

County	WSF
Barnstable	0.60
Berkshire	0.52
Bristol	0.54
Dukes	0.59
Essex	0.58
Franklin	0.52
Hampden	0.49
Hampshire	0.59
Middlesex	0.55
Nantucket	0.61
Norfolk	0.52
Plymouth	0.53
Suffolk	0.66
Worcester	0.59

N1103.6.2 (R403.6.2) through N1103.6.6 (R403.6.6) Add the subsections as follows:

**N1103.6.2 (R403.6.2) Verification**: Installed performance of the mechanical ventilation system shall be tested and verified by a HERS Rater, HERS Rating Field Inspector, or an applicable BPI Certified Professional, and measured using a flow hood, flow grid, or other airflow measuring device in accordance with either RESNET Standard Chapter 8 or ACCA Standard 5.

**N1103.6.3 (R403.6.3) Air-moving Equipment, Selection and Installation**. As referenced in ASHRAE Standard 62.2-2013, section 7.1, ventilation devices and equipment shall be tested and certified by Air Movement and Control Association ("AMCA") or Home Ventilating Institute ("HVI") and the certification label shall be found on the product. Installation of systems or equipment shall be carried out in accordance with manufacturers' design requirements and installation instructions. Where multiple duct sizes and/or exterior hoods are standard options, the minimum size shall not be used.

**N1103.6.4 (R403.6.4) Sound Rating**. Sound ratings for fans used for whole building ventilation shall be rated at a maximum of one sone.

EXCEPTION: HVAC air handlers and remote-mounted fans need not meet sound requirements. There shall be at least four feet of ductwork between the remote-mounted fan and intake grille.

**N1103.6.5 (R403.6.5) Documentation**. The owner and the occupant of the dwelling unit shall be provided with information on the ventilation design and systems installed, as well as instructions on the proper operation and maintenance of the ventilation systems.

Ventilation controls shall be labeled with regard to their function, unless the function is obvious.

**N1103.6.6 (R403.6.6) Air Inlets and Exhausts**. All ventilation air inlets shall be located a minimum of ten feet from vent openings for plumbing drainage systems, appliance vent outlets, exhaust hood outlets, vehicle exhaust, or other known contamination sources; and shall not be obstructed by snow, plantings, or any other material. Outdoor forced air inlets shall be covered with rodent screens having mesh openings not greater than ½ inch. A whole house mechanical ventilation system shall not extract air from an unconditioned basement unless approved by a registered design professional. Where wall inlet or exhaust vents are less than seven feet above finished grade in the area of the venting, including but not limited to decks and porches, a metal or plastic identification plate shall be permanently mounted to the exterior of the building at a minimum height of eight feet above grade directly in line with the vent terminal. The sign shall read, in print size no less than <sup>1</sup>/<sub>2</sub> inch in size, "MECH. VENT DIRECTLY BELOW. KEEP CLEAR OF ALL OBSTRUCTIONS."

## **EXCEPTIONS**:

1. Ventilation air inlets in the wall shall be separated from dryer exhausts and contamination sources exiting through the roof by a minimum of three feet.

2. No minimum separation distance shall be required between local exhaust outlets in kitchens/bathrooms and windows.

3. Vent terminations that meet the requirements of the National Fuel Gas Code (NFPA 54/ ANSI Z223.1) or equivalent.

## N1104.3 (R404.2) Reserved

N1106.1 (R406.1) through N1106.1.2 Revise and/or add the section and subsections as follows:

**N1106.1 (R406.1) Scope**. This section establishes criteria for compliance using an Energy Rating Index ("ERI") analysis, or approved alternative energy performance rating methods.

**N1106.1.1 (R406.1.1) Approved Alternative Energy Performance Methods**. The following rating threshold criteria are sufficient to demonstrate energy code compliance under section N1106 (R406) without calculation of a standard reference design. The mandatory provisions of subsection N1106.2 (R406.2) also apply:

- 1. **ENERGY STAR Homes 3.1 Path**. New buildings or additions to an existing building, building system or portion thereof shall be certified to conform to the ENERGY STAR Certified Homes, Version 3.1 standard.
- 2. Passive House Institute US ("PHIUS") or Passive House Institute ("PHI") Approved Software. PHIUS+ 2015: Passive Building Standard – North America, or another approved software by PHIUS or PHI, where specific space heat demand, as modeled by a certified passive house consultant, is less than or equal to 10 kBTU/ft<sup>2</sup>/year.

3. Any other software approved by the Board of Building Regulations and Standards.

**N1106.1.2 (R406.1.2) Documentation**. The following documentation is required for energy code compliance under subsection N1106.1.1 (R406.1.1):

- 1. If using ENERGY STAR Homes, Version 3.1 path:
  - a. Prior to the issuance of a building permit, the following item shall be provided to the building official:
    - i. A copy of the preliminary HERS rating, based on plans
  - b. Prior to the issuance of a certificate of occupancy, the following items shall be provided to the building official:
    - i. A copy of the final ENERGY STAR Homes certificate;
    - ii. A copy of the certified HERS rating; and
    - iii. A copy of the signed ENERGY STAR Thermal Enclosure System Checklist.
- 2. If using PHIUS or PHI passive house software:
  - a. Prior to the issuance of a building permit, the following items shall be provided to the building official:
    - i. A list of compliance features; and
    - ii. A statement that the estimated specific space heat demand is "based on plans."
  - b. Prior to the issuance of a certificate of occupancy, the following item shall be provided to the building official:
    - i. A copy of the final report, submitted on a form that is approved to document compliance with current PHIUS or PHI standards. Said report shall indicate that the finished building achieves a certified passive house consultant-verified specific space heat demand of less than or equal to 10kBTU/ft<sup>2</sup>/year.

N1106.3 (R406.3) Add the following sentence to the end of the paragraph:

The RESNET Home Energy Rating System ("HERS") index is the approved ERI approach in the Commonwealth.

#### N1106.4 (R406.4) Revise the section as follows:

**N1106.4 (R406.4) ERI-based Compliance**. Compliance based on an ERI analysis requires that the rated design be shown to have an ERI less than or equal to the appropriate value listed in Table N1106.4 (R406.4) when compared to the ERI reference design prior to credit for onsite renewable electric generation.

N1106.4.1 (R406.4.1) Add the subsection, and associated table, as follows:

N1106.4.1 (R406.4.1) Trade-off for Onsite Renewable Energy Systems. New construction following N1106.3 (R406.3) or existing buildings and additions following

N1107.4 (R407.4) may use any combination of the following renewable energy trade-offs to increase the maximum allowable HERS rating for each unit separately served by any combination of the following:

- 1. Solar photovoltaic array rated at 2.5kW or higher shall offset five HERS points.
- 2. Clean biomass heating system, solar thermal array, or geothermal heat pump, or a combination of these systems, operating as the primary heating system shall offset five HERS points.
- 3. Solar thermal array for primary domestic hot water heating or a clean biomass stove shall offset two HERS points.

NOTE: A clean biomass stove offset may not be combined with a primary heating system offset.

Table N1106.4.1 (R406.4.1). Maximum HERS Ratings with Onsite Renewable Energy Systems

Systems				
	Maximum HERS index score <sup>a</sup>			
		Whole house renovations;		
<b>Renewable Energy Source</b>	New construction	additions		
None	55	65		
Solar $PV > 2.5kW$ ; Renewable	60	70		
primary heating system	00	70		
Solar PV; Renewable primary	62	72		
heating & solar thermal DHW	02	12		
Solar PV & Renewable				
primary heating & solar	67	77		
thermal DHW				

<sup>a</sup> Maximum HERS rating prior to onsite electric renewable generation in accordance with section N1106.4 (R406.4).

N1106.5 (R406.5) Revise the section as follows:

**N1106.5 (R406.5) Verification by Approved Agency**. Verification of compliance with section N1106 shall be completed by an approved third party. For compliance using a HERS rating or Energy Star Homes 3.1 certification, verification of compliance shall be completed by the certified HERS rater. For compliance using PHIUS+ 2015 or PHI software, verification of compliance shall be completed by a certified passive house consultant.

N1108.1.2 (R502.1.2) Add an exception to the subsection as follows:

EXCEPTION: Alternatively, the addition and any alterations that are part of the project shall comply with N1106 (R406) and shall achieve a maximum HERS index using Table N1106.4.1 (R406.4.1).

#### **CHAPTER 12: MECHANICAL ADMINISTRATION**

M1201.1 Revise the section as follows:

**M1201.1 Scope**. The provisions of Chapters 12 through 23 of 780 CMR 51.00: *Massachusetts Residential Code* shall regulate the design, installation, maintenance, alteration and inspection of mechanical systems that are permanently installed and used to control environmental conditions within buildings. These chapters shall also regulate those mechanical systems, system components, equipment and appliances specifically addressed in this code.

For the provisions of Chapters 12 through 23 of 780 CMR 51.00: *Massachusetts Residential Code* governed by the specialized codes (see 780 CMR 1.00), see the applicable specialized codes. Provisions related to work otherwise governed by 780 CMR 51.00: *Massachusetts Residential Code* shall be retained if not in conflict with other sections of 780 CMR 51.00: *Massachusetts Residential Code*. Enforcement of work governed by the specialized codes shall be by those persons so authorized.

Additional requirements for boilers and other pressure vessels may be found in M.G.L. c. 146 and 522 CMR: *Board of Boiler Rules*, as applicable.

## **CHAPTER 13: GENERAL MECHANICAL SYSTEM REQUIREMENTS**

M1303.2 Add the section as follows:

**M1303.2 Solid Fuel-burning Central Heating Appliance Labeling**. Solid fuel-burning boilers or warm air furnaces shall bear a permanent and legible factory-applied label supplied to the manufacturer and controlled by an approved testing agency; such label shall contain applicable items in section M1303.1 and the following information:

- a. Type of appliance (boiler or warm air furnace); and
- b. Boilers, pressure vessels, and pressure relief devices shall be stamped in accordance with M.G.L. c. 146, §§ 24 and 34.

## **CHAPTER 14: HEATING AND COOLING EQUIPMENT**

M1401.6 Add section, and associated subsections, as follows

**M1401.6 Used Solid Fuel-burning Appliances**. Used solid fuel-burning appliances that predate the listing requirements set forth in 780 CMR 51.00: *Massachusetts Residential Code* may be utilized but the installation of such appliances shall otherwise conform to the requirements of 780 CMR 51.00: *Massachusetts Residential Code*, as applicable and such installations shall be inspected by the building official (or fire official in such towns that utilize the fire official for such inspection purposes).

**M1401.6.1** Clearances to Combustibles. In the absence of listed clearances and floor protection requirements, used solid fuel-burning appliances shall be installed in accordance with the clearances of 780 CMR 51.00: *Massachusetts Residential Code*.

**M1401.6.2 Floor Protection General**. Floor protection listing requirements for a used appliance shall be met. In the absence of listing requirements, solid fuel-burning appliances shall have floor protection that is noncombustible material applied to the combustible or noncombustible floor area underneath and extending in front, to the sides and to the rear of a heat producing appliance, and have the necessary thermal conductivity to satisfy the floor protection requirements of the appliance. Various "hearth rugs," "mats," "tile board," "hearth board" and similar products sold as floor protectors may be noncombustible but may not satisfy thermal conductivity requirements of this section.

M1401.6.2.1 Floor Protection Requirements. Floor protection requirements shall be:

- four inches (102 mm) of millboard having a thermal conductivity k = 0.84 (Btu) (inch)/(ft<sup>2</sup>) (hour) (°F);
- 2. a noncombustible floor protector of the same overall thermal conductivity in (1.); or,
- 3. approved by a registered design professional.

EXCEPTION: If existing floor protection can be demonstrated to have been adequate for a previous installation of a used solid fuel-burning appliance, then such floor protection shall be allowed. If calculations demonstrate that the existing floor protection has a thermal conductivity lower than that set by this section, then the existing floor protection may be maintained.

#### M1414.1 Revise the section as follows:

**M1414.1 General**. Fireplace stoves shall be listed, labeled and installed in accordance with the terms of the listing. Fireplace stoves shall be tested in accordance with UL 737. Also see Chapter 10 of 780 CMR 51.00: *Massachusetts Residential Code* for detailed guidance on solid fuel-burning appliances.

CHAPTER 15: EXHAUST SYSTEMS (no amendments)

## **CHAPTER 16: DUCT SYSTEMS**

M1601.3 Replace the section as follows:

M1601.3 Duct Insulation Materials. Duct insulation shall conform to the following requirements and the requirements of Chapter 11 of 780 CMR 51.00: *Massachusetts Residential Code*.

M1601.4 Replace the section as follows:

**M1601.4 Installation**. Duct installation shall comply with Subsections M1601.4.1 through M1601.4.7 and the requirements of Chapter 11 of 780 CMR 51.00: *Massachusetts Residential Code*.

M1601.4.6 Revise the first paragraph of the subsection as follows:

**M1601.4.6 Duct Insulation**. Duct insulation shall be installed in accordance with the following requirements and the requirements of Chapter 11 of 780 CMR 51.00: *Massachusetts Residential Code*. Where conflict exists between the requirements of this section and Chapter 11 of 780 CMR 51.00: *Massachusetts Residential Code*, the requirements set forth in Chapter 11 of 780 CMR 51.00: *Massachusetts Residential Code* shall govern.

## **CHAPTER 17: COMBUSTION AIR**

M1701.1 Revise the section as follows:

**M1701.1 Scope**. Solid fuel-burning appliances shall be provided with combustion air in accordance with the appliance manufacturer's installation instructions. Oil-fired appliances shall be provided with combustion air in accordance with 527 CMR. The methods of providing combustion air in this chapter do not apply to fireplaces, fireplace stoves and direct vent appliances. The requirements for combustion and dilution air for gas-fired appliances shall be in accordance with Chapter 24 of 780 CMR 51.00: *Massachusetts Residential Code*.

## **CHAPTER 18: CHIMNEY AND VENTS**

M1801.1 Delete the last sentence in the paragraph.

M1801.11 Delete the exception to requirement 1.

M1801.12 Add the following exception to the subsection:

EXCEPTION: Unless common connection is allowed by 248 CMR or 527 CMR. If allowed, the common flue shall be of such size to serve all appliances connected if such appliances were operated simultaneously. Note that 248 CMR and 527 CMR are enforced by gas inspectors and the heads of fire departments, respectively.

# CHAPTER 19: SPECIAL APPLIANCES, EQUIPMENT AND SYSTEMS (no amendments)

## CHAPTER 20: BOILERS AND WATER HEATERS (no amendments)

## **CHAPTER 21: HYDRONIC PIPING**

M2101.3 Revise the subsection as follows:

**M2101.3 Protection of Potable Water**. The potable water system shall be protected from backflow in accordance with the provisions of the Department of Environmental Protection and/or the local water purveyor, as applicable.

## **CHAPTER 22: SPECIAL PIPING AND STORAGE SYSTEMS**

Delete all sections of CHAPTER 22 and replace with the following:

**M2201 SPECIAL PIPING AND STORAGE SYSTEMS**. Special laws, regulations, or both include requirements for oil tanks, piping, fittings, connections, installation, and oil pumps and valves. Refer to M.G.L. c. 148, § 13, M.G.L. c. 148, § 37, 527 CMR: *Board of Fire Prevention Regulations*, 522 CMR: *Board of Boiler Rules*, and EPA regulations. See also 780 CMR 51.00: *Massachusetts Residential Code* for tank structural design.

## **CHAPTER 23: SOLAR THERMAL ENERGY SYSTEMS**

M2301.1 Add two notes to the end of the section as follows:

NOTES:

- 1. Additional requirements for boilers and other pressure vessels may be found in M.G.L. c. 146 and 522 CMR: *Board of Boiler Rules*, as applicable.
- 2. Where solar thermal systems involve matters of potable water and/or wastewater, see 248 CMR: *Board of State Examiners of Plumbers and Gas Fitters*.

## **CHAPTER 24: FUEL GAS**

For the fuel gas provisions of Chapter 24 of 780 CMR 51.00: *Massachusetts Residential Code*, see 248 CMR: *Board of State Examiners of Plumbers and Gas Fitters*. Provisions 248 CMR related to work otherwise governed by 780 CMR 51.00: *Massachusetts Residential Code* shall be retained if not in conflict with other sections of 780 CMR 51.00: *Massachusetts Residential Code*.

## **CHAPTERS 25 THROUGH 33: PLUMBING**

For the plumbing provisions of Chapters 25 through 33 of 780 CMR 51.00: *Massachusetts Residential Code*, see 248 CMR 10.00: *Uniform State Plumbing Code*. Provisions of 248 CMR related to work otherwise governed by 780 CMR 51.00: *Massachusetts Residential Code* shall be retained if not in conflict with other sections of 780 CMR 51.00: *Massachusetts Residential Code*. *Code*.

## **CHAPTERS 34 THROUGH 43: ELECTRICAL**

For the electrical provisions of Chapters 34 through 43 of 780 CMR 51.00: *Massachusetts Residential Code*, see 527 CMR 12.00: *Massachusetts Electrical Code* (Amendments). Provisions 527 CMR 12.00 related to work otherwise governed by 780 CMR 51.00: *Massachusetts Residential Code* shall be retained if not in conflict with other sections of 780 CMR 51.00: *Massachusetts Residential Code*.

CHAPTER 44: REFERENCED STANDARDS (no amendments)

#### **APPENDICES**

#### APPENDIX A: SIZING AND CAPACITIES OF GAS PIPING(Reserved)

## APPENDIX B: SIZING OF VENTING SYSTEMS SERVING APPLIANCES EQUIPPED WITH DRAFT HOODS, CATEGORY I APPLIANCES, AND APPLIANCES LISTED FOR USE WITH TYPE B VENTS (Reserved)

APPENDIX C: EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS (Reserved)

APPENDIX D: RECOMMENDED PROCEDURE FOR SAFETY INSPECTION OF AN EXISTING APPLIANCE SYSTEMS (Reserved)

#### **APPENDIX E: MANUFACTURED HOUSING USED AS DWELLINGS (Adopted as revised)**

**AE102.2** Revise the section as follows:

AE102.2 Additions, Alterations or Repairs. Additions, alterations and repairs made to a manufactured home shall conform to 780 CMR 51.00: *Massachusetts Residential Code* and the specialized codes.

AE201 Add two sentences to the definition of "MANUFACTURED HOME" as follows:

A manufactured home (mobile home) is not a manufactured building. For manufactured buildings, see 780 CMR 110.R3.

AE301.4 Reserved

AE302 to AE307 Reserved

AE402 Reserved

AE505 Reserved

AE507 Reserved

#### **APPENDIX F: PASSIVE RADON GAS CONTROLS**

(Adopted as revised)

**AF101.1** Revise the section as follows:

**AF101.1 General**. This appendix contains minimum requirements for new construction in the high radon potential counties as listed in Table AF101(1) regardless of the radon levels at the site. These requirements are intended to provide a passive means of resisting radon gas entry and prepare the dwelling for post-construction radon mitigation, if necessary. See Figure AF102. Active construction

techniques, rather than passive techniques, shall be permitted to be used where approved.

Alternatively, the passive system requirements of ANSI/AARST Standard Designation #CCAH: *Reducing Radon in New Construction of One & Two Family Dwellings and Townhouses*, 2013 may be used for new construction in Zone 1, or approved equal system.

Irrespective of which approach is used, no testing is required as follows:

- 1. for the radon levels at the site prior to construction;
- 2. for the radon control system when completed; or
- 3. in the building after completion of the project.

Therefore, such testing shall not be a condition of issuing a certificate of occupancy.

AF102.1 Revise the definition of "GAS-PERMEABLE LAYER" as follows:

**GAS-PERMEABLE LAYER**. A gas-permeable layer shall consist of one of the following:

- 1. A uniform layer of clean aggregate that is not less than four inches (102 mm) thick. The aggregate shall consist of material that will pass through a two-inch (51-mm) sieve and be retained by a <sup>1</sup>/<sub>4</sub>-inch (6.4-mm) sieve.
- 2. A uniform layer of sand (native or fill) that is not less than four inches (102 mm) thick and that is overlain by a soil gas collection mat or soil gas matting installed in accordance with the manufacturer's instructions. The soil gas mat or matting shall be designed for this purpose and condition, and have the capacity to freely transport soil gases to the collection point from the most remote area.

AF103.2.2 Revise the subsection as follows:

**AF103.2.2 Sumps**. Sumps open to soil or serving as the termination point for subslab drain tile loops shall be covered with a gasketed or sealed lid. Sumps used as the suction point in a sub slab depressurization system shall have a lid designed to accommodate the vent pipe. Sumps used as a floor drain shall have a lid equipped with a trapped inlet. Drainage systems that lead outside the foundation walls shall be isolated or trapped so as not to short-circuit the depressurization system.

**AF103.3.1** Revise the subsection as follows:

**AF103.3.1 Soil-gas-retarder**. The soil in basements and enclosed crawl spaces shall be covered with a soil-gas-retarder. The soil-gas-retarder shall be lapped not less than 12 inches (305 mm) at joints and shall extend to foundation walls enclosing the basement or crawl space. The soil gas-retarder shall fit closely around any pipe, wire or other penetrations of the material. Punctures or tears in the material shall be sealed

or covered with additional sheeting. The membrane shall extend upward six inches be sealed to the perimeter footing or wall with an ASTM C290 class 25 or higher sealant or equal.

AF103.3.2 Revise the subsection as follows:

**AF103.3.2 "T" Fitting and Vent Pipe**. A "T" fitting shall be inserted beneath the soil-gas-retarder and be connected to a three-inch minimum vertical vent pipe. The vent pipe shall extend through the conditioned space of the dwelling and terminate not less than 12 inches (305 mm) above the roof in a location not less than ten feet (3,048 mm) away from any window or other opening into the conditioned spaces of the building that is less than two feet (610 mm) below the exhaust point. The horizontal legs of the "T" fitting shall connect to two five-foot long pieces of four-inch diameter perforated pipe laid horizontally in a 50 in<sup>2</sup> bed of gravel, filled with the same gravel as used in the gas-permeable layer.

AF103.4.2 Revise the subsection as follows:

**AF103.4.2 Soil-gas-retarder**. A soil-gas-retarder shall be placed on top of the gaspermeable layer prior to casting the slab or placing the floor assembly. The soil-gas retarder shall cover the entire floor area with separate sections lapped not less than 12 inches (305 mm) and shall extend upward six inches and be sealed to the wall with an ASTM C290 class 25 or higher sealant or equal. The soil-gas-retarder shall fit closely around any pipe, wire, or other penetrations of the material. Punctures or tears in the material shall be sealed or covered. Under-slab insulation, if used, shall be placed on top of the sheeting.

AF103.4.2 Revise the subsection as follows:

**AF103.4.3 "T" Fitting and Vent Pipe**. Before a slab is cast or other floor system is installed, a "T" fitting shall be inserted below the slab or other floor system and the soil-gas-retarder. The "T" fitting shall be connected to a three-inch minimum vertical vent pipe. The vent pipe shall extend through the conditioned space of the dwelling and terminate not less than 12 inches (305 mm) above the roof in a location not less than ten feet (3,048 mm) away from any window or other opening into the conditioned spaces of the building that is less than two feet (610 mm) below the exhaust point. The horizontal legs of the "T" fitting shall connect to two five-foot long pieces of four-inch diameter perforated pipe laid horizontally in a 50 in<sup>2</sup> bed of gravel, filled with the same gravel as used in the gas-permeable layer.

## APPENDIX G: PIPING STANDARDS FOR VARIOUS APPLICATIONS (Reserved)

#### **APPENDIX H: PATIO COVERS**

(Adopted in full)

**APPENDIX I: PRIVATE SEWAGE DISPOSAL** 

(Adopted as amended)

**AI101.1** Revise the section as follows:

**AI101.1 Scope**. Private sewage disposal systems shall conform to the requirements of 310 CMR 15.000: *The State Environmental Code*, *Title 5: Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of On-site Sewage Treatment and Disposal Systems and for the Transport and Disposal of Septage, and any additional legal restrictions imposed by the municipal health department.* 

## **APPENDIX J: EXISTING BUILDINGS AND STRUCTURES** (Adopted as amended)

AJ101.1 Revise the section as follows:

**AJ101.1 General**. The purpose of APPENDIX J is to encourage the continued use or reuse of legally existing buildings and structures. The provisions of APPENDIX J are intended to permit work in existing buildings that is consistent with the purpose of 780 CMR 51.00: *Massachusetts Residential Code*. Compliance with these provisions shall be deemed to meet the requirements of 780 CMR 51.00: *Massachusetts Residential Code*. *Compliance with these provisions shall be deemed to meet the requirements of 780 CMR 51.00: Massachusetts Residential Code*.

Features of existing construction which do not meet the requirements of 780 CMR 51.00: *Massachusetts Residential Code* for new construction shall be presumed to have met the regulations, codes or laws in effect at the time of construction or alteration and, if so, shall be deemed to be existing nonconforming. Unless stated otherwise, nothing in APPENDIX J shall require the upgrading or replacement of any existing nonconforming feature or component of an existing building, provided the feature, component or system is in serviceable condition. Components or features of an existing building which, in the opinion of the building official, are dangerous, unsafe, damaged, significantly deteriorated or which otherwise present a threat to occupants or to public safety shall be remediated in accordance with 780 CMR 51.00: *Massachusetts Residential Code*.

Any new building system or portion thereof shall conform to 780 CMR 51.00: *Massachusetts Residential Code* for new construction to the fullest extent practicable. However, individual components of an existing building system may be repaired or replaced without requiring that system to comply fully with 780 CMR 51.00: *Massachusetts Residential Code* unless specifically required by APPENDIX J.

For compliance of work governed by other codes, including the specialized codes, see section R101.4.

AJ102.1 Revise the section as follows:

**AJ102.1 General.** Regardless of the category of work being performed, the work shall not cause the structure to become unsafe or adversely affect the performance of the building; shall not cause a system regulated by 780 CMR 51.00: *Massachusetts Residential Code* to become unsafe, hazardous, insanitary or overloaded; and unless expressly permitted by these provisions, shall not make the building any less compliant with 780 CMR 51.00: *Massachusetts Residential Code* or to any previously approved alternative arrangements than it was before the work was undertaken.

AJ102.3 Revise the section as follows:

**AJ102.3 Smoke, Carbon Monoxide and Heat Protection**. Smoke, carbon monoxide and heat protection shall be provided when required by this section and designed, located and installed in accordance with the provisions for new construction. See sections R314, R314.5, and R315.

AJ102.3.1 through AJ102.3.3 Add the subsections as follows:

## AJ102.3.1 Adding or Creating One or More Sleeping Rooms.

- 1. **Single-family Dwelling**. When one or more sleeping rooms are added or created to an existing dwelling, the entire dwelling shall be provided with smoke, heat and carbon monoxide protection.
- 2. **Two-family Dwelling**. When one or more sleeping rooms are added or created to one dwelling unit that unit shall be provided with smoke, heat and carbon monoxide protection detectors. When sleeping rooms are added or created to both units the entire building shall be provided with smoke, heat and carbon monoxide protection.
- 3. **Townhouses Dwelling Unit**. When one or more sleeping rooms are added or created to an existing dwelling unit, the entire unit shall be provided with smoke, heat, and carbon monoxide protection.

**AJ102.3.2 Complete Reconstruction**. If a dwelling or townhouse building undergoes reconstruction such that more than 50% of walls and ceilings are open to framing, then the entire existing building shall be provided with smoke, heat and carbon monoxide protection.

AJ102.3.3 Adding an Attached Garage. If a garage is created under or attached to an existing dwelling unit, a heat detector shall be provided in the garage in accordance with R314.8.

AJ102.7.1 Add subsection as follows:

**AJ102.7.1 Documentation of Compliance Alternatives**. The building official shall ensure that the BBRS is provided with information regarding any and all compliance alternatives accepted by the building official within two weeks of acceptance.

AJ102.10 through AJ102.14 Add sections, and associated subsections, as follows:

**AJ102.10 Unlined Chimneys**. Where new HVAC appliances are connected to an unlined chimney, the chimney lining requirements of 248 CMR: *Board of State Examiners of Plumbers and Gas Fitters* or 527 CMR: *Board of Fire Prevention Regulations*, as applicable, and those of the appliance manufacturer, shall be satisfied. If the appliance is a solid fuel-burning appliance, the chimney shall be relined to

satisfy requirements both of the code for new construction and those of the manufacturer, as applicable.

**AJ102.11 Latent Conditions**. When latent conditions are observed and which are determined by the licensed construction supervisor, the owner or the building official to be dangerous or unsafe, or when a component or system is determined to be unserviceable, said conditions shall be corrected in accordance with applicable provisions of 780 CMR 51.00: *Massachusetts Residential Code*. A building permit shall be obtained or the building permit shall be amended in accordance with the provisions of section R105 in order to reflect the necessary required work and the approval shall be obtained from the building official prior to commencement of the corrections.

EXCEPTION: If the public safety so warrants, corrective actions are permitted to be made prior to amending the building permit application, providing that the building official is notified in writing within 24 hours of actions taken pursuant to this exception. This exception shall not be construed as to authorize constructive approval nor set aside the requirements to amend the permit application, nor shall the authority of the building official to enforce 780 CMR 51.00: *Massachusetts Residential Code* be abridged. Such corrective actions shall be documented by the construction supervisor or the owner and submitted to the building official within 48 hours of the completion of the action under this exception. Such corrective work shall not be concealed until the building official has inspected and approved the work.

AJ102.12 Energy Efficiency. See section N1100.

AJ102.13 Roofing and Reroofing. See Chapter 9 of 780 CMR 51.00: *Massachusetts Residential Code* generally and section R907.

AJ102.14 Accessibility for Persons with Disabilities. Accessibility requirements shall be in accordance with 521 CMR.

AJ103.1 Revise the subsection as follows:

**AJ103.1 General**. If a building permit is required at the request of the prospective permit applicant, the building official or his or her legal designee may meet with the prospective applicant to discuss plans for any proposed work under these provisions prior to the application for the permit. The purpose of this preliminary meeting is for the building official to gain an understanding of the prospective applicant's intentions for the proposed work, and to determine, together with the prospective applicant, the specific applicability of these provisions.

AJ301.1.2 Delete the subsection in its entirety.

AJ301.2 and AJ301.3 Delete in their entirety.

AJ401.2.1 Add the subsection as follows:

AJ401.2.1 Emergency Escape and Rescue Windows. For one- and two-family dwellings and townhouses of no more than three stories in height, all emergency escape windows from sleeping rooms shall have a net clear opening of  $3.3 \text{ ft}^2$  (0.307 m<sup>2</sup>). The minimum net clear opening shall be 20 inches by 24 inches (508 mm by 610 mm) in either direction except that windows in sleeping rooms of existing dwellings which do not conform to these requirements may be replaced without conforming to these dimensional requirements, provided that the windows do not significantly reduce the existing opening size.

EXCEPTION: Replacement windows utilized as emergency escape and rescue windows, other than double-hung windows, shall generally conform to the requirements of this section without conforming to the cited dimensional requirements, provided that such replacement windows do not significantly reduce the existing opening size.

AJ401.4 Replace the subsection as follows:

**AJ401.4 Structural**. Unreinforced masonry townhouse buildings shall have parapet bracing and wall anchors installed at the roofline whenever a reroofing permit is issued if required by 780 CMR 34.00: *Existing Structures*. Such parapet bracing and wall anchors shall be of an approved design. Where renovations may decrease the structural performance of the existing building, such proposed activities shall be evaluated by a registered design professional for adequacy, prior to such actual structural renovation.

AJ501.1 Revise the subsection as follows:

AJ501.1 Newly Constructed Elements. Additions, newly constructed elements, components and systems shall comply with the requirements of 780 CMR 51.00: *Massachusetts Residential Code*.

#### **EXCEPTIONS**:

- 1. Operable windows may be added without requiring compliance with the light and ventilation requirements of section R303.
- 2. Newly installed electrical equipment shall comply with the requirements of section AJ501.5.

**AJ501.4** Revise the subsection as follows:

AJ501.4 Structural. The minimum design loads for the structure shall be the loads applicable at the time the building was constructed, provided that a dangerous condition is not created. Structural elements that are uncovered during the course of the alteration and that are found to be unsound or dangerous shall be made to comply

with the applicable requirements of 780 CMR 51.00: *Massachusetts Residential Code*. Where alterations may decrease the structural performance of the existing building, such proposed activities shall be evaluated by a registered design professional for adequacy, prior to such actual structural alterations.

AJ501.5 Revise the subsection as follows:

## AJ501.5 Electrical Equipment and Wiring. See 527 CMR.

AJ601.5 Add a subsection as follows:

**AJ601.5 Structural**. Where reconstruction may decrease the structural performance of the existing building, such proposed activities shall be evaluated by a registered design professional for adequacy, prior to such actual structural reconstruction.

AJ701 Add a section as follows:

## AJ701 HISTORIC BUILDINGS

AJ701.1 General. For historic building requirements, see 780 CMR 34.00: *Existing Building Code*.

APPENDIX K: SOUND TRANSMISSION	(Adopted in full)
APPENDIX L: PERMIT FEES (see 801 CMR 4.00: <i>Rates</i> , as applicable)	(Reserved)
<b>APPENDIX M: HOME DAY CARE – R-3 OCCPANCY</b>	(Reserved)
APPENDIX N: VENTING METHODS	(Reserved)
<b>APPENDIX O: AUTOMATIC VEHICULAR GATES</b>	(Adopted in full)
<b>APPENDIX P: SIZING OF WATER PIPING SYSTEM</b>	(Reserved)
APPENDIX Q	(Reserved)
<b>APPENDIX R: LIGHT STRAW-CLAY CONSTRUCTION</b>	(Reserved)
<b>APPENDIX S: STRAWABLE CONSTRUCTION</b>	(Reserved)

APPENDIX T: RECOMMENDED PROCEDURE FOR WORST-CASE TESTING OF ATMOSPHERIC VENTING SYSTEMS UNDER N1102.4 OR N1105 CONDITIONS  $\leq 5$  ACH<sub>50</sub> (Reserved)

## APPENDIX U: SOLAR-READY PROVISIONS – DETACHED ONE- AND TWO-FAMILY DWELLINGS, MULTIPLE SINGLE-FAMILY DWELLINGS (TOWNHOUSES) (Adopted as amended)

Delete APPENDIX U and replace as follows:

#### SECTION AU101 (RB101) SCOPE

AU101.1 (RB101.1) General. These provisions shall be applicable for new construction, except additions.

#### SECTION AU102 (RB102) GENERAL DEFINITIONS

**SOLAR-READY ZONE**. A section or sections of the roof or building overhang designated and reserved for the future installation of a solar photovoltaic or solar thermal system.

#### SECTION AU103 (RB103) SOLAR-READY ZONE

**AU103.1 (RB103.1) General**. New detached one- and two-family dwellings, and multiple single-family dwellings (townhouses) with not less than 600 ft<sup>2</sup> (55.74 m<sup>2</sup>) of roof area oriented between 110° and 270° of true north shall comply with sections AU103.2 through AU103.8 (RB103.2 through RB103.8).

#### **EXCEPTIONS**:

1. New residential buildings with a permanently installed on-site renewable energy system.

2. A building with a solar-ready zone that is shaded for more than 70% of daylight hours annually.

3. Buildings and structures as designed and shown in construction documents that do not meet the conditions for a solar-ready zone area.

AU103.2 (RB103.2) Construction Document Requirements for Solar Ready Zone. Construction documents shall indicate the solar ready zone where applicable.

AU103.3 (RB103.3) Solar-Ready Zone Area. The total solar-ready zone area shall consist of an area not less than 300 ft<sup>2</sup> (27.87 m<sup>2</sup>) exclusive of mandatory access or set back areas as required by 527 CMR. New multiple single-family dwellings (townhouses) three stories or less in height above grade plane and with a total floor area less than or equal to 2,000 ft<sup>2</sup> (185.8 m<sup>2</sup>) per dwelling shall have a solar-ready zone area of not less than 150 ft<sup>2</sup> (13.94 m<sup>2</sup>). The solar-ready zone shall be composed of areas not less than five feet (1,524 mm) in width and not less than 80 ft<sup>2</sup> (7.44 m<sup>2</sup>) exclusive of access or set back areas as required by 527 CMR.

AU103.4 (RB103.4) Obstructions. Solar-ready zones shall consist of an area free from obstructions, including but not limited to vents, chimneys, and roof-mounted equipment.

NOTE: Nothing in AU103.4 (RB103.4) shall require any construction documents to be redesigned or reconfigured so as to create a solar-ready zone area.

AU103.5 (RB103.5) Roof Load Documentation. The structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents.

**AU103.6 (RB103.6) Interconnection Pathway**. Construction documents shall indicate pathways for routing of conduit or plumbing from the solar-ready zone to the electrical service panel or service hot water system.

**AU103.7 (RB103.7) Electrical Service Reserved Space**. The main electrical service panel shall have a reserved space to allow installation of a dual pole circuit breaker for future solar electric installation and shall be labeled "For Future Solar Electric." The reserved space shall be positioned at the opposite (load) end from the input feeder location or main circuit location.

**AU103.8 (RB103.8) Construction Documentation Certificate**. A permanent certificate, indicating the solar-ready zone and other requirements of this section, shall be posted near the electrical distribution panel, water heater or other conspicuous location by the builder or registered design professional.

## **APPENDIX AA Stretch Energy Code**

**AA101 Purpose and Adoption**. The purpose of the stretch energy code is to provide a more energy efficient code alternative for new buildings. The stretch energy code may be adopted or rescinded by any municipality in the commonwealth in the manner prescribed by law.

**AA102 Applicability**. Municipalities that have adopted the stretch energy code shall use the energy efficiency requirements of this appendix as provided below. These requirements replace all previous stretch energy code requirements.

#### AA103 New Buildings.

**AA 103.1 R-use Buildings**. In all R-use buildings, of four stories or less above grade plane with one or more dwelling units, each dwelling unit shall comply with section N1106 (R406) of 780 CMR 51.00: *Massachusetts Residential Code*.

AA103.2 Large Area and High Energy Use Buildings. All buildings over 100,000  $ft^2$ , and new supermarkets, laboratories and conditioned warehouses over 40,000  $ft^2$  shall comply with 780 CMR 13.00 and shall demonstrate energy use per  $ft^2$  at least 10% below the energy requirements of ANSI/ASHRAE/IESNA 90.1 APPENDIX G

Performance Rating Method on either a site or source energy basis. The additional efficiency package options selected in accordance with C406.1 shall be included in calculating the baseline building performance value.

EXCEPTION: Exclusively R-use buildings complying with AA 103.1 dwelling unit requirements.

**AA103.3 Other New Buildings**. New buildings not covered in AA103.1 and AA103.2 shall comply with 780 CMR 13.00 or Chapter 11 of 780 CMR 51.00: *Massachusetts Residential Code* as applicable based on the use and occupancy of the building.

**AA104 Existing Buildings**. For alterations, renovations, additions or repairs of existing buildings in these municipalities the energy efficiency requirements of 780 CMR 13.00 or Chapter 11 of 780 CMR 51.00: *Massachusetts Residential Code* shall be used as applicable based on the use and occupancy of the building.