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**780 CMR 1 through 35**

shall be the *International Building Code 2015* with:

- sections and/or text deleted shown in ~~strikeout~~
- sections replaced, added, or with text modified or added shown in **red** font.
- sections replaced, added, or with text modified following the October 13, 2015 BBRS meeting are shown in **blue** font.
- sections where modification occurred during / after the November 10, 2015 BBRS meeting are shown in **orange** font.

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

### SECTION 101 GENERAL

**101.1 Adoption and Title**. The Board of Building Regulations and Standards (BBRS) adopts and incorporates by reference, the *International Building Code*, 2015 edition, as periodically amended by errata (IBC), 780 CMR 110.R1 through 110.R7 and 115AA and these together with modifications as set forth, shall collectively comprise the *Massachusetts State Building Code* (780 CMR), Ninth Edition, Base Volume, and referred to as "this code".

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

1. the construction, reconstruction, alteration, repair, demolition, removal, inspection, issuance and revocation of *permit*s or licenses, installation of equipment, classification and definition of any building or structure and use or occupancy of all buildings and structures or parts thereof except bridges and appurtenant supporting structures which have been or are to be constructed by, or are under the custody and control of the Massachusetts Department of Transportation, the Massachusetts Bay Transportation Authority, the Department of Conservation and Recreation, or the Massachusetts Port Authority or for which said agencies have maintenance responsibility;
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 and protection practices; and
4. other powers and duties found in M.G.L. c. 143, §§ 93 through 100, but not listed herein.

**Exception**: 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, and other buildings as described in this code may comply with 780 CMR 51.00: *International Residential Code* with MA amendments.

**101.3 Intent**. The purpose of this code 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.

**101.4 Referenced Codes**. Referenced codes include the specialized codes of M.G.L. c. 143, § 96 and other codes and regulations listed in 101.4.1 through 101.4.12 and shall be considered part of this code 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 this code and within the jurisdiction of the *building official*, shall be subject to inspection by the *building official*.

**101.4.1 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*.

**101.4.2 Mechanical**. The provisions of the *International Mechanical Code (IMC)* shall apply to all mechanical systems except for ~~that~~ those which ~~is~~ are defined as sheet metal work by M.G.L. c. 112, § 237. The provisions of 271 CMR shall apply to all sheet metal work, as defined by M.G.L. c. 112, § 237.

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

**101.4.4 Property Maintenance**. The *International Property Maintenance Code* is not adopted. Reference to the *International Property Maintenance Code* shall be considered reference to this code (780 CMR) and within the jurisdiction of the *building official*.

**101.4.5 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 *International Fire Code (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. Modifications, alterations, additions, or deletions to *Fire Protection Systems* are any changes which affect the performance of the *fire protection system*. Such changes require a building permit and are subject to other permitting requirements pursuant to applicable provisions of M.G.L. c.148 §27A**.**

**101.4.6 Energy**. Chapter 13: *Energy Efficiency* of this code shall apply to all matters governing the design and construction of buildings for energy efficiency.

**101.4.7 Architectural Access**. Any reference in this code to accessibility shall be considered reference to 521 CMR: *Architectural Access Board*. 521 CMR is enforced by the *building official*.

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

**101.4.9 Elevators**. Any reference in this code to elevators shall be considered reference to 524 CMR: *Board of Elevator Regulations*.

**101.4.10 Electrical**. Any reference in this code to the *International Electrical Code* shall be considered reference to 527 CMR 12.00: *Massachusetts Electrical Code (Amendments)*.

**101.4.11 Sheet Metal**. *See* 271 CMR: *Board of Examiners of Sheet Metal Workers*.

**101.4.12 International Residential Code**. Any reference in this code to the *International Residential Code* shall be considered reference to 780 CMR 51.00 through 120.00.

**101.4.13 Transit and Commuter Rail Stations.** Stations shall comply with this Code and Chapters 2, 3, 4, and 5 of NFPA 130-2014. Any references to NFPA 101 and NFPA 220 shall mean reference to this Code. Where conflict exists between this Code and the *referenced standard*, the compliance with the *referenced standard* shall be required.

**101.5 BBRS Advisory Committees**. BBRS technical Advisory Committees support requests from and by the BBRS as it deems necessary per M.G.L. c. 143. Titles and membership of these technical advisory committees may be viewed at www.mass.gov/dps.

## SECTION 102 APPLICABILITY

**102.1 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 this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

**Exception**: Where enforcement of a provision of this code would violate the conditions of a listing or manufacturer's instructions, the conditions of the listing and manufacturer's instructions shall apply.

**102.2 Other Laws**. The provisions of this code shall not nullify any provision of state or federal law. Massachusetts General Laws (M.G.L.s) and the Code of Massachusetts Regulations (CMRs) are often referenced in this code. It is the code user's responsibility to determine all applicable laws and regulations relevant to sections in this code.

**102.2.1 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 51.00: *Massachusetts Residential Code*.

**102.2.2 Municipal Bylaws or Ordinances**. 780 CMR is in effect 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.

**102.3 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 this code.

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

**102.5 Partial Invalidity**. In the event that any part or provision of this code 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.

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

**102.6.1 Laws in Effect**. Unless specifically provided otherwise in this code, and narrow to the provisions of this code, 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 this code.

**102.6.2 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 this code.

**102.6.3 Less Stringent**. In cases where the provisions of this code 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 this code shall apply, providing such application can be reasonably demonstrated to not result in danger to the public, as determined by the *building official*.

**102.6.4 Existing Means of Egress, Lighting and Ventilation**. The *building official* may cite the following condition 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 this code.

a. Inadequate number of means of egress.

b. Egress components with insufficient width or so arranged to be inadequate, including signage and lighting.

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.

**102.7 Moved Structures**. Buildings or structures moved into or within the jurisdiction shall comply with the provisions of Chapter 34: *Existing Structures* 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.

**102.8 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 this code 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.

**102.8.1 Owner Responsibility**. The *owner*, as defined in Chapter 2: *Definitions*, shall be responsible for compliance with the provisions of this code.

## PART 2 - ADMINISTRATION AND ENFORCEMENT

## SECTION 103 ENFORCEMENT

**103.1 Municipal and State Enforcement**. Reference to The Department of Building Safety shall be considered reference to the *building official*. This code shall be enforced by the *building official* as defined in Chapter 2: *Definitions* and in accordance with M.G.L. c. 143, §§ 3, 3A, Y,

and Z and M.G.L. c. 22, the *building official* shall include; building commissioner or inspector of buildings, local inspector, and state building inspector. These M.G.L.s also contain provisions, not limited to: employment and designation, qualifications, temporary appointment, and certification of *building official*s.

## SECTION 104 DUTIES AND POWERS OF BUILDING OFFICIAL

**104.1 General**. The *building official* is hereby authorized and directed to enforce the provisions of this code in accordance with M.G.L. c. 143, §§ 3 and 3A. In every city and town this code shall be enforced by the State Inspector of the Department of Public Safety, Division of Inspections, as to any structures or buildings or parts thereof that are owned by the Commonwealth or any departments, commissions, agencies, or authorities of the Commonwealth

**104.2 Applications and *Permit*s**. The *building official* shall receive applications, review *construction documents* and issue *permit*s for the erection, and alteration, demolition and moving of buildings and structures, inspect the premises for which such *permit*s have been issued and enforce compliance with the provisions of this code.

**104.3 Notices and Orders**. The *building official* shall issue all necessary notices or orders to ensure compliance with this code.

**104.4 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.

> **104.4.1 Coordination of Inspections**. Whenever in the enforcement of this code, or another code or ordinance, the responsibility of more than one enforcement official of the jurisdiction 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.

**104.5 Identification**. The *building official* shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

**104.6 Right of Entry**. Where it is necessary to make an inspection to enforce the provisions of this code, 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 this code 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 this code, 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.

**104.7 Department Records**. The *building official* shall keep official records of applications received, *permit*s 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.

**104.8 Liability**. All claims of liability relative to *building official*s shall be governed by M.G.L. c. 258.

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

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

**104.10 Modifications**. Wherever there are practical difficulties involved in carrying out the provisions of this code, 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 this code impractical and the modification is in compliance with the intent and purpose of this code 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 department of building safety.

**104.10.1 Flood hazard areas and coastal dunes**. The *building official* shall not grant modifications to any provision related to *flood hazard areas* and *coastal dunes* as established by this code without the granting of a variance to such provisions by the building code appeals board. Also, no variance to requirements of this code can be solely utilized to argue for lawful construction/reconstruction where such construction/reconstruction would conflict with requirements of M.G.L. c. 131, § 40: *Removal, Fill, Dredging or Altering of Land Bordering Waters* (the Wetlands Protection Act), and/or 310 CMR 10.00.

**104.11 Alternative Materials, Design and Methods of Construction and Equipment**. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, 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 this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

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

**104.11.2 Tests**. Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, 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 jurisdiction. Test methods shall be as specified in this code 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.

**104.12 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 this code may be appropriately addressed. Matters not specifically provided for in this code 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 department of building safety. For highly specialized buildings and structures that conform to unique code requirements or nationally recognized standards not required in this code, *registered design professional*s shall provide sufficient information to the *building official* to support their approval.

## SECTION 105 PERMITS

**105.1 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 this code without first filing an application with the *building official* and obtaining the required *permit*.

**105.2 Work Exempt from Permit**. Except for activities which may require a *permit* pursuant to other laws, by-laws, rules 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 used as tool and storage sheds, playhouses and similar uses, provided the floor area is not greater than 120 square feet (11 m2).
2. Fences not over 7 feet (2134 mm) high.
3. Oil derricks.
4. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.
5. Water tanks supported directly on grade if the capacity is not greater than 5,000 gallons (18 925 L) and the ratio of height to diameter or width is not greater than 2:1.
6. Sidewalks and driveways not more than 30 inches (762 mm) above adjacent grade, and not over any basement or story below and are not part of an accessible route.
7. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
8. Temporary motion picture, television and theater stage sets and scenery.
9. Prefabricated swimming pools accessory to a Group R-3 occupancy that are less than 24 inches (610 mm) deep, are not greater than 5,000 gallons (18 925 L) and are installed entirely above ground.
10. Shade cloth structures constructed for nursery or agricultural purposes, not including service systems.
11. Swings and other playground equipment accessory to detached one- and two-family dwellings. (also refer to 521 CMR for accessibility requirements as applicable)
12. Window awnings in Group R-3 and U occupancies, supported by an exterior wall that do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.

13. Nonfixed and movable fixtures, cases, racks, counters and partitions not over 5 feet 9 inches (1753 mm) in height.
14. 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.
15. Replacement or repair of any component or components of a *fire protection system*, where such does not affect system performance and compatibility. No building permit is required for maintenance. Other permits, however, may be required pursuant to applicable provisions of M.G.L. c.148§27A and of 527 CMR.

**105.2.1 Emergency Repairs**. Where replacements and repairs governed by this code 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.

**105.2.2 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 jurisdiction of 780 CMR.

**105.3 Application for Permit**. To obtain a *permit*, the *owner* (*see* definition) 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 www.mass.gov/dps. 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 this code.
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* (*see* definition) or authorized agent.
7. Give such other data and information as required by the *building official* in accordance with this code.

**105.3.1 Action on Application**. The *building official* shall examine or cause to be examined applications for *permit*s 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 this code and all pertinent laws (*see* note below) 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, must 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, § 3SB.
7. Construction in coastal dunes: in accordance with flood construction requirements of this code.
8. Registration of Home Improvement Contractors or Subcontractors for residential contracting services, in accordance with M.G.L. c. 142A, § 9(a).

**105.3.2 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.

**105.4 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 this code or of any other ordinance of the jurisdiction. *Permits* presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction 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 this code or of any other ordinances of this jurisdiction.

**105.5 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 and justifiable cause demonstrated.

**105.6 Suspension or Revocation**. The *building official* is authorized to suspend or revoke a *permit* issued under the provisions of this code 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 this code.

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

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

**105.9 Independent Structural Engineering Review Condition**. As a condition for the issuance of a building *permit*, the structural design of the following described structures shall be reviewed by a *registered design professional* to verify that the design of the primary structure is conceptually correct and that there are no major errors in the design:

1. High rise buildings.
2. Structures of unusual complexity or design as determined by the BBRS. A *building official* may apply to the BBRS for such a determination on a specific structure.

This requirement shall not preclude an *owner* from obtaining an independent structural engineering design review of a primary structure, other than those listed in this section.

**105.9.1 Review Requirements**. The independent structural engineering review shall be in accordance with the guidance document found at www.mass.gov/dps.

**105.9.2 Disputes**. Disputes between the structural engineer responsible for the design of the building or structure and the independent structural engineering reviewer shall be resolved by the BBRS or a board established by the BBRS.

## SECTION 106 FLOOR AND ROOF DESIGN LOADS

**106.1 Live Loads Posted**. Where the live loads for which each floor or portion thereof of a commercial or industrial building is or has been designed to exceed 50 psf (2.40 kN/m$^2$), such design live loads shall be conspicuously posted by the *owner* in that part of each story in which they apply, using durable signs. It shall be unlawful to remove or deface such notices

**106.2 Issuance of Certificate of Occupancy**. A certificate of occupancy required by Section 111 shall not be issued until the floor load signs, required by Section 106.1, have been installed.

**106.3 Restrictions on Loading**. It shall be unlawful to place, or cause or permit to be placed, on any floor or roof of a building, structure or portion thereof, a load greater than is permitted by this code.

## SECTION 107 SUBMITTAL DOCUMENTS AND CONSTRUCTION CONTROL

**107.1 General**. Submittal documents consisting of *construction documents*, statement of special inspections, geotechnical report and other data shall be submitted in two or more sets with each *permit* application. The *construction documents* shall be prepared by a *registered design professional* where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the *building official* is authorized to require additional *construction documents* to be prepared by 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 this code.

**107.1.1 Professional Seal and Signature**. All plans and specifications shall bear a seal and signature of the responsible *registered design professional* in accordance with M.G.L. c. 143, § 54A. *See* also www.mass.gov/dpl for policy on electronic seal and signature for certain *registered design professional*s.

**107.1.2 Fire Department Review**. For *permits* that include *fire protection systems* under Chapters 4: *Special Detailed Requirements Based on Use and Occupancy* or 9: *Fire Protection Systems*, or 34: *Existing Structures*, *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 this code or reference standards, he or she shall notify the *building official* (refer to M.G.L. c. 148, § 28A) in writing citing relevant sections of noncompliance with this code or the section of the referenced standards of Chapter 35: *Referenced Standards*.

**107.1.3 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 State and must include a stamp approval and signature.
3. Plans must be stamped on every page by a Third Party Inspection Agency.
4. Every page showing calculations by a *registered design professional* must 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 must 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 must accompany the plan submittal package with *approved* certification from manufacturer.

**107.2 Construction Documents**. *Construction documents* shall be in accordance with Sections 107.2.1 through 107.2.5.

**107.2.1 Information on Construction Documents**. *Construction documents* shall be dimensioned and drawn upon suitable material. Electronic media documents are permitted to be submitted when *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 this code and relevant laws, ordinances, rules and regulations, as determined by the *building official*.

**107.2.2 Fire Protection System Shop Drawings**. Shop drawings for the fire protection system(s) shall be submitted to indicate conformance to this code and the *construction documents* and shall be *approved* prior to the start of system installation. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9: *Fire Protection Systems*.

**107.2.3 Means of Egress**. The *construction documents* shall show in sufficient detail the location, construction, size and character of all portions of the means of egress in compliance with the provisions of this code. In other than occupancies in Groups R-2, R-

3, and I-1, the *construction documents* shall designate the number of occupants to be accommodated on every floor, and in all rooms and spaces.

**107.2.4 Exterior Wall Envelope**. *Construction documents* for all buildings shall describe the *exterior wall envelope* in sufficient detail to determine compliance with this code. The *construction documents* shall provide details of the *exterior wall envelope* as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive membrane and details around openings. The *construction documents* shall include manufacturer's installation instructions that provide supporting documentation that the proposed penetration and opening details described in the *construction documents* maintain the weather resistance of the *exterior wall envelope*. The supporting documentation shall fully describe the *exterior wall* system which was tested, where applicable, as well as the test procedure used.

**107.2.5 Site Plan**. The *construction documents* submitted with the application for *permit* shall be accompanied by a site plan showing to scale the size and location of new construction and existing structures on the site, distances from *lot lines*, the established street grades and the proposed finished grades and, as applicable, *flood hazard areas*, *floodways*, and *design base flood* elevations; and it shall be drawn in accordance with an accurate boundary line survey. 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 when the application for *permit* is for *alteration* or *repair* or when otherwise warranted.

**107.2.5.1 Design flood elevations.** Where *design flood elevations* are not specified, they shall be established in accordance with Section 1612.3.1.

**107.3 Examination of Documents**. The *building official* shall examine or cause to be examined the accompanying submittal documents and shall ascertain by such examinations whether the construction indicated and described is in accordance with the requirements of this code and other pertinent laws or ordinances.

**107.3.1 Approval of Construction Documents**. When the *building official* issues a *permit*, the *construction documents* shall be *approved*, in writing or by stamp, as "Reviewed for Code Compliance". One set of *construction documents* so reviewed shall be retained by the *building official*. The other 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.

**107.3.2 Previous Approvals**. This code 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 this code and has not been abandoned.

**107.3.3 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 this code. 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.

**107.3.4 Deferred Submittals**. For the purposes of this section, deferred submittals are defined as those portions of the design that are not submitted at the time of the application and that are to be submitted to the *building official* within a specified period.

Deferral of any submittal items shall have the prior approval of the *building official*. The deferred submittal items shall not be installed until the deferred submittal documents have been *approved* by the *building official*.

**107.4 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*.

**107.5 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.

**107.6 Construction Control**.

**107.6.1 General**. This section shall apply to the construction controls, professional services and contractor services required for buildings and structures needing *registered design professional* services.

The following structures are exempt from the requirements of this section:

1. Any building containing less than 35,000 cubic feet of enclosed space, measured to the exterior surfaces of walls and roofs and to the top of a ground supported floor, or in the case of a crawl space, to the bottom surface of the crawl space. In the case of basement floors or levels, the calculation of enclosed space shall include such spaces. For additions to existing buildings, the volume of enclosed space shall include the entire existing building and all proposed additions.
2. Any one- or two-family dwelling or any accessory building thereto.
3. Any building used exclusively for agricultural purposes. *See* Appendix C: *Group U - Agricultural Buildings* for occupancy and other limitations.
4. Retaining walls less than ten feet in height at all points along the wall as measured from the base of the footing to the top of the wall.
5. Structures where the *building official* determines that the scope of work is minor in nature and not needing *registered design professional* services.

Notwithstanding these exemptions, *registered design professional* services shall be required for activities which are deemed to constitute the practice of architecture or engineering as defined in M.G.L. c. 112, §§ 60A or 81D, except as provided in M.G.L. c. 143, § 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, shop drawings or plans and specifications prepared to document that work shall not be required to bear the seal or signature of a *registered design professional*. In *lieu* of a seal and signature the *building official* may require that the *registered design professional* review and approve shop or record drawings for general conformance to the design concept.

**107.6.1.1 Specialized Structures**. Telecommunication towers, wind turbine towers, and similar structures are engineered structures and shall be subject to the requirements of Section 107.6.

**107.6.2 Registered Design Professional Services**.

**107.6.2.1 Design**. All plans, computations and specifications involving new construction, alterations, repairs, expansions or additions or change in use or occupancy of existing buildings shall be prepared by or under the direct supervision of a *registered design professional* and shall bear his or her signature and seal (*see* Section 107.1.1).

Said signature and seal shall signify that the plans, computations and specifications meet the applicable provisions of this code and accepted engineering practices. Any alternative means and methods which deviate from prescriptive requirements of this code shall be submitted to the *building official* for approval in a narrative form separate from the plans.

**107.6.2.2 Construction**. The *registered design professional*s who are responsible for the design, plans, calculations, and specifications, their designee or the *registered design professionals* who have been retained for construction phase services, shall perform the following tasks:

1. Review, for conformance to this code and the design concept, shop drawings, samples and other submittals by the contractor in accordance with the requirements of the *construction documents*.
2. Perform the duties for *registered design professional*s in Chapter 17: *Special Inspections and Tests*.
3. Be present at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the work and to determine if the work is being performed in a manner consistent with the *construction documents* and this code.

The *permit* application shall not be deemed completed until all of the *construction documents* required by this code have been submitted. Documentation indicating that work complies with the plans and specifications shall be provided at the completion of each phase when required by the *building official*. Upon completion of the work, the *registered design professional* shall file a final document to the *building official* indicating that, to the best of his or her knowledge and belief, the work has been performed in accordance with the *approved* plans and this code. Forms for construction control when required by the *building official* shall be those found at www.mass.gov/dps.

**107.6.2.3 Special Inspections and Tests**. Special inspections and tests shall be provided in accordance with Chapter 17: *Special Inspections and Tests*.

**107.6.2.4 Non Structural System Test and Inspection**. Tests and inspections of non structural systems shall be performed in accordance with applicable engineering practice standards, referenced standards listed in Chapter 35: *Referenced Standards*, or as otherwise specified in this code.

**107.6.3 Construction Contractor Services**. The actual construction of the work shall be the responsibility of the general contractor as identified on the *approved permit* and shall involve the following:

1. Execution of all work in accordance with the *approved construction documents*.
2. Execution and control of all means and methods of construction in a safe and satisfactory manner in accordance with all applicable local, state, and federal statutes and regulations.

3. Upon completion of the construction, certification in writing to the responsible *registered design professional* that, to the best of the contractor's knowledge and belief, construction has been done in substantial accord with Section 107.6 and with all pertinent deviations specifically noted. The *building official* may require a copy of this certification.

**107.6.4 Project Representation**. A project representative may be required by the *building official*. This representative shall keep daily records and submit reports as may be required by the *building official*. This project representation requirement shall be determined prior to the issuance of the *permit* and may be a prerequisite for *permit* issuance. Refusal by the applicant to provide such service if required by the *building official* shall result in the denial of the *permit*. All fees and costs related to the performance of project representation shall be borne by the *owner*. When applications for unusual designs or magnitude of construction are filed, or where reference standards require special architectural or engineering inspections, the *building official* may require that the project representative be a *registered design professional* in addition to those *registered design professional*s required elsewhere per Section107.6.

**107.6.5 Building Official Responsibility**. Nothing contained in Section 107.6 shall have the effect of waiving or limiting the *building official*'s authority to enforce this code with respect to examination of the contract documents, including plans, computations and specifications, and field inspections.

## SECTION 108 TEMPORARY STRUCTURES AND USES

**108.1 General**. The *building official* is authorized to issue a *permit* for temporary structures and temporary uses. Such *permit*s shall be limited as to time of service, but shall not be *permit*ted for more than 180 days. The *building official* is authorized to grant extensions for demonstrated cause.

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

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

**108.4 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.

**108.5 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 this code (also *see* Chapter 31: *Special Construction*).

## SECTION 109 FEES

**109.1 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.

**109.2 Schedule of Permit Fees**. For state building *permit* fees, *see* 801 CMR 4.02: *Rates*. For municipal building *permit* fees, refer to the municipality.

**109.3 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*.

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

**Exception**: Emergency repairs as found in Section 105.2.1

**109.5 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

**110.1 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 this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid. It shall be the duty of the *permit* applicant to cause 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 this code. Neither the *building official* nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

**110.2 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.

**110.3 Required Inspections**. The *building official* shall conduct inspections during construction at intervals sufficient to ensure compliance with the provisions of this code which may include inspections set forth in Sections 110.3.1 through 110.3.10 (Also 110.4). 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.

**110.3.1 Footing and Foundation Inspection**. Footing and foundation inspections shall be made after excavations for footings are complete and any required reinforcing steel is in place. For concrete foundations, any required forms shall be in place prior to inspection. Materials for the foundation shall be on the job, except where concrete is ready mixed in accordance with ASTM C 94, the concrete need not be on the job.

**110.3.2 Concrete Slab and Under-floor Inspection**. Concrete slab and under-floor inspections shall be made after in-slab or under-floor reinforcing steel and building service equipment, conduit, piping accessories and other ancillary equipment items are in

place, but before any concrete is placed or floor sheathing installed, including the subfloor.

**110.3.3 Lowest floor elevation.** In *flood hazard areas*, upon placement of the lowest floor, including the *basement*, and prior to further vertical construction, the elevation certification required in Section 1612.5 shall be submitted to the *building official*.

**110.3.4 Frame Inspection**. Framing inspections shall be made after the roof deck or sheathing, all framing, fire-blocking and bracing are in place and pipes, chimneys and vents to be concealed are complete and the rough electrical, plumbing, heating wires, pipes and ducts are *approved*.

**110.3.5 Lath and Gypsum Board Inspection**. Lath and gypsum board inspections shall be made after lathing and gypsum board, interior and exterior, is in place, but before any plastering is applied or gypsum board joints and fasteners are taped and finished.

**Exception**: Gypsum board that is not part of a fire-resistance-rated assembly or a shear assembly.

**110.3.6 Fire- and Smoke-resistant Penetrations**. Protection of joints and penetrations in fire-resistance-rated assemblies, smoke barriers and smoke partitions shall not be concealed from view until inspected and *approved*.

**110.3.7 Energy Efficiency Inspections**. Inspections shall be made to determine compliance with Chapter 13: *Energy Efficiency* and shall include, but not be limited to, inspections for: envelope insulation R- and U-values, fenestration U- value, duct system R- value, and HVAC and water-heating equipment efficiency.

**110.3.8 Other Inspections**. In addition to the inspections specified above, the *building official* is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the department of building safety.

**110.3.9 Special Inspections**. For special inspections, *see* Chapter 17.

**110.3.10 Final Inspection**. The final inspection shall be made after all work required by the building *permit* is completed.

**110.3.10.1 Flood hazard documentation**. If located in a *flood hazard area*, documentation of the elevation of the lowest floor as required in Section 1612.5 shall be submitted to the *building official* prior to the final inspection.

**110.4 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.

**110.5 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 this code. The *building official* may require the *permit* holder or his representative to attend these inspections.

**110.6 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 this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the *building official*.

**110.7 Periodic Inspections**. The *building official* shall inspect periodically existing buildings and structures and parts thereof in accordance with Table 110 entitled Schedule for Periodic Inspections of Existing Buildings. Such buildings shall not be occupied or continue to be occupied without a valid Certificate of Inspection. Periodic inspections required by this section do not apply to residences operated or licensed by the Massachusetts Department of Developmental Services and subject to 780 CMR 51: *Massachusetts Residential Code.*

**Table 110**
**Schedule for Periodic Inspection of Existing Buildings**
(*See* Chapters 3: *Use and Occupancy Classification* and 4: *Special Detailed Requirements Based on Use and Occupancy* for complete descriptions of use groups.)

| Use Group | Use Group | Use Group Description | Minimum Inspections | Maximum Certification Period |
|---|---|---|---|---|
| A-1 | Movie theaters or theaters for performing acts (stage and scenery) | > 400 occupant load | Semi-annual | One year |
| | | ≤ 400 occupant load | Semi-annual | One year |
| A-2 | Restaurants, Night Clubs or similar uses | > 400 occupant load[1] | Semi-annual[1] | One year |
| | | ≤ 400 occupant load[1] | Annual[1] | One year |
| A-3 | Lecture halls, dance halls, churches and places of religious worship, recreational centers, terminals, *etc*. | > 400 occupant load | Semi-annual | One year |
| | | ≤ 400 occupant load | Annual | One year |
| A-4 | Low density recreation and similar uses. | | *see* note 3. | Five years |
| A | Special amusement buildings or portions thereof. | | *see* note 3. | One year |
| E | Educational, day care | | *see* note 3. | One year |
| I-1 | Group home | | *see* note 3. | One year |
| I-2 | Residents incapable of self preservation: hospitals, nursing home, mental hospitals, certain day care facilities. | | *see* note 3. | Two years[2] |
| I-3 | Residents restrained: prisons, jails, detention centers, *etc*. | | *see* note 3. | Two years |
| I-4 | Adult and/or child day care facilities. | | *see* note 3. | One year |
| R-1 | Hotels, motels, boarding houses, *etc*. | | *see* note 3. | One year |
| R-1 | Detoxification facilities | | *see* note 3. | Two years |
| R-2 | Multi-family | | *see* note 3. | Five years |
| R-2 | Dormitories and R-2 Congregate Living | | *see* note 3 | One year |
| R-2 | Summer Camps for children. | | Annual | One year |
| R-3 | Residential facilities licensed by DDS or DMH | | Annual | One year |
| R-4 | Residential care/assisted living facilities (≤ 16 persons) | | Annual | One year |
| Any | Facilities licensed by the Alcohol Beverage Control | | Annual[4] as per | One year as per |

| | | | |
|---|---|---|---|
| | Commission where alcoholic beverages are served and consumed. | M.G.L. c. 10, § 74 | M.G.L. c. 10, § 74 |
| Any | House museums (as recognized by MA Historical Commission) | Annual | One year |
| Any | Fire escapes, *etc*. per Chapter 10: *Means of Egress* | Five years | Five years |

**Notes**:

1. When appropriate for A-2 uses, the inspection for the Certificate of Inspection should include and be timed to satisfy the requirements of M.G.L. c. 10, § 74.
2. One year for facilities licensed or operated by the Department of Mental Health (DMH).
3. Prior to issuance of new certificate.
4. Certificates of inspection for establishments intending to sell alcoholic beverages to be consumed on the premises shall be governed by M.G.L. c. 10, § 74 and the inspection schedule in Section 110.7. The *building official* may issue a temporary inspection certificate, once co-signed by the *building official* and by the head of the fire department, effective to a date certain for the establishment.

General Note: It is the responsibility of building *owner*, as defined in Chapter 2: *Definitions*, to meet the inspection requirements in this table for continued use and occupancy. The maximum certification period specified in the table is intended to provide administrative flexibility. For uses allowing more than one year maximum certification period, the *permit* may determine the certificate validity term. For example, an R-2 building could be certified for one, two, three, four or five years.

## SECTION 111 CERTIFICATE OF OCCUPANCY

**111.1 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 this code or of other ordinances of the jurisdiction. 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 per 310 CMR 15, are requirements of the issuance of the Certificate of Use and Occupancy.

**Exception**: Certificates of occupancy are not required for work exempt from *permit*s under Section 105.2.

**111.1.1 Buildings or Structures Hereafter Altered**. 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 permit*s and of the applicable codes for which *permit* is required.

**111.1.2 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 this code.

**111.2 Certificate Issued**. After the *building official* inspects the building or structure and finds no violations of the provisions of this code or other laws that are enforced by the department of

building safety, the building commissioner/inspector of buildings or state building inspector shall issue a certificate of occupancy within ten days 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 this code 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. The use and occupancy, in accordance with the provisions of Chapter 3: *Use and Occupancy Classification*.
9. The type of construction as defined in Chapter 6: *Types of Construction*.
10. The design occupant load.
11. If an automatic sprinkler system is provided, whether the sprinkler system is required.
12. Any special stipulations and conditions of the building *permit*.
13. 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 (CMR) that apply regarding building features.

**111.3 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*. For the purposes of this section *building official* shall mean building commissioner/inspector of buildings or state building inspector.

**111.4 Revocation**. The *building official* is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of this code 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 this code.

**111.5 Posting**. Buildings and structures shall be posted for occupancy as noted in this section.

**111.5.1 Posting of Use and Occupancy**. A copy of the certificate of occupancy shall be posted at the main entry or be made readily available for inspection.

**111.5.2 Required Egress Posting**. A suitably designed placard, *approved* by the *building official* shall be posted by the *owner* on all floors of every building and structure, except High Hazard, Factory, and 1-3 use occupancies, as defined in Chapter 3: *Use and Occupancy Classification*. In addition to the per floor requirement, all rooms used as a place of assembly or as an R-l sleeping space shall have the required egress posting. Said placard shall be securely fastened to the building or structure in a readily visible place, showing exiting paths per floor.

**111.5.3 Place of Assembly Posting**. A placard suitably designed in contrasting colors and *approved* by the *building official*, shall be posted by the *owner* in every room where

practicable of every building and structure and part thereof designed for use as a place of public assembly (A-Use Groups). Said placard shall designate all of the occupant loads *approved* for each configuration within each room or space.

**111.5.4 Replacement of Posted Signs**. All posting signs shall be furnished by the *owner* and shall be of permanent design; they shall not be removed or defaced, and if lost, removed or defaced, shall be immediately replaced.

**111.5.5 Periodic Posting Inspection**. The *building official* may periodically inspect all existing buildings and structures except one and two family dwellings for compliance with this code in respect to posting; or may accept the report of such inspections from a *registered design professional* or others certified by the BBRS; and such inspections and reports shall specify any violation of the posting requirements of this code.

## SECTION 112 SERVICE UTILITIES - Reserved

## SECTION 113 APPEALS

**113.1 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 this code 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 www.mass.gov/dps

**113.2 Limitations on Authority. - Reserved**

**113.3 Qualifications. - Reserved**

**113.4 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 113.0, 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 must be heard by the local board before being heard by the state building code appeals board.

**113.4.1 Review**. Any person, including the State 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 State Building Code Appeals Board for a hearing *de novo* before the State Board, 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 www.mass.gov/dps.

**113.4.2 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.

**113.4.3 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.

**113.4.4 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 113.0.

## SECTION 114 VIOLATIONS

**114.1 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 this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

**114.2 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 this code, or in violation of a *permit* or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

**114.2.1 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*; or
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; or
3. By sending the party responsible or their agent authorized to accept service of process in the Massachusetts a copy of the order by registered or certified mail return receipt requested, if he is within the Massachusetts; 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.

**114.3 Enforcement**. Violations to this code 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.

**114.4 Violation Penalties**. Any person who violates a provision of this code 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 this code, shall be subject to penalties as prescribed by M.G.L. c. 143, § 94a.

## SECTION 115 STOP WORK ORDER

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

**115.2 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.

**115.3 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, § 94a. Each day during which a violation exists shall constitute a separate offense.

## SECTION 116 UNSAFE STRUCTURES AND EQUIPMENT

**116.1 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.

**116.2 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: www.usfa.dhs.gov/downloads/pdf/publications/napi4.pdf continuously until such time as the building is reoccupied; or
    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 116, 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 through12, shall enforce Section 116.2 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 Chapter 34: *Existing Structures*.

**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.

## CHAPTER 2: DEFINITIONS

**AGRICULTURE.** Defined by M.G.L. c. 128, §1A. Specifically, "farming" or "agriculture" shall include farming in all of its branches and the cultivation and tillage of the soil, dairying, the production, cultivation, growing and harvesting of any agricultural, aquacultural, floricultural or horticultural commodities, the growing and harvesting of forest products upon forest land, the raising of livestock including horses, the keeping of horses as a commercial enterprise, the keeping and raising of poultry, swine, cattle and other domesticated animals used for food purposes, bees, fur-bearing animals, and any forestry or lumbering operations, performed by a farmer, who is hereby defined as one engaged in agriculture or farming as herein defined, or on a farm as an incident to or in conjunction with such farming operations, including preparations for market, delivery to storage or to market or to carriers for transportation to market.

**AGRICULTURAL, BUILDING.** A structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products. This structure shall not be a place of human habitation. ~~or a place of employment where agricultural products are processed, treated or packaged, nor shall it be a place used by the public.~~

**[BS] BASE FLOOD ELEVATION.** The elevation of the *base flood*, including wave height, relative to the National Geodetic Vertical Datum (NGVD), North American Vertical Datum (NAVD) or other datum specified on the *Flood Insurance Rate Map* (FIRM). For AO zones the base flood elevation shall be the elevation of the highest adjacent grade plus the depth specified on the FIRM or the elevation of the highest adjacent grade plus two (2) feet if no depth is specified.

**BOARDING HOUSE.** A building arranged or used for lodging for compensation, with or without meals~~, and not occupied as a single-family unit~~.

**[A] BUILDING OFFICIAL.** ~~The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative.~~ The building

commissioner/inspector of buildings, local inspector or state building inspector charged with the administration and enforcement of this code in accordance with M.G.L. c. 143, §§ 3 and 3A.

**[F] COMBUSTIBLE LIQUID.** A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:

**Class II.** Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

**Class IIIA.** Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

**Class IIIB.** Liquids having a closed cup flash point at or above 200°F (93°C).

~~The category of combustible liquids does not include compressed gases or cryogenic fluids.~~

**Exceptions:** The category of combustible liquids shall not apply to:

1. *Compressed gases* or *cryogenic fluids*.
2. Class II and III liquids that are not heated to or above their flash points and:
   a. that have no fire point when tested in accordance with ASTM D92, up to the boiling point of the liquid or up to a temperature at which the sample being tested shows an obvious physical change; or
   b. that are in a water-miscible solution or in a dispersion with a water and inert (noncombustible) solids content of more than 80% by weight, which do not sustain combustion when tested using 49 CFR 173 Appendix H or the UN Recommendation on the Transport of Dangerous Goods.

**[BS] COASTAL A ZONE.** Area within a *special flood hazard area*, landward of a V zone or landward of an open coast without mapped *coastal high hazard areas*. In a coastal A zone, the principal source of flooding must be astronomical tides, storm surges, seiches or tsunamis, not riverine flooding. During the base flood conditions, the potential for breaking wave height shall be greater than or equal to 1 ½ feet (457 mm). The inland limit of the coastal A zone is ~~(a)~~ the Limit of Moderate Wave Action ~~if delineated on a FIRM, or (b) designated by the authority having jurisdiction~~ on the Massachusetts Coastal A Zone Map.

**COASTAL DUNE.** Any natural hill, mound or ridge of sediment landward of a coastal beach deposited by wind action or storm overwash. Coastal dune also means sediment deposited by artificial means and serving the purpose of storm damage prevention or flood control. For purposes of this Code, a coastal dune is one that has been determined to be significant to the interests of flood control and/or storm damage prevention as defined in the Wetlands Protection Act, M.G.L. c. 131, § 40. Coastal Dunes are subject to the construction requirements of Appendix G.

**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 10.00. Coastal Wetland Resource Areas include barrier beaches, coastal beaches, coastal dunes, rocky intertidal shores, tidal flats, land subject to 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. See Appendix G for all construction requirements in these areas.

**[BS] DESIGN FLOOD.** ~~The *flood* associated with the greater…~~See Base Flood.

**[BS] DESIGN FLOOD ELEVATION.** ~~The elevation of…~~See Base Flood Elevation.

**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.

**FIRE AREA.** ~~The aggregate floor area enclosed and bounded by fire walls, fire barriers, exterior walls or horizontal assemblies of a building. Areas of the building not provided with surrounding walls shall be included in the fire area if such areas are included within the horizontal projection of the roof or floor next above.~~ The aggregate are of a building, regardless of subdivisions by fire barriers, fire walls, or horizontal assemblies.

**[BS] FLOOD HAZARD AREA.** The greater of the following two areas:

1. The area within a flood plain subject to a 1-percent or greater chance of *flooding* in any year as identified on a community's current effective Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map (FHBM), whichever is applicable.
2. ~~The area designated as a flood hazard area on a community's flood hazard map, or otherwise legally designated.~~ If a community has received preliminary FIRM and Flood Insurance Study (FIS) from FEMA, and has been issued a Letter of Final Determination (LFD) from FEMA, the area designated as a flood hazard area on the community's preliminary FIRM, and FIS as of the date of the LFD.

**HIGH-RISE BUILDING.** ~~A building with an occupied floor located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.~~ A building more than 70 feet in height above grade plane.

**[A] JURISDICTION.** ~~The governmental unit that has adopted this code under due legislative authority.~~ The Board of Building Regulations and Standards.

**[BS] LIMIT OF MODERATE WAVE ACTION.** Line shown on ~~FIRMs~~ the Massachusetts Coastal A Zone Map to indicate the inland limit of the 1 ½ - foot (457 mm) breaking wave height during the base flood.

**LODGING HOUSE.** A one-family dwelling with five or fewer guest rooms where one or more occupants are primarily permanent in nature and ~~rent is paid~~ compensation is provided for the guest rooms. A building licensed as a "lodging house" per M.G.L. c. 140, § 22 to 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. Such wood may be ungraded but is stamped or certified in accordance with 780 CMR 110.R4.

**NIGHT CLUB.** An assembly occupancy with a high occupant load density that is generally characterized by at least two of the following: low lighting levels; music generating above-normal sound levels; nighttime operating hours; tables and seating that create ill defined aisles; a specific area designated for dancing; or service facilities for beverages with limited food service. For night club construction requirements see Section 430.

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

**[A] OWNER.** ~~Any person, agent, operator, entity, firm or corporation having any legal or equitable interest in the property; or recorded in the official records of the state, county or municipality as holding an interest or title to the property; or otherwise having possession or control of the property, including the guardian of the estate of any such person, and the executor or administrator of the estate of such person if ordered to take possession of real property by a court.~~ Every person who alone or jointly or severely with others (a) has legal title to any building

or structure; or (b) has care charge or control of any building or structure in any capacity including but not limited to agent, executor, executrix, administrator, administration, trustee or guardian of the estate of the holder of legal title; or (c) lessee under a written letter agreement; or (d) mortgagee in possession; or (e) agent, trustee or other person appointed by the courts. Each such person is bound to comply with the provisions of this code.

**[A] REGISTERED DESIGN PROFESSIONAL.** An individual who is ~~registered or~~ licensed or otherwise authorized to practice their respective design profession as defined by the statutory requirements of the professional registration laws of ~~the state or jurisdiction in which the project is to be constructed.~~ Massachusetts.

**[A] REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.** ~~A registered design professional engaged by the owner or the owner's authorized agent to review and coordinate certain aspects of the project, as determined by the building official, for compatibility with the design of the building or structure, including submittal documents prepared by others, deferred submittal documents and phased submittal documents.~~ See *registered design professional*.

**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.

**SUBSTANTIAL REPAIR OF A FOUNDATION**. Work to repair and/or replace a foundation that results in the repair or replacement of the portion of the foundation walls with a perimeter along the base of the foundation that equals or exceeds 50% of the perimeter of the base of the entire foundation measured in linear feet. The term "substantial repair of a foundation" also includes a building or structure ~~including a manufactured home~~ that has incurred a failure of a foundation regardless of the actual work done to repair or replace the foundation.

**SUMMER CAMPS FOR CHILDREN.** Premises with residential facilities operated solely between April and October for recreational and other purposes. For requirements see Section 429.

**TEMPORARY EMERGENCY USES.** A building or space within a building that is used for purposes other than originally designed or intended. A temporary emergency use may only be used pursuant to the provisions of Section 108. A Temporary Emergency Use building or space within a building shall be approved for such use by the municipal or state building official in consultation with the other appropriate municipal and state officials in accordance with Section 3113.

**TEMPORARY OVERNIGHT SHELTER.** See Section 3112.

**TRANSFORMER VAULT.** An underground structure or room in which power transformers, network protectors, voltage regulators, circuit breakers, and meters are housed.

## CHAPTER 3: USE AND OCCUPANCY CLASSIFICATION

**307.1.1** Replace item 8 as follows:

8. See Appendix C for the storage or utilization of materials for agricultural purposes on the premises.

**308.3.4 Five or fewer persons receiving custodial care.** A facility with five or fewer persons receiving custodial care shall be classified as Group R-3 or shall comply with the *International*

*Residential Code* provided an automatic sprinkler system is installed in accordance with Section 903.3.1.3 ~~or Section P2904 of the International Residential Code.~~

**Exception:** DDS group home facilities of 5 or fewer persons receiving custodial care, see Section 310.5.

**308.6** add this exception
**Exception:** Day care licensed as Family Child Care Homes and Large Family Child Care Homes under M.G.L. c. 15D shall be classified as ancillary to the main use of the building.

**310.5 Residential Group R-3.** Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:
Buildings that do not contain more than two *dwelling units*
*Boarding houses* (nontransient) with 16 or fewer occupants
*Boarding houses* (*transient*) with 10 or fewer occupants
Care facilities that provide accommodations for five or fewer persons receiving care
*Congregate living facilities* (nontransient) with 16 or fewer occupants
*Congregate living facilities* (*transient*) with 10 or fewer occupants
*Lodging houses* ~~with five or fewer *guest rooms*~~
DDS facilities in conformance with the occupant safety requirements of 115 CMR 7: *Standards for All Services and Supports*.

**310.5.1 Care facilities within a single family dwelling.** Care facilities for five or fewer persons receiving care that are within a single-family dwelling are permitted to comply with the *International Residential Code* provided an *automatic sprinkler system* is installed in accordance with Section 903.3.1.3 ~~or Section P2904 of the International Residential Code~~.

**310.6 Residential Group R-4.** Residential Group R-4 occupancy shall include buildings, structures or portions thereof for more than five but not more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised residential environment and receive *custodial care*. Buildings of Group R-4 shall be classified as one of the occupancy conditions specified in Section 310.6.1 or 310.6.2. The persons receiving care are capable of self-preservation. This group shall include, but not be limited to, the following:

Alcohol and drug centers
Assisted living facilities
Congregate care facilities
*Group homes*
Halfway houses
Residential board and care facilities including facilities

- for Assisted Living per M.G.L. c. 19D as administered by the Executive Office of Elder Affairs.
- Facilities licensed pursuant to 104 CMR 28.00: *Licensing and Operational Standards for Community Programs* and housing no more than 12 people.

Social rehabilitation facilities

Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code.

**312.1 General.** Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy. Group U shall include, but not be limited to, the following:

Agricultural buildings *(See Appendix C for applicable requirements)*
Aircraft hangers, …

## CHAPTER 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

**407.1.1 M.G.L. requirements.** Hospitals, nursing homes, and convalescent homes shall be constructed of at least Type IB construction in accordance with M.G.L. c. 111 §§51 and 71.

## SECTION 427 BULK MERCHANDISING RETAIL BUILDINGS

**427.1 General.** Bulk merchandising retail buildings have different fire and life safety risks than traditional retail buildings. This section provides standards to adequately deal with these differences, and to reduce the risk of life loss, injury, and excessive property damage from fire.

**427.2 Scope.** The provisions of this section shall apply to buildings or structures defined as bulk merchandising retail buildings or portions thereof containing high piled combustible storage. Unless otherwise noted in this section, the requirements for bulk merchandising retail buildings shall be in accordance with the requirements set forth for Group M and Section 414.

**427.3 Definitions.** The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown below (See Chapter 2 for terms not defined below):

**BULK MERCHANDISING RETAIL BUILDING**. A building where sales areas contain high piled combustible commodities, or high piled, high hazard commodities as defined in Chapter 3 and 4.

**GROUP A PLASTICS.** Products that utilize plastic, or non plastic products that utilize significant plastic packaging materials, that have a high BTU content:

ABS (acrylonitrile-butadienestyrene copolymer)
Acetal (polyformaldehyde)
Acrylic (polymethyl methacrylate)
Butyl rubber
EPDM (ethylene-propylene rubber)
FRP (fiberglass reinforced polyester)
Natural rubber (expanded)
Nitrile rubber (acrylonitrilebutadiene rubber)
PET or PETE (polyethylenerephthalate)
Polybutadiene
Polycarbonate
Polyester elastomer
Polyethylene

Polypropylene
Polystyrene (expanded and unexpanded)
Polyurethane (expanded and unexpanded)
PVC (polyvinyl chloride greater than 15% plasticized, e.g., coated fabric unsupported film)
SAN (styrene acrylonitrile)
SBR (styrene-butadiene rubber)

**HIGH PILED COMBUSTIBLE COMMODITY**. Storage of combustible materials in piles greater than 12 feet (3.658 m) in height or combustible materials on pallets, in racks or on shelves where the top of storage is greater than 12 feet (3.658 m) in height.

**HIGH PILED, HIGH HAZARD COMMODITY.** Storage of combustible materials such as rubber tires, Group A plastics, flammable liquids, idle pallets and commodities with similar heat release characteristics where the top of storage is greater than six feet (1.829 m) in height.

**RACK STORAGE**. Combination of vertical, horizontal and diagonal members that support stored materials in fixed or portable racks.

**SHELF STORAGE.** Storage on structures less than 30 in. (76.2 cm) deep with shelves usually two feet (0.6 m) apart vertically and separated by approximately 30 in. (76.2 cm) aisles.

**427.3.1Commodity Classification.** Commodities in storage and display shall be classified in accordance with the following NFPA standards:

13: Installation of Sprinkler Systems
30: Flammable and Combustible Liquids Code
30B: Aerosol Products, Manufacture and Storage
231: General Storage
430: Storage of Liquid and Solid Oxidizer

**427.4 Fire Protection Requirements.** Fire protection requirements shall be in accordance with Table 427.4.

Insert **TABLE 427.4 FIRE PROTECTION REQUIREMENTS**

**427.5 Fire Suppression Systems.** Fire sprinkler design and installation shall be provided in accordance with the applicable requirements set forth by NFPA 13, 30, 30B, 231, 430 or other nationally recognized codes and standards, or tests conducted in test laboratories as defined in 527 CMR.

**427.6 Storage Arrangement**. Storage arrangements for fire protection purposes shall comply with requirements set forth by NFPA 13, 30, 30B, 231, ~~430~~ **400**, as listed in Appendix A, or other nationally recognized codes and standards, or tests conducted in test laboratories as defined in 527 CMR.

**427.7 Hose Connections.** A Class I automatic, wet standpipe system shall be provided in accordance with NFPA 14. Hose connections shall be located around the interior perimeter of the building within five ft of all required fire department access doors, adjacent to the latch side of the door. Hose connections shall be installed to accommodate 200 feet of travel distance to any point in the building.

Where the most remote portion of the building exceeds 200 ft of travel distance from the required access doors, additional hose connections shall be provided in locations approved by the head of the fire department. Hose connections shall be readily accessible and marked for fire department use only.

When approved by the head of the fire department the following exceptions shall be permitted:

**Exception 1.** Hose connections may be omitted when the following fire department building access and fire hydrant coverage is provided: minimum ~~18~~ **20** feet wide, unobstructed access roadways located within 20 feet of the building on at least three sides, compliant with applicable provisions of 527 CMR; minimum ten feet wide, unobstructed access route between the access roadway and the fire department access doors; and, fire hydrants in locations approved by the head of the fire department.

**Exception 2.** In lieu of a Class I standpipe system, a Class II automatic, wet-standpipe system in accordance with NFPA 14 shall be permitted when the following fire department building access and fire hydrant coverage is provided: minimum ~~18~~ 20 feet wide, unobstructed access roadways located within 50 feet of the building on at least three sides, compliant with applicable provisions of 527 CMR; minimum ten feet wide, unobstructed access route between the access roadway and the fire department access doors; and, fire hydrants in locations approved by the head of the fire department. The hose connections shall be located as described above for the Class I standpipe system. Occupant hose shall not be required, and the hose connections shall be marked for fire department use only.

**427.8 Fire Department Access Door.** Fire department access doors shall be provided for fire department emergency access. Access doors shall be:

1. located adjacent to fire department access roadways,
2. provided with an approved exterior fire department accessible key cylinder operable lock device,
3. provided with approved fire department identification signs, and
4. provided such that all points of the floor area are accessible within 200 feet of travel distance.

Fire department access doors may be used as occupant egress doors.

**427.9 Fire Department Access Roadways.** Fire department access roadways shall be provided on at least two sides of the building with such access to be approved by the head of the fire department prior to any construction. Fire hydrants shall be provided in locations approved by the head of the fire department.

**427.10 Means of Egress.** Means of egress shall be in accordance with Chapter 10 for Group M unless otherwise modified in this section.

**Exception.** Exit access travel distance shall be limited to 200 feet. If the only means of customer entrance is through one exterior wall of the building, two thirds of the required egress width shall be located in this wall. At least one half of the required exits shall be located so as to be reached without passing through checkout stands. In no case shall checkout stands or associated railings or barriers obstruct exits, required aisles, or approaches thereto.

**427.11 Flammable/Combustible Liquids.** The display, storage, protection, and maximum allowable quantities of flammable and combustible liquids permitted in mercantile display areas shall be in accordance with NFPA 30.

**427.12 Aerosols.** The display, storage, protection, and maximum allowable quantities of aerosols permitted in mercantile occupancies shall be in accordance with of NFPA 30B.

**427.13 Non-flammable and Non-combustible Hazardous Materials.** Non-flammable and noncombustible hazardous materials such as: Oxidizers, Unstable Materials, Toxics, Highly

Toxics, Corrosives, and Water Reactives shall ~~meet the following requirements~~ ~~comply with applicable provisions of 527 CMR~~ meet the following requirements:

Q = F x A where:

Q = the maximum quantity in a single control area for mercantile display.

F = the density factor as indicated in Table 427.13.

A = the area occupied for mercantile display. For computation purposes, the area shall not exceed 1,500 square feet (139.39 m ) per control area.

Insert **TABLE 427.13 DENSITY FACTOR FOR HAZARDOUS MATERIALS EXEMPTIONS CALCULATIONS**

**427.14 Fire Alarm or Notification Systems.** Either a fire alarm system or emergency notification system, as described below and approved by the head of the fire department, shall be provided:

**1. Fire Alarm System.** The fire alarm system shall include the following:

a. A fire alarm system required for life safety shall be installed, tested, and maintained in accordance with applicable requirements of 527 CMR and NFPA 72.

b. All systems and components shall be approved for the purpose for which installed, and all installation wiring or other transmission paths shall be monitored for integrity in accordance with NFPA 72.

c. Manual fire alarm stations shall be provided in the natural path of escape near each required exit from an area. Each manual fire alarm station shall be accessible, unobstructed, visible, and of the same general type.

d. Notification signals for occupants to evacuate shall be by audible and visible signals in accordance with NFPA 72 and 527 CMR. The general evacuation alarm signal shall operate throughout the entire building.

e. The fire alarm system shall be arranged to transmit the alarm automatically via any of the following means acceptable to head of the fire department and in accordance with NFPA 72:

i. Auxiliary Alarm System

ii. Central Station Connection

iii. Proprietary System, or

iv. Remote Station Connection

f. The fire alarm control panel location shall be located in an area acceptable to the head of the fire department. Where required, a remote annunciator shall be located in an area acceptable to the head of the fire department.

g. Other control systems intended to make the protected premises safer for building occupants including, but not limited to, duct smoke detectors, fire/smoke dampers, smoke management systems, fire door controls, shall be installed and monitored for integrity in accordance with NFPA 72, and a distinctive supervisory signal shall be provided to indicate a condition that would impair the satisfactory operation of the equipment.

h. Supervisory attachments including, but not limited to, control valves, fire pump running conditions, float valves, shall be installed and monitored for integrity in accordance with NFPA 72 and a distinctive supervisory signal shall be provided to indicate a condition that would impair the satisfactory operation of the equipment.

i. All building HVAC fans shall be arranged to automatically shut down on any general alarm condition. Duct smoke detectors shall not be required

j. Water flow initiating devices shall be arranged to initiate an alarm condition within one minute of being activated. In addition, provisions shall be made to control and prevent false alarms due to water surges.

**2. Emergency Notification System.** During a fire emergency, the emergency notification system shall sound an audible alarm in a continuously attended location for the purpose of initiating the evacuation plan required under this section.

**427.15 Evacuation Planning and Training**. An evacuation plan shall be submitted at the time of application for a building permit as part of the required. The certificate of use and occupancy shall not be issued until the evacuation plan has been reviewed and approved by the head of the fire department. Any changes to the evacuation plan shall not be effected until a revised plan has been submitted to and approved by the head of the fire department. The evacuation plan shall detail procedures, define roles and responsibilities of employees, and shall include an egress plan indicating routes of travel to all exits. The evacuation plan shall be used to ensure the safe evacuation of all customers and employees. All employees shall be instructed and periodically trained with respect to their duties, as required by 527 CMR.

**427.16 Smoke and Heat Venting**. Adequate methods of manual heat and smoke venting shall be provided. The method of operation, vent area, spacing layout, construction of vents and curtain boards or other acceptable means of addressing methods of heat and smoke venting shall be determined by an engineering evaluation and analysis. The analysis shall be reviewed and approved by the head of the fire department and shall contain sufficient detail to evaluate the hazard and effectiveness of the venting system.

## SECTION 428 MOTION PICTURE AND TELEVISION PRODUCTION FACILITIES

**428.1 Scope.** This section addresses building code regulations for motion picture and television industry soundstages, production facilities, and approved production locations. All requirements not specified in this section shall conform to this code.

**428.2 Referenced Standard.** Except as otherwise noted in Section 428.0, the buildings, structures and sites associated with motion picture and television industry soundstages, production facilities, and approved production locations shall be in accordance with NFPA 140 except NFPA-101 does not apply. In addition, these facilities, shall meet 527 CMR and any other applicable Massachusetts specialized codes, see Section 101.4.

**428.3 Definitions.** Definitions in NFPA 140 shall apply along with any additional terms that are defined by other reference standards.

**428.4 Sound Stages and Approved Production Facilities**.

**428.4.1 Fire Protection.** See NFPA 140, Section 5.11.

**428.4.2 Fire Department Building Access.** See 527 CMR.

**428.4.3 Fire Hydrants.** At least one fire hydrant shall be located on each side of the building. The head of the fire department shall determine fire hydrant locations (see 527 CMR).

**428.4.4 Portable Fire Extinguishers.** Portable fire extinguishers shall be provided installed in accordance with NFPA 10 as listed in Chapter 35.

**428.4.5 Automatic Sprinkler System.** An automatic sprinkler system shall be designed and installed in accordance with the Extra Hazard, Group 2 requirements of NFPA 13 throughout all buildings having a soundstage, production studio or approved production

facility. The automatic sprinkler system shall additionally meet the provisions of Section 903, as applicable.

**428.4.6 Fire Alarm Systems.**

**428.4.6.1 Manual Fire Alarm System.** A manual fire alarm system meeting the requirements of subsection 907.3 shall be installed in all buildings having a soundstage, production studio, or which are approved production facilities.

**428.4.6.2 Alarm Notification Appliances.** Alarm notification appliances shall be provided in accordance with Chapter 9. With the approval of the head of the local fire department (see M.G.L. c. 148, § 27A), the alarm notification appliances may be deactivated during videotaping, filming or broadcasting of programs as long as the building is equipped with a fully operating, approved and supervised automatic sprinkler system in accordance with NFPA 13.

**428.4.6.3 Supervision.** The automatic sprinkler system and fire alarm system shall be supervised in accordance with Chapter 9.

**428.5 Means of Egress.** Means of egress shall be in accordance with Chapter 10 except NFPA 140, Sections 4.10.2 and 4.10.3, shall govern where there is conflict with Chapter 10. Means of egress shall be appropriate for the intended use and subject to the approval of the *building official* in consultation with the head of the fire department.

**428.6 Approved Production Locations**.

**428.6.1 Permits**. A building permit is required for structures undergoing construction, reconstruction, and modification. Other permits may be required from the local fire department or as applicable to any specialized code.

**428.6.2 Foamed Plastic Materials**. Foamed plastic materials affixed to the building or structure and used for decorative purposes shall meet the requirements of NFPA-140, Chapter 5.

**428.6.3 Structural Loads**. Buildings or structures shall be evaluated for increased loading caused by sets, scenery, and other equipment in accordance with this code.

**428.6.4 Fire Department Access**. *See* 527 CMR.

**428.6.5 Means of Egress.** See Chapter 10.

**428.7 Operating Features**.

**428.7.1 Audience Life Safety**. When a live audience is present for a production, the provisions for life safety and means of egress shall be subject to the approval of the local *building official* in consultation with the head of the local fire department.

**428.7.2 Notification in Event of Emergency**. The production company shall provide the head of the local fire department an emergency notification procedure for the production location activities for review and approval (*see* 527 CMR).

**SECTION 429 SUMMER CAMPS FOR CHILDREN**

**429.1 New and Existing Occupancies.** This section shall apply to existing and new summer camps for children. The use of such accommodations for purposes of inspection and certification shall be considered as being similar to a dormitory in Use Group R-2.

**429.2 Means of Egress.** All one-story, one-room buildings having 1,000 square feet or less and having 25 occupants or less shall require only one means of egress provided that:

1. the length of travel does not exceed 50 feet from any point in the building to the outside at grade; and,
2. the minimum width for aisles and corridors shall be three feet.

**429.2.1 Emergency Escape.** Every sleeping room shall have at least one exterior door or openable window to permit emergency exit or rescue; the windows shall conform to the following requirements:

1. must be openable from the inside without the use of separate tools;
2. the sill height shall not be more than 36 inches above the finish floor and with a maximum six foot drop from the window sill to grade below the window; and
3. provide a minimum net clear opening area 5.7 square feet. The minimum net clear opening dimensions shall be 20 X 24 inches in either direction.

**429.3 Fire Protection.** Smoke detectors shall be required for existing and new residential units in accordance with Section 907. When applicable, carbon monoxide (CO) detectors shall be required in summer camps for children. In new construction of summer camps for children, and where applicable, CO detectors shall be hard-wired and interconnected or otherwise be of an acceptable wireless type and conform to location requirements and listing requirements as set forth in this code, 527 CMR or 248 CMR, as applicable. For existing summer camps for children undergoing alterations, additions, etc., refer to Chapter 34.00.

For existing day care centers, located on the premises of summer camps for children, CO detectors shall conform to the requirements of this code, 527 CMR or 248 CMR, as applicable.

**Exception.** Tents and other temporary shelters which are designed to sleep less than eight persons and which have an open side consisting of greater than 1/6 of the perimeter of the shelter or which have built-in provisions for emergency escape.

**429.4 Mechanical.** If camps are heated, then the building must conform to all applicable code sections and specialized codes.

**429.5 Enforcement and Inspections.** Enforcement shall be by the *building official* who shall inspect and certify the summer camps yearly, prior to season opening.

**430 NIGHTCLUBS**

**430.1 General.** All buildings containing a *nightclub* with an occupant load $\geq$ 50 shall comply with the provisions of this section and other applicable provisions of this code.

**430.2 Sprinkler Protection.** An approved automatic sprinkler system shall be provided throughout buildings containing a *nightclub* in accordance with Section 903.3.1.1.

**430.3 Foam plastics and interior finishes.** Foam plastics shall not be used in *nightclubs* as *interior finish* except as provided in Section 803.4 and shall not be used as interior *trim* except as provided in Section 806.5 or 2604.2. This section shall apply both to exposed foam plastics and to foam plastics used in conjunction with a textile or vinyl facing or cover.

**430.4 Entertainment system response.** The activation of any *fire protection system* element (signaling system, detection, sprinklering, etc.) shall automatically cause immediate:

1. illumination of all areas and components of the required *means of egress*, and additionally;
2. full activation of all other house lighting; and
3. stopping of any and all sounds and visual distractions (public address systems, entertainment and dance lighting, music, etc.) that conflict/compete with the fire protective signaling system.

**430.5 Main exit.**

The main entrance egress system shall be sized such that the width of all required *means of egress* elements is a minimum of 72 inches (nominal) or as determined by Section 1029.2, whichever is greater. The main entrance/exit door system shall consist of a pair of side-hinged swinging type doors without a center mullion and shall be equipped with panic hardware.

**430.5.1 Alternative Egress.** The *building official* may allow an alternative means of compliance where conditions exist which would preclude the installation of a 72-inch egress system. This approval is contingent upon the submission of an egress analysis from a *registered design professional* which determines that there is adequate *means of egress*. As a condition of an alternative egress approach, low level exit pathway marking shall be provided in accordance with Sections 1024.2 through 1024.5.

## CHAPTER 5: GENERAL BUILDING HEIGHTS AND AREAS

**501.1** Add three notes:

Note 1. Site plans may be required to contain fires lanes per 527 CMR. Any building fire protection system is governed by 780 CMR with the exception of M.G.L. c. 148 §26 series laws.
Note 2. In this chapter, requirements for unsprinklered buildings may be overridden by sprinkler requirements of M.G.L. c. 148.
Note 3. M.G.L c. 111, § 51 requires hospitals and nursing homes of at least Type IB construction.

## CHAPTER 8: INTERIOR FINISHES

**806.3 Combustible decorative materials.** In all occupancies ~~In other than Group I-3~~, curtains, draperies, fabric hangings and similar combustible decorative materials suspended from walls or ceilings shall comply with 527 CMR ~~Section 807.4 and shall not exceed 10 percent of the specific wall or ceiling area to which such materials are attached.~~

## CHAPTER 9: FIRE PROTECTION SYSTEMS

**901.1** Add two notes:

Note 1. In subsections 904.2, 907.1.1, 909.7, 909.8, 909.9, 909.10, 909.19 the term "fire official" or "building official" is to be substituted with the terms "*building official* in consultation with the fire official". The fire official may appeal a *building official* action per Chapter 1.
Note 2.In subsections 903.1.1 and 916.1 through 916.6.3, the term "fire code official" is to be substituted with the term "*building official* and fire official".
Note 3. Reference to the IFC shall be applied in accordance with subsection 101.4.5 of this code.

**901.2** Replace the exception as follows:

**Exceptions:**

1. Any *fire protection system* or portion thereof not required by this code shall be permitted to be installed for partial or complete protection provided that such system meets the requirements of this code.
2. Where alternative fire protection designs, which vary from any prescriptive requirements of this Chapter, are to be utilized, the *owner* shall engage an independent *registered design professional*, to review said alternative design. The scope of the review shall include, but not be limited to:
    a. Design assumptions, methodologies, and resulting proposed system designs, to determine whether or not:

i. the proposed fire protection systems and any other systems which are affected by the alternative design, are consistent with the general objectives and prescriptive provisions of this Chapter;

ii. they all conform to accepted engineering practice.

b. Preparation of a written report to the *building official* as to the appropriateness of the proposed design specifically listing any variances from the prescriptive provisions of this Chapter and describing, in detail, the design provisions used to achieve compliance. If the reviewing engineer concurs with the proposed design, the *owner* shall make application for a variance, to the Appeals Board per Chapter 1. In addition to all supporting information and materials, the reviewing engineering's report required per this exception shall be included in the application for variance. A *permit* shall not be issued until the variance, if required, has been granted, or unless the *permit* is issued in part per Chapter 1.

When a variance is granted per this exception for a *bulk merchandising retail building* as defined in Chapter 4 and when the condition is common to future buildings of the *owner*, the BBRS, upon request of the *owner*, may provide that the variance shall be applicable to such future buildings. If such request is made, a quorum of the BBRS shall hear the appeal. Each such application to a future building will be subject to determination as prescribed per Chapter 1 by the *building official* in consultation with the fire official that its use is in conformity with the terms of the variance.

**901.2.1 Document Submittal Process.** This process includes the three tiers of the minimum document submittal requirements. This process does not preclude the *permit* applicant from submitting additional documents; for example shop drawings along with the *construction documents* at time of *permit* application.

**1. Tier One, Construction Documents.** Prior to issuance of a *permit*, *construction documents* for the *fire protection system* must be submitted in accordance with Section 107.1.2 and a *permit* obtained prior to the installation of *fire protection systems* or modifications, alterations, additions or deletions to an existing *fire protection system*. The *construction documents* shall contain sufficient information to completely describe each of the *fire protection system(s)* for which a *permit* is to be issued. The *construction documents* shall include the following:

a. Each system shall be described in a narrative report, which contains:

i. design methodology for the protection of the occupancy and hazards in - accordance with this code and applicable NFPA Standards and,

ii. sequence of operation of all fire protection systems and operations and,

iii. testing criteria to be used for final system acceptance.

b. Building and site access for fire-fighting and/or rescue vehicle(s) and personnel.

c. Fire hydrant(s) location and water supply information.

d. Type/description and design layout of the automatic sprinkler system(s).

e. Automatic sprinkler system(s) control equipment location.

f. Type/description and design layout of the automatic standpipe system(s).

g. Standpipe system hose valve(s) type and location.

h. Fire department ~~siamese~~ connection type(s) and location.

i. Type/description and design layout of the fire protective signaling system(s).

j. Fire protective signaling system(s) control equipment and remote annunciator

k. Type/description and design layout of the smoke control or exhaust system(s).
l. Smoke control or exhaust system(s) control equipment location.
m. Building life safety system features (auxiliary functions) required to be integrated as part of the fire protective signaling system(s).
n. Type/description and design layout of the fire extinguishing system(s).
o. Fire extinguishing system(s) control equipment location.
p. Fire protection system(s) equipment room location.
q. Fire protection system(s) equipment identification and operation signs.
r. Fire protection system(s) alarm/ supervisory signal transmission method and location.
e. Fire command center location.
t. Type/description and location of any emergency alarm system.
u. Type/description and location of any alternative fire suppression system or protection.
v. Type/description and location of any carbon monoxide protection.
w. Emergency responder radio coverage type/location.

**2. Tier Two, Shop Drawings**. Prior to installation of *fire protection systems*, shop drawings, where applicable, shall be submitted in accordance with Section 107.1.2 and shall contain, but not be limited to; detailed design layout, equipment specifications, system sequence of operation, and analysis to substantiate the design. Shop drawings shall note the name(s), license number(s) and license expiration date(s) of the contractor(s) installing the fire protection systems.

> **Exception.** For shop drawings of Fire Alarm and Detection Systems see Section 907.1.2 for applicable requirements.

**3. Tier Three, Record Drawings.** As built plans shall be provided to the *owner* for all fire protection and life safety systems that are sealed as reviewed and approved by the *registered design professional* or legally recognized professional performing Construction Control. Where changes to original shop drawings are minor, a list of as-built changes shall be permitted to be submitted where sealed and reviewed and approved by the *registered design professional* or legally recognized professional performing Construction Control per Chapter 1.

**901.3 Maintenance.** All ~~water-based~~ fire protection systems shall be maintained in accordance with ~~NFPA 25~~ applicable provisions of 527 CMR. ~~All other *fire protection systems* shall be maintained in accordance with the requirements of the applicable reference standards and standards listed in Chapter 35: *Referenced Standards*.~~ The *owner* of every building or structure shall be responsible for the care and maintenance of all *fire protection systems*, including equipment and devices, to ensure the safety and welfare of the occupants. No person shall shut off, disconnect, obstruct, remove or destroy, or cause or permit to be shut off, disconnected, obstructed, removed or destroyed, any part of any sprinkler system, water main, hydrant or other device used for fire protection or carbon monoxide detection and alarm in any building owned, leased or occupied by such person or under his control or supervision, without first procuring a written permit so to do from the head of the fire department of the city or town wherein such building is situated in accordance with M.G.L. c. 148, § 27A.
When installations of fire protection systems are interrupted for repairs or other necessary reasons, the *owner* shall immediately advise the local fire department and shall diligently prosecute the restoration of the protection.

**901.5 Acceptance Tests.** *Fire protection systems* shall be tested in accordance with the requirements of this code and ~~the International Fire Code. When required, the tests shall be conducted in the presence of the building official. Tests required by this code, the International Fire Code and the standards listed in this code shall be conducted at the expense of the owner or the owner's authorized agent. It shall be unlawful to occupy portions of a structure until the required fire protection systems within that portion of the structure have been tested and approved~~. NFPA Standards and approved testing criteria and operational sequence as submitted in Section 901.2.1, Tier One, Item a. When required, the tests shall be conducted in the presence of the *building official* and fire official or their designee. The *building official* may authorize the fire official as designee. The fire official may authorize the *building official* as designee.

**901.5.1 Certificate of Occupancy**. Prior to the issuance of a Certificate of Occupancy and prior to witness of acceptance testing the following documents must be submitted to the building and fire officials, or designees.

1. Certification from the *registered design professional*, or other legally recognized professional, responsible for the *construction documents* per Section 107.6, stating that the *fire protection systems* have been installed in accordance with applicable codes and standards, in accordance with the *approved construction documents* and that the record drawings indicate any deviations, if any.
2. Confirmation by the *owner* that they have received the as-built record drawings.
3. Material, Test, Performance, and Completion Certificates, properly executed by the installing contractor in accordance with the applicable NFPA standards.

Note. In lieu of witnessing a satisfactory functional test, the *building official* and fire official or designees, may accept a final performance test report from a *registered design professional*, or other legally recognized professional, as an acceptance test. Said report shall certify that complete and satisfactory functional tests of all *fire protection systems*, in accordance with the applicable codes and standards, and that the *approved* testing criteria and operational sequence, have been witnessed.

**901.6.2 Fire alarm systems.** Fire alarm systems required by the provisions of Section 907.2 of this code ~~and Sections 907.2 and 907.9 of the International Fire Code~~ shall be monitored by an *approved* supervising station in accordance with Section 907.6.6.

Exceptions:

1. Single- and multiple-station smoke alarms required by Section 907.2.11.
2. Smoke detectors in Group I-3 occupancies.
3. Supervisory service is not required for *automatic sprinkler systems* in one- and two-family dwellings.
4. Smoke detectors in patient sleeping rooms in occupancies in Group I-2.

**901.7 Fire areas.** ~~Where buildings, or portions thereof, are divided into fire areas so as not to exceed the limits established for requiring a fire protection system in accordance with this chapter, such fire areas shall be separated by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, having a fire-resistance rating of not less than that determined in accordance with Section 707.3.10.~~ For the purpose of this chapter, *fire area* shall be defined as: "the aggregate area of the building, regardless of subdivisions by fire barriers and horizontal assemblies".

**901.9 Signs.** All signs required to identify fire protection equipment, equipment rooms and equipment locations shall be constructed of durable materials, be permanently installed and be readily visible. Letters and numbers shall contrast with the sign background, shall be at least two inches in height and shall have an appropriate width-to-height ratio to permit the sign to be read easily from a distance of ten feet. The sign and location shall be approved by the local fire department.

**901.9.1 Sprinkler Control Valve Room Signs.** Where sprinkler control valves are located in a separate room or building, a sign shall be provided on the entrance door. The lettering shall be at least 2½ inches (63.5 mm) in height and shall otherwise conform to Section 901.7 and shall read "Sprinkler Control Valves."

**903.2** Add note:
**Note.** Automatic sprinkler systems may be required by M.G.L. c. 148, § 26A, 26A½, 26G, 26G½, 26H or 26I, or M.G.L. c. 272 §§ 86 through 86d

**903.2** Replace the exception as follows:
**Exceptions:** *Automatic sprinkler systems* shall not be required in the following rooms or areas where such rooms or areas are protected with an approved *automatic smoke detection system* and notification in accordance with Section 907 that will respond to visible or invisible particles of combustion.

1. Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided those spaces or areas are equipped throughout with an automatic smoke detection and notification system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour *fire barriers* constructed in accordance with Section 707 or not less than two-hour *horizontal assemblies* constructed in accordance with Section 712, or both.
2. Machine rooms of traction/drum hydraulic elevators, elevator hoistways, or elevator pits. Such elevator machine rooms, hoistways, or pits shall be constructed to meet the *fire-resistance rating* specified in Table 601 and otherwise as required by the applicable sections of Chapter 7. Where Table 601 requires a higher *fire-resistance rating* for elevator machine rooms, hoistways, or pits, such rating must be provided unless such ratings are governed by other sections of this code. For elevator installation within atriums also see Chapter 4 for additional *fire-resistance rating* guidance. Where the elevator machine room is determined to be a true penthouse roof structure, also refer to Section 1509.0 for additional *fire-resistance rating* requirements.
3. Noncombustible and limited combustible concealed spaces and plenums that contain electrical, data, communications and other cables that are of the types and in the configurations permitted in such spaces by 527 CMR.
4. Transformer Vaults where all the following conditions are satisfied:
   a. The cable within the vault is flame retardant or limited combustible.
   b. The dielectric fluid is a limited combustible fluid.
   c. The vault is enclosed in three hour fire resistance rated construction.

d. The vault is at grade or no more than one level below grade. Access to the vault is directly from the exterior or via a dedicated two hour passageway.
e. The vault is protected with automatic smoke detection connected to the building fire alarm system which notifies the fire department upon activation.
f. The room is limited to the sole use of the transformer equipment and is limited in size to accommodate said equipment only. Storage is prohibited in the vault enclosure.
g. The vault is provided with spill containment.
h. An emergency fire plan has been developed with and approved by the fire department.
i. Continuous ventilation is provided for the vault enclosure in accordance with the ventilation requirements of NFPA 30.
j. The ventilation equipment is dedicated to serve the vault only.
k. Standby emergency power, in addition to the normal power source, is provided for the ventilation equipment.
l. The vault is no larger in area than 2400 sq. ft.

5. Transformer Vaults where an alternative suppression system is provided for the vault in accordance with Section 904 and Exception 6. Conditions i., j., and k. are met.

**NOTE:** Also see Subsections 903.3.1.1.1, 903.3.1.2.1, and 903.3.1.2.2

**903.2.1 through 903.2.10.1.** Delete these subsections, and replace with Table 903.2:

**[F] 903.3.1.1.1 Exempt locations.** *Add* note:

Also see Section 903.2 Exceptions

**[F] 903.3.1.2.1and 903.3.1.2.2.** *Add* note:

Also see Section 903.2 Exceptions

**[F] 903.3.1.3 NFPA 13D sprinkler systems.** *Automatic sprinkler systems* installed in one- and two-family dwellings~~;~~ townhouses, Group R-3, Group R-4 Condition 1, buildings containing only R-Uses of three units or less~~, and *townhouses*~~ shall be permitted to be installed throughout in accordance with NFPA 13D.

**903.3.5.2 Combination Services.** A single combination water supply shall be permitted provided that the domestic and/or commercial demand is added to the sprinkler demand as required by NFPA 13, NFPA 13D or NFPA 13R as applicable.

**903.4.1 Monitoring.** Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to ~~an *approved* supervising…~~ one of the following NFPA 72 locations. The *owner* has the choice of which single option to employ.

1. UL listed or FM approved central supervising station, or
2. Approved proprietary supervising station or approved remote supervising station, or
3. Alarm signals to an approved Auxiliary Fire Alarm System in accordance with NFPA 72, with supervisory signals supervised by method a or b identified above, or at a

constantly attended location approved by the local fire department, having personnel on duty trained to recognize the type of signal received and to take prescribed action. This shall be permitted to be a location different from that at which alarm signals are received.

**903.4.2 Amend wording as follows:**

**Alarms.** An approved audible device, located on the exterior of the building in an approved location, shall be connected to each *automatic sprinkler system.* Such sprinkler waterflow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Activation of the sprinkler waterflow alarm devices shall activate a fire alarm system installed throughout the building in accordance with Section 907. ~~Where a fire alarm system is installed, actuation of the *automatic sprinkler system* shall actuate the building fire alarm system.~~

**903.4.4 Re-transmission of Alarm Signals.** In all cases, alarm signals received by those operating approved remote/proprietary station fire alarm system supervising stations shall re transmit alarm signals within 90 seconds of receipt, to the fire department having jurisdiction.

**903.5** Add note:
Note. See Section 901.3.

**904.5.1 Discharge Test.** All systems shall be tested by a discharge of expellant gas through the piping and nozzles with observations being made of the flow of expellant gas through all nozzles as well as observing for leakage and continuity of piping with free unobstructed flow.

**904.6.1 Discharge Test.** All systems shall be tested by a discharge of expellant gas through the piping and nozzles with observations being made of the flow of expellant gas through all nozzles as well as observing for leakage and continuity of piping with free unobstructed flow.

**904.14 Water Spray Fixed Systems.** Water spray fixed systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 15 and the listings contained therein.

**904.15 Aerosol Systems.** Aerosol systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 2010 and the listings contained therein.

**905.3.9 High-piled Combustible Storage.** A class I automatic wet or manual standpipe system shall be provided in all exit passageways of areas containing high-piled combustible storage.

**[F] 905.10 During Construction.** Standpipes systems required during construction and demolition operations shall be provided in accordance with Section 3311 and NFPA 241.

**907.2.8.3.1 Annunciation.** In buildings that are not equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or Section 903.3.1.2, the smoke detectors in guestrooms shall be connected to the buildings fire alarm systems for the purpose of notifying the guestroom occupants and shall be annunciated by guestroom at a constantly attended location from which the fire alarm system is capable of being manually activated.

907.2.9.1 Exception 2. Revise to read as follows:

2. Manual fire alarm boxes are not required where the building is equipped throughout with an *automatic sprinkler system* installed in accordance with Sections 903.3.1.1, ~~or~~ 903.3.1.2, or 903.3.1.3 and the occupant notification appliances will automatically activate throughout the notification zones upon a sprinkler water flow.

**907.2.11 Single- and multiple-station smoke alarms.** Listed single- and multiple-station photoelectric type smoke alarms ~~complying with UL 217 shall be installed in accordance with Sections 907.2.11.1 through 907.2.11.6 and NFPA 72.~~ shall be installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72, as applicable. Section 907.2.8 shall not preclude the installation of a fully addressable fire alarm system where system detectors and alarm notification devices can perform the functions as required in Section 907.2.11.

**907.2.15** Add exception as follows:
**Exception.** Buildings sprinklered throughout with an *automatic sprinkler system*.

**907.5.2.2.6 Evacuation.** Where the head of the fire department or his/her designee determines that partial or selective evacuation is not desired but rather total evacuation is required, then a distinctive signal in lieu of a voice alarm is permitted.

**907.5.2.3** Add a second sentence as follows:
Also refer to 521 CMR for visible alarm requirements in buildings, or portions thereof, open to the public.

**907.6.6 Monitoring.** Fire alarm systems required by this chapter ~~or by the *International Fire Code*~~ shall be monitored by an approved supervising station in accordance with NFPA 72 and 901.6.

**Exception:** Monitoring by a supervising station is not required for:

1. Single- and multiple-station smoke alarms required by Section 907.2.11.
2. Smoke detectors in Group I-3 occupancies.
3. Automatic sprinkler systems in one- and two family dwellings.
4. Smoke detectors in patient sleeping rooms in occupancies in Group I-2.

**909.2 General Design Requirements.** Buildings, structures or parts thereof required by this code to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of Section 909 and the generally accepted and well-established principles of engineering relevant to the design. The *construction documents* shall include sufficient information and detail to adequately describe the elements of the design necessary for the proper implementation of the smoke control systems. These documents shall be accompanied by sufficient information and analysis to demonstrate compliance with these provisions.
An independent third party review is required for smoke control system designs incorporating performance analysis under Section 909 (design fire analysis, rational analysis, timed egress analysis), or the smoke control methods of Sections 909.6, 909.7, or 909.8 or other alternative design method selected by the *registered design professional*. The independent third party

reviewer shall prepare a written report documenting the review, and submit it to the *registered design professional* and the building and fire officials. If all parties concur that the analyses are appropriate, the design may be approved pursuant to Section 104.11.

**909.6 Pressurization Method.** When approved by the fire official, the primary mechanical means of controlling smoke shall be by pressure differences across smoke barriers. Maintenance of a tenable environment is not required in the smoke control zone of fire origin.

**909.15 Control Diagrams.** Identical control diagrams showing all devices in the system and identifying their location and function shall be maintained current and kept on file with the fire ~~code official, the fire department and in the fire command center~~ official and shall be kept on site adjacent to the fire alarm panel in a format and manner *approved* by the fire chief.

**909.16**
**Exception**: Existing buildings with an existing dedicated function smoke control panel.

**909.18.8.3.1 Report Filing.** A copy of the final report shall be filed with the fire code official and *building official* and an identical copy shall be maintained in an approved location at the building.

**909.20.6.1.1 Intake Duct Detection.** An intake duct smoke detector shall be installed just downstream of the fresh air fan. Activation of this detector shall annunciate at the control panel and shall shut down the fan for that particular smoke proof enclosure.

**909.20.6.3 Acceptance and testing.** Before the mechanical equipment is *approved*, the system shall be tested in the presence of the *building official* and fire official or their designee, to confirm that the system is operating in compliance with these requirements. The *building official* may authorize the fire official as designee. The fire official may authorize the *building official* as designee.

**909.22 Maintenance.** Smoke control systems shall be maintained to ensure to a reasonable degree that the system is capable of controlling smoke for the duration required. The system shall be maintained in accordance with the manufacturer's instructions and Sections 909.22.1 through 909.22.5.

**909.22.1 Schedule.** A routine maintenance and operational testing program shall be initiated immediately after the smoke control system has passed the acceptance tests. A written schedule for routine maintenance and operational testing shall be established.
**909.22.2 Written Record.** A written record of smoke control system testing and maintenance shall be maintained on the premises. The written record shall include the date of the maintenance, identification of servicing personnel, and notification of any unsatisfactory condition and the corrective action taken, including parts replaced.
**909.22.3 Testing.** Operational testing of the smoke control system shall include all equipment such as initiating devices, fans, dampers, controls, doors and windows.
**909.22.4 Dedicated Smoke Control Systems.** Dedicated smoke control systems shall be operated for each control sequence semiannually. The system shall also be tested under standby power conditions.

**909.22.5 Nondedicated Smoke Control Systems.** Dedicated smoke control systems shall be operated for each control sequence annually. The system shall also be tested under standby power conditions.

**912.7 Connections.** Fire department connections shall be such that attachment to any one water sprinkler connection will serve all sprinklers, and attachment to any one standpipe connection will serve all standpipes within the building.

**913.6 Second Power Source.** All electric driven fire pumps shall be provided with emergency power from an on-site emergency generator system set when the fire pump is installed as protection for a building or structure with any one of the following characteristics:

1. High-rise building
2. Use Group H
3. Use Group I having surgery or treatment areas.

**SECTION 916**
**EMERGENCY RESPONDER RADIO COVERAGE**

**916.1 General.** Emergency responder radio coverage shall be provided in all new buildings in accordance with ~~Section 510 of the *International Fire Code*~~ Sections 916.2 ~~and 916.3~~ through 916.6.3 and Section 24.5 of NFPA 72: Two-way, in-building Emergency Communications Systems .

**Exception:** Existing buildings which contain fire fighter communication systems.

~~**916.2 Coverage.** All buildings shall have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building. This Section shall not require improvement of the existing public safety communication systems.~~

~~**Exceptions:**~~

~~1. Where approved by the fire official, a wired communication system in accordance with Section 907.2.13.2 shall be permitted to be installed or maintained in lieu of an approved radio coverage system.~~

~~2. Where it is determined by the fire official that the radio coverage system is not needed.~~

~~**916.3 Design and installation.** Emergency responder radio coverage in Buildings shall be designed and installed in accordance with NFPA 72.~~

**916.2 Emergency responder radio coverage in new buildings.** All new buildings shall have *approved* radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building. This section shall not require improvement of the existing public safety communication systems.

**Exceptions:**

1. Where *approved* by the building official and the *fire code official*, a wired communication system in accordance with Section 907.2.13.2 shall be permitted to be installed or maintained instead of an *approved* radio coverage system.

2. Where it is determined by the *fire code official* that the radio coverage system is not needed.
3. In facilities where emergency responder radio coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the *fire code official* shall have the authority to accept an automatically activated emergency responder radio coverage system.

**916.3 Permit required.** A construction permit for the installation of or modification to emergency responder radio coverage systems and related equipment is required as specified in Section 105.1. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

**916.4 Technical requirements.** Systems, components and equipment required to provide the emergency responder radio coverage system shall comply with Sections 916.4.1 through 916.4.2.5.

**916.4.1 Radio signal strength.** The building shall be considered to have acceptable emergency responder radio coverage when signal strength measurements in 95 percent of all areas on each floor of the building meet the signal strength requirements in Sections 916.4.1.1 and 916.4.1.2.

**916.4.1.1 Minimum signal strength into the building**. A minimum signal strength of -95 dBm shall be receivable within the building.

**916.4.1.2 Minimum signal strength out of the building**. A minimum signal strength of -95 dBm shall be received by the agency's radio system when transmitted from within the building.

**916.4.2 System design.** The emergency responder radio coverage system shall be designed in accordance with Sections 916.4.2.1 through 916.4.2.5.

**916.4.2.1 Amplification systems allowed.** Buildings and structures that cannot support the required level of radio coverage shall be equipped with a radiating cable system, a distributed antenna system with Federal Communications Commission (FCC)-certified signal boosters, or other system approved by the *fire code official* in order to achieve the required adequate radio coverage.

**916.4.2.2 Technical criteria.** The *fire code official* shall maintain a document providing the specific technical information and requirements for the emergency responder radio coverage system. This document shall contain, but not be limited to, the various frequencies required, the location of radio sites, effective radiated power of radio sites, and other supporting technical information.

**916.4.2.3 Standby power.** Emergency responder radio coverage systems shall be provided with standby power in accordance with Section 2702. The standby power supply shall be capable of operating the emergency responder radio coverage system for a duration of not less than 24 hours.

**916.4.2.4 Signal booster requirements.** If used, signal boosters shall meet the following requirements:

1. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4-type waterproof cabinet.
2. Battery systems used for the emergency power source shall be contained in a NEMA 4-type waterproof cabinet.
3. The signal booster system and battery system shall be electrically supervised and monitored by a supervisory service, or when *approved* by the *fire code official*, shall sound an audible signal at a constantly attended location
4. Equipment shall have FCC certification prior to installation.

**916.4.2.5 Additional frequencies and change of frequencies.** The emergency responder radio coverage system shall be capable of modification or expansion in the event frequency changes are required by the FCC or additional frequencies are made available by the FCC.

**916.5 Installation requirements.** The installation of the public safety radio coverage system shall be in accordance with Sections 916.5.1 through 916.5.4.

**916.5.1 Approval prior to installation.** Amplification systems capable of operating on frequencies licensed to any public safety agency by the FCC shall not be installed without prior coordination and approval of the *fire code official*.

**916.5.2 Minimum qualifications of personnel.** The minimum qualifications of the system designer and lead installation personnel shall include both of the following:

1. A valid FCC-issued general radio operators license.
2. Certification of in-building system training issued by a nationally recognized organization, school or a certificate issued by the manufacturer of the equipment being installed.

These qualifications shall not be required where demonstration of adequate skills and experience satisfactory to the *fire code official* is provided.

**916.5.3 Acceptance test procedure.** Where an emergency responder radio coverage system is required, and upon completion of installation, the building *owner* shall have the radio system tested to verify that two-way coverage on each floor of the building is not less than 90 percent. The test procedure shall be conducted as follows:

1. Each floor of the building shall be divided into a grid of 20 approximately equal test areas.

2. The test shall be conducted using a calibrated portable radio of the latest brand and model used by the agency talking through the agency's radio communications system.
3. Failure of not more than two nonadjacent test areas shall not result in failure of the test.
4. In the event that three of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than four nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the 90-percent coverage requirement.
5. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public agency's radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered failure of that test area. Additional test locations shall not be permitted.
6. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building *owner* so that the measurements can be verified during annual tests. In the event that the measurement results become lost, the building *owner* shall be required to rerun the acceptance test to reestablish the gain values.
7. As part of the installation a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and subsequent annual inspections.

**916.5.4 FCC compliance.** The emergency responder radio coverage system installation and components shall also comply with all applicable federal regulations including, but not limited to, FCC 47 CFR Part 90.219.

**916.6 Maintenance.** The emergency responder radio coverage system shall be maintained operational at all times in accordance with Sections 916.6.1 through 916.6.3.

**916.6.1 Testing and proof of compliance.** The emergency responder radio coverage system shall be inspected and tested annually or where structural changes occur including additions or remodels that could materially change the original field performance tests.

Testing shall consist of the following:

1. In-building coverage test as described in Section 916.5.3.
2. Signal boosters shall be tested to verify that the gain is the same as it was upon initial installation and acceptance.
3. Backup batteries and power supplies shall be tested under load of a period of 1 hour to verify that they will properly operate during an actual power outage. If within the 1-hour test period the battery exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined.

4. Other active components shall be checked to verify operation within the manufacturer's specifications.
5. At the conclusion of the testing, a report, which shall verify compliance with Section 916.5.3, shall be submitted to the *fire code official*.

**916.6.2 Additional frequencies.** The building *owner* shall modify or expand the emergency responder radio coverage system at his or her expense in the event frequency changes are required by the FCC or additional frequencies are made available by the FCC. Prior approval of a public safety radio coverage system on previous frequencies does not exempt this section.

**916.6.3 Field testing.** Agency personnel shall have the right to enter onto the property at any reasonable time to conduct field testing to verify the required level of radio coverage.

**917 PRIVATE UNDERGROUND FIRE MAINS AND YARD HYDRANTS**
**917.1 Private Underground Fire Mains and Yard Hydrants**. Fire hydrants and underground fire mains installed on private property shall be located and installed as approved by the head of the fire department. Hydrants shall conform to the standards of the administrative authority of the jurisdiction and the fire department. Hydrants shall not be installed on a water main less than six inches in diameter. Standards of construction shall be in accordance with NFPA 24.

**CHAPTER 10: MEANS OF EGRESS**
**1001.3.1 Maintenance of exterior stairs and fire escapes.** Exterior stairways and fire escapes shall be kept free of snow and ice and those constructed of materials requiring the application of weather protecting products, shall have these products applied in an approved manner and shall be applied as often as necessary to maintain the stairways and fire escapes in safe condition. Weather resistant structural fasteners and connections shall tie the stairways and fire escapes directly into the building structural system.

**1001.3.2 Testing and certification.** All exterior bridges, steel or wooden stairways, fire escapes and egress balconies shall be examined and/or tested, and certified for structural adequacy and safety every five years, by a *registered design professional*, or others qualified and acceptable to the *building official*; said professional or others shall then submit an affidavit to the *building official*.

**1010.1.9.7 Delayed egress.** Add a second exception to item 4. as follows:
**Exception 2.** In Use Group B buildings where one tenant occupies the entire floor and the building has a ~~local or remote~~ security station staffed 24 hours each day, the installation of a door release device may be omitted on egress doors in elevator lobbies provided that all other items in this Section are met, and in addition, the following items are met:

a. The building is equipped throughout with both a supervised automatic fire sprinkler system and a supervised automatic fire alarm system.
b. The supervised automatic fire sprinkler system and the supervised fire alarm system shall interface with the access control system to unlock the doors automatically upon activation of either system.

c. The elevator lobby shall be equipped with a telephone connected directly to the staffed security station and a sign having block letters one inch in height shall be provided directly above the telephone and shall state: "In case of emergency, pick up telephone. You will be connected directly to security personnel".

**1010.1.9.11** Exception 3. Add the following sentence to the end of the exception:

For Group R-2 and R-3 structures that contain three of fewer *dwelling units*, doors are permitted to be locked from the *stairway* side, provided they are openable from the egress side, but do not need to comply with the aforementioned simultaneous unlocking provisions.

**1010.1.9.12 Exterior doors and locks to apartment houses**. In accordance with M.G.L. c. 143, § 3R, at least one of the doors of the main common entryway into every apartment house having more than three apartments shall be designed or equipped as to close automatically and lock automatically with a lock, including a lock with an electrically-operated striker mechanism, a self-closing door and associated equipment. Such associated equipment shall include an intercom system tied independently to each apartment and where from each apartment the electrically operated striker mechanism can be released; additionally, where the number of apartments in a given building, irrespective of fire/party wall separation, is ten or more apartments, a closed circuit security camera system shall also be incorporated in such manner that from each apartment, apartment occupants can utilize their personal television sets to observe who is seeking entrance to the building. The intercom and closed circuit security camera systems shall be designed and listed for the weather and temperature conditions to which they will be exposed.

**Exceptions.**
1. Buildings exempted as noted in M.G.L. c. 143, § 3R.
2. The required intercom and TV connections can be supplanted with other audio and visual technology that serves the same purpose, provided such information is readily available for all dwelling units.
3. If all audio and visual information is sent to a constantly attended station occupied by staff trained in what parties are allowed into the building then providing such audio and visual information to each dwelling unit is not required.

1010.1.10 Revise as follows:

Insert the words "*Transformer Vaults* and" before the word "Electrical" in the second paragraph of Section 1010.10.

**1013.1.1 Transformer Vaults.** In addition to having exit signage complying with Section 1013, generally, transformer vaults shall have installed:
1. additional exit signage such that the top of the sign is within 18 inches of the floor and adjacent to the opening side of the door; and
2. a means for illuminating the *egress path* to the *exit door(s)* of the *transformer vault*, by means of one (1) of the following:
    a. emergency lighting, in accordance with Section 1008; or

b. ~~reflective tape to assist in displaying the egress path to the exit door(s) of the vault.~~ luminous egress path markings, in accordance with Sections 1025.2 through 1025.5.

## CHAPTER 11: ACCESSIBILITY

**1101.1 Scope**. In accordance with M.G.L. c. 22, § 13A all public buildings shall be designed to be accessible to, and functional and safe for the use by, physically disabled persons, and conform to the requirements of 521 CMR. In accordance with M.G.L. c. 143, § 3, 521 CMR shall be enforced by the *building official* or the state inspector, as applicable.

**1101.2** through **1111.4.2** Delete these Sections.

## CHAPTER 12: INTERIOR ENVIRONMENT

**1201.1 Scope.** The provisions of this chapter shall govern ventilation, temperature control, lighting, *yards* and *courts*, sound transmission, room dimensions, surrounding materials and rodentproofing associated with the interior spaces of buildings.

**Note 1:** Where any of the following codes or standards, terms or equipment are referenced in this chapter, please refer to Section 101.4, inclusive and as applicable: NFPA-70; plumbing, the *International Mechanical Code*; or the *International Fire Code*.

**Note 2:** In this chapter, where mechanical ventilation rates are referenced to the *International Mechanical Code*, such ventilation rates shall conform to the requirements of the *International Mechanical Code* and Chapter 13, as applicable.

**1203.5.2.1 Bathrooms.** Rooms containing bathtubs, showers, spas and similar bathing fixtures shall be mechanically ventilated in accordance with the *International Mechanical Code*. Natural ventilation methods such as openable windows shall not substitute for mechanical ventilation. Such bathroom exhaust shall vent directly to the outside and no exhaust vent shall terminate in attics or other interior portions of the building. (Also see 248 CMR)

**1209.4 Air sealing.** Doors, trap doors, scuttles, and other openings separating conditioned space from unconditioned space shall be fitted with gaskets or weather strips or other and such openings shall close tight to minimize air transfer between these spaces. Also see Chapter 13.

## CHAPTER 13: ENERGY EFFICIENCY

**[E] 1301.1.1 Criteria.** Buildings shall be designed and constructed in accordance with the 2015 *International Energy Conservation Code* (IECC) with Massachusetts Amendments contained herein. These amendments intended to expressly apply to IECC, are also to apply in intent to ANSI/ASHRAE/IESNA 90.1.

**C401.2 Application.**

Commercial buildings shall comply with one of the following:

1. The requirements of ANSI/ASHRAE/IESNA 90.1—2013 as modified by C401.2.2 and C406.1.

2. The requirements of Sections C402 through C405. In addition, commercial buildings shall comply with Section C406 and tenant spaces shall comply with Section C406.1.1.
3. The requirements of Sections C402.5, C403.2, C404, C405.2, C405.3, C405.4, C405.6 and C407. The building energy cost, or the total annual energy use on either a site or source energy basis, shall be equal to or less than 85 percent of the standard reference design building. Source energy calculations shall comply with C401.2.2.1
4. Residential use buildings up to 5 stories may elect to comply with the energy provisions of Section N1106 found in the Residential Volume of 780 CMR, provided all units are separately rated, separately metered, individually heated and cooled and have kitchens.

**C401.2.2 Performance rating Method for Source Energy**

*Add exception to* ANSI/ASHRAE/IESNA 90.1 APPENDIX G PERFORMANCE RATING METHOD, Section G1.1

**Exception:**

When Appendix G is used for the comparison of building energy consumption only, the comparison may be performed on site energy and/or on a source energy basis.

**C401.2.2.1 Source Energy Method**

For the purpose of quantifying the projected Source Energy consumption of a building the Site to Source Fuel Conversion factors in Table 401.2.2 shall apply.

**Table 401.2.2 Site to Source Fuel Conversion Factors**

| Load Type | Factor |
|---|---|
| Electric power use at the utility meter | 3.01 |
| Natural Gas | 1.09 |
| Fuel Oil | 1.13 |
| LPG | 1.12 |
| Purchased District Heating | |
| Hot Water | 1.35 |
| Steam | 1.45 |
| Purchased District Cooling | 0.99 |
| Fossil fuels not listed | 1.1 |
| Purchased Combined Heat and Power District Heat | * |

*A source fuel conversion for purchased district heat supplied by a combined heat and power central utility will be published by the MA Dept. of Energy Resources on a per district system basis.

**C401.2.2.2 Approved software for source energy calculation with combined heat and power.**

1. Determination of the source energy consumption and usage intensity when using purchased combined heat and power district heat shall be performed as an exceptional calculation using the Department of Energy Resources (DOER) approved Excel worksheet.
2. Determination of the source energy consumption and usage intensity for heat generated by a combined heat and power system located on-site shall be performed using software meeting the requirements of ASHRAE 90.1 Normative Appendix G Performance Rating Method, Section G 2.2 Simulation Program, *and* has an explicitly stated

capability to determine both the site and source energy use intensity for combined heat and power systems without the requirement for exceptional calculations as defined in ASHRAE 90.1 Appendix G Section G2.5.

**C402.2.5** *Delete the Exception*

~~**C402.3 Roof solar reflectance and thermal emittance.**~~
~~Low-sloped roofs directly above cooled conditioned spaces in *Climate Zones* 1, 2 and 3 shall comply with one or more of the options in Table C402.3.~~
~~**Exceptions:** The following roofs and portions of roofs are exempt from the requirements of Table C402.3:~~
~~1. Portions of the roof that include or are covered by the following:~~
~~1.1. Photovoltaic systems or components.~~
~~1.2. Solar air or water-heating systems or components.~~
~~1.3. Roof gardens or landscaped roofs.~~
~~1.4. Above-roof decks or walkways.~~
~~1.5. Skylights.~~
~~1.6. HVAC systems and components, and other opaque objects mounted above the roof.~~
~~2. Portions of the roof shaded during the peak sun angle on the summer solstice by permanent features~~
~~of the building or by permanent features of adjacent buildings.~~
~~3. Portions of roofs that are ballasted with a minimum stone ballast of 17 pounds per square foot [74 kg/m2]~~
~~or 23 psf [117 kg/m2] pavers.~~
~~4. Roofs where not less than 75 percent of the roof area complies with one or more of the exceptions to this Section.~~

~~**C402.3.1 Aged roof solar reflectance.** Where an aged solar reflectance required by Section C402.3 is not~~
~~available, it shall be determined in accordance with Equation 4-3.~~
~~*Raged* = [0.2+0.7(*Rinitial*-0.2)] **(Equation 4-3)** where:~~
~~*Raged* = The aged solar reflectance.~~
~~*Rinitial* = The initial solar reflectance determined in accordance with CRRC-1.~~

**C402.3 Rooftop solar readiness.** New low-rise commercial buildings and additions of less than 4 stories above grade, with not less than 2,400 square feet of roof area that is either flat or oriented between 110 degrees and 270 degrees of true north shall comply with Sections C402.3.1 through C402.3.6.

**Exceptions:**

1. Assembly Group A-2 and A-3, and High Hazard Group H buildings.
2. Buildings with a permanently installed on-site renewable energy system.
3. Flat roof areas designed for rooftop vehicle parking facilities.
4. Buildings with a solar-ready zone that is shaded for more than 50 percent of daylight hours annually.

**C402.3.1 Construction document requirements for solar ready zone.** Construction documents shall indicate the solar ready zone.

**C402.3.2 Solar-ready zone area.** The total solar-ready zone area shall be not less than 1,600 square feet, or 50% of the roof area that is either flat or oriented between 110 degrees and 270 degrees of true north, exclusive of mandatory access or set back areas as required by the MA Fire Code.

**C402.3.3 Obstructions.** Solar-ready zones shall be free from obstructions, including but not limited to vents, chimneys, and roof-mounted equipment.

**C402.3.4 Roof load documentation.** The structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents.

**C402.3.5 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.

**C402.3.6 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."

Add Section C402.6:
**C402.6 Approved calculation software tools.** The following software tools are sufficient to demonstrate compliance with Section C401.2:

1. **COMcheck**: Version 4.0.2, or later. Can be accessed at: https://www.energycodes.gov/
2. Any other software tool *approved* by the Board of Building Regulations and Standards.

**C405.1 General (Mandatory).** This section covers lighting systems controls, the maximum lighting power for interior and exterior applications and electrical energy consumption.

**Exception:** Dwelling units within commercial buildings shall not be required to comply with Sections 405.2 through 405.5, provided that they comply with Sections R404.1 and R404.2.

Walk-in coolers, walk-in freezers, refrigerated warehouse coolers and refrigerated warehouse freezers shall comply with Section C403.2.15 or C403.2.16.

**C405.10 Electric Vehicle Service Equipment Capable (Mandatory).** In accordance with 527 CMR and this section, Group A-1, B, E, I, M and R buildings with more than 3 dedicated parking spaces shall provide sufficient electrical capacity and physical capacity at the service panel to accommodate future simultaneous vehicle charging at a minimum of 4% of parking spaces and in no case less than one space. Calculated spaces shall be rounded up to the nearest whole number. A minimum 40-ampere branch circuit shall be installed to terminate in close proximity to each proposed locations of future installation of Society of Automotive Engineers (SAE) standard J1772-approved Level 2 electric vehicle service equipment. The circuits shall have no other outlets. A permanent and visible label stating "EV READY" shall be posted in a

conspicuous place at both the service panel and the circuit termination point. The location and number of "EV READY" parking spaces shall be identified on construction documents.

**C406.1 Requirements.** Buildings shall comply with at least ~~one~~ two of the following:

1. More efficient HVAC performance in accordance with Section C406.2.
2. Reduced lighting power density system in accordance with Section C406.3.
3. Enhanced lighting controls in accordance with Section C406.4.
4. On-site supply of renewable energy in accordance with Section C406.5.
5. Provision of a dedicated outdoor air system for certain HVAC equipment in accordance with Section C406.6.
6. High-efficiency service water heating in accordance with Section C406.7.

**Exception 1:** Buildings in municipalities not served by a participating Mass Save investor-owned gas or electric utility provider shall comply with at least one of the requirements in Section C406.1.

**Exception 2**: Buildings being designed utilizing ANSI/ASHRAE/IESNA 90.1—2013 must comply with Item 2 of C406.1 as well as at least one of the remaining items listed in C406.1.

**C406.5 On-site renewable energy.** Total minimum ratings of on-site renewable energy systems shall comply with one of the following:

1. Provide not less than 0.50 watts per square foot (5.4 W/m$^2$) of conditioned floor area.
2. Provide not less than 3 percent of the design energy used within the building for building mechanical and service water heating equipment and lighting regulated in Chapter 4.
3. Provide not less than 65 percent of the total annual energy used within the building for building space and service water heating with biomass fuel using direct vented combustion mechanical equipment rated at a minimum of 80 AFUE. The biomass fuel shall meet the eligible fuel and emission criteria under M.G.L. c. 25A, §11F 1/2 (Massachusetts alternative energy portfolio standard).
4. Provide not less than 65 percent of the total annual energy used within the building for building space and service water heating using a geothermal heat pump system with a coefficient of performance of not less than 4.

Add subsection C407.6.1.1 and C407.6.1.2 as follows:

**C407.6.1.1 Approved Alternative Energy Performance Methods.** The requirements of this section are *approved* performance methods to demonstrate compliance with Section C407 without calculation of a standard reference design:

1. **RESNET Approved Software for Home Energy Rating System (HERS)**. For residential units within a building up to 5 stories *above grade plane*, and with independent unit-level heating and cooling systems, a HERS rater verified index of 55 or less for the finished units together with a completed and HERS rater verified ENERGY STAR Thermal Enclosure Checklist may be used. Compliance with this section requires that the criteria lf C402.4, C403.2, C404 and C405 are met.
2. **Passive House Institute US (PHIUS) Approved Software**. PHIUS+ 2015: Passive Building Standard – North America, or another *approved* software by PHIUS, where Specific Space Heat Demand, as modeled by a Certified Passive House Consultant, is

less than or equal to 10 kBTU/ft$^2$/year. Compliance with this section requires that the criteria lf C402.4, C403.2, C404 and C405 are met.

3. **ENERGY STAR Homes 3.1 path.** New residential structures, or additions to existing residential structures, or portions thereof, as certified to conform with the ENERGY STAR Certified Homes standard, Version 3.1.
4. Any other software *approved* by the Board of Building Regulations and Standards.

**C407.6.1.2 Documentation.** The following documentation is required for energy code compliance under subsection C407.6.1.1, Item 1:

1. If using the HERS software:
    a. Prior to the issuance if a building *permit*, the following items must be provided to the *Building Official*:
        i. a HERS compliance report which includes a proposed HERS index of 55 or lower;
        ii. a description of the unit's energy features; and
        iii. a statement that the rating index is "based on plans"
    b. Prior to the issuance of a certificate of occupancy, the following items must be provided to the *building official*:
        i. a copy of the final certificate indicating that the HERS rating index for each unit is verified to be 55 or less, with a completed HERS rater verified ENERGY STAR Thermal Enclosure Checklist is to be submitted to the *building official*. The HERS rating compliance shall be determined before electrical renewable energy systems are credited.
        ii. a certificate, as required by Section R401.3 is required for each unit, and will list the HERS index of the *dwelling unit*.
2. If using the PHIUS software:
    a. Prior to the issuance of a building *permit*, the following items must 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 must be provided to the *building official*:
        i. A copy of the final report, submitted on a form that is *approved* to document compliance with PHIUS+ 2015 standards. Said report must indicate that the finished building achieves a Certified Passive House Consultant-verified Specific Space Heat Demand of less than or equal to 10kBTU/ft$^2$/year.
3. If using ENERGY STAR Homes, Version 3.1 path:
    a. Prior to the issuance of a building *permit*, the following items(s) must 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 must 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.

## CHAPTER 14: EXTERIOR WALLS

**1403.5 Vertical and lateral flame propagation.**
Exterior walls on buildings of Type I, II, III or IV construction that are greater than 40 feet (12 192 mm) in height above grade plane and contain a combustible *water-resistive barrier* shall be tested in accordance with and comply with the acceptance criteria of NFPA 285. For the purposes of this section, fenestration products, and flashing of fenestration products, and flashing of other openings and penetrations shall not be considered part of the *water resistive barrier*.

**Exceptions:**

1. In other than high rise buildings, walls in buildings equipped throughout with an *automatic sprinkler system*, with the following conditions: 1) only where a NFPA 13 sprinkler system is provided and 2) where fire flow analysis has been performed without sprinkler decrease allowance that shows adequate water is available.
2. Walls in which the *water-resistive barrier* is the only combustible component and the *exterior wall* has a wall covering of brick, concrete, stone, terra cotta, stucco or steel with minimum thicknesses in accordance with Table 1405.2.
3. Walls in which the *water-resistive barrier* is the only combustible component and the *water-resistive barrier* has a peak heat release rate of less than 150 kW/m$^2$, a total heat release of less than 20 MJ/m$^2$ and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E 1354 and has a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E 84 or UL 723. The ASTM E 1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m$^2$.
4. Walls in which the *water-resistive barrier* is the only combustible component and the concealed spaces within exterior wall assemblies are fireblocked in such a manner so as to interrupt and cut off concealed air spaces (both vertical and horizontal.)
    a. Fireblocking shall be installed within concealed spaces of exterior wall assemblies at every floor level or at maximum vertical intervals not exceeding 20 feet. Fireblocking shall be installed at horizontal intervals not exceeding 40 feet in exterior walls of noncombustible construction
    b. Materials used for fireblocking in exterior wall assemblies shall comply with Section 7.18.2.1.

## CHAPTER 16: STRUCTURAL DESIGN

**1603.1.7 Flood design data.** For buildings located in whole or in part in *flood hazard areas* as established in Section 1612.3, the documentation pertaining to design, if required in Section 1612.5, shall be included and the following information, referenced to the datum ~~on the community's Flood Insurance Rate Map (FIRM)~~ of the *base flood elevation*, shall be shown, regardless of whether flood loads govern the design of the building:

1. Flood design class assigned according to ASCE 24.

2. In *flood hazard areas* other than *coastal high hazard areas* or *coastal A zones*, the elevation of the proposed lowest floor, including the basement.
3. In *flood hazard areas* other than *coastal high hazard areas* or *coastal A zones*, the elevation to which any nonresidential building will be dry floodproofed.
4. In *coastal high hazard areas* and *coastal A zones*, the proposed elevation of the bottom of the lowest horizontal structural member of the lowest floor, including the basement.

**1604.11 Snow, Wind and Earthquake Design Factors.** Ground snow load, $p_g$, ultimate design wind speed (three second gust), $V_{ult}$, and earthquake response accelerations for the maximum considered earthquake, $S_S$ and $S_1$, for each city and town in Massachusetts shall be as given in Table 1604.11.

**1604.12 Revisions to AISC 341-10**
**F1.1 Scope.** Add last sentence as follows:
Eccentricities less than the beam depth are permitted if they are accounted for in the member design by determination of eccentric moments using the amplified seismic load.

**1605.3.2** Delete.

**1607.10.2** Delete.

**1608.2 Ground Snow Loads.** The ground snow loads to be used in determining the design snow loads for roofs shall be determined in accordance with Table 1604.11 ~~ASCE 7 or Figure 1608.2 for….~~

**1608.4 Concave Curved Roofs.** Section 7.4.3 of ASCE 7 applies to convex curved roofs only. The effective loaded area of a concave curved roof shall be that area of the surface of the roof where the tangents to the surface have a slope of 50 degrees or less. The total uniform snow load for concave curved roofs shall be P*f* multiplied by the total horizontal projected area of the roof. This total load shall be applied uniformly over the effective loaded area of the roof.

**1608.5 Drifts on Multiple Level Roofs.** For multiple stepped roofs similar to that shown in Figure 1608.5.1, the sum of all the roof lengths upwind above the drift under consideration, $l_u$*, in Figure 1608.5.1, shall replace $l_u$ in Figure 7-8 of ASCE 7. For multiple level roofs similar to that shown in Figure 1608.5.2, if the total calculated height of a drift and the underlying uniform snow layer on the upwind side of a higher roof ($h_d + h_b$) is equal to or greater than $0.7(h_b + h_c)$, then the length, $l_u$*, as shown in Figure 1608.5.2, shall be used in place of $l_u$ in Figure 7-8 of ASCE 7.

Insert **FIGURE 1608.5.1**
Insert **FIGURE 1608.5.2**

**1608.6 Very High Roof Separations.** When the ratio $h_r/L_T$ is greater than 1.0, where $L_T$ is the dimension in feet of the upper roof perpendicular to the wind flow (perpendicular to $l_u$ in Figure 7-8 of ASCE 7) and $h_r = h_b + h_c$, the drift surcharge load on the lower roof due to drifting of snow from the upper roof may be reduced. The reduced height of the drift surcharge, $h_{dr}$, shall be

not less than: $h_{dr} = h_r (2 - h_r/L_T)$, except that when $h_r/L_T$ is greater than 2.0, $h_{dr}$ shall be equal to zero.

**1608.7 Snow Pockets or Wells.** Account shall be taken of the load effects of potentially excessive snow accumulation in pockets or wells of roofs or decks.

**1608.8 Roof Projections.** The term roof projections used herein and in Section 7.8 of ASCE 7 shall be interpreted to include screen walls, parapets, fire wall projections, and mechanical equipment. Drift loads at roof projections shall be in accordance with Section 7.8 of ASCE 7.

**1608.9 Sliding Snow.** In addition to the sliding snow load on a lower roof as required in Section 7.9 of ASCE 7, the lower roof shall be designed for a windward drift surcharge at the wall separating the upper and lower roofs in accordance with Figure 1608.5.1 and Section 7.8 of ASCE 7. The sliding snow load and the windward drift surcharge need not be considered to act concurrently.

**1608.10 Snow Guards.** Sliding snow from an adjacent sloping high roof need not be considered on the low roof if snow guards, as specified herein, are provided on the high roof. In this case, the sloping roof with snow guards shall be designed for the unit snow loads required for a flat roof. The roof area(s) requiring snow guards shall be indicated on the construction documents. Snow guards shall be designed by a *registered design professional*. The *registered design professional* shall insure that there are adequate load paths from the snow guards into the supporting members and from the supporting members into the primary structure. The structural design of snow guards shall account for the impact of the sliding snow. The effectiveness in preventing the sliding of snow of proprietary snow guard systems shall be demonstrated by tests.

**1608.11 Snow Storage and Collection Areas.** Consideration of potentially excessive snow accumulation shall be given to portions of structures designated or used as snow collection or storage areas during and after snow removal operations (e.g. temporary snow collection areas when mechanically removing snow from a roof; snow storage areas for parking structures).

**1609.3** Replace the first paragraph with the following:
The ultimate design wind speed, $V_{ult}$ in mph, shall be determined in accordance with Table 1604.11.

**1610** Replace section as follows:
**SECTION 1610 LATERAL SOIL AND HYDROSTATIC LOADS**
**1610.1 General.** Basement, foundation, and retaining walls shall be designed to resist lateral loads due to soil and water pressure. Lateral soil pressure on said walls shall be determined in accordance with the principles of soil mechanics and as provided in Chapter 18. Floors or similar elements below the water table shall be designed to resist the upward pressure of the water.

> **Exception.** Uninhabitable spaces with concrete floors on the ground with an under-slab drainage system, including sump pits and sump pumps, designed to keep the water level a minimum of 1 foot below the bottom of the floor slab need not be designed to resist water pressure.

**1610.2 Seismic Loads on Foundation Walls and Retaining Walls**. Exterior foundation walls and retaining walls shall be designed to resist an earthquake force, $F_w$, for horizontal backfill surface, equal to:

$$F_w = 0.100(S_S)(F_a)(\gamma_t)(H)^2$$

where $S_S$ is the maximum considered earthquake spectral response acceleration from Table 1604.11, $F_a$ is the site coefficient from Table 1613.3.3(1), $\gamma_t$ is the total unit weight of the soil, and H is the height of the wall measured as the difference in elevation of finished ground surface or floor in front of and behind the wall. The earthquake force from the backfill shall be distributed as an inverted triangle over the height of the wall.

Surcharges that are applied over extended periods of time shall be included in the total static lateral soil pressure and their earthquake lateral force shall be computed and added to the force determined above. The point of application of the earthquake force from extended duration surcharge shall be determined on an individual case basis.

If the backfill or the existing soil behind the backfill consists of loose saturated granular soil, the potential for liquefaction of the backfill or existing soil adjacent to the wall during seismic loading shall be evaluated in accordance with the requirements of Section 1806.4.

If the backfill or existing soil beyond the backfill is potentially subject to liquefaction, the increase in design lateral load on the foundation wall or retaining wall shall be determined by a *registered design professional*.

For wall strength design, a load factor of 1.43 shall be applied to the earthquake force calculated above.

**1612.1 General.** Within *flood hazard areas* as established in Section 1612.3, all new construction of buildings, structures and portions of buildings and structures, including substantial improvement and restoration of substantial damage to buildings and structures, and *substantial repair of a foundation* shall be designed and constructed to resist the effects of flood hazards and flood loads. For buildings that are located in more than one *flood hazard area*, the provisions associated with the most restrictive *flood hazard area* shall apply.

**1612.2 Definitions.** The following terms are defined in Chapter 2 and are in addition to those shown in the IBC:

**COASTAL DUNE**

**COASTAL WETLAND RESOURCE AREA.**

**SUBSTANTIAL REPAIR OF A FOUNDATION**

**1612.3 Establishment of flood hazard areas.** ~~To establish flood hazard areas, the applicable governing authority…~~ See Chapter 2 for definition of *flood hazard areas*.

**1612.3.2 Determination of impacts.** ~~In riverine flood hazard areas where design flood elevations are specified…~~ (Reserved)

**1612.4 Design and construction.** The design and construction of buildings and structures located in flood hazard areas, including coastal high hazard areas and coastal A zones, shall be in accordance with Chapter 5 of ASCE 7 and ASCE 24. For minimum elevation requirements for

lowest floor, bottom of lowest horizontal structural member, utilities, flood-resistant materials and wet and dry floodproofing refer to tables in ASCE 24 which are to be amended as shown below. The design and construction of buildings and structures located in coastal dunes shall be in accordance with Appendix G.

| | | Flood Design Class 1 | Flood Design Class 2 | Flood Design Class 3 | Flood Design Class 4 |
|---|---|---|---|---|---|
| **Minimum Elevation* of Lowest Floor (Zone A: ASCE 24-14 Table 2-1)** | Zone A not identified as Coastal A Zone | ~~DFE~~ BFE + 1 ft | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE, or~~ 500-year flood elevation, whichever is higher |
| **Minimum Elevation of Bottom of Lowest Horizontal Structural Member (Zone V: ASCE 24-14 Table 4-1)** | Coastal High Hazard Areas (Zone V) and Coastal A Zone | ~~DFE~~ BFE + 2 ft | BFE +2 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE, or~~ 500-year flood elevation, whichever is higher |
| **Minimum Elevation Below Which Flood-Damage-Resistant Materials Shall be Used (Table ASCE 24-14 5-1)** | Zone A not identified as Coastal A Zone | ~~DFE~~ BFE + 1 ft | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE, or~~ 500-year flood elevation, whichever is higher |
| | Coastal High Hazard Areas (Zone V) and Coastal A Zone | ~~DFE~~ BFE + 2 ft | BFE +2 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE, or~~ 500-year flood elevation, whichever is higher |
| **Minimum Elevation** of Utilities and Equipment (ASCE 24-14 Table 7-1)** | Zone A not identified as Coastal A Zone | ~~DFE~~ BFE + 1 ft | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE, or~~ 500-year flood elevation, whichever is higher |
| | Coastal High Hazard Areas (Zone V) and Coastal A Zone | ~~DFE~~ BFE + 2 ft | BFE +2 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE, or~~ 500-year flood elevation, whichever is higher |
| **Minimum Elevation of Dry Floodproofing of non-residential structures and non-residential portions of mixed-use buildings (ASCE 24-14 Table 6-1)** | Zone A not identified as Coastal A Zone | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE, or~~ 500-year flood elevation, whichever is higher |
| | Coastal High Hazard Areas (Zone V) and Coastal A Zone | Not permitted | Not permitted | Not permitted | Not permitted |
| **Minimum Elevation of Wet Floodproofing*** (ASCE 24-14 Table 6-1)** | Zone A not identified as Coastal A Zone; Coastal A Zone; Coastal High Hazard Areas (Zone V) | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +1 ft or ~~DFE; whichever is higher~~ | BFE +2 ft or ~~DFE, or~~ 500-year flood elevation, whichever is higher |

* Flood Design Class 1 structures shall be allowed below the minimum elevation if the structure meets the wet floodproofing requirements of ASCE 24-14 Section 6.3.
** Unless otherwise permitted by ASCE 24-14 Chapter 7
*** Only if permitted by ASCE 24-14 Section 6.3.1

**Note: In V zones and coastal A zones location of utilities and equipment to the indicated level is required. Protection of utilities and equipment below the indicated level is not accepted.**

**1613.1 Scope.** Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7, excluding

Chapter 14 and Appendix 11A, but including Massachusetts Amendments to Tables 12.2-1 and 12.14-1. The *seismic design category* for a structure is permitted to be determined in accordance with Section 1613 or ASCE 7, but *seismic design category* A shall not be used in Massachusetts. Any structure that could satisfy the requirements of *seismic design category* A in Section 1613 or ASCE 7 shall be assigned to *seismic design category* B for purposes of implementing this Code.

**1613.1** Add, after the exceptions, this text:
Section 1613 presents criteria for the design and construction of buildings and nonbuilding structures subject to earthquake ground motion. The specified earthquake loads rely on post-elastic energy dissipation in the structure, and because of this fact, the provisions for design, detailing and construction shall be satisfied even for structures and members for which load combinations containing earthquake load produce lesser effects than other load combinations. The purpose of Section 1613 is to minimize the hazard to life of occupants of all buildings and nonbuilding structures, to increase the expected performance of high occupancy assembly and education buildings as compared to ordinary buildings, and to improve the capability of essential facilities to function during and after an earthquake. Because of the complexity of and the great number of variables involved in seismic design (e.g. variability in ground motion, soil types, dynamic characteristics of the structure, material strength properties, and construction practice), Section 1613 presents only minimum criteria in general terms. These minimum criteria are considered to be prudent and economically justified for the protection of life safety in buildings subject to earthquakes and for improved capability of essential facilities to function immediately following an earthquake.
Absolute safety and prevention of damage, even in an earthquake event with a reasonable probability of occurrence, cannot be achieved economically in most buildings. The "design earthquake" ground motion specified in Section 1613 may result in both structural and non-structural damage. For most buildings designed and constructed according to the minimum requirements of Section 1613, it is expected that structural damage from a major earthquake may be repairable, but the repair may not be economically feasible. For ground motions larger than the design earthquake, the intent of Section 1613 is that there will be a low likelihood of building collapse.

**1613.3.1 Mapped Acceleration Parameters.** The parameters $S_S$ and $S_1$ shall be determined from Table 1604.11. ~~the 0.2 and 1-second spectral response accelerations shown on Figures…~~

*Note to reader: The following amendments pertain to ASCE 7*

**ASCE 7, TABLE 12.2-1** Revise as follows:
**Note f.** Replace 'ordinary moment frame' with 'ordinary steel moment frame'
**Limitations:** Amend as follows:

| Seismic Force-Resisting System | Seismic Design Category |
|---|---|
| A.3 | B is NP |
| A.4 | B is NP |
| A.9 | B and C are NP |
| A.10 | B is NP. |
| A.11 | B is NP |
| A.13 | B and C are NP |

| | |
|---|---|
| A.14 | B is NP |
| A.17 | B and C are limited to 35 ft. and note 1. |
| B.3 | B and C are NP for K-type configuration only. |
| B.6 | B is NP |
| B.7 | B is NP |
| B.18 | B and C are NP |
| B.19 | B is NP |
| B.20 | B is NP |
| B.24 | B and C are limited to 35 ft. and note 1. |
| C.7 | B is NP |
| E.3 | B and C are NP |
| F | B is NP |
| H | B and C are limited to 100 ft. and 65 ft., respectively and note 2 |

**Note 1.** Permitted only at exterior walls and fire-rated walls and not permitted for buildings in Occupancy Category IV and not permitted for buildings where the seismic weight of any laterally supported level (floor or roof) exceeds 25 psf.

**Note 2.** Connections shall be designed for two times the computed forces and moments resulting from seismic loads, in combination with other loads, as applicable, but need not be designed for forces greater than the expected nominal yield strength ($R_yF_yA_g$) of diagonal braces in braced frames or 1.1 times the expected flexural capacity of beams ($1.1R_yM_p$) in moment frames. Columns that are part of the seismic force-resisting system shall satisfy the requirements of Section 8.3 Column Strength of ANSI/AISC 341 Seismic Provisions for Structural Steel Buildings. K-Braced Frames shall not be permitted. Beams in V-Type and Inverted V-Type Braced Frames shall meet the following additional requirements:

a. A beam that is intersected by braces shall be continuous between columns.

b. A beam that is intersected by braces shall be designed to support the effects of all tributary dead and live loads from load combinations stipulated by 780 CMR16 assuming that braces are not present.

c. Top and bottom flanges of the beam at the point of intersection of braces shall be designed to support a horizontal force perpendicular to the longitudinal axis of the beam that is equal to 2% of the nominal beam flange strength: $F_yb_ft_{bf}$.

**ASCE 7, TABLE 12.14-1** Revise as follows:

**Limitations:** Amend as follows:

| Seismic Force-Resisting System | Seismic Design Category |
|---|---|
| A.3 | B is NP |
| A.4 | B is NP |
| A.9 | B is NP |
| A.10 | B is NP. |
| A.11 | B is NP |
| A.15 | See note 1. |
| B.3 | B and C are NP for K-type configuration only. |
| B.6 | B is NP |
| B.7 | B is NP |

| | |
|---|---|
| B.18 | B is NP |
| B.19 | B is NP |
| B.20 | B is NP |
| B.24 | See note 1. |

**Note 1.** Permitted only at exterior walls and fire-rated walls and not permitted for buildings in Occupancy Category IV and not permitted for buildings where the seismic weight of any laterally supported level (floor or roof) exceeds 25 psf.

**CHAPTER 18: SOILS AND FOUNDATIONS.**

**1801.3 Foundation Types Not Covered by the Code.** Types of foundations not specifically covered by the provisions of this chapter, and ground modification treatments to improve soils with inadequate load bearing capacity or settlement characteristics, may be permitted subject to approval by the *building official*. A report shall be submitted to the *building official* that identifies the foundation as a type not covered by existing code provisions, and contains sufficient data and analyses to substantiate the adequacy of the proposed foundation. The report shall be prepared by a *registered design professional* knowledgeable in the design of the proposed type of foundation or ground modification. The *building official* may require that an independent peer review be performed to evaluate the adequacy of the proposed design.

**1803.1 General.** Geotechnical investigations shall be conducted in accordance with Section 1803.2 and reported in accordance with Section 1803.6. Where required ~~by the building official or where geotechnical investigations involve in-situ testing, laboratory testing or engineering calculations~~, such investigations shall be conducted by a *registered design professional*.

**1803.2 Investigations required.** Geotechnical investigations shall be conducted in accordance with Sections 1803.3 through 1803.5.

~~**Exception:** The *building official* shall be permitted to waive the requirement for a geotechnical investigation where satisfactory data from adjacent areas is available that demonstrates an investigation is not necessary for any of the conditions in Sections 1803.5.1 through 1803.5.6 and Sections 1803.5.10 and 1803.5.11.~~

**Exceptions:** The *building official* shall be permitted to waive the requirement for a geotechnical investigation:

1. Where satisfactory data from adjacent areas is available that demonstrates an investigation is not necessary to meet the requirements of this chapter or,
2. For unoccupied structures that do not pose a significant risk to public safety in the event of failure; or
3. For structures used for agricultural purposes.

**1803.5.4** Delete the Exception

**1803.5.11** In two locations replace 'C' with 'B, C'

**1803.5.12** In two locations replace 'D' with 'B, C, D'

**1803.6** Add item 11. as follows:

11. Magnitude and distribution of lateral soil and ground water pressures, including seismic loads, on foundation and retaining walls.

**1805.1.2.1 Flood hazard areas.** For buildings and structures in *flood hazard areas* as established in Section 1612.3, the finished ground level of an under-floor space such as a crawl space shall be equal to or higher than the outside finished ground level on at least one side.

~~**Exception:** Under-floor spaces of Group R-3 buildings that meet the requirements of FEMA TB 11.~~

**1805.4.2** Add exception:

**Exception.** The foundation drain may be omitted if determined not to be necessary by a *registered design professional*.

**1805.5 Impacts on Groundwater Levels.** Below-grade structures, their appurtenances and foundation drains shall be designed and constructed so as not to cause changes to the temporary or permanent groundwater level if such changes could adversely impact nearby structures or facilities including deterioration of timber piles, settlement, flooding or other impacts.

**1806.2** Replace the text 'Table 1806.2' with 'Table 1806.2 or Table 1806.2a'

Insert:

**TABLE 1806.2a PRESUMPTIVE ALLOWABLE VERTICAL BEARING PRESSURES**
and Notes 1. through 9

**1806.3 Lateral load ~~resistance~~.** ~~Where the presumptive values of Table 1806.2 are used to determine resistance to lateral loads, the calculations shall be in accordance with Sections 1806.3.1 through 1806.3.4.~~ Where foundations are required to resist lateral loads, the allowable values of sliding friction, adhesion and passive pressure for design shall be determined by a *registered design professional*.

~~**1806.3.1 Combined resistance.** The total resistance to lateral loads shall be permitted to be determined by combining the values derived from the lateral bearing pressure and the lateral sliding resistance specified in Table 1806.2.~~

~~**1806.3.2 Lateral sliding resistance limit.** For clay, sandy clay, silty clay, clayey silt, silt and sandy silt, in no case shall the lateral sliding resistance exceed one-half the dead load.~~

~~**1806.3.3 Increase for depth.** The lateral bearing pressures specified in Table 1806.2 shall be permitted to be increased by the tabular value for each additional foot (305 mm) of depth to a maximum of 15 times the tabular value.~~

~~**1806.3.4**~~ **1806.3.1 Increase for poles.** Isolated poles for uses such as flagpoles or signs and poles used to support buildings that are not adversely affected by a 1/2-inch (12.7 mm) motion at the ground surface due to short-term lateral loads shall be permitted to be designed using lateral bearing pressures equal to two times the tabular values of Table 1806.2.

**1806.4 Liquefaction.** The potential for liquefaction induced by the design earthquake in saturated clean to silty sands and non-plastic silts (Soil Classes 8 and 9 in Table 1806.2a) shall be evaluated as indicated in Sections 1806.4.1 through 1806.4.4.

**1806.4.1 Standard Penetration Test.** For cases where lateral sliding cannot occur, the susceptibility to liquefaction can be evaluated on the basis of Standard Penetration Test (SPT) blow counts, N (blows per foot), using Figures 1806.4(a) through (c). Figure 1806.4(a) shall be used if the N-values were determined using the standard 140-pound donut drop weight, or if the type of hammer is not known. Figures 1806.4(b) and (c) shall be used only for cases where the specific type of hammer (safety hammer or automatic hammer) is known to have been used. Figures 1806.4(b) and (c) reflect the greater energy efficiency with these two specific types of hammer. Hammer type shall be as described in ASTM Standard Method D6066. N-values to be used with Figures 1806.4(a) through (c) are uncorrected field values.

Figures 1806.4(a) through (c) are intended to be a screening tool for Site Classes A through D, determined in accordance with Section 1613.5.2. The figures are based on a rock spectral acceleration of SS = 0.35g, a soil amplification factor of Fa = 1.52 for Site Class D, and a factor of safety of 1.1. These figures are based on observed behavior of clean fine to medium sand, and are conservative for other (more silty) materials in Soil Classes 8 and 9.

If the SPT N-values plot above or to the right of the applicable curve in Figures 1806.4(a) through (c), the soil shall be considered not susceptible to liquefaction. Liquefaction for soils below a depth of 60 feet (18 meters) from final grade need not be considered for level ground. For pressure-injected footings, the ten-foot (3-meter) thickness of soil immediately below the bottom of the driven shaft shall be considered not susceptible to liquefaction.

**1806.4.2 Compacted Fills.** Compacted granular fills shall be considered not susceptible to liquefaction provided that they are systematically compacted to at least 93% of the maximum dry density determined in accordance with ASTM Standard Method D1557.

**1806.4.3 Evaluation by a Registered Design Professional.** Soils that do not meet the criteria in Section 1806.4.1 or 1806.4.2 shall be considered potentially susceptible to liquefaction. For these cases, studies shall be performed by a *registered design professional* in accordance with Section 1803.5.12.

**1806.4.4 Lateral Sliding.** For sites underlain by the saturated soils identified in Section 1806.4, and where the ground surface at the site or adjacent to the site is sloping such that lateral sliding (slope instability) may occur, studies by a *registered design professional* shall be made to establish the safety against sliding and lateral deformations as a result of the design earthquake.

Insert **Figure 1806.4.a, and**
**Figure 1806.4.b, and**
**Figure 1806.4.c**

**1807.1.6 Prescriptive design of concrete and masonry foundation walls.** Concrete and masonry foundation walls ~~that are laterally supported at the top and bottom shall be permitted to be designed and constructed in accordance with this section~~ shall be permitted to be designed and constructed in accordance with this section, provided that they are laterally supported at the top and bottom, not subject to net hydrostatic pressures or surcharge loadings, and the backfill adjacent to the walls is not subjected to heavy compaction loads.

**1807.2, 1807.2.1, 1807.2.2, 1807.2.3** Replace as follows:

**1807.2 Retaining Walls.** Retaining walls shall be designed in accordance with Sections 1807.2.1 through 1807.2.6. The requirements of this section shall apply to any type of retaining structure or system that has any portion of its exposed face inclined steeper than one horizontal to one vertical, including conventional retaining walls, crib and bin wall systems, reinforced or mechanically stabilized earth systems, anchored walls, soil nail walls, multi-tiered systems, boulder walls or other types of retaining structures. The requirements of this section do not apply to slope facings, armor or riprap placed for the sole purpose of protection against surface erosion.

**1807.2.1 Design.** Retaining walls shall be designed to resist the static and seismic pressures of the retained materials, water pressures, and dead and live load surcharges to which such walls are subjected, and to ensure stability against excessive movements, overturning, sliding, excessive foundation pressure, and water uplift. Retaining walls that support an unbalanced height of retained material greater than six feet (1.83 m), and any retaining system or slope that could impact public safety or the stability of an adjacent structure shall be designed by a *registered design professional*.

**1807.2.2 Design Lateral Soil Loads.** Retaining walls shall be designed for the lateral soil loads set forth in Section 1610, including seismic lateral pressure, or the lateral loads determined by a *registered design professional* based on a geotechnical investigation performed in accordance with Section 1803.

**1807.2.3 Safety Factor.** Retaining walls shall be designed to resist the lateral action of soil to produce sliding and overturning with a minimum factor of safety of 1.5 in each case. The load combinations of Section 1605 shall not apply to this requirement. Instead, design shall be based on 0.7 times nominal earthquake loads, 1.0 times other nominal loads, and investigation with one or more of the variable loads set to zero. The safety factor against lateral sliding shall be taken as the available soil resistance at the base of the retaining wall foundation divided by the net lateral force applied to the retaining wall.

**Exception:** Where earthquake loads are included, the minimum factor of safety for retaining wall sliding and overturning shall be 1.1.

**1807.2.4 Overall Stability.** The overall global stability of a retaining wall, considering potential failure surfaces extending through the materials located below, in front of and behind the wall shall be evaluated.

**1807.2.5 Discrete Elements.** For retaining walls constructed of discrete elements, such as unmortared masonry, rock, boulders, or stacked modular units, the elements shall be bonded or fastened together to prevent dislodgement under static and seismic loading conditions where dislodgement of the elements could pose a risk to public safety.

**1807.2.6 Wall Drainage.** Retaining walls shall be designed to support a hydrostatic head of water pressure equal to the full height of the wall, unless a drainage system is provided to reduce or eliminate hydrostatic pressure on the wall. Drainage systems shall be designed with sufficient permeability and discharge capacity, and shall be provided with appropriate filters and other design features to prevent blockage due to siltation, clogging, or freezing.

**1808.2 Design for capacity and settlement.** Foundations shall be ~~so~~ designed ~~that the allowable bearing capacity of the soil is not exceeded, and that differential settlement is minimized~~ to provide adequate load bearing capacity while limiting settlement, heave and lateral movement to

tolerable levels. Foundations in areas with expansive soils shall be designed in accordance with the provisions of Section 1808.6.

**1810.1.2 Use of existing deep foundation elements.** Deep foundation elements left in place ~~where a structure has been demolished shall not be used for the support of new construction unless satisfactory evidence is submitted to the building official, which indicates that the elements are sound and meet the requirements of this code. Such elements shall be load tested or redriven to verify their capacities. The design load applied to such elements shall be the lowest allowable load as determined by tests or redriving data~~ that have previously supported a partially or fully demolished structure may be used for support of new construction if satisfactory evidence is submitted by a *registered design professional* to the *building official* which indicates that the foundation elements have not been adversely impacted by the demolition, are structurally sound, have adequate load-bearing capacity to support the new design loads, and meet all of the requirements of this code. The load-bearing capacities of the deep foundation elements shall be determined by one of the following methods:

1. Analyses to determine the actual sustained load that the foundations supported satisfactorily in the previous structure.
2. Analyses based on documented foundation geometry and presumptive bearing value of the supporting soil, where applicable to the foundation type.
3. Load testing or re-driving performed on representative foundation elements. Records of previous pile-driving and load testing may be utilized where such records are deemed adequate by the *registered design professional*.

**1810.3.2.6** Insert the following exceptions:

**Exceptions:**

1. Maximum allowable stress for concrete or grout in compression for elements that are cast in place without a permanent casing shall be 0.33 f'c.
2. Maximum allowable stresses for timber foundation elements shall be 80 percent of the values determined in accordance with the AWC NDS.

**1810.3.3.1 Allowable axial load.** The allowable axial load on a deep foundation element shall be determined in accordance with Sections 1810.3.3.1.1 through ~~1810.3.3.1.9~~ 1810.3.3.1.11. Where the allowable load capacity is not determined by using one of the formulas or analysis methods provided in Sections 1810.3.3.1.1 through 1810.3.3.1.11, or the presumptive load- bearing values in Section 1806, the allowable load capacity shall be verified by load tests. Dynamic load testing of instrumented driven piles performed in accordance with ASTM D4945 may be ~~accepted by the *building official*~~ used in lieu of static load testing, where the testing program consists of a minimum of three instrumented piles tested to a minimum factor of safety of 2.5 using an analysis procedure that matches the force and velocity traces measured at the top of the pile. Load testing may be waived by the *building official* based upon submittal of substantiating data prepared by a *registered design professional* which include load test data or performance records for the proposed deep foundation elements under similar soil and loading conditions.

**Exception.** The allowable frictional resistance of cast-in-place elements greater than or equal to 12 inches in diameter obtaining capacity in Material Classes 1 through 6 in Table 1806.2a may be determined by a *registered design professional* based on analyses incorporating results of testing in similar bearing materials.

**1810.3.3.1.1, 1810.3.3.1.2, 1810.3.3.1.3** Replace as follows:

**1810.3.3.1.1 Driving Criteria.** For driven piles with a design load capacity not exceeding 50tons (445 kN), the allowable load capacity may be determined based on final driving criteria (net displacement per hammer blow) obtained from an appropriate pile driving formula using a factor of safety not less than 3.5, or from wave equation analysis using a factor of safety not less than2.75. The use of followers shall be allowed only as directed by a *registered design professional*.
The introduction of fresh hammer cushion material just prior to final penetration is not permitted.

**1810.3.3.1.2 Load Tests.** Where static load testing is required to determine the allowable load bearing capacity of deep foundation elements in vertical compression, the load tests shall be performed in accordance with ASTM D1143 and the following requirements:

1. **Load in Bearing Stratum.** The load reaching the top of the bearing stratum under the maximum test load shall not be less than the following:
    a. For end-bearing elements: 100% of the allowable design load.
    b. For friction elements: 150% of the allowable design load.

For foundation elements designed for a combination of end-bearing and friction, the required test load reaching the bearing stratum shall be based on the predominant support mode.

2. **Instrumentation.** The test element shall be instrumented using strain gauges, tell-tales, or similar methods to enable measurement or computation of the load in the element where it enters the bearing stratum. For foundation elements containing concrete, instrumentation shall be installed to permit direct measurement of the elastic modulus of the element during the test. Instrumentation of the test element is not required for the following cases:
    a. The test element is installed within a casing that extends to within ten feet above the bearing stratum.
    b. Load testing is performed on an existing foundation element, and appropriate consideration is given to potential frictional resistance developed above the bearing stratum during the load test.
    c. The foundation element length does not exceed 30 feet and no appreciable load will be supported above the bearing stratum.
3. **Loading procedure**. The loading procedure shall be as follows:
    a. Apply 25% of the proposed allowable design load every 0.5 hour. Longer time increments may be used, but each time increment should be the same. In no case shall a load be changed if the rate of settlement is not decreasing with time.
    b. At 200% of the proposed allowable design load maintain the load for a minimum of one hour and until the settlement (measured at the lowest point on the element at which measurements are made) over a one-hour period is not greater than 0.01 in.
    c. Remove 50% of the design load every 15 minutes until zero load is reached. Longer time increments may be used, but each should be the same.
    d. Measure rebound at zero load for a minimum of one hour.

e. For each load increment or decrement, take readings at the top of the element and on the instrumentation at one, two, four, eight and 15 minutes and at 15-minute intervals thereafter.

A load greater than 200% of the proposed allowable design load may be applied at the top of the test element, using the above loading procedure, to ensure that the requirement for minimum load reaching the bearing stratum is fulfilled. Other optional methods listed in ASTM D1143 may be approved by the *building official* upon submittal in advance of satisfactory justification prepared by a *registered design professional*.

**1810.3.3.1.3 Load Test Evaluation Methods.** Provided that the requirement for minimum load reaching the bearing stratum is satisfied, the allowable design load is permitted to be the greater of the following:

1. Allowable design load based on settlement during loading: 50% of the applied test load which causes a gross settlement at the top equal to the sum of: a) the theoretical elastic compression of the element in inches assuming all the load at the top is transmitted to the tip, plus b) 0.15 inch (3.8 mm), plus c) 1% of the tip diameter or width in inches.
2. Allowable design load based on the net settlement after rebound: 50% of the applied test load which results in a net settlement at the top of 0.5 inch (13 mm) after rebound at zero load.

If the allowable design load is not governed by one of the above criteria, the allowable design load shall be equal to 50% of the maximum test load.

If the requirement for minimum test load reaching the bearing stratum is not satisfied, the allowable design load shall not exceed: a) the load reaching the bearing stratum for end- bearing elements and b) two-thirds of the load reaching the bearing stratum for friction elements.

The allowable design load capacity determined from load tests can be applied to other foundation elements of the same type and size that are installed in similar subsurface conditions using the same installation methods and equipment. Where the design is based on a minimum embedment length, minimum penetration resistance, or friction over a minimum surface area, the applicable design value for the production elements shall equal or exceed the value used for the test element.

**1810.3.3.1.10. Enlarged Base Piles**. For enlarged base piles with compacted concrete bases and design capacities up to 120 tons, that are formed on or in bearing materials of Classes 1 to 9 inclusive in Table 1806.2a, the allowable load may be computed by the following formula. The Class 9 material (fine sand) shall have a maximum of 15% by weight finer than the No. 200 mesh sieve and the fines shall be non-plastic.

$R = [(B \times E)/C] V^{2/3}$ **(Equation 18-12)**

where:

R = allowable load in pounds.
B = average number of blows required to inject one cubic foot of concrete, during injection of the last batch.
E = Energy per blow in foot-pounds.
C = constant.
V = total volume of base concrete in cubic feet.

The values of R, E, and C shall conform to Table 1810.3.3.1 unless other values are determined by load test, in which case the latter values shall control. The value of V shall include an allowance of one Standard Batch Volume of concrete, if concrete is used in the tube during the driving process, plus the additional volume of concrete injected during formation of the base.

During injection of the last batch of concrete in the base, the height of concrete within the drive tube shall not be more than 1/3 of the drive-tube inside diameter.

Insert **TABLE 1810.3.3.1**

**1810.3.3.1.11 Alternate Load Test Procedure for Micropiles**. For micropiles designed as friction piles, the friction capacity in compression may be verified by load testing in tension in accordance with ASTM D3689 and the following requirements:

1. The test pile must be cased or left un-grouted down to the top of the bearing stratum in a manner which will ensure that no friction resistance is developed above the bearing stratum.
2. The maximum design load shall be taken as 50% of the applied test load which results in a movement under load of 0.5 inch (13 mm) at the pile tip. The movement at the pile tip shall be:
    a. measured directly by a tell-tale or
    b. computed by deducting the theoretical elastic elongation of the pile from the displacement measured at the top of the pile.

**1810.3.9.4.1** Insert, after the first sentence of the second paragraph, the following text:
Where the actual cross-section area is greater than the minimum area required by design, the minimum reinforcement ratio can be applied to the minimum design area.

**1810.3.9.4.2** Insert, after the first sentence of the second paragraph, the following text:
Where the actual cross-section area is greater than the minimum area required by design, the minimum reinforcement ratio can be applied to the minimum design area.

**1810.3.9.5 Belled drilled shafts.** Where drilled shafts are belled at the bottom, the edge thickness of the bell shall not be less than ~~that required for the edge of footings~~ four inches (102 mm). Where the sides of the bell slope at an angle less than 60 degrees (1 rad) from the horizontal, the effects of vertical shear shall be considered.

**1810.3.14 Spacing.** The minimum center-to-center spacing of piles shall be not less than twice the average diameter of a round pile, nor less than 1¾ times the diagonal dimension of a rectangular pile. When driven to or penetrating into rock, the spacing shall be not less than 24 inches (610 mm). When receiving principal support from end-bearing on materials other than rock or through frictional resistance, pile spacing shall be not less than 30 inches (762 mm). For enlarged base piles, the center-to-center spacing with uncased shafts shall be not less than 2.5 times the outside diameter of the drive tube and not less than 42 inches (1067 mm). The center-to-center spacing of enlarged base piles with cased shafts shall be not less than 3.0 times the shaft diameter. For auger-cast piles, the minimum center-to-center spacing between adjacent piles shall not be less than 30 inches (760 mm) or two times the pile diameter, whichever is

greater. The minimum center-to-center spacing between adjacent piers designed for friction support shall be not less than two times the shaft diameter.

**1810.4.6** Replace as follows:
**1810.4.6 Heaved Elements.** Deep foundation elements ~~that have heaved during the driving of adjacent elements shall be redriven as necessary to develop the required capacity and penetration, or the capacity of the element shall be verified by load tests in accordance with Section 1810.3.3.1.2.~~ in the vicinity of piles being driven shall be monitored to observe heave of the elements. Accurate reference points shall be established on each element immediately after its installation; for cast-in-place piles with unfilled casings or shells, the reference point shall be at the bottom of the pile. If, following the installation of piles in the vicinity, heaving of ½ inch (13 mm) or more occurs, the heaved element shall be re-driven to develop the required capacity and penetration, or the capacity of the element shall be verified by load testing in accordance with Section 1810.3.3.1.2 or by analyses performed by a *registered design professional*.

**1810.4.8** Replace as follows:
**1810.4.8 Hollow-stem augered, cast-in-place elements.** Where concrete or grout is placed by pumping through a hollow-stem auger, ~~the auger…~~the element shall be formed by advancing a closed-end continuous-flight hollow-stem auger of uniform diameter into a satisfactory bearing material followed by removal of the tip closure and pumping cement grout or concrete through the hollow-stem while the hollow-stem auger is extracted. The installation shall conform to the following requirements:

1. During advancement, the hollow-stem auger shall be rotated at a higher rate than required for advancement, so that the material through which the auger is being advanced is removed by the auger flights and is not displaced laterally by the auger. During withdrawal, if the hollow stem auger is rotated, it shall be rotated in a positive (advancing) direction.
2. The grout or concrete shall be pumped under continuous pressure and in one continuous operation. Grout or concrete pump pressures shall be measured and maintained at all times sufficiently high to offset hydrostatic and lateral earth pressures. The rate of withdrawal of the auger shall be carefully controlled to exclude all foreign matter and ensure that the augered hole is completely filled with grout or concrete as the auger is withdrawn. The actual volume of grout or concrete pumped into each hole shall be equal to, or greater than, the theoretical volume of the augered hole.
3. If the grouting or concreting process of any element is interrupted, or a loss of concreting or grouting pressure occurs, the element shall be re-drilled to five feet (1524 mm) below the elevation of the tip of the auger when the installation was interrupted or concreting or grouting pressure was lost, or to the bottom of the element if less than five feet, and the installation shall resume from this point.
4. Elements shall not be installed within six diameters (center-to-center) of an element filled with grout or concrete less than 24-hours old except where approved by the *registered design professional*.
5. The continuous flight auger rig utilized to install augered uncased elements shall be equipped with data logging equipment that automatically monitors and produces a real-time printout of depth, grout or concrete pressure, grout or concrete flow, and rate of auger withdrawal. The automatic monitoring equipment shall immediately indicate to the

equipment operator, and record on the printed record, any instance during the withdrawal of the hollow-stem auger where the rate of auger withdrawal times the theoretical element cross-sectional area exceeds the rate of grout or concrete placement. Printed instrumentation readout for each element shall be provided to the *registered design professional*'s representative upon completion of each element

**CHAPTER 19: CONCRETE**

**1905.1.7** Revise as follows:

*14.1.4 – Plain concrete in structures assigned to Seismic Design Category B, C, D, E or F.*

*14.1.4.1 – Structures assigned to Seismic Design Category B, C, D, E or F shall not have…*

*Add items (d) and (e):*

*(d) Pedestals. Plain concrete pedestals shall not be used to resist lateral seismic forces.*

*(e) Dowels. Reinforcing steel dowels shall extend from the plain concrete footing into the supported pedestals, columns or walls.*

**CHAPTER 21: MASONRY**

**2106.2 Amendments to Chapter 7 of TMS 402/ACI 530/ASCE 5** *(Numbers that follow are section numbers of TMS 402/ACI 530/ASCE 5).*

**7.3.2.5** At the end of the last sentence, add this text:
"or one third the length of the wall, whichever is less".

**7.3.2.5.1** Add subsection:

**7.3.2.5.1 Vertical reinforcement at openings.** Two adjacent cells shall be grouted solid at each side of each opening and continuous vertical reinforcement shall be located in either of these two cells. Bars in a grouted cell may be offset horizontally by one cell to mitigate interference due to lintels.

**7.3.2.5.2**Add subsection:

**7.3.2.5.2 Horizontal shear reinforcement.** Horizontal shear reinforcement shall be provided by horizontal deformed bars in grouted bond beams at a maximum vertical spacing of 48 in. on center. The vertical spacing of horizontal deformed bars in grouted bond beams may be increased to a maximum of 104 in. on center if all of the following conditions are met:

a. Welded wire reinforcement (ladder or truss configuration) shall be provided at a maximum vertical spacing of 8 in. on center and placed in a bed joint not less than 3/8 in. thick.
b. The longitudinal side wires of the horizontal shear reinforcement shall be a minimum of 3/16 inch diameter with #9 cross or diagonal wire. Additional joint reinforcement or reinforcing bars in grouted bond courses shall be added to meet the design requirements.
c. Joint reinforcement shall be lapped to develop the full capacity of the reinforcing in the plane of the wall, at corners, and at intersecting shear walls.
d. Joint reinforcement wires shall be anchored with hooks or bends around the vertical jamb reinforcement at openings and ends of walls.

**7.3.2.11** Revise note (a) to read as follows:

(a) Reinforcement shall be provided in accordance with Sections 7.3.2.6(a) and 7.3.2.6(b), and (f), except where prestressing tendons are located.

Add section:

**7.5 Nonparticipating elements.** Notwithstanding the requirements of Section 7.4 to the contrary, non-participating elements (i.e. those isolated from in-plane force) shall be reinforced in accordance with Section 7.4.3, except as follows:

1. Reinforcement shall be provided in both the horizontal and vertical directions, and spacing of vertical bars shall not exceed 72 inches for Seismic Design Categories B and C, and 48 inches for Seismic Design Category D.
2. For exterior walls, and for walls enclosing exits, exit discharges, and elevator shafts, the minimum cross-sectional area of reinforcement in the direction of the span shall be 0.0007 times the gross cross-sectional area of the wall, and shall consist of reinforcing steel bars in grouted cells, grouted bond courses, or grouted collar joints. The maximum spacing of the bars shall be the lesser of 1/3 of the span or 48 inches.

## CHAPTER 22: STEEL

**2205.1.1 Shop Drawings**. Complete shop drawings shall be prepared in a manner consistent with industry practice *and* in advance of the actual fabrication. Such drawings shall clearly distinguish between shop and field connections for bolts and welds, and shall also clearly identify steel grades, bolt types and sizes, weld types and sizes, locations and dimensions and all information necessary for proper fabrication and installation of the steel members.

**2211.6.1 Limitations on cold-formed steel framed shear walls**. The only sheathing materials permitted for cold-formed framed shear walls are steel sheets, wood structural panels, gypsum board panels, and fiberboard panels.

**2211.6.1.1 Limitations on gypsum board panel and fiberboard panel sheathed cold formed steel framed shear walls**. Gypsum board and fiberboard sheathed cold-formed steel framed shear walls are limited as follows:

1. The building shall not be more than 35 feet in height as measured from mean grade plane to mean roof plane.
2. The location of the shear walls shall be limited to *exterior walls*, *fire walls*, *fire barriers*, or *fire partitions*.
3. The building is not in Occupancy Category IV.
4. The seismic weight of each level (floor or roof), supported laterally by the shear walls, shall not be more than 25 psf. Where attics are not habitable, the seismic weight of a pitched roof shall include the dead load of the attic floor.

## CHAPTER 23: WOOD

**2303.1.14 Native Lumber**. *Native lumber* shall be acceptable for use in one- and two-family dwellings, barns, sheds, and agricultural and accessory structures. *Native lumber* shall also be acceptable for use in one- or two-story structures as columns when the design loads are 25% greater than required in Chapter 16; as joists, principal beams, and girders in floor constructions when the design loads are 15% greater than required in Chapter 16; and as other elements when the design loads are as required in Chapter 16.

When native lumber is used, it shall be subject to the following requirements:

1. Sizing Criteria: For lumber, sized in accordance with the DOC PS-20, figures for maximum fiber stress and modulus of elasticity for framing grade No. 2 shall be used in establishing span and spacing characteristics for all structural members.
2. Stress Criteria: Lumber which is sized in excess of the dimensions established by the DOC PS-20 for the given nominal size referenced shall be allowed to have a maximum fiber stress increase above that provided in Section 2303.1.14 item 1 in proportion to the increased bearing capacity of the cross section as provided in Table 2303.1.14.

Insert **TABLE 2303.1.14 NATIVE LUMBER - ALLOWABLE STRESSES**

**CHAPTER 24: GLASS AND GLAZING**

**2406.1 Human impact loads.** Individual glazed areas, including glass mirrors, in hazardous locations as defined in Section 2406.4 shall comply with Sections 2406.1.1 through 2406.1.4. Also *see* M.G.L. c. 143, §§ 3T, 3U, and 3V.

**CHAPTER 26: PLASTIC**

**2603.5.5 Vertical and lateral fire propagation.**

The exterior wall assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.

**Exceptions:**

1. One-story buildings complying with Section 2603.4.1.4.
2. Wall assemblies where the foam plastic insulation is covered on each face by not less then 1-inch (25 mm) thickness of masonry, ~~or~~ concrete, terracotta, stucco or ½ inch thick Type X gypsum board and meeting one of the following:
   2.1 There is no airspace between the insulation and the ~~concrete or~~ masonry, concrete, terracotta, stucco, or ½-inch thick type X gypsum board.
   2.2 The insulation has a flame spread index of not more than 25 as determined in accordance with ASTM E 84 or UL 723 and the maximum airspace between the insulation and the concrete or masonry is not more than 1 inch (25 mm).
3. In other than high rise buildings, walls in buildings equipped throughout with an *automatic sprinkler system*, with the following conditions: 1) only where a NFPA 13 sprinkler system is provided and 2) where fire flow analysis has been performed without sprinkler decrease allowance that shows adequate water is available.
4. Wall assemblies in noncombustible construction that have concealed spaces fireblocked in such a manner so as to interrupt the foam plastic insulation and cut off the concealed air spaces (both vertical and horizontal.)
   a. Fireblocking shall be installed within concealed spaces of exterior wall assemblies at every floor level or at maximum vertical intervals not exceeding 20 feet. Fireblocking shall be installed at horizontal intervals not exceeding 40 feet in exterior walls of noncombustible construction. Fireblocking shall extend through any concealed air space and through any foam plastic material.
   b. Materials used for fireblocking in exterior wall assemblies shall comply with Section 7.18.2.1.

## CHAPTER 27: ELECTRICAL

**2701.1 Scope.** This chapter governs the electrical components, equipment and systems used in buildings and structures covered by this code. Electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of ~~NFPA 70~~ 527 CMR 12.

**[F] 2702.1.1 Stationary generators.** Stationary emergency and standby power generators required by this code shall be listed in accordance with UL 2200. For air quality control for point source generation see 310 CMR 7:00 *Air Pollution Control*.

**[F] 2702.2.2 Elevators and platform lifts.** Standby power shall be provided for elevators and platform lifts as required by this code and 524 CMR ~~in Sections 1009.4, 1009.5, 3003.1, 3007.8 and 3008.8~~.

## CHAPTER 28: MECHANICAL SYSTEMS

**[M] 2801.1 Scope.** Mechanical appliances, equipment and systems shall be constructed, installed and maintained in accordance with the *International Mechanical Code* and 248 CMR ~~the International Fuel Gas Code~~. Masonry chimneys, fireplaces and barbecues shall comply with the *International Mechanical Code* and Chapter 21 of this code.

## CHAPTER 29: PLUMBING SYSTEMS

**[P] 2901.1 Scope.** The provisions of 248 CMR ~~this chapter and the International Plumbing Code~~ shall govern the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of plumbing equipment and systems. Toilet and bathing rooms shall be constructed in accordance with 248 CMR or if applicable, Section 1210. Plumbing systems and equipment shall be constructed, installed and maintained in accordance with the ~~International Plumbing Code~~ 248 CMR. Private sewage disposal systems shall conform to ~~the International Private Sewage Disposal Code~~. 310 CMR 15.00: *The State Environmental Code Regulating Septic Systems (Title 5).*

## CHAPTER 30: ELEVATORS AND CONVEYING SYSTEMS

**3001.1 Scope.** This chapter governs the design, construction, installation, alteration and repair of elevators and conveying systems and their components.

**3001.2 Referenced standards.** Except as otherwise provided for in this code, the design, construction, installation, alteration, repair and maintenance of elevators and conveying systems and their components shall conform to ~~ASME A17.1/CSA B44, ASME A17.7/CSA B44.7, ASME A90.1, ASME B20.1, ANSI MH29.1, ALI ALCTV and ASCE 24 for construction in flood hazard areas established in Section 1612.3.~~ this code and 524 CMR.

**3001.3 Accessibility.** Passenger elevators required to be accessible or to serve as part of an accessible means of egress shall comply with ~~Sections 1009 and 1109.7.~~ this code and 521 CMR.

**3001.4 Change in use.** A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall comply with ~~Section 8.7 of ASME A17.1/CSA B44~~. this code and 524 CMR.

**3001.5 Applicable requirements.** This code or 524 CMR or the *specialized codes* may govern requirements associated with elevators and conveying systems. Where there is conflict or duplication of this code with 524 CMR then the requirement in 524 CMR shall apply. Where construction requirements including but not limited to fire rated construction and egress, are

found in this chapter and are not found in 524 CMR then the requirements of this chapter shall apply.

**SECTION 3008 OCCUPANT EVACUATION ELEVATORS** (reserved)

**CHAPTER 31: SPECIAL CONSTRUCTION**

**3104.4 Contents.** Only materials and decorations conforming to Chapter 8 and 527 CMR, and approved by the *building official* in consultation with the fire official shall be located in the pedestrian walkway.

**3109.1 General.** Swimming pools shall comply with the requirements of Sections 3109.2 through 3109.5 and other applicable sections of this code.

See also:

1. 521 CMR 19.00: Recreational Facilities;
2. 105 CMR 430.000: Minimum Standards for Recreational Camps for Children (State Sanitary Code: Chapter IV) and 105 CMR 435.00: Minimum Standards for Swimming Pools (State Sanitary Code: Chapter V)

**3109.3 Public Swimming Pools.** ~~Public swimming pools shall be completely enclosed by a fence not less than 4 feet (1290 mm) in height or a screen enclosure. Openings in the fence shall not permit the passage of a 4-inch-diameter (102 mm) sphere. The fence or screen enclosure shall be equipped with self-closing and self-latching gates.~~ See M.G.L. c. 140, § 206 for enclosures to public and semi-public outdoor in-ground swimming pools.

**SECTION 3112 TEMPORARY OVERNIGHT SHELTERS**

**3112.1 Scope and Purpose.** The purpose of Section 3112 is to establish reasonable standards for the use of facilities designed for other purposes to be safely occupied temporarily as places of overnight accommodation. In this regard, the State Building Code is not intended to serve as a barrier to those seeking to assist individuals in need, but instead to offer a means to ensure that a reasonable degree of life safety is provided.

**3112.2 Temporary Overnight Shelters - Defined.** For purposes of Section 3112, a temporary overnight shelter shall be defined as any building, facility, or space therein designed and used primarily as a church or house of worship for religious services or instruction or related activities which is owned or operated by a religious organization and qualified for exemption under 26 U.S.C. Section 501(c)(3) of the Internal Revenue Code. The primary use of the building, facility, or space therein is for religious services or instruction but may, on occasion, provide temporary overnight accommodation to a limited number of individuals for a limited period of time as provided for Section 3112. Other groups or organizations wishing to offer overnight accommodations in buildings designed and constructed for other purposes shall file an application for change of use in accordance with Section 105.

Temporary overnight shelters, as addressed in Section 3112, shall be classified as R-1 Use. Express administrative and technical requirements found in Section 3112 shall override more general requirements found elsewhere in this code.

**3112.3 Approval and Temporary Certificate of Occupancy.** In order to operate a temporary overnight shelter, a temporary certificate of occupancy must first be issued by the *building official*. Application for a certificate shall be made as follows:

1. The application must contain information demonstrating that the structure meets the following requirements:
    a. It has been issued a valid certificate of occupancy for its current use.
    b. It is or will be equipped with a functioning sprinkler system or is suitably protected by a hard-wired smoke and/or heat detection and alarm system, and a carbon monoxide detection system in accordance with Section 3112.6, Table 3112.6 and Sections 3112.7 through 3112.14.
    c. It contains adequate means of egress relative to the number of approved overnight occupants.
    d. It contains adequate emergency lighting and egress signage.
    e. It contains the necessary facilities in accordance with the applicable guidelines promulgated by the Massachusetts Department of Public Health.
    f. Attestation that the structure meets the requirements of the Architectural Access Board regulations at 521 CMR.
    g. Attestation that the location is equipped with a hard-wired land line phone for use in the event of an emergency.
2. The application must include the following:
    a. Zoning approval (if applicable).
    b. A plot plan (internet accessed satellite maps may be sufficient if properly labeled).
    c. A plan for compliance with the applicable guidelines promulgated by the Massachusetts Department of Public Health.
    d. A fire safety and evacuation plan. The plan shall include, but not be limited to:
        i. The identification of the anticipated nightly occupant load.
        ii. A diagram of the bed and personal space layout.
        iii. The identification of exits and aisles leading thereto.
        iv. Outline of procedures for accounting for employees and occupants after evacuation.
        v. Outline of procedures for the evacuation of occupants with special needs.
        vi. At time of activation, the Head of the Fire Department shall be provided with the identification of the preferred and any alternative person responsible for reporting fires and other emergencies to the fire department.
        vii. At time of activation, the Head of the Fire Department shall be provided with a plan for assignment of personnel responsible for oversight of evacuation.
        viii. A plan for training of employees relative to emergency evacuation.
    e. Identification of an on-site individual responsible for ensuring compliance with Section 3112.
3. Upon receipt of a completed application, the *building official* shall forward the application to the municipal fire chief and health official for their review. A site visit shall then be undertaken collectively by the *building official*, fire official, health official, the *owner*, and the applicant, or their respective designees. Said officials shall assess the suitability of the structure for issuance of a temporary certificate of occupancy and ensure the accuracy and efficiency of the documentation submitted in accordance with Section 3112.3 items 1. and 2. Promptly after the site visit is completed, the *building official* shall either approve the application and issue the

temporary certificate of occupancy, or deny the application, or approve the application and issue the temporary certificate of occupancy with conditions. The *building official* may condition the issuance of a certificate upon anything that he determines is necessary to ensure the safety of the occupants of the shelter and consistent with Section 3112.1. Prior to taking action, the *building official* shall review the application with the fire chief and health official. The *building official* shall consider any recommendations made by the fire chief or health official with due regard for their concerns. However, the *building official* shall not issue any temporary certificate over the objection of the Head of the Fire Department or the local Board of Health.

4. Temporary certificates of occupancy shall not be issued for a period to exceed one year. Applications for renewal shall be reviewed in accordance with Section 3112.3 items 1. through 3.

5. If issued, the temporary certificate shall reflect the name of the organization it was issued to, the name of the party responsible for the operation of the shelter, the address, the issuance date, the expiration date, any conditions of issuance ordered pursuant to Section 3112.3 item 3., and the maximum allowed occupant load.

6. A temporary certificate of occupancy may be revoked by the *building official* at any time for a violation of any provision of Section 3112, any violation of the General Laws, or for any reason necessary to ensure the safety of the occupants of the structure. The terms of issuance of the certificate may similarly be modified. Any such action may be appealed to the Building Code Appeals Board in accordance with M.G.L. c. 143, § 100.

**3112.4 Shelter Operation.**

1. The party responsible for the operation of the temporary overnight shelter must notify the municipal *building official* and fire chief in writing at least 48 hours prior to each period of operation. The notification must include a statement as to the anticipated number of days the shelter will be in operation and an estimate as to the number of individuals who will be in occupancy per night. Notification shall similarly be made within 24 hours after use of the shelter has ended.

2. The temporary certificate of occupancy issued pursuant to Section 3112.3 shall be conspicuously posted at the main entrance to the shelter.

3. A document shall be posted, in a location approved by the municipal *building official* and the head of the fire department, containing an accurate number and names of occupants on a nightly basis and a copy of the evacuation plan referenced Section 3112.3 item 2.d. Such document shall also contain the names of all workers and volunteers who are overseeing or assisting in the usage on a nightly basis. The shelter shall be set up and operated in accordance with the documentation submitted pursuant to Section 3112.3 item 2. and any conditions mandated under Section 3112.3 item 3.

**3112.5 Access by Public** Officials. Access to the shelter for purposes of ensuring compliance with Section 3112 shall be granted upon request by the *building official*, fire chief, health official, police chief or their respective designees.

**3112.6 Limitations of Use**. Use shall be limited as described in this Section and Table 3112.6.

1. A temporary overnight shelter identified with a 'P' in Table 3112.6 equipped with an interconnected, monitored smoke and carbon monoxide detection and notification system as required by Chapter 9 may operate year-round for the following periods only:

a. not more than 52 days during a calendar year,
b. not more than seven consecutive days.

Where the subject church/house of worship proper possesses a NFPA 13 fire sprinkler system throughout the building per the governing edition of NFPA 13 in effect when such system was installed, the temporary overnight shelter can be located anywhere in the church/house of worship, providing all other requirements of Section 3112, inclusive are met. If the church/house of worship does not have an NFPA 13 fire sprinkler system installed throughout the building then the location of the temporary overnight shelter must conform to the requirements set forth in Table 3112.6 (partial fire sprinklering of the temporary overnight shelter is required under certain circumstances addressed in Table 3112.6).

**TABLE 3112.6**

Use Limitations for Temporary Overnight Shelters

| Location in Building | Building Construction Type | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | IA | IB | IIA | IIB | IIIA | IIIB | IV | VA | VB |
| Basement (without direct access to outside) | PS | PS | PS | PS | NP | NP | PS | NP | NP |
| Basement (with direct access to outside) | P | P | P | P | P | P | P | P | PS |
| 1st Floor | P | P | P | P | P | P | P | P | P |
| 2nd Floor | P | P | P | P | P | P | P | P | P |
| 3rd Floor | P | P | P | P | PS | PS | PS | PS | PS |
| 4th Floor and above | PS | PS | PS | PS | PS | PS | PS | PS | NP |

P= Permitted, *see* Section 3112.6. PS= Permitted with sprinklers, *see* Section 3112.6. NP = Not Permitted.

2. Alternatively, a temporary overnight shelter identified with a 'P' in Table 3112.6 may operate year-round for the following periods only:
a. not more than 52 days during a calendar year,
b. not more than 14 consecutive days.

In order to achieve compliance with this Section a temporary overnight shelter shall be equipped with an interconnected, monitored smoke and carbon monoxide detection and notification alarm system as required by Chapter 9.

3. A temporary overnight shelter identified with a 'PS' in Table 3112.6 may operate year-round for the following periods only:
a. not more than 104 days during a calendar year,
b. not more than 30 consecutive days.

Note: In order to achieve compliance with this Section a temporary overnight shelter shall be equipped with a full NFPA 13 sprinkler system, interconnected and monitored smoke and carbon monoxide detection and notification alarm system as required by Chapter 9.

4. The operating period limitations set forth in Section 3112.6 may be exceeded in the event that a state of emergency is declared by the Governor in accordance with St. 1950, c. 639 or due to an emergency deemed detrimental to the public health pursuant to M.G.L. c. 17, ' 2A.

**3112.7 Reserved.**

**3112.8 Fire and CO Detection, Occupant Notification and Life Safety System Supervision.** All temporary overnight shelters are required to install and have operational, an interconnected, monitored smoke and carbon monoxide detection and notification alarm system.
**3112.9 Monitoring requirements.** Off premise monitoring of the interconnected smoke and carbon monoxide detection and notification alarm system is required and shall conform to the requirements in chapter 9 and NFPA 72 and NFPA 720, as applicable.
**3112.10 General Installation Requirements and Alarm Signal Precedence.** Installation requirements for the interconnected, monitored smoke and carbon monoxide detection and notification alarm systems shall be in accordance with this code; 527 CMR; the smoke alarm/detector and carbon monoxide alarm/detector manufacturers' requirements; NFPA 72 and NFPA 720, all as applicable. For alarm signal precedence, see Section 916.5.
**3112.11 Location of Fire and CO Detection and Occupant Notification Appliances.** Buildings, facilities or spaces therein intended used as a temporary overnight shelters as defined in Section 3112.2 shall incorporate, as applicable, smoke and carbon monoxide detection and notification alarm systems in:

1. All shelter sleeping areas;
2. All egress routes directly serving the shelter areas;
3. All common areas directly associated with the shelter areas.

**3112.12 Listing.** Smoke detectors/alarms shall be listed to UL 268; carbon monoxide detectors/alarms shall be listed to IAS/CSA 6.19 or UL 2075 as applicable.
**3112.13 Power source.** The primary and secondary power sources for the low voltage or wireless, interconnected, monitored smoke detection system shall conform to the applicable requirements of NFPA 72; primary and secondary power requirements for CO detectors shall conform to the applicable requirements of NFPA 720.
**3112.14 Fire Sprinkler Locations When Utilized.** Where fire sprinklers are intended employed, as a minimum, such fire sprinkler system(s), complying w/applicable portions of NFPA 13, shall protect:
(1) All shelter sleeping areas;
(2) All egress routes directly serving the shelter areas;
(3) All common areas directly associated with the shelter areas.

**SECTION 3113 TEMPORARY EMERGENCY USE**
**3113.1 General.** Except as noted herein, the provisions of Section 3113 shall apply to *temporary emergency uses*.
**3113.1.1 Permit Required**. *Temporary emergency uses* shall not be operated or maintained for any purpose without first obtaining a permit from the municipal official having jurisdiction.
**3113.2 Construction Documents.** A written request for the Temporary Emergency Use change, identifying the address-specific property is required.
**3113.3 Certification.** A *temporary emergency use* shall be so identified by a special certificate of use and occupancy as established for such purpose (see the Department of Public Safety website www.mass.gov/dps for an example of this special certificate of use and occupancy) by the municipal or state *building official* in consultation with other appropriate municipal and state officials in accordance with procedures established for such purposes.
**3113.4 Means of Egress.** All *temporary emergency uses* shall conform to the *means of egress* requirements of Chapter 10 to the degree practicable

## CHAPTER 34: EXISTING BUILDING CODE

**780 CMR 34** shall be the *International Existing Building Code 2015* with Sections or text modified or added as follows:

**[A] 101.1 Title.** These regulations shall be known as the *Existing Building Code* of ~~[NAME OF JURISDICTION]~~Massachusetts, hereinafter referred to as "this code."

**[A] 101.2 Scope**. The provisions of the *International Existing Building Code* shall apply to the *repair, alteration, change of occupancy, addition* to and relocation of *existing buildings*.

Notes:

1. If requirements in this code conflict with similar requirements in 780 CMR 1, then 780 CMR 1 applies.
2. When this code references requirements in other I-Codes see 780 CMR 1 for guidance on how to use those I-Codes.
3. Requirements in this code for plumbing, fuel gas, electrical, elevators, fire, or accessibility shall be replaced by the requirements of the Massachusetts specialty codes, as indicated in 780 CMR 1.

**104.2.2.1 Building investigation and evaluation.** ~~The code official is authorized to require an *existing building* to be investigated and evaluated by a registered design professional based on the circumstances agreed upon at the preliminary meeting. The design professional shall notify the code official if any potential nonconformance with the provisions of this code is identified.~~ For any proposed work regulated by this code and subject to 780 CMR, Section 107, as a condition of the issuance of a permit the building *owner* shall cause the *existing building* (or portion thereof) to be investigated and evaluated in accordance with the provisions of this code. The investigation and evaluation shall be in sufficient detail to ascertain the effects of the proposed work on at least these systems: structural, means of egress, fire protection, energy conservation, lighting, hazardous materials, accessibility, and ventilation for the space under consideration and, where necessary, the entire building or structure and its foundation if impacted by the proposed work. The results of the investigation and evaluation, along with any proposed *compliance alternatives*, shall be submitted to the *building official* in written report form.

**104.11 Compliance Alternative ~~materials, design and methods of construction, and equipment.~~** ~~The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative....~~ Where compliance with the provisions of the code for new construction, required by this code, is impractical because of construction difficulties or regulatory conflicts, *compliance alternatives* may be accepted by the *building official*. The *building official* may accept these *compliance alternatives*, archaic materials and assemblies in Resource A of this code, or other alternatives proposed. If the *compliance alternative* involves fire protection systems the *building official* shall consult with the fire official. *Compliance alternatives*, if any are proposed, shall be included with the application for a permit and shall identify all items of non- or partial compliance with the requirements of this code, and for approval by the *building official*. The *building official* shall respond to the acceptability of any proposed *compliance alternatives* within 30 days of the filing of the permit application. Where proposed *compliance alternatives* are, in the opinion of the

*building official*, unacceptable, or where issues of non-compliance remain, the permit applicant shall have the remedies prescribed by 780 CMR 113.

**CODE OFFICIAL.** ~~The officer or other designated authority charged with the administration and enforcement of this code~~. See 780 CMR 2 **BUILDING OFFICIAL**.

**COMPLIANCE ALTERNATIVE.** An alternative life-safety construction feature which meets or exceeds the requirements or intent of a specific provision of 780 CMR. The building official is authorized to approve or disapprove compliance alternatives. Compliance alternatives are allowed only for existing buildings.

**REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE**.~~A registered design professional engaged…and phased submittal documents~~. See 780 CMR 2 **REGISTERED DESIGN PROFESSIONAL**.

**ROOF RECOVER.** The process of installing an additional roof covering over a prepared existing roof covering ~~without removing the existing roof covering~~.

**301.1.4.1**
Replace Item 1 text as shown and add **Table 301.1.4.1**
1. 780 CMR using 100% of the prescribed forces. For existing buildings with seismic force resisting systems found in Table 301.1.4.1, the values of R, $\Omega_0$, and $C_d$ from this table shall be used in the analysis. For seismic force resisting systems not found in Table 301.1.4.1, the values of R, $\Omega_0$, and $C_d$ used for analysis in accordance with 780 CMR 16 shall be those specified for structural systems classified as "Ordinary" in accordance with Table 12.2-1 of ASCE 7, unless it can be demonstrated that the structural system satisfies the proportioning and detailing requirements for systems classified as "Intermediate" or "Special".

**301.1.4.2** Add these exceptions to Item 1.

**Exceptions**:
1. 780 CMR using 50% of prescribed forces when directed here by Section 907.4.4.
2. 780 CMR using either
   a. 50% of prescribed forces when directed here by Section 1103.3.1 and when the vertical addition increases the building area less than or equal to 30% or,
   b. 75% of prescribed forces when directed here by Section 1103.3.1 and when the vertical addition increases the building area more than 30% but less than 50%.

Insert **Table 301.1.4.1 BASIC SEISMIC-FORCE-RESISTING SYSTEMS**

**302.6 Masonry Parapets.** This exception applies to requirements in this code for masonry parapets:

**Exception.** If the height-to-thickness ratio of an unbraced unreinforced masonry parapet does not exceed 2.5, then bracing is not required. For the purpose of this exception the height shall be measured from either the level of tension anchors or the roof sheathing, whichever is lower.

**302.7 Structural requirements pertaining to roofing work.**

1. Structural requirements of parapets of unreinforced masonry required by this code per Sections 403.5 and 707.3.1 shall only apply when the intended alteration requires a permit for reroofing and when roof covering is removed from the entire roof diaphragm and not by the 25% roof area trigger found in these sections.
2. Structural requirements of roof diaphragms resisting wind loads in high wind regions required by this code per Sections 403.8 and 707.3.2 when the intended alteration requires a permit for reroofing shall only apply when roof covering is removed from the entire roof diaphragm and the building is located where the ultimate design wind speed is greater than 150 mph and the building is occupancy category IV per Table 1604.5 of the *International Building Code.*

**302.8 Structural requirements pertaining to major alterations.**

1. Structural requirements required by this code in Sections 403.6 and 5 for unreinforced masonry walls shall apply to buildings in Seismic Design Category B in addition to categories C, D, E, and F found in these sections and shall require roof *and* floor levels to be anchored to the walls.
2. Structural requirements required by this code in Sections 403.7 and 907.4.6 for unreinforced masonry parapets shall apply to buildings in Seismic Design Category B in addition to categories C, D, E, and F found in these sections.

**302.9 Provisions for change in occupancy classification to R, I, or E-Use.** Notwithstanding other requirements in this code see ~~780 CMR~~ Chapter 9 and applicable provisions of 527 CMR for certain carbon monoxide detection requirements when a change of occupancy classification to R, I, or E-Use occurs.

**302.10 Fire detection systems in R-2 Uses permitted under 780 CMR 5th edition or earlier.** When this code requires a smoke detection system in an R-2 Use and does not additionally require an NFPA 13, 13R, or 13D system installed throughout the building then this section shall apply.

**302.10.1.1 Heat detection.** If a building fire alarm system is provided, a heat detector shall be provided inside each dwelling unit within 6 feet of the entrance door. The heat detectors shall be connected to the building fire alarm system and cause a general alarm throughout the building upon activation. This shall also apply to the R-2 Use of a mixed use building.

**302.10.1.2 Common area detection.** If a building fire alarm system is provided, smoke detectors shall be provided in the common areas of the building. The common area detectors shall be connected to the building fire alarm system and cause a general alarm throughout the building upon activation. This shall also apply to the R-2 Use of a mixed use building.

**302.10.1.3 Dwelling unit detection.** Interconnected dwelling unit smoke detection shall sound within that dwelling unit only.

**Exception:**

For buildings of three stories or less used exclusively as R-2 Use with 6 or fewer dwelling units and with at least two means of egress serving each dwelling unit, the fire detection system may comply with the all of the following requirements:

1. Interconnected dwelling unit smoke detection shall sound within that dwelling unit only.
2. Area smoke detection shall be provided throughout common uses spaces including shared means of egress.
3. A heat detector shall be provided inside each dwelling unit within 6 feet of doors serving common areas.

Upon activation of either the common area smoke detection or the heat detection, a general alarm shall be sounded throughout the building.

**[BS] 404.4 Less than substantial structural damage.** For damage less than substantial structural damage, repairs shall be allowed that restore the building to its predamage state. New structural members and connections used for this repair shall comply with the detailing provisions of the International Building Code for new buildings of similar structure, purpose and location.

**404.4.1 Repairs for less than substantial damage due to snow load effects.** Roof framing components that have sustained less than *substantial structural damage* caused by or related to snow load effects shall be rehabilitated to comply with the applicable provisions for dead and snow loads in 780 CMR 16. Undamaged roof framing components that receive dead or snow loads from rehabilitated components shall also be rehabilitated to comply with the design loads of the rehabilitated design.

**[BS] 606.2.1 Repairs for less than substantial structural damage.** For damage less than *substantial structural damage*, the damaged elements shall be permitted to be restored to their predamage condition.

**606.2.1.1 Repairs for less than substantial damage due to snow load effects.** Roof framing components that have sustained less than *substantial structural damage* caused by or related to snow load effects shall be rehabilitated to comply with the applicable provisions for dead and snow loads in 780 CMR 16. Undamaged roof framing components that receive dead or snow loads from rehabilitated components shall also be rehabilitated to comply with the design loads of the rehabilitated design.

**706.3** Add two more exceptions.

**706.3 Recovering versus replacement.** New roof coverings shall not be installed without first removing all existing layers of roof coverings down to the roof deck where any of the following conditions occur:

**….**

**Exceptions:**

**….**

5. For roof replacement and roof recover projects, where the existing roof assembly includes a built-up roof that is adhered to the roof deck, the existing built up roof shall be permitted to remain in place and be restored to good condition to serve as a sound substrate for the new roof covering, as per the roof manufacturer's requirements.
6. For Roof Recover projects where there is only one layer of existing roofing present, existing continuous insulation shall be permitted to remain in place, provided all wet or otherwise deteriorated portions of the insulation is removed and replaced.

**804.2** Add exception:
**Exception.** R-2 structures, of three units undergoing Level 2 alterations, are exempt from the requirements of this section provided that:

1. The *work area* is for single unit and
2. No other permits for Level 2 work have been issued for the building in the previous two years.

Amend Section 804.2.2 and 804.2.4, item 2 Exception, as follows:

**"Exception:** If the building does not have sufficient ~~municipal~~ water supply for design of a fire sprinkler system …"

Amend Section 804.2.3 as follows:

**804.2.3 Windowless stories.** Work located in a windowless story, as determined in accordance with the *International Building Code*, shall be sprinklered where the work area is required to be sprinklered under the provisions of the *International Building Code* for newly constructed buildings and the building has sufficient ~~municipal~~ water supply without installation of a new fire pump.

Delete Section 804.2.5, and replace with:

**804.2.5 Supervision.** Fire sprinkler systems required by this section shall be supervised by the method required in 780 CMR 903.4.1 (code for new construction).

Amend Section 805.4.4, as follows:

**805.4.4 Panic hardware.** In an *work area*, and in the egress path from any *work area* to the exit discharge, in buildings or portions thereof of Group A assembly occupancies with an occupant load greater than 100, and nightclubs with an occupant load of 50 or greater, all required exit doors equipped with latching devices shall be equipped with approved panic hardware.

Delete the word "municipal" from Section 904.1.1.

**1002.1 Compliance with the building code.** Where the character or use of an existing building or part of an existing building is changed to ~~one of the following special use or occupancy categories as defined in the *International Building Code*, the building shall comply with all of the applicable requirements of the *International Building Code*~~: a special use or occupancy as found in 780 CMR 4 the special use or occupancy shall comply with the applicable requirements of that chapter. Areas changed to incidental uses shall comply with 780 CMR Table 509.
~~1. Covered and open mall buildings.~~
~~2. Atriums.~~
~~3. Motor vehicle-related occupancies.~~
~~4. Aircraft-related occupancies.~~
~~5. Motion picture projection rooms.~~

~~6. Stages and platforms.~~
~~7. Special amusement buildings.~~
~~8. Incidental use areas.~~
~~9. Hazardous materials.~~
~~10. Ambulatory care facilities.~~
~~11. Group I-2 occupancies.~~

**1401.2 Applicability.** ~~Structures existing prior to **[DATE TO BE INSERTED BY THE JURISDICTION. Note: it is recommended that this date coincide with the effective date of building codes within the jurisdiction]**, in which there is work involving additions, alterations or changes of occupancy shall be made to conform to the requirements of this chapter or the provisions of Chapters 5 through 13.~~ The provisions of Sections 1401.2.1 through 1401.2.5 shall apply to existing occupancies that will continue to be, or are proposed to be, in Groups A, B, E, F, I-2, M, R and S. These provisions shall not apply to buildings with occupancies in Group H or I-1, I-3 or I-4.

**1401.3.4 Peer Review.** At the discretion of the *building official*, the *owner* shall engage a *registered design professional* to review the performance compliance evaluation and methodologies proposed to determine compliance with this section. The *registered design professional* shall prepare a written report to the *building official* summarizing the results of their review. Items identified by the *registered design professional* as needing modification in order to be in compliance with this section shall be addressed to the satisfaction of the *building official* prior to the issuance of a building permit.

**1401.4 Investigation and evaluation.** For proposed work covered by this chapter, the building *owner* shall cause the *existing building* to be investigated and evaluated in accordance with the provisions of Sections 1401.4 through 1401.9.

**[BS] 1401.4.1 Structural analysis.** The *owner* shall have a structural analysis of the existing building made to determine adequacy of structural systems for the proposed *alteration*, *addition* or *change of occupancy*. The analysis shall demonstrate that the building with the work completed is capable of resisting the loads specified in Chapter 16 of the *International Building Code*.

**Exception:** Residential buildings three stories or less above grade plane and comprised of light frame construction and of 6 units or less shall not need to demonstrate compliance to the loads specified in Chapter 16 of the *International Building Code*. Any structural alterations made to the building shall comply with the code for new construction as practicable or Chapter 4.

**1401.4.2 Submittal.** The results of the investigation and evaluation as required in Section 1401.4, along with proposed *compliance alternatives*, shall be submitted to the *code official*.

**1401.4.3 Determination of compliance.** The *code official* shall determine whether the *existing building*, with the proposed *addition*, *alteration*, or *change of occupancy*, complies with the provisions of this section in accordance with the evaluation process in Sections 1401.5 through1401.9.

**1401.6.17** Add note as follows:

Note: Automatic sprinklers required by M.G.L. c. 148 § 26G need not be considered "Required sprinklers" for the purposes of this section.

Add the following note to follow 1501.1:

**Note:** As applicable, 527 CMR, in conjunction with applicable provisions of M.G.L. c.148 §27A, must be satisfied if fire protection systems are to be dismantled, shut-off, or modified.

**CHAPTER 35: REFERENCED STANDARDS**
Replace introductory paragraph with this paragraph as follows:
This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section 102.4. Where a section of this code has been amended to cite a different standard (other than the one listed in this chapter), the referenced standard identified in the body of the code shall prevail, and the referenced standard identified in this chapter is no longer applicable or enforceable as a part of that section. Where a section of this code has been deleted or modified to remove a reference to a specific standard, the referenced standard listed in this chapter is no longer applicable or enforceable as part of this code. Buildings, structures, or conditions not addressed in this code must comply with Section 104.10.2.

Insert ~~five~~ nine referenced standards:
NFPA 15 – 2012 Standard for Water Spray Fixed Systems for Fire Protection
NFPA 24 – 2010 Standard for the Installation of Private Fire Service Mains and their Appurtenances
NFPA 25 – 2014 Standard for the Inspection, Testing, and Maintenance of Water-based Fire Protection Systems
NFPA 92B – 2009 Standard for Smoke Management Systems in Malls, Atria and Large Spaces
NFPA 140 – 2013 Standard on Motion Picture and Television Production Studio Soundstages, Approved Production Facilities, and Production Locations
NFPA 130 – 2014 Standard for Fixed Guideway Transit and Passenger Rail Systems
NFPA 241 – 2009 Standard for Safeguarding Construction, Alteration, and Demolition Operations
NFPA 400 – 2010 Hazardous Materials Code
NFPA 2010 – 2015 Standard for Fixed Aerosol Fire-Extinguishing Systems

**CHAPTER 115: APPENDICES**
**APPENDIX A EMPLOYEEQUALIFICATIONS** (Not adopted)
**APPENDIX B BOARD OF APPEALS** (Not adopted)
**APPENDIX C GROUP U—AGRICULTURAL BUILDINGS (Adopted)**
**C101.2 and C101.3** Add two sections:
**C101.2 Occupancy Thresholds.** Buildings that exceed an occupancy load of 100, that would otherwise be classified as Group U Agricultural, shall be classified per their intended use.

**Exception.** Riding arenas shall have an occupancy load limit of 100.

**C101.3 H-Use.** Agricultural buildings used to store commercial fertilizers, herbicides, or pesticides shall comply with 527 CMR, 780 CMR, and M.G.L. c. 132B with its associated regulations, as applicable.
**C102.3** Delete.

**TABLE C102.1** Add a second footnote (b) to **ALLOWABLE AREA.** This footnote is to read as follows:
b. Greenhouses that comply with snow-load requirements are exempt from the area requirements set forth in C102.

**APPENDIX D FIRE DISTRICTS** (Not adopted)
**APPENDIX E SUPPLEMENTARY ACCESSIBILITY REQUIREMENTS** (Not adopted)
**APPENDIX F RODENTPROOFING (Adopted)**
**APPENDIX G FLOOD-RESISTANT CONSTRUCTION IN COASTAL DUNES**
(Adopted but replaced in its entirety with the following)
**G301.1 General.** Work subject to the requirements of this appendix shall be designed by a *registered design professional*. Work located in both *flood hazard areas* and *coastal dunes* shall meet the requirements for both areas. Where requirements are duplicative the more stringent requirement shall apply.
**G301.2 Construction Documents.** *Construction documents* per Section 1612.5 shall be submitted as applicable for work in *coastal dunes*. *Construction documents* shall indicate proposed details of floor, wall, foundation support components, loading computations, and other essential technical data used to meet the requirements of this appendix.. In addition and as part of the *permit* application for construction in *coastal dunes* the *building official* shall require submission of one of the *construction documents* specified in (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 must 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).

**G301.3 Elevation of Structures** in **Coastal Dunes.** 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 with the exception of pilings or pile caps 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 and Wetlands Protection regulations, 310 CMR 10.21 through 10.35. For lateral additions 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 or pile caps 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 and the Wetlands Protection regulations at 310 CMR 10.21 through 10.35. Enclosures are not permitted below the lowest horizontal structural member of the lowest floor.

**G301.4 Foundations.** Foundations shall be designed in accordance with Section 18, ASCE 7 and ASCE 24. Anchorage of buildings and *structures* shall be designed and connected to resist flotation, collapse or permanent lateral movement due to structural loads and stresses from flooding equal to the base flood. Foundations for work meeting the elevation requirements of Section G301.3 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.

**APPENDIX H SIGNS (Adopted)**
**APPENDIX I PATIO COVER (Adopted)**
**APPENDIX J GRADING (Adopted)**
**APPENDIX K ADMINISTRATIVE PROVISIONS** (Not adopted)
**APPENDIX L EARTHQUAKE RECORDING INSTRUMENTATION** (Not adopted)
**APPENDIX M TSUMANI-GENERATED FLOOD HAZARD** (Not adopted)
**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 of 780 CMR 51 (Residential Code).

**AA103.2 Large area and high energy use buildings**. All buildings over 100,000 sq ft, and new supermarkets, laboratories and conditioned warehouses over 40,000 sq. ft. shall

comply with 780 CMR 13 and shall demonstrate energy use per square foot 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.

**AA103.3 Other new buildings.** New buildings not covered in AA103.1 and AA103.2 shall comply with 780 CMR 13 or 780 CMR 51-Chapter 11 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 or 780 CMR 51-Chapter 11 shall be used as applicable based on the use and occupancy of the building.