CHAPTER 34: EXISTING BUILDING CODE

PART 1—SCOPE AND APPLICATION SECTION 101 SCOPE AND GENERAL REQUIREMENTS

[A] 101.1 Revise section as follows.

[A] 101.1 Title. These regulations shall be known as the *Existing Building Code of Massachusetts*, hereinafter referred to as 780 CMR 34.00

101.2 Scope. The provisions of the *International Existing Building Code*-2021 shall apply to the repair, alteration, change of occupancy, addition to and relocation of existing buildings.

NOTES:

1. If requirements in 780 CMR 34.00 conflict with similar requirements in 780 CMR 1.00, then 780 CMR 1.00 controls.

2. When 780 CMR 34.00 references requirements in other I-Codes, see 780 CMR 1.00 for guidance on how to use those I-Codes.

3. Requirements in 780 CMR 34.00 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 1.00.

4. Any new building system or portion thereof shall conform to 780 CMR for new construction to the fullest extent practicable. However individual components of an existing building system may be repaired or replaced without requiring that system to comply fully with 780 CMR unless specifically required by this code.

104.2.1 Replace section with the following:

104.2.1 Determination of substantially improved or substantially damaged existing buildings and structures in flood hazard areas and substantial repair of a foundation.
For applications for reconstruction, rehabilitation, repair, alteration, addition or other improvement of existing buildings or structures located in flood hazard areas, the building official shall determine where the proposed work constitutes substantial improvement or repair of substantial damage or substantial repair of a foundation. Where the building official determines that the proposed work constitutes substantial improvement or repair of substantial damage or substantial repair of a foundation, and where required by this code, the building official shall require the building to meet the requirements of Section 1612 of the International Building Code.

104.2.2.1 Building Investigation and Evaluation. Revise section as follows.

For any proposed work regulated by 780 CMR 34.00 and subject to section 107 of 780 CMR, 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 780 CMR 34.00. 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.

104.10.1 Replace section with the following:

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 780 CMR without the granting of a variance to such provisions by the Building Code Appeals Board.

104.12 Compliance Alternative. Add section as follows.

Where compliance with the provisions of the code for new construction, required by 780 CMR 34.00, 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 780 CMR 34.00, 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 noncompliance or partial compliance with the requirements of 780 CMR 34.00, 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 noncompliance remain, the permit applicant shall have the remedies prescribed by section 113 of 780 CMR.

SECTION 202 GENERAL DEFINITIONS

CODE OFFICIAL. See 780 CMR 2.00, 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. See 780 CMR 2.00, registered design professional

ROOF RECOVER. The process of installing an additional roof covering over a prepared existing roof covering.

301.1 Applicability. Add the following sentence to end of section.

Automatic sprinkler systems may be required by M.G.L. c. 148, §§ 26A, 26A1/2, 26G, 26G1/2, 26H, or 26I; or by M.G.L. c. 272, §§ 86 through 86D. See sections 101.4.5 and 903.2 of 780 CMR for additional guidance.

302.3 Existing materials. Add the following section and table.

> **302.3.1** The values contained in Table 302 shall be used as material property values of the existing material listed therein, unless values are obtained from tests, specified by other provisions in this chapter, or values are used, based on available historical information for a particular type of masonry construction, prevailing codes and standards, and assessment of existing conditions.

TABLE 302 MATERIALPROPERTY VALUES

Symbol/Notation	Description	MaximumValue	Notes
f'_m	See Section A104	300 psi	Per section A108.3
Em	Elastic Modulus in Compression	550,000 psi	Based on f'_m = 1,000 psi
f'_{sp}	See Section A104	0 psi	-
v_m	Masonry with running bond lay-up	20 psi	-
v_m	Masonry, fully grouted, with a lay-up other than running bond	20 psi	-
v_m	Masonry, partially grouted or ungrouted, with a lay-up other than running bond	10 psi	-

Add the following sections.

302.6 Masonry Parapets. The following exception applies to requirements in 780 CMR 34.00 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 sections 503.6 and 706.3.1 of 780 CMR 34.00 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 sections 503.12 and 706.3.2 of 780 CMR 34.00 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 145 mph and the building is Risk Category IV in accordance with Table 1604.5 of 780 CMR.

EXCEPTION: Buildings that have been demonstrated to comply with the wind load provisions in ASCE 7-88 or later editions.

302.8 Structural Requirements Pertaining to Major Alterations.

1. Structural requirements required by sections 503.8 and 906.5 of 780 CMR 34.00 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 sections 503.6 and 906.6 of 780 CMR 34.00 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.

3. Structural requirements required by sections 503.10 and 906.7 for unreinforced masonry partitions shall apply to buildings in seismic design category B in addition to categories C, D, E, and F found in these sections.

[BS] 304.3.2 Compliance with reduced seismic forces. Add the following exceptions.

EXCEPTIONS:

1. 780 CMR using 50% of prescribed forces when directed here by section 503.4 and 805.3, provided there is no substantial structural alteration.

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%.

SECTION 307 SMOKE ALARMS

Revised sections as follows.

307.1 Fire Detection. Where an *alteration*, *addition*,*change of occupancy* or relocation of a building is made to an *existing building* or structure of a Group R and I-1 occupancy, the *existing building* shall be provided with smoke detection/alarms in accordance with Section 907 of the *International Building Cod*e

Delete exception.

Add sections as follows.

307.1.1: When a dwelling unit has more than 50% of the total combined surface area of the walls and/or ceilings open to framing, then the entire dwelling unit shall be provided with smoke detectors/alarms in accordance with Section 907 of the *International Building Code*.

307.1.2: When a dwelling unit has 50% or less of the total combined surface area of the walls and/or ceilings open to framing, or the work is outside of the dwelling unit, the fire protection shall be maintained at the level provided but shall not be less than required by 527 CMR 1.00.

307.2 Fire Protection Systems in R-2 Uses Which are not Currently Equipped with Sprinklers. When 780 CMR 34.00 requires a smoke detection system in an R-2 Use and does not additionally require an NFPA 13, 13R, or 13D sprinkler system to be installed throughout the building, then subsections 307.2.1 through 307.2.3.1 shall apply.

307.2.1 Heat Detection. If a building fire alarm system is provided, a heat detector shall be provided inside each dwelling unit within six feet of the entrance door servicing common exit areas. 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.

EXCEPTION: Buildings containing three units or fewer and not provided with a building fire alarm system that comply with 307.2.3.1.

307.2.2 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 any common area servicing the R-2 Use of a mixed use building.

EXCEPTION: Buildings containing three units or fewer and not provided with a building fire alarm system that comply with 302.10.3.1.

307.2.3 Dwelling Unit Detection. Interconnected dwelling unit smoke detection shall sound within that dwelling unit only.

EXCEPTION: For buildings of three stories or fewer used exclusively as R-2 Use with six 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. Heat detection shall be provided inside each dwelling unit within six 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.

307.2.3.1 Buildings with Three Dwelling Units or Fewer. In buildings containing 3 or fewer dwelling units which are not protected with sprinklers and which are not provided with a building fire alarm system, each dwelling unit shall have additional interconnected smoke alarm/detector on the stairway side of all doors leading to common interior stairways. If there is a common basement, a separate interconnected system of smoke detectors/alarms, including smoke detectors/alarms on the stairway side of all doors leading to interior stairways, shall be provided to serve the basement level only.

308.1 Carbon monoxide detection. Change the *International Fire Code* or Section R315 of the *International Residential Code to* Section 915 of the *International Building Code*.

Add following exception.

4. When a dwelling unit has more than 50% of the total combined surface area of the walls and/or ceilings its walls and ceilings open to framing, then the entire dwelling unit shall be provided with carbon monoxide protection in accordance with Section 915 of the *International Building Code*.

Add the following section.

308.2 Change in Occupancy Classification to R, I, or E-Use. Notwithstanding other requirements in 780 CMR 34.00, see applicable provisions of 527 CMR 1.00 for certain carbon monoxide detection requirements when a change of occupancy classification to R, I, or E-Use occurs.

Add following sections.

405.1.1 Repairs to structural concrete. Repairs to structural concrete elements in accordance with this section and ACI 562 shall be permitted. The evaluation, design of repairs to earthquake damage, or rehabilitation of elements of the seismic force-resisting systems shall be in compliance with section 304.3.

405.2.1.2 Repairs for Less than Substantial Damage due to Snow Load Effects. Damaged 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 16.00. 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] 502.4 Existing structural elements carrying gravity load. Delete the words *in design dead, live or snow load, including snow drift effects, of more than 5 percent* from first sentence and **add** the following sentence to end of section.

The increase in gravity loads or decrease in capacity shall account for the cumulative effects of additions and or alterations since original construction.

Add the following exception.

2. Structural elements whose demand capacity ratio is not increased by more than 5%.

Revise section as follows.

[BS] 503.3 Existing structural elements carrying gravity load.

Any existing gravity load-carrying structural element for which an *alteration* causes an increase in design gravity load shall be replaced or altered as needed to carry the gravity loads required by the *International Building Code* for new

structures. Any existing gravity load-carrying structural element whose gravity load-carrying capacity is decreased as part of the *alteration* shall be shown to have the capacity to resist the applicable design required by the *International Building Code* for new structures. The increase in gravity loads or decrease in capacity shall account for the cumulative effects of additions and or alterations since original construction.

Exceptions:

Add the words *Insulation shall not be added such that it increases the thermal factor Ct in accordance with ASCE 7-16 Table 7.3-2* to the end of exception number 2 and **add** exception number 3.

3. Structural elements whose demand capacity ratio is not increased by more than 5%.

[BS] 503.7 Anchorage for concrete and reinforced masonry walls. Add B to the Seismic Design Categories.

Revise sections as follows.

[BS] 503.8 Anchorage for unreinforced masonry walls in major alterations. Where the *work area* exceeds 50 percent of the building area, the building is assigned to Seismic Design B, C, D, E, or F, the alteration work shall include installation of wall anchors for exterior unreinforced masonry walls to resist out-of-plane seismic forces specified in Section A113.1.3 of this code at the floor and roof lines, unless an evaluation demonstrates compliance of existing wall anchorage.

[BS] 503.9 Bracing for unreinforced masonry parapets, chimneys, and appendages in major alterations. Where the *work area* exceeds 50 percent of the building area, and where the building is assigned to Seismic Design Category B, C, D, E or F, parapets constructed of unreinforced masonry, unreinforced masonry chimneys and exterior wall appendages shall be removed, have bracing installed, or anchored as needed to resist out-of-plane seismic forces, unless an evaluation demonstrates compliance of such items. Reduced seismic forces shall be permitted.

EXCEPTIONS:

1. 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.
2. Chimneys braced by or anchored to the roof structure and extending less than 4 feet above it.

[BS] 503.10 Anchorage of unreinforced masonry partitions in major alterations. Where the *work area* exceeds 50 percent of the building area, and where the building is assigned to Seismic Design Category B, C, D, E or F, unreinforced masonry partitions and nonstructural unreinforced masonry walls within the *work area* and adjacent to egress paths from the *work area* shall be anchored, removed or altered to resist out-of-plane seismic forces specified in Section A113.1.3 of this code, unless an evaluation demonstrates compliance of such items.

Revise section as follows.

[BS] 503.12 Roof diaphragms resisting wind uplift loads in high-wind regions. For Risk Category III and IV Buildings where the intended *alteration* requires a permit for reroofing and involves removal of roofing materials from more than 50 percent of the roof diaphragm of a building or section of a building within a 5-year period located where the ultimate design wind speed is greater than 130 mph (58 m/s) in accordance with Table 1604.11 of 780 CMR, connections of the roof diaphragm to roof framing members, including the building perimeter, shall be evaluated for the wind uplift loads specified in Section 1609 of the *International Building Code*. If the connections in their current condition are not capable of resisting 75 percent of those wind uplift loads, they shall be replaced or strengthened in accordance with the loads specified in Section 1609 of the *International Building Code*.

Exception: Buildings that have been demonstrated to comply with the wind load provisions in 780 CMR 5th Edition or later editions.

Add section as follows.

702.8 Additions and Replacements of Exterior Wall Coverings and Exterior Wall Envelopes. Where an exterior wall covering or exterior wall envelope is added or replaced, compliance with sections 805.2 and 805.3 of this code is required.

Add the following points.

[BS] 705.2.1 Roof recover.

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, in accordance with 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.

Revise section as follows.

[BS] 706.2 Addition or replacement of roofing or replacement of equipment. Any existing gravity load-carrying structural element for which an *alteration* causes an increase in design gravity load shall be replaced or altered as needed to carry the gravity loads required by the *International Building Code* for new structures. The increase in gravity loads shall account for the cumulative effects of additions since original construction.

Exceptions:

Add the words *Insulation shall not be added such that it increases the thermal factor C_t in accordance with ASCE 7-16 Table 7.3-2 without checking capacity of existing structure* to end of exception number 2 and **add** exception number 3.

3. Structural elements whose demand capacity ratio is not increased by more than 5%.

Revise section as follows.

[BS] 706.3.2 Roof diaphragms resisting wind uplift loads in high-wind regions. For Risk Category III and IV Buildings where roofing materials are removed from more than 50 percent of the roof diaphragm or section of a building within a 5-year period located where the ultimate design wind speed, V_{ult}, determined in accordance with Table 1604.11 of 780 CMR, is greater than 130 mph (58 m/s), connections of the roof diaphragm to roof framing members, including the building perimeter shall be evaluated for the wind uplift loads specified in the *International Building Code*. If the connections in their current condition are not capable of resisting 75 percent of those wind uplift loads, they shall be replaced or strengthened in accordance with the loads specified in the *International Building Code*.

Exception: Buildings that have been demonstrated to comply with the wind load provisions in 780 CMR 5th Edition or later editions.

803.2 Automatic sprinkler systems. Add exception as follows.

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 a single unit; and
2. No other permits for Level 2 work have been issued for the building in the previous three years.

803.2.2 Groups Add R-3.

Exception Delete the word *municipal* before the word *water*.

Delete the word *municipal* before the word *water* in the following sections.

803.2.4 Windowless stories. Delete the word *municipal* before the word *water*.

803.2.5 Other required automatic sprinkler systems. Point number 2**. Delete** the word *municipal* before the word *water*.

Replace section as follows.

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

Revise section as follows.

[BS] 805.2 Existing structural elements carrying gravity loads. Any existing gravity load-carrying structural element for which an *alteration* causes an increase in design gravity load shall be replaced or altered as needed to carry the gravity loads required by the *International Building Code* for new structures. Any existing gravity load-carrying structural element whose gravity load-carrying capacity is decreased as part of the *alteration* shall be shown to have the capacity to resist the applicable design gravity load required by the *International Building Code* for new structures.

Exceptions: Retain exception number 1 **revise** number 2 and **add** number 3 as follows.

Buildings in which the increased dead load is attributable to the addition of a second layer of roof covering weighing 3 pounds per square foot (0.1437 kN/m^2) or less. Insulation shall not be added such that it increases the thermal factor C_t in accordance with ASCE 7-16 Table 7.3-2 without checking capacity of existing structure.

Structural elements whose demand capacity ratio is not increased by more than 5%.

Revise section as follows.

[BS] 805.3 Existing structural elements carrying lateral loads. Except as permitted by Section 503.13, where the *alteration* increases design lateral loads, results in prohibited structural irregularity as defined in ASCE 7, decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall meet the requirements of Sections 1609 and 1613 of the *International Building Code*. Reduced seismic forces shall be permitted.

Exception:

1. Any existing lateral load-carrying structural element whose demand capacity ratio with the alteration considered is not more than 10 percent greater than its demand-capacity ratio with the alteration ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with *International Building Code* Sections 1609 and 1613. Reduced seismic forces shall be permitted. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction.

Add exception as follows.

2. Buildings in which the increase in the demand-capacity ratio is due entirely to the addition of rooftop-supported mechanical equipment individually having an operating weight less than 400 pounds (181.4 kg) and where

the total additional weight of all rooftop equipment placed after initial construction of the building is less than 10 percent of the roof dead load. For purposes of this exception, "roof" shall mean the roof level above a particular story.

904.1.1 High-rise buildings. Delete the *word* municipal before the word *water*.

Revise sections as follows.

[BS] 906.4 Anchorage for concrete and reinforced masonry buildings. For any building assigned to Seismic Design Category B, C D, E or F with a structural system that includes concrete or reinforced masonry walls with a flexible roof diaphragm, the *alteration* work shall include installation of wall anchors at the roof line of all subject buildings and at the floor lines of unreinforced masonry buildings unless an evaluation demonstrates compliance of existing wall anchorage. Reduced seismic forces shall be permitted.

[BS] 906.5 Anchorage for unreinforced masonry walls. For any building assigned to Seismic Design Category B, C, D, E or F with exterior unreinforced masonry walls, the *alteration* work shall include installation of wall anchors to resist out-of-plane seismic forces specified in Section A113.1.3 of this code at the roof and floor line, unless an evaluation demonstrates compliance of existing wall anchorage.

[BS] 906.6 Bracing for unreinforced masonry parapets, chimneys and appendage. Parapets constructed of unreinforced masonry, unreinforced masonry chimneys and exterior wall appendages in buildings assigned to Seismic Design Category B, C, D, E or F shall be removed, have bracing installed, as needed to resist the reduced *International Building Code*-level seismic forces in accordance with Section 304.3, unless an evaluation demonstrates compliance of such items. Use of reduced seismic forces shall be permitted.

EXCEPTIONS:
1. 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.
2. Chimneys braced by or anchored to the roof structure and extending less than 4 feet above it.

[BS] 906.7 Anchorage of unreinforced masonry partitions. Where the building is assigned to Seismic Design Category B, C, D, E or F, unreinforced masonry partitions and nonstructural unreinforced masonry walls within the *work area* and adjacent to egress paths from the *work area* shall be anchored, removed, or altered to resist out-of-plane seismic forces specified in Section A113.1.3 of this code, unless an evaluation demonstrates compliance of such items.

Revise sections as follows.

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 a special use or occupancy as found in 780 CMR 4.00, 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.

1011.2.1 Fire sprinkler system. Delete exceptions.

[BS] 1103.1 Additional gravity loads. Any existing gravity load-carrying structural element for which an *addition* and its related *alterations* cause an increase in design gravity load shall be replaced or altered as needed to carry the gravity loads required by the *International Building Code* for new structures. Any existing gravity load-carrying structural element whose gravity load-carrying capacity is decreased as part of the *addition* and its related *alterations* shall be considered to be an altered element subject to the requirements of Section 806.2. Any existing element that will form part of the lateral load path for any part of the *addition* shall be considered to be an existing lateral load-carrying structural element subject to the requirements of Section 1103.3.

Exception: Add exception number 2.
Structural elements whose demand capacity ratio is not increased by more than 5%.

CHAPTER 13 PERFORMANCE COMPLIANCE METHODS Delete chapter.

CHAPTER 15 CONSTRUCTION SAFEGUARDS Delete chapter and replace with note that construction safeguards *shall comply with Chapter 33 of the International Building Code.*