



**Town Of Longmeadow
Community House
Roof and Balustrade Replacement**

735 Longmeadow Street
Longmeadow, MA
TOL-7-011
Marsh 14, 2019

**780 CMR 9th Edition Chapter 34.00 Analysis and Report
Prescriptive Compliance Method**

- As per the 9th Edition of 780 CMR 34.00, effective 1/01/18, the Existing Building Code in Massachusetts is, by adoption, the International Existing Building Code-2015 (IEBC-2015) with Massachusetts amendments.
- As per 780 CMR Chapter 34.00 Section 101.1, these regulations shall be known as the Existing Building Code of Massachusetts, hereinafter referred to as 780 CMR 34.00.
- The proposed work is controlled construction as per 780 CMR Section 107. This written report details the results of an investigation and evaluation of the existing building in accordance with the stipulations of 780 CMR 34.00 Section 101.4.2.1.
- This report assumes that there are no outstanding notices of violations or other orders from the building official concerning the condition or use of the subject building. (780 CMR Section 102.6.4 Existing Means of Egress, Lighting and Ventilation).
- This report is intended to be submitted to the building official as a necessary precondition of the issuance of a building permit.

Reference Data

This building is a contributing element to a historic district. As such it is subject to the provisions of Section 408 of the Massachusetts version of the 2015-IEBC. Therefore, the roofing work on this project is exempt from a requirement that it provide full compliance with the energy code's R-value requirements for roof replacement work.

The building is two story building with a full basement.
Constructed in early 1921, it would be Type IIIB construction type per 780 CMR 9th edition (concrete structural frame, masonry exterior walls, wood roof frame less than 20' above the floor below).

The building is currently occupied as a Multipurpose building

Lower Level:
Business – B Municipal offices

First Floor:
Assembly – A An auditorium that can be divided into smaller spaces. There is also a kitchen. The town has a posted occupancy of 200 occupants. There is also a municipal office on the first floor.

Second Floor:
Business – B A room is occupied for a dance studio.

The building is non-sprinkled.
There will be a Change of Occupancy.

Project Description

The project scope includes the following Work:

The decorative balustrade along the perimeter of a portion of the roof on the building's main facade is to be replaced. Ancillary related work scope includes replacement of a portion of the adjacent flat roof which is to be stripped down to the roof deck and have the above deck roof system replaced. New insulation will include the addition of a continuous layer of polyisocyanurate foam board above the roof deck (as thick as allowed by the historic roof edge profile) and insulation blown-in from above into the roof rafter/ceiling cavity under the roof deck.

The affected roof area is approximately 1,850 sf.

Occupancy Category of Building or Structure (from 780 CMR, Table 1604.5)

- Occupancy Category II

Seismic Design Category (from 780 CMR Section 1613.3.5)

- Table 1613.3.5 (1): B
- Table 1613.3.5 (2): B

Chapter 1 - Scope and Administration

Applicable

Part 1- Scope and Application

Section 101 General

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

101.2 Scope: **Applicable**
The provisions of the *International Existing Building Code of Massachusetts-2015* shall apply to the repair, alteration, change of occupancy, addition to and relocation of existing buildings.

- Notes:
- If requirements in 780 CMR 34.00 conflict with similar requirements in 780 CMR 1.00 *Scope and Administration*, then 780 CMR 1.00 controls.
 - When 780 CMR 34.00 references requirements in other I-Codes, see 780 CMR 1.00 *Scope and Administration* for guidance on how to use those I-Codes.
 - 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 *Scope and Administration*.

101.3 Intent: **Applicable**
The intent of this code is to provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements to safeguard the public health, safety and welfare insofar as they are affected by the *repair, alteration, change of occupancy, addition and relocation of existing buildings*.

101.4 Applicability: **Applicable**
This code shall apply to the *repair, alteration, change of occupancy, addition and relocation of existing buildings*, regardless of occupancy, subject to the criteria of Sections 101.4.1 and 101.4.2.

101.4.1 Buildings Not Previously Occupied: **Not Applicable**
A building or portion of a building that has not been previously occupied or used for its intended purpose in accordance with the laws in existence at the time of its completion shall be permitted to comply with the provisions of the laws in existence at the time of its original permit unless such permit has expired. Subsequent permits shall comply with the 780 CMR 1.00 through 35.00 or 780 CMR 51.00, as applicable, for new construction.

101.4.2 Buildings Previously Occupied: **Applicable**
The legal occupancy of any building existing on the date of adoption of this code (10/2017) shall be permitted to continue without change, except as is specifically covered in this code, 527 CMR or 780 CMR, or as is deemed necessary by the *code official* for the general safety and welfare of the occupants and the public.

101.5 Safeguards During Construction: **Applicable**
Construction work covered in this code, including any related demolition, shall comply with the requirements of Chapter 15.

101.6 Appendices: **Applicable**
The *code official* is authorized to require rehabilitation and retrofit of buildings, structures or individual structural members in accordance with the appendices of this code if such appendices have been individually adopted.

101.7 Correction of Violations of Other Codes: **Applicable**
Repairs or alterations mandated by any property, housing, or fire safety maintenance code or mandated by any licensing rule or ordinance adopted pursuant to law shall conform only to the requirements of that code, rule, or ordinance and shall not be required to conform to this code unless the code requiring such *repair or alteration* so provides.

Part 2-Administration and Enforcement

Section 104 Duties and Powers of Code Official **Applicable**
104.2.1 Building Investigation and Evaluation: **Applicable**
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.

In brief, the following table indicates the effects of the proposed work on the above listed systems:

| | |
|----------------------------------|-------------------|
| Structural Design Gravity Load | -None |
| Structural Lateral Load Capacity | -None |
| Means of Egress | -None |
| Fire Protection | -None |
| Fire Resistive Construction | -None |
| Energy Conservation | -Will be Improved |
| Lighting | -None |
| Hazardous Materials | -None |
| Accessibility | -None |
| Ventilation | -None |

The following report expands on the above list and documents the results of the investigation and evaluation of the subject building or structure, along with any proposed compliance alternatives.

104.10.1 Flood Hazard Areas: **Not Applicable**
For existing buildings located in flood hazard areas.... Refer to Sections 404.5 and 408.3.

104.11 Compliance Alternative: **Not Applicable**
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.

- No compliance alternatives requested

Chapter 2 - Definitions

Applicable

Chapter 3 - Provisions for All Compliance Methods

Applicable

Section 301 Administration

301.1 General: **Applicable**
The *repair, alteration, change of occupancy, addition or relocation of all existing buildings* shall comply with one of the methods listed in Sections 301.1.1 through 301.1.3 as selected by the applicant.

- The work of this project shall comply with Section 301.1.1 **Prescriptive compliance method, thus complying with Chapter 4 of this code.**

Sections 301.1.1 through 301.1.3 shall not be applied in combination with each other.

Where this code requires consideration of the seismic-force-resisting system of an existing building subject to *repair, alteration, change of occupancy, addition or relocation of existing buildings*, the seismic evaluation and design shall be based on Section 301.1.4 regardless of which compliance method is used.

Exception: Subject to the approval of the *code official*, alterations complying with the laws in existence at the time the building or the affected portion of the building was built shall be considered in compliance with the provisions of this code unless the building is undergoing more than a limited structural *alteration* as defined in Section 907.4.4. New structural members added as part of the *alteration* shall comply with 780 CMR. **Applicable**
Alterations of existing buildings in flood hazard areas shall comply with Section 701.3. **Not Applicable**

Automatic sprinkler systems may be required by M.G.L. c. 148, Sections 26A, 26A ½, 26G, 26G ½, 26H, or 26I; or by M.G.L. c. 272 Sections 86 through 86D. See sections 101.4.5 and 903.2 of 780 CMR for additional guidance. **See "Other Pertinent Regulations" below**

301.1.1 Prescriptive Compliance Method: **Applicable**
Repairs, alterations, additions and changes of occupancy complying with Chapter 4 of this code in buildings complying with the 527 CMR shall be considered in compliance with the provisions of this code.

301.1.2 Work Area Compliance Method: **Not Applicable for Prescriptive Compliance Method**

301.1.3 Performance Compliance Method: **Not Applicable for Prescriptive Compliance Method**

301.1.4 Seismic Evaluation and Design Procedures: **Applicable**
The seismic evaluation and design shall be based on the procedures specified in 780 CMR, ASCE 41 and the procedures contained in Appendix A of this code shall be permitted to be used as specified in Section 301.1.4.2.

301.1.4.1 Compliance with IBC-Level Seismic Forces: **Applicable**
Where compliance with the seismic design provisions of 780 CMR is required, the criteria shall be in accordance with one of the following:

1. 780 CMR using 100% of the prescribed forces. **Applicable**
2. Compliance with ASCE 41, using a Tier 3 procedure and the two-level performance objective in Table 301.1.4.1 for the applicable risk category. **Not Applicable**

301.1.4.2 Compliance with Reduced IBC-Level Seismic Forces: **Not Applicable**
Where seismic evaluation and design is permitted to meet reduced 780 CMR seismic force levels, the criteria used shall be in accordance with one of the following:

- 780 CMR using 75% of the prescribed forces. **Not Applicable**
Exception 1: 780 CMR using 50% of prescribed forces when directed here by Section 807.5.2, provided there is no substantial structural alteration, as defined by 907.4.2
Exception 2: 780 CMR using either:
 - 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
 - 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%.

2. Structures or portions of structures that comply with the requirements of the applicable chapter in Appendix A, as specified in Items 2.1 through 2.5 below and subject to the limitations of the respective Appendix A chapters, shall be deemed to comply with this section. **Not Applicable**

2.1 The seismic evaluation and design of unreinforced masonry bearing wall buildings in Risk Category I or II are permitted to be based on the procedures specified in Appendix Chapter A1. **Not Applicable**

2.2 Seismic evaluation and design of the wall anchorage system in reinforced concrete and reinforced masonry wall buildings with flexible diaphragms in Risk Category I or II are permitted to be based on the procedures specified in Chapter A2. **Not Applicable**

2.3 Seismic evaluation and design of cripple walls and sill plate anchorage in residential buildings of light-frame wood construction in Risk Category I or II are permitted to be based on the procedures specified in Chapter A3. **Not Applicable**

2.4 Seismic evaluation and design of soft, weak, or open-front wall conditions in multiunit residential buildings of wood construction in Risk Category I or II are permitted to be based on the procedures specified in Chapter A4. **Not Applicable**

2.5 Seismic evaluation and design of concrete buildings assigned in Risk Category I, II, or III are permitted to be based on the procedures specified in Chapter A5. **Not Applicable**

3. ASCE 41, using the performance objective in Table 301.1.4.2 for the applicable risk category. **Not Applicable**

Section 302 General Provisions

302.1 Applicability: **Applicable**
The provisions of Section 302 apply to all alterations, repairs, additions, relocations of structures and changes of occupancy regardless of compliance method.

302.3 Existing Materials: **Applicable**
Materials already in use in a building in compliance with requirements or approvals in effect at the time of their erection or installation shall be permitted to remain in use unless determined by the building official to be unsafe.

302.4 New and Replacement Materials: **Applicable**
Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for *repairs and alterations*, provided no unsafe condition is created. Hazardous materials shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

302.5 Occupancy and Use: **Applicable**
When determining the appropriate application of the referenced sections of this code, the occupancy and use of a building shall be determined in accordance with Chapter 3 of 780 CMR.

302.6 Masonry Parapets: **Not Applicable**
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 Roof Work: **Not Applicable**

1. Structural requirements of parapets of unreinforced masonry required by section 403.5 and 707.3.1 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 sections 403.5 and 707.3.1 of 780 CMR 34.00. **Not Applicable**

2. Structural requirements of roof diaphragms resisting wind loads in high-wind regions required by sections 403.8 and 707.3.2 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 150 mph and the building is Risk Category IV in accordance with Table 1604.5 of 780 CMR. **Not Applicable**

302.8 Structural Requirements Pertaining to Major Alterations: **Not Applicable**
1. Structural requirements required by section 403.6 and 907.4.5 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 section 403.7 and 907.4.6 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 in these sections.

302.9 Provisions for Change in Occupancy Classification to R, I or E Use: **Not Applicable**

302.10 Fire Detection Systems in R-2 Uses Which Are Not Currently Equipped with Sprinklers: **Not Applicable**
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 system installed throughout the building, then subsections 302.10.1 through 302.10.3 shall apply.

Chapter 4 - Prescriptive Compliance Method

Applicable

Section 401 General

401.1 Scope: **Applicable**

The provisions of this chapter shall control the *alteration, repair, addition and change of occupancy or relocation of existing buildings and structures, including historic buildings and structures* as referenced in Section 301.1.1.

Exception: Existing bleachers, grandstands and folding and telescopic seating shall comply with ICC 300. **Not Applicable**

401.1.1 Compliance with Other Methods: **Applicable**
Alterations, repairs, additions and changes of occupancy to or relocation of *existing buildings* shall comply with the provisions of this chapter or with one of the methods provided in Section 301.1.

401.2 Building Materials and Systems: **Applicable**
Building Materials and systems shall comply with the requirements of this section.

401.2.1 Existing Materials: **Applicable**
Materials already in use in a building in compliance with requirements or approvals in effect at the time of their erection or installation shall be permitted to remain in use unless determined by the building official to be unsafe per Section 115.

401.2.2 New and Replacement Materials: **Applicable**
Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for *repairs and alterations*, provided no hazard to life, health or property is created. Hazardous materials shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

401.2.3 Existing Seismic Force-Resisting Systems: **Not Applicable**
Where the existing seismic force-resisting system is a type that can be designated ordinary, values of R, Omega_{ps}, and C_u for the existing seismic force-resisting system shall be those specified by 780 CMR for an ordinary system unless it is demonstrated that the existing system will provide performance equivalent to that of a detailed, intermediate or special system.

401.3 Dangerous Conditions: **Applicable**
The building official shall have authority to require the elimination of conditions deemed dangerous.

Section 402 Additions: **Not Applicable**

Section 403 Alterations: **Not Applicable**

Section 404 Repairs: **Applicable**

404.1 General: **Applicable**
Buildings and structures, and parts thereof, shall be repaired in compliance with Section 401.2 and 404. Work on nondamaged components that is necessary for the required *repair* of damaged components shall be considered part of the *repair* and shall not be subject to the requirements for *alterations* in this chapter. Routine maintenance required by Section 401.2, ordinary repairs exempt from permit in accordance with Section 105.2, and abatement of wear due to normal service conditions shall not be subject to the requirements for repairs in this section.

404.2 Substantial Structural Damage to Vertical Elements of the Lateral Force-Resisting System: **Applicable**
A building that has sustained *substantial structural damage* to the vertical elements of its lateral force-resisting system shall be evaluated and repaired in accordance with the applicable provisions of Sections 404.2.1 and 404.2.3.

Exception 1: **Not Applicable**
Buildings assigned to Seismic Design Category A, B or C whose substantial structural damage was not caused by earthquake need not be evaluated or rehabilitated for load combinations that include earthquake effects.

Exception 2: **Not Applicable**
One- and two-family dwellings need not be evaluated or rehabilitated for load combinations that include earthquake effects.

404.2.1 Evaluation: **Not Applicable**
The building shall be evaluated by a *registered design professional*, and the evaluation findings shall be submitted to the *building official*. The evaluation shall establish whether the damaged building, if repaired to its predamage state, would comply with the provisions of 780 CMR for wind and earthquake loads.

Wind loads for this evaluation shall be those prescribed in 780 CMR Section 1609. Earthquake loads for this evaluation, if required, shall be permitted to be 75 percent of those prescribed in 780 CMR Section 1613. Alternately, compliance with ASCE 41, using the performance objective in Table 301.1.4.2 for the applicable risk category, shall be deemed to meet the earthquake evaluation requirement.

404.2.2 Extent of Repair for Compliant Buildings: **Not Applicable**
If the evaluation establishes compliance of the predamage building in accordance with Section 404.2.1, then repairs shall be permitted that restore the building to its predamage state.

404.2.3 Extent of Repair for Noncompliant Buildings: **Not Applicable**
If the evaluation does not establish compliance of the predamage building in accordance with Section 404.2.1, then the building shall be rehabilitated to comply with the applicable provisions of 780 CMR for load combinations that include wind or seismic loads. The wind loads for the repair shall be as required by the building code in effect at the time of original construction, unless the damage was caused by wind, in which case the wind loads shall be as required by 780 CMR. Earthquake loads for this rehabilitation design shall be those required for the design of the predamage building, but not less than 75 percent of those prescribed in 780 CMR Section 1613. New structural members and connections required by this rehabilitation design shall comply with the detailing provisions of 780 CMR for new buildings of similar structure, purpose and location. Alternatively, compliance with ASCE 41, using the performance objective in Table 301.1.4.2 for the applicable risk category, shall be deemed to meet the earthquake evaluation requirement.

404.3 Substantial Structural Damage to Gravity Load-Carrying Components: **Not Applicable**
Gravity load-carrying components that have sustained *substantial structural damage* shall be rehabilitated to comply with the applicable provision of 780 CMR for dead and live loads. Snow loads shall be considered if the substantial structural damage was caused by or related to snow load effects. Existing gravity load-carrying structural elements shall be permitted to be designed for live loads approved prior to the damage. If the approved live load is less than that required by Section 1607 of 780 CMR, the area designed for the nonconforming live load shall be posted with placards of *approved* design indicating the *approved* live load. Nondamaged gravity load-carrying components that receive dead, live or snow loads from rehabilitated components shall also be rehabilitated or shown to have the capacity to carry the design loads of the *rehabilitation* design. New structural members and connections required by this rehabilitation design shall comply with the detailing provisions of 780 CMR for new buildings of similar structure, purpose and location.

404.3.1 Lateral Force-Resisting Elements: **Not Applicable**
Regardless of the level of damage to vertical elements of the lateral force-resisting system, if *substantial structural damage* to gravity load-carrying components was caused primarily by wind or earthquake effects, then the building shall be evaluated in accordance with Section 404.2.1 and, if noncompliant, rehabilitated in accordance with Section 404.2.3.

Exception 1: **Not Applicable**

One- and two-family dwellings need not be evaluated or rehabilitated for load combinations that include earthquake effects.

Exception 2: **Not Applicable**
Buildings assigned to Seismic Design Category A, B or C whose substantial structural damage was not caused by earthquake need not be evaluated or rehabilitated for load combinations that include earthquake effects.

404.4 Less than Substantial Structural Damage: **Not Applicable**
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 780 CMR for new buildings of similar structure, purpose and location.

404.4.1 Repairs for Less than Structural Damage due to Snow Load Effects: **Not Applicable**
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: *Structural Design*. 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.

404.5 Flood Hazard Areas: **Not Applicable**
For buildings and structures in *flood hazard areas* established by 780 CMR Section 1612.3, or Section R322 of 780 CMR 51, as applicable, any repair that constitutes *substantial improvement* or repair of *substantial damage* of the existing structure shall comply with the flood design requirements for new construction, and all aspects of the existing structure shall be brought into compliance with the requirements for new construction for flood design.

Section 405 Fire Escapes: **Not Applicable**

Section 406 Glass Replacement and Replacement Windows: **Not Applicable**

Section 407 Change of Occupancy: **Not Applicable**

Section 408 Historic Buildings: **Applicable**

408.1 Historic Buildings: **Applicable**
The provisions of this code that require improvements relative to a building's existing condition or, in the case of repairs, that require improvements relative to a building's predamage condition, shall not be mandatory for historic buildings unless specifically required by this section.

408.2 Life Safety Hazards: **Applicable**
The provisions of this code shall apply to historic buildings judged by the building official to constitute a distinct life safety hazard.

408.3 Flood Hazard Areas: **Not Applicable**
Within *flood hazard areas* established in accordance with 780 CMR Section 1612.3 or Section R322 of 780 CMR 51, as applicable, where the work proposed constitutes *substantial improvement*, the building shall be brought into compliance with 780 CMR Section 1612, or Section R322 of 780 CMR 51, as applicable.

- Exception: *Historic buildings* need not be brought into compliance that are:
- Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places;
 - Determined by the Secretary of the U.S. Department of Interior as contributing to the historical significance of a registered historic district or as a district preliminarily determined to qualify as an historic district; or
 - Designated as historic under a state of local historic preservation program that is approved by the Department of Interior.

Section 409 Moved Structures: **Not Applicable**

Section 410 Accessibility for Existing Buildings: **Not Applicable**
Refer to ACCESSIBILITY COMPLIANCE 521 CMR below for details of design compliance.

Chapter 5 – Classification of Work: **Not Applicable for Prescriptive Compliance Method**

Chapter 6 – Repairs: **Not Applicable for Prescriptive Compliance Method**

Chapter 7 – Alterations-Level 1: **Not Applicable for Prescriptive Compliance Method**

Chapter 8 – Alterations-Level 2: **Not Applicable for Prescriptive Compliance Method**

Chapter 9 – Alterations-Level 3: **Not Applicable for Prescriptive Compliance Method**

Chapter 10 – Change of Occupancy: **Not Applicable for Prescriptive Compliance Method**