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Memo Report

From: W. Mark Cummings, P.E.

To: Mr. Stephen Smith

Subject: Fire Protection & Life Safety Code Assessment: 5 Sherman Street, Portland, ME

As requested, Fire Risk Management, Inc. (FRM) performed a site survey and reviewed the information (drawings) you provided with regards to the current plans for renovating the 1st floor level of the existing apartment building located at 5 Sherman Street in Portland, ME. The focus for this review was to evaluate the fire protection and life safety requirements that would need to be addressed as part of this renovation and to ensure continued compliance with all applicable codes, regulations, and ordinances. The proposed building renovations are to be confined to the first floor of the property and entail combining the two existing apartments at this level into a single, larger apartment that will be occupied by the property owner.

DISCUSSION

A site survey of the property at 5 Sherman St. in Portland was conducted on 04/25/2017, which included discussions with Mr. Stephen Smith; the property owner. The purpose of this site survey, along with a detailed review of the building's floor plan drawings, was to support an assessment of the proposed changes to the building's configuration on the 1st floor level and a subsequent evaluation of the potential impacts on the applicable fire and life safety codes and regulations. The evaluated code requirements for the affected building are primarily based on the review of the drawings provided to FRM that show the proposed renovation plans, along with the results of the site survey. The references used for the fire and life safety codes assessment include the two primary, applicable codes that are currently adopted by the State of Maine, along with the Ordinances and Regulations promulgated by the City of Portland:

1. National Fire Protection Association (NFPA) 101, the *Life Safety Code*[®] (2009 ed.),
2. *Maine Uniform Building and Energy Code* "MUBEC", which is based on the 2009 International Building Code (IBC) with amendments, and inclusive of the International Existing Building Code (IEBC),
3. City of Portland Code of Ordinances, Chapter 10 – *Fire Prevention and Protection*, and
4. City of Portland Fire Department Rules and Regulations, Revised November 28, 2016.

Since the renovations will not represent more than 50 percent of the aggregate area of the building, the IEBC would classify the renovations as a Level 2 alteration. The requirements for a Level 2 alteration are outlined within Chapter 7 of the IEBC. Although the building is considered an existing building, due to the extent of the renovations, compliance with some provisions of the MUBEC are mandated by the IEBC within the renovated first floor (work area).

Located at 5 Sherman Street in Portland, the building is reported to be over 100 years old. The building has an approximate floor area (footprint) of 1,850 ft² and consists of three residential floors above the basement. The second and third floors each consist of a single apartment, which will remain unchanged. The first floor currently includes two separate apartment units, which are to be converted into a single apartment unit.

The following sections provide a general summary of the code review performed on the building, outlining the building's current classification and the fire protection and life safety requirements that are (will be) required by the codes currently adopted by the State of Maine.

Building Information

Building Classification: The building is a 3-story structure above an unoccupied basement level. The first floor will be renovated from two apartment units to a single apartment. The

second floor and third floor each consist of a single apartment unit. The building is considered a Residential Occupancy (R-2), per MUBEC or an Existing Apartment Building, per NFPA 101.

Height and Area: The building is a 3-story structure, approximately 35 ft in height, with approximately 1,850 ft² of area on each level (footprint).

Construction type: The construction of the building appears to meet the classification as a combustibile, unprotected structure; as defined by NFPA as a Type V(000) or MUBEC as Type VB.

There are no minimum construction types required for this building per NFPA 101 and the IEBC does not restrict construction type.

Separation/Corridors: Per NFPA 101, § 31.3.7, there are no specific subdivision requirements for the overall building because of each dwelling unit has access to two separate exits.

The exit stair enclosures that serve the second and third floor units are required to maintain a 1-hour fire separation from the rest of the building as outlined in NFPA 101, which has the more stringent requirement.

Interior Finish: The interior wall and ceiling finishes are permitted to use Class A, B, or C finish materials per NFPA 101 § 31.3.3.2 and MUBEC Table 803.9.

Means of Egress

Occupant Load: Using occupant load factors outlined in the codes for the residential spaces within the building, the following represents the estimated maximum occupant loads for each level of the building:

First floor:	10 occupants
Second floor:	10 occupants
Third floor:	10 occupants

Occupant load estimates are based on a Residential use; 200 SF per occupant as outlined in NFPA 101 Table 7.3.1.2 and MUBEC Table 1004.1.

Number of Exits: **Required:** Based on the occupant load and occupancy type of the building, it is required to have a minimum of two (2) means of egress from each of the occupied (residential) floor levels. A single exit from the basement level is acceptable.

Provided: Two (2) existing stair enclosures serve the second and third floors. The first floor level is also provided with two separate exits.

The first floor is currently provided with three exits. However, with the creation of a single apartment, the third exit is no longer necessary or required. The existing wall of the rear exit enclosure is to be relocated to capture the unused space. The modified wall is required maintain the 1-hour fire resistance rating for the exit enclosure. The wall modification will not affect the existing exit, including no changes to door or stair widths.

A minimum of two (2) means of egress are required from each level of the building per NFPA 101 § 7.4.1.1. These means of egress are required to be properly separated from each other. The proposed number of exits and their separation from one another are easily compliant with the applicable codes.

Egress Capacity: The available exit components from each level of the building, including both the doors and stairs, have an egress capacity that is far greater than the actual building occupant load; with each having the capacity to accommodate more than 100 persons.

Exit Travel Distance Limitations:

Dead end corridor: The codes allow for a dead-end corridor of up to 35 feet (NFPA 101 § 29.2.5.4 and MUBEC 1018.4). There are no dead-end corridors currently included in the proposed plans.

Common path of travel: The codes allow for a common path of exit travel of up to 35 feet (NFPA 101 § 31.2.5.3.2). The maximum common path of travel is not required to include the travel distance within the dwelling unit. Since the first-floor unit has direct access to the exterior there is no common path travel distance. Therefore, the building is compliant with this requirement.

Exit access travel distance: A maximum travel distance from the apartment door to an exit must be no greater than 100 feet, per NFPA 101 § 31.2.6.2. The travel distance within the unit to an exit access door is limited to 75 feet, per NFPA § 31.2.6.1. The first floor is provided with access directly to the exterior and travel distance from within the first-floor unit to an exist is much less than 75 feet.

Egress Lighting and Marking:

Emergency lighting is not required because the building is not more than four stories in height and does not have more than 12 dwelling units, per NFPA 101 § 31.2.9.

Exit signs are not required within dwelling units, per the MUBEC and not required per NFPA § 7.10.1.4 because the occupancy has not changed.

Fire Protection Systems

Fire Sprinkler System: The building is not provided with an automatic fire sprinkler system. Based on the level of alteration, a sprinkler system is not required by the IEBC § 704.2.2, because the first floor (work area) has direct access to the exterior of the building and has less than 30 occupants.

Fire Alarm and Notification System:

The building is not currently provided with a fire alarm/notification system. A fire detection / alarm / notification system is not required per NFPA § 31.3.4.1.1, because the building is not four or more stories in height and does not contain more than 11 dwelling units. Similarly, the IEBC/MUBEC does not require a fire alarm system because there aren't any dwelling units three stories or more above the lowest level of exit discharge.

Smoke alarms (single station smoke detectors) are required by NFPA 101 § 31.3.4.5 and MUBEC § 704.4.3 in all apartments and in the basement. However, both NFPA 101 and the MUBEC permit the existing smoke alarms to be battery powered, which would include the basement, second and third floors. Since the first floor will be fully renovated, the smoke detectors/alarms dwlll be required to be interconnected, hardwired to the building's power, along with having a battery backup. Additionally, the State requires a carbon monoxide (CO) detector to be installed in each bedroom or an area giving access to a bedroom. This applies to the existing apartments as well as the renovated first floor unit.

SUMMARY/RECOMMENDATIONS

Based on our review of the building and the proposed renovation plans provided, the building is currently compliant with the applicable codes. In connection with the renovation of the 1st floor level, it will be necessary to ensure that the modified wall adjacent to the rear exit enclosure will continue to provide a 1-hour fire separation with the 1st floor apartment. Equally, it will be necessary to ensure that the required smoke detectors within the 1st floor apartment will be interconnected and "hard wired." Similarly, a properly installed CO detector(s) will also be required within the new apartment. The State requires that

the CO detector must also be hard wired to the building's electrical service, along with a battery backup, unless the unit is provided with a non-replaceable battery having a 10-year lifespan. All other aspects of the proposed building renovations appear to be compliant with all applicable fire and life safety codes and regulations.

Should there be any questions regarding this assessment and the recommendations contained herein, please do not hesitate to contact me.

Sincerely,



W. Mark Cummings, P.E.
Principal Fire Protection Engineer