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Memo Report

From: W. Mark Cummings, P.E.

To: Mr. Ford Reiche

Subject: Fire & Life Safety Review; 223 Western Promenade, Portland, ME

Introduction

As requested, Fire Risk Management, Inc. (FRM) has performed a review of the proposed configuration/design for the renovations the residential building located at 223 W. Promenade in Portland, ME. As you are aware, we have also performed a detailed review of the property in preparation for supporting the design of the fire sprinkler systems that are planned as part of the renovation activities.

223 W. Promenade (hereinafter referred to as the “building”) is a three story residential building with a partially below grade Basement level. Originally built as a single family home, it was most recently used as a two-family residential building. Although early in the project the intent was to reconfigure the building into four (4) separate condominium units, the current renovation plan is to convert this building to include only three (3) multi-story units as depicted on the updated architectural plans dated 23 July, 2013. The following discussion is based on the review this latest set of floor plans.

Discussion

The City of Portland, Maine adopts the Maine Uniform Building and Energy Code (MUBEC), along with having other additional municipal provisions that must be adhered to. The MUBEC includes the 2009 editions of the International Building Code (IBC). Due to the fact that the proposed renovations to the building result in a “change of use”, it will be necessary to apply the building construction and life safety codes and standards for “new” construction to this effort. Currently, the building is not provided with either a fire sprinkler system or a fire detection/alarm/notification system.

Automatic sprinkler systems are to be installed throughout the building in accordance with the requirements of NFPA 13R, the *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*. Equally, the renovation activities will include a requirement to ensure that any walls and/or floor/ceiling assemblies that separate units will have a fire resistance rating of at least one half hour.

Use/Occupancy

The building will contain multiple dwelling units and will be classified as a Residential (R-2) Occupancy, as defined by the IBC. With regards to life safety, the requirements for New Apartment Buildings in NFPA 101, the Life Safety Code®, will apply. As was previously discussed with the representatives with the City’s Planning Department and Fire Prevention Bureau, when the building was originally to be separated into four (4) units, it would not be possible to treat the building and/or these units individually, as being classified as one and two family dwellings. This will not be changed by the reduction to only three (3) units.

Construction

It was observed that the building generally consists of masonry exterior walls and wood-framed interior construction, including heavy timber. Where visible during the site inspection, it appeared that the floor/ceiling assemblies consisted of a wood planking underlayment supported by heavy timber floor joists; and in some areas steel beams. Further analysis would be required to fully determine the actual construction type of the building, but for this review it is assumed to be a minimum of Type IIIB. For a R-2 occupancy of Type IIIB construction, the building is compliant with the height and area restrictions outlined in the IBC.

Fire Resistance Ratings

As required in the building code (MUBEC/IBC), the walls (partitions) and floor/ceiling assemblies separating individual residential dwelling units of a Type IIIB construction and protected throughout by automatic fire sprinkler systems, shall have at least a ½-hour fire resistance rating. The fact that this building is listed on the Historic Registry, coupled with the potential existence of heavy timber construction, may provide additional guidance with regards to evaluating the fire resistance ratings assigned to individual barriers. This should be performed on a “case by case” basis when evaluating the construction requirements needed for the individual barriers used to separate units. However, based on a review of the building and its construction, it is likely that the majority of the existing barriers (walls and floor/ceiling assemblies) already have an inherent fire resistance of at least one hour.

Means of Egress

This building is classified as Use Group R-2, per IBC, or an Apartment Building, per NFPA 101. When the building is fully sprinklered with systems that are compliant with NFPA 13R, only a single exit is required from each dwelling unit as long as the exit is at grade (street level). Additionally, the maximum travel distance to the exit for a fully sprinklered building is 125 feet. Based on the proposed design for the three units, all units will comply with this maximum travel distance. Due to the fact that total travel distance from the 3rd floor within Unit 1, as measured on the design plans was very close the maximum distance allowed, the actual distance was verified by measuring the actual distance within the unit, along the specified path of travel from the 3rd floor bedroom. The measurement verified that the travel distance will, in fact, be less than 125 feet. The other two units easily comply with all egress requirements.

Fire Protection Systems

Automatic sprinkler systems are to be provided throughout the building (all units), in accordance with IBC Section 903 and per NFPA 13R. The new automatic sprinkler systems must be supervised in accordance with the provisions of NFPA 101; 30.3.5.1. This will require that the signal output from flow and tamper switches installed in the sprinkler systems be monitored by a Central Station; such as a fire and security monitoring company.

The need for a fire (booster) pump has not yet been determined. Based on the water supply data provided by the Portland Water District, the potential exists that the sprinkler system for Unit 1 may require a booster pump to provide adequate pressure for the 3rd floor sprinklers. Upon completion of the sprinkler systems design, including hydraulic calculations; if a booster pump is required, it will be installed within the respective mechanical space.


As outlined in NFPA 101, Paragraph 30.3.4.1.1, a fire detection/alarm system will not be required for this building. However, as required by 30.3.4.5, smoke detection is still needed within every bedroom, outside the sleeping areas in the vicinity of the bedrooms, and on each floor of the unit, including the basement level. These are to be single station smoke detectors, albeit they are to be interconnected, such that when one goes into alarm, all will be activated.

As outlined by the City of Portland’s Code of Ordinance, carbon monoxide (CO) detection shall also be installed in accordance with the requirements of NFPA 720, the Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment (2009 ed.).

Recommendations

The planned renovations for the building at 223 W. Promenade in Portland, ME to convert this structure to a 3-unit residential building appear to be fully code compliant. It is understood that some design details may still be in process, such as a determination of the final configurations for those barriers that separate the individual units and will require a fire resistance rating and whether or not a fire booster pump may be needed. However, all other fire and life safety aspects, as depicted on the floor plans associated with this review, will be compliant with both the National Codes and Standards and the City of Portland's ordinances and regulations.

If you have any questions regarding the above review or would like additional details, please do not hesitate to contact me.



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