



## **FIRE RISK MANAGEMENT, INC**

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Date: 30 April, 2014

# **Memo Report**

**From:** W. Mark Cummings, P.E.  
**To:** Mr. Bill Hopkins; Archetype Architects  
**Subject:** **Fire Protection & Life Safety Code Review of the Maine Wharf Restaurant Building**

As requested, Fire Risk Management, Inc. (FRM) reviewed the information you provided with regards to the current plans for the renovation of the (existing) Maine Wharf building located in Portland, ME. The focus for this review was to evaluate the fire protection and life safety features of the building to ensure that all applicable codes, regulations, and ordinances are continuing to be adequately addressed. It is understood that as of this date, a specific tenant(s) for only the 1<sup>st</sup> floor of the building has been identified and the current building design drawings provide details on this level only. The 1<sup>st</sup> floor of the building is to be occupied by the Maine Wharf Restaurant, an “Assembly” occupancy, and a seafood store, a “Mercantile” occupancy. The specific configuration for the upper (2<sup>nd</sup> and 3<sup>rd</sup>) floors has not yet been determined, but it is anticipated that these will consist of “business” occupancies.

The primary codes and regulations used as reference for that review included;

1. The Maine Uniform Building and Energy Code “MUBEC” (2009 IBC with amendments).
2. The Life Safety Code<sup>®</sup>, NFPA 101; 2009 ed.
3. The City of Portland Code of Ordinances; primarily Chapter 10, *Fire Prevention and Protection*, (Rev. 1-20-11),
4. City of Portland Technical Manual, Section 3 – Public Safety, (Rev. 6/17/11),
5. City of Portland Fire Department Rules and Regulations, and
6. The Fire Code<sup>®</sup>, NFPA 1; 2009 ed.

## **DISCUSSION**

This review focuses solely on the building itself and therefore the main codes being referenced are the Life Safety Code<sup>®</sup> and the Maine Uniform Building and Energy Code (MUBEC). The review was based on the drawings provided by Archetype Architects; dated 02/26/2014. .

### ***Building Information***

**Building Classification:** Assembly, Ordinary hazard (NFPA 101 § 6.1.2.1 & 6.2.2.3)  
Non-separated, mixed use: A-2, B, S-2 (MUBEC 303.1, 304.1 & 311.3)

**Height and Area:** The building height is approximately 43 ft, 3 Stories, with an (footprint) area of approximately 9,100 SF.

**Construction type:** Non-combustible steel and masonry, unprotected (NFPA 101 Type 2(000); MUBEC Type IIB)

Resulting from the building being fully protected by automatic sprinkler systems, the maximum permitted height is 3 stories, 75 ft; with a maximum permitted area of 28,500 SF per floor per MUBEC Table 503, Sections 504.2 & 506.3. Additional area would also be permitted based on the amount of street frontage, but was not included in the allowed area analysis since a site plan was not provided for review.

Based on the area limitation, the building does not exceed the allowed area for Use Group A-2. Type II (000) construction is permitted per NFPA 101 § 12.1.6

where the Assembly occupancy is limited to a single story and the occupant load does not exceed 1,000 people.

Interior Finish:

Due to the installation of the sprinkler systems, the interior wall and ceiling finish is permitted to be either Class A, B, or C in both the Assembly and Business areas (NFPA 101 § 10.2.8, 12.3.3.2 & 38.3.3.2; whereby the sprinkler system allows a reduction in one Class level based on the original requirement within Chapters 12 or 38. However, exit enclosures will need to be provided with a minimum of a Class B material. Class A, B, and C materials are also allowed, depending on the specific area/room, as outlined in MUBEC Table 803.9).

Due to the presence of sprinkler systems, no fire rated requirements would be imposed on the floor finish (NFPA 101 § 10.2.8, 12.3.3.5 and 38.3.3.5) except for exit enclosures, which should be at least a Class II material. The MUBEC (804.4.1) has a requirement that exit enclosures use materials that comply with the DOC FF-1 “pill test.”

Extinguishment:

Portable fire extinguishers are required in this building and should be installed in accordance with NFPA 10 and MUBEC 906.1.

**Means of Egress**

Occupant Load:

259 persons on the 1<sup>st</sup> floor and 91 persons on each of the 2<sup>nd</sup> and 3<sup>rd</sup> floors. Occupant load is based on the occupant load factors outlined in NFPA 101, Table 7.3.1.2 and MUBEC Table 1004.1.

Number of Exits:

Required: Two (2) per floor, Provided: Six (6) for the first floor and two (2) for each of floors 2 and 3.

A minimum of two (2) means of egress are required from all floors / areas of the building per NFPA 101 § 7.4.1.2. The 1<sup>st</sup> floor of the building is provided with six independent means of egress leading from the interior of the building directly to the exterior. Where the occupant load of a room or space exceeds 50 people, two independent, remote means of egress are provided from all rooms or spaces. The two upper floors currently have no interior walls defined, but each has access to the two enclosed stairs.

NFPA 101 requires that the exits be adequately separated from one another. For buildings that are protected throughout by automatic sprinkler systems, this separation distance must be equal to or greater than one-third the diagonal dimension of the building. The diagonal dimension was measured at approximately 186 ft. The two stairs on the upper floors are separated by a distance of approximately 68 ft. As such, the separation distance for the exits is compliant.

Egress Capacity:

The existing exits have sufficient capacity for up to 1,500 persons on the 1<sup>st</sup> level and approximately 260 persons for each of the 2<sup>nd</sup> and 3<sup>rd</sup> floors; whereby the stairs are the limiting factor for the upper floors. The egress capacity provided for the building greatly exceeds the minimum required capacity needed to support the occupant loads.

Based on the requirements for a main entrance in an Assembly occupancy, the main entrance capacity should represent at least 1/2 of the entire occupant load (NFPA 101 § 12.2.3.6.2). Although not specified on the plans, it appears that the smaller, east door will be the main entrance to the restaurant (assembly) area due to its proximity to what appears to be a reception desk. This single door can accommodate up to 1/2 of the occupant load for the assembly space and, therefore, is compliant.

Distance Limitations: Dead end corridor: Allowed up to 20 ft per NFPA 101 § 12.2.5 and MUBEC 1018.4 for Assembly occupancies and up to 50 ft for Business occupancies per NFPA 101 § 38.2.5 and MUBEC. There are no dead-end corridors exceeding the limitations within the building.

Common path of travel: Allowed up to 20 ft, or up to 75 ft where serving less than 50 people, in Assembly occupancies per NFPA 101 § 12.2.5.1.2 or up to 100 ft in Business occupancies.

Exit access travel distance: Allowed up to 250 ft in Assembly occupancies and up to 300 ft in Business occupancies that are provided with sprinkler systems per NFPA 101 § 12.2.6.2 and 38.2.6.3.

Egress Marking: Illumination should be provided in accordance with NFPA 101 § 7.8 and MUBEC 1101.2. Emergency lighting should be provided in accordance with NFPA 101 § 7.9 and MUBEC 1006. Exit signs shall be provided in accordance with NFPA 101 § 7.10 and MUBEC 1011.1.

Based on a review of the Life Safety Plan provided, it appears that adequate emergency lighting and exit markings are to be provided.

## **Fire Protection Systems**

Fire Sprinkler System: An automatic fire sprinkler system is required for this building.

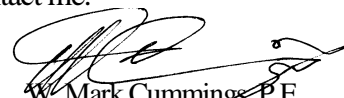
It is reported that the building will be provided with automatic fire sprinkler systems throughout, which will be assumed by this review to be compliant with NFPA 13 and will be properly supervised (MUBEC 903.2.4 & 903.3.1.1).

Fire Alarm and Notification System: A fire alarm system is required for this building. The fire alarm system must also monitor the automatic fire sprinkler system. Based on the review of the Life Safety Plan provided, it appears that a fire detection / alarm / notification system is to be installed and it will be assumed this will be done in compliance with NFPA 72. It should be noted that based on this review a number of initiating and notification devices appear to be missing; such as a pull station adjacent to the west exit on the 1<sup>st</sup> floor. Also, this plan indicates the installation of numerous devices that are not necessary; such as the installation of smoke detectors beyond those needed for elevator recall. This building is protected by fire sprinkler systems and, as such, the additional smoke detectors are not required; especially in the numbers that are indicated on the upper floors. Also, these plans do not indicate the locations for the main fire alarm control panel (FACP) and elevator machinery rooms, which also have specific requirements for smoke/heat detection to be provided. The design for the fire detection/alarm/notification system should be reviewed in detail to ensure that it will be code-compliant, but also that it does not include devices that are not needed and will increase both capital and life cycle costs for the building.

## **RECOMMENDATIONS**

Based on our review of the plans provided and if the assumptions regarding the potential use of the upper floors of the building remain valid, the Marine Wharf Restaurant and building 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. Should there be any questions regarding this assessment and the recommendations contained herein, please do not hesitate to contact me.

  
W. Mark Cummings, P.E.  
Principal Engineer