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October 31, 2017

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CODE COMPLIANCE REVIEW OF THE NEW MIXED-USE BUILDING AT 0 HANCOCK STREET IN PORTLAND, MAINE

Dear Tyler:

As requested, Fire Risk Management, Inc. (FRM) has reviewed the drawings provided via email for the proposed new mixed use building at 0 Hancock Street in Portland, ME. The review was based on the Maine Uniform Building and Energy Code (MUBEC) (amended version of IBC 2009) and Portland Fire Code (amended version of the 2009 edition of NFPA 101 - Life Safety Code). Our focus of the review was for compliance with the construction type, fire separation, and egress provisions of the applicable codes.

Assumptions

For our review, FRM had to make the following assumptions:

- The maximum footprint area is 31,353 sq. ft. (second floor).
- The building will be fully sprinklered in accordance with the applicable codes.

Construction Type

There are some issues related to the calculation provided on Drawing AC01. The total area calculation only includes Use Group B, however, the drawing indicates Use Group M. Based on the area of Use Group M on the First Floor (listed in the Means of Egress Section), it is not considered accessory (less than 10%). If the Use Group M is not separated from the remainder of the building by rated construction (creating a separated mixed use approach for the first floor), the total area calculation will not comply. In addition to the Use Group M, the upper floors would be limited to small assembly use spaces (i.e. - conference rooms less than 50 people) and would require the total area of these conference areas to be less than 10 % of the floor on which it was located (per MUBEC 508.2.1).

Another issue related to the construction type is the fire ratings for some structure. Due to the height of the shafts that connect all floors, some of the structure (floors, beams, columns) may be required to be upgraded to a 2-hour fire resistance rating. The structure requires the increase only if the shaft walls are structurally supported by the floor system.

If the building is classified as Use Group B, Business for all floors, the construction type for the building could be Type IIB. As this is a shell/core approach, the classification of Use Group B limits the size of any conference rooms to less than 50 people. In addition, if there were assembly spaces on a floor, the total area would be required to be limited to 10% (i.e. – accessory). This construction classification assumed that the roof deck is not considered a “story” and therefore, not be used as part of the height and area calculations.

Base area (Use Group B) –	23,000 sq. ft.
Increase for Sprinklers –	46,000 sq. ft.
<u>Increase for (93.5%) Frontage –</u>	<u>15,755 sq. ft.</u>
Total footprint area allowed –	84,755 sq. ft.

If the building were to be provided with 10,000 sq. ft. of mercantile on the first floor, minimum construction type would be Type IIB. The calculation would be as follows:

Base area (Use Group M) –	12,500 sq. ft.
Base area (Use Group B) –	23,000 sq. ft.
Increase for Sprinklers (Group M) –	25,000 sq. ft.
Increase for Sprinklers (Group B) –	46,000 sq. ft.
Increase for (93.5%) Frontage (M) –	8,500 sq. ft.
<u>Increase for (93.5%) Frontage (B) –</u>	<u>15,755 sq. ft.</u>
Total footprint area allowed –	71,836 sq. ft.

This would also require the building to be considered a separated mixed use, however, a rated separation according to IBC 508.4 is not required.

If the building were to be classified as Use Group A-3 due to the Roof Deck, the minimum construction type for the building would be Type IIA due to the height of the roof deck. The calculation would be as follows:

Base area (Use Group A-3) –	15,500 sq. ft.
Increase for Sprinklers –	31,000 sq. ft.
<u>Increase for (93.5%) Frontage –</u>	<u>13,175 sq. ft.</u>
Total footprint area allowed –	59,675 sq. ft.

The total floor area calculation for the building is required to show that the actual area divided by the allowable area on each floor when added together is less than 3.

<u>Actual Area</u>	<u>Allowable Area</u>	<u>Fraction</u>
30,625 sq. ft.	59,675 sq. ft.	.513
31,353 sq. ft.	59,675 sq. ft.	.525
31,353 sq. ft.	59,675 sq. ft.	.525
<u>9,336 sq. ft.</u>	<u>59,675 sq. ft.</u>	<u>.156</u>
	Total	1.720

Fire Rated Separations

Drawing AC01 indicates the walls / structure that are required to be fire rated. One item that should be modified is detailed under Fire Partitions. These sections indicates that exit access corridors are required to have a fire rating, however, neither MUBEC or NFPA 101 require fire rated exit access corridors in Use Group B or M (or A-3 if there are non-accessory uses).

Fire Alarm / Detection

Additional requirements should be added to the fire alarm section. Additional information should include, but are not limited to: systems that are connected (Sprinkler, HVAC, etc.), notification devices required (and where), and connections to the fire department / UL Listed Central Station.

This section includes a sprinkler requirement (912.2.1). This section should be expanded to include the fire sprinkler / standpipe requirements.

Means of Egress

The factor included for the stairs and doors for the Roof deck is listed as 0.2 (stairs) and 0.15 (doors). This is not correct for current MUBEC, which requires 0.3 (stairs) and 0.2 (doors). In addition, egress on a floor requires all occupants to use the exits at the same time. The calculation on the drawing does not add the Business Use and the Assembly Roof deck on the Fourth Floor. Based on the number of occupants on the drawings, the total width of stairs required should be 209 inches. The stairs appear to be 60 inch in width each, which would not be compliant.

On drawing A1.01, the discharge door from Stair A does not swing in the direction of travel.

On drawing AC01, the egress factor for the Roof deck references IBC 2015. This is currently not applicable. In addition, the exception to reduce the egress factors is only for buildings that are sprinklered and provided with a voice alarm system. This reduction does not apply since the requirements from NFPA 101 are more restrictive.


Maximum Travel Distance

The applicable codes permit a maximum travel distance to the nearest exit to be 300 feet for Business occupancies and 200 feet for Assembly occupancies. These travel distances should be shown on a life safety drawing.

Remoteness of Exits / Exit Access

When more than one exit is required due to the occupant load or a common path of travel, the applicable codes requires those exits to be located at least 1/3 of the maximum diagonal of the space needing 2 exit / exit access doors.

Sincerely,



Jeffrey L DeMaine, P.E.