



Nathan Clifford

Code Review

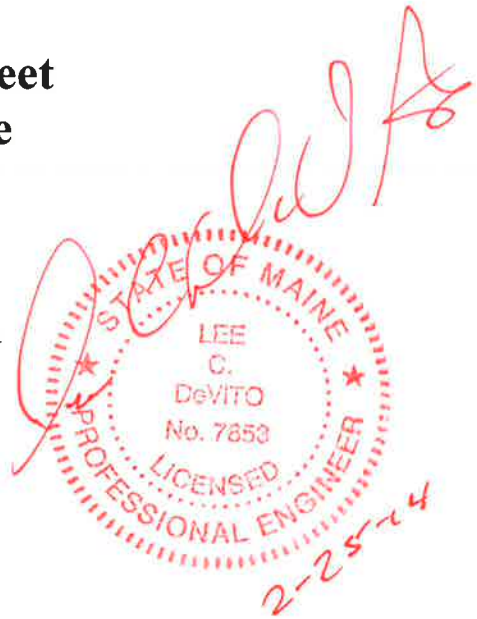
**180 Falmouth Street
Portland, Maine**

Prepared by:

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February 25, 2014

Revision 2



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Introduction

The scope of this report is intended to document the code review results for the Nathan Clifford Building. This facility is located at 180 Falmouth Street, in Portland, Maine. The building is existing and it was formerly used as a school. It will be undergoing a change in occupancy from Educational E to Residential Group R-2. Both these occupancies have the same Hazard level. The building is currently vacant.

FIREPRO® makes all reasonable efforts to incorporate practical and advanced fire protection concepts into its advice. The extent to which this advice is carried out affects the probability of fire safety. It should be recognized, however, that fire protection is not an exact science. No amount of advice can, therefore, guarantee freedom from either ignition or fire damage.

Reference Documents

- Maine Uniform Building Code (MUBC)
- 2009 International Building Code (IBC)
- 2009 International Existing Building Code (IEBC)
- NFPA 101 Life Safety Code – 2009 Edition, with City of Portland Amendments
- City of Portland Fire Safety Regulations

Building Description

The Nathan Clifford Building has a lower level which is partially below grade, and three stories above grade. The lower level will contain accessory storage, a Fitness area, Trash Room, Elevator Machine Room, Sprinkler Room, and two living units. The first floor through the third floor will be living units. The roof will have Mechanical units on it. The current design indicates a total of 22 living units.

The International Existing Building Code requires that a building undergoing a change of occupancy classification be constructed in accordance with the requirements of the International Building Code (MUBC) for new construction. In some specific areas, exceptions are allowed. Those exceptions are noted

Occupancy Classification

Building Codes

The renovated building will be an R-2 Occupancy as defined by Section 310 of the MUBC.

The building is reviewed in accordance with NFPA 101, *Life Safety Code*, 2009 edition, Chapters 30, New Apartment Buildings, and 43, Building Rehabilitation; the International Building Code, 2009 edition, and the International Existing Building Code, 2009 edition.

Type of Construction

According to the architect, the Construction Type is IIIB.

The Life Safety Code, Section 30.1.6, states that there are no special construction requirements for the building

Height and Area Requirements

MU Building Code

Table 503 of the MUBC outlines the height and area limitations for a building or structure based on its type of construction. Table 601 of the MUBC outlines the fire-resistance ratings of certain building elements required to meet Type IIIB.

Table 503 – Allowable building height and areas

For an R-2 Occupancy, a Type IIIB construction building has limits of four (4) stories and 16,000 square feet per story. The Nathan Clifford building has four (4) stories. The largest proposed floor area is 11,508 square feet. This falls within the limits for Type IIIB construction.

Fire Resistance Rating

MU Building Code

The MUBC, in Table 601 lists the fire resistance rating requirement for Type IIIB construction as:

Structural Frame:	0 Hours
Exterior Bearing Walls:	2 Hours
Interior Bearing Walls:	0 Hours
Non-Bearing Walls and Partitions:	0 Hours
Floor Construction and Secondary Members:	0 Hours
Roof Construction and Secondary Members:	0 Hours

In accordance with the MUBC, Section 708.4, because there are four floors in the building, shaft enclosures must have a fire rating of two hours. A review of the drawings shows that all shaft enclosures will have a rating of two hours.

The elevator lobby is not enclosed. In accordance with the MUBC, Section 708.14.1, Exception 4, "Enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system designed in accordance with 903.3.1.2 (NFPA 13R system)".

The building will have an NFPA 13R sprinkler system. Therefore, the elevator lobbies are not required to be enclosed.

Life Safety Code

Chapter 30, New Apartment Buildings, Section 30.1.6, Minimum Construction Requirements, states that there are no special construction requirements.

Fire Partitions

MU Building Code

Corridor Fire Partitions (Non Brg): ½ hour	<i>Table 1018.1 & Sect 709.3 Ex.1</i>
Corridor Doors: 0.33 hour in 1-hour wall	<i>Table 715.4</i>
Corridor Doors to have smoke control	<i>Sect. 715.4.3.1</i>
Dwelling Unit Wall Separation: 1 hour	<i>Sect. 709.3</i>
Floor Assembly between Dwelling Units: 1 hr	<i>Sect 712.3</i>

MUBC Section 420.2 states that walls separating dwelling units in the same building and walls separating dwelling units from other occupancies contiguous to them in the same building shall be constructed as fire partitions in accordance with MUBC Section 709. MUBC Section 420.3 states that floor assemblies separating dwelling units in the same building and floor assemblies separating dwelling units from other occupancies contiguous to them in the same building shall be constructed as horizontal assemblies in accordance with MUBC Section 712.

MUBC Section 709.3 states that fire partitions shall have a fire resistance rating of not less than one hour. Exception 1 allows corridor walls to have a rating of ½ hour. Exception 2 allows dwelling unit separation in buildings of Type IIIB construction to have a fire resistance rating of not less than ½ hour in buildings equipped with an automatic sprinkler system in accordance with Section 903.3.1.1. Because the sprinkler system in the Nathan Clifford building is a 13R system, the exceptions in Section 709.3 do not apply, and the fire partitions must have a fire resistance rating of one hour.

MUBC Section 712.3, last sentence, states that horizontal assemblies separating dwelling units in the same building shall be a minimum of one hour fire-resistance-rated construction. The Exception to this section states that dwelling unit separations in buildings of Type IIIB construction shall have fire resistance ratings of not less than ½ hour in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, if an NFPA 13 sprinkler system is used. Because the sprinkler system in the Nathan Clifford building is a 13R system, the exception in Section 712.3 does not apply, and the horizontal (floor) assemblies must have a fire resistance rating of one hour.

MUBC Section 715.4.3.1 states that fire door assemblies shall meet the requirements for a smoke and draft control door assembly.

A review of the drawings indicates that the fire resistance of the Corridor Fire Partitions, the Corridor Doors, the Dwelling Unit Wall separation and the Floor Assemblies will have the required rating; and that the Corridor Doors will meet the requirements for a smoke and draft control assembly.

Fire Protection Systems

MU Building Code

MUBC Section 903.2.8 states that an automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area

Life Safety Code

Section 30.3.5.1, states that all buildings shall be protected throughout by an approved automatic sprinkler system.

The building will have a sprinkler system designed in accordance with NFPA 13R, which will meet the above requirements.

Fire Alarm and Detection Systems

MU Building Code

MUBC Section 907.2.9 Group R-2, states that fire alarm systems and smoke alarms shall be installed in Group R-2 occupancies as required in Sections 907.2.9.1 and 907.9.2. Section 907.2.9.1, Exception 2, states that manual fire alarm boxes are not required “where an automatic sprinkler system is installed in accordance with 903.3.1.2 (NFPA 13R)” and the occupant notification appliances will automatically activate throughout the notification zones upon a sprinkler water flow.

MU Section 907.2.9.2 Smoke alarms, states that single- and multiple-station smoke alarms shall be installed inside the dwelling units, in accordance with 907.2.11.2 for Group R-2.

Life Safety Code

Section 30.3.4.1.1 states that apartment buildings four or more stories in height, or with more than 11 dwelling units, shall be provided with a fire alarm system in accordance with Section 9.6, except as modified by 30.3.4.2 through 30.3.4.6.

Section 30.3.4.2.1 requires manual initiation of the fire alarm system unless there are no more than 16 units; and the building is protected by an approved, supervised automatic sprinkler system.

In buildings protected by such a system, the fire alarm system shall be initiated upon operation of the automatic sprinkler system.

An automatic fire alarm system, including manual fire alarm boxes, will be installed; and single and multi-station smoke detectors will be installed. This meets the fire alarm system requirements of both codes.

Standpipe System

In accordance with the IEBC, Section 704.3 Standpipes, where the work area includes exits or corridors shared by more than one tenant, and is located more than 50 feet above or below the lowest level of fire department access, a standpipe system shall be provided. There are no exits or corridors located more than 50 feet above or below the lowest level of fire department access for this building. Therefore, standpipes are not required by code.

Although not required, the architect has decided to install one standpipe in the building. It will be a Class I standpipe, and fire department connections will be installed as approved by the fire chief.

Egress Requirements

MU Building Code

<i>Egress Components</i>	<i>Code Section</i>	<i>Requirement (with sprinklers)</i>	<i>Provided/Not Provided</i>
<i>Capacity of Exit Stairs</i>	MUBC 1005.1	0.3 inches per occupant or 44 inches minimum	Stair A and Stair B are 65 inches wide
<i>Maximum Dead-end distance (Group R-2)</i>	MUBC 1018.4	50 ft	Appears to be less than 15 feet
<i>Maximum Common Path of Travel (R-2)</i>	MUBC 1014.3	50 ft	Appears to be less than 20 feet
<i>Minimum Exit Access Door Width</i>	MUBC 1008.1.	0.2 inches per occupant or 32 inches minimum	Appears to be 8 feet
<i>Maximum Exit Access Travel Distance (Group R)</i>	MUBC 1016.1	250 ft	Appears to be approximately 80 feet

Life Safety Code

Means of Egress requirements are provided in Chapter 7, and are consistent with the Building Code requirements.

Number of Exits

MU Building Code

Means of Egress (Based on MSBC Table 1021.1 – Minimum number of exits for occupant load)

Floor level	Number of Exits	
	Required	Provided
Basement	2	2
First Floor	2	2
Second Floor	2	2
Fifth Floor	2	2

Life Safety Code

Every dwelling unit shall have access to at least two separate exits remotely located from each other, which is provided.

A review of the drawings indicates that the minimum number of exits has been provided.

Illumination of Means of Egress and Exit Signs

MU Building Code

All means of egress require illumination at all times when the space served by that means of egress is occupied. This does not apply to dwelling units and sleeping units within Group R-2 Occupancies.

Life Safety Code

Continuous illumination shall be provided in all stairs, aisles, corridors, ramps, escalators and passageways leading to an exit. Exit signs shall be provided no more than 100 feet from any viewing point in an exit corridor.

Emergency lighting shown in the drawing package, appears to meet the above requirements.

Additional Design Questions

FIREPRO was requested to investigate and respond to three additional questions.

1. With respect to the handrails, is it necessary to add a handrail in the middle of the stair well?

This was reviewed. According to the drawings, the width of the stair between the handrails on either side is 5'-5" (65") in Stair A and Stair B. In the International Existing Building Code (IEBC), Chapter 9, Change of Occupancy, Section 912.4.4

states that Handrails shall comply with the requirements of 705.9, Handrails. Section 7.5.9.1, Minimum requirement, states that every required stairway that is a part of a means of egress...shall be provided with handrails for the full length of the run of the steps on at least one side. All exit stairways with a required egress width of more than 66 inches shall have a handrail on both sides.

The Life Safety Code, Section 7.2.2.4.1.2 (2), states that for existing stairs, Handrails are required within 44 inches of all portions of the required egress width.

While there is no direct statement that addresses the specific situation in the Nathan Clifford building, it is *FIREPRO*'s professional opinion that the above information can be interpreted to mean that a center handrail is not required.

2. Are the existing handrails required to comply with the requirements regarding full extensions of the handrails?

The IEBC, Historic Buildings, Section 103.9, states that existing handrails and guards at all stairs shall be permitted to remain, provided they are not structurally dangerous.

The MUBC, Section 3404.1 General, Exception 2, states that Handrails otherwise required to comply with the requirements of Section 1012.6 regarding full extension of handrails are exempted where such extensions would be hazardous due to plan configuration.

***FIREPRO* is not qualified to make the determination as to whether the extensions would be hazardous, however, the exemptions exist.**

3. Can the existing doors to the rooms be used as doors to the individual units?
There are various sections in the International Existing Building Code that address this. Section 912.4.1, Means of egress for change to a higher hazard category, does not apply to this building, as our occupancy change is to an equal hazard category. However, it does provide information on the use of existing doorways in Exception 5. That exception states that existing corridor doorways, transoms, and other corridor openings shall comply with the requirements of Section 705.5.1, 705.5.2, and 705.5.3.

Chapter 7 is titled Alterations – Level 2. Section 705.5.1 discusses corridor doors. It says that all dwelling unit or sleeping unit doors in R-2 occupancies shall be at least 1 3/8 inch solid core wood or approved equivalent, and shall not have any glass panels other than approved wired glass or other approved glazing material in metal frames. All dwelling units or sleeping units in Group R-2 shall be equipped with approved door closers. There are two exceptions that apply – one of existing doors that meet the requirements of HUD Guidelines of Fire Rating of Archaic Materials and Assemblies for a rating of 15 minutes or more- and - one that existing doors in buildings protected throughout with an approved automatic sprinkler system shall be

required only to resist smoke, be reasonably tight fitting, and shall not contain louvers.

Section 705.5.2, Transoms, says that for an R-2 occupancy, all transoms in corridor walls shall be either glazed with ¼ inch wired glass set in metal frames, or other glazing assemblies having a fire-protection rating as required for the door and permanently secured in the closed position or sealed with material consistent with the corridor construction.

While this situation does not apply directly to our “equal hazard” category, it would seem reasonable that, if it is desirable to use the existing corridor doors and any existing transoms, it would be reasonable to discuss this with the fire department, to find out if they would accept it.

Conclusions

FIREPRO®'s conclusions are based on a review of the Bid Set 2014_01-15 drawing package submitted by the designer.

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