STUDY

FALMOUTH COMMUNITY FACILITIES Limited Code Review Falmouth, Maine

DRAFT



Prepared For:

Town of Falmouth 271 Falmouth Road Falmouth, Maine 04105

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Prepared By:



Introduction

The existing D.W. Lunt and Plummer-Motz Schools in Falmouth, Maine will be vacated after the current school year, as the students and staff of both schools relocate to the new Falmouth Elementary School. The Town of Falmouth has been studying various scenarios for redeveloping the existing school buildings and the associated sites. Child Development Services of Cumberland County (CDS) has been identified by the Town as a potential lessee for either the Lunt or Plummer-Motz building. Oak Point Associates was asked by the Town of Falmouth to conduct a code review of both buildings, specifically to evaluate the degree to which occupancy by CDS would trigger fire and life safety code-required upgrades.

For this report, the Lunt and Plummer-Motz School buildings were reviewed to six codes with regard to life safety and fire protection:

- Maine State Fire Marshal Daycare and Nursery School Requirements (DNSR)
- 2006 National Fire Protection Association Life Safety Code, (NFPA 101)
- 2007 Standard for the Installation of Sprinkler Systems, (NFPA 13)
- 2007 National Fire Alarm Code, (NFPA 72)
- 10-148 CMR Chapter 32, Rules for the Licensing of Child Care Facilities (CMR 10-148)
- Maine Uniform Building and Energy Code (MUBEC)

Only permanent portions of these buildings were evaluated (i.e. not portable classroom units), as it is assumed that any portable buildings will be removed following the closure of the school buildings. The Plummer-Motz School includes the Plummer, Mason and Motz portions of the complex.

The buildings were only evaluated for fire and life safety code compliance. Other requirements initiated by the Child Care License Rules, such as the removal of lead paint, a zoning review, and water quality, are not evaluated in this report.

Fire/Life Safety Code Overview

General Information

<u>Codes</u>

The two buildings have been reviewed to the following codes with regard to life safety and fire protection:

- 1. Maine State Fire Marshal Daycare and Nursery School Requirements (DNSR) required and enforced by the Maine State Fire Marshal's Office
- 2. 2006 National Fire Protection Association Life Safety Code, (NFPA 101) adopted by the Maine State Fire Marshal's Office and the Town of Falmouth, enforced by both entities

- 3. 2007 Standard for the Installation of Sprinkler Systems, (NFPA 13) adopted and enforced by the Maine State Fire Marshal's Office
- 4. 2007 National Fire Alarm Code, (NFPA 72) adopted and enforced by the Maine State Fire Marshal's Office
- 5. 10-148 CMR Chapter 32, Rules for the Licensing of Child Care Facilities (CMR 10-148) adopted by the State of Maine
- Maine Uniform Building and Energy Code (MUBEC), based on the 2009 International Building Code (IBC) and including the 2009 International Existing Building Code (IEBC) – adopted by the State of Maine and enforced by the Town of Falmouth

The NFPA and IBC codes contain requirements for new construction and less stringent requirements for existing buildings to provide an acceptable level of life safety. The level of work and the change in hazard category (determined by the new and existing uses/occupancies) dictate to what extent the new construction requirements are initiated and where the lesser existing building provisions may be used. This will be discussed further in the Classification of Work section below and as applicable throughout the report.

Occupancy Classification

Planned Occupancy

Based on an email provided to Oak Point Associates from Child Development Services (CDS), dated January 4, 2011, the following uses will be included/needed.

Child care/Preschool

- Children will be at least 2.6 years old.
- There are children with rest time.
- Because children receive care for more than three hours a session, they are licensed as a child care center.
- Up to 30 children in child care/preschool.
- Supporting areas:
 - o Receptionist
 - Two offices for three child care staff
 - Four offices for preschool staff
 - o Teacher's work room

Therapy

- Sixteen case managers located in shared offices
- Twenty five therapists located in shared offices
- Four small speech therapy treating rooms
- Four OT/PT larger treating/evaluation rooms with suspended equipment
- Gymnasium area for inside gym/gross motor activities
- Family waiting area

The following codes, classify these uses as follows:

- IBC classifies the child care/preschool components as a Group E (educational) occupancy per Section 305.2 because the children are more than 2½ years in age even though they will receive personal care services. The therapy component is classified as a Group B (business) occupancy per Section 304. The gymnasium is classified as a Group A-3 (assembly) occupancy per Section 303.
 - a. Please note that the Group B classification results in a partial change in occupancy (discussed further in the Classification of Work section) which instigates additional code requirements. The therapy component cannot be considered as accessory to the child care component unless it does not occupy more than 10 percent of the building area of the story in which it is located per IBC, Section 508.2.1. If it does not exceed this threshold and is considered accessory to child care, this would no longer be considered as a Group B occupancy. Therefore, no change of use would be occurring and all IBC requirements that follow in the report would no longer be applicable.
- 2. NFPA 101 classifies the child care/preschool components as a Day Care occupancy per Section 6.1.4.1 because four or more clients receive care, maintenance, and supervision, by other than their relatives or legal guardians, for less than 24 hours per day. The children are considered capable of self-preservation per Section A.3.212 because they are more than 2 years in age. The therapy component is classified as a Business occupancy per Section 6.1.11. The gymnasium is classified as an Assembly occupancy per Section 6.1.2.
- 3. The DNSR classify the child care/preschool component as a Day Care Center because it is offering care to more than 12 children. This code does not address the therapy (or gymnasium) component of the building.

If the child care/preschool areas are not separated from the therapy areas by occupancy separations (fire barrier walls), the building will be considered a non-separated mixed occupancy. In a non-separated mixed occupancy, the entire building is required to be designed to the most restrictive requirements of all occupancies present in the building. There do not appear to be many advantages to providing an occupancy separation between the two uses. This would provide a reduction in the amount of smoke detection required. This assumes that the IEBC initiated items are only applicable to areas with change of use. This is a reasonable assumption but will need verification from Authorities Having Jurisdiction.

Existing Occupancy

The buildings are currently used as educational facilities for elementary students. The buildings also contain assembly areas; the multi-purpose rooms and stages. The buildings are classified as non-separated mixed occupancies with primary occupancies of Educational and Assembly per NFPA 101 and E (educational) and A-3 (assembly) per IBC. There are also incidental spaces that serve the primary occupancies such as offices, storage and mechanical rooms. These are less than 10 percent of the building area and therefore do not initiate a separate occupancy classification.

Classification of Work

There is no work planned for the building aside from code required upgrades and temporary partitions within the classrooms.

NFPA Requirements

NFPA 101 considers this project as a "change of occupancy" because of the occupancy change from Educational/Assembly to Day Care/Business/Assembly. Per NFPA 101, Section 43.7.2.1, because there is no increase in the hazard classification category (category 3 per Table 43.7.3 for all applicable occupancies), not all features of the building need to meet the requirements for new construction. The sprinkler system, fire detection and alarm and communication systems all need to meet the requirements for new Day Care/Business facilities (and the existing requirements for Assembly facilities). The remainder of the building needs to comply with the requirements for existing Day Care/Assembly/Business facilities with regard to life safety/fire protection.

If an occupancy separation is provided between the child care and therapy uses then only the provisions applicable to each occupancy are required for that area. The exception to this is requirements for sprinkler systems which are applicable to the entire building. The major differences are as follows:

1. A fire alarm/detection system is required for Day Care occupancies, but not Business or Assembly occupancies as configured in either of these buildings.

The NFPA requirements are outlined throughout the report in the section discussing that particular item.

IBC/IEBC Requirements

Based on the assumption that the therapy area will exceed 10 percent of the stories in which they are located, the IEBC has been consulted to determine the building code classification of work as adopted under the MUBEC. If the area does not exceed 10 percent, these items are not applicable. IBC, Section 3401.5 considers work performed in accordance with the IEBC to meet the existing structure chapter of the IBC. Therefore, the IBC does not initiate any further code requirements except as referenced back to by the IEBC.

The IEBC considers the project as a "change of occupancy" because of the addition of the Group B occupancy. (The Group E and A-3 occupancy classification remain the same.) The IEBC requires:

- 1. The structural systems need to be reviewed to IEBC, Section 907. A cursory review has been included as part of this study. This includes the review of gravity load supporting elements due to the increased live load per IEBC, Section 907.1.
- 2. All unsafe electrical conditions need to be corrected and the electrical service to the existing building and the number of electrical outlets are required to meet the requirements of NFPA 70 per IEBC, Section 908. Light is required to comply with the requirements of the IBC. A review of the electrical systems within the building has not been included as part of this study.

- 3. The kitchen exhaust and mechanical ventilation requirements need to comply with Maine's mechanical code per IEBC, Section 909 and the IBC per Section 911.1. A review of the mechanical systems within the building has not been included as part of this study.
- 4. The fixture counts and water supply needs to be reviewed to the Maine Plumbing Code as outlined in IEBC, Section 910.1. A review of the plumbing systems within the building has not been included as part of this study.
- Compliance with Chapter 8 (which in turn requires compliance with Chapters 6 and 7) is required per IEBC, Section 912.1.1. If an occupancy separation is provided to isolate the Group B occupancy then these requirements are only limited to the Group B area. Without an occupancy separation, the requirements are applicable to the entire building.
 - a. Vertical opening protection is required per IEBC, Section 703.2.1 with the exception of vertical openings in sprinklered buildings that do not connect more than three stories (IEBC, Section 703.2.1, exception 5).
 - b. The structural systems need to be reviewed to IEBC, Section 707. This has not been included as part of this study.
- 6. Interior finishes are required to comply with IBC per IEBC, Section 912.3.
- 7. Means of egress are required to comply with IEBC, Section 805, per Section 912.4.2 because the egress hazard category is decreasing. Section 805 requires the means of egress lighting and exit signs to meet the requirements of IBC for new construction.
- 8. The egress capacity is required to meet the requirements of IBC for new construction.
- 9. Handrails and guardrails are required from all stairs serving the change of use area that are not in danger of collapsing per IEBC Sections 705.9, 705.10, 912.4.4 and 912.4.5.
- 10. All penetrations of existing vertical shafts require a 1-hour fire damper or firestopping system per IEBC, Section 912.7.4.

The following items are specifically excluded from review/change per IEBC, Chapter 9 for changes of occupancy. Other applicable codes may dictate the review/addition/modification of these systems.

- 1. A sprinkler system and fire detection and alarm system are not required by the IBC based on the change of occupancy per IEBC Section 912.2 because these systems are not required in this type of Group B occupancy under the IBC.
- 2. The height and area of the building are not required to be reviewed because the height and area hazard category is decreasing (IEBC, Section 912.5.2).
- 3. The exterior wall ratings and opening protection are not required to be reviewed because the hazard category is not increasing (IEBC, Section 912.6.2.
- 4. Vertical opening enclosures are not required to be reviewed because the hazard category is not increasing (IEBC, Section 912.7.2 and 912.7.3).

D.W. Lunt School Existing Conditions

Passive Fire Protection Features

Type of Construction

The existing, 1942, two story portion of the building is brick exterior walls with wood framing and decking. The 1990 addition consists of concrete masonry and brick with wood framing. The building is classified as IBC Type IIIB and NFPA Type III(200) type of construction. In this type of construction exterior walls are of noncombustible construction and rated for 2-hour fire resistance if they are bearing walls. The remainder of the building contains combustible and non-combustible materials.

Height and Area Limitations

Children under the age of 3 years are restricted to floors having direct exit at grade level per CMR 10-148, Section 22.2.

Per DNSR, because the building has wood frame construction, children are not permitted at the basement level (or below grade). If the existing sprinkler system is upgraded to an NFPA 13 compliant system, children over the age of three are permitted one story above grade. These requirements are similar in NFPA 101, Table 17.1.6.1.

The lower level of the original portion of the building is located below grade. Day Care occupancies are not permitted below grade per DNSR. The remainder of the existing classroom spaces are either at grade or no more than one story above grade which would permit child care use.

The type of construction complies with NFPA 101, Table 13.1.6 which allows any assembly occupancy on the level of exit discharge in a sprinklered building. NFPA 101 does not govern the type of construction of business occupancies.

Interior Compartmentation

Specific Occupancy Areas

The following areas represent an increased hazard and need to be separated from the remainder of the building by vertical and horizontal partitions having the rating shown. These items are required with or without the Day Care occupancy.

Separations per NFPA 101, Sections 8.7, 13.3.2, 17.3.2.1 and 39.3.2:

- 1. boiler and furnace rooms (any size equipment, no requirements if only air-handling), 1-hour fire resistant separation or sprinklered with smoke partitions
- 2. storage rooms > 100 SF, 1-hour fire resistant separation or sprinklered with smoke partitions
- 3. mechanical rooms (considered storage rooms) > 100 SF, 1-hour fire resistant separation or sprinklered with smoke partitions

- 4. janitor's closets, 1-hour fire resistant separation or sprinklered with smoke partitions, (doors may have louvers in sprinklered buildings)
- 5. laundries (with more than a single domestic-type clothes washer/dryer, 1-hour fire resistant separation and sprinklered
- 6. rooms with hazardous materials, 1-hour fire resistant separation and sprinklered

Because the building is sprinklered, the majority of areas with an increase in hazard are allowed to be separated by smoke partitions instead of a 1-hour fire resistant enclosure. In the areas where a 1-hour separation is still required, not only do the walls need to have a 1-hour fire resistant rating, but the floor/ceiling assembly separating it from the floor above or below is also required to be rated, the supporting construction of this horizontal assembly is required to be 1-hour fire resistant, the doors are required to be 45-minute rated and self-closing, and penetrations and joints are required to be fire stopped with assemblies rated for 1-hour.

The Boiler Room and Fuel Oil Storage are located one level below the stage. These spaces are separated from the building above by a gypsum ceiling which appears to provide a fire-resistance rating. Some of the joints between the rated ceilings and the foundation wall are fire stopped. Penetrations are also fire stopped.

The remaining areas throughout the building with an increased hazard are required to be separated from the rest of the buildings with smoke partitions with sealed penetrations and joints and self-closing doors. The walls and ceilings of these spaces are constructed as required however several of the doors are not provided with closers, have broken closers or are also provided with door stops. There are also unsealed penetrations throughout.

Corridors

Because the building is sprinklered, corridors are permitted to be constructed as smoke partitions per NFPA 101, Section 17.3.6(2). There are no corridor rating requirements required for the assembly or business uses.

Throughout the building the corridor walls are constructed as required for smoke partitions. A smoke partition is allowed to only extend to the underside of a monolithic or suspended ceiling system where the ceiling forms a continuous membrane; a smoke-tight joint is provided between the smoke partition and the bottom of the suspended ceiling; and the space above the ceiling is not used as a plenum. (NFPA 101, Section 8.4.2) Many doors are not provided with closers and many are provided with door stops or are wedged open, both preventing the door closer from operating properly.

Vertical Openings

Communicating Space - Vertical openings are required to be in compliance with NFPA 101, Section 8.6 per Sections 13.3.1, 17.3.1 and 39.3.1 for all three occupancies. The Main Entrance and Ramp is a communicating space between the two story classroom wings. A communicating space is defined as a floor opening between floor levels that does not connect more than three contiguous stories. Communicating spaces are required to be separated from the remainder of the building by vertical and

horizontal 1-hour fire barriers or smoke barriers in a sprinklered building (NFPA 101, Section 8.6.6(4)(a)). The communicating space has been separated from the two story classroom wing by the original exterior wall and 90-minute rated fire-resistant, self-closing, doors.

Stair Enclosure - Vertical exit enclosures are required to be constructed of 1-hour fire barriers with 60minute latching and self or automatic closing doors. The fire resistance rating of 1-hour is allowed because the stair shaft connects less than four stories (NFPA 101, Section 7.1.3.2.1). The walls are required to extend from the ground floor to the underside of the roof deck. The joint between the walls and roof deck is required to be fire stopped. The stair is not allowed to have openings to non-normally occupied spaces such as storage, mechanical rooms or lavatories (NFPA 101, Section 7.1.3.2(5)). The stair is not allowed to have penetrations except for electrical conduit serving the stair, water or steam piping necessary for the heating or cooling of the stair, sprinkler piping, penetrations for fire alarm circuits and existing penetrations that are fire stopped (NFPA 101 Section 7.1.3.2(6)). The requirements are applicable to all three occupancies and not just initiated by the child care.

The stair enclosure appears to be of gypsum wallboard or plaster construction which should achieve the 1-hour rating. There is wired glass in the stair enclosure. This is no longer allowed and should be removed and replaced with rated glass. Only one of the four stair doors has the required 60-minute rating. All of the doors are self-closing, but several are wedged open. These doors should be on magnetic hold open devices if they are desired to be open under normal use.

The ground floor Boys Room opens onto the stair enclosure. This is considered a non-normally occupied space and is not allowed to open onto the stair enclosure.

Shaft Enclosures- Shafts are required to be constructed of 30-minute fire barriers per NFPA 101, Section 8.6.5(3). All penetrations require fire dampers and firestopping per NFPA 101 and the IEBC, Section 912.7.4.

Interior Finish Ratings

Based on the change of use, per IEBC, Section 912.3 and IBC, Table 803.9 for sprinklered B occupancies, the finishes on the walls and ceilings within the exits and corridors are required to be a minimum of Class B. Within remaining spaces, a minimum of Class C is required. Per NFPA 101, Sections 10.2 and 17.3.3, the finishes on the walls and ceilings throughout the building are required to be a minimum of Class C. There are no interior floor finish requirements per either code. Class B is defined as having a flame spread index from 26-75. Class C has aflame spread from 76-200. All classifications have a smoke development index from 0-450.

Typical interior finishes throughout the building are painted gypsum/plaster walls and suspended acoustical tile (SAT) ceilings. Without testing it is not possible to determine if the paint on the walls meets these requirements however in laboratory testing, paint has not been shown to significantly increase the flame spread of the material it is applied to. Gypsum and plaster are considered Class A

materials. SAT ceilings typically have an A classification. There are also some tectum panels in the classrooms which should meet the required Class C rating.

Exterior Ratings

Stairs

Where stair walls intersect exterior walls and the exterior walls are at an angle of less than 180 degrees, the exterior wall is required to be a one-hour fire barrier with 45-minute opening protection for a distance of 10 feet beyond the intersection. (NFPA 101, Section 7.2.4.3.3) This is to protect the stair from a fire inside the building. The stair enclosure at the building intersects the exterior wall at 180 degrees so no exterior protection is required for this reason.

Active Fire Protection Features

Automatic Fire Suppression System

The building is required to be sprinklered because of the communicating space per NFPA 101, Section 16.3.5.3 for Day Care occupancies. The building is sprinklered. There are several areas where the sprinkler coverage was not provided and these need to be updated. Examples of these areas include within a small storage closet on the ground floor, under the storage loft in the storage room adjacent to the stage and above large ducts in the mechanical room off of this same storage room.

Occupant Notification

Detection and Alarm Systems

A fire alarm system is required in accordance with NFPA 101, Section 9.6, per Section 16.3.4.1. The fire alarm system is required to be initiated by manual means, operation of any required smoke detectors and activation of the sprinkler system per NFPA101, Section 16.3.4.2. The fire alarm system is required to notify the fire department in accordance with NFPA 101, Section 9.6.4, per Section 16.3.4.5 and DNSR.

A smoke detection system is required in accordance with NFPA 101, Section 9.6 per Section 16.3.4.5 for the Day Care occupancy. Smoke detectors are required on each story in front of the doors to the stairways and in the corridors of all floors occupied by the Day Care occupancy. Smoke detectors are also required in lounges, recreation areas and sleeping rooms (including rooms where children nap) in the Day Care occupancy per NFPA 101 and in all rooms and/or area used for the child care center per DNSR.

The remainder of the fire alarm system is required to be in compliance with NFPA 70 and 72 per NFPA 101, Section 9.6.1.3 except for components that are considered to be an approved existing installation.

The existing system is a Thorn Fire Quest zoned system. There are smoke detectors in the corridors and in the multi-purpose room. There are no smoke detectors within the classrooms. Duct smoke detectors are located on the air handling unit. Manual pull stations exist at all exits except for one. There is a heat detector in the boiler room, and flow and tamper switches on the sprinkler system. Horn/strobe units

are located in the corridors and in the multi-purpose room; however, these devices do not meet the present ADA and NFPA 72 requirements. There is a fire alarm annunciator at the main entrance.

Neither the assembly nor the business occupancy classifications trigger upgrades to the fire alarm system smoke detection as a fire alarm system is not required for these uses in the configurations that would be present in the Lunt building. Because a fire alarm system is provided, horn/strobes need to comply with NFPA 72 and ADA.

A thorough review of the fire alarm system is required to determine the exact modifications required and the capacity of the fire alarm panel for these modifications. Generally, additional smoke detection is required throughout the child care rooms. An additional manual pull station is required. Existing horn/strobe units need to be replaced and additional horn/strobe units added.

Exit Signs

Exit signs are required per NFPA 101, Sections 13.2.10, 17.2.10 and 39.2.10. There are exit signs throughout the building however additional signs are required.

Means of Egress Illumination and Emergency Lighting

Means of egress are required to be illuminated per NFPA 101, Sections 13.2.8, 17.2.8 and 39.2.8.

Emergency lighting is required in stairs, corridors, assembly spaces, in interior or limited access portions of the building and at the exit discharge per NFPA 101, Sections 7.9.1.1, 13.2.9 and 17.2.9.

The means of egress is currently illuminated. Emergency lighting is provided by battery-powered units. There are no exterior emergency lights. Additional coverage is needed in some areas.

Egress

General Egress Requirements

Per NFPA 101, the egress is required to comply with Chapter 7 and specific Day Care requirements of Section 17.2.

Number of Exits

Two exits are required to be provided on every story and be accessible from every part of every story and mezzanine. This is the case for Day Care, Assembly and Business use (NFPA 101, Sections 7.4, 13.2.4.1, 17.2.4.1 and 39.2.4). The addition to the building is provided with the minimum required number of exterior doors. In the original building only one exit is provided, the exit stair. The ramp is considered a means of egress, but not an exit since there is no additional level of protection provided to occupants when they are on the ramp. The classroom located above the existing stair tower in the original building does not have access to any exits on its level.

An additional exit is required located in the vicinity of the ramp. The single classroom space can no longer continued to be used as there is no feasible means to provide this space with exiting.

Accessible Means of Egress

All areas of the building are required to be accessible with the exception of the mechanical rooms which do not need to be accessible per NFPA 101, Section 7.5.4.1.

Every accessible space must have two accessible means of egress unless only one exit is required and then only one accessible means of egress is required. (NFPA 101, Section 7.5.4.1) An accessible means of egress is defined as providing an accessible route to an area of refuge or to the public way (NFPA 101, Section 3.3.136.1). A story protected by an automatic sprinkler system with a minimum of two accessible spaces separated from each other by smoke partitions qualifies as an area of refuge. (NFPA 101, Section 3.3.17)

Because the building is sprinklered and the corridors are smoke partitions the majority of the building meets these requirements. The storage loft in the Storage Room adjacent to the stage and the mezzanine classroom in the original building located above the stair do not meet these requirements. The storage loft should only be used for access to the adjacent mechanical space and then it would not be required to be accessible. The mezzanine classroom should not be used since it is not feasible to provide an accessible means to access or egress this space.

The ramp serving the stage has a clear width of 34 inches. To be an accessible means of egress a ramp needs to have a clear width of 36 inches between handrails. If the guardrail is relocated along the edge of the stage this clear width should be provided.

Intervening Rooms

Exit access is not allowed to pass through intervening or adjacent rooms unless they are accessory to the space served. (NFPA 101, Section 7.5.1.6) The stage egress is currently through the adjacent storage room.

Required Widths

Means of egress are required to be provided with certain minimum widths as outlined below:

- 1. Corridors Required 44 inches 44 inches provided
- 2. Doors Required 32 inches 32 inches provided
- 3. Stairs Required 44 inches 44 inches provided

<u>Stairs</u>

Treads and Risers

Existing stairs are allowed to have a minimum tread depth of 10 inches. (NFPA 101, Table 7.2.2.2.1(b)) This measurement is from the edge of the tread overhang above to the edge of the tread overhang below. The tread depths in the stair enclosure are 10 inches meeting this requirement. The stairs leading to the mezzanine classroom have a tread depth of 9½ inches. Discontinuing using this space is recommended elsewhere in this report.

Treads should not be provided with nosings as these are considered a tripping hazard. The treads in the stair enclosure are provided with nosings.

Existing stairs are allowed to have a maximum riser height of 7½ inches. (NFPA 101, Table 7.2.2.1(b)) The riser heights in the stair enclosure are 7-7/8 inches, exceeding this requirement. The stairs leading to the mezzanine classroom have a riser height of 6½ inches.

Landings

Existing stairs are required to have a maximum height between landings of 12 feet to allow occupants to have a resting spot if required between flights of stairs. (NFPA 101, Table 7.2.2.2.1(b)) The landing to landing heights throughout the building meet this requirement.

Handrails and Guardrails

Existing stairs are required to have handrails on one side located 30 to 38 inches above the surface of the tread. Providing a handrail on both sides is preferable and would be required in new construction. The handrails at the stairs are below the 30 inch requirement.

Existing guards for stairs are permitted to be at a height of 30 inches. (NFPA 101, Section 7.2.2.4.5.2(3)) The guards at the stairs do not meet the 30 inches.

In new construction openings in guardrails are limited in size so that a 4 inch sphere cannot pass through. The requirement does not apply to existing guardrails but is recommended. (NFPA 101, Section 7.2.2.4.5.3) The existing guardrails are solid.

Stair Signs

Stairs above grade are not required to have signage when they connect fewer than four stories. (NFPA 101, Section 7.2.2.5.4.1) Stairs that require travel in an upward direction to reach the level of exit discharge are not required to have signage when they are only one level below grade and the exit discharge is clearly obvious. (NFPA 101, Section 7.2.2.5.4.2(B)) The stair is serving a floor only one level below grade so stair signs are not required.

<u>Ramps</u>

Existing ramps are allowed to have a minimum clear width of 30 inches. (NFPA 101, Table 7.2.5.2(b)). The ramps in the main entrance have a clear width of 41 inches on one run and 44 inches on the other run. The ramp off the stage has a clear width of 34 inches.

<u>Doors</u>

Number Required Number of egress doors required (IBC, Tables 1014.1 and 1018.1 and NFPA 101, Section 7.4.1.2):

Occupant Load	Number of Doors
0-49	1
50-500	2
501-1000	3
>1000	4

Throughout the building, the required number of doors is provided.

Boiler rooms greater than 500 SF and with individual fuel-fired equipment in excess of 400,000 Btu input capacity are required to have two egress doors separated by a minimum of half the diagonal of the space. (IBC Section 1014.3) The Boiler Room is only 320 square feet, so the single means of egress provided is compliant.

Panic Hardware

Panic hardware is required on doors serving an area with an occupant load greater than 100. (NFPA 101, Section 17.2.2.2.2) Panic hardware has been provided on doors serving these occupant loads.

Swing

Doors need to swing in the direction of egress travel when serving an area with an occupant load greater than 50. (NFPA 101, Section 7.2.1.4.2) Doors in an exit enclosure are required to swing in the direction of egress travel. The door swings throughout the building are compliant.

Locking

Closet doors and spaces such as refrigerators and freezers must be capable of being opened by children from the inside (NFPA 101, Section 17.2.2.2.4). Bathroom doors that are locking, must be capable of being unlocked from the outside by an opening device readily accessible to staff (NPFA 101, Section 17.2.2.2.5). A thorough review of all locks will need to be completed if this project moves forward. It is unknown what type of kitchen equipment will be present in the final design. Initial investigations indicate that bathroom locks can be unlocked from the exterior with a flathead screwdriver.

Egress Windows

Egress windows are not required because the building is sprinklered (NFPA 101, Section 17.2.11.1.2(1)).

Guardrails on Other than Stairs

Walking surfaces that are located more than 30 inches above the floor adjacent to them are required to be provided with guardrails that are 42 inches high. (NFPA 101, Sections 7.1.8 and 7.2.2.4.5.2) The storage loft in the storage room adjacent to the stage has a 32 inch high guard.

Site

The parking lot at the Lunt School is currently striped to accommodate roughly 41 cars, including two handicapped accessible spaces. CDS has indicated that it has 75 staff, most of them full time. In

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addition, CDS will need drop-off and parking for parents. The existing bus drop-off in front of the building has the potential for creating some additional parking spaces, particularly short term spaces for drop-off and pick-up. However, this drop off is currently mostly curbed, and so handicapped accessible drop-off spaces would not be easily provided in this location without modifications to the curb and sidewalk. There is also the potential for additional staff parking at the back of the school, which is currently paved but gated (used for play space and service vehicles). The existing accessible parking spaces do not meet code and some re-striping will need to happen. If additional parking spaces are added so that the total number of spaces is greater than 50, additional handicapped accessible space(s) will also need to be added.

The Child Care Licensing Rules require that the facility must have access to an outdoor play area with sufficient play space for all children that is age-appropriate and safe. CDS has not identified that they will need outdoor play equipment. However, the Lunt School has no code-compliant playground equipment in the immediate outdoor vicinity of the building. The lower playground area (near the Plummer-Motz School) is the closest playground, and it is not along an accessible route. There are areas around the building where play equipment could be installed, if this is required. The Town should speak further with CDS about their needs in this regard.

Plummer-Motz School Existing Conditions

Passive Fire Protection Features

Type of Construction

The three story plus basement building is brick exterior walls with wood framing and decking. The building is classified as IBC Type IIIB and NFPA Type III(200) type of construction. In this type of construction exterior walls are of noncombustible construction and rated for 2-hour fire resistance if they are bearing walls. The remainder of the building contains combustible and non-combustible materials.

Height and Area Limitations

Children under the age of 3 years are restricted to floors having direct exit at grade level per CMR 10-148, Section 22.2.

Per DNSR and NFPA 101, Table 17.1.6.1, because the building has wood frame construction and is not fully sprinklered, children are only permitted at the ground level (with direct access to the exterior). If the building becomes fully sprinklered, children are permitted to be one story above grade. This can be achieved one of two ways. Either the entire Plummer-Mason-Motz areas are sprinklered. Or the Plummer building is isolated from the remainder of the building by a structurally independent fire wall or demolition of the connecting corridor. Oak Point Associates recommends fully sprinklering the building. Additionally, the existing Plummer sprinkler system will need to be upgraded to an NFPA 13 compliant system.

The type of construction complies with NFPA 101, Table 13.1.6 which allows any assembly occupancy on the level of exit discharge in a sprinklered building. NFPA 101 does not govern the type of construction of business occupancies.

Interior Compartmentation

Specific Occupancy Areas

The following areas represent an increased hazard and need to be separated from the remainder of the building by vertical and horizontal partitions having the rating shown. These items are required with or without the Day Care occupancy.

Separations per NFPA 101, Sections 8.7, 13.3.2, 17.3.2.1 and 39.3.2:

- 1. boiler and furnace rooms (any size equipment, no requirements if only air-handling), 1-hour fire resistant separation or sprinklered with smoke partitions
- 2. storage rooms > 100 SF, 1-hour fire resistant separation or sprinklered with smoke partitions
- 3. mechanical rooms (considered storage rooms) > 100 SF, 1-hour fire resistant separation or sprinklered with smoke partitions
- 4. janitor's closets, 1-hour fire resistant separation or sprinklered with smoke partitions, (doors may have louvers in sprinklered buildings)
- 5. laundries (with more than a single domestic-type clothes washer/dryer, 1-hour fire resistant separation and sprinklered
- 6. rooms with hazardous materials, 1-hour fire resistant separation and sprinklered

The three story portion of the building is sprinklered. In this area, the majority of rooms with an increase in hazard, such as storage rooms greater than 100 square feet are allowed to be separated by smoke partitions instead of a 1-hour fire resistant enclosure because of the sprinkler protection. Doors are required to be self-closing and joints and penetrations are required to resist the passage of smoke.

In remainder of the building where it is not sprinklered, all areas with an increase in hazard are required to be provided with sprinklers or a 1-hour fire resistant enclosure. To achieve this rated enclosure, not only do the walls need to have a 1-hour fire resistant rating, but the floor/ceiling assembly separating it from the floor above or below is also required to be rated, the supporting construction of this horizontal assembly is required to be 1-hour fire resistant, the doors are required to be 45-minute rated and self-closing, and penetrations and joints are required to be fire stopped with assemblies rated for 1-hour. The majority of these types of spaces are constructed of walls which provide the minimum required fire resistance rating, however the floor/ceiling assembly is not rated; and there are also unsealed penetrations and joints. Sprinklering this portion of the building would reduce the majority of these enclosures to smoke partitions.

Corridors

Because the building is recommended to be fully sprinklered, corridors will be permitted to be constructed as smoke partitions per NFPA 101, Section 17.3.6(2). If the building is not fully sprinklered,

corridors require upgrades to 1-hour construction by extending the existing walls to the deck above, providing 20-minute doors with closers and providing firestopping at penetrations and joints. There are no corridor rating requirements required for the assembly or business uses.

Throughout the building the corridor walls are constructed as required for smoke partitions. A smoke partition is allowed to only extend to the underside of a monolithic or suspended ceiling system where the ceiling forms a continuous membrane; a smoke-tight joint is provided between the smoke partition and the bottom of the suspended ceiling; and the space above the ceiling is not used as a plenum. (NFPA 101, Section 8.4.2) Many doors are not provided with closers and many are provided with door stops or are wedged open, both preventing the door closer from operating properly.

Vertical Openings

Vertical openings are required to be in compliance with NFPA 101, Section 8.6 per Sections 13.3.1, 17.3.1 and 39.3.1 for all three occupancies.

Stair Enclosures - Vertical exit enclosures are required to be constructed of 1-hour fire barriers with 60minute latching and self or automatic closing doors. The fire resistance rating of 1-hour is allowed because the stair shaft connects less than four stories. (NFPA 101, Section 7.1.3.2.1) The walls are required to extend from the ground floor to the underside of the roof deck. The joint between the walls and roof deck is required to be fire stopped. The stair is not allowed to have openings to non-normally occupied spaces such as storage, mechanical rooms or lavatories. (NFPA 101, Section 7.1.3.2(5)) The stair is not allowed to have penetrations except for electrical conduit serving the stair, water or steam piping necessary for the heating or cooling of the stair, sprinkler piping, penetrations for fire alarm circuits and existing penetrations that are fire stopped. (NFPA 101, Section 7.1.3.2(6)) Once an occupant enters the stair, they cannot be required to leave the stair until they are discharging at the exterior of the building.

The two original stair enclosures appear to be of gypsum wallboard or plaster construction which should achieve the 1-hour rating. The added rear stair is of block construction which also should achieve the 1-hour rating.

With the exception of the doors on the second floor, the doors serving the two original stair enclosures have the required 60-minute rating and are self-closing but are provided with devices preventing them from closing such as a latch or a door stopper. The doors on the second floor are non-rated and are not self-closing. The doors serving the newer stair in the rear of the building are 45-minute rated and are self-closing.

There are no normally occupied spaces opening onto the stair enclosures. The rear stair is in a common shaft with the elevator. These are required to be in located in separate shafts.

In the two original stairs, when an occupant enters the stair on the second floor, they are required to leave the stair enclosure on the first floor and then return to the stair enclosure before discharging at the ground floor.

The stairs to the basement and the attic by the Multi-Purpose Room are only enclosed at one level, the ground level. The stair to the attic is provided with a 1-hour, self-closing door however this door is held open with a wedge. The stair to the basement is provided with a 1-hour self-closing door; however, this door is held open with a door stopper. NFPA 101, Section 7.2.2.5.1.3 allows stairs to only be enclosed on the level of exit discharge in existing buildings.

Convenience Opening – The Multi-Purpose Room is a two story space interconnecting the attic above the Multi-Purpose Room with the first floor. A convenience opening is required to be separated from one level with 1-hour construction per NFPA 101, Section 8.6.8.1. The second floor separation is a concrete masonry unit wall which achieves the required rating, but penetrations and joints require firestopping.

Shaft Enclosures- Shafts are required to be constructed of 30-minute fire barriers per NFPA 101, Section 8.6.5(3). All penetrations require fire dampers and firestopping per NFPA 101 and the IEBC, Section 912.7.4. The Boiler Room is essentially a shaft between the basement and the ground floor. A communicating space is defined as a floor opening between floor levels that does not connect more than three contiguous stories. The Boiler Room enclosure appears to meet the requirements for a 1-hour fire resistance rating, but there are unsealed penetrations and joints and fire dampers are required.

Elevator Machine Rooms

Elevator machine rooms are required to have the same fire-resistance rating as the elevator shafts they serve. The elevator shaft is required to have a 1-hour rating because it is only interconnecting three levels. The elevator is in a CMU enclosure with a 90-minute door that should provide the 1-hour rating required however there are several louvers in these walls that are not fire rated.

Interior Finish Ratings

Based on the change of use, per IEBC, Section 912.3 and IBC, Table 803.9 for nonsprinklered B occupancies, the finishes on the walls and ceilings within the exits are required to be a minimum of Class A. The finishes on the walls and ceilings within corridors are required to be a minimum of Class B. Within remaining spaces, a minimum of Class C is required. Per NFPA 101, Sections 10.2 and 17.3.3, the finishes on the walls and ceilings throughout the building are required to be a minimum of Class C. There are no interior floor finish requirements per either code. Class A is defined as having a flame spread index from 0-25. Class B has a flame spread index from 26-75. Class C has aflame spread from 76-200. All classifications have a smoke development index from 0-450.

Typical interior finishes throughout the building are painted gypsum/plaster walls and suspended acoustical tile (SAT) ceilings. Without testing it is not possible to determine if the paint on the walls

meets these requirements however in laboratory testing, paint has not been shown to significantly increase the flame spread of the material it is applied to. Gypsum and plaster are considered Class A materials. SAT ceilings typically have an A classification.

Exterior Ratings

Fire Separation Distance

If the portable classrooms are no longer present, the fire separation distances for the building exceed 30 feet and therefore have no exterior wall rating or opening requirements. The portable classrooms located around the building are approximately 35 feet away. This results in a fire separation of 17 feet for each building. In new construction, this would require each building to have an exterior wall rating of 1-hour which is not currently provided.

Stairs

Where stair walls intersect exterior walls and the exterior walls are at an angle of less than 180 degrees, the exterior wall is required to be a one-hour fire barrier with 45-minute opening protection for a distance of 10 feet beyond the intersection. (NFPA 101, Section 7.2.4.3.3) This is to protect the stair from a fire inside the building. The rear stair serving the multi-story space has exposure from the Resource Room at a 90 degree angle. This room has a non-rated exterior window within 10 feet of the intersection of the stair.

Active Fire Protection Features

Automatic Sprinkler System

There is an automatic sprinkler system provided throughout the Plummer building. A four inch sprinkler riser is located in the boiler room with a Siamese fire department connection at the front of the building. The system does not have a backflow preventer and there is no tamper switch on the sprinkler entrance shut-off valve. The Motz building and the corridor that connects the Motz and Plummer buildings are not sprinklered.

Occupant Notification

Detection and Alarm Systems

A fire alarm system is required in accordance with NFPA 101, Section 9.6, per Section 16.3.4.1. The fire alarm system is required to be initiated by manual means, operation of any required smoke detectors and activation of the sprinkler system per NFPA 101, Section 16.3.4.2. The fire alarm system is required to notify the fire department in accordance with NFPA 101, Section 9.6.4, per Section 16.3.4.5 and DNSR.

A smoke detection system is required in accordance with NFPA 101, Section 9.6 per Section 16.3.4.5 for the Day Care occupancy. Smoke detectors are required on each story in front of the doors to the stairways and in the corridors of all floors occupied by the Day Care occupancy. Smoke detectors are also required in lounges, recreation areas and sleeping rooms (including rooms where children nap) in the Day Care occupancy per NFPA 101 and in all rooms and/or area used for the child care center per DNSR.

The remainder of the fire alarm system is required to be in compliance with NFPA 70 and 72 per Section 9.6.1.3 except for components that are considered to be an approved existing installation.

The existing system is a Notifier 500, 16-zone panel; 8 zones are used. Some components of the old Simplex system are being used. Horn/strobes are a combination of ADA and non-ADA types, and additional horn/strobes are needed to meet present NFPA 72 and ADA requirements. There are duct heat detectors on the air handling units, but no duct smoke detectors. Smoke detectors are nonexistent, except those associated with the elevator. There are manual pull stations at most exits; however these are located over twelve inches high and often more than five feet from the exit.

Neither the assembly nor the business occupancy classifications trigger upgrades to the fire alarm system smoke detection as a fire alarm system is not required for these uses in the configurations that would be present in the Plummer-Motz building. Because a fire alarm system is provided, horn/strobes need to comply with NFPA 72 and ADA.

A thorough review of the fire alarm system is required to determine the exact modifications required and the capacity of the fire alarm panel for these modifications. Generally, smoke detection is required throughout corridors at the stairs and within the child care rooms. Manual pull stations need to be relocated. Existing horn/strobe units need to be replaced and additional horn/strobe units added.

Exit Signs

Exit signs are required per NFPA 101, Sections 13.2.10, 17.2.10 and 39.2.10. There are exit signs throughout the building however additional signs are required.

Means of Egress Illumination and Emergency Lighting

Means of egress are required to be illuminated per NFPA 101, Sections 13.2.8, 17.2.8 and 39.2.8.

Emergency lighting is required in stairs, corridors, assembly spaces, in interior or limited access portions of the building and at the exit discharge per NFPA 101, Sections 7.9.1.1, 13.2.9 and 17.2.9.

There is battery powered emergency lighting in the building, but coverage is incomplete. No exterior emergency lights exist in the building and there are five exits that need exterior lights.

Egress

General Egress Requirements

Per NFPA 101, the egress is required to comply with Chapter 7 and specific Day Care requirements of Section 17.2.

Number of Exits

Two exits are required to be provided on every story and be accessible from every part of every story and mezzanine. This is the case for Day Care, Assembly and Business use (NFPA 101, Sections 7.4, 13.2.4.1, 17.2.4.1 and 39.2.4).

On the second floor of the multi-story portion of the building two exits are provided, but these are not accessible from every space. To access both exits, the two classrooms on the floor would have to pass through each other. This would be considered an intervening room and would not be code compliant.

On the first floor of the multi-story portion of the building three exits are provided and are accessible from every space.

On the ground floor of the multi-story portion of the building three exits are provided. Access to these exits is through the Library. This would be considered an intervening room and would not be code compliant.

On the ground floor of the single-story portion of the building five exits are provided. These are doors directly to the exterior of the building.

Accessible Means of Egress

All areas of the building are required to be accessible with the exception of the mechanical rooms which do not need to be accessible per NFPA 101, Section 7.5.4.1.

Every accessible space must have two accessible means of egress unless only one exit is required and then only one accessible means of egress is required. (NFPA 101, Section 7.5.4.1) An accessible means of egress is defined as providing an accessible route to an area of refuge or to the public way (NFPA 101, Section 3.3.136.1). A story protected by an automatic sprinkler system with a minimum of two accessible spaces separated from each other by smoke partitions qualifies as an area of refuge. (NFPA 101, Section 3.3.17)

Within the sprinklered multi-story portion of the building the majority of the space meets these requirements. On the upper floor, the addition of a corridor between the two exit stairs will provide the smoke partitions required.

Within the non-sprinklered single-story portion of the building, accessible means of egress are provided by doors to the exterior of the building.

Intervening Rooms

Exit access is not allowed to pass through intervening or adjacent rooms unless they are accessory to the space served. (NFPA 101, Section 7.5.1.6)

On the upper floor of the multi-story portion of the building two exits are provided. To access both exits, the two classrooms on the floor would have to pass through each other. This is considered an intervening room and is not be code compliant.

On the ground floor of the multi-story portion of the building three exits are provided. Access to these exits is through the Library. This is considered an intervening room and is not be code compliant.

Required Widths

Means of egress are required to be provided with certain minimum widths as outlined below:

- 1. Corridors Required 44 inches 44 inches provided
- 2. Doors Required 32 inches 32 inches provided
- 3. Stairs Required 44 inches 44 inches provided

<u>Stairs</u>

Treads

Existing stairs are allowed to have a minimum tread depth of 10 inches. (NFPA 101, Table 7.2.2.2.1(b)) This measurement is from the edge of the tread overhang above to the edge of the tread overhang below. The tread depths throughout the building meet this requirement.

Treads should not be provided with nosings as these are considered a tripping hazard. All of the stairs in the building have treads with nosings, the two original stairs are provided with 1 inch nosings while the newer rear stair has 3/8 inch nosings.

The treads on the original stairs are deteriorating and should be replaced to prevent a tripping hazard.

Risers

Existing stairs are allowed to have a maximum riser height of 7½ inches. (NFPA 101, Table 7.2.2.1(b)) The riser heights throughout the building meet this requirement.

Landings

Existing stairs are required to have a maximum height between landings of 12 feet to allow occupants to have a resting spot if required between flights of stairs. (NFPA 101, Table 7.2.2.2.1(b)) The landing to landing heights throughout the building meet this requirement.

Handrails and Guardrails

Existing stairs are required to have handrails on one side located 30 to 38 inches above the surface of the tread. Providing a handrail on both sides is preferable and would be required in new construction. The handrails at the stairs are below the 30 inch requirement.

Existing guards for stairs are permitted to be at a height of 30 inches. (NFPA 101, Section 7.2.2.4.5.2(3)) The guards at the stairs do not meet the 30 inches.

In new construction openings in guardrails are limited in size so that a 4 inch sphere cannot pass through. The requirement does not apply to existing guardrails but is recommended. (NFPA 101, Section 7.2.2.4.5.3) The existing guardrails are solid. The exterior stair guardrails have large openings.

Stair Signs

Stairs above grade are not required to have signage when they connect fewer than four stories. (NFPA 101, Section 7.2.2.5.4.1) Stairs that require travel in an upward direction to reach the level of exit discharge are not required to have signage when they are only one level below grade and the exit discharge is clearly obvious. (NFPA 101, Section 7.2.2.5.4.2(B)) There are no stairs that connect four or more stories or that required travel in an upward direction to reach the level of exit discharge from more than one level below grade so no signs are required.

Corridors

When the folding gate in the Mason corridor is closed, this creates a dead-end corridor of 51 feet, in excess of the allowable length of 20 feet, leading towards the Multi-Purpose Room on the ground floor. This gate needs to be removed.

Ramps

Existing ramps are allowed to have a minimum clear width of 30 inches. (NFPA 101, Table 7.2.5.2(b)). The ramps adjacent to the main entrance of the building far exceed this requirement.

Doors

Number Required

Number of egress doors required (IBC Tables 1014.1 and 1018.1 and NFPA 101 Section 7.4.1.2):

Occupant Load	Number of Doors
0-49	1
50-500	2
501-1000	3
>1000	4

Typically throughout the building, the required number of doors is provided.

Boiler rooms greater than 500 SF and with individual fuel-fired equipment in excess of 400,000 Btu input capacity are required to have two egress doors separated by a minimum of half the diagonal of the space. (IBC Section 1014.3) The Boiler Room is 529 square feet and the Btu capacity is 3,000,000, so a second means of egress is required. Currently only one means of egress is provided.

Panic Hardware

Panic hardware is required on doors serving an area with an occupant load greater than 100. (NFPA 101, Section 17.2.2.2.2) Panic hardware has been provided on doors serving these occupant loads.

Swing

Doors need to swing in the direction of egress travel when serving an area with an occupant load greater than 50. (NFPA 101, Section 7.2.1.4.2) Doors in an exit enclosure are required to swing in the direction of egress travel. The door swings throughout the building are compliant.

Locking

Closet doors and spaces such as refrigerators and freezers must be capable of being opened by children from the inside (NFPA 101, Section 17.2.2.2.4). Bathroom doors that are locking, must be capable of being unlocked from the outside by an opening device readily accessible to staff (NPFA 101, Section 17.2.2.2.5). A thorough review of all locks will need to be completed if this project moves forward. It is unknown what type of kitchen equipment will be present in the final design. Initial investigations indicate that bathroom locks can be unlocked from the exterior with a flathead screwdriver.

Landings

In existing buildings, the floor level beyond the doors to the exterior is allowed to be one step lower than the floor level on the inside provided this step does not exceed 8 inches. (NFPA 101, Section 7.2.1.3.5) The two original stair towers both have this condition with a step of 6 inches.

Egress Windows

Where two egress doors are not provided leading to separate areas, egress windows are required with a clear opening of 5.7 square feet per DNSR and NFPA 101, Section 17.2.11.1.1. The opening cannot be less than 20" in width and 24" in height. The bottom of the opening cannot be more than 44" above the ground. Egress windows will need to be provided within child care areas unless the building is sprinklered.

Site

There is one large parking lot to the north of the Plummer School that is currently striped to accommodate 50 cars, including two handicapped accessible spaces. There are an additional 25 spaces around the entrances to the Motz and Mason buildings. CDS has indicated that it has 75 staff, most of them full time. In addition, CDS will need drop-off and parking for parents. The existing drop-off in front of the Mason building has the potential for drop-off and pick-up. It appears that there will be sufficient parking for CDS in the vicinity of Plummer-Motz, but will leave little additional parking for Community Programs if they relocate to the Motz wing. There is room for parking expansion on the site, particularly adjacent to the existing 50-space lot.

The Child Care Licensing Rules require that the facility must have access to an outdoor play area with sufficient play space for all children that is age-appropriate and safe. CDS has not identified that they will need outdoor play equipment. There is a playground directly behind the Motz wing that was installed fairly recently. It appears more appropriate for an age 5-12 than to preschoolers, and is not fenced. Additional equipment (perhaps closer to Plummer), and enclosure fencing may be desired or required by CDS. The Town should speak further with CDS about their needs in this regard.

Recommendations

D.W. Lunt School

Day Care Initiated Items

- 1. Children 3 and under are only permitted at grade level.
- 2. Child care cannot be located on the lower level of the two story portion because it is below grade.
- 3. Because the building is sprinklered, children above the age of three can be located one level above grade. They cannot be located in the classroom above the existing stair enclosure.
- 4. All corridor doors require door closers.
- 5. Additional smoke detection is required within all rooms to be used as part of the child care center.
- 6. Outdoor play equipment may be required.

Therapy Initiated Items

- 1. If the therapy (business) use exceeds 10% of the floor area of the stories it is located on then provide IEBC required structural, mechanical, electrical and plumbing reviews.
- 2. Structural reinforcement of the elevated floor in the 1941 school building is required due to the increased live load per IEBC, Section 907.1

Items Required for any Project Involving Change of Use to Day Care or Business

- 1. Upgrade Boiler Room and Fuel Oil Storage Room Joint Fire Stopping Where fire stopping at joints is deteriorating remove and replace with a tested system. Where fire stopping at joints is not provided, install fire stopping that meets a tested system.
- 2. Upgrade Less Hazardous Specific Occupancy Separations Provide door closers, remove door stoppers and seal penetrations smoke tight.
- 3. Upgrade Stair Enclosure Provide 60-minute rated fire resistant doors with magnetic hold open devices. Add a rated doorway in the hallway between the stair enclosure and the Boys Room to isolate this non-normally occupied space from the stair. Replace the wired glass window with a 60-minute fire resistant window that has been tested as required for a wall.
- 4. Upgrade shaft penetrations with firestopping and/or fire dampers.
- 5. Upgrade Sprinkler System Upgrade the sprinkler system as required by NFPA 13 throughout the building. This will require a detailed review of the system.
- 6. Upgrade Fire Alarm System A thorough review of the fire alarm system is required to determine the exact modifications required and the capacity of the fire alarm panel for these modifications. Minimally, an additional manual pull station is required. All horn/strobe units need to be updated to NFPA 72/ADA compliant types and additional horn/strobe units added.
- 7. Add Emergency Lighting additional lighting is required.
- 8. Add Exit Signs additional exit signs are required.
- 9. New Exit Stair Install a new stair tower to serve the two floors of the original building. The classroom located above the existing stair tower should not be used for any occupancy as there is no feasible means to provide this space with exiting directly from this level. (This item may not be

required depending on the type of business use selected. If a single tenant business use is present a single exit is permitted for a maximum two story space provided that the travel distance to the exterior does not exceed 100 feet. The therapy use is not considered a single tenant because the children receiving therapy and their families are not in the space day in day out as would be the case, for example, in an office building of one company.)

- 10. Discontinue Use of Non-Accessible Spaces The storage loft in the Storage Room adjacent to the stage should not be used for storage and the mezzanine classroom located above the stair tower should not continued to be used. These would allow these spaces to not be accessible.
- 11. Stage Ramp Attach the guardrail to the stage instead of the ramp floor to increase the ramp clear width.
- 12. Provide Corridor for Stage Egress A portion of the storage room adjacent to the stage should be converted to a corridor to provide a means of egress from the stage.
- 13. Rebuild Stairway Rebuild the stair within the stair enclosure so that riser height and tread depth comply with the minimum and maximum requirements. Provide treads without nosings. Reconfiguring the stair will require the exterior door of the stair to be moved closer to the adjacent exterior walls of the building.
- 14. Replace Stairway Handrails and Guardrails When the stairway in the stair enclosure is rebuilt, provide code compliant guardrails and handrails.
- 15. Replace Storage Loft Guardrail Replace the Storage Loft guardrail with one that has is 42 inches high. This is required even if the loft is not used for storage.
- 16. Provide additional parking spaces and provide code-compliant handicapped accessible parking spaces.

Plummer-Motz School

Day Care Initiated Items

- 1. Children 3 and under are only permitted at grade level.
- 2. The children can only be located at grade (with direct access to the exterior) unless the building becomes fully sprinklered. This can be achieved one of two ways. Either the entire Plummer-Mason-Motz areas are sprinklered. Or the Plummer building is isolated from the remainder of the building by a structurally independent fire wall or demolition of the connecting corridor. Oak Point Associates recommends fully sprinklering the building. If the building is fully sprinklered, then children above the age of three can be located one level above grade. The remaining recommendations are based on the building becoming fully sprinklered.
- 3. All corridor doors require door closers. (If a sprinkler system is not provided corridors require upgrades to 1-hour construction by extending the existing walls to the deck above, providing 20-minute doors with closers and providing firestopping at penetrations and joints).
- 4. A complete smoke detection system is required throughout the building. Currently only elevator associated smoke detection is provided.
- 5. Unless a sprinkler system is provided throughout, egress windows are required in child care rooms.
- 6. Outdoor play equipment may be required.

Therapy Initiated Items

1. If the therapy (business) use exceeds 10% of the floor area of the stories it is located on then provide IEBC required structural, mechanical, electrical and plumbing reviews.

Items Required for any Project Involving Change of Use to Day Care or Business

- 1. Upgrade Specific Occupancy Area Separations if a sprinkler system is provided upgrades to smoke partitions are required, otherwise upgrades to 1-hour fire partitions are required.
- 2. Upgrade Boiler Room Penetration and Joint Fire Stopping Seal penetrations and joints with fire stopping. Provide fire dampers with access panels at ductwork penetrations.
- 3. Rebuild Original Stair Enclosures Rebuild the original stair enclosures so that occupants are not required to leave the stair enclosure once they have entered it. Provide 60-minute fire resistant rated doors on magnetic hold opens so the doors are not held open by devices that will not release under a fire condition.
- 4. At the elevator addition stair, a wall is required between the stair and the elevator lobby so that the elevator does not open onto the stair enclosure. A rated shaft wall ceiling is also required to isolate the existing ductwork penetrations from the stair enclosure.
- 5. Remove Door Stoppers Remove the door stoppers on the Attic and Basement Stair doors so these doors will close under a fire condition.
- 6. Update Elevator Machine Room Enclosure Replace non-rated louvers with louvers rated for a minimum of 60-minutes.
- 7. Update Attic Separation Update the separation from the attic to the ground floor by providing firestopping at penetrations and joints.
- 8. Rate Resource Room Windows do to Exposure to Stair The exterior walls of the building typically provide the minimum 1-hour rating required. Upgrade the exterior windows for 10 feet beyond the exterior stair wall to provide a 45-minute rating.
- Upgrade Sprinkler System Upgrade the Plummer sprinkler system as required by NFPA 13. This
 will require a detailed review of the system, but an initial walk through does not indicate many
 deficiencies although a backflow preventer and supervisory devices need to be added at the water
 entrance.
- 10. Upgrade Fire Alarm System A thorough review of the fire alarm system is required to determine the exact modifications required and the capacity of the fire alarm panel for these modifications. Manual pull stations need to be relocated closer to exits and lowered. All horn/strobe units need to be updated to NFPA 72/ADA compliant types and additional horn/strobe units added. Duct smoke detection is required.
- 11. Add Emergency Lighting and Means of Egress Lighting additional lighting is required.
- 12. Add Exit Signs additional exit signs are required.
- 13. Upgrade Access to Exits On the ground and second floor of the multi-story portion of the building add exit access corridors that interconnect the stair enclosures.
- 14. Rebuild Original Stair Enclosures Rebuild the original stair enclosures so that occupants are not required to leave the stair enclosure once they have entered it. Provide 60-minute fire resistant rated doors on magnetic hold opens so the doors are not held open by devices that will not release under a fire condition.

- 15. When these stairs are rebuilt, provide treads without nosing. Also provide sufficient landing depth to allow the stair doors to swing into the stair enclosures without reducing the required width by more than allowable. Provide code compliant handrails and guardrails.
- 16. Remove Folding Gate in Mason Corridor When the folding gate is closed, a dead-end corridor is created that exceeds the allowable dead-end length.
- 17. Provide a second exit for the boiler room.