

PHILIP R. SHERMAN, P.E.

FIRE PROTECTION ENGINEERING AND BUILDING CODE CONSULTING

P.O. Box 216
444 WILMOT CENTER ROAD
ELKINS, NH 03233-0216
PHONE: 603-526-6190
FAX: 603-526-4979
EMAIL: PSHERMAN@PR Sherman.COM

Date: April 19, 2013
Proj: 1658.01

Meredith Public Library
91 Main Street
Meredith, NH 03253

Attention: Ms. Erin Apostolos

Re: Life Safety Code Survey

Dear Ms. Apostolos:

This letter will set forth the results of my survey of the above property for compliance with the New Hampshire State Fire Code, specifically as it references 2009 NFPA 101 Life Safety Code (LSC).

The intent of this survey is to understand the areas where the existing building is not in conformance with the code, as the code applies to existing buildings, and to suggest means for compliance where those means are not obvious. This effort is based on a visit to the site on April 2, 2013, and a review of available drawings, which were limited to the 1988 Phase II project. This review is limited to fire code issues related to the physical building, and does not include fire prevention issues, testing of fire protective systems, or other codes that may apply.

Building Description

The original building was constructed in 1901, with an addition constructed in the late 1980s and finished in the early 1990s over two phases. The historic part of the building is on the Federal Historic Register. The addition consists of a connecting center stair, known as the bridge, and three stories for functional spaces, known as the new wing. The building is used as a public library, and includes adult and children's reading rooms, stacks, work areas, a function room and storage rooms. The Life Safety Code occupancy is an existing place of assembly with some business and storage areas, per LSC 3.3.178.2, 3.3.178.3 and 3.3.178.15. There are no rated separations within the historic wing, therefore the entire wing is treated as a place of assembly, regardless of the occupant load of specific spaces.

Each portion of the building has three floor levels, however the historic and new wings are offset by about a half a story at the bridge stair, and the upper level within the historic building is offset into two levels. LSC 3.3.77.1 defines the level of exit discharge as lowest story where 50% of the exits discharge at grade, or, where no story meets this condition, the level of exit discharge is the story that has exits that discharge to grade via the smallest elevation change. The historic wing lower level discharges to grade at the bridge stair with an elevation change of about 77". The main level discharges to grade at the south exterior rear with an elevation change of about 33". Per LSC 4.6.3, this wing is therefore considered a two story wing with a basement. The new wing discharges to grade at the main level, therefore this wing is also a two story wing with a basement. Overall, the building is treated as a two story building with a basement, as this is the case at each location in the building.

The construction type of the historic building is Type III(200), consisting of exterior masonry bearing walls, with wood interior members and roof. The bridge and the new wing is constructed of steel and wood, and drawings indicate protection with Type X gypsum board, therefore the construction type is Type V(111).

As it appears that the bridge stair is separated by two hour construction, these construction types may be applied as they relate to the independent major areas.

Upper Level, Major Issues Affecting Code Compliance

In order to prioritize the discussion, the review of code compliance will start with a review of the major issues affecting the two parts of the upper level of the historic wing. Following this will be a discussion of other issues applicable to the building.

- LSC 13.1.6 limits the location of existing places of assembly, based on the construction type of the building, and the presence, or lack of, sprinklers.
 - For the historic wing, the main level place of assembly is permitted, but the upper level place of assembly is not permitted without automatic sprinklers throughout the main and upper levels. The lower level of the historic wing is a storage and business occupancy and construction type is not regulated.
 - For the new wing, the existing places of assembly are permitted at the lower level, main level and upper level.
- Egress from the historic building, upper level, consists of the bridge stair and a rear stair at the southwest corner.
 - The bridge stair has two restrooms, a storage room and an office opening directly into the stair. Significant combustibles are located in the stair, including a copy machine, and extensive displays and wall hangings.

- Doors into the stair appear to be rated, however several were installed in Phase I. labels were on the top of the door, and the rating could not be determined.
 - The rear stair consists of a narrow, steep, irregular, stair, with winders, limited non-compliant handrails for parts of the stair and an enclosure that is not rated.
 - In summary, the historic wing upper level occupancy is not permitted by code due to the construction type and lack of sprinklers, and the egress from the levels is seriously deficient.
- In order to continue the use of the upper levels in the historic wing, the following is proposed:
 - Option One, upgrade the construction type in certain areas, per LSC 13.1.6, with modifications below.
 - Provide a one hour fire rated ceiling throughout the basement of the historic building. Protect carrying beams, floor joists and deck above resulting in a one hour floor ceiling assembly. Columns are masonry at this level and provide at least a one hour rating.
 - Provide one hour fire rating for first floor columns, and for beams attached to columns, carrying the second floor.
 - Floor joists and the upper floor deck are to be protected by the existing plaster, provided at least a one half hour rating is achieved. This requires approval of the state fire marshal. Further investigation is required to determine existing conditions.
 - First floor partition walls are assumed to be non-load bearing, however if any are load bearing, provide one hour fire rating.
 - Roof and supporting structure is to be protected by the existing plaster, provided at least a one half hour rating is achieved. This requires approval of the state fire marshal. Further investigation is required to determine existing conditions.
 - One half hour fire ratings, in lieu of the required one hour fire ratings, are justified by existing smoke detection system.
 - Existing heat detection in storage and restrooms to be changed to smoke detection.
 - Existing heat detection in boiler room to remain.

- Provide, or confirm existing, heat detection in all unheated attics.
 - Confirm smoke detection is provided in every space.
- Option Two
 - Provide automatic sprinklers throughout the main and upper levels of the historic building per LSC 13.1.6.
 - Given the known difficulties in providing a sufficient water supply to the site, this option should at least be priced, as should the provision of an on site water supply for the sprinklers. It is likely, but not definitive, that option one is less expensive.
- Both options, correct issues with the bridge stair
 - Remove all copy machines, drinking fountains, and other electrical devices from stair, LSC 7.1.10.1.
 - Remove all wall hangings, library displays, coat racks, and other combustibles from stair, LSC 7.1.10.1.
 - Abandon storage room and provide one hour fixed access panel. There is to be no storage in this room, LSC 7.1.3.2.1(8).
 - Confirm that all doors to stair are 1.5 hour rated at the new wing wall, LSC 8.2.1.3
 - Confirm that all doors to the stair are at least one hour rated at the historic wing, LSC 7.1.3.2.1(1).
 - Confirm that the two hour wall is continuous behind the kitchenette, LSC 8.2.1.3.
 - Confirm that one hour wall is continuous at the basement door to the historic wing, LSC 7.1.3.2.1(1).
 - Permit existing restrooms to remain, based on provision of smoke detection within each room. This requires approval of the state fire marshal, LSC 7.1.3.2.1(8).
 - Provide legal handrail at wheelchair lift position. Currently, handrail is discontinuous and ends do not return, second handrail is blocked when lift is in operation. This may require a handrail outside of the path of the lift,

while maintaining a 44" stair for egress. This requires further investigation. LSC 7.2.2.4.1.6

- Provide legal risers to upper level, currently irregular.
- Exterior door to be equipped with panic hardware. Interior vestibule door to be similarly equipped if door has a latch, LSC 13.2.2.2.3.
- Exterior door has a one inch step at exterior. Provide exterior landing equal to elevation of interior floor, and equal to the depth of the door, slope from landing at 1:12 pitch, LSC 7.2.1.3.1. While the code permits an 8" step, this is not a step, it is a hazard.
- Both options, replace existing south stair with code compliant stair serving both parts of the upper level and discharging to the exterior, LSC 7.4.
 - In good conscience, there is no way to make the existing stair safe for continued use. While this may conflict with the historic nature of the existing building, this stair is a hazardous condition and needs to be replaced.
 - The new stair is to be in a one hour rated enclosure, supported by one hour rated construction. Support the stair enclosure from first floor deck, which will be one hour rated as indicated above, but do not support from upper floor deck as it will not be one hour rated, 7.1.3.2.1(1)
 - The replacement stair is not required to serve the basement, however the existing basement stair is to be removed. There is no practical way to make this stair safe for use.
 - The removal of the existing basement stair requires the approval of the state fire marshal. The existing basement is left with a single exit, however this should be proposed based on limited occupancy (one work station and storage), and the provision of the smoke detection system. Replacing the existing basement south stair appears to be extremely difficult without major work, for little additional benefit. LSC 39..2.4
 - In lieu of the new interior stair, provide a new exterior stair, and remove the existing stair at each level, LSC 7.4.

Other Code Compliance Issues

- Boiler room: In addition to the one hour ceiling indicated above, provide 3/4 hour rated door assembly. Walls are brick and two hour rated gypsum board, but penetrations need

to be sealed with sealant listed for the penetrations, and fire dampers are required at ducts, LSC 13.3.2.1.2(1)(a).

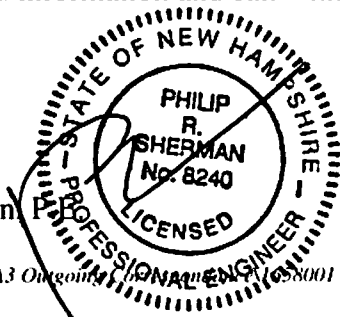
- North stair:
 - Remove all combustibles and storage from stair, including helium cylinder, ladder and coat racks, LSC 7.1.10.1.
 - Treads and risers are irregular, correct this to bring into compliance with LSC 7.2.2.3.6
 - Correct irregular threshold to exterior, and irregular exit discharge route, LSC 7.2.1.3.1, 7.7.
 - State fire marshal to approve existing first floor door blocking more than half the required width of the discharge door, LSC 7.2.1.4.2.1.
 - State fire marshal to approve existing stack aisle widths at 33" and 25", LSC 7.3.4.1(2)
 - Existing handrail is located 29" off tread nosing, at least at upper level. Review all handrails locations and locate at 34" - 38", or confirm existing location is at least 30" off tread nosing. LSC 7.2.2.4.1.
- Provide documentation of flame spread for all fabric wall coverings, and all low density fiberboard wall coverings, LSC 13.3.3.
- Main historic front door and discharge
 - If door is abandoned, provide exit path from main level to new enclosed stair above, then fix main front door in closed position and do not permit use.
 - If door is to continue in use, and if main level access is not provided to new stair, then both doors need to swing out, be equipped with legal hardware, remove dead bolts, remove screen door, LSC 7.2.1.
 - If door is to continue in use, and not be used for egress, door swing and hardware are permitted to remain.
 - If door is to continue in use:
 - Rework doors to provide an exterior landing equal to the depth of the door, LSC 7.2.1.3.1.

- Exterior stairs vary in tread and riser dimension. Bring in to compliance with LSC 7.2.2.3.6.
 - Provide legal one handrail along natural path of travel, LSC 7.2.2.4.1.
 - Correct all stepped ramps to create walking paths at <1:20, leading to compliant stairs with level landings at top and bottom, LSC Chapter 7
- Existing south stair discharge, if to be reused with new interior stair:
 - Provide risers in compliance with LSC 7.2.2.3.6
 - Upper level, mezzanine portion:
 - Door to new interior stair to swing into stair, 7.2.1.4.2.
 - Door to bridge stair, provide level landing on room side of door, LSC 7.2.1.3.1.
 - Reconnect missing door closer on office in bridge stair, 7.1.3.2.1(1).
 - Children's room provide handrails at stepped seating, LSC 13.2.5.6.8.
 - Review exit sign coverage from historic wing, based on reworking of egress paths, LSC 13.2.10.
 - Emergency lighting: Review coverage to provide code required coverage at all aisles from rooms requiring two exits, exit stairs and the exit discharge to the public way. Existing coverage appears insufficient, LSC 13.2.9.

Please review this information and call with any questions.

Yours truly:

Philip R. Sherman



D:\AaProj Closed\1658\A3 Outgoing\1658001 RU.wpd

A draft of this letter was issued on April 19, 2013, with no comments received in return. A final signed copy was requested on January 17, 2017 and issued on January 20, 2017. No additional site investigation, or review of the implications of the revised New Hampshire State Fire Code, were conducted in the interim..