Roxann D. Wedegartner
Mayor

City of
GREENFIELD, MASSACHUSETTS

Department of Inspections and Enforcement

Mark A. Snow
Building Commissioner

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MEMO

To: Roxann Wedegartner, Mayor

From: Mark Snow, Building Commissioner

Date: February 1, 2023

Re: Greenfield Library Overview (Leavitt Hovey House)

During recent conversation I learned the city is looking into occupying and using this building other ways than a Library, such as changing the occupancy and use from A-3 (Assembly use) to B (Business) offices.

The existing Library (Leavitt Hovey House) located at 402 Main Street is classified as an A-3 (Assembly) occupancy use and includes office use as an ancillary use. The existing Library and staff will vacate this building later this year to relocate into their new building.

This office has been asked to provide information pertaining to what work is necessary for this change in occupancy use. As part of this process a review of past documents relating to this building was done, those documents reviewed are listed below along with bullet points from each document. I have not included copies of each document listed below, but can do so if you wish.

1. February 2002 - Indoor Air Quality Assessment, Prepared by Massachusetts Department of public Health.

    - Carbon Dioxide levels elevated above 800 parts per million (ppm) in 16 of 18 areas surveyed. (Refer to P3 and Table 1 and 2)

    - In all areas examined, exhaust vents were deactivated. (Refer to P3)

    - Administrative offices located on 2nd floor do not have mechanical exhaust ventilation. (Refer to P4)

- Outdoor noises such as passing traffic were heard in airshaft indicting that this vent is likely open to the outdoors. (Refer to P4)

- A number of areas in basement do not have mechanical fresh air supply systems. (Refer to p4)

- Ground floor conference room had a relative humidity measurement of 70 percent. Prolong relative humidity concentrations above 70 percent can foster mold growth in susceptible materials such as carpeting, cardboard, paper, books, cloth and other materials. (Refer to P6)

- A second possible means for introducing moisture into the basement area is chronic moistening of the rear exterior wall from a combination of a lack of a gutter/downspout system for the roof and the existence of clinging ivy on the rear wall. (Refer to P7)

- Another source of moisture penetration into the building may be through the rear exterior wall. (Refer to P8)

- See report conclusions/recommendations for further details. (Refer to P 10 - 14)

* Note, As a result of the assessment conducted in 2002, conclusions/recommendations were made. There are fourteen (14) short-term measures that should be considered for immediate implementation (Refer to P11 & 12) and three (3) long-term measures (Refer to P13)

2. June 2018 – City of Greenfield ADA Self-Evaluation and Transition Plan, Prepared by Berkshire Regional Planning Commission.

    - Library, Greenfield & LeVanway Rooms not accessible; (Refer to P16)

    - Books, programs and services at Library Accommodations, None (Refer to P16)

    - The building and grounds are not ADA compliant. Non-compliant features include; (Refer to P24)

    - The Library is inaccessible with several physical barriers preventing a person with mobility challenges from entering the city building. The building was also built before the Americans with Disability Act of 1990. (Refer to P24 & 25)

        - The accessible route from site arrival points and accessible entrance is not stable, firm or slip resistant. (Refer to P24)

        - The route ramp has large crevices and is uneven. (Refer to P24)

- The restrooms are locked, and the public must first go to front desk to acquire the key to gain access to restroom facilities. (Refer to P24)
- The signage indicating accessible elevator is very small and accessing the elevator on the route is difficult. (Refer to P24)
- Aisles are not wheelchair accessible. (Refer to P24)
- Children's section is also not ADA compliant; the area has a step down and does not allow for wheelchair accessibility. (Refer to P25)
- Refer to pages 186 thru 201 for further bullet points

3. August 2, 2019 - Copy of periodic Inspection report
    - Numerous emergency lights throughout building not working. (Refer to report)
    - Walls in Greenfield room are in disrepair. (Refer to report)
4. August 13, 2019 Email from Mayor Martin regarding Executive Order in light of the Office of Mobility comments on ADA violations of the building and an architect's report on modifications required and cost of those modification.
    - Refer to email
5. August 28, 2019 Memo from Inspector of Buildings, Mark Snow to Mayor William Martin regarding Greenfield's Library occupant load.
    - Refer to memo
6. October 10, 2023 - Determination of Occupancy Load and Egress requirements for basement meeting rooms, prepared by Structural Support & Design Services.
    - Regarding egress from rooms B 101 and B 103, two code compliant means of egress are required by Building Code. (Refer to P8)
    - Exit at north end of the corridor (B102) serves as one means of egress. The doorway is 36 in, wide, which is slightly less than required (37 in) (Refer to report P8)
    - The enclosed stairway at the northern end of the west side of basement stack area is non-compliant and non-available as a second means of egress. (Refer to P8)

- Stairway to first floor (Outside of the Mechanical room) is not marked as an egress route from the basement and it is inaccessible. The door leading to the stairwell is locked when Library is closed. (Refer to P8)

- Basement is marked as an accessible entrance into the Library by the sign on the exterior wall. As such, it implies that a person entering through that door has the same level of safety as persons that do not require the accessible entrance. If that door is blocked, there is no second accessible means of egress from rooms B 101 and B 103 at any time, even when the Library is open. Essentially, it's a trap. Elevators cannot be considered as a means of egress during a fire.

- Egress doors cannot be locked in the direction of egress route. Typically, areas that are not open to the public or areas where access is limited are provided with hardware that sounds an alarm when opened (and appropriate signage) The entire egress route must be available at all times that the building is occupied. Refer to P8)

- The determination herein is that a compliant second means of egress is not available to the occupants in B101 and B 103 during times when Library is closed. At no time is there an accessible second means of egress available to occupants in the basement. Also, at no time is there a code compliant second means of egress from the stack area. (Refer to report P8)

- Three (3) options for compliant egress are listed on page 9. (Refer to report)

7. October 15 & 16 2019 Email from Ellen and Mike Rainville regarding their proposal for the use of the Library basement area.

    - October 15th email includes a proposal for the use of the Library basement area.

    - October 16, 2019 email from Mr. Rainville to Mark Smith

8. October 21, 2019

    - Email from George VanDelinder to Mayor Martin regarding follow up air quality study that was first done in 2002. Email further states Inspector took measurements of C02 levels, temperatures, and moisture level in walls, floors, and carpet in the basement rooms. Inspector was very concerned about high levels of moisture found in basement rooms. (Refer to email)

9. November 18, 2019 - Notice of Violation issued by the Inspections Department

    - Inadequate number of means of egress from Book Stack room. (Refer to report)

- Inadequate number of means of egress from rooms B 101 and B 103. (Refer to report)

- The stairway to the first floor is not adequately marked with signage as an exit. (Refer to report)

10. November 27, 2019 – Indoor Air Quality Assessment, Prepared by Massachusetts Department of public Health.

    - Several recommendations noted in 2002 report not resolved at time of November 2019 indoor Air Quality Assessment (Refer to P2 & 3)

    - Exhaust Vents, in all examined all exhaust vents were deactivated. (Refer to P4)

    - Administrative offices on 2nd floor offices do not have mechanical exhaust. (Refer to P4)

    - A second large grill located at top of stairwell from first floor may be connected to the eastern brick ventilation shaft. The sound of vehicle traffic was noted emanating from this grill, indicating the airshaft is likely open to the outdoors. (Refer to P4)

    - It is noted in the report that the HVAC system is over 20 years old. Efficient function of equipment at this age is difficult to maintain, since compatible replacement parts are often unavailable. (Refer to P5) According to ASHRAE, the service life for the various components of the HVAC system between 20 and 30 years old, assuming routine maintenance of the equipment (ASHRAE, 1991) despite attempts to maintain the equipment, the optimal operational lifespan of this equipment has been exceeded. (Refer to P5)

    - Room B101 had extensive water damage along its western wall (Picture 1). Attempts were made to repair in the form of gypsum wallboard patches used to fill holes in the base of the plaster wall. The use of gypsum wallboard is inappropriate because the backing can mold-colonized if chronically wet. (Refer to P5)

    - Water damaged ceiling tiles; some of the stained tiles were from roof leaks that have reportedly been repaired. The roof of the building was also examined. The roof membrane has become loose, resulting in pooling water. (Refer to P6)

    - The building is configured in a manner where significant hot, moist air can readily pass into interior of the building. Other sources of hot, humid air impacting the main offices include spaces around the basement door, as well as outdoor exterior doors. (Refer to P6)

- Exterior conditions impacting the building;
    - Roots from oak trees are entering sewer pipes resulting in blockage. (Refer to P8)

    - Debris accumulate around flat roof drain, creates a dam that inhibits rainwater drainage from the roof. (P8)

    - Oak tree prevents sunlight from drying the eastern wall of GPL. (P8)

    - Oak tree is a possible danger due to its distance from its exterior walls. Soil subsidence may also be caused by oak tree roots, which can undermine the structure of a building to cause wall and floor cracking as well as other related damage. (Refer to P8)

* Note, As a result of the assessment conducted in 2019, conclusions/recommendations were made. There were seven (7) recommendations recommended (Refer to P9 & 10)

11. December 2, 2019 - Executive Order #2019-4 Updated Library restrictions,(This order shall supersede Executive Order 2019-3 and shall take effect Monday, December 2, 2019

    - For the safety of staff and public, until further notice, the Library's ground floor book stack room is closed and not to be occupied until a plan as indicted by the professional engineer is submitted and approved by the Building Inspector; (Refer to Executive Order #2019-4)

    - Basement rooms 101 and 103 shall, at all times, provide two means of unimpeded egress from each room; AND FURTHER THAT, a maximum occupancy load for BOTH rooms shall be 49 with no overflow. (Refer to Executive Order #2019-4)

Based on the review of the documents listed above, this office provides the following comments;

Short term plan, Basement level and 1st floor;

1. Determine what areas of the basement and 1st floor levels will be occupied, determine whether those levels of the building will be open to public or will be occupied and used by employees only. Building open to public must meet 521 CMR Architectural Access Board regulations and means of egress requirements of 780 CMR.

2. Obtain a permit for Change of Occupancy use. A historic building undergoing repair, alteration, or change of occupancy shall be investigated and evaluated of the building (Work area). IEBC chapters 10 and 12.

- Complete Building Code Review drafted by Jones Whitsett Architects.

3. Has an evaluation of asbestos and condition of the asbestos been conducted? If so, indicate whether there are any immediate issues related to asbestos that need addressing.

4. The 2002 and 2019 Indoor Air Quality reports identify problems relating to moisture infiltration into building causing problems related to mold, elevated levels of carbon dioxide along with other issues that affect indoor air quality. Each of those reports not only identifies problems, recommendations have been provided that would resolve those problems and prevent further problems with Indoor air quality. Those recommendations in each report should be followed and actions taken to rectify those problems identified with indoor air quality. See 2002 and 2019 Indoor Air Quality reports.

5. Remove and replace all damaged materials affected by moisture and mold.

6. Investigate and evaluate to ensure all areas have adequate ventilation; any deficiencies should be addressed and resolved.

7. Investigate, evaluate, and recommission the existing HVAC systems to ensure these HVAC systems are adequately sized for the areas they serve and that units are functioning as designed.

8. Correct violations noted in November 18, 2019 report

9. Ensure any existing fire protection/detection systems are operational and have been inspected within the last year.

12. A Self-Evaluation and Transition Plan was conducted by the Berkshire Regional Planning Commission, a report was prepared and provided with their findings. Once the level of use for the basement and 1st floor levels are established, Steps should be taken to address and resolve deficiencies related to 521 CMR Architectural Access Board regulations.

13. 2nd floor exterior stairs (2nd means of egress) must be inspected and certified every 5 years.

14. Ensure there is adequate electrical service, outlets, and low voltage capabilities in areas intended for business use to accommodate new uses and layouts.

Long term plan Basement level and 1st floor;

1. Resolve any outstanding problems.

2. Renovate existing building; bring building up to meet current building, mechanical, electrical, plumbing, gas, codes, and accessibility and fire prevention regulations.

3. Consider installing a new elevator

Respectfully Submitted

Mark A. Snow
Building Commissioner

Determination of Occupancy Load

And

Egress Requirements for Basement Meeting Rooms

Greenfield Public Library

420 Main Street

Greenfield, MA

Prepared for:

The Town of Greenfield

14 Court Square

Greenfield, MA

Prepared by:

STRUCTURAL SUPPORT & DESIGN SERVICES

236 S. Shirkshire Rd.
Conway, MA 01341
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October 10, 2019

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1. EXECUTIVE SUMMARY

This report is a determination of the occupancy load and egress requirements for the meeting rooms located in the basement addition to the Greenfield Public Library.

Based on the calculated occupancy load, two means of safe egress from the two rooms are required. The exit at the north end of the corridor between the two rooms serves as one means of egress.

The second means of egress from the two rooms is the enclosed stairway that leads to grade at the northern end of the west side of the basement stack area. The stairway is non-code compliant as an egress route. The basement stack room is typically locked shut except during limited times when the stack area is occupied. Consequently, the basement stack room exit cannot be considered a safe means of egress.

The door to the stairway that leads up to the first floor (non-code compliant as an egress route) is also locked when the library is closed.

Egress doors and access routes must be operable at all times that the building is occupied.

The determination herein is that a code compliant second means of egress is not available to the occupants in the basement meeting rooms when used during periods when the library is closed. The basement stack area is also without a code compliant second means of egress. There is no accessible second means of egress available in the basement.

The building official and the fire chief are charged with public safety. They have the authority to require compliance with the building code in cases of insufficient egress.

For the purposes of planning, a two possible ways to create a code compliant and accessible means of egress from the basement areas were developed.

Option 1 (see Appendix A) would create new exit doors at the back of rooms B101 and B103. New retaining walls and accessible ramps would be built to on the eastern and western sides of the addition for egress to safe discharge areas. On the west side, the stack room egress stairs would be eliminated and the exit would discharge to a ramp intersecting with the B101 ramp. The approximate cost for this option would be $86,000. The additional cost for an engineer or architect to design the modifications would be about $20,000.

Option 2 (see Appendix B) would create a new exit door on the west side of B101 with a new retaining wall system. The stack room egress stairs would be eliminated and the exit would discharge to a ramp that would intersect with the new ramp system on that side. Egress from B103 would be through a new corridor created by partitioning off the back of room 101 to discharge through the new exit on the west side. The floor area in B101 would be decreased by about 25% due to the corridor. The approximate cost for this option would be $54,000. The additional cost for an engineer or architect to design the modifications would be about $14,000.

The costs are approximate. They are based on the author's opinion and conceptual designs. No actual designs exist, therefore the numbers presented are theoretical.

2. APPLICABLE OCCUPANCY LOAD REGULATIONS.

The Massachusetts State Building Code (780 CMR) relative to the occupancy load consists of the International Building Code, the International Existing Building Code, and the Massachusetts Amendments to those codes. The Massachusetts Board of Fire Prevention Regulations (527 CMR) also apply. The relevant sections from the Building Code are listed below:

Chapter 1. Scope and Administration of the Building Code.

Section 102.6 governs existing structures and allows for continued occupancy of a building "without change, except as specifically covered in 780 CMR or as deemed necessary by the building official for the general safety and welfare of the public."

Section 102.6.4 covers existing means of egress, lighting, and ventilation. It allows the building official to site and order abated several specific conditions, among which are number of means of egress and insufficient width of egress.

Chapter 3. Use and Occupancy Classification.

Section 303.4 lists libraries as Assembly in Group A-3.

Section 304 lists office areas as Business Group B

Chapter 10. Means of Egress.

Section 1004, Occupancy Load. The following is taken from Table 1004.1.2:

Occupancy	**Occupant Load Factor** (floor area in sq. ft. per occupant)
Assembly w/o fixed seats	7 net
Assembly un-concentrated (tables and chairs)	15 net
Library Reading Rooms	50 net
Library stack Area	100 gross
Business Areas	100 gross
Accessory Storage Areas, Mech. Equip. Rooms	300 gross

Section 1004.3, Posting of Occupancy Load requires that the occupancy load be posted in a conspicuous place in all rooms designated as Assembly.

3. OCCUPANCY LOAD DETERMINATION.

The occupancy load for the basement level of the northern addition that contains the meeting rooms (B101 and B103) and the corridor (B102) were determined separately from the rest of the basement because those rooms are used when the doors to the basement stack room and the stairway to the first floor are locked.

Occupancy Load of the Basement of Northern Addition	
Room	**Occupancy Load** (number of occupants)
B101 Meeting Room (810 s.f.)	54
B103 Meeting Room (803 s.f.)	54
Total	108

The Occupancy load for the entire basement was calculated to determine the egress requirements for the entire basement.

Basement Occupancy Load	
Room	**Occupancy Load** (number of occupants)
B107 Basement stack area (2,364 s.f.)	24
B108 Janitor closet (270 s.f.)	1
Mechanical Room (170 s.f.)	1
B101 Meeting Room (810 s.f.)	54
B103 Meeting Room (803 s.f.)	54
Total	134

4. EGRESS REQUIRMENTS.

The following sections from the building code are applicable to the occupancy load and egress requirements for the basement:

Section 1006 relates to the number of exits and exit access doorways.

The number of exits required is determined by Table 1006.2.1. Part of the table is replicated below:

Spaces with One Exit or Exist Access Doorway		
Occupancy	**Maximum Occupant Load of Space**	**Max. Path of Egress Travel Distance (ft.) (without Sprinkler System)**
A	49	75
B	49	100

The calculated occupancy load for the basement meeting rooms was 108 persons, which exceeds the one egress criteria of 49 persons. The travel distance from the meeting rooms to the stack room exit is 128 ft. which exceeds the allowable travel distance of 75 ft. for one exit.

Two exits are required for rooms B101 and B103.

The minimum number of exits for each story are listed in Table 1006.3.1:

Occupant Load per Story	**Minimum Number of Exits or Access to Exits Per Story**
1-500	2
501-1,000	3

Two exits are required from all areas in the basement.

Section 1009, Accessible Means of Egress requires that where more than one means of egress are required, each space shall be served by at least two accessible means of egress. Exception 1 to section 1009.1 states "Accessible means of egress are not required to be provided in existing buildings." However, the Existing Building Code (sections 401.2, 801.3, and 1401.2) states that all new construction must meet the current building code, which includes compliance with the Massachusetts Access Board regulations. If a new means of egress was created, it would have to

meet the building code, including the accessibility requirements.

The following sections relate to the width of the egress path. The sections have been re- organized to allow for a clear train of reason.

Section 1005, Means of Egress Sizing, the minimum width of each component along the egress path must be determined from the requirements for that component.

Section 1005.3.2, Other Egress Components (than stairways), determines that the capacity of means of egress components be calculated by multiplying the occupancy load by 0.2 in per occupant. 0.2 x 134 = 27 in.

Section 1005.7.1, Doors, when fully opened, doors shall not reduce the required width by more than 7 in.

Section 1020, Corridors, requires that the minimum width of egress corridors is 44 in.

Section 1005.4, Continuity, requires that the minimum width of the egress path is not to be reduced along the path of travel.

Section 1010.1.1, Size of Doors, The required width for exit doors shall be sufficient for the occupancy load and shall provide a minimum clear width of 32 in.

Consequently, where serving the entire basement, the egress route must be at least 44 in. wide. Doors along the path of egress must be at least 37 in. wide (44 in. – 7 in.), including exterior doors. Egress doors from B101 and B103 must meet the minimum 32 in. width.

Section 1016.2, Egress Through Intervening Spaces. Item 3 does not allow for egress passage through spaces that can be locked.

Section 1010.1.9, Door Operations, requires that doors shall be readily openable from the egress side without the use of a key, special knowledge, or effort.

CMR 527, Section 4.4.3.1.1 states "In every occupied building or structure, means of egress form all parts of the building shall be maintained free and unobstructed."

CMR 527, Section 4.4.3.1.2 states that "No lock or fastening shall be permitted that prevents free escape from the inside of any building other than health care occupancies and correctional occupancies where staff are continuously on duty ... "

Section 1029.7 Travel Distance. The travel distance to an exit door shall not be greater than 200 ft. The 200 ft. distance applies where the egress routes are compliant with the code.

5. SUMMARY OF EXISTING CONDITIONS.

Regarding egress from rooms B101 and B103, two code compliant means of egress are required by the building code. A code compliant means of egress would be equipped with proper fire separation from surrounding areas, exit signs, emergency lighting, the correct width along the route, and fire rated exit doors with the appropriate hardware, such as panic bars.

The exit at the north end of the corridor (B102) serves as one means of egress. The doorway is 36 in. wide, which is slightly less than required (37 in.)

The enclosed stairway at the northern end of the west side of the basement stack area is non-compliant and non-available as second means of egress.

The travel distance is about 128 ft. The stack room egress route leads up a set of stairs to an exterior door. The enclosed stairway is not fire rated, the stairs are non-code compliant, the route is not marked as an exit route, and the exit door is barred closed with a 2x4 placed in brackets. The basement stack room is typically locked shut except during limited times when the stack area is occupied. The basement stack room exit cannot be considered a safe means of egress.

The stairway to the first floor (outside of the mechanical room.) is not marked as an egress route from the basement and it is inaccessible. The door leading to the stairwell is locked when the library is closed.

The basement is marked as an accessible entrance into the library by the sign on the exterior wall. As such, it implies that a person entering through that door has the same level of safety as persons that do not require the accessible entrance. If that door is blocked, there is no second accessible means of egress from rooms B101 and B103 at any time, even when the library is open. Essentially, it's a trap. Elevators cannot be considered as a means of egress during a fire.

Egress doors cannot be locked in the direction of the egress route. Typically, areas that are not open to the public or areas where access is limited are provided with hardware that sounds an alarm when opened (and appropriate signage.) The entire egress route must be available at all times that the building is occupied.

The determination herein is that a compliant second means of egress is not available to the occupants in rooms B101 and B103 during times when the library is closed. At no time is there an accessible second means of egress available to occupants in the basement. Also, at no time is there a code compliant second means of egress from the stack area.

The building official and the fire chief have the authority to require compliance with the building code.

6. OPTIONS FOR COMPLIANT ERGRESS.

Limiting the use of the meeting rooms to periods when the library is open does not resolve the issue of insufficient number of means of egress from rooms B101 and B103. The stack room is often locked when the library is open. Locked or not, the stack room exit door is non-compliant due to the barred doorway, the non-compliant inaccessible stairs, and the lack of emergency exit signage and lighting. The stairway to the second floor is non-compliant due to the lack of exit signs and emergency lighting and it is not accessible.

In order to make the library safe for all patrons, two options were considered. Option 1 provides egress from B101 and B103 to the exterior directly. Option 2 is less expensive. It provides egress from B103 through B101, and reduces the floor area of B101 by about 25%. Both options provide a compliant means of egress from the stack area.

Option 1 (see Appendix A.) Egress from B101 would be provided by creating a new egress door in the existing foundation wall at the southwest corner of the room. A system of retaining walls, sidewalks, and ramps would be constructed to run parallel to the western wall and to discharge to the existing sidewalk. The stack room egress would be made code compliant by removing the existing stair enclosure and creating an at-grade egress route by extending the new retaining wall to the stack room foundation wall. The stack room floor is 14 in. above the meeting room floor, so a 14 ft. ramp would be necessary leading from the stack room door down to the new sidewalk. A set of stairs would need to be built to allow egress from the second floor fire escape to grade. Egress from B103 would be from a new exit door cut into the existing foundation wall at the southeast corner of the room. A system of retaining walls, sidewalks, and ramps would be constructed to discharge to the existing sidewalk.

Option 2 (see Appendix B.) Egress from B103 would be provided by creating a fire rated partition wall in room B101 to serve as an egress corridor. A new exit doorway would be cut into the existing foundation wall at the southwestern corner of room B101. The interior doors from B101 and B103 would be reconfigured to discharge into the new corridor. The stack room egress would be made code compliant by removing the existing stair enclosure and creating an at-grade egress route by extending the new retaining wall to the stack room foundation wall. A 14 ft. ramp would be necessary leading from the stack room door down to the new sidewalk. A set of stairs would be built to allow egress from the second floor fire escape to grade. All doors would be fire-rated and fitted with the appropriate hardware. Exit signs and lighting would be installed. Ramps would be fitted with guardrails and handrails.

Option 3. Do nothing. There is no requirement to upgrade a building to meet the current building code unless the owner is notified by the building inspector or fire chief that the building must be made to comply with the building code if an unsafe condition exists. However, there is a certain degree of liability assumed when an owner is made aware of unsafe conditions and chooses not to address them. In the panic of an emergency, locked egress doors and inaccessible egress routes could result in a disaster. In that case, the public would be seeking answers as to why the unsafe conditions were permitted to remain.

7. COST OPINION.

A cost opinion is herein provided for the two options described above. The cost opinion is for planning purposes only. The cost opinion is an educated guess of a conceptual design and may vary from actual costs by as much as 100% or more.

Option 1.

1. New door opening in the B101 west exterior wall with a fire rated door, frame and hardware.
2. New door opening in the B103 east exterior wall with a fire rated door, frame and hardware.
3. New exit door from stack area with a fire rated door, frame and hardware.
4. Exit signs and lighting.
5. West side: two retaining walls, one with steps to the fire escape from the second floor.
6. West side: concrete sidewalk with ramps, landings, guardrails, and handrails extending to the existing sidewalk.
7. East side: two concrete retaining walls.
8. East side: concrete sidewalk with ramps, landings, guardrails, and handrails extending to the existing sidewalk.

The cost for the above would range from $76,000 to $95,000. Engineering or architect fee for design for basement egress project may range from $16,000 to $24,000.

Option 2.

1. New door opening in the B101 exterior wall with fire rated door, frame and hardware.
2. Exit signs and lighting.
3. Relocate B103 doorway.
4. New fire rated corridor wall in B101.
5. West side: two retaining walls, one with steps to the second floor fire escape.
6. West side: concrete sidewalk with ramps, landings, guardrails, and handrails extending to the existing sidewalk.
7. New exit door from stack area with a fire rated door, frame and hardware.

The cost for the above would range from $48,000 to $60,000. Engineering or architect fee for design for basement egress project may range from $10,000 to $18,000.

8. SUMMARY.

The occupancy load was determined for the two meeting rooms in the basement. It was determined that two means of egress are required from each of the meeting rooms. Based on the occupancy of the basement, it was determined that two means of egress are required from all areas of the basement at all times that the library is occupied. It was also determined that all new work is required to meet the building code and the Architectural Access Board Regulations.

The door at the northern end of the basement addition is compliant.

The existing alternate routes do not meet the requirements for egress routes. There is no code compliant means to exit from the basement if the northern doorway is blocked. There is no other code-compliant accessible means of egress from the basement at any time.

At all times when the library is open, it is required that there are two accessible routes to an exit from any area in the basement, including the basement stack area.

Based on the two options provided, the cost of providing code compliant egress routes would range from about $68,000 to $106,000 depending on the option selected.

End of Report

Michael Rainville, P.E.

Structural Support & Design Services

236 S. Shirkshire Rd.

Conway, MA 01341

P3 PROJECT PLANNING PROFESSIONALS

Doris Crowdrey - Chairman, Board of Trustee's
Greenfield Public Library
420 Main Street
Greenfield, MA 03110

August 20, 2019

Re: Estimate for ADA Upgrades.

Sub: Reasoning and Rationale.

Dear Doris,

As the Project Manager for the Greenfield Public Library project, the question of not moving forward with the project has continually been bantered around as a viable option.

This option of course is the City's decision and we will abide by any direction the City decides.

The question of why did we indicate an "8 Million Dollar" upgrade to the existing building appears to need clarification.

The State of Massachusetts uses 780 CMR for its building code. The current edition is the 9th edition and for the last two editions Massachusetts joined the majority of the states by adopting the IBC "International Building Code", with state specific amendments. One of those amendments is 521 CMR, the Massachusetts Architectural Access Board Code of Regulations.

The specific regulation that drives the renovation is what is known as the "30%" rule. Should renovations to a structure exceed 30% of the value of the Assessed Value of the current structure, a full level III renovation is necessary on all systems and energy codes.

Without getting into the particulars of each deficiency listed by the Commonwealth's Office of Disability, the entrances, and bathrooms alone will require excess to that amount. This puts the entire structure into a complete code upgrade to the Ninth Edition of 780 CMR.

We have attached our estimate for your use. This estimate is based on completely renovating the existing structure and not demolishing the stack wing as indicated by Johnson Roberts 12/26/18 letter by Phil O'Brien. This renovation in our opinion, will result in the loss of at least 30% of the stack and program space to allow for the additional requirements of the Ninth Edition.

I hope this letter clarifies the issue for you

Daniel Pallotta – President
P-Three Inc.

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Norwell, MA 02061-1618
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P3 PROJECT PLANNING PROFESSIONALS

ESTIMATE FOR EXISTING GREENFIELD LIBRARY

Division 1					
General Requirments					
	General Conditions	21,500.00	Mo	14	**301,000.00**
	Insurances, Bonds	125,000.00	LS	1	**125,000.00**
	Permits	40,000.00	EST	1	**40,000.00**
	Gen Requirments	14,500.00	SF	5	**71,775.00**
Division 2					
Existing Conditions					
	Cut and Patch	75,000.00	LS	1	**75,000.00**
	Abatement	225,000.00	LS	1	**225,000.00**
Division 3					
Concrete					
	Structural Ramp Rebuild	52,125.00	LS	1	**52,125.00**
	Exterior	20,000.00	LS	1	**20,000.00**
	Foundations/Reinforce	185,000.00	LS	1	**185,000.00**
	ADA Ramp Main Street	225,000.00	Ea	1	**225,000.00**
Division 4					
Masonry					
	Flue and Chimney's	585.00	SF	26	**15,356.25**
	Elevator Shaft	80,000.00	LS	1	**80,000.00**
Division 5					
Metals					
	Misc. Metals/Struct	14,500.00	LS	19.50	**282,750.00**
	Railings	248.00	LF	54	**13,392.00**
	Ext. railings	188.00	LF	96	**18,048.00**
Division 6					
Wood and Plastics					
	Casework ADA	14,825.00	SF	3.25	**14,828.25**
	Circulation ADA	25,000.00	LS	1	**25,001.00**
	Rough and Finish Carp.	14,500.00	SF	35	**507,500.00**
	Remove and replace Detail Trim	25,000.00	SF	1	**25,000.00**
Division 7					
Thermal Protection					
	Roof at Stack	2,600.00	SF	14.50	**37,700.00**
	Roof at Historic	6,200.00	SF	12.25	**75,950.00**
	Insulation @ Roof "STRETCH"	8,800.00	SF	18	**158,400.00**
	Insulation @ Walls "STRETCH"	5,250.00	SF	18	**94,500.00**

Division 8					
Doors and Windows					
	Doors Frames and Hardware	22.00	EA	3,000	**66,000.00**
	Entrance Doors "ADA"	5.00	EA	9,000	**45,000.00**
	Windows "STRETCH"	112.00	EA	3,500	**392,000.00**
Division 9					
Finishes					
	Flooring & Prep	14,500.00	SF	17.50	**253,750.00**
	Interior Painting	22,685.00	SF	1.25	**28,356.25**
	Ceramic Tile	800.00	SF	20.25	**16,200.00**
	Plaster and GWB	14,500.00	SF	6.50	**94,250.00**
	Exterior Painting	80,000.00	LS	1.00	**80,000.00**
Division 10					
Specialties					
	Toilet Partitions	1,500.00	EA	2	**3,000.00**
	Toilet Accessories	800.00	EA	3	**2,400.00**
	Fire Extinguishiers	8.00	EA	300	**2,400.00**
	Signage	5,000.00	LS	1	**5,000.00**
	Entrance Mats	5,000.00	LS	2	**10,000.00**
Division 12					
Furnishings					
	Window Treatment	112.00	Ea	350	**39,200.00**
	Entrance Mats	5,000.00	LS	2	**10,000.00**
	ADA Bookstacks	30,000.00	LS	1	**30,000.00**
Divison 14					
Elevators					
	ADA Elevator	175,000.00	LS	1	**175,000.00**
Division 21					
Fire Protection					
	New Suppression system	14,500.00	SF	9.12	**132,240.00**
Division 22					
Plumbing					
	Plumbing and Fixures	14,500.00	SF	13.81	**200,245.00**
Division 23					
HVAC					
	VRF HVAC System/Baseboard	14,500.00	SF	39.52	**573,040.00**
Division 24					
Electrical					
	Electrical System	14,500.00	SF	32.52	**471,540.00**
	Fire Alarm System	14,500.00	SF	5.25	**76,125.00**
	Data and AV System	60.00	Ea	325	**19,500.00**
	Telephony System	15,000.00	LS	1	**15,000.00**

Division 31				
Earthwork				
Site Prep and Demo	145,000.00	LS	1	**145,000.00**
Demolition of Int. Ramp	40,000.00	LS	1	**40,000.00**
Division 32				
Exterior Improvemnts				
Exterior Repair Historic	55,000.00	LS	1	**55,000.00**
Landscape Repair	40,000.00	LS	1	**40,000.00**
Division 33				
Utilities				
Electric w/ Mitigation	125,000.00	LS	1	**125,000.00**
Gas	35,000.00	LS	1	**35,000.00**
Water	40,000.00	LS	1	**40,000.00**
Sewer	35,000.00	LS	1	**35,000.00**
Fiber/VZ	40,000.00	LS	1	**40,000.00**
Direct Costs				**5,963,571.75**
Over-Head and Profit for GC	7.50%			**447,267.88**
TOTAL				**6,410,839.63**
TEMP MOVE(S)	30,000.00	LS	2	**60,000.00**
TEMP RENT	2,500.00	Mo	18	**45,000.00**
FF&E	80,000.00	LF	1	**80,000.00**
Designer at DCAM Rate	6,410,839.63	@	10%	**641,083.96**
OPM at Market Rate	6,410,839.63	@	2%	**128,216.79**
Field Representation	16,000.00	Mo	14	**224,000.00**
Project Costs 2018				**7,589,140.39**
Escalation	7,589,140.39	@	6%	**455,348.42**
Project Cost				**8,044,488.81**
Suggested Contingency				**603,336.66**
TOTAL NEEDED TO BRING TO COMPLETE CODE				**8,647,825.47**

City of Greenfield ADA Self-Evaluation and Transition Plan

Active, Aware, Accessible

June 2018

Table of Contents

Policies, Programs, and Meetings

Public Meetings

When residents have access to public meetings, they can be engaged in their community and will be inclined to improve it. The City of Greenfield has upwards of 29 boards, commissions, and task forces that have public meetings. These public meetings are held in a variety of City buildings that range in accessibility. There are about ten rooms in seven different buildings where meetings are held, two/thirds of which are held in either the Town Hall or 114 Main Street. Three board's meetings are held in the library which was determined as part of the self-evaluation for City buildings to be inaccessible.

Meeting Place	Board / Commission	Accessible
Town Hall, Second Floor Meeting Room	Agricultural Commission	Yes
	Board of Assessors	
	Board of License Commissioners	
	Cable Advisory Board	
	Commission on Disability Access	
	Mayor's Task Force on Domestic Violence	
	Parking and Traffic Commission	
	Planning and Construction Committee	
	Retirement Board	
	School Building Committee	
	Sustainable Greenfield	
Town Hall, Room 104 (Clerk's Office)	Board of Registrars of Voters	Yes
Police Department Meeting Room	Public Safety Commission	Yes
114 Main Street	Conservation Commission	No
	Cultural District Committee	
	Historical Commission	
	Human Rights Commission	
	Planning Board	
	Redevelopment Authority	
	Zoning Board of Appeals	
114 Main Street, Back Room	Local Cultural Council	No
Library, Greenfield & LeVanway Rooms	Library	No
	Public Library Board of Trustees	
	Youth Commission	
20 Sanderson Street, Second Floor	Board of Health	No
	Recreation Commission	
Greenfield Community Center, Suite 2	Greenfield Council on Aging	Yes
Greenfield High School, Cafeteria	School Committee	Yes
	Town Council	

Programs and Services

Departments that provide services to the public need to ensure that they are not in conflict with Title II of the Americans with Disabilities Act. Removal of architectural barriers and access to the buildings that these services reside in were evaluated as part of the building evaluations completed by BRPC's building specialist sub-consultant. In addition to physical access, departments that provide services need to also ensure that they are relating with the public in a manner that is not discriminatory to the disabled. This includes having policies in place that outlines the responsibility of the City to provide accommodations. These policies usually include which alternative communication methods are available such as interpreters, braille, and text telephones, but also include department procedure for providing non-discriminatory alternatives may not be feasible in circumstances where equal access (i.e. having meetings in an accessible office that provides privacy if the normal office is inaccessible).

The City of Greenfield identified 19 departments that provide services to the public. The services that the departments provide include direct government services, activities that the public can participate in, and emergency services.

Departments	Services Provided	ADA Training and Assistance for Employees	Dept. ADA Policy	Accommodations
City Clerk	Voter registration, vital copies of board filings	no	no	none
Treasurer	Tax collection	no	no	none
DPW	Meetings	no	no	none
Mayor's office	Meetings	no	no	none
Licensing	Licenses	no	no	none
Planning	Planning and community development	no	yes	upon request
Assessors	Property valuations, meetings, maps	no	no	none
Energy and Sustainability	Consultations	no	no	none
Veterans Services	Meetings, services	no	no	none
Building inspector	Inspections, meetings, maps	no	no	none
Recreation	All municipal recreation programs	no	no	Beach Wheelchair, others upon request
Health Department	Meetings, inspections	no	no	none

Departments	Services Provided	ADA Training and Assistance for Employees	Dept. ADA Policy	Accommodations
GCET	Municipal internet services, IT	no	no	none
Council on Aging	Community Center activities, classes	no	no	none
Police Department	Holding cells, emergencies, meetings	no	no	Accessible Holding Cells
Fire Department	Emergencies, meetings	no	no	Emergency Management Special Needs Survey
Library	Books, programs and services at library	no	no	none
School Department	Classes, sports, clubs, theater	no	yes	upon request
Human Resources	Civil service, employment	no	no	none

Major Findings

- The City of Greenfield does not have a TTY (teletypewriter) number for residents with hearing impairments to contact any departments including emergency services like fire and police. Only DPW seems to have familiarity with how to communicate with TTY. The Recreation Department has worked with interpreters over the phone, but do not have any formal training.
- The Human Resources Department does not have any training materials for ADA compliance. Other departments do not have their own training either.
- The City does not specify which accommodations it will or can make to disabled persons.
- No departments have their own ADA policies outlining what accommodations they can make to persons with disabilities.
- There is no policy in place outlining what constitutes as an undue burden to the City concerning ADA compliance.
- The Parks and Recreation Department lists no motorized vehicles on the beach, as well as no pets, but does not specify accommodations for a beach-friendly motorized vehicle for mobility-impaired residents or exceptions for service animals.
- Only the school has any disability policy and has clear procedures of how to follow Section 504. The school also develops accommodation plans for students with disabilities.
- No departments have equipment on-hand to assist with communication with disabled residents and visitors nor is there anything on-hand to assist residents and visitors with comprehension such as closed captioning on videos or braille.

Federal Street Elementary - The building and grounds are not ADA compliant. Non-compliant issues include:

- The route from parking to entrance is not a compliant accessible route.
- The accessible route needs to be resurfaced and repainted to indicated route clearly.
- The service areas and restrooms signage are not ADA compliant
- The accessible route to the elevator is obstructed with tables and other items.

The Federal Street Elementary School is moderately accessible. The building's primary function is accessible, but restrooms and other programs and services may be difficult to access for persons with mobility challenges.

Minimally Accessible

If a person with mobility challenges can enter the City building but not access programs or services, nor restrooms, then the building is minimally accessible.

Fire Station - The Building and grounds are not ADA compliant. Non-compliant features include:

- The route from parking to entrance is not a compliant accessible route.
- The service areas and restrooms are not ADA compliant.

The Fire Station is minimally accessible where a person with mobility challenges can enter the City building but not access programs and services, or restrooms. The building was built before the Americans with Disabilities Act of 1990 including the modifications made by the ADA Amendments Act of 2010. The Fire Station would need extensive renovations to address ADA compliance.

Inaccessible

A building is inaccessible if a physical barrier prevents a person with mobility challenges from entering the City building.

Library - The Building and grounds are not ADA compliant. Non-compliant features include:

- The accessible route from site arrival points and accessible entrance is not stable, firm or slip-resistant.
- The route ramp has large crevices and is uneven
- The restrooms are locked, and the public must first go to front desk to acquire the key to gain access to restroom facilities.
- The signage indicating accessible elevator is very small and accessing the elevator on the route is difficult.
- Aisles are not wheelchair accessible

- Children section is also not ADA compliant the area has a step down and does not allow for wheelchair accessibility.

The library is inaccessible with several physical barriers preventing a person with mobility challenges from entering the City building. The building was also built before the Americans with Disabilities Act of 1990.

Green River School - The Building and grounds are not ADA compliant. Non-compliant features include:

- The accessible route from parking to entrance is damaged, the travel surface is uneven and does not provide smooth transition from parking to building entrance.
- The front entrance is not ADA compliant the door hardware is not accessible as is also the call button hardware to gain access into the building.
- The service areas and restrooms are not ADA compliant at this time as the building is under construction.
- The interior needs to be upgraded to provide ADA compliant signage in all areas, classrooms and restrooms.
- The playground area is not ADA compliant as there is no accessible route.

These areas should be reviewed during construction to ensure that ADA compliant conditions are met for the grade levels that will be attending the school.

GCET Building – Non-compliant features of the GCET building include:

- The entrance is not ADA compliant.
- An accessible route from site arrival points and accessible entrance is not provided.
- The entrance is not ADA compliant and does not have an automatic opener to allow for accessibility.

The GCET Building is classified as inaccessible. It is inaccessible for people with mobility challenges to Town's primary function and restrooms.

Accessibility Challenges for all City Buildings & Schools

Approach and Entrance

Accessible Exterior Route – Most municipal buildings in Greenfield have inaccessible routes from accessible parking to the entrance. The remedies to these compliance issues range from repairing sidewalk along the accessible route to rearranging parking and redesigning a new accessible route to the building.

The library's accessible entrance ramp has cracks and crevices. Route from parking to entrance crosses an emergency vehicles lane.

Accessible route from parking to entrance at the Veteran's Center has large crevices and is uneven.

There is not an accessible route to the entrance of the fire station from accessible parking.

Accessible route from on-street parking location in front of 114 Main Street is uneven and not stable.

Route to City Offices entrance is uneven, damaged, and door is not ADA compliant.

The surface of the route to Federal Street entrance is not is not stable or accessible.

Library					(See pg. 24 for summary of evaluation)
Location	**Barrier**	**Suggested Action**	**Cost Estimate**	**Priority***	**Timeframe**
Approach & Entrance	Parking	Rearrange parking to facility.	$8500.00	2	2-3 years
Access to Goods and Services	Ramps	Widen Ramp to at least 36" and resurface	$15,000.00	2	1-2 years
	Signage	Add new signage that include braille raised lettering	$200.00	3	1-2 years
	Seating: Assembly	Identify seating	$200.00	3	1-2 years
	Seating: General	Identify seating	$200.00	3	1-2 years
Toilet Rooms	Accessible Route	Refinish	$10,000.00	3	1-2 years
	Entrance	Reconfigure	$5,000.00	3	2-3 years
	Stalls	Reconfigure	$10,000.00	3	2-3 years
Additional Access	Fire Alarm Systems	Add A/V Alarms	$15,000.00	3	3-5 years
*1 = Safety Hazard 2 = Major Barrier 3 = Moderate Barrier 4 = Negligible Impact					

Total Estimated Cost: $64,100.00

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA **Building location: 412 Main Street**

Surveys completed by BRPC building specialist sub-consultant

1. Approach & Entrance

		Yes	No	PHOTOS
1.1	Route from site arrival points (parking, passenger loading zones, sidewalks) **2010 ADA Standards for Accessible Design - 206.2.1- Accessible from parking location crosses in front of Fire Station where emergency vehicles enter and exit.**		X	
Exterior Accessible Route				
1.13	Route Stable, firm and slip-resistant? **302.1- Route has large crevices and is uneven.**		X	
	Ramps			
1:25	Ramp is at least 36"? **405.5**		X	

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
1:26	Ramp surface stable, firm and slip resistant? **405.4**		X	
1:29	Level landing where direction changes is at least 60 x 60? **405.7.4**		X	
1:30	Ramp has a rise higher than 6" handrails on both sides? **405.8**		X	
1:35	Handrail 12" beyond top and bottom of ramp? **505.10.1**		X	
1:37	Is the Main entrance accessible?		X	
1:38	If not accessible is there an alternative entrance ?	X		
1:39	Do inaccessible entrances have signs indicating nearest accessible? **216.6**	X		

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
1:40	Accessible entrance with the International Symbol of Accessibility? **216.6**	X		
1:41	Clear opening width of accessible entrance at least 32"? **404.2.3**	X		
1:42	Pull side of door at least 18" of maneuvering clearance ? **404.2.4**	X		
1:43	Threshold is vertical is it no more than 1/4" high ? **404.2.5**		X	
1:44	Door equipped with hardware that is operable with one hand ? **404.2.7**	X		
1:45	Operable parts of door no less than 34" no greater than 48"? **404.2.7**	X		

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
1:46	Door closer, does it take 5 seconds to close? **404.2.8**	X		
2. Access to Goods & Services				
Access to Goods & Services				
2.1	Does accessible entrance provide direct access to area? 206.4		X	
Interior Accessible Route				
2.2	Are all public spaces on at least one accessible route? 206.2.4		X	
2.3	Is the route stable, firm and slip-resistant? 40.2, 302.1	X		
2.5	If the route is greater than 200', less than 60" wide, is there a passing space? **403.5.3**		X	

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
2.9	Are there elevators or platform lifts to all public stories?	X		
Signs				
2:38	Signs designation permanent rooms and spaces? **216.2, 703.5, 703.2, 703.3**		X	
2:39	Signs that provide direction to information about interior spaces? **703.5.1**		X	
Controls-light switches, security				
2:50	Clear floor space at least 30" wide by 48" long ? **305.3**		X	
2:51	Can the control be operated with one hand and without tight grasping, pinching, or twisting of the wrist? **309.4**		X	
Seating: Assembly Areas				

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
2.52	Adequate number of wheelchair spaces provided? **221.2.1**		X	
2.53	Wheelchair spaces dispersed to allow location choices and viewing? **221.2.3**		X	
2.54	Wheelchair spaces have a clear line of sight? **802.2.1.1, 802.1.1.2**		X	
2.55	Where people are expected to stand, do wheelchair spaces have a clear line of sight? **802.2.2.1-2**		X	
2:56	If there is a single wheelchair space, is it at least 36" wide? **802.1.2**		X	
2:57	Two adjacent wheelchair spaces, are they each at least 33" wide? **802.1.2**		X	

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
2:58	Wheelchair space can be entered from the front or rear, at least 48" deep? **802.1.3**		X	
2:59	Wheelchair space can only be entered from the side, is it at least 60" deep? **802.1.3**		X	
2:60	Do wheelchair spaces adjoin, but not overlap, accessible routes? **802.1.4**		X	
2:61	Is there at least one companion seat for each wheelchair space? **221.3**		X	
Toilet Rooms				
3.1	One toilet that is accessible? Either one for each sex, or one unisex. 604.1, 604.8, 604.9, 609.4	X		
3.2	Are there signs at inaccessible toilet rooms that give directions to accessible toilet room? 216.8	X		
3.3	Is there a sign at the accessible toilet with the International Symbol of Accessibility? 216.8	X		

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
Accessible Route				
3.4	Is there an accessible route to the accessible toilet room? 206.2.4		X	
Signs at Toilet Rooms				
3.5	Text Characters contrast with background, raised, Braille. 703.5		X	
3.6	Door opening width at least 32" clear, between the face of door and the stop? 404.2.3		X	
3.7	Front approach to the pull side of the door is there at least 18" of maneuvering clearance beyond the latch side plus 60" clear depth? 404.2.4		X	
3.8	Threshold is vertical is it no more than higher 1/4"? 404.2.5, 303.2.	X		
3.9	Door equipped with hardware that is operable with one hand? 404.2.7		X	

GREENFIELD PUBLIC LIBRARY **Project: Greenfield ADA** **Building location: 418 Main Street** **Surveys completed by BRPC building specialist sub-consultant**				
		Yes	No	PHOTOS
3.10	Are the operable parts of the door hardware mounted no less than 34" no greater than 48"? 404.2.7	X		
In the Toilet Room				
3.16	Is there a clear path to at least one of each type of fixture that is at least 36" wide? 502.6		X	
3.17	Is there clear floor space available for a person in a wheelchair? 603.2.1		X	
3.18	Single user toilet if door swings in and over a clear floor space at an accessible fixture, is there a clear floor space at least 30 x 48? 603.2.3		X	
3.19	If the mirror is over lavatory or countertop, is the bottom edge of the reflecting surface no higher than 40" above the floor? 603.3	X		

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
	Lavatories			
3.21	Does at least one lavatory have a clear floor space for a forward approach at least 30" wide and 48" long? **606.2**		X	
3.22	Do no less than 17" and no greater than 25" of the clear floor space extend under the lavatory so that a person using a wheelchair can get close enough to reach the faucet? **306.2**		X	
3.23	Is the front of the lavatory or counter surface, whichever is higher, no more than 34" above the floor? **606.3**	X		
3.24	Is there at least 27 inches clearance from the floor to the bottom of the lavatory that extends at least 8" under the lavatory for knee clearance? **306.3.3**		X	

GREENFIELD PUBLIC LIBRARY **Project: Greenfield ADA Building location: 418 Main Street** **Surveys completed by BRPC building specialist sub-consultant**				
		Yes	No	PHOTOS
3.25	Is there toe clearance at least 9" high? **306.3.3**	X		
3.26	Are pipes below the lavatory insulated or otherwise configured to protect against contact? **606.5**		X	
3.27	Can the faucet be operated with tight grasping, pinching, or twisting of the wrist? **606.4**		X	
Soap Dispensers and Hand Dryers				
3.28	Are the operable parts of the soap dispenser or counters no less than 20" no greater than 25" deep, no higher than 44" above the floor? **308.2.2**		X	
3.29	Are the operable parts of the hand dryer or towel dispenser no less than 20" and no greater than 25" deep: no higher than 44" above the floor? **309.4, 308.2**		X	

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
Water Closets in Single-User Toilet Rooms				
3.30	Is the centerline of the water closet no less than 16" and no greater 18" from the side wall or partition? **604.2**	X		
3.31	Is clearance provided around the water closet measuring at least 60" from the side wall and at least 56: from the real wall? **604.3.1**	X		
3.32	Is the height of the water closet no less than 17" and no greater than 19 inches above the floor measured to the top of the seat? **604.4**	X		
3.33	Is there a grab bar at least 42" long the side wall? **604.5.1**	X		
3.34	Is there a grab bar at least 36" long the rear wall? **609.3**	X		
3.35	If the flush control is hand operated, is the operable part located no higher than 48" above the floor? **605.6**	X		

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
3.36	If the flush control is hand operated, can it be operated with one hand and without tight grasping, pinching, or twisting of the wrist? **605.4**	X		
3.37	Is the flush control on the open side of the water closet? **604.6**	X		
3.38	Is the toilet paper dispenser located no less than 7" and no greater than 9" form the front of the water closet to the centerline of the dispenser? **604.7**	X		
3.39	Is the outlet of the dispenser no less than 15" and no greater than 48" above the floor? **604.7**	X		
3.40	Does the dispenser allow continuous paper flow? **604.7**		X	

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
Toilet Compartments (Stalls)				
3.41	Is the door opening width at least 32" clear, between the face of the door and the stop, when the door is open 90 degrees? **604.8.1.2**	X		
3.42	If there is a front approach to the pull side of the door, is there at least 18" of maneuvering clearance beyond the latch side plus 60" clear depth? **604.8.1.2**		X	
3.43	Is the door self-closing? **604.8.1.2**		X	
3.44	Are there door pulls on both sides of the door that are operable with one hand and do not require tight grasping pinching or twisting of the wrist? **604.8.1.2**	X		
3.45	Is the lock operable with one hand and without tight grasping pinching or twisting of the wrist? **309.4**		X	

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
3.46	Are the operable parts of the door hardware mounted no less than 34" and no greater than 48" above the floor? **404.2.7**	X		
3.47	Is the compartment at least 60" wide? **604.8.1.1**	X		
3.48	If the water closet is wall hung is compartment at least 56" deep? **604.8.1.1**	X		
3.49	If the water closet is floor mounted, is the compartment at least 59" deep? **604.8.1.1**	X		
3.50	If the door swings in, is the minimum required compartment area provided beyond the swing of the door (60" x 56") if water closet is wall hung or 59" if water closet is floor mounted? **604.8.1.1**		X	

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
3. Additional Access				
Drinking Fountains				
4.1	Does at least one drinking fountain have a clear floor space at least 30" wide x at least 48" long centered in front of it for a forward approach? 602.2	X		
4.2	If there is a forward approach, do no less than 17" and no greater than 25" of the clear floor space extend under the drinking fountain? 306.2.2. 306.2.3	X		
4.3	If the drinking fountain is no deeper than 20" are the operable parts no higher than 48" above the floor? 308.2.2	X		
4.4	If the drinking fountain is no less than 20" and no greater than 25" deep are the operable parts no higher than 44" above the floor? **308.2.2**	X		

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
4.5	Can the control be operated with one hand and without tight grasping, pinching or twisting of the wrist? **309.4**	X		
4.6	Is the spout outlet no higher than 36" above the floor? **602.4**	X		
4.7	Is the spout at least 15" from the rear of the drinking fountain no more than 5" from the front of the drinking fountain? **602.5**	X		
4.8	If there is more than one drinking fountain, is there at least one for standing persons? **211.2**	X		
4.9	If the leading (bottom) edge of the fountain is higher than 27" above the floor, does the front of the fountain protrude no more than 4" into the circulation path? **307.2**	X		

GREENFIELD PUBLIC LIBRARY
Project: Greenfield ADA Building location: 418 Main Street

Surveys completed by BRPC building specialist sub-consultant

		Yes	No	PHOTOS
4.10	Does at least one telephone have a clear floor space at least 30" wide x at least 48" long for a parallel or forward approach? **704.2.1**		X	
4.11	Is the highest operable part of the telephone no higher than 48" above the floor? **704.2.2**		X	
4.12	If the leading (bottom) edge of the telephone is higher than 2" above the floor, does the front of the telephone protrude no more than 4" into the circulation path? **307.2**		X	
4.13	Does at least on telephone have a volume control? **704.3**		X	
4.14	Is the volume control identified by a pictogram of a telephone handset with radiating sound waves? **703.7.2.3**		X	
4.15	Does at least on telephone have a TTY? **217.4.1**		X	

GREENFIELD PUBLIC LIBRARY **Project: Greenfield ADA** **Building location: 418 Main Street** **Surveys completed by BRPC building specialist sub-consultant**				
		Yes	No	PHOTOS
4.16	Is the touch surface of the TTY keypad at least 34" above the floor? **704.4.1**		X	
4.17	Is the TTY identified by the international Symbol of TTY? **703.7.2.2**		X	
4.18	Do signs that provide direction to public telephones also provide direction to the TTY? **216.9.2**		X	
4.19	Do telephones that do not have a TTY provide direction to the TTY? **216.9.2**		X	
Fire Alarm Systems				
4.2	If there are fire alarm systems, do they have both flashing lights and audible signals? **702.1**	X		

FIRE ALARM CONTROL PANEL SHOWING NORMAL

FIRE EXTINGUISHER INSPECTED MARCH 19

DEPARTMENT OF INSPECTIONS AND ENFORCEMENT

14 Court Sq., Greenfield, Mass., 01301 (413) 772-1404 Fax 772-1566

402 MAIN ST.

Inspection of GREENFIELD PUBLIC LIBRARY

Address _____

Inspector WILLIAM KETCHEN MARK SNOW

Owner _____

Inspection date 8 / 2 / 19

Report date ___/___/___

Occupant load _____

1) EMERGENCY LIGHT #36 ON SECOND FLOR BY EMERGENCY EXIT NOT WORKING.
2) EMERGENCY LIGHT #389 IN OFFICE ON SECOND FLOOR NOT WORKING.
3) EMERGENCY LIGHT #189 IN BACK STACKS ROOM NOT WORKING.
4) EMERGENCY LIGHT #21 BY TOP OF STAIRS TO BASEMENT NOT WORKING
5) TRIM BACK BUSHES ON EMERGENCY EXIT OFF COMPUTER AREA.
6) CHECK TO MAKE SURE EXIT SIGN #29 IN CHILDRENS AREA IS WORKING PROPERLY.
7) WALLS IN GREENFIELD MEETING ROOM ARE IN DISREPAIR, REPAIR OR REPLACE AS NEEDED.
8) EMERGENCY LIGHT #15 IN BASEMENT BOOK SALE ROOM.
9) THERE NEEDS TO BE AN EXIT SIGN ON THE FLOOR IN THE BOOK SALE ROOM
10) EXIT LIGHT #11 IN BOILER ROOM NOT WORKING

** CORRECT IMMEDIATELY EVERYTHING ELSE 30 DAYS

CALL FOR REINSPECTION WHEN COMPLETED.

COPY OF FIRE ALARM INSPECTION REPORT.

PLEASE CALL FOR A RE-INSPECTION WHEN CORRECTIONS HAVE BEEN COMPLETED. ACCEPTANCE AND APPROVAL BY AN INSPECTOR OF THIS DEPARTMENT IS REQUIRED BY ___/___/___.

Inspector Signature _____

Inspection Witness Signature Ellen Boyer

Inspection Witness Print Name Ellen Boyer

Gmail by Google

Mark Snow <mark.snow@greenfield-ma.gov>

Library & ADA

1 message

William Martin <william.martin@greenfield-ma.gov> Tue, Aug 13, 2019 at 8:24 AM
To: Mark Snow <mark.snow@greenfield-ma.gov>
Cc: Mayor of Greenfield <mayor@greenfield-ma.gov>, Lindsay Rowe <lindsay.rowe@greenfield-ma.gov>, "J. D. Mark Smith" <mark.smith@greenfield-ma.gov>

Mark,

I am considering an Executive Order to prohibit or limit use of the library meeting rooms in light of the Office of Mobility comments on ADA violations of the building and an architects report on modifications required and cost of those modifications.

In your most recent walk thru and coupled with the Office of Mobility review and inspection of the Library, have you a written summary or recommendations? Is there an increase in liability with the recent letter from MOB?

Are there building modifications that would negate liability or cause a temporary safe situation?

Talk of coverting 1st floor meeting room windows (19" width) to doorways as an accommodation may not have any merit. What is your opinion?

And to use another exit door after the meeting rooms for egress. Thoughts?

Call for further discussion.

Thanks,
WM

1 provide list

Determination of Occupancy Load

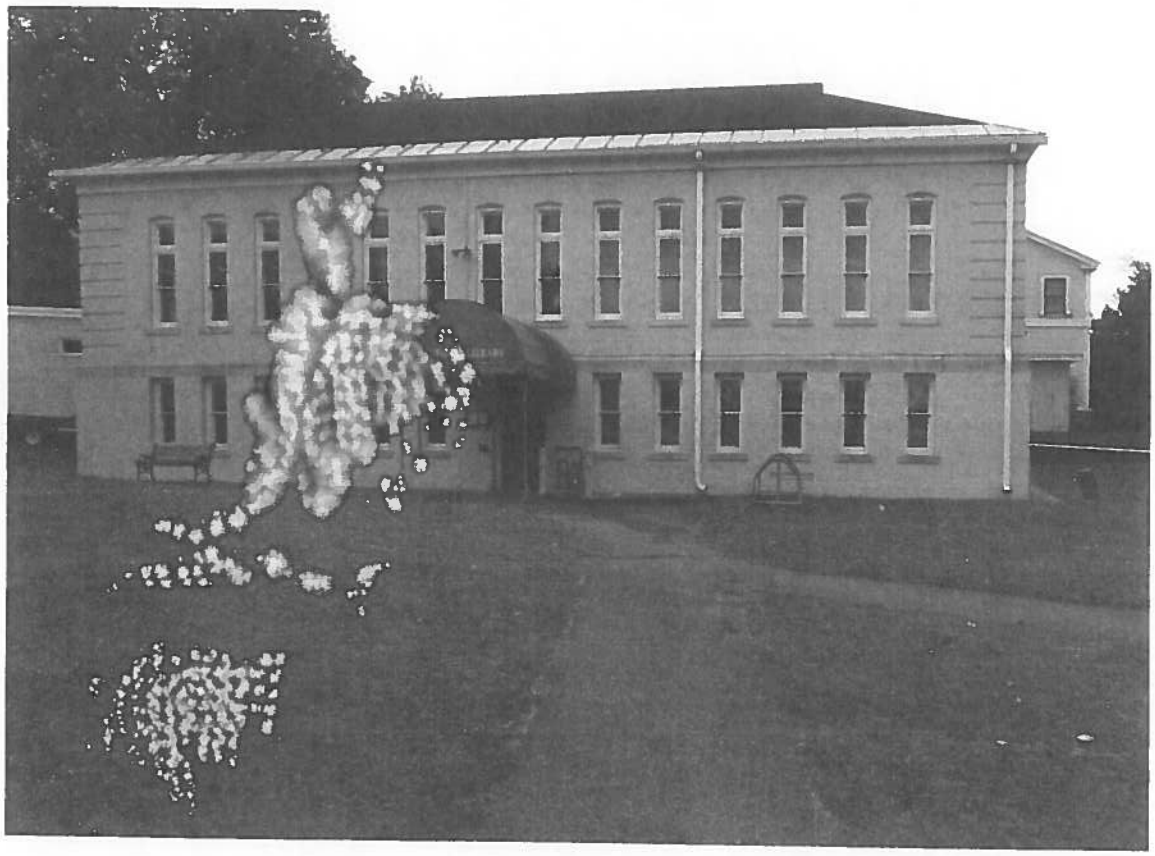
And

Egress Requirements for Basement Meeting Rooms

Greenfield Public Library

420 Main Street

Greenfield, MA



Prepared for:

The Town of Greenfield

14 Court Square

Greenfield, MA

Prepared by:

STRUCTURAL SUPPORT & DESIGN SERVICES

236 S. Shirkshire Rd.
Conway, MA 01341
413-522-7771

October 10, 2019

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report is a determination of the occupancy load and egress requirements for the meeting rooms located in the basement addition to the Greenfield Public Library.

Based on the calculated occupancy load, two means of safe egress from the two rooms are required. The exit at the north end of the corridor between the two rooms serves as one means of egress.

The second means of egress from the two rooms is the enclosed stairway that leads to grade at the northern end of the west side of the basement stack area. The stairway is non-code compliant as an egress route. The basement stack room is typically locked shut except during limited times when the stack area is occupied. Consequently, the basement stack room exit cannot be considered a safe means of egress.

The door to the stairway that leads up to the first floor (non-code compliant as an egress route) is also locked when the library is closed.

Egress doors and access routes must be operable at all times that the building is occupied.

The determination herein is that a code compliant second means of egress is not available to the occupants in the basement meeting rooms when used during periods when the library is closed. The basement stack area is also without a code compliant second means of egress. There is no accessible second means of egress available in the basement.

The building official and the fire chief are charged with public safety. They have the authority to require compliance with the building code in cases of insufficient egress.

For the purposes of planning, a two possible ways to create a code compliant and accessible means of egress from the basement areas were developed.

Option 1 (see Appendix A) would create new exit doors at the back of rooms B101 and B102. New retaining walls and accessible ramps would be built to on the eastern and western sides of the addition for egress to safe discharge areas. On the west side, the stack room egress stairs would be eliminated and the exit would discharge to a ramp intersecting with the B101 ramp. The approximate cost for this option would be $86,000. The additional cost for an engineer or architect to design the modifications would be about $20,000.

Option 2 (see Appendix B) would create a new exit door on the west side of B101 with a new retaining wall system. The stack room egress stairs would be eliminated and the exit would discharge to a ramp that would intersect with the new ramp system on that side. Egress from B103 would be through a new corridor created by partitioning off the back of room 101 to discharge through the new exit on the west side. The floor area in B101 would be decreased by about 25% due to the corridor. The approximate cost for this option would be $54,000, The additional cost for an engineer or architect to design the modifications would be about $14,000.

The costs are approximate. They are based on the author's opinion and conceptual designs. No actual designs exist, therefore the numbers presented are theoretical.

2. APPLICABLE OCCUPANCY LOAD REGULATIONS.

The Massachusetts State Building Code (780 CMR) relative to the occupancy load consists of the International Building Code, the International Existing Building Code, and the Massachusetts Amendments to those codes. The Massachusetts Board of Fire Prevention Regulations (527 CMR) also apply. The relevant sections from the Building Code are listed below:

Chapter 1. Scope and Administration of the Building Code.

Section 102.6 governs existing structures and allows for continued occupancy of a building "without change, except as specifically covered in 780 CMR or as deemed necessary by the building official for the general safety and welfare of the public."

Section 102.6.4 covers existing means of egress, lighting, and ventilation. It allows the building official to site and order abated several specific conditions, among which are number of means of egress and insufficient width of egress.

Chapter 3. Use and Occupancy Classification

Section 303.4 lists libraries as Assembly in Group A-3.

Section 304 lists office areas as Business Group B

Chapter 10. Means of Egress.

Section 1004, Occupancy Load. The following is taken from Table 1004.1.2:

Occupancy	**Occupant Load Factor** (floor area in sq. ft. per occupant)
Assembly w/o fixed seats	7 net
Assembly un-concentrated (tables and chairs)	15 net
Library Reading Rooms	50 net
Library stack Area	100 gross
Business Areas	100 gross
Accessory Storage Areas, Mech. Equip. Rooms	300 gross

Section 1004.3, Posting of Occupancy Load requires that the occupancy load be posted in a conspicuous place in all rooms designated as Assembly.

3. OCCUPANCY LOAD DETERMINATION.

The occupancy load for the basement level of the northern addition that contains the meeting rooms (B101 and B103) and the corridor (B102) were determined separately from the rest of the basement because those rooms are used when the doors to the basement stack room and the stairway to the first floor are locked.

Occupancy Load of the Basement of Northern Addition	
Room	**Occupancy Load** (number of occupants)
B101 Meeting Room (810 s.f.)	54
B103 Meeting Room (803 s.f.)	54
Total	108

The Occupancy load for the entire basement was calculated to determine the egress requirements for the entire basement.

Basement Occupancy Load	
Room	**Occupancy Load** (number of occupants)
B107 Basement stack area (2,364 s.f.)	24
B108 Janitor closet (270 s.f.)	1
Mechanical Room (170 s.f.)	1
B101 Meeting Room (810 s.f.)	54
B103 Meeting Room (803 s.f.)	54
Total	134

4. EGRESS REQUIRMENTS.

The following sections from the building code are applicable to the occupancy load and egress requirements for the basement:

Section 1006 relates to the number of exits and exit access doorways.

The number of exits required is determined by Table 1006.2.1. Part of the table is replicated below:

Spaces with One Exit or Exist Access Doorway		
Occupancy	**Maximum Occupant Load of Space**	**Max. Path of Egress Travel Distance (ft.) (without Sprinkler System)**
A	49	75
B	49	100

The calculated occupancy load for the basement meeting rooms was 108 persons, which exceeds the one egress criteria of 49 persons. The travel distance from the meeting rooms to the stack room exit is 128 ft. which exceeds the allowable travel distance of 75 ft. for one exit.

Two exits are required for rooms B101 and B103.

The minimum number of exits for each story are listed in Table 1006.3.1:

Occupant Load per Story	**Minimum Number of Exits or Access to Exits Per Story**
1-500	2
501-1,000	3

Two exits are required from all areas in the basement.

Section 1009, Accessible Means of Egress requires that where more than one means of egress are required, each space shall be served by at least two accessible means of egress. Exception 1 to section 1009.1 states "Accessible means of egress are not required to be provided in existing buildings." However, the Existing Building Code (sections 401.2, 801.3, and 1401.2) states that all new construction must meet the current building code, which includes compliance with the Massachusetts Access Board regulations. If a new means of egress was created, it would have to

meet the building code, including the accessibility requirements.

The following sections relate to the width of the egress path. The sections have been re- organized to allow for a clear train of reason.

Section 1005, Means of Egress Sizing, the minimum width of each component along the egress path must be determined from the requirements for that component.

Section 1005.3.2, Other Egress Components (than stairways), determines that the capacity of means of egress components be calculated by multiplying the occupancy load by 0.2 in per occupant. 0.2 x 134 = 27 in.

Section 1005.7.1, Doors, when fully opened, doors shall not reduce the required width by more than 7 in.

Section 1020, Corridors, requires that the minimum width of egress corridors is 44 in.

Section 1005.4, Continuity, requires that the minimum width of the egress path is not to be reduced along the path of travel.

Section 1010.1.1, Size of Doors, The required width for exit doors shall be sufficient for the occupancy load and shall provide a minimum clear width of 32 in.

Consequently, where serving the entire basement, the egress route must be at least 44 in. wide. Doors along the path of egress must be at least 37 in. wide (44 in. – 7 in.), including exterior doors. Egress doors from B101 and B103 must meet the minimum 32 in. width.

Section 1016.2, Egress Through Intervening Spaces. Item 3 does not allow for egress passage through spaces that can be locked.

Section 1010.1.9, Door Operations, requires that doors shall be readily openable from the egress side without the use of a key, special knowledge, or effort.

CMR 527, Section 4.4.3.1.1 states "In every occupied building or structure, means of egress form all parts of the building shall be maintained free and unobstructed."

CMR 527, Section 4.4.3.1.2 states that "No lock or fastening shall be permitted that prevents free escape from the inside of any building other than health care occupancies and correctional occupancies where staff are continuously on duty ... "

Section 1029.7 Travel Distance. The travel distance to an exit door shall not be greater than 200 ft. The 200 ft. distance applies where the egress routes are compliant with the code.

5. SUMMARY OF EXISTING CONDITIONS.

Regarding egress from rooms B101 and B103, two code compliant means of egress are required by the building code. A code compliant means of egress would be equipped with proper fire separation from surrounding areas, exit signs, emergency lighting, the correct width along the route, and fire rated exit doors with the appropriate hardware, such as panic bars.

The exit at the north end of the corridor (B102) serves as one means of egress. The doorway is 36 in. wide, which is slightly less than required (37 in.)

The enclosed stairway at the northern end of the west side of the basement stack area is non-compliant and non-available as second means of egress.

The travel distance is about 128 ft. The stack room egress route leads up a set of stairs to an exterior door. The enclosed stairway is not fire rated, the stairs are non-code compliant, the route is not marked as an exit route, and the exit door is barred closed with a 2x4 placed in brackets. The basement stack room is typically locked shut except during limited times when the stack area is occupied. The basement stack room exit cannot be considered a safe means of egress.

The stairway to the first floor (outside of the mechanical room.) is not marked as an egress route from the basement and it is inaccessible. The door leading to the stairwell is locked when the library is closed.

The basement is marked as an accessible entrance into the library by the sign on the exterior wall. As such, it implies that a person entering through that door has the same level of safety as persons that do not require the accessible entrance. If that door is blocked, there is no second accessible means of egress from rooms B101 and B103 at any time, even when the library is open. Essentially, it's a trap. Elevators cannot be considered as a means of egress during a fire.

Egress doors cannot be locked in the direction of the egress route. Typically, areas that are not open to the public or areas where access is limited are provided with hardware that sounds an alarm when opened (and appropriate signage.) The entire egress route must be available at all times that the building is occupied.

The determination herein is that a compliant second means of egress is not available to the occupants in rooms B101 and B103 during times when the library is closed. At no time is there an accessible second means of egress available to occupants in the basement. Also, at no time is there a code compliant second means of egress from the stack area.

The building official and the fire chief have the authority to require compliance with the building code.

6. OPTIONS FOR COMPLIANT ERGRESS.

Limiting the use of the meeting rooms to periods when the library is open does not resolve the issue of insufficient number of means of egress from rooms B101 and B103. The stack room is often locked when the library is open. Locked or not, the stack room exit door is non-compliant due to the barred doorway, the non-compliant inaccessible stairs, and the lack of emergency exit signage and lighting. The stairway to the second floor is non-compliant due to the lack of exit signs and emergency lighting and it is not accessible.

In order to make the library safe for all patrons, two options were considered. Option 1 provides egress from B101 and B103 to the exterior directly. Option 2 is less expensive. It provides egress from B103 through B101, and reduces the floor area of B101 by about 25%. Both options provide a compliant means of egress from the stack area.

Option 1 (see Appendix A.) Egress from B101 would be provided by creating a new egress door in the existing foundation wall at the southwest corner of the room. A system of retaining walls, sidewalks, and ramps would be constructed to run parallel to the western wall and to discharge to the existing sidewalk. The stack room egress would be made code compliant by removing the existing stair enclosure and creating an at-grade egress route by extending the new retaining wall to the stack room foundation wall. The stack room floor is 14 in. above the meeting room floor, so a 14 ft. ramp would be necessary leading from the stack room door down to the new sidewalk. A set of stairs would need to be built to allow egress from the second floor fire escape to grade. Egress from B103 would be from a new exit door cut into the existing foundation wall at the southeast corner of the room. A system of retaining walls, sidewalks, and ramps would be constructed to discharge to the existing sidewalk.

Option 2 (see Appendix B.) Egress from B103 would be provided by creating a fire rated partition wall in room B101 to serve as an egress corridor. A new exit doorway would be cut into the existing foundation wall at the southwestern corner of room B101. The interior doors from B101 and B103 would be reconfigured to discharge into the new corridor. The stack room egress would be made code compliant by removing the existing stair enclosure and creating an at-grade egress route by extending the new retaining wall to the stack room foundation wall. A 14 ft. ramp would be necessary leading from the stack room door down to the new sidewalk. A set of stairs would be built to allow egress from the second floor fire escape to grade. All doors would be fire-rated and fitted with the appropriate hardware. Exit signs and lighting would be installed. Ramps would be fitted with guardrails and handrails.

Option 3. Do nothing. There is no requirement to upgrade a building to meet the current building code unless the owner is notified by the building inspector or fire chief that the building must be made to comply with the building code if an unsafe condition exists. However, there is a certain degree of liability assumed when an owner is made aware of unsafe conditions and chooses not to address them. In the panic of an emergency, locked egress doors and inaccessible egress routes could result in a disaster. In that case, the public would be seeking answers as to why the unsafe conditions were permitted to remain.

7. COST OPINION.

A cost opinion is herein provided for the two options described above. The cost opinion is for planning purposes only. The cost opinion is an educated guess of a conceptual design and may vary from actual costs by as much as 100% or more.

Option 1.

1. New door opening in the B101 west exterior wall with a fire rated door, frame and hardware.
2. New door opening in the B103 east exterior wall with a fire rated door, frame and hardware.
3. New exit door from stack area with a fire rated door, frame and hardware.
4. Exit signs and lighting.
5. West side: two retaining walls, one with steps to the fire escape from the second floor.
6. West side: concrete sidewalk with ramps, landings, guardrails, and handrails extending to the existing sidewalk.
7. East side: two concrete retaining walls.
8. East side: concrete sidewalk with ramps, landings, guardrails, and handrails extending to the existing sidewalk.

The cost for the above would range from $76,000 to $95,000. Engineering or architect fee for design for basement egress project may range from $16,000 to $24,000.

Option 2.

1. New door opening in the B101 exterior wall with fire rated door, frame and hardware.
2. Exit signs and lighting.
3. Relocate B103 doorway.
4. New fire rated corridor wall in B101.
5. West side: two retaining walls, one with steps to the second floor fire escape.
6. West side: concrete sidewalk with ramps, landings, guardrails, and handrails extending to the existing sidewalk.
7. New exit door from stack area with a fire rated door, frame and hardware.

The cost for the above would range from $48,000 to $60,000. Engineering or architect fee for design for basement egress project may range from $10,000 to $18,000.

8. SUMMARY.

The occupancy load was determined for the two meeting rooms in the basement. It was determined that two means of egress are required from each of the meeting rooms. Based on the occupancy of the basement, it was determined that two means of egress are required from all areas of the basement at all times that the library is occupied. It was also determined that all new work is required to meet the building code and the Architectural Access Board Regulations.

The door at the northern end of the basement addition is compliant.

The existing alternate routes do not meet the requirements for egress routes. There is no code compliant means to exit from the basement if the northern doorway is blocked. There is no other code-compliant accessible means of egress from the basement at any time.

At all times when the library is open, it is required that there are two accessible routes to an exit from any area in the basement, including the basement stack area.

Based on the two options provided, the cost of providing code compliant egress routes would range from about $68,000 to $106,000 depending on the option selected.

End of Report

Michael Rainville, P.E.

Structural Support & Design Services

236 S. Shirkshire Rd.

Conway, MA 01341

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Based on the calculated occupancy load, two means of safe egress from the two rooms are required. The exit at the north end of the corridor between the two rooms serves as one means of egress.

The second means of egress from the two rooms is the enclosed stairway that leads to grade at the northern end of the west side of the basement stack area. The stairway is non-code compliant as an egress route. The basement stack room is typically locked shut except during limited times when the stack area is occupied. Consequently, the basement stack room exit cannot be considered a safe means of egress.

The door to the stairway that leads up to the first floor (non-code compliant as an egress route) is also locked when the library is closed.

Egress doors and access routes must be operable at all times that the building is occupied.

The determination herein is that a code compliant second means of egress is not available to the occupants in the basement meeting rooms when used during periods when the library is closed. The basement stack area is also without a code compliant second means of egress. There is no accessible second means of egress available in the basement.

The building official and the fire chief are charged with public safety. They have the authority to require compliance with the building code in cases of insufficient egress.

For the purposes of planning, a two possible ways to create a code compliant and accessible means of egress from the basement areas were developed.

Option 1 (see Appendix A) would create new exit doors at the back of rooms B101 and B102. New retaining walls and accessible ramps would be built to on the eastern and western sides of the addition for egress to safe discharge areas. On the west side, the stack room egress stairs would be eliminated and the exit would discharge to a ramp intersecting with the B101 ramp. The approximate cost for this option would be $86,000. The additional cost for an engineer or architect to design the modifications would be about $20,000.

Option 2 (see Appendix B) would create a new exit door on the west side of B101 with a new retaining wall system. The stack room egress stairs would be eliminated and the exit would discharge to a ramp that would intersect with the new ramp system on that side. Egress from B103 would be through a new corridor created by partitioning off the back of room 101 to discharge through the new exit on the west side. The floor area in B101 would be decreased by about 25% due to the corridor. The approximate cost for this option would be $54,000. The additional cost for an engineer or architect to design the modifications would be about $14,000.

The costs are approximate. They are based on the author's opinion and conceptual designs. No actual designs exist, therefore the numbers presented are theoretical.

2. APPLICABLE OCCUPANCY LOAD REGULATIONS.

The Massachusetts State Building Code (780 CMR) relative to the occupancy load consists of the International Building Code, the International Existing Building Code, and the Massachusetts Amendments to those codes. The Massachusetts Board of Fire Prevention Regulations (527 CMR) also apply. The relevant sections from the Building Code are listed below:

Chapter 1. Scope and Administration of the Building Code.

Section 102.6 governs existing structures and allows for continued occupancy of a building "without change, except as specifically covered in 780 CMR or as deemed necessary by the building official for the general safety and welfare of the public."

Section 102.6.4 covers existing means of egress, lighting, and ventilation. It allows the building official to site and order abated several specific conditions, among which are number of means of egress and insufficient width of egress.

Chapter 3. Use and Occupancy Classification.

Section 303.4 lists libraries as Assembly in Group A-3.

Section 304 lists office areas as Business Group B

Chapter 10. Means of Egress.

Section 1004, Occupancy Load. The following is taken from Table 1004.1.2:

Occupancy	**Occupant Load Factor** (floor area in sq. ft. per occupant)
Assembly w/o fixed seats	7 net
Assembly un-concentrated (tables and chairs)	15 net
Library Reading Rooms	50 net
Library stack Area	100 gross
Business Areas	100 gross
Accessory Storage Areas, Mech. Equip. Rooms	300 gross

Section 1004.3, Posting of Occupancy Load requires that the occupancy load be posted in a conspicuous place in all rooms designated as Assembly.

3. OCCUPANCY LOAD DETERMINATION.

The occupancy load for the basement level of the northern addition that contains the meeting rooms (B101 and B103) and the corridor (B102) were determined separately from the rest of the basement because those rooms are used when the doors to the basement stack room and the stairway to the first floor are locked.

Occupancy Load of the Basement of Northern Addition	
Room	**Occupancy Load** (number of occupants)
B101 Meeting Room (810 s.f.)	54
B103 Meeting Room (803 s.f.)	54
Total	108

The Occupancy load for the entire basement was calculated to determine the egress requirements for the entire basement.

Basement Occupancy Load	
Room	**Occupancy Load** (number of occupants)
B107 Basement stack area (2,364 s.f.)	24
B108 Janitor closet (270 s.f.)	1
Mechanical Room (170 s.f.)	1
B101 Meeting Room (810 s.f.)	54
B103 Meeting Room (803 s.f.)	54
Total	134

4. EGRESS REQUIRMENTS.

The following sections from the building code are applicable to the occupancy load and egress requirements for the basement:

Section 1006 relates to the number of exits and exit access doorways.

The number of exits required is determined by Table 1006.2.1. Part of the table is replicated below:

Spaces with One Exit or Exist Access Doorway		
Occupancy	**Maximum Occupant Load of Space**	**Max. Path of Egress Travel Distance (ft.) (without Sprinkler System)**
A	49	75
B	49	100

The calculated occupancy load for the basement meeting rooms was 108 persons, which exceeds the one egress criteria of 49 persons. The travel distance from the meeting rooms to the stack room exit is 128 ft. which exceeds the allowable travel distance of 75 ft. for one exit.

Two exits are required for rooms B101 and B103.

The minimum number of exits for each story are listed in Table 1006.3.1:

Occupant Load per Story	**Minimum Number of Exits or Access to Exits Per Story**
1-500	2
501-1,000	3

Two exits are required from all areas in the basement.

Section 1009, Accessible Means of Egress requires that where more than one means of egress are required, each space shall be served by at least two accessible means of egress. Exception 1 to section 1009.1 states "Accessible means of egress are not required to be provided in existing buildings." However, the Existing Building Code (sections 401.2, 801.3, and 1401.2) states that all new construction must meet the current building code, which includes compliance with the Massachusetts Access Board regulations. If a new means of egress was created, it would have to

meet the building code, including the accessibility requirements.

The following sections relate to the width of the egress path. The sections have been re- organized to allow for a clear train of reason.

Section 1005, Means of Egress Sizing, the minimum width of each component along the egress path must be determined from the requirements for that component.

Section 1005.3.2, Other Egress Components (than stairways), determines that the capacity of means of egress components be calculated by multiplying the occupancy load by 0.2 in per occupant. 0.2 x 134 = 27 in.

Section 1005.7.1, Doors, when fully opened, doors shall not reduce the required width by more than 7 in.

Section 1020, Corridors, requires that the minimum width of egress corridors is 44 in.

Section 1005.4, Continuity, requires that the minimum width of the egress path is not to be reduced along the path of travel.

Section 1010.1.1, Size of Doors, The required width for exit doors shall be sufficient for the occupancy load and shall provide a minimum clear width of 32 in.

Consequently, where serving the entire basement, the egress route must be at least 44 in. wide. Doors along the path of egress must be at least 37 in. wide (44 in. – 7 in.), including exterior doors. Egress doors from B101 and B103 must meet the minimum 32 in. width.

Section 1016.2, Egress Through Intervening Spaces. Item 3 does not allow for egress passage through spaces that can be locked.

Section 1010.1.9, Door Operations, requires that doors shall be readily openable from the egress side without the use of a key, special knowledge, or effort.

CMR 527, Section 4.4.3.1.1 states "In every occupied building or structure, means of egress form all parts of the building shall be maintained free and unobstructed."

CMR 527, Section 4.4.3.1.2 states that "No lock or fastening shall be permitted that prevents free escape from the inside of any building other than health care occupancies and correctional occupancies where staff are continuously on duty ... "

Section 1029.7 Travel Distance. The travel distance to an exit door shall not be greater than 200 ft. The 200 ft. distance applies where the egress routes are compliant with the code.

5. SUMMARY OF EXISTING CONDITIONS.

Regarding egress from rooms B101 and B103, two code compliant means of egress are required by the building code. A code compliant means of egress would be equipped with proper fire separation from surrounding areas, exit signs, emergency lighting, the correct width along the route, and fire rated exit doors with the appropriate hardware, such as panic bars.

The exit at the north end of the corridor (B102) serves as one means of egress. The doorway is 36 in. wide, which is slightly less than required (37 in.)

The enclosed stairway at the northern end of the west side of the basement stack area is non-compliant and non-available as second means of egress.

The travel distance is about 128 ft. The stack room egress route leads up a set of stairs to an exterior door. The enclosed stairway is not fire rated, the stairs are non-code compliant, the route is not marked as an exit route, and the exit door is barred closed with a 2x4 placed in brackets. The basement stack room is typically locked shut except during limited times when the stack area is occupied. The basement stack room exit cannot be considered a safe means of egress.

The stairway to the first floor (outside of the mechanical room.) is not marked as an egress route from the basement and it is inaccessible. The door leading to the stairwell is locked when the library is closed.

The basement is marked as an accessible entrance into the library by the sign on the exterior wall. As such, it implies that a person entering through that door has the same level of safety as persons that do not require the accessible entrance. If that door is blocked, there is no second accessible means of egress from rooms B101 and B103 at any time, even when the library is open. Essentially, it's a trap. Elevators cannot be considered as a means of egress during a fire.

Egress doors cannot be locked in the direction of the egress route. Typically, areas that are not open to the public or areas where access is limited are provided with hardware that sounds an alarm when opened (and appropriate signage.) The entire egress route must be available at all times that the building is occupied.

The determination herein is that a compliant second means of egress is not available to the occupants in rooms B101 and B103 during times when the library is closed. At no time is there an accessible second means of egress available to occupants in the basement. Also, at no time is there a code compliant second means of egress from the stack area.

The building official and the fire chief have the authority to require compliance with the building code.

6. OPTIONS FOR COMPLIANT ERGRESS.

Limiting the use of the meeting rooms to periods when the library is open does not resolve the issue of insufficient number of means of egress from rooms B101 and B103. The stack room is often locked when the library is open. Locked or not, the stack room exit door is non-compliant due to the barred doorway, the non-compliant inaccessible stairs, and the lack of emergency exit signage and lighting. The stairway to the second floor is non-compliant due to the lack of exit signs and emergency lighting and it is not accessible.

In order to make the library safe for all patrons, two options were considered. Option 1 provides egress from B101 and B103 to the exterior directly. Option 2 is less expensive. It provides egress from B103 through B101, and reduces the floor area of B101 by about 25%. Both options provide a compliant means of egress from the stack area.

Option 1 (see Appendix A.) Egress from B101 would be provided by creating a new egress door in the existing foundation wall at the southwest corner of the room. A system of retaining walls, sidewalks, and ramps would be constructed to run parallel to the western wall and to discharge to the existing sidewalk. The stack room egress would be made code compliant by removing the existing stair enclosure and creating an at-grade egress route by extending the new retaining wall to the stack room foundation wall. The stack room floor is 14 in. above the meeting room floor, so a 14 ft. ramp would be necessary leading from the stack room door down to the new sidewalk. A set of stairs would need to be built to allow egress from the second floor fire escape to grade. Egress from B103 would be from a new exit door cut into the existing foundation wall at the southeast corner of the room. A system of retaining walls, sidewalks, and ramps would be constructed to discharge to the existing sidewalk.

Option 2 (see Appendix B.) Egress from B103 would be provided by creating a fire rated partition wall in room B101 to serve as an egress corridor. A new exit doorway would be cut into the existing foundation wall at the southwestern corner of room B101. The interior doors from B101 and B103 would be reconfigured to discharge into the new corridor. The stack room egress would be made code compliant by removing the existing stair enclosure and creating an at-grade egress route by extending the new retaining wall to the stack room foundation wall. A 14 ft. ramp would be necessary leading from the stack room door down to the new sidewalk. A set of stairs would be built to allow egress from the second floor fire escape to grade. All doors would be fire-rated and fitted with the appropriate hardware. Exit signs and lighting would be installed. Ramps would be fitted with guardrails and handrails.

Option 3. Do nothing. There is no requirement to upgrade a building to meet the current building code unless the owner is notified by the building inspector or fire chief that the building must be made to comply with the building code if an unsafe condition exists. However, there is a certain degree of liability assumed when an owner is made aware of unsafe conditions and chooses not to address them. In the panic of an emergency, locked egress doors and inaccessible egress routes could result in a disaster. In that case, the public would be seeking answers as to why the unsafe conditions were permitted to remain.

7. COST OPINION.

A cost opinion is herein provided for the two options described above. The cost opinion is for planning purposes only. The cost opinion is an educated guess of a conceptual design and may vary from actual costs by as much as 100% or more.

Option 1.

1. New door opening in the B101 west exterior wall with a fire rated door, frame and hardware.
2. New door opening in the B103 east exterior wall with a fire rated door, frame and hardware.
3. New exit door from stack area with a fire rated door, frame and hardware.
4. Exit signs and lighting.
5. West side: two retaining walls, one with steps to the fire escape from the second floor.
6. West side: concrete sidewalk with ramps, landings, guardrails, and handrails extending to the existing sidewalk.
7. East side: two concrete retaining walls.
8. East side: concrete sidewalk with ramps, landings, guardrails, and handrails extending to the existing sidewalk.

The cost for the above would range from $76,000 to $95,000. Engineering or architect fee for design for basement egress project may range from $16,000 to $24,000.

Option 2.

1. New door opening in the B101 exterior wall with fire rated door, frame and hardware.
2. Exit signs and lighting.
3. Relocate B103 doorway.
4. New fire rated corridor wall in B101.
5. West side: two retaining walls, one with steps to the second floor fire escape.
6. West side: concrete sidewalk with ramps, landings, guardrails, and handrails extending to the existing sidewalk.
7. New exit door from stack area with a fire rated door, frame and hardware.

The cost for the above would range from $48,000 to $60,000. Engineering or architect fee for design for basement egress project may range from $10,000 to $18,000.

8. SUMMARY.

The occupancy load was determined for the two meeting rooms in the basement. It was determined that two means of egress are required from each of the meeting rooms. Based on the occupancy of the basement, it was determined that two means of egress are required from all areas of the basement at all times that the library is occupied. It was also determined that all new work is required to meet the building code and the Architectural Access Board Regulations.

The door at the northern end of the basement addition is compliant.

The existing alternate routes do not meet the requirements for egress routes. There is no code compliant means to exit from the basement if the northern doorway is blocked. There is no other code-compliant accessible means of egress from the basement at any time.

At all times when the library is open, it is required that there are two accessible routes to an exit from any area in the basement, including the basement stack area.

Based on the two options provided, the cost of providing code compliant egress routes would range from about $68,000 to $106,000 depending on the option selected.

End of Report

Michael Rainville, P.E.

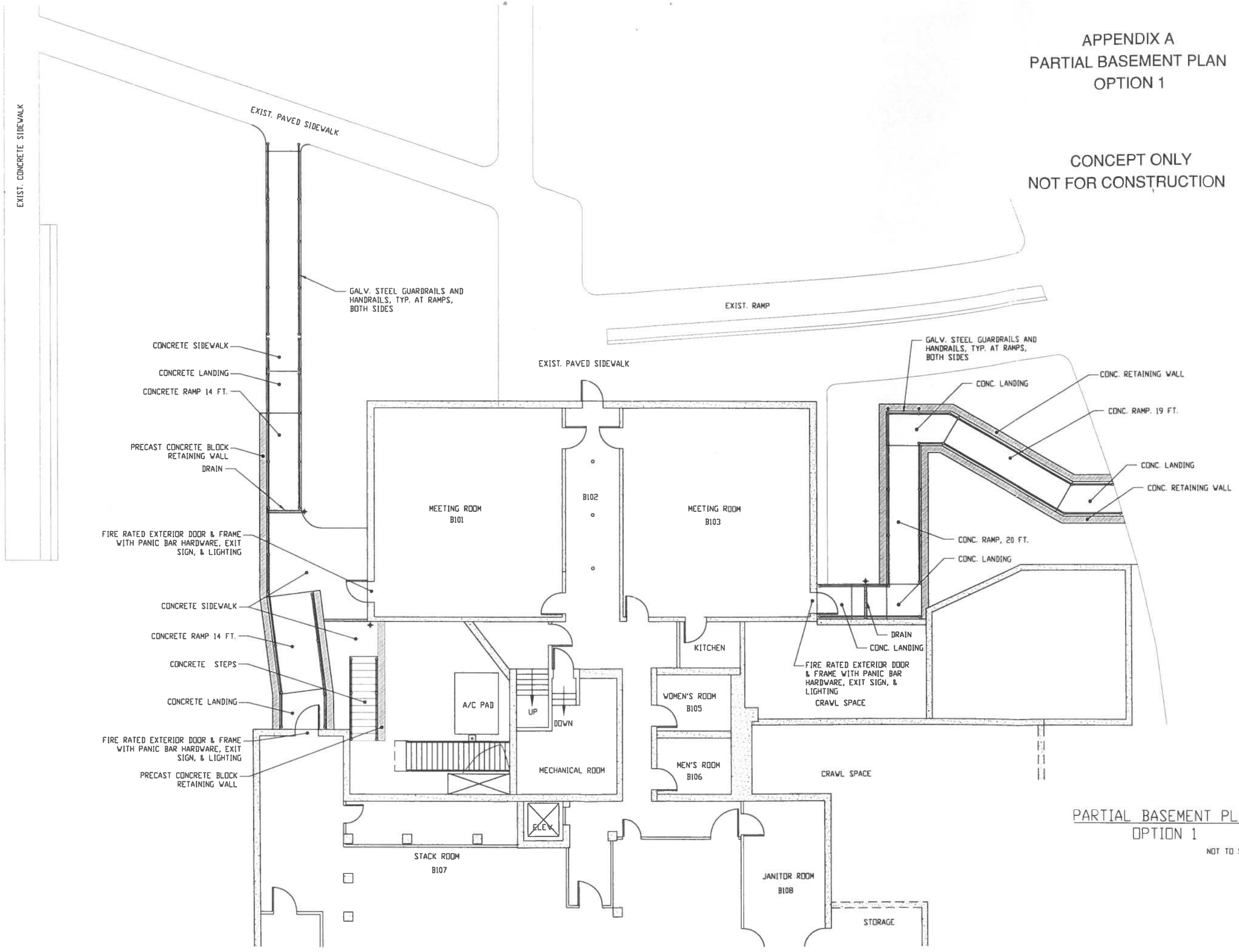
Structural Support & Design Services

236 S. Shirkshire Rd.

Conway, MA 01341

APPENDIX A
PARTIAL BASEMENT PLAN
OPTION 1

CONCEPT ONLY
NOT FOR CONSTRUCTION

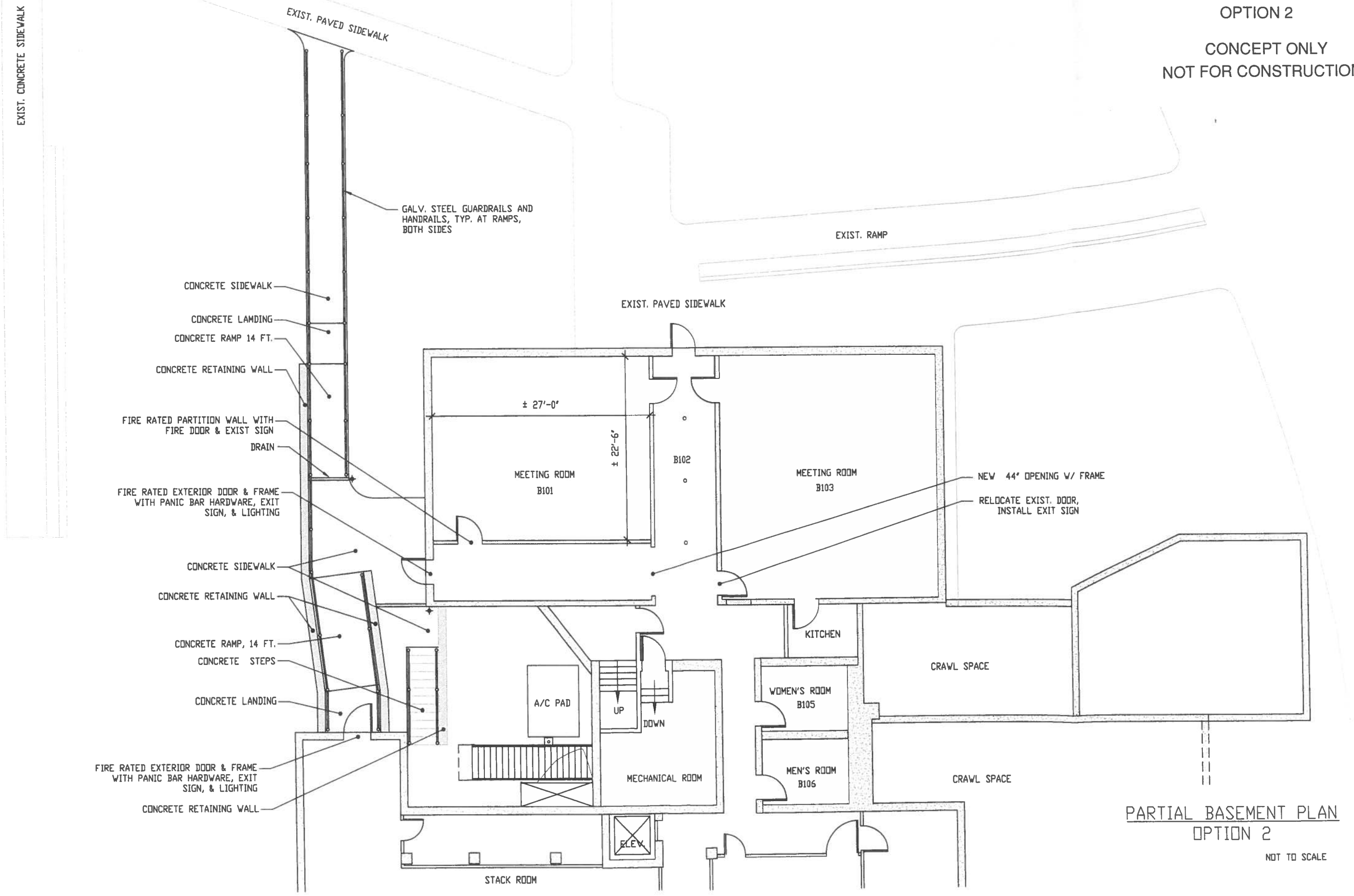


PARTIAL BASEMENT PLAN
OPTION 1

NOT TO SCALE

APPENDIX B
PARTIAL BASEMENT PLAN
OPTION 2

CONCEPT ONLY
NOT FOR CONSTRUCTION



PARTIAL BASEMENT PLAN
OPTION 2

NOT TO SCALE

Gmail by Google

Mark Snow <mark.snow@greenfield-ma.gov>

Fwd: plan for use of library basement

1 message

Mark Smith <mark.smith@greenfield-ma.gov> Tue, Oct 15, 2019 at 1:44 PM
To: Mark Snow <mark.snow@greenfield-ma.gov>

---------- Forwarded message ---------
From: **Ellen Boyer** <ellen.boyer@greenfield-ma.gov>
Date: Tue, Oct 15, 2019 at 1:42 PM
Subject: plan for use of library basement
To: William Martin <william.martin@greenfield-ma.gov>, Mark Smith <mark.smith@greenfield-ma.gov>, Lindsay Rowe <lindsay.rowe@greenfield-ma.gov>, Robert Strahan <robert.strahan@greenfield-ma.gov>, Doris Cowdrey <dcowdrey@comcast.net>

Mayor Martin,

Here is our proposal for the use of the library basement area.

Based on the discussion that took place at this morning's meeting we will do the following, all effective on Wednesday, October 17.

1. Completely close the Friends book sale area to any and all activity. The Friends will be instructed to remove all the books from this area, and we will coordinate the date and time of the removal with the fire chief.

2. Close the custodian's office, and move his desk to another area in the library.

3. Cancel all meetings currently scheduled in either meeting room. The single exception to this is the Friends book sale, which is scheduled to take place in the LeVanway Room on Wednesday, October 17, from 5:30-7:30, which will be allowed to take place with a fire watch in place.

The back door, the hallway, the stairway to the 2nd floor, the restrooms, and the elevator will continue to be used.

Going forward we propose that the LeVanway Room be the single meeting room available for use, with a maximum occupancy of 49 people. We will permanently close the Greenfield Room. We will also follow the original executive order by continuing to disallow use of the LeVanway Room when the library is not open, and to disallow any public meetings to take place in the library.

If there is any further discussion on the use of the library we would very much like to participate.

Respectfully,

Ellen Boyer
Doris Cowdrey

--

Mark Smith, J.D.

Director of General Administration

Office of the Mayor

City of Greenfield

14 Court Square

Greenfield, MA 01301

(413) 772-1581

mark.smith@greenfield-ma.gov

Gmail

Mark Snow <mark.snow@greenfield-ma.gov>

Library occupancy load and egress requirements

Mark Snow <mark.snow@greenfield-ma.gov> Tue, Oct 15,
Draft To: Mayor of Greenfield <mayor@greenfield-ma.gov>, William Martin <william.martin@greenfield-ma.gov>, Mark Smith <mark.smith@greenfield-ma.gov>, Robert Strahan <robert.strahan ma.gov>, Lindsay Rowe <lindsay.rowe@greenfield-ma.gov>, Ellen Boyer <ellen.boyer@greenfield-ma.gov>
Cc: William Ketchen <william.ketchen@greenfield-ma.gov>

Mayor Martin,

This email is follow-up to our meeting earlier today regarding the recent evaluation that was performed for Greenfield's Public Library. Present at today's meeting includes, Mayor William Mart Smith, Lindsay Rowe, Ellen Boyer, Doris Cowdry, Fire Chief Robert Strahan, and myself. An evaluation of the basement level was conducted by Structural Support & Design Service, Michae The purpose of this evaluation was to determine the occupancy load and egress requirements for the basement meeting rooms at the Library. As result of Mr. Rainville's evaluation, Mr. Rainv report, dated October 10, 2019 that reflects his findings and determination.

Mr. Rainville's report indicates the established occupancy load for rooms B101 and B103 is 54 persons for each room, therefore each room requiring two exits. The report indicates there is nc compliant 2nd means of egress available to the basement meeting rooms when used during periods when the Library is closed. The report also indicates there is no code compliant 2nd mear from the basement book stack area. The report indicates if the accessible entrance into the Library is blocked that there is no second accessible means of egress from meeting rooms B101 a any time, even when the Library is open.

Mr. Rainville's determination is that a compliant second means of egress is not available to the occupants in rooms B101 and B103 during times the Library is closed. At no time is there an ac second means of egress available to occupants in the basement. Also, at no time is there a code compliant second means of egress from the basement stack area.

Mr. Rainville's evaluation report raises serious life safety concerns for occupants in the basement level of the building, these safety concerns are serious and must be addressed. For the shor it was discussed the use of the basement area will be restricted until the code related issues are addressed and resolved. The restriction means the two meeting rooms, B101 and B103 alor basement stack area will not be used/occupied. The basement entrance/exit access areas, public restrooms, and elevator can remain open and available to the public for use during normal o hours.

During this meeting it was brought to our attention that the Friends of the Library have a book sale scheduled for tomorrow, October 16, 2019 during Library normal operating hours from 5 pn plan to accommodate this event was discussed and agreed to. The plan is that the display of books on sale and sales transition would be relocated from the basement book stack room into th rooms, limit the total occupancy load for the basement level to 49 persons, and a fire watch would be provided by Greenfield Fire Dept personnel.

As indicated in Mr. Rainville's report, 780 CMR Massachusetts State Building Code (9th edition), sections 102.6 and 102.6.4 apply to this matter, Since Mr. Rainville's findings identify serious concerns this dept will be following up with a more detailed report in accordance with sections 102.6 and 102.6.4.

Respectfully,

Mark A. Snow
Inspector of Buildings/Zoning Enforcement,
ICC CBO, ICC Fire Inspector I, NFPA Fire Inspector I,
City of Greenfield,
14 Court Square
Greenfield, MA 01301
(413)772-1404 ext 2105
mark.snow@greenfield-ma.gov

Gmail by Google

Mark Snow <mark.snow@greenfield-ma.gov>

Fwd: Air Quality Study

1 message

William Martin <william.martin@greenfield-ma.gov> Wed, Oct 23, 2019 at 5:19 PM
To: Mark Snow <mark.snow@greenfield-ma.gov>, Robert Strahan <robert.strahan@greenfield-ma.gov>, Valerie Bird <valerie.bird@greenfield-ma.gov>, Mayor of Greenfield <mayor@greenfield-ma.gov>, Lindsay Rowe <lindsay.rowe@greenfield-ma.gov>
Cc: "J. D. Mark Smith" <mark.smith@greenfield-ma.gov>

To All,

We are awaiting the air quality report from DPH and will reassess discuss all other current information in the near future.

Thank you for all your expertise and patience while we progress through the "steps" for safety of all involved.

WM

---------- Forwarded message ---------
From: **George VanDelinder** <george.vandelinder@greenfield-ma.gov>
Date: Mon, Oct 21, 2019 at 3:26 PM
Subject: Air Quality Study
To: William Martin <william.martin@greenfield-ma.gov>, Mark Smith <mark.smith@greenfield-ma.gov>, Ellen Boyer <ellen.boyer@greenfield-ma.gov>, Mayor of Greenfield <mayor@greenfield-ma.gov>

Mayor,
Last Friday Michael Feeney visited the Library to do a follow up air quality study that was first done by him in 2002.
Michael is Director of the Indoor Air Quality Program for the Massachusetts Department of Public Health.
Consistent with his original study, Michael took measurements of CO2 levels, temperatures, and moisture levels in walls, floors and carpet. Adequate ventilation and moisture control to minimize mold was his main focus.
We spoke briefly before he finished and I can't really speculate what conclusions he will make in his report, but I know he was very concerned about the high levels of moisture found in the basement rooms. As an example, he showed me stains in the carpet of the Greenfield Room that was caused by moisture coming up through the concrete underneath.
Solutions to this moisture problem will be involved and I am sure he will outline, in detail, in his report.
I am following up with Michael to get an idea as to when his report will be available and will let you know as soon as I can.
In the meantime, Ellen has told me she submitted a plan for opening the LeVanway Room. I might suggest that you hold off on this decision until we get a look at this report.
--

George VanDelinder, PE

Director, Central Maintenance

Town of Greenfield

14 Court Square

Greenfield, MA 01301

cell: 413-325-3188

Email: george.vandelinder@greenfield-ma.gov

Since their schedule is Tuesday for construction and their guestimate is 3 hours from 7 AM, and to err on the side of caution, I must insist that we delay opening that day, Tuesday, October 29, 2019 until 11 AM.

All staff currently scheduled that day will be compensated under our rules for winter closing.
HR can provide precise details.

Thank you all for your patience.

Bill Martin
Mayor

[Quoted text hidden]

George VanDelinder <george.vandelinder@greenfield-ma.gov> Sun, Oct 27, 2019 at 6:21 PM
To: William Martin <william.martin@greenfield-ma.gov>
Cc: Ellen Boyer <ellen.boyer@greenfield-ma.gov>, Mark Snow <mark.snow@greenfield-ma.gov>, Robert Strahan <robert.strahan@greenfield-ma.gov>, Mayor of Greenfield <mayor@greenfield-ma.gov>, "J. D. Mark Smith" <mark.smith@greenfield-ma.gov>, Lindsay Rowe <lindsay.rowe@greenfield-ma.gov>, Valerie Bird <valerie.bird@greenfield-ma.gov>, Diana Letourneau <diana.letourneau@greenfield-ma.gov>, H R <hr@greenfield-ma.gov>, Liz Gilman <liz.gilman@greenfield-ma.gov>

Mayor,
What about my custodian? Under winter rules he comes in at normal time. Should he delay as well?
[Quoted text hidden]

---

2 attachments

image002.png
3K

BERKSHIRE GAS

image001.png
11K

402 Main St.

City known as the Town of
GREENFIELD, MASSACHUSETTS

William F. Martin
Mayor

DEPARTMENT OF INSPECTIONS
AND ENFORCEMENT

MARK A. SNOW
Inspector of Buildings
Town Hall • 14 Court Square • Greenfield, MA 01301
Phone 413-772-1404 • Fax 413-772-1566
MarkS1@greenfield-ma.gov • www.greenfield-ma.gov

November 18, 2019

NOTICE OF VIOLATION

Mayor, William Martin
City of Greenfield
14 Court Square
Greenfield, MA 01301

Re: Greenfield Public Library

Mayor William Martin,

This letter is regarding the Greenfield Public library located at 402 Main Street. Recently the city of Greenfield hired Structural Support & Design Services to evaluate and determine the occupancy load and egress requirements for the basement level of the Library, specifically the two meeting rooms and the book stack room. Michael Rainville performed the evaluation. As result of Mr. Rainville's evaluation, a report of his findings and determination was prepared and provided to the city.

Mr. Rainville determined that two means of safe egress are required from the basement level. One means of egress and exit, is the exit located at the north end of the corridor between the two rooms. The second exit from the basement level is of concern. Deficiencies noted by Mr. Rainville are listed below;

- 2nd means of egress from the two meeting rooms is the enclosed stairway that leads to grade at northern end of the west side of the basement stack area. Stairway is non-code compliant as an egress route. The basement stack room is typically locked shut except during limited times when the stack area is occupied, consequently stack room exit cannot be considered a safe means of egress.

- The door to the stairway that leads up to the 1st floor (Non-compliant as an egress route) is locked when Library is closed.

- A code compliant second means of egress is not available to the occupants in the basement meeting rooms when used during periods when the Library is closed.

- The basement stack area is without a code compliant second means of egress.

- There is no accessible second means of egress available in the basement.

Mr. Rainville's notes in his report there is no second accessible means of egress from rooms B 101 and B 102 at any time. 521 CMR Massachusetts Architectural Access Board (AAB) regulations regulates accessibility for public buildings, 521 CMR section 3.3 applies to existing buildings,

> 3.3 EXISTING BUILDINGS All additions to, reconstruction, remodeling, and alterations or repairs of existing public buildings or facilities, which require a building permit or which are so defined by a state or local inspector, shall be governed by all applicable subsections in 521 CMR 3.00: JURISDICTION

There is no open permit or permit application that has been filed with this department for work described in section 3.3, therefore, there is no trigger mechanism that requires work to provide a second accessible means of egress from either of these rooms. However, once work is performed as described in 521 CMR section 3.3, and that work falls under the requirements of 521 CMR, 3.3, 3.3.1, thru 3.3.6 then, at that time, a second accessible means of egress would be required. See sections 3.3.1 thru 3.3.6,

> 3.3.1 If the work being performed amounts to less than 30% of the full and fair cash value of the building and
>
> a. if the work costs less than $100,000, then only the work being performed is required to comply with 521 CMR or
>
> b. if the work costs $100,000 or more, then the work being performed is required to comply with 521 CMR. In addition, an accessible public entrance and an accessible toilet room, telephone, drinking fountain (if toilets, telephones and drinking fountains are provided) shall also be provided in compliance with 521 CMR. Exception: General maintenance and on-going upkeep of existing, underground transit facilities will not trigger the requirement for an accessible entrance and toilet unless the cost of the work exceeds $500,000 or unless work is being performed on the entrance or toilet.
>
> > Exception: Whether performed alone or in combination with each other, the following types of alterations are not subject to 521 CMR 3.3.1, unless the cost of the work exceeds $500,000 or unless work is being performed on the entrance or toilet. (When performing exempted work, a memo stating the exempted work and its costs must be filed with the permit application or a separate building permit must be obtained.)
>
> a. Curb Cuts: The construction of curb cuts shall comply with 521 CMR 21.00: CURB CUTS. 521 CMR: ARCHITECTURAL ACCESS BOARD 1/27/06 521 CMR - 10 3.00: JURISDICTION
>
> b. Alteration work which is limited solely to electrical mechanical, or plumbing systems; to abatement of hazardous materials; or retrofit of automatic sprinklers and does not involve the alteration of any elements or spaces required to be accessible under 521 CMR. Where electrical outlets and controls are altered, they must comply with 521 CMR.
>
> c. Roof repair or replacement, window repair or replacement, repointing and masonry repair work.

d. Work relating to septic system repairs, (including Title V, 310 CMR 15.00, improvements) site utilities and landscaping.

3.3.2 If the work performed, including the exempted work, amounts to 30% or more of the full and fair cash value (see 521 CMR 5.00) of the building the entire building is required to comply with 521 CMR.

a. Where the cost of constructing an addition to a building amounts to 30% or more of the full and fair cash value of the existing building, both the addition and the existing building must be fully accessible.

3.3.3 Alterations by a tenant do not trigger the requirements of 521 CMR 3.3.1b and 3.3.2 for other tenants. However, alterations, reconstruction, remodeling, repairs, construction, and changes in use falling within 521 CMR 3.3.1b and 3.3.2, will trigger compliance with 521 CMR in areas of public use, for the owner of the building.

3.3.4 No alteration shall be undertaken which decreases or has the effect of decreasing accessibility or usability of a building or facility below the requirements for new construction.

3.3.5 If alterations of single elements, when considered together, amount to an alteration of a room or space in a building or facility, that space shall be made accessible.

3.3.6 No alteration of an existing element, space, or area of a building or facility shall impose a requirement for greater accessibility than that which would be required for new construction.

Mr. Rainville's notes in his report that 780 CMR sections 102.6 and 102.6.4 apply to existing buildings:

102.6 Existing Structures. The legal occupancy of any structure existing on the date of the adoption of 780 CMR shall be permitted to continue without change, except as is specifically covered in 780 CMR or as deemed necessary by the Building Official for the general safety and welfare of the public.

102.6.4 Existing Means of Egress, Lighting and Ventilation. The Building Official may cite any of the following conditions in writing as a violation and order the abatement within a time frame deemed necessary by the Building Official to make the building environment safe, healthy, or otherwise comply with 780 CMR.

1. Inadequate number of egress.
2. Egress components with insufficient width or so arranged to be inadequate, including signage and lighting.
3. Inadequate lighting & ventilation.

As a result of Mr. Rainville's findings and determination, this department in conjunction with Fire Chief, Robert Strahan and Fire Prevention Officer Daniel Smith believe these deficiencies pose potential serious safety concerns and that those concerns must be addressed.

This portion of the letter serves as a **"Notice of Violation"** in accordance with 780 CMR Massachusetts State Building Code 9th Edition, section 102.6.4. All codes referenced within this letter are from 780 CMR Massachusetts State Building Code 9th Edition with Massachusetts amendments unless otherwise noted.

> 114.2 Notice of Violation. The building official is authorized to serve a notice of violation or order on the person responsible for the erection, construction, alteration, extension, repair, moving, removal, demolition or occupancy of a building or structure in violation of the provisions of 780 CMR, or in violation of a permit or certificate issued under the provisions of 780 CMR. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

Violations:

1. Inadequate number of means of egress from the book stacks room. (102.6.4 & Table 1006.3.1) There is no approved 2nd means of egress from the book stack room.
   - The book stack room shall not be occupied / used until an approved 2nd means of egress is provided, inspected and approved by this department.

   - To remedy this violation, see options provided in Mr. Rainville's report. A written plan of corrective action to remedy this violation must be provided to this department for review and approval; this plan must be provided within 45 days from date of this notice.

2. Inadequate number of means of egress from rooms B 101 and B 103. (102.6.4, 1001.2, 1001.3 & Table 1006.3.1)
   - Must provide and maintain two separate means of egress from rooms B 101 & B 103 at all times the building is occupied / open.

   - The basement level shall not be occupied when two separate means of egresses are not provided.

   - To remedy this violation, see options provided in Mr. Rainville's report. A written plan of corrective action to remedy this violation must be provided to this department for review and approval; this plan must be provided within 45 days from the date of this notice.

3. The stairway to the first floor is not adequately marked with signage as an exit. (102.6.4, 1008.2, 1008.3 & 1013)
   - To remedy this violation, install additional illuminated exit sign / emergency lights near the door at the base of the center stairs to mark as an egress route, 30 days to correct.

> 114.1 Unlawful Acts. It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, move, remove, demolish, occupy or change the use or occupancy of any building, structure or equipment regulated by 780 CMR, or cause same to be done, in conflict with or in violation of any of the provisions of 780 CMR.

114.3 Enforcement. Violations to 780 CMR shall be enforced in accordance with the applicable provisions of M.G.L. c. 143, M.G.L. c. 148, and M.G.L. c. 148A.

114.4 Violation Penalties. Any person who violates a provision of 780 CMR or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure, or makes a change of use in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of 780 CMR, shall be subject to penalties as prescribed by M.G.L. c. 143, § 94(a).

This department is open to other options, (short and long term) that are not noted in Mr. Rainville's report. Any possible option must be presented to this department in writing for review and approval.

If you are aggrieved by any decision or order relating to the violations of 780 CMR cited above you may file an appeal in accordance with 780 CMR 113.0 no later than 45 days after the service of notice thereof of the interpretation, order, requirement or direction.

113.1 General. Appeals of orders, decisions, determinations and failures to act made by any state or local agency or any person or state or local agency charged with the administration or enforcement of the state building code or any of its rules and regulations, except the specialized codes of M.G.L. c. 143, § 96, relative to the application and interpretation of 780 CMR shall be addressed by the Building Code Appeals Board in accordance with M.G.L. c. 143, § 100. An application to file an appeal may be found at http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/

You may contact me with questions you have concerning this matter.

Respectfully,

Mark A. Snow
Inspector of Buildings/Zoning Enforcement,
ICC CBO, ICC Fire Inspector I, NFPA Fire Inspector I,
City of Greenfield,
14 Court Square
Greenfield, MA 01301
(413)772-1404 ext 2105
mark.snow@greenfield-ma.gov

cc: Ellen Boyer - Director of Public Library
Mark Smith - Director of General Administration
Robert Strahan - Fire Chief
Daniel Smith – Fire Prevention Officer

521 CMR 3.00: JURISDICTION

3.1 SCOPE

All work performed on *public buildings or facilities* (*see* **521 CMR 5.00: DEFINITIONS**), including *construction, reconstruction, alterations, remodeling, additions*, and *changes of use* shall conform to 521 CMR.

3.1.1 To determine the scope of compliance, refer to **521 CMR 3.2, New Construction** and **521 CMR 3.3, Existing Buildings**. In the absence of jurisdiction by 521 CMR, 780 CMR: the State Building Code may apply.

3.2 NEW CONSTRUCTION

All new construction of *public buildings/facilities* shall comply fully with 521 CMR.

3.3 EXISTING BUILDINGS

All *additions* to, *reconstruction, remodeling*, and *alterations* or *repairs* of existing *public buildings or facilities*, which require a building permit or which are so defined by a state or local inspector, shall be governed by all applicable subsections in **521 CMR 3.00: JURISDICTION**.

For specific applicability of 521 CMR to existing multiple dwellings undergoing renovations, see **521 CMR 9.2.1**.

3.3.1 If the work being performed amounts to less than 30% of the *full and fair cash value* of the *building* and

a. if the work costs less than $100,000, then only the work being performed is required to comply with 521 CMR

or

b. if the work costs $100,000 or more, then the work being performed is required to comply with 521 CMR. In addition, an *accessible* public *entrance* and an *accessible* toilet room, telephone, drinking fountain (if toilets, telephones and drinking fountains are provided) shall also be provided in compliance with 521 CMR.

Exception: General maintenance and on-going upkeep of existing, underground transit facilities will not trigger the requirement for an *accessible entrance* and toilet unless the cost of the work exceeds $500,000 or unless work is being performed on the *entrance* or toilet.

Exception: Whether performed alone or in combination with each other, the following types of *alterations* are not subject to **521 CMR 3.3.1**, unless the cost of the work exceeds $500,000 or unless work is being performed on the entrance or toilet. (When performing exempted work, a memo stating the exempted work and its costs must be filed with the permit application or a separate building permit must be obtained.)

a. Curb Cuts: The construction of *curb cuts* shall comply with **521 CMR 21.00: CURB CUTS.**

402 MAIN ST.

City of
GREENFIELD, MASSACHUSETTS

OFFICE OF THE MAYOR

WILLIAM F. MARTIN
Mayor
City Hall • 14 Court Square • Greenfield, MA 01301
Phone 413-772-1560 • Fax 413-772-1519
Mayor@greenfield-ma.gov • www.greenfield-ma.gov

EXECUTIVE ORDER #2019-4
Library Building – Updated Restrictions

WHEREAS: I, William Martin, Mayor of the City of Greenfield, am Chief Administrative and Executive Officer and am responsible for maintaining the well-being of Greenfield and its citizens; and,

WHEREAS: The Greenfield Public Library is located in the Leavitt-Hovey House, which was built as a private home in 1797, and after the acquisition of the building by the City, an extension was added with meeting rooms; and,

WHEREAS: Under 102.8.1 of 780 CMR – "Owner Responsibility" – the Owner shall be responsible for the compliance of 780 CMR; and,

WHEREAS: The City has received a report by a structural engineer raising serious safety concerns about the ground floor of the library,

WHEREAS: The City has received a Notice of Violations from the Building Commissioner defining violations and compliance measures required to maintain safety,

NOW THEREFORE, I, Mayor William Martin, hereby state, by Executive Order, that the Director of the Greenfield Library, and any other department or committee so charged, shall direct their department or committee in the following:

THAT: For the safety of the staff and the public, until further notice, the Library's ground floor book stack room is closed and not to be occupied until a plan as indicated by the Professional Engineer is submitted and approved by the Building inspector;

THAT: Basement Rooms 101 and 103 shall, at all times, provide two means of unimpeded egress from each room; AND FURTHER THAT, a maximum occupancy load for BOTH rooms shall be 49 with no overflow.

This order shall supersede Executive Order 2019-3 and shall take effect Monday, December 2, 2019

William Martin, Mayor

Date

The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
Bureau of Environmental Health
250 Washington Street, Boston, MA 02108-4619
Phone: 617-624-5757 Fax: 617-624-5777
TTY: 617-624-5286

CHARLES D. BAKER
Governor

KARYN E. POLITO
Lieutenant Governor

MARYLOU SUDDERS
Secretary

MONICA BHAREL, MD, MPH
Commissioner

Tel: 617-624-6000
www.mass.gov/dph

November 27, 2019

George VanDelinder, Central Maintenance Director
City of Greenfield
14 Court Square
Greenfield, MA 01301

Dear Mr. VanDelinder:

Enclosed is a copy of the report by our Indoor Air Quality Program on their visit to the Greenfield Public Library to conduct an indoor air quality assessment. The report shows that there were issues identified. Please refer to the recommendations section for advice on how to correct these issues.

Sincerely,

Michael A. Feeney, R.Ph., J.D., C.H.O.
Director, Indoor Air Quality Program

cc:
Jana Ferguson, Director, BEH
Ellen Boyer, Director, Greenfield Public Library
Valerie Bird, Director, Greenfield Board of Health

Enclosure(s)

INDOOR AIR QUALITY ASSESSMENT

Greenfield Public Library
402 Main Street
Greenfield, Massachusetts

Prepared by:
Massachusetts Department of Public Health
Bureau of Environmental Health
Indoor Air Quality Program
November 2019

Background

Building:	Greenfield Public Library (GPL)
Address:	402 Main Street Greenfield, MA
Assessment Requested by:	George VanDelinder, Central Maintenance Director, Town of Greenfield
Reason for Request:	General indoor air quality (IAQ) and water damage/mold growth concerns
Date of Assessment:	October 18, 2019
Massachusetts Department of Public Health/Bureau of Environmental Health (MDPH/BEH) Staff Conducting Assessment:	Michael Feeney, Director, IAQ Program
Building Description:	The library contains two wings in a split-level configuration. "The library resides in the historic Leavitt-Hovey House, a wooden structure built in 1797, with east and west wings added in 1817. In 1907, the town of Greenfield took the house and property by eminent domain to establish a public library. A 4,000 square foot masonry addition designed to hold the adult book stacks was added to the north of the original building in 1908, and the Greenfield Public Library opened on January 11, 1909. In 1952, a 500 square foot bookmobile garage was added to the east wing" (GPL, 2016). The GPL was renovated in 1998 (MJA & KL., 1998). The second floor of the 1797 wing is used for administrative offices. The ground floor of the 1907 wing contains a conference room, an office and restrooms. The basement of the 1797 wing is used for storage of books and contains a mechanical room and the custodial office.
Windows:	Openable

Previous Recommendations

An assessment of this building was conducted in 2001, with a report finalized in 2002 including recommendations to improve IAQ based on assessment findings. In the 2002 report, the following recommendations were made (with note indicating action taken):

1. Consider replacing carpeting in the basement conference room with tile or other non-porous surface. *Note: original carpeting replaced with carpet tile.*
2. Extend condensation drains to empty at ground level. *Note: no extensions appear to have been installed.*
3. Continue to remove clinging ivy from the exterior walls of the GPL. *Note: clinging plants have regrown to cover rear portions of GPL.*
4. Examine the feasibility of providing mechanical exhaust ventilation for the basement book stacks and the second floor offices. For the second floor offices with univents, examine the feasibility of converting the existing airshafts of the original ventilation system into mechanical systems. Contact an HVAC engineering firm to determine if existing vents, ductwork, etc. can be retrofitted for mechanical ventilation. *Note: no remedial efforts regarding exhaust ventilation were taken.*
5. Install a gutter/downspout system to properly drain rainwater away from the foundation. *Note: no gutter system was installed.*

Methods

Please refer to the IAQ Manual for methods, sampling procedures, and interpretation of results (MDPH, 2015).

IAQ Testing Results

The following is a summary of indoor air testing results (Table 1).

- ***Carbon dioxide levels*** were below the MDPH guideline of 800 parts per million (ppm) in all areas assessed, indicating adequate fresh air in the space at the time of this assessment.
- ***Temperature*** was within the recommended range of 70°F to 78°F in all areas assessed.
- ***Relative humidity*** was within or close to the lower end of the recommended range of 40% to 60% in areas assessed.
- ***Carbon monoxide*** levels were non-detectable (ND) in all areas assessed.
- ***Fine particulate matter (PM2.5)*** concentrations measured were below the National Ambient Air Quality Standard (NAAQS) level of 35 $\mu g/m^3$ in all areas assessed.

The assessment results indicate that the ventilation system is providing adequate fresh air for the occupancy in the building. Note that many areas had low occupancy, which can reduce the creation of carbon dioxide. To maximize air exchange, the BEH recommends that mechanical ventilation systems operate continuously during periods of occupancy. Without the system operating as designed, normally occurring pollutants cannot be diluted or removed, allowing them to build up and lead to IAQ/comfort complaints.

Ventilation

A heating, ventilating, and air conditioning (HVAC) system has several functions. First it provides heating and, if equipped, cooling. Second, it is a source of fresh air. Finally, an HVAC system will dilute and remove normally occurring indoor environmental pollutants by not only introducing fresh air, but by filtering the airstream and ejecting stale air to the outdoors via exhaust ventilation. Even if an HVAC system is operating as designed, point sources of respiratory irritation may exist and cause symptoms in sensitive individuals.

Fresh air is supplied by a unit ventilator (univent) system (Figure 1). Univents draw air from outdoors through a fresh air intake located on the exterior walls of the building and return air through an air intake located at the base of each unit. Fresh and return air are mixed, filtered, heated and provided to rooms through an air diffuser located in the top of the unit. Univents were functioning in the majority of areas examined.

Exhaust ventilation is provided by ceiling-mounted exhaust vents in the first floor library areas. The basement conference room has a wall-mounted exhaust vent, which is connected to a large fan installed on the rear exterior wall. In all areas examined, exhaust vents were deactivated. Without a functional exhaust system, normally occurring environmental pollutants can build-up and lead to indoor air quality complaints.

The administrative offices on the second floor do not have mechanical exhaust ventilation. The roof of the 1797 wing has two chimney-like structures, which appear to be exhaust ventilation airshafts. A large grill in the staff office appears to be connected to the western brick ventilation shaft by ductwork in the attic. A second large grill located at the top of the stairwell from the first floor may be connected to the eastern brick ventilation shaft. The sound of vehicle traffic was noted emanating from this grill, indicating the airshaft is likely open

to the outdoors. These vents are not mechanical, but use rising, heated air to draw environmental pollutants from the building. While this system can work well during the heating season to provide exhaust ventilation, the system does not work during the air conditioning season. These vents may also serve as a moisture source during summer weather. Additionally, a number of areas in the basement do not have a mechanical fresh air supply system (Table 1).

It is also important to note that the HVAC system is over 20 years old. Efficient function of equipment of this age is difficult to maintain, since compatible replacement parts are often unavailable. According to the American Society of Heating, Refrigeration and Air-Conditioning Engineering (ASHRAE), the service life[1] for the various components of the HVAC system is between 20 to 30 years, assuming routine maintenance of the equipment (ASHRAE, 1991). Despite attempts to maintain the equipment, the optimal operational lifespan of this equipment has been exceeded.

To maximize air exchange, the IAQ program recommends that both supply and exhaust ventilation operate continuously during periods of building occupancy. In order to have proper ventilation with a mechanical supply and exhaust system, the systems must be balanced to provide an adequate amount of fresh air to the interior of a room while removing stale air from the room. The date of the last servicing and balancing was not available at the time of the assessment. It is recommended that existing ventilation systems be re-balanced every five years to ensure adequate air systems function (SMACNA, 1994).

Microbial/Moisture Concerns

Room B101 had extensive water damage along its western wall (Picture 1). It also appears that repairs were attempted in the past in the form of gypsum wallboard (GW) patches used to fill holes in the base of the plaster wall (Picture 2), as indicated by the presence of paper inside the wall. The use of GW as a patch is inappropriate since the paper backing can become mold-colonized if chronically wet. The likely source of moisture causing this damage is pooling water against the foundation. Cement slabs were placed against the foundation to form a walkway and provide some amount of water drainage from the building. Chronic exposure to

[1] The service life is the time during which a particular system or component of ...[an HVAC]... system remains in its original service application and then is replaced. Replacement may occur for any reason, including, but not limited to, failure, general obsolescence, reduced reliability, excessive maintenance cost, and changed system requirements due to such influences as building characteristics or energy prices (ASHRAE, 1991).

rainwater has resulted in the cement slabs subsiding and losing sealant. In addition, the subsidence has created a trench next to the building which will further prevent drainage (Picture 3). Water likely accumulates in the trench, which then penetrates through the exterior wall to damage interior wall plaster and serve as a moisture source for water vapor to accumulate beneath carpet tiles.

Water-damaged ceiling tiles were observed in a number of areas. Some of the observed stained tiles were from roof leaks that have reportedly been repaired. The roof of the building was also examined. The roof membrane had become loose, resulting in pooling water (Picture 4). Debris is also present from tree branches that overhang the roof. Debris holds moisture on the roof, which can damage the membrane and can be attractive to pests.

During the summer of 2018, the Boston area experienced an unprecedented period of extended hot, humid weather. According to the Washington Post, "[d]ata…show[s]…cities in the Northeast have witnessed such humidity levels for record-challenging duration...[i]ncluding Albany, Boston, Burlington Portland and Providence" during the summer of 2018 (WP, 2018). "Boston and nearby locations… [saw]…historic numbers of those warm nights with low temperatures at or above 70 degrees…Providence and Blue Hill Observatory have already broken their annual records" (WP, 2018).

If a building does not have adequate exhaust ventilation and air chilling capacity to remove/reduce relative humidity from outside air, then hot, moist air introduced into a building can linger to increase occupant discomfort as well as possibly moisten materials that may lead to mold growth.

As noted previously, the building is configured in a manner where significant hot, moist air can readily pass into interior of the building. Other sources of hot, humid air impacting the main offices include spaces around the basement door, as well as outdoor exterior doors. Note that both liquid water and water vapor can create conditions conducive to fungal colonization of vulnerable materials. Leaks through the building envelope (e.g., roof, exterior wall components, and foundation) or plumbing issues are obvious water sources. High relative humidity combined with hot weather can also cause damage. Under certain conditions, condensation[2] can accumulate

[2] Condensation is the collection of moisture on a surface with a temperature below the dew point. The dew point is a temperature determined by air temperature and relative humidity. For example, at a temperature of 73°F and relative humidity of 57 percent indoors, the dew point for water to collect on a surface is approximately 57°F.

and moisten materials. If these materials are porous, carbon-containing items (e.g., gypsum wallboard, carpeting, cloth, paper, and cardboard), mold can grow.

The key to managing condensation in hot, humid weather indoors is understanding dew point. When warm, moist air passes over a cooler surface, condensation can form. Condensation is the collection of moisture on a surface at or below the dew point. The dew point is the temperature that air must reach for saturation to occur. If a building material/component has a temperature *below the dew point*, condensation will accumulate on that material. Over time, condensation can collect and form water droplets.

According to American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), if relative humidity exceeds 70%, mold growth may occur due to wetting of building materials (ASHRAE, 1989). It is recommended that porous material be dried with fans and heating within *24 to 48 hours of becoming wet* (US EPA, 2008, ACGIH, 1989). If porous materials are not dried within this time frame, mold growth may occur. Water-damaged porous materials cannot be adequately cleaned to remove mold growth.

Building Materials Prone to Condensation

A method to locate areas in a building prone to condensation would be to measure air and building material temperatures. If a wide temperature range exists between measurements, the building materials at the colder end of the range may be prone to becoming moistened with condensation in hot, humid weather.

Using a laser thermometer, the surface temperature of the following locations were measured: interior walls, window frames, GW in close proximity to the floor, and floor temperature approximately five feet (5′) from exterior walls. Air temperature and relative humidity were also measured. Several conditions were noted (Table 2):

- Measurement of wall temperature was done during a clear day with solar heating. Wall temperatures measured in a range from 59 to 63°F, while the indoor temperature was in a range of 70 to 72°F. The difference in temperature indicates that the walls are not insulated or energy efficient and can serve as thermal bridges[3]. Where a thermal bridge

[3] A thermal bridge is an object (usually metallic) in a wall space through which heat is transferred at a greater rate than materials surrounding it. During the heating season, the window comes in contact with heated air from the interior and chilled air from the outdoors, resulting in condensation formation if the window frame temperatures are below the dew point.

exists, condensation is likely to form on the warm side of the cold object, which can moisten materials, such as plaster.

- Floor temperatures were also measured in a range from 59 to 63°F, while the indoor temperature was in a range of 70 to 72°F. The floor is likely not insulated and can serve as a thermal bridge, leading to potential condensation on the floor, which can moisten carpeting and items placed on the floor.

In each of these instances, the lower temperature of the floors and walls combined with the presence of thermal bridges in addition to possible water penetration through the cement floor from poorly draining rainwater (rooms B101/B103) make these materials vulnerable to moistening and mold growth under the weather conditions experienced in Massachusetts over the summer of 2018.

Exterior Conditions Impacting the Building

An oak tree exists near the southeast corner of the GPL property, which overhangs the roof (Picture 5). This tree poses a number of hazards to the GPL as well as a possible danger to free egress for the Greenfield Fire Department (GFD) from its firehouse driveway:

- As reported by Greenfield public officials, the roots of the oak tree are entering sewer pipes for the GPL, resulting in blockage.
- Leaves and acorns accumulate around the flat roof drain, which creates a dam that inhibits rainwater drainage from the roof. This condition can also lead to ice accumulation blocking this drain, which can lead to water running off the roof to moisten exterior walls.
- The oak tree prevents sunlight from drying the eastern wall of the GPL.
- The oak tree is a possible danger to the GPL due to its distance from its exterior walls. The recommended safe distance from which an oak tree should be planted is recommended to be approximately 98 feet (33 yards) from the exterior of a building (BI, 2015). Soil subsidence may also be caused by oak tree roots, which can undermine the structure of a building to cause wall and floor cracking as well as other related damage. To prevent subsidence, a 98 feet distance is recommended (Williams, A. 2006). Within this distance, severe weather may

result in the tree falling onto the GPL or having the tree roots damage the sewer service. The oak tree is well within 98 feet from the building.

- Also of note is resistance of the oak tree to uprooting during high wind events. In general a tree root system will spread out in all directions from its trunk. As noted previously, an oak tree root can extend in a 196 foot diameter from its trunk. Any structure disrupting the root structure would then to make the tree unstable if subjected to high winds from a certain direction. The east side of the tree has its root system disrupted by a sidewalk and the driveway of the GFD (Picture 6). A strong westerly wind would make the oak tree prone to falling eastward to block the GFD driveway. If the oak tree is subjected to strong southeasterly winds, which are rare but possible, it is feasible that the tree can uproot to fall on the GPL.

The Federal Emergency Management Agency (FEMA) provides a number of recommendations in order to prepare for severe thunderstorms. Of note FEMA recommends "Cut down or trim trees that may be in danger of falling on your [building]" (FEMA, 2018). Given the proximity to the GPL, the damage done to sewer lines and its location near the GFD driveway, removal of the oak tree should be strongly considered.

Conclusions/Recommendations

Based on observations at the time of assessment, the following is recommended:

1. Consider implementing recommendations in the 2002 report that have not already implemented. A copy of the 2002 report is attached as Appendix A.
2. Remove GW used to repair the basement wall in B103. Repair with an appropriate material (e.g., cement board) that is not susceptible to mold growth.
3. To prevent future water damage from rain/groundwater in basement rooms a number of options to improve drainage from the west-facing wall of the 1907 building can be considered:
    - Install a French drain at the base of the wall;

- Install a water-impermeable apron that resists settling to drain water away from the wall like the tarmac apron installed on the westernmost wall of the building (Picture 7);
- Install a gutter/downspout system to reduce rainwater impact on the cement slabs. Once installed, reset the cement slabs in a manner to prevent settling.

4. It is highly recommended to remove the oak tree from the southwest corner of the building to improve roof drainage and prevent potentially catastrophic damage in severe wind conditions/heavy rain.
5. Given the age of the HVAC system, consideration should be given to having a ventilation engineer examine the HVAC system for upgrade or replacement.
6. In order to prevent mold growth/water damage to building materials in basement areas during extended hot, humid weather (e.g., heatwave). The following actions are recommended:
    - Operate the fresh air supply and exhaust system in the basement levels *continuously* when outdoor relative humidity is greater the 70%.
    - Consider raising the temperature set point for the HVAC system in the basement during periods of hot weather when the building is mostly empty of occupants to limit condensation.
    - Use dehumidifiers in the basement areas to supplement humidity reduction during periods of extended heat with high relative humidity (>48 hours):
        - Dehumidifiers need to be properly drained of water and properly cleaned and maintained.
        - Dehumidifiers only need to be used during periods of high outdoor relative humidity (>70%) during a heat wave.
7. Refer to resource manual and other related IAQ documents located on the MDPH's website for further building-wide evaluations and advice on maintaining public buildings. These documents are available at: http://mass.gov/dph/iaq.

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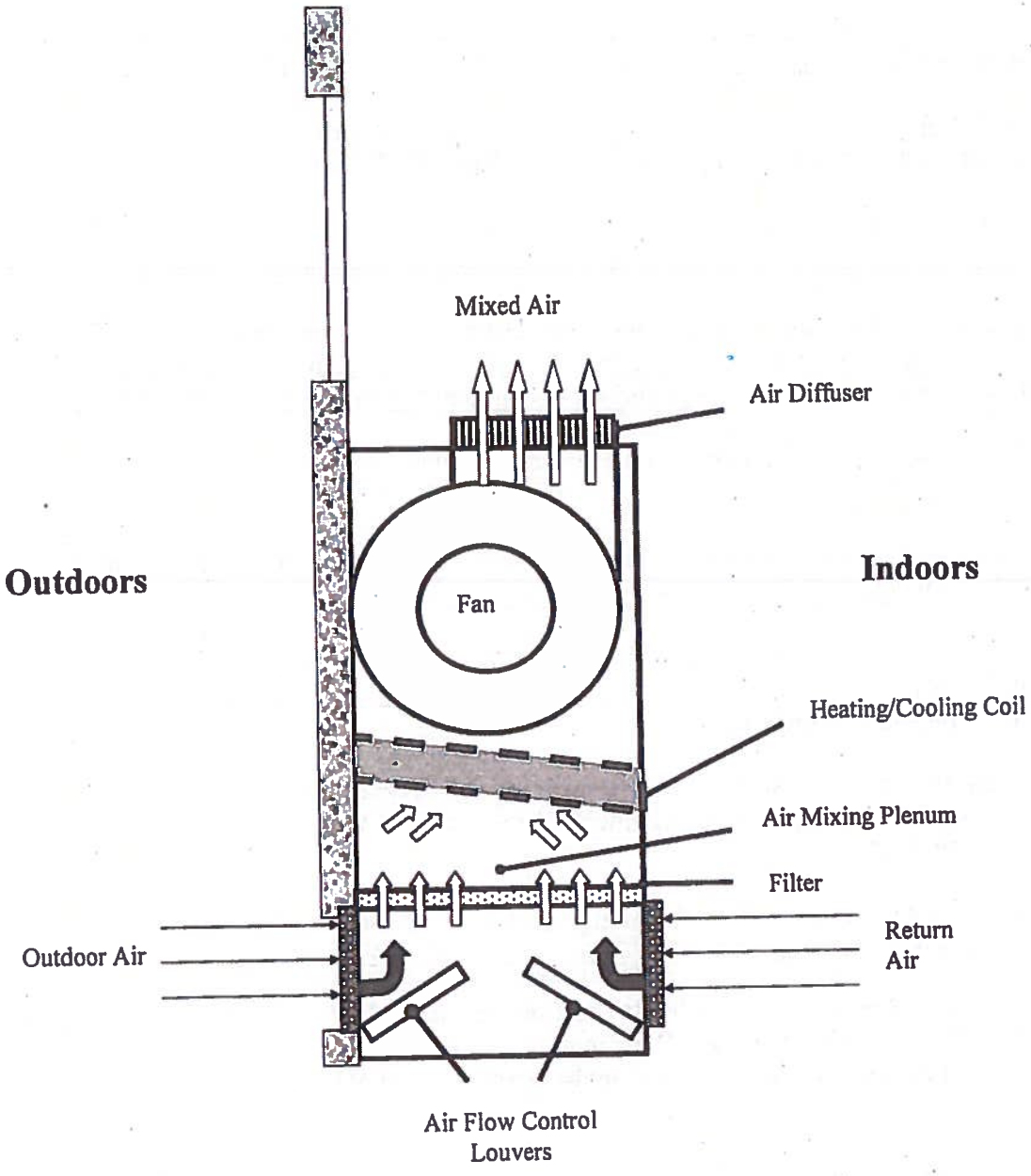
Figure 1: Unit Ventilator (Univent)

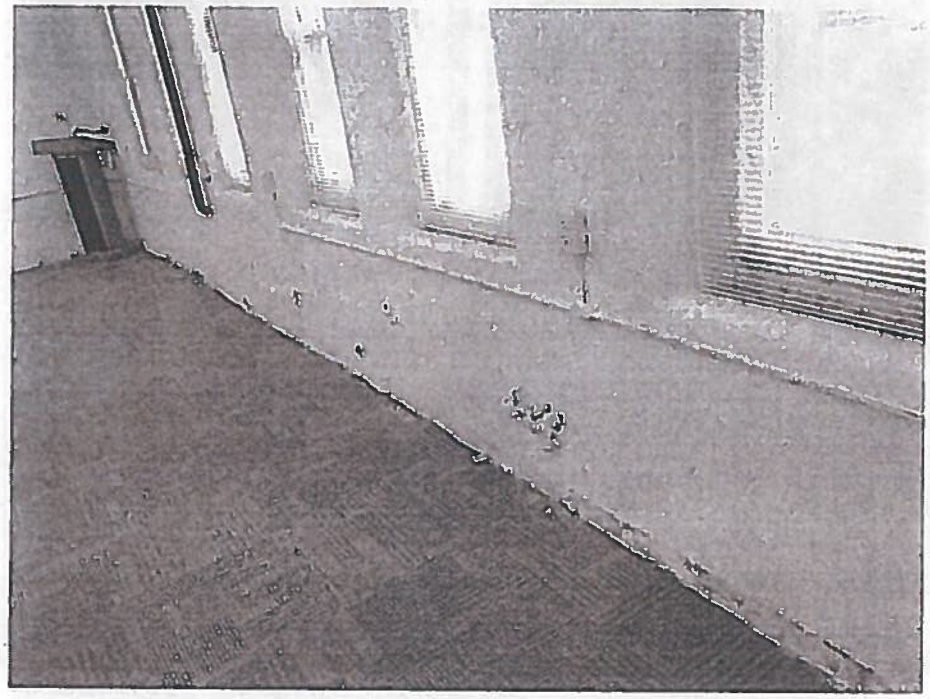


Air Flow

⟵ = Fresh air return

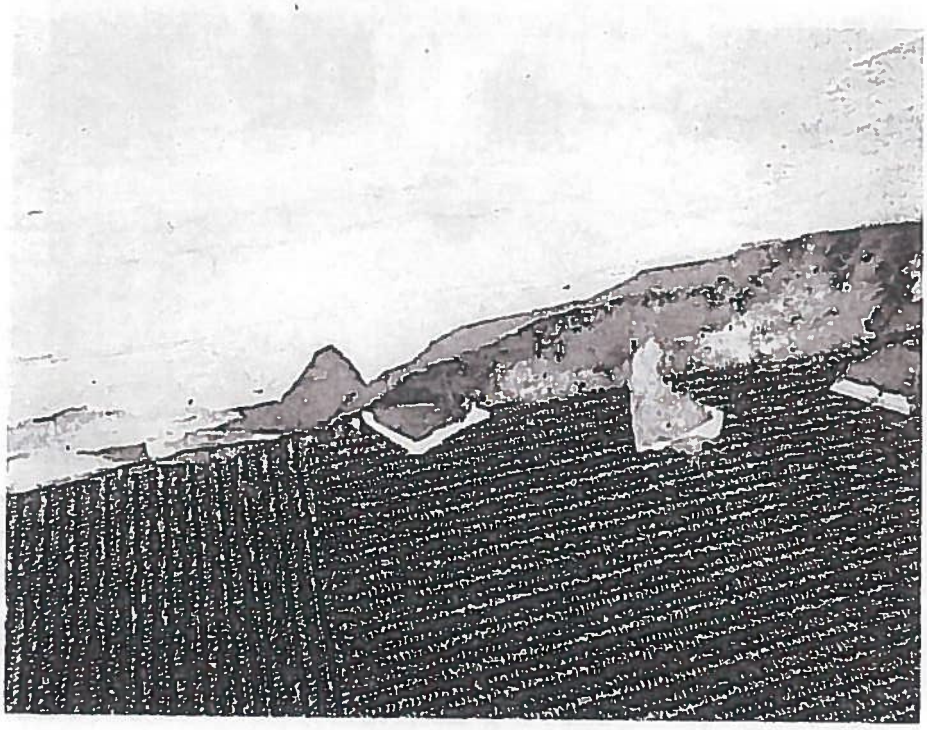
⇦ = Mixed air

Picture 1



Room B101 had extensive water damage along its western wall

Picture 2

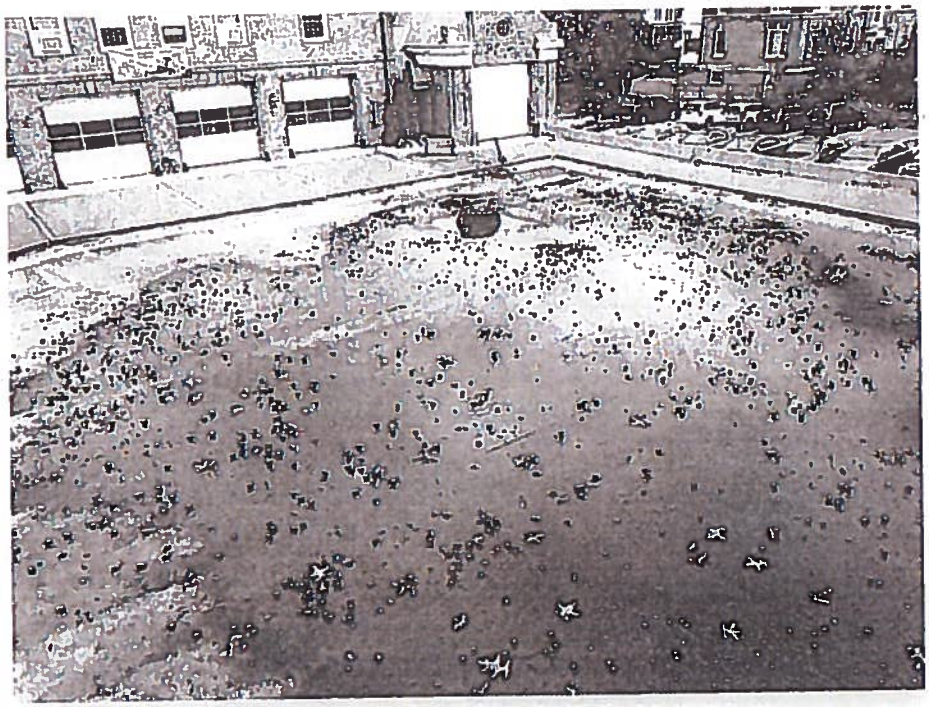


GW inside plaster wall

Picture 3

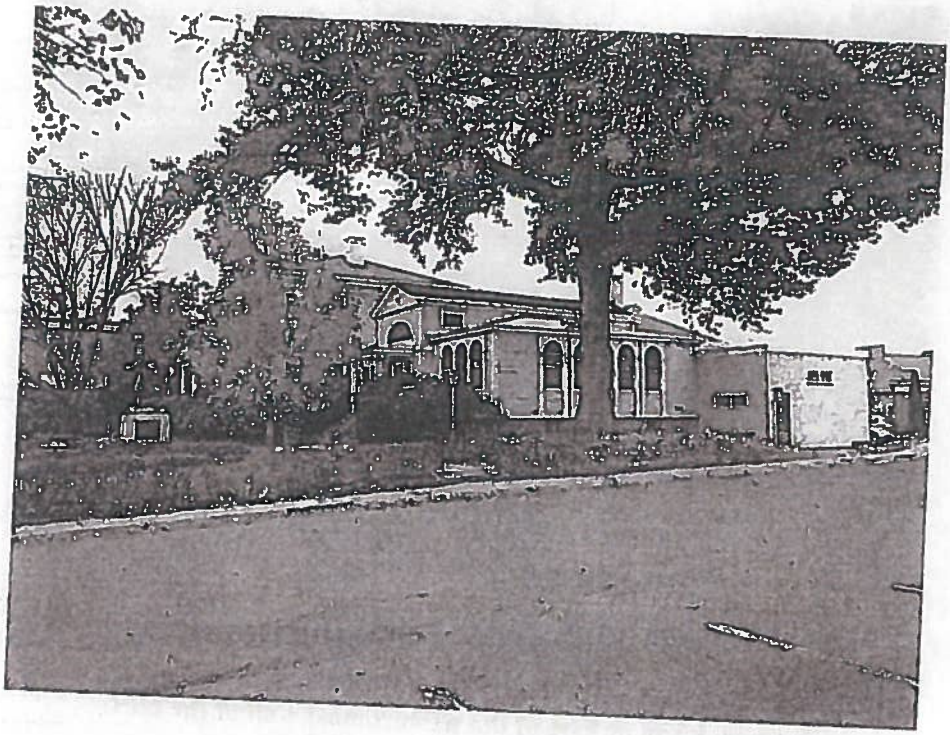
Subsiding and ajar cement slabs at base of west wall
(Note missing sealant in slab/wall junction)

Picture 4



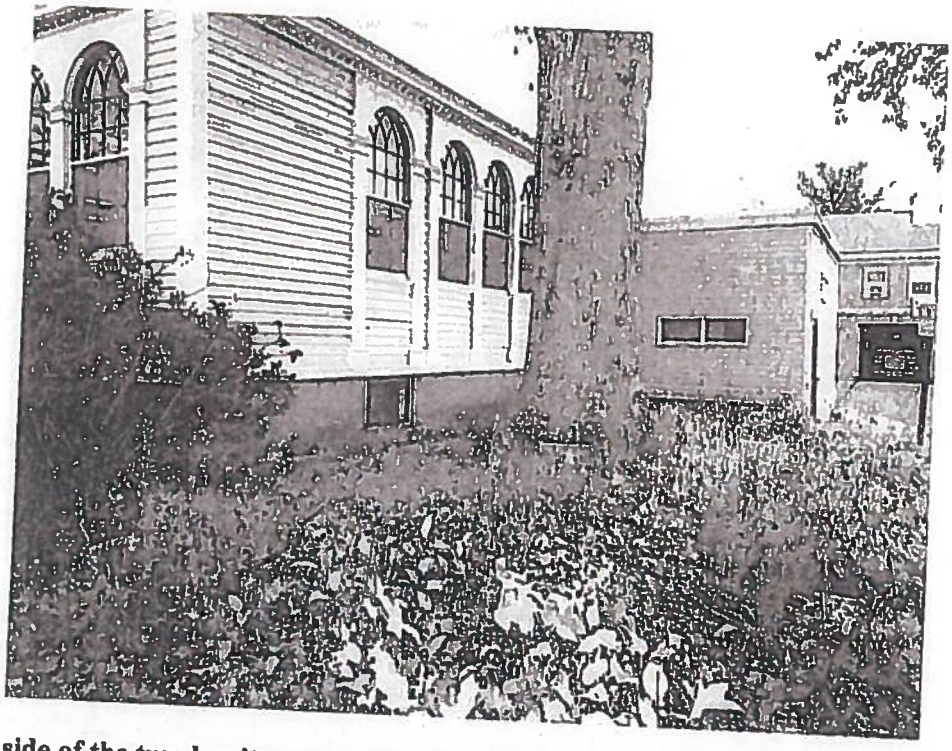
Pooling water on roof

Picture 5



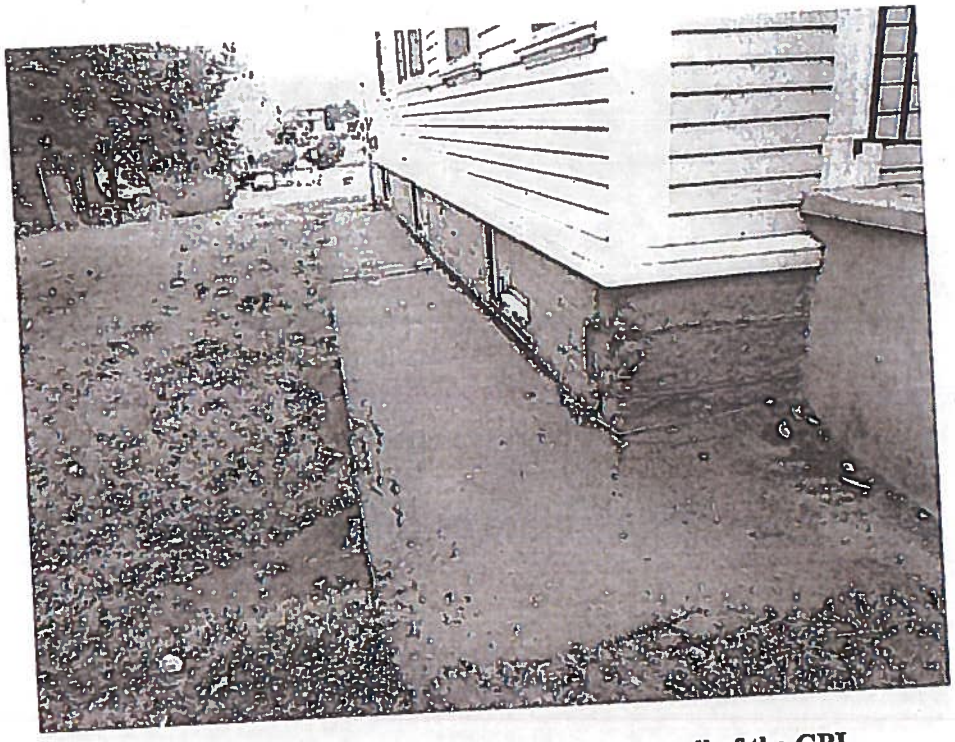
Oak tree overhanging building

Picture 6



The east side of the tree has its root system disrupted by a sidewalk and the driveway of the Greenfield Fire Station

Picture 7



Tarmac apron at base of the westernmost wall of the GPL

Location: G[illegible]nfield Public Library

Address: 402 Main Street, Greenfield, MA

Table 1

Indoor Air Results

Date: 10/18/2019

Location	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Temp (°F)	Relative Humidity (%)	PM2.5 ($\mu g/m^3$)	Occupants in Room	Windows Openable	Ventilation		Remarks
								Supply	Exhaust	
Background (Outdoors)	396	ND	59	41	8					
2nd floor SW office	646	ND	74	41	ND	1	Y	Y	N	Honey combs in windows
SE office	618	ND	74	39	ND	0	Y	Y	N	Air filter
N office	624	ND	74	40	2	1	Y	Y	N	Air filter
Kitchen	626	ND	74	42	ND	0	Y	Y	N	
1st floor information	613	ND	74	40	1	1	Y	Y	N	Air filter
DVDs	631	ND	75	40	ND	0	Y	Y	N	Air filter
Computer	733	ND	74	39	ND	12	Y	Y	N	Air filter
Children's stack SW corner	577	ND	73	40	ND	4	Y	Y	N	Musty odor
Children's west	564	ND	72	41	ND	0	Y	Y	Y	
Children's picture book	534	ND	71	40	ND	0	Y	Y	N	

ppm = parts per million

$\mu g/m^3$ = micrograms per cubic meter

ND = non detect

Comfort Guidelines

Carbon Dioxide: <800 = preferable
> 800 ppm = indicative of ventilation problems

Temperature: 70 - 78 °F
Relative Humidity: 40 - 60%

Location: Greenfield Public Library

Address: 402 Main Street, Greenfield, MA

Indoor Air Results

Date: 10/18/2019

Table 1 (continued)

Location	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Temp (°F)	Relative Humidity (%)	PM2.5 ($\mu g/m^3$)	Occupants in Room	Windows Openable	Ventilation		Remarks
								Supply	Exhaust	
Children's office	600	ND	73	41	ND	0	Y	Y	N	
Front desk office	652	ND	73	44	ND	2	N	N	N	Plants
Front desk	647	ND	73	43	3	2	N	Y	N	Plants
Adults Stack west	669	ND	73	42	ND	0	Y	Y	N	
Adults stack center	664	ND	73	43	ND	2	Y	Y	N	
Adults stack east	771	ND	72	44	ND	2	Y	Y	N	Floor tile cracking
Basement B101	476	ND	72	43	ND	0	Y	Y	N	Water-damaged plaster
B103	470	ND	70	46	ND	0	Y	Y	Y	

ppm = parts per million

$\mu g/m^3$ = micrograms per cubic meter

ND = non detect

Comfort Guidelines

Carbon Dioxide: <800 = preferable
> 800 ppm = indicative of ventilation problems

Temperature: 70 - 78 °F

Relative Humidity: 40 - 60%

Location: Greenfield Public Library
Address: 402 Main Street, Greenfield, MA

Temperature Readings
Date: 10/18/2019

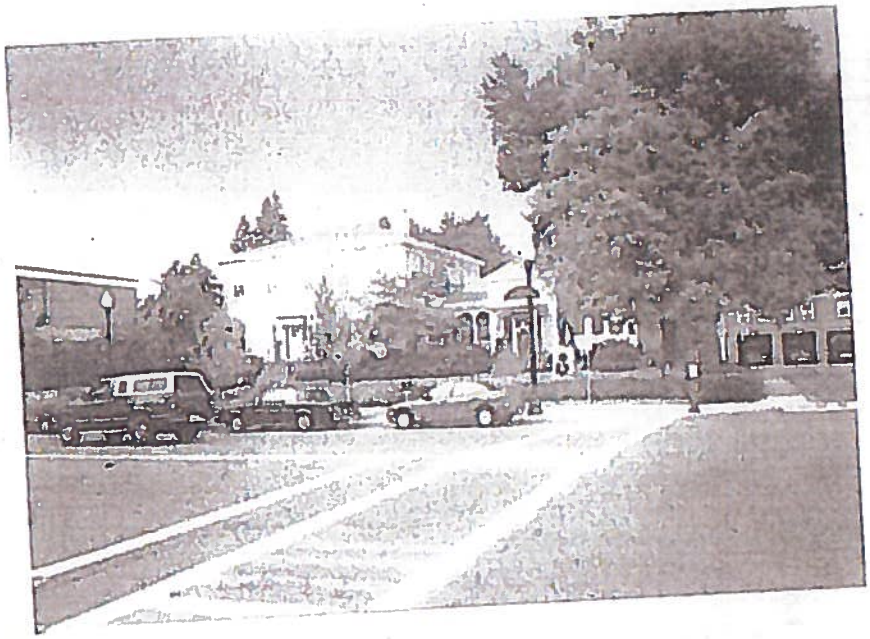
Table 2
Temperature Measurements of Surfaces

Location	Air Temperature (°F)	Temperature Range of Floors (°F)	Difference in Temperature of Air v. Floor (°F)
B 101	72	59-63	+9-13
B 103	70	59-65	+11-15

APPENDIX A

INDOOR AIR QUALITY ASSESSMENT

Greenfield Public Library
402 Main Street
Greenfield, Massachusetts



Prepared by:
Massachusetts Department of Public Health
Bureau of Environmental Health Assessment
February, 2002

APPENDIX A

Background/Introduction

At the request of Lisa Hebert of the Greenfield Board of Health, the Massachusetts Department of Public Health (MDPH), Bureau of Environmental Health Assessment (BEHA) provided assistance and consultation regarding indoor air quality at the Greenfield Public Library, 402 Main Street, Greenfield, Massachusetts. Reports from building occupants of indoor air quality related symptoms prompted this request. On August 13, 2001, a visit was made to this school by Michael Feeney, Chief of Emergency Response/Indoor Air Quality (ER/IAQ), BEHA, to conduct an indoor air quality assessment.

The library contains two wings in a split-level configuration. The original wing was a free standing, two-story, wood frame mansion constructed in 1797 (see Picture 1). A two-story brick wing was added to the rear of the building in the 1950s. The library occupies the first floor of the 1797 wing and the second floor of the 1950s wing. The second floor of the 1797 wing is used for administrative offices. The ground floor of the 1950s wing contains a conference room, an office and restrooms. The basement of the 1797 wing is used for storage of books and contains a mechanical room and the custodial office. An elevator shaft services each floor of the 1797 wing. Windows are sash windows that are not openable. The library exhaust ventilation was renovated in 1998 (MJA & KL, 1998). Exhaust vents were removed and new motors were added to the basement and first floor.

Methods

Air tests for carbon dioxide, temperature and relative humidity were taken with the TSI, Q-Trak ™, IAQ Monitor Model 8551. Water content of carpeting was measured

with a Delmhorst, BD-2000 Model, Moisture Detector with a Delmhorst Standard Probe. Moisture measurements were taken in the basement conference room.

Results

The library has a staff of 10 and is used by 100+ members of the public daily. Tests were taken during normal operations at the library and results appear in Tables 1-2.

Discussion

Ventilation

It can be seen from the tables that carbon dioxide levels were elevated above 800 parts per million of air (ppm) in 16 of 18 areas surveyed, indicating a ventilation problem in most areas. It is also noted that a number or areas were sparsely populated during the assessment. Under ordinary circumstances, low population in areas of the building would be expected to greatly reduce carbon dioxide levels.

Fresh air is supplied by a unit ventilator (univent) system (see Figure 1). Univents draw air from outdoors through a fresh air intake located on the exterior walls of the building and return air through an air intake located at the base of each unit. Fresh and return air are mixed, filtered, heated and provided to rooms through an air diffuser located in the top of the unit. Univents were functioning in the majority of areas examined.

Exhaust ventilation is provided by ceiling-mounted exhaust vents in the first floor library areas. The basement conference room has a wall-mounted exhaust vent, which is connected to a large fan installed on the rear exterior wall (see Picture 2). In all areas examined, exhaust vents were deactivated. Without a functional exhaust system,

normally occurring environmental pollutants can build-up and lead to indoor air quality complaints.

The administrative offices on the second floor do not have mechanical exhaust ventilation. The roof of the 1797 wing has two chimney-like structures, which appear to be exhaust ventilation airshafts. A large grill in the staff office appears to be connected to the western brick ventilation shaft by ductwork (see Picture 3) in the attic. A second large grill located at the top of the stairwell from the first floor may also be connected to the eastern brick ventilation shaft. The sound of vehicle traffic was noted emanating from this grill, indicating the airshaft is likely open to the outdoors. These vents are not mechanical, but use rising, heated air to draw environmental pollutants from the building. While this system can work well during the heating season to provide exhaust ventilation, the system does not work during the air- conditioning season. These vents may also serve as a moisture source during summer weather. Additionally, a number of areas in the basement do not have mechanical fresh air supply systems (see Tables).

To maximize air exchange, the BEHA recommends that both supply and exhaust ventilation operate continuously during periods of building occupancy. In order to have proper ventilation with a mechanical supply and exhaust system, the systems must be balanced to provide an adequate amount of fresh air to the interior of a room while removing stale air from the room. The date of the last servicing and balancing was not available at the time of the assessment. It is recommended that existing ventilation systems be re-balanced every five years to ensure adequate air systems function (SMACNA, 1994).

The Massachusetts Building Code requires a minimum ventilation rate of 20 cubic feet per minute (cfm) per occupant of fresh outside air or have openable windows in each room (SBBRS, 1997; BOCA, 1993). The ventilation must be on at all times that

the room is occupied. Providing adequate fresh air ventilation with open windows and maintaining the temperature in the comfort range during the cold weather season is impractical. Mechanical ventilation is usually required to provide adequate fresh air ventilation.

Carbon dioxide is not a problem in and of itself. It is used as an indicator of the adequacy of the fresh air ventilation. As carbon dioxide levels rise, it indicates that the ventilating system is malfunctioning or the design occupancy of the room is being exceeded. When this happens a buildup of common indoor air pollutants can occur, leading to discomfort or health complaints. The Occupational Safety and Health Administration (OSHA) standard for carbon dioxide is 5,000 parts per million parts of air (ppm). Workers may be exposed to this level for 40 hours/week, based on a time-weighted average (OSHA, 1997).

The Department of Public Health uses a guideline of 800 ppm for publicly occupied buildings. A guideline of 600 ppm or less is preferred in schools due to the fact that the majority of occupants are young and considered to be a more sensitive population in the evaluation of environmental health status. Inadequate ventilation and/or elevated temperatures are major causes of complaints such as respiratory, eye, nose and throat irritation, lethargy and headaches.

Temperature readings ranged from 71° F to 76° F, which were within the BEHA recommended comfort guidelines in all areas measured. The BEHA recommends that indoor air temperatures be maintained in a range of 70° F to 78° F in order to provide for the comfort of building occupants. In many cases concerning indoor air quality, fluctuations of temperature in occupied spaces are typically experienced, even in a building with an adequate fresh air supply.

The relative humidity was measured in a range of 46 to 59 percent (with the exception of the basement conference room, which measured 70 percent), which were also within the BEHA recommended comfort range in all areas sampled. The BEHA recommends that indoor air relative humidity is comfortable in a range of 40 to 60 percent. Relative humidity levels in the building would be expected to drop during the winter months due to heating. The sensation of dryness and irritation is common in a low relative humidity environment. Low relative humidity is a very common problem during the heating season in the northeast part of the United States.

Microbial/Moisture Concerns

Of note was the conference room on the ground floor of the 1950s wing, which had a relative humidity measurement of 70 percent. Prolonged relative humidity concentrations indoors above 70 percent can foster mold growth in susceptible materials (ASHRAE, 1989) such as carpeting, cardboard, paper, books, cloth and other materials. Porous materials, if repeatedly exposed to high humidity, can serve as mold growth media. A musty odor was perceived upon entering this room.

In order to ascertain whether carpet was dampened by high relative humidity, moisture sampling was done in the carpeting. Most areas of carpeting had moisture content measurements of 8.8 to 33.2 percent, indicating that the carpet was indeed moistened. Two factors may be contributing to the moistening of the carpet: operation/non operation of different components of the ventilation system and/or water penetration through the exterior wall of this wing of the GPL. During the assessment, the univent in this room was operating and the exhaust vent fan was deactivated. Under these conditions, water vapor introduced into this area of the building from outdoors by the univent can build up, since the exhaust vent is not removing air from the space. This

condition is extremely problematic when outdoor relative humidity is high (on this day, 91 percent). While the operation of the univent will remove some moisture from air passing through cooling coils, extreme relative humidity conditions outdoors can introduce excess moisture into the indoor environment. This excess moisture can then be absorbed by building components, particularly carpeting.

The American Conference of Governmental Industrial Hygienists (ACGIH) recommends that carpeting be dried with fans and heating within 24 hours of becoming wet (ACGIH, 1989). If carpets are not dried within this time frame, mold growth may occur. Water-damaged carpeting cannot be adequately cleaned to remove mold growth. The application of a mildewcide to moldy carpeting is not recommended.

Moisture introduction into the basement can also be problematic for the books stored in the basement stacks. Paper and book binding materials can support mold growth if chronically exposed to water vapor. Control of moisture/water penetration is necessary to prevent microbial growth.

A second possible means for introducing moisture into the basement area is chronic moistening of the rear exterior wall from a combination of a lack of a gutter/downspout system for the roof and the existence of clinging ivy on the rear wall. Water damage to the foundation wall (see Picture 4), brick support pillars (see Picture 5) and a basement stairwell (see Picture 6) in contact with the wall itself, indicate signs of chronic water penetration. During the course of the assessment, a thunderstorm producing a heavy rainfall occurred. This rainfall allowed Mr. Feeney to observe water drainage around the exterior of the building. The lack of a gutter/downspout system allows back-splashing rainwater to impact on the ground adjacent to the exterior wall, which results in chronic wetting. This condition allows water to pool against the building's exterior wall and foundation (see Picture 7). Gutters and downspouts should

be designed to direct rainwater away from the base of the building to prevent the chronic wetting of exterior walls which can result in damaged brickwork and/or mold growth.

Another source of moisture penetration into the building may be through the rear exterior wall, which was formerly covered with a substantial ivy growth (see Picture 8). Clinging plants can cause water damage to brickwork by inserting tendrils into brick and mortar. Water can penetrate into the brick along the tendrils, which can subsequently freeze and thaw during the winter. This freezing/thawing action can weaken bricks and mortar, resulting in damage to the wall. In addition, the growth of roots against the exterior walls can bring moisture in contact with wall brick and eventually lead to cracks and/or fissures in the foundation/slab below ground level. Over time, this process can undermine the integrity of the building envelope and provide a means of water entry into the building via capillary action through foundation concrete and masonry (Lstiburek, J. & Brennan, T.; 2001). In order to avoid this problem, clinging plants on brickwork is not recommended.

During the course of the evaluation, accumulated water was observed on the surface of univent fresh air diffusers. This condition can indicate the uncontrolled introduction of moisture into the interior of the building. Two exhaust vents exist on the second floor of the building that belong to a former ventilation system. As mentioned previously, the exhaust vent in the second floor office is connected by ductwork to a chimney-like structure. The connection of the other exhaust vent could not be determined, however as discussed, outdoor noises such as passing traffic were heard in the airshaft indicating that this vent is likely open to the outdoors. Each of these vents corresponds to chimney-like structures on the roof of the 1797 wing (see Picture 9). These vents can be a source of moisture being introduced into the building, resulting in excessive production of condensation.

Condensation is generated under the following conditions. When warm, moist air passes over a surface that is colder than the air, water condensation can collect on the cold surface. Over time, water droplets can form, which can then drip from a suspended cold surface. For this reason, HVAC systems are equipped with drainage systems beneath cooling coils to drain condensate as moist outdoor air is cooled. Univents have drain (drip) pans that are connected to a drainage pipe system. Each of these drip pans empty through a PVC pipe that exits through the exterior wall clapboard (see Picture 10). Each of these pipes drain condensation directly onto the exterior wall, resulting in chronic moistening that is rotting the clapboard. This chronic moistening can result in water penetration into the interior of the building.

Several rooms contained a number of plants, some of which were located on top of univents. Plant soil and drip pans can also provide a source of mold growth. Over-watering of plants should be avoided and drip pans should be inspected periodically for mold growth. Plants should have drip pans to prevent wetting and subsequent mold colonization of window frames. Plants should also be located away from univents and exhaust ventilation to prevent the aerosolization of mold, dirt and pollen.

A water fountain was observed above carpeting in the children's section (see Picture 11). Spills from the water fountain can result in wetting of the carpet, which can lead to mold growth.

Other Concerns

Cleaning products, label remover and other materials were found in the staff office. Many of these products contain chemicals, which can be irritating to the eyes, nose and throat. These products should be stored properly and used in an area with proper exhaust ventilation to remove odors.

The staff work office contained a photocopier. VOCs and ozone can be produced by photocopiers, particularly if the equipment is older and in frequent use. Ozone is a respiratory irritant (Schmidt Etkin, D., 1992). Library personnel should ensure that local exhaust ventilation is activated while equipment is in use to help reduce excess heat and odors in this area.

Conclusions/Recommendations

Occupant symptoms and complaints are consistent with what might be expected in an environment with a poorly operating ventilation system and chronic moisture penetration into the basement. The conditions observed in the GPL raise several issues. The combination of the building design, maintenance, work hygiene practices and the condition of stored materials in the building can have an adverse impact on indoor air quality. No exhaust ventilation exists in the book stack area of the basement. Without exhaust ventilation, water vapor can build up and linger in the basement. Water vapor penetration through the foundation walls must be halted in order to prevent further mold colonization of the library book collection in the basement stacks. However, this remedy does not solve the issue of lack of mechanical exhaust ventilation for the basement, which should decrease the overall water vapor load for the building.

As an initial step, options concerning the preservation of materials stored in this area should be considered. Since many books are stored in this area, an evaluation concerning disposition of these materials must be made. Porous materials that are judged not worthy of preservation, restoration or transfer to another media (e.g., microfiche or computer scanning) should be discarded. Where stored materials are to be preserved, restored or otherwise handled, an evaluation should be done by a professional

book/records conservator. This process can be rather expensive, and may be considered for conservation of irreplaceable documents that are colonized with mold. Due to cost of book conservation, disposal or replacement of moldy materials may be the most economically feasible option.

For these reasons a two-phase approach to correcting IAQ problems is required, consisting of immediate **(short-term)** measures to improve air quality and **long-term** measures that will require planning and resources to adequately address overall indoor air quality concerns.

The following **short-term** measures should be considered for immediate implementation:

1. Consider removing any water damaged carpeting from the basement conference room. Disinfect non-porous surfaces with an appropriate antimicrobial compound. After disinfection, clean non-porous surfaces with soap and water.
2. Consider replacing carpeting in the basement conference room with tile or other non-porous surface.
3. Temporarily seal the original exhaust vents above the second floor stairwell with polyethylene plastic and duct tape until a permanent seal can be erected.
4. Consider using a floor fan set on the lowest setting to direct air into the exhaust vent in the staff office.
5. Consider consulting a professional book/records conservator to obtain guidance concerning the proper methods for preserving the stored materials in the 1797 building basement.
6. Examine other porous materials for mold growth and musty odors. If present, discard these materials.
7. Extend condensation drains to empty at ground level.

8. Operate the basement conference room exhaust ventilation fan when the univent is operating to remove water vapor.

9. Survey all univent functions to ascertain if an adequate air supply exists for each room and make univent repairs as needed. Check fresh air intakes for repair and increase the percentage of fresh air intake if necessary. Consider consulting a heating, ventilation and air conditioning (HVAC) engineer concerning the calibration of univent fresh air control dampers building-wide.

10. To maximize air exchange, the BEHA recommends that mechanical ventilation operate continuously during periods of occupancy, independent of thermostat control.

11. Continue to remove clinging ivy from the exterior walls of the GPL.

12. For buildings in New England, periods of low relative humidity during the winter are often unavoidable. Therefore, scrupulous cleaning practices should be adopted to minimize common indoor air contaminants whose irritant effects can be enhanced when the relative humidity is low. To control for dusts, a high efficiency particulate arrestance (HEPA) filter equipped vacuum cleaner in conjunction with wet wiping of all surfaces is recommended. Avoid the use of feather dusters. Drinking water during the day can help ease some symptoms associated with a dry environment (throat and sinus irritations).

13. Move plants away from univents. Ensure plants have drip pans. Examine drip pans periodically for mold growth and disinfect with an appropriate antimicrobial where necessary.

14. Use cleaning and other supplies with adequate ventilation. Obtain Material Safety Data Sheets (MSDS) for cleaning products from manufacturers or suppliers. Maintain these MSDS and train individuals in the proper use, storage and

protective measures for each material in a manner consistent with the Massachusetts Right-To-Know Law, M.G.L. c. 111F (MGL, 1983)

The following **long-term measures** should be considered:

1. Examine the feasibility of providing mechanical exhaust ventilation for the basement book stacks and the second floor offices. For the second floor offices with univents, examine the feasibility of converting the existing airshafts of the original ventilation system into mechanical systems. Contact an HVAC engineering firm to determine if existing vents, ductwork, etc. can be retrofitted for mechanical ventilation.
2. Install a gutter/downspout system to properly drain rainwater away from the foundation
3. Repair roof and replace/repair any water-stained ceiling tiles and wall plaster. Examine the area above and around these areas for mold growth. Disinfect areas of water leaks with an appropriate antimicrobial if necessary.

APPENDIX A

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APPENDIX A

Picture 1

Wood Frame Mansion Constructed In 1797

Picture 2

Exhaust Fan for Basement Meeting Room

APPENDIX A

Picture 3

Ductwork in Attic Connected to the Western Brick Ventilation Shaft

Picture 4

Water Damage to Foundation Wall

APPENDIX A

Picture 5

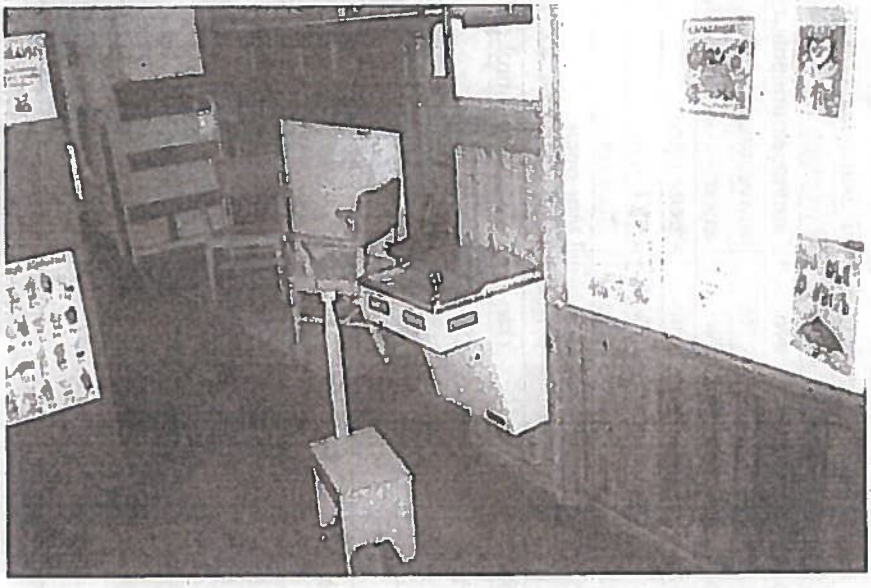
Water Damage to Brick Support Pillars

Picture 6

Water Damage to Basement Stairwell and Foundation Wall

APPENDIX A

Picture 11



Water Fountain Observed Above Carpeting in the Children's Section

APPENDIX A
TABLE 1

Indoor Air Test Results – Greenfield Public Library, Greenfield, MA – August 10, 2001

Location	Carbon Dioxide *ppm	Temp. °F	Relative Humidity %	Occupants in Room	Windows Openable	Ventilation		Remarks
						Intake	Exhaust	
Outside (Background)	393	82	91					Measurements taken @ 1:45 pm
Director's Office	806	71	59	1	No	Yes (1)	No	Fireplace, univent-condensation on louver, door open
Staff Office	782	74	59	3	No	Yes (2)	No	univent-condensation on louver, door open
Staff Office-Printer	802	76	53	1	No	Yes (1)	No	Door open
Kitchen	781	74	62	0	No	Yes (1)	No	Door open
Restroom					No	No	Yes	Exhaust vent broken
Reference Area	1203	72	50	3	No	Yes (2)	No	Fireplace
Computer Area	1209	72	49	7	No	Yes (1)	No	univent-condensation on louver
Front Desk Area	1229	72	50	4	No	Yes (1)	No	univent-condensation on louver
Elevator Stack Area	1081	73	52	3	Yes	Yes (1)	Yes	Exhaust off
Rear Stack	835	74	54	1	Yes	Yes (2)	No	
Child Library Room	1007	71	49	4	No	Yes (3)	Yes	Exhaust off, univent-condensation on louver, fireplace, water bubbler over carpet, plants, door open

*** ppm = parts per million parts of air**
CT = ceiling tiles

Comfort Guidelines

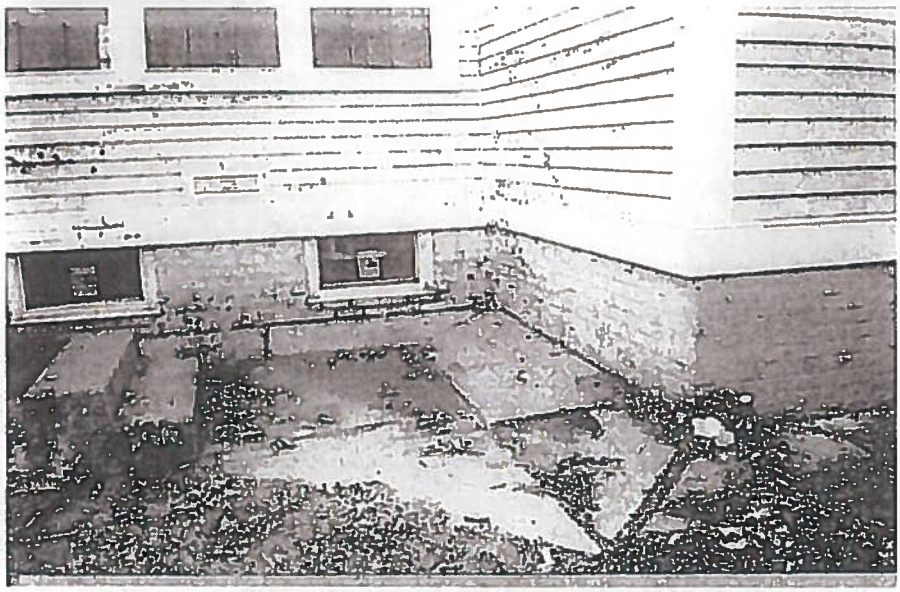
Carbon Dioxide - < 600 ppm = preferred
600 - 800 ppm = acceptable
> 800 ppm = indicative of ventilation problems
Temperature - 70 - 78 °F
Relative Humidity - 40 - 60%

APPENDIX A

Picture 7

Pooling Rainwater from Roof, Note Damage to Foundation Stone in Proximity to Pool

Picture 8



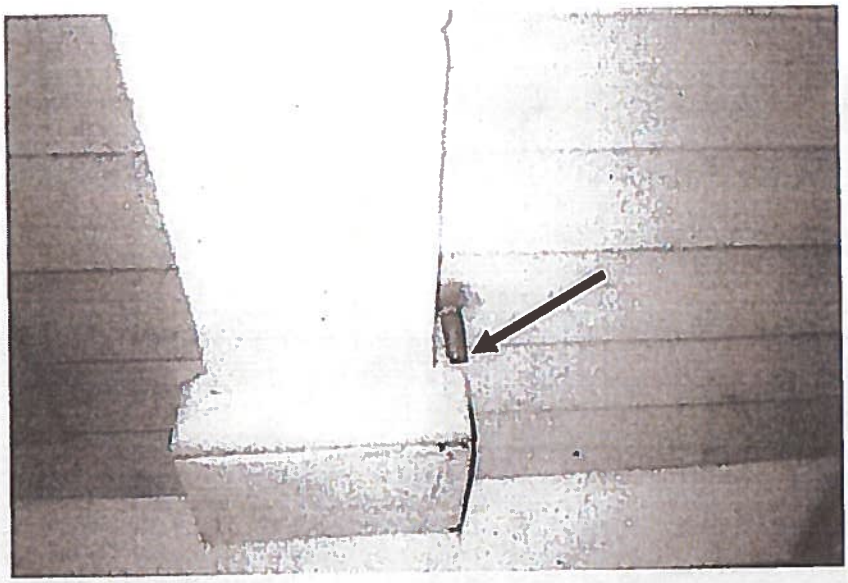
Exterior Wall at Rear of Building Formerly Covered With Substantial Ivy Growth

APPENDIX A

Picture 9

Chimney-Like Structures on the Roof Of the 1797 Wing

Picture 10



Condensation Drain Emptying Onto Exterior Wall Clapboard, Note Damage to Wood below Drain

APPENDIX A
TABLE 2

Indoor Air Test Results – Greenfield Public Library, Greenfield, MA – August 10, 2001

Location	Carbon Dioxide *ppm	Temp. °F	Relative Humidity %	Occupants in Room	Windows Openable	Ventilation		Remarks
						Intake	Exhaust	
Child Library Inner Room	1138	73	46	1	No	Yes (1)	No	
Greenfield Room	1301	73	56	2	No	Yes (1)	Yes	Exhaust off, musty odor
Elevator Car	1168	73	54	1	No	No	No	
Conference Room	530	74	70	0	No	Yes	Yes	Exhaust off, musty odor – carpet moisture – 8.8%-33.2%
Stack Room	946	75	56	0	No	No	No	Pillars-efflorescence, water damage-outer wall-mold
Children's Library	1175	75	49	0	No	Yes	No	Supply off
Children's Library Closet						No	Yes	Water damaged plaster
Children's Library Restroom						No	Yes	No undercut door
Front Desk Area	1389	73	53	17	Yes	Yes	No	Taken @ 3:05 pm

*** ppm = parts per million parts of air**
CT = ceiling tiles

Comfort Guidelines

Carbon Dioxide -	< 600 ppm = preferred
	600 - 800 ppm = acceptable
	> 800 ppm = indicative of ventilation problems
Temperature -	70 - 78 °F
Relative Humidity -	40 - 60%