

CRITERIUM[®] **BROWN ENGINEERS**

P.O. BOX 314
WASHBURN, ME 04786
TEL 207 455-4717
207 945-0131
800 509-5193
FAX 207 455-8090
EMAIL criterium-brown@criterium-brown.com

February 26, 2015

Town of Addison Board of Selectmen
Attn: John Woodward, Daria Alexander
P.O. Box 142
Addison, ME 04606

Re: Structural Inspection (Second Report) – February 6, 2015
Addison Town Hall, 334 Water Street, Addison, Maine

INVOICE

For engineering services rendered:

Investigation, evaluation, and report (7.5 hrs. @ \$125.00/hr.)	\$937.50
Photographs	\$ 12.00
Mileage (50 miles @ \$0.575/mile)	\$ 28.75
Administrative Fee	\$ 35.00
Total Due	\$1013.25

Please make check payable to: *Criterium Brown Engineers*

Due upon receipt

BR-15-043

THANK YOU – WE APPRECIATE YOUR BUSINESS!

**LICENSED
PROFESSIONAL
ENGINEERS**

BUILDING DIAGNOSTICS
INSPECTIONS
ANALYSIS
MAINTENANCE PLANNING

Visit our website:
www.criterium-brown.com

CRITERIUM[®] **BROWN ENGINEERS**

P.O. BOX 314
WASHBURN, ME 04786
TEL 207 455-4717
207 945-0131
800 509-5193
FAX 207 455-8090
EMAIL criterion-brown@criterion-brown.com

STRUCTURAL INSPECTION Second Report

ADDISON TOWN HALL
334 WATER STREET
ADDISON, MAINE

Prepared for:
Town of Addison Board of Selectmen
P.O. Box 142
Addison, ME 04606

Prepared by:
Criterium Brown Engineers
71 Story Street
P.O. Box 314
Washburn, Maine

February 26, 2015

Inspection No. BR-14-394
Date of Inspection: February 6, 2015
Engineer: Keith R. Brown, P.E., BCIE

**LICENSED
PROFESSIONAL
ENGINEERS**

BUILDING DIAGNOSTICS
INSPECTIONS
ANALYSIS
MAINTENANCE PLANNING

Visit our website:
www.criterion-brown.com

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 OBSERVATIONS	2
3.0 EVALUATION.....	3
5.0 CONCLUSION.....	5

APPENDIX A - PHOTOGRAPHS

DRAFT

1.0 INTRODUCTION

At the request of the Town of Addison, Board of Selectmen, an invasive structural inspection was performed at the Addison Town Hall, 334 Water Street on February 6, 2015. The primary purpose of the inspection and this report is to provide the Board of Selectmen with additional information concerning the condition of concealed wall framing members at the right side of the building. This inspection and report is the result of recommendations made in our initial inspection report dated December 17, 2014. The report that follows has been prepared based on that inspection.

This inspection was performed by and report written by Keith R. Brown, P.E., Board Certified Building Inspection Engineer. For your interest, a copy of Mr. Brown's resume is attached.

This report is based on an examination of portions of seven of the wall studs at the back half of the right side of the building and also at one stud at the right front of the building, in the stairwell. With the authorization of the Addison Board of Selectmen, gypsum wallboard was removed at five locations and insulation was removed. Further, a hole was also created in the upper ceiling of the meeting room to determine the type of connection of the wall/floor framing at the second floor level.

Similar to our original report, this inspection and report do not include code compliance, mold investigations, environmental investigations, indoor air quality analysis, municipal regulatory compliance, subsurface investigation, or records research related to this building.

As the Town is aware, indoor air quality is a growing concern. Mold and mildew, fostered by moisture accumulation, can lead to respiratory discomfort and aggravate allergies and other respiratory conditions for some people. While we may comment on readily visible evidence of mold infestations this inspection and report should not be considered a mold investigation of any kind. Individuals specifically trained and qualified for such work should undertake such an investigation. We understand that others prior to and independent of this inspection performed an indoor air quality analysis. That report should be considered in conjunction with this report.

Our inspection and report have been conducted in compliance with the standards of practice of Criterium-Brown Engineers and in a manner consistent with that level of care and skill that is ordinarily exercised by members of the profession practicing under similar conditions at the time the services are performed.

As Professional Engineers, it is our responsibility to evaluate available evidence relevant to the scope of work as outlined in our proposal dated January 22, 2015. We are not, however, responsible for conditions that could not be seen or were not within the scope of our service at the time of the inspection.

During the inspection of February 6, 2015, Daria Alexander and Dan Fortin (revitalization committee members), Tom Batson and David Ingersoll (Town of Addison Selectmen), John Rittenhouse (carpenter hired by the Town of Addison) and Keith Brown (Criterium-Brown Engineers) were present.

It is the intent of the writer that this report be read in conjunction with our initial inspection report dated December 17, 2014. In the interest of reducing the potential for confusion regarding photos, photographs depicted in this report will be consecutively numbered as additions to the photos of our initial report.

2.0 OBSERVATIONS

The following observations are listed in no particular order of importance

- 2.1 The interior wall finishes in the disturbed areas showed no indication of subsurface structural distress or moisture related damage prior to the inspection. The exterior siding in the disturbed areas was found to be very “spongy” during our initial inspection, exhibiting considerable lateral deflection upon application of relatively light pressure.

The interior wall finishes of the meeting room consist of two layers of gypsum wallboard having a total thickness of approximately 7/8” to 3/4” thickness. The wallboard is attached to vertical 1”x 3” strapping that has in turn been nailed to the interior face of the wall studs. Wall studs were found to be 2”x 6” full dimension lumber spaced on approximate 16-inch centers. The walls are framed with a balloon framing method, and it was determined that studs extend from the top of the foundation sill to the top plate of the second floor for an overall approximate height in the order of eighteen feet or so.

- 2.2 Five openings were created in the drywall over an 8-foot span to expose the sides of the studs in that area. Opening elevations varied from 24” to 48” above the baseboard heating unit. The nature of the openings allowed for examination of the sides of the studs and the interior face of the wall sheathing from foundation level up to several inches above the opening. The overall areas of the openings extended from the front edge of the right rear window toward the front of the building (photo 46).

2.2.1 Wet insulation was found in all of the wall openings (photo 47).

2.2.2 The wood board wall sheathing was found to be saturated with water and rotted and is the apparent reason for the sponginess of the exterior wall surface.

2.2.3 All of the observed wall studs exhibited evidence of moisture related rot on the outside face of the stud. The extent of rot varied from minimal at two locations to extensive at other locations with deterioration extending full width of the stud inward to depths of up to two inches with average deterioration extending 1 to 1.5 inches (photos 48-52).

- 2.3 A section of drywall was also removed at the front right stairwell at a point approximately 11’6” from the interior front right corner.

2.3.1 The two wall studs that were observed as well as the wall sheathing had been prime-painted and all components were found to be free of rot and deterioration (photos 53, 54).

- 2.4 In all locations where rot was observed on wall studs, the most extensive rot was observed in the lower portions of the studs, decreasing with increase in distance from floor level.
- 2.5 We observed no significant stress cracking in those portions of the studs that had not yet rotted. A small amount of stress crack was observed near the outside face of one of the studs.
- 2.6 The observation point created above the upper first floor ceiling verified that the walls are framed “balloon” style, which was a common framing method at the time this building was initially constructed. As such, the wall studs extend from the top of the foundation to the roof framing. We observed a wood board nailer attached to the side of the wall stud opposite the attachment side of the second floor joist, and we were able to determine that the purpose of this nailer was to allow for installation of a wood fire stop between adjacent studs within the wall cavity (photos 55-57). The underside of the second floor deck, the wall sheathing and the ends of the floor joist were all wet, with some moisture related deterioration observed.

The rotted remnants of similar nailer framing was observed at first floor level

3.0 EVALUATION

Based on the observed pattern of stud rot and deterioration as well as the overall condition of the wall framing that became visible as part of this inspection, it is our professional opinion that the primary moisture source that is the cause of ongoing rot and structural deterioration in the right wall is as was stated in our initial report, i.e. water vapor in the air from the crawl space is venting itself through the wall framing where the water vapor is condensing when it comes in contact with the cold surfaces of the outside wall sheathing. This process has likely been ongoing since construction of the “new foundation”. This type of damage, however, will develop at an ever increasing rate as the decay fungus spreads throughout the structural members. This process has already rotted away the fire blocking separating the crawl space from the wall framing, the remnants of which are similar to those observed at the juncture between the first and second floors.

It is professional opinion that while the subject building has not yet reached a point where it meets the definition of *unsafe* (as defined in the following paragraphs), The rotted framing members that were observed will continue to deteriorate to the point that they will be considered to have sustained *substantial structural damage* (as defined in the following paragraphs) at some indefinite point in the future, and it will be prudent for the Town to make plans at this time for repair or replacement of this structure within the next few years. If no action is taken to correct the ongoing moisture conditions in the crawl space, deterioration will continue to develop to the extent that this building could be considered unsafe in as little as several years.

In order to remove some of the subjectivity of the determinations of unsafe and significant structural damage one can refer to a generally accepted standard that includes such definitions. The State of Maine has adopted the *Maine Uniform Building and Energy Code (MUBEC)*. The 2009 International Existing Building Code (IEBC) is included in MUBEC. Although by virtue of

its population, the Town of Addison is not mandated to adopt MUBEC, the code never the less is the recognized standard by which buildings in the State are held to. The following are excerpts of several definitions found in Chapter 2, Section 202 of 2009 IEBC:

- Unsafe – Buildings, . . . in which the structure or individual structural members meet the definition of “*dangerous*,” or that are otherwise *dangerous* to human life or the public welfare . . . shall be deemed unsafe. . . .
- Substantial Structural Damage – A condition where:
 1. In any story, the vertical elements of the lateral-force-resisting system have suffered damage such that the lateral load-carrying capacity of the structure in any horizontal direction has been reduced by more than 20 percent from its pre-damaged condition; or
 2. The capacity of any vertical gravity load-carrying component, or any group of such components, that supports more than 30 percent of the total area of the structure’s floor(s) and roof(s) has been reduced more than 20 percent from its pre-damaged condition and the remaining capacity of such affected elements, with respect to all dead and live loads, is less than 75 percent of that required by the *International Building Code* for new buildings of similar structure, purpose and location.

While it is our professional opinion that the meeting room is currently safe for typical occupancy, the room finishes and exterior finishes should be inspected following all significant wind, snow/ice and rain events for any evidence of recent or developing structural movement.

A suggested work plan to correct the conditions observed in our initial inspection and this follow-up inspection would be as follows:

- Take corrective action to effectively eliminate the intrusion of moisture into the sill framing, crawl space and wall framing. The ground surface at the back of the building will need to be regraded to prevent surface water from migrating toward the sill framing and top of foundation.
- The suspect foundation drain discussed in our initial report should be further investigated and made functional.
- The crawl space floor should be cleaned of debris and then covered with a vapor barrier, and the vapor barrier edges sealed to vertical piers and the foundation wall to the extent possible.
- Structural improvements will need to be undertaken including replacement of deteriorated sill framing along the back wall of the building and the back half of the right and left walls to the extent necessary.

- Remove siding and wallboard sheathing to the extent necessary to remove all deteriorated siding and sheathing and to expose wall framing to the extent that sound, undisturbed studs are located.
- Cut out and replace damaged wall studs and install sister members on each side of the stud. Sisters will need to extend approximately 8 feet alongside undamaged portions of the studs and sisters will need to be anchored to provide sufficient lateral support. These repaired studs will need to be designed by a qualified, registered design professional.
- Install new wall sheathing, siding and interior finishes.
- Install crawl space ventilation portions sufficient to provide one square foot of free ventilation area per 50 square feet of floor area.

The Town of Addison should continue to develop a planned strategy for repair of this structure within the next year in order that costs of repairs can be budgeted for the 2016 Annual Budget or sooner.

5.0 CONCLUSION

Based on our observations made, it is our professional opinion that the Addison Town Hall should undergo repairs within the next two years in order to assure continued stability of the structure. It should be noted that our opinion is based solely on the structural aspects of this building. It is our understanding that the structure also has issues related to the presence of mold and lead dust that will also need to be given future consideration.

There is no one-way to build or repair an old, wood-framed building such as this. As a result, you may encounter others whose opinions will differ from ours. We cannot be responsible for any action you may take based on those opinions unless we have the opportunity to review the situation and examine the relevant conditions before any repairs and/or modifications are made.

This report has been prepared in strict confidence with you as our client. Further, we will not release this report to anyone without your permission.

Many things have been discussed in this report. However, we realize that there may still be other things of interest to you that have not been discussed. Therefore, we encourage you to call with any additional questions you may have.

Thank you for the opportunity to be of assistance to you.

Sincerely,

Keith R. Brown, P.E., CBIE

KRB/shb

APPENDIX A

PHOTOGRAPHS

Prepared for: Town of Addison
Property: Addison Town Hall, 334 Water Street, Addison, Maine

46. Openings created for invasive inspection
47. Wet insulation and rotted siding
48. Rot damage on stud and wall sheathing
49. Rot damage on stud and wall sheathing
50. Rot damage on stud and wall sheathing
51. Rotted stud and wall sheathing 80 inches front of right rear stud
52. Rotted stud, sill framing and wall sheathing (note that fire stop has disintegrated entirely)
53. Wall opening in front right stairwell
54. Stud and wall sheathing in front right stairwell
55. Second floor joist, second floor deck above right side wall
56. Second floor joist-to-stud connection
57. Second floor joist, second floor deck above right side wall